

5.1 DESCRIPTION

Immediately upon receipt of the relay, an inspection and acceptance test should be made to make sure that no damage has been sustained in shipment, and that the relay calibrations have not been disturbed.

5.2 VISUAL INSPECTION

Check the nameplate stamping to make sure that the model number and rating of the relay agree with the requisition. Remove the relay from its case and check that there are no broken or cracked molded parts or other signs of physical damage, and that all screws are tight.

5.3 INVERSE TIME UNIT

a) PHASE PICKUP CALIBRATION VERIFICATION

1. Set the switch on the front of the relay so the output relays correspond to phase or ground (Position B).
2. Connect the relay as indicated in the figure below. In order to apply current to the relay, use a supply of 120 or 220 volts, 50/60 Hz, with a variable resistor in series, or an electronic test source.

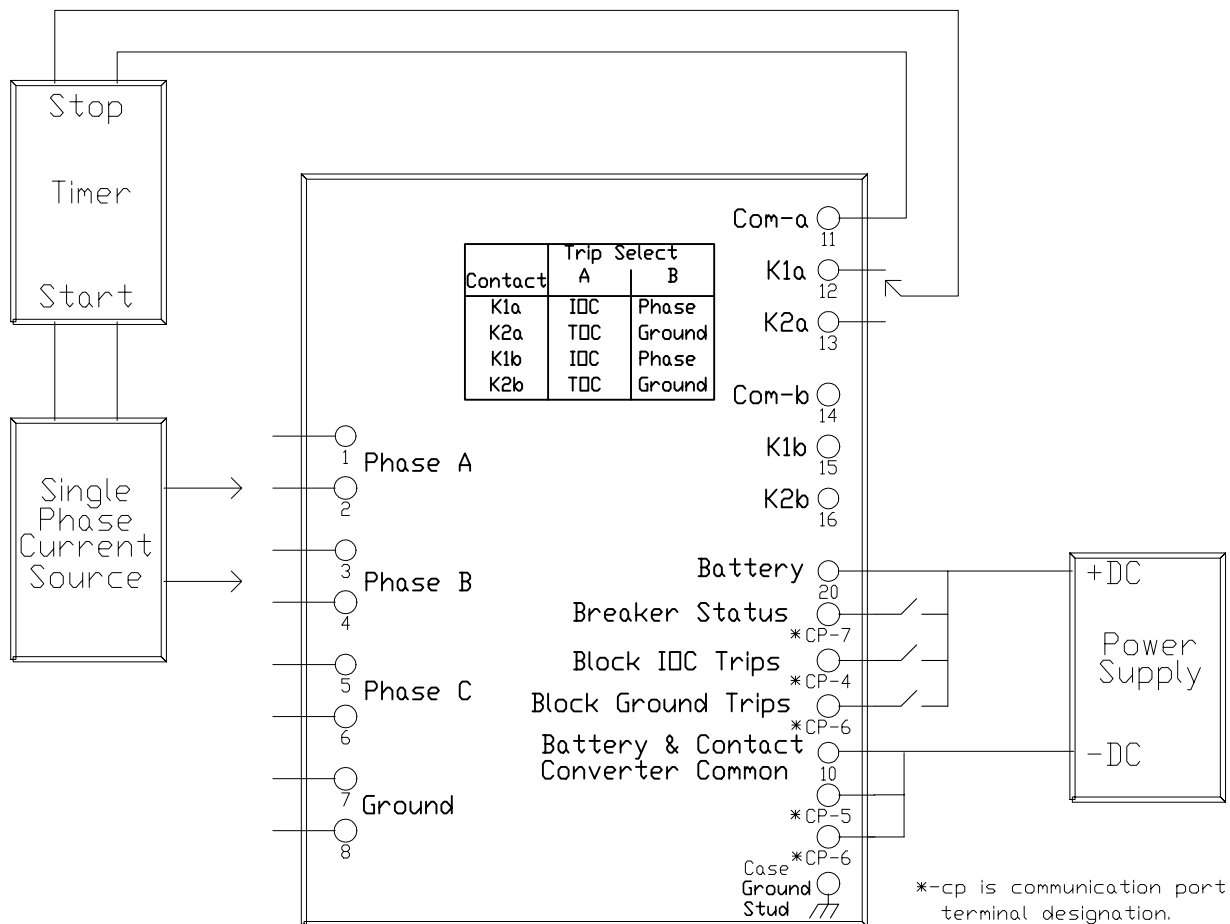


Figure 5-1: TEST CONNECTIONS

- Set the relay at the desired pickup TOC and disable the instantaneous unit by setting the instantaneous multiplier to zero (0).
- Apply current to the relay and verify that the Pickup LED on the front of the relay lights between 100% and 110% of the pickup TOC setting, and that the trip relay closes thereafter.
- With the output relay closed, reduce the current applied, verifying that at a value between 95% and 105% of the pickup TOC, the relay resets, and the Pickup LED turns off.

b) VERIFICATION OF OPERATING TIME

- With the relay still connected as indicated in Figure 5–1: TEST CONNECTIONS, set the inverse time unit to minimum pickup and set the corresponding time dial to 5 on a 5 A relay, or 0.5 on a 1 A relay.
- Successively apply currents of 2, 5, and 10 times pickup TOC at a minimum, verifying that the operating times are within the margins indicated in the table below.

