

CHAPTER 5

COMMISSIONING

INTRODUCTION

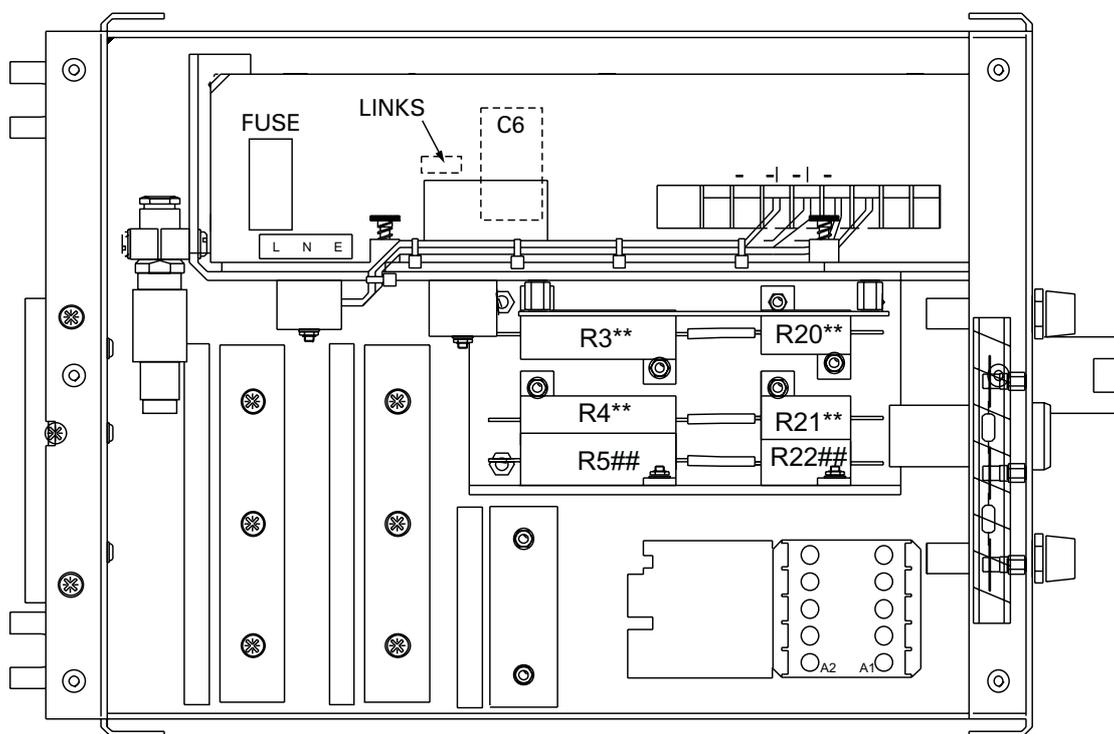
- 1 Interswitched equipments, or equipments interfaced with other radar equipments, are described in their respective Handbooks.

CAUTION

The transceiver RF output must not be operated into an open circuit or poorly matched feed cable. Damage to the RF head will result.

POWER SUPPLIES

- 2 Check that all cables have been installed and connected.
- 3 In the Soft Start Unit check that the thermal overload trip button is set.
- 4 In the Soft Start Unit check the voltage and fuse settings of the Power Supply (factory set to 220V input). For 110V operation, short out the link pins located beside C6 on the PSU.



CD-1360

Figure 1 - Soft Start Unit: Link and Fuse Locations

LINK AND SWITCH SETTINGS

- 5 Ensure that the correct links are fitted to the Display Unit to enable it to work with the MkVII Transceiver.
- 6 The Transceiver links are factory set. The links/switches listed below are options for the installation. All other links and switches are listed in the unit descriptions. Check that the MkVII Transceiver links/switches are set as follows:

a) Receiver CTX-A356

LK1	OPEN	Tune sample delay (intermediate, approx. 50 ns)
LK2	MADE	Tune sample delay (maximum, approx. 100 ns)
LK3	OPEN	Tune sample delay (minimum)
Note: only one of LK1, LK2 or LK3 is to be MADE. Selected for best AFC performance)		
LK5	B	Minimum AFC Lock
		A - intermediate AFC lock
		A & B OPEN - maximum AFC lock

b) Tx Microcontroller PCB:

	Grid		
SW1-3	4A	ON	Jitter enabled
		OFF	No PRF jitter
SW2-1	3A	OFF	Antenna Motor starts on Run
		ON	Antenna Motor on all of the time

c) Soft Start Unit neon indicator voltage

220v Nom. Connect a wire link between TP3 and TP4 on PCB (located behind the heatsink). Connect a wire link across one of the two resistors mounted below the keyswitch.

