



INSTRUCTION MANUAL

TURNTABLE

MODEL EM-4717

INSTRUCTION MANUAL

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TURNTABLE

ELECTRO-METRICS

MODEL EM-4717

SERIAL NO: N/A

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WARRANTY

This Model EM-4717 Turntable is warranted for a period of 12 months (USA only) from date of shipment against defective materials and workmanship. This warranty is limited to the repair or replacement of defective parts and is void if unauthorized repair or modification is attempted. Repairs for damage due to misuse or abnormal operating conditions will be performed at the factory and will be billed at our commercial hourly rates. Our estimate will be provided before the work is started.

DESCRIPTION AND USE--ELECTRO-METRICS MODEL EM-4717 TURNTABLE

1.0 Description

The Electro-Metrics Model EM-4717 Turntable is used in performing commercial EMC compliance testing. The turntable is constructed of metal with an overall diameter of 3 meter (9.85 ft.) and uses the unique Electro-Metrics Chain Mail Grounding Scheme (patent pending) to maintain the platform at ground potential.

The rotation drive system comprises a 1.5 hp motor, ring encoder, and double worm gear reduction drive. The table can rotate 370° before table motion is halted by firmware limits in the Controller Unit. These rotational limits can be modified using values enter via the Controller front panel.

A separate Interface Module interfaces the Controller with the rotation drive system. The Controller connects with the Interface Module via a multi-conductor control cable. The rotation drive system connects with the Interface Module via the encoder cable and the motor power cable. The cables are permanently connected to the encoder and motor with removable connectors for connection to the Interface Module. The Controller and Interface Module have separate AC power inputs.

The location of the Interface Module is dependent on the location of the turntable installation:

a. Sheltered Enclosures/Shielded Rooms

The Interface Module is located under the ground plane of a shielded enclosure or shielded room.

b. Unsheltered External Test Sites

The Interface Module is rack mounted with the EM-4700 Controller Unit. The rack should be protected from the weather.

The Interface Module does not contain an external power switch. A relay within the enclosure is activated by the EM-4700 Controller and applies the AC power to the drive system. Overcurrent protection is provided by a 15 A breaker on the front panel of the Interface Module.

NOTE: **The breaker is for overcurrent protection only. *It is not intended to function and should not be used as a power ON/OFF switch. This would drastically shorten the operational lifetime of the breaker.***

The EM-4717 Turntable can not be operated independently of the EM-4700 Turntable/Antenna Tower Controller Module. The controller module must always be connected to the turntable Interface Module for either manual or computer controlled operation.

The turntable base is constructed of 12.7 mm (0.5") powder-coated or painted steel while the platform is constructed of 9.5 mm (0.375") painted steel. Attached to the base section are the rotation drive system and the center support constructed of powder coated steel. The turntable platform comprises nine (9) sections consisting of eight (8) pie-shaped segments plus a circular center segment. The unit is assembled using 316 stainless steel hardware.

To provide grounding for the metal top of the turntable, angular grounding ring sections are provided. Chain mail is attached to the outer edge of the platform. When installed around the edge of the turntable pit, the plates and chain mail form a unique method of grounding the metal turntable top.

2.0 Specifications

2.1 Electrical

Motor Rating:	1.5 hp.
Turntable Rotation Rate (In Scan Mode):	0.95 rpm (maximum).

2.2 Mechanical

Turntable Diameter:	3.0 m (9.85 ft.).
Turntable Height (Overall):	42 cm (16.5 inches).
Maximum Distributed Load	4,000 kg (8,800 lbs).
Turntable Weight:	1,135 kg (2,500 lbs).

3.0 Interface Module Specifications

3.1 Electrical

AC Power Source, maximum:	220 VAC, 50-60 Hz @ 15 A.
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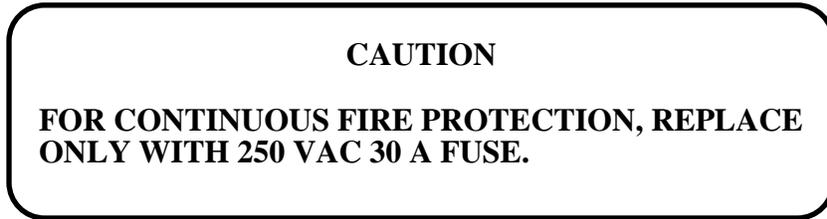
3.2 Mechanical

Length:	41.9 cm (16.5 inches).
Width:	48.3 cm (19 inches).
Height:	13.3 cm (5.25 inches).
Weight:	2.7 kg (6.0 lbs).

4.0 Turntable Drive System/Interface Module Overcurrent Protection

The main overcurrent protection for the turntable drive system is provided by a 15 A breaker on the front panel of the Interface Module. In addition, each AC line from the front panel breaker to the motor driver contains an in-line fuse.

