ELECTRO-MECHANICS COMPANY

TURNTABLE INSTALLATION MANUAL

399101
REVISION A

INTRODUCTION

THE PURPOSE OF THIS MANUAL IS TO PROVIDE THE CUSTOMER WITH A BASIC UNDERSTANDING OF HOW TO INSTALL AN EMCO ABOVE GROUND TURNTABLE AT THE SITE. THEREFORE THE MANUAL WILL BE WRITTEN IN GENERAL TERMS IN ORDER TO ADDRESS THE WIDEST SCOPE OF CIRCUMSTANCES, RECOGNIZING THAT EACH CUSTOMER'S APPLICATION (AND NEEDS) WILL ALMOST CERTAINLY BE DIFFERENT.

THE MANUAL WILL DESCRIBE THE SETUP AND INSTALLATION IN THE FOLLOWING SEQUENCE:

TOOLS REQUIRED

UNCRATING

VERIFICATION OF PARTS

MECHANICAL ASSEMBLY

ELECTRICAL ASSEMBLY

SETTING THE CONTROLLER LIMIT SWITCHES

FINAL MECHANICAL ASSEMBLY

RECOMMENDED MAINTENANCE

TOOLS REQUIRED

TO ASSEMBLE EITHER A ONE PIECE OR A SECTIONAL TURNTABLE YOU WILL NEED THE FOLLOWING TOOLS:

3/8" SOCKET AND RATCHET SET (SET TO INCLUDE 1/4" THROUGH 3/4")

3/8"SOCKET EXTENSION, 3" LONG

1/8" TO 1/2" ALLEN WRENCH SET

12" CRESCENT WRENCH

SMALL PRY BAR

HAMMER

SMALL BLOCK OF WOOD (PIECE OF 2" X 4")

WOODEN WEDGES (FOR LEVELING BASE)

UNCRATING

AFTER RECEIVING THE TURNTABLE, PLACE THE CRATES IN THE AREA THAT THE ASSEMBLY WILL TAKE PLACE. THE TURNTABLE WILL BE ONE OF SEVERAL TYPES:

A SOLID WOODEN TOP

A SOLID METAL TOP

A SECTIONAL WOODEN TOP

A SECTIONAL METAL TOP

APART FROM THE WEIGHT FACTOR, THERE ARE NO MAJOR DIFFERENCES BETWEEN METAL AND WOODEN TOP TURNTABLES. INSURE THAT THERE IS ADEQUATE RIGGING EQUIPMENT AVAILABLE (AND USED), TO ASSEMBLE BOTH TYPES OF TURNTABLES EFFICIENTLY AND SAFELY.

VERIFICATION OF PARTS

THE CRATES ARE DESIGNED TO BE USED ONLY ONCE: TO TRANSPORT THE UNIT TO THE CUSTOMER'S SITE; SO DAMAGE/DESTRUCTION OF THE CRATES WHILE REMOVING THE TABLE PARTS IS TO BE EXPECTED.

AFTER REMOVING ALL BOXES AND PARTS FROM THE CRATES AND PLACING SIMILIAR PARTS IN GROUPS AT THE ASSEMBLY SITE, DISPOSE OF THE PACKING MATERIAL AND THEN CHECK THE PHYSICAL PARTS RECEIVED AGAINST THE SALES ORDER. IN THE UNLIKELY EVENT THAT THERE ARE ANY MISSING PIECES, NOTE THE SHORTAGES, CAREFULLY RE-EXAMINE THE DUNNAGE AND BOXES FOR THE MISSING PARTS. SHOULD THEY NOT BE FOUND, IMMEDIATELY CONTACT THE FREIGHT COMPANY AND EMCO FOR RESOLUTION OF THE ISSUE.

WHILE NOT ALL TURNTABLES WILL HAVE THE SAME NUMBER OF PARTS (OR CRATES) GENERALLY, THE CRATES ARE MADE AROUND THE LARGE PIECES, THEN THE SMALL PIECES PACKED AROUND THE LARGER: THE CASTERS (ON THE 6 FOOT+ UNITS) ARE PACKED IN A SEPARATE CARDBOARD BOX, INSIDE ONE OF THE LARGE CRATES, AND THE HARDWARE (SCREWS, WASHERS, NUTS, ETC) ARE USUALLY IN PLASTIC BAGS, INSIDE THE CARDBOARD BOXES.

