

## AFC Catalogue, Section 5 – Antenna Feeds

1. Satellite Communication Feeds
2. Dual Beam Feed
3. Multi-Satellite Feeds



# Antenna Feed Systems

## Satellite and Terrestrial Communications

AFC has been designing and manufacturing feed systems for over two decades. Numerous feed components, launchers, dual polarization coupler, orthomode couplers scalar assemblies, diplexers, ultra low loss waveguide and filters comprise a product line for commercial and government customers. Frequency bands covered are up to 100 GHz.

Often feed requirements involve unique requirements. Typical examples are lightweight, high shock and vibration feed components for aircraft and space systems, high power components for radar and GOES or transmit/receive feeds for U. S. and Intelsat satellite dish antennas. Manufacturing techniques employed are aimed at achieving desired technical results and cost objectives. For example, receive only dual polarized feeds and multi-satellite feeds are highly tooled aluminum castings. Electroforming methods are used to generate complex internal contours, high strength and light weight products. Such techniques are common for orthomode polarizers and TallGuide, an ultra low loss waveguide for Ku-band uplinks, DBS and radar. AFC's conical horn antenna product line contains a complete list of Western Electric equivalent feed component networks.

The table that follows lists AFC's most common feeds for satellite communications. Please contact AFC's sales department [sales@afcsat.com](mailto:sales@afcsat.com) for your specific requirement.



## Features

- Products for C and Ku-band satellite, GOES, Intelsat and terrestrial communications
- Custom components for wide or multiband operation, space, airborne and high power
- Ultra low loss waveguide and low axial ratio feed assemblies
- Western Electric equivalent parts

# Satellite Communications Feeds

## GOES, S-Band

SPS	Single port linear feed
SPSM	Motorized single port linear feed

## C-Band

SPC	Single port receive only linear feed
DPC	Dual port receive only linear feed
DPC-CP	Dual port circular polarized receive only feed
DPCM	Motorized remote dual port linear polarized receive only feed
TRC	Transmit, receive two port linear feed
TRCG	Transmit, receive two port linear feed with transmit reject filter
TRCF-CP	Circular polarized transmit, receive two port linear feed with transmit reject
CFLT	Transmit reject filter
TRCM	Motorized transmit, receive two port linear feed

## Multi-satellite C-Band

MSF-12	Dual beam multi-satellite feed retrofit for 3.7 meter antenna
MSF-16 series	Multi-satellite feed ring, bridge and spar hardware for 4.5 to 5 meter antennas
MSF-23 series	Multi-satellite feed ring, bridge and spar hardware for 6 to 7 meter antennas
MSF-25 series	Multi-satellite feed ring, bridge and spar hardware for 7 to 8 meter antennas
MSF-29 series	Multi-satellite feed ring, bridge and spar hardware for 9 meter antennas
MSF-EXT/OMT	Multi-satellite feed extension for 2 degree satellite spacing
MSF-CAS	Cassegrain reflector hole cover kit.

## Ku-Band

SPK	Single port receive only linear feed
DPK	Dual port linear receive only feed
TRK	Transmit, receive two port linear feed
TRKF	Transmit, receive two port linear feed
TRKM	Motorized transmit, receive two port linear feed
TRKFM	Motorized transmit, receive two port linear feed with transmit reject filter

## C/Ku-Band

SPCK	C, Ku-band two port linear feed
DPCK	Four port dual C, Ku-band linear receive only feed
SPCKM	Motorized remote four port dual C, Ku-band linear receive only feed



## Dual Beam Retrofit for 3.7 Meter Diameter Class Antennas

*Specifically Designed for  
Small 12 ft. Size Antennas*



AFC's dual beam retrofit kit provides an economical alternative to installing multiple antennas for simultaneous reception of two adjacent 2 degree satellites. To accommodate headends anywhere and various satellite positions, feed separation is continuously variable from 1.9 to 6 degrees of arc.

