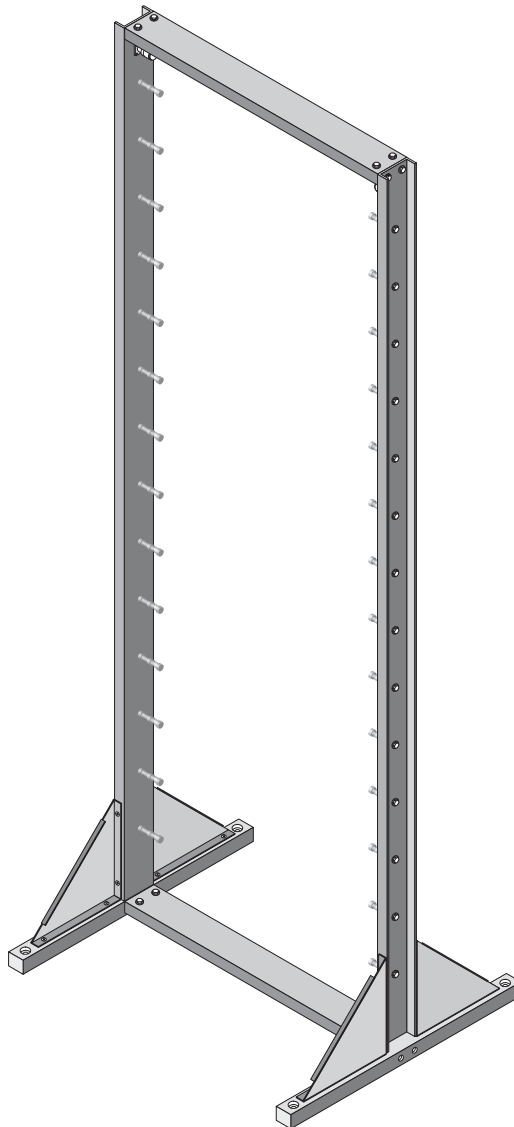




Instruction Manual for Peg Rack Assembly

Manual Part Number

7-9188



Warranty

This warranty applies for one year from shipping date.

TX RX Systems Inc. warrants its products to be free from defect in material and workmanship at the time of shipment. Our obligation under warranty is limited to replacement or repair, at our option, of any such products that shall have been defective at the time of manufacture. **TX RX Systems Inc.** reserves the right to replace with merchandise of equal performance although not identical in every way to that originally sold. **TX RX Systems Inc.** is not liable for damage caused by lightning or other natural disasters. No product will be accepted for repair or replacement without our prior written approval. The purchaser must prepay all shipping charges on returned products. **TX RX Systems Inc.** shall in no event be liable for consequential damages, installation costs or expense of any nature resulting from the purchase or use of products, whether or not they are used in accordance with instructions. This warranty is in lieu of all other warranties, either expressed or implied, including any implied warranty or merchantability of fitness. No representative is authorized to assume for **TX RX Systems Inc.** any other liability or warranty than set forth above in connection with our products or services.

TERMS AND CONDITIONS OF SALE

PRICES AND TERMS:

Prices are FOB seller's plant in Angola, NY domestic packaging only, and are subject to change without notice. Federal, State and local sales or excise taxes are not included in prices. When Net 30 terms are applicable, payment is due within 30 days of invoice date. All orders are subject to a \$100.00 net minimum.

QUOTATIONS:

Only written quotations are valid.

ACCEPTANCE OF ORDERS:

Acceptance of orders is valid only when so acknowledged in writing by the seller.

SHIPPING:

Unless otherwise agreed at the time the order is placed, seller reserves the right to make partial shipments for which payment shall be made in accordance with seller's stated terms. Shipments are made with transportation charges collect unless otherwise specified by the buyer. Seller's best judgement will be used in routing, except that buyer's routing is used where practicable. The seller is not responsible for selection of most economical or timeliest routing.

