

Microwave Application Guide

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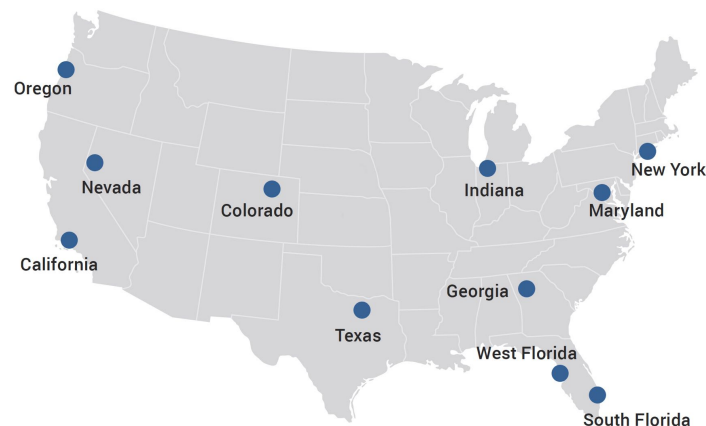
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The background of the slide is a low-angle photograph of a tall, white telecommunications tower. The tower's lattice structure is composed of numerous vertical and diagonal beams, creating a complex geometric pattern. A large, white, parabolic satellite dish is mounted on one of the upper sections of the tower. The sky in the background is a pale blue with soft, wispy white clouds. A solid blue horizontal bar is positioned across the middle of the image, containing the title text in white. The bar has a slight gradient and a thin white border on its left side.

Tower Mounts & Accessories

R5 Heavy-Duty Universal Pipe Mount Kit

These heavy-duty sliding brackets are used for even the most difficult tower attachments.

- R5 and R5-LL include 4-1/2" x 72" Antenna Mounting Pipe; R5-UP version includes hardware for mounting 1-1/2" to 4-1/2" OD Antenna Mounting Pipes, but no Pipe.
- Easily adjustable taper up to 5.7° (based on 30" spacing of brackets).
- Kits include U-Bolts and all hardware.



Part #	Description	Pipe	Weight
R5	R5 Heavy-Duty Universal Pipe Mount Kit	4-1/2" x 72"	137
R5-LL	R5 Heavy-Duty Universal Pipe Mount Kit	4-1/2" x 72"	148
R5-UP	R5 Heavy-Duty Universal Pipe Mount Kit	No Pipe Included; Accepts Antenna Mounting Pipes 1-1/2" to 4-1/2"	90

Part #	Name	Weight
LLEG-K	Large Leg Adapter Kit for Tower Mounts	78
R5-REINFORC	R5 Heavy-Duty Universal Reinforcement Kit	34

R6 Heavy-Duty Universal Pipe Mount Kit

This heavy-duty universal pipe mount kit is used for difficult tower attachments.

- Heavy-duty sliding brackets for difficult tower attachments.
- Includes 4-1/2" x 72" antenna mounting pipe.
- Easy taper adjustment of up to 5.7° (based on 30" spacing of brackets).
- Fits round leg sizes 1-1/2" to 9-1/2" diameter and angle sizes 3" to 6".



Part #	Description	Pipe	Weight
R6	R6 Heavy-Duty Universal Pipe Mount Kit	4-1/2" x 72"	265
R6-UP	R6 Heavy-Duty Universal Pipe Mount Kit	No Pipe Included	198

Part #	Name	Weight
BCAM-HDLL	BCAM™ Large Leg Adapter Kit	141
BCAM-HDLL-AA	BCAM™ Large Leg Adapter Kit for Angle Legs	130
BCAM-HD-6XT	BCAM™ 6° Taper Extension Kit	90

Sliding Universal Tapered Pipe Mounts

These sliding brackets are used for even the most difficult tower attachments.

- Easily adjustable taper up to 6° in 3/4° increments.
- Offers universal mounting; round legs from 1" to 8", 60° angle legs from 1-1/2" to 8", and 90° angles 1-1/2" to 6".
- Kits include U-Bolts and all hardware.



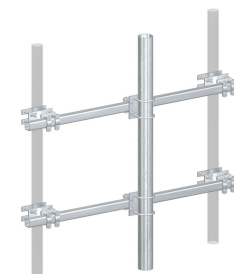
Part #	Description	Pipe OD	Stand-Off	Weight
TAM-2U	Sliding Universal Tapered Pipe Mounts	2-3/8" and 2-7/8"	1'	77
TAM-2U-L	Sliding Universal Tapered Pipe Mounts	2-3/8" and 2-7/8"	2'	93
TAM-3U	Sliding Universal Tapered Pipe Mounts	3-1/2" and 4-1/2"	1'	79
TAM-3U-L	Sliding Universal Tapered Pipe Mounts	3-1/2" and 4-1/2"	2'	95

Part #	Name	Weight
TAM-LL	Large Leg Adapter Kit for Tower Mounts & Reinforcement Kits	39

Universal Tubular-Arm Pipe Mounts

These universal tubular-arm pipe mounts allow transmission lines to run between the tower and mounting arms.

- For use on non-tapered tower sections.
- Cross arms are 2-1/2" x 2-1/2" x 80", 3/16" (wall) square structural tubing.
- 4-1/2" x 72" antenna mounting pipe included in TAP-472.
- Hot-dip galvanized after fabrication.
- Fit leg sizes 7/8" to 5".

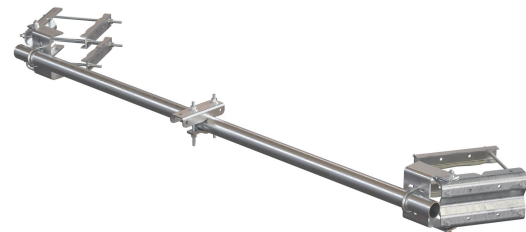


Part #	Description	Weight
TAP-472	Universal Tubular-Arm Pipe Mounts	240
TAP-NP	Universal Tubular-Arm Pipe Mounts	177
TAP-PM	Universal Tubular-Arm Pipe Mounts	32
TAP-LM	Universal Tubular-Arm Pipe Mounts	69

Tower Face Support

These tower face support kits allow microwave dishes a universal tieback solution.

- Attaches to round (1.75" - 14" O.D.), angle (2.5" - 10" : 90 deg. and 2.5" - 14" : 60 deg.), #12 PiROD™ truss (12" C-C), and tapered tower legs.
- Includes 3-1/2" O.D. Pipe
- Strut support bracket accepts up to 5/8" dia. hardware
- Hot dip galvanized steel construction.

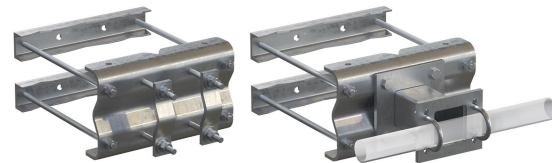


Part #	Description	Pipe	Round Member Size	60 Deg. Angle Member Size	90 Deg. Angle Member Size	#12 PiROD™ Leg	Weight
TFS-3126	Tower Face Support	3-1/2" O.D. x 126"	1.75" - 14" O.D.	2.5" - 14"	2.5" - 10"	12" C-C	234
TFS-NP	Tower Face Support	Order Separately	1.75" - 14" O.D.	2.5" - 14"	2.5" - 10"	12" C-C	152
TFS-3174	Tower Face Support	3-1/2" O.D. x 174"	1.75" - 14" O.D.	2.5" - 14"	2.5" - 10"	12" C-C	265
TFS-3252	Tower Face Support	3-1/2" O.D. x 252"	1.75" - 14" O.D.	2.5" - 14"	2.5" - 10"	12" C-C	324

Tower Leg Support

This universal tower leg support kit is ideal for creating a new vertical or horizontal connection.

- Attaches to round (1.75" - 14" O.D.), angle (2.5" - 10" : 90 deg. and 2.5" - 14" : 60 deg.), #12 PiROD™ truss (12" C-C), and tapered tower legs.
- Includes clamp halves.
- Flip channel brackets for angle legs.
- Hot dip galvanized steel construction.



Stand-offs sold separately.

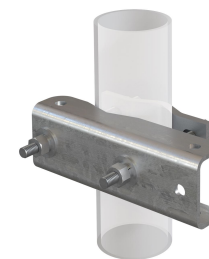
Part #	Description	Pipe	Round Member Size	60 Deg. Angle Member Size	90 Deg. Angle Member Size	#12 PiROD™ Leg	Weight
TLS-U	Tower Leg Support	Order Separately	1.75" - 14" O.D.	2.5" - 14"	2.5" - 10"	12" C-C	66

Part #	Name	Description	Weight
MM01	Standoff Arm Kit for Single Antennas	8" Support Arm	37
MM02	Standoff Arm Kit for Single Antennas	24" Support Arm	51
MM03	Standoff Arm Kit for Single Antennas	36" Support Arm	62

Microwave Strut Support

This universal microwave strut support comes with three attachment points for tiebacks.

- Attaches to 1.9" - 4.5" O.D. members.
- Holes accept 5/8" dia. hardware.
- Hot dip galvanized steel construction.

