

Mag-Gard® Motor Circuit Protectors (MCP) are instantaneous-trip magnetic-only circuit breakers. They have a single adjustment which simultaneously sets the magnetic trip level of each individual pole. Mag-Gard® circuit breakers comply with NEC requirements for providing motor circuit protection when installed as part of a UL Listed combination controller having motor overload protection. Interrupting ratings are established for these UL Recognized Components only when they are used in combination with motor starters with properly sized overload relays and contactors.

All Mag-Gard circuit breakers will accept the same lugs and accessories as equivalent circuit breakers. Mag-Gard circuit breakers are available with I-Line construction. ♦ High-interruption (H) construction Mag-Gard circuit breakers (LHL and MHL) are also available.

Table 7.65: Magnetic Only 3–1200 A 600 Vac, 50/60 Hz▲

Ampere Rating	Adjustable Trip Range (A)	Suffix	3P only			
			Cat. No.	\$ Price		
GJL ♦	3	9–33 A	GJL36003M01	1089.00		
	7	21–77 A	GJL36007M02	1089.00		
	15	45–165 A	GJL36015M03	1089.00		
	30	90–330 A	GJL36030M04	1089.00		
	50	150–550 A	GJL36050M05	1380.00		
	75	225–825 A	GJL36075M06	1643.00		
LAL	400	500–1000 A	LAL3640022M	4619.00		
		750–1600 A	LAL3640028M	4619.00		
		1000–2000 A	LAL3640030M	4619.00		
		1125–2250 A	LAL3640031M	4619.00		
		1250–2500 A	LAL3640032M	4619.00		
		1500–3000 A	LAL3640033M	4619.00		
		1750–3500 A	LAL3640035M	4619.00		
		2000–4000 A	LAL3640036M	4619.00		
MAL ★	600 800 1000	625–1250 A	25M	MAL36600 MAL36800 MAL361000	Add Suffix	7560.00 9927.00 12705.00
		750–1500 A	26M			
		1000–2000 A	30M			
		1500–3000 A	33M			
		2000–4000 A	36M			
		2500–5000 A	40M			
		3000–6000 A	42M			
		3500–7000 A	44M			
		4000–8000 A	45M			
		4500–9000 A	46M			
5000–10000 A	47M					
J-Interrupting—600 Vac						
PJL PLL	600 800 1000 1200	1200–10000 A	PJL36060M68			7560.00 9927.00 12705.00 16517.00
		1200–10000 A	PJL36080M68			
		1500–10000 A	PJL36100M69			
		1800–10000 A	PJL36120M70			
L-Interrupting—480 Vac						
PJL PLL	600 800 1000 1200	1200–10000 A	PLL34060M68			8006.00 10514.00 13455.00 17492.00
		1200–10000 A	PLL34080M68			
		1500–10000 A	PLL34100M69			
		1800–10000 A	PLL34120M70			

▲ 250 Vdc ratings are available except on PJ and PL. No UL component recognition.

Circuit Breaker	250 Vdc Multiplier
LAL	High = 1.2 Low = 1.4
MAL	High = 1.1 Low = 1.2

- UL magnetic trip tolerances are -20%/+30% from the nominal values shown.
- ♦ No GJL I-Line available.
- ★ Each ampere rating can be ordered with any designated trip range for the frame by adding the proper suffix to the catalog numbers.

Accessories Page 7-36 and Supplemental Digest
 Optional Lugs Page 7-39 and Supplemental Digest
 Dimensions Pages 7-54 and 7-55
 Enclosures Page 7-56



Adjustable instantaneous-trip circuit breakers are intended for use in combination with motor starters with overload relays for the protection of motor circuits from short circuits. Other specific applications include rectifiers and resistance welders. These circuit breakers contain a magnetic trip element in each pole with the trip point adjustable from the front. Interrupting ratings are determined by testing the instantaneous-trip circuit breakers in combination with a contactor and overload relay.

