# HORIZON Marine Electronics

## MST660 Marine Compact Disc Stereo System

## **Owner's Manual**

- AM/FM CD Player
- Removable Front Panel
- Water Resistant Housing
- 18FM & 12AM Presets
- 8 Times Oversampling
- Intro, Repeat & Random Play





Marine Division of Yaesu U.S.A.

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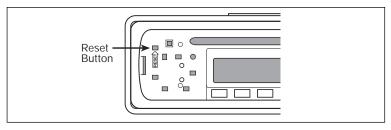
## **FEATURES**

- Detachable face panel: Guards against theft by allowing you to remove the face panel, rendering the stereo unusable. A carry case for the detachable face panel is included.
- All Electronic Controls: The Bass, Treble, Volume, Balance and Fader functions are all controlled by touch buttons for greater long term reliability.
- 8 Times Oversampling Digital Filter: Provides superb sound with high data integrity.
- Anti-vibration/Anti-shock CD Mechanism: Ensures your music is not disrupted by boat movement.
- Random, Repeat and Intro-scan Functions: Takes the effort out of playing CDs or locating specific tracks on your CD.
- Audible Cue/Review: Helps you to advance or retrace a track at high speed while monitoring it's progress.
- Auto Loading: Simply insert the CD into the slot and the servo mechanism takes over automatically.
- 18 FM and 12 AM Pre-set Memories: Store up to 18 FM stations and 12 AM stations in memory for easy recall.
- Auto Pre-set Memory System: Automatically locates and stores local stations into memory for you.
- Seek and Manual Tuning: Select stations yourself or let your radio find them for you.
- Local/DX Switch: Adjusts your radio's sensitivity for distant or local reception when seeking or scanning.
- **Preview Scan:** Steps through your pre-set station memories, pausing briefly on each to let you decide whether you wish to select that station.
- FM Stereo/Mono Switch: Lets you manually disable stereo operation for improved reception in weak signal areas.
- Clock: Shows the time at the touch of a button.
- RCA outputs: Provides a separate low level output for connection to external equalizer/booster-amplifier systems.
- Water Resistant Housing: Built into a special water resistant marine housing made from corrosion-proof materials with a transparent splash-resistant front cover.
- LCD Display: Easy to read under all lighting conditions with orange backlighting for night time use.



## **PRECAUTIONS**

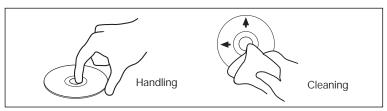
 If you are connecting your MST660 for the first time or have just reconnected your boat battery and you are experiencing problems with the MST660's operation, we suggest you try resetting the unit. The reset button is located under the removable face panel (see page 5 for instructions on removing and refitting the face panel). Simply press the reset button with a ball point pen or similar. You can then refit the face panel.



- Do not insert anything other than audio compact discs into the disc slot.
   The CD mechanism contains precision laser equipment which could be damaged by inserting foreign objects.
- The station memories and clock time are retained only while the red 'Battery' lead is connected (see Installation section). If the battery is disconnected or switched off at the master switch, or if the unit is removed from the vessel, the station memories will be lost and the clock will need to be reset.

## **Handling Compact Discs**

- Handle the CD by its edge. Avoid touching the disc's surface.
- Store your CDs away from direct sunlight or heat sources. Keeping the CD stored in its original case will help to keep it flat.
- Clean the CD with a soft cloth. Clean from the center to the outer edge (see diagram) rather than in a circular motion. Do not use solvents.

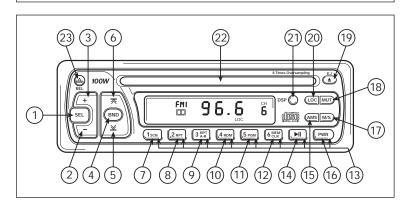


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#### Moisture Condensation

Your MST660 uses optical laser technology. Occasionally, damp or humid conditions may cause condensation to appear on the lenses inside the unit. Should this occur, the unit may not operate correctly. Simply eject the CD and leave the unit turned on for a while until the moisture evaporates.

