

INSTRUCTIONS

MODEL CB-11 AND CB-21

TURNTABLES

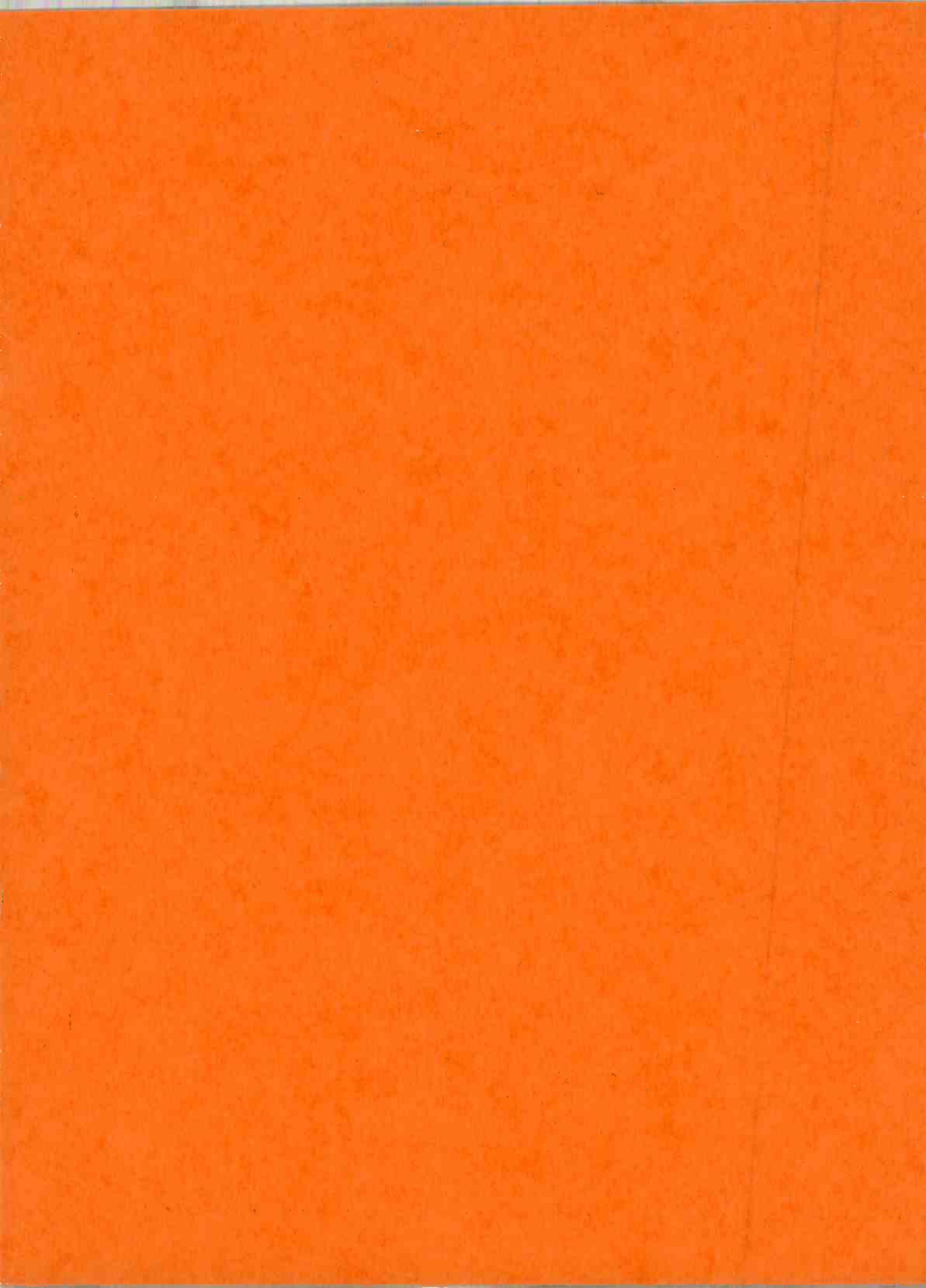
GATES RADIO COMPANY

MANUFACTURING ENGINEERS SINCE 1922

QUINCY, ILL., U. S. A.

