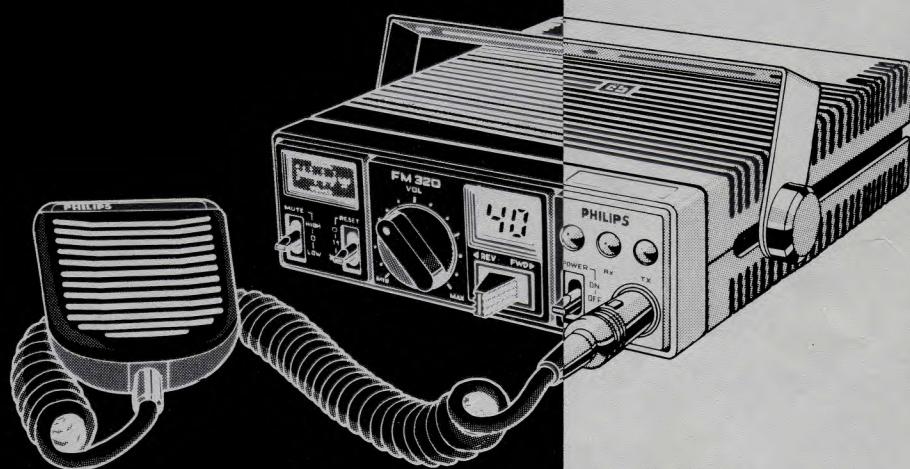




UHF



40 CHANNEL
CITIZEN BAND
UHF TRANSCEIVER



OPERATING MANUAL

PHILIPS

General Information

This transceiver is a combination transmitter and receiver designed for use in the ultra-high frequency (**U.H.F.**) Citizens' Radio Service — (**Citizens' Band**).

This unit is designed and approved to comply with, and be operated under, the appropriate regulations as at the time of manufacture. It is the responsibility of the user to understand and obey the operating regulations.

A licence is required before the unit may be operated, the address of the State Licensing Office is shown in the telephone book under Commonwealth Government, **Postal and Telecommunications Department**. The Operating Regulations (**Form RB14**) and Licence Application (**Form RB13**) are available from this office.

Service

To obtain service for your Philips **UHF CB** take it to your nearest or most convenient authorised service centre. A listing of authorised centres is supplied with your unit and is available from Philips Service Branches in all states.

Warranty

A separate warranty booklet containing warranty registration card and full warranty details is supplied with each Philips CB unit. To obtain warranty service this booklet must be presented with the unit when delivered to the authorised service centre.

Typical Specifications

General

Operating Voltage:	10.8 to 16.2 volts DC
Current Consumption:	Receive — muted 250mA Receive — rated audio 550mA Transmit 1.5 Amp
Polarity:	Floating
Operation:	Frequency Modulation
Dimensions:	225mm deep, 160mm wide, 55mm high
Weight:	1 kilogram (approximately)
Frequency Range:	476.425 MHz to 477.400 MHz
Channel Spacing:	25KHz
Frequency Stability:	\pm 6ppm 5°C to 50°C
Input/Output Impedance:	50Ω unbalanced (nominal) Tx/Rx
Duty Cycle:	2 minutes transmit 2 minutes receive
Operating Temperature:	0°C to 60°C

Receiver

Audio Output:	2 watts into 8 ohm at 7% THD
Selectivity:	40db at \pm 25 KHz
Sensitivity:	12db SINAD at 0.5 μ V pd \pm 3KHz deviation at 1KHz and 300mW output power into 8 ohms
Mute Range:	
Mute Low Position	0.4 μ V pd
Mute High Position	1 μ V pd

Transmitter

RF Output Power:	5 watts \pm 0.5 db
Spurious Radiation:	1 μ W (out of band)
Audio Sensitivity:	5mV rms input for 3KHz deviation at 1KHz modulation
AF Distortion:	5% for 3KHz deviation at 1KHz modulation
Maximum Deviation:	\pm 5KHz

Control Functions

Controls

- 1. Power Switch.** Controls the DC power within the unit, operation to the upwards position turns the receiver on.
- 2. Volume Control.** Rotary operation which is set to required audio level.
- 3. Mute Switch.** A three-position switch which determines the muting level of the receiver, in the **upward** or "high" position only very strong signals will be heard, in the **downward** or "low" position all "usable" signals will be heard, in the **centre** position the mute will be removed enabling very weak signals to be heard — in the centre position all ambient noise will also be evident.
- 4. Channel Selector.** Enables selection of operating channel, operation of the switch to the right or "**fwd**" position will change to a higher channel, operation to the left or "**rev**" position will change to a lower channel. If the switch is operated and released it will change to the next channel, if the switch is held in the operated position it will change one channel in the first second and then approximately three channels per second until released.
- 5. Reset Switch.** A three-position switch for channel reset purposes, operation to the upward or "**11**" position will automatically return the unit to channel 11, operation to the downward or "**nom**" position will automatically select your pre-determined channel — this channel will have been pre-set by the factory but can be easily altered to the channel of your choice by any authorised service centre.