## **CONTROLS**



- SELect Button: Press to select the next available control. The options available are Volume, Bass, Treble, Balance and Fader.
- + Control Button: Increases the setting of the selected control (Volume, Bass, Treble, Balance or Fader).
- Control Button: Decreases the setting of the selected control (Volume, Bass, Treble, Balance or Fader).
- 4. Press BND to set the frequency band to FMI, FMII, FMIII, AMI or AMII.

## 5 & 6. **坐 ⊼ TUNE Buttons**.



- Press the SCN (Scan) button to play the first 10 seconds of each track on the CD
- The RPT (Repeat) button causes the current track on the CD to be played repeatedly.
- The RPT A-B (Repeat Selection) button allows a selection of music on the CD to be played repeatedly.
- Press the RDM (Random) button to play all the tracks on the CD once in random order.
- 11. Press *PGM* to play up to 24 tracks on a CD in preprogrammed order.
- Press MEM/CLR to add or remove selected tracks from the pre-programming memory. If added to memory, these tracks are then played using the PGM button.
- 13. Buttons 1 to 6 are used to store and access preset station memories.
- To store a preset station in memory, select the required station, then press and <u>hold</u> a preset memory button for 1 second.
- To recall a station from the preset memory, simply press a preset memory button briefly.
- 14. When CD is playing, press the ►II button to pause the CD. Press ►II again to resume normal play.
  - When radio is playing, press ►II to return to a CD.
- 15. Press the AMS button to step through the stations in the preset memories, pausing briefly on each station.
  - Press and <u>hold</u> the *AMS* button to automatically locate and store the 6 strongest local stations from the selected band into the preset station memories.
- 16. Press the PWR button to turn the MST660 ON or OFF.
- 17. Press the M/S button to select Mono or Stereo reception on the FM band.
- 18. Press the MUTE button to temporarily drop the output level to a very low volume. Press the MUTE button again (or the volume + or – buttons) to restore the output volume to normal levels
- Press the ≜ button to stop CD play and eject the CD. The unit switches to radio mode.
- Press the LOC button to select between local and distant stations when tuning.
- 21. Press the DSP (Display) button to display the clock on the LCD. The LCD

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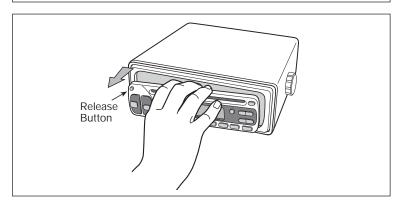


automatically reverts back to the previous display after 5 seconds.

Press and <u>hold</u> the *DSP* (Display) button for 2 seconds to enter the clock setting mode.

- 22. Insert the CD into this slot with the label facing upwards.
- 23. Press REL button to unlock face panel for removal.

## REMOVAL AND FITTING THE FACE PANEL



#### Removal

Before removing the face panel, turn the unit OFF by pressing the PWR button.

- Press the release button to release the left-hand end of the face panel.
- 2. Lift the front panel out towards you.

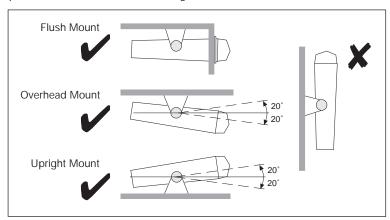
After removing the face panel, place it inside the supplied case to protect it from damage. Do not leave it in a position where it could be exposed to direct sunlight.

## Refitting

- Make sure the face panel is the right way up as it cannot be attached upside down.
- Fit the right-hand end of the face panel into the tabs inside the right-hand end of the unit.
- Gently press the left-hand end of the face panel into place until it clicks. Only light pressure is required.

#### Location

The MST660 is designed to be mounted in several different ways to enable it to be installed in the most convenient position. Although the unit is water resistant when the front cover is closed, care should be taken to locate it where it will not be subjected to spray or rain. The unit should be mounted with an angle of less than 20° to the horizontal plane (see diagram) and in a position that is free from direct sunlight and excessive vibration.



