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- Online catalogue for the latest United States and European catalogues
- Safety BASICS™ for the essentials of electrical safety
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Circuit Protection Solutions

Automatic Sectionalising Link Catalogue

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Cooper Bussmann are one of the world's leading suppliers of fuses and fusible protection systems. Provider of the world's first truly global product line, each product is backed by an efficient world-wide distribution network service and unrivalled technical support. Cooper Bussmann circuit protection solutions comply with major international standards: BS, IEC, DIN and UL.

Cooper Bussmann High Voltage fuses have absorbed and embodied the expertise and experience of thirteen of the most prestigious manufacturers and are able to offer an unbeatable range of products in terms of technical excellence, performance and quality.

Cooper Bussmann offer a wider range of High Voltage fuses than any other manufacturer and types are available to meet most service applications. With over 50 years' experience in design and manufacture, Cooper Bussmann have supplied fuselinks to more than 90 countries world-wide.

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With a continual commitment to meet our customers' needs, with innovative, high quality products with ISO 9002 'approved systems', Cooper Bussmann are the suppliers choice for High Voltage Circuit Protection Solutions.

Automatic Sectionalising Link

Table of Contents

ASL Contents/Information

This booklet provides detailed information on the Cooper Bussmann Automatic Sectionalising Link (ASL) or Smart Link for use in distribution cut-outs.

- Low cost retrofit option for spur line isolation in place of existing expulsion fuses
- Available for up to 38kV overhead lines.
- Pick-up current ratings from 15 to 320 Amps.
- Enhanced lightning immunity perfomance.
- 1, 2 or 3 shot options available.
- Electronic circuit fully encapsulated.

Introduction

The Bussmann Automatic Sectionalising Link (ASL), represents a significant breakthrough in the field of medium voltage overhead line distribution system protection, offering considerable savings in operating costs and minimising unnecessary interuptions to customers.

Using the Bussmann ASL, an economical system can be installed utilising most existing explusion drop out fuse mounts in conjunction with multishot circuit breakers or auto-reclosers. Even where no expulsion fuse mounts exist and these have to be provided, significant benefits can still be achieved.

Major benefits in efficiency and performances are achieved by:

- Reducing outages caused by transient no-damage faults, especially due to lightning, which would otherwise cause unneccessary operation of expulsion fuse-links.
- Reducing unnecessary ‘call outs’ due to nuisance transient faults.
- Sectionalising and isolating the network thereby reducing the number of customers disconnected due to permanent faults.
- Providing visual identification of a fault downstream of the ASL and therefore allowing speedy restoration of supply.

Statistics show that up to 90% of expulsion fuse-link operations on spur lines are in response to transient no-damage faults. The cost for each expulsion fuse-link replacement can be the same as the capital cost of a complete fuse cut-out.The alternative approach of replacing expulsion fuse-links by solid links has the disadvantage that any permanent fault on a spur line results in an outage of the whole system.

The Bussmann ASL ensures effective overhead spur line isolation in the event of a genuine local fault, while at the same time remaining unresponsive to transient (temporary) no-damage surge currents.

Features

1. **Increased network reliability with an overall reduction in cost**

   The ASL discriminates between transient and permanent faults only giving automatic disconnection of permanent faults. By virtually eliminating nuisance outages, significant reduction in system running costs are achieved.

2. **Comprehensive range of ratings**

   ASL's are available with voltage ratings up to 38kV pick-up currents from 15 to 320A and 1, 2 or 3 count options.Colour bands are provided for easy identification of count and pick up rating.

3. **Fits into existing expulsion fuse mounts**

   ASL's are available to fit most expulsion fuse mounts. 'BR' types fit most UK mounts. C-type version fits all the common NEMA interchangeable mounts such as S & C, Chance, ABB etc, ASL's are installed & removed using existing pole head equipment.

4. **Silent, reliable drop-out action**

   High output force of replacement chemical actuator provides rapid reliable drop out action, even under icing to provide visual indication of a faulty line. Dead time operation ensures no sparks, ionised gas or contact erosion, minimising fire risks.

5. **Immunity to magnestising inrush current**

   The logic circuit is programmed to ignore first half cycle current and react only if both the negative and positve half cycles exceed the pick-up current. As magnetising inrush currents are largely one-directional they are ignored by the logic circuit.

6. **Surge and EMI protection**

   Electronics are shielded from magnetic field influences by being enclosed within the conducting tube. The ASL is tested to withstand lightning impulse currents and to be immune to radio frequency interference.

7. **Self powered, no maintenance**

   Power required to drive the logic circuit and actuator is supplied by two current transformers during the passage of fault current. No additional power source is required or routine maintenance is needed.

8. **Low threshold for hold off current (250 milliamps)**

   This ensures that a return to load current following a temporary fault will not result in a mistaken count by the ASL.

Construction

The Bussmann ASL is designed for use in expulsion fuse mounts by replacing the fuse-link and carrier tube. A variety of ASL's are available to fit most fuse mounts including the single vent interchangeable type for use in NEMA type distribution cut outs.

Shown in figure 1, the ASL houses a fully encapsulated logic circuit within its main conductive tube powered by encapsulated small current transformers mounted on the outside of the tube. This ensures that the electronic circuitry is free from electrical interference as the tube acts as an effective Faraday cage. The logic circuit is also environmentally protected to prevent moisture ingress. Energy derived from the current transformers under fault conditions allows the ASL to be self powered to ensure operation even when there is no initial load current.

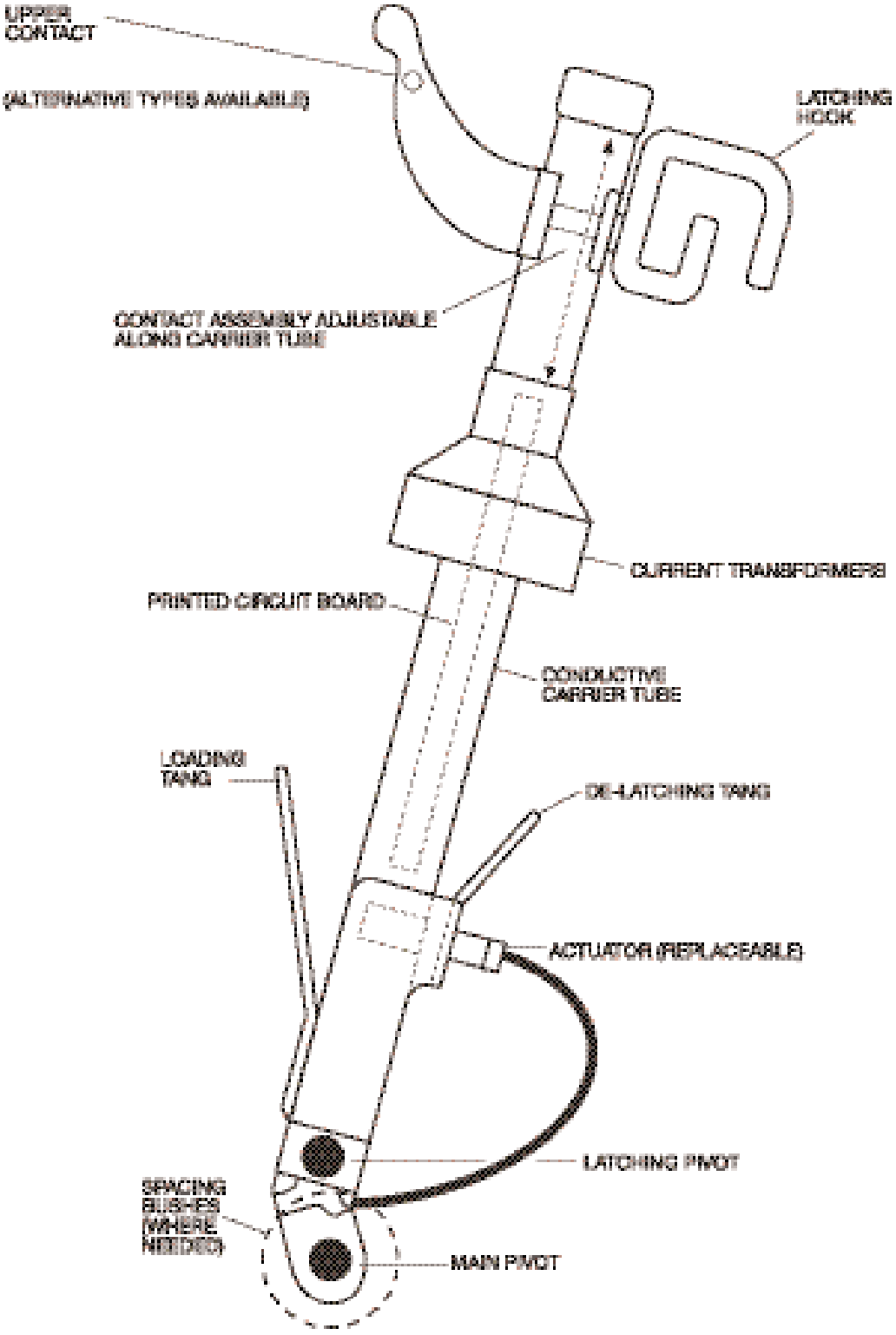
In appearance the upper and lower contacts of the ASL resemble that of the fuse carrier it replaces. Instead of a fuse element melting to release the carrier from the mount, operation is accomplished by discharging a capacitor into a small chemical actuator (or 'striker') which unlatches the carrier tube and causes it to swing down in the manner of an expulsion fuse carrier.

The chemical actuator is an extremely reliable device with high mechanical advantage, which by means of a small electrical current convert's chemical energy into mechanical movement, providing rapid, reliable drop out action even under icing conditions. The actuator is completely safe to handle and there are no-special storage or transporting requirements.