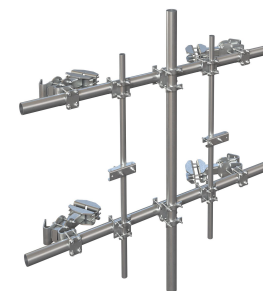


Part #	Description	Attachment	Weight
MSS-U	Microwave Strut Support	1.9" - 4.5" O.D.	12

10' Face Microwave Mount

These face microwave mounts are available with strut supports and a variety of face pipe lengths to fit virtually any tower.

- Attach to 1-1/2" to 9-1/2" round members or 3" to 6" angles.
- Includes double strut supports.
- Features FACE™ mount adjustability.
- Add FACE-LLEG for larger leg sizes (round legs 9-1/2" to 16" dia, 90° angle legs 6" to 11", or truss legs up to 12").



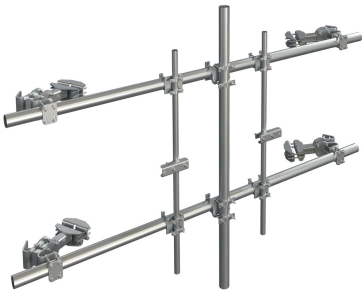
Part #	Description	Horizontal Pipe	# of Struts	Weight
FMW10-30DS	10' Face Microwave Mount	2-7/8" O.D. x 126"	2	1036
FMW10-3DS	10' Face Microwave Mount	3-1/2" O.D. x 126"	2	1082
FMW10-4DS	10' Face Microwave Mount	4-1/2" O.D. x 126"	2	1183
FMW10-30SS	10' Face Microwave Mount	2-7/8" O.D. x 126"	1	962
FMW10-3SS	10' Face Microwave Mount	3-1/2" O.D. x 126"	1	1007
FMW10-4SS	10' Face Microwave Mount	4-1/2" O.D. x 126"	1	1108
FMW10-30	10' Face Microwave Mount	2-7/8" O.D. x 126"	0	822
FMW10-3	10' Face Microwave Mount	3-1/2" O.D. x 126"	0	852
FMW10-4	10' Face Microwave Mount	4-1/2" O.D. x 126"	0	920

Part #	Name	Weight
FACE-LLEG	Large Leg Adapter Kit	75
FACE-PM	Pipe Mount Attachment Kit	52

14' Face Microwave Mount

These face microwave mounts are available with strut supports and a variety of face pipe lengths to fit virtually any tower.

- Attach to 1-1/2" to 9-1/2" round members or 3" to 6" angles.
- Includes double strut supports.
- Features FACE™ mount adjustability.
- Add FACE-LLEG for larger leg sizes (round legs 9-1/2" to 16" dia, 90° angle legs 6" to 11", or truss legs up to 12").



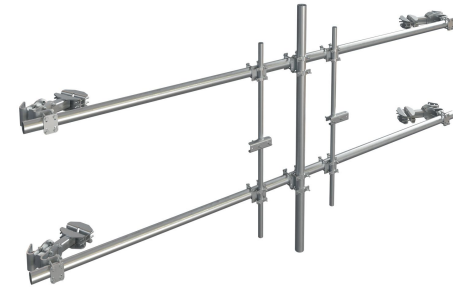
Part #	Description	Horizontal Pipe	# of Struts	Weight
FMW14-30DS	14' Face Microwave Mount	2-7/8" O.D. x 174"	2	1095
FMW14-3DS	14' Face Microwave Mount	3-1/2" O.D. x 174"	2	1172
FMW14-4DS	14' Face Microwave Mount	4-1/2" O.D. x 174"	2	1313
FMW14-30SS	14' Face Microwave Mount	2-7/8" O.D. x 174"	1	1020
FMW14-3SS	14' Face Microwave Mount	3-1/2" O.D. x 174"	1	1098
FMW14-4SS	14' Face Microwave Mount	4-1/2" O.D. x 174"	1	1038
FMW14-30	14' Face Microwave Mount	2-7/8" O.D. x 174"	0	861
FMW14-3	14' Face Microwave Mount	3-1/2" O.D. x 174"	0	913
FMW14-4	14' Face Microwave Mount	4-1/2" O.D. x 174"	0	1005

Part #	Name	Weight
FACE-LLEG	Large Leg Adapter Kit	75
FACE-PM	Pipe Mount Attachment Kit	52

20' Face Microwave Mount

These face microwave mounts are available with strut supports and a variety of face pipe lengths to fit virtually any tower.

- Attach to 1-1/2" to 9-1/2" round members or 3" to 6" angles.
- Includes double strut supports.
- Features FACE™ mount adjustability.
- Add FACE-LLEG for larger leg sizes (round legs 9-1/2" to 16" dia, 90° angle legs 6" to 11", or truss legs up to 12").



Part #	Description	Horizontal Pipe	# of Struts	Weight
FMW20-30DS	20' Face Microwave Mount	2-7/8" O.D. x 252"	2	1086
FMW20-3DS	20' Face Microwave Mount	3-1/2" O.D. x 252"	2	1161
FMW20-4DS	20' Face Microwave Mount	4-1/2" O.D. x 252"	2	1297
FMW20-30SS	20' Face Microwave Mount	2-7/8" O.D. x 252"	1	1012
FMW20-3SS	20' Face Microwave Mount	3-1/2" O.D. x 252"	1	1087
FMW20-4SS	20' Face Microwave Mount	4-1/2" O.D. x 252"	1	1222
FMW20-30	20' Face Microwave Mount	2-7/8" O.D. x 252"	0	937
FMW20-3	20' Face Microwave Mount	3-1/2" O.D. x 252"	0	1012
FMW20-4	20' Face Microwave Mount	4-1/2" O.D. x 252"	0	1147

Part #	Name	Weight
FACE-LLEG	Large Leg Adapter Kit	75
FACE-PM	Pipe Mount Attachment Kit	52

2-3/8" Face Strut Pipe Kit

This universal face strut pipe kit allows additional tiebacks to be added.

- Attaches to 1.5" - 4.5" O.D. members.
- Includes 2-3/8" O.D. x 96" pipe.
- Strut support bracket accepts up to 5/8" dia. hardware
- Hot dip galvanized steel construction.

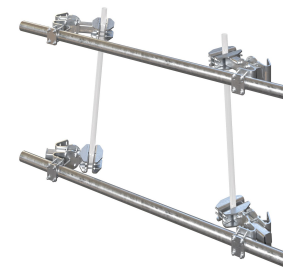


Part #	Description	Mount Pipe	Round Member Size	Weight
FSP296-K	2-3/8" Face Strut Pipe Kit	2-3/8" O.D. x 96"	1.5" - 4.5" O.D.	75

Universal Face Pipe Mount Assembly

These universal mounts are designed for even the most difficult face mount applications.

- Easily adjustable taper up to 8° (based on 60" spacing of brackets)
- Work with face pipes 2-7/8", 3-1/2", or 4-1/2" OD.
- Attach to 1-1/2" to 9-1/2" round members or 3" to 6" angles.
- Add FACE-LLEG for larger leg sizes (round legs 9-1/2" to 16" dia, 90° angle legs 6" to 11", or truss legs up to 12").
- Four FACE-LLEG required for FACE-ASY1.



Part #	Description	Sectors	Face Pipes	Weight
FACE-ASY1-30126	Universal Face Pipe Mount Assembly	One	(2) 2-7/8" x 10'-6"	657
FACE-ASY1-3126	Universal Face Pipe Mount Assembly	One	(2) 3-1/2" x 10'-6"	690
FACE-ASY1-4126	Universal Face Pipe Mount Assembly	One	(2) 4-1/2" x 10'-6"	755
FACE-ASY1-NP	Universal Face Pipe Mount Assembly	One	None	530
FACE-ASY1-NPS	Universal Face Pipe Mount Assembly	One	None	265
FACE-ASY3-30126	Universal Face Pipe Mount Assembly	Three	(6) 2-7/8" x 10'-6"	1,236
FACE-ASY3-3126	Universal Face Pipe Mount Assembly	Three	(6) 3-1/2" x 10'-6"	1,330
FACE-ASY3-4126	Universal Face Pipe Mount Assembly	Three	(6) 4-1/2" x 10'-6"	1,530
FACE-ASY3-NP	Universal Face Pipe Mount Assembly	Three	None	850
FACE-ASY4-30126	Universal Face Pipe Mount Assembly	Four	(8) 2-7/8" x 10'-6"	1,651
FACE-ASY4-3126	Universal Face Pipe Mount Assembly	Four	(8) 3-1/2" x 10'-6"	1,771
FACE-ASY4-4126	Universal Face Pipe Mount Assembly	Four	(8) 4-1/2" x 10'-6"	2,042
FACE-ASY4-NP	Universal Face Pipe Mount Assembly	Four	None	1,133

Part #	Name	Weight
FACE-LLEG	Large Leg Adapter Kit	75
FACE-PM	Pipe Mount Attachment Kit	52

Large Leg Adapter Kit for Tower Mounts

This kit enables the attachment of tower mounts to large pipe and angle.

- Attaches to tubular legs 4-3/4" to 10-3/4" and angle legs 3" to 8".

