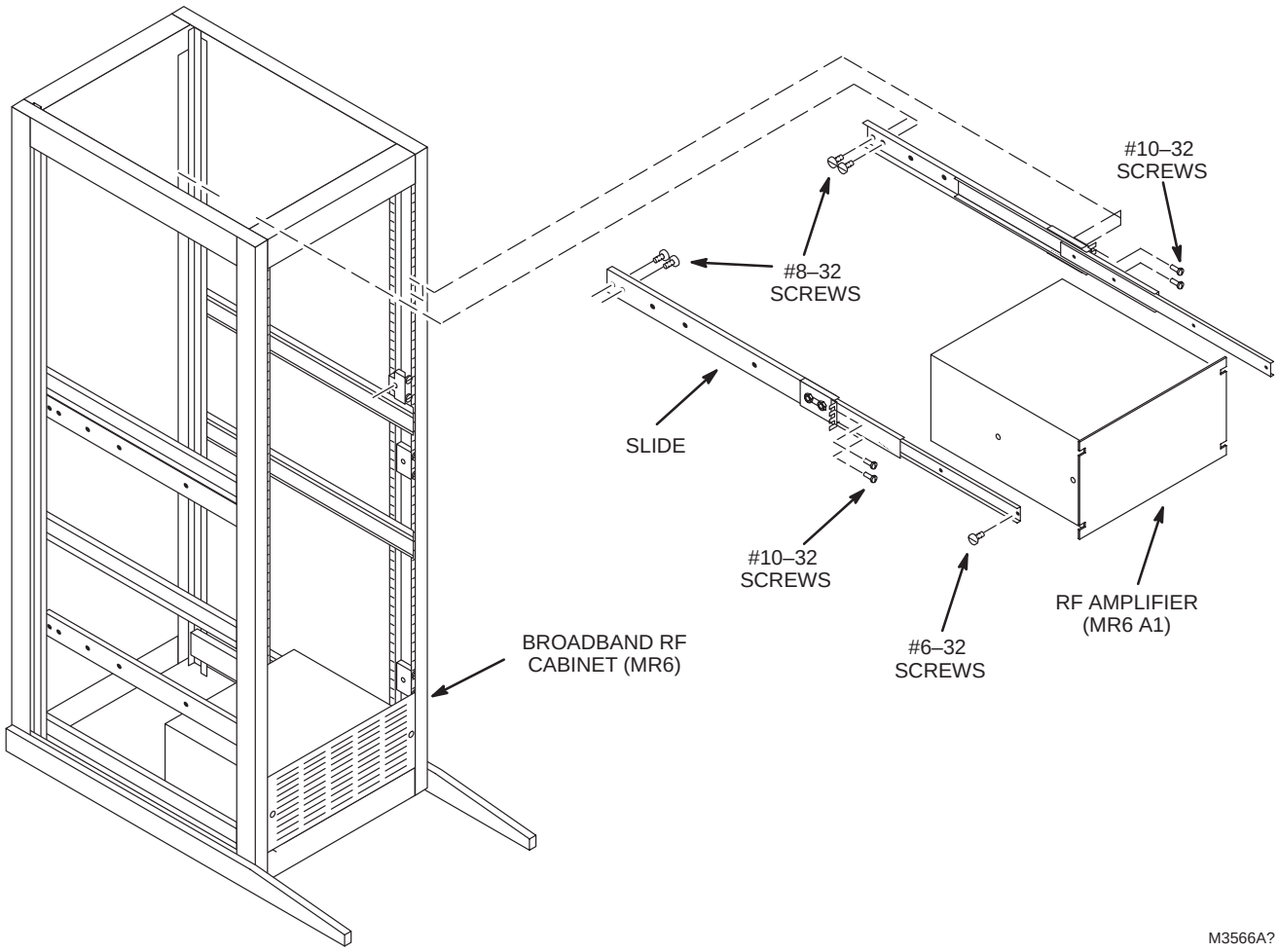
SECTION 1 – BROADBAND RF CABINET (MR6)

Note
This Section applies to M1040FF and M1040FK.

1–1 RF AMPLIFIER REPLACEMENT

Remove RF Amplifier (A1) from BroadBand RF Cabinet (MR6) as follows:

1. Disconnect power to cabinet.
2. Tag power source to leave switch/circuit breaker in off position due to “cabinet in service”.
3. Remove power plug of amplifier from connector J12 of power module.
4. Tag and remove connectors J2, J3, and J7 from rear panel of amplifier.
5. Slide amplifier out from cabinet. Refer to Illustration 1–1.
6. The Power line–cord is part of the Amplifier and **must be retained** with it. See NOTE.
7. Remove four #6–32 screws and amplifier from two slide assemblies. Refer to Illustration 1–1.



RF AMPLIFIER REMOVAL/INSTALLATION
ILLUSTRATION 1–1

1–1 RF AMPLIFIER REPLACEMENT (Continued)

Repair RF Amplifier of BroadBand RF Cabinet (MR6) as follows:

1. Refer to ENI Amplifier Service Manual, Model MRI–2000, for repair procedures.
2. Refer to ANALOGIC Amplifier Service Manual, Model AN8063G, for repair procedures.

Note

The **power line–cord** is part of the BroadBand RF Amplifier and **must be retained** with the BroadBand RF Amplifier. These power line–cords are **not always compatible** with other BroadBand RF Amplifiers and the cost of the power line–cord is outrageous from the vendor.

Note

The BroadBand RF Amplifier should not have any problems fitting into the stand–alone MR6 BroadBand Cabinet. **Do not remove any parts** or filters from these amplifiers as the MR6 Cabinet does not contain a filtered front cover. **All parts must be retained/reinstalled when exchanging/replacing these Amplifiers or a charge will be incurred.**

Install RF Amplifier (A1) into BroadBand RF Cabinet (MR6) as follows:

