

## Service and Installation Procedure Guide



## **SMICO Manufacturing Company, Inc**

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### **SMICO Sales Representative Contact information**

*Name of Rep Company*  
*Sales Rep name*  
*Address*  
*Phone*  
*Email*

Dear *Company Name*,

THANK YOU, for purchasing a SMICO screener. Over the past 70 years SMICO has built and successfully installed thousands of screeners for companies just like yours. Our belief is that the best screener manufacturers are not known only for the quality of their machines, but also by the quality of their support. By purchasing a SMICO screener you have activated a team of dedicated professionals to support you through the entire life of your SMICO screener. Our employees realize that your purchase of a SMICO screener doesn't mean the end their job, but that it's only the beginning to a valued relationship. We would like to demonstrate our commitment to you by giving you several keys to maximizing the productivity of your new SMICO screener which you'll want to review before installation.

### **Our Quality Promise To You:**

We take great pride in the American-Made quality of our SMICO screeners. Each SMICO machine goes through 3 separate quality checks during production before leaving our plant. In addition, each SMICO screener has been run and monitored, to make sure it performs at optimum capacity when it arrives at your plant. If our machine doesn't meet these very tight standards it is not shipped!

### **Warranty:**

Each SMICO employee gives special pride and attention to each screener during each phase of the production process. Because of this, our customers enjoy a full 1 year warranty on the drive, motor, welds and other components of their new SMICO screener. Please familiarize yourself with the complete warranty enclosed in this package in order to understand your rights as a client of SMICO.

### **Installation:**

We strongly recommend that you utilize one of our expert installers or the help of your local SMICO rep to help you install your new SMICO screener (contact us for pricing). However, if you choose to install your new SMICO screener yourself please follow the service manual completely to ensure your warranty remains in tact. **Please remember that SMICO is not responsible for any damage caused by anyone other than a SMICO employee or representative and any repairs needed due to improper installation will not be covered under the SMICO warranty.**

If you have any issues with your SMICO screener during installation or the machine is not running properly at any time during start up please shut down the machine, and immediately contact your SMICO rep or contact SMICO directly at 1-800-351-9088. One of our factory service technicians will help correct the problem over the phone or schedule a service call at your location.

## **Service and Parts:**

SMICO has factory trained service staff that can provide onsite repairs to our screener at your facility. Below is the fee schedule associated with any repair or service to your SMICO screener.

- Technician Daily Service Rate: \$650---\$850
- The Daily Service Rate does not include the cost of parts required during service.
- All travel costs associated with the service call will be at the customer's expense.

For our clients who would prefer to avoid the variable costs associated with service and repair or lack service and repair staff, a service agreement is available. The service agreement includes a discount on parts as well as an annual tune-up visit by a SMICO service technician in addition to many other benefits. Please contact your local sales rep or contact a SMICO service specialist directly at 1-800-351-9088.

SMICO supports our screeners with a full selection of parts to repair your machine. Our parts division can handle all of your needs from bolts, screens and any other part in between. We offer several levels of shipping including same day or next day service. We're available from 6 AM to 6 PM CST Monday through Friday for your convenience.

All of us at SMICO are very interested in receiving feedback from, you our customer, on your impressions of our company. There is a post card, inserted with this packet, which we would like you to fill out after your machine is installed and running. We promise to read these carefully as we strive to improve our products and services.

Respectfully,

Erick Heald  
*CEO*

Tim Douglass  
*COO*

Randall K. Stoner  
*Chief Engineer*

Bill Springmeyer  
*Plant Manager*

***Assembled with PRIDE and QUALITY by all the people at SMICO***

# PRELIMINARY INSTALL INSTRUCTIONS AND FOLLOW UP

## A: STORAGE

Generally the unit is delivered as required. If the unit is delivered before the installation and has to be stored there are a few steps that need to be taken. If the unit is to be stored for up to **TWO (2)** months The unit needs to be stored in a building or if at all possible away from excessive moisture.

