Circuit breaker testing
Accessories

Contents

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Cables						
Analogue Input XLR/Banana	XLR female / 4 mm safety plugs, 1 m (3.3 ft). For customized analog transducer connection	X	X	X	X	GA-00040
Cable Analogue XLR/open ends	XLR female / open ends, 1 m (3.3 ft)	X	X	X	X	GA-00041
Transducer cable, XLR / IP / TS	NOVOTECHNIC IP/TS, 1 m (3.3 ft)	X	X	X	X	GA-00044
Transducer cable, XLR / TLH / LWH	NOVOTECHNIC TLH/LWH, 0.5 m (1.6 ft)	X	X	X	X	GA-00049
Transducer cable XLR / LWG	NOVOTECHNIC LWG/M12, 0.5 m (1.6 ft)	X	X	X	X	GA-00050
Cable Current clamp	For current clamp, BNC / XLR3, 0.3 m (1 ft)	X	X	X	X	GA-00140
Cable, extension EGIL Timing MAIN	Extension cable for time measurement of main contacts, XLR5 female / XLR5 male 10 m (32.8 ft)				X	GA-00150
	5 m (16.4 ft)				X	GA-00155

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Cable, EGIL Timing						
	Timing 5 m (16.4 ft) XLR5 / 4 mm banana excl. clamps				X	GA-00160
Cable, EGIL Timing AUX						
	AUX1&2, timing 5 m (16.4 ft) XLR5 / 4 mm banana excl. clamps				X	GA-00170
Cable, EGIL Voltage sense						
	SDRM Voltage sense cable incl. clamps, 2 m (6.5 ft)				X	GA-00175
Cable set, Timing TM1800 AUX TM1700 AUX TM1600 MAIN TM1600 AUX	The cable sets consist of 8 cables with clamps and 4 mm stackable safety plugs. For timing of CB contacts.					
	5 m (16.4 ft)	X	X	X		GA-00231
	10 m (32.8 ft)	X	X	X		GA-00241
	15 m (49.2 ft)	X	X	X		GA-00251
	20 m (65.6 ft)			X		GA-00261
	25 m (82 ft)			X		GA-00271
	40 m (131 ft)			X		GA-00281
SCA600/Coax. Cable		X	X	X		GA-00750
Extension cable Analogue input	XLR female/XLR male 1 m (3.3 ft)	X	X	X	X	GA-00760

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Item		Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Cable reel		20 m (65.5 ft), 4 mm stackable safety plugs					
		Black	X	X	X	X	GA-00840
		Red	X	X	X	X	GA-00842
		Yellow	X	X	X	X	GA-00844
		Green	X	X	X	X	GA-00845
		Blue	X	X	X	X	GA-00846
Cable Timing MAIN (Adv.)		Timing M/R XLR3 male / banana, 5 m (16.4 ft)	X	X			GA-00850
Extension cable Timing MAIN		For Timing M/R modules, XLR3 male / XLR3 female, 10 m (32.8 ft)	X	X			GA-00851
Cable Timing MAIN (Std.)		Timing M/R, XLR male / 4 mm banana, 5 m (16.4 ft)	X	X			GA-00852
Adapter Digital		For Doble transd. (Use with GA-00895)	X	X			GA-00867
Adapter Digital		For Siemens digital transducer	X	X			GA-00868
Adapter Digital		For Vanguard transd. (Use with GA-00895)	X	X			GA-00869
Cable Timing AUX		5 m, (16.4 ft)	X	X			GA-00870
Digital transducercable		For customized digital transducer connection RS422, SUB-D15 / open ends, 10 m (33 ft)	X	X			GA-00885

