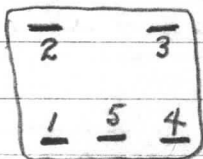
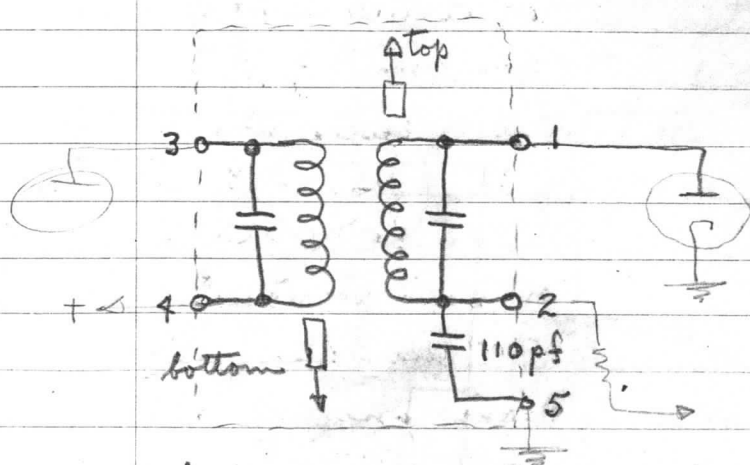


RCA surplus miniature IFF Automatic Elec.
Y 119-3-19 970441-6



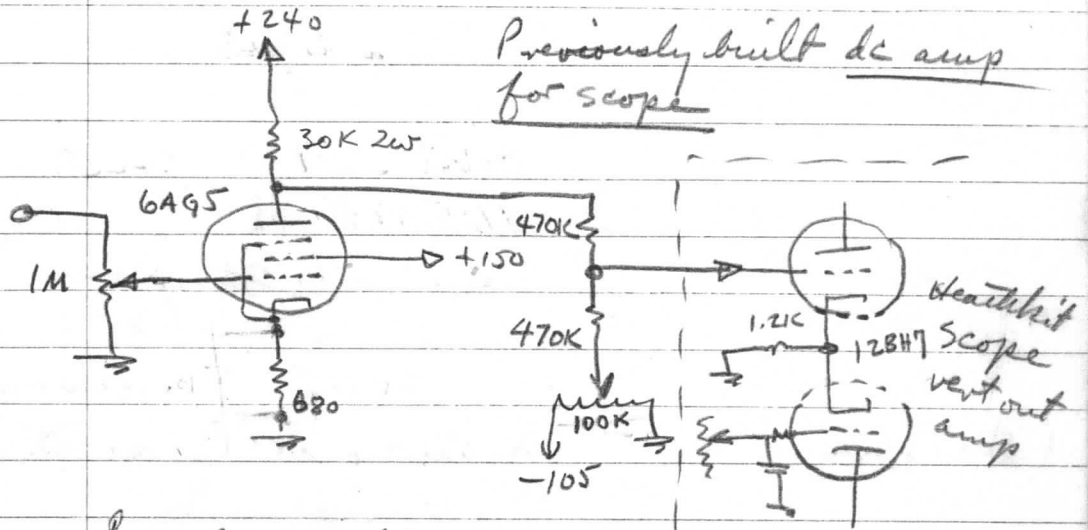
J.W. Miller no. 12-C6 appears to be similar except 12-C6 has 2 filter capacitors. Data says 21Kc BW at 6db down

9/16/64

- Found that 6SN7 phase inverter in SX-25 (p16) crystal drier had no BT. Connected it to +260 as originally intended - much - much gain. Neutralizing condenser not large enough -

9/17/64 -

Changed 9.6mc IF to 455KC substituting the Y119-3-19 970441-6 miniature IF transformers for the 10.7mc min IFs. Same mounting hardware. Loaded pri and secondary of each transformer with 47K to increase bandwidth. Put in 6AG5 cathode follower at chassis output. objective is to drive FM discriminator from this chassis. Loaded primary of 725K IF transformer with 47K. Need grid limiter networks -



has objectionable amount of 120v ripple on display.

