NBT

Breaker Trip Circuit Supervision

Breaker trip circuit supervision relay for voltage level and electrical continuity.

Application

- Breaker trip circuit

Protection and Control

- Undervoltage and overvoltage
- Defective phase identification
- Circuit continuity

Features

- Low burden
- 300 ms switching delay
- Drawout case

APPLICATION

The type NBT relays have been designed to supervise the voltage level and electrical continuity in the tripping circuit of a circuit breaker.

One NBT relay performs the supervision regardless of whether the circuit is opened or closed. Should the voltage supply drop below 40% of its rated value or the continuity of the tripping circuit be interrupted, the output relay operates and its contacts can be used for alarm signal, and blocking of the breaker closing circuit.

When the position of a breaker is changed, either tripping or reclosing, the relay will not operate since it is provided with a 300 ms timer at rated voltage to allow time for the switching of the breaker's auxiliary contacts 52/a and 52/b.

CONSTRUCTION

The NBT relays are drawout type and consist of telephone relays (designated A, B and C in the diagrams). These are very low burden relays to minimize power consumption since they are permanently energized, except when in operation. Although low burden, the contacts can pass high currents, as indicated below.

The 300 ms delay in the operation is achieved by a short-circuit ring in the relay core.

MODELS

Relay Type NBT12D

This relay is used for a breaker with one tripping coil. Under normal conditions relay A is permanently energized through 52/a or 52/b and the tripping coil.

Ra and R^1a limit the current value below the minimum required to energize the tripping coil even in case of a short circuit in the telephone relay coil.

Should the voltage drop below 40% of its rated value or there is not circuit continuity, (for example, due to failure in the tripping circuit), relay A as well as relay C would drop out, closing two contacts and opening a third one.

Relay Type NBT12E

This relay is identical to Model NBT12D but is used in applications where the tripping and signaling circuits are fed by different batteries.

Relay Type NBT32D

This relay is used for a breaker with three tripping coils (one per phase). This model has three signalling targets on the same relay to identify the defective phase.

CONTACT CHARACTERISTICS

Relay Type NBT32E

This relay is identical to model NBT32D, but it is used in applications where the tripping and signalling circuits are fed by different batteries.

Maximum Voltage		Maximum Permissible Current		Interrupting Capacity		
VDC	VAC	For 1 Sec (A)	Continuous (A)	Up to 300 VAC (W)	Up to 40 VDC (W)	Up to 60 VDC (W)
440	380	30	4	400	400	150

Relay Type NBT12VE

This relay is similar to NBT12E except with 4 normally closed contacts.

