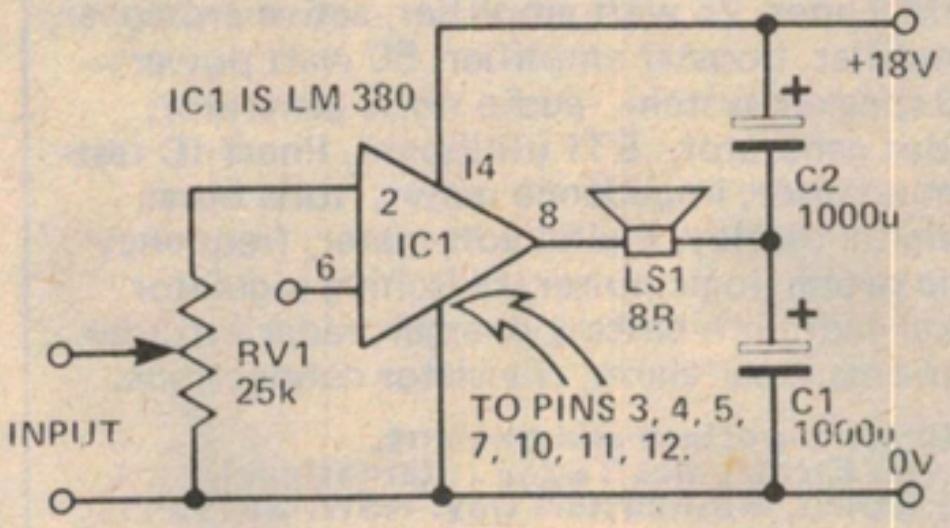
Novel loudspeaker coupling circuit

In most amplifier designs the speaker is fed by a high value capacitor to provide DC blocking, but this may result in a heavy switch-on surge, as the capacitor charges up.

An alternative approach, which is worthy of experiment, is shown in the diagram below. Here the ground side of the speaker is connected to the junction of two equal high value capacitors (1000 uF is typical), across the supply.

The amplifier output voltage will be at $V_s/2$, and so will the voltage across C_1 (if C_1 and C_2 are equal); so as the supply voltage builds up, the DC voltage



across the speaker will remain zero, eliminating the switch-on surge. C_1 and C_2 will also provide supply smoothing. The circuit is shown with the LM380, but could be applied to any amplifier circuit, providing that the DC voltage at the output is half the supply voltage.

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7442N	50
7445N	69
7447N	60
7448N	69
7451N	17
7474N	29
7475N	49
7485N	88
7489N	2.00
7490N	43
7492N	43
7493N	43
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74107N	29
74121N	34
74123N	59
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74145N	69
74150N	95
74151N	69
74154N	1.00
74157N	69
74161N	87
74162N	87
74163N	87
74174N	96
74175N	90
74190N	1.15
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74221N	1.55
74298N	1.65
74365N	66
74366N	66
74367N	66

74LS00 TTL	
74LS00N	25
74LS02N	25
74LS04N	25
74LS05N	25
74LS08N	25
74LS10N	25
74LS13N	40
74LS14N	90
74LS20N	25
74LS22N	25
74LS28N	41
74LS30N	25
74LS33N	39
74LS38N	30
74LS74N	35
74LS75N	47
74LS90N	51
74LS93N	51
74LS95N	1.89
74LS107N	35
74LS112N	35
74LS113N	35
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Ideas for experimenters

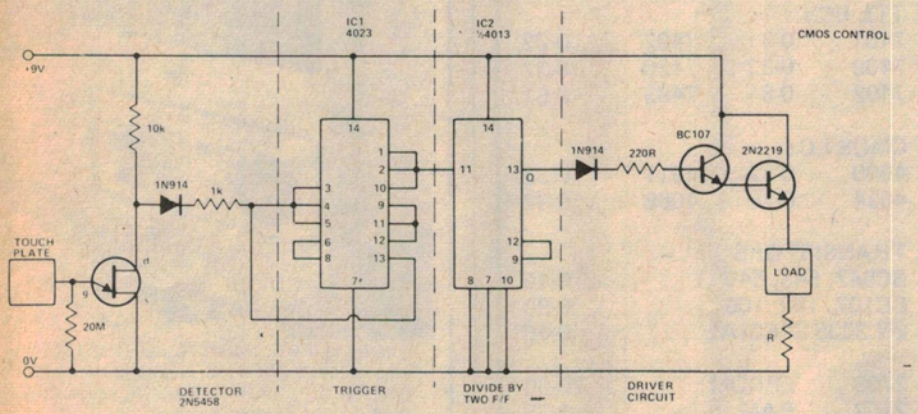
Deaf Touch Switch

Many designs for touch controls suffer from the disadvantage of low noise immunity, and this circuit was designed seeking to rectify this vault.

