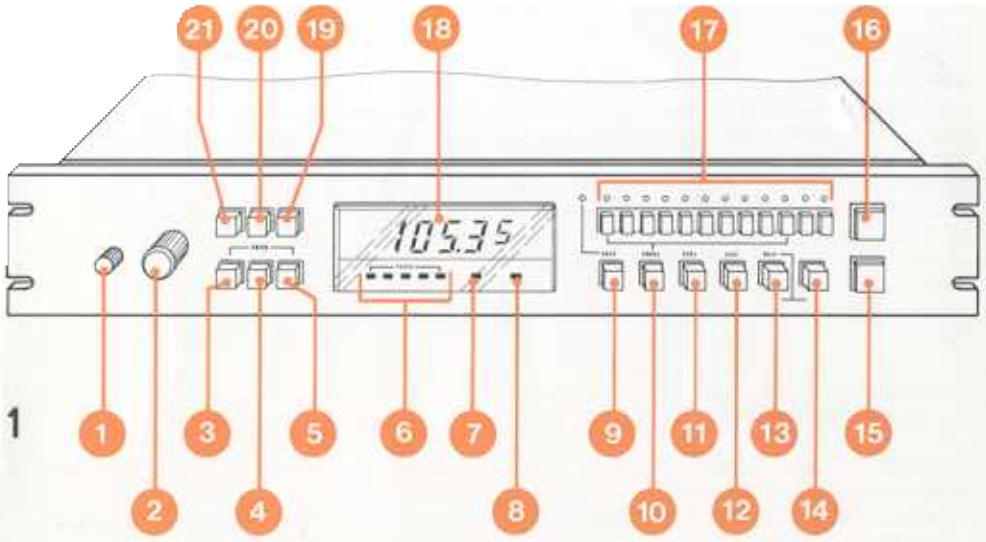

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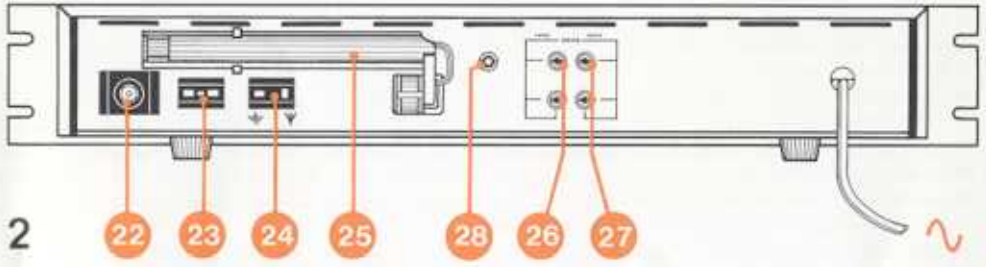

2

PHILIPS

PHILIPS 22 AH 180

hi fi
HIGH FIDELITY INTERNATIONAL

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English

Controls, etc. *(fig. 1)*

1. mains switch 'ON/STAND-BY'
2. output level control
3. muting switch 'ON/OFF'
4. muting level selector
5. △ F-switch
6. signal strength indication 'SIGNAL'
7. local FM-station indicator 'LOCAL'
8. stereo indicator 'STEREO'
9. store button 'STORE' with indicator
10. key-in button 'KEY-IN'
11. lock switch 'LOCK'
12. search switch 'SEARCH'
13. 50/100 kHz selector
14. wave range selector 'AM/FM'
15. tuning down button 'DOWN'
16. tuning up button 'UP'
17. entry/preset buttons with indicators 'AM/FM MEMORY'
    nrs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (= 0) for entering
    nrs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 for presetting
18. frequency display
19. stereo only switch 'STEREO ONLY'
20. mode switch 'MODE'
21. MPX-filter switch

Inputs, outputs, etc *(fig. 2)*

22. inputs FM aerial, 75 ohm
23. inputs FM aerial, 300 ohm
24. inputs AM aerial and earth
25. AM-rod aerial
26. outputs to (pre-)amplifier, 'FIXED'
27. outputs to (pre-)amplifier, 'VARIABLE'
28. input for switch unit

Checking the mains voltage

Before connecting the set to the mains supply check that the operating voltage, indicated on the type plate at the rear, is that of your local mains voltage. If it is not, do not connect the set to the mains but consult your dealer.