Smico manufactures many different machine types and it is **IMPORTANT** consult the factory before lay-up. While occasionally there may be warranty issues, if the unit stays in storage for longer than **TWO (2) months it is important to contact the factory to avoid these issues.** While the unit is in storage it is important to rotate the shaft(s) several times at least once a month to lubricate the bearings.

## **KEEP RECORDS OF STORAGE PROCEDURES AND DATES!**

## B: HANDLING

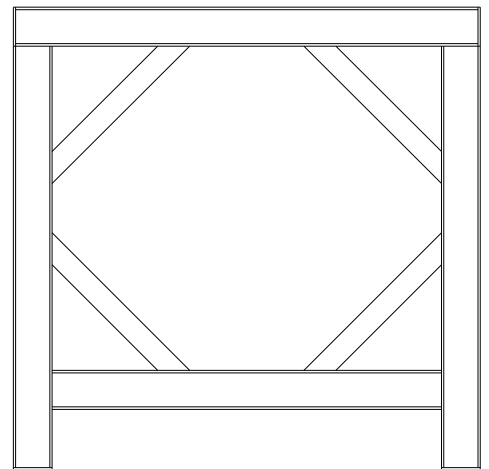
When handling the unit, be sure to raise it evenly at all four corners. This applies to level, or the actual angle that the machine will be running installed. Even weight distribution is important. Depending on the size, and style of the unit forklift, chain fall, hoist and crane are all acceptable. There also, depending on the size and style of the unit, may be lifting lugs located at all four corners. It is recommended that these lifting lugs be utilized as they are located at critical stress points on the unit.

## C: INSTALLATION

**Previous to any purchase / installation a structural engineer should be consulted.**

One of the most important individual items for installation of your **SMICO** series screener is the preparation of a proper foundation. The essential part of a foundation is that it is rigid and square. Steel or concrete foundations are recommended. Wood foundations are not recommended since they are rarely rigid, and since they are subject to temperature changes and warpage, it is impossible to insure accuracy or squareness. When selecting a steel foundation it is necessary that the beam is selected such that the natural frequency of the beam is not within the period of sympathetic vibration period of the machine. The spring mounts on the machine provide vibration isolation for this machine. **DO NOT attempt to further isolate this machine by using some type of vibration isolator between the frame and the foundation.** This will result in a frame that is not rigid and the machine will vibrate this frame excessively. This will usually produce more vibration transmission than less vibration transmission.

*Typical frame depicting gussets that are properly sized and located. The traditional "x" bracing is not adequate for vibrating equipment.*



**\*SMICO IS NOT RESPONSIBLE FOR INSTALLATION OR NATURAL FREQUENCY RELATED PROBLEMS.\***

Ensure that the unit is installed at the correct angle as engineered / purchased. Some units are purchased with a static base and sub-frame that are designed to bolt directly to your floor or structural frame. Some are just with a static base that bolts to your structural frame constructed to the correct angle.

If installing on your frame it must be level and square within 1/4 inch. This will greatly affect the life and performance of the unit. If installing on a concrete substrate this needs to be as level as possible. If the installation is outdoors it is recommended that the concrete pad be installed over compacted earth. Consult your engineer or an engineering firm to ensure that the size and thickness of the concrete base will be sufficient.

**It is important to make sure that any installation is as level and as rigid as possible to maintain the life and continued performance of the unit.**

**E: CLEARANCE**

While Smico tries to ask all of the right questions as far as where or how a unit is fitting into an installation it is important to realize these most important maintenance issues.

**VERTICAL CLEARANCE:** Smico recommends that a vertical clearance of 2" (inches) be maintained between the vibrating screener itself and any stationary structures such as feed hoppers, discharge chutes, and bins.

**SCREEN REPLACEMENT:** There must be enough clearance to remove the feed end or discharge end of the machine and be able to replace the screens. The length of the screener and the number of screen decks are an important consideration. Clearance in between the screen decks are also something to consider.

There must be enough clearance for an operator to remove the screen tensioning arrangement on both sides of the unit.

