

**EQUIPMENT TEST LIST**  
**RINGING AND TONE MACHINE**  
**POWER SYSTEMS EQUIPMENT**

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**1. GENERAL**

**1.01** This section provides an index and information access system to locate the standard tests applicable to equipment listed in the preceding table of contents. Test classification and frequency of periodic routine are also provided.

**1.02** This ETL is issued to incorporate changes which are indicated by an arrow to the left of each line which has been changed.

**1.03** Comments on this section should be made by following the instructions in Bell System Practices (BSP), Section 000-010-015.

**1.04** Routine test information is arranged in the following order from left to right: Section number, issue/addendum, test letter or paragraph number, test title, test class, frequency, and the last space is for a locally assigned job number.

**1.05** Section 010-300-011 provides Equipment Test List instructions.

**NOTICE**

Not for use or disclosure outside the  
Bell System except under written agreement

## 22.0 RING &amp; TONE MACH

## 22.1 RING &amp; TONE MACH; A.E. INC CLASS

## FOR ALL UNITS

155-310-701 (2/0)	2.02 (A) LUBRICATE CAM	MW 3M	-----
	2.02 (B) CHECK OIL LEVEL IN GEAR CASE	MW 3M	-----
	2.02 (C) LUBRICATE MOTOR BEARINGS	MW 3M	-----
	2.02 (F) FLUSHING GEAR CASE	MW 24M	-----
	2.04 CHECK CONTACT ALNMT	MW 12M	-----
	2.05 CHECK CONTACT SEPARATION	MW 12M	-----
	2.06 CHECK CONTACT SPRING AND CAM SPRING SEPARATION	MW 12M	-----
	2.07 CHECK SPRING TENSION	MW 12M	-----
	2.08 CHECK CLRNC BETWEEN INTERRUPTER TONE CAMS	MW 12M	-----
	2.09 CHECK CONDITION OF MOTOR BEARINGS	MW 12M	-----
	2.10 CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.11 CHECK BRUSH HOLDERS	MW 12M	-----
	2.12 CHECK BRUSH LENGTH	MW 12M	-----
	2.13 CHECK BRUSH FIT	MW 12M	-----
	2.14 CLEAN AND INSPECT COMMUTATOR SURFACE	MW 6M	-----
	2.16 CHECK FOR EXCESSIVE NOISE AND VIBRATION	MW 6M	-----

## OPTIONAL FEATURES, SELECT NO MORE THAN ONE CATEGORY

## KS-2245 OIL IN GEAR CASE

155-310-701 (2/0)	2.02 (E) CHANGE OIL IN GEAR CASE	MW 24M	-----
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## KS-16326 OIL IN GEAR CASE

155-310-701 (2/0)	2.02 (E) CHANGE OIL IN GEAR CASE	MW 60M	-----
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## MIXTURE KS-2245 &amp; KS-16326 OILS IN GEAR CASE

155-310-701 (2/0)	2.02 (E) CHANGE OIL IN GEAR CASE	MW 24M	-----
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## TROUBLE TESTS

155-310-701 (2/0)	2.15 NO LOAD MOTOR SPEED	TT	-----
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## ◆ 22.2 RING &amp; TONE MACH; KS-5133 &amp; KS-5133-01

## FOR ALL UNITS

163-701-701 (5/0)	2.01 (F) CHECK FOR OIL LEAKS	MW 6M	-----
	2.01 (K) LUBRICATE WORM AND WORM WHEEL	MW 3M	-----
	2.01 (L) LUBRICATE METAL SPRING ROLLERS	MW 3M	-----
	2.08 CHECK FOR EXCESSIVE NOISE AND VIBRATION	MW 3M	-----
	2.09 CLEAN AND INSPECT COMMUTATOR AND COLLECTOR RING SURFACES	MW 3M	-----
	2.13 CHECK BRUSH LENGTH	MW 12M	-----
	2.18 CHECK TEMPERATURE	MW 3M	-----

