

/// RBR Circuit breaker, remote operated, hydraulic magnetic

Miniature circuit breaker for extreme reliability, within long endurance applications and harsh environments

RBR

Circuit breaker



Features

- Remote and manual operated
- Precise, temperature independent operation
- Panel mount
- Integrated auxiliary contacts (optional)
- Up to 3 poles configuration
- High interrupting capacities due to unique arc chute method
- Immediate resetting possible
- Wide current range: 0.02 - 100 A
- Wide choice of time delays
- Motor input voltage: 12-80 VDC
- Maximum application voltage 137.5 VDC / 484 VAC
- High contact pressure & longer contact life due to wiping
- self-cleaning contacts
- Flexibility by many options

Description

Remote operated hydraulic magnetic circuit breaker for railway applications to protect electronic equipment and components against unintended high currents.

The circuit breaker can be operated both ON and OFF from various locations. Manual operation is still possible. Optional with integrated auxiliary contacts to monitor the circuit.

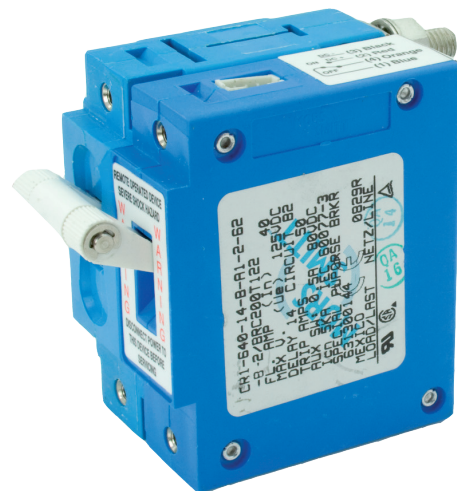
The trip point is always at maximum allowable current, independent of ambient temperature. With unique arc chute design which results in high interrupting capacities.

Up to 3 poles which all break its electronic circuits when 1 breaker trips, for optimal protection of the system. Wide range of currents and options available.

Application

To be used in applications where the circuit breaker must be operated remotely, where electrical systems, circuits or components must be protected against too high currents. This situation can occur, when under strained or heavy use a motor or other load-generating component within the equipment will draw additional current from the power source. High currents cause the wires or components to overheat and ultimately burn up.

The RBR circuit breaker can be used in all railway applications where protection against overload and short circuit is necessary, for example HVAC systems, (door) control systems, braking systems, passenger information systems, etc.



Railway compliancy

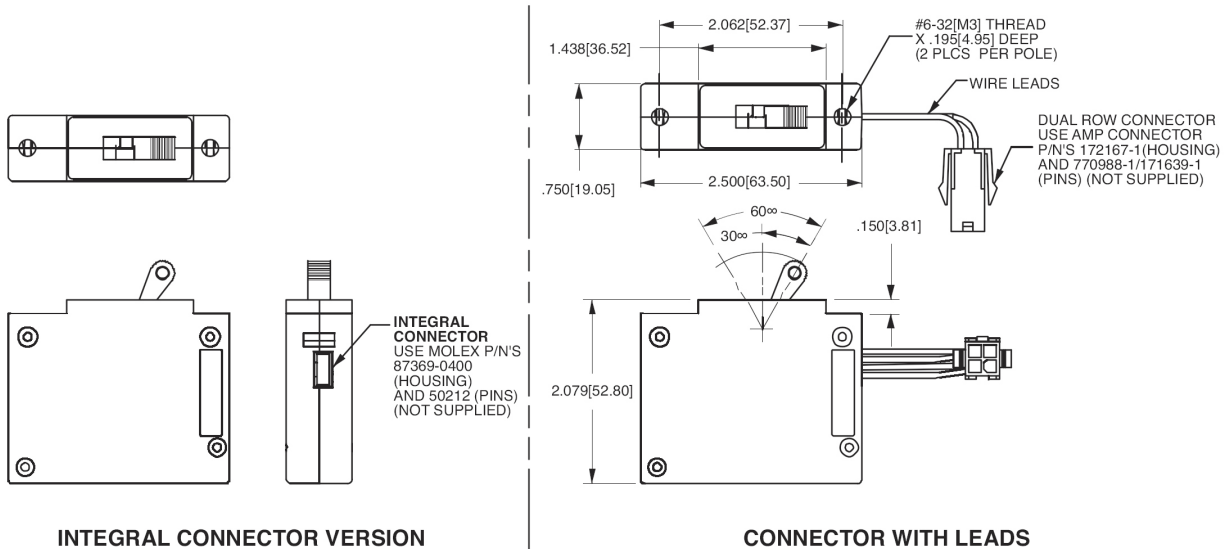
All our circuit breakers are designed according:

EN 50155	NF F16-101/102
IEC 60077 - 1/2/3/4	NF F 62-001 - 1/2/3
IEC 61373	NF F61-010
EN 50124-1	IEC 60068-2-30
EN 45545-2	IEC 60068-2-52
	MIL Method 107D, condition A

Circuit breaker RBR

Form & fit drawings

All dimensions in inches and [mm]



For more detailed technical specifications, drawings and ordering information, go to the product page on www.morssmitt.com

 Over 10 million Mors Smitt relays in use in rail transport applications worldwide!

Mors Smitt Asia Ltd.
Unit B & C, 25/F., Casey Aberdeen House
38 Heung Yip Road, Wong Chuk Hang
Hong Kong
Tel: +852 2343 555
sales.msa@wabtec.com

Mors Smitt France SAS
2 Rue de la Mandinière
72300 Sablé-sur-Sarthe, France
Tel: +33 (0) 243 92 82 00
sales.msf@wabtec.com

Mors Smitt UK Ltd.
Graycar Business Park,
Burton on Trent, DE13 8EN, UK
Tel: +44 (0)1283 357 263
sales.msuk@wabtec.com

Wabtec Netherlands B.V.
Vrieslantlaan 6,
3526 AA, Utrecht, Netherlands
Tel: +31 (0)30 288 1311
sales.msbv@wabtec.com

Mors Smitt Technologies Ltd.
1010 Johnson Drive,
Buffalo Grove, IL 60089-6918, USA
Tel: +1 847 777 6497
salesmst@wabtec.com

RMS Mors Smitt
6 Anzed Court,
Mulgrave, VIC 3170, Australia
Tel: +61 (0)3 8544 1200
sales.rms@wabtec.com

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Technical specifications

Circuit breaker RBR

General description

The Mors Smitt remote operated circuit breaker combines the convenience of remote ON, OFF and reset capability, with the safety and accuracy of a standard magnetic current sensing device, thus allowing operation of the breaker from various locations in a system, facility or site (while not sacrificing the ability to manually operate the breaker if required). With the RBR, service, diagnostics, load shedding and power distribution control functions can now be performed in areas that were previously unattended, inaccessible or unsafe.

The RBR module allows remote operation of the CR panel mount breaker (up to 3 poles), through hard wiring with a single pole, double throw switch connected to a standard power source, or more sophisticated relay and modem networks.

The RBR module can be mounted to either side of the host breaker, while occupying only the width of a standard CR circuit breaker pole. Several interface methods are available. Remote physical actuation of the host circuit breaker is achieved by connecting the RBR module's handle with the breakers.

Being based on the CR-circuit breaker, the RBR allows easy adaptation into existing panel designs. In addition, its' compact size allows efficient use of space for new design applications. With the RBR, Mors Smitt has designed a versatile, compact and reliable solution in a hydraulic/magnetic circuit breaker or switch only device that can be operated both manually and remotely.

