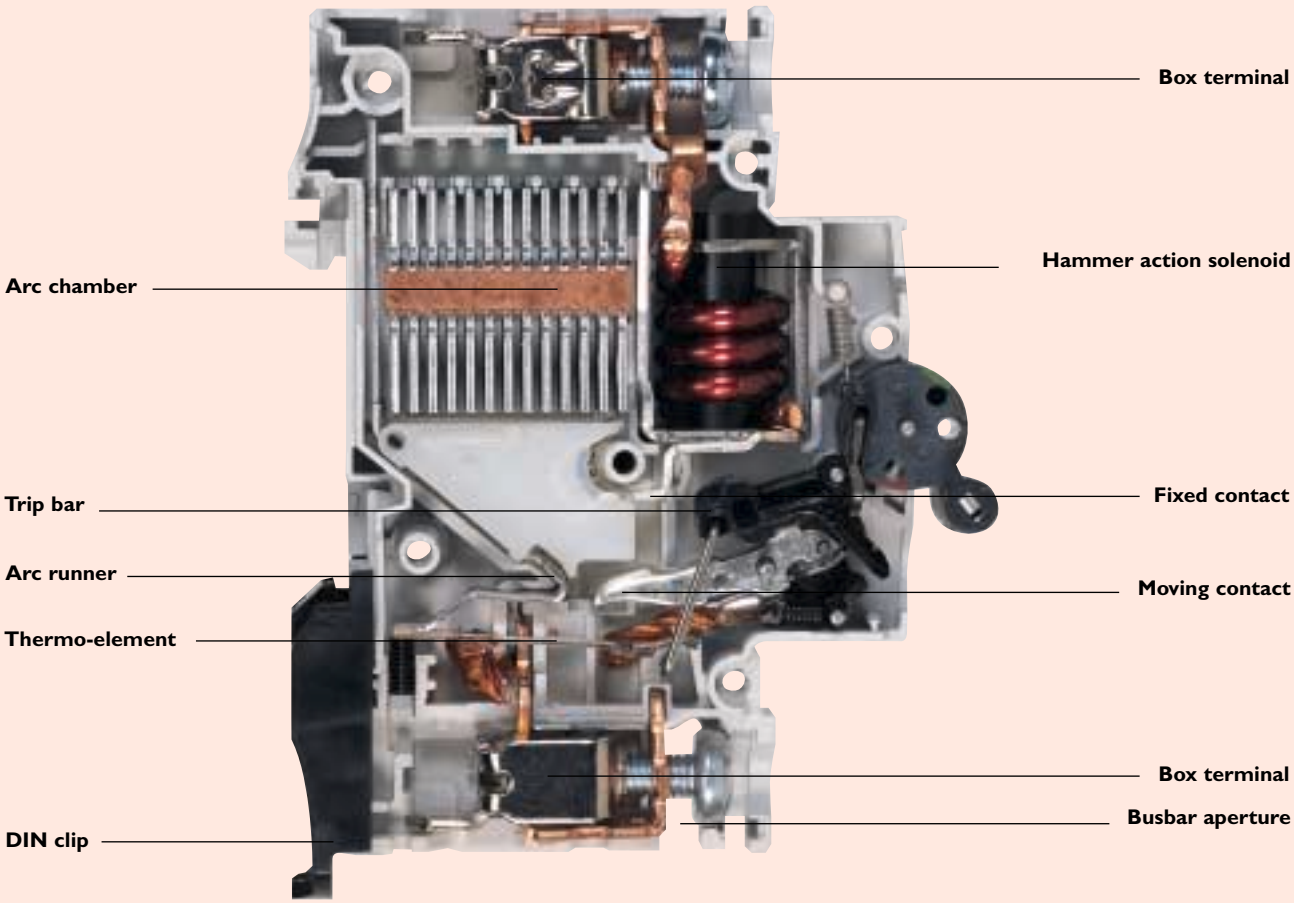
WYLEX NS RANGE MCB INTERNAL VIEW



APPLICATIONS

The NS single pole MCB with its Type B characteristics is suited for general domestic applications.
The Type B characteristic will give indirect shock protection at relatively high levels of earth loop impedance.

GENERAL CONSTRUCTION

NS MCBs are of the thermal-magnetic current limiting type, having a compact construction which has been achieved by not only minimising the number of parts but also the number of welded joints and connections. Critical material selection ensures reliability and durability. Typical of this is the choice of silver graphite for the fixed contact.
The MCB has an easy to operate handle with a trip-free toggle mechanism – so even when the handle is held in the 'on' position the MCB is free to trip.

AMBIENT TEMPERATURE CONSIDERATIONS

NS MCBs are calibrated to meet the requirements of BS EN 60898, 30°C Ref Calibration Temperature.
At other temperatures the following rating factors should be used:

At 60°C 0.9 At 20°C 1.0 At 0°C 1.1

Adjacent thermal-magnetic MCBs should not be continuously loaded at or approaching their nominal rated currents when mounted in enclosures. It is good engineering practice to apply generous derating factors or make provision for adequate free air between devices.
In these situations, and in common with other manufacturers, we recommend a 66% diversity factor is applied to the MCB nominal rated current where it is intended to load the MCBs continuously (in excess of 1 hour).

