RB 4100 Troubleshooting and Service Information

10/3/2019

The purpose of this guide is to describe in detail the mesh adjustments of the baler. Also, detailed function of the electro-hydraulic system and some basic troubleshooting of the baler will be covered.

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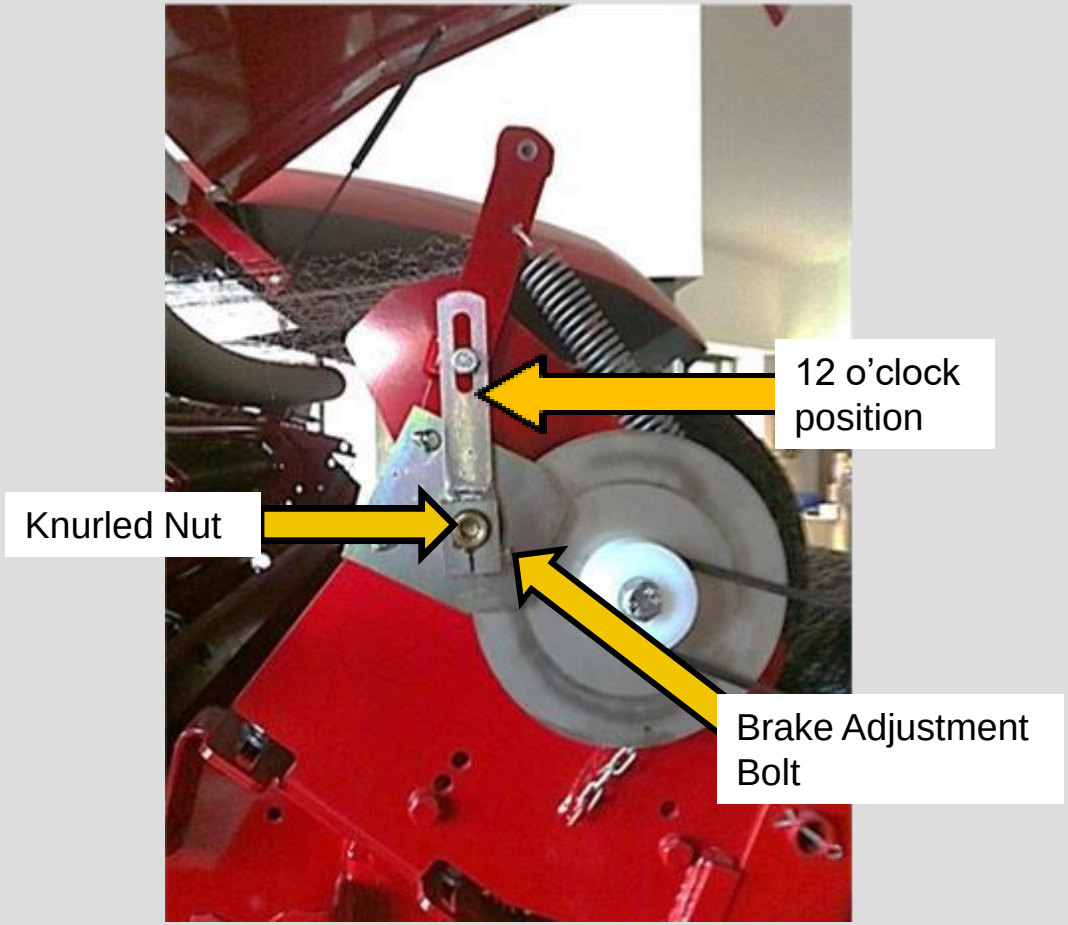
Mesh Adjustments

NOTE: Proper mesh adjustment and mesh settings is very crucial to proper operation of this baler. Without proper adjustments, issues will occur.

Mesh Brake Adjustment



The mesh brake should be adjusted as follows

- Loosen the **brake adjustment bolt**.
- Move the **brake arm** to the **12 o’clock position** as shown in the picture.
- Tightened **knurled nut** to where the **brake just drags** when arm is at the **12 o’clock position**.
- Tighten the **brake adjustment bolt**.
- Verify proper adjustment by moving the brake arm to the 2 o’clock position, the brake should be holding tight at this position.

NOTE: To aid in this adjustment, the brake arm spring can be disconnected to aid in raising the brake arm to the proper position.

Brake Arm Spring Adjustment

The **brake arm spring** should be adjusted to the **tightest position possible**. Preferably, the **spring hook** on the adjustment tab as shown in the picture.

- Ensure spring is set the same on each side of the mesh unit
- Try to achieve a calm swinging of the brake bar
- Net requires the net brake resistance to run as wide as possible into the chamber

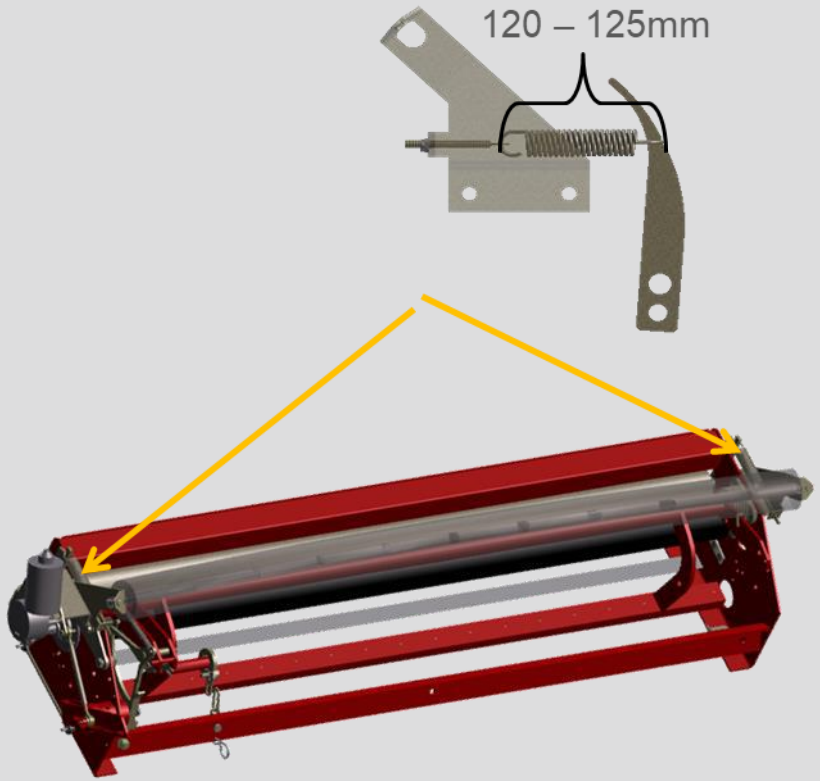
Only use the chain segments if you are working with a weak, low quality net. If good quality net is used, the spring can be directly fixed to the hook.

Mesh Roll Hand Crank

When installing a roll of mesh, the **hand crank** should be tightened until the **metal flange nut** stops protruding from the hand crank frame.

