



## Twin Engine Synchronizer

SB-186  
Rev. C  
10/99

## ***FOR YOUR RECORDS***

Serial Number ( located on unit) \_\_\_\_\_  
Date of purchase \_\_\_\_\_  
Dealers Name \_\_\_\_\_  
Dealers address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Dealers telephone \_\_\_\_\_

### **TECHNICAL SPECIFICATIONS**

#### **MECHANICAL DATA**

- Size: 13.5"L X 8.0"W X 3.4"H (343L x 203W x 86D mm)
- Weight: 6.9 lbs. (3.08 kg)
- Construction: Black powder-coated zinc die cast housing with stainless steel arms and springs on a black powder-coated aluminum mounting bracket.

#### **ELECTRICAL REQUIREMENTS**

- 12 Volt DC nominal operating voltage  
(9 to 16 maximum range)
- Current: 4 amps maximum  
0.9 amps nominal when controlling  
0.1 amps quiescent state
- Polarity and over-voltage protected

#### **ENVIRONMENTAL CAPACITY**

- Operating temperature: -10°C to +85°C
- Storage temperature: -55°C to +105°C
- EMC tested and certified to SAE J1113-1 Class C & 3, 21, 41
- Salt spray resistant to 96 hours ASTM B117-73

#### **ENGINE AND CONTROL CABLE APPLICATIONS**

- Fits all diesel and gasoline inboard and I/O engines
- Fits all outboard engines
- Fits all series 30 mechanical throttle control cables

# TABLE OF CONTENTS

<b>INTRODUCTION .....</b>	<b>4</b>
<b>THEORY OF OPERATION .....</b>	<b>4</b>
<b>SAFETY NOTICE .....</b>	<b>5</b>
<b>GASOLINE ENGINE INSTALLATION</b>	
<b>INBOARD or INBOARD/OUTBOARD (2 or 4 Cycle)</b>	
Parts List/Contents .....	6
Determining/Changing Direction of Operation .....	7
Mounting AccuSync & Preliminary Cable Attachment.....	8,9
Wiring the AccuSync .....	
<b>9,10,11</b>	
Speed Sensors & Final Cable Attachment .....	12,13
<b>DIESEL or TURBO DIESEL ENGINE INSTALLATION</b>	
Parts List/Contents .....	14
Determining/Changing Direction of Operation .....	15
Mounting AccuSync & Preliminary Cable Attachment .....	16,17
Wiring the AccuSync .....	17,18,19
Speed Sensors & Final Cable Attachment .....	20,21,22
<b>OUTBOARD ENGINE INSTALLATION</b>	
Parts List/Contents .....	23
Determining/Changing Direction of Operation .....	24
Mounting AccuSync & Preliminary Cable Attachment .....	25,26
Wiring the AccuSync .....	27,28
Speed Sensors & Final Cable Attachment .....	29,30
<b>OPERATION INSTRUCTIONS</b>	
Dockside Checkout .....	31
Operating Instructions .....	32
Disabling the AccuSync .....	32
<b>TROUBLESHOOTING .....</b>	
<b>33,34</b>	
<b>WIRING DIAGRAMS .....</b>	
<b>35,36</b>	
<b>OPTIONAL PARTS/SERVICE PARTS.....</b>	<b>37</b>

## INTRODUCTION

Congratulations on purchasing your **AccuSync** engine synchronizer from Sturdy Marine. We are confident you will find the benefits of the **AccuSync** well worth your investment.

For decades, Sturdy Corporation has enjoyed an enviable reputation for quality and reliability. This dedication to excellence has made Sturdy Corporation the benchmark in the marine and engine control industry.

The **AccuSync** is one example of the products that helped us build that reputation. We've employed state-of-the-art electronic and engine control technology to create a safe, reliable, easy to operate marine engine synchronizer. The **AccuSync** is designed and constructed to the highest standards, giving you many years of trouble free operation.

For your convenience, Sturdy Corporation maintains a **24 hour, 7 days** a week technical assistance telephone line. Call **(910) 763-2500** during normal business hours, 8 a.m. to 5 P.M. EST, for immediate assistance. If calling after-hours, please leave a message as directed and someone will return your call as soon as possible. If you are an internet user, visit our website, [www.sturdycorp.com](http://www.sturdycorp.com) for assistance or E-mail us at [marinesupport@sturdycorp.com](mailto:marinesupport@sturdycorp.com).

## THEORY OF OPERATION

The **AccuSync** is designed to assist or aid the vessel operator during extended periods of cruising. It provides the vessel operator with the ability to operate the engine throttles independently while simultaneously synchronizing the engine speed. Accelerating, decelerating and special maneuvering can be done then immediately return to synchronized cruising without any special manipulations of the throttles.

At any time the **AccuSync** may be activated, whether idling or at cruise speed makes no difference. Operate your vessel's throttles as you do normally, using both throttle levers to adjust speed. When synchronized operation is desired simply adjust the follower engine speed within 15% of the lead engine, the **AccuSync** will then automatically match the engine speeds. If the throttles are then moved outside of the 15% window the **AccuSync** will no longer maintain the engines in a synchronized condition until returned to within the 15% window.

The **AccuSync** offers these advantages:

- Full control of both, Port and Starboard engines with freedom to make speed changes without having to switch off the synchronizer or making any special throttle manipulations. The **AccuSync** will not interfere to rapid speed changes.
- Installs easily on a wide variety of boats. These include inboard and I/O, diesel or turbo diesel and (2 or 4 cycle) outboard engines.
- Synchronizes through a full range of RPM's from idle to wide-open throttle.
- Greater engine efficiency by eliminating "drag" induced by mismatched engine speeds while cruising.
- Reduces engine vibration for increased cruising comfort.
- Eliminates steer-offs during acceleration and deceleration.

## SAFETY NOTICE

As with any mechanical device, proper installation is essential for optimum performance. Please read and follow the recommended installation procedures detailed in this manual. For your safety and enjoyment, please become familiar with the operation of the **AccuSync** twin engine synchronizer before operating. Particularly important information is noted in this manual by the following symbols.



### NOTE:

**NOTE** provides important information to make the installation easier or clearer.



### CAUTION:

**CAUTION** indicates special information that must be followed to avoid damage to the AccuSync system.



### WARNING:

**WARNING** indicates special information that must be followed to avoid personal injury or damage to the AccuSync system.

## UNPACKING YOUR ACCUSYNC



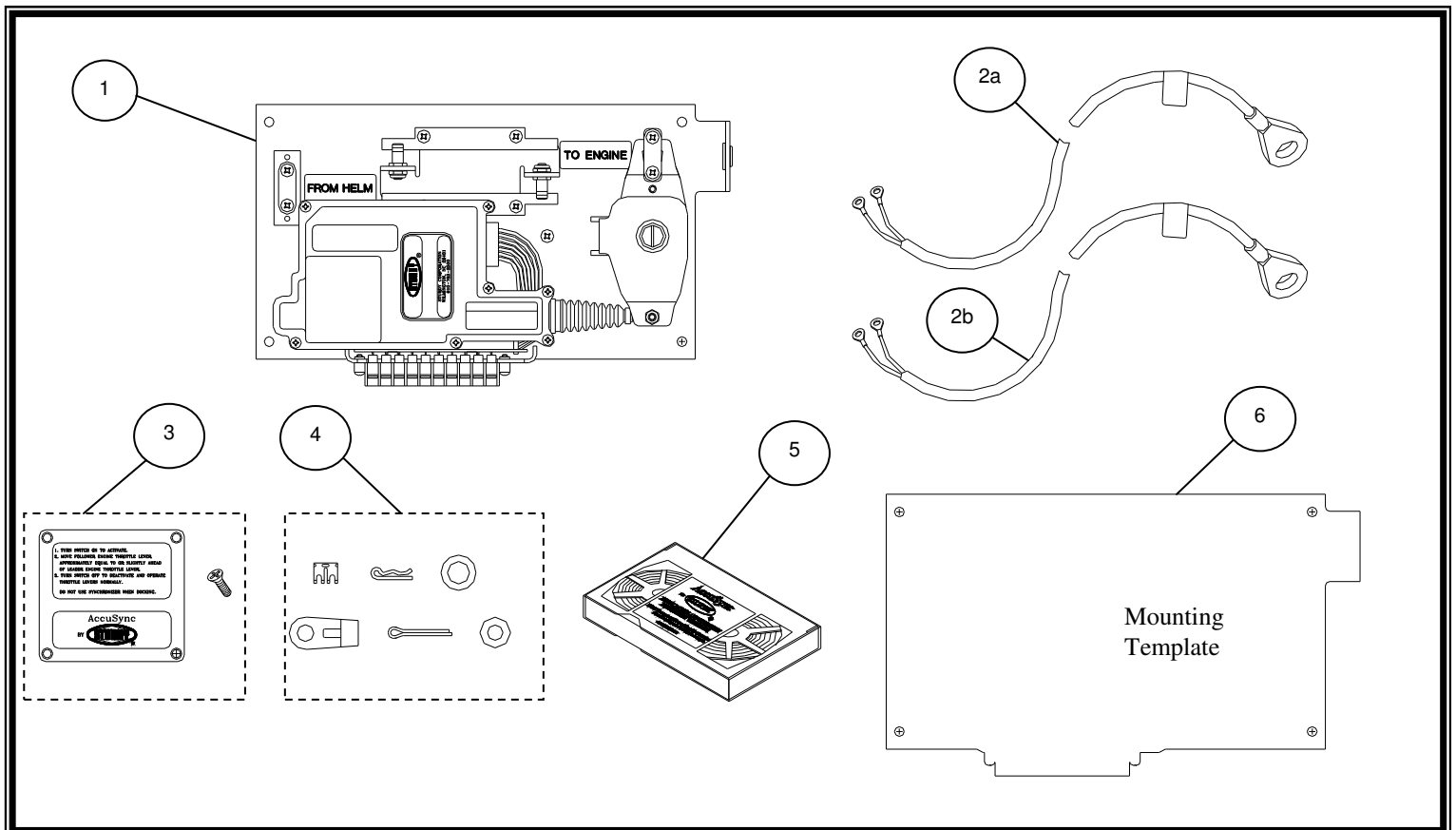
**NOTE:** Upon unpacking your **AccuSync**, verify that your **AccuSync** is programmed for your type of application. Information stating whether your **AccuSync** is programmed for Gasoline, diesel-sine generator, or Diesel-magnetic pickup can be found labeled on the **AccuSync**. Also check the parts received against the parts list to make sure you have received all the necessary parts. It will also be necessary to cut the Tie Strap, which secures the slide on your **AccuSync** during shipping.

# STANDARD GASOLINE ENGINE (SPARK IGNITED) PARTS LIST

ITEM #	DESCRIPTION	QTY	PART NUMBER
1	AccuSync -Gasoline	1	37D-00941-001
2a	Sensor Assembly (Leader) 30'	1	31C-00611-001
2b	Sensor Assembly (Follower) 30'	1	31C-00611-002
3	Kit - Plaque	1	39A-00459
4	Kit - Cable Attachment	1	39A-00448
4a	Jumper Terminal Strip	1	31A-00607
4b	Hairpin Cotter 3/16 x 19/32	1	35A-00023
4c	Washer SS .319 x .5 x .05	3	35A-00068
4d	Terminal Eye Red 30 Series	3	35A-00081
4e	Cotter Pin 3/32 x 3/4	3	35A-00188
4f	Washer SS .437 x .219 x .012	1	55A-00036
5	Installation & Operation Video	1	39B-00460
6	Mounting Template	1	39C-00447
•	Warranty Registration Card	1	39A-00464
•	Installation & Operation Manual	1	SB-186

- Part not shown in Parts Diagram

## PACKAGE CONTENTS



# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Determining Direction Of Operation:

Before beginning the installation, it may be necessary to change the direction of operation of the **AccuSync** to match the direction of operation of your throttle control system.

### To Determine Your Direction of Operation:

Place your engine throttle levers in the **idle** position then examine the throttle cable attachment point on your engines.

- If the cable end is fully extended and pushing the throttle lever toward the idle set screw, the direction of operation is **pull-to-open** (See Figure 1a).
- If the cable is retracted within the outer throttle cable housing and pulling towards the idle set screw, the direction of operation is **push-to-open** (See Figure 1b).

Figure 1a

### Pull-to-Open Throttle

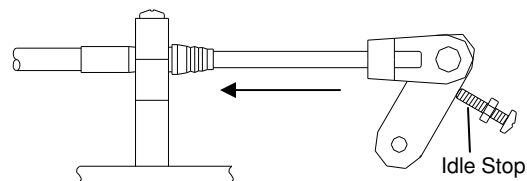
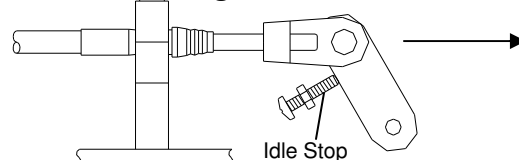


Figure 1b



### Push-to-Open Throttle

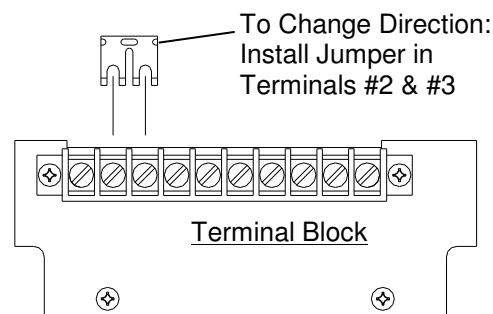


**NOTE:** The **AccuSync** is shipped preset for **pull-to-open** throttle operation. If it is determined that your throttle operation is **pull-to-open**, no change is necessary. If it is determined that your throttle operation is **push-to-open**, it will be necessary to change the direction of the **AccuSync**.