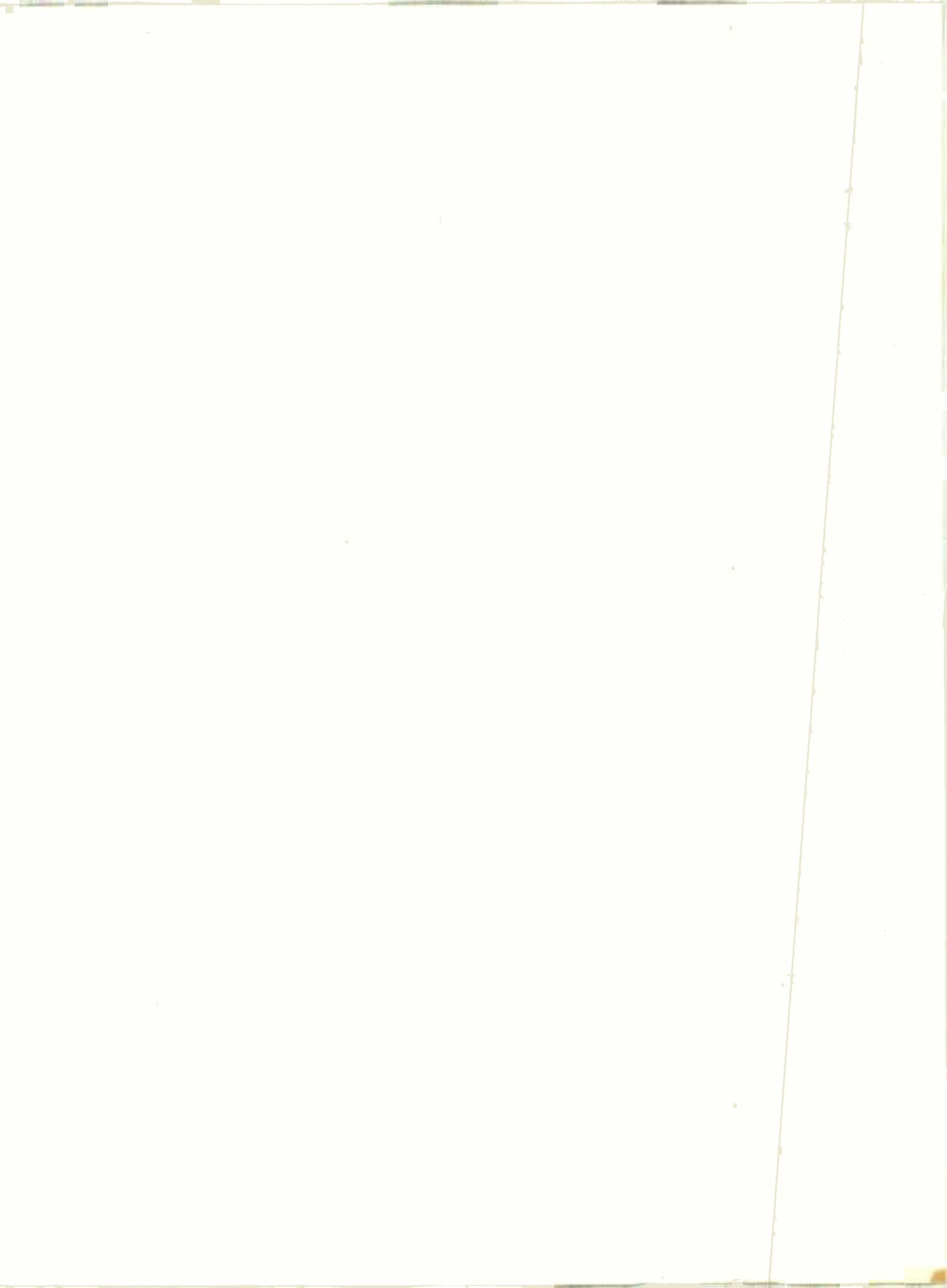
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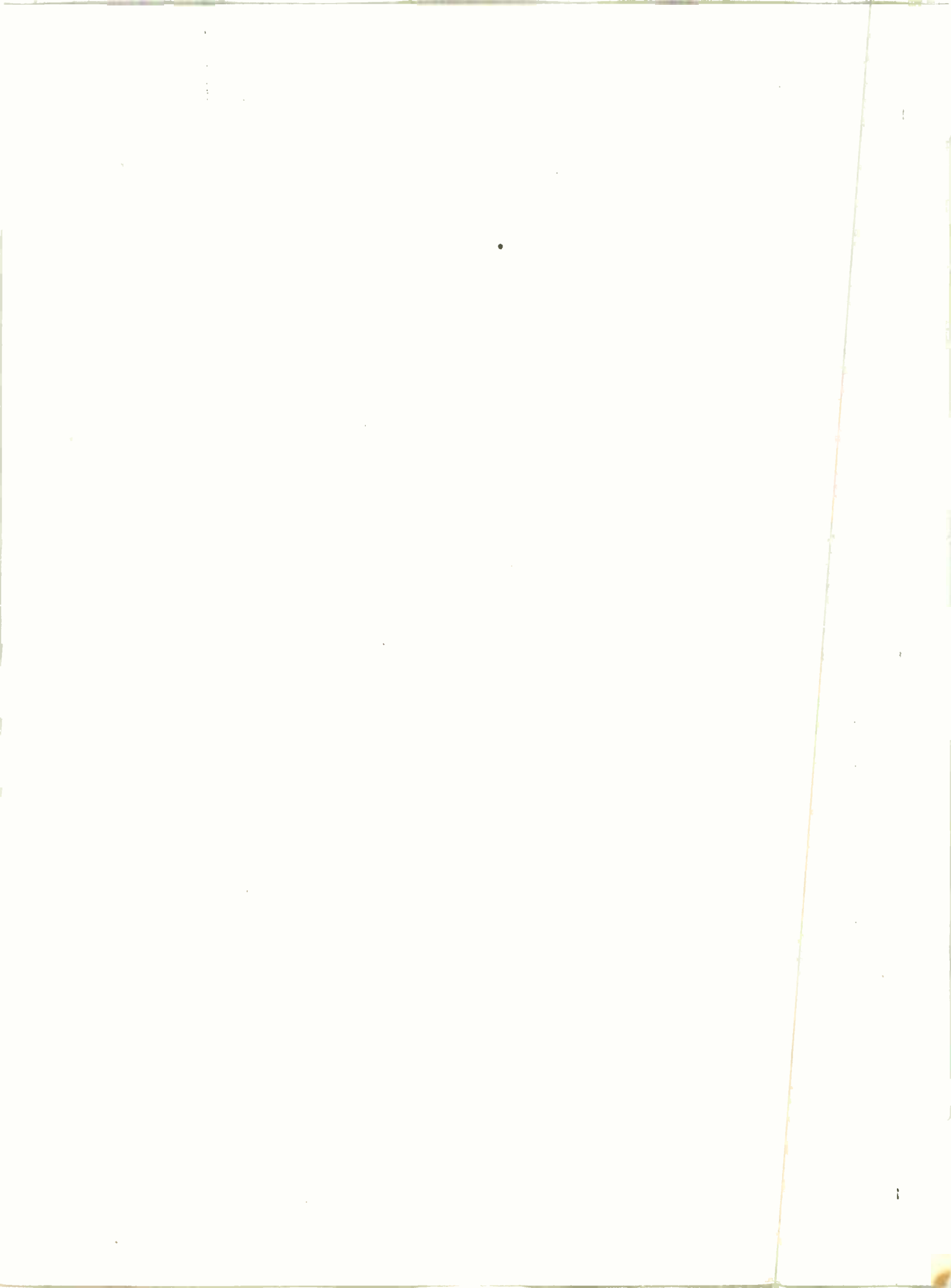


