SAFETY SIGNS

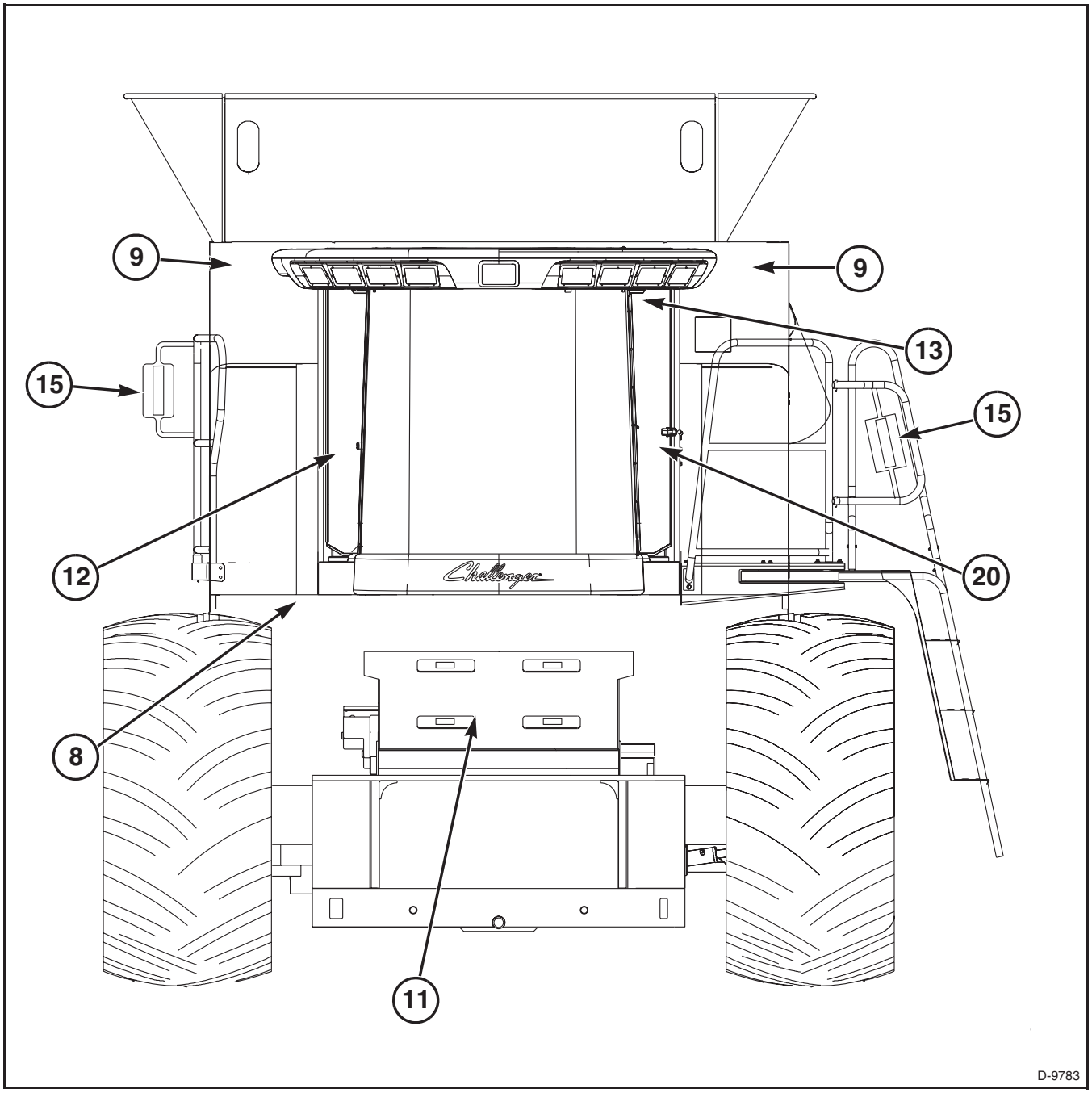

FIG. 28

FIG. 28: Safety sign locations, Front View.

FIG. 61

FIG. 61: Combine front view.

FIG. 62

FIG. 62: Combine rear view.

Drive Chain Lubrication

Drive chain service life will vary according to the method the chain is lubricated. A properly lubricated chain will last 100 to 200 times longer than the same chain which is poorly lubricated and not maintained.

Lubrication of the chain pins and inner link bushing surfaces which articulate with each other while the chain is under full load is most important. Lubrication to a smaller degree is also required between the chain rollers and inner link bushing surfaces.

Oil must be applied to the upper edges of the chain link side plates on the slack chain strand before the chain engages a sprocket. Since access of oil to chain pins and bushings is only possible through the clearances between the link side plates when the chain is slack.

If oil is applied only to the chain rollers the oil can not reach the chain link side plate pins and bushings, and cannot retard chain wear.

The elongation of roller chains results from wear between the pins and bushings only. Roller wear does not cause or add to the extending of roller chains.

Drive Chain Lubricants

Lubrication specifications are met by the use of a good grade of clean engine oil without detergents.

Detergent oils are not required but oils with anti-foam, anti-rust, or film strength additives can be beneficial.

The proper lubricant viscosity for many operating temperatures are shown in the chart below.

Ambient Operating Temperatures		**Recommended Lubricant**
degrees F	**degrees C**	**Viscosity**
-20 to 20	- 29 to - 7	SAE 10
20 to 40	- 7 to 4	SAE 20
40 to 100	4 to 38	SAE 30
100 to 120	38 to 49	SAE 40
120 to 140	49 to 60	SAE 50

NOTE: Heavy oils and greases are too stiff to enter the chain joints and must not be used.

FIG. 118: Remove the four capscrews (1) and washers retaining the lower fan shroud (2) to the radiator assembly.

Lift up on the lower fan shroud to disengage the fan shroud from the flanges on the radiator assembly. Remove the lower fan shroud.

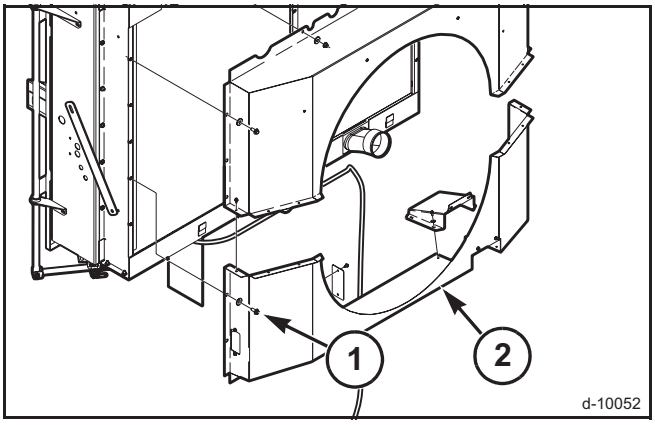

FIG. 118

FIG. 119: Remove the lower radiator hose (1) from the bottom of the radiator tank.

