

Product Specifications



DB846F65ZAXY

Directed Dipole™ Antenna, 806–960 MHz, 65° horizontal beamwidth, fixed electrical tilt



- Excellent azimuth roll-off, reducing soft hand-offs and improving capacity
- Deep null filling below the horizon for improved signal intensity
- Rugged, reliable design, light weight for low tower loading
- Air dielectric feed system

CHARACTERISTICS

General Specifications

Antenna Type	Directed Dipole™
Brand	Directed Dipole™
Operating Frequency Band	806 – 960 MHz

Electrical Specifications

Frequency Band, MHz	806–896	870–960
Beamwidth, Horizontal, degrees	65	60
Gain, dBd	14.5	14.8
Gain, dBi	16.6	16.9
Beamwidth, Vertical, degrees	11.0	10.5
Beam Tilt, degrees	0	0
Upper Sidelobe Suppression (USLS), typical, dB	15	15
Front-to-Back Ratio at 180°, dB	40	40
VSWR	1.33:1	1.33:1
3rd Order IMD at 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	Vertical	Vertical
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

DB846F65ZAXY



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Back
Connector Quantity	1
Wind Area, maximum	0.1 m ² 1.6 ft ²
Wind Loading, maximum	387.0 N @ 100 mph 87.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	215.9 mm 8.5 in
Length	1828.8 mm 72.0 in
Width	254.0 mm 10.0 in
Net Weight	9.5 kg 21.0 lb

Regulatory Compliance/Certifications

Agency

RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification

Compliant by Exemption
Logo 2



Included Products



DB5083

Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members



DB380

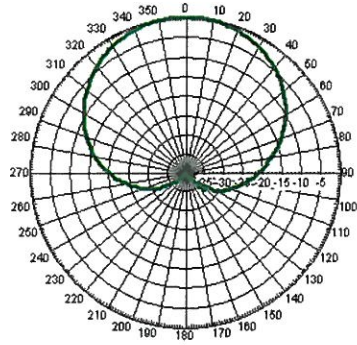
Pipe Mounting Kit for 4.5 in (114.3 mm) OD round members

Product Specifications

DB846F65ZAXY

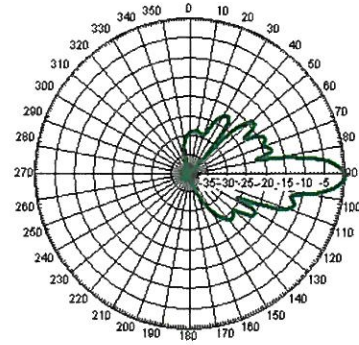


Horizontal Pattern

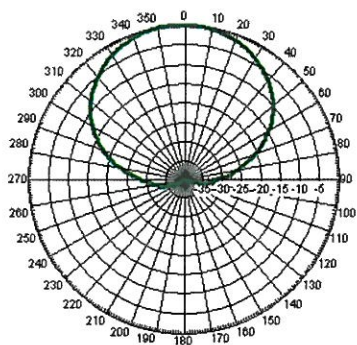


Freq: 850 MHz, Tilt: 0

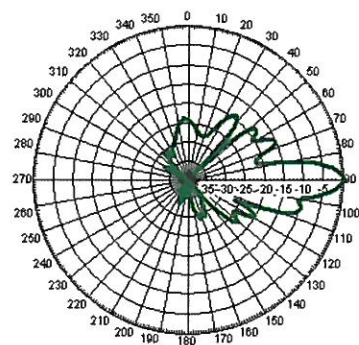
Vertical Pattern



Freq: 850 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0



Freq: 940 MHz, Tilt: 0

3 Proposed Antennas

Product Specifications



HBX-6516DS-T0M

DualPol® Antenna, 1710–2180 MHz, 65° horizontal beamwidth, fixed tilt



- Superior azimuth tracking and pattern symmetry
- Rugged, reliable design with excellent passive intermodulation suppression
- Exceptional upper sidelobe suppression and front-to-back ratio