380 to 440V No links required.

SETTING TO WORK

- 7 Carry out the following:
 - (1) Switch on the single phase mains at the Isolators for the Display and Transceiver.
 - (2) Set the 3 phase mains isolator to ON.
 - (3) Set the Soft Start Unit switch to ON.
 - (4) Set the display power switch to ON.
- 8 At the display ensure that the Transceiver is entered as MkVII in the installed equipment parameters.
- 9 Verify that the display indicates TX READY after the warm up period of approximately 3 minutes.
- 10 Set to RUN.
- 11 Transceiver status is indicated by LEDs located on the modulator and control board. Only the LEDs on the Tx Microcontroller PCB are visible with the transceiver cover removed. The other LEDs are only visible with the Electronics Unit (CTX-A370) in the test position. Refer to Fault Diagnosis procedures in Chapter 7 details of the LEDs and the test position.
- 12 The LEDs on the Tx Microcontroller PCB are as follows:

	Grid	
D18	8F	Lit, indicating Tune Indicator signal present (Run mode only)
D41	4E	Flashing, indicating that the processor is running
D42	4E	Only lit when external trigger pulses being applied
D43	4E	Lit, indicating magnetron heater OK Flashes slowly for warm up time Flashes quickly after warm up time
D44	4E	Not used

HEADING LINE ADJUSTMENT

NOTE: This procedure is not required for Nucleus 3 displays. Heading line errors are corrected by the Display 'skew' setting.

General

- 13 Following installation, the heading line may be checked to give maximum bearing accuracy as follows:

NOTE: During the Heading Line alignment procedure, the ship must be stationary on a fixed known heading and must have bearing information from the gyro compass available. The ship is to be alongside; less accurate results are obtained if at anchor or at a buoy.

Checking the Alignment

- 14 With the vessel stationary, or at anchor, proceed as follows:
- (1) Check that the array/gearbox alignment mark is correct.
 - (2) Switch ON the Display and operate in a HEAD UP mode and at a range of 6 miles.
 - (3) Select a stationary target which can be seen by eye and which paints an echo on the screen.
 - (4) Take a compass bearing on the target, and compare this with the bearing of the echo paint on the display. Note the degree and direction of discrepancy.

To Correct an Error (Fine Adjustment)

- 15 Any error is present in the Heading Line may be adjusted as follows:
- (1) Switch the Gearbox Safety Switch to OFF.
 - (2) Switch all supplies to STANDBY.
 - (3) Using a 12 mm spanner, release the six bolts securing the rear cover to the Turning Mechanism and remove the cover.
 - (4) Loosen the two pillars securing the Azimuth/Heading Line PCB.
 - (5) Hold the antenna secure.
 - (6) Note the position of the pointer on the scale, which is marked in two degree steps.
 - (7) Move the pcb assembly the required amount to correct the mis-alignment.

NOTE: Moving the PCB to the left moves the video anti-clockwise with respect to the Heading Line.

- (8) Retighten the two pillars to secure the Azimuth/Heading Line PCB.
- (9) Refit the outer cover. DO NOT TIGHTEN.
- (10) Set the Safety Switch to ON.