## CHANGING DIRECTION OF OPERATION

The **AccuSync** is easily modified for push-to-open throttle operation. Simply install the supplied Jumper from terminal #2 to terminal #3 at the terminal strip. The **AccuSync** is now set for push-to-open throttle operation. (See Figure 2)

Figure 2



# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Mounting the AccuSync:

Examine your engine compartment to determine possible locations to mount the **AccuSync**. Begin by selecting which engine will be considered the lead engine and which will be the follower engine. The term “**lead**” refers to the engine without the **AccuSync** inline and the “**follower**” engine being the engine with the **AccuSync** inline.

One way to help select a suitable mounting location is to go to your follower engine and disconnect the push-pull throttle cable from it. Temporarily fasten the throttle cable to the **AccuSync** by removing the cable anchor bracket from the anchor point marked “**FROM HELM**”. Place the throttle cable properly in the cable anchor bracket and re-install onto the **AccuSync**. This will help you find a mounting location within the limits of the existing throttle cable. (See Figure 3 & 4)

Also, consider the following when selecting a mounting location.

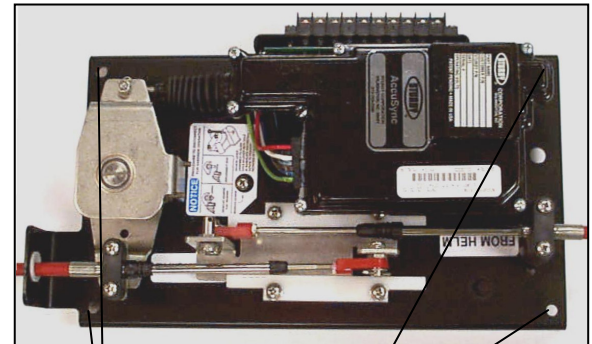
- Mount in a dry, splash-free location where it will not impede normal engine servicing.
- The **AccuSync** can be mounted at any angle without affecting its performance. You can mount on overheads, bulkheads or any point in between.
- We recommend the **AccuSync** be attached to a backing plate in order to mount to a stringer or beam.
- Be sure to mount away from hot, moving or corrosive components.



**CAUTION:** Do not mount the **AccuSync** on the engine.

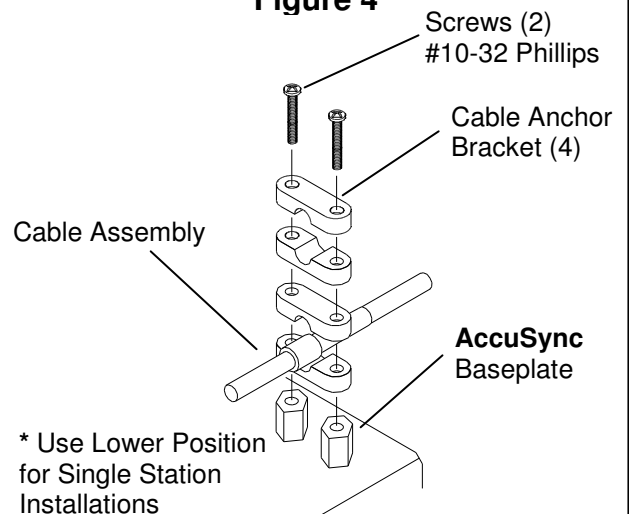
After selecting a mounting location, use the supplied **Template** to mark four pilot holes in the proper locations. Remember to look behind the mounting surface for proper clearance before drilling pilot holes. Use #10 Stainless Steel hardware to attach the **AccuSync** to the mounting surface.

Figure 3



4 Mounting Holes

Figure 4



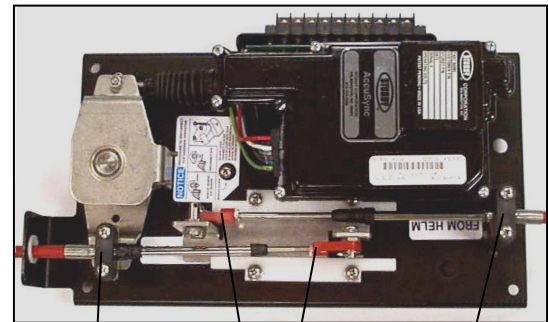


# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Installing the AccuSync-to-Follower Engine Cable:

The push-pull throttle cable to connect the **AccuSync** to the follower engine is not supplied with the **AccuSync**. This must be purchased separately. Using a tape measure, measure from the cable mount bracket on the **AccuSync** to the cable mount bracket on the follower engine. Plan the cable route between these points with the fewest amount of bends (12" or larger radius) to ensure smooth throttle response. The length of throttle cable purchased should be the measured length plus one foot. (See Figure 6)

Figure 5



Cable Anchor  
"To Engine"

Terminal  
Eye(s)

Cable Anchor  
"From Helm"



**NOTE:** Single station vessels: use the lowest cable anchor location on slide plate to mount the helm-to-AccuSync cable. Dual station vessels: mount the primary helm- to-in the upper cable anchor location.



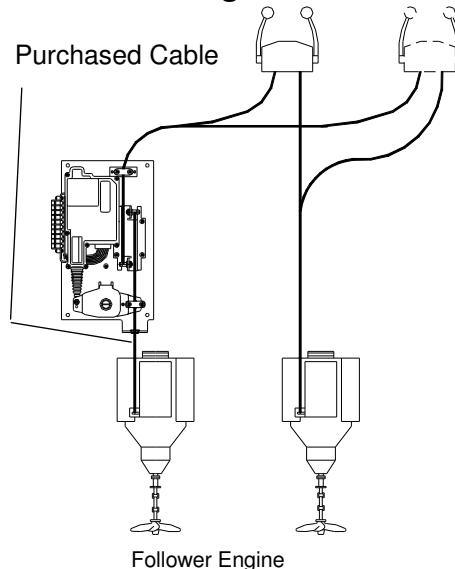
**NOTE:** The **AccuSync** is designed to operate with Morse "Red Jacket 33 Supreme or equivalent cabling. High quality cable must be used between the helm stations and **AccuSync** and also between the **AccuSync** and follower engine.

To install this cable, remove the cable anchor bracket marked "**TO ENGINE**" from the **AccuSync** and insert the new **AccuSync-to-engine** cable into cable anchor bracket and re-attach. Do not attach terminal eyes on cables until doing final cable adjusting later in the installation. (See Figure 5 & 6)



**NOTE:** Use large radius bends when planning throttle cable routes. Tight bends and "S" bends in the cabling will cause cable binding and poor synchronizer response.

Figure 6



# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Wiring the AccuSync:

### 12 Volt Power

First, identify a constant 12 volt DC power source. This will be used to provide power to the **AccuSync**. Using a red 16 gage marine grade wire with a 10 amp fuse placed inline, connect one end to the ignition switch and route to the **AccuSync's** terminal strip. Connect this wire to terminal #4 at the **AccuSync**.

Next, locate a source for battery ground (-). This can be the negative post of the battery or a terminal strip connected to negative battery terminal. Using a black 16 gage marine grade wire, connect one end to grounding source and the other end to terminal #3 at the **AccuSync's** terminal strip.

### Activation Switch

In order to activate or de-activate the **AccuSync**, an on/off switch must be located at the helm station or stations. Select one of the following two options that applies to your installation.

### OPTION 1: Using an Existing Auxiliary Switch

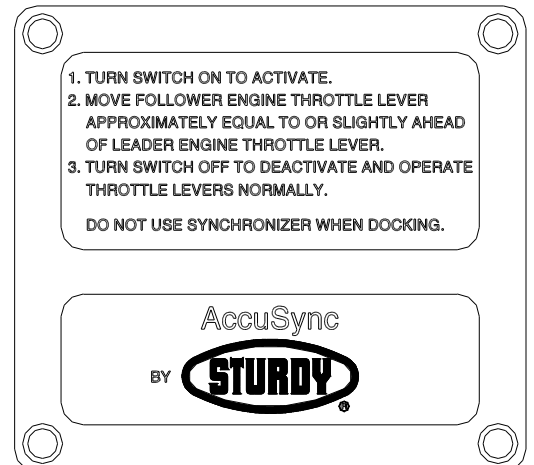
For convenience, many boat manufacturers provide auxiliary switches at the helm station to provide switched power to onboard accessories. These switches may be used to provide activation to the **AccuSync**. If an auxiliary switch is used, verify that it is attached to a 12 volt DC power source. Using 16 gage marine grade wire, connect one end of the wire to the switch and route wire to the **AccuSync's** terminal strip and connect to terminal #1.

Next install the **Informational Plaque** provided adjacent to the switch intended for **AccuSync** operation, in full view of the operator. This plaque instructs the **AccuSync** user on its proper operation. Use the (4) #6 x 1/2 " screws provided to affix the plaque to the mounting surface. (See Figure 7)

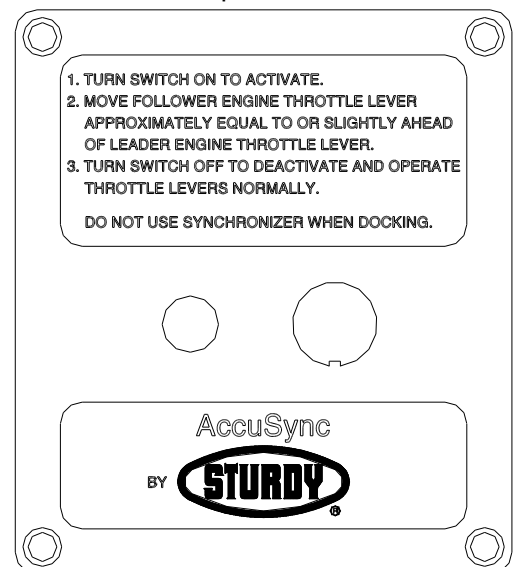


**WARNING:** 12 volt power to terminal #4 on the AccuSync must originate from the 12 VDC source. Do not jump power from terminals #1 to #4.

**Figure 7**  
Option 1



**Figure 8**  
Option 2



# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

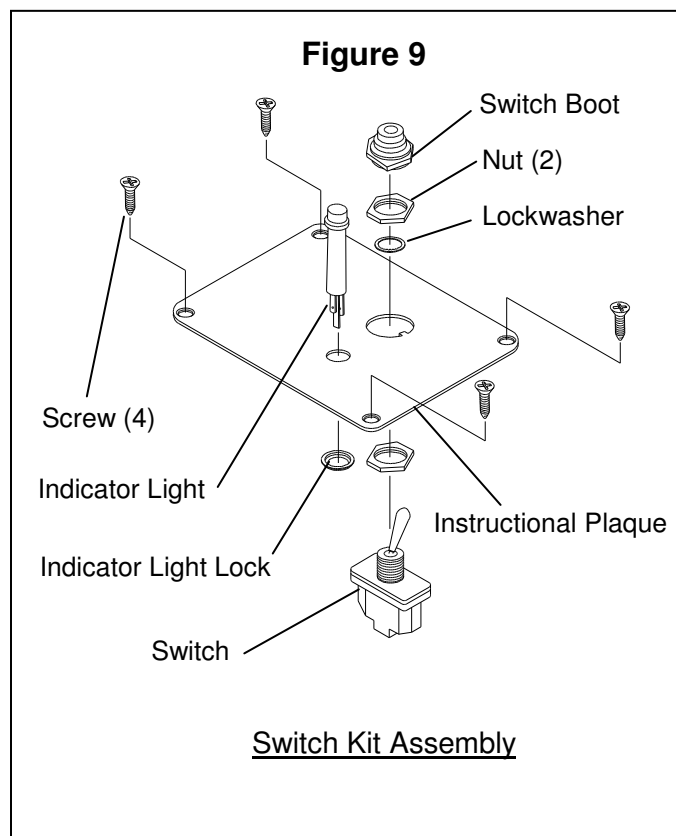
## Wiring the AccuSync Continued:

### OPTION 2: Using the Optional AccuSync On/off Switch w/ Indicator Light

If an existing auxiliary switch is unavailable, a **Switch Kit (P/N 39A-00458)** is available from Sturdy Marine. This kit provides a heavy duty sealed marine grade switch, indicator light, and an instructional plaque explaining proper **AccuSync** operation. (See Figure 8)

Assemble switch and indicator light onto switch plate. (See Figure 9)

To mount the switch panel, first locate a clear area on your dashboard large enough to accommodate the switch panel (Approx. 3"x3"). Use the supplied template to mark the necessary cutout and mounting holes. Remember to look behind the mounting surface for proper clearance before drilling pilot holes. Use a 1/32" drill bit to drill four mounting holes. Then drill a larger hole (approx. 5/16") at the 4 corners of the cutout. Use a jigsaw to cut out between the 4 corners, completing the cutout. Mount the assembled switch panel into the dashboard using the (4) #6 x 1/2" screws provided.



In order to connect the activation switch to the **AccuSync**, three 16 gage marine grade wires must be run to the switch. These wires are 12 volt power, ground and an **AccuSync** "enable" wire. Avoid using a black or red wire for the sync enable wire so it will not be confused with other wires when final connections are made. (See Wiring Diagram)

- Connect one end of the wire (black) to the negative side of the indicator light at the switch panel and other end to Terminal #3 on the **AccuSync's** terminal strip or the ground source (-).
- Connect one end of the second wire (red) to center terminal of the enable switch and the other end to terminal #4 on the **AccuSync's** terminal strip or the 12 volt power source.
- Connect the third wire and one end of the switch-to-indicator light jumper (supplied w/switch kit) to terminal #3 on the enable switch and the other end to terminal #1 on the **AccuSync** terminal strip.
- Connect the remaining end of the jumper onto the (+) side of the indicator light.

# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Installing Engine Speed Sensors:

The **AccuSync** operates by electrically monitoring the engine speed of the port and starboard engines. This is accomplished by placing sensors on the engines and wiring to the appropriate terminals on the **AccuSync**. Follow the procedure outlined below to properly install the speed sensors, one sensor must be placed on each engine.