METHOD OF OPERATION

1 Moderate overload conditions
Detection of moderate overload conditions is achieved by the use of a thermo-metal element which deflects in response to the current passing through it. The thermo-metal element moves against the trip bar releasing the trip mechanism.

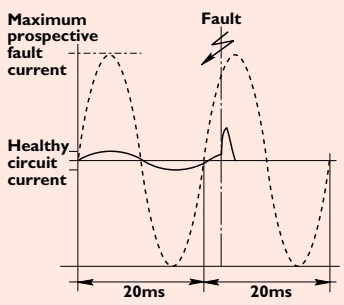
2 Short circuit conditions
When the current flowing through the MCB reaches a predetermined level, the solenoid directly pulls in the plunger which forcibly separates the contacts and simultaneously releases the trip mechanism.

3 Establishment of arc between fixed and moving contacts
As the moving contact moves away from the fixed contact, an arc is established. The arc runs along the arc runner to the arc chamber where it is split up between the plates and extinguished.
The low inertia and consequent high speed of the moving contact has a limiting effect on the flow of fault current. The rapid development of the arc, together with its accelerated extinction in the arc chamber, gives a typical operating time of 3.5–5 milliseconds.

CURRENT LIMITING ACTION

The high speed current limiting action ensures that the MCB operates before the full prospective fault current is allowed to develop.
Under fault conditions, damage can be sustained to the installation and associated equipment due to the amount of energy that passes before the current is completely interrupted. The total energy let-through depends on the value of current and the time for which it flows, and is denoted by the symbol I^2t. The high speed current limiting action of NS MCBs ensures that the energy let-through and any subsequent damage is minimised. This reduced energy let-through assists greatly with both back-up and discrimination considerations.

CURRENT LIMITING EFFECT



BACK-UP PROTECTION

Back-up protection is required only if the prospective short circuit current at the point of installation exceeds the breaking capacity of the MCB. When providing back-up protection consideration must be given to discrimination between the MCB and fuse.

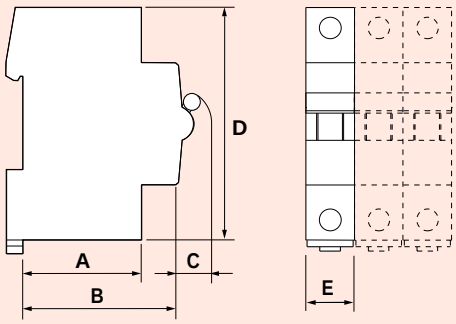
DISCRIMINATION

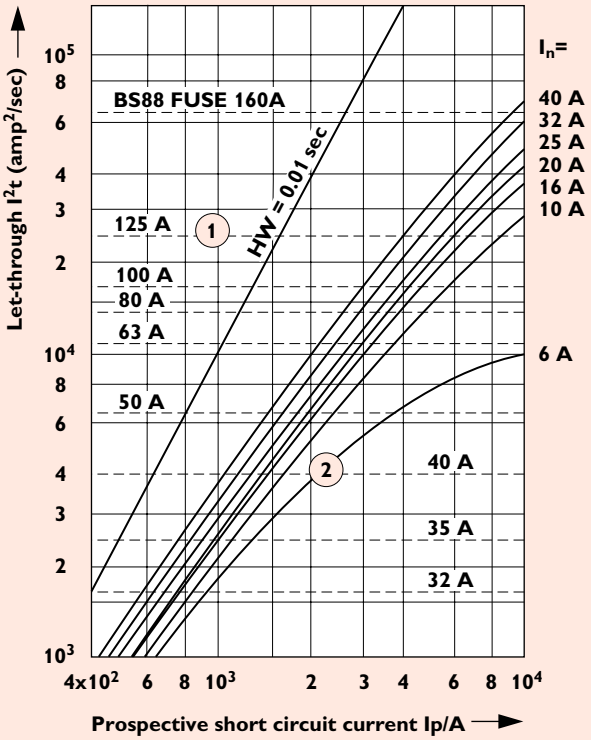
It is desirable that the protective device nearest the fault should operate first. The low energy let through of NS MCBs provides better discrimination with HRC fuse back-up than is given by earlier types of MCBs.

NSB MCBs

British standards	BS EN 60898: 1991
Rated voltage (single pole)	240V
Tripping characteristics	Type B
Short circuit rating	6kA
Reference calibration temperature	30°C
Terminal capacity – outgoing cable	0.75 to 25mm^2

CAT REF	RATING
NSB06	6A
NSB10	10A
NSB16	16A
NSB20	20A
NSB32	32A
NSB40	40A
NSB50	50A





(1) min melting pt (pre-arching) eg I_n=125A BS 88

(2) max let-through I^2t of MCB eg 6A