



# TURBO DRIVE INSTALLATION

## MODEL 2500T

### General Purpose Table & Cross

➔ **NOTE** This Turbo Drive is configured as if the feed were going to be mounted on the right hand end of a mill table. The lead screw pitch is 5 turns per inch. See **CAUTION** below before changing anything!

#### CAUTION

The Turbo Drive power cable should be left **unplugged** until the drive is properly installed on the lead screw.

See the **Operation** manual to reverse the direction of travel or to change the lead screw pitch default. Turn **off** the Turbo Drive and **remove** the power plug from the wall before you attempt to change any jumpers or reverse the top housing.

#### WARNINGS

**DO NOT** install and operate this power feed without safety handwheel Servo #58923 on **BOTH** ends of the table. This is required to prevent injury.

**Check handwheel clearances before operation.**

Clearances between the surfaces of the handwheel and the non-moving parts of the equipment on which the handwheel is installed must be at least one-fourth inch (1/4") to prevent injury.

**Do not operate** without proper clearance!

Prevent contact during fast traverses.

#### WARRANTY CAUTION

There are **NO** user-serviceable parts inside the center or bottom housings. Removal of the motor, keyboard, or bottom housing screws **voids** the warranty.

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#### REFERENCE DRAWINGS ENCLOSED

NA-58496	Bevel Gear Installation
NB-58608 (3 sheets)	Turbo Drive Installation
0800-80678	Turbo Drive Operation manual

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#### PREPARATION

➔ **NOTE** Carefully study all three sheets of the installation drawing NB-58608 to determine the best configuration for your machine. Features of different configurations can be combined, if required.

**Step 1:** Remove nut, handle, dial assembly and key (or similar parts on the feed screw shaft) from the lead screw such that a

machined flat and square mounting face and screw support bearing are exposed. Save all parts, as they may be needed for modification and/or installation later.

*Step 2:* Take all necessary measurements. Shaft diameters and keyway widths must be measured accurately so that the bearing race, gear and keys can be fit snugly.

*Step 3:* Make all necessary modifications of existing parts and/or new parts following tolerance requirements noted on the installation drawing.

**\* TIP** A simple layout can be very helpful.

*Step 4:* Select two of the eight holes on the feed housing for mounting of the unit.

*Step 5:* Referencing drawing NB-58608 for hole locations, drill and tap mounting face of the machine 1/4-20 x .75" deep. The two holes must be perpendicular to the mounting face and located within  $\pm .010$ " from true position.

*IF:* If there is a bearing retaining plate, drill two clearance holes through at the same locations or even bolt the feed down to the bearing retainer itself. For the latter case, a good evaluation of the bearing retainer strength is strongly recommended.

## **TURBO DRIVE INSTALLATION**

*Step 1:* Thoroughly clean the screw shaft and mounting area. Apply a thin coat of high pressure grease to the shaft and bare metal surfaces.

*Step 2:* Move the table of the milling machine to the extreme left-hand position.

*Step 3:* Slide the shaft spacer (if any) then the bearing race #0857 onto the screw shaft.

*Step 4:* Install the spacer ring (if any) and Turbo Drive onto the lead screw. Tighten the two 1/4-20 mounting screws. Make sure that the bearing race is not binding with the needle bearing.

## **BEVEL GEAR INSTALLATION**

*IF:* If needed, modify the bevel gear. See drawing NB-58608 for dimensions and Notes 1 and 3.

*Step 1:* See drawing NA-58496.

*Step 2:* Apply high pressure grease to the screw shaft. Install key and slide bevel gear onto shaft.

*Step 3:* Shim bevel gear to obtain backlash of .015/.025".

## DIAL AND HANDWHEEL INSTALLATION

*IF:* If needed, modify the dial. See drawing NB-58608 for dimensions.

**Step 1:** The dial should be adjusted to obtain .005" spacing from the face of the Turbo Drive.

➔ **NOTE** This is important in order to keep chips from entering the gear train. Three plastic (.030" thick) and five brass (.005" thick) washers are provided for this. Shim as required.

