

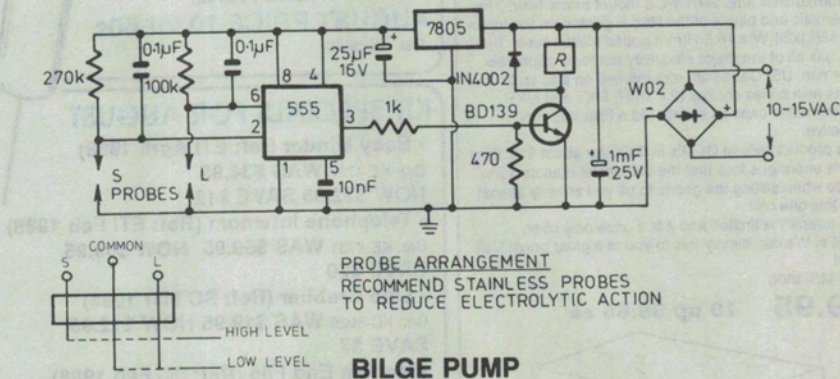
Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.

## Sump/bilge pump controller

Here is a straightforward and easy to build design for a sump or bilge pump controller which uses only common components. It is also a rather unusual application for a common 555 timer chip, as a dual sensing comparator with hysteresis.

As water reaches the "high" level, it establishes a conduction path from contact probe S to the common earth line. This pulls pin 2 of the 555 low and below its internally set trigger level of 1.7V (1/3 of Vcc), causing the IC to switch to its ON state. Output pin 3 thus goes high, and turns on the BD139 transistor to activate the relay and turn on the pump.

As the water is pumped out and its level falls, eventually it falls below the bottom of the contact probe L, removing the conduction path between this probe and the common earth line. This allows pin 6 of the 555 to rise above the upper internal threshold of 3.3V (2/3 of



Vcc), causing the 555 to reset again – turning off the relay and the pump.

Operation of the pump is thus fully automatic, turning on only when the water reaches the "high" level set by probe S, and turning off only when it falls below the "low" level set by probe L and the common probe.

As you can see there are no moving parts. I would recommend that the probes are made from stainless steel rod, to reduce electrolytic action.

I powered the circuit from a small 2155-type power transformer.

Ron Coleman,  
Rivett, ACT

**\$50**

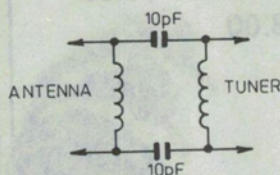
## High pass filter for TV

I was faced recently with a TV installation where the Channel 2 signal was so strong that it overwhelmed the set's AGC and caused severe herringbone patterning on the picture. At the same time, the commercial channel was only just adequate, and any attempt to reduce the overall level to accommodate the Channel 2 signal took the other one down into snow.

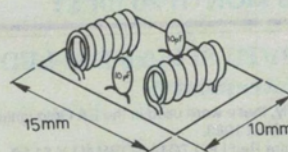
Commercially made wave traps are available but not to me at the particular time in question. I hunted around in the bottom of my toolbox, to see if there was anything that might help me out of the predicament.

I found two 10pF ceramic capacitors, some stiff copper wire, and a scrap of Veroboard about 10 by 15mm. In no time I had cobbled up the little trap shown here. It was fitted inside the TV between the antenna and the tuner and easily reduced the Channel 2 signal to manageable proportions.

The reduction in strength was about 10dB relative to Channel 6. A similar unit was later made for use with Channel 8 and the reduction there was about 12dB.



**TV FILTER**



The coils are wound from short lengths of 0.7 or 0.8mm copper wire and consist of five or six turns using a small screwdriver, about 3mm in diameter, as a former.

This trap is not tuned to any particular frequency. It is simply a broad, high pass filter. It has a small but measurable insertion loss at the higher VHF

channels but very much higher losses at lower frequencies. The trap is not recommended for use on UHF.

This handy little trap was an emergency lash-up which worked so well that several others have been made, all with equal success.

Jim Lawler,  
Geilston Bay, Tas.

**\$30**

## Dreamed up a great idea?

If YOU have developed an interesting circuit or design idea, like those we publish in this column, why not send us in the details? As you can see, we pay for those we publish — not a fortune, perhaps, but surely enough to pay for the effort of drawing out your circuit, jotting down some brief notes and popping the lot in the post (together with your name and address, or course!). Send them to Jim Rowe, Electronics Australia, PO Box 227, Waterloo 2017.