



JOY MINING MACHINERY
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Safety Notice!

Joy has recently been made aware of an incident in which it was reported that when a Joy Lightweight Remote Control Station was placed on top of a magnet on a continuous miner a function occurred that was not intended. According to the report when the remote station was removed from the magnet this function then ceased.

Joy is re-investigating the effects of magnets on the Lightweight Station, and also what can be done to eliminate negative effects of a magnet of sufficient strength placed in proximity to the remote station. In the meantime, Joy strongly recommends that extreme caution be exercised when using magnets around the Lightweight Remote Control Station and reiterates that normal safe practices be used when operating with remote control. This includes observing the safe operating zones around the machine and not placing a powered remote station on a piece of energized equipment. Please refer to Joy's Service Bulletin #00FG-0176 for additional information regarding remote control operation of Joy Equipment, a copy of which accompanies this notice.

Please distribute and review this Safety Notice and the Service Bulletin with all personnel who work with or around remotely operated equipment. **FAILURE TO FOLLOW THESE PRECAUTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.**



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JOY SERVICE BULLETIN

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MACHINES**
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REMOTE CONTROL OPERATION OF JOY EQUIPMENT

The concept of operating mining equipment by remote control provides increased operator safety and comfort while achieving maximum productivity from the machine. However, as with any piece of equipment this increased safety aspect can be realized only if safe operating practices are followed. **WARNING! Failure to follow the proper operating procedures could result in serious injury or death.** This bulletin provides some general guidelines. Except where noted, these guidelines apply to all model remotes.

Please distribute copies of this bulletin to all personnel who work with or around remote controlled equipment. In addition, we recommend that you review these guidelines with all personnel during your regular safety meetings.

The guidelines are as follows:

A. POSITION OF PERSONNEL

The relative position of the operator and all other personnel to the machine is most important. **One of the most significant potential hazards is being pinched between the machine and the rib. Therefore, all personnel must remain a safe distance from any remote controlled machine.** Generally, personnel should avoid placing themselves between the machine and the rib unless there is sufficient clearance. Personnel must remain under adequately supported roof and away from any hazards created by the machine or haulage equipment. Keep in mind that the conveyor boom does swing from side to side, and therefore all personnel should stay clear of the arc of the boom. In addition, the operator must always be positioned so that he can determine the status of the methane monitor warning light on the machine being operated.

Under some situations it may be necessary for the operator to be positioned alongside the conveyor where the conveyor swing is a potential hazard. In these situations a variety of devices to disable the conveyor swing are available and should be considered. Depending upon conditions, it may be safe for personnel to position themselves next to the machine provided that all of the following conditions are met:

- the personnel are under adequately supported roof;
- personnel are a safe distance from the side of the machine;
- personnel are outside the arc of the conveyor boom;
- personnel are not located directly in front or behind the machine; and
- personnel are not in the path of an oncoming shuttle car or other haulage vehicle

continued . . .

B. OPERATION IN CONJUNCTION WITH OTHER EQUIPMENT AND PERSONNEL

If the machine is being operated in conjunction with another machine which has an operator, such as a continuous haulage system or a shuttle car, the operator of the remote controlled continuous miner should position himself so that he can clearly see the operator of the other piece of equipment. If shuttle cars or other mobile haulage systems are being used in conjunction with the continuous miner, the operator must be careful not to position himself in the path of travel of this equipment. In this situation, the best position for the operator may be alongside the continuous miner provided that he is a safe distance from the side of the machine and there is sufficient clearance between the operator and the rib. ***It is important to remember that since the continuous miner is a tracked vehicle, it can pivot. There must be sufficient clearance so that neither the operator nor any other personnel would be pinched between the machine and rib in the event that the machine pivots.*** Likewise, the operator of a continuous miner should have a clear line of sight at all times to the miner helper and to anyone else assisting in the operation of the machine.

C. RADIO REMOTE CONTROL OPERATION

Radio remote control enables mine personnel to operate continuous miners and other equipment (e.g., longwall shearers, FCT's) unencumbered by a cable. However, because the machine may accept a "signal" from any transmitter of the same frequency as the receiver on the machine, certain precautions must be taken to insure against inadvertent operation.

Prior to operating two miners in the same underground section, always verify that they are using separate frequencies for the transmitter/receiver set. The remote controls sold by Joy have multiple frequencies available. By using separate frequencies, two miners can safely be operated in the same section. In addition, when operating JOY miners in the same section with other radio remote controlled equipment made by Joy or by other manufacturers, always verify that each piece of equipment is operating on a different frequency.

