

# **ROTEX**

## **SCREENING - FEEDING - CONVEYING**

## EC DECLARATION OF CONFORMITY

We the undersigned:

Declare under our sole responsibility that the following apparatus:

Product Description: Rotex Screener  
Model or Type No.: 8521DGP MWMM  
Serial No.: SOE004091  
  
Tariff Code: 847410000

Is in conformity with the following relevant legislation:

Directives with which  
Machine complies

Applicability of requirements Not applicable  
Governing schedule 4 machinery

Transposed Harmonized Standard Used	BS EN ISO 12100-1:2003 + A1:2009 BS EN ISO 12100-2:2003 + A1:2009 BS EN ISO 14121-1:2007 BS EN 60204-1:2006 + A1:2009
-------------------------------------	--

I declare that the machine described above conforms fully with the Essential Health and Safety Requirements of the European Machinery Directive.

Name and position of person binding the manufacturer or authorized representative:

Signature .....  
Name David Leech  
Function Drawing Office Manager  
Location Rotex Europe  
Date of issue 19<sup>TH</sup> July 2012

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# **ROTEX®**

**INSTALLATION • OPERATION • MAINTENANCE**

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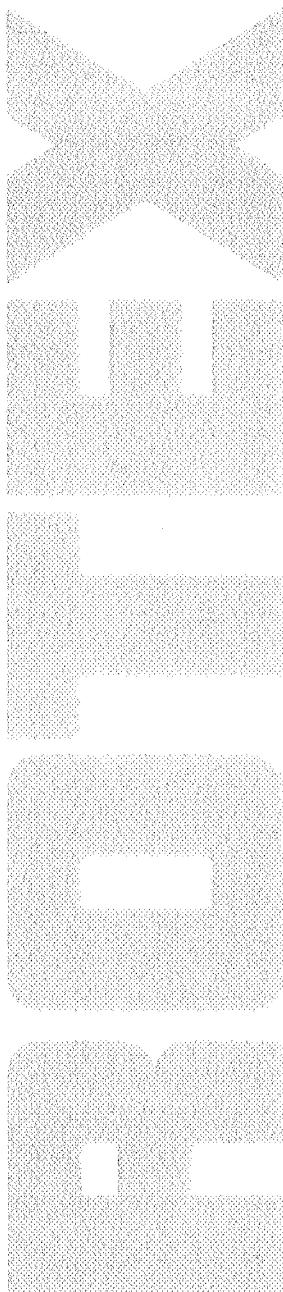
- Screen Opening Reference Table

## **APPENDIX D:**

- Glossary of Screening Terms

# **INTRODUCTION**

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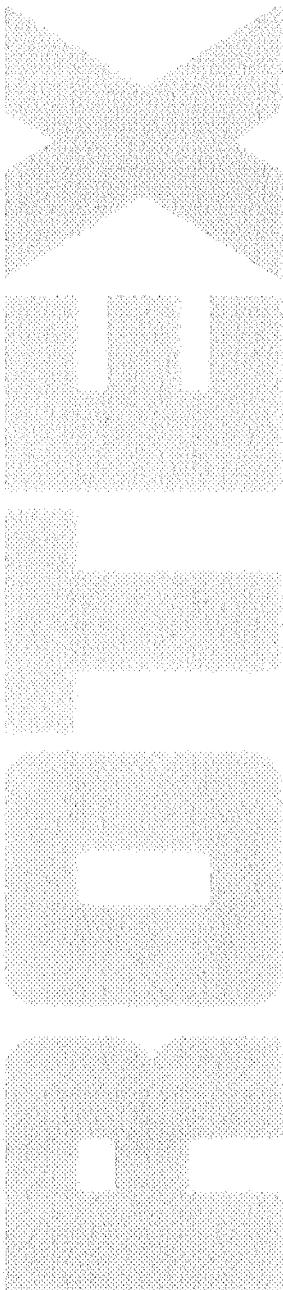
Welcome to the Rotex Installation, Operation and Maintenance manual. This latest edition is designed to provide quick, complete answers, whether you are new to Rotex screeners, want to improve their performance or perform routine maintenance.

## **HOW THE MANUAL IS ORGANIZED**

The three major sections—Installation, Operation and Maintenance—are divided into topics covering the most important points and frequently asked questions. The Appendix sections contain maintenance information specific to your Rotex, a glossary of terms, screen reference table and a troubleshooting guide.

- ◆ **Installation**  
Explains the basic requirements for a successful installation, including layout, access clearances, mounting methods, connector alignment, and startup items.
- ◆ **Operation**  
Reviews pre-startup details as well as operating considerations. Because of the wide variety of applications, this section covers common adjustments such as screen selection, the ball mesh cleaning system, speed and slope.
- ◆ **Maintenance**  
Focuses on how to care for your Rotex. Normal adjustment and wear items are covered, as well as recommendations for selecting the proper mesh cleaning balls and connectors.
- ◆ **Appendix A**  
Includes installation and maintenance data for your particular model and serial number. A General Assembly drawing and parts list make it easy to order genuine Rotex parts.
- ◆ **Appendix B**  
Common problems and their solutions are covered in this Troubleshooting Guide.
- ◆ **Appendix C**  
The Screen Opening Reference Table is a list of readily available screens and their openings in relation to standard test sieves.
- ◆ **Appendix D**  
This Glossary deals with common screening terms and those parts specific to Rotex screeners.

## HOW TO CONTACT ROTEX



### PARTS AND MACHINES INQUIRIES

#### ROTEX CONTACT DETAILS:

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*Friday 8.00 a.m. to 2.00 p.m.*

### HOW TO ORDER ROTEX PARTS

Always use genuine Rotex replacement parts to maintain the efficient, reliable performance of your Rotex screener.

Please have the following information to place an order:

- Model Number
- Serial Number
- Part number and description of the part; for example, part number 123456 and white neoprene connecting sleeve

To order screens, supply the following:

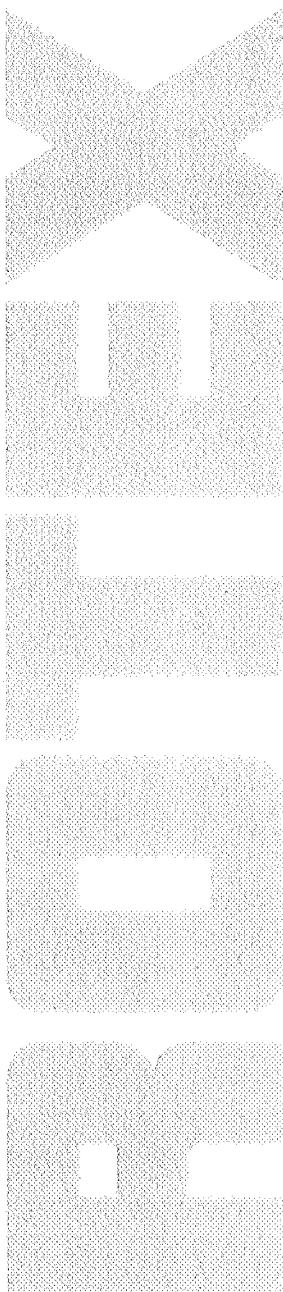
- Number of meshes per inch or opening of the screen; for example, 10 mesh or 2.00 mm opening
- Wire diameter, such as 0.080 in. or 2.03 mm
- Screen material, such as 304 SS, 430 SS, polyester, abrasion resistant steel, etc.
- Screen dimensions: width and length
- Screen edging type (plastic, bondtite, metal, etc.) if used on your machine

Contact Rotex if the above information is not available or your product specifications have changed.

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# **WARRANTY**

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(A) For a period of one year after date of shipment by Rotex, all goods manufactured by Rotex are warranted to be free from defects in material and workmanship, and except as provided in subparagraph (B) below, shall conform to the standards and specifications set forth in Rotex's proposal and/or any drawings furnished by Buyer and/or approved by Rotex.

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(B) ROTEX MAKES NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, as to any goods or material used in any goods which goods or material are not actually manufactured by Rotex, and Rotex assumes no responsibility therefor. Such goods or materials shall carry only the warranty of their manufacturer.

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(D) All labels, tags or other means of identification affixed to the goods or to any crate, carton or packaging containing the goods will be for identification purposes only and SHALL NOT CONSTITUTE A WARRANTY OF ANY KIND EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

# **WARRANTY**

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## **REMEDIES**

In the event any of the goods manufactured by Rotex shall fail to comply with the provisions of Warranty Section (A), as Buyer's exclusive remedy, Rotex shall, at its option, either refund the purchase price thereof, or repair or replace (F.O.B. shipping plant or Ex Works shipping plant for international trade) the goods, or any part thereof, which under normal installation, use and service disclosed such defect, provided that:

- (i) the goods are intact for examination by Rotex;
- (ii) Rotex has received written notice of the specific defect within ten days of the appearance and/or occurrence of the defect;
- (iii) said defect occurred within one year for the date of shipment by Rotex; and
- (iv) an examination by Rotex discloses, in Rotex's judgement, that the goods are defective.

The warranty does not extend to any goods which have been subject to misuse, neglect, accident, incorrect wiring, improper installation, or to goods used in violation of instructions furnished by Rotex, or to goods which have been repaired or altered by anyone other than personnel authorized by Rotex.

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## **CANCELLATION**

Buyer may not cancel an order after acceptance by Rotex except with Rotex's consent, and upon terms acceptable to Rotex that will indemnify Rotex against any loss.

## **RETURNED MERCHANDISE**

Rotex shall not accept returned goods for credit without its prior written consent.

## **SAFETY CHECKLIST**



**BEFORE OPERATION OF THE MACHINE EACH DAY, MAKE A CHECK OF THE FOLLOWING ITEMS. LOCK OUT POWER TO THE MACHINE AND OBEY ALL SAFETY REGULATIONS BEFORE DOING MAINTENANCE.**

**ALSO FOLLOW SPECIFIC SAFETY PRECAUTIONS AT THE BEGINNING OF THE INSTALLATION, OPERATION AND MAINTENANCE SECTIONS.**

- Inspect cable assemblies, if equipped, for wear and uniform tension. Inspect cable attachment hardware for wear or damage. Replace cables and/or adjust turnbuckles as required.
- Inspect hanger assemblies, if equipped, for loose bolts, broken parts, or failed bearings.
- Inspect floor mounting bolts, if equipped, to make sure they are tight.
- Inspect drive mounting hardware for loose or missing bolts.
- Inspect connectors for tears or leakage. Replace or adjust as necessary.
- Do not operate the machine without all drive and/or belt guards installed. Check for slipping belts.
- All top cover clamps, door clamps, screen frame jacking bolts and top cover jacking bolts, if equipped, must be installed and correctly adjusted.
- All pneumatic clamps, if equipped, must be correctly inflated.
- Make sure all inspection caps and access panels are installed.
- Inspect discharge end drag link (horizontal stabilizer bar), if equipped, for noise or excessive looseness.
- Inspect slide bearing assemblies for wear. If slide bearing is greased-type, make sure to follow the recommendations for grease specifications, quantity and lubrication frequency.
- Inspect motor wiring for wear or damage.
- Remove all loose items, such as tools, from the machine.
- Make sure the area around the machine is clear of product and other items.

## **Installation Safety Precautions**



### **CAUTION**

1. Disconnect and lock out all electrical power to the machine before installation.
2. Use additional safety cables when machines are installed in overhead locations with cable suspension.
3. Install connectors, seals and rubber bushings in accordance with the instructions in this Manual.
4. Install the machine with sufficient clearance on all sides for safe operation.
5. Install safe working platforms around the machine for safe operation and maintenance.
6. Keep the machine and area around the machine clean.

ROTEX Screeners are designed to be safe. Follow these precautions during installation, operation and maintenance.

1. Do not operate the machine until all of the guards are installed, access doors/lids are closed and safety interlocks operate correctly.
2. Do not adjust, clean or maintain the machine until power is disconnected and locked out.
3. Do not put or leave any loose items, such as tools, on or in the machine.
4. Do not climb, sit or stand on the machine.

