A SHORT GUIDE

FOR THE OPERATION OF THE

FURUNO LC-90

LORAN C NAVIGATOR

INTRODUCTION

The Furuno LC-90 Loran C Navigator is truly an electronic marvel. It can direct you out to sea while following a complicated route plan to your chosen location. It will even warn you if you are off course by sounding an audible alarm. It will then direct you home, and all with incredible accuracy. But learning how to operate the LC-90 is like the visitor to New York City who asked a native "How do you get to Carnegie Hall?" The native answered, "Practice, man, practice." The same is required to become proficient with the LC-90. Practice, man, practice.

This guide is meant to supplement and complement the Owner's Manual. The user is encouraged first to read the Owner's Manual to obtain a general overview of Loran and the LC-90. Then later, if the user is having a specific problem, he should be able to look for the specific operation in this guide and quickly solve his problem.

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HOW TO TURN THE UNIT "ON"

1.   PRESS | PWR |

HOW TO TURN THE UNIT "OFF"

1.   SIMULTANEOUSLY PRESS | PWR | AND | OFF | .

HOW TO ENTER A SELECTED MODE

PRESS | ◁ | OR | ▷ |

TO MOVE THE MODE INDICATOR ARROW SIDEWAYS AND TO
ALIGN IT ABOVE THE SELECTED MODE.

HOW TO ENTER A SELECTED FUNCTION

PRESS | # | | X |

SUBSTITUTE THE SELECTED FUNCTION NUMBER FOR THE X.

HOW TO MOVE CURSOR

PRESS | △ | OR | ▽ |

TO POSITION CURSOR TO DESIRED LOCATION.

HOW TO CLEAR THE MEMORY

START WITH UNIT "OFF"

1.   PRESS
       | CLR | AND HOLD.

2.   PRESS
       | PWR | .

3.   AFTER TWO BEEPS, RELEASE
       | CLR | .

HOW TO CHANGE DEFAULT VALUE E. LONGITUDE TO W. LONGITUDE

START WITH UNIT "OFF".

1. PRESS

    [+/-]   AND HOLD.

2. PRESS

    [PWR] .

3. AFTER TWO BEEPS, RELEASE

    [+/-] .

HOW TO ACTIVATE OR DEACTIVATE ASF

1. ENTER FUNCTION #4 BY PRESSING

    [#]   [4] .

2. MOVE CURSOR TO THIRD LINE BY PRESSING

    [▽].

3. REVERSE ASF STATUS BY PRESSING

    [CLR]   [+/-]   [ENT] .

HOW TO VARY THE BACKLIGHTING ILLUMINATION LEVEL

    PRESS

    [DIM]   FOUR TIMES TO CYCLE THROUGH
            BRIGHT, MEDIUM, DIM AND OFF.

HOW TO MANUALLY ENTER MAGNETIC VARIATION

1. ENTER FUNCTION #4 BY PRESSING

    [#]   [4].

2. CHANGE "A" (AUTOMATIC) TO "D" (DISABLED) BY PRESSING

    [CLR]   [+/-]   [ENT].

3. ENTER MAGNETIC VARIATION BY PRESSING

    [CLR]   [+/-]   [X]   [X]   [ENT] .

    SUBSTITUTE YOUR LOCAL MAGNETIC VARIATION FOR THE X's.
    OMIT +/- FOR WEST VARIATION.

HOW TO SET THE AVERAGING TIME FOR SPEED AND L/L

1.   ENTER FUNCTION #3 BY PRESSING

      | # | | 3 | .

2.   ENTER AVERAGING NUMBER BY PRESSING

      | CLR | | X | | ENT | .

      SUBSTITUTE YOUR CHOICE OF AVERAGING NUMBER FOR THE X.

HOW TO INITIALIZE AND FIND YOUR POSITION

1.   ENTER FUNCTION #1 BY PRESSING

      | # | | 1 | .

2.   ENTER YOUR APPROXIMATE LATITUDE WITHIN 3 DEGREES BY
      PRESSING

      | CLR | | X | | X | | ENT | .

      SUBSTITUTE YOUR ESTIMATED LATITUDE FOR THE X's.

