A faded image of the Rayco R145 Radio ATB System unit is visible in the background. The unit is a rectangular device with a grey faceplate. It has a digital display showing "R 145" and "RADIO TWO-BLOCK ALARM". There are also some indicator lights and buttons on the faceplate.

R145  
**RADIO ATB SYSTEM**

Installation and Operation Manual

Crane Warning Systems Atlanta  
1-877-672-2951 Toll Free  
1-770-888-8083 Direct  
1-678-367-5448 Fax  
sales@cwsa.biz  
www.cwsa.biz

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The purpose of this manual is to provide the customer with the operating procedures essential for the promotion of proper machine operation for its intended purpose. It is important to over-stress proper usage. All information in this manual should be read and understood before any attempt is made to operate the machine.

Since the manufacturer has no direct control over machine application and operation, conformance with good safety practice in this area is the responsibility of the user and his operating personnel.

All procedures herein are based on the use of the system under proper operating conditions, with no deviations from the original design. Alteration and/or modification of the equipment is strictly forbidden without written approval from Rayco Technology Group.

The R145 Wylie Systems atb indicator is to be regarded only as an aid to the operator.

This system must never be used, under any circumstances, as a substitute for the good judgment of a crane operator when carrying out approved crane-operating procedures. Responsibility for the safe operation of the crane lies with the crane operator. The indicator equipment will not prevent crane damage due to overloading and related causes.

Before operating a crane equipped with a Wylie system indicator, the operator must carefully read the information in both this manual and the crane manufacturer operator's manual. He must also have read and understood the CIMA safety manual, the latest ASME B30.5 standard and the current OSHA, federal, state and local regulations applicable to his job. Correct functioning of the system depends upon routine daily inspection.

Any suspected faults or apparent damage should be immediately reported to the responsible authority before using the crane.



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## GENERAL DESCRIPTION OF THE SYSTEM

The R145 RADIO ANTI-TWO-BLOCK SYSTEM is a device purposed to alert the operator and shut off crane motion controls upon an impending two-block situation. It has been conveniently designed to fit on telescopic cranes, boom trucks, derrick trucks and conventional lattice cranes.

The system consists of a radio switch to be installed at the tip of the boom and/or jib as well as display/receiver for the operator cab which is capable of managing two radio switches.

The device manufactured in Canada has been designed to withstand the worst Canadian environment including extremely low temperatures and corrosive environments.

Thoroughly researched, this system will easily adapt to all crane types, requiring only a minimum of installation time.

The display/receiver comes standard for 12V or 24V negative body machines. For machines requiring non-standard electrical systems, necessary adapting relays or different installation procedures may be needed as further detailed.



**R145 DISPLAY BOX**



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## INTRINSIC SAFETY

The Wylie system radio anti-two-block is a fail-safe system because continuous information of functional and battery status is sent by the radio switch to the display/receiver. The fail safe communication feature guarantees that the radio switch can effectively send a two-block signal and that the display/receiver can understand this signal. The system will warn the operator a few weeks before power shortage of radio switch batteries thereby guaranteeing in advance the system's operational status.

The display/receiver will warn the operator of a noisy radio environment reading by the blinking of the receiving status indicator light. If part of communication is missed by the display/receiver it will automatically halt commands of the crane even if no actual two-block situation occurred.

The LEARN MODE is another interesting feature of the display/receiver. It allows easy re-programming of identification numbers for newly replaced radio switches without the inconvenience of DIP switches used on previous systems.



**R145 ATB SWITCH**

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**OPERATING PROCEDURE**

The system is automatically engaged on crane ignition or on PTO engagement. Normal operation of the crane then resumes.

If a pending two-block situation occurs, the red TWO-BLOCK indicator light will appear and the buzzer will sound off continuously until the situation is corrected. If a lock-out has been installed, motions for telescoping out and hoisting up are stopped. If the hoist is separated from the boom, then motion for booming down will also be stopped. To resume normal operation, the operator must either hoist down or telescope in.

1. The RECEIVING STATUS indicator light will remain ON during normal communication status between radio switch and display/receiver. The indicator light may shut OFF momentarily due to disturbances. The display/receiver will tolerate a certain level of disturbances simply warning the operator by blinking the receiving status indicator light. Beyond the level of tolerance for disturbances, the control will automatically shut down the crane motion control.
2. The LOW BATTERY indicator light will warn the operator of imminent energy shortage of the radio switch battery cells for the with an advance notice of at least 2 weeks.