**Step 2:** Secure dial using dial nut #59254.

**Step 3:** Slide handwheel #58923 onto the end of the shaft and tighten with 1/2-20 lock nut #01115.

**Step 4:** Replace the handwheel on the *left* end of the table with the handwheel #58923 provided. This is required to prevent injury.

## TURBO DRIVE OPERATION

See the separate **Servo Turbo Drive Operation** manual for complete operating instructions. Plug the unit into a properly grounded three-wire outlet supplying 110 volt single phase 50/60 Hz 6 amp power. Turn the control switch ON and follow the instructions in the manual or on the **Quick Reference** sheet for setting limits.

# SERVO PRODUCTS COMPANY

Web: [www.servoproductsco.com](http://www.servoproductsco.com)

### CALIFORNIA BRANCH

1355 W. Foothill Blvd.  
Azusa, CA 91702  
Ph. 626.691.0121 Fax 626.334.7301

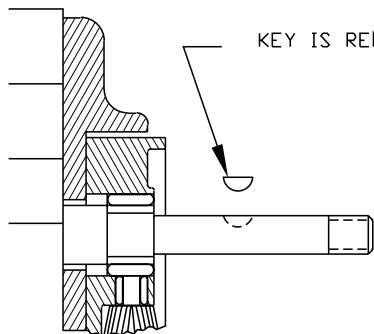
### HEADQUARTERS

34940 Lakeland Blvd.  
Eastlake, OH 44095  
Ph. 440.942.9999 Fax 440.942-9100

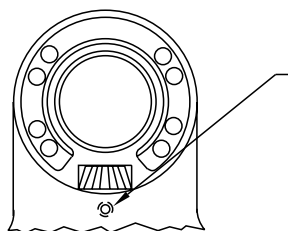
### FLORIDA BRANCH

8950 131<sup>st</sup> Ave. N.  
Largo, FL 33773  
Ph. 727.585.8555 Fax 727.585.6555

DO NOT PLUG IN POWER UNTIL ALL STEPS ARE COMPLETED.

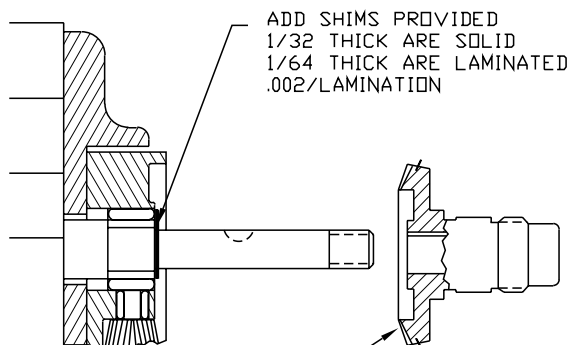


KEY IS REMOVED DURING SHIMMING

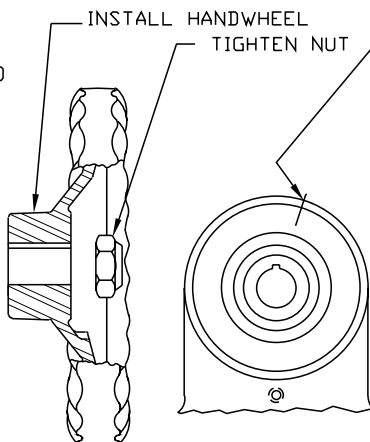


TIGHTEN SLIGHTLY (HOLDS BEVEL PINION STATIONARY DURING SHIMMING.)  
(TIGHTEN UPPER ONE ONLY)

**STEP 1**  
**PREPARATION**



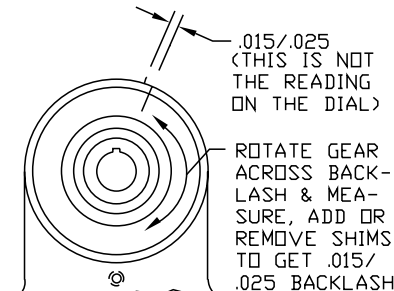
ADD SHIMS PROVIDED  
1/32 THICK ARE SOLID  
1/64 THICK ARE LAMINATED  
.002/LAMINATION



