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Catalog #115 • \$3.00

The Leader in Marine Electrical Parts.



Superior quality starts here...

1-800-722-2720 • 850-455-5476



The Starting & Charging Specialists

1

It all starts coming together here. An automated line dispenses epoxy glue on the inside of the shell; high performance magnets are bonded through an induction heating procedure. Buffer pads are then added.

2 At this induction heating station the corrosion resistant nickel-plated armature shaft, ring and silicon steel lamination stack are joined as one unit.

2

3

3 Our next stop is the powder coater. The best insulation and corrosion preventative available.

4

4 A number of steps are completed within this station. Here, the commutator is attached, a computerized armature winder adds the copper wire, and commutator clamps are crimped and silver welded. Next, the armature will go into a lathe where the commutator will be polished. Two computerized quality checks are made during this time.

5

5 The armatures are now placed on the automated assembly line. A robotic arm picks up each armature and places it into the trickle varnish "carousel." When this step is complete, the same robotic arm removes the armature and places it back on the line.

6

6 Add the brush kit, nuts, bolts, spring, end cap and drive gear. Assembly of the starter is almost complete at this phase of the line.

7 The final of many tests! Each and every starter must pass multi-level, maximum load test before being boxed. Quality assured all the way!

7





We build.



**We test.
And test.
And test.**



We ship.



The Starting & Charging Specialists

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The Leader in Marine Electrical Parts.

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ARCO is a full service supplier of new and remanufactured electrical products for the starting and charging of marine engines. Located in the United States, **ARCO** has operated in Pensacola, Florida since 1960.

ARCO sells only original equipment quality items! All new and remanufactured units are assembled under the strictest quality control standards. **Each** and **every** unit is tested on the assembly line to ensure original equipment reliability.

ARCO products are distributed to thousands of dealers through a network of 180 national and international warehouse distributors worldwide.

ARCO stocks thousands of complete units and replacement parts to service everything from bass boats to battleships.

ARCO services all D.C. voltage systems, including clockwise and counterclockwise rotation starting motors.

ARCO catalogs only the items most frequently requested by our customers worldwide.

ARCO also supplies replacement parts for many "hard-to-find" and "obsolete" units from our constantly expanding inventory.



HOURS OF OPERATION

MONDAY – THURSDAY

7:00 A.M. - 5:30 P.M. CENTRAL

CLOSED FRIDAYS

NOTE: All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or otherwise, without prior written permission from ARCO Starting & Charging. Every effort has been made to make all information as complete and as accurate as possible. Product descriptions, typographic, price, or photographic errors are unintentional and subject to correction.

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POLICIES



PAYMENT POLICY



ARCO accepts the following major credit cards: MasterCard, Visa, American Express, and Discover. Credit card orders will be shipped immediately. **All shipments are processed by credit card only.**

SHIPPING

MONDAY - THURSDAY - CLOSED FRIDAYS

MINIMUM ORDER: \$50.00 (U.S. currency only). Please add 15% for Parcel Post. We are proud of our prompt, efficient service. 99.8% of all orders are shipped within 24 hours of placement. Shipments of 150 lbs or less are shipped via UPS or FedEx. Larger orders are shipped freight collect. All orders are shipped F.O.B. shipping point.

PRIORITY SHIPPING: Next day, second day, air, and air freight shipments are subject to an additional \$5 handling charge. Priority shipments will be hand-carried through the order process. **All orders received before 2:30 P.M. CST (M-TH) will be shipped the same day.**

DROP SHIPPING: Unless a duplicate order is placed for inventory, a 10% surcharge will be added for all drop shipments.

WARRANTY

ARCO products, **when properly installed**, are warranted by ARCO against defects in materials and workmanship for a period of **12 MONTHS FOR LEISURE USE**. Products used in commercial or racing applications are warranted for a period of 90 days.

This warranty extends to the application under normal use and service and **does not apply to rust, corrosion, submersions, cut wires, deliberate abuse, broken drive gears or housings.**

Improper installation, careless handling, tampering or dismantling of units makes this warranty null and void.

**Our warranty is limited to repair or replacement of the defective unit.
It does not cover labor or any other expense.**

This warranty being expressly in lieu of all other obligations or liabilities and ARCO neither assumes nor authorizes any other person or firm to assume for it any other liability in connection with the sale of its products or merchandise.

NOTE

Our warranty is limited to the repair or replacement of defective units only.

Labor or any other expenses are NOT covered.

All warranty returns must have a RETURN GOODS AUTHORIZATION NUMBER and include a complete explanation of malfunction.

RETURNS

LOST OR DAMAGED GOODS: Our responsibility ceases when the transportation company signs the bill of lading signifying your merchandise has been picked up in good condition. If part of your shipment is lost or damaged, do not accept shipment until the freight agent makes a notation on your freight bill.

THOROUGHLY INSPECT YOUR SHIPMENT AS SOON AS IT IS RECEIVED. If any concealed loss or damage is discovered, it is absolutely necessary for you to request an inspection by your freight agent. We are willing to give our assistance in collecting claims for loss or damage; however, we cannot be responsible for claims collection or replacement of damaged goods.

STOCK ADJUSTMENT:

All returns must be pre-approved and are subject to a 15% handling charge or an offsetting order of twice the equivalent value. Merchandise must be returned freight prepaid in original packaging and in saleable condition. **Dirty or damaged packaging will be replaced and charged to the customer's account.**

WARRANTY RETURNS:

All returns must be pre-approved and returned FREIGHT PREPAID. Warranty returns must include a complete explanation. Return warranty units for evaluation to:
ARCO Starting and Charging
3921 Navy Boulevard
Pensacola, FL 32507-1296 U.S.A.

PACKAGING:

All returned items must be packaged with due care in the original ARCO box(es). A copy of the original ARCO invoice and the returning company's packing list must be included. The packing list should show the ARCO part number(s) returned. **All warranty returns must include a complete explanation of the problem.**





An ARCO Warranty Protects You From Defects in Materials or Workmanship...

The Warranty **DOES NOT** cover such things as:



FREIGHT DAMAGE

ARC part boxes are not shipping boxes.

If you are shipping a part to a customer or sending a warranty return, the part must be packaged in a way to prevent possible damage. Place extra packing material around the part, place it back in the part box and then into a well packed, sturdy shipping container.

To prevent damage, properly pack all parts before reshipment.



BROKEN SOLENOIDS

The solenoid was not broken when the starter was packaged to be shipped. We have special boxes made for the starters, and we use special packing materials to ensure the item will arrive to the customer safely. Sometimes, though, the packages are mishandled by the carrier (i.e., dropped or thrown) and the solenoid becomes damaged. This is the carrier's responsibility. It is not a material defect; therefore it is **not covered by warranty**.



RUST, CORROSION OR SUBMERSIONS

ARC treats every component with a special rust and corrosion resistant coating to prevent water damage. However, it is impossible to protect the unit from direct contact with water. Therefore, a failure directly caused by rust, corrosion or submersion is **not covered by warranty**.

BROKEN MOUNTING FLANGES OR SHAFTS

A broken flange is typically caused by improper installation. The mounting holes may look evenly spaced in a triangular pattern, but they are not—one hole is slightly offset. Forcing a mounting bolt into the offset hole may cause the flange to break. This may also occur if the mounting bolts are not tightened evenly. A broken shaft is caused by a malfunction in the gearbox. These breaks are not material defects, and they are **not covered by warranty**.



CUT WIRES OR DISMANTLED UNITS

Cutting a unit's wires or dismantling a unit immediately voids the manufacturer's warranty. In addition, taking a motor off the reservoir and trying to install it on an old reservoir usually damages the brushes and seals in the motor. Disassembled parts are **not covered by warranty**.

BROKEN NOSE HOUSINGS

This type of failure is always blamed on a bad casting. In fact, it is caused when a starter, spinning at a high rate of rpm, comes to an abrupt stop. This can occur when an engine backfires or momentarily releasing the start switch and re-engaging the starter before it has spun down. It may also happen when a cylinder suffers a water hydraulic lock. In either case, the damage is not due to a defective unit, and is **not covered by warranty**.



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STATE-OF-THE-ART, COMPUTERIZED TESTING EQUIPMENT



DID YOU KNOW...

You have a better chance at winning a lottery than you have of receiving an **ARCO** unit that doesn't perform!

EVERY **ARCO unit is load tested with state-of-the-art testing equipment.**



We have invested over a million dollars in fully automated computerized testing equipment for our inboard starters, outboard starters and tilt/trim motors. Each and every unit is tested for performance beyond its normal operating condition. The testers pictured above are specifically designed for testing inboard and outboard starters and are just three of five different testers we have in use today. We also have one designed for testing tilt/trim motors and another for testing hydraulic pump assemblies.

Most manufacturers only perform spot tests or a free run only test. It is impossible to know that every unit is performing to specification without performing an extensive load test on every unit. It is very expensive to test each and every unit, however, our goal is to supply you with the highest quality unit possible at a reasonable price.

After completion of a thorough test procedure, detailed test results are displayed. The tests are so complete that even the resistance of the solenoid contacts are shown on the report. Armature ripple is also shown along with a performance curve. If a unit fails to perform to specification it is rejected and is sent to our quality assurance department for inspection.

**We call this
VALUE!**

The next time you install an **ARCO** part you can have confidence that the part will perform to O.E.M. specifications.



TECH TIPS

IMPORTANT BATTERY FACTS

A good battery can provide four or five years of worry-free service with the right kind of care.

Bigger is better! The battery you are replacing does not have to be the same size as the original. **IT IS ALWAYS BETTER TO HAVE EXTRA BATTERY CAPACITY.**

POINTS TO REMEMBER

- ➡ **The battery is the heart of the electrical system**
- ➡ **Always start troubleshooting at the battery**
- ➡ **Never store a battery in a discharged state**
- ➡ **Never add anything except distilled water to a battery**



DRY CHARGED BATTERIES MUST BE CHARGED BEFORE USING



Many small batteries are supplied with the electrolyte in a separate container. If you have to fill a new battery with electrolyte, **YOU MUST PLACE THE BATTERY ON A QUICK CHARGER.** The charging system will never bring the battery to a fully charged state. **THE BATTERY CAPACITY WILL NEVER BE ABOVE 80%.** Pulling the battery out later and trying to charge it will not work. **THE BATTERY'S CAPACITY HAS BEEN PERMANENTLY CUT BY 20% AND THERE IS NOTHING YOU CAN DO ABOUT IT.**

BATTERIES WILL SELF DISCHARGE WHEN STORED

Batteries will self discharge when stored for long periods of time. This is a normal process with all lead acid batteries. **Always charge the battery to full charge before storing.** Also disconnect the negative battery cable. This will keep the small system drains from accelerating the discharge process. The best way to avoid shortened battery life is **use a SMART CHARGER (not a trickle charger)** on the battery when it's not being used. A smart charger is a charging device that will maintain the battery at a full state of charge by only charging the battery when the voltage drops to a specified level without overcharging.



ELECTROLYTE BECOMES WATER IN A DISCHARGED BATTERY



As a battery becomes discharged the percentage of sulfuric acid in the electrolyte becomes less. The sulfuric acid combines with the lead plates producing lead sulfate. As this happens **the electrolyte solution becomes pure water.** A discharged battery will freeze in cold climates, which will destroy the insulators and plates inside it.

LOOSE BATTERY TERMINAL ENDS CAN DESTROY A BATTERY

Loose or corroded battery cable lugs can cause all sorts of problems. When the starter is engaged the loose or corroded connection can cause a heavy arc which will melt the post right out of the battery. If the battery is gassing, the arc can cause the battery to explode. Never use the temporary type battery ends. These are only good for emergency use and will become corroded in a short period of time. **Always use a crimped and sealed battery cable end or replace the battery cable.**

Make sure there is a gap between the ends of the terminal when tight.



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BATTERY TESTING PROCEDURES

WARNING! Batteries give off hydrogen gas constantly. Hydrogen gas is highly explosive. Always wear safety glasses or goggles and use caution when working with batteries.

OPEN CIRCUIT VOLTAGE TEST

Before you can properly test any battery it must be at FULL CHARGE.

You can verify the state of charge with the use of a **digital multimeter**.

Connect the digital multimeter to the battery terminals. A fully charged 12 volt battery will read at least 12.6 volts (2.1 volts per cell) on the multimeter. **If your reading is 12.4 OR BELOW you must recharge the battery before testing.**

Open Circuit Volts	Percent of Charge
11.7 volts or less	0%
12.0	25%
12.2	50%
12.4	75%
12.6 or more	100%



12 volt battery

LOAD TESTING THE BATTERY

Before you can properly test any battery it must be at FULL CHARGE.

The only way you can thoroughly test a battery is to place a high amperage load across the battery terminals.

Starter motors have very high amperage requirements which can exceed 300 amps on certain engine applications. If the battery has to be recharged you must first remove the surface charge. This can be done by using the starter. Disable the ignition spark (consult manufacturer's method to avoid electronic ignition) and crank the engine for 10-15 seconds. Once you have removed the surface charge, disconnect the battery cables and connect the battery load tester to the battery posts.

Determine the cold cranking amperage rating of the battery you are testing.
If the cold cranking amp rating (CCA) is not known, use 450 CCA for four cylinder engines, 550 CCA for six cylinder engines and 650 CCA for V-8 engines.

Adjust current draw on the load tester to 50% of the CCA rating. Continue this for 15 seconds while viewing the voltage reading on the battery tester. The voltage should stay above the specified reading (see chart below) without falling off. If the voltage remains at the specified level or above, the battery would be considered good. If the voltage reading drops below the specified level, replace the battery.

Load Test Chart		
Minimum Voltage	Temperature (degrees)	
9.6	70 F	21C and above
9.5	60F	16C
9.4	50F	10C
9.3	40F	-1C
9.1	30F	-7C
8.9	20F	-12C
8.7	10F	-18C
8.5	0F	-18C



The Leader in Marine Electrical Parts.

TECH TIPS



TECH TIP

*Rust, Corrosion or Submersions are
NOT COVERED BY WARRANTY*

The best offense ... is a great defense

Moisture is the number one “killer” of marine starters. That is why, from start to finish, we design and manufacture our starters with corrosion protection in mind. In fact, over three million dollars has been invested in totally computerized production and testing machinery. Follow along as we show you how we not only go to war against corrosion, but build quality into each and every ARCO part.

First, we start with nickel-plated armature shafts and silicon steel lamination stacks. Add a layer of powder coating, the best insulation and corrosion preventative available, and you are ahead in the battle.

Next, the commutator is attached, computer-wound copper windings are added, and a ground fault test is made on each armature. Strategic testing during the early stages of assembly is an essential maneuver for uncovering and correcting potential weaknesses. The commutator tabs are then crimped and hot staked. On the lathe, the commutator face is smoothed and polished ensuring the brushes run as friction-free as possible. A computerized 18 point armature check is made at this time.

Now the armature goes onto our automated, state-of-the-art assembly line. The first stop is the polyester trickle varnish “carousel”. The varnish not only assists in holding the windings in place during peak performance, but also dissipates heat—another of the starter’s enemies. Moving along, the armatures are now inserted into the epoxy coated shell. The shells have been previously prepared with high performance magnets bonded to the interior. Nuts, bolts, gaskets, a spring, drive gear, brush kit and end cap are added to complete the assembly of the starter. The high performance magnets are now fully charged. Last, but not least, a computerized full load performance test is conducted on each and every starter. Only by passing this final inspection is an ARCO starter certified as ready for battle.



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REPLACEMENT OUTBOARD STARTERS



The Leader in Marine Electrical Parts.



3410 (NEW)

FITS: TOHATSU 45-140 HP, 2 Stroke

Replaces: Hitachi S114-415A,
S114-415, S114-571A,
S114-667

9-tooth drive gear



DV510*

**9-tooth
drive gear**



SR410*

**Brush holder
assembly**



***Will Fit These Starters Only:**

ARCO 3410, Hitachi S114-667, Tohatsu FM 5900

3421 (NEW)

FITS: YAMAHA

1984-1997 9.9-15 HP

1988-1998 25 HP

Replaces: Hitachi S106-07B,
S106-07E, S106-07F

10-tooth drive gear



3422 (NEW)

FITS: YAMAHA

1984-UP 70 HP

1991-UP 60 HP, 2 Stroke

Replaces: Hitachi S108-97A

9-tooth drive gear



DV522*

**9-tooth
drive gear**



SR422*

**Brush holder
assembly**



***Will Fit These Starters Only:**

ARCO 3422, Hitachi S108-97A, Yamaha 6H3-81800-11

3412 (NEW)

**FITS: SUZUKI, TOHATSU,
NISSAN 30-40 HP, 2 Stroke**

Replaces: Hitachi S108-94,
S108-112, S108-120

9-tooth drive gear



DV512*

**9-tooth
drive gear**



SR412*

**Brush holder
assembly**



***Will Fit These Starters Only:**

ARCO 3412, Hitachi S108-120, Tohatsu 3C8-76010-100

3423 (NEW)

FITS: YAMAHA

1987-Up 30 HP

1989-Up 40-50 HP

Replaces: Hitachi S108-87A

11-tooth drive gear



DV523*

**11-tooth
drive gear**



SR423*

**Brush holder
assembly**



***Will Fit These Starters Only:**

ARCO 3423, Hitachi S108-87A, Yamaha 6F5-81800-11

3420 (NEW)

FITS: YAMAHA 25-40 HP, 2 Stroke

MARINER 20-40 HP, 2 Stroke

Replaces: Hitachi S108-80,
S108-80A, S108-80B

11-tooth drive gear



DV520*

**11-tooth
drive gear**



SR420*

**Brush holder
assembly**



***Will Fit These Starters Only:**

ARCO 3420, Hitachi S108-80B, Yamaha 689-81800-13

3424 (NEW)

FITS: YAMAHA, MARINER

55-60 HP 2-Cyl, 2 Stroke Engines

Replaces: Hitachi S114-221

9-tooth drive gear



DV524*

9-tooth
drive gear



SR424*

Brush holder
assembly



***Will Fit These Starters Only:**

 3424, Hitachi S114-221J, Yamaha 697-81800-13

3427 (NEW)

FITS: YAMAHA

1994-1999 75 HP;

1991-1996 85 HP;

1984-UP 90 HP

Replaces: Hitachi S114-263B,

9-tooth drive gear



DV527*

9-tooth
drive gear



SR427*

Brush holder
assembly



***Will Fit These Starters Only:**

 3427, Hitachi S114-263B, Yamaha 688-81800-12

3425 (NEW)

FITS: YAMAHA

1984-1988 40-50 HP

Replaces: Hitachi S108-99B

9-tooth drive gear



DV525*

9-tooth
drive gear



SR425*

Brush holder
assembly



***Will Fit These Starters Only:**

 3425, Hitachi S108-99B, Yamaha 6H4-81800-12

3428 (NEW)

FITS: YAMAHA 115-2.

Replaces: Hitachi S11

9-tooth drive gear



DV528*

9-tooth
drive gear



SR428*

Brush holder
assembly



***Will Fit These Starters Only:**

 3428, Hitachi S114-660B, Yamaha 6N7-81800-10

3426 (NEW)

FITS: YAMAHA

1984-1996 115-200 HP, 2 Stroke

1995-2000 40-50 HP, 4 Stroke

Replaces: Hitachi S114-323

9-tooth drive gear



DV526*

9-tooth
drive gear



SR426*

Brush holder
assembly



***Will Fit These Starters Only:**

 3426, Hitachi S114-323C, Yamaha 6E5-81800-12

3429 (NEW)

FITS: YAMAHA

1998-UP V200;

1994-UP 225 HP

1990-UP 250 HP

Replaces: Hitachi S114-559B

9-tooth drive gear



DV529*

9-tooth
drive gear



SR429*

Brush holder
assembly



***Will Fit These Starters Only:**

 3429, Hitachi S114-559B, Yamaha 61A-81800-01

REPLACEMENT OUTBOARD STARTERS



3430 (NEW)

FITS: YAMAHA
1999-Up 80 HP, 4 Stroke
1999-Up 100 HP, 4 Stroke
MERCURY/MARINER
90 HP, 4 Stroke
 Replaces: Hitachi S114-828B
13-tooth drive gear



3440 (NEW)

FITS: SUZUKI 75/85 HP,
1988-2000 2 Stroke
 Replaces: Hitachi S114-555
9-tooth drive gear



DV540*
9-tooth
drive gear



SR440*
Brush holder
assembly



***Will Fit These Starters Only:**

ARCO 3440, Hitachi S114-555, Suzuki 31100-95601

3431 (NEW)

FITS: YAMAHA
2000-Up LZ 150-175 HP
2000-Up VZ 150-175 HP
2000-Up Z 150-175 HP
2000-Up LZ 200-Z200 HP
 Replaces: Hitachi S114-836A
13-tooth drive gear



3442 (NEW)

FITS: SUZUKI 90/100,
150-225 HP, 2 Stroke
 Replaces: Hitachi
 S114-551, S114-674
8-tooth drive gear



DV542*
8-tooth
drive gear



SR442*
Brush holder
assembly



***Will Fit These Starters Only:**

ARCO 3442, Hitachi S114-674, Suzuki 31100-92E00

3432 (NEW)

FITS: YAMAHA
2000-Up F115, 4 Stroke
2000-Up LF115, 4 Stroke
 Replaces: Hitachi S114-838A
13-tooth drive gear



3444 (NEW)

FITS: SUZUKI
115-140 HP, 2 Stroke
 Replaces: Hitachi
 S114-437, S114-673
9-tooth drive gear



DV544*
9-tooth
drive gear



SR444*
Brush holder
assembly



***Will Fit These Starters Only:**

ARCO 3444, Hitachi S114-673, Suzuki 31100-94610

3433 (NEW)

FITS: YAMAHA
2004-Up 150 HP, 4 Stroke
2005-Up 250 HP, 4 Stroke
2006-Up 225 HP, 4 Stroke
 Replaces: Hitachi S114-867
13-tooth drive gear





REPLACEMENT OUTBOARD STARTERS



TECH TIP

- Excess oil or grease may cause drive failure.
- Be sure to follow the lubrication directions shown below.



“DO NOT”

**SPRAY OIL OR OTHER LUBRICANTS
ON O/B STARTER DRIVES**

The O/B Starter Drives are Rubber Cushioned Drives. If any oil gets between the compression nut and the rubber grip surface, drive failure will result.



“DO”

**REMOVE THE DRIVE ASSEMBLY
WHEN APPLYING LUBE TO THE SHAFT**

Always remove the drive assembly before applying lube to the shaft. Only apply a thin film of water resistant grease to the shaft. Make sure to wipe off any excess.