CLAIMS:

All claims for damage or loss in transit must be made promptly by the buyer against the carrier. All claims for shortages must be made within 30 days after date of shipment of material from the seller's plant.

SPECIFICATION CHANGES OR MODIFICATIONS:

All designs and specifications of seller's products are subject to change without notice provided the changes or modifications do not affect performance.

RETURN MATERIAL:

Product or material may be returned for credit only after written authorization from the seller, as to which seller shall have sole discretion. In the event of such authorization, credit given shall not exceed 80 percent of the original purchase. In no case will Seller authorize return of material more than 90 days after shipment from Seller's plant. Credit for returned material is issued by the Seller only to the original purchaser.

ORDER CANCELLATION OR ALTERATION:

Cancellation or alteration of acknowledged orders by the buyer will be accepted only on terms that protect the seller against loss.

NON WARRANTY REPAIRS AND RETURN WORK:

Consult seller's plant for pricing. Buyer must prepay all transportation charges to seller's plant. Standard shipping policy set forth above shall apply with respect to return shipment from TX RX Systems Inc. to buyer.

DISCLAIMER

Product part numbering in photographs and drawings is accurate at time of printing. Part number labels on TX RX products supersede part numbers given within this manual. Information is subject to change without notice.

Manual Part Number 7-9188 Copyright © 1998 TX RX Systems, Inc. First Printing: January 1998	
Version Number	Version Date
1	01/27/98

