Covered in this chapter:
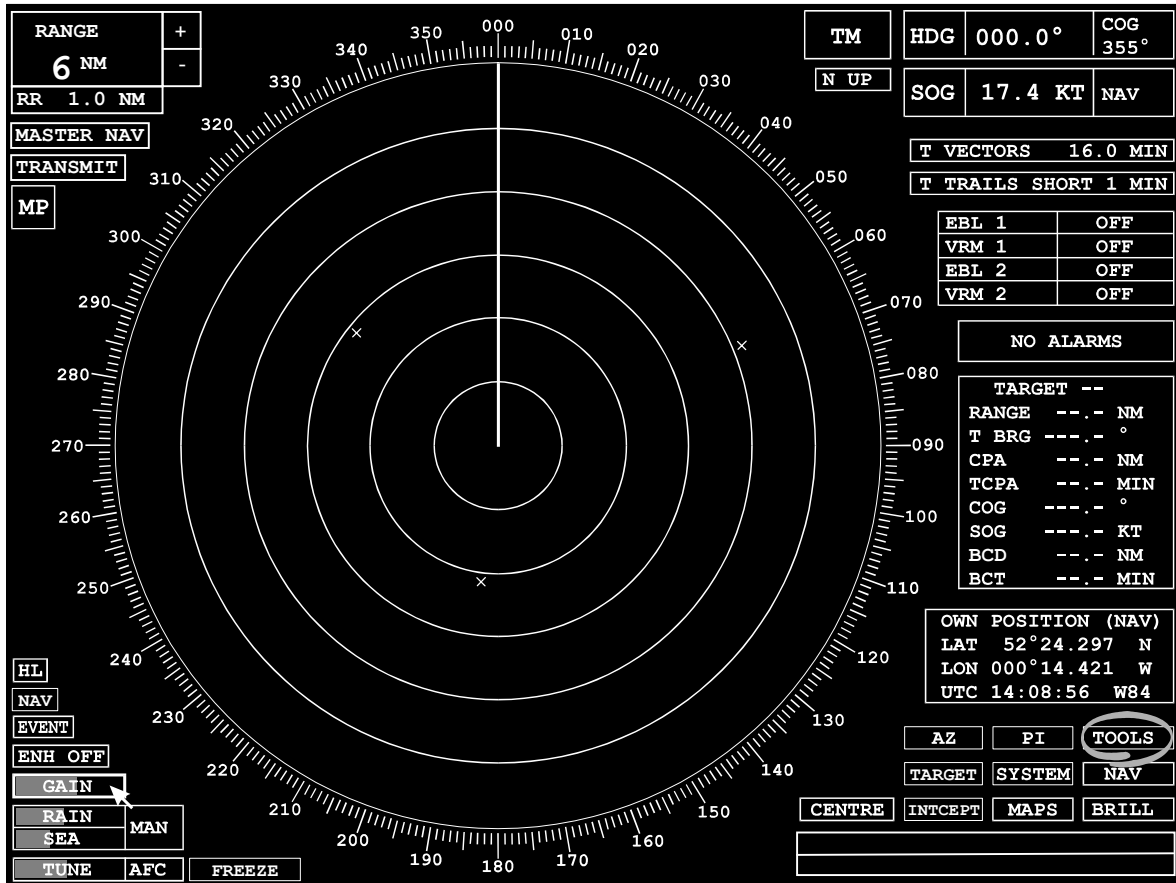
- Displaying a half circle or full circle rotating cursor to provide a means of parallel indexing.
- Marking points of interest in the video circle.
- Planning a change of course using a constant turn radius.
- Displaying an outline of own ship at its position in the video circle.
- Helicopter approach sector.
- Stations keeping.

```
┌──────┐ ┌──────┐ ┌──────┐
│  AZ  │ │  PI  │ │TOOLS▼│
└──────┘ └──────┘ └──────┘
┌──────┐ ┌──────┐ ┌──────┐
│TARGET│ │SYSTEM│ │ NAV  │
└──────┘ └──────┘ └──────┘
┌──────┐ ┌──────┐ ┌──────┐
│INTCEPT│ │ MAPS │ │BRILL │
└──────┘ └──────┘ └──────┘
```