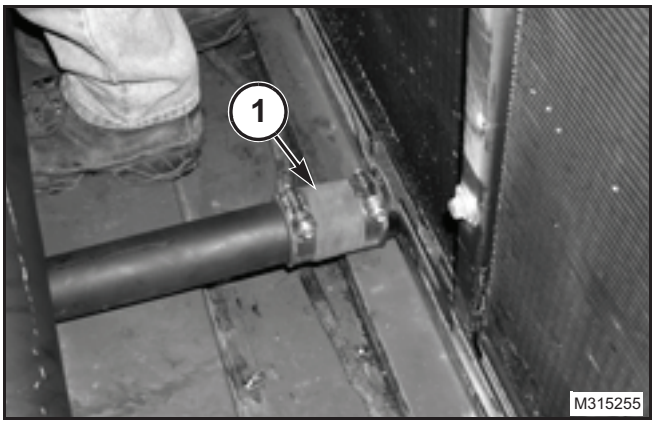

FIG. 119

FIG. 120: Remove the lower charge air cooler line (1).

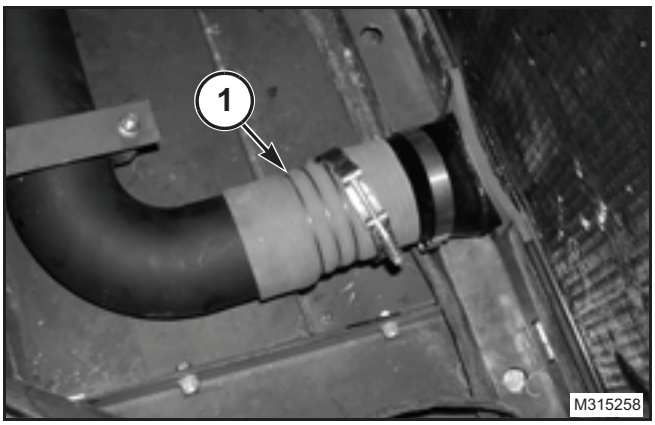

FIG. 120

FIG. 121: Remove the radiator drain valve (1) to prevent the drain valve from being damaged during the removal and handling of the radiator assembly.

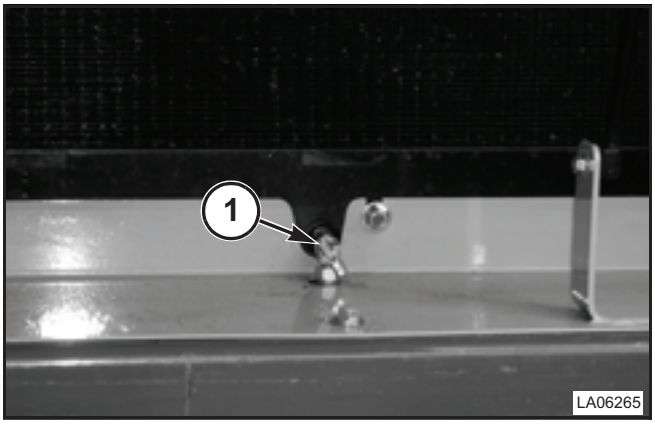

FIG. 121

FIGS. 211–213: Place the belt around the jackshaft sheave, over the flat idler (2), and against the inner sheave half (6) of the variable speed drive assembly.

Place the outer sheave half (4) against the hub. Secure the outer sheave half to the hub using the eight cap screws with lock washers (5). Tighten the cap screws securely.

Adjust the header drive belt tension with the tension-adjusting bolt (3) on the flat idler (2). Adjust the tension until there is a gap (A) of 2.75 to 2.85 mm (0.108 to 0.112 in) between the sheave valves (4) and (6) when the jackshaft sheaves are fully open.

NOTE: Rotate the sheaves by hand while making this adjustment to prevent the belt from being pinched in the sheaves. Check the adjustment after the combine has run a short time.

Tighten the nut (1) on the bolt securing the flat idler (2).

