OPERATIONAL OVERVIEW

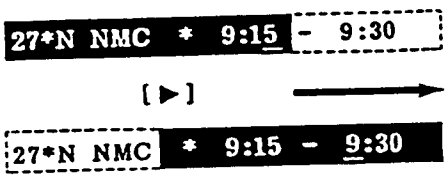
The DFAX is a rather simple unit to operate, although at first glance it may be a little intimidating to someone who has never used a facsimile receiver. However once you get to know what the various abbreviations mean, the simplicity and the logic behind the panel layout will become more apparent.

The front panel is divided roughly into two blocks; controls and LCD display composed of 16 characters on the upper side, and the printer on the lower side. The keyboard, delineated by different color schemes, is located just below the LCD display. Each time a touchpad is pressed an audible beep is generated to signal the operator that the unit has received his command.

CONTROLS AND TOUCHPADS

ARROW KEYS

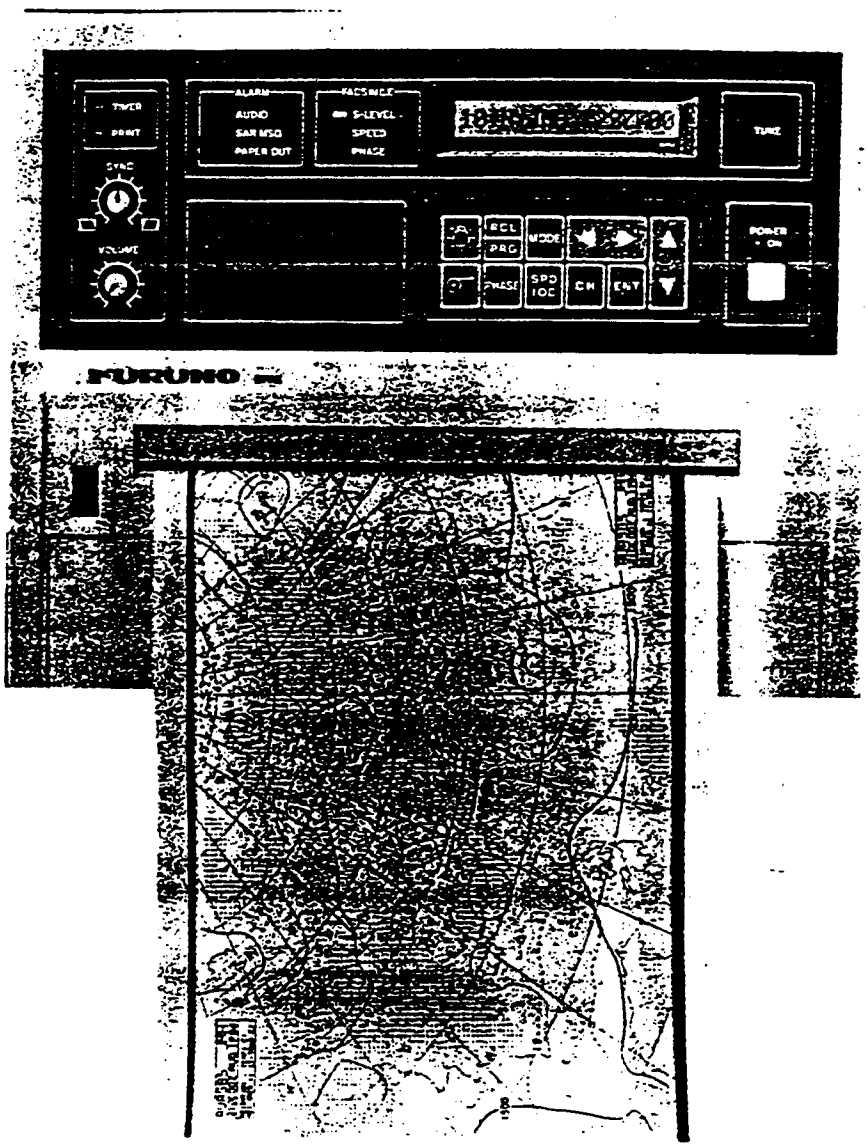
You may notice that there are no numeric keys on the panel, unlike other equipment which employ numeric keys to enter data. It means that entry of the numeric data or selection of the operating mode is performed by scrolling the number or message displayed on the LCD window. The vertical arrow keys [▲] and [▼] are used to scroll the menu upward or downward, respectively. On the contrary the horizontal arrow keys [◀] and [▶] are for moving the cursor for data entry (or recall) leftward or rightward. In some modes, however, these keys are also used to scroll the display sideways. Pressing the [▶] key when the cursor is located at the right-hand edge of the LCD display will scroll the window rightward. Similarly when the cursor is at the far left end, the [◀] key will scroll the window leftward. The figure below shows an example of sideways scrolling in the program timer mode.



FUNCTION KEYS

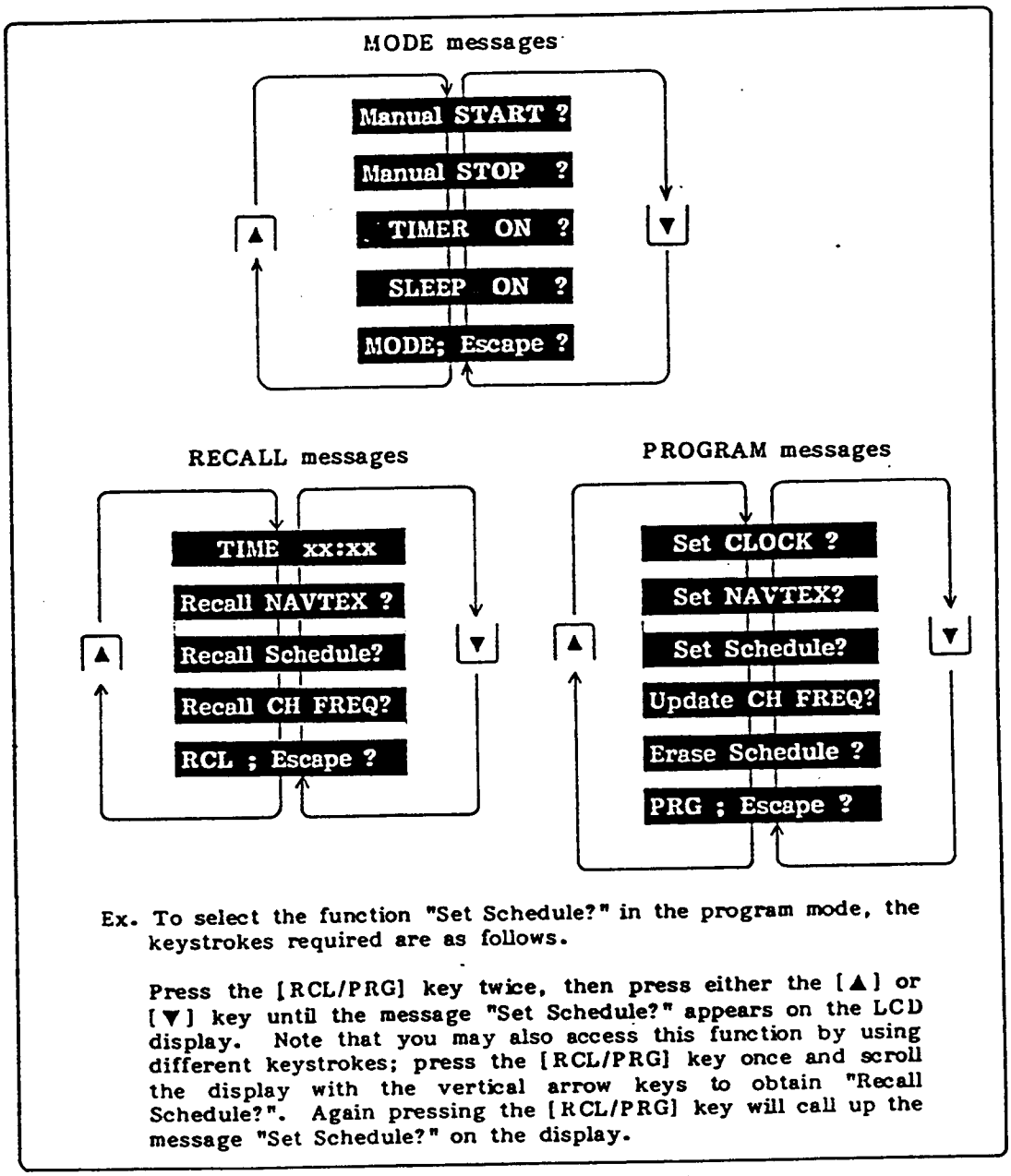
The [MODE] and the [RCL/PRG] keys deal with several operating modes. The [MODE] key is used to turn on/off the printer in the manual recording mode, or to activate the timer/sleep modes. The [RCL/PRG] key stands for RECALL/PROGRAM, and is used to display or update the current time data, frequency data, timer program, NAVTEX station and message data (the NAVTEX version only), etc. The first pressing of the [RCL/PRG] key selects the Recall function, then pressing the same key again will call up the Program function. When you press the [RCL/PRG] key once, the function "Time" is selected first since it is a default setting. Other functions may be

