ADUR & WORTHING
PLANNING SERVICES

PLAN	AWDM/ 1193/15
DATE VALID	- 1 SEP 2015

80m,40m,20m,15m,10m,6m,2m and 70cm Eight-band Vertical Antenna

CPVU8 (Antenna tuner is needed)

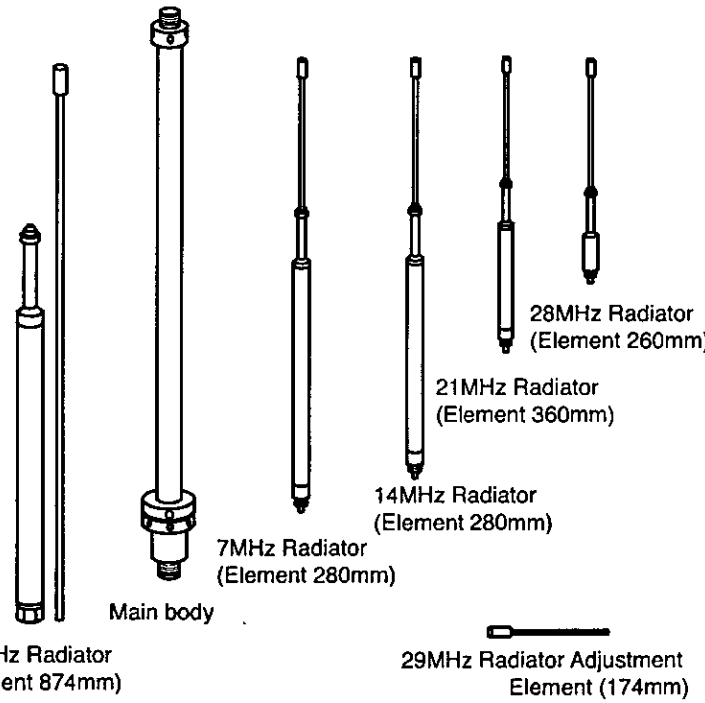
DIAMOND ANTENNA

Operation Instructions

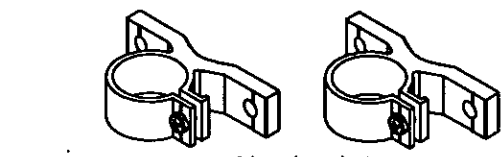
Description

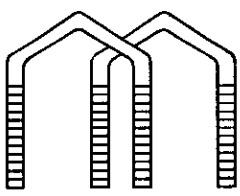
The CPVU8 is an eight-band ground plane antenna for 3.5/7/14/21/28/50/144/430MHz.
Since the CPVU8 is compact and light weight, it can be used for temporary base station antenna.
The CPVU8 can be used at 144/430Mhz without any adjustment. Other bands (3.5/7/14/21/28/50MHz) can be tuned by sliding the each element.

-Note----------
<<Installing the antenna>>
Don't install on a rainy or windy day since it is dangerous.
Don't attempt to install the antenna only by yourself. Installing the antenna alone on the roof may lead you dangerous accident. Always ask your friends for help installing the antenna.
Don't drop the antenna, tools and attachment when installing the antenna in the height. Install the antenna before assembling it on the ground.

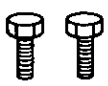


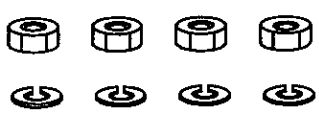
Parts Description


Mast bracket


V-volt


Pipe bracket

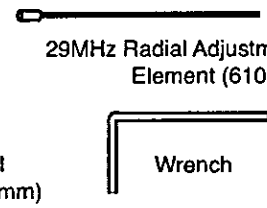

Volt


Nuts

Washer (L)


Washer (S)

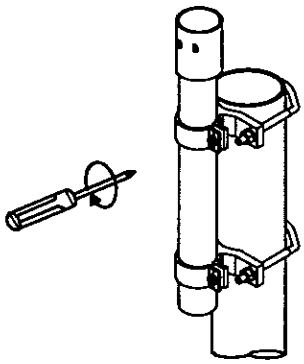

Core



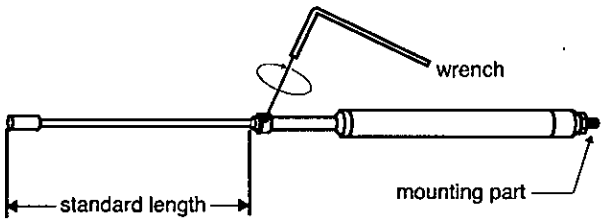
Assembly Instruction

※Prepare for 10mm, 8mm, 7mm Spanner, or Monkey Spanner.

