



**Magnum Dynalab MD 90/90R
ANALOG FM TUNER**

INSTRUCTION MANUAL

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A Message From the President

Thank you for choosing the Magnum Dynalab *MD 90* FM Tuner. Great care has been given in the design, manufacturing and selection of components for the *MD 90* FM Tuner. This complete process will insure that your listening experience will be optimized for years.

The front end of all Magnum Dynalab tuners is an exclusive "in house" designed and manufactured component, we are the only company in the world that does their own R.F. "Front-end". The reason that we design and build our own front-end is that no other manufacturer can make one that meets our exacting specifications. The importance of a front-end to the tuner is the equivalent of a high performance laser mechanism to a CD transport. The front-end must gather the FM signal and isolate it from the extraneous aberrations inherent in the environment as well as the FM stations adjacent to it. Our rigid criteria for our tuners and their front-ends insure that you get the most out of your FM reception with the highest degree of consistency available in the industry.

To insure that all specifications on our tuners are met at ALL frequencies, we manually align our tuners front-end at three frequencies (92 MHz, 101.5 MHz and 106MHz). This process optimizes tuning performance across the entire FM band, so that you attain the same levels of quality regardless of where you are tuned.

These procedures also ensure that the balance between SENSITIVITY, SELECTIVITY and MUSICALITY are maintained. Your tuner is now optimized to reject strong adjacent channel noise, provide more consistent levels of tuning performance across FM band and to have a superior ability to isolate the station you wish to listen to from the extraneous interference of the FM signals.

Once again MAGNUM DYNALAB thanks you for including our product in your audio system, we are sure that you will have years of listening pleasure from your *MD 90*. If there is anything else we can offer to aid your enjoyment in listening to FM, please feel free to contact us on our toll free number, 1-800-551-4130 or via email at: info@magnumdynalab.com.

Respectfully yours,
Larry Zurowski

President

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UNPACKING YOUR MD 90

Carefully inspect all sides of the shipping carton for damage. If there are marks or holes in the carton make note of the location in relation to the unit inside. Any obvious dents or scuff marks should alert you to the possibility of damage. Carefully remove the MD 90 from the end caps and wrapping, inspect all sides. Pay special attention to the corresponding areas on the unit where damage was found to the shipping carton. If damage is evident, document the type and extent of the damage, then repack the unit and call the dealer.

KINDLY DO NOT SEND THE UNIT BACK TO THE SHIPPER UNTIL YOU HAVE BEEN ASKED TO DO SO.

DO NOT DISCARD THE PACKING MATERIALS AND CARTONS. Should there be a necessity to return the unit for any reason, it must arrive safely and suitably packaged in order for our receiver to accept it from the carrier. Also, if the unit has incurred damage as a result of improper packaging, it is not likely that a claim for the damage against the carrier will be successful.

Likewise, we will ship your unit back to you only in factory-approved packaging. However, if the unit were to arrive at the factory in anything other than factory approved packaging, we reserve the right to return same in factory-approved packaging and charge the cost of the packaging to the shipper. This is the only way we can assure you of a safe return (damage by carrier excepted).

SETTING UP YOUR MD 90

1. Place your tuner the shortest distance possible from your pre-amplifier/ integrated amplifier, being careful to avoid areas that may cause extreme temperatures.
2. Connect your tuner to the pre-amplifier, using cables/ inter-connects that are consistent with the rest of the inter-connects in your system. For a single ended (un-balanced) system the cables will be connected to the RCA connectors labeled "unbalanced out" on the rear panel of your tuner to an unused aux. input on the rear of your pre-amplifier/ integrated amplifier. For connection to a balanced system, the balanced cables will be connected from the XLR outputs marked "output balanced" on the rear of your tuner to the balanced inputs on the rear of your pre-amplifier/ integrated amplifier.
3. Connect your FM antenna cable to the **ANTENNA IN** terminal on the rear panel of your tuner. The connection type on the back of your tuner is an "F" connector (75 ohms). Should your antenna cable be 300 twin lead, you may convert this to 75 ohms with a 300 ohm to 75 ohm balun/ transformer.
4. Make sure that the center conductor of the cable is properly inserted into the connector. If you do not possess an antenna, attach the **temporary** wire (enclosed in box) to your tuner. Place this into the "F" connector input on the rear of your tuner.