The ASL is reset by fitting a replacement actuator and re-inserting the carrier into it's mount. The resetting operation will normally take less time than that needed to change a blown expulsion fuse- link.

Cut away diagram of the Sectionaliser CONSTRUCTIONAL DETAILS

FIGURE 1



Cut away diagram shows a BR1 type ASL

Operation

Under normal load conditions the electronics remain inert. However, should the line current increase above a certain pre-set value (the pick-up current) the logic circuit activates.

The upstream auto-recloser then opens, temporarily removing the fault from the line. The logic circuit powered by an internal capacitor, stores the incident for around 25 seconds (the 'reclaim time').

When the upstream device recloses, typically 3 to 10 seconds later, if the fault current is no longer in evidence, the ASL will ignore the incident after the reclaim time and eventually reverts to an inert state again. However, if the fault current (ie. current above the pick-up current) is still present, the logic circuit will decide that this represents a permanent fault on the spur line and for a two count unit will prepare to de-latch.

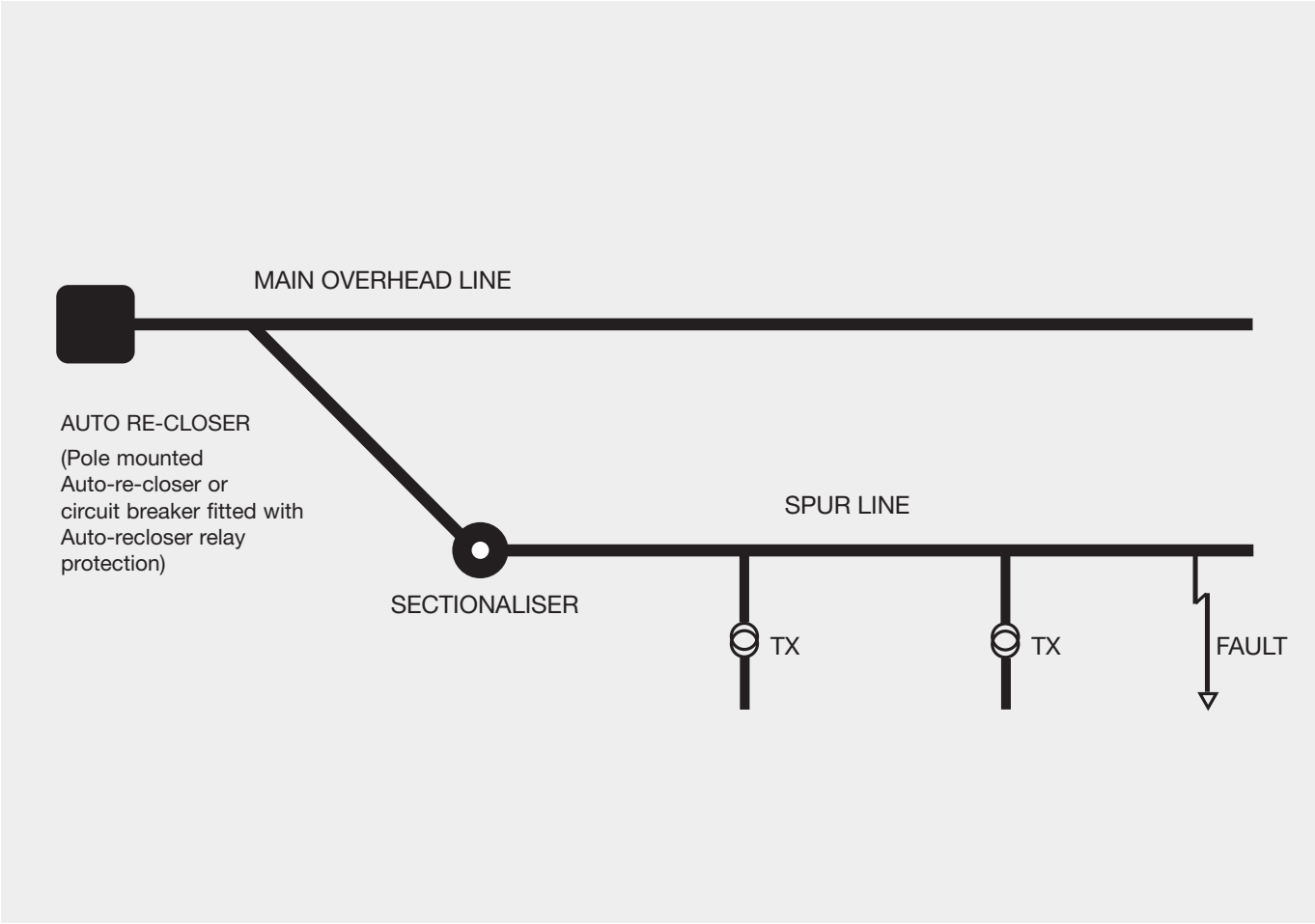
The logic circuit is inhibited from operating the latch mechanism until the upstream recloser has tripped for the second time and the line current has fallen to a value of less than 250mA (the 'hold-off' current) for a period of at least 0.1 second.

The ASL thus operates during the dead time of the upstream protective device and does so quickly, without sparks or ionised gas emission and without contact erosion.

The logic circuit is designed to inhibit response to transformer magnetising inrush current surges. Thus ASL's on healthy spur lines are not spuriously operated by such currents, following repeated operations of the upstream recloser.

In practice, any spur-line fault conditions which persists for a time long enough to operate the upstream recloser will operate the ASL, so isolating the spur as illustrated in figure 2 & figure 3. Any transient or 'no-damage' current will be ignored.