3446 (NEW)

FITS: HONDA

40 HP, 4 Stroke

Replaces: Hitachi S114-677,
S114-561;

Honda 31200-ZV5-0130,
31200-ZV6A-0130

9-tooth drive gear

CW Rotation



SR446*

Brush holder
assembly

***Will Fit These Starters Only:**

ARCO 3446, Hitachi S114-677, Honda 31200-ZV6A-0130

5359 (NEW)

FITS: MERCURY/MARINER

8, 9.9, 13.5, 15 HP

4 Stroke

9-tooth drive gear



DV359

9-tooth
drive gear

SR359

Brush holder assembly

3447 (NEW)

FITS: HONDA

2002 - UP 115 & 130 HP

Replaces: Mitsubishi MOT 60381;
Honda: 31200-ZW5-003

13-tooth drive gear



5360 (NEW)

FITS: MERCURY

2001-UP 40, 50, 60 HP

4-cyl, 4 Stroke

9-tooth drive gear



DV360

9-tooth
drive gear

SR360

Brush holder assembly

5358 (NEW)

FITS: EVINRUDE

40, 50, 75, 90 HP

E-Tec Models

9-tooth drive gear



DV358

9-tooth
drive gear

SR358

Brush holder assembly

5361 (NEW)

FITS: O.M.C.

1993-UP 9.9-15 HP

Small 10-tooth drive gear

2" casing

DV361

Small 10-tooth
drive gear

SR361

Brush holder assembly



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REPLACEMENT OUTBOARD STARTERS



The Leader in Marine Electrical Parts.



TECH TIP

- Excess oil or grease may cause drive failure.
- Be sure to follow the lubrication directions shown on page 17.

NOTE

When ordering drive assemblies for B.R.P./O.M.C. starters, be aware that some B.R.P./O.M.C. outboard starters use a 2-piece drive assembly; older B.R.P./O.M.C. starters use a 1-piece drive assembly.

ORDER THE
CORRECT DRIVE.

THEY ARE NOT
INTERCHANGEABLE!

5362 (NEW)

FITS: MERCURY 40-50 HP
1997-UP 4-Stroke
9-tooth metric drive gear

DV362
9-tooth metric
drive gear



SR362
Brush holder assembly

5363 (NEW)

FITS: O.M.C.
1991-UP 150-175 HP
V6 Eagle-Series
1997-UP V4 and V6
2003 75/90/115 HP
2003-UP 90/105/115
60° Engine
2004-UP 100-175 HP
Direct Injection

SR363
Brush holder assembly



DV517
9-tooth
drive gear

DV518
10-tooth
drive gear

JSA517

Jack shaft assembly/9-tooth drive gear
Fits Johnson Evinrude carbureted engines

JSA518

Jack shaft assembly/10-tooth drive gear
Fits Johnson Evinrude direct injection engines

5364 (NEW)

FITS: MERCURY
1998-UP 25 HP, 4 Stroke
Yamaha 25HP, 4 Stroke
9-tooth drive gear

DV364
9-tooth
drive gear

SR364
Brush holder assembly



5365 (NEW)

FITS: MERCURY
30/40/50/60 HP
1999-UP 3-cyl, 4 Stroke
2000-UP Yamaha
40HP, 4 Stroke
9-tooth drive gear

DV365
9-tooth
drive gear

SR365
Brush holder assembly



5366 (NEW)

FITS: MERCURY
35-50 HP
9-tooth drive gear

DV366
9-tooth
drive gear

SR366
Brush holder assembly





TECH TIP

- Excess oil or grease may cause drive failure.
- Be sure to follow the lubrication directions shown on page 17.

NOTE

When ordering drive assemblies for B.R.P./O.M.C. starters, be aware that some B.R.P./O.M.C. outboard starters use a 2-piece drive assembly; older B.R.P./O.M.C. starters use a 1-piece drive assembly.

ORDER THE
CORRECT DRIVE.

THEY ARE NOT
INTERCHANGEABLE!

5367 (NEW)
FITS: MERCURY/MARINER
 1986-1996 6-15 HP
 1980-2003 18-25 HP
 10-tooth drive gear
 2½" motor casing



DV367
 10-tooth
 drive gear



SR367
 Brush holder assembly



5368 (NEW)
FITS: O.M.C.
 1997-2000
 9.9/15 HP, 4-stroke
 10-tooth drive gear



DVK68*
 2-pc drive kit
 *See NOTE



SR368
 Brush holder assembly



5369 (NEW)
FITS: O.M.C.
 8/9.9-11 HP
 1997-1998 4 stroke
 1977-1992 9.9-15 HP
 10-tooth drive gear
 2" motor casing



DV369
 10-tooth
 drive gear



SR369
 Brush holder assembly



Save Time With **SR107 - BRUSH LOADING TOOL** See page 75

Makes brush loading as simple as 1-2-3
 The "perfect tool" for loading outboard starter brushes.
 Strong stainless steel construction.



One Tool Fits
All These Caps!

(1) Depress Brushes and
Slide End Cap In Tool

(2) Insert Armature

(3) Remove Tool Leaving Brushes Loaded For Assembly



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REPLACEMENT OUTBOARD STARTERS



The Leader in Marine Electrical Parts.



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ORDER THE
CORRECT DRIVE.

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INTERCHANGEABLE!

5370 (NEW)

FITS: O.M.C.
55-75 HP 3-cyl
9-tooth drive gear



DV370*
9-tooth drive gear
*See NOTE

DVK70*
2-pc drive kit
*See NOTE



SR370
Brush holder assembly

5371 (NEW)

FITS: O.M.C.
50-60 HP 2-cyl
9-tooth drive gear



DV371*
9-tooth drive gear
*See NOTE

DVK71*
2-pc drive kit
*See NOTE



SR371
Brush holder assembly

5372 (NEW)

FITS: O.M.C.
85-140 HP; Late-model V4
Small 10-tooth drive gear



DV372*
Small 10-tooth drive gear
*See NOTE

DVK72*
2-pc drive kit
*See NOTE



SR372
Brush holder assembly

5372X (NEW)

FITS: O.M.C.
1969-1970 85-115 HP
1971-1972 85-125 HP
Large 10-tooth drive gear



DV372X
Large 10-tooth drive gear



SR372
Brush holder assembly



5373 (NEW)

FITS: O.M.C.
150-235 HP V6
8-tooth drive gear



DV373
8-tooth drive gear



SR373
Brush holder assembly





REPLACEMENT OUTBOARD STARTERS



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**ORDER THE
CORRECT DRIVE.**

**THEY ARE NOT
INTERCHANGEABLE!**

5374 (NEW)

FITS: MERCURY
65-85 HP 4-cyl
10-tooth drive gear



DV374
10-tooth
drive gear



SR374
Brush holder assembly



5374X (NEW)

FITS: MERCURY
1956-1957 25-30 HP
1957 55 HP
1958 30-55 HP
1959 35 & 55 HP
Large 10-tooth
drive gear



DV374X
Large
10-tooth
drive gear



SR374
Brush holder assembly



5375 (NEW)

FITS: MERCURY/MARINER
50-90 HP/65 HP Jet
10-tooth drive gear



DV375
10-tooth
drive gear



SR375
Brush holder assembly



5376 (NEW)

FITS: O.M.C.
18-40 HP
11-tooth drive gear



DV376*
11-tooth
drive gear
*See NOTE



SR376
Brush holder assembly



5377 (NEW)

FITS: MERCURY/MARINER
90-175 HP Inline
150 HP V6
10-tooth drive gear



DV377
10-tooth
drive gear



SR377
Brush holder assembly



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**ORDER THE
CORRECT DRIVE.
THEY ARE NOT
INTERCHANGEABLE!**

5378X (NEW)

FITS: MERCURY/MARINER
V150 HP, V175 HP
Large 10-tooth
drive gear



DV378X
Large
10-tooth
drive gear



SR380

Brush holder assembly



5380 (NEW)

FITS: MERCURY/MARINER
135-200 HP V6
105 HP Jet
8-tooth drive gear



DV380

8-tooth
drive gear



SR380

Brush holder assembly



5381 (NEW)

FITS: MERCURY
1999-UP 2.5 DFI
1996-1999 200 HP V6 DFI
1998-Up 225 HP V6 DFI
1999-Up 3.0L V6
9-tooth drive gear



DV381

9-tooth
drive gear



SR381

Brush holder assembly



5379 (NEW)

FITS: MERCURY/MARINER
40-50 HP
10-tooth drive gear



DV379
10-tooth
drive gear



SR379

Brush holder assembly



5381X (NEW)

FITS: MERCURY/MARINER
150-225 HP
9-tooth drive gear



DV381

9-tooth
drive gear



SR380

Brush holder assembly





The Leader in Marine Electrical Parts.

REPLACEMENT OUTBOARD STARTERS



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**ORDER THE
CORRECT DRIVE.**

**THEY ARE NOT
INTERCHANGEABLE!**

5382 (NEW)
FITS: CHRYSLER/FORCE
35-50 HP
11-tooth drive gear



DV382
11-tooth
drive gear



SR382
Brush holder assembly



5384 (NEW)
FITS: MERCURY/MARINER
2.0L, 2.4L, 2.5L V6,
COUNTER-ROTATING,
RACING OUTBOARDS
10-tooth drive gear



DV384
10-tooth
drive gear



SR384
Brush holder assembly



5385 (NEW)
FITS: MERCURY
35-40 HP, 2-cyl
10-tooth drive gear



DV385
10-tooth
drive gear



SR385
Brush holder assembly



5386 (NEW)
FITS: O.M.C.
1985-Up
120-140 HP V4
10-tooth drive gear



DV386*
10-tooth
drive gear
*See NOTE



DVK86*
2-pc drive kit
*See NOTE



SR386
Brush holder assembly



5387 (NEW)
FITS: O.M.C.
V6, V8 loop
10-tooth drive gear



DV387
10-tooth
drive gear



SR387
Brush holder
assembly



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ORDER THE
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INTERCHANGEABLE!

5388 (NEW)

FITS: MERCURY
50-60 HP, 3-cyl,
1991-1996 45 HP Jet
10-tooth drive gear



DV388
10-tooth
drive gear



SR388
Brush holder assembly



5389 (NEW)

FITS: O.M.C.
1989-Up 25, 40, 50 HP; 2-cyl
1990-Up 48-50 HP
9-tooth drive gear



DV389*
9-tooth drive gear
*See NOTE

DVK89*
2-pc drive kit
*See NOTE



SR389
Brush holder assembly



5390 (NEW)

FITS: O.M.C.
1987-1993 20-35 HP; 2-cyl
9-tooth drive gear



DV390*
9-tooth drive gear
*See NOTE

DVK90*
2-pc drive kit
*See NOTE



SR390
Brush holder assembly

5392 (NEW)

FITS: MERCURY/MARINER
100-125 HP Inline 4-cyl;
80 HP Jet
8-tooth drive gear



DV392
8-tooth
drive gear



SR392
Brush holder assembly



5393 (NEW)

FITS: CHRYSLER/FORCE
70-150 HP
9-tooth drive gear



DV393
9-tooth
drive gear



SR393
Brush holder assembly





REPLACEMENT OUTBOARD STARTERS



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**ORDER THE
CORRECT DRIVE.
THEY ARE NOT
INTERCHANGEABLE!**

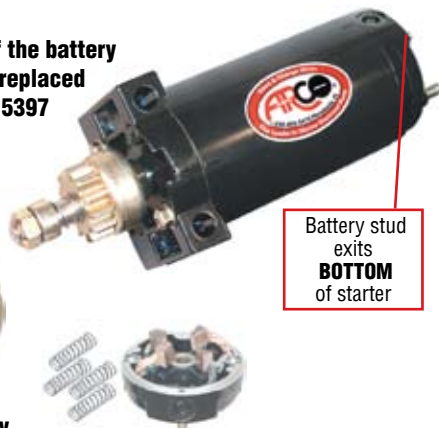
5394 (NEW)

Determine location of the battery stud on starter being replaced before ordering - See 5397

FITS: FORCE
1996-1999 40-50 HP
13-tooth drive gear

DV394
13-tooth
drive gear

SR394
Brush holder assembly



Battery stud
exits
BOTTOM
of starter

5395 (NEW)

FITS: MERCURY/MARINER
1994-Up 225 HP
8-tooth drive gear

DV395
8-tooth
drive gear

SR395
Brush holder assembly



5396 (NEW)

FITS: MERCURY
1994-1996 30-40 HP,
2-cyl, 55-60 HP
1997-Up 45 HP Jet
10-tooth drive gear

DV396
10-tooth
drive gear

SR396
Brush holder assembly



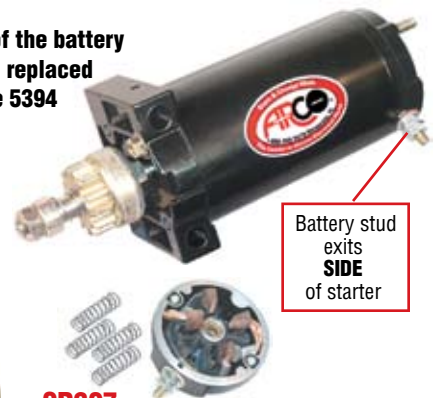
5397 (NEW)

Determine location of the battery stud on starter being replaced before ordering - See 5394

FITS: FORCE
1992-1995 40 HP
1992-1995 50 HP
13-tooth drive gear

DV397
13-tooth
drive gear

SR397
Brush holder assembly



Battery stud
exits
SIDE
of starter

5398 (NEW)

FITS: O.M.C.
1997-1999
25-35 HP 3-cyl
10-tooth drive gear

DVK98*
2-pc 10-tooth drive gear
*See Note

SR398
Brush holder assembly



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**ORDER THE
CORRECT DRIVE.**

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INTERCHANGEABLE!**

5399 (NEW)

**MOTOR ONLY
FITS: O.M.C.**

90-115 HP
1997-UP 60° V4
1998-2000 80 HP
1998-2000 100 HP



DV517
9-tooth
drive gear



SR399
Brush holder assembly



JSA517

Jack shaft assembly/9-tooth drive gear
Fits Johnson Evinrude carbureted engines



5400 (NEW)

**FITS: MERCURY
2001-UP**

135-250 HP
200-250 Sport Jet
2005-UP

VERADO 4 STROKE
200-275 HP
14-tooth drive gear



SW463
Replacement solenoid

5551 (NEW)

FITS: CHRYSLER

25-35 HP

Large 10-tooth drive gear



DV551

Large 10-tooth
drive gear



SR551

Brush holder assembly



7325 (NEW)

FITS: MERCURY/FORCE

90-120 HP Sport Jet

9-tooth drive gear



DV325

9-tooth
drive gear



SR325

Brush holder assembly



7326 (NEW)

FITS: MERCURY

1996-UP V6 Sport Jet

8-tooth drive gear



DV326

8-tooth
drive gear



SR326

Brush holder assembly





The Leader in Marine Electrical Parts.

TECH TIPS

We could tell you why your starter failed, but we thought you might like to see for yourself.

If left unchecked, these problems will result in premature starter failure **REGARDLESS** of the **STARTER MANUFACTURER**.



Although the outside of the starter (at bottom right) looks fine, the flywheel picked up water from the bilge and pumped it inside the starter causing the corrosion shown here.

WATER INTRUSION IS THE #1 CAUSE OF STARTER FAILURE. If water gets pumped into the motor portion of the starter from the flywheel, it will not drain out. As you can see, rust and corrosion will destroy the inside components of the starter.



Shown here are damaged starter mounting pads. Water ingested into the engine stresses the mounting bolts beyond normal conditions. The bolts stretch and cause the starter to become loose. This could eventually lead to damage to the ring gear, starter casting and possibly the entire engine block.

THE #2 CAUSE OF STARTER FAILURE IS WATER INGESTION INTO THE ENGINE. Leaking exhaust manifolds, gaskets and risers are often the source. Damage to the mounting pads, as shown above, indicate the starter has been loose on the engine; possibly caused by water ingestion into the cylinder. Although the engine may not experience a complete hydro lock, if enough water is on top of the piston to raise the compression to a high level, the starter bolts and mounting pads will be stressed beyond normal load conditions.

DON'T BE FOOLED BY OUTWARD APPEARANCES. As shown here, the outside condition of the starter appears to be fine, but by removing and inspecting the lower starter case bolt, it is obvious water has gotten inside the starter.

These problems are not the fault of the starter. Simply replacing the starter without first locating and correcting the source of water intrusion will only result in more starter failures.

Questions?
In need of a replacement starter?
Give us a call.



TECH TIP

*These types of damage are
NOT COVERED BY WARRANTY*

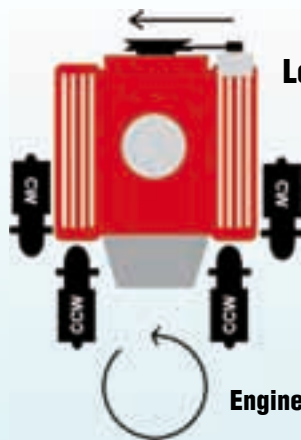


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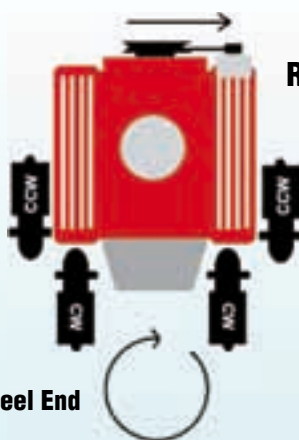


How To Determine The Correct Starter Rotation



Left Hand Engine Rotation

This is the most common engine rotation found on today's marine engines. This is the same rotation as automotive engines. Use these charts to determine the correct starter rotation needed.



Right Hand Engine Rotation

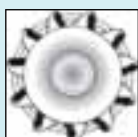
This is not very common on today's marine engines. This is the opposite rotation of automotive engines.

Engine Rotation Viewed From The Flywheel End

Another way to determine the starter rotation is to inspect the chamfer on the starter drive gear. The bevel will always be on the trailing edge.



Clockwise Rotation



Counter Clockwise Rotation

Important Check Points



Worn Out Battery

Batteries cause more trouble than any other component in a marine electrical system.

Always make sure the battery is completely charged and load tested before replacing other components.



Loose Connections

Be sure to check all the terminals and connections and make sure they are clean and tight.



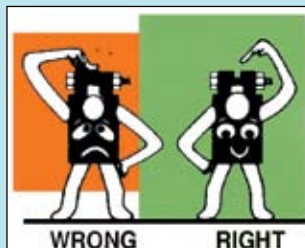
High Resistance

This is a very common problem found in marine electrical systems. Corrosion, undersized wire, or bad connections will cause low voltage to the electrical components. Low voltage causes high heat and will destroy electrical devices. Be sure to check for voltage drops.



Incorrect Wiring

Incorrect wiring can cause burnouts. Always tag the wires when removing an electrical component. **If you are not sure how to connect the wires call our technical department toll free at 800-722-2720.**



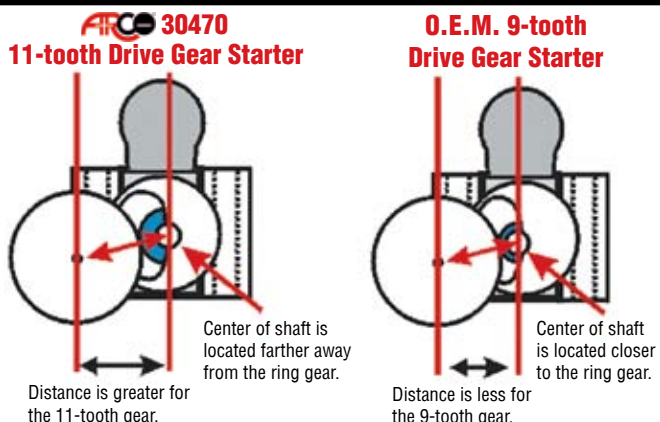
Loose Battery Clamps

Cable terminals must be tight. If the ends of the clamps touch at the top, disconnect the cable clamps and shave the ends of the clamp jaws with a file so there is a gap.

DRIVE GEARS

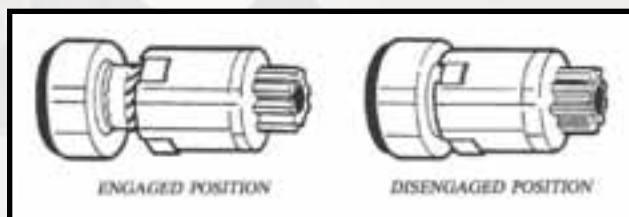
DID YOU KNOW...

Did you know the gear profile for the 9-tooth O.E.M. gear reduction starter and the 11-tooth ARCO High Performance gear reduction starter are the same? The only difference is the diameter of the drive gear. Since the 11-tooth drive gear has two more teeth it is naturally larger in diameter. To compensate for its smaller diameter, the center of the 9-tooth drive gear is located closer to the flywheel. Both starters are thus completely interchangeable. These are powerful starters and we are able to take advantage of a better gear ratio using this 11-tooth gear.



INERTIA DRIVES GEARS

As shown here, spinning the drive with a wire wheel in the direction it clicks will disengage the locks.



Do not condemn a drive until it has been tried in actual operation and proven faulty.

The Folo-Thru type drive currently used on many starting motors has brought about difficulty due to a misunderstanding of operating and lack of information on proper servicing. This fact has been reflected by the number of drives returned for warranty which are fully operative.

The Folo-Thru drive is designed to lock and remain in the extended or engaged position until the engine starts and reaches approximately 400 to 500 RPM. The drive to flywheel rotation is fifteen to one. When the engine is turning at 400 RPM, the starter drive gear is turning 6,000 RPM. If the drive is locked in the extended position it has to be reinstalled on the engine and the engine started or the drive must be turned in excess of 6,000 RPM by a wire wheel mounted on an electric bench grinder to make it disengage.

The reason the pinion locks in the engaged position is to assure the starter continues to crank until the engine has started, thus preventing false starts. This is accomplished by using a spring loaded pin which rides on one of the pinion screw threads and drops into a hole when the pinion is in the fully engaged position. This locks the pinion in the engaged position. When the engine starts, the flywheel of the engine drives the starter pinion. A clutch mechanism is built into the pinion to protect the starter from excessive RPM.

The clutch allows the pinion to turn faster or overrun the armature shaft. When the engine reaches 400-500 RPM, the pinion spins fast enough to create the needed centrifugal force to throw the spring loaded pin out of the hole in the shaft and allow the pinion to disengage.

REPLACEMENT INBOARD STARTERS



The Leader in Marine Electrical Parts.



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30119

HEAVY-DUTY

FITS: MERCUISER, O.M.C.,
VOLVO PENTA, ETC.

w/standard solenoid
12 Volt, CW Rotation



SW975

Replacement solenoid

★ NEW H/D REPLACEMENT AVAILABLE!
CW Rotation: Order #30460

30124

HEAVY-DUTY

FITS: MERCUISER,
O.M.C. COBRA,

YAMAHA, VOLVO PENTA
w/metric solenoid
12 Volt, CW Rotation



SW984

Replacement solenoid

★ NEW H/D REPLACEMENT AVAILABLE!
CW Rotation: Order #30460

30433 (NEW)

VALUE PRICED!

STANDARD DUTY

Direct O.E.M. replacement
gear reduction starter.