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Digital transducer extension cable	RS422, SUB-D15 / SUB-D15, 10 m (33 ft)	X	X			GA-00888
Cable Digital TP1	NOVOTECH Digital TP1, linear transducer cable, D-SUB 15 / M12, 10 m (33 ft)	X	X			GA-00889
L & L digital cable	For using Leine & Linde 530 digital transducer, 10 m (33 ft)	X	X			GA-00890
Baumer digital cable	For using Baumer digital transducer, 10 m (33 ft)	X	X			GA-00895
Heidenhein digital cable	Digital transducer cable, Heidenhein, 10 m (33 ft)	X	X			GA-00900
Ethernet cable, network	Cable for connection to network/LAN, RJ45	X	X			GA-00960
TM1700/1800 DCM extension cable kit	1 DCM extension cable, DIN 6, 10 m (33 ft) Old type	X	X			GA-00998
	1 DCM extension cable, DIN 7, 10 m (33 ft) Actual type. See "TM1700/1800 DCM Extension cable" on page 7	X	X			GA-00999
Open analog cable	For customized analog transducer connection,1 m (3.3 ft)	X	X	X	X	GA-01000
Extension cable Analogue Input	For analog input, XLR3 female / XLR3 male Analog cable Egil/TM, 10 m (33 ft) (old GA-00760)	X	X	X	X	GA-01005
	XLR3 female / XLR3 male, 1 m (3.3 ft)	X	X	X	X	GA-01007
Cable kit Control	Control kit for three phases, 5 x 5 m (16 ft), 2 x 0.25 m (10"), 2 x jumper	X	X			GA-90002

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Item	Description		TM1800	TM1700	TM1600	EGIL	Art. No.
DCM – DualGround							
DCM	DCM TM1700 DualGround Timing						
	3- channels Including: 1 DCM Upgrade cable kit	CG-19180		X			BL-59190
	6-channels Including: 2 DCM Upgrade cable kit	CG-19180		X			BL-59192
TM1700/1800 DCM Upgrade cable kit	Cables for 3 channels addition DualGround upgrade from 3 to 6 channels 3 DCM cables, 12 m (39 ft, 6 Clamps		X	X			CG-19180
TM1700/1800 DCM Extension cable	DualGround cable extension for 3 channels, 10 m (33 ft) (3 x GA-00999)		X	X			CG-19181
DCM - TM1800	Module for TM1800						
	Module with 3 channels Including: 1 DCM Upgrade cable kit 1 DCM to Timing M/R	CG-19180 GA-12900	X				CG-19190
	Module with 6 channels Including: 2 DCM Upgrade cable kit 1 DCM to Timing M/R	CG-19180 GA-12900	X				CG-19192
DCM Span extension cable	Cable to extend the span in the TM1700/1800 DCM Upgrade cable kit CG-19180 BNC / BNC, 2 m (6.6 ft)		X	X			GA-00720
DCM Cable link	DCM to Timing M/R		X	X			GA-12900

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Software						
CABA Win	For TM1700/1800, incl. Ethernet cross-over cable	X	X			CG-8000X
	For TM1600, incl. fiberoptics and USB interface			X		BL-8203X
	For EGIL, incl. USB cable				X	BL-8204X

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Application kits						
First trip kit						
	For single operating mechanism, 1 + 3 clamps	X	X			BL-90700
	For three operating mechanisms, 3 + 3 clamps	X	X			BL-90710
Synchro Switch Relay kit	Synchronized Switching Relay test kit incl. accessories, software and cables (delivered in transport case)					
	SSR kit for TM 1700/1800	X	X			CG-91200
	SSR for TM1600 (incl. VD401)			X		BL-91200
Transducer calibration kit	Plate XB-39016 not included	X	X			XB-39095
Vibration kit	The Vibration kit extends TM1800/TM1700/TM1600 and CABA Win with the equipment and software required for recording and analyzing vibration signals at a circuit breaker. The kit includes the signal conditioning unit SCA606, the software CABA Win Vibration and one vibration channel. The vibration solution can be extended up to 6 channels.	X	X	X		BL-13090
Vibration channel	Additional vibration channel to be used together with the Vibration kit. Each Vibration channel includes accelerometer, accelerometer adapter, cables to SCA606 and cables to TM1800/TM1700/TM1600*.	X	X	X		XB-32010

