

AUTO REEL -AS

AUTOMATIC CORD REEL WITH AUTO SAFE



MODEL # : 091-220-20-120-AS

INPUT: 120 Volts, 50/60 Hz, 20 Amps

File: IM_091-220-20-120-AS_revA.indd
Rev: A
Revised By: JM
Date: 06-09-2015

2 YEAR WARRANTY



scan using your mobile device for more information

170 Cherry Avenue
West Sayville, NY 11796
www.kussmaul.com



Ph: 800-346-0857
Fax: 631-567-5826
sales@kussmaul.com

INTRODUCTION

The Model 091-220-20-120-AS Auto Reel with Auto Safe is a manual extension, spring retract reel containing a 45 foot long, 3 wire cable. The unit is designed to be either ceiling or wall mounted to provide single phase, 120 volt / 20 ampere power to ambulances, fire trucks, service vehicles and other emergency vehicles. Usually used with a vehicle mounted Auto Eject, the Auto Reel automatically retracts the vehicle's shoreline (power cable, mains cable) to remove it from the floor and eliminate the tripping hazard of loose cord. Automatic retraction occurs whenever the load current through the Auto Reel drops to zero either due to an automatic ejection of the shoreline by the Auto Eject, or by a manual disconnect initiated by the vehicle's operator. In addition, the Auto Reel with Auto Safe disconnects power from the shoreline to eliminate any shock hazard from a severed or wet power cord.

SYSTEM DESCRIPTION

The Model 091-220-20-120-AS Auto Reel with Auto Safe consists of 3 major components:

- I. **Auto Reel Cord Windup**
- II. **Auto Reel Control Box**
- III. **Auto Reel Remote Panel**

I. Auto Reel Cord Windup

The Cord Windup is a commercially available spring retract cord reel modified with an electromechanical release. In Manual mode operation, the operator manually pulls on the shoreline to extend it slightly longer than required to reach the vehicle. When released, the cord retracts slightly to a stop. The spring inside the Cord Windup is extended, and then held in position by a "cam" and "locking pawl". To fully retract the cord, the operator pulls the cord further and then releases it to wind up the cord. This type of mechanism is simple, robust and widely used. In Auto mode an electromechanical hold and release is used to eliminate the requirement of pulling the cord to initiate the windup sequence. Refer to System Description III concerning Auto and Manual mode selection.

II. Auto Reel Control Box

The Control Box consists of the following electronic components to sense and operate the Auto Reel:

- a. Low voltage power supply for the logic functions.
- b. High voltage power supply to operate the rewind solenoid.
- c. Current detector to sense when the shoreline is disconnected from the vehicle.
- d. A microcontroller to control the solenoid voltage and timing.

III. Auto Reel Remote Panel

The Remote Panel is the operator interface for the Auto Reel with Auto Safe, and provides the Auto Safe feature. It contains an LED indicator, and two toggle switches. The Selector Switch allows for selection of the automatic or manual modes of operation for cord retraction. While the Selector Switch is in the Auto mode, after the shoreline is connected to the vehicle, the Momentary Engage Switch enables the Auto Safe and supplies AC power to the vehicle. The LED labeled "AC POWER" will illuminate when Auto Safe has been enabled. The Auto Safe feature provides safety for operators and those working around the high power shoreline cable—disconnecting power from the shoreline to prevent electrical hazards from a severed or wet power cord.

OPERATION

The Auto Reel coils up your vehicle shoreline cable with torque supplied by a spring. To supply power to the vehicle, the operator grasps the Shoreline Connector on the Cord Windup, and draws out a sufficient length of shoreline cable so that the connector can be plugged into the vehicle and the lock on the Cord Windup is engaged. The operator enables the Auto Safe by depressing the Momentary Engage Switch on the Remote Panel, which will illuminate the LED labeled “AC POWER” on the Remote Panel. This closes the Remote Panel relays to supply AC power to the vehicle and illuminate the LED labeled “AC OUTPUT” on the Control Box. The vehicle receives power, and its battery charger and other loads are energized.