Operate the machine only in accordance with the instructions in this Manual. Follow the caution instructions in the Installation, Operation and Maintenance sections. Follow the caution labels on the machine and do not remove or cover these labels.

**THE OPERATOR MUST READ AND UNDERSTAND ALL THE INSTRUCTIONS AND CAUTIONS BEFORE OPERATING THE MACHINE.**

**THE MANUAL MUST BE WITH THE MACHINE AT ALL TIMES, IN THE HOLDER ON THE MACHINE.**

**DO NOT CHANGE THE MACHINE IN ANY WAY WITHOUT CONSULTATION WITH AND WRITTEN PERMISSION FROM ROTEX.**

# **1 INSTALLATION**

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## **Inspection**

Most ROTEX Screeners are supplied with a separate container of connecting sleeves, connecting rings and other hardware. Make sure that these parts have been included in the shipment. Note and identify all of the packages listed on the shipping papers. Store these components in a clean, dry space until installation.

Make a careful inspection of the ROTEX Screener to find any damage that may have occurred during shipping.

Rotex carefully inspects all equipment before shipment. The carrier assumes responsibility for the safe delivery at the time of shipment from the factory. Make claims for loss or damage to the carrier.

### ◆ **Visible Loss or Damage**

Any external evidence of loss or damage must be noted on the freight bill and signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage, and to immediately request an inspection by the claim investigator, may cause the carrier to refuse to honor a damage claim. The carrier will supply the form to file a claim.

### ◆ **Concealed Loss or Damage**

Concealed loss or damage means loss or damage that is not seen until the merchandise is unpacked. If damage is seen, send a written request for inspection to the carrier's claim investigator within 15 days of the delivery date. Then file a claim with the carrier.

## **Storage Before Installation**

If the screener will not be installed for six months after delivery, use the following storage and inspection procedures:

1. Lift and move the screener in a horizontal position using the steel eyebolts located at the four corners of the base. Do not allow slings to touch the screen box assembly, bottom pan or top cover, since they can be damaged.
2. Apply plastic film sheeting over the entire unit.
3. Store the machine and loose parts (connecting sleeves, rings and spares) in a dry protected area, such as a warehouse or under a roof.
4. Do not store the screener in an area that can become flooded or damage the wood shipping skid.
5. Do not stack heavy items on top of the machine.
6. Inspect the unit after 60 days to check for the following conditions:
  - ◆ There is no damage to the plastic sheeting surrounding the machine and parts.
  - ◆ There is no rust or corrosion on unpainted surfaces.
  - ◆ There is no rust or corrosion on the slide bearing assemblies at the discharge end of the screener.
  - ◆ There is no damage to the cartons or boxes containing the loose and spare parts.



### **NOTE**

*If the screener will be stored for more than six months, long term storage preparation may be required. This preparation should be made before the machine is shipped from the factory*

# 1 INSTALLATION

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## Moving the Screener



### NOTE

Contact Rotex for special instructions if the screen box assembly must be removed from the base in order to install the unit.



### CAUTION

The ROTEX Screener's center of gravity is located approximately  $\frac{1}{3}$  of the distance between the feed end and the discharge end of the screener – NOT in the middle of the screener (see Figure 1.1).



### WARNING

When lifting the ROTEX Screener into position, attach hoists to the base (see figure 1.1). Do NOT connect hoists to the screen box assembly. Lifting the screen box assembly will damage the screener, and may cause serious personal injury. Lift machine only as shown below.

## LIFTING WITH STRAPS

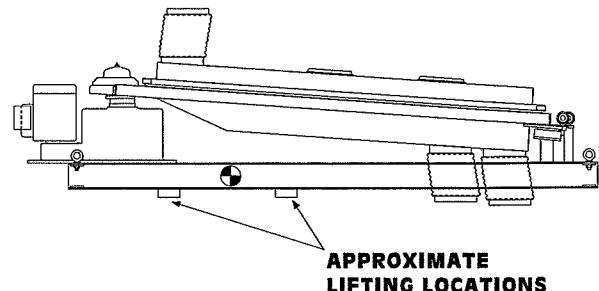
When lifting with straps, note the following:

- ◆ Keep the screener level to the ground at all times
- ◆ Lift the screener at the four corners using separate hoists or spreader bars at each end of the screener

## LIFTING WITH A FORK TRUCK

When using a fork truck to move the machine, note the following:

- ◆ The forks must be long enough to lift both sides of the base frame.
- ◆ The forks must support the screener at its center of gravity to prevent the unit from tipping on the forks



### APPROXIMATE LIFTING LOCATIONS

#### 1.1. Center of Gravity and Lifting Locations for Moving by Fork Truck

## Installing the Screener

ROTEX Screeners can be installed in three ways: floor mounted, cable suspended or stand mounted. Refer to the Outline Drawing provided with your order for details on the installation method and forces.



### NOTE

1. Vibration isolators such as springs or rubber mounts are not acceptable mounting methods. Such isolation systems are not effective at the low operating frequency of Rotex screeners, which is in the range of 3 to 5 Hz (200 to 300 rpm)

2. The operating frequency, static weight and dynamic forces generated by the screener must be taken into account when determining the installation method. These forces are listed on the Outline Drawing provided with each order (see section 1.x). Contact Rotex for new installation instructions if a different mounting arrangement is required.

## CLEARANCES

A ROTEX Screener has a top cover and screen frame(s) that must be removed from the screen box assembly for regular maintenance. For ease of maintenance, provide enough clearance to remove these items from the sides or the discharge end of the machine. A hoist is recommended for larger screeners.

The screener's drive will also require periodic maintenance, so allow access to all sides of the drive. A 24 in. (61cm) or greater clearance is recommended for maintenance around the screener.



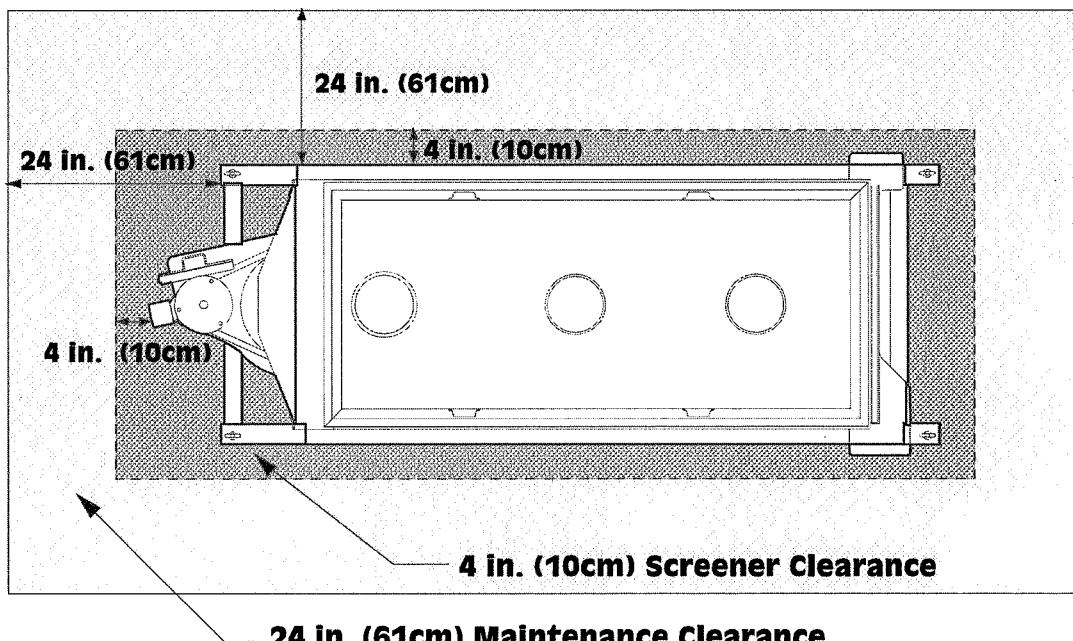
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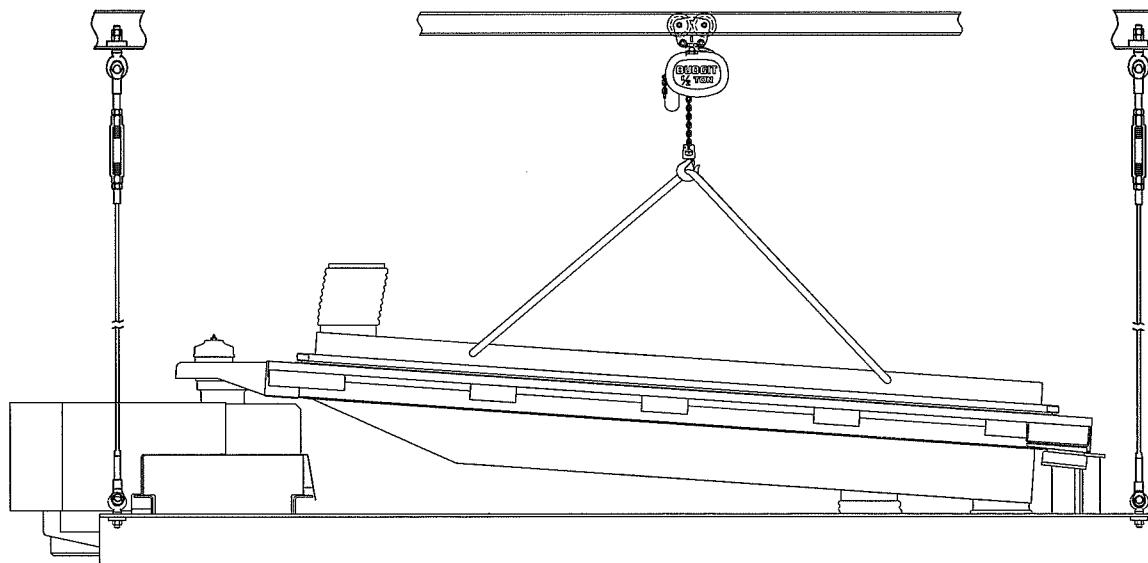


## NOTE

Cable suspended screeners can move up to 4 in.  
(10cm) during startup. Provide clearance of not  
less than 4 in. (10cm) on all sides



1.2. Installation Clearances



1.3. Hoist Installation above Screener

# **1** INSTALLATION

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## **FLOOR MOUNTING**

Floor mounted ROTEX Screeners come completely assembled and can be installed on any level surface. Refer to the Rotex Outline Drawing provided with your machine for the static and dynamic forces Bolt the screener to the floor using permanent anchor bolts.



### **CAUTION**

*All Rotex Screeners equipped with Dynamic Absorber drive heads must be cable suspended and are identified by a "D" or "S" in the model number.*



### **CAUTION**

*Expansion anchors are not recommended because they can come loose while the screener is in operation.*

A ROTEX Screener may be equipped with integral legs to raise the screener above the floor. Attach the legs by bolting them to the floor using permanent anchor bolts

## **CABLE SUSPENSION**

All Rotex Screeners can be designed for cable suspended installation. This installation method isolates the support structure from transmission of the lateral and longitudinal shear forces generated by the screener.

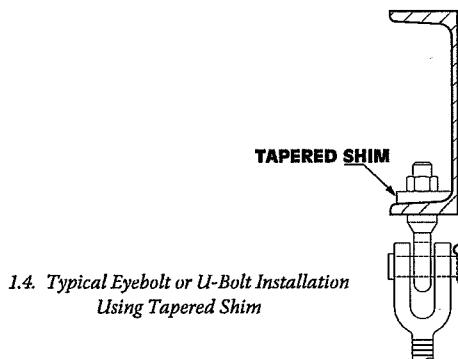
Refer to the Outline Drawing provided with your order for details on cable suspension, including the static and dynamic forces and frequency of these forces.



