

# OWNERS MANUAL

KEEP WITH BOAT OWNERS INFORMATION





**Congratulations...**you are the owner of the finest trim tabs available. Bennett Trim Tabs provide you with control never thought possible. Properly sized trim tabs get you up on plane quickly and correct listing at nearly any speed, regardless of weight distribution or sea conditions. These benefits add up to less drag on the hull, reduced engine stress, increased speed, and decreased fuel consumption.

Bennett Trim Tabs set the standard in the industry. Founded in 1960 by trim tab inventor Charles Bennett, Bennett Marine is established on a strong foundation of product quality, technology, and customer service.

At Bennett Marine we take a great deal of pride in what we do and enjoy discussing our product. If you have any questions not answered in this manual please feel free to contact us.

### HOW BENNETT TRIM TABS WORK

Bennett Trim Tabs are two stainless steel planes installed on the transom. As the actuating cylinders (called actuators) deflect the trim tabs, waterflow is redirected. This waterflow creates upward pressure under the trim tabs, raising the stern. As the stern rises, the bow lowers (figure 1). Because proper trim tab surface area is essential, larger and/or slower boats require larger trim tabs than smaller, faster boats.

Bennett Trim Tabs employ the force of hydraulics for smooth trimming action. When the helm control is pressed, electrical current is sent to the hydraulic power unit (HPU). This signal activates the HPU's electric motor, creating fluid pressure. Valves on the HPU open, channeling the required amount of fluid to the actuators. When the helm control is released, the valves close, capturing the fluid in the actuators. Due to the specially engineered Bennett HPU and the nature of hydraulics (a fluid cannot be compressed), the trim tabs hold their position.

Bennett Trim Tabs operate in reverse of what you might think. The port trim tab lifts the port stern which lowers the starboard bow. Conversely, the starboard trim tab lifts the starboard stern which lowers the port bow. With properly installed trim tabs, you will not be aware of this reverse function as the control function is based on the direction you wish to move the bow (figure 2). For your information, Bennett Trim Tab position indicators are available to visually check the exact position of the trim tabs (see "Other Bennett Products").

Figure 1

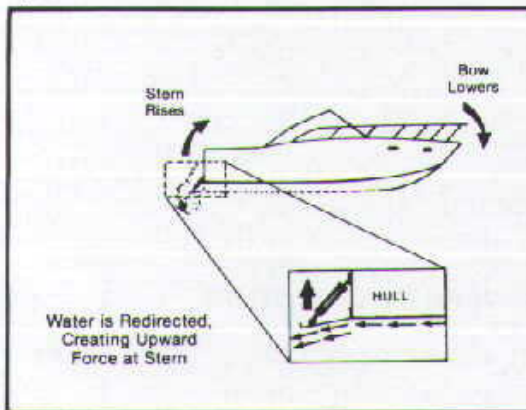
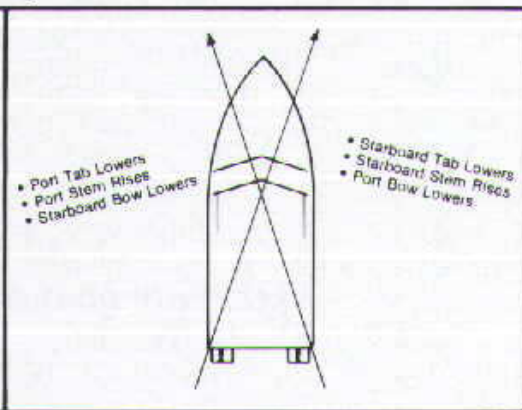


Figure 2





## HOW TO USE YOUR BENNETT TRIM TABS

The proper use of Bennett Trim Tabs becomes second nature after a short time. Here are some general guidelines to get you started:

**Getting and staying trimmed**—Most boats "break over" (get on plane) at a particular speed. This speed is determined by weight distribution, water conditions, etc. Bennett Trim Tabs enable your boat to plane at speeds lower than natural planing speed. As the throttle is pushed, the stern squats and the bow rises. In short bursts, the helm control is pushed in the "BOW DOWN" position, moving both trim tabs. The boat reacts as the stern rises and the bow "breaks over", resulting in, among other things, increased visibility and speed (figure 3.) If overtrimming occurs as the boat gains speed, the trim tabs can be retracted by pressing "BOW UP". (When overtrimmed, the bow plows, reducing maneuverability.)

