MODIFICATIONS OF THE DIGITAL NOTCH FILTER
OF THE DAMPER  (Refers to SPS/ABM/Note 85-10)
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Some modifications have been made on the ADC module
and the output module of the digital notch filter.

The gain of the ADC input amplifier is 10 dB and the new
input sensitivity is now +/- 315 mV full scale.
(It was +/- 100 mV first). This improves the noise margin.

The output module has been modified for an output signal of
 +/- 5 V in 50 Ω.(It was +/- 2V first). The gain of 14 dB on the DAC
output stage is necessary for the lead/lag filter and a
programmable attenuator in the feedback loop.
The DAC is modified so that we can use the 9th bit from
the notch filter.
The nonlinearity with the PROM works only around the center of
the output signal (+/- 8 steps symmetrical).
We can now program different curves in
one PROM instead of one curve in 2 PROMS. For this we
sacrificed the bang/bang feedback.
The center of the curve is selected with a binary to Gray code
converter. Symmetrical to the center all bits are zero which
makes decoding easy. Outside the center range one or more bits
are high and force the PROM to a fixed address space, otherwise
the nonlinearity would repeat every 16 steps.
It also means that we must write the code for linear transfer
twice, one time in the highest address range and one time
on the lowest. On the highest address range this is necessary because
we always want linear transfer for signals that exceed +/-8 steps and on the lowest range we need linear transfer for
normal operation of the damper. (Because this range is used
for the center of the output signal)
Other address ranges can be selected by means of a jumper
on the printed circuit board.(1 to 9). Then for the center of
the output signal we have a nonlinear response.
The getting input forces the PROM to address range 0 when high
and to the one selected with the jumper, but only when the
nonlinearity is switched on.
Please find the two circuit diagrams of the modifications
on the next two pages.
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