After the metal flange nut stops protruding, back off crank 1/8 turn.

Adjustment of mesh roll tension



Adjusting the pressure of the **net feed rollers** is done with the adjustment of a spring.

The tension springs determine the pressure the **steel roller** exerts on the **rubber roller**. Since the steel roller is chamfered, the net is pushed towards the sides.

The total length of the spring should be measured if problems arise with net feeding issues onto the bale the.

When adjusted properly the spring will measure 120-125 mm from hook to hook.

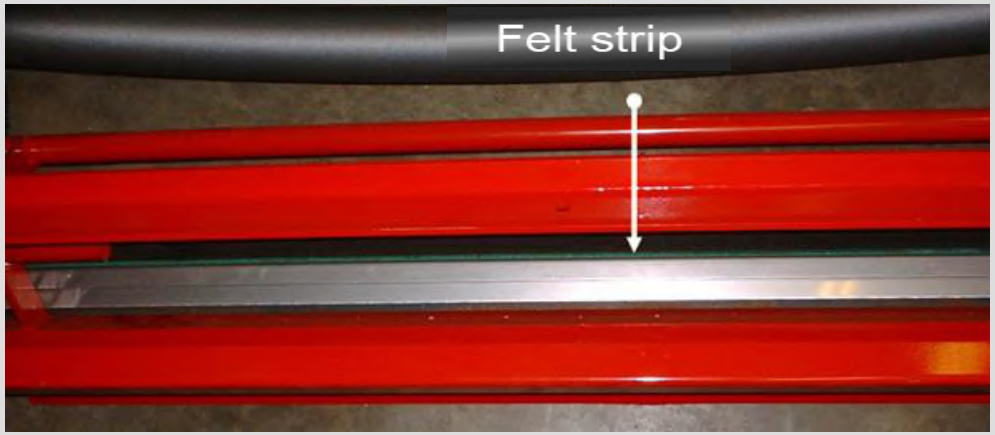
NOTE: During extended periods where the baler is not being used, such as over winter, it is recommended to remove tension on spring by sliding hook of the spring off the mesh roller arm.

Felt strip

Below the **rubber net feeding roller** is a guide with a felt strip.

The purpose is to keep the **rubber roller** clean and deflect the net to the chamber. To prevent the net from wrapping around the **rubber roller** the felt strip has to be fitted and adjusted properly.

AGCO part number is 72632651



Monitor Adjustments

For **normal silage baling**, it is recommended to use the times for **net delay, net roller delay,** and **clutch on time** as follows.

Net Delay: 1.5 seconds

Net Roller Delay: 2.0 seconds

Net clutch time: 4.0 seconds

If in **dry hay conditions**, use the settings described below.

Net delay: 0.5 to 1.0 seconds

Net roller delay: 0.5 to 1.0 seconds

Net clutch time: 6.0 to 8.0 seconds

The purpose for this is to **eliminate** as much **material** as possible from **building up** around the **mesh unit** before the **net starts feeding**.

Note: Adjustments to these times may be needed depending on factors such as crop type, moisture of the crop, and operator preferences.

Mesh Adjustments Troubleshooting

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FAULT	Possible Cause	Checks
Net feeds poorly onto bale, Net doesn't cover entire bale	Mesh brake adjusted too loose	Tighten the brake
	Brake arm spring too loose	Tighten by one link at a time, if quality net, set spring hook on adjustment tab
	Net unit not centralized on baler	Refer to operators manual for adjustment to centralize net unit.
	Mesh roll tension spring adjusted too loose, or is too weak	Adjust spring tension to spec or replace spring
	Mesh roll hand crank adjusted too loose	Tighten mesh roll hand crank

FAULT	Possible Cause	Checks
Net feeds poorly onto bale, Net doesn't cover entire bale continued	Poor bale shape	Adjust the filling of the bale chamber
	Excess material build up at back of net unit	Remove debris, bale without outside two rubber flaps
		If severe material build-up, install dry hay material kit 72648842
	Net quality	Change net roll with quality net

FAULT	Possible Cause	Checks
Net wrapping doesn't start/ Net not feeding	Net brake adjusted too tight	Loosen net brake
	Brake arm spring adjusted too tight	Loosen spring one chain link at a time
	Incorrect clutch on time	Increase clutch on time in one second intervals
	Excess material build up behind the net unit	Remove debris, bale without outside two rubber flaps
		If severe material build-up, install dry hay material kit 72648842

FAULT	Possible Cause	Checks
Net is wrapping around net feed rollers	Rubber roll covered in debris	Clean roll and adjust felt strip closer to rubber roller
	Net get's caught in score marks / cuts on the steel and rubber rollers	Clean steel roll with sand paper, replace rubber roll
	Missing felt strip	Replace felt strip and deflector

FAULT	Possible Cause	Checks
Mesh tears while feeding onto bale	Net brake adjusted too tight	Loosen net brake
	Net brake arm spring adjusted too tight	Loosen spring one chain link at a time
	Mesh hand crank adjusted too tight	Loosen mesh hand crank
	Net quality	Change out mesh roll with quality mesh

Mesh wrap tie cycle

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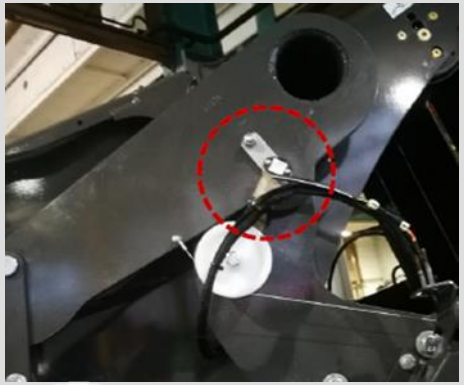
Step One-Bale diameter reached



The **bale size potentiometer** detects bale size and is a contactless design. Once the controller reads the appropriate bale size, this initiates a tie cycle.

The signal wire (white wire) runs from pin 29 of the baler controller to terminal B of the sensor. **Power** is supplied to terminal A (orange wire) and **ground** is supplied to Terminal C (black wire).

The potentiometer has a working range of 0.2V to 5V and as the bale diameter increases, the mV value in the diagnostics screen increases.

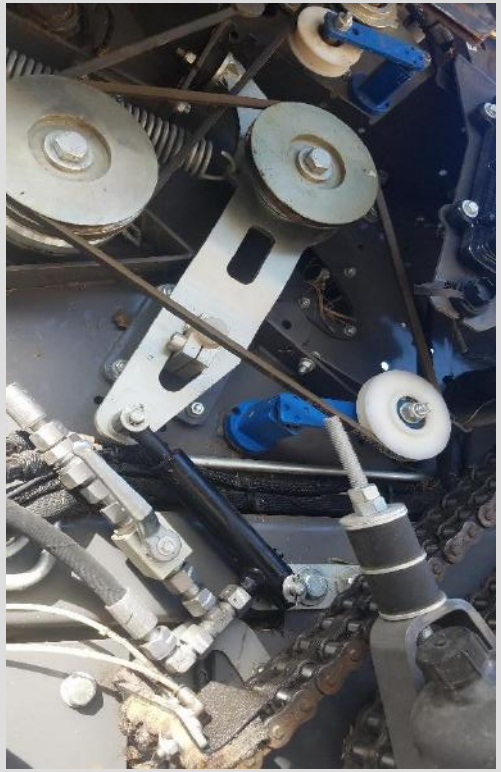
The mV reading in the diagnostics screen should read between 900-1000 mV with an empty chamber.