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Item	Description			TM1800	TM1700	TM1600	EGIL	Art. No.
Static and dynamic resistance measurement								
SDRM201	Included acessories: SDRM Cable SDRM multi cable extension Voltage sense Voltage sense extension cable Current cable (red) Current cable (black) Clamps (2 pcs)	GA-12815 GA-00175 GA-00150 GA-12820 GA-12830 KD-03040					X	CG-90250
SDRM201 Cable EGIL	For SDRM201						X	GB-03430
SDRM202	Included accessories SDRM Cable for TM1700/1800 SDRM multi cable extension, 7.5 m Current cable, red, 2pcs, 3 m (9.8 ft) Current cable, black 2 pcs, 0.5 m (1.6 ft) Clamps (2 pcs) Ground cable, 2.5 mm^2 10 m (33 ft)	GA-12815 GA-12820 GA-12830 KD-03040 GA-00208		X	X			CG-90200
	Pack of 3 units (CG-90200) for circuit breaker with 2 Breaks/Phase			X	X			CG-90230
	SDRM Cable for TM1600 SDRM multi cable extension, 7.5 m Current cable, red, 2 pcs, 3 m (9.8 ft) Current cable, black 2 pcs, 0.5 m (1.6 ft) Clamps (2 pcs) Ground cable, 2.5 mm^2 10 m (33 ft)	GA-12815 GA-12820 GA-12830 KD-03040 GA-00208				X		CG-90210
	SDRM Cable for EGIL Voltage sense cable, 2 m (6.5 ft) Voltage sense extension cable, 10 m (33 ft) Current cable, red, 2pcs, 3 m (9.8 ft) Current cable, black 2 pcs, 0.5 m (1.6 ft) Clamps (2 pcs) Ground cable, 2.5 mm^2 10 m (33 ft)	GA-00175 GA-00150 GA-12820 GA-12830 KD-03040 GA-00208					X	CG-90220
SDRM202 Cable	SDRM Cable for TM1700/1800			X	X			CG-90205
	SDRM Cable for TM1600					X		CG-90215
SDRM Cable (CG-90205)	SDRM Cable for EGIL						X	CG-90225

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Extension cable, SDRM201/202	Extension cable for CG-90200 and CG-90210					
	10 m (33 ft)	X	X	X	X	GA-12810
	7.5 m (24.6 ft)	X	X	X	X	GA-12815
Current cables and clamps for SDRM202						
	Cable, red 2.5 m (8.2 ft)	X	X	X	X	GA-12820
	Cable, black, 0.5 m (1.6 ft)	X	X	X	X	GA-12830
	Clamps (2 pcs)	X	X	X	X	KD-03040

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Transducers						
Linear						
Analog						
TLH-150	150 mm (5.9") travel [1]	X	X	X	X	XB-30016
TLH-225	225 mm (8.8") travel [1]	X	X	X	X	XB-30017
TLH-500	500 mm (19.7") travel [1]	X	X	X	X	XB-30020
TLH-750	750 mm (29.5") travel [1]	X	X	X	X	XB-30022
TLH-1000	1000 mm (39.4") travel [1]	X	X	X	X	XB-30023
	[1] Including cable, 0.5 m (20") GA-00049					
LWG 150	150 mm (5.9") travel [2]	X	X	X	X	XB-30116
LWG 225	225 mm (8.8") travel [2]	X	X	X	X	XB-30117
LWG 500	500 mm (19.7") travel [2]	X	X	X	X	XB-30120
	[2] Including cable, 0.5 m (20") GA-00050					
TS 150	150 mm (5.9") travel [3]	X	X	X	X	XB-30030
TS 50	50 mm (1.9") travel [3]	X	X	X	X	XB-30031
TS 25	25 mm (1") travel [3]	X	X	X	X	XB-30033
	[3] Including cable, 1 m (39") GA-00044					
Digital						
Linear transducer TP1	NOVOTECHNIC TP1 (Highspeed design for Megger) 300 mm (11.8") travel	X	X			XB-39140
Linear transducer TP1	NOVOTECHNIC TP1 (Highspeed design for Megger) 500 mm (19.7") travel	X	X			XB-39150

The above transducers are also available in other lengths, please contact Megger for more information.

Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Rotary						
Analog						
Transducer kit	Novotechnic IP6501 Incl. cable 1 m (39"), 6 mm Flex coupling, Hexagon wrench	X	X	X	X	XB-31010
Digital						
Transducer kit	Baumer BDH16.05A3600-LO-B Incl. cable 10 m (33 ft), 10/6 mm Flex coupling, Hexagon wrench	X	X			XB-39130