Symbols Commonly Used



WARNING



ESD Electrostatic Discharge



CAUTION or ATTENTION



Hot Surface



High Voltage



Electrical Shock Hazard



Use Safety Glasses



Important Information

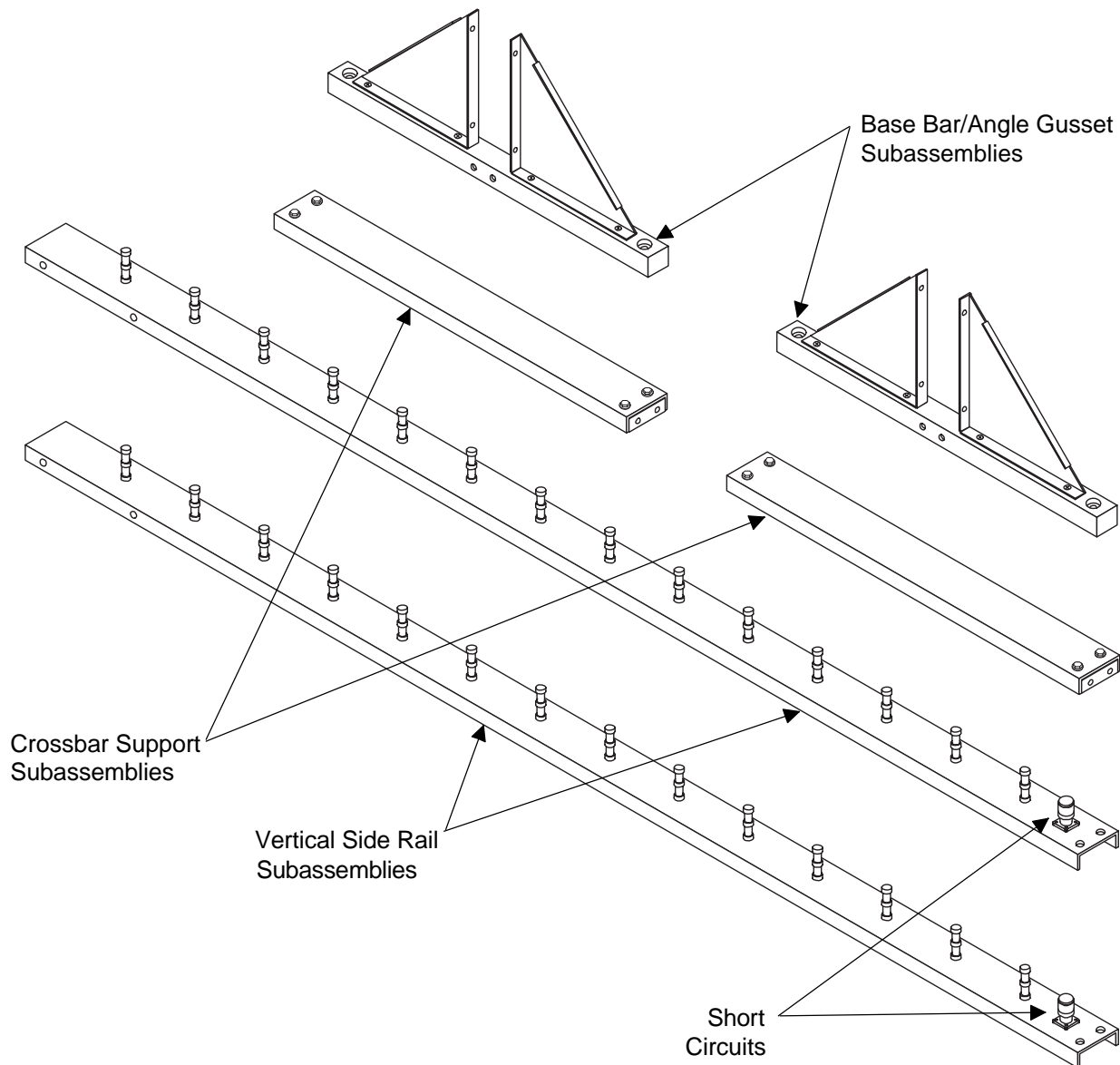
INTRODUCTION

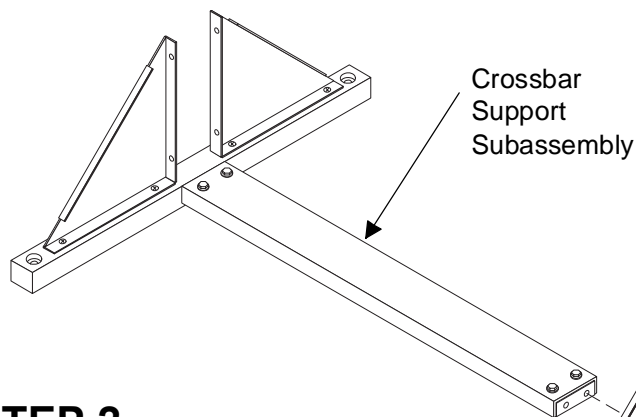
All T-pass racks are assembled following the basic procedures in this manual. Rack construction will vary in height and depth (between vertical side rails) and also peg spacing for cavity size.

All racks use one common row of support pegs to support two rows of cavities. Consult the particular system mounting instructions for rotational orientation of cavities for optimum cabling.

STEP 1

Make sure there are six subassemblies and one hardware kit.



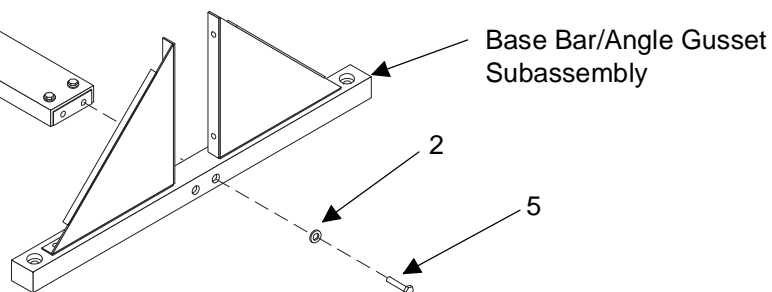


ITEM NO.	PART #	QTY	DESCRIPTION
1	8-6018	8	10-32 STAINLESS STEEL KEP NUT(TITELOCK)
2	8-6026	8	1/4" SS FLAT WASHER, 5/8"OD .062" TK
3	8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
4	8-6099	4	1/4-28 X 1/2"SS HHMS,W/CHAMPHERED.TIP
5	8-6372	4	1/4-28 X 1-1/2 SS HHMS,W/CHAMPHERED TIP

