

Evaluation Report

666



FG Auger Alert

F.G. MANUFACTURING AUGER ALERT

MANUFACTURER AND DISTRIBUTOR: (Under License)

Beline Manufacturing
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Kindersley, Saskatchewan
S0L 1S0
Tel: (306) 463-6491

RETAIL PRICE: \$275.00 (f.o.b. Kindersley, Saskatchewan; March 1991)

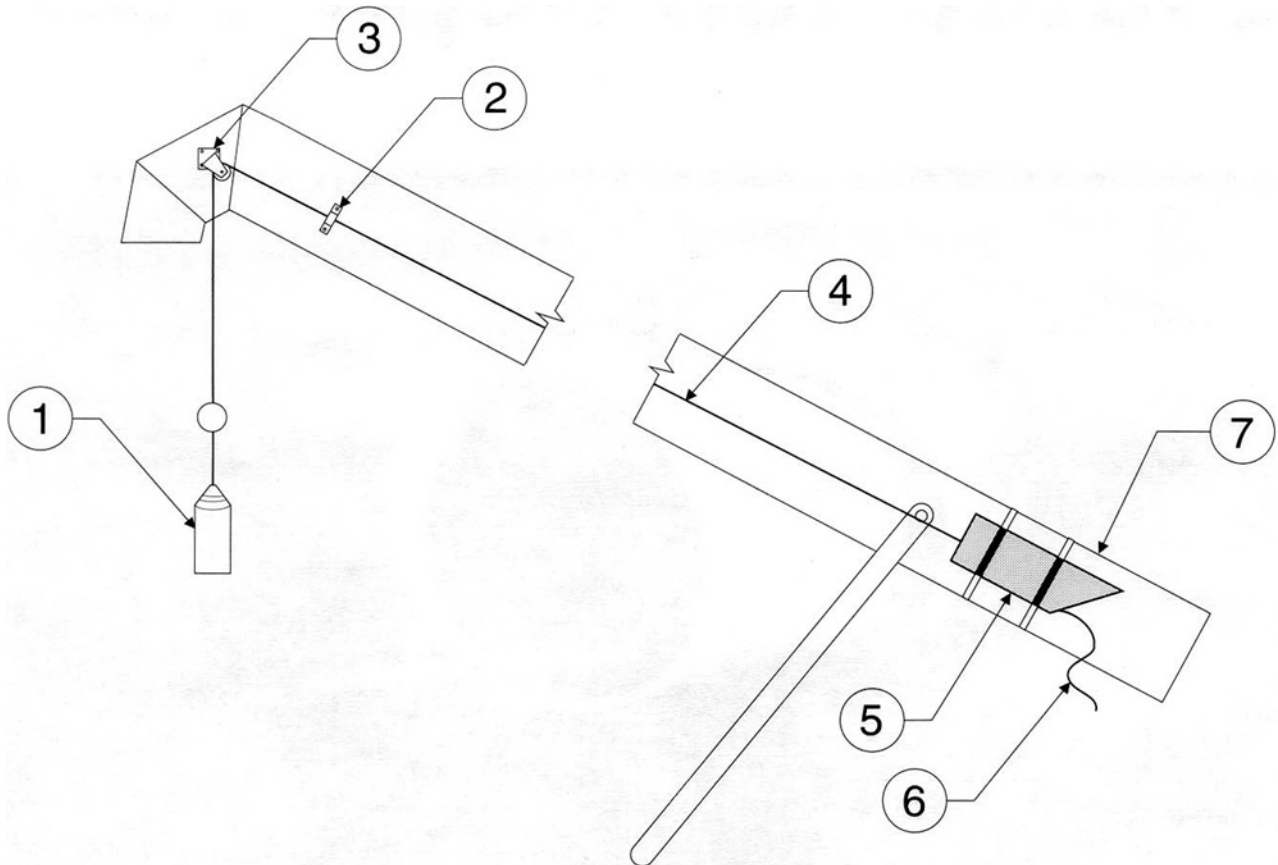


FIGURE 1. F.G. Auger Alert: (1) Switch Can, (2) Cable Guide, (3) Pulley, (4) Power Cable, (5) Electronics Container, (6) 12 Volt Power Source Cables, (7) Auger Tube.

SUMMARY

Quality of Work: The performance of the F.G. Auger Alert was very good. The Auger Alert was effective in alerting an auger operator of a full bin.

The Auger Alert did not diminish the capacity of the auger to which it was attached and did not alter or interfere with flowing grain.

Ease of Installation: Ease of Installation was very good. The auger alert was easily installed on a 50 ft (15.2 m), 10 in (255 mm) diameter grain auger and took one person about 30 minutes to install.

Ease of Operation and Adjustment: Ease of field operation was very good. The Auger Alert was easy to operate and required little operator experience. The Auger Alert did not require lubrication or daily service.

Ease of adjusting the Auger Alert was very good and took one person minimal time. The switch can was lowered into the bin or truck to the desired level and secured in that position.

