GRAIN LOSS MONITOR
Dj GLM 200

INSTALLATION and OPERATING MANUAL

DICKEY-john
CORPORATION
# TABLE OF CONTENTS

**INTRODUCTION** ................................................................................................................. 1

**INSTALLATION** ..................................................................................................................... 3
  - Control Console ................................................................................................................ 3
  - Battery Connections ........................................................................................................... 5
  - Suppressors ....................................................................................................................... 8
  - Grain Sensors ................................................................................................................... 8
  - Ground Speed Sensor ....................................................................................................... 8
  - Cables (Walker-Type Combines) ....................................................................................... 9
  - Cables (Rotor Combines) .................................................................................................. 10
  - Cables (Pull-Type Combines) ......................................................................................... 10
  - Operator Controls ............................................................................................................ 11

**SYSTEM CHECK** .................................................................................................................. 13
  - Operational Check .......................................................................................................... 13
  - Control Console .............................................................................................................. 13
  - Ground Speed Sensor ..................................................................................................... 14
  - Grain Sensors .................................................................................................................. 14

**OPERATION** ......................................................................................................................... 17
  - Operating Procedures ...................................................................................................... 17
  - Distance Mode .................................................................................................................. 17
  - Time Mode ....................................................................................................................... 19

**TROUBLESHOOTING** .......................................................................................................... 21
  - Control Console ............................................................................................................ 21
  - Ground Speed Sensor ..................................................................................................... 21
  - Grain Sensors .................................................................................................................. 22
  - Grain Sensor Cable Repair .............................................................................................. 27
  - Bulb Replacement ............................................................................................................. 27
  - Routine Daily Maintenance .............................................................................................. 28

© 1980 DICKEY-john Corporation
INTRODUCTION

The DICKEY-john Dj GLM 200 Grain Loss Monitor is a solid state electronic unit consisting of a control console, four grain sensors, a ground speed sensor, and a wiring harness. The control console is located near the operator's station and provides a visual indication of the separation loss during harvesting. Two of the grain sensors are mounted on the rear of the two outside straw walkers or at the discharge end of the rotor and two are mounted on the rear of the shoe in order to detect a sample of the lost grain as it passes out the rear of the combine. The ground speed sensor is mounted on the combine drive axle and provides the console with a ground speed signal relative to the distance traveled. The wiring harness connects the sensors to the console and also connects the system to the combine storage battery (operates only on 12 volts D. C.).

The value of the Grain Loss Monitor lies in its ability to provide the operator with information concerning the threshing operation of his combine. When the operator has adjusted his combine to a grain loss level which is satisfactory for harvesting, he can calibrate the Dj GLM 200 system to this level and the system will then indicate an increase or decrease from this reference point. One method of checking for acceptable grain loss by the combine is to inspect the field for losses and then determine the best ground speed and combine adjustments to use.

The Dj GLM 200 Grain Loss Monitor's grain sensors detect a sample of grain as it passes out the rear of the combine and the monitor console processes this information and displays it as a reading on the meter. When the combine has been adjusted to an acceptable loss (by the operator) and the monitor calibrated to this level (as described in the operation section) the meter will then indicate a change in the grain loss level of the combine.
The monitor system has two operating modes. One of the modes is the DISTANCE Mode (normal operating mode) in which the monitor will indicate loss per area independent of changes in the ground speed of the combine. The other mode is the TIME Mode in which the operation of the monitor console and grain sensors can be checked out as described in the SYSTEM CHECK section. This mode is also used when crop conditions are such that the ground speed falls below the drop-out level of the ground speed sensor signal (typically 1/2 mph) or in the event of a malfunction of the ground speed sensor. If one of these conditions exist the monitor system indicates the relative grain loss per unit of time.

The control console front panel contains a meter and the controls necessary for the operator to adjust the system to a desired operating range for the type of grain being harvested. The indicator is a meter with a green/yellow/red scale which is used to indicate either a satisfactory grain loss condition (green portion of scale) or intermediate area (yellow portion of scale) or an excessive loss condition (red portion of scale) by means of its pointer. The indicator is backlit for night operation.

The console front panel contains six operator controls plus a meter indicator.

