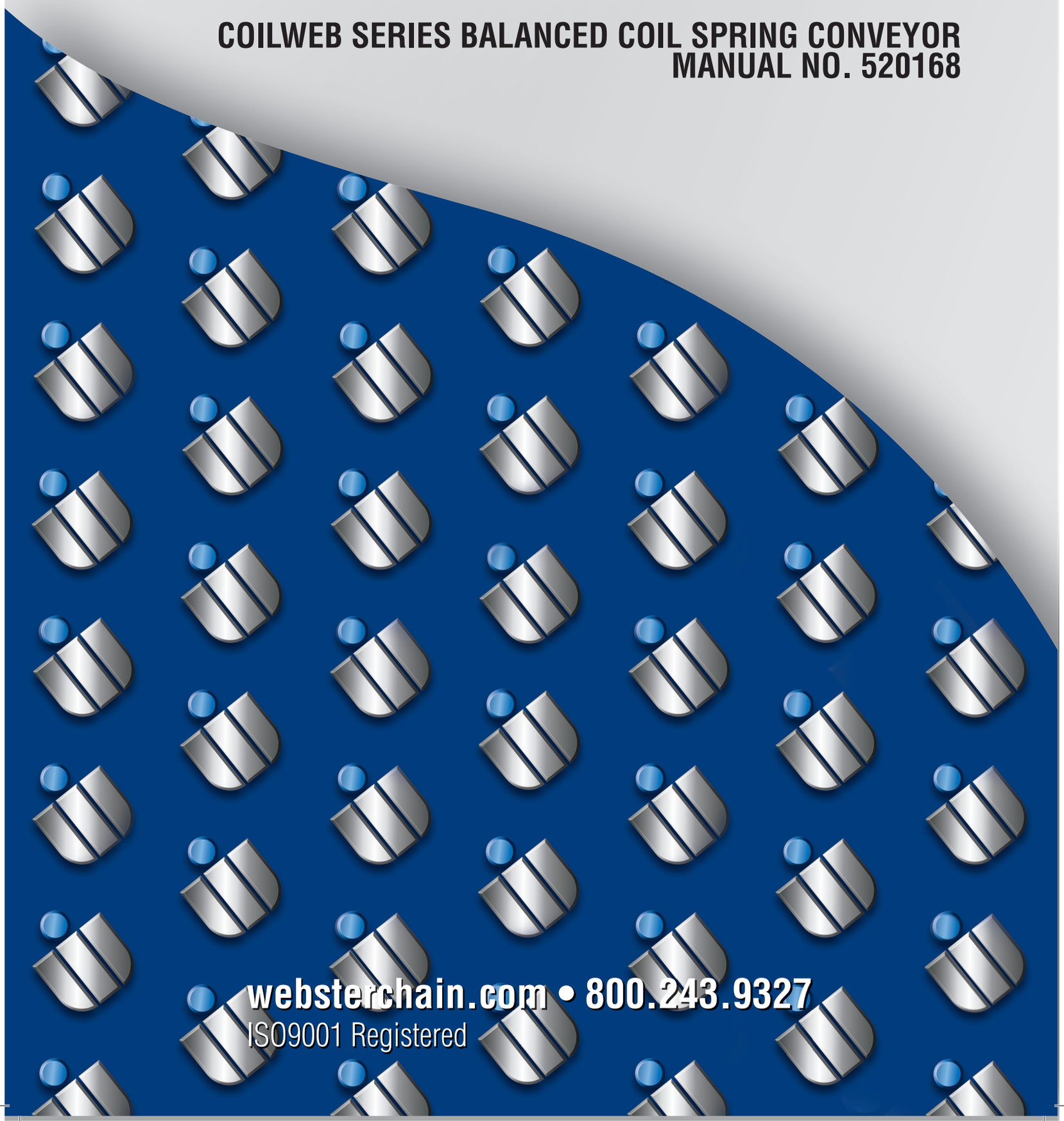
WEBSTER

SINCE 1876

COILWEB SERIES BALANCED COIL SPRING CONVEYOR
MANUAL NO. 520168



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GENERAL SAFETY

Safety is the most important consideration at all times. The use of proper tools, clothes, personal protection and attention to detail are required. Many accidents are caused by inattention or not following proper procedures.

Common sense and good habits are the best training.

Please observe the following safety precautions at all times. Failure to follow these instructions can result in personal injury or damage to the equipment.

1. Always refer to the drawings and the manual for installation, operation and maintenance. If you cannot find the information in the manual please contact Webster Industries, Inc.

