

## VHF T-Pass Expandable Transmitter Combiners 118-174 MHz

TX RX Systems T-pass Transmitter Combiners utilize three-port bandpass cavities and dual ferrite isolators that are designed to be easily expandable while providing all the benefits of ordinary cavity combiners. Expansion can usually be accomplished without modification to the existing system by simply connecting one of our factory-tuned expansion channel assemblies. The T-pass cavity along with a frequency dependent, length-critical cable makes each channel "see" only the antenna and not the other channels. The combiners are capable of operating over the entire 118-136 or 132-174 MHz frequency range, and additional cavities can be connected between the isolator and T-pass filter to customize channel frequency response to system requirements. This flexibility of design makes our T-pass Transmitter Combiners perfect for complex VHF frequency assignments. For system requirements that go beyond our standard models, contact TX RX Systems for a customized design.

### FEATURES

- ▶ Mechanically and electrically designed for ease of expansion and broadband operation, and inherent flexibility allows for additional filtering and customized configurations
- ▶ Systems are built with our rugged, high quality cavities: Invar-based temperature compensation, adjustable silver-plated coupling loops, heavy-gauge aluminum outer conductors, thick heliarc-welded cavity top plates, and heavy silver plating on microfinished tuning assemblies
- ▶ 6.625" (168 mm) and 10" (254 mm) diameter cavity options
- ▶ Includes dual ferrite isolators: 5W/25W, 5W/60W, and 5W/100W options
- ▶ Low insertion loss, high Tx-Tx and high Ant-Tx isolation gives predictable system performance
- ▶ High intermodulation suppression and excellent transmitter noise suppression
- ▶ Long-term product dependability and customer support
- ▶ Compact Peg-Rack mounting securely holds up to fifteen 6.625" (168 mm) or twelve 10" (254 mm) cavities. 19" mounting option available

### TX RX Systems Inc.

8625 Industrial Pkwy, Angola, NY 14006  
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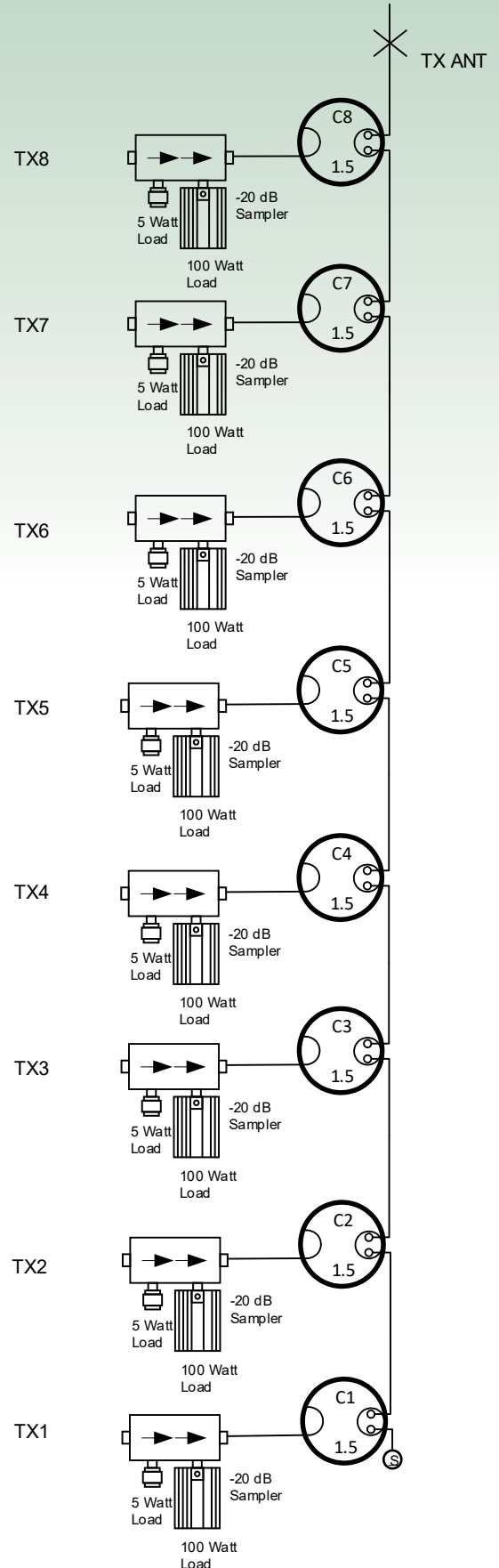
## SPECIFICATIONS

