

U.S.C.G. Electrical Standards & Wiring Diagrams

On January 31, 1977 the U.S.C.G. Published Safety Standards for Marine Electrical Systems. These Standards Cover Such Technical Details As:

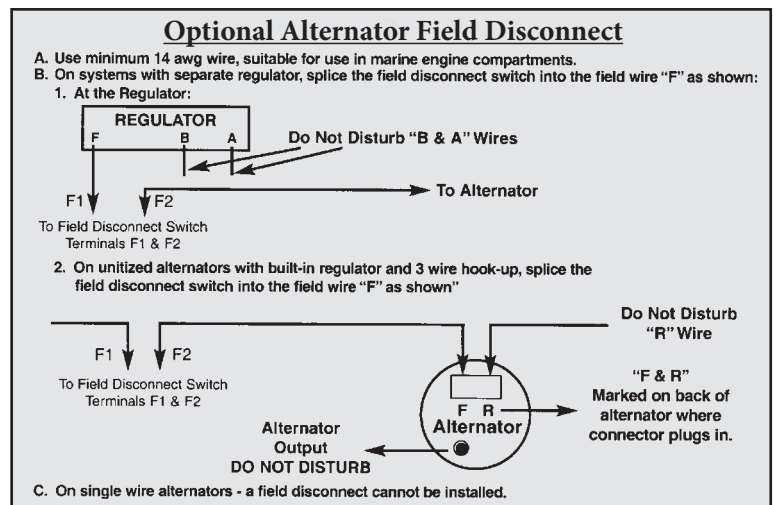
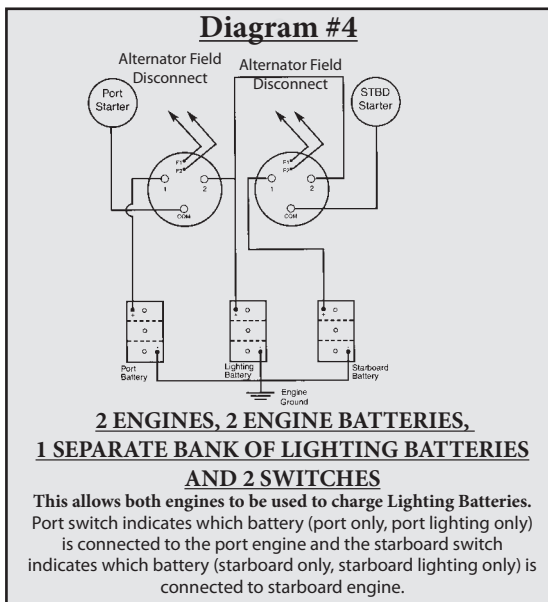
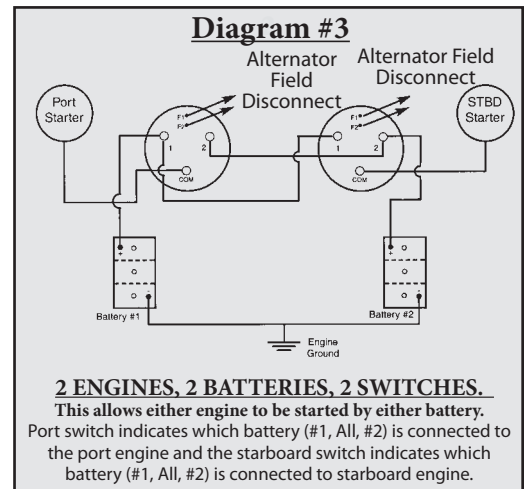
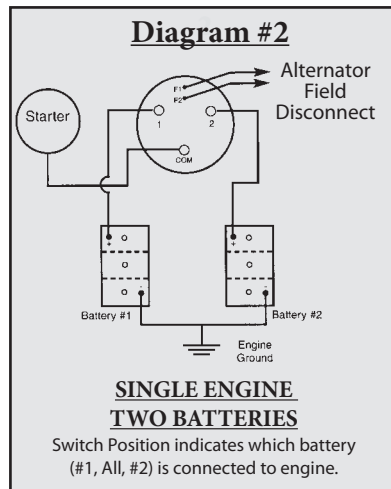
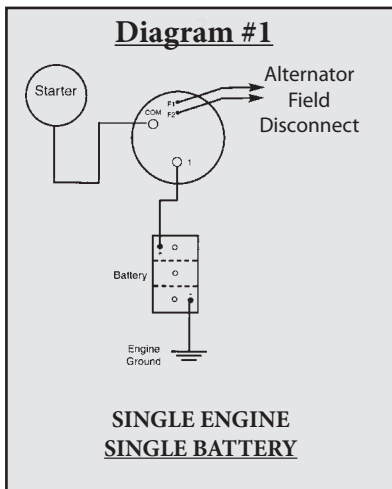
- Batteries and Associated Conductors
- Conductor Size and Ampacity
- Strain Relief and Pull Tests
- Termination Requirements
- Overcurrent Protection
- Ignition Protection
- Grounding
- Insulation