PRODUCED AT GOVERNMENT



FURUNO DFAX (FAX-208A/N), Front Panel

selected by scrolling the display with the [▲] or [▼] key as shown below. To activate the function selected, press the [ENT] key. If you accidentally type in the [MODE] or [RCL/PRG] key, select the escape message of each menu and hit the [ENT] key to retrieve the unit to the normal operation.

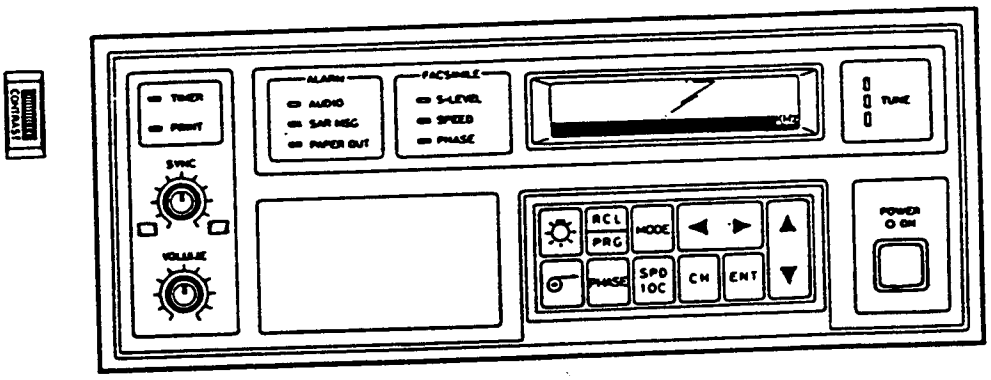


Ex. To select the function "Set Schedule?" in the program mode, the keystrokes required are as follows.

Press the [RCL/PRG] key twice, then press either the [▲] or [▼] key until the message "Set Schedule?" appears on the LCD display. Note that you may also access this function by using different keystrokes; press the [RCL/PRG] key once and scroll the display with the vertical arrow keys to obtain "Recall Schedule?". Again pressing the [RCL/PRG] key will call up the message "Set Schedule?" on the display.

OTHER KEYS

The symbols or abbreviations printed on the [⊙⁻], [☼], [PHASE], [SPD/IOC] and [CH] keys directly represent their functions. For instance, the [⊙⁻] key is used to feed the paper and the [☼] key is for varying the backlighting of the LCD display. The name and function of each control and touchpad (including LED) are recapitulated on page 12.



CONTROLS AND TOUCHPADS

POWER O ON	Turns on/off the unit.
SYNC	Equalizes picture synchronization to align with the paper feed direction.
VOLUME	Adjusts audio level of the monitor speaker.
	Used to vary the level of backlighting of the LCD display and intensity of LED.
CONTRAST	Adjusts the contrast of the LCD display.
	Used to feed paper.
PHASE	Adjusts picture phase.
SPD IOC	Selects speed and IOC numbers.
CH	Used to call up station and frequency data.
ENT	Used to enter data or activate a function.
RCL PRG	Used to recall data stored in the memory, or used to program data.
MODE	Used to control the operation of printer.
▲ ▼	Used to scroll a number or message upward or downward.
◄ ►	Used to move the cursor or data entry message sideways.

LEDS

Tune	Three indicators run upward or downward when the programmed frequency differs from the actual receiving one.
S-level	Lights when the signal is too weak to receive.
Speed	Lights when the scanning speed is incorrectly set.
Phase	Lights when the picture is out of phase.
Audio	Lights when the alarm mode is activated.
SAR MSG	Lights when receiving the search and rescue message of NAVTEX signal.
Paper out	Lights when the recording paper runs out completely.
Timer	Lights when the timer mode is operating.
Print	Lights while the picture is being printed.

MANUAL RECORDING

As was described in the FEATURES section, the DFAX employs a unique timer which enables automatic recording of facsimile signals up to 16 programs according to a preset schedule. In this section, however, the basic operating procedure for manual recording is explained step by step to familiarize you with the controls and touchpads on the front panel. Details for the operating procedure of the Timer Recording are explained in the next section.

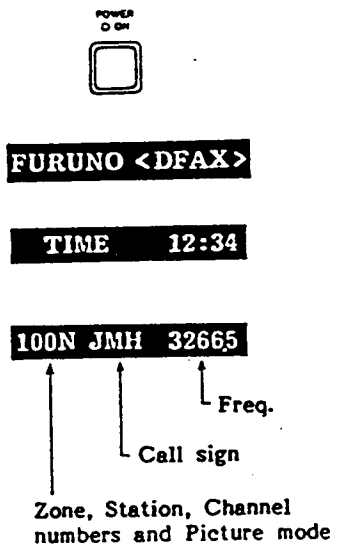
Before you do start operation, obtain a radio facsimile frequency list for your area. The Facsimile Station List attached to the appendix of this manual may be useful to quickly find out the call sign and frequency in your area, since it is arranged in alphabetical order according to country. Make sure that the recording paper is properly loaded, referring to page 29.

POWER ON/OFF

Power on/off of the unit is made using the POWER button located on the lower right of the front panel. Press the POWER button and you will see the time displayed on the window for several seconds. Then, the display will change to channel data: zone, station and channel numbers plus picture mode (refer to page 21 for details of the picture mode), followed by a call sign and frequency in this order. When a specific function is completed by the action of keystrokes, the unit returns to the normal display, indicating the channel data previously selected.

The very first time you turn on your unit, don't worry about the stray data displayed on the window (the time may be inconsistent with the local time in your area and the call sign may be unknown to you), since these were set at the factory.

To turn off the power press the POWER button again.



[Normal Display]

Initialization of the unit (Cold Start)

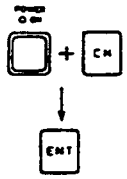
The DFAX is designed to retain in memory all information entered by the user (such as time, programmed schedules, etc.) whether it is turned on or off. An internal "Keep-alive" battery, of which the estimated life is five years, performs this function. However, data in the memory may become jumbled due to a dead battery or accidental loosening of the plugs connecting the pc boards. In either case, you have to clear the memory to ensure that no stray data has been stored there. Again make sure that all data that you had previously entered will be lost after this operation. Upon clearing the memory, the unit is reset to the following default value.