## OPTIONAL FEATURES, SELECT NO MORE THAN ONE CATEGORY

## OIL RING BEARINGS

163-701-701 (5/0)	2.01 (C) CHECK OIL LEVEL IN OIL RING BEARING GAUGE	MW 3M	-----
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163-701-701 (5/0)	2.01 (D) REPLACE OIL RING BEARING OIL	MW 24M	-----
	2.04 CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.07 CHECK BEARINGS FOR EXCESSIVE WEAR	MW 12M	-----
	2.10 CHECK COMMUTATION	MW 12M	-----
	2.14 CHECK BRUSH FIT	MW 12M	-----
WOOL-PACKED BEARINGS			
163-701-701 (5/0)	2.01 (G-H) LUBRICATE WOOL-PACKED BEARINGS	MW 3M	-----
LOW SPEED INTERRUPTER W/INSULATED CAM			
163-701-701 (5/0)	2.01 (I) LUBRICATE SHAFT BEARINGS	MW 3M	-----
LOW SPEED INTERRUPTER W/ METAL CAM			
163-701-701 (5/0)	2.01 (J) CLEAN AND REPACK SHAFT BEARINGS	MW 60M	-----
TROUBLE TESTS			
163-701-701 (5/0)	2.02 MACHINE SPEED	TT	-----
	2.03 AC MOTOR STARTING SWITCH	TT	-----
	2.05 WORM AND WORM WHEEL OPRN	TT	-----
	2.06 ARMATURE END PLAY	TT	-----
	2.11 BRUSH HOLDER CLRNC	TT	-----
	2.12 BRUSH HOLDER YOKE ADJMT	TT	-----
	2.15 BRUSH PRESSURE	TT	-----
	2.16 SPEED REGULATOR CONTACTS	TT	-----
	2.17 LOW-SPEED INTERRUPTER	TT	-----
♦ 22.3 RING & TONE MACH; KS5159 & KS5352			
FOR ALL UNITS			
163-320-701 (10/0)	2.01 (A) LUBRICATE WORM AND WORM GEAR	MW M	-----
	2.01 (C) CLEAN AND REPACK ARMATURE SHAFT BEARINGS	MW 36M	-----
	2.02 CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.03 CHECK ARMATURE SHAFT END PLAY (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.04 CHECK CONDITION OF WORM AND WORM GEAR (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.05 CHECK FOR EXCESSIVE NOISE AND VIBRATION	MW 6M	-----
	2.06 CHECK MOTOR SPEED (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW 6M	-----
	2.07 CHECK AC OUTPUT VOLTAGE (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.08 (2.08-2.14) CLEAN AND INSPECT COMMUTATOR SURFACE	MW 6M	-----
	2.15 (2.15-2.19) CHECK BRUSH CONDITION AND LENGTH	MW 12M	-----
	2.20 CHECK INTERRUPTER CONTACT FOLLOW	MW 12M	-----
	2.21 CHECK INTERRUPTER SPRING TIMER	MW 12M	-----
OPTIONAL FEATURES			
HOLTZER-CABOT AND COMMERCIAL ELECTRIC PRODUCTS CORP			
163-320-701 (10/0)	2.01 (B) LUBRICATE INTERRUPTER SHAFT BEARINGS	MW 6M	-----

## ♦ 22.4 RING &amp; TONE MACH; KS5319 &amp; KS5319-01 - KS5319-03

## FOR ALL UNITS

163-320-701 (10/0)	2.01	(A) LUBRICATE WORM AND WORM GEAR	MW M	-----
	2.01	(B) LUBRICATE INTERRUPTER SHAFT BEARINGS (HOLTZER CABOT MACHINES)	MW 6M	-----
	2.02	CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.03	CHECK ARMATURE SHAFT END PLAY (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.04	CONDITION OF WORM AND WORM GEAR (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.05	CHECK FOR NOISE AND VIBRATION	MW 6M	-----
	2.06	CHECK MOTOR SPEED (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.07	CHECK AC OUTPUT VOLTAGE (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.08	(2.08-2.14) CLEAN AND INSPECT COMMUTATOR SURFACE	MW 6M	-----
	2.15	(2.15-2.19) CHECK BRUSH CONDITION AND LENGTH	MW 12M	-----
	2.20	CHECK INTERRUPTER CONTACT FOLLOW	MW 12M	-----
	2.22	CHECK INTERRUPTER SPRING TIMER	MW 12M	-----

