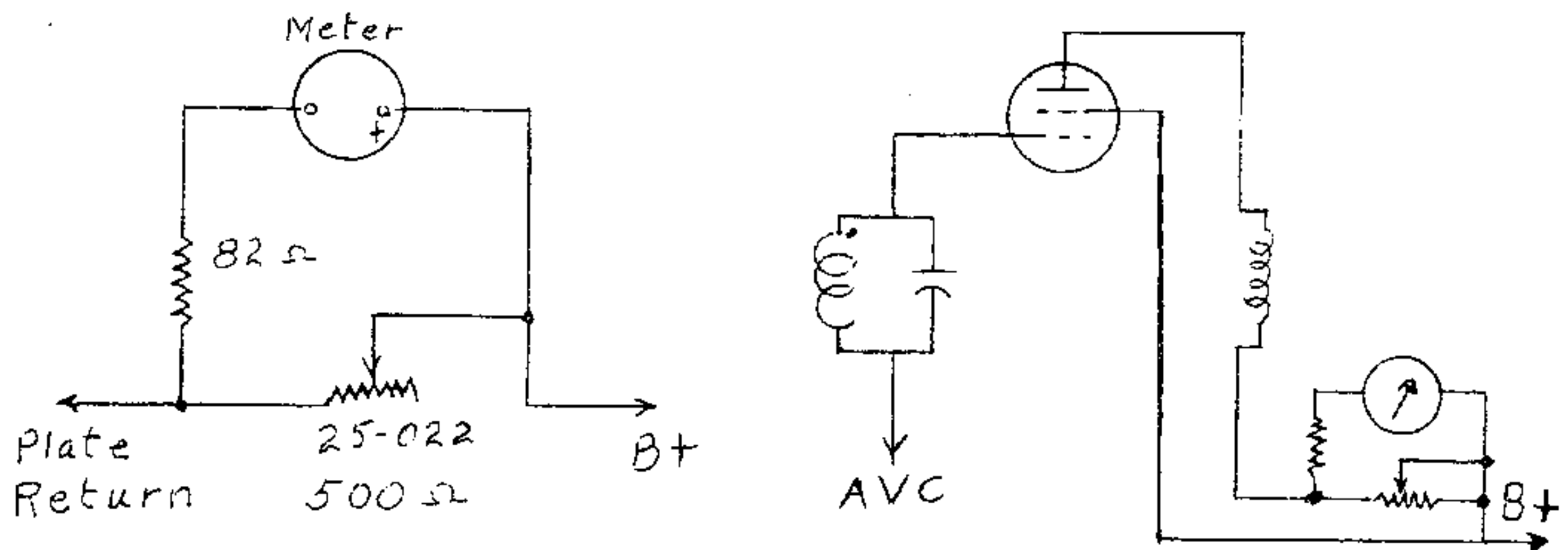


### "S" METER CIRCUITS FOR USE WITH THE HALLICRAFTERS MODELS

S20R, S40, S40A, S40B, SX62, S77, S85, etc. COMMUNICATIONS RECEIVERS

In answer to many requests for an "S" meter circuit which could be installed in the Hallicrafters model S-85 and similar receivers not originally equipped with a built in "S" meter, we are pleased to announce herewith a kit of parts that is adaptable for installing such a meter not only in the S-85, but also models S20R, S40, S40A, S40B, SX62, S77, S77A, etc.

Because the plate current of an R.F. or I.F. stage, controlled by AVC, varies inversely with the received signal strength, it is only necessary to measure the plate current of such a stage to get a relative indication of the signal strength. Provision should be made to balance out the residual plate current to "zero" the meter for calibration purposes. The basic circuit of the Hallicrafters "S" meter kit for performing these functions is shown below:



Best results are usually obtained by inserting this circuit in the plate return of the first R.F. tube. In some receivers good results may also be obtained in the plate return of one of the I.F. tubes, although, generally speaking, the R.F. stage is the more sensitive. Whatever the stage chosen the following conditions must be met:

- (a) The stage MUST be controlled by AVC.
- (b) The tube's screen current MUST NOT pass through the meter.

After the meter is installed in the receiver it will be necessary to make the following adjustments. The setting of the meter should also be checked occasionally, after long periods of use:

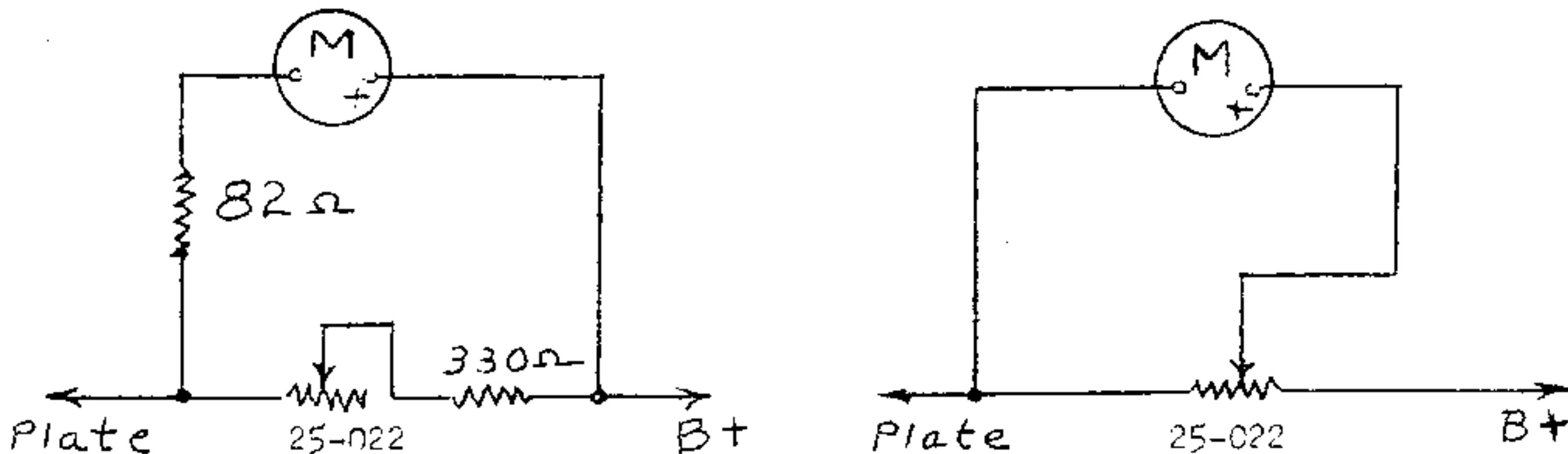
**Mechanical zero set:**

Turn set off. With pointer adjustment screw on front of meter, set pointer on last calibration mark on right hand side of meter scale.

**Electrical zero set:**

Set the RF gain or sensitivity control to maximum (full clockwise) position; AVC on; noise limiter (ANL) off; BFO off (CW-AM switch to AM); selectivity to broad or sharp (no xtal); turn up volume (AF gain) control. Turn set on and allow to warm up for at least ten minutes. Tune to a quiet spot on the dial, preferably on one of the higher frequency bands. Do not tune in a signal. Remove antenna and short the antenna terminals to ground. With zero set control (25-022) set meter pointer to "S" unit zero on left hand side of meter scale. Remove short on antenna terminals and reconnect antenna.