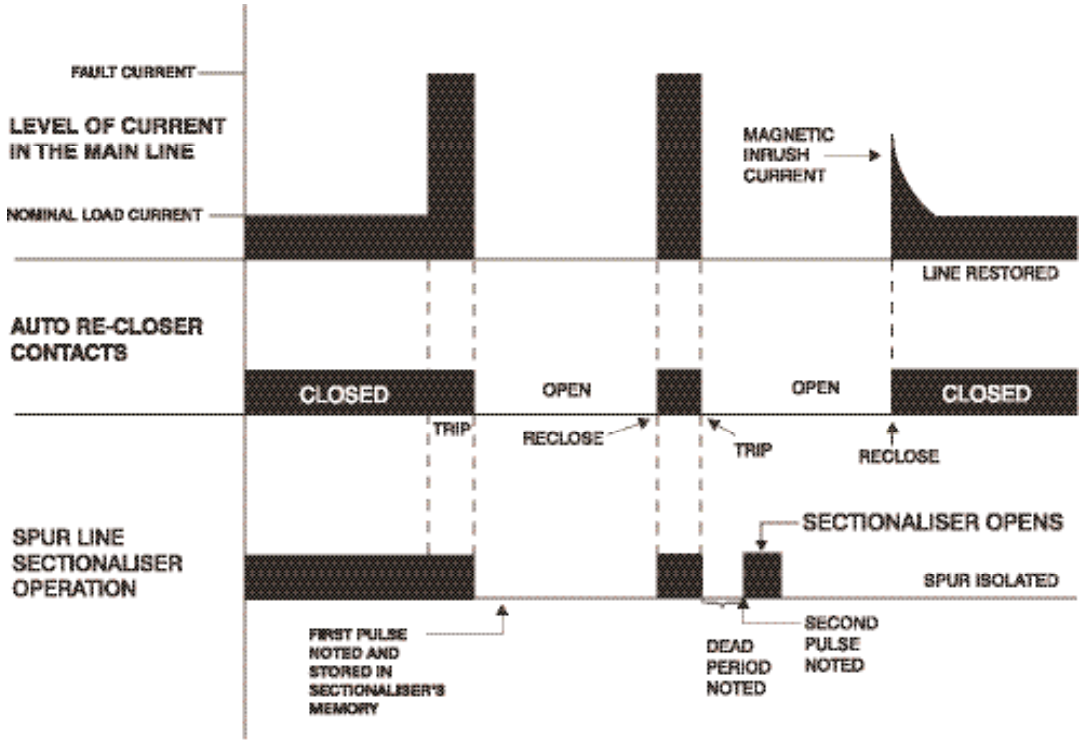
FIGURE 2



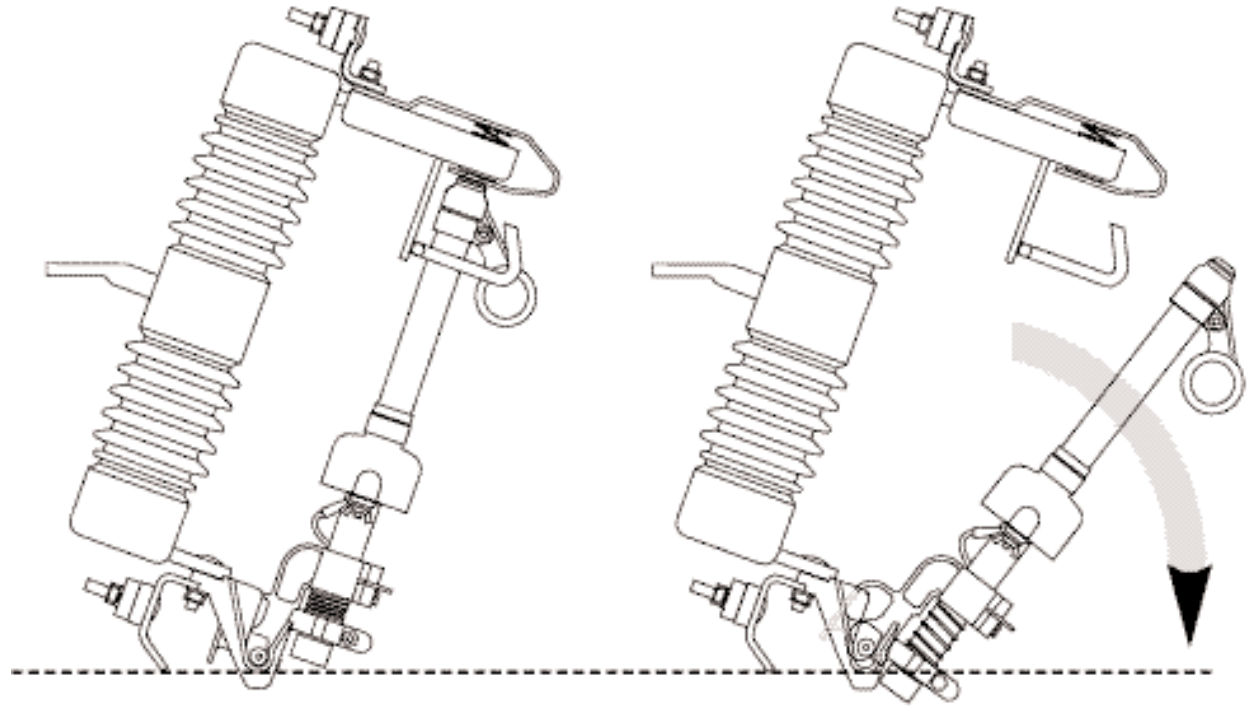
OPERATIONAL SEQUENCE OF A SECTIONALISER ISOLATING A SPUR LINE FAULT

ILLUSTRATION BELOW SHOWS A 2 SHOT DEVICE

FIGURE 3



SECTIONALISER ISOLATING A SPUR-LINE FAULT



LATCHED POSITION

DE - LATCHED POSITION

Application

Historically in many countries using a low impedience earthed 3-wire overhead line system the individual protection of a spur line is provided by explusion type fuse-links which are intended to operate only during a persistent fault on the spur. In this group-fused system one fuse controls a group of transformers in conjunction with either an upstream circuit breaker having a multishot facility or an auto-recloser.

However in practice it has been found that there is a much higher proportion of fuse-link operations corresponding to 'non-damage' faults than damage faults. To reduce non-damage faults some utilities replaced all fuse-links beyond the auto-recloser with solid links and the auto-recloser set for instantaneous trips. The disadvantages of this so called 'solid system' is the increased zone protected by the reclosing device leading to a greater number of consumers effected by each fault on a spur line.

The availability of the ASL now achieves the discrimination feature of providing individual spur protection without the disadvantages of non-damage fault fuse-link operations.

Limitation of expulsion fuse-links and auto-reclose circuit breaker combination

The intended performance of expulsion fuse-links fitted at the major spurs and an upstream auto-recloser (equipped with one instantaneous and followed by at least one delayed trip) is that for non-damaged faults on a fused spur, the circuit breaker trips instantaneously and the fuse-link element remains intact. The auto-recloser recloses after the dead time with the fault no longer present thus restoring supply to all customers.

For damage faults, the auto-recloser trips instantaneously and the fuse-link element remains intact. The auto-recloser recloses after dead time but as the fault is still present the fuse-link operates before the delayed protection of the auto-recloser. When the auto-recloser closes for the third time all customers have supply except those beyond the fuse.

However in practice, as shown by the diagram, there exists a current where the fuse-link characteristic crosses the instantaneous characteristic of the auto-recloser. This leads to a proportion of fuse-links operating before or during the breaker operation. If a fault is permanent nothing is lost, but if a fault is of the non-damage type a non-damage fuse-link operation will occur.

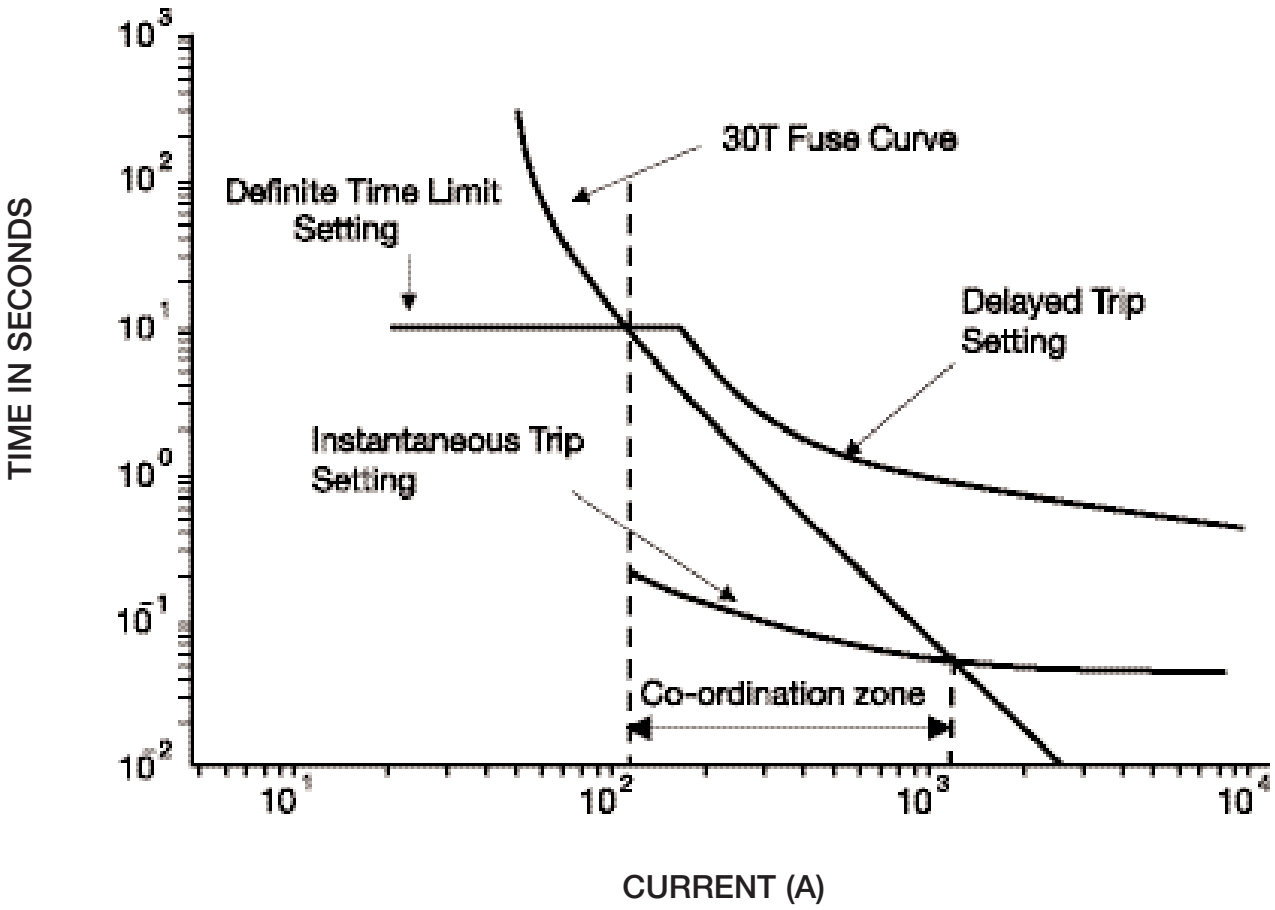
Such non-damage fuse-link operations are widely un-welcome and are most widely associated with lightning strikes, which can produce these high current transients.

In addition, for low earth fault currents, there will be a zone where the expulsion fuse-link will not operate during the delayed protection of the auto-recloser resulting in lockout of the auto-recloser. This will lead to all customers downsteam from the auto-recloser losing supply rather than just those on the faulty spur with a subsequent increase in customer minutes lost.

Typically for a 30A type T expulsion fuse-link, the 10 second melting time is 120A leaving a large zone of fault currents below this where lockout of the auto-recloser will occur. Recent measurement studies have shown that in the case of one UK utility 50% of earth faults were less than 100 Amps. Conventional group fusing would have resulted in recloser lockout for these faults, as would operation of a 'solid system'.

In summary there is a limit to the coordination zone for expulsion fuse-links and auto-recloser combinations. Low current permanent earth faults and high current transient faults cannot be correctly coordinated.