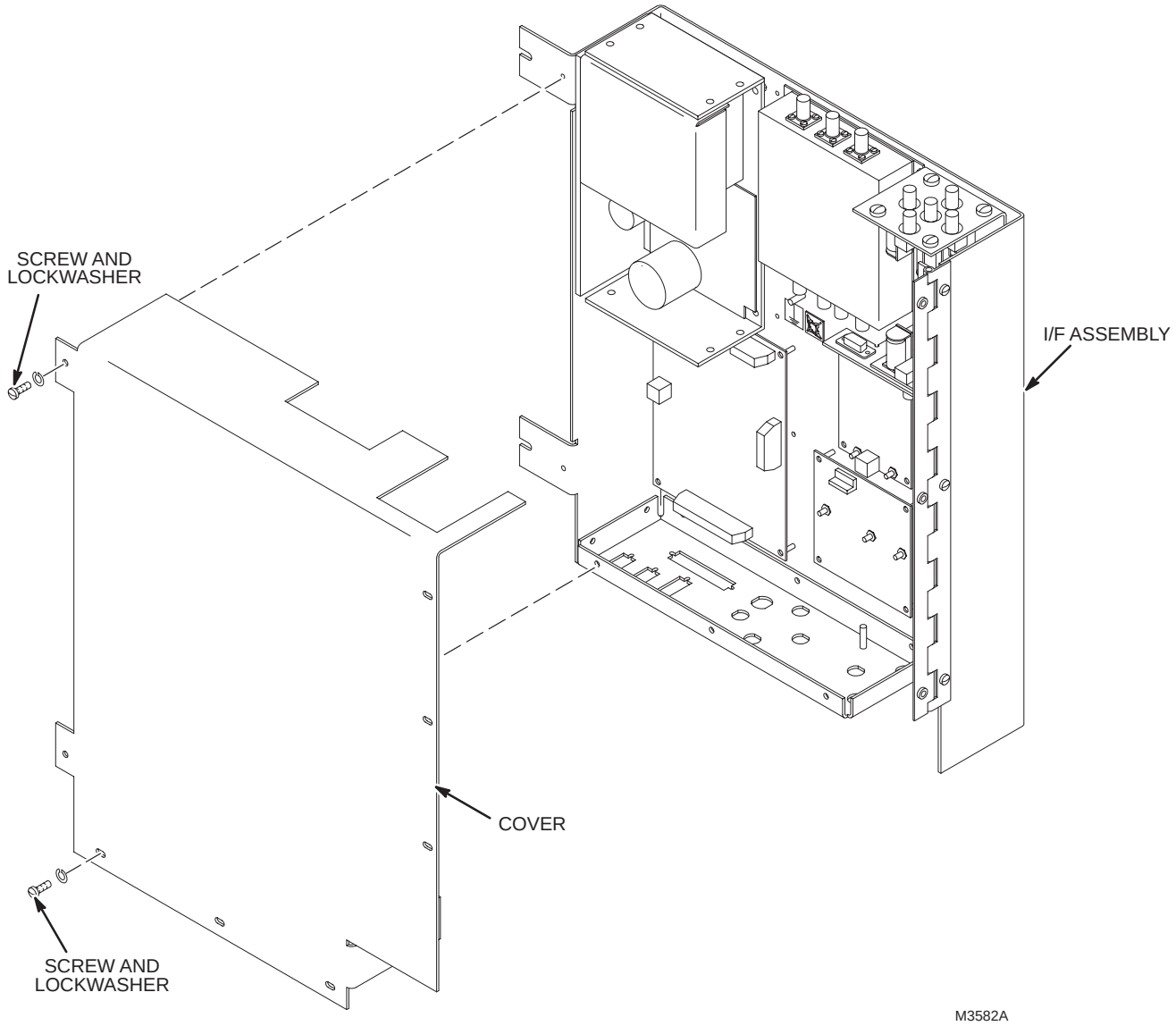
The replacement Amplifier may be a different brand or model than the one you removed.

3. Install amplifier and four #6–32 screws to two slide assemblies. Refer to Illustration 1–1.
4. Slide amplifier into cabinet. Refer to Illustration 1–1.
5. Install connectors J2, J3, and J7 onto rear panel of amplifier.
6. Install the power line–cord at the rear panel of amplifier. Connect the other end to the Power Distribution Box.
7. Install the power line–cord at the rear panel of amplifier. Connect the other end to the Power Distribution Box.
8. Verify the rear circuit breaker of the amplifier is turned to the on position. Insure the front panel does not also contain a power switch—possibly hidden.
9. Turn switch/circuit breaker to the on position and remove “cabinet in service” tag.
10. Connect power to cabinet.

1–2 I/F COVER REMOVAL

Remove cover from I/F Assembly (A2) as follows:

1. Disconnect power to cabinet.
2. Tag power source to leave switch/circuit breaker in off position due to “cabinet in service”.
3. Remove power plug of amplifier from connector J12 of power module.
4. Tag and remove connectors J6 and J12 from I/F Assembly.
5. Remove four pan head screws and cover from I/F Assembly. Refer to Illustration 1–2.