FITS: ALL GM ENGINES

with 14" flywheel using a
staggered bolt pattern.

Recommended for late model 3.0 Liter
with 14" flywheel using tail bracket.



Can also be used in place of 10MT with two long bolt staggered
pattern or 30470! Mounting bolt kit MBK450 required if replacing 10MT
*Mounting bolt kit MBK450 required if replacing 10MT.

SW463 Replacement Solenoid

30456 (NEW)

HIGH-PERFORMANCE

FITS: MERCUISER, CRUSADER, MARINE POWER,
PLEASURECRAFT, AND OTHERS.

14MT, CW Rotation

Will also replace
ARCO 30120

30457 (NEW)

HIGH-PERFORMANCE

FITS: MERCUISER,
CRUSADER, MARINE POWER,
PLEASURECRAFT, AND OTHERS.

14MT, CCW Rotation



Replaces this 10 MT style starter

DV456

CW Rotation Replacement Drive

Fits: Delco 14 MT, ARCO 30456 starter

DV457

CCW Rotation Replacement Drive

Replaces: Mercury 850402

Fits: Delco 14 MT, ARCO 30457 starter

SW456

14 MT Replacement Solenoid

4 Post, 3-Bolt Mount



Four Post

Battery

R SW

Motor

Three-Bolt

Mount



CATCH US ON THE WEB AT:
www.arcomarine.com



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30459 (NEW)

HIGH-PERFORMANCE
FITS: MERCUISER,
CRUSADER,
MARINE POWER,
AND OTHERS.

Light weight and compact;
permanent magnet gear reduction.

CCW Rotation

SW463 Replacement Solenoid



30462 (NEW)

FITS: 6.0L GM
ENGINES

Permanent magnet
gear reduction starter
with two long bolt
slight offset bolt pattern



SW463 Replacement Solenoid

30460 (NEW)

HIGH-PERFORMANCE
Permanent magnet
gear reduction starter
FITS: MERCUISER,
COBRA, YAMAHA,
VOLVO PENTA
CW Rotation
12 3/4" flywheel

Includes
Mounting
Bolts & Gasket



Replaces this
10 MT style
starter

30460 Will Replace all CW Rotating 10MT Starters with
One Long and One Short Bolt Straight Across Pattern.

30470 (NEW)

HIGH-PERFORMANCE
Permanent magnet
gear reduction starter
FITS: VOLVO PENTA,
MERCUISER,
MARINE POWER, ETC.

Two long bolt staggered pattern
14" flywheel, **CW Rotation**

Will also replace 9-tooth OEM version.



30470 Will Replace
all CW Rotating 10MT
Starters with Two Long Bolt
Staggered Pattern. **DOES**
NOT include mounting bolt
kit - See below.



Replaces this
10 MT style
starter

DV460

Replacement **9 tooth drive gear**
fits **ARCO 30460** only!



SW450

Replacement solenoid
For ARCO 30460 & 30470 only!
Does not include
plunger; see below.
Order plungers separately.



PA450S

1 3/4" Plunger for **ARCO SW450**

PA450L

2 1/4" Plunger for **ARCO SW450**



MBK450

MOUNTING BOLT KIT REQUIRED
if replacing 10MT style starters.

DV450

Replacement **11-tooth drive gear**



SW450

Replacement solenoid
For ARCO 30460, & 30470 only!
Does not include plunger; see below.
Order plungers separately.



PA450S

1 3/4" Plunger for **ARCO SW450**

PA450L

2 1/4" Plunger for **ARCO SW450**



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50109

HEAVY-DUTY

FITS: CHRYSLER

318 Marine V8

Two-bolt mount,

1 threaded hole

12 Volt, **CW rotation**



50110

12 Volt, **CCW Rotation**

50134

HEAVY-DUTY

FITS: CHRIS CRAFT, HARMAN MARINE

Three-bolt mount (two 3/8"

holes, one 5/16"

threaded hole) 12 Volt,

CW Rotation



50135

12 Volt, **CCW rotation**

50137

HEAVY-DUTY

FITS: CHRIS CRAFT AND OTHERS

Three-bolt mount, (two 3/8"

holes, one 5/16"

threaded hole)

12 Volt, **CW Rotation**



50138

12 Volt, **CCW rotation**

50141

HEAVY-DUTY

12 Volt, **CCW rotation**

50142

HEAVY-DUTY

FITS: CHRIS CRAFT,

VOLVO PENTA V8

Two-bolt mount

12 Volt, **CW rotation**



50143

HEAVY-DUTY

FITS: MERCUISER 470

Threaded mounting

stud in case

12 Volt, **CW rotation**



50160

HEAVY-DUTY

FITS: CHRIS CRAFT

Three-bolt housing

12 Volt, **CW rotation**



50161

HEAVY-DUTY

FITS: CHRIS CRAFT

12 Volt, **CCW rotation**



TECH TIP *Rust, Corrosion or Submersions are NOT COVERED BY WARRANTY*

ARCO treats every component with special rust and corrosion resistant coatings to prevent water damage. However, it is impossible to protect the unit from direct contact with water. Therefore, a failure directly caused by rust, corrosion or submersion is not covered by warranty.

50169

HEAVY-DUTY

**FITS: MERCUISER
888, 302, 351 FORDS**
Two-bolt mount
12 Volt, CW rotation



70108

FITS: 460 FORDS
Heavy Duty
12 Volt, CW rotation



**To be discontinued when
present stock is exhausted.**

70106

FITS: CRUSADER AND OTHERS W/FORD ENGINES
Nose extends 2" into flywheel
Two-bolt mount
12 Volt, CW rotation
Side battery terminal



SW394

Replacement solenoid

**To be discontinued when
present stock is exhausted.**

70117

FITS: MANY LATE MODEL FORDS
Mod II style;
4 1/2" diameter case
Nose extends 2 3/8" into flywheel
Two-bolt mount
12 Volt, CW rotation
Rear battery terminal



**To be discontinued when
present stock is exhausted.**

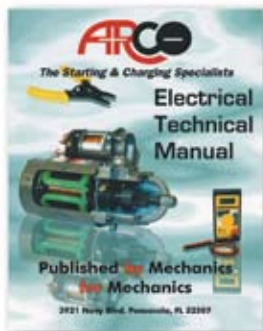
SW394 Replacement solenoid

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70125 (NEW)

Permanent magnet
Gear-reduction starter
FITS: MANY LATE MODEL
5.0L, 5.8L FORDS
12 Volt, CW rotation



SW125

Replacement solenoid



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REPLACEMENT INBOARD STARTERS



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70200

(NEW)

HIGH PERFORMANCE

Permanent magnet

Gear-reduction starter

FITS: 302, 351 FORDS

12 Volt, CW rotation

Kit includes wiring harness

to replace conventional starter.



70201

(NEW)

HIGH PERFORMANCE

CCW ROTATION

Same as above except CCW rotation.



Will also replace
conventional style starter

SW125

Replacement solenoid

70212

(NEW)

HIGH PERFORMANCE

Permanent magnet

Gear-reduction starter

FITS: 460 FORD ENGINES

Replaces: O.M.C. 988013

12 Volt, CW rotation

Two-bolt mount with 3/8" x 18
threaded mounting ear.

Kit includes wiring harness

to replace conventional starter.



Will also replace
conventional style starter

SW125

Replacement solenoid

70216

(NEW)

HIGH PERFORMANCE

Permanent magnet

Gear-reduction starter

FITS: 2.3L FORD ENGINES

Replaces: O.M.C. 988012

12 Volt, CW rotation

Three-bolt mount.

Kit includes wiring harness

to replace conventional starter.



SW125

Replacement solenoid



Will also replace
conventional style starter

90105

(NEW)

FITS: RENAULT & MERCUISER

70, 80, 90 series, PARIS RHONE

Three-bolt mount

12 Volt, CW rotation



90110

(NEW)

FITS: BUKH & RUGGERINI

DV8, RD80, 180,

181, RF140 series

Replaces: PARIS

RHONE D9E50

Two-bolt mount

12 Volt,

CCW rotation





REPLACEMENT INBOARD STARTERS



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90120 (NEW)

FITS: PERKINS, RENAULT MARINE, VOLVO PENTA

Replaces: PARIS RHONE

D11E119T

Three-bolt mount

12 Volt,

CW rotation



SW814

Replacement solenoid

97225 (NEW)

Gear-reduction starter

FITS: VOLVO PENTA TMD40, TMD41, KAD42 and others.

Replaces: PARIS RHONE/VALEO

D9R116, D9R144,

Three-bolt mount, 12 Volt, CW rotation



SW225 Replacement solenoid

DV225 Replacement drive gear

97308 (NEW)

Bosch Style Starter

Fits: TAMD120A, TAMD120B, VOLVO PENTA

24 Volt, 11-Tooth Drive Gear

CW rotation



To be discontinued when present stock is exhausted.

90125 (NEW)

24 Volt, CW rotation

FITS: PERKINS, RENAULT MARINE, VOLVO PENTA

Replaces: PARIS RHONE

D11E122T

Three-bolt mount



98170

Lucas M45G starter

FITS: PERKINS 4-108VA

propulsion

13-tooth drive gear

12 volt, CW rotation



95949 (NEW)

FITS: RENAULT MARINE, VOLVO PENTA

Replaces: PARIS RHONE

D11E126, D11E156

Three-bolt mount

12 Volt, CW rotation



SW814

Replacement solenoid

98175

Mitsubishi gear

reduction starter

FITS: WESTERBEKE

9-tooth drive gear

12 volt, CW rotation



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98180 (NEW)

FITS: YANMAR

GM, GM2, GM3,
GM10, GM20/2-20F,
GM30, GMF, 1GM,
2GM, 3GM

Replaces: HITACHI S114-303,
S114-303A



12200

FITS: MANY MID-SIZE PERKINS DIESELS

4 cyl

10-tooth drive gear
12 Volt, CW rotation



98185 (NEW)

FITS: YANMAR

4JH, QM20,
2QM20, & 2T engines

Replaces: HITACHI S114-483,
S114-815



12202

FITS: MANY MID SIZE PERKINS DIESELS

12-tooth drive gear
12 Volt, CW rotation



10113 (NEW)

Gear-reduction starter

FITS: VOLVO PENTA

4 cyl, 6 cyl gas
Aluminum pinion housing
w/2 threaded mounting holes
Permanent magnet,
12 volt, CW rotation



12205

FITS: CUMMINS

MARINE 6.9L,
PENINSULAR 6.2L,
379T, ETC.

10-tooth drive gear
12 Volt, CW rotation



12206

12 Volt, CCW rotation

12100

FITS: MANY SMALL PERKINS DIESELS

10-tooth gear
12 Volt, CW rotation



12213 (NEW)

FITS: CUMMINS 6BT,
PENINSULAR,
6.2L DIESEL, ETC.

10-tooth drive gear
12 Volt, CW rotation



REVERSABLE TILT-TRIM MOTORS

Today's tilt-trim motors use wire wound or permanent magnet fields.

BEFORE YOU CAN ACCURATELY TEST THE MOTOR YOU MUST KNOW WHAT TYPE IT IS.

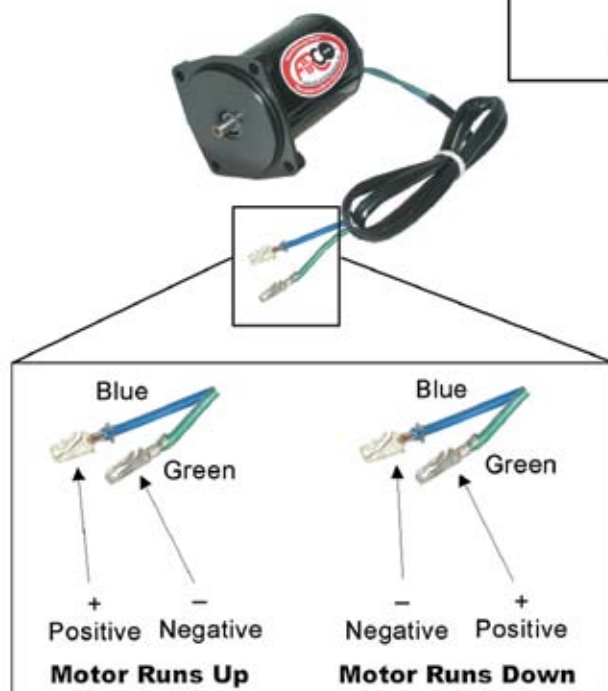
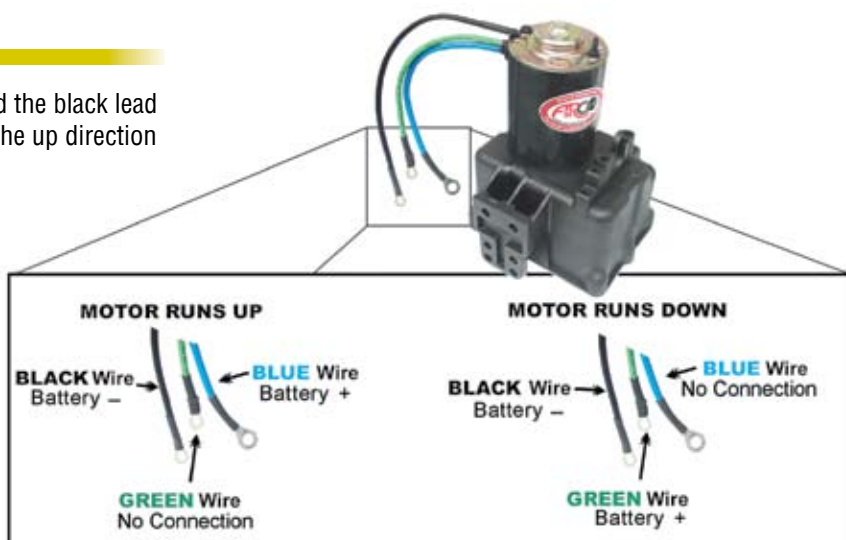
Wire wound field motors will normally have three wires and will usually have four screws placed around the perimeter of the motor case. If the motor has only two wires; it is usually a permanent magnet field motor. However, some older Mercury Marine wire wound field motors have only two wires and use an external ground that is attached to the motor housing. Since wire wound field motors have a higher current draw, solenoids are used to relay battery current to the motor. Permanent magnet field motors draw much less current and miniature relays are used to relay the battery current.

REMEMBER - BLUE SKY (UP) WIRE TO POSITIVE MAKES THE MOTOR RUN IN THE UP DIRECTION
GREEN GRASS (DOWN) WIRE TO POSITIVE MAKES THE MOTOR RUN IN THE DOWN DIRECTION

Wire Wound Field Motor

Connecting the blue lead to battery positive and the black lead to battery negative will make the motor run in the up direction and will raise the outdrive or outboard motor.

Connecting the green wire to battery positive and the black wire to battery negative will make the motor run in the down direction. This will lower the outdrive or outboard motor.



Permanent Magnet Field Motor

Connecting the blue lead to battery positive and the green lead to battery negative will make the motor run in the up direction. This will raise the outdrive or outboard motor.

Connecting the green lead to battery positive and the blue lead to battery negative will make the motor run in the down direction. This will lower the outdrive or outboard motor.



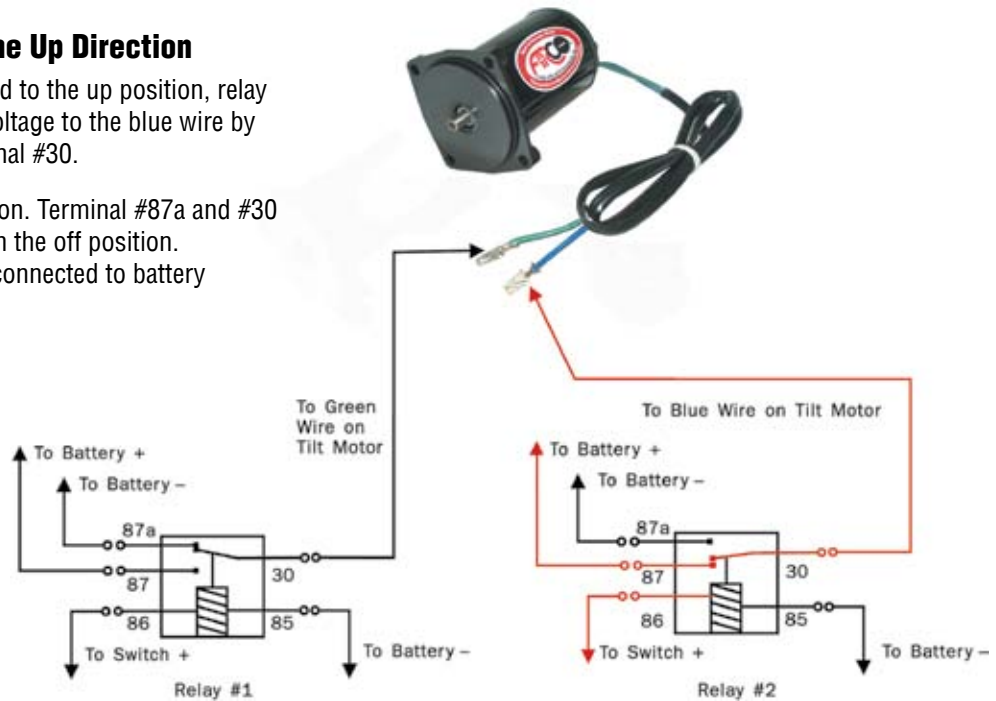
TILT-TRIM MOTOR REVERSING RELAYS

PERMANENT MAGNET FIELD MOTORS

▲ Motor Running In The Up Direction

When the tilt-trim switch is moved to the up position, relay #2 activates supplying positive voltage to the blue wire by connecting terminal #87 to terminal #30.

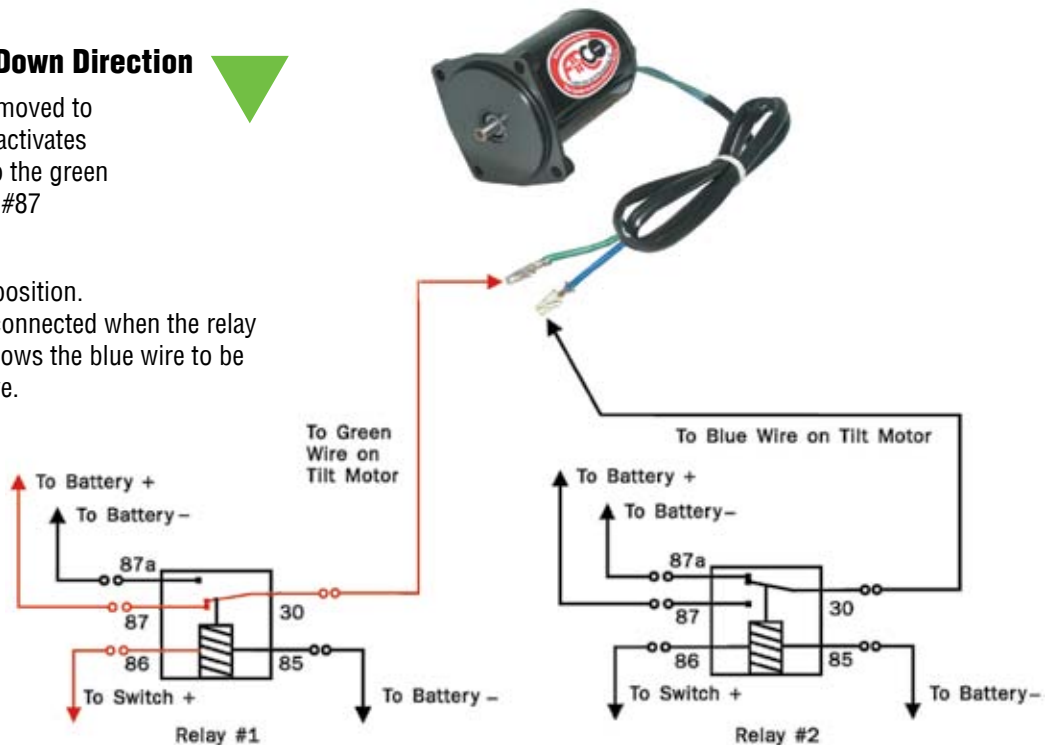
Relay #1 remains in the off position. Terminal #87a and #30 are connected when the relay is in the off position. This allows the green wire to be connected to battery negative.



▼ Motor Running In The Down Direction

When the tilt-trim switch is moved to the down position, relay #1 activates supplying positive voltage to the green wire by connecting terminal #87 to terminal #30.

Relay #2 remains in the off position. Terminal #87a and #30 are connected when the relay is in the off position. This allows the blue wire to be connected to battery negative.

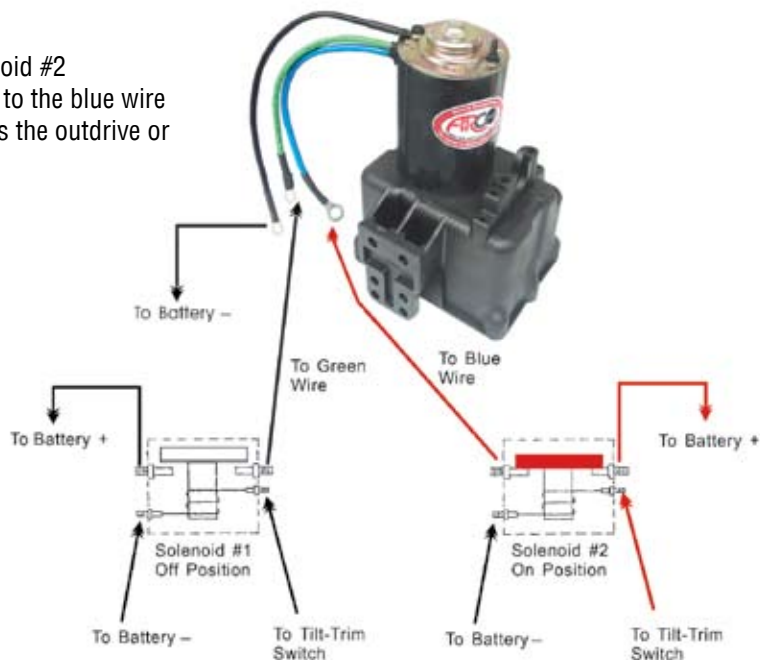


TILT-TRIM MOTOR SOLENOIDS

WIRE WOUND FIELD MOTORS

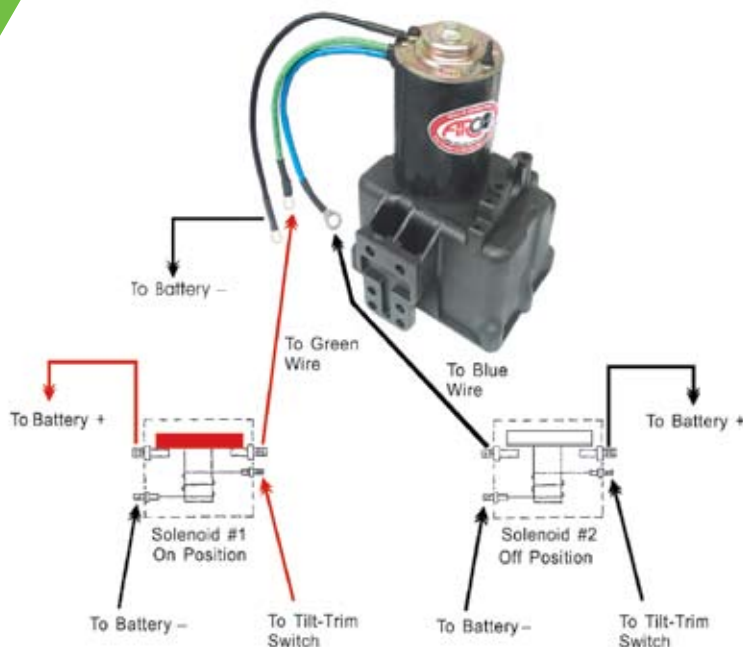
▲ Motor Running In The Up Direction

When the tilt-trim switch is in the up, position solenoid #2 is energized and battery positive voltage is supplied to the blue wire making the motor run in the up direction. This raises the outdrive or outboard motor.