Introduction

The TOOLS soft key provides access to a number of on-screen tools which allow the user to:
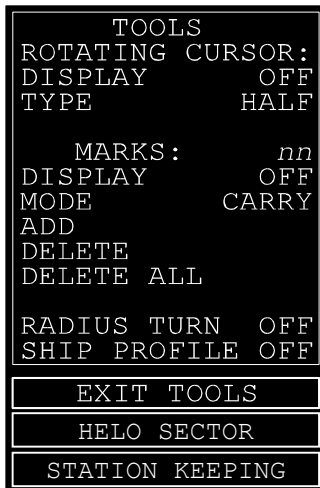
- Display a half or full circle 'Rotating Cursor'
- 'Mark' up to 20 points of interest on screen.
- Pre-plan a 'Radius Turn'
- Display the 'Ship's Profile'
- Display a 'Helicopter Approach Sector'
- Display the 'Station Keeping'

Accessing the TOOLS

```
┌─────────┐
│ TOOLS▼  │
└─────────┘
```

1. Position the screen cursor over the TOOLS soft key.
2. Right click to toggle tools display ON or OFF.

Note - When tools are turned-ON, only the tools currently ON in the TOOLS menu will be visible. When tools are turned-OFF all tools related synthetics are removed from the radar picture.

```
┌──────────────────────┐
│        TOOLS         │
│ ROTATING CURSOR:     │
│ DISPLAY        OFF   │
│ TYPE          HALF   │
│                      │
│    MARKS:        nn  │
│ DISPLAY        OFF   │
│ MODE         CARRY   │
│ ADD                  │
│ DELETE               │
│ DELETE ALL           │
│                      │
│ RADIUS TURN    OFF   │
│ SHIP PROFILE   OFF   │
│ ┌──────────────────┐ │
│ │   EXIT TOOLS     │ │
│ ├──────────────────┤ │
│ │   HELO SECTOR    │ │
│ ├──────────────────┤ │
│ │ STATION KEEPING  │ │
│ └──────────────────┘ │
└──────────────────────┘
```

A left click will reveal the TOOLS menu and an EXIT soft key as shown on the left

Note - A left click on the EXIT TOOLS soft key will close the menu.

Rotating Cursor

```
        TOOLS
ROTATING CURSOR:
DISPLAY        OFF
TYPE          HALF

   MARKS: nn
DISPLAY        OFF
MODE         CARRY
ADD
DELETE
DELETE ALL

RADIUS TURN    OFF
SHIP PROFILE   OFF

    EXIT TOOLS
```

A **HALF** circle, or **FULL** circle, rotating cursor can be displayed to provide a means of parallel indexing. The rotating cursor consists of a single white line diameter plus a number of equally spaced lines which are perpendicular to the single line. The spacing of the perpendicular lines corresponds to the range ring spacing on all ranges except the 0.75n.m. (1.5km) range where spacing is at half ring intervals. The rotating cursor is always centred on own ship.
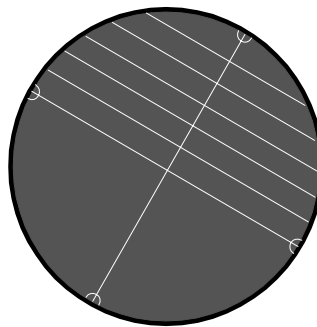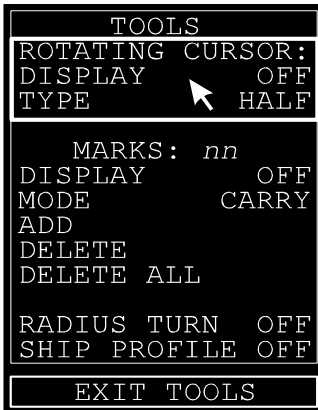
HALF Rotating Cursor   FULL Rotating Cursor
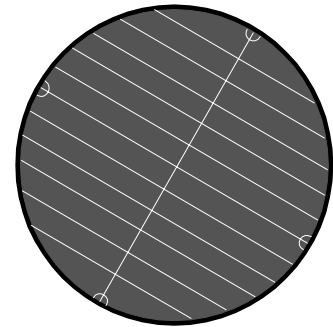
The displayed cursor can be rotated by dragging (left click, hold and drag) the end points of the lines which pass through the video circle centre. The end points are marked with an open semi-circular marker. ⌣