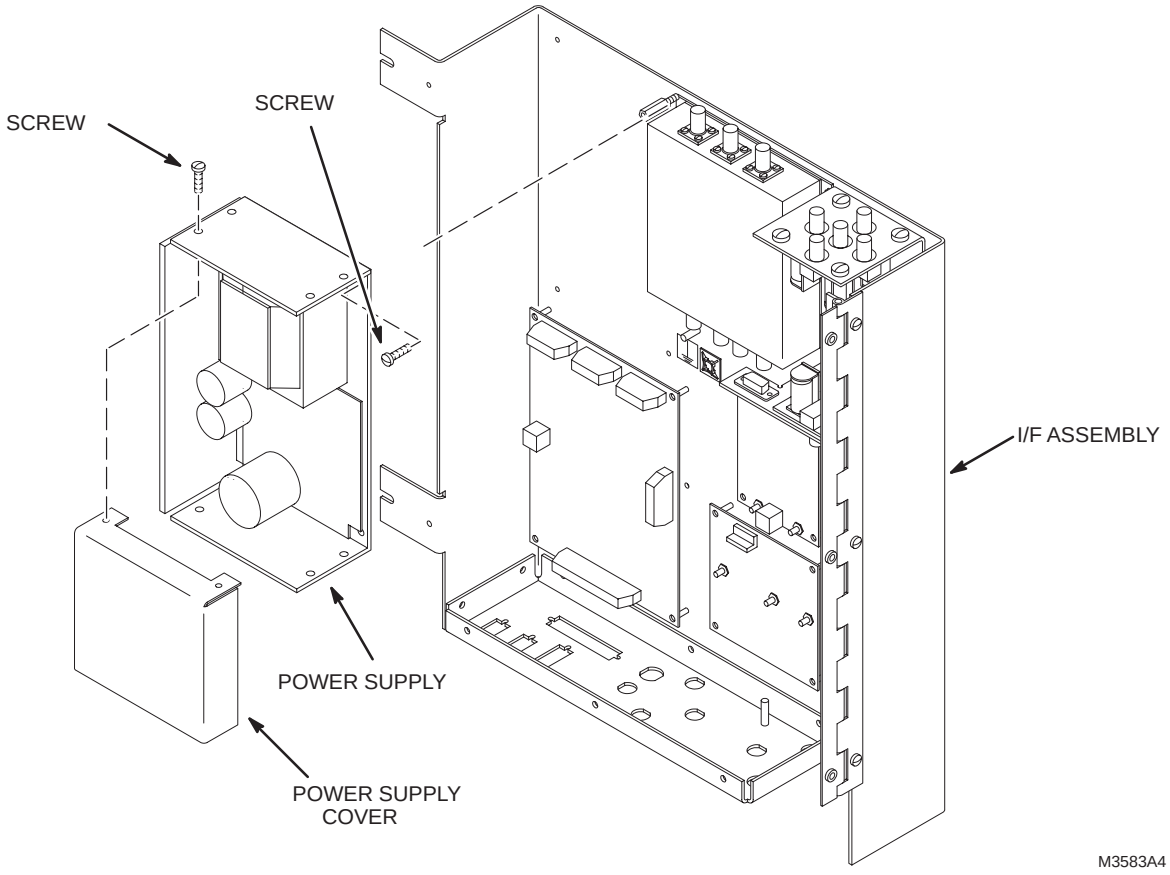


INTERFACE COVER REMOVAL/INSTALLATION
ILLUSTRATION 1–2

1–3 POWER SUPPLY REPLACEMENT

Remove Power Supply (A1) from I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Tag and unsolder connections +12V, COM, –12V, +5V, and COM from circuit board.
3. Tag and unsolder connections 1 and 4 from transformer.
4. Remove two pan head screws and cover from power supply. Refer to Illustration 1–3.
5. Remove four pan head screws and power supply from chassis. Refer to Illustration 1–3.



POWER SUPPLY REMOVAL/INSTALLATION
ILLUSTRATION 1–3

1–3 POWER SUPPLY REPLACEMENT (Continued)

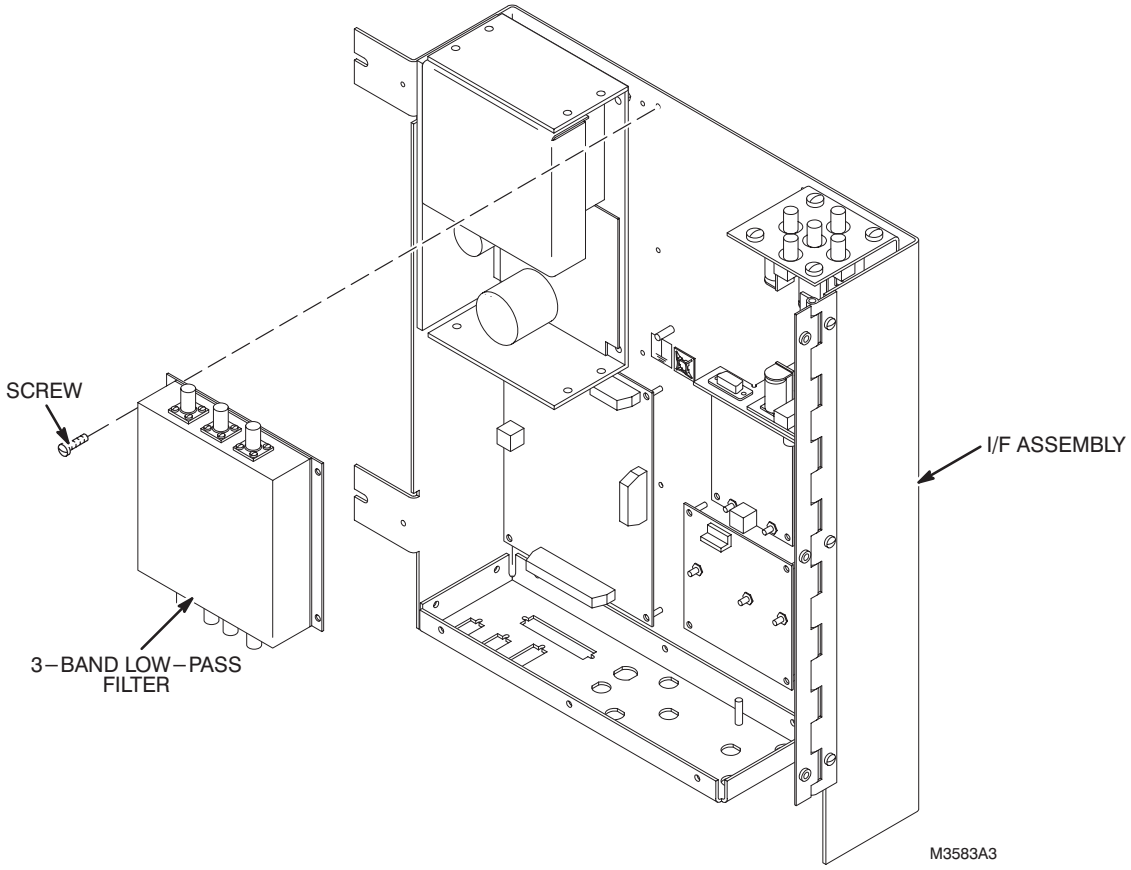
Install Power Supply (A1) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Install power supply and four pan head screws onto chassis. Refer to Illustration 1–3. Tighten screws.
3. Install cover and two pan head screws onto power supply. Refer to Illustration 1–3.
4. Solder connections 1 and 4 onto transformer.
5. Solder connections +12V, COM, –12V, +5V, and COM onto circuit board.

1–4 THREE–BAND LOW–PASS FILTER REPLACEMENT

Remove the 3–Band Low–Pass Filter (A2) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Tag and disconnect connectors J1, J2, J3, J4, J5, J6, and J7 from 3–Band Low–Pass Filter.
3. Remove four pan head screws and 3–Band Low–Pass Filter from cabinet. Refer to Illustration 1–4.



