SPECIFICATIONS

		Type 1703-BW			Type 1700-CW		Type 1702-BW	
Motor Horsepower Range:		1/12 to 1/6			1/4 and 1/3		1/2 and 3/4	
Power Supply Single-Phase	Volts	115			115		115	
	Full-load Amperes	2.2			5		10	
Line-Voltage Limits	At 60 Cycles	105–125			105–125		105–125	
	At 50 Cycles	105–125			Note 2			
Input Power Watts	Full Load	325			560		1150	
	Stand-by	30			38		65	
Motor Control Output DC — Armature	Amperes	1.5			3		6.5	
	Volts	0–115			0–115		0–115	
	Amperes	0.2			0.4		0.4	
Field	Volts	115	66	48	115	75	115	75
Speed range		0 to rated	0 to 1.25 rated	0 to 1.5 rated	0 to rated	0 to 1.15 rated	0 to rated	0 to 1.15 rated
Dynamic Braking		Braking Resistor Furnished						
Armature Overload Protection		None Furnished						
Control Station		Variac furnished; Switching to be Provided by User						
Over-all Dimensions in inches	Chassis	$7\frac{1}{2} \times 10\frac{1}{4} \times 3\frac{1}{2}$			$9\frac{3}{4} \times 12\frac{5}{8} \times 5$		$11\frac{1}{4} \times 15\frac{1}{4} \times 5\frac{7}{8}$	
	Variac	$3\frac{1}{4} \times 3\frac{11}{16} \times 4\frac{3}{8}$			$4\frac{1}{2} \times 4\frac{15}{16} \times 5\frac{1}{2}$		$5\frac{3}{4} \times 6\frac{1}{4} \times 5\frac{7}{8}$	
Net Weight in Pounds	Chassis	$4\frac{1}{2}$			17		$27\frac{1}{2}$	
	Variac	$3\frac{1}{2}$			$6\frac{1}{2}$		$11\frac{1}{4}$	
Code Word		SABOT			SALTY		SATIN	
Prices, Net F.O.B. Factory	1 to 4 units	**$72.00 ea.**			**$135.00 ea.**		**$195.00 ea.**	
	5 to 19 units	**68.50**			**122.00**		**177.50**	
	20 units and up	**65.50**			**116.00**		**170.00**	

MOTORS FOR USE WITH ABOVE SPEED CONTROLS (Note 1)

Motor ratings: open, drip-proof, reversible, 40°C rise continuous, horizontal, rigid base	Compound	Compound	Compound with interpoles
General Radio Designation	MOD-11	MOD-3	MOD-6
Horsepower	1/6	1/3	3/4
Speed (RPM)	1725	1725	1725
Leads (brought out separately)	6	6	6
Bearings	Sleeve	Sleeve	Sleeve
Frame Size	F-56	H-56	H-66
Net Weight — Pounds	25	30	60
Code Word (Note 3)	MOTOR *	MOTOR *	MOTOR *
Price	**$52.50**	**$59.00**	**$100.00**

Note 1. Any motor within control rating can be used. Compound motors for use with Type 1703-BW must have separate series-field leads.
Note 2. 50-cycle model available on special order.
Note 3. To order motor with Variac Speed Control, add motor to the code word of the corresponding speed control; thus SATIN MOTOR is the code word for the TYPE 1702-BW Variac Speed Control with MOD-6 motor. Motors are not sold separately.

Type		*Code Word*	*Price*
1702-P2	**Switch**	FLIPO	**$ 6.00**
1705-P1	**Drum Controller**	DRUMO	**22.00**

A TUNED FILTER FOR USE IN CAPACITANCE MEASUREMENTS AT ONE MEGACYCLE

Figure 1. View of the Type 1212-P2 1-Megacycle Filter.

The TYPE 716-CS1 Capacitance Bridge,[1] which operates at a frequency of one megacycle per second, is well suited to the measurement of small capacitors, such as the disc-ceramic type, and low-loss dielectrics. To realize

the full precision of which the bridge is capable, however, the null detector should be provided with a filter to reduce the magnitude of harmonics and noise. An experimental filter was illustrated in a previous article.[2]

The commercial version of this filter is now available and is shown in Figure 1. This convenient plug-in unit, the TYPE 1212-P2 1-megacycle Filter, when used with the TYPE 1212-A Unit Null Detector, results in high selectivity against harmonics and noise and also provides considerably increased sensitivity. These features are particularly important for dissipation-factor measurements on low-loss capacitors. When this combination is used with the TYPE 716-CS1 Capacitance Bridge and the TYPE 1330-A Bridge Oscillator,[3] the dissipation factor balance can be set to a precision of .00002, or 1/5 of the smallest dial division.

Figure 2 is a schematic diagram of the filter. The LC ladder section provides insertion gain at 1 MC and attenuation at higher frequencies. The bridge output impedance is capacitive (in the normal oscillator-detector connection) so that there are effectively two R-C ladder sections for low frequency rejection. Gain and rejection figures for a typical filter are:

[1] Ivan G. Easton, "A 1-Megacycle Schering Bridge," *General Radio Experimenter*, XXVI, 9, February, 1952, pp. 4–8.
[2] "A Convenient Test Fixture for Small Capacitors," *General Radio Experimenter*, 30, 4, September, 1955, pp. 4–6.
[3] The TYPE 1211-A Unit Oscillator with the TYPE 1203-A Unit Power Supply is equally satisfactory.

Equipment for 1-mc capacitance measurements. The generator is the Type 1330-A Bridge Oscillator, the bridge the Type 716-CS1 Capacitance Bridge. The null detector (Type 1212-A) is shown at the right. The filter shown is the experimental model; the Type 1212-P2 plugs into the detector in the same way.

Unknown Capacitor....	100 $\mu\mu$f	1000 $\mu\mu$f
Insertion Gain 1 Mc....	22 db	32 db
Relative 2nd Harmonic Rejection.....	39 db	47 db

The resonant frequency of the filter is affected but slightly by the setting of the bridge, and a single tuning adjustment suffices for all bridge settings. If the filter is tuned for the 100 $\mu\mu$f bridge setting, the net sensitivity actually increases for higher capacitance values, because the decreasing output impedance of the bridge causes enough increase of inherent sensitivity to more than compensate for the slight detuning of the filter.

The filter plugs directly into the input terminals of the TYPE 1212-A Unit Null Detector through TYPE 874 Coaxial Connectors, which provide complete shielding. — HENRY P. HALL

SPECIFICATIONS

Net Weight: **Dimensions: 2" diameter, 5" long.**

Type		*Code Word*	*Price*
1212-P2	One-Megacycle Filter.....	ANNUL	$30.00

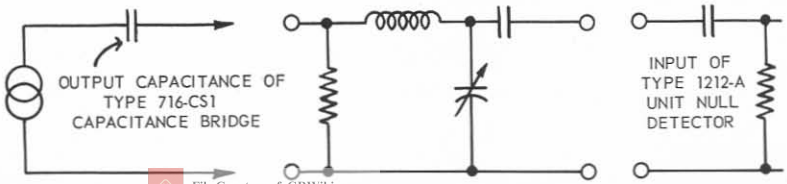

Figure 2. Schematic diagram of the filter circuit.