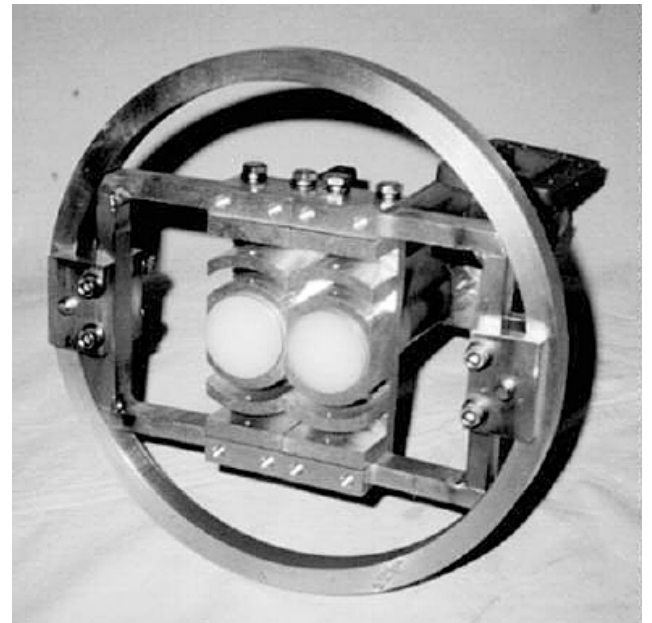
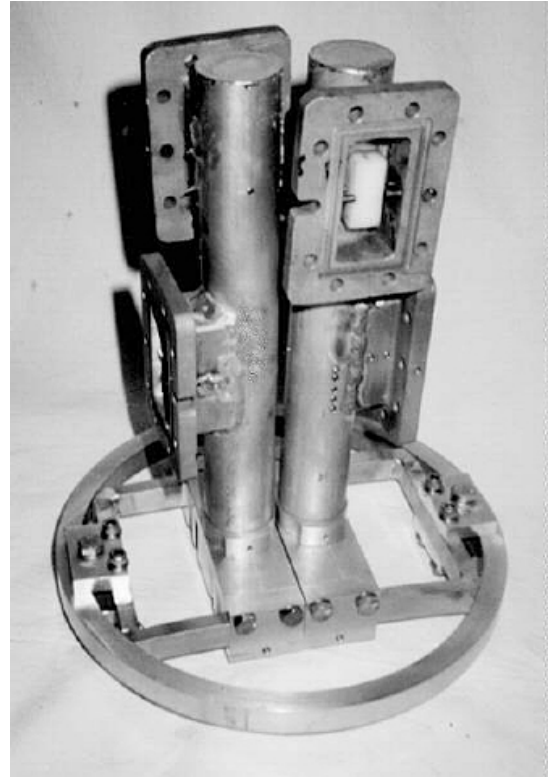
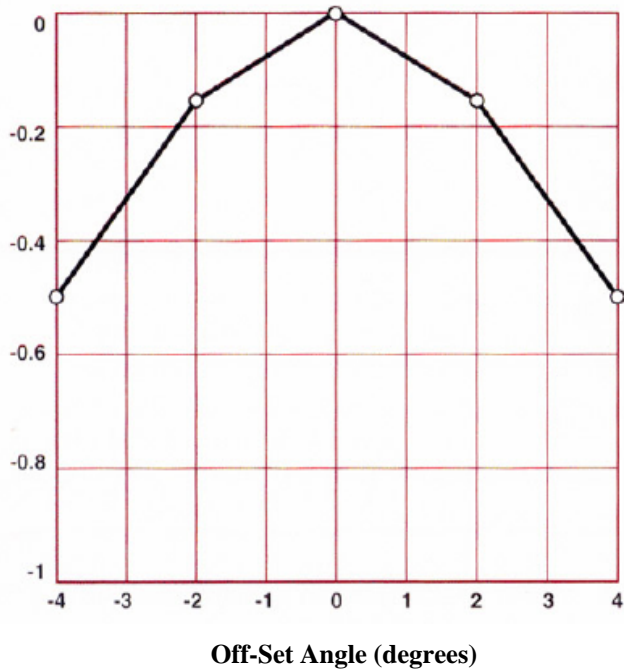
AFC's dual beam systems are designed specifically for AFC's PR-12 antenna or may be called out for other manufacturers' type antennas. Based on the theory of overmoded dielectric filled waveguide feeds, users can upgrade their feed to receive high quality 2 degree signals. The two feeds are free of any spurious effects, preserve polarization purity and optimize antenna pattern.