9/19/64 Tape No 1 ^{Side #1} Right Tracks

Counter 270 - 385

270 - 10:21:00 AM Orbit [#] 326

385 - 10:25:00 AM

Noise level is $\frac{1}{2}$ scale on VU meter for indicated record level on signal.

Calculated time of $40^\circ N$ crossing 10:27.09

Received about 3 mins of good signal - did not hear frame tone. Signal gone at ^(counter 361) 10:24:00 - started to fade at 10:23:10

Recording from detector output through $\frac{1}{2}$ 470K recorder.

FM detector center voltage on noise - 22V.

Folded dipole antenna.

orbit 327 Counter 385 - ^{Right tracks}

11:53:15

about 54:30 frame?

56:00

- 35V det mid

56:15

was on skirt, corrected.

audio better at point of noise

balance

48:00 up to -40V det mid

Frame 48:15

49:00 switched to TV - many db better.

test tune w/ blanking ~~of~~ ^{of} ~~symmetrical~~
 about 18 on 50v scale w/ 25-0.

1201 Back to ~~dipole~~ ^{TV} much better
 Back and forth - much difference - advantage
 Frame 12:01:45 switches rapidly -

1203 fade from both back quickly
 on TV.

1204 faded again.

orbit 328 left track counter 272

13:31 start recording before appearance
 1st on TV at 13:32:45

13:34:10 faded.

back 34:55 frame

TV better all the way

13:39 gone

9/20

orbit
341

ctr 515 Left track 10:58 start (late)
 frame 1101 ctr 601
 Stop 1103 ctr 666

End Side 1

Tape 1

on playback the sync does not stay
 fixed in the 4 scan/sec sweep -
 For orbit 342 recording 60v left channel,
 signal right channel.

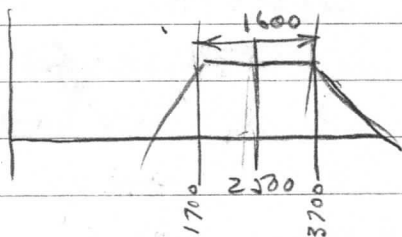
	Ctr 018	12:29:00	Side 2 tape 1
orbit 342	Frame	12:31:31	Ctr 055
	"	12:34:00	" 129
	"	12:37:30	" 207
	End	12:41	" 284

60v left channel; signal right channel

9/26/64

Want bandpass filtering for 400 line resolution (in lieu 800 line of signal since spot size is so large).

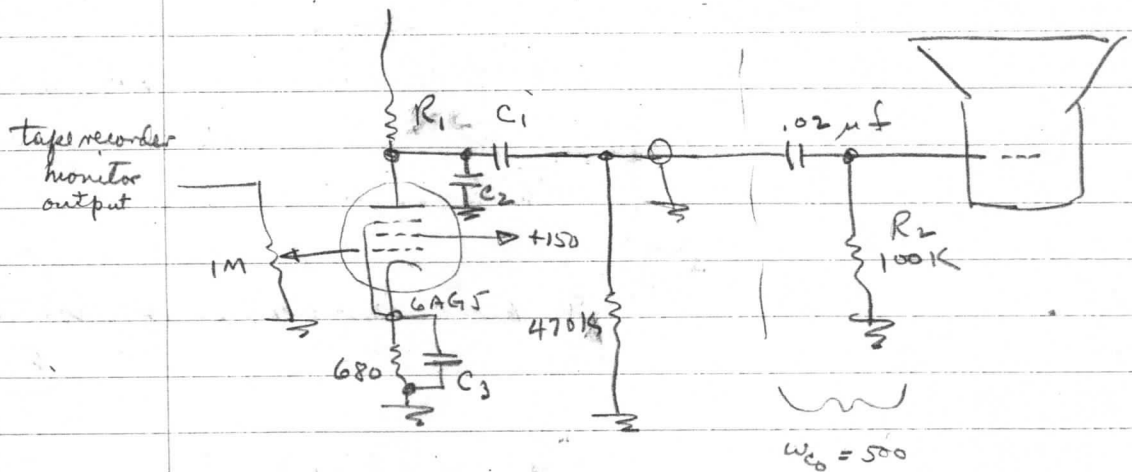
$$\frac{400 \text{ lines} \times \frac{\text{cycle}}{2 \text{ lines}}}{\frac{1}{4} \text{ sec}} = 800 \text{ cps}$$



