

356 Capri Blvd. Naples, FL 34113

Phone Number: **Read Troubleshooting Section First!**

Email: info@gemremotes.com WWW.GEMREMOTES.COM

**Warning!!**

**DON'T CONNECT WIRES COLOR TO COLOR INSIDE THE MOTOR**

**Read All Directions Prior To Installation!**

**EACH USER MUST READ THE INSTRUCTIONS ON THE YELLOW FACE CARD INSIDE THE GEM UNIT ON THE DOCK!**

Use of other wiring directions could result in damage to your GEM unit and/or the motors!

Not following the directions could cost you time and money!!

**To ensure proper installation of your GEM Controller, use GEM's directions in lieu of all others.**

GEM Remotes' units are not designed to be used in conjunction with hand or drum switches. If drum switches worked with your motors and you removed them, you must check inside the motor to ensure proper connections to the GEM unit. Overload protection is not provided. Do not use oversized circuit protection use chart below. Use type 3 conduit hubs Only. **Caution:** Bonding (grounding) between conduit is not automatic, it must be provided upon installation. The **GEM unit is wired for 115VAC or 230VAC** (3 wires + ground). No modifications to the GEM transformer are needed. GEM recommends that all 2 motor systems or excessively long electrical runs be wired at 230VAC. If wired at 230VAC then all motors must be re-configured internally for 230VAC. Motors come from the factory wired at 115VAC or 230VAC. See the next page for confirmation of motor wire configuration. The transformer is wired to the White wire (neutral 115VAC). If you don't have a neutral you will have to rewire the transformer for 230. If you have a GEM GFI you need a neutral if you don't have a neutral then you will need a non GEM GFI unit. Read label inputs and outputs on the transformer for proper wire connections. Gem motor feed white wire is not used for 230VAC connection to the motor unless 115VAC brake is used. Green or bare wires must only be used as a ground. **It is unsafe to use a ground as a neutral.** Please use the chart below for proper wire size. If you use the wrong size wire you could damage your motors and/or the GEM unit. If you get a chatter sound in the contactor during use then you have a voltage drop greater than 5%. We have **20** years of experience. We recommend that you read and use the Step by Step Wiring Procedures before starting the installation. It could save you time and money.

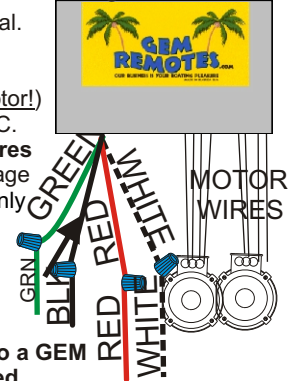
# of Motors	Motor HP	115 Volt AC Main Feed							230 Volt AC Main Feed						
		Amps to run	Breaker Size	50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	Amps to run	Breaker Size	50 Feet	100 Feet	200 Feet	300 Feet	400 Feet
1	1/2	8.8	10 Amps	14	12	8	6	6	4.4	5 Amps	14	14	12	12	10
1	3/4	10.8	15	14	10	8	6	4	5.4	10	14	14	12	12	10
1	1	12.8	15	12	10	6	4	4	6.4	10	14	14	12	12	10
1	1 1/2	17.0	20	12	8	6	4	2	8.5	10	14	14	10	10	8
2	1/2	17.6	20	10	8	6	4	----	8.8	10	12	12	10	8	6
2	3/4	21.6	25	10	8	4	2	----	10.8	15	12	12	10	8	6
2	1	25.6	30	8	8	4	2	----	12.8	15	10	10	10	6	4
2	1 1/2	34.0	35	8	6	2	1/0	----	17.0	20	10	10	8	4	2
4	1/2	----	----	----	----	----	----	----	17.6	20	12	10	8	6	4
4	3/4	----	----	----	----	----	----	----	21.3	25	10	10	8	6	4
4	1	----	----	----	----	----	----	----	26.0	30	10	8	6	4	2
4	1 1/2	----	----	----	----	----	----	----	34.0	35	8	6	4	2	1/0
4	2	----	----	----	----	----	----	----	44.8	45	8	6	4	2	1/0

Breakers size is our recommendation. Please use motor label for proper size and code compliance.

