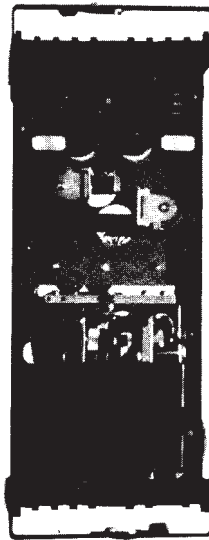


## High Speed Undervoltage and Voltage-balance Relays.



# CFV & CFVB

## Voltage Relays

### APPLICATION

**Undervoltage Phase-fault Detection** is provided by the CFV12 relay and is used in preference to the ICR when high-speed operation is desired. The drop-out on a phase-to-phase fault will be approximately 20 percent lower than the calibrated dropout on a 3-phase fault. Where more accurate fault detection is required, it is recommended that three single-phase CFV16A relays be used. They will have the same dropout on single-or three-phase faults.

**Phase Sequence** of a three-phase system can be continuously checked by the CFV12 relay in addition to providing undervoltage fault detection.

**Ground-Fault Detection** is provided by the CFV16B relay using one single-phase relay across the broken-delta corner of a wye-delta transformer.

**Voltage -balance Relays** of the CFVB11B type, are used to block other relays or devices that will operate incorrectly when a potential transformer fuse blows. They require two sets of potential transformers that normally receive the same primary voltage during the time when blown-fuse protection is required.

### Contact Rating

**Current Closing** - 30 amperes, 250 volts maximum.

**Current Carrying Ratings** are limited by the different ratings of the target and holding coils. The choice of these ratings depends on the current taken by the tripping circuit.

### Target and Holding Coil Ratings - AC or Amperes

Rating of Coil	1 amp	0.2 amp
Tripping Duty	30.0	5.0
Carry Continuously	2.0	0.5

The dc resistance of the target coil and the holding coils are 0.25 ohms each for the 1.0-amp target, 7 ohms each for the 0.2-amp target. For the universal target, the resistance is 0.13 ohms for the 2-amp tap and 7 ohms for the 2-amp tap.

### Selection Guide

Frequency (Hz)	Voltage	Calibration Range (Dropout Volts)	Holding Coil (Amps dc)	Target Coil (Amps dc)	Model Number	Case Size	Approx. Wt. lb. (kg)	
							Net	Ship

#### Single-Phase Voltage 1-N.O., 1-N.C. - Target and Holding Coil on N.C. Contact-Shorting Bar Across N.O. Contact

60	115	15-45	1.0	1.0	12CFV16A4A A5A A6A A1A A2A A3A A15A	S1	12 (5.4)	18 (8.1)
		15-45	0.2	0.2				
		30-105	1.0	1.0				
		30-105	0.2	0.2				
		30-105	—	—				
		30-105	—	1.0				
50	110	30-105	0.2	0.2	A17A			

#### Single-Phase Voltage 1-N.O., 1-N.C. - Target and Holding Coil on N.C. Contact-Shorting Bar Across N.C. Contact

60	115	15-45	1.0	1.0	12CFV16B4A B5A B6A B1A B2A B3A	S1	12 (5.4)	18 (8.1)
		15-45	0.2	0.2				
		30-105	1.0	1.0				
		30-105	0.2	0.2				
		30-105	—	—				
		30-105	—	—				

#### Three-Phase Undervoltage and Phase Sequence 1-N.O., 1-N.C. (Holding Coil on Both)

60	115	30-120 30-120	1.0 0.2	1.0 0.2	12CFV12A3A A4A	S1	12 (5.4)	18 (8.1)
50	115	30-120 30-120	0.2 1.0	0.2 1.0				



# CFV & CFVB Voltage Relays

Frequency (Hz)	Rated Voltage	Calibration Range (Dropout Volts)	Model Number	Aux. Relay Voltage (dc)	Case Size	Approx. Wt. in lb (kg)	
						Net	Ship