**ROUTINE MAINTENANCE:** There must be enough clearance for maintenance personnel to perform their duties. These duties may include applying grease to the bearings, checking oil levels or changing oil and making sure that there is no accumulation of material around the springs which may interfere with the performance of the machine.

While Smico machines are engineered to last, on occasion there may be a drive component failure. Some thought should be put into clearances to be able to refurbish the unit.

**CAUTION: ALL HOLD DOWN BRACKETS AND SHIPPING BRACKETS MUST BE REMOVED BEFORE FINAL LEVELING AND BEFORE START UP OF THE MACHINE!**

**CAUTION:** During start up and shut down the shaking components of the screener will experience a brief period of much larger movement as the vibrating screener passes through the resonant frequency of the support springs. The vibrating screener must not contact any stationary object during this time.

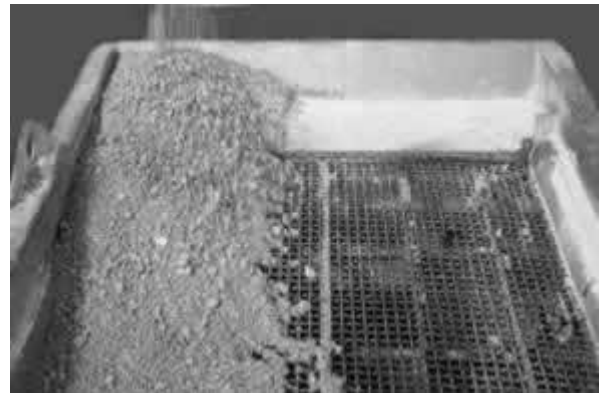
**FEEDING ARRANGEMENT:** Proper material feed to vibrating equipment is essential in maintaining desired performance and screening efficiency. Feed chutes and hoppers should be designed to result in an even feed to the entire width of the screen. Precautions should be taken to prevent fine and coarse material from segregating to opposite sides of the machine due to feed chute configuration. Ideally all material should be fed so falling straight down at the feed end center of the screener from as short a height as possible.

Feeding material to the middle of the screen deck body, on a corner, or in a segregated manner can result in undesirable side motion that can cause the screener body to twist and lead to eventual metal fatigue and cracking. It will also mean that each square inch of the screening surface is not being utilized.

**RIGHT WAY**



**WRONG WAY**



**MOTOR AND DRIVE ROTATION:** Depending on the material and your expectations of what the machine will separate there are a couple of considerations.

**SINGLE AND MULTIPLE DECK MACHINES:** It is important to consider what cut of the product you need to extract from your system. Any decks above the centerline of the drive along with any decks below the centerline of the drive will react according to the motor rotation.

If the motor / drive are running counter flow, i.e. the motor is rotating towards the feed end, this will retain material on the decks above the centerline of the drive and quickly remove material from the decks below the centerline of the drive. In an opposite fashion, if the motor / drive are running with flow, i.e. the motor / drive are running towards the discharge end the material will be removed more quickly from the decks above centerline of the drive than below.

When your machine was purchased these considerations should have been analyzed by your production department and or your engineering partner.

**BELT TENSION AND ALIGNMENT:** Proper belt tension and alignment are important to screening performance. Belts that are too loose will slip during start up and may not be able to start the unit. Belts that whip excessively may indicate insufficient belt tension. Belts slightly squeal during start up are normal while the screener and the motor get into synchronization with each other.

**CAUTION:** If the belts are tensioned too tightly they can cause damage. As belts are over tightened the vibrating screener is pulled out of square with the base frame. Operating in this twisted position introduces stresses that can lead to spring failure, metal fatigue, cracking and broken welds in the screener. In addition, the twisting vibration will affect screening efficiency. Over tightened belts put an extra load on the vibrating screener causing early bearing failure, motor bearing failure and motor base failure.

Servicing belt tension: Smico provides two basic styles of drive and belt systems. One drive provides a positive eccentric built into the drive components which uses a fixed motor base. The other drive is a circle throw and uses a pivoting motor base. Belt tensioning procedures for either system can be found in your Smico operations manual. Adjusting the belts on a positive eccentric drive requires adjusting the slide motor base to obtain proper belt tension while adjustment of the circle throw drive requires adjusting the motor and pivoting motor base using spring compensation to obtain the proper belt tension.