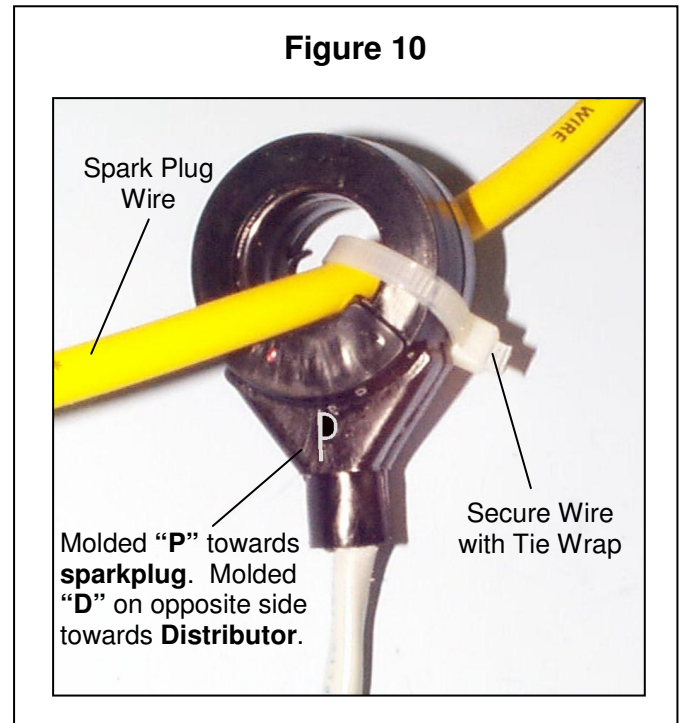
Select a spark plug wire, one on each engine that is preferably isolated away from other spark plug wires so that interference from other spark signals is not detected.

Slip the **Sensor coil** over spark plug wire boot with the coil facing the correct direction. The sides of the sensor coil are marked “**P**” for sparkplug and “**D**” for **Distributor**. Make sure the “**P**” faces in the direction of the sparkplug and the “**D**” in the direction of the distributor. **(See Figure 10)** Secure **sensor coil** to spark plug wire with a tie wrap.

Route the **Sensor Wiring** to the **AccuSync** avoiding contact with hot or abrasive surfaces that may damage wiring. Tie wrap as necessary to securely fasten wiring in place.

Attach **Sensor Wiring** to their respective terminals on the **AccuSync** terminal strip.

- Attach the **lead** engine signal wire to terminal **#9**.
- Attach the **follower** engine signal wire to terminal **#6**.
- Attach both **follower** and **lead** engine signal return wires to terminal **#7**. **(See Wiring Diagram)**



**CAUTION:** If the Sensor cable is cut or shortened during installation, re-terminate connections with the shield wire and the signal return (black wire) terminated together.



**CAUTION:** Route sensor wiring clear of hot surfaces such as exhaust manifolds or exhaust pipes.



**WARNING:** Reversing “Leader” and “Follower” sensor leads may result in damage or improper operation.

# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Final Cable Attachment:



**NOTE:** Prior to final cable attachment and adjustment, energize the **AccuSync** momentarily to ensure that the **AccuSync** is at its "home" position.

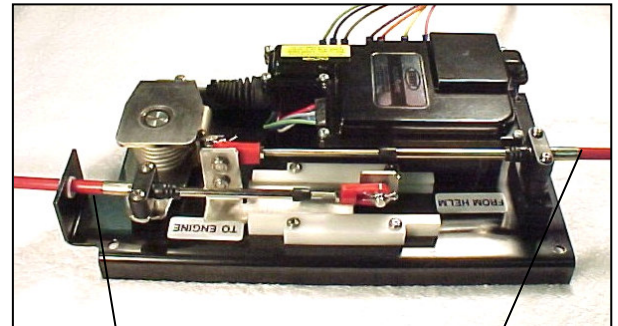
At this point all cables should be secured to their respective anchor points and **Terminal Eyes** can now be screwed onto cables. **Terminal Eyes** should be screwed onto cable ends for a minimum of 3/8" of thread engagement. (See Figure 11 & 12)

## To Adjust Throttle Cabling:

- A) Begin cable connections by returning both the throttle lever and the engine's throttle to the idle position.
- B) Slip **Terminal Eye(s)** of Control head-to-**AccuSync** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- C) Slip **Terminal Eye** of **AccuSync-to-engine** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- D) Adjust **Terminal Eye** on engine end of **AccuSync-to-engine** cable in or out until eye slips over attachment stud on the engine. Replace securing hardware.
- E) Tighten cable end jam nuts and cable clamps. Ensure all cotter pins and washers are secured.
- F) After completing connections and adjustments operate follower throttle lever from idle to wide-open throttle and check that these positions are reached.

**Proceed to Dockside Checkout**

Figure 11



AccuSync to  
Engine Cable

AccuSync to  
Control Head  
Cable

Figure 12



Terminal Eye  
Thread on Rod  
3/8" Min.

Pin

Washer

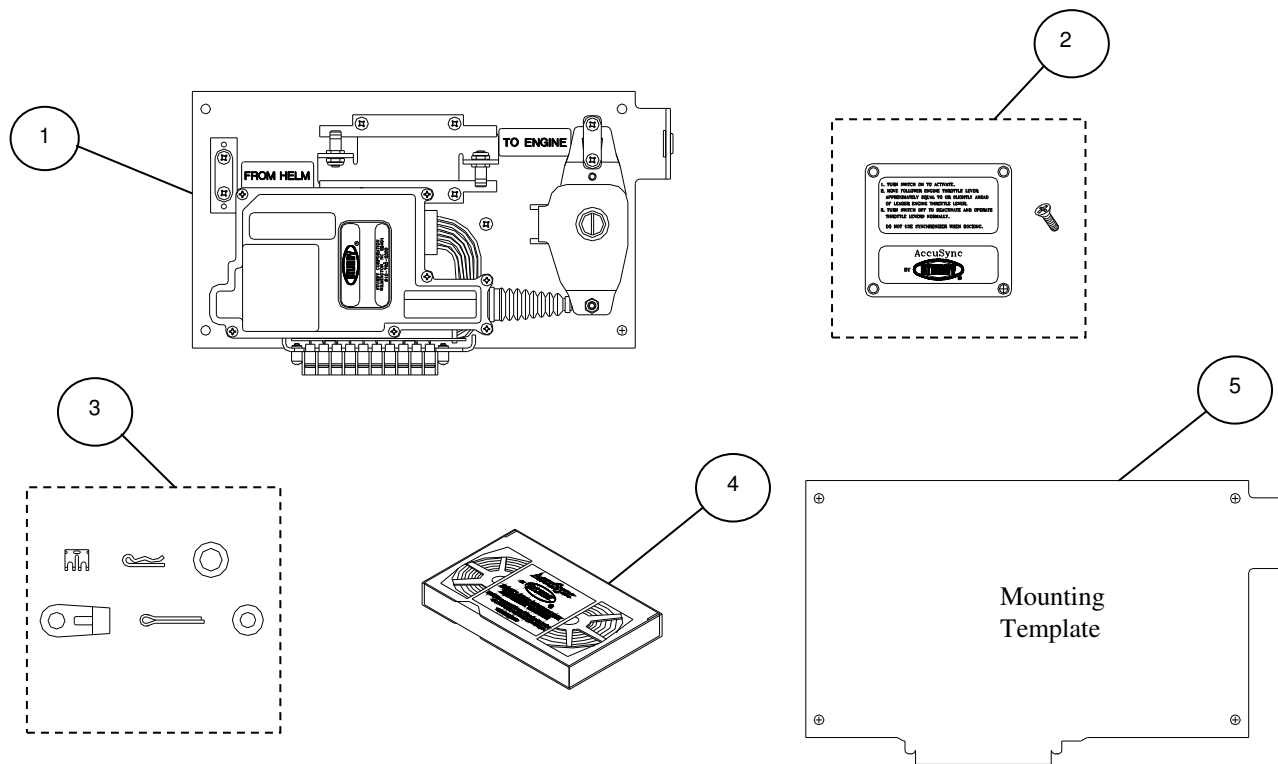
# (DIESEL or TURBO DIESEL ENGINES) PARTS LIST

ITEM #	DESCRIPTION	QTY	PART NUMBER
1	AccuSync -	1 **	37D-00941-002,-003
2	Kit - Plaque	1	39A-00459
3	Kit - Cable Attachment	1	39A-00448
3a	Jumper Terminal Strip	1	31A-00607
3b	Hairpin Cotter 3/16 x 19/32	1	35A-00023
3c	Washer SS .319 x .5 x .05	3	35A-00068
3d	Terminal Eye Red 30 Series	3	35A-00081
3e	Cotter Pin 3/32 x 3/4	3	35A-00188
3f	Washer SS .437 x .219 x .012	1	55A-00036
4	Installation & Operation Video	1	39B-00460
5	Mounting Template	1	39C-00447
•	Warranty Registration Card	1	39A-00464
•	Installation & Operation Manual	1	SB-186

- Part not shown in Parts Diagram

\*\* AccuSync Programmed for specific sensor use. -002 (Sine) , -003 (Mag)  
Sensors are not supplied in the kit

## PACKAGE CONTENTS



# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Determining Direction Of Operation:

Before beginning the installation, it may be necessary to change the direction of operation of the **AccuSync** to match the direction of operation of your throttle control system.

#### To Determine Your Direction of Operation:

Place your engine throttle levers in the **idle** position then examine the throttle cable attachment point on your engines.

- If the cable end is fully extended and pushing the throttle lever toward the idle set screw, the direction of operation is **pull-to-open** (See Figure 1a).
- If the cable is retracted within the outer throttle cable housing and pulling towards the idle set screw, the direction of operation is **push-to-open** (See Figure 1b).

Figure 1a

#### Pull-to-Open Throttle

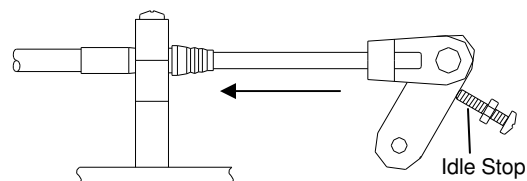
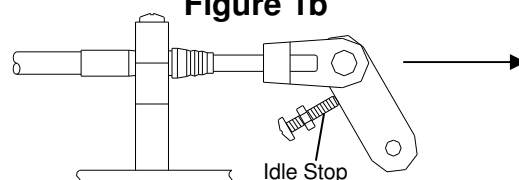


Figure 1b



#### Push-to-Open Throttle

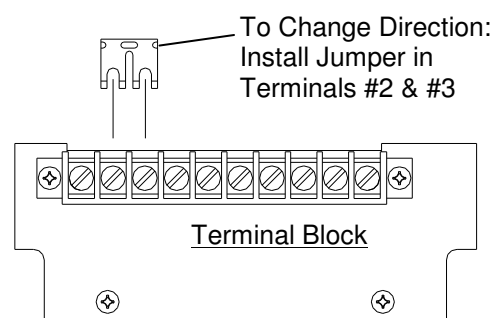


**NOTE:** The **AccuSync** is shipped preset for **pull-to-open** throttle operation. If it is determined that your throttle operation is **pull-to-open**, no change is necessary. If it is determined that your throttle operation is **push-to-open**, it will be necessary to change the direction of the **AccuSync**.

### CHANGING DIRECTION OF OPERATION

The **AccuSync** is easily modified for push-to-open throttle operation. Simply install the supplied Jumper from terminal #2 to terminal #3 at the terminal strip. The **AccuSync** is now set for push-to-open throttle operation. (See Figure 2)

Figure 2





# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Mounting the AccuSync:

Examine your engine compartment to determine possible locations to mount the **AccuSync**. Begin by selecting which engine will be considered the lead engine and which will be the follower engine. The term “**lead**” refers to the engine without the **AccuSync** inline and the “**follower**” engine being the engine with the **AccuSync** inline.

One way to help select a suitable mounting location is to go to your follower engine and disconnect the push-pull throttle cable from it. Temporarily fasten the throttle cable to the **AccuSync** by removing the cable anchor bracket from the anchor point marked “**FROM HELM**”. Place the throttle cable properly in the cable anchor bracket and re-install onto the **AccuSync**. This will help you find a mounting location within the limits of the existing throttle cable. (See Figure 3 & 4)

Also, consider the following when selecting a mounting location.

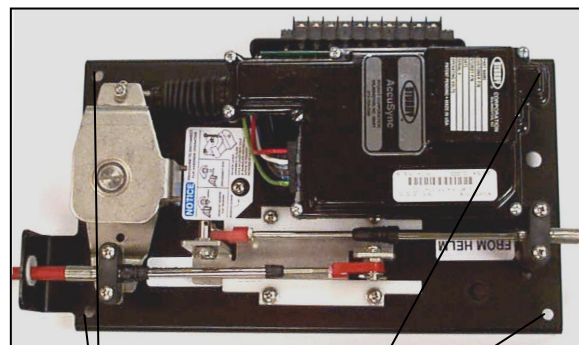
- Mount in a dry, splash-free location where it will not impede normal engine servicing.
- The **AccuSync** can be mounted at any angle without affecting its performance. You can mount on overheads, bulkheads or any point in between.
- We recommend the **AccuSync** be attached to a backing plate in order to mount to a stringer or beam.
- Be sure to mount away from hot, moving or corrosive components.



