

ASSEMBLY AND INSTALLATION INSTRUCTIONS



A5055 5 ELEMENT 6 METER BEAM

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Please contact your vendor for technical support and warranty service.



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WARNING

THIS ANTENNA IS AN ELECTRICAL CONDUCTOR. CONTACT WITH POWER LINES CAN RESULT IN DEATH, OR SERIOUS INJURY. DO NOT INSTALL THIS ANTENNA WHERE THERE IS ANY POSSIBILITY OF CONTACT WITH OR HIGH VOLTAGE ARC-OVER FROM POWER CABLES OR SERVICE DROPS TO BUILDINGS. THE ANTENNA, SUPPORTING MAST AND/OR TOWER MUST NOT BE CLOSE TO ANY POWER LINES DURING INSTALLATION, REMOVAL OR IN THE EVENT PART OF THE SYSTEM SHOULD ACCIDENTALLY FALL. FOLLOW THE GUIDELINES FOR ANTENNA INSTALLATIONS RECOMMENDED BY THE U.S. CONSUMER PRODUCT SAFETY COMMISSION AND LISTED IN THE ENCLOSED PAMPHLET.

Your Cushcraft 6 meter beam is designed and manufactured to give top performance and trouble free service. The antenna will perform as specified if the instructions and suggestions are followed and care is used in assembly and installation. When checking the components received in your antenna package use the parts lists in each section. It is easiest to identify the various dimensions of tubing by separating them into groups of the same diameter and length. If you are unable to locate any tube or component, check the inside of all tubing. **IMPORTANT:** save the weight label from the outside of the carton. Each antenna is weighed at the factory to verify the parts count. If you claim a missing part, you will be asked for the weight verification label. There is a master parts list on page 2.

LOCATION

Location of the antenna is very important. Surrounding objects such as trees, power lines, other antennas, etc. will seriously reduce efficiency. To minimize the effects of surrounding objects, mount the antenna as high and in the clear as possible. If metal guy wires are used, they should be broken with strain insulators. **YOU MUST INSURE THAT NEITHER PEOPLE OR PETS CAN COME IN CONTACT WITH YOUR ANTENNA WHILE IT IS IN OPERATION. DEADLY VOLTAGES AND CURRENTS MAY EXIST. ALSO, SINCE THE EFFECTS OF EXPOSURE TO RF ARE NOT FULLY UNDERSTOOD, LONG TERM EXPOSURE TO INTENSE RF FIELDS IS NOT RECOMMENDED. THERE IS A WARNING STICKER WHICH MUST BE ATTACHED TO THE BOOM AS SHOWN IN FIGURE E.**

Plan your installation carefully. If you use volunteer helpers be sure that they are qualified to assist you. Make certain that everyone involved understands that you are in charge and that they must follow your instructions. If you have any doubts at all employ a professional antenna installation company to install your antenna.

MOUNTING

The mast mount bracket will accommodate up to a 2" OD (5.1 cm) mast. A 1-1/2" OD (3.8 cm) or larger heavy wall tubing mast should be used. A good heavy duty antenna rotator will provide the best service and longest life. Often it is desirable to mount several antennas on one mast. To keep possible interaction to a minimum, place your antennas as far apart as you can.

SYSTEM GROUNDING

Direct grounding of the antenna, mast and tower is very important. This serves as protection from lightning strikes and static buildup, and from high voltage which is present in the radio equipment connected to the antenna. A good electrical connection should be made to one or more ground rods (or other extensive ground system) directly at the base of the tower or mast, using at least #10AWG ground wire and non-corrosive hardware. For details and safety standards, consult the National Electrical Code. You should also use a coaxial lightning arrester. Cushcraft offers several different models, such as LAC-1, LAC-2 and the LAC-4 series.

ASSEMBLY

Assemble your antenna by following the directions and illustrations in steps 1 through 5. Vertical polarization is normally used for FM. Other modes use horizontal polarization. After the antenna is completely assembled, verify dimensions and element spacings for accuracy. Then, return to the section below for final tuning.