AUTO-RECLOSER FUSE CO-ORDINATION



Advantages of ASL and auto-reclosing circuit breaker combination

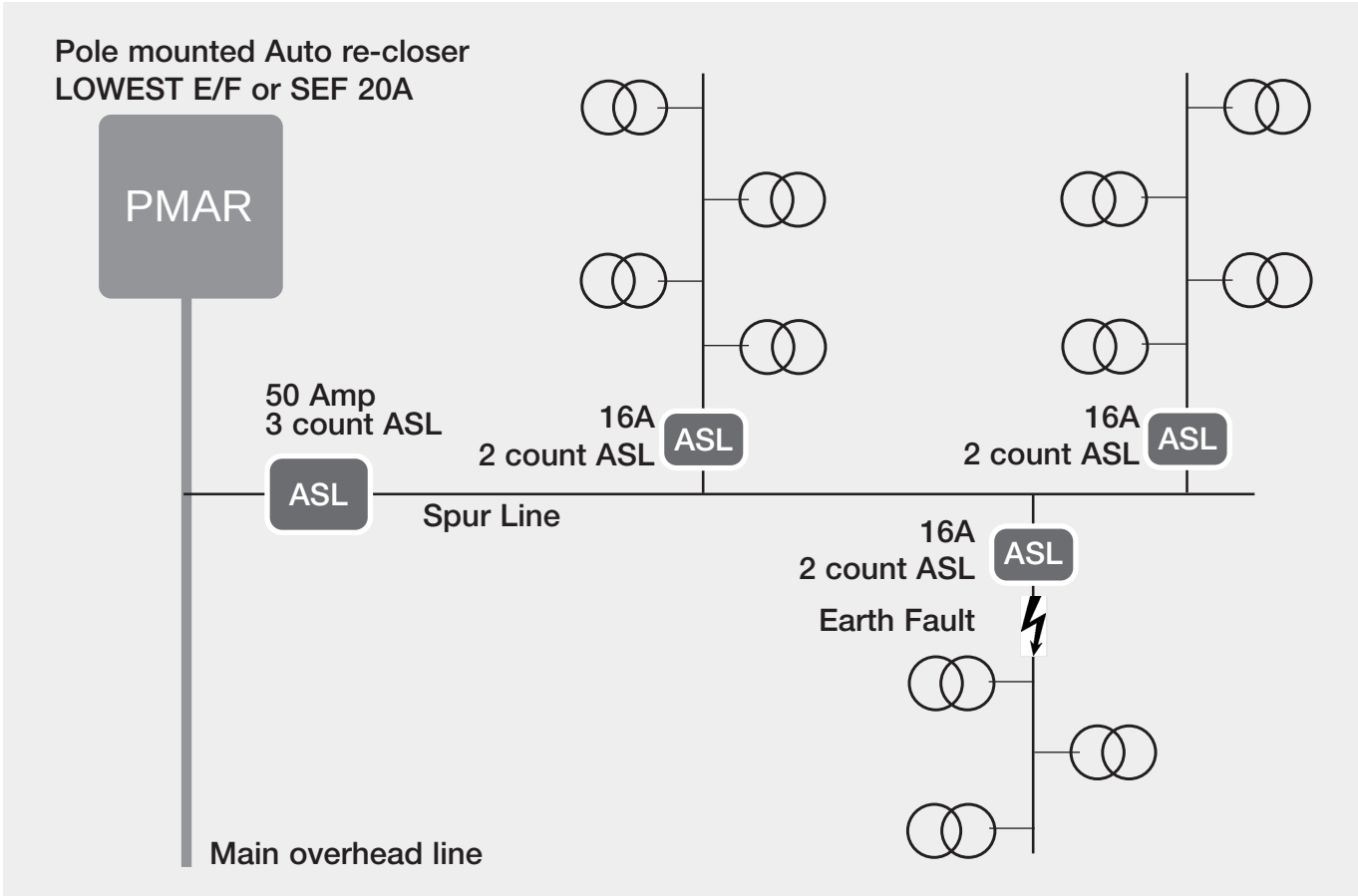
As illustrated in the co-ordination diagram, the main advantage of the ASL is that discrimination with pole mounted auto-recloser or ground mounted multishot circuit breaker is assured down to the minimum operating current of the ASL without the necessity for delayed trips. Auto-reclosers can therefore be set for instantaneous trip thus minimising system damage. Fault withstand is not an issue as the short time-current withstand rating of the ASL will be greater than the available fault current except for a few possible applications next to a substation.

In the case of low earth fault currents, by selecting an ASL with minimum pick up current at or below the minimum trip current of the auto-recloser where possible, these earth faults will result in operation of the ASL on the faulty spur, thus preventing lockout of the recloser and wide loss of supply to customers.To achieve the optimum level of co-ordination and to take account of tolerances, the lowest rating of ASL should be 80% of the earth fault or sensitive earth fault settings, dependent on the scheme employed.

The diagram below illustrates an enhanced protection scheme utilising the full potential of the ASL's. Any permanent fault on the spurs fitted with the ASL's that causes reclose operations of the PMAR will also cause operation of the ASL in the faulted spur.

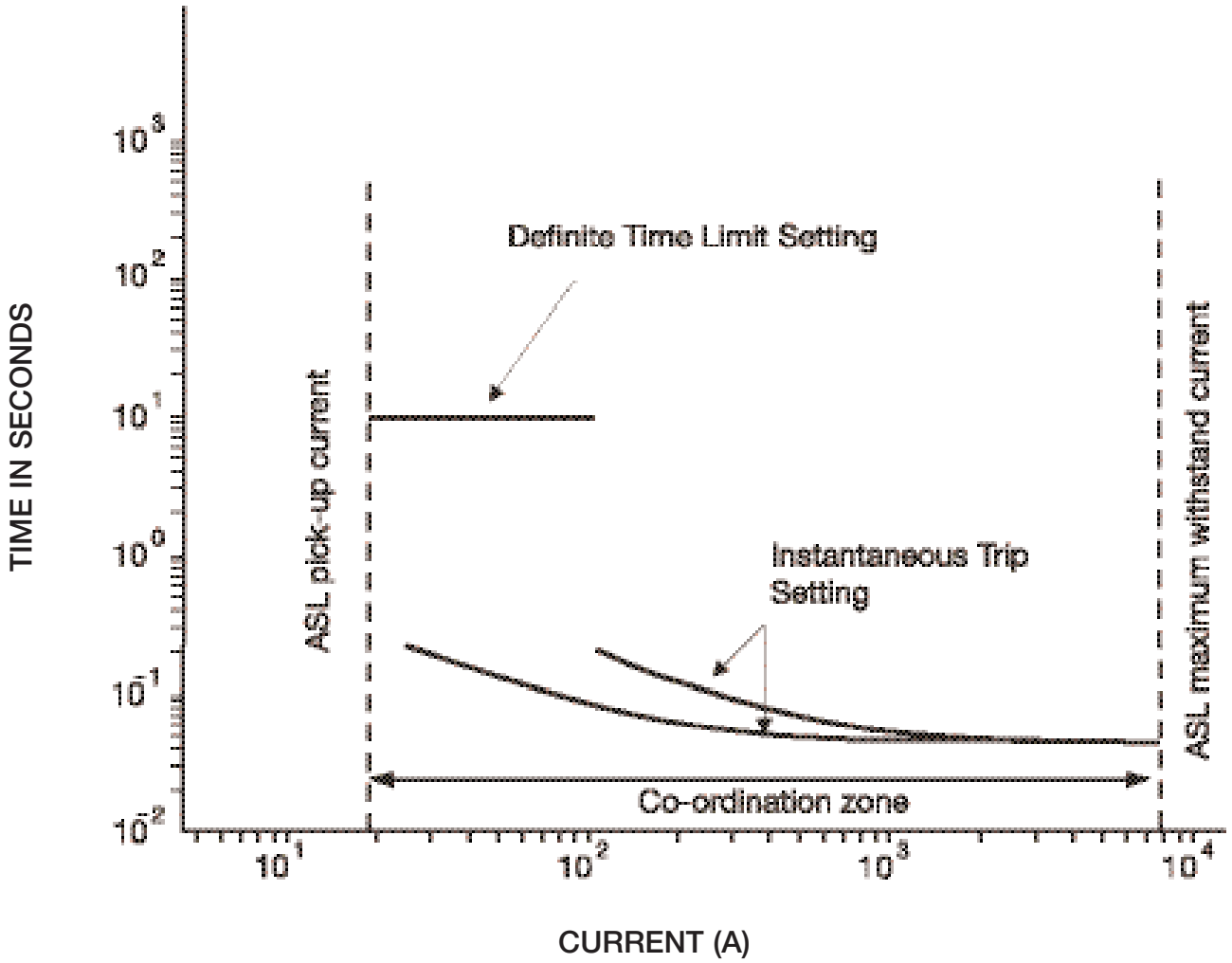
FIGURE 4

ENHANCED PROTECTION SCHEME USING AUTOMATIC SECTIONALISING LINKS



With a conservative estimate of £100 for the cost of a callout for a two men crew, application of an ASL on a spur location can be easily justified when more than two nuisance outages would otherwise occur over the expected life of the ASL. Assuming a 20 year life expectancy, an ASL is justified where there are more then 0.1 non damage fuse-link operations per spur location per year. In practice, dependent on the loading on the spur, typically it has been found that an ASL is cost effective for spur lines longer than 1 to 3 Km. For spur lines longer than 4 to 6 Km further economic sectionalising of the line will be achieved by putting 2 ASL's in series. In this case the downstream ASL will have one less count than the upstream ASL as shown in fig. 4.

AUTO-RECLOSER ASL CO-ORDINATION



North American Practice

In the United States the most common type of overhead primary distribution circuit is the four-wire multiearthed – neutral system. A typical distribution system will be similar to that in figure 5. A main line (feeder) with an auto-recloser near its head originates from a substation with several spurs (laterals) tapped off this feeder. Often further branch lines are tapped off the spur (lateral) which in turn supply power to end users. Individual transformers are individually fused and also fuses at the head of branches and laterals provide further sectionalising of the system.

Typically the individual transformer fuse-links are selected such that they will operate on all selected overcurrents without causing the auto-recloser to trip. Operation of this fuse-link affects a small number of customers thus minimising the effects of any nuisance operations.

The fuse-link at the head of the lateral or branch co-ordinates with the auto-recloser in the same way so described for the group fused system with some of the same limitations. There is a maximum current beyond which the fuse-link will operate before the recloser has a chance to clear a temporary fault.Under high transient fault conditions, such as caused by lightning, nuisance fuse-link blowing can result. As these circuits are characterised by comparitively high earth fault currents fuse-links are used effectively for earth fault protection

Most of the distribution circuits have at least two expulsion fuse-links in series. Due to the non-current limiting nature of expulsion fuse-links there is a maximum current at which co-ordination can be achieved. Above this current it is likely that both the upstream and downstream expulsion fuse-links will operate at the same time.

In both examples it is the common feature of the fuse at the head of the lateral (spur) that gives rise to the limitations in operational performance.

