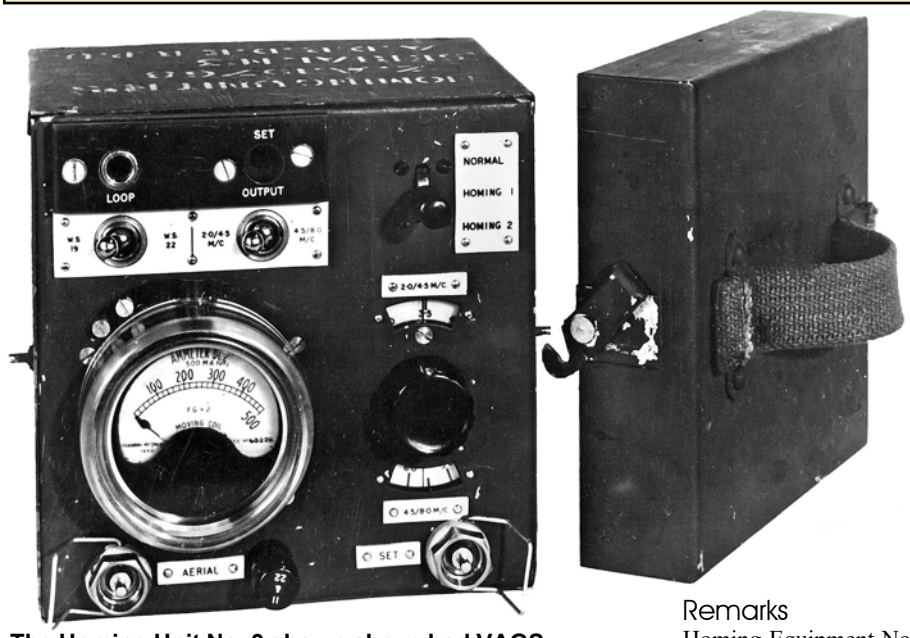
Volume 2 AMENDMENT No. 12

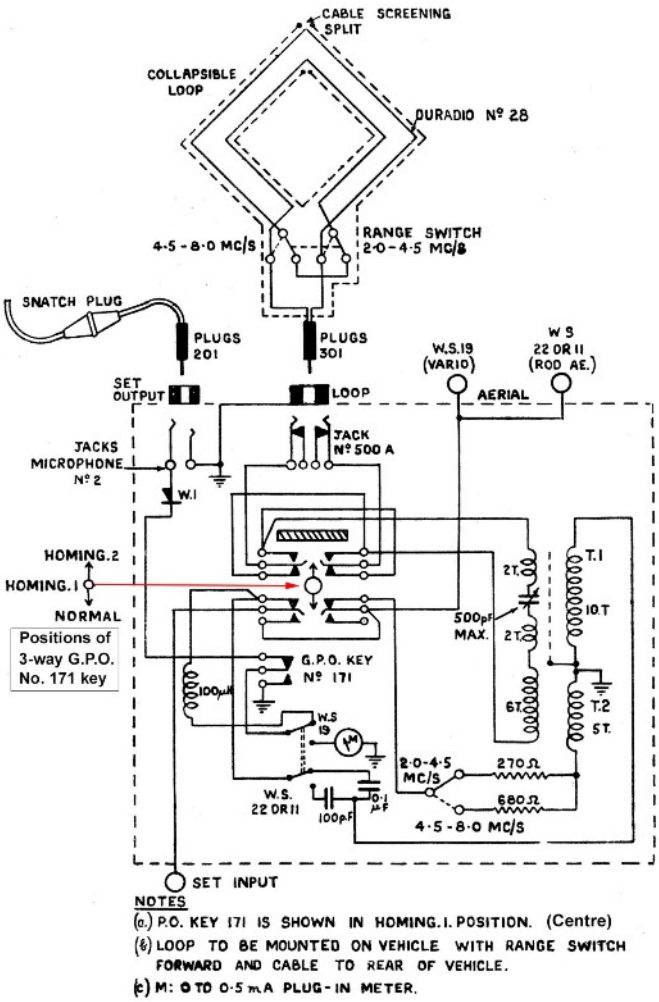
Date of issue: March 2023.