## OPTIONAL FEATURES

## ARMATURE SHAFT, SEPARABLE OR SINGLE-SEALED BALL BEARINGS

163-320-701 (10/0)	2.01	(C) CLEAN AND REPACK ARMATURE SHAFT BEARINGS	MW 36M	-----
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## 22.5 RING &amp; TONE MACH; KS-5319-04

## FOR ALL UNITS

163-320-701 (10/0)	2.01	(A) LUBRICATE WORM AND WORM GEAR	MW M	-----
	2.02	CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.03	CHECK ARMATURE SHAFT END PLAY (UPON REPAIR OR EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.04	CHECK CONDITION OF WORM AND WORM GEAR (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.05	CHECK FOR NOISE AND VIBRATION	MW 6M	-----
	2.06	CHECK MOTOR SPEED (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW 6M	-----
	2.07	CHECK AC OUTPUT VOLTAGE (UPON REPAIR OF EQPT OR PRFRMC INDICATES CHECK ADVISABLE)	MW *	-----
	2.08	(2.08-2.14) CLEAN AND INSPECT COMMUTATOR SURFACE	MW 6M	-----
	2.15	(2.15-2.19) CHECK BRUSH CONDITION AND LENGTH	MW 12M	-----
	2.20	CHECK INTERRUPTER CONTACT FOLLOW	MW 12M	-----
	2.22	CHECK INTERRUPTER SPRING TIMER	MW 12M	-----

## OPTIONAL FEATURES

## ♦ HOLTZER-CABOT AND COMMERCIAL ELECTRIC PRODCUTS CORP.

163-320-701 (10/0)	2.01	(B) LUBRICATE INTERRUPTER SHAFT BEARINGS	MW M	-----
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## ARMATURE SHAFT, SEPARABLE OR SINGLE-SEALED BALL BEARINGS

163-320-701 (10/0)	2.01	(C) CLEAN AND REPACK ARMATURE SHAFT BEARINGS	MW 6M	-----
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## 22.6 RING &amp; TONE MACH; KS-5430

## FOR ALL UNITS

163-702-701 (4/0)	2.01	LUBRICATION	MW 36M	-----
	2.03	CHECK FOR NOISE AND VIBRATION	MW 3M	-----
	2.06	CLEAN AND INSPECT COMMUTATOR AND COLLECTOR RINGS	MW 3M	-----
	2.09	CHECK BRUSH LENGTH	MW 12M	-----
	2.10	CLEAN AND INSPECT SPEED REGULATOR CONTACTS	MW 12M	-----
	2.12	CHECK TEMPERATURE	MW 3M	-----

## ◆ 22.7 RING &amp; TONE MACH; KS5510,5659 &amp; 5546

## FOR ALL UNITS

163-704-701 (11/0)	2.01	LUBRICATION * (B,C) LUBRICATE WORM AND WORM GEAR BEARINGS	MW 6M	-----
	2.02	CLEAN INTERRUPTER SHAFT BEARINGS	MW 12M	-----
	2.05	CHECK FOR NOISE AND VIBRATION	MW 6M	-----
	2.08	CLEAN AND INSPECT COMMUTATOR AND COLLECTOR RING SURFACES	MW 6M	-----
	2.11	CHECK BRUSH LENGTH	MW 6M	-----
	2.13	CHECK TEMPERATURE	MW 12M	-----
	2.17	CHECK INTERRUPTER SPRING FOLLOW	MW 6M	-----

## OPTIONAL FEATURES, SELECT NO MORE THAN ONE CATEGORY

## WOOL-PACKED BEARINGS

◆ 163-704-701 (11/0)	2.01	(1) LUBRICATE WOOL-PACKED SLEEVE BEARINGS	MW 6M	-----
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## UNSEALED BALL BEARINGS