**PLEASE REFER TO YOUR SMICO OPERATIONS MANUAL PRIOR TO ADJUSTING THE BELTS.**

**SCREEN CLOTH SUPPORT AND TENSIONING:** Screen cloth and its support are vital to your product separation. Support rubber is installed on the stringers or screen supports that run the length of the screener. It is important that this support rubber is maintained. If purchasing a new screen it is important that it is tensioned correctly and the screen is snug against all of the screen cloth supports.

**CAUTION:** If the screen cloth is not taught against the support rubber and screen supports screening quality and efficiency will be diminished. Screen cloth life and the screen supports life will be compromised, as the screen has no support it will in effect take on the vibration of the machine and wear will cause screen fatigue, breakage of the screen, breakage of the screen supports.

**CAUTION:** ONCE VIBRATION/G-FORCES TAKE EFFECT ON DAMAGED PORTIONS OF THE SCREEN SUPPORT STRUCTURE IT CAN LEAD TO FURTHER DAMAGE TO THE UNIT AS A WHOLE TO INCLUDE PREMATURE BEARING FAILURE, STRUCTURAL DAMAGE TO THE DECKS AND LEAD TO WELD FATIGUE AND CRACKS IN THE SCREENER STRUCTURE.

## **MAINTENANCE CHECKS**

### Daily Checks

- a. Apply two ounces of grease every 24 hours of operation for grease lubricated bearings.
- b. Oil level on oil lubricated bearings. (for one week after oil change)
- c. Clear away any buildup from any moving parts.

### Weekly Checks

- a. Screen cloth tension
- b. Wear on screen and tension rails
- c. Oil level on oil lubricated bearings
- d. Even material feed and distribution
- e. Loose bolts

### Monthly Checks

- a. Wear on screen support cushions at screen changes
- b. Drive belt tension
- c. Support springs

### Semi Annual Checks

- a. Wear of V-belts and sheaves
- b. Type of grease or oil used depending on drive lubrication schedules
- c. Wear on screen support cushions
- d. Wear on feed and discharge

## Troubleshooting Guide

PROBLEM	CAUSE	CORRECTION
<b>Material carry-over or screening inefficiency</b>	<b>Excess tonnage creating too deep of a bed of material</b>	<b>Reduce tonnage fed to screen</b>
	<b>Not enough open area in screen media</b>	<b>Increase % open area</b>
	<b>Not enough screen action</b>	<b>Increase the machine stroke</b>
	<b>Material flowing too fast</b>	<b>Reduce machine speed</b>
	<b>Screen cloth plugged</b>	<b>Increase the machine stroke; Change style of screen cloth</b>
	<b>Screen cloth blinded</b>	<b>Increase the machine speed; Change style of screen cloth</b>
	<b>Cloth opening too small to pass near size material</b>	<b>Increase size of screen cloth opening</b>
<b>Material flows to one side</b>	<b>Uneven material distribution</b>	<b>Center the feed</b>
	<b>Screen running crooked in base due to too much belt tension</b>	<b>Adjust belt tension</b>
	<b>Machine out of level</b>	<b>Inspect the support springs; Level the machine in the base</b>
	<b>Operating at critical speed</b>	<b>Change speed slightly</b>
<b>Breaking support springs</b>	<b>Spring bottoming due to feed tonnage or load exceeding the spring rating</b>	<b>Change to heavier springs</b>
	<b>Uneven material distribution</b>	<b>Center the feed</b>
	<b>Material buildup around spring</b>	<b>Install spring covers or deflect material. Keep area around springs clean</b>
	<b>Harsh or corrosive environment</b>	<b>Install premium springs</b>
	<b>Machine running crooked in the base due to too much belt tension</b>	<b>Adjust belt tension; Inspect the support springs</b>
	<b>Different rated springs on one side of screen than on opposite side</b>	<b>Install proper springs per operating manual</b>

