

Gleaner®
A65 / A75
ROTARY COMBINE

SERVICE MANUAL
79027302 A Rev.

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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.

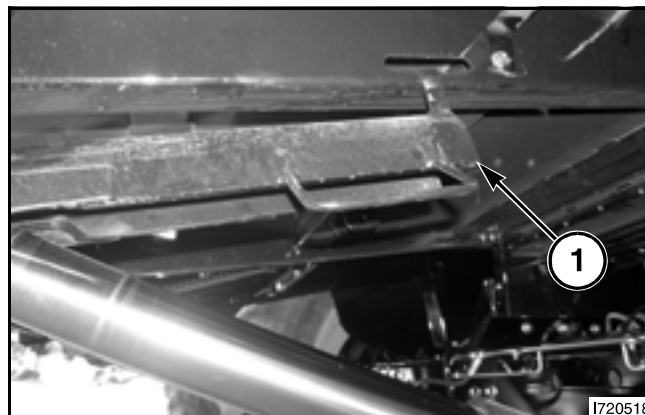


FIG. 64

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.

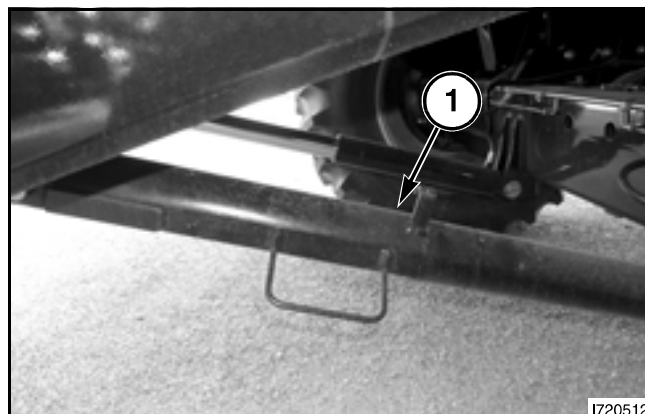


FIG. 65

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.

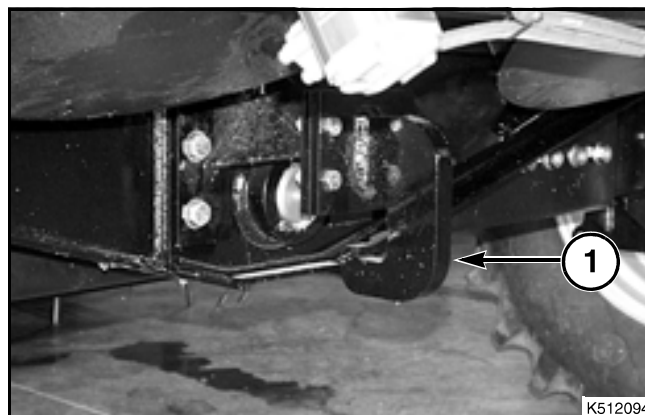


FIG. 66

General Information

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.

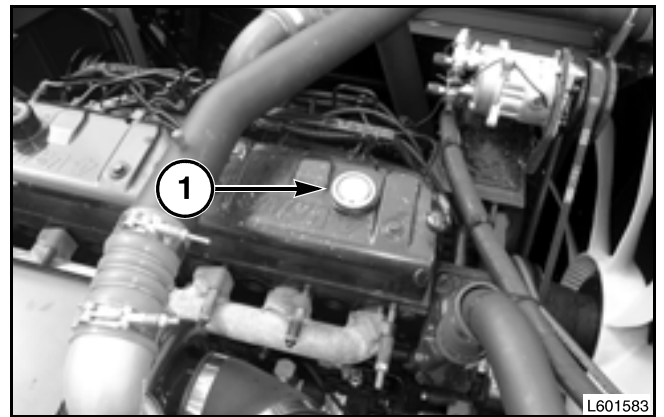


FIG. 109

Centrifugal Oil Filter

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

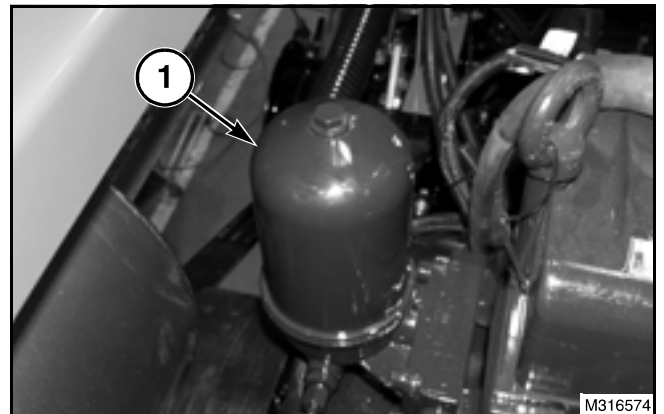


FIG. 110

Drive Chain Sprocket and Idler Alignment

If there is wear on the inside surface of the chain roller link plates, the sprockets are not aligned. Make sure that:

FIG. 128: The shafts (that the driver and driven sprockets are mounted on) are in the same location (level with each other).

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

Rotate the drive and look for excessive movement. If movement is shown inspect the sprocket and shaft. If there is no problem shown, remove and install sprocket. Not correctly mounted sprockets or out of round sprockets are from time to time the root of vibration or more severe problems. A dial indicator can be used to measure side to side sprocket movement or diameter vibration by holding the dial indicator up to the sprocket sidewall.

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

FIG. 129: The shafts (that the driver and driven sprockets are mounted on) are parallel to each other.

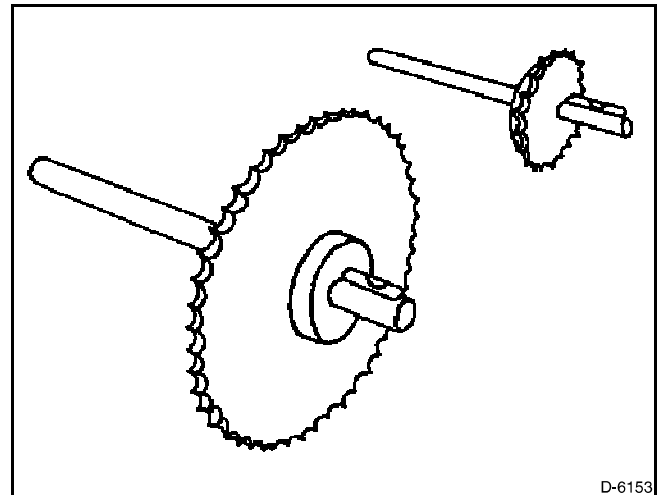


FIG. 128

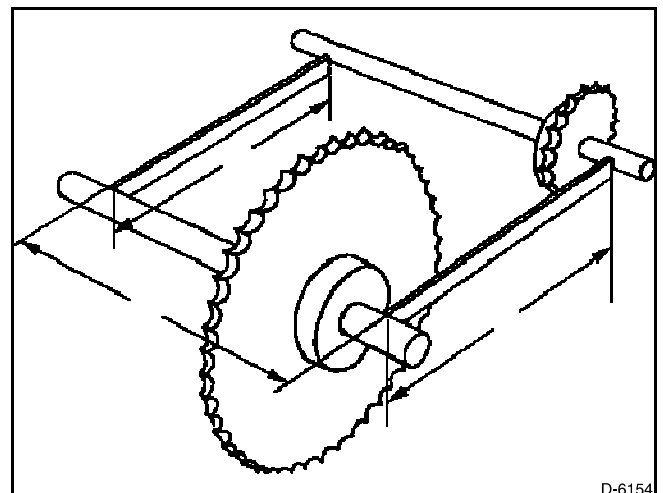


FIG. 129

FIG. 130: The driver and driven sprockets are in line (not offset).

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 sprockets. If the drive is properly aligned, the straight edge will contact each sprocket evenly. The straight edge must touch the two outer edges of each sprocket for a total of four points of contact.

Shafts not aligned will show up as a gap between the outside face of the sprocket and the straight edge.

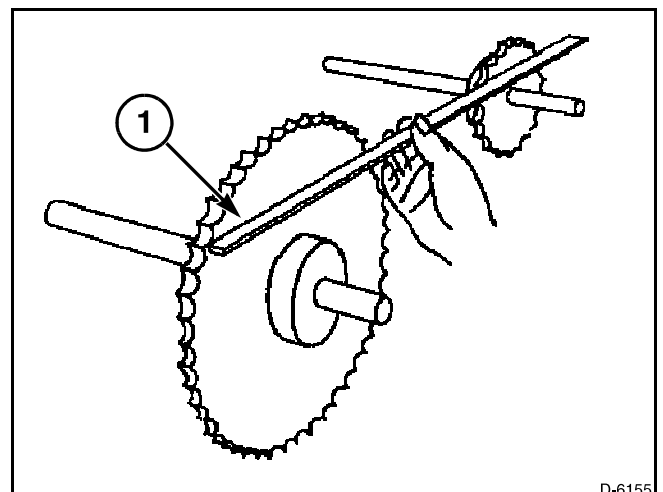


FIG. 130

General Information

HYDROSTATIC DRIVES - A65

General Information

The rotor and propulsion pumps are mounted in tandem and are driven from the rear of the engine with a 4 band belt.

The rotor drive pump is variable displacement. An electrically operated valve destrokes the pump when the thresher clutch is disengaged. A pressure limiter protects the rotor drive system by destroking the pump at high pressures.

The rotor drive motor is fixed displacement. The output shaft of motor is connected directly to a 2-speed gearbox, which drives the rotor.

The rotor speed is controlled by a switch in the cab and an electric displacement controller on the pump.

Charge pressure setting is 2309-2654 kPa (335-385 psi) above case pressure when the rotor pump is in the neutral (destroked). When the rotor pump is in forward or reverse (in stroke), charge pressure is approximately 172 kPa (25 psi) less than above figures. Charge pressure is used for replenishing the closed loops, flushing and cooling the systems and shifting the variable swash plates in the pumps. Charge pressure settings at the motor are set approximately 137 kPa (20 psi) less than the pump.

Case (drain) pressure must not be higher than 276 kPa (40 psi). The case return lines carry the pump and motor leakage and other return oil back to the cooler and reservoir.

The propulsion drive pump is driven by the rotor pump, supplying oil under high pressure to rotate the propulsion drive motor. Pump and motor are connected by hydraulic hoses in a closed loop circuit.

The output shaft of the motor is connected directly to the transmission gearbox.

The propulsion drive pump is a variable displacement type, which varies the amount of oil sent to the motor to change the ground speed.

The propulsion drive motor is fixed displacement. The pump output determines the speed and direction of rotation of the driven motor. The pump output is controlled by a ground speed lever in the cab.

NOTE: Two additional fixed displacement wheel motors, and control valve, are installed in parallel with propulsion drive motor when optional power rear wheel drive is installed.

Charge pressure setting is 2689-2896 kPa (390-420 psi) above case pressure when the propulsion pump is in neutral (destroked). When the propulsion pump is in forward or reverse (in stroke), charge pressure is approximately 172 kPa (25 psi) less than above figures. Charge pressure is used for replenishing the closed loops, flushing and cooling the systems and shifting the variable swash plates in the pumps. Charge pressure settings at the motor are set approximately 137 kPa (20 psi) less than the pump.

Case (drain) pressure must not be higher than 276 kPa (40 psi). The case return lines carry the pump and motor leakage and other return oil back to the cooler and reservoir.

If a hose fails, the loss of charge pressure will cause the hydrostatic pumps to destroke to neutral. Continued running of the engine after loss of hydraulic oil can cause damage to the charge pump and hydrostatic pumps. Turn engine off at once when monitor shows low oil level.

All high pressure hoses are specifically selected for the high pressures found in these systems 44.8 mPa (6500 psi) in the propulsion drive, 48.3 mPa (7000 psi) in the rotor drive).

Gleaner®

A65 / A75 Combine

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02 - Specifications

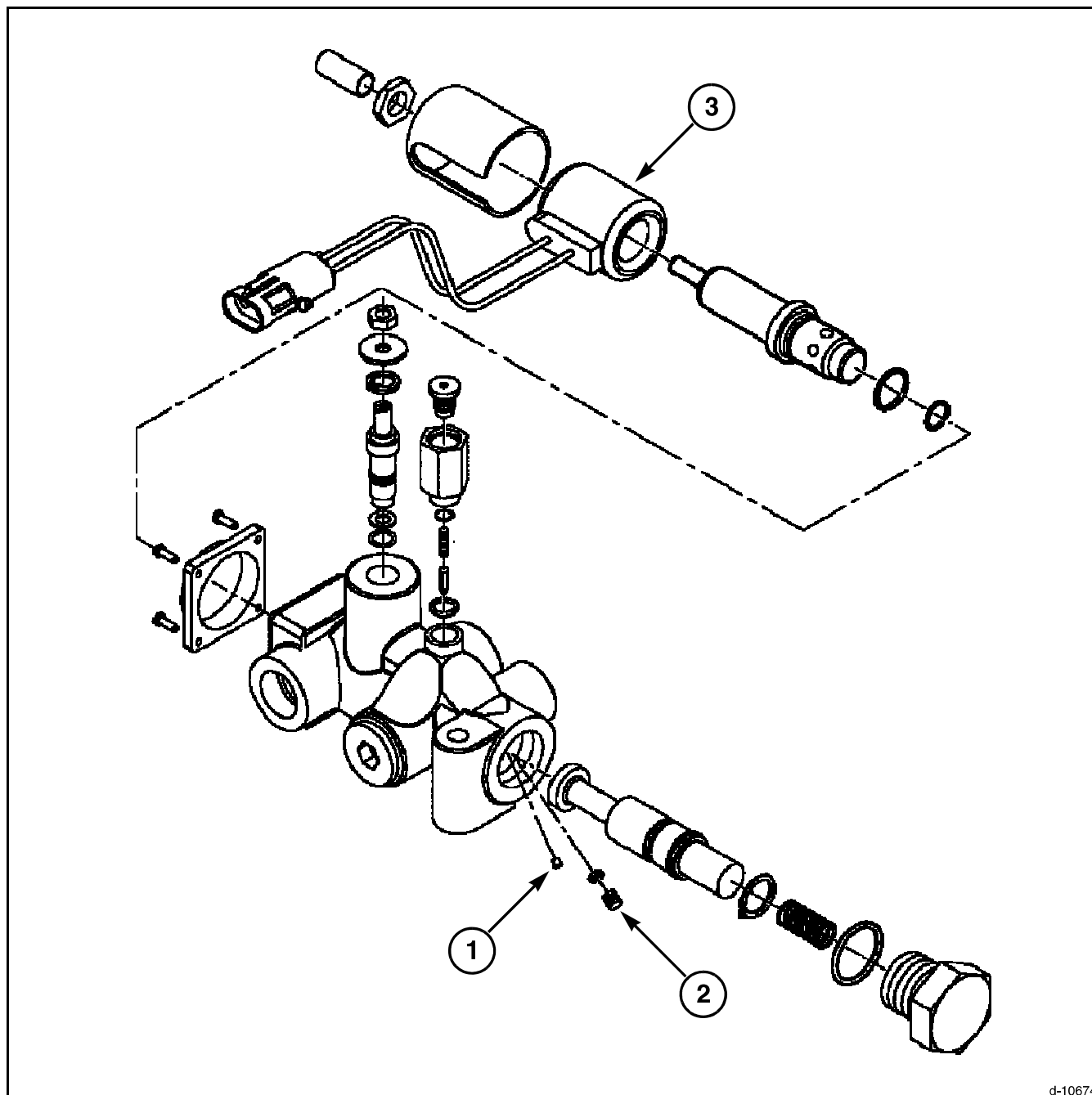
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Specifications

Reel Drive Hydraulic Valve Assembly - A65



d-10674

FIG. 14

FIG. 14: Reel Drive Valve Assembly Prior to HS87101

Make.....	Sauer Danfoss
Model	Z2201004
Maximum Flow.....	32.2 to 39.75 l/min (8.5 to 10.5 gal/min)
Orifice (1)	0.79 mm (0.031 in)
Orifice Assembly (2)	0.64 mm (0.025 in)
Coil (3)	
Rated Voltage	12 Volts Direct Current
Resistance	8.41 to 9.77 Ohms
Current Draw.....	1.23 to 1.43 Amps

Steering Priority Valve Assembly - A65

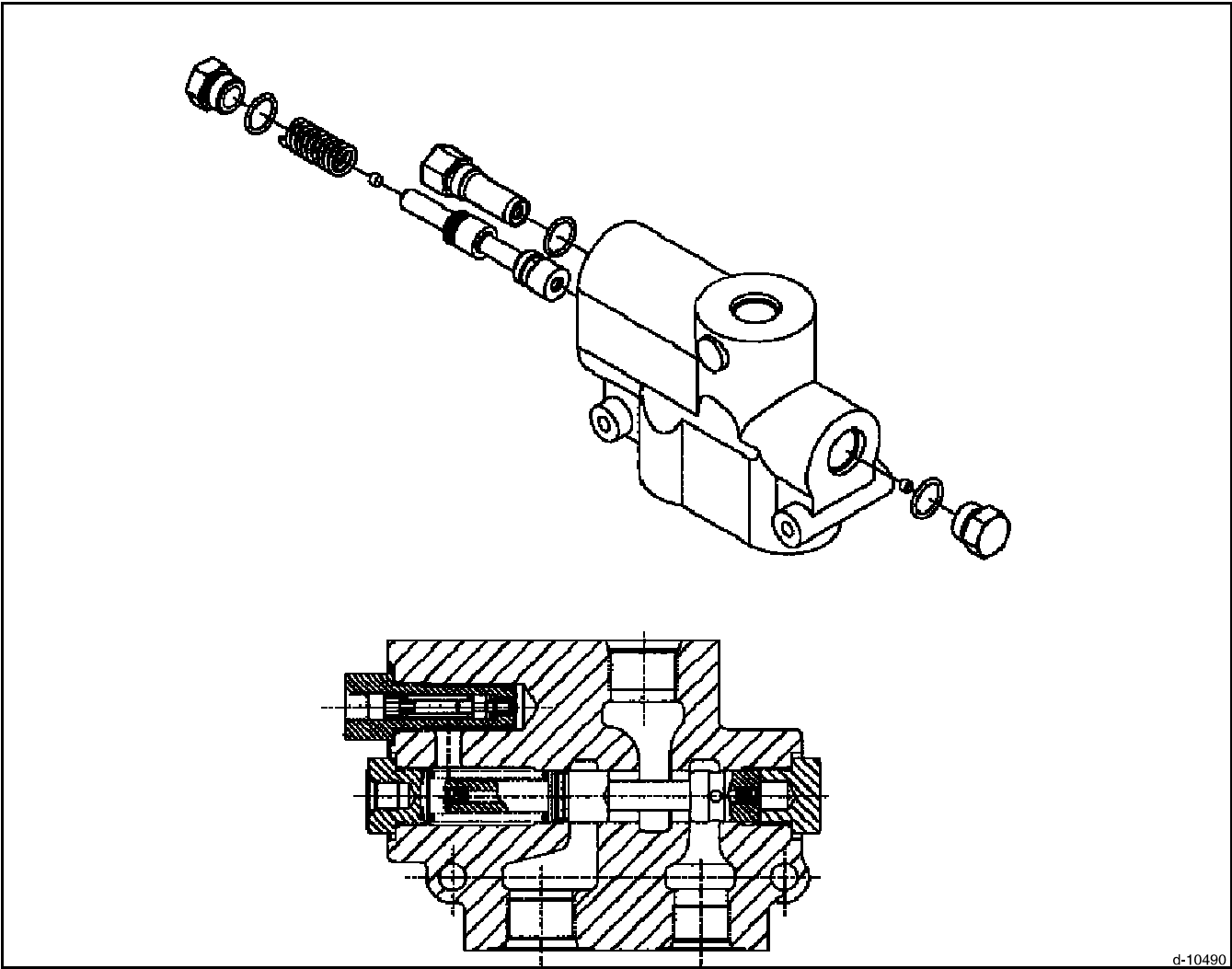


FIG. 43

FIG. 43: Steering Priority Valve Assembly

Make.....	Eaton
Model	VLE103C44Z0B
Inlet Flow Rating	151.4 l/min (40 gal/min)
Relief Valve Pressure Setting.....	155 bar (2250 psi)
Relief Valve Limit	276 bar (4000 psi)
Pilot Pressure.....	Internal
Pilot Signal	Load Sense Pilot
Control Spring.....	10.3 bar (150 psi)
Control Pressure.....	16.0 bar (233 psi)
Load Sensing Orifice	0.91 mm (0.036 in)
Pilot Pressure Orifice	0.91 mm (0.036 in)
Dynamic Signal Orifice	0.79 mm (0.031 in)
Relief Dashpot	0.67 mm (0.0265 in)

Specifications

Hydraulic System - Complete:

System with standard rear axle.....	90.8 liters (95.9 qt)
System with power rear wheel drive axle	97.6 liters (103.1 qt)
Hydraulic Reservoir	31.4 liters (33.2 qt)
Type of oil.....	Permatran® 821XL

Power Rear Wheel Drive Hubs

Inboard Axle Bearing.....	Lubricated by hydraulic oil in wheel motor case
Outboard Axle Bearing.....	Lubricated with grease in a permanently sealed cavity

ENGINE - A75

Make and Model	Sisu 84CTA Tier III 8.4L
Cylinders	6 in-line
Type.....	6-cylinder, wastegate turbocharged and charge air cooled
Bore.....	111 mm (4.37 in)
Stroke.....	145 mm (5.71 in)
Piston Displacement.....	8.4 liters (513 cu in)
Compression Ratio.....	17.3:1
Horsepower Rated - Tier 3.....	261 kW (350 hp) @ 2100 rpm
High Torque Power Bulge - Tier 3	280 kW (375 hp) @ 1900 rpm
Piston Rings.....	2 compression and 1 oil
Oil Filter	Combination full flow and bypass, replaceable canister
Air Cleaner	Aspirated, dual element, dry type
High Idle Speed	2200 rpm
Rated Speed.....	2100 rpm
Low Idle Speed	1000 rpm
Injection Pump.....	Bosch CP3.3
Firing Order.....	1-5-3-6-2-4
Static Fuel Injection Timing	Electronically controlled
Engine Oil Pressure @ Rated Speed and Normal Operating Temperatures.....	345 kPa (50 psi)
Thermostat.....	91 degrees C (195 degrees F)
Starts to open	82 degree C (180 degrees F)
Fully open.....	95 degree C (203 degrees F)
Engine Protection	Sisu electronic
Minimum Oil Pressure at Low Idle - 1100 rpm	69 kPa (10 psi)
Minimum Oil Pressure at Rated Speed - 2200 rpm	207 kPa (30 psi)
Maximum Operating Coolant Temperature	100 degrees C (212 degrees F)

Reel Fore and Aft Check Valves (CE Only) - A75

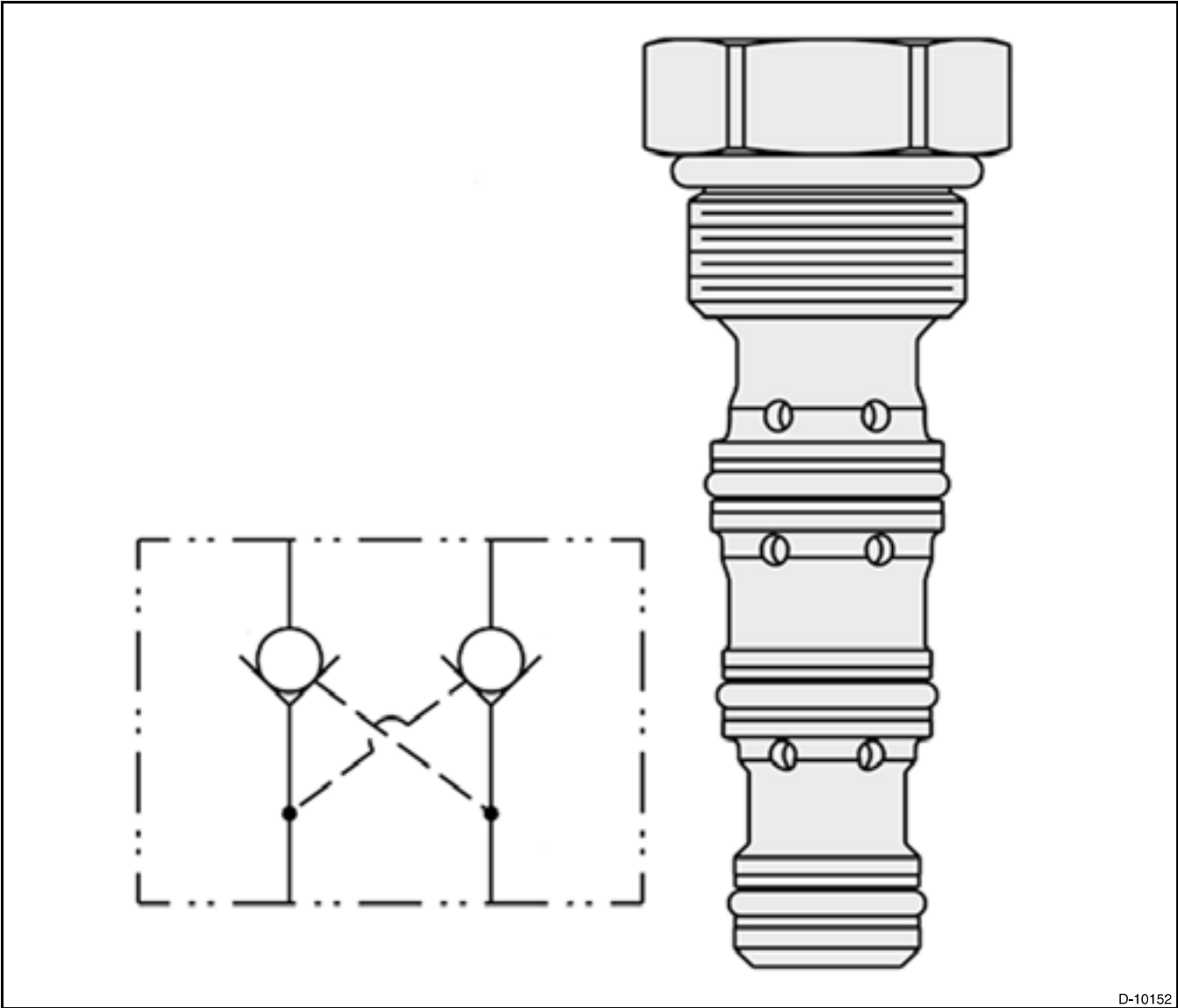


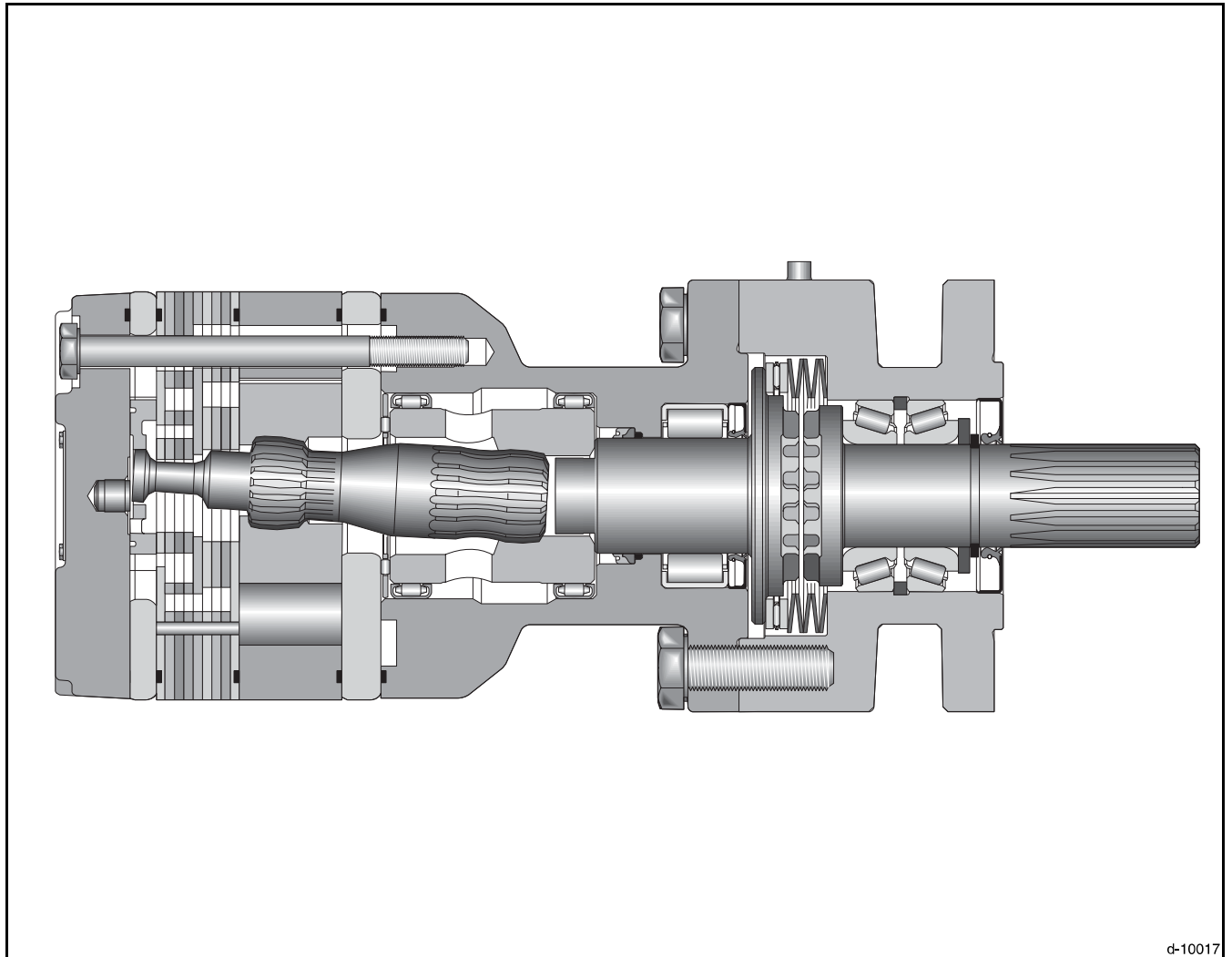
FIG. 89
FIG. 89: Reel Fore and Aft Pilot Operated Check Valve
(CE Only)

Serial Number HS36101 and Later

Make..... HydraForce
Model DC08-40
Type..... Pilot Operated Check Valve
Flow..... 19 l/min (5 gal/min)
Operating Pressure 240 bar (3500 psi)

Specifications

Feed Reverser Hydraulic Motor and Clutch Assembly - A75



c-10017

FIG. 118

FIG. 118: Feed Reverser Hydraulic Motor and Clutch Assembly

Make..... Parker Hannifin

Model TF0280GS050AAAA

FIG. 21: Remove the air deflector (1).

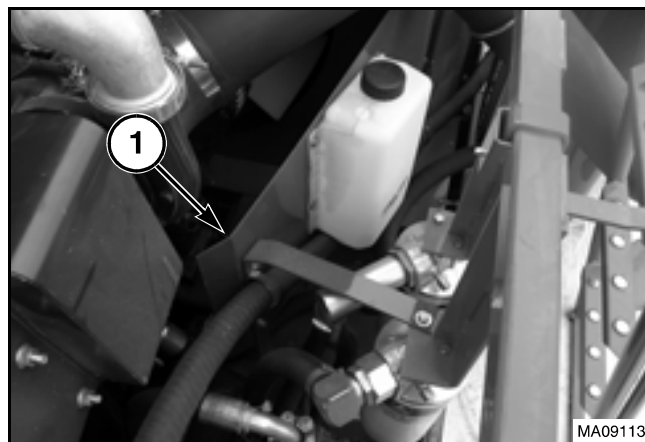


FIG. 21

FIG. 22: Remove the upper charge air cooler line (1).
Remove the upper radiator hose (2).

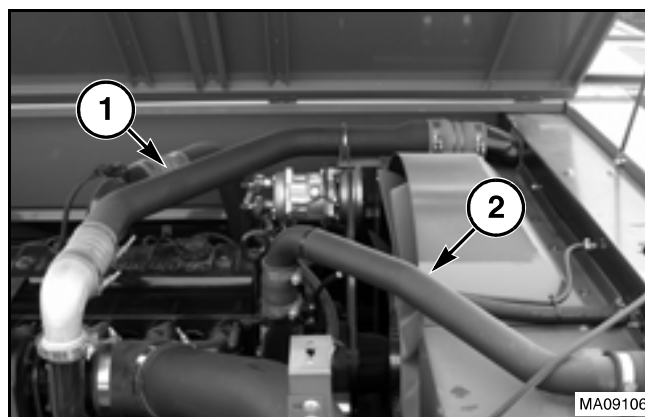


FIG. 22

FIG. 23: Remove the deaeration hose (1).

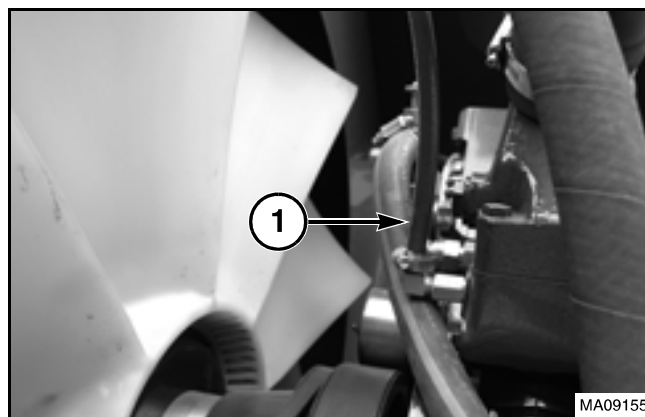
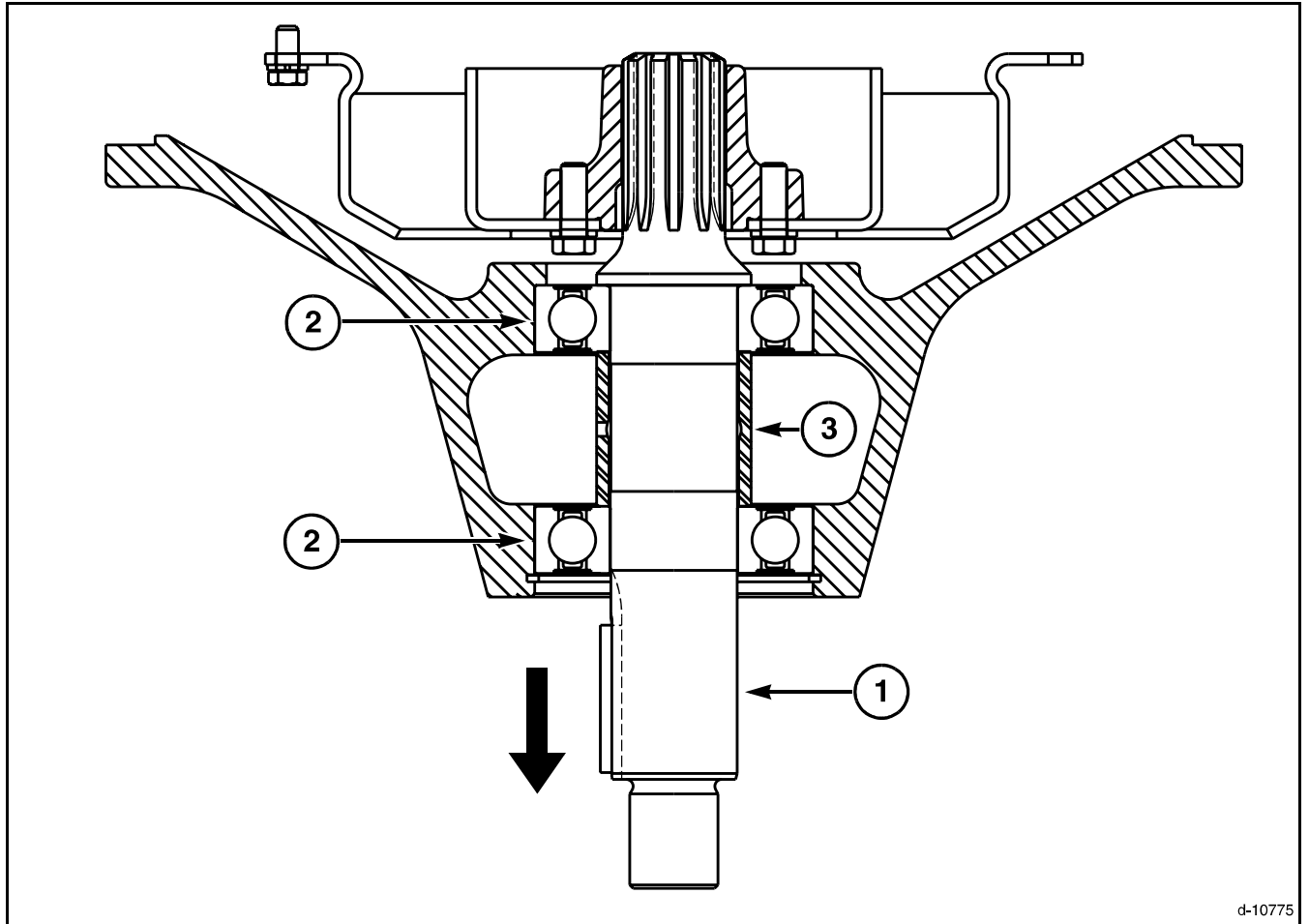


FIG. 23

Engine Output Shaft



d-10775

FIG. 106

FIG. 106: Using a soft faced hammer and / or a block of wood, drive the output shaft (1) and bearings (2) out the drive sheave end of the output shaft housing until the bearings clear the bore in the output shaft housing. Remove the shaft assembly from the housing.

Using a press or suitable puller, remove the two bearings and bearing spacer (3) from the output shaft.

Inspect all parts and replace as found necessary.

