AUTO TAB CONTROL system

OPERATOR'S MANUAL

IMPORTANT: This manual contains critical information directly affecting the safe and efficient operation of your boat. Please read thoroughly before operating the Auto Tab Control system.

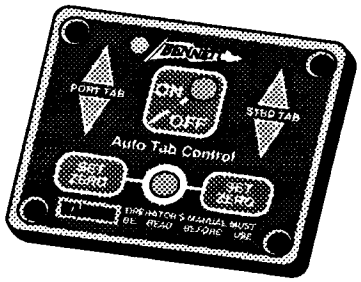
SAVE AND KEEP WITH BOAT OWNERS INFORMATION

Congratulations! *You are about to experience an exciting and enjoyable boating innovation. The Bennett Auto Tab Control (ATC) system constantly monitors and automatically corrects your boat to it's optimum attitude compensating for weight shifts, speed, wind, or sea condition changes. The ATC system is boating technology at its best!*

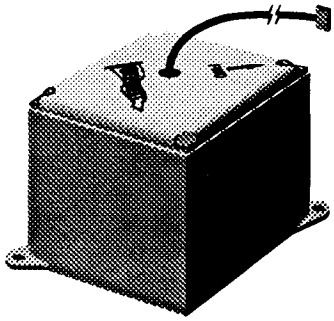
Section 1

A Basic Product Understanding:

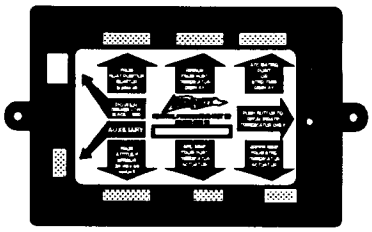
The Bennett ATC system is composed of four main components:



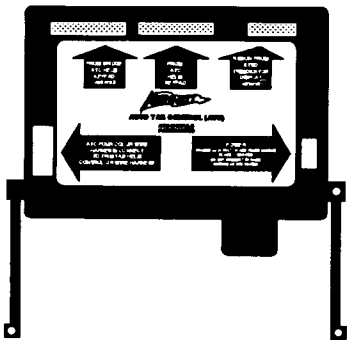
Helm Keypad- The Helm Keypad enables you to turn the ATC system ON and OFF, set the zero point, and monitor trim tab movement by observing the arrow indicators.



Attitude Sensor- The Attitude Sensor detects your boat's deviation from the "zero point" you store in memory and sends a continuous signal to the Central Processing Unit.



Central Processing Unit- The Central Processing Unit analyzes Attitude Sensor messages, determines how the trim tabs should be adjusted, and communicates this corrective information to the ATC Module.



ATC Module- The ATC Module translates the Central Processing Unit's command and energizes the trim tab Hydraulic Power Unit for corrective trim tab adjustment.

The ATC system calculates continuous readings on your boat's attitude and decides how to make necessary the attitude-correcting trim tab adjustments. If you leave protected water - out into rougher seas, experience a weight shift from passenger movement, or re-set the throttle, the ATC system adapts and compensates for the condition and adjusts your boat to the original attitude you set in it's memory. The ATC system has various built-in delays and will not make trim tab adjustments during momentary weight shifts.

Section 2
Before Operating Your Auto Tab Control,
<u>You Must Check Your Trim Tab Installation</u>:

The ATC system interfaces with your trim tab system, and instantly operates your trim tab Hydraulic Power Unit (HPU). Therefore, before you operate the Bennett ATC system, it is critical you confirm the HPU wiring and hydraulic tubing is connected EXACTLY as described in items 1 and 2 below:

1. Hydraulic Tubing:

- Port tubing must be connected to the Port trim tab fitting on one end and the HPU fitting marked "P" on the HPU end.
- The Starboard tubing must be connected to the Starboard trim tab fitting on one end and the HPU fitting marked "S" on the HPU end.

THE TUBING MUST NOT BE REVERSED.