Note for users in Great Britain
When fitting a mains plug to the mains lead, please proceed as follows:
The wires in the mains lead are coloured in accordance with the following code:
blue - neutral; brown - live.
As these colours may not correspond with the colour markings identifying the terminals in your plug proceed as follows:
The brown wire must be connected to the terminal which is marked with the letter L or coloured red. The blue wire must be connected to the terminal which is marked with the letter N or coloured black. This apparatus must be protected by a 3 amp. fuse if a 13 amp. plug is used or if any other type of plug is used by a 5 amp. fuse either in the plug or adapter or at the distribution board. If in doubt consult a qualified electrician.

Connections

Pre-amplifier or integrated amplifier
A pre-amplifier or an integrated amplifier can be connected to the outputs 26 or 27.
The output level from sockets 26, marked 'FIXED', is not adjustable. The output level from sockets 27, marked 'VARIABLE' can be adjusted with level control 2 enabling the output level of the tuner to be matched to that of other sound sources connected to the amplifier. Connect the left and right channel of the amplifier to the desired outputs 26 or 27, marked 'LEFT' and 'RIGHT'.

AM-aerials
The ferrite rod aerial 25 will provide satisfactory reception of local stations with strong signals. Because this aerial has directional properties, its direction should be adjusted for the best reception (se paragraph: 'Aerial signal indicators'.)
In fringe areas, or in locations surrounded by steel frame buildings where satisfactory reception cannot be obtained with the rod aerial, an AM-outdoor aerial should be connected to the AM-terminal 24, Ψ-side. An earth lead may be connected to the other terminal, ⏚-side (see fig. 2).
The rod aerial 25 should still be directed for optimum reception even when using an AM-outdoor aerial.

FM-aerials
Broadcasts from local FM-stations can be received using the provisional wire aerial (supplied), which should be connected to the aerial inputs 23, marked '300 Ohm'. This aerial should be positioned to give optimum reception. For best results, particularly in the case of stereo reception, an external aerial should be employed. Dependent on the type of aerial being used (75 Ohm or 300 Ohm) it should be connected either to the terminals 22 or 23.

Aerial signal indicators

The relative strength of an AM/FM signal being received is shown by five separate indicators 6. The stronger the signal, the more indicators will light. The optimum tuning point may be found by tuning the set until the last indicator to light reaches its maximum brightness. When receiving very strong signals, for instance, from a local station, an attenuation circuit is automatically switched on and indicator 7 'LOCAL' will light. This indication applies only to FM-stations. When receiving an FM-stereo transmission, indicator 8 'STEREO' will light. This will remain lit if mode switch 20 is set to 'MONO' position.

Switching on/stand-by

Depressing switch 1 switches on the tuner and the display 18 will light, showing the frequency of the station to which the set was tuned when last switched off. Setting switch 1 to position 'stand-by' (not-depressed) switches off the tuner so that only the memory circuit is still energized. The information stored in the memory circuits is thus retained.
Note: Should the mains supply be disconnected for a period in excess of approximately two days, the stored information will be lost and the memory circuits will require re-programming.

Muting of weak FM-stations

Depressing the muting on/off switch 3 eliminates the undesirable interstation and weak station noises inherent to the FM-band. The muting level can be chosen by setting muting level selector 4 to either position '1' (not depressed) or '2' (depressed).
Muting switch 3 should be set to position 'OFF' (not depressed) to permit reception of a weak station.

Muting of a detuned FM-station

Using the possibilities of the built-in synthesizer system, depressing the △ F switch 5 enables the checking of the tuning accuracy of an FM-station being received. Based on the 50 kHz catch range of the synthesizer, every FM-station which is 50 kHz (or more) away from the tuned frequency, will be muted. This is a valuable aid when checking to see if an FM-station is accurately tuned to the centre of an FM-channel ('zero-axis crossing'). If it is not, the station will be muted when depressing the △ F-switch. In this case, the set

should be retuned as follows:
Since the FM-station in question may be transmitting on the 50 kHz (0.05 MHz) frame (e.g. 88.75 MHz in stead of 88.70 MHz) set 50/100 kHz selector ⑬ always to '50 kHz' position (depressed) and tune accurately in to the station by momentarily touching the down or/and up buttons ⑮ or/and ⑯ until the station is not muted when depressing △ F-switch ⑤.

Muting of monaural FM-braodcasts

Depressing switch ⑲ 'STEREO ONLY' will mute all stations not transmitting the FM-stereo pilot tone. This will mute all monaural broadcasts.

