

Installation & Operational Manual
Electric Turntable Assemblies
2.0 m / 2.5 m / 3.0 m
Model 2080 Series



CONTROL COPY

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NOTICE: This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation.

SAFETY SYMBOL DEFINITIONS



OR



REFER TO MANUAL

When product is marked with this symbol refer to instruction manual for additional information.



OR



HIGH VOLTAGE

Indicates presence of hazardous voltage. Unsafe practice could result in severe personal injury or death.



PROTECTIVE EARTH GROUND (SAFETY GROUND)

Indicates protective earth terminal. You should provide an uninterruptible safety earth ground from the main power source to the product input wiring terminals, power cord, or supplied power cord set.



CAUTION

Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.

GENERAL SAFETY CONSIDERATIONS



BEFORE POWER IS APPLIED TO THIS INSTRUMENT, GROUND IT PROPERLY

through the protective conductor of the AC power cable to a power source provided with protective earth contact. Any interruption of the protective (grounding) conductor, inside or outside the instrument, or disconnection of the protective earth terminal could result in personal injury.



BEFORE SERVICING: CONTACT EMCO - servicing (or modifying) the unit by yourself may void your warranty. If you attempt to service the unit by yourself, disconnect all electrical power before starting.

There are voltages at many points in the instrument which could, if contacted, cause personal injury. Only trained service personnel should perform adjustments and/or service procedures upon this instrument.

Capacitors inside this instrument may still be CHARGED even when instrument is disconnected from its power source.



ONLY QUALIFIED PERSONNEL should operate (or service) this equipment.



STAY CLEAR of moving components during operation of equipment

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Assembly Drawings - 2 m, 2.5 m, 3 m
Warranty
Updates, Upgrades and Revisions

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1.0 General Description

1.1 INTRODUCTION

The EMCO Model 2080 is an electric powered turntable platform system designed to be used with the Model 2090 Positioning Controller for EMI compliance testing. The 2 meter and larger tables utilize a pinion and gear drive with a gear reducer and electric motor. The top is of a non-conductive construction of marine-grade plywood with a plastic laminate. The drive motor and gearing are located beneath the platform. On the 2 meter model, the top is provided as a single piece. On larger sizes, the top portion of the turntable is sectional to provide easy access in the event that service is required. A 15 cm hole is provided in the center of the turntable to allow for customer supplied cabling to and from the Equipment Under Test. The electronics are located in a shielded enclosure adjacent to the motor. Signal I/O is via fiber-optic cable.

The bearing on which the turntable rotates has the drive teeth cut directly on the outside and will easily support most Equipment Under Test (EUT). The outside support for the turntable includes casters which aid in the support of cantilevered loads on the outside of the turntable.

To prevent over-travel of the turntable in either direction of movement, mechanical limits must be adjusted. The limit switch adjustments are located on the inside of the encoder/limit assembly which is attached to the main gear box. For continuous rotation without limits, remove the two brass cams located in the encoder/limit assembly. Soft limits can be set within the mechanical limits, using the Model 2090 Positioning Controller.

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1.2 STANDARD CONFIGURATION

230 VAC Electric Motor Unit

Rotational limit adjust switches

Continuous or Non-continuous operation

Ten meter fiber-optic control cables

Overall height 330 mm (13")

SCAN and SEEK Capability

1.3 OPTIONS

Model 2090 Positioning Controller: This controller provides control for two separate devices (EMCO towers and turntables) in any combination, plus the control of four auxiliary devices. The unit includes a GPIB bus and is compatible with most popular software.

Hand Control Unit: This sturdy, hand-held controller will allow the user to manually operate the table remotely and independently from the Model 2090 Positioning Controller. This controller attaches conveniently to the electrical enclosure located on the base of the turntable. Functions include: clockwise (CW) and counter-clockwise (CCW).