2. Helm Control Wiring:

Single Lever or Rocker Switch control: Inspect the four color wire harness leading to the back of the trim tab helm control.
Notice the indented letter on the back of the trim tab helm control and connect as follows:

- The Red wire must be connected to the terminal marked "R"
- The Green wire must be connected the terminal marked "G"
- The Blue wire must be connected the terminal marked "B"
- The Yellow wire must be connected the terminal marked "Y".

THE WIRING CONNECTIONS MUST NOT BE REVERSED.

Racing Type Control: Facing the control, with the word BOW at the top, turn the control over to the right (or left) and inspect the back of the control to insure the wiring is connected as follows:

- The blue wire is connected to the two top terminals
- The red wire is connected to the two left terminals
- The yellow wire is connected to the two bottom terminals
- The green wire is connected to the two right terminals

THE WIRING CONNECTIONS MUST NOT BE REVERSED.

FAILURE TO COMPLY WITH POINTS 1 <u>AND</u> 2 CAUSES THE AUTO TAB CONTROL TO FUNCTION IMPROPERLY.

Boat Leveler Insta-Trim conversion: The Auto Tab Control Installation instructions are based on Bennett Trim Tab wire colors. If you are installing the Auto Tab control on a Boat Leveler system, the wire color conversion is as follows:

Bennett **RED** wire = Boat Leveler **GREEN** wire
Bennett **GREEN** wire = Boat Leveler **WHITE** wire
Bennett **BLUE** wire = Boat Leveler **RED** wire
Bennett **YELLOW** wire = Boat Leveler **YELLOW** wire

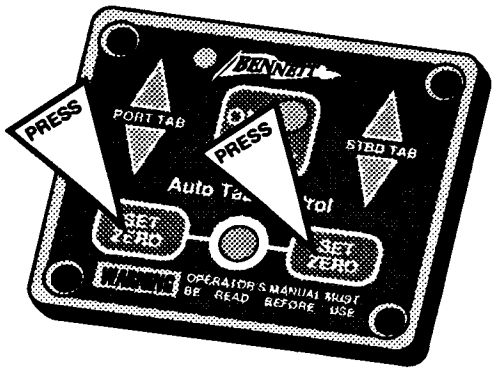
If you require further clarification of points 1 and 2, refer to your trim tab installation instructions, trim tab owner's manual, or call Bennett Marine, Customer Service at (305) 427-1400, (8am-5pm Eastern time, Monday - Friday.)

Section 3
How to Set the Zero Point-
Finding Your Boat's Optimum Attitude:

Important note: The ON/OFF Helm Keypad button does not activate the ATC system until the initial zero point is set. (If the zero point is not set, the SET ZERO light slowly blinks ON and OFF.)

After installation, take the boat for a test run to set the zero point.

While underway, allow your boat to "break over" on plane and achieve what you consider to be its most desirable running attitude. At that moment, press and hold both "SET ZERO" buttons on the ATC Helm Keypad until the LED flashes rapidly (hold down for approximately 4 seconds.) Once the LED is flashing, the attitude of the boat, at the moment the set zero buttons are released, is locked in the memory as the new zero point. The ATC zero point is now set. The system automatically reverts to the "off" mode.

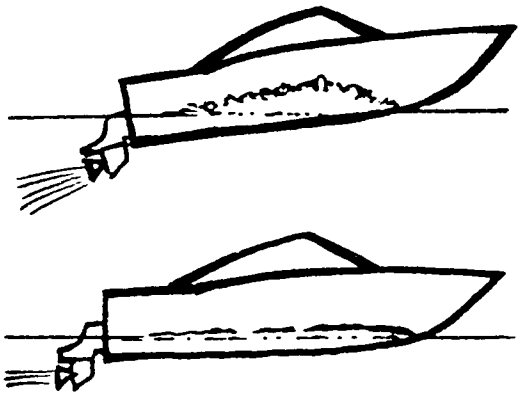


A Boat with a wide range of running speeds (ex: 20 to 40 mph) should set the zero point within the lower half of the running range.

After setting the zero point , press the ON/OFF button to begin the automatic trimming mode.