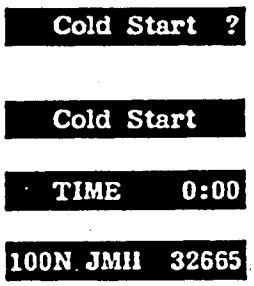
PRODUCED AT GOVERNMENT

1. Time data : 0:00
2. Program schedule : Cleared
3. Frequency data updated by the user : Cleared
4. Zone, station and channel data in normal mode: "100N JMH 32665"
5. NAVTEX station and message : All registered in capital letter
6. Audio alarm : ON

Note: Items 5 and 6 are applicable only for the NAVTEX version.

In order to initialize the unit, turn off the unit first, then hold down the [CH] key while pressing the POWER button. The message "Cold Start?" will appear on the display. Hit the [ENT] key and the message will change to "TIME 0:00," notifying the operator that the unit is now defaulted. Note that the channel and frequency data preprogrammed at the factory cannot be erased, since these are exclusively stored in the ROM, of which the contents are not retained by the battery.

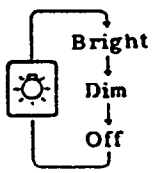




ADJUSTMENT OF LCD CONTRAST AND DIMMER

Because of its polarized characteristics, the intensity of the LCD (Liquid Crystal Display) varies with not only the viewing angle of the operator, but also the environmental temperature. The CONTRAST control located at the left-side panel of the unit is provided to equalize the degree of the polarization. Be aware that too clockwise a setting may result in blackening of the entire LCD.

The [☼] key is used to vary the level of backlighting of the LCD display and the brightness of the LED indicators for nighttime operation, in three steps of bright, dim and off. Each time the [☼] is depressed, the level will change in the above sequence. Note that the alarm LEDs will not light up at the "off" setting.



SELECTION OF FACSIMILE STATION AND FREQUENCY

The facsimile station will usually transmit signals at several different frequencies on the HF band (a few stations also transmit on the LF band) for convenience that the probable frequency for a quality recording may be selected at the receiver side. In choosing a receiving frequency, the general rule of thumb is that the highest probable frequency band must be selected for the initial attempt, then move to a low band if the picture is not reproduced satisfactorily.

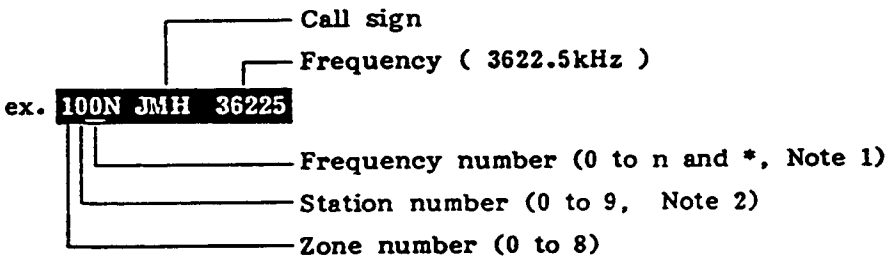
In practice, since the receiving condition on the HF band is greatly affected by the phenomenon of nature (year, season, time, etc., as explained in the appendix of this manual) as well as the distance between the transmitting station and receiver, selection of the probable frequency is required whenever you want to receive the facsimile signal.

To overcome this inconvenience, the DFAX employs a scan function which automatically searches the frequencies assigned to a station and locks onto the most probable frequency. Of course, a commonly-used monitor function for judging signal strength with a built-in speaker is also available (like the conventional facsimile receiver.) The sequence of keystrokes to select a desired station would be:

Pressing the [CH] key, the station and frequency data appear on the display. The character where the data entry cursor is placed will be flashing to indicate that the unit is ready to accept the operator's command.

[CH] → 100N JMH 36225

Arrangement of station and frequency data



Note 1. The frequency number (n) depends on the station. Refer to the Facsimile Station List attached in this manual. To activate the scan mode, select the asterisk mark "*" instead of a number.

Note 2. The station number is fixed to zero when selecting the zone number to zero.

Select the zone number of the desired station by scrolling the numbers on the window with the [▲] or [▼] key. Hit the [▶] key to move the cursor to the next data column and set the station number. In the same manner, get into the scan mode by selecting the asterisk "*" on the data column of the frequency. If a specific frequency is always received stably in your area, enter the channel number instead of "*".

[◀ ▶] / [▲ ▼] → 100N JMH → 23* NMC

On completion of the data entry, press the [ENT] key and the unit starts scanning the frequencies allocated. The display will show the message "..* ... SCAN " while scanning, then will indicate the frequency on which the receiver has locked onto.

[ENT] → 23* NMC SCAN → 23*N NMC 12730

TUNING

There are rare occurrences, where the actual receiving frequency slightly deviates from the nominal transmitting frequency written on the Frequency

PRODUCED AT GOVERNMENT

List. The TUNE indicator, composed of three lamps will "flow" upward when the receiving frequency is lower than the preprogrammed frequency data. Press and hold the [▲] key until the indicator stops flowing and only the center lamps lights stably. On the contrary, press the [▼] key if the indicator flows downward.

Note: The TUNING is inoperative when selecting the scan mode.

The indicator will always flow for a signal in LF band or for a picture of which the most part is occupied by the black signal, irrespective of frequency deviation.

SETTING THE INTERNAL CLOCK

It is necessary to set the built-in clock to the local time in your area to properly operate the sleep mode and timer recording. The operation of the sleep mode and timer recording are described later on. If the Facsimile Schedule Book in use is written in GMT (Greenwich Mean Time), it is recommended to set the clock in GMT to avoid mis-programming of the schedule time.

Press the [RCL/PRG] key and the time is displayed on the window.

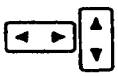
TIME 12:34

Again press [RCL/PRG], then [ENT]. You will see the message "Set CLOCK?" followed by "Set CLOCK xx:xx" on the display.

Set CLOCK ?

Set CLOCK 12:34

Set the time to the incoming time signal by using the arrow keys and press the [ENT] key at the exact moment the time signal is released for the start of a new minute/hour.



Set CLOCK 11:50

SETTING THE MONITOR VOLUME

The unit incorporates a speaker for monitoring the received signal. The MONITOR control located on the left-hand of the panel adjusts the audio output level from the speaker. Push in and release the control to bring it out.

SETTING THE SPD/IOC

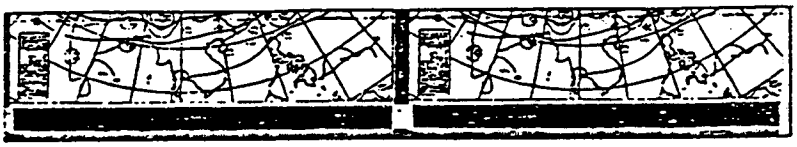
Next, you may have to set the correct SPD/IOC number depending on the facsimile station. SPD and IOC stands for scanning speed and index of corporation, respectively. These are a kind of synchro code to reproduce an exact copy of the picture transmitted from the facsimile station, and are listed on the Facsimile Schedule Book. If the SPD is incorrectly set, a part of the picture will be overlapped or a multiple picture will be recorded. You will also be notified of a wrong SPD setting by the lighting of the SPD LED.

Similarly, the picture is foreshortened or expanded to the paper feed direction if the IOC is set incorrectly. Four SPDs and two IOCs are available to meet the requirements of WMO and ITU: 60, 90, 120, and 240 for SPD, and 288 and 576 for IOC. Find the appropriate SPD and IOC of the desired station from the Facsimile Schedule Book and set them following the procedure.

