



CAUTIONS:

1. DO NOT TEST AMPTECTOR WHILE BREAKER IS CARRYING CURRENT.
2. IF POSSIBLE, TESTING SHOULD BE PERFORMED WITH AMPTECTOR UNDER TEST CONNECTED TO A DIRECT TRIP ACTUATOR AS IT IS ON A BREAKER. IF A DIRECT TRIP ACTUATOR IS NOT AVAILABLE, CONNECT A 15 TO 30 OHM RESISTOR (1/8 WATT MINIMUM) ACROSS TERMINALS "OP" AND "ON". IF AMPTECTOR IS NOT LOADED IN THIS MANNER, SOME FUNCTIONS AND INDICATORS MAY NOT PERFORM PROPERLY.
3. TO MINIMIZE THERMAL STRESS ON TEST KIT AND AMPTECTOR, HOLD "CALIB" (MOMENTARY) TOGGLE SWITCH FOR NO MORE THAN 15 OR 20 SECONDS AT A TIME.
4. AFTER READING CURRENT BY ANY MEANS, IF CURRENT PERSISTS, USE "STOP" SWITCH TO CUT OFF CURRENT.
5. WHEN CHECKING OUT SETTINGS ON AN AMPTECTOR FOR USE, THE GENERAL PROCEDURE IS TO START WITH THE HIGH CURRENT SETTINGS AND WORK DOWN TO THE LOWEST CURRENT SETTING. THIS AVOIDS UNNECESSARY DIAL CHANGES AFTER CALIBRATION.
6. THE TEST KIT MUST BE HORIZONTAL DURING TEST.
7. THE OUTPUT CURRENT IS A FUNCTION OF THE LINE VOLTAGE WHICH MUST BE REASONABLY SINUSOIDAL AND HAVE GOOD REGULATION. R₁ PROVIDES SOME ADJUSTMENT FOR LOW VOLTAGES.

TESTING AMPTECTOR

Times marked on Amprector dials are TOP of the band - hence, expect shorter times when testing.

(A) 3 Phase

The selector switch permits checking to all if all Amprector phase inputs are operative. Since all feed into a common pick-up and timing circuit, it is only to use one phase to check out all the solid state circuitry functions. It is only necessary to use one circuit function (say, long delay pick-up) to verify that each phase (A, B and C) performs similarly (say, each phase picks up at about 5 amps with long delay pick-up set at 1X).

(B) Pick-up values are mid-band which has $\pm 10\%$ tolerance: (See table)

(C) To Check Long Delay Pick-up (Switch to Lo, Turn Timer OFF).

1. Push "RESET" and then "TEST".
2. Slowly increase current until Long Delay neon lamp (clear) glows steadily indicating Amprector pick-up.
3. Use "STOP" switch to cut off current.

(D) To Check Long Delay Time (Switch to Hi, Short Delay and Inst. Pick-ups set above 6X, Set 30 amp. [6X] with "CALIBRATE" switch) (See Cautions #3 and #7).

1. Push "RESET" and turn Timer "ON".
2. Push "TEST" - Test Kit will stop when Amprector trips the output. Timer should read less than dial setting but not under 2/3 of the setting, i.e. if set at 36 it should be more than 24 seconds.
3. Any other multiple of sensor may be checked, if desired - see performance curves for approximate trip time to be expected.

(E) To Check Instantaneous (Turn Timer OFF)

1. Set Long Delay Time to maximum so Long Delay will not trip too fast.
2. Set Short Delay switch to "READ AMPS" to disable the Short Delay function.
3. Push "RESET" then "TEST" and increase current steadily but rather rapidly until relay "clicks" off in Test Kit. (If current is preset to about 3/4 of setting, using calibrate switch, the final setting can be approached slower for better accuracy). (See Caution #3).
4. Reset - Hold INST switch in "READ" position - push "TEST" button and read current. (See Caution #4).