Once the zero point is set, the ATC system will permanently retain this optimum attitude in it's memory. Your boat now seeks this "plugged-in" attitude regardless of changes in speed, weight distribution, sea conditions and/or other variables that effect your boats attitude. If you want to reset the zero point, just follow the same procedure as above and the stored zero point is replaced by the new information.

Helpful Hint- Most boats "break over" (get on plane) at a particular speed. This speed is determined by weight distribution, water conditions, etc. Every boat has one particular attitude where it runs most efficiently. This is the attitude you want to enter as your zero point.



Untrimmed

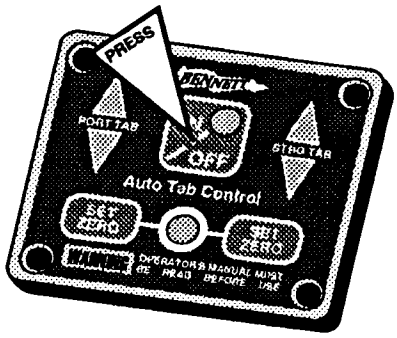
Trimmed

A good way to reveal your boats optimum attitude is to conduct a test by running lightly loaded at full speed in flat water. (This should be done in an open, no traffic area.) You will know your boats ideal attitude by observing the bow in relation to the horizon, reduced bow spray, and diminished wake.

Section 4

Activating and Deactivating Your Auto Tab Control:

The ATC system is activated by pressing the ON/OFF button for one second. When the key is released, the ON/OFF LED lights-up, indicating the unit is operating. Once activated, the ATC continuously analyzes and calculates the attitude of your boat and directs messages to the trim tabs for correction back to the zero point.



The ATC continues to make corrections as necessary until deactivated.

The LED trim tab direction "arrows" on the Helm Keypad flash, indicating direction of trim tab movement.
Example: when the bottom direction arrow marked PORT TAB flashes, the port trim tab is deflecting downward. Conversely, when the top direction arrow flashes, the port trim tab is retracting. The same is true for the starboard trim tab direction arrows.

ONCE ACTIVATED, THE ATC SYSTEM ADJUSTS THE TRIM TABS AUTOMATICALLY UNTIL YOU DEACTIVATE IT BY:

1. PRESSING THE ATC KEYPAD'S ON/OFF BUTTON (recommended method)
   OR
2. PRESSING ANY POSITION OF THE TRIM TAB HELM CONTROL
   OR
3. CUTTING THE POWER SOURCE TO THE ATC SYSTEM

Section 5

Safety Precautions and Information:

- For bow high attitude, the ATC system should be deactivated and the trim tabs manually placed in the full-up position when running in a following sea.
- For bow high attitude, the ATC system should be deactivated and the trim tabs manually placed in the full-up position when running an inlet.
- The boat must be properly trimmed when the ATC zero point is set.
- The ATC system is programmed to not activate during sharp turns.
- Speed, load, and trim tab size may be such that the ATC and trim tabs are unable to trim the boat at certain speeds.
- Occasionally check for loose or corroded wiring connections on the ATC system and trim tab system and lubricate when necessary.
- To avoid component damage, when power is "on" to the Central Processing Unit or ATC Module do not connect or disconnect any plugs connected into either unit.
- Take immediate action to correct any malfunction or failure of your trim tabs.
- Improper use of ATC system or trim tabs can cause accident or injury.