TURNTABLE OPERATING TROUBLES

DEFECT	PROBABLE SOURCE OF TROUBLE	REMEDY	REMARKS
"WOW"	<ol style="list-style-type: none"> 1. Accumulated dirt and burnt oil on lower motor bearing. 2. Motor bearing in upper end bell may be worn on one side, causing a binding action. 3. Glazed surface on idler wheels. 4. Improper pressure adjustment of the idler wheels. 5. Improper speed. 	<ol style="list-style-type: none"> 1. Remove end bell, clean thoroughly and reoil. 2. Replace end bell. 3. Clean idler wheels more frequently with Carbon Tetrachloride. 4. Follow directions in Instruction Sheet for "Idler Yoke Adjustment". 5. Refer to "Improper Speed". 	<ol style="list-style-type: none"> 1. If motor is not equipped with a ball thrust assembly, would recommend same. (Motor will give longer trouble-free operation than with thrust washer arrangement.) Order M-4249.
IMPROPER SPEED	<ol style="list-style-type: none"> 1. Idler wheel yoke not properly adjusted. 2. Idler wheel may be slipping on platter or motor drive pulley. 	<ol style="list-style-type: none"> 1. Follow directions in Instruction Sheet for "Idler Yoke Adjustment". 2. Clean idler wheels, inside rim of platter, and drive pulley with Carbon Tetrachloride, wiping dry with a clean lint-free cloth. 	

