

MILITARY RADARS

Transportable/Static Surveillance Aerials

There are three basic S600 series transportable/static surveillance aerials:

Type S1010 using single curvature 5.49x1.83m (18x6ft) cosec² reflector for 10cm (S) Band.

Type S1015 using single curvature 5.49x1.83m (18x6ft) parabolic reflector for 10cm (S) Band.

Type S1016 using single curvature 5.49x1.83m (18x6ft) cosec² reflector for 23cm (L) Band.

These aerials are normally supplied as self-contained aerial vehicles which can be lifted by helicopter carried in transport aircraft or towed by a light vehicle such as a Landrover. They can also be supplied in static form for mounting on a gantry, tripod or building roof.

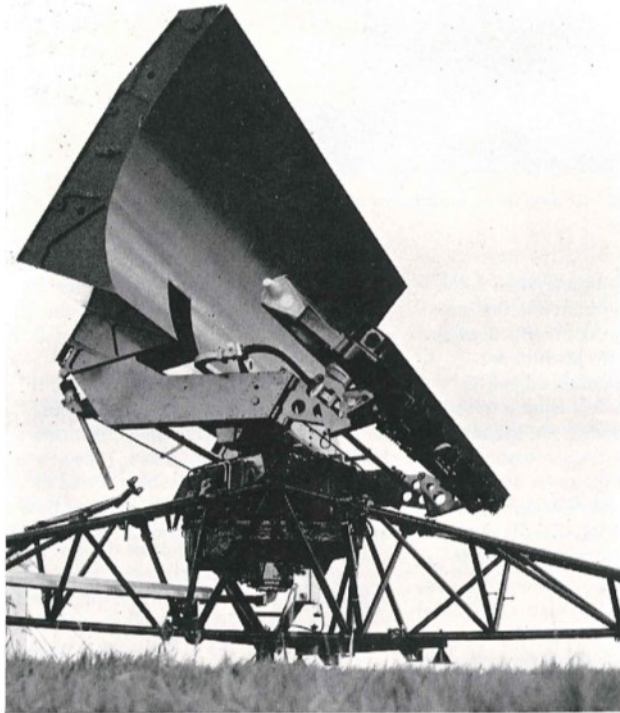
All of the aerials use squintless linear feeds which eliminate the problems of squint normally encountered with con-

ventional linear feeds and therefore enable any frequency to be used within a band without compensating for squint, furthermore, several transmitters can be fed into a single aerial by using a new multiplexer giving the advantages of wider frequency coverage, higher total power and diversity reception. The new squintless feeds, when used with the single curvature reflector, can produce a radiation pattern with sidelobes 28dB down on the main beam whilst having a frequency bandwidth of more than 10%.

The transportable aerials employ a standard tripod mount which folds readily for transportation. A standard set of running gear, consisting of road wheels and suspension, can be rapidly attached to an aerial assembly. The reflector folds down to a horizontal position for transportation.

Provision has been made for the attachment of secondary radar (IFF) aerials to the top of the reflectors.

The 10cm (S) Band aerials are used with either the 1MW (S2010) or 2MW (S2012) 10cm (S) Band Transmitter/Receivers which are described on page 260. The 23cm (L) Band aerial is used with the 2MW 23cm (L) Band Transmitter/Receiver described on page 260.



The 10cm (S) Band surveillance aerial ready for towing

Features

- Fully transportable.
- Squintless linear feeds.
- Diversity operation over a wide frequency band.
- Excellent sidelobe performance.
- Standard tripods and turning gear.

Data summary

Reflector size: 5.49x1.83m (18x6ft).

Horizontal beamwidth:

- 10cm (S) Band cosec²: 1.4°.
- 10cm (S) Band parabolic: 1.4°.
- 23cm (L) Band cosec²: 3.1°.

Vertical coverage (Cosec² aerials):

- 10cm (S) Band: Cosec squared up to 45°.
- 23cm (L) Band: Cosec squared up to 40°.

Vertical beamwidth (parabolic aerial): 4.5°.

Sidelobe level (horizontal): 28dB.



Polarization:

10cm (S) Band: Fixed, horizontal or circular.
23cm (L) Band: Fixed or horizontal.

Gain:

10cm (S) Band cosec²: 34dB.
10cm (S) Band parabolic: 37dB.
23cm (L) Band cosec²: 28dB.

Aerial turning speeds: 6 to 15 r.p.m dependant on drive assembly.

Drive motor: 4.5 h.p.

Operating temperature:
-30° to +50°C.

Storage temperature: -40 to +65°C.

Operational wind speed: Gusting to 130 k.p.h (70 knots) without tethering.

Survival wind speed: Gusting to 222 k.p.h (120 knots) with tethering and aerial folded.

Ice coating: 6.3mm (0.25in.) maximum.

Maximum ground bearing pressure (deployed): 196.6kg per cm² (2800lb/ft²).