Select instantaneous-trip circuit breakers as follows:

This selection table is suitable for motors, other than NEMA Design E, with locked-rotor indicating code letters per NEC® Table 430.7 (b) as follows:

Table 7.66: Locked-Rotor Indicating Codes

Horsepower	Motor Code letter
1/2 or less	A-L
3/4 to 1-1/2	A-K
2 to 3	A-J
5 to 25	A-H
30 to 125	A-G
150 or more	A-F

- For other motors order a special thermal-magnetic circuit breaker with magnetic trip settings for the specific motor—

Table 7.67: GJL Adjustable Instantaneous-Trip Circuit Breakers for Single Motor Circuit Protection

Hp Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors				Full Load Amperes▲	GJL Family Mag-Gard Circuit Breaker Cat. No.	Magnetic Trip Settings■	
3Ø 60 Hz						MIN	MAX
200 Vac	230 Vac	460 Vac	575 Vac				
1/2	3/4	1/2	0.8	GJL36003M01♦	1100%	4100%	
			1	GJL36003M01♦	900%	3300%	
		3/4	1.1	GJL36003M01♦	800%	3000%	
			1.4	GJL36003M01	600%	2400%	
		1	1.8	GJL36003M01	500%	1800%	
			2	GJL36003M01	500%	1700%	
	1-1/2	1	2.1	GJL36003M01	400%	1600%	
			2.3	GJL36003M01	400%	1400%	
		1-1/2	2.6	GJL36003M01	300%	1300%	
			2.7	GJL36003M01★	300%	1200%	
		3/4	2.8	GJL36003M01★	300%	1200%	
			3.2	GJL36007M02	700%	2400%	
3/4	1	3.4	GJL36007M02	600%	2300%		
		3.6	GJL36007M02	600%	2100%		
	3	3.9	GJL36007M02	500%	2000%		
		4.1	GJL36007M02	500%	1900%		
	1-1/2	4.8	GJL36007M02	400%	1600%		
		5.2	GJL36007M02	400%	1500%		
1-1/2	1	3	6	GJL36007M02	400%	1300%	
			6.1	GJL36015M03	700%	2700%	
		5	6.8	GJL36015M03	700%	2400%	
			7.6	GJL36015M03	600%	2200%	
		7-1/2	7.8	GJL36015M03	600%	2100%	
			9	GJL36015M03	500%	1800%	
	3	7-1/2	9.6	GJL36015M03	500%	1700%	
			10	GJL36015M03	400%	1500%	
		10	11	GJL36030M04	600%	2400%	
			14	GJL36030M04	600%	2200%	
		5	15	GJL36030M04	500%	1900%	
			17.5	GJL36030M04	500%	1900%	
5	7-1/2	15	21	GJL36030M04	400%	1600%	
			22	GJL36030M04	400%	1500%	
		20	25.3	GJL36030M04	400%	1300%	
			27	GJL36050M05	600%	2000%	
		10	28	GJL36050M05	500%	2000%	
			32	GJL36050M05	500%	1700%	
	15	15	32.2	GJL36050M05	500%	1700%	
			34	GJL36050M05	400%	1600%	
		30	40	GJL36050M05	400%	1400%	
			41	GJL36050M05	400%	1300%	
		40	42	GJL36075M06	400%	1300%	
			48.3	GJL36075M06	500%	1700%	
20	20	52	GJL36075M06	400%	1600%		
		54	GJL36075M06	400%	1500%		
	50	62	GJL36075M06	400%	1300%		
		65	GJL36075M06	300%	1300%		