The SENSORS select switch on the monitor front panel is labeled TEST-SHOE-WALKER/ROTOR-BOTH. In the TEST position an internal signal is generated enabling the operator to test the operation of the console and ground speed sensor. When the control is set to either the SHOE or WALKER/ROTOR position, only the shoe or walker/rotor grain sensors are being monitored. These positions allow the operator to determine where the greatest separation loss is occurring (shoe or walker/rotor). The BOTH position is the one used during normal combine operations and indicates that both sets of grain sensors (shoe and walker/rotor) are being monitored by the console. The METER CALIBRATION control and GRAIN SENSITIVITY control operate in conjunction with one another to set the accepted reference grain loss point and loss sensitivity for any given grain. The three two-position switches across the bottom of the console front panel are labeled POWER, ALARM MODE, and SYSTEM MODE. The POWER switch applies power to the monitoring system in the ON position. The ALARM MODE switch is a two-position switch with one position labeled METER and the other position labeled SEEDS. When the switch is in the METER position the alarm will periodically sound when the meter indicator moves into the red zone (meter reading of approximately 3.25) and remains there for over 10 seconds indicating an unsatisfactory increase in grain loss. When the switch is in the SEEDS position the alarm will sound (chirp) when grain strikes the grain sensors. The SYSTEM MODE switch is a two-position switch with one position labeled DIST (distance) and the other position labeled TIME. When the switch is in the DIST position the system will indicate relative grain loss per area. When the switch is in the TIME position the system will indicate relative grain loss per unit of time.

The wiring harness consists of three separate cables. One two-conductor cable is used to connect the monitor console to the combine 12-volt battery. The second two-conductor cable is used to connect the ground speed sensor to the monitor console and the four-conductor cable with the molded junction is used to connect the grain sensors to the monitor console. Each of the harnesses are of sufficient length to fit the largest combines.

A variety of grain sensor mounting brackets are available to permit mounting the grain sensors on most combines. The correct brackets are provided to fit your particular combine.
INSTALLATION

Before starting the installation be sure to read the entire manual. Read the installation instructions furnished with the grain sensors and the ground speed sensor. THE MOST IMPORTANT PART OF THE ENTIRE INSTALLATION IS THE MOUNTING OF THE GRAIN SENSORS AND THE GROUND SPEED SENSOR. A proper installation will provide proper results, an improper installation will not.

Make sure cables are routed where they will not be damaged by moving parts, gears, sharp edges, etc. A damaged cable will make the system inoperative.

Control Console

The control console should be located near the operator's station (preferably directly in front of the operator) where it will be accessible to the operator without obstructing or diverting his normal driving view. The mounting bracket may be attached to the control console with the mounting holes oriented up or down as required.

---

Figure 2

- Refer to the above illustration and select a location for mounting the console as described above.
- Use the mounting bracket as a template to mark the location of the bracket mounting holes.
- Drill two 9/32” diameter mounting holes where marked.

CAUTION: Make sure you check the opposite side of the drilling surface to make certain there is ample clearance and that it is free of wiring, etc.
Attach the mounting bracket to the mounting surface using two 1/4 - 20 x 3/4" bolts, lockwashers, and nuts supplied.

Mount the console to the mounting bracket using two 1/4 - 20 x 3/4" hex head bolts.

CAUTION: The console has a Wellnut on each side and care must be exercised when tightening the bolts. Refer to the above illustration and tighten the two bolts just enough to keep the console supported without slipping. DO NOT OVERTIGHTEN BOLTS, AS THIS WILL CRACK CONSOLE SIDES AND VOID ITS WARRANTY.
Battery Connections

Figure 5

THIS IS A 12-VOLT D. C. (battery) SYSTEM. The battery cable has two wires, a Red wire and a Black wire, each terminated in a ring terminal. Attach the RED wire directly to the positive (+) battery terminal. Attach the BLACK wire directly to the negative (−) battery terminal.

Figure 6

Secure battery cable with tie wraps furnished. To avoid the possibility of electrical noise on the console battery cable do not align console battery cable in close proximity to existing battery leads. Do not fasten console battery cable to any of the existing cables from the battery to the combine. The battery, ignition, and electrical system of the combine must be in good working order.
NOTE: The control console has a ground stud on the back. If, when checking out the system, electrical noise creates a problem this ground stud should be connected to a nearby metal combine frame ground.

The diagrams shown are typical battery hookups.

On combines having two 6-volt batteries that are so widely separated that the console battery cable will not reach both of them, the battery cable should be connected in one of the following ways.
NOTE: When connecting a console battery lead to the combine frame, an existing bolt may be used or a new hole can be drilled, but in either case, the terminal of the console battery lead must be in direct contact with clean, bare metal of the frame (any layer of dirt, paint or rust, no matter how thin, can cause a poor electrical connection and must be removed). Care must also be taken to insure that the part of the frame member to which the console battery lead is connected is part of the same frame member to which the battery is connected, and not a bolted-on connection.

On combines equipped with a positive ground battery system the monitor power cable must be connected as follows. The red lead must be connected to the positive terminal on the battery and the black lead must be connected to the negative terminal on the battery. NOTE: ON POSITIVE GROUND BATTERY SYSTEMS DO NOT CONNECT THE CONSOLE GROUND STUD TO CHASSIS GROUND.