2. Do not use the equipment other than for its intended purpose.

3. Do not operate the conveyor without guards or other safety devices.

4. All safety labels must be clearly visible.

5. Emergency shut offs must be easily accessible.

6. Keep obstacles away from the moving parts of the conveyor. Do not let foreign material build up in or around the conveyor. Foreign material around the springs and drive may cause damage and breakage.

7. Do not sit on, walk on or overload the conveyor whether it is on or off.

8. Do not remove guards, do maintenance or be near the conveyors moving parts without stopping the conveyor and locking out the power. On conveyors with pneumatic devices (such as gates) shut off and lock out the air supply also.

9. Make sure shipping braces are removed before starting the conveyor.

10. Make sure no personnel are near the conveyor when starting it.

11. Check the conveyor periodically for corrosion or excessive wear of any component (sheaves, belts etc.).

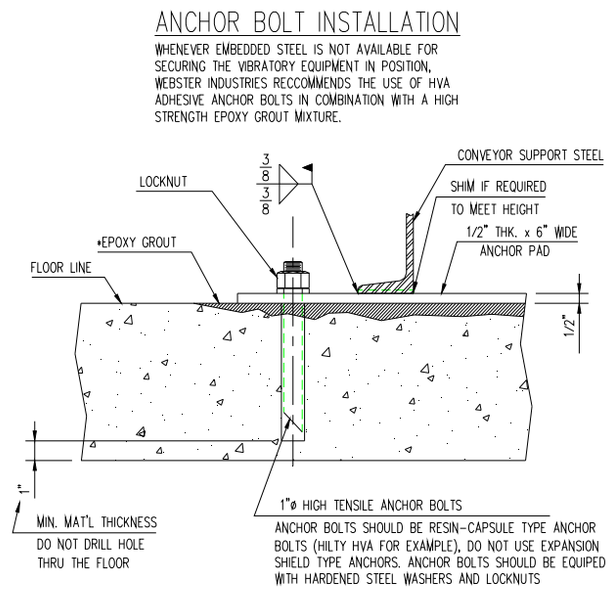
12. The stroke of the conveyor should be checked frequently. The stroke is a good indicator of the conveyor's performance.

Webster provides the safety devices shown on the drawings. Safety devices associated with equipment not furnished by Webster Industries, Inc. (such as controls) or are required by the way the conveyor is installed or used are the responsibility of the customer.

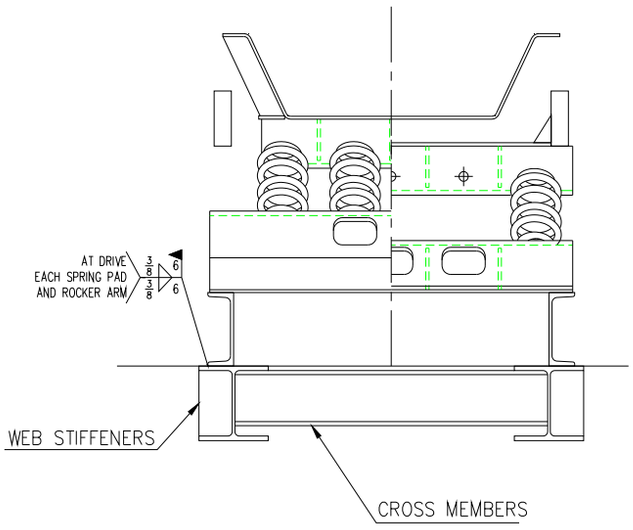
FOUNDATIONS OR SUPPORTS

Natural frequency and soil conditions should be taken into consideration in the foundation design. Since these conditions vary Webster Industries, Inc. can assume no responsibility for foundation design. If there is any possibility of the foundation or supports causing a problem we recommend that the customer consult an engineering firm specializing in soils and foundations or structural engineering.

The preferred method of attaching the conveyor to its foundation is to weld it to beams embedded in the concrete as shown in the following sketch. Since this is not always possible, an anchor bolt installation is also shown.



* GROUTING NOTE
WHEN ANCHORING THE 1/2" THICK SOLE PLATE TO THE FLOOR USE A THIN LAYER OF EPOXY GROUT BETWEEN THE PLATE AND THE FLOOR, THEN TIGHTEN THE LOCKNUTS. AFTER THE SOLE PLATE IS SECURED, WELD THE CONVEYOR BASE OR SUPPORT STEEL TO THE SOLE PLATE. (EXAMPLE OF GROUT WOULD BE MASTERFLOW 648 CP PLUS FROM BASF-MASTER BUILDERS TECHNOLOGIES LINE)



INSTALLATION

All conveyors are thoroughly tested and inspected prior to shipment. Check to be sure that no damage has resulted in transit.