INSTALL HANDWHEEL

TIGHTEN NUT

SCRIBE ACROSS GEAR & HOUSING WHILE PUSHING GEAR AGAINST ONE SIDE OF THE BACKLASH



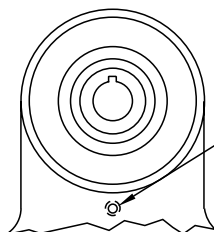
.015/.025  
(THIS IS NOT THE READING ON THE DIAL)

ROTATE GEAR ACROSS BACKLASH & MEASURE, ADD OR REMOVE SHIMS TO GET .015/.025 BACKLASH

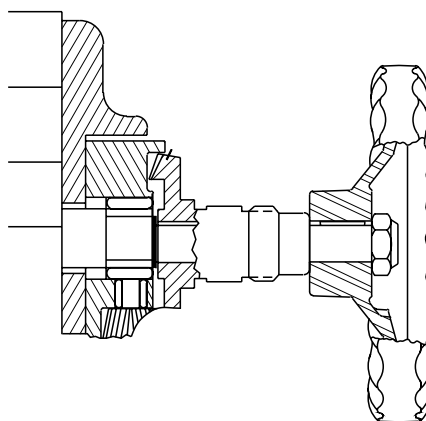
PUSH BEVEL GEAR AGAINST SHIMS.

**STEP 2**  
**SHIMMING BEVEL GEAR**

**CAUTION:** IF BACKLASH IS NOT PROPERLY SET BEFORE TURNING UNIT ON, BEVEL GEAR MAY BE DESTROYED.

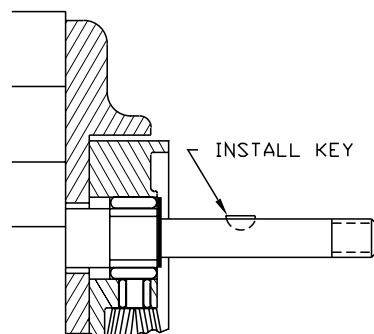


LOOSEN SETSCREW

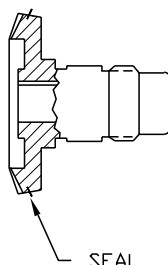


MANUALLY TURN HANDWHEEL. IF EXCESSIVE GEAR NOISE OR BINDING OCCURS, SHIMS NEED TO BE ADDED OR REMOVED, WHEN RE-SHIMMING, REPEAT STEPS 1 AND 2.

**STEP 3**  
**DOUBLE CHECK OF SHIMMING**



INSTALL KEY



SEAL

REMOVE GEAR, PACK WITH GREASE. (DO NOT USE SILICONE TYPE GREASE) REPLACE GEAR. (DO NOT LOSE ANY SHIMS)

PICTURES IN THIS DRAWING ARE FOR REFERENCE ONLY. SEE INSTALLATION DRAWING OF CORRESPONDING MODEL FOR EXACT PARTS CONFIGURATION.



