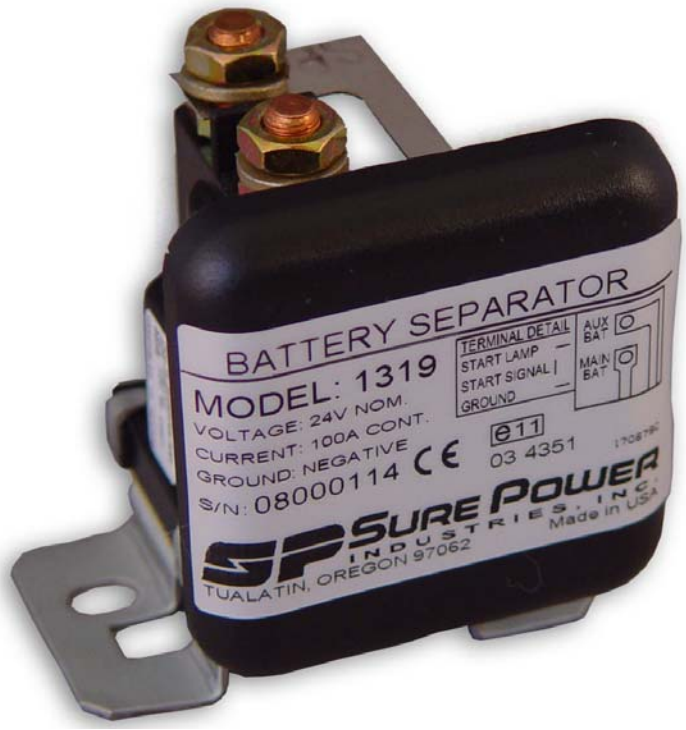
REVISIONS				
REV	ECO	DESCRIPTION	DATE	BY
001	4153	PRODUCTION RELEASE	7/30/04	BF
002	5188	CHANGE TRQ FRM 60±10 TO 50±5 IN/LBS & ADD e-MARK TO LABEL	7/16/08	BF
003	5355	ADD TRANSIENT PROTECTION	1/16/09	JT
004	5369	REDUCE ESD SPECIFICATION FROM 15kV to 8kV	2/6/09	JT

1318/1319
24V BATTERY SEPARATOR



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES [MM]
TOLERANCES ARE: .XX ± .10 [X.X ± 2.5]
.XXX ± .030 [X.XX ± 0.76]
INTERPRET GEOMETRIC DIMENSIONS AND TOLERANCING PER ASME Y14.5-1994
DRAWINGS IN THIS DOCUMENT ARE NOT TO SCALE

APPROVALS		DATE
DRAWN BY	JZD	1/7/09
PROJECT ENG APPROVAL		
ENG MANAGER APPROVAL		
SALES/MRKTG APPROVAL		

SURE POWER
A Part Of COOPER Bussmann

TITLE
MODEL NO: 1318/1319
24V BATT SEPARATOR,100A
SPECIFICATION OUTLINE

SIZE	CAGE CODE NO.	DRAWING NO.	REV
A	55156	1318_1319	004

SCALE: NONE | FILE: 1318_1319-004 | SHEET 1 OF 7

OVERVIEW

The 1318 and 1319 are 100A battery separator modules with an integrated relay for 28V systems—the 1318 is unidirectional and the 1319 is bidirectional. The 1318 monitors only the main battery and charges the auxiliary battery if the main battery is above the connect threshold. The 1319 monitors both the main and auxiliary battery banks. If either battery bank is above the connect threshold, the relay connects the two banks together. If the batteries are below the disconnect threshold, the unit will open the relay. The connect threshold is set to a nominal voltage of 26.8V, which would only be reached when the charging system is operational. This will cause the relay to only close when the charging system is operational, charging both banks of batteries. The disconnect voltage is set to a nominal 25.7V, which is near the full charge resting voltage of the batteries. This will cause the relay to be opened shortly after the engine is stopped, attempting to preserve 100% of the starting battery capacity for engine cranking.