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	1710 – 2180 MHz

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Beamwidth, Horizontal, degrees	65	65	65
Gain, dBd	15.8	15.9	16.0
Gain, dBi	17.9	18.0	18.1
Beamwidth, Vertical, degrees	7.6	7.1	6.7
Beam Tilt, degrees	0	0	0
Upper Sidelobe Suppression (USLS), typical, dB	18	18	18
Front-to-Back Ratio at 180°, dB	34	34	34
Isolation, dB	30	30	30
VSWR	1.4:1	1.4:1	1.4:1
3rd Order IMD at 2 x 20 W, dBc	-153	-153	-153
Input Power, maximum, watts	250	250	250
Polarization	±45°	±45°	±45°
Impedance	50	50	50
Lightning Protection	dc Ground	dc Ground	dc Ground

Product Specifications



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Area, maximum	0.1 m ² 1.2 ft ²
Wind Loading, maximum	298.0 N @ 100 mph 67.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	83.8 mm 3.3 in
Length	1305.6 mm 51.4 in
Width	165.1 mm 6.5 in
Net Weight	4.5 kg 9.9 lb

Included Products



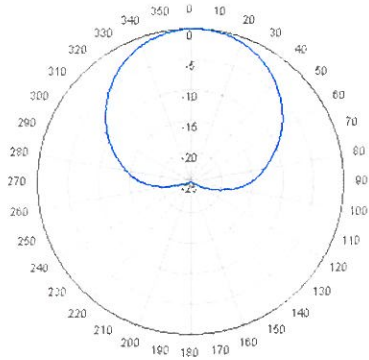
602030A

Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members

Product Specifications

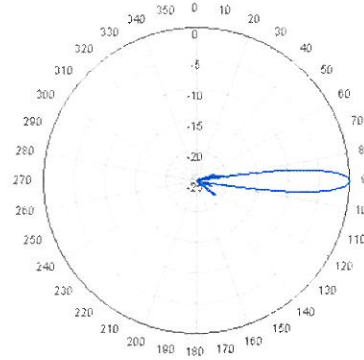


Horizontal Pattern

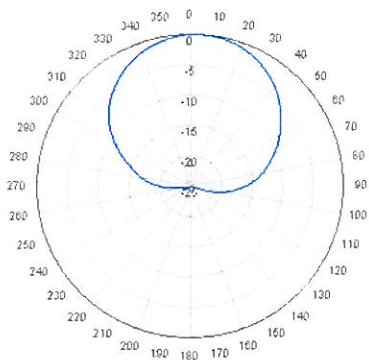


Freq: 1785 MHz, Tilt: 0°

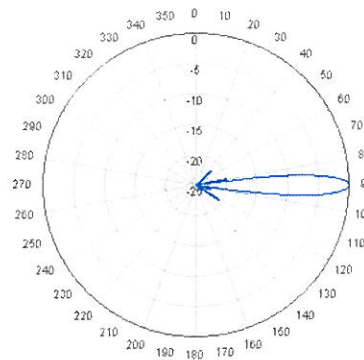
Vertical Pattern



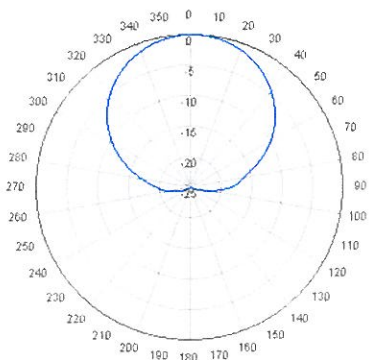
Freq: 1785 MHz, Tilt: 0°



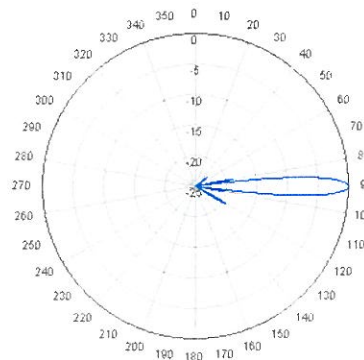
Freq: 1920 MHz, Tilt: 0°



Freq: 1920 MHz, Tilt: 0°



Freq: 2110 MHz, Tilt: 0°



Freq: 2110 MHz, Tilt: 0°

3 Proposed Antennas

Product Specifications



LNX-6514DS-VTM

DualPol® Antenna, 698-896 MHz, 65° horizontal beamwidth, RET compatible variable electrical tilt

- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site co-locations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings

