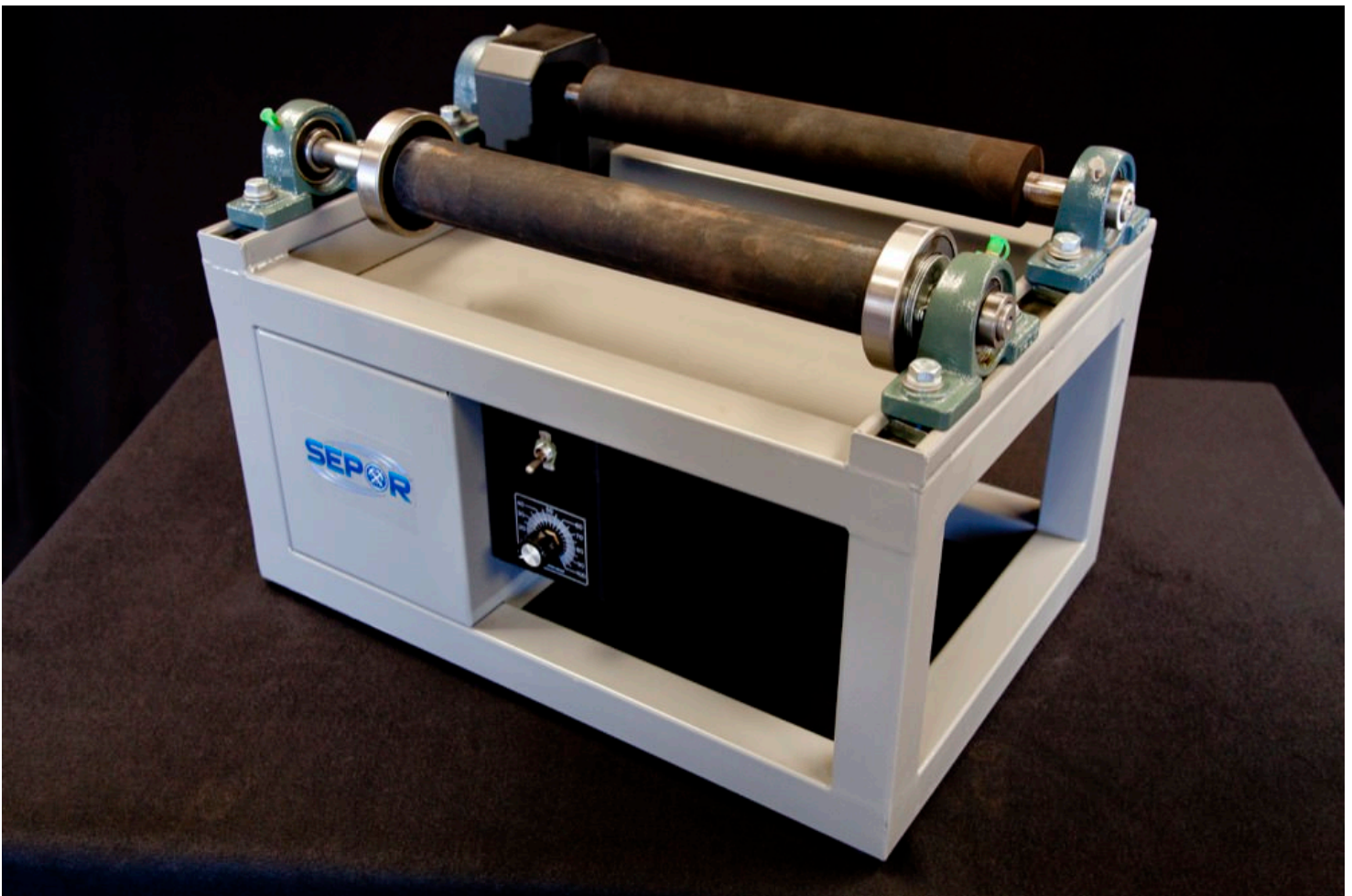




SEPOR, INC
718 N FRIES AVE.
WILMINGTON, CA 90744
310 830 6601
Fax: 310 830 9336
info@sepor.com

OPERATING & MAINTENANCE MANUAL

2" x 24" ROLL DRIVES



INSTALLATION

Place the machine on a level surface to minimize jar migration. Connect to the proper power supply, 110 V/1 Ph/60 Hz. (For foreign users we supply a 220 V/1 Ph/50hz electrical connection. The 220 V machines have the electrical cord supplied, without a plug.)

