

EQUIPMENT TEST LIST
INVERTERS
POWER SYSTEMS EQUIPMENT

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18.5	J87326	3	1.	GENERAL	
18.6	J87337A	3	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.	
18.7	KS-5717	3	1.02	This Equipment Test List (ETL) is reissued to incorporate changes which are indicated by an arrow to the left of each line which has been changed.	
18.8	KS-5726	3	1.03	Comments on this section should be made by following the instructions in Bell System Practices (BSP), Section 000-010-015.	
18.9	KS-15511	4	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.	
18.10	KS-19329	4	1.05	Section 010-300-011 provides Equipment Test List instructions.	
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NOTICE

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18.0 INVERTERS

18.1 INVERTERS; J87266E

FOR ALL UNITS

161-245-302	(3/0)	4.01	(4.01, 5.04) CHECK AC OUTPUT VOLTAGES	MW 6M	-----
		4.03	CHECK CLOCK SIGNAL VOLTAGE	MW 6M	-----
		5.03	CHECK DC INPUT VOLTAGE	MW 6M	-----

TROUBLE TESTS

161-245-302	(3/0)	5.01	LOW VOLTAGE MONITOR IND (A-G)	TT	-----
		5.04	OUTPUT AC VOLTAGE TEST	TT	-----
		5.05	HIGH, LOW, DISTORTED OR ZERO AC OUTPUT VOLTAGE (TABLE 1)	TT	-----
		5.05	NO OUTPUT VOLTAGE (TABLE 2)	TT	-----

18.2 INVERTERS; J87274A

FOR ALL UNITS

161-246-301	(4/0)	4.01	(A1) CHECK DC INPUT VOLTAGE	MW 6M	-----
		4.01	(A4) CHECK AC OUTPUT VOLTAGE AT FIRM AC DISTRIBUTION PANEL	MW 6M	-----
		4.01	(A7) CHECK AC OUTPUT VOLTAGE FREQUENCY	MW 6M	-----
		4.02	CLEAN AND INSPECT COMPONENTS AND VENTILATING PASSAGES	MW 12M	-----
161-246-701	(4/0)	3.05	CHECK MASTER OSCILLATOR OUTPUT	MW 6M	-----
		3.06	CHECK SLAVE OSCILLATOR OUTPUT	MW 6M	-----

TROUBLE TESTS

161-246-701	(4/0)	3.03	INVERTER OUTPUT VOLTAGE ADJMT	TT	-----
		3.04	OUTPUT FREQUENCY ADJUSTMENT	TT	-----
		3.07	CURRENT DROOP SHORT-CIRCUIT ADJMT	TT	-----
		3.08	OVERVOLTAGE TEST AND LOAD DISCONNECT ADJMT	TT	-----
		3.09	CRITICAL ADJMT	TT	-----

18.3 INVERTERS; J87295A & J87295B

FOR ALL UNITS

161-247-301	(2/0)	4.01	CHECK AC OUTPUT VOLTAGE	MW M	-----
		4.02	CHECK LOW-VOLTAGE ALARM CIRCUIT	MW 12M	-----

TROUBLE TESTS

161-247-301	(2/0)	5.02	(A) NO INPUT VOLTAGE	TT	-----
		5.02	(B) LOW OR HIGH INPUT VOLTAGE	TT	-----
		5.03	(A) HIGH OUTPUT VOLTAGE	TT	-----
		5.03	(B) LOW OUTPUT VOLTAGE	TT	-----
		5.03	(C) NO OUTPUT VOLTAGE	TT	-----