◆ 163-704-701 (11/0)	2.01	(2) CLEAN AND LUBRICATE BALL BEARINGS	MW 36M	-----
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## 22.8 RING &amp; TONE MACH; KS-15532 L1 - L4

## FOR ALL UNITS

163-720-701 (9/1)	2.02	CHECK FREEDOM OF ROTATING PARTS	MW 6M	-----
	2.03	CHECK DIRECTION OF ROTATION	MW 6M	-----
	2.04	CHECK FOR NOISE AND VIBRATION	MW 3M	-----
	2.05	CLEAN AND INSPECT CONDITION OF MOTOR COMMUTATOR AND COLLECTOR RING SURFACES	MW 3M	-----
	2.06	CHECK CONDITION OF BRUSHES	MW 12M	-----
	2.07	CHECK BRUSH LENGTH	MW 12M	-----
	2.08	CHECK MOTOR SPEED	MW 12M	-----
	2.09	CHECK AC GENERATOR OUTPUT VOLTAGE	MW 12M	-----
	2.10	CHECK TONE ALTERNATOR OUTPUT VOLTAGE	MW 12M	-----
	2.11	CHECK TEMPERATURES	MW 3M	-----
	2.12	CHECK MOUNTING SCREW TIGHTNESS	MW 12M	-----
	2.13	CHECK CONTACTS FOR CLEANLINESS	MW 12M	-----
	2.14	CHECK CONTACT ALIGNMENT	MW 12M	-----
	2.15	CHECK CONTACT FOLLOW	MW 12M	-----
	2.16	CHECK TIMING REQ'T	MW 12M	-----