If your combine battery arrangement is different than those shown, or if there is any question as to where to connect console battery wires, use a voltmeter to make sure you have from 11 to 14 volts across the Red and Black wires. On combines having two 12-volt batteries, make sure console battery leads are connected directly to the grounded battery.

NOTE: Good battery connections are essential for proper operation. Make sure connections are clean and tight.
Suppressors

Field experience indicates that many gasoline engines have problems with their electrical systems that can be detrimental to the operation of any electronic system. The Grain Loss Monitor should not be affected by ignition noise if the electrical system is in good working order. If interference causes the monitor to give false indications, an ignition suppressor should be installed on the distributor coil wire. In some cases, especially when using gasoline-powered combines, suppressors may also have to be installed on each spark plug. (Ignition suppressor Dj part no. 20393, spark plug suppressor Dj part no 20392).

Grain Sensors

NOTE: ON ROTARY COMBINES THE ROTOR SENSORS ARE MOUNTED NEAR THE REAR OF THE ROTOR AS DESCRIBED IN THE GRAIN SENSOR INSTALLATION INSTRUCTIONS.

![Diagram of grain sensor installation](image)

Refer to the grain sensor installation instructions furnished with each type of grain sensor. Install the sensors exactly as described, making sure the sensors will not hit any side walls, shields, or interfere with stationary or moving parts when the walker/rotor and shoe are in operation. Before using the combine for harvesting, make absolutely sure the sensors are not loose on their mounting hardware. This is to insure they will not be torn loose by the material being discharged through the rear of the combine, or by vibration. ALWAYS REMOVE DEBRIS FROM SENSOR PADS AND MOUNTING BRACKETS DAILY.

Ground Speed Sensor

Refer to the ground speed sensor mounting instructions included with the sensor, and mount the sensor exactly as described. Make sure that the spacing between the circular magnet assembly and the pick-up coil assembly is as shown on the instructions. Mount the sensor on the axle where it will be shielded from any stubble remaining in the field.
Cables (Walker-Type Combines)

Refer to the figures above, for typical cable routing. The cable for the ground speed sensor should follow along the right side of the combine, as shown, down to the speed sensor, which is usually mounted near the right wheel.

The grain sensors cable can also be routed down along the right side of the cab, under the combine, to the left side as shown. The cable junction should be mounted on the outside, approximately in the position shown. Leave enough slack, where shown, to permit the sensors to move back and forth during combining without placing any strain on the leads to the sensors. Use sufficient tie wraps to keep all cables away from sharp edges, gears, and other moving parts.

Make sure the connector plugs at the rear of the control console are fully inserted and the knurled locking ring on the connector actually “snaps” into its locked position. The ground speed sensor plug has two wires attached to it. It must be plugged into the cable connector tagged GROUND SPEED INPUT. The grain sensors connector plug has four wires attached to it. Make sure it is fully inserted into the cable connector tagged MATERIAL SENSOR INPUT. Make sure that pin #1 mates with pin #1 on the socket.

The battery cable should be routed directly to the 12-volt battery. To avoid noise problems do not align console battery cable in close proximity to existing battery leads.
Cables (Rotor Combines)

Refer to the Installation Instructions Dj GLM Cable Routing supplied with the grain loss system for your combine and install the cables as described. Make sure the cables are secured where they will not be damaged by moving shafts, gears, belts, etc. Any excess cable lengths should be coiled and secured where they will not be damaged or cause a buildup of debris.

Cables (Pull-Type Combines)

Refer to the figures above for approximate cable routing. Secure the combine harness hitch connector in the approximate position shown. Route the combine harness along the tongue and down the left side of the combine. Secure the grain sensor cable molded junction in the approximate position shown. Route the ground speed sensor cable to the ground speed sensor as shown. Use sufficient tie wraps to keep all cables away from sharp edges, gears, and other moving parts.

Route the extension cable from the monitor console to the hitch connector as shown. Make sure the connector plugs at the rear of the console are fully inserted and the knurled locking ring on the connector actually "snaps" into its locked position. The ground speed sensor cable has two conductors and must be plugged into the console cable tagged GROUND SPEED INPUT. The grain sensors cable has four conductors and must be plugged into the console cable tagged MATERIAL SENSOR INPUT.

The battery cable should be routed directly to the 12-volt battery. To avoid noise problems, do not align console battery cable in close proximity to existing battery leads.
OPERATOR CONTROLS

FRONT PANEL

SENSORS switch — This switch is a four-position rotary switch with the positions labeled TEST-SHOE-WALKER/ROTOR-BOTH.

TEST position — an internal seed signal is generated enabling the operator to test the operation of the console and ground speed sensor.

SHOE position — system monitors only the shoe sensors and displays the relative grain loss on the meter.