Please note that the piece of wire provided should only be used as a medium to test and setup the tuner, to maximize performance with your tuner a better antenna system is recommended. Magnum Dynalab offers a number of different antennae, these antennae are discussed in the *Reception Techniques* in the back of the manual. If you have any questions please call your dealer or contact Magnum Dynalab directly.

5. Unwrap the EIA AC cord and plug the EIA end into the rear socket marked "Power Input" on the rear panel of your tuner. Plug the other end of the AC cord into a 120/220/230/240 volt continuous AC source that you are using.

Note: Many countries that use 220/230/240 volts have a special FM transmitter, tuning de-emphasis for these countries may be different. Please consult Magnum Dynalab for the correct usage. If your tuner is used in a country where the tuning de-emphasis is set incorrectly the sonic performance will be seriously affected.

CONTROLS AND FUNCTIONALITY

(Letters correspond with image on the following page)

- A. **POWER** – Turns the power (AC) on and off to your tuner, with the optional remote system this switch must be left in the “OFF” position.
- B. **STEREO** – Switches your tuner from Stereo to Mono and vice-versa. Switching to Mono will often clean up noisy stereo transmissions and aid in delivering quiet listening to weaker signals.
- C. **I.F. BANDWIDTH** – When **BW 1** is selected your tuner is in the wide IF (Intermediate Frequency) bandwidth setting. This setting produces the best sound possible where strong adjacent channel interference is not an issue. When **BW 2** is selected the tuner is placed in the “Narrow” bandwidth setting, this setting produces optimal sound performance where adjacent channel interference is a factor.
- D. **MUTE** – In the “ON” position, a limit is now placed on your tuner. While scaling up and down the FM dial, weak stations will be overlooked so that no alarming noises will be heard while looking for programs. We recommend that with the optional remote system you leave the Mute switch in the “ON” position.
- E. **TUNING KNOB** – Rotating this knob allows you precise control of the fine tuning of the FM signal you are listening to. Slight de-tuning of the tuner may aid in eliminating measures of multi-path or other atmospheric conditions that may affect the sound quality of your reception.

DISPLAYS AND METERS

(Letters correspond with image on the following page)

- F. **MULTI-PATH METER** – This meter indicates multi-path (multi-path is the same FM signal being received by your antenna and tuner at two different time intervals). Your multi-path meter should read zero. If this meter reads more than zero, move your antenna to a different location or rotate your antenna so that your meter reads zero. If this does not correct the problem a better or different antenna system may be required, please visit the *Reception Techniques* section in this manual.
- G. **CENTER TUNER METER** – Indicates the setting of the tuners front end in relation to the station you are tuning to. In normal situations this needle should be tuned to the central point of this meter.

- H. **SIGNAL STRENGTH METER** – The signal strength meter indicates the strength of your incoming FM signal, the higher the better. This meter is calibrated to **never** hit 10, this is done to protect the meter mechanism.
- I. **FREQUENCY DISPLAY** – Displays the station via a numeric value, the frequency that your tuner is dialed into. Display ranges from 87.5 MHz through 108.5 MHz. This readout is controlled by the tuning knob.