### **NOTE**

*If the base is converted to cable suspension, or if existing eyebolts are relocated, contact Rotex.*

## **Installing cable suspended screeners**



1.4. Typical Eyebolt or U-Bolt Installation Using Tapered Shim

Connect cables from the top flange of the base of the screener to the overhead structure. Note the following installation points:

- ◆ Because the base will move, provide not less than 4 inches (10cm) clearance around the entire screener base.
- ◆ Use only cables with Rotex's quality and design standards (see table 1.7 for specifications)
- ◆ Eyebolts or u-bolts must be connected to a flat and level surface on the overhead support structure. A tapered shim must be used to create a flat surface
- ◆ Turnbuckles must be placed at the top of the assembly to prevent a pinch point between the cable assembly and moving parts of the screener (see figure 1.3).
- ◆ Cables must be installed at a 90-degree angle to the floor in both directions. Cables that are not installed vertically will not provide sufficient isolation of transmitted forces.
- ◆ The recommended cable length is 5-10 ft. (1.5-3m), with a minimum length of 3 ft. (1.1m). Corner support stands are recommended if no overhead structure is available.
- ◆ The Rotex base must be level unless otherwise specified on the outline drawing.



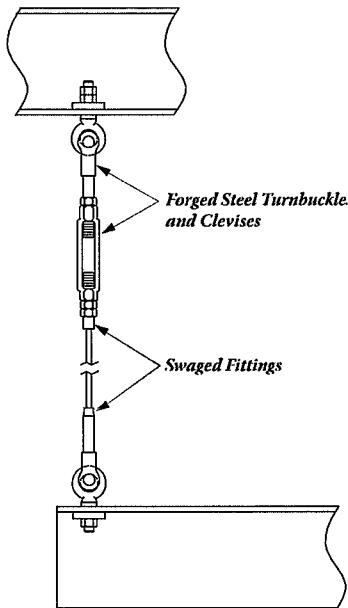
# 1 INSTALLATION

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## WARNING

Thimbles and looped ends are not acceptable fittings.



1.5. Acceptable Fittings



## WARNING

If the screener will be installed in an overhead location, use a secondary means of support to prevent the machine from falling if a cable breaks.



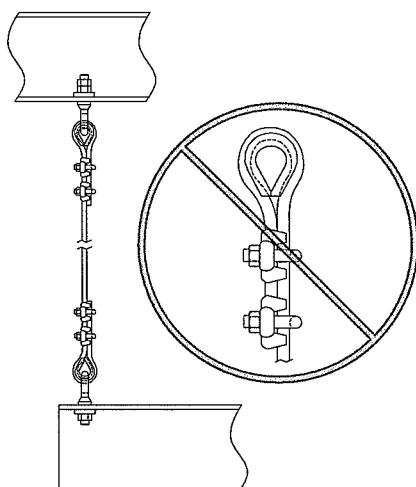
## WARNING

Chains and fixed rods are not suitable for suspending the screener.

### Cable specifications

If Rotex did not supply cables, cables with the following specifications are recommended:

- ◆ Type 304 SS wire rope, Improved Plow Steel
- ◆ Independent Wire Rope Core (IWRC), 6 x 19 class
- ◆ Swaged forged steel fittings
- ◆ Assembly to be proof tested and certified as follows:



1.6. Unacceptable Cable Fittings

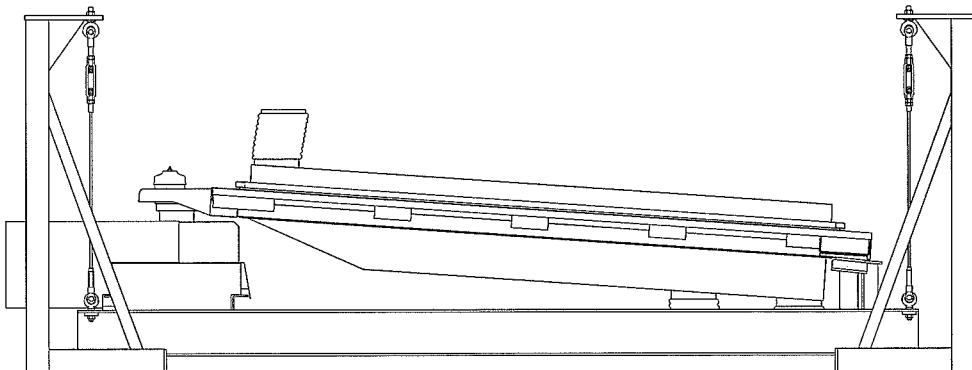
FIRST NUMBER IN MODEL	MACHINE SERIES	MINIMUM WIRE ROPE DIAMETER	PROOF TEST
1	10	5/8 in. (9.5mm)	4800 lb (18682 N)
2	20	5/8 in. (9.5mm)	4800 lb (18682 N)
3	30	5/8 in. (9.5mm)	4800 lb (18682 N)
4	40	5/8 in. (9.5mm)	4800 lb (18682 N)
5	80	1/2 in. (13mm)	8160 lb (36296 N)
6	50	5/8 in. (16mm)	12560 lb (55867 N)
7	70	3/4 in. (19mm)	19840 lb (88248 N)

1.7. Cable Specifications

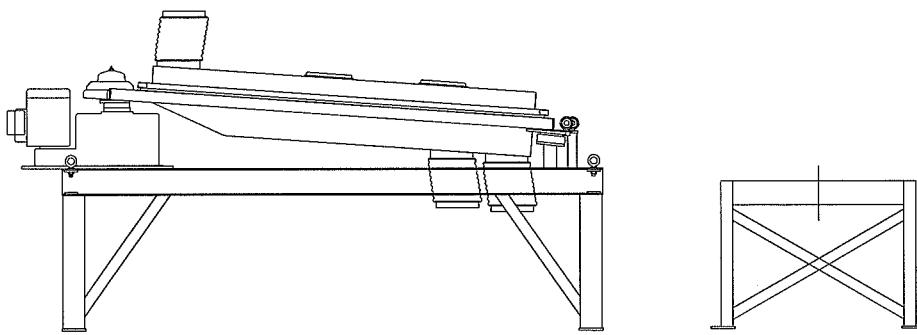


# 1 INSTALLATION

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1.8. Cable Suspended Machine Using Corner Support Stands



1.9. Typical Stand Structure

## **STAND MOUNTING**

A Rotex Screener designed for floor mounting may also be mounted on a support stand.

The stand must be designed with stiff diagonal bracing on not less than three sides. The lower ends of the braces must be connected near the floor to minimize vibrations (See Figure 1.9.)

Attach the legs by bolting them to the floor using permanent anchor bolts



### **NOTE**

*Static and dynamic forces must be used to design the elevated stand. Refer to the Outline Drawing provided with the order for static and dynamic forces.*

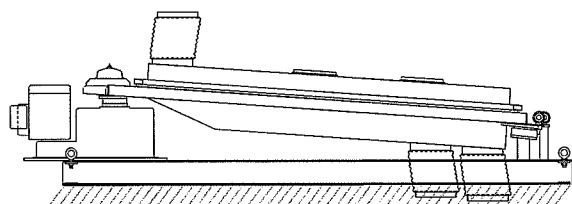


### **NOTE**

*The slope of the base must not be more than 4 degrees.*

## **SLOPE**

Rotex Screeners are designed with a standard 4-degree screen deck slope when the base is horizontal. Refer to the Outline Drawing provided with your order for the slope specified. In some applications a larger or smaller slope may be necessary for best performance.



1.10. Standard 4 Degree Deck Slope with Base Level



### **NOTE**

*If the slope is being changed on a previously installed screener, the inlet and outlet connections must be relocated. See page 10 for instructions on how to align feed and discharge piping*



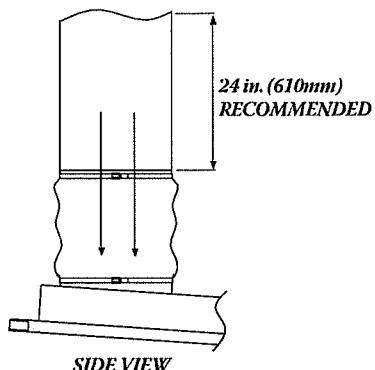
# 1 INSTALLATION

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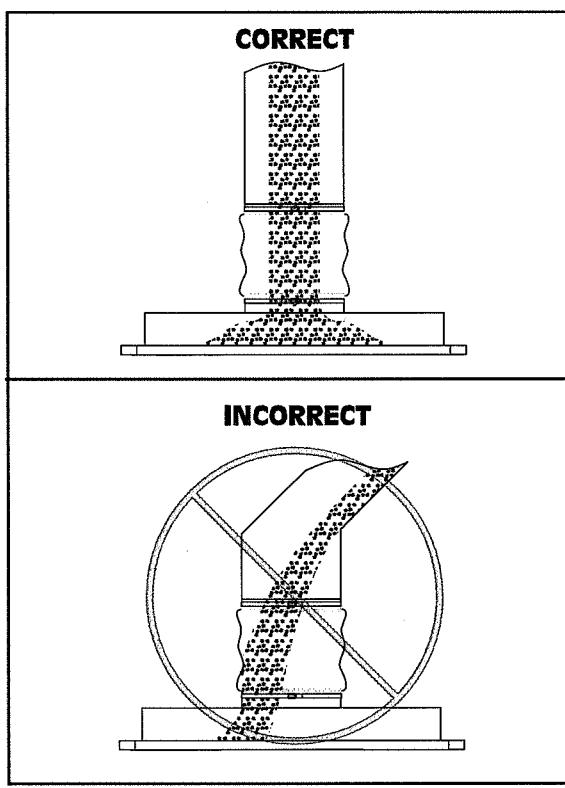
## FEEDING CONSIDERATIONS

ROTEX Screeners perform best when the feed rate is constant. Therefore, use feeding devices such as rotary airlocks, vibratory feeders or bucket elevators because they do not cause surges. The feed material should enter the screener vertically and be centered in the inlet. To minimize flushing or fluidization of the product, the vertical fall into the screener must be less than 24 in. (610mm).

1.11. Feeding Considerations



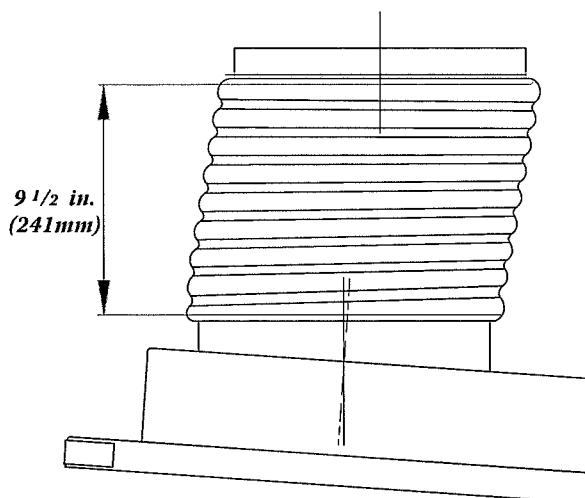
SIDE VIEW



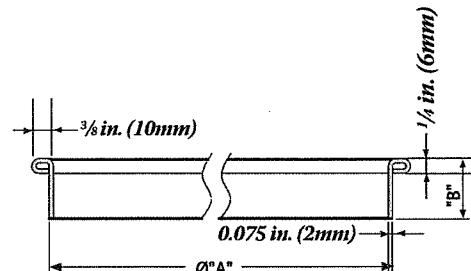
END VIEW

## CONNECTING RINGS AND SLEEVES

Rotex Screeners are normally supplied with mild steel or stainless steel connecting rings for each inlet and outlet. These rings provide the proper connection for the stationary end of the flexible connecting sleeves. Refer to the Outline Drawing provided with your order for details on the connecting rings.