## **Upright or Overhead Mounting**

- Attach the two gimbal knobs and the self-adhesive rubber washers to the MST660 and slide the unit into the mounting bracket. Ensure the rubber washers are between the bracket and the CD player's case. Tighten the knobs firmly.
- Temporarily position the MST660 in the desired location and roughly mark the location of the bracket edges. Now, remove the unit from the bracket and reposition the bracket to mark the mounting hole positions. A range of mounting holes is provided to suit most installations.
- Screw or bolt the bracket into position. The mounting method will depend on the material to which the bracket is being attached.
- 4. Slide the MST660 back into the bracket slots and adjust for the correct position before tightening the gimbal knobs. Remember to avoid exceeding the maximum mounting angle of 20°.
- 5. Complete the antenna lead and electrical wiring as described later.

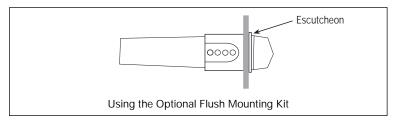
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## Flush Mounting

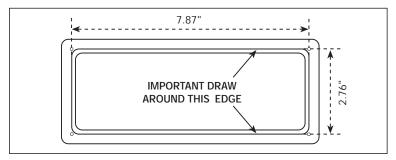
The MST660 can be neatly flush mounted into a panel or bulkhead so that just the controls and the protective cover are visible. There are two flush mounting options available. The best option for you will depend on your particular situation.

- If the space behind the bulkhead or panel you have selected has a suitable support shelf and the area is fully accessible, you can use the supplied escutcheon panel as described later.
- If the space behind the bulkhead or panel is largely inaccessible or there is no additional support shelf, we recommend you use the optional CMB60 flush mounting kit (available as an accessory). This kit is more robust, is fully self supporting and allows the MST660 to be installed from the front.



## Installation using the supplied Escutcheon Panel.

- 1. Select a suitable location on a panel or bulkhead. Examine behind the bulkhead to determine the best method of support for the CD player.
- 2. Place the escutcheon on the panel or bulkhead in the required position and mark around the outside edge of the escutcheon slot wall.



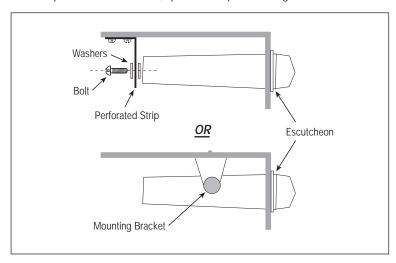
Remove the escutcheon and measure the marks. They should measure approximately 7.87" wide and 2.76" high. If not, check the diagram above to ensure that you measured the correct edge.



- 4. If your measurements are correct, carefully cut the slot around the marked lines, ensuring that you maintain the curves in each corner. Mark and drill the four 0.08" holes in the bulkhead to accept the locating pins at each corner of the escutcheon.
- 5. Trial fit the escutcheon to ensure it fits securely against the panel. If all is well, place a small dab of glue on each locating pin and press the escutcheon into place. Temporarily hold with tape if necessary.
- 6. With the escutcheon firmly glued in place, slide the MST660 through the slot from the front and push it all the way in, while leaving a clearance for the front cover to hang in the open position. Open the cover if necessary to ensure the correct clearance.
- Holding everything in position, mark the location of the internal support bracket(s). Drill the required holes and fit the bracket(s) as required to hold the MST660 firmly in place.

Note: If using the perforated metal support strip, mount it to the rear of the MST660 as shown in the diagram below.

8. Complete the antenna lead, speaker and power wiring as described later.



#### **ELECTRICAL WIRING**

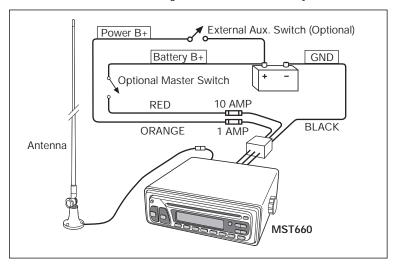
### **DC Connections**

Caution: The MST660 is designed for vessels with a 12 Volt negative ground electrical system only!