A particular electrical component may be affected by some or all of the above categories. Those categories related to product design have been complied with, however, many additional details must be considered by the installer of the equipment as well in order to achieve compliance with this standard. It is suggested that the actual standard be familiarized when installing equipment. Perhaps one of the most critical requirements is ignition protection. A product that is marked "Ignition Protected" can be used in that area of a boat that is not isolated from a gasoline fuel vapor source. Refer to the actual standard for a determination of what parts of a boat require Ignition Protected products.

If a product is not plainly marked "Ignition Protected" then assume it is not.

For Details On All Of The Above, Obtain The Following: U.S.C.G. Safety Standards For Electrical Systems CFR Title 33, Chapter 1, Subchapter S, Part 183, Subpart I

Typical Battery Switch Wiring Diagrams



Battery Switch Technical Information - How to Use PERKO Battery Switches

Using Perko Battery On-Off Switches

There are many ways to use a Perko Battery On-Off Switch. The most obvious (and most common) is simply to use it to turn off your battery when in storage so that your battery does not drain as quickly and is ready to go when you are. Like all Perko products, these time-proven switches are made in the USA. All switches are ignition protected.

But for boats with multiple engines and multiple batteries, using multiple on-off switches (sometimes in conjunction with a selector switch) can provide different benefits.

Example 1: Running with a selector switch in the both position (see selector switches) may not fully charge all batteries. But adding on-off switches to the circuit you can force the alternator to charge the battery you want charged.

If you have any questions or doubt about how to use, install or wire any battery switch, consult a certified marine electrician.

Battery disconnect switches help manage the overall use of electrical power onboard. They are used to connect or disconnect electrical devices from the electrical system. They help to prevent battery drain during periods of inactivity. They allow for a quick and easy way to shut down the entire electrical system in an emergency. An optional key lock helps to prevent unauthorized use of the vessel.

Perko battery switches are designed for surface mounting. Standard duty disconnect switches have bright red polycarbonate reinforced housings for safety with large easy-to-turn black knobs. The housing of the heavy duty switches are red fiber-reinforced polycarbonate.

Models with an "Alternator Field Disconnect" feature offer protection for Non-Unitized Alternators should the switch accidentally be turned to the "OFF" position with the engine running.

High conductivity studs are long enough to handle more than 1 cable and strong enough for torque needed for secure connections. Optional spacer ring (PN 0462DP0RED) allows for the use of larger cables.

Medium Duty Disconnect Switches.

Figs. 9601-9604 Series:

On-off switches are among the most popular battery switches ever produced. Their traditional Perko bolt circle makes for easy installation. These switches can be mounted in numerous locations, and as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

Versions of this series of switches offer additional features such as alternator disconnect and key lock security.

Compact Disconnect Switches.

Figs. 9611 and 9612 Series:

These on-off switches use the same traditional Perko footprint as the 9601-9604 Series. This makes for easy installation. These switches can be mounted in numerous locations. And as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

Versions of the 9611 series of switches offer additional features such as alternator disconnect and key lock security.

Four removable skirt panels allow for easy cable connection from different directions. High conductivity studs are long enough to handle more than 1 cable and strong enough for torque needed for secure connections.

New Concept Disconnect Switches.

Fig. 9621 Series:

These on-off switches offer a completely new approach to battery switches for small boats not normally equipped with the ability to shut off the electrical system. Their primary purpose is to prevent battery drain during regular periods of normal non-use.

An entirely new mounting system (designed specifically for small boats) makes these switches simple to install and to access on boats with limited space and low amperage draws. Simply cut a 3" hole, install the cup mounted switch with 4 screws, attach the cables and you're off. The integral lid closes flush to the mounting surface, protects the switch from the elements and provides a clean, professional look. To turn on or off, simply open the lid, turn the easy to hold key, and close the lid. No more dead battery.