Frequency Range Options	118-136 MHz 132-174 MHz
Cavity Type	Quarterwave
Cavity Diameter Options	6.625" (168 mm) 10" (254 mm)
Maximum Continuous Transmit Power	See table for specific model
Continuous Isolator Load Power	See Model Matrix
Minimum Tx-Tx Separation	See Model Matrix
Typical Tx-Tx Isolation at Minimum Separation	-70 dB
Typical Antenna-Tx Isolation	-60 dB
Typical Tx Noise Suppression	See curves for specific model
Nominal Input Impedance	50 Ohms
Maximum Input Return Loss (VSWR)	-20 dB (1.22:1)
Temperature Range	-30° C to +60° C
Connectors, Input & Antenna	N-female
Mechanical Mounting Options (add -MR or -LR to end of model number)	<b>Default:</b> Peg-Rack <b>-MC*:</b> 19" rack mount adaptor plates, 17.5" (184.25 mm) high <b>-LR:</b> System supplied without Peg-Rack
Maximum Channels per Rack	Fifteen 6.625" (168 mm) channels Twelve 10" (254 mm) channels
Dimensions	See Model Matrix
Weight	See Model Matrix

\*Note: -MC option reduces maximum number of channels to ten 10" or twelve 6.625" channels per rack.

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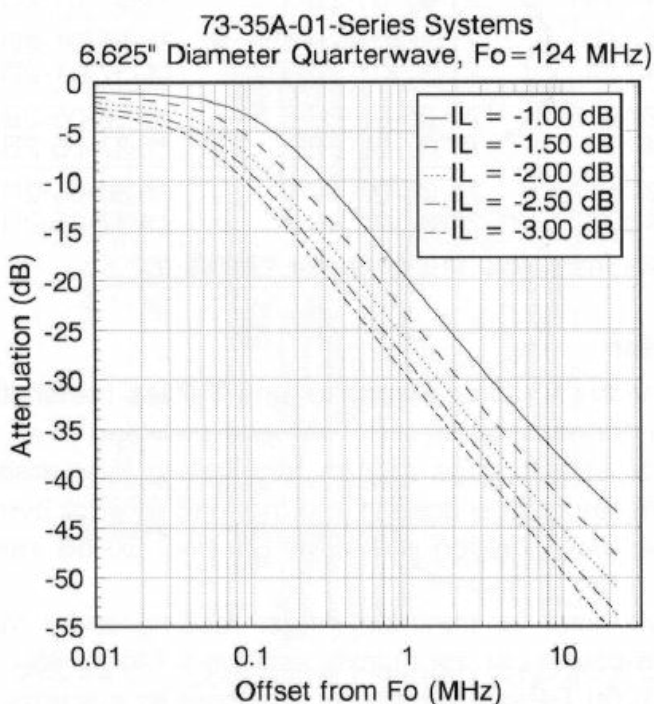
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Example of model 73-38-01-2D-08

