

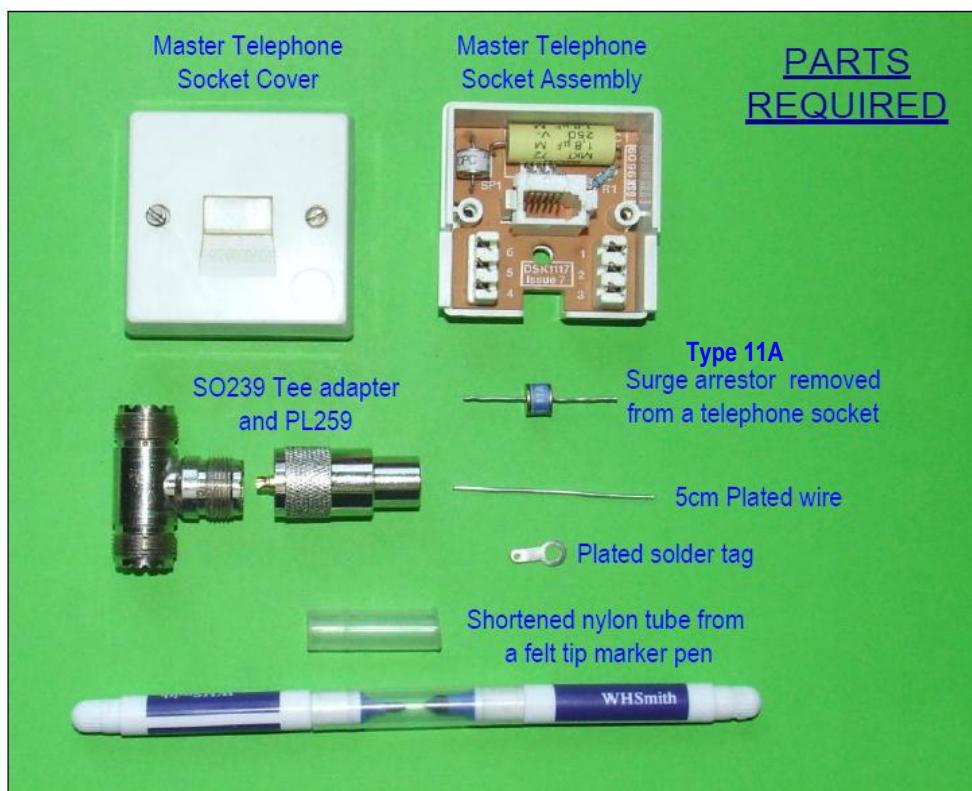
# PL259 Surge Arrestor - G8ODE

(For installations up to 100 watts RF- depending on the type of Arrestor used)



It's a good idea if you have an external antenna high up in the air to have a voltage surge arrestor to limit the voltage that may come back down the wire or coax after there has been static build up. This simple idea makes use of a salvaged surge arrestor from a spare British Telecom main telephone socket. The device looks like a small ceramic cylinder with metal caps and wires at each end. - see photo below.

The surge arrestor is a gas filled device. In operation once the voltage across the line builds up to a certain level (e.g. > 300 volts) - the gas ionises and shorts out the voltage surge but recovers to a high resistance state once the voltage subsides. The operation is extremely fast.



## PREPARATION



The PL259 collar is removed to make assembly easier.

Solder tag cleaned



Surge arrestor wire extended

PL259  
RG213 type

Nylon tube ready for  
insertion into PL259



It's easier working with the PL259 connector's collar removed.

The PL259's (RG213 type) inside thread should be filed or reamed out until the nylon tube fits snugly.

The nylon tube insulates the two metal caps from the body of the PL259 and stops the end caps being shorted out.

One end of the salvaged surge arrestor type 11A is extended with 5cm of plated copper wire. This enables it to be pushed through the PL259 centre pin's end for soldering.

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## READY FOR SOLDERING



Insert the Type 11A surge arrestor into the nylon tube, which should be a firm fit in the PL259. The end cap should just be visible below the top edge of the connector. The centre pin is soldered to the extension wire.

The Solder tag is slid in between the PL259 body and the nylon tube. This is a very tight fit and there is no need to solder it to the body. The shorter wire end of the surge arrestor is then soldered to the tag.

## SURGE ARRESTOR ASSEMBLED READY FOR USE



This version of the surge arrestor uses a "T" adapter with 3 SO239 sockets to allow it to be inserted in-line with a coax cable.

Connectors such as the UHF type and other type of Tee adapters can also be used to suit individual needs.

It is advisable to periodically test the device using the Final Testing instructions.

## FINAL TESTING

The assembled PL259 with the 3 port SO239 Tee adapter should be checked with a multi-meter using the ohms range for any short circuits, then rechecked with a 500v DC insulation tester. The unit will exhibit a short circuit when the 500v is applied and the high resistance state should return once the voltage is removed. A further check is necessary to verify that the high resistance state has returned.

This can also be achieved with a hand-cranked insulation tester by reducing the cranking rate in order to lower the voltage, the resistance will return to a high state. The salvaged BT Type 11A devices that are typically rated at 230v will be good for powers up to 100 watts RF. The one used at the QTH has caused no problems since it was installed.