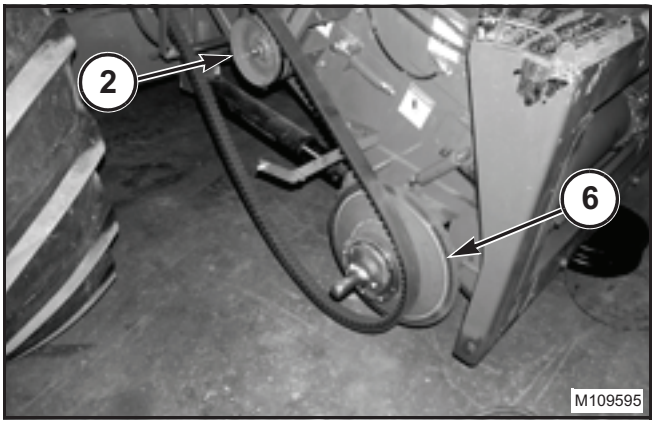

FIG. 211

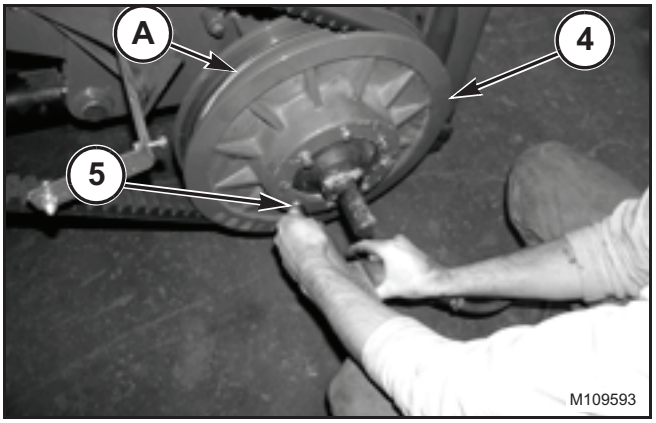

FIG. 212

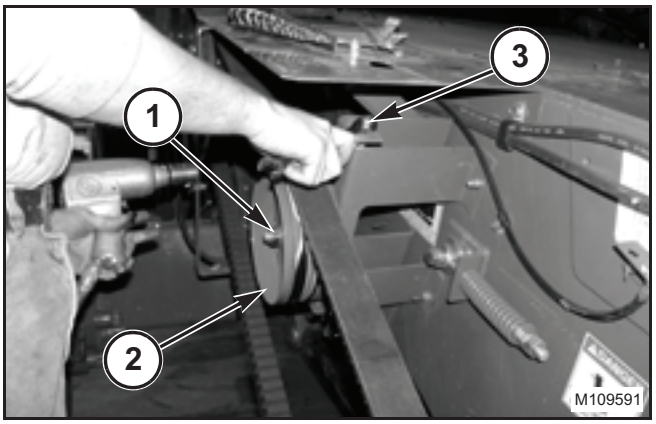

FIG. 213

FIG. 214: Remove the plug in the hose and the cap in the fitting in the rotary union used to prevent contamination of the system. Install the hydraulic hose (1) onto the rotary union (2).

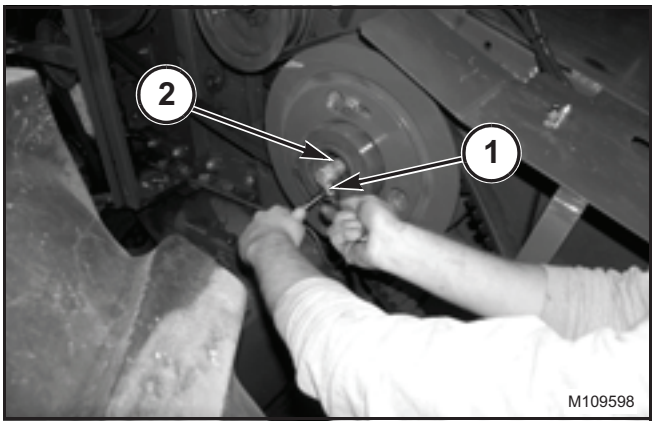

FIG. 214

Angled Unloader

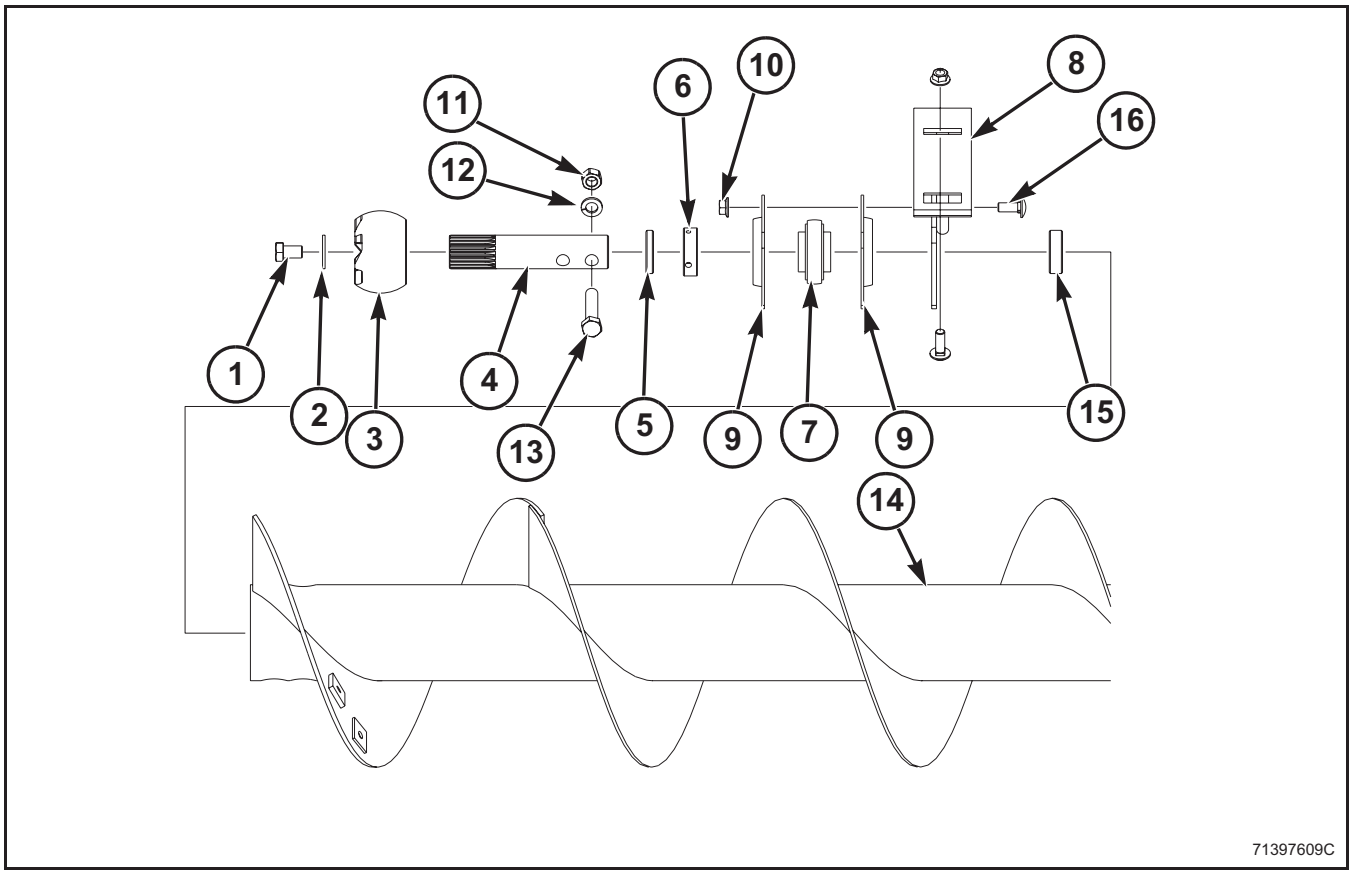

FIG. 772

FIG. 772: An exploded view of the left-hand section of the angled unloader auger shown.

Remove any corrosion, burrs, or roughness from the unloader stub shaft and from the drive hub in the angled unloader auger. Install the stub shaft (4) into the drive hub of the angled unloader auger (14). Align the flats on the stub shaft with the large through holes in the drive hub as the stub shaft is installed. Install the two hex head cap screws (13) from the side of the drive hub with the counter bored holes. Secure the hex head cap screws with the two hex nuts (11) and the lock washers (12). Tighten the hex nuts securely.