$$\begin{array}{r} 2500 \\ - 800 \\ \hline 1700 \end{array} \quad \begin{array}{r} 2500 \\ - 800 \\ \hline 3700 \end{array}$$

$$\omega_1 = 2\pi(1700) = 11,300$$

$$\omega_2 = 2\pi(3700) = 23,200$$



$$C_1 (R_1 + R_2) = \frac{1}{11,300}$$

$$C_2 \left(\frac{R_1 R_2}{R_1 + R_2} \right) = \frac{1}{23,200}$$

$$R_1 = 10K, \quad R_2 = 100 \frac{100K(470K)}{570K} = 82.5K$$

$$C_1 = \frac{1}{92.5K(11,300)} = 0.00095 \mu f = 0.001 \mu f$$

$$\frac{R_1 R_2}{R_1 + R_2} = \frac{10(82.5)}{92.5} K = 8.91K$$

$$C_2 = \frac{1}{8.9K(23,200)} = 0.0048 \mu f = 0.005 \mu f$$

200 485

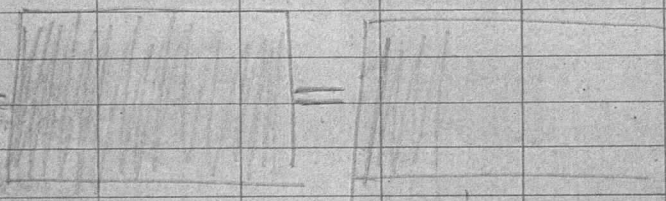
$$680 (C_3) = \frac{1}{11,300}$$

$$C_3 = \frac{1}{11,300(680)} = 0.13 \mu f$$

8000000

may white

shading black
5sec



300pps start

3sec

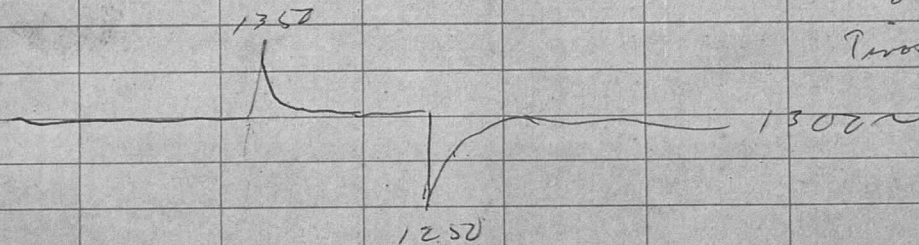
12.5 millisecc blanking on video

Two beacon 136.92
136.23

} AM

1300 subcarrier

horizon sensor



8-12 RPM is
Two rotation rate

also used for telemetry

10/7/64

Test pictures taken & developed 10/6/64

With closeup lens 7A, camera set 2.5 ft to fiducial (black mark from "magic marker"), Photograph of ruler shows best focus at $17\frac{1}{2}$ inches. Resolution on negative under microscope shows the "68 lines/mm" bars resolved. This is $\frac{68 \text{ lines/mm}}{25} = 2.82 \text{ lines/mm}$

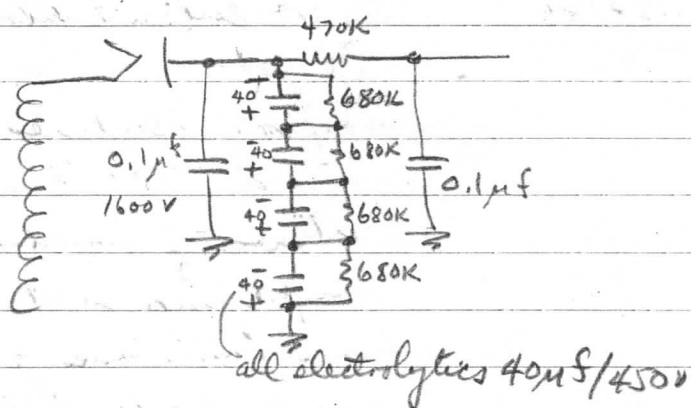
in object space. (magnification is not actually 25:1 since the distance is not set to $(26 \times f_{\text{obj}})$, 2.8 lines/mm is correct for object resolution, however. Enlarger does not give as great a resolution. Gives $48 \text{ lines/mm} \times \frac{1}{25} = 1.92 \text{ lines/mm}$, say 2.

$$\begin{array}{r} 85 \\ 2.8 \\ \hline 680 \\ 170 \\ \hline 2380 \end{array}$$

CRT frame size is about 85 mm square, giving a theoretical capability for optics of ≈ 170 lines resolution through enlarger, ≈ 238 lines to negative.

