



FIELD TESTING OF STANDARD 40°C CALIBRATED THERMAL MAGNETIC MOLDED CASE BREAKERS

As stated in the National Electric Code, the purpose of a circuit breaker is to open "the electric circuit if the current reaches a value which will cause an excessive or dangerous temperature in associated conductors or conductor insulation."

Field testing of molded case circuit breakers is intended to

enable qualified people to determine that a particular circuit breaker will perform its basic circuit protection function. Field testing is not intended to verify published time-current characteristic curves, since these curves are determined under precisely controlled ambient temperature and electrical conditions. Field testing is aimed at assuring that the circuit breaker is functionally operable.

TEST PROCEDURE

CAUTION: All tests are to be made only on circuit breakers and equipment which are de-energized, disconnected, and isolated from live parts.

1. Any deviation from this procedure will result in time values different from those in the table.
2. Connect breakers, one pole at a time, using four feet of wire or cable as indicated.
3. Conduct test at 300% of breaker rating in an ambient of 25°C (77°F).
4. Allow at least five minutes cooling time between tests of adjacent poles.
5. If repeated tests on any pole are to be made, allow at least twenty minutes cooling time.
6. Resulting trip time should agree with trip times indicated.

NOTE: Also shown in the table are maximum tripping times for cable protection. These values are based on heat tests on conductors in conduit. If the value exceeds the maximum tripping time shown, but falls below the maximum tripping time for cable damage, the circuit breaker is still providing an acceptable level of protection. Consideration should be given to coordination with other protective devices before replacing a circuit breaker that trips beyond the time value.



FIELD TEST RESULTS

Test values are based on 300% of breaker rating on individual poles at 25°C (77°F) using four feet of copper wire or cable as indicated.

Type Breaker	Amp. Rating	Wire Size Per Pole	Tripping Time In Seconds		
			Minimum	Maximum	Max. For Cable Protect.
CC	15-20	1-# 12	5	40	100
	30	1-# 10	5	40	100
CE, CF	15-20	1-# 12	7	35	100
	30-40	1-# 8	7	35	100
CE, CF	50-100	1-# 1	9	100	200
CJ	150-225	1-# 4/0	45	180	300
CJ	250-400	2-# 3/0	35	200	300
CM	400-450	2-# 3/0	30	250	300
CM	500-600	2-350 MCM	30	280	350
CM	700-800	3-300 MCM	70	400	600
CP	600	2-350 MCM	35	190	350
CP	800-1200	4-350 MCM	75	330	600
CP	1400-1600	5-400 MCM	230	420	750
CR	1800-2000	5-500 MCM	260	450	750
EQ	15-20	1-# 12	4	35	100
	30-40	1-# 8	4	35	100
	50-100	1-# 1	5	45	200
QJ	125-225	1-# 4/0	25	155	300
E	15-20	1-# 12	8	40	100
	30-40	1-# 8	8	40	100
	50-100	1-# 1	9	45	200
EH, EF, HE	15-20	1-# 12	10	50	100
	30-40	1-# 8	10	50	100
	50-100	1-# 1	9	75	200
FJ	70-100	1-# 1	30	120	200
	125-225	1-# 4/0	35	160	300
JL	70-100	1-# 1	50	120	200
	125-225	1-# 4/0	40	160	300
	250-400	2-# 3/0	30	200	300
KM	250-450	2-# 3/0	70	230	300
	500-600	2-350 MCM	45	200	350
	700-800	3-300 MCM	55	280	600
HP	800-1200	4-350 MCM	35	350	600
	1400-1600	5-400 MCM	100	400	750
HR	1800-2000	5-500 MCM	170	440	750