

# POWER FEED INSTALLATION

## Model M-2500

### General Purpose Kit



#### REFERENCE DRAWINGS ENCLOSED

NA-5444	Bevel Gear Installation
NB-3438	Power Feed Installation
ND-6292	Type 140 Servo Drive
ND-6293	Type 150 Servo Drive
0800-80001	Servo Power Feed Operation

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#### PREPARATION

**□ NOTE** *Carefully study all three sheets of the installation drawing NB-3438 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 bearing race, gear and keys can be fit snugly.

*Step 3:* Make all necessary modification 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-3438 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 feed down to the bearing retainer itself. For the latter case a good evaluation of the bearing retainer strength is strongly recommended.

#### DRIVE UNIT 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 shaft spacer (if any) then bearing race #0857 onto the screw shaft.

*Step 4:* Install spacer ring (if any) and power feed 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 bevel gear. See drawing NB-3438 for dimensions and Notes 1 and 3.

*Step 1:* See drawing A-5444.

*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 HANDCRANK INSTALLATION

*IF:* If needed modify dial. See drawing NB-3438 for dimensions and Note 12.

*Step 1:* The dial should be adjusted to .005 inch spacing from the face of the mill feed.

**NOTE** *This is important in order to keep chips from entering the gear train. For this there are provided two solid washers #01252 and five laminated washers #01251. Shim as required.*

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

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

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## LIMIT SWITCH INSTRUCTIONS

**NOTE** *Referencing dimensions on drawing NB-3438 design your travel stop. It is important to prevent stop from hitting limit switch box when pushing plunger. When determining the positions of the mounting holes, make sure that limit switch plungers and stops will be on the same center line.*

## INSTALLATION ON TABLE

*Step 1:* Remove standard table stop pieces (if any) and install the table stop you designed. Put standard stop back in position to prevent feed stops from being set beyond extreme table travel.

*Step 2:* Remove the two cap screws holding the T-shaped table stop bracket (if any).

*Step 3:* Place spacers into the counterbored holes in the T-stop and place the limit switch assembly on the spacers. Secure to the table using appropriate screws.

**NOTE** *The T-stop should be retained to act as a positive stop where required for manual operation. The T-stops are often not symmetrical and may need to be ground to obtain proper operation.*

**NOTE** *For proper operation, the electrical limit switch should be engaged .4 inch before the mechanical stop to allow for coasting of the table.*

## INSTALLATION ON CROSS

*Step 1:* Referring to drawing NB-3438 design your limit switch bar and mount it to the table. Mount limit switch to the bar.

*Step 2:* Determine the right length of the trip rail according to the machine travel on that particular axis.

*Step 3:* Drill clearance holes in the trip rail #1752 and matching #10-24 x .75 in. deep threaded holes in the knee.

*Step 4:* Install trip rail and adjust stops.

## INSTALLATION ON KNEE

*Step 1:* Referring to drawing NB-3438, determine the length of the trip rail according to the machine travel and the standoffs for mounting the limit switch bracket.

*Step 2:* Drill clearance holes in the trip rail and matching #10-24 x .75 in. deep holes in the machine column.

*Step 3:* Mount limit switch to the knee and trip rail to the column and adjust stops.

## OPERATION

See separate *Servo Power Feed Operation* sheet. Plug the unit into a source of 120 volt, 50 or 60 cycle power.

### WARNINGS

#### **Check hand crank clearances before operation.**

Clearances between the surfaces of the hand crank and the non-moving parts of the equipment on which the hand crank is installed must be at least one-fourth inch (1/4") to prevent injury. Modification of existing hand crank or replacement may be required.

***Do not operate*** without proper clearance!

Prevent contact during fast traverses.

## SERVO PRODUCTS COMPANY

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

### CALIFORNIA BRANCH

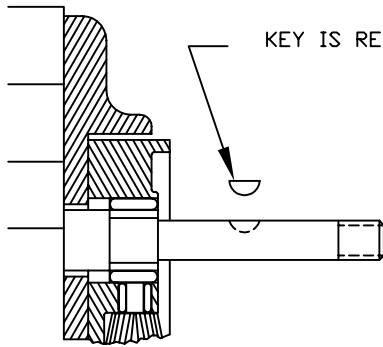
14254 Valley Blvd., Unit A  
City of Industry, CA 91746  
Ph. 626.961.7800 Fax 626.961.2444

### HEADQUARTERS

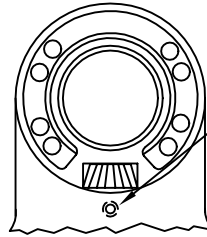
34940 Lakeland Blvd.  
Eastlake, OH 44095  
Ph. 440.942.9999 Fax 440.942-9100