By replacing a fuse with an ASL at the head of a lateral or branch as in figure 6 the co-ordination range is extended to the maximum short time withstand rating of the ASL.

FIGURE 5

TYPICAL NORTH AMERICAN DISTRIBUTION SYSTEM

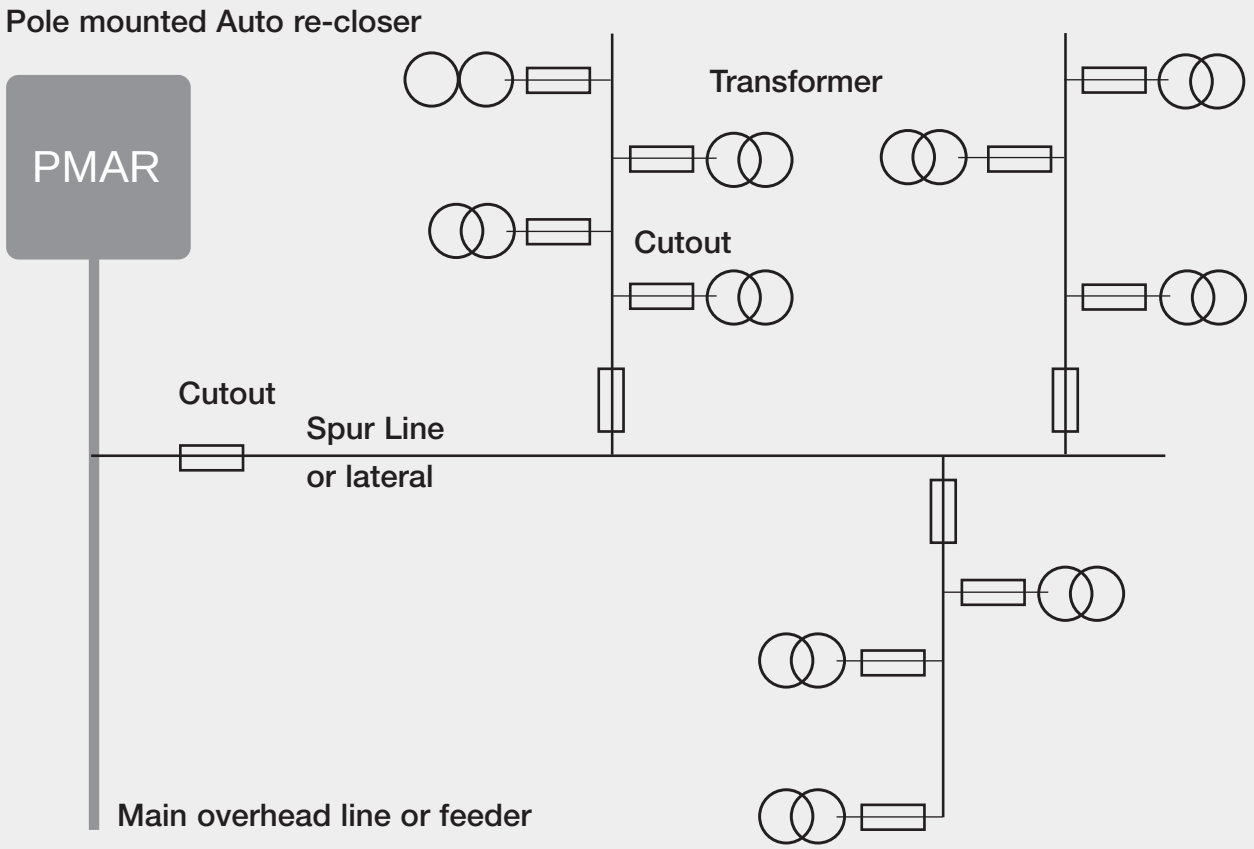
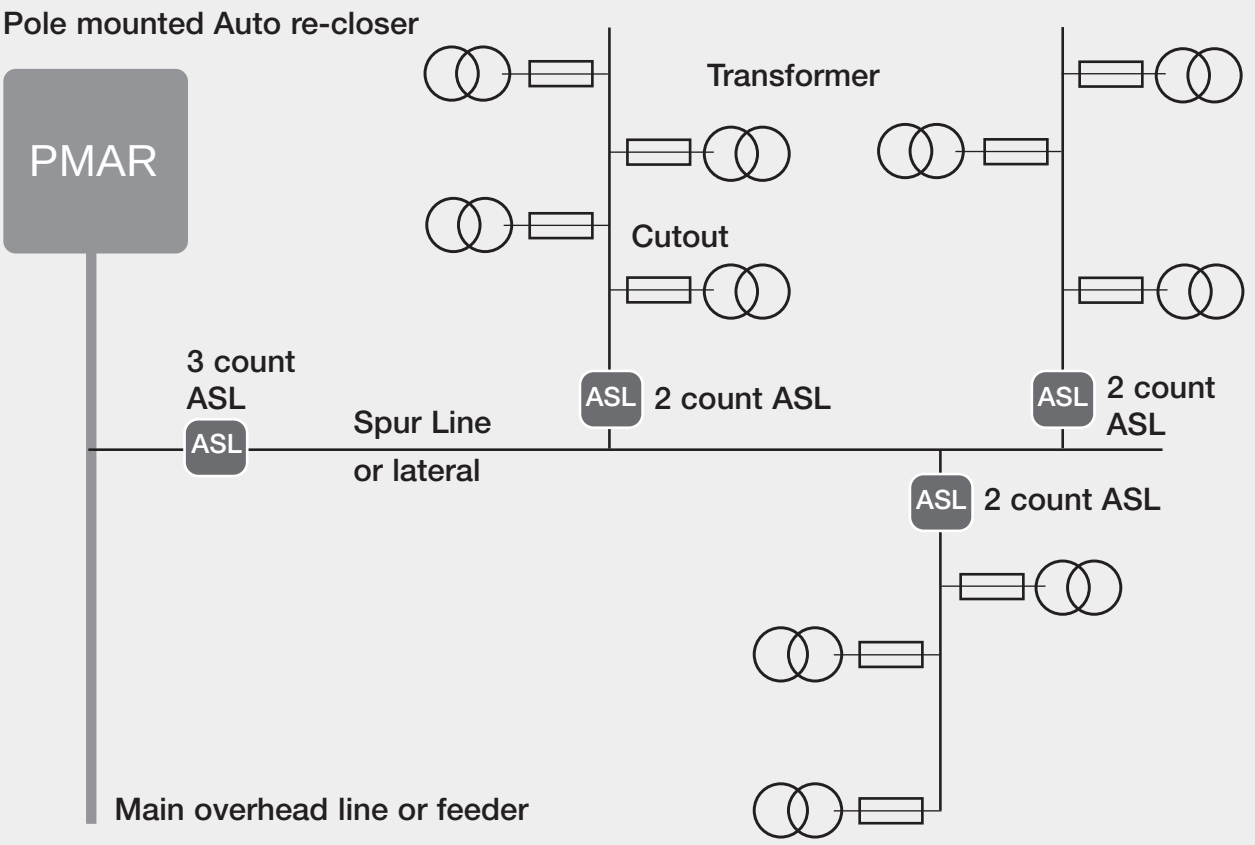


FIGURE 6

TYPICAL NORTH AMERICAN DISTRIBUTION SYSTEM USING AUTOMATIC SECTIONASING LINKS



Selection

When selecting an ASL for each installation the following parameters should be considered

System Voltage

The ASL is insensitive to system voltage and being in effect a solid conductor has no insulation requirements. Hence the sole criterion concerning voltage is that the ASL fits into a mount of the appropriate voltage rating, meeting the dialectric values required (BIL & power frequency).

Pick-Up Current (Actuating Current)

For optimum co-ordination the lowest rating of ASL should be 80% of the minimum earth fault or sensitive earth fault settings allowing auto-recloser operations.

However, depending on the position of the ASL it must be chosen to withstand the possible transformer magnetising inrush currents.

When a recloser switches in and out attempting to clear a fault on one branch circuit, all the healthy circuits experience surge currents due to magnestising inrush determined by the transformer KVA.

The anti-magnetising inrush circuit in the ASL ensures against spurious operation, provided both positive and negative going half cycles, are below the pick up valve. If the ratio of transformer capacity/pick up settings is made too small, then even the smaller loops of the highly asymmetrical magnetising in-rush current, maybe of sufficient valve to override the inhibiting circuit and allow operation to occur.

IEEE standard C37-63 for mainline sectionalisers allows a ratio of 1.6:1 for pick-up current to total available transformer current.

Present experience suggests that this is satisfactory for most applications of 2 and 3 count ASL's. For 1 shot ASL's and applications where the transformer KVA is dominated by one large transformer, ie. more than 60% of the total, a ratio of 2.5:1 is recommended.

For example: for 2 and 3 count ASL's a 40A pick-up setting allows for maximum installed transformer capacity of up to 25A. Even though the maximum loading on the line might be 5A, a small percentage of the maximum available, magnetising in-rush which is dependant on the installed KVA is the determining factor.

Frequency

The ASL must have a frequency rating equal to the supply frequency of either 50 or 60Hz.

No of Counts

The number of counts to operate is factory pre-set. The ASL should be chosen to operate in at least one less count than the upstream auto-recloser. For example, a 4 shot auto-recloser would have a maximum of a 3 count ASL downstream. To reduce the number of recloser operations a 2 count unit would be the most common. Where ASL's are used in series the downstream ASL should be one less count than the upstream ASL.1 Count ASL's are also available, for applications such as underground cables where transient faults are unlikely. Choice of an ASL over a fuse eliminates the co-ordination issues discussed previously.