Adjustment is a maximum distance of 2mm, magnet to the potentiometer

The potentiometer and the adjustable sensor magnet must be aligned.

AGCO part number: 72635528

Step 2-Net roller



After the full bale diameter is reached, the controller delays moving the net roller by the amount entered into the **Net roller delay** setting (0-5 seconds).

The purpose of **net roller delay** is to allow the operator to come to a complete stop before a tie cycle begins. It also ensures that the roller is in position before the net begins feeding.

After the net roller delay time is met, the controller sends power to the **movable net roller solenoid**, shifting a spool valve, and causes the roller to move towards the bale chamber.

Once the solenoid is powered, the valve shifts to allow oil to be pushed out by spring pressure acting on the single acting cylinder. The oil is allowed to flow back to the tractor.

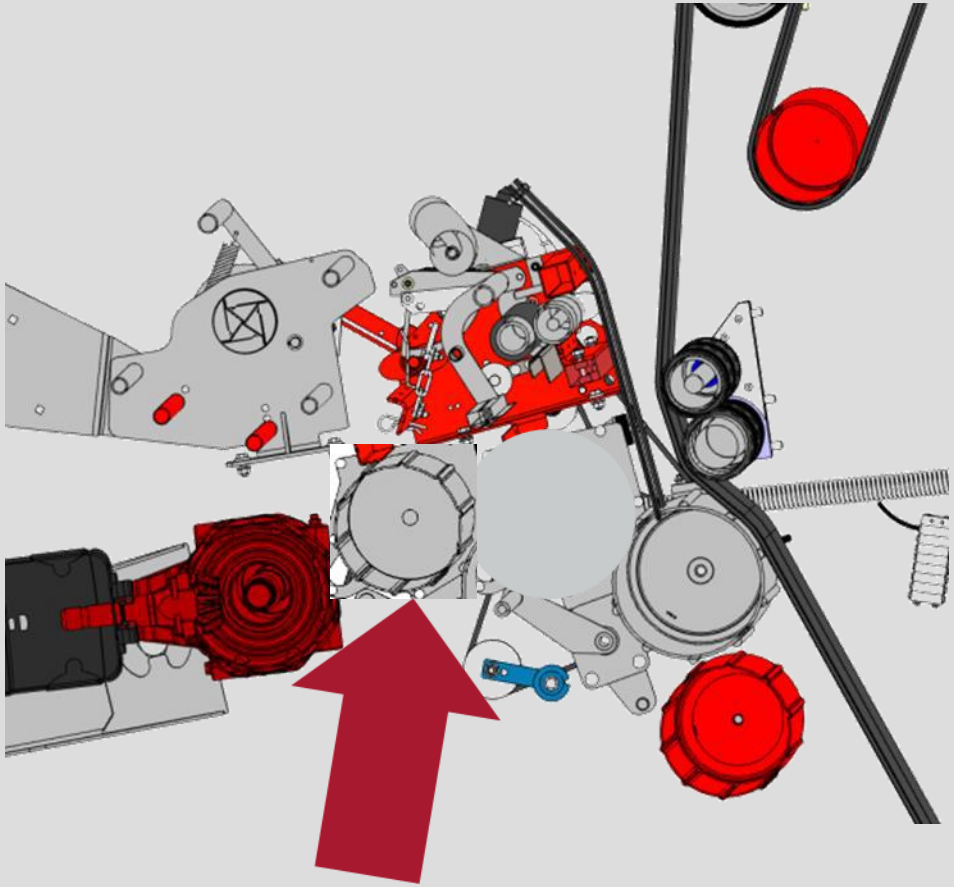
This roller is continuously driven by a belt.

Power to this solenoid runs from pin 12 of the controller on a tan wire to terminal 1 of the solenoid.
Ground for this solenoid runs to terminal 2 of the solenoid on a black wire.

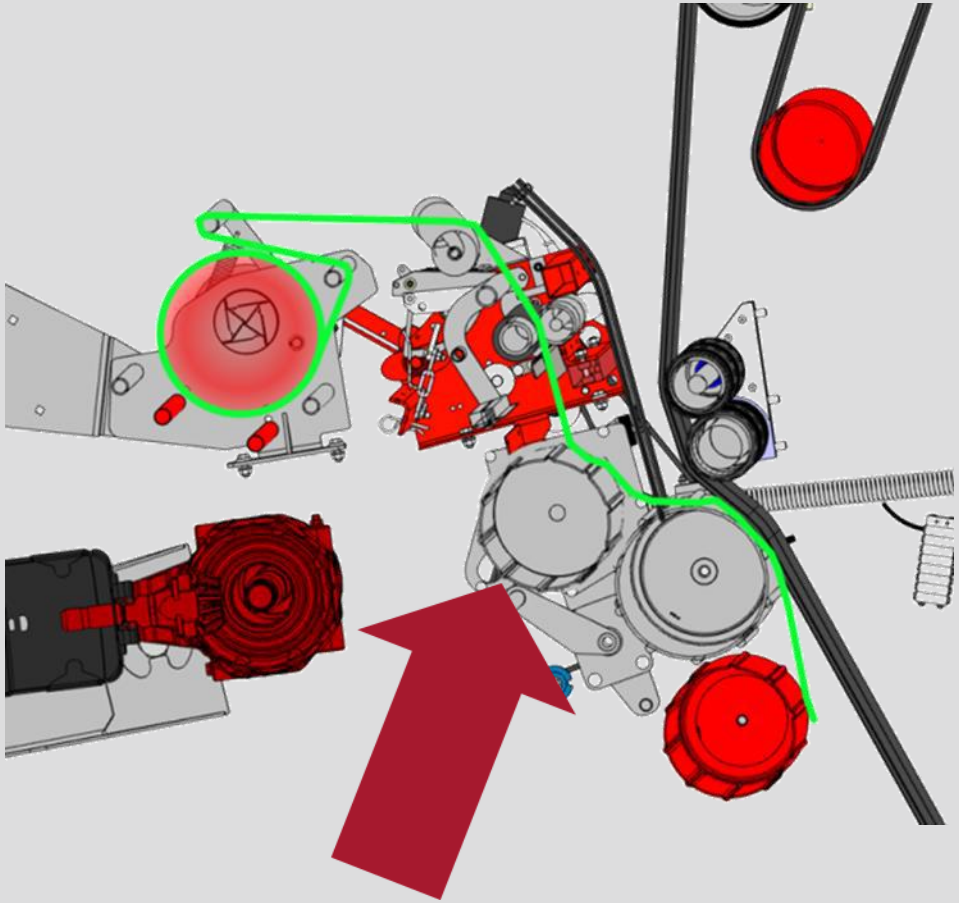
NOTE: The tailgate hydraulic function must be ran in float for the roller to operate properly.