1.12. Ring & Sleeve Spacing with Molded Connecting Sleeve



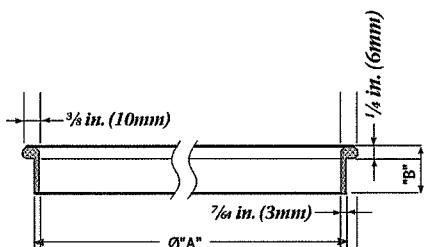
NOMINAL RING SIZE	A. OUTSIDE DIAMETER	B. HEIGHT
6 in. (152mm)	5 13/16 in. (148mm)	1 in. (25mm)
8 in. (203mm)	7 3/4 in. (197mm)	1 in. (25mm)
10 in. (254mm)	9 3/4 in. (248mm)	1 in. (25mm)
12 in. (305mm)	12 in. (305mm)	1 1/2 in. (38mm)
14 in. (356mm)	14 in. (356mm)	1 1/2 in. (38mm)
16 in. (406mm)	16 in. (406mm)	1 1/2 in. (38mm)

1.13. Rolled Ring Dimensions



# 1 INSTALLATION

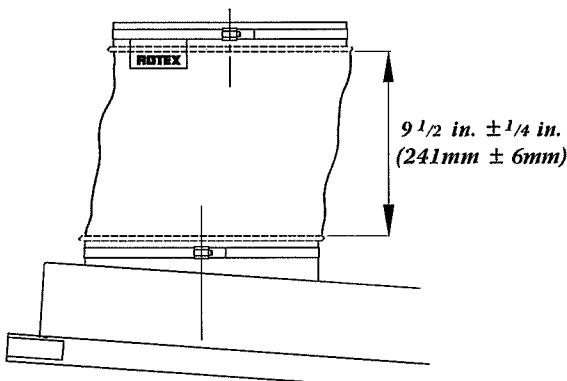
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NOMINAL RING SIZE	A. OUTSIDE DIAMETER	B. HEIGHT
4 in. (102mm)	9 3/4 in. (95mm)	1 in. (25mm)
6 in. (152mm)	5 7/8 in. (149mm)	1 in. (25mm)
8 in. (203mm)	7 13/16 in. (198mm)	1 in. (25mm)
10 in. (254mm)	9 13/16 in. (249mm)	1 in. (25mm)

1.14. Machined Connecting Ring Dimensions

After the inlet and outlet pipes have been aligned (per pages 10 and 11), weld the loose ring to the pipe so that the distance from the bead on the ring and the bead on the Rotex ring is  $9\frac{1}{2}$  in.  $\pm\frac{1}{4}$  in. ( $241mm \pm 6mm$ )



1.15 Bead to Bead Distance



## NOTE

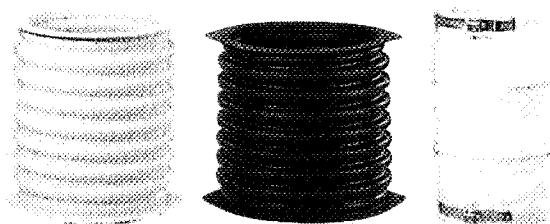
Always refer to the Outline Drawing supplied with your order. The recommended bead-to-bead distance may NOT be  $9\frac{1}{2}$  in. (241mm) if fabric connectors are supplied.

## SLEEVES & CONNECTORS

ROTEX Screeners are also supplied with flexible connecting sleeves for each inlet and outlet. These sleeves are either molded or fabric. Refer to the general assembly drawing and spare parts list in the Appendix for the description of the sleeves supplied on your order.

Molded sleeves are available in approximate 4 in., 6 in. 8 in., and 10 in. diameters (102, 152, 203, 254mm) and are designed to stretch fit over rings that have a  $\frac{1}{4}$  in. (6mm) bead for a  $9\frac{1}{2}$  in. (241mm) bead-to-bead distance.

Fabric connecting sleeves are available in the standard 4 in., 6 in., 8 in. and 10 in. sizes and can also be made in other diameters and lengths.



1.16 Connecting Sleeves

If using a molded connecting sleeve such as rubber or neoprene, stretch the sleeve over the bead on the ring. Band clamps are not required.

Fabric connecting sleeves are provided with a stainless steel band clamp to hold the sleeve on the ring. Band clamps should be installed within the hems on both ends of the sleeve.



## NOTE

Install fabric connecting sleeves with part number tag at the top.

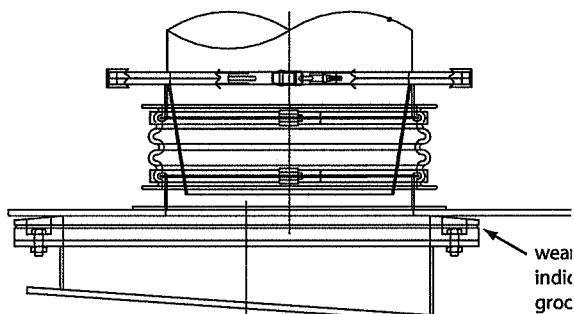


# 1 INSTALLATION

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## **SLIDING INLET AND OUTLET CONNECTORS**

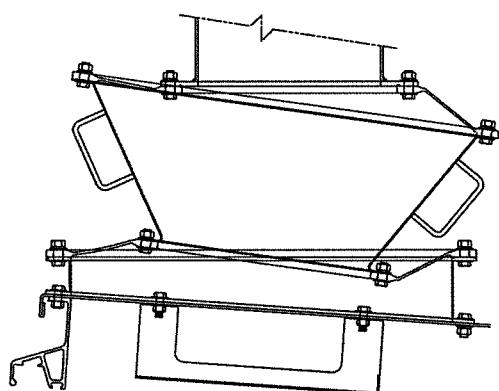
If your screener is supplied with a Sliding Inlet or Outlet connector, refer to the Appendix for installation and alignment instructions.



1.17. Sliding Inlet Connector

## **NUTATING INLET CONNECTOR**

If your screener is supplied with a Nutating Inlet connector, refer to the Appendix for installation and alignment instructions.



1.18. Nutating Inlet Connector

## **INLET/OUTLET ALIGNMENT**

The inlet and outlet piping must be carefully aligned with the centerline of the screener to ensure maximum sleeve life. If the piping is not correctly installed, premature sleeve failure can occur.

Follow these steps for correct installation of inlet and outlet piping.

1. Standing at the feed end of the screener, rotate the drive so the screen box assembly is located at the 0° or 180° position (see Figure 1.20).
2. Adjust the position of the inlet pipe so it is centered over the screener inlet as viewed from the feed end (position A.)
3. Rotate the drive to the 90° or 270° position.
4. Move to the side of the screener to position B. Install the feed pipe so that the feed pipe and inlet are aligned as viewed from position B (see figure 1.21).
5. Repeat above steps, viewing from positions A and C at discharge end of screener.

## **ALTERNATIVE ALIGNMENT METHOD**

1. Move the screen box assembly to 180° position (see Figure 1.20).
2. Install feed and outlet piping using the offset dimensions in the table below.
3. When viewing machine from position A, the feed and discharge piping should be aligned along the same centerline as the inlet and outlets on the screener.

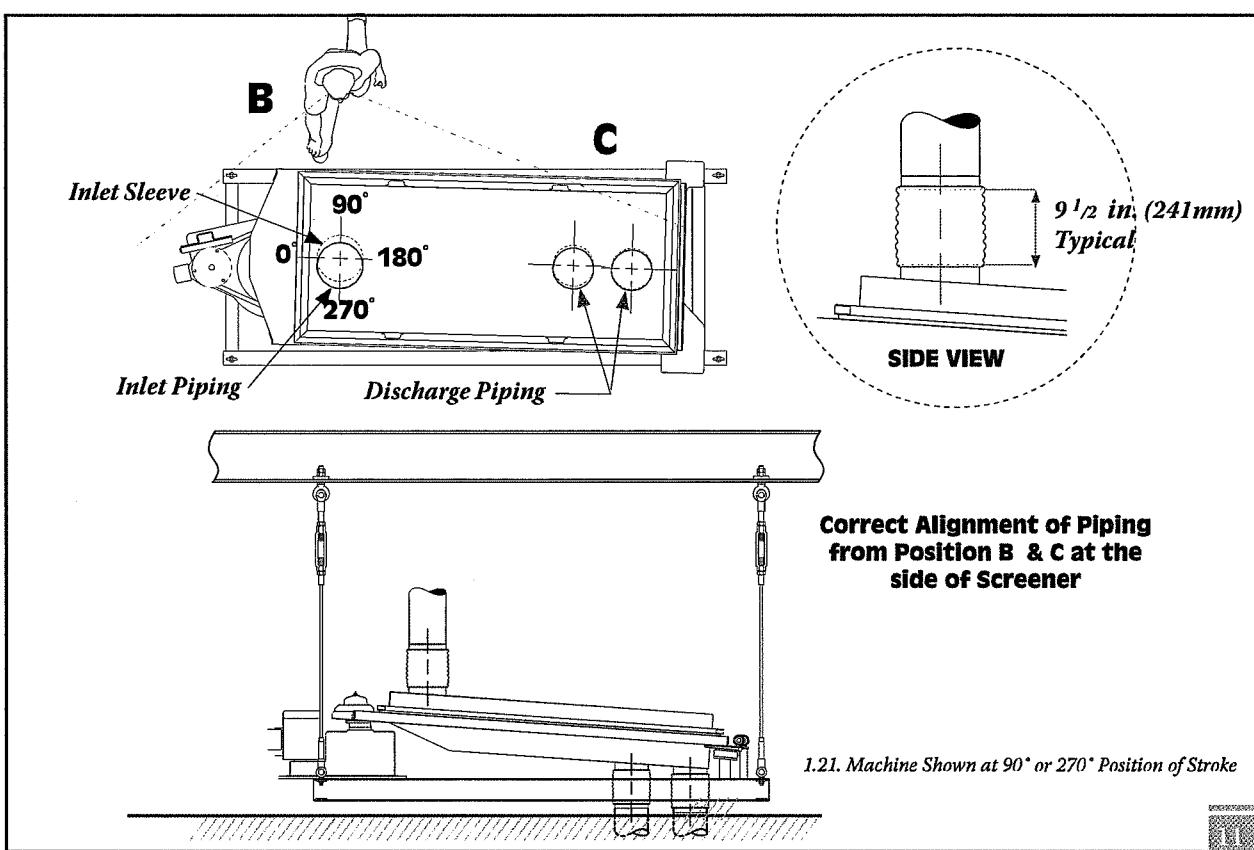
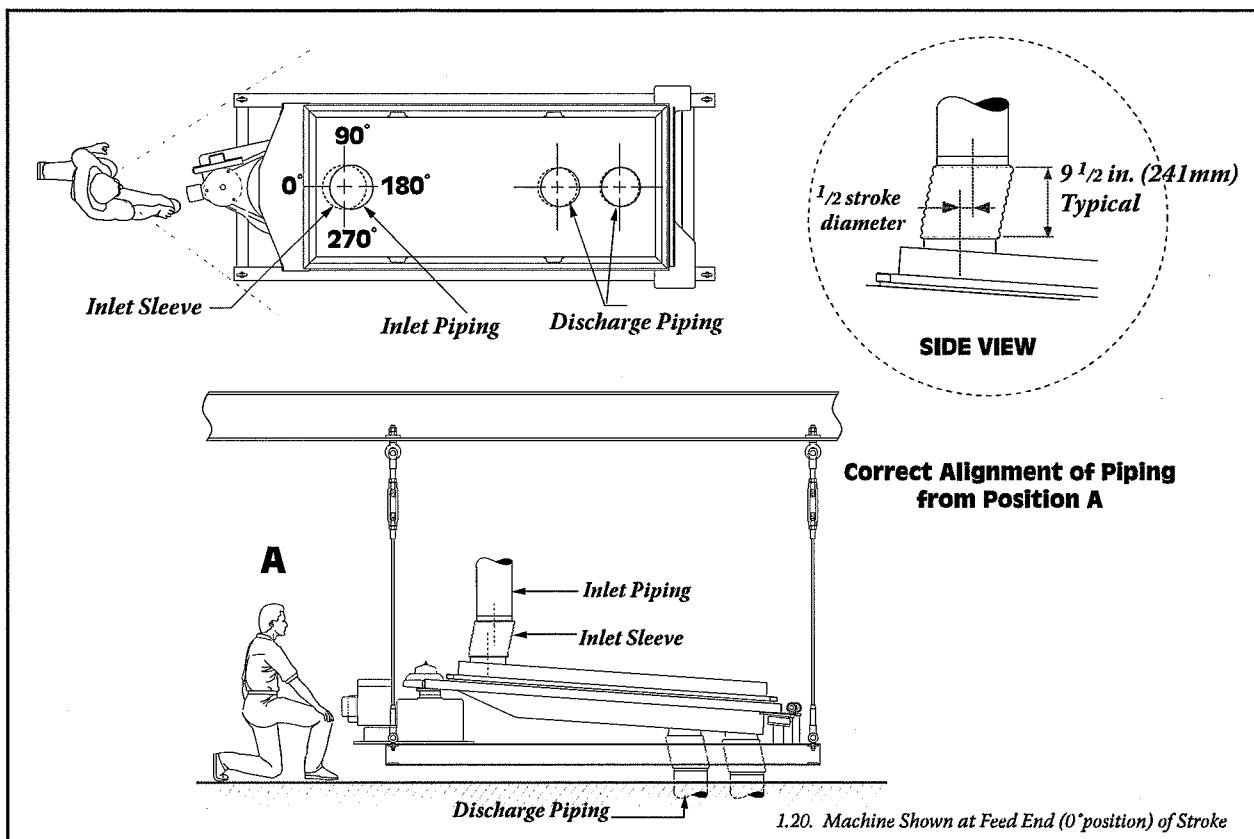
FIRST NUMBER IN MODEL	MACHINE SERIES	STROKE DIAMETER	PIPING OFFSET DISTANCE
1	10	2 in. (51mm)	1 in. (25mm)
2	20	2 ½ in. (64mm)	1 ¼ in. (32mm)
3	30	2 ½ in. (64mm)	1 ¼ in. (32mm)
4	40	2 ½ in. (64mm)	1 ¼ in. (32mm)
8	80	3 in. (76mm)	1 ½ in. (38mm)
5	50	3 ½ in. (89mm)	1 ¾ in. (44mm)
7	70	3 ½ in. (89mm)	1 ¾ in. (44mm)