IMAGE OF MD 90



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CHECKING OUT YOUR MD 90

1. Place your power switch to the "ON" position (A on diagram). This should turn on your tuner's meter lights and frequency display.
2. Place your STEREO/MONO switch (B on diagram) to the Stereo setting.
3. Place your bandwidth switch (C on diagram) to BW1.
4. Place your Mute switch (D on diagram) to "ON" position.
5. On your preamplifier/ integrated amplifier select the input that your MD 90 tuner is connected to.
6. Rotate the tuning knob on your tuner (E on diagram) until sound is heard through your speakers, now fine tune this station using the center tuner meter (G on diagram) and signal strength meter (H on diagram) as indicators. Your stereo light on the face of your tuner should be on. Place the stereo/mono switch (B on diagram) to the Mono position, your stereo light should now go off. Now turn the stereo/mono switch back to the Stereo position and your stereo indicator light should turn back on.
7. You are ready now to search through FM frequencies in search of your favorite stations. If you encounter difficult reception situations please read the Controls and Functionality section of your manual.
8. Approximately 48 hours of "burn in" should eliminate any measure of drifting that you may encounter with your new tuner. Please note that when your tuner is turned off for more than a couple of hours, upon powering "ON" your tuner, you may encounter a slight amount of drift on the station you were last tuned to. Please do not touch the dial, as when the tuner warms back up, it will return to where it was last center tuned.

TUNER REMOTE (OPTIONAL)

If your tuner was ordered with the **RC1 "PRECISION REMOTE SYSTEM"**, here are the operating instructions.

1. The power switch should be off on the front panel of the tuner
2. Using the remote handheld, push the **"POWER ON"** button. You will see the tuner turn on.
3. To tune with the handheld, push and then hold either the **"TUNE UP"** or **"TUNE DOWN"** button until you reach the desired station. The longer you hold the button the faster the frequency changes. To **FINE TUNE** hold either button for a shorter time until your center tune meter is set or your magic eye tube is closed.
4. Your Precision remote gives you the ability to store and scan up to 20 preset stations. To program a preset station, first tune to the desired station and then push **"STORE"**. Then select the preset memory position you want to store this station in by selecting two digits. For numbers 1-9 you must select 01-09 and for 10+ directly enter the number. To recall these presets you must push **"P"** and then enter the two-digit preset you wish to recall. ***NOTE-When setting a preset you must enter the numbers quickly.**
5. To turn your tuner off, push the **"POWER OFF"** button until you see the tuner turn off.

Your RC1 remote operates with 2 AA batteries, which are included.

IMAGE OF RC1 REMOTE



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TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
No sound, meter lights are not on	<ul style="list-style-type: none">• Power cord disconnected• Power off at source	<ul style="list-style-type: none">• Connect power cord• Check AC source
No sound, meter lights are on	<ul style="list-style-type: none">• Interconnect not properly installed• Preamp set to incorrect source• Preamp set to tape monitor source, if preamp has such a function• Power amplifier is off	<ul style="list-style-type: none">• Verify installation of interconnects• Turn preamp to input where tuner is connected• On preamp defeat tape monitor function• Turn amplifier on
Low signal strength	<ul style="list-style-type: none">• Antenna not connected properly• Incorrect antenna• Station too distant• Improper antenna position/ placement	<ul style="list-style-type: none">• Check antenna connection• Check instruction manual for correct antenna type• Change your antenna• Rotate your antenna or mount your antenna higher or near a window if indoors
Intermittent sound	<ul style="list-style-type: none">• Mute switch is in the "ON" position	<ul style="list-style-type: none">• Turn the mute switch to "OFF" position

RECEPTION TECHNIQUES

Antenna Cabling:

The lead-in cable from the antenna is often the weakest link in the system. Some time spent on selection and matching will yield dramatic results when it comes to noise reduction in weak signals.

A good grade of 75 ohm coaxial cable will provide very sufficient signal passage, along with effective shielding against interference. Without effective shielding your coaxial cable can in fact become an antenna in itself. There are different grades of 75 ohm cable, there is RG59/U (Suitable for 50 feet and less) and RG 6. RG 6 is the better of the two and should be used in runs of 100 feet or more. The RG 6 has quad shielding and 50 % less losses than RG 59/U.

A good type of RG 6 is Beldon 1189 A. Combine this cable with LRC connectors and you will have an installation that will optimize the performance of your tuner.

The key to maximizing the efficiency of the system is insuring that all connections are clean and tight, silicon grease on outdoor connections will insure good performance over a long period of time. If you splice either cable, make sure that exactly the same type of cable is used.