Position of the roller in the baling position and in the net feeding position.

Baling position



Net feeding position



Step 3-Net clutch

Next, the controller will wait until **net delay** is reached, then send power to the net clutch.

Net delay is the amount of time between the time the roller moves toward the bale and the time the net clutch is powered and begins immediately after **net roller delay.**

Net delay is set in the monitor (0-5 seconds). Causes a pause for material to clear before mesh is fed to wrap the bale.

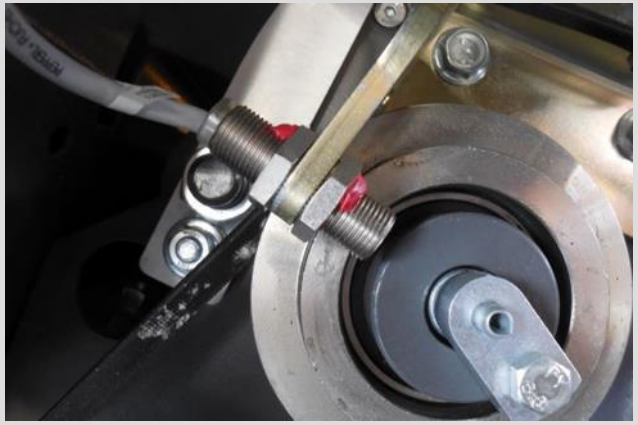
Power is sent from pin 14 of the controller to terminal 2 (tan wire) of the net clutch.
Ground is terminal 1 (black wire).

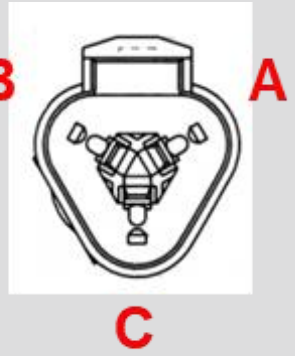
Power will be sent to the clutch for the time set in the monitor (**clutch on time**). After this time has been reached (3-8 seconds), the controller stops power to the clutch.

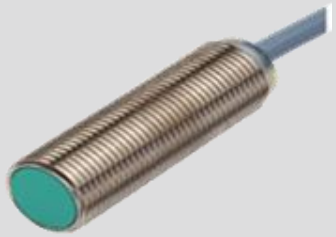
After the clutch is turned off, the net is fed onto the bale only by the bale rotating in the chamber.

AGCO part number is 72635524

Step 4-Mesh count sensor







Once net feeding starts the **mesh count sensor** begins turning on and off, measuring the amount of mesh applied.

Adjustment is to be set a maximum distance of 2mm from the actuating tab.

Terminal A of the sensor (yellow wire) is the signal wire back to the controller. This wire runs to pin 23 of the controller. Terminal B is the ground for the sensor (black wire). Terminal C is supply voltage for the sensor (yellow wire).

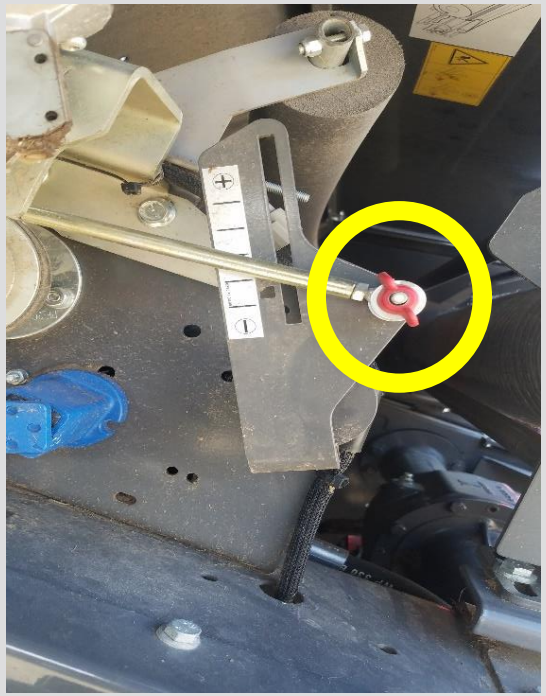
As soon as the sensor sees metal, the sensor is turned on and the indicator LED on the sensor lights up. The sensor then provides pulses which can be seen in the sensor diagnostics menu.

AGCO part number is 72635491

NOTE: All sensors on the baler are 12 volt sensors. There is a constant supply of voltage to the sensor. The sensor switches from ground to 12 volts when turned on. This sends a 12 volt reading back to the controller and the LED light is illuminated.

Step 5-Net knife is triggered to cut position

Net knife actuator



Once the **Mesh count sensor** signals enough wraps have been applied to the bale, the controller sends power to the **mesh knife actuator.**

The actuator receives power from pin 19 or 20 of the controller. They are spliced together.

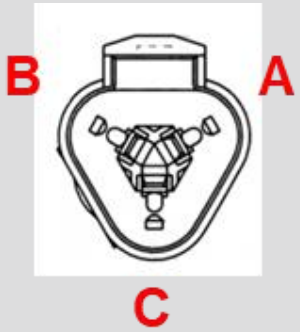
The tan wire goes to terminal 1 of the actuator. Terminal 2 is the ground (black wire).

The **actuator** moves the **knife arm** which in turn rotates the **one way clutch** and trips the knife.

AGCO part number for the actuator is 72635477

NOTE: Ensure that the actuator arm is always in the position circled for proper operation.

Step 6-Knife home position sensor



Once the net knife trips, the net knife sensor detects whether the net knife is tensioned (home position), or has been triggered.

The sensor must be adjusted to a distance of 3–5 mm from the locking hook.

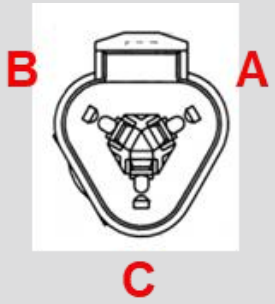
As long as the **net knife is tensioned**, or in the home position, the sensor sees metal and is switched on, the control LED on the **sensor lights up** and in the sensor diagnostics menu the state is at a 1.