FUEL TANK

REMOVAL

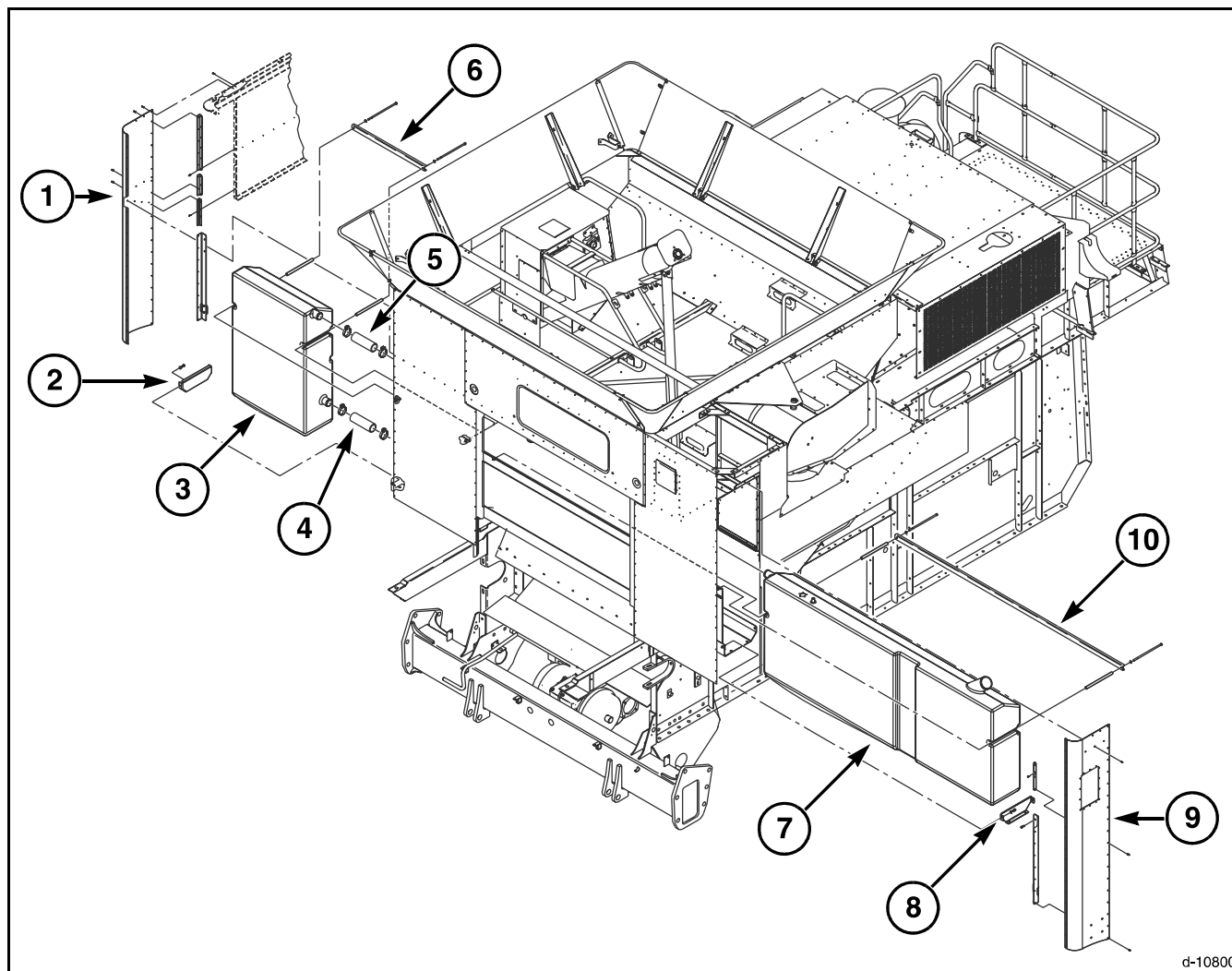


FIG. 187

FIG. 187: Exploded View of Fuel Tank Components

1. Right-hand grain bin corner shield
2. Right-hand fuel tank floor plate
3. Right-hand fuel tank
4. Lower fuel tank connecting hose
5. Upper fuel tank connecting hose
6. Right-hand fuel tank retaining channel
7. Left-hand fuel tank
8. Left-hand fuel tank floor plate
9. Left front grain bin corner shield
10. Left-hand fuel tank retaining channel

Feeder Housing

FIG. 4: Power flows from the beater shaft (2) through a belt (1) to the variable speed or fixed speed jackshaft (3).

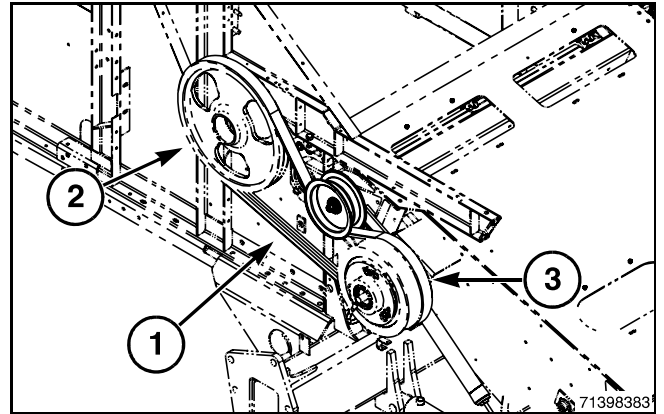


FIG. 4

FIG. 5: Variable Speed Header Drive - Power flows from the variable speed jackshaft through a belt (1) to the header drive countershaft that is mounted under the feeder housing.

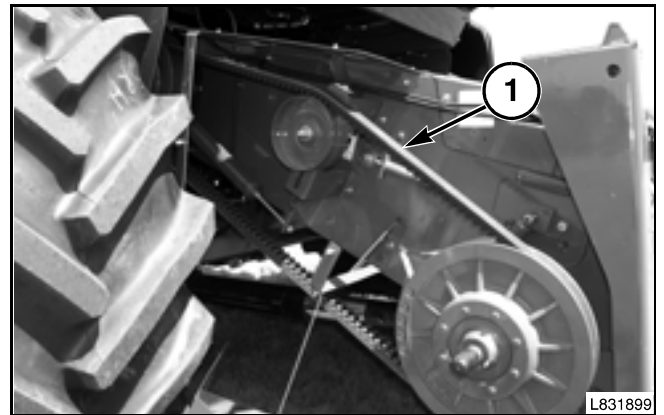


FIG. 5

FIG. 6: Fixed Speed Header Drive - Power flows from the fixed speed jackshaft through a belt (1) to the header drive countershaft that is mounted under the feeder housing.

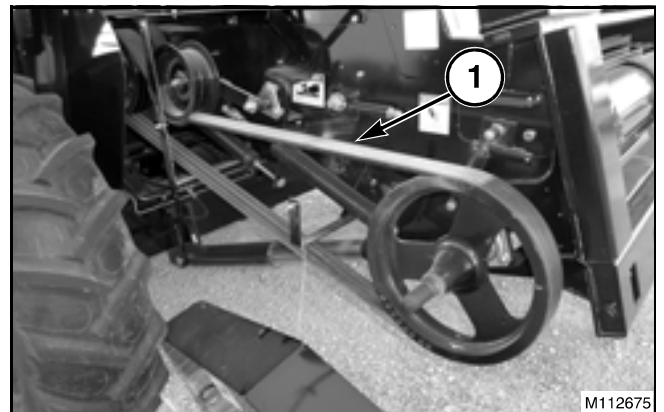


FIG. 6

FIG. 7: The headers are driven from the left-hand (1) and the right-hand ends of the feeder countershaft.

A belt (2), which is driven from the left-hand side of the header drive countershaft, drives the pivot shaft through a jaw type slip clutch. The pivot shaft drives the conveyor chain.

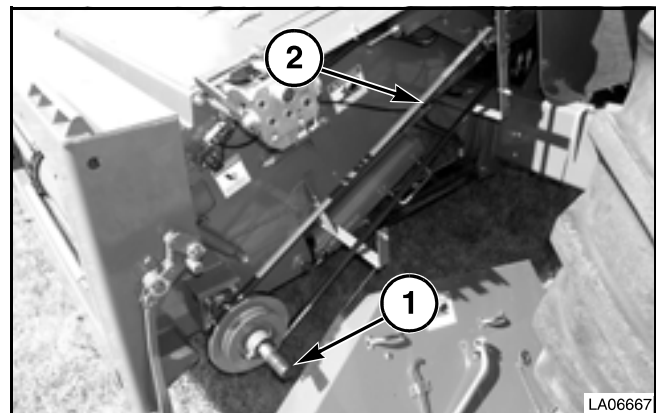


FIG. 7

FIG. 72: Remove the remaining capscrews (1), flat washers, lock washers, and the nuts fastening the front mud guard shield (2). Remove the shield from the machine.

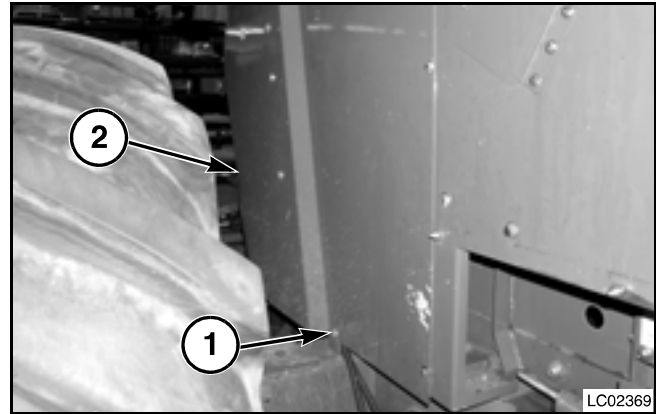


FIG. 72

FIG. 73: Turn the jam nut (1) to loosen the tension on the belt (2).

Remove the belt (2) from the sheaves.

NOTE: Note the grooves in the countershaft sheave and the pivot shaft sheave from which the belt is being removed.

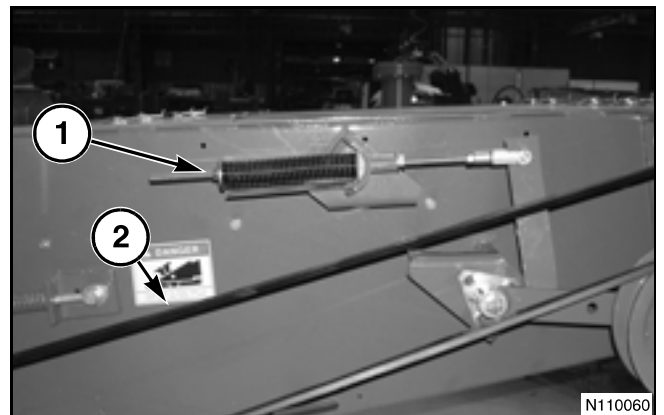


FIG. 73

Feeder Housing

COUNTERSHAFT VARIABLE SPEED HEADER DRIVE

Removal

FIG. 137: To have access for removal of the header drive countershaft, the header must be removed from the combine.



FIG. 137

FIG. 138: Lower the feeder housing to the ground or fully extend the header lift cylinders. Position the header lift cylinder stop (1) so that the stop fully contacts and covers three sides of the lift cylinder rod. Lower the feeder housing until the header lift cylinder stop contacts the end of the cylinder.

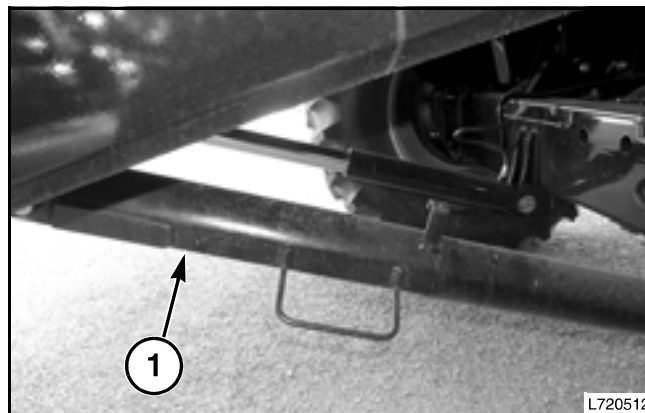


FIG. 138

FIG. 139: If the variable header speed drive has not been locked out for use with a grain head or a corn head, start the engine and operate the engine at low engine speed.

NOTE: *The reel lift hose must be fastened to the variable speed header drive at this time.*

Engage the separator and the header clutches.

With the reel lift and lower switch (1), press the lower section of the switch to decrease the header speed to full low range. In full low range the driven countershaft sheave halves have moved together.

Disengage the header and the separator clutches. Turn off the engine and remove the start key.

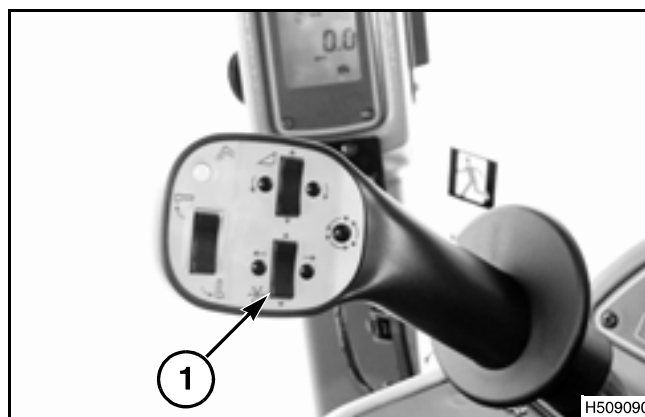


FIG. 139

FIG. 212: Install the locking collar (1) on left-hand bearing. Using a wrench in the spanner hole in the collar, lock the bearing to the shaft by rotating the locking collar in the direction of normal shaft rotation. After this is done, turn the set screw in tightly for an additional positive lock.

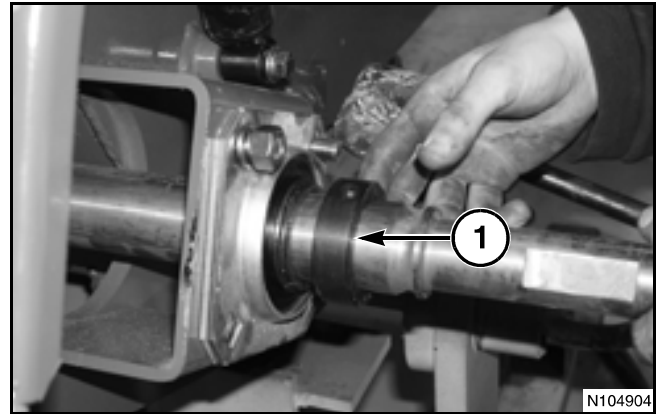


FIG. 212

FIG. 213: Install the woodruff key (2) into the left-hand end of the countershaft.

Slide the left-hand sheave (1) onto the shaft, making sure to align the keyway with the woodruff key. The small diameter belt groove must face outward when the sheave is installed.

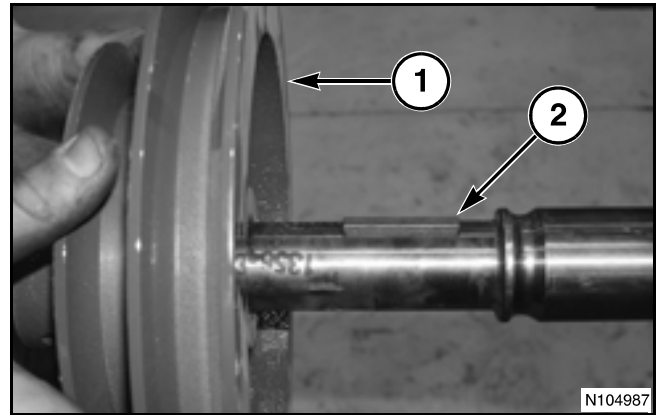


FIG. 213

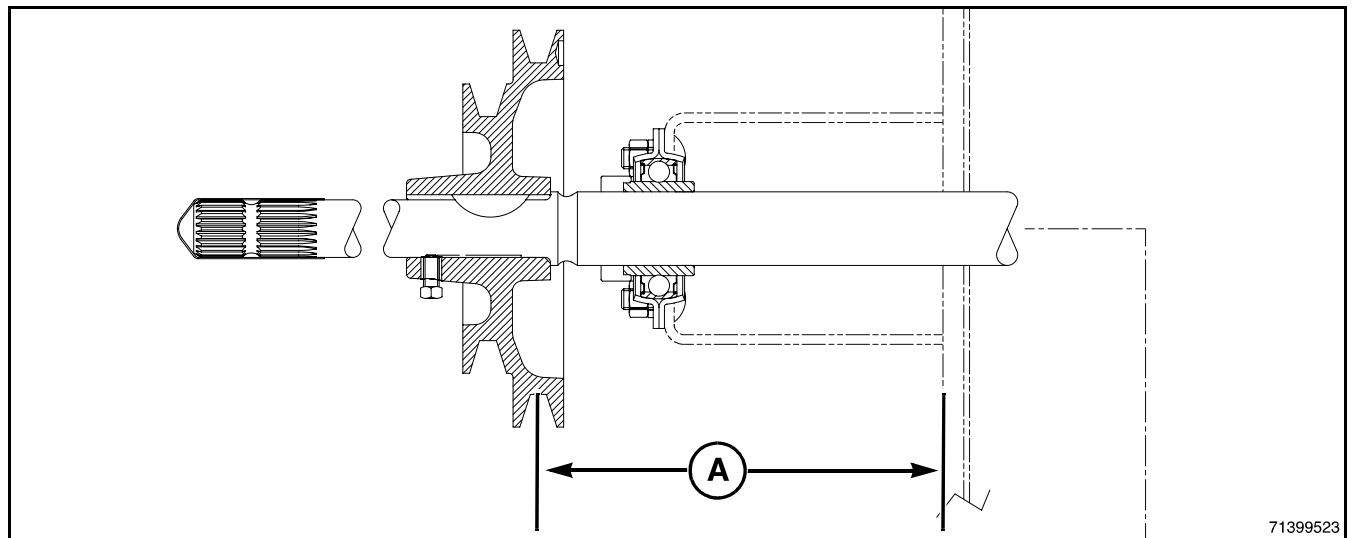


FIG. 214

FIG. 214: Position the center of the large belt groove at a distance (A) of 257.4 mm (10.134 in) from the side of the feeder housing.

Feeder Housing

FIG. 271: Using the sheave support jackshaft (1) as an alignment fixture, locate the sheave support jackshaft in a suitable press.

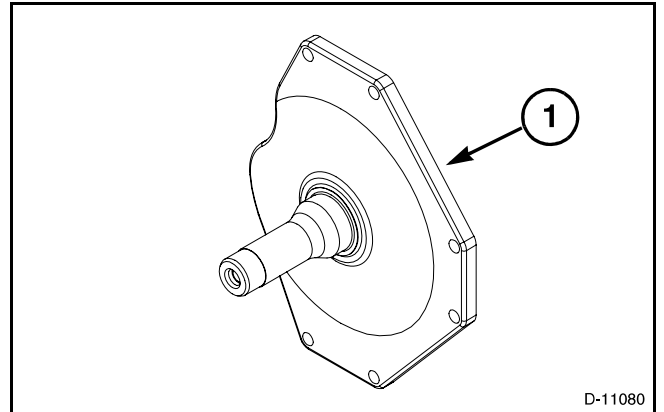


FIG. 271

FIG. 272: Turn the hub assembly over and locate the hub assembly on the jackshaft sheave support in the press. The jackshaft will support the inner and outer races of the inner bearing (1) and locates the spacer (3) in the correct location in the hub (2). Install the spacer (3) on the jackshaft sheave support. Press outer bearing (4) into the hub until the outer bearing is tight against the spacer.

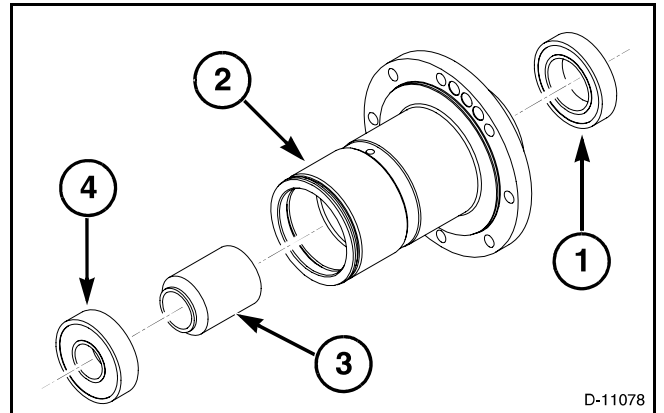


FIG. 272

FIG. 273: Locate the driven sheave (1) against the outside face of the flange on the hub (2). Install the eight capscrews with lock washers (3) to fasten the hub to the driven sheave. Tighten the capscrews securely.

Clean and apply primer N to the threads (4) for the three guide pins in the outer face of the driven sheave. Permit the primer N to dry.

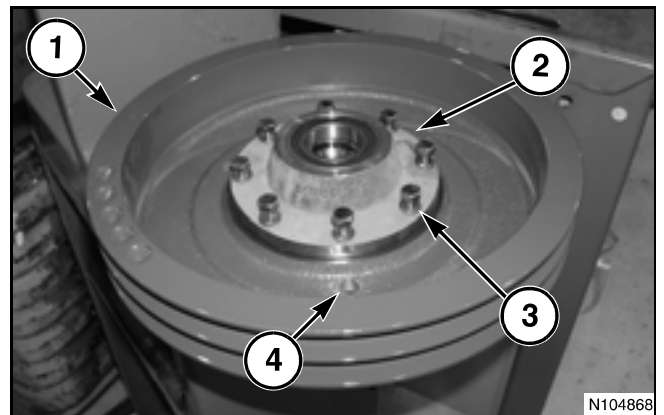


FIG. 273

FIG. 274: If the bushings (1) for the guide pins are being replaced, press new bushings into the outer sheave half. Press the bushings flush with the outer surface of the outer sheave half.

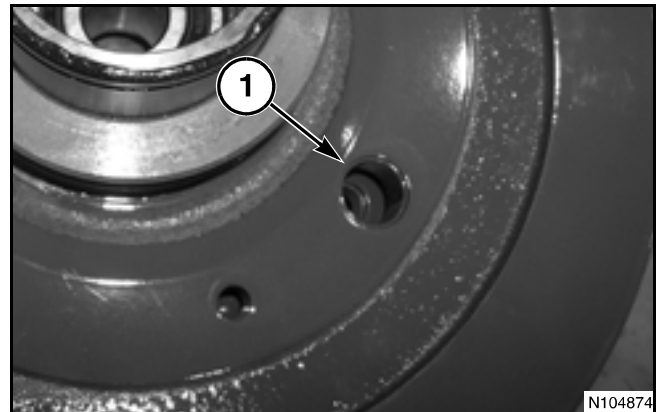


FIG. 274

FIG. 369: If equipped position the header quick coupler (2) onto the feeder housing. Install the capscrews (1) fastening the post supporting the header quick coupler (2). Tighten the capscrews securely.

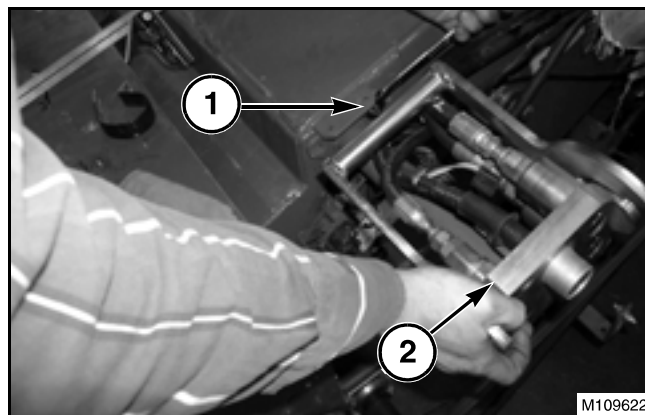


FIG. 369

FIG. 370: If equipped, connect the tilt sensor (1). Install the capscrew fastening the harness clamp (2).

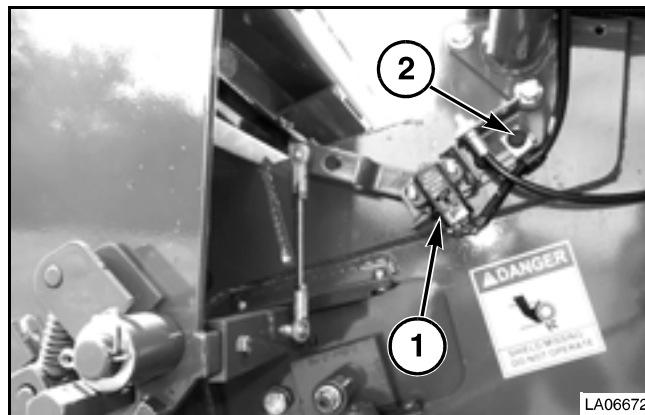


FIG. 370

FIG. 371: Be sure the belt (1) is around the pivot shaft sheave (2), over the idler sheave (3), and around the countershaft sheave (4).

NOTE: Select the proper grooves for low or high speed.

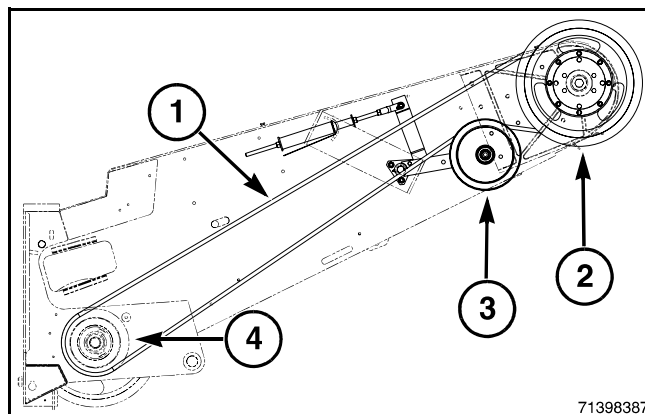


FIG. 371

FIG. 372: Fasten the spring and rod assembly to the idler arm assembly.

Turn the jam nut (1) on the threaded rod (3) to tension the belt. Adjust the jam nut (1) until the front face of the flat washer (4) is aligned with the front edge of the spring indicator (5).

NOTE: Loosen the jam nut (2) on the bottom of the spring spacer to adjust the spring.

Tighten the jam nut (2) on the bottom of the spring spacer.

NOTE: The jam nuts (1) and (2) must clamp the spring spacer after the final belt tension adjustment is made.

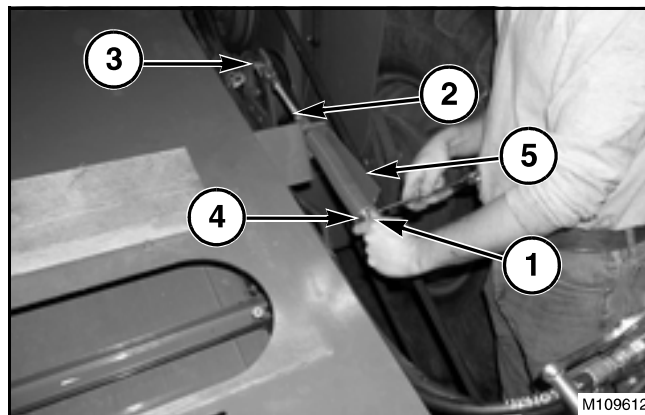


FIG. 372

Feeder Housing

PIVOT SHAFT

Removal

FIG. 447: The feeder housing must be removed from the combine. Refer to Feeder Housing Removal in this section of the manual.

NOTE: Combines with serial numbers HS36101 and later are equipped with a four strand feed chain. Servicing the four strand feed chain and related components is similar to servicing the three strand feed chain and related components.



FIG. 447

FIG. 448: Turn the jam nut (1) to loosen the tension on the belt (2).

Remove the belt (2) from the sheaves.

NOTE: Note the grooves in the countershaft sheave and the pivot shaft sheave from which the belt is being removed.

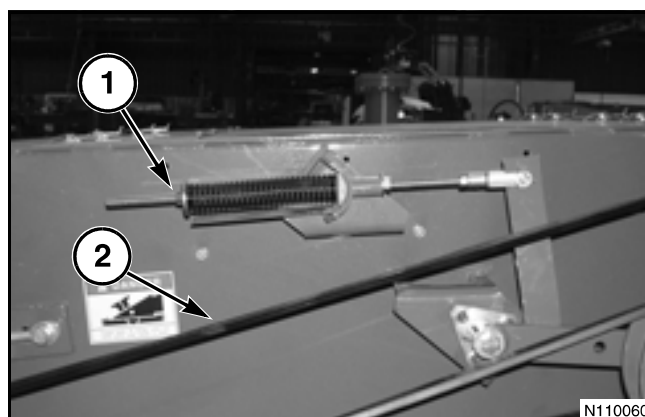


FIG. 448

FIG. 449: Header Reverser Option - Remove the tension on the drive chain (2) using the adjusting bolt (1).

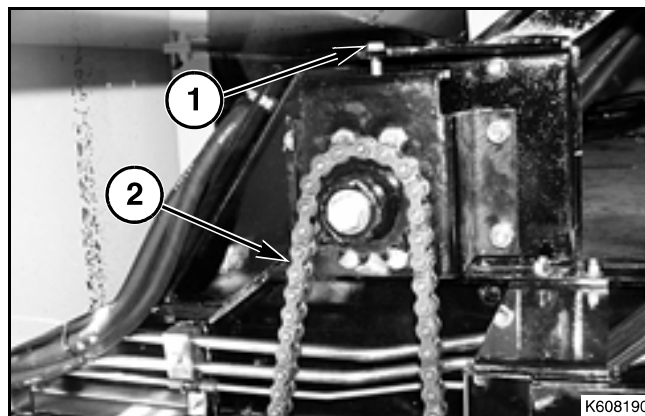


FIG. 449

FIG. 521: Tension the belt (3) by installing the tension spring (2) onto the spring anchor pin in the idler arm assembly (4) and then onto the spring anchor pin in the spring anchor (1). Be sure that the hooks at the ends of the tension spring are seated in the grooves of the spring anchor pins.

The spring tension is not adjustable. The drive is designed to provide the proper belt tension through out the service life of the drive belt.



WARNING: Install all of the shields and guards before operating the combine.

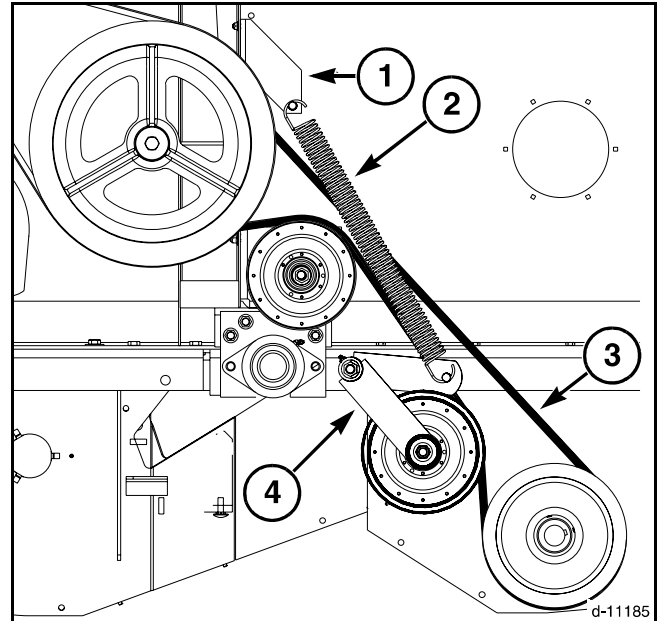


FIG. 521

Conveyor Chain Paddle Replacement

FIG. 522: Properly position the combine before beginning.



WARNING: Before working around or under the combine:

Locate the combine on a flat, hard, level surface.

Put the transmission in neutral.

Set the parking brake.

Lower the header completely to the ground or the floor.

Turn off the engine and remove the start key.

Locate a block in front of and a block behind the front drive tires.



FIG. 522

FIG. 523: The elevator is of the over shot type and discharges material over the top at the upper head. The conveyor chain paddles (1) are fastened to the chain attaching links with capscrews.

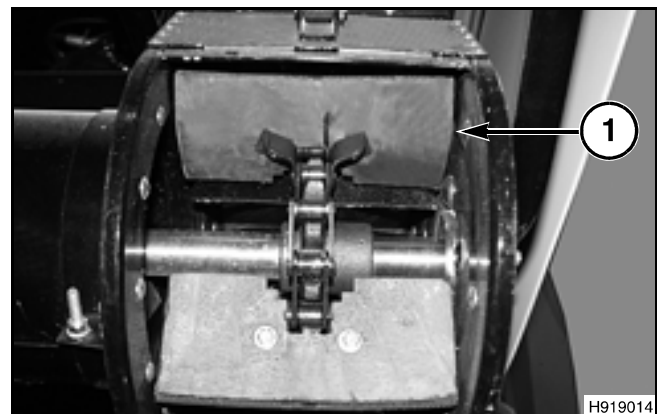


FIG. 523

Clean Grain System

FIG. 597: Install the master link, side bar, and retaining clip (1).

NOTE: Install the retaining clip (1) with the open end trailing the direction of chain travel.

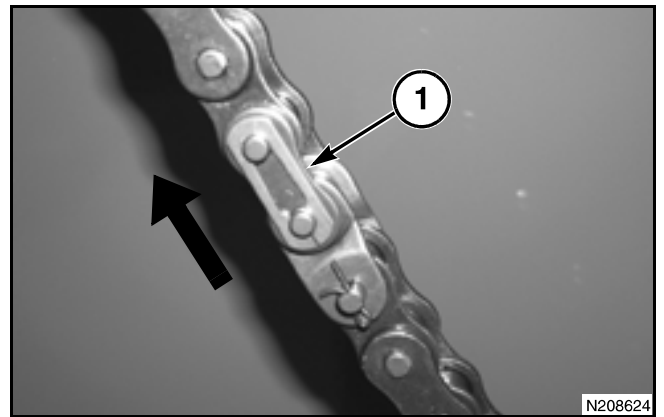


FIG. 597

FIG. 598: Adjust the tension of the grain bin filling auger drive chain (1) by moving the idler sprocket (2) in the adjustment slot. The chain must have 11.6 to 17.3 mm (0.46 to 0.68 in) slack (A) at the tightest point of rotation on the center of the longest span. Tighten the idler sprocket lock nut securely when the correct location of the idler sprocket is determined.

NOTE: Photograph taken with the elevator head removed from the combine and the right-hand panel removed.

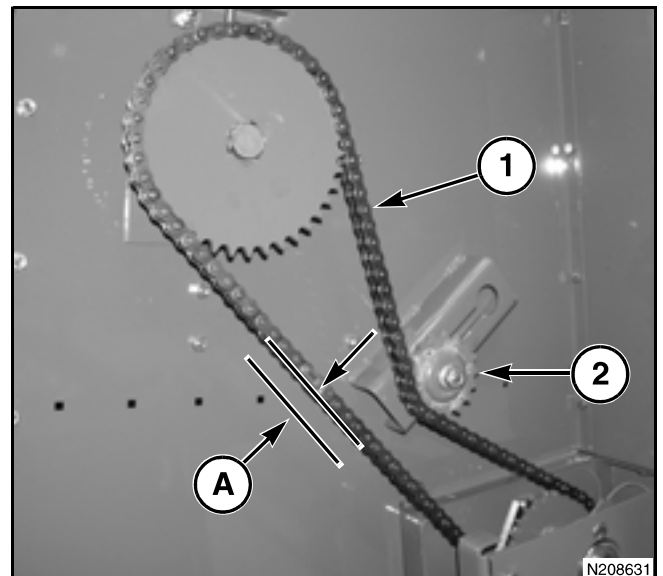


FIG. 598

Upper Elevator Shaft

Removal

FIG. 599: Properly position the combine before beginning.



WARNING: Before working around or under the combine:

Locate the combine on a flat, hard, level surface.

Put the transmission in neutral.

Set the parking brake.

Lower the header completely to the ground or the floor.

Turn off the engine and remove the start key.

Put a block in front of and a block behind the front drive tires.



FIG. 599

Removal

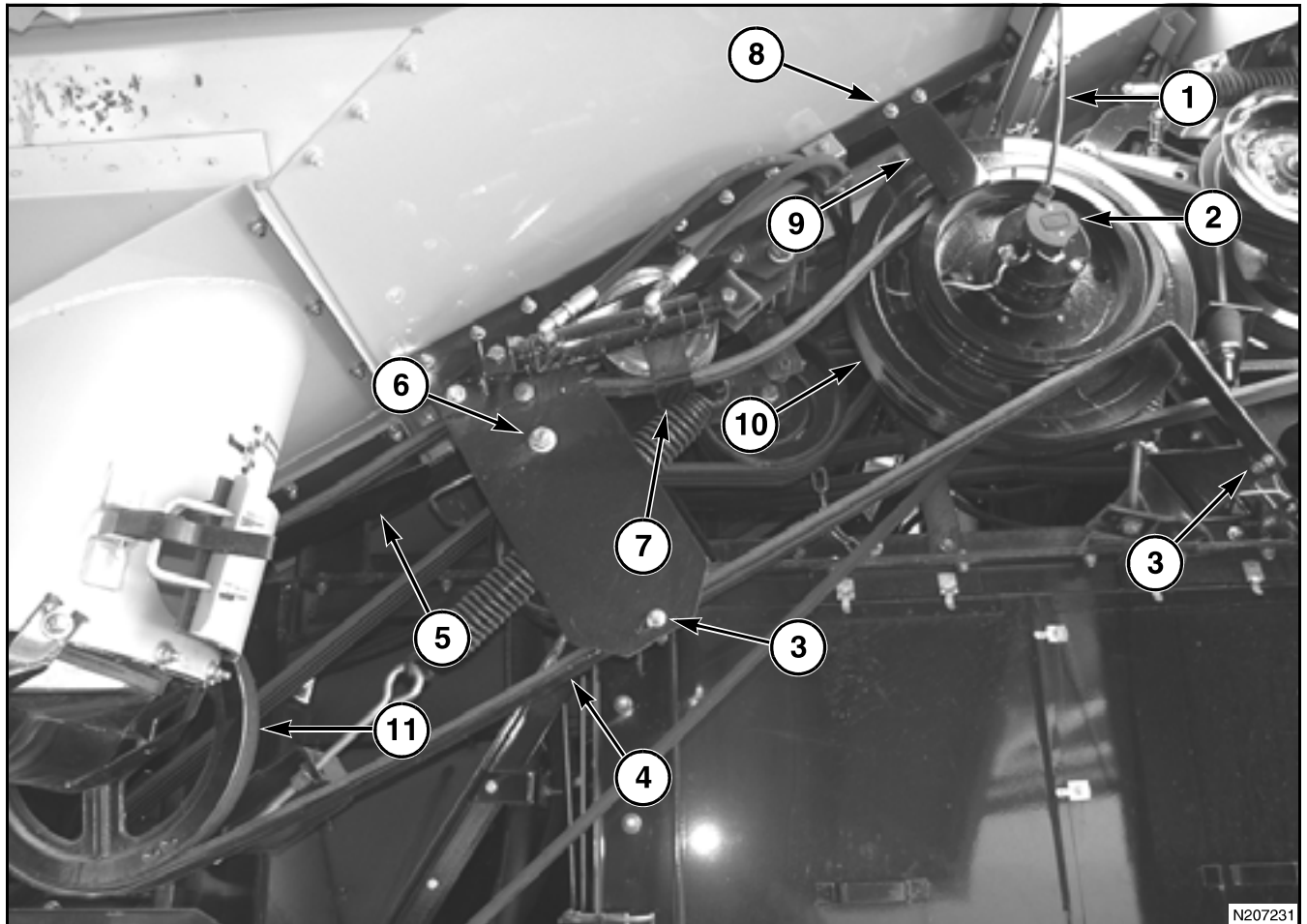


FIG. 663

FIG. 663: The wiring harness (1) must be disconnected to remove the drive belt. The wiring harness (1) from the brush holder assembly (2) connects to a machine ground and to a connector in the combine wiring harness. Disconnect the ground wire and the lead wire from the connector. Remove the wiring harness from the clips.