**CAUTION:** Do not mount **AccuSync** on the engine.

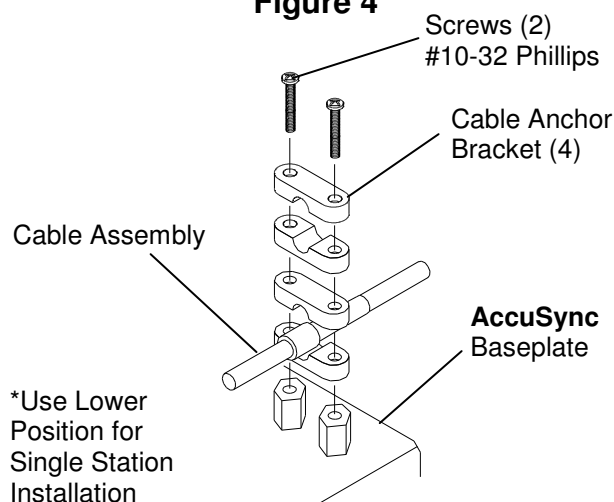
After selecting a mounting location, use the supplied **Template** to mark four pilot holes in the proper locations. Remember to look behind the mounting surface for proper clearance before drilling pilot holes. Use #10 Stainless Steel hardware to attach the **AccuSync** to the mounting surface.

Figure 3



4 Mounting Holes

Figure 4





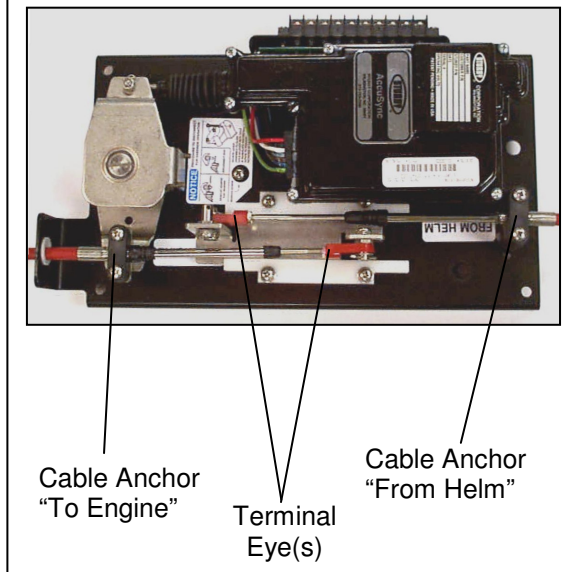
# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Installing the AccuSync-to-Follower Engine Cable:

The push-pull throttle cable to connect the **AccuSync** to the follower engine is not supplied with the **AccuSync**. This must be purchased separately. Using a tape measure, measure from the cable mount bracket on the **AccuSync** to the cable mount bracket on the follower engine. Plan the cable route between these points with the fewest amount of bends (12" or larger radius) to ensure smooth throttle response. The length of throttle cable purchased should be the measured length plus one foot. (See Figure 6)

Figure 5



**NOTE:** Single station vessels: use the lowest cable anchor location on slide plate to mount the helm-to-AccuSync cable. Dual station vessels: mount the primary helm-to-in the upper cable anchor location.



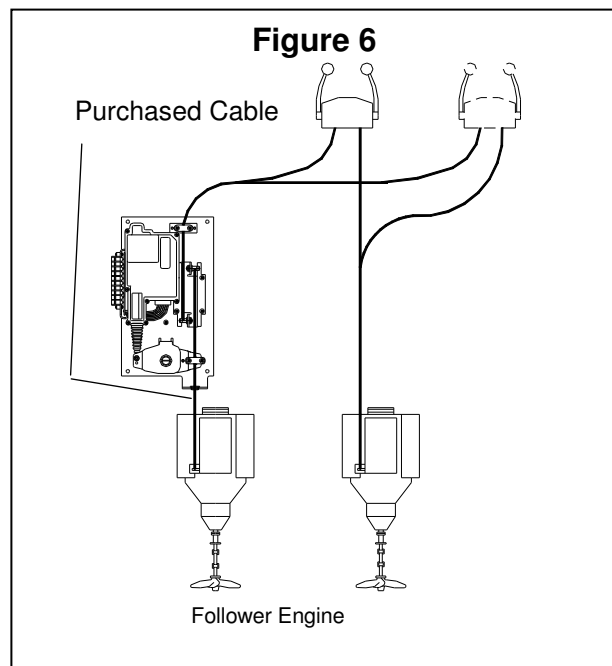
**NOTE:** The **AccuSync** is designed to operate with Morse "Red Jacket 33 Supreme or equivalent cabling. High quality cable must be used between the helm stations and **AccuSync** and also between the **AccuSync** and follower engine.

To install this cable, remove the cable anchor bracket marked "**TO ENGINE**" from the **AccuSync** and insert the new **AccuSync-to-engine** cable into cable anchor bracket and re-attach. Do not attach terminal eyes on cables until doing final cable adjusting later in the installation. (See Figure 5 & 6)



**NOTE:** Use large radius bends when planning throttle cable routes. Tight bends and "S" bends in the cabling will cause cable binding and poor synchronizer response.

Figure 6



# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Wiring the AccuSync:

#### 12 Volt Power

First, identify a constant 12 volt DC power source. This will be used to provide power to the **AccuSync**. Using a red 16 gage marine grade wire with a 10 amp fuse placed inline, connect one end to the ignition switch and route to the **AccuSync's** terminal strip. Connect this wire to terminal #4 at the **AccuSync**.

Next, locate a source for battery ground (-). This can be the negative post of the battery or a terminal strip connected to negative battery terminal. Using a black 16 gage marine grade wire, connect one end to grounding source and the other end to terminal #3 at the **AccuSync's** terminal strip.

#### Activation Switch

In order to activate or de-activate the **AccuSync**, an on/off switch must be located at the helm station or stations. Select one of the following two options that applies to your installation.

#### OPTION 1: Using an Existing Auxiliary Switch

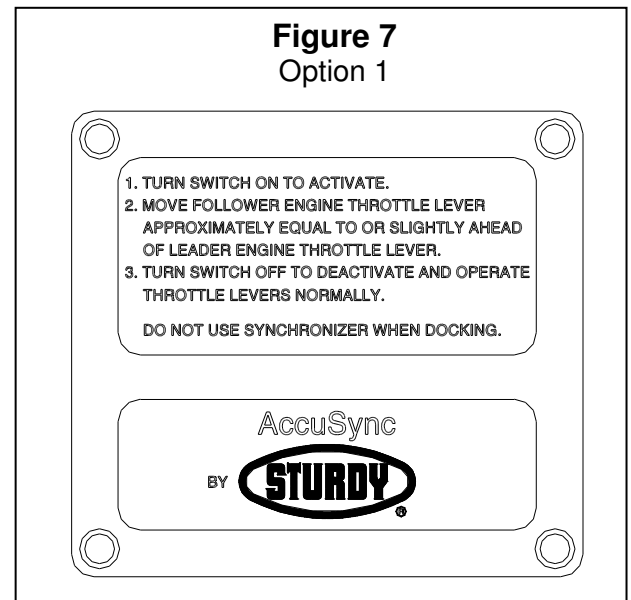
For convenience, many boat manufacturers provide auxiliary switches at the helm station to provide switched power to onboard accessories. These switches may be used to provide activation to the **AccuSync**. If an auxiliary switch is used, verify that it is attached to a 12 volt DC power source. Using 16 gage marine grade wire, connect one end of the wire to the switch and route wire to the **AccuSync's** terminal strip and connect to terminal #1.

Next install the **Informational Plaque** provided adjacent to the switch intended for **AccuSync** operation, in full view of the operator. This plaque instructs the **AccuSync** user on its proper operation. Use the (4) #6 x 1/2" screws provided to affix the plaque to the mounting surface. (See Figure 7)

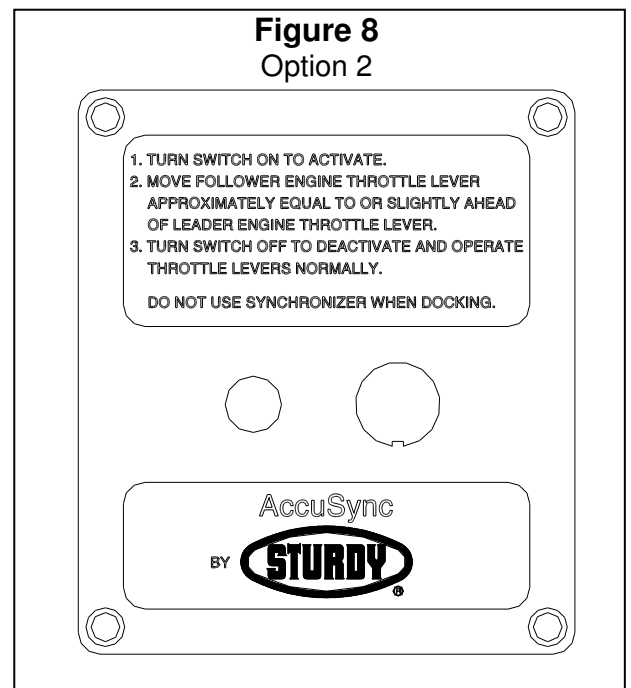


**WARNING:** 12 volt power to terminal #4 on the AccuSync must originate from the 12 VDC source. Do not jump power from terminals #1 to #4.

**Figure 7**  
Option 1



**Figure 8**  
Option 2



# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Wiring the AccuSync Continued:

#### **OPTION 2: Using the Optional AccuSync on/off Switch w/ Indicator Light**

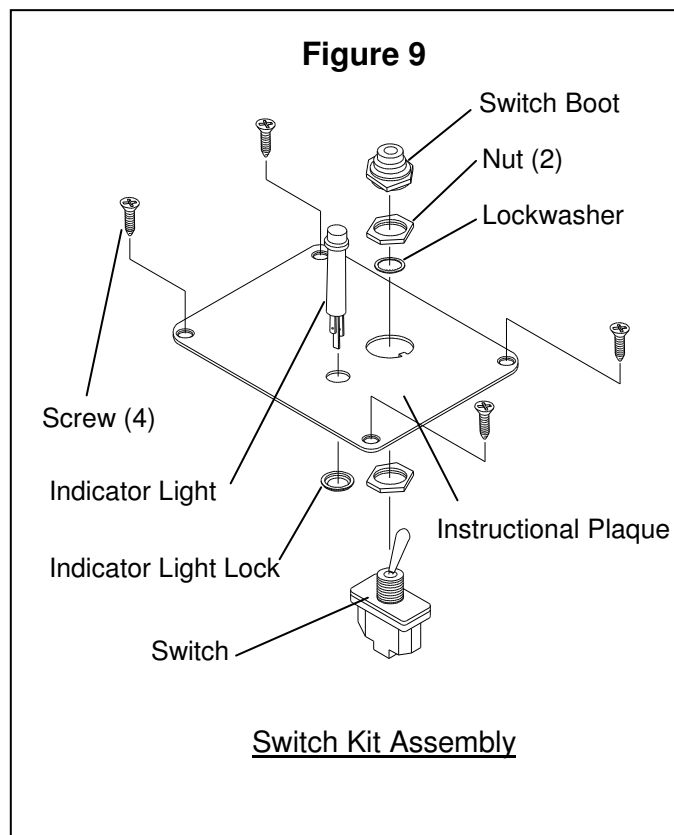
If an existing auxiliary switch is unavailable, a **Switch Kit (P/N 39A-00458)** is available from Sturdy Marine. This kit provides a heavy duty sealed marine grade switch, indicator light, and an instructional plaque explaining proper **AccuSync** operation. (See Figure 8)

Assemble switch and indicator light onto switch plate. (See Figure 9)

To mount the switch panel, first locate a clear area on your dashboard large enough to accommodate the switch panel (Approx. 3"x3"). Use the supplied template to mark the necessary cutout and mounting holes. Remember to look behind the mounting surface for proper clearance before drilling pilot holes. Use a 1/32" drill bit to drill four mounting holes. Then drill a larger hole (approx. 5/16") at the 4 corners of the cutout. Use a jigsaw to cut out between the 4 corners, completing the cutout. Mount the assembled switch panel into the dashboard using the (4) #6 x 1/2" screws provided.

In order to connect the activation switch to the **AccuSync**, three 16 gage marine grade wires must be run to the switch. These wires are 12 volt power, ground and an **AccuSync** "enable" wire. Avoid using a black or red wire for the sync enable wire so it will not be confused with other wires when final connections are made. (See Wiring Diagram)

- Connect one end of the wire (black) to the negative side of the indicator light at the switch panel and other end to Terminal #3 on the **AccuSync's** terminal strip or the ground source (-).
- Connect one end of the second wire (red) to center terminal of the enable switch and the other end to terminal #4 on the **AccuSync's** terminal strip or the 12 volt power source.
- Connect the third wire and one end of the switch-to-indicator light jumper (supplied w/switch kit) to terminal #3 on the enable switch and the other end to terminal #1 on the **AccuSync** terminal strip.
- Connect the remaining end of the jumper onto the (+) side of the indicator light.



# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Connecting Engine Speed Sensors:

In order to operate, the **AccuSync** requires electrical engine speed input from both the lead and follower engines. This information is provided by either a sine generator or magnetic pickup mounted on each engine. Your engines may already be fitted with one of these two options. Sensors are not included in the **AccuSync** kit. If necessary, they may be purchased from Sturdy Marine or your local marine parts supplier.

Inspect and determine which, if any speed sensors are installed on your engines. Consult your engine owner's manual for location or information concerning mechanical hookup. Follow the procedure outlined below to properly wire your speed senders to the **AccuSync**.

#### Sine Generator

Attach the **Signal** and **Signal Return Wires** to their respective terminals on the sine generators. This will be indicated by a (“+” for signal) and (“-” for signal return) on the sine generator adjacent to the respective terminal lug. Use 18 gage marine grade wire, preferably in three different colors so they are easily identifiable. Black wire can be used for both signal returns and two different colors used for each signal wire. Twist wire pairs together to minimize the electrical noise commonly found onboard. The **AccuSync** will not operate correctly if the signal and signal return connections are reversed at their termination points.

