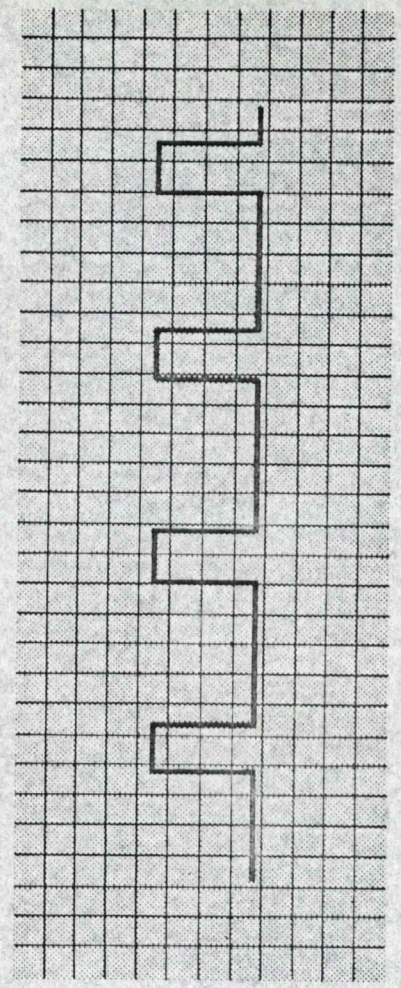
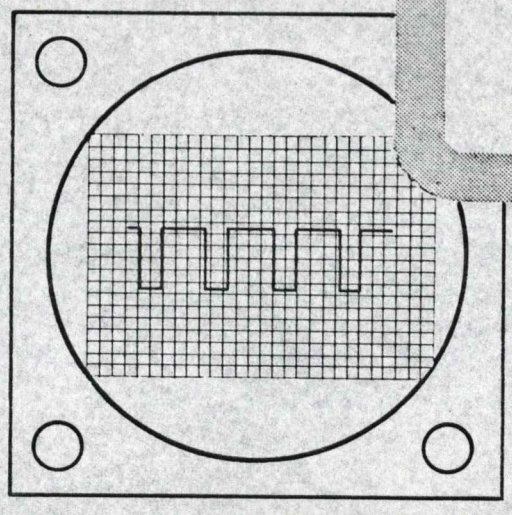


MAINTENANCE AND INSTRUCTION MANUAL FOR MODEL II RADIO FREQUENCY ASSEMBLY

(50M66515) ANALOG

(50M66516) DIGITAL



GEORGE C. MARSHALL SPACE FLIGHT CENTER
ASTRIONICS LABORATORY - INSTRUMENTATION AND COMMUNICATIONS DIVISION
TELEMETRY SYSTEMS BRANCH

MSFC FORM 422 (VERTICAL) (AUGUST 1960)

APPLICATION		PART No.	M F	REVISIONS			
NEXT ASSY	USED ON			SYM	DESCRIPTION	DATE	APPROVAL
50M67109	Z						

PART A
OPERATION AND MAINTENANCE INSTRUCTIONS
FOR
MODEL II ANALOG RF ASSEMBLY
(50M66515)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING 12/15/65 DRAFTSMAN [illegible] CHECKER [illegible] TRACER CHECKER ENGINEER DDV ENGINEER SUBMITTED Dec. 3, 1965 R. L. Brotcher APPROVED DATE 12-6-65 RELEASED BY R. F. & V. L. VN H. R. Thomas	PART A OPERATION AND MAINTENANCE INSTRUCTIONS FOR MODEL II ANALOG RF ASSEMBLY (50M66515)	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
MATERIAL		SCALE	DWG SIZE A — 50M66515
HEAT TREATMENT		UNIT WT	SHEET OF
FINAL PROTECTIVE FINISH			