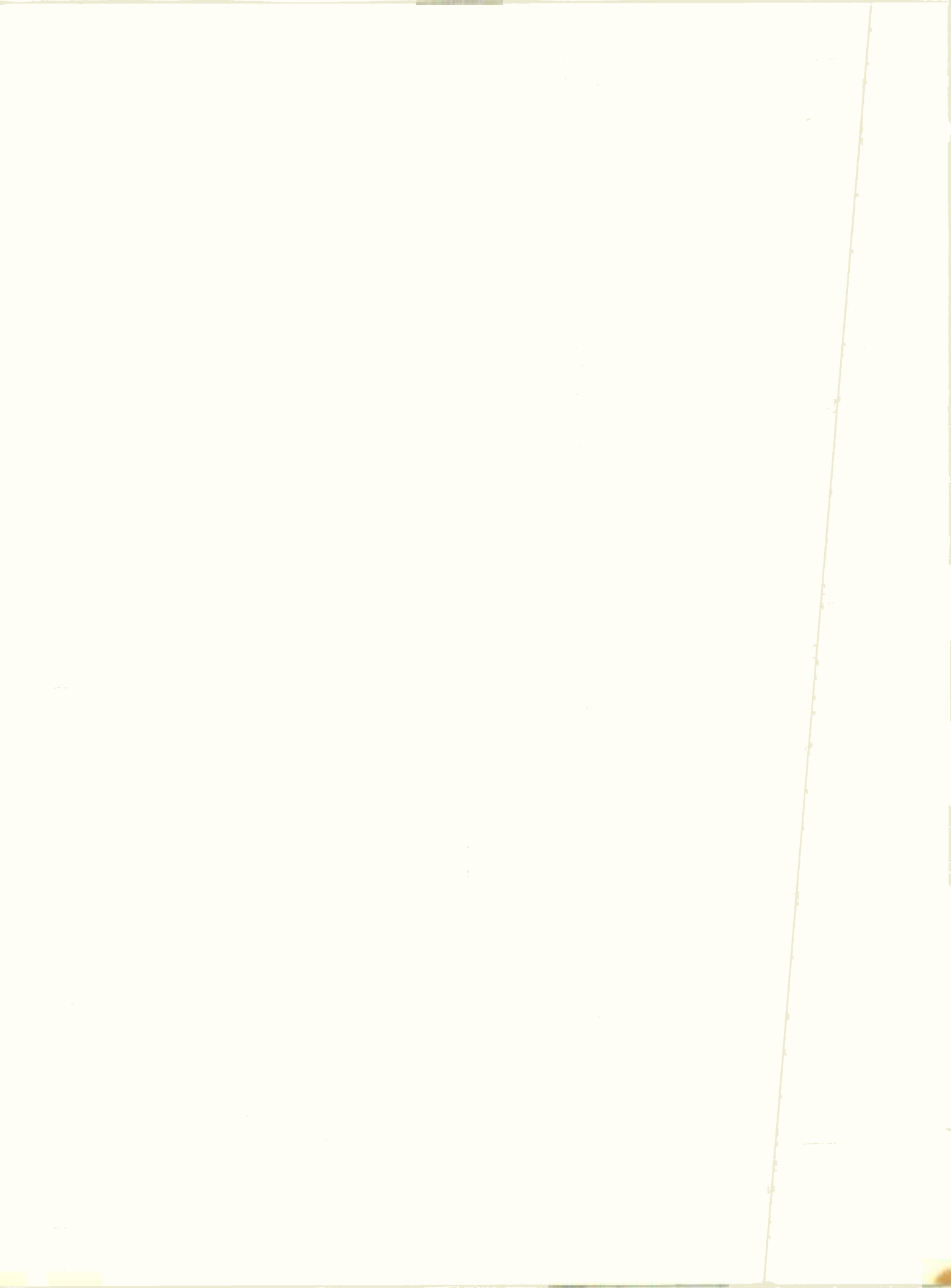


DEFECT	PROBABLE SOURCE OF TROUBLE	REMEDY	REMARKS
MOTOR BINDING	<ol style="list-style-type: none"> 1. Worn bearing. 2. Dirt and burnt oil (caused by friction) around lower motor bearing. 	<ol style="list-style-type: none"> 1. Replace motor end bell (upper end). 2. Clean thoroughly and recoil. 	<ol style="list-style-type: none"> 1. It is more economical to replace complete end bell than to replace bearing. Order N-281 2. If motor is not equipped with a ball thrust assembly, would recommend same. Order M-4249.
PLATTER WOBBLE	<ol style="list-style-type: none"> 1. Lack of oil in center bearing housing. 	<ol style="list-style-type: none"> 1. There should be approximately one teaspoonful of oil in center bearing housing. 	<ol style="list-style-type: none"> 1. This point should be checked frequently. (Every 60 hours of operation).
SLOW STARTING	<ol style="list-style-type: none"> 1. Insufficient tension on idler yoke springs. 2. Idler wheel yoke not properly adjusted. 	<ol style="list-style-type: none"> 1. Increase tension by moving nuts forward on threaded shaft. 2. Follow directions in Instruction Sheet for "Idler Yoke Adjustment". 	
FLUTTER OR EXCESSIVE RUMBLE	<ol style="list-style-type: none"> 1. Sleeve spacers for mounting motor, not properly seated. 	<ol style="list-style-type: none"> 1. Loose screw which holds motor to shock mount and seat spacer correctly. Motor shock mount should be carrying weight evenly and not pulling to one side. 	<ol style="list-style-type: none"> 1. If motor shock mount is not carrying weight evenly, any motor vibration is likely to be carried through to the turntable casting, and finally to the pickup arm itself.



DEFECT	PROBABLE SOURCE OF TROUBLE	REMEDY	REMARKS
STYLUS WILL NOT STAY IN GROOVE SLIDES ACROSS RECORD	1. Turntable not level. 2. Arm not horizontal with record. 3. Worn stylus. 4. Incorrect stylus pressure.	1. Level turntable, using spirit level. 2. Readjust arm properly. 3. Check stylus and replace if bad. 4. Check manufacturer's recommendations.	

NOTE: When ordering replacement motor, please specify Manufacturer, Type of Motor and H.P. (This information will be found on plate attached to motor)



GENERAL INSTRUCTIONS FOR CB-11 AND CB-21
TRANSCRIPTION TURNTABLE CHASSIS MECHANICAL OPERATION
CB-11 33-1/3 RPM/78 RPM (45 RPM with Adapter)
CB-21 33-1/3 RPM/45 RPM

The Gates CB-11 and CB-21 Transcription Turntables are of the inside rim drive design, recognized by most engineers as the most successful type of turntable for quietness in operation and freedom from mechanical difficulties. The equipment has been designed to require a minimum of maintenance, and actual maintenance requires only periodical cleaning and a single oiling detail, bi-monthly, pertaining to the motor.

IDLER WHEELS

Two idler wheels are provided, both being identical and carrying Gates Part No. A-1939-103. These idler wheels are inverted in relation to each other, and thus are located for proper engagement with the two pitch diameters of the motor drive shaft, which governs the speed of the rotation of these idler wheels. The idler wheel that engages with the large diameter of the motor shaft is the one for 78 RPM on the CB-11 and for 45 RPM on the CB-21 and the other, which engages with the small diameter, is for 33-1/3 RPM. These idler wheels are arranged on a specially designed bracket arrangement which, by means of the speed change lever, moves the idler wheel for the desired speed into the proper position for engagement with the inside rim of the turntable. These idler wheels and their location have been carefully adjusted at the factory before shipment and no readjustment should be required unless the equipment becomes loosened in transit. If loosened, it will be noted that the bracket previously referred to, which holds the two idler wheels, is bolted to the main casting by means of a single bolt which is located in an oversize hole so that the idler wheels may be adjusted for uniform tension at both speeds. As adjustment is seldom, if ever, required, it is suggested that if in an extreme case this would be necessary, such as damage in shipment, or after long periods of operation, follow instructions on Page 3.