If difficulty is encountered in obtaining electrical zero, variation in the basic circuit as shown below may prove helpful.



Inability to obtain electrical zero may result from several causes;

Weak or aged tube in "S" meter stage.

Cathode resistor in meter stage is wrong or has changed value;  
Some receivers are designed leaving a residual AVC. voltage applied to the tubes. IN this case, with sets equipped with an AVC on-off switch, the meter may be zeroed with the AVC off. The RF gain control on the receiver may not reach absolute zero resistance at maximum gain position (design function). With the set out of the cabinet this may be checked by shorting out the RF gain control.

(cont. on page 3)

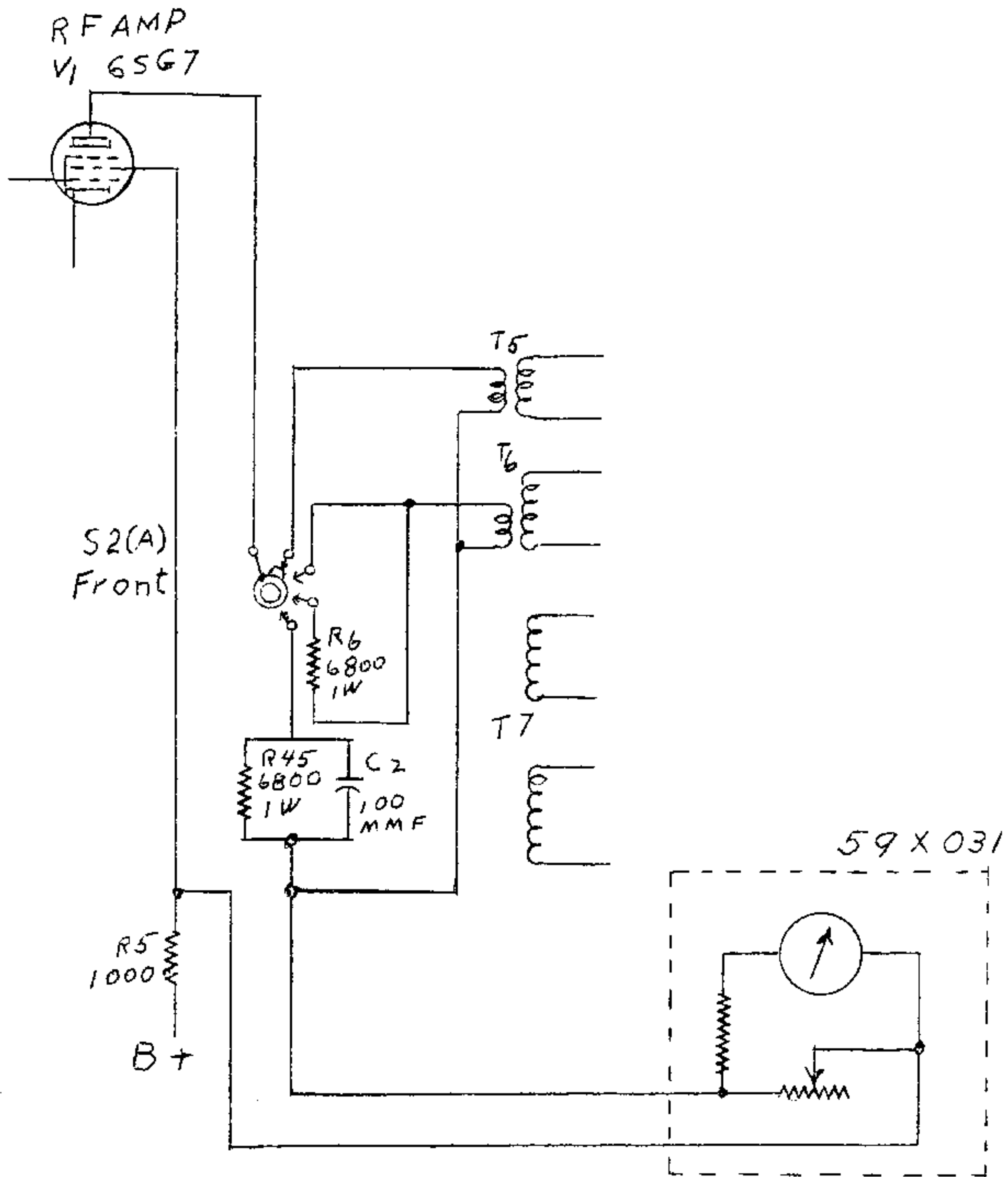
In this case short out the RF gain control and zero set the meter. Remove the short from the gain control and observe and record the reading. This reading is the true electrical zero and should be used for any future resetting of the electrical zero.

\*\*\*\*\*

HALLICRAFTERS "S" METER KIT      PART NO. 59X031

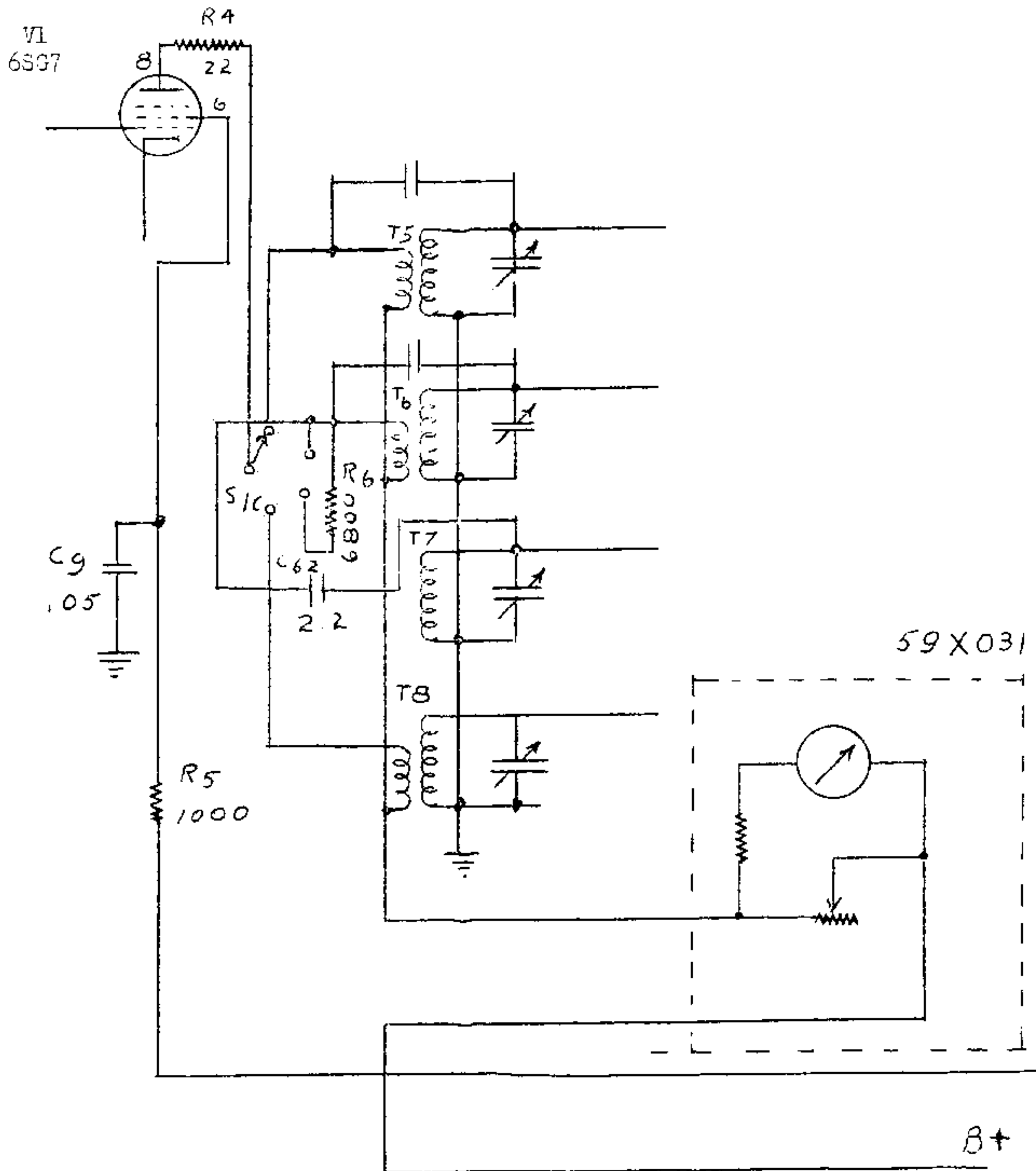
Includes:

- |   |                                     |                          |
|---|-------------------------------------|--------------------------|
| 1 | Meter calibrated in "S" units.      | 0-5 ma movement (82-283) |
| 1 | 25-022 control, electrical zero set | 500 ohms                 |
| 1 | 23X20X820 Resistor                  | 82 ohms 1/2 watt         |
| 1 | 23X20X331 Resistor                  | 330 ohms 1/2 watt        |



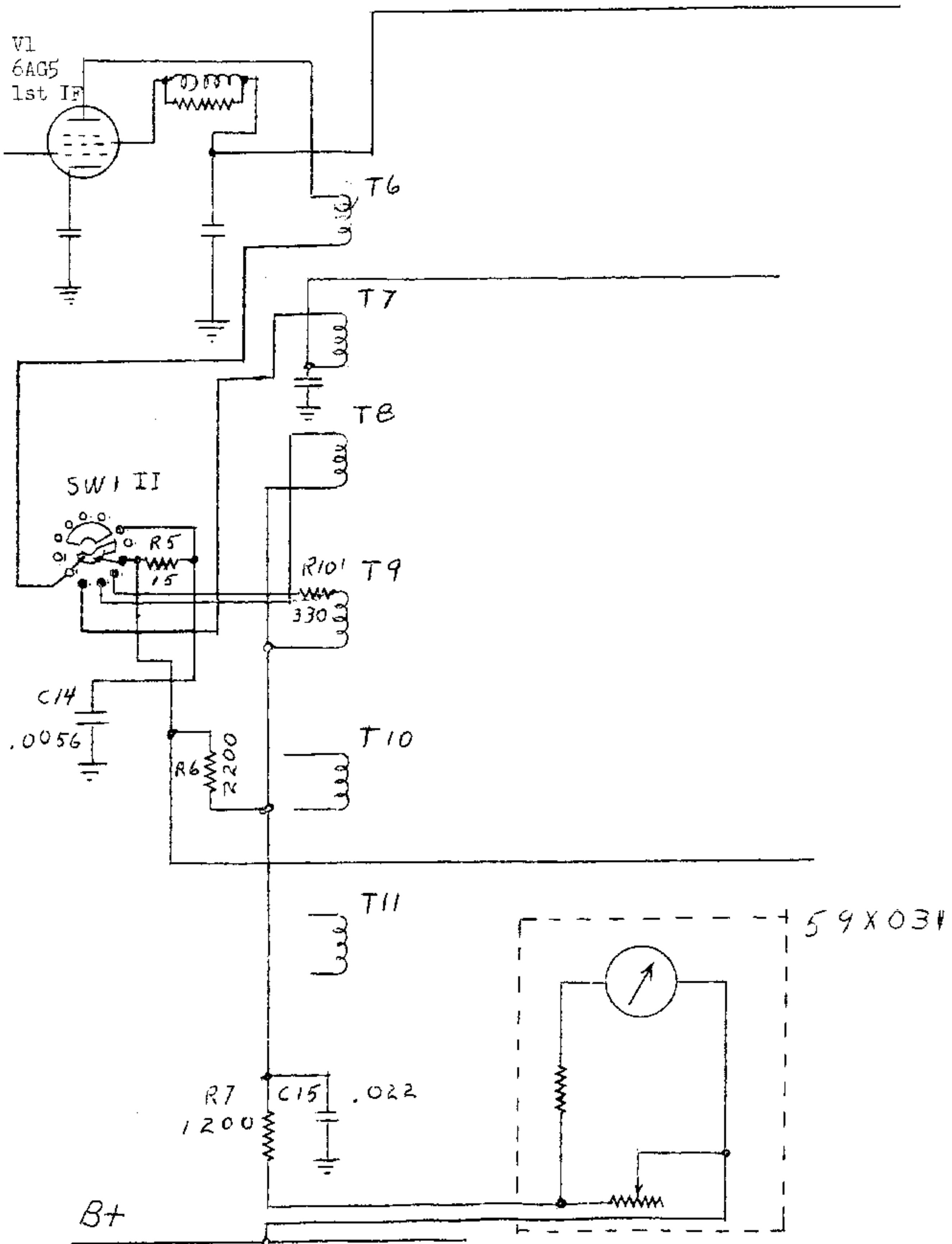
Location of "S" Meter circuit in S-77, S-77A and S-86.