NOTE: When removing the hardware note any washers, shims, and spacers and the locations of the washers, shims, and spacers for use during assembly. These washers, shims, and spacers are used for alignment and must be located in the correct location during assembly.

Remove the hardware (3) fastening the belt guide (4) to the combine. Remove the belt guide from the machine.

Remove the hardware fastening the belt guide (5) to the combine. Remove the belt guide from the machine.

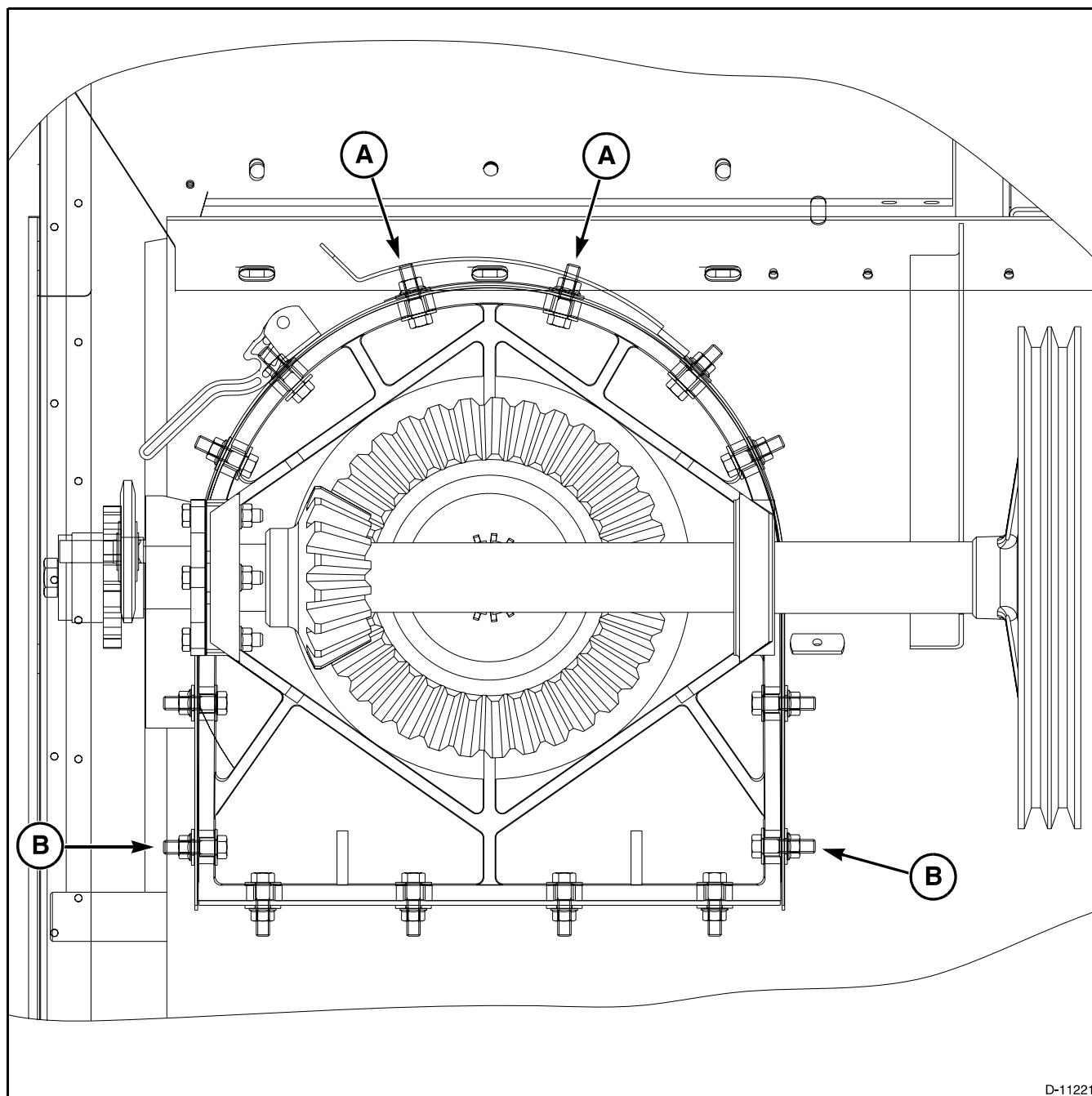
Remove the hardware (6) fastening the idler sheave to the combine. Remove the idler sheave from the machine.

Remove the hardware fastening the belt guide strap (7) to the combine. Remove the belt guide strap from the machine.

Remove the hardware (8) fastening the belt guide strap (9) to the combine. Remove the belt guide strap from the machine.

Remove the drive belt from the drive (10) and driven (11) sheaves, and remove from the combine.

Unloading Auger System



D-11221

FIG. 734

FIG. 734: Tighten hardware after operating the unloading system. Tighten all hardware starting at location (A) working side to side until reaching location (B). Finish with the front hardware.

Loosen the hardware required to add the gear cover.

ELBOW GEARBOX

FIG. 804: The unloader elbow gearbox (1) is located in the unloader elbow and sends power from the vertical auger to the horizontal auger.

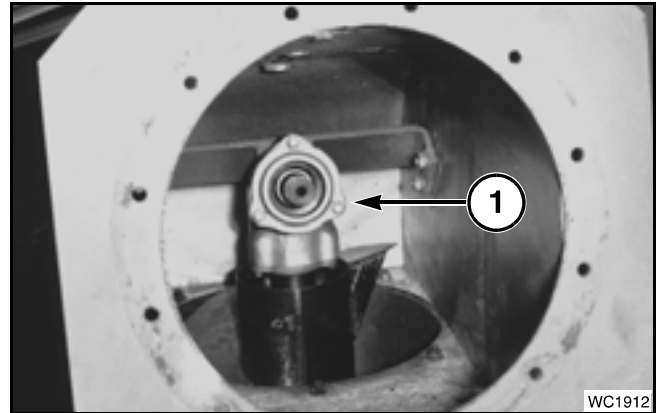


FIG. 804

Removal

FIG. 805: Remove the cover plates (1) from the unloader elbow.

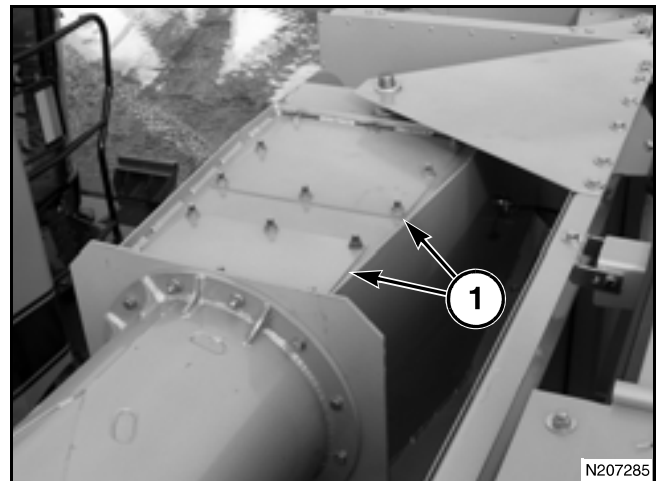


FIG. 805

FIG. 806: Remove the horizontal unloading auger (1) as shown in this section of the manual.

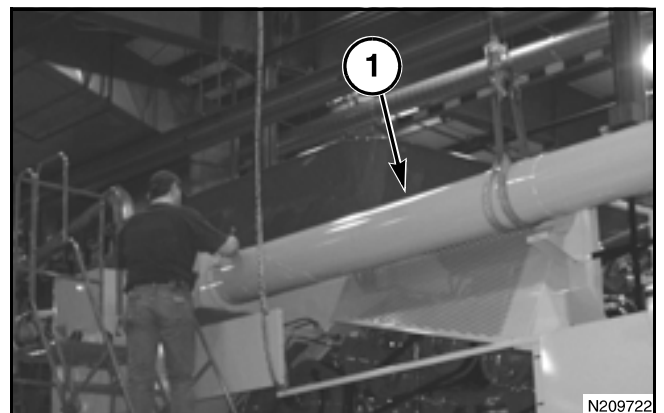


FIG. 806

Return Grain System

FIG. 870: Remove the lubrication fitting in the idler arm assembly. Check the lubrication fitting and clean the passage in the idler arm assembly to make sure the idler arm assembly is taking grease.

Use a suitable driver to press the bushings (1) and the spacer (3) from the idler arm assembly (2).

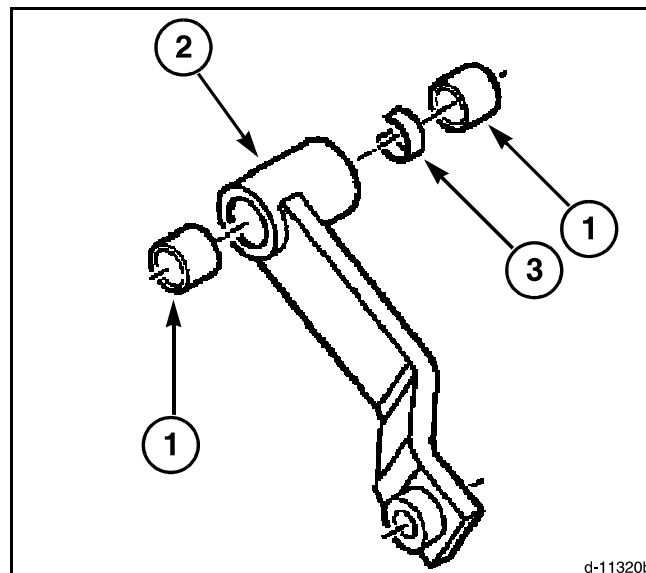


FIG. 870

Installation

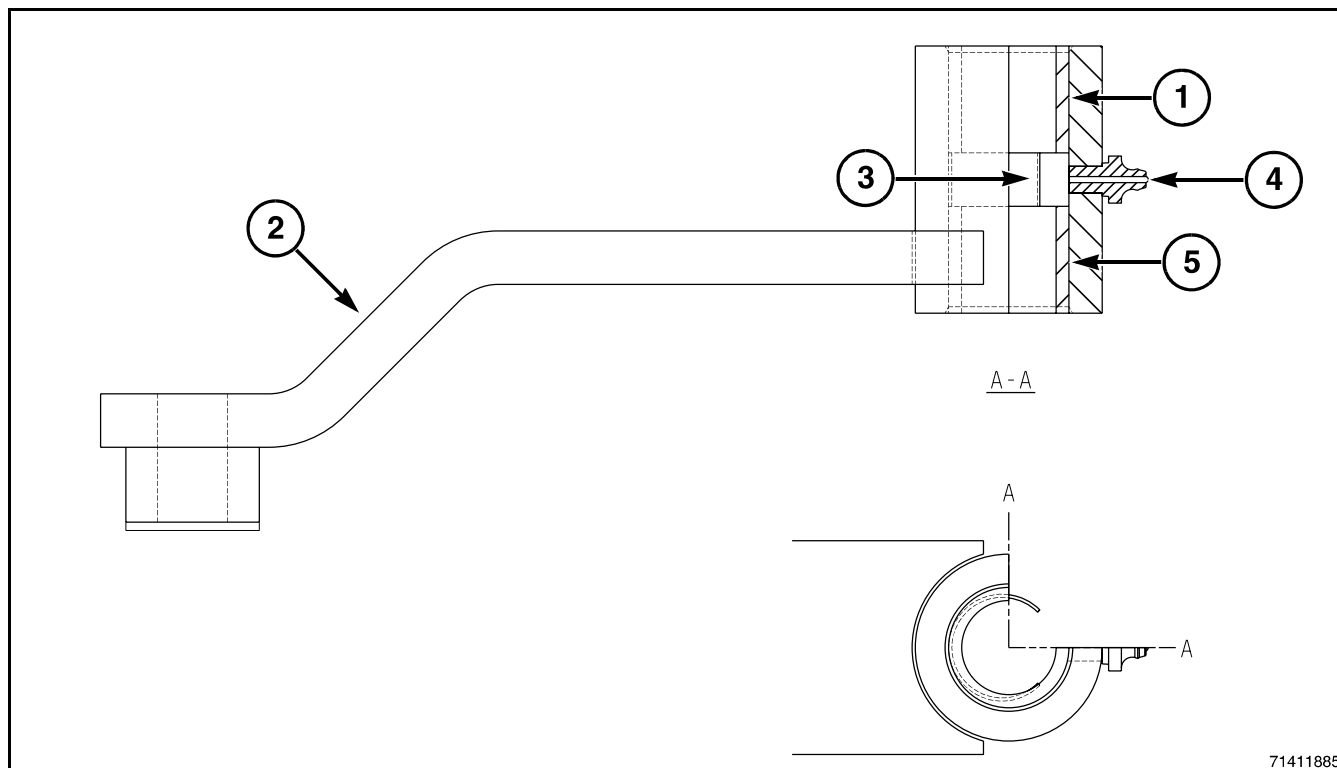


FIG. 871

FIG. 871: If the bushings (1) and (5) were removed from the idler arm assembly (2), install the lubrication fitting (4) in the hub of the idler arm assembly.

Press bushing (1) into the hub of the idler arm assembly until flush or 0.4 mm (0.016 in) below the face of the hub. Install the spacer (3) with the split in the spacer aligned with the grease fitting (4).

From the opposite side, press the second bushing (5) into the hub until flush or 0.4 mm (0.016 in) below the face of the hub.

Return Grain System

FIG. 943: With an assistant, insert the upper end of the elevator housing assembly into the head assembly.



FIG. 943

FIG. 944: Locate suitable lifting equipment (1) under the cover of the boot assembly.

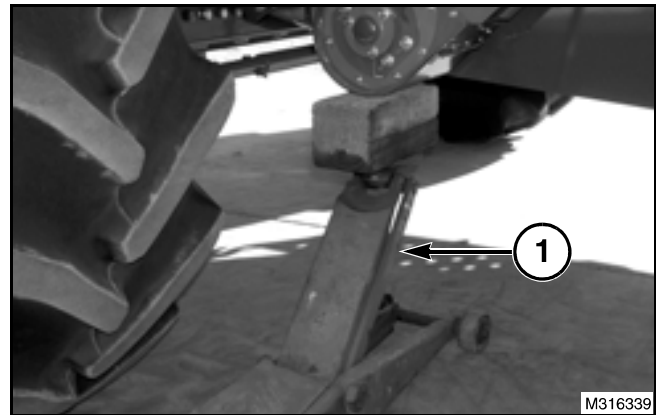


FIG. 944

FIG. 945: Slide the boot end of the elevator inward onto the grain auger trough extension (1). Align the mounting bolts with the holes in the elevator support (2).

At the bottom inside of the elevator housing, install the hardware fastening the elevator housing (3) to the bottom support (4) but do not tighten.

NOTE: The support hardware will be tightened later after installing the upper elevator housing to the head assembly hardware.

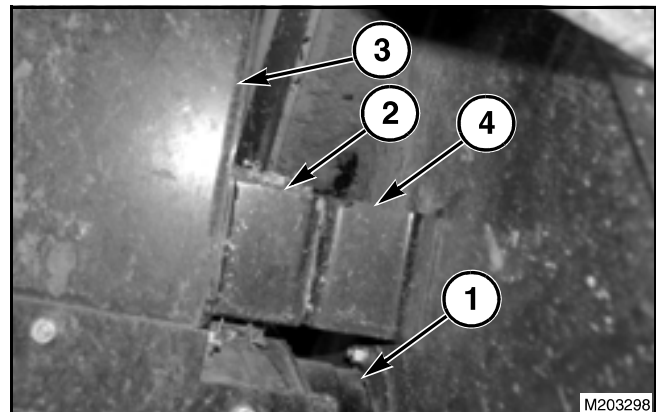


FIG. 945

FIG. 946: Using a tapered punch, align the upper elevator housing mounting holes with the holes in the head assembly.

Reaching inside of the head assembly, install the hardware through the elevator housing into each side of the head assembly. Install the hardware (1) fastening the elevator housing to the side of the head assembly but do not tighten.

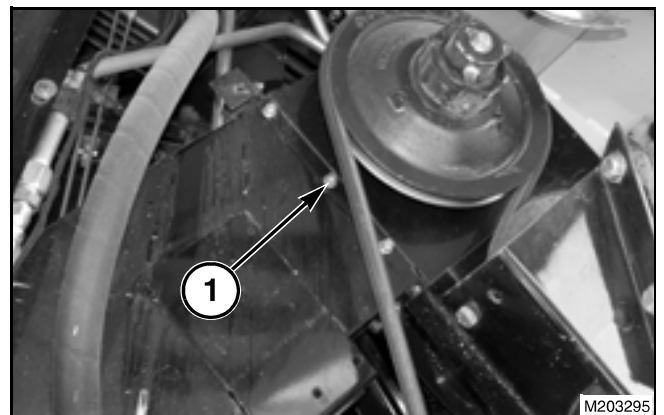


FIG. 946

Universal Joint Replacement

FIG. 996: Remove the retaining rings (1) from all four bearing caps in the Universal joint be serviced.

NOTE: Retaining rings located in the bearing caps that seat under the ears of the yokes shown.

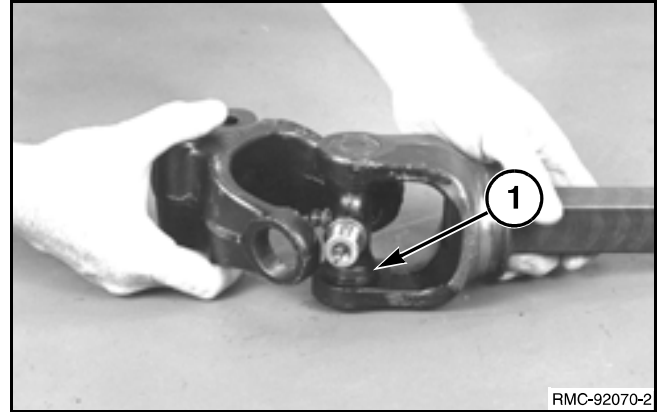


FIG. 996

FIG. 997: Use a suitable fixture support the yoke (1). Press the tube yoke (2) or the double yoke down onto the cross as far as possible to drive the upper bearing cap part of the way out of the tube yoke (2).

Put the yoke (1) in the press so the other bearing cap in the tube yoke (2) or the double yoke is up. Press the yoke (2) down onto the cross as far as possible to drive the other bearing cap part of the way out of the tube yoke.

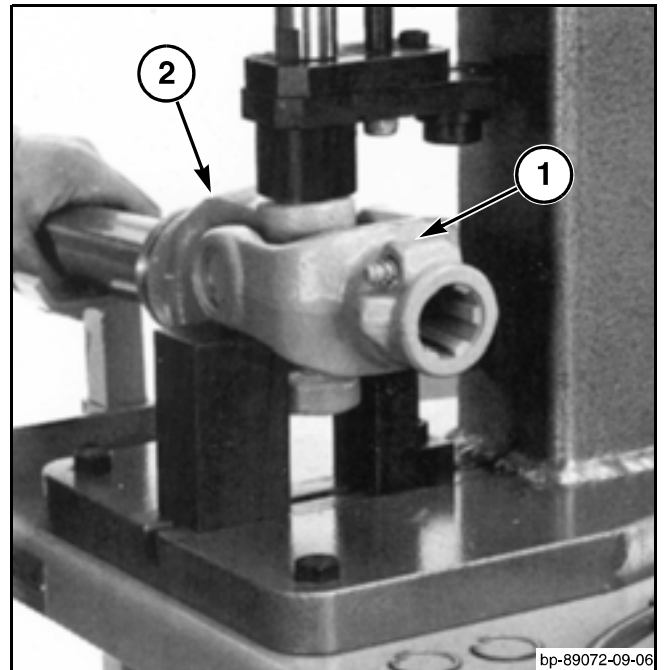


FIG. 997

FIG. 998: Fasten one of the bearing caps in a vise.

NOTE: Make sure the jaws of the vise are as close to the yoke as possible from which the bearing cap is being removed.

Hit the yoke to drive the yoke up off of the bearing cap. Do not remove the other bearing cap from the yoke at this time.

NOTE: When hitting a yoke, never hit the area around the hole for the bearing cap. Distortion of the hole will make removal of the bearing cap difficult.



FIG. 998

FIG. 39: Remove the eye of the spring (1) from the spring anchor pin to remove the tension on the idlers (2).

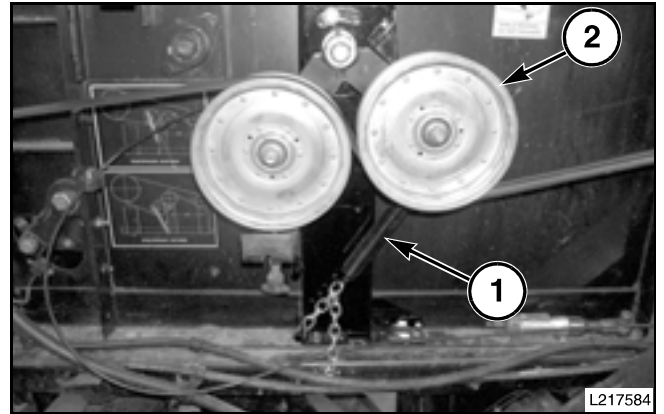


FIG. 39

FIG. 40: Remove the drive belt (1) from the drive sheave (2) and then from the driven sheave on the straw chopper rotor shaft. Remove the drive belt from the two idlers (3).

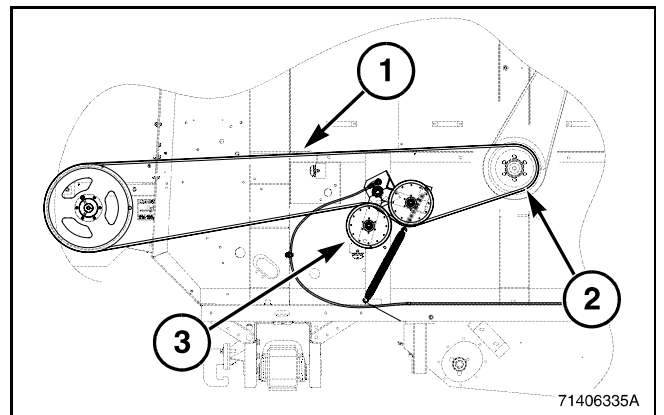


FIG. 40

Straw Chopper

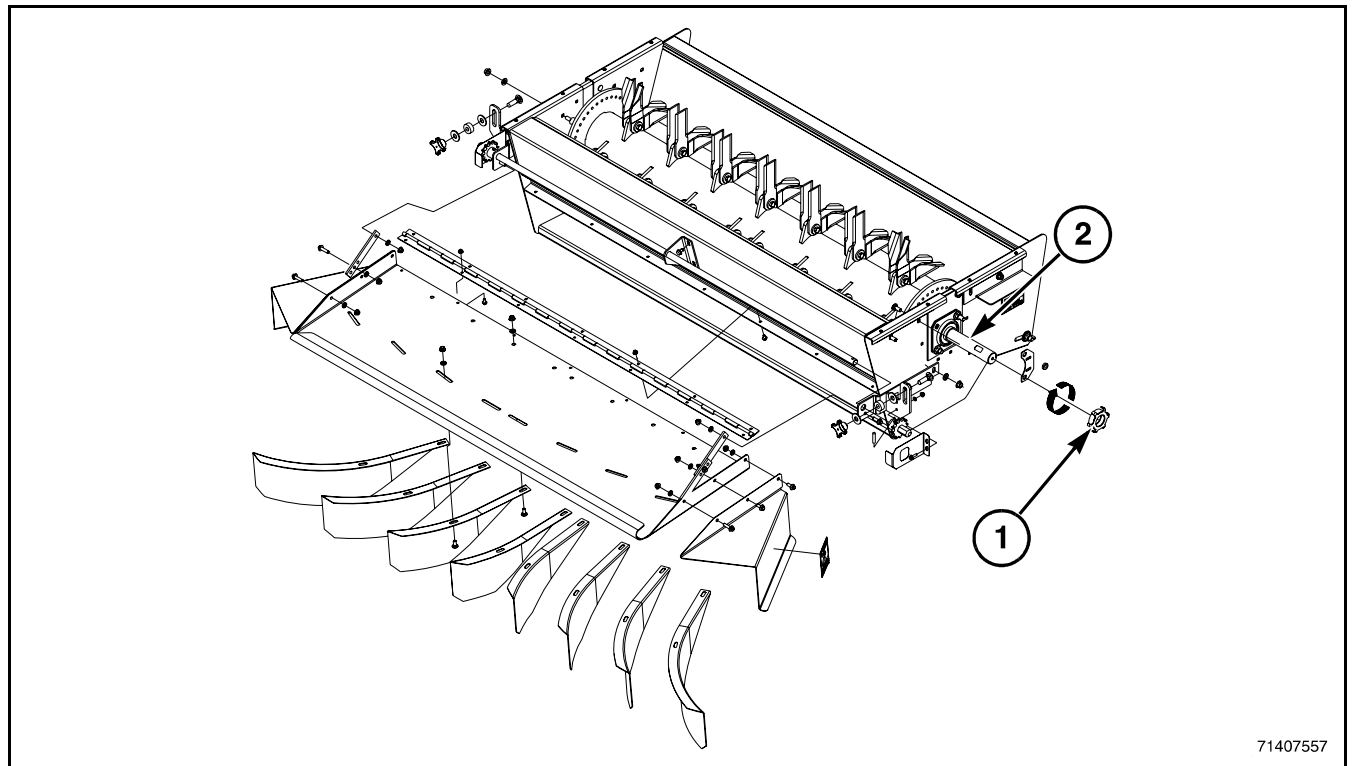


FIG. 104

FIG. 104: Exploded drawing of the high velocity straw chopper assembly.

Push the sensing collar (1) against the bearing inner race at the right-hand end of the rotor assembly (2). Rotate the sensing collar in the direction of shaft rotation until tightly engaged. Tighten the sensing collar with a drift punch. Tighten the screw in the sensing collar.

If the chopper assembly was disassembled, refer to the figure shown to assemble.

Installation

FIG. 166: If the pivot bushings (1) were removed from the idler arm assembly (2), install the fitting for the lube hose in the hub of the idler arm assembly.

Press a pivot bushing (1) into the hub of the idler arm assembly until flush or 0.4 mm (0.016 in) below the face of the hub. Then, from the opposite side, press the second bushing into the hub until flush or 0.4 mm (0.016 in) below the face of the hub.

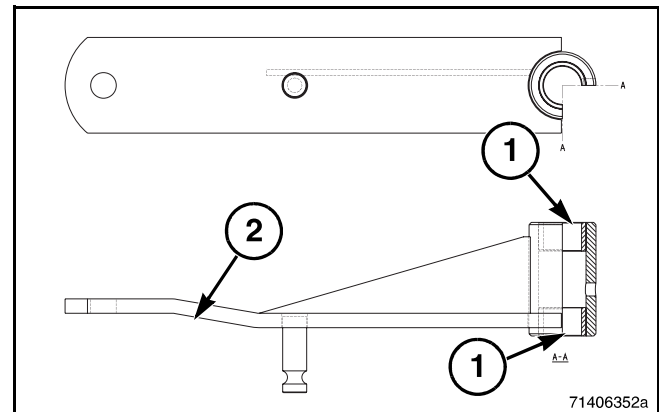


FIG. 166

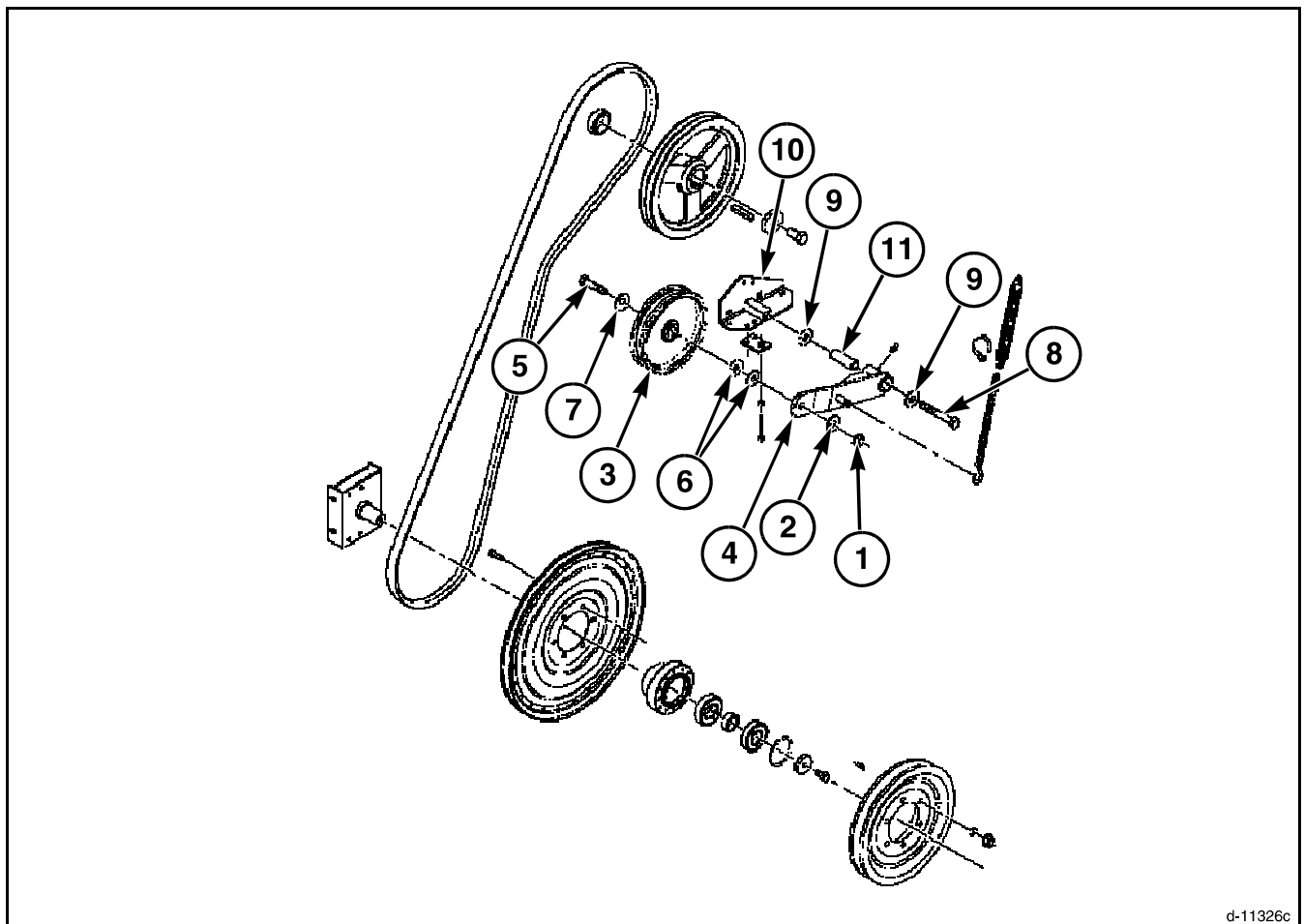


FIG. 167

FIG. 167: Grease the outside diameter of the idler pivot sleeve (11). Install a wide washer (9) onto the pivot bolt (8) and then slide the idler pivot sleeve over the pivot bolt. With the spring anchor pin in the idler arm assembly (4) facing out, slide the idler arm assembly onto the idler pivot sleeve. Install a wide washer (9) onto the pivot bolt against the inside surface of the idler arm assembly. Install the pivot bolt into the mounting plate (10) and tighten the pivot bolt securely.

Chaff Spreader

FIGS. 234–235: Prior to Serial Number HS87101 and HS36101: Pull out on the knob (3) to release the lock and raise the chaff spreader to the service position to access the gas struts.

Using a suitable device, support the chaff spreader in a raised position to cause the clevis pins to be loose in the clevis.

Remove the hair pins (2) and then the clevis pins (1).

Remove the support device and carefully lower the chaff spreader to the maintenance position.

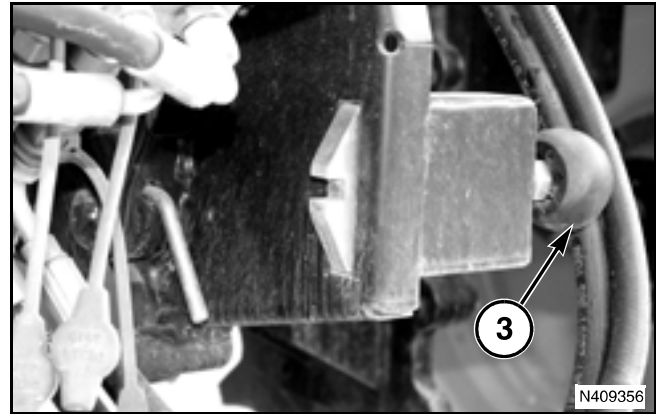


FIG. 234

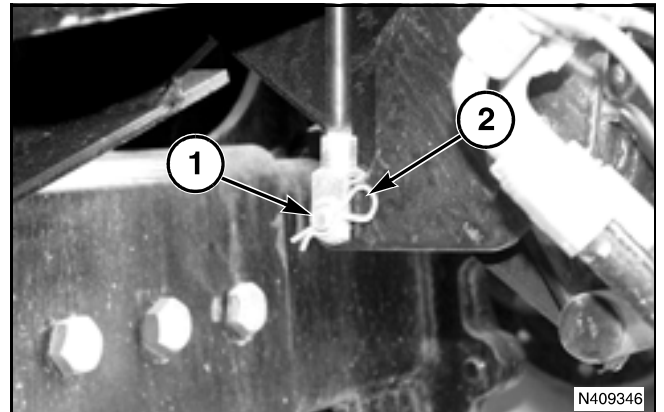


FIG. 235

FIG. 236: Effective with Serial Number HS87101 and HS36101: Pull out the knob (1) to release the lock and raise the chaff spreader to the service position to access the gas strut. The lock will engage when the service position is reached.

Remove the hex lock nut and then the hex head cap screw (2) securing the clevis of the gas strut (3). Remove the gas strut from the strut anchor on the right-hand support assembly (4).



WARNING: When the gas strut is removed from the support assembly, gas pressure can then cause the gas strut to rapidly extend. To prevent personal injury, keep fingers and hands away from pinch points.

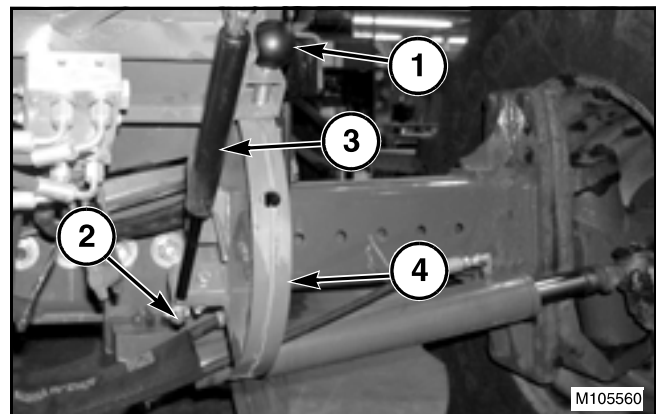


FIG. 236

FIG. 237: Pull out on the knob (1) to release the lock and lower the chaff spreader to the maintenance position.



CAUTION: The chaff spreader is heavy and awkward to handle without the gas strut and could fall rapidly if not supported properly.

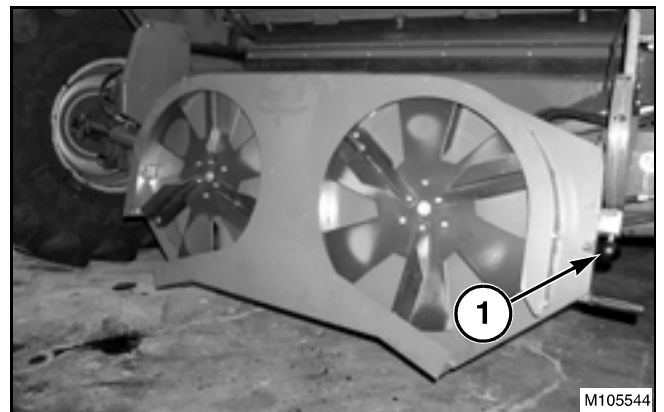


FIG. 237

FIG. 34: Lift the axle assembly with suitable lifting equipment located under the pivot pin center line of the center section until the weight of the axle is removed from the pivot pin (1).