**R145 DISPLAY/RECEIVER FUNCTIONS:**

<b>BOOM TIP</b>	<b>DISPLAY/RECEIVER</b>	<b>DISPLAY/RECEIVER FUNCTIONS</b>				
Radio Switch Weight Position	Switch Position	Receiving Status	Low Battery	ATB Lamp	Buzzer	Relay Contact
Safe Condition Weight Freely Suspend	NORMAL	ON	OFF	OFF	OFF	CLOSED
	RIGGING	ON	OFF	ON	ON	OPEN
	ON	ON	OFF	ON	OFF	CLOSED
Two-Blocked Weight Lifted	NORMAL	ON	OFF	ON	ON	OPEN
	RIGGING	ON	OFF	ON	OFF	CLOSED
	OVERRIDE	ON	OFF	ON	OFF	CLOSED

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## CALIBRATION PROCEDURE

This feature provides the possibility of easily changing or adding a radio switch to the display/receiver by re-programming the display/receiver. The following sequence of procedures must be respected upon re-programming the radio switch(es):

1. Turn display/receiver power OFF (if previously on).
2. Engage display/receiver switch into OVERRIDE/BYPASS MODE and hold through step 3.
3. Turn display/receiver power ON. After 2 seconds, release the display/receiver switch to the RIGGING/TEST MODE\* within 4 seconds (passing through the NORMAL MODE).

### **Now you're in LEARN MODE. \*\***

In the LEARN MODE please note that the TWO-BLOCK indicator light and BUZZER will be activated intermittently until NORMAL MODE is resumed.

To enter the new ID number(s) for your radio switch(es) in the display/receiver, follow this sequence of procedures:

4. Engage radio switch into TWO-BLOCK state.
5. Disengage radio switch into OUT OF TWO-BLOCK state. The identification number of radio switch is now programmed into display receiver. Confirmation of this for radio switch #1 will be signaled by the RECEIVING STATUS green light indicator. Confirmation for radio switch #2 will be signaled by the LOW BATTERY red light indicator.
6. Re-engage display/receiver switch into NORMAL MODE.

### **Now you've returned to NORMAL MODE of operation.**

\* At this point in the sequence, all prior identification numbers of radio switches in the display/receiver are cleared. Re-programming of all desired radio switch(es) used with the display/receiver is can proceed.

\*\* Upon leaving the LEARN MODE without programming any radio switches, the display/receiver will assume a void communication status with the radio switch preventing the reception of all incoming information.

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## FCC APPROVAL

### **DOC DOCUMENT:**

**This device complies with the requirements of the Department of Communications (DOC), Canada, as specified in document RSS-210. The device is permitted only on a no-interference no-protection basis, that is, it must cease operation when it is determined that it causes harmful interference to services authorized by DOC. Also, the operator must accept any radio interference received, including interference that cause undesired operation of the device. DOC certification No:**