To Turn the Rotating Cursor ON or OFF
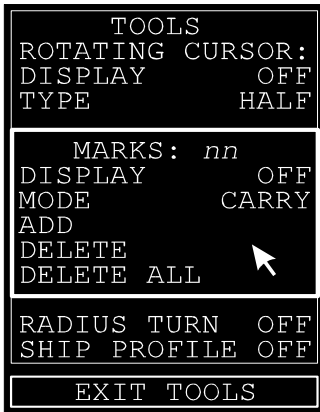
```
DISPLAY        OFF
```

1. Within the menu, position the screen cursor over the DISPLAY line under the ROTATING CURSOR heading.
2. Left click to toggle the cursor ON or OFF.

To Select HALF or FULL Circle Cursor

```
TYPE
```

1. Within the menu, position the screen cursor over the TYPE line.
2. Left click to toggle the cursor to HALF or FULL.

```
          TOOLS
ROTATING CURSOR:
DISPLAY          OFF
TYPE            HALF

    MARKS: nn
DISPLAY          OFF
MODE           CARRY
ADD
DELETE
DELETE ALL

RADIUS TURN      OFF
SHIP PROFILE OFF

      EXIT TOOLS
```
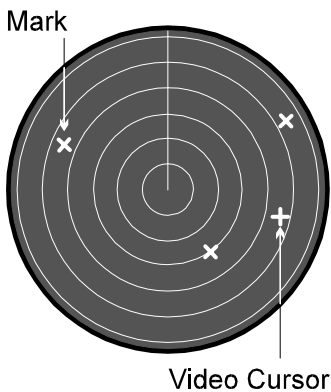
Marks

Up to 20 position 'marks' can be defined within the video circle. The marks are available in all motion modes, presentation modes (except H-Up mode) and range scales, and may be '**dropped**' or '**carried**'. When carried, the marks remain at a fixed range and bearing from own ship. When dropped they remain at a fixed position on the ground or in the water (depending on the speed mode in use).

In the menu the MARKS: *nn* line indicates the number of marks currently defined, and the MODE line indicates whether CARRY or DROP is selected.

To Turn Marks ON or OFF
1. Within the menu, position the screen cursor over the DISPLAY line under the MARKS: *nn* heading.
2. Left click to toggle marks ON or OFF.

```
DISPLAY          OFF
```

Mark

Video Cursor

Marks are displayed as small white crosses (x) within the video circle.

To CARRY or DROP Marks
1. Within the menu, position the screen cursor over the MODE line.
2. Left click to toggle between DROP and CARRY.

```
MODE           CARRY
```

To Add Marks
1. Within the menu, position the screen cursor over the ADD line.
2. Left click to select. The ADD line in the menu will change to yellow.
3. Position the cursor over the position to be marked.
4. Left click to mark.

```
ADD
```

If an attempt is made to add a mark when 20 marks are already defined, the following prompt is displayed.

```
All marks are now allocated
```

To DELETE Individual Marks

```
DELETE
```

1. Within the menu, position the screen cursor over the DELETE line.
2. Left click to select. The DELETE line in the menu will change to yellow.
3. Position the cursor over the mark to be deleted.
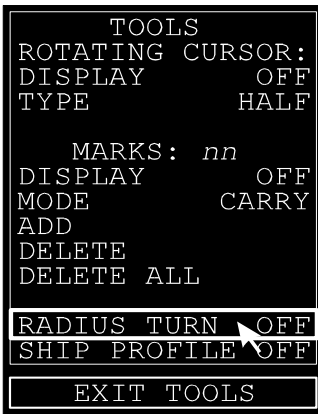4. Left click to delete.