Remove the capscrew (2) that fastens the axle pivot pin in the front pivot block of the rear axle support weldment. Using a steel drift located at the rear of the pivot pin, drive the pivot pin to the front out of the rear axle support weldment and center section.



CAUTION: Axle assembly is heavy and awkward, keep fingers and hands away from pinch points. Use a drift or steel bar to remove pin.

CAREFULLY and SLOWLY lower the axle assembly from the rear axle support and remove from under the combine.

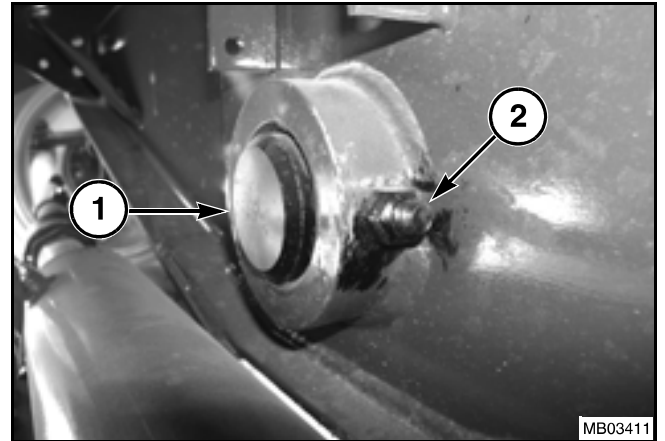


FIG. 34

AXLE INSTALLATION

FIG. 35: If the axle pivot bushings (1) were removed, position the bushings into the front and rear of the pivot tube bore of the center section (2) and press the bushings flush with the bore.

Position the axle center section with large axle extension mounting holes (3) facing forward when the center section is put in the combine.

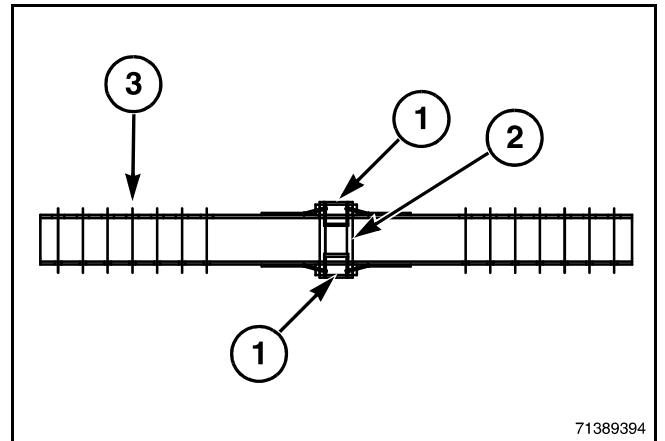


FIG. 35

FIG. 36: Apply a layer of grease to the axle pivot bushings and contact surfaces.

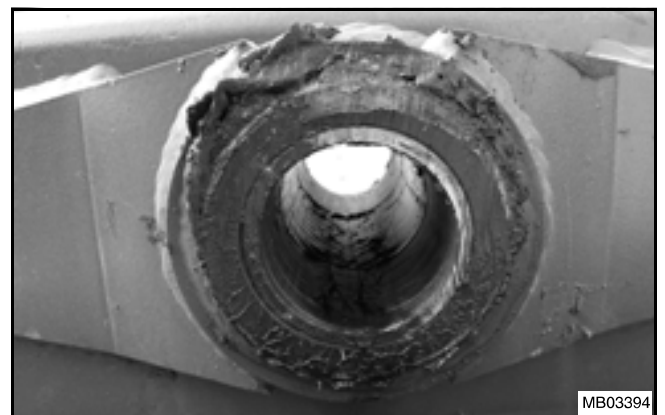


FIG. 36

Power Rear Axle

Rear Wheel Lug Nut Torque

FIG. 111: Power Rear Axle - A combine equipped with the power rear axle uses ten lug nuts per wheel.

Torque lug nuts (1) to 406 Nm (300 ft lbs).

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

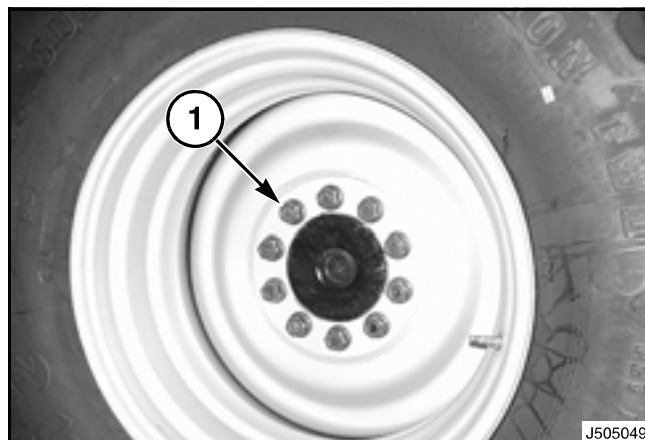


FIG. 111

Rear Wheel Motor Axle Bearings

FIG. 112: The outer axle bearing (1) of each rear wheel is lubricated with grease in a sealed cavity (1).

The hydraulic oil in the wheel motor case lubricates the inside axle bearing (2) of each rear wheel motor.

No maintenance is required on either bearing.

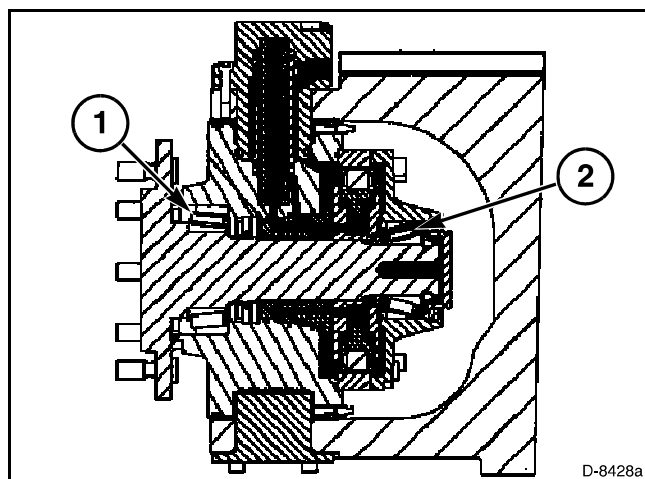


FIG. 112

Wheel Motor Steering Pin Bushings

FIG. 113: The power rear axle assemblies are designed for long service life if the steering pin bushings are periodically lubricated and the rear wheel drive axle is cleaned on a regular schedule.

Complete disassembly of the rear wheel drives for replacement of the steering pins bushings (1) and thrust washers (2) will not be necessary unless the combine and rear wheel drive axle has had a large amount of use and has been operated frequently in extremely dusty, sandy, or wet and muddy field conditions without the rear wheel drives being cleaned and the steering pins lubricated on a regular schedule.

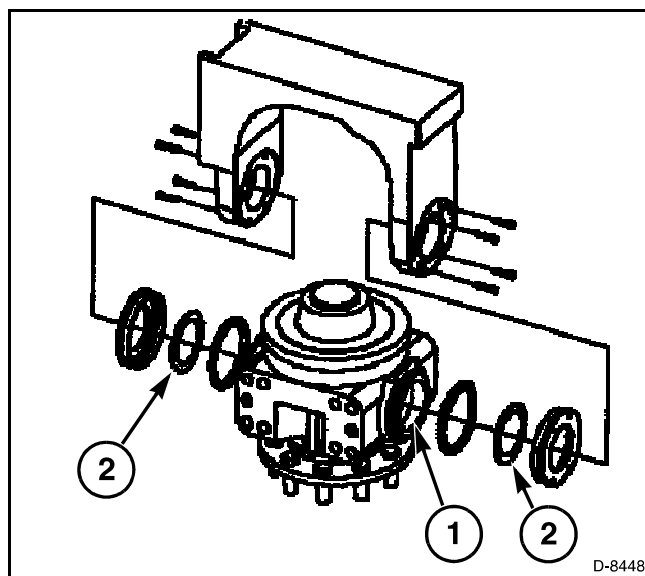


FIG. 113

FIG. 178: Remove the ten lug nuts (1) fastening each rear wheel to the hub and remove both wheel and rim assemblies from the work area.

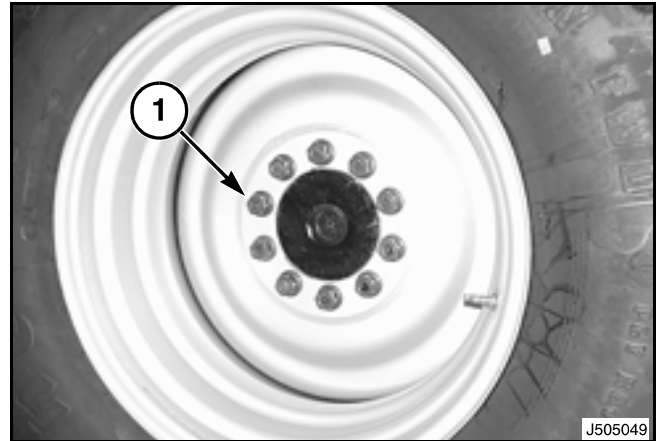


FIG. 178

FIG. 179: Remove the cotter pin (1) and remove the slotted nut (2) fastening the socket to the steering arm (3). Remove the socket assembly from the wheel motor steering arm using a ball joint or tie rod separator.

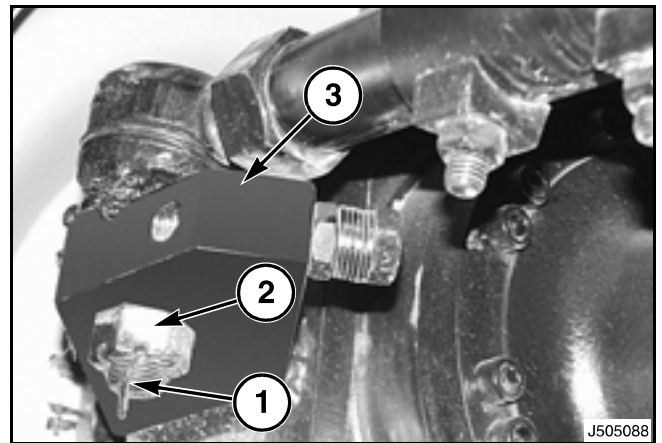


FIG. 179

FIG. 180: Label the wheel motor assembly supply hoses, reverse (1) and forward (2), and disconnect the hoses from the motor.

Label the case drain hose (3) and disconnect the hose.

NOTE: Cap the ends of the hoses and valve ports to prevent contamination of the hydraulic system.

IMPORTANT: Having a clean area is necessary when installing or servicing hydraulic components. When disconnecting hydraulic components, areas around the connections must be cleaned or washed with solvent so that contamination will not enter the system. Always keep hoses, connections, and ports closed with a cap to keep contamination out of the system.

Remove the hoses from the wheel motor hose guide (4) and temporarily fasten the hoses away from the wheel motor.

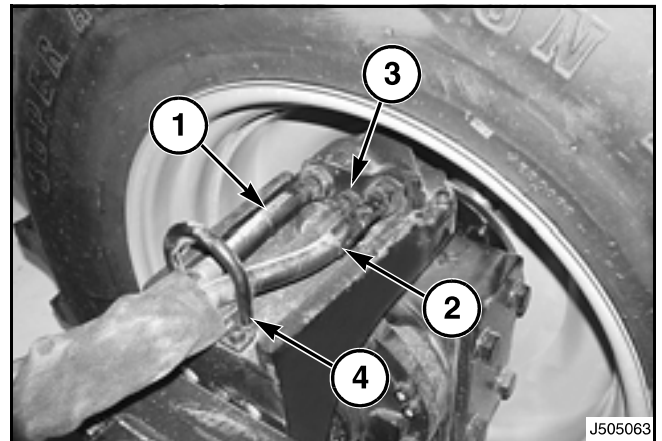


FIG. 180

Power Rear Axle

Test Procedure No. 2

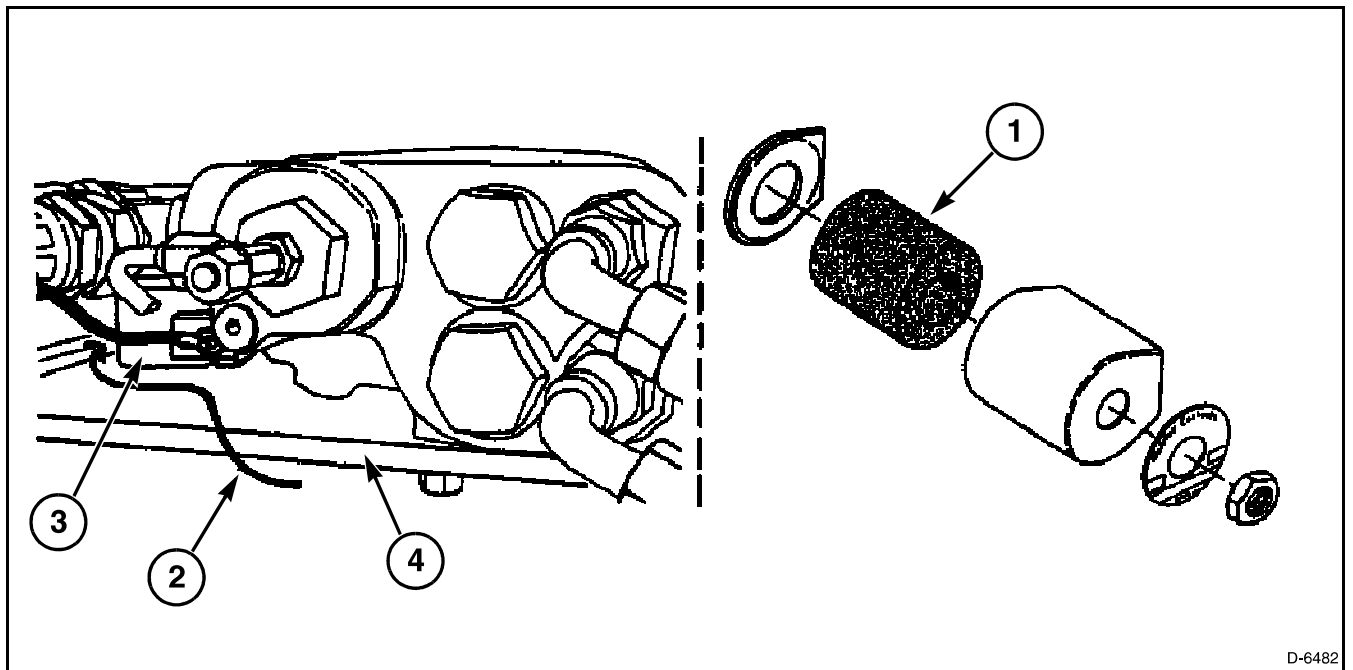


FIG. 240

FIG. 240: Problem: Power rear axle not operating.

Cause: Solenoid valve not working.

Turn ignition switch to the ON position. DO NOT start the engine. Have an assistant operate the ON-OFF power rear axle switch.

A noise must be heard at the solenoid, indicating that the solenoid valve spool is shifting properly.

- If a noise is not heard, check for a possible loose wire connection at the terminal of the solenoid valve and at the power rear axle switch in the cab.

Also check for a bad ground at the solenoid valve. The solenoid valve gets ground through the Equa-Trac II valve body.

The ground can be tested by connecting a jumper wire (2) between the coil mounting nut (3) on the solenoid and the frame (4) of the combine.

- If the solenoid valve operates properly using a jumper wire, check the area under the heads of the bolts fastening the Equa-Trac II valve body to the mounting bracket. Make sure there is a clean metal to metal surface with no paint or grease.
- If a noise is still not heard, complete an electrical resistance check on the solenoid valve coil (1) to determine if the coil has a defect. The coil resistance must be 7-9 ohms.
- If the solenoid valve still does not shift after checking for secure wire connections and acceptable coil resistance, replacement of the solenoid valve is necessary.

FIG. 38: The left-hand drive tire must be removed. Before removing the left-hand drive tire, make sure the combine is properly located before beginning tire removal.



WARNING: Before working around or under combine:

Locate combine on a flat, hard, and level surface.

Put the transmission in neutral.

Set the parking brake.

Raise the header, engage header lift cylinder stop and lower header slightly to lock the stop in location.

Turn off the engine and remove the start key.

Put a block in front of and behind the drive tire that will remain on the combine. If both sides are to be removed, block in front of and behind the rear tires.



FIG. 38

FIG. 39: Locate suitable lifting equipment (1) under the load carrying member (2) on the left-hand side where the combine tire will be removed.

Raise the combine so the drive tire just clears the ground.

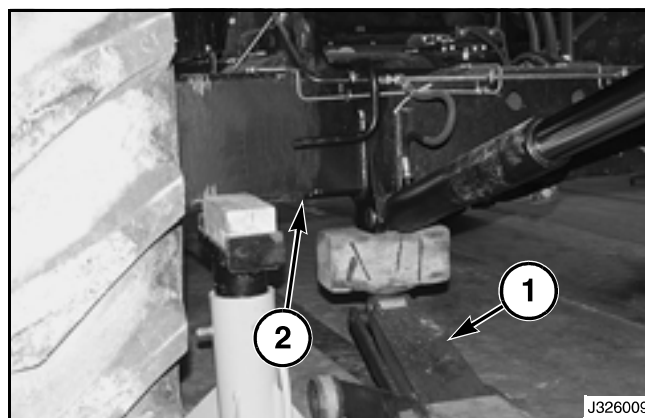


FIG. 39

FIG. 40: Securely block (1) under the load carrying member (2) and lower jack so the blocking (1) is supporting the load carrying member.

NOTE: Make sure the drive tire is still just clearing the ground.

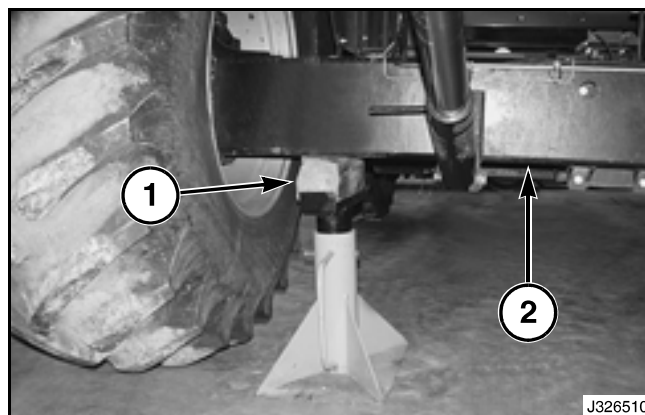


FIG. 40

Rotor

FIG. 124: Lift the rotor using a fork lift. Put the tines of the fork lift between the rotor and separator housing guide vane shell. Chain the fork lift tines to the rotor, then support the rear of the rotor with the fork lift. Raise the rotor (1) off the wood supports.

Fully lower the concaves to the widest opening using the adjusting switch (1) in the cab. Remove the two planks or timbers from under the rotor.

Slowly remove the rotor (1) from the combine. When the rotor has been removed approximately 0.5 to 1.0 m (2 to 3 ft) put a second chain or strap around the rotor (1) and tines of the fork lift, then raise the front of the rotor by slightly moving the fork lift mast rearward. Back the fork lift away from the combine until the rotor (1) clears the rear of the main frame then lower the rotor to the ground and support the rotor (1) with blocks.

NOTE: The rotor weighs approximately 544.3 kg (1200 lbs).



WARNING: Extreme caution must be exercised. Make sure the fork lift is of suitable capacity to handle the rotor. Do not stand under the rotor when the rotor is suspended on the fork lift.

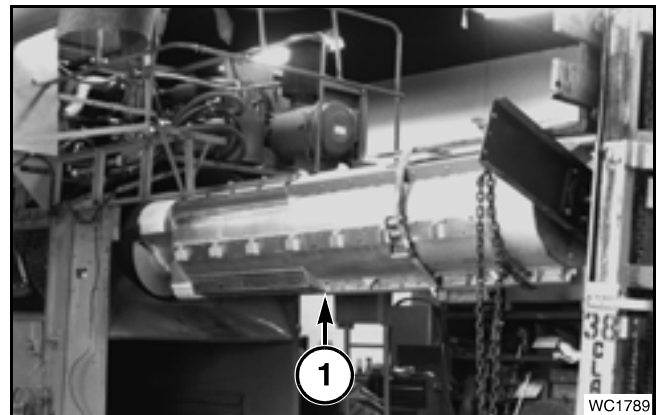


FIG. 124

Installation

FIG. 125: Make sure concaves are lowered to the widest position. Using a fork lift, carefully install the rotor (1) in the processor cage of the combine.

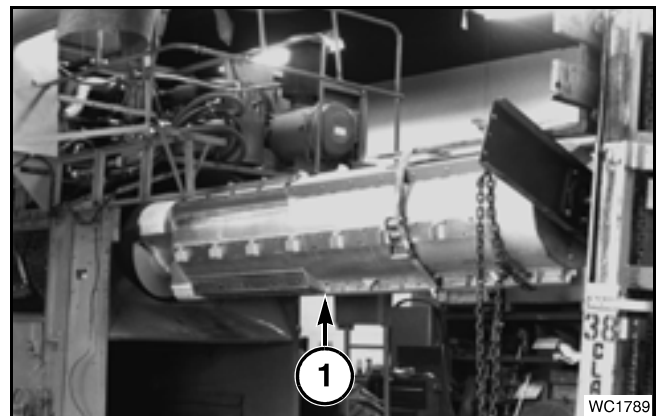


FIG. 125

FIG. 126: Guide the rotor into the processor cage so the front rotor bearing assembly is in the proper location. Install the rotor speed sensor assembly (3) and the rotor bearing assembly to the combine using the existing hardware (1). Install the lubrication line (2) to the front bearing assembly.

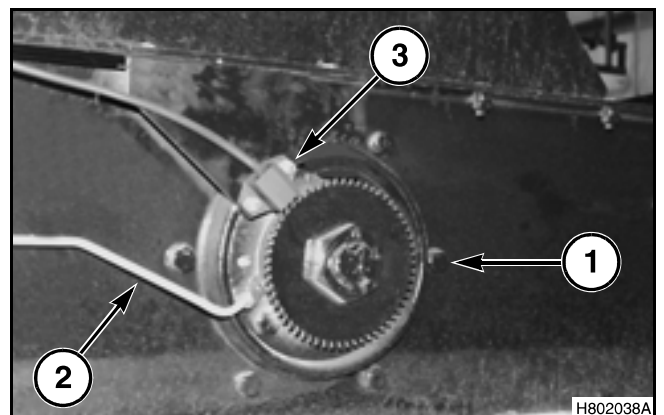


FIG. 126

FIG. 207: Lay a piece of plywood between the separator return pan and the main frame front bulkhead. This will prevent damage to the separator return pan comb fingers when the concaves are removed.



FIG. 207

FIG. 208: Remove the concave blanks (2) if the machine is so equipped.

Remove the bolts (1) that fasten the concaves to the right-hand hanger tube.

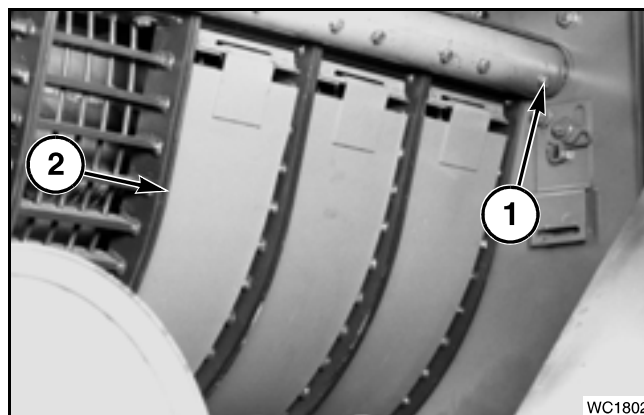


FIG. 208

FIG. 209: Remove the concave overlap (1) by removing capscrews (4). Remove bolts (2) that fasten the concaves to the left-hand adjusting hanger bar. Leave bolts (3) in the seventh (last) concave section to prevent the hanger bar from slipping out from under the concaves.

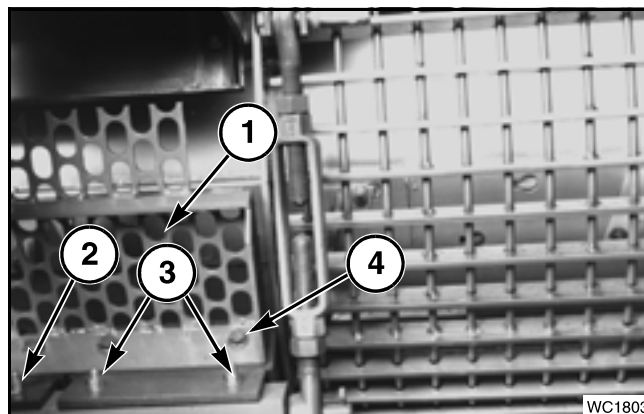


FIG. 209

FIG. 210: Turn the rotor so a threshing element is straight down at the six o'clock position.

Lift the left-hand end of the second concave section up so that the right-hand end can be lowered off the right-hand hanger tube.

NOTE: Concave removal requires an assistant.

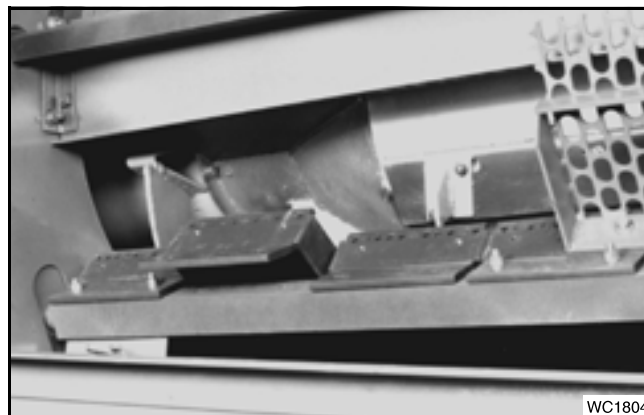


FIG. 210

Rotor Gearbox

FIG. 289: Remove the output shaft front bearing cone (1), washer (2), and double gear (3) from the gearbox housing.

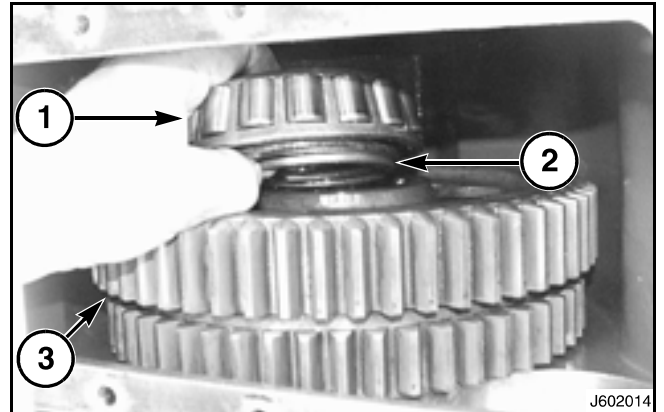


FIG. 289

FIG. 290: Using a suitable puller, remove the rear bearing cone (1) from the output shaft.

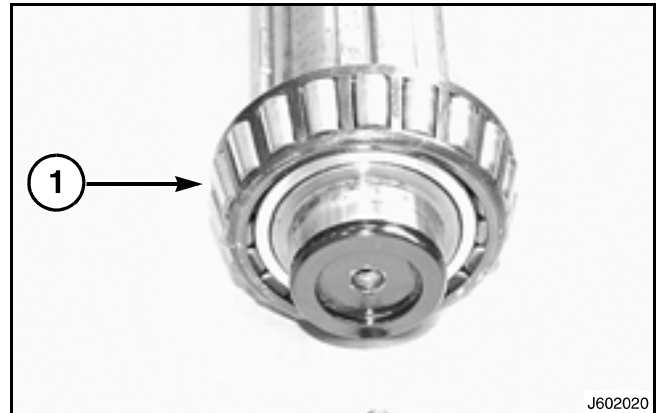


FIG. 290

FIG. 291: Using suitable pullers, remove the input shaft front bearing cup and the output shaft front bearing cup and seal from the gearbox case.

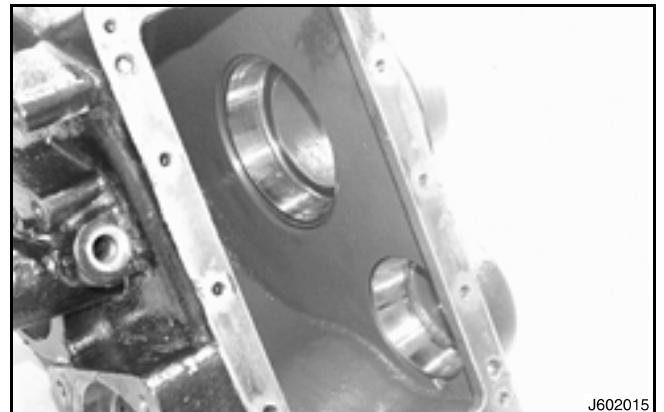


FIG. 291

SEPARATOR RETURN PAN

GENERAL INFORMATION

FIG. 360: The separator return pan (1) moves grain and other material that has fallen through the separator grates and concave to the front of the chaffer (2).

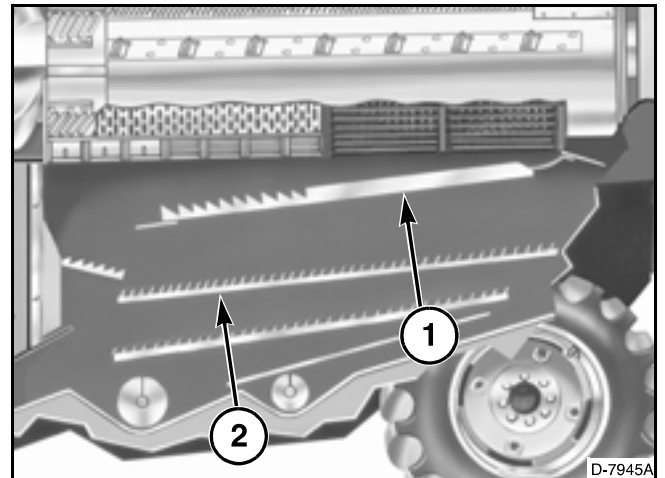


FIG. 360

FIG. 361: The separator return pan (1) and cascade pan (2) must be checked regularly and kept clean of mud and material that can accumulate and harden on the pans. The extra weight can cause severe damage to the pans and the shaker shoe drive components.

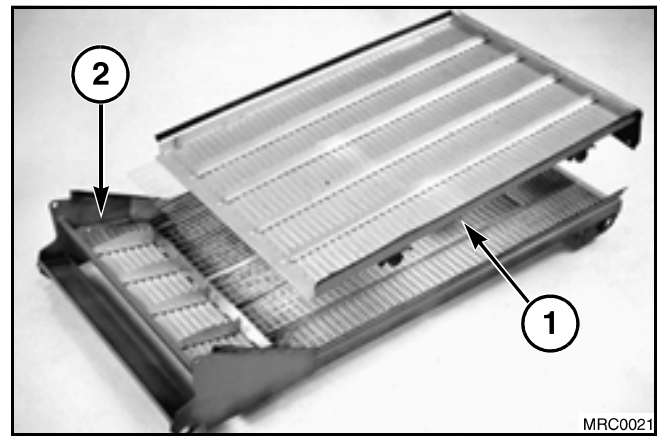


FIG. 361

Chaffer / Cleaning Shoe / Shaker Shaft

FIG. 429: Remove the hardware fastening the sieve (1) to the cleaning shoe frame. Shake the sieve to loosen any chaff and dust accumulation. Slide the sieve out of the rear of the combine.

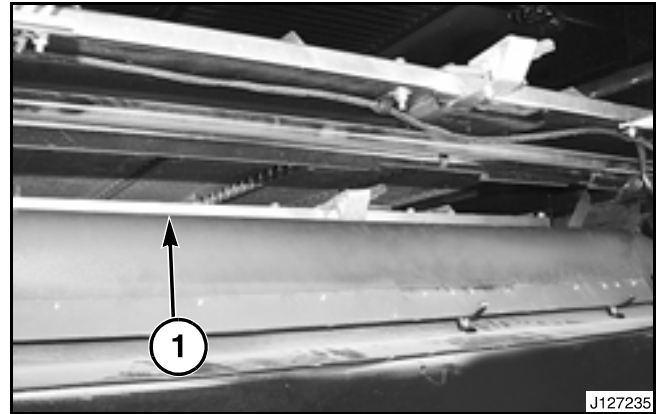


FIG. 429

Installation

FIG. 430: Slide the sieve (1) into the cleaning shoe frame. Fasten the sieve to the cleaning shoe frame with the hardware removed during disassembly.

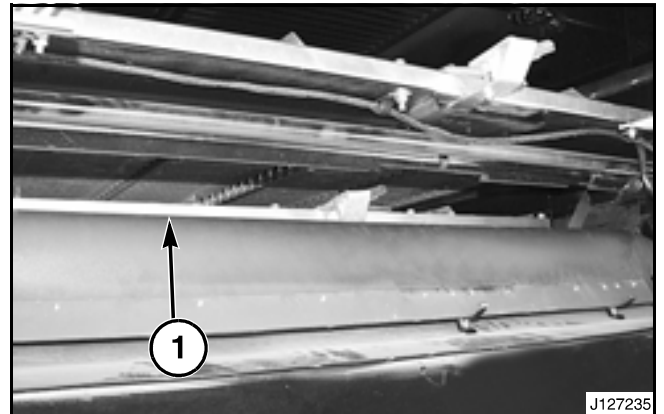


FIG. 430

FIG. 431: Install the rear canvas seal and latch using latches (1).

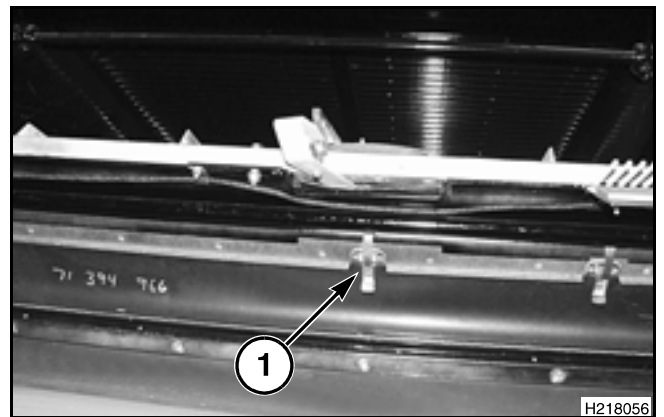


FIG. 431

Chaffer / Cleaning Shoe / Shaker Shaft

FIG. 520: Slide the lock collars (2) against the bearings (3). Rotate the lock collars by hand until the lock collars engages the bearings. Tighten the lock collars with a drift punch. Tighten the setscrews (1) in the lock collars locking the lock collars in location.

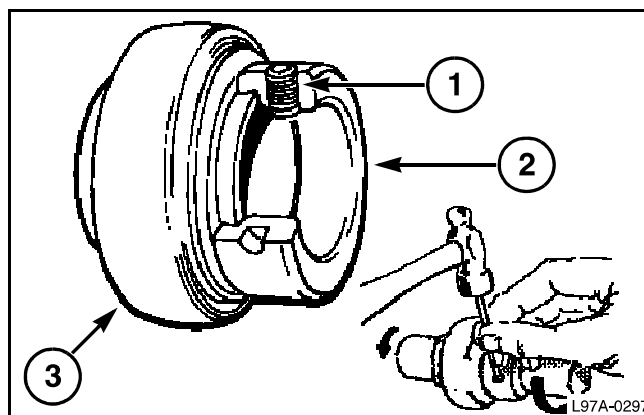


FIG. 520

FIG. 521: Install the chaffer (1) and sieve (2) as shown in this section of the manual.

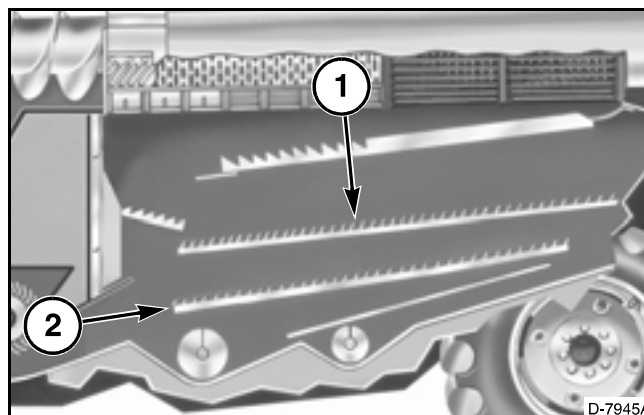


FIG. 521

FIG. 522: Using the hardware removed during disassembly fasten the grain loss monitor sensor boards (1) to the combine.

Install the wiring harness through the right-hand side of the combine.

Connect the wiring harness to the grain loss monitor sensor boards (1).

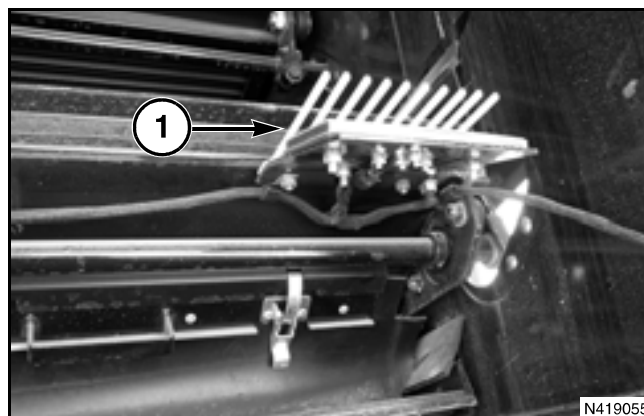


FIG. 522

Cleaning Shoe Pitman

Install the pitman shaft through the right-hand side of the combine.

Using the mounting hardware removed during disassembly fasten the pitman shaft and bearing assemblies to the combine frame. Do not tighten the mounting hardware at this time.