①Fix the pipe bracket to the mast with mast brackets.
※Fix the mast brackets in parallel by taking the entire balance in account.
②CPVU8 can be installed at ϕ30-62 mast.



③Adjust the length of radiator and radial referring the below standard length chart and fix them by the wrench.



The frequency labels are on each part. The radiators and radials are very similar but the mounting part is different. The radial's mounting part is bigger.

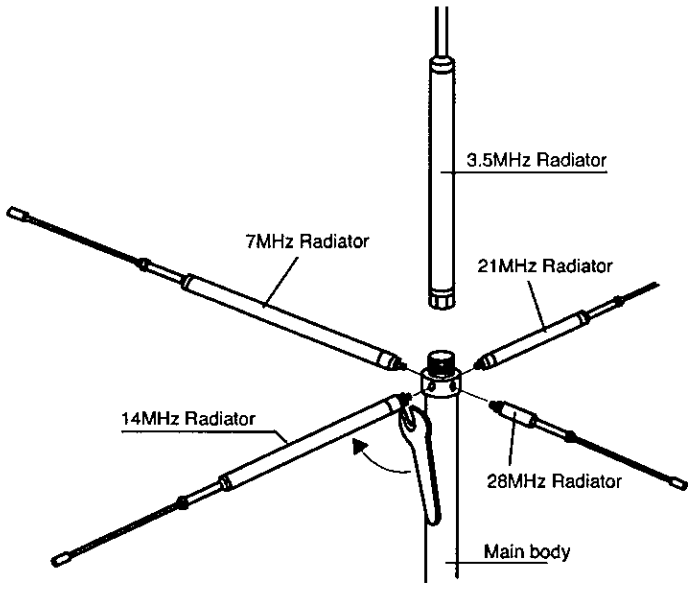
※3.5MHz radiator and radial are separated as a matter of convenience. Right after taking them out from the bags, assemble them immediately for the prevention of mixing use. When operation 29MHz(FM), use 29MHz adjustment elements (shorter one). The radiator adjustment element is 100mm and the radial adjustment element is 535mm.

Standard Length

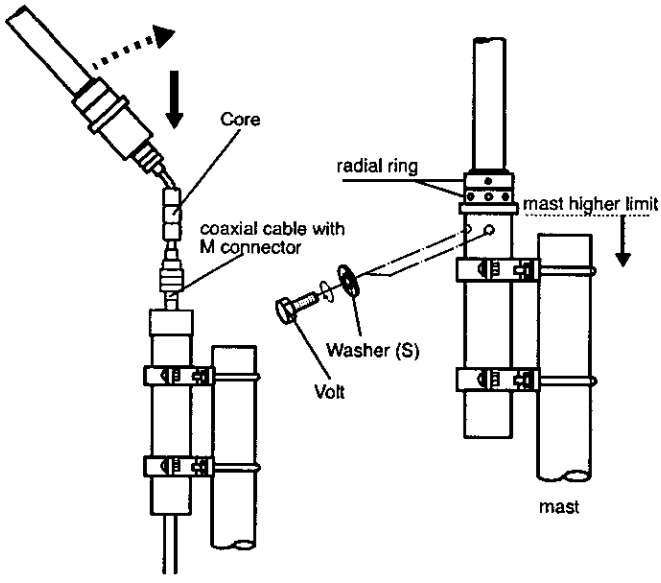
3.5MHz	Radiator	825mm
	Radial	697mm
7MHz	Radiator	266mm
	Radial	294mm
14MHz	Radiator	169mm
	Radial	239mm
21MHz	Radiator	293mm
	Radial	815mm
28MHz	Radiator	165mm
	Radial	657mm
50MHz	Radial	568mm
50MHz(FM)	Radial	525mm
29MHz(FM)	Radiator	100mm
	Radial	535mm

④Assemble each radiator to the main body. Attach 3.5MHz radiator on top main body and attach other radiator along the side as show the below figure.

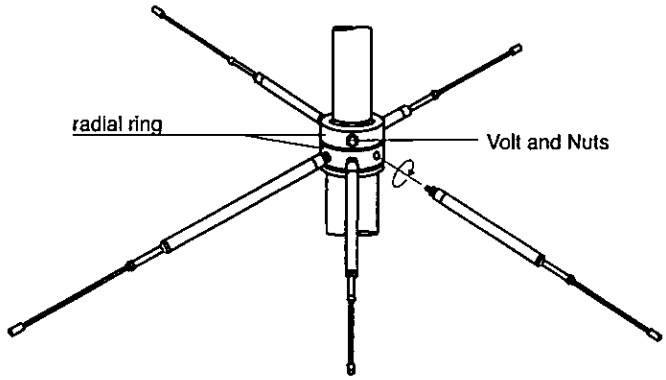
※When assembling, at first, fasten the screws by hands, then lock the nuts tightly by spanner.