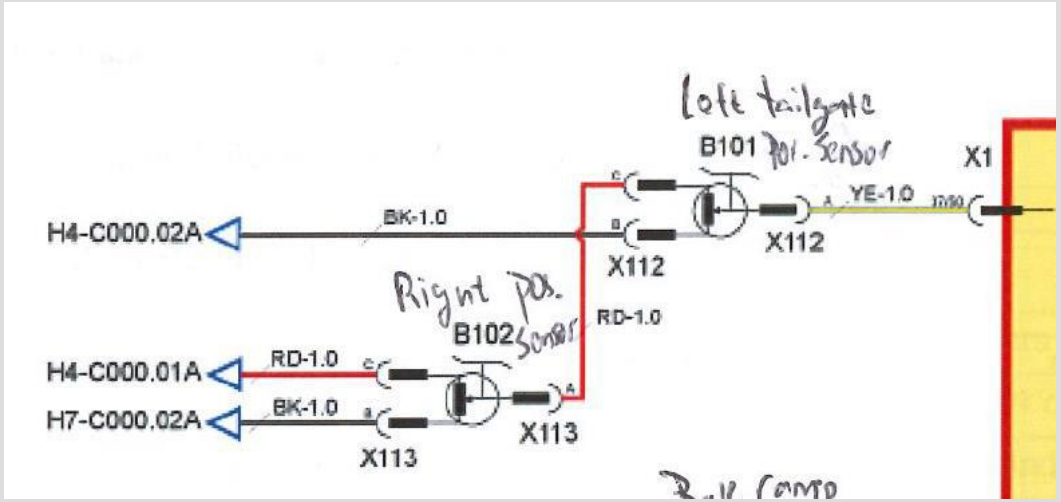
When the **knife is tripped** the **sensor is turned off** and the state in the diagnostics menu changes from 1 to 0.

Terminal A of the sensor is signal voltage and runs to pin 24 of the controller (yellow wire), Terminal B is sensor ground (black wire), and Terminal C is supply voltage(red wire).

AGCO part number is 72635490

Step 7-Open tailgate





The **tailgate opens by manually** cycling the hydraulic lever in the cab.

The tailgate lock sensors detect whether the tailgate is locked or unlocked. The sensors are connected in series with one on the left side, and one on the right.

The sensor must be adjusted to a distance of 3–5mm from the locking hook.

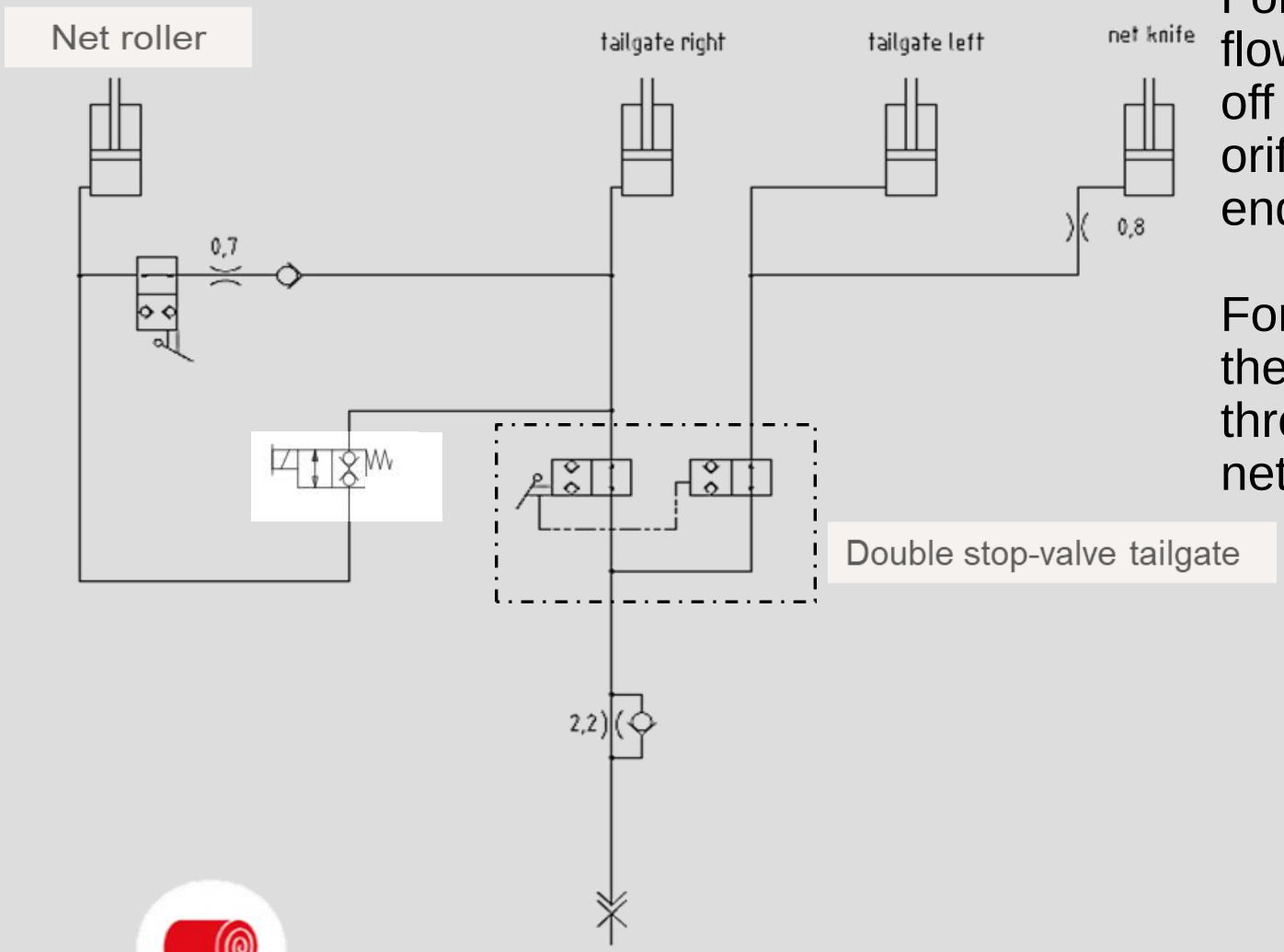
When the **locking hook moves away from the sensor**, the **sensor is turned off**. In the diagnostics menu the switching state will be at a 0 when the gate is unlocked.

AGCO part number is 72635490.

From the controller on pin 37 a yellow wire runs to terminal A of the left tailgate sensor. Terminal B is ground on a black wire, and terminal C runs to terminal A of the right position sensor on a red wire.

Power for the right position sensor flows through terminal C on a red wire, ground for the right position sensor is a black wire to terminal B.

Step 7- Open tailgate continued

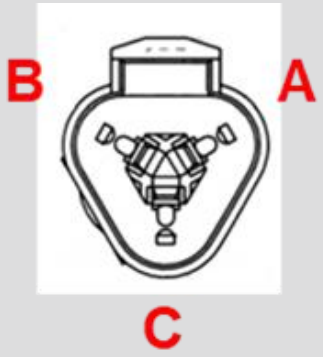


Opening the tailgate also hydraulically **resets the movable net roller, as well as the net knife** for the next tie cycle sequence.

For the **movable net roller**, pressurized oil flows from the tractor through the tailgate shut off valve, through a check valve, through an orifice, through a hand valve, and to the base end of the cylinder.

For the **net knife**, pressurized oil flows from the tractor, through the tailgate shutoff valve, through an orifice, and to the base end of the net knife cylinder.