RBR motor characteristics

Voltage input	12 VDC...80 VDC
Start current	< 1A
Switching time	< 2 s
Operating temperature	-25 °C...+80 °C

MTBF values miniature circuit breaker

Poles	MTBF (106 hrs)	MTBF (years)	
1	0.83335	95.1	
2	0.41665	47.6	
3	0.27780	31.7	

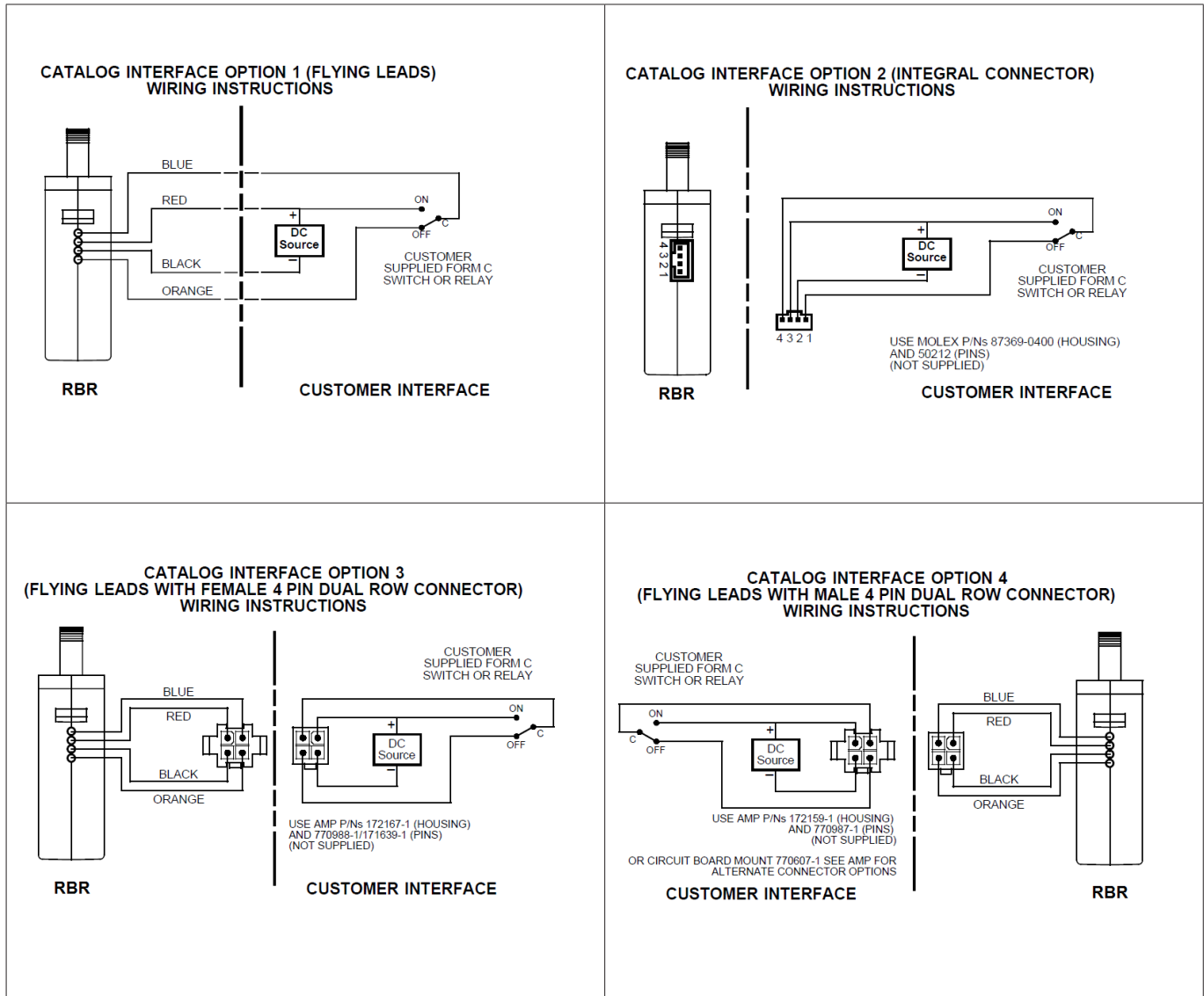
Remark: these values are based on conservative calculations, the actual MTBF figures will be higher.

Endurance: 10.000 'ON-OFF' operations with rated current & voltage.