Noise suppression during FM-stereo broadcasts

The reception quality of FM-stereo broadcasts depends to a large extent upon the signal provided by the FM-aerial.
If a strong stereo signal is being received and mode switch ⑳ is not depressed, high quality, low noise stereo reproduction will result. If the signal is weak, however, noise will increase and may spoil the programme content.
At a pre-determined level, the tuner will automatically switch to the mono mode. The noise level will then be reduced but the stereo effect will, as a consequence, be lost.
This function can be performed manually by depressing mode switch ⑳. Alternatively, however, with some loss of stereo separation in the high frequencies, the noise level can be reduced by depressing MPX-filter switch ㉑.

Tuning to AM- and FM-stations

Radio stations broadcast on various wave lengths (or frequencies) classed in a number of wave ranges (bands), amongst them, the AM medium wave range (531-1602 kHz) and the FM-wave range (87.5-108 MHZ).
These frequencies are shown on display ⑱ when tuning. Both of these wave ranges can be received with this tuner. The frequency separation between AM stations is 9 kHz or a multiple of it. In the FM-band the frequency separation is 100 kHz or a multiple of it. In only a few cases the separation is 50 kHz. The 50/100 kHz selector ⑬ determines whether the tuner alters its frequency in steps of 50 kHz (0.05 MHz) or in steps of 100 kHz (0.1 MHz) when the tuning buttons are operated.

Observing the instructions mentioned so far, tuning to FM- and AM-stations can be achieved in four different ways.

Tuning by keying-in a desired frequency

On FM with selector ⑬ in '100 kHz' position
- Check that lock switch ⑪ and search switch ⑫ are not depressed.
- Set range selector ⑭ to 'FM' (not depressed).
- Press key-in button ⑩. The frequency shown on display ⑱ will become zero
- Enter the frequency desired by pressing the appropriate buttons ⑰. The new frequency is now shown on display ⑱.
- Press store button ⑨. This shifts the frequency data into the synthesizer circuits and the station just entered will be received. Any previous entry is automatically cancelled.
- When storing a keyed-in frequency, which is out of the FM-tuning range, the tuner automatically changes this incorrect frequency into a band-end frequency (87.5 or 108 MHz) and nothing will be heard.
- To safeguard a station being received against unwanted detuning, lock switch ⑪ should be depressed. This will inactivate any other tuning function. However, the function of wave range selector ⑭ and 50/100 kHz selector ⑬ are not safeguarded. Therefore do not re-set these selectors.

On FM with selector ⑬ in '50 kHz' position
- Check that lock switch ⑪ and search switch ⑫ are not depressed.
- Set wave range selector ⑭ to 'FM' position (not depressed).
- Dependent upon various conditions, pressing key-in button ⑩ may lead to two different random read-outs on display ⑱, viz.: '00.0' or '00.05'. For correct tuning to a frequency containing a 50 kHz (0.05 MHz) element proceed as follows:
- Enter the frequency desired but ignore the final digit '5' of the frequency by pressing the appropriate entry buttons ⑰.
- For keying-in the 50 kHz channel (the final digit '5' of the frequency) touch tuning up button ⑯ once. This should be done irrespective of the random read-out originally obtained.

Example: for keying-in the frequency 88.75 MHz, press buttons ⑰ '8', '8' and '7'. The display may either show now 88.7 MHz or 88.75 MHz. For correct tuning the tuning up button ⑯ must be touched once. The display will now show 88.75 MHz.
- The frequency can be stored by pressing store button ⑨.
- After tuning, depress lock switch ⑪, if desired.

General remark:
Tuning to FM-frequencies is possible only if the desired programme complies with the settings of the controls ③, ④ and/or ⑲.

On AM
For keying-in frequencies in the AM-wave range, the same keying-in procedure can be followed as for FM, except that wave range selector ⑭ should be set to 'AM' position (depressed). The setting of 50/100 kHz selector ⑬ is irrelevant when tuning on AM.

Manual tuning

- Check that lock switch ⑪ and search switch ⑫ are not depressed.
- Set wave range selector ⑭ to the desired position: 'AM' or 'FM'.
- For AM-tuning the position of the 50/100 kHz selector ⑬ is irrelevant. For FM-tuning the correct position should be chosen.
- By pressing the tuning down button ⑮ (or tuning up button ⑯) only once, the frequency shown on display ⑱ decreases (or increases) in steps of 1 kHz on AM and steps of 50 or 100 kHz on FM. The latter depending upon the setting of selector ⑬.
- By keeping the buttons ⑮ (or ⑯) depressed, the tuner will count down (or up) with high speed until the button is released, for instance at the moment when the frequency desired is almost reached.
- For slow, final tuning with single steps, the buttons ⑮ or ⑯ should be touched once per step.
- To check the tuning accuracy watch for maximum reading of signal indication ⑥. When tuning on FM check the tuning accuracy by using the △ F switch ⑤ (see para. 'Muting of a detuned FM-station').
- After tuning, depress lock switch ⑪, if desired.

