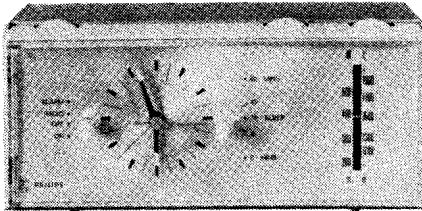


## "TRADER" SERVICE SHEET

1848



Appearance of the Philips 13RS261.

**P**HILIPS 13RS261 is an a.c. mains operated clock and transistored radio receiver featuring a radio/buzzer alarm. When set for alarm, the radio switches on first, the buzzer sounding approximately 10 minutes later. An automatic "sleep control" can be set to switch the radio off at any pre-determined time up to 60 minutes.

The radio employs 6 transistors and a crystal diode for the reception of l.w. (1,175-2,000m) and m.w. (185-571m) bands, and an audio power output of 200mW is provided via a 3in 8Ω loudspeaker.

A metal rectifier and zener diode provide a shunt regulated power supply of a nominal 6.2V at 14mA. The total power consumption from a 200-240V 50c/s power supply (including clock), is 4W (40mA).

Transistor Table

Transistor		Emitter (V)	Base (V)	Collector (V)
TR1	AF117	4.32	4.25	0
TR2	AF117	5.66	5.43	0
TR3	AF117	5.24	4.98	0
TR4	AC128	5.23	5.13	0.5
TR5	AC128	3.2	3.05	0
TR6	AC128	6.185	6.02	3.3

† Alternative type.  
Voltage across L19, 18V a.c.

## PHILIPS 13RS261

## A.C. Mains Operated Clock and Transistored Radio Receiver

## TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 1 were taken from data supplied by the manufacturer and were measured under no signal conditions on a 100kΩ/V meter. The mains power supply was 240V a.c., and all readings are positive with respect to chassis.

## CIRCUIT ALIGNMENT

**Equipment Required.**—An a.m. signal generator; a 0.47μF capacitor; approximately 12in of wire to form a single-turn coupling loop; an audio output meter with an impedance of 8Ω, alternatively, an a.c. voltmeter 0-2.5V a.c. with an 8Ω resistor in parallel may be used.

Disconnect the loudspeaker and connect the output meter (or voltmeter and resistor)

in its place, and turn volume control to maximum.

During alignment the input signal should  
(Continued overleaf col. 1)

## MANUFACTURERS SERVICE DEPARTMENT

Combined Electronic Services Ltd.,  
"J" Building, Welhall Road,  
Hamilton, Lanarkshire, Scotland.  
(Telephone: Hamilton 21122)

## Spare:

Queensway, Waddon Factory Estate,  
Croydon, Surrey.  
(Telephone: Croydon 7722)

## Resistors

R1	22kΩ	A1
R2	1kΩ	B1
R3	6.8kΩ	A1
R4	82kΩ	A1
R5	470Ω	A1
R6	15kΩ	A1
R7	3.9kΩ	A1
R8	1kΩ	A1
R9	12kΩ	A1
R10	470Ω	A1
R11	4.7kΩ	C1
R12	10kΩ	A1
R13	47kΩ	A1
R14	470Ω	A1
R15	390kΩ	B1
R16	1.5kΩ	B1
R17	100Ω	B1
R18	1.5kΩ	B1
R19	100Ω	B1
R20	3.3Ω	B1
R21	3.3Ω	B1
R23	560Ω	A1
R24	820Ω	A1
R27	56Ω	B1
R28	180kΩ	B1
R29	22Ω	C1
R30†	56Ω	C1