3–BAND LOW–PASS FILTER REMOVAL/INSTALLATION
ILLUSTRATION 1–4

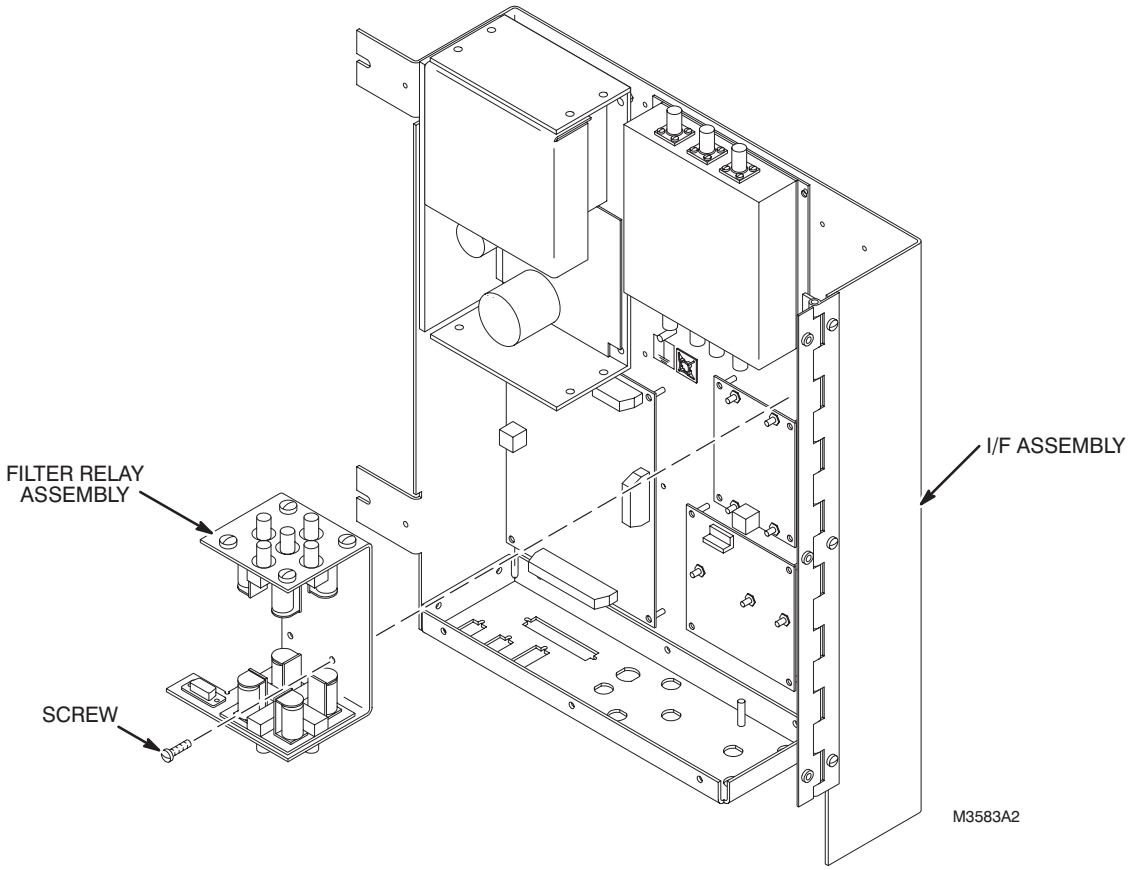
Install 3–Band Low–Pass Filter (A2) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Install 3–Band Low–Pass Filter and four pan head screws in cabinet. Refer to Illustration 1–4. Tighten screws.
3. Install connectors J1, J2, J3, J4, J5, J6, and J7 to 3–Band Low–Pass Filter.

1–5 FILTER RELAY ASSEMBLY REPLACEMENT

Remove Filter Relay Assembly (A3) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Tag and disconnect connectors J1, J3, J4, J5, J6, J7, and J8.
3. Remove two screws from connector J9, tag, and disconnect connector.
4. Remove four pan head screws from Filter Relay Assembly. Refer to Illustration 1–5.
5. Remove connector J2 from filter relay assembly and lift Filter Relay Assembly from chassis.



FILTER RELAY ASSEMBLY REMOVAL/INSTALLATION
ILLUSTRATION 1–5

1–5 FILTER RELAY ASSEMBLY REPLACEMENT (Continued)

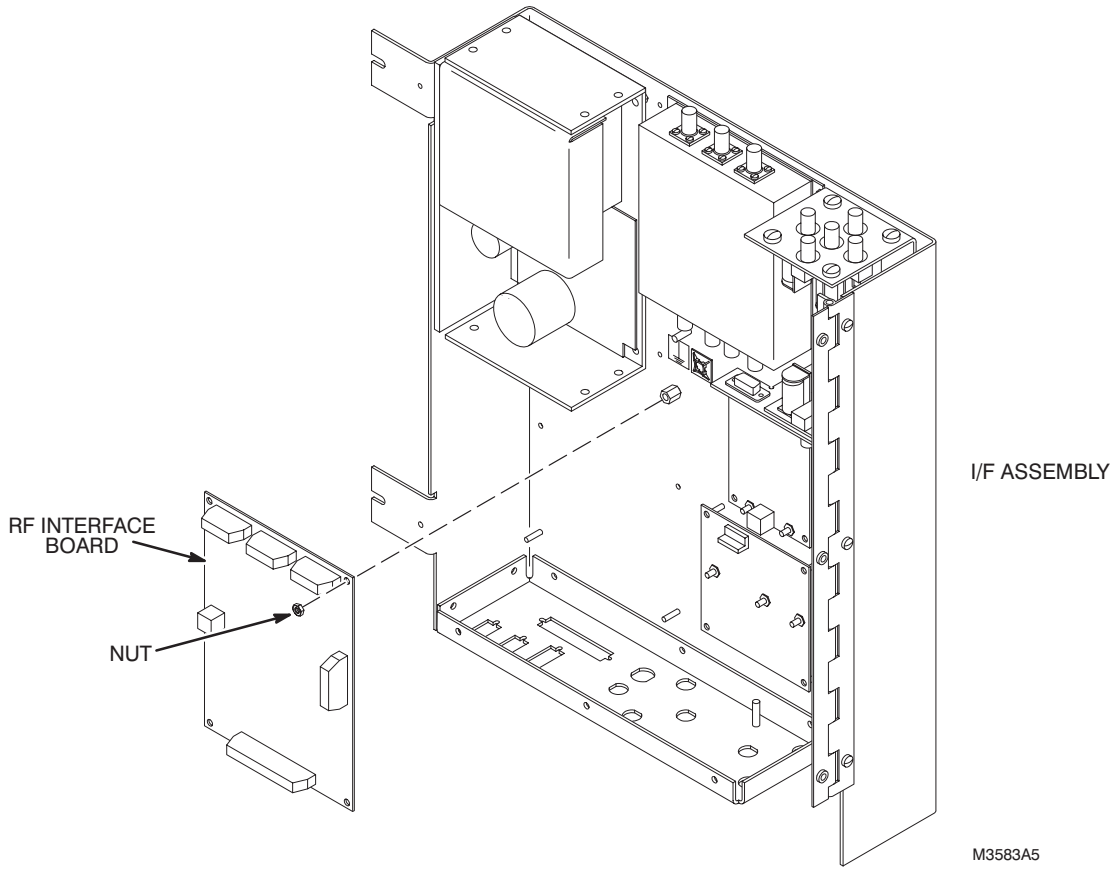
Install Filter Relay Assembly (A3) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Install connector J2 onto filter relay assembly and set filter relay assembly onto chassis.
3. Install four pan head screws onto filter relay assembly. Refer to Illustration 1–5.
4. Install connector J9 and secure with two screws.
5. Install connectors J1, J3, J4, J5, J6, J7, J8, and J9.

1–6 RF INTERFACE BOARD REPLACEMENT

Remove RF Interface Board (A4) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Tag and disconnect connectors J1, J2, J3, J4, J5, and J6 from RF Interface Board.
3. Remove four nuts and RF Interface Board from studs in cabinet. Refer to Illustration 1–6.