While learning to use trim tabs, begin by pressing the helm control in half second bursts for gradual trimming. A momentary delay occurs from the time the helm control is pressed to the time the boat reacts. To avoid overtrimming, allow enough time between bursts to permit the boat to respond to the trim tabs. This time depends on the boat's speed.

A good way to learn your boat's optimum attitude is to conduct a test by running lightly loaded at full speed in flat water. During this test, observe the bow in relation to the horizon. This situation should reveal the boat's best running attitude. Then, under normal operating conditions, use the trim tabs to reproduce the same attitude achieved during the test. You will know the ideal attitude by the diminished wake, reduced laboring of the engine(s), and the increased rpm's...all at the same throttle setting.

When running in a chop or heavier seas, press "BOW DOWN", positioning the bow to cut through the waves. This action provides a drier, more comfortable ride. In a following sea or when running an inlet, the trim tabs should be *fully retracted* for maximum rudder response.

When steering from a bridge or tower, a good trimming method is to watch the bow spray or stern wake and the roostertail. In an untrimmed condition, the spray from the bow is far aft on the hull, the wake is high, and the roostertail is pronounced. When trimmed, the bow spray is farther forward, the wake is reduced, and the roostertail is smaller and farther behind the boat. In addition, when trimmed, the rpm's increase.

**Correction of a list**—Bennett Trim Tabs are operated individually to correct a listing condition. Regardless of the helm control model, the trim tabs adjust the boat's attitude in the direction the helm control is pushed. If the port bow is high, push the left hand "BOW DOWN" direction on your helm control and the port bow lowers. If the starboard bow is high, push the right-hand "BOW DOWN" direction and the starboard bow lowers. Do not think about what the trim tabs are doing, just concentrate on your helm control (figure 4). Note: The boat should be trimmed fore and aft before correcting for a list.

**Using trim tabs with power trim:**—1. Adjust the trim tabs to achieve a planing attitude. 2. Use the power trim to position the prop path parallel to the waterflow. 3. If necessary, re-adjust the trim tabs to "fine tune" (figure 5).

Bennett Trim Tabs let you get the most out of your power because the trim tabs are *trimming the hull* while the power trim is *trimming the prop*.

**Correction of porpoising**—Press "BOW DOWN" in half second bursts. As the trim tabs deflect, porpoising subsides and speed should remain the same or increase. Only a slight amount of trim tab deflection should be necessary.

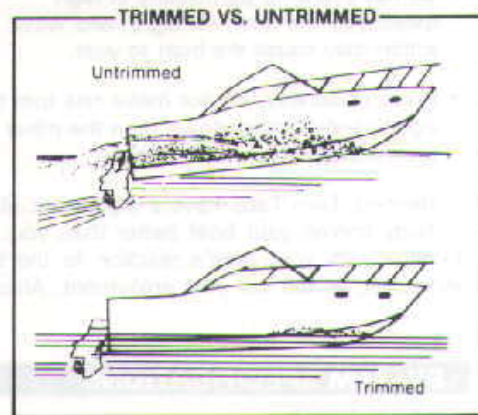


Figure 3

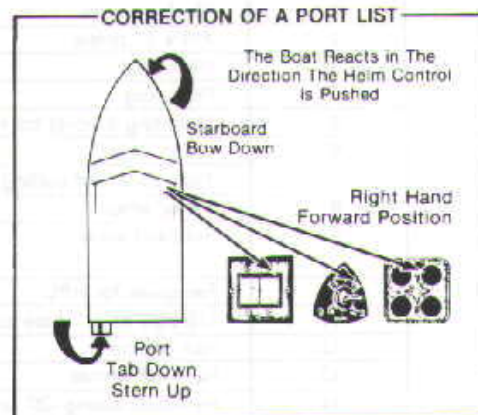


Figure 4

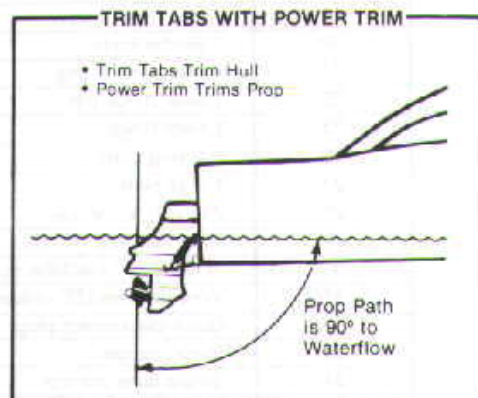


Figure 5

IMPORTANT! READ "SAFETY PRECAUTIONS" ON NEXT PAGE.