Do not lift the conveyor by the pan or the balancer. Lift the conveyor by the base. If slings are used, use spreaders in the slings to avoid crushing the pan.

Shipping braces are installed on all sections after test and tune and prior to shipment. These are to remain intact until installation is complete. The shipping braces are needed to maintain height and properly align the sections.

The conveyor should be installed so that it is accessible for inspection and maintenance from both sides of the conveyor.

General arrangement drawings are made a part of this manual. These drawings show each shipping section's identification numbers. Locate conveyor sections on their foundations as indicated on these drawings.

On pans over ¼" thick, stops are provided at the shipping section splices in order to obtain the required gap to provide the proper weld penetration. Pans ¼" thick and smaller fit up to the next pan with no gap. See **Fig. 1** and/or the general arrangement drawings. Align the conveyor so the pans are straight and level crosswise and either level or at the desired slope lengthwise. Shim the bases to maintain pan alignment.

CAUTION

Be aware of proper grounding techniques for all welding procedures. Avoid passing current through bearings.

Complete all welding such as splice plates and welding to

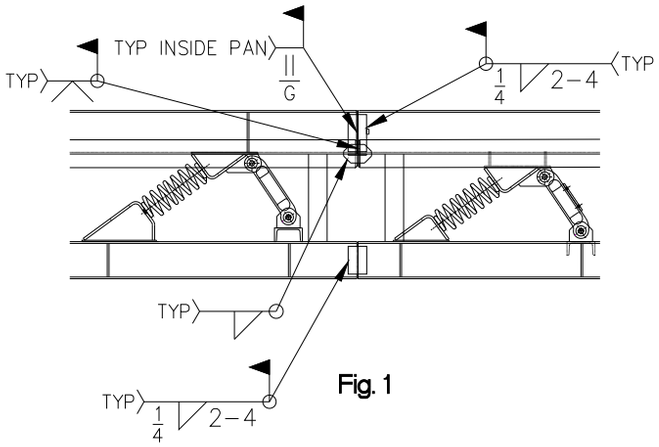


Fig. 1

the foundation, etc. after aligning pan.

CAUTION

Remove the shipping braces before running the conveyor.

Check the stroke. Instructions for checking the stroke and reading the stroke plate are in the Operation section of this manual. The empty stroke and design stroke are on the general arrangement drawing included in this manual and are also stamped on the serial number plate on the conveyor.

Twenty four to forty eight hours after the start up, check the conveyor to make sure there are no loose bolts etc. If nuts need to be tightened follow the torque requirement shown in the maintenance section of this manual.

OPERATION

Please note that any modifications to our conveyors without the knowledge and/or advice of Webster Industries, Inc. may result in damage or improper operation of the unit. Any unauthorized work done to the conveyor may void the warranty.

Keep debris and foreign material away from all moving parts.

Do not allow sticky material to build up excessively on the conveying pans.

If there is a need to modify the conveyor in a way that may result in the addition or subtraction of vibrating weight, first consult Webster Industries, Inc.

DESCRIPTION

CoilWeb conveyors consist of a pan or trough supported by rocker arms and reaction springs. The spring rate of the system is selected so that the natural frequency of the pan-spring system is very near the operating frequency of the drive. The result is that most of the power required to vibrate the pan is stored and released by the reactor springs. A minimum drive force is required to overcome the frictional forces.

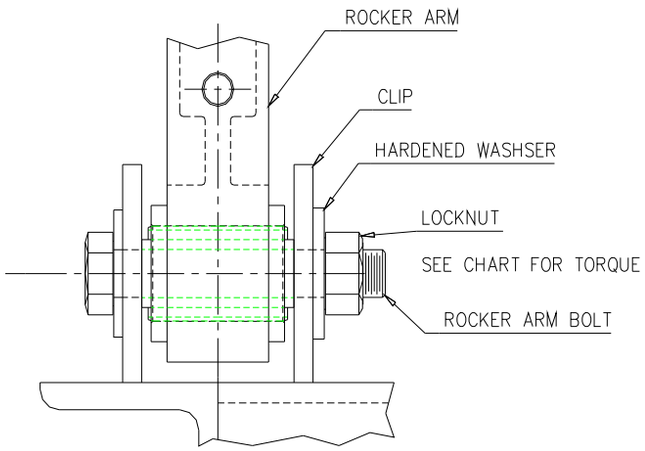
The CoilWeb drive has an eccentric shaft that is connected to the pan and balancer though a drive spring. The drive spring reduces the starting torque requirements by reducing the initial stroke of the pan.