AFTER UNPACKING THE UNIT, NOTE THE DIFFERENT SCREW TYPES AND LENGTHS. LAG BOLTS (COARSE THREADED, LONG SCREWS) ARE USED TO HOLD THE CASTERS TO THE BASE. HEX-HEAD MACHINE SCREWS/BOLTS (FINER THREADED SCREWS) HOLD THE BEARING TO THE BEARING BLOCKS AND THE CASTER RAIL TO THE TOP. THESE SCREWS ARE DIFFERENT SIZES AND CANNOT BE USED IN THE WRONG PLACE. ALLAN HEAD CONTERSUNK SCREWS (SHORT, TRIANGULAR, FLUSH-MOUNT SCREWS) HOLD THE TOP TO THE BEARING FLANGE AND THE BEARING BLOCKS TO THE BASE SEGMENTS.

FLAT WASHERS ARE SUPPLIED WITH THE LAG BOLTS AND SOME MACHINE SCREWS, AND ARE, MOST OF THE TIME, STILL ON THE SCREWS. WASHERS MAY WORK LOOSE IN TRANSIT AND WOULD BE IN THE BOTTOM OF THE BAG, SO PUT THEM BACK ON THE SCREWS THAT HAVE THEM MISSING. GO TO THE GROUPS OF PARTS AND COUNT THE NUMBER OF HOLES THAT REQUIRE SCREWS, THEN VERIFY THE SAME NUMBER, AND TYPE, OF SCREWS ARE PRESENT.

MECHANICAL ASSEMBLY

WITH A 4 FOOT TURNTABLE, PLACE THE MOTOR POWER OUTLET AS CLOSE TO THE POWER SOURCE AS PRACTICAL. ATTACH THE TURNTABLE TO IT'S PERMANENT MOUNTING, IF APPLICABLE. DO NOT ATTEMPT THE POWER HOOK UP AT THIS TIME!

WITH SECTIONAL TURNTABLES (6 FEET AND LARGER), THE BEARING BLOCK IS ALREADY ATTACHED TO THE MOTOR SEGMENT. PLACE THE MOTOR SEGMENT AS CLOSE AS PRACTICAL TO THE POWER SOURCE THEN ASSEMBLE THE OTHER SEGMENTS IN THE FOLLOWING MANNER:

THE SEGMENTS ARE NUMBERED ON THE EDGES AND MUST BE ASSEMBLED IN SEQUENCE (1 FACES 1, 2 FACES 2, ETC). MATCHING NUMBERS ARE STAMPED ON THE SIDE OF THE SEGMENT, TOWARD THE CENTER AND APPROXIMATELY 1 TO 1 1/2" FROM THE INSIDE CORNER. KEEP LOOKING, THEY MAY BE SOMEWHAT HARD TO SEE.

AFTER LOCATING THE MATCHING SEGMENT, STAND IT UP ON OUTSIDE END AND INSTALL THE BEARING BLOCK, USING THE APPROPRIATE BOLTS. (SEE THE BOLT DIAGRAM AT THE END OF THE MANUAL)

AFTER ATTACHING THE BEARING BLOCK TO THE BASE SEGMENT, PLACE THAT SEGMENT IN THE APPROPRIATE LOCATION (WITH THE NUMBERS MATCHING)

CONTINUE TO INSTALL THE BEARING BLOCKS ON THE BASE SEGMENTS AND PLACE THE SEGMENTS IN SEQUENCE UNTIL THEY ARE ALL IN PLACE.

AFTER THE BASE SEGMENTS, WITH THE BEARING BLOCKS, ARE IN PLACE, POSITION THE BEARING ON THE BEARING BLOCKS AND INSTALL THE MOUNTING BOLTS FINGER TIGHT. YOU MAY HAVE TO "NUDGE" THE SEGMENTS (WITH THE HAMMER AND BLOCK OF WOOD) IN ORDER TO GET THE HOLES TO LINE UP. NOTE THE SANDED, SHINY, SURFACE ON THE BEARING WHERE THE TWO BEARING GROUNDING STRAPS (ALREADY ATTACHED TO THE MOTOR SEGMENT) ARE TERMINATED BY THE BEARING BOLTS. THESE GROUNDING STRAPS ARE DESIGNED TO FIT BETWEEN THE BEARING BOLTS AND THE BEARING. GOOD CONTACT FOR THESE STRAPS IS NECESSARY, OTHERWISE STRAY EMI NOISE MAY SHOW UP DUE TO THE MOTOR AND TABLE ROTATION.

NOW CHECK THE RUNOUT(PLAY) BETWEEN THE PINION AND THE BEARING GEAR. TO DO THIS, LOOSEN THE TWO 5/16" ALLAN HEAD SET SCREWS THAT ATTACH THE PINION TO THE SHAFT. (THEY ARE AT 90 DEGREES TO ONE ANOTHER AND ARE AT THE BOTTOM OF THE TWO HOLES HALFWAY DOWN THE SMALL GEAR).