Power Requirements: The Auger Alert required an independent 12 volt electrical power source. The device was supplied with power cables and suitable clips for attaching the cables to a battery.

Operator Safety: Safety was excellent. The Auger Alert was safe to operate, and when used as intended, helped prevent accidents at the auger site. In addition, use of the auger alert diminished the need to climb to the top of a bin to determine grain height.

Operator's Manual: The operator's manual was poor. Operational instructions consisted of a product literature sheet and a typewritten page with installation instruction.

Mechanical History: The pendulum switch within the sensor can failed at 15 hours.

RECOMMENDATIONS

It is recommended that the manufacturer consider:

1. Providing a more comprehensive and informative operator's manual,
2. Redesigning the pendulum switch to increase its durability.

Station Manager: B.H. Allen

Project Manager: R.K. Harris

THE MANUFACTURER STATES THAT

With regards to the recommendations (1-2):

1. We have rewritten the Operator's Manual with the help of a professional in order to better address the concerns of setting up and operation of the Auger Alert.
2. The pendulum switch has undergone a complete revamping, and has tested satisfactorily.

GENERAL DESCRIPTION

The F.G. Auger Alert is an electronic device that attaches to a grain auger or similar material conveyor for the purpose of alerting a conveyor operator of a full bin. The Auger Alert is activated when the level of grain in a bin or other container reaches a prescribed level. The auger operator is alerted to the level of a bin by an electrically operated automotive horn. An optional model has the capability of stopping the auger prime mover (electric motor, gasoline engine, or tractor engine) when the desired bin level is reached.

The Auger Alert consists of a mechanical switch arranged as a pendulum within a rubber coated can. The switch sensor can is suspended from the discharge end of the grain auger by a power cable. The cable passes through a pulley which is fastened to the side of the auger at the discharge. The cable is connected to an electronics pod which is attached to the outside of the auger tube in a position where it can be reached by the auger operator. The electronics pod contains the audio horn and the necessary electronics to power the device. Two power cords, a positive and negative, supply the 12 volt electrical power from a remote source.

Detailed specifications are given in APPENDIX I, while FIGURE 1 shows the location of major components.

SCOPE OF TEST

The machine evaluated by PAMI was configured as described in General Description, FIGURE 1, and the Specifications section of this report. The manufacturer may have built different configurations of this machine before or after PAMI tests. Therefore, when using this report, check that the machine under consideration is the same as the one reported here. If differences exist, assistance can be obtained from PAMI or the manufacturer to determine changes in performance.

The Auger Alert was first operated in the lab to determine the degree of angle deflection required to complete the electrical circuit and sound the horn, and determine sound levels of the horn.

The Auger Alert was mounted to the discharge of a Flexi-coil 10 inch grain auger for field testing.

RESULTS AND DISCUSSION

LABORATORY TESTS

The F.G. Auger Alert was set up in the laboratory to determine the angles at which the switch can had to be deflected to sound the horn. The circuit was completed when the switch can was deflected 25° in any direction. Sound levels of the horn were measured at 10 ft (3 m), 20 ft (6.1 m) and 30 ft (9.1 m) and were recorded as, 95.0 dB, 83.5 dB, and 81.0 dB, respectively.

QUALITY OF WORK

The performance of the F.G. Auger Alert was very good. The horn was effective in alerting the auger operator of a full bin and allowed time for the operator to close the end gate on the grain truck. The horn would sound when the grain level deflected the switch can to 25° in any direction. The switch can did not alter the flow of grain coming from the discharge of the auger.

EASE OF INSTALLATION

Ease of Installation was very good. The Auger Alert was easily installed on a 50 ft (15.2 m), 10 in (255 mm) diameter grain auger and took one person about 30 minutes.

The electronics pod containing the audio horn and on/off switch was attached to the lower portion of the auger tube, in a position where it did not interfere with auger operation and was easily reached by the operator. Plastic tie down straps were provided to attach the pod to the auger tube. Plastic tie down straps were used to secure the sensor wire to the remaining upper length of the auger tube. A pulley was attached to the outside of the auger discharge and the sensor wire was passed through the pulley. A metal wire guide was fastened to the sheet metal of the discharge tube to align the sensor switch can with the centre line of the discharge.

EASE OF OPERATION

Operation: Ease of operating the Auger Alert was very good. Operation consisted of adjusting the switch can to the desired height and

switching the unit on. The alarm was loud enough to be audible above the noise of most gas and electric motors or tractors used to power the auger. The Auger Alert did not require daily lubrication or servicing.

Adjustment: Adjustment was very good and took one person minimal time. The Auger Alert was adjusted by raising or lowering the sensor switch to the desired height within the bin. The adjustment was done by passing the sensor wire through the discharge pulley, and tying the wire at the electronics pod. The Auger Alert was supplied with 70 ft (21 m) of sensor wire and allowed a wide range of adjustment (FIGURE 2).

