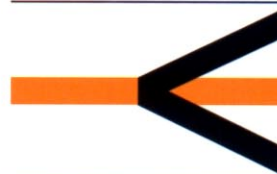


HR Smith
Group of
Companies



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Advanced
airborne
antenna
systems

Shaping the future of Airborne Antenna

HR Smith
Technical Developments Limited



Shaping the future of Airborne Antennas



The HR Smith Group's unique combination of RF design and advanced thermoplastic composite technology places

it at an unparalleled advantage over the majority of existing other antenna manufacturers.

A new generation of advanced engineering thermoplastics has enabled HR Smith (Technical Developments) to create antennas which have unique rain erosion qualities allied to improved impact resistance, high temperature capability and thermal stability. Additionally, superior electrical and mechanical properties and enhanced chemical resistance are combined with on-time delivery, and a lower cost compared to conventional antennas.

The new thermoplastic antennas are the latest state-of-the-art products to be offered by the HR Smith Group and are designed to meet the needs of the aircraft industry into the twenty first century.

The antennas are produced to give optimum electrical performance that is maintainable throughout the life of the antenna, together with a mechanical integrity hitherto not achieved with thermoset composite antennas.

HR Smith can offer direct replacements for the majority of in-service antennas with, in most cases, off the shelf delivery.

Mechanical integrity

The antennas are constructed from advanced thermoplastic resins which have many advantages over their old technology thermosetting counterparts:

The advantages include:

- Improved rain erosion and impact resistance
- High temperature capability and thermal stability
- Void and adhesive free structures
- High degree of product reproducibility
- Enhanced environmental performance
- Corrosion resistant assembly
- Freedom from delamination

The use of advanced thermoplastics in the construction of currently available HR Smith products has given proven performance enhancement, with over fifteen years in-service use on high speed military aircraft.

The traditional methods of assembly with component parts such as connectors, baseplate and radiating element being housed in a pre-formed thermoset shell with resultant cavity, have been replaced by revolutionary, patented, manufacturing design features. These features substantially eliminate the current failure modes of traditional antennas.

A new molding technique forms the radiating element as part of

the process and encapsulates the baseplate and connectors. The resultant antenna does not have any voids, printed circuit board radiating elements or unsupported radiating elements which can give rise to failures on current antennas. These antennas will not delaminate as some fibreglass antennas have done in the past. Combining this with our dry fit conductive anti-corrosion RF gaskets gives users fit-and-forget antenna systems at a reduced cost.

Electrical performance

The elimination of a separate radiating element and cavity in the advanced molding process ensures that the original performance is maintained throughout the life of the antenna.

Thermoplastics offer void and adhesive free assembly which provides the high quality electrical properties required for antennas to give optimum performance.

For the first time, the new range of thermoplastic antennas offers a quality product that can have a mean time between failure approaching that of the aircraft's life and can provide a fit-and-forget solution.

The standard range of antennas is manufactured to be direct replacements for the range of antennas as detailed in the Antenna Cross Reference List at the end of this brochure.

VHF Communications Antenna Type Ten 105

The broadband VHF Antenna Type Ten 105 has been manufactured from durable high impact resistant thermoplastic which has unrivalled resistance to rain erosion and yet is one of the lightest antenna for its size. The radiation pattern is omni-directional and the antenna is extremely efficient with a VSWR of less than 2.0:1 across the frequency band. Bolt patterns exist for compatibility to most airframes worldwide.



Electrical Specification

Frequency Range	118 MHz-156 MHz
VSWR	2.0:1
Polarisation	Vertical
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Cleared for all subsonic commercial aircraft
Temperature Range	-75° to +180°C
Weight	Less than 2lbs (0.9Kg nominal)