Place the flangettes (9) and the bearing assembly (7), with the locking collar (6) facing outward, against the bearing support (8). From the bearing support side, install the four full thread round head square neck bolts (16) with the hex flange nuts (10) securing the bearing flangettes but do not tighten.

NOTE: The hardware will be tightened later in the procedure after aligning the bearings.

Slide the inner spacer (15) onto the stub shaft against the drive hub in the angled unloader auger. Install the bearing support (8) with the bearing flangettes (9) and bearing assembly (7) onto the stub shaft with the locking collar (6) facing the splined end of the stub shaft.

Slide the outer spacer (5) onto the stub shaft against the inner bearing race. Be sure the locking collar (6) is on the inner bearing race.

With the coupler teeth facing outward, slide the inner coupler (3), onto the spline of the stub shaft (4). Install the hex head cap screw (1) with a wide plain washer (2) securing the inner coupler to the stub shaft in the angled unloader auger. Torque the hex head cap screw to 225 Nm (165 lbf ft).

POWER REAR AXLE

GENERAL INFORMATION

FIG. 1: The power rear axle is simply an extension of the combines hydrostatic propulsion drive system.

The switch (1) is a three position rocker switch; O-Off, H-High, L-Low.

NOTE: Removal, installation, and service of the combines hydrostatic propulsion system can be found in the Hydraulics division.

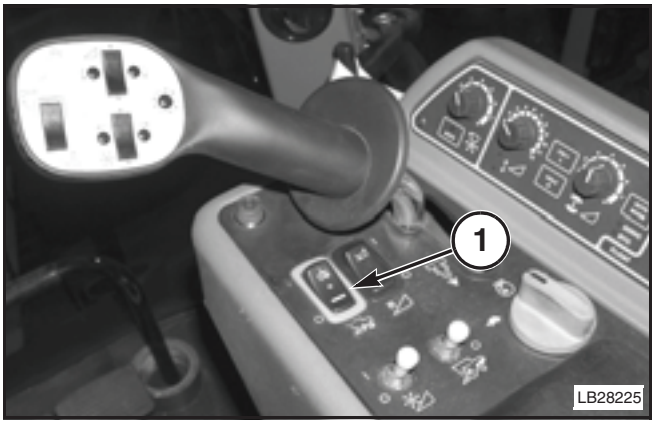

FIG. 1

FIG. 2: The powered steering axle with adjustable tread width is optional equipment.

The rear axle wheel tread is set to 304.8 cm (120 in) for field operation. The tread width can be adjusted from 304.8 to 365.8 cm (120 to 144 in) with 18.4 X 26 R1/R2 steering tires.

The steering system uses a drag link (tie rod) assembly located in front of the axle. The steering cylinders are two double acting 63.5 mm (2.50 in) bore X 342.9 mm (13.5 in) stroke cylinders located at the rear of the axle.

NOTE: Removal, installation, and service for the cylinder can be found in the Hydraulics division, Steering Cylinders section.

FIG. 2

FIG. 3: Steering is controlled through a power steering control unit (1) located under the cab.

Hydraulic fluid is directed to the steering cylinders through this unit to control the combine steering.

NOTE: Specifications, removal, installation, and service for the steering control unit can be found in the Hydraulics division, Power Steering Control Unit section.

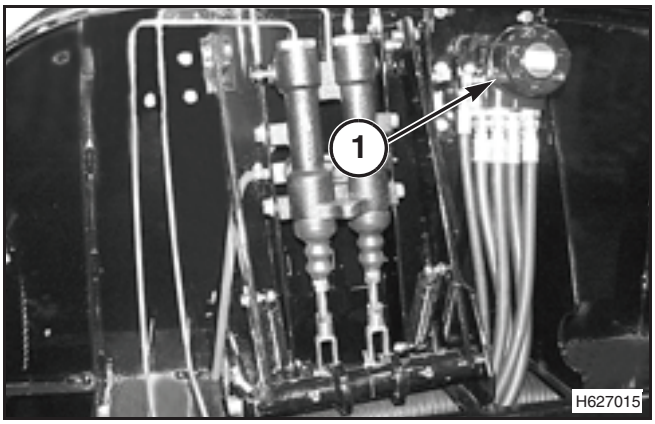

FIG. 3

FIG. 189: Fill the spring cavities (1) in the distributor valve with grease and then install the springs (2).

Lubricate the distributor valve backup rings mating surfaces.

Align the locating tabs (3) up with the slots in the valve cover. Press the distributor into the valve cover.

Install the valve retaining tool (4) TUTHILL number 704733-01. Assemble the motor see Cylinder Block Replacement.

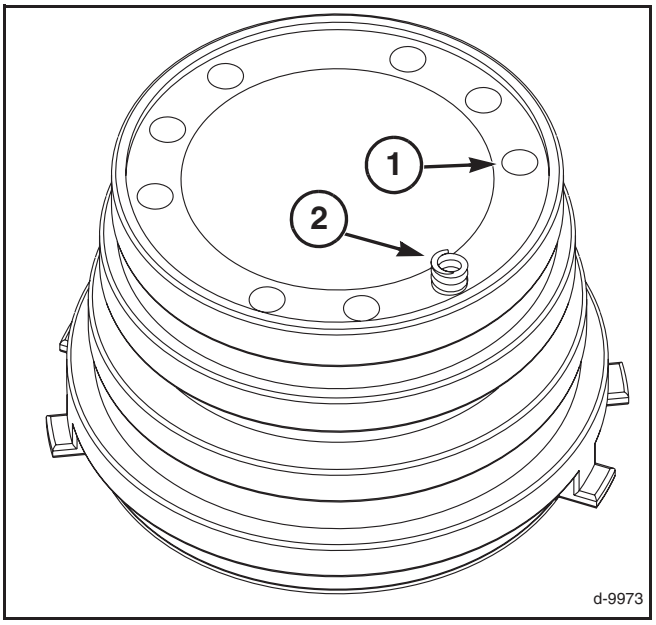

FIG. 189

FIG. 190: Align the locating tabs (1) up with the slots in the valve cover. Press the distributor into the valve cover.