CHARACTERISTICS

General Specifications

Antenna Type DualPol®
Brand DualPol® | Teletilt®
Operating Frequency Band 698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	13.7	14.2
Gain, dBi	15.8	16.3
Beamwidth, Vertical, degrees	12.0	12.0
Beam Tilt, degrees	0–12	0–12
Upper Sidelobe Suppression (USLS), typical, dB	17	17
Front-to-Back Ratio at 180°, dB	30	30
Isolation, dB	30	30
VSWR Return Loss, db	1.4:1 15.6	1.4:1 15.6
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	400	400
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

LNx6514DS-VM



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	186.0 lb/ft @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	180.3 mm 7.1 in
Length	1828.8 mm 72.0 in
Width	302.3 mm 11.9 in
Net Weight	15.0 kg 33.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNx-6514DS-R2M
RET System	Teletilt®

Included Products

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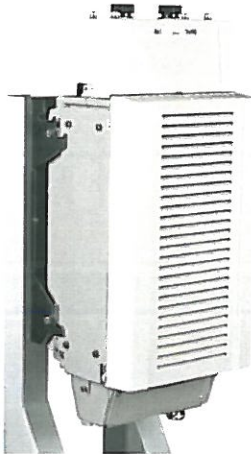
• **600899A-2**

Down tilt Mounting Kit for 4.5 in (114.3 mm) OD round members

Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



A distributed eNodeB expands deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

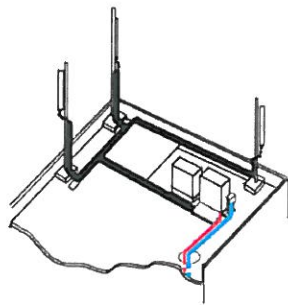
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-AWS is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-AWS is compact and weighs less than 20 kg (44 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-AWS provides more RF power while at the same time consuming less electricity.



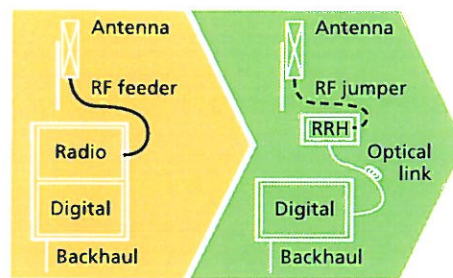
Macro

Features

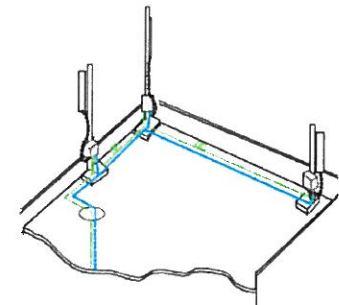
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption

Benefits

- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)

- Passive convection cooling (no fans)
- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Digital Ports and Alarms

- Two optical ports to support daisy-chaining
- Six external alarms

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3 Existing Antennas (to stay)

Product Specifications



HBX-6516DS-T2M

DualPol® Antenna, 1710–2180 MHz, 65° horizontal beamwidth, fixed tilt



- Superior azimuth tracking and pattern symmetry
- Rugged, reliable design with excellent passive intermodulation suppression
- Exceptional upper sidelobe suppression and front-to-back ratio

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	1710 – 2180 MHz

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Beamwidth, Horizontal, degrees	65	65	65
Gain, dBd	15.8	15.9	16.0
Gain, dBi	17.9	18.0	18.1
Beamwidth, Vertical, degrees	7.8	7.4	7.0
Beam Tilt, degrees	2	2	2
Upper Sidelobe Suppression (USLS), typical, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
Isolation, dB	30	30	30
VSWR	1.4:1	1.4:1	1.4:1
3rd Order IMD at 2 x 20 W, dBc	-153	-153	-153
Input Power, maximum, watts	250	250	250
Polarization	±45°	±45°	±45°
Impedance	50	50	50
Lightning Protection	dc Ground	dc Ground	dc Ground

Product Specifications



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Area, maximum	0.1 m ² 1.2 ft ²
Wind Loading, maximum	298.0 N @ 100 mph 67.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	83.8 mm 3.3 in
Length	1305.6 mm 51.4 in
Width	165.1 mm 6.5 in
Net Weight	4.5 kg 9.9 lb

Included Products



602030A

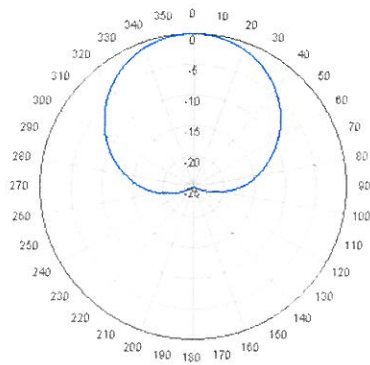
Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members