Slip Ring: This option allows continuous rotation of the turntable through the use of the latest technology in mercury slip-rings. The slip ring option is typically supplied with Schuko or NEMA connectors. Specify part #103441 for NEMA connectors, and part #103351 for Schuko connectors. The amperage rating for the standard electrical assembly is 20 amps. Consult the factory for all custom requirements on slip-rings.

Shield Room Feed-Through: This option allows the customer to take the fiber-optic control cable from the control room to the shield room and still maintain shielding attenuation. The unit is made of brass for conductivity and provides attenuation of greater than 100 dB at 10 GHz. A single 22.25 mm (.875") hole is required to mount this option.

Additional Fiber Optic Cable: Additional lengths of fiber optic cable may be ordered.

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1.4 PRECAUTIONS



Read this manual completely before starting installation. This equipment should be installed and operated only by qualified personnel.



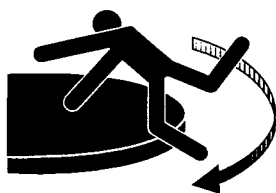
The electrical installation of this product should be accomplished by an individual who is authorized to do so by the appropriate local authority. The installation should be in compliance with local electrical safety codes.



Do not attempt to service unless qualified to do so. As with any electrical equipment, ensure unit electrical power has been disconnected and secured when performing scheduled maintenance or adjustments.



Do not make any modifications to this unit without consulting the factory directly.



Stay clear of all moving components on this equipment.

Do not, at any time, place hands or feet in the vicinity of the drive pinion on the turntable.



Regularly inspect all equipment and conduct scheduled maintenance in accordance with the factory recommendations provided.

Only use replacement parts and fasteners ordered directly from the factory.

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2.0 Assembly Instructions

2.1 TURNTABLE ASSEMBLY

1. Uncrate all parts. NOTE: Do not discard any packing material until unit is fully assembled. Check all parts for any shipping damage. Ensure a clear area is available to assemble the turntable unit safely.
2. On 2 meter models, remove the bolts which attach the top onto the turntable drive assembly. Larger models are shipped partially unassembled.
3. Using a forklift or other appropriate lifting device, place the turntable bottom or bearing support section into position.



CAUTION Lifting of the turntable should be performed by qualified personnel.



CAUTION Ensure power is off and secured before proceeding further.



CAUTION Electrical connection should only be performed by a qualified electrician and subject to local electrical codes.



CAUTION Keep all body parts away from the drive pinion when the turntable is energized.

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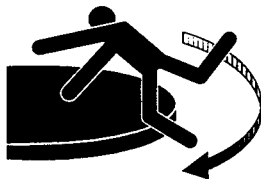
5. Rotate the turntable using the controller to verify proper operation.

6. Set the travel limits, if desired, by adjusting the cams in the encoder/limit assembly. Refer to the section in this manual titled "Setting Travel Limits."

7. On 2 meter models, reinstall the top section removed in step #2 of these instructions. On larger models, individual sections are attached to the center bearing. The sections are also joined at the caster rail which is mounted on the underside of the turntable's top. The joints of the caster rail and the joints of the top sections are staggered to provide maximum rigidity of the top. Refer to the assembly prints in the back of this manual.

2.2 SETTING TRAVEL LIMITS

The mechanical limits of the 2080 turntable are located adjacent to the gearbox. To obtain access to the limits, it is necessary to remove the top center section of the turntable. Additionally, remove the aluminum cover on the side of the enclosure. Removal of this cover will expose the limit cams and limit switches. The cams are fastened using a 6-32 allen head set screw. To adjust the position of the cam, loosen the set screw and rotate the cam on the 1/4" shaft. When the cam is properly positioned, tighten the set screw.

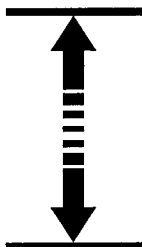


CAUTION Keep all body parts away from the drive pinion when the turntable is energized.

Rotate the table until a limit switch is engaged. Note the position of the main bearing with reference to a stationary marker. Rotate the table the other direction until the other limit switch is engaged. Determine which limit switch is currently engaged and move the brass cam until the proper rotation is provided between the limits. Alternately, the front panel readout of the Model 2090 Controller can be used to determine the range of rotation.

