

Achieving Type 2 “No Damage” Motor Start Protection

Allen Bradley NEMA Motor Starters & Mersen Fuses

Type 2 “No Damage” Protection - What Is It and Which Fuses Are Best?

Type 2 protection, also referred to as “no damage” protection, simply means that if a short circuit occurs, the short circuit protective device will operate fast enough to prevent fault current damage to healthy equipment in the system. Tests show that current-limiting fuses are the best choice for the protection of the motor controllers if damage-free performance is required. To ensure that correct fuse choices are made, short circuit tests must be made on every possible combination of motor control and fuse. This sheet summarizes a major manufacturer’s motor starter and the Mersen time-delay fuses which give Type 2 “no damage” protection. All combinations are UL witnessed and certified.

200 Volt, Three-Phase Motors

HP (FLC)	Starter †	Cat. No.	Heater # Element	Class J	Class RK1	SCCR (kA)
1 1/2	0	509-A	W48	AJT15	A6D15R	100
2	0	509-A	W50	AJT15	A6D15R	100
3	0	509-A	W53	AJT20	A6D20R	100
5	1	509-B	W59	AJT30	A6D30R	100
7 1/2	2	509-C	W63	AJT50	A6D50R	100
10	3	509-D	W65	AJT60	A6D60R	100
15	3	509-D	W68	AJT100	A6D100R	100
20	3	509-D	W71	AJT100	A6D100R	100
25	3	509-D	W75	AJT150	A6D150R	100
30	4	509-E	W77	AJT175	A6D175R	100
40	4	509-E	W81	AJT200	A6D200R	100
50	5	509-F	W37	AJT200††	A6D200R††	100
60	5	509-F	W39	AJT250††	A6D250R††	100
75	5	509-F	W41	AJT350	A6D350R	100

460 Volt, Three-Phase Motors

HP (FLC)	Starter †	Cat. No.	Heater # Element	Class J	Class RK1	SCCR (kA)
5	0	509-A	W49	AJT15	A6D15R	100
7 1/2	1	509-B	W53	AJT20	A6D20R	100
10	1	509-B	W56	AJT30	A6D30R	100
15	2	509-C	W61	AJT45	A6D45R	100
20	2	509-C	W63	AJT60	A6D60R	100
25	3	509-D	W66	AJT60	A6D60R	100
30	3	509-D	W66	AJT90	A6D90R	100
40	3	509-D	W69	AJT100	A6D100R	100
50	3	509-D	W72	AJT100	A6D100R	100
60	4	509-E	W74	AJT125	A6D125R	100
75	4	509-E	W77	AJT175	A6D175R	100
100	4	509-E	W82	AJT200	A6D200R	100
125	5	509-F	W37	AJT200††	A6D200R††	100
150	5	509-F	W39	AJT250††	A6D250R††	100
200	5	509-F	W42	AJT400	A6D400R	100

200 Volt, Three-Phase Motors

HP (FLC)	Starter †	Cat. No.	Heater # Element	Class J	Class RK1	SCCR (kA)
2	0	509-A	W48	AJT15	A6D15R	100
3	0	509-A	W52	AJT20	A6D20R	100
5	1	509-B	W57	AJT30	A6D30R	100
7 1/2	2	509-C	W61	AJT45	A6D45R	100
10	3	509-C	W64	AJT60	A6D60R	100
15	3	509-D	W66	AJT90	A6D90R	100
20	3	509-D	W69	AJT100	A6D100R	100
25	3	509-D	W73	AJT100††	A6D100R††	100
30	3	509-D	W75	AJT150	A6D150R	100
40	4	509-E	W79	AJT175	A6D175R	100
50	4	509-E	W83	AJT200	A6D200R	100
60	5	509-F	W37	AJT200††	A6D200R††	100
75	5	509-F	W40	AJT300	A6D300R	100
100	5	509-F	W43	AJT400	A6D400R	100

575 Volt, Three-Phase Motors

HP (FLC)	Starter †	Cat. No.	Heater # Element	Class J	Class RK1	SCCR (kA)
5	0	509-A	W47	AJT12	A6D12R	100
7 1/2	1	509-B	W51	AJT20	A6D20R	100
10	1	509-B	W53	AJT20	A6D20R	100
15	2	509-C	W58	AJT35	A6D35R	100
25	2	509-C	W63	AJT60	A6D60R	100
30	3	509-D	W64	AJT70	A6D70R	100
40	3	509-D	W66	AJT90	A6D90R	100
50	3	509-D	W69	AJT100	A6D100R	100
60	4	509-E	W71	AJT100	A6D100R	100
75	4	509-E	W74	AJT125	A6D125R	100
100	4	509-E	W78	AJT175	A6D175R	100
125	5	509-F	W35	AJT200	A6D200R	100
150	5	509-F	W36	AJT200††	A6D200R††	100
200	5	509-F	W40	AJT300	A6D300R	100

† Catalog number is not complete. Refer to Bulletin 509 Section of A-B Industrial Control Catalog to specify complete catalog starter number.

†† May be too small to allow some motors to start.

