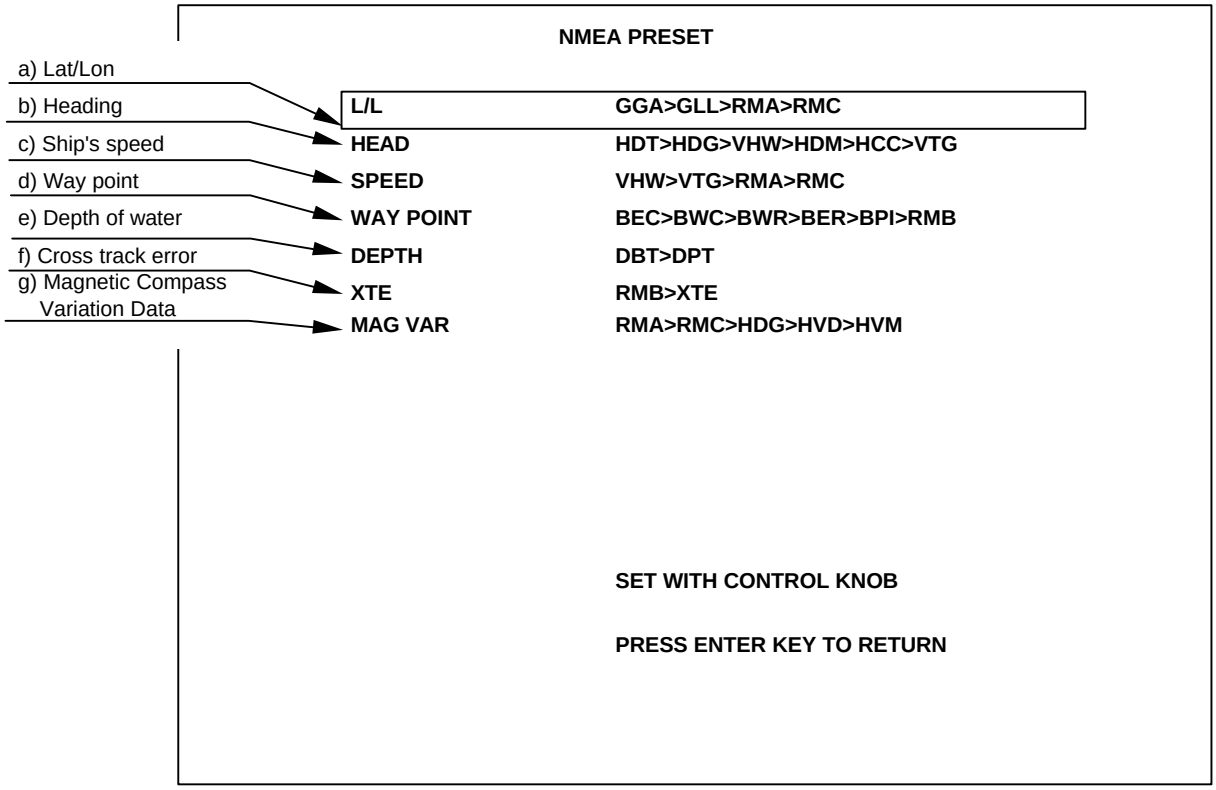
5.5.4.6.4 NMEA Preset

This preset allows you to change the priority of the NMEA data being read by the radar. Lat/Long, Heading, Speed, Waypoint, Depth, Cross track error, and Magnetic compass deviation can be adjusted so as to read the various NMEA sentences available for each in a prioritized format.
The highlighted NMEA sentence ID will become the priority sentence. To highlight a sentence ID, scroll the cursor touch pad to required data (up or down) to bring border to that function. Then scroll the cursor touch pad to right until the required sentence ID is selected. Then, rotate control knob counter-clockwise until highlighted sentence ID is at the beginning of the list.



5.5.4.6.5 Initial adjustment settings (ADJUST)

The items in the ADJUST menu are done immediately following installation. They need not be changed during normal operation.

(1) Adjusting distance (TIMING ADJ)

This adjustment calibrates the distance displayed on the radar screen to the actual distance.

(1) First, set the radar range to 0.25 NM, FTC to minimum, and GAIN to optimum. Then adjust STC until the pulse generated by the radar at the center of the screen is a round dot.

(2) Adjusting the distance.