Step 8-Bale ramp



As the **bale** rolls out of the chamber it **pushes** the arms of the **bale ramp down**. This in turn moves a piece of metal past the **bale ramp sensor turning it on**.

The sensor must be adjusted to a distance of 3–5mm from the metal arm.

When the metal arm runs past this turns the sensor on, the control LED on the sensor lights up, and the state changes in the diagnostics menu changes from 0 to 1.

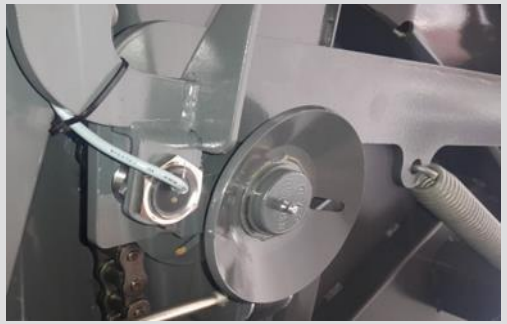
The signal wire runs from terminal A to pin 46 of the controller (yellow wire). Power is supplied by a red wire to Terminal C, and ground is supplied by a black wire to terminal B.

AGCO part number is 72635490

After the bale rolls off, the **ramp comes back up** and the **sensor is turned off.**

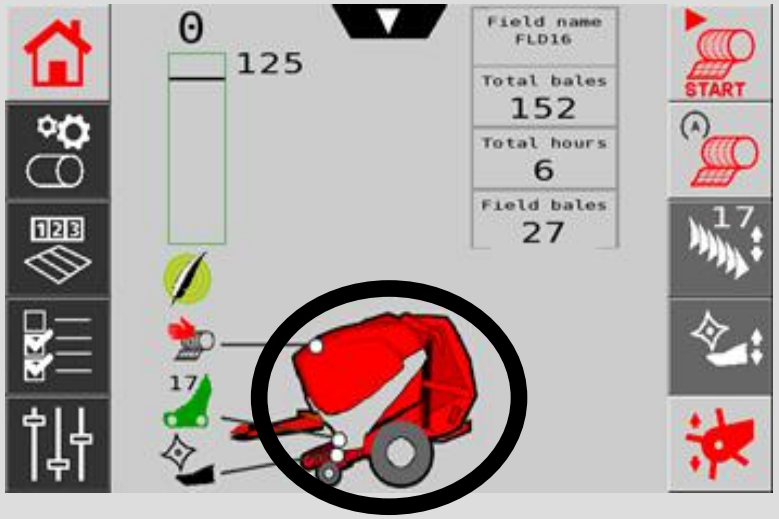
After the controller sees the mesh feed, knife trip, tailgate open, and the ramp go down then back up, it will count a bale.

Step 9-Close tailgate



Left sensor

Right sensor



The **tailgate is closed by manually** cycling the lever in the tractor cab. Hydraulic flow is not sent to the rod end of the cylinder. Simply, the valves create **a path for oil to return back to the tractor (refer to page 25). The tailgate closes by gravity and spring pressure.**

When completely closed **both the left and right tailgate latch must be turned back on to start the next bale.** This is done by **spring pressure pulling the metal locking arms down** into position.

When the tailgate is in the **locked position** the switching state in the diagnostics menu will be at a 1.

When tailgate is closed the monitor will show this on the work screen as shown.

Mesh Wrap Tie Cycle Troubleshooting

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FAULT	Possible Cause	Checks
Net Wrapping doesn't start/ Net not feeding	Faulty magnetic net clutch	Bench test clutch with known source of 12 volts, replace if necessary
	No power or ground to net clutch	Diagnose wiring from controller to clutch, also verify good ground.
	Slipping V-belt	Tighten or replace V-belt
	Incorrect monitor setup	Ensure wrapping method is set to Net in advanced menu
Net feeds into bale but get net not feeding error	Faulty mesh count sensor	Adjust or replace sensor if necessary.

FAULT	Possible Cause	Checks
Net knife not tripping	Faulty mesh count sensor	Adjust sensor properly, or replace if necessary
	Faulty net knife actuator	Bench test actuator to ensure proper operation
	No power or good ground to net knife actuator	Verify voltage to actuator when net knife is moved to cut position
	Net reset cylinder did not hydraulically retract	Manually reset knife and make sure tailgate function is in float position while baling

FAULT	Possible Cause	Checks
Net feeding while baling in progress. Error message: Net Feeding	Magnetic clutch doesn't release properly	Replace magnetic clutch
	Magnetic clutch is powered	Possible short in wiring, or faulty controller
	If net is not physically feeding into baler-Faulty net count sensor	Adjust or replace net count sensor

FAULT	Possible Cause	Checks
Net knife trips itself. Error message: Reset Net Knife	Net knife actuator is powered	Possible damaged or shorted harness, or faulty controller
	Faulty one-way drive bearing in trip arm	Replace one way drive bearing
	Faulty knife home sensor	Adjust properly or replace of necessary

FAULT	Possible Cause	Checks
Mesh feeds and wraps into rotor	Movable net roller did not move into net feed position	Moveable net roller solenoid not being powered or poor ground
		Tailgate not operated in float position
	All three rubber mesh flaps up	The middle flap should be left down at all times.