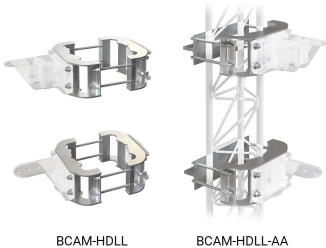


Part #	Description	Weight
LLEG-K	Large Leg Adapter Kit for Tower Mounts	78

BCAM™ Taper Adjustment System

This kit enables the attachment of the BCAM™ taper adjustment system to larger legs.

- Attaches to up to 16" round legs or #12 breakdown legs.



BCAM-HDLL

BCAM-HDLL-AA

Part #	Description	Weight
BCAM-HDLL	BCAM™ Large Leg Adapter Kit	141
BCAM-HDLL-AA	BCAM™ Large Leg Adapter Kit for Angle Legs	130

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Large Leg Adapter Kit for Tower Mounts & Reinforcement Kits

This kit enables the attachment of tower mounts and reinforcement kits to larger legs.

- Attaches to round legs up to 12-3/4", 60° angle legs up to 12", and 90° angle legs up to 8-1/2".

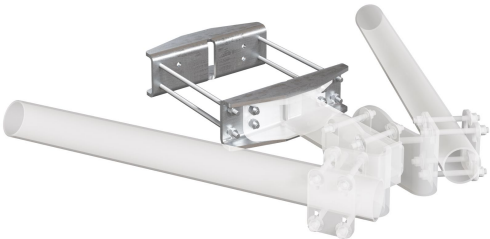


Part #	Description	Weight
TAM-LL	Large Leg Adapter Kit for Tower Mounts & Reinforcement Kits	39

Large Leg Adapter Kit

This large leg adapter kit works with FACE series mounts to accomodate large pipe and angle.

- Fits tubular legs 9-1/2" - 16" diameter, angle legs 6" - 11" and #12 breakdown legs



Part #	Description	Sectors	Face Pipes	Weight
FACE-LLEG	Large Leg Adapter Kit	Varies	None	75

Universal Sliding Pipe Stiff Arm Assemblies

These sliding pipe tie-back assemblies are used to stabilize sector frames.

- Pipe not included
- Leg bracket fits round legs from 1-1/2" to 8-5/8" OD, 60° angle legs up to 8", and 90° angle legs up to 6".
- Universal sector frame attachment hardware fits 1-1/2" to 5" OD.

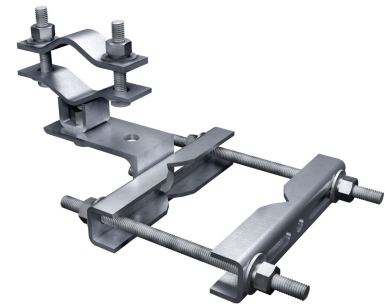


Part #	Description	Weight
SPTB-NP	Universal Sliding Pipe Stiff Arm Assemblies	48
SPTB278-NP	Universal Sliding Pipe Stiff Arm Assemblies	51

Universal Stiff Arm Attachment

This universal stiff arm bracket attaches to round or angle members.

- Pivoting design for ease of installation in even the most difficult applications.
- Universal mounting; round legs from 1" to 6", 60° angle legs from 1" to 6", and 90° angles 1" to 4".
- All hardware included.



Part #	Description	Application	Weight
SAM-U	Universal Stiff Arm Attachment	1" to 6" Round, 1" to 6" 60° Angles; 1" to 4" 90° Angles	8.6

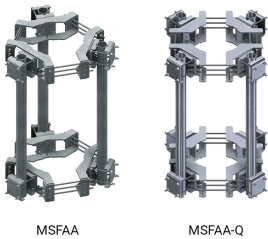


Monopole Mounts & Accessories

Monopole Sector Frame Attachment Assembly

This allows the easy attachment of sector frames to monopoles.

- Provides 4-1/2" OD mounting pipes for attachment of sector frames
- Includes two ring mounts, 4-1/2" OD mounting pipes, and hardware

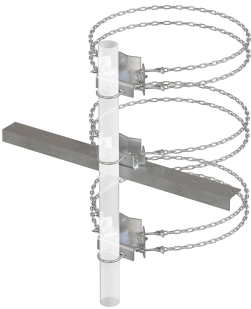


Part #	Description	Description	Pole Sizes	Weight
MSFAA	Monopole Sector Frame Attachment Assembly	Sector Frame Attachment Assembly (3 Sector)	12" - 45"	790
MSFAA-L	Monopole Sector Frame Attachment Assembly	Sector Frame Attachment Assembly Large (3 Sector)	45" - 60"	995
MSFAA-Q	Monopole Sector Frame Attachment Assembly	Sector Frame Attachment Assembly (4 Sector)	12" - 60"	1110

Chain Mount Kit for Dish Antennas

This kit enables the chain mounting of dish antennas to monopoles.

- Fits polygon or round poles 5" - 36"
- Includes U-bolts for mounting 4-1/2" OD pipes
- Heavy-duty kit for dishes up to 8' in diameter
- Includes side-strut support bracket for stiff arms
- Purchase U-bolts separately if mounting 3-1/2" pipes
- Order antenna mounting pipes separately
- For longer chain lengths order GC4-PF



Part #	Description	Description	Weight
DCH8	Chain Mount Kit for Dish Antennas	HD Chain Mount with Stiff Arm	141

Taper-Adjustable Chain Mount Kit

This kit enables the chain mounting and taper adjustment of antennas or RRU's to monopoles.

- Fits polygon or round poles
- Simple taper adjustment allows for up to 6° of taper in 3/4" increments
- Includes U-bolts for mounting 2-3/8" or 4-1/2" OD pipes
- Hot-dip galvanized
- Purchase U-bolts separately if mounting 2-7/8" or 3-1/2" pipes
- Order antenna mounting pipes separately
- For longer chain lengths order GC4-PF



Part #	Description	Description	Standoff	Range	Weight
TCHM1	Taper-Adjustable Chain Mount Kit	Single Sector	1'	5" - 36"	80
TCHM1-L	Taper-Adjustable Chain Mount Kit	Single Sector	2'	5" - 36"	96
TCHM2	Taper-Adjustable Chain Mount Kit	Double Sector	1'	5" - 36"	150
TCHM2-L	Taper-Adjustable Chain Mount Kit	Double Sector	2'	5" - 36"	180
TCHM3	Taper-Adjustable Chain Mount Kit	Triple Sector	1'	6-1/2" - 36"	225
TCHM3-L	Taper-Adjustable Chain Mount Kit	Triple Sector	2'	6-1/2" - 36"	270

Chain Mount Kit

This kit enables the chain mounting of antennas or RRU's to monopoles.

- Fits polygon or round poles
- Includes U-bolts for mounting 2-3/8" or 4-1/2" OD pipes
- Hot-dip galvanized
- Purchase U-bolts separately if mounting 2-7/8" or 3-1/2" pipes
- Order antenna mounting pipes separately
- For longer chain lengths order GC4-PF

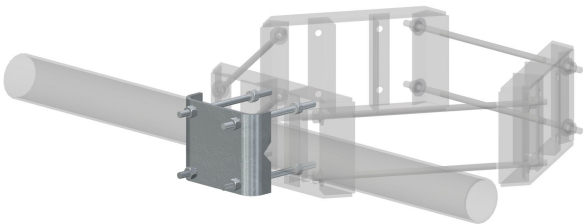


Part #	Description	Description	Range	Weight
CHM1	Chain Mount Kit	Single Sector	5" - 36"	52
CHM2	Chain Mount Kit	Double Sector	5" - 36"	93
CHM3	Chain Mount Kit	Triple Sector	6-1/2" - 36"	145

Flush Mount Adapter Kit

This kit allows the flush attachment of vertical pipe to ring mounts.

- Fits our standard or lightweight ring mounts
- Kit includes plates and all hardware
- Order antenna mounting pipes separately
- FMA1 can be used to mount a pipe horizontally or vertically



Part #	Description	Description	Pipe Size Range	Weight
FMA1	Flush Mount Adapter Kit	1 Plate and Hardware	1-1/2" - 4-1/2"	17
FMA2	Flush Mount Adapter Kit	4 Plates and Hardware	1-1/2" - 4-1/2"	57
FMA1-2	Flush Mount Adapter Kit	2 Plates and Hardware	1-1/2" - 4-1/2"	30

Support Arm Kit

This is the standard standoff arm used with our T-bracket mounts.

- 18", 24", 36", or 48" length with 4-1/2" OD x 18" stub
- Include attachment hardware
- Mounting plate is 3/4" thick by 8" square with four 11/16" holes on 6" centers
- Standoff is 4" x 1/4" square tube
- Unique welded gussets add strength



Part #	Description	Description	Weight
SV197-18	Support Arm Kit	18" Support Arm	48
SV197-24	Support Arm Kit	24" Support Arm	54
SV197-36	Support Arm Kit	36" Support Arm	65
SV197-48	Support Arm Kit	48" Support Arm	77

Standoff Arm Kit for Single Antennas

This kit allows the attachment of vertical pipe to ring mounts.