If continuous rotation is desired, remove both cams.

WARNING Ensure the current travel limit settings will not cause damage to existing cables and equipment located underneath the turntable.



Once limits have been set, return the turntable to its original position by replacing the enclosure cover and turntable top.

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2.3 ELECTRICAL INSTALLATION



CAUTION It is important that this procedure be performed by a qualified electrician prior to energizing the unit.

The Model 2080 is designed to operate using 230 VAC, single phase, 50/60 Hz service.

1. The branch circuit supplying power to the motor base should be protected from excess current according to local electrical codes.
2. Check that the conductor size is adequate for the motor load and the distance from the mains source. Improperly sized conductors will lead to a high voltage drop in the power conductors and cause reduced starting torque and premature motor failure.
3. The motor base assembly is provided with an unterminated flexible conduit with input power leads exposed. This flexible conduit is to be terminated into a junction box fitted on or near the motor base. Terminate the power leads of the motor base assembly according to local electrical code requirements. The following conductor color code is observed:

Brown: AC high

Blue: AC neutral

Green/Yellow: Protective Earth/Safety ground

2.4 HAND CONTROL UNIT

To connect the Hand Control Unit (HCU), remove the connector cap on the motor base. Plug the cable receptacle from the hand control unit into the electrical enclosure and screw connectors completely together. The HCU is now ready to operate. Be sure to coordinate use of the unit with the operator of the Model 2090 Positioning Controller.

CAUTION Do not plug the Hand Control Unit into the motor base while that device is operational. Coordinate with the operator of the Model 2090 Positioning Controller before plugging in, using, or unplugging. **DO NOT PUSH THE CW AND CCW BUTTONS AT THE SAME TIME. BE SURE THAT THE MOTOR IS COMPLETELY STOPPED BEFORE REVERSING DIRECTION WITH THE HAND CONTROL UNIT.**



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To allow the HCU to operate, push the control switch from MAIN to HAND. When the HCU is selected, the Model 2090 Positioning

Controller is overridden until control is returned from the HCU. If the Model 2090 Positioning Controller is left on while the HCU is used, all changes in position are recorded by the Model 2090 Device Controller.

When you are ready to change to automated testing, toggle the control switch from HAND to MAIN.

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3.0 Recommended Maintenance

Regular maintenance will prolong the serviceability of your turntable. Follow this recommended schedule.



CAUTION Do not perform maintenance while the turntable is operating.

EVERY SIX MONTHS

- Adjust the encoder chain. The chain should have no more than 20 mm (1/8") looseness when flexed to a point halfway between the two sprockets. Adjust the chain by loosening the two screws holding the encoder assembly. Move the encoder in or out to the desired tension.
- Lubricate the encoder chain. Use a good quality grease to lubricate the chain.
- Grease the casters. Use a good quality bearing grease to lubricate the casters.
- Check the gearbox for fluid leakage. A slight film that collects is normal. You should not have puddles of fluid. The gearbox is lubricated and sealed at the factory. Under normal conditions, it should not require servicing during its life.

EVERY 12 MONTHS

- Lubricate the main bearing race. Use a grease gun with a good quality bearing grease. The grease fittings are located inside the race, 90 degrees apart, underneath the top. Three discharges from the grease gun in each fitting are adequate.
- Grease the gear teeth. Apply a good quality grease to the gear teeth.

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4.0 Specifications

4.1 ELECTRICAL

Nominal AC Voltage	230 VAC
Input Frequency	50/60 Hz
Current Rating	20 amp service
Phase	Single (1)

4.2 MECHANICAL

Diameter	2 meters
Height	33 cm. (13 in.)
Distributed Load Rating*	907 kg (2000 lb.)

Diameter	2.5 meters
Height	33 cm. (13 in.)
Distributed Load Rating*	1134 kg (2500 lb.)

Diameter	3 meters
Height	33 cm. (13 in.)
Distributed Load Rating*	1134 kg (2500 lb.)