### FLORIDA BRANCH

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

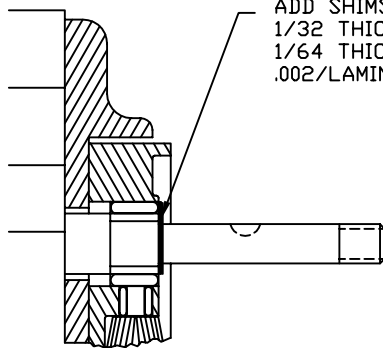


KEY IS REMOVED DURING SHIMMING

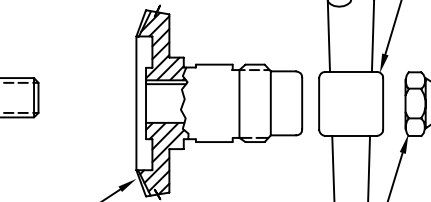


TIGHTEN SLIGHTLY (HOLDS BEVEL PINION STATIONARY DURING SHIMMING.)

STEP 1  
PREPARATION



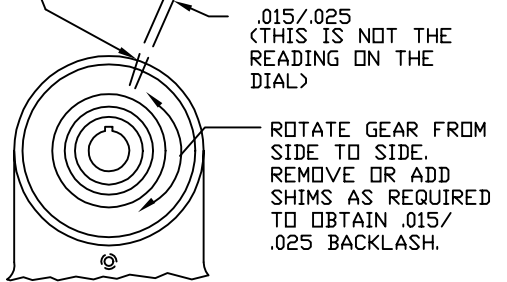
ADD SHIMS PROVIDED  
1/32 THICK ARE SOLID  
1/64 THICK ARE LAMINATED  
.002/LAMINATION



PUSH BEVEL GEAR  
AGAINST SHIMS.

INSTALL HANDCRANK.

MARK HOUSING AND BEVEL GEAR  
WITH PENCIL TO CHECK BACKLASH.



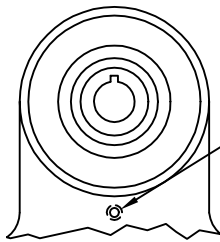
.015/.025  
(THIS IS NOT THE  
READING ON THE  
DIAL)

ROTATE GEAR FROM  
SIDE TO SIDE.  
REMOVE OR ADD  
SHIMS AS REQUIRED  
TO OBTAIN .015/  
.025 BACKLASH.

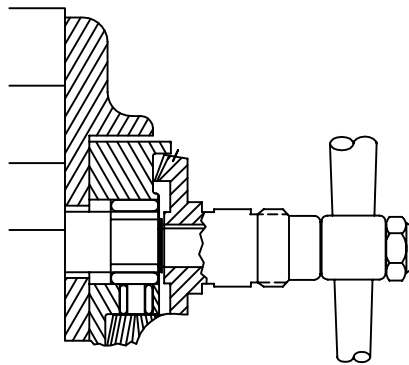
TIGHTEN NUT.

STEP 2  
SHIMMING BEVEL  
GEAR

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



LOOSEN SETSCREW

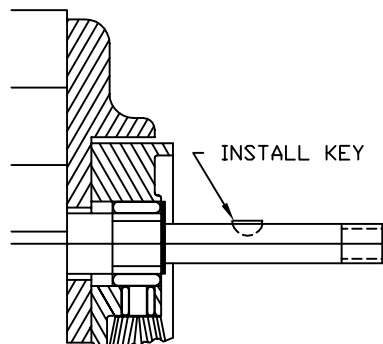


WITH POWER FEED IN  
NEUTRAL POSITION, TURN  
HANDCRANK. IF EXCESSIVE  
GEAR NOISE OR BINDING  
OCCURS, SHIMS NEED TO BE  
ADDED. WHEN ADDING SHIMS,  
REPEAT STEPS 1 AND 2.

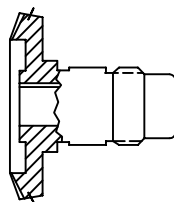


CONTROL HANDLE @  
NEUTRAL POSITION

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-5444 C

STEP 4  
LUBRICATION









# M-2500 TABLE FEED PARTS IDENTIFICATION LIST



0266  
Limit Switch Gasket  
Qty = 1



1133  
Limit Switch  
Bracket  
Qty = 1



06928  
Phill Pan Hd Screw  
Qty = 4



01115  
Lock Nut  
Qty = 1



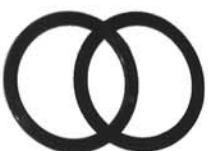
00614  
Key  
Qty = 1



59254  
Dial Nut  
Qty = 1



01251  
Brass Shim  
Qty = 5



01252  
Plastic Shim  
Qty = 2



0237  
Bevel Gear  
Qty = 1



0589-32  
.032 Shim  
Qty = 5



0589-16L  
.016 Shim  
Qty = 2



0857  
Bearing Race  
Qty = 1



00596  
Roll Pin  
Qty = 2



00602  
Soc Head  
Cap Screw  
Qty = 2