MARIO G8ODE

TWO ELECTRODE MINI SURGE ARRESTERS														
CG5 Series														
Example			SPECIFICATIONS											
Type used in BT Master LRU														
PARAMETERS	CONDITIONS	SYMBOL	CG5-90 CG5-90L	CG5-230 CG5-230L	CG5-350 CG5-350L	MIN	TYP	MAX	MIN	TYP	MAX	UNITS		
<b>Device Specifications</b>			500V/s 100V/ $\mu$ s 1kV/ $\mu$ s 50V 1MHz Arc Voltage I=5A, min	$V_{BD}$ $V_{BD}$ $V_{BD}$ $IR$ C $V_{arc}$	72 - - $10^{10}$ - - 25	90 500 700 - 1 - -	113 - - - - - -	184 - - $10^{10}$ - - 25	230 500 700 - 1 - -	276 - - - - - -	280 - - $10^{10}$ - - 25	350 600 800 - 1 - -	420 - - - - - -	V V V pF V
<b>Life Ratings<sup>(1)</sup></b>			Surge Life Max Current Surge AC Current	100A (10/1000 $\mu$ s) 5kA (8/20 $\mu$ s) 10x 1sec @ 60Hz	- - -	300 10 5	- - -	300 10 5	- - -	300 10 5	- - -	shots shots A		

<sup>(1)</sup> End-of-Life limits are:  
DC: 50% of minimum initial DC Breakdown Voltage limit to 150% of maximum initial DC Breakdown Voltage limit.  
Impulse: less than 150% of initial impulse Breakdown Voltage limit.

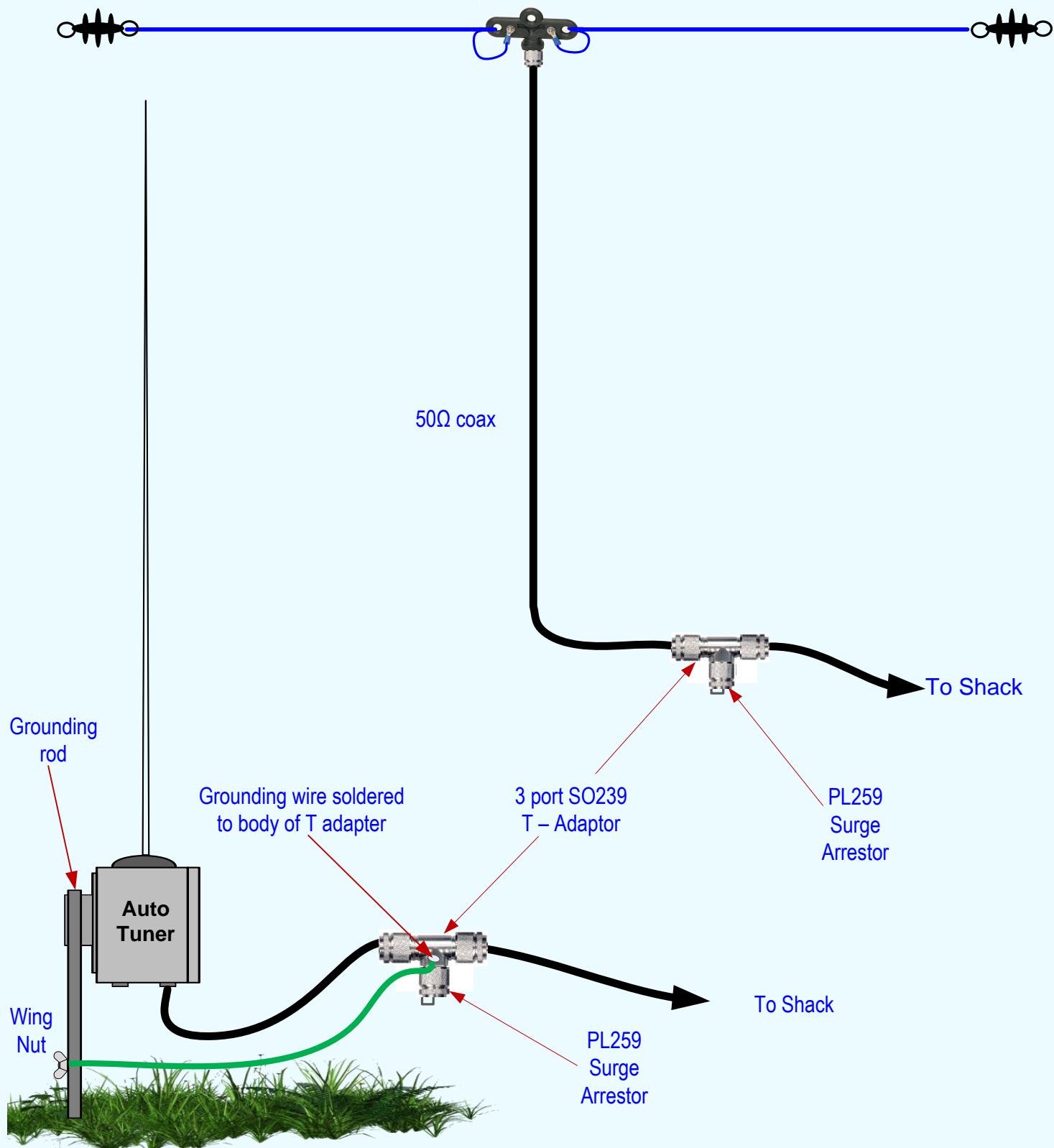
**IMPORTANT NOTICE :-** The RSARS offers no guarantees that a salvaged device will protect radio systems against all forms of static. Constructors who make and use this device do so at their own risk

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Limiting static surges on dipoles, verticals or end fed antennas



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