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Transducer mounting kits						
Universal kits						
Rotary transducer mounting kit	For transducers XB-31010 and XB-39130 Including: Clamping base — XB-39014 Flexible arm — XB-39021 Holder for angular transducer — XB-39022 Plastic transport case — XB-39023 Adapter M6/6 2 Nuts M6 — XB-39025 Adapter M8/6 2 Nuts M8 — XB-39026 Adapter M10/6 2 Nuts M10 — XB-39027 Adapter M12/6 2 Nuts M12 — XB-39028	X	X	X	X	XB-51010
Universal transducer mounting kit	For linear and rotary transducers Including: Magnetic base — XB-39013 Clamping base — XB-39014 Flexible arm — XB-39021 Holder for angular transducer — XB-39022 Plastic transport case — XB-39023 Adapter M6/6 2 Nuts M6 — XB-39025 Adapter M8/6 2 Nuts M8 — XB-39026 Adapter M10/6 2 Nuts M10 — XB-39027 Adapter M12/6 2 Nuts M12 — XB-39028 Universal support — XB-39029	X	X	X	X	XB-51020
Circuit breaker specific kits						
LTB Kit (ABB)	Incl. mounting kit XB-51010, Software conversion table BL-8730X	X	X	X		XB-61010
HPL/BLG Kit (ABB)	Incl. mounting kit XB-51010, Software conversion table BL-8720X	X	X	X		XB-61020
AHMA Kit (ABB)	3-Phase Diagnostic Set for ABB drive mechanism type AHMA 4/8	X	X	X		XB-61030
HMB Kit (ABB)	For drive mechanism type HMB 4/8 Three phase set complete in case 3 PES-HMB8 Transducers 3 GA-00055 Adapter cable 1 GD-00766 Alu transport case 3 Calibration Certificates	X	X	X		XB-61040
Ready-to-use kits – Rotary						
Analog						
1-phase kit	Incl. transducer XB-31010, mounting kit XB-51010	X	X	X	X	XB-71010
3-phase kit	Incl. 3 x 1-pase kits XB-71010	X	X	X		XB-71013
Digital						
1-phase kit	Incl. transducer XB-39130, mounting kit XB-51010	X	X			XB-71020
3-phase kit	Incl. 3 x 1-pase kits XB-71020	X	X			XB-71023
Transducer mounting accessories						
Thread adapter kit	Imperial / metrics adapter kit for TLH / TP1	X	X	X	X	XB-39036
Distance screw	Metrics / metrics for TLH / TP1	X	X	X	X	XB-39160

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| Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Rod for digital transducer TP1	Rod for NOVOTECHNIC TP1, 300 mm (11.8")	X	X	X	X	XB-39193
Switch magnetic base		X	X	X	X	XB-39013
Flexible arm		X	X	X	X	XB-39021
Holder for rotary/ angular transducer,		X	X	X	X	XB-39022
Clamping base		X	X	X	X	XB-39014
Flex coupling	For shaft diam. 6 mm (for Novotechnic IP6501)	X	X	X	X	XB-39030
Flex coupling	For shaft diam. 10 / 6 mm (for Baumer BDH)	X	X	X	X	XB-39032

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Item	Description	TM1800	TM1700	TM1600	EGIL	Art. No.
Other						
Cable organizer						
	Hook-and-loop straps, 10 pcs.	X	X	X	X	AA-00100
Long term monitoring	EPROM to be mounted in the TM1600					
LTM1	Starts measurement when there is a change at any of the time-measuring inputs			X		BL-80010
LTM2	Functions in the same way as a standard TM1600, but returns automatically to the READY state after measurement			X		BL-80011
VD401	Voltage divider, ratio 400/1 (for TM1600 and EGIL with analog channel)			X	X	BL-90070
Current	AC/DC clamp/clip-on/current probe, Fluke 80i-110s					
	Current sensor kit 1 channel (Fluke 80i-110s incl. cable GA-00140)	X	X			BL-90600
	Current sensor kit 3 channels (Fluke 80i-110s incl. cables GA-00140)	X	X			BL-90610
Temperature sensor	With the temperature sensor the ambient temperature is automatically recorded with each measurement and stored together with the test result. The temperature becomes a parameter in CABA Win. Suitable cable is the Analog cable, 10 m GA-01005. Range: -20°C to +50°C (-4°F to +122°F) Resolution: 0.5°C (0.9°F)	X				CG-90070
Thermopaper, for Fujitsu	114 mm, 30 m			X	X	GC-00030
	Box/24 pcs			X	X	GC-00032
Thermopaper	114 mm, Ø 40 mm	X				GC-00040
Clamp	Ground Clamp	X	X	X	X	GC-80020
Soft case	Made from sturdy nylon fabric	X	X			GD-00340
Ferrite kit	Accessory for timing of GIS circuit breakers using TM1800 with DualGround™ Including: C-shape ferrite 7 XB-40010 I-shape ferrite 4 XB-40020 Round ferrite 4 30-67090 Hook and loop fastener 4 09-10140 Transport case GD-00440 User's Manual ZP-CG04E	X	X			XB-40090