Incorrect setting of the SPD/IOC numbers

Two pictures

Wrong selection of the of the SPEED number ("60" is selected instead of "120".)

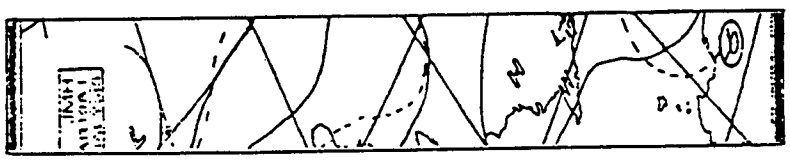


Overlapped recording

Wrong selection of the SPEED number ("120" is selected instead of "60".)

Expanded or foreshortened recording

Wrong selection of the IOC number. When "288 (576)" is selected for transmission with the IOC of "576 (288)", the recording will be extended (foreshortened) in the paper feeding direction.



Hit the [MODE] key, and the message "Manual START?" will come up on the display. With the [ENT] key pressed, the message will change to "SPD/IOC xxx/xxx".

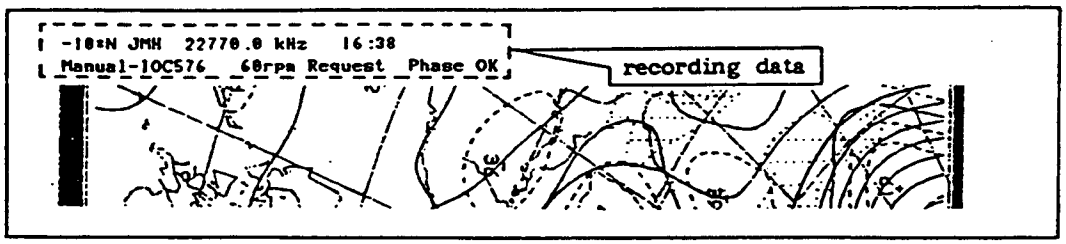
[MODE] **Manual START ?**

[ENT] **SPD/IOC; 60/576**

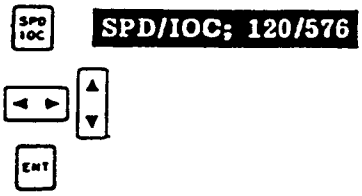
Scroll the number with the [▲] or [▼] key until the proper SPD number appears on the display. Hit the [▶] key to shift the cursor to the data column for IOC and select the proper IOC in the same manner as SPD selection.

On completion of SPD/IOC settings, press the [ENT] key. Now the printer plots the recording data followed by a picture as shown on the next page.

27°N NMC 171512



If you cannot find the correct SPD and IOC for the desired station, try recording at any setting of SPD and IOC. After several inches of printed paper comes out from the unit, check whether the picture is printed normally or not. If not, hit the [SPD/IOC] key, change the value with the arrow keys, and press the [ENT] key.

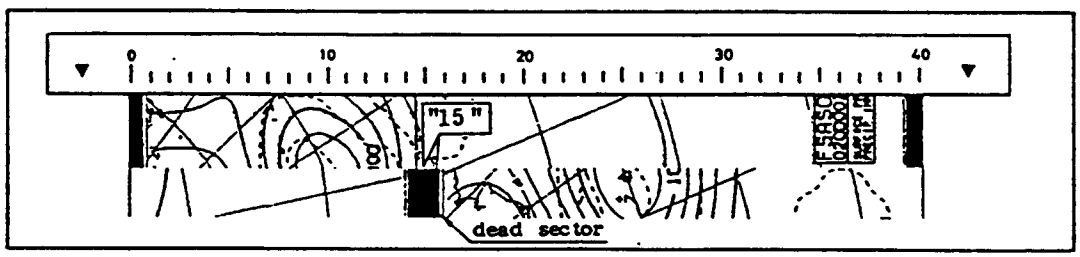


To escape from this mode, press the [SPD/IOC] key. Note that the selection of SPD/IOC by using the [SPD/IOC] key is effective only while the printer is operative.

PHASE MATCHING

When the printer starts recording after the phase signal (see page APA-2) was transmitted, or when the received signal is too weak in failing to detect the phase signal, the recording may be split into two parts by a thick white gap called a dead sector as illustrated. The [PHASE] key is provided to compensate for the phase mis-matching, shifting the dead sector to the left edge of the recording paper. When this may occur, the PHASE LED will light up and the message "Phase NG " will be printed out as the recording data.

Note: When receiving the signal having a black dead sector, the mis-matching occurs infrequently since the black dead sector is also used to align the picture phase.



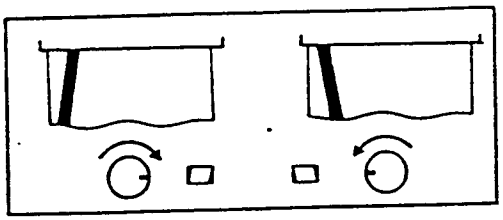
Press the [PHASE] key and the message "SET PHASE 00" appears on the display.

Read the scale at the center of the dead sector and enter the value in the data column by using the [▲] or [▼] key. The value to be corrected will range between 0 and 40.

Hit the [ENT] key and the dead sector is shifted to the left edge of the recording paper. Note that the [PHASE] key is also effective only while the printer is operative.

SIGNAL SYNCHRONIZATION

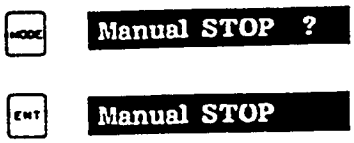
The SYNC control is a kind of fine adjuster for the phase matching. If the dead sector is plotted obliquely to the paper feed direction even when the PHASE is properly selected, turn the SYNC control to correct it as illustrated.



STOPPING PICTURE RECORDING

In the manual recording mode, the printer is still operative even after the completion of the picture recording, since the unit doesn't detect the remote control signal (start and stop signal of the picture) in this mode. The key sequences to manually stop printing are as follows.

Press the [MODE] key and the display will indicate the message "Manual STOP?" for verification. Hit the [ENT] key. Now the printer stops recording and the unit is restored to the normal mode, indicating the channel data.

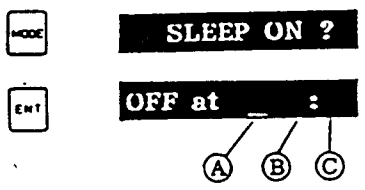


SLEEP MODE

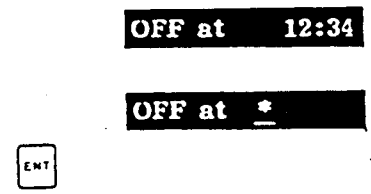
As was described on the above section, it is necessary to manually stop the operation of the printer in the manual mode. To make the operator free from the annoying operation at the ending of the reception of a desired chart and to minimize the consumption of the recording paper, an automatic stop of the recording, called sleep mode, is available.

There are two ways in which the time to stop recording may be selected; timer sleep and remote sleep. In the timer sleep, the printer stops recording at the time designated by the operator, while the remote sleep is operative by detecting the remote control signal and thus is effective only in the timer recording mode. Note that once the printer stops recording by the action of the sleep mode the unit will be inoperative just as if it were turned off, indicating only the message "OFF Facsimile". To retrieve the unit to the normal operation, press the [MODE] key instead of the POWER button. The key sequences to operate the sleep mode are as follows.

Press the [MODE] key, then scroll the menu with the vertical arrow key to display the message "SLEEP ON?". Hit [ENT] and the message will change to "OFF at _ : ". If the [ENT] key is pressed again while the data columns remain blank, the printer stops immediately and gets into the sleep mode.