WALKER/ROTOR position — system monitors only the straw walker sensors or rotor sensors and displays the relative grain loss on the meter.

BOTH position — system monitors both the straw walker/rotor and shoe sensors and displays the total relative grain loss on the meter.

METER CALIBRATION — This control sets the amount of meter deflection and is used to position the meter indicator to a point (normally 1) on the scale so that an increase or decrease in relative grain loss can be observed.

GRAIN SENSITIVITY — This control sets the system sensitivity to the grain striking the grain sensors. Usually small soft grain such as barley or rice require a more sensitive setting (MAX.) than large hard grains such as corn which requires a less sensitive setting (MIN.).

POWER switch — This switch is a two-position slide switch with the positions labeled OFF and ON. In the ON position POWER is applied to the monitor system. In the OFF position POWER is removed from the monitor system.

ALARM MODE switch — This switch is a two-position slide switch with the positions labeled METER and SEEDS.

METER position — the alarm periodically sounds for one second when the meter indicator moves into the red zone (meter reading of approximately 3.25) and remains there for over 10 seconds.

SEEDS position — the alarm sounds (chirps) when grain strikes the grain sensors or when tapping on the grain sensors with a sharp object (pencil or screwdriver).

SYSTEM MODE switch — This switch is a two-position slide switch with the positions labeled DIST. (distance) and TIME.

DIST position — system indicates relative grain loss per area.

TIME position — system indicates relative grain loss per unit of time.
SYSTEM CHECK

After the system has been installed, check the routing of the harness cables and make certain they are routed and secured where they will not be damaged during operation of the combine.

Check the installation of the sensors. Make certain all bolts are tight and the lead routing off the sensors will not cause any unnecessary build up of stubble or debris. Make sure the grain sensors will not hit any sidewalls, shields or interfere with any stationary or moving parts when the separator is in operation. Make sure the shoe sensors do not hit the steering tires when they are completely turned in either direction.

Operational Check

![Control Console Image]

Figure 18

Control Console

- Set the POWER switch to the ON position.
- Set the ALARM MODE to the SEEDS position.
- Set the SYSTEM MODE to the TIME position.
- Set the GRAIN SENSITIVITY control to MAX. (fully clockwise).
- Set the METER CALIBRATION control to MIN. (fully counterclockwise).
- Set the SENSORS switch to the TEST position.

The alarm should be sounding at a rapid chirping rate.

- Rotate the METER CALIBRATION control in a clockwise direction and note that the meter will deflect to full scale.

If the alarm chirps and the meter deflects the console is operational in the TIME MODE.
Ground Speed Sensor

- Set the POWER switch to the ON position.
- Set the ALARM MODE to the METER position.
- Set the SYSTEM MODE to the DIST (distance) position.
- Set the GRAIN SENSITIVITY control to MAX. (fully clockwise).
- Set the METER CALIBRATION control to MIN. (fully counterclockwise).
- Set the SENSORS switch to the TEST position.

To check the ground speed sensor the vehicle must be in motion at a speed above one MPH. NOTE: DO NOT ENGAGE SEPARATOR.

- While the vehicle is moving at a constant speed (above three MPH) advance the METER CALIBRATION control clockwise until a meter reading of approximately 2.5 is obtained.
- Increase vehicle speed and note that the meter reading decreases.
- Decrease vehicle speed (stay above one MPH) and note that the meter reading increases.
- Decrease vehicle speed until the meter reading is 3.25 or slightly above. Note that after approximately 10 seconds the alarm sounds for approximately 1 second. The alarm will sound for 1 second at 10 second intervals as long as the meter reading remains at 3.25 or above.

If the meter reading varies as described above the console and ground speed sensor are operational in the DIST MODE.

NOTE: The above procedure is only used to confirm the ground speed sensor is functioning. The changing meter indication versus ground speed changes do not occur during normal operation.

Grain Sensors

CAUTION: BEFORE CHECKING SENSORS MAKE CERTAIN THE COMBINE IS STOPPED AND THE ENGINE IS OFF.

- Set the POWER switch to the ON position.
- Set the ALARM MODE to the SEEDS position.
- Set the SYSTEM MODE to the TIME position.
Set the GRAIN SENSITIVITY control to MAX. (fully clockwise).

Set the SENSORS switch to the SHOE position.

Tap on each shoe grain sensor sounding board with a sharp object (pencil or screwdriver) or drop seeds from a minimum distance of six inches. The alarm on the console should sound (chirp) for each impact on the shoe grain sensor sounding boards.

Set the SENSORS switch to the WALKER/ROTOR position.

Tap on each walker or rotor grain sensor sounding board with a sharp object (pencil or screwdriver) or drop seeds from a minimum distance of six inches. The alarm on the console should sound (chirp) for each impact on the walker or rotor grain sensor sounding boards.