Fuse type: 30A/250 Volts LITTLEFUSE Type JLLN-30A, quantity 2.



Except for the 15 A breaker, no front panel controls are located on the Interface Module.

5.0 Turntable Rotation Drive System Motor Safety Switch

The rotation drive system motor contains a *Safety Switch* located on a raised projection where motor power enters the motor housing.

The Safety Switch is used to prevent accidental turn on of the rotation drive system whenever routine or other maintenance is being performed on the drive system. In normal use, the Safety Switch is in the ON position and turn on of the power to the drive motor is accomplished by a relay activated by the EM-4700 Controller Module.

Access to this switch can only be done before the turntable is assembled or by removing one of the platform segments (refer to 7.1 Step a).

NOTE: **During initial assembly of the turntable and whenever maintenance has been performed, verify that the Safety Switch is ON before the turntable is completely assembled.**

This switch can not be accessed after the turntable is fully assembled.

5.1 Description Safety Switch

Type: 2 position heavy duty toggle switch, moisture protected.

Rating: 250 VAC @ 10 A.

Function: To prevent accidental operation of the turntable during maintenance procedures.

6.0 Turntable Control and Operation

Control of the EM-4717 Turntable is accomplished using the Electro-Metrics EM-4700 Controller Module. Refer to the EM-4700 Controller Instruction Manual for information and instruction on operating the Controller and Turntable.

The EM-4717 Turntable uses an Interface Module for connections between the drive system motor and the EM-4700 Controller.

6.1 Connections EM-4717 Turntable, Interface Module, EM-4700 Controller

- a. Connect the multi-connector control cable between the rear panel Turntable Interface Connector on the EM-4700 Controller and the Controller Interface Connector on the rear panel of the Interface Module.
- b. Connect the Encoder Cable and the Motor Power Cable to their respective connectors on the rear panel of the Interface Module.
- c. Connect the AC power cord between the rear panel AC connector on the EM-4700 Controller and the selected AC power source.
- d. Connect the 220 VAC power cord between the rear panel AC connector on the Interface Module and the 220 VAC power source.
- e. If remote operation is desired, connect the GPIB cable between the rear panel GPIB Connector on the EM-4700 Controller and the computer being used.
- f. The EM-4717 Turntable and EM-4700 Controller are now ready for operation.

7.0 Maintenance

Maintenance on the EM-4717 Turntable is limited to periodic lubrication of the worm gear, main turntable rack gear, and roller wheels.

7.1 Turntable Segment Removal Procedure

To perform the maintenance required, segments of the turntable top platform must be removed.

NOTE: **1) A minimum of two (2) people are required to perform the following procedures.**

2) Turn off and disconnect all AC power before starting the following procedures.

a. Center Segment Removal

1) Using a 5/32 allen wrench, remove the eight (8) allen-head screws from the circular center segment.

2) Remove the center segment.

3) To install a center segment, reverse the above procedure.

b. Pie-Shaped Segment Removal

1) Using a 5/32 allen wrench, remove the twenty four (24) allen-head screws securing the selected pie-shaped segment.

2) Remove the segment.

3) To install a pie-shaped segment, reverse the above procedure.

c. To prevent accidental turn on of the rotation drive system motor during any of the following maintenance procedures, set the Safety Switch to OFF. If required, move the turntable platform until the opening provided by removing a pie-shaped segment is over the motor assembly.

7.2 Worm Gear Lubrication Procedure

The worm gear should be lubricated as follows:

Light usage: Yearly basis.

Meduim usage: Every six months.

Heavy usage: Every three months.

- a. Remove a pie-shaped segment of the turntable top. (Refer to 7.1b.)
- b. Lubricate using 90 wt oil or any similar gearbox oil applied to the worm gear assembly.

NOTE: There two worm gear drives that require lubrication. Applying lubrication to one unit does not lubricate the other. Both units must be lubricated separately.

c. Reinstall the turntable segment.

7.3 Main Rack Gear Lubrication Procedure

- a. Remove the center segment. (Refer to 7.1a.)
- b. Apply grease to the grease fitting on the main rack gear. **Do not over grease** as this can break the grease seals within the rack gear and cause the rack gear to eventually fail.
- c. Replace the center segment.

7.4 Roller Wheels Lubrication Procedure

- a. Using a 5/32 allen wrench, remove the ten (10) allen-head screws securing the access plate located at the end of one pie-shaped segment.
- b. Lubricate each roller wheel by applying grease to each grease fitting on the inside face of each wheel. This should be done on a six month to yearly basis. **Do not over grease** as this can break the grease seals within the wheel and cause the wheel to eventually fail.
- c. Replace the access plate.