18.4 INVERTERS; J87322

FOR ALL UNITS

161-248-301	(4/0)	4.03	CHECK CLOCK SIGNAL VOLTAGE	MW 6M	-----
		4.04	CHECK DC INPUT VOLTAGE	MW 6M	-----

161-248-301 (4/0)	4.05	CHECK AC OUTPUT VOLTAGE	MW 6M	-----
TROUBLE TESTS				
161-248-301 (4/0)	5.01	LOW VOLTAGE MONITOR IND. (A-D)	TT	-----
	5.02	OUTPUT VOLTAGE TEST (A-G)	TT	-----
	5.03	HIGH, LOW, DISTORTED OR ZERO OUTPUT VOLTAGE (CHART 1)	TT	-----
	5.03	ZERO OUTPUT VOLTAGE (CHART 2)	TT	-----
18.5 INVERTERS; J87326				
FOR ALL UNITS				
161-249-301 (3/0)	4.02	CLEAN VENTILATING PASSAGES	MW 6M	-----
	4.03	CHECK AC OUTPUT VOLTAGE	MW 6M	-----
	4.04	CHECK DC INPUT VOLTAGE	MW 6M	-----
	4.05	CHECK CLOCK SIGNAL VOLTAGE	MW 6M	-----
TROUBLE TESTS				
161-249-301 (3/0)	5.01	TROUBLE TEST CHART	TT	-----
	5.02	(5.02 - 5.03) DEFECTIVE COMPONENTS	TT	-----
18.6 INVERTERS; J87337A				
FOR ALL UNITS				
161-250-301 (1/1)	4.01	INVERTER CIRCUIT CHECK	MW 3M	-----
	4.02	CLEAN VENTILATING PASSAGES	MW 3M	-----
TROUBLE TESTS				
161-250-301 (1/1)	5.01	TROUBLE TEST CHART	TT	-----
18.7 INVERTERS; KS-5717				
FOR ALL UNITS				
161-212-701 (3/0)	2.01	(A) LUBRICATE BALL BEARINGS	MW 12M	-----
	2.02	CHECK BEARINGS FOR EXCESSIVE WEAR	MW 12M	-----
	2.03	CHECK FREEDOM OF ROTATING SHAFT	MW 12M	-----
	2.04	CHECK NOISE AND VIBRATION	MW 12M	-----
	2.08	(2.08 - 2.09) CHECK CONDITION OF COMMUTATORS AND COLLECTOR RINGS	MW 12M	-----
	2.10	CHECK BRUSH HOLDER AND YOKE CLEARANCE	MW 12M	-----
	2.11	CHECK BRUSH FIT	MW 12M	-----
	2.12	CHECK BRUSH LENGTH	MW 12M	-----
	2.13	(A, B) BRUSH PRESSURE	MW 12M	-----
	2.14	CHECK BEARING AND WINDING TEMPERATURE	MW 12M	-----
TROUBLE TESTS				
161-212-701 (3/0)	2.05	(A) SPEED AND FREQUENCY	TT	-----
	2.06	(B) OUTPUT VOLTAGE	TT	-----
	2.06	(B) OUTPUT VOLTAGE	TT	-----
18.8 INVERTERS; KS-5726				
FOR ALL UNITS				
161-212-701 (3/0)	2.01	(B1) LUBRICATE BALL BEARINGS AT END OPP SPEED REGULATOR	MW 12M	-----

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161-212-701 (3/0)	2.01	(B2) LUBRICATE BALL BEARINGS AT SPEED REGULATOR END	MW 36M	-----
	2.02	CHECK BEARINGS FOR EXCESSIVE WEAR (AS REQUIRED)	MW *	-----
	2.03	CHECK FREEDOM OF ROTATING SHAFT	MW 12M	-----
	2.04	CHECK NOISE AND VIBRATION	MW 12M	-----
	2.05	(B) CHECK SPEED AND FREQUENCY (AS REQUIRED)	MW *	-----
	2.06	(C) CHECK OUTPUT VOLTAGE (AS REQUIRED)	MW *	-----
	2.08	(2.08 - 2.09) CHECK CONDITION OF COMMUTATORS AND COLLECTOR RINGS (AS REQUIRED)	MW *	-----
	2.10	CHECK BRUSH HOLDER AND YOKE CLEARANCE	MW 12M	-----
	2.11	CHECK BRUSH FIT	MW 12M	-----
	2.12	CHECK BRUSH LENGTH	MW 12M	-----
	2.13	(C) CHECK BRUSH PRESSURE	MW 12M	-----
	2.14	CHECK BEARING AND WINDING TEMPERATURE	MW 12M	-----