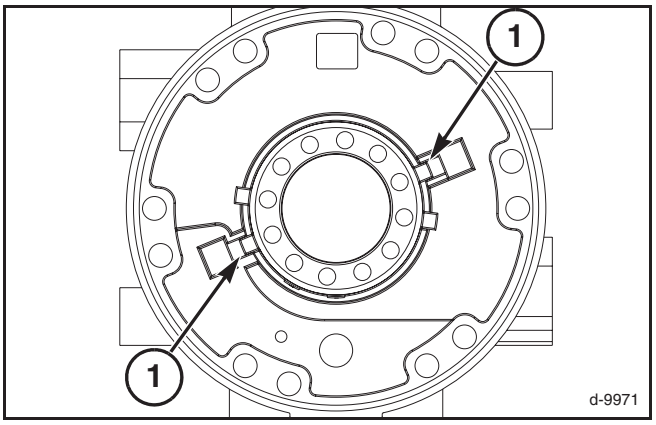

FIG. 190

FIG. 191: Install the valve retaining tool (1) TUTHILL number 704733-01. Assemble the motor see Cylinder Block Replacement.

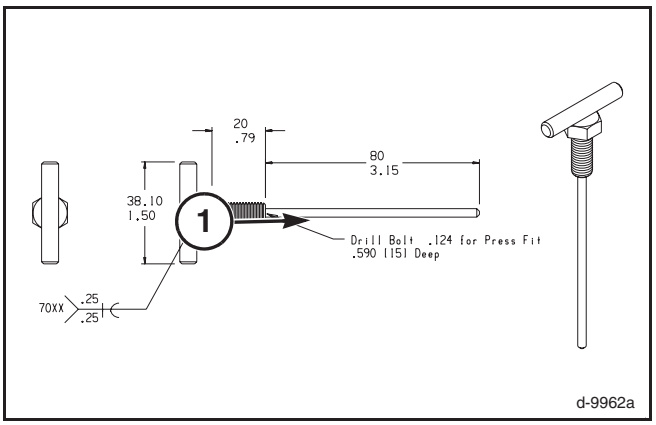

FIG. 191

CHAFFER / CLEANING SHOE / SHAKER SHAFT

CHAFFER (TOP SCREEN)

Removal

FIG. 408: If equipped, slide the straw chopper back.

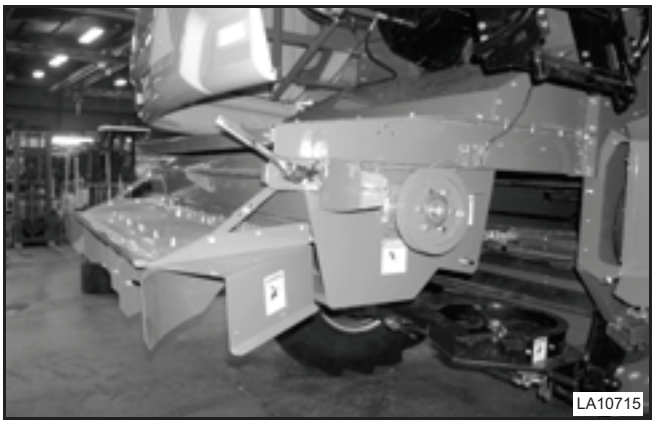

FIG. 408

FIG. 409: Remove the chaffer adjustment cable (1) from the chaffer.

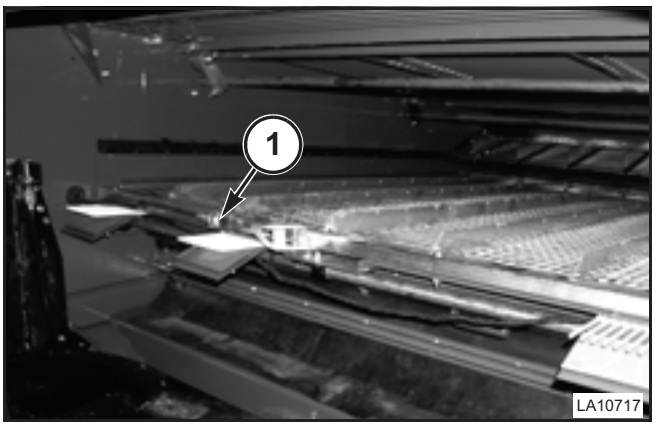

FIG. 409

FIG. 410: Remove the four capscrews, narrow plain washers, and lock nuts (1) retaining the chaffer.

Work the chaffer (2) back and forth to free up the chaff / dust accumulation, then slide the chaffer out the rear of the combine.

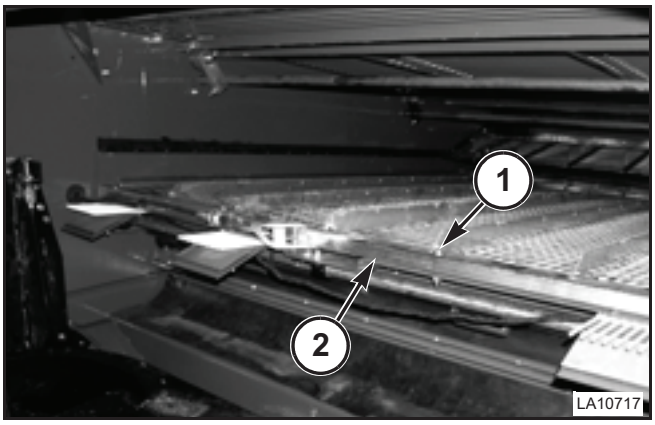

FIG. 410

OIL FILTER

GENERAL

FIG. 24: The dual element filter head with filters (1) is located in front of the engine under the rear of the grain bin.

IMPORTANT: There is no filter bypass provided in the filter head. The filters must be changed at the required service intervals. Failure to properly service the filters will result in reduced propel and rotor drive performance.

NOTE: Refer to the General Information division for the recommended service period and the oil filter specifications.

The filters are low-pressure filters placed in the suction side of the charge circuit of the propel system and the rotor drive system. The hose (2) provides oil from the hydraulic reservoir. The hoses (3), (4), and (5) provide oil to the charge pumps of the propel hydrostatic pump and the two rotor hydrostatic pumps.