Antenna 10-205-112P

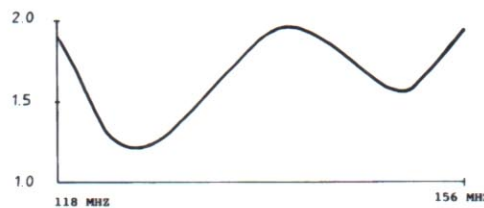
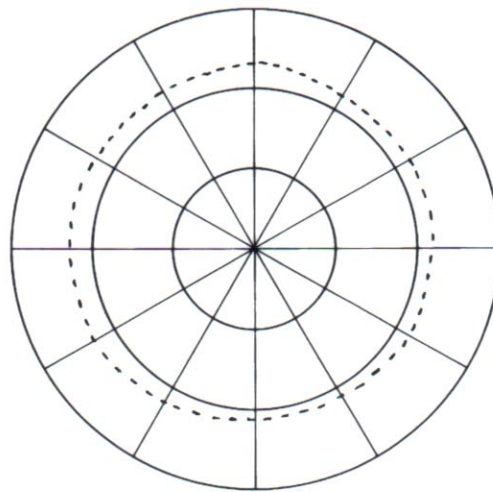
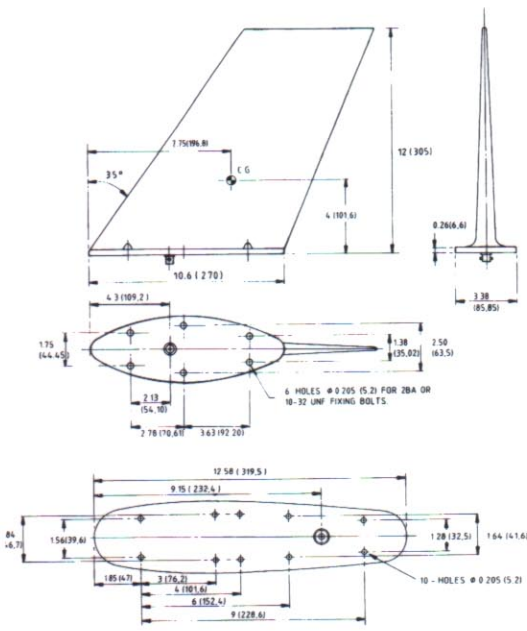
Connector	Type BNC
Mating Connector	UG88(-)/U
Gasket Pt No	10-500-11-3

Antenna 10-205-24P

Connector	Type C
Mating Connector	UG8573E(-)/U
Gasket Pt No	10-500-11-115

Equivalents

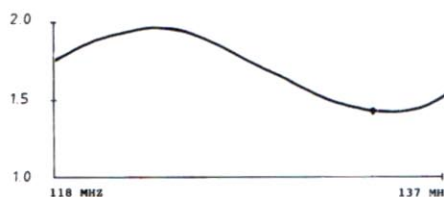
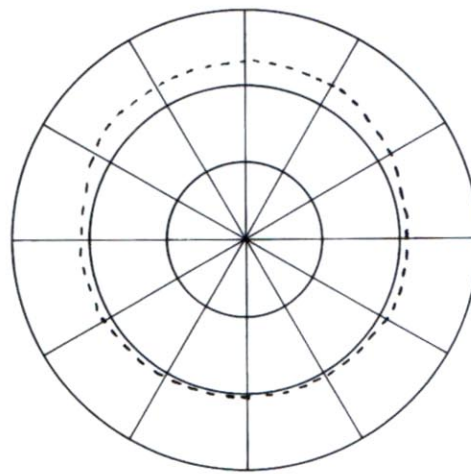
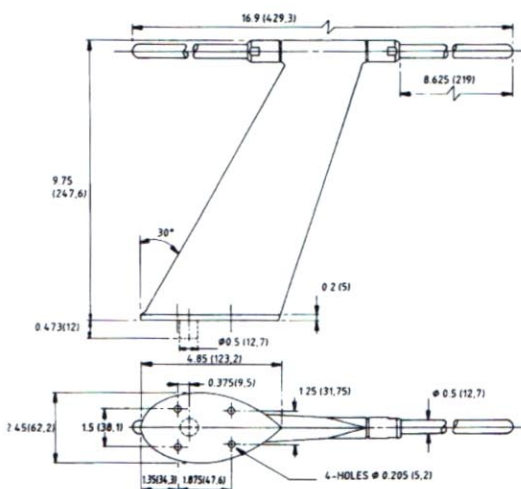
Dome & Margolin	DMC50-1 DMC50-2 DMC50-17 DMC25-2B
Sensor	S65-8282-Series
Collins	37R-2



CAA Approval
WR00700

VHF Low Profile Antenna Type Ten 118

The Antenna has been designed specifically for mounting on the underside of aircraft where clearance is a problem. Manufactured from durable, high impact resistant thermoplastic, these antennas have unrivalled resistance to rain erosion and rough field operating conditions. With a height of less than 10 inches (25.4cms) and a top loading element, it is ideally suited for helicopters or other aircraft with low ground clearance.



Electrical Specification

Frequency Range	118 MHz-1137 MHz
VSWR	2.5:1
Polarisation	Vertical
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	High sub sonic
Temperature Range	-75° to +180°C
Weight	1.0lb (0.45Kg)