- specify motor horsepower, voltage, frequency, full-load current and code letter or locked rotor current.
- Determine motor hp rating from the motor nameplate.
- Refer to the tables and select an instantaneous-trip circuit breaker with an ampere rating recommended for the hp and voltage involved.
- Select an adjustable trip setting of at least 800%, not to exceed 1300%, of the motor full-load amperes (FLA) for other than Design E motors. For Design E motors, select an adjustable trip setting of at least 1100% not to exceed 1700% of FLA.
- The NEC 1300% maximum setting may be inadequate for instantaneous-trip circuit breakers to withstand current surges typical of the magnetization current of autotransformer type reduced voltage starters, or open transition wye-delta starters during transfer from "start" to "run," constant hp multi-speed motors, and motors labeled "high efficiency." Select thermal-magnetic circuit breakers from page 7-32 for those applications.
- Part-winding motors, per NEC 430.3, should have two circuit breakers selected from the above at not more than one half the allowable trip setting for the horsepower rating. The two circuit breakers should operate simultaneously as a disconnecting means per NEC 430.103.
- Based on NEC 430.52 and NEC Table 430.150. See page 7-30 for a available Adjustable Instantaneous-Trip Circuit Breakers.

Table 7.68: LAL and MAL Adjustable Instantaneous-Trip Circuit Breakers for Single Motor Circuit Protection

Hp Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors				Full Load Amperes▲	Mag-Gard Circuit Breaker Cat. No.	Magnetic Trip Settings■		
3Ø 60 Hz						MIN	MAX	
200 Vac	230 Vac	460 Vac	575 Vac					
75	100	200	221	LAL3640033M	700%	1400%		
			240	LAL3640035M	700%	1500%		
		250	242	LAL3640035M	700%	1400%		
			248	LAL3640035M	700%	1400%		
		300	285	LAL3640036M	700%	1400%		
			289	LAL3640036M	700%	1400%		
	125	125	250	302	LAL3640036M	700%	1300%	
				312	LAL3640036M	600%	1300%	
		350	336	MAL3660040M	700%	1500%		
			359	MAL3660040M	700%	1400%		
		150	150	300	360	MAL3660040M	700%	1400%
					361	MAL3660040M	700%	1400%
150	350	400	382	MAL3660040M	700%	1300%		
			414	MAL3660042M	700%	1400%		
	400	500	472	MAL3660044M	700%	1500%		
			477	MAL3660044M	700%	1500%		
	200	200	400	480	MAL3660044M	700%	1500%	
				552	MAL3680045M	700%	1400%	
250	500	590	MAL3680045M	700%	1400%			
		602	MAL3680045M	700%	1300%			

▲ Motor full-load currents are taken from NEC Table 430.150. Select wire and circuit breakers on basis of horsepower rather than nameplate full-load current per NEC 430.6 (A) for general motor applications. Do not use these values to select overload relay thermal units. See Digest pages 14-129-14-152 for selection of thermal units when actual full load current is not known. The voltages listed are rated motor voltages. Corresponding nominal system voltages are 200-208, 220-240, 440-480 and 550-600 V.

■ Only MIN and MAX settings are shown, intermediate settings are available on all circuit breakers.

♦ See NEC 430.52(A) for circuit breaker settings above 800%.

★ If due to motor starting characteristics, trip settings at the 1300% maximum permitted level are needed, the next size Mag-Gard circuit breaker should be chosen.

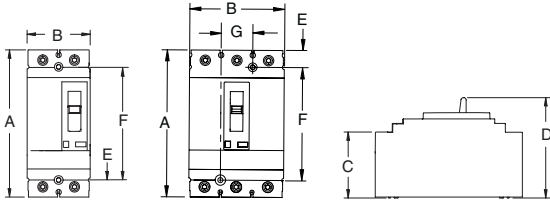


Figure 25

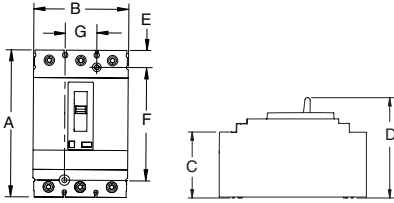


Figure 26

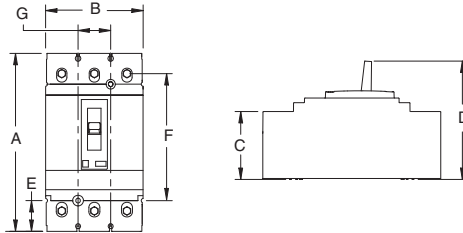


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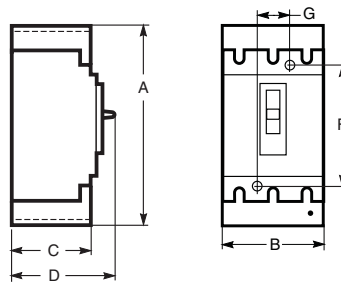