TUNING PROCEDURE

If you wish to check the VSWR before installation, please observe the following procedures. Temporarily mount the antenna with the boom vertical, reflector at least one foot (30 cm) off the ground on a non-metallic support (wooden box), to prevent detuning the antenna. Guy the top of the boom. Do not use line with wire in it (some clotheslines have a wire core). Keep other antennas, metal objects and guy lines clear of the antenna under test. Do not attempt to tune the Yagi near the ground with the boom parallel to the ground since ground effects will nullify any adjustment and degraded performance will result.

Run the coax cable from your transmitter to the area in which the antenna is going to be tested. The length of this cable or your feedline is not critical. Connect a good quality VSWR bridge to the end of this cable. Connect a short length of cable [10 ft (305 cm) or less] from the VSWR bridge to the antenna. Set the transmitter to your center operating frequency. When you read VSWR, be sure you move far enough away from the antenna so that your body does not effect the reading.

Measure the VSWR. If it is high, move the Reddi-Match clamp (69) by 1/4" (.6 cm) in one direction and check the VSWR. If the VSWR improved, then continue moving the Reddi-Match clamp in the same direction. If the VSWR deteriorated then move the Reddi-Match clamp in the opposite direction. Repeat this procedure until no further improvement can be made. You have matched your antenna to 50 Ohms. Then tighten all connections. Tape the feedline to the boom and mast.



KEY	P/N	DISPLAY	DESC	SIZE	QTY
115	050115		CONNECTOR BOOT		1
116	240116		SILICONE GREASE PACKAGE		1

FIGURE F



#5 - FEEDLINE ASSEMBLY

Before attaching the feedline permanently, tune the antenna as outlined on page 1. The antenna is designed for use with 50 Ohm coaxial cable terminated with a PL-259 connector. Any length of feedline can be used with your A50-5S. The shortest length of cable will have the least loss. A connector boot is included for use with your new antenna. (Figure F) Slide the boot over the cable before attaching your PL-259. Coat only the outside connector threads and shell with silicone grease. Do not coat the center pin or receptacle. After the PL-259 is firmly screwed on to the antenna connector, slide the vinyl boot over the connector and against the mast bracket. Tape the feedline to the boom and down the mast. It's a good idea to form a drip loop in the coax to help protect the connector from water damage (figure G).