(cont on page 5)



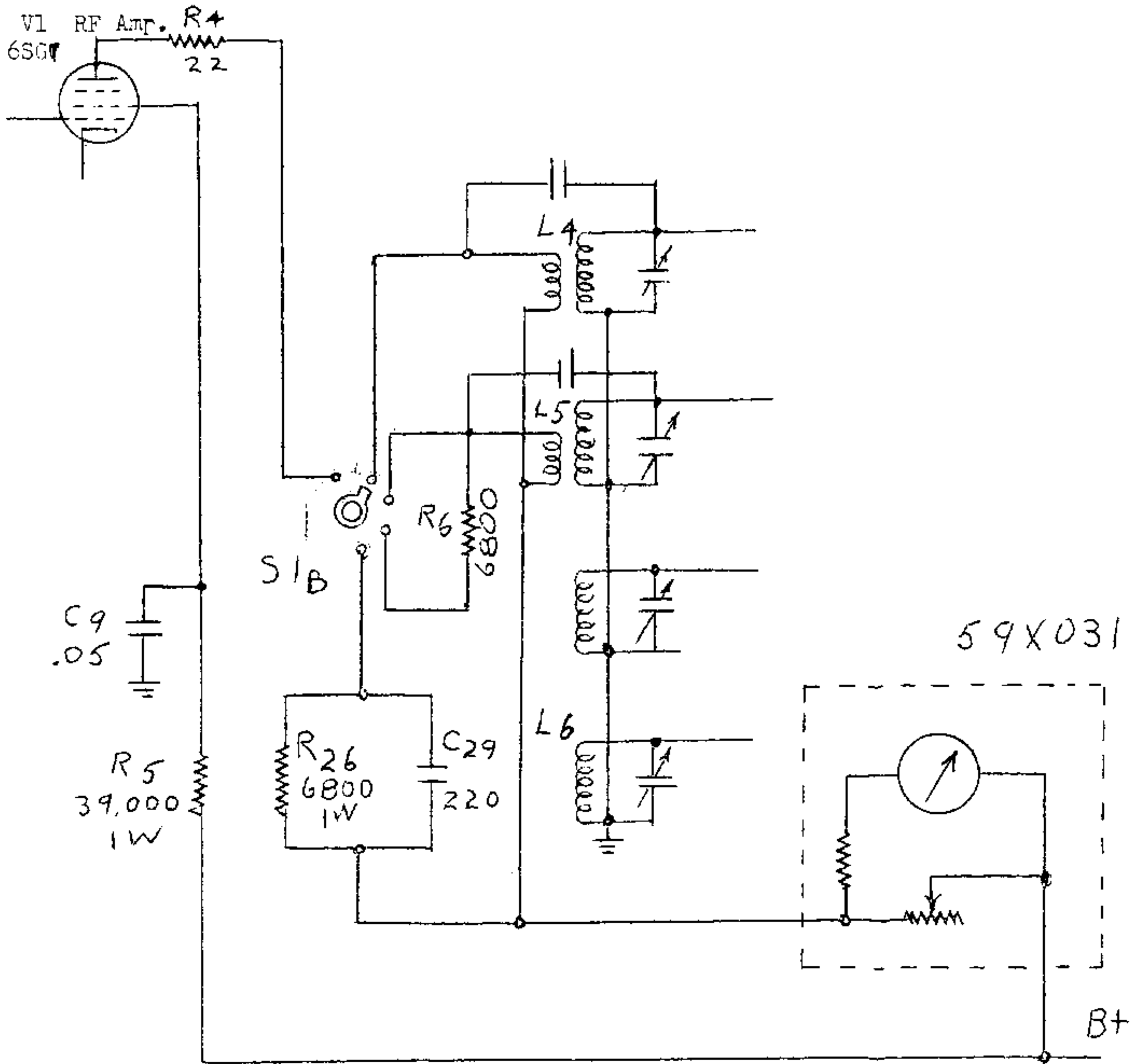
Location of "S" meter in models S-L0 and S-L0A

(cont on page 6)



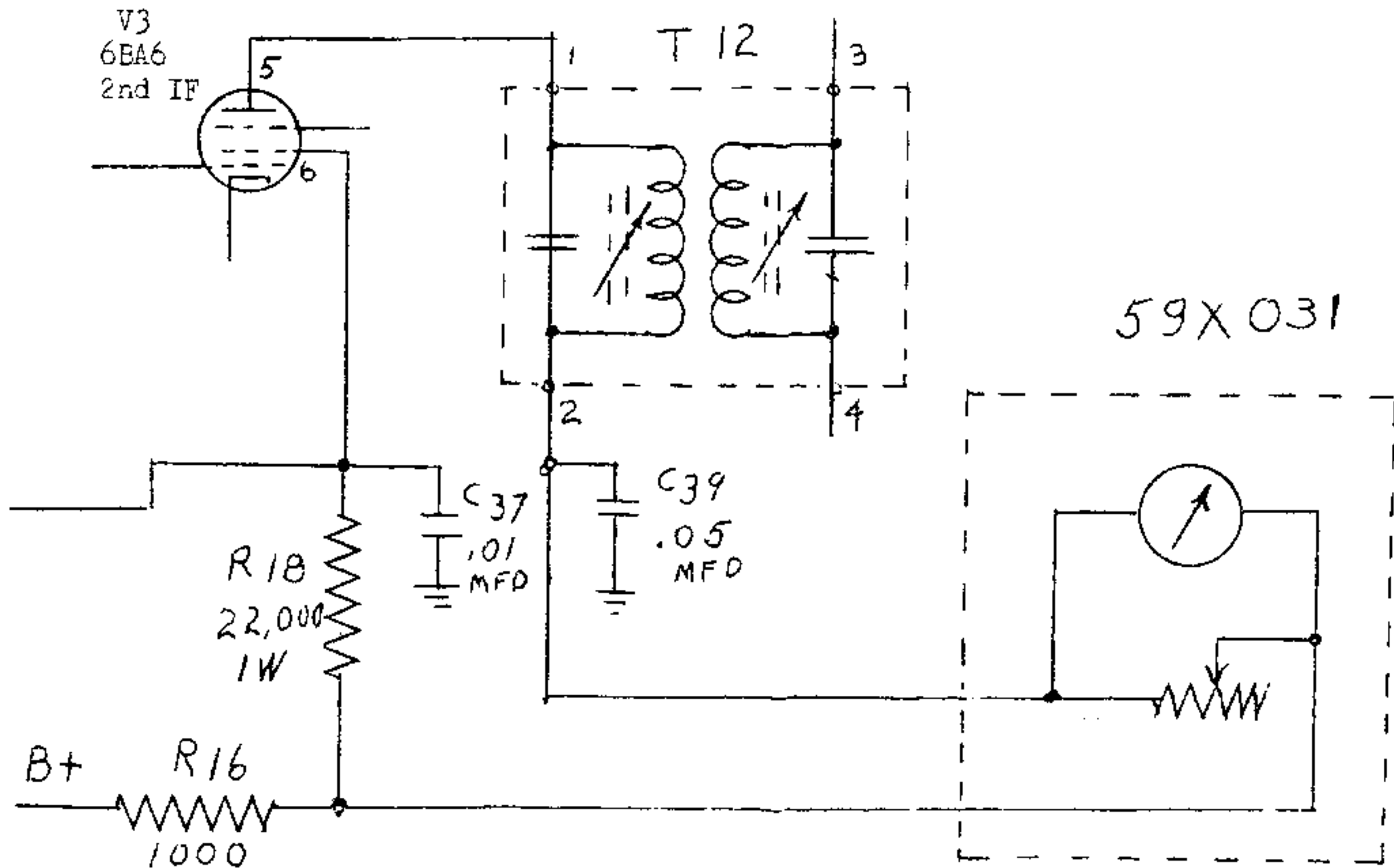
Location of "S" Meter circuit in SX-62

(cont on page 7)



Location of "S" Meter circuit (Hallicrafters Kit #59X031) in S-85, S-85U, S-40B and S-40BU.