▼ Motor Running In The Down Direction

When the tilt-trim switch is in the down position, solenoid #1 is energized and battery positive voltage is supplied to the green wire making the motor run in the down direction. This lowers the outdrive or outboard motor.



PART NUMBER QUICK REFERENCE



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CHRIS CRAFT

16.60-00031	VR407
16.61-00026	40115
16.61-00042	50142
16.61-00043	50141
16.61-00044	50160
16.61-00045	50161
16.61-00048	50141
16.61-00050	50160
16.61-00051	50161
16.61-00053	VR406

CHRYSLER

177917	SW774
2095509	50110
2098300	VR405
2847527	VR405
2855927	50110
2875927	50110
2875928	50109
3527501	40112
3527502	40112
449541-1	6216
455541	6216
460917-1	SW295
480955	5393
490955	5393
575955	5382
F6169551	5393

CRUSADER

22611	SW295
39049	60104
39064	60104
39200	60075
42016	SW975
42090	30456
42091	30457
42150	30457
9006320	SW774
RU0050	SW456
RU0050A	SW463
RU0050B	SW463
R130014	SW295

DELCO

8400027	20822
8600514	20850
8600515	20840
8000500	5400
9000735	30470 & MBK450
9000762	30470 & MBK450
9000763	30460
9000768	30470 & MBK450
9000789	30470 & MBK450
9000819	30470 & MBK450
9000820	30460
9000821	30470 & MBK450

DELCO

9000822	30460
9000839	30470 & MBK450
9000840	30470 & MBK450
9000849	30470 & MBK450
9000884 S/P	30433
9000884 H/P	30470 & MBK450
9000885	30470 & MBK450
9000887	30462
9000888	30459
9000940	30470 & MBK450
9000974	5400
19010612	30457
19010615	30457
19010617	30456
19020600	20810
19020601	20800
19020604	20810
19020606	20820
19020608	20825
19020609	20800
19020611	20815
19020612	20815
19020616	20830
19020617	20821
19020703	20840
19020704	20850
19020706	20840
19020707	20850

FORCE

811902	DV394
819222	DV393
819479A1	6276
819480A1	6276
820595	SR394
50-819085	5393
50-819968-1	7325
50-820193	5394
50-F616955-1	5393
827675A1	6255
87-F660917	R040
89-F460917-1	SW295
F15189	SR393
F15190	BK900
F177917	SW774
F575955	5382
F616955	5393

HITACHI

S106-07B	3421
S106-07E	3421
S106-07F	3421
S108-80	3420
S108-80A	3420
S108-80B	3420
S108-87A	3423
S108-94	3412
S108-94A	3412
S108-94B	3412
S108-94C	3412

HITACHI

S108-97	3422
S108-97A	3422
S108-99B	3425
S108-112	3412
S108-120	3412
S114-221	3424
S114-221E	3424
S114-221F	3424
S114-221G	3424
S114-221H	3424
S114-221J	3424
S114-263B	3427
S114-303	98180
S114-303A	98180
S114-323	3426
S114-323A	3426
S114-323B	3426
S114-323C	3426
S114-415	3410
S114-415A	3410
S114-437	3444
S114-483	98185
S114-551	3442
S114-551A	3442
S114-552	3428
S114-552A	3428
S114-555	3440
S114-559B	3429
S114-561	3446
S114-571	3410
S114-571A	3410
S114-660	3428
S114-660A	3428
S114-660B	3428
S114-667	3410
S114-673	3444
S114-674	3442
S114-677	3446
S114-815	98185
S114-817A	98185
S114-828B	3430
S114-836A	3431
S114-838A	3432
S114-867	3433
S114-867A	3433

HONDA

31200-ZV5-0130	3446
31200-ZV5-003	3446
31200-ZV6A-0130	3446
31200-ZW5-003	3447
36120-ZV5-821	6239

KAWASAKI

13101-3701	DV750
13101-3703	DV750
13101-3705	DV750
13101-3706	DV750
59051-3005	DV440
59051-5007	DV440

MARINE PWR

471200	20830
471201	20830
4711210	20830
1210-000	60050
0170-000	30459
0171-000	30457
0172-000	30460
0174-000	30470 & MBK450

MARINER

50-97072M	3424
50-97072T	3424
50-97693M	3420
50-804312T1	3430

MERCURY

12449	60050
13037	SW975
13310	DV380
13310-1	DV380
13310T1	DV380
14336A6	6275
14336A8	6275
14336A9	6275
14336A15	6275
14336A17	6275
14336A20	6275
15382	SW975
15386	SR380
15386-001	SR380
17631	TR218
17631A1	TR218
17649	6218
17649A1	6218
17649A02	6218
17649T	6218
18525A1	M525
25661	SW661
25661-1	SW661
25661T1	SW661
25942	5374-6
32082	SW082
32701	20102
33261	SW975
43076	DV385
43076T	DV385
47456A1	20102
47886	SW622
47886T	SW622
514995	5551
54981	SW981
54293A5	SW925
54293A10	SW926
54293A11	SW925
54293A13	SW926
56045	20102
57380	DV366
59755	20102
62351A1	AR351
62351A2	AR351
63292	BK900
65057	SW981
65057A1	SW981





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MERCURY	ARCO	MERCURY	ARCO	MERCURY	ARCO	MERCURY	ARCO
65057T1.....	SW981	825096T01.....	SW945	50-37274A4.....	5374	50-8M8021116.....	30470
68571-1.....	DV362	827675A1.....	6255	50-37345A1.....	5366	50-803900T.....	5551
68575.....	DV377	828151.....	R151	50-38890A1.....	5366	50-803903T.....	5382
68575-3.....	DV396	828151A1.....	R151	50-41583.....	5385	50-804312T1.....	3430
68575T2.....	DV365	828506.....	20850	50-41583T.....	5385	50-805991.....	12213
69729.....	20102	828708.....	6250	50-44369A1.....	5388	50-806963A2.....	30460
75383.....	SR379	828708A1.....	6279	50-44415.....	5380	50-806963A4.....	30460
75384.....	BK900	828708T.....	6250	50-45120.....	30119	50-806964A2.....	30470 & MBK450
75384-1.....	BK900	850402.....	DV457	50-45822.....	5374	50-806964A3.....	30470 & MBK450
75661.....	DV380	86177-1.....	DV381	50-46282.....	30119	50-806964A4.....	30470 & MBK450
78403A1.....	60050	862030T.....	20810	50-47454.....	30456	50-806965A2.....	30460
78403A2.....	60050	862031T.....	20800	50-47455.....	30457	50-806965A4.....	30460
78477.....	20104	862031T1.....	20800	50-48643A1.....	5374	50-807904A1.....	30433
79215.....	SR380	863077T.....	20815	50-514955.....	5551	50-808011A1.....	30457
8M0007971.....	3432	865202T.....	R202	50-55601A2.....	5366	50-808011A4.....	30459
8M0031551.....	6250	865380A13.....	6275	50-56886.....	70200	50-808011A05.....	30459
8M0058226.....	AR351	875285T1.....	20840	50-57465A1.....	5377	50-812428A3.....	30470 & MBK450
8M0064020.....	20850	875286A-1.....	20850	50-575955.....	5382	50-812429A2.....	30460
8M6000803.....	20850	87828.....	6218	50-57867A1.....	5374	50-812604A2.....	30470 & MBK450
8M6000804.....	20840	878265A1.....	6250	50-58059.....	90105	50-81490M.....	3424
8000500.....	5400	878265A4.....	6250	50-58788.....	5374	50-818445-2.....	5395
802587.....	DV393	881247A1.....	20850	50-58788A3.....	5374	50-818445-3.....	5395
802587T.....	DV393	881248T.....	20840	50-59799.....	30119	50-818445-5.....	5395
802587T01.....	DV393	88183A5.....	6275	50-60315.....	5375	50-819085.....	5393
802639.....	DV380	88183A6.....	6275	50-60594A1.....	5384	50-819085-1.....	5393
802639T.....	DV380	88183A11.....	6275	50-60594T01.....	5384	50-819085T1.....	5393
802640.....	DV325	88183A12.....	6275	50-64975.....	5378X	50-819271.....	5397
802640T.....	DV325	882751A1.....	R151	50-65436.....	5375	50-819968-1.....	7325
802665T.....	DV394	882751A04.....	R751	50-65784A1.....	30457	50-819968-2.....	7325
803822T.....	SW774	883166A2.....	M532	50-65785A1.....	30456	50-819968-3.....	7325
805447T.....	60065	89902.....	SW975	50-66015.....	5375	50-819968-4.....	7325
805884T.....	60065	889955.....	20840	50-66015-1.....	5392	50-819968T4.....	7325
807057.....	R202	889955T01.....	20840	50-66015-2.....	5375	50-820193.....	5394
807652T.....	60055	889956.....	20850	50-66015-3.....	5392	50-820193-1.....	5394
807653T.....	60060	891736T.....	6218	50-66015-T.....	5392	50-820193A1.....	5397
809155.....	M874	891754T.....	DV365	50-66015T1.....	5375	50-820193T1.....	5394
809162.....	M875	893907A02.....	6276	50-67341.....	5374	50-820193003.....	5394
809463.....	SW463	898265015.....	DV381	50-69863A1.....	30119	50-822330A2.....	30470 & MBK450
809463-1.....	SW463	898265016.....	BK900	50-69864A1.....	30119	50-822462.....	5396
809463A1.....	SW463	92459A3.....	6270	50-69865.....	50169	50-822462-1.....	5396
809885A1.....	6276	92459A4.....	6270	50-69865A1.....	50169	50-822462T1.....	5396
809885A2.....	6276	92459A8.....	6270	50-72467.....	5377	50-825095.....	3426
809885T2.....	6276	92497A3.....	60050	50-72550.....	50143	50-830308.....	5364
811628.....	6279	96562.....	DV367	50-72550A1.....	50143	50-830308T.....	5364
811674.....	6276	96564T.....	SR367	50-72550A2.....	50143	50-832997.....	7326
811874.....	M874	98555.....	60050	50-72550R2.....	50143	50-832997-1.....	7326
811874T.....	M874	98555A1.....	60050	50-73521.....	5379	50-832997-2.....	7326
811875.....	M875	99186.....	6278	50-73521T.....	5379	50-832997003.....	7326
811875T.....	M875	99186-1.....	6278	50-76965A1.....	30457	50-833153.....	5381
811883.....	M883	99186-T.....	6278	50-76965A3.....	30457	50-833153-1.....	5381
811883T.....	M883	50-F514955.....	5551	50-76965A4.....	30457	50-833153-2.....	5381
811888.....	M888	50-F575955.....	5382	50-77141.....	5380	50-833153-3.....	5381
811902.....	DV394	50-12121A2.....	30470 & MBK450	50-77328A1.....	30119	50-833153-5.....	5381
813447.....	6276	50-12177A2.....	30470 & MBK450	50-77328A3.....	30119	50-833153T4.....	5381
816770.....	AR351	50-12872.....	50169	50-79472.....	5380	50-834749.....	5362
816770T.....	AR351	50-17251A3.....	30457	50-79472-1.....	5380	50-84917M.....	3420
817119A1.....	60050	50-29105.....	5374X	50-79472T2.....	5380	50-852570T.....	5359
817119A4.....	60050	50-30829.....	5366	50-79604A1.....	30456	50-853329T.....	5400
819222.....	DV393	50-30842.....	5374X	50-79604A3.....	30456	50-853869.....	5393
819222A1.....	DV393	50-30955.....	5374 W/ DV370	50-79821A2.....	30119	50-853869T.....	5393
820583.....	DV325	50-31976.....	5374	50-79822A1.....	30119	50-854636T.....	5365
820586.....	SR325	50-32403.....	5374-6	50-79822A2.....	30119	50-856996T.....	5381X
820586T.....	SR325	50-32411.....	5374X	50-79823A1.....	30119	50-859168T.....	5359
821509.....	R509	50-32703.....	30119	50-8M0033984.....	5367		
823653A5.....	6270			50-8M6001043.....	5400		
823653A9.....	6270						



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MERCURY



50-859169T	5364
50-859170T	5365
50-859170T1	5365
50-859171T	5362
50-859377T	5360
50-863007A1	30433
50-864340A2	30470 & MBK450
50-86976	5381X
50-881368T1	3432
50-881368T2	3432
50-884044T	5360
50-884045T	5365
50-884238T	5380
50-888151T	5364
50-888160T	5365
50-888161T	5360
50-892339T	5400
50-892339T01	5400
50-893886T	5364
50-893887T	5365
50-893888T	5360
50-893889T	5367
50-893890T	5396
50-893891T	5375
50-893892T	5392
50-893893	5380
50-898265001	5362
50-898265002	5393
50-898265003	7325
50-898265005	5379
50-898265006	5366
50-898265007	5385
50-898265008	5381
50-898265009	5395
50-898265010	5377
50-898265011	5382
50-898265012	5388
50-898265013	5381X
50-90983A1	5367
50-90983T1	5367
50-92669M	3424
50-96359M	3420
50-97072M	3424
50-97072T	3424
50-97499A2	30456
50-97499A3	30456
50-97499R2	30456
50-97499R4	30456
50-97693M	3420
50-99417A2	30124
50-99418A2	30470 & MBK450
50-99419A3	30457
86-865202T	R202
87-18211	R211
87-61053	SW275
87-803632T	SW295
89-15857	SW275
89-18080	SW984
89-F460917-1	SW295
89-F654924-1	SW924
89-68258	SW275
89-68258A4	SW275
89-76416A1	SW394
89-76545	SW275

MERCURY



89-76545T	SW275
89-803629T	SW924
89-817109A1	SW109
89-817109A2	SW109
89-817109A3	SW109
89-818864	SW064
89-818864T	SW064
89-818997A1	SW097
89-818997A2	SW097
89-818997T1	SW097
89-818998A1	SW097
89-818998A2	SW097
89-818999A1	SW099
89-818999A2	SW099
89-825096	SW945
89-825096T	SW945
89-846070	SW058
H/D VERSION	SW058HD
89-850187A1	SW097
89-850187T1	SW097
89-850188A1	SW099
89-850188T1	SW099
89-850189	SW054
89-850189T	SW054
89-850408	SW456
89-853654A1	SW275
89-889273	SW924
89-889274	SW925
89-91975	SW054
89-94318	SW058
H/D VERSION	SW058HD
89-96054	SW054
89-96054T	SW054
89-96158	SW058
89-96158T	SW058
392-2940	TR217
392-8262	TR217
392-9250	TR217
F391926	PA924
F391926-1	PA924

B.R.P - O.M.C. ARCO

172588	6228
172853	TR208
172869	SW340
173692	AR104
173944	6228
174942	5376
175019	5376
277628	SW081
321648	DV376
328381	SR372
378444	SW081
380095	SW622
380361	6209
380973	VR404
381166	40152
381519	40152
381781	30119
382138	6209
382220	6209
383440	VR404

B.R.P - O.M.C. ARCO

383443	40152
383575	5372X
383622	SW622
383691	5370
384163	5371
384198	30119
384233	40152
384777	5370
384781	DV371
384914	5372X
385401	5376
385529	5372
385844	SR371
385949	DV372
385952	BK900
386430	5369
386591	5376
386657	5370
387094	5373
387277	6206
387683	DV373
387684	5371
387768	SR376
388955	AR103
389275	5371
389398	SW622
389493	SW622
389954	5372
390124	AR103
391264	6220
391511	5387
391735	5370
392133	5376
393259	6220
393570	5386
393988	6220
394176	6220X
395207	5373
395419	SW622
395840	6220
396235	5387
397023	5387
432925	5363
433226	6243
433850	BK900
433852	SR363
434495	6241
434496	6241
434517	JSA517
434795	6220
435532	6242
435548	6244
437666	6244
437801	6242
438529	6241
438531	6241
438786	6238
438878	5363
439937	6238

B.R.P - O.M.C. ARCO

580841	AR103
581305	AR103
581366	AR104
581528	SW340
581603	AR103
581778	AR104
582048	6206
582155	6206
582195	R473
582304	AR104
582307	AR103
582399	AR103
582472	R473
582473	R473
582708	SW622
583408	AR103
583473	5390
583482	5389
583940	AR104
584107	6206
584128	SW268
584416	R473
584580	SW580
584608	5368
584613	5361
584799	5387
584818	5398
584980	5399
585050	5370
585051	5372
585056	5389
585057	5372
585058	5370
585059	5390
585060	5386
585061	5376
585062	5373
585063	5371
585197	5370
585265	SR376
585266	SR372
585267	DV372
586100	DV372
586101	DVK89
586102	DVK76
586147	R473
586180	SW622
586224	R473
586274	5361
586275	5368
586276	5369
586277	5398
586278	5376
586279	5389
586280	5371
586281	5370
586283	5372





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B.R.P - O.M.C.

586284	5399
586285	5386
586286	5363
586287	5363
586288	5373
586289	5387
586392	DV387
586411	5387
586730	SW730
586731	5387
586767	R767
586768	5358
586774	SW590
586842	SW394
586890	5387
586897	5387
586957	5387
587020	SW595
587045	5358
763454	5369
778991	5390
778992	5373
778993	5371
778994	5386
778995	5361
778996	5398
979768	6211
979774	SW774
979937	6211
980801	SW394
981074	30124
981078	30119
981186	40152
981187	40152
981410	SW268
981638	6211
981703	SW394
981821	70200
982058	6204
982069	6211
982073	6211
982107	30124
982121	30124
982151	TR211
982187	SW268
982189	SW394
982200	30119
982311	TR204
982364	20104
982706	6204
983019	6220
983248	30124
983195	6214
983318	6211
983424	60125
983444	30119
983446	6220
983790	30124
984356	6206
984456	30470 & MBK450
984536	70212
984565	60125
984628	70216

B.R.P - O.M.C.

985063	SW268
985064	SW730
985237	6220
985465	60125
985466	60125
985799	SW984
985964	40152
985966	30124
986008	60125
986280	6245
986505	30470 & MBK450
987774	60070
987811	70125
987883	SW125
987969	70200
988012	70125
988013	70212
988217	30460
988247	60125
3850216	SW463
3850525	30470 & MBK450
3850526	30460
3853839	SW394
3853853	60125
3853869	SW984
3853945	6245
3853982	30470 & MBK450
3853998	SW984
3854182	60125
3854190	70125
3854194	SW125
3854750	30460
3854751	30470 & MBK450
3854809	60125
3855177	30470 & MBK450
3855882	30460
3856600	60070
3857298	60125
3857533	R473
3857561	60070
3857747	30470 & MBK450
3858463	30460
3860566	30470 & MBK450
3860769	60125
5004518	JSA518
5005254	6238
5005374	6241
5005376	6241
5005831	6248
5006319	6247
5036732	6240

PLSRCRAFT

R13001	SW394
R130014	SW295
R200000	70201
RA097002	40147

PLSRCRAFT

RA097006	60108
RA097007	20815
RA097007A	20821
RA097007B	20825
RA097007C	20822
RA097009	20826
RA122001	70200
RA122002	70201
RA122004	70108
RA122008	30456
RA122009	30459
RA122014	70125
RA122015	30433
RA122019	30462
RU0050	SW456
RU0050A	SW463
RU0050B	SW463

POLARIS

3240120	DV744
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SEA DOO

29550089	DV650
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SIERRA

18-5600	5373
18-5601	5366
18-5602	5374
18-5603	30459
18-5604	5375
18-5605	5379
18-5606	5388
18-5608	5380
18-5609	5381X
18-5610	5392
18-5611	5367
18-5612	5363
18-5613	5393
18-5614	5397
18-5617	5361
18-5618	7325
18-5619	5387
18-5620	5395
18-5621	5396
18-5622	5394
18-5623	5368
18-5624	5389
18-5626	5370
18-5627	5390
18-5628	5386
18-5629	5376
18-5630	5371
18-5631	5398
18-5632	5399
18-5634	5372
18-5635	5370
18-5636	5377
18-5639	5367
18-5640	5373
18-5641	5366
18-5642	5375

SIERRA

18-5643	5380
18-5644	5393
18-5645	5376
18-5646	5371
18-5647	5372
18-5648	5370
18-5649	5377
18-5650	DV366
18-5651	DV385
18-5655	DV376
18-5656	DV377
18-5658	DV381
18-5659	DV325
18-5671	DV390
18-5673	DV393
18-5674	DV380
18-5675	DV387
18-5677	DV394
18-5678	DV389
18-5679	DVK72
18-5680	DVK76
18-5682	DV396
18-5697	BK900
18-5702	R952
18-5704	R832
18-5705	R473
18-5707	AR351
18-5708	AR103
18-5709	AR104
18-5710	VR405
18-5711	VR404
18-5712	VR407
18-5714	VR095
18-5727	VR406
18-5728	VR405
18-5729	R211
18-5800	R012
18-5801	SW394
18-5802	SW981
18-5803	SW774
18-5804	SW975
18-5807	SW081
18-5808	SW622
18-5811	SW463
18-5812	SW268
18-5813	SW268
18-5814	SW340
18-5815	SW275
18-5816	SW054
18-5817	SW058
18-5818	SW064
18-5819	SW097
18-5820	SW099
18-5821	SW945
18-5822	SW926
18-5823	SW580
18-5833	SW590
18-5834	SW109
18-5835	SW295
18-5836	SW661
18-5837	SW984
18-5838	SW975