STROKE

Operating displacement, or stroke, is the primary indicator of the conveyor's operating condition. Upon initial start-up, verify that the stroke of the pan and balancer (if applicable) are as indicated on our general arrangement drawings. The stroke of the conveyor should be checked frequently. The stroke is a good indicator of the conveyors performance. The stroke plates, attached to the side of the machine will indicate the operating stroke of the unit. See **Fig. 2**.

Included with this manual is a **magnetic stroke plate**. This is useful if the stroke plates mounted on the conveyor are not accessible, have been damaged or lost. If the stroke is incorrect, get a tachometer reading of the eccentric shaft speed and notify Webster Industries, Inc.
Check drive alignment and adjust if necessary. Refer to Drive Alignment instructions found in the Maintenance section of this manual.

Connect the drive belts, sheaves and guards if necessary. Check the alignment of the belts.



Connect electrical power to motor. Rotation of the motor is not important.

READING THE STROKE PLATE

When the pan is vibrating, the stroke plate has a double image. The Operating Image part of **Fig. 2** . illustrates this double image and shows intersecting lines at ¾". This would be the stroke of the conveyor.

A larger pan stroke will show the intersecting lines above ¾" and a smaller pan stroke will show the intersecting lines below the ¾".

If the conveyor is not properly fastened to the floor the stoke reading will not be accurate.

Check the stroke of all conveyors frequently. If the actual stroke differs from the operating stroke by more than 1/8", it is necessary to make adjustments.
(see Trouble Shooting Section under; Stroke, for advice.)

BALANCING AND ISOLATING

The standard unbalanced CoilWeb vibrating conveyor develops a dynamic reaction and must be installed on an appropriate foundation or support structure. For installations requiring a minimum transmission of the dynamic reaction to supports, a selection of balanced, isolated, or balanced and isolated construction can be employed.

In the balanced construction, a balancing weight is driven 180° out of phase to the pan. This balancing weight is equal to the pan weight and has a duplicate reactor spring assembly system. Being 180° out of phase results in two equal and opposite dynamic reactions that cancel out the majority (80% to

95%) of the dynamic reaction to the supports.

In the isolated construction a relatively short length CoilWeb vibrating conveyor is equipped with a heavy moving inertia base and is mounted to the support structure on soft isolation springs. This type of construction (less complex than balancing) reduces the reaction forces by 85% to 95%.

A combination balanced/isolated can be utilized to provide the highest in isolation
efficiency.

MAINTENANCE

Lubrication

All bearings are shipped pre-lubricated with a grease chosen for chemical and mechanical stability. Periodic re-lubrication with grease, not oil, should be made with the length of interval between re-lubrication depending on the bearing operating speed and atmospheric conditions. See chart below.

Always add grease slowly with the shaft revolving whenever possible, until a slight bead forms at the seals.

When the bearing is full to capacity, there will be a small rise in operating temperature. (Approx. 30 degrees F.)

HOURS OF OPERATION PER DAY	LUBRICATION PERIOD-WEEKS
8	8
16	4
24	2

SPRING SYSTEM

Coil springs are attached at each end with threaded fasteners. This conveyor has been designed so that some or all the spring brackets have additional holes for springs. These holes allow for additional springs if the stroke needs to be adjusted or changes, such as adding liners or covers, are made in the future.

The location or distribution of the springs in the spring brackets is irrelevant to the performance of the conveyor since the job of the springs is controlling the stroke. The springs do not have to be symmetrical about the centerline of the unit.