When two or more pieces of equipment are being operated in the same coal mine on the same frequency, it is essential to verify that the machines are separated by a sufficient distance so that there will not be inadvertent operation. A minimum distance of 1,000 feet between machines is recommended (measured using the shortest distance through crosscuts, entries, or other air openings). Do not operate spare transmitters since a machine's receiver on pre-July of 2000 units can not distinguish between an intended transmitter versus another identical transmitter.

Current "One Way" remote systems (units provided on JOY machines built since July of 2000) have a feature called Teach/Learn. Remotes with teach/learn capability are able to distinguish between two transmitters on the same frequency. When connected by cable to the receiver's teach/learn port, the transmitter exchanges serial number information with the receiver and sets its frequency to match that of the receiver. Once disconnected from the teach/learn port and activated in the normal operating mode the

receiver will only accept commands from the transmitter that is broadcasting the matching set of serial numbers on its frequency. If another transmitter is broadcasting on the same frequency the receiver will “hear” it but will not obey the commands from this non-matching transmitter. If the non-matched transmitter is closer to the receiver such that its signal is stronger than the signal from the “matched” transmitter, then the receiver will cause the miner to shut down its pump, thus defaulting to a safe condition. As a “belt and suspenders” approach when there are two miners in the same section, it is recommended that they have separate frequency receivers. This will eliminate the occurrence of “nuisance drop outs” caused by same frequency interference.

Finally, in order to avoid accidentally interfering with another radio remote controlled machine, ***do not energize the radio transmitter or electrically connect the receiver on a machine when above ground.*** Radio waves can travel much farther above ground than below ground. Due to the wide variations in conditions, it is not possible to place specific values for an operational distance. Therefore, always utilize the cable or on-board controls for above ground operation.

D. OPERATION FROM WITHIN THE MACHINE

Some continuous miners may still have both remote control and on-board controls (i.e., inside the operator's platform). While it may be possible to operate a continuous miner that has onboard controls from inside the operator's platform using the remote station, Joy strongly recommends against this practice. Instead, if the machine is to be operated from inside the operator's platform, the remote control should be disconnected or de-energized, and the on-board controls utilized. Of course, when on-board controls are utilized they must be used in a manner consistent with applicable government regulations, e.g., the operator must be under a supported roof.

E. POWER SOURCE FOR REMOTE CONTROL UNITS

Some continuous miner models of JOY radio remote control units are designed so that the operator's cap lamp battery can energize the control. The unit is not designed to be operated by a separate battery attached to the remote, and Joy strongly recommends against this practice for several reasons. The primary reason is that when the operator moves away from the remote control, the only safe practice is for him to de-energize it by disconnecting it from its battery source, and leaving it on a firm surface. This will prevent another person from activating it while the operator is away. Having a separate battery attached to the remote control permits the miner operator to walk away from the remote while it is still energized. In addition, when the remote is being operated with the umbilical cable, when the operator moves away from the remote he should make certain that it is de-energized and on a firm surface. When the machine is not in use, remove power to avoid the possibility for unintentional operation.

F SPECIAL INSTRUCTIONS - USE OF “MOLDED PLASTIC”, “COMPACT”, AND “LIGHT-WEIGHT” MODELS

These units can be operated by positioning on the mine floor where conditions permit, on a firm platform, or by using carrying straps. If the carrying straps are used, they

should be adjusted so the station is in a position allowing easy controlled operation.
Never set the remote on the machine to operate it.

G. MAINTAIN ONGOING FAMILIARITY WITH CONTROLS

It is important for the machine operator to familiarize himself with a machine's controls each time the operator initially uses a machine. This familiarization should be done with the machine and personnel in a safe operating area. This familiarization is necessary because of the following factors

1. Directional movement may differ from machine to machine.
2. Location or sequence of handles may differ.
3. The same remote station may function differently on different machines because of solenoid or demultiplexer wiring differences between machines.
4. Maintenance may have been performed on the machine that inadvertently changed control station lever response.

As you are aware, mining conditions vary greatly. Therefore, it is not possible to cover every conceivable situation in this bulletin. A general alertness among all personnel is essential to safety.

Again, the remote control is a useful device, and as with any piece of equipment it must be used properly. Proper use of a remote control will greatly increase the safety and comfort of your personnel, while at the same time permitting you to achieve maximum productivity from your equipment. □