Circuit breaker RBR

Wiring diagram

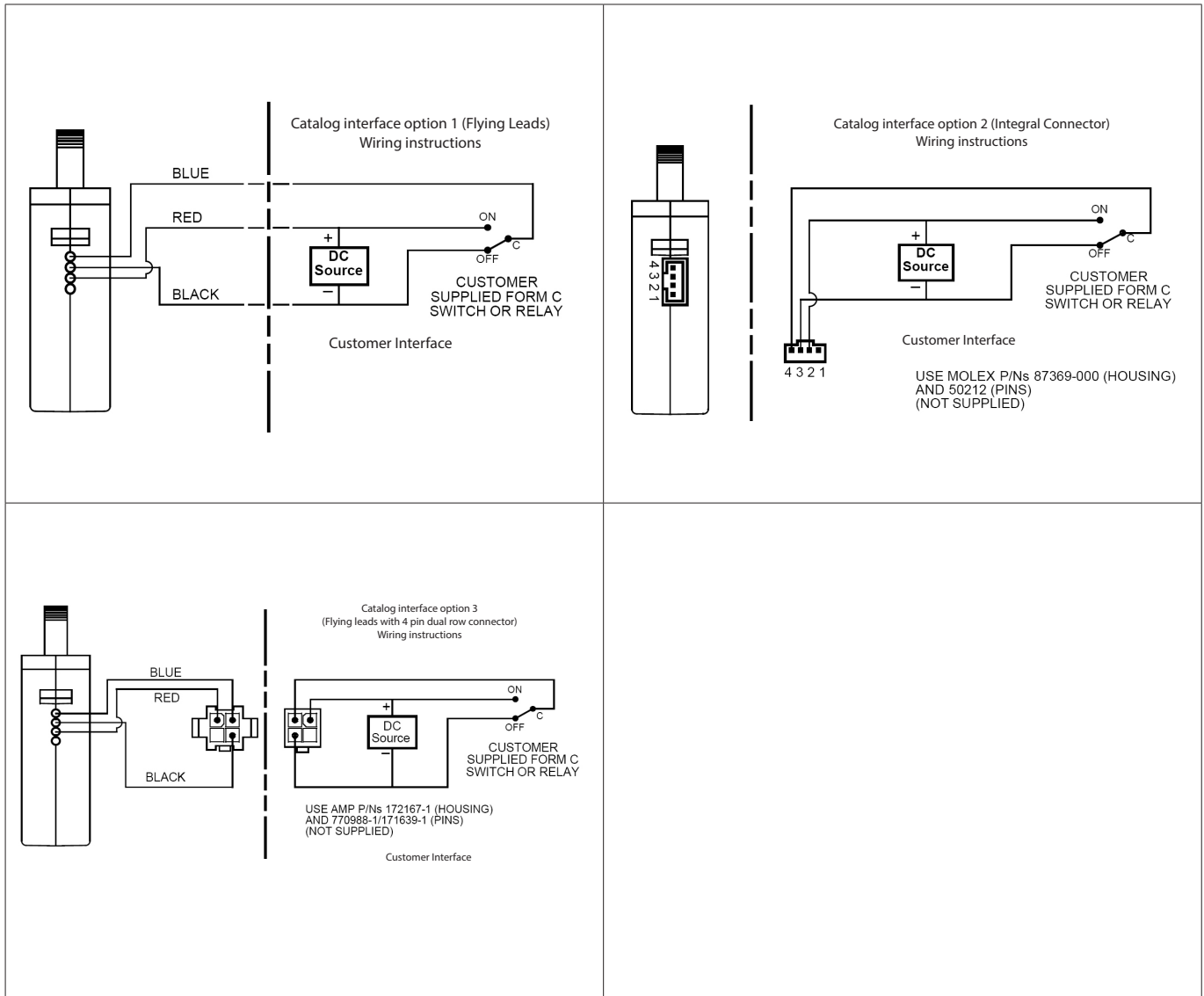
20...40 VDC & 40...80 VDC versions



Circuit breaker RBR

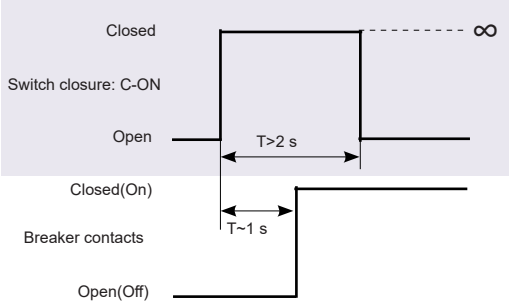
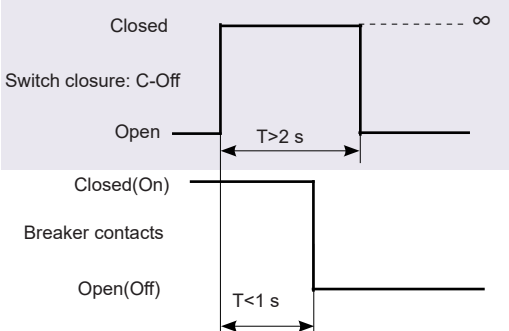
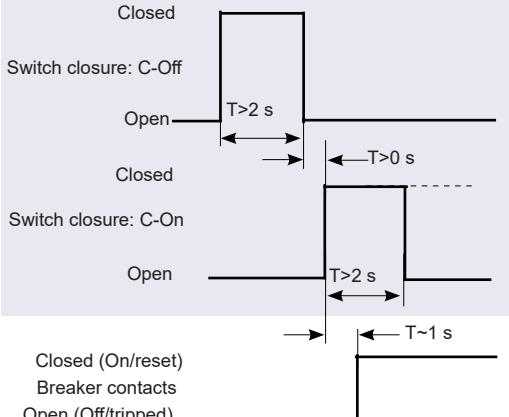
Wiring diagram

12 VDC versions



Circuit breaker RBR

Operation diagram

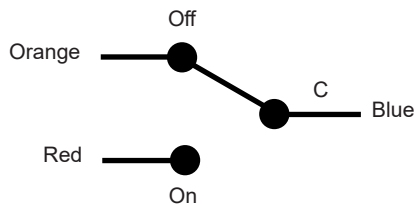
<p>I. Breaker Off to breaker On</p> 	<ul style="list-style-type: none"> At least 2 seconds is required to allow the motor to switch the breaker ON After approximately 1 second the breaker will be switched ON After switching the breaker ON the C-ON connection can be left in this status or be opened again, this doesn't effect the status of the breaker For the description of the "C-ON" mode off the remote switch see previous pages
<p>II. Breaker On to breaker Off</p> 	<ul style="list-style-type: none"> At least 2 seconds is required to allow the motor to switch the breaker to OFF After approximately 1 second the breaker will be switched off After switching the breaker OFF the C-OFF connection can be left in this status or be opened again, this doesn't effect the status of the breaker For the description of the "C-OFF" mode off the remote switch see previous pages
<p>III. Breaker tripped to reset</p> 	<ul style="list-style-type: none"> To reset a tripped breaker the breaker needs to be shut off first by making the ON to OFF operation (operation II) After the ON to OFF operation the OFF to ON operation has to be performed (operation I) After the OFF to OFF operation the remote switch contact may be opened, this doesn't effect the status of the breaker

Circuit breaker RBR

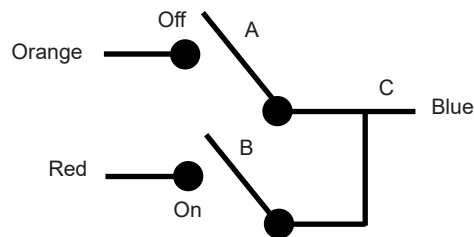
External interface date

20 - 40 VDC & 40 - 80 VDC versions:

Original change over circuit

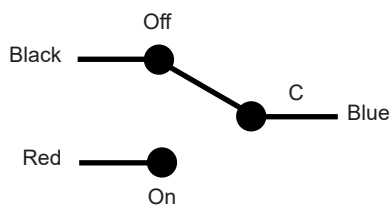


Two switch circuit for external interface

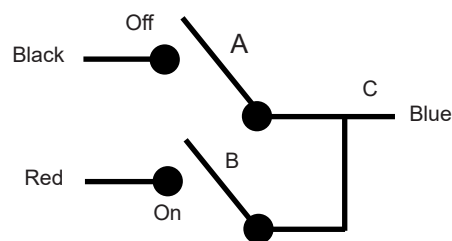


12 VDC versions:

Original change over circuit



Two switch circuit for external interface



Functional schema of two switch external interface
applicable for all voltage range versions

Switch A status	Switch B status	Function
Open	Open	Neutral state
Open	Closed	Switch breaker from Off to On
Closed	Open	Switch breaker from On to Off
Closed	Closed	Malfunction (do not apply this status of both switches, this will cause a fault)

Circuit breaker RBR

Ordering scheme RBR

...../BR								
Voltage rating	A							12 VDC
	B							20-40 VDC
	C							41-80 VDC
Interface ¹	1							Flying leads (no connector)
	2							Integral connector
	3							Flying leads with 4 pin dual row connector (female)
	4							Flying leads with 4 pin dual row connector (male)
Lead length	00							No lead
	01							1" (25.4 mm)
	02							2" (50.8 mm)
	03							3" (76.2 mm)
	..							etc
Actuator colour (Handle colour must be the same as the handle colour for the breaker)	T							White
	U							Black
	V							Red
	W							Yellow
Mounting position (As viewed from back of the breaker, line side up, pole 1 left)	1							Left side
	2							Right side
Mounting inserts (Mounting should match the circuit breaker)	1							6-32 x 0.195"
	2							ISO M3 x 5 mm
Agency approvals ²	1							UL recognized, CSA, TUV to EN 60077 and NF F 62-001
	2							UL-Listed, CSA, TUV to EN 60077 and NF F 62-001
	A							No agency approvals (configuration not tested by external agency)

¹ Integral or 4 pin dual row connectors not available with agency approval UL-listed construction
An integral connector is not compatible with flying leads

² It is not necessary that the remote modules and host circuit breaker have the same agency approvals

To order a remote operated circuit breaker:

Add the remote module part number to the end of the CR-circuit breaker ordering code.

Example : CR1-610-24-B-A1-3-36-B-2 /BRB106T112.

Match color & mounting of breaker with the module.

Circuit breaker CR

Ordering scheme CR - page 1

CR	codes continue on following page.....					
Poles ¹	1						1 pole
	2						2 poles
	3						3 poles
Current rating (amperes) ²	020		0.020	420	2.000	650	50.000
	025		0.025	522	2.250	660 ²	60.000
	030		0.030	425	2.500	670 ²	70.000
	035		0.035	527	2.750	680 ²	80.000
	040		0.040	430	3.000	690 ²	90.000
	045		0.045	435	3.500	695 ²	95.000
	050		0.050	440	4.000	810 ²	100.000
	055		0.055	445	4.500		
	060		0.060	450	5.000		
	065		0.065	455	5.500	Or voltage coil (nominal rated voltage) ³	
	070		0.070	460	6.000	A06	6 DC
	075		0.075	465	6.500	A12	12 DC
	080		0.080	470	7.000	A18	18 DC
	085		0.085	475	7.500	A24	24 DC
	090		0.090	480	8.000	A32	32 DC
	095		0.095	485	8.500	A48	48 DC
	210		0.100	490	9.000	A65	65 DC
	215		0.150	495	9.500		
	220		0.200	610	10.000	J06	6 AC
	225		0.250	710	10.500	J12	12 AC
	230		0.300	611	11.000	J18	18 AC
	235		0.350	711	11.500	J24	24 AC
	240		0.400	612	12.000	J48	48 AC
	245		0.450	712	12.500	J65	65 AC
	250		0.500	613	13.000	K20	120 AC
	255		0.550	614	14.000	L40	240 AC
	260		0.600	615	15.000		
	265		0.650	616	16.000		
	270		0.700	617	17.000		
	275		0.750	618	18.000		
	280		0.800	620	20.000		
	285		0.850	622	22.000		
	290		0.900	624	24.000		
	295		0.950	625	25.000		
	410		1.000	630	30.000		
	512		1.250	632	32.000		
	415		1.500	635	35.000		
(Over values on request)	517		1.750	640	40.000		
Frequency & delay	03		DC, 50/60 Hz, switch only				
	10		DC instantaneous				
	11		DC ultra short				
	12		DC short				
	14		DC medium				
	16		DC long				
	20		50/60 Hz instantaneous				
	22		50/60 Hz short				
	24		50/60 Hz medium				
	26		50/60 Hz long				
	42 ⁵		50/60 Hz short, hi-inrush				
	44 ⁵		50/60 Hz medium, hi-inrush				
	46 ⁵		50/60 Hz long, hi-inrush				
	52 ⁵		DC, short, hi-inrush				
	54 ⁵		DC, medium, hi-inrush				
	56 ⁵		DC, long, hi-inrush				

