



# TURBO DRIVE INSTALLATION

## MODEL 9824T KNEE FEED

Servo SAM 3 & Servo SV 54

- ➔ **NOTE** This Turbo Drive Knee Feed is configured for mounting the feed on the front of the knee with the keypad facing left. The lead screw pitch is 5 turns per inch left hand with 2 to 1 reducing bevel gear set from the jack shaft to the lead screw (jack screw). 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 the 8" safety handwheel Servo #1685-1 for the knee feed. 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-58705	Turbo Drive Installation
0800-80678	Turbo Drive Operation manual

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### PREPARATION

**Step 1:** Gather together the following items that you will need to complete this installation.

- a) lathe
- b) 3/8" electric hand drill
- c) #7 drill, 1/8" drill, #H drill, #Q drill

- d) 1/4-20 tap, 3/8-24 tap
- e) 9/32" diameter transfer punch
- f) flat file
- g) 3/4" socket wrench
- h) set of inch hex wrenches
- i) grease
- j) clean shop rag

*Step 2:* Clean the power feed mounting area completely.

*Step 3:* Remove the drive clutch from the elevating jack shaft.

*Step 4:* Remove the dial nut, dial, and dial carrier. (Turn the dial carrier counterclockwise to remove.) Keep the dial for reuse later.

*Step 5:* Slip bearing race #6901 onto the jack shaft as shown. Slide the Turbo Drive over the bearing race and locate against front of the knee.

*Step 6:* Using a 9/32" diameter transfer punch, transfer two mounting holes from the feed to the bearing retainer. Remove the unit and the bearing race just installed. Then drill .201 diameter (#7 drill) through the bearing retainer and bearing housing and 1" into the knee casting.

*Step 7:* Remove the bearing retainer.

*Step 8:* Pull jack shaft out of knee. Hold inboard end up while removing to avoid damage to the pinion gear.

*Step 9:* Open up the drilled holes on the bearing retainer and the bearing housing to .266" diameter (#H drill) clearance holes. Tap 1/4-20 UNC x 1/2" deep into the knee casting.

*Step 10:* Press the bearing off the jack shaft.

*Step 11:* Drill and tap the end of the jack shaft 3/8-24 UNF x 3/4" deep. The .332" diameter must be concentric to the shaft O.D. within .002" T.I.R. Chamfer 1/32" x 1/2" diameter. **For best results, machining should be done in a lathe.**

*Step 12:* Place the shaft extension #58537 into the end of the jack shaft. Drill a 1/8" diameter hole along the pilot hole and through the threaded joint. Pin with the 1/8" diameter x 5/8" long roll pin. File smooth.

*Step 13:* Reassemble and replace the jack shaft in the machine.

*Step 14:* Replace the bearing retainer.

## **TURBO DRIVE INSTALLATION**

*Step 1:* Slide the bearing race back onto the jack shaft.

*Step 2:* Slide the Turbo Drive onto the bearing race and push against the knee. Secure with two 1/4-20 x 1-3/4" long socket head cap screws.

*IF:* If the bearing race is not flush with the needle bearing in the unit within  $\pm.05$ ", then either shim behind the race or machine the spacer to correctly locate the race.

### **BEVEL GEAR INSTALLATION**

*Step 1:* Follow the drawing NA-58496 for installation of the bevel gear. Adjust for proper gear backlash.

### **DIAL AND HANDWHEEL INSTALLATION**

*Step 1:* After getting the proper gear backlash, the dial should be adjusted to obtain .005" spacing from the face of the power feed. 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:* In the following sequence, install the key, bevel gear, dial and dial nut #2255. Install key #05966, spacers #57277 and #2981 and slide the handwheel #1685-1 in place. Tighten with 1/2-20 locknut #01115.

### **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.

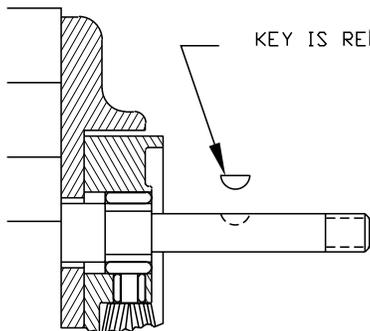
### **SERVO PRODUCTS COMPANY**

433 North Fair Oaks Avenue, Pasadena, CA 91103 USA  
Phone: 800.521.7359 or 626.796.2460 Fax: 626.796.3845

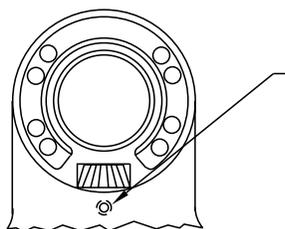
Web: [www.servoproductsco.com](http://www.servoproductsco.com)

If service is required, call Servo Products Company.