## Capacitors

C1	—	A1
C2	—	A1

C3	154pF	B1
C4	56pF	B1
C5	0.01μF	B1
C6	2,000pF	A1
C7	0.047μF	A1
C8	150pF	A1
C9	40μF	A1
C10	0.047μF	A1
C11	150pF	A1
C13	0.01μF	A1
C14	0.047μF	A1
C15	150pF	A1
C18	0.01μF	A1
C19	0.01μF	A1
C20	82pF	B1
C21	80μF	A1
C22	0.01μF	B1
C23	200μF	B1
C25	6.4μF	A1
C26	25μF	B1
C27	—	A1
C28	—	B1
C29	200μF	B1
C30	500μF	B1
C31	125μF	B1

## Coils\*

L1	4Ω	A1
L2	—	A1
L3	19Ω	B1
L4	4.8Ω	A1
L4a	—	A1

L5	—	A1
L6	8Ω	A1
L6a	2.1Ω	A1
L7	—	A1
L8	7.5Ω	A1
L8a	2.4Ω	A1
L9	—	A1
L10	9Ω	A1
L10a	3.3Ω	A1
L11	1.8Ω	A1
L12	8Ω	A1
L14	3Ω	B1
L15	60Ω	B1
L16	60Ω	B1
L17	250Ω	B1
L18	1.5kΩ	C1
L19	34Ω	C1
L20	—	C1