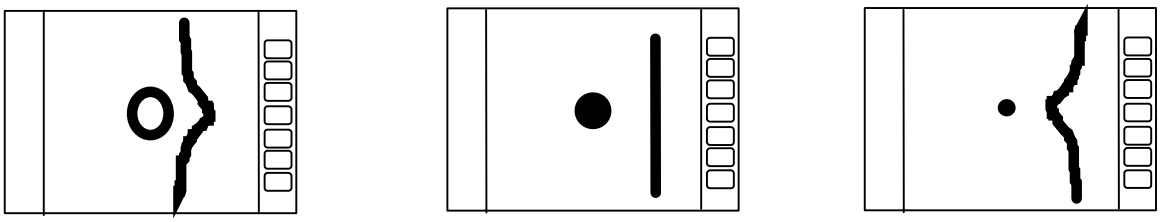
(2-1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>TIMING ADJUST. Press “ENT”.

(2-2) “TIMING ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, adjust the timing until the center dot appears as shown in (b). If there is a linear target such as a bridge or breakwater, adjust timing until the target appears straight on the screen.

(2-3) When the adjustment is finished, press the "ENT" key to exit from the distance adjustment screen.

Up/Down → ENT → Control knob → ENT

To select TIMIG ADJ | Do Timing adjustment | Fix TX Timing Delay



a) Too far b) Correct c) Too shrunk

(2) Adjusting angle (HEAD ADJ)

This adjustment calibrates the heading direction displayed on the screen to the actual direction of the ship.

Note: Heading offset value for open antenna is different from that for a radome antenna.

(1) Find one small target within a 0.5 to 1.5 NM range off your bow and is both within visible range and is clearly displayed on the radar screen.
(2) Measure the bearing of this target from the bow using a compass. Let it be θc.
(3) Measure the bearing of the target in head up (HU) mode using EBL. Let it be θr.
(4) Calculate the following:
θc - θr: if θc is greater than θr
360 - (θr - θc): if θr is greater than θc

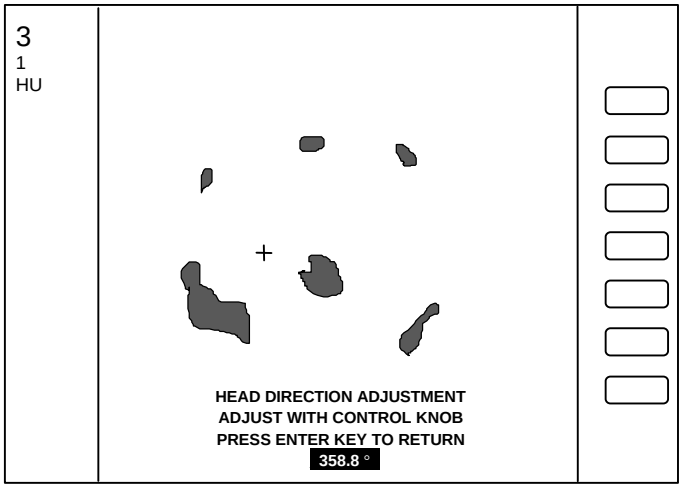
This is the azimuth error of your radar at installation. If ?c and ?r are equal, no adjustment is needed.

Adjustment method

(1) Press the "MENU" key and select SETUP>CUSTOM>ADJUST>HEAD ADJUST. Press "ENT".
(2) "HEAD DIRECTION ADJUSTMENT" will be displayed at the bottom of the screen. Using the control knob, set the value to the azimuth error you have calculated above.
(3) When the adjustment is finished, press the "ENT" key to exit from the distance adjustment screen.

Up/Down → ENT → Control knob → ENT

Select HEAD ADJ. | Set a value to.



HEADING Adjustment

(3) Adjusting tuning circuit (TUNING CAL)