Table 1. Hardware Kit for Peg Rack

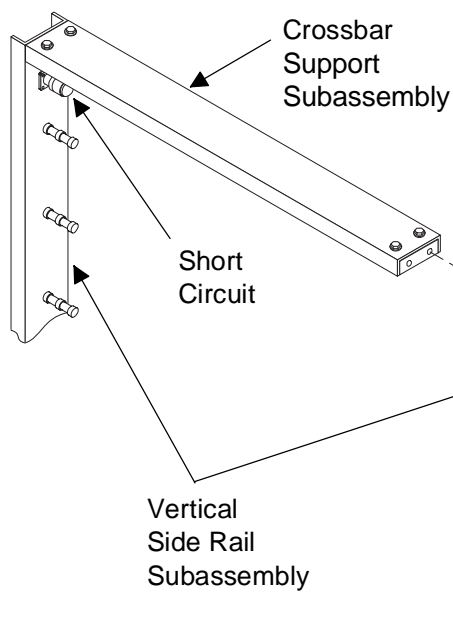
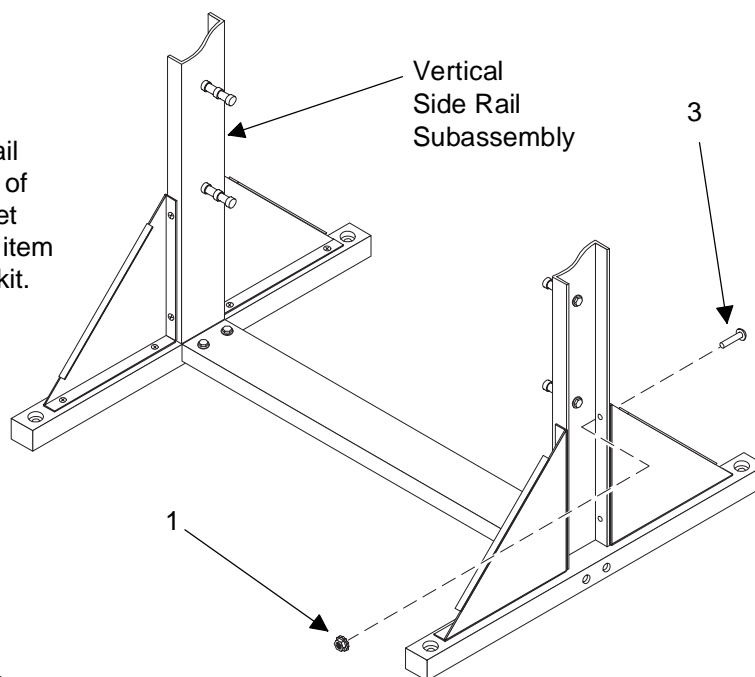
STEP 2

Assemble two base bar/angle gusset subassemblies to one crossbar support subassembly using 4 each item 2 and item 5 from hardware kit as listed in Table 1.



STEP 3

Assemble two vertical side rail subassemblies. One to each of the two base bar/angle gusset subassemblies using 8 each item 3 and item 1 from hardware kit.



STEP 4

Assemble one crossbar support subassembly at the top of the two vertical side rail subassemblies using 4 each item 4 and item 2 from hardware kit.

93-00-02**Rack, Peg style for (15) 6" dia x 13" cavities**

PART #	QTY	DESCRIPTION
1-1727	32	PEG FOR TXRX RACK
1-1772	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-02
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1890	2	VERT SIDE RAIL 63.75" PEG RACK 93-00-02
1-8188	2	BASE BAR (SOLID)
3-1792	4	RACK ANGLE FOR PEG RACKS
3-2330	1	CABLE, SHORT CIRCUIT T-PASS 800 MHZ
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	1	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLTD.
8-6002	2	4-40 x 3/8 SS BHMS
8-6005	2	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	40	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	40	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-10**Rack, Peg style for (20) 6" dia x 13" cavities**