18.9 INVERTERS; KS-15511

FOR ALL UNITS

161-230-701 (1/0)	2.02	CHECK FREEDOM OF ROTATING SHAFT	MW 12M	-----
	2.03	CHECK ARMATURE END PLAY	MW 12M	-----
	2.04	CHECK NOISE AND VIBRATION	MW 12M	-----
	2.05	CHECK SPEED	MW 12M	-----
	2.06	CHECK CAPACITY AND OUTPUT VOLTAGE	MW 12M	-----
	2.07	CHECK CONDITION OF COMMUTATORS AND COLLECTOR RINGS	MW 12M	-----
	2.08	CHECK BRUSH HOLDER CLEARANCE	MW 12M	-----
	2.09	CHECK BRUSH HOLDER ROCKER RING	MW 12M	-----
	2.10	CHECK BRUSHES	MW 12M	-----
	2.11	CHECK TEMPERATURE	MW 12M	-----

18.10 INVERTERS; KS-19329

FOR ALL UNITS

161-231-301 (3/0)	1.08	CLEAN AND INSPECT COMPONENTS AND VENTILATING PASSAGES	MW 12M	-----
	4.01	(B) CALIBRATE PORTABLE TEST VOLTMETERS	MW 12M	-----
	4.01	(C) CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.01	(D) CHECK AC OUTPUT VOLTAGE	MW M	-----

TROUBLE TESTS

161-231-301 (3/0)	5.04	(5.04 - 5.06) INCORRECT OR NO OUTPUT VOLTAGE - FUSE DOES NOT OPEN	TT	-----
	5.07	(5.07 - 5.09) NO OUTPUT VOLTAGE - FUSE OPENS	TT	-----
	6.01	(6.01 - 6.08) COMPONENT TEST PROCEDURES)	TT	-----

18.11 INVERTERS; KS-19430

FOR ALL UNITS

161-232-301 (1/1)	1.05	CLEAN VENTILATING PASSAGES	MW 3M	-----
	4.01	(A) CHECK DC INPUT VOLTAGE	MW M	-----

161-232-301 (1/1)	4.01	(B) CHECK AC OUTPUT VOLTAGE	MW M	-----
	4.02	CALIBRATE PORTABLE TEST VOLTMETERS	MW 12M	-----
TROUBLE TESTS				
161-232-301 (1/1)	5.04	(5.04 - 5.08) INCORRECT OR NO OUTPUT VOLTAGE - CIRCUIT BREAKER DOES NOT OPEN	TT	-----
	5.09	(5.09 - 5.11) NO OUTPUT VOLTAGE - CIRCUIT BREAKER OPENS	TT	-----
	6.01	(6.01 - 6.08) COMPONENT TEST PROCEDURES	TT	-----
18.12 INVERTERS; KS-19738				
FOR ALL UNITS				
161-233-301 (3/1)	4.02	CLEAN VENTILATING PASSAGES	MW 6M	-----
	4.03	OUTPUT VOLTAGE(M2) VOLTMETER CALIBRATION CHECK	MW 6M	-----
	4.04	OUTPUT VOLTAGE & FREQUENCY CHECK	MW 6M	-----
	4.05	EARLY WARNING MONITOR ALARM CHECK	MW 3M	-----
	4.06	EARLY WARNING MONITOR CHECK	MW 6M	-----
	4.07	SHUT DOWN MONITOR ALARM CHECK	MW 3M	-----
	4.08	SHUT DOWN MONITOR CHECK	MW 6M	-----
	4.09	INVERTER SHUT DOWN TIME DELAY CHECK	MW 6M	-----
	4.10	BATTERY FUSE ALARM CHECK	MW 6M	-----
	4.11	DC FILTER NETWORK FUSE ALARM CHECK	MW 6M	-----
	4.12	AC FILTER NETWORK FUSE ALARM CHECK	MW 6M	-----
TROUBLE TESTS				
161-233-301 (3/1)	5.05	PRELIMINARY CHECKS	TT	-----
	5.06	NO OUTPUT VOLTAGE	TT	-----
	5.07	LOW OUTPUT VOLTAGE	TT	-----
	5.08	HIGH OUTPUT VOLTAGE	TT	-----
	5.09	TROUBLE TEST CHART	TT	-----
18.13 INVERTERS; KS-19951				
FOR ALL UNITS				
161-234-301 (3/0)	4.01	CLEAN COMPONENTS AND VENTILATING PASSAGES	MW 12M	-----
	4.02	CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.03	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.04	CHECK OUTPUT VOLTAGE FREQUENCY	MW 12M	-----
TROUBLE TESTS				
161-234-701 (2/0)	3.04	FREQUENCY ADJUSTMENT	TT	-----
	3.05	DELAYED PULSE GENERATOR ADJUSTMENT	TT	-----
	3.06	SHORT CIRCUIT CURRENT ADJUSTMENT	TT	-----
	3.07	VOLTAGE LIMIT ADJUSTMENT	TT	-----
	3.08	VOLTAGE BAND ADJUSTMENT	TT	-----
	3.09	HARMONIC TRAP ADJUSTMENT	TT	-----
18.14 INVERTERS; KS-19952				