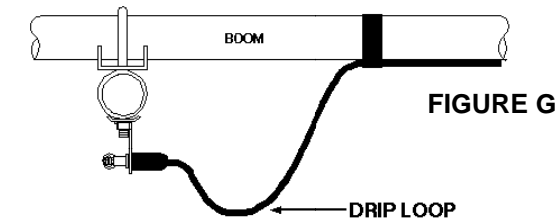


FIGURE G

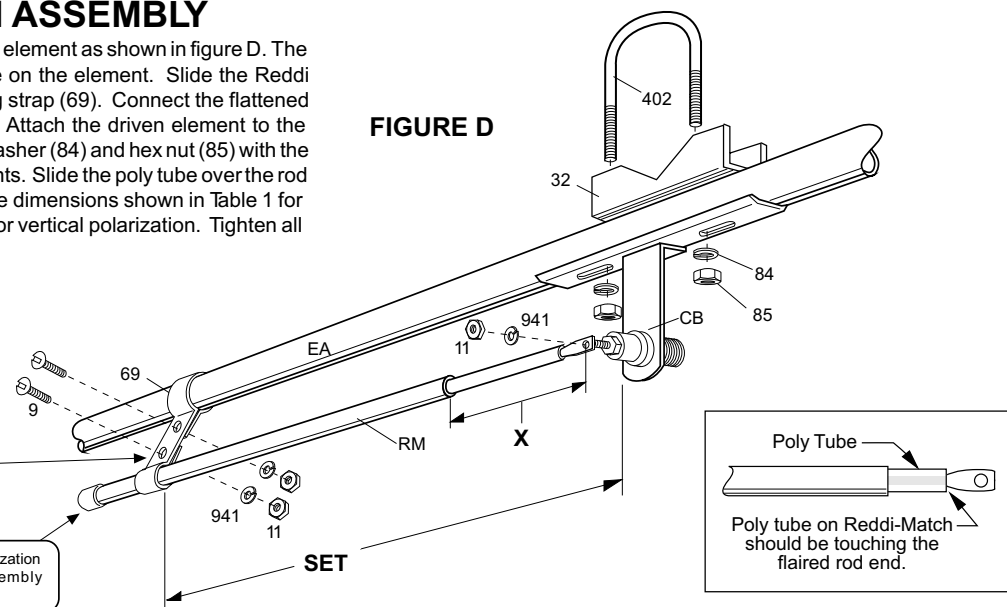
SPECIFICATIONS

Frequency	50-54 MHz
Number Elements	5
Forward Gain	10.5 dBi
Front to Back Ratio	24 dB
SWR Typical	1.2:1
2:1 Bandwidth, MHz	>1
Power	1000 Watts
Boom Length	12 ft. (3.7 m)
Longest Element	123" (312.4 cm)
Turning Radius	7.8 ft. (2.37 m)
Mast Size Range	1.5-2.0 in (3.8-5.1 cm)
Wind Surface Area	2.9 ft ² . (.273 m ²)
Weight	11 lb. (5.0 kg)

#3 - REDDI MATCH ASSEMBLY

Mount the Reddi Match to the driven element as shown in figure D. The tuning strap (69) should already be on the element. Slide the Reddi Match tube (RM) through the tuning strap (69). Connect the flattened rod to the screw on the connector. Attach the driven element to the boom using U-bolt (402) with lock washer (84) and hex nut (85) with the connector facing the director elements. Slide the poly tube over the rod up to the flattened end. Adjust to the dimensions shown in Table 1 for horizontal polarization and Table 2 for vertical polarization. Tighten all connectors.

FIGURE D



KEY	P/N	DISPLAY	DESC	SIZE	QTY	KEY	P/N	DISPLAY	DESC	SIZE	QTY
9	010009		SS MACHINE SCREW	8-32 X 5/8" (1.59 cm)	2	85	010085		HEX NUT	1/4" (.63 cm)	2
941	011941		SS LOCK WASHER	#8	3	84	010084		LOCK WASHER	1/4" (.63 cm)	2
11	010011		SS HEX NUT	8-32	3	402	010402		U-BOLTS	1-1/2" (3.8 cm)	1
32	190032		U-BOLT BRACKET	1-1/2" (3.8 cm)	1	CB	A50CB		CONNECTOR BRACKET		1
69	200069		TUNING STRAP		1	RM			REDDI MATCH ASSY	19" (48.3 cm)	1