Antenna 10-118-1P

Connector	Type BNC
Mating Connector	UG88(-)/U
Gasket Pt No	10-500-11-11

Antenna 10-205-2P

Connector	Type TNC
Mating Connector	31-2367 Amphenol
Gasket Pt No	10-500-11-11

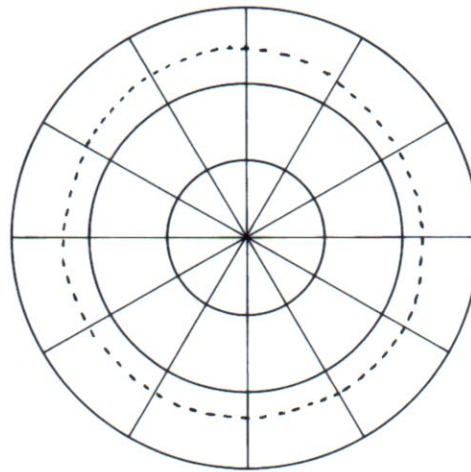
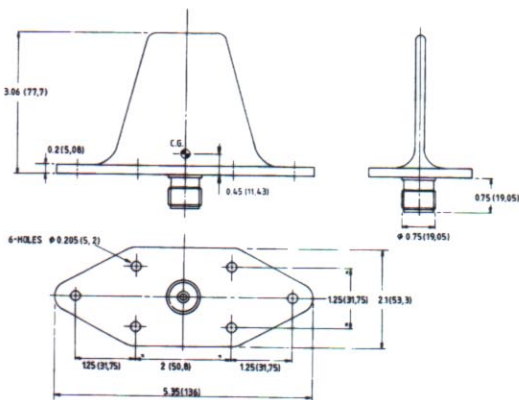
Equivalents

Dayton Granger	VF10-347
Chelton	16-21

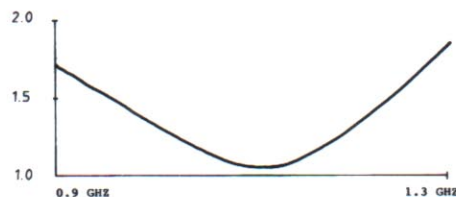
CAA Approval
WR00700

ATC/DME Blade Antenna Type Ten 203

The ATC/DME Blade Antennas, included in the Ten 208 Series, are equally suitable for use in ATC/IFF/TACAN and TCAS systems within the frequency band 950 to 1250 MHz. Manufactured from lightweight durable thermoplastic, with low drag characteristics, the antenna are suitable for aircraft operating at speeds up to Mach 1.



FIELD PATTERN



V.S.W.R. PLOT

Electrical Specification

Frequency Range	950 - 1250 MHz
VSWR	1.3:1 (1000 - 1100 MHz) 1.7:1 (950 - 1250 MHz)
Polarisation	Vertical
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Mach 1
Temperature Range	-75° to +180°C
Weight	Less than 0.188 lbs (85gms)

Antenna 10-203-1P

Connector	Type N
Mating Connector	UG-21(-)/U
Gasket Pt No	10-500-11-2

Antenna 10-203-3P

Connector	Type C
Mating Connector	UG573(-)/U
Gasket Pt No	10-500-11-2

Antenna 10-203-4P

Connector	Type HN
Mating Connector	UG-59(-)/U
Gasket Pt No	10-500-11-2

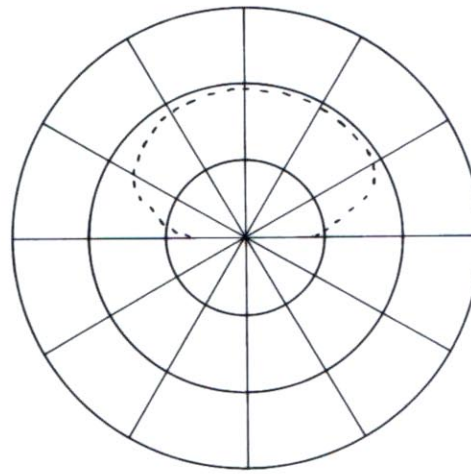
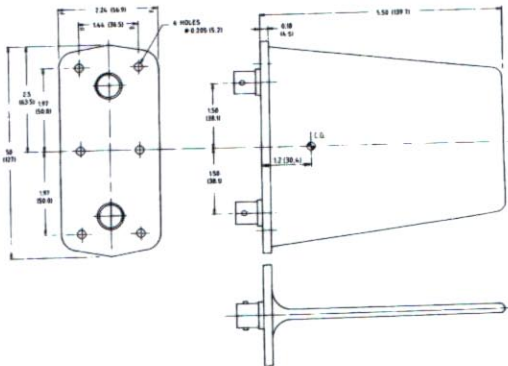
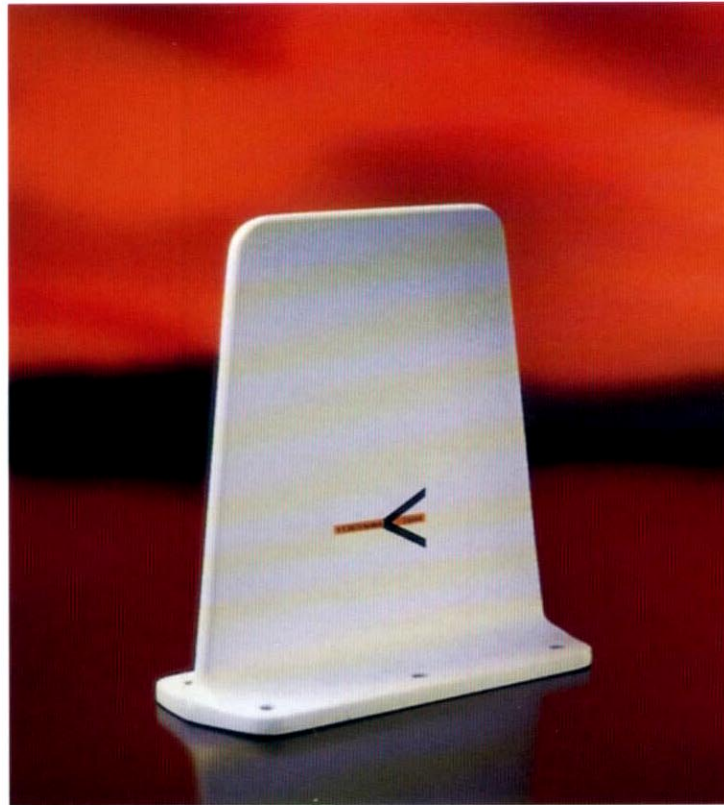
Equivalents

