Pulse Noise Generator

To test the noise blanker in the 210X/215X receiver, one needs a way to simulate the ignition noise from an automobile. The following circuit info appeared in the Swan 100MX manual.

The noise blanker circuit utilized in the 210X/215X, like all effective noise blankers, is designed to detect the presence of impulse noise able a certain threshold, and to mute, or blank, the output of the receiver for the duration of the pulse. There is no circuit or scheme that can eliminate static or background hiss types of noise. Since operation of the blanker circuit depends upon the presence of this high level impulse type of noise, it is difficult, if not impossible, to service the circuit unless a source of such impulses is available. Efforts to service it using the commonly available test equipment lineup are ineffective, and may well lead to mis-adjustment. Most often, this section of the receiver is never checked out, but merely accepted on faith.

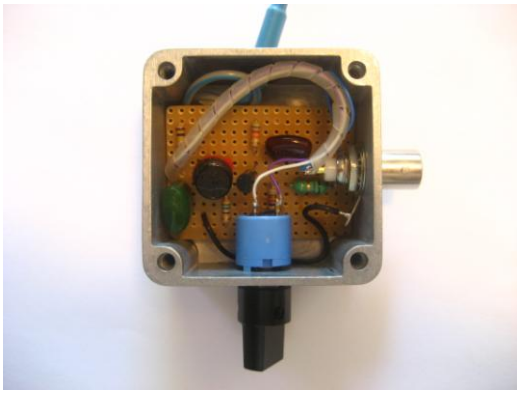
It follows then, that a simple, inexpensive instrument that generates this type of signal could be most useful in the service shop, yet commercial instruments are prohibitively expensive. For that reason the circuit of such an instrument in included here, so that it may be built up locally and added to the shop equipment inventory for such service.

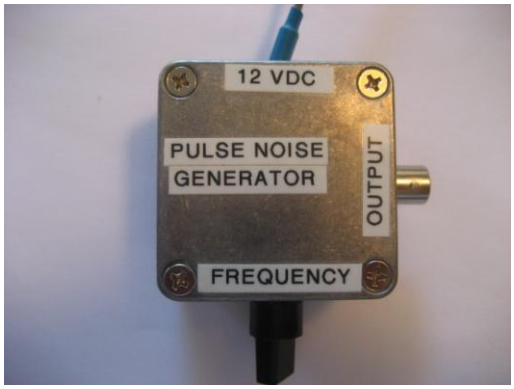
Referring to the following diagram, we see that the 2N1671 is a uni-junction transistor, connected in an oscillator circuit. The 0.22 uf capacitor is charged through the 100K and 1M ohm resistors, with the latter made adjustable to control the charging rate. When the charge reaches a certain level, the UJT fires, discharging the capacitor, and generating a sharp pulse of current through the 56 ohm resistor. This in turn fires the 2N5060, delivering a relatively large current pulse through the inductor. This pulse is used to simulate the impulse noise. Level is adjusted by the 100 ohm potentiometer. Power is can be two 9 volt batteries in series, although a suitable DC power supply delivering approximately 12 - 18 volts at a few milli-amperes would also be suitable.

Using the design from the Swan manual, a simplified circuit was built leaving out a power switch and level adjust pot. The frequency adjust pot can vary the pulses from about 2/sec to 100+/sec.

Please note that the signal strength of the pulses into the receiver from the pulse generator will not be as high as one might expect. The receiver band pass filters provide quite a bit of attenuation to the pulses. However, you should still be able to see a S9+ reading on 80M and 40M. If the noise threshold pot on the PC-120 board is adjusted for no pulse noise on the 40M band, then there will still be low level pulses on the 80M band. Further adjustment of the noise threshold pot can reduce the 80M noise pulses. However, this will probably result in worse 3rd order IMD distortion products when strong SSB signals are present.

Here are pictures of the pulse noise generator mounted inside a Hammond case.





Here is a schematic of the pulse noise generator.