Set the SENSORS switch to the BOTH position.

Set the ALARM MODE to the METER position.

Set the METER CALIBRATION control to MAX. (fully clockwise).

Have an observer stationed where he can observe the meter. Continuously tap on one of the grain sensors and have the observer note that the meter needle moves into the red zone and the alarm sounds momentarily after a delay of 10 seconds. If the tapping on the sensor is continued the meter reading will remain in the red zone and the alarm will sound periodically (every 10 seconds).

If the alarm sounds (chirps) when tapping on the sensor sounding boards of all the grain sensors as described above then the grain sensors are functioning and are operational.
 OPERATION

The Dj GLM 200 Grain Loss Monitor has the capability of operating in two modes, either the Distance Mode or the Time Mode. In the Distance Mode the ground speed signal from the Ground Speed Sensor is utilized and the monitor will indicate relative grain loss per unit of area. In the Time Mode the ground speed signal is ignored and the monitor will indicate relative grain loss per unit of time.

In the Distance Mode, which is the recommended mode of operation, the monitor console processes the information from the grain sensors and the ground speed sensor and indicates the relative grain loss per unit of area on the meter indicator. When the monitor controls are set for an acceptable grain loss condition, which is determined by the operator, any changes in the separator loss will be seen on the meter. The monitor will enable the operator to save grain by indicating to the operator when changes in field conditions are affecting the combine separating efficiency and by indicating the results of any corrective action taken.

In the Time Mode the monitor console processes the information from the grain sensors and indicates the relative grain loss per unit of time on the meter indicator. As the material flow is increased or decreased the indicated grain loss should follow the same pattern since the monitor is indicating the grain loss per unit of time.

In either mode the Grain Loss Monitor is used for assisting the operator in determining the best rate of ground speed during harvesting.

Operating Procedures

Distance Mode

To prepare the monitor for operation:

- Set the POWER switch to ON.
- Set the ALARM MODE switch to METER.
- Set the SYSTEM MODE switch to DIST (distance).
- Set the SENSORS switch to BOTH.
- Set the METER CALIBRATION control to MAX. (fully clockwise).
- Set the GRAIN SENSITIVITY control to MIN. (fully counterclockwise).
Begin operating the combine in a normal manner while harvesting a test strip. NOTE: Make sure that the crop being harvested and the combine loading and adjustments will be representative of normal operating conditions.

After the combine is fully loaded and operating at the ground speed expected for normal or satisfactory conditions, advance the GRAIN SENSITIVITY control slowly clockwise until the meter indicates a full scale reading of 5, then advance the control one or two more divisions clockwise. NOTE: Usually small, soft grains such as barley or rice require a more sensitive (MAX.) setting than larger, harder grain such as corn which requires a less sensitive (MIN.) setting. Typically the settings are: corn and beans 6 – 7, wheat 7 – 8, barley, rice or rapeseed 8 – 9.

Rotate the METER CALIBRATION control counterclockwise until the meter indicates a green zone setting of 1. This sets the loss reference position of the indicator.

After the desired setting has been obtained, stop the combine and check the ground behind the combine for grain loss. If the separator losses are acceptable, continue combining. The monitor will now indicate whether the separator losses are increasing or decreasing as compared to the loss found during the test run. Greater grain loss will be indicated by an upscale deflection into the red zone by the meter pointer. The operator can then make the necessary separator adjustments or make a change in the ground speed in order to reduce the grain loss.

The WALKER/ROTOR and SHOE positions of the console SENSORS switch enable the operator to make comparative checks of the separator loss at either the walkers, rotor or the shoe, by switching to the desired position. To do this, switch to the WALKER/ROTOR and SHOE positions while the combine is operating satisfactorily. Note the pointer deflection for each position.

Generally, if the WALKER/ROTOR position indicates an increase in grain loss, the cause may be improper threshing or a partially plugged walker. If the SHOE position indicates an increase in grain loss, the air flow or the sieves are not set properly. In addition, variations in ground and crop conditions can affect losses in both the walkers and the shoe. If plugging of the shoe sensor brackets occur during operation, remove the sensor seed combs.

When normal operating conditions are obtained, the meter pointer will remain in the green zone but may produce some momentary excursions into the yellow or red zone. Such momentary deflections should be ignored unless they occur frequently. In such cases, the operator should inspect the ground behind the combine, combine, and monitoring system for potential problems.

If the result of the first test strip run was not satisfactory, adjust combine and repeat the test, using the procedure described above.

NOTES:

1. Grain conditions may vary which can cause the calibration of the system to change. This may require a change in the calibration setting.