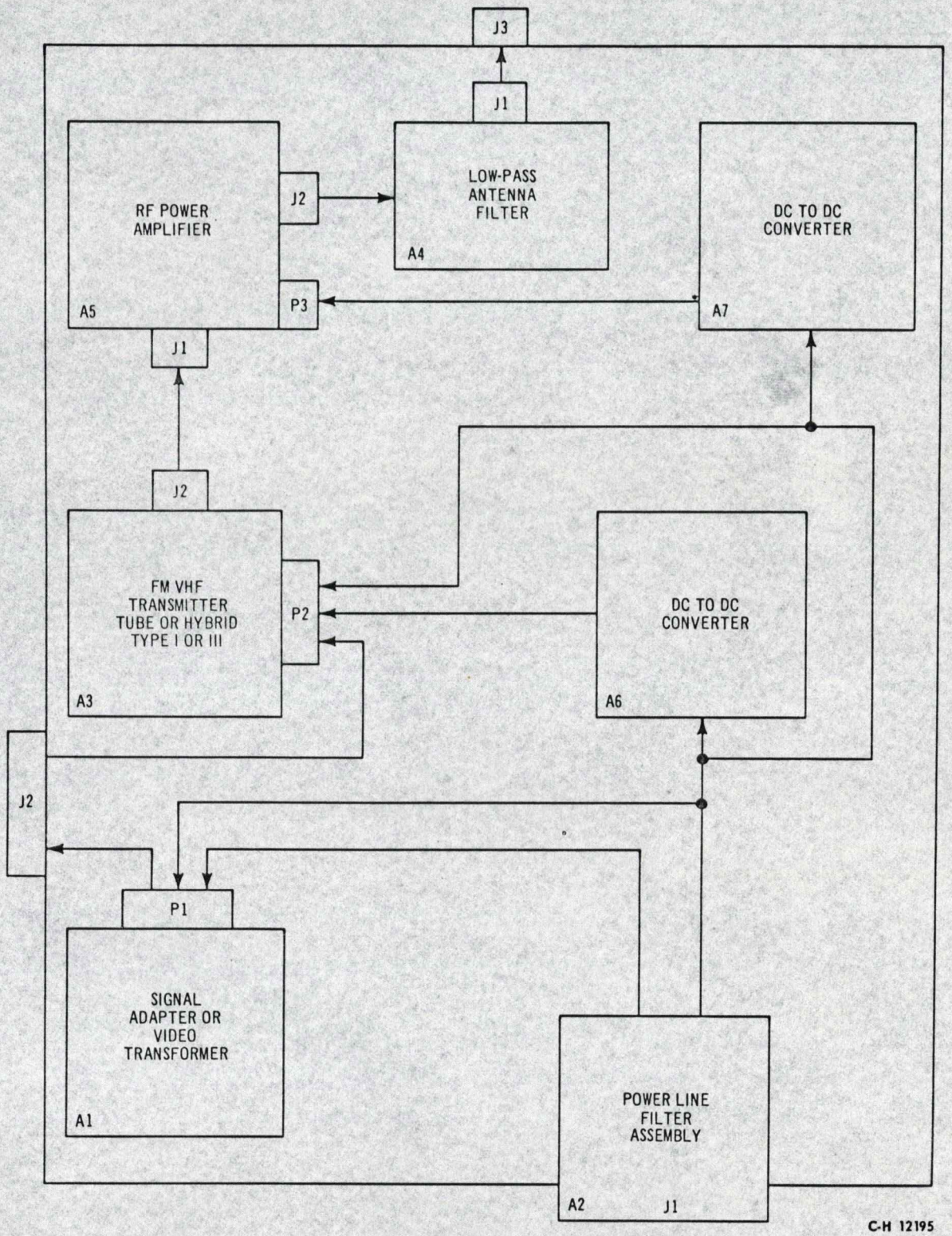


FIGURE A1-1. TYPE I AND TYPE III ANALOG RF ASSEMBLY

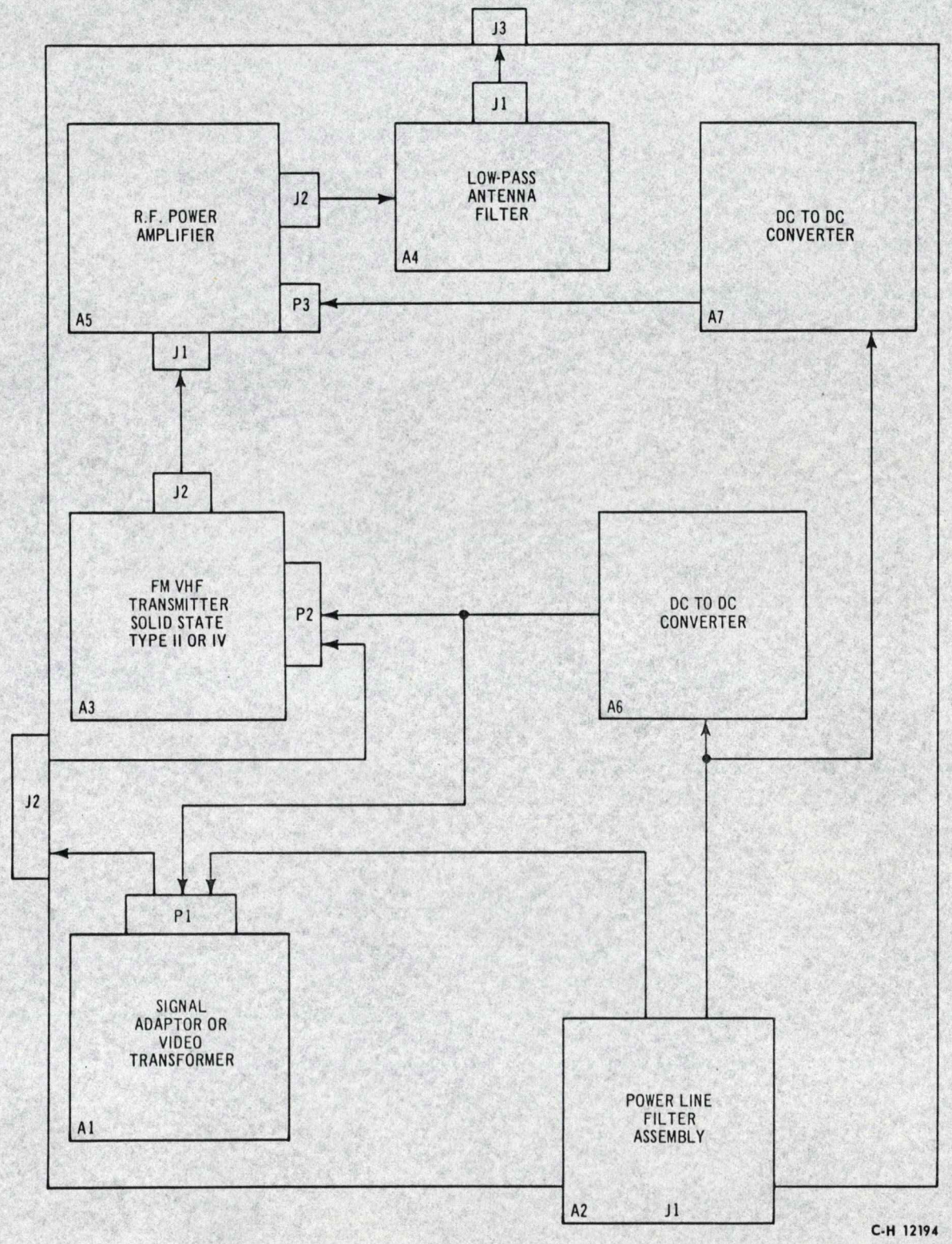


FIGURE A1-2. TYPE II AND IV ANALOG RF ASSEMBLY

SECTION II
THEORY OF OPERATION

2.1 SCOPE

This section contains the theory of operation of the Model II Analog RF Assembly. Except for the video transformer, the module circuitry is proprietary information. The operation of the assemblies will be covered only in block-diagram form in terms of input and output signals of the modules.

2.2 INTERCONNECTION OF MODEL II ANALOG RF ASSEMBLIES

Figure A2-1 illustrates in block-diagram form the interconnection of the various modules in the type I and type III analog RF assemblies. Figure A2-2 illustrates the interconnection of the type II and type IV analog RF assemblies.

2.3 OPERATION

2.3.1 Power Line Filter

The modulation signal is applied through pins A and B, jack J1 [this is the same as J1 of the RF assembly], of the power line filter assembly to pins F and G of plug P1 on the differential signal adapter (or the video transformer). A positive excursion of the modulating signal will cause an increase in RF frequency.

2.3.2 Video Transformer, Wideband Differential Signal Adapter, or Dummy Signal Adapter

The signal adapter or the video transformer (figure A2-3) converts the differential input signal into a "single-ended" signal with respect to chassis ground. The output of the signal adapter or transformer, pin C of J1 on the signal adapter, is applied to an external recorder through pin C of jack J2. The dummy signal adapter (figure A2-4) optionally replaces the signal adapter and provides direct electrical connection of the modulation signal to the recorder. The dummy signal adapter consists of a potted connector mounted on a bracket.

