



**MODIFICATION OF STANDARD  
KEPCO MODEL BOP 20-20MC  
KEPCO MODEL BOP 20-20DC**

The Kepco Models BOP 20-20MC and BOP 20-20DC have been modified from standard Kepco Models BOP 20-20M and BOP 20-20D, respectively, to be stable handling capacitive loads up to 10 mF.

**INSTRUCTION MANUAL CORRECTIONS:**

This modification makes the BOP more suitable for a wide variety of applications such as solar cell/ solar panel testing, piezoelectric device driving/ testing, capacitor testing, capacitive transducer driving/testing and powering industrial or lab-type applications for capacitive or capacitive-resistive loads.

Static specifications representing the unit's accuracy in Voltage mode are identical to the standard BOP models, while the ripple and noise specifications are better (approximately 50% lower) for MC and DC models than standard BOP models.

Specifications listed in Table 1 are for BOP 20-20MC and BOP 20-20DC in Voltage Mode.

**TABLE 1. BOP 20-20MC AND BOP 20-20DC SPECIFICATIONS**

Bandwidth (DC to f-3dB)		Rise/Fall Time <sup>(2)</sup>	Recovery at Step Load <sup>(3)</sup>
Resistive Load, Nominal	Capacitive Load, 10 $\mu$ F <sup>(1)</sup>		
4.8 KHz	5.3 KHz	75 $\mu$ S	225 $\mu$ S

**NOTES:**

- (1) Nonuniformities of the frequency response for the standard 10 $\mu$ F load create a larger 3-dB bandwidth than for the resistive load.
- (2) 10% to 90%, with nominal resistive load.
- (3) Load between infinity and nominal resistive load values.

In voltage mode the bandwidth of the BOP 20-20MC and BOP 20-20DC models is less than the standard BOP, while the response time is increased. Nonuniformities of the frequency response can be nearly eliminated by reducing the bandwidth in Voltage mode.

**Reducing Bandwidth.** Bandwidth can be reduced in a predictable manner by increasing the internal compensation capacitance by placing an external capacitor (see Table 2) in parallel with the main compensation capacitor of Assembly A1.

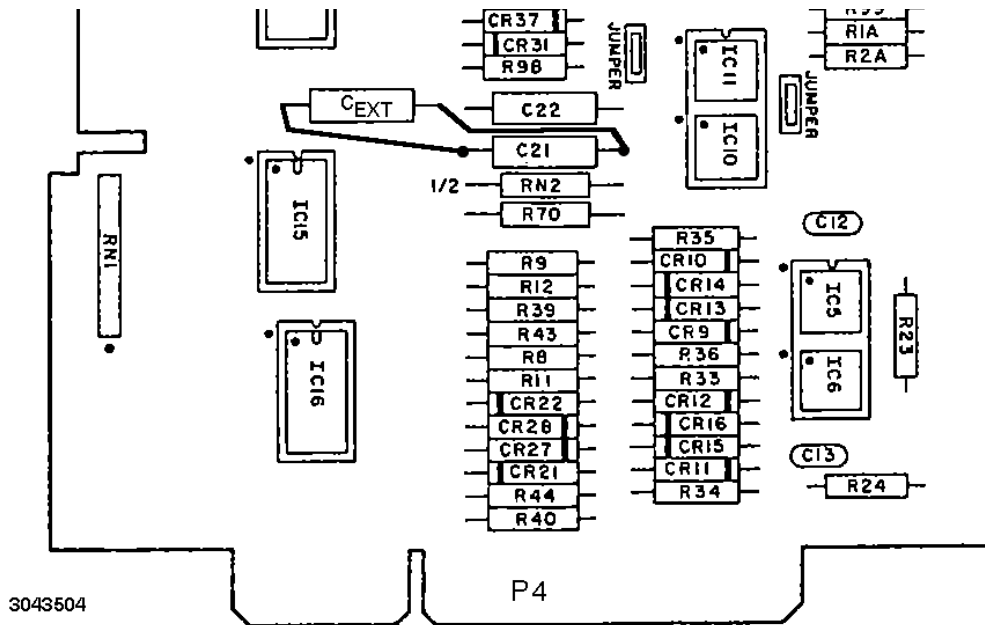
- For older models, identified by the indicator between the two front panel meters labeled REMOTE, the external capacitor is soldered across A1C21 (see Figure 1).
- For newer models, identified by the indicator between the two front panel meters labeled REMOTE (W DIG ON)/OUT ON (W DIG OFF), connect the external capacitor across pins 12 and 14 of the rear programming connector.

**TABLE 2. BANDWIDTH CORRECTION**

	EXTERNAL CAPACITOR (See <b>Reducing Bandwidth</b> above.)						
	1 nF	2.2 nF	4.7 nF	15 nF	33 nF	47 nF	100 nF
CORRECTED BANDWIDTH	4.6 KHz	4.4 KHz	3.2 KHz	1.3 KHz	0.7KHz	0.6 KHz	0.5 KHz

NOTE: Listed bandwidth correction values are for Voltage mode, nominal resistive load.

In Current Mode the dynamic specifications are: 3-dB bandwidth of 4.4kHz and rise/ fall time of 80µs.



**FIGURE 1. ASSEMBLY A1, EXTERNAL BANDWIDTH CORRECTION CAPACITOR LOCATION (OLDER MODELS ONLY)**