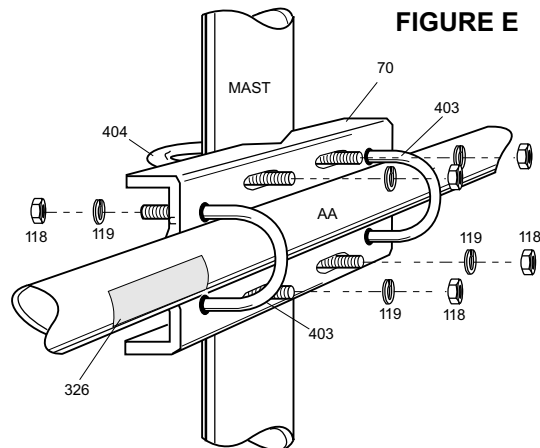
KEY	P/N	DESCRIPTION	QUANTITY
9	010009	8-32 x 5/8" (1.59 cm) stainless steel machine screw	2
11	010011	8-32 stainless steel hex nut	3
13	050013	1-1/4" (3.17 cm) plastic cap	2
27	050027	5/8" (1.59 cm) plastic caps	10
32	190032	1-1/2" (3.8 cm) heavy duty U-bolt brackets	5
33	190033	1-1/2" (3.8 cm) U-bolt backing plate	4
69	200069	Formed aluminum tuning strap	1
70	190070	4" x 6" (10.2 x 15.2 cm) formed mast plate	1
84	010084	1/4" (.63 cm) stainless steel lock washer	10
85	010085	1/4" (.63 cm) stainless steel hex nut	10
115	050115	Connector boot	1
116	240116	Silicone package	1
118	010118	5/16" (.8 cm) stainless steel hex nut	8
119	010119	5/16" (.8 cm) stainless steel lock washers	8
326	290326	Danger label	1
402	010402	1-1/2" (3.8 cm) stainless steel U-bolt	5
403	010403	1-5/8" (4.13 cm) stainless steel U-bolt	2
404	010404	2 1/8" x 3 3/4" (5.4 x 9.53 cm) stainless steel U-bolt	2
409	030409	3/4" (1.9 cm) stainless steel worm clamps	10
412	030412	1-3/8" (3.49 cm) stainless steel worm clamps	2
941	011941	#8 stainless steel lock washer	3
AA		1-3/8" x 50" (3.49 x 127 cm) aluminum tubing, slotted both ends	1
BB		1-1/4" x 50" (3.17 x 127 cm) aluminum tubing	2
EA		3/4" x 48" (1.9 x 121.9 cm) aluminum tubing slotted both ends	5
EB		5/8" x 40-1/2" (1.6 x 102.9 cm) aluminum tubing	2
EC		5/8" x 35-3/4" (1.6 x 90.8 cm) aluminum tubing	2
ED		5/8" x 33" (1.6 x 83.8 cm) aluminum tubing	2
EE		5/8" x 32-1/2" (1.6 x 82.5 cm) aluminum tubing	2
EF		5/8" x 32" (1.6 x 81.3 cm) aluminum tubing	2
CB		Connector Bracket	1
RM		Reddi Match tube Assembly	1

KEY	P/N	DISPLAY	DESC	SIZE	QTY
70	190070		MAST MT PLATE	4" X 6" (15.2 x 15.2 cm)	1
118	010118		HEX NUT	5/16" (.8 cm)	8
119	010119		LOCK WASHER	5/16" (.8 cm)	8
326	290326		DANGER LABEL		1
403	010403		U-BOLT	1-5/8" X 3" (4.13 cm x 7.62 cm)	2
404	010404		U-BOLT	2 1/8" x 3 3/4" (5.40 x 9.53 cm)	2

#4 - BOOM TO MAST ASSEMBLY

Mount the antenna to the mast at the location shown in Figures B and B-2. Mounting hardware is shown below (Figure E).

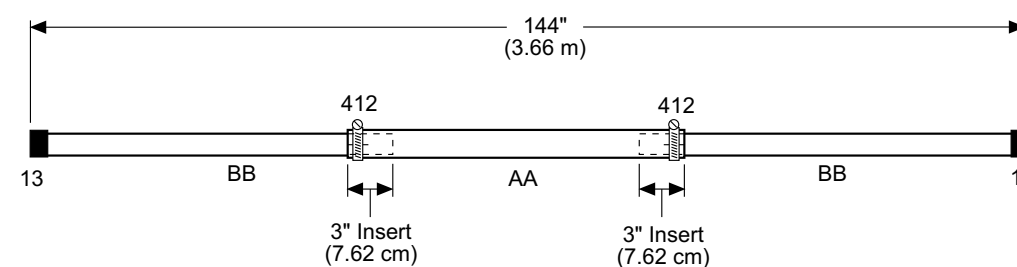
FIGURE E



#1 - BOOM ASSEMBLY

Place a mark 3 inches (7.6 cm) in from one end of the BB tubes. Next, place clamp (412) over the ends of the AA tube. Slide the BB tubes into AA up to the 3" mark, check overall dimension and if correct, tighten clamps. Slide on end caps (13).