## Model Matrix

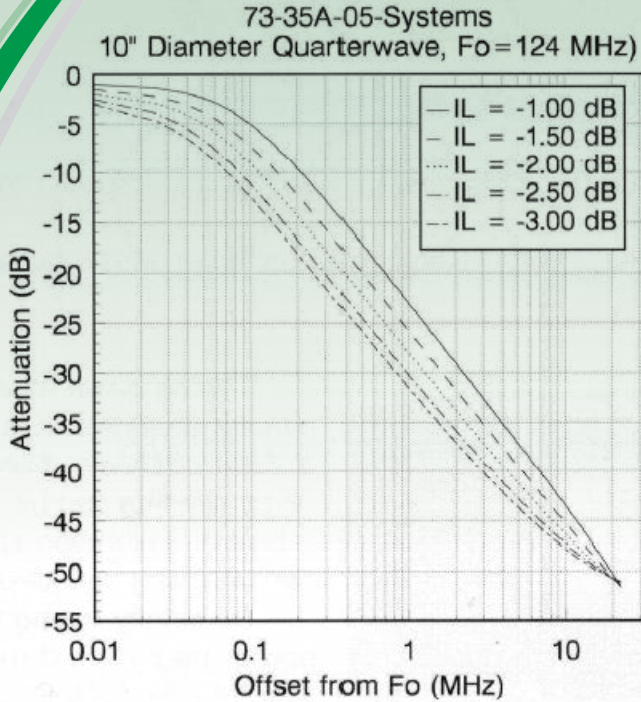
Model Number	Cavity Diameter, in (mm)	Isolator Power (W)	Isolator Load Power	Frequency Range (MHz)	Minimum Tx-Tx Separation at Cavity Loss	Dimensions (HWD)	Weight
73-35A-01-2B-nn	6.625" (168)	150	5W / 25W	118-136	100 kHz @ -1.5dB 60 kHz @ -2.5 dB	65.25" x 24" x 40.25" (1659 x 610 x 1022 mm)	38 lbs (17.2 kg)
73-35A-01-2C-nn	6.625" (168)	150	5W/ 60W	118-136	100 kHz @ -1.5dB 60 kHz @ -2.5 dB	65.25" x 24" x 40.25" (1659 x 610 x 1022 mm)	38.5 lbs (17.5 kg)
73-35A-01-2D-nn	6.625" (168)	150	5W / 100W	118-136	100 kHz @ -1.5dB 60 kHz @ -2.5 dB	65.25" x 24" x 40.25" (1659 x 610 x 1022 mm)	39 lbs (17.7 kg)
73-35A-05-2B-nn	10" (254)	150	5W / 25W	118-136	80 kHz @ -1.5 dB 45 kHz @ -2.5. dB	79.5" x 24" x 42.5" (2019 x 610 x 1080 mm)	44 lbs (19.9 kg)
73-35A-05-2C-nn	10" (254)	150	5W/ 60W	118-136	80 kHz @ -1.5 dB 45 kHz @ -2.5. dB	79.5" x 24" x 42.5" (2019 x 610 x 1080 mm)	44.5 lbs (20.2 kg)
73-35A-05-2D-nn	10" (254)	150	5W / 100W	118-136	80 kHz @ -1.5 dB 45 kHz @ -2.5. dB	79.5" x 24" x 42.5" (2019 x 610 x 1080 mm)	45 lbs (20.4 kg)
73-38-01-2B-nn	6.625" (168)	150	5W / 25W	132-174	125 kHz @ -1.5 dB 75 kHz @ -2.5 dB	65.25" x 24" x 36.6" (1659 x 610 x 937 mm)	33 lbs (15.0 kg)
73-38-01-2C-nn	6.625" (168)	150	5W/ 60W	132-174	125 kHz @ -1.5 dB 75 kHz @ -2.5 dB	65.25" x 24" x 36.6" (1659 x 610 x 937 mm)	35 lbs (15.9 kg)
73-38-01-2D-nn	6.625" (168)	150	5W / 100W	132-174	125 kHz @ -1.5 dB 75 kHz @ -2.5 dB	65.25" x 24" x 36.6" (1659 x 610 x 937 mm)	37 lbs (16.8 kg)
73-38-05-2B-nn	10" (254)	150	5W / 25W	132-174	95 kHz @ -1.5 dB 50 kHz @ -2.5 dB	79.5" x 24" x 36.9" (2019 x 610 x 937 mm)	41 lbs (18.6 kg)
73-38-05-2C-nn	10" (254)	150	5W/ 60W	132-174	95 kHz @ -1.5 dB 50 kHz @ -2.5 dB	79.5" x 24" x 36.9" (2019 x 610 x 937 mm)	41.5 lbs (18.8 kg)
73-38-05-2D-nn	10" (254)	150	5W / 100W	132-174	95 kHz @ -1.5 dB 50 kHz @ -2.5 dB	79.5" x 24" x 36.9" (2019 x 610 x 937 mm)	42 lbs (19.0 kg)



73-35A-01 Series Systems (6.625" Cavity Diameter)						
Tx-to-Tx Separation	Cavity Loss (dB)	Max Power	Loss (dB) vs. No. of Channels			
			2	4	8	12
1 MHz	-1.5	150W	-2.6	-2.7	-3.0	-3.3
250 kHz			-2.7	-3.0	-3.3	-3.6
100 kHz			-3.2	-4.0	-4.7	-5.1
75 kHz	-2.0	135W	-3.6	-4.5	-5.2	-5.6
50 kHz			Use 10" cavities at this separation			