Route sender wiring back to the **AccuSync** avoiding contact with hot or damaging surfaces. Tie wrap or secure wiring as necessary.

Attach Sender Wiring to the respective terminals on the **AccuSync's** terminal strip in the following manner.

- The **lead** engine signal wire to terminal #9.
- The **follower** engine signal wire to terminal #6.
- Both the **follower** and **lead** engine signal return wires to terminal #7. (**See Wiring Diagram**)



**Figure 10**  
Sine Generator



**WARNING:** Do not reverse “leader” and “follower” sensor leads. Damage or improper operation may occur.



**CAUTION:** Avoid Routing sensor wiring near hot or damaging surfaces such as exhaust manifolds. Twist sender wire pairs together to cancel the effects of common mode electrical noise.

# INSTALLATION (DIESEL or TURBO DIESEL ENGINES)

## Connecting Engine Speed Sensors Continued:

### Magnetic Pickup

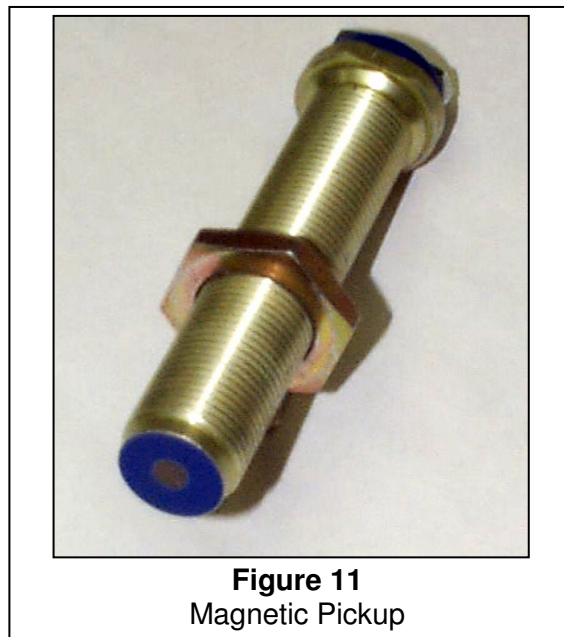
Verify that your engines are fitted with **magnetic pickups**. If you need magnetic pickups installed, a location in the engine bell housing inline with the flywheel gear must be selected to mount the magnetic pickup sender. Specific instructions concerning mounting may be found in your engine owner's manual. Thread the magnetic pickup into this hole until it contacts the flywheel gear, then back-off ( $\frac{1}{4}$  turn or  $\frac{1}{32}$ ") to set the proper clearance between the magnetic pickup sender and flywheel gear.

Attach the **Signal** and **Signal Return Wires** to their respective terminals on the magnetic pickups. This will be indicated by a ("+" for signal) and ("- for signal return) on the sine generator adjacent to the respective terminal lug. Use 18 gage marine grade wire, preferably in three different colors so they are easily identifiable. Black wire can be used for both signal returns and two different colors used for each signal wire. Twist wire pairs together to minimize the electric noise commonly found onboard. The **AccuSync** will not operate correctly if the signal and signal return connections are reversed at their termination points.

Route sender wiring back to the **AccuSync** avoiding contact with hot or damaging surfaces. Tie wrap or secure wiring as necessary.

Attach Sender Wiring to the respective terminals on the **AccuSync's** terminal strip in the following manner.

- The **lead** engine signal wire to terminal #9.
- The **follower** engine signal wire to terminal #6.
- Both the **follower** and **lead** engine signal return wires to terminal #7. (**See Wiring Diagram**)



**Figure 11**  
Magnetic Pickup



**WARNING:** Do not reverse "lead" and "follow" sender leads. Damage or improper operation may occur.



**CAUTION:** Avoid Routing sensor wiring near hot or damaging surfaces such as exhaust manifolds. Twist sender wire pairs together to cancel the effects of common mode electrical noise.



**WARNING:** A contaminated or improperly set magnetic sensor will result in poor synchronizer performance.



# INSTALLATION

## (DIESEL or TURBO DIESEL ENGINES)

### Final Cable Attachment:



**NOTE:** Prior to final cable attachment and adjustment, energize the **AccuSync** momentarily to ensure that the **AccuSync** is at its "home" position.

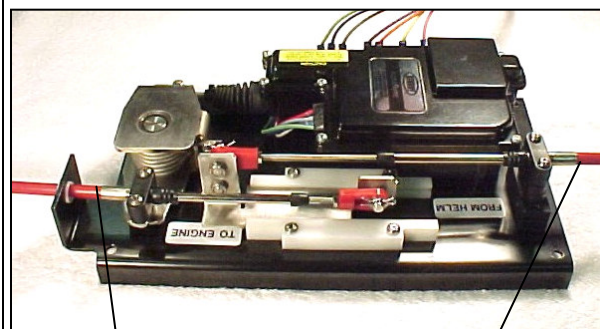
At this point all cables should be secured to their respective anchor points and **Terminal Eyes** can now be screwed onto cables. **Terminal Eyes** should be screwed onto cable ends for a minimum of 3/8" of thread engagement. (See Figure 12 & 13)

### To Adjust Throttle Cabling:

- A) Begin cable connections by returning both the throttle lever and the engine's throttle to the idle position.
- B) Slip **Terminal Eye(s)** of Control head-to-**AccuSync** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- C) Slip **Terminal Eye** of **AccuSync-to-engine** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- D) Adjust **Terminal Eye** on engine end of **AccuSync**-to-engine cable in or out until eye slips over attachment stud on the engine. Replace securing hardware.
- E) Tighten cable end jam nuts and cable clamps. Ensure all cotter pins and washers are secured.
- F) After completing connections and adjustments operate follower throttle lever from idle to wide-open throttle and check that these positions are reached.

**Proceed to Dockside Checkout**

Figure 12



**AccuSync to  
Engine Cable**

**AccuSync to  
Control Head  
Cable**

Figure 13



Terminal Eye  
Thread on Rod  
3/8" Min.

Pin

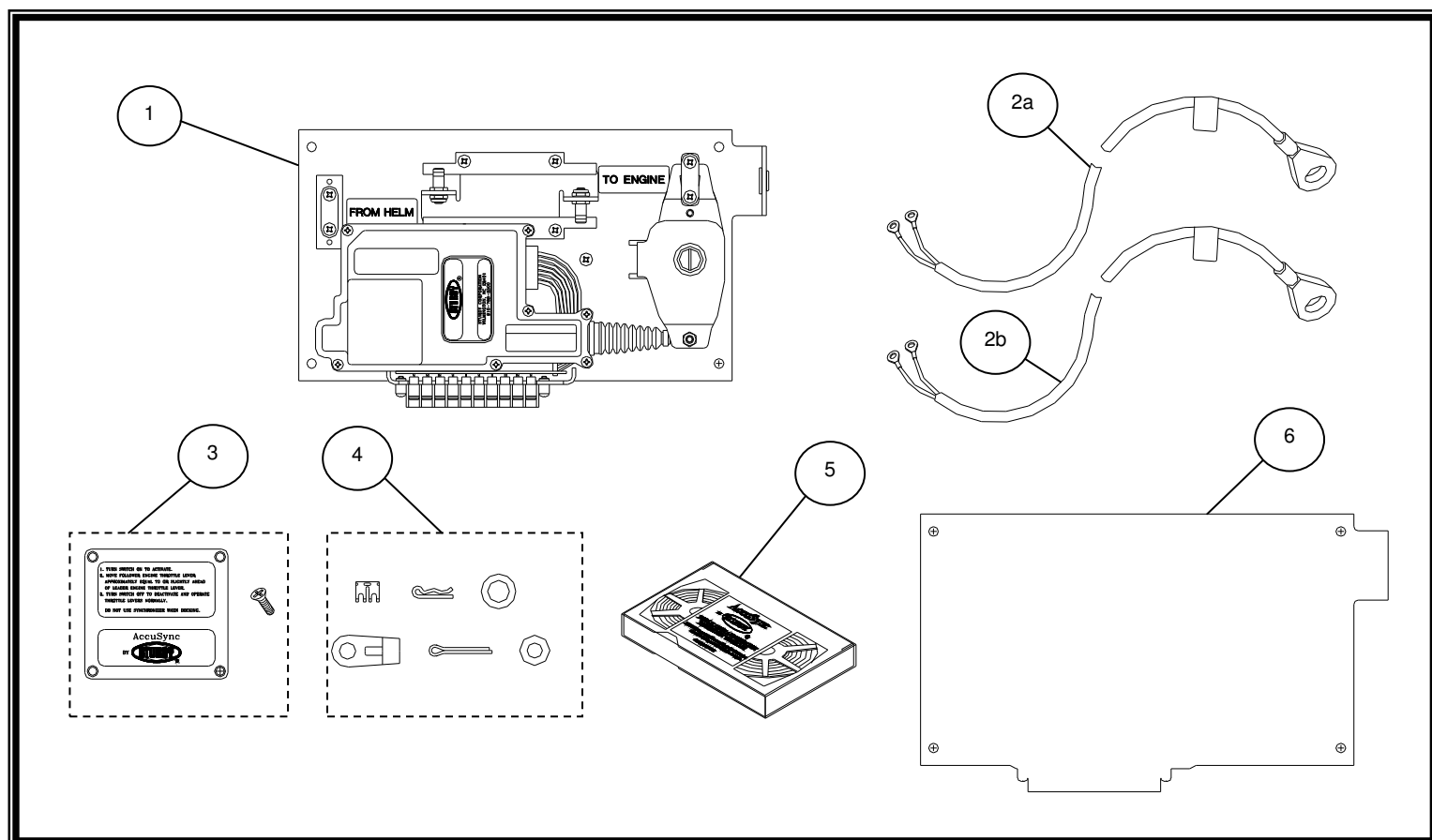
Washer

## STANDARD GASOLINE OUTBOARD (SPARK IGNITED) PARTS LIST

ITEM #	DESCRIPTION	QTY	PART NUMBER
1	AccuSync -Gasoline	1	37D-00941-001
2a	Sensor Assembly (Leader) 30'	1	31C-00611-001
2b	Sensor Assembly (Follower) 30'	1	31C-00611-002
3	Kit - Plaque	1	39A-00459
4	<u>Kit - Cable Attachment</u>	1	<u>39A-00448</u>
4a	Jumper Terminal Strip	1	31A-00607
4b	Hairpin Cotter 3/16 x 19/32	1	35A-00023
4c	Washer SS .319 x .5 x .05	3	35A-00068
4d	Terminal Eye Red 30 Series	3	35A-00081
4e	Cotter Pin 3/32 x 3/4	3	35A-00188
4f	Washer SS .437 x .219 x .012	1	55A-00036
5	Installation & Operation Video	1	39B-00460
6	Mounting Template	1	39C-00447
•	Warranty Registration Card	1	39A-00464
•	Installation & Operation Manual	1	SB-186

- **Part not shown in Parts Diagram**

## PACKAGE CONTENTS



# INSTALLATION (GASOLINE OUTBOARD ENGINE)

## Determining Direction Of Operation:

Before beginning the installation, it may be necessary to change the direction of operation of the **AccuSync** to match the direction of operation of your throttle control system.

### To Determine Your Direction of Operation:

Place your engine throttle levers in the **idle** position then examine the throttle cable attachment point on your engines.

- If the cable end is fully extended and pushing the throttle lever toward the idle set screw, the direction of operation is **pull-to-open** (See Figure 1a).
- If the cable is retracted within the outer throttle cable housing and pulling towards the idle set screw, the direction of operation is **push-to-open** (See Figure 1b).

Figure 1a

### Pull-to-Open Throttle

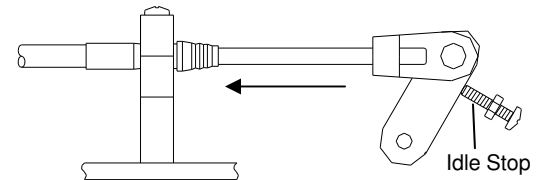
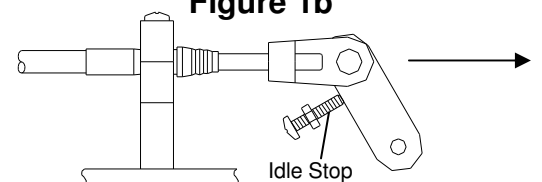



Figure 1b



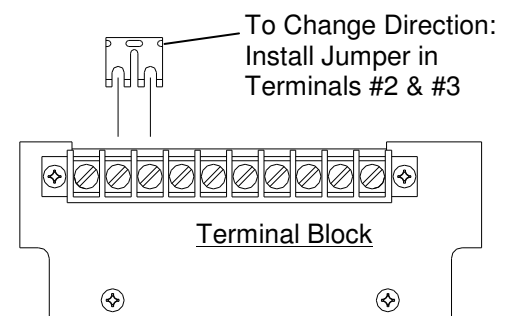
### Push-to-Open Throttle

 **NOTE:** The **AccuSync** is shipped preset for **pull-to-open** throttle operation. If it is determined that your throttle operation is **pull-to-open**, no change is necessary. If it is determined that your throttle operation is **push-to-open**, it will be necessary to change the direction of the **AccuSync**.

## CHANGING DIRECTION OF OPERATION

The **AccuSync** is easily modified for push-to-open throttle operation. Simply install the supplied Jumper from terminal #2 to terminal #3 at the terminal strip. The **AccuSync** is now set for push-to-open throttle operation. (See Figure 2)

Figure 2





# INSTALLATION (GASOLINE OUTBOARD ENGINE)

## Mounting the AccuSync:

Lacking an engine compartment, outboard applications must use an alternate location to mount the **AccuSync**. This location can be under the center console or in a rear compartment of the vessel. First, select which engine will be considered the follower engine. The term “**follower**” engine being the engine with the **AccuSync** inline.