To DELETE ALL Marks
WARNING - THIS OPERATION CANNOT BE UNDONE.
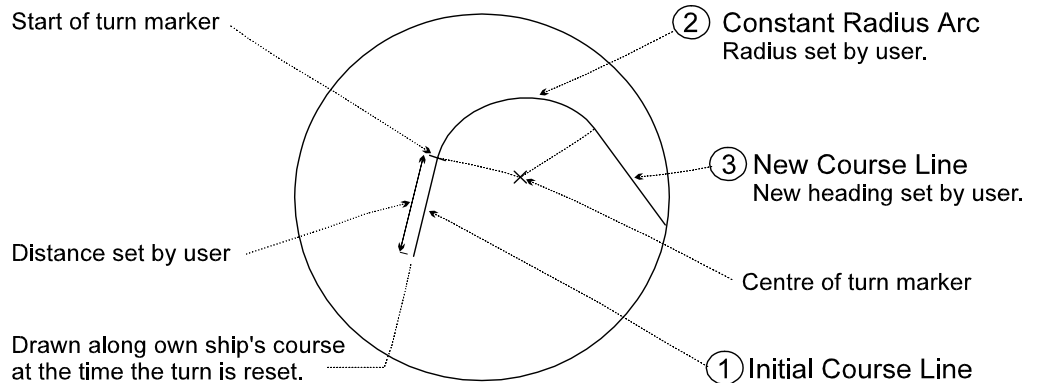
```
DELETE ALL
```

1. Within the menu, position the screen cursor over the DELETE ALL line.
2. Left click to delete ALL marks.

*Note - All 'marks' are **cleared automatically** if the Drop or Carry mode is altered, or the presentation mode is changed between stabilised and unstabilised (See Chapter 5: Presentation & Motion Modes).*

```
        TOOLS
ROTATING CURSOR:
DISPLAY          OFF
TYPE            HALF

   MARKS: nn
DISPLAY          OFF
MODE           CARRY
ADD
DELETE
DELETE ALL

RADIUS  TURN    OFF
SHIP  PROFILE   OFF

     EXIT TOOLS
```
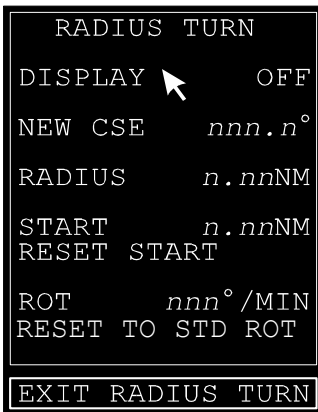
Constant Radius Turn

This tool allows the user to plan a change of course using a constant radius turn. It is available in transmit mode for all motion modes, stabilised presentation modes and range scales. The planned turn is displayed as three adjustable lines as shown in the figure below.

Start of turn marker

② Constant Radius Arc
Radius set by user.

③ New Course Line
New heading set by user.

Distance set by user

Centre of turn marker

Drawn along own ship's course
at the time the turn is reset.

① Initial Course Line

Radius Turn Menu

```
RADIUS  TURN    OFF
```

A left click on the RADIUS TURN line will reveal the RADIUS TURN menu shown below left.

```
     RADIUS TURN

DISPLAY          OFF

NEW CSE       nnn.n°

RADIUS       n.nnNM

START        n.nnNM
RESET  START

ROT         nnn°/MIN
RESET TO STD ROT

EXIT RADIUS TURN
```

The planned turn is displayed initially with default values applied. Any adjustments made by the user are automatically limited to the maximum rate of turn.

The MAX RATE OF TURN is entered during initialisation.

Within the menu, left clicks on the DISPLAY line will toggle the 'radius turn' display ON and OFF.

Note – *A left click on the EXIT RADIUS TURN soft key will close the menu.*

Each parameter of the plan (new course, turn radius and start line) can be altered in any one of three ways.

1. By left clicking on the parameter caption in the RADIUS TURN menu, and then using the cursor control to change the reading.
2. By right clicking on the parameter caption in the RADIUS TURN menu to reveal a drop down numeric keypad, from which a new value for the parameter can be entered.
3. By a process of dragging from within the video circle (ONLY when the Constant Radius Turn menu is displayed and the Radius Turn Display is ON).

The procedures for making changes to individual parameters are as follows.