# Step by Step Wiring Procedures

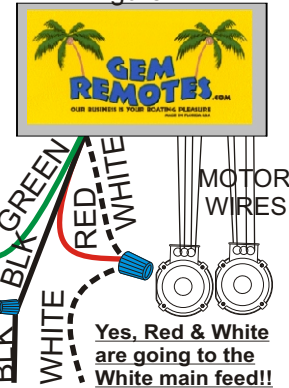
## Main Feed Wire Connections

### 230VAC WIRING Figure 1A

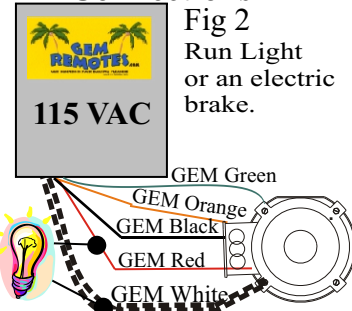


## Main Feed Wire Connections

### 115 VAC WIRING Figure 1B



## Run Light or Brake Connections



Attach the run light onto the GEM Red & GEM White for 115VAC or 230VAC system that has 115VAC neutral.

To run a 115VAC brake attach wires to GEM Orange and GEM Black when main feed is at 115VAC. If 230VAC brake is used, use GEM Orange and GEM Black. If you have 230VAC system and you only have a 115VAC brake then you must use GEM White & GEM Red. (The GEM white wire will be used at 230VAC).

- Open the GEM box, remove the face card screws and remove the motor inspection cover.
- For shipping purposes the main feed black wire is placed into the down contactor. Pull it out. (Gr4 Remove) Strip main feed and motor wires inside the GEM unit.
- Hook up your unit at 230VAC if possible (see figure 1A) or 115VAC wiring use figure 1B. The **GEM main feed White and GEM Red wires** should be connected together with the white main feed wire. (Neutral = 115VAC between White and Black wires. Make sure that this is the case.) If your unit is a 4 motor or a special order 230VAC you will not have a neutral.
- Turn off power at the circuit breaker. Use properly sized circuit breaker and wire size. See wire chart on other page.
- Cut off the drum switches. Drum switches can not be used in conjunction with the GEM unit.
- Connect wires color to color inside the GEM box (or inside a junction box) using wire nuts. (Not color to color inside the motor!)
- Wiring the motors and the GEM unit at 230VAC: Cap off the GEM White motor wires. These wires are not used at 230VAC.
- To confirm and/or change motor wiring, open motor covers and configure motor winding wires as shown below. **Inspect wires inside each motor to ensure proper wire connection.** Use the motor wire diagrams below. Failure to do so could damage your motors. **You will have to move wires inside the motor even though the drum switches worked.** Our system is only compatible with 20% of drum switch wiring configurations. To reverse motor starting direction, swap wires **inside motor!** Some motors have circuit protection and output wires from these might have different color wires. Also, some motor manufacturers prewire their motors with wire sets that don't have 5 matching wires to the GEM unit. You must check inside each motor to insure proper wiring. Some use blue and/or yellow wires as a substitute for green ground or orange wires.
- If your unit is an AutoStop unit read those directions. Your unit will not work without the limit switch wires hooked up properly. **Check that your lift stops in both the up and the down direction! An Auto-Stop unit must be hooked up to a GEM limit switch. Failure to do so could result in damage to your lift and/or the boat and is against code and not insured.**
- Turn off unit when not in use. Read operating instructions printed on the yellow face card, inside the GEM box.
- Test the GFIC (if equipped) once every month and or before each use. GEM's GFI Needs a Neutral(115) to work.
- Check that your hand held remote and the manual switches both go in the same direction. If not, see troubleshooting #5.
- If you have 2 motors and you need to level the lift, hold the level switch in the off position. While holding it down raise or lower the Motor #1 using the manual switch. **Do not let go of the level switch until Motor #1 is level and is stopped.**
- Allow motors to come to a complete stop before reversing directions, failure could result in motors going the wrong way.
- A replacement transmitter or a spare can be bought online, loss of range or unit hiccup check battery, 12 Volt 23A.