- Versatile 8", 24" or 36" standoff arms available
- Accepts 2-3/8", 2-7/8", or 3-1/2" pipes vertically or horizontally
- Fits our standard or lightweight ring mounts
- Includes attachment hardware
- Mounting plate is 1/2" thick by 8-1/2" square with four 11/16" holes on 6" centers
- Standoff is 4" x 3/16" square tube



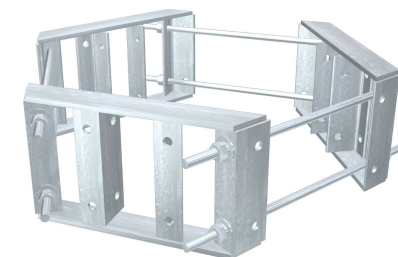
Part #	Description	Description	Weight
MM01	Standoff Arm Kit for Single Antennas	8" Support Arm	37
MM02	Standoff Arm Kit for Single Antennas	24" Support Arm	51
MM03	Standoff Arm Kit for Single Antennas	36" Support Arm	62

Part #	Name	Weight
UGLM4	Lightweight Quad-Bracket	110
LWRM	Universal Three-Sector Ring Mount Kit	269
UGLM	Lightweight Tri-Bracket	89
UQB4	Universal Four-Sector Ring Mount Kit	285
RM3-HD	Heavy-Duty Three-Sector Ring Mount Kit	338
RM4-HD	Heavy-Duty Four-Sector Ring Mount Kit	385

Lightweight Ring Mount Kit

This kit is used in lightweight ring mount applications of up to two antennas per sector.

- Easy to use lightweight ring mount
- Perfect for applications using two antennas per sector
- 6" x 6" bolt pattern
- Large and small pole adapter kit also available
- Contact us for load and engineering data

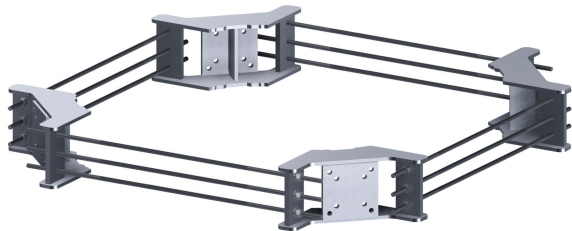


Part #	Description	Type	Weight
UGLM4	Lightweight Quad-Bracket	Lightweight Quad-Bracket	110
UGLM	Lightweight Tri-Bracket	Lightweight Tri-Bracket	89

Universal Ring Mount Kit

This kit is used to attach tri-brackets and platforms to monopoles.

- Included in many of our kits, but also available separately
- Wider operating range than other brands
- Designed to stay as close as possible to the monopole, not interfering with external climbing ladders
- 6" x 6" bolt pattern
- Large-pole adapter kit available for poles larger than 45" and up to 60"
- Contact us for load and engineering data



Part #	Description	Type	Pole Sizes	Weight
LWRM	Universal Three-Sector Ring Mount Kit	Universal Tri-Bracket	12" - 45"	269
UQB4	Universal Four-Sector Ring Mount Kit	Universal Quad-Bracket	12" - 60"	285

Heavy-Duty Ring Mount Kit

Our most robust ring mount kits designed for the most extreme loading conditions.

- This is the ring mount used to support our Fortress™ platform mounts
- 18" overall height provides 17" contact area with the pole, reducing point loads and minimizing pole deformation
- Mounting hole pattern includes our standard 6" x 6" pattern as well as a 6" x 11-1/2" hole pattern for larger plates
- Kit include threaded rods and hardware
- Contact us for load and engineering data



Part #	Description	Type	Pole Sizes	Weight
RM3-HD	Heavy-Duty Three-Sector Ring Mount Kit	Tri-Bracket Kit	12" - 45"	338
RM4-HD	Heavy-Duty Four-Sector Ring Mount Kit	Quad-Bracket Kit	12" - 60"	385

The background image shows a multi-story building with a light-colored facade and many windows. On the roof of the building, there is a complex structure of metal poles and cross-bracing supporting several large, rectangular, white antennas or solar panels. The sky above is a pale blue with some wispy white clouds. A dark blue horizontal band is superimposed over the middle of the image, containing the title text.

Rooftop Mounts & Accessories

CSRT Series™ Rooftop Mounts

The innovative CSRT Series™ Rooftop Mounts feature easy setup and transportation for even the most difficult to access rooftop sites.

- For the most difficult to access rooftop sites
- Bolt-together design, all hardware is 1/2"
- All members are 96" or less in length for transport in elevators
- Maximum member weight 70 lb
- RRU mount included



Part #	Description	Mounting Pipe	Footprint	Mats	RRU Mounts	Weight
CSRT1-10-RRU	CSRT Series™ Rooftop Mast	2-7/8" X 10'	96" x 96"	4	1	640
CSRT1D-10-RRU	CSRT Series™ Rooftop Mast	2-7/8" X 10'	96" x 140"	6	1	750

Part #	Name	Description	Weight
MAT18	Rubber Mat	1/2" x 18" x 48" Rubber Mat	16

Penetrating Tripod

This tripod mount is penetrating and accepts a variety of pipe diameters.

- Heavy-duty design
- Accepts 2-3/8" - 4-1/2" mast pipes
- Order pipe separately
- 1/2" x 3" stainless wedge anchors included



Part #	Description	Description	Weight
TRPD-HD-PEN	Penetrating Tripod	Penetrating Tripod	175

Water Tank Tripod Mount & Penetrating Roof Mount

These mounts penetrating and are ideal for use on both rooftops and water tanks.

- Welds on top water tanks or bolts to rooftops with 1/2" bolts
- 2-3/8" x 96" mast
- Bracket slides for easy adjustment to sloped surfaces



Part #	Description	Application	Weight
WTT96	Water Tank Tripod Mount & Penetrating Roof Mount	Water Tank Tripod	95

Rubbert Mat

The rubber mat is used as a protective barrier between a rooftop mount and the roof membrane.

- Manufactured from UV-resistant 1/2" thick rubber



Part #	Description	Description	Weight
MAT18	Rubber Mat	1/2" x 18" x 48" Rubber Mat	16



Wall Mounts & Accessories

Slider Bracket Wall Mount Kits

This kit is used to attach antennas to walls.

- Stands 11" off wall, 1' to pipe centerline
- Complete kits with U-bolts
- Order antenna mounting pipe separately
- Order hardware to mount to hollow or solid walls
- If 16" spacing between concrete anchors is required, order SBWM-16L long wall angle kit
- Mounting holes 13/16" x 1" slots on 12" centers



Part #	Description	Description	Pipe OD	Weight
SBWM	Slider Bracket Wall Mount Kits	Two Slider Brackets w/ Hardware	2-3/8" - 2-7/8"	52
SBWM-HD	Slider Bracket Wall Mount Kits	Two Slider Brackets w/ Hardware	3-1/2"-4-1/2"	54

Part #	Name	Description	Weight
SBWM-16L	Long Wall Angle Kit for Slider Bracket Wall Mount Kits	Long Wall Angle Kit	17
HWK58	Hollow Wall Mount Kit	Hollow Wall Mount Kit	11
SWK58	Solid Wall Mount Kit	Solid Wall Mount Kit	9.2

Heavy-Duty Wall Mount Brackets

These brackets provide a secure means of attaching antennas to walls.

- Accept 2-3/8" or 4-1/2" OD antenna mounting pipes
- Order U-bolts separately
- Full-size backing plates are included with hollow wall kits
- Solid-wall version includes stainless wedge anchors
- Standard models stand 4" off wall; extended models stand 12" off wall
- Mounting plate is 12" x 12" with 9/16" holes on 10" centers
- Order hardware to mount to hollow or solid walls



Part #	Description	Description	Qty	Weight
SP221	Heavy-Duty Wall Mount Brackets	4" Hollow Wall Kit	Kit of 2	64
SP222	Heavy-Duty Wall Mount Brackets	4" Solid Wall Kit	Kit of 2	35
SP221-12	Heavy-Duty Wall Mount Brackets	12" Hollow Wall Kit	Kit of 2	80
SP222-12	Heavy-Duty Wall Mount Brackets	12" Solid Wall Kit	Kit of 2	50

Standoff Wireless Wall Mounts

These mounts are used to install panel or whip antennas.

- Kits include U-bolts for 2-3/8" and 2-7/8" antenna mounting pipes
- Order antenna mounting pipe separately
- If mounting a 3-1/2" OD pipe, purchase U-bolts (UB1358) separately
- Wall plate is 1/2" thick by 8-1/2" square with four 11/16" holes on 6" centers
- Standoff is 4" x 3/16" square tube
- Order hardware to mount to hollow or solid walls



Part #	Description	Stand Off	Weight
WWM01	Standoff Wireless Wall Mounts	8"	25
WWM02	Standoff Wireless Wall Mounts	2'	38
WWM03	Standoff Wireless Wall Mounts	3'	50

Part #	Name	Description	Weight
HWK58	Hollow Wall Mount Kit	Hollow Wall Mount Kit	11
SWK58	Solid Wall Mount Kit	Solid Wall Mount Kit	9.2

Long Wall Angle Kit for Slider Bracket Wall Mount Kits

This kit is used where 16" spacing between concrete anchors is required.

- Mounting holes are 13/16" x 1" slots on 16" centers



Part #	Description	Description	Weight
SBWM-16L	Long Wall Angle Kit for Slider Bracket Wall Mount Kits	Long Wall Angle Kit	17

Hollow Wall Mount Kit

This hardware kit is used to attach antenna wall mounts to hollow walls.