1.19. Stroke and Offset Dimension Table



## 1 INSTALLATION

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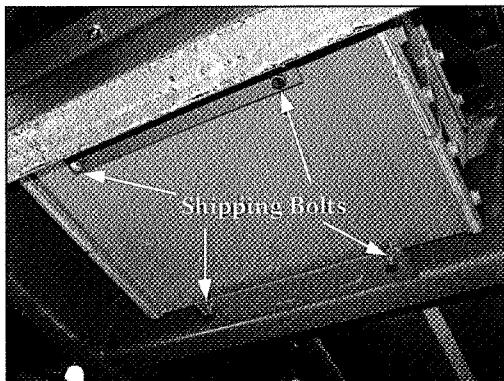
# 1 INSTALLATION

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## **REMOVING SHIPPING HARDWARE**

To prepare the ROTEX Screener for operation, remove the hardware installed to protect the machine during shipment.

1. For screeners with Dynamic Absorber drives, remove the four shipping bolts installed on bottom of drive



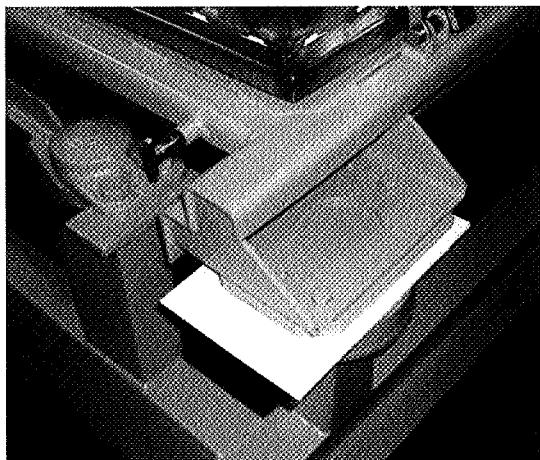
1.22. Location of Dynamic Absorber Drive Shipping Bolts



### **CAUTION**

*Failure to remove shipping bolts can damage the screener and cause excessive base motion.*

2. For all screener types, remove the two corrugated plastic protection sheets from the slide bearing assemblies.



1.23. Slide Bearing Protection Sheets

## **WIRING THE MOTOR**

1. Refer to the wiring diagram located on the screener's motor for wiring specifications.
2. Use flexible wire to accommodate the 4 in. (10cm) motion during start up and shutdown of cable suspended screeners.



### **NOTE**

*Motor and wiring must comply with all applicable national and local codes*



### **CAUTION**

*Do not operate the screener until the startup preparation has been completed.*

### **Operation Safety Precautions**



#### **CAUTION**

1. Do not operate the machine until all of the guards are installed, access doors/lids are closed and safety interlocks operate correctly.
2. Do not adjust, clean or maintain the machine until power is disconnected and locked out.
3. Do not operate the machine until all top cover clamps are installed and correctly adjusted.
4. Do not put or leave any loose items, such as tools, on or in the machine.
5. Do not climb, sit or stand on the machine.
6. Do not change the machine in any way without consultation with and written permission from ROTEX.
7. Keep the machine and area around the machine clean.

Lubricate the machine as instructed in this Manual. Contact ROTEX with questions about lubrication.

## **2 OPERATION**

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### **PRE OPERATION CHECKLIST**



#### **CAUTION**

*Power MUST be locked out before any work is done to the screener. Confirm that the screener has no power before performing these steps.*

*Before operating the screener, review the following.*

- Sleeve Alignment** – To maximize the service life of inlet and outlet connectors, confirm that the feed and discharge piping has been aligned according to the instructions on page 11 in the Installation section
- Lubrication** – If your Rotex is equipped with a “gear drive,” make sure that the drive head is filled with the proper quantity and type of oil. Refer to the lubrication recommendations in the Appendix.
- Mounting Bolts or Cable Assemblies** – Make sure all mounting or anchor bolts are securely tightened. Cable assemblies must be checked to confirm that turnbuckle lock nuts are tight and there is uniform tension on the cables.
- Top Cover Clamps** – With all clamps attached, make sure that each clamp is properly tightened. The indicator tab on the clamp must be aligned with the green section on the label. If it is not aligned, unclamp the handle, rotate the handle clockwise to increase the force or counter-clockwise to decrease the force. Reclamp the handle and make sure that the tab is aligned with the green section.
- Top Cover Jacking Bolts** – If the screener is equipped with top cover jacking bolts, make sure that they are tight against the top cover and that lock nuts are tight.
- Safety Guards** – Do not operate machine without all drive and/or belt guards in place.
- Power Cable** – If the machine is cable suspended, make sure that the power cable to the motor is flexible enough to allow for 4 in. (10cm) of motion.

- Screener Clearances** – Start the screener briefly to confirm there is sufficient clearance around the base and rotating screen box assembly. Do not restart machine until it comes to a complete stop.
- Direction of Rotation** – Rotex Screeners can operate in either direction.
- Operating Empty Screener** – Operating the screener without material can damage the screen clothing and cause premature wear of the mesh cleaning balls. Do not operate the machine for more than 10 minutes without feed.
- Temperature Considerations** – Standard Automatic-Tensioning Screeners can operate with material temperature not more than 250°F (121°C) when equipped with the proper connectors, mesh cleaning balls, screen edging, seals and lubricants
- Pressure** – Standard Rotex Screeners are designed for maximum ±3 in. water column (0.75 kPa) pressure.



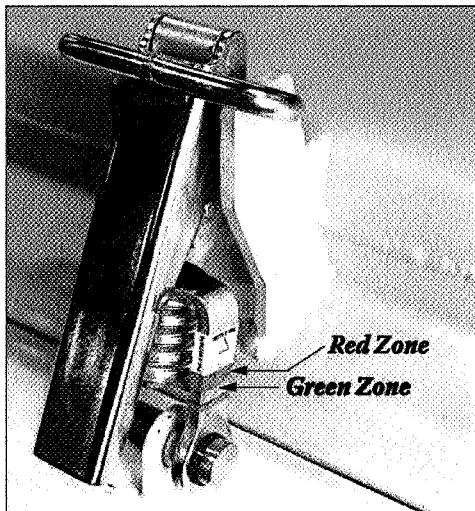
#### **NOTE**

*If ambient temperatures are below 40°F or above 140°F (4°-60°C), consult Rotex for lubrication recommendation.*

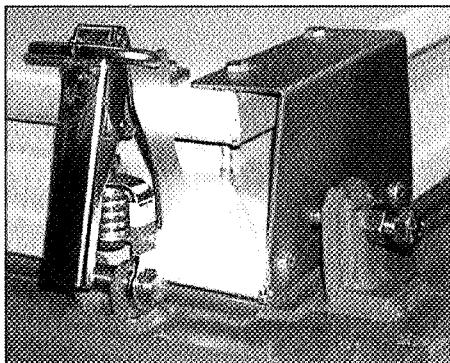


#### **CAUTION**

*Excessive positive or negative pressure can cause machine failure and injury to personnel.*



2.1. Compensating Clamp Handle



2.2. Screener with Top Cover Jacking Bolts

**NOTE**

1. For cable suspended screeners, there must be not less than 4 in. (10cm) of clearance around the base. Base movement should be less than 1 in. (25mm) in diameter during operation.

If the motion is larger, make sure that the cables are taut and that the base is level across the long and short dimensions. Greater movement in the screener base may occur during startup or shutdown, but will decrease after the screener is at operating speed.

2. Special compensating designs are available for operation with materials above 250°F (121°C). Consult Rotex before operating any machine at elevated temperatures.

## **OPERATIONAL CONSIDERATIONS**

### **OPERATING EMPTY SCREENER**

Do not operate the screener without material for more than 10 minutes, since the action of the mesh cleaning balls can damage the screen clothing.

### **PRESSURE**

Standard Rotex screeners are designed for maximum  $\pm 3$  in. water column (0.75 kPa) pressure.

### **TEMPERATURE**

Standard Automatic-Tensioning Screeners can operate with material temperature not more than 250°F (121°C) when equipped with the proper connectors, mesh cleaning balls, screen edging, seals and lubricants.

**NOTE**

*Special designs are available for operation with material hotter than 250°F (121°C). Consult Rotex before operating a screener at an elevated temperature.*

### **WEIGHTS AND COUNTER BALANCING**

The screener has been carefully counterbalanced based on the speed and weight of the moving screen box assembly.

**CAUTION**

*Do not add to or remove weight from the screen box assembly without first contacting Rotex for instructions on how to adjust the drive head counterbalancing. Weight changes can damage the screen box assembly, reduce performance and transmit higher forces into the support structure.*

### MAKING CHANGES TO THE SCREENER

The screener has been designed to the specifications provided at time of order. The speed, slope, mesh cleaning balls, screen & etc., have been specified for your particular application. Therefore, adjustments may be necessary if product or capacity requirements change.

The following review covers the more common adjustments affecting machine performance. Contact Rotex before making any changes.

#### SCREEN SELECTION

Screens greatly influence the operation and performance of a screener. The wrong screen can reduce capacity, cause out-of-spec products and increase screen replacement costs. Consider the following factors for the application.

#### Screen Blinding

Screen with a smaller diameter wire may be necessary if screen blinding is a problem. The smaller wire presents less area in which material can become trapped.

Synthetic screens such as polyester or nylon may be specified if stainless steel is not acceptable.