AC voltage from, for example, the hand is applied to the gate of the FET buffer. The resultant positive signal is applied via the diode, to the input of IC1. This IC is made up from three triple gates connected in a Schmidt trigger configuration. At the threshold voltage, a positive pulse is fed to the clock input of IC2, a D-type flip-flop. Connection is made between Q and the D input, so as to cause the flip-flop to run in the 'triggered' mode. Thus the input signals are divided by two and the output appears at the Q terminal.

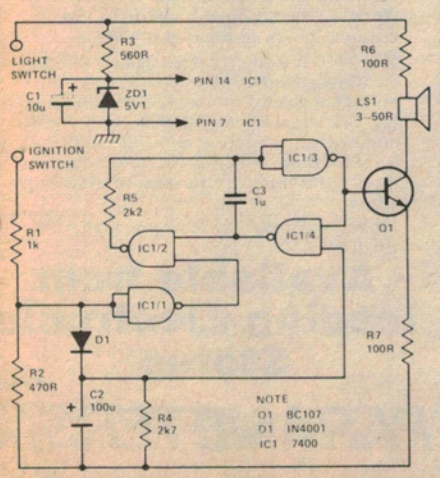
In operation, a single positive pulse sets the Schmidt trigger to its low level. (Removel of the hand causes reversion to the 'high' state). This, in turn, feeds the clock input of IC2, which changes the state of the Q output. When this is high, the output stage is driven on, enabling current to flow in the external load and the current limiting resistor, R.

A second positive pulse changes the state of Q to its low level, causing the output stage to be biased off.



Car Lights Reminder

Many circuits to warn motorists that they have left their headlights on after switching the engine off have appeared in the past. I feel this circuit is an improvement over many of these in that it requires no switches, and it is only necessary to make three connections to the car's electrical system.



If the ignition is switched off while the lights are on, an audible warning is sounded for about ten seconds. This tone is produced by NAND gates IC1/2, IC1/3 and IC1/4. Operation of this oscillator is inhibited by an '0' on the gating input of IC1/2. This in turn corresponds to a logic '1' present at the input to IC1/1 while the ignition switch is on, supplying a high logic level to IC1/1, the oscillator is thus disabled.

When the ignition is switched off, the output of IC1/1 goes high, enabling the oscillator. At this stage C2, which has until now been charged up via D1, begins to discharge via R4. While the voltage on C2 is high, the gating input of IC1/4 allows oscillator operation, however as C2 discharges, this action is inhibited. This occurs after about ten seconds.

Power for the circuit is provided by R3 and ZD1 from the vehicle's 12 V rail.

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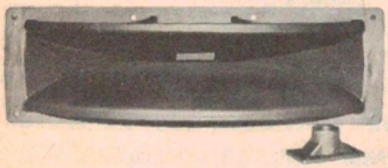

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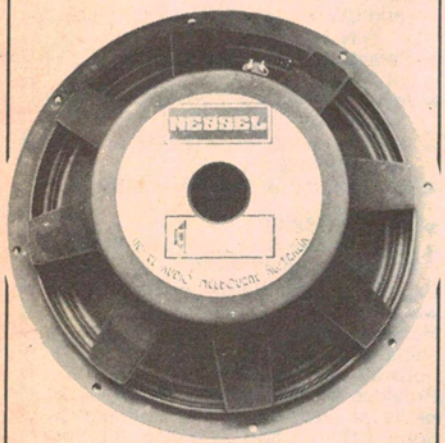

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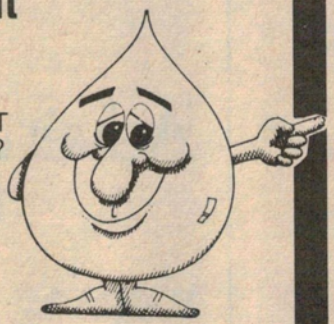

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Mr. Blob says "The Technique of inserting components on one side of a board and soldering on the other is done for reasons which are now completely out of date; Namely this technique was established originally because heavy and bulky components were used. This no longer applies and has big disadvantages, the circuit is impossible to follow unless the board is continually turned over to inspect each side, its difficult to work on both sides of the board and soldering basically needs three hands. A common fault is to mount both leadout wires on the same tract.
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No need to lose your way round a circuit board that needs a layout drawing — Blob-Boards make construction easy. Blob-Boards have numbered tracks that make layout drawing out of date, the tinning ensures easy soldering, and the tracks don't strip off when you unsolder components. Blobbing components on to the tracks (no holes, no drilling) makes layout easy to follow. Use the 8-IC board for 'Digital Electronics by Experiment' in this issue, but remember that we have "A Blob for every job".