(Above) For 118-136 MHz systems (above): typical insertion loss and maximum input power as a function of Tx-Tx separation, cavity loss setting, and number of channels

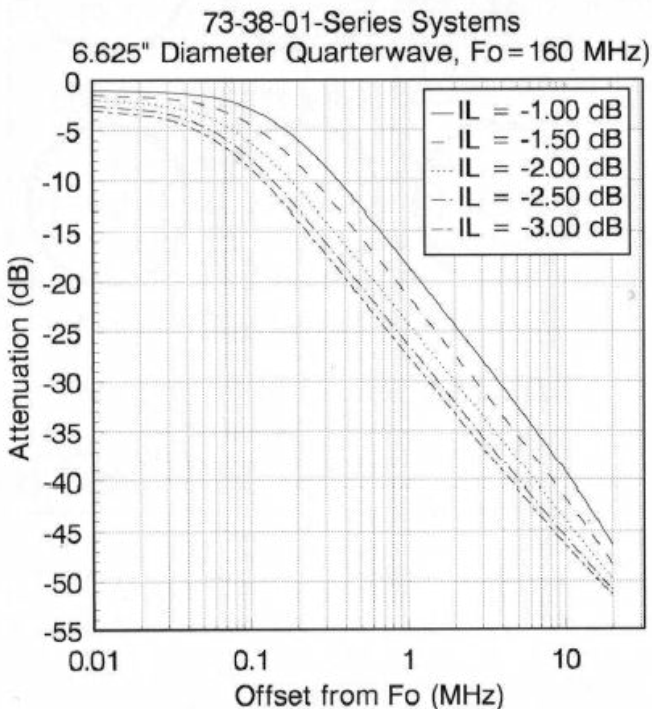
(Left) For 118-136 MHz systems: typical Tx noise attenuation vs. offset from frequency and insertion loss setting



73-35A-05 Series Systems (10" Cavity Diameter)						
Tx-to-Tx Separation	Cavity Loss (dB)	Max Power	Loss (dB) vs. No. of Channels			
			2	4	8	12
1 MHz	-1.5	150W	-2.6	-2.7	-3.0	-3.3
250 kHz			-2.7	-2.9	-3.1	-3.4
100 kHz			-2.9	-3.6	-4.0	-4.4
75 kHz	-2.0	135W	-3.5	-4.1	-4.6	-4.9
50 kHz	-2.5	130W	-4.1	-4.8	-5.4	-5.7

(Above) For 118-136 MHz systems (above): typical insertion loss and maximum input power as a function of Tx-Tx separation, cavity loss setting, and number of channels

(Left) For 118-136 MHz systems: typical Tx noise attenuation vs. offset from frequency and insertion loss setting



73-38-01 Series Systems (6.625" Cavity Diameter)						
Tx-to-Tx Separation	Cavity Loss (dB)	Max Power	Loss (dB) vs. No. of Channels			
			2	4	8	12
1 MHz	-1.5	150W	-2.6	-2.7	-3.0	-3.3
125 kHz			-3.3	-4.5	-5.3	-5.7
100 kHz	-2.0	135W	-3.6	-4.5	-5.2	-5.5
75 kHz	-2.0	115W	-4.3	-5.4	-6.2	-6.7
50 kHz	Use 10" cavities at this separation					

(Above) For 132-174 MHz systems (above): typical insertion loss and maximum input power as a function of Tx-Tx separation, cavity loss setting, and number of channels