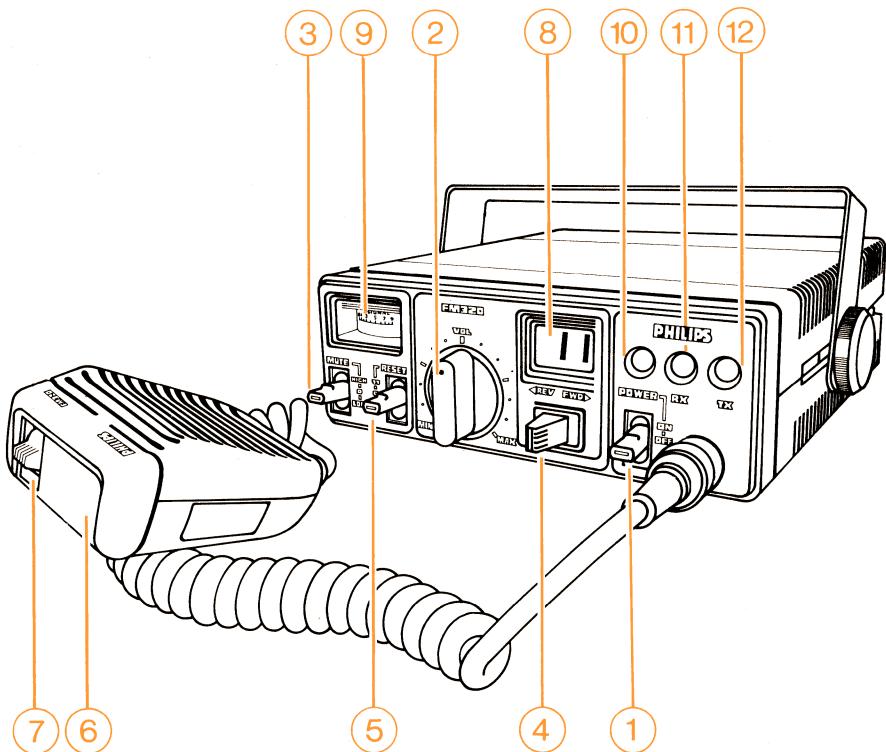
Microphone Controls

- 6. Press-to-talk** switch is located on the top of the microphone and controls the transmit function. To transmit simply press the switch, hold the microphone 3 to 4 inches from your mouth and speak clearly at normal voice level. Release of the press-to-talk switch will allow the unit to receive.
- 7. Remote channel change** switch is also located on the top of the microphone and performs the same functions as the channel change switch on the unit.