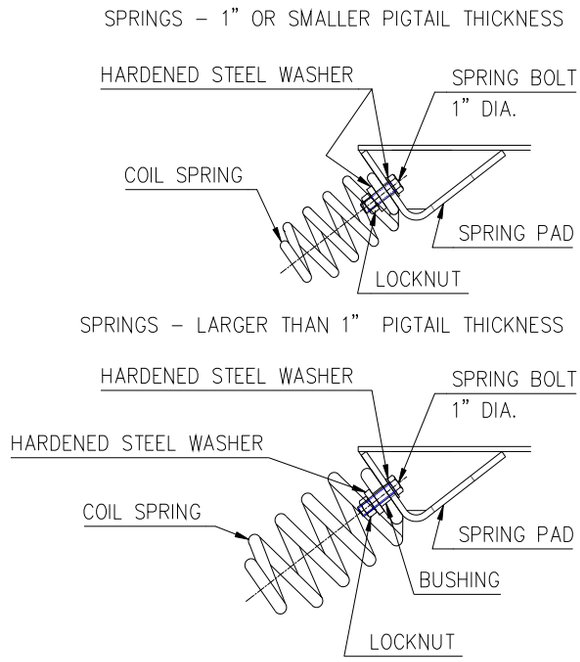


FIG. 3

Always torque fasteners to their proper specifications (See Fig. 4).

BOLT TORQUE SPECIFICATIONS FOR	GR 5 CAP SCREW S & SECURITY LOCKNUTS
Bolt Diameter	Torque FT.-LBS.
1/2- 13 UNC	75
5/8- 11 UNC	150
3/4- 10 UNC	260
7/8- 9 UNC	430
1 - 8 UNC	640
1- 1/4 - 7 UNC	1120

Note: Same torques apply when using Security Locknuts

FIG. 4

The rocker arms control the direction and keep the material running straight in the conveyor.

ROCKER ARMS

Cast iron rocker arms have rubber bushings pressed into each end. These bushings have an inner sleeve clamped by the mounting clips. This is to prevent rotation of the inner

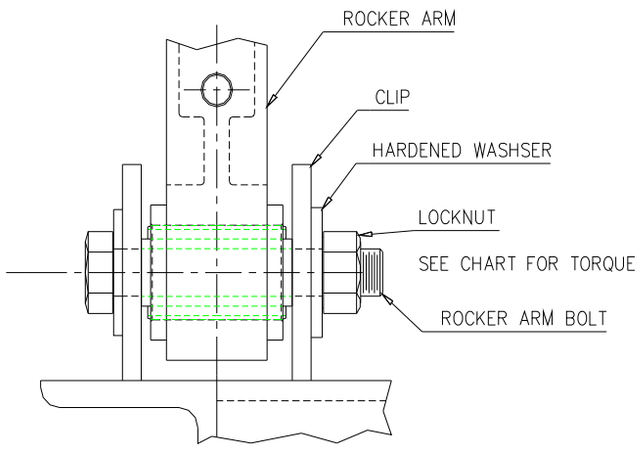


FIG. 5

sleeve of the bushing. There is an interference fit between the bushing's outer sleeve and the casting.
Proper torque of the fastener is critical to assure proper operation.

DRIVE

Installation
Balanced Conveyor

1. Removing the outboard bearings, collars and connecting rods normally gives better access to install the drive.

2. Install drive in conveyor and loosely assemble mounting bolts and nuts.

3. Setscrews on flange bearing should be loose on eccentric shaft. Bolt the drive spring(s) to the connecting rod(s) in the eccentric part of the shaft and to the drive bracket. An anti-seize compound is recommended to be used on the threads of the Security locknuts, these nuts are used on the drive springs only. (Torque to proper torque – see section on the spring system. The center connecting rods usually connect to the pan drive bracket). Allow springs to locate the flange bearings on the eccentric shaft.

4. Align the eccentric shaft perpendicular to the connecting rod and parallel to the drive bracket. See **figure 6**. Shim the pillow blocks if necessary so the seals are centered on the shaft. Use the jackscrews to hold in position.

5. See section on flange bearing page 9. Using extreme caution and safety slowly rotate the shaft to center the flange bearing. (On the larger 3 15/16 bearings there will be two bolts holding the split housing that need to be loosened to allow the bearing to align. After aligning, torque the bolts in the split housing to 75 ft-lbs.) Tighten the setscrews in the flange bearing(s) on the eccentric shaft to the proper torque for the size screw.

6. Use the jackscrews to position the pillow block bearings so the eccentric is 90° to the drive connection. (See fig. 6 in the drive alignment section)

7. Install the outboard bearings (with setscrews loose), collars (coat the bore with anti-seize compound and be sure setscrews are tight) and connecting rods if they were removed to facilitate installation of the drive.

8. Assemble the drive springs to the outboard connecting rods.

9. Measure the gap between the end of the springs and the bracket, and make shims to the proper thickness to fill these gaps. Install shims and bolt the springs (Torque to proper torque – see section on the spring system) to the drive bracket.