FIG. 594: Combines with Serial Numbers HS87104 and Later / HS36145 and Later - Install the pitman shaft spacer (1) and the key (2) on the pitman shaft. Install the pitman driven sheave (3). Fasten the pitman driven sheave to the pitman shaft with the capscrew (5) and washer (4) removed during disassembly.

Torque the M20 X 45 Class 10.9 capscrew to 610 Nm (450 lbf ft).

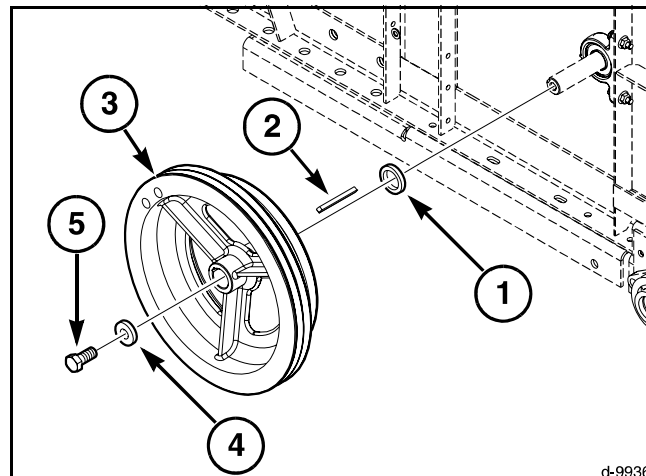


FIG. 594

FIG. 595: Combines with Serial Numbers Prior to HS87104 / Prior to HS36145 - Install the pitman shaft spacer (1) and the key (2) on the pitman shaft. Install the pitman driven sheave (3).

Replace the capscrew (5) with a Grade 8 5/8-11 capscrew. Fasten the pitman driven sheave to the pitman shaft with the capscrew and washer (4).

Torque the capscrew to 285 Nm (210 lbf ft).

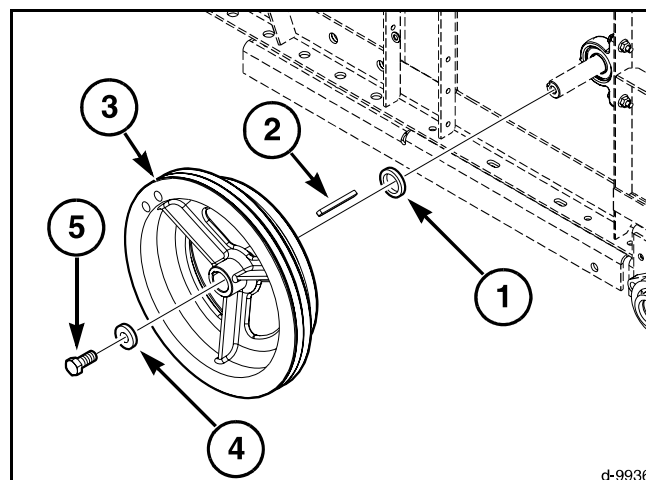


FIG. 595

FIG. 682: Install the fan blades from the right-hand end of the fan shaft. The blades must be parallel to the center shaft.

NOTE: The end of the fan blade with the wide notch must face the left-hand end of the fan shaft.

IMPORTANT: Total thickness variation within the fan blades must not be more than 0.076 mm (0.003 in).

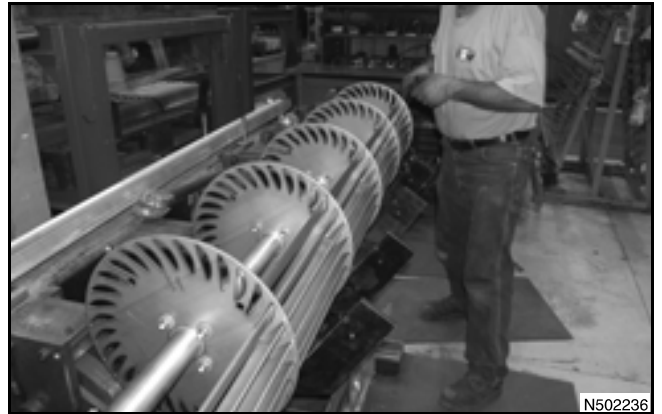


FIG. 682

FIG. 683: With all the blades installed, move six blades back toward the right-hand end of the shaft approximately 152.4 mm (6 in).

NOTE: To help with installation move six blades starting with a blade located near an alignment hole (1).

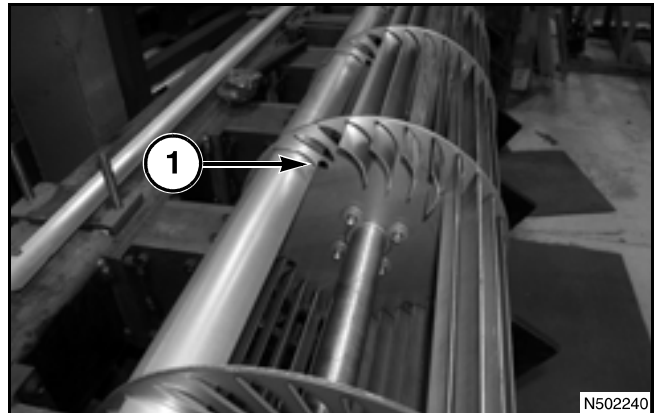


FIG. 683

FIG. 684: Install the retaining ring (1) through the hole made by the moving of the six fan blades back into the groove in the blades.

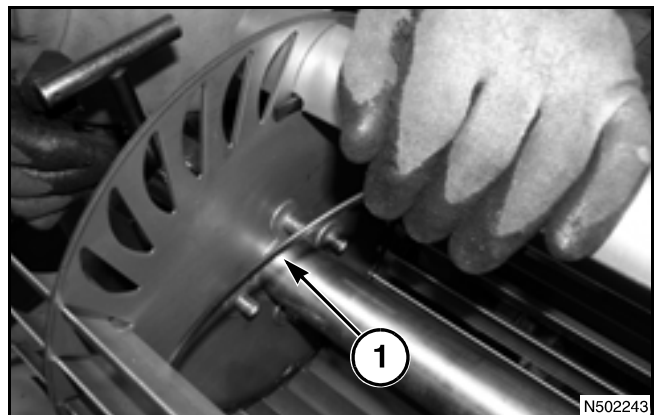


FIG. 684

FIG. 685: Using one of the alignment holes in the fan head, insert a punch (1) to hold the inner retaining ring (2) down. Move the six fan blades back into position. Remove the punch to release the retaining ring into the notches in the fan blades.

IMPORTANT: Make sure the retaining ring is seated in the notches of all the fan blades.



FIG. 685

Brakes

FIG. 2: The master cylinder is located under the cab. The master cylinder is made of a remote fluid reservoir along with dual displacement piston assemblies. Dual displacement pistons provide a rapid fill. Up to 3.45 to 6.9 bar (50 to 100 psi) with a large piston. High pressure is supplied after that with a smaller piston. Right-hand and left-hand piston assemblies provide independent left-hand and right-hand braking through left-hand and right-hand brake pedals. Independent operation of either brake pedal helps turn the combine using the brakes.

A brake pedal locking strap is used to lock the pedals together. This supplies equal braking force to both brake drums at the same time for travel on roads.

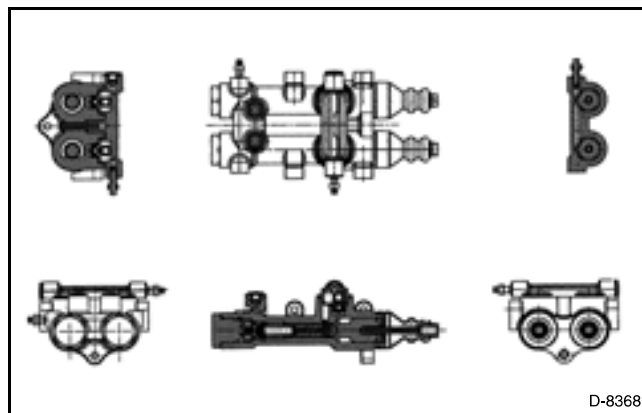


FIG. 2

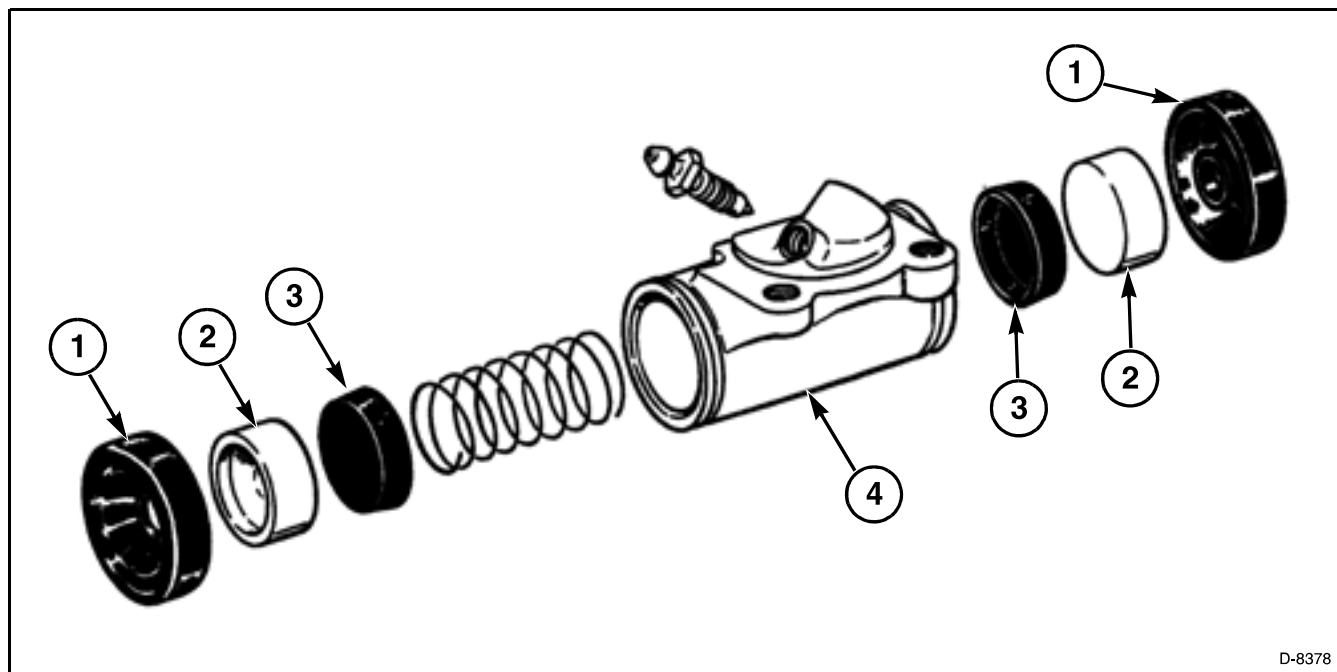


FIG. 3

FIG. 3: In the drum brake system, each wheel cylinder (4) contains two pistons (2). One piston (2) at either end, which push outward in opposite directions. This forces the brake shoe into contact with the drum. All pistons have a seal (3) to stop fluid leakage. A rubber dust boot (1) seals the outer end of the cylinder against dust and dirt.

FIG. 73: Remove the pivot screw (1) from the adjusting nut (2).

IMPORTANT: The left-hand brakes have a left-hand thread and the right-hand brakes have a right hand thread.

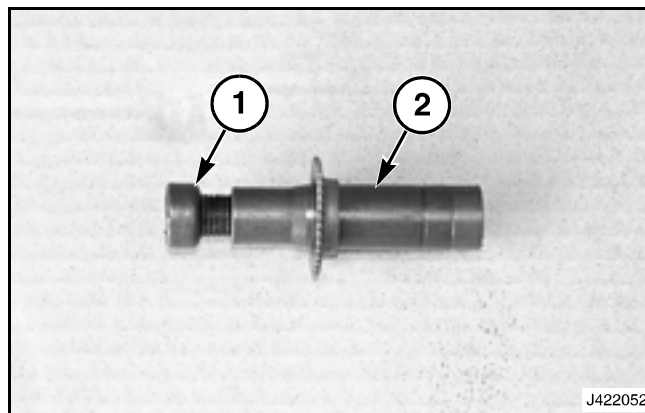


FIG. 73

FIG. 74: Do not remove the links (1) from the wheel cylinder boots (2) unless the wheel cylinders are to be serviced.

If the wheel cylinders are to be serviced, refer to the Wheel Cylinder section.

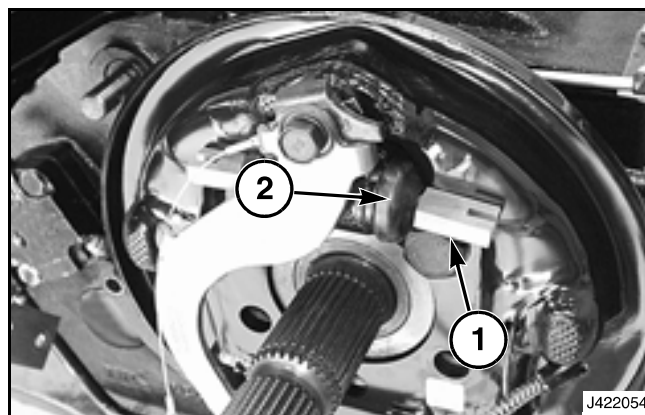


FIG. 74

FIG. 75: Do not remove the adjuster cable assembly (1) from the anchor bolt (2).

If the adjuster cable assembly is to be replaced, remove the parking brake lever before removing the cable assembly. Refer to Removal of Brake Parking Lever section.

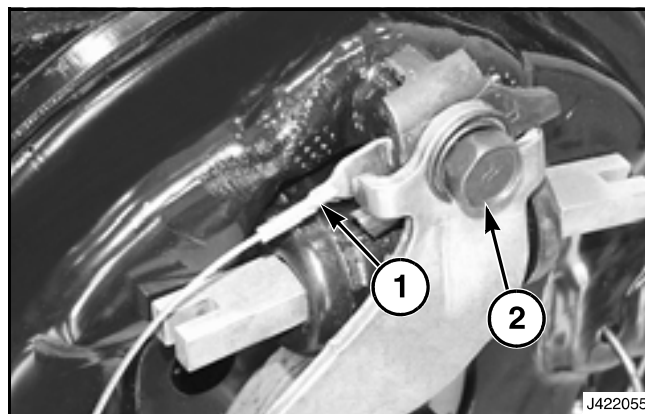


FIG. 75

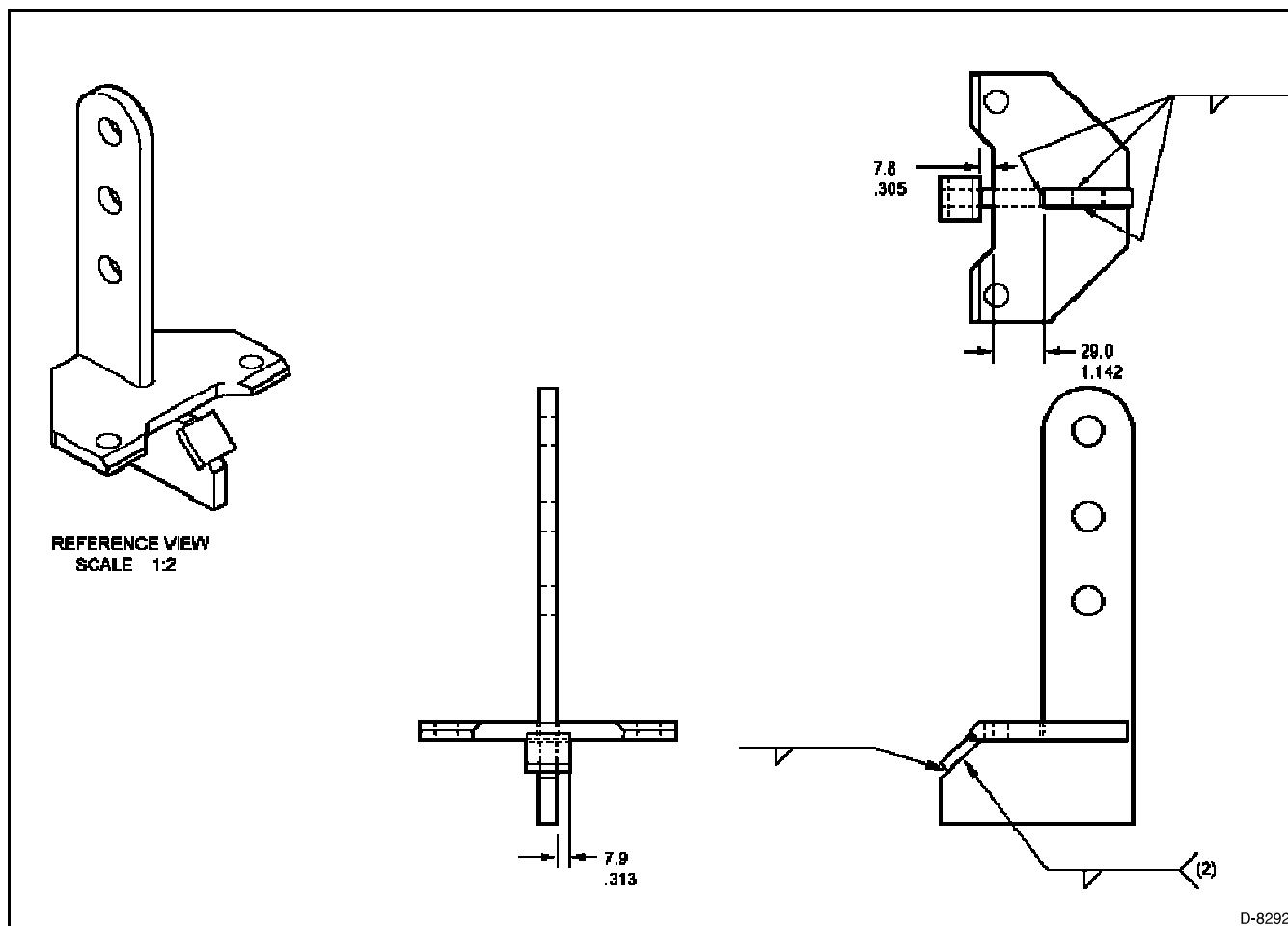


FIG. 144

FIG. 144: See the figure for details required to fixture and weld the above components into a lifting bracket weldment.

FIG. 223: Remove the top plug (1) and gasket from the final drive (2).

Remove the vent from the final drive (3).

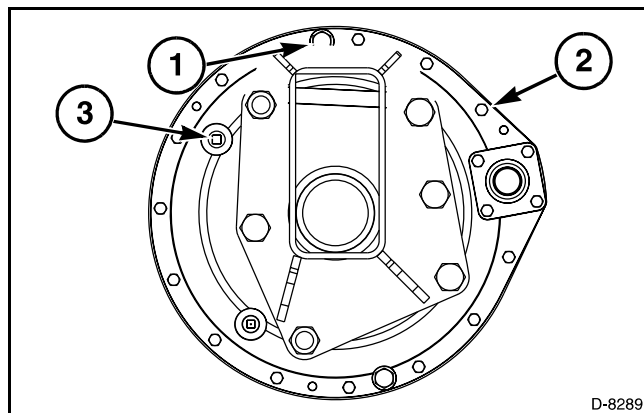


FIG. 223

FIG. 224: In the threaded opening that the top plug was removed from, install the supplied breather vent (1).

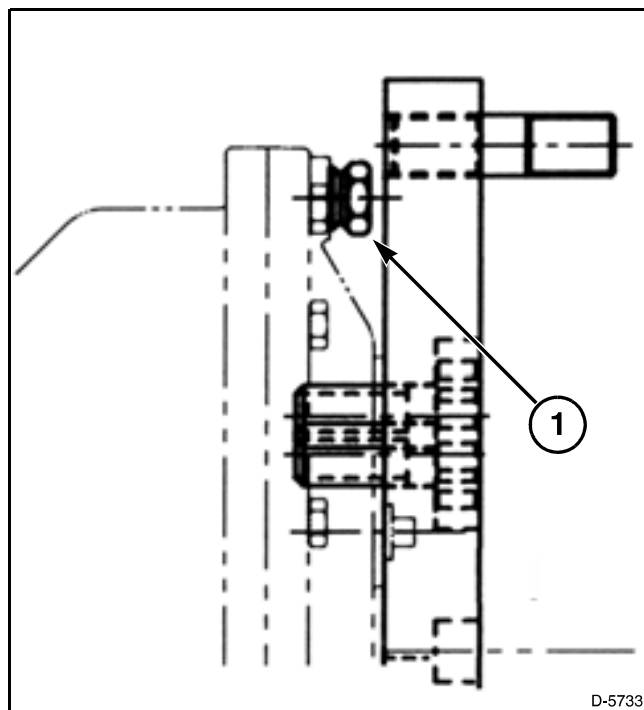


FIG. 224

FIG. 225: Clean the threads of the bushing reducer, vent plug, and 90 degree elbow fitting. Apply thread primer to each part, and permit the primer to dry.

Apply retaining compound to the threads of the bushing reducer, vent plug, and 90 degree elbow fitting.

Install the bushing reducer (1), 90 degree fitting (2), and vent plug (3) in the final drive assembly.

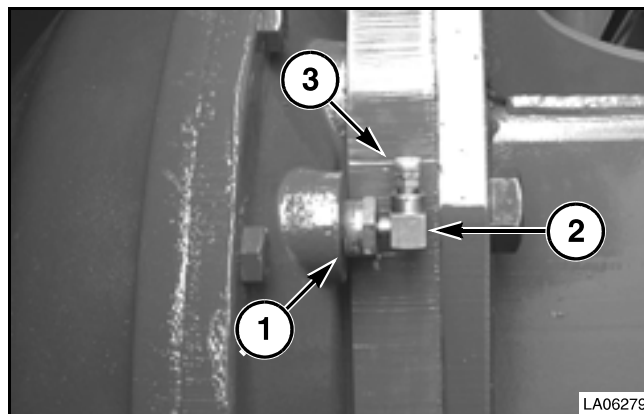


FIG. 225

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Transmission

TRANSMISSION SHIFTER

Transmission Shifter Assembly Adjustment

FIG. 310: The shifter assembly fastens to the top of the transmission cover. The shifter is actuated by a single control cable (1) from the shift lever in the cab.

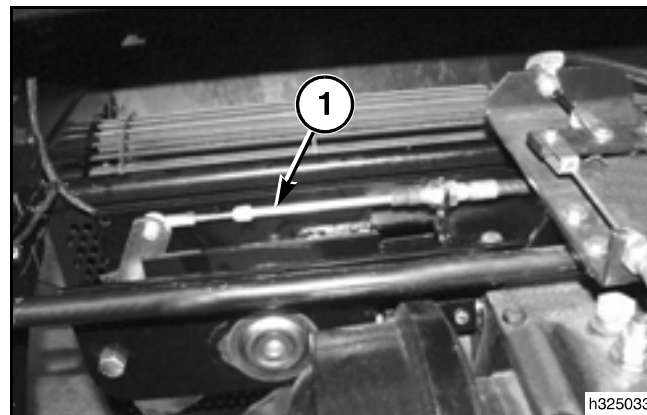


FIG. 310

FIG. 384: The hydrostatic motor adapter housing (1) is fastened to the left-hand side of transmission housing (2) using ten capscrews.

Remove the capscrews. Using a soft-faced hammer, or a hammer and a block of wood, tap the edge of the adapter housing in several locations to release the sealant. Remove the housing from the dowel pins.

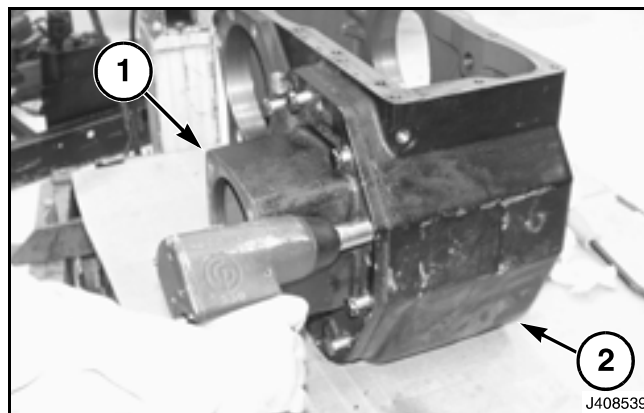


FIG. 384

FIG. 385: Remove the four capscrews that fasten the bearing carrier (1) to the left-hand side of the transmission housing.

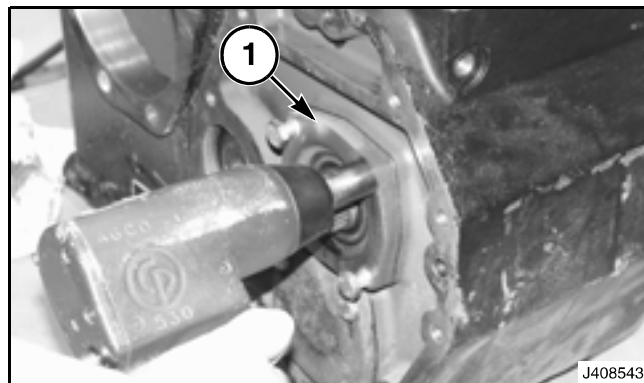


FIG. 385

FIG. 386: Remove the bearing carrier from the transmission. Remove the seal and the O-ring and discard both the seal and the O-ring. Remove all of the shims (1) from the carrier and press the bearing cup from the carrier (2).

NOTE: Group the shims using a tag with a wire to use during assembly as the first shim setting.

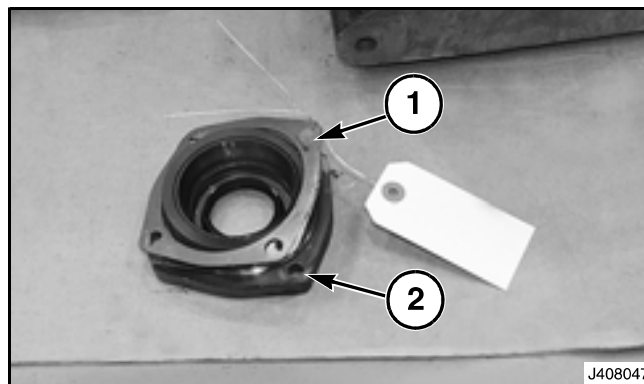


FIG. 386

FIG. 387: Clean the pump (1) and the area around the pump.

Using a suitable container located under the screen and drain plug (2) disconnect the pump suction line (3) at the pump and at the suction screen assembly.

Drain the oil from the transmission.

Refer to Transmission Maintenance in this section of the manual.

Disconnect the pressure line (4) at the pump and the bearing mainshaft carrier (5) fittings. Remove the line from the transmission.

Plug all of the lines and cap all of the fittings.

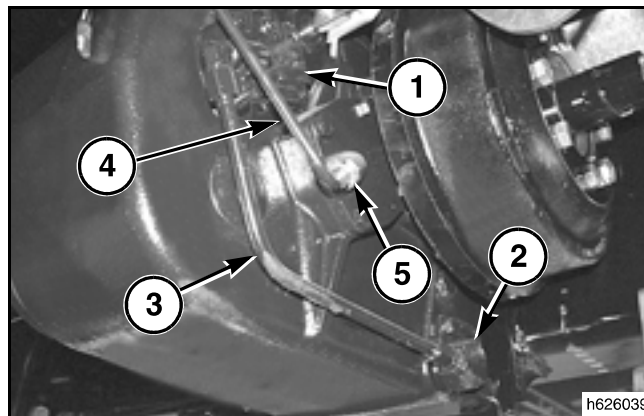


FIG. 387

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HEADER REVERSER HYDRAULIC MOTOR

SECTIONAL CONTROL VALVE HYDRAULIC SYSTEM

GENERAL INFORMATION

The combine is equipped with individual (stand alone) closed center hydraulic control valves.

They are:

- The Main Hydraulic Control Valve which consists of four sections.
- The Reel/Pickup Drive Control Valve.
- The Lateral Tilt Valve
- Rotary Screen Valve
- Chaff Spreader Valve (optional accessory)
- Steering Control Unit

Main Hydraulic Control Valve

FIG. 56: The Main Hydraulic Control Valve is located on the right side of the combine, just forward of the clean grain elevator housings.

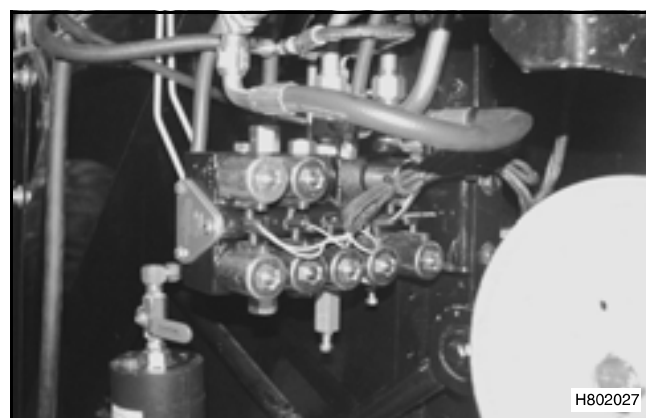


FIG. 56

FIG. 57: It is a closed center, modular type valve which consists of the following sections:

- a. Header lift/load sense section (1).
- b. Reel lift section (2).
- c. Header/feeder reverser section (3).
- d. Unloader swing section (4).

Each section has the same mounting configuration and share a common pressure oil gallery and a common return (tank) oil gallery. Both respective oil galleries run the full length of the valve stack.

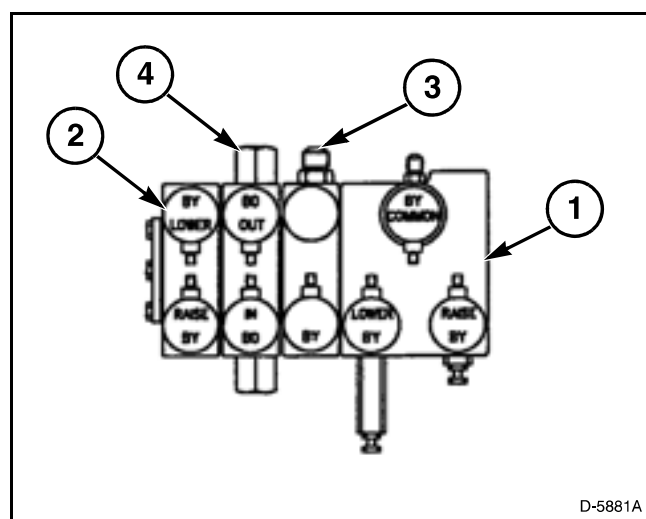


FIG. 57

Sectional Control Valve Hydraulic System

Lubricate the O-ring (2) with lubriplate and install the O-ring on the header lift workport adapter fitting (1).

Thread the header lift workport adapter fitting into the valve body. Torque the header lift workport adapter fitting to 30 Nm (20 lbf ft).

Sectional Control Valve Hydraulic System

Thread each respective control spool end cap (17) into the valve body (3). Torque the end caps to 54 Nm (40 lbf ft).

Install the load check poppet plunger (26) into the valve body (3).

Lubricate the load check poppet seat O-rings (27) with lubriplate and install the O-rings on each respective load check poppet seat (25).

Install each respective load check poppet seat (25) into the valve body (3) with the chamfered side facing outward (away from the load check poppet plunger).

NOTE: Press the load check poppet seats (25) into the valve body (3) by threading the load check poppet cap (22) to the valve body (3).

Lubricate the load check poppet end cap O-rings (28) with lubriplate and install the O-rings on each respective end cap (22).

Install each respective load check poppet return spring (23) into the load check poppet (24), then install the spring/poppet assembly into each respective end cap (22).

Thread each respective load check poppet end cap (22) (spring/ poppet/end cap assembly) into the valve body (3). Torque the end caps to 47 Nm (35 lbf ft).

Lubricate the O-rings (29) with lubriplate and install the O-rings on each respective work port adapter fitting (2).

Thread the work port adapter fittings (2) into each respective work port of the valve body (3). Torque the adapter fittings to 47 Nm (35 lbf ft).

Lubricate the O-rings (30) with lubriplate and install the O-rings on each respective 90 degree elbow (1).

Thread the 90 degree elbows (1) into each respective work port adapter fitting (2). Do not tighten the jamnuts, (31).

NOTE: Leave the jamnuts (31) loose so the 90 degree elbows (1) can be rotated to facilitate connecting the hydraulic cylinder tubes to the 90 degree elbows (1).

Reel/Pickup Control Valve (Prior To S/N HS87101 and S/N HS36101)

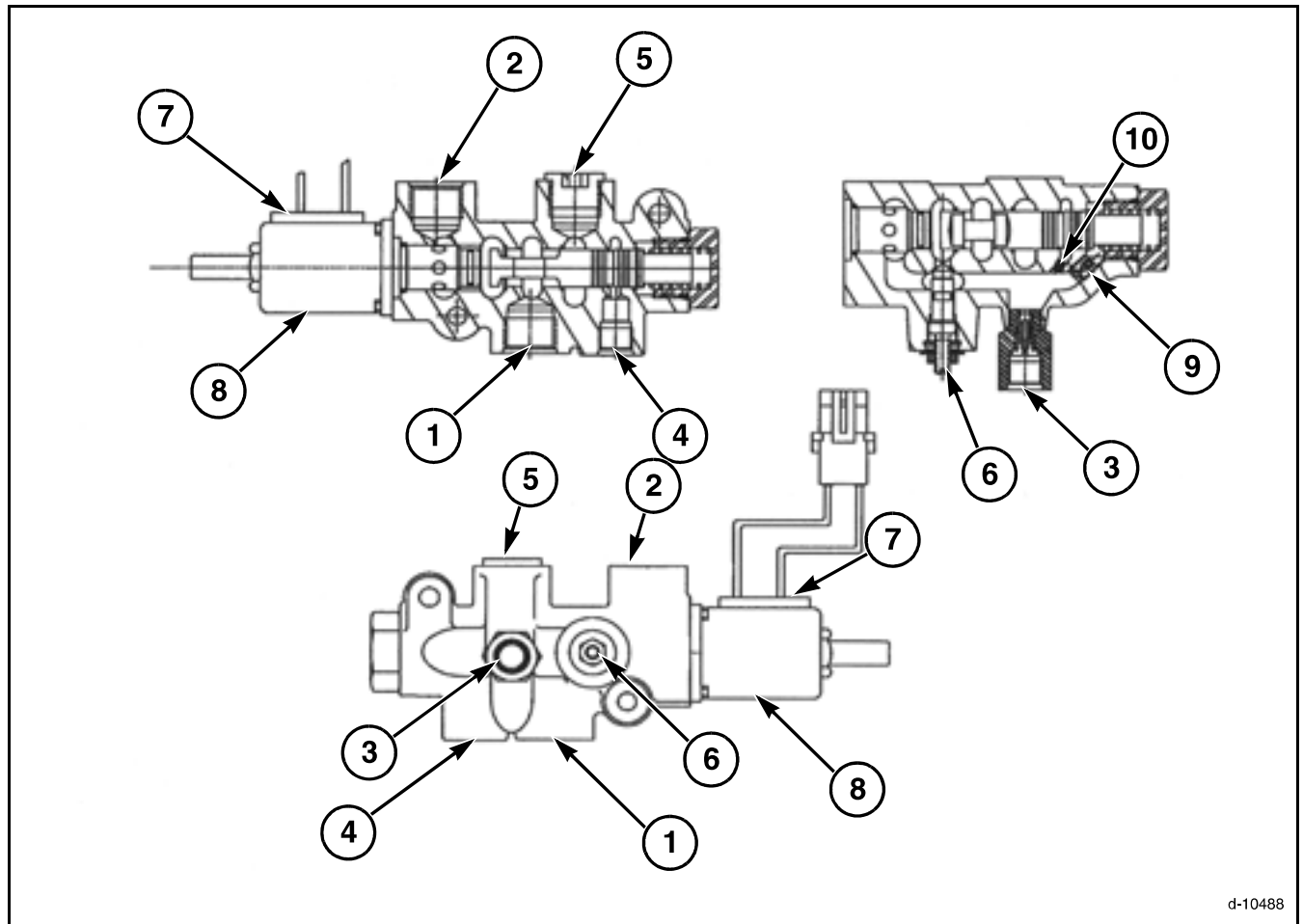


FIG. 141

FIG. 141: The pressure flow compensated hydraulic pump driven by the engine provides hydraulic flow to the IN port (1) of the reel speed control valve. The hydraulic flow is supplied by teeing into the main control stack valve.



WARNING: DO NOT utilize the override screw to manually override the reel drive system. The reel or the pickup turning upon engine startup could result in **DEATH OR SERIOUS INJURY**.

- (1) IN Port, Pressure
- (2) OUT Port
- (3) LS (Load Sense) Port
- (4) T Bleed to Tank Port
- (5) T Tank Return Port Plugged
- (6) Manual Override Screw
- (7) Coil
- (8) Coil Cover
- (9) Pilot Pressure Orifice/Screen Assembly, 0.635 mm (0.025 in)
- (10) Bleed Off Orifice, 0.787 mm (0.031 in)

Mono-block Control Valve (Effective S/N HS87101 and S/N HS36101)

HYDRAULIC LOAD SENSING SYSTEM

The pressure and flow control spools and springs in the hydraulic pump compensator valve are adjusted so that the hydraulic pump will initially generate an output pressure of 24.1 bar (350 psi) at the pump outlet and therefore at the priority valve inlet when the engine is started.

NOTE: Detailed information on the operation of the compensator valve can be found in the Hydraulic Pump section.

As the hydraulic pump continues to operate, pressure immediately generates in the priority passage in the priority valve since the flow of priority oil stops in the steering control unit.

NOTE: Detailed information on the operating modes of the priority valve can be found in the Priority Valve section.

During Low Pressure Standby Mode (No Steering Demand)

The priority oil moves through a .91 mm (.036 in) orifice pressurizing the end of the spool in the priority valve. The pressure shifts the spool, reducing the oil flow to the priority passage and permits virtually all (less the oil to reduce thermal shock) of the oil to travel to the main control and the later tilt valves.