Maximum Fault Current

The ASL must have a short time-current withstand equal to or greater than the available fault current (see Performance Characteristics).

Continuous Current

The ASL must have a continuous current rating equal to or greater than the anticipated system load current. This is normally not an issue as all ASL's are rated at 200A continuous.

Reclaim Time

The reclaim time is the time that the memory of the ASL retains prior counts and is nominally 25 seconds. However in practice this time will vary with the value and duration of fault current pulses. For high values of fault current, particularly where the upstream recloser is operating in delayed mode, the ASL reclaim time may extend by up to 15% while for instantaneous tripping operation at lower values of current near the pick up value, reclaim times will be reduced, for details see performance characteristics. For these reasons it is recommended that the maximum reclose time (dead time between shots) of the recloser be 15 seconds, as this must be shorter than the ASL reset time for correct co-ordination. If the auto-recloser is operating in the instantaneous region of the trip characteristic near the pick-up current of the ASL the auto-recloser dead time should not exceed 10 seconds.

Over Voltage Protection

Over voltage protection will be dependent on individual users. Bussmann ASL's have been tested to withstand 65KA lightning surge current as defined in IEEE C37, 62, IEEE C62.11 and IEC 60099 for surge arrestors, making them immune to lightning surges up to 65KA.

Load Breaking

The ASL is designed for dead-break operation only. If the unit is manually opened under live line conditions, an arc will be drawn across the contacts exactly as in the case of an expulsion fuse. If the current is low enough and if conditions are favourable, the arc may extinguish as the unit drops down to the isolating position. Therefore the same operating procedures will apply for the ASL as for expulsion fuses with regard to load breaking.

NEMA Interchangeable mounts are fitted with hooks, for use with a load-buster tool. To open the ASL under load, use an appropriate load break tool designed for use with interchangeable cut outs and follow instructions provided with such a tool.

Performance Type Tests

The only fully applicable standard for ASLs is the ESI standard 41-27 Part 5. There also exists an ANSI standard C37-63, which covers traditional enclosed tank-type sectionalisers. In verifying the performance of the ASL, as listed in the performance characteristics, these two standards have provided the basis for evaluation. As many of the test clauses of C37-63 are inappropriate only those applicable have been carried out.

In addition to those listed in the performance characteristics, a number of other tests have been performed to demonstrate the suitability of the ASL. These include load make, mechanical operation, icing, salt fog (corrosion) and other environmental tests including thermal cycling, rain-UV, & ozone. Details of all these tests are available on request.

Routine Tests

Every ASL is functionally tested at least twice during manufacture. Current pulses of 15% for 50Hz (10% for 60Hz units) below nominal pick-up value and 15% for 50Hz (10% for 60Hz units) above nominal pick-up value are applied. The ASL's are checked to ensure that they do not react to the lower value but operate at the higher value.

Dead Time

The time for an ASL to drop down to a safe isolating distance (from the instant when the line goes 'dead' after the correct number of counts) is approximately 250 milliseconds. To obviate any possibility of the unit attempting to open under live conditions the upstream recloser should have a dead line time of not less than 0.5 seconds.

In the case of a three phase ganged unit, the total time taken for all three modules to drop down to a safe isolating distance is around 750 milliseconds. Hence the upstream recloser should not have a dead line time less than 1.5 seconds to ensure against mal operation.

Mounting Arrangements

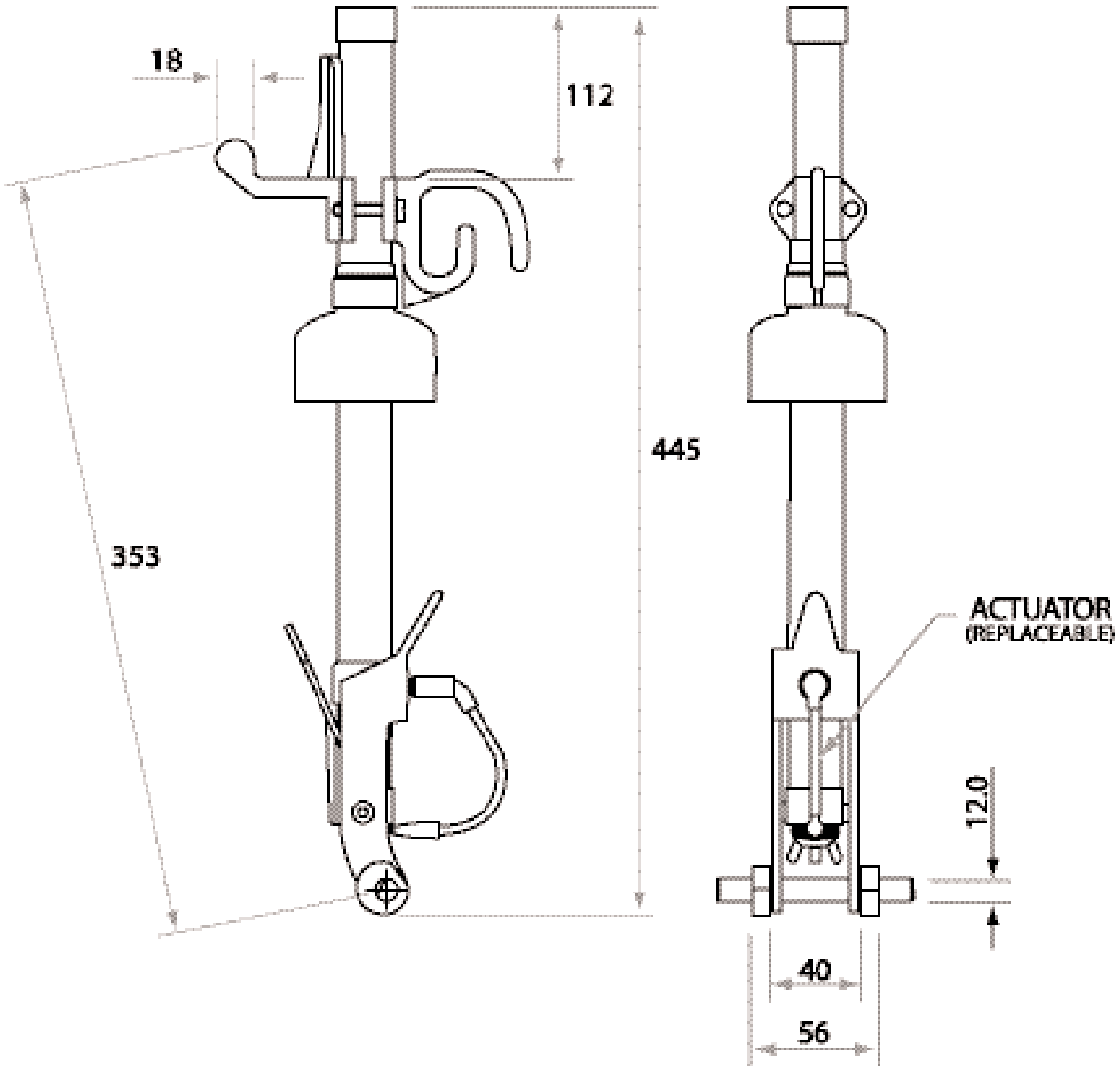
A variety of ASL's are available to fit the most common types of expulsion fuse mount as shown in the table below.

Bussmann ASL Reference	Suitable for Mount type	Replacement Actuator
BR1	S & E Equipment, pre. 1967	E2906
BR2	Brush Power (1976-1987)	E2906
BR3	Hawker Switchgear	E2906
BR5	J & P (GEC)	2924
BR1M	Morris Line Equipment	E2906
BR1T*	Morris Line Triple pole Unit	E2906
C	Interchangeable USA, NEMA	E2906
CR5	Interchangeable USA NEMA For UK with J & P Pole Head	E2906