(cont on page 8)

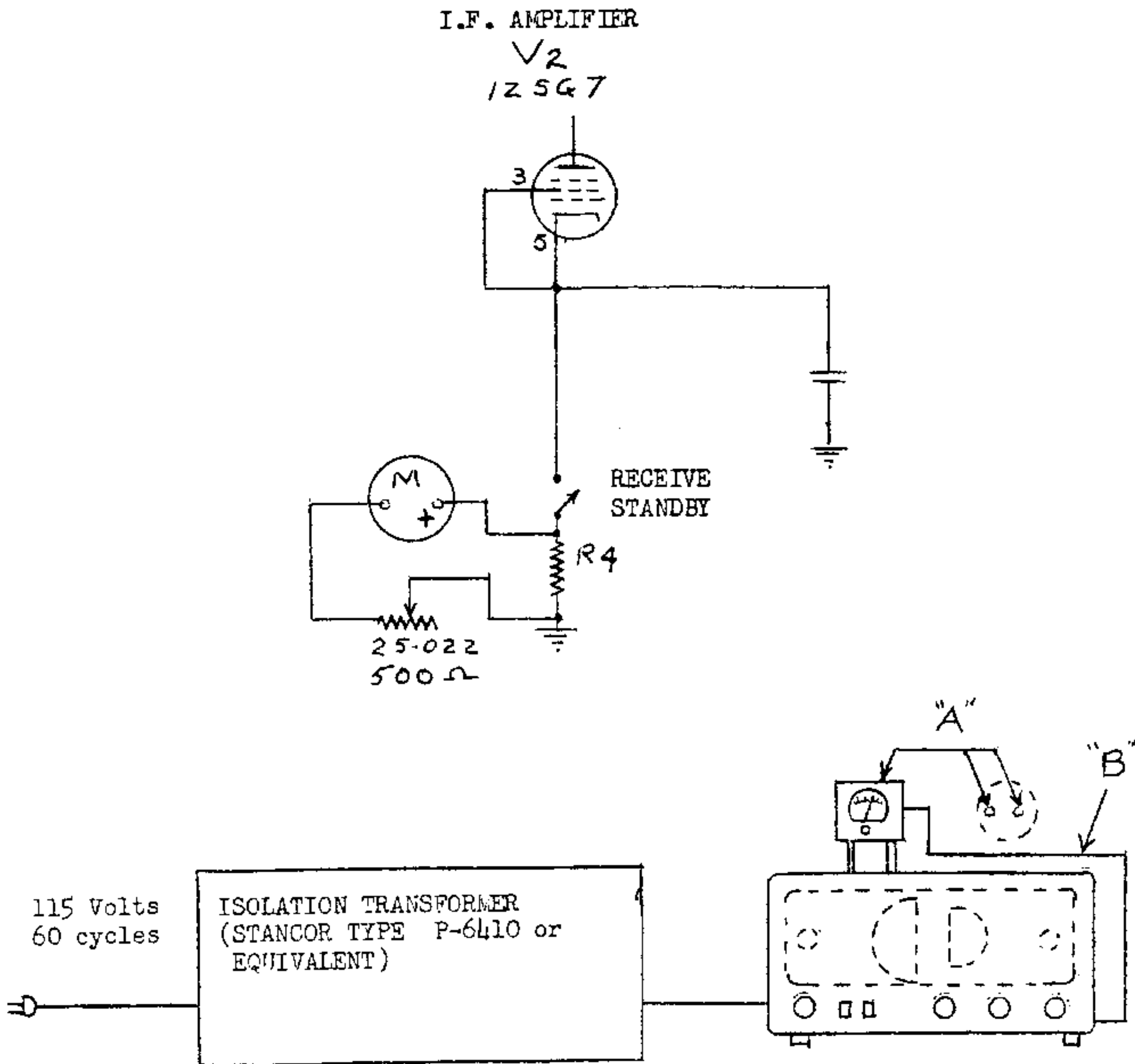


Location of "S" meter circuit (Hallicrafters Kit #59X031) in S-53A.

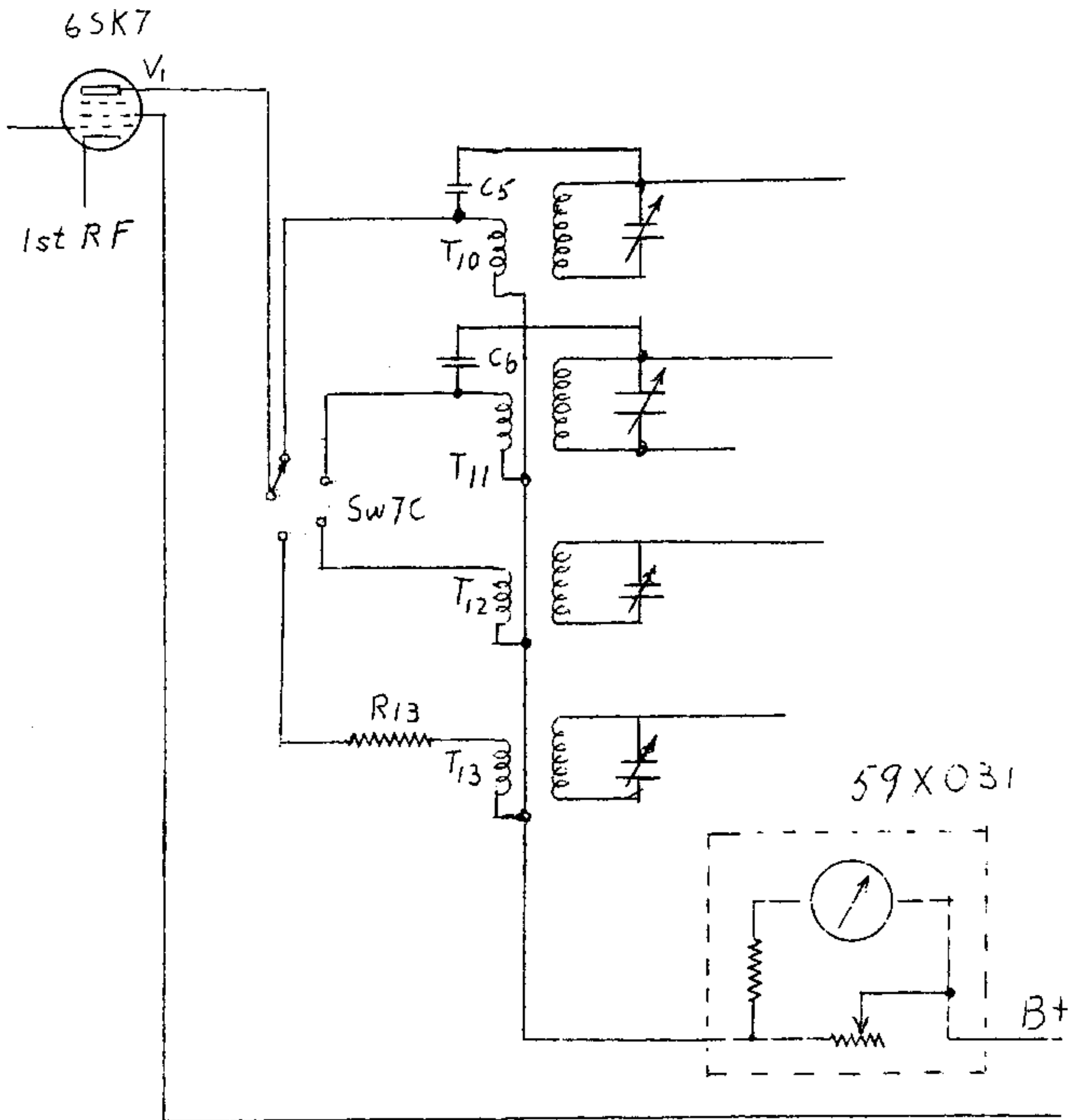
(cont on page 9)