### **FCC DOCUMENT:**

**This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

### **NOTE**

**This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.**

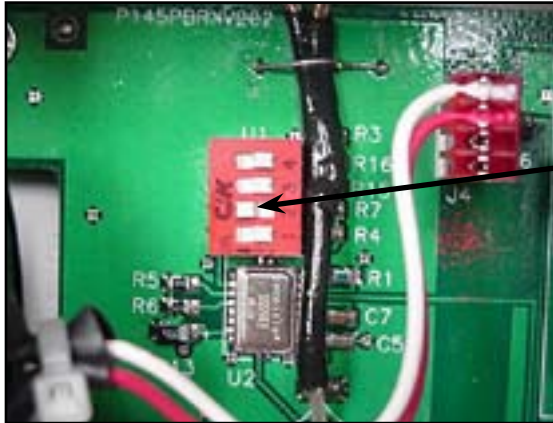
**FCC APPROVAL No.**

**FCC ID: MSVR145**

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**ANNEXE**

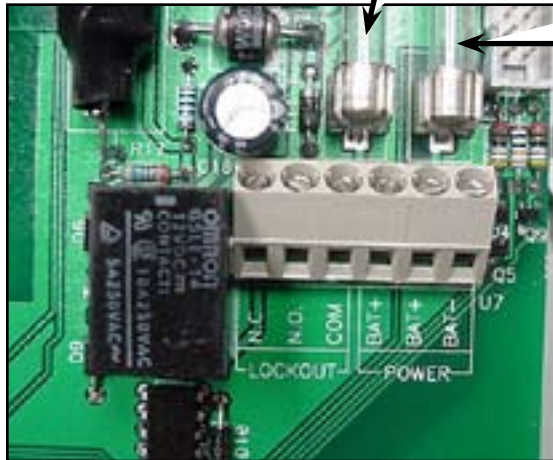
**INTERNAL PARTS AND CONNECTIONS**



**IMPORTANT:**  
 Do not touch dip switches.  
 They are factory adjusted  
 for good performance.

**FUSE F2:  
 5 AMPS  
 FOR LOCK-OUT  
 PURPOSE**

**FUSE F1:  
 1 AMP  
 FOR POWER  
 SUPPLY**



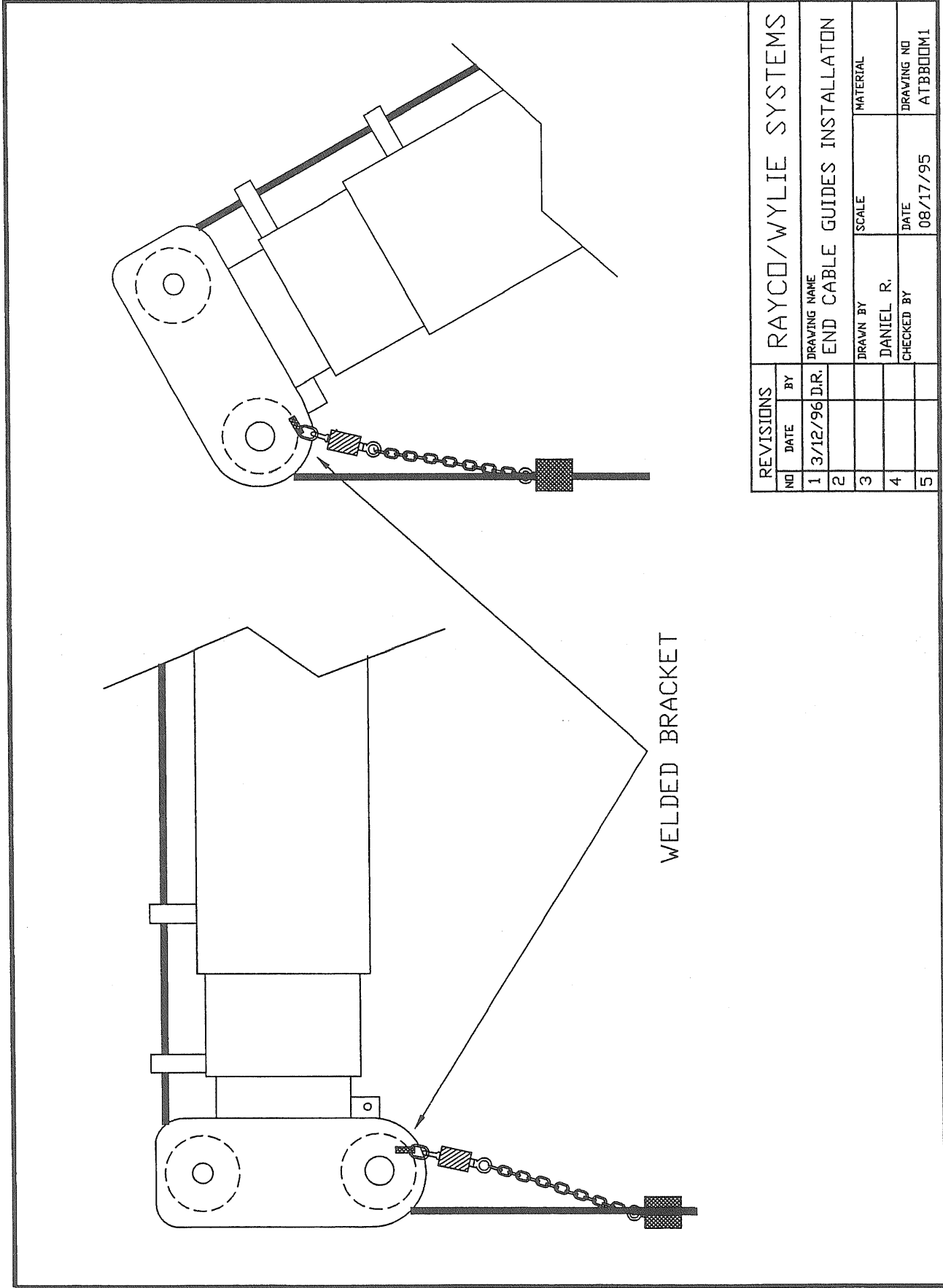
**POWER:**  
 BAT - = NEGATIVE BATTERY ACC.  
 BAT+ = POSITIVE BATTERY ACC.  
 BAT+ = USED FOR INTERNAL RELAY

**LOCKOUT:**  
 COM : COMMON RELAY  
 N.O. : NORMALLY OPENED CONTACT  
 N.C. : NORMALLY CLOSED CONTACT  
 (SEE NOTE FOR DETAILS)

**NOTE:**

In case of a lockout system is installed on the machine, add a jumper between BAT+ and COM terminals. Connect one strand of lockout coil valve to N.O. terminal and the other strand to the ground of machine (must be negative body). In case of more than 1 valve is necessary for the lockout system, you have to add a slave relay (BOSH type for example) between the terminals and the coils. All valves must be connected in parallel.

# ATB SWITCH INSTALLATION



REVISIONS		RAYCO/WYLIE SYSTEMS			
NO	DATE	BY	DRAWING NAME	SCALE	MATERIAL
1	3/12/96	D.R.	END CABLE GUIDES INSTALLATION		
2					
3			DRAWN BY DANIEL R.		
4			CHECKED BY	DATE 08/17/95	DRAWING NO ATB000M1
5					

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