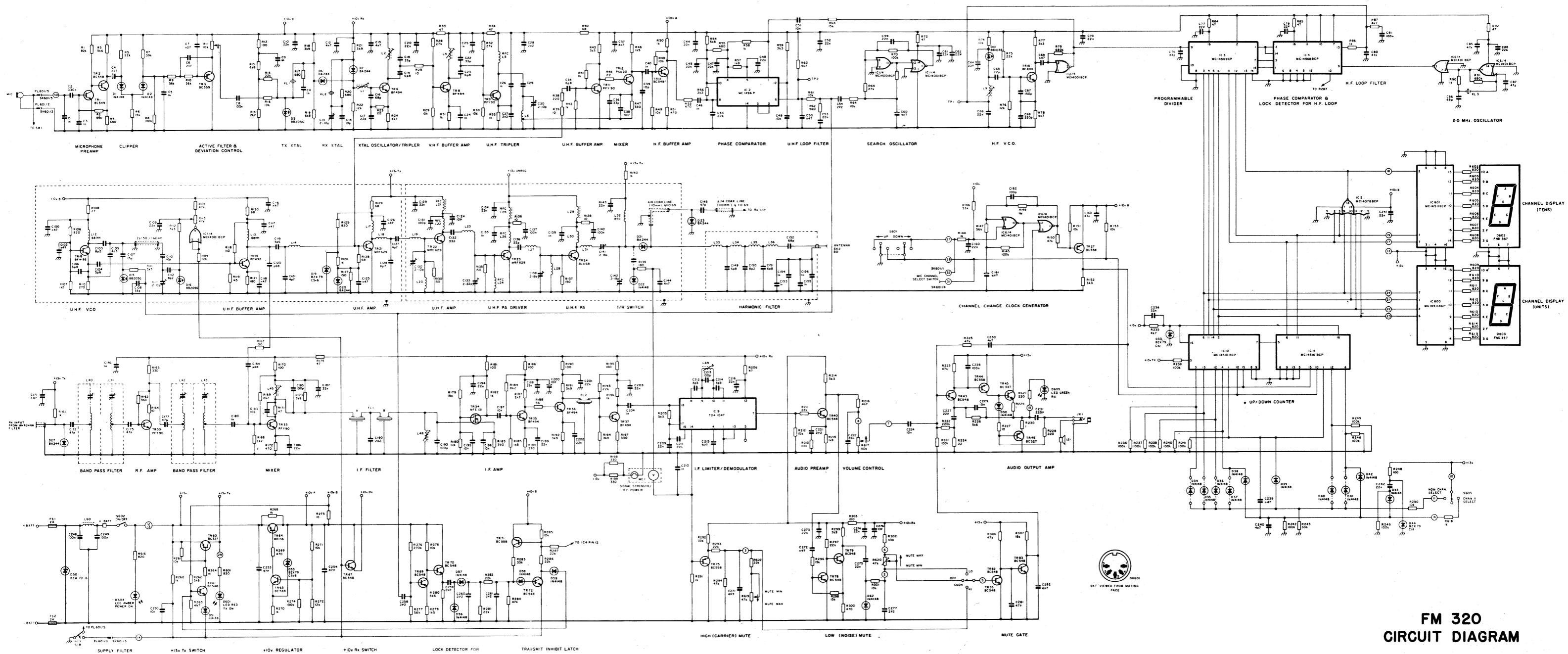
Indicators

- 8. Channel Indicators.** Red LED digital display indicating which of the forty channels is presently selected.
- 9. S/RF Meter.** Indicates level of received carrier signal or the transmitter output power, dependent on receive or transmit mode.
- 10. Power.** An amber LED which indicates that DC power has been switched to the set.
- 11. RX.** A green LED which indicates presence of an incoming carrier signal or when the receiver is unmuted.
- 12. TX.** A red LED which indicates power is being supplied to the transmitter stages.

Diagram



Schematic Diagram



Installation

Mounting

When planning the installation of your Philips **FM320** careful consideration should be given to the following points:—

1. Ease of operation of controls.
2. Non-interference with driving functions.
3. General safety of car occupants.
4. Routing of power and antenna cables.
5. Availability of suitable rigid supports.
6. Proximity of car heater outlets and hoses.

Having located a suitable mounting position, remove the mounting bracket from the unit and fix securely in position, this should be effected by the use of at least two self-tapping screws or suitable nuts and bolts. The CB unit can then be fitted into the mounting bracket and secured.

Mount the microphone bracket within easy reach of the driver, ensuring the curly cord does not hinder operation of vehicle control.

Power

DC power should be derived directly from the vehicle's battery to minimize voltage loss and ignition interference. The **FM320** is designed to operate from a nominal 12 volts DC, positive or negative ground. The **red** wire is to be connected to the **positive** (+) terminal and the **black** wire to the **negative** (-) terminal.

Care should be taken when installing the battery cable that it is not in a position where its insulation could wear through or be damaged, and so allow the cable to short circuit and so cause a fire. Particular care should be taken when bringing the cable through the vehicle's fire wall, and an opening with a grommet fitted should be used.

Antennas

The **FM320** is designed to operate with any standard U.H.F. antenna of **50 ohms** nominal impedance. The two most common types of mobile antennas used are the whip and co-axial dipole. To operate efficiently, whip antennas require a ground plane and the centre of a vehicle's metal roof has been found to be the position providing the best result. Mounting a whip aerial in other positions may provide directional operation.

Co-axial dipole antennas do not need a ground plane and can be mounted on almost any part of the vehicle, including vehicles with fibreglass panels and on the mirrors, etc. of large vehicles. However, the best results are obtained by mounting the aerial as high as possible.