Types of Antennas:

Multi-element Yagi - This is a unidirectional antenna capable of pulling in very distant stations due to its high gain, the higher the gain the better. These types of antennas are very directional and should be used with a rotor to get the maximum benefit of the antenna. The directional feature helps eliminate multi-path problems by allowing only the signal from the direction that the antenna is facing to be picked up by the antenna and not the signals that come from a different direction.

Magnum Dynalab offers two Yagi antennae, the MD 6 FM or MD 10 FM

Vertical 1/2 Wave - This design offers ease of installation and operation. This type of antenna is omni-directional, which means that it picks up stations coming from all directions. No rotor is required to pull in stations from behind or the side. This design also gathers more of the FM signal from the air, offering superior fidelity over that of a standard bi-directional antenna. It also gives 2.5 dB gain to the signal strength over that of a standard dipole.

If multi-path is a reception problem try laying the antenna down in the horizontal plane rather than the vertical plane. This type of antenna can be used indoors or outdoors, but regardless of whether it is installed indoors or outdoors the higher that you can put it the better it will perform.

Magnum Dynalab offers the MD ST-2, an excellent vertical 1/2 wave antenna

Folded Di-Pole - This is the most common and simplest of all antennas, most people are familiar with the 79 cent piece of wire you received with most electronics gear (generally provided with a tuner or receiver). This piece of wire is bi-directional and the performance of it is affected by the angle that the signal hits the piece of wire. There are quite a number of di-pole antenna designs; they work well in areas of strong signal strength, such as local stations.

Magnum Dynalab offers the SR-100 as a good folded di-pole.

There are many styles of antennas but all of them are based on one of these types.

FM RECEPTION AIDS AND ACCESSORIES

We have already alluded to the importance of a good quality antenna which has been designed and built with the reception of the FM bandwidth exclusively.

Should you encounter a situation in which you require more gain to the FM signal or situations where you may need less gain AND better selectivity then the Magnum Dynalab 205 "Signal Sleuth" may be of benefit to you.

The 205 is a FM signal processor/amplifier designed specifically for FM. If you would like more information on this item, please feel free to contact us at any time. Call us TOLL FREE 1-800-551-4130, email us at info@magnumdynalab.com or visit us at www.magnumdynalab.com.

PRODUCT SPECIFICATIONS

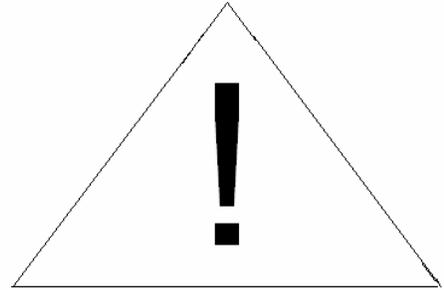
Usable sensitivity- Mono -	10.3 dBf
50 dB quieting - Mono -	13.2 dBf
50 dB quieting - Stereo -	34.0 dBf
Capture ratio -	1.5 dB
Image rejection -	75.0 dB
Signal to noise ratio -	75.0 dB
Alternate channel - Wide -	60.0 dB
Alternate channel - Narrow -	80.0 dB
Adjacent channel - Wide -	9.0 dB
Adjacent channel - Narrow -	25.0 dB
THD - Mono -	0.10 %
THD - Stereo -	0.18 %
Stereo separation -	50.0 dB
AM suppression -	-70.0 dB
SCA rejection -	-80.0 dB
IF rejection -	-80.0 dB
19 KHz and 38 KHz component rejection -	-75.0 dB
Audio frequency response (+/- 1 dB) -	20 Hz - 17 KHz
Balanced audio output (600 ohms) -	2.2 V
Line audio output (RCA) -	1.0 V
Line power (Must be specified) -110/220/230/240-	VAC
Dimensions (inches H.W.D.) -	4 x 17.75 x 13
Weight (lbs./kgs) -	12/5.45
Power consumption (Typ/Max) -	50w/100w