The gear box has been filled with oil prior to shipment. In order to prevent oil from spilling during shipment, the breather plug has been removed and a solid plug has been put in its place. Before running the machine, the breather plug must be reinstalled. Remove the perforated side plate to access the gear box.

ROLL SPACING ADJUSTMENT

The drive roll is the fixed roll with the belt guard, drive pulley and drive belt connected to the gear reducer. This roll should not be moved. The idle roll may be moved to set the spacing between the drive rolls, to accommodate various size jars. The idle roll spacing is set by loosening the pillow block bolts. These bolts do not have to be removed, just loosened. Once the bolts are loose, tap the roll, which will slide in the unistrut. Make sure to move each side equally, and that the rolls are PARALLEL before re-tightening the bolts.

OPERATION

Recommended jar sizes to use on the roll drive range from 4" diameter to 10" diameter. The RPM's of the jar are directly related to the RPM's of the rollers. The roll diameter is 2", and have a speed range from 10 to 345 RPM's. So, a jar with an eight-inch diameter would have a maximum jar speed of 86 RPM's (91% of the jar's critical speed). (345 RPM x (2/8)) See enclosed Table of Grinding Jar, Roll Speeds for 2" Diameter Roll Drive. For drives with optional timers, set the timer for the desired amount of time (0-99 hours in 1 min increments). When the pre-set time period expires, the power will be shut off to the machine. The desirable operating speeds of the ball mill (jar's) is between 70% and 77% of its critical speed. The critical speed is the speed at which a particle's acceleration due to the centrifugal force from the mill's rotation is equal to the particle's acceleration due to gravity.

$$\text{Critical Speed (RPM's)} = \sqrt{\frac{76.6}{D1}}$$

D1 = Internal diameter of the jar (mill) measured in feet.

The Jar Drive should not be operated without the guards or side plate in place

The Sepor jar rolling machines are designed for continuous duty and may be used for extended periods of time. The jar rolling machines have been tested with up to 100 pound loads, with a 1/4 HP drive. For heavier loads, larger HP drives are required.

OPERATION

The Jar Drive should not be operated without the guards or side plate in place. The Sepor jar rolling machines are designed for continuous duty and may be used for extended periods of time.

This roll drive is equipped with the Solid State DC Motor Speed Control, for connection to 110 V/1 Ph/60 Hz electrical power source. The Control operates by first turning the power toggle switch located on the front of the control panel to the ON position. The drive roll will now start and the rolls will rotate. To control the speed of rotation, then the dial on the front of the controller from 0-10. Maximum roll revolution is 231 RPM's.

During grinding, the jars will have a tendency to 'creep'. This cannot be avoided. To prevent the jars from sliding over the ends of the rolls, a stainless-steel jar stop is in place at the end of the neoprene roll. If only one jar is used, place the jar near the jar stop to begin grinding.

DRY GRINDING

The solids to be ground must be well crushed, preferably finer than 8 mesh, except for soft, easily ground material. For very hard material, a finer starting particle size would be desirable for optimum results from the jar mill.

The amount of material placed in the jar should be sufficient to cover the grinding jar, filling all voids between grinding media and slightly covering the grinding media. This will give the fastest grinding times. Up to a maximum of 40% of the jar volume may be utilized for feed material, however at the maximum material charge, grinding times will be increased. If the material being ground becomes clogged, or agglomerates into a plastic like state, grinding action will cease in the jar. The material must be removed and dried, or ground wet, dispersed in a liquid of up to 50% solids (by weight).

Grinding time varies with the percent media charge, the load of grinding material, the mill operating speed (% Critical Speed), and the type of material being ground. Experimentation will determine the optimum load, grinding time for material to be ground. It is generally true that the longer the grinding time, the finer the product becomes.

WET GRINDING

Viscosity of the material should be equivalent to a free flowing slurry, but the slurry may be as much as 60% solids. The grinding material batch size will vary, but generally a loading of feed material between 20% to 40% of the jar volume will produce the desired results.

Again, the optimum load can be determined by experimenting with the volumetric charge of material to be ground.

LUBRICATION GUIDE

The following lubricants are suggested, but any equivalent may be used. These are recommended for normal operating conditions with ambient temperature to 100 degrees F.