* **Distributed Load Rating** is based on load being evenly distributed to each section. No point loads under .37 sq m (4 sq ft) should exceed 500 kg (1100 lb); and not over 500 kg should be applied to a 45 degree segment outboard of the casters.

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Warranty

The EMC Test System, L.P. warrants that our products are free from defects in materials and workmanship for a period of two years from the date of shipment. If you notify us of a defect within the warranty period, we will at our option, either repair or replace those products which prove to be defective. If applicable, we will also recalibrate the product.

There also will be no charge for warranty services performed at the location we designate. You must however, prepay inbound shipping costs and any duties or taxes. We will pay outbound shipping costs from a carrier of our choice, exclusive of any duties or taxes. You may request warranty services to be performed at your location, but it is our option to do so. If we determine that warranty services can only be performed at your location, you will not be charged for our travel related costs.

This Warranty does not apply to:

- Normal wear of materials.
- Consumable items such as batteries, fuses, etc.
- Products which have been improperly installed, maintained, or used.
- Products which have been operated outside of specifications.
- Products which have been modified without authorization.
- Calibration of products, unless necessitated by defects.

This warranty is exclusive. No other warranty, written or oral, is expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

The remedies provided by this warranty are your sole and exclusive remedies. In no event are we liable for any damages whatsoever, including but not limited to, direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

NOTE Please contact our sales department for a Return Material Authorization Number before shipping equipment to us.

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Updates, Upgrades and Revisions

At EMC Test Systems, we are constantly trying to improve what we do. Your feedback is very important to us!

Furthermore, we want to stay in contact with you so that we can learn how to serve your needs better. Please take a moment to fill out and return the warranty card located in the back of this Owner's Manual. By returning a completed warranty card, you will have your product registered, keep informed of new products, upgrades, and enhancements, and give your feedback about the product. If you have any comments or suggestions about the way this or any other EMCO product works for you, please let us know.

Comments can be mailed directly to:

EMCO Sales Department

P. O. Box 80589

Austin, Texas 78708-0589

You can also contact us by telephone, fax or E-mail at:

(512) 835-4684 (phone)

(800) 253-3761 (phone)

(512) 835-4729 (fax)

E-mail: info@emctest.com

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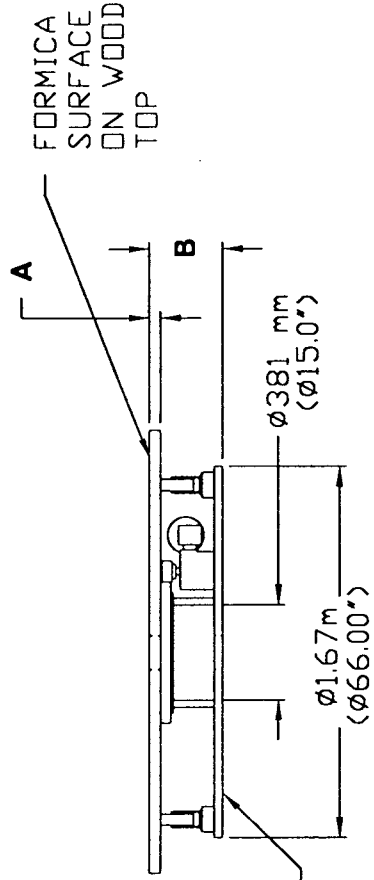
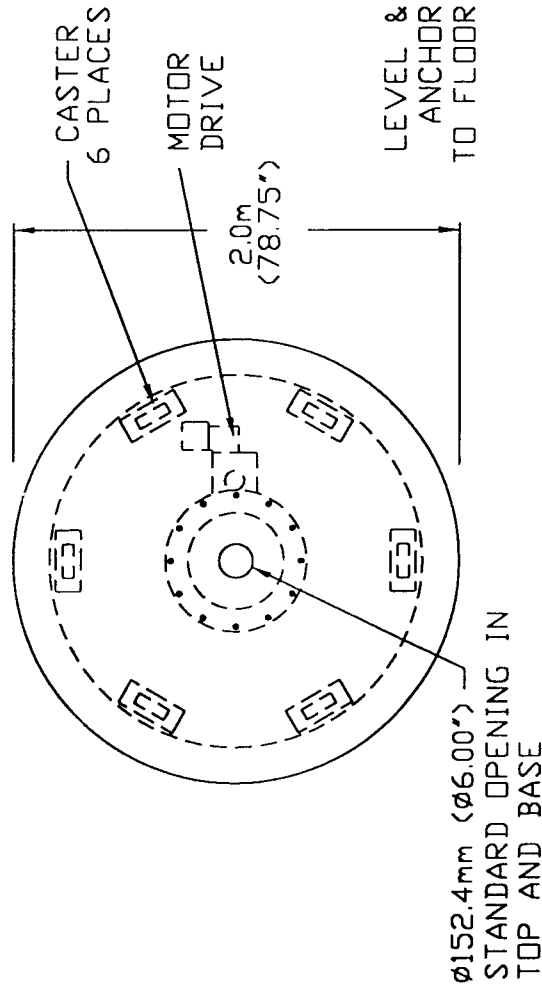
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NOTES:

1. UNLESS OTHERWISE SPECIFIED, PRIMARY DIMENSIONS SHOWN ARE IN MILLIMETERS; SECONDARY IN BRACKETS ARE IN INCHES.
2. SEE CHART FOR DIMENSIONS AND APPROX WEIGHTS.



CROSS SECTION VIEW

TOP	A	B	WEIGHT
WOOD	52.0mm [2.05"]	333.0mm [13.10"]	302.5 kg 605 lbs
METAL	9.5mm [.38"]	290.0mm [11.43"]	368 kg 810 lbs

THE ELECTRO-MECHANICS COMPANY
AUSTIN, TEXAS

2m TURNTABLE DIMENSIONS

TOLERANCES - MILLIMETERS UNLESS OTHERWISE SPECIFIED		CONTRACT NO.	
DECIMALS	ANGLES	APPROVALS	DATE
± .125	± .0075	BROWN JCB	12/3/91
MATERIAL	CHECKED	ISSUED	
END MAIL NO.			
FINISH			

METRIC

THIRD ANGLE PROJECTION	USED ON
APPLICATION	

SIZE	FSC# NO.	DWG. NO.	REV.
A3		398631	A
SCALE	NONE	SHEET	1 OF 1

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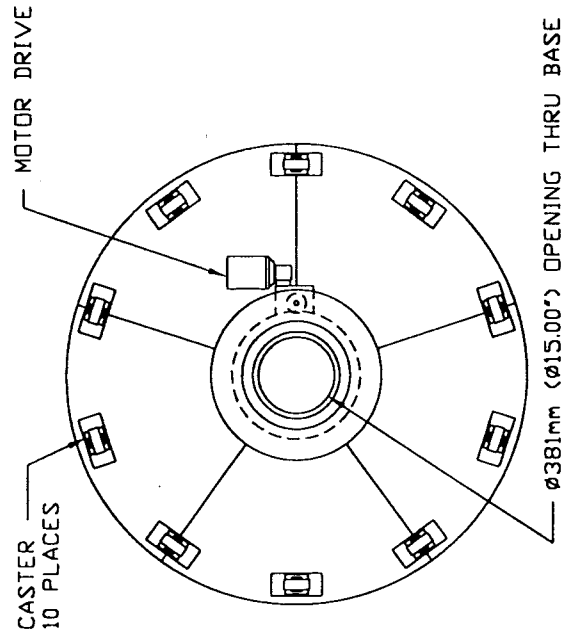
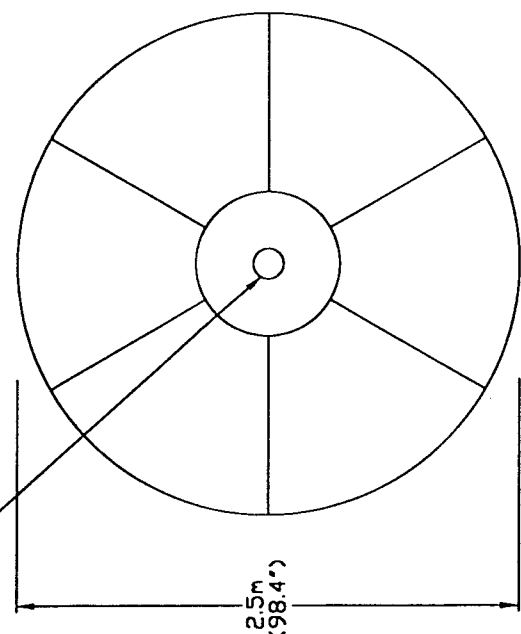
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REV. A		REV. A	
SH	1	REV	A
ZONE		REV	A
DESCRIPTION		DATE	
REVISIONS		APPROVED	

