

## APPLICATION DATA

### Discrimination

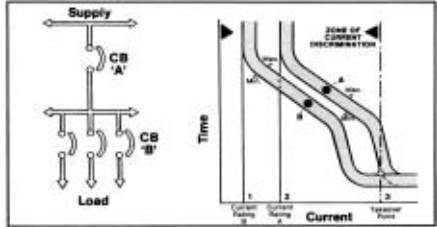
In most distribution systems there are two or more overcurrent protection devices between the supply source and the load.

Generally, the devices must operate selectively so that the device closest to the fault on the supply side will disconnect the circuit. If for any reason this device were to fail, then the next protective device connected in series with it should disconnect the circuit.

HEINELEC hydraulic-magnetic circuit breakers offer 3 means of achieving discrimination:

1. By using different current ratings of the same breaker type.
2. By using different time delay curves of the same breaker type.
3. By using different current ratings, time delay curves and different breaker types.

The principle of discrimination is shown on the right:



In the above circuit consisting of the series connection of circuit breaker A and B, discrimination is achieved by:

- (a) The different current ratings – points 1 and 2 on the superimposed time delay curves.
- (b) The different time delay curves A and B do not intersect until the “Limit of discrimination” is reached – at point 3, where the time delay curves intersect. Beyond this point both breakers can trip simultaneously. Thus for any current up to point 3, breaker B will always interrupt before breaker A. Similarly any circuit breaker discrimination arrangement can be obtained by superimposing the time delay characteristics.

### TRANSFORMER SHORT CIRCUIT CURRENTS

Transformer		Secondary	
Capacity kVA	Impedance (1)	Full load Current A	Short circuit Current A(2)
160	4%	222	5,550
200	4%	278	6,950
250	4%	347	8,675
315	4%	438	10,875
400	4%	556	13,900
500	4%	695	17,375
750	5%	1,043	20,860
1,000	5%	1,391	34,775
1,500	6%	2,086	34,766
2,000	6.5%	2,782	46,366

- (1) Based upon industry and Australian Standards
- (2) Short circuit currents are higher than in practice as no allowance is made for HV and LV circuit impedance. Therefore values provide a very high safety factor.