The priority oil moves through the center of the spool through a .79 mm (.031 in) dynamic signal orifice in the opposite end of the spool. The priority oil moves through the .91 mm (.036 in) orifice in the load sense line fitting and into the load sense line. The priority oil may or may not escape through the shuttle valve, but can not escape through the hydraulic pump compensator valve. The priority oil can, however, escape unrestricted through the load sense line to the steering control unit and then escape to the reservoir via the steering control unit/main hydraulic system return line. A balance of force is then made on both ends of the spool in the priority valve, causing the spool to throttle back and forth, holding 16 bar (233 psi) of pressure in the priority passage/inlet port in the steering control unit.

When none of the hydraulic system solenoid valves (main control valve or lateral tilt valve) are activated, oil flow is blocked. Oil from the pressure oil gallery is blocked and cannot flow into the load sense oil gallery to the shuttle valve. The shuttle valve directs the greater of the two load sense signals (steering control unit or control valves) to the pump compensator valve.

Because the load sense signal from the main control valve and the lateral tilt valve is less than 16 bar (233 psi), the shuttle valve directs the greater signal from the steering unit to the pump flow compensator spool. The load sense pressure 16 bar (233 psi) is added to the spring force of 24.1 bar (350 psi) on the spring end of the flow compensator spool. These two forces then causes the compensator valve to stroke the hydraulic pump and the pressure in the pump outlet/priority valve inlet port to go to 40.1 bar (583 psi).

During Activation of Load Sense (Pressure and Flow Compensated) Functions

Whenever one of the pressure and flow compensated (load sense) functions listed are activated, the master (load sense) solenoid is not energized.

- Steering
- Lateral Tilt
- Chaff Spreader
- Rotary Screen
- Reel Speed/Header Pickup Speed
- Header Lift

Whenever one or more of the pressure and flow compensated (load sense) functions are activated, the load sense line continually monitors the pressure in the work ports of the activated systems and relays a signal, from the system that requires the highest working pressure, back to the flow control spool of the compensator valve mounted on the hydraulic pump. The compensator valve then strokes the hydraulic pump to produce the flow required at a pressure of 24.1 bar (350 psi) above the pressure required to overcome the load.

Steering

When the steering wheel is activated to make a left hand (or right hand) turn, the load sense (master) solenoid on the main control valve is not energized.

When turning, the steering control unit connects the inlet (priority oil) port to the load sense port in the steering unit. The inlet pressure seats the load sense check valve in the steering control unit. The check valve in the steering control unit blocks the priority flow through the center of the priority valve spool. The oil pressure on each end of the spool in the priority valve is then made equal and the priority passage/steering unit inlet pressure is transmitted into the priority valve load sense line.

As the steering signal (pressure) in the load sense line increases, the shuttle valve determines which flow is of a higher pressure by permitting the higher-pressure flow to press the check ball against a seat blocking off the lower-pressure signal from the other systems. The higher-pressure signal is allowed to pass through the valve cartridge to the compensator valve on the hydraulic pump.

The compensator valve then strokes the hydraulic pump to produce the flow required (dependent upon how fast the steering wheel is being turned) at a pressure of 24.1 bar (350 psi) above the pressure required to overcome the load to steer the machine.

Lateral Tilt

When the lateral tilt is actuated (manual or automatic), solenoids on the lateral tilt valve are energized. The load sense (master) solenoid in the main control valve is not energized.

Mono-block Control Valve (Effective S/N HS87101 and S/N HS36101)

PROBLEM	POSSIBLE CAUSE	CORRECTION
	Low voltage at Feed Reverser valve. Voltage must be at least 11 volts to properly open valve. Coil has failed. Feed Reverser switch has failed or an open circuit.	Check the voltage and the coil using the procedure in Solenoid Troubleshooting. If OK, go to the next step.
	Anti cavitation check valve is not seating allowing oil to flow to reservoir.	Replace the check valve or exchange with a header lift check valve. If the problem follows the valve, replace the valve. If not OK, go to next step.
	Poppet for common solenoid valve not moving or moving only part way.	Change out the common solenoid valve with a new valve or exchange with chaff spreader or reel lift lower valve. If the problem follows the valve, replace the valve. If not OK, go to the next step.
	Poppet for solenoid valve not moving or moving only part way.	Change out the Feed Reverser valve with a new valve or exchange with header lift or lower valve. Inspect the O-rings and backup rings for cuts or damage and inspect the bore for damage. If the problem follows the valve, replace the valve. If not OK, go to the next step.
	Square jaw clutch in feed reverser motor not engaging. Feed reverser motor may have excessive wear or scoring.	Continue with Troubleshooting in the Header Reverser Hydraulic Motor section of the Hydraulic division.
Feed Reverser slowly turns without feed reverser switch activated.	Voltage may be being applied to Feed Reverser coil allowing oil to flow to the reverser motor.	Check to be sure no voltage is being applied to valve solenoids. Refer to Solenoid Troubleshooting. If OK, go to the next step.
	Poppet for Feed Reverser solenoid valve not seating, spring broken, or O-ring and backup ring are cut.	Change out the Feed Reverser valve with a new valve or exchange with header lift or lower valve. Inspect the O-rings and backup ring for cuts or damage and inspect the bore for damage. If the problem follows the valve, replace the valve.

FIG. 261: Lightly oil the cartridge assembly (1) prior to installation. Carefully thread the cartridge into the manifold (2) until the O-ring contacts the manifold. Using a deep well socket, torque the cartridge assembly to 47 to 54 Nm (35 to 40 lbf ft).

IMPORTANT: Be careful not to bend the stem of the cartridge. Tightening the cartridge too much can cause distortion in the cartridge stem.

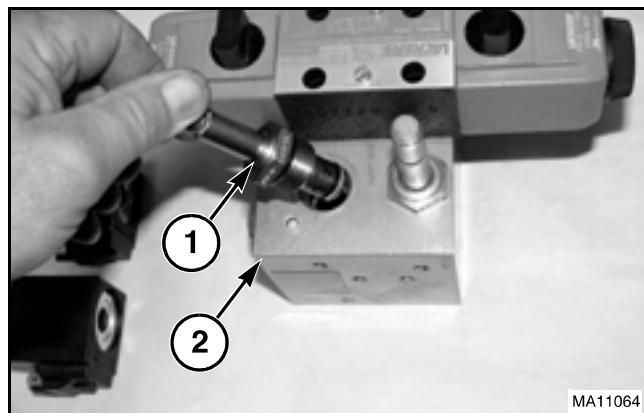


FIG. 261

FIG. 262: Install the coil assembly (1) onto the valve cartridge (2) with the terminals facing away from the directional control valve (3).

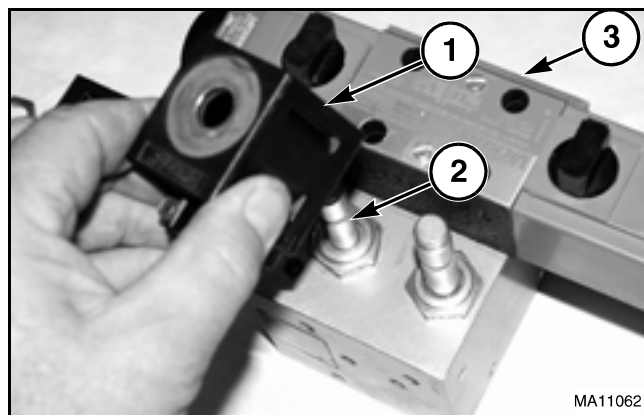


FIG. 262

FIG. 263: Install the coil nut (1) on top of the solenoid coil. Torque the nut to 5 to 8 Nm (48 to 72 lbf in).

IMPORTANT: Tightening the coil nut too much can cause distortion in the cartridge stem.

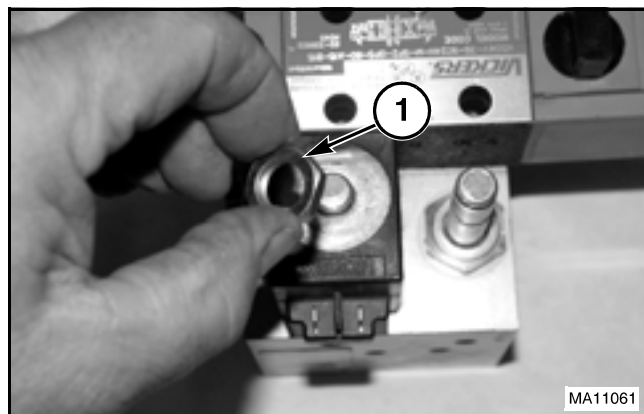


FIG. 263

Chaff Spreader Flow Divider

ASSEMBLY

FIG. 316: Install new O-rings (1) and new backup rings (2) on the cartridge as shown.

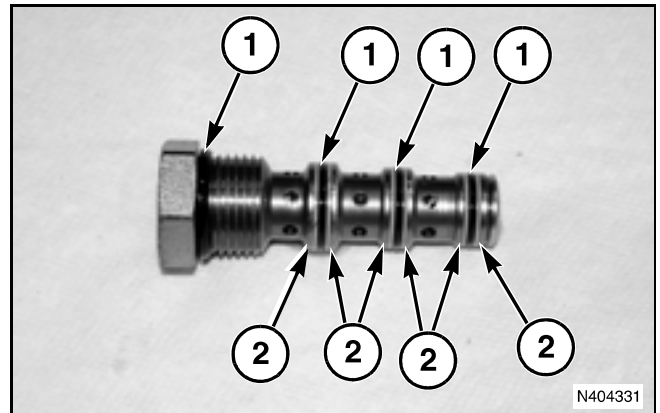


FIG. 316

FIG. 317: Dip the cartridge in hydraulic oil to coat the O-rings, backup rings, and internal spools and springs.

Install the flow divider cartridge (1) into the valve block. Use a socket and tighten the cartridge to 27.2 to 32.6 (20 to 24 lbf ft).

IMPORTANT: Tightening the cartridge too much will result in distortion of the cartridge causing the spools to stick.

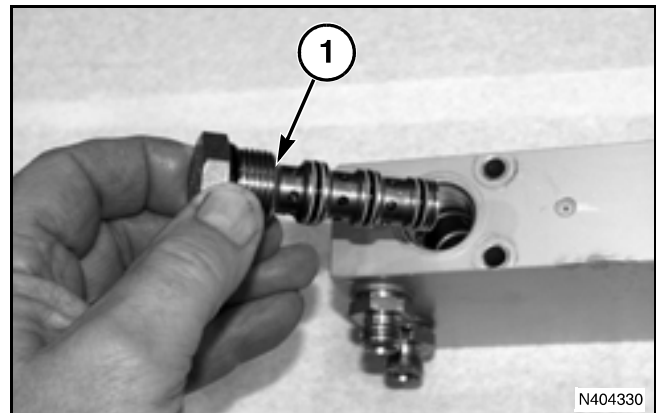


FIG. 317

FIG. 318: Dip the anti-cavitation check valve in hydraulic oil before installation. Using a hex wrench, install the anti-cavitation check valve (1) into the bottom of the return port R in the valve block. Tighten the check valve securely.

IMPORTANT: Over tightening the check valve will cause distortion of the check valve causing the ball to not seat or open.

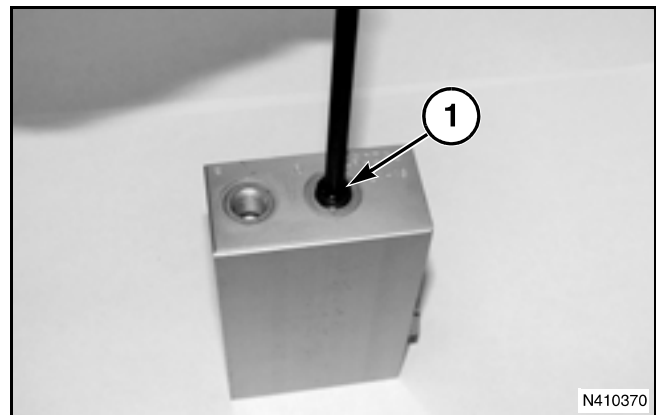
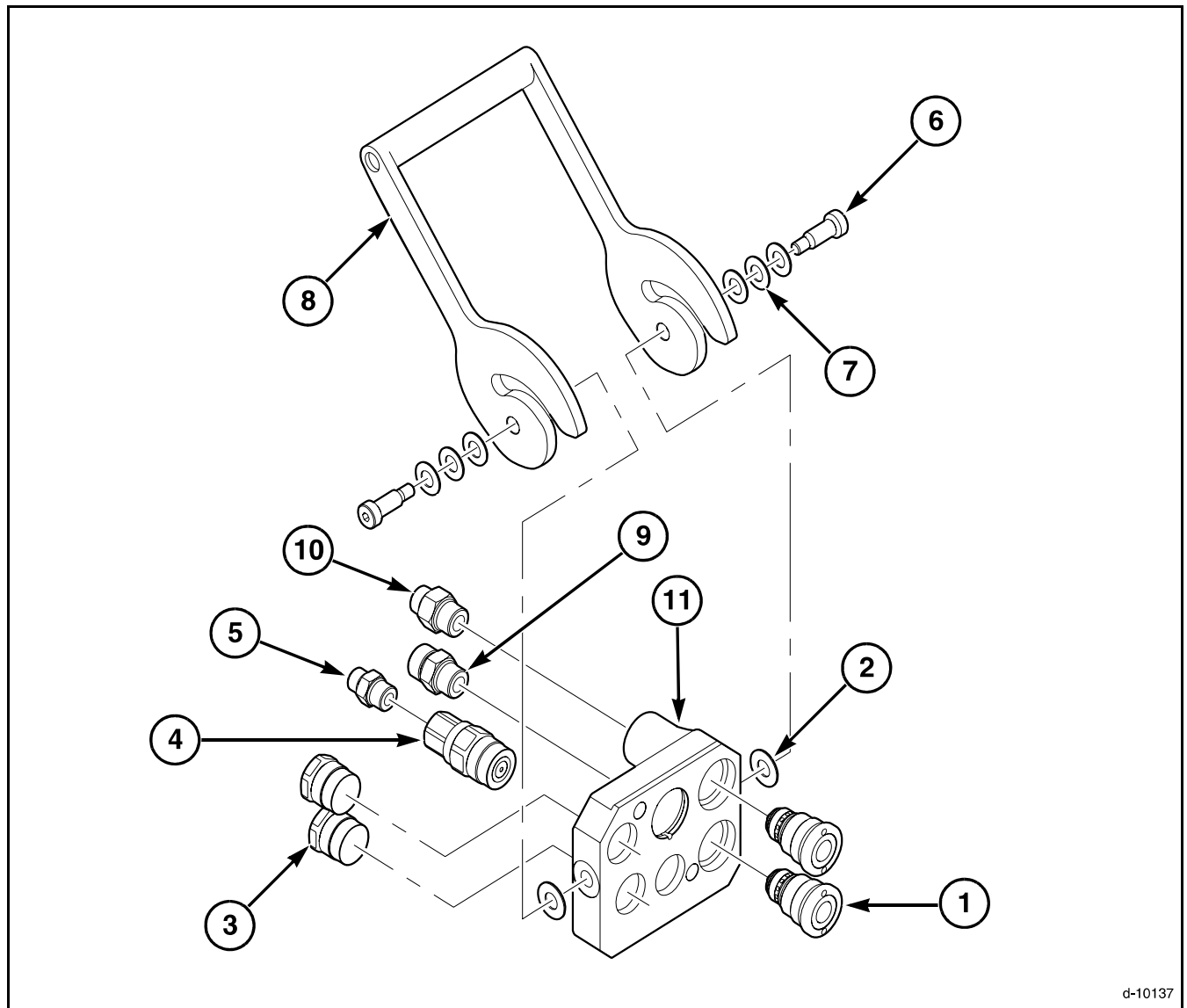


FIG. 318

Single Point Fixed Connector (Combine)

Disassembly



d-10137

FIG. 375

FIG. 375: Exploded View of Single Point Fixed Connector.

- | | |
|--|---|
| 1. 1/2 inch Flush Face Hydraulic Cartridge Fixed Coupler | 6. Handle Screw |
| 2. Flat Washer | 7. Spring Washer |
| 3. Fixed Coupler Plug | 8. Lever |
| 4. 3/8 inch Cartridge Fixed Coupler | 9. 1 inch O-Ring Face Seal by 7/8 inch O-Ring Boss Hydraulic Fitting |
| 5. 11/16 inch O-Ring Face Seal by 3/4 inch O-Ring Boss Hydraulic Fitting | 10. 13/16 inch O-Ring Face Seal by 7/8 inch O-Ring Boss Hydraulic Fitting |
| | 11. Plate |

Reel Lift Cylinders

Reassembly

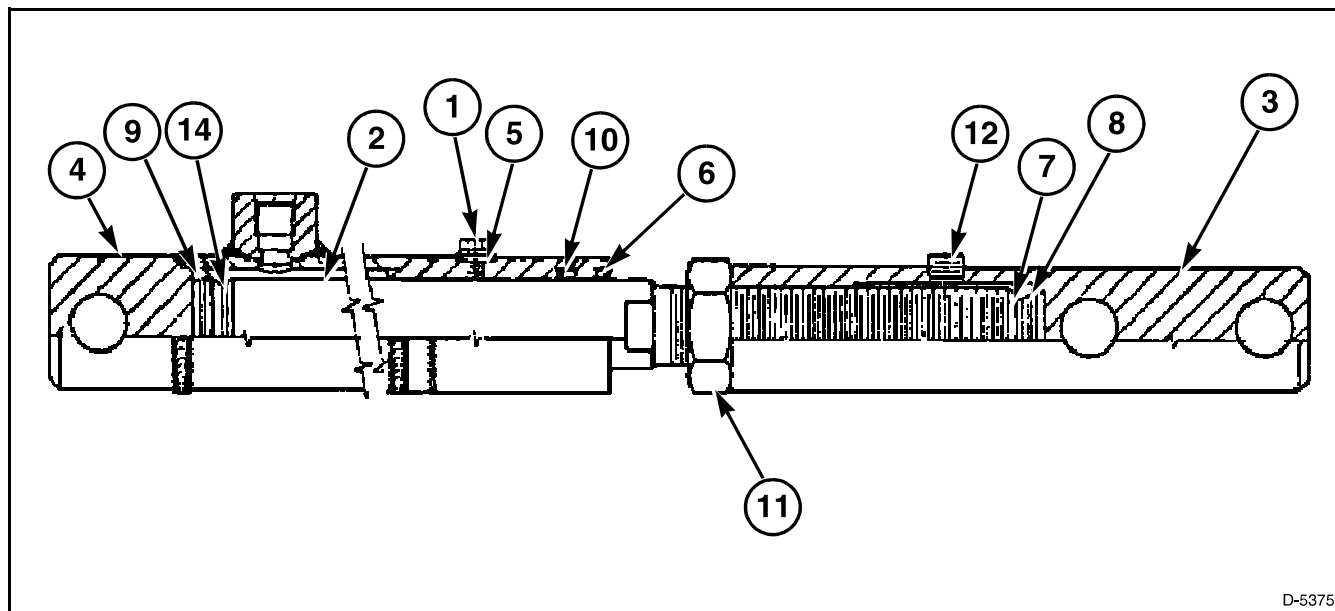


FIG. 425

FIG. 425: All parts should be cleaned and dried thoroughly. Metal parts should be lightly oiled prior to reassembly.

Install a new U-cup seal (10) and a new wiper seal (6) in the inside diameter of the cylinder head. Install the new wiper seal with the lip facing outward.

Install a new retaining ring (9) in the deep groove (14) of the piston rod (2).

Oil the outside of the piston rod and carefully insert the piston rod into the barrel assembly (4).

Push the piston rod into the barrel assembly until the lock ring area of the piston rod can be seen through the port.

By using a screwdriver through the port, pop the retaining ring into the lock position.

Extend the piston rod to the full out position to make sure that the retaining ring is properly seated.

If removed, install the jam nut (11) and then the retaining ring (8) in the deep groove (7) of the piston rod.

Coat the inside of the rod end (3) with a lubricant and thread the rod end onto the piston rod until the lock ring area of the rod can be seen through the plug hole.

By using a screwdriver through the plug hole, pop the retaining ring into the lock position.

Extend the rod end (3) to the full out position to make sure that the retaining ring is properly seated. Install the pipe plug (12).

NOTE: Final assembly torque of the jam nut (11) is 183 to 203 Nm (135 to 150 lbf ft).

If removed, install the bleed screw (1) and the washer (5) into the barrel assembly (4). Torque the bleed screw to 2.3 to 4.5 Nm (20 to 40 lbf in).

HEADER LATERAL TILT CYLINDER

GENERAL

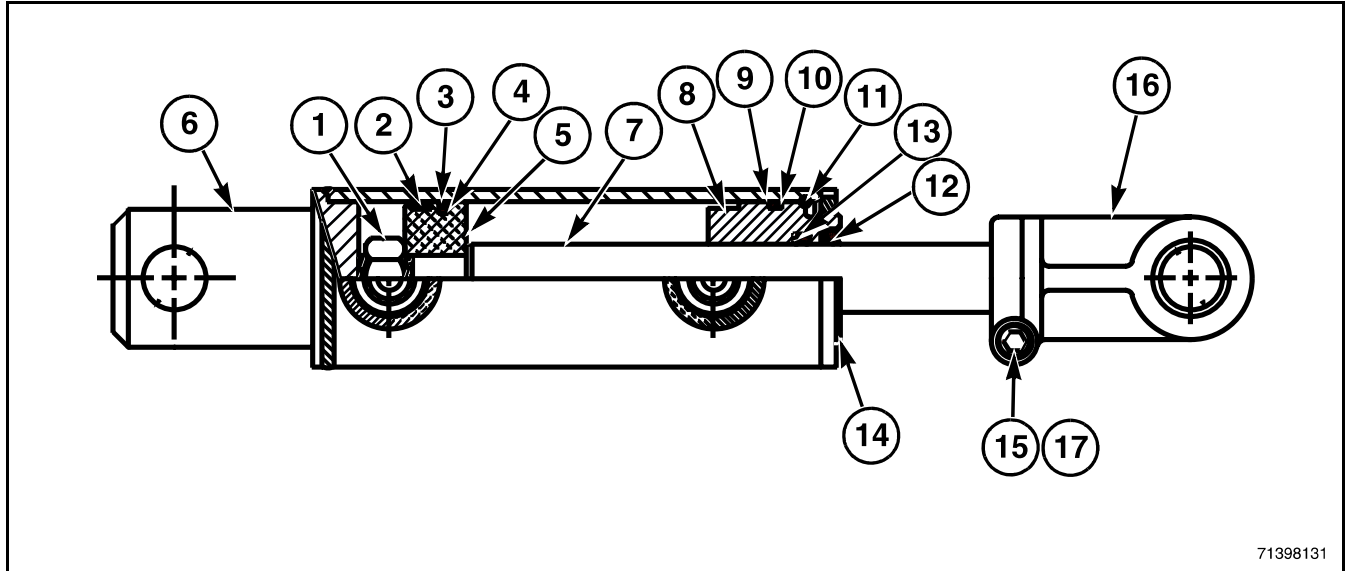


FIG. 462

FIG. 462: Header Lateral Tilt Cylinder Component List

- (1) Nut, Piston
- (2) Wear Ring
- (3) Teflon Ring
- (4) O-Ring
- (5) Piston
- (6) Barrel Assembly
- (7) Piston Rod
- (8) Bearing
- (9) O-Ring
- (10) Backup Ring
- (11) Retaining Ring
- (12) Wiper Seal
- (13) U-Cup Seal
- (14) Retainer Nut
- (15) Cap Screw
- (16) Rod Clevis Yoke
- (17) Nut, Clevis

Hydrostatic Drive Systems

Rotor and Propel Pump Hydraulic Schematic

The following information refers to Fig. 498

- (1) Reservoir
- (2) Filter (Note: Only one filter used on A65)
- (3) Cooler Bypass Valve
- (4) Cooler
- (5) Unloader Engage Cylinder
- (6) Unloader Engage Valve
- (7) Rotor Motor
- (8) Rotor Pump (Note: Two pumps used on A75)
- (9) Propel Pump
- (10) Propel Motor
- (11) RWA Motor
- (12) RWA Valve
- (A) Suction Pressure
- (B) Return Pressure
- (C) Charge Pressure
- (D) High Pressure

Reassembly



CAUTION: The pump is very heavy. Use a suitable hoist to aid in assembly.

FIG. 645: Clean the mating surface of both pumps. Lubricate and install the new O-ring (5).

Lubricate the splines on the input shaft of the rear pump (propel) (2). Install the rear pump into the coupler in the front pump (rotor) (1). Take care not to damage the O-ring. Join the two pumps together and install the mounting bolts (4) with the flat washers (3). Initially tighten the mounting bolts finger tight and then torque to 103 to 115 Nm (76 to 85 lbf ft).

Install the hydraulic adapter fittings and the rotor pressure switch as noted during disassembly.

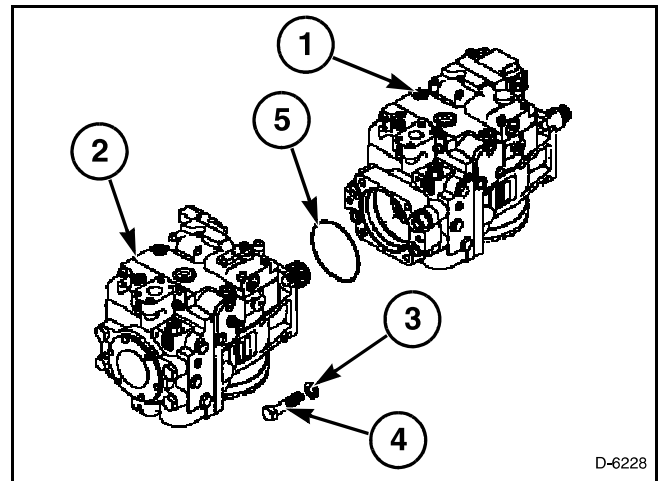


FIG. 645

Installation

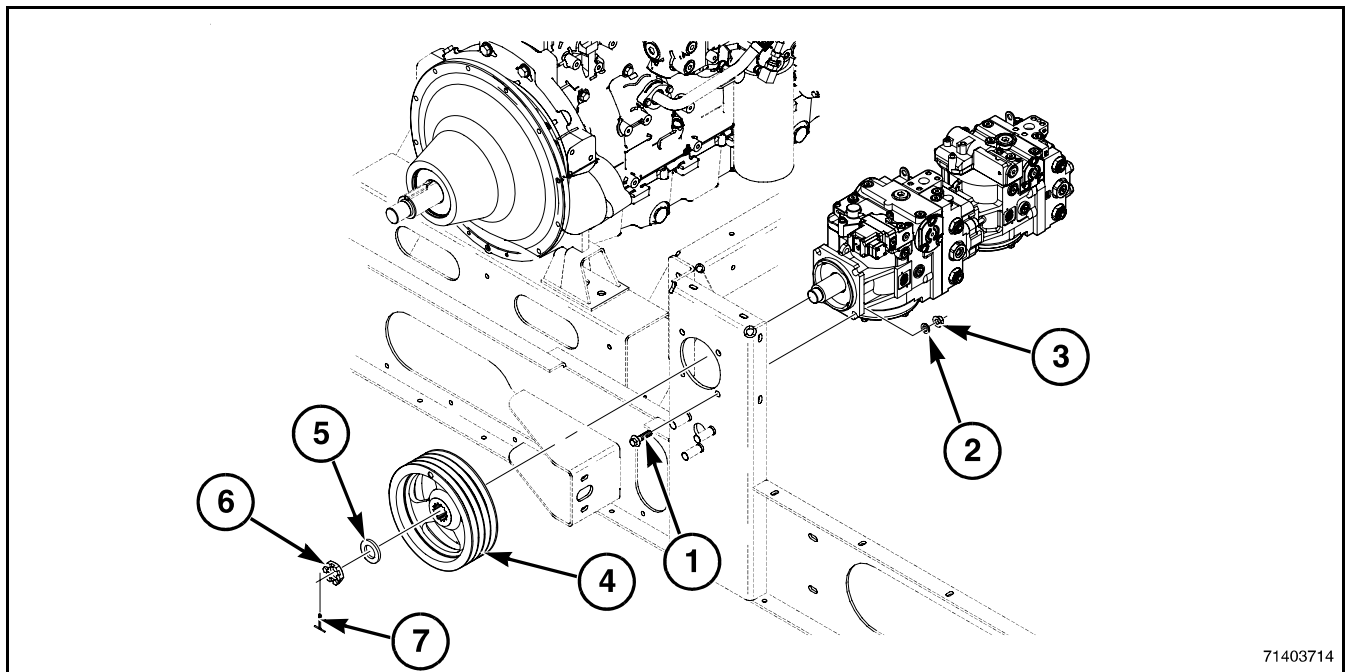


FIG. 646

FIG. 646: Connect a suitable lifting device to support the tandem pump.



CAUTION: The tandem pump is very heavy. Use a suitable hoist to support and aid in the installation of the tandem pump.

Position the tandem pump onto the pump support weldment bolted to the engine platform.

Hydrostatic Rotor Drive System

System Will Not Operate in Either Direction

	Check	Description	Action
1.	Oil level in reservoir.	Insufficient hydraulic fluid to supply system loop.	Fill reservoir to the proper level.
2.	Input to pump control.	Input to control module is operating improperly.	Check control input and repair or replace as necessary.
3.	Pump displacement control.	Control linkages are not secure, control orifices are blocked, etc.	Repair or replace control module as necessary.
4.	Make sure bypass valve(s) are closed.	If bypass valve(s) is open the system loop will be depressurized.	Close bypass valves. Replace multi-function valve if defective.
5.	Charge pressure with pump in neutral.	Low charge pressure insufficient to recharge system loop.	Measure charge pressure with the pump in neutral. If pressure is low, go to step 6; otherwise continue with step 5.
6.	Charge pressure with pump in stroke.	Low charge pressure with the pump in stroke indicates a motor charge relief valve or system pressure relief valve may be improperly set.	Measure charge pressure with pump in stroke. If pressure is low, adjust or replace motor charge relief valve, otherwise go to step 9.
7.	Pump charge relief valve.	A pump charge relief valve that is leaky or set too low will depressurize the system.	Adjust or replace pump charge relief valve as necessary.
8.	Charge pump inlet filter.	A clogged filter will under supply system loop.	Inspect filter and replace if necessary.
9.	Charge pump.	A malfunctioning charge pump will provide insufficient charge flow.	Repair or replace the charge pump. If OK go to last step.
10.	System pressure.	Low system pressure will not provide power necessary to move load.	Measure system pressure. Continue with next step.
11.	System multi-function valves.	Defective multi-function valves will cause system pressure to be low.	Replace multi-function valve(s).

Low Motor Output Torque

	Check	Description	Action
1.	System pressure at motor.	Low system pressure at the motor will reduce torque.	Measure system pressure at motor. If pressure limiter setting is low, increase setting.
2.	For internal leakage.	Internal leakage will reduce system pressure.	Check for leakage in O-rings, gaskets, and other fittings. Repair unit as required, or replace leaky unit.

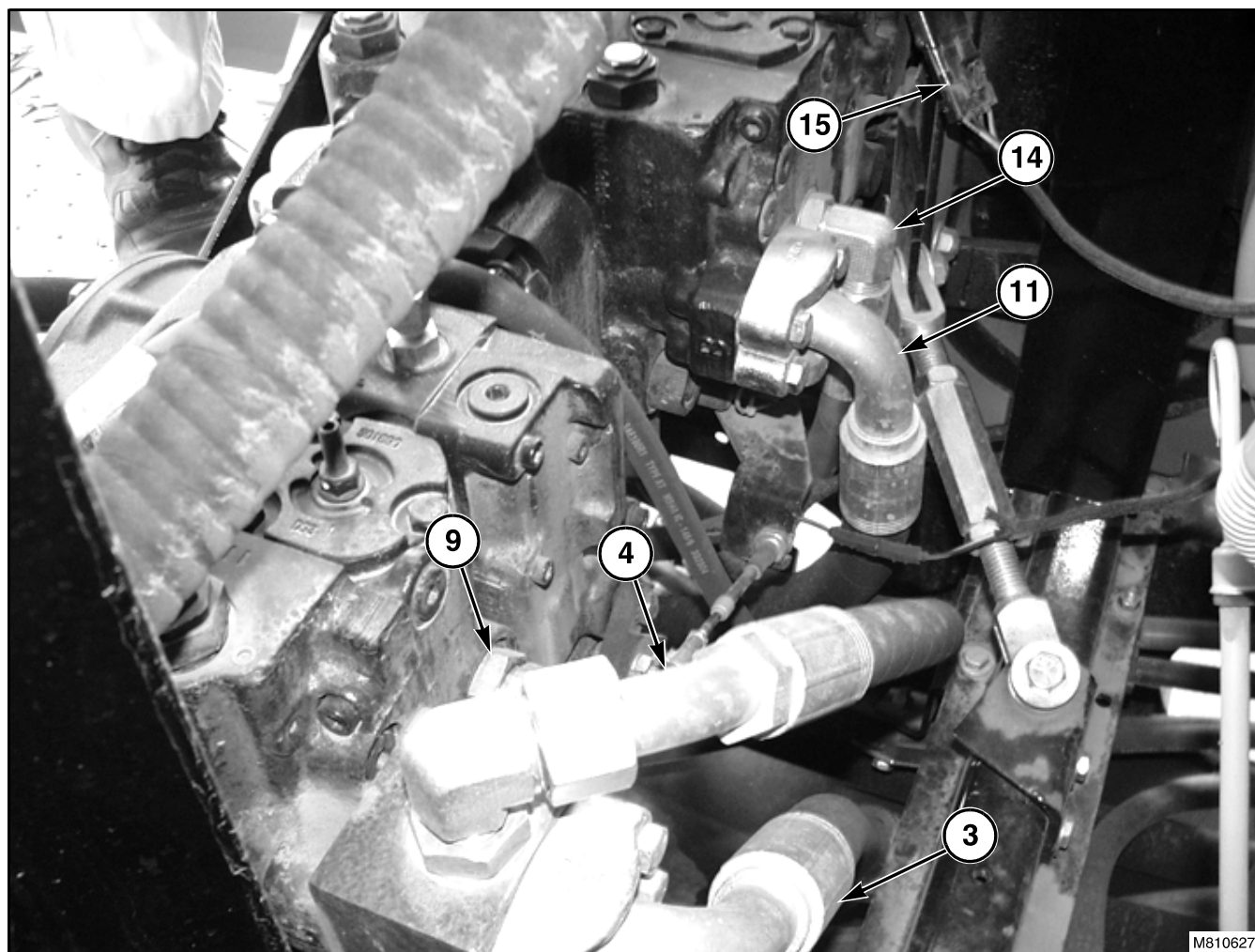


FIG. 553

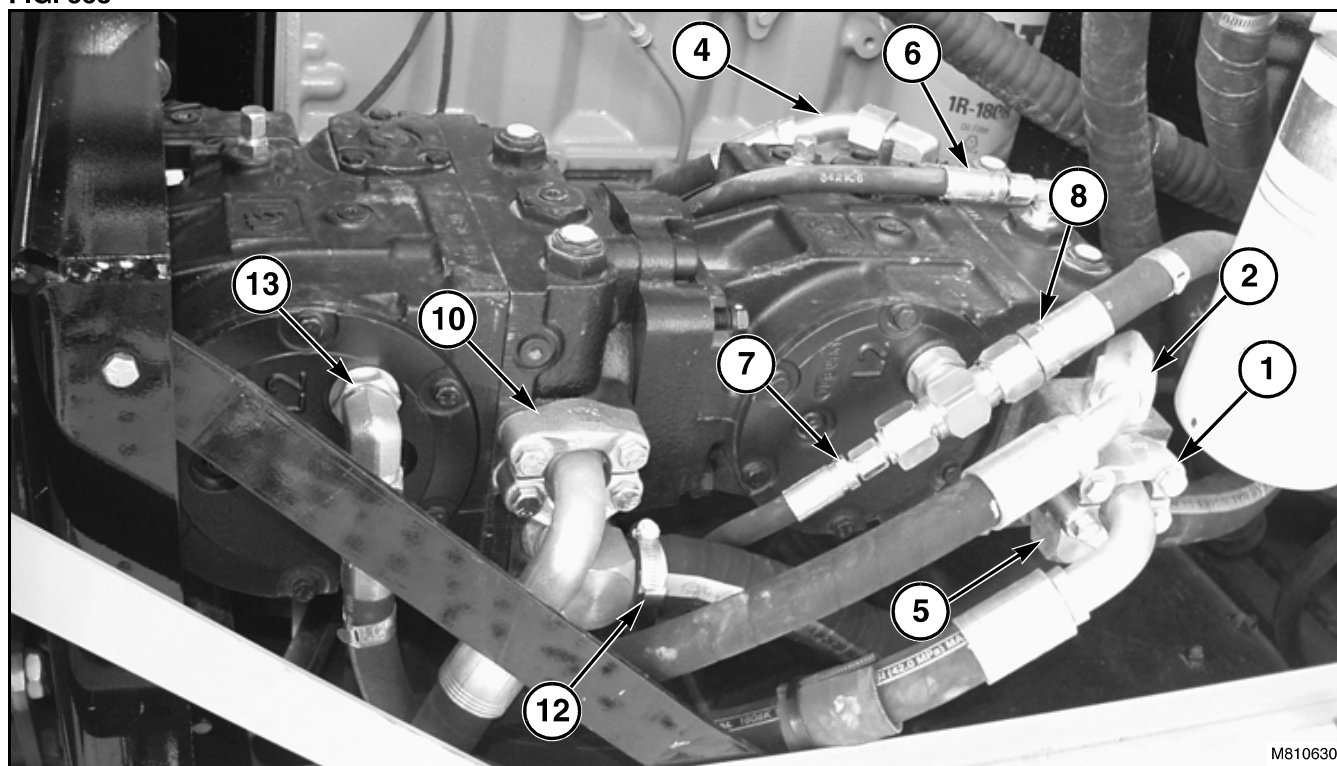


FIG. 554

Hydrostatic Propulsion Drive System

Series 90 Motor

FIG. 608: Bottom View - Propulsion Motor

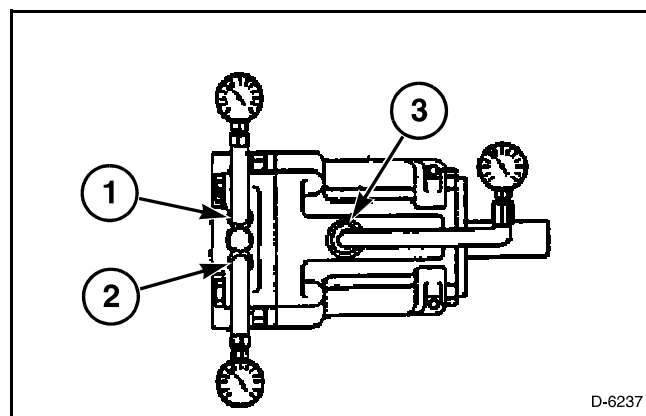


FIG. 608

FIG. 609: LH End View - Propulsion Motor

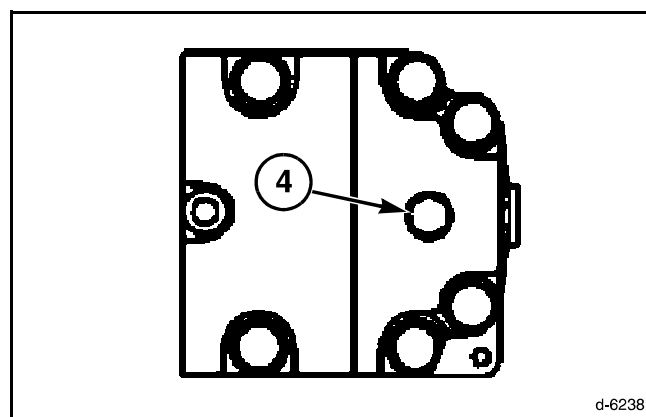


FIG. 609

FIG. 610: Filter - Hydrostatic System

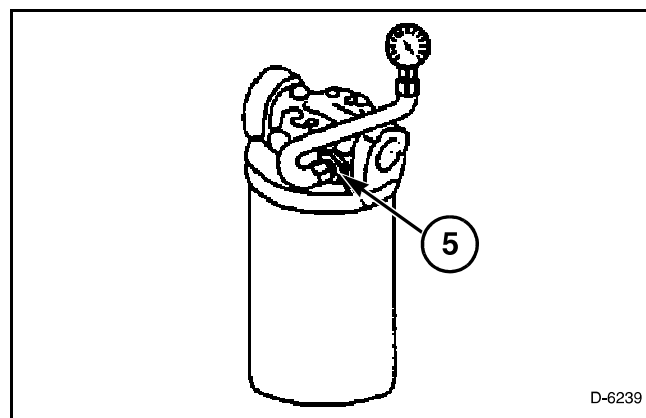


FIG. 610

Hydrostatic Pump and Motor Repair

FIG. 761: Remove the large capscrews that secure the end cap to the pump housing.