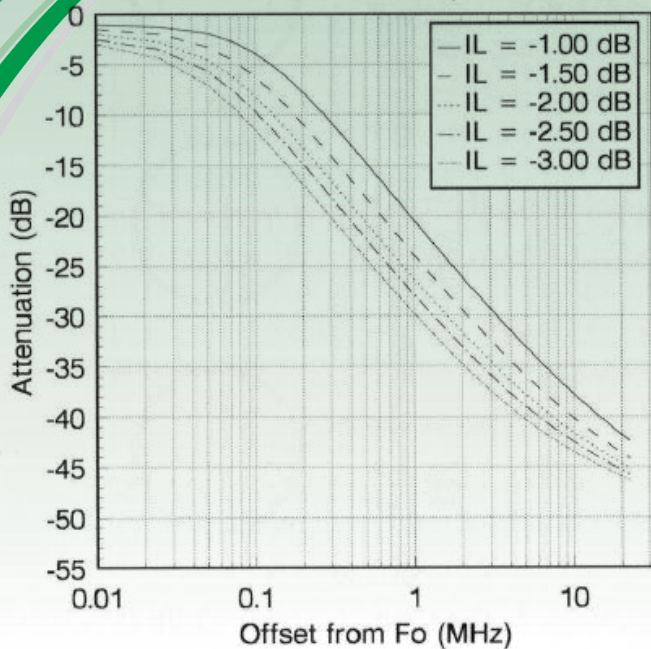
(Left) For 132-174 MHz systems: typical Tx noise attenuation vs. offset from frequency and insertion loss setting

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### 73-38-05-Series Systems

10" Diameter Quarterwave, Fo = 160 MHz



73-38-05 Series Systems (10" Cavity Diameter)						
Tx-to-Tx Separation	Cavity Loss (dB)	Max Power	Loss (dB) vs. No. of Channels			
			2	4	8	12
1 MHz	-1.5	150W	-2.6	-2.7	-2.9	-3.1
125 kHz			-2.9	-3.4	-3.8	-4.0
100 kHz			-3.0	-3.7	-4.2	-4.5
75 kHz	-2.0	150W	-3.5	-4.2	-4.7	-5.0
50 kHz	-2.5	130W	-4.1	-5.0	-5.7	-6.1

(Above) For 132-174 MHz systems (above): typical insertion loss and maximum input power as a function of Tx-Tx separation, cavity loss setting, and number of channels

(Left) For 132-174 MHz systems: typical Tx noise attenuation vs. offset from frequency and insertion loss setting

## EXPANSION CHANNEL GUIDE

T-pass Combiner Model Number	Cavity Diameter, in (mm)	Isolator Loads	Frequency Range	Expansion Channel Model Number	Starter Channel Model Number*
73-35A-01-2B-nn	6.625" (168)	5W / 25W	118-136	21-35A-01-2B-T	21-35A-01-2B-TS
73-35A-01-2C-nn	6.625" (168)	5W/ 60W	118-136	21-35A-01-2C-T	21-35A-01-2C-TS
73-35A-01-2D-nn	6.625" (168)	5W / 100W	118-136	21-35A-01-2D-T	21-35A-01-2D-TS
73-35A-05-2B-nn	10" (254)	5W / 25W	118-136	21-35A-05-2B-T	21-35A-05-2B-TS
73-35A-05-2C-nn	10" (254)	5W/ 60W	118-136	21-35A-05-2C-T	21-35A-05-2C-TS
73-35A-05-2D-nn	10" (254)	5W / 100W	118-136	21-35A-05-2D-T	21-35A-05-2D-TS
73-38-01-2B-nn	6.625 (168)	5W / 25W	132-150 144-174	21-36-01-2B-T 21-37-01-2B-T	21-36-01-2B-TS 21-37-01-2B-TS
73-38-01-2C-nn	6.625 (168)	5W/ 60W	132-150 144-174	21-36-01-2C-T 21-37-01-2C-T	21-36-01-2C-TS 21-37-01-2C-TS
73-38-01-2D-nn	6.625 (168)	5W / 100W	132-150 144-174	21-36-01-2D-T 21-37-01-2D-T	21-36-01-2D-TS 21-37-01-2D-TS
73-38-05-2B-nn	10" (254)	5W / 25W	132-150 144-174	21-36-05-2B-T 21-37-05-2B-T	21-36-05-2B-TS 21-37-05-2B-TS
73-38-05-2C-nn	10" (254)	5W/ 60W	132-150 144-174	21-36-05-2C-T 21-37-05-2C-T	21-36-05-2C-TS 21-37-05-2C-TS
73-38-05-2D-nn	10" (254)	5W / 100W	132-150 144-174	21-36-05-2D-T 21-37-05-2D-T	21-36-05-2D-TS 21-37-05-2D-TS

\* Starter channels are provided with a short circuit on the T-pass loop



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