Note: drum switch wire Org might be pre-wired to Motor Blk\*. GEM Org needs to be attached to Motor Yel (T4).

**Standard "T#" or # Wires Wired at 115 VAC. wire inside the motor!!!!**

A.O. Smith, Baldor, Dayton, GE Electorgear, Emerson, Leeson, Lincon, Marathon, SMC and other "T#" Number motor wires

\*To change motor direction, switch T5 & T8 motor wires.

**To change from 115 to 230VAC:**

- Cap GEM White wire (not used).
- Attach 3 motor wires together T3, T5\* and T2.
- FYI: GEM Blk to T1(P1), GEM Org to T4, GEM Red to T8(6)\*.

**Standard "T#" or # Wires Wired at 230 VAC.**

A.O. Smith, Baldor, Dayton, GE Electorgear, Emerson, Leeson, Lincon, Maratho,n SMC and other "T#" Motor wires

\*To change motor direction, switch T5 & T8 motor wires inside the motor!!!!

**Standard Colored Motor Wired at 115 VAC. wire inside the motor!!!!**

A.O. Smith, Baldor, Dayton, Electorgear, Emerson, Leeson, Lincon, Marathon and other Colored Motor wires

\*To change motor direction, switch Motor Red and Motor Black wires.

**To change from 115 to 230VAC:**

- Cap GEM White wire (not used).
- Attach 3 motor wires together M Org, M Blk\* and M White.
- FYI: GEM Black to Motor Blue, GEM Orange to Motor Yellow, GEM Red to Motor Red\*.

**Standard Colored Motor Wired at 230 VAC.**

A.O. Smith, Baldor, Dayton, Electorgear, Emerson, Leeson, Lincon, Marathon and other Colored Motor wires.

\*To change motor direction, switch Motor Red and Motor Black wires inside the motor!

**A.O. SMITH 115/230VAC Wired at 115 VAC**

Note: drum switch Org might be pre-wired to Motor Black\*. GEM Orange needs to be on pin 2. Also move White wires. See below.

