

MOTOROLA HF-SSB Automatic Antenna Tuners

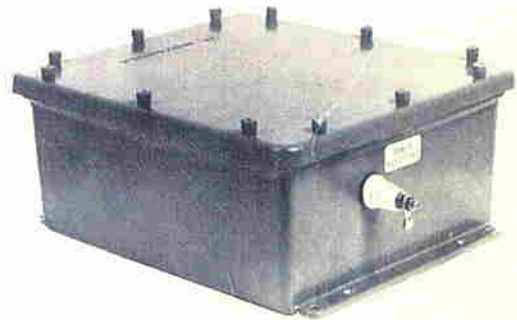
2-18 MHz, 2-30 MHz

Modele T1959B, T1961B, T1962B, F2259A, F2260A



LIGHT/COMPACT

Modele F2261A, F2262A



HEAVY DUTY

Service Manual

68P02926G25-0



MOTOROLA INC.

**Communications
Sector**

MOTOROLA HF-SSB Automatic Antenna Tuners

2-18 MHz, 2-30 MHz



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REFERENCE DIAGRAMS

- Troubleshooting Chart
- Exploded Detail and Parts Lists, 2-18 MHz Tuners
- Printed Circuit Board Detail, 2-18 MHz Tuners
- Schematic Diagrams, 2-18 MHz Tuners
- Printed Circuit Board Detail, 2-30 MHz Tuners
- Schematic Diagram, 2-30 MHz Tuners
- Parts Lists, 2-30 MHz Tuners

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MODEL COMPLEMENTS

T1959B Light Compact Mobile Tuner, 2-18 MHz

TLA1132B Antenna Base Tuner

TKN8123A Cable Kit (17 feet)

TKN8119A Matching Harness

T1961B Light Compact Marine Tuner, 2-18 MHz

TLA1152B Antenna Marine Tuner

T1962B Light Compact Marine Tuner, 2-9 MHz

TLA1162B Antenna Marine Tuner

F2260A Light Compact Mobile Tuner, 2-30 MHz

FLN1667A Antenna Base Tuner

TKN8123A Cable Kit (17 feet)

TKN8119A Matching Harness

F2259A Light Compact Marine Tuner, 2-30 MHz

FLA1632A Antenna Marine Tuner

F2261A* Heavy Duty Marine/Land Base Station Tuner, 2-18 MHz

TLA6102A RF Board

FHN5513A Antenna Tuner Housing

FBN5521A Antenna Tuner Packing

F2262A* Heavy Duty Marine/Land Base Station Tuner, 2-30 MHz

FLA1603A Antenna Tuner

*Cable kit TKN8120B (30 feet) or TKN8121B (100 feet) must be ordered.

KIT BREAKDOWNS

TLA1132B Antenna Base Tuner

TLA1102A Antenna Tuner

FBN5507A Packing

TLA1152B Antenna Marine Tuner

TLA1102A Antenna Tuner

FBN5507A Packing

TLA1102A Antenna Tuner

TLA6102A RF Board

THN6410A Housing

TLA1162B Antenna Marine Tuner

TLA1112A Antenna Tuner

FBN5507A Packing

TLA1112A Antenna Tuner

TLA6112A RF Board

THN6410A Housing

FLN1667A Antenna Tuner

FLN1668A Antenna Tuner

FBN5507A Packing

FLN1668A Antenna Tuner

FLA5502A RF Board

THN6410A Housing

FLA1632A Antenna Tuner

FLA1642A Antenna Tuner

FBN5507A Packing

FLA1642 Antenna Tuner

FLA5502A RF Board

THN6410A Housing

FLA1603A Antenna Tuner
FLA1604A Antenna Tuner
FBN5521A Packing

FLA1604A Antenna Tuner
FLA5502A RF Board
FHN5513A Housing

ACCESSORIES

TKN8120B Cable Kit, 30 feet
TKN8121B Cable Kit, 100 feet

Mobile Light Compact

Specifications

Models	T1959B	F2260A
Frequency range	2-18 MHz	2-30 MHz
Antenna length	8-16 feet (up to 60 feet)	8-16 feet (up to 60 feet)
Lead-in length from antenna to tuner	1 foot (mobile installation)	1 foot (mobile installation)
Cabling	Model TKN8123A, supplied with the tuner	
Ground lead	1" wide copper strap. Length 1 foot or less between tuner and ground system.	
Power requirements	12 V dc at 1.4 A maximum	
Power handling capability	125 W PEP maximum	
Tuning time	One second typical, 2.5 seconds maximum	
Housing	Weather-resistant housing with all stainless-steel hardware. All connections are made externally without removing the cover.	
Ground system requirements	Requires suitable low-resistance ground connection to steel hull or sufficient ground plane.	
Dimensions, H x W x L	14.2" x 3.6" x 9" (36 cm x 9.1 cm x 22.9 cm)	
Weight	5.5 lbs (2.5 kg)	
Accessories	Model TKN8119A Mobile Antenna Matching Harness (supplied with tuner)	