- Includes four, 5/8" x 12" galvanized threaded rods



Part #	Description	Description	Weight
HWK58	Hollow Wall Mount Kit	Hollow Wall Mount Kit	11

Solid Wall Mount Kit

This hardware kit is used to attach antenna wall mounts to solid walls.

- Includes four 5/8" x 5" SS wedge anchors



Part #	Description	Description	Weight
SWK58	Solid Wall Mount Kit	Solid Wall Mount Kit	9.2

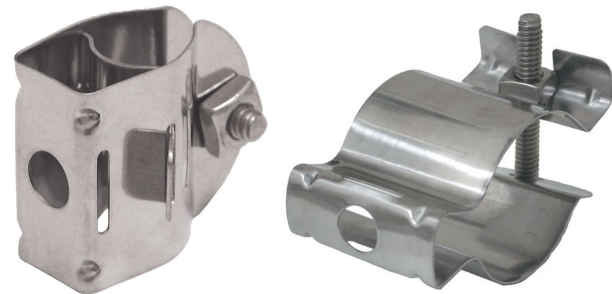
The background of the slide features a faded, light blue image of various cable support components. On the left, there is a large, cylindrical metal fitting with a flange. To its right is a smaller, more complex metal bracket with a threaded rod and nut. Below these, towards the bottom right, is another metal component with a rectangular shape and several circular holes. The overall aesthetic is clean and technical.

Cable Support

Butterfly Hangers

These versatile hangers can be mounted with 3/8" hardware to angle adapters or standoffs, or directly to tower members using banding or hose clamps.

- 304 stainless steel
- Captivated slotted SS screw and nut for tightening
- Attach with 3/8" hardware kits, banding, round member adapters, angle adapters, or standoff kits
- Fit corrugated and smooth-wall cables



Part #	Description	Cable Size	U of M	Weight
BUG12	Butterfly Hangers	3/8", 1/2", EW180, EW220, & EW240	10 pack	0.8
BUG78	Butterfly Hangers	4/8", EW85, & EW90	10 pack	0.9
BUG114	Butterfly Hangers	1-1/4"	10 pack	1.1
BUG158	Butterfly Hangers	1-5/8"	10 pack	1.1
BUG214	Butterfly Hangers	2-1/4" & EW37	10 pack	1.8

Universal Barrel Cushions

These universal barrel cushions adjust to a range of cable sizes.

- Designed to manage today's hybrid cables
- Universal fit holds cables tightly and reduces inventory need or fit issues
- Patented design holds the cable securely
- These rubber inserts fit inside snap-in hangers, butterfly hangers, or cable blocks for easy installation; see chart below for proper hanger size
- UV-resistant EPDM rubber is durable in extreme conditions



Part #	Description	Cable Size Range	Hanger Size	U of M	Weight
BCU12X	Universal Barrel Cushions	3 mm to 13 mm	1/2"	10 pack	0.3
BCU78X	Universal Barrel Cushions	4 mm to 14 mm	7/8"	10 pack	0.6
BCU114X	Universal Barrel Cushions	14 mm to 25 mm	1-1/4"	10 pack	1
BCU158X	Universal Barrel Cushions	14 mm to 36 mm	1-5/8"	10 pack	1.3
BCU214X	Universal Barrel Cushions	14 mm to 45 mm	2-1/4"	10 pack	2.3
BCU158M7	Universal Barrel Cushions	7 holes for 4 mm to 9 mm	1-5/8"	10 pack	1.5

Barrel Cushions for Elliptical Waveguide

Match these barrel cushions with the appropriate hanger to elliptical waveguide.

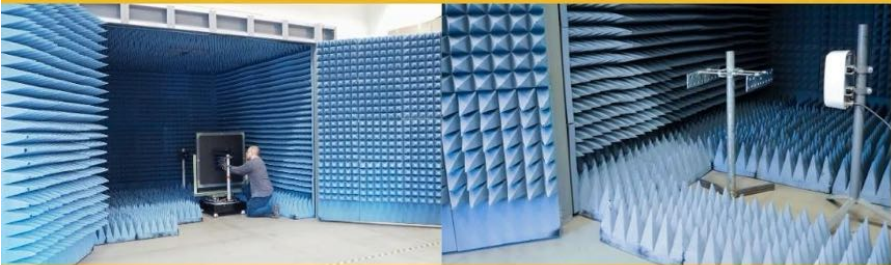
- Designed to manage elliptical waveguide
- These rubber inserts fit inside snap-in hangers, butterfly hangers, or cable block for easy installation; see chart below for proper hanger size
- UV-resistant EPDM rubber is durable in extreme conditions



Part #	Description	Cable Size & Type	# of Holes	Hole Size	Hanger Size	U of M	Weight
BCE902	Barrel Cushions for Elliptical Waveguide	EWP90S/EWP90/EW90	2	1.28" x 0.76"	1-5/8"	10 pack	2.5
BCE631	Barrel Cushions for Elliptical Waveguide	EWP63/EW63/EWP63S/EW65/EWP64/EW63/EP70/E011	1	2" x 1.16"	2-1/4"	10 pack	2.5

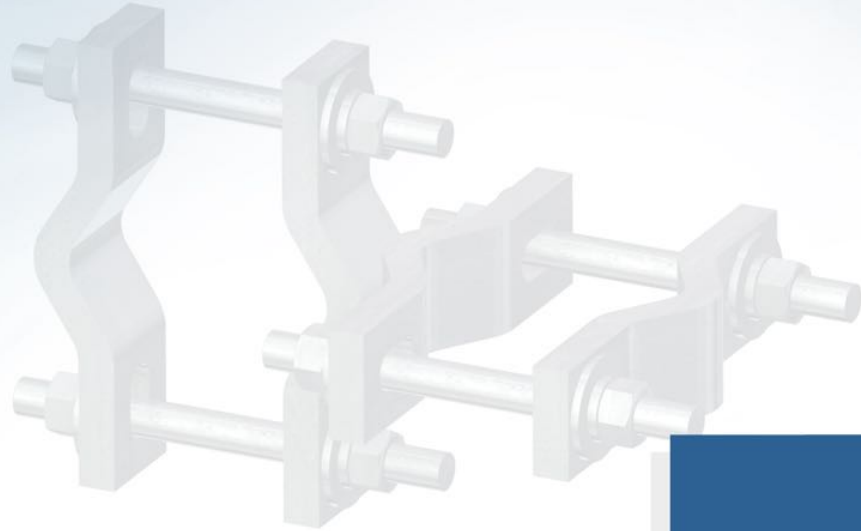


Preserving signal integrity.
Increasing network performance.

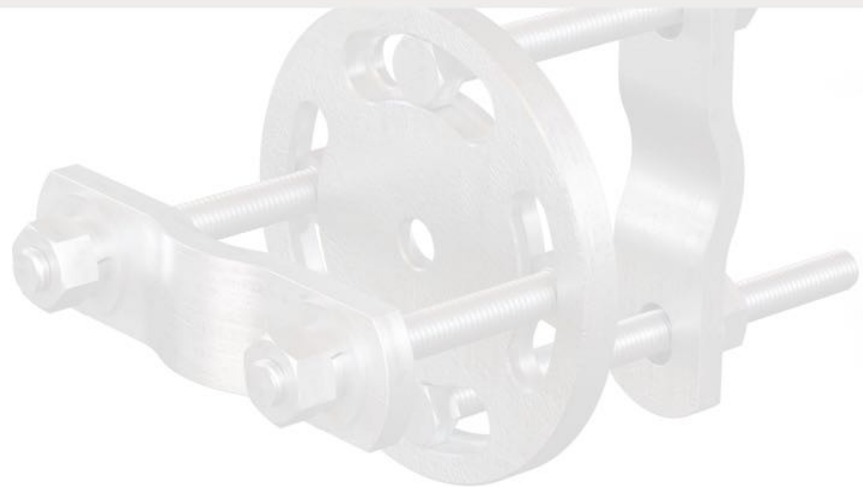


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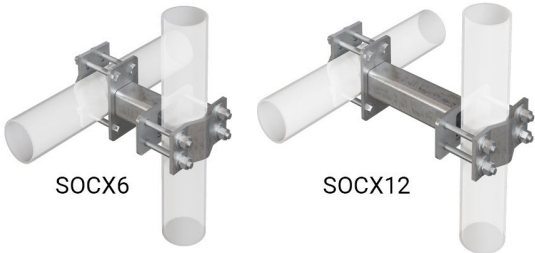
Hardware



Standoff Crossover Kit

These universal standoff crossovers help offset antenna distances from their attachment points.

- Attaches to 2.375" - 4.5" O.D. members.
- Allows horizontal to vertical 90 degree connection.
- Includes 6" standoff.
- Hot dip galvanized steel construction.