**Wiring From GEM Unit**

\*To change motor direction, switch Motor Black & Motor Red wires

**To change from 115 to 230VAC:**

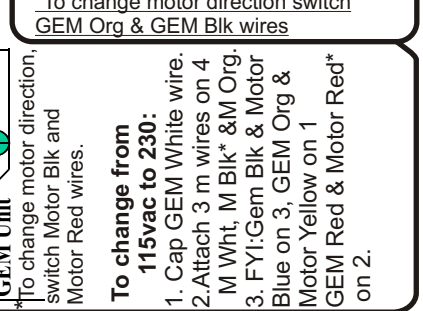
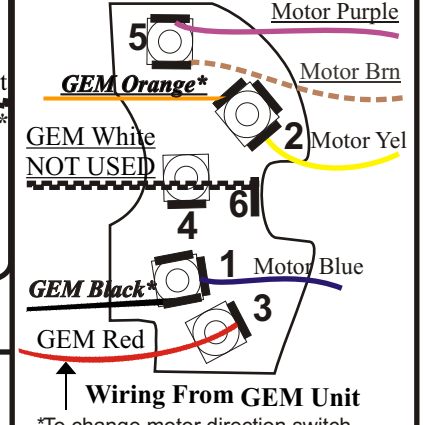
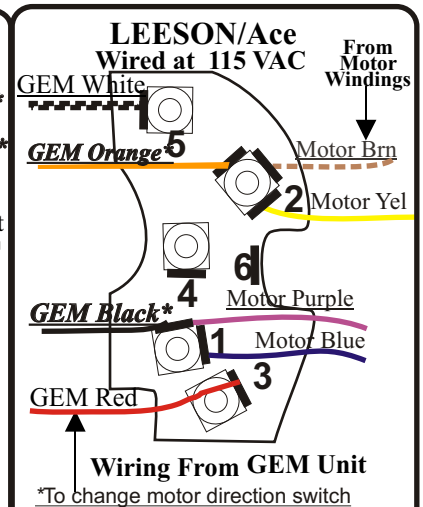
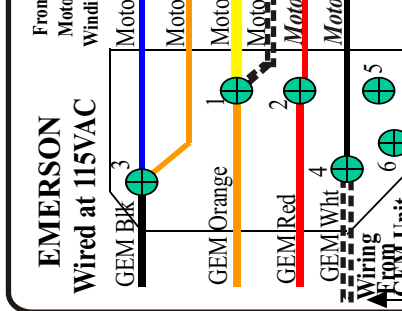
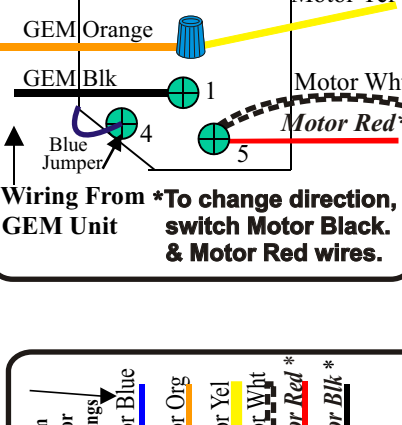
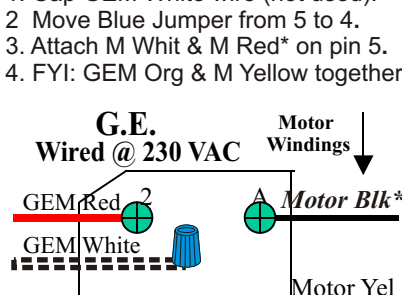
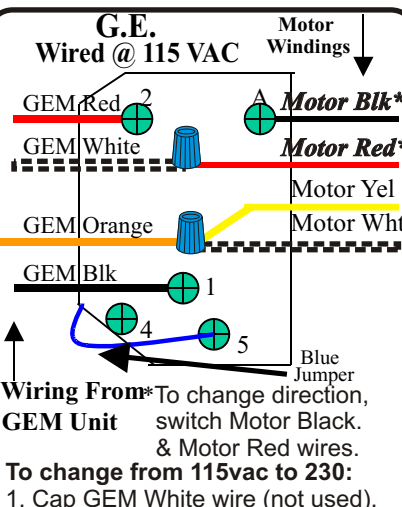
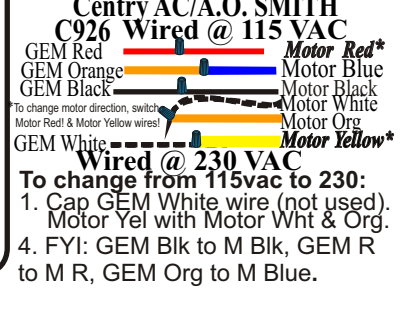
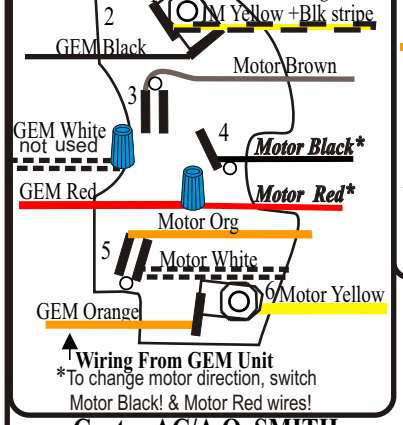