Dorne & Margolin Sensor	DMN 50 Series S65-5366 Series
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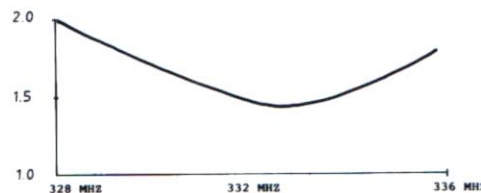
CAA Approval
WR00700

Glide Slope Antenna Type Ten 204

The Glide Slope Antenna Type 204 is designed for use with dual receiver installations. The antenna is designed for bulkhead mounting and can be installed either inside a radome or externally on low speed aircraft. Manufactured from durable lightweight thermoplastic, this antenna offers unrivalled performance at low cost for any aircraft installation.



FIELD PATTERN



VSWR PLOT

Electrical Specification

Frequency Range	328 - 326 MHz
VSWR	2.0:1
Polarisation	Horizontal
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Can be used externally mounted on low speed aircraft
Temperature Range	-75° to +180°C
Weight	5.25oz (150gms) (nominal)

Antenna 10-204-1P

Connector	Type C
Mating Connector	UC537(-)/U
Gasket Pt No	10-500-11-7

Antenna 10-204-3P

Connector	Type N
Mating Connector	UG-21(-)/U
Gasket Pt No	10-500-11-7

Antenna 10-204-5P

Connector	Type TNC
Mating Connector	31-2367 Amphenol
Gasket Pt No	10-500-11-7

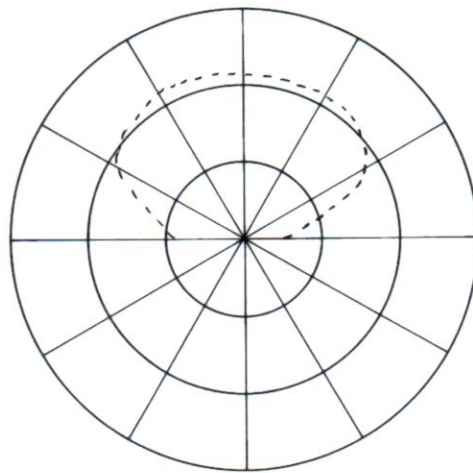
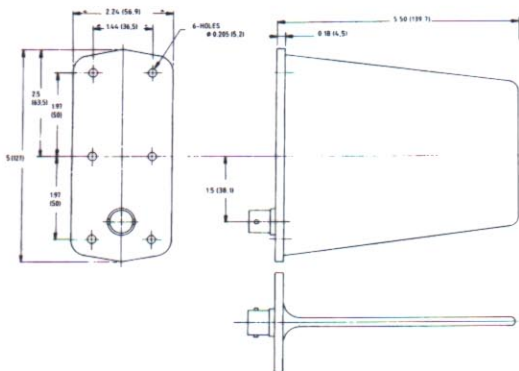
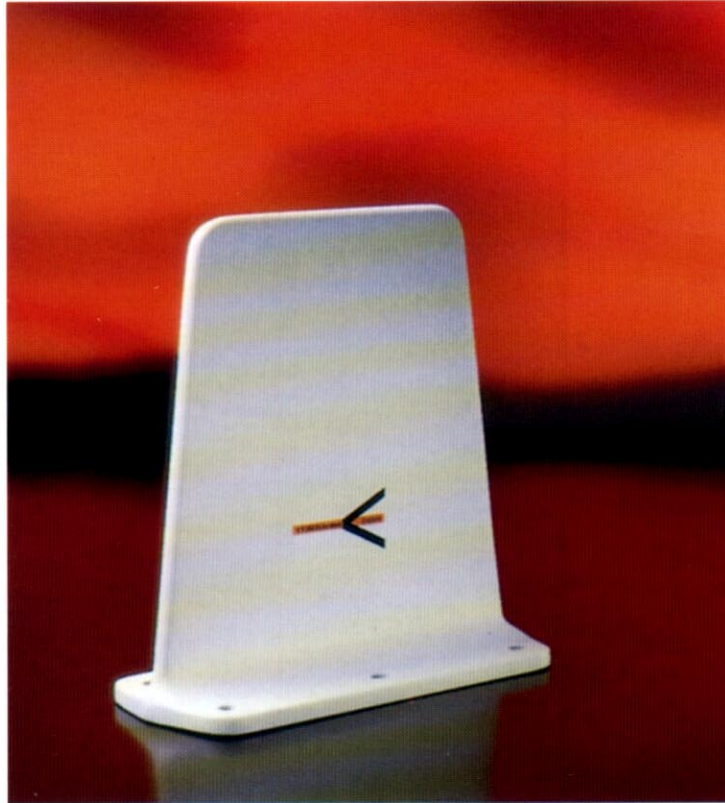
Equivalents