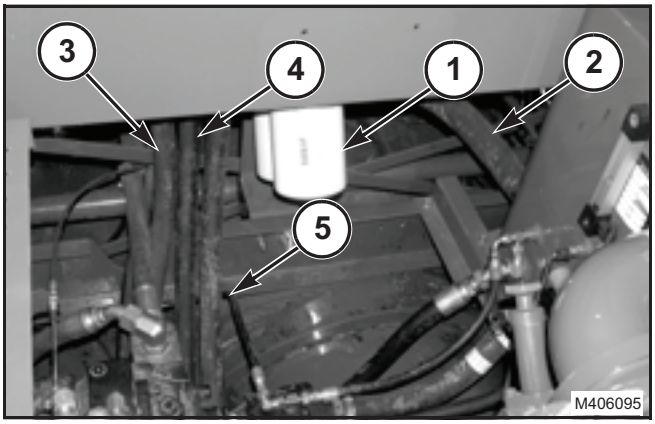

FIG. 24

REMOVAL

FIG. 25: Drain approximately 15 liters (4 gal) of hydraulic-transmission fluid from the hydraulic reservoir to avoid the gravity flow of hydraulic-transmission fluid from the hydraulic reservoir through the filter head.

Drain the hydraulic-transmission fluid from the reservoir as described in this section.

IMPORTANT: Properly dispose of the hydraulic-transmission fluid in accordance with environmental standards.

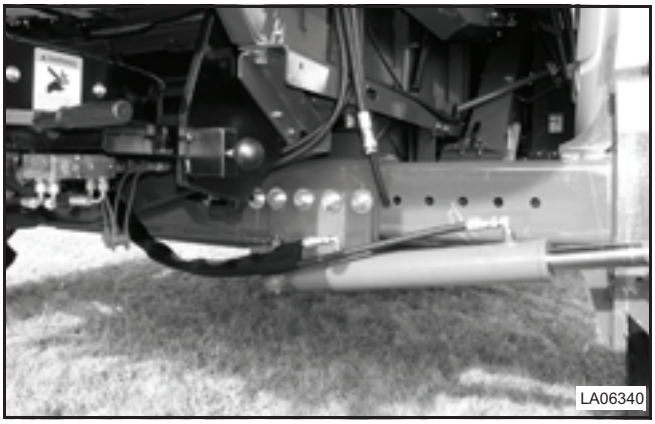

FIG. 25

FIG. 26: Thoroughly clean the area around the filter head. Place a drain pan under the filter elements (1).

Using a strap or a chain wrench, loosen the filter elements. Remove and discard the filter elements. Clean the seal seating areas on the filter head.

IMPORTANT: Properly dispose of the filter elements in accordance with environmental standards.

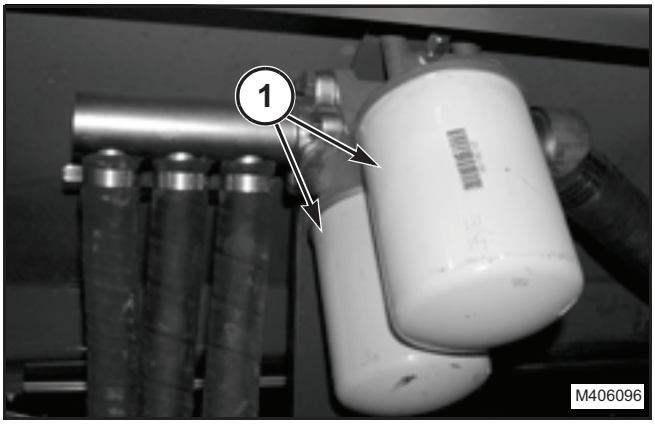

FIG. 26

FIG. 329: Rotor Speed Adjustment Screen - With the thresher engaged the rotor speed screen is used to increase or decrease the speed of the rotor.

Pressing either the top (1) or bottom (2) button changes the speed 10 rpm. Once the desired rotor speed setting is reached, press the OK button (3) to return to the combine settings screen. Pressing the OK button also saves the current rotor speed after the rotor is stopped.

Entering a rotor speed is also possible by pressing the white box (4) in the rotor speed box. A number pad will be displayed after the button is pressed. Input the desired speed using the number pad and press the enter button.

The rotor speed is adjustable from 200 to 1050 rpm.

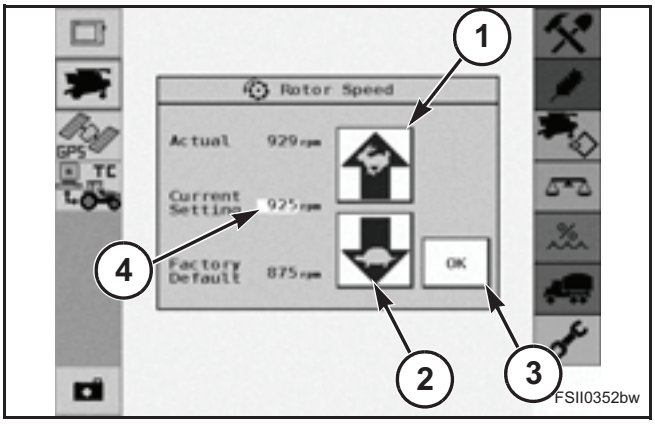

FIG. 329

FIG. 330: Unplugging Rotor - When the separator is off, a rotor unplug button is displayed in the rotor speed adjustment screen. Press the unplug button and the rotor unplug box will display. In the rotor unplug box a forward (1) and reverse (2) button is displayed. For the buttons to operate the thresher must be disengaged.

When the forward button is pressed, the rotor will accelerate to 250 rpm. when the reverse button is pressed and held, the rotor receives a one second pulse at maximum pressure (rpm) in the reverse direction. After the one second pulse, the rotor continues to turn at 40 rpm in the reverse direction. This pulse to maximum rpm gives fast acceleration against the plug. Watching the rotor speed display on the monitor will indicate when the blockage is cleared.

When the blockage is cleared, press the Normal button (3) to return to the rotor speed adjustment screen.

NOTE: The thresher switch must be turned off before the rotor switch can be used to unplug a blockage.

IMPORTANT: Refer to Operation section for the correct procedure to unplug the rotor.

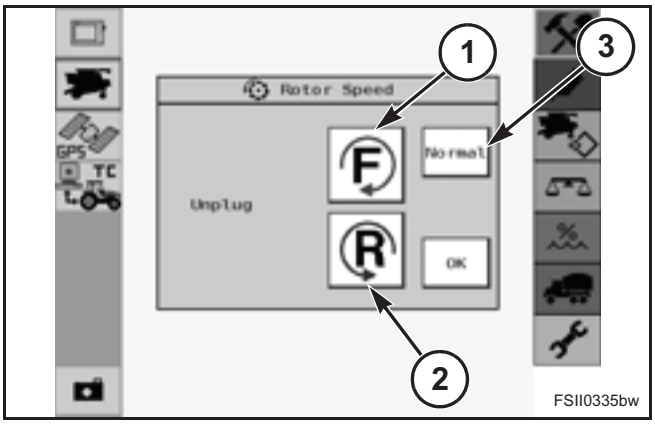

FIG. 330

POWER STEERING CONTROL UNIT TROUBLESHOOTING

IMPORTANT: Most steering problems can be corrected if the problem is properly defined. The entire steering system should be evaluated before removing any components. The steering control unit is generally not the cause of most steering problems. The following is a list of steering problems along with possible causes and suggested corrections.