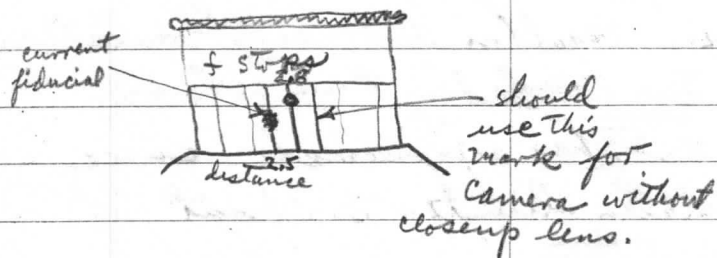
Actually will be a little better since negative was taken at $16\frac{3}{4}$ " instead of $17\frac{1}{2}$ "

Hum bars seem to be improved by 10 μ f filter in scope HVPS.



The bottom electrolytic has 430v across it. By mistake I left it on for 24 hours so it has had "life test."

With fiducial at "2½ ft", best focus is at 2.25 ft (f2.8) no closeup lens. Using the camera normally, the fiducial should be on the other side of nominal at the other f1.9 depth of field mark.



10/24/64

I brought a Tektronix 535 home and got some pictures. Resolution may be 150 lines or so. Negatives marked 10/11/64. Frame 9A is best picture of Cuba.

Comparing with Heathkit pit - Hum bars are gone and the wiggly bars on the first part of the horizontal sweep are gone.

Looking at deflection plates of Heathkit scope with the 535, the hum is present on the horizontal plates but not on sweep generator output.

At present there is also a random intensity variation.

Tried using the scope tube in Glenn Corrington's RCA scope (which is magnetically shielded) no longer require the hum bucking voltage for straight line sweep. Random intensity variation still present. Probably hum also.

Trying another approach since fundamentally limited to about 200 line resolution.

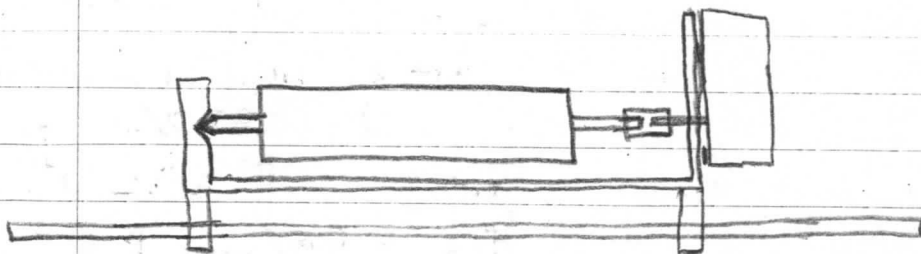
ordered two Hurst synchronous motors from Allied 10/23/64,
1-240 RPM 1-48 RPM.

Torque is $\frac{100 \text{ in oz}}{\text{Speed in RPM}}$

$$\frac{100}{240} \approx 0.4 \text{ in oz}$$

obviously will have to have good bearings on drum.

$$\frac{100}{48 \text{ RPM}} \approx 2 \text{ in oz}$$



Vertical travel force available w/ $\frac{1}{4}$ "-20 drive
 $\frac{2\pi \text{ in oz/revolution}}{\frac{1 \text{ in}}{20 \text{ revolution}}} = 250 \text{ oz}$

$$\frac{208 \text{ sec}}{60 \text{ sec}} \times \frac{48 \text{ rev}}{\text{min}} \times \frac{1 \text{ in}}{20 \text{ rev}} = 8.32 \text{ in}$$

Drawn of drum for square picture

$$\frac{8.32 \text{ in}}{\pi} =$$