A SUGGESTED CIRCUIT AND INSTALLATION INSTRUCTIONS FOR  
 INSTALLING AN "S" METER ON THE S-38 SERIES RECEIVERS

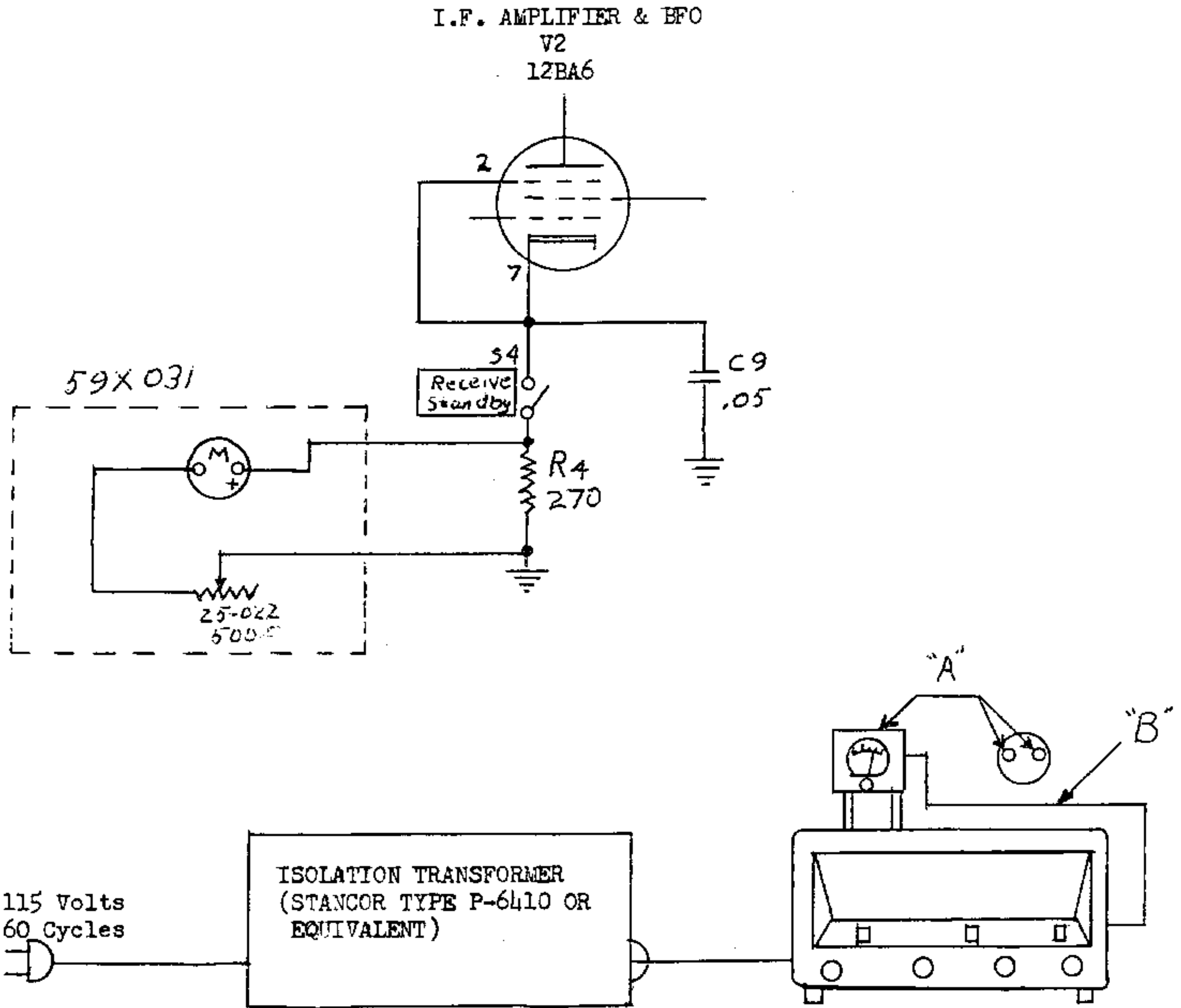


An "S" meter installed according to the above diagram will have one lead connected to B- and in this type of receiver B- is connected to one side of the AC line. In order to prevent a hazard, an isolation transformer (STANCOR type P-6410 or equivalent) must be used. In addition the meter terminals "A" must be completely covered and the connecting lead "B" must be the rubber covered 115 volts AC type.



Location of "S" meter circuit in S-20R.

A SUGGESTED CIRCUIT AND INSTALLATION INSTRUCTIONS FOR  
 INSTALLING AN "S" METER ON THE S-38E SERIES RECEIVERS.



An "S" meter installed according to the above diagram will have one lead connected to B- and in this type of receiver B- is connected to one side of the AC line. In order to prevent a hazard, an isolation transformer (STANCOR type P-6410 or equivalent) must be used. In addition the meter terminals "A" must be completely covered and the connecting lead "B" must be the rubber covered 115 volts AC type.