(F) 12X Discriminator GO/NO-GO Test (If the Amprector does not have an instantaneous trip function, perform this test). (See Cautions #3 and #4).

1. Do Steps E.1. and E.2.
2. With the Current Adjust set at 0, push "RESET", then "TEST". Gradually, but within about 3 seconds raise the current to over about 65 amps using the Current Adjust control. The Amprector should not trip instantaneously. After about 2 seconds activate the Stop switch (Long Delay would eventually trip). Leave the Current Adjust setting where it is.
3. Push "RESET". Wait 10 sec. Push "TEST". The Amprector should trip instantaneously.
4. Using the Calibrate switch, set Current Adjust for 45 amps. Push "RESET". Wait 10 seconds. Push "TEST". The Amprector should not trip instantaneously. Push the Stop switch after about 2 seconds.

(G) To Check Short Delay Pick-Up (Set Instant. to Max.).

1. Place Short Delay switch in OPERATIVE position, time to min. and proceed similar to Instantaneous above.
2. Set Short Delay switch to "READ AMPS" to read ammeter as in E.4. above. (See Caution #4.)

(H) To Check Short Delay Time

NOTE: It is possible, under certain conditions, that the fixed discriminator or instantaneous function may trip instantaneously during short delay time testing. To avoid this, merely hold the Instantaneous Operative/Read Amps Toggle switch in the "READ AMPS" position while performing the test in Step H.4.

1. Set Short Delay Pick-up dial at 4X (20 amperes).
2. Set "CURRENT ADJUST" at 10X (50 amperes) with Calibrate switch. (See Caution #3).
3. Turn Timer on and Short Delay switch to "OPERATIVE".
4. Push "RESET" and manual timer reset button, then "TEST" and timer will give an approximate reading of the delay.

NOTE: This is not accurate enough for close timing of short delay but it will show the difference between the three band calibrations.

(I) To Check Groun Pick-up

1. Hold Ground Test momentary switch in down position during steps 2, 3 and 4.
2. Place "CURRENT ADJUST" knob at zero, switch to Lo.
3. Push "RESET" then "TEST".
4. Turn "CURRENT ADJUST" until unit trips (from 0.9 to 1.2 amps).
5. For Amprectors with adjustable pick-up, see chart on top of Amprector, in D.B. 32-850 or I.B. 33-790.
6. If sensors are connected to the Amprector during the test, expect increased pick-up currents due to the required sensor exciting current. Again, see the chart mentioned in (I) 5. for typical values.



(J) To Check Ground Time

1. With Ground Test momentary switch and calibrate switch in down position, turn Current Adjust to get 2.5 amperes.
2. Turn "TIMER" on. (If timer is not at zero, push manual reset button).
3. Release "CALIBRATE" switch, continue to hold Ground Test switch down.
4. Push "RESET" and manual timer reset button, then "TEST" and timer will give an approximate reading of the delay.

(K) Long Delay Reset Test (with any long delay pick-up and time setting).

1. Set current at 30 amps and find long delay trip time as in Section D. (Remember Hi/Lo switch and Short Delay and Inst. Pick-up settings.)
2. Start test again, but when time is about 80% of the above trip time, quickly reduce current to about 80% of long delay pick-up setting. (Pick-up light should go out).
3. Quickly raise current back to 30 amps and allow Amp- tector to trip.
4. The total time on counter should be between 150 and 200% of trip time in (1) above.
(If time setting in (1) is very low, run test at 15 amps instead of 30 amps).

CHECKING TEST KIT

(When first received or for Maintenance Check)

(A more rigorous check-out would be to perform ALL Amp- tector tests on a standard Amp- tector).