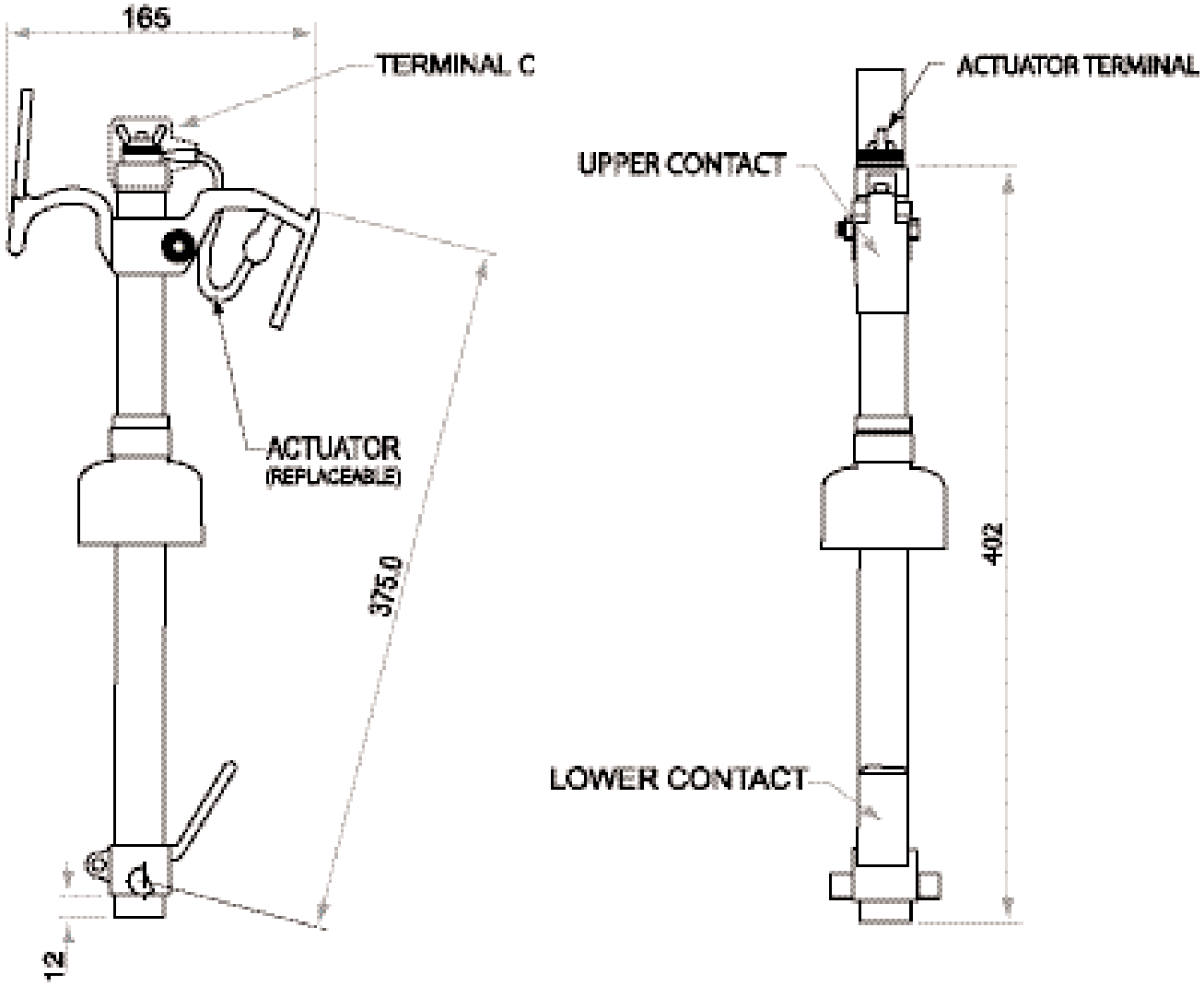
* A 2 or 3 pole mechanically ganged mount is available which accepts the ASL type BR1T, for applications where it is required to isolate all phases, even for a single phase fault. Operation of the ASL in one phase automatically operates an interphase trip mechanism, which causes the remaining phases to open.

Performance Characteristics			
Rated Maximum Voltage:	15kV (110kV BIL), 27kV (150kV BIL), 38kV (170kV BIL)		
Rated Frequency:	50Hz, 60 Hz		
Pick Up Current:	60Hz operation (±10%) 16, 24, 40, 56, 80, 112, 160, 200, 320 Amps 50Hz operation (±15%) 15, 20, 25, 40, 50, 63, 80, 100, 200, 320 Amps		
Number of counts:	1, 2 or 3		
Hold off current:	250 milliamps		
Current Withstand:	**Continuous**	**200A**	
	Momentary 1st peak	16,000 Amps	
	1 sec	8000 Amps	Symmetrical
	10 sec	2600 Amps	Symmetrical
Reclaim times:	25 seconds (±15%)		
Response time: Minimum duration of current pulse for overcurrent memory response:	30 msec @ 1.5 X pick up setting (reclaim time 10 seconds) 60 msec @ 1.3 X pick up setting (reclaim time 15 seconds)		
Auto-recloser dead time range:	0.5 sec to 15 sec		
Minimum time of dead line after fault pulse for count:	80 - 120 msec		
Ambient temperature limits:	-30°C to 80°C		
Surge Current withstand:	65KA per ANSI C37, 63 IEEE 62.11 & IEC EN60099-1		

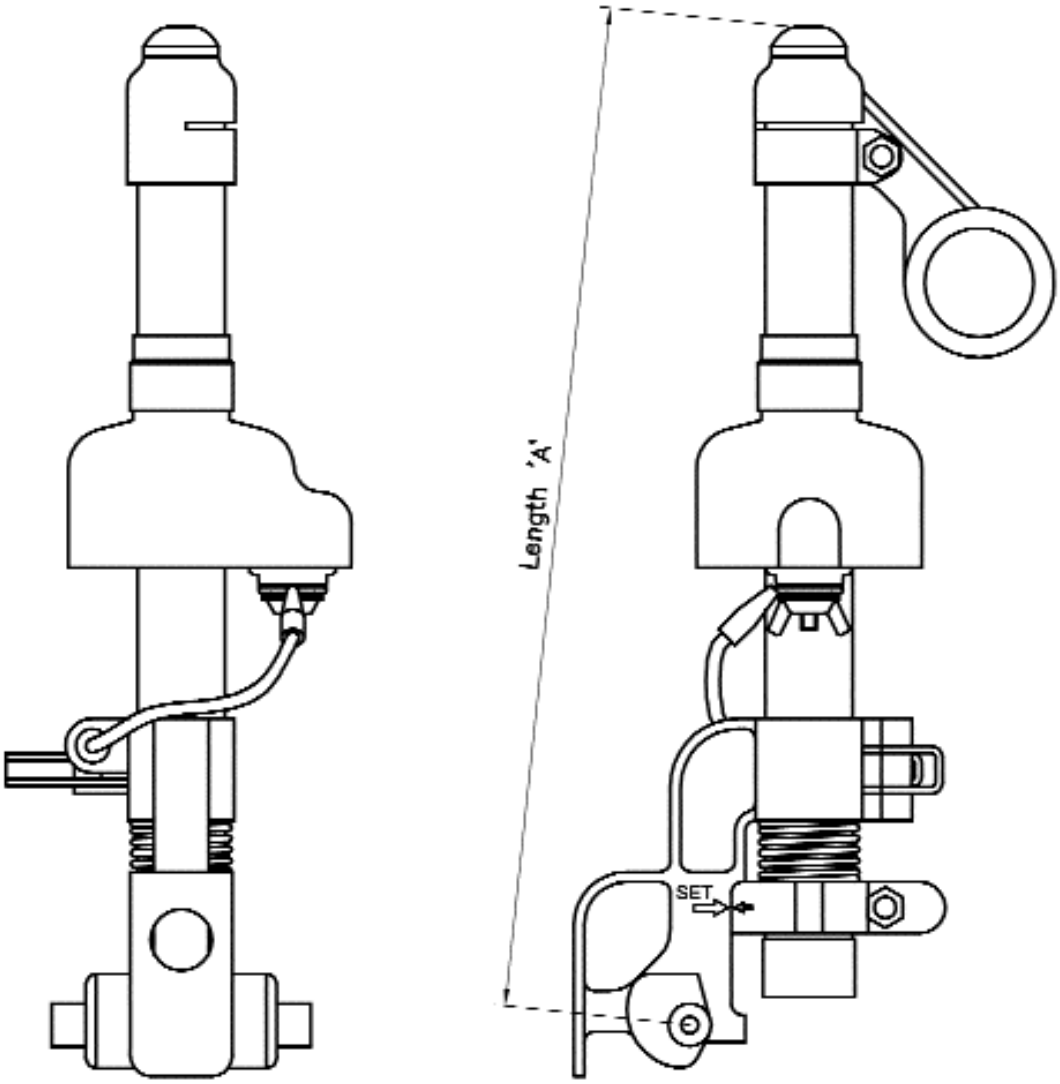
BR3



BR5


165
TERMINAL C
ACTUATOR
(REPLACEABLE)
375.0
12
ACTUATOR TERMINAL
UPPER CONTACT
402
LOWER CONTACT

C



Dimensional Table

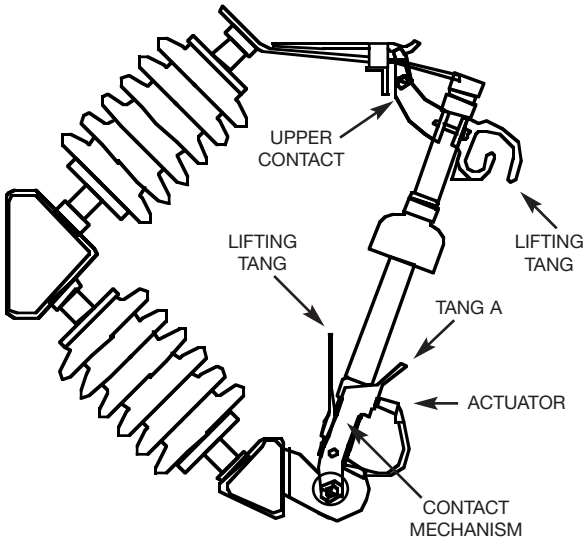
VOLTAGE RATING	LENGTH 'A'
15kV	292
27kV	380
38kV	468

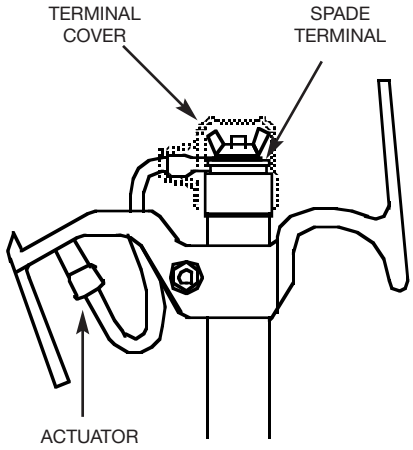
Installation

In general the installation procedure for the ASL is similar to that for the equivalent fuse carrier, in that the same polehead is used but an actuator is replaced after operation instead of an expulsion fuse-link. Detailed installation instructions are available with every ASL and also on request.