Table 5–1: INVERSE CHARACTERISTIC OPERATING TIMES

TIMES PICKUP TOC	OPERATING TIMES (in seconds)				
	INVERSE (ANSI)	INVERSE (BS142)	VERY INVERSE	LONG TIME INVERSE	EXTREMELY INVERSE
2	4.28 to 4.73	0.49 to 0.55	8.03 to 8.87	44.8 to 49.5	8.24 to 9.11
5	1.93 to 2.13	0.21 to 0.25	1.43 to 1.58	19.3 to 21.3	1.02 to 1.13
10	1.32 to 1.45	0.15 to 0.18	0.77 to 0.85	11.7 to 12.9	0.30 to 0.33

- For the Definite Time Characteristics, based on any current input, the time should be half of the maximum value.

c) VERIFICATION OF TIME DIAL

- Set the relay at the minimum pickup TOC and verify that with an input current of five times (5x) pickup TOC, the operating time is between the margins shown in the tables below.

Table 5–2: TIME DIAL VERIFICATION – INVERSE TIME

TIME DIAL 5 A (1 A)	OPERATING TIMES (in seconds)				
	INVERSE (ANSI)	INVERSE (BS142)	VERY INVERSE	LONG TIME INVERSE	EXTREMELY INVERSE
10 (1)	3.84 to 4.24	4.08 to 4.51	2.84 to 3.14	38.6 to 42.7	2.02 to 2.23
7 (0.7)	2.69 to 2.98	2.86 to 3.16	2.00 to 2.20	27.0 to 29.9	1.42 to 1.57
3 (0.3)	1.16 to 1.29	1.24 to 1.37	0.86 to 0.96	11.6 to 12.9	0.62 to 0.69
1 (0.1)	approx. 0.41	0.42 to 0.47	approx. 0.31	3.86 to 4.27	approx 0.24

Table 5–3: TIME DIAL VERIFICATION – DEFINITE TIME

TIME DIAL 5 A (1 A)	OPERATING TIMES (in seconds)			
	T _{max} = 2 sec.	T _{max} = 4 sec.	T _{max} = 6 sec.	T _{max} = 8 sec.
10 (1)	1.95 to 2.05	3.95 to 4.05	5.45 to 5.05	7.95 to 8.05
7 (0.7)	1.35 to 1.45	2.75 to 2.85	4.15 to 4.25	5.55 to 5.65
3 (0.3)	0.57 to 0.63	1.14 to 1.26	1.71 to 1.89	2.35 to 2.45
1 (0.1)	approx. 0.20	approx. 0.40	0.57 to 0.67	0.76 to 0.86

5.4 INSTANTANEOUS UNIT

a) VERIFICATION OF PICKUP

1. Set the Output Select switch on the front of the relay to the B position so the output relays correspond to phase or ground.
2. Connect the relay as indicated in Figure 5–1: TEST CONNECTIONS on page 5–1. Use a supply voltage with a variable resistor in series, or use an electronic test source.
3. Set the relay at the minimum pickup TOC. Set the instantaneous unit to one times ($1 \times$) the pickup TOC setting. Set the instantaneous time delay to zero (0) seconds.
4. Apply current to the relay and verify that the Pickup LED lights and the output trip relay closes when the current is between 95% and 105% of the pickup TOC setting.
5. With the trip output contact closed, lower the applied current, verifying that the trip relay resets and that the Pickup LED turns off at a current value equal to or greater than 95% of the pickup value.

b) VERIFICATION OF OPERATING TIME

1. With the relay still connected as in Figure 5–1: TEST CONNECTIONS on page 5–1, apply a current of 5 times ($5 \times$) the pickup TOC setting, verifying that the operating time is less than 0.025 seconds.
2. Set the time delay of the instantaneous unit and verify that it is never less than the set time, nor greater than the set time +10 milliseconds.

5.5 GROUND UNIT

Repeat each test with the relay connected as in Figure 5–1: TEST CONNECTIONS on page 5–1, except apply current to the ground unit (terminals 7 and 8). For each test, apply ground settings to the relay as instructed.