This will adjust the automatic tuning circuit to its best operating point

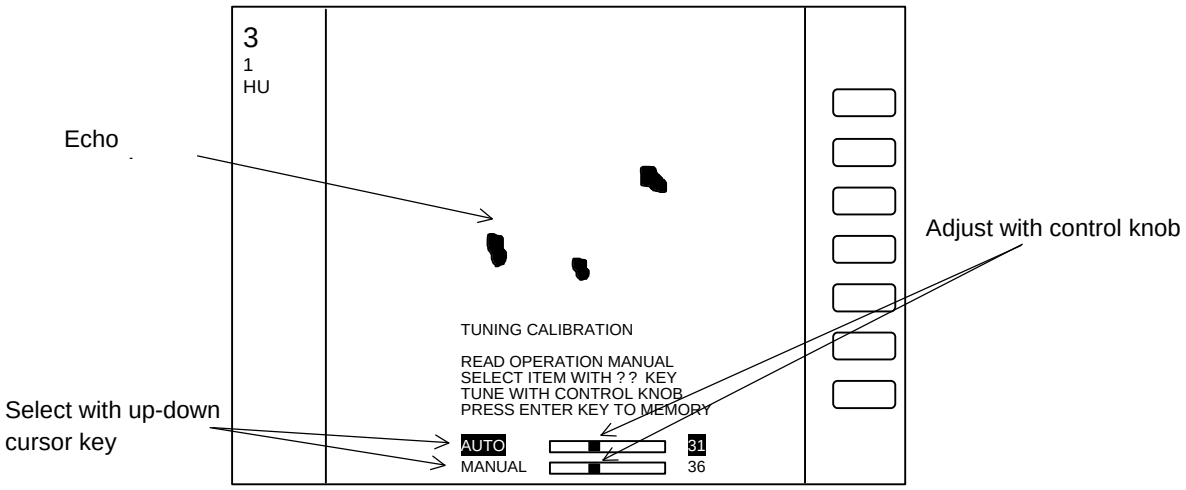
Adjustment in AUTO mode:
This adjustment is made by changing the center frequency of the receiver's automatic frequency control circuit (AFC). Response speed of the AFC is 0.5 seconds. In other words, for each detent of the rotary knob, the center frequency changes after 0.5 seconds. It takes approximately 2.5 seconds for the antenna to make one turn (24 RPM = 0.4 RPS). This means that you can see a new target every 2.5 seconds. When tuning, turn the knob slowly to obtain the best image. The AFC is calibrated by this adjustment.

Adjustment in MANUAL mode:
This adjustment is made by changing the center frequency of tuning range in the manual tuning circuit. Adjusting the manual tuning compensates for frequency deviation of the magnetron relative to temperature and time. It's necessary to do this adjustment when the radar is first installed and whenever the magnetron is replaced. Observe a close range and stable target echo, then turn the knob slowly to obtain the best image. After this adjustment, the manual adjustment indication on screen becomes 50 and this is the new tuning range center. Manual tuning must be selected in the echo menu for making manual adjustment of tuning.

(1) Choose several stable video images in the 6 NM range or more and select the long pulse setting. (menu>echo>S/L)
(2) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>TUNING CAL. Press “ENT”.
(3) “TUNING CALIBRATION” is displayed at the bottom of the screen. Select AUTO with the up-down cursor key.
(4) While watching video images, adjust control knob until the maximum amount of echo returns are displayed.
(5) Select MANUAL with the down cursor key.
(6) Adjust the control knob until echoes are clearly visible. This sets the middle value of manual tuning.
(7) When the adjustment is finished, press the "ENT" key to exit from the TUNING CALIBRATION screen.

Up/Down → Control knob → Up/Down → Control knob → ENT

Select AUTO | Adjust tuning | Select MANU | Adjust tuning

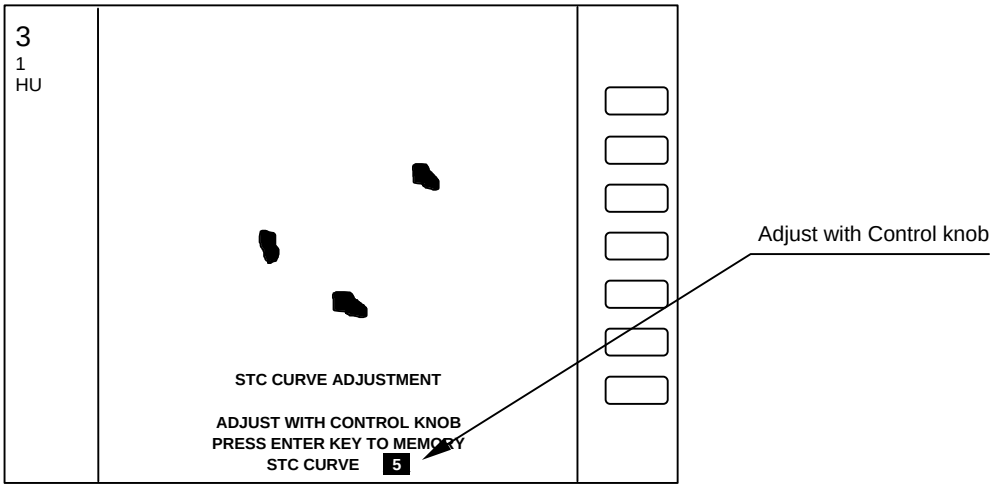


(4) Adjusting antenna height (ANTENNA)