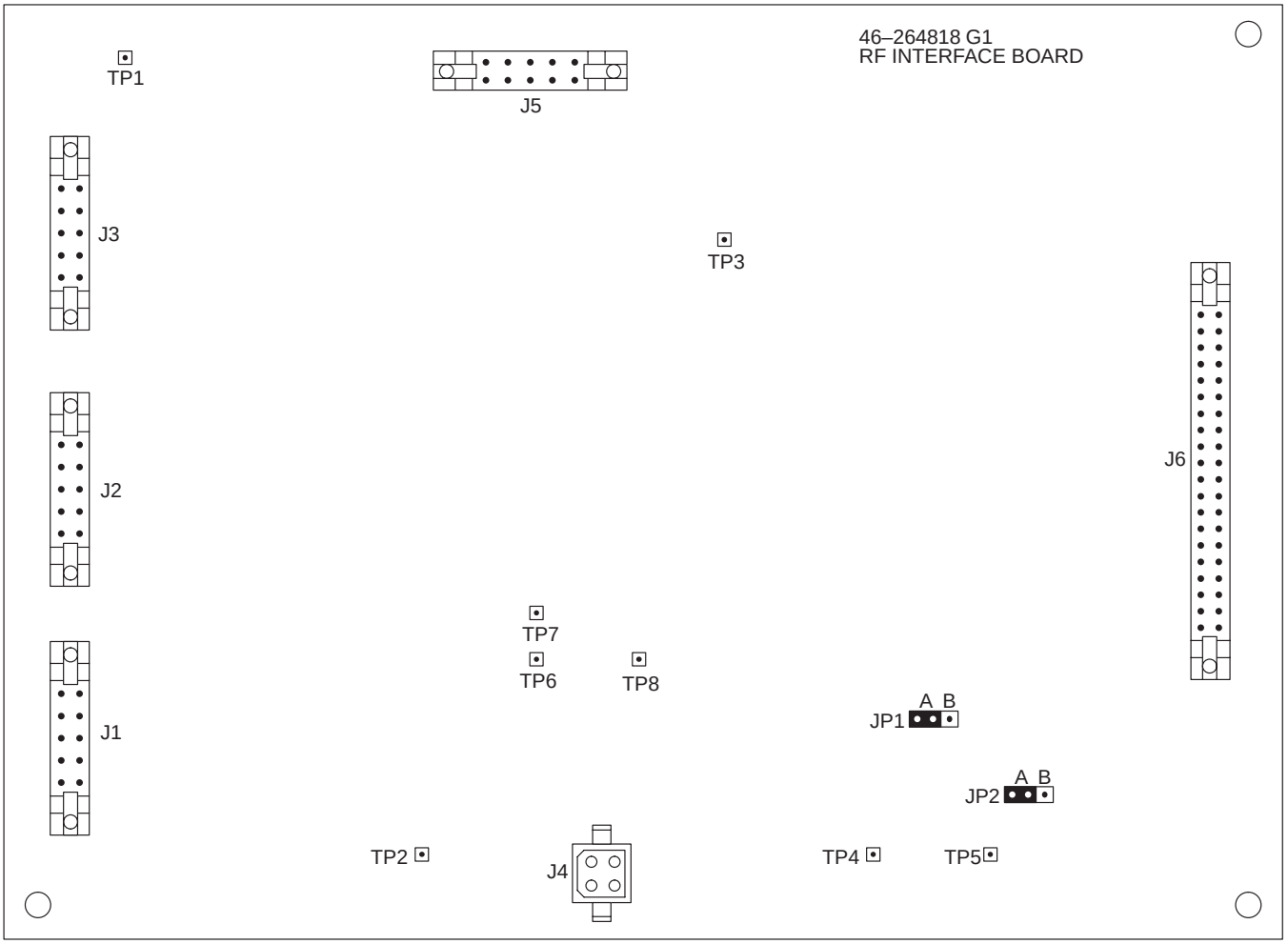


RF INTERFACE BOARD REMOVAL/INSTALLATION
ILLUSTRATION 1–6

1–6 RF INTERFACE BOARD REPLACEMENT (Continued)

Install RF Interface Board (A4) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Install RF Interface Board and four nuts onto studs in cabinet. Refer to Illustration 1–6. Tighten nuts.
3. Install connectors J1, J2, J3, J4, J5, and J6 to RF Interface Board.



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RF INTERFACE BOARD (MR6 A2 A4)
ILLUSTRATION 1–7

1–6 RF INTERFACE BOARD REPLACEMENT (Continued)

TABLE 1–1
RF I/F BOARD POWER SUPPLY REQUIREMENTS

NOMINAL VOLTAGE	TOLERANCE	RIPPLE	CURRENT (max)
+5VDC	+/– 5%	5mV p–p	1.5 amps
+15VDC	+/– 5%	5mV p–p	300 milliamps

TABLE 1–2
RF I/F BOARD TEST POINT IDENTIFICATIONS

TEST POINT NUMBER	TYPE	FUNCTION
TP1	TTL	Power on reset.
TP2	+15 VDC	Power supply.
TP3	Pulsed	Amplifier gating signal.
TP4	+5 VDC	Power supply.
TP5	0 VDC	Logic ground.
TP6	Open Collector	Relay return path.
TP7	Open Collector	Relay return path.
TP8	Open Collector	Relay return path.

TABLE 1–3
RF I/F BOARD JUMPER POSITIONS

JUMPER NUMBER	POSITION	FUNCTION
JP1	**A**	**Strb1 from CPS is used for address decoding.**
	B	**Strb0 from CPS is used for address decoding.**
JP2	**A**	**Logic ground pin from CPS gets connected to board logic ground directly.**
	B	**Logic ground pin from CPS gets connected to board logic ground via 100 ohm resistor.**
NOTE: After test of board is complete, leave jumpers in position shonwn in schematic.		

1–7 SENSOR DRIVER BOARD REPLACEMENT (OBSOLETE)

Note

FOR M1040FF: The Sensor Driver Board was removed by FMI 60420, SPECTRO POWER MONITOR UPGRADE (FOR PRE 5.4 PRODUCTION SYSTEMS, M1040FF). If Sensor Driver Board is present in the system then FMI 60420 needs to be performed on the system.
FOR M1040FK: The Sensor Driver Board may be present but is not connected or used.

