

Operating Instructions

FOR **(W)** SELTRONIC BREAKERS
DIGITAL 310 BREAKERS

FILED # 270

HOOK-UP

Caterpillar

Before Hook-Up

1. Remove breaker from service.
2. Breaker should be closed and in the "On" position.
3. Record breaker settings so they can be returned to their original position.
4. Set all breaker settings to maximum position.
5. Set "Test Type" switch on the test kit to "Off".

WARNING: ELECTRICAL SHOCK IS POSSIBLE FROM THE TEST LEADS.
BE SURE THAT THE "TEST TYPE" SWITCH IS IN THE "OFF" POSITION.

CAUTION: THE TRIP UNIT KIT CAN BE DAMAGED IF A RATING IS NOT INSTALLED
INSTALL A RATING PLUG IN THE TRIP UNIT BEFORE USING THE TEST KIT.

Hook-Up

1. Remove the test cord from inside the test kit for the type of breaker to be tested. See Figure 1, 2 & 3.
2. Connect the test cord to "Output" on test kit and insert opposite end into breaker. For CS Series breakers select input to be tested.
3. Plug test kit power cord into a power source.

Figure 1-Test Cords

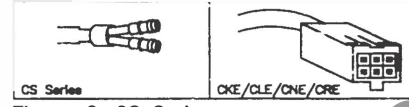


Figure 2-CS Series

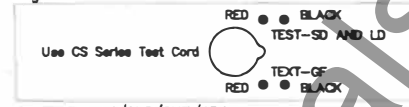
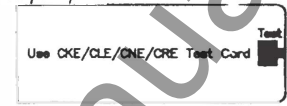


Figure 3-CKE/CLE/CNE/CRE



TESTS

All tests performed are functional operation tests only and are not intended as a check of the actual calibration of the breaker. Precise calibration should be done with primary injection equipment.

Long Delay Test

1. Set "Test Type" switch to "Long Delay". (RED "RUNNING" LIGHT MAY COME ON BRIEFLY)
2. Examine breaker, rating plug and trip unit nameplates to determine breaker frame and rating of unit per their catalog numbers. Breakers with ground fault are the same as the standards.
3. Select "Test Range" from "Long Delay Test Position", "Breaker Frame" and "Rating" shown on "Test Chart".
4. When green "Ready" light turns on the unit is ready for testing. Push "Start" button and begin timing. Release "Start" pushbutton.
 - A. The red "Running" light turns on during testing.
 - B. Breaker will trip within "Time Range" shown on "Test Chart".
5. Set "Test Type" Switch to "Off"
6. Reset and reclose breaker.

NOTE: ALLOW THE MINUTES BEFORE REPEATING LONG DELAY TEST.

Short Delay Test

1. Set "Test Type" switch to "Short Delay". (RED "RUNNING" LIGHT MAY COME ON BRIEFLY)
2. Set "Short Delay Time" setting on trip unit, if available, to minimum.
3. When green "Ready" light turns on, push "Start" button.
 - A. The red "Running" light turns on during test.
 - B. Breaker will trip instantaneously. Release "Start" pushbutton.
 - C. The green "Ready" light turns on in four to six seconds.
4. Reset and reclose breaker

Ground Fault Test

1. Repeat Step #2 in "Hook-up" for Seltronic only.
2. Set "Test Type" switch to "Ground Fault". (RED "RUNNING" LIGHT MAY COME ON BRIEFLY)
3. Set ground fault pick-up setting on trip unit to minimum position.
4. When the green "Ready" light turns on push "Start" button and hold.
 - A. The red "Running" light turns on during test.
 - B. The breaker will trip with a slight delay, release "Start" pushbutton.
 - C. The green "Ready" light turns on in four to six seconds.
5. Set "Test Type" switch to "Off" and then back to "Ground Fault". (RED "RUNNING" LIGHT MAY COME ON BRIEFLY)
6. Reset and reclose breaker.
7. Set ground fault time setting on trip unit to minimum position.
8. When the green "Ready" light turns on push "Start" button and hold.
 - A. The red "Running" light turns on during test.
 - B. The breaker will trip instantaneously, release "Start" pushbutton.
 - C. The green "Ready" light turns on in four to six seconds.
9. Set "Test Type" switch to "Off".
10. Reset and reclose breaker.
 - A. Unplug test kit from trip unit.
 - B. Return trip unit settings to their original settings.

Should Breaker Fail Test.