⑤Connect core and coaxial cable with M connector (not included) and pass them through the pipe bracket and connect the matching section.
※Please use self-melting tape for complete water-proof.
⑥Insert the main body into the pipe bracket and fix it with washer (S) and volt.
※Antenna is very heavy so please pay attention when installing the antenna. The top end of the mast is to be lower than the radial ring of the antenna main body.

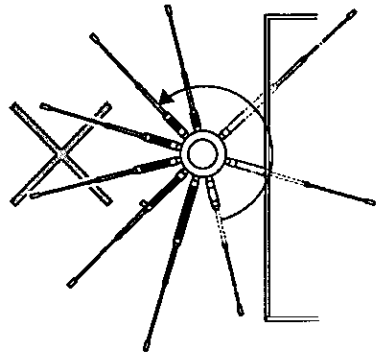


⑦Assemble all radials. 3-radials on each radial ring. Turn the radial rings and adjust radial location to keep unifcrm angles.



About one directional style radial element

CPVU8 is designed to make one directional style radial element by moving the radial rings. (One directional style radial) This product is a high shortening ration antenna so if using one directional style radial element, some frequency may be adjusted apart from armature band. That time, to adjust armature band is not possible by element adjustment.
We are not able to take responsible when using one directional style radial element. Use the spread around style radial element.



Adjustment

When using antenna tuner, please adjust under 'Through' condition. If using Auto antenna tuner, adjust under 'Through'.

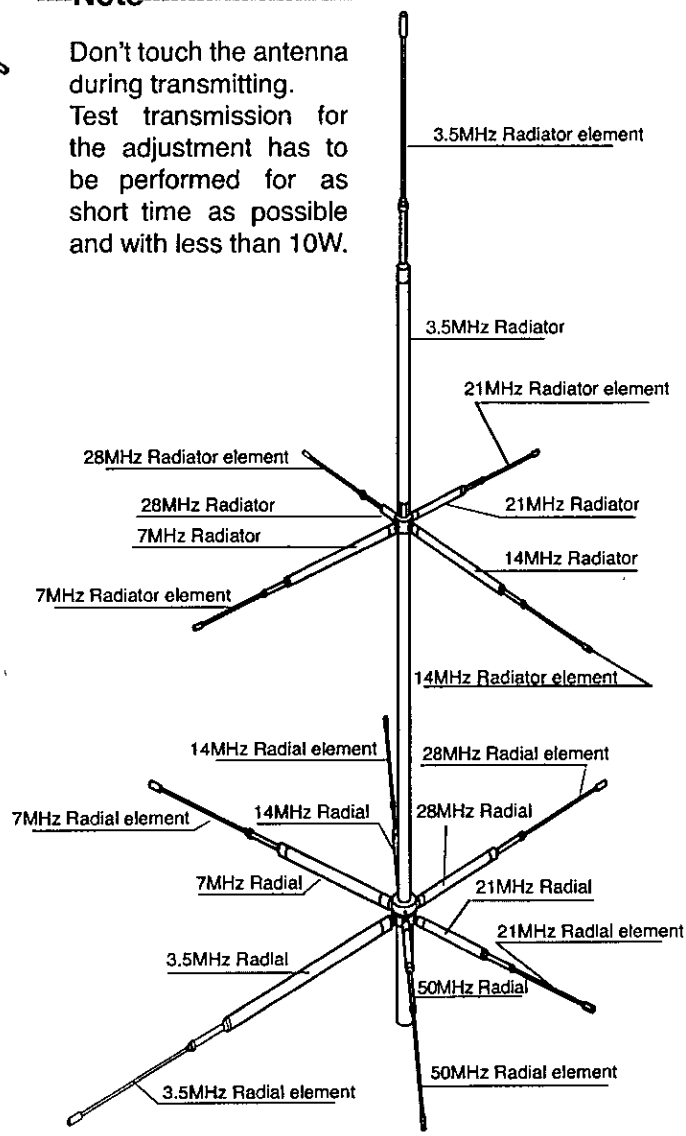
①Confirm SWR at 144/430MHz.
②Slide radial element of 50MHz and adjust the best SWR at the desired frequency.
③Then start adjustment of SWR from 28→21→14→7→3.5MHz.
Extend the adjustment element of radiator for lower frequency and shorten for higher frequency. When n it is difficult to adjust less than 2.0, please fix the element at the lowest point.
④Sliding the radial element, please continue adjustment, then fix element at the lower point than 2.0.
⑤After above adjustment, please thoroughly check and confirm all SWR; and proceed finer tuning.