1–8 LINE SENSOR REPLACEMENT (OBSOLETE)

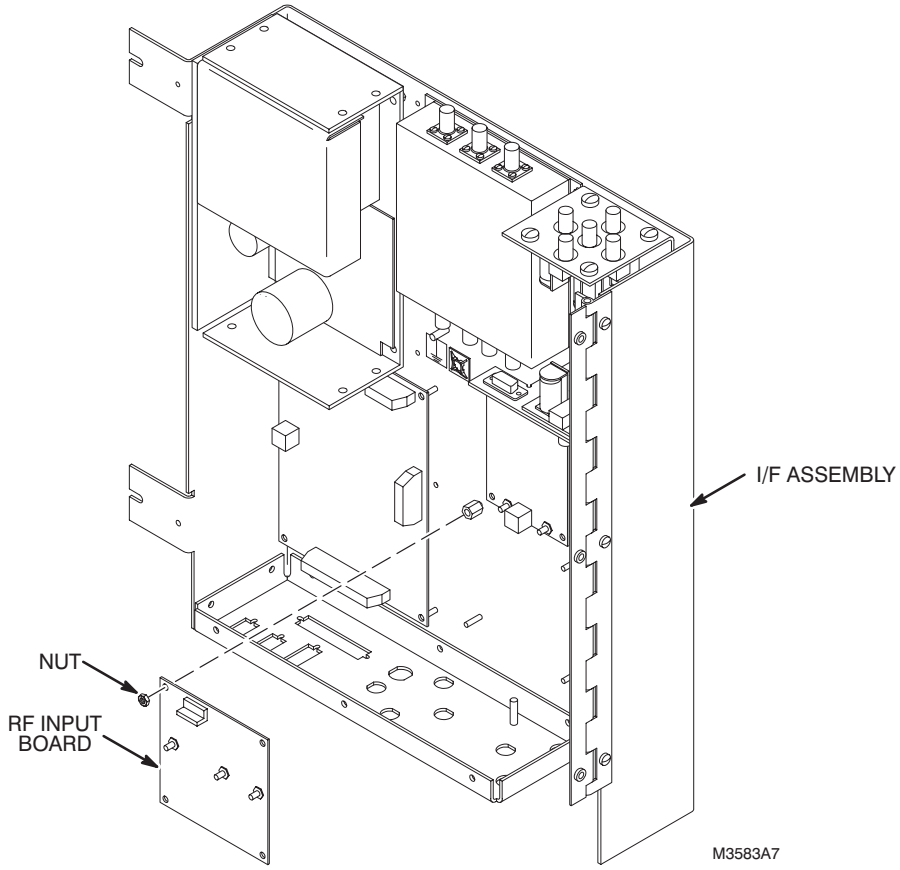
Note

FOR M1040FF: The 50 Ohm Line Sensor Housing was removed by FMI 60420, SPECTRO POWER MONITOR UPGRADE (FOR PRE 5.4 PRODUCTION SYSTEMS, M1040FF). If Line Sensor is present in the system then FMI 60420 needs to be performed on the system. A Spectro Directional Coupler will be added in the Line Sensor's place.
FOR M1040FK: The 50 Ohm Line Sensor Housing may be present but is not used for monitoring power.

1–9 RF INPUT BOARD REPLACEMENT

Remove RF Input Board (A7) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Tag and disconnect connectors J1, J2, J3, and J4 from RF Input Board.
3. Remove four nuts and RF Input Board from studs in cabinet. Refer to Illustration 1–8.

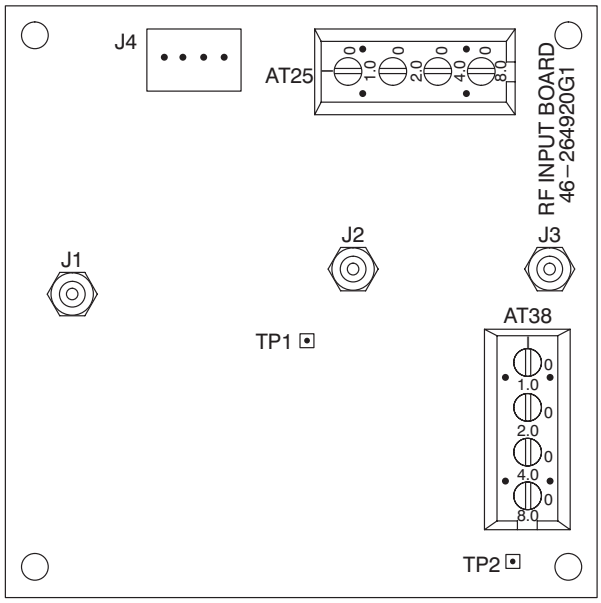


RF INPUT BOARD REMOVAL/INSTALLATION
ILLUSTRATION 1–8

Install RF Input Board (A7) of I/F Assembly as follows:

1. Put on a grounded wrist band.
2. Install RF Input Board and four nuts onto studs in cabinet. Refer to Illustration 1–8. Tighten nuts.
3. Connect connectors J1, J2, J3, and J4 to RF Input Board.

1–9 RF INPUT BOARD REPLACEMENT (Continued)



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RF INPUT BOARD (MR6 A2 A7)
ILLUSTRATION 1–9

TABLE 1–4
RF INPUT BOARD POWER SUPPLY REQUIREMENTS

NOMINAL VOLTAGE	TOLERANCE	RIPPLE	CURRENT (max)
+15VDC	+/– 5%	5mV p–p	300 milliamps

TABLE 1–5
RF INPUT BOARD TEST POINT IDENTIFICATIONS

TEST POINT NUMBER	TYPE	FUNCTION
TP1	+ 15 VDC	Power supply.
TP2	Ground	Signal common.

1–10 I/F COVER INSTALLATION

Install cover onto I/F Assembly (A2) as follows:

1. Put on a grounded wrist band.
2. Install cover and four pan head screws onto I/F Assembly. Refer to Illustration 1–2.
3. Install connectors J6 and J12 onto I/F Assembly.
4. Install power plug of amplifier into connector J12 of power module.
5. Remove “cabinet in service” tag from switch/circuit breaker.
6. Connect power to cabinet.

SECTION 2 – RF CABINET (MR1)

Note
This Section applies to M1040FF and M1040FK.

2–1 POWER MONITOR I/F BOARD REPLACEMENT (OBSOLETE)

Note
This Subsection applies to M1040FF.

Note
The Power Monitor I/F Board was removed by FMI 60420, SPECTRO POWER MONITOR UPGRADE (FOR PRE 5.4 PRODUCTION SYSTEMS, M1040FF). If the Power Monitor I/F Board is present in the system then FMI 60420 needs to be performed on the system.

2–2 ANALOG PROCESSOR BOARD REPLACEMENT

Note
This Subsection applies to M1040FK **only**.

Refer to *Direction 15401, Signa Advantage 1.5T, 1.0T, & 0.5T Subsystems,* Volume 2, TPS/RF: Replacement/Maintenance tab, Section 30, ANALOG PROCESSOR BOARD.

SECTION 3 – SYSTEM CABINET (MR2)

Note
This Section applies to M1040FF and M1040FK.