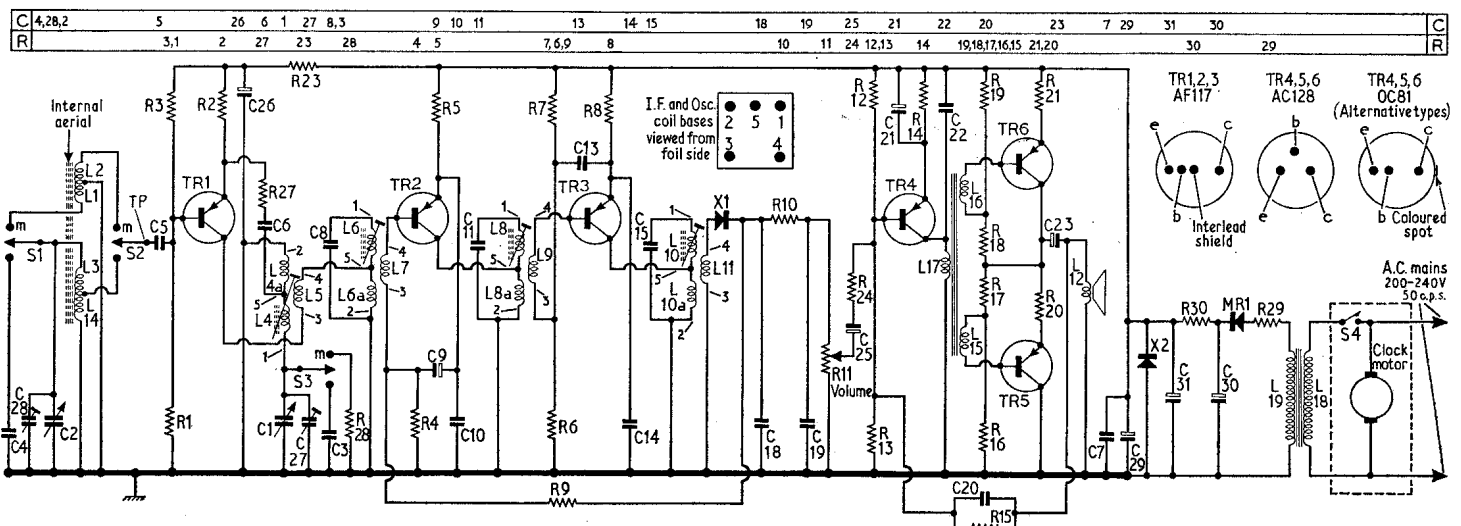
## Miscellaneous

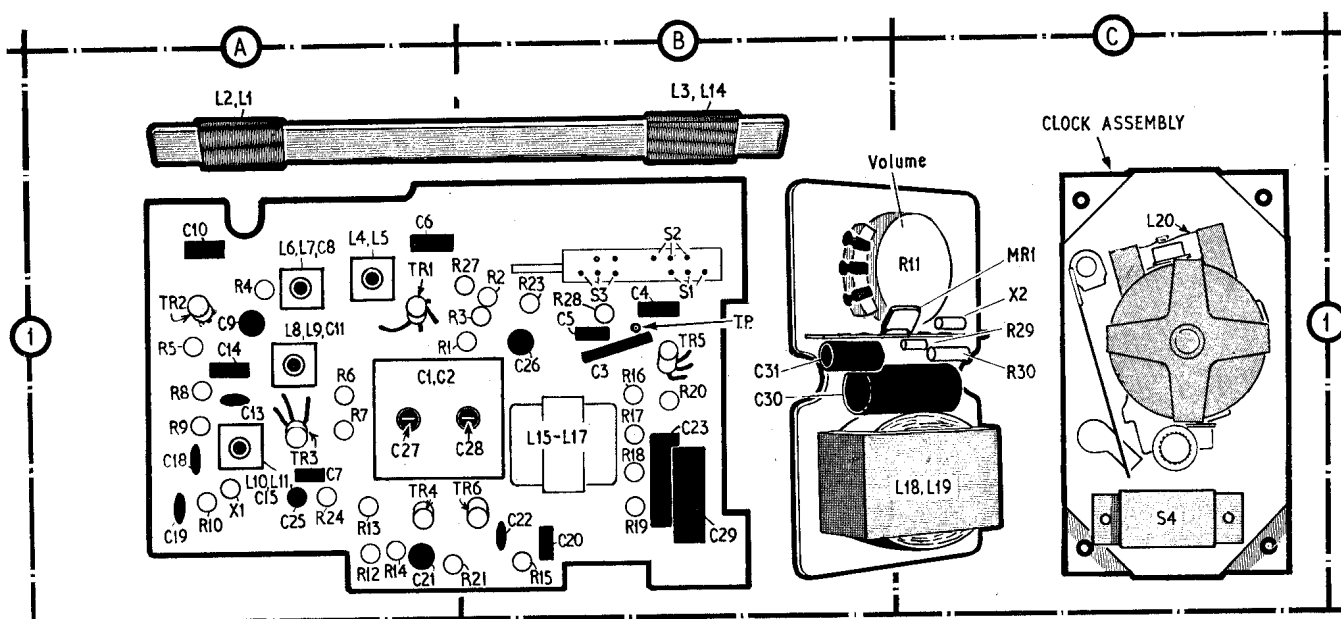
X1	OA70	A1
X2†	OAZ202	C1
MR1	STC-S7	C1
S1-S3	—	B1
S4	—	C1

\* Approximate d.c. resistance in ohms.

† May be 82Ω

‡ May be BYZ88/C6V2.





Component side view of the printed panel and power supply unit, and (right) the clock assembly.

#### Circuit Alignment—continued

be progressively attenuated in order to maintain an output of 50mW (0.75V).

- 1.—Switch receiver to m.w. and rotate tuning gang to minimum capacitance, feed in a 470kc/s a.m. signal via the 0.47μF capacitor at test point (S2/C5). Adjust L10, L8 and L6 in that order for maximum output.
- 2.—Switch receiver to l.w., and rotate tuning gang to maximum capacity. Feed in a 148kc/s a.m. signal and adjust L4 for maximum output.
- 3.—Switch receiver to m.w. and rotate tuning gang to minimum capacity. Feed in a 1,630kc/s a.m. signal and adjust C27 for maximum output.
- 4.—Repeat operations 2 and 3 until no further improvement results.
- 5.—Connect the single-turn coupling coil to a low impedance output from the signal generator and place the receiver in the loop.
- 6.—Switch the receiver to l.w., and tune to 1,579m. Feed in a 190kc/s a.m. signal, and adjust L3/L14 (on ferrite rod) for maximum output.
- 7.—Switch receiver to m.w., and tune to 571m. Feed in a 525kc/s a.m. signal and adjust L1/L2 (on ferrite rod) for maximum output.
- 8.—Tune receiver to 231m. and feed in a 1,300kc/s a.m. signal. Adjust C28 for maximum output.
- 9.—Repeat operations 6, 7 and 8 until no further improvement results.