**Installation** of a new retrofit upgrade kit requires the replacement of the legs and brackets of the feed support hardware. The retrofit kit comes furnished with all necessary hardware for a durable, weather-tight installation. The retrofit system provides isolation between beams better than 20dB with a loss of only about 0.25 dB at 2 degrees. Cross-polar discrimination is typically better than 16 dB.

## Features

- \* Simultaneously receives two 2 degree satellites on one antenna
- \* Antennas may easily be retrofitted for 2 degrees in the field
- \* Feed Separation variable from 1.9 to 6 degrees of arc
- \* Available for AFC, Microdyne, Prodelin, Comtech, DH, SA or other manufacturer's antennas

## Dual Beam Retrofit Gain (dB) Vs Boresight Angle



### *Ordering Information 8-*

#### **MSF - 12 Dual Beam Retrofit Kit**

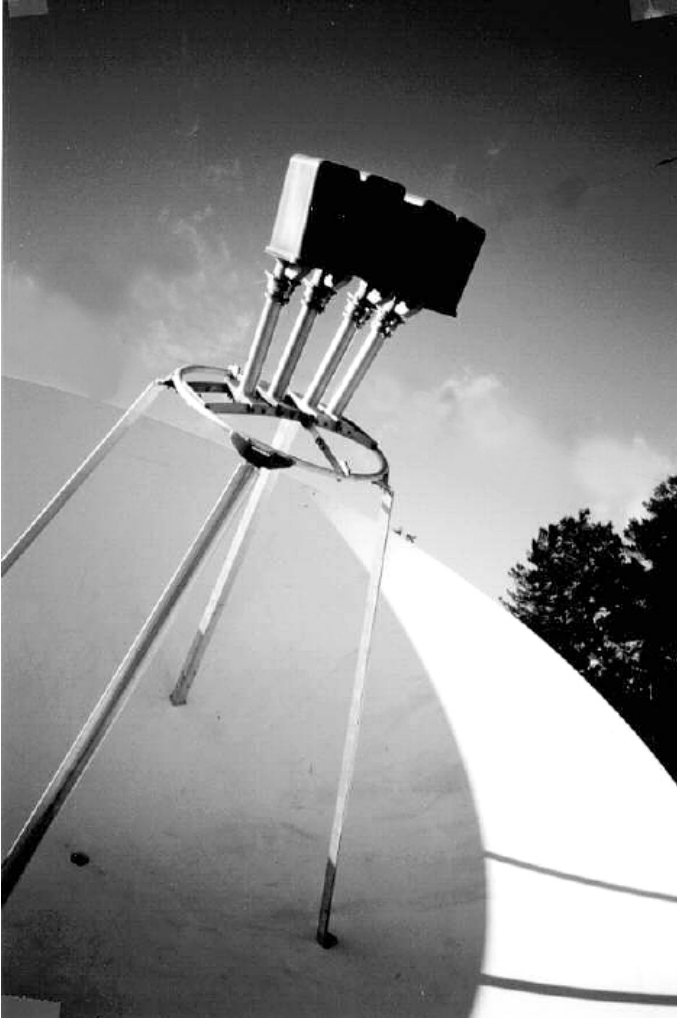
The MSF-12 is a complete assembly equipped to receive simultaneously two satellite. Since the retrofit feeds need to be positioned at the focal point of your antenna, please let us know your antenna focal length or let us help you find it. To save field installation time, we are ready to provide an antenna pointing summary. When you place your order, just let us know your site location coordinates and the satellites you wish to aim at. Our computer program can easily determine antenna elevation, azimuth angles, feed separation and inclination rotation angle just right for your location.

AFC manufactures 3.7, 5 and 7 meter antennas, multi-sat feeds and dual beam retrofits. Antenna pedestal options include high wind mounts. Contact AFC sales for alternatives to fit your needs.



## Multi-Sat Feed For Two Degree Satellites

*Specifically Designed for  
4.5 to 9 Meter Antennas*



AFC's Multiple Satellite Feed System (MFS) series provides an economical alternative to installing multiple antennas for simultaneous reception of up to seven adjacent 2 degree satellites. With the recent addition of the two new satellites, there are now 5 "birds" at 2 degree spacing.