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#### Referring to the wiring diagram:

- Connect the Red wire labelled 'BATTERY B+' directly to the positive terminal of the vessel's battery, or to a point which has +12 Volts available at all times. This lead maintains the memories within the MST660 and is the main power source for the unit.
- Connect the Orange wire labelled 'POWER B+' to the vessel's +12V supply via an appropriate isolating switch or circuit breaker. This lead turns the radio ON and OFF. Alternatively, this wire can be connected directly to the battery's positive terminal and the MST660 switched ON and OFF using it's own controls.
- 3. Connect the Black lead labelled 'GROUND' to the battery's negative terminal or to the common negative bus in the electrical system.



**Important:** Your MST660 is able to maintain it's memories when it is switched off by drawing power directly from your battery via the Red 'BATTERY B+' lead. Although the memory backup current is very small (about 4 mA) it may eventually discharge your battery if left connected indefinitely. The time taken to completely discharge your battery could vary depending on it's Amp-hour rating and condition.

If you do not run your boat's motor regularly or your battery is not kept charged between outings (e.g. Solar or wind charger), we recommend you disconnect the Red lead each time you secure your boat. This is easily done by connecting the Red 'Battery B+' lead via a Master switch which can be switched off after each outing.



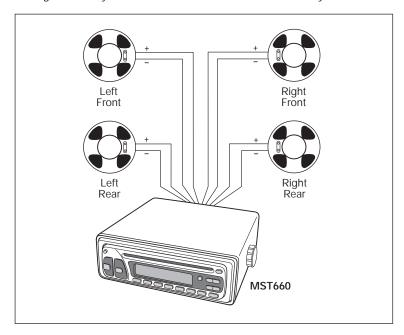
## **Speaker Connections**

When connecting the speakers, observe the correct polarity as shown in the diagram. Incorrect polarity will result in a reduction of Bass response and stereo effect. The use of speakers with an impedance of less that 4 Ohms is not recommended, as they will cause excessive loading of the MST660's output circuit.

Caution: The MST660 is a four speaker system that requires 2 separate wires for each speaker.

- **DO NOT** connect the negative (-ve) terminals of the speaker wires together or ground them to any part of the negative electrical Bus.
- DO NOT short the +ve and -ve speaker wires together.

Damage caused by the above will not be covered under warranty.



Connect all four speakers as shown in the diagram. Adjust the Fader control for the required front/rear balance. If you wish to connect only two speakers, connect these to the Rear speaker wires. The remaining speaker wires should be insulated to ensure they cannot short circuit together or to ground. If using only two speakers, adjust the Fader control to the Rear speakers.

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#### **Antenna Connections**

Connect an AM/FM marine antenna to the antenna socket, which extends from the rear of the MST660.

## **RESET BUTTON**

When the installation is complete, remove the front panel and press the *Reset* button using a ball point pen or similar (see PRECAUTIONS on page 2). This will ensure the MST660 is ready to be switched on for the first time. If at any time the controls do not seem to work (after replacing the vessels battery for example), press the *Reset* button to reset the microcomputer inside the MST660.

### **FUSE REPLACEMENT**

If any of the fuses blow, replace them with the following:

Red 'Battery +' lead: 10 Amp, 3AG. Orange 'Power B+' lead: 1 Amp, 3AG.

## **OPERATION**

#### **GENERAL FUNCTIONS**

#### Power ON/OFF

To turn the unit ON, press the *PWR* button. The unit will resume the mode that was selected when it was last turned off.

To turn the unit off, press the *PWR* button again. Note that when the unit is turned OFF, the clock is not displayed.

#### **Controls**

The Volume, Bass, Treble, Balance and Fader controls are selected electronically. The default selection is the Volume control. To select another control, press the *SEL* button repeatedly until the name of the control you require is displayed on the LCD. Each press cycles to the next control in sequence. After a moment, the display will change to show the current setting for that control. If no button is pressed for 6 seconds, the display returns to normal and the control defaults back to the Volume control.

- Volume: To adjust the Volume, simply press the or + buttons. 'V ' will appear on the display along with a number indicating the current setting. Press to decrease the volume level or + to increase the volume level.
- Bass: Press the SEL button repeatedly until 'BAS' is displayed. Press –
  to decrease the Bass level or + to increase the Bass level.
- Treble: Press the SEL button repeatedly until 'TRE' is displayed. Press –
  to decrease the Treble or + to increase the Treble.
- Balance: Press the SEL button repeatedly until 'BAL' is displayed. Press
   to reduce the volume in the right speakers or + to increase the volume in the left speakers.