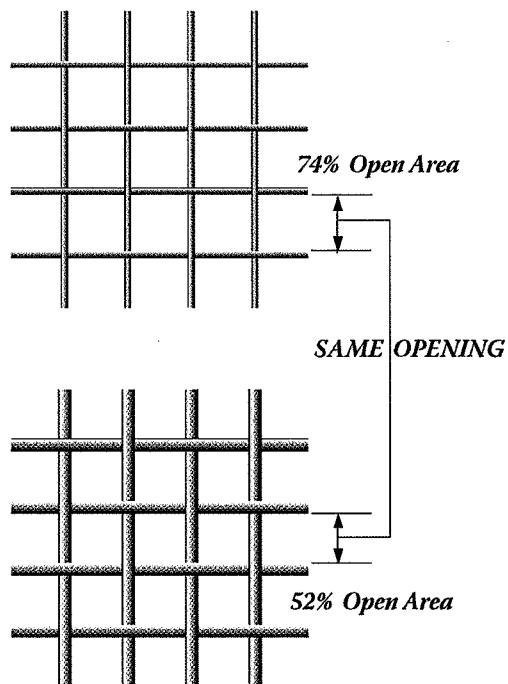
#### Capacity

Selecting the proper screen is often a compromise between screen life and capacity/performance. Thinner wire screens allow greater throughput than heavier screens, but often do not have a long life.

Samples of material can be tested in the Rotex Materials Testing Lab to determine the best balance between wire diameter and capacity.

#### Durability

Screen with the same size opening may have different wire diameters. The selection of longer-lasting screens with larger wires must be compared with their reduced performance caused by blinding.



2.3. Illustration comparing screens with large and small wire diameters

#### Temperature

Metallic screens are recommended for all applications and when the product temperatures are more than 200°F (93°C). Synthetic screens (nylon and polyester) are recommended for temperatures not more than 200°F (93°C).

#### Materials of Construction

Screens are available in a variety of materials, including carbon steel, stainless steel (304, 316 and 430), abrasion-resistant steel and synthetics (nylon and polyester). Contact Rotex for recommendations.



## OPERATION

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### BALL MESH CLEANING SYSTEM

Rotex Screeners use resilient balls in the "pockets" of the screen frame(s) to keep the screen surface free from blinding or pegging and to help particle stratification. Factors that affect mesh cleaning are as follows.

#### Number of Mesh Cleaning Balls

- ◆ Use the minimum number of balls per screen frame pocket to control blinding.
- ◆ For screen frames not more than 40 in. (1m) wide, use three balls per screen frame pocket. For screen frames more than 40 in. (1m) wide, use four balls per screen frame pocket.
- ◆ Do not use more than six balls per pocket because this quantity will prevent the free movement of the balls and can decrease the mesh cleaning performance.
- ◆ The size and number of mesh cleaning balls specified in each pocket may change, depending on the section of the frame and level of blinding. Balls may be removed in applications where screen blinding is not seen. Contact Rotex for recommendations.



#### NOTE

*In most scalping applications, use only one or two balls per pocket at the discharge end of the frame. Excessive ball action at the discharge end can cause screen failure*

#### Size of Mesh Cleaning Balls

Balls come in various sizes:  $\frac{1}{2}$  in.,  $\frac{1}{4}$  in.,  $\frac{1}{8}$  in. and 2 in. diameters (29mm, 35mm, 41mm and 50mm) and in a variety of compounds. Refer to the following table for guidelines on selecting the proper ball size and when to replace worn balls. Contact Rotex for recommendations for a specific application.

SCREEN MESH / SCREEN OPENING	NEW BALL SIZE	REPLACEMENT (WORN) SIZE
4 mesh (4.75mm and larger)	2 in. (50mm)	$1\frac{3}{8}$ in. (35mm)
4 mesh – 18 mesh (4.75mm – 1.00mm)	$1\frac{5}{8}$ in. (41mm)	$1\frac{1}{8}$ in. (29mm)
18 mesh – 80 mesh (1.00mm – 180 $\mu$ m)	$1\frac{3}{8}$ in. (35mm)	1 in. (25mm)
80 – 400 mesh (180 – 38 $\mu$ m)	$1\frac{1}{8}$ in. (29mm)	$\frac{3}{4}$ in. (19mm)

2.4. Screen / Ball Size Table

### SPEED

- ◆ The speed of the screener affects conveying rate and product stratification as well as agitation of the mesh cleaning balls.
- ◆ The standard operating speeds for each model are shown on the following page. Your screener may have a different speed because of the requirements for a particular application.

The first digit of the Rotex model number indicates the drive series. The letter D following the model number indicates the machine is equipped with a Dynamic Absorber drive head. For example, a Model 3201 has a 30 series drive; a Model 81D has an 80 series Dynamic Absorber drive.



#### NOTE

*Contact Rotex before changing the screener speed.*



#### NOTE

*Although there is no limit to speed reduction, performance will be affected because conveying rate and ball mesh cleaning action are reduced.*



## **2 OPERATION**

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DRIVE HEAD SERIES	DRIVE TYPE	PINION SHAFT SPEED (RPM)	STANDARD SCREEN BOX SPEED (RPM)
10	Belt	n.a.	294
20	Gear	915	243
30	Belt	n.a.	252
40	Gear	915	243
80	Gear	815	216
80D	Belt	n.a.	218
80S	Belt	n.a.	218
50	Gear	598	200
50D	Belt	n.a.	197
50S	Belt	n.a.	197
70	Gear	609	203
70D	Belt	n.a.	203
70S	Belt	n.a.	203

2.5. Standard Operating Speeds

### **WEIGHT AND COUNTERBALANCING**

The screener has been carefully counterbalanced based on the speed and weight of the moving screen box assembly.



#### **CAUTION**

*Do not add to or remove weight from the screen box assembly without contacting Rotex for instructions on how to adjust drive head counterbalancing. Weight changes can damage the screen box assembly, reduce performance and transmit higher forces into the support structure.*

### **SLOPE**

- The slope of the screening surface controls the product conveying rate. Conveying rate determines retention time and bed depth, which directly affects the performance of the separations.

- To increase the conveying rate, the screening slope can be increased by inclining the base of the screener not more than 4 degrees. The slope adjustment can be made by installing shims under the feed end of the base or by changing the length of the supporting cables.
- To decrease the slope, install shims under the discharge end of the screener base or change the length of the supporting cables.

### **DIRECTION OF ROTATION**

ROTEX Screeners may operate in either direction (clockwise or counter-clockwise). If the feed to the screener is greater to one side of the deck, reversing the direction of rotation may improve the separation.

### **VENT CONNECTIONS**

ROTEX Screeners can be equipped with a vent for connection to a dust collection system. 200 to 300 cfm (5.7 – 8.5 cubic meters/minute) is generally recommended for dust control.



#### **CAUTION**

*Internal pressure must not be higher than ±3 in. water column (0.75 kPa).*



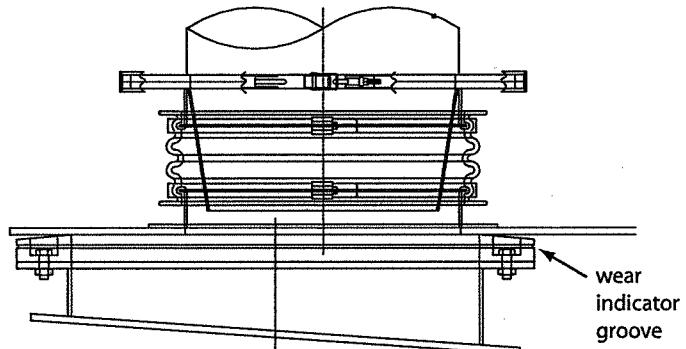
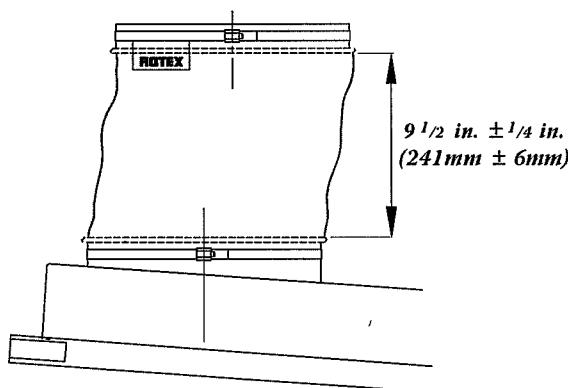
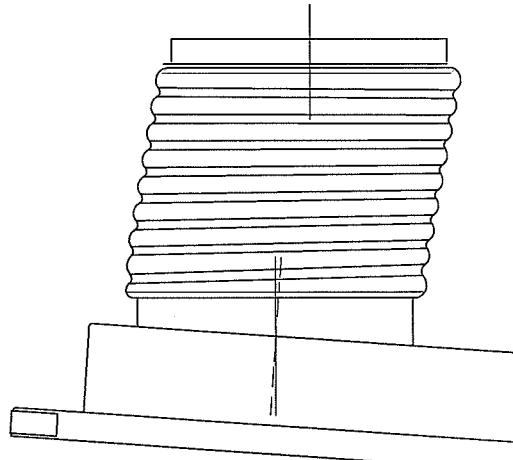
#### **NOTE**

*Excessive airflow through the screener can reduce screening performance because material is lifted from the screen surface. This problem is more common with fines removal and grading applications.*

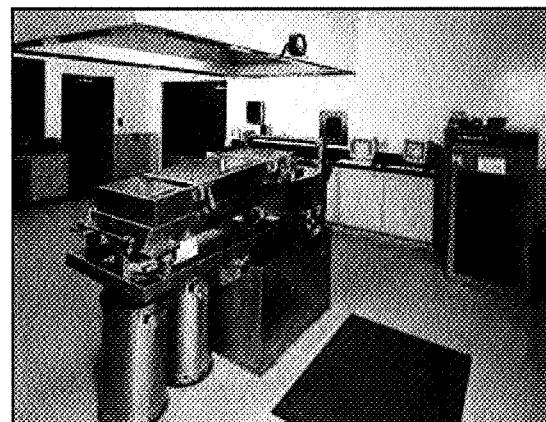


**INLET/OUTLET CONNECTORS**

- ◆ Standard ROTEX Screeners are shipped with flexible connecting sleeves for each inlet and outlet.
- ◆ Molded connecting sleeves are available in nominal 4 in., 6 in., 8 in. and 10 in. (102, 152mm, 203mm and 254mm) diameters and designed for use with a 9½ in. bead-to-bead spacing. See page 36 in the Maintenance section for specifications on the materials available.
- ◆ Fabric sleeves are used in large volume applications and when special sizes, shapes or lengths are required.
- ◆ Slider inlet and outlet connectors are available in standard 8 in., 10 in., 12 in. and 14 in. (203mm, 254mm, 305mm and 356mm) sizes for new and retrofit installations. Other sizes are available on special order.

**Evaluating Performance**

To check the performance of a ROTEX Screener, testing must be conducted on a representative sample of the product using a testing device such as a GRADEX Particle Size Analyzer or a manual sieve shaker. Contact Rotex for help in evaluating the analysis results.



## **Maintenance Safety Precautions**



### **CAUTION**

1. Do not adjust, clean or maintain the machine until power is disconnected and locked out.
2. Do not operate the machine until all of the guards are installed, access doors/lids are closed and safety interlocks operate correctly.
3. Do not put or leave any loose items, such as tools, on or in the machine.
4. Do not change the machine in any way without consultation with and written permission from ROTEX.
5. Check mechanical fasteners every week to make sure they are tight. Tighten any loose fasteners and use the torque specifications in this Manual. Use a locking agent, such as Loctite®, where specified.
6. Inspect support cable assemblies and hardware for wear every week.
7. Inspect hanger assemblies, if equipped, for loose bolts, broken parts, or failed bearings.
8. Do not climb, sit or stand on the machine.
9. Keep the machine and area around the machine clean.
10. Lubricate the machine as instructed in this Manual. Contact ROTEX with questions about lubrication.
11. Do not clean aluminum parts with alkaline materials.