Problem	Possible Cause	Correction
1. Slow steering, hard steering, or loss of power assist.	Worn or malfunctioning pump.	Replace pump.
	Stuck flow divider piston.	Replace flow divider.
	Worn pump allowing the system pressure to be less than specified.	Replace pump.
	Malfunctioning relief valve allowing the system pressure to be less than specified.	Replace the relief valve.
	Overloaded steer axle.	Reduce load.
	Malfunctioning priority valve.	Check spring and sticking spool.
		Check damping orifices in both ends of main bore for debris.
		Check system pressure at steering control unit inlet for proper system pressure.
		If not correct adjust priority valve relief cartridge.
2. Wander - Tendency of vehicle path to deviate from course defined by operator input.	Air in the system due to low level of oil, cavitating pump, leaky fitting, pinched hose, etc.	Correct condition and add fluid.
	Worn mechanical linkage.	Repair or replace.
	Bending of linkage or cylinder rod.	Repair or replace.
	Loose cylinder piston.	Repair or replace.
	Severe wear in steering control unit.	Replace the steering control unit.
3. Drift - Deviation of vehicle path, without operator input, from normally expected continuing course.	Cylinders slowly extend and retract without turning the wheel.	A small rate of extension may be normal on a closed center steering system.
	Worn or damaged steering linkage.	Replace linkage and align steering wheels.
4. Slip - A slow movement of steering wheel fails to cause any movement of wheels.	Leakage of cylinder piston seals or accessory valve between cylinder lines or ports.	Replace seals or accessory valve.
	Worn steering control unit meter.	Replace steering control unit.

FUSE AND RELAY IDENTIFICATION

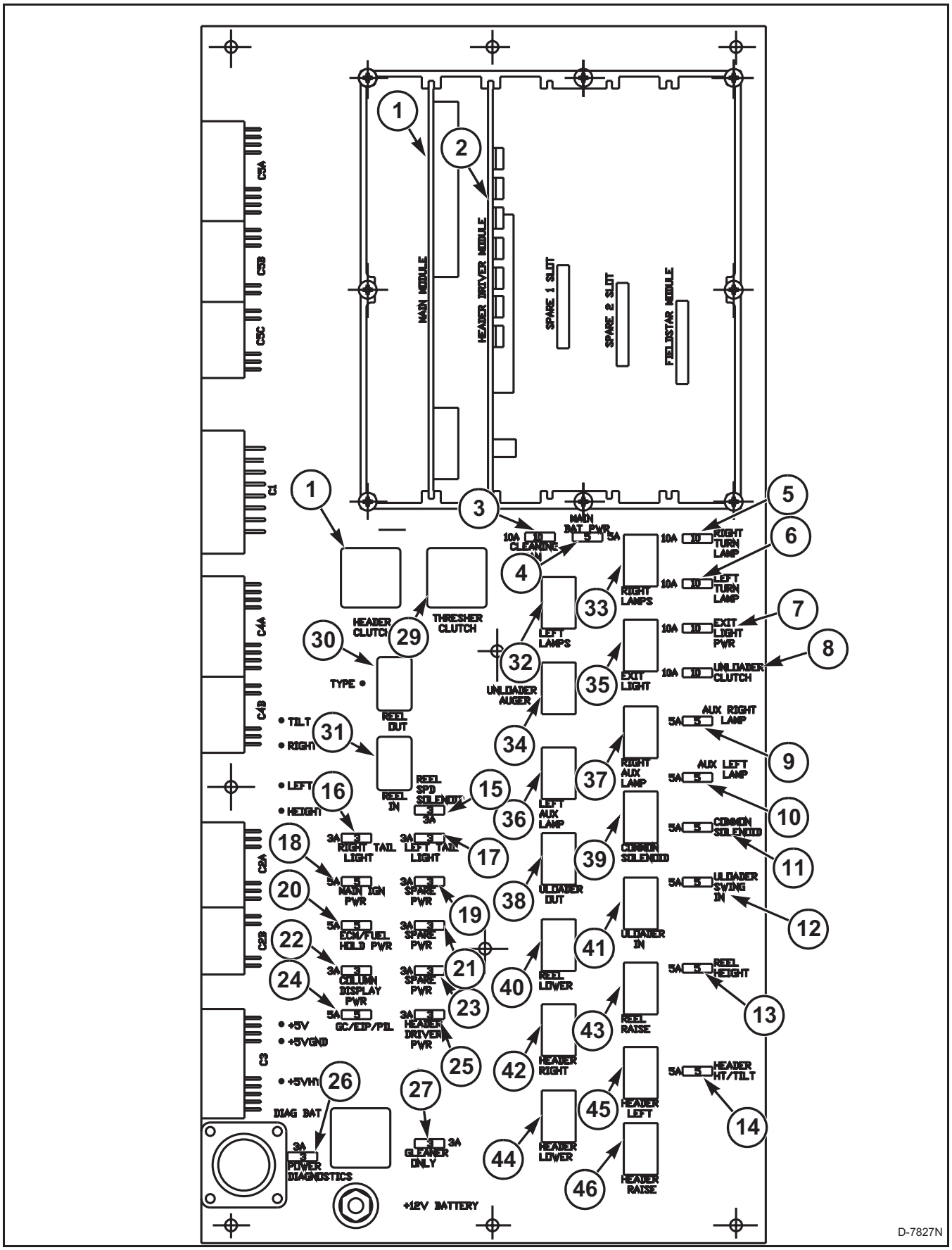

FIG. 2

Table - Combine Model

Number	Configuration	Model Description
R75	2	Transverse rotary - Cummins J1587 Electronic/Mechanical Engine
R65	1	Transverse rotary - Cummins J1939 Electronic Engine
R55	1	Transverse rotary - Cummins J1939 Electronic Engine
9790 EUR	5	Axial rotary - Cummins J1939 Electronic Engine - European
9790 US	4	Axial rotary - Cummins J1939 Electronic Engine - US Model
9690 EUR	5	Axial rotary - Cummins J1939 Electronic Engine - European
9690 US	4	Axial rotary - Cummins J1939 Electronic Engine - US Model
670	6	Axial rotary - Caterpillar J1939 Electronic Engine
660	6	Axial rotary - Caterpillar J1939 Electronic Engine
A85	6	Axial rotary - Caterpillar J1939 Electronic Engine
9895	6	Axial rotary - Caterpillar J1939 Electronic Engine
680B	6	Axial rotary - Caterpillar J1939 Electronic Engine

NOTE: Different model combines create slight differences in some switch graphics and terminology used in this document.