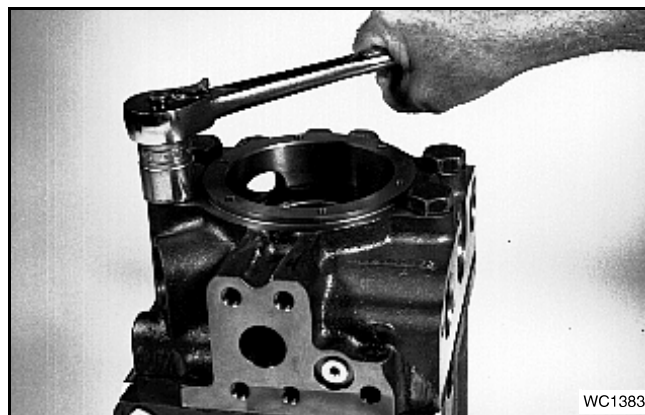


FIG. 761

FIG. 762: Remove the end cap from the pump housing. The alignment pins and valve plate will normally remain with the pump housing.

Remove the end cap gasket and the swash plate leveler spring hardened shims from the spring pockets in the end can.

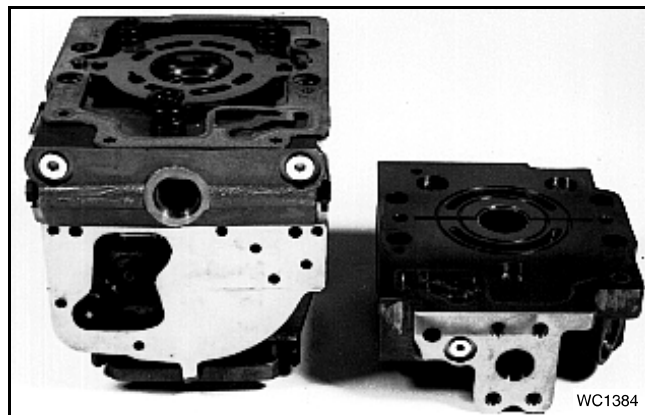


FIG. 762

FIG. 763: Remove the two long swash plate leveler T-Bar springs (1) and the short swash plate hold down spring (2) from the pump housing.

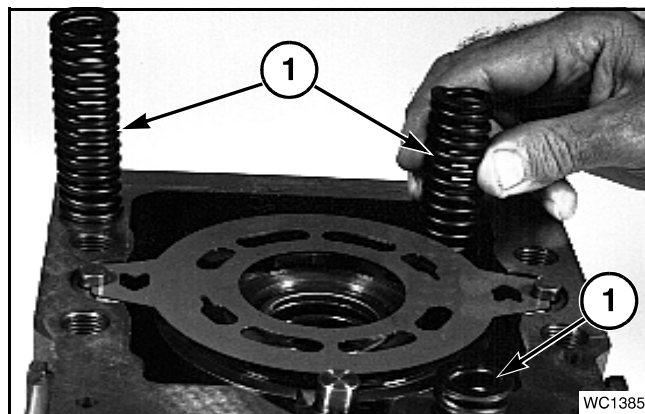


FIG. 763

FIG. 764: Remove the alignment pins (1) and the valve plate (2) noting the direction of the arrows (3) on the valve plate.

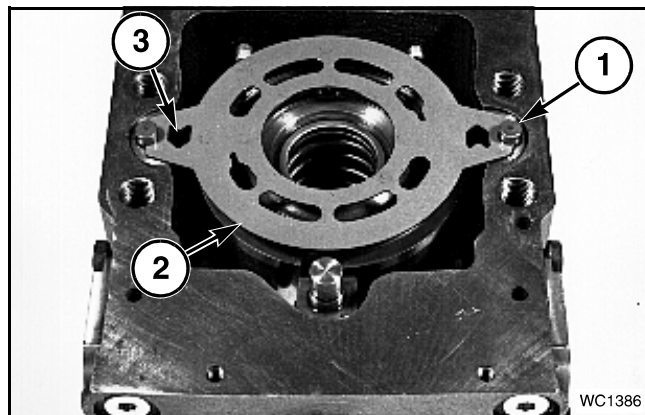


FIG. 764

Hydrostatic Pump and Motor Repair

FIG. 860: Remove the valve plate and the alignment pins from the end cap.

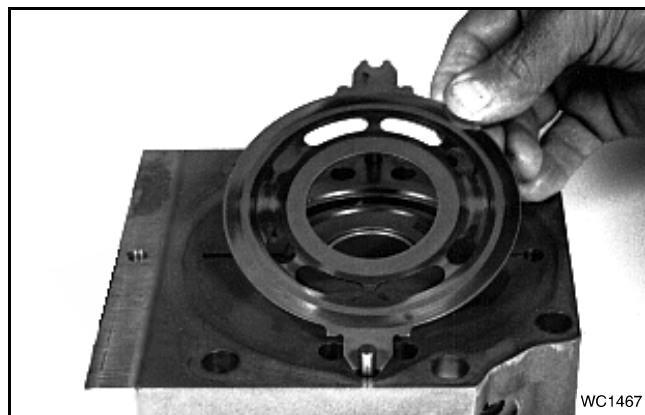


FIG. 860

FIG. 861: Remove the piston assemblies from the slipper guide.



FIG. 861

Inspection/Reconditioning

All parts should be thoroughly cleaned in a suitable solvent and blown dry with clean, dry compressed air.

Replace all O-rings, gaskets, and the output shaft seal.

Inspect all parts for damage, nicks, or unusual wear patterns. Replace all parts having unusual or excessive wear or discoloration.

FIG. 862: If the end cap journal bearing needs replacement, remove the bearing with a suitable puller.

IMPORTANT: Do not damage the valve plate surface of the end cap.

Replacement is evidenced by large amounts of the metal back on the bearing being visible through the plastic material.



FIG. 862

pressure to the servo piston. The pump de-strokes reducing the flow until the differential across the external control valve becomes equal to the load sense setting. When the flow being delivered is less than the demand, the differential across the external control valve drops below the load sense setting and the load sense spring shifts the spool connecting the servo piston to the pump case. The pump strokes, increasing flow until the differential across the external control valve becomes equal to the load sense setting.

When the external control valve is placed in neutral, the load sense control connects the load sense signal line to drain. With no load sense pressure acting on the non-spring end of the flow compensator spool, the pump adjusts the stroke to whatever position is necessary to maintain system pressure at the load sense setting. The pump is now in standby mode.

Because of the series arrangement of the flow compensator and the pressure compensator spools, the pressure compensator spool will override the flow compensator spool. If at any time the system pressure reaches the pressure compensator setting, the pressure compensator spool will shift, blocking the passage that connects the flow compensator spool with the servo piston and porting the system pressure to the servo piston causing the pump to de-stroke.

Removal

FIG. 927: Use a 5 mm Allen wrench to remove the four socket head cap screws (1) that hold the pressure-flow compensator (2) to the pump housing.

Remove and discard the three O-rings.

NOTE: It is important to keep the parts of the pump clean. Small particles of dirt or lint can prevent the pump from working correctly. Make sure the pump is clean before disassembly. Put parts on clean wax paper and use only lint free paper towels to wipe parts.

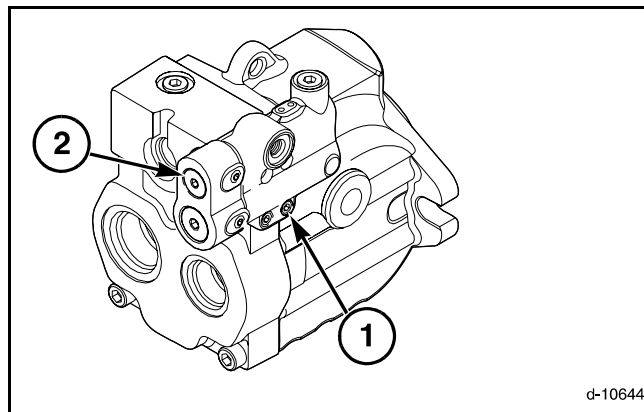


FIG. 927

d-10644

Steering Control Unit

FIG. 981: Position the spool and sleeve assembly (1) so that the splined end of the spool enters the 14 hole end of the housing (2) first.

IMPORTANT: *Be extremely careful that the parts do not tilt out of position while inserting.*

Push the parts gently into place with a slight rotating action, keeping the pin nearly horizontal with the porting face (3) of the housing.

Bring the spool assembly entirely within the housing bore until the parts are flush at the meter end (14 hole end) of the housing.

With the spool assembly in this flush position, check for free rotation within the housing by turning with a light finger tip force at the splined end.

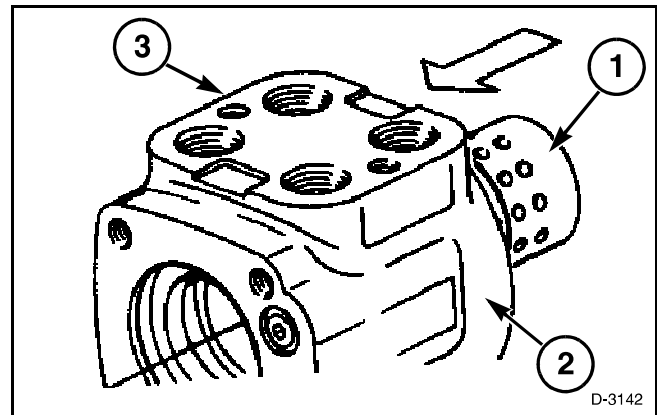


FIG. 981

Motor Assembly Procedure

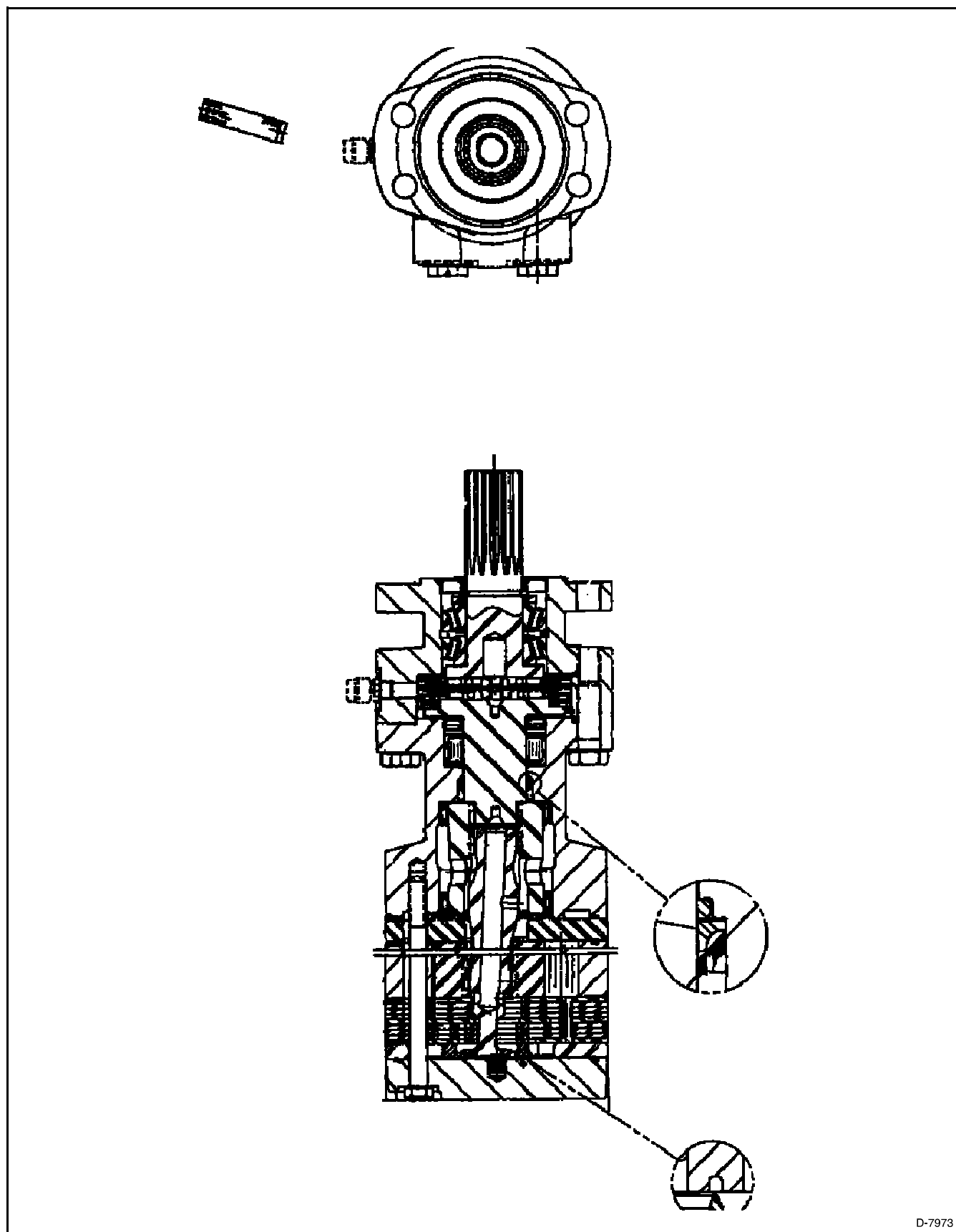


FIG. 1024

Rotary Screen Drive

FIGS. 1083–1084: Adjustable Flow Regulator Cartridge (1).

The adjustable flow regulator is a pressure compensated flow control. Turning the stem (2) moves a needle valve varying the opening of an orifice. Turning the stem clockwise decreases the flow and counterclockwise movement increases the flow.

NOTE: If the cartridge becomes contaminated, the flow (rotary screen speed) may decrease. Opening and then closing the stem (needle valve) may dislodge the contaminate.

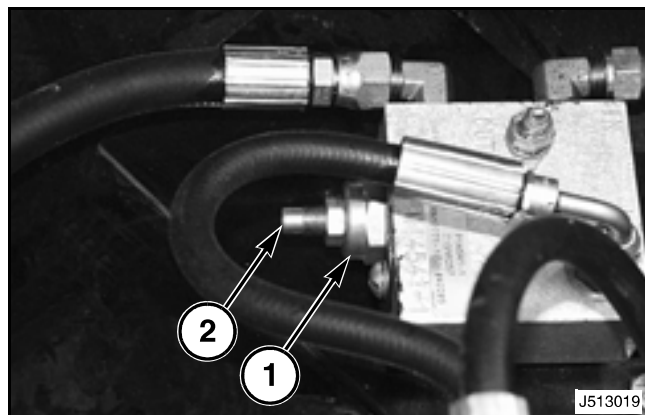


FIG. 1083

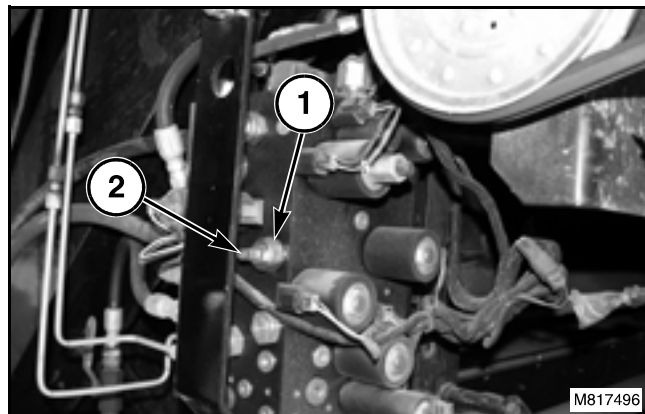


FIG. 1084

Adjustment of Flow control

FIG. 1085: Properly position the machine before beginning to adjust the rotary screen regulator valve assembly.



WARNING: Before working around or under the machine:

Place the machine on a flat, hard, level surface.

Place the transmission in neutral.

Set the parking brake.

Lower the header completely to the ground or the floor.

Shut off the engine and remove the start key.

Position a block in front and a block behind the front drive tires.



FIG. 1085

Access the right-hand side panel latch(es) by reaching under the panel, release the latch(es), and swing the panel(s) open.

Gleaner®

A65 / A75 Combine

SERVICE MANUAL 79027302 A Rev.

10 - Electrical

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Cab Electrical Component Location

FIG. 51: Radio Antenna (1) being installed.

Location:

In left-hand cab roof above exit door.

Comments:

Can access through opening for exit (unloading tube) light.

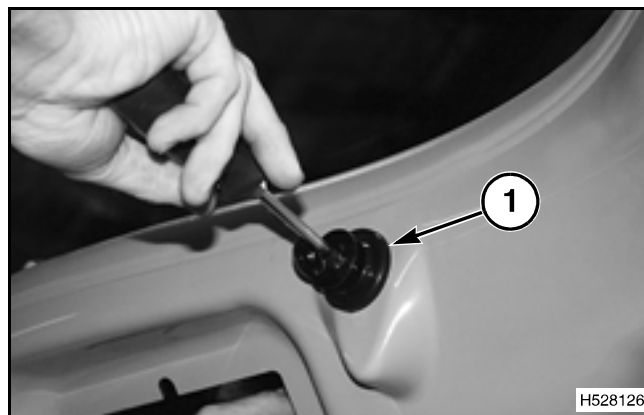


FIG. 51

POWER OUTLETS

FIG. 52: Lighter (1).

Location:

Right rear of operator seat in plastic enclosure under fuse panel.

Comments:

Remove plastic enclosure to access for removal.

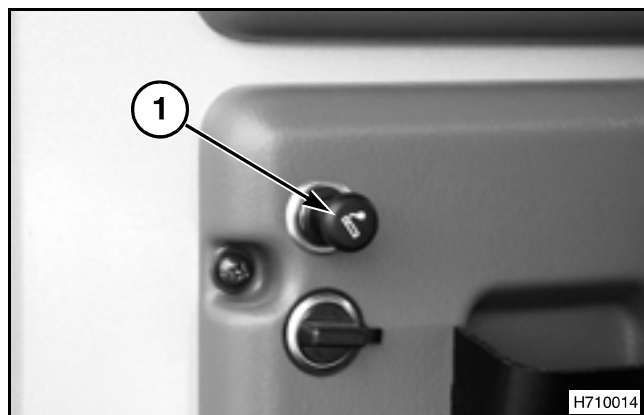


FIG. 52

FIG. 53: Auxiliary Power Socket (1).

Location:

Right rear of operator seat in plastic enclosure under fuse panel.

Comments:

Remove plastic enclosure to access for removal.

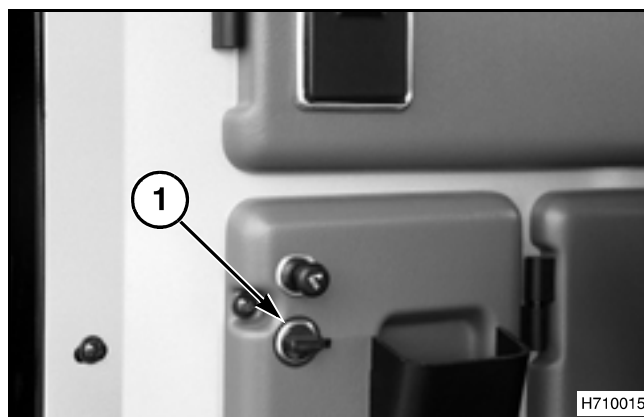


FIG. 53

Legend - Speed Sensors

Abbreviation	Description
REEL SPEED	Reel speed
ROTOR SPEED	Rotor speed
FAN/HYD HARNESS	Fan/Hydraulic Harness
GRAIN BIN HARNESS	Grain bin harness
MAIN HARNESS	Main harness
SEPR FAN SPEED	Separator fan speed
SPREADER	Spreader
CLEAN GRAIN	Clean grain
TAILINGS RETURN	Tailings return
BEATER SPEED	Beater speed
GROUND SPEED	Ground speed
CLEANING SHOE	Cleaning shoe

Notes

(A) - Voltage to sensors is approximately 10 volts DC. When sensor is installed, voltage will be approximately 8.5 volts DC without a target and approximately 7 volts DC with a target present. During operation it will be a square wave at the detected frequency. Higher or lower voltages indicate failures and will be displayed in the cab.

Wiring Diagrams

Concave and Separator Fan, RWA, Beeper

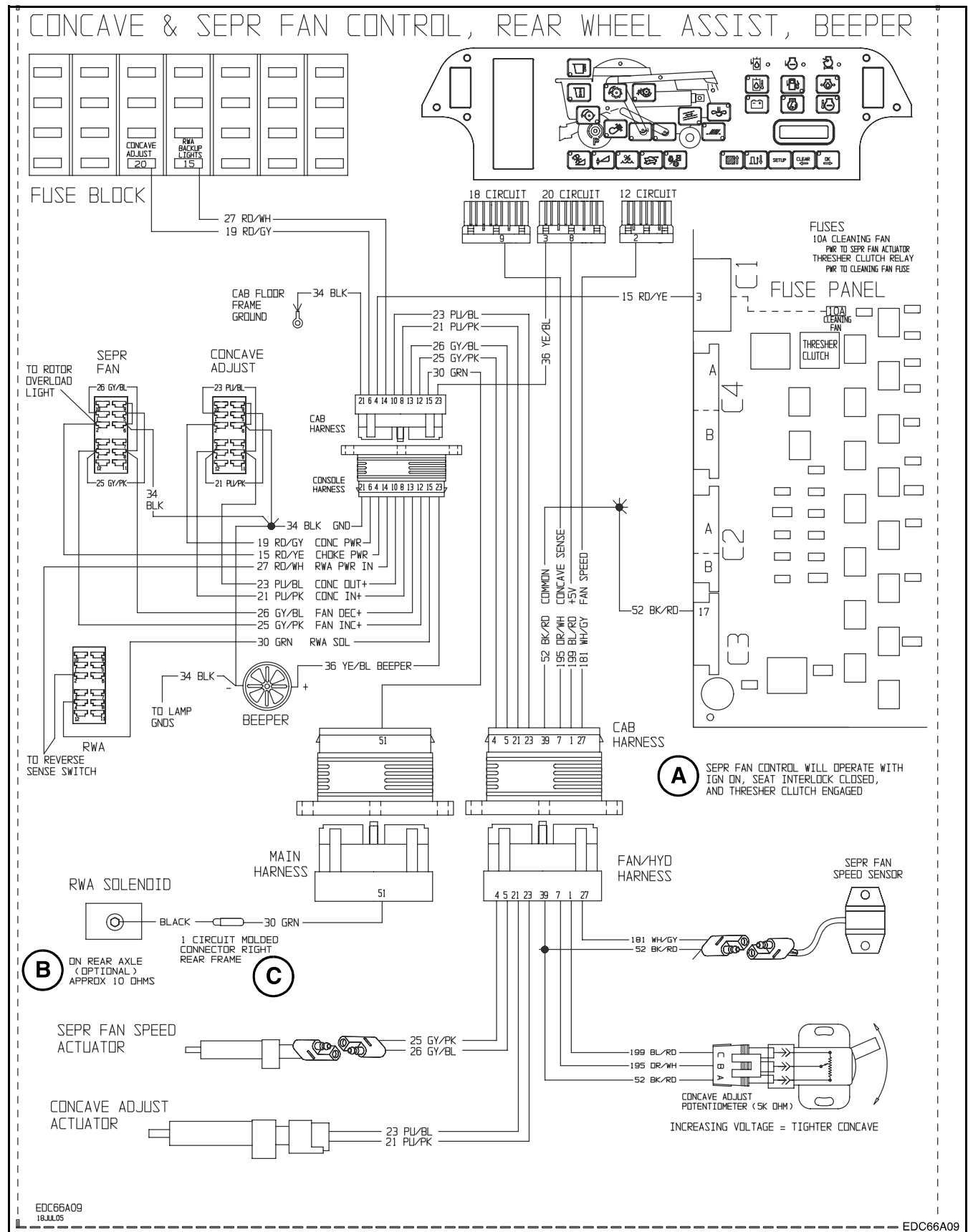


FIG. 84

FIG. 84: Concave and Separator Fan, RWA, Beeper

Legend - Clutch, Feeder Reverser, Chaff Spreader

Abbreviation	Description
CHAFF SPREADER	Chaff spreader
FAN/HYDRAULIC HARNESS	Fan/Hydraulic harness
FEED REVERSE SWITCH	Feeder reverse switch
HEADER CLUTCH	Header clutch
HEADER CLUTCH SWITCH	Header clutch switch
ROTOR SPEED	Rotor speed
SEAT INTERLOCK SWITCH	Seat interlock switch
SOLENOID VALVES	Solenoid valves
THRESHER CLUTCH	Thresher clutch
THRESHER CLUTCH SWITCH	Thresher clutch switch
TO IGN SWITCH	To ignition switch
TO ROW FINDER RELAY	To row finder relay

Notes

- (A) - With ignition ON and seat interlock closed, main module logic engages thresher clutch relay, providing power to circuit 13 and clutch switches. Circuit 22 engages header clutch relay. If seat interlock switch is opened, the clutch relays open after a short delay.
- (B) - 7.2 ohms feed reverse coil.
10 ohms common and chaff spreader coils

Fieldstar, Moisture



- 10 - Not used
- 11 - BN/GN 0.8/18 gauge, POT sensor
- 12 - BN/YE 0.8/18 gauge, POT high

Item 22: EIP Ground - BK 0.8/18 gauge

Item 23: Bin Beacon Enable - Hella Socket 87127

- 85 - WH/YE 0.8/18 gauge, bin level signal in
- 86 - RD 0.8/18 gauge, beacon enable, acc fused power
- 30 - RD/WH 0.8/18 gauge, beacon bin enable
- 87A - WH/RD 1.0/16 gauge, beacon bin output

Item 24: Head Lights - Carlingswitch Connector LC1-05

- 2 - RD 2.0/14 gauge, power in
- 4 - PK/BK 2.0/14 gauge, headlight/PCB
- 6 - RD 2.0/14 gauge, power in
- 8 - PK/BK 0.8/18 gauge, field lights
- 9 - BK 0.8/18 gauge, ground
- 10 - PK/BK 0.8/18 gauge, switch backlight

Item 25: Field Lights - Carlingswitch Connector LC1-04

- 2 - YE/RD 2.0/14 gauge, roof field light - power
- 4 - YE 1.0/16 gauge, roof/field lights
- 6 - YE/RD 2.0/14 gauge, field light power
- 8 - GN 2.0/14 gauge, field light
- 9 - BK 0.8/18 gauge, ground
- 10 - PKBK 0.8/18 gauge, switch backlight

Item 26: Rear Work Lights - Carlingswitch Connector LC1-03

- 2 - OR/BK 2.0/14 gauge, power in
- 4 - YE 2.0/14 gauge, rear work lights
- 9 - BK 0.8/18 gauge, ground
- 10 - PKBK 0.8/18 gauge, switch backlight

Item 27: Beacon Light - Carlingswitch Connector LC1-02

- 2 - RD 1.0/16 gauge, power in
- 4 - WHRD 1.0/16 gauge, beacon light
- 9 - BK 0.8/18 gauge, ground
- 10 - PK/BK 0.8/18 gauge, switch backlight

Item 28: Exit/Unloader Light - Carlingswitch Connect LC1-01

- 2 - RD 0.8/18 gauge, power in
- 4 - RDWH 0.8/18 gauge, exit light
- 9 - BK 0.8/18 gauge, ground
- 10 - PK/BK 0.8/18 gauge, switch backlight

Item 29: EIP to Console - AMP Connector 176119-8

- 1 - RD 1.0/16 gauge, EIP ignition
- 2 - YE/PK 0.8/18 gauge, display select
- 3 - YE/BL 0.8/18 gauge, beeper
- 4 - DRN 0.5/20 gauge, CAN shield
- 5 - YEL .05/20 gauge, CAN hi
- 6 - GRN 0.5/20 gauge, CAN low
- 7 - Not used
- 8 - BL/RD 0.8/18 gauge, +5 volts sensor reference
- 9 - Not used
- 10 - RD 0.8/18 gauge, battery
- 11 - BK 1.0/16 gauge, battery ground
- 12 - WH/YE 0.8/18 gauge, bin full switch
- 13 - OR/BK 0.8/18 gauge, stone trap door switch
- 14 - BL 0.8/18 gauge, park brake switch
- 15 - YE/OR 0.8/18 gauge, rotor pressure overload switch
- 16 - PK 0.8/18 gauge, air filter switch
- 17-20 - Not used

Item 30: EIP to Console - AMP Connector 176116-6

- 1 - WH/BL 0.8/18 gauge, beater speed
- 2 - WH/GY 0.8/18 gauge, chopper fan speed
- 3 - Not used
- 4 - Not used
- 5 - PK/WH 0.8/18 gauge, clean grain speed
- 6 - GN/YE 0.8/18 gauge, ground speed
- 7 - GN/BK 0.8/18 gauge, return elevator speed
- 8 - GN/OR 0.8/18 gauge, shoe speed
- 9 - WH/OR 0.8/18 gauge, distribution auger speed
- 10 - WH/GN 0.8/18 gauge, spreader speed
- 11 - Not used
- 12 - Not used

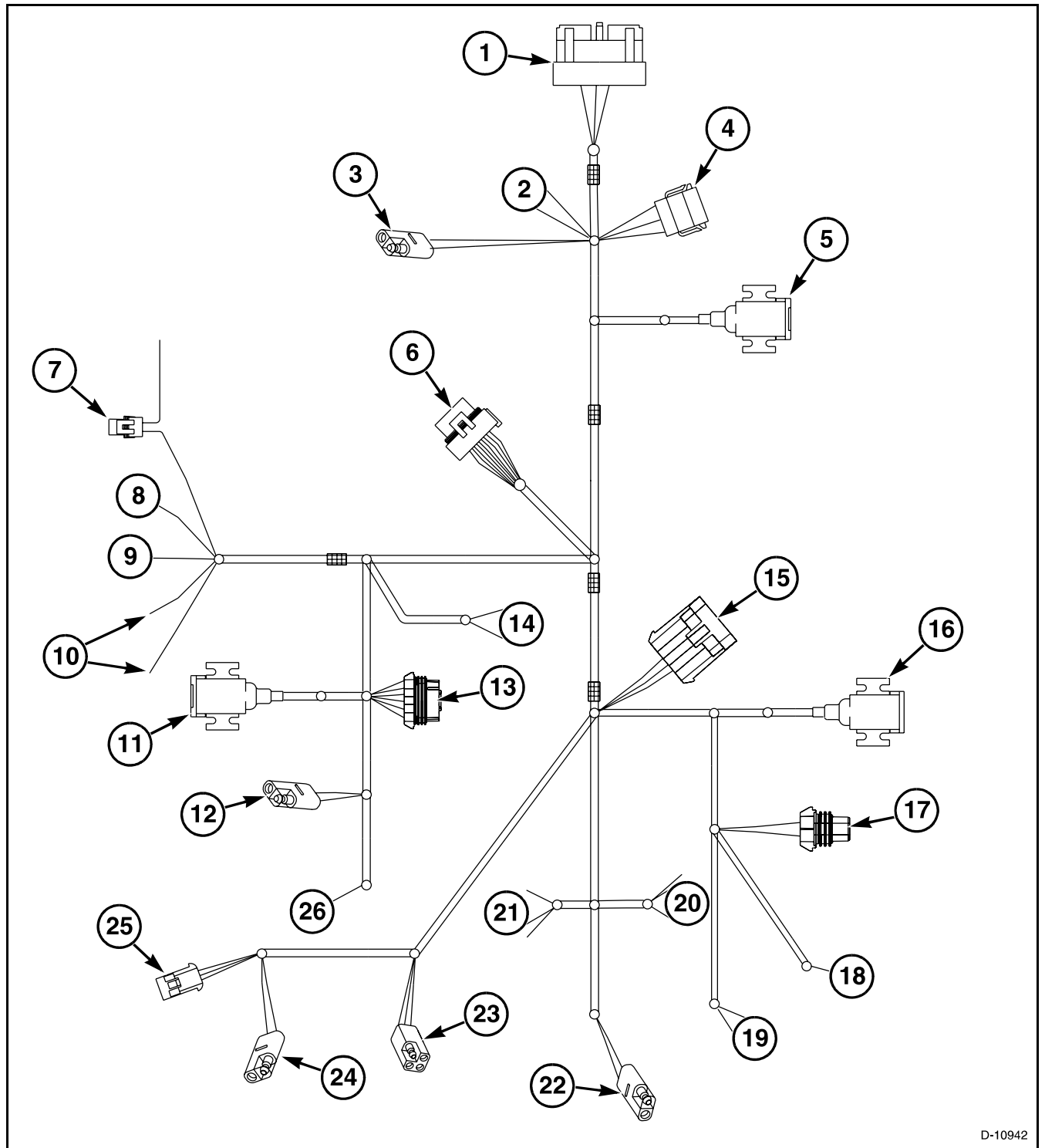
Item 31: EIP to Console - AMP Connector 176118-6

- 1 - BN/RD 0.8/18 gauge, cab temperature
- 2 - BN/WH 0.8/18 gauge, external temperature
- 3 - Not used
- 4 - BL/WH 0.8/18 gauge, hydraulic oil temperature
- 5 - Not used
- 6 - BN/RD 0.8/18 gauge, hydraulic oil level
- 7 - Not used
- 8 - BL 0.8/18 gauge, coolant level probe
- 9 - OR/WH 0.8/18 gauge, concave potentiometer
- 10 - GY/WH 0.8/18 gauge, choke potentiometer

Wiring Harness

MAIN HARNESS

Combines with Serial Numbers:
HR87101-HR87999 and HR36101-HR36999



D-10942

FIG. 159
FIG. 159: Main Wiring Harness for Combines with Serial
Numbers: HR87101-HR87999 and HR36101-HR36999

FIG. 176: Main thresher clutch.

Location:

Above thresher clutch assembly, attached to A-frame bolt (1).

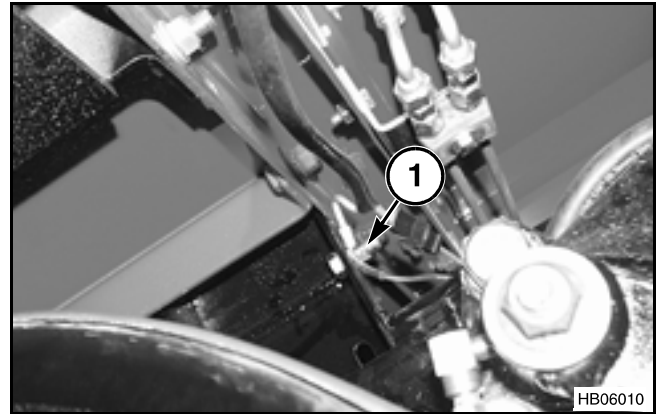


FIG. 176

FIG. 177: Header clutch

Location:

Slightly above and forward of header clutch assembly, attached to brace (1).

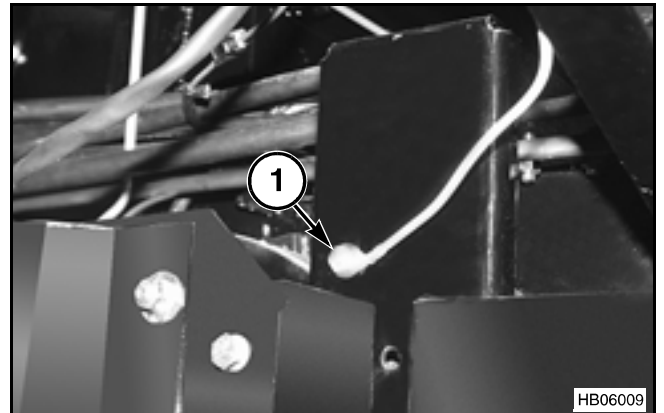


FIG. 177

FIG. 178: Battery ground

Circuit: Black

Location:

Stud (1) on starter.