Frequency change of radiator adjustment element per 1cm

frequency	Frequency change
3.5MHz	30KHz
7MHz	50KHz
14MHz	20KHz
21MHz	17KHz
28MHz	40KHz

----Note----------

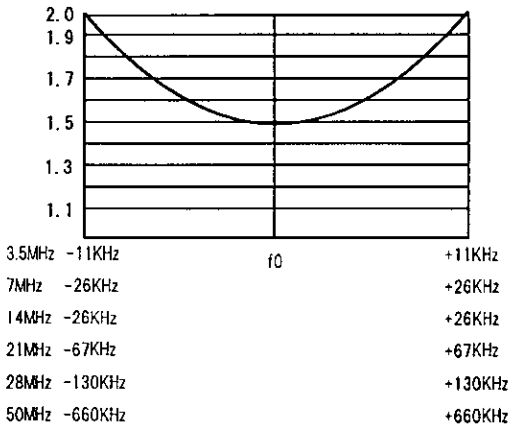
Don't touch the antenna during transmitting.
Test transmission for the adjustment has to be performed for as short time as possible and with less than 10W.



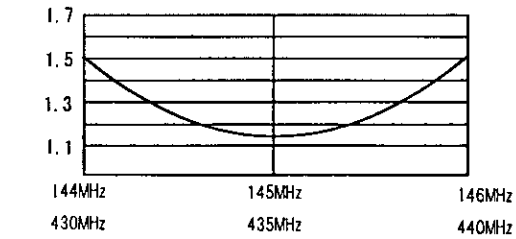
※If SWR is less than 2.0, you can operate the antenna tuner 'Through". (However, if protection circuit of the transceiver is operated and the transmitting is stopped automatically, It is not so.) Since CPVU8 is high shortening ration antenna, use the antenna tuner if changing the frequency.

VSWR

HF/50MHz

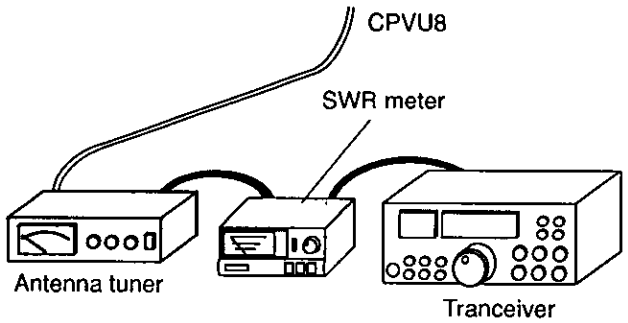


144/430MHz



About the antenna tuner

CPVU8 is designed as using the antenna tuner makes the best SWR. When operating, the auto antenna tuner of the transceiver is ON. If the transceiver doesn't have the antenna tuner, use the antenna tuner. Check the antenna tuner instruction when operating the antenna tuner.
Set the SWR meter between the transceiver and the antenna tuner and check the SWR. If SWR is less than 2.0, you can operate the antenna tuner 'Through". (However, if protection circuit of the transceiver is operated and the transmitting is stopped automatically, it is not so.)



--Note----------

- Touching the antenna during transmission may cause to electrify. Pay attention not to touch the antenna especially for children if installing on a balcony railing.
- Please refrain from operation at over power than the specified.
- Kindly check tight fastening of each mounts, set screws etc. regularly to prevent any accident.
- When the install location is changed, please check and adjust SWR of each frequency newly.

·Specifications

Frequency range	3.500-3.575MHz 7.00-7.10MHz 14.00-14.35MHz 21.00-21.45MHz 28.00-29.70MHz (The element is required at 29.00MHz) 50-52MHz 144-146MHz 430-440MHz
Type	1/4λ (3.5/7/14/21/28/50MHz) 1/2λ (144MHz) 2x5/8λ (430MHz)
Gain	2.15dBi (144MHz) 5.5dBi (430MHz)
Impedance	50Ω
VSWR	Less than 2.0 (3.5/7/14/21/28/50MHz) Less than 1.5 (144/430MHz)
Max. power rating	200W SSB, 50W CW (3.5/7/14/21/28/50MHz) 150W FM (144/430MHz)
Mast diameter accepted	φ30-62
Length	2.7m
Weight	2.4kg
Connector	M-J

Though these products purchased are manufactured under strict quality control, if damage is caused by transporting, ask your dealer promptly.

Design and specifications of these products will be changed for future improvement without advance notice.

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