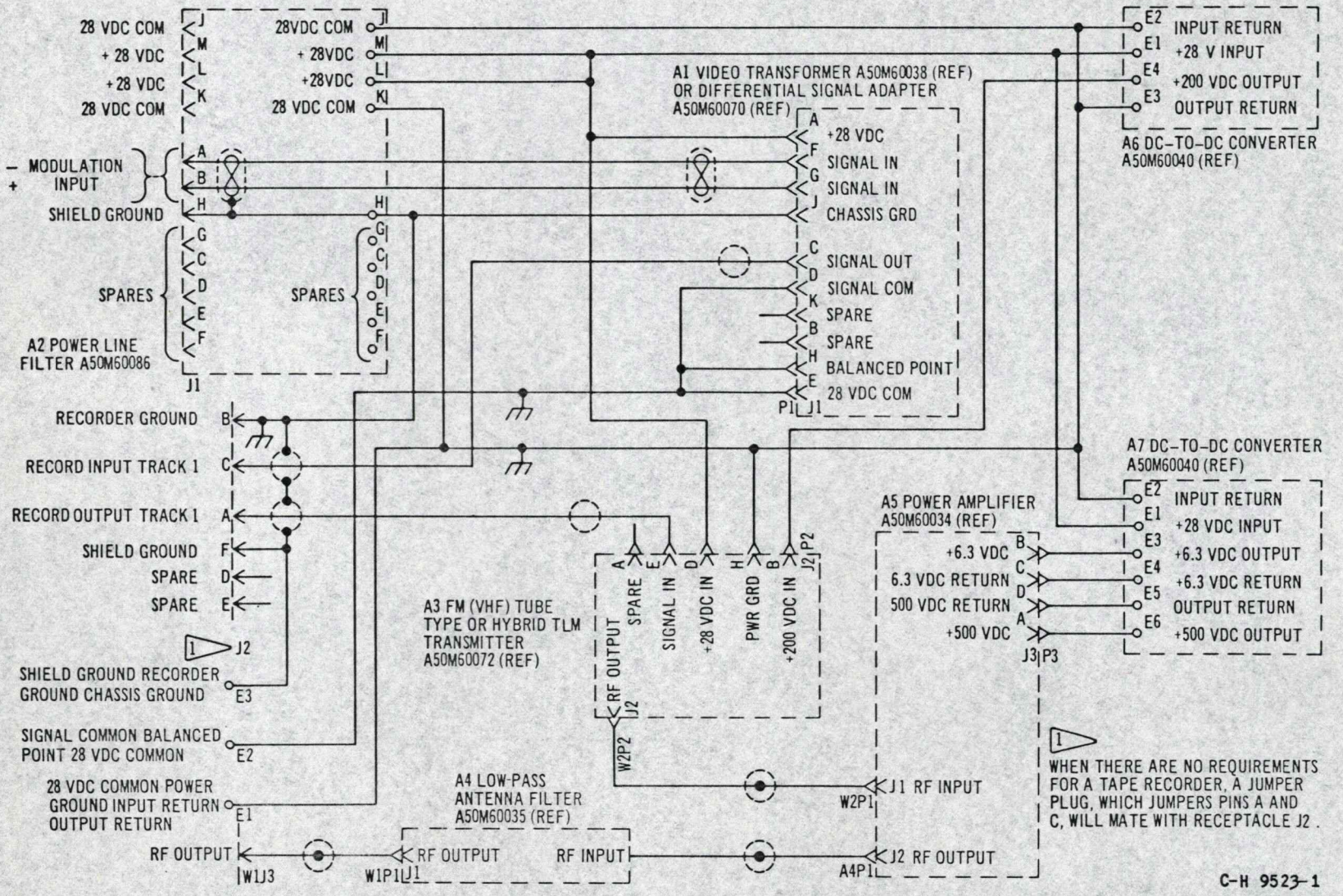


FIGURE A2-1. TYPE I AND TYPE III ELECTRICAL SCHEMATIC

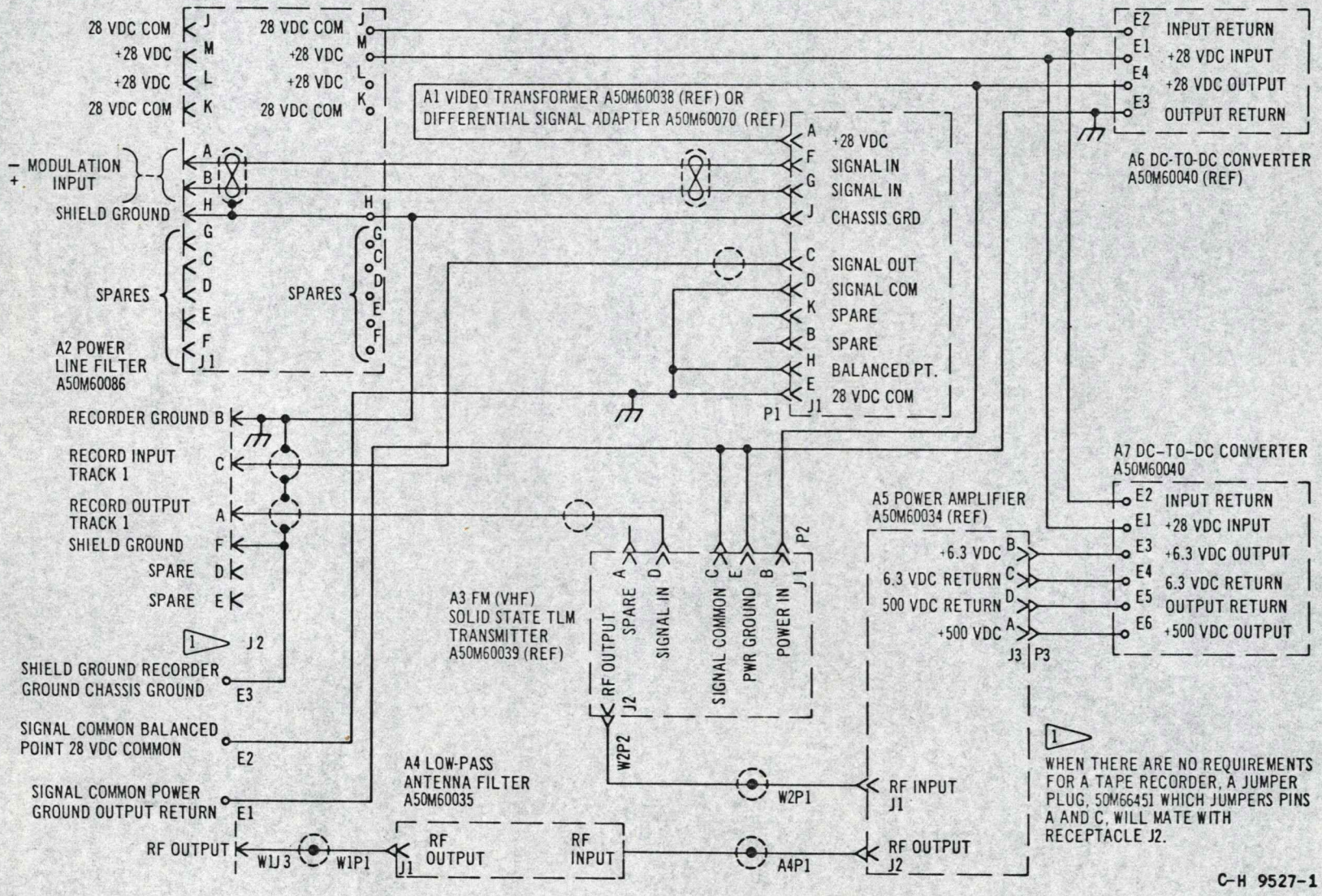


FIGURE A2-2. TYPE II AND TYPE IV ELECTRICAL SCHEMATIC

2.3.3 FM (VHF) Transmitter

The modulation input to the transmitter is applied from the external recorder; or if a recorder is not used, the modulation input comes directly from the signal adapter or through the jumper plug. This signal is used to frequency modulate the carrier frequency of the transmitter. The transmitter output is applied through its coaxial jack J2 to the input of RF power amplifier jack J1.

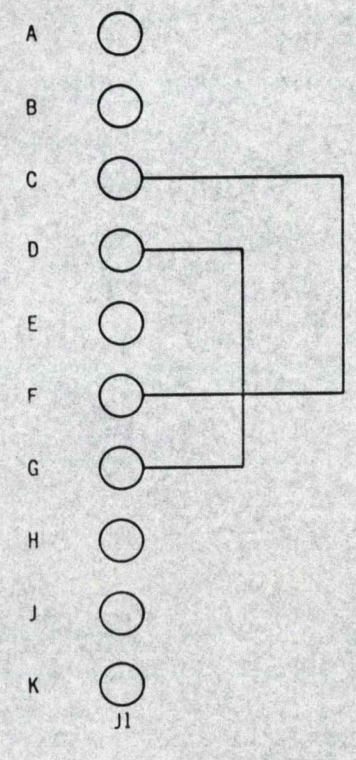


FIGURE A2-4. DUMMY SIGNAL ADAPTER SCHEMATIC

2.3.4 RF Power Amplifier

The frequency-modulated output of the transmitter is amplified and applied through amplifier coaxial output jack J2 to the low-pass antenna filter.

2.3.5 Antenna Filter