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SIERRA



18-5841	SW774
18-5842	SW412
18-5843	SW424
18-5900	30119
18-5901	30456
18-5902	30457
18-5903	70200
18-5904	70201
18-5905	30470 & MBK450
18-5906	10113
18-5907	30456
18-5908	30457
18-5910	30470 & MBK450
18-5911	30460
18-5913	30470 & MBK450
18-5914	70200
18-5915	70201
18-5916	70216
18-5917	70216
18-5918	10113
18-5919	30460
18-5920	70125
18-5936	12412
18-5938	12420
18-5939	80108
18-5943	80108
18-5945	65055
18-5950	20102
18-5951	20104
18-5954	40112
18-5956	20102
18-5957	60050
18-5959	80108
18-5960	60060
18-5963	40152
18-5964	40152
18-5965	60065
18-5966	60050
18-5967	60055
18-5972	60124
18-5979	60072
18-5982	60160
18-5983	20810
18-5984	20820
18-6250	SR102
18-6251	SR104
18-6252	TR208
18-6253	TR217
18-6254	TR217
18-6257	6214
18-6258	6239
18-6259	6267
18-6260	60125
18-6261	60070
18-6262	60122
18-6263	60108
18-6264	R036
18-6265	60071
18-6266	R040
18-6267	R211
18-6268	R177
18-6269	SW340

SIERRA



18-6270	70212
18-6271	R670
18-6273-1	6278
18-6274	6224
18-6275	30433
18-6276	70212
18-6277	6244
18-6278	84150
18-6280	6242
18-6281	6238
18-6282	7326
18-6283	5381
18-6284	84135
18-6285	6243
18-6286	6255
18-6287	SW450
18-6288	20825
18-6291	SW125
18-6292	10113
18-6293	20800
18-6298	20815
18-6299	20830
18-6410	3420
18-6411	3422
18-6412	3424
18-6413	3426
18-6414	3440
18-6415	3428
18-6416	3444
18-6417	3442
18-6418	3410
18-6420	3421
18-6421	3423
18-6422	3425
18-6423	3427
18-6424	3429
18-6425	3430
18-6426	3431
18-6427	3432
18-6432	3412
18-6433	3446
18-6434	5369
18-6435	5360
18-6436	5362
18-6437	5364
18-6438	5365
18-6439	5382
18-6440	5400
18-6441	5551
18-6443	30462
18-6450	20821
18-6451	20827
18-6452	20826
18-6453	20822
18-6454	20840
18-6455	20850
18-6754	6209
18-6755	6204
18-6756	6228
18-6758	6223
18-6759	6220
18-6760	6265

SIERRA



18-6761	6206
18-6762	6216
18-6763	6217
18-6764	6211
18-6765	6270
18-6767	6208
18-6767-1	6208
18-6769	6275
18-6769-1	6275
18-6770	6227
18-6771	M525
18-6772	6218
18-6773	6250
18-6774	6279
18-6775	6274
18-6777	6276
18-6778	M532
18-6779	6245
18-6780	6241
18-6781	6260
18-6783	6240
18-6785	6269
18-6786	6268
18-6787	6261
18-6788	6264
18-6789	6266
18-6811	6266
18-6812	6266
18-6813	6275
18-6814	6206
18-6815	6248
18-6816	6228
18-6817	6232
18-6821	6267
18-6822	6224
18-6824	5384
18-6825	5381X
18-6826	5358
18-6827	3444
18-6828	5385
18-6829	5359
18-6838	6225
18-6841	60125
18-6842	60125
18-6843	60075
18-6845	60076
18-6847	60076
18-6848	60074
18-6851	BI-1202-3A
18-6852	BI-1602
18-6854	BI-1603
18-6855	BI-0702
18-6860	WH800
18-6861	3429
18-6863	5368
18-6864	5397
18-6925	84135
18-6932	98185
18-6937	98180
18-6946	30470
18-6952	60150

SIERRA



18-6955	60170
18-56001	SR410
18-56002	SR446
18-56003	SR420
18-56004	SR424
18-56005	SR426
18-56006	SR428
18-56007	SR429
18-56008	SR440
18-56009	SR444

SUZUKI



31100-87D00	3442
31100-87D10	3442
31100-92E00	3442
31100-94400	3412
31100-94401	3412
31100-94402	3412
31100-94500	3444
31100-94510	3444
3C8-76010-10	3412
31100-94511	3444
31100-94512	3444
31100-94600	3444
31100-94601	3444
31100-94610	3444
31100-95600	3440
31100-95601	3440
31100-96310	3412
31100-96311	3412
38100-87D01	6269
38100-87E20-OED	6268
38100-92E00-OED	6268
38100-92E00-OEP	6268
38410-94540	R950/951

TOHATSU



FM5900	3410
353-76010-1A0	3410
353-76010-04	3410
353-76010-300	3410

UNIVERSAL



275753	40112
277584	40145
288182	60108
288759	60108

VOLVO



1214764	R040
1324492	R670
1501832	R832
1504952-1	R952
241812	R670
3581774	97225
3586765	6227
3587625	30470 & MBK450
3803113	97225
3850216-7	SW463





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VOLVO



3850525-1	30470 & MBK450
3850927-9	60125
3853839-3	SW394
3853853-4	60125
3853869-0	SW984
3853982-1	30470 & MBK450
3853998-7	SW984
3854182-7	60125
3854190-0	70125
3854194-2	SW125
3854750-1	30460
3854751-9	30470 & MBK450
3854809-5	60125
3855177-6	30470 & MBK450
3856600	60070
3856003-3	30460
3856004-1	30470 & MBK450
3856596	6227
3857298	60125
3857265-7	6224
3857561	60070
3857747	30470 & MBK450
3857813	60071
3858071	6232
3858077	M533
3859054	SW463
3860082	60072
3860171	60070
3860566	30470 & MBK450
3860764	30470 & MBK450
3860769	60070
3860798	60071
3861575	6233
3862308	30460
3862612	60074
3862613	60076
3862665	60073
3862985	30459
3885317	30470 & MBK450
3884950	60073
594043	DV225
594054	SW225
6643474-7	R670
818721	SW975
829029-8	SW814
829527-1	97225
831725-7	R952
834625-6	80108
834804-7	SW814
834852-6	SW814
834893-0	50142
835121-5	50142
835334-4	50141
835635-4	70200
839367-0	R832
839586-5	TR222
841066-4	70200
841177-9	R177
841377-5	30456
841378-3	80108
841656-2	SW975
841762-8	80108

VOLVO



841765-1	80108
841766-9	80108
847308	97308
847561-8	80200
849561-6	80200
849747-1	60160
849748-9	60175
850834-3	6223
851126-3	TR223
852565-1	SW565
852928-1	6224
853083-4	6224
853084-2	6224
853544-5	R670
853545-2	R670
854346-4	6227
854357-1	R040
854437	6227
854525-3	6232
854531-1	M531
855326-5	30124
855332-3	SW975
855334	30459
857298	60125
858838-6	80108
858839-4	80108
859252-9	97225
859618-1	SW225
859623-1	DV225
860334-2	95949
870670-7	R670
872018-7	80108
872235-7	80108
872241-5	10113
872272-0	R177
872300-9	R670
872449-4	6224
872720-8	VR135
872926-1	80108
873051-7	6224
873120-0	BI-0702
873549-0	10113
875356-8	TR221
876037-3	R832
876038-1	R670
876039-9	R952
876040-7	R040

WESTERBEKE



16762	12101
23953	12104
31227	12101
30594	86050
33486	30456
34552	98175
21129980	30459
42847	60104

YAMAHA



CS3-43880-00	6259
19-1400-10	60075

YAMAHA



6BR-81800-00	3433
6BR-81800-01	3433
6CJ-81800-00	3432
6C5-81800-00	3432
6E5-43880-01	6267
6E5-43880-02	6267
6E5-81840-10	SR426
6E5-81800-11	3426
6E5-81800-12	3426
6E5-81941-10	SW941
6E5-81941-11	SW941
6E5-81950-01	R950
6E5-8195A-01	R951
6F5-81800-10	3423
6F5-81800-11	3423
6G1-8194A-10	SW945
6G1-81940-00	SW945
6G1-81941-10	SW945
6G5-43880-00	6265
6G5-43880-01	6265
6G5-43880-02	6265
6H1-43880-00	6267
6H1-43880-02	6260
6H3-81800-10	3422
6H3-81800-11	3422
6H4-81800-10	3425
6H4-81800-11	3425
6H4-81800-12	3425
6H5-43880-02	6264
6H5-43880-09	6264
6J4-81800-00	3423
6J4-81800-01	3423
6K7-81800-10	3428
6K8-81807-10	DV500
6L2-81800-10	3421
6L2-81800-11	3421
6L2-81800-20	3421
6M6-8183E-00	DV700
6M6-8183E-01	DV700
6N7-81800-00	3428
6N7-81800-01	3428
6N7-81800-10	3428
6N7-81840-00	SR428
6N7-WS818-01	3428
61A-81800-00	3429
61A-81800-01	3429
61A-81840-00	SR429
61A-81941-00	SW941
61H-81800-00	3428
61H-81800-01	3428
61H-81800-10	3428
62X-43880-00	6266
62X-43880-01	6266
62X-43880-09	6266
62Y-43880-01	6259
62Y-43880-02	6259
63P-81800-00	3433
64E-43880-00	6240
64E-43880-01	6240
64E-43880-03	6240

YAMAHA



65W-81800-00	5364
65W-81800-01	5364
65W-81800-02	5364
65W-81800-03	5364
65W-81941-00	SW099
67C-81800-00	5365
67C-81800-01	5365
67C-81800-02	5365
67F-43880-00	6261
67F-81800-00	3430
67F-81800-01	3430
67F-81800-02	3430
67H-43880-00	6240
67H-43880-01	6240
67H-43880-04	6240
68F-81800-00	3431
68F-81800-01	3431
68V-43880-00	6240
68V-43880-01	6240
68V-43880-03	6240
68V-81800-00	3432
68V-81800-01	3432
69J-43880-01	6263
69L-81800-00	3429
663-81840-11	SR424
682-81800-11	3421
682-81800-12	3421
688-43880-10	6267
688-81800-10	3427
688-81800-11	3427
688-81800-12	3427
688-81950-10	SW950
689-81800-11	3420
689-81800-12	3420
689-81800-13	3420
697-81800-10	3424
697-81800-11	3424
697-81800-12	3424
99999-03249	3424

YANMAR



128170-77010	98180
128170-77010D	98180
128270-77200	84135
129608-77010	98185
129698-77010	98185
129772-77200	84150
171008-77010	98185
X211447009	SW487



ARCO STARTING & CHARGING SPECIALISTS

Toll Free 800-722-2720 • Phone 850-455-5476 • Fax 850-453-2630 • www.arcomarine.com

REPLACEMENT TILT/ TRIM MOTORS & REPAIR KITS



The Leader in Marine Electrical Parts.



DO NOT CUT WIRES OR DISMANTLE UNITS

Cutting a unit's wires or dismantling a unit immediately voids the manufacturer's warranty. Water can easily seep into the motor through cut wiring. In addition, taking a motor off the reservoir and trying to install it on an old reservoir usually damages the brushes in the motor. Disassembled parts are not covered by warranty.

6204 (NEW)
FITS: O.M.C.
3-wire connection
2-bolt mount

TR204
Repair kit



6206 (NEW)
FITS: O.M.C.
3-wire connection
3-bolt mount

TR206
Repair kit



6208 (NEW)
(MOTOR/RESERVOIR ONLY)
FITS: O.M.C.
3-wire connection

TR208
Repair kit



6209 (NEW)
FITS: O.M.C.
2-wire connection

TR209
Repair kit



6211 (NEW)
FITS: O.M.C.
stern-drive 1979-1985
2.5L, 3.0L
3-wire connection
Ring Terminal Ends

TR211
Repair kit
(Cast Aluminum)

TR210
Repair kit
(Stamped Steel)



6213 (NEW)
**FITS: GOOD AUTOMATIC
 WINDLASS**
 Ring Terminal Ends

Will also replace
 units with
 this style shaft



6217 (NEW)
(MOTOR/RESERVOIR ONLY)
**FITS: B.M.W., MERCRUISER,
 VOLVO PENTA**
 Includes: Screws,
 gasket & adapter
 Ring Terminal Ends

TR217
 Repair kit



TAK217
 Screws, gasket, adapter



6214 (NEW)
MOTOR/RESERVOIR ONLY
FITS: O.M.C.
**1979-1985 3.8L,
 4.3L, 5.0L, 5.7L**
 Stern Drive Engines
 2-wire connection



6218 (NEW)
(MOTOR ONLY)
**FITS: MERCRUISER I/O'S AND
 MERCURY OUTBOARDS
 W/OILDYNE PUMP**
 12 Volt
 Ring Terminal Ends

Replaces early
 square-style
 motor



6216 (NEW)
(MOTOR/RESERVOIR ONLY)
FITS: CHRYSLER, O.M.C.
 3-wire connection



TR218
 Brush kit →



6219
 Slow speed motor
 Fits Jack lift for racing outboards

REPLACEMENT TILT/ TRIM MOTORS & REPAIR KITS



The Leader in Marine Electrical Parts.



6220 (NEW)

HEAVY-DUTY

FITS: O.M.C.

2-wire connection

Includes O-ring

3-bolt mount

Male Spade Terminal Ends

96" Leads



R473

Relay available

6220X (NEW)

HEAVY-DUTY, FITS: O.M.C.

2-wire connection, Includes O-ring, 3-bolt mount

Male Spade Terminal Ends

62" Leads



6223 (NEW)

HEAVY-DUTY

FITS: VOLVO PENTA

Female Spade Terminal Ends



6224 (NEW)

(COMPLETE)

FITS: VOLVO PENTA

Includes: Hydraulic valve body

Ring Terminal Ends

6225 (NEW)

(MOTOR/ RESERVOIR ONLY)

Fits: PRESTOLITE



To be discontinued
when present stock
is exhausted



← Replaces this style
Prestolite Pump

6227 (NEW)

(COMPLETE)

FITS: VOLVO PENTA - THRU 1999

W/OILDYNE PUMP

6232

(MOTOR ONLY)



M531 (NEW)

RESERVOIR KIT

FITS: ARCO 6227

Includes: Reservoir,
cap, and O-ring

Fits Oildyne Pump ONLY



For new style 4 screw
mount see M533 in
miscellaneous section

6228 (NEW)

HEAVY-DUTY

(MOTOR ONLY)

FITS: MANY SMALL

O.M.C. OUTBOARDS

Includes gasket



Fits: O.M.C. Pump
No. 173946

TR228

Repair kit



6231 (NEW)
(MOTOR ONLY)
FITS: U.S. MARINE
W/OILDYNE PUMP
2-wire connection
Female Spade Terminal Ends



6239 (NEW)
HEAVY-DUTY
FITS: HONDA
1992-2002 35-50 HP
2-wire connection
Includes O-ring
4-bolt mount
Hollow-hex shaft
Female Spade
Terminal Ends



6232 (NEW)
(MOTOR ONLY)
FITS: ARCO 6227,
LATE MODEL
VOLVO PENTA
W/ OILDYNE PUMP
2-wire connection



NOTE:
Distance between
mounting bolts: 2.5"
Bolt size: 10x32 fine thread

6240 (NEW)
HEAVY-DUTY
FITS: YAMAHA
1997-UP 115 HP
2000-UP 115 HP 4-Stroke
1997-2000 130 HP
1997-UP 150-200 HP
1998-UP 225 HP
2-wire connection
4-bolt mount,
Ring Terminal Ends
Includes O-ring



6233 (NEW)
FITS: LATE MODEL
VOLVO PENTA SX
MODELS.
Replaces Teleflex
Motor and Volvo part
number 3861575



NOTE:
Distance between
mounting bolts: 2.3"
Bolt size: 10x24 coarse thread

6241 (NEW)
HEAVY-DUTY
FITS: O.M.C. 60, 70, 90,
115, 150, 175 HP
1991-Up 200, 225 HP
1991-94 120, 140 HP
1995-Up 50 HP 3-cyl, 60 HP,
V4 130 HP
1997-Up 115-200 HP
1998-99 225 HP
2-wire connection
4-bolt mount
Flat-blade shaft
Female Spade Terminal Ends



Includes O-ring and adaptor to
replace motors with hollow hex shafts

ALSO REPLACES OEM MOTORS WITH
HOLLOW HEX SHAFT

R473
Relay available



6238 (NEW)
HEAVY-DUTY
FITS: O.M.C.
1998-Up
75 HP-250 HP FFI
Outboard Engines
4-bolt mount,
Female Sealed
Terminal Ends
Includes O-ring



REPLACEMENT TILT/ TRIM MOTORS & REPAIR KITS



6242 (NEW)

HEAVY-DUTY

FITS: O.M.C.

1992-Up J-suffix 40, 48, 50 HP

2-wire connection

Includes O-ring, 4-bolt mount

Hollow-hex shaft

Female Spade Terminal Ends



R473

Relay available

6243 (NEW)

HEAVY-DUTY

FITS: O.M.C.

1989-1992 M-suffix 40, 48, 50 HP

2-wire connection;

4-bolt mount, Includes O-ring

Hollow-hex shaft

Male Spade Terminal Ends



R473

Relay available

6244 (NEW)

HEAVY-DUTY

FITS: O.M.C.

1993 V6

1993-Up Commercial V8

2-wire connection;

3-bolt mount, Includes O-ring

Flat-blade shaft

Female Spade Terminal Ends



R473

Relay available

6245 (NEW)

HEAVY-DUTY

FITS: O.M.C. COBRA

1989-1993 Stern drives (all models)

VOLVO 1994-UP 3.0-8.2L

2-wire connection;

3 bolt mount, Flat-blade shaft

Includes O-ring

Flag Connector Terminal Ends



**To be discontinued when
present stock is exhausted**

6247 (NEW)

HEAVY-DUTY

FITS: EVINRUDE ETEC

2005-2009 70-90 HP

2007-2009 115 HP

2009- 130 HP

2-wire connection

4-bolt mount, Includes

TAK247 mounting kit,

Flat-blade shaft



TAK247

Mounting bolts, flat washers,
O-ring and couplers



6248 (NEW)

HEAVY-DUTY

FITS: EVINRUDE ETEC

2005-2009 40-50 HP

2006-2009 60 HP

2009- 25-30 HP

2-wire connection

4-bolt mount, Includes

TAK247 mounting kit,

Flat-blade shaft



TAK247

Mounting bolts, flat washers,
O-ring and couplers



6250 (NEW)

HEAVY-DUTY

FITS: Late model MERCURY

135, 150 XR6, Magnum III,

175, 200, 225, 250 HP,

105-140 HP Jet

2-wire connection,

2-bolt mount

Includes O-ring ,

Flat-blade shaft

Bullet Connector Terminal Ends



**This motor will NOT replace an early
model Mercury cartridge pump motor!
Order Part No. 6278**

6255 (NEW)
HEAVY-DUTY
FITS: Late model
MERCURY/FORCE
 25-50 HP outboards
 2-wire connection
4-bolt mount
Flat-blade shaft
 Bullet Connector
 Terminal Ends



6258 (NEW)
HEAVY-DUTY
FITS: YAMAHA
2005-UP 75 HP 4 Stroke
2005-UP 90 HP 4 Stroke
 2-wire connection
4-bolt mount
Includes O-ring
 Ring Terminal Ends



6259 (NEW)
HEAVY-DUTY
FITS: YAMAHA
2001-2004 50 HP 4 Stroke
2002-2004 60 HP 4 Stroke
2001-2006 40 HP 2 Stroke (TLR)
2003-2009 50 HP 2 Stroke (TLR)
 2-wire connection
3-bolt mount
Includes O-ring
 Ring Terminal Ends



6260 (NEW)
HEAVY-DUTY
FITS: YAMAHA
1992-2002 90 HP
1992-1995 50-90 HP
1994 40 HP; 1996 70-90 HP
1997-Up 60, 70, 90 HP
 2-wire connection,
3-bolt mount
Includes O-ring
Flat-blade shaft
 Ring Terminal Ends



6261 (NEW)
HEAVY-DUTY
FITS: YAMAHA
1999-2004 75, 80, 90 &
100 HP 4 Stroke O/B Engine
 2-wire connection
4-bolt mount,
 Ring Terminal Ends
Includes O-ring



6263 (NEW)
HEAVY-DUTY
FITS: YAMAHA
2002-2009 200, 225,
250 HP 4 Stroke
2002-2009 200-300 HP
2 Stroke
 2-wire connection
3-bolt mount
Includes O-ring
 Ring Terminal Ends



6264 (NEW)
HEAVY-DUTY
FITS: YAMAHA
1985-1992
40-50 HP
 2-wire connection
4-bolt mount,
Includes O-ring
 Ring Terminal Ends



6265 (NEW)
HEAVY-DUTY
FITS: YAMAHA
1987-1995
115-200 HP Outboards
1990-1993 225 HP
 2-wire connection
3-bolt mount
Includes O-ring
Flat-blade shaft
 Ring Terminal
 Ends



REPLACEMENT TILT/ TRIM MOTORS & REPAIR KITS



6266 (NEW)
FITS: YAMAHA
1995-Up 40/50 HP
2-wire connection
3-bolt mount
Includes O-ring
Ring Terminal Ends



6270 (NEW)
(COMPLETE)
FITS: Late model MERCURY
225-275 HP Outboards w/Oildyne pump
Ring Terminal Ends



6271 (NEW)
(COMPLETE)
Slow speed unit used for racing
applications

6267 (NEW)
FITS: YAMAHA
Early 70, 90, 115,
150-200 HP
3-wire connection
3-bolt mount
Ring Terminal Ends
4-mm thick shaft
blade with 68.3-mm
mounting collar.
Includes O-ring



6274 (NEW)
HEAVY-DUTY
FITS: Late model
MERCURY/MARINER
& FORCE 75-125 HP
outboards w/single
ram 3-wire connection;
4-bolt mount
Hollow-hex shaft
(Motor/Reservoir Only for Trim
Pump Assembly 824051)
Includes stainless steel
mounting screws,
shaft adaptor, O-ring
and fill plug.
Ring Terminal Ends



6268 (NEW)
FITS: SUZUKI
1991-1997 DT90,
1991-2000 DT100,
1991-2003 DT150,
1991-1992 DT175,
1991-2000 DT200,
1991-2003 DT225
2-wire connection
3-bolt mount
Includes O-ring and adaptor
Ring Terminal Ends



6269 (NEW)
FITS: SUZUKI DT 150/200
3-wire connection
3-bolt mount
Includes O-ring
Ring Terminal Ends



6275 (NEW)
(COMPLETE)
FITS: Late model MERCURISER
w/Oildyne pump
Ring Terminal Ends

6218 MOTOR ONLY

M525 (NEW)
Reservoir kit
FITS: ARCO 6275
Includes: Reservoir, cap, O-ring,
mounting screw



For new style 4 screw mount
Mercuriser 883166A2 see M532
in miscellaneous section

6276 (NEW)

HEAVY-DUTY

FITS: Late model
MERCURY/MARINER, FORCE
40-125 HP outboards
w/single ram
2-wire connection
4-bolt mount

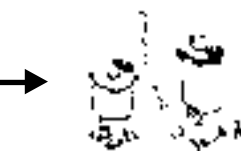
Hollow-hex shaft
(Motor/Reservoir Only)

**Includes stainless
steel mounting screws, shaft adaptor,
O-ring and fill plug.**

Bullet Connector Terminal Ends



Will also replace these style units




TAK276

Mounting bolts, O-ring, fill cap and
shaft adapters for tilt/trim motors



6277 (NEW)

HEAVY-DUTY (MOTOR ONLY)

FITS: 
cartridge pump 6278 only!
2-bolt mount
Ring Terminal Ends



TR277

Repair kit



Motor WILL NOT replace original equipment. Order Part No. 6278

6278 (NEW)

(COMPLETE) HIGH-PERFORMANCE

Cartridge pump
w/replaceable motor
Fits: MERCURY/MARINER
35-220 HP Outboards
2-bolt mount

w/Design I, 3 ram,
3-wire tilt/trim units
W/SIDE FILL RESERVOIR
Replaces square-style Eaton,
round-style Prestolite



TR277

Repair kit

SIDE FILL RESERVOIR



6279 (NEW)

HEAVY-DUTY

FITS: MERCURY/MARINER
outboards w/Design II
3 ram, three-wire trim units
Hollow-hex shaft
W/AFT FILL RESERVOIR
3-wire connection
2-bolt mount
**Shaft adaptor and
O-ring included.**
Ring Terminal Ends



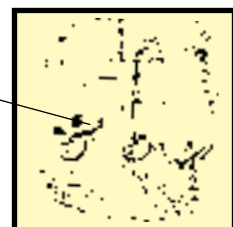
Replaces this
square motor

TR279

Repair kit



AFT FILL RESERVOIR





CHARGING SYSTEMS

NOTE: ALTERNATORS ARE NOT BATTERY CHARGERS



* ENGINE HORSEPOWER REQUIRED FOR ALTERNATORS

For every 23 AMPS of alternator output about one horsepower is required.