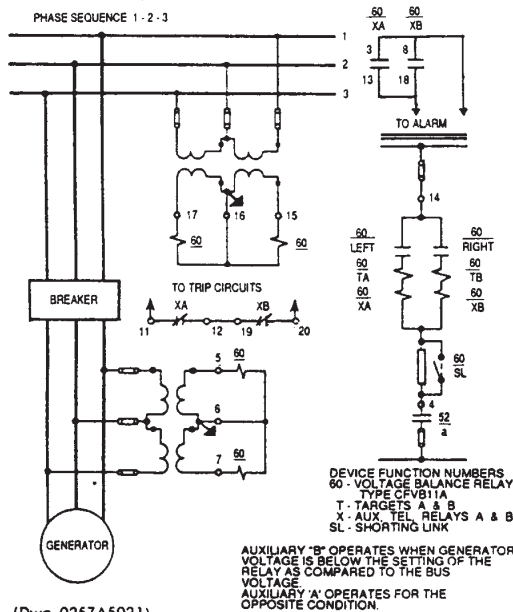
### Three-Phase Voltage Balance 2-N.C. and 1-N,O.

60	120	50-95% of rated voltage on either source when other source is 100% same.	12CFVB11B1A B5A B6A	125/250 48/125 110/220	M2	22 (9.9)	34 (15.4)
50	100 120						

## BURDENS

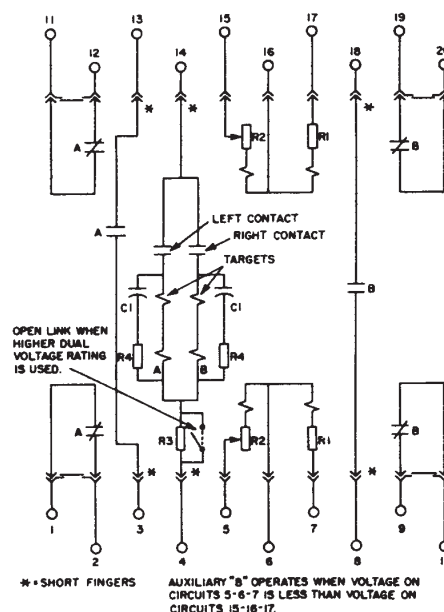
CFV								CFVB (120 Volts)						
Relay	Volts	Freq.	Dropout	Studs	Watts	Vars.	Volt-Amp.	Circuit	Frequency (Cycles)	Impedance (Ohms)	P.F.	V. A.		
CFV12A	115	60	6-25	5-6	3.8	3.9	5.4	5-6	60	5075	0.97	2.83		
			6-25	7-8	11.0	12.2	17.0	6-7		2240	0.97	6.43		
			30-120	5-6	3.8	3.9	5.4	15-16		5075	0.97	2.83		
		30-120	7-8	11.8	12.2	17.0	16-17	2240		0.97	6.43			
		40-160	7-8	11.7	12.3	17.0	50	5-6		5080	0.97	2.83		
		6-25	5-6	4.3	4.5	6.4		6-7		2155	0.97	6.68		
	6-25	7-8	14.2	14.9	20.3	15-16		5080	0.97	2.83				
	CFV16A or CFV16B	115	60	6-20	5-6	14.4	3.2†	14.8	50	50	5080	0.97	2.83	
				15-45		12.2	1.6†	14.8			6-7	2155	0.97	6.68
				30-105		12.2	1.6†	14.8			15-16	5080	0.97	2.83
			6-20		14.7	3.0†	15.0	16-17			2155	0.97	6.68	
			15-45		10.8	2.2†	11.0	110			110	6-20	14.7	3.0†
30-105				10.8	2.2†	11.0	15-16					5080	0.97	2.83
30-105			9.0	1.8†	9.2	16-17	2155		0.97	6.68				

†Capacitive



(Dwg. 0257A5021)

A typical external connection diagram for three-phase voltage balance relay. Type CFVB11B, used to indicate when a potential transformer fuse blows.



(Dwg. 0246A6890-0)

An internal diagram for CFVB11B Relay.