## 3 MAINTENANCE

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ROTEX Screeners have been carefully designed to require a minimum of maintenance. Regular checks of the following components will ensure safe operation, maximum performance and extend the life of the screener.



### CAUTION

*Power MUST be locked out before any work is done to the screener. Confirm that the screener has no power before beginning any maintenance.*

There are two basic designs of ROTEX Screeners—Automatic-Tensioning and General-Purpose.

### AUTOMATIC-TENSIONING DESIGN

- All-metal construction in product contact areas, including aluminum, stainless steel and carbon steel
- Screen is attached to screen frame using spring tension clips and grommets located around the perimeter of the screen.
- Screen frames on multiple deck machines have an integral spacer to separate the decks.
- Screen frame(s) and top cover are equipped with easily replaced, resilient seals, such as neoprene, silicone or EPDM rubber
- Sanitary designs are available.

### GENERAL-PURPOSE DESIGN

- Carbon steel or aluminum top cover
- Wood screen frames
- Screen attached to screen frames using staples
- Multiple screen frames on each deck of larger machines
- Separate wood spacers on multiple deck machines
- Felt seals on wood screen and spacer frames; Sponge seals on top cover

The following sections cover disassembly and

maintenance of Automatic-Tensioning and General-Purpose screeners. Parts that are common to both designs—connectors, mesh cleaning balls, etc.—are included with separate headings.

### PRE-MAINTENANCE CHECKLIST

Review before performing maintenance:

**Motor** – If the motor will be replaced, confirm that the motor voltage is correct for the motor installed on the machine. The voltage rating is on the motor nameplate. Also confirm that the motor enclosure and type is correct for the operating location and conditions.

**Drive Belt Tension** – If the screener is equipped with linked drive belts, refer to the Drive Head section in the Appendix for the proper installation procedure.



#### NOTE

*The tension of linked drive belts cannot be measured using a conventional belt tension gauge.*

**Direction of Rotation** – ROTEX Screeners can operate in either direction (clockwise or counter-clockwise).

**Connecting Sleeves** – Check all connectors for tears and holes. For long life of inlet and outlet connectors, confirm that the feed and discharge piping has been aligned according to the instructions on page 11 in the Installation section.

**Sliding Connectors or Nutating Inlet Connector** – Refer to the Appendix for maintenance details.

**Lubrication** – If your Rotex is equipped with a “gear drive,” make sure that the drive head is filled with the proper quantity and type of oil. Gear-type drive heads can be identified by the horizontal shaft on the side of the gearbox, and use a horizontal mount motor. All other drives use a motor with a vertical shaft.



#### NOTE

*If ambient temperatures are below 40°F or above 140°F (4°-60°C), consult Rotex for lubrication recommendations.*





## MAINTENANCE

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- Mounting Bolts or Cable Assemblies** – Make sure all mounting or anchor bolts are securely tightened. Cable assemblies must be checked to make sure that turnbuckle lock nuts are tight and that the wire rope portion is not damaged. Also confirm that tension on the cables is the same. Cables should not “whip” or vibrate during operation.
- Slide Bearing Assemblies** – Make sure there is proper clearance between the Slide Plate and Socket on carbon-type and greased slide bearings. Refer to the Slide Bearing section in the Appendix for maintenance and lubrication recommendations.
- Top Cover Clamps** – With all clamps attached, make sure that each clamp is properly tightened. The indicator tab on the clamp must be aligned with the green or OK section on the label. If it is not aligned, unclamp the handle, rotate the handle clockwise to increase the force or counter-clockwise to decrease the force. Re-clamp the handle and confirm that the tab is aligned with the green or OK section.
- Top Cover Jacking Bolts** – If the screener is equipped with top cover jacking bolts, make sure that they are tight against the top cover and that lock nuts are tight.
- Safety Guards** – Do not operate machine without all drive and/or belt guards in place.
- Power Cable** – If the machine is cable suspended, make sure that the power cable to the motor is in good condition. The power cable must be flexible enough to allow for 4 in. (10cm) of motion.
- Maintenance Tools and Hardware** – Before starting the machine, make sure all tools have been removed from the area, including the top cover.
- Clearances** – Start the screener briefly to confirm there is sufficient clearance around the base and rotating screen box assembly. Do not restart machine until it comes to a complete stop.
- Operating Empty Screener** – Operating the screener without material can damage the screen clothing and cause premature wear of the mesh cleaning balls. Do not operate the machine for more than 10 minutes without feed.
- Noise** – The screener should operate smoothly and quietly with no sharp knocking noises. Loud noises may indicate the top cover or screen frames are not properly clamped. Loose assemblies will damage the screener and can cause leakage.



### NOTE

*For cable suspended screeners, there must be not less than 4 in. (10cm) of clearance around the base.*



## **3 MAINTENANCE**

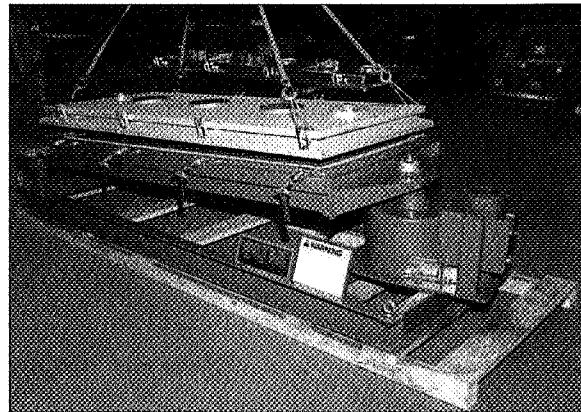
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### **AUTOMATIC-TENSIONING SCREENERS**

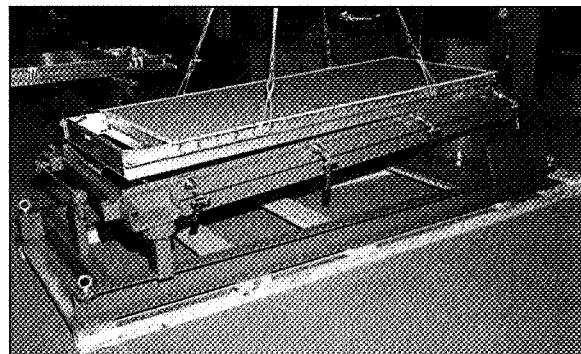
Mesh cleaning balls, screen clothing and seals are critical components of screen frame assemblies. All can be visually inspected after the screen frames are removed.

#### **DISASSEMBLY**

1. Shut off feed to screener and allow the machine to run empty for five minutes to clear material from the deck(s).
2. Remove the inlet connector.
3. Loosen screen frame jacks and top cover jacking bolts, if supplied with the machine.
4. Unclamp top cover clamps.
5. Remove top cover.
6. Remove screen frame from the screen box assembly by lifting first at the discharge end.
7. Inspect all seals for wear and damage. Good seals will be soft with no gaps between sections or at corners where leakage can occur.



*3.1. Top cover removal using lifting hooks and overhead hoist*



*3.2. Lifting the Screen Frame*

#### **ASSEMBLY**

Note that there are three different screen frame designs, depending on machine size and number of decks.

- A. Plain frames that use no screen frame jacks or roller jacks
- B. Frames that use roller jacks located at the discharge end of the screen frame
- C. Frames that use external screen frame jacks located at either end of the box frame

Please refer to the following illustrations to determine what is supplied on your screener and follow the specific assembly procedures.



*3.3. Screen frame removal using lifting hooks and overhead hoist*

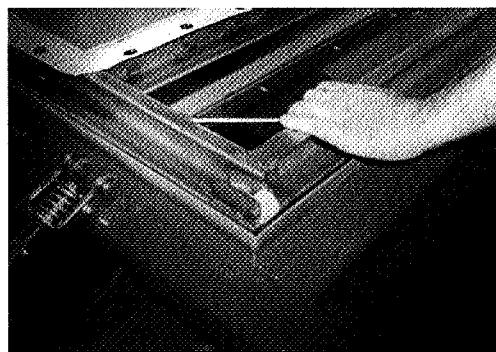


## MAINTENANCE

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### **A. Plain Frames**

1. Lower the screen frame into the screen box assembly and push it toward the discharge end of the screen box assembly.
2. Install the top cover but do not clamp. Use the jacking bolts to move the top cover against the stop plates if the screener is equipped with them.
3. Clamp the clamp handles and check to make sure the indicator tab is in the green or OK zone. If required, loosen the top cover jacking bolts one half turn so the top cover is free to move down. Adjust the clamps by rotating the handle on the threaded rod and re-checking the compression.
4. Re-tighten the top cover jacking bolts, if applicable, and tighten the lock nuts.



3.4. Roller Jack Frame

### **B. Frames with Roller Jacks**

1. Lower the screen frame into the screen box assembly so the urethane bolt heads touch at the feed end.
2. Push the screen frame into the screen box assembly at the discharge end. The frame will require approximately 50 lb (23 kg) of force to install it correctly, and the rollers will be compressed.
3. Install the top cover but do not clamp. If applicable, use the jacking bolts to move the top cover against the stop plates.
4. Clamp the clamp handles and check to make sure the indicator tab is in the green or OK zone. If required, loosen the top cover jacking bolts one half turn so the top cover is free to move down. Adjust the clamps by rotating the handle on the threaded rod and re-checking the compression.
5. Re-tighten the top cover jacking bolts and tighten the lock nuts.



#### **NOTE**

*Make sure that only the rollers touch the discharge end of the screen box. Refer to the instructions in the appendix for adjusting the bolts and rollers.*

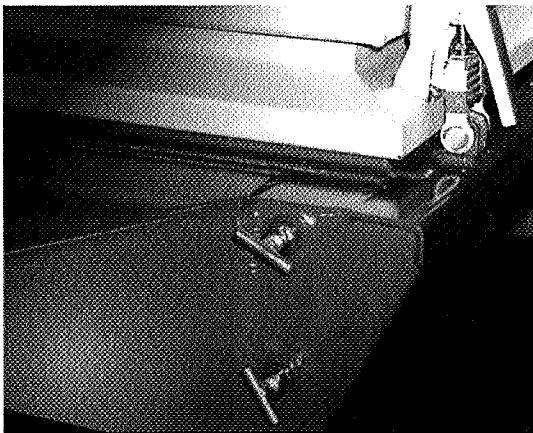
### **C. Frames with Screen Frame Jacks**

1. Lower the feed end of the bottom screen frame into the screen box assembly.
2. Tighten the bottom deck screen frame jacks to push the screen frame to the discharge end of the screen box assembly.
3. Loosen the screen frame jack approximately one half turn so the screen frame is free to move down and fully contact the screen box assembly below.
4. Repeat for all decks by tightening the jacks to move the frames into position and then loosening them.
5. Install the top cover but do not clamp. If applicable, use the jacking bolts to move the top cover against the stop plates.
6. Clamp the clamp handles and check to make sure the indicator tab is in the green or OK zone. If required, loosen the top cover jacking bolts one half turn so the top cover is free to move down. Adjust the clamps by rotating the handle on the threaded rod and re-checking the compression.
7. Re-tighten the top cover jacking bolts, if provided, and tighten the lock nuts.
8. Tighten all screen frame jacks one half turn and tighten lock nuts.

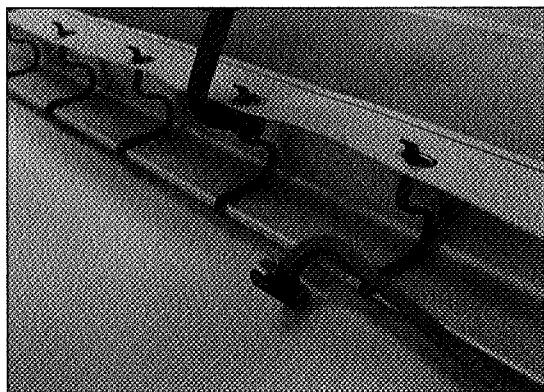


## **3 MAINTENANCE**

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3.5. Screen Frame Jacks at Feed End of Screen Box Assembly



3.6. Discharge End of Screen Frame with Edging Pulled Down on Clips



### **CAUTION**

*Do not over-tighten the jacking bolts. Excessive pressure can distort the screen frames, causing leakage and damaging the screen frames and screen box assembly.*

## **Screens**

Screens are attached to frames with metal clips. For maximum life and performance, the screen must be installed so it is taut and flat with no depressions or sagging.