UNIT CONNECTIONS

The unit has five connections (see Connection Diagram for locations):

1. Main Battery connection

   This is the high current connection to the main battery bank. This connection is made directly to the relay. Product labeling refers to this as the MAIN BAT connection. The unit is powered from the main battery connection or the auxiliary battery connection, drawing power from whichever has the higher voltage.

2. Auxiliary Battery connection

   This is the high current connection to the auxiliary battery bank. Product labeling refers to this as the AUX BAT connection. The unit is powered from the main battery connection or the auxiliary battery connection, drawing power from whichever has the higher voltage.

3. Ground

   This is the unit ground connection.

4. Start signal input

   This is the input for engine start signal override. When power is applied to this input, the relay will close if the Aux. Battery is no less than 0.85 Volts below the Main battery (Main – 0.85V).

5. Start lamp output

   This is the start lamp drive output. The start lamp is powered when the start signal input has caused the relay to close. This output can source up to 250mA to an incandescent lamp. For LED type indicator, see MAXIMUM RATINGS, START LAMP drive current.

ELECTRICAL

MAXIMUM RATINGS

Maximum ratings establish the maximum electrical rating to which the unit may be subjected.

Characteristic	Symbol	Parameter	Unit	Notes
Input Voltage	V_{INMAX}	32	V	Damage to relay MAY occur if repeatedly operated above 32V
Standoff Voltage	V_{SO}	40	V	5-minute duration. Applies to AUX BATT, MAIN BATT, and START SIGNAL terminals only.
Time at Standoff	t_{SO}	Continuous	V	Control is protected from continuous operation at 40V
Continuous Relay current	$I_{R,MAXC}$	100	A	
Inrush Relay current	$I_{R,MAXI}$	400	A	30 seconds on, 6 minutes off duty cycle.
START LAMP drive current	I_{LAMP}	250	mA	Protected from short circuits on output—tested at 16V. This output is designed for an incandescent lamp. A current-limiting resistor must be used in series with an LED indicator (1k-Ohm, ½ W recommended).
ESD	V_{ESD}	±8kV contact ±8kV air	V	Ref. SAE J1113-13. All terminals in any combination.

All terminals protected against reverse polarity except reversal of one of the battery polarities. (Relay is not current limited. Connecting batteries of opposite polarity will damage relay).

ELECTRICAL CHARACTERISTICS

Unless otherwise stated, conditions apply to full operational temperature range and full voltage range (9V to 16V)

Characteristic	Symbol	MIN	TYP	MAX	Unit	Notes
Normal Input Voltage	V_{IN}	18		32	V	Proper relay operation not guaranteed below 18V.
Contact life			25,000		Cyc	100A resistive load.
Connect Voltage	V_{CON}		26.8		V	Nominal minimum voltage required at main battery terminal for attached relay to be energized.
Disconnect Voltage	V_{DCON}		25.7		V	Nominal maximum voltage required at main battery terminal for attached relay to be de-energized.
Quiescent Current	I_{QUES}		3.0		mA	26.0V, relay off, Start Signal input open or grounded.
Relay drive current	I_{RELAY}		0.5		A	
START LAMP output voltage	V_{LAMP}		Battery voltage – 2.2V		V	2.2V is the typical voltage drop from Main Battery to the Start Lamp output (Battery voltage being the higher of the two battery voltages).
START SIGNAL threshold voltage	V_{SST}		71% of Battery		V	Nominal minimum voltage required on START SIGNAL input for the input to activate.
Connect debounce	t_{CD}	14			S	When the battery voltage rises above the connect voltage and the relay closes, this is the minimum amount of time it will stay closed, regardless of the battery voltages.
Disconnect debounce	t_{DD}	10			S	When the battery voltage falls below the disconnect voltage and the relay opens, this is the minimum amount of time it will stay open, regardless of the battery voltages.

ENVIRONMENTAL SPECIFICATIONS

Control module is encapsulated in epoxy, relay is water resistant.

