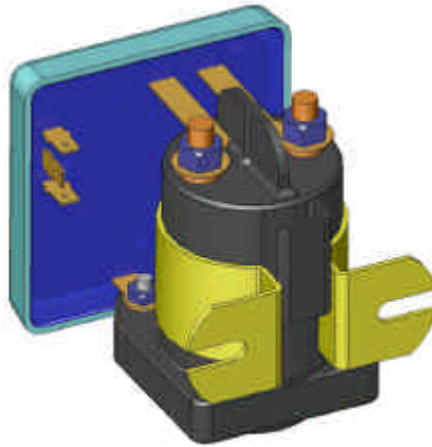


BATTERY SEPARATOR

The Smart Solenoid



*MODEL BS-200
This unit will activate only
when either the Main or
Auxiliary Battery System
exceeds 13.2 volts*.*

The *BATTERY SEPARATOR* is designed for use in multi-battery applications as a solenoid priority system to protect the chassis charging system from excessive loading while allowing auxiliary batteries to be charged. The *BATTERY SEPARATOR* has two basic operational characteristics:

ASSIST IN ENGINE STARTING

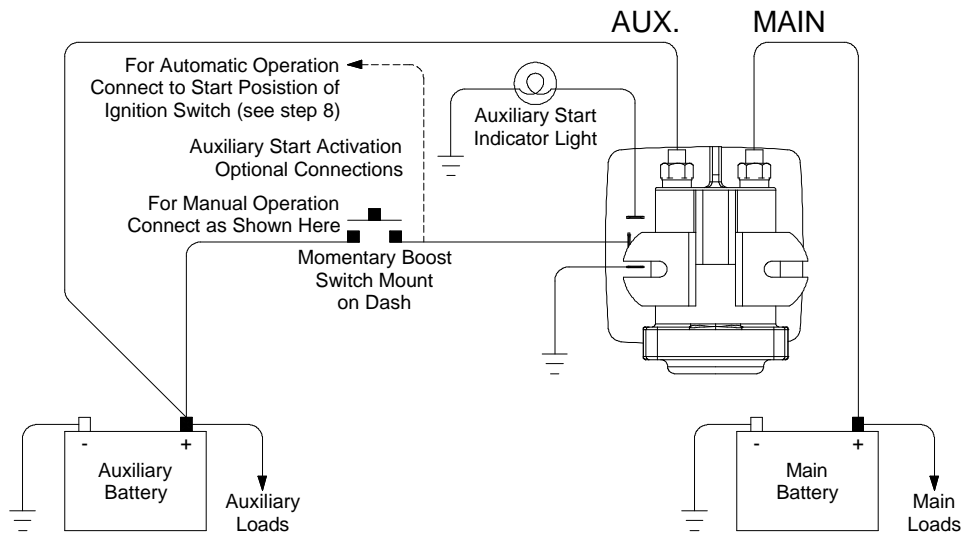
When the starter is activated the *BATTERY SEPARATOR* compares the voltage of both battery banks. If the chassis' battery is lower than the auxiliary battery bank, the *BATTERY SEPARATOR* will engage allowing the auxiliary battery bank to aid in vehicle starting. The start signal must be at least three volts for the operation to occur.

PROTECT THE CHARGING SYSTEM

The *BATTERY SEPARATOR* monitors the battery system to determine if the batteries are being charged. When the engine or auxiliary batteries reach 13.2 volts *, indicating charging is taking place, the *BATTERY SEPARATOR* will engage, joining the two battery banks. If the drain on the charging system by the auxiliary or main battery bank reduces the system voltage below 12.8 volts *, the *BATTERY SEPARATOR* will disconnect the battery banks from each other, thus protecting the respective battery banks from excessive drain.

A delay function has been incorporated in the control circuit to prevent the *BATTERY SEPARATOR* from reacting to momentary voltage fluctuations and chattering.

The priorities are to assist in engine starting, if required, and to protect the charging system from excessive power drain.



Battery Separator Installation Instructions

1. Mount the *Battery Separator* in a convenient location near the *main* battery bank. Do not mount in direct engine heat. Drill 7/32" holes for 1/4-20 self-threading screws and lock washer. For material less than 0.10" add a washer and nut (not included).
2. Connect one end of a new wire of the proper size (see wire size chart) to the main battery terminal of the *Battery Separator*.
3. Connect the opposite end of a wire installed in step #2 to the *main* battery positive (+) terminal.
4. Connect one end of wire of proper size (see wire size chart) to the *auxiliary* battery terminal of the *Battery Separator*.
5. Connect the opposite end of the wire installed in step #4 to the *auxiliary* battery positive (+) terminal.
6. Make sure the *auxiliary* battery is properly grounded to the vehicle chassis.
7. **Ground Connection.** Connect a #14 gauge wire between chassis ground and the *Battery Separator* ground terminal. This may momentarily activate the *Battery Separator*. This is normal.
8. **Auxiliary Start Connection (optional).** Automatic operation. Connect a #14 gauge wire from the start position of the ignition switch to the *Start* terminal of the *Battery Separator*. Make this connection at the ignition switch. This wire should only have voltage when the ignition switch is in the start position. Note: The start signal must be able to produce at least 3V* in order to provide automatic boost, see connection diagram above for manual operation option.
9. **Lamp Connections (optional).** Connect a #14 gauge wire from the *Lamp* terminal of the *Battery Separator* to one end of an indicator lamp (250mA maximum current draw). Connect the opposite end of the lamp to the chassis ground. This lamp will illuminate when the auxiliary start function is activated.
10. **Checking the Operation:** The *Battery Separator* should now be operational. Start the vehicle or apply a charge to the main battery. Once the main battery rises to 13.2V* the *Battery Separator* should activate. Turn off the vehicle or remove the charge to the main battery. The *Battery Separator* should disconnect the auxiliary battery once the voltage on the main battery drops below 12.8V*.
11. Apply a charge to the auxiliary battery. When auxiliary voltage rises above 13.2V*, the *Battery Separator* should activate. Remove charging unit, the *Battery Separator* should open when auxiliary battery is less than 12.8V*.
12. The auxiliary start function should activate the *Battery Separator* if the main battery voltage is lower than the auxiliary battery. The start terminal must see at least 3V* to activate. The auxiliary battery must read at least 10V*.

Recommended Battery Separator Wire Size Chart

Wire Length	Wire Gauge if using Auxiliary Start	Wire Gauge if not using Auxiliary Start
up to 10 feet	4 gauge	8 gauge
10 to 20 feet	2 gauge	6 gauge

* Typical voltage settings have $\pm 2\%$ tolerance.