10. Using extreme caution and safety slowly rotate the shaft to center the flange bearing. (On the larger 3 15/16 bearings there will be two bolts holding the split housing that need to be loosened to allow the bearing to align. After aligning, torque the bolts in the split housing to 75 ft-lbs.) Tighten the setscrews in the flange bearing(s) on the eccentric shaft to the proper torque for the size screw(see section on flange bearing).

11. Tighten the jackscrews and mounting bolts on the pillow block bearings. Slowly rotate the shaft again using extreme caution and safety. The resistance should be the same as before tightening the pillow block bolts. Recheck alignment and reinstall sheaves, bushings, belts, guards etc. Run the conveyor for about 10 minutes and retighten all bolts.

ALIGNMENT

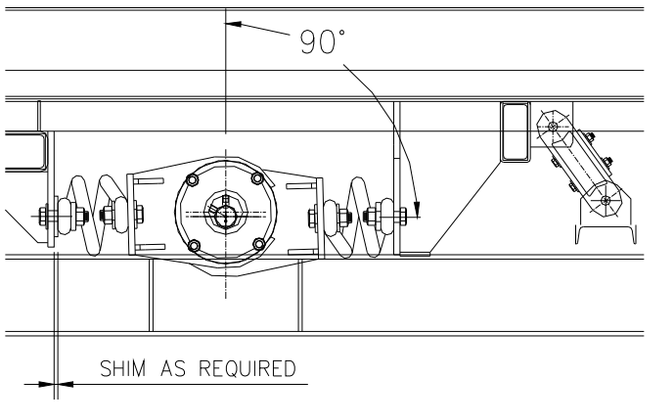
If the drive needs to be disassembled (to change springs,

the eccentric shaft or bearings) or replaced, the flange bearing(s) should be realigned and the drive alignment reset.

Fig. 6 indicates the proper drive alignment of the eccentric shaft with the drive connection. At rest, the conveyor trough will seek its neutral position on the spring system, that is, mid stroke. In this position, the eccentric shaft should be set in its mid stroke position, or 90 degrees to the drive connection. Properly aligned, shaft rotation in either direction will exert the same force on the drive connection.

WARNING:

To ensure that the drive is not unexpectedly started, turn off and lockout the power source before proceeding. Check that



A BALANCED DRIVE IS ALIGNED BY ADJUSTING THE BEARINGS SO THE ECCENTRIC IS 90° TO THE CENTERLNE OF THE CONNECTION WITH THE SPRING TIGHT AGAINST ONE BRACKET(USUALLY THE BRACKET ON THE PAN). A SHIM IS USED TO FILL THE GAP BETWEEN THE SPRING AND THE OTHER BRACKET (USUALLY THE BRACKET ON THE BALANCER)

FIG. 6

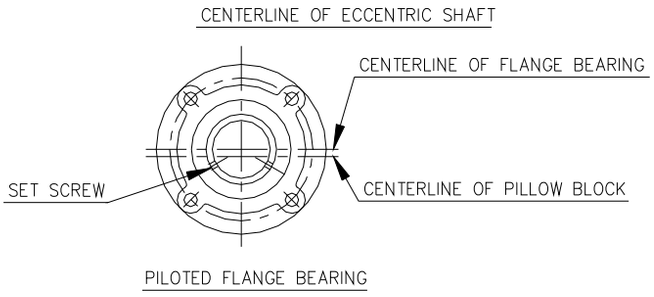
the eccentric shaft is in a neutral position (drive springs not compressed). Failure to observe these precautions could result in bodily injury.

To reset the drive alignment loosen pillow block bearing bolts and back off on jackscrews. Remove bolts form the springs on the side with the shims and remove the shims.

Rotate the eccentric shaft, allowing the pillow block bearings to slide on their bases to achieve the 90-degree relationship.

Tighten pillow block bearing bolts, jackscrews, and all jam nuts.

Shim to the second bracket and reinstall spring bolts.



Run conveyor for about 10 minutes, and then retighten.

FLANGE BEARINGS

Assembly Instructions for Flange Bearings on CoilWeb Drive

WARNING

To ensure that the drive is not unexpectedly started, turn off and lockout the power source before proceeding. Check that the eccentric shaft is in a neutral position (drive springs not compressed). Failure to observe these precautions could result in bodily injury.