## SAFETY PRECAUTIONS

- Do not overtrim, particularly at high speeds, as the bow will dig in and wave action may cause the boat to veer.
- While underway, do not move one trim tab significantly farther down than the other as undesirable listing could occur.
- Use your trim tab helm control with caution.
- For best maneuverability, trim tabs should be fully retracted in a following sea, or when running an inlet.
- Improper use of trim tabs can cause accident or injury.

Bennett Trim Tabs have a significant effect on the operation and versatility of your boat, and nobody knows your boat better than you. So, the best learning method is to spend time getting familiar with your boat's reaction to the trim tabs. As your experience with Bennett Trim Tabs increases, so too will your enjoyment. Always operate your boat with safety first in mind.

## SYSTEM SPECIFICATIONS

Parts List (figure 6)

Diagram Number	Description	Part Number
1	Fluid reservoir	VP1139
2	#10 x 1" screw	H1180
3	Filler stack	-----
4	Filler plug	VP1140
5	Mounting bracket for HPU	H1179
6	Lexan cover	VP1138
7	Type 25 thread cutting screw	VP1154
8	Motor strap	VP1142
9	Solenoid valve	VP1135-R (red) VP1135-G (green)
10	Faceplate for HPU	VP1144
11	1/8 pipe to 1/4" tube connector	VP1146
12	Hex retainer	VP1141
13	Nut with ferrule	T1127
14	Hydraulic tubing (20' unless otherwise specified)	T1125
15	Tube bending clip	H1173
16	Female elbow	H1172
17	Pipe nipple (3" unless otherwise specified)	H1171
18	Upper hinge	A1103
19	#14 x 1-1/2" screw	H1174
20	Cylinder body	A1105
21	Piston with o-ring	A1109
22	Lower hinge pin	A1115
23	Lower hinge	A1113
25	Backing plate	varies with size
27	Hinge plate	varies with size
28	#10 x 1-1/4" screw	EH1071
29	Trim tab only	varies with size
30	1/4-20 x 3/4" machine screw	H1175
31	Wire harness (22' unless otherwise specified)	WH1000
32	Quick-disconnect plug	VP1143
33	Nylon hanger	H1177
34	Single lever control	VC1000
35	20 amp fuse (12 volt system)	H1176
36	Fuse holder	H1178
37	Racing type control	RT1000
38	Rocker switch control	RS1000