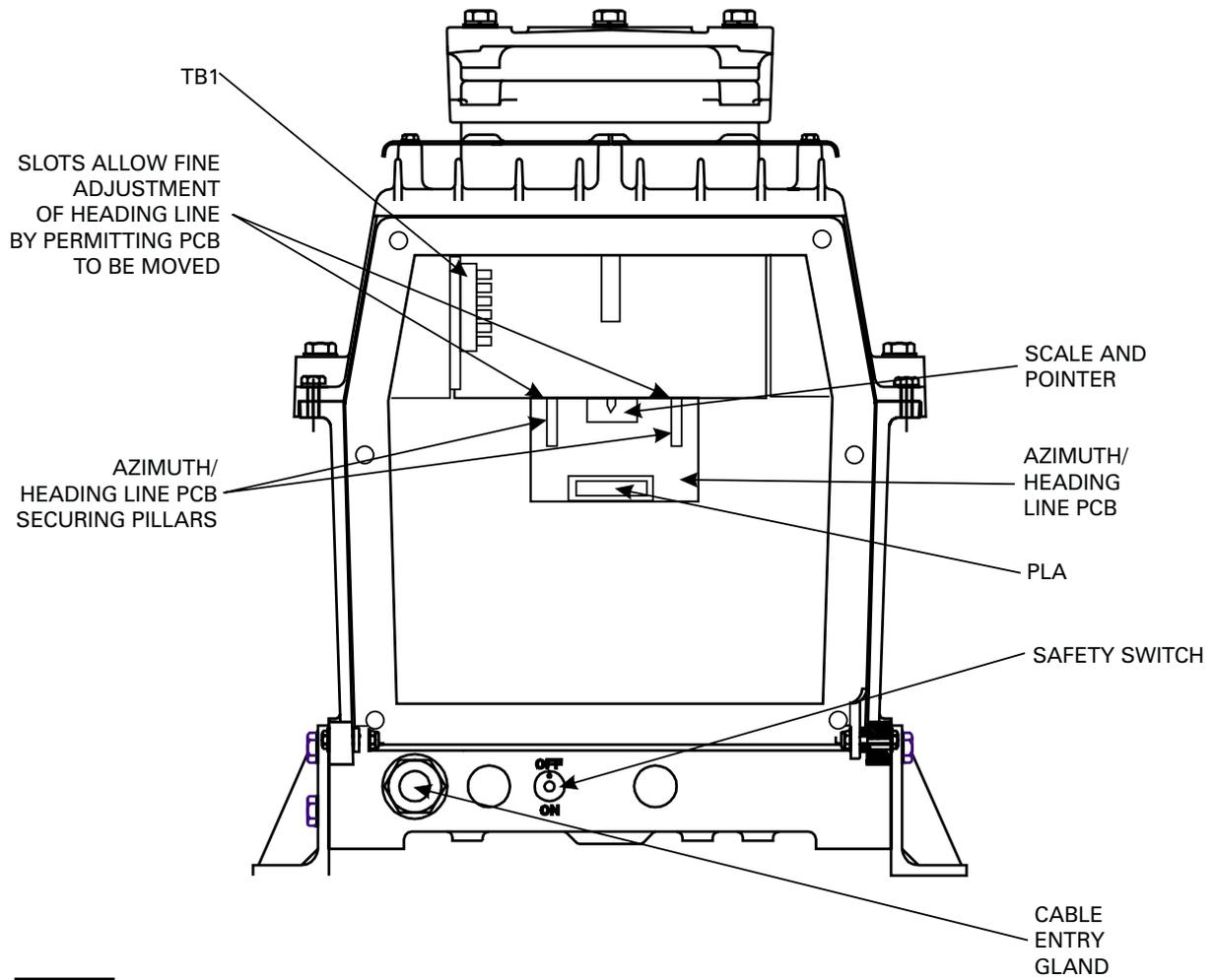
- (11) Set the Display to RUN and check that the visual and PPI display bearing of the known target.
- (12) To make any further adjustment repeat step (7).
- (13) Secure the rear cover.

To Correct an Error (Coarse Adjustment)

- 16 The Heading Line Opto Disc is factory set, however if the fine adjustment does not achieve the required correction, proceed as follows:
 - (1) Perform Paragraph 15, steps (1) to (3).
 - (2) Disconnect the plug to the Heading Line PCB.
 - (3) Remove the Heading Line PCB, ensuring that the opto sensor does not foul against the opto disc.
 - (4) With the array facing forward, check that the leading edge of the heading line disc recess is in line with the array centre line.
 - (5) The heading line disc recess may be corrected by slackening the three M4 retaining bolts holding the disc in place. **Do not** remove the bolts completely.
 - (6) Manually rotate the disc to the new position required and retighten the bolts.
 - (7) Refit and reconnect the Heading Line PCB by sliding the opto device over the edge of the opto disc.
 - (8) Refit the retaining pillars and reconnect the plug.
 - (9) To check that the Heading Line is correct, refer to the Fine Adjustment Paragraph.

SETTING UP THE TRANSMISSION MONITOR

- 17 The efficiency of the magnetron is checked by carrying out a performance monitor check.
- 18 The two specific types of optional performance monitors that can be fitted are:
 - (1) **Transmission Monitor** - comprises a monitor arm fitted to the outer case of the turning mechanism. The transmission monitor is selected by setting PERF. MON to ON at the display. The monitor arm neon is ionised as the antenna passes over the arm, and a 'plume' is displayed on the screen.
 - (2) **Receiver Monitor** - comprises a noise source mounted into the circulator port to the diode limiter. The noise fingers produced should extend to 6 mile radius. This can be adjusted by RV1 on the Tx Microcontroller PCB (grid 6E). Note that this test should be done with the display set to CORR 0 (no interference rejection).



CD-4579

Figure 2: Turning Mechanism: Access