2. If losses are very low, the meter pointer may remain at the zero position.
3. Always remove debris from sensors at the end of each day. If plugging of the shoe sensor
brackets occur try removing the combs from the sensors.

4. When harvesting corn and a chopper is used, install a chopper slow-down kit if one is available.

5. If the combine ground speed falls below 1/2 MPH the distance input signal from the ground
speed sensor will drop out causing the loss per area reading to fall to zero. When harvesting
at slow speed (1/2 MPH or less on self-propelled and 1 1/2 MPH on pull-type combines) the
monitoring system should be used in the TIME mode.

Time Mode

In the Time Mode the monitor will indicate relative grain loss per unit of time and the operating
procedure must be performed while harvesting at a desired constant ground speed.

To prepare the monitor for operation:

- Set the POWER switch to ON.

- Set the ALARM MODE switch to METER.

- Set the SYSTEM MODE switch to TIME.

- Set the SENSORS switch to BOTH.

- Set the METER CALIBRATION control to MAX. (fully clockwise).

- Set the GRAIN SENSITIVITY control to MIN. (fully counterclockwise).

- Begin operating the combine in a normal manner while harvesting a test strip. NOTE: Make
sure that the crop being harvested and the combine ground speed, loading, and adjustments
will be representative of normal operating conditions.

- After the combine is fully loaded and operating at the ground speed expected for normal or
satisfactory conditions, advance the GRAIN SENSITIVITY control slowly clockwise until the
meter indicates a full scale position, then advance the control one or two more divisions
clockwise. NOTE: Usually small, soft grains such as barley or rice require a more sensitive
(MAX.) setting than larger, harder grain such as corn which requires a less sensitive (MIN.)
setting. Typically the settings are: corn and beans 6 – 7, wheat 7 – 8, barley, rice, or
rapeseed 8 – 9.

- Rotate the METER CALIBRATION control counterclockwise until the indicator indicates
a green zone setting of 1.

- After the desired reading has been obtained, stop the combine and check the ground behind
the combine for grain loss. If the separator losses are acceptable, continue combining. The
monitor will now indicate whether the separator losses are increasing or decreasing as
compared to the loss found during the test run. Greater grain loss will be indicated by an
upscale deflection into the red zone by the meter pointer. The operator can then make the
necessary separator adjustments or make a change in the ground speed in order to reduce the
grain loss.
The WALKER/ROTOR and SHOE positions of the console SENSORS switch enable the operator to make comparative checks of the separator loss at either the walkers, rotor or the shoe, by switching to the desired position. To do this, switch to the WALKER/ROTOR and SHOE positions while the combine is operating satisfactorily. Note the pointer deflection for each position.

Generally, if the WALKER/ROTOR position indicates an increase in grain loss, the cause may be improper threshing or a partially plugged walker. If the SHOE position indicates an increase in grain loss, the air flow or the sieves are not set properly. In addition, variations in ground and crop conditions can affect losses in the walkers, rotor and shoe. If plugging of the sensor brackets occur during operation, remove the sensor seed combs if they are installed.

When normal operating conditions are obtained, the meter pointer will remain in the green zone but may produce some momentary excursions into the yellow or red zone. Such momentary deflections should be ignored unless they occur frequently. In such cases, the operator should inspect the ground behind the combine, combine, and monitoring system for potential problems.

If the result of the first test strip run was not satisfactory, adjust combine and repeat the test, using the procedure described above.
TROUBLESHOOTING

The general procedure to use, when a problem occurs, is to determine all symptoms and isolate the cause to a particular sensor, sensor lead, wiring harness, or the control console, in that order.

The Dj GLM 200 Grain Loss Monitor System has a built in test mode which can help isolate problems. When a problem is suspected the operation of the monitor system should be checked as follows:

Control Console

- With the combine stationary and the engine OFF, set the POWER switch to ON, ALARM MODE switch to SEEDS, SYSTEM MODE switch to TIME, SENSORS switch to TEST, GRAIN SENSITIVITY control to MAX. (fully clockwise), and METER CALIBRATION control to MIN. (fully counterclockwise).

- The alarm should be sounding at a rapid chirp. Advance the METER CALIBRATION control in a clockwise direction and note that the meter pointer deflects to full scale.

- If the alarm sounds at a rapid chirp and the meter pointer deflects to full scale the console is operational in the TIME MODE. If not, the console is defective and needs to be repaired or replaced.

Ground Speed Sensor

To check the ground speed sensor the combine must be driven at a speed above one MPH. DO NOT ENGAGE SEPARATOR.

- Set the POWER switch to ON, ALARM MODE switch to METER, SYSTEM MODE switch to DIST, SENSORS switch to TEST, GRAIN SENSITIVITY control to MAX., and METER CALIBRATION control to MIN.

- Drive the combine at a constant speed above one MPH.