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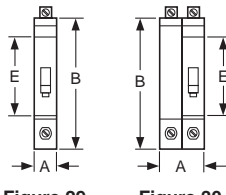


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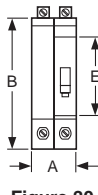


Figure 30

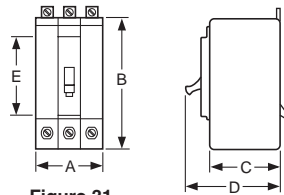


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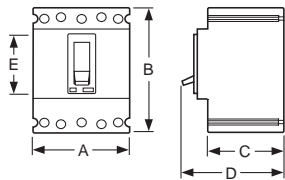


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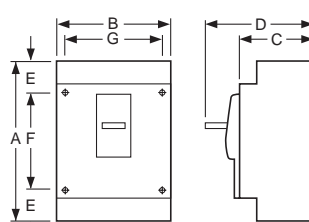


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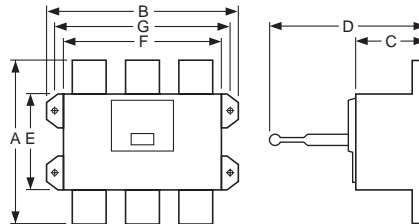


Figure 34

Table 7.143: HD, HG, HJ, HL, JD, JG, JJ, JL, DG, DJ, and DL Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches						
			A	B	C	D	E	F	G
HD, HG, HJ, HL	2	25	6.40	2.74	2.87	4.36	0.74	4.92	—
	3	26	6.40	4.12	2.87	4.36	0.74	4.92	1.38
JD, JG, JJ, JL	3	27	7.52	4.12	2.87	5.00	1.30	4.92	1.38
DG, DJ, DL	3	28	13.38	5.51	3.75	6.61	2.22	8.93	1.77

Table 7.144: ED, EG, EJ and GJL Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches				
			A	B	C	D	E
ED, EG, EJ	1	29	0.98	5.66	3.09	4.05	3.32
ED, EG, EJ	2	30	1.96	5.66	3.09	4.05	3.32
ED, EG, EJ	3	31	2.94	5.66	3.09	4.05	3.32
GJ	3	32	3.54	4.72	2.76	3.94	2.20

Table 7.145: MG, MJ, PG, PJ, PL, RG, RJ and RL Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches						
			A	B	C	D	E	F	G
MG, MJ (800 A and below)	2, 3	33	12.86	8.27	5.77	8.05	2.49	7.87	7.83
PG, PJ, PK, PL (1000–1200 A)	2, 3	33	16.16	8.27	5.77	8.05	4.19	7.87	7.83
RG, RJ, RL	2, 3	34	16.24	16.54	6.63	14.49	8.73	14.25	15.35

Table 7.146: Shipping Weights▲

Frame Size	Approx. Shipping Weight (Lbs.)	Frame Size	Approx. Shipping Weight (Lbs.)
HD, HG, HJ, HL 2P	4	DG, DJ, DL	14
HD, HG, HJ, HL 3P	5	GJ	3
JD, JG, JJ, JL	5	MG, MJ	34
ED, EG, EJ 1P	2	PG, PJ, PL	32
ED, EG, EJ 2P	3	RG, RJ, RL (Without RLTB)	52
ED, EG, EJ 3P	4		

▲ All weights are for 3P circuit breakers unless otherwise noted.