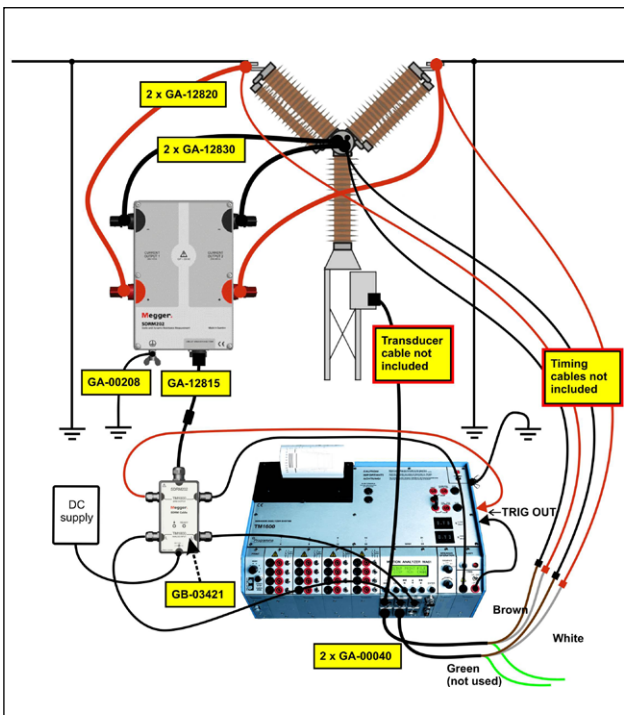For more information about optional accessories please contact Megger

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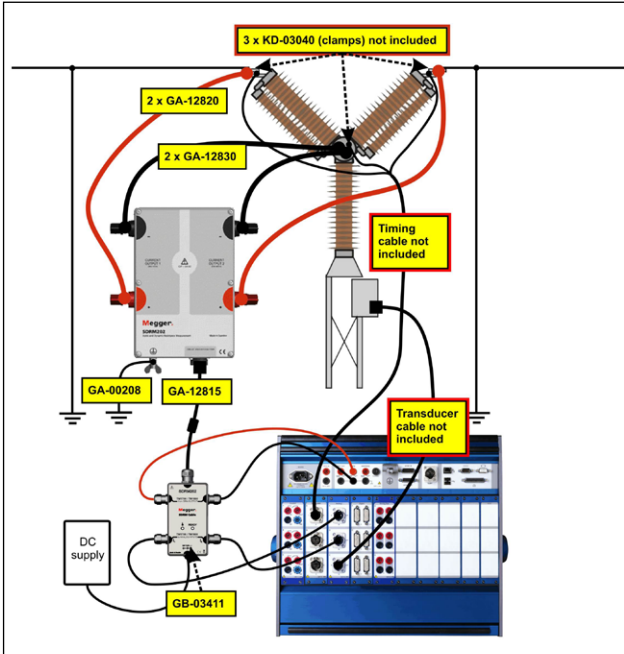
Timing cable is included with the TM1800 timing module.
Transducer cable is selected together with the the type of transducer used.
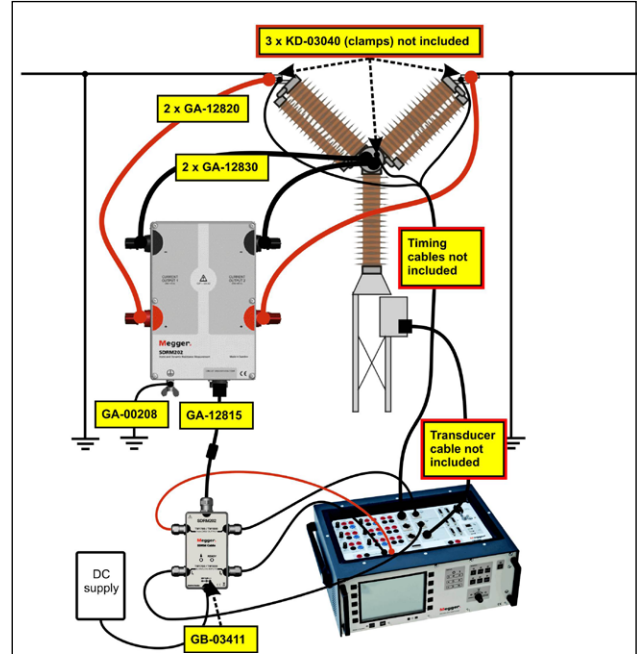
Timing cable is included with the TM1700.
Transducer cable is selected together with the the type of transducer used.