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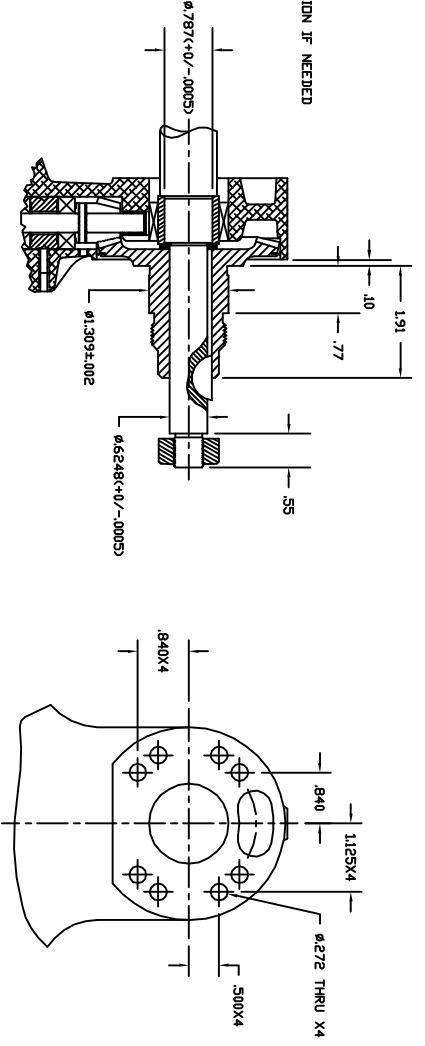
BEVEL GEAR INSTALLATION