PART #	QTY	DESCRIPTION
1-1727	44	PEG FOR TXRX RACK
1-1772	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-02
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-2237	2	VERT SIDE RAIL 84.75" PEG RACK 93-00-05
1-8188	2	BASE BAR (SOLID)
3-1792	4	RACK ANGLE FOR PEG RACKS
3-2330	1	CABLE, SHORT CIRCUIT T-PASS 800 MHZ
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	1	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLTD.
8-6002	2	4-40 x 3/8 SS BHMS
8-6005	2	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	52	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	52	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-04**Rack, Peg style for (15) 6" dia x 11.5" cavities**

PART #	QTY	DESCRIPTION
1-1727	32	PEG FOR TXRX RACK
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1890	2	VERT SIDE RAIL 63.75" PEG RACK 93-00-02
1-2149	2	UP/LOW CROSSBAR SUPPORT PEG RK 93-00-04
1-8188	2	BASE BAR (SOLID)
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLTD.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)

8-6021	8	1/4-28 SS HEX NUT
8-6026	40	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	40	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-13**Rack, Peg style for (20) 6" dia x 20" fan cavities**

PART #	QTY	DESCRIPTION
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-2237	2	VERT SIDE RAIL 84.75" PEG RACK 93-00-05
1-3945	2	UP/LOW CROSSBAR SUPPORT PEG RK 5/4WV CAV
1-5912	44	RACK PEG, 6" 900 MHZ CAVS
1-8188	2	BASE BAR (SOLID)
3-1792	4	RACK ANGLE FOR PEG RACKS
3-2330	1	CABLE, SHORT CIRCUIT T-PASS 800 MHZ
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	1	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLTD.
8-6002	2	4-40 x 3/8 SS BHMS
8-6005	2	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	52	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	52	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-17**Rack, Peg style for (15) 6" dia x 20" fan cavities**

PART #	QTY	DESCRIPTION
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1890	2	VERT SIDE RAIL 63.75" PEG RACK 93-00-02
1-3945	2	UP/LOW CROSSBAR SUPPORT PEG RK 5/4WV CAV
1-5912	32	RACK PEG, 6" 900 MHZ CAVS
1-8188	2	BASE BAR (SOLID)
3-1792	4	RACK ANGLE FOR PEG RACKS
3-2330	1	CABLE, SHORT CIRCUIT T-PASS 800 MHZ
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	1	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLTD.
8-6002	2	4-40 x 3/8 SS BHMS
8-6005	2	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	40	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	40	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-08**Rack, Peg style for (20) 6" dia x 26" cavities**

PART #	QTY	DESCRIPTION
1-1727	44	PEG FOR TXRX RACK
1-1762	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-01
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-2237	2	VERT SIDE RAIL 84.75" PEG RACK 93-00-05
1-8188	2	BASE BAR (SOLID)
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT

3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	52	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	52	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-09

Rack, Peg style for (15) 6" dia x 26" cavities

PART #	QTY	DESCRIPTION
1-1727	32	PEG FOR TXRX RACK
1-1762	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-01
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1890	2	VERT SIDE RAIL 63.75" PEG RACK 93-00-02
1-8188	2	BASE BAR (SOLID)
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	40	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	40	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-11

Rack, Peg style for (19) 10" dia x 26" cavities

PART #	QTY	DESCRIPTION
1-1727	40	PEG FOR TXRX RACK
1-1762	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-01
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-3014	2	VERTICAL SIDE RAIL, PEG RACK 93-00-11
1-8188	2	BASE BAR (SOLID)
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6021	8	1/4-28 SS HEX NUT
8-6026	48	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	48	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-01

Rack, Peg style for (13) 10" dia x 26" cavities

PART #	QTY	DESCRIPTION
1-1727	28	PEG FOR TXRX RACK
1-1762	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-01
1-1782	4	ANGLE GUSSET FOR PEG RACKS