The input to the low-pass antenna filter is applied through its integral coaxial cable. The filter passes the frequency-modulated output of the power amplifier, and attenuates the second and higher harmonics of the signal by 40 db minimum. The output of the filter is applied through a coaxial cable from antenna filter jack J1 to RF output jack J3 of the RF assembly.

2.3.6 DC-to-DC Converters

The dc-to-dc converters provide regulated dc power for the transmitter and RF power amplifier.

APPLICATION		PART No.	M F	REVISIONS			
NEXT ASSY	USED ON			SYM	DESCRIPTION	DATE	APPROVAL
50M68407	Z						

PART B
OPERATION AND MAINTENANCE INSTRUCTIONS
FOR
MODEL II DIGITAL PCM RF ASSEMBLY
(50M66516)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING 12/15/65 DRAFTSMAN R. Taylor / CHECKER TRACER / CHECKER ENGINEER DGL / ENGINEER SUBMITTED Dec. 3, 1965 R. L. Brateher APPROVED DATE 12-6-65 RELEASED BY R-P & VE-VN L. R. Thomas	PART B OPERATION AND MAINTENANCE INSTRUCTIONS FOR MODEL II DIGITAL PCM RF ASSEMBLY (50M66516)	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
MATERIAL		SCALE	DWG SIZE A — 50M66516
HEAT TREATMENT		UNIT WT	SHEET OF
FINAL PROTECTIVE FINISH			