To operate the timer sleep, enter the desired time into data columns Ⓑ and Ⓒ. The remote sleep activates by setting the asterisk "*" on the data column Ⓐ by using the vertical arrow key. After the setting is completed, press the [ENT] key to perform the sleep mode.



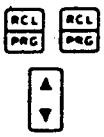
TIMER RECORDING

Most of the LF to HF facsimile broadcasts all over the world are regularly serviced according to a schedule issued by the meteorological observatory in each country. Therefore, if you wish to print a certain facsimile signal on a daily basis, the timer recording mode will virtually allow you "hands-off" automatic operation (self start and stop of the printing) once it has been preprogrammed.

ENTRY OF PROGRAM TIME

You may preset up to 16 programs for timer recording. Prepare the Facsimile Schedule Book including the time table for your area and record the broadcasting start and end time of the desired stations onto a note book for reference.

1. Press the [RCL/PRG] key twice, then scroll the menu with the [▲] or [▼] key until the message "SET Schedule?" appears on the display.



Set Schedule?

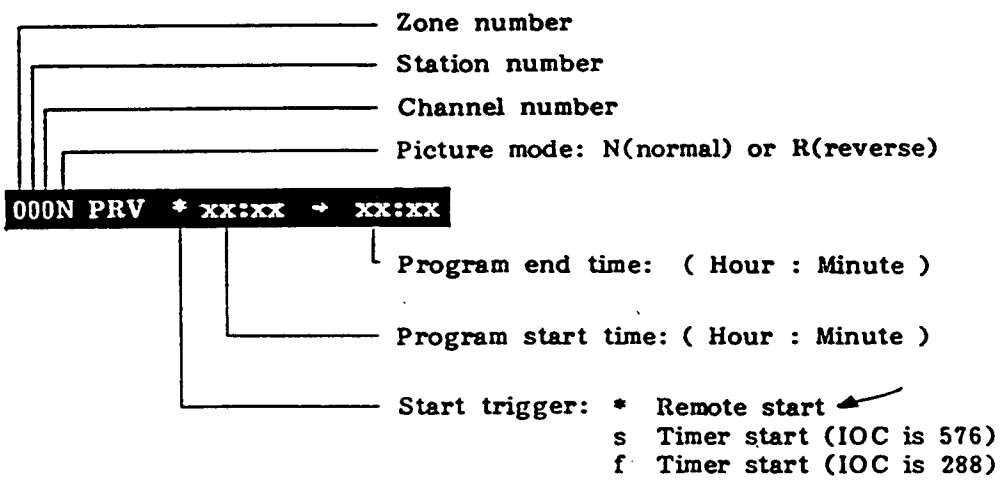
2. Hit the [ENT] key and the message will change to the data entry display for the program timer, of which the data columns are arranged as shown below. In order to call up the data column for the program end time, scroll the display leftward by using the [▶] key.

000N PRV * 0:00

If the timer programs has been preset in full, the message "Schedule Full!" will appear instead of the data entry display and the unit reverts to the normal mode.

Schedule Full!

The data column is arranged as follows



Picture mode: Some facsimile broadcast stations transmit a reverse picture (white and black parts are recorded reversely just like the negative of a film). When the picture mode is set to "R", the reverse picture is automatically converted into a normal one. As the picture mode for each station has already been preprogrammed in the built-in memory, it is not necessary to set it locally unless a facsimile station is newly established or a new frequency is allocated.

Start trigger: Three trigger modes are selective; remote start, timer start in IOC of 576 and of 288. In the remote start, the printer gets into the stand-by status at the program start time, then records the picture in response to the remote control signal (start and stop signals of a picture) transmitted from the station. The IOC number is also correctly set by the remote control signal.

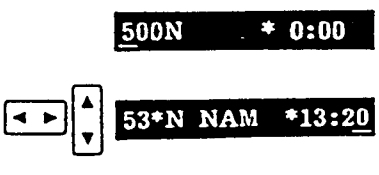
While in the timer start, the printer operates in accordance with the programmed timer irrespective of the presence or absence of the facsimile signal. The proper IOC (576 or 288) must be chosen by the operator in this mode. Note that the timer start will not operate for a signal having a white dead sector.

In practice, since most of the facsimile stations transmit the remote control signal according to the WMO standard, it is recommended to select the remote start mode for ensuring reception of the entire picture and for minimizing paper consumption.

For example, suppose that you want to receive the facsimile signal transmitted from NAM in Norfolk Virginia, U.S.A., by using the timer program;

Zone: 5, Station: 3, frequency: scan mode, Start trigger: *
Receiving time : 13:20 to 13:45

3. Move the cursor to the bottom of the zone column with the [◄] key and scroll the number to obtain "5" by using [▲] or [▼] key. Enter the station, frequency, start trigger and program start time.



4. With the [►] key pressed when the cursor is located at the far right side of the data column, the data entry display is scrolled leftward and the cursor jumps to the data column of the program end time. Enter "13:45".

5. When data entry is completed, press the [ENT] key. The message "SET" will appear for about two seconds to notify the operator that the unit has accepted his command.

6. Repeat steps 1 through 6 to enter other scheduled programs.

PRODUCED AT GOVERNMENT

7. To activate the timer function, hit the [MODE] key, scroll the message in order to display "TIMER ON" on the LCD window, then press the [ENT] key. Now the display will be changed to the programmed schedule most closest to the present time. If no schedule is programmed, the message "No Schedule !" will be displayed.

TIMER ON ?

No Schedule !

Caution on programming timer

- When two programs overlap each other, the latter program becomes invalid. For instance, if the start/stop time of the program A and B are set to 2:00 -- 2:30 and 2:15 -- 2:40 respectively, the program B will not be recorded.
- When selecting the remote start mode, the program start time should be set at least one minute earlier than the actual broadcasting time in order to acquire the remote control signal without error.

REVISION OF PROGRAM TIME

If you want to partially change the programmed schedules, for instance, the broadcasting time of a specific station has been changed, perform the following keystrokes to quickly call up and update the time data.

Press the [RCL/PRG] key once, scroll the message in order to obtain "Recall Schedule?" with the [▲] or [▼] key, then hit [ENT].

Recall Schedule?

Of the preprogrammed schedules, the one which the program start time is the earliest will appear on the window. Scroll the display with the [▲] or [▼] key until the schedule of the desired station appears. These keys operate as follows.

53* NAM * 2:10

52* WLO *17:25

[▲] : Call up the schedule from an earlier time setting.

[▼] : Call up the schedule from a later time setting.

Press [RCL/PRG] again to get into the timer program mode. Update the schedule in the same manner as the "Entry of Program Time." See page 20.

52* WLO *17:25

ERASING PROGRAMMED SCHEDULE

If necessary, the programmed schedule can be erased partially or totally by using the following keystrokes.

Partial erasure

Perform the same keystrokes as "Revision of program time" to get the program schedule.

Press and hold the [▶] key to scroll the display leftward until the program end time appears on the window.

52* WLO *17:25

*17:25 - 17:45

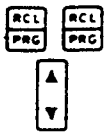
Change the program start time to the same time as the program end time (or vice versa) with the [▲] or [▼] keys, then press [ENT]. After displaying the message "Erase" for about two seconds, the unit reverts to the normal display.

*17:45 - 17:45

Erase

Complete Erasure

Press the [RCL/PRG] key twice, then scroll the message with the [▲] or [▼] key in order to display the message "Erase Schedule?".



Erase Schedule ?

Hit the [ENT] key and the message will change to "Erase OK? (Y/N)", verifying your command to avoid inadvertently erasing the programmed schedule by accidentally pressing the [ENT] key. Place the cursor under the character "Y", then hit the [ENT] key. After indicating the message "ERASE" for about two seconds, the unit reverts to the normal display.