Pick-up and Knife Functions

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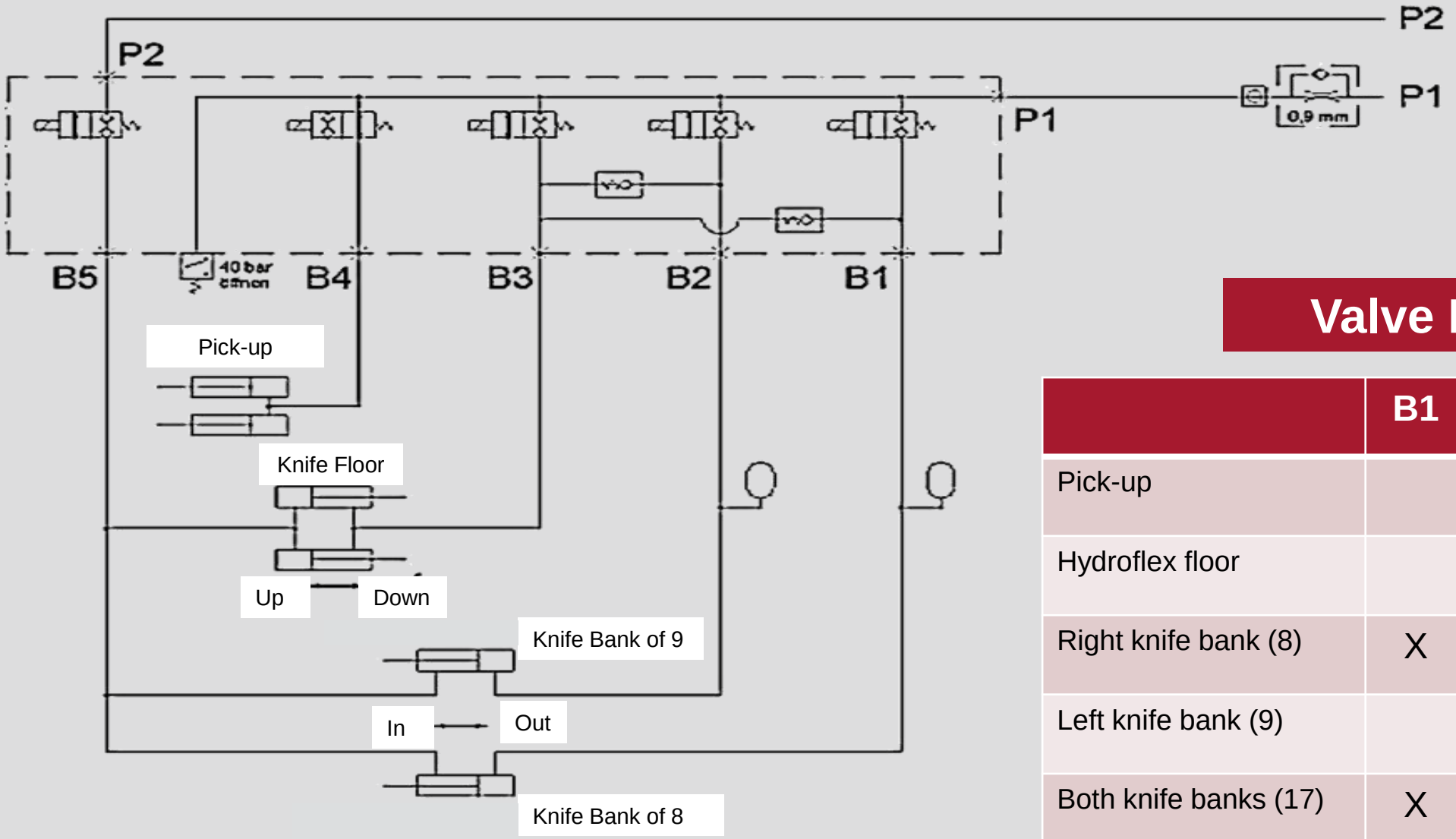
Hydraulic Schematic



Valve Logic

	B1	B2	B3	B4	B5
Pick-up					
Hydroflex floor			X	X	X
Right knife bank (8)	X			X	X
Left knife bank (9)		X		X	X
Both knife banks (17)	X	X		X	X

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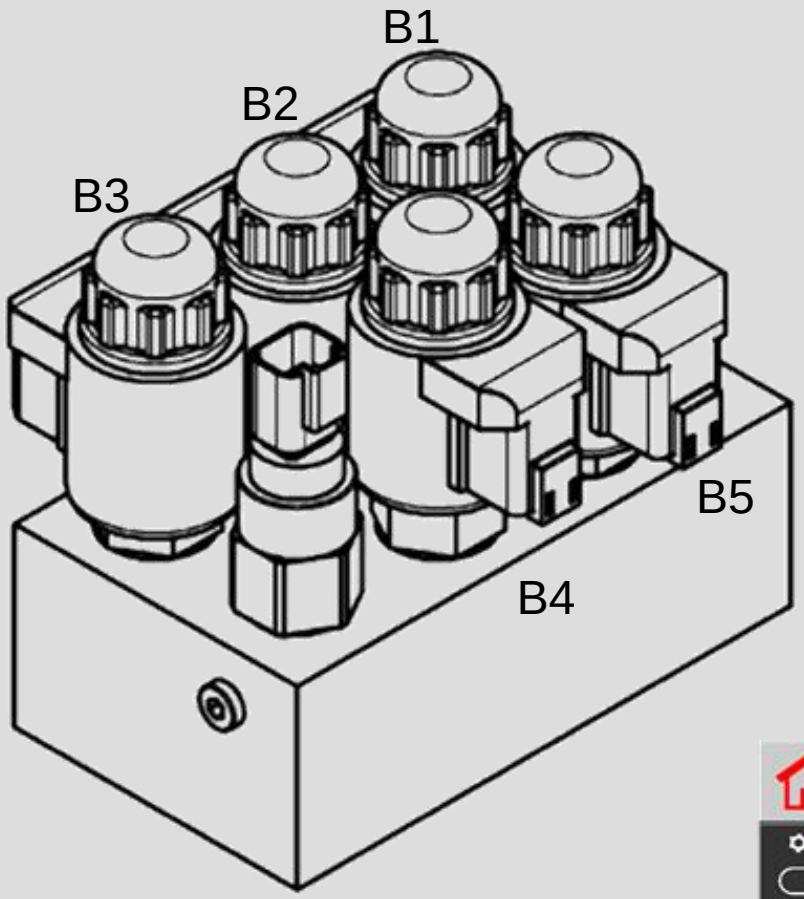
Pick-up and Knife floor operation



Pick-up is the default position for the valve. No **solenoids** are energized to allow pick-up operation.

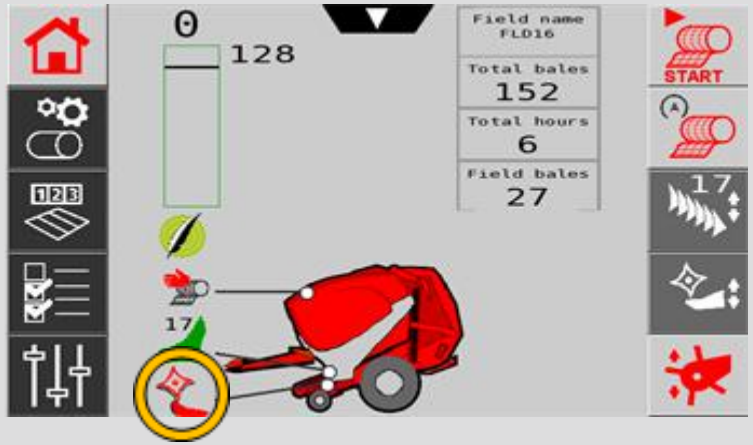
Upon selecting the **floor option** in the monitor, solenoid **B3, B4, and B5 will energize**.

Solenoid B3 receives power from pin 13 of the controller and runs to terminal 1 on a tan wire. Ground is to terminal 2 on a black wire.

Solenoid B4 and B5 receive power from pin 3 of the controller and runs to terminal 1 of each solenoid on a tan wire. Ground on each solenoid is terminal 2 on a black wire.

The **B4 and B5 solenoid** are **always** energized together.

When the floor is lowered, the icon will be displayed on the monitor as shown below.



Right and Left knife bank function

When 8 knives is selected, **solenoid B1** will be **energized** while **raising and lowering the knives**. The monitor will show an icon for 8 knives engaged.

When 9 knives is selected, **solenoid B2** will be **energized** while **raising and lowering the knives**. The monitor will show an icon for 9 knives engaged.