After the publication of 'Wireless for the Warrior' Volume 2 'Wireless Sets of WW2', a small number of minor (typing) errors and incorrect data was spotted. Corrections, additional photos and newly found items are published in 'Volume 2 Amendments'.



Homing Equipment No. 1

The Homing Unit No. 3 shown above had VAOS number ZA19768 and serial number 3.



SCHEMATIC DIAGRAM OF HOMING UNIT Nº3 FOR USE WITH W.S 19 OR 22.

Remarks

Homing Equipment No. 1 was a system that gave indication as to the required direction of movement in order to reach an intended destination, from which location continuous MCW transmissions of about a minute duration must be made according to a pre-arranged plan. The equipment could thus be used to guide a lost patrol to its base, or more especially to enable the 'B' echelon to locate the tank harbour.

It was used in conjunction with Wireless Set No. 19 or 22 installed in 'A' or 'B' vehicles. In the working instructions was also mentioned Wireless Set No. 11.

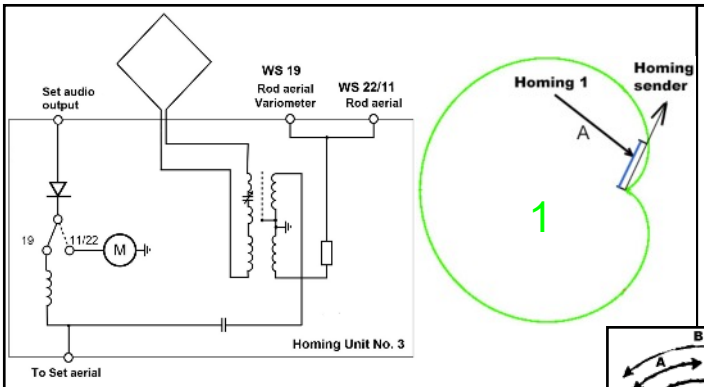
The equipment was completely self-contained, required no power supply and was easily and quickly fitted to any class of vehicle. The homing sender at the destination could be any sender capable of MCW operation in the frequency band of the set to which it was working.

The range of working with the homing equipment of which a reliable indication was given depended on many factors. Inaccuracies were caused by sky waves and on that account a reliable range was smaller by night than day, and reduced at a higher frequency of the MCW transmitter. Examples: at a frequency of 2.5MHz the day range was 50 miles, and 25 miles at night. But when a frequency of 6.5MHz was used this was reduced to 25 miles during the day and 7 miles at night.

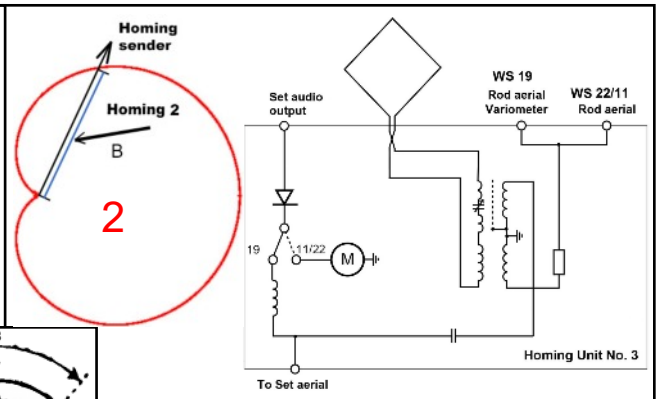
The homing system was based on well known principles, it was novel in that it was used in vehicles, employing existing wireless equipment and used a detected MCW receiver audio rectified into DC for a deflection on a meter. Although not confirmed yet, it is believed that its primary requirement of the development of the homing system was in desert warfare. To date no information has come to light that the system ever came into production, probably that requirements were no longer needed at the time when development was finished.