# Service Bulletin



## hallicrafters

Bulletin 1954-10

Revised 10-5-60

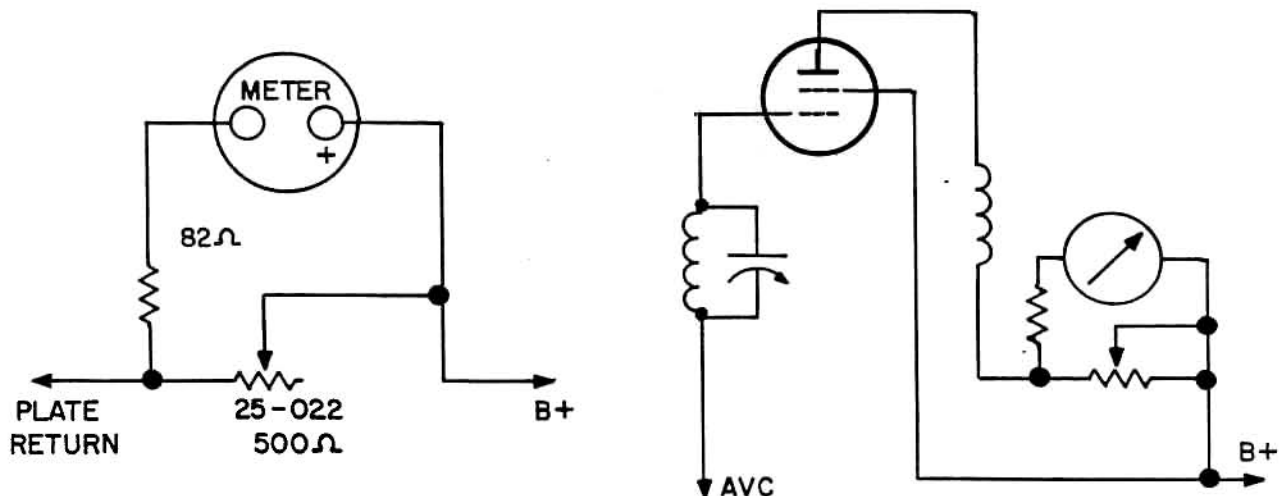
Reprinted 3-30-62

### "S" METER CIRCUITS FOR USE WITH THE HALLICRAFTERS MODELS

S20R, S38, S40, S40A, S40B, S53A, SX62, S77, S77A,  
CB3 series, S38 series, S40BU, S120 series,  
S85, S85U, S86, S107 AND S108 COMMUNICATIONS RECEIVERS

In answer to many requests for an "S" meter circuit which could be installed in the Hallicrafters model S-85 and similar receivers not originally equipped with a built in "S" meter, we are pleased to announce herewith a kit of parts that is adaptable for installing such a meter not only in the S-85, but also models S20R, S40, S40A, S40B, SX62, S77, S77A, etc.

Because the plate current of an R.F. or I.F. stage, controlled by AVC, varies inversely with the received signal strength, it is only necessary to measure the plate current of such a stage to get a relative indication of the signal strength. Provision should be made to balance out the residual plate current to "zero" the meter for calibration purposes. The basic circuit of the Hallicrafters "S" meter kit for performing these functions is shown below:



Best results are usually obtained by inserting this circuit in the plate return of the first RF tube. In some receivers good results may also be obtained in the plate return of one of the IF tubes, although, generally speaking, the RF stage is the more sensitive. Whatever the stage chosen the following conditions must be met:

- (a) The stage MUST be controlled by AVC.
- (b) The tube's screen current MUST NOT pass through the meter.

(cont. on page 2)

After the meter is installed in the receiver it will be necessary to make the following adjustments. The setting of the meter should also be checked occasionally, after long periods of use:

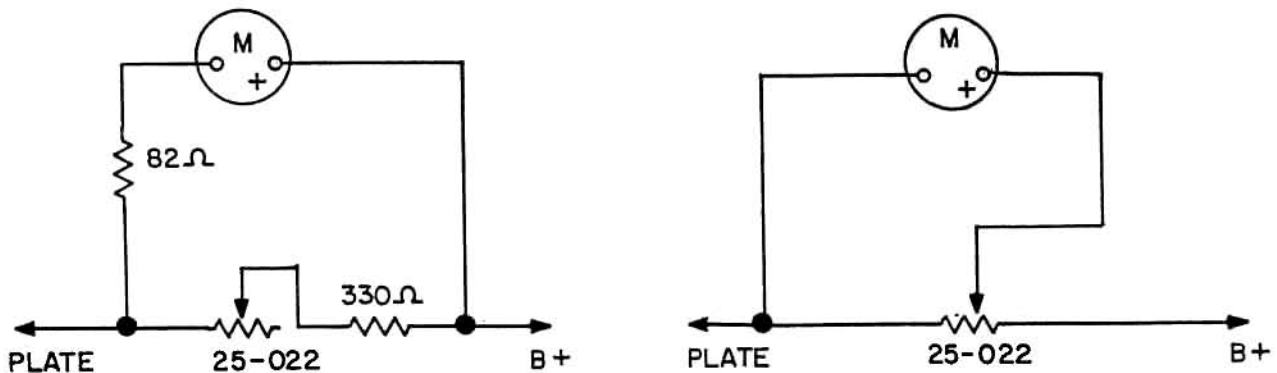
**Mechanical zero set:**

Turn set off. With pointer adjustment screw on front of meter, set pointer on last calibration mark on right hand side of meter scale.

**Electrical zero set:**

Set the RF gain or sensitivity control to Maximum (full clockwise) position; AVC on; noise limiter (ANL) off; BFO off (CW-AM switch to AM); selectivity to broad or sharp (no xtal); turn up volume (AF gain) control. Turn set on and allow to warm up for at least ten minutes. Tune to a quiet spot on the dial, preferably on one of the higher frequency bands. Do not tune in a signal. Remove antenna and short the antenna terminals to ground. With zero set control (25-022) set meter pointer to "S" unit zero on left hand side of meter scale. Remove short on antenna terminals and reconnect antenna.

If difficulty is encountered in obtaining electrical zero, variation in the basic circuit as shown below may prove helpful.



Inability to obtain electrical zero may result from several causes:

Weak or aged tube in "S" meter stage.

Cathode resistor in meter stage is wrong or has changed value.

Some receivers are designed leaving a residual AVC voltage applied to the tubes. IN this case, with sets equipped with an AVC on-off switch, the meter may be zeroed with the AVC off.

The RF gain control on the receiver may not reach absolute zero resistance at maximum gain position (design function).

With the set out of the cabinet this may be checked by shorting out the RF gain control.

(cont. on page 3)

In this case short out the RF gain control and zero set the meter. Remove the short from the gain control and observe and record the reading. This reading is the true electrical zero and should be used for any future resetting of the electrical zero.

\*\*\*\*\*

HALLICRAFTERS "S" METER KIT          PART NO. 59X031

Includes:

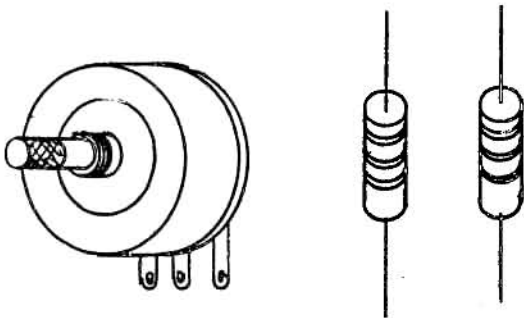
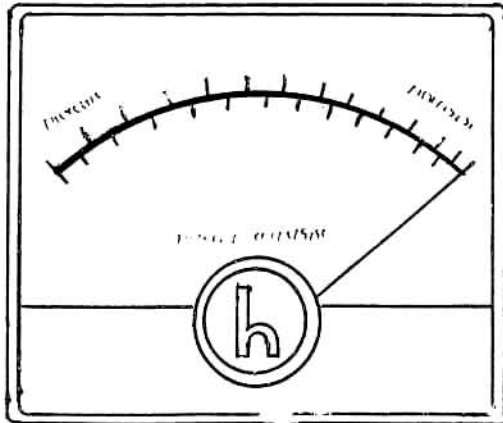
- |   |                                     |                          |
|---|-------------------------------------|--------------------------|
| 1 | Meter calibrated in "S" units       | 0-5 ma movement (82-283) |
| 1 | 25-022 control, electrical zero set | 500 ohms                 |
| 1 | 23X20X820 Resistor                  | 82 ohms 1/2 watt         |
| 1 | 23X20X331 Resistor                  | 330 ohms 1/2 watt        |

# Service Bulletin



**Hallicrafters** .....

BULLETIN 1954-8  
May 13, 1954



CALLING ALL COMMUNICATIONS RECEIVER OWNERS

HERE'S WHAT YOU'VE BEEN ASKING FOR!