1-1834	2	VERT SIDE RAIL 78" PEG RACK 93-00-01
1-8188	2	BASE BAR (SOLID)
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	36	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	36	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

93-00-20

Rack, Peg style for (15) 6" dia x 17" cavities

PART #	QTY	DESCRIPTION
1-1727	32	PEG FOR TXRX RACK
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1890	2	VERT SIDE RAIL 63.75" PEG RACK 93-00-02
1-8188	2	BASE BAR (SOLID)
1-8450	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-20
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	40	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	40	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

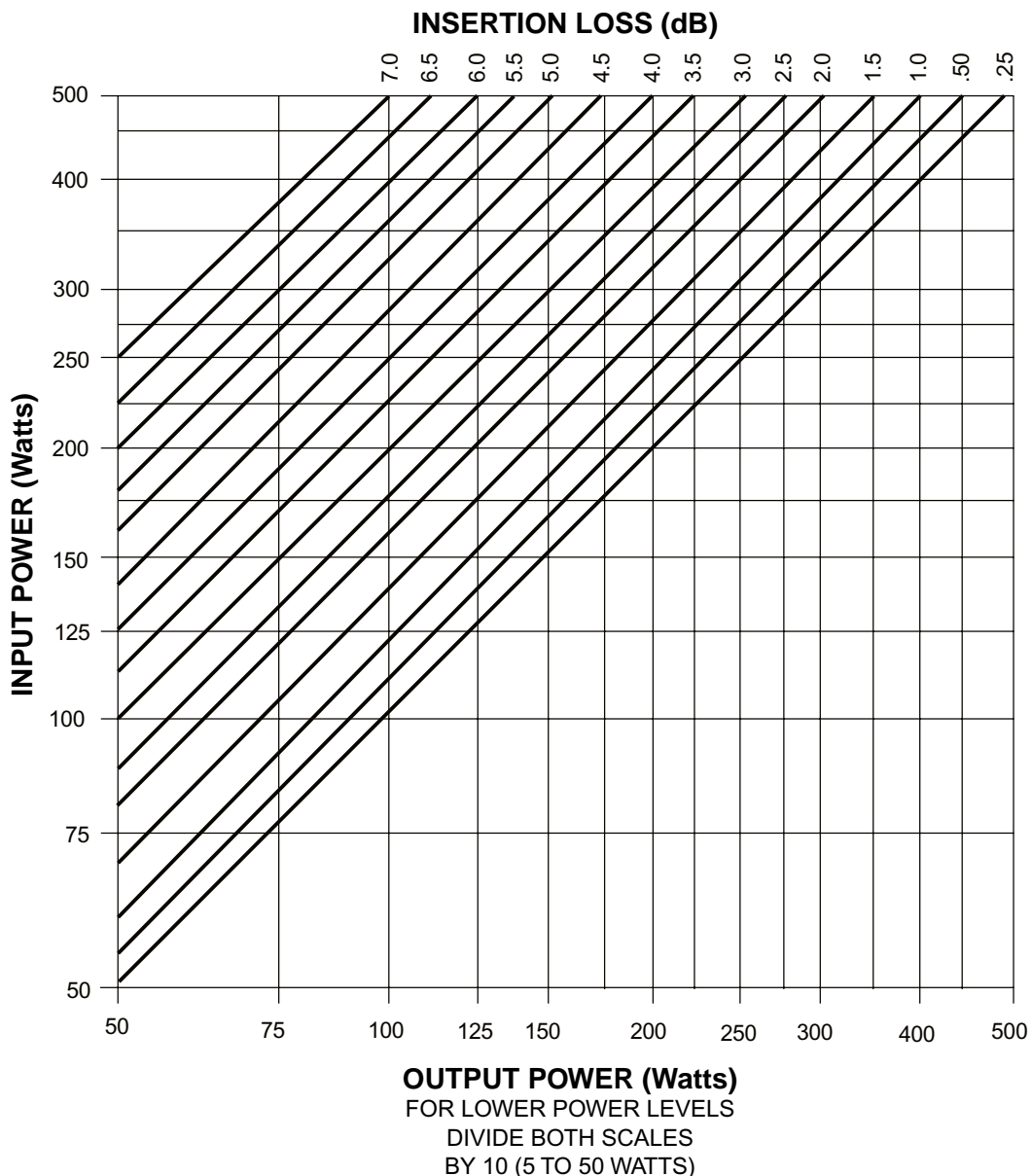