Erase OK ? (Y/N)

Erase

If the unit gets into this mode by mis-operation, move the cursor to the character "N" and press the [ENT] key. The display will show the message "Escape" and the unit will return to the normal display.

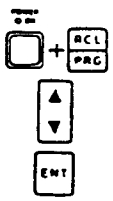
Erase OK ? (Y/N)

Escape

PRINTING SCHEDULED PROGRAM

The scheduled programs can be printed out for reference.

Turn off the unit first then hold the [RCL/PRG] key while pressing the POWER button. Scroll the menu by using the [▲] or [▼] key to display the message "Print Schedule?". With the [ENT] key pressed, the printer will plot the program as shown below.



Print Schedule ?

```
            xxx  Schedule  xxx

27x  NMC              x15:03  - 15:13
27x  NMC              x17:18  - 17:30
26x  CKN              x21:48  - 22:10
```

Start Trigger
(Remote Start)

REPRODUCED AT GOVERNMENT

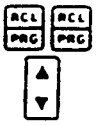
UPDATING PREPROGRAMMED STATION/FREQUENCY

All frequency data for existing facsimile stations are preprogrammed in the built-in memory at the factory. However, if the transmitting frequency of a specific station is changed or a facsimile station is newly established, it is necessary to update the contents of the memory following the procedure shown below.

CHANGING PROGRAMMED DATA TO A NEW FREQUENCY

For example, assuming that the Kodiak, Alaska station will change the frequency in channel number 4 from 17192kHz to 17183kHz, perform the following keystrokes.

To call up the updating mode, press the [RCL/PRG] key twice and the message "Update CH FREQ?" will appear on the display.



Update CH FREQ?

Hit the [ENT] key and the data entry display "000N PRV 799" appears on the window.

000N PRV 799

Place the cursor on the zone column by using the horizontal arrow key and select the number 2 with the [▲] key. Similarly, set the station and channel number to 5 and 4, respectively.

254N NOJ 17192

Move the cursor to the frequency column and select the numbers 1, 7, 1, 8 and 3 with the arrow keys.

254N NOJ 17183

After verifying that the proper frequency data is selected, press the [ENT] key to store it in the memory. To get back to the normal display, press the [RCL/PRG] key again.

100N JMH 32665

ADDING A NEW FREQUENCY

A new frequency may be added into the extra memory area (up to 65 channels) allocated in the zones tabulated on the next page. You may enter the frequency data into any channel of these zones. However, for convenience, it is recommended to select the zone in which you are fishing, sailing, etc. If you want to distinguish the data newly entered from the programmed one, zone "0" should be selected since it is exclusively allocated as a private channels. The operating procedure is the same as the above section "Changing programmed data to a new frequency".

Note: The call signs (PRV, AUX) assigned to these zones cannot be changed.

The frequency data updated by the user may be erased when initializing the unit as described on page 13.

Zone No.	Station No.	Call sign	Channel No.
0	0	PRV	0 thru 9
2	9	AUX	"
4	"	"	0 thru 5
5	"	"	0 thru 9
6	"	"	"
7	"	"	"
8	"	"	"

RECALLING/PRINTING FREQUENCY DATA

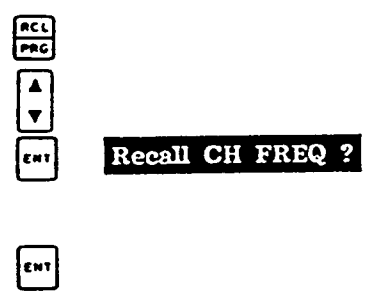
All frequency data stored in the memory (including the one entered by the user) can be recalled on the display or printed on the recording paper for reference.

Recalling

Hit [RCL/PRG] followed by [▲] or [▼] to obtain the message "Recall CH FREQ ?" on the display. Press the [ENT] key and the display will show the channel data previously selected.

By using the arrow keys, select the desired station and frequency number.

In order to escape from this mode and to return to the normal display, press the [ENT] key.



Printing

In order to print the frequency data turn off the unit first, then hold the [RCL/PRG] key while pressing the POWER button. Scroll the display with the vertical arrow keys to obtain the message "Print FREQ ?", then hit the [ENT] key. When the printing is completed, turn off the unit to escape from this mode.

```
                    *** Channel  Frequency ***

-------------------------  Zone No.0  ---------------------------
Station - 0      PRV
   799    799    799    799    799    799

-------------------------  Zone No.1
Station - 0      JMH
 36225  49020  73050  99700 135970 182200 227700
Station - 1      JMJ
 33650  54050  94380 146925 181300
Station - 2      JJC
 [illegible] 86190 127455 [illegible] 162700 238644
```

The channel frequency is shown in 100Hz.

ex. 182200: 18220.0kHz

SELECTION OF NAVTEX STATION AND MESSAGE

This chapter describes the operating procedure according to selection of the NAVTEX station and designation of the message to be received, and is applicable only for the NAVTEX version.

As stated in detail in the Appendix of this manual, the header code of all messages are prefixed by a four character group; the first character denotes the identity of the transmitting station, the second specifies the category of message and the next two give serial numbers between 00 and 99 in transmitting order. It should be noted that serial number 00 is exclusively assigned to a important emergency message. The list below shows the category of each message. As for the station list, refer to page APC-3.

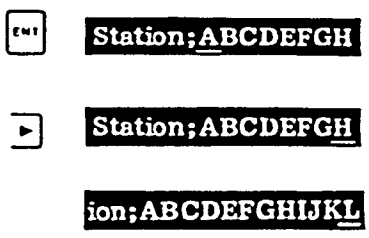
A. Coastal navigational warning
B. Meteorological warning
C. Ice report
D. Search and Rescue Alert
E. Meteorological forecast
F. Pilot message
G. Decca message
H. Loran-C message
I. Omega message
J. Differential Omega message
K. Other electronic Navaid system messages
L. Navarea warnings
M-Y. No category allocated (as of September, 1986)
Z. QRU (no message on hand)

Any category from the above list may be selected. However, all NAVTEX receivers are required to print out messages A, B, D and L, which are considered essential for warning of hazards or other information of concern to the oceangoing navigator. If necessary, the DFAX can sound an audio alarm when receiving a D type message having a serial number of 00, in addition to the lighting of the SAR MSG (Search And Rescue message) LED.

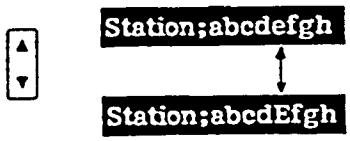
SELECTION OF STATION AND MESSAGE

1. Press the [RCL/PRG] key twice, then scroll the menu by using the [▲] and [▼] keys in order to display the message "SET NAVTEX?".

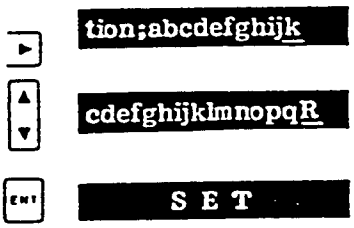
2. Hit the [ENT] key, and the NAVTEX stations will be displayed with their identification letters A to H in alphabetical order. The remaining letters I to Z may be called up by scrolling the data column leftward with the [►] key; place the data select cursor to the far right side of the data column by using [►], then further pressing the same key will scroll a series of letters from right to left.



3. Registration of the NAVTEX station is made by setting the identification character in capital letters. Pressing the [▲] or [▼] key alternately selects a capital or small letter where the cursor is placed.