MOTOR

The motor is a specially designed vertical type synchronous motor carefully balanced for both low mechanical and audible noise. As it is a synchronous type motor, it will operate at the same speed, regardless of line voltage, between 90 and 140 volts. However, it is recommended that both the correct voltage and frequency be used, as synchronous motors, by their very nature, have a greater temperature rise when operating at voltages other than normal.

TURNTABLE CASTING

The casting is a specially designed aluminum casting with each rib and location of mass carefully determined to cancel harmonic vibrations and thus eliminate rumble. On all Gates turntables a small cushion strip is placed between the casting and the table proper. Where the chassis only is purchased, for use in other than Gates cabinets, this strip is also supplied. When the mounting screws are finally pulled up to hold the chassis to the table, they should be pulled up only firmly enough to secure it, allowing the mounting strip to absorb any floor vibration.

OILING

The CB-11 and CB-21 chassis are equipped with Chrysler oilite bearings in the main center spindle and on each idler wheel bearing. Thus, little, if any, oiling is required at this point, although in some instances where the equipment is new and tight, oiling may be required for a period of three or four weeks. Remove the idler wheels and the platter. Clean both the inside of the spindle bearing with a soft rag, and the inside of the idler wheel bearings and the outside of the spindle bearings. Place about a teaspoonful of fine-oil or lathe spindle oil in the center spindle bearing and a few drops in each of the idler wheel bearings and reassemble the equipment. Caution should be taken that oil is not conducted to the inside rim of the turntable as this will cause slippage. This, of course, is corrected by making sure there is no oil on the top of each idler wheel bearing. As a precaution, wipe them off with a soft rag. After operating the turntable a minute or two immediately following the oiling procedure, remove the turntable platter and note if there is any oil on the inside rim. If there is, it should be wiped off, and likewise the idler wheels should then be wiped clean because if there is oil on the inside rim of the platter, there will be oil on the outside of the idler wheels.

MODE OF OPERATION

The turntable is simple in its design, and the operator will immediately recognize, by casual inspection, the mode of operation. When the speed shift lever is in the center position, the motor is turned off and the idler wheels are disengaged from the platter. When the lever is turned to right or left, the turntable is operating at the speed pointed to on the escutcheon plate, either 78 RPM and 33-1/3 RPM on the CB-11, or 45 RPM and 33-1/3 RPM on the CB-21. The microswitch which turns on the motor at time of engaging the speed lever is provided so that the operator will not possibly let the motor come up to speed before engaging the idler wheels to the turntable. Though in emergencies, such as the operator starting the turntable at the wrong speed, it can be quickly changed to the other speed by reversing the speed lever position. This practice is not recommended, as it creates extra pressure on the driver wheels and merely adds to their wear, which under normal operations is indefinite. It is strongly urged that the practice of placing the turntable in operating condition but holding the platter proper awaiting a cue, not be followed by operating personnel, as this simply allows the motor to drive against the idler wheel and it is possible to wear an indentation into the wheel. As the turntable is provided with a felt top, where this practice is desired, the operators can hold the record, allowing the turntable platter to spin underneath the record. The guide pin, if provided, can be removed if there is any danger of defacing the record labels.

SUMMARY OF MECHANICAL OPERATION

The CB-11 and CB-21 Transcription Turntable Chassis is so constructed in its rugged design and simplicity that it will operate for years with only normal maintenance and occasional replacement of the idler wheels. It is suggested that a spare idler wheel be purchased for your service stock so that no inconvenience will be had where the idler wheel might require replacing. There is a

thrust bearing in the center bottom spindle on which the bottom of the platter spindle rides, and care should be taken on initial installation, and likewise periodical servicing when removing the platter, that the thrust bearing is not lost. Normal maintenance, keeping the equipment clean, and impressing on operators that even the most rugged mechanical device will fail when improperly handled will assure continued noise-free broadcasting of transcribed programs.

45 RPM ADAPTER KIT (Used on CB-11 Only)

The 45 RPM Adapter Kit consists of a brass bushing with a plug insert. The plug slips into the 33-1/3 RPM spindle of the CB-11 turntable chassis; also a center pin adapter to accommodate the 45 RPM RCA records. Two holes have been cut in the top of the turntable platter which come directly over the motor spindle. The motor spindle will be found on a direct line between the operating handle and the center of the platter. To use the Adapter Kit, merely turn the 1-1/2" hole so that it is over the motor spindle and slip the adapter into the spindle. Then place the record adapter over the record pin in the platter. To operate, turn the operating handle to the 33-1/3 RPM position and the turntable will operate at 45 RPM. To go back to 33-1/3, RPM operation, merely remove the adapter from the motor spindle and the record adapter from the platter and the turntable is ready for operation in a normal manner. If this kit is supplied for use with turntable chassis which were shipped from the factory without this feature, it will be necessary to drill a 1-1/2" hole in the platter in accordance with the drawing supplied with the kit. Slight readjustment of the idler wheel yoke and tension spring may be necessary to obtain correct operation at all three speeds. All turntable chassis which are equipped for three-speed operation at the factory have been carefully adjusted for this operation.