163-720-701 (9/1) 2.17 CHECK CLEARANCE BETWEEN CURRENT CARRYING AND  
GRD METALLIC PARTS MW 12M -----

OPTIONAL FEATURES, SELECT NO MORE THAN ONE CATEGORY

HIGH SPEED OR INTERRUPTER SHAFT BEARINGS. GREASE FITTINGS

163-720-701 (9/1) 2.01 (A) HIGH-SPEED SHAFT AND INTERRUPTER SHAFT  
BEARINGS WITH GREASE FITTINGS MW 12M -----

HIGH SPEED OR INTERRUPTER SHAFT BEARINGS, OIL LUBE

163-720-701 (9/1) 2.01 (B) HIGH-SPEED SHAFT AND INTERRUPTER SHAFT  
BEARINGS WITH OIL LUBRICATION OPTION MW 6M -----

INTERRUPTER SHAFT BEARINGS W/O GREASE FITTINGS

163-720-701 (9/1) 2.01 (C) INTERRUPTER SHAFT BEARINGS NOT EQUIPPED  
WITH GREASE FITTINGS MW 12M -----

22.9 RING & TONE MACH; KS-15804 L1-L6

FOR ALL UNITS

163-530-701 (9/0) 2.04 CHECK FREEDOM OF ROTATING PARTS MW 6M -----

2.05 CHECK OPERATION FOR NOISE AND VIBRATION MW 12M -----

2.06 CHECK MOTOR SPEED MW 12M -----

2.09 CHECK MOTOR FRAME TEMPERATURE MW 6M -----

2.14 (B) LUBRICATE BRONZE WORM GEAR MW 3M -----

OPTIONAL FEATURES, SELECT NO MORE THAN ONE CATEGORY

KS-15804 L1 - L3

163-530-701 (9/0) 2.03 CHECK MOTOR BRUSH LENGTH MW 12M -----

2.14 (C) CLEAN AND LUBRICATE SHAFT AND BEARINGS MW 6M -----

KS-15804 L5

163-530-701 (9/0) 2.03 CHECK MOTOR BRUSH LENGTH MW 12M -----

TROUBLE TESTS

163-530-701 (9/0) 2.10 SPRING PACK MTG SCREWS TYTNS TT -----

2.11 CONTACTS CLEANING TT -----

2.12 CONTACT FOLLOW TT -----

2.13 TIMING REQTS TT -----

KS-15804 L1, L3 & L5

163-530-701 (9/0) 2.01 MOTOR CMTR CONDITION TT -----

2.02 MOTOR BRUSHES CONDITION TT -----

2.08 TONE ALTRN OUTPUT VOLTAGE TT -----

KS-15804 L2

163-530-701 (9/0) 2.01 MOTOR CMTR CONDITION TT -----

2.02 MOTOR BRUSHES CONDITION TT -----

KS-15804 L4 & L6

163-530-701 (9/0) 2.08 TONE ALTRN OUTPUT VOLTAGE TT -----

22.10 RING & TONE MACH; KS-15905 L1 -L3

FOR ALL UNITS

163-530-701 (9/0) 2.04 CHECK FREEDOM OF ROTATING PARTS MW 6M -----

2.05 CHECK OPERATION FOR NOISE AND VIBRATION MW 12M -----

163-530-701 (9/0)	2.06	CHECK MOTOR SPEED	MW 12M	-----
	2.09	CHECK MOTOR FRAME TEMPERATURE	MW 6M	-----
◆ TROUBLE TESTS				
163-530-701 (9/0)	2.07	ALTRN OUTPUT VOLTAGE	TT	-----
	2.10	SPRING PACK MTG SCREWS TYTNS	TT	-----
	2.11	CONTACTS CLEANING	TT	-----
	2.12	CONTACT FOLLOW ALNMT	TT	-----
	2.13	TIMING REQTS	TT	-----
◆ 22.11 RING & TONE MACH; KS-15985 L1				
◆ FOR ALL UNITS				
163-530-701 (9/0)	2.04	CHECK FREEDOM OF ROTATING PARTS	MW 12M	-----
	2.05	CHECK OPERATION FOR NOISE AND VIBRATION	MW 12M	-----
	2.06	CHECK MOTOR SPEED	MW 12M	-----
	2.09	CHECK MOTOR FRAME TEMPERATURE	MW 6M	-----
	2.14	(A) LUBRICATE BRONZE WORM GEAR	MW 3M	-----
◆ TROUBLE TESTS				
163-530-701 (9/0)	2.07	ALTRN OUTPUT VOLTAGE	TT	-----
	2.08	TONE ALTRN OUTPUT VOLTAGE	TT	-----
	2.10	SPRING PACK MTG SCREWS TYTNS	TT	-----
	2.11	CONTACTS CLEANING	TT	-----
	2.12	CONTACT FOLLOW ALNMT	TT	-----
	2.13	TIMING REQTS	TT	-----
◆ 22.12 RING & TONE MACH; KS-15985 L2 & L3				
◆ FOR ALL UNITS				
163-530-701 (9/0)	2.03	CHECK MOTOR BRUSH LENGTH	MW 12M	-----
	2.04	CHECK FREEDOM OF ROTATING PARTS	MW 12M	-----
	2.05	CHECK OPERATION FOR NOISE AND VIBRATION	MW 12M	-----
	2.06	CHECK MOTOR SPEED	MW 12M	-----
	2.09	CHECK MOTOR FRAME TEMPERATURE	MW 6M	-----
	2.14	(A) LUBRICATE BRONZE WORM GEAR	MW 3M	-----
◆ TROUBLE TESTS				
163-530-701 (9/0)	2.01	MOTOR CMTR CONDITION	TT	-----
	2.02	MOTOR BRUSHES CONDITION	TT	-----
	2.07	ALTRN OUTPUT VOLTAGE	TT	-----
	2.08	TONE ALTRN OUTPUT VOLTAGE	TT	-----
	2.10	SPRING PACK MTG SCREWS TYTNS	TT	-----
	2.11	CONTACTS CLEANING	TT	-----
	2.12	CONTACT FOLLOW ALNMT	TT	-----
	2.13	TIMING REQTS	TT	-----