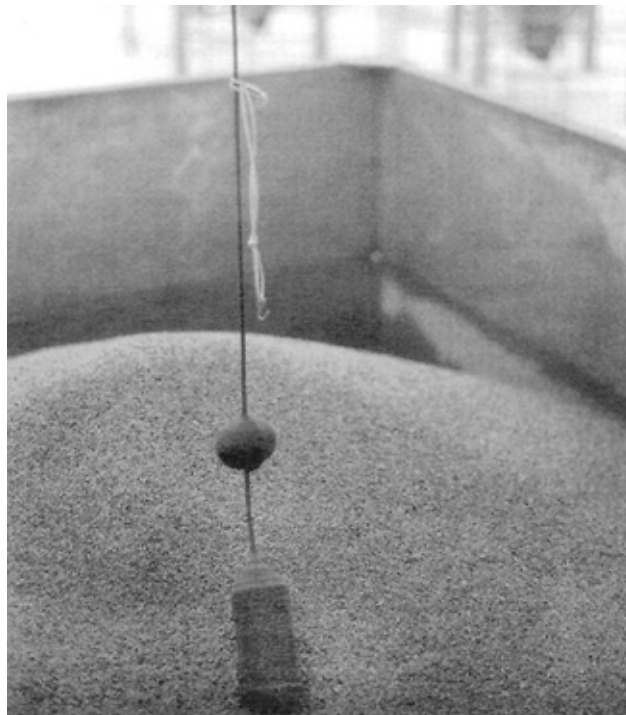


FIGURE 2. Sensor Can Lowered into Bin.

POWER REQUIREMENTS

The Auger Alert required a remote 12 volt power source and did not rely on dry cell storage batteries. It was equipped with 15 ft (4.5 m) of power hook-up wire with positive and negative battery clips. Attaching the battery clips to the battery of the powering tractor provided the necessary 12 volt power. If this grain auger was powered by an electric motor or manual start gasoline engine a separate 12 volt battery would be required to operate the Auger Alert.

OPERATOR SAFETY

Safety was excellent. The Auger Alert was safe to operate and posed no safety hazards to the operator. The Auger Alert diminished the need to climb high bins to determine the level of contents. An optional model (not tested) was available that would shut down the prime mover when the sensor switch can was tilted 250 by the rising grain column.

OPERATOR'S MANUAL

The operator's manual was poor, and consisted of a typed page showing installation instructions. The manual did not include much useful information. It is recommended that the manufacturer consider providing a more comprehensive and informative operator's manual.

MECHANICAL HISTORY

The pendulum switch within the sensor can failed at 15 hours. It is recommended the manufacturer consider redesigning the pendulum switch to increase its durability.

APPENDIX I

SPECIFICATIONS

| | |
|--------------------------------|---|
| MAKE: | Beline Manufacturing (under license) |
| MODEL: | Auger Alert |
| OVERALL DIMENSIONS: | |
| Sensor Switch Can: | |
| - Length | 5.5 in (140 mm) |
| - Diameter | 2.7 in (69 mm) |
| - Covering | Air Dry Rubber |
| Auger Discharge Pulley: | |
| - Diameter | 3.9 in (99 mm) |
| - Width | 0.5 in (13 mm) |
| - Mounting Bracket | Plastic Swivel (360° rotation) |
| Sensor Cable | |
| - Length | 70 ft (21.3 m) |
| - Gauge | 22 gauge (strength member) |
| Tie Straps | |
| - Material | Nylon (UV protected) |
| Electronic Pod | |
| - Length | 12.6 in (320 mm) |
| - Diameter | 14.5 in (368 mm) |
| - Material | Plastic (PVC) |
| Horn | |
| - Type | Automotive |
| Time Delay | |
| - Type | Resistor and Capacitor |
| - Time | 3 seconds |
| Switch | |
| - Type | Automotive Toggle |
| Power Source Cables | |
| - Length | 15 ft (4.5 m) |
| - Gauge | 16 gauge |

APPENDIX II

MACHINE RATINGS

The following rating scale is used in PAMI Evaluation Reports:

| | |
|-----------|----------------|
| Excellent | Fair |
| Very Good | Poor |
| Good | Unsatisfactory |

SUMMARY CHART

BELINE MANUFACTURING AUGER ALERT

| | |
|------------------------------|--|
| RETAIL PRICE: | \$275.00 (f.o.b. Kindersley, Saskatchewan; March 1991) |
| QUALITY OF WORK: | Very Good; Effectively alerted augeroperator |
| EASE OF INSTALLATION: | Very Good; took one person 30 minutes |
| EASE OF OPERATION | |
| - Operation: | Very Good; Easy to operate |
| - Adjustment: | Very Good; Easy to adjust |
| POWER REQUIREMENTS: | 12 volt external power required |
| OPERATOR SAFETY: | Excellent; contributed to a safer auger site |
| OPERATOR MANUAL: | Poor; did not contain much useful information |
| MECHANICAL HISTORY: | At 15 hours, the pendulum switch failed |



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