Radio Production Unit

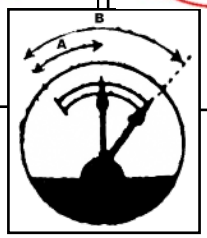
When SEE at Woolwich Common moved to Christchurch in 1943 (at that time renamed SRDE) to the former location of ADRDE, vacated after their move to Malvern in 1942, the workshops with staff remained. These were reorganised by H.E. Drew in June 1943 into the Radio Production Unit, undertaking urgent first off production runs for SRDE and ADRDE. The construction of the Homing Units, and possibly the collapsible loop, was done at the Radio Production Unit. It is interesting to note that Capt. Willy Simondsen developed a small and robust VHF transceiver, and his famous 'Sweetheart' receiver whilst attached to the Radio Production Unit. Recorded is that also parts for the Wireless Set No. 10 were made at Woolwich Common.



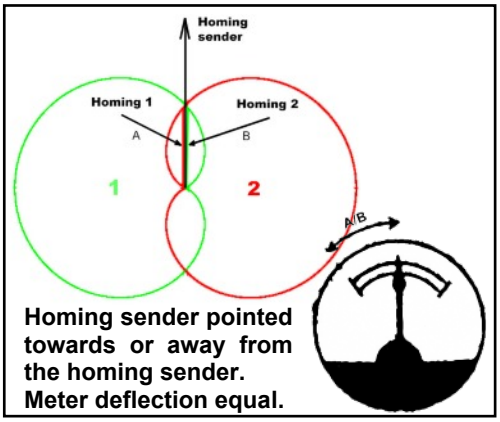
Lobe to right. Key switch at HOMING 1 (Centre position).



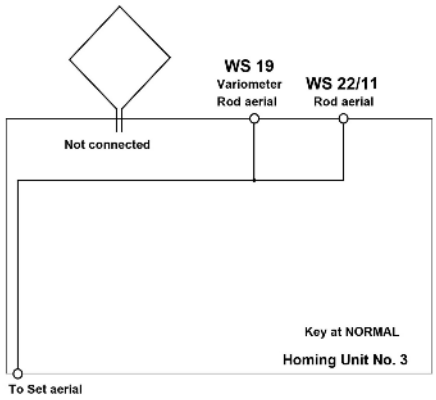
Lobe to left. Key switch at HOMING 2 (Up position).



Meter deflection of HOMING 1 -A- and HOMING 2 -B- with the homing sender position at the right hand side.



Homing sender pointed towards or away from the homing sender. Meter deflection equal.



Connections in the Homing Unit No. 3 in the NORMAL position of the 3-way key switch.

Method of operation.

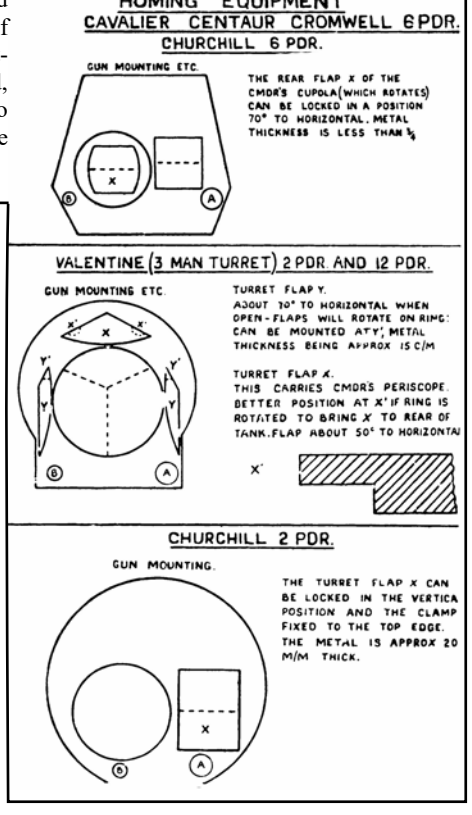
The collapsible loop aerial included in the equipment was used in conjunction with the normal 12ft rod aerial by the sets to produce cardioid polar reception characteristics. The rod aerial pickup was injected into the loop circuit by transformer coupling in the homing unit. The cardioid was arranged to have its axis of symmetry across the vehicle with the lobe to the left (looking from the rear to the front of the vehicle) when the key of the homing unit was at HOMING 1. With the key depressed to the HOMING 2 position, the loop output was reversed and a right hand cardioid resulted. Thus when the homing sender was to the right of the vehicle direction, (as above drawing), depressing the key from HOMING 1 to HOMING 2 resulted in an increased output from the receiver. This was indicated on an output meter as a movement of the needle from A to B i.e. to the right.