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200 Volt, Three-Phase Motors

HP (FLC)	Contactor Basic Cat. No. (a)	Overload Relay Basic Cat. No. (b)	CLASS J	CLASS CC	SCCR (kA)
1/2	100-C09	193-E**EB	AJT6	ATDR6	100
3/4	100-C09	193-E**EB	AJT10	ATDR10	100
1	100-C09	193-E**FB	AJT15†	ATDR15	100
1 1/2	100-C09	193-E**FB	AJT15	ATDR15	100
2	100-C09	193-E**FB	AJT15	ATDR15††	100
3	100-C12	193-E**FB	AJT20	ATDR20††	100
5	100-C23	193-E**GB	AJT30	ATDR30††	100
7 1/2	100-C30	193-E**HC	AJT40	-	100
10	100-C37	193-E**HC	AJT50	-	100
15	100-C60	193-E**KE	AJT80	-	100
20	100-C72	193-E**KE	AJT100	-	100
25	100-C85	193-E**KE	AJT100††	-	100

230 Volt, Three-Phase Motors

HP (FLC)	Contactor Basic Cat. No. (a)	Overload Relay Basic Cat. No. (b)	CLASS J	CLASS CC	SCCR (kA)
1/2	100-C09	193-E**DB	AJT6	ATDR6	100
3/4	100-C09	193-E**EB	AJT10†	ATDR10	100
1	100-C09	193-E**FB	AJT15†	ATDR15	100
1 1/2	100-C09	193-E**FB	AJT15	ATDR15	100
2	100-C09	193-E**FB	AJT15	ATDR15	100
3	100-C12	193-E**FB	AJT20	ATDR20	100
5	100-C16	193-E**GB	AJT20††	ATDR20††	100
7 1/2	100-C23	193-E**GB	AJT30††	ATDR30††	100
10	100-C30	193-E**HC	AJT40††	-	100
15	100-C43	193-E**JD	AJT50††	-	100
20	100-C60	193-E**KE	AJT80††	-	100
25	100-C72	193-E**KE	AJT100	-	100
30	100-C85	193-E**KE	AJT100††	-	100

460 Volt, Three-Phase Motors

HP (FLC)	Contactor Basic Cat. No. (a)	Overload Relay Basic Cat. No. (b)	CLASS J	CLASS CC	SCCR (kA)
1/2	100-C09	193-E**DB	AJT3	ATDR3	100
3/4	100-C09	193-E**DB	AJT6†	ATDR6	100
1	100-C09	193-E**DB	AJT6	ATDR6	100
1 1/2	100-C09	193-E**EB	AJT10†	ATDR10	100
2	100-C09	193-E**EB	AJT10†	ATDR10	100
3	100-C09	193-E**FB	AJT15†	ATDR15	100
5	100-C09	193-E**FB	AJT15	ATDR15††	100
7 1/2	100-C12	193-E**FB	AJT20	ATDR20††	100
10	100-C16	193-E**GB	AJT20††	ATDR20††	100
15	100-C23	193-E**GB	AJT30††	ATDR30††	100
20	100-C30	193-E**HC	AJT40	-	100
25	100-C37	193-E**HC	AJT50	-	100
30	100-C43	193-E**JD	AJT50††	-	100
40	100-C60	193-E**KE	AJT80	-	100
50	100-C72	193-E**KE	AJT100	-	100
60	100-C85	193-E**KE	AJT100††	-	100

575 Volt, Three-Phase Motors

HP (FLC)	Contactor Basic Cat. No. (a)	Overload Relay Basic Cat. No. (b)	CLASS J	CLASS CC	SCCR (kA)
1/2	100-C09	193-E**DB	AJT3	ATDR3	100
3/4	100-C09	193-E**DB	AJT3	ATDR3	100
1	100-C09	193-E**DB	AJT6†	ATDR6	100
1 1/2	100-C09	193-E**DB	AJT6	ATDR6	100
2	100-C09	193-E**EB	AJT10†	ATDR10	100
3	100-C09	193-E**FB	AJT10	ATDR10	100
5	100-C09	193-E**FB	AJT15	ATDR15	100
5	100-C09	193-E**FB	AJT15	ATDR15††	100
7 1/2	100-C09	193-E**FB	AJT15	ATDR15††	100
10	100-C12	193-E**FB	AJT20	ATDR20††	100
15	100-C23	193-E**GB	AJT30	ATDR30††	100
20	100-C30	193-E**HC	AJT40	-	100
25	100-C37	193-E**HC	AJT50	-	100
30	100-C37	193-E**HC	AJT50	-	100
40	100-C60	193-E**KE	AJT80	-	100
50	100-C72	193-E**KE	AJT100	-	100
	100-C85	193-E**KE	AJT100	-	100

(a) Catalog number is not complete, add coil voltage code and auxiliary contact description.

(b) Catalog number is not complete, replace ** with trip class and reset mode.

†† May be too small to allow some motors to start.

† Sized larger than code max for single motor

http://literature.rockwellautomation.com/idc/groups/literature/documents/br/193-br001_-en-p.pdf

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