IF YOU'RE LUCKY, BOTH SET SCREWS WILL BE ACCESSIBLE AND EASILY LOOSENED, IF NOT, YOU WILL HAVE TO HOOKUP THE CONTROLLER IN ORDER TO ROTATE THE RING GEAR TO GET AT THE OTHER ALLEN SET SCREW. (SEE THE SECTION BELOW ON ELECTRICAL ASSEMBLY, FOR CONTROLLER HOOKUP. THEN RETURN TO THIS POINT IN THE MANUAL.)

ONCE BOTH SET SCREWS ARE LOOSE, REMOVE THE PINION FROM THE SHAFT AND REMOVE THE 3/8" KEY (THE SQUARE PIECE OF METAL INSIDE THE GEAR) FROM THE KEYWAY, PLACE IT TO THE SIDE AS YOU WILL REINSTALL IT LATER. ONCE THE KEY IS REMOVED, REPLACE THE PINION ON THE SHAFT. THE PINION AND RING GEAR SHOULD ROTATE WITHOUT TOO MUCH EFFORT. ROTATE THE RING GEAR AND CHECK THE AMOUNT OF PLAY BETWEEN THE TEETH OF THE GEARS. WITH A RING GEAR TOOTH CENTERED BETWEEN TWO PINION GEAR TEETH, THE SMALL PINION GEAR SHOULD MOVE SIDE TO SIDE NO MORE THAN 1/32" (JUST DISCERNIBLE MOVEMENT).

CHECK THE PLAY EVERY 90 DEGREES ROTATION OF THE LARGE RING GEAR. IF THERE IS TOO MUCH PLAY BETWEEN THE GEARS, MOVE THE BASE SEGMENTS IN OR OUT UNTIL THE SIDE TO SIDE MOVEMENT IS MINIMIZED AND SEEMS THE SAME AS YOU CHECK IT EVERY 90 DEGREES ROTATION OF THE RING GEAR. MINIMIZING THE SIDE MOVEMENT IS IMPORTANT BUT MORE CRITICAL IS THAT THE GEARS MESH EVENLY AND NOT "BIND" OR STICK THROUGHOUT THE COMPLETE ROTATION OF THE RING GEAR.

(UNEVEN GEAR RUNOUT WILL MAKE THE TABLE SOMEWHAT "JERKY" WHEN RUNNING)

ONCE THE RUNOUT HAS BEEN ADJUSTED, TIGHTEN THE BOLTS MOUNTING THE BEARING TO THE BEARING BLOCK AND CHECK THE RUNOUT ONE MORE TIME. MAKE ANY ADDITIONAL ADJUSTMENTS NEEDED BY SLIGHTLY LOOSENING THE BEARING BLOCK BOLTS AND MOVING THE SEGMENTS AS NECESSARY. WHEN YOU ARE COMFORTABLE WITH THE ADJUSTMENT, REPLACE THE KEY IN THE KEYWAY AND TIGHTEN THE ALLEN HEAD SET SCREWS IN THE PINION GEAR. MAKE SURE THEY ARE REASONABLY TIGHT, SINCE THEY WONT BE ACCESSIBLE, WHEN THE UNIT IS COMPLETELY ASSEMBLED.

LEVEL THE BASE SEGMENTS BY USING AN ORDINARY CARPENTER'S LEVEL AND PLACING LOW ANGLE WOODEN WEDGES UNDER THE LOW SPOTS AROUND THE BASE CIRCUMFERENCE. (MORE PERMANENT LEVELING PROCEDURES, SUCH AS GROUTING OR SHIMMING COULD BE USED, IF THE TURNTABLE WILL NOT BE MOVED.) IF THE TABLE IS NOT LEVELED, THE OUTER CIRCUMFERENCE WILL LIKELY HAVE SOME UP AND DOWN MOVEMENT, WHICH WILL NOT ONLY LOOK UNACCEPTABLE BUT ALSO PLACE UNNECESSARY STRESS ON THE CENTER FLANGE SEGMENT MOUNTING BOLTS.

ATTACH THE CASTER BLOCKS TO THE OUTER PART OF THE SEGMENTS, USING THE LAG BOLTS AND FLAT WASHERS SUPPLIED. NOTE THAT THE BLOCKS CAN BE INSTALLED WITH THE GREASE FITTING FACING IN OR OUT. BE SURE TO INSTALL THE CASTERS WITH THE GREASE FITTING TO THE OUT SIDE.