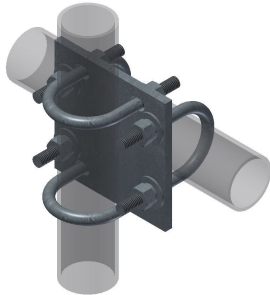


Part #	Description	Standoff Distance	Round Member Size	Weight
SOCX6	Standoff Crossover Kit	6"	2.375" - 4.5" O.D.	28
SOCX12	Standoff Crossover Kit	12"	2.375" - 4.5" O.D.	33

Crossover Plate Kits

Crossover plate kits are used to attach two pipes perpendicular to each other

- Heavy-duty crossover plate kits are used to attach pipes in 90° fashion
- U-bolts and hardware are included
- Hot-dip galvanized

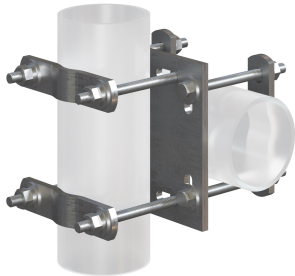


Part #	Description	Smaller Pipe Size	Larger Pipe Size	Thickness	Quantity
SCX1-K	Crossover Plate Kits	2-3/8"	2-3/8"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX2-K	Crossover Plate Kits	2-3/8"	2-7/8"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX23-K	Crossover Plate Kits	2-7/8"	2-7/8"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX3-K	Crossover Plate Kits	3-1/2"	3-1/2"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX43-K	Crossover Plate Kits	2-3/8"	3-1/2"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX4-K	Crossover Plate Kits	2-3/8"	4-1/2"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX45-K	Crossover Plate Kits	2-7/8"	3-1/2"	3/8"	1 Plate, 4 U-Bolts & Hardware
SCX6-K	Crossover Plate Kits	2-7/8"	4-1/2"	1/2"	1 Plate, 4 U-Bolts & Hardware
SCX7-K	Crossover Plate Kits	3-1/2"	4-1/2"	1/2"	1 Plate, 4 U-Bolts & Hardware
SCX34-K	Crossover Plate Kits	4-1/2"	4-1/2"	3/8"	1 Plate, 4 U-Bolts & Hardware

Universal Crossover Plate Kits

Crossover plate kits are used to attach two pipes perpendicular to each other

- Accommodate the new sizes of antenna pipes being used today
- Universal feature removes uncertainty in the field
- All hardware included
- Hot-dip galvanized

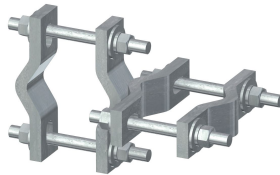


Part #	Description	Smaller Pipe Size	Larger Pipe Size	Thickness (Hardware Size)	Quantity
SCX3-U	Universal Crossover Plate Kits	1-1/2" - 4-1/2"	1-1/2" - 4-1/2"	3/8" (1/2")	1 Plate, 4 V-Clamps & Hardware
FCX45-U	Universal Crossover Plate Kits	1-1/2" - 4-1/2"	1-1/2" - 4-1/2"	3/8" (1/2")	1 Plate, 4 V-Clamps & Hardware
SCX6-U	Universal Crossover Plate Kits	1-1/2" - 2-7/8"	2-1/2" - 6"	1/2" (1/2")	1 Plate, 4 V-Clamps & Hardware
SCX7-U	Universal Crossover Plate Kits	1-1/2" - 3-1/2"	1-1/2" - 4-1/2"	1/2" (1/2")	1 Plate, 4 V-Clamps & Hardware

Crossover Clamp Sets

Crossover clamp sets are used to attach two pipes perpendicular to each other

- Used for attaching pipes in 90° junction
- All hardware included
- Hot-dip galvanized

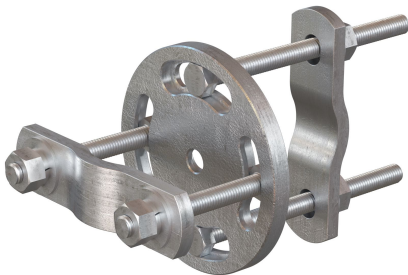


Part #	Description	Smaller Pipe Size	Larger Pipe Size
SSCK	Crossover Clamp Sets	1-1/2" - 3-1/2"	1-1/2" - 3-1/2"
DSCK	Crossover Clamp Sets	1-1/2" - 3-1/2"	2-3/8" - 5"


Adjustable Clamp Plate Assembly

This clamp plate is adjustable to enable stiff arm attachment in difficult applications.

- Drop-forged design for increased strength and durability
- Hot-dip galvanized
- All hardware included
- Angle adjusts from 40° to 140°



Part #	Description	Application	Weight
PUCK	Adjustable Clamp Plate Assembly	7/8" to 3-1/2" OD	16 lb




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Bulk Pipe

This hot-dip galvanized pipe is available in a variety of sizes.

- Plain-end hot-dip galvanized pipe
- ASTM A53 Grade B Schedule 40 or Schedule 80
- Other sizes available, please inquire



Part #	Description	Length	OD x Length (in)
P3096	Bulk Pipe	8'-0"	2-7/8" x 96"
P30108	Bulk Pipe	9'-0"	2-7/8" x 108"
P30120	Bulk Pipe	10'-0"	2-7/8" x 120"
P30126	Bulk Pipe	10'-6"	2-7/8" x 126"
P30150	Bulk Pipe	12'-6"	2-7/8" x 150"
P30174	Bulk Pipe	14'-6"	2-7/8" x 174"
P30252	Bulk Pipe	21'-0"	2-7/8" x 252"
P396	Bulk Pipe	8'-0"	3-1/2" x 96"
P3150	Bulk Pipe	12'-6"	3-1/2" x 150"
P3174	Bulk Pipe	14'-6"	3-1/2" x 174"
P3252	Bulk Pipe	21'-0"	3-1/2" x 252"
P4126	Bulk Pipe	10'-6"	4-1/2" x 126"
P4252	Bulk Pipe	21'-0"	4-1/2" x 252"
P296	Bulk Pipe	8'-0"	2-3/8" x 96"
P3126	Bulk Pipe	10'-6"	3-1/2" x 126"
P4174	Bulk Pipe	14'-6"	4-1/2" x 174"

Additional sizes are available, please inquire for more information.

Engineering References



Instructions

In the subsequent sections of this guide, we have compiled an assortment of resourceful tools to streamline your product selection experience for microwave face mounts.

Step 1: Begin by identifying the specific microwave equipment that you intend to install. This identification is crucial as it lays the foundation for all subsequent choices regarding the mounting equipment.

Step 2: The next step involves determining the required length for the microwave face mount. This dimension is vital as it has a direct impact on the stability and functionality of the installation.

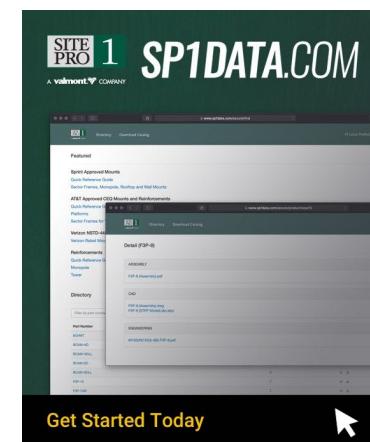
Step 3: Having selected the necessary length, you must then proceed to select the pipe of an appropriate diameter. This selection is contingent upon factors such as wind speed and the elevation of the installation site.

Included within our references are comprehensive charts that delineate the permissible EPA values based on the maximum capacity of the pipe, specifically sch 40 A53 grade B, at the selected length and diameter.



Engineering Database Resource

For those who are seeking additional documentation, such as engineering letters and other relevant materials that are crucial to your project, we direct you to our curated Architectural and Engineering (A&E) Database. This resource is an invaluable repository for professionals in the field. To gain access, we encourage you to register for an account by visiting [SP1Data.com](https://www.sp1data.com). Here, you will find a breadth of resources designed to support your engineering needs.



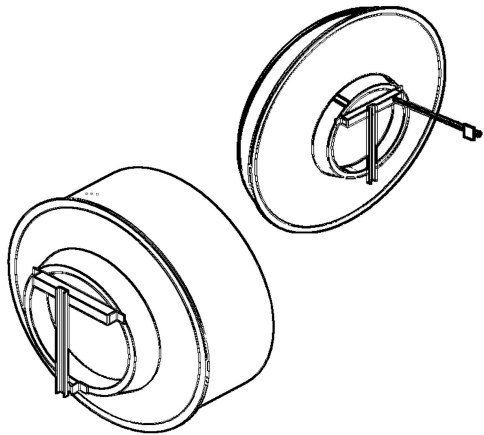
Questions & Additional Support

For additional engineering support or specific queries, reach out to our team at SP1Engineering@Valmont.com. Our experts are ready to provide the precise assistance and information your project requires.

Generalized EPA & Weight Reference by Dish Size

Beginning with the microwave diameter (dish size), use the table below to determine a generalized EPA and weight for the equipment to be installed. Consult the OEM for more detailed specifications (EPA, Weight, etc.).