3–1 BROADBAND RECEIVER MODULE REPLACEMENT

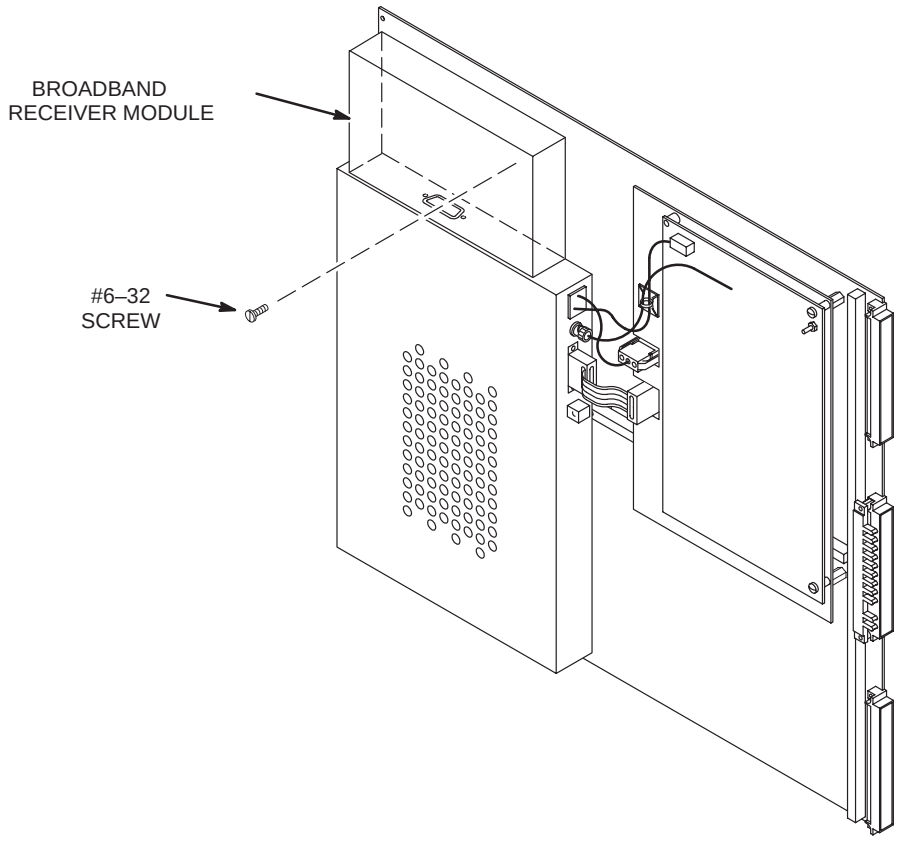
Remove BroadBand Receiver Module (A3) as follows:

1. Make sure power to Gradient (MR3) and System Cabinet (MR2) have been disconnected.
2. Put on a grounded wrist band.
3. Tag and simultaneously disconnect connector J12 from Receiver Board and connector J14 from Exciter Board.
4. Remove two screws securing Receiver Board to cabinet.
5. Use ejector clips to push Receiver Board out from connector at rear of chassis.
6. Remove Receiver Board out from chassis.
7. Put Receiver Board in a static free bag.
8. Put static free bag with Receiver Board onto a work bench.
9. Make sure grounded wrist band is on.
10. Remove Receiver Board from static free bag.
11. Remove four #6–32 screws and BroadBand Receiver Module from Receiver Board. Refer to Illustration 3–1.

TABLE 3–1
POWER SUPPLY REQUIREMENTS

NOMINAL VOLTAGE	TOLERANCE	RIPPLE	CURRENT (max)
+ 18VDC	**+3%**	**5% p–p**	**100 milliamp**

3–1 BROADBAND RECEIVER MODULE REPLACEMENT (Continued)



BROADBAND RECEIVER MODULE REMOVAL/INSTALLATION
ILLUSTRATION 3–1

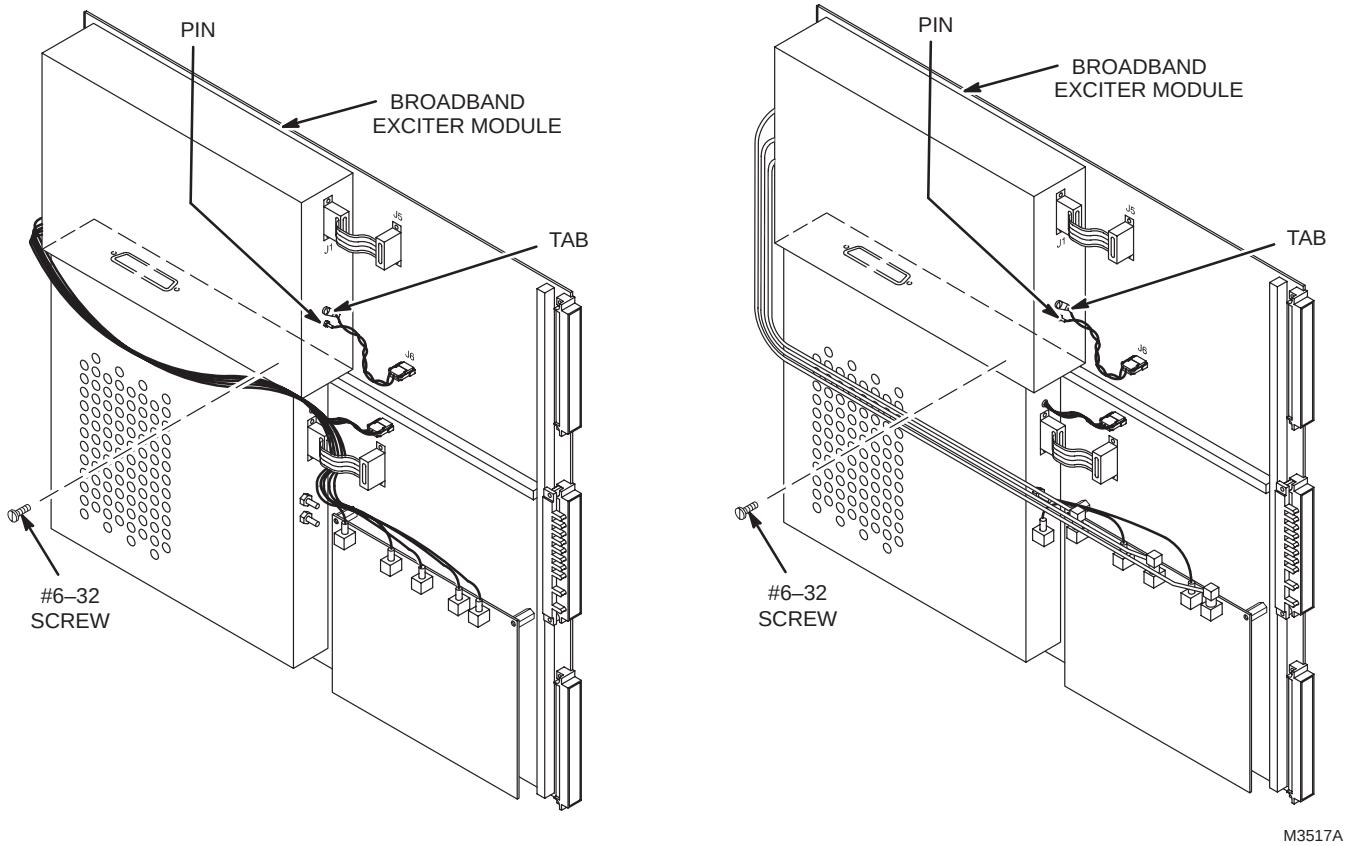
Install Broadband Receiver Module (A3) as follows:

1. Put on a grounded wrist band.
2. Install four #6–32 screws and BroadBand Receiver Module onto Receiver Board. Refer to Illustration 3–1. Tighten screws.
3. Put Receiver Board in a static free bag.
4. Move static free bag with Receiver Board to Systems cabinet.
5. Make sure grounded wrist band is on.
6. Remove Receiver Board from static free bag.
7. Slide Receiver Board into chassis until connector seats firmly at back of chassis.
8. Install two screws to secure Receiver Board to cabinet.
9. Simultaneously install connector J12 onto Receiver Board and connector J14 onto Exciter Board.

3–2 BROADBAND EXCITER MODULE REPLACEMENT

Remove BroadBand Exciter Module (A3) as follows:

1. Make sure power to Systems Cabinet has been disconnected.
2. Put on a grounded wrist band.
3. Tag and simultaneously disconnect connector J12 from Receiver Board and connector J14 from Exciter Board.
4. Remove two screws securing Exciter Board to cabinet.
5. Use ejector clips to push Exciter Board out from connector at rear of chassis.
6. Remove Exciter Board out from chassis.
7. Put Exciter Board in a static free bag.
8. Put static free bag with Exciter Board onto a work bench.
9. Make sure grounded wrist band is on.
10. Remove Exciter Board from static free bag.
11. Tag and disconnect connectors J5 and J6 from Exciter Board. Refer to Illustration 3–2.
12. Remove four pan head screws and BroadBand Exciter Module from Exciter Board. Refer to Illustration 3–2.



BROADBAND EXCITER REMOVAL/INSTALLATION
ILLUSTRATION 3–2

3–2 BROADBAND EXCITER MODULE INSTALLATION (Continued)

Install BroadBand Exciter Module (A3) as follows:

1. Put on a grounded wrist band.
2. Install four pan head screws and Broadband Exciter Module onto Exciter Board. Refer to Illustration 3–2. Tighten screws.
3. Connect connectors J5 and J6 onto Exciter Board. Refer to Illustration 3–2.
4. Put Exciter Board in a static free bag.
5. Move static free bag with Exciter Board to System Cabinet.
6. Make sure grounded wrist band is on.
7. Remove Exciter Board from static free bag.
8. Slide Exciter Board into chassis until connector seats firmly at back of chassis.
9. Install two screws to secure Exciter Board to cabinet.
10. Simultaneously install connector J12 onto Receiver Board and connector J14 onto Exciter Board.
11. Connect power to System Cabinet.

SECTION 4 – POWER DISTRIBUTION UNIT (PDU)

Note
This Section applies to M1040FF and M1040FK.

4–1 BROADBAND RF CONTACTOR (STANDARD PDU ONLY)

Remove Contactor K11 from Power Distribution Unit (PDU) as follows:

FATAL ELECTRIC SHOCK HAZARD!! LETHAL VOLTAGES ARE PRESENT WITHIN THE PDU EVEN IF ALL PDU BREAKERS ARE OFF. TO PREVENT POSSIBLE FATAL ELECTRIC SHOCK, DISCONNECT POWER TO THE PDU BY PERFORMING THE FOLLOWING PROCEDURE.

1. Make sure Signa Software is not running.
2. Press the FULL OFF button on front control panel of PDU.
3. Disconnect power to PDU Cabinet.
4. Tag power source to leave switch/circuit breaker in the off position due to “cabinet in service”.
5. Put on a grounded wrist band.
6. Swing open right front panel.
7. Remove three screws from left front panel.
8. Swing open left front panel.
9. Verify that power to PDU has been disconnected by checking for 0 volts, with respect to ground, on both ends of each fuse located inside the front, left, side of PDU. If power is present, 120 VAC each, find source, disconnect, and tag.
10. Tag and disconnect wires from contactor.
11. Remove three screws, with flat washer and lockwashers, and contactor from PDU.
12. Put contactor K11 in a static free bag.
13. Put static free bag with contactor K11 onto a work bench.

4–1 BROADBAND RF CONTACTOR (STANDARD PDU ONLY) (Continued)

Install Contactor K11 into Power Distribution Unit (PDU) as follows:

1. Put on a grounded wrist band.
2. Remove contactor K11 from static free bag.
3. Install contactor K11 and three screws, with flat washer and lockwashers, into PDU.
4. Install wires into contactor.
5. Swing close left front panel.
6. Install three screws to secure left front panel. Tighten screws.
7. Swing close right front panel.
8. Press the FULL ON button on front control panel of PDU.
9. Connect power to PDU Cabinet.
10. Remove “cabinet in service” tag from power source.
11. Turn on Signa Software.

SECTION 5 – PENETRATION PANEL (PP1)

Note
This Section applies to M1040FF and M1040FK.

5–1 20dB GAIN BLOCK

Remove 20 dB Gain Block (A13) from Penetration Panel (PP1) as follows:

1. Put on a grounded wrist band.
2. Disconnect connector (OUT) of cable (Run 469) from connector (OUT) of 20 dB Gain Block (A13) on outside of Penetration Panel (PP1).
3. Disconnect connector (IN) of cable on connector J79 of Penetration Panel (PP1) from connector (IN) of 20 dB Gain Block (A13).
4. Remove four screws and 20 dB Gain Block from Penetration Panel (PP1).
5. Put 20 dB Gain Block (A13) in a static free bag.
6. Put static free bag with 20 dB Gain Block (A13) onto a work bench.

Install 20 dB Gain Block (A13) onto Penetration Panel (PP1) as follows:

1. Put on a grounded wrist band.
2. Remove 20 dB Gain Block (A13) from static free bag.
3. Install four screws and 20 dB Gain Block (A13) onto Penetration Panel (PP1). Tighten screws.
4. Install connector (IN) of cable on connector J79 of Penetration Panel (PP1) onto connector (IN) of 20 dB Gain Block (A13).
5. Install connector (OUT) of cable (Run 469) onto connector (OUT) of 20 dB Gain Block (A13) on Penetration Panel (PP1).