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ELECTRICAL ASSEMBLY

CONNECT THE PERMANENT POWER SOURCE TO THE TABLE DRIVE MOTOR. USE A QUALIFIED ELECTRICIAN. DO NOT CONNECT THE CONTROLLER POWER CABLE YET.

PLACE THE CONTROLLER IN ITS PERMANENT LOCATION. ROUTE THE 4 AND 8 PIN CONTROLLER CABLES BETWEEN THE CONTROLLER AND THE TURNTABLE. CONNECT THE 4 PIN CABLE TO THE TURNTABLE THEN THE CONTROLLER. CONNECT THE 8 PIN CABLE TO THE TURNTABLE THEN THE CONTROLLER. VERIFY THAT THE CONTROLLER POWER SWITCH TO VERIFY THAT IT IS IN THE "OFF" POSITION. CONNECT THE CONTROLLER POWER CABLE AND PLUG IT INTO THE THE POWER SOURCE.

TURN ON THE CONTROLLER. THE DISPLAY WILL BE BLANK FOR SEVERAL SECONDS WHILE IT GOES THROUGH A SELF TEST ROUTINE. THEN THE DISPLAY WILL SHOW EITHER "8888" OR "<A NUMBER>"; BOTH ARE ACCEPTABLE RESPONSES.

SETTING THE CONTROLLER LIMIT SWITCHES

PRESS THE 'CW' SWITCH AND VERIFY THAT THE TURNTABLE ROTATES CLOCKWISE. STOP THE ROTATION BY PRESSING THE 'STOP' SWITCH. PRESS THE 'CCW' SWITCH AND VERIFY THAT THE TURNTABLE ROTATES COUNTER CLOCKWISE. STOP THE ROTATION BY PRESSING THE 'STOP' SWITCH.

SET THE CURRENT POSITION TO 400 BY USING THE 'INC' SWITCH: HOLD IT DOWN UNTIL THE DISPLAY READS '400'.

PRESS 'CCW' SWITCH AND ROTATE TABLE UNTIL THE CAMS STOP THE TABLE.

SET LOWER LIMIT AND CURRENT POSITION TO '0': PRESS 'DEC'UNTIL IT COMES TO '0'. PRESS 'LOAD' THEN IMMEDIATELY PRESS 'CURRENT POSITION'. IF THE 'CURRENT POSITION' AND 'CCW'; DO NOT BOTH READ '0', RELOAD TO '0' BY REPEATING THE ABOVE PROCEDURE.

PRESS 'CW' UNTIL THE MECHANICAL LIMIT IS REACHED, AND THE TABLE SHUTS OFF.

NOTE THE UPPER LIMIT FIGURE (SOMEWHERE AROUND 390 OR 400), DIVIDE THAT NUMBER BY 2. PRESS 'CCW' UNTIL YOU REACH THAT NUMBER. THEN SET 'CURRENT POSITION' TO 180: PRESS 'LOAD' THEN IMMEDIATELY PRESS 'CURRENT POSITION'; AT THIS POINT YOU HAVE CENTERED THE TABLE AND SET THE MECHANICAL LIMITS.

THERE WILL BE 15 TO 20 DEGREES SAFETY FACTOR IN EITHER DIRECTION BEFORE THE TABLE REACHES THE MECHANICAL LIMIT SWITCHES. THE ROTATION, AND REPEATABILITY OF POSITION, IS DONE BY THE CONTROLLER. THE CAMS ARE AN ADDITIONAL SAFETY FEATURE.

YOU MAY WISH TO VERIFY REPEATABILITY (AND INSURE THAT THE CAMS HAVEN'T SLIPPED) BY NOTING A LOCATION ON THE TURNTABLE AND ROTATING TO THE UPPER AND LOWER LIMITS, THEN CALLING OUT THAT PRESET NUMBER. THE TABLE SHOULD REPEAT TO THE SAME POSITION AND THE CONTROLLER DISPLAY NUMBER WILL BE WITHIN ONE OR TWO DEGREES OF THE TABLE LOCATION. NOTE THAT THE NUMBER (AND TABLE LOCATION) MAY VARY SLIGHTLY, DEPENDING ON THE WEIGHT HE LOAD PLACED ON THE TABLE AND THE AMOUNT OF BACKLASH IN THE GEARBOX.

FINAL MECHANICAL ASSEMBLY

ONCE THE TABLE HAS BEEN CENTERED (USING THE CONTROLLER), THEN BEGIN ATTACHING THE UPPER TABLE SEGMENTS TO THE CENTER BEARING PLATE, USING FLAT HEAD ALLEN BOLTS. NOTE THAT THE MATING SIDE SUPPORTS ON EACH OF THE SEGMENTS ARE OFFSET: THREE OF THE SEGMENTS HAVE THEM CLOSER TO THE CENTER WHILE THREE ARE CLOSER TO THE OUTSIDE EDGE.

