Using (14)-(15)

$$J^2 = \frac{V}{A\left[\frac{V}{X+Y}+B\right]} = \frac{6.2}{2.3\left[\frac{6.2}{11.38+6.63}+0.55\right]}$$

$= 6.74$ w

Test No. 4

Test of insulated rail joint and 10 ohm coil connected in multiple:

Readings	Normal	Reverse	Average
A	1.5	1.5	1.5
B	.018	.038	.028
V	6	6	6
A^1	.230	.270	.250
B^1	.110	.200	.155
V^1	6.5	6.5	6.5
A^2	.160	.190	.175
B^2	.050	.160	.105
V^2	7.2	7.2	7.2
A^3	.120	.116	.118
V^3	7.2	7.2	7.2

(1) $G^2 = .250 - .155 = .095$

(2) $C^4 = .155$

(3) $R^1 = \frac{V^1}{A^1} = \frac{6.5}{.250} = 26.$

(4) $R^1 = G + G^1 = 3.06 + 22.93 = 26.$

(5) $R^2 = \frac{V^2}{A^2} = \frac{7.2}{.175} = 41.14$

(6) $R^2 = G + G^2 = 3.06 + 38.07 = 41.14$

(7) $R^3 = \frac{V^3}{A^3} = \frac{7.2}{.118} 61.01$

(8) $R^3 = G^1 + G^2 = 22.93 + 38.07 = 61.00$

(9) $G = \frac{R^1 + R^2 - R^3}{2} = \frac{26. + 41.14 - 61.01}{2} = \frac{6.13}{2} = 3.06$

(10) $G^1 = \frac{R^1 + R^3 - R^2}{2} = \frac{26. + 61.01 - 41.14}{2} = \frac{22.93}{2}$

(11) $G^2 = \frac{R^2 + R^3 - R^1}{2} = \frac{41.14 + 61.01 - 26.}{2} = \frac{76.15}{2} = 38.07$

(12) $X = \frac{V^1 - G^1 A^1}{A^1 - B^1} = \frac{6.5 - 22.96 \times .25}{.250 - .155} = \frac{.76}{.095} = 8.-$

(13) $Y = \frac{V^1 - G^1 A^1}{B^1} = \frac{6.5 - 22.96 \times .25}{.155} = \frac{.76}{.155} = 4.95$

(14) $X = \frac{V^2 - G^2 A^2}{A^2 - B^2} = \frac{7.2 - 38.07 \times .175}{.175 - .105} = \frac{.54}{.070} = 7.07$

(15) $Y = \frac{V^2 - G^2 A^2}{B^2} = \frac{7.2 - 38.07 \times .175}{.105} = \frac{.54}{.107} = 5.04$

Using (12)-(13)

$$J^2 = \frac{V}{A\left[\frac{V}{X+Y}+B\right]} = \frac{6.}{1.5\left[\frac{6.}{8.+4.95}+.028\right]}$$

$= 8.$ ohms

Using (14)-(15)

$$J^2 = \frac{V}{A\left[\frac{V}{X+Y}+B\right]} = \frac{6.}{1.5\left[\frac{6.}{7.07+5.04}+.028\right]}$$

$= 7.69$ ohms

It is to be hoped that Mr. Dodgson will check these readings and explain for the benefit of the readers of the *Railway Signal Engineer* wherein we have made an error or what other tests should have been made to have obtained more accurate information.

Cleveland, O. F. B. WIEGAND,
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ASPECTS OF THE POSITION LIGHT SIGNAL

IN order to explain the several aspects of the position light signal as described in the article, "The Development of Position Light Signals," on page 264 of the July issue of the *Railway Signal Engineer*, a diagram is here given showing just which lights are illuminated for each aspect.

1—Stop.

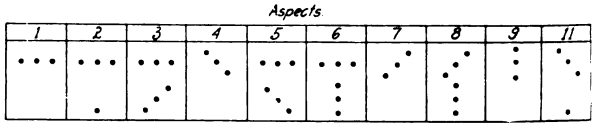
2—Stop, then proceed. (Rule 509, Standard Code.)

3—Proceed at slow speed prepared to stop.

4—Proceed with caution prepared to stop short of train or obstruction.

5—Proceed at slow speed prepared to stop short of train or obstruction.

6—Proceed at restricted speed.



Aspects of the Position-Light Signal

7—Approach next signal prepared to stop.

8—Approach next signal at restricted speed.

9—Proceed.

11—Approach home signal with caution.

No. 4 is the manual permissive block signal.

No. 5 is to be used as the grade signal which may be accepted by tonnage freight trains without stopping, while other trains stop before proceeding.

No. 11 is the distant switch signal. It will be noted it is similar to No. 4, which, under the rules, may not be accepted by a passenger train without stopping. The addition of the bottom light permits passenger trains to accept it.

If, at some future time, the stop requirement in Rule 509 should be eliminated, aspects Nos. 3 and 5 would be eliminated, and No. 2 substituted for aspect No. 5.