Other series features include ignition protection, white or black mounting cups, panel and bulkhead mount options and a large plastic key that is retained or can be easily removed to prevent accidental actuation. A selector version (8521DP) is also available.

Heavy Duty Disconnect Switches

Fig. 9703 Series:

On-off switches are among the most popular heavy duty battery switches ever produced. Their use of the traditional Perko bolt circle makes for easy installation, whether new or as a replacement. These switches can be mounted in numerous locations, and as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

These heavy duty switches are rated at up to 450 amps continuous and 1,200 amps intermittent (see specifications). An alternator field disconnect feature is standard.

High conductivity studs are long enough to handle more than 1 cable and strong enough for torque needed for secure connections.

Using Perko Battery Selector Switches.

There are many ways to use a Perko battery selector switch. Here is a simple way to think of the most common use.

Perko battery switches are designed for surface mounting and have bright red polycarbonate reinforced housings for safety with large easy-to-turn black knobs. Selector switches are designed with a "make before break" feature. This allows switching between the "1", the "ALL" and the "2" positions while the engine is running and the switches are ignition protected.

You always want to have enough power to start your engine to go back to shore. This begins by never leaving the dock without 2 fully charged batteries. For each trip, select one battery that you will use for your engine only for that day. Set the switch to that position (either "1" or "2"), start your engine and head out. Once there, shut off your engine and change the switch to the other position to run your accessories off the other battery. You can start and stop your engine as need be as you spend the day on the water.

Battery selector switches allow you to do everything a battery disconnect switch does and in addition they permit battery selection (of two or more batteries) for specific purposes including starting engines, running accessories or even recharging. They allow for the use of one or more batteries in



Battery Switch Technical Information - How to Use PERKO Battery Switches

systems with one or more engines and facilitate putting batteries in parallel for emergency starting when one or both batteries are substantially discharged.

When you're done for the day, start your engine and head home. You will recharge that battery on your way back. But if you happened to drain it too much to start the engine, then just change the switch position to the other battery that is fully charged and you're on your way.

The "both" positions can be used in the event neither battery has enough power to start your engine. In this case using two badly discharged batteries together just may provide enough power to start. Note that running in the "both" position may not fully recharge both batteries. Recharging is best done with the switch set to either the 1 or 2 position. Once back at the dock, turn the switch to the "off" position to prevent either battery from draining while in storage.

High conductivity studs are long enough to handle more than 1 cable and strong enough for torque needed for secure connections. Optional spacer ring (PN 0462DP0RED) allows for the use of larger cables.

Always consult a certified marine electrician if you have any questions or doubt about how to use, install or wire any battery switch.

Medium Duty Selector Switches

Figs. 8501-8504 Series:

This series of battery selector switches are among the most popular battery switches ever produced. Their use of the traditional Perko bolt circle makes for easy installation, whether new or as a replacement. These switches can be mounted in numerous locations and positions, and as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

In addition to doing everything a battery disconnect switch does, battery selector switches permit battery selection (of two or more batteries) for specific purposes including starting engines, running accessories or even recharging. They allow for the use of one or more batteries in systems with one or more engines and facilitate putting batteries in parallel for emergency starting when one or both batteries are substantially discharged.

Versions of the 8501 Series switches offer additional features such as alternator disconnect and key lock security.

The 90° rotation feature allows users to feel the switches' position in no light situations and the classic shape of the knob makes it easy to turn.

Compact Selector Switches

Figs. 8511 and 8512 Series:

Compact battery selector switches use the same traditional Perko bolt pattern as the 8501 series but with a smaller footprint. This makes for easy installation. These switches can be mounted in numerous locations and positions, and as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

Versions of the 8511 series switches offer additional features such as alternator disconnect and key lock security.

Four removable skirt panels allow for easy cable connection from different directions. High conductivity studs are long enough to handle more than 1 cable and strong enough for torque needed for secure connections.

New Concept Selector Switch.

Fig. 8521 Series:

These small selector switches offer a completely new approach to battery switches for small boats not normally equipped with the ability to shut off the electrical system. Their primary purpose is to prevent battery drain during regular periods of normal non-use. This selector version offers the option of adding a second battery to the system.