AFTER INSTALLING THE FIRST SEGMENT, ATTACH THE CASTER RAIL TO THE UNDERSIDE OF THE SEGMENT: PLACE THE CASTER RAIL , MASONITE SIDE NEXT TO THE CASTERS, UNDER THE SEGMENT AND SLIDE IT UNDER THE SEGMENT SO THAT HALF OF IT PROTUDES FROM THE SEGMENT. THE CASTER RAILS WILL ACT AS FURTHER BRACING TO UNIFY THE TOP.

IT MAKES NO DIFFERENCE WHICH ONE YOU INSTALL FIRST, THE LAST ONE INSTALLED IS CRITICAL. IT MUST BE THE SEGMENT THAT HAS THE SIDE SUPPORTS CLOSER TO THE OUTSIDE. (IT IS MUCH MORE DIFFICULT TO INSTALL INNER SIDE SUPPORT SEGMENTS THAN OUTER ONES FOR THE LAST SEGMENT.)

WHILE INSTALLING THE SEGMENTS AND CASTER RAIL, DONT TIGHTEN UP THE BOLTS HOLDING THE SEGMENTS TO THE CENTER RING OR THE CASTER RAIL TO THE SEGMENTS. AFTER THE LAST SEGMENT IS INSTALLED, SPACE THE SEGMENTS EQUALLY BY MOVING THEM SLIGHTLY AND ADJUSTING THE SPACE BETWEEN ADJOINING SEGMENTS.

AFTER TIGHTENING THE BOLTS HOLDING THE SEGMENTS TO THE CENTER RING AND THE CASTER RAIL TO THE TOP, ROTATE THE TABLE AND CHECK THE RUNOUT OF THE OUTER CIRCUMFERENCE; IT SHOULD RUN TRUE WITHIN 3/8-1/2" (10-15mm).

RECOMMENDED MAINTENANCE

ON SECTIONAL TURNTABLES (THOSE WITH CASTERS AND RAILS) WE RECOMMEND THE CASTERS BE LUBRICATED EVERY SIX MONTHS WITH A GOOD QUALITY BEARING GREASE.

ON SECTIONAL AND ONE PIECE TOP UNITS, WE SUGGEST THAT YOU CHECK THE FLUID LEVEL IN THE GEABOX ONCE A YEAR. THIS WILL REQUIRE REMOVAL OF THE TOP OR ONE OF THE SEGMENTS IN ORDER TO ACCESS THE GEARBOX. THE GEARBOX HAS A LEVEL PLUG ON THE SIDE. REMOVE THE PLUG AND FILL THE GEARBOX WITH 90WEIGHT GEAR GREASE UNTIL IT RUNS OUT THE LEVEL PLUG.(THE LEVEL WAS SET AT THE FACTORY, THIS IS TO INSURE THAT ANY LEAKAGE IS ACCOMMODATED.)

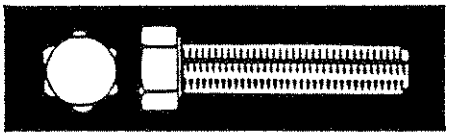
ON SOLID TOP MODELS, GREASE THE DRIVE CHAIN EVERY SIX MONTHS; USE A CHAIN LUBRICANT.

ALL MODELS WILL BENEFIT FROM TWICE YEARLY GREASING OF ALL THE INNER BEARING RACE FITTINGS. REMOVE THE CENTER 'DONUT' AND ROTATE THE TABLE AS NECESSARY TO REACH ALL THE FITTINGS.

TURNTABLE SCREWS, BOLTS, AND FASTENERS

ALLEN HEAD COUNTERSUNK SCREWS

1/2" x 13 x 1" (12.7mm x ? x 25.4mm)	CENTER FLANGE TO BEARING
1/2" x 13 x 2 1/2" (12.7mm x ? x 63.5mm)	BEARING BLOCKS TO BASE



HEX HEAD MACHINE SCREWS

5/8" x 11 x 1 1/4" (15.9mm x ? x 31.8mm)	BEARING TO BEARING BLOCK

LAG BOLTS

3/8" x 3 1/2" (9.5mm x 88.9mm)	CASTER BLOCKS TO BASE

ALLEN SET SCREWS

5/16" x 5/16" (7.9mm x 7.9mm)	PINION GEAR
.050" x 1/8" (1.3mm x 3.2mm)	CAM SET SCREW