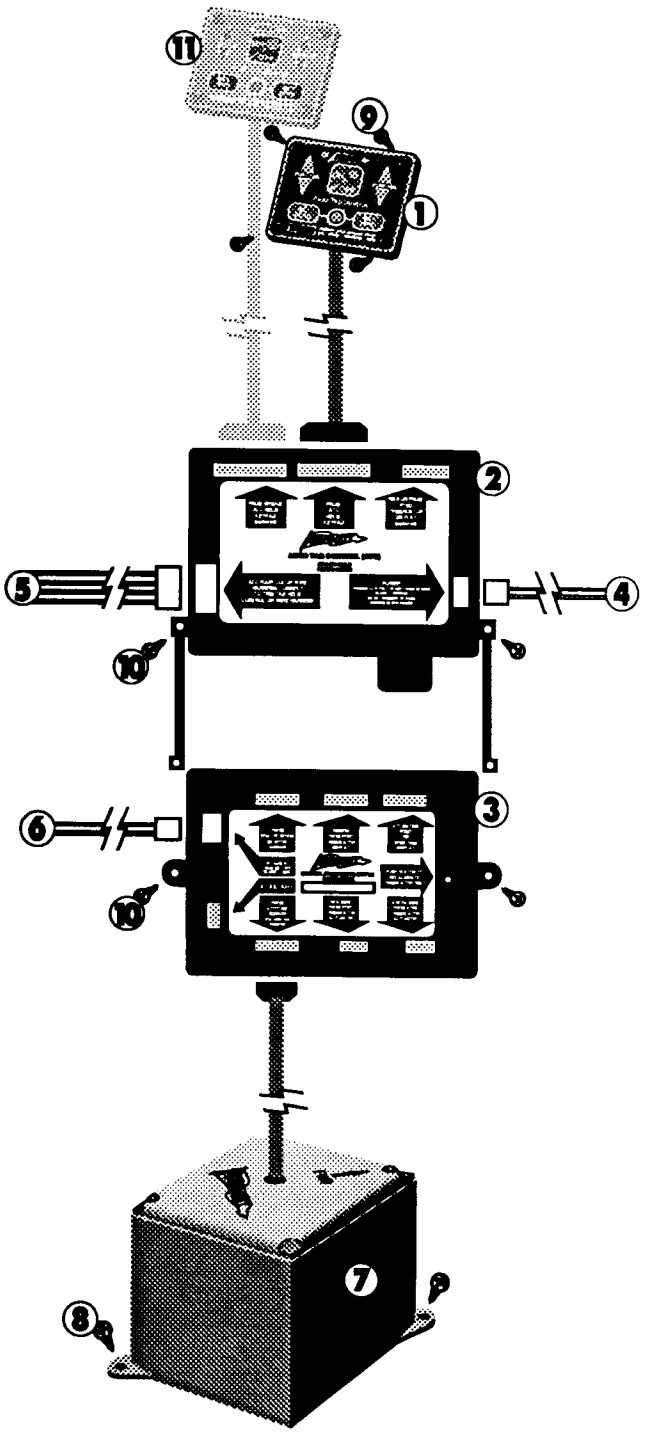
BE PRUDENT- IF IT APPEARS THE ATC SYSTEM IS CAUSING YOUR BOAT TO REACT IN AN UNDESIRABLE MANNER, **STOP THE BOAT** — THEN INVESTIGATE THE PROBLEM.

Trim tabs and the ATC system have a significant effect on the operation and versatility of your boat, and nobody knows your boat better than you. The best learning method is to spend time getting familiar with your boat's reaction to the trim tabs and ATC system. Always operate your boat with safety first in mind.

Section 6

System Schematic and Parts List:

#	Description	Part Number
1.	Helm Keypad	AC250
2.	ATC Module	AC400
3.	Central Processing Unit (CPU	IC2110
4.	ATC Power Pigtail	PT800
5.	ATC Four Color Wire Harness (4')	WH2004
6.	CPU Power Pigtail	PT500
7.	Attitude Sensor with 20' cable	BP350
8.	#10 x 1" Stainless steel mounting screws	H1180
9.	#6 x 3/4" Oval head screws	H1182
10.	#8 x 3/4" Stainless steel mounting screws	H1183
11.	Bridge Helm Keypad (OPTIONAL)	AC250A



• Section 7

Helpful System Information:

1. Activating ATC system causes list
   - Trim tab tubing or wiring may be crossed. See the "Before Operating Your Auto Tab Control" section of this manual.
   - ATC system zero point may be incorrectly set.

2. The trim tabs are not correcting the boat to optimum attitude or not correcting a listing condition.
   - The ATC attempts to make a particular attitude correction several times. It forces the trim tabs to remain in a particular corrective position until the attitude changes.

   If it appears the trim tabs frequently cannot correct an out-of-trim position, the trim tabs may be undersized.