IDLER YOKE ADJUSTMENTS FOR MODEL CB-11 AND CB-21 TURNTABLES

First, it is necessary to loosen the large bolt which holds the idler wheel bracket in place. Loosen this bolt just enough to allow adjusting. A large screwdriver for the slotted end of the bolt and a wrench for the nut are the tools you will need. Adjust the yoke so both idler wheels engage with the motor drive pulley just before they engage with the platter.

The 33-1/3 RPM speed is the more critical of the two as there is less driving surface on the motor pulley for driving the idler wheel. When adjusting the idler wheel for this speed, engage the motor starting switch in the 33-1/3 position and start platter rotating. Then stop platter with your fingers. If the wheel is properly adjusted, slippage should occur between the platter and the idler wheel and not on the motor drive pulley.

After both wheels are adjusted properly, tighten bolt holding idler assembly, making sure assembly does not slip in the process. The turntable should now operate properly at both speeds and also give proper torque for satisfactory operation. No adjusting of the springs on the idler yoke is necessary unless tension of the springs is weak. If more tension is required, this can be accomplished by moving the two nuts forward on the threaded shaft.

PARTS LIST

<u>QUANTITY</u>	<u>DRAWING</u>	<u>DESCRIPTION</u>
1	A-7032-101 A-9603-101	Drive pulley adapter plug (For 60 Cycle operation) CB-11
*1	A-7032-102 A-9603-102	Drive pulley adapter plug (For 50 Cycle operation) CB-11
1	A-2998-4	Motor Drive Pulley, A-7030- (For 60 Cycle operation) CB-11
*1	A-2998-4	Motor Drive Pulley, A-7795-1 (For 50 Cycle operation) CB-11
1	A-2998-12	Motor Drive Pulley, A-9296-1 (For 60 Cycle operation) CB-21
*1	A-2998-12	Motor Drive Pulley, A-9296-2 (For 50 Cycle operation) CB-21
2	A-2998-3	Idler Wheels, A-1939-103 (For 60 Cycle operation)
*2	A-2998-3	Idler Wheels, A-7793-1 (For 50 Cycle operation)
1	A-2998-1	Limit Switch, YZ-2RL, Micro
1	A-2998-2	Capacitor, .1 mfd., 400 Volt, tubular
1	A-2998-5	Center Bearing Assembly, A-2400-101
4	A-2998-6	Shock Mounting, 100-Pl, Lord
1	A-2998-7	Capacitor, 2.5 mfd., 330 Volts A.C., CRA-3025, C-D
3	A-2998-8	Truarc Retaining Rings, #5100-43
1	A-2998-9	Ball Bearing, 1/2" diameter
1	A-2998-10	Drive Motor
2	A-2998-11	Springs, A-1984-1
1	A-5603-1	Center Pin Adapter Bushing

Note: *These parts used when turntable is operated on 50 cycles.

GUARANTEE

This equipment is fully guaranteed by the Gates Radio Company of Quincy, Illinois, to be free from all defects in materials and workmanship and will be repaired, replaced or adjusted in accordance with the manufacturer's option and terms as outlined below.

- 1 - Gates believes the purchaser has every right to expect first-class quality materials and workmanship and has created rigid inspection and test procedures plus excellent packing methods to assure good arrival at destination.
- 2 - Gates agrees to supply daily factory service, and will make emergency shipments at any time where possible.
- 3 - Gates fully guarantees, under normal and proper usage, all component parts in Gates equipment, except as noted. These parts will be replaced or repaired at the option of Gates as follows:

Transmitter Parts: Main power or plate transformer, modulation transformer, modulation reactor, main tank condensers.

(Replacements or Repairs): Where less than 1 year old - no charge

Between 1 and 2 years old - 50%
of new price

Moving Parts: Guaranteed for six months.

Electron Tubes: Subject to manufacturer's warranty at the time of shipment. Adjustment will be made to the customer as given to Gates Radio Company by the tube manufacturer.

All Other Component Parts: (Except as listed above or below), guaranteed for one year.

Abuse: Damage resulting from an Act of God, or by fire, wind, rain, hail, or any other condition other than normal usage is not covered by the guarantee.