To set the Balance to the center position, press – or + to reduce the front or rear setting until 'C-00' is displayed, indicating the centre position.

- Fader: Press the SEL button repeatedly until 'FAD' is displayed.
  - Press + to fade the sound toward the Front speakers (and reduce the volume in the Rear speakers). 'F' and a number is displayed to show the Front speaker setting.

Press – to fade the sound to the Rear speakers (and reduce the volume in the front speakers).  $'\!R'$  and a number is displayed to show the Rear speaker setting.

To set the fader to the center position, press – or + to reduce the front or rear setting until 'C - 00' is displayed, indicating the center position.

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Mute Button: Press the MUT button to temporarily reduce the volume. 'MUTE' appears on the display. You can use this feature when making or receiving phone calls or talking on your marine radio. Press MUT again (or the volume + or - buttons) to restore the sound to normal levels. Note that the sound will not be completely silenced, but will be reduced to a low level.

#### **RADIO**

When the unit is turned on, it will automatically return to the mode it was in when switched off. If the radio was selected, the last used radio station memory will be selected automatically. If the CD mode was selected, press **BND** to change to the radio mode

## Selecting the Memory Band

There are five memory bands available - three FM and two AM. Each band has six station memories giving a total of 18 FM memories and 12 AM memories. If you have programmed all six memories in one band, you can select the next band and continue programming more stations. If you often travel away from your local area, you can store your local stations in one band and the stations for the area you are visiting, in another band.

To select another band press the **BND** button. Each press selects FMI, FMII, FMIII, AMI or AMII in sequence.

## Using the M/S Button

The  $\emph{M/S}$  button can be used to select either Mono reception or Stereo reception.

- Mono: Selecting Mono improves reception when FM signals are weak or noisy, by disabling stereo detection. When selected, 'MON' is displayed. Note: MONO selection is only available on the FMI, FMII or FMIII bands.
- Stereo: Select stereo for normal stereo listening on the FM radio bands.
   When stereo is selected, a symbol is displayed

## Manual Tuning

To tune the radio manually, press the  $\nearrow$  or  $\veebar$  buttons. Press  $\veebar$  to step downward in frequency and  $\nearrow$  to step upward in frequency.

#### Automatic Tuning (SEEK)

To automatically locate (SEEK) a station, press and hold the  $\overline{\wedge}$  or  $\underline{\vee}$  button for more than 1 second. Press and <u>hold</u>  $\underline{\vee}$  to seek downwards in frequency and  $\overline{\wedge}$  to seek upwards in frequency. The radio will stop seeking when a strong, clear station is found.



## **Programming the Pre-set Station Memories**

#### Manual Programming

To manually program a station memory:

- 1. Select the required Band (FMI, FMII, FMIII, AMI or AMII).
- 2. Press the ⊼ or ⊻ buttons to select the required station.
- 3. Press and hold one of the six pre-set station memory buttons for 1 second. That pre-set memory number will appear in the display indicating that the memory is now programmed. e.g. if memory button 4 was pressed, '4' will appear in the display. If the selected memory button already contains a station, it will be replaced by the new station.

Repeat the above steps to program other pre-set station memories.

#### Automatic Programming

- 1. Select the required Band (FMI, FMII, FMIII, AMI or AMII).
- 2. Press and <u>hold</u> the *AMS* button for more than 2 seconds. The radio will begin searching the selected band for radio stations. As each station is located, it is stored into the next available pre-set station memory. The new stations will replace any stations previously stored in that band. Once all memories in that band have been programmed, the Automatic Memory scan will stop and the radio will play the station in pre-set memory 1.

## **Scanning Pre-Set Station Memories**

To scan through the pre-set station memories, briefly press the *AMS* button. The radio will step through the pre-set station memories in the selected band, pausing for about 10 seconds on each station. If you hear a station you like, briefly press *AMS* again (or the corresponding station memory button). The pre-set memory scan will be cancelled and the radio will remain on that station.

## **Selecting Pre-Set Station Memories**

To manually select a pre-set station memory, briefly press the desired station memory button 1 - 6. The radio will jump straight to that station and the memory number will appear on the display.