NA-58496

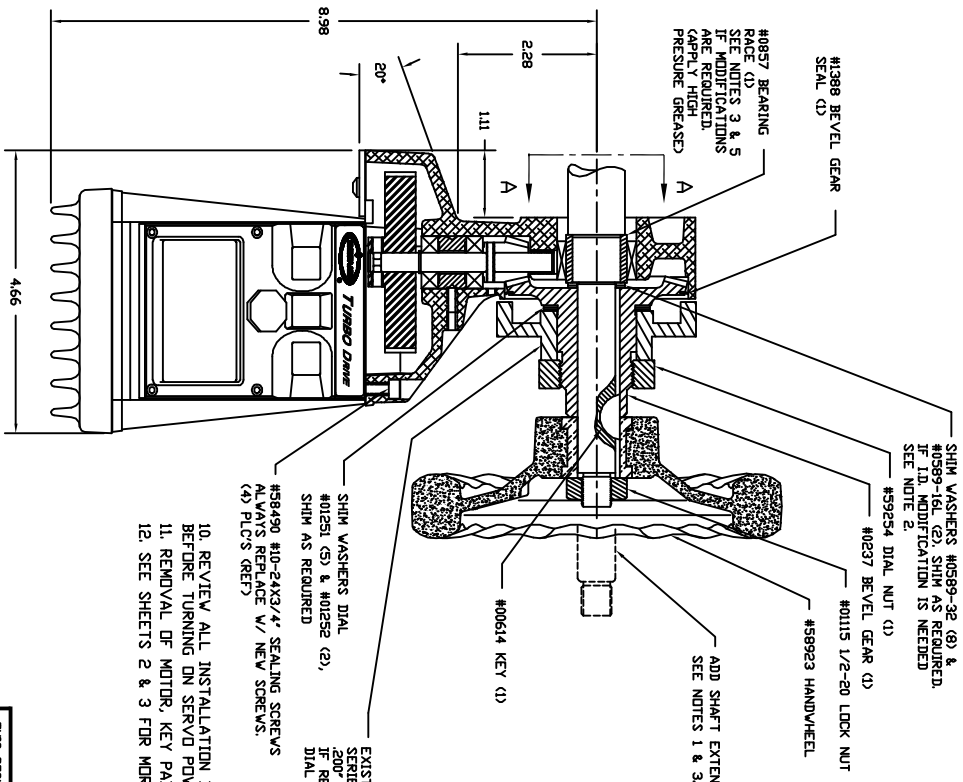
**STEP 4**  
**LUBRICATION**

REVISION		DATE	DRAWN	CHECKED
ECD	LTR	DESCRIPTION		

DIMENSIONING DETAIL



VIEW A - A



- SHIM WASHERS #0599-32 (3) & #0599-42 (2) REQUIRED. IF I.D. MODIFICATION IS NEEDED, SEE NOTE 2.
- #59254 DIAL NUT (1)
- #0237 BEVEL GEAR (1)
- #0115 1/2-20 LOCK NUT
- #8923 HANDWHEEL
- #00614 KEY (1)
- ADD SHAFT EXTENSION IF NEEDED. SEE NOTES 1 & 3.
- EXISTING DIAL OR BRIDGEPORT SERIES I .200" REV DIAL FOR .200" LEAD. IF REQUIRED, MODIFY EXISTING DIAL TO FIT. SEE NOTE 1.
- SHIM WASHERS DIAL #01251 (5) & #01252 (2), SHIM AS REQUIRED.
- #59490 #10-24X3/4" SEALING SCREWS ALWAYS REPLACE W/ NEW SCREWS. (4) PLS. REF.
10. REVIEW ALL INSTALLATION INSTRUCTIONS AND POWER FEED OPERATIONS BEFORE TURNING ON SERVO POWER FEED.
  11. REMOVAL OF MOTOR, KEY PAD OR BOTTOM HOUSING VOIDS THE WARRANTY.
  12. SEE SHEETS 2 & 3 FOR MORE DETAILS.

CONFIGURATION I

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES & TOLERANCES ARE IN FRACTIONS. DECIMALS  $\pm 1/64$ , .XX  $\pm .005$ , .XXX  $\pm .005$ . ANGLES  $\pm 1/2^\circ$ . FINISH MATERIAL NOTED. CHECKED

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CONTRACT NO.	APPROVALS	DATE
	T. KU	8/31/98
FINISH	CHECKED	
NOTED		
APPLICATION	USED ON	
NEXT ASSY		

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES & TOLERANCES ARE IN FRACTIONS. DECIMALS  $\pm 1/64$ , .XX  $\pm .005$ , .XXX  $\pm .005$ . ANGLES  $\pm 1/2^\circ$ . FINISH MATERIAL NOTED. CHECKED

CONTRACT NO. APPROVALS DATE

FINISH CHECKED

NOTED

APPLICATION USED ON

NEXT ASSY

COMPUTER NO.

SCALE 1/2

SIZE CODE IDENT NO. DRAWING NO. REV.

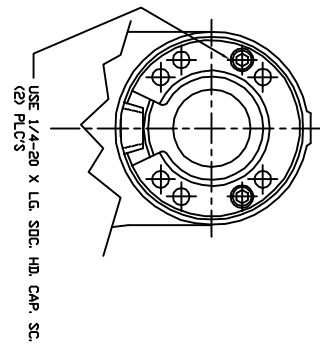
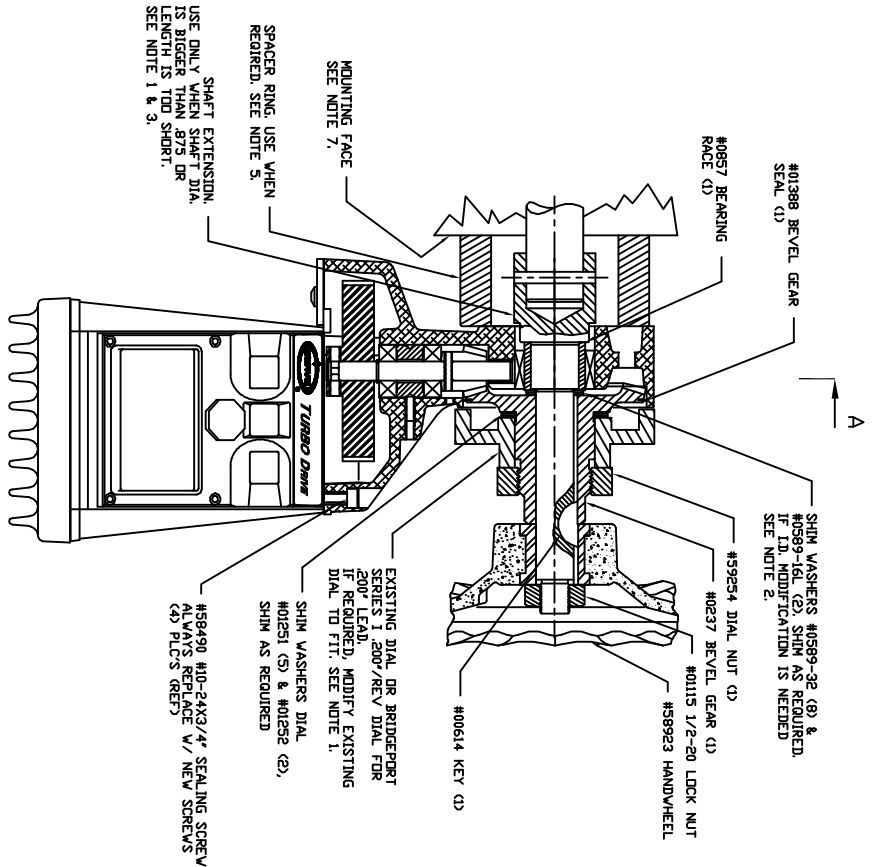
B 0800-80721 NB-58608 B