Product Specifications

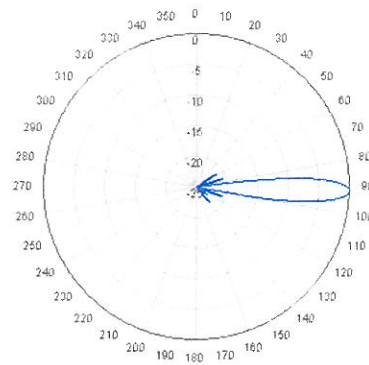


Horizontal Pattern

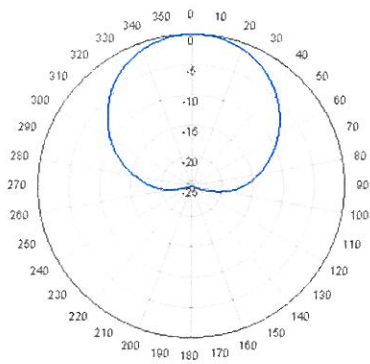
Vertical Pattern



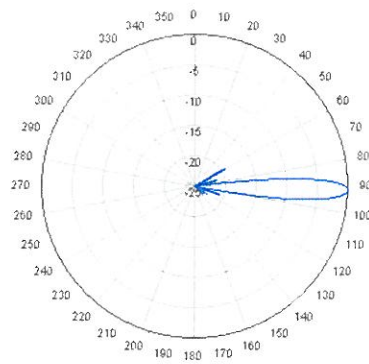
Freq: 1785 MHz, Tilt: 2°



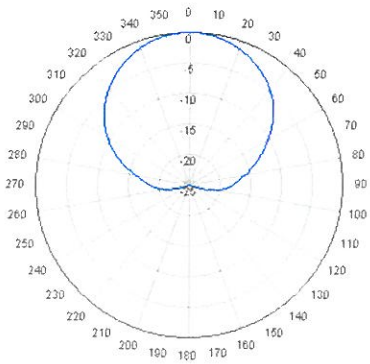
Freq: 1785 MHz, Tilt: 2°



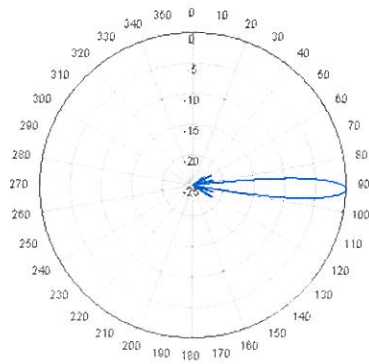
Freq: 1920 MHz, Tilt: 2°



Freq: 1920 MHz, Tilt: 2°



Freq: 2110 MHz, Tilt: 2°



Freq: 2110 MHz, Tilt: 2°

3 Existing Antennas (to stay)

Product Specifications



LNX-6514DS-VTM

DualPol® Antenna, 698-896 MHz, 65° horizontal beamwidth, RET compatible variable electrical tilt

- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site co-locations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings

CHARACTERISTICS

General Specifications

Antenna Type DualPol®
Brand DualPol® | Teletilt®
Operating Frequency Band 698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	698–806	806–896
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	13.7	14.2
Gain, dBi	15.8	16.3
Beamwidth, Vertical, degrees	12.0	12.0
Beam Tilt, degrees	0–12	0–12
Upper Sidelobe Suppression (USLS), typical, dB	17	17
Front-to-Back Ratio at 180°, dB	30	30
Isolation, dB	30	30
VSWR Return Loss, db	1.4:1 15.6	1.4:1 15.6
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	400	400
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

LNX-6514DS-VTM



Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	186.0 lb/ft @ 100 mph
Wind Speed, maximum	241.4 km/h 150.0 mph

Dimensions

Depth	180.3 mm 7.1 in
Length	1828.8 mm 72.0 in
Width	302.3 mm 11.9 in
Net Weight	15.0 kg 33.1 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	LNX-6514DS-R2M
RET System	Teletilt®

Included Products

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600899A-2

Downtilt Mounting Kit for 4.5 in (114.3 mm) OD round members