3. All LED's on keypad blink on and off simultaneously.
   - Attitude Sensor signal is interrupted. Check sensor cable for breaks, and check firmness of connection into ATC module.

4. "SET ZERO" light blinks on and off
   - No zero point has been set. Refer to Section 3" of this manual.

5. ATC system shuts off by itself.
   - CPU and/or ATC module may be receiving low voltage (less than 7 volts)
   - If the boat is in a severe list (greater than 26 degrees) for more than 6 seconds, the trim tabs will fully retract and the ATC system will automatically turn off.

6. One or both of the Helm Keypad's trim tab direction arrows remains in the on mode.
   - The ATC has determined one or more of the trim tabs has reached a limit. Unit resumes operation once the boat's attitude changes.

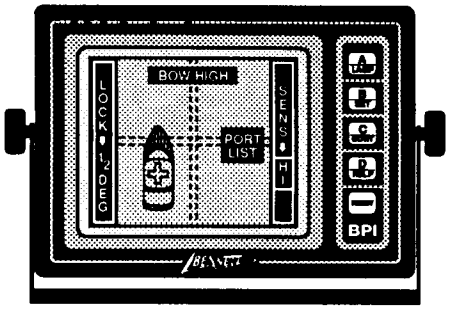
   NOTE: The ATC attempts to make a particular attitude correction several times. It forces the trim tabs to remain in a particular corrective position until the attitude changes.

   If it appears the trim tabs frequently cannot correct an out-of-trim position, the trim tabs may be undersized.

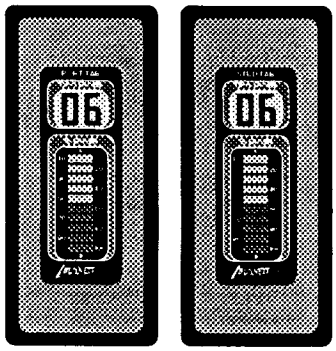
Section 8

Other Bennett Products:

Boat Position Monitor: The Boat Position Monitor electronically displays your boats reaction to the ATC system. The monitor has a series of informative screens displaying the boats relative running attitude. As your boat moves through the water the monitor graphically displays changes in your boat's attitude.



Trimdicator ®: Trimdicators are electronic trim tab position indicators. They display the position of each trim tab in degrees and percent of deflection. The Trimdicator features two electronic LCD / LED displays (one port - one starboard). The Trimdicators share the same CPU as the ATC system and can therefore be added at a reduced cost over the complete kit.



Auto Tab Retractor: The ATR automatically retracts the trim tabs when the boat's ignition key is turned to the "OFF" position. This compact unit connects behind the instrument panel to the trim tab helm control and the engine's ignition switch.

Power Converter : This accessory enables the Auto Tab Control and Trimdicators to operate on 24 or 32 volts by converting the CPU's incoming power to 12 volt.

Interrupter Relay: This small add-on component prevents fuse from blowing when BOW UP and BOW DOWN are inadvertently pressed at the same time. Used for Racing type and Rocker switch trim tab controls only. (Note: Both trim tabs can be pressed "BOW UP and BOW DOWN at the same time, the interrupter relay is only for the accidental pressing of one position BOW UP and the other BOW DOWN)

Hatch Lifter System: The Bennett hatch lifter cylinder vertically lifts up to 250 lbs. The Hatch Lifter is great for an inconvenient or heavy hatch. The Hatch Lifter cylinder shares the same Hydraulic Power Unit with the trim tabs making it economical as well as efficient. Dual cylinder systems are available.

Sport Tabs: Sport tabs are black coated, heavy duty, stainless steel trim tabs designed for moderate performance use up to 60 mph.

Bass Tabs: These trim tabs are specifically designed for use on Bass Boats. However, because of their reduced size cylinder and trim tab, Bass Tabs can be used on nearly any short transom boat.

If you have any questions regarding your Bennett Auto Tab Control, please give us a call.

Bennett Marine, Inc.
of Deerfield Beach
550 N.W. 12th Avenue
Deerfield Beach, Florida 33442 U.S.A.

Phone: (305) 427-1400
Fax: (305) 480-2897