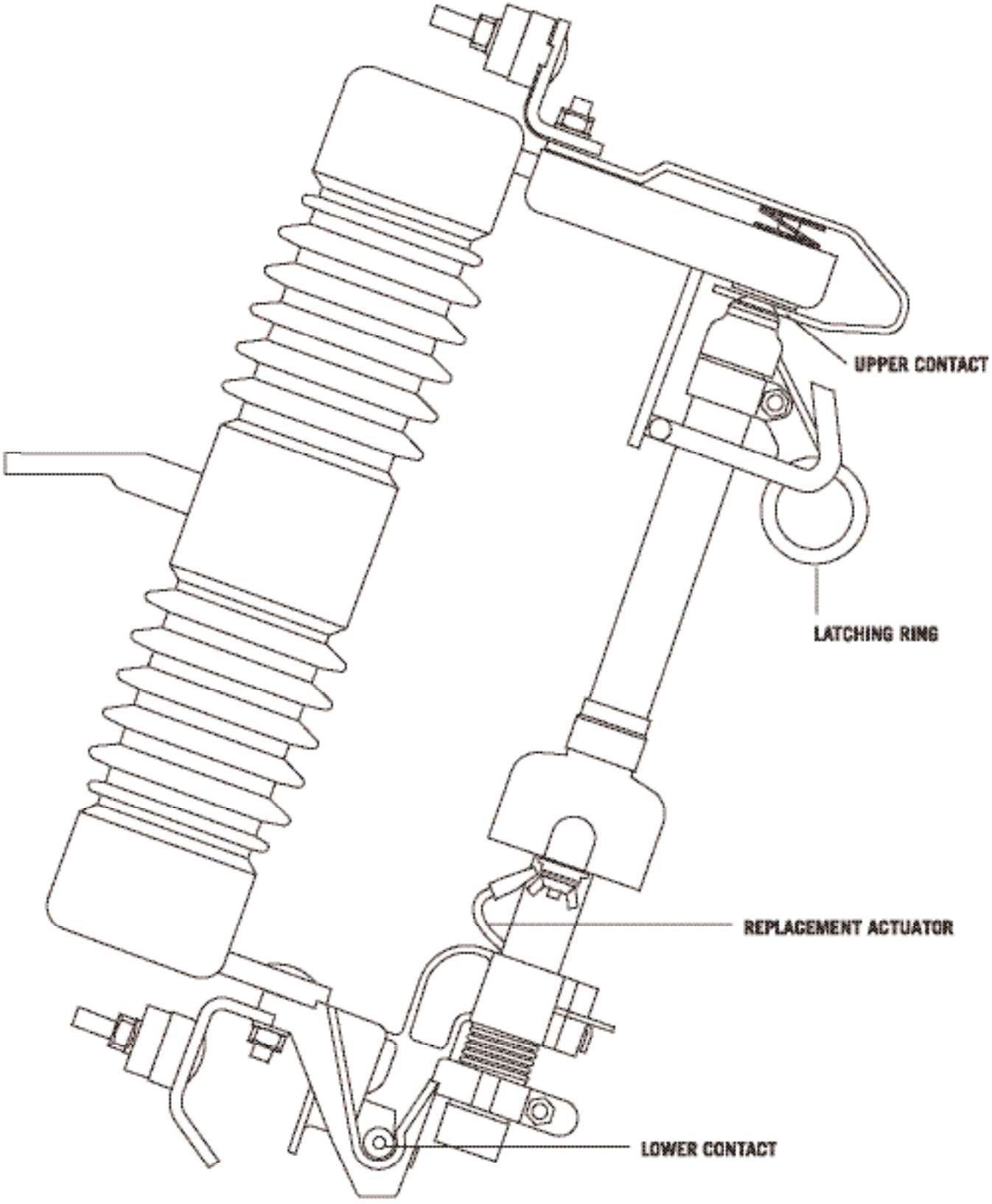
A common actuator E2906 fits all types of ASL except type BR5 for the J & P mount. For this unit actuator 2924 should be used, which is the same as E2906 except for an extra boot. The purpose of the boot is to provide additional environmental protection as the BR5 unit is the only ASL with the actuator fitted to the top contact.

The general procedure for replacing the actuator is to slacken off the wing nut and withdraw the spade terminal. Unscrew the actuator and discard spent actuator assembly. Screw in new actuator until finger tight in it's housing. Lightly smear contact grease to both sides of actuator spade terminal. Wipe clean flat face of actuator terminal on main body of ASL and smear light covering of grease. Locate spade terminal under washer and wing nut & then tighten wing nut.





TYPE ASL XX C DESIGNED FOR USE WITH NEMA STYLE FUSE MOUNTS



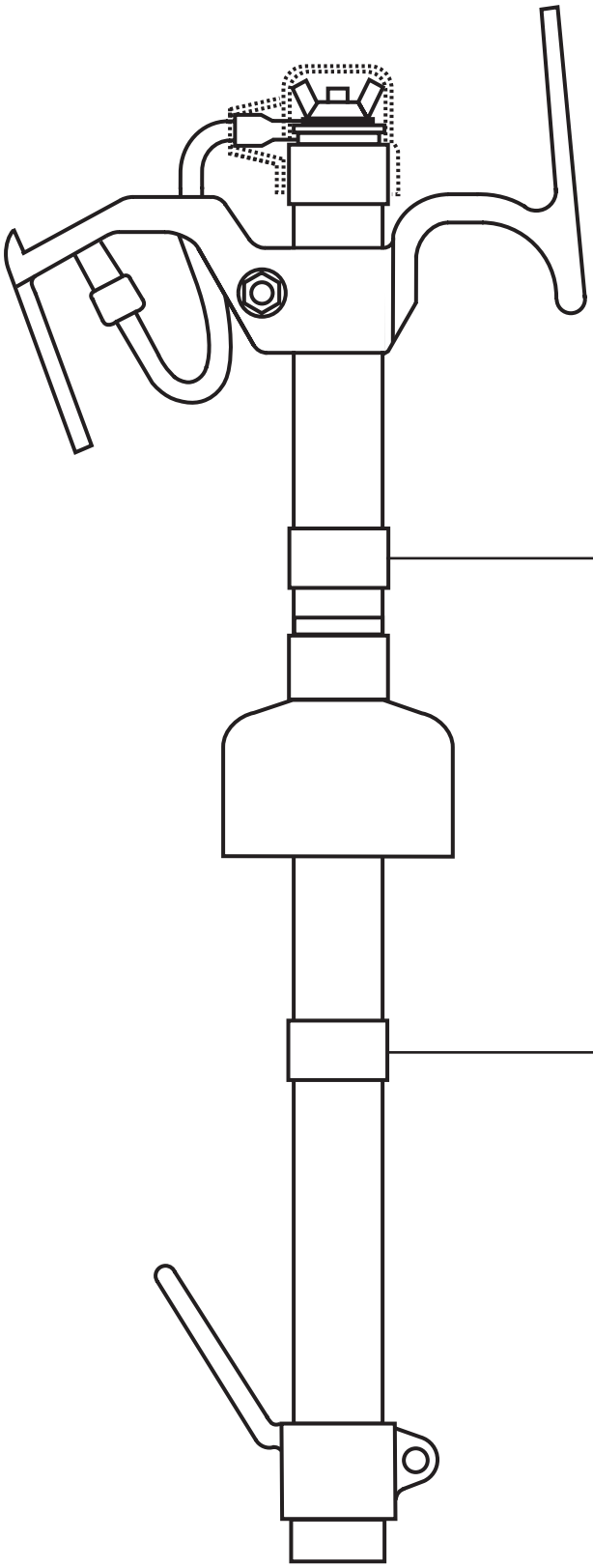
Colour Coding Information

Colour Coding Identification

PICK UP CURRENT Coloured band below current transformer				NUMBER OF COUNTS Coloured band above current transformer	
60 HZ operation (suffix US)		50 Hz operation		1 count	Brown
16A	Yellow	20A	Yellow	2 count	No Band
24A	Red	25A	Red	3 count	Green
40A	Blue	40A	Blue		
56A	Green	50A	Green		
80A	Black	63A	Black		
112A	White	80A	Brown		
160A	Brown	100A	White		
224A	Orange	200A	Orange		
320A	No band				

AUTOMATIC SECTIONALISING LINK - COLOUR BANDS

COLOUR BAND DIAGRAM SHOWS ASL TYPE BR5



NUMBER OF SHOTS

1 COUNT	BROWN
2 COUNT	NO BAND
3 COUNT	GREEN

PICK UP CURRENT (50Hz only)

20A	YELLOW
25A	RED
40A	BLUE
50A	GREEN
63A	BLACK
80A	BROWN
100A	WHITE
200A	ORANGE

Ordering Information

Ordering Codes: First select the part code from the table below

SYMBOL					MEANING
RATING VOLTAGE	PRODUCT TYPE	PICK-UP CURRENT IN AMPS	MOUNTING ARRANGE-MENTS	NUMBER OF SHOTS	
15					SECTIONALISER TO BE USED IN 15KV CUT-OUTS
	ASL				AUTOMATIC SECTIONALISING LINKS (ASL)
		100			THE PICK UP CURRENT WILL BE SET AT 100 AMPS
			BR1		DETAILS THE CONTACT ARRANGEMENT FOR A GIVEN FUSE MOUNT.(SEE MOUNTING REFERENCES IN THE ABOVE TABLE
				2	DETAILS THE NUMBER OF CURRENT PULSES, OR SHOTS, THE UNIT WILL ACCEPT BEFORE OPERATING EITHER 1,2, OR 3.
15	ASL	100	BR1	2	**TOTAL PART NUMBER**

Note:

- IN THE EXAMPLE ABOVE THE PART NUMBER WOULD BE: **15ASL100BR1-2**
- SPARE ACTUATORS PART REFERENCE **E2606** ARE AVAILABLE
- ASLS FOR USE ON 60HZ SYSTEMS ADD US TO REFERENCE, E.G. 15ASL100BR1-2**US**

Notes

Notes