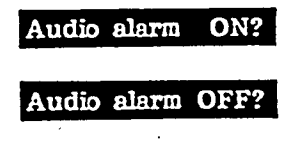
4. For example, assume that you want to select Reykjavik, Iceland, of which the identification letter is R. Press and hold the [▶] key until the data cursor is placed under the letter "r", then hit either the [▲] or [▼] key to change "r" to "R", followed by [ENT]. Now the registration of the NAVTEX station is completed and the message "SET" will appear for a while on the LCD display.



5. Next, the NAVTEX message will come up on the window. In the same manner as the station selection, set the code of the message desired in capital letters. Note that, as mentioned before, watch on messages A, B, D and L is mandatory, thus these will remain in capital letters irrespective of hitting the [▲] or [▼] key.

6. Again press the [ENT] key. Now the unit will proceed into the alarm mode after indicating the message "SET" for about two seconds.

7. In the alarm mode, either the message "AUDIO ALARM ON?" or "AUDIO ALARM OFF?" is displayed on the LCD window. These messages may alternately be selected with the [▲] or [▼] key. To have the alarm under the above circumstances, select "AUDIO ALARM ON?", then press [ENT].



8. In order to turn off the alarm sound, press the [ENT] key.

The figure below shows an example of the NAVTEX message. The message always starts with the four characters "ZCZC" plus space, followed by the header code, then the main text and concludes with "NNNN".

```
ZCZC GA45
WZ 884
DOVER STRAIT
CABLE LAYING OPERATIONS IN PROGRESS BETWEEN FOLKESTONE AN=D SANGATTE
CABLE VESSELS LOCATED IN ENGLISH AND FRENCH INSHORE TRAFFIC ZONES
DETAILS IN REGULAR BROADCASTS BY CHANNEL NAVIGATION INFORMATION
SERVICE VHF10 DOVER VHF11 GRIS NEZ
CANCEL WZ 876 (GA41)
NNNN
```

If any character in the header code is missing because the receiving condition is marginal, the printer will type an asterisk "*" onto the column of the lost

PRODUCED AT GOVERNMENT

letter, followed by the error message "Corrupt Header". In this case neither the main text nor the end code "NNNN" will be printed out.

Similarly if more than 33 percent of the characters of the main text are lost (the asterisk "*" is also typed instead of the lost letter), the message "Corrupt message" is printed next to the main text.

Sometimes one transmitter sends the same information in the same header code if the text includes a very important notice. When the receiver succeedingly detects the same header code, the latter information is rejected, indicating "Message Already Received".

RECALL/PRINT OF NAVTEX STATION AND MESSAGE

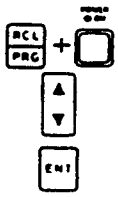
You may recall and print a NAVTEX station and message stored in the memory for reference.

Press the [RCL/PRG] key and scroll the menu with the [▲] or [▼] key so that the message "RECALL NAVTEX? is displayed on the window. Hit [ENT], then the arrow key to obtain the desired display.

Recall NAVTEX ?

- [▲] : Alternately changes the display to either station or message data.
- [▼] : Ditto.
- [►] : Scroll the display to the left.
- [◄] : Scroll the display to the right.

In order to print the NAVTEX station and message, turn off the unit first, then hold the [RCL/PRG] key while pressing the POWER button. Scroll the display with the [▲] or [▼] key to obtain the message "Print NAVTEX ?", followed by the [ENT] key. When the printing is completed, turn off the unit to escape from this mode.



Print NAVTEX ?

MONITORING THE NAVTEX SIGNAL

If necessary, you may monitor the NAVTEX signal through the speaker instead of the ordinary facsimile signal.

Pressing the [MODE] key twice, either the message "Monitor FAX ?" or "Monitor NAVTEX ?" is displayed on the window. Select the message "Monitor NAVTEX ?" with the [▲] or [▼] key (these keys alternately select the above messages), then hit the [ENT] key.

Monitor FAX?

Monitor NAVTEX?

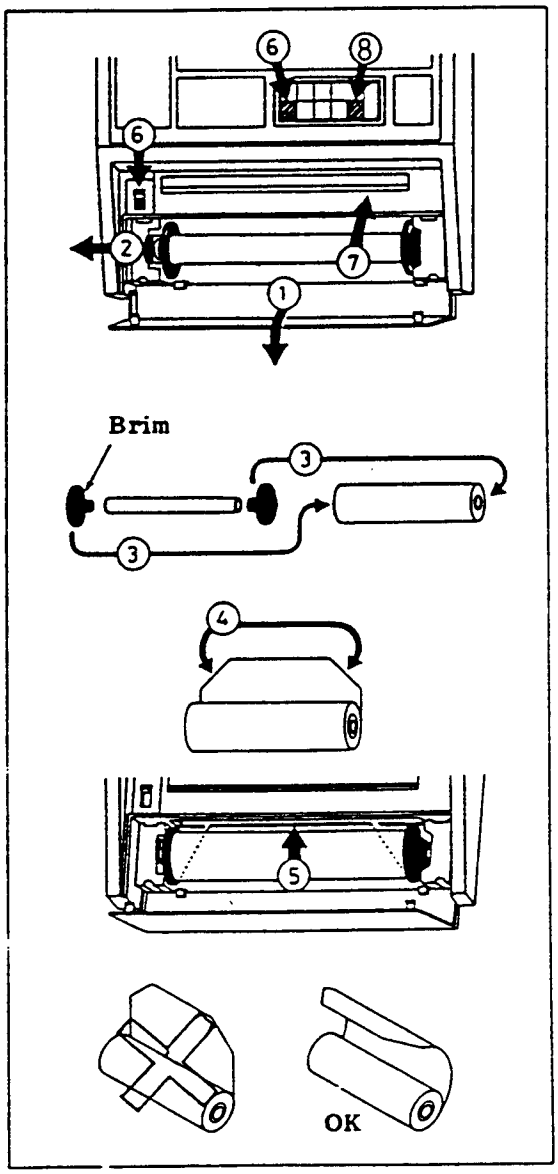
REPRODUCED AT GOVERNMENT

REPLACEMENT OF RECORDING PAPER

When the recording paper runs out completely, a distinct beep sound is released for about one second and the paper out alarm lamp lights to call the operator's attention. The message "PAPER OUT" also appears on the LCD display.

In the conventional facsimile receiver using a recording stylus, the operator must carefully note the remaining length of the recording paper since lack of paper may cause serious damage to the stylus. In most cases, shortage of paper will be acknowledged by an "end of roll mark" printed on the paper. The paper used in the DFAX also has a 50cm red end mark which appears when the paper remains about 1m. However, worry about damage to the stylus is eliminated since the unit employs a thermal head printer which automatically stops when the paper runs out.

1. Pull the paper container cover forward to open it.
2. Take out the paper spool with the spool catch pushed outward.
3. Take out the brims from the used spool and set it to a new roll of paper.
4. Cut both corners of the paper end to ensure smooth feeding.
5. Put back the paper in the paper container. Set the paper-release/lock lever to the release position, then insert the paper into the slot just above the container until the paper out alarm lamp goes off. Do not straighten the paper end, otherwise it will jam inside the cabinet.
6. Lock the paper with the paper-release/lock lever, then press the [☞] key to feed out the paper from the slot below the scale.
7. Tighten slack with the brims. Check that the paper is aligned evenly.
8. Press the [ENT] key to return to the normal display.



RECEPTION BY EXTERNAL RECEIVER

The unit requires no external receiver for normal use because most of the LF and HF weather facsimile broadcast frequencies have been programmed in the built-in memory. However you may also utilize a high performance external receiver when the signal level is marginal.