FIG. 75: One, eight character LCD (1) is used to display the data from the parameter selected by pressing one of the membrane switches.

It will display alarm messages that occur during operation.

The LCD is also used in software programming and troubleshooting electrical/electronic parameters for service.

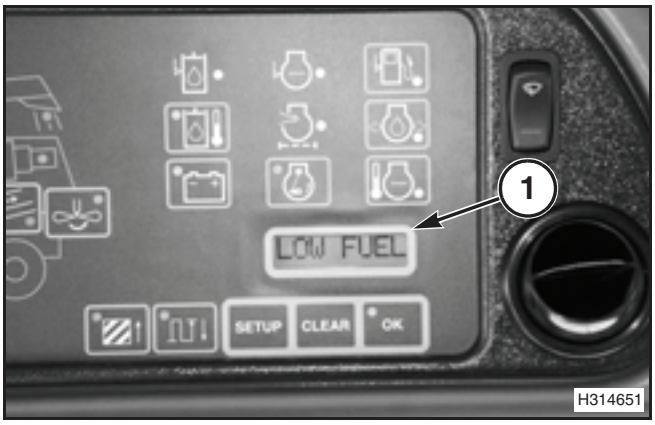

FIG. 75

FIG. 76: One remote switch (1) (display select) located on the control handle (2) is used to select the displayed parameter on the bottom of the tachometer display located on the front pillar (3).

The pillar display (3) will cycle through three values:

- Engine or thresher RPM
- Ground speed (MPH or KPH)
- Parameter selected by the membrane switch last pressed on the EIP

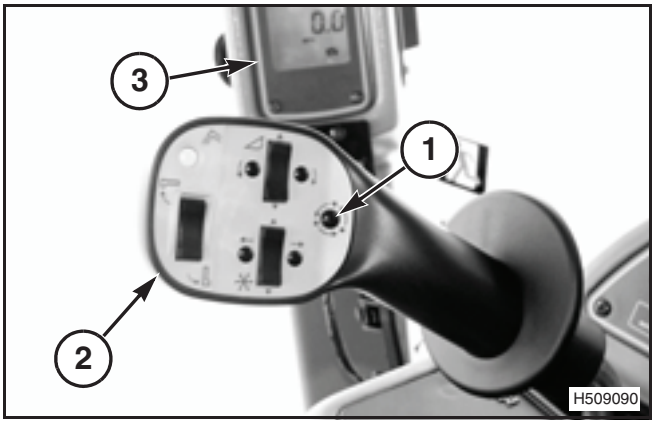

FIG. 76

HEATING VENTILATION AND AIR CONDITIONING PANEL

HVAC Panel Removal

FIG. 12: Remove the four screws (1) that fasten the HVAC panel trim (2) to the panel (3).

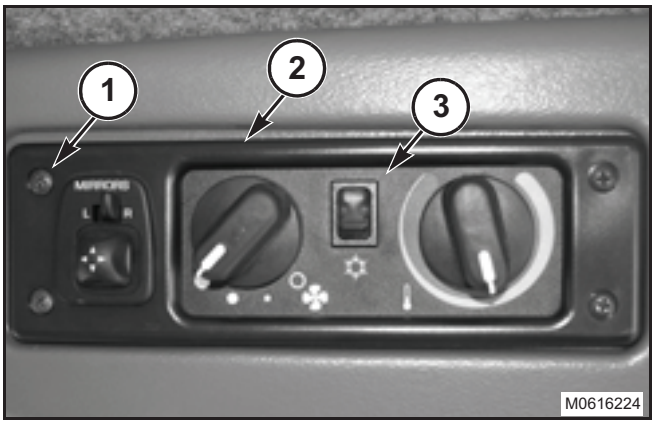

FIG. 12

FIG. 13: Disconnect the electrical connector (1) in the back of the trim.

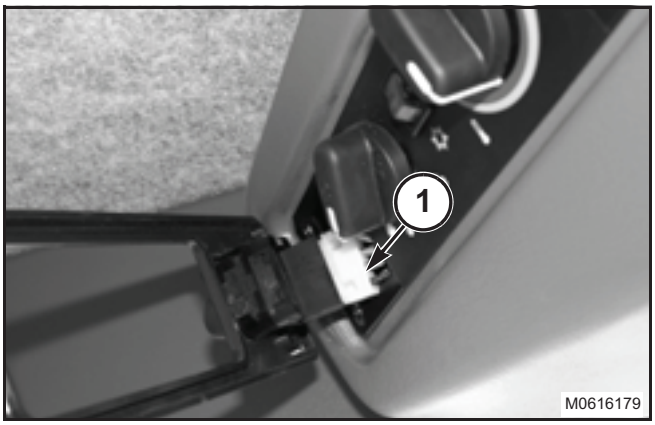

FIG. 13

FIG. 14: Remove the two cap screws (1) that fasten the control panel (2) to the overhead dash.

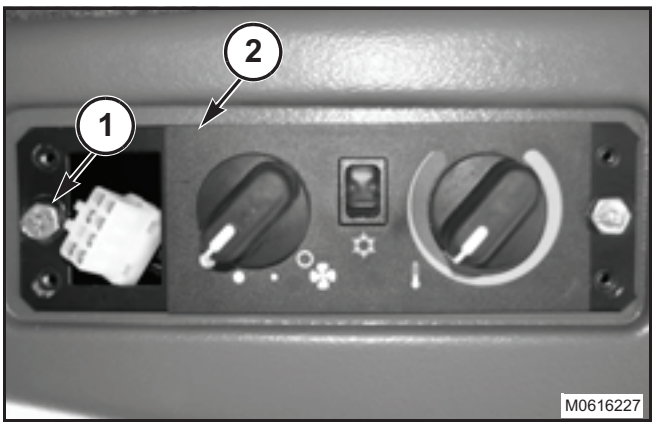

FIG. 14