#### **CD PLAYER**

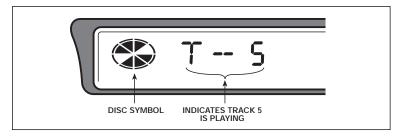
**Caution:** Do not insert anything other than audio compact discs into the disc slot. The CD mechanism contains precision laser equipment which could be damaged by inserting foreign objects.

**Important:** Because of the wide dynamic range offered by CD systems, the difference in volume level between very soft sounds and very loud sounds can be quite high. For this reason we recommend that you avoid turning the

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volume level up too high when listening to very soft music or tracks with no audio level, otherwise a sudden change to very loud music could damage your speakers.



## Inserting the CD

Remove the CD from its case and insert it label side up into the CD slot. The mechanism will automatically draw the CD into the player and track 1 will begin playing (indicated by 'T - 1' on the display).

A disc symbol is displayed on the left of the LCD whenever there is a CD in the player. The symbol will simulate rotation whenever the CD is playing.

The MST660 will not allow you to insert a second CD while there is already one in the player. If you find you are unable to insert a CD, check to see if the disc symbol is displayed. If so, you will need to eject the current CD first.

When playing CD's, the Volume, Bass, Treble, Balance and Fader controls are adjusted in the same manner described previously.

#### Fast Forward / Rewind

To advance through the present track at high speed, press and <u>hold</u> the ₹ button. The elapsed playing time will be displayed and will advance rapidly. Release the button to continue playing at the normal speed.

To reverse through the present track at high speed, press and <u>hold</u> the <u>¥</u> button. The elapsed time on the display will decrease rapidly. Release the button to continue playing the present track at the normal speed.

## Step to the Next Track

To step immediately to the start of the next track, press the  $\nearrow$  button once. The next selected track will begin playing. Press the  $\nearrow$  button repeatedly to advance to the start of successive tracks.

To step immediately to the start of the track currently being played, briefly press the  $\underline{\times}$  button once. The current track will start playing from the beginning. Press the  $\underline{\times}$  button repeatedly to locate the start of previous tracks.

## Intro-Scan

The Intro-Scan feature plays the first 10 seconds of each track allowing you to identify songs on the CD. To select Intro-Scan, press the *SCN* button. *'SCN'* will be displayed. Press the *SCN* button again to cancel Intro-Scan and stay on the current track.

#### Repeat Play

The 'Repeat Play' feature causes the current track to be played repeatedly. To select 'Repeat Play', press the *RPT* button. '*RPT*' will be displayed. Press the *RPT* button again to cancel the 'Repeat Play' feature.

### Repeat Play A-B

The 'Repeat Play A-B' feature allows a 'selected section' of the CD to be replayed repeatedly. The 'selected section' can be part of a track or may cover several consecutive tracks.

To repeat a section of the CD:

- Press the RPT A-B button at the point where you wish the repeat to start. 'A' will appear to the right of the display and the track time counter will be appear.
- Allow the CD to continue playing until it reaches the required end point, then press the RPT A-B button again. 'B' will appear.

The CD unit will now begin to play the selected section of CD repeatedly. To cancel the RPT A-B function, press the *RPT A-B* button again.

## Programmed CD Tracks

The program function allows up to 24 tracks to be selected and played in any order.

To program the selection:

- 1. Insert a CD into the player.
- 2. Press ⊼ or ¥ to select a track number.
- 3. Press *MEM* to store that track number in memory.
- Continue selecting tracks in the required order and programming them into memory using the *MEM* button until you have programmed your entire selection.

To play the CD in the preprogrammed order, press the **PGM** button. To clear the program, press the **CLR** button.

#### Random Play

When 'Random Play' is selected, all tracks on the CD will be played once in

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random order. To select 'Random Play' (also known as 'Shuffle Play') press the *RDM* button. '*RDM*' will be displayed.

To cancel 'Random Play', press the **RDM** button again.

## Switching Between CD and Radio

To select the radio while playing a CD simply press **BND**. The CD will stop and the radio will play.