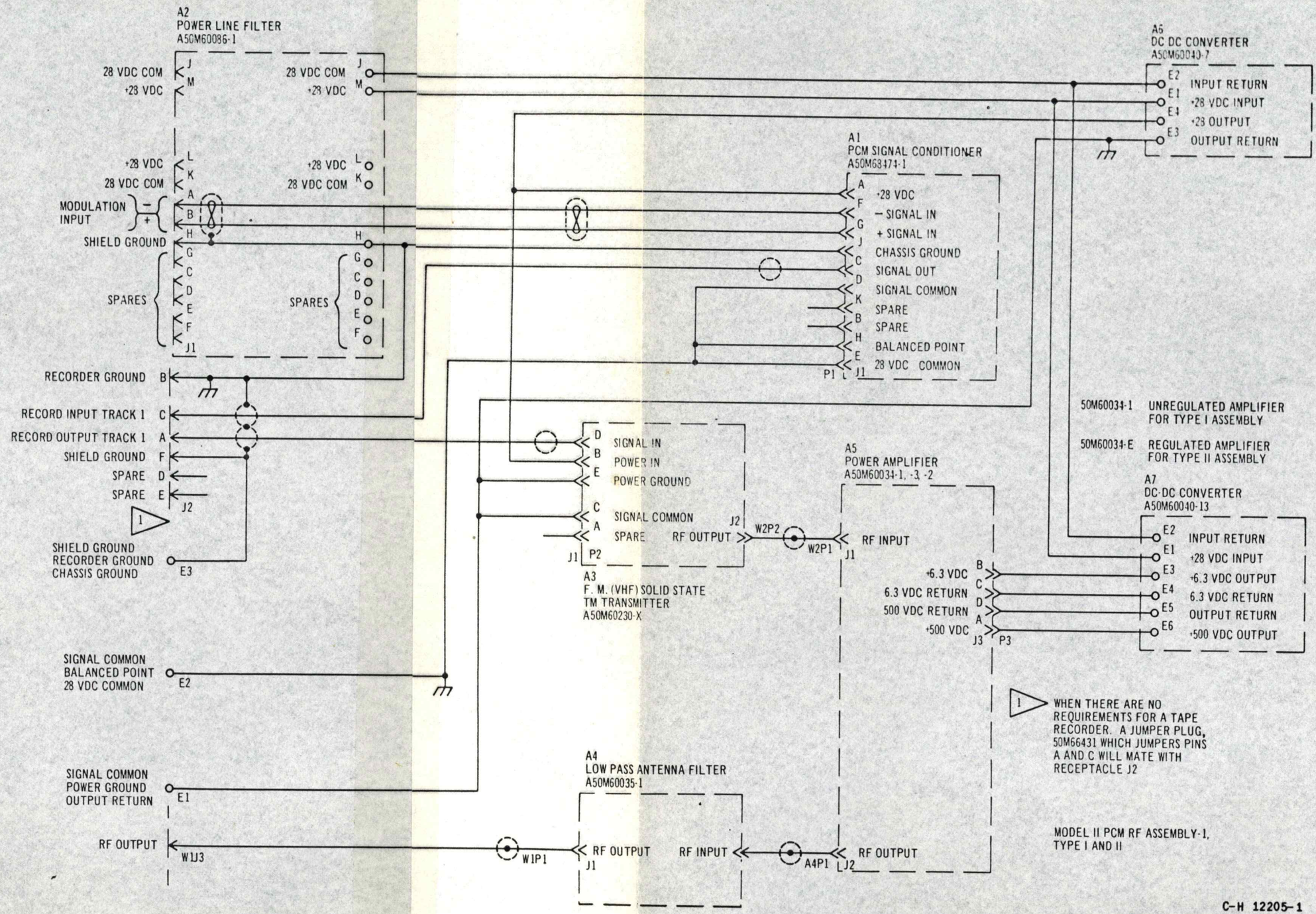


FIGURE B1-6. MODEL II PCM RF ASSEMBLY-1, TYPE I AND TYPE II

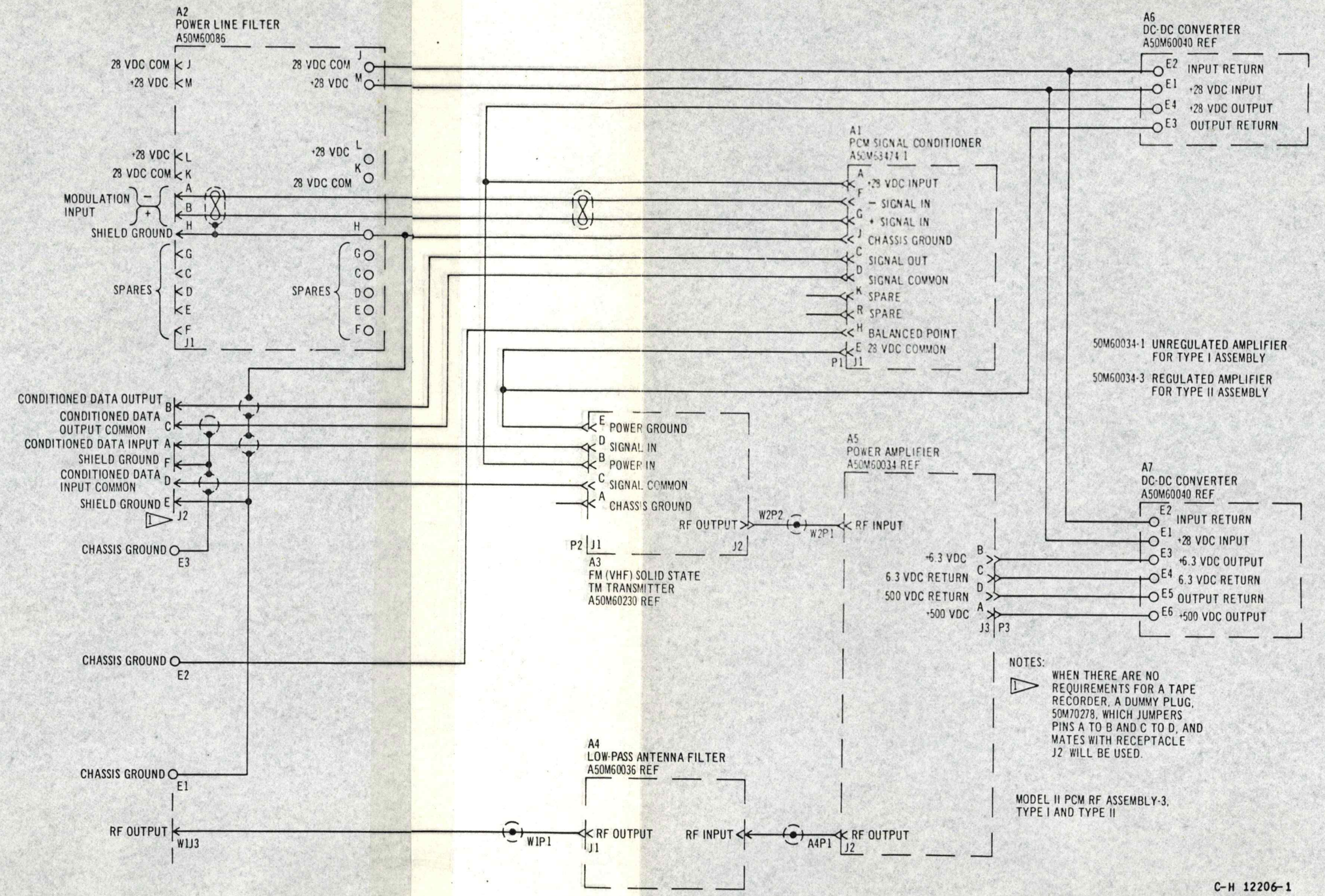