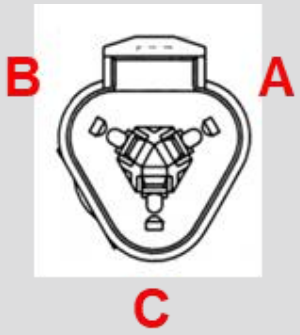
When 17 knives is selected, **both solenoid B1 and B2** will be **energized** while **raising and lowering the knives**. The monitor will show an icon for 17 knives engaged.

Solenoid B1 receives power from pin 1 of the controller, to terminal 1 of the solenoid, on a tan wire. Ground is terminal 2 on a black wire.

Solenoid B2 receives power from pin 11 of the controller, to terminal 1 of the solenoid, on a tan wire. Ground is terminal 2 on a black wire.

NOTE: Once either knife bank is completely raised into the cut position, the solenoid will be de-energized. The reason is for proper operation of the accumulators.

Knife floor sensor



The **knife floor sensor** detects the position of the knife floor and whether it is up or down.

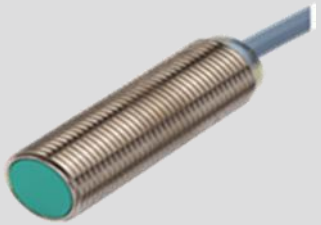
The sensor must be set to a maximum distance of 2mm from the **knife floor** cylinder.

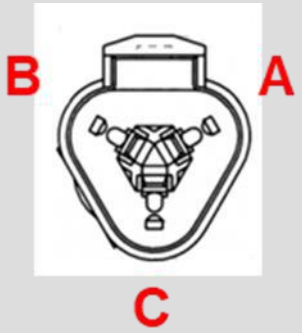
When the **knife floor** is up, the sensor sees metal and is switched on, the control LED on the sensor lights up and in the sensor diagnostics menu the state will be at a 1.

The signal wire from terminal A of the sensor runs to pin 36 of the controller on a yellow wire. Power is supplied to terminal C (red wire), and ground is terminal B (black wire).

AGCO part number is 72635491

Right knife bank sensor





The **right knife bank sensor** detects whether the bank of **8 knives** is up or down.

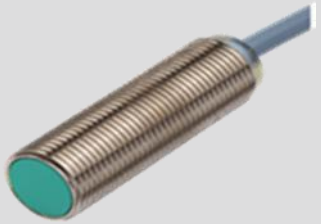
As soon as the bank of **8 knives** is brought up, the sensor sees metal and is switched on, the control LED on the sensor lights up and in the sensor diagnostics menu the state will be at a 1.

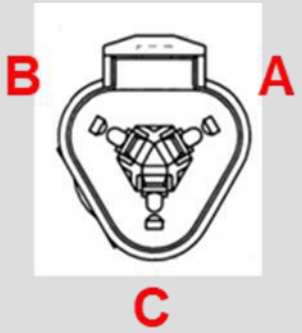
The sensor must be set to a maximum distance of 2mm from the ring drive wheel.

The signal wire from terminal A of the sensor runs to pin 35 of the controller on a yellow wire. Power is supplied to terminal C (red wire), and ground is terminal B (black wire).

AGCO part number is 72635491

Left knife bank sensor





The **left knife bank sensor** detects whether the bank of **9 knives** is up or down.

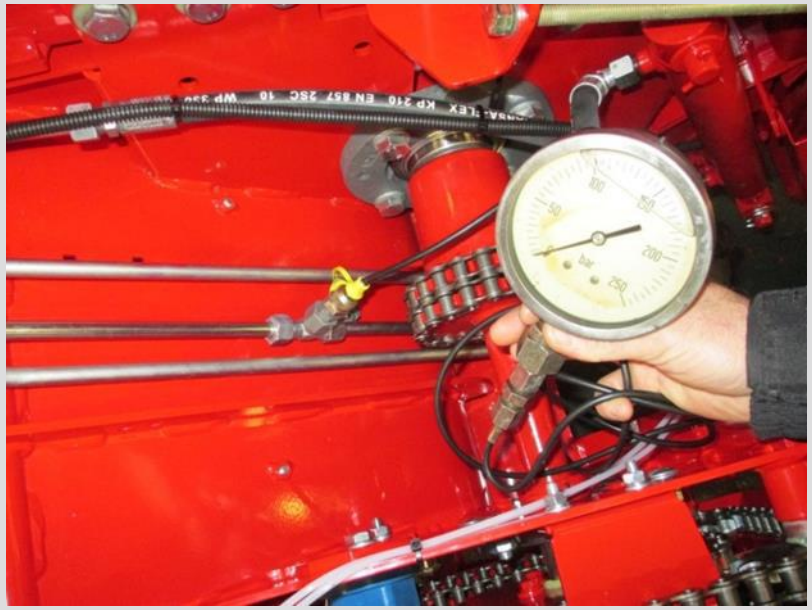
As soon as the bank of **9 knives** is brought up, the sensor sees metal and is switched on, the control LED on the sensor lights up and in the sensor diagnostics menu the state will be at a 1.

The sensor must be set to a maximum distance of 2mm from the ring drive wheel.

The signal wire from terminal A of the sensor runs to pin 34 of the controller on a yellow wire. Power is supplied to terminal C (red wire), and ground is terminal B (black wire).

AGCO part number is 72635491

Knife Protection



The knives are **protected hydraulically** against overload. Each knife bank is protected with an accumulator.

If 45 bar (650 psi) pressure is exceeded, **the knives retract automatically**

The knife symbol on the monitor display will disappear.

The oil is **forced into an accumulator** when overloaded. When the **pressure declines**, the knives return via the **accumulator** pressure into the cutting position.

To check the pressure of the cutting device accumulator, test points are fitted in the hydraulic lines. For the bank of 8 knives the fitting is on the right side of the baler, for the bank of 9 knives the fitting is on the left.

To test move the knives into the cutting position and connect a pressure gauge

Normal reading is **40-45 Bar (580-650 psi)**

Pick-up and Knife Troubleshooting

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FAULT	Possible Cause	Checks
No function works except pick-up	Faulty B5 solenoid	Replace solenoid
	No power or poor ground to B5 solenoid	Check wiring to B5 solenoid
	Trash build-up in B5 solenoid valve spool	Remove valve spool and clean out

FAULT	Possible Cause	Checks
Knives will not engage but floor will move	If bank of eight knives won't raise or lower	Check B1 solenoid for power and ground. Replace if necessary
	If bank of nine knives won't raise or lower	Check B2 solenoid for power and ground. Replace if necessary
	Trash build up in B1 or B2 valve spool	Remove spool and clean trash

FAULT	Possible Cause	Checks
Floor will not move up or down, but knives will move	B3 solenoid not shifting	Check B3 solenoid for power and ground. Replace if necessary.
	Trash in B3 valve spool	Remove spool and clean out trash

FAULT	Possible Cause	Checks
Knives retract when baling heavy windrow	Normal operation	The knives will retract when 650 PSI is exceeded
Knives retract with minimal load	B1 or B2 solenoid has constant power	Check for voltage at solenoid and diagnose wiring

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