An entirely new mounting system (designed specifically for small boats) makes these switches simple to install and to access on boats with limited space and low amperage draws. Simply cut a 4" hole, install the cup mounted switch with 4 screws, attach the cables and you're off. The integral lid closes flush to the mounting surface, protects the switch from the elements and provides a clean, professional look. To turn on or off, simply open the lid, turn the easy to hold key and close the lid. No more dead battery.

Other series features include ignition protection, white or black mounting cups, panel and bulkhead mount options and a large plastic key that is retained or can be easily removed to prevent accidental actuation. An on-off version (9621DP) is also available.

Heavy Duty Selector Switches

Fig. 8603 Series:

Perko 8603 battery selector switches are among the most popular heavy duty battery switches ever produced. Their use of the traditional Perko bolt circle makes for easy installation, whether new or as a replacement. These switches can be mounted in numerous locations, and as ignition protected switches, they can be installed in the engine rooms of gasoline powered boats.

These heavy duty switches are rated at up to 380 amps continuous and 850 amps intermittent (see specifications). An alternator field disconnect feature is standard. The 90° rotation feature of the knob allows users to feel the switches' position in no light situations, and the classic shape of the knob makes it easy to turn.

Using Perko Cup Mount Battery Switches.

Perko's new "cup mount" system offers an entirely new approach to battery switch installations and gives owners of small boats an easy way to reduce the likelihood of a dead battery. Designed primarily for smaller boats with limited mounting location options, these switches offer an entirely new approach to battery switch installation. They let you mount a switch in places not normally thought of for switch installation like:

- On the side of center consoles
- Under seats
- Against exposed bulkheads

Switches are flush mounted on the surface with no protrusions to bump against and protected from the elements by a simple to open and close cover while the inner workings remain safely inside a compartment.

The cup mount switches are easy to install and simple to access while remaining completely out of the way.

A NEW LOOK FOR BATTERY SWITCHES

Create New Sales and Installation Opportunities

Introducing The Cup Mount



5

Battery Switches and Electrical Components

Ideal for:

- Tenders
- Skiffs
- Flats Boats
- Inflatables
- Small Boats

Mounts on:

- Consoles
- Lockers
- Storage bulkheads
- Interior gunnel walls
- Under bench seats

PERKO, INC.

Manufacturer of Marine Navigation Lights, Hardware and Accessories for over 100 Years



A SWITCH FOR ANY APPLICATION

From a Trusted Brand in the Marine Industry

- Proven Quality and Reliability
- Single Battery Disconnect or Dual Battery Selector Switch Options

See Pages 80-84

Compact Design

SINGLE BATTERY ON/OFF



Backing Plate
For panel mount applications

DUAL BATTERY SELECTOR



NEW PRODUCT

Cup Mount
For recessed mounting applications



Stand-Off
For bulkhead mounting applications

Medium Duty



Medium Duty +



Heavy Duty



PERKO, INC

Manufacturer of Marine Navigation Lights, Hardware and Accessories for over 100 Years

Cup Mount - Compact Battery Switches

Cup Mount Options for Battery, Disconnect and Selector Switches, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems

- Material: Polycarbonate Body with Nickel Plated Terminals
- Finish: **Body:** Red and Black
Cup: Off White or Black
- Dimensions: **9621:** Cup Diameter: 3-1/2", Installs in 3" Dia. Hole
8521: Cup Diameter: 4-1/2", Installs in 4" Dia. Hole
- Screw Size: For Mounting Cup: #6
- Terminal Stud Size: 3/8"
- Rated: 140 Amps Continuous,
200 Amps 5 Min. Intermittent
250 Amps 30 Second Start

- Features:
- Small compact size
 - Attractive, durable easy open/close cover hides and protects switch face
 - Allows for easy battery switch access without opening hatches, doors or reaching into tight spaces
 - Removable actuator key

Ideal For: Tenders, Skiffs, Flats Boats, Inflatables or Small Boats

Mounts On: Consoles, Lockers, Storage Bulkheads, Interior Gunnel Walls or Under Bench Seats



NEW PRODUCT

Fig. 9621 with Cup



Removable Actuator Key



Retail Package

Description	Cup Color	Retail Pkg.	OEM Bulk Pkg.
Selector Switch with Cup	Off White	8521DPC	8521C
Selector Switch with Cup	Black	8521DPCBLK	8521BC
Disconnect Switch w/Cup	Off White	9621DPC	9621C
Disconnect Switch w/Cup	Black	9621DPCBLK	9621BC
Spare Parts:			
Spare Actuator Key - Fig 9621		9621DPOKEY	
Spare Actuator Key - Fig 8521		8521DPOKEY	