Setting the New Course
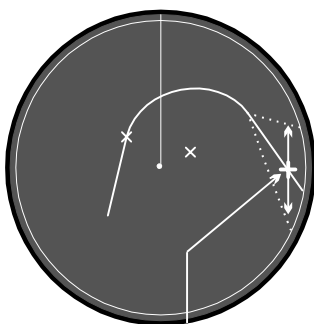**Either**

`NEW CSE nnn.n °`

1. Within the Radius Turn menu, position the screen cursor over the **NEW CSE** line.
2. Left click to allow adjustment using the cursor control.
3. Move the cursor control left or right to change the NEW CSE reading in the menu.
4. Left click to accept the new reading.

Alternatively a right click on the NEW CSE line within the menu will reveal a drop down numeric keypad from which the new course can be entered, see Chapter 15.

Or
From within the video circle,
1. Position the video circle over the **new course** line.
2. Press and hold down the left key.
3. Drag the new course line to the required course.
4. Release the left key.

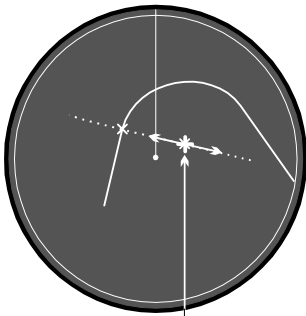New course line
Drag to new course

Setting the Turn Radius

Either

`RADIUS        n.nnNM`

1. Within the Radius Turn menu, position the screen cursor over the **RADIUS** line.
2. Left click to allow adjustment using the cursor control.
3. Move the cursor control left or right to change the RADIUS reading in the menu.
4. Left click to accept the new reading.

Alternatively a right click on the RADIUS line within the menu will reveal a drop down numeric keypad from which the radius can be entered, see Chapter 15.

Or

From within the video circle,

1. Position the video cursor over the **centre of turn** marker.
2. Press and hold down the left key.
3. Drag the marker to adjust the turn radius.
4. Release the left key.

Centre of turn marker
Drag to adjust radius

Setting the Start Line
Either

`START        n.nnNM`

1. Within the Radius Turn menu, position the screen cursor over the **START** line.
2. Left click to allow adjustment using the cursor control.
3. Move the cursor control left or right to change the START reading in the menu.
4. Left click to accept the new reading.

Alternatively a right click on the START line within the menu will reveal a drop down numeric keypad from which the start can be entered, see Chapter 15.

Or

From within the video circle,

1. Position the video cursor over the **start of turn** marker.
2. Press and hold down the left key.
3. Drag the start of turn marker along the initial course line to the point required.
4. Release the left key.
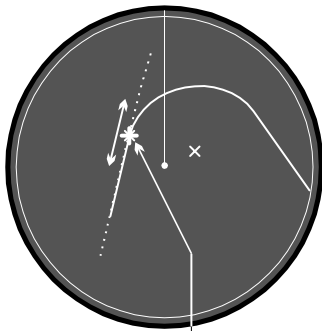
Start of turn marker
Drag to new point

Aligning to Own Ship's Course

After all parameters have been adjusted, the planned turn must be aligned with own ship's course.

1. Within the Radius Turn menu, position the screen cursor over the **RESET START** line.
2. Left click to place the start of turn marker on own ship's course line.
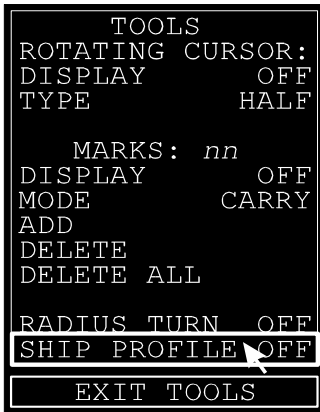
RESET START

Rates of Turn

Within the Radius Turn menu, the 'rate of turn' (ROT) is calculated from the other parameters. See **Standard Rate of Turn**.

Standard Rate of Turn

1. Within the menu, position the screen cursor over the **RESET TO STD ROT** line.
2. Left click to reset the radius to that required for the standard rate of turn.