Marine Light Compact

Specifications

Models	T1961B	F2259A	T1962B
Frequency range	2-18 MHz	2-30 MHz	2-9 MHz
Antenna length	23-60 feet	23-60 feet	23-foot whip
Lead-in length from antenna to tuner	No restriction as long as length of lead-in and antenna is less than 60 feet.		3 feet maximum
Cabling	100' maximum. Requires field-assembled and supplied 3-conductor cable (#18 gauge minimum), and coaxial cable and connectors. All control-cable connectors are provided with the radio.		
Ground lead	1" wide copper strap. Length 5' or less between tuner and ground system.		
Power requirements	12 V dc at 1.4 A maximum		
Power handling capability	150 W PEP maximum		
Tuning time	One second typical, 2.5 seconds maximum		
Housing	Weather-resistant housing with all stainless steel hardware. All connections are made externally without removing the cover.		
Ground system requirements	Requires suitable low-resistance ground connection to steel hull or sufficient ground plane.		
Dimensions, H x W x L	14.2" x 3.6" x 9" (36 cm x 9.1 cm x 22.9 cm)		
Weight	5.5 lbs (2.5 kg)		
Accessories (one required for land applications)	Model TKN8120B, 30-foot cable kit Model TKN8121B, 100-foot cable kit		

Heavy Duty Marine/Land-Base Station

Specifications

Models	F2261A	F2262A
Frequency range	2-18 MHz	2-30 MHz
Antenna length	23-60 feet	23-60 feet
Lead-in length from antenna to tuner	No length restriction as long as total length of lead-in and antenna is less than 60 feet	
Cabling	100' maximum. Requires field-assembled and supplied 3-conductor cable (#18 gauge minimum), and coaxial cable and connectors. All control cable connectors are provided with the radio.	
Ground lead	1" wide copper strap. Length 5' or less between tuner and ground system.	
Power requirements	12 V dc at 1.4 A maximum	
Power handling capability	150 W PEP maximum	
Tuning time	One second typical, 2.5 seconds maximum	
Housing	Heavy-duty fiberglass housing per NEMA 4X standards.	
Ground system requirements	Requires suitable low-resistance ground connection to sufficient ground plane.	
Dimensions, H x W x L	6.7" x 13.3" x 15.4" (17 cm x 34 cm x 39 cm)	
Weight	12.1 lbs (5.5 kgs)	
Accessories (one required for land applications)	Model TKN8120B 30-foot cable kit Model TKN8121B 100-foot cable kit	

FOREWORD

1. SCOPE OF MANUAL

This manual is intended for use by experienced technicians familiar with similar equipment. The information it contains is current as of the printing date. Subsequent engineering changes are described in supplementary Instruction Manual Revisions (IMRs) issued as needed. The applicable schematic diagram is updated and the changes are described in a revision column printed either on the diagram or next to the corresponding parts list.

2. SERVICE

The Motorola National Service Organization offers one of the finest nation-wide installation and maintenance programs available to communications equipment users. This organization comprises approximately 900 Motorola Service Stations located throughout the United States. Each Service Station is independently owned and operated, is staffed by one or more trained, FCC-licensed technicians, and is specially selected and authorized by Motorola.

The administrative staff of the National Service Organization consists of national, area and district service managers, and district representatives, all of whom are Motorola employees. Their objective is continually to improve the service to Motorola customers.

Motorola maintenance is available either on a time and material basis, or by means of a service contract. To obtain a service contract, contact your Motorola Service Representative, or write to:

National Service Manager
Motorola Communications and Electronics,
Inc.
1303 E. Algonquin Road
Schaumburg, Illinois 60196

3. MODEL AND KIT IDENTIFICATION

Every Motorola product is specifically identified by an overall model number printed on the nameplate. In addition, the assembly and kits comprising the product usually have kit model numbers stamped on them.

4. REPLACEMENT PARTS ORDERING

Motorola maintains a **factory parts center** and several **area parts centers** located throughout the United States. These factories are equipped to process parts orders, identify part numbers, and otherwise assist the maintenance and repair of Motorola Communications Group products. Addresses of these parts centers are listed on the following page.

Orders for crystals, channel elements, active filters, PROMs, code plugs, and resonant reeds should be sent directly to the **factory parts center**. Orders for all other parts and for instruction manuals should be sent to the nearest **area parts center**.