Similarly if the needle would deflect to the left on depressing the key indicated that the sender was to the left of the vehicle direction.

No change in deflection on pressing the key indicated that the vehicle was pointed either towards or away from the homing sender.

When a course away from the sender was pursued a slight deviation from this course would cause indications given by the equipment to be such as to cause the vehicle to be turned completely round and onto the correct course towards the sender.

Mounting the loop aerial on armoured cars and tanks differed with the type of vehicle. As an aid to the fitting, illustrated lists of 20 vehicles were provided, ranging from Daimler armoured cars to Crusader cruiser tanks. See a sample page from this list (right).



References

- Information and access to source material for this Amendment courtesy Royal Signals Museum, Blandford Forum, U.K.
- Homing equipment No. 1, Working Instructions, SRDE Pamphlet No. 361A, Nov. 1943.
- Homing loop for Wireless Set No. 18, D Signals Monthly Liaison Notes No. 15, pp 10, 429, Sep. 1944.
- Wireless for the Warrior, Compendium 2, Chapter DF Sets, L. Meulstee, 2012, isbn 1898805 10 5.
- Homing loop for Wireless Set No. 18, WftW Vol. 2, Amendment No. 11, Feb. 2023.
- SRDE 1907-1973, HMSO, 1973.
- The story of Woolwich Common, J.C. Faney, AWRE News, The journal of the Atomic Weapons Research Establishment, May 1964.
- A practical engineer's progress to the presidency, H.D. Drew, Radio and Electronic Engineer, Vol. 52, No. 1, Jan. 1982.
- Wikipedia: ADRDE.

