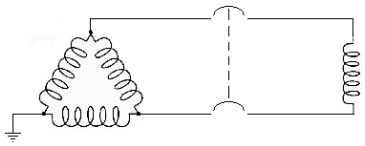
FRED# 296
TD00301003E

MOLDED CASE CIRCUIT BREAKER APPLICATION ON GROUNDED B-PHASE SYSTEMS

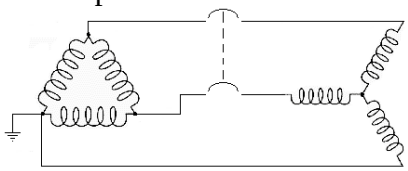
Occasionally you may have an application that is a delta voltage source with a grounded "B" phase, also known as corner grounded. Eaton Corporation literature states "for all 3 phase delta grounded B phase applications, refer to Eaton Corporation." Following are sketches of what the voltage source looks like with a breaker applied.

Std. 2 Pole Breaker (Fig 1)



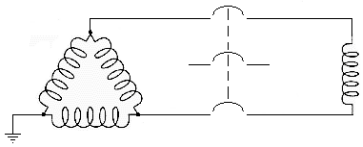
Protected Single Phase Load

2 or 3 Pole breaker with Unprotected Ground Phase. (Fig 2)



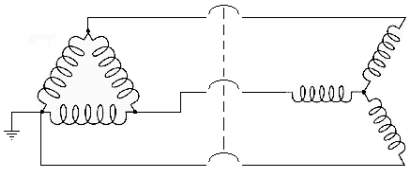
2 Phases Protected 3 Phase Load

Std 3 Pole Breaker (Fig 3)



Protected Single Phase Load

Std 3 Pole Breaker (Fig 4)



Protected 3 Phase Load

(Use outside poles when 2 poles of a 3 pole breaker are used)

Sizing a breaker for application in a Grounded B-Phase Delta system is different from sizing a breaker for application in a solidly grounded or low-resistance grounded wye system because the phase to ground interrupting duty requirement of an individual breaker pole is different for each case.

A) In a grounded B-Phase System case, a single-line-to-ground fault occurring downstream of the breaker must be interrupted by a single pole of the breaker with full line-to-line voltage across that single interrupting pole.

B) In a neutral-grounded wye system, solidly-grounded or low-resistance grounded; a downstream single-line-to-ground fault must likewise be interrupted by a single pole of the breaker, but in this case with only line-to-neutral voltage across that single interrupting pole.

This is the difference which determines the values of the following application data table:

PHASE TO GROUND INTERRUPTING RATINGS
MOLDED CASE CIRCUIT BREAKERS IN GROUNDED B-PHASE SYSTEMS

	INTERRUPTION RATING, kA		
	240 VAC	**480 VAC**	**600 VAC**
CLASSIC			
EB	5		
EHB	18	10	
FB	18	10	8.6
HFB	65	10	8.6
CA, CAH, HCA *	10		
JA, KA	25	15	10
HKA	65	15	10
JB, KB, HKB	18	10	
LB, LBB, HLB	25	10	
DA	25		
LA, LAB, HLA 400A	42	15	10
LA, LAB, HLA 600A	30	10	8.6
LC, HLC	30	10	8.6
LCL		65	
MA, HMA	42	12	10
MA, HMA W/CERAMIC ARC CHUTES	42	15	10
MC, HMC	42	12	10
NB, HNB	25	12	
NB TRI-PAC		75	
NC, HNC	25	12	
PB, PC	65	25	20
PB TRI-PAC		100	
Series C			
GHB, GHC	14		
GD	22	8.6	
ED, EDH, EDC	10		
EHD	14	10	
FDB	14	10	10
FD, JD, JDB, KD,LD, LDB, CLD	35	10	10
HFD, HJD, HKD, HLD, CHLD	65	10	10
FDC, JDC, KDC, LDC, CLDC	100	10	10
MDL, CMDL	50	10	10
HMDL, CHMDL	65	10	10
ND, CND	50	14	14
HND, CHND	65	14	14
NDC, CNDC	100	14	14
NDU	150	14	14