AN "S" METER KIT YOU CAN INSTALL IN YOUR  
RECEIVER.

KIT CONSISTS OF:

- 1 - "S" meter as used in Hallicrafters receivers calibrated in "S" units.
- 1 - Zero Potentiometer
- 2 - Resistors
- 1 - Installation instructions.

You will be glad to hear that this kit will work in any communications receiver employing AVC, such as all versions of the following:

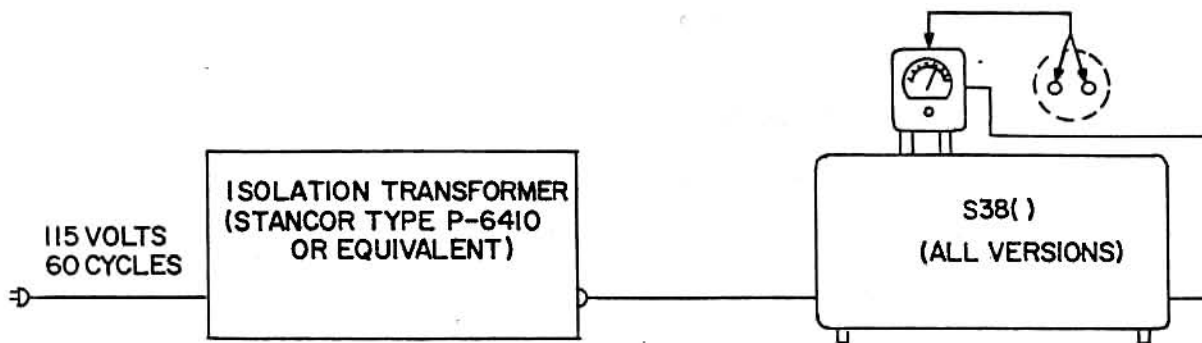
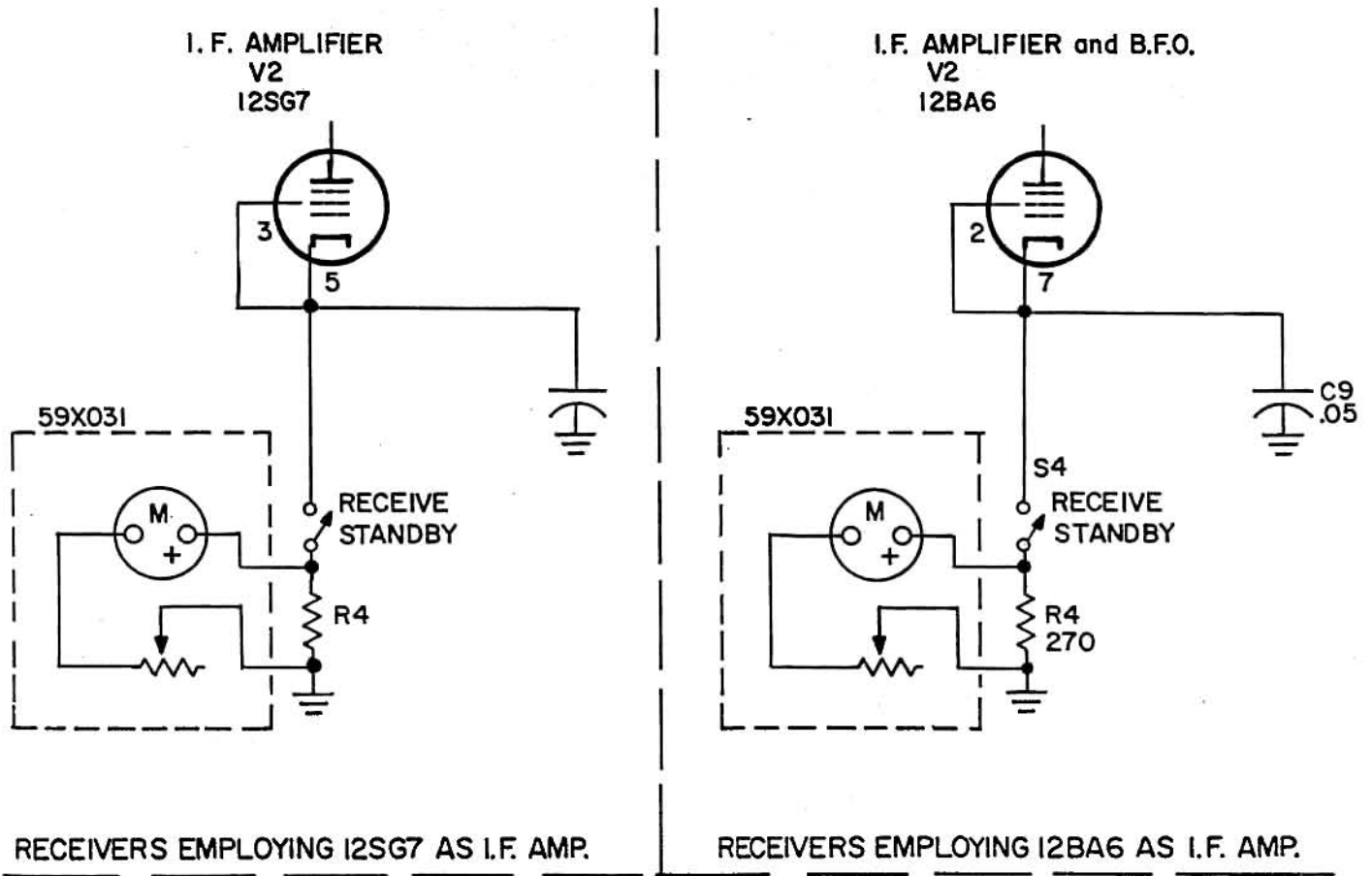
S-20R, S-38, S-40, S-53, SX-62, S-77, S-85 and S-86

Full instructions included with each kit or write for further information.

Ask for kit number 59X031.....Special Price \$12.00 each Amateur Net Price quoted F.O.B. Factory. Shipping weight approximately 1 lb. Please include 20% deposit with requests for C.O.D. shipment. Prices subject to change without notice.

Order from your nearest jobber or write to Hallicrafters Service Division, 4401 West 5th Avenue, Chicago 24, Illinois

A SUGGESTED CIRCUIT AND INSTALLATION INSTRUCTIONS FOR  
INSTALLING AN "S" METER ON THE S-38 SERIES RECEIVERS



An "S" meter installed according to the above diagram will have one lead connected to B- and in this type of receiver B- is connected to one side of the AC line. In order to prevent a hazard, an isolation transformer (STANCOR type P-6410 or equivalent) must be used. In addition the meter terminals "A" must be completely covered and the connecting lead "B" must be the rubber covered 115 volts AC type.