All fixings and materials are adequately protected against environmental corrosion and the aerial equipment will operate in all climatic conditions.

Full details are given in Marconi Radar Data Sheets A1—10cm (S) Band; A2—23cm (L) Band.

Static Surveillance Aerials

There are four basic S600 static surveillance aerials:

Type S1011 using a single curvature 13.72×4.57m (45×15ft) parabolic reflector for 10cm (S) Band.

Type S1012 using a single curvature 13.72×4.57m (45×15ft) cosec² reflector for 10cm (S) Band.

Type S1013 using a single curvature 13.72×4.57m (45×15ft) parabolic reflector for 23cm (L) Band.

Type S1014 using a single curvature 13.72×4.57m (45×15ft) cosec² reflector for 23cm (L) Band.

These aerials can be used singly or in back-to-back configurations. The back-to-back aerials provide a choice of a 10cm (S) Band parabolic or cosec² reflector mounted back-to-back with a 23cm (L) Band parabolic or cosec² reflector on a single turning gear.

All of these aerials are suitable for all static installations and can be mounted on a gantry, plinth or building roof. The reflectors are illuminated with linear feeds and all except the 23cm (L) Band parabolic reflector can be illuminated by a new squintless 'delta' feed. This squintless feed permits diversity operation to be undertaken by using a new Marconi

multiplexer whereby several transmitters can be operated simultaneously into a single aerial. The squintless feed also enables a radiation pattern to be achieved with sidelobes better than 28dB down on the main beam.

Provision has been made for the attachment of secondary radar (IFF) aerials to all of the reflectors.

The 10cm (S) Band aerials are used with either the 1MW (S2010) or 2MW (S2012) 10cm (S) Band Transmitter/Receivers which are described on page 260. The 23cm (L) Band aerials are used with the 2MW 23cm (L) Band Transmitter/Receiver described on page 260.

Features

Squintless Linear Feeds.

High Gain.

Diversity operation over wide frequency band.

Excellent Sidelobe Performance.

Data summary

Reflector size: 13.72m×4.57m (45×15ft).

Horizontal beamwidth:

10cm (S) Band cosec ² :	} 0.55° at half power points
10cm (S) Band parabolic:	
23cm (L) Band cosec ² :	} 1.24° at half power points
23cm (L) Band parabolic:	

Vertical coverage (cosec² aerials): cosec squared up to 40°.

Vertical beamwidth (parabolic aerials): 1.5°.

Sidelobe level (horizontal): Better than 28dB.

Bandwidth:

10cm (S) Band: 400MHz.
23cm (L) Band: 120MHz.

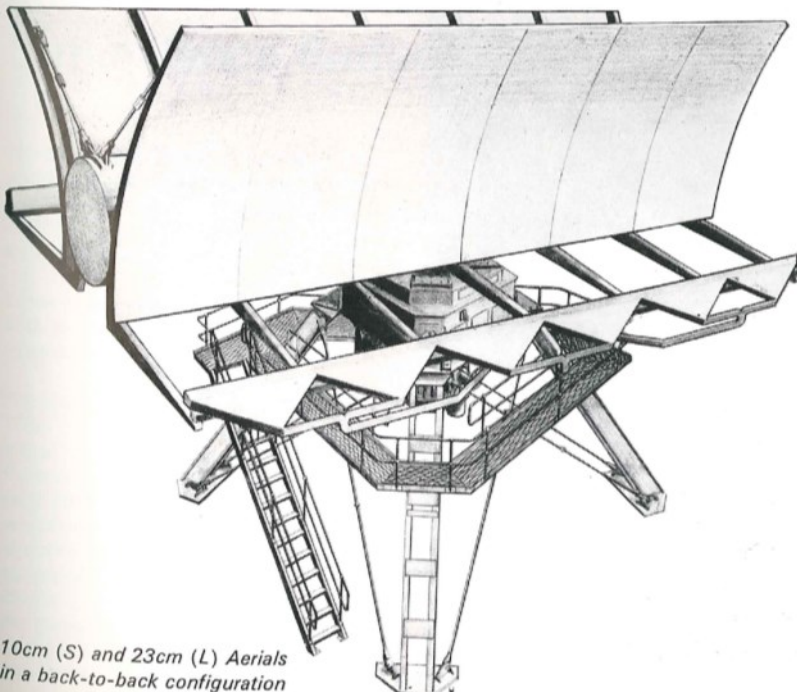
Aerial gain:

10cm (S) Band: 45dB.
23cm (L) Band: 34.25dB.

Polarization: Horizontal.

Aerial turning speeds: 3, 4, 6 and 8 r.p.m dependant on drive arrangement.

Drive motors: Up to 3, one- or two-speed electric motors each of 35 h.p nominal rating.



10cm (S) and 23cm (L) Aerials in a back-to-back configuration