Dorne & Margolin	DM25-2
Collins	37-P5
Sensor	S41422 Series

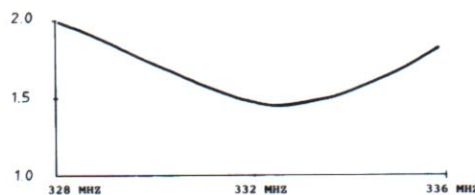
CAA Approval
WR00700

Glide Slope Antenna Type Ten 205

The Glide Slope Antenna Type 205 is designed for use with dual receiver installations. The antenna is designed for bulkhead mounting and can be installed either inside a radome or externally on low speed aircraft. Manufactured from durable lightweight thermoplastic, this antenna offers unrivalled performance at low cost for any aircraft installation.



FIELD PATTERN



V.S.W.R. PLOT

Electrical Specification

Frequency Range	328 - 326 MHz
VSWR	2.0:1
Polarisation	Horizontal
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Can be used externally mounted on low speed aircraft
Temperature Range	-75° to +180°C
Weight	5.25oz (150gms) (nominal)

Antenna 10-205-1P

Connector	Type N
Mating Connector	UG-21(-)/U
Gasket Pt No	10-500-11-7

Antenna 10-205-3P

Connector	Type C
Mating Connector	UG-88(-)/U
Gasket Pt No	10-500-11-7

Antenna 10-205-4P

Connector	Type TNC
Mating Connector	31-2367 Amphenol
Gasket Pt No	10-500-11-7

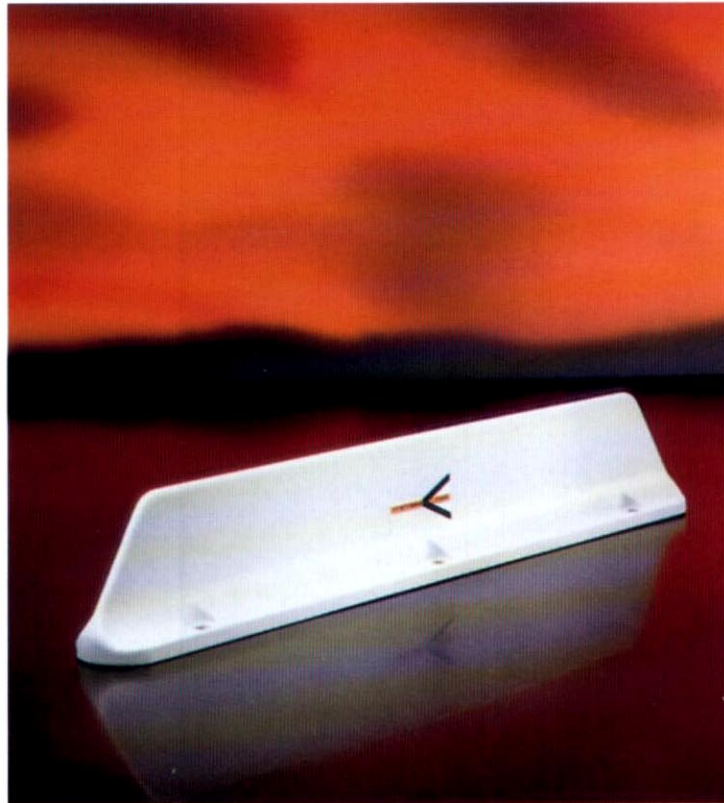
Equivalents

Collins	37-P4
Sensor	S41422 Series

CAA Approval
WR00700

External Marker Beacon Antenna Type Ten 208

The antennas, for external mounting, have been designed for the reception of 75MHz marker beacon signals. They are of lightweight, low profile construction and are suitable for use on aircraft operating at supersonic speeds. The unique design of the antenna ensures that the attachment flange can be profiled and drilled to suit any installation.