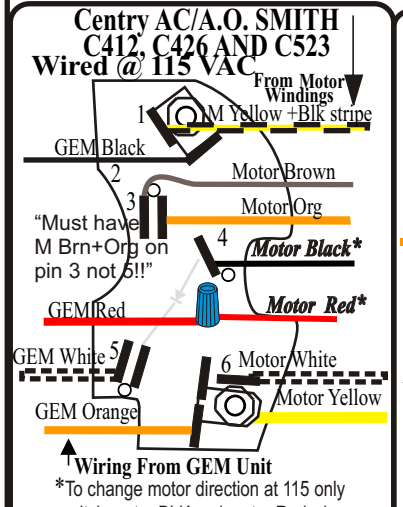
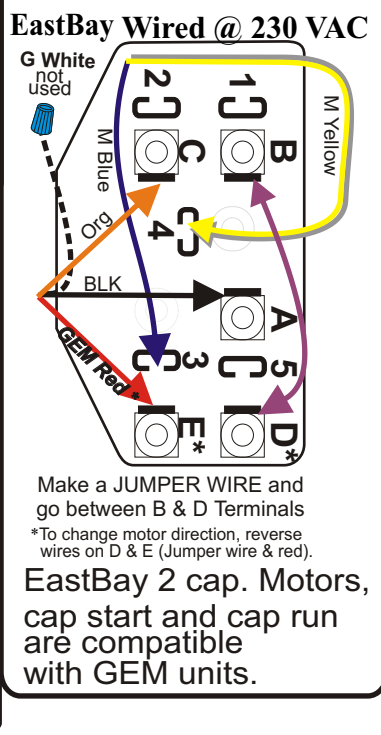
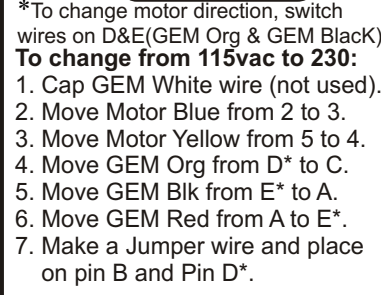
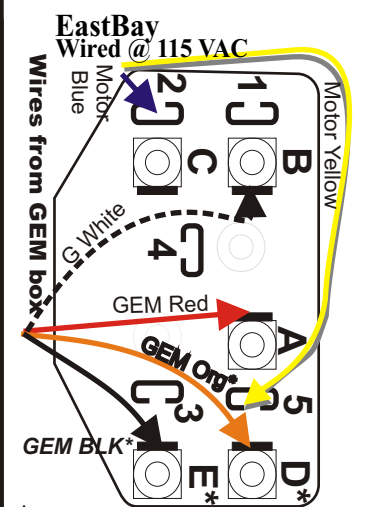
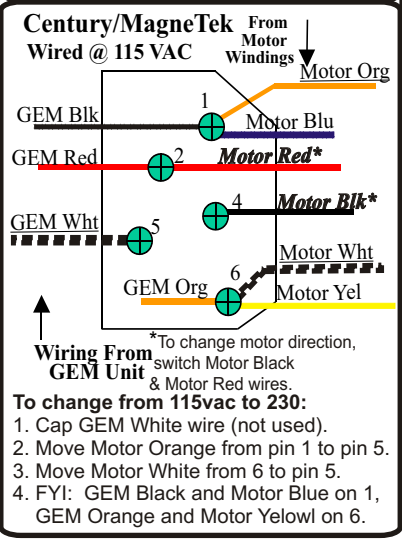
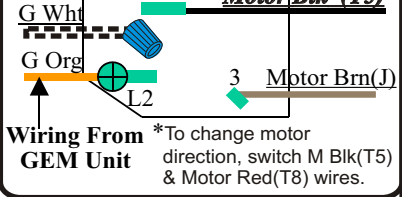
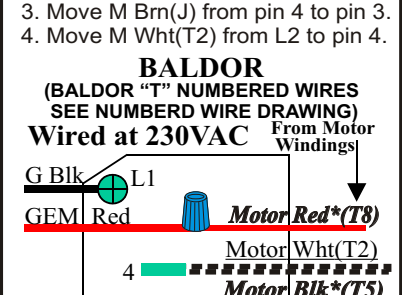
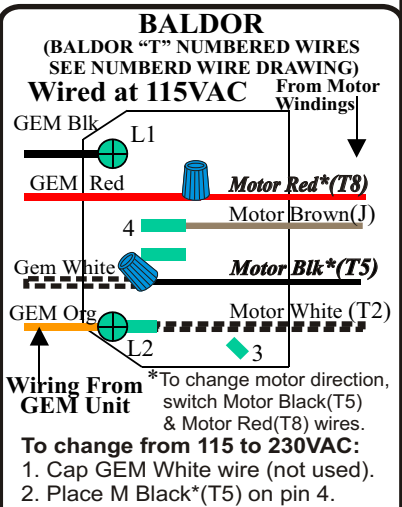
- Cap GEM White wire (not used).
- Place Motor Black on pin 4.
- Move Motor Blue jumper from pin 4 to pin 5.
- GEM Orange is on pin 2!!!!!!**
- Move Motor White from pin 1 to 3.