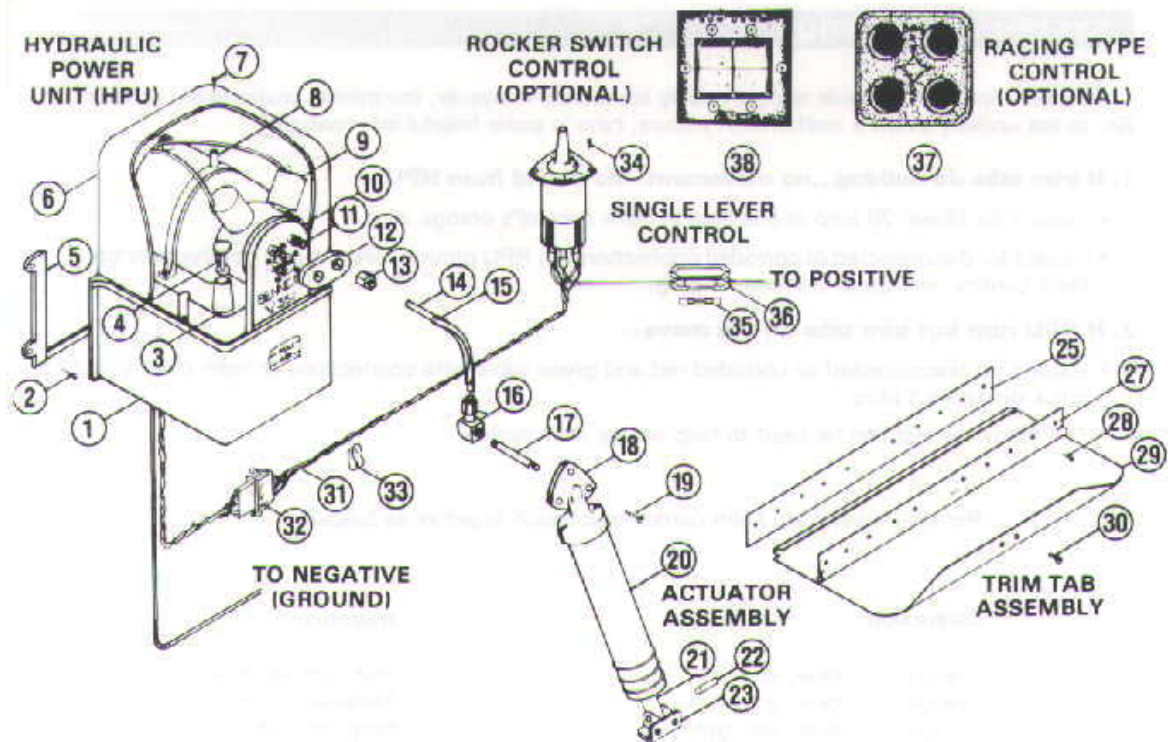


Figure 6

**Trim tabs:** Stainless steel

**Actuators:** Upper hinge material (Part #A1103) made of flexible nylon. Remainder of actuator made of high impact fiberglass-filled nylon.

**Hydraulic Power Unit (HPU):** HPU draws a maximum 18 amps (broken-in) and operates on 12 volts DC (except 24 & 32 volt HPU's). Approximately 22 ounces of **ANY TYPE AUTOMATIC TRANSMISSION FLUID (ATF)** is required to fill reservoir to proper level for single actuator installations. With trim tabs fully retracted, proper fluid level is about 2" from bottom of reservoir.

The HPU forces both trim tabs full-up to full-down in 9-10 seconds, individually in 4-5 seconds. (Trim tab travel on dual actuator systems takes twice as long.)

**Helm Control:** Controls on 12 volt systems use 20 amp in-line fuse (24V & 32V use proportionally smaller).

**Hydraulic tubing:** Tubing has 1/4" outside diameter and 1800 lb. burst pressure.

**Wire Harness:** Wire colors and their functions:

Red	Port valve
Green	Starboard valve
Blue	Motor forward (pump pressure)
Yellow	Motor reverse (pump retract)
Black on HPU	Ground
Orange on helm control	Positive



## SYSTEM INFORMATION

Bennett Trim Tabs are built to rigid quality standards. However, the marine environment is harsh. So, in the unlikely event a malfunction occurs, here is some helpful information:

### 1. If trim tabs do nothing...no movement...no sound from HPU—

- Inspect for blown 20 amp in-line fuse in helm control's orange wire.
- Inspect for disconnected or corroded connections on HPU ground wire, orange positive wire from helm control, and quick-disconnect plug.

### 2. If HPU runs but trim tabs do not move—

- Inspect for disconnected or corroded red and green valve wire connections at helm control and quick-disconnect plug.
- The following test can be used to help isolate malfunction.

Remove wires from helm control and touch together as follows:

Operation	Reaction
Orange (+), blue, red	Port trim tab down
Orange (+), blue, green	Starboard trim tab down
Orange (+), blue, red, green	Both trim tabs down
Orange (+), yellow, red	Port trim tab up
Orange (+), yellow, green	Starboard trim tab up
Orange (+), yellow, red, green	Both trim tabs up

If trim tabs function in each of the above combinations, check helm control. If during this test trim tabs continue to malfunction, inspect HPU.

### 3. If one trim tab operates and the other one does not—

- Inspect for disconnected or corroded red or green valve wire connections at helm control and quick-disconnect plug. (Red wire operates port trim tab; green wire operates starboard trim tab.)
- Reverse hydraulic lines at front of HPU to determine if malfunction is in HPU or actuator/hydraulic connections. If after reversing lines, symptom shifts to other trim tab, malfunction may exist in HPU. If symptom remains on the same side, malfunction may exist with the actuator/hydraulic connections.

### 4. If trim tabs go down but will not retract—

- Inspect for low voltage of the battery. Check battery for voltage while HPU (or another accessory) is running. If voltage is less than 10 volts, valves will not open.
- Inspect for disconnected or corroded connections on helm control, and quick-disconnect plug.