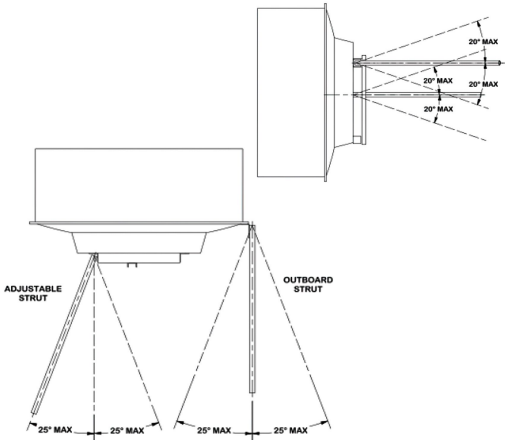
Outside Diameter	Normal EPA (Sq Ft) No ice	Normal EPA (Sq Ft) 1/2 Ice	Normal EPA (Sq Ft) 1" Ice	Weight (lbs.)
2 ft (0.6 m)	3.14	3.4	3.68	40
4 ft (1.2 m)	12.6	13.1	13.6	120
6 ft (1.8 m)	28.3	29.1	29.9	300
8 ft (2.4m)	50.3	51.3	52.4	460
10 ft (3.0 m)	78.5	79.9	81.2	560
12 ft (3.65 m)	130.2	131.9	133.6	600



Typical Strut Positions

Using the chart below, a tieback force can be determined. A proper installation, requires strut support arms to have a horizontal angle of less than 25° and a vertical angle of less than 20°. The mount should not deviate beyond 0.1" to preserve the correct signal pathway.

Size	Adjustable Strut Force	Fixed Strut Force
4' (1.2m)	500 lb (2200 N)	-
6' (1.8m)	1400 lb (9207 N)	-
8' (2.4m)	958 lb (4261 N)	1265 lb (5627 N)
10' (3.0m)	1320 lb (5871 N)	1987 lb (8838 N)
12' (3.7m)	1799 lb (8001 N)	2585 lb (11498 N)



Pipe Size References

The charts below highlight pipe capacity based on EPA. Use the charts below to determine the appropriate pipe size and length to determine the proper product usage.

10 ft Length

2.875 OD (Wind Load: 1.4390 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	66.7858	54.0965	44.7078	37.5670	32.0098	27.6002	24.0429	21.1314	18.7185	16.6964	14.9852
100	57.7177	46.7514	38.6375	32.4662	27.6635	23.8527	20.7784	18.2623	16.1769	14.4294	12.9505
150	52.9953	42.9262	35.4762	29.8099	25.4001	21.9011	19.0783	16.7680	14.8534	13.2488	11.8909
200	49.8809	40.4036	33.3914	28.0580	23.9074	20.6141	17.9571	15.7826	13.9805	12.4702	11.1921
250	47.5918	38.5494	31.8590	26.7704	22.8103	19.6681	17.1331	15.0584	13.3389	11.8980	
300	45.7997	37.0978	30.6593	25.7623	21.9513	18.9274	16.4879	14.4913	12.8366	11.4499	
350	44.3372	35.9132	29.6803	24.9397	21.2504	18.3230	15.9614	14.0286	12.4267	11.0843	
400	43.1082	34.9176	28.8576	24.2484	20.6613	17.8151	15.5190	13.6397	12.0822	10.7770	
450	42.0524	34.0625	28.1508	23.6545	20.1553	17.3788	15.1389	13.3056	11.7863		
500	41.1299	33.3152	27.5332	23.1356	19.7132	16.9976	14.8068	13.0138	11.5278		

3.5 OD (with Wind Load: 2.2990 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	106.6995	86.4266	71.4269	60.0184	51.1400	44.0952	38.4118	33.7604	29.9054	26.6749	23.9409
100	92.2120	74.6917	61.7287	51.8693	44.1963	38.1080	33.1963	29.1765	25.8449	23.0530	20.6902
150	84.6673	68.5805	56.6781	47.6253	40.5802	34.9901	30.4802	26.7893	23.7303	21.1668	18.9974
200	79.6916	64.5502	53.3473	44.8265	38.1954	32.9338	28.6890	25.2149	22.3357	19.9229	17.8809
250	76.0345	61.5879	50.8991	42.7694	36.4426	31.4224	27.3724	24.0578	21.3107	19.0086	
300	73.1713	59.2688	48.9825	41.1589	35.0703	30.2392	26.3417	23.1519	20.5082	18.2928	
350	70.8348	57.3762	47.4184	39.8446	33.9504	29.2736	25.5005	22.4126	19.8534	17.7087	
400	68.8713	55.7857	46.1039	38.7401	33.0093	28.4621	24.7937	21.7913	19.3030	17.2178	
450	67.1845	54.4194	44.9747	37.7913	32.2009	27.7650	24.1864	21.2576	18.8303		
500	65.7107	53.2256	43.9881	36.9623	31.4945	27.1559	23.6558	20.7913	18.4172		

4 OD (with Wind Load: 3.1820 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	147.6806	119.6213	98.8606	83.0703	70.7818	61.0313	53.1650	46.7271	41.3914	36.9201	33.1361
100	127.6288	103.3793	85.4375	71.7912	61.1712	52.7446	45.9464	40.3826	35.7714	31.9072	28.6369
150	117.1863	94.9209	78.4470	65.9173	56.1662	48.4290	42.1871	37.0785	32.8446	29.2966	26.2939
200	110.2996	89.3427	73.8369	62.0435	52.8655	45.5830	39.7079	34.8995	30.9144	27.5749	24.7487
250	105.2378	85.2426	70.4485	59.1963	50.4394	43.4911	37.8856	33.2979	29.4957	26.3095	
300	101.2750	82.0327	67.7956	56.9672	48.5401	41.8534	36.4590	32.0440	28.3850	25.3187	
350	98.0411	79.4133	65.6308	55.1481	46.9901	40.5170	35.2948	31.0208	27.4786	24.5103	
400	95.3233	77.2119	63.8115	53.6194	45.6875	39.3938	34.3164	30.1609	26.7169	23.8308	
450	92.9887	75.3209	62.2486	52.3062	44.5686	38.4290	33.4759	29.4222	26.0626		
500	90.9488	73.6686	60.8831	51.1587	43.5909	37.5860	32.7416	28.7768	25.4908		

4.5 OD (with Wind Load: 4.2530 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	197.3870	159.8835	132.1351	111.0302	94.6056	81.5732	71.0593	62.4545	55.3230	49.3468	44.2891
100	170.5862	138.1748	114.1941	95.9547	81.7602	70.4974	61.4110	53.9745	47.8114	42.6466	38.2756
150	156.6290	126.8695	104.8508	88.1038	75.0707	64.7293	56.3864	49.5584	43.8995	39.1572	35.1439
200	147.4243	119.4137	98.6890	82.9262	70.6590	60.9254	53.0728	46.6460	41.3196	36.8561	33.0786
250	140.6588	113.9337	94.1601	79.1206	67.4164	58.1294	50.6372	44.5053	39.4234	35.1647	
300	135.3622	109.6434	90.6143	76.1412	64.8777	55.9405	48.7304	42.8294	37.9389	33.8405	
350	131.0398	106.1422	87.7209	73.7099	62.8061	54.1542	47.1743	41.4618	36.7274	32.7600	
400	127.4073	103.1999	85.2892	71.6666	61.0651	52.6530	45.8666	40.3125	35.7093	31.8518	
450	124.2869	100.6724	83.2003	69.9114	59.5695	51.3635	44.7433	39.3252	34.8347		
500	121.5605	98.4640	81.3752	68.3778	58.2627	50.2367	43.7618	38.4625	34.0706		

14 ft Length

2.875 OD (with Wind Load: 1.0280 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	47.7108	38.6457	31.9386	26.8373	22.8673	19.7172	17.1759	15.0960	13.3722	11.9277	10.7052
100	41.2327	33.3985	27.6020	23.1934	19.7624	17.0400	14.8438	13.0463	11.5566	10.3082	9.2517
150	37.8591	30.6658	25.3437	21.2957	18.1455	15.6458	13.6293	11.9788	10.6110	9.4648	8.4947
200	35.6342	28.8637	23.8543	20.0442	17.0791	14.7264	12.8283	11.2749	9.9874	8.9085	7.9955
250	33.9989	27.5391	22.7596	19.1244	16.2953	14.0506	12.2396	10.7575	9.5291	8.4997	
300	32.7186	26.5021	21.9026	18.4042	15.6817	13.5215	11.7787	10.3524	9.1703	8.1797	
350	31.6739	25.6558	21.2032	17.8165	15.1810	13.0897	11.4026	10.0218	8.8774	7.9185	
400	30.7958	24.9446	20.6154	17.3227	14.7601	12.7269	11.0865	9.7440	8.6314	7.6990	
450	30.0416	24.3337	20.1105	16.8984	14.3986	12.4152	10.8150	9.5054	8.4200		
500	29.3826	23.7999	19.6693	16.5277	14.0828	12.1428	10.5777	9.2968	8.2353		