Electrical Specification

Frequency Range	75 MHz +/-0.25 MHz
VSWR	Less than 1.5:1
Polarisation	Horizontal
Impedance	50ohms (nominal)

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Supersonic
Temperature Range	-75° to +180°C
Weight*	Less than 0.55 lbs (0.25Kg)
	*Dependant upon type, typically 0.46 lbs (0.20Kg) type 10-208-3FP

Antenna 10-208-1FP

Connector	Type C
Mating Connector	UG573(-)/U
Gasket Pt No	10-500-11-385

Antenna 10-208-2FP

Connector	Type BNC
Mating Connector	UG88(-)/U
Gasket Pt No	10-500-11-385

Antenna 10-208-3FP

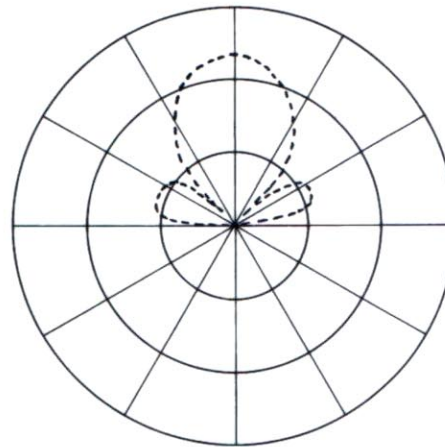
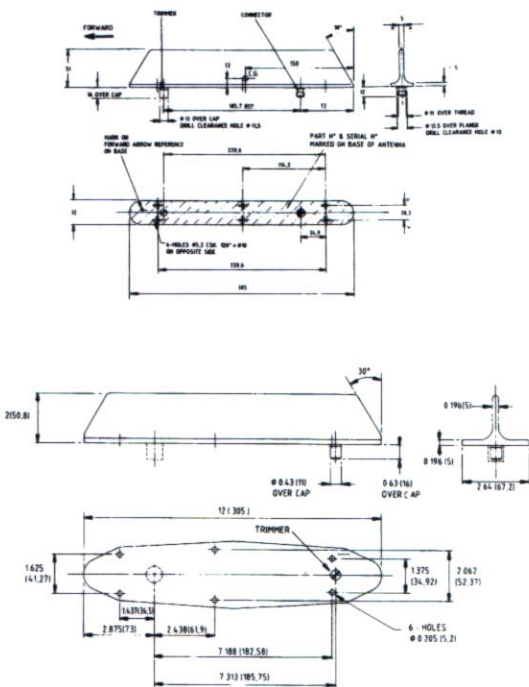
Connector	Type C
Mating Connector	UG573(-)/U
Gasket Pt No	10-500-11-385

Antenna 10-208-4F

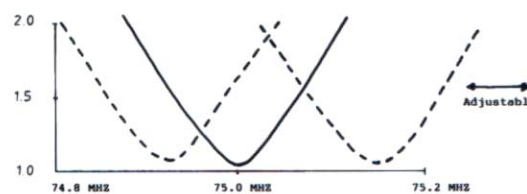
Connector	Type TNC
Mating Connector	31-2367 Amphenol
Gasket Pt No	10-500-11-330