**AO SMITH Wired at 230VAC.**

Note: Drum switch Org might be pre-wired to Motor Black\*. GEM Orange needs to be on pin 2. Also move Motor White and Motor Black wires to pin 4 and 3.

\*To change motor direction, switch Motor Black & Motor Red wires.

**Wiring From GEM Unit**





to a **GEM GR2A**. **GEM ORANGE WIRE IS ON PIN 2**

See previous pages for more motor wire diagrams.

**MAIN FEED  
POWER 230VAC  
(3wires+ground)  
Wired to GEM  
at 115VAC**

These 4 exploded views are inside the GEM Box

Yes @115V the GEM White and Red go to Neutral

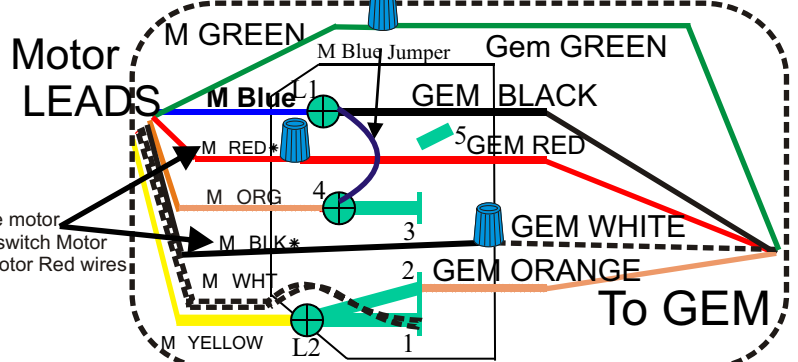
240 Volt hook up using only 3 wires(2+G) Not using Neutral(White) You must rewire the Multitap transformer see #13 below. Can't be done to a GEM GFI (needs 115vac to work).

Only use this diagram when you don't have a neutral, can't be used with GEM's GFI.