3.5 OD (with Wind Load: 1.6430 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	76.2537	61.7655	51.0459	42.8927	36.5476	31.5130	27.4513	24.1271	21.3721	19.0634	17.1096
100	65.9001	53.3791	44.1149	37.0688	31.5853	27.2342	23.7240	20.8512	18.4703	16.4750	14.7864
150	60.5082	49.0116	40.5055	34.0359	29.0010	25.0059	21.7830	19.1452	16.9590	15.1270	13.5766
200	56.9523	46.1314	38.1251	32.0357	27.2967	23.5364	20.5028	18.0201	15.9624	14.2381	12.7788
250	54.3387	44.0143	36.3755	30.5655	26.0440	22.4563	19.5619	17.1931	15.2299	13.5847	
300	52.2925	42.3569	35.0057	29.4145	25.0633	21.6107	18.8253	16.5457	14.6564	13.0731	
350	50.6227	41.0044	33.8879	28.4753	24.2630	20.9206	18.2242	16.0173	14.1884	12.6557	
400	49.2194	39.8677	32.9485	27.6859	23.5904	20.3407	17.7190	15.5733	13.7951	12.3049	
450	48.0140	38.8913	32.1416	27.0079	23.0126	19.8425	17.2850	15.1919	13.4572		
500	46.9607	38.0382	31.4365	26.4154	22.5078	19.4072	16.9058	14.8587	13.1620		

4 OD (with Wind Load: 2.2730 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	105.4928	85.4491	70.6191	59.3397	50.5616	43.5965	37.9774	33.3786	29.5672	26.3732	23.6701
100	91.1692	73.8470	61.0306	51.2827	43.6965	37.6771	32.8209	28.8465	25.5526	22.7923	20.4562
150	83.7098	67.8049	56.0371	47.0867	40.1212	34.5943	30.1355	26.4863	23.4619	20.9274	18.7825
200	78.7904	63.8202	52.7440	44.3196	37.7634	32.5613	28.3645	24.9298	22.0831	19.6976	17.6787
250	75.1746	60.8914	50.3235	42.2857	36.0304	31.0671	27.0629	23.7857	21.0697	18.7936	
300	72.3438	58.5985	48.4285	40.6934	34.6737	29.8972	26.0438	22.8900	20.2763	18.0860	
350	70.0337	56.7273	46.8821	39.3940	33.5665	28.9425	25.2121	22.1591	19.6288	17.5084	
400	68.0924	55.1548	45.5825	38.3020	32.6360	28.1402	24.5133	21.5449	19.0847	17.0231	
450	66.4247	53.8040	44.4661	37.3639	31.8367	27.4510	23.9129	21.0172	18.6173		
500	64.9675	52.6237	43.4907	36.5442	31.1383	26.8488	23.3883	20.5561	18.2089		

4.5 OD (with Wind Load: 3.0380 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	140.9974	114.2079	94.3867	79.3110	67.5786	58.2693	50.7591	44.6124	39.5183	35.2493	31.6365
100	121.8530	98.7009	81.5710	68.5423	58.4029	50.3576	43.8671	38.5551	34.1526	30.4633	27.3410
150	111.8831	90.6253	74.8969	62.9342	53.6244	46.2374	40.2779	35.4005	31.3582	27.9708	25.1040
200	105.3080	85.2995	70.4955	59.2358	50.4731	43.5202	37.9109	33.3201	29.5154	26.3270	23.6287
250	100.4753	81.3850	67.2603	56.5174	48.1568	41.5230	36.1711	31.7910	28.1609	25.1188	
300	96.6918	78.3204	64.7276	54.3891	46.3434	39.9594	34.8091	30.5939	27.1005	24.1730	
350	93.6043	75.8195	62.6607	52.6524	44.8636	38.6834	33.6975	29.6170	26.2351	23.4011	
400	91.0095	73.7177	60.9237	51.1929	43.6199	37.6111	32.7634	28.7960	25.5079	22.7524	
450	88.7806	71.9123	59.4316	49.9391	42.5516	36.6899	31.9610	28.0907	24.8831		
500	86.8330	70.3347	58.1279	48.8436	41.6182	35.8851	31.2599	27.4745	24.3373		

20 ft Length

2.875 OD (with Wind Load: 0.7200 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	33.4161	27.0670	22.3695	18.7966	16.0160	13.8097	12.0298	10.5731	9.3658	8.3540	7.4978
100	28.8789	23.3919	19.3322	16.2444	13.8414	11.9347	10.3964	9.1375	8.0941	7.2197	6.4798
150	26.5161	21.4780	17.7504	14.9153	12.7089	10.9582	9.5458	8.3899	7.4318	6.6290	5.9496
200	24.9578	20.2158	16.7073	14.0388	11.9620	10.3142	8.9848	7.8968	6.9951	6.2394	5.5999
250	23.8125	19.2881	15.9406	13.3945	11.4131	9.8409	8.5725	7.5344	6.6741	5.9531	
300	22.9158	18.5618	15.3403	12.8901	10.9833	9.4703	8.2497	7.2507	6.4228	5.7289	
350	22.1840	17.9691	14.8505	12.4785	10.6326	9.1679	7.9862	7.0192	6.2177	5.5460	
400	21.5691	17.4710	14.4388	12.1326	10.3378	8.9138	7.7649	6.8246	6.0453	5.3923	
450	21.0408	17.0431	14.0852	11.8355	10.0847	8.6954	7.5747	6.6574	5.8973		
500	20.5792	16.6692	13.7762	11.5758	9.8634	8.5047	7.4085	6.5114	5.7679		

3.5 OD (with Wind Load: 1.1150 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	51.7485	41.9163	34.6416	29.1086	24.8026	21.3859	18.6295	16.3736	14.5039	12.9371	11.6112
100	44.7222	36.2250	29.9380	25.1563	21.4349	18.4821	16.1000	14.1504	12.5346	11.1806	10.0346
150	41.0631	33.2611	27.4885	23.0980	19.6811	16.9699	14.7827	12.9926	11.5090	10.2658	9.2136
200	38.6499	31.3064	25.8731	21.7406	18.5245	15.9727	13.9140	12.2291	10.8327	9.6625	8.6721
250	36.8762	29.8697	24.6857	20.7429	17.6744	15.2397	13.2754	11.6679	10.3356	9.2191	
300	35.4876	28.7450	23.7562	19.9618	17.0089	14.6658	12.7755	11.2285	9.9464	8.8719	
350	34.3544	27.8271	22.9976	19.3244	16.4657	14.1975	12.3676	10.8700	9.6288	8.5886	
400	33.4021	27.0557	22.3601	18.7887	16.0093	13.8039	12.0248	10.5686	9.3618	8.3505	
450	32.5840	26.3931	21.8125	18.3285	15.6172	13.4659	11.7303	10.3098	9.1326		
500	31.8692	25.8141	21.3340	17.9265	15.2746	13.1705	11.4729	10.0836	8.9322		

4 OD (with Wind Load: 1.5900 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	73.7939	59.7730	49.3992	41.5091	35.3687	30.4965	26.5658	23.3488	20.6827	18.4485	16.5576
100	63.7743	51.6572	42.6919	35.8730	30.5664	26.3557	22.9587	20.1786	17.8745	15.9436	14.3095
150	58.5563	47.4306	39.1989	32.9379	28.0655	24.1993	21.0803	18.5276	16.4120	14.6391	13.1387
200	55.1151	44.6433	36.8953	31.0023	26.4161	22.7772	19.8414	17.4388	15.4475	13.7788	12.3666
250	52.5858	42.5945	35.2021	29.5795	25.2039	21.7319	18.9309	16.6385	14.7386	13.1465	
300	50.6057	40.9906	33.8765	28.4657	24.2548	20.9136	18.2180	16.0119	14.1836	12.6514	
350	48.9897	39.6817	32.7948	27.5567	23.4803	20.2458	17.6363	15.5007	13.7307	12.2474	
400	47.6317	38.5817	31.8857	26.7928	22.8294	19.6845	17.1474	15.0710	13.3501	11.9079	
450	46.4651	37.6368	31.1048	26.1366	22.2703	19.2024	16.7274	14.7019	13.0231		
500	45.4458	36.8111	30.4224	25.5633	21.7817	18.7812	16.3605	14.3793	12.7374		

4.5 OD (with Wind Load: 2.1260 kips)

HEIGHT	WIND SPEED (mph)										
(ft)	90	100	110	120	130	140	150	160	170	180	190
50	98.6703	79.9230	66.0520	55.5021	47.2917	40.7770	35.5213	31.2199	27.6550	24.6676	22.1393
100	85.2730	69.0712	57.0836	47.9661	40.8705	35.2404	30.6983	26.9809	23.9001	21.3183	19.1333
150	78.2961	63.4198	52.4131	44.0415	37.5265	32.3570	28.1866	24.7734	21.9446	19.5740	17.5678
200	73.6948	59.6928	49.3329	41.4533	35.3212	30.4555	26.5301	23.3175	20.6550	18.4237	16.5354
250	70.3129	56.9534	47.0690	39.5510	33.7003	29.0579	25.3126	22.2474	19.7071	17.5782	
300	67.6652	54.8088	45.2965	38.0617	32.4312	27.9637	24.3595	21.4097	18.9650	16.9163	
350	65.5045	53.0586	43.8501	36.8463	31.3956	27.0707	23.5816	20.7260	18.3594	16.3761	
400	63.6887	51.5878	42.6346	35.8249	30.5253	26.3203	22.9279	20.1515	17.8505	15.9222	
450	62.1289	50.3244	41.5904	34.9475	29.7777	25.6757	22.3664	19.6580	17.4133		
500	60.7659	49.2204	40.6780	34.1808	29.1245	25.1125	21.8757	19.2267	17.0313		



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Version: MGPG01 Updated: 12/23