Equivalents

Dorne & Margolin	DMN-50
Collins	37 x 2
Comant	C1-118-1
Chelton	17-9



FIELD PATTERN



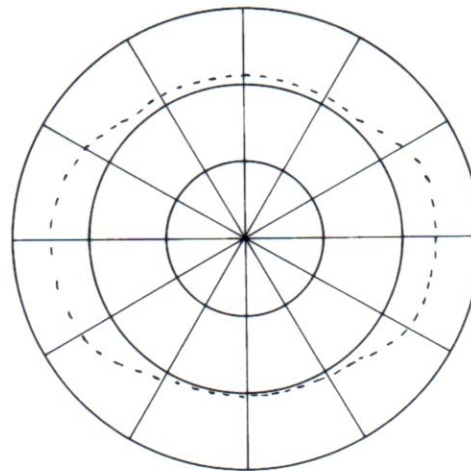
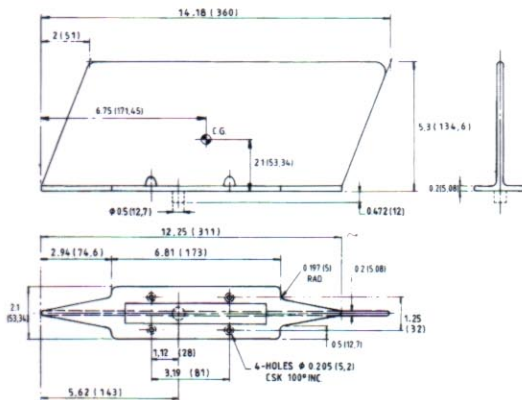
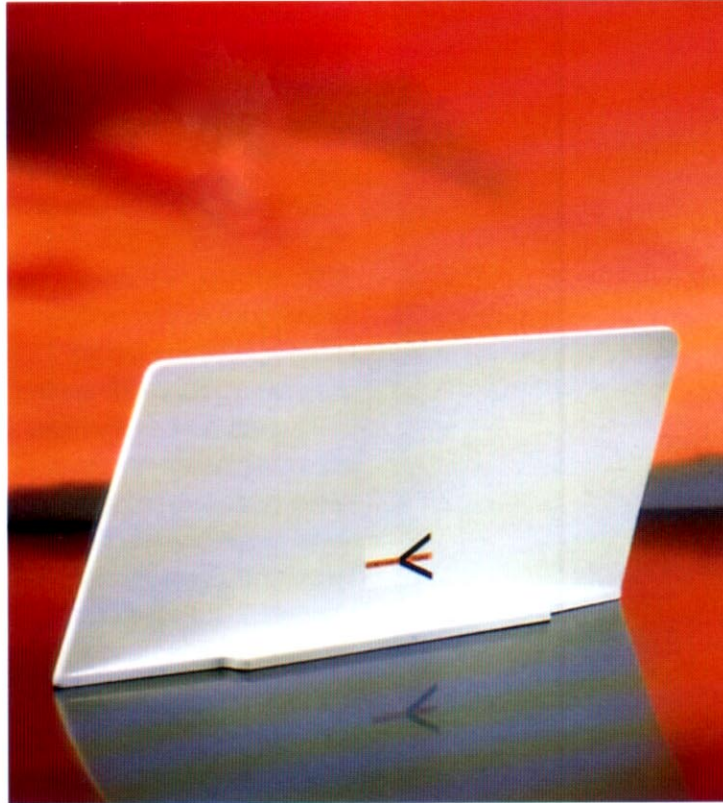
V.S.W.R. PLOT

CAA Approval
WR00700

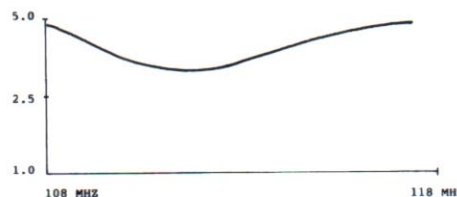
VOR ILS Blade Antenna Type Ten 250

One of the world's lightest, low drag VOR/ILS antennas, with an unrivalled mechanical integrity, offering users a very cost-effective solution to VOR/ILS on all types of commercial aircraft.

Manufactured from extremely durable, lightweight thermoplastic, with fully integrated electrical elements, the unit is suitable for any VOR or VOR/ILS aircraft installation.



FIELD PATTERN



V.S.W.R. PLOT

Electrical Specification

Frequency Range	108 MHz-118 MHz 328-336 MHz
VSWR	Less than 5.0:1
Polarisation	Horizontal (When horizontally positioned)
Impedance	50 Ohms (nominal)
Coupler	Type 10-500-2 VOR/ILS Type 10-500-3 Dual VOR/ILS

Mechanical Specification

Altitude	50,000ft (15,250m)
Speed	Cleared for all sub sonic commercial aircraft
Temperature Range	-75° to +180°C
Weight	1.1 lbs (500gms)

Antenna	10-250-9B
Connector	Type BNC
Mating Connector	UG88(-)/U
Gasket Pt No	10-500-11-347

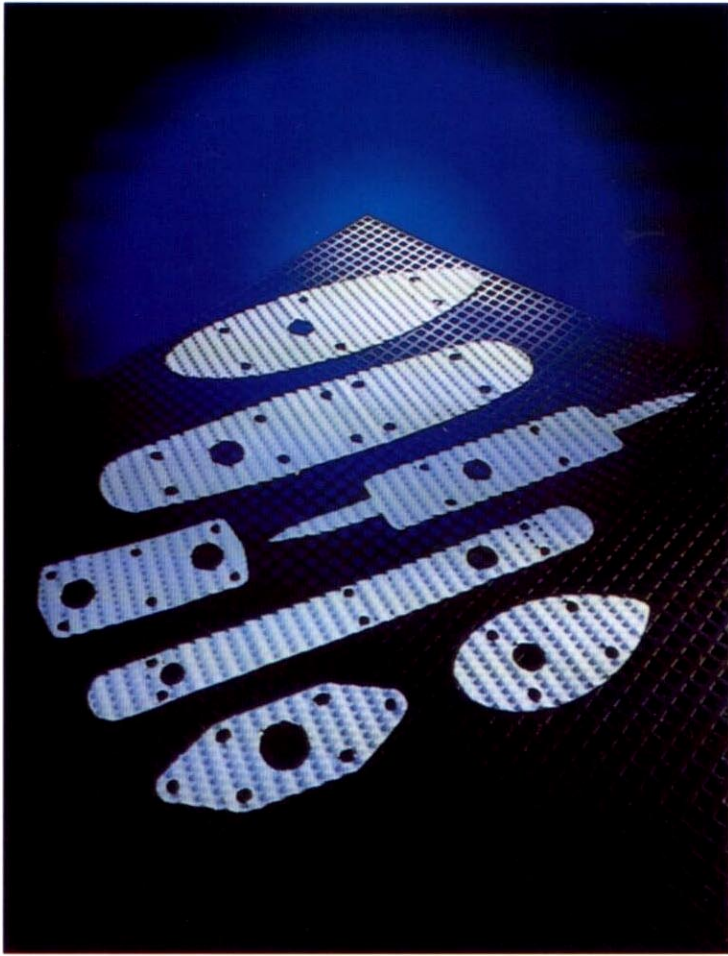
Antenna	10-250-9T
Connector	Type TNC
Mating Connector	31-2367 Amphenol
Gasket Pt No	10-500-11-347