FIGURE B1-7. MODEL II PCM RF ASSEMBLY-3, TYPE I AND TYPE II

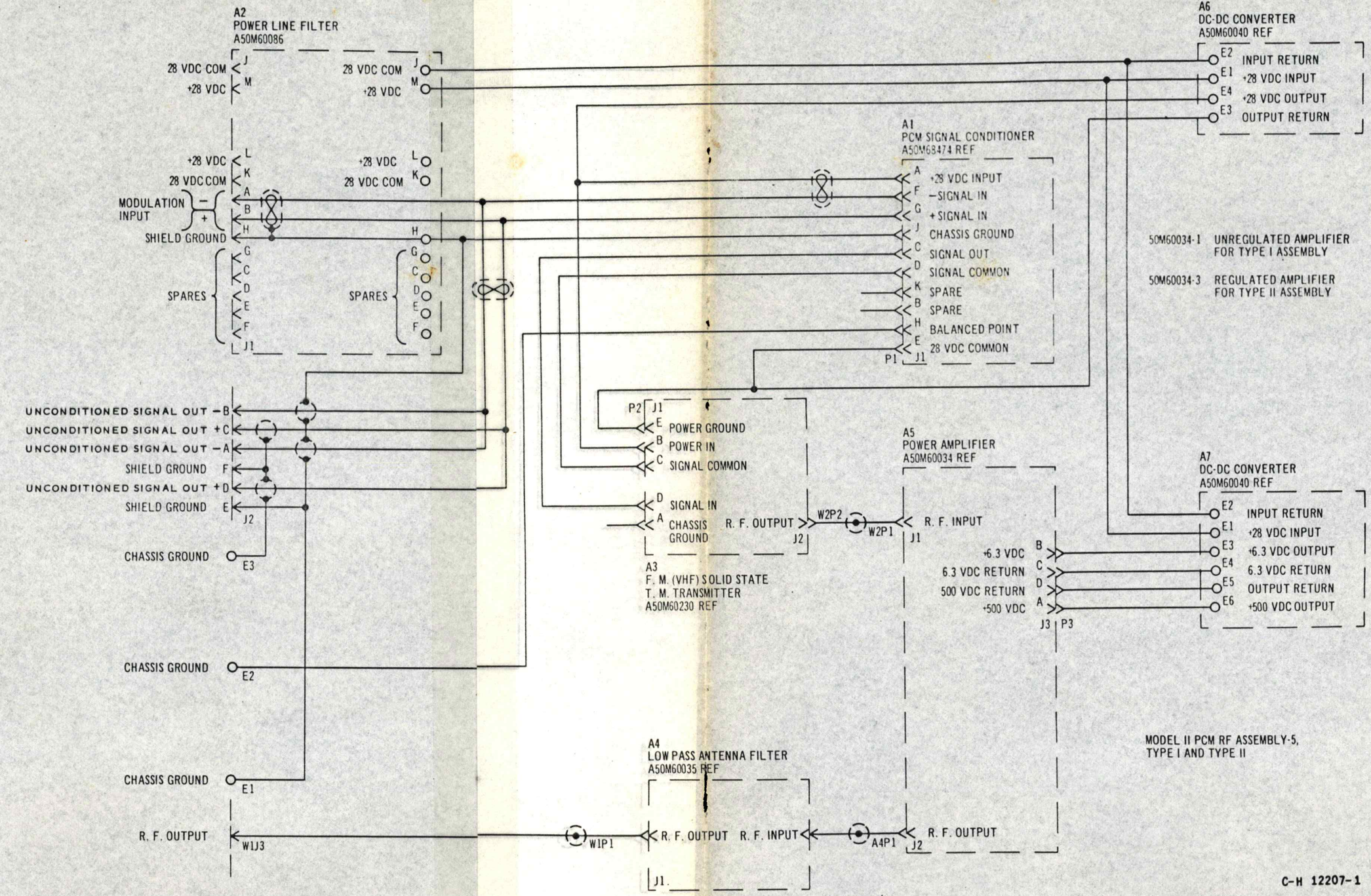
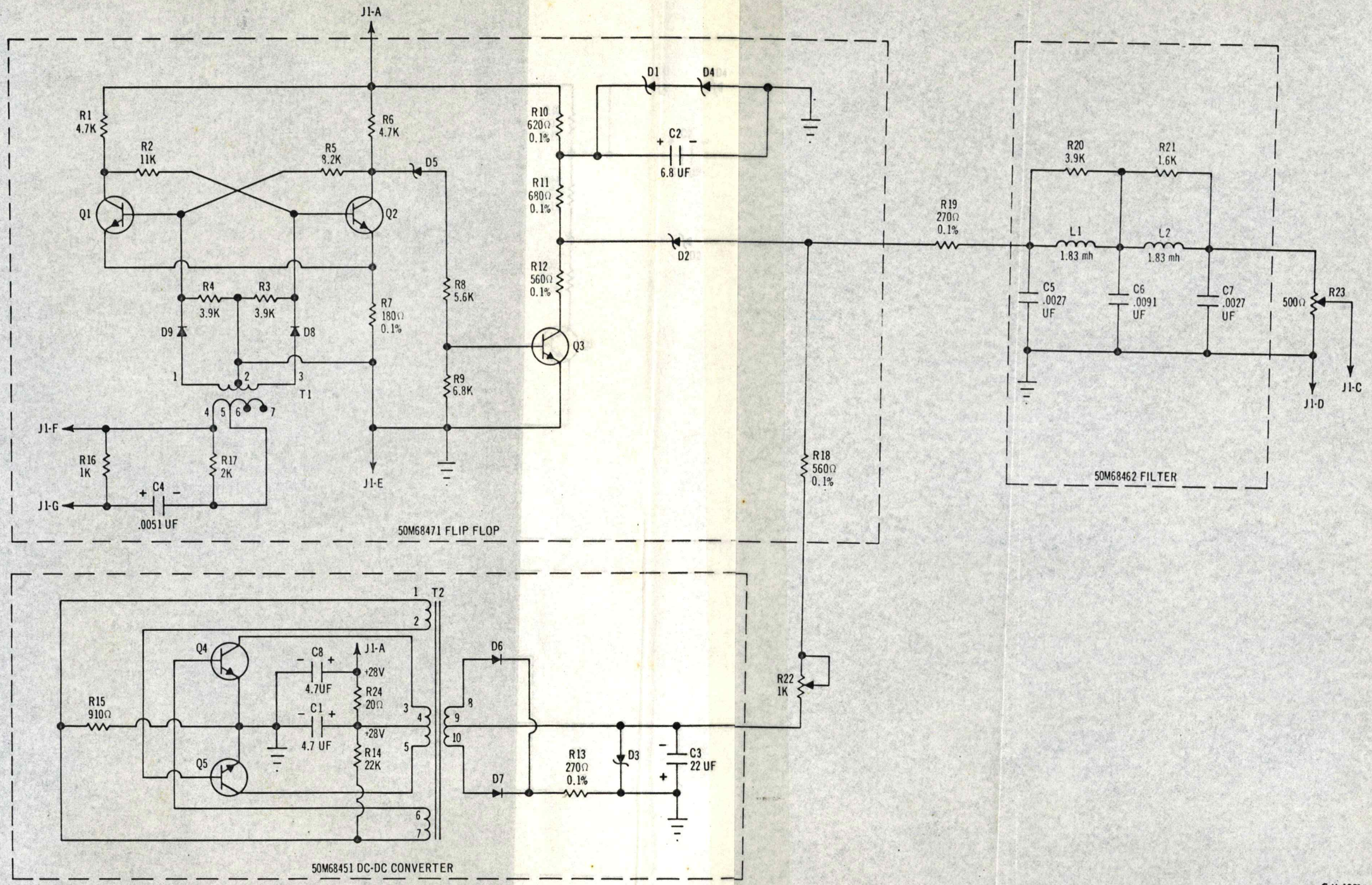