Cup Available Off White or Black

Fig. 8521 Selector Switch

Shown Mounted on Flats Boat Console



Open



Closed



Panel and Bulkhead Mount - Compact Battery Selector & Disconnect Switches

Compact Selector and Disconnect Switches, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems

Material: Polycarbonate Body with Nickel Plated Terminals
 Finish: Red and Black
 Dimensions: **9621:** Face: 3" x 2-1/2"
 8521: Face: 3-7/8" x 3-1/4"
 Screw Size: #10
 Terminal Stud Size: 3/8"
 Rated: 140 Amps Continuous,
 200 Amps 5 Min. Intermittent
 250 Amps 30 Second Start

Installation: **9621:** Hole Size: 2-1/8"
 8521: Hole Size: 3"

Features:

- **Two mounting options:**
 - Panel mount with backing plate
 - Bulkhead mount with mounting legs
- Small compact size
- Removable actuator key

Ideal For: Tenders, Skiffs, Flats Boats, Inflatables or Small Boats

Mounts On: Consoles, Lockers, Storage Bulkheads, Interior Gunnel Walls or Under Bench Seats



Fig. 9621
Disconnect Switch

NEW
PRODUCT

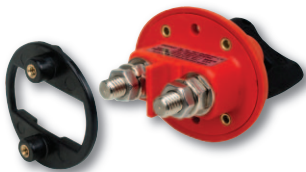


Fig. 8521
Selector Switch

Description	Retail Pkg.	OEM Bulk Pkg.
Selector Switch w/Mtg Ring & Legs	8521DP	
Selector Switch Only w/Ring	-----	8521R
Selector Switch Only w/Legs	-----	8521L
Disconnect Switch w/Mtg Ring & Legs	9621DP	-----
Disconnect Switch Only w/Ring	-----	9621R
Disconnect Switch Only w/Legs	-----	9621L
Spare Parts:		
Fig. 8521: Spare Actuator Key	8521DP0KEY	
Fig. 9621: Spare Actuator Key	9621DP0KEY	

Mounting Options

Panel Mount with Backing Plate



Shown Mounted



Bulkhead Mount with Mounting Legs



Shown Mounted



Retail Packages includes both backing plate and mounting legs



Removable Actuator Key



Compact Battery Selector & Disconnect Switches

Compact Main Battery Selector & Disconnect Switches, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems
Protected by the following U.S. Patents; Design 260,637 - 4,280,028 - 4,424,424



- Material: Polycarbonate Body with Brass Terminals
Finish: Red and Black
Dimensions: Width: 4", Height 4", Depth: 3"
Rated: 315 Amps Continuous, 450 Amps 5 Min. Intermittent
Terminal Stud Size: 3/8"
- Features:
- Higher Rating Capacity than the 8500 Series
 - Requires 1/3rd less space to mount
 - Same Bolt Pattern as Popular 8500 Series
 - Locking and Non-Locking Models
 - Smooth, Positive 90° Rotary Position Selector
 - Four removable skirt panels for easy cable access and mounting

Fig. 8511 Selector Switch



Fig. 8512



Fig. 9612 Disconnect Switch



Fig. 9611



Surface Mounting Trim Ring Available

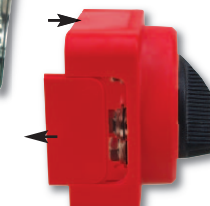
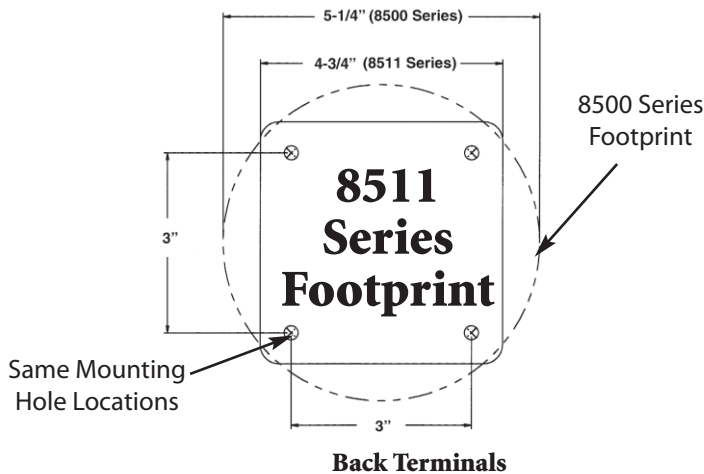