Fig. 1. Short fingers—internal connections, relay NBT12D

Front View

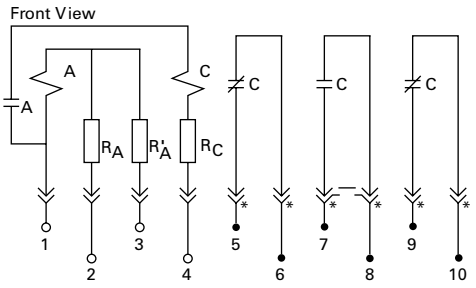


Fig. 2. Typical external connections, relay NBT12D

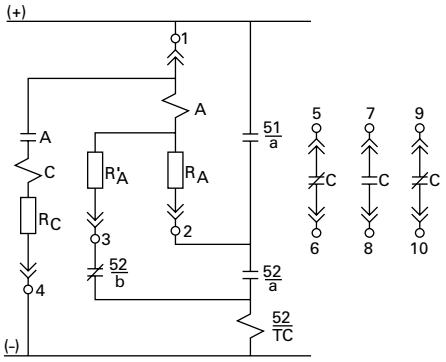


Fig. 3. Short fingers—internal connections, relay NBT12E

Front View

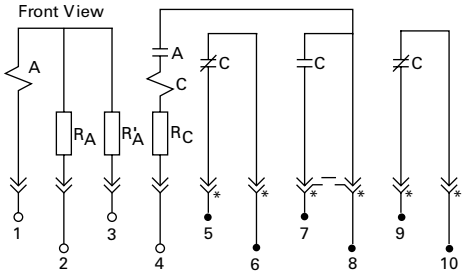


Fig. 4. Typical external connections, relay NBT12E

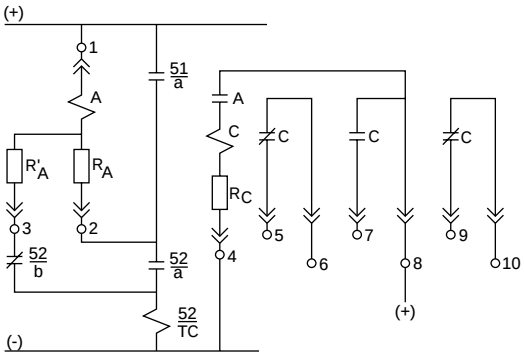


Fig. 5. Short fingers—internal connections, relay NBT32D

Front View

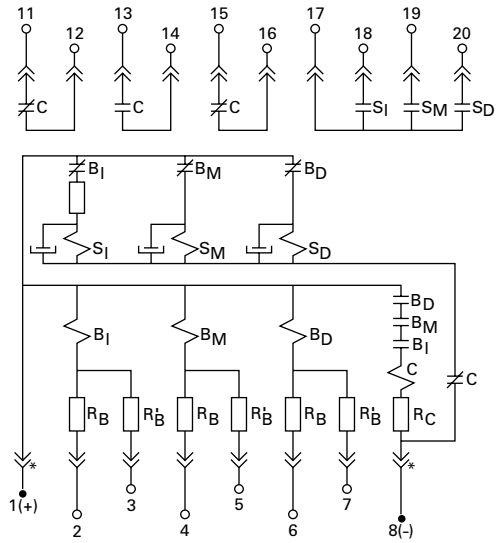
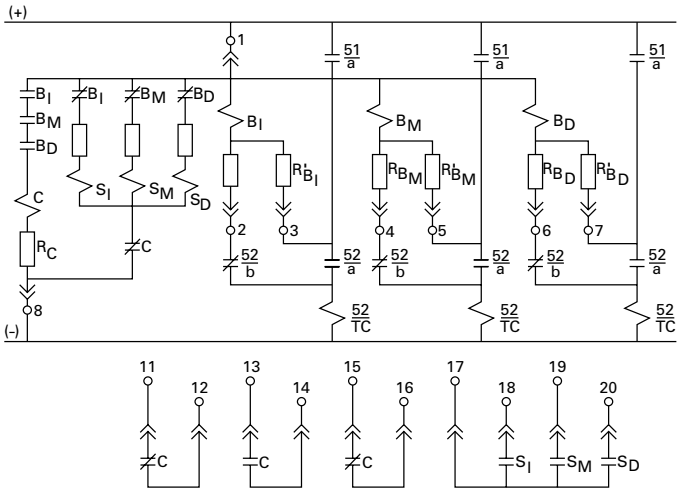


Fig. 6. Typical external connections, relay NBT32D



MODELS

Fig. 7. Short fingers—internal connections, relay NBT32E

Front View

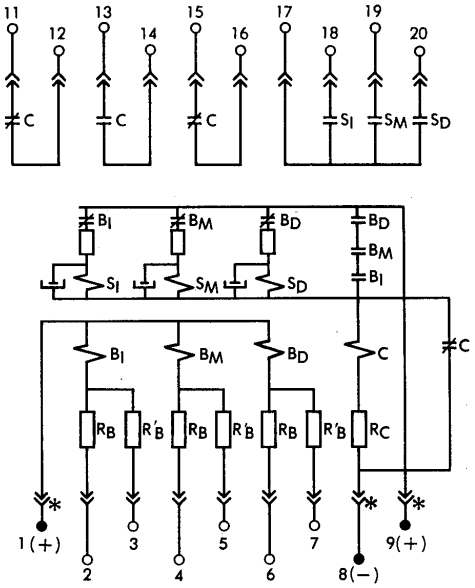


Fig. 8. Typical external connections, relay NBT32E

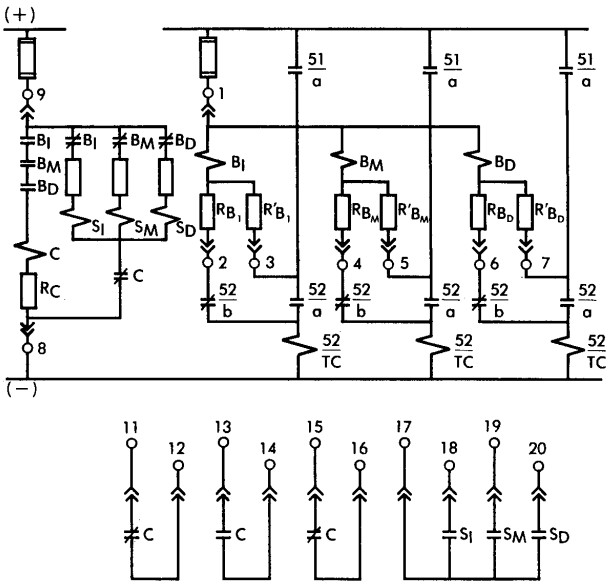
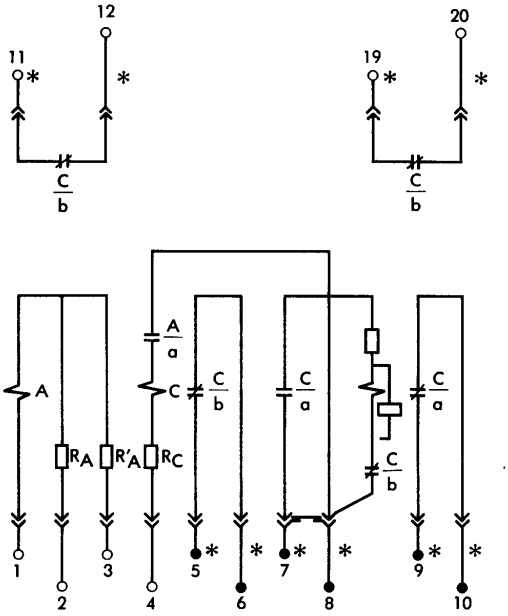


Fig. 9. Short fingers — internal connections, relay NBT12VE



SELECTION GUIDE

Rated Voltage VDC①	Number of Tripping Coils to be Supervised	Tripping and Signalling Circuit	Model Number ②	Minimum Operating Voltage VDC	Maximum Voltage VDC	Number of Signalling Targets	Number of Output Contacts	Total Burden w/Pole	Case Size	Approx. Wt. in lbs (kg)	
										Net	Ship
125	1	Common	NBT12D1A	90	140	—	2 N.C. and 1 N. O.	1.5	S1	11 (5)	15 (7)
	1	Different	NBT12E1A			—					
	3	Common	NBT32D1A			3			S2	13 (6)	17 (8)
	3	Different	MBT32E1A			3					
	1	Different	NBT12VE1A			—	4 N.C.		V2	9 (4)	11 (5)
220	1	Different	NBT12VE2A			—					

① 110, 250 VDC available on request.
② Refer to figures 2 through 9 for appropriate connection diagrams.