To return to the CD, press ►II. As long as the CD is left inside the player and the unit remains connected to the power source, it will begin playing the last selected track.

Note: If the I button is pressed when there is no CD in the mechanism, the MST660 will simply ignore the command and will continue to play the radio.

## **Ejecting the CD**

To eject the CD press the ≜ button. 'EJT' will be displayed and the CD will appear in the slot.

Note: If the ejected disc is left in the slot it will be drawn back into the player automatically after 15 seconds to protect it.

## SETTING THE CLOCK

The MST660 has a built in clock.

To display the clock, briefly press the *DSP* button. The clock will be displayed for 5 seconds, after which it will return to its previous state.

To set the clock:

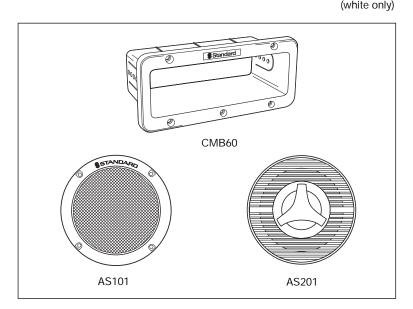
- 1. Turn the unit ON (using the *PWR* button).
- Press and <u>hold</u> the *DSP* button for about 1 second until the time appears on the display. The two dots between the digits will be flashing to indicate that the clock is now in the time setting mode.

Note: The time setting mode will be cancelled automatically after 5 seconds if the  $\underline{\vee}$  or  $\overline{\wedge}$  buttons are not pressed.

When finished, simply press any other button or wait a few seconds and the display will return to its previous state.

## ACCESSORIES

AS101	6-inch Flush-Mount Speakers (available in black or white)
AS201	7-inch Flush-Mount Speakers (white only)
CMB60	Flush-Mount Kit



## REPLACEMENT PARTS

PART	HORIZON PART NUMBER
Detachable Face Panel	063005008A
Dust Cover	053003027A
Flush Mount Escutcheon	063001002A
Mounting Bracket	160003023A
Mounting Bracket Knobs	154010017A
Power Wire Harness	156006001A
Rear Case Assembly	M27649001A
Speaker Wire Harness	156005001A

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## TROUBLE SHOOTING

The following checks will assist you in solving most of the problems you are likely to encounter after installing your MST660. Should any problem persist after you have tried these ideas, consult your dealer for advice.

SYMPTOM	CAUSE	SOLUTION
No Power.	The vessels battery switch is not on.	If the power supply is connected to the vessels battery via a master switch, turn the master switch on.
	One of the fuses has blown.	Replace the damaged fuse.
Disc cannot be loaded or ejected.	There is already a disc in the player.	Remove the disc in the player, then insert the new disc.
	You are trying to insert the CD upside down.	Insert the CD with the label facing up.
	The CD is very dirty or defective.	Clean the CD or try another CD.
	The temperature is too high - the sun has been shining directly onto the unit.	Cool the unit down or protect it from direct sunlight.
	There is condensation on the laser lens.	Leave the player off for an hour or so, then try again.

### **ERROR CODES**

The MST660 is controlled by an advanced microprocessor. If a problem occurs with the unit's normal operation, the microprocessor will sense this and display an error code. If the error codes E1, E2 or E3 appear on the display at any time, remove the front panel and press the *Reset* button. In most instances, this will fix the problem. If the error persists, return your MST660 to your dealer for repair.



## **SPECIFICATIONS**

## **FM Radio**

Frequency range:	87.5 - 107.9 MHz
Frequency Step:	
Intermediate Frequency:	
Sensitivity (30dB S/N):	
AM Suppression:	50 dE
Image Rejection:	
Channel Separation:	
Station Memories:	
AM Radio	
Frequency Range:	530 - 1710 kHz
Frequency Step:	
Intermediate Frequency:	450 kHz
Sensitivity (20dB S/N):	
Image Rejection:	
Station Memories:	12
Compact Disc Mechanism	
Frequency Response:	5 Hz - 20 kHz +1 dF

## **Audio Amplifier**

Audio Output :	15 Watts Front (RMS) @ 10% THD (25W Peak)
	15 Watts Rear (RMS) @ 10% THD (25W Peak)
	(4 Channels x 25W Peak = 100W Peak)
Speaker Impedance:	4 Ohm
	800 mV (RMS) Nominal

#### General

DC Supply Input:	11 - 16 Volts Negative Ground
Back-up Current:	~4 mA
Memory Backup:	External Back-up Memory Wire
Overall Size:	7.67'' (W) x 3.15'' (H) x 9.25'' (D)
Mounting Slot Size:	7.87" (W) x 2.76" (H) (approximately)

All specifications are nominal and are subject to change without notice or obligation.