FIGURE B1-8. MODEL II PCM RF ASSEMBLY-5, TYPE I AND TYPE II



C-H 12204

FIGURE B2-1. PCM SIGNAL CONDITIONER, ELECTRICAL SCHEMATIC (50M68475-1)

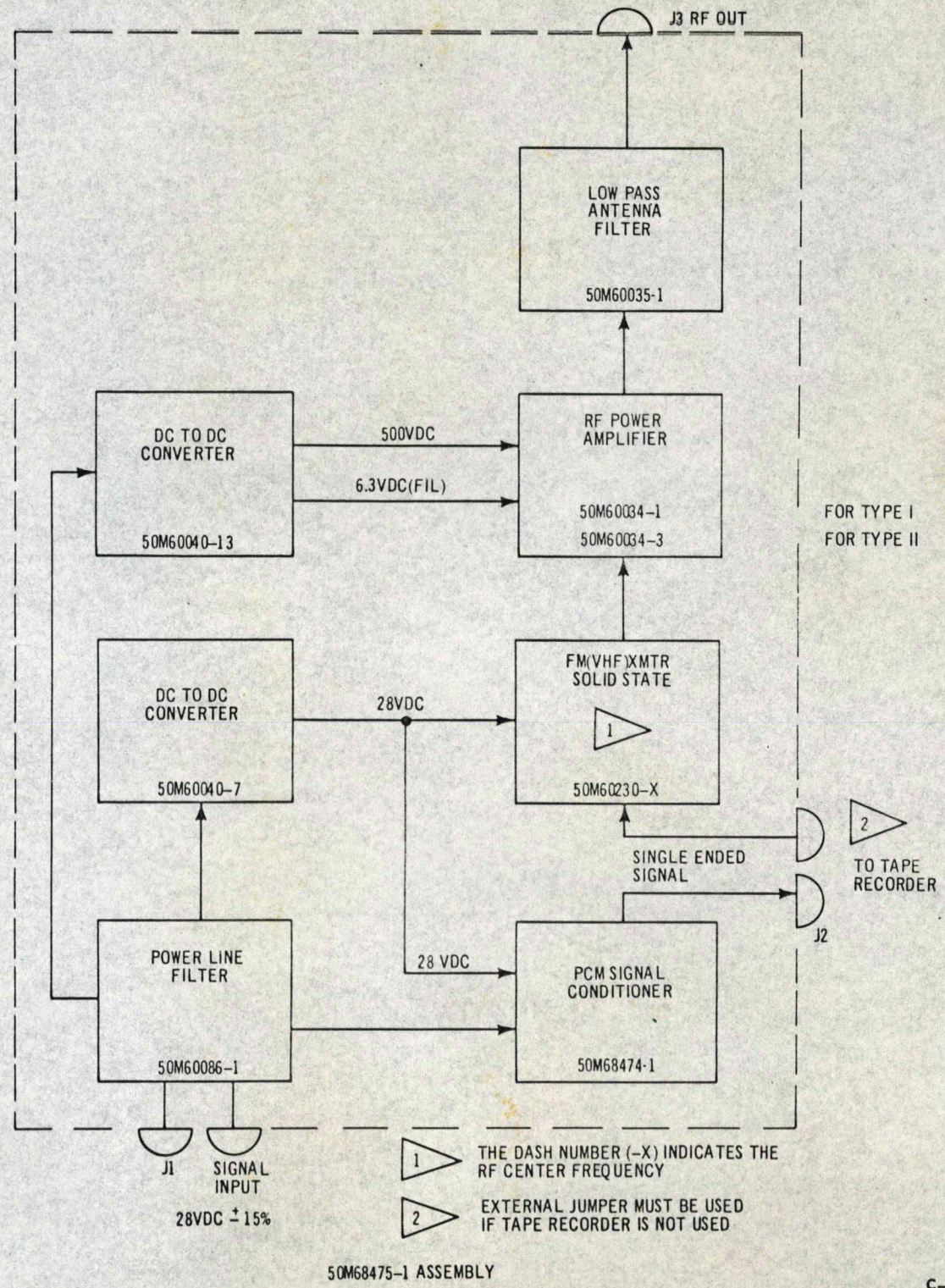


FIGURE B2-2. 50M68475-1 ASSEMBLY