RESET TO STD ROT

The standard rate of turn is entered during initialisation.

```
        TOOLS
ROTATING CURSOR:
DISPLAY        OFF
TYPE          HALF

   MARKS: nn
DISPLAY        OFF
MODE         CARRY
ADD
DELETE
DELETE ALL

RADIUS TURN    OFF
SHIP PROFILE  OFF

    EXIT TOOLS
```

Ship's Profile

This tool allows the ship's profile (a simple outline of the ship in plan view) to be displayed at own ship's position in the video circle. The profile is displayed in Transmit mode only, and does not apply to static installations. The profile is only shown on the lower range scales.

1. Within the **TOOLS** menu, position the screen cursor over the **SHIP PROFILE** line.
2. Left click to toggle the profile display **OFF** or **ON**.
   The default setting for Ship's Profile is ON.

Note - The shape of the profile and maximum range scale at which it is displayed is determined from information entered during initialisation (i.e. Ship's length and beam, and Turning Unit offsets from ship's centre).
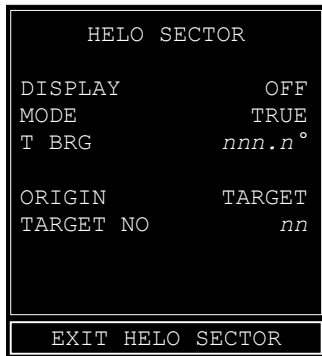

Sector Bearing
15°
15°

Helicopter (Helo) Approach Sector

The Helicopter Approach Sector facility is used to aid the operator in guiding a helicopter to land. This facility is available in all stabilised modes.
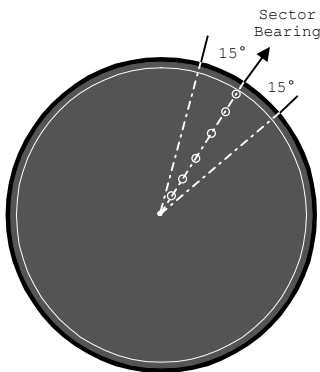
The sector is displayed as three radials spaced at 15° apart, with small calibration circles drawn on the centre line (the sector bearing line). The circles are spaced at intervals determined by the current range ring selection. The radials extend from the origin to the edge of the video circle, and are displayed as green dashed-lines. The sector origin can be either Own Ship or any Tracked Target.

If the origin is Own Ship, the orientation can either be set to a true value (Fixed with respect to north) or to a relative value (with respect to ship's head). If the sector origin is a Tracked Target, it is always set to a true bearing.

Accessing the HELO SECTOR Menu

HELO SECTOR

```
     HELO SECTOR

DISPLAY            OFF
MODE              TRUE
T BRG           nnn.n°

ORIGIN          TARGET
TARGET NO           nn



   EXIT HELO SECTOR
```

1. Position the screen cursor over the HELO SECTOR soft key located under the Tools Menu.
2. Left click to reveal the Helo Sector menu. See example left.

Note - A left click on the EXIT HELO SECTORS soft key will close the menu.

Turning Helo Sector Display ON or OFF

DISPLAY   OFF

1. Within the menu, position the screen cursor over the DISPLAY line.
2. Left click to toggle the display ON or OFF.

Selecting TRUE or RELATIVE Display Mode

MODE   TRUE

1. Within the menu, position the screen cursor over the MODE line.
2. Left click to toggle the display to TRUE or REL.
   A prompt will be displayed if the sector origin is not Own Ship.

Selecting the Helo Sector BEARING

T BRG   nnn.n°
R BRG   nnn.n°

1. Within the menu, position the screen cursor over the T BRG (or R BRG) line.
2. Left click to access.
   Bearing line in menu is displayed in yellow.
3. Move the cursor control left or right to change the bearing.
4. Left click to accept new bearing.

Alternatively a right click on the T BRG (or R BRG) line will reveal a drop down keypad from where a new bearing can be entered. Refer to Chapter 15 in User Guide if further information on drop down keypads is required.
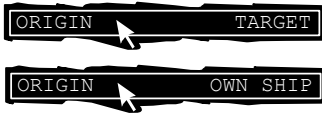
Selecting the Helo Sector ORIGIN

1. Within the menu, position the screen cursor over the ORIGIN line.
   Left click to toggle the origin to OWN SHIP or TARGET.