If screen is not taut, inspect clips for excessive deformation. See page 27 for correct screen frame clip shape. Replace clips if they are not the correct shape or do not pull the screen flat.

Make sure the screen edging is in continuous close contact with the cross member at the discharge end. Leakage can occur if the edging rises on the clips, which allows product to leak between the discharge hoppers.

## **INSTALLATION**

1. After removing old screen, check all screen frame pockets for proper quantity and size of mesh cleaning balls.
2. Gently unpack the new screen to avoid bending or crimping. Sharp bends or crimps will cause premature failure.

3. Center the new screen on the screen frame and move the screen tension clips to the grommets along the sides and ends
4. Align and attach the tension clips at all four corners first. Refer to the following illustrations showing the installation order and how to use the screen tension clip tool.
5. Make sure the screen is still positioned on the center of the screen frame. Only the screen edging, not the screen, should contact the frame
6. Install every other tension clip, starting first at the feed and discharge ends. Complete installation along both sides.
7. Install the remaining clips, starting at the discharge end, followed by the feed end, and ending with both sides.
8. Remove and align any clip that is not correctly aligned with a grommet.

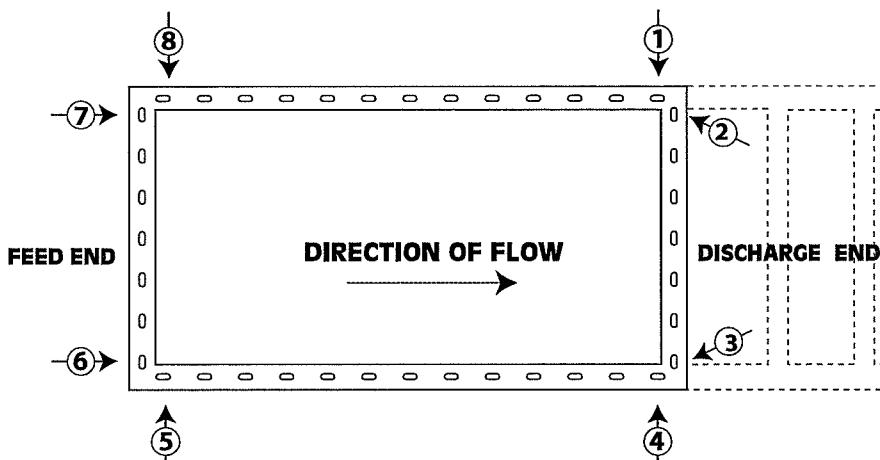
## **SCREEN STORAGE AND CLEANING**

1. If the screen is removed from the frame, roll it smoothly onto the original shipping tube and store horizontally to avoid crimping or bending.
2. Screens should be gently cleaned with an appropriate nylon or steel brush if required.
3. If screens are washed, use temperatures less than 140°F (60°C) to prevent damage to the edging. Hang screen to dry.



## 3 MAINTENANCE

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3.7. Clip Installation Sequence

### **Screen Tension Clip Tool**

The screen tension clip tool makes installation easier and faster. In most cases, screens may be replaced on one-deck machines without removing the screen frame from the screen box assembly.

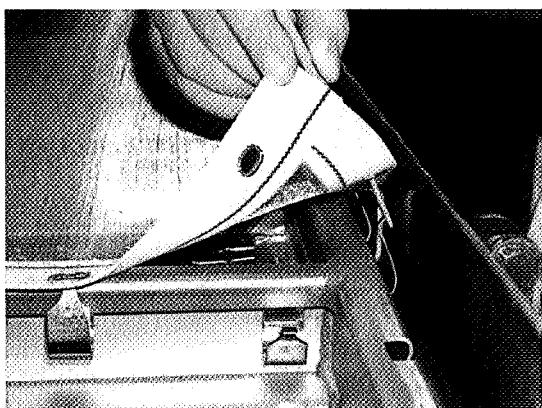


3.8. Screen Tension Clip Tool

### **INSTALLATION**

1. Push tool through the grommet and over the tip of the screen tension clip. The tip of the clip should be held in the rectangular slot at the end of the tool.
2. Push down on the edging and pull the tool up and toward the outside of the screen box assembly.
3. The clip will move up through the grommet and snap into position.

3.9.a. Clip Installation



3.9.b. Clip Installation



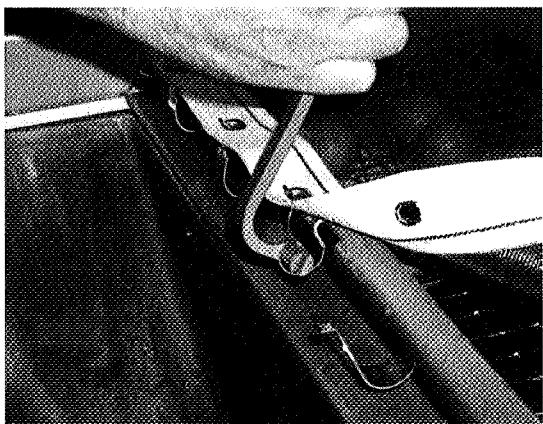
## **3 MAINTENANCE**

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### **REMOVAL**

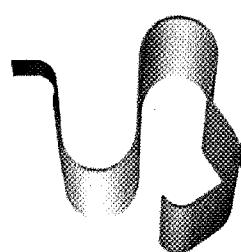
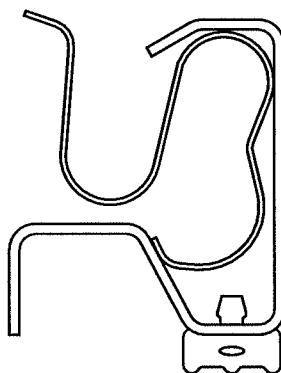
1. Slide the slot on the curved end of the tool over the screen tension clip.
2. Push the tool toward the center of the screen to release clip pressure.
3. Pull the grommet and edging off the clip.

*3.10. Clip Removal*

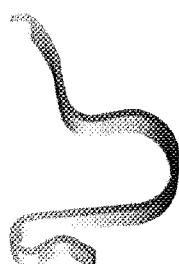
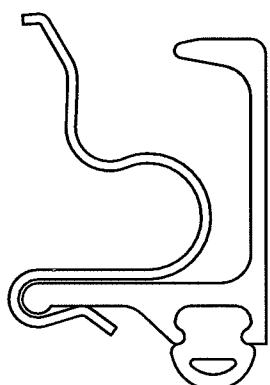


### **Screen Tension Clips**

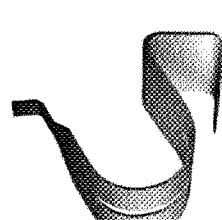
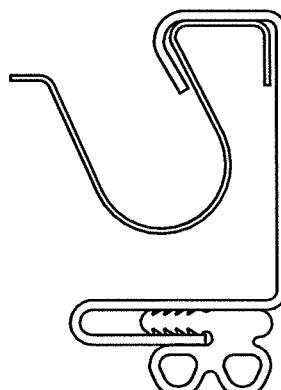
Clips are available with a range of tensions. Clips are selected based on the screen wire diameter, screen material and size of the screen frame. Contact Rotex for information on clip selection.



*3.11. Tension Clip for Carbon Steel / Stainless Steel Frames*



*3.12. Tension Clip for Aluminium Screen Frames*



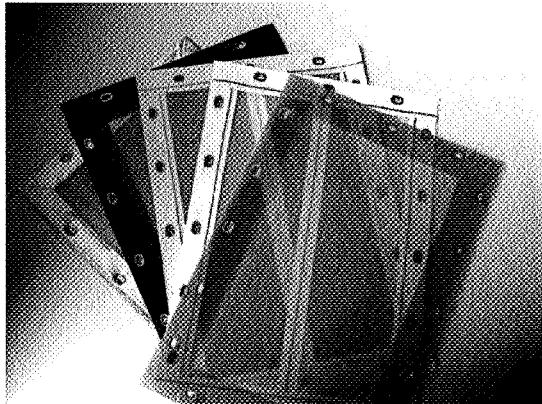
*3.13. Type-T Tension Clip for Carbon Steel / Stainless Steel Frames*

## 3 MAINTENANCE

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### Screen Edging

Screen edging is available in several materials, widths and designs, depending on the application, temperature and wire screen diameter. Contact Rotex for information on the proper edging for your application.

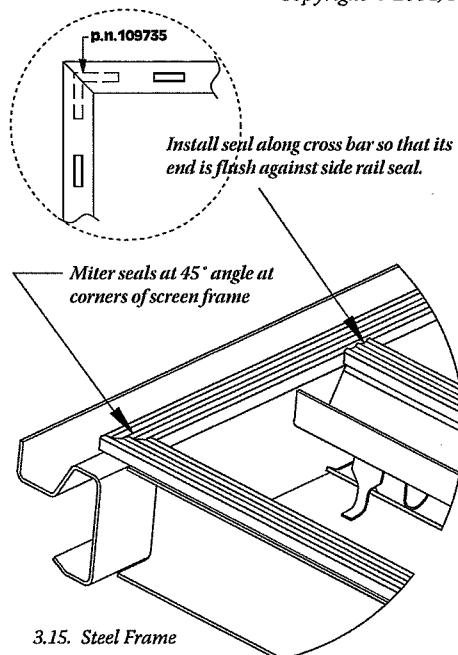


3.14. Screen Edging

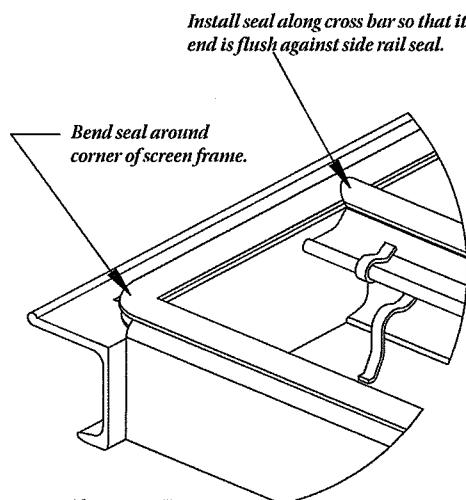
### Seals

Seals must be properly maintained to control leakage between the top cover, screen frame(s) and screen box assembly.

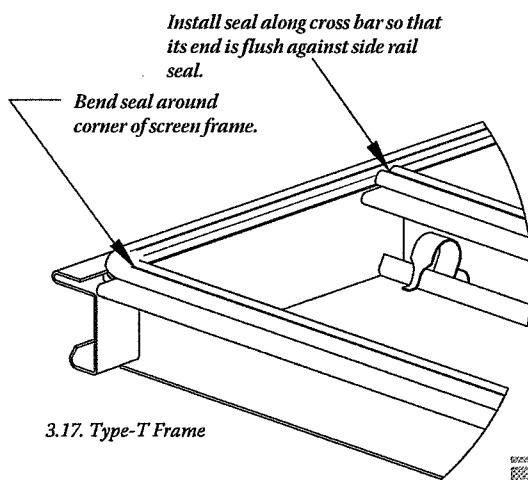
- Inspect seals any time the screener is disassembled for screen changes or other maintenance.
- Seals must be smooth, flat and resilient to control leakage.
- Make sure seals are tight in the top cover and screen frame seal holders.
- Confirm there are no gaps between seal sections or at corners.
- Do not stretch seals during installation, because shrinkage will cause gaps and product leakage.



3.15. Steel Frame



3.16. Aluminum Frame



3.17. Type-T Frame



## MAINTENANCE

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