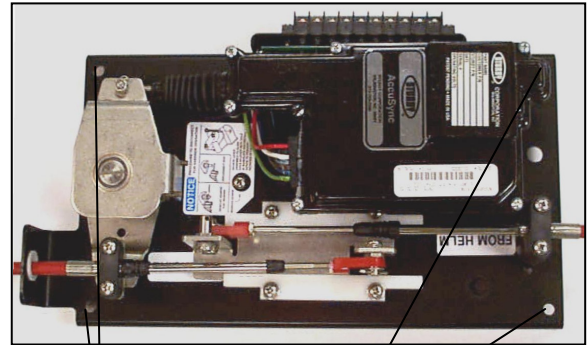
Then, find a suitable location to permanently mount the **AccuSync**. To help find possible locations; remove the follower engine throttle cable from the throttle control head and temporarily fasten the throttle cable to the **AccuSync**. Complete this by removing the cable anchor bracket from the anchor point marked “**TO ENGINE**” and placing the throttle cable in the cable anchor bracket and re-installing onto **AccuSync**. This will help you find a suitable location for permanently mounting the **AccuSync** within the limits of the existing throttle cable.

Also, consider the following when selecting a mounting location.

- Mount in a dry, splash-free location where it will not impede normal engine servicing.
- The **AccuSync** can be mounted at any angle without affecting its performance. You can mount on overheads, bulkheads or any point in between.
- The **AccuSync** can be attached to a backing plate in order to mount to a stringer or beam.
- Be sure to mount away from hot, moving or corrosive components.

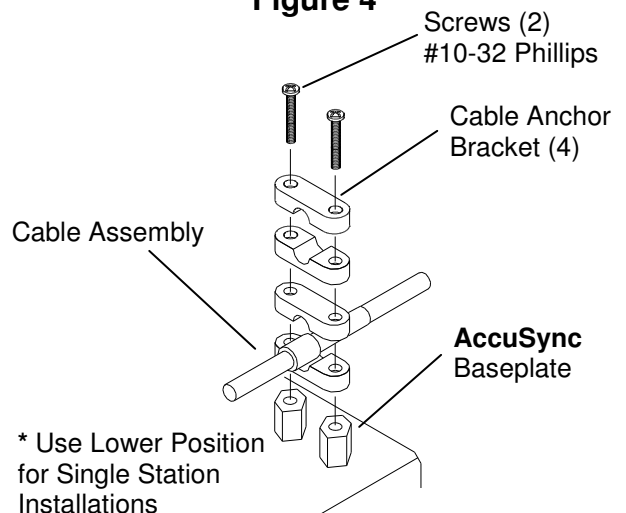
After selecting a mounting location, use the supplied **Template** to mark four pilot holes in the proper locations. Remember to check behind the mounting surface for proper clearance before drilling pilot holes. Use #10 Stainless Steel hardware to attach the **AccuSync** to the mounting surface.

Figure 3



4 Mounting Holes

Figure 4

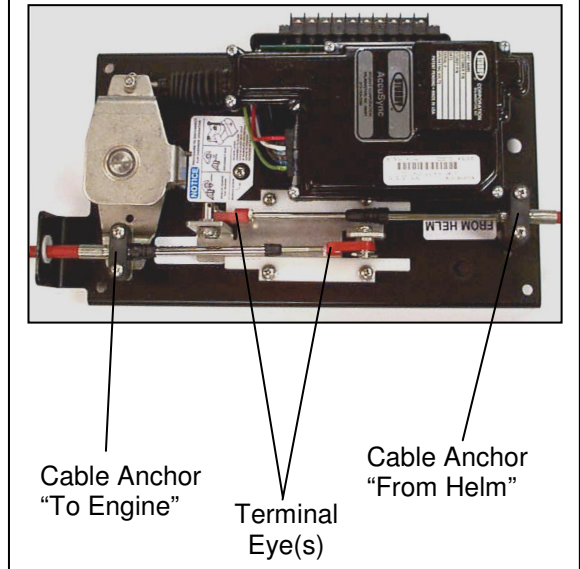


# INSTALLATION (GASOLINE OUTBOARD ENGINE)

## Installing Control Head-to-AccuSync Cable:

The push-pull throttle cable to connect the **AccuSync** to the follower engine is not supplied with the **AccuSync**. This cable must be purchased separately. Using a tape measure, measure from the cable mount bracket on the **AccuSync** to the cable mount bracket on the follower engine. Plan the cable route between these points with the fewest amount of bends (12" or larger radius) to ensure smooth throttle response. The length of throttle cable purchased should be the measured length plus one foot. (See Figure 6)

Figure 5



**NOTE: Single** station vessels: use the lowest cable anchor location on slide plate to mount the helm-to-AccuSync cable. **Dual** station vessels: mount the primary helm- to-in the upper cable anchor location.

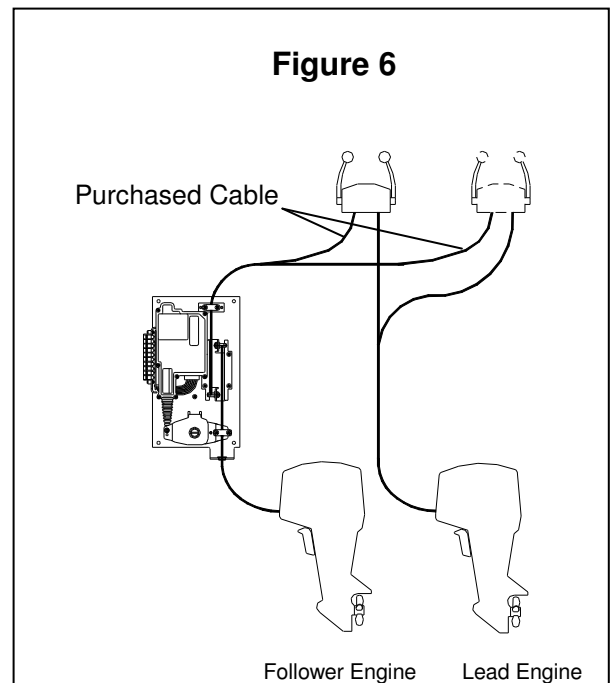


**NOTE:** The **AccuSync** is designed to operate with Morse "Red Jacket 33 Supreme or equivalent cabling. High quality cable must be used between the helm stations and **AccuSync** and also between the **AccuSync** and follower engine.

To install this cable, remove the cable anchor bracket from the **AccuSync** at the anchor point marked "**FROM HELM**" (See Figure 5). Place the throttle cable(s) properly in the cable anchor bracket and re-install on the **AccuSync**.

Re-attach the new **AccuSync-to-control head cable** to the control head in the reverse fashion that was used to remove the original throttle cable.

Figure 6



# INSTALLATION (GASOLINE OUTBOARD ENGINE)

## Wiring the AccuSync:

### 12 Volt Power

First, identify a constant 12 volt DC power source. This will be used to provide power to the **AccuSync**. Using a red 16 gage marine grade wire with a 10 amp fuse placed inline, connect one end to the ignition switch and route to the **AccuSync's** terminal strip. Connect this wire to terminal #4 at the **AccuSync**.

Next, locate a source for battery ground (-). This can be the negative post of the battery or a terminal strip used for grounding. Using a black 16 gage marine grade wire, connect one end to grounding source and the other end to terminal #3 at the **AccuSync's** terminal strip.

### Activation Switch

In order to activate or de-activate the **AccuSync**, an on/off switch must be located at the helm station or stations. Select one of the following two options that applies to your installation.

### OPTION 1: Using an Existing Auxiliary Switch

For convenience, many boat manufacturers provide auxiliary switches at the helm station to provide switched power to onboard accessories. These switches may be used to provide activation to the **AccuSync**. If an auxiliary switch is used, verify that it is attached to a 12 volt DC power source. Using 16 gage marine grade wire, connect one end of the wire to the switch and route wire to the **AccuSync's** terminal strip and connect to terminal #1.

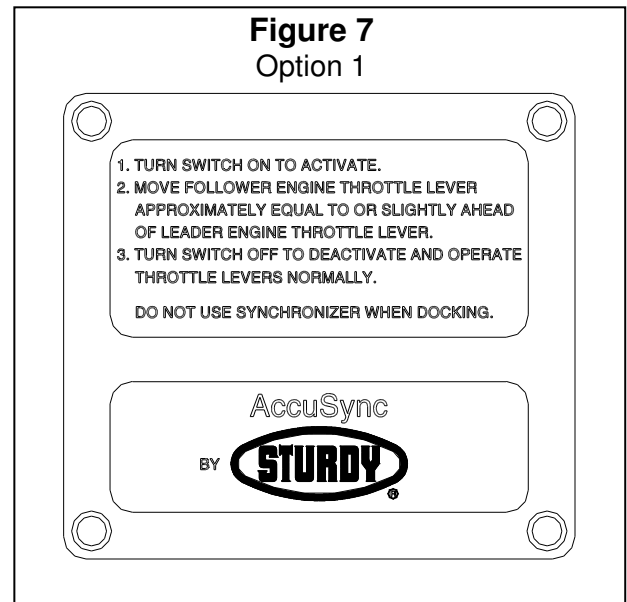
Next install the **Informational Plaque** provided adjacent to the switch intended for **AccuSync** operation, in full view of the operator. This plaque instructs the **AccuSync** user on its proper operation. Use the (4) #6 x 1/2 " screws provided to affix the plaque to the mounting surface.

(See Figure 7)

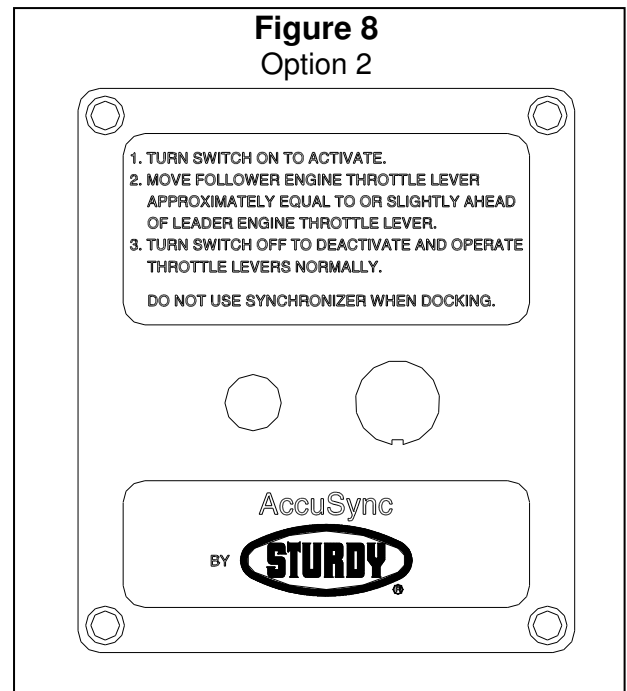


**WARNING:** 12 volt power to terminal #4 at the AccuSync must originate from the 12 VDC source. Do not jump power from terminal #1 to #4.

**Figure 7**  
Option 1



**Figure 8**  
Option 2



# INSTALLATION

## (GASOLINE OUTBOARD ENGINE)

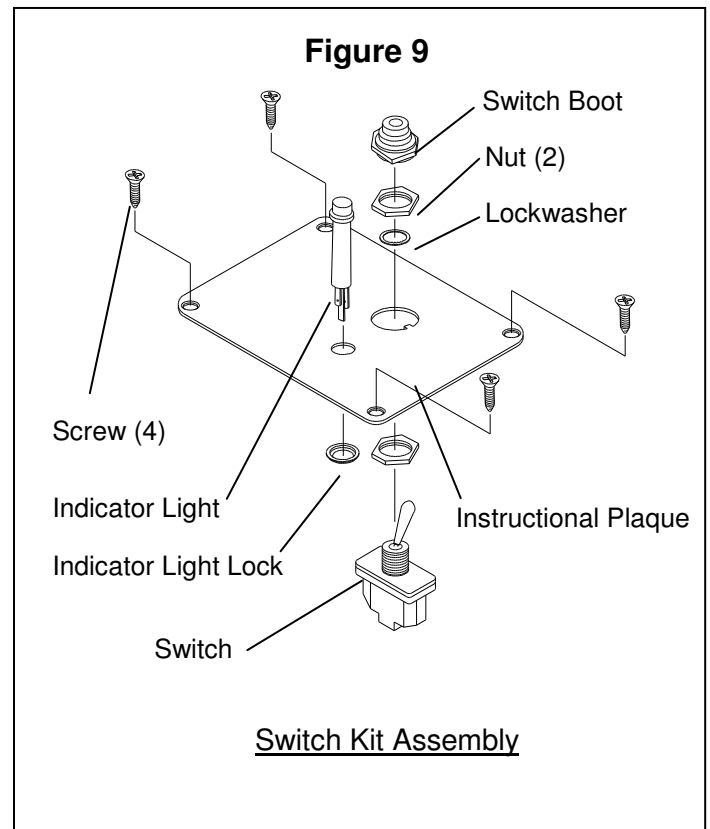
### Wiring the AccuSync Continued:

#### **OPTION 2: Using the Optional AccuSync on/off Switch w/ Indicator Light**

If an existing auxiliary switch is unavailable, a **Switch Kit (P/N 39A-00458)** is available from Sturdy Marine. This kit provides a heavy duty sealed marine grade switch, indicator light, and an instructional plaque explaining proper **AccuSync** operation. (See Figure 8)

Assemble switch and indicator light onto switch plate. (See Figure 9)

To mount the switch panel, first locate a clear area on your dashboard large enough to accommodate the switch panel (Approx. 3"x3"). Use the supplied template to mark the necessary cutout and mounting holes. Remember to look behind the mounting surface for proper clearance before drilling pilot holes. Use a 1/32" drill bit to drill four mounting holes. Then drill a larger hole (approx. 5/16") at the 4 corners of the cutout. Use a jigsaw to cut out between the 4 corners, completing the cutout. Mount the assembled switch panel into the dashboard using the (4) #6 x 1/2" screws provided.