Timing cable is an optional accessory to TM1600.
Transducer cable is selected together with the the type of transducer used.
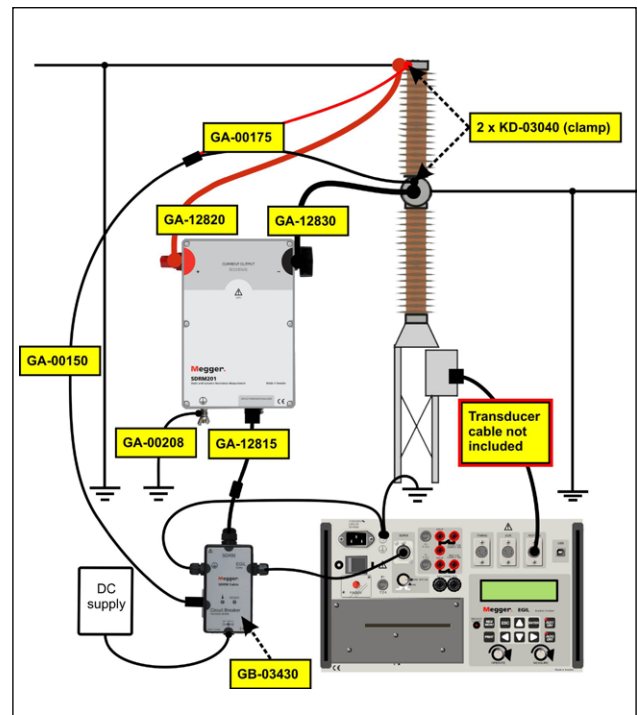
Transducer cable is selected together with the the type of transducer used.

DualGround - safe testing

The best way to provide safety in circuit breaker testing is to keep
both sides of the circuit breaker grounded throughout the test. This
will also make the test faster and easier. Minimum time shall be
spent in the substation and focus shall be on the test rather than
the equipment.

One side grounded
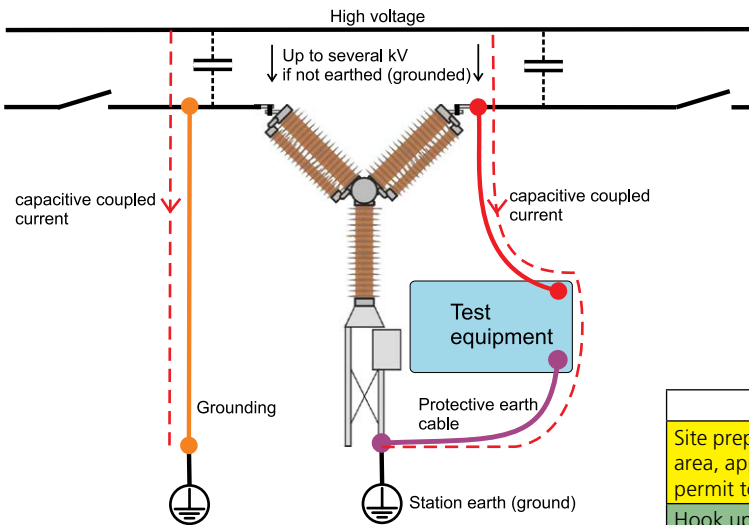
| Conventional vs. DualGround	
Site preparation (isolate work area, apply safety ground, issue permit to work)	Site preparation (isolate work area, apply safety ground, issue permit to work)
Hook up test equipment. Issue sanction for test	Hook up test equipment. Issue sanction for test
Authorised person removes the ground	Risky step left out
Perform testing	Safe testing with both sides grounded
Authorised person applies ground	Risky step left out
Cancel sanction for test. Disconnect test equipment	Cancel sanction for test. Disconnect test equipment
Site closing (cancel permit to work, disconnect ground)	Site closing (cancel permit to work, disconnect ground)