1. Check shaft – Shaft and bearing bore should be clean and free of nicks and burrs. If shaft is worn repair or replace as needed

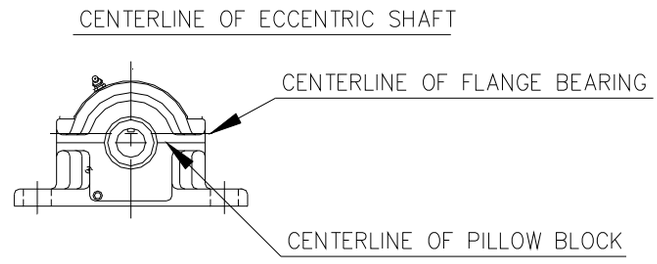
2. Install unit – slip bearing into position. Do not hammer on the bearing.

3. The next steps occur during drive installation (see page 7)

4. Install the housing mounting bolts to a snug fit. Align the bearing(s) so they are in line with the spring(s) and square with the drive bracket. Using extreme caution and safety, slowly rotate the shaft to center bearing. (On larger units with the 3 15/16 roller bearing there will be two bolts for the split housing that need to be loosened to align and then retorqued to 75 ft-lb)

5. Tighten mounting bolts to proper torque. Slowly rotate the shaft again using extreme caution and safety the resistance should be the same as before.

6. After the shaft is aligned tighten the setscrews that lock the bearing to the shaft, hand tight and then alternate tightening until proper torque is reached. (600 in.-lb for 3 7/16 bearing and 1200 in.-lb for the 3 15/16 bearing).



7. Run about 10 minutes; retighten all bolts.

PILLOW BLOCK BEARINGS

Assembly Instructions
Pillow Block Bearings on CoilWeb Drive

WARNING:

To ensure that the drive is not unexpectedly started, turn off and lockout the power source before proceeding. Check that the eccentric shaft is in a neutral position (drive springs not compressed). Failure to observe these precautions could result in bodily injury.

1. If pillow blocks are either rebuilt or purchased from a non-standard source, the clearance between the bearing outer race and the housing must be checked, and if excessive, a shim must be added. To check this clearance, clean the housing bore and bearing O.D., place the bearing in the lower half of the housing, place a short piece of Plastigage** on top of the bearing, install the cap on the housing and tighten, remove the cap and determine the clearance by measuring the width of the Plastigage using the scale printed on the paper sleeve in which the Plastigate came. If the clearance exceeds .002", add a shim between the bearing and housing to reduce the clearance. Shim thickness should be somewhat less than on half of indicated clearance to reduce the clearance to .0005" to .0020". The shim should be as follows:

1-11/16 bearing # 500025 13/16" W x 10" L
2- 3/16 bearing #500122 1-1/16" Wx13-1/2"L
2-15/16 bearing # 500232 1-3/16" W x 17" L

The gap between the ends of the shim should be under the lube fitting when the pillow block is assembled.

2. Assemble one pillow block seal ring onto the eccentric shaft and slide it beyond the roll pin hole. Install the roll pin in the hole. Coat the bores of the pillow block adaptor sleeve and bearing with anti-seize* compound. Assemble the adaptor sleeve on the shaft with the large end against the roll pin and install the bearing on the sleeve. Coat the thread and face of the bearing locknut with anti-seize compound and assemble the lock washer and locknut on the sleeve. The slot in the sleeve should be revolved 90 degrees from the keyway in the shaft.

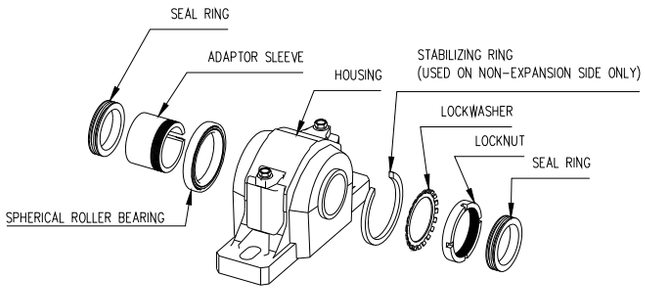
3. Tighten the bearing by exerting a tightening torque on the locknut while striking the face of the nut with a soft hammer. This tightening forces the bearing onto the tapered adaptor sleeve and expands the inner race resulting in a reduction of the internal clearance in the bearing. The bearing should be tightened to a final internal clearance of from .0005" - .0015". This clearance is measured between an unloaded roller and the outer race by means of a feeler gage. After the correct internal clearance has been obtained, bend one tang of the lock washer into a notch in the locknut and pack the bearing full of grease.