93-00-21

Rack, Peg style for (13) 10" dia x 19" cavities

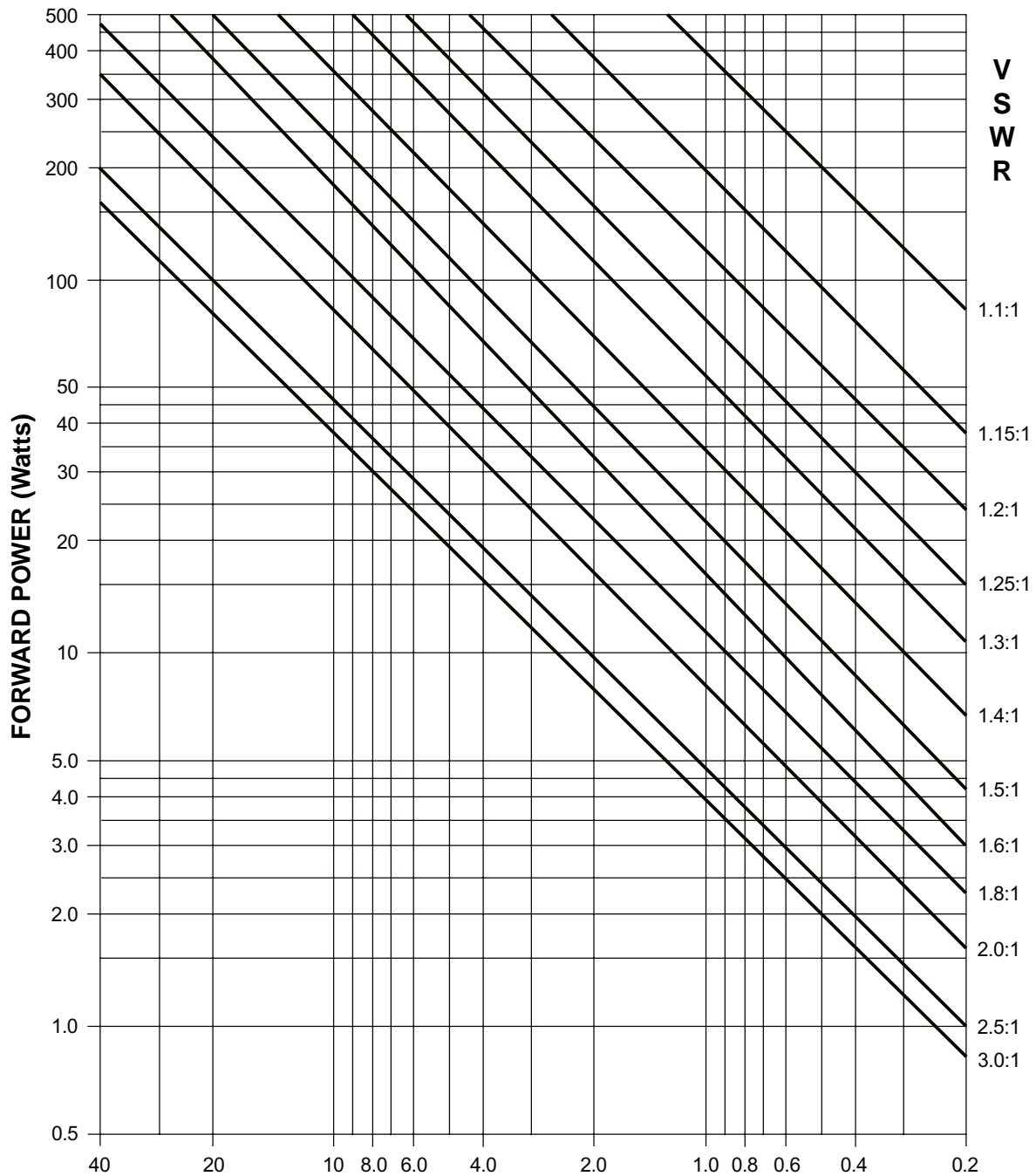
PART #	QTY	DESCRIPTION
1-1727	28	PEG FOR TXRX RACK
1-1782	4	ANGLE GUSSET FOR PEG RACKS
1-1834	2	VERT SIDE RAIL 78" PEG RACK 93-00-01
1-8188	2	BASE BAR (SOLID)
1-8451	2	LOWER CROSSBAR SUPPORT PEG RACK 93-00-21
3-1268	2	SHORT CIRCUIT FOR UHF & VHF TP MULT
3-1792	4	RACK ANGLE FOR PEG RACKS
3-6430	1	HARDWARE KIT FOR PEG RACKS
8-5890	2	UG-58A/U N FLG.BLKHD.BODY ASSY,SIL.PLT.D.
8-6002	4	4-40 x 3/8 SS BHMS
8-6005	4	4-40 STAINLESS STEEL KEP NUT(TITELOCK)
8-6021	8	1/4-28 SS HEX NUT
8-6026	36	1/4" SS FLAT WASHER, 5/8"OD .062" TK
8-6076	8	10-32 x 3/8" SS THMS PHILLIPS
8-6099	36	1/4-28 X 1/2"SS HHMS,W/CHAMPHER'D.TIP