Automatic tuning (search tuning)

- Check that lock switch ⑪ is not depressed.
- Depress search switch ⑫.
- Set wave range selector ⑭ to the position desired: 'AM' or 'FM'.
- When searching for an FM-station having a 50 kHz (0.05 MHz) element in its frequency, depress the 50/100 kHz selector ⑬.
- Press tuning button ⑮ or ⑯ and the tuner will automatically search down or up the chosen frequency wave range until a station is found meeting the conditions laid down in the setting of the controls ③, ④ or/and ⑲). Relatively weak stations will be omitted.
- By pressing the tuning buttons ⑮ or ⑯ once more, the search will continue until the next station is found.
- After tuning, depress lock switch ⑪, if desired.

Preset tuning

AM- and FM-stations tuned by keying-in, manual tuning or search tuning can be stored in the memory of the tuner using the 12 preset buttons ⑰. At any moment these stations can be recalled by simply pressing the appropriate preset button. This method of tuning is called preset tuning.
The programme frequencies are best stored in a systematic way in order to assist their recall at a later date.

Storing a preselected frequency
- Check that lock switch ⑪ is not depressed.
- Tune to the station desired in one of the ways mentioned above.
- Press store button ⑨. The store indicator will now light.
- While the store indicator is alight (approximately 2 seconds) press one of the preset buttons ⑰. This will store the frequency in the memory circuits and the appropriate preset indicator, situated above the button pressed, will light.

Should store indication extinguish before the frequency has been stored, press store button ⑨ again.

Recalling the frequency (preset tuning)
- Check that lock switch ⑪ is not depressed.
- Set AM/FM selector ⑭ to the correct position: for a preset AM-frequency to 'AM', for a preset FM-frequency to 'FM'.
- Set 50/100 kHz selector ⑬ to the corresponding position: '100 kHz' (not depressed) when recalling a 100 kHz FM-frequency (e.g. 88.70 MHz) and '50 kHz' (depressed) when recalling a 50 kHz FM-frequency (e.g. 88.75 MHz). For recalling an AM-frequency the position of this selector is irrelevant.

Important: Since an incorrect setting of 50/100 kHz selector ⑬ may lead to detuning and muting of a station when using △ F switch ⑤ you are advised to set 50/100 kHz selector ⑬ always to '50 kHz' position (depressed) when using the preset tuning since this will eliminate the

possibility of making mistakes.

- Press the desired preset button (17). The corresponding indicator will light, showing the preset button in operation.
- Depress lock switch (11), if desired, to safeguard against unwanted detuning.

Attention: With lock switch (11) *not* depressed, accidental operation of the preset buttons (for instance with a duster) may upset the presetting. Since, as distinct from mechanical systems, the preset information remains stored in the memory, correct preset tuning can be restored by simply pressing store button (9). Wait until the store indicator extinguishes and the preset tuning can be resumed as before.

Technical data

(Subject to modification without notice)

FM section

- Wave range: 87.5 - 108 MHz.
- Aerial inputs:
75 Ohm coax,
300 Ohm balanced.
- Sensitivity (at 75 Ohm): 0,9 μV acc. to IHF.
- Total harmonic distortion:
on mono: 0,1%,
on stereo: 0,15%.
- Frequency response: 20-15000 Hz, + 0.5, −1 dB
- Capture ratio (1 mV input): 1.5 dB.
- Selectivity (100 μV input): 65 dB.
- Signal to noise ratio: 70 dB.
- Pilot-tone suppression: 65 dB.
- Stereo separation (1 kHz): 55 dB.
- AM suppression: 65 dB.
- IF suppression: 100 dB.
- Image response: 100 dB.
- Spurious response: 100 dB.
- Muting threshold: 2 and 20 μV for 50 dB S/N at 75 kHz deviation.
- Audio output (at 100% mod.): 1 V max.

AM section

- Wave range: MW 531-1602 kHz.
- Sensitivity (at 1000 kHz): 150 μV for 26 dB S/N.
- Selectivity ($\pm$ 9 kHz): 40 dB.
- IF suppression: 60 dB.
- Image response: 70 dB.
- Audio output (at 30% mod.): 200 mV.
- Distortion (at 30% mod.): 0.8%.
- Signal to noise ratio (at 30% mod.): 40 dB.

- Dimensions: 482 x 68 x 370 mm. approx.