<b>PROBLEM</b>	<b>CAUSE</b>	<b>CORRECTION</b>
<b>Side sheets or support panels cracking</b>	<b>Machine running crooked in the base due to too much belt tension causing side motion</b>	<b>Adjust belt tension</b>
	<b>Machine running with side motion due to natural frequency of plant structure</b>	<b>Adjust speed of machine or reinforce structure</b>
	<b>Vibrating frame hitting on stationary plant structure</b>	<b>Allow adequate clearance</b>
	<b>Running with broken spring</b>	<b>Replace the spring</b>
	<b>Running beyond screen natural frequency</b>	<b>Adjust speed of machine or change machine natural frequency (Contact Smico)</b>
<b>Breaking screen cloth</b>	<b>Inside bend width dimension of cloth incorrect</b>	<b>Replace with correct cloth</b>
	<b>Tension assembly too loose</b>	<b>Adjust tension on cloth</b>
	<b>Tension Rails are worn or improper type</b>	<b>Replace tension rails</b>
	<b>Support rubber is worn</b>	<b>Replace support rubber</b>
<b>Excessive plant vibration</b>	<b>Machine running erratically due to natural frequency of plant structure</b>	<b>Adjust speed of machine or, change machine or the structures natural frequency (Contact Smico)</b>
	<b>Drive belts too tight</b>	<b>Adjust belt tension</b>
	<b>Broken support spring</b>	<b>Replace broken spring</b>
	<b>Support springs are too stiff</b>	<b>Replace with softer springs</b>
	<b>Insufficient X-bracing in the plant</b>	<b>Adjust speed of machine or change machine natural frequency (Contact Smico)</b>

<b>PROBLEM</b>	<b>CAUSE</b>	<b>CORRECTION</b>
<b>Drive belts slipping, flopping or coming off</b>	<b>Improper sheave alignment</b>	<b>Adjust alignment</b>
	<b>Improper belt tension</b>	<b>Adjust belt tension</b>
	<b>Grooves in sheave worn</b>	<b>Replace sheave</b>
	<b>Belts oily or dirty</b>	<b>Clean off belts and sheaves</b>
<b>Oil Bath Drive Mechanism leaking oil</b>	<b>Too much oil in tube</b>	<b>Install correct amount of oil Refer to operating manual</b>
	<b>Machine out of level causing oil to flow to low side of machine</b>	<b>Level the machine, Inspect support springs</b>
	<b>Housing bolts or bolts around housing cap have become loose</b>	<b>Tighten bolts with Loctite</b>
	<b>Housing cracked</b>	<b>Replace housing</b>
	<b>Sealing surfaces between housing and seals flared or have burrs</b>	<b>Smooth burrs or replace parts</b>
	<b>Crack in tube assembly</b>	<b>Consult Smico Mfg.</b>
<b>Oil Bath Drives oil in mechanism excessively hot</b>	<b>Incorrect oil level.</b>	<b>Install correct amount of oil Refer to operating manual</b>
	<b>Machine out of level, causing oil to flow to low side of machine</b>	<b>Level the machine, Inspect support springs</b>
	<b>Improper type of oil</b>	<b>Install recommended type of oil Refer to operators manual</b>
	<b>Bearing failing</b>	<b>Replace all bearings sharing the same oil bath</b>

PROBLEM	CAUSE	CORRECTION
Short bearing life	Contaminated grease or oil	Inspect seals for wear, inspect shaft housing and any mating flanges. Change oil, making sure oil in storage is clean and clean containers used to transport
	Infrequent lubrication intervals, oil changes	Grease / Change oil more frequently to operating manual
	Improper type of grease / oil	Install recommended type of grease Refer to operating manual
	Improper shaft end play	Should have 1/8 to 1/4" shaft travel side. Rebuild mechanism. Consult S Mfg. Co if assistance is needed.
	Machine out of level causing oil to flow to low side of machine	Level the machine
	Improper type of bearing	Replace with proper factory authorized bearing
	Machine running too fast	Change sheave ratio or motor speed
	Machine impacting on stationary structure or built-up material	Eliminate hitting