#### GENERAL NOTES

**Dismantling.**—Place the receiver face downwards on a non-scratch work surface and remove the two retaining screws from the rear of the case, which can now be carefully lifted away to the extent of the loudspeaker leads. Disconnect the loudspeaker leads, and the rear section with loudspeaker can be completely detached.

To gain access to the foil side of the printed panel, release the three securing

screws, two at the top adjacent to the ferrite rod and one at the bottom of the panel. The panel and aerial assembly can now be lifted from the front moulding, giving access to the foil side of the panel and drive cord assembly.

**Removing the Power Supply Panel.**—To remove the power supply panel, remove the three retaining screws, one at the top adjacent to the volume control and two at the bottom near the mains transformer. The metal panel can now be lifted from the front moulding.

**Removing the Clock Unit.**—To remove the clock unit, first release the printed panel and power supply panel, as previously described. Swivel the four spire clips (one at each corner of the front moulding) through 90 deg. and lift off the perspex fascia. With the alarm set control, set all the clock hands to 12 o'clock, then remove the sweep, minute, hour and alarm hands, in that order, from their respective spindles (reverse order for re-assembly). Remove

the control knob pointers and detach the silver clockface. *Do not attempt to remove the control knobs before removing the clock unit from the front moulding.* Prise off the four circular spire clips and remove rubber washers holding the clock unit to the front moulding. Disconnect the four leads to the clock unit, two to the motor and two to the switch, after which the unit can be removed.

For re-assembly proceed in the reverse order. When replacing the perspex fascia, rotate the four spire clips into their original positions, then push the fascia on to the front moulding so that it clicks into place.

**Clock Adjustments.**—When a replacement clock unit is fitted, or when the hands of the existing unit have been removed, the following setting up procedure should be carried out.

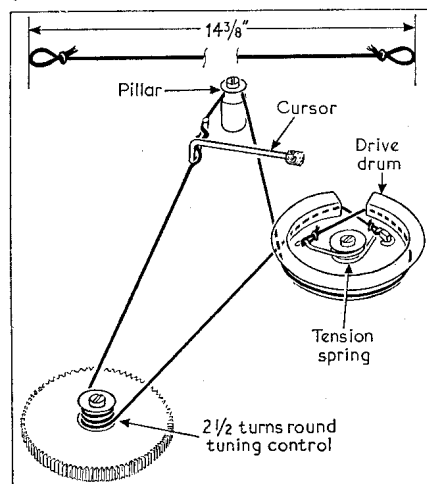
With the clock unit viewed from the bottom (vibrator reed furthest), observe that the cam faces on the two large gear wheels nearest the clockface are not co-incident. If they are co-incident push in and turn the alarm set control, on the back of the receiver, to separate them.

Turn the sleep control knob fully clockwise to the OFF position.

Turn the function control knob fully anti-clockwise to the 'ON' position, then fully clockwise to the 'ALARM' position.

Push in and slowly turn the alarm set control at rear of the receiver so that the alarm hand spindle (outer, largest) turns in an anti-clockwise direction. The mechanism will produce two audible clicks; the first will be the radio operating switch closing, and the second the alarm reed releasing. Immediately the second click is heard, stop turning the alarm set control and affix the hands to their respective spindles in the following order at the 12 o'clock position; alarm, hour, minute, and sweep. Check for adequate clearance between adjacent hands and between the clockface fascia.

**NOTE:** Due to the poisonous nature of the luminous paint on the clock hands it is essential that, after touching them, the technician should wash his own hands.



Drive cord assembly shown at minimum capacitance.