FOR EXAMPLE: A 12 volt, 115 AMP alternator requires 5 horsepower.

(115 divided by 23 = 5 horsepower). A 24 volt unit requires twice the horsepower.



* ALTERNATORS ARE NOT BATTERY CHARGERS

Alternators are designed to supply current for the accessory load and maintain the charge of the battery.

Most alternators can safely charge at only two-thirds of their maximum rated output. When trying to recharge a dead battery, the alternator will charge at maximum output for extended periods of time causing the alternator to overheat. **High heat destroys** transistors, diodes and windings.



* ONE-WIRE ALTERNATORS CAN NOT BE USED WITH BATTERY ISOLATORS

One-wire alternators, sometimes referred to as self-exciting alternators, require battery voltage at the output terminal in order to charge. Since battery isolators eliminate the battery voltage to the alternator, you must use a battery isolator with an ignition excite capability or modifications must be made to the alternator to allow ignition excitation.



* ALTERNATORS MUST TURN THE PROPER RPM IN ORDER TO FUNCTION

Just because the alternator looks like it's turning, doesn't mean it's turning fast enough to charge. **Most alternators do not start charging until they reach 1,000 RPM** alternator shaft speed. 5,000 RPM alternator shaft speed is normally required to reach maximum output. If you're not sure what the alternator shaft speed is, you can determine this with the pulley ratio. Measure the diameter of the crank shaft or drive pulley and the alternator pulley. Divide the crank shaft pulley diameter by the alternator pulley diameter. This figure would be the engine-to-alternator RPM ratio. A normal ratio would be 2.5 to 1. For example, let's say we have a 7 inch diameter crank shaft pulley and a 2.75 inch alternator pulley. We would divide 7 inches by 2.75 which equals 2.54 to 1. If the engine was turning 1,000 RPM we would multiply 1,000 by 2.54 which would give us 2,540 alternator RPM.

Again, with today's high amperage alternators, belt condition and tension are critical in proper alternator performance.

Alternator Pulley



Crankshaft Pulley

IF YOU ARE ABLE TO TURN THE ALTERNATOR FAN BY HAND, YOU DO NOT HAVE THE BELT TIGHT ENOUGH.



* ALTERNATORS WILL CHARGE WHEN TURNING IN EITHER DIRECTION

* NEVER DISCONNECT THE BATTERY CABLE WHEN THE ALTERNATOR IS CHARGING

A common practice with the old generator system was to disconnect the battery cable while the engine was running to see if the generator was working. If this procedure is done on today's transistorized alternator systems, severe damage to the internal components of the alternator usually will be the end result. **This includes using a battery selector switch while the engine is running.**



ALTERNATORS APPROVED FOR MARINE USE

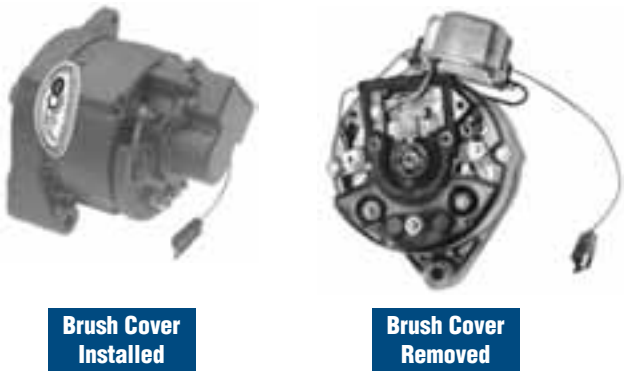
Alternators that are being installed on inboard gasoline engines must be certified to meet Coast Guard requirements for ignition protection. In order for the alternator to be certified, it must pass the testing procedure, Marine SAE J1171, laid-out by the Society of Automotive Engineers (SAE).

Brushes inside the alternator cause some sparking when the alternator is charging. This is normal for any alternator. When the alternator is exposed to a flammable atmosphere, such as an enclosed engine compartment on an inboard gasoline application with a fuel leak, the sparking from the brushes in the alternator may cause an explosion.

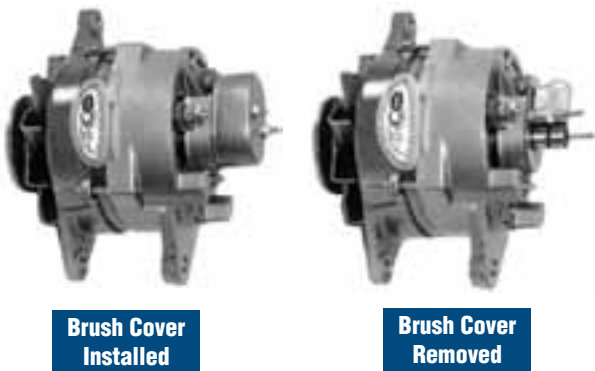
The Marine SAE J1171 testing procedure is as follows: A sparking device, similar to a spark plug, is installed in the brush area of the alternator. Another device is also installed in the brush area of the alternator to supply a specified mixture of propane gas and oxygen. The alternator is then placed in an explosion proof test chamber. The chamber and the alternator are then filled with the explosive gas mixture. A high-voltage coil supplies current to the sparking device in the brush area of the alternator, causing an explosion. An explosion must not occur in the test chamber while this test is being performed. This step is repeated nine times. Finally, a spark is supplied inside the test chamber causing an explosion to ensure that the explosive mixture was present during the testing operations.

VARIOUS MARINE APPROVED ALTERNATOR DESIGNS

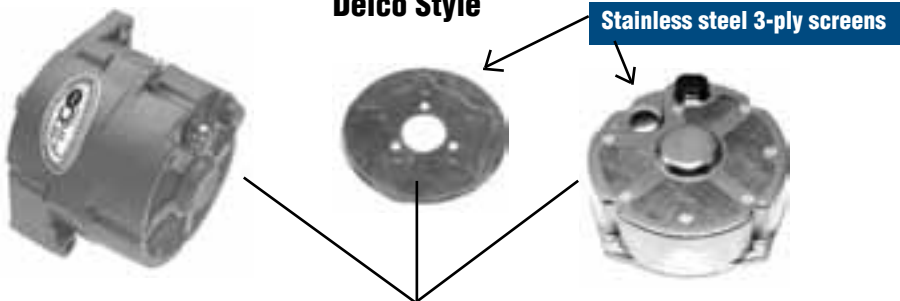
Motorola Style



Prestolite Style



Delco Style



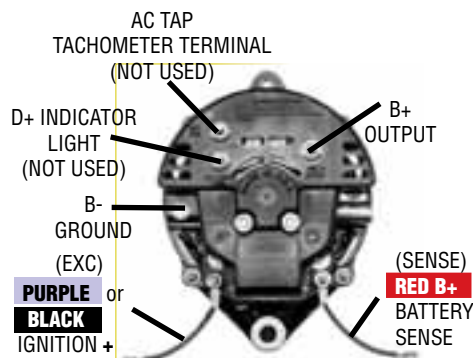
Delco style alternators use flame arrestors instead of sealed brush compartments.



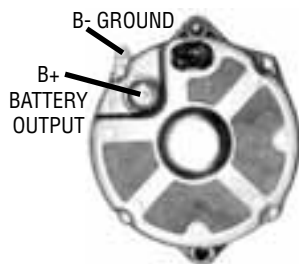
ALTERNATOR CIRCUITS

Many alternators require ignition voltage to initiate charging. You must verify that all required connections are connected to the proper terminal and have the correct voltage in order for the alternator to operate properly. Below you will find the most common alternator circuits used on marine applications.

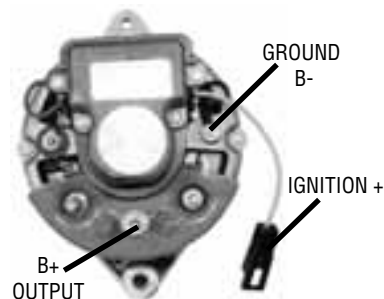
COMMON MARINE ALTERNATOR CIRCUITS



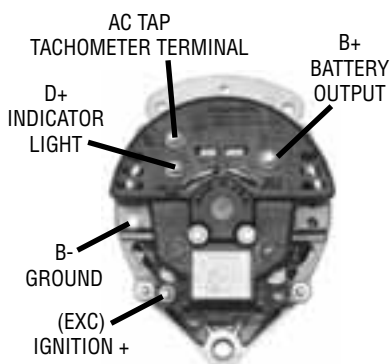
**LATE MOTOROLA/PRESTOLITE STYLE
FITS MERCURISER & OMC**



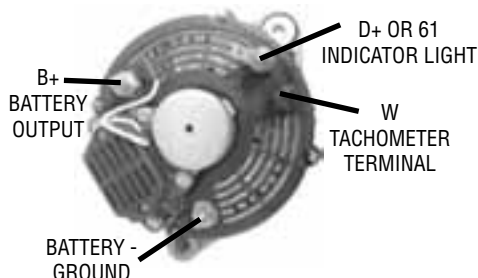
**DELCO SELF EXCITING STYLE
FITS MERCURISER AND OMC**



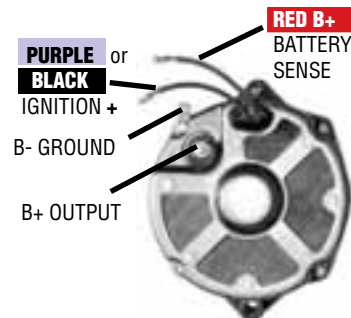
**EARLY MOTOROLA STYLE
FITS WESTERBEKE AND OTHERS**



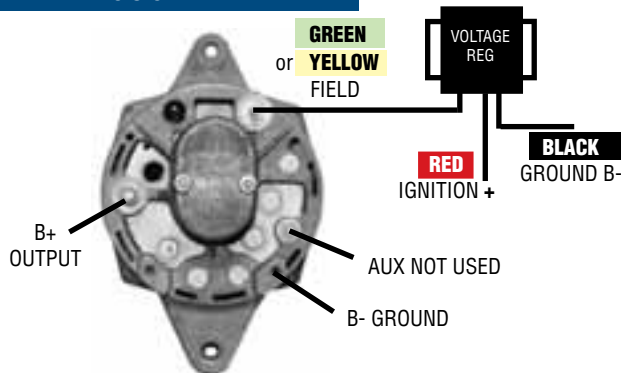
**LATE MOTOROLA/PRESTOLITE STYLE
FITS U.S. MARINE**



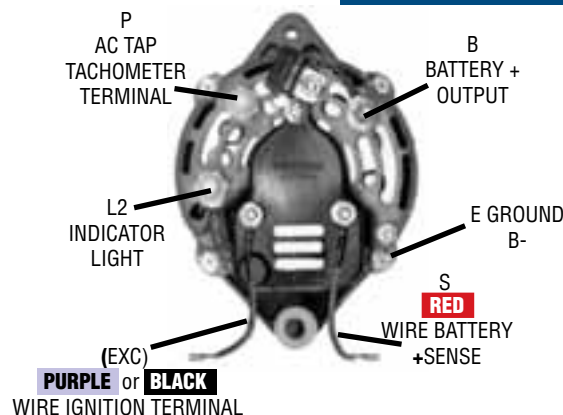
**VALEO/PARIS RHONE
FITS VOLVO PENTA**



**DELCO STYLE
FITS MERCURISER & OMC**



**EARLY PRESTOLITE STYLE
FITS OMC**



**LATE MANDO STYLE
FITS MERCURISER AND OTHERS**

20100

FITS: MANY DIESEL ENGINES

12 Volt, 70 AMP

Self exciting internal regulator

Negative ground

1-wire connection

2-inch mounting foot

Single groove pulley included

For high-amp (12 Volt, 105 Amp)
replacement alternator,
see 60122 on Page 57.



20102

FITS: MERCUISER, O.M.C.

12 Volt, 70 AMP

Self exciting

Ignition protection screens

Internal regulator

Negative ground

1-wire connection

2-inch mounting foot

Single groove pulley included

For high-amp (12 Volt, 105 Amp) replacement
alternator, see 60122 on Page 57.



20104

FITS: MERCUISER, O.M.C.

12 Volt, 70 AMP

Ignition protection screens

Internal regulator

Negative ground

2-wire plug

2-inch mounting foot

Single groove pulley included

For high-amp (12 Volt, 105 Amp)
replacement alternator, see
60122 on Page 57.



20500

Universal-mount alternator

12 Volt, 70 AMP

Self exciting

Ignition protection screens

1-wire connection

**Single groove
pulley included**

1-inch mounting foot

Adaptors available for
2" and 3" mounting
configurations



20800 (NEW)

FITS: MERCUISER

4.3L - 8.2L

1998-Up

12 Volt, 70 AMP

Internal Fan

65-mm multi-groove

**serpentine
pulley included**



20810 (NEW)

FITS: MERCUISER 3.0L

1999-UP

12 Volt, 70 AMP

Internal Fan

**Single groove
pulley included**



20815 (NEW)

FITS: MERCUISER 4.3L-6.2L

12 Volt, 70 AMP

Internal Fan

**50-mm multi-groove
serpentine pulley
included**



20820 (NEW)

**FITS: INDMAR,
PLEASURECRAFT,
CRUSADER, AND OTHERS**

12 Volt, 70 AMP

Internal Fan

2-inch mounting foot

**65-mm multi-groove
serpentine pulley
included**



REPLACEMENT INBOARD ALTERNATORS



The Leader in Marine Electrical Parts.



20821 (NEW)
FITS: PLEASURECRAFT
12 Volt, 70 AMP
Internal Fan
2-inch mounting foot
50-mm serpentine
pulley included



20827 (NEW)
HIGH AMP
FITS: INDMAR
12 Volt, 95 AMP
Internal Fan
2-inch mounting foot
65-mm serpentine
pulley included



**95
AMP**

20822 (NEW)
FITS: PLEASURECRAFT
12 Volt, 70 AMP
Internal Fan
2-inch mounting foot
65-mm serpentine
pulley included



20828 (NEW)
HIGH AMP
FITS: MARINE POWER
12 Volt, 95 AMP
Internal Fan
2-inch mounting foot
Double pulley included



**95
AMP**

20825 (NEW)
FITS: INDMAR,
PLEASURECRAFT,
CRUSADER, AND OTHERS
12 Volt, 70 AMP
Internal Fan
2-inch mounting foot
Single groove
pulley included



20830 (NEW)
FITS: MARINE POWER
12 Volt, 70 AMP
Internal Fan
2-inch mounting foot
Double pulley included



20826 (NEW)
HIGH AMP
FITS: PLEASURECRAFT
12 Volt, 95 AMP
Internal Fan
2-inch mounting foot
65-mm serpentine
pulley included



**95
AMP**

20840 (NEW)
FITS: 2.5L
MERCURY OUTBOARD
12 Volt, 50 AMP
Internal Fan
2-inch mounting foot
Multi-groove
serpentine
pulley included



20850 (NEW)
FITS: 3.0L MERCURY OUTBOARD
 12 Volt, 50 AMP
 Internal Fan
 Multi-groove serpentine
 pulley included

***Will not replace
 Mercury # 821663A-1**



40147 (NEW)
FITS: PLEASURECRAFT,
 12 Volt, 55 AMP
 Negative ground
 2-inch mounting foot
 Single groove
 pulley included

VR406
 Replacement Regulator
 for Prestolite alternator
 Not required for ARCO
 replacement alternator.



Replaces this
 ◀ style unit

40112
FITS: CHRYSLER MARINE
 12 Volt, 70 AMP
 Internal regulator
 Negative ground
 Single groove
 pulley included

VR405
 Replacement Regulator
 for Prestolite alternator
 Not required for ARCO
 replacement alternator.



Replaces this
 ◀ style unit

40152
FITS: O.M.C.
 12 Volt, 70 AMP
 Internal regulator
 Negative ground
 Single groove
 pulley included

VR404
 Replacement Regulator
 for Prestolite alternator
 Not required for ARCO
 replacement alternator.



Replaces this
 ◀ style unit

40115 (NEW)
FITS: CHRIS CRAFT
 12 Volt, 55 AMP
 Negative ground
 1-inch mounting foot
 Single groove
 pulley included

VR407
 Replacement Regulator
 for Prestolite alternator
 Not required for ARCO
 replacement alternator.



Replaces this
 ◀ style unit

60050 (NEW)
MANDO
FITS: LATE MODEL
MERCUISER
 12 Volt, 55 AMP
 Internal regulator
 2-inch mounting foot
 Single groove
 pulley included

M883
 Replacement Regulator

65050 (NEW)
 75 Amp high-output
 also available



REPLACEMENT INBOARD ALTERNATORS



The Leader in Marine Electrical Parts.



60055 (NEW)

MANDO
FITS: LATE MODEL
MERCUISER
12 Volt, 55 AMP
Internal regulator
2-inch mounting foot
Multi-groove serpentine
pulley included



M883

Replacement Regulator

65055 (NEW)

75 Amp high-output also available

60060 (NEW)

MANDO
FITS: LATE MODEL
MERCUISER
12 Volt, 65 AMP
Internal Regulator
2-inch mounting foot
Multi-groove serpentine
pulley included



65055 (NEW)

75 Amp high-output
also available

60065 (NEW)

MANDO
FITS: LATE MODEL
MERCUISER
12 Volt, 65 AMP
Internal regulator
2-inch mounting foot
Single groove
pulley included



65050 (NEW)

75 Amp high-output
also available

60070 (NEW)

MANDO
FITS: LATE MODEL
VOLVO PENTA
12 Volt, 65 AMP
Internal Regulator
2-inch mounting foot
Single groove
pulley included



60071 (NEW)

MANDO
FITS: LATE MODEL
VOLVO PENTA
12 Volt, 65 AMP
Internal Regulator
2-inch mounting foot
Multi-groove serpentine
pulley included



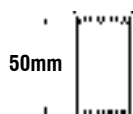
60072 (NEW)

MANDO
FITS: LATE MODEL
VOLVO PENTA
12 Volt, 65 AMP
Multi-groove
serpentine
pulley included



**If you have questions
about any of our products,
please don't hesitate to call!**
Toll Free 1-800-722-2720
or 1-850-455-5476

60073 (NEW)
VOLVO PENTA
FITS: LATE MODEL VOLVO PENTA
12 Volt, 75 AMP
50-mm multi-groove serpentine
pulley included



60074 (NEW)
VOLVO PENTA
FITS: LATE MODEL
VOLVO PENTA
12 Volt, 75 AMP
2-inch mounting foot
Single groove
pulley included

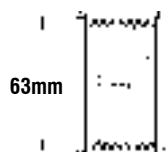


60075 (NEW)
UNIVERSAL ALTERNATOR W/ MANY APPLICATIONS
FITS: YAMAHA, MARINE POWER, CRUSADER
 Replaces Motorola
12 Volt, 55 AMP
 Internal regulator Includes:
 Tachometer terminal, indicator
 light terminal, remote battery
 sensing terminal
1-inch mounting foot
with 3-ear adjustment
Single groove pulley included



M883
Replacement Regulator

60076 (NEW)
VOLVO PENTA
FITS: LATE MODEL VOLVO PENTA
12 Volt, 75 AMP
63-mm multi-groove serpentine
pulley included



60104 (NEW)
REPLACES: MOTOROLA
12 Volt, 55 AMP
 Internal regulator
 Negative ground
1-inch mounting foot
Single groove
pulley included



Replaces this
 ◀ style unit



60108 (NEW)
FITS: UNIVERSAL AND OTHERS
12 Volt, 55 AMP
 Internal regulator
 Negative ground
2-inch mounting foot
Single groove
pulley included



65108 (NEW)
75 Amp high-output
also available



Replaces this
 ◀ style unit

60125 (NEW)
FITS: O.M.C. COBRA
 Replaces: Prestolite/Motorola
12 Volt, 55 AMP
 Internal regulator
 Negative ground
2-inch mounting foot
Single groove
pulley included



Replaces this
 ◀ style unit



REPLACEMENT INBOARD ALTERNATORS



The Leader in Marine Electrical Parts.



12 VOLT, 105 AMP - HIGH AMP ALTERNATORS

Today's increased electrical loads and more sophisticated electronics demand improved performance, greater reliability, and higher output from the electrical generating system. ARCO's creative engineering offers a **105 AMP** series as the means to a totally efficient electrical system. For comparison, just look at the Performance Chart at the bottom of the page!