If OWN SHIP is selected as the sector origin, the line immediately below the ORIGIN line will be blank. If TARGET is selected, the line will be 'TARGET No nn'. Where nn is the ID number of a selected target, or '--' if no target has yet been selected.

Selecting a Specific TARGET as Sector Origin

1. Within the menu, position the screen cursor over the TARGET NO line.
2. Left click to access.
   This will force the screen cursor into the video circle and the user is prompted to select a target.
3. Within the video circle, position the cursor over the required target.
4. Left click to select the target as the sector origin.
   The ID of the selected target will appear in the Helo Sector menu.
   The screen cursor is also returned to the menu.

Note - While the screen cursor is within the video circle, a right click will exit and return the cursor to the Helo Sector menu without making a selection.
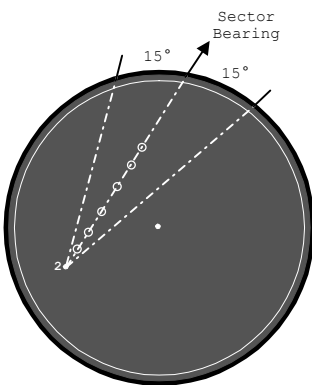
Alternatively a right click on the TARGET NO line will reveal a drop down keypad from where the ID number of the required target can be entered. Refer to Chapter 16 in User Guide if further information on drop down keypads is required.
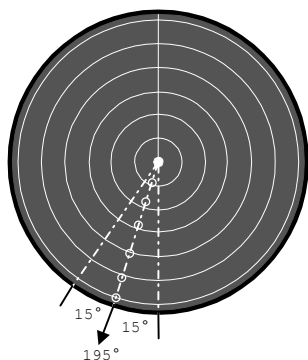
Sector Defaults and Suppression

By default the display of the sector is set to OFF, with its origin on own ship and north stabilised. Its bearing is set to 195° relative to ship's head.

The sector is switched OFF if the radar is switched to standby. The sector display is temporarily suppressed if the presentation mode is switched to unstabilised. The sector ON/OFF state is unaffected while the display is suppressed. An appropriate prompt is raised if an attempt is made to switch the sector ON in either of the above conditions.

Warning Prompts

A suitable prompt is displayed if either method of selecting a target fails to find a tracked target.
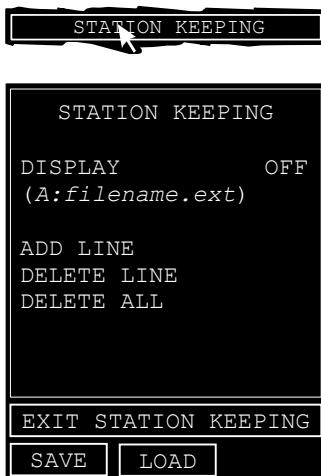
Station Keeping

The Station Keeping facility allows the radar operator to check that vessels in a convoy are keeping their correct position with respect to each other. The facility allows the operator to draw a number of lines which are displayed in the video circle, showing the intended relative positions of the vessels while they are sailing on convoy.

The graphics drawn by the operator stay in the same position relative to own ship, and rotate when own ship turns. Station Keeping graphics can be saved and retrieved from a memory cards.

The Station Keeping facility is NOT available in STANDBY mode.

Accessing the STATION KEEPING Menu

1. Position the screen cursor over the STATION KEEPING soft key located under the Tools Menu.
2. Left click to reveal the Station Keeping menu. See example left.

```
     STATION KEEPING


STATION KEEPING

DISPLAY          OFF
(A:filename.ext)


ADD LINE
DELETE LINE
DELETE ALL




EXIT STATION KEEPING
 SAVE     LOAD
```

Note - A left click on the EXIT STATION KEEPING soft key will close the menu.

Turning Station Keeping Display ON or OFF

1. Within the menu, position the screen cursor over the DISPLAY line.
2. Left click to toggle the display ON or OFF.
   If a graphics file has been loaded from a memory card, the line immediately under the DISPLAY caption will show a file name and extension. If no graphics file has been loaded the line will be dashed out (-:--------.---).
   See Loading a Graphic from a Memory Card later in the chapter.

```
DISPLAY              OFF
```

Creating the Station Keeping Graphics
The Station Keeping graphics are created by a process referred to as 'rubber banding'.