MAGNUM DYNALAB LTD. RESERVES THE RIGHT TO CHANGE OR MODIFY THE SPECIFICATIONS WITHOUT FURTHER NOTICE

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IMPORTANT SAFETY INSTRUCTIONS

1. KEEP THESE INSTRUCTIONS
2. HEED ALL WARNINGS
3. FOLLOW ALL INSTRUCTIONS
4. DO NOT USE THIS APPARATUS IN WATER
5. CLEAN ONLY WITH DRY CLOTH
6. DO NOT BLOCK ANY VENTILATION OPENINGS, INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.
8. DO NOT DEFEAT THE SAFETY PURPOSE OF THE GROUNDING TYPE PLUG. THE GROUNDING PLUG HAS TWO BLADES AND A THIRD GROUNDING PRONG. THE THIRD PRONG IS PROVIDED FOR YOUR SAFETY. IF THE PROVIDED PLUG DOES NOT FIT INTO YOUR OUTLET, CONSULT AN ELECTRICIAN FOR REPLACEMENT OF THE OBSOLETE OUTLET.
9. PROTECT THE POWER CORD FROM BEING WALKED ON OR PINCHED PARTICULARLY AT PLUGS, CONVENIENCE RECEPTACLES, AND THE POINT WHERE THEY EXIT FROM THE APPARATUS
10. ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.
11. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.
12. REFER ALL SERVICING TO QUALIFIED PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANY WAY, SUCH AS THE POWER SUPPLY CORD OR PLUG IS DAMAGED, LIQUID HAS BEEN SPILLED OR OBJECTS HAVE FALLEN INTO THE APPARATUS, THE APPARATUS HAS BEEN EXPOSED TO RAIN OR MOISTURE, DOES NOT OPERATE NORMALLY, OR HAS BEEN DROPPED.
13. THE EQUIPMENT REQUIRES A GROUNDED POWER OUTLET TO OPERATE SAFELY.
14. THE POWER SUPPLY CORD IS THE MAIN DISCONNECT AND SHALL BE READILY OPERABLE.



“WARNING” TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

LIMITED WARRANTY

Register your product at www.magnumdynamalab.com

Magnum Dynalab Ltd. herein referred to as the "manufacturer" guarantees this product to be free of defect in both material and workmanship and agrees to remedy any such defect or replace any defective component at no charge for a period of two years from date of sale to the first end user. This warranty is void if the product has been found to be subjected to misuse, abuse, lightning strike, unauthorized service, damaged in transit or has been altered or repaired in such a way as to detract from its performance, reliability or its safe operation. All tubes are covered for 12 months.

Should such defect be discovered and it falls within the terms of this guarantee, the manufacturer will correct the defect in workmanship and/or replace any defective component with a new one of similar capability and value. This warranty does not apply to the cabinet or appearance items such as the faceplate, control knobs or meter lenses nor does it cover any expenses in shipping the unit to the appropriate service depot.

The foregoing is in lieu of any other warranties expressed, implied or statutory and the manufacturer neither assumes nor authorizes any person to assume for it any other obligation or liability in the connection with the sale of this product. This warranty is not transferable except by written authorization from the manufacturer.

In order to qualify under the terms of the above warranty, all items must be returned to the appropriate factory service depot with all shipping charges prepaid in lieu of having previously registered the purchase of the unit by completing and returning the attached Registration Card, the unit must be accompanied by proof from an authorized Magnum Dynalab Ltd. dealer.

YOUR LOCATION	RETURN SHIPPING ADDRESS
Within the USA	Magnum Dynalab c/o Trans American 2775 Broadway, Buffalo, NY, USA 14227-1043 PHONE: 1-800-551-4130
Within Canada	Magnum Dynalab Ltd. 8 Strathearn Avenue, Unit # 9 Brampton, ON, Canada L6T 4L9 PHONE: 1-800-551-4130
Other Countries	Contact selling dealer

TO PREVENT FIRE SHOCK OR HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER OR FACEPLATE, NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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