- Advance the METER CALIBRATION control clockwise until a meter reading of 2.5 is obtained.

- Increase combine speed and note that the meter reading decreases. Decrease combine speed and note that the meter reading increases.

- If the meter pointer deflects as described above, the ground speed sensor is operational in the DIST MODE. If not, the ground speed sensor is incorrectly adjusted or the ground speed sensor or harness is defective and needs to be repaired or replaced. (NOTE: Refer to the Installation Instruction for the ground speed sensor and adjust the sensor clearance as specified.)
Grain Sensors

**CAUTION:** BEFORE CHECKING SENSORS MAKE CERTAIN THE COMBINE IS STOPPED AND THE ENGINE IS OFF.

- Set the POWER switch to ON, ALARM MODE to SEEDS, SYSTEM MODE to TIME, GRAIN SENSITIVITY control to MAX., and the SENSORS switch to BOTH position.
- Tap on each grain sensor sounding board with a sharp object (pencil or screwdriver) or drop seeds from a minimum distance of six inches. The alarm on the console should sound (chirp) for each impact on the grain sensor sounding boards. If the alarm does not sound, repeat the test and if it still does not sound the grain sensor or sensor wiring harness is defective and needs to be repaired or replaced.

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor is completely dead.</td>
<td>Poor battery connections.</td>
<td>Check battery connections. Connections must be clean and tight.</td>
</tr>
<tr>
<td></td>
<td>Blown fuse.</td>
<td>Check fuse. The monitor contains a fuse in the negative (black) power lead. If blown, replace with a 1-amp fuse (Dj Part No. 20112-0023).</td>
</tr>
<tr>
<td></td>
<td>Cut or broken battery lead.</td>
<td>Check for cut or broken wires from battery. If cut or broken, splice the wires being sure to match wire colors. Solder the splices and tape each wire individually, USE ONLY ROSIN CORE SOLDER.</td>
</tr>
<tr>
<td>Monitor operates erratically. Light behind gage indicator flickers off and on.</td>
<td>Poor battery connections.</td>
<td>Check battery connections. Connections must be clean and tight.</td>
</tr>
</tbody>
</table>
## Dj GLM 200

### GRAIN LOSS MONITOR

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor indicator needle remains at zero in the Distance Mode and in</td>
<td>Ground Speed Sensor lead cut or</td>
<td>Check for cut or broken wires from Ground Speed Sensor.</td>
</tr>
<tr>
<td>ground speed sensor Test. Monitor operates satisfactorily in the Time</td>
<td>broken.</td>
<td>If damage is found, carefully cut away the cable covering.</td>
</tr>
<tr>
<td>Mode.</td>
<td></td>
<td>Repair damaged wire or wires by soldering wires together (USE ONLY ROSIN CORE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SOLDER) being sure to match wire colors, then tape over each repaired lead</td>
</tr>
<tr>
<td></td>
<td></td>
<td>using vinyl tape. Tape over cut portion of cable cover.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relocate path of cable so that the same type of damage will not occur again.</td>
</tr>
<tr>
<td></td>
<td>Ground Speed Sensor defective or</td>
<td>Inspect the sensor for any signs of physical damage such as loose mounting screws</td>
</tr>
<tr>
<td></td>
<td>incorrectly adjusted.</td>
<td>or cracked or broken sensor parts. If physical damage is found, replace ground</td>
</tr>
<tr>
<td></td>
<td></td>
<td>speed sensor. If no damage is found then check for excessive clearance between the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic circular housing and the pick-up assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unless otherwise specified, there should be 1/32-inch clearance between the two</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sensor parts. If necessary adjust pick-up assembly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check all sensor connectors for signs of corrosion. Make sure connectors are clean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and making good contact.</td>
</tr>
</tbody>
</table>
## DJ GLM 200