DO NOT PLUG IN POWER UNTIL ALL STEPS ARE COMPLETED.

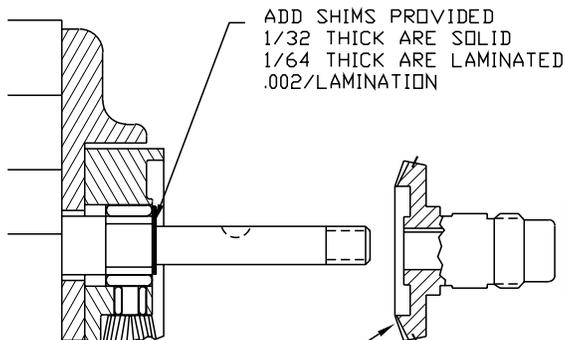


KEY IS REMOVED DURING SHIMMING

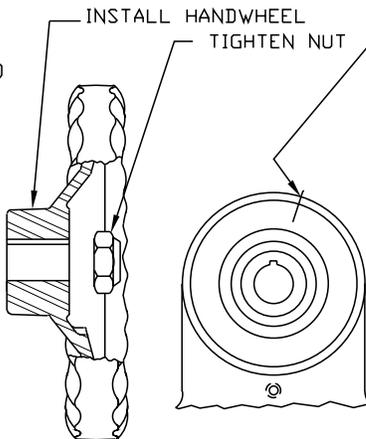


TIGHTEN SLIGHTLY (HOLDS BEVEL PINION STATIONARY DURING SHIMMING.)  
(TIGHTEN UPPER ONE ONLY)

**STEP 1**  
**PREPARATION**



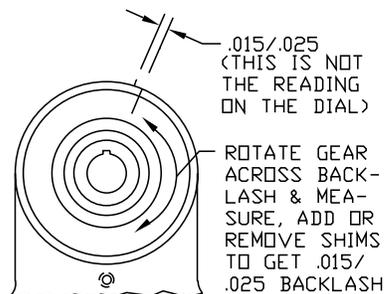
ADD SHIMS PROVIDED  
1/32 THICK ARE SOLID  
1/64 THICK ARE LAMINATED  
.002/LAMINATION



INSTALL HANDWHEEL

TIGHTEN NUT

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



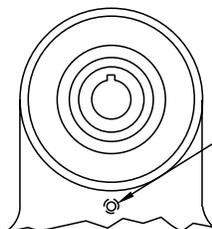
.015/.025  
(THIS IS NOT THE READING ON THE DIAL)

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

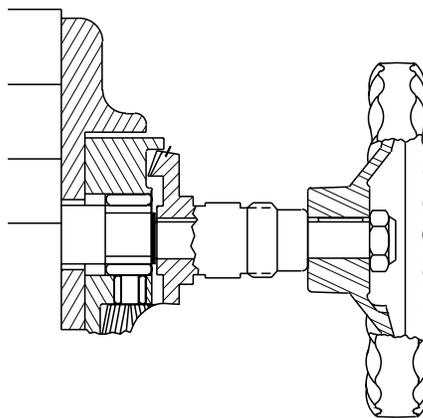
PUSH BEVEL GEAR AGAINST SHIMS.

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

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

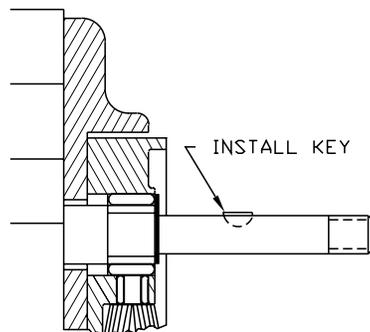


LOOSEN SETSCREW

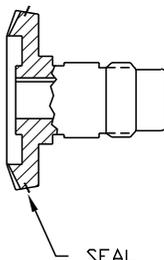


MANUALLY TURN HANDWHEEL. IF EXCESSIVE GEAR NOISE OR BINDING OCCURS, SHIMS NEED TO BE ADDED OR REMOVED, WHEN RE-SHIMMING, REPEAT STEPS 1 AND 2.

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



INSTALL KEY



SEAL

**STEP 4**  
**LUBRICATION**

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.



SERVO PRODUCTS COMPANY

BEVEL GEAR INSTALLATION

NA-58496