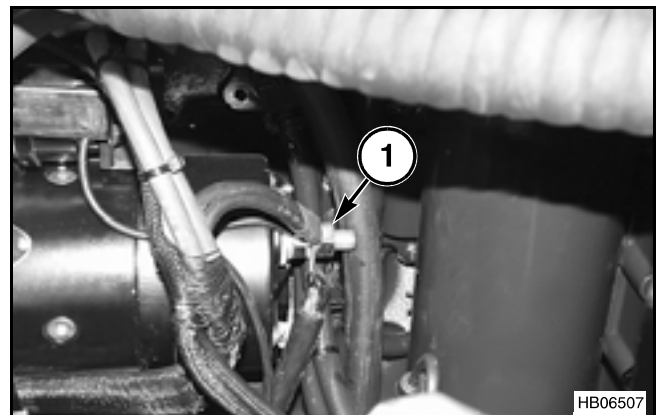


FIG. 178

FIG. 179: Air conditioning compressor clutch.

Location:

At clutch to top of compressor housing (1).

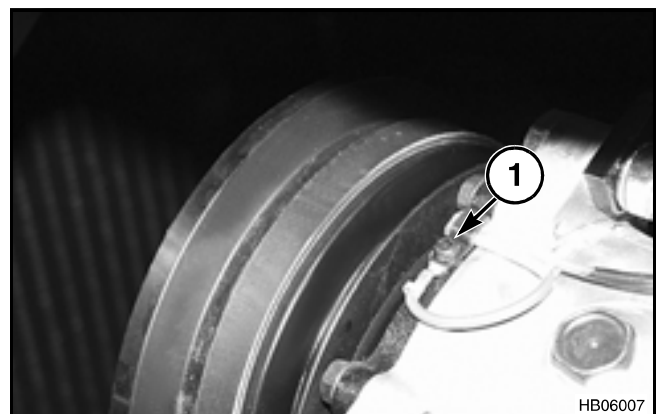


FIG. 179

Combine Module Can Software Downloader

FIG. 24: At the Setup screen choose Typical (1) for the type of Setup and then click Next.

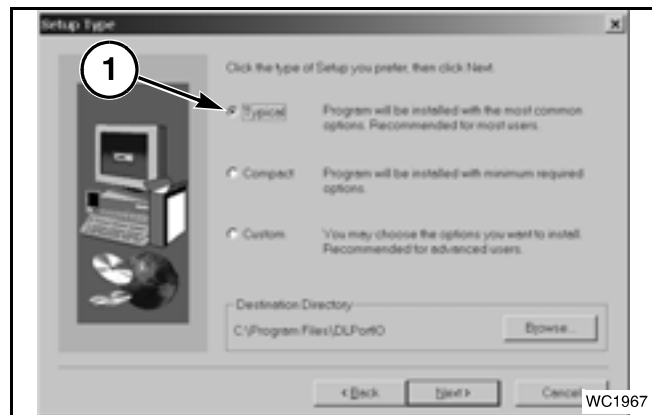


FIG. 24

FIG. 25: Follow the instructions on the remaining screens. Click on Finish (1) to complete the installation. Windows will then restart your computer.

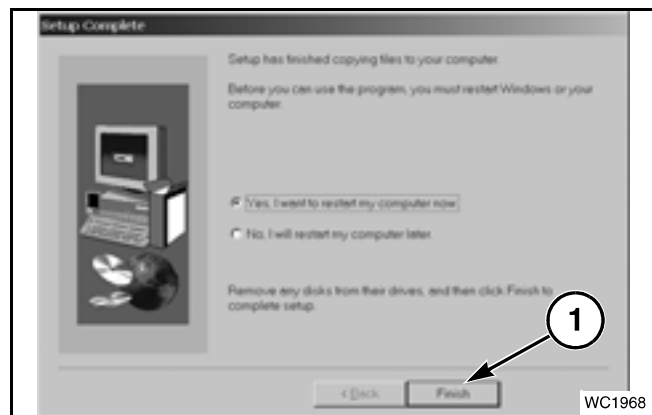


FIG. 25

ELECTRONIC INSTRUMENT PANEL

GENERAL INFORMATION

General

FIG. 73: The electronic instrument panel (EIP) is located in the upper front of the cab headliner.

The EIP interfaces with the operator using a LCD display, 37 multi color LED's, 28 membrane switches, and a buzzer controlled by the EIP.

Adjustable back lighting is set in Setup 1 mode...BK LIGHT.



FIG. 73

FIG. 74: The EIP monitors shaft speeds, analog sensors (voltage, temperature, pressure, etc.), and digital inputs (switches).

Operator interface is through some 28 membrane switches on the EIP panel. The EIP supports all combine models (model is set in setup mode #2). The electronic (hardware and software) and mechanical construction are identical except for the front EIP decal.



FIG. 74

Electronic Instrument Panel

- After five seconds, power is turned back on until a fault is detected or until 20 seconds have passed.
- If 20 seconds passes with the sensor reading okay, the alarm is turned off.
- If a fault is detected, the sensor is turned off for another five seconds until it is tested again.
- Class 2 audible alarm.

Display Type

- Range is not displayed.

Alarm Conditions

- The hydraulic oil level is low.
- LCD shows message HYD LVL.LOW.
- The red LED flashes two times every second when the hydraulic oil level is low.
- An alarm is noted by the buzzer sounding five times every ten seconds.
- The green OK LED turns off.

FIG. 126: Rotor Pressure Overload Switch.

Description

- Open/ground type switch.
- Class 1 audible alarm.

Display Type

- Range not displayed.

Alarm Conditions

- Switch closes (to ground) when the pressure is too high.
- The red LED turns on.
- The buzzer sounds a unique sound in this condition (continuous output at a frequency of 20 times a second, approximately 25% duty cycle).
- The green OK LED turns off.

FIG. 127: Park Brake Switch.

Description

- Switch open from ground when the parking brake is engaged.
- Class 1 audible alarm.

Display Type

- The red LED turns on when parking brake is engaged.

Alarm Conditions

- If the combine is moving, the buzzer will sound continuously until the combine is either stopped or the parking brake is disengaged.
- The green OK LED turns off.
- LCD shows message PARK .BRAKE .

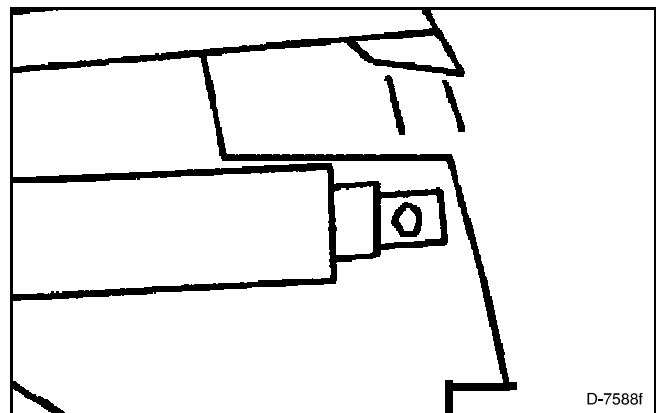


FIG. 126

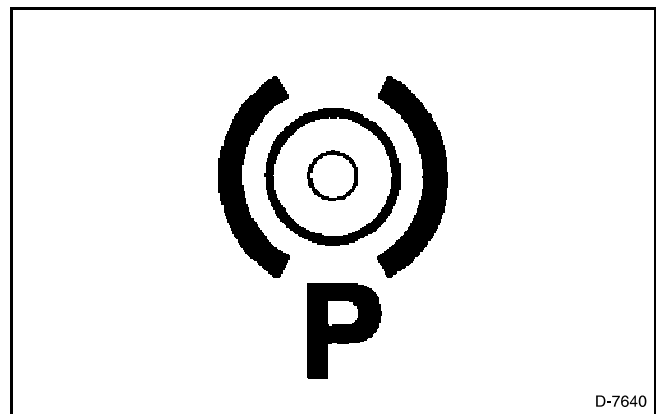


FIG. 127

Engine Trouble Codes

NOTE: Refer to Engine Manufacturer Troubleshooting and Repair Manual Electronic Control System or Engine Distributor for detailed information on fault codes.

Trouble Code	Engine RPM LED	Description
17	Yellow	Battery voltage LOW
18	Yellow	Battery voltage HIGH
19	Yellow	Battery voltage NO SIGNAL
80	Yellow	Throttle 1 sensor defect HIGH (IDLE)
81	Yellow	Throttle 1 sensor defect LOW (IDLE)
82	Yellow	Throttle 2 sensor defect HIGH (IDLE)
83	Yellow	Throttle 2 sensor defect LOW (IDLE)
84	Yellow	Throttle 3 sensor defect HIGH (IDLE)
85	Yellow	Throttle 3 sensor defect LOW (IDLE)
92	Yellow	Oil pressure ABOVE NORMAL
93	Yellow	Oil pressure NO SIGNAL
94	Yellow	Engine speed signal ABOVE NORMAL
95	Yellow	Oil pressure sensor defect
96	Yellow	Oil pressure sensor defect LOW
97	Yellow	Oil pressure sensor defect HIGH
98	Yellow	Oil pressure LOW
99	Red	Oil pressure LOW, ALARM
100	Yellow	Boost pressure sensor defect LOW
101	Yellow	Boost pressure sensor defect HIGH
102	Yellow	Boost pressure LOW
103	Yellow	Boost pressure ABOVE NORMAL
104	Yellow	Boost pressure NO SIGNAL
110	Yellow	Coolant temperature sensor defect LOW
111	Yellow	Coolant temperature sensor defect HIGH
112	Yellow	Coolant temperature HIGH
113	Red	Coolant temperature HIGH, ALARM
114	Yellow	Intake manifold temp. sensor defect LOW
115	Yellow	Intake manifold temp. sensor defect HIGH
116	Yellow	Intake manifold temp ABOVE NORMAL.
117	Yellow	Intake manifold temp. sensor NO SIGNAL
121	Yellow	Water in fuel
122	Yellow	Fuel filter pressure LOW
146	Yellow	Requested speed out of range LOW (less than 500 rpm)

NOTES

Control Module Default (Manual) Mode

FIG. 299: The control module is designed to recognize certain mechanical and/or electrical defects as faults and automatically shut off.

NOTE: *When the control module automatically shuts off (as described above) the module goes into manual mode.*

The control module will default whenever any of the following conditions exist:

- If any circuit to the sensor is faulty, the system defaults to manual.
- If any mechanical fouling of the header sensing mechanism prevents the sensor arms from moving and producing a higher signal voltage after the control module has actuated the hydraulic valve to raise the header frame.

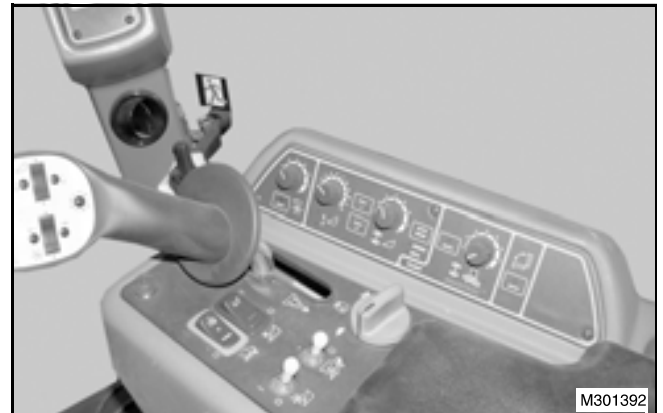


FIG. 299

System Components

FIG. 300: There are four major systems that make up the AHHC system.

- Four sensors (potentiometers) that are mounted throughout header and feeder house
 1. Right and left header sensors are mounted on header and give a direct indication on how far off the ground header is. The sensors may not always be present since some headers use them and others do not.
 2. Feed house angle sensor is mounted on feed house of combine and is always present. It estimates header height by measuring the angle the feed house makes at its pivot point with the combine.
 3. Tilt sensor is mounted at header tilt pivot point. Its lowest value occurs when the header is tilted full left (left side down) and its highest value corresponds with header tilted full right (right side down). It provides input to control module which indicates whether header is level with respect to combine. Sensor is present with the tilt option.
- Main module (PCB board) and header driver module (PCB board) mounted in card box (1) in fuse panel module (FP)
- Control handle operator inputs.
- Operator inputs mounted in the control console module (CC) panel.

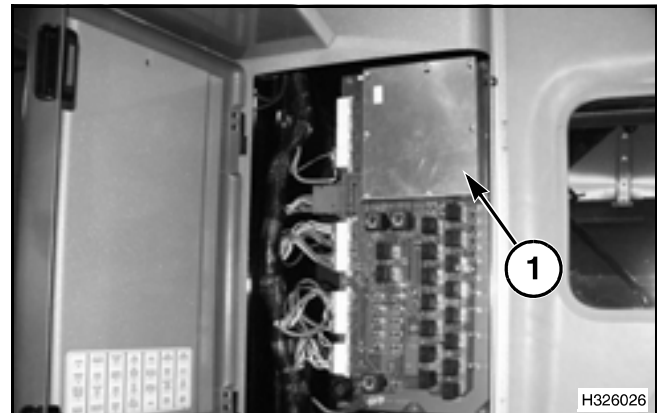


FIG. 300

NOTE: *In addition to the above components, the electro-hydraulic header lift control valve must also be considered an integral part of the AHHC system. (Detailed service information on the valve is located in the Hydraulic division).*

Console Controller

Diagnosis of Fault Codes

Fault code 11 - Raise Solenoid failure.

PROBLEM/EFFECT	POSSIBLE CAUSE	CORRECTION
Raise solenoid failure -Header will not raise in manual mode NOTE: Failure code caused by not detaching current flow to solenoid.	Conditions: -Ignition key off	
	FP 10A fuse Header Height/Tilt power to solenoids through relays blown	Replace fuse in FP
	FP 3A fuse Hydraulic Handle/Seat Interlock blown	Replace fuse in FP Fuse Block
	Header raise relay failure in FP	Replace relay in Fuse Panel (FP)
	Conditions: -Ignition key off -disconnect GY/RD wire #146 from solenoid	
	Valve raise solenoid field coil failure -Measure resistance from solenoid terminal to ground	1) If R = 0 ohms or infinity, replace coil
		2) If R = approximately 7.2 ohms, coil is OK. Go to next cause.
	Harness connectors and/or FP connector pins are: -Connectors have separated -Bent or broken pins -Pushed back or expanded pins -Corroded pins -Moisture in or on the connector -Missing or damaged connector seals	Check all connectors from FP to solenoid valve
		Repair damaged harness connector pins or replace harness
		Replace FP module if pins are damaged
	No +12V input to coil -Circuit #146 is open? -Measure resistance of connector C4B pin #5 to ground.	1) If R = 0 ohms or infinity, repair or replace defective harness 2) If R = approximately 4.2 ohms, harness is OK. Go to next cause.

Fault code 55 - Feeder House Height Sensor failed calibration

PROBLEM/EFFECT	POSSIBLE CAUSE	CORRECTION
Feeder House Height Sensor failed calibration -EIP header height LED flashing and feeder house angle sensor calibration fault. Input voltage must change at least .75V from full height to resting on ground. NOTE: Failure code caused by not detecting at least .75V difference during calibration.	Feeder house height sensor may never have been calibrated.	Calibrate automatic header and tilt system following the procedure in this manual.
	Conditions: -Ignition key off	
	Potentiometer linkage is out of adjustment or stuck.	1) Check and set feeder house height sensor linkage using sensor linkage settings section of the manual 2) If linkage was out of adjustment, calibrate system. Set header height control at dial midpoint and header sensitivity fully counter clockwise (least sensitive).
	Conditions: -Transmission in neutral -Parking brake on -Operator in seat -Engine running -Header and thresher clutch engaged	
		3) Connect VOM to FP test pin outs height and +5VGND. With header automatic height system in manual mode, test for decreasing signal voltage by lowering header to the ground. Voltage range must be more than .75V. If there is some change but less than .75, sensor linkage is out of adjustment or sensor is failed. 4) Calibrate automatic header height and tilt system following the procedure in this manual. 5) If fault code 55 is set, go to next cause.
	Feeder house height potentiometer failed -Disconnect 3 pin connector at sensor -Measure resistance between terminals 1 and 3, and 3 and 2. -As potentiometer arm is rotated, resistance in both circuits should read R approximately 500 ohms to 5000 ohms	1) If resistance is out of range, replace potentiometer and calibrate. 2) If resistance is OK, go to next cause.
	Signal line circuit may be crossed with the sensor input +V circuit or sensor common circuit.	1) Correct or replace faulty harness and connector. calibrate system. 2) If wiring is correct and system does not calibrate, replace FP header driver PCB module.

Operator's Seat

OPERATION

FIG. 3: The operator's seat is designed to provide comfort and easy operation.

The operator's seat can be adjusted as follows:

- The armrest knob (1) is used to tilt the left-hand armrest up or down to the best operating position.
- The backrest lever (2) is used to adjust the backrest. Lift the lever and tilt the backrest to the desired position. Release the lever to hold the backrest in the selected position.
- The headrest (3) can be raised or lowered as necessary.

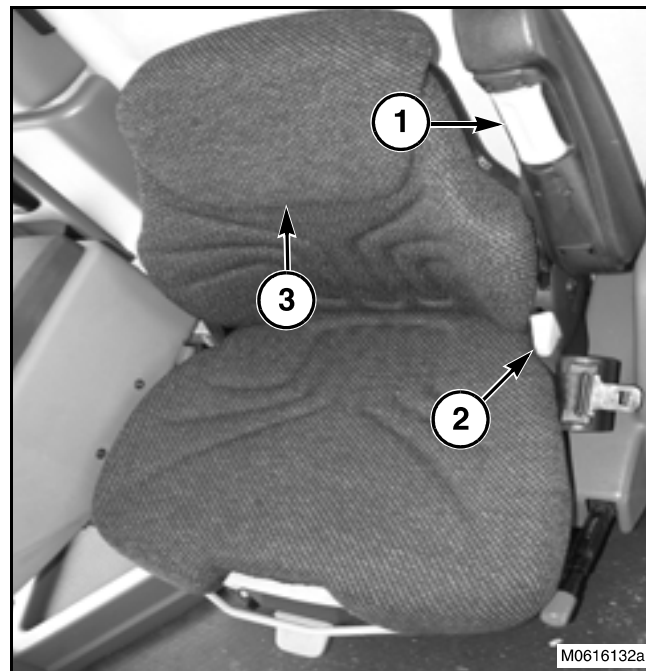


FIG. 3

FIG. 4: The operator's seat can be adjusted as follows:

- The fore and aft bar (1) is used to move the seat fore and aft for different operator size. Lift the bar up and move the seat to the required position. Release the bar to hold the seat in the selected position.
- The height adjustment switch (2) controls the air pressure used to adjust the seat height. With the key on, lift the switch up to increase air pressure and raise the seat. Push the switch down to decrease air pressure and lower the seat.
- The seat cushion angle adjustment lever (3) changes the angle of the seat cushion. Pull lever up and move end of seat cushion up or down as desired and release lever. Make sure that the lever locks the seat cushion into position.
- The seat cushion depth adjustment lever (4) changes the position of the seat cushion. Pull lever up and slide seat cushion forward or rearward to desired position and release lever. Make sure that the lever locks the seat cushion into position.

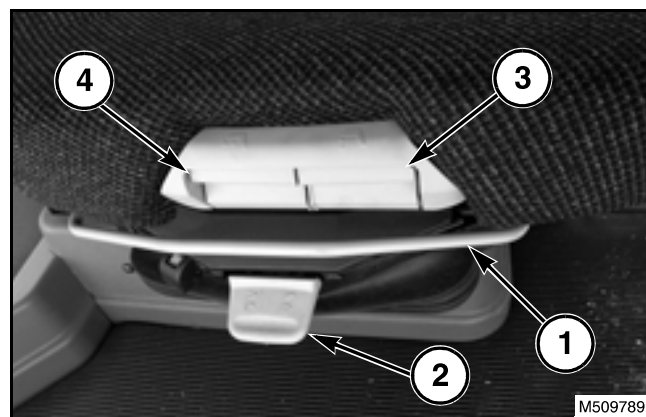


FIG. 4

Turn Signal Switch

FIG. 5: Moving the turn signal switch lever (1) to the rear position signals a left turn. Moving the turn signal switch lever to the forward position signals a right turn.

NOTE: The lever must be moved back to the center position manually to stop the turn signal.

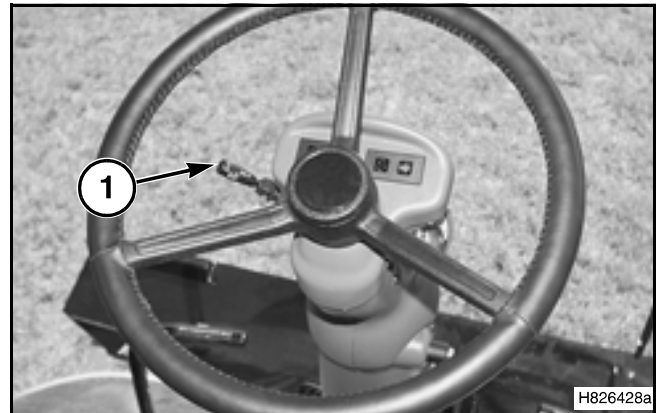


FIG. 5

Ignition Switch

FIG. 6: The ignition switch (1) is a key type switch with Accessory (2), Off (3), On (4), and spring loaded Start (5) positions.

With the ignition switch in the Off position, electrical power is available to the 12V power supply, auxiliary power receptacle, service lamps, head lamps, work lamps, flasher or hazard lamps, cab interior lamps, turn signal and horn switch.

When rotated to the Acc position, power is available to all that is available with the switch in the Off position as well as the radio, cab blower (fan), windshield wiper and global positioning system (optional accessory).

When turned to On position, power is available to all that is available with Accessory and Off position as well as the main monitor and gauges, header and thresher clutches (if seat switch is engaged), and the rear wheel drive switch.

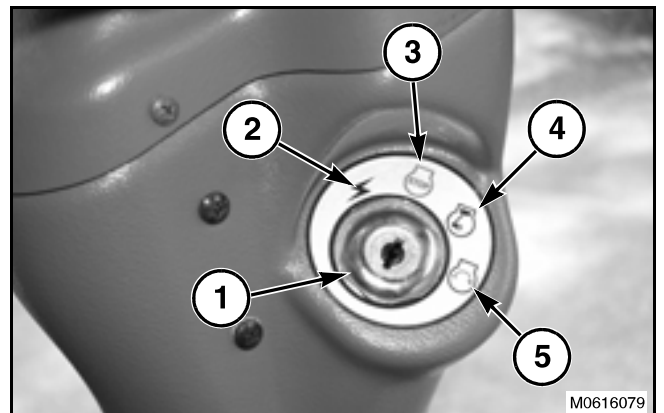


FIG. 6

Headliner

MAIN HEADLINER

Main Headliner Removal

FIG. 7: Remove the overhead lamp lens (1) from the overhead lamp (2). Apply pressure to the long sides of the lens and pull down on the lens.

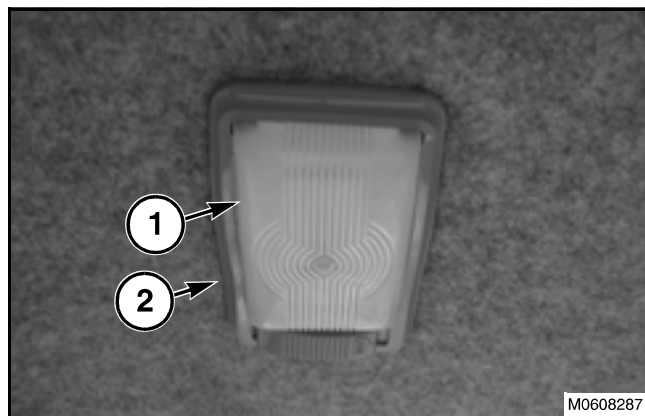


FIG. 7

FIG. 8: Remove the four screws (1) that fasten the overhead lamp (2) to the headliner.



FIG. 8

FIG. 9: Disconnect the electrical connector (1) in the back of the overhead lamp.

Remove the screw (2) that fastens the overhead lamp ground wire (3) to the cab.

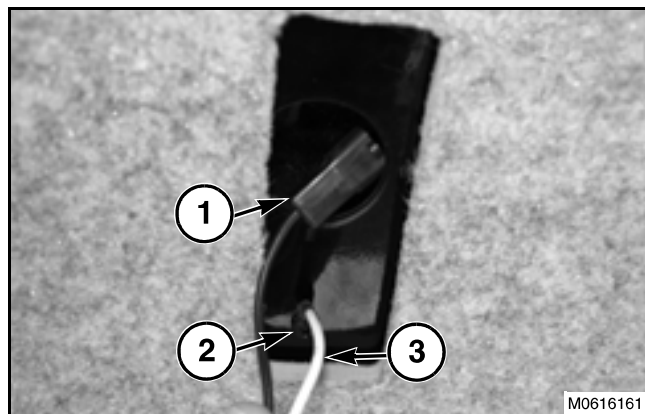


FIG. 9

FIG. 46: Install the panel assembly and the plate to the cab frame using the screws (1).

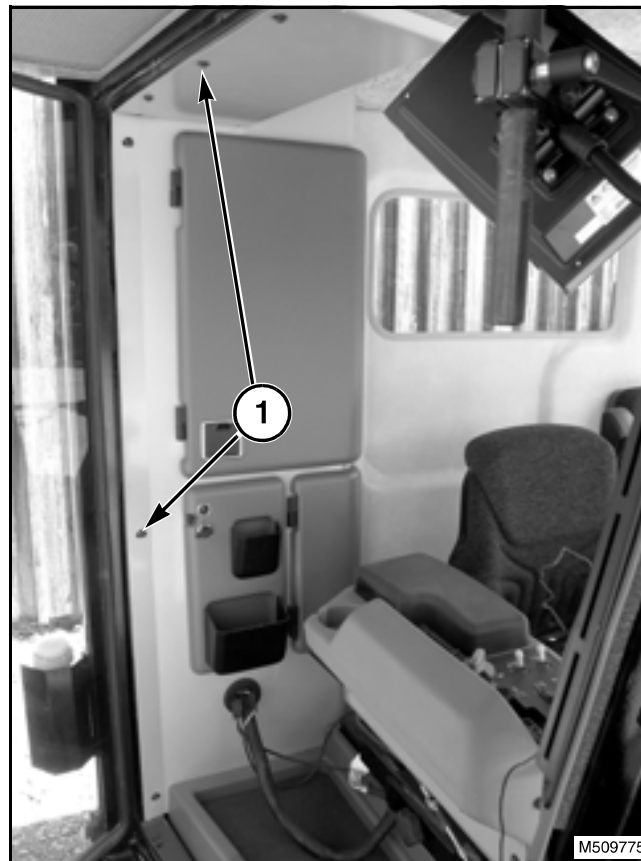


FIG. 46

FIG. 47: Install the pin (1) in the window latch assembly, and close the side window.

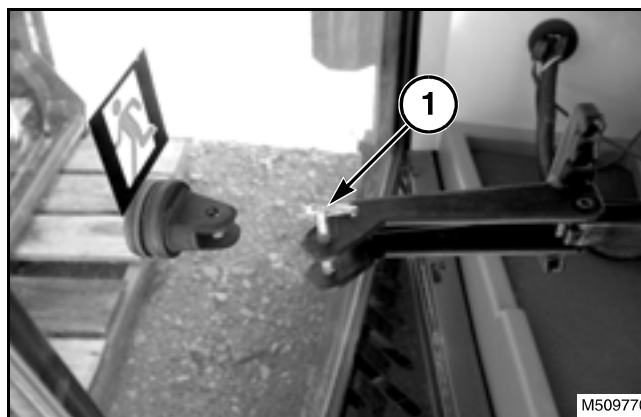


FIG. 47

Air Conditioning and Heating

SERVICING REFRIGERATION SYSTEM

Preliminary Checks

Procedure

The most common problem with air conditioning systems is no cooling or not enough cooling. The preliminary checks below must be carried out before any disassembly or testing of the system.

There are three (3) basic sections to total Diagnosis:

- Refrigeration - Determining the system has a full, but not excessive refrigerant charge.
- Electrical - Determining whether the electrical components (switches, thermostat, blowers, and clutch) of the system are operating correctly.

NOTE: Electric coolant valve and control system (potentiometer) malfunction can be separated from bad air conditioning performance by closing the water valve at the engine.

- Mechanical - A check of the air passages and ducts, refrigerant lines and hoses, compressor drive belt, etc., to make sure these pieces are operating properly before looking for faulty units in the refrigeration system.

Check the Easy Items First

Diagnosis of air conditioning systems must be done in a specific order starting with the easiest and most common problems. The following items must be checked before moving on:

- Close off the water supply at the engine.
- Check the engine cooling system, and make sure there are no leaks and the coolant level is correct.
- Check the compressor drive belt. The belt must be in good condition with the correct tension.

IMPORTANT: Heat generated during slippage of the drive belt is one of the more common reasons for clutch and compressor front seal failures.

- Check the condenser, coolers, and engine radiator and make sure the cores are not blocked with dirt or debris. Clean with compressed air or water.

The condenser, cooler, and radiator fins must not be bent or damaged. Air must be able to flow through freely. Special fin combs are available to straighten fins.

- Check the screens to make sure the screens are not blocked with dirt or debris. Clean with compressed air or water.
- Check the cab air filter, heater and air conditioning module filter under the cab, and the recirculation filter in the cab for blockage. Clean or replace the elements as necessary.
- Check the blower and ducts for correct operation.

- Make sure the main air conditioning system and compressor fuses are not blown.
- Inspect all the lines and fittings for signs of dirt, oil deposits, or moisture as this can indicate leakage. Make sure there are no sharp bends or signs of wear because of not enough clearance.
- Make sure the compressor clutch engages when the temperature control is turned to full cold and the air conditioning switch is ON. If not, check the electrical system. Check the condition of all wiring connections.
- Make sure the evaporator drain tubes are clear at the bottom of the heating and air conditioning unit under the cab.

Test Condition 2

FIG. 67: Excessive moisture.

Gauge Readings

Low side gauge - normal.

High side gauge - normal.

Other Indications

Discharge air - becomes warm as the low side cycles to vacuum. As the moisture is released by the desiccant, the moisture becomes stopped and freezes at the expansion valve, blocking R-134a flow into the evaporator.

Discharge air - becomes warm all the time during the hot part of the day. Warmer ambient temperatures cause more moisture to be released from the desiccant. The moisture assembles and freezes at the expansion valve, blocking R-134a flow into the evaporator.

Diagnosis

Excessive moisture in the system.

Correction

1. Leak test the system. Leak test the compressor and the seal area very carefully.
2. Remove the refrigerant from the system.
3. Repair the leaks as located.
4. Replace the receiver drier.
5. Drain the oil from the compressor. Fill the compressor with the correct amount of new oil.
6. Evacuate the system for at least 60 minutes (DEEP VACUUM).
7. Charge the system with a measured weight of R-134a.
8. Operate the system and check the performance.

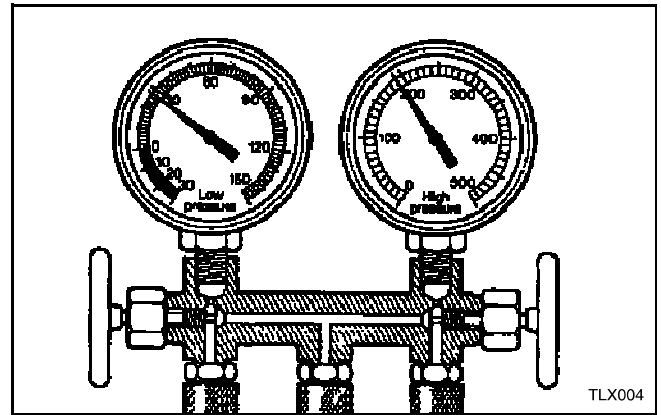


FIG. 67

Air Conditioning and Heating

FIG. 123: Prior to removing the refrigerant lines remove all the dirt and debris from the area.

Clean the area. The heating and air conditioning module must remain as clean as possible.

Disconnect the liquid (high pressure) line (1) from the expansion valve inlet, and disconnect the suction (low pressure) line (2) from the expansion valve outlet.

NOTE: Keep the open lines and fittings plugged. Do not let dirt or moisture enter the open lines.

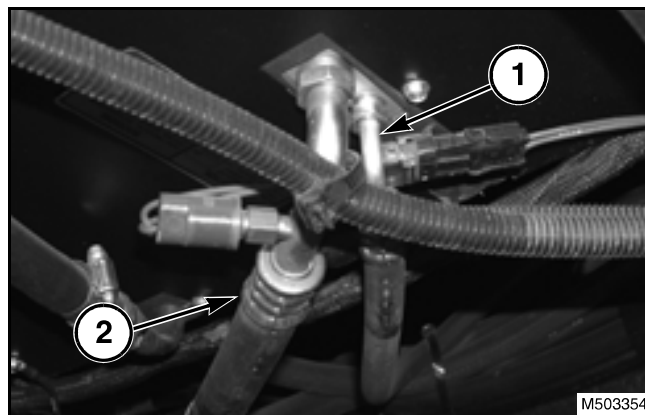


FIG. 123

FIG. 124: Remove the flexible air hose (1) from in front of the heating and air conditioning assembly to access the top evaporator retaining screw.

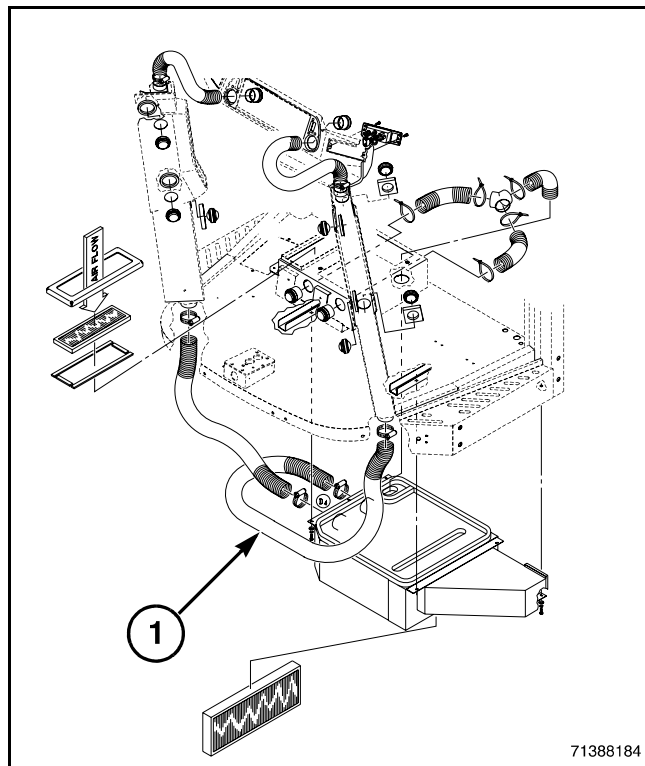


FIG. 124

FIG. 125: Access the top evaporator retaining screw (1) through the access opening in the cab frame (2) after the flexible air hose has been removed.

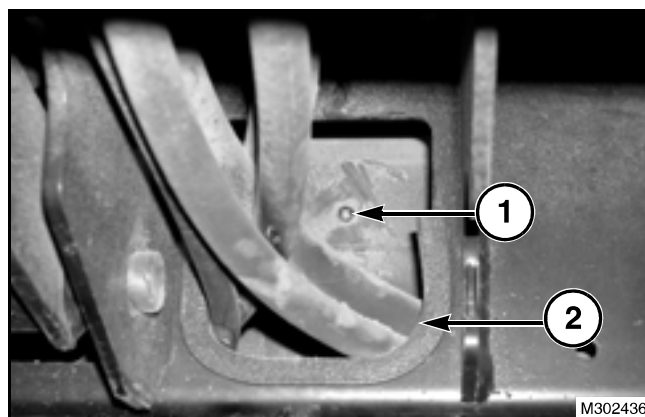


FIG. 125

FIG. 188: Resistance values in relationship to temperature for internal air temperature sensor testing.

Temperature	Resistance
Degrees C (Degrees F)	Ohms
-30 (-22)	173.9
-25 (-13)	128.5
-20 (-4)	95.89
-15 (5)	72.23
-10 (14)	54.89
-5 (23)	42.07
0 (32)	32.51
5 (41)	25.31
10 (50)	19.86
15 (59)	15.69
20 (68)	12.49
25 (77)	10.00
30 (86)	8.060
35 (95)	6.536
40 (104)	5.331
45 (113)	4.372
50 (122)	3.606
55 (131)	2.989
60 (140)	2.490
65 (149)	2.085
70 (158)	1.753
75 (167)	1.481
80 (176)	1.256

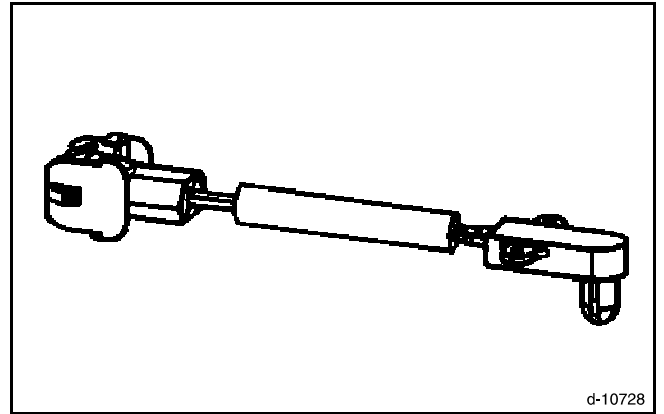


FIG. 188

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