When the vehicle is equipped with an Auto Eject, the driver needs to only start the engine. Engine starting will automatically disconnect the shoreline, dropping the current on the shoreline to zero. With the Selector Switch on the Remote Panel in Auto Mode, electronics in the Control Box monitor this current. The sudden decrease of current energizes a solenoid which moves the locking pawl to permit the spring to retract the shoreline cable. The cable retracts until it encounters the Cord Stop that limits the amount of cable wound on the Cord Windup.

With the Remote Panel in Auto mode, the rewind spring is unlatched whenever the current from the shoreline is interrupted. This is the normal mode of operation. During servicing and maintenance it may be desirable to remove the shoreline from the Auto Eject without winding up the cable. This is done by selecting Manual mode instead. Refer to Installation Wiring Diagram I & II.

NOTE: There must be a minimum 0.050 ampere load on the vehicle in order for the Auto Reel to operate

WIRING

Mount the Auto Reel to a sturdy structure either by a ceiling mount or a wall mount. Be certain that when extended, the shoreline reaches the intended destination on the vehicle. The shoreline must be extended by manually pulling it slightly further than the required length so that sufficient length remains to reach the vehicle—without being pulled taut when the spring mechanism retracts to the locked position.

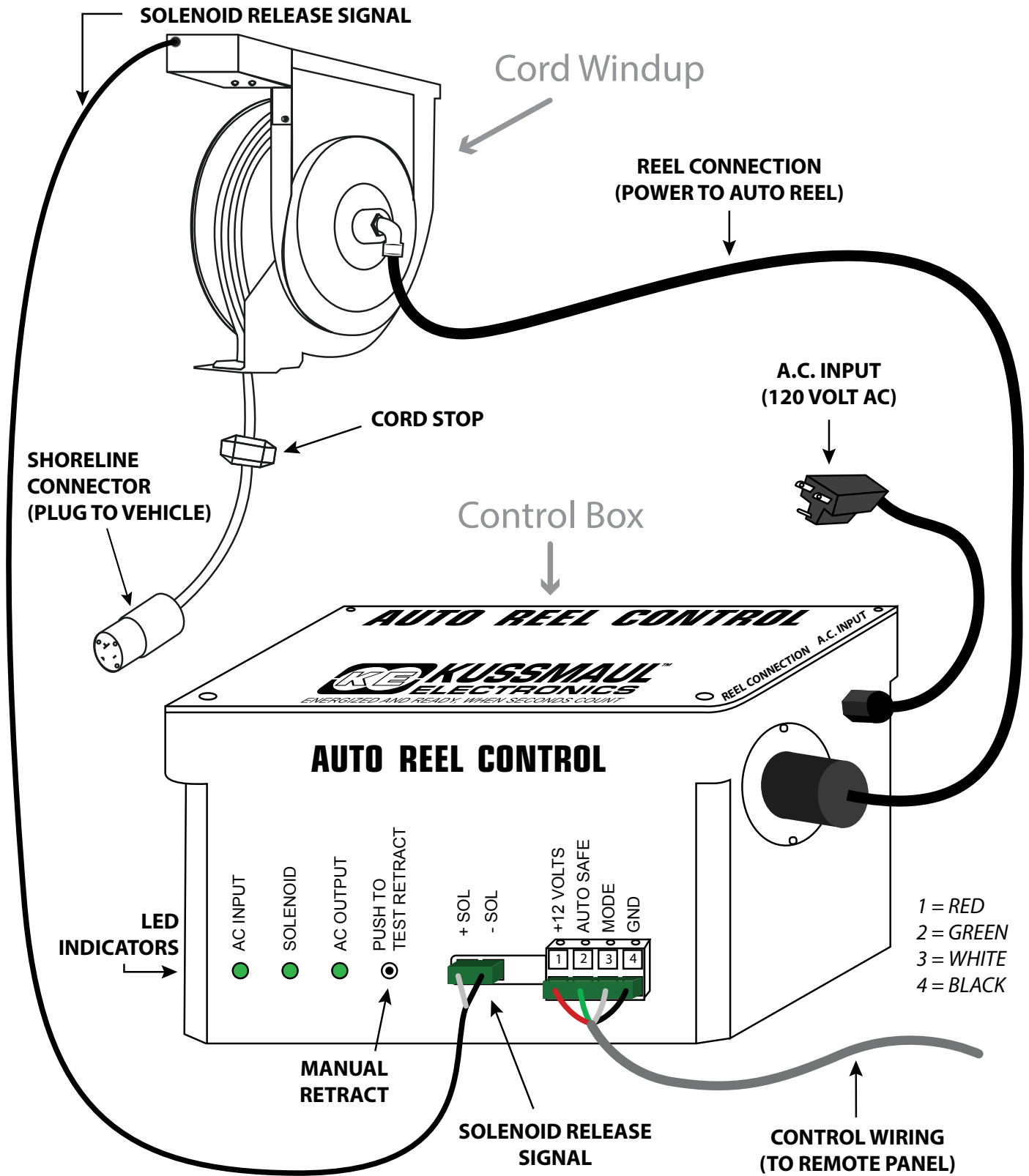
Mount the Control Box in a convenient location close to the Cord Windup, then:

1. Be certain that the LED indicators on the Control Box are visible for installation and troubleshooting.
 2. Wire the A.C. Input on the Control Box to provide 120 volts, 20 amperes from a dedicated 20 ampere circuit breaker.
 3. Connect the Reel Connection plug from the Cord Windup to the Reel Connection input on the Control Box.
 4. Wire the Solenoid Release Signal, 2 wires, from the Cord Windup to the Control Box.
 5. Wire the Control Wiring, 4 wires, from the Remote Panel to the Control Box.
- Refer to Installation Wiring Diagram I & II.

This completes the wiring of the Cord Windup, Control Box, and Remote Panel Assemblies.

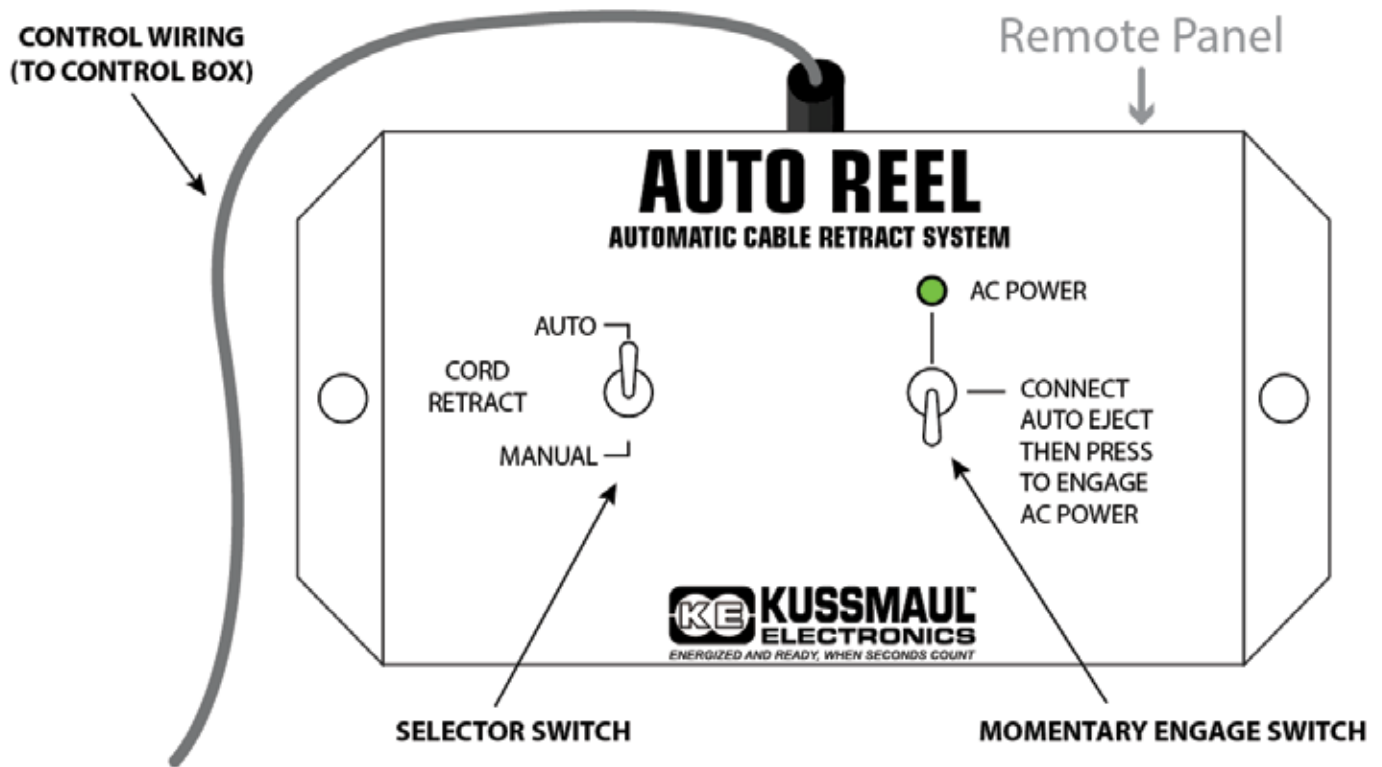
INSTALLATION WIRING DIAGRAM

I. Auto Reel Cord Windup & Auto Reel Control Box



INSTALLATION WIRING DIAGRAM

II. Auto Reel Remote Panel



TESTING

Preliminary Test

1. Perform a visual inspection checking that all mounting fasteners are securely tightened and that wiring is in accordance with the wiring diagrams. Refer to Installation Wiring Diagram I & II.
2. Measure the input voltage to be certain that the voltage is between 105 and 125 volts AC.
3. Turn on the 120 volt power to the system.
4. Check that the LED labeled "AC INPUT" on the Control Box is illuminated.
This completes the Preliminary Test.

Manual Rewind Test

1. Extend the shoreline to an appropriate length by pulling it from the Cord Windup.
2. Depress the button labeled "PUSH TO TEST RETRACT" on the Control Box.
This will energize the latch release solenoid in the reel and permit the spring to rewind the shoreline.