Characteristic	Parameter	Units
Operational Temperature Range (Control)	-40 TO +85	°C
Operational Temperature Range (Relay)	-28 TO +48	°C

TRANSIENT IMMUNITY/EMISSIONS

Characteristic	Level	Notes
Inductive Load Switching	+400V/-600V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
Mutual Coupling	±300V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
Load Dump	122V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
ISO Immunity	Per standard[1]	ISO 7637-2:2004
ISO Emissions	Per standard[1]	ISO 7637-2:2004

[1]Sufficient to apply E mark.

RADIATED EMISSIONS

Characteristic	Level	Notes
Radiated Emissions Narrowband 30MHz to 1GHz	Per standard[2]	ISO 13766:1999, section 6.5 EN 13309:2000, section 4.6 EU Directive 72/245/EEC as amended
Radiated Emissions Broadband 30MHz to 1GHz	Per standard[2]	ISO 13766:1999, section 6.4 EN 13309:2000, section 4.5 EU Directive 72/245/EEC as amended

[2]Sufficient to apply CE mark.

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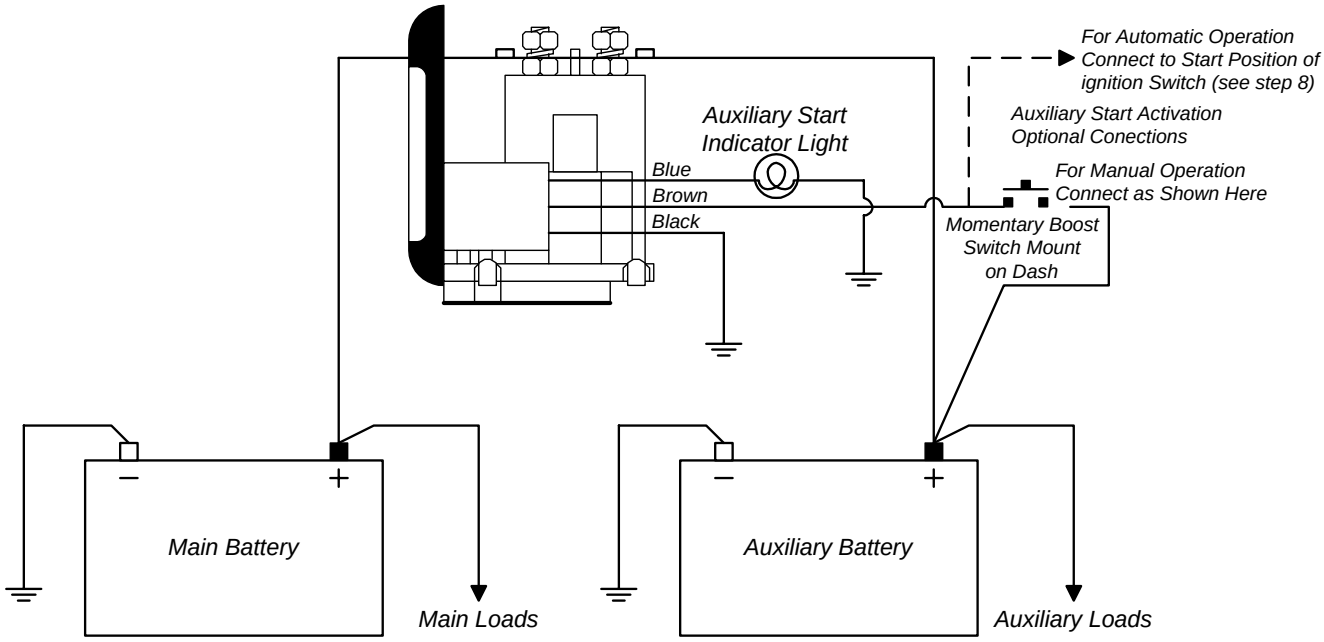
A	55156	1318_1319	004