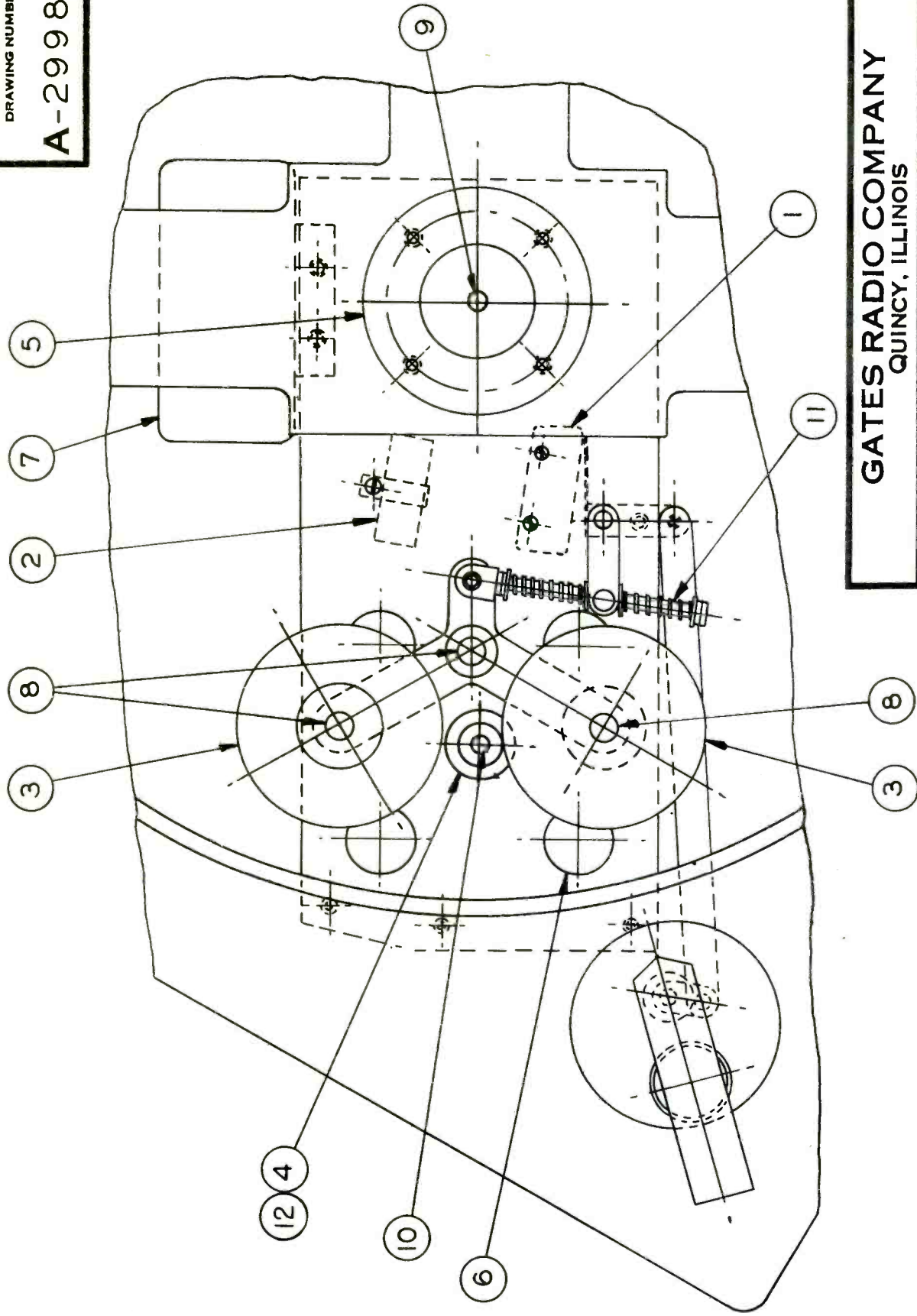
- 4 - Date of invoice to original user-purchaser and date of receipt by Gates Radio Company of notification from the customer will determine the age of equipment or parts.
- 5 - In case of adjustment, as on certain transmitter parts listed above, "new price" is Gates' current price at time of replacement and/or adjustment.
- 6 - This guarantee covers only Gates manufactured parts and complete Gates equipments including all parts therein, with exceptions as noted. Any purchased part not manufactured by Gates will be subject to the manufacturer's guarantee, unless such part is a unit incorporated in Gates manufactured equipment.

- 7 - Transcription pickups, regardless of make, are guaranteed for ninety days - said guarantee including every associated part of the pickup except the stylus, which because of its fragility is not guaranteed by Gates.
- 8 - Where the replacement part in question must be supplied under the guarantee before the defective part can be returned for inspection, as might sometimes be required, the customer will be billed in full and credit or adjustment will be given on receipt of the defective part in accordance with this guarantee and the terms herein. In order for credit adjustment to be received in line with this guarantee the defective or replaced part must be shipped prepaid to Gates Radio Company or to any other destination requested by Gates within two weeks of the date of the invoice covering the replacement part. Any item alleged defective shall not be returned to Gates until after written permission has been first obtained from Gates' home office at your request.
- 9 - All shipments under this guarantee will be made f.o.b., Quincy, Illinois, and all materials returned will be shipped prepaid by the customer f.o.b., Quincy, Illinois.
- 10 - As a material part of this guarantee the customer agrees to employ capable technical personnel to maintain all equipment under this guarantee in good, normal condition, properly serviced and cleaned, and to use said equipment as and for the purpose intended by seller. This guarantee does not extend to the supply by Gates of any personnel to make any replacement, repair or adjustment.
- 11 - Gates shall not be responsible for damages to items in transportation or careless handling; or injuries to persons or damage to property arising out of the use of operation of Gates equipment or parts, but Gates will supply repair or replacement items speedily, which will be billed to the customer who, in turn, will place claim with the carrier, with assistance from Gates if necessary and when so requested.
- 12 - Delays in fulfilling any part of this guarantee because of depleted stock, floods, war, strikes, power failures, transportation delays, or failure of suppliers to deliver, or because of Acts of God or any other conditions beyond the control of Gates, does not in any way render Gates liable under this guarantee; however, every effort will be made to render prompt service.
- 13 - Gates agrees that this equipment sold is manufactured, where need be, under Royalty License Agreements with Western Electric Company and Radio Corporation of America.
- 14 - This Guarantee is not transferable from the original user-purchaser, and no right of subrogation is given herein.
- 15 - This Guarantee is effective on all standard Gates cataloged items sold after June 11, 1951.