This general information is not intended to be complete. Please feel free to call Bennett Marine to assist in solving situations not clarified or addressed above. Bennett Marine customer service is available to help Monday through Friday, 8am to 5pm Eastern time. (954) 427-1400.

## MAINTENANCE

- Periodically, check fluid level in HPU. With trim tabs completely retracted, fluid level should be about 2" from bottom of reservoir (approximately 22 ounces). To refill, remove lexan cover and filler plug located at the front left hand corner of the reservoir. **FILL WITH ANY TYPE AUTOMATIC TRANSMISSION FLUID (ATF) ONLY.** Brands or types of ATF can be mixed. Running HPU with an excess or lack of fluid will not cause damage.
- Periodically, check for clean electrical connections on back of control, HPU ground wire, and quick-disconnect plug.
- Cold temperatures do not affect the trim tab system. No winterization is necessary.
- (SALTWATER ONLY) To deter electrolysis, a zinc anode should be attached to the top of each trim tab. Zinc must make direct contact with stainless steel. Do not paint zinc. Do not ground trim tabs to other underwater appendages.
- Paint trim tabs to discourage marine growth. 1. Clean surface of all grease, oil, dirt. 2. Apply two coats of epoxy metal primer. 3. Apply two coats of anti-fouling paint. Actuator, including the piston, may be painted.
- Unpainted trim tabs may acquire an orange discoloration. **THIS OXIDATION OF SURFACE CARBON MOLECULES IS NORMAL.** The integrity of the stainless steel is not affected. Orange coating can be cleaned off, but will eventually return. **Note: This discoloration should not be confused with the pitting and corrosion of electrolysis.**

## SAFETY INFORMATION

- Take immediate action to correct any malfunction or failure of your trim tabs.
- Occasionally, check for loose or corroded wiring connections.
- Stepping on the trim tab may cause damage to the unit, or injury.
- Make sure the HPU is mounted in a dry location to avoid drenching and consequent failure.
- Leaving the actuator extended when boat is not in use will not cause seal damage.
- Occasionally, inspect HPU fluid level.
- REFER TO SAFETY PRECAUTIONS ON PAGE 4.

## OTHER BENNETT PRODUCTS

**Auto Tab Control (ATC):** Automatic trim tabs! The ATC retrofit kit monitors and maintains your boat's most efficient attitude by automatically operating the trim tabs. Compatible with other Bennett electronics.

**Boat Position Monitor:** Attractive, multi-function LCD screen displays the attitude of your boat as it moves through the water. Compatible with other Bennett electronics.

**Trimdicators®:** Trimdicators® display accurate trim tab location in degrees and percent deflection with clear, crisp LCD and LED read-outs. Compatible with other Bennett electronics.

**Auto Tab Retractor (ATR):** The ATR automatically retracts trim tabs when boat's Ignition key is turned to "off" position.

**Interrupter Relay:** The Interrupter Relay prevents fuse from blowing when "BOW UP" and "BOW DOWN" are inadvertently pressed at the same time. Used for Racing type and Rocker switch controls only. (Note: Both trim tabs can be pressed "BOW UP" or "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:** The Hatch Lifter hydraulic cylinder lifts up to 250 lbs. Cylinder and trim tabs can operate off the same trim tab hydraulic power unit.

**Sport Tabs:** Sport Tabs are gloss black, heavy duty stainless steel trim tabs designed for sport boats.

**Bass Tabs:** Bass Tabs are trim tabs designed for Bass boats, and short transom boats.



## BENNETT TRIM TABS

### 5 YEAR LIMITED WARRANTY

If any part of a Bennett Trim Tab system fails due to manufacturing defects or workmanship within a period of **five (5) years**, it will be repaired or replaced without charge.

No labor costs of replacement, haulout, or miscellaneous charges are covered.

**The foregoing is in lieu of any and all other warranties, expressed or implied, including any warranty of merchantability or fitness for a particular purpose. There are no other warranties which extend beyond that set forth above.**

**Please note:**

Contacting Bennett Marine first may save considerable time, trouble and expense.

**Warranty return procedure:**

Remove faulty part and return to Bennett Marine. No pre-authorization is required. Parts covered under warranty will be repaired or replaced without charge. If necessary, a replacement part can be sent in advance of the faulty part's return.

If Hydraulic Power Unit is being returned, please drain fluid before shipping.

**Please insert a note in the box with your instructions and return address.**

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT BENNETT MARINE CUSTOMER SERVICE.

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