Both sides grounded

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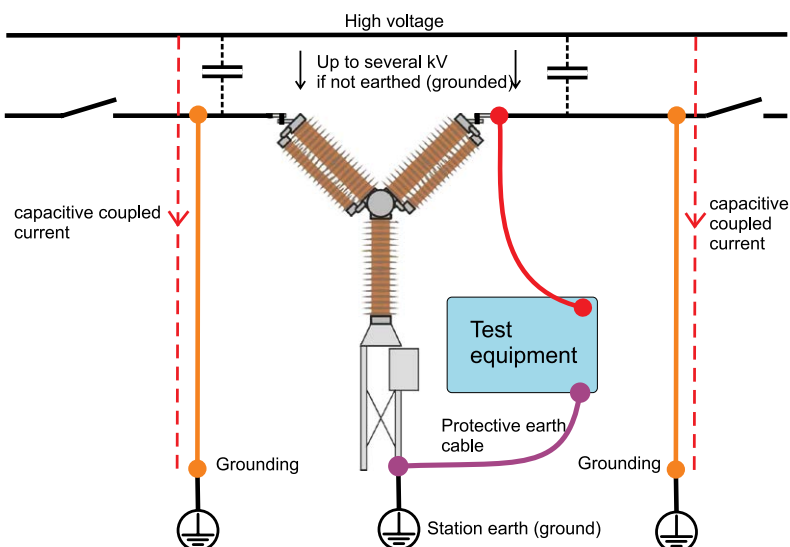
Analogue transducer mounted on a distribution circuit breaker

1. Clamping base
2. Flexible arm
3. Holder angular transducer
4. Novotechnik IP6501
5. Flex coupling
6. Bolt adapter
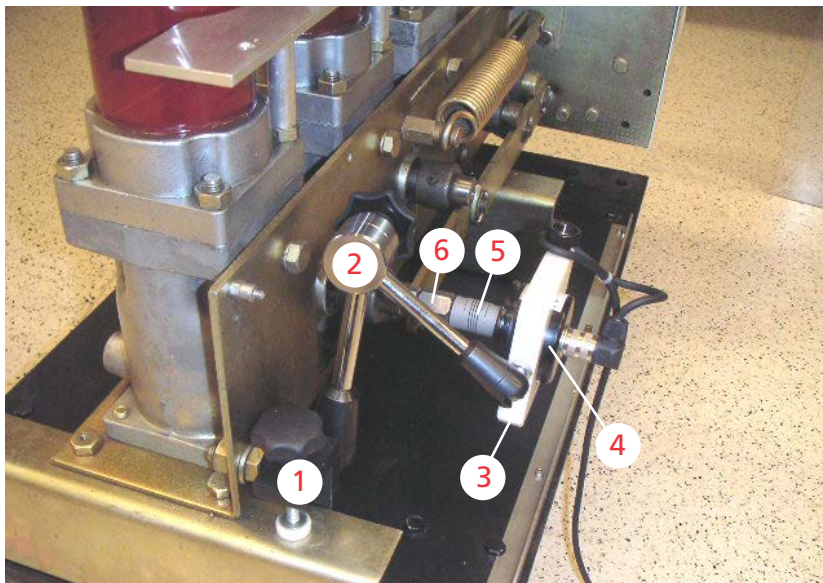
Digital transducer mounted on a distribution circuit breaker

1. Magnetic base
2. Flexible arm
3. Holder angular transducer
4. BAUMER BDH 16.05A10-L0-4
5. Flex coupling
6. Bolt adapter

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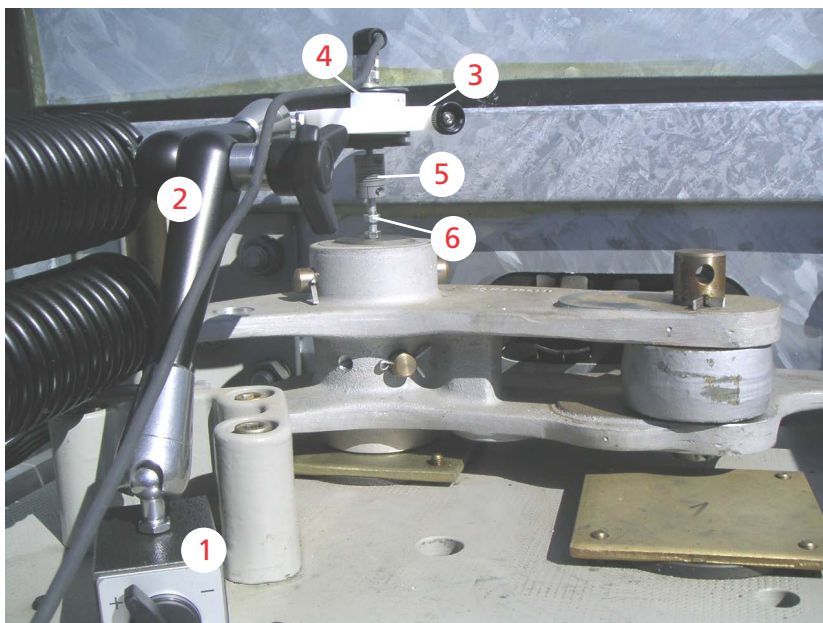
First trip measurement

A good and time effective way to check the condition of a circuit breaker is to document its behavior at the first open operation after it has been idle for long time. The measurement and connections to the circuit breaker are carried out while it is still in service. All of the connections are made inside the control cabinet.