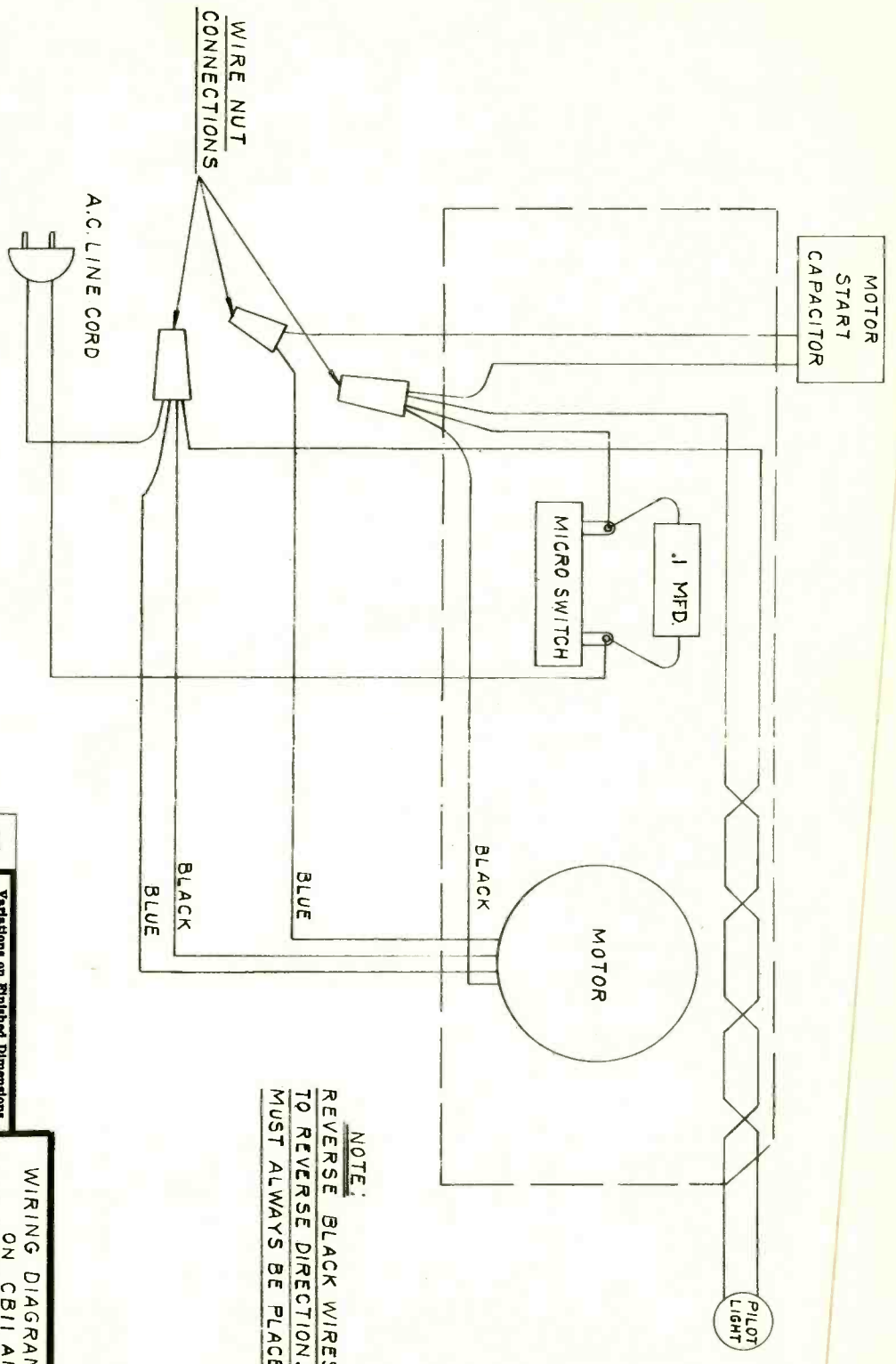
GATES RADIO COMPANY
QUINCY, ILLINOIS

DRAWING NUMBER

A-2998



GATES RADIO COMPANY QUINCY, ILLINOIS	
SIMPLIFIED CONSTRUCTION DETAIL CB-11, & CB-21	
MATERIAL	SCALE
DR. BY H.G.H.	DATE 6-29-49
CH. BY	ENG.
DRAWING NUMBER A-2998	



NOTE:
REVERSE BLACK WIRES ON MOTOR
TO REVERSE DIRECTION. CONDENSER
MUST ALWAYS BE PLACED IN ONE BLUE LEG

Variations on Finished Dimensions unless otherwise marked			
Size Dimension	Fractional Dimension	Decimal Dimension	
Up to 1/4"	± 1/32	± .005	
Above 1/4" to 6"	± 1/64	± .005	
Above 6" to 24"	± 1/32	± .010	
Above 24"	± 1/16	± .015	

WIRING DIAGRAM MOTOR ASSEMBLY,
ON CB11 AND CB21

MATL.	FIN.	PART NO.
DRAWN BY D.L.		
DATE 10-30-52		
CHECKED BY F.R.D.		
DATE 10-30-52		
GATES RADIO COMPANY QUINCY, ILLINOIS		DWG. NO. B-12404

ECZ #4617
RGK 4-4-53

