



## MODIFICATION OF STANDARD KEPCO MODEL BOP 5-30DL

The Kepco Model BOP 5-30DL has been modified from a standard Kepco Model BOP 5-30D, to be stable handling inductive loads up to 1 Henry.

### INSTRUCTION MANUAL CORRECTIONS:

This modification makes the BOP more suitable for a wide variety of applications such as motor testing, testing of magnetic components (coils, speakers, etc.), industrial applications with inductive loads, driving CRT coils, cryogenic applications and powering correcting magnets for medical imaging applications or particle accelerators. The unit is designed to operate in a stable manner in Current or Current Limit Mode for heavy inductive loads. Tests were performed with loads up to 1 Henry max, but operation with higher inductive loads is possible. The unit is also stable with any R-L series load combination.

Specifications listed in Table 1 are for BOP 5-30DL in Current Mode. In voltage mode the dynamic specifications are: bandwidth of 6kHz and rise/fall time of 60 $\mu$ S. All other specifications are identical to the standard BOP.

**TABLE 1. BOP 5-30DL SPECIFICATIONS**

Bandwidth (DC to f-3dB)		Rise/Fall Time (2)	Recovery at Step Load Time Constant (3)	Load Effect Nominal Resistive Load (4)
Resistive Load, Nominal	Inductive Load, 2mH			
3.5 KHz	32 Hz	110 $\mu$ S	130 $\mu$ S	2ppm/Hz
NOTES: (1) Specifications listed are for Current Mode. (2) 10%-90%, short-circuit. (3) Short-circuit - Nominal Resistive Load. (4) Load effect increases nonlinearly with frequency from the typical 0.5 mA in DC- full scale (same as the standard unit) with the average rate listed.				

If the load impedance at the working frequency multiplied by the peak value of current equals the voltage limit setting, it is recommended that the output voltage be kept below the voltage limit setting to avoid inducing a large distortion of output current. If the voltage limit is reached, the unit's bandwidth can be reduced by connecting an external film capacitor between pins 16 and 18 of the unit's programming connector (PC 15). Table 2 below shows the effect that adding the external capacitor has on the 3dB bandwidth for resistive, resistive-inductive or inductive loads, with less than 10% tolerance (excluding the capacitor tolerance)

**TABLE 2. BANDWIDTH CORRECTION**

	EXTERNAL CAPACITOR (ACROSS PINS 16 AND 18 OF PC 15 PROGRAMMING CONNECTOR)						
	0.01 $\mu$ F	0.02 $\mu$ F	0.05 $\mu$ F	0.1 $\mu$ F	0.2 $\mu$ F	0.5 $\mu$ F	1 $\mu$ F
CORRECTED BANDWIDTH	2.6 KHz	1.8 KHz	0.9 KHz	0.5 KHz	0.25 KHz	0.12 KHz	0.06 KHz