FIGURE A



KEY	P/N	DISPLAY	DESC	SIZE	QTY	KEY	P/N	DISPLAY	DESC	SIZE	QTY
AA			ALUM TUBE	1-3/8" X 50" (3.5 x 127 cm)	1	13	050013		PLASTIC CAP	1-1/4" (3.8 cm)	2
BB			ALUM TUBING	1-1/4" x 50" (3.17 x 127 cm)	2	412	030412		TELESCOPE CLAMP	1-3/8" (3.5 cm)	2

#2 - ELEMENT ASSEMBLY & MOUNTING

The elements are made up of one pre-drilled and slotted 3/4" (1.9 cm) O.D. center tube and two pre-cut 5/8" (1.59 cm) O.D. end tubes. Assemble the elements using Figure B for horizontal polarization or Figure B-2 for vertical polarization. Slide the tuning strap (69) on one of the EA tubes. This will be the driven element #2. Place telescope clamps (409) loosely on the slotted ends of all EA tubes. Note that the EC tubes must be used with the EA tube on which you placed the tuning strap (69). Attach caps (27) to the end of each element. Mount the elements to the boom (Figure C). Refer to figure D for mounting the dipole element with the connector bracket. Mount the connector with the threads (socket) pointing to the mast mount. Adjust the antenna to your preferred portion of the 6 meter band using Table 1 if you've chosen horizontal polarization or Table 2 for vertical polarization. Tighten all connections.