INSTALLATION DRAWING MODEL 2500T

SERVOPRODUCTS COMPANY 34940 LAKELAND BLVD., EASTLAKE, OHIO 44095

SHEET 1 OF 3

REVISION		DATE	DRAWN	CHECKED
ECD	LTR			
DESCRIPTION				



SPACER RING, USE WHEN REQUIRED. SEE NOTE 5.

SHAFT EXTENSION IS BIGGER THAN Ø75 OR SEE NOTE 1 & 3.

#01388 BEVEL GEAR SEAL (1)

SHIM WASHERS #0589-32 (B) & #0589-16L (2). SHIM AS REQUIRED. IF I.D. MODIFICATION IS NEEDED. SEE NOTE 2.

#0857 BEARING (1)

#59254 DIAL NUT (1)

#0237 BEVEL GEAR (1)

#00115 1/2-20 LOCK NUT

#38923 HANDWHEEL

EXISTING DIAL OR BRIDGEPORT SERIES 1 200°/REV DIAL FOR 200° LEAD. IF REQUIRED, MODIFY EXISTING DIAL TO FIT. SEE NOTE 1.

SHIM WASHERS DIAL #0251 (S) & #0252 (2), SHIM AS REQUIRED.

#59490 #10-24X3/4" SEALING SCREWS ALWAYS REPLACE W/ NEW SCREWS (4) PLCS (REF)

- NOTES:
- REGARDLESS OF THE CONFIGURATION, THE EXISTING BEARING THRUST PRELOAD MUST NOT BE DISTURBED.
  - CLAMPING OF SPACER, BEARING RACE, ETC. AGAINST INNER RACE OF EXISTING BALL BEARING IS O.K. ONLY WHEN THE INNER RACE IS CLAMPED ORIGINALLY. THE SHOULDER BEHIND THE BALL BEARING MUST BE SQUARE AND FULL CIRCLE.
  - SEE SHEETS 1 & 3 FOR MORE DETAILS.

CONFIGURATION II

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES & FLATNESS TO BE WITHIN .01 CONCENTRICITY TO BE WITHIN .01 REMOVE SHARP EDGES AND CORNERS .005 MIN. DRAFTING STANDARD PER ANSI Y14.5M-1982