N.B. If you wish to mount your antenna in the vehicle roof, we suggest you contact a professional mobile radio installer. This precaution is necessary due to the differing roof constructions on various types of vehicles.

Remote Speaker

Provision is made on the rear of the set for an external **8 ohm** speaker to be connected. When the external speaker is plugged in, the internal speaker is disconnected. **Plug and unplug only when set is switched "off".**

Operating Procedure

To Receive

1. Set **mute** switch in **centre** position (RX unmuted).
2. Set **volume** control to **minimum** (full counter-clockwise).
3. Switch power switch “ON”.
4. Set **volume** control to desired output level (noise or signal).
5. Set **mute** switch to “high” or “low” position.
6. Select desired channel.

To Transmit

1. Select desired channel.
2. If channel is clear (no received signal in low mute signal and green LED off), depress **press-to-talk** switch on microphone and speak clearly with the microphone held 3 to 4 inches from the mouth.
3. Release press-to-talk switch to receive.

Courtesy on Channel

As the Citizens' Radio Service is used by many people it is suggested that you follow the guidelines below to enable efficient and pleasant communications.

1. Always listen on a channel before transmitting, if somebody is already using the channel wait for a break, don't try to transmit over the top of someone else's transmission.
2. Allow a three-second break between an incoming signal and your transmission, this will allow a "breaker" to notify his presence without having to over-ride your transmission.
3. Try to keep each transmission to less than one minute.
4. Do not conduct conversations on the call channel, switch to a clear channel as soon as you establish contact and so leave the call channel clear for others.
5. Keep the emergency channel for the purpose it is designed — emergency communications — do not conduct conversations on this channel.

The **UHF** channel allocations for the Citizens' Radio Service are:—

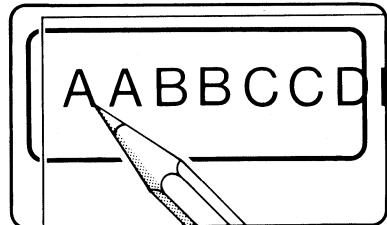
Channel 1	476.425MHz	Channel 15	476.775MHz	Channel 29	477.125MHz
2	.450	16	.800	30	.150
3	.475	17	.825	31	.175
4	.500	18	.850	32	.200
5	.525	19	.875	33	.225
6	.550	20	.900	34	.250
7	.575	21	.925	35	.275
8	.600	22	.950	36	.300
9	.625	23	.975	37	.325
10	.650	24	477.000	38	.350
11	.675	25	477.025	39	.375
12	.700	26	.050	40	.400
13	.725	27	.075		
14	.750	28	.100		

To assist in conveying messages under extreme conditions the international phonetic alphabet should be used.

A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Fox trot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

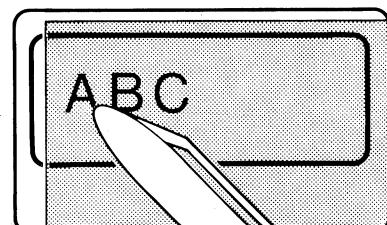
How to apply your call-sign

1. Remove backing paper and position the required lettering over the recess provided near the top right hand corner of the front of your C.B. radio.

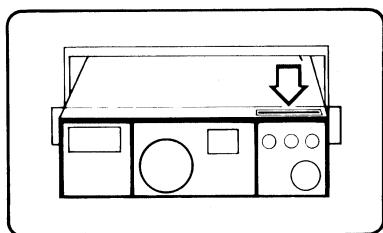


3. Carefully pull away the sheet, making sure that the transfer has been completed. Repeat until your 'call sign' has been completed.

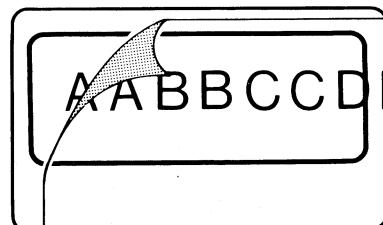
N.B. If a mistake is made, a letter may be removed with cellotape or by gently scraping with a sharp edge.



5. Peel transparent sticker from its backing-sheet and carefully press into recess, over the applied lettering. This will ensure lasting protection for your 'call sign'.



2. Press the first required letter into the recess with your finger and then shade lightly over the whole letter with a ball point pen, soft pencil, or any other blunt instrument.



4. Then place the backing sheet over the lettering and burnish moderately hard to firm adhesion with a smooth instrument such as the cap of a ball point pen.