3. Repeat steps 1, 2 & 3 several times extending the shoreline at different lengths to ascertain that retraction is complete at any length.
This completes the Manual Rewind Test.

Automatic Rewind Test

1. Manually extend the shoreline from the Cord Windup and plug it into a vehicle. The vehicle must have a battery charger or some other loads that require power from the AC line.
2. It is now **necessary** to enable the Auto Safe by depressing the Momentary Engage Switch on the Remote Panel which will illuminate the LED labeled "AC POWER" on the Remote Panel. This closes the Remote Panel relays to supply AC power to the vehicle and illuminate the LED labeled "AC OUTPUT" on the Control Box. Refer to Installation Wiring Diagram I & II.
2. To confirm that the current sensor functions, manually disconnect the shoreline from the vehicle and note that the AC power is interrupted, the latch release solenoid is momentarily energized, and after a brief interval, the cord is retracted.
3. Confirm this test by extending the shoreline, inserting it into the Auto Eject and starting the engine.
4. Observe that on engine start the shoreline is ejected and the cord is retracted.
This completes the Automatic Rewind Test.

NOTE: There must be a minimum 0.050 ampere load on the vehicle in order for the Auto Reel to operate

SPECIFICATIONS

Auto Reel Cord Windup

Reel Cord Length: 45 ft.
Max Reel Amps: 20 Amperes
Min Reel Amps: 0.050 Amperes
Volts: 105-125 VAC
Cord: #12 AWG
Cord Type: SJO
Length: 14 5/8 in.
Width: 9 3/8 in.
Height: 13 1/4 in.
Weight: 31 lbs

Auto Reel Control Box

Length: 6 1/4 in.
Width: 6 1/4 in.
Height: 4 3/16 in.