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & TOLERANCES ARE FRACTIONS DECIMALS ANGLES	CONTRACT NO.	DATE
± 1/64 .XX ± .005	APPROVALS	9/1/98
MATERIAL	T. KU	
FINISH		
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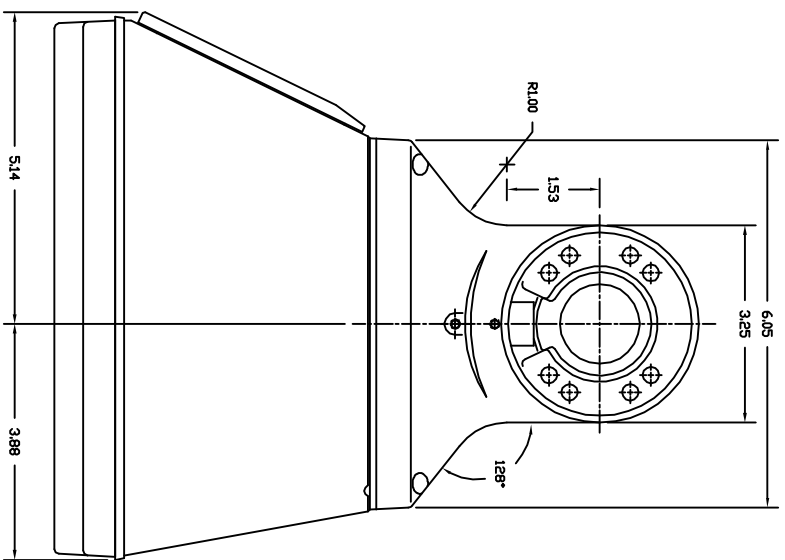
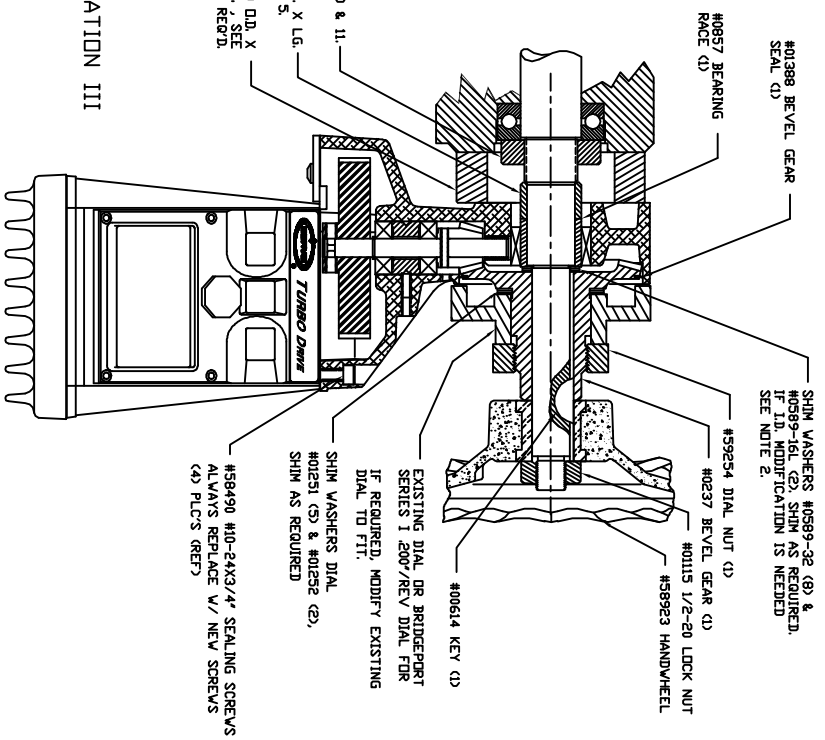
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INSTALLATION DRAWING  
MODEL 2500T

SIZE	CODE IDENT NO.	DRAWING NO.	REV.
B	0800-80721	NB-58608	B
SCALE	1/2	SHEET 2	OF 3

APPLICATION	USED ON
NEXT ASSY	

REVISION		DATE	DRAWN	CHECKED
ECD	LTR	DESCRIPTION		



CONFIGURATION III

NOTES: 16, SEE SHEETS 1 & 2 FOR MORE DETAILS.

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		BRAVN T. KU	7/25/94
		CHECKED	

SERVOPRODUCTS COMPANY 34940 LAKELAND BLVD., EASTLAKE, OHIO 44095			
INSTALLATION DRAWING			
MODEL 2500T			
SIZE	CODE IDENT NO.	DRAWING NO.	REV.
B	0800-80721	NB-58608	B
SCALE	1/2	SHEET 3	OF 3

4 3 2 1