Illustration of removable skirt panels

- Fig. 8511: Selector Switch
Fig. 8512: Selector Switch with Key Lock
Fig. 9611: Disconnect (On/Off) Switch
Fig. 9612: Disconnect (On/Off) Switch with Key Lock

Features	Retail Pkg.	OEM Bulk Pkg.	Alternator Field Disconnect
Selector w/o Key Lock	8511DP	8511	No
Selector with Key Lock	8512DP	8512	No
Disconnect w/o Key Lock	9611DP	9611	No
Disconnect with Key Lock	9612DP	9612	No

Surface Mount Trim Ring: 8511TRMRNG



Same Mounting Hole Locations

Disconnect Switch



Selector Switch





Medium Duty Battery Selector and Disconnect Switches

Medium Duty, Main Battery Selector & Disconnect Switches, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems
Protected by the following U.S. Patents; Design 260,637 - 4,280,028 - 4,424,424



Material: Polycarbonate Body with Brass Terminals
Finish: Red and Black
Dimensions: Diameter: 5-1/4", Depth: 2-5/8"

Rated: 250 Amps Continuous,
360 Amps 5 Min. Intermittent

Terminal Stud Size: 3/8"

- Features:
- Smooth, Positive 90° Rotary Position Selector
 - Alternator Field Disconnect: When used with non-unitized alternators, these models will interrupt the field current (reducing the possibility of damage) if turned "OFF" with the engine running.

- Fig. 8501: Selector Switch
- Fig. 8502: Selector Switch with Key Lock
- Fig. 8503: Selector Switch w/Alt. Field Disc.
- Fig. 8504: Selector Switch with Key Lock and Alt. Field Disc.
- Fig. 9601: Disconnect (On/Off) Switch
- Fig. 9602: Disconnect (On/Off) Switch with Key Lock
- Fig. 9603: Disconnect (On/Off) Switch w/Alt. Field Disc.
- Fig. 9604: Disconnect (On/Off) Switch with Key Lock and Alt. Field Disc.



Fig. 8501
Selector Switch



Fig. 8502



Fig. 8503



Fig. 8504

Fig. 9602
Disconnect Switch with Ley Lock



Features	Retail Pkg.	OEM Bulk Pkg.	Alternator Field Disconnect
Selector w/o Key Lock	8501DP	8501	No
Selector with Key Lock	8502DP	8502	No
Selector w/o Key Lock	8503DP	8503	Yes
Selector with Key Lock	8504DP	8504	Yes
Disconnect w/o Key Lock	9601DP	9601	No
Disconnect with Key Lock	9602DP	9602	No
Disconnect w/o Key Lock	9603DP	9603	Yes
Disconnect with Key Lock	9604DP	9604	Yes
Cable Spacer	0462DP0RED	0462000RED	

Back Terminals

Disconnect Switch

Selector Switch

Fig. 0462



with Alternator Field Disconnect



without Alternator Field Disconnect



Optional Cable Spacer



Fig. 9601



Fig. 9603



Fig. 9604



Heavy Duty Battery Selector and Disconnect Switches

Heavy Duty Main Battery Selector Switch, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems
 Protected by the following U.S. Patents; Design 260,637 - 4,280,028 - 4,424,424

- Material: Polycarbonate Body with Brass Terminals
- Finish: Red and Black
- Dimensions: Width: 5-1/2", Height 5-1/2", Depth: 3-5/8"
- Rated: 380 Amps Continuous,
850 Amps 5 Min. Intermittent
- Screw Size: #10
- Terminal Stud Size: 1/2"
- Features: Selector Switch
with Alternator Field Disconnect



Fig. 8603



Features
Selector Switch

Retail Pkg.
8603DP

Alternator Field Disconnect
Yes

Heavy Duty Main Battery Disconnect Switch, Ignition Protected

For use with alternators and generators 6-50 V.D.C. Marine Electrical Systems
 Protected by the following U.S. Patents; Design 260,637 - 4,280,028 - 4,424,424