Coil current measurement at First trip / First close test. The circuit breaker is in service during first trip test. Thus, it is not allowed to put the breaker in local mode or break up the circuit in order to measure the coil current. The only way to measure coil currents in a safe way is to use current clamps.

Designed to measure the circuit breaker's contact opening times when connected. You will be able to measure your circuit breaker's opening contact times without having to take them offline.It will also be possible to check the transition of the current to 0 during the opening of your circuit breaker's contacts as well as the synchronization of the opening times on the 3 phases.

Equipment

The equipment needed for a first trip measurement depends on the configuration of the circuit breaker. A common denominator for all measurements is the three current clamps for the line current are needed to capture the timing of the individual phases. These do not need to be able to measure DC currents, since they will only measure the alternating line currents. For the coil current, either one or three clamps are needed depending on the number of operating mechanisms. These need to be able to measure both AC and DC to cover all types of coils, however DC coils being the most common.

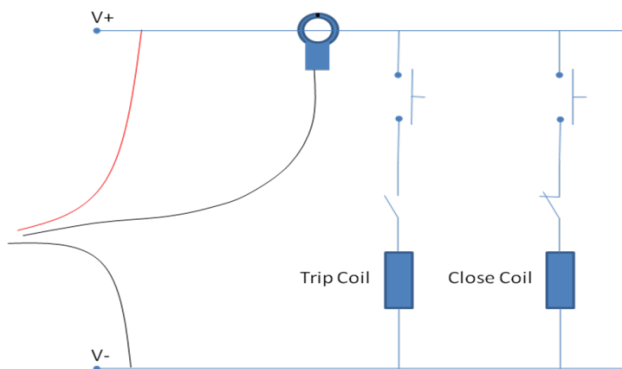For ordering information, see "First trip kit" on page 9.

Figure 1. Point for measuring coil current and control voltage
Since the breaker is in service, the conventional way of measuring the times of the main contacts with timing leads across the interrupter cannot be used. Instead of timing leads, three current clamps are used. These current clamps are used on the secondary side of the current transformer for each phase. These show the current flowing through each phase and by looking for the instant when the current stops flowing, the breakers trip time is revealed.
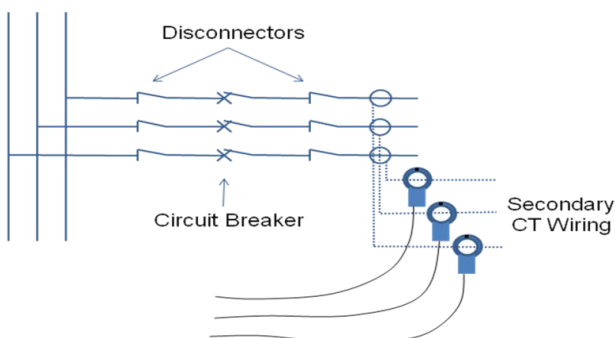

Figure 2. Point for measuring the line currents

Your "One Stop" Source for all your electrical test equipment needs

- Battery Test Equipment
- Cable Fault Locating Equipment
- Circuit Breaker Test Equipment
- Data Communications Test Equipment
- Fiber Optic Test Equipment
- Ground Resistance Test Equipment
- Insulation Power Factor (C&DF) Test Equipment
- Insulation Resistance Test Equipment
- Line Testing Equipment
- Low Resistance Ohmmeters
- Motor & Phase Rotation Test Equipment
- Multimeters
- Oil Test Equipment

- Portable Appliance & Tool Testers
- Power Quality Instruments
- Recloser Test Equipment
- Relay Test Equipment
- T1 Network Test Equipment
- Tachometers & Speed Measuring Instruments
- TDR Test Equipment
- Transformer Test Equipment
- Transmission Impairment Test Equipment
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