Depending on the height at which the antenna is installed, it may be necessary to make the following correction.
(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>ANTENNA. Press “ENT”.
(2) “STC CURVE ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 9.
(3) Press the "ENT" key to exit from the adjusting antenna height screen

Up/Down → ENT → Control knob → ENT

Select ANTENNA | Choose value | Complete



ANTENNA Adjustment

Echoes in short range are varied in accordance with antenna height. Use 9 for the lowest antenna and 1 for the highest antenna. Actual adjustment of the ANTENNA HEIGHT is done by obtaining a continuous echo return of sea clutter out to maximum selected range. Note that erasing sea clutter in short-range functions will erase small targets as well.

(5) Setting automatic GAIN circuit (GAIN)

Adjustment in AUTO mode:

Set the radar to the 1.5 NM range. Press the "AUTO" button until AT2 appears at the left of the screen. The G, S, and F readings below it should all have AT next to them, meaning they are all set to the auto mode. This adjustment must be done after adjusting the Auto STC. Relative sizes of targets that are processed remain at a constant level. The target signal of the auto gain circuit is adjusted constantly, even if actual returns are varied due to a change of sea conditions. This adjustment is made on a long-range scale, and should be adjusted to obtain a small amount of noise on the display.

(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>GAIN ADJ. Press “ENT”.
(2) “AUTO GAIN ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 30.
(3) Press the "ENT" key to exit from the adjusting screen.

Up/Down → ENT → Control knob → ENT

Select GAIN ADJ | Choose value | Complete

Adjustment in MANUAL mode:

Set the radar to the 1.5 NM range. Press the "STC" button to set the manual control mode. The G, S, and F readings below it should all have values next to them, meaning they are all set to the manual mode. Set G 60 (Gain 60), S 0 (STC 0) and F 0 (FTC 0) first. Then, enter to the adjustment screen. This adjustment is made on a long-range scale, and should be adjusted to obtain a small amount of noise on the display.

(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>GAIN ADJ. Press “ENT”.
(2) “MANUAL GAIN ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 30.
(3) Press the "ENT" key to exit from the adjusting screen.

Up/Down → ENT → Control knob → ENT

Select GAIN ADJ | Choose value | Complete

(6) Setting automatic STC circuit (STC)

Adjustment in AUTO mode:

Set the radar to the 1.5 NM range. Press the "AUTO" button until AT2 appears at the left of the screen. The G, S, and F readings below it should all have AT next to them, meaning they are all set to the auto mode. AUTO STC will automatically delete echoes within 0.1 NM of your boat.

Because the 0.1 N.M. detection zone provides data for the STC circuit outside the 0.1 N.M. range, it's not recommended to make this adjustment close to shore or in a harbor area.

(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST> STC ADJ. Press “ENT”.
(2) “AUTO STC ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 16.
(3) Press the "ENT" key to exit from the adjusting screen.

Up/Down	→	ENT	→	Control knob	→	ENT
Select STC ADJ				Choose value		Complete

Adjustment in MANUAL mode:

Set the radar to the 1.5 NM range. Press the "STC" to set the manual control mode. The G, S, and F readings below it should all have values next to them, meaning they are all set to the manual mode. Set G 60 (Gain 60), S 60 (STC 60) and F 0 (FTC 0) first. Then enter to the adjustment screen.

(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST> STC ADJ. Press “ENT”.
(2) “MANUAL STC ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 16.
(3) Press the "ENT" key to exit from the adjusting screen.

Up/Down	→	ENT	→	Control knob	→	ENT
Select STC ADJ				Choose value		Complete

(7) Setting HARBOR STC circuit (HARBOR)

Set 1.5N.M range, HBR, G AT (Gain Auto), S HB (STC harbor), F 0 (FTC 0) first.
This adjustment must be carried out after adjustment of auto gain. Harbor mode means that a fixed STC depth is applied when the ship is going into a harbor or close to shore. This adjustment will provide good short-range target detection.

(1) Press the “MENU” key and select SETUP>CUSTOM>ADJUST>STC ADJ. Press “ENT”.
(2) “HARBOR STC ADJUSTMENT” will be displayed at the bottom of the screen. Using the control knob, choose a desired value from 1 to 16.
(3) Press the "ENT" key to exit from the adjusting screen.

Up/Down	→	ENT	→	Control knob	→	ENT
Select STC ADJ				Choose value		Complete