1. Check to see if green "Ready" light is on: If it is not:
 - A. Make sure the test kit has power AC applied.
 - B. Unplug the test kit from the power source, examine the fuse in the test kit and replace it if blown. Plug test kits power cord into power source.
2. Repeat test and if breaker again fails contact your local challenger representative.

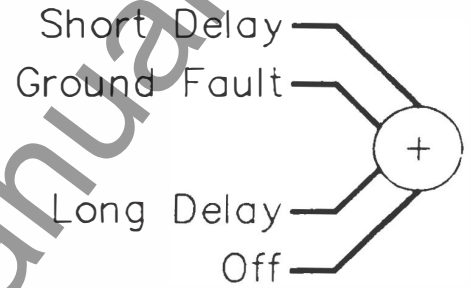
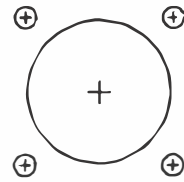
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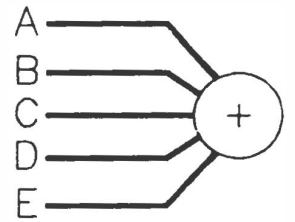
Seltronic
Trip Unit
Test Kit



Style



Test Range



Test

Ready ⊕

Running ⊕

Start ⊕



Test Chart 1

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
LC150	75	A	32	64
	90	A	49	92
	100	B	25	50
	125	B	40	78
	150	C	32	64
LC300	150	A	32	64
	175	A	44	87
	200	B	25	50
	225	B	32	64
	250	B	40	78
	275	C	27	54
	300	C	32	64
LC400	200	A	32	64
	225	A	41	81
	250	B	22	44
	300	B	32	64
	350	C	25	49
	400	C	32	64
LC600	300	A	32	64
	350	A	44	87
	400	B	25	50
	450	B	32	64
	500	B	40	78
	600	C	32	64

Test Chart 2

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
LCL250	125	A	38	75
	150	A	55	107
	175	B	33	65
	200	B	43	84
	225	C	31	60
	250	C	38	75
	LCL400	200	A	38
225		A	48	94
250		B	26	52
275		B	32	62
300		B	38	75
350		C	29	57
400		C	38	75
MC800	400	A	38	75
	500	B	26	52
	600	B	38	74
	700	C	30	57
	800	C	38	75
	NC1200	800	B	30
900		B	38	74
1000		B	46	92
1100		C	32	63
1200		C	38	75

Test Chart 3

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
PC2000	1000	A	38	75
	1200	A	55	107
	1400	B	33	65
	1600	B	43	85
	1800	C	31	60
	2000	C	38	75
PC2500	1400	A	47	94
	1600	B	27	54
	1800	B	35	68
	2000	B	43	85
	2500	C	38	75
PC3000	1600	A	43	85
	1800	A	55	107
	2000	B	30	59
	2500	B	47	92
	3000	C	38	75

Test Chart 4

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
AQB-L400 QF	250	B	33	67
	300	B	44	92
	350	B	58	119
	400	B	78	153
AQB-L400 QM	250	D	12	24
	300	D	16	33
	400	D	21	43
AQB-LL400 QS	250	D	28	55
	300	D	12	24
	350	D	16	33
	400	D	21	43
AQB-A103	10	C	25	45
	25	E	90	175
	40	C	25	45
	100	E	90	175

Test Chart 5

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
AQB-A1602 800A	400	B	21	42
	480	B	31	62
	560	C	24	48
	640	C	31	62
	700	D	23	46
	800	D	31	62
AQB-A1602 1600A	800	B	21	42
	900	B	27	54
	1000	B	33	66
	1200	C	27	54
	1400	D	23	46
	1600	D	31	62

Test Chart 6 KS SELTRONIC

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
KS125	63	A	36	73
	70	B	20	41
	90	B	33	66
	100	B	40	81
	110	C	28	56
	125	C	36	73
KS250	125	A	36	73
	150	B	23	46
	160	B	26	53
	175	B	32	63
	200	B	40	81
	225	C	29	58
KS400	250	C	36	73
	200	A	36	73
	225	B	20	41
	250	B	25	50
	300	B	36	73
	315	B	40	81
350	C	28	56	
400	C	36	73	

Test Chart 7 KES Digitrip RMS 310

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
KES125	63	A	25	50
	70	A	31	61
	90	B	23	46
	100	B	28	56
	110	B	34	68
	125	C	24	48
KES250	125	A	24	49
	150	A	35	70
	160	A	40	80
	175	B	22	43
	200	B	28	56
	225	B	36	71
KES400	250	C	24	48
	200	A	24	49
	225	A	31	62
	250	A	38	76
	300	B	25	50
	315	B	27	55
350	B	34	67	
400	C	24	48	