Auto Reel Remote Panel

Length: 3 1/32 in.
Width: 5 1/4 in.
Height: 1 1/2 in.

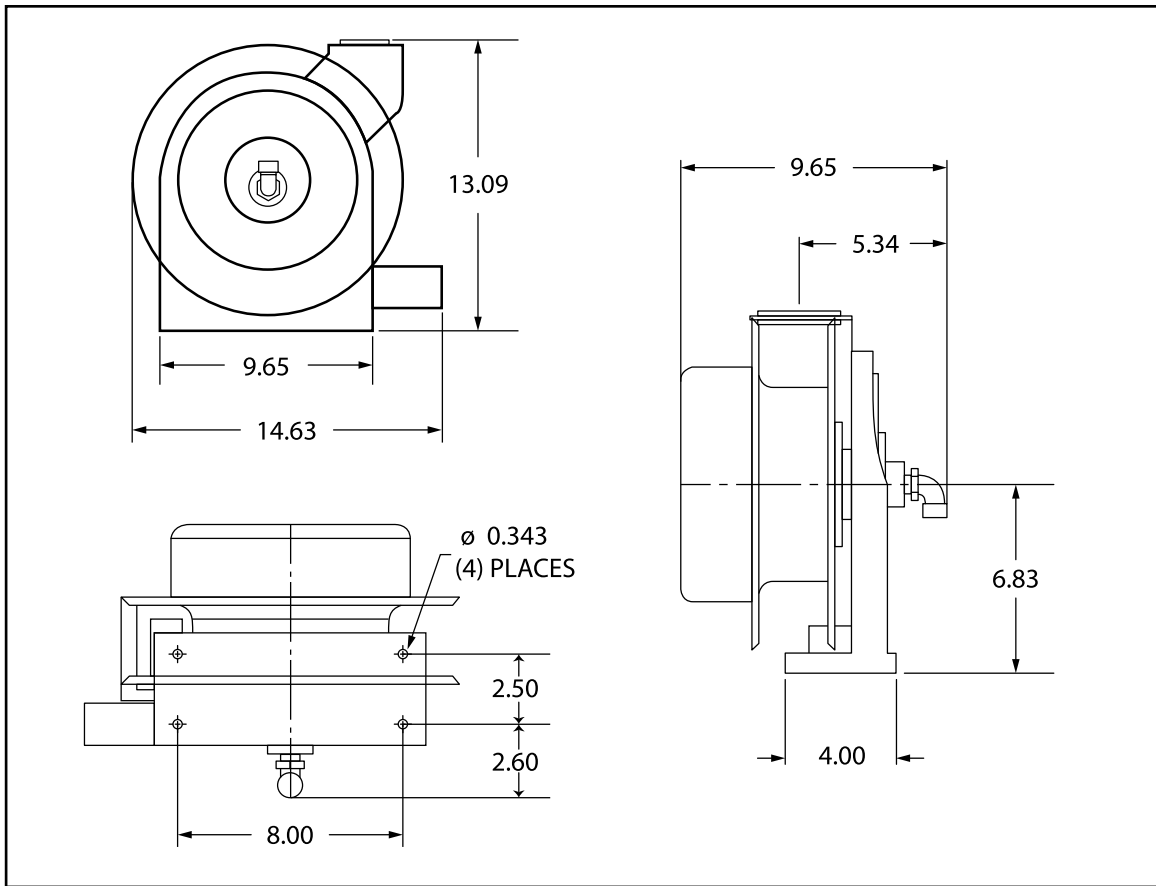
170 Cherry Avenue
West Sayville, NY 11796
www.kussmaul.com