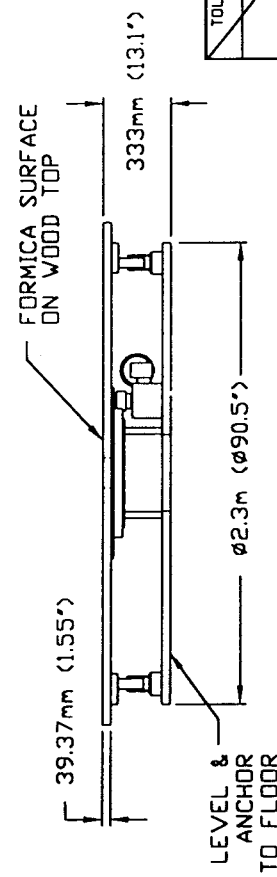
DWG. NO. 398632

- NOTES:
1. UNLESS OTHERWISE SPECIFIED, PRIMARY DIMENSIONS SHOWN ARE IN MILLIMETERS; SECONDARY IN BRACKETS ARE IN INCHES.
 2. APPROX WT = 428 kg (940 lbs).

Ø152.4mm (Ø6.00") STANDARD HOLE THRU TOP PLATE



VIEW WITH TOP REMOVED

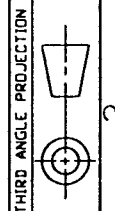


CROSS SECTION VIEW

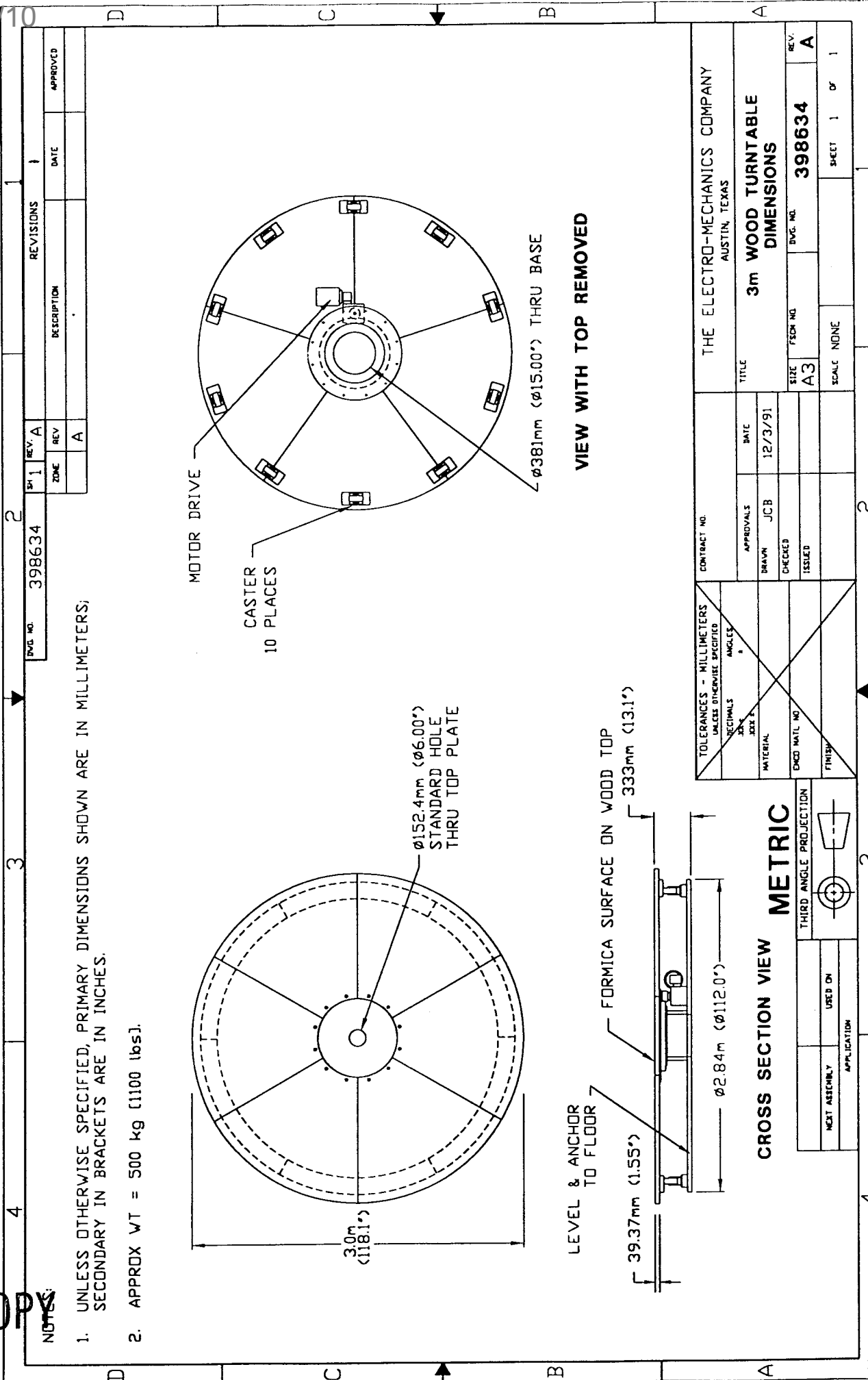
METRIC

TOLERANCES - MILLIMETERS UNLESS OTHERWISE SPECIFIED		CONTRACT NO.		THE ELECTRO-MECHANICS COMPANY AUSTIN, TEXAS	
DECIMALS	ANGLES	APPROVALS	DATE	TITLE	
FRACTIONS		DRAWN JCB	12/3/91	2.5m WOOD TURNABLE DIMENSIONS	
MATERIAL		CHECKED	ISSUED	SIZE	DWG. NO.
ENGD. NAT'L. NO.				A3	398632
FINISH				SCALE	SHEET 1 OF 1
				NONE	

NEXT ASSEMBLY	USED ON
APPLICATION	



THIRD ANGLE PROJECTION



REV.	DATE	DESCRIPTION	APPROVED
1			

398634	REV. A
ZONE	REV
A	A

- NOTES:
- UNLESS OTHERWISE SPECIFIED, PRIMARY DIMENSIONS SHOWN ARE IN MILLIMETERS; SECONDARY IN BRACKETS ARE IN INCHES.
 - APPROX WT = 500 kg [1100 lbs].

CONTRACT NO.		THE ELECTRO-MECHANICS COMPANY AUSTIN, TEXAS	
APPROVALS	DATE	TITLE	
DRAWN JCB	12/3/91	3m WOOD TURNABLE DIMENSIONS	
CHECKED		SIZE	DWG. NO.
ISSUED		A3	398634
MATERIAL		SCALE	NONE
ENCD MATL NO		SHEET 1 OF 1	
FINISH			

THIRD ANGLE PROJECTION	
NEXT ASSEMBLY	USED ON
APPLICATION	

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