### GRAIN LOSS MONITOR

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor operates normally when the SENSOR select switch is in the SHOE position but has no indicator movement or alarm when the switch is in the WALKER/ROTOR position. (NOTE: This symptom may be reversed when the walker/rotor is normal and the shoe is malfunctioning.)</td>
<td>Shorted walker or rotor sensor lead.</td>
<td>Check walker or rotor wiring harness and repair short.</td>
</tr>
<tr>
<td>Monitor inoperative.</td>
<td>Defective walker or rotor sensor (shorted).</td>
<td>Replace defective walker or rotor sensor.</td>
</tr>
<tr>
<td>Shorted voltage lead on grain sensor.</td>
<td>Grain sensor shorted internally.</td>
<td>Check wiring harness from all grain sensors to monitor. Repair damaged wiring. (Refer to the following Grain Sensor Cable Repair.)</td>
</tr>
<tr>
<td>Monitor console defective.</td>
<td></td>
<td>Replace defective grain sensor.</td>
</tr>
<tr>
<td>With ALARM MODE TO SEEDS, SYSTEM MODE to TIME and SENSORS switch to BOTH, Alarm will not sound (chirp) when tapping on one of the sensors.</td>
<td>Broken lead to sensor.</td>
<td>Inspect wiring harness and repair. (Refer to the following Grain Sensor Cable Repair.)</td>
</tr>
<tr>
<td></td>
<td>Defective grain sensor.</td>
<td>Replace grain sensor.</td>
</tr>
<tr>
<td>Fuse in negative (black) power cable lead blown.</td>
<td>Monitor console defective.</td>
<td>Replace defective monitor console.</td>
</tr>
<tr>
<td></td>
<td>Battery cable leads reversed and monitor console grounding stud connected to chassis ground.</td>
<td>Make certain the Red lead of the battery cable is connected to the (+) positive terminal on the battery. If the combine has a positive ground battery system DO NOT connect the grounding stud to chassis ground.</td>
</tr>
</tbody>
</table>
**Dj GLM 200**

**GRAIN LOSS MONITOR**

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combine stationary with engine running, separator engaged and no seeds striking grain sensors. System in TIME mode with METER CALIBRATIONS and GRAIN SENSITIVITY controls to B and SENSORS switch to BOTH. Meter deflects when engine is revved up. Meter may deflect more when blower or flashers are turned on.</td>
<td>Electrical interference.</td>
<td><strong>NOTE:</strong> If the combine has a positive ground system DO NOT connect the grounding stud or sensor ground connection to chassis ground. Install a grounding strap between the grounding stud on the rear of the console and the combine chassis. Install a grounding strap at each sensor between the sensor ground connection (G) and the sensor's mounting bracket. Reroute the sensor cable.</td>
</tr>
</tbody>
</table>
MONITOR CONSOLE
(DJ GLM 200)

GROUND SPEED SENSOR

BATTERY

FUSE
(1 AMP)

+12V
(POS)

GND
(NEG)

RED
BLACK

SHOE SENSORS

WALKER/ROTOR SENSORS

MOLDED JUNCTION

PIN 4
BLACK
PIN 3
RED
PIN 2
WHITE
(SHOE)
PIN 1
GREEN
(WALKER/ROTOR)

MOLDED JUNCTION

GND
+12 V
+4.2 V
GND
+12 V
+4.2 V
GND
+12 V
+4.2 V

SHOE SENSORS

WALKER/ROTOR SENSOR

Figure 20
Grain Sensor Cable Repair

- Strip off approximately 3/8 inch of insulation from each end of the broken lead.

![Figure 21](image)

- Insert each bare wire into an in-line crimp-on connector and crimp with a crimping tool as shown. NOTE: If a crimping tool is not available, use combination pliers and crimp each lead in place with the wire cutting part of the pliers.

- Wrap vinyl tape over the leads and the crimp-on connector to make the connection weatherproof.

Bulb Replacement

![Figure 22](image)

- Remove the rubber plug located behind the meter on the back of the console.
Remove the bulb (Dj Part No. 20115) and replace as shown.

**ROUTINE DAILY MAINTENANCE**

The Dj GLM 200 is a valuable tool during the operation of your combine and like any good tool it must be taken care of to ensure that it will operate properly. The following maintenance should be performed after each day of harvesting.

1. Clean and wipe off the grain sensor sounding boards.
2. Check routing of grain sensor leads and remove any buildup of stubble and debris.
3. Check the grain sensor mounting brackets and make sure they are tight.
4. Check the ground speed sensor and remove any buildup of stubble and debris.
Dealers are requested to inform their customers of the following warranty prior to acceptance of an order from them for any DICKEY-john product.

DICKEY-john Warranty

DICKEY-john warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within one year from date of original installation, and is returned to DICKEY-john within 30 days after such defect is discovered, DICKEY-john will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident or improper installation or maintenance. Said part will not be considered defective if it substantially fulfills the performance specifications. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. DICKEY-john neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages. Purchaser accepts these terms and warranty limitations unless the product is returned within fifteen days for full refund of purchase price.
DICKEY-john products

FARM EQUIPMENT INSTRUMENTATION
PLANTER MONITORS
COMBINE GRAIN LOSS MONITORS
MOISTURE TESTERS
COTTON HARVESTING MONITORS
SPEED/AREA MONITORS
SPRAYER CONTROL SYSTEMS
SPREADER CONTROL SYSTEMS
GRAIN DRILL MONITORS
ANHYDROUS AMMONIA CONTROL SYSTEMS
TRACTOR PERFORMANCE MONITORS
GRAIN ANALYSIS COMPUTERS

first in agrionics

DICKEY-john® CORPORATION