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## LIMITED WARRANTY

STANDARD HORIZON warrants, to the original purchaser only, each new Marine Communications Product ("Product") manufactured and/or supplied by Standard Horizon against defects in material and workmanship under normal use and service for a period of time from the date of purchase as follows:

### MST660 Marine Compact Disc Stereo System - 1 year

To receive warranty service, the purchaser must deliver the Product, transportation and insurance prepaid, to Standard Horizon,115 North Wright Brothers Drive, Salt Lake City, Utah 84116-2838. Include proof of purchase indicating model, serial number, and date of purchase. Standard Horizon will return the Product to the purchaser freight prepaid.

In the event of a defect, malfunction or failure of a Product during the warranty period, Standard Horizon's liability for any breach of contract or any breach of express or implied warranties in connection with the sale of Products shall be limited solely to repair or replacement, at its option, of the Product or part(s) therein which, upon examination by Standard Horizon, shall appear to be defective or not up to factory specifications. Standard Horizon may, at its option, repair or replace parts of subassemblies with new or reconditioned parts and subassemblies. Parts thus repaired or replaced are warranted for the balance of the original applicable warranty.

Standard Horizon will not warrant installation, maintenance or service of the Products. In all instances, Standard Horizon's liability for damages shall not exceed in purchase price of the defective Product. This warranty only extends to Products sold within the 50 States of the United States of America and District of Columbia

Standard Horizon will pay all labor and replacement parts charges incurred in providing the warranty service except where purchaser abuse or other qualifying exceptions exist. The purchaser must pay any transportation expenses incurred in returning the Product to Standard Horizon for service.

This limited warranty does not extend to any Product which has been subjected to misuse, neglect, accident, incorrect wiring by anyone other than Standard Horizon, improper installation, or subjected to use in violation of instructions furnished by Standard Horizon, nor does this warranty extend to Products on which the serial number has been removed, defaced, or changed. Standard Horizon cannot be responsible in any way for ancillary equipment not furnished by Standard Horizon which is attached to or used in connection with Standard Horizon's Products, or the operation of the Product with any ancillary equipment and all such equipment is expressly excluded from this warranty. Standard Horizon disclaims liability for range, coverage, or operation of the Product and ancillary equipment as a whole under this warranty. Standard Horizon reserves the right to make changes or improvements in Products, during subsequent production, without incurring the obligation to install such changes or improvements on previously manufactured Products.

The implied warranties which the law imposes on the sale of this Product are expressly LIMITED in duration, to the time period specified above. Standard Horizon shall not be liable under any circumstances for consequential damages resulting from the use and operation of this Product, or from the breach of this LIMITED WARRANTY, any implied warranties, or any contract with Standard Horizon. IN CONNECTION WITH THE SALE OF ITS PRODUCTS, STANDARD HORIZON MAKES NO WARRANTIES, EXPRESS OR IMPLIED AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, EXCEPT AS EXPRESSLY SET FORTH HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply. This warranty gives specific legal rights, and there may be other rights which may vary from state to state.

ONLY PRODUCTS SOLD ON OR AFTER JANUARY 1, 1991 WILL BE COVERED UNDER THE TERMS OF THIS LIMITED WARRANTY.

#### NOTE

There should be a pre-paid warranty registration postcard inserted in this manual. If there is not, please either contact:

STANDARD HORIZON MARINE DIVISION 17210 Edwards Road, CERRITOS, CA 90703 Telephone No. (562) 404 2700 Fax No. (562) 404 1210

or register online at: www.yaesu.com





STANDARD HORIZON 17210 Edwards Road, CERRITOS, CA 90703 Telephone (562) 404 2700

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