1. Connect the AF output of the external receiver to the EXT SIG terminal on the unit (Refer to page xx for details). Generally the optimum level of AF signal (1mW/600ohms) may probably be taken out the from LINE OUT of the receiver. Adjustment of the AF signal level is very important. If the level is insufficient (less than 0.1mW) the unit will not operate, if it is too high (more the 10mW) the recorder circuitry may be damaged. In practice, it is essential to tune the receiver in the desired station first then gradually increase the AF output to the rated level.

2. Set the MODE and BANDWIDTH selectors of the receiver to "CW" and "NARROW (approx. 1kHx)". Turn the RF GAIN control fully clockwise and set the AGC switch to "OFF". Place the BFO control at the mid point of its travel and set the receiver to the desired frequency. Adjust the VOLUME and BFO controls for a clear facsimile signal.

   Note: To receive an ISB station, it may be necessary to shift the frequency within ±2kHz relative to the assigned frequency.

3. Get the message "SPD/IOC xx/xx" on the LCD window by pressing the [MODE] key followed by the [ENT] key, and set the proper SPEED and IOC number referring to the Facsimile Schedule Book.

4. On completion of the SPD/IOC settings, press the [ENT] key to activate recording. Gradually increase the AF signal level so that the picture is plotted on the recording paper. If necessary, readjust the BFO control for a clear recording.

5. When interference or noise is heavy, try to shift the TUNING dial within 300Hz of the assigned frequency to obtain a better picture. A narrower bandwidth is better for rejecting noise. However if the resolution of picture becomes poor, select a wider bandwidth.

MAINTENANCE

GENERAL

The equipment will maintain optimum performance for a reasonably long period. However, continued performance can not be expected without periodic inspection and maintenance. Important points to be checked from time to time are tabulated below.

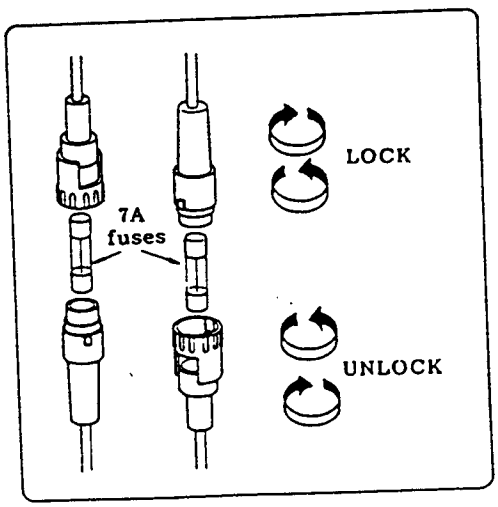
Check Item	Action
whip antenna	If cracked or broken, replace it with a new one.
antenna wire	If sheath peelen, seal with vinyl tape. If immersed with water, stretch new antenna wire.
junction of whip antenna and preamp unit	If corroded, clean and waterproof with sealing compound.
coaxial cable	If cut, repair it.
coaxial plug connection	If loosened, reconnect. If corroded, clean contacts.
power plug connection	If loosened, reconnect. If corroded, clean contacts.
battery connection	If corroded, clean power terminals.
grounding terminal	If corroded, clean terminal.

FUSE REPLACEMENT

To protect the equipment from serious damage, two fuses are provided on the power supply lines.

The fuses protect against over-voltage/reverse polarity of the ship's mains or internal fault of the equipment.

If a fuse has blown, first find out the cause of the trouble before replacing it with a new one. A fuse rated for more than 7A should not be used, since it may cause permanent damage to the equipment.



Damage due to overfusing is not covered by the warranty.

Another fuse is provided inside the equipment (POWER module), and it blows when the internal circuit is defective. If this happens, call your dealer for service. Never attempt further circuit check inside.

CLEANING

The unit should kept clean and dry at all times. Dust or loose dirt can be wiped off with a soft and dry cloth. To remove thick and heavy dirt, use a mild detergent and water on a soft cloth.

CAUTION

Never use plastic solvents, such as thinner or acetone, for cleaning. It may harm the cabinet case, touchpads and the display window.

TROUBLESHOOTING

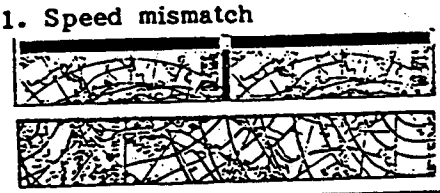
OPERATOR TROUBLESHOOTING

Problems with the equipment may be caused not only by a faulty circuit but also by the incoming signal condition, inadequate installation, or even operator error.

The list below shows the typical troubles which may be mistaken as equipment error.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Power won't come on. (No display nor sound)	1. Switch at main switchboard is turned off. 2. Power connector is loose or pulled out. 3. Power fuse (7A) has blown. 4. Battery is dead.	1. Turn on the main switch. 2. Plug connector firmly. 3. Check mains voltage and polarity first, and put a new fuse. If it blows again, call for service. When driven from AC mains, check rectifier as well. 4. Charge or replace battery.
Lamp lights but no or faint display.	1. Improper CONTRAST setting	1. Adjust the CONTRAST control. (Ref. page 14.)
Unreadable character displayed	1. Back-up memory contents destroyed. 2. Keep-alive battery is dead.	1. Perform "Cold Start." (Ref. page 13.) 2. Ask your dealer for battery replacement.
No audible sound	1. VOLUME is set too low. 2. Loop-back jumper wire(s) at rear terminal board is disconnected.	1. Adjust the VOLUME control. (Page 16) 2. Connect the jumpers correctly. (#2 - #3 & #5 - #6)
Noise sound but no or very weak signal	1. Antenna connector is loose or disconnected. 2. Antenna cable is cut or shorted.	1. Fasten it tightly. 2. Repair the cable.
No response to key operation	1. Recorder is in sleep mode ("OFF Facsimile").	1. Press [MODE] to restrat. (Page 19)
Can't start recording.	1. Paper has run out. (PAPER OUT lamp is on.)	1. Load a new roll of paper. (Page 29)

- cont -

SYMPTOM	POSSIBLE CAUSE	REMEDY
Paper won't advance.	1. RELEASE/LOCK lever is in "RELEASE" position. 2. Paper is jammed. 3. Paper roll has slipped out of supporting catches.	1. Turn the lever to "LOCK" side. 2. Clean paper path. 3. Load paper correctly. (Ref. page 29.)
Paper feeds but no recording.	1. Paper is loaded with front-side-back. 2. Normal paper (non-thermal) is used.	1. Load paper correctly. (Ref. page 29.) 2. Use specified thermal paper.
Multiple or overlapped picture	1. Speed mismatch 	1. Select correct speed. (Ref. page 17.)
Split picture (Dead sector in the middle)	1. Out of phase	1. Set PHASE manually. (Ref. page 18.)
Vertically expanded or compressed picture	1. IOC mismatch	1. Change IOC manually. (Ref. page 17.)
Skew picture	1. SYNC is deviated.	1. Adjust SYNC control. (Ref. page 19.)
Faint or noisy picture	1. Receiver detuned 2. Weak incoming signal	1. Adjust frequency manually while watching TUNE indicator. (Ref. page 16.) 2. Select another frequency.
Won't start recording as scheduled.	1. Remote start mode is selected but start signal is not transmitted. 2. Improper schedule setting (Two programs overlapped in time - later schedule will be disregarded.)	1. Use time start mode if dead secter is transmitted in black. 2. Review schedule.
Schedule and private channel settings are cleared or destroyed.	1. Keep-alive battery for memory back-up is dead.	1. Ask your dealer for battery replacemnet. Perform "Cold Start" sequence. (Page 16)
Paper turned black	1. Paper has been stored in hot environment or exposed to active chemical gas.	1. Keep paper in dry and cool place.

VI – 4