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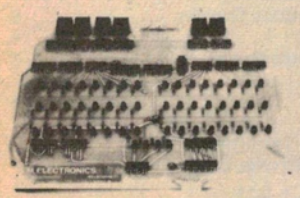

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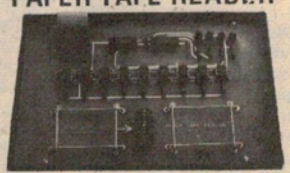

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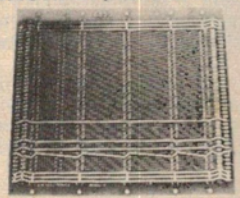

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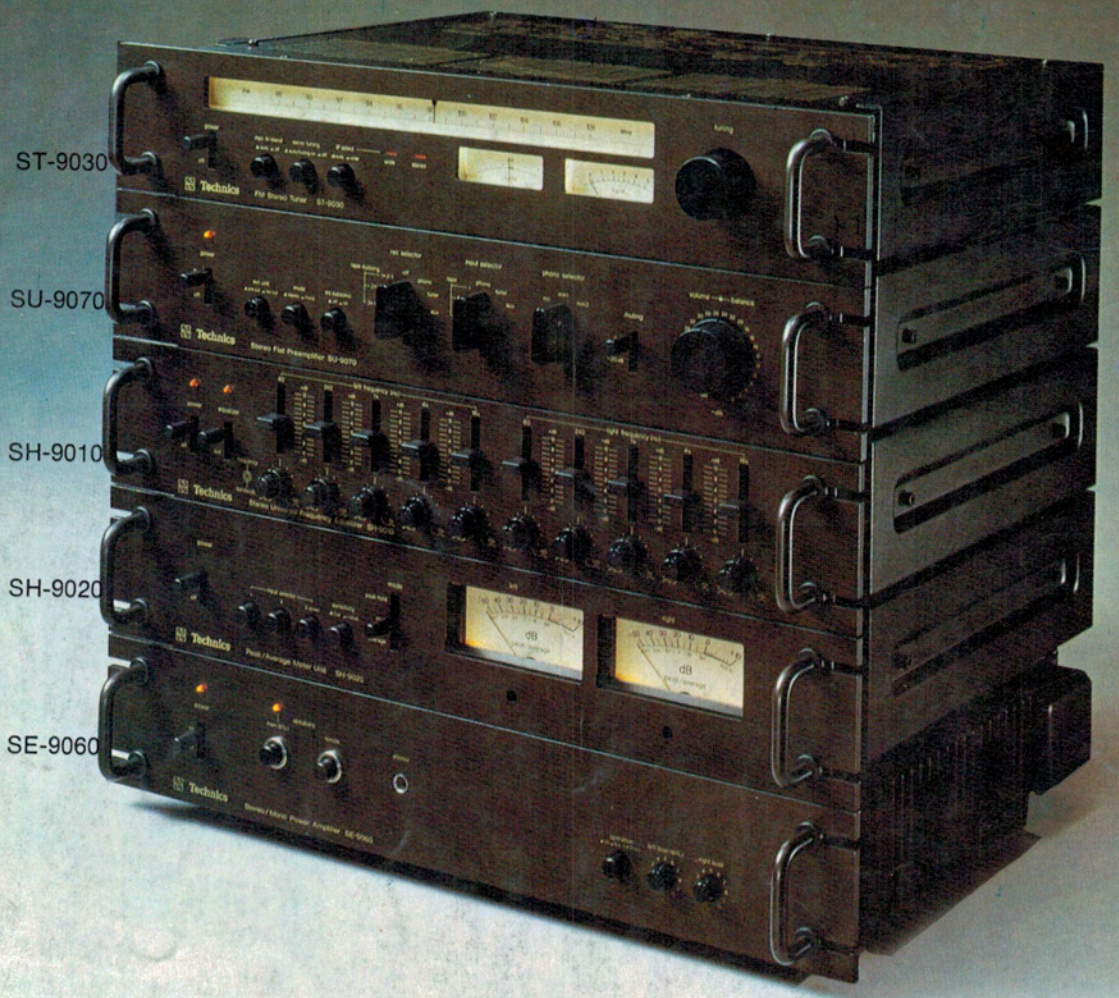

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