In order to connect the activation switch to the **AccuSync**, three 16 gage marine grade wires must be run to the switch. These wires are 12 volt power, ground and an **AccuSync** "enable" wire. Avoid using a black or red wire for the sync enable wire so it will not be confused with other wires when final connections are made. (See Wiring Diagram)

- Connect one end of the wire (black) to the negative side of the indicator light at the switch panel and other end to Terminal #3 on the **AccuSync's** terminal strip or the ground source (-).
- Connect one end of the second wire (red) to center terminal of the enable switch and the other end to terminal #4 on the **AccuSync's** terminal strip or the 12 volt power source.
- Connect the third wire and one end of the switch-to-indicator light jumper (supplied w/switch kit) to terminal #3 on the enable switch and the other end to terminal #1 on the **AccuSync** terminal strip.
- Connect the remaining end of the jumper onto the (+) side of the indicator light.

# INSTALLATION

## (GASOLINE OUTBOARD ENGINE)

### Installing Engine Speed Sensors:

The **AccuSync** operates by electrically monitoring the engine speed of the port and starboard engines. This is accomplished by placing sensors on the engines and wiring to the appropriate terminals on the **AccuSync**. Follow the procedure outlined below to properly install the speed sensors, one sensor must be placed on each engine.

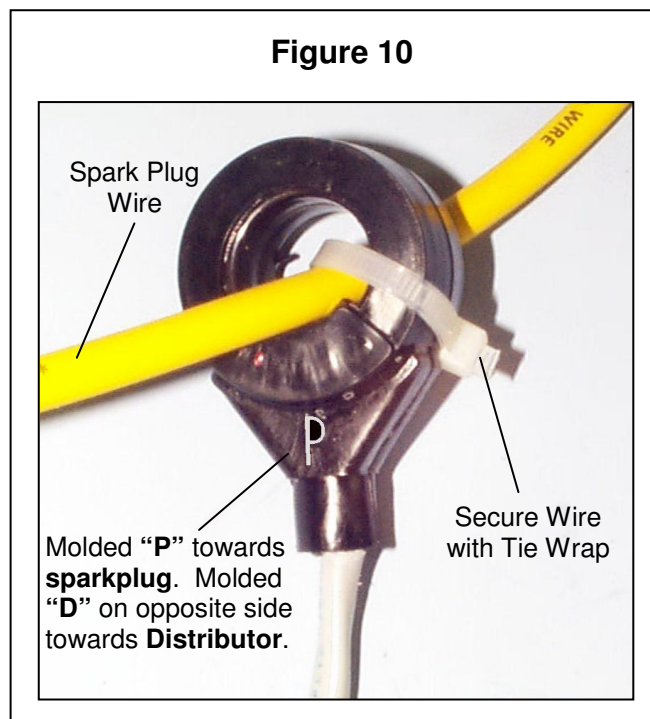
Select a spark plug wire, one on each engine that is preferably isolated away from other spark plug wires so that interference from other spark signals is not detected.

Slip the **Sensor coil** over spark plug wire boot with the coil facing the correct direction. The sides of the sensor coil are marked “**P**” for sparkplug and “**D**” for **Distributor**. Make sure the “**P**” faces in the direction of the sparkplug and the “**D**” in the direction of the distributor. (See Figure 10) Secure **sensor coil** to spark plug wire with a tie wrap.

Route the **Sensor Wiring** to the **AccuSync** avoiding contact with hot or abrasive surfaces that may damage wiring. Tie wrap as necessary to securely fasten wiring in place.

Attach **Sensor Wiring** to their respective terminals on the **AccuSync** terminal strip.

- Attach the **lead** engine signal wire to terminal #9.
- Attach the **follower** engine signal wire to terminal #6.
- Attach both **follower** and **lead** engine signal return wires to terminal #7. (See Wiring Diagram)



**CAUTION:** If the Sensor cable is cut or shortened during installation, re-terminate connections with the shield wire and the signal return (black wire) terminated together.



**CAUTION:** Route sensor wiring clear of hot surfaces such as exhaust manifolds or exhaust pipes.



**WARNING:** Reversing “Leader” and “Follower” sensor leads may result in damage or improper operation.

# INSTALLATION (GASOLINE ENGINE) INBOARD or INBOARD/OUTBOARD

## Final Cable Attachment:



**NOTE:** Prior to final cable attachment and adjustment, energize the **AccuSync** momentarily to ensure that the **AccuSync** is at its “home” position.

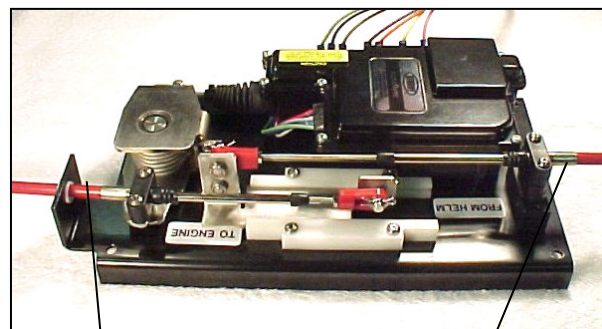
At this point all cables should be secured to their respective anchor points and **Terminal Eyes** can now be screwed onto cables. **Terminal Eyes** should be screwed onto cable ends for a minimum of 3/8” of thread engagement. (See Figure 11 & 12)

### To Adjust Throttle Cabling:

- A) Begin cable connections by returning both the throttle lever and the engine's throttle to the idle position.
- B) Slip **Terminal Eye(s)** of Control head-to-**AccuSync** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- C) Slip **Terminal Eye** of **AccuSync-to-engine** cable on the stud of the slide mechanism found on the **AccuSync** and replace washer and cotter pin in stud.
- D) Adjust **Terminal Eye** on engine end of **AccuSync**-to-engine cable in or out until eye slips over attachment stud on the engine. Replace securing hardware.
- G) Tighten cable end jam nuts and cable clamps. Ensure all cotter pins and washers are secured.
- H) After completing connections and adjustments operate follower throttle lever from idle to wide-open throttle and check that these positions are reached.

**Proceed to Dockside Checkout**

Figure 11



AccuSync to  
Engine Cable

AccuSync to  
Control Head  
Cable

Figure 12



Terminal Eye  
Thread on Rod  
3/8” Min.

Pin

Washer



## DOCKSIDE CHECKOUT



**WARNING:** A successful dockside checkout must be completed before operating your boat on the open water!

Once the **AccuSync** is installed and wired, it is essential to perform a complete dockside checkout prior to a sea trial. Follow the steps listed below to verify that the **AccuSync** is installed and wired correctly.

- 1) Begin the checkout by inspecting all cable and wiring connections. Make sure they are correctly installed and securely fastened.
- 2) With the engines off, operate the follower engine throttle from idle to wide-open throttle. Make sure the engine throttle reaches both, the idle position and the wide-open throttle position.
- 3) Switch on **AccuSync Switch**. The “ON” indicator **Light** should illuminate.
- 4) Switch off **AccuSync Switch**. The **Synchronizer** will execute a short search to find its “home” position.
- 5) Start both engines and allow engines to warm up as necessary.
- 6) With the **AccuSync** off, check the throttles by advancing each throttle lever and returning to idle. The throttles should return back to their idle RPM.
- 7) Switch on the **AccuSync Switch** and verify gearshift is in neutral position. Advance the lead engine throttle slightly above idle and then move the follower engine throttle approximately 300 RPM's above the set point of the lead engine. The **AccuSync** will recognize the RPM difference and adjust the follower engine speed to match the lead engine speed. The RPM difference between engines may not completely settle while engines are in a no-load condition. A load must be applied for the **AccuSync** to match engine speeds accurately. If for any reason the **AccuSync** fails to operate as described, do not operate vessel until a successful dockside checkout has been completed. If the **AccuSync** does not work properly as described above; please see the troubleshooting section.

## SEA TRIAL

Follow the steps outlined below to ensure a safe completion of the sea trial.

- 1) Head toward the open water with the **AccuSync** switched off.
- 2) Once arriving in a safe area to operate your boat, advance the throttles from idle to wide-open with the **AccuSync** turned off. Make sure the idle and wide-open positions are reached and the throttles operate smoothly. If for any reason, the throttles do not respond properly, do not proceed any further with the sea trial. Consult the Trouble Shooting Section of this manual for possible causes of the malfunction.
- 3) Switch on the **AccuSync** activation switch.
- 4) If your throttles are presently set within 15% of each other; the **AccuSync** will begin to synchronize your engine speeds immediately. If not, move the throttles to within approximately 15% of each other and observe engine speeds begin to match each other. Move the throttles beyond the 15% window and the **AccuSync** will standby until the throttles are returned within the 15% window and resume synchronizing the engine speeds.

# OPERATING THE ACCUSYNC

Operating the AccuSync is very easy. Provided below are tips for operating your AccuSync safely.

- The AccuSync can be activated or de-activated at any time whether at idle or at cruising speed.
- Once the throttles are moved within 15% of each other, the AccuSync will begin to synchronize your engines. Move the throttles more than approximately 15% apart and the AccuSync will standby until the throttles are returned to within 15% of each other.
- At any time the throttles may be operated independently without switching off the AccuSync.
- De-activate the AccuSync before attempting to dock or operate the boat in close quarters.



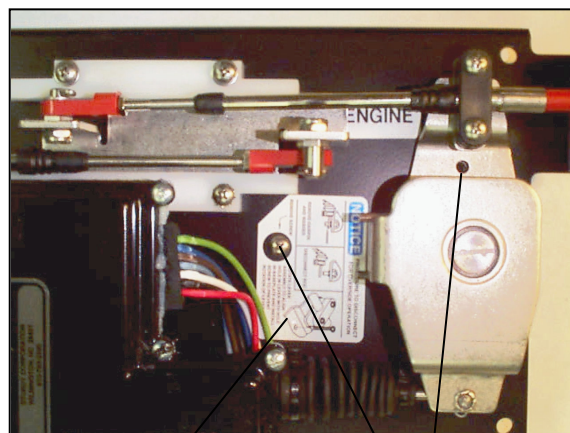
**NOTE:** The **AccuSync** will return to its “home” position causing the follower engine speed to slightly change when the **AccuSync** is de-activated. For this reason, it is recommended to operate with the follower engine throttle lever slightly trailing the lead engine throttle lever. This will cause a slight de-acceleration of the follower engine upon de-activation.



**CAUTION:** Do not attempt docking or operating in close quarters with the **AccuSync** enabled!

## DISABLING THE ACCUSYNC:

- 1) If the **AccuSync** becomes inoperative for any reason, it is necessary to “fix” the cable anchor position on the **AccuSync** to operate the throttle manually and avoid damage to the **AccuSync**. Use the following procedure to lock the lower spring bracket assembly in its “home” position.
  - Remove the bracket lock screw (#10-32 x 1/2”) from its storage position in the chassis. A label denotes the correct screw to use.
  - Detach the hairpin clip from the **AccuSync** motor rod and remove the rod from the synchronizer spring assembly.
  - Insert the bracket lock screw through the bracket arm and thread into chassis. Tighten screw into chassis.
- 2) The **AccuSync** is now disabled and manual operation of throttles can continue until corrective action is taken.



Instructions to disable the AccuSync

Relocate Screw to disable AccuSync

**Figure 13**



## TROUBLESHOOTING

<b><u>PROBLEM</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>SOLUTION</u></b>
Synchronizer does not move to the "home" position when on/off switch is toggled "on" and "off".	1) Activation switch is wired incorrectly 2) Blown fuse/tripped circuit breaker in power to terminal #4 3) Faulty or no ground connection on terminal #3	1) Check switch wiring per diagram. 2) Replace fuse/reset circuit breaker 3) Ensure proper ground on terminal #3.
Sync Enable Switch is "on", but the AccuSync does not move the Follower throttle.	1) Sensor input wires are on incorrect AccuSync terminals 2) Throttle cable binding 3) Engines not running 4) Sensor is positioned with incorrect polarity on spark plug wire. 5) Magnetic-sensor gap set too wide.	1) Ensure positive side of sensor wires are on terminals #6 and #9. Insure negative sensor wires are on pin #7. 2) Reroute or replace throttle cable. 3) Start engines. 4) Install sensors with "P" toward distributor. 5) Set recommended gap between flywheel and magnetic sensor. (1/32")
AccuSync moves Follower throttle in wrong direction.	1) Push / Pull jumper incorrectly configured 2) Lead engine sensor wiring connected to follower signal input. 3) Following engine sensor wire connected to lead engine input.	1) Set Push / Pull jumper to proper configuration. 2) Connect Lead engine signal(+) wire to terminal #9 3) Connect Following engine signal (+) wire to terminal #6.
Follower Engine runs erratically or "hunts" while in sync mode.	1) following engine throttle cable binding. 2) Spark sensor coil is picking up spark signals from adjacent spark plug wires. 3) insufficient load on engines. 4) Possible cavitation of Follower engine.	1) Reroute or replace throttle cable. 2) Move spark sensor as far away from adjacent spark plug wires as possible. 3) Load must be applied to engines (in gear) for AccuSync to function properly. 4) Adjust engine's Tilt/Trim to eliminate cavitation.

<b>TROUBLESHOOTING CONTINUED</b>		
<b><u>PROBLEM</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>SOLUTION</u></b>
AccuSync moves Follower throttle proper direction to match Leader RPM's, but cannot match it.	1) Follower engine must be within +/- 15% of Leader engine for Synchronizer to match engine speeds 2) Throttle cable out of adjustment.	1) Move Follower Engine's RPM's to within +/- 15% of Leader Engine's RPM's. 2) Refer to "Cable Adjustment".
Activation LED on optional switch kit will not illuminate.	1) Faulty power connections to LED. 2) "+" and "-" reversed on LED. 3) LED faulty	1) check and correct wiring 2) check and correct wiring 3) Replace LED.