PHASE TO GROUND INTERRUPTING RATINGS (Continued)
MOLDED CASE CIRCUIT BREAKERS IN GROUNDED B-PHASE SYSTEMS

	INTERRUPTION RATING, kA		
	240 VAC	**480 VAC**	**600 VAC**
RD, CRD 1600, 2000	65	14	14
RDC, CRDC 1600, 2000	100	14	14
RD 2500	65	20	20
RDC 2500	100	20	20
Series G			
EGB	18	10	
EGE	25	10	
EGS	35	10	
EGH	65	10	
EGC	100	10	
JGE	25	10	10
JGS, LGE	35	10	10
LGS	50	10	10
JGH, LGH	65	10	10
JGC, LGC	100	10	10
JGU, LGU	150	10	10
JGX, LGX	200	10	10
NGS 800,1200	50	14	14
NGH 800,1200	65	14	14
NGC 800,1200	100	14	14
NGU 800	150	14	14
RGH 1600, 2000	65	14	14
RGC 1600, 2000	100	14	14
RGH 2500	65	20	20
RGC 2500	100	20	20

- These breakers are U.L. listed for 240 VAC corner grounded applications. All others are Eaton Corporation certified, but based on U.L. test requirements.

3 pole breakers may be used for 3 phase loads with the grounded phase connected through a breaker pole. See Figure 4. In this configuration, the standard interruption values apply for phase to phase interruption, but the reduced values apply for phase-to-ground interruption.

3 pole breakers may be also be used for single phase loads connected through the outside poles. –See Figure 3.

Where permitted by the electrical code, 2 or 3 pole breakers may be used in the unprotected neutral configuration, Figure 2. In this configuration, the reduced interruption values apply for all interruptions.

The following corner grounded delta application ratings are Eaton Corporation certified, but based on U.L. test requirements. Those interruption ratings are applicable to all breakers not stated on the previous table.

CORNER GROUNDED DELTA SYSTEM VOLTS	CIRCUIT BREAKER AMPERE RATING	I.C. RATING (AMPERES)
240 with 240V Breaker	100 AND BELOW	4,330 FOR 240V RATED BREAKER
240 with 240V Breaker	101-800	8,660 FOR 240V RATED BREAKER
240 with 480V or 600V Breaker	ALL	USE 480V MARKED RATING ON BREAKER
480 OR 600	800 AND BELOW	8,660
480 OR 600	801-1200	12,120
480 OR 600	1201-2000	14,000
480 OR 600	2001-2500	20,000
480 OR 600	2501-3000	25,000
480 OR 600	3001-4000	30,000

All 480VAC or 600VAC rated breakers are suitable for use on 240VAC corner grounded delta systems, but the short circuit rating must be reduced to the 480VAC short circuit current rating marked on the breaker.

No 120/240VAC circuit breakers may be used on any corner grounded delta system.

3 pole breakers may be used for 3 phase loads with grounded phase connected through a breaker pole. –See Figure 4.

3 pole breakers may also be used for single phase loads which will be connected through the outside poles. See Figure 4. In this configuration, the standard interruption values apply for phase to phase interruption, but the reduced values apply for phase-to-ground interruption.

Where permitted by the electrical code, 2 or 3 pole breakers may be used in the unprotected neutral configuration, Figure 2. In this configuration, the reduced interruption values apply for all interruptions.

Panel boards must be built as 3 phase 3 wire.

Series ratings do not apply for phase-to-ground interruption or for protected phase-to-unprotected phase interruption.

The protected phase-to-protected phase interruption values are not affected by the corner grounded configuration.

Notice – Positive identification of the grounded phase through the entire system must be made per the NEC Code.