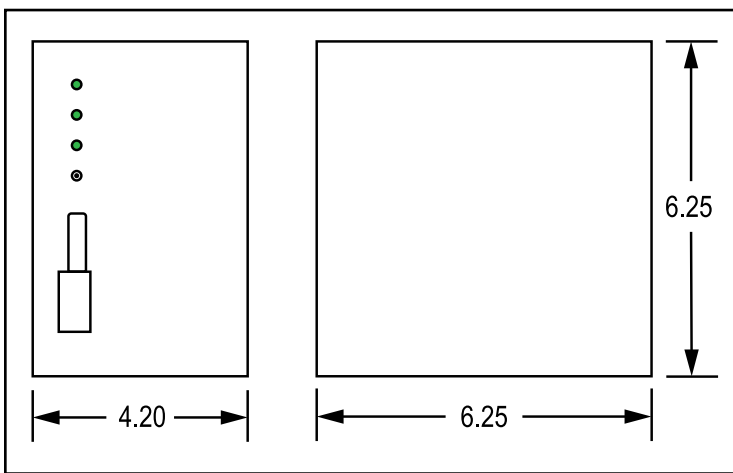
Ph: 800-346-0857
Fax: 631-567-5826
sales@kussmaul.com

OUTLINE DRAWING

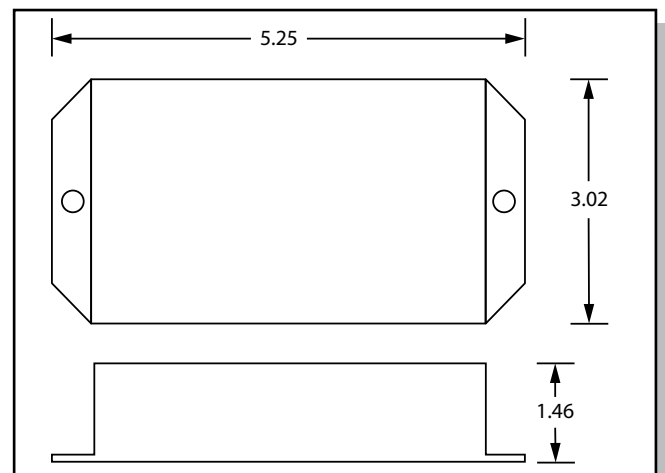
I. Auto Reel Cord Windup



II. Auto Reel Control Box



II. Auto Reel Remote Panel



OPTIONAL ACCESSORIES

I. SUPER 30 AUTO EJECT, MODEL #: 091-55-15-120



- **Automatically Disconnects Shoreline**
- Totally Automatic Operation, No Push Button
- Automatic Plug Detector
- Automatic Anti-Arc Device Built-In
- **Auto Reel works with ALL 120 Volt, 15 & 20 Amp Auto Eject models**



II. CONNECTOR PROTECTOR, MODEL #: 091-55-069

- Shock-resistant rubber jacket protects connector when dropped
- 1/8" wall thickness rubber jacket fits over cord connectors



INSTALLATION RECORD

DATE INSTALLED _____

INSTALLED BY _____

VEHICLE IDENTIFICATION _____

VEHICLE OWNER _____

WARRANTY POLICY

All products of Kussmaul Electronics are warranted to be free of defects of material or workmanship. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 2 years from the date the equipment was shipped. Defective products should be returned to Kussmaul Electronics with shipping charges prepaid. Upon repair, products will be returned to customer with shipping charges paid.

Kussmaul Electronics shall have no liability for damages of any kind to associated equipment arising from the installation and/or use of the Kussmaul Electronics products. The purchaser, by the acceptance of the equipment, assumes all liability for any damages which may result from its installation, use or misuse, by the purchaser, his or its employees or others.



Members of
Fire and Emergency
Manufacturers and
Service Association



Members of
National Fire
Protection
Association



Members of
Fire Apparatus
Manufacturers
Association



170 Cherry Avenue
West Sayville, NY 11796
www.kusssmaul.com



Ph: 800-346-0857
Fax: 631-567-5826
sales@kusssmaul.com