Abbreviations

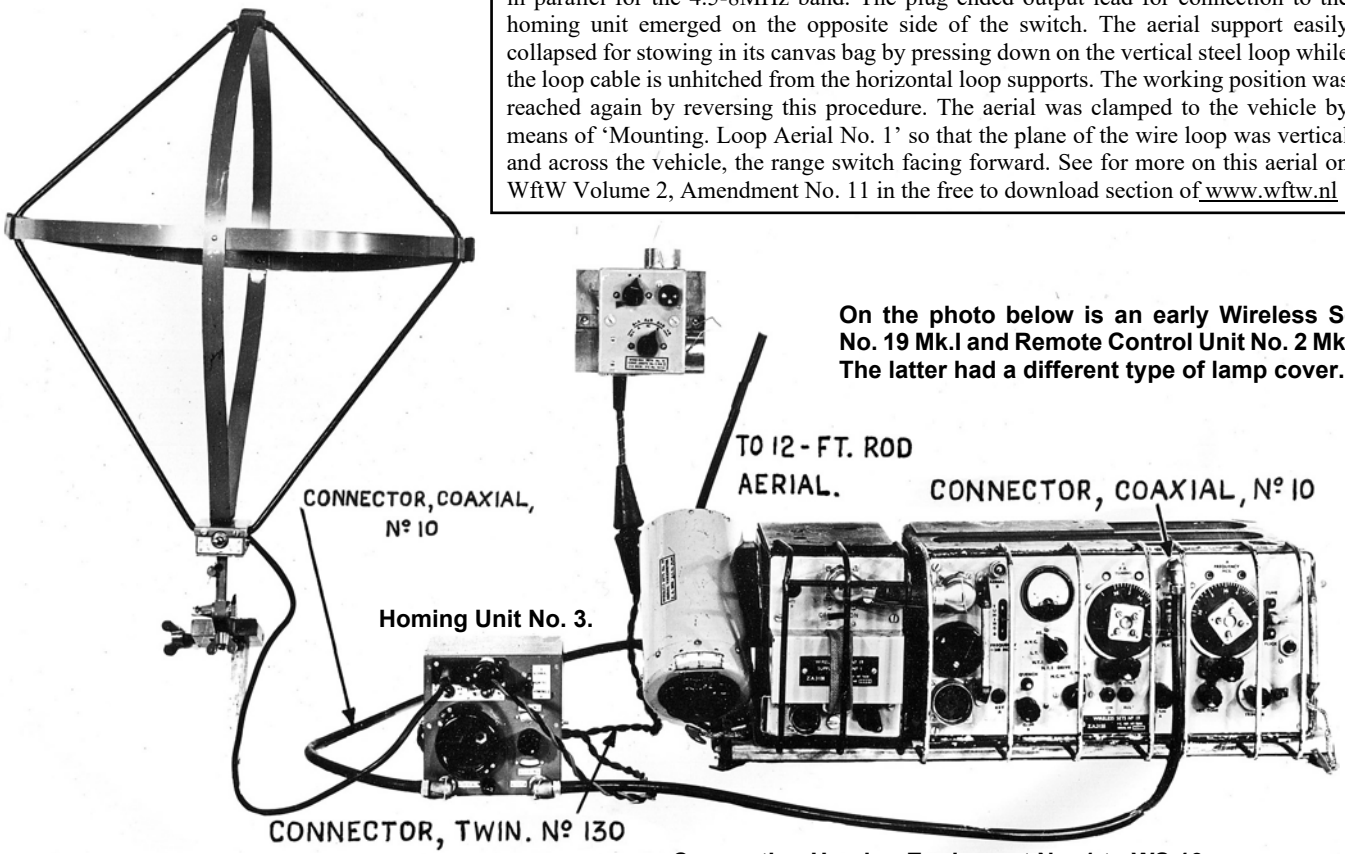
ADRDE: Air Defence Research and Development Establishment.
SEE: Signals Experimental Establishment.
SRDE: Signals Research and Development Establishment.
VAOS: Vocabulary Army Ordnance Stores.

Connections for using the homing equipment with Wireless Sets No. 11, 19 and 22.

Construction of the Aerial Loop, D/F No. 1

The actual loop consisted of a single turn of twin screened RF cable supported in a diamond shape by means of two flexible steel loops, one in a vertical plane and the other in a horizontal one. A small box at the base of the loop contained a two pole toggle switch by which the two turns were connected in series for the frequency band 2-4.5MHz and in parallel for the 4.5-8MHz band. The plug ended output lead for connection to the homing unit emerged on the opposite side of the switch. The aerial support easily collapsed for stowing in its canvas bag by pressing down on the vertical steel loop while the loop cable is unhitched from the horizontal loop supports. The working position was reached again by reversing this procedure. The aerial was clamped to the vehicle by means of 'Mounting. Loop Aerial No. 1' so that the plane of the wire loop was vertical and across the vehicle, the range switch facing forward. See for more on this aerial on WftW Volume 2, Amendment No. 11 in the free to download section of www.wftw.nl