MECHANICAL UNIT

Ball or Roller Type Bearings

Roller chains

Gear Boxes

Loose Pulleys

EXXON LUBRICANT

UNIREX N2

CORAY 90

SAPRTAN EP 5

NUTO 63

SINGLE TIER, 24" ROLL DRIVE • 010E-028

| # | ITEM # | ITEM DESCRIPTION | QTY |
|----|-------------|-------------------------------|-----|
| 1 | 010E-B001 | 24" ROLL DRIVE FRAME | 1 |
| 2 | 010E-X001 | BEARING GUIDE 2" | 2 |
| 3 | 010E-X002 | BEARING COVER | 2 |
| 4 | 010E-X003 | 2.5" X 24" RUBBER DRIVE ROLLS | 2 |
| 5 | CNT-DCX203C | DC CONTROLLER | 1 |
| 6 | MO-M1135046 | 1/4HP, 90V, DC MOTOR | 1 |
| 7 | 784ST125 | 3/4" PILLOW BLOCKS | 4 |
| 8 | 786ST025 | 18 TOOTH TIMING PULLEY 3/8" | 2 |
| 9 | 762ST174 | V-BELT PULLEY 240L | 1 |
| 10 | 778ST035 | 5/8: TAPER LOCK BUSHING | 1 |
| 11 | 778ST045 | BUSHING SH X 3/4" | 1 |

TWO (2) TIER, 24" ROLL DRIVE • 010E-031

| # | ITEM # | ITEM DESCRIPTION | QTY |
|----|------------------|-----------------------------|-----|
| 1 | 010E-TN001 | 24" ROLL DRIVE FRAME | 1 |
| 2 | 010E-X001 | BEARING GUIDE 2" | 4 |
| 3 | 010E-X002 | BEARING COVER | 4 |
| 4 | 010E-X003 | 2.5"X24" RUBBER DRIVE ROLLS | 4 |
| 5 | CNT-174307.00 | DC CONTROLLER | 1 |
| 6 | MO-098000 | 1/2HP, 90V, 1750RPM | 1 |
| 7 | 784ST125 | 3/4" PILLOW BLOCKS | 8 |
| 8 | GR-SK02-56C2.0-5 | NORD GEARBOX | 1 |
| 9 | 784ST260 | SPROCKET #H40BTL14H | 1 |
| 10 | 778ST069 | 3/4: TAPER LOCK BUSHING | 1 |
| 11 | 778ST045 | BUSHING SH X 3/4" | 1 |
| 12 | 784ST265 | SPROCKET#40BTL21H | 1 |
| 13 | 784ST298 | SPROCKET#DS40ATB21H/1.625 | 1 |

THREE (3) TIER, 24" ROLL DRIVE • 010E-032

| # | ITEM # | ITEM DESCRIPTION | QTY |
|----|------------------|------------------------------|-----|
| 1 | 010E-TT001 | 24" ROLL DRIVE FRAME | 1 |
| 2 | 010E-X003 | 2.5"X24" RUBBER DRIVE ROLLS | 6 |
| 3 | 010E-X001 | BEARING GUIDE 2" | 6 |
| 4 | 010E-X002 | BEARING COVER | 6 |
| 5 | CNT-174307.00 | DC CONTROLLER | 1 |
| 6 | MO-98008 | 1/2HP, 180V, 1750RPM | 1 |
| 7 | 784ST125 | 3/4" PILLOW BLOCKS | 12 |
| 8 | GR-SK02-56C2.0-5 | NORD GEARBOX | 1 |
| 9 | 784ST260 | SPROCKET #H40BTL14H | 1 |
| 10 | 784ST265 | SPROCKET#40BTL21H | 1 |
| 11 | 784ST298 | SPROCKET#DS40ATB21H/1.625 | 1 |
| 12 | 720ST178 | BUSHING 1008 5/8" BORE | 1 |
| 13 | 720ST180 | TAPER LOCK BUSHING 1215 3/4" | 1 |
| 14 | 720ST181 | TAPER LOCK BUSHING 1610 3/4" | 1 |

WIRING

The diagram illustrates the electrical wiring for a motor timer system. The main power source is 120 VAC, which passes through an 8 AMP FUSE (F1) and a switch (S1) before reaching the MOTOR OUTLET. The motor is connected to the outlet via a GREEN - 14 GAGE wire and a WHITE - 14 GAGE wire. The timer (T1) is a 10-pin socket with a specific internal wiring configuration shown by dashed lines. It is connected to the motor outlet and the 120 VAC source. The timer has two main control lines: a WHITE - 18 GAGE line for the TIMER START (S2) and a BLACK - 18 GAGE line for the TIMER STOP (S3). A separate section shows a SHAFT COUNTER SWITCH (S5) connected to the motor's shaft and a switch (S4) for the COUNTER RESET, which is connected to the timer's terminal 4. The counter itself is a 4-digit display (C1) with digits 1 through 4. The wiring is color-coded and labeled with gauge sizes throughout the diagram.