ADD LINE

1. Position the screen cursor over the ADD LINE caption in the STATION KEEPING menu.
2. Left click to access the edit mode.
   The ADD LINE caption in the menu will be displayed in yellow.
3. Within the video circle, position the cursor at the point where the graphic is to be started.
4. Left click to anchor the start point.
5. Move the cursor to the second point.
   Note that the graphic line is drawn as a dashed red line from the anchor point to the cursor, and follows the cursor as it is moved.
6. Left click to anchor the line at the second point.
   Note that a line is now set between the two anchor points. The second line follows the cursor as it is moved.
7. Repeat steps 3 to 6 as often as required.
   The current line (the one anchored to the cursor) can be terminated by a right click, a left click at the line's fixed anchor point, or by selecting a different edit line from the menu.

Note - The graphics can be any shape or size desired by the operator. They can be a number of boxes (around individual vessels) or a single box around the whole convoy. They could also consist of a single lines through each vessel, see examples on next page. The maximum number of lines in a single graphics file is limited to 50.
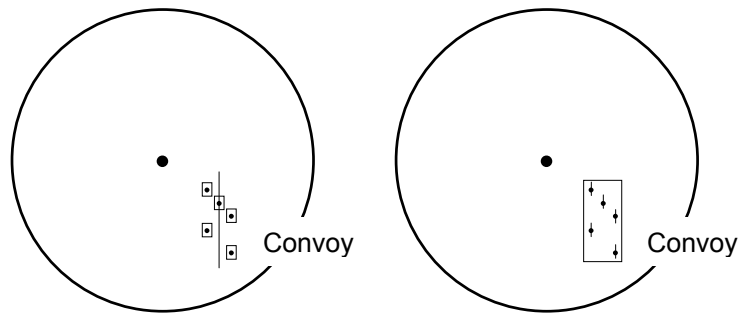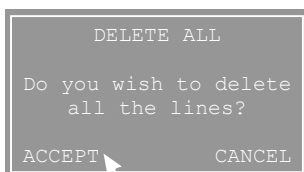
A second left click on the ADD LINE caption will terminate the current edit mode, and return the caption text to its original colour.

Removing a Line from a Displayed Graphic

1. Position the screen cursor over the DELETE LINE caption in the STATION KEEPING menu.
2. Left click to access the delete mode.
   The DELETE LINE caption in the menu will be displayed in yellow.
3. Within the video circle, position the cursor over the line to be deleted.
4. Left click to delete the line.
5. Repeat steps 3 and 4 as often as required.

A second left click on the DELETE LINE caption will terminate the current edit mode.

Removing All Lines from a Displayed Graphic

1. Position the screen cursor over the DELETE ALL caption in the STATION KEEPING menu.
2. Left click to remove all lines.
   A dialog box requesting confirmation will appear, see example left.
3. Within the dialog box, click on ACCEPT to remove all lines.

Note - This action only deletes the lines from the screen, it does not delete the lines from the Group file on the memory card.

A second left click on the DELETE ALL caption will terminate the current edit mode.

Saving a Graphic to a Memory Card

SAVE

1. Position the screen cursor over the SAVE soft key located under the menu.
2. Left click to access.

This action will reveal a standard alphanumeric keypad with the name of the last graphics file loaded (if any) as a default.

3. Use the keypad to save the file. See Chapter 15 in the User Guide. The operator will be prompted to confirm a selection if the save will cause an existing file to be overwritten.

Loading a Graphic from a Memory Card

LOAD

1. Position the screen cursor over the LOAD soft key located under the menu.
2. Left click to reveal a list of the Station Keeping graphics files available for loading.
   The list is for a particular file card (A or B) and contains the file names of the Station Keeping graphics available for selection, see Chapter 15 in the User Guide.
3. Left click on the file required.

Note - Once a Station Keeping file has been loaded from a memory card, that card can be removed without affecting the displayed graphics. The loaded file will remain in the radar's volatile memory until the radar is switched off.

Intentionally Blank