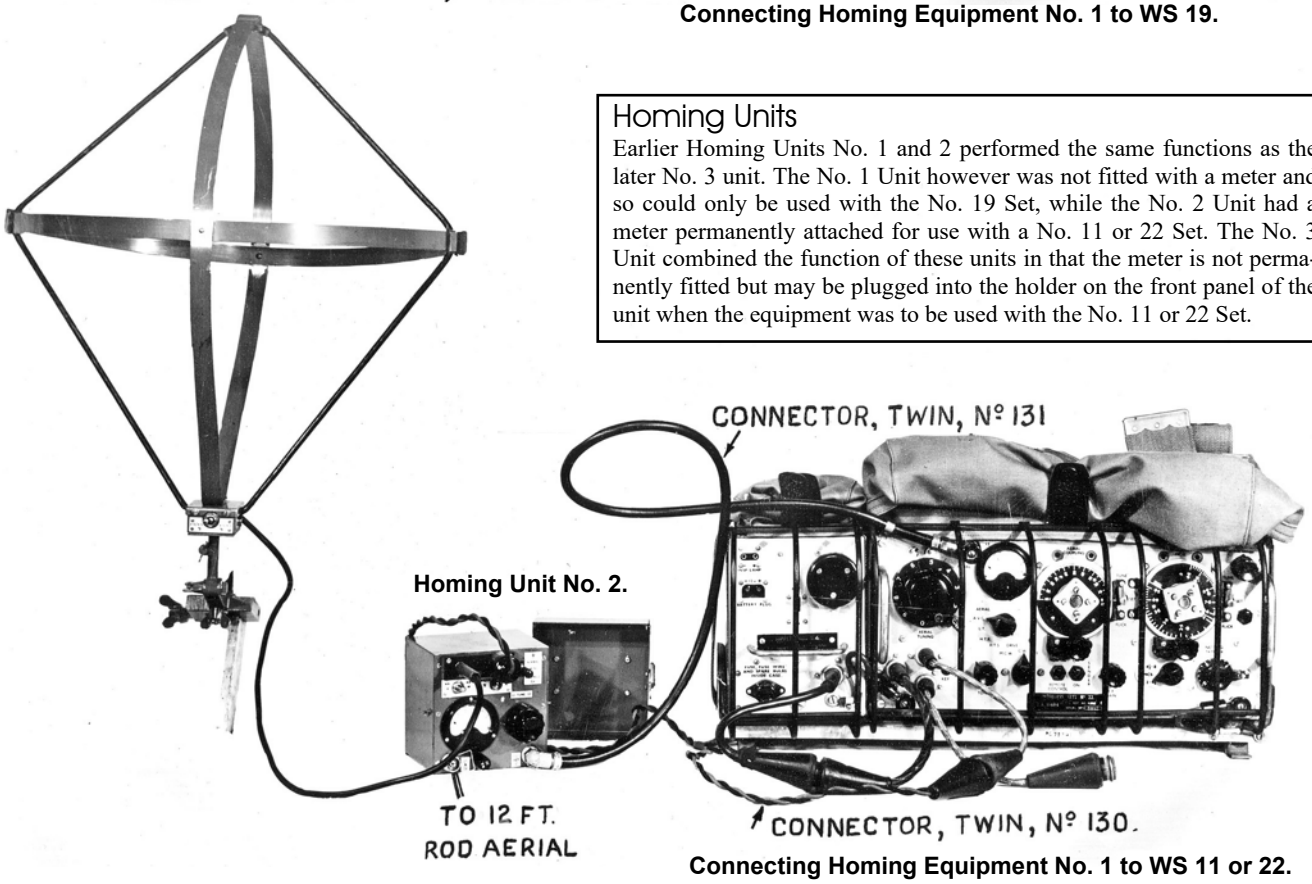
On the photo below is an early Wireless Set No. 19 Mk.I and Remote Control Unit No. 2 Mk.I. The latter had a different type of lamp cover.



Connecting Homing Equipment No. 1 to WS 19.

Homing Units

Earlier Homing Units No. 1 and 2 performed the same functions as the later No. 3 unit. The No. 1 Unit however was not fitted with a meter and so could only be used with the No. 19 Set, while the No. 2 Unit had a meter permanently attached for use with a No. 11 or 22 Set. The No. 3 Unit combined the function of these units in that the meter is not permanently fitted but may be plugged into the holder on the front panel of the unit when the equipment was to be used with the No. 11 or 22 Set.



Connecting Homing Equipment No. 1 to WS 11 or 22.