60121 (NEW) HIGH-AMP 12 Volt, 105 AMP

Self exciting
Integral regulator
Isolated ground
Includes: Tachometer terminal.
External voltage adjustment.
1-inch mounting foot, 1/2" hole
Single groove pulley included



60126 (NEW) HIGH-AMP

FITS: Late Model VOLVO PENTA w/warning panel connection
12 Volt, 105 AMP

Integral regulator
Isolated ground
Includes: Tachometer terminal
2-inch mounting foot, 10mm hole
Single groove pulley included



For applications WITHOUT warning panel connection, use 60124

60122 (NEW) HIGH-AMP 12 Volt, 105 AMP

Self exciting integral regulator
Isolated ground
Includes: Tachometer terminal.
External voltage adjustment.
2-inch mounting foot, 3/8" hole
Single groove pulley included



60498 (NEW) HIGH-AMP

FITS: CATERPILLAR DIESEL 6T1396
12 Volt, 105 AMP
Integral regulator
Isolated ground
Heavy duty bearings
1-inch mounting foot
PULLEY NOT INCLUDED



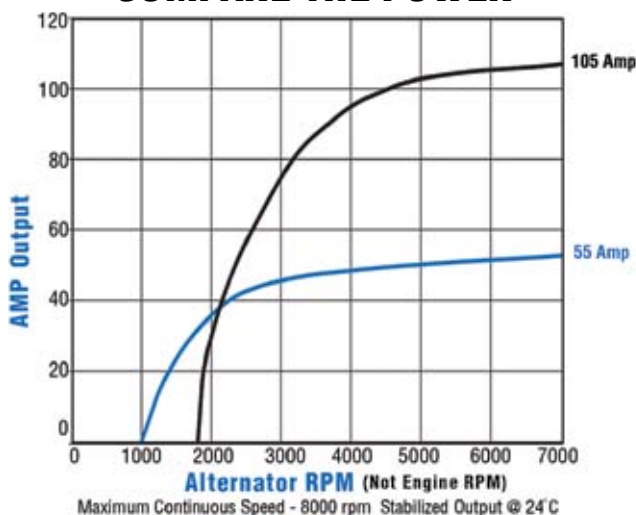
60124 (NEW) HIGH-AMP FITS: VOLVO PENTA 12 Volt, 105 AMP

Self exciting
Integral regulator
Isolated ground
Includes: Tachometer terminal
External voltage adjustment
2-inch mounting foot, 10mm hole
Single groove pulley included



For applications WITH warning panel connection, use 60126

COMPARE THE POWER



60150 (NEW)
 Prestolite/Motorola
24 Volt, 75 AMP
 Integral regulator
 Isolated ground
7" casing
PULLEY NOT INCLUDED



60180 (NEW)
 Prestolite/Motorola
32 Volt, 100 AMP
 Integral regulator
 Isolated ground
7" casing
PULLEY NOT INCLUDED



**To be discontinued
 when present stock
 is exhausted**

60160 (NEW)
 Prestolite/Motorola
12 Volt, 160 AMP
 Integral regulator
 Isolated ground
7" casing
PULLEY NOT INCLUDED



60195 (NEW)
 Prestolite/Motorola
FITS: CUMMINS DIESEL
12 Volt, 65 AMP
 Internal regulator
 Negative ground
2-inch mounting foot
PULLEY NOT INCLUDED
 Poly-V pulley
 available separately



60170 (NEW)
 Prestolite/Motorola
24 Volt, 175 AMP
 Integral regulator
 Isolated ground
7" casing
PULLEY NOT INCLUDED



60197 (NEW)
FITS: CATERPILLAR
DIESEL 6T1395
24 Volt, 35 AMP
 Integral regulator. Isolated
 ground. Heavy duty bearings
1-inch mounting foot
PULLEY NOT INCLUDED



**To be discontinued
 when present stock
 is exhausted**

60175 (NEW)
 Prestolite/Motorola
24 Volt, 100 AMP
 Integral regulator
 Isolated ground
7" casing
PULLEY NOT INCLUDED



60198 (NEW)
FITS: CATERPILLAR DIESEL 6T1396
12 Volt, 51 AMP
Integral Regulator
 Isolated ground
 Heavy duty bearings
1-inch mounting foot
PULLEY NOT INCLUDED



**For high-amp
 (12 Volt, 105 Amp)
 replacement alternator
 see 60498 on Page 57.**

REPLACEMENT INBOARD ALTERNATORS



The Leader in Marine Electrical Parts.



80108 (NEW)

**FITS: LATE MODEL VOLVO PENTA
DIESEL ENGINES**
12 Volt, 55 AMP
Internal regulator
2-inch mounting foot
PULLEY NOT INCLUDED



For high-amp
(12 Volt, 105 Amp)
replacement alternator
see 60124/60126
on Page 57.

84135

HITACHI MARINE
FITS: YANMAR DIESEL
12 Volt, 35 AMP
Internal regulator
**Single groove
pulley included**



80200 (NEW)

PARIS RHONE/VALEO
**FITS: BAUDOUIN, BUKH,
VOLVO PENTA**
DIESEL ENGINES
24 Volt, 30 AMP
Integral regulator
2-inch mounting foot
PULLEY NOT INCLUDED



To be discontinued
when present stock
is exhausted

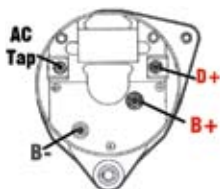
84150

HITACHI MARINE
FITS: YANMAR DIESEL
12 Volt, 50 AMP
Internal regulator
**Single groove
pulley included**



83160 (NEW)

FITS: LEHMAN, PERKINS, ETC.
12 Volt, 75 AMP
with regulator
Single groove



86050

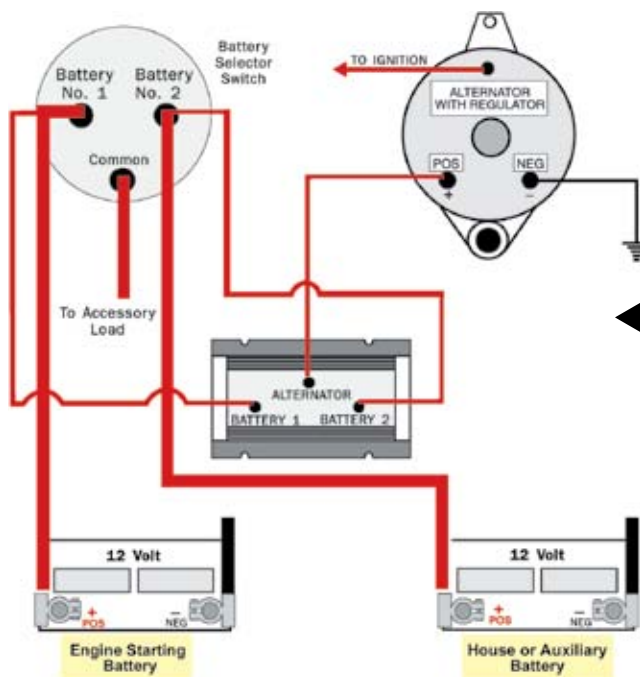
FITS: WESTERBEKE
12 Volt, 50 AMP
Internal regulator
**Single groove
pulley included**



TYPICAL BATTERY ISOLATOR CIRCUITS

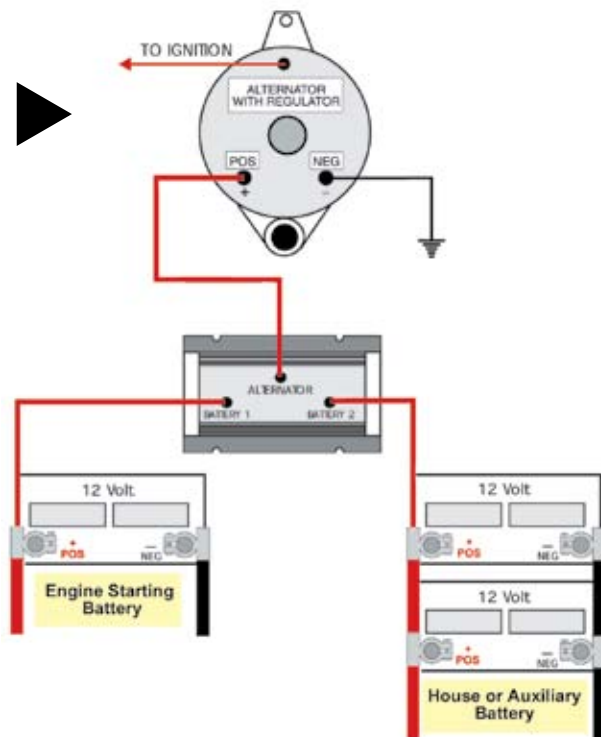
The most common battery isolator is the one alternator, two battery unit. It doesn't matter how many batteries are connected in parallel to the battery 1 or 2 terminal.

Remember, when batteries are connected in parallel, they become one large battery.

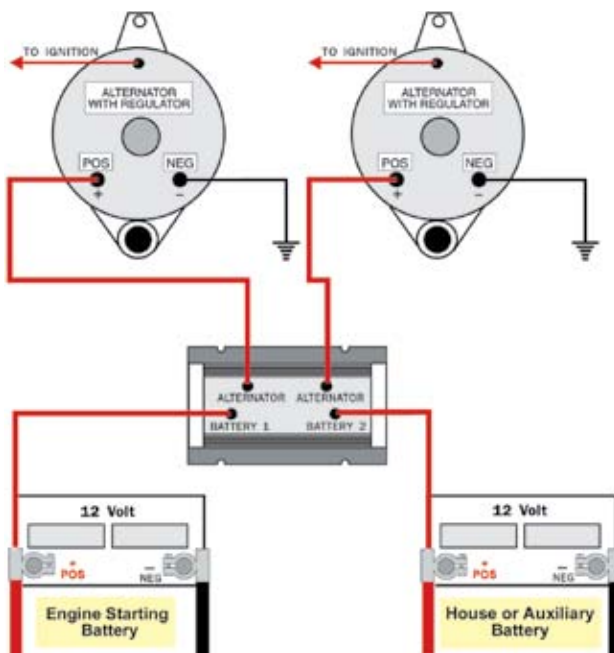


The two alternator, two battery isolator allows both alternators to charge both batteries.

In the event of one alternator failure, both batteries would be maintained by the working alternator.



The one alternator, two battery isolator with a battery selector switch will allow both banks of batteries to be charged regardless of what position the battery selector switch is in.



INBOARD/OUTBOARD BATTERY ISOLATORS



The Leader in Marine Electrical Parts.



Battery isolators are solid-state devices which allow electrical current to flow in one direction only, thus permitting the alternator to be connected directly to two batteries without fear of one higher charged battery discharging into the lower charged battery. Both batteries are always being charged automatically, in proportion, to their needs, whenever the engine is running. When battery isolators are used in conjunction with selector switches, it is not necessary to change the switch position to provide for charging of both batteries. Isolators provide proportioning of the output or charging current on the alternator to the batteries as required, regardless of switch position. Rated for use with 10 to 350 amp alternators on 12, 24, or 32 volt negative ground systems.



NOTE

Battery Isolators cannot be used on 12 volt charging systems with 24 volt trolling motors.

BI-0702

1 Alternator, 2 Batteries
70 AMP max



BI-1202-3A

1 Alternator,
2 Batteries
120 AMP max
Includes: Exciter Terminal



BI-0702-4

1 Alternator, 2 Batteries
70 AMP max
Includes: Regulator
sensing terminal



BI-1203

1 Alternator,
3 Batteries
120 AMP max



BI-0703

1 Alternator, 3 Batteries
70 AMP max



BI-1203-3A

1 Alternator,
3 Batteries
120 AMP max
Includes Exciter Terminal



BI-1202

1 Alternator,
2 Batteries
120 AMP max



BI-1602

1 Alternator,
2 Batteries
160 AMP max





NOTE

Battery Isolators cannot be used on 12 volt charging systems with 24 volt trolling motors.

BI-1603

1 Alternator,
3 Batteries
160 AMP max



BI-2703-4

2 Alternators,
3 Batteries
70 AMP max
Includes: Regulator
sensing terminal



BI-2402

1 Alternator,
2 Batteries
240 AMP max



BI-3202

2 Alternators,
2 Batteries
120 AMP max



BI-2702

2 Alternators,
2 Batteries
70 AMP max



BI-3203

2 Alternators,
3 Batteries
120 AMP max



BI-2703

2 Alternators,
3 Batteries
70 AMP max



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WIRING

Wiring is just as important as any other component in the starting and charging system. It must be capable of delivering the amount of current that the load is demanding.

When electrical systems are designed, the wire size is calculated for the specific requirements of the electrical components being used. **When electrical components are added or upgraded, the wire size has to be upgraded also. For example, replacing a low torque starter with a high torque starter will normally require the battery cables and possibly the battery to be upgraded. WHEN IN DOUBT, ALWAYS USE A BIGGER WIRE.**

A word about wire gauge

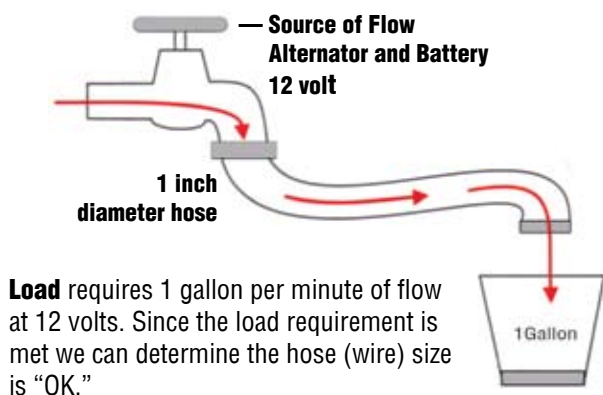
The size of a wire (gauge) is expressed in terms of a standard American Wire Gauge (AWG) measurement.

The higher the AWG number, the smaller the wire. For example, a 14 gauge wire is smaller than a 10 gauge wire. The smaller the wire, the greater its resistance to the flow of electrons and the greater the heat generated when the wire is conducting electricity. The heat can destroy insulation and even kindle a fire. **THE LARGER THE AMPERAGE OF A CIRCUIT, THE LARGER THE WIRE THAT IS NEEDED.**

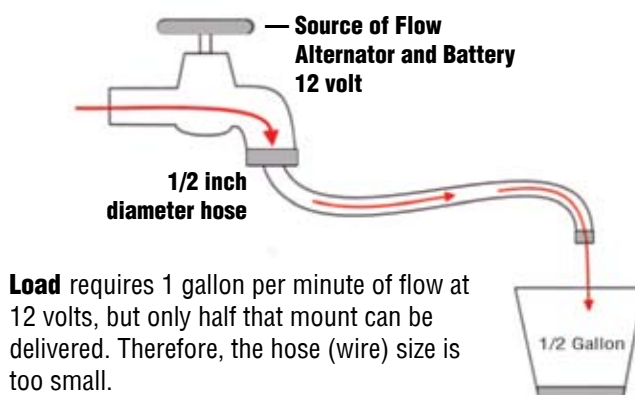
Think of wiring as a water hose.

The electrical current is like water flowing through the hose. The source or supply of this water would be the battery and alternator. Look at the diagrams below. The first diagram shows a one inch diameter hose which allows one gallon per minute of flow. Since the load requires only a gallon per minute of flow, we can say that this hose (wire size) is of sufficient size to carry the supply of water (current) to the load. This all changes when we reduce the water hose (wire size) to one half inch as shown in the second diagram. The hose (wire) can only deliver half the current needed by the load— this hose (wire) is NOT of sufficient size to carry the needed supply of water (current) to the load.

Adequate Wire Size (gauge)



Inadequate Wire Size (gauge)



BIGGER (THICKER) IS BETTER!

The higher the AWG Number, the thinner the wire.

The larger the amperage of a circuit, the thicker the gauge of the wire that is needed.

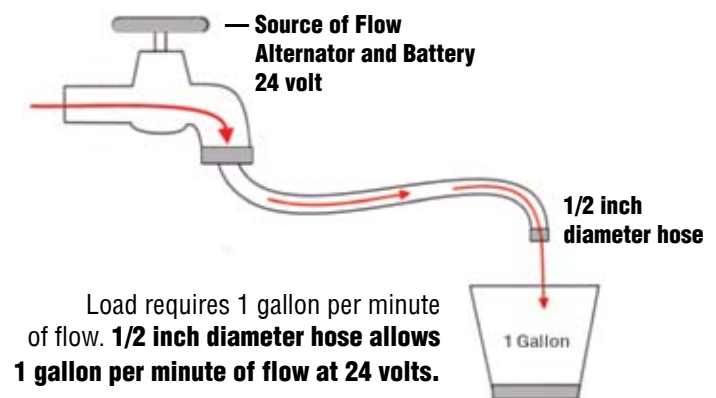
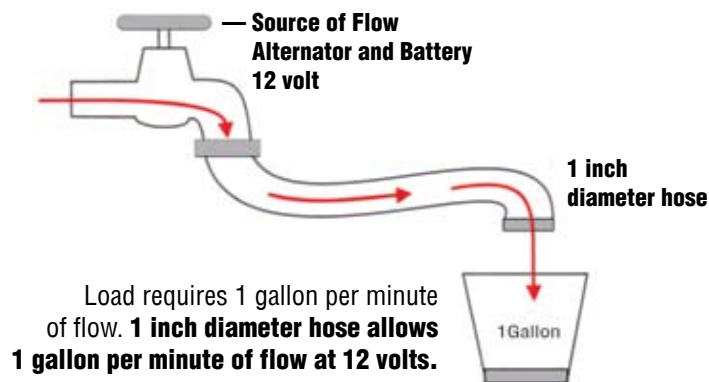
WIRING AND VOLTAGE

VOLTAGE IS MUCH LIKE WATER PRESSURE.

When calculating proper wire sizing, voltage plays a very important role. Voltage is much like water pressure. The higher the voltage, the faster the current flows.

A 24 volt system can move the same amount of current through a wire one half the size required for a 12 volt system.

This is also shown in the charging cable size chart on the following page. Notice that the 24 volt cable size requirements are much less than that of the 12 volt.



The higher the voltage, the faster the current flows.



RECOMMENDED WIRE SIZES

Below you will find the recommended wire sizes for charging and starting systems. **IT IS VERY IMPORTANT TO INCLUDE THE GROUND CABLE WHEN CALCULATING THE TOTAL LENGTH OF THE SYSTEM.**

The ground cable must carry the same amount of current as the positive cable.

WHEN IN DOUBT - - - BIGGER IS BETTER!

MINIMUM CHARGING CABLE GAUGE SIZE

		TOTAL LENGTH INCLUDING GROUND CABLE							
TYPE OF SYSTEM	OUTPUT IN AMPERES	UP TO 4 FT.	4 FT. TO 7 FT.	7 FT. TO 10 FT.	10 FT. TO 13 FT.	13 FT. TO 16 FT.	16 FT. TO 19 FT.	19 FT. TO 22 FT.	22 FT. TO 28 FT.
12 VOLT	0-20 AMPS	14 GA.	12 GA.	12 GA.	10 GA.	10 GA.	8 GA.	8 GA.	8 GA.
	20-35 AMPS	12 GA.	10 GA.	8 GA.	8 GA.	6 GA.	6 GA.	6 GA.	4 GA.
	35-50 AMPS	10 GA.	8 GA.	8 GA.	6 GA.	6 GA.	4 GA.	4 GA.	4 GA.
	50-65 AMPS	8 GA.	8 GA.	6 GA.	4 GA.	4 GA.	4 GA.	4 GA.	4 GA.
	65-85 AMPS	6 GA.	6 GA.	4 GA.	4 GA.	2 GA.	2 GA.	2 GA.	0 GA.
	85-105 AMPS	6 GA.	6 GA.	4 GA.	2 GA.	2 GA.	2 GA.	2 GA.	0 GA.
	105-125 AMPS	4 GA.	4 GA.	4 GA.	2 GA.	2 GA.	0 GA.	0 GA.	0 GA.
	125-150 AMPS	2 GA.	2 GA.	2 GA.	2 GA.	0 GA.	0 GA.	0 GA.	00 GA.
24 VOLT	0-20 AMPS	14 GA.	14 GA.	14 GA.	12 GA.	12 GA.	12 GA.	10 GA.	10 GA.
	20-35 AMPS	12 GA.	12 GA.	12 GA.	10 GA.	10 GA.	8 GA.	8 GA.	8 GA.
	35-50 AMPS	10 GA.	10 GA.	10 GA.	10 GA.	6 GA.	6 GA.	6 GA.	6 GA.
	50-65 AMPS	8 GA.	8 GA.	8 GA.	8 GA.	6 GA.	4 GA.	4 GA.	4 GA.
	65-85 AMPS	6 GA.	6 GA.	6 GA.	6 GA.	6 GA.	6 GA.	4 GA.	4 GA.
	85-105 AMPS	6 GA.	6 GA.	6 GA.	6 GA.	4 GA.	4 GA.	4 GA.	2 GA.
	105-125 AMPS	4 GA.	4 GA.	4 GA.	4 GA.	4 GA.	4 GA.	2 GA.	2 GA.
	125-150 AMPS	2 GA.	2 GA.	2 GA.	2 GA.	2 GA.	2 GA.	2 GA.	2 GA.

MINIMUM STARTING CABLE GAUGE SIZE FOR MOST INBOARD GASOLINE ENGINE APPLICATIONS

4 - 6 - 8 Cylinder Gasoline Engine							
Total Cranking Circuit Length in Inches	UP TO 75"	75" - 125"	125"-175"	175"-225"	225"-275"	275"-325"	325"-425"
Minimum Battery Cable Size	4	2	1	0	2/0	3/0	4/0

SOLENOID TYPES AND CIRCUITS

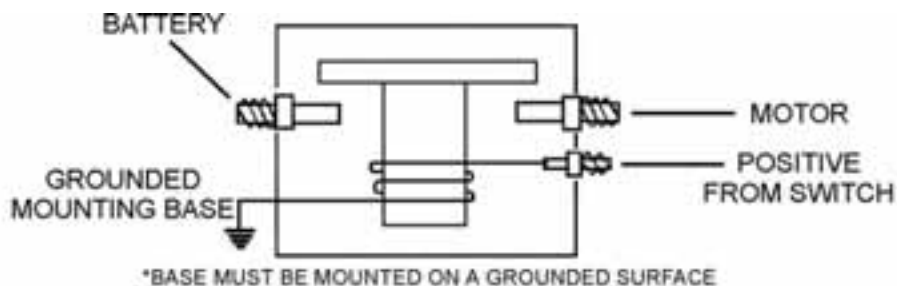


Many of the remote mount solenoids look identical on the outside.

However, they can be very different on the inside. Beside the different internal circuits, these can be rated for continuous duty or intermittent duty use.

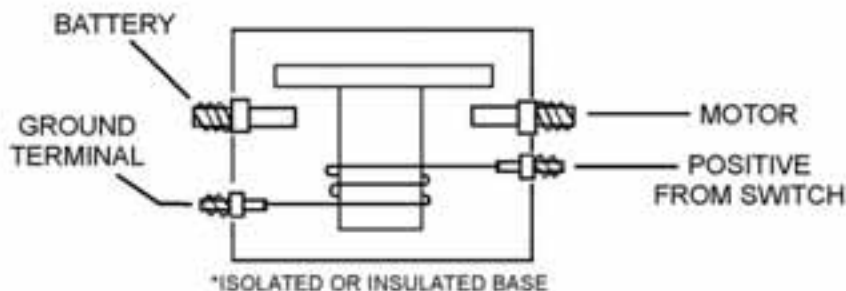
Continuous duty solenoids are wound with very fine wire and draw very little amperage. The contacts in continuous duty solenoids will usually have a lower amperage rating than that of the intermittent duty type. These are normally used as tilt trim relays. This type of solenoid can also be used for a variety of applications where a remote relay is needed to power a motor or other device.