All orders for replacement parts or equipment information should include the complete identification number. This requirement applies to all components, kits, and chassis. If the component part number is known, the order should include the number of the chassis or kit which uses it, an identification description of the desired component sufficient to identify it.

Orders for crystals and channel elements should specify the crystal or channel element type number, crystal and carrier frequency, and the model number of the chassis using the part.

Orders for active filters, PROMs, code plugs, and "Vibrasender" and "Vibrasponder" resonant reeds, should specify type number and frequency, and should identify the carrier/operator of the communications system utilizing these items.

5. ADDRESSES

5.1 AREA PARTS CENTERS

5.1.1 U.S. Orders

Western Area Parts
1170 Chess Drive, Foster City
San Mateo, California 94404
Telephone: 415-349-3111
TWX: 910-375-3877

Midwest Area Parts
1313 E. Algonquin Road
Schaumburg, Illinois 60196
Telephone: 312-576-7322
TWX: 910-693-0869

Midatlantic Area Parts
7230 Parkway Drive
Hanover, Maryland 20176
Telephone: 301-796-8600
TWX: 710-862-1941

East Central Area Parts
12995 Snow Road
Parma, Ohio 44130
Telephone: 216-267-2210
TWX: 810-421-8845

Eastern Area Parts
85 Harristown Road
Glen Rock, New Jersey 07452
Telephone: 201-447-4000
TWX: 710-988-5602

Pacific Southwestern Area Parts
P.O. Box 85036
San Diego, California 92138
Telephone: 714-578-2222
TWX: 910-335-1634

Gulf States Area Parts
8550 Katy Freeway, Suite 128
Houston, Texas 77024
Telephone: 713-932-8955

Southwestern Area Parts
P.O. Box 34290
3320 Belt Line Road
Dallas, Texas 75234
Telephone: 214-241-2151
TWX: 910-860-5505

Southeastern Area Parts
P.O. Box 368
Decatur, Georgia 30031
Telephone: 504-981-9800
TWX: 810-766-0876

5.1.2 Canadian Orders

Motorola Ltd.
National Parts Department
3125 Steeles Avenue East
Willowdale, Ontario M2H 2H6
Telephone: 416-499-1441
TWX: 610-492-2713
Telex: 065-25191

5.1.3 All Other Countries

Motorola, Inc., or
Motorola Americas, Inc.
International Parts Dept.
1313 E. Algonquin Road
Schaumburg, Illinois 60196
U.S.A.
Telephone: 312-576-6492
TWX: 910-693-0869
Telex: 722443 or 722424
Cable: MOTOL PARTS

5.2 FACTORY PARTS CENTER

5.2.1 Mail Orders

Motorola, Inc.
Component Products Sales and Service
P.O. Box 66191
O'Hare International Airport
Chicago, Illinois 60666

5.2.2 Other Correspondence

Motorola, Inc.
Component Products Sales and Service
2553 N. Edgington Street
Franklin Park, Illinois 60131

5.3 GENERAL OFFICES

Motorola Communications and Electronics
Inc.
Communications Group Parts Dept.
1313 E. Algonquin Road
Schaumburg, Illinois 60196
Telephone: 312-576-3900

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MOTOROLA INC.

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MOTOROLA HF-SSB Automatic Antenna Tuners

2-18 MHz, 2-30 MHz

1. DESCRIPTION

1.1 GENERAL

Motorola HF-SSB automatic antenna tuners are antenna matching networks rated at 125 or 150 watts peak envelope power (PEP). Selection of the network components for antenna matching is performed by a microprocessor-based circuit that monitors antenna conditions each time that a channel is changed. The entire tuning process usually takes less than one second. Microprocessor control eliminates the need for programming, preset adjustments, manual tuning, or manual adjustments during installation or operation.

The automatic antenna tuner can accommodate any number of channels automatically. New channels can be added at any time without adjusting the tuner.

1.2 MODELS

Automatic antenna tuner models are available in two frequency ranges, 2-18 MHz and 2-30 MHz, as shown in the table below.

Frequency Range	Models
2-18 MHz	T1959B, T1961B, F2261A
2-30 MHz	F2260A, F2259A, F2262A

These models match the impedance of an end-fed antenna (23- to 35-foot vertical whip or 23- to 60-foot random length wire) into a nominal 50-ohm impedance source with a frequency range from 2-18 MHz or 2-30 MHz.

Models T1959B and T1961B (2-18 MHz) or F2260A and F2259A respectively (2-30 MHz) differ only in supplied kits. Models T1959B and F2260A are supplied with a cable kit, intended for land mobile applications, and can tune mobile antennas 8 feet high or longer. Models T1961B and F2259A are intended for marine use and the cables are assembled in the field. A special control cable connector kit, TRN4423A, is supplied with the TRITON marine radio.

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