POWER IN/OUT VS INSERTION LOSS

The graph below offers a convenient means of determining the insertion loss of filters, duplexers, multicouplers and related products. The graph on the back page will allow you to quickly determine VSWR. It should be remembered that the field accuracy of wattmeter readings is subject to considerable variance due to RF connector VSWR and basic wattmeter accuracy, particularly at low end scale readings. However, allowing for these variances, these graphs should prove to be a useful reference.



POWER FWD./REV. VS VSWR



REFLECTED POWER (Watts)

FOR OTHER POWER LEVELS
MULTIPLY BOTH SCALES
BY THE SAME MULTIPLIER

Return Loss vs. VSWR

Return Loss	VSWR
30	1.06
25	1.11
20	1.20
19	1.25
18	1.28
17	1.33
16	1.37
15	1.43
14	1.50
13	1.57
12	1.67
11	1.78
10	1.92
9	2.10

Watts to dBm

Watts	dBm
300	54.8
250	54.0
200	53.0
150	51.8
100	50.0
75	48.8
50	47.0
25	44.0
20	43.0
15	41.8
10	40.0
5	37.0
4	36.0
3	34.8
2	33.0
1	30.0

$\text{dBm} = 10\log P/1\text{mW}$
Where P = power (Watt)

Insertion Loss

Input Power (Watts)

		50	75	100	125	150	200	250	300
Insertion Loss	3	25	38	50	63	75	100	125	150
	2.5	28	42	56	70	84	112	141	169
	2	32	47	63	79	95	126	158	189
	1.5	35	53	71	88	106	142	177	212
	1	40	60	79	99	119	159	199	238
	.5	45	67	89	111	134	178	223	267

Output Power (Watts)

Free Space Loss

Distance (miles)

	.25	.50	.75	1	2	5	10	15	
Frequency (MHz)	150	68	74	78	80	86	94	100	104
	220	71	77	81	83	89	97	103	107
	460	78	84	87	90	96	104	110	113
	860	83	89	93	95	101	109	115	119
	940	84	90	94	96	102	110	116	120
	1920	90	96	100	102	108	116	122	126

Free Space Loss (dB)

Free space loss = $36.6 + 20\log D + 20\log F$
Where D = distance in miles and F = frequency in MHz