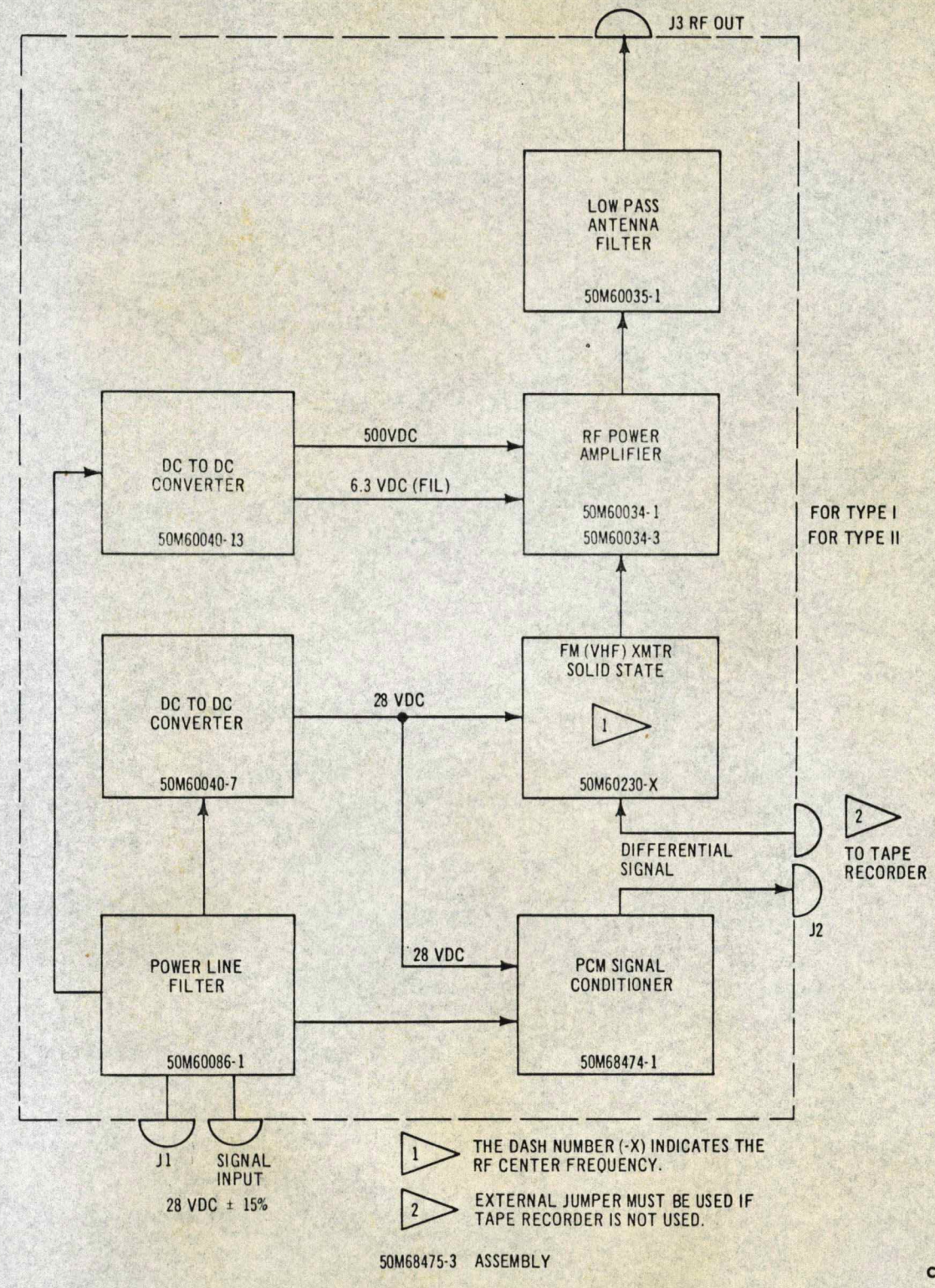
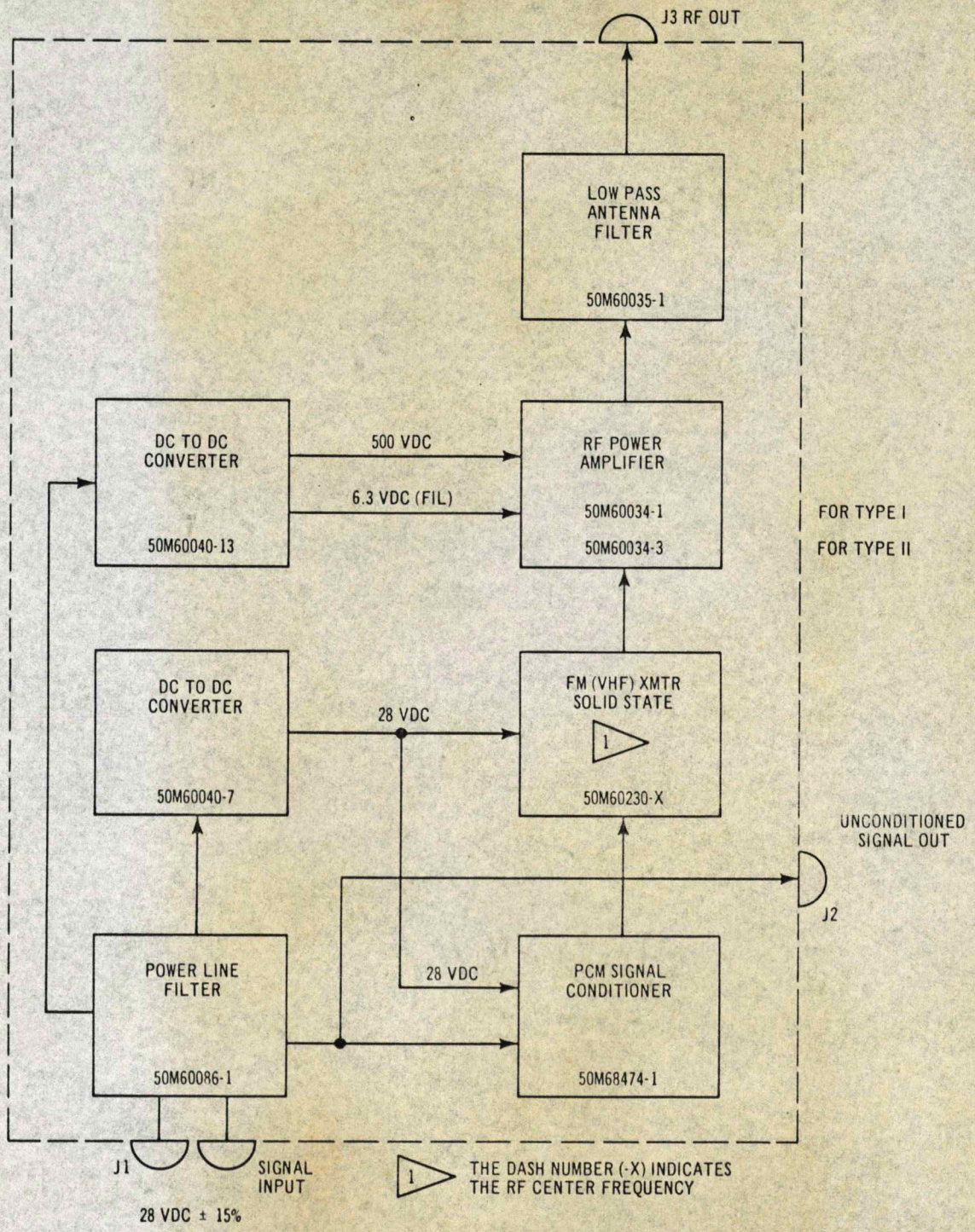


FIGURE B2-3. 50M68475-3 ASSEMBLY



50M68475-5 ASSEMBLY

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FIGURE B2-4. 50M68475-5 ASSEMBLY