SCALE: NONE	FILE: 1318_1319-004	SHEET 5 OF 7

REVISIONS
- SEE SHEET 1 -

CONNECTION DIAGRAM



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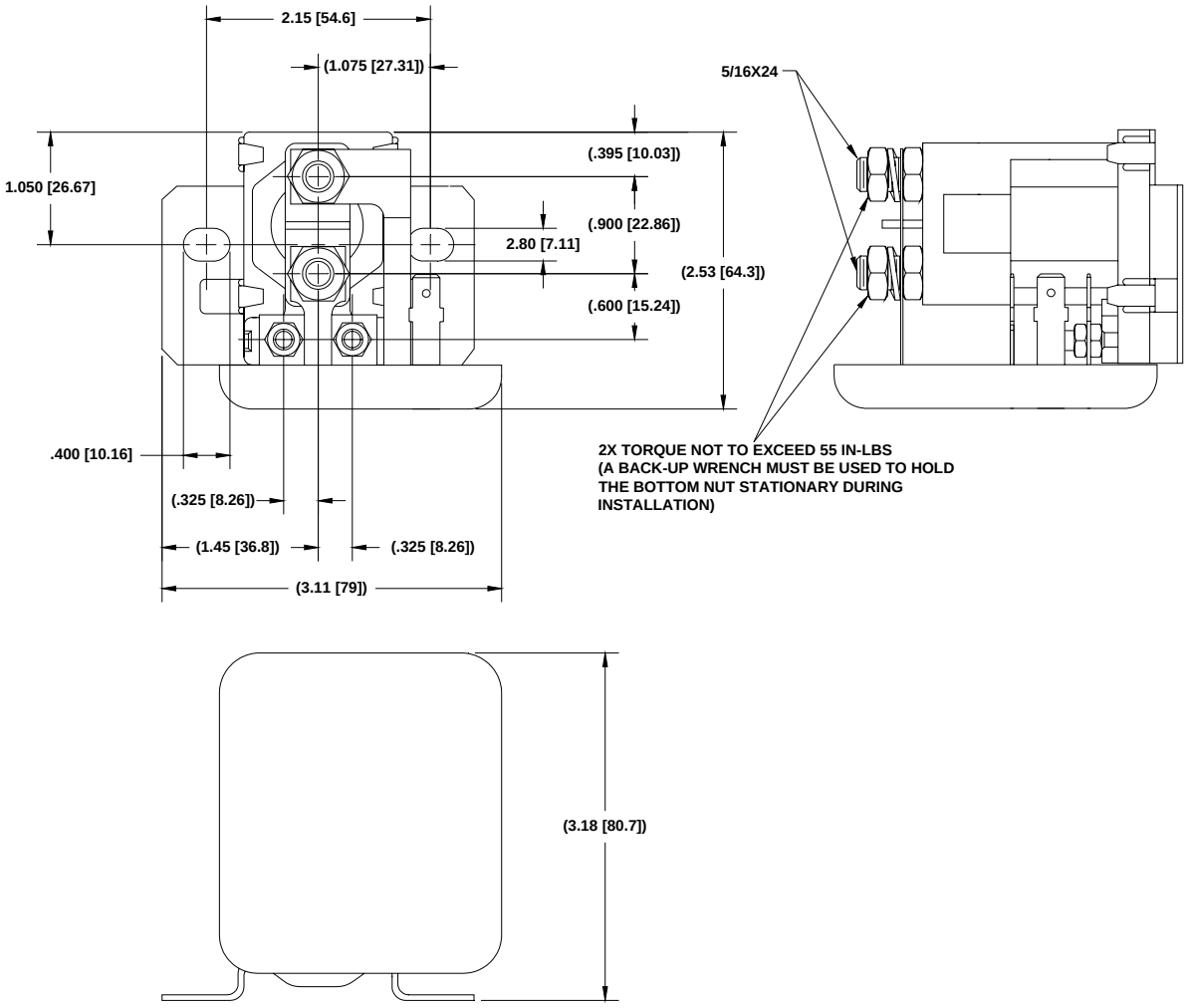
SCALE: NONE	FILE: 1318_1319-004	SHEET 6 OF 7

REVISIONS
- SEE SHEET 1 -

UNIT DIMENSIONS



Weight: Under 1 Lb. (0.45Kg)
Recommended Mounting: Coil terminals up or horizontal

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