FIGURE B
Horizontal Polarization

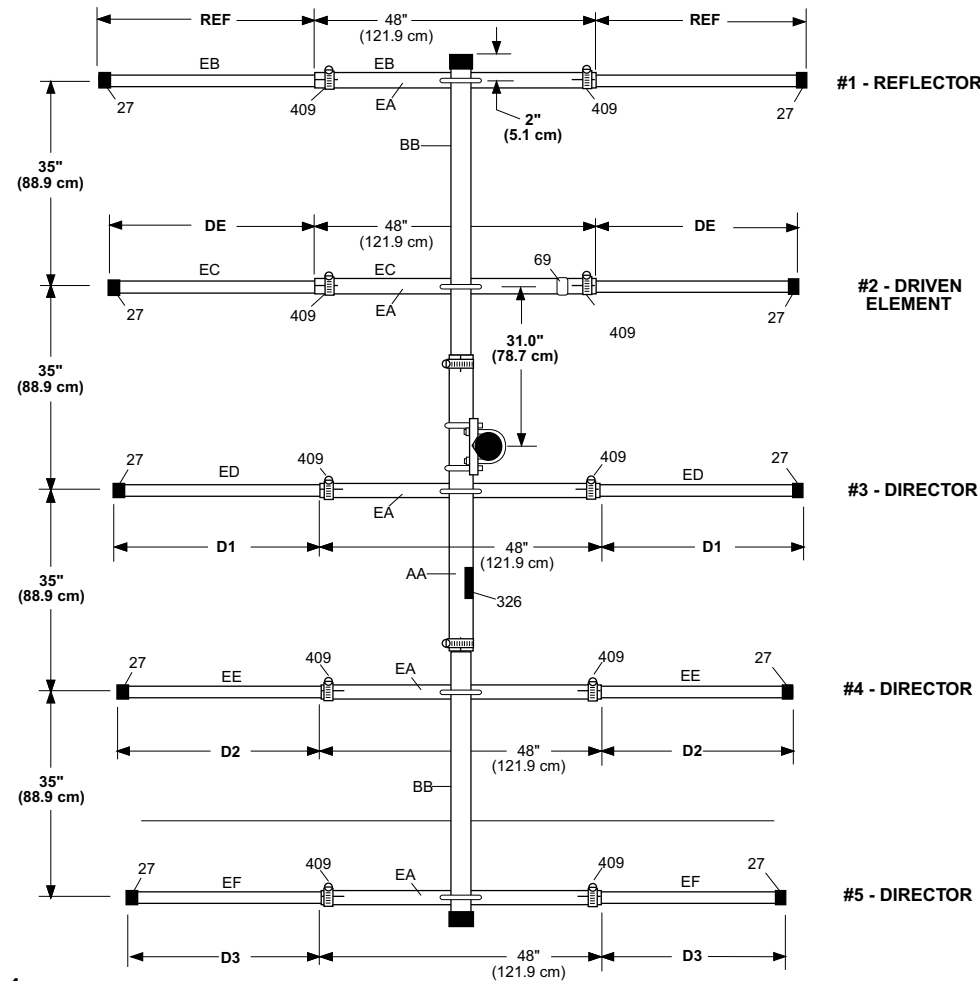


Table 1

Horizontal Polarization				
	50 MHz-	51.5 MHz-	53 MHz	
	51.5 MHz	53 MHz	54 MHz	
REF in.	35-1/8	34	32-1/8	
(cm)	(89.22)	(86.36)	(81.60)	
DE in.	31-3/4	28-3/8	26-7/8	
(cm)	(80.64)	(72.07)	(68.26)	
D1 in.	29-3/4	27	26-1/4	
(cm)	(75.56)	(68.58)	(66.67)	
D2 in.	29-3/4	24-7/8	24-5/8	
(cm)	(75.56)	(63.18)	(62.55)	
D3 in.	25-5/8	24-1/2	23-1/2	
(cm)	(65.09)	(62.23)	(59.69)	
Set in.	15-5/8	16-1/2	17	
(cm)	(39.69)	(41.91)	(43.18)	
X in.	1-7/8	3	3	
(cm)	(4.76)	(7.62)	(7.62)	

FRONT
↓

FIGURE C

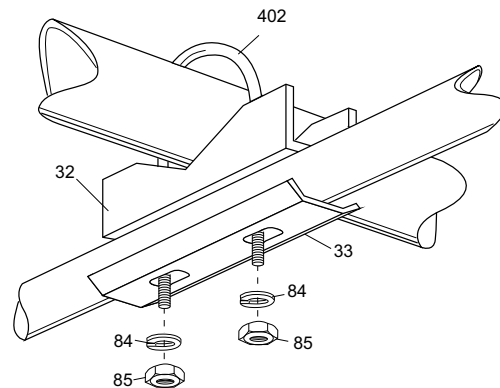


FIGURE B-2
(Vertical Polarization)