3.   ENTER YOUR APPROXIMATE LONGITUDE WITHIN 3 DEGREES BY
      PRESSING

      | CLR | | X | | X | | X | | ENT | .

      SUBSTITUTE YOUR ESTIMATED LONGITUDE FOR THE X's.
      LEADING ZEROS ARE NECESSARY. IF LONGITUDE
      DISPLAYS "E", CHANGE TO "W" IF APPROPRIATE.
      SEE PAGE 2.

      IN A FEW MOMENTS YOUR GRI AND S1 AND S2 CODES
      WILL BE DISPLAYED. IN A FEW MINUTES YOUR PRESENT
      POSITION WILL BE DISPLAYED.

      TO EXIT THIS FUNCTION PRESS | ◁ | OR | ▷ | .

HOW TO FIND YOUR POSITION AFTER INITIALIZATION HAS BEEN COMPLETED.

1.   PRESS

      | PWR | .

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ENTERING WAYPOINTS

HOW TO ENTER WAYPOINTS BY LATITUDE AND LONGITUDE

1.   ENTER WPT. MODE BY PRESSING ◁ OR ▷ .

2.   NUMBER WAYPOINT BY PRESSING

| CLR | | X | | X | | ENT | .

SUBSTITUTE WAYPOINT NUMBER FOR X's. USE A LEADING ZERO FOR NUMBERS 1 THROUGH 9.

3.   ENTER LATITUDE BY PRESSING

| CLR | X | X | X | X | X | X | ENT | .

SUBSTITUTE DEGREES, MINUTES, TENTHS AND HUNDREDTHS OF MINUTES FOR X's. LEADING ZEROS ARE NECESSARY. TRAILING ZEROS ARE UNNECESSARY.

4.   ENTER LONGITUDE BY PRESSING

| CLR | X | X | X | X | X | X | X | ENT | .

SUBSTITUTE DEGREES, MINUTES, TENTHS, AND HUNDREDTHS OF MINUTES FOR X's. LEADING ZEROS ARE NECESSARY. TRAILING ZEROS ARE UNNECESSARY.

HOW TO ENTER WAYPOINTS BY TD'S

1.   ENTER FUNCTION #4 AND OBTAIN THE ASF VALUES FOR THE TD'S YOU WISH TO ENTER.

2.   ADD THESE ASF VALUES TO THE TD'S YOU WISH TO ENTER.

3.   ENTER WPT MODE.

4.   PRESS

| TD |
| LL | SO THAT THE UNIT DISPLAYS TD'S.

5.   NUMBER WAYPOINT BY PRESSING

| CLR | | X | | X | | ENT | .

SUBSTITUTE WAYPOINT NUMBER FOR X's. USE A LEADING ZERO FOR NUMBERS 1 THROUGH 9.

6.   ENTER TD FOR S1 BY PRESSING

| CLR | X | X | X | X | X | X | ENT | .

SUBSTITUTE TD NUMBERS FOR X's.

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HOW TO ENTER WAYPOINTS BY TD'S (Continued)

7. ENTER TD FOR S2 BY PRESSING

| CLR | | X | X | X | X | X | X | | ENT | .

SUBSTITUTE TD NUMBERS FOR X's.

8. CONVERT TD's TO L/L's BY PRESSING

| TD↓ |
| ↰LL | .

HOW TO ENTER WAYPOINTS OF PRESENT POSITION

1. ENTER WPT MODE BY PRESSING

| ◁ | OR | ▷ | .

2. NUMBER WAYPOINT BY PRESSING

| CLR | | X | | X | | ENT | .

SUBSTITUTE WAYPOINT NUMBER FOR X's. USE A LEADING
ZERO FOR NUMBERS 1 THROUGH 9.

3. PRESS

| EVT | .

HOW TO ENTER WAYPOINTS BY RANGE AND BEARING FROM PRESENT POSITION

1. ENTER CLC MODE BY PRESSING

| ◁ | OR | ▷ | .

2. NUMBER WAYPOINT BY PRESSING

| CLR | | X | | X | | ENT | .

3. ENTER RANGE BY PRESSING

| CLR | | X | | X | | X | | ENT | .