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FOR ALL UNITS

161-234-302 (1/0)	4.01	CLEAN COMPONENTS AND PASSAGES	MW 12M	-----
	4.02	DC INPUT VOLTAGE CHECK	MW 12M	-----
	4.03	AC OUTPUT VOLTAGE CHECK	MW 12M	-----
	4.04	OUTPUT VOLTAGE FREQUENCY CHECK	MW 12M	-----

TROUBLE TESTS

161-234-702 (1/0)	3.05	DELAYED PULSE GENERATOR ADJUSTMENT	TT	-----
	3.06	SHORT-CIRCUIT CURRENT ADJUSTMENT	TT	-----
	3.07	VOLTAGE LIMIT ADJUSTMENT	TT	-----
	3.08	VOLTAGE BAND ADJUSTMENT	TT	-----

◆ 18.15 INVERTERS; KS-20816 L1, L2

FOR ALL UNITS

◆ 161-206-301 (3/1)	4.02	(4.02.1) CLEAN K2 RELAY CONTACTS	MW 12M	-----
◆	4.04	CHECK DC INPUT VOLTAGE	MW 12M	-----
◆	4.05	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
◆	4.06	CHECK VOLTMETER ACCURACY	MW 12M	-----
◆	4.07	CHECK OUTPUT VOLTAGE FREQUENCY	MW 12M	-----
◆	4.08	CHECK TRANSFER CIRCUIT	MW 6M	-----

TROUBLE TESTS

◆ 161-206-301 (3/1)	5.01	TROUBLE TEST CHART	TT	-----
◆	5.02	DEFECTIVE CIRCUIT PACK	TT	-----
◆	5.03	DEFECTIVE THYRISTOR	TT	-----

◆ 18.16 INVERTERS; KS-21354 L1 (J87429A)

FOR ALL UNITS

161-203-302 (2/0)	4.03	CLEAN VENTILATING PASSAGES	MW 12M	-----
	4.04	CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.05	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.07	CHECK OUTPUT VOLTAGE FREQUENCY	MW 12M	-----

TROUBLE TESTS

◆ 161-203-302 (1/0)	5.01	(5.01, 5.07 - 5.08) TROUBLESHOOTING CHART	TT	-----
◆	5.02	(5.02 - 5.06) COMPONENT TEST PROCEDURES	TT	-----

18.17 INVERTERS; J87415A

FOR ALL UNITS

161-201-301 (1/0)	4.01	CHECK INPUT VOLTAGE	MW 12M	-----
	4.02	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.03	CHECK OUTPUT FREQUENCY	MW 12M	-----