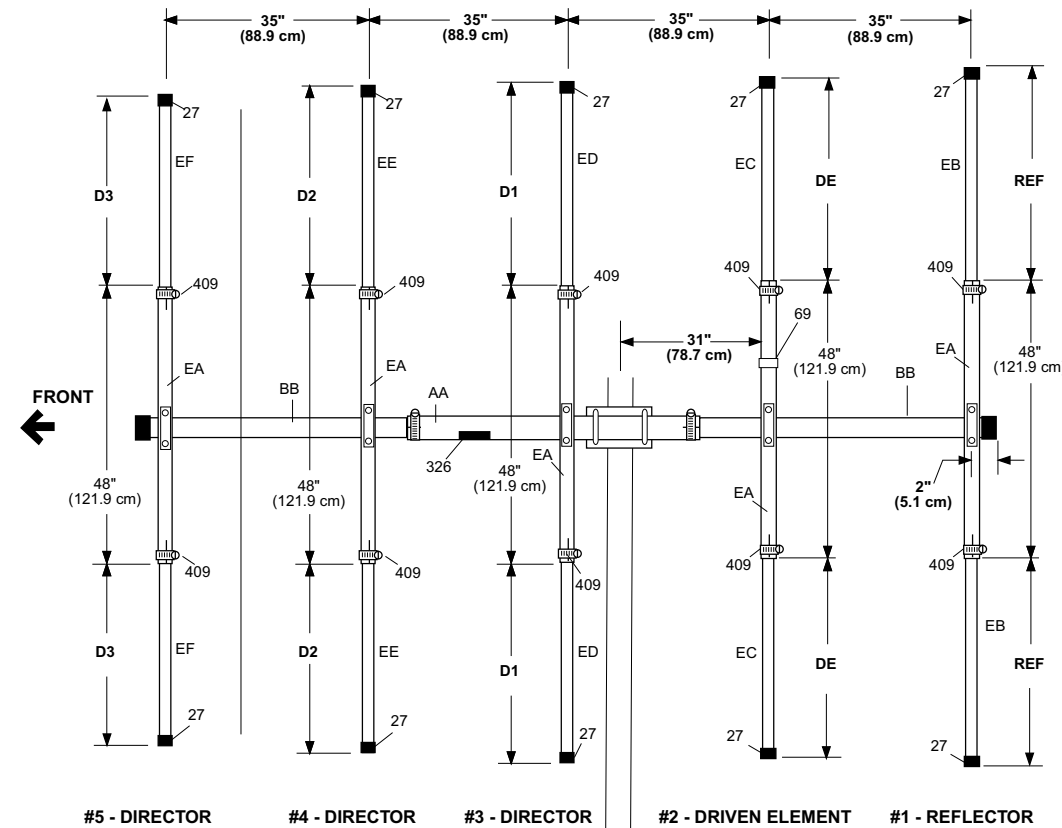


Table 2

Vertical Polarization				
	50 MHz-	51.5 MHz-	53 MHz	
	51.5 MHz	53 MHz	54 MHz	
REF in.	37-1/2	35-1/2	33-1/2	
(cm)	(95.25)	(90.17)	(85.09)	
DE in.	30-3/4	30-3/4	30-3/4	
(cm)	(78.10)	(78.10)	(78.10)	
D1 in.	30	28	26	
(cm)	(76.2)	(71.12)	(66.04)	
D2 in.	29-1/2	27-1/2	25-1/2	
(cm)	(74.93)	(69.85)	(64.77)	
D3 in.	29	27	25	
(cm)	(73.66)	(68.58)	(63.5)	
Set in.	15-5/8	15-5/8	18	
(cm)	(39.69)	(39.69)	(45.72)	
X in.	2	2	1-1/2	
(cm)	(5.08)	(5.08)	(3.81)	

KEY	P/N	DISPLAY	DESC	SIZE	QTY	KEY	P/N	DISPLAY	DESC	SIZE	QTY
EA			ALUM TUBING	3/4" x 48" (1.9 x 121.9 cm)	5	33	190033		BACKING PLATE	1-1/2" (3.8 cm)	4
EB			ALUM TUBING	5/8" x 40-1/2" (1.6 x 102.9 cm)	2	69	200069		TUNING STRAP		1
EC			ALUM TUBING	5/8" x 35-3/4" (1.6 x 90.8 cm)	2	85	010085		HEX NUT	1/4" (.63 cm)	10
ED			ALUM TUBING	5/8" x 33" (1.6 x 83.8 cm)	2	84	010084		LOCK WASHER	1/4" (.63 cm)	10
EE			ALUM TUBING	5/8" x 32-1/2" (1.6 x 82.5 cm)	2	326	290326		DANGER LABEL		1
EF			ALUM TUBING	5/8" x 32" (1.6 x 81.3 cm)	2	402	010402		U-BOLT	1-1/2" (3.8 cm)	5
27	050027		PLASTIC CAP	5/8" (1.59 cm)	10	409	030409		WORM CLAMP	3/4" (1.9 cm)	10
32	190032		U-BOLT BRACKET	1-1/2" (3.8 cm)	5						