SUBSTITUTE MILES AND TENTHS FOR X's. USE LEADING ZEROS
IF NECESSARY.

4. ENTER BEARING BY PRESSING

| CLR | | X | | X | | X | | ENT | .
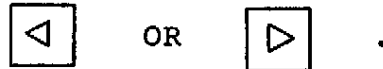
SUBSTITUTE DEGREES FOR X's. USE LEADING ZEROS
IF NECESSARY.

HOW TO FIND RANGE AND BEARING TO WAYPOINT FROM PRESENT POSITION

1.   ENTER NAV MODE BY PRESSING

◁   OR   ▷   .

2.   ENTER "FROM" AND "TO" WAYPOINTS BY PRESSING
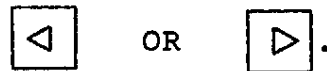
CLR   0   0   X   X   ENT   .

SUBSTITUTE WAYPOINT NUMBER FOR X's. USE LEADING ZERO FOR
NUMBERS 1 THROUGH 9.

RANGE AND BEARING WILL BE DISPLAYED ON LINES 5 AND 6.

RANGE AND BEARING WILL ALSO BE DISPLAYED IN R/B MODE ALONG
WITH PRESENT POSITION.

HOW TO FIND SHIP'S SPEED, SHIP'S COURSE, VELOCITY TO DESTINATION, TIME TO GO, CROSS-TRACK ERROR, COURSE OFFSET, FROM WAYPOINT TO WAYPOINT

1.   ENTER NAV MODE BY PRESSING
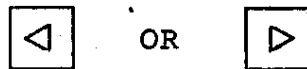
◁   OR   ▷ .

2.   ENTER "FROM" AND "TO" WAYPOINTS BY PRESSING

CLR   X   X   X   X   ENT   .

SUBSTITUTE "FROM" AND "TO" WAYPOINT NUMBERS FOR X's. USE
LEADING ZERO FOR NUMBERS 1 THROUGH 9.

3.   PRESS

◁   OR   ▷

TO DISPLAY INFORMATION IN S/C, VTD, XTE MODES.

HOW TO CREATE A ROUTE PLAN

1. ENTER PLN MODE BY PRESSING

    [◁]   OR   [▷] .

2. ENTER ROUTE PLAN NUMBER BY PRESSING

    [CLR]   [X]   [X]   [ENT] .

3. ENTER FIRST WAYPOINT IN POSITION NUMBER 1 BY PRESSING

    [CLR]   [X]   [X]   [ENT] .

4. ENTER REMAINING WAYPOINTS OF ROUTE PLAN IN SUCCEEDING
    POSITIONS IN A SIMILAR MANNER.

5. SET ARRIVAL ALARM TO ENABLE AUTOMATIC SWITCHING OF
    WAYPOINTS WHEN VESSEL ENTERS ALARM AREAS.

ALARMS

ENTER THE ALM MODE BY PRESSING

[◁]   OR   [▷] .

FOR ALL OF THE FOLLOWING

HOW TO REVERSE THE ALARM STATUS, i.e., CHANGE "OFF" TO "ON" AND "ON" TO "OFF"

WITH CURSOR ON THIRD LINE, PRESS

[CLR]   [+/-]   [ENT] .

HOW TO SET OFF-COURSE ALARM

WITH CURSOR ON FOURTH LINE, PRESS

[CLR]   [+/-] (FOR OUT)   [X]   [X]   [X]   [ENT] .

OMIT PRESSING +/- IF STATUS IS ALREADY OUT.

SUBSTITUTE FOR X's WHAT OFF-COURSE DISTANCE IS DESIRED TO
ACTUATE ALARM IN MILES, TENTHS, AND HUNDREDTHS.

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ALARMS (Continued)

HOW TO SET ARRIVAL ALARM

WITH CURSOR ON FIFTH LINE, PRESS

| CLR | | +/- | (FOR IN) | X | X | X | ENT | . .

OMIT PRESSING +/- IF STATUS IS ALREADY "IN".

SUBSTITUTE FOR X's THE DISTANCE FROM THE DESTINATION
WAYPOINT THAT YOU DESIRE TO ACTIVATE THE ALARM. THE
DISTANCE MUST BE IN MILES, TENTHS, AND HUNDREDTHS.