Test Chart 8 LS SELTRONIC

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
LS	300	A	36	73
	315	A	41	82
	350	A	49	98
	400	B	29	58
	500	B	45	91
	600	C	36	73
	630	C	39	79

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

Test Chart 9 LES/MES Digitrip RMS 310

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
LES600	300	A	24	49
	315	A	27	54
	350	A	33	67
	400	B	20	39
	500	B	31	61
	600	C	24	48
	630	C	26	53
LES/MES800	400	B	20	39
	500	B	31	61
	600	C	24	48
	630	C	26	53
	800	D	28	56

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

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Test Chart 10 NS SELTRONIC

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
ND800	400	A	31	62
	450	A	40	80
	500	B	22	44
	550	B	27	54
	600	B	32	64
	630	B	35	70
	700	C	24	48
	800	C	31	62
ND1200	600	B	32	64
	630	B	35	70
	700	C	24	48
	800	C	31	62
	900	D	25	50
	1000	D	31	62
	1200	E	32	64
	1250	E	35	70

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

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Test Chart 11 NES Digitrip RMS 310

Breaker Frame	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
NES800	400	A	31	62
	450	A	40	80
	500	B	22	44
	550	B	27	54
	600	B	32	64
	630	B	35	70
	700	C	24	48
	800	C	31	62
	NES1200	600	B	32
630		B	35	70
700		C	24	48
800		C	31	62
900		D	25	50
1000		D	31	62
1200		E	32	64
1250		E	35	70

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

Test Chart 12 RS SELTRONIC

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
RS1600	800	C	25	52
	1000	C	39	79
	1200	D	36	74
	1250	D	39	82
	1400	E	34	72
	1500	E	39	82
	1600	E	44	92
RS2000	1000	C	25	52
	1200	C	37	73
	1250	C	39	79
	1400	D	32	63
	2000	E	44	92

Test Chart 13 RES DIGITRIP 310

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
RES1600	800	B	31	61
	1000	C	26	52
	1200	D	24	49
	1250	D	27	53
	1400	E	24	47
	1500	E	27	54
RES2000	1600	E	31	62
	1000	B	31	61
	1200	C	24	48
	1250	C	26	52
	1400	D	21	43
	1600	D	28	56
RES2500	2000	E	31	62
	1200	B	28	56
	1250	B	31	61
	1600	C	27	54
	2500	D	28	56

Test Chart 14

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
KS Mining *	225	B	21	42
	400	C	36	73
LS Mining *	600	C	36	73

* Not For Instant Only Styles.

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

Test Chart 15 SPB Digitrip RMS 210

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
SPB400	200	B	30	61
	250	C	26	52
	300	D	24	48
	400	E	31	61
SPB800	400	B	31	61
	600	D	24	48
	630	D	27	53
	800	E	31	61
SPB1200	600	B	31	61
	630	C	18	37
	800	C	30	59
	1000	D	30	60
	1200	E	31	61

Test Chart 16 SPB Digitrip RMS 210

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
SPB1250	600	B	31	61
	630	C	18	37
	800	C	30	59
	1000	D	30	60
	1200	E	31	61
	1250	E	33	66
SPB1600	800	B	31	61
	1000	C	26	52
	1200	E	17	35
	1250	E	19	37
SPB2000	1600	E	31	61
	1000	B	31	61
	1200	C	24	48
	1250	C	26	52
	1600	D	28	55
2000	E	31	61	

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

Test Chart 17 SPB Digitrip RMS 210

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
SPB2500	1600	C	19	38
	2000	D	19	38
	2500	E	21	43
SPB3000	1600	C	19	38
	2000	C	30	59
	2500	D	30	60
	3000	E	31	61
SPB3150	1600	C	19	38
	2000	C	30	59
	2500	D	30	60
	3000	E	31	61
	3150	E	34	68

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

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Test Chart 18 SPB Digitrip RMS 210

Breaker Trip Unit	Rating	Long Delay Test Position	Time Range For Trip-Seconds	
			Min.	Max.
SPB4000	2000	B	31	61
	2500	C	26	52
	3000	D	24	48
	3150	D	27	53
	3200	D	28	55
	4000	E	31	61
SPB5000	3000	B	31	61
	3150	B	34	67
	3200	C	19	38
	4000	C	30	59
	5000	D	30	60

Important:

Wait 5 minutes between a long delay test and any other previous test. A memory effect will cause the time to be less than indicated above if the 5 minute waiting period is ignored.

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