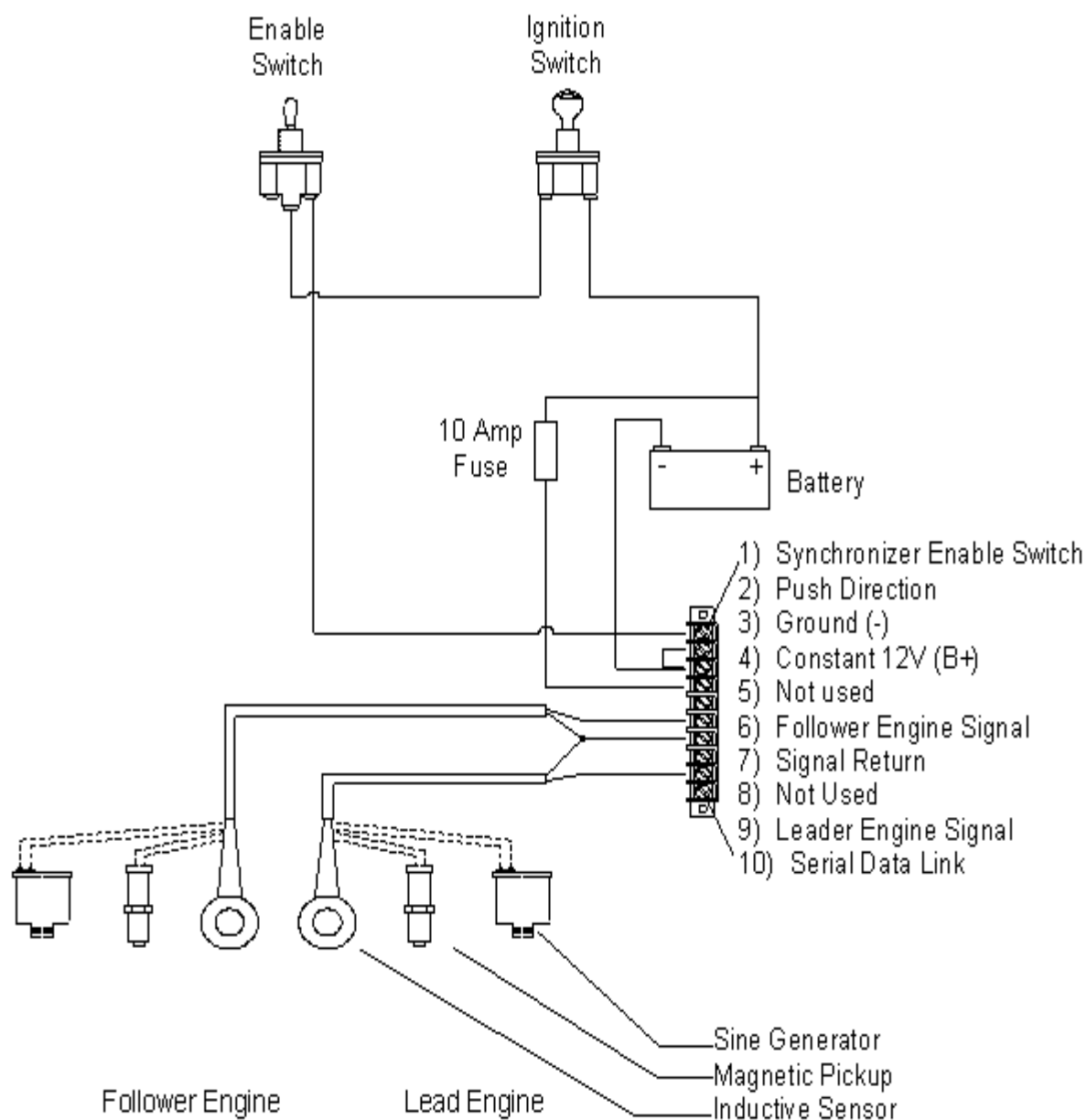
## TERMINAL BLOCK CONNECTIONS



**CAUTION:** Malfunction or damage to the unit may result from connecting the **AccuSync** to a Voltage above 16 VDC or below 9 VDC. The **AccuSync** operates on 12 VDC nominal voltage and will not operate when supply voltage is less than 10VDC.

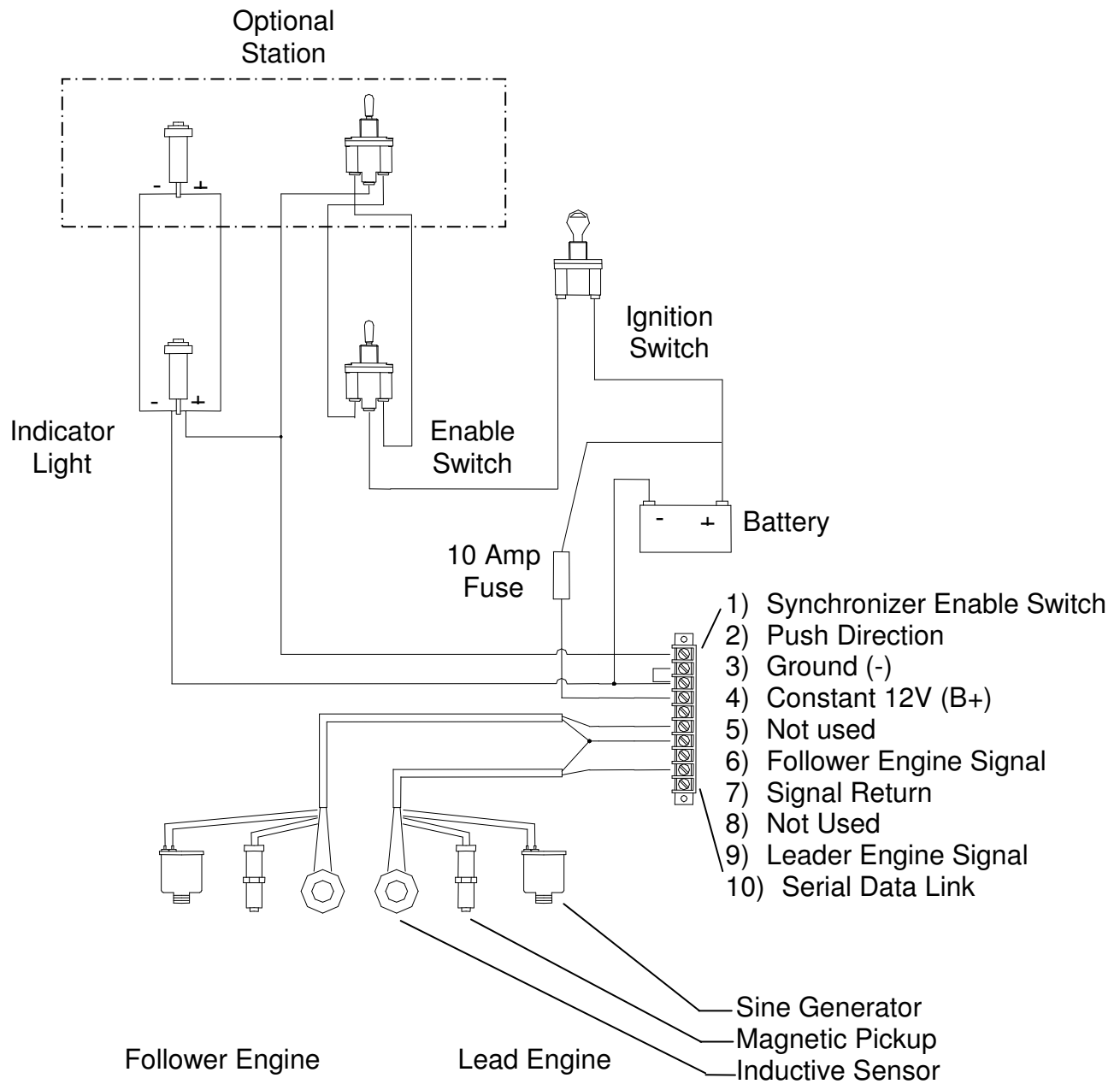
<b>Terminal #</b>	<b>Terminal Description</b>	<b>Wiring Description</b>
1	Synchronizer Enable	Connect to AccuSync Enable Switch (+12V).
2	Push/Pull	Install jumper from terminal #2 to #3 to change operation from pull to push-to-wot.
3	Synchronizer Ground	Connect to battery (-) negative terminal
4	(+) 12 Volt DC Power	Connect to constant (+) 12 volt power with 10 Amp fuse inline.
5	Not Used	Not Used
6	Follower Signal Input	Connect to Follower engine sensor signal
7	Signal Return	Connect to Follower/Leader sensor return signal
8	Not Used	Not Used
9	Leader Signal Input	Connect to Leader engine sensor signal
10	Serial Data Link	Optional-

## WIRING DIAGRAM STANDARD SINGLE STATION



# WIRING DIAGRAM

\*\* Shown using Optional Sturdy Switch/Plaque Kit – Part Number 39A-00458

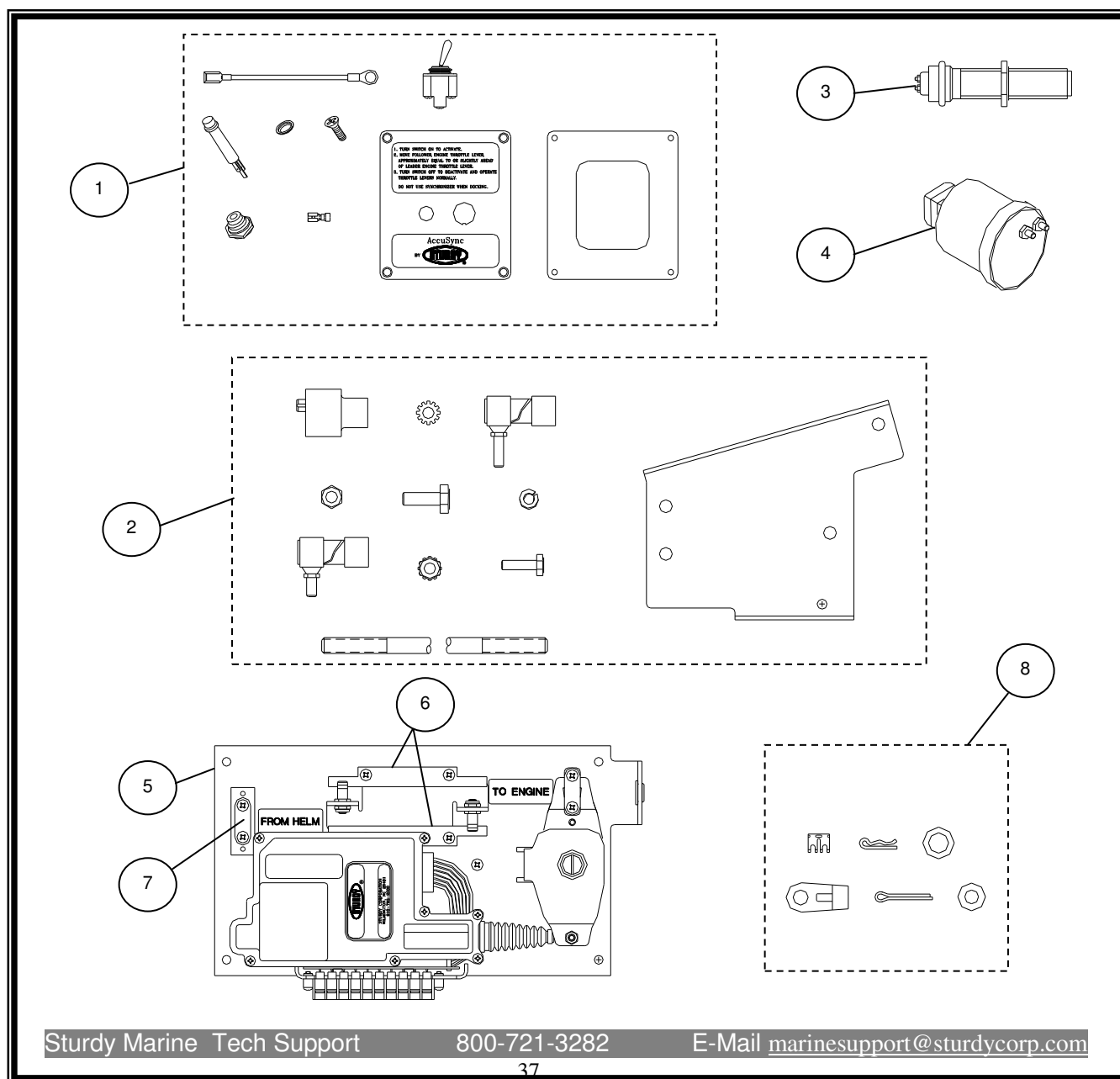


## AVAILABLE OPTIONAL PARTS

ITEM #	DESCRIPTION	QTY	PART NUMBER
1	Kit-Plaque/switch	1	39A-00458
2	Hynautic Adapter Kit	1	39A-00463
3	Magnetic Sensor	1	31B-00369
4	Sine Generator	1	37B-00952

### SERVICE PARTS

5	AccuSync Assembly	1	39D-00939
6	Nylon Slides	2	39B-00432
7	Cable Anchor Brackets	6	37B-00650
8	Kit – Cable Attachment	1	37B-00448





Corporation

1822 Carolina Beach Road  
Wilmington, North Carolina 28401  
Internet: [www.sturdycorp.com](http://www.sturdycorp.com)  
Email: [marinesupport@sturdycorp.com](mailto:marinesupport@sturdycorp.com)

Toll Free: 800-721-3282  
Voice: 910-763-2500  
Fax: 910-763-2650