HOW TO SET BORDER ALARM

WITH CURSOR ON FOURTH LINE, PRESS

| CLR | | +/- | (FOR IN) | X | X | X | ENT | .

OMIT PRESSING +/- IF STATUS IS ALREADY "IN".

SUBSTITUTE FOR X's THE DISTANCE FROM THE BORDER THAT YOU
DESIRE TO ACTIVATE ALARM. DISTANCE MUST BE IN MILES,
TENTHS, AND HUNDREDTHS.

HOW TO SET ANCHOR WATCH

1.   WITH CURSOR ON FIFTH LINE, PRESS

| CLR | | +/- | (FOR OUT) | X | X | X | ENT | .

OMIT PRESSING +/- IF STATUS IS ALREADY "OUT".

SUBSTITUTE FOR X's THE DISTANCE FROM YOUR PRESENT POSITION
THAT YOUR DESIRE TO ACTIVATE THE ALARM.

2.   ENTER NAV MODE BY PRESSING

◁   OR   ▷ .

3.   PRESS

| CLR | | O | O | X | X | ENT | . .

SUBSTITUTE A WAYPOINT NUMBER THAT CONTAINS·YOUR PRESENT
POSITION FOR THE X's.

EVENT

HOW TO STORE PRESENT POSITION IN EVENT MEMORY

IN ANY MODE EXCEPT WPT, PRESS

| EVT | .

HOW TO ACCESS EVENT MEMORY

1.   ENTER FUNCTION #0 BY PRESSING

| # | | 0 | .

2.   PRESS

| CLR | | X | | X | | ENT |

SUBSTITUTE EVENT NUMBER FOR X's.

HOW TO TRANSFER POSITION DATA FROM EVENT MEMORY TO WAYPOINT MEMORY

1.   ENTER FUNCTION #0 BY PRESSING

| # | | 0 | .

2.   SELECT EVENT FOR TRANSFER BY PRESSING

| CLR | | X | | X | | ENT | .

SUBSTITUTE EVENT NUMBER FOR X's.

3.   PRESS

| CLR | | X | | X | | ENT | .

SUBSTITUTE WAYPOINT NUMBER FOR X's.

ADDENDA

FOR THE FURUNO

LC-90 OWNER'S MANUAL

Page 3   Interface Kit Code No. should be 000-508-663.

Page 19   Add the following:

IMPORTANT Please note that the antenna connector
is NOT a PL-259, although it looks very similar. If
a PL-259 connector is used, the connector will not
properly tighten, and erratic operation will probably
result. The proper connector is an M-P-3 (Ni) Code
No. 000-106-393. Be very careful not to "short" the
antenna cable when installing the connector as this
will damage the receiver and factory service will be
required.

Page 20   Fig 11. Change "impedance" to "resistance". Omit
"(250-350 ohms normal)". Add "The resistance should
be approximately 7000 ohms. Use only a low-voltage
type ohmmeter."

Page 21   Omit paragraph that starts "Note: If your present
location..." and replace with:

IMPORTANT: If your location is in the Western
Hemisphere, and if after clearing, the second data
line shows "E" rather than "W", this default status
must be reversed as follows: Starting with the unit
"Off", press and hold the ⌐+/-⌐ key. While still
pressing the ⌐+/-⌐ key, press the PWR key. After
two beeps are heard, release the ⌐+/-⌐ key. The
status has been reversed from "E" to "W". This
status will now remain in the unit's memory until the
next time it is cleared.

Page 24   Add at bottom of page:

"Use function #3 to program the desired data output
to the output jack. FURUNO CIF, DISPLAY, or NMEA 0183
output data is available at pins 1 and 2. Pin 1 is +
and Pin 2 is -. NMEA 0180 or NMEA 0183 data output is
available at Pins 5 and 6. Pin 5 is + and Pin 6 is -."

Page 27   Omit fourth paragraph starting with "Note also that
the default values..."

Page 30   Change last sentence to read:

"Press ⌐▽⌐ once. Then press ⌐CLR⌐ ⌐+/-⌐ ⌐ENT⌐ ."

Page 69   Data Plug CODE NO. should be 000-508-663.