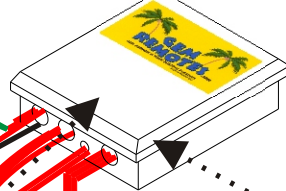
**TROUBLESHOOTING:**

1. For shipping purposes, the **Black main feed wire is placed in the middle of the down contactor. Pull it out(GR4 Remove).**
2. **1 or 2 motors turn in the wrong direction:** Switch **motor wires**, wire inside the motor BLK\*(T5) with Red\*(T8) see motor diagram pages.
3. **Motor not working:** Color to Color wiring inside the motor is incorrect. You must use GEM's motor wire diagrams. **A.O. Smith motors move Gem Orange wire to pin 2** Gem units work with 115/230VAC 1 phase, cap. start, **induction run motors**. Three phase motors require special order. 1 1/2 horsepower motors and larger can have a cap. start and a cap. run. The run cap. might not reverse or the run cap. can explode. It must be removed as this will increase the run amps that the motor will draw by 3 amps(Eastbay motors, 2 cap. systems are compatible).
5. **Transmitter button runs in opposite direction than manual switch:** The electrician rewired the manual switch instead of rewiring the motor wires. They must rewire the motors internally and turn manual switch right side up.
6. The **contactors will not pull in both directions** or 1 direction and or the manual switch does not work, but the hand held remote activates a small clicking noise inside the GEM box **Auto-Stop units must be hooked up to a limit switch.** In the Auto-Stop mode in only one direction: Adj. Limit switch. See instructions on cover of limit switch. **It is against code and not covered by insurance to be used without a GEM limit switch.**
7. **Short range or lift hiccups:** If the red LED on the transmitter is **dim or flickers**, **replace the battery 12v 23A.** It is helpful to have the antenna on the near side of the GEM box when the boat is returning to the lift. Make sure the antenna is as **straight** as possible. You may have to move the receiver inside the box. Do not change the length of the antenna wire unless you talk to GEM.
8. **Cutting off drum switches:** They work, but the GEM unit only works in 1 direction; You need to rewire inside motors Note GEM Org wire..
9. **Chatter in the contactor:** Check for low voltage 5% drop, when system is running (override by pushing in contactor). Also check wire size vs run length.
10. **Clear memory:** Inside the GEM box find the 2 blue wires on the learn button follow them to the receiver board. Press and hold the black CLR button in. Turn on the power to the GEM unit. Continue to hold in the black button. The LED will flash once then 7 seconds later it will flash a 2nd time. The memory will be cleared now. Reprogram the transmitter by pressing learn button. For learn instructions read the yellow face card. **Need more help?** Call 239-642-0873 M-F 8:30-4:00 EST. The web page also has more information.
11. **TROUBLESHOOTING: GFCI (GFIC and GFI) needs a neutral. New 2004 GFI will not reset if it has a fault or is not getting 115VAC.** Disconnect all motor wires, check to see if the GFI resets, then hook up 1 motor at a time to find the fault.
12. **TROUBLESHOOTING: Wiring at 110VAC-120VAC:** If motors (A.O. Smith) does not work rewire GEM Org inside the motor to pin #2.
  1. 115 VAC motor system problems: **Motor Hum:** Connect **red and white GEM main feed wire together.** See **figure 1A.**
  2. Over sizing the circuit breaker can damage your lift, motors and/or the boat. Use the correct size circuit and wire size. Use wire chart.
13. **TROUBLESHOOTING: Wiring at 220VAC-240VAC:** 4 motor or special order **230V only** do not have a White main feed unless a GFI unit.
  1. **Unless the GEM unit is specifically ordered for 230VAC, a 4 wire main feed is required. If you do not have 3 wires + ground then you will need to rewire the system for 230VAC only (2 wire+Ground).** Cut yellow transformer wire and cap it off. Read the top of transformer label. Black=common then Attach Org wire(240) to main feed Red.
14. **TROUBLESHOOTING: Wiring at 208VAC:** Rewire the transformer. Read the label, on top for proper wire connections. Cut yellow transformer wire and cap it off. Read top of the transformer label. Black=common Attach Red wire(208) to main feed Red. **Need more help?** Call 239-642-0873 M-F 8:30-4:00 EST. The web page also has more information for after hours help.

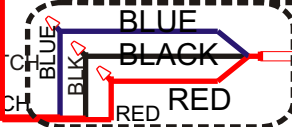
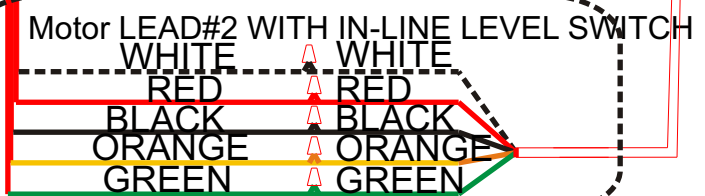
Fig: 1A



GROUND Wires from each motor connected to GEM's Green and main feed ground



To MOTOR#2



LIMIT SWITCH