4. Assemble the other pillow block seal ring onto the eccentric shaft. Thoroughly clean both halves of the pillow block housing and coat the bearing seats with anti-seize compound. Place the shaft and bearing into the lower half of the housing; move the seal rings so they go into the grooves in the housing. Install the stabilizing ring between the bearing and the housing shoulder on the locknut side of the bearing. Place the top half of the housing on the lower half and install and tighten the bolts which clamp it in place. Note: The upper half of each pillow block must be assembled with its mating lower half as these parts are not interchangeable.

5. Assemble the second pillow block on the other end of the eccentric shaft following the same procedure as was used for the first except that a stabilizing ring is not used.

6. Check to make sure the seals in the Pillow Block Bearings are not rubbing against the shaft. It may require shimming the Pillow Block Bearings to prevent the seals from rubbing against the eccentric shaft to avoid premature wear of the seals. Run the conveyor for about 10 minutes; retighten the pillow block bearings.

* Never-Seez or equal.



** "Plastigage" is made by Perfect Circle and can be purchased from automobile supply stores.

TROUBLE SHOOTING

Noise

• The Conveyor is designed to run quietly; if any unusual noises occur, this condition should be corrected. Possible causes of noise are:

• Loose or broken fasteners

• Foreign material trapped in areas of the conveyor

• Rocker Arm bushings loose or have failed

• Loose bearings

• Loose anchor bolts or welds

STROKE

Stroke too high

• The stroke being too high will result in higher stresses on the springs, causing reduced spring life and breakage. Possible causes are:

• Material building up in the conveyor increasing the weight of the vibrating mass
• Weight has been added to the pan

• Spring(s) have broken

• Additional springs are needed. Consult Webster Industries, Inc. for advice.

Stroke too low

• The stroke being too low will result in reduced material flow. If the material flow is satisfactory this does not have to be changed. If more flow is needed the stroke can be increased by removing springs or for finer adjustments adding weight to the pan. Consult Webster Industries, Inc. for advice.

• Material build up under the pan preventing free movement of the pan may cause low stroke.

Spring Breakage

• Possible causes of spring breakage are:

• Stroke of conveyor too high

• Spring mounting bolts not properly tightened

• Foreign material preventing free spring movement

Bearings Are Hot

(It is normal for bearings to run 150° F)

• Possible causes for bearing to run hot are:

• Too much grease or the wrong kind of grease

• Seals rubbing (drive misalignment)

• Bearings too tight

• Foreign material packed around bearings

• Bearing contamination

WEBSTER
SINCE 1876

Manufacturing Facility in Tiffin, OH

HISTORY

Since 1876 Webster Industries, Inc has provided conveying solutions of all types to a broad range of markets with a variety of products and expertise. Towner K. Webster founded Webster Industries with his “Common Sense” elevator bucket in Chicago, Illinois. In 1907 Webster relocated to Tiffin, Ohio where our corporate headquarters reside today. Over the past century Webster has evolved from producing elevator buckets to being the world’s leading manufacturer of engineered class chains, commercial castings and vibrating conveyors

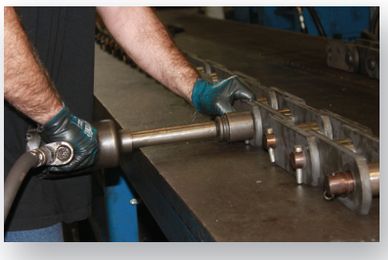
LOCATIONS

Our Tiffin headquarters has over 300,000 square feet of manufacturing space and includes a malleable iron foundry, punch press operations, heat treat facility, machine shop, sheet metal fabrication department, chain assembly area, in-plant laboratory and testing facilities. Our two warehousing and assembly locations located in Meridian, Mississippi and Tualatin, Oregon allow for quick access to over $7 million dollars of inventory throughout North America. Our three manufacturing facilities stock over 250,000 feet of chain to serve our customer requirements.

VERTICAL INTEGRATION

Vertical Integration Manufacturing system-While most other companies rely increasingly on outsourcing to produce its products, Webster Industries continues to invest heavily in our vertical integration. To Webster, vertical integration guarantees superior product design, consistent product quality, and the best deliveries in the industry. All aspects of your chain are made under one roof in Tiffin, Ohio. Webster’s reputation for high quality products comes from the same principles it was founded on American materials, American labor and American pride.American Materials, Labor, and Pride.

Chain Assembly



Sheet Metal

Heat Treat

Foundry

Machine Shop

Punch Press

ISO 9001 QMI REGISTERED QUALITY SYSTEM

WARNING

Never operate Machine with Guards Removed
Disconnect and Lockout Power Before Removing Guards to Service Equipment

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