TROUBLE TESTS

161-201-301 (1/0)	5.03	TROUBLE TEST CHART	TT	-----
	5.04	CKT TEST PROCEDURES	TT	-----

◆ 18.18 INVERTERS; KS-21353 L1 (J87428A)

FOR ALL UNITS

161-203-301 (2/0)	4.01	CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.02	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.03	CHECK AC OUTPUT VOLTAGE FREQUENCY	MW 12M	-----
TROUBLE TESTS				
161-203-301 (2/0)	5.03	TROUBLESHOOTING CHART	TT	-----
	6.01	(6.01 - 6.08) COMPONENT TEST PROCEDURES	TT	-----
	7.01	POINT TO POINT VOLTAGES	TT	-----
18.19 INVERTERS; J29361AA-1				
FOR ALL UNITS				
161-245-311 (1/0)	4.02	CHECK OUTPUT VOLTAGE	MW 6M	-----
	4.03	CHECK RNG CONVR OUTPUT FREQUENCY	MW 6M	-----
TROUBLE TESTS				
161-245-311 (1/0)	5.02	CRITICAL COMPONENT RPLCMT RESTRICTIONS	TT	-----
	5.03	(5.03 - 5.04) DEFECTIVE OUTPUT VOLTAGE	TT	-----
	5.05	TROUBLE CHART	TT	-----
	5.07	TEST DEFECTIVE OSC-A1 CKT PACK	TT	-----
	5.08	TEST DEFECTIVE CLP-A2 CKT PACK	TT	-----
	5.09	TEST FOR SHORTED TRANSISTORS Q1, Q2, Q3, Q4, OR Q5	TT	-----
	5.10	TEST FOR OPEN IN FERRORESONANT OUTPUT CIRCUIT	TT	-----
	5.11	TEST FOR DEFECTIVE T1 TRANSFORMER	TT	-----
18.20 INVERTERS; KS-21353 L1 (J87428B)				
FOR ALL UNITS				
161-203-303 (1/0)	4.02	CLEAN VENTILATING PASSAGES	MW 12M	-----
	4.04	CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.05	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.06	CHECK AC OUTPUT FREQUENCY	MW 12M	-----
TROUBLE TESTS				
161-203-303 (1/0)	5.01	(5.01 - 5.02) TROUBLES & CHART	TT	-----
	6.01	(6.01 - 6.08) COMPONENT TEST PROCEDURES	TT	-----
18.21 INVERTERS; KS-21354 L1 (J87429B)				
FOR ALL UNITS				
161-203-304 (1/0)	4.03	CLEAN VENTILATING PASSAGES	MW 12M	-----
	4.04	CHECK DC INPUT VOLTAGE	MW 12M	-----
	4.05	CHECK AC OUTPUT VOLTAGE	MW 12M	-----
	4.07	CHECK AC OUTPUT FREQUENCY	MW 12M	-----
TROUBLE TESTS				
161-203-304 (1/0)	5.01	(5.01 - 5.02) TROUBLES & CHART	TT	-----
18.22 INVERTERS; KS-5590, KS-15574, KS-15597, KS-15662 & KS-15679				
TROUBLE TESTS				
161-208-701 (5/0)	2.01	CLEAN RELAY CONTACTS, ARMTR & POLE-PIECE FACE	TT	-----

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161-208-701 (5/0)	2.02	VIBRATOR OPRN	TT	-----
	2.03	OUTPUT FREQUENCY	TT	-----
	2.04	OUTPUT VOLTAGE	TT	-----
	2.05	TEMPERATURE	TT	-----

18.23 INVERTERS; J87266A

TROUBLE TESTS

◆ 161-245-301 (1/0)	5.01	(5.01 - 5.06) TROUBLE SYMPTOMS & CHECKS	TT	-----
◆	6.01	(6.01 - 6.09) COMPONENT TEST PROCEDURES	TT	-----