- Material: Polycarbonate Body with Brass Terminals
- Finish: Red and Black
- Dimensions: Width: 5-1/2", Height 5-1/2", Depth: 3-5/8"
- Rated: 450 Amps Continuous,
1200 Amps 5 Min. Intermittent
- Screw Size: #10
- Terminal Stud Size: 1/2"
- Features: Disconnect (On/Off) Switch
with Alternator Field Disconnect



Fig. 9703



Features
Disconnect Switch

Retail Pkg.
9703DP

Alternator Field Disconnect
Yes

In-line Fuse Holder, Cable Straps and Line Support Clips

In-Line Fuse Holder

- Material: Molded Polymer
- Dimensions: Length: 2-1/8", Diameter: 11/16"
- Rated: 20 Amps at 12, 24 and 32 Volts For 1/4" x 1-1/4" Fuses
- Voltage: 12V
- Features: Includes 7-1/2" Wire Leads

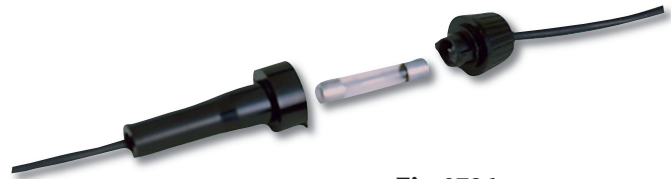


Fig. 0786

Type	Retail Pkg.
In-Line Fuse Holder	0786DP

Cable Strap

- Material: Ultra-Violet Stabilized Polymer for Weather Resistance
- Dimensions: Width All Sizes: 1/2"
- Screw Size: #4
- Features: Eliminates the Need for Insulating Cushion



Fig. 0196

I.D. Inches	Retail Pkg.	OEM Bulk Pkg.
3/16"	0196DP1	0196001
1/4"	0196DP2	0196002
5/16"	0196DP3	0196003
3/8"	0196DP4	0196004
1/2"	0196DP5	0196005
5/8"	0196DP6	0196006
3/4"	0196DP7	0196007

Note: This Item Conforms to U.S.C.G. Electrical Standards. See page 75.

Line Support Clips

- Material: Aluminum with Synthetic Rubber Cushion



Fig. 0163
Single Line

For O.D. Line	Width	Single Line Retail Pkg.	Double Line Retail Pkg.
1/4"	3/8"	0163DP2ALU	-----
3/8"	1/2"	0163DP4ALU	0164DP4ALU
1/2"	1/2"	0163DP5ALU	0164DP5ALU*
5/8"	1/2"	0163DP6ALU	-----

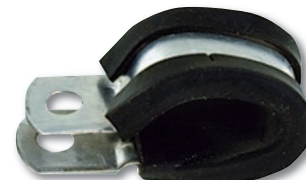


Fig. 0164
Double Line

Note: This Item Conforms to U.S.C.G. Electrical Standards. See page 75.



Deck Connections & Cable Outlet

Watertight Deck Connections

Material: Fig. 1189 Brass
 Fig. 1190 Zinc Alloy
 Finish: Chrome Plated
 Dimensions: Height: 1-3/16", Diameter: 1-5/8"
 Screw Size: #6
 Rated: 15 Amps at 12, 24 and 32 Volts Polarized Double Contact Connector. Accepts up to #14 gauge stranded wire
 Voltage: 12, 24, or 32V
 Features: Includes flange gasket with integral waterproof cap for base when plug is removed



Fig. 1189
Chrome Plated Brass
Fig. 1190
Chrome Plated Zinc

Finish	Retail Pkg.	OEM Bulk Pkg.
Chrome Brass	1189DP0CHR	1189000CHR
Chrome Zinc	1190DP0CHR	1190000CHR

Note: These Items Are Not Ignition Protected.

Spare Parts Ordering Information
 Connector with Cover: 1189DP099A.
 Connector Only: 0042.



Watertight Cable Outlet

Material: Brass
 Finish: Chrome Plated
 Dimensions: Diameter Base: 1-1/4"
 Screw Size: #4
 Features:

- For 5/16 Inch O.D. Cable
- Equipped with Rubber Grommet for Watertight Passage of Cable



Fig. 0424
Chrome Plated Brass

Finish	Retail Pkg.
Chrome	0424DP0CHR