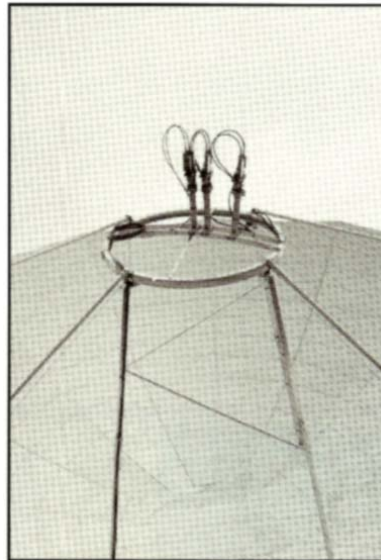
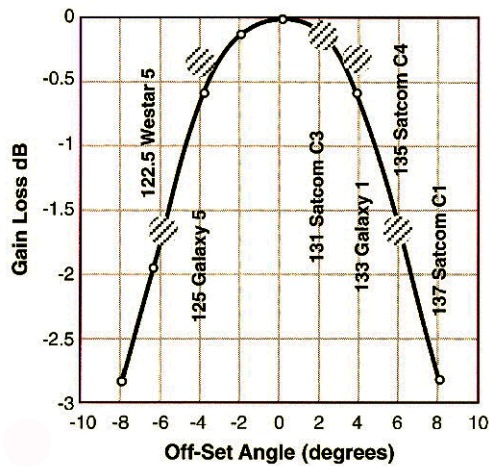
AFC's MSF systems are designed specifically for the intended size and manufacturer's type antenna. With the Multi-Sat feed extension, existing AFC MDF users can upgrade their feed to receive high quality 2 degree signals. The MSF feed extensions are free of any spurious effects and preserve polarization purity and antenna pattern.

**Installation** of a new MSF system requires the replacement of the spars and brackets of the feed support hardware. The feed extension upgrade comes furnished with all necessary gaskets and hardware to make for a durable weather-tight installation. The MSF system provides isolation between beams better than 20dB with a loss of only about 0.25 dB at 2 degrees and 0.75 dB at 4 degrees. Cross-polar discrimination is typically better than 18 dB.

### *Features*

- \* **Simultaneously receives up to seven 2 degree satellites on one antenna.**
- \* **Antennas may easily be retrofitted for 2 degrees in the field.**
- \* **Can be expanded economically**
- \* **Available for 4.5 to 9 meter antennas. Such as SA 4.5, 4.6, 5, 7; Andrew 4.5, 4.6, 5, 7, 9, Harris 6.1, 9; Microdyne 5, 7; Hughes 5, 6; AFC 5, 7; Anixter 5; Comtech 4.5, 5; Prodelin 4.5, 5.**

MSF Gain  
Versus  
Boresight Angle



## Ordering Information

### MSF System

### Description

<b>MSF-16/x</b>	Ring, bridge and strut hardware—5M Class. X is the antenna type with focal length under 75 inches. Example MSF-16/SA4.5, SMF-16/ASFs, MSF-16/Andrew 4.5
<b>MSF-23/x</b>	Ring, bridge and strut hardware—7M Class. X is the antenna type with focal length under 75 and 85 inches. Example MSF-23/AFC7, MSF-23/Harris 6.1, MSF-23/Anixter 5.
<b>MSF-25/x</b>	Ring, bridge and strut hardware—7/8M Class. X is the antenna type with focal length under 85 and 95 inches. Example MSF-25/Andrew 7
<b>MSF-29/x</b>	Ring, bridge and strut hardware—9M Class. X is the antenna type with focal length under 95 and 128 inches. Example SMF-29/Andrew 9, MSF-29/Harris 9.
<b>MSF-EXT</b>	Multi-Sat feed extension. On required per satellite. Each MSF-EXT requires one MSF-OMT to separate the dual polarized vertical and horizontal transponders.
<b>MST-OMT</b>	Dual pol orthomode coupler.
<b>MSF-COV</b>	LNA/LNB weather cover kit.
<b>MSF-CAS</b>	Cassegrain hold cover plate