[illegible]

Circuit breaker

CR

Notes:

1. Standard multipole units have all poles identical except when specifying auxiliary switch, mixed poles on request
2. Current rating 60 A - 100 A are available with circuit codes A & B only. Current ratings 80 A - 100 A are available up to 2 poles maximum
3. Voltage coils not rated for continuous duty. Available only with delay codes 10 and 20
4. For 0.02 to 30 A, select current code 630
 For 30 - 50 A, select current code 650
 For 60 - 70 A, select current code 670
 For 80 - 100 A, select current code 810
 Maximum number of poles on request
5. Available with circuit codes B & D only, and up to 50 A maximum
6. Circuit codes D, E, F & G available with terminal codes 1,2,4 & 5 only. Circuit codes D available up to 50 A maximum current rating
7. Actuator code:
 B Handle location as viewed from front of breaker:
 2 pole - left pole
 3 pole - center pole
8. Auxiliary switch available with series trip and switch only circuits. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole (rear view)
9. Available to 60 A maximum
10. Available to 50 A maximum
11. Available to 100 A maximum
12. Available to 25 A maximum
13. 2 & 3 pole circuit breakers required for 120/240 VAC applications, terminal barrier is required. Third pole is for 120/240 VAC applications requiring neutral disconnect. The 3rd pole has the same construction as poles 1 & 2
14. Code only applicable for single pole. For multiple poles select code C
15. Multiple pole only
16. Single pole only
17. TUV certified: not for switch only circuit and not for actuator legend 'ON-OFF'
 UL recognized: for most applications, not for all
 UL listed: possible on request
 Special applications without approvals: agency approval code A
18. Not TUV certified, agency approval code A
19. Barriers not in combination with terminal shrouds

Circuit breaker
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Mors Smitt Asia Ltd.
Unit B & C, 25/F., Casey Aberdeen House
38 Heung Yip Road, Wong Chuk Hang
Hong Kong
Tel: +852 2343 555
sales.msa@wabtec.com

Wabtec Netherlands B.V.
Vrieslantlaan 6,
3526 AA, Utrecht, Netherlands
Tel: +31 (0)30 288 1311
sales.msbv@wabtec.com

Mors Smitt France SAS
2 Rue de la Mandinière
72300 Sablé-sur-Sarthe, France
Tel: +33 (0) 243 92 82 00
sales.msf@wabtec.com

Mors Smitt Technologies Ltd.
1010 Johnson Drive,
Buffalo Grove, IL 60089-6918, USA
Tel: +1 847 777 6497
salesmst@wabtec.com

Mors Smitt UK Ltd.
Graycar Business Park,
Burton on Trent, DE13 8EN, UK
Tel: +44 (0)1283 357 263
sales.msuk@wabtec.com

RMS Mors Smitt
6 Anzed Court,
Mulgrave, VIC 3170, Australia
Tel: +61 (0)3 8544 1200
sales.rms@wabtec.com

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