With the Polarized 11 Pin Banana plug assembly not connected to an Amp- tector, Timer switch off, Short Delay switch in operative position, Hi-Lo switch in Lo, Current Adjust set to 0, plug tester into 120 volt, 60* Hertz source. Turn power switch on, power pilot lamp should light (red) and reset pilot lamp should light (amber). If reset pilot lamp is not lit, push "RESET" button, reset pilot lamp (amber) should light. Turn timer switch on, timer should not run. Push "TEST" button, test pilot lamp (red) should light, timer should operate counting seconds, and reset pilot lamp should go out. Operate "STOP" toggle switch (momentary), timer should stop and test pilot lamp should go out. Push manual reset button on timer, timer should reset to zero. If any of the above checks do not work, operate Stop switch and Reset switch and repeat check.

For balance of checks on test kit, use a known properly cali- brated amp- tector.

Banana plug assembly connected to the Amp- tector, timer switch off, short delay toggle switch in "READ AMPS" posi- tion, Hi-Lo switch in Lo, circuit selector set at "A". Amp- tector settings: Set long delay pickup at 1.0 (5 amps $\pm 10\%$), long delay seconds at 36 (trip time for 6X current, 30 amps); short delay pick-up at 10, seconds at .50; Instantaneous pick- up at 10; Ground pick-up at 'A' (1 amp), seconds at .50.

Turn power ON, hold "CALIB" (momentary) toggle switch in Calibrate position and turn Current Adjust knob slowly from zero to maximum. Ammeter should read from zero to approxi- mately 7 amperes. Turn Current Adjust knob to zero and put Hi-Lo switch in Hi position, hold "CALIBRATE" switch in Calibrate position and turn Current Adjust knob from zero to maximum, ammeter should read from 0 to about 70 amperes, depending upon the 120V line voltage and the test unit's R1 setting. (See Cautions #3 and #7.)

Long delay pick-up, set Current Adjust to 0, Hi-Lo switch to Lo, push "RESET" button, push "TEST" button, increase "CURRENT ADJUST" knob slowly until long delay pick-up pilot lamp (clear) is lit. This lamp should light at 5 amperes $\pm 10\%$. Lamp will go out when current is lowered below pick- up. Repeat with Selector switch on Phase B and again with switch on Phase C.

Long delay time, set "Circuit Selector" to "A". Hi-Lo switch to Hi, hold "CALIBRATE" switch in Calibrate position and turn "CURRENT ADJUST" knob until ammeter reads 30. Release "CALIBRATE" switch, press "RESET" button, Amp- tector long delay set for 36 seconds, turn timer on, push "TEST" button. Control the current to see that it stays at 30 amperes (see caution #7). Amp- tector should turn off timer and current ("TEST" pilot lamp should go out) between 24 to 36 seconds. Push "RESET" button, "RESET" pilot lamp should go on. Push manual reset button on timer, timer should reset to zero.

**Tester can be used on 50 Hz but timer reading must be multiplied by 6/5. Dials for short delay and inst. pickup may be blocked at 10X on 50 Hertz Amp- tectors).*

REPAIR PARTS

The following parts are available at Westinghouse East Pittsburgh, Pa.

	Style No.
(a) Handle Plug and Cord Assembly	682C898G01
(b) Timer (for 140D481G02 only).	3707A11H01
(c) Details for replacing Prong in Handle and Cord Assembly. (11 ea. per Test Kit)	
Connecting Stud	794A477H01
Banana Plug	794A478H01

TABLE OF LIMITS FOR STEP B

LONG DELAY	PICK-UP LIMITS (AMPS)	SHORT DELAY AND INSTANTANEOUS	PICK-UP LIMITS (AMPS)
.5X = 2.5 AMP	2.25 to 2.75	4X = 20 AMP	18 to 22
.6X = 3.0	2.7 to 3.3	5X = 25	22.5 to 27.5
.7X = 3.5	3.15 to 3.85	6X = 30	27 to 33
.8X = 4.0	3.6 to 4.4	7X = 35	31.5 to 38.5
.9X = 4.5	4.05 to 4.95	8X = 40	36 to 44
1.0X = 5.0	4.5 to 5.5	10X = 50	45 to 55
1.25X = 6.25	5.6 to 6.9	12X = 60	54 to 66