Equivalents

Dorne & Margolin	DMN4-17
Sensor	S65-247-Series

CAA Approval
WR00700

Dry Fit Conductive Anti-Corrosion Gaskets Series 10-500-11A



The 10-500-11A series of Dry Fit Conductive Anti-Corrosion Gaskets is a patented development of the highly successful 10-500-11 Series. Designed for use where quick fit and fast turnaround are required, the dry fit series of gaskets maintains both unrivalled RF continuity with good moisture seal to combat corrosion.

Modern electrical and RF systems require that joints between metallic surfaces remain in good electrical contact and free from corrosion.

The 10-500-11A Series provides the most simple and cost-effective means of producing the reliable, good quality electrical, corrosion free joints that are essential for advanced RF systems.

The gasket consists of a highly conductive metallic film specially contoured to provide multi-point metal to metal contact, thus reducing RF circulatory currents.

A state-of-the-art, pre-formed aerospace approved sealant provides a moisture free joint during installation.

The pressure exerted during installation also gives a unique self-contouring feature to the gasket. The gasket precisely forms itself to the two metallic surfaces ensuring consistent distribution of conducting contacts over non parallel surfaces. The resulting moisture free, contoured RF seal need no maintenance.

The 10-500-11A Series has been subjected to extensive testing and with 15 years of successful operational service in the most severe, naval, land-based and airborne environments has proven market leading performance and stability.

Features

- Documented operational reliability
- Proven corrosion resistant performance
- Unrivalled DC and RF conductivity
- Light weight
- Easy installation
- Low life cycle cost

Frequent areas of use

- Antenna mounting
- Avionic racking
- Airframe access panels
- Microwave waveguides
- EMI suppression on aircraft and missile systems
- Avionic packaging

Technical advice can be provided on the suitability of 10-500-11A Series Conductive Sealing Gaskets for particular application.

Antenna Cross Reference

HR Smith Part Number Cross Reference

VHF Communications

10-50-112 Dayton Granger 720044
Dayton Granger VF10-222
Dayton Granger VC10-126
Dorne & Margolin DMC 50-2
Dorne & Margolin DMC 60-1
Comant C108
Collins 37-R2
Chelton 12-1
Sensor System S65-8280
Sensor System S65-8282

10-105-24 Dorne & Margolin DMC 50-1
Sensor Systems S65-8262-2

10-105-20 Dorne & Margolin DMC 50-17

10-118-20 Dayton Granger VF10-347
Chelton 16-21

ATC / DME

10-203-1P Dorne & Margolin DMN 50-6
Dayton Granger L10-16
Commant C100-5
Chelton 10A9
Sensor Systems S65-5366-10L

10-203-2P Commant C-100-2

10-203-3P Commant 100-3
Dorne & Margolin DMN 50-3
Sensor Systems S65-5366-10LC

10-203-4P Collins 2377-1
Commant C100-4
Dorne & Margolin DMN 50-4
Sensor Systems S65-5366-2L
Dayton Granger 750147
Chelton 10A1

Glide slope

10-204-1P Dayton Granger 720036
Dorne & Margolin DMN 25-2
Chelton 17-21
Collins 37-P5
Sensor Systems S41422-2

10-204-3P Sensor Systems S41422-2

10-205-1P Chelton 17-20N
Collins 37-P4
Sensor Systems S41422-6

10-205-3P Chelton 17-20
Sensor Systems S41422-5

10-205-4P Dayton & Granger 720036-1
Dorne & Margolin DMN25-1

Marker

10-208-2 Dayton Granger MB10-12B-1
Collins 37X-2
10-208-7FP Commant C1 118-1
10-208-8FP Trivec Avant 31-10-01
10-208-9FP Dorne & Margolin DMN-50

VOR / ILS

10-250-9 Dayton Granger VT10-56-6
Dorne & Margolin DMN4-17
Commant C1 120 GS
Sensor Systems S65-247-Series