Intermittent duty solenoids are wound with much heavier wire and draw more amperage. The contacts have a very high amperage rating. If these stay energized for extended periods of time they heat up and eventually burn out the coil inside the solenoid. This type of solenoid is normally used as a starter motor relay.



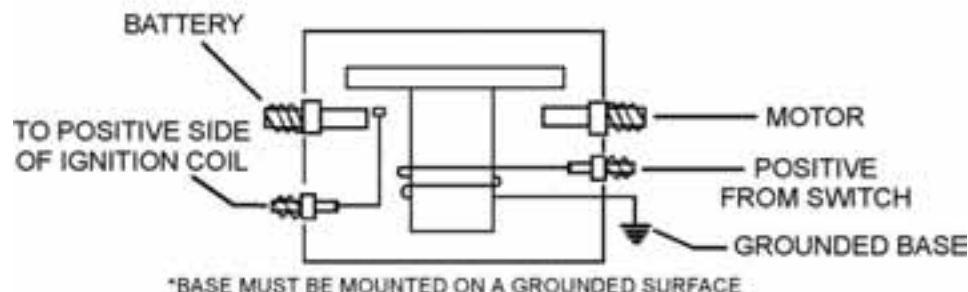
GROUNDING BASE SOLENOIDS

One end of the coil is grounded to the mounting base. This type solenoid must mount on a grounded surface or a ground must be attached to the base.



INSULATED BASE SOLENOIDS

Both ends of the coil in this unit are insulated. A separate ground must be connected and this type of solenoid can be mounted on any surface.



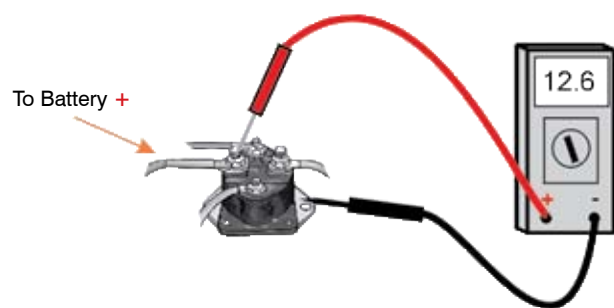
SOLENOIDS EQUIPPED WITH RELAY TERMINAL

This type of solenoid is normally used for starting motors. Since conventional ignition coils operate on 7 volts, the relay terminal supplies 12 volts to the ignition coil during starting for easier starts. The base of this solenoid must be grounded.



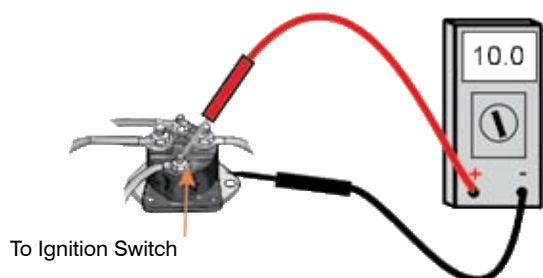
SIMPLE SOLENOID TESTING: GROUNDED BASE REMOTE SOLENOIDS

NOTE: Before Performing These Tests You Must Fully Charge and Load Test The Battery to Verify It Is Good.

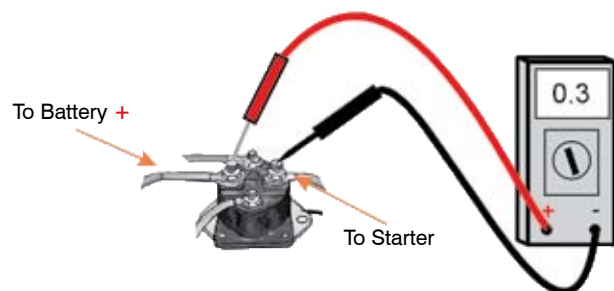


Step 1: Check the voltage on the battery side of the solenoid as shown on the left. The reading should be the same as the battery reading (12.6V = Full Charged Battery).

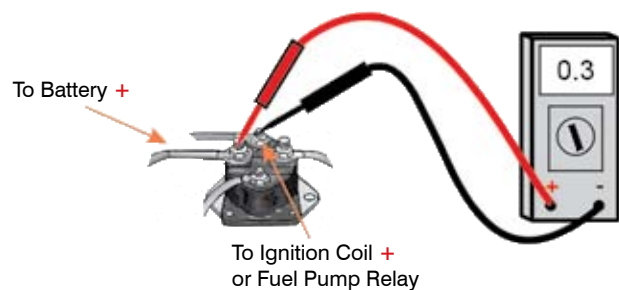
Step 2: With the voltmeter still connected, turn the key to the start position and read the voltage. The voltage should not drop below 10.0 volts on this terminal. If the voltage drops below 10.0 volts, The battery cable should be cleaned or replaced. If the reading is 10.0 volts or more move on to step 3.



Step 3: Keep the negative voltmeter lead on the metal base of the solenoid and move the positive voltmeter lead to the terminal marked "S" on the solenoid. Turn the key to the start position and read the voltage. The Voltage could read a little lower than the previous reading but should never be below 10.0 volts. If the voltage is lower than 10.0 volts, You must troubleshoot the start circuit (ignition switch, voltage supply to the ignition switch, neutral safety switch).



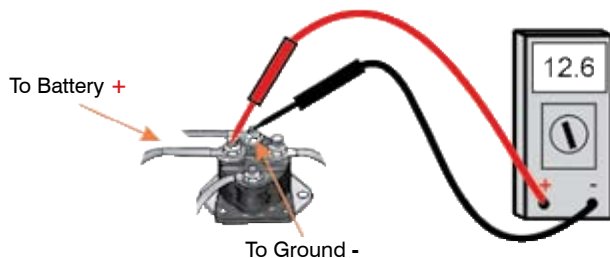
Step 4: Move the positive voltmeter lead to the battery terminal on the solenoid and the negative voltmeter lead to the terminal that the starter cable is attached. Turn the key to the start position and read the voltage. The voltage should read no more than .3 volts. If the reading is more than .3 volts the contacts have excessive resistance and the solenoid should be replaced.



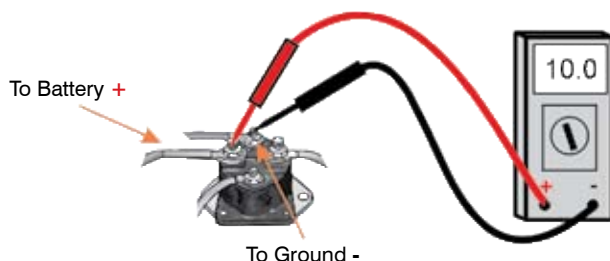
Step 5: Some solenoids use a relay terminal on the solenoid to power fuel pumps or supply full battery voltage to ignition coils when the starter is activated. This terminal is usually marked "I" or "R". Connect the voltmeter as shown. Turn the key to the start position. You should read no more than 0.3 volts. If you have more than 0.3 volts the solenoid should be replaced.

SIMPLE SOLENOID TESTING: **INSULATED BASE REMOTE SOLENOIDS**

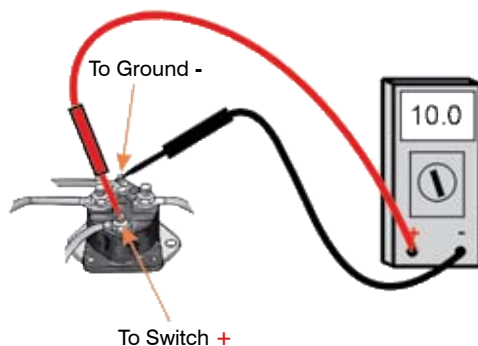
NOTE: Before Performing These Tests You Must Fully Charge and Load Test The Battery to Verify It Is Good.



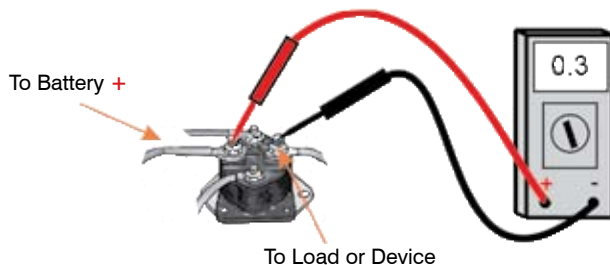
Step 1: Check the voltage on the battery side of the solenoid as shown on the left. The reading should be the same as the battery reading (12.6V = Full Charged Battery).



Step 2: With the voltmeter still connected, activate the switch and read the voltage. The voltage should not drop below 10.0 volts on this terminal. If the voltage drops below 10.0 volts, the battery cable should be cleaned or replaced. If the reading is 10.0 volts or more move on to step 3.



Step 3: Keep the negative voltmeter lead on the ground terminal of the solenoid and move the positive voltmeter lead to the terminal marked "S" on the solenoid. Activate the switch and read the voltage. The Voltage could read a little lower than the previous reading but should never be below 10.0 volts. If the voltage is lower than 10.0 volts, you must troubleshoot the switch circuit (toggle switch, push button switch, or voltage supply to these switches).



Step 4: Move the positive voltmeter lead to the battery terminal on the solenoid and the negative voltmeter lead to the terminal that the starter cable is attached. Activate the switch and read the voltage. The voltage should read no more than .3 volts. If the reading is more than .3 volts the contacts have excessive resistance and the solenoid be replaced.

REPLACEMENT SOLENOIDS



The Leader in Marine Electrical Parts.



SW054

FITS: MERCUISER, MERCURY

Isolated base
12 Volt



SW064

FITS: MERCUISER, MERCURY

Isolated base
12 Volt
White housing



SW058

STANDARD-DUTY

FITS: MERCUISER, MERCURY

Isolated base
12 Volt



SW081

FITS: MANY APPLICATIONS; O.M.C.

Isolated base
12 Volt



SW058HD

HEAVY-DUTY

FITS: MERCUISER, MERCURY

Isolated base
12 Volt



**SW058 OEM STYLE
COIL & CONTACT ASSEMBLY**



**ARCO SW058HD
COIL & CONTACT ASSEMBLY**

SW097

FITS: MERCUISER, MERCURY

Isolated base
12 Volt
White housing



SW099

FITS: MERCUISER, MERCURY

Isolated base
12 Volt



SW109

FITS: MERCURY/FORCE

Isolated base
12 Volt



High Temp Housing
for Less Distortion

Studs are Molded
in the Housing for
More Precise
Contacting

One Piece
Moving Core
with Solid
Brass Stem

Heavy Duty
High Temp
Coil Assembly

Solid Copper
Moving Contact
Covers Stud
Contacts for More
Contact Area

SW125

HEAVY-DUTY

FITS: FORD

ARCO 70125, 70200,
70201, 70212, 70216
gear reduction starters
on late model 5.0L, 5.8L



SW225

HEAVY-DUTY

**FITS: VOLVO PENTA,
VALEO** gear reduction



SW268

FITS: O.M.C.

Grounded base
12 Volt



SW275

FITS: MERCURY

Isolated base
12 Volt



SW288

FITS: O.M.C.

Isolated base
12 Volt



SW295

FITS: CHRYSLER

Isolated base
12 Volt



SW340

FITS: O.M.C.

Isolated base
12 Volt



SW394

FITS: MERCURISER & O.M.C.

Grounded base
12 Volt



SW450

FITS: ARCO 30460, 30470

4 terminals
12 Volt

**Plungers to fit these units
MUST BE ORDERED
SEPARATELY-SEE BELOW**



PA450L

2 1/4" Plunger for
ARCO SW450



Fits late model 30470.

PA450S

1 3/4" Plunger for
ARCO SW450



Will also fit early
model 30450 & all 30460.

REPLACEMENT SOLENOIDS



The Leader in Marine Electrical Parts.



SW456

FITS: 14 MT

ARCO 30456, 30457

4 Post, 3-Bolt Mount



SW590

Starter Solenoid

FITS: LATE MODEL

EVINRUDE E-TEC ENGINES

Isolated base



SW463

HEAVY-DUTY

**FITS: O.E. DELCO PG 260,
MERCUISER, OMC, VOLVO PENTA**

This solenoid will not fit

ARCO 30460, 30470!



SW595

FITS EVINRUDE E-TEC

2010-UP 15 HP-300 HP



SW486

FITS: MANY HITACHI STARTERS

on YANMAR diesels

12 Volt



SW622

FITS O.M.C.

Isolated base

12 Volt



SW565

FITS: VOLVO PENTA

Isolated base

12 Volt



SW661

FITS: MERCURY

Isolated base

12 Volt



SW580

FITS O.M.C.

1993-UP,

9.9 -15 HP Outboard

Isolated base

12 Volt



SW730

FITS: O.M.C.

Grounded base

12 Volt



SW774

FITS: CHRYSLER, O.M.C.
Replaces Chrysler 177917
Grounded base
12 Volt



SW814

**FITS: PARIS RHONE
D11E167T, ETC.**
12 Volt



SW865

HEAVY-DUTY
12 VOLT, 1000 AMP
Parallel/solenoid
Isolated ground



SW866

24 VOLT, 1000 AMP

SW924

FITS: FORCE OUTBOARDS
Choke solenoid
Order plunger (below) separately



PA924

Plunger to fit  SW924

SW925

FITS: MERCURY OUTBOARDS
Choke solenoid



SW926

**FITS: 75 HP-V200 HP
MERCURY OUTBOARDS**
Choke solenoid



SW941

FITS: YAMAHA
Solenoid



SW945

**FITS: YAMAHA 2 & 4 STROKE,
MERCURY 4 STROKE**
Starter solenoid



SW950

FITS: YAMAHA
Solenoid



SW975

FITS: DELCO
Standard solenoid
12 Volt



SW981

FITS: MERCURY
Grounded base
12 Volt



SW984

FITS: DELCO
Metric solenoid
12 Volt



OUTBOARD RECTIFIERS & REPLACEMENT RELAYS

ARCO
The Leader in Marine Electrical Parts.



AR103

FITS: O.M.C.
3-lead Rectifier



AR104

FITS: O.M.C.
4-lead Rectifier



AR351

HEAVY-DUTY
FITS: MERCURY
3-post Rectifier



R012 Continuous duty relay;
12 Volt, 85 Amp

R024 24 Volt, 85 Amp

R036 32-36 Volt, 85 Amp



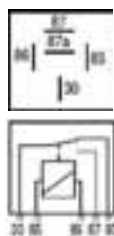
R038

S.P.D.T. normally closed,
continuous duty relay
used w/many winch motors
Isolated ground, **12 Volt, 85 Amp**



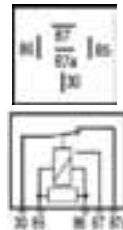
R040

FITS: VOLVO PENTA
12 Volt, 30 Amp



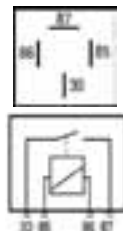
R151

**FITS: MERCURY &
MARINER OUTBOARDS**
12 Volt, 30 Amp



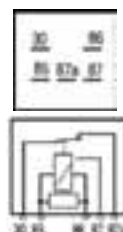
R177

FITS: VOLVO PENTA
12 Volt, 30 Amp



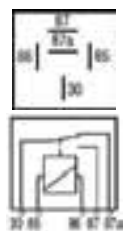
R202

FITS: MERCURISER
12 Volt, 30 Amp



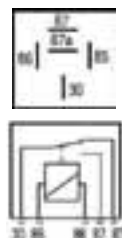
R211

FITS: MERCURY
12 Volt, 30 Amp



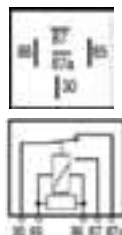
R473

FITS: O.M.C.
12 Volt, 30 Amp



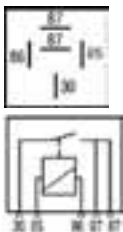
R509

**FITS: MERCURY,
MARINER & FORCE,
OUTBOARDS**
12 Volt, 30 Amp



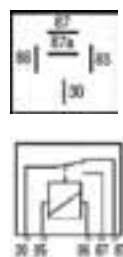
R670

FITS: VOLVO PENTA
12 Volt, 30 Amp



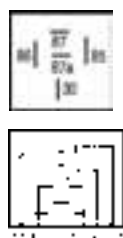
R952

FITS: VOLVO PENTA
12 Volt, 30 Amp



R751

**FITS: MERCURISER &
MERCURY VERADO
OUTBOARDS**
12 Volt, 30 Amp



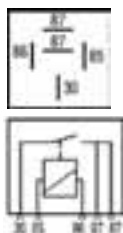
VR095

**LATE MODEL S.E.V. MARCHAL,
REPLACES: VOLVO PENTA 841688-5**
Plastic case, 12 Volt



R832

FITS: VOLVO PENTA
12 Volt, 30 Amp



VR404

**PRESTOLITE MARINE
REPLACES: O.M.C. 383440**
12 Volt



R950 (NEW)

**YAMAHA O/B TILT/TRIM RELAY
REPLACES: YAMAHA 6E5 81950-01**
1991 & Up 115 HP,
1991 - 2004 130 HP,
1991 & Up 150 HP,
1991 - 2000 175 HP,
1991 - 1999 200 HP



VR405

**PRESTOLITE MARINE
FITS: CRUSADER, PALMER,
UNIVERSAL, ETC.
REPLACES: CHRYSLER 2847527**
12 Volt



R951 (NEW)

**YAMAHA O/B TILT/TRIM RELAY
REPLACES: YAMAHA 6E5 8195A-01**
1991 & Up 115 HP,
1991 - 2004 130 HP,
1991 & Up 150 HP,
1991 - 2000 175 HP,
1991 - 1999 200 HP



VR406

**PRESTOLITE MARINE
REPLACES: PLEASURECRAFT
R098002, etc.**
12 Volt



VOLTAGE REGULATORS & MISCELLANEOUS ITEMS



VR407

PRESTOLITE MARINE
FITS: OWENS YACHT, ETC.
REPLACES: CHRIS CRAFT
16.60-00031
12 Volt



VR512

FITS: PARIS RHONE/VALEO
A13N147M, A13N148M
LATE MODEL VOLVO PENTA
858840
12 Volt



M883

Regulator assembly
FITS: LATE MODEL MANDO
REPLACES MERCRUISER 811883



BH450

Brush Holder Assembly
FITS: ARCO 30460, 30470
High performance starters



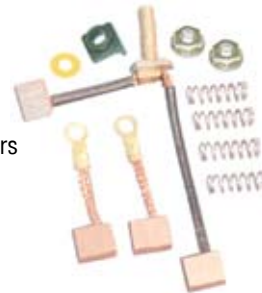
BK899

Replacement brushes
FITS: Most HITACHI jet ski,
small outboard and
snowmobile starters



BK900

Replacement brushes
FITS: AMERICAN-MADE
permanent magnet outboard starters



DV225

FITS: VALEO starter nos. D9R116, D9R144
used on **VOLVO PENTA** diesel engines,
ARCO starter No. 97225



DV450

CW Rotation, 11 tooth gear
FITS: ARCO High Performance
Gear Reduction Starter 30470



DV456

FITS: DELCO 14MT, **ARCO** 30456
Starters w/CW Rotation
9-tooth gear



DV457

FITS: DELCO 14MT, **ARCO** 30457
Starters w/CCW Rotation
9-tooth gear



DV460

FITS: High Performance
ARCO 30460 Gear Reduction Starter
CW Rotation, 9 tooth gear



M525

Reservoir kit
FITS: ARCO 6275
Replaces: MERCUISER
Includes: Reservoir, cap,
 O-rings, mounting screw



M531

Reservoir kit
FITS: ARCO 6227
Replaces: Volvo
Includes: Reservoir, cap, O-rings



M532

Fits MERCUISER 883166A2

M533

Fits VOLVO-PENTA 3858077
 New style reservoir kit,
 heavy duty 4-screw mount.
 Improved design, will only fit
 late model **OILDYNE** pumps
 equipped with 4 mounting ears.
Includes: Reservoir, screws, cap, O-rings.



MBK450

Mounting bolt kit for gear reduction starters
FITS: ARCO 30470 starter,
2 long mounting bolts, 3/8"-16 N.C. threads
 This kit will also fit all **DELCO** gear
 reduction starters w/staggered bolt mounting pattern



**Required when replacing a 10MT Starter
 with a Gear Reduction Starter.
 Will NOT FIT metric engines or 10MT starters.**

MBK460

Mounting bolt kit
FITS: ARCO 30460 starter,
 3/8"-16 N.C. threads
 This kit will also fit **DELCO** 10MT style
 starters w/1 short & 1 long mounting bolt



Will NOT FIT metric engines

PA450S

1 1/4" Plunger for ARCO SW450
Fits 30460



PA450L

2 1/4" Plunger for ARCO SW450
Fits 30470



PA924

Plunger to fit ARCO SW924
 Replaces: Force 839126-1



SR102

Prestolite repair kit
FITS: PRESTOLITE
 2-brush outboard starters



SR104

Prestolite repair kit
FITS: PRESTOLITE
 4-brush outboard starters



SR107

ARCO BRUSH LOADING TOOL

Makes brush loading as simple as 1-2-3
 Perfect tool for loading outboard starter brushes.
 Fits most all size and shape caps.



TM001

Electrical Technical Manual

This easy-to-understand technical
 reference is written by Mechanics for
 Mechanics. Procedures are explained
 in basic terms with illustrated
 examples.



MISCELLANEOUS ITEMS



TAK217

Screws, O-ring,
and adapter for tilt/trim motors

FITS: **ARCO** 6217,
PRESTOLITE ERH4102



TAK247

Mounting bolts, flat washers,
O-ring and couplers for
tilt/trim motors

FITS: **ARCO** 6247 & 6248



TAK276

Mounting bolts, O-ring, fill cap
and shaft adapters for
tilt/trim motors

FITS: **ARCO** 6274 & 6276



WH800

Wire connector.

Fits **ARCO** alternators

20800, 20810, 20815, 20840, 20850,
65050 & 65055



WH826

Wire connector.

Fits **ARCO** alternators

20826, 20827 & 20828



WH830

Wire connector.

Fits **ARCO** alternators

20820, 20821, 20822, 20825 & 20830
60073, 60074 & 60076



DV1000

HEAVY-DUTY

Idler gear assembly

Sea-Doo, PWC 951cc



DV440

HEAVY-DUTY Replacement drive gear

FITS: KAWASAKI PWC 440 - 550cc



DK440

Drive spring/retainer kit



DV500

HEAVY-DUTY Replacement drive gear

FITS: YAMAHA PWC 500cc



DK500

Drive spring/retainer kit



DV750

HEAVY-DUTY Idler gear assembly

FITS: KAWASAKI 650, 750, 900cc



DV744

HEAVY-DUTY Idler gear assembly

FITS: POLARIS PWC 650-750cc



DV700

HEAVY-DUTY Idler gear assembly

FITS: YAMAHA PWC 650, 701, 760cc



DV650

HEAVY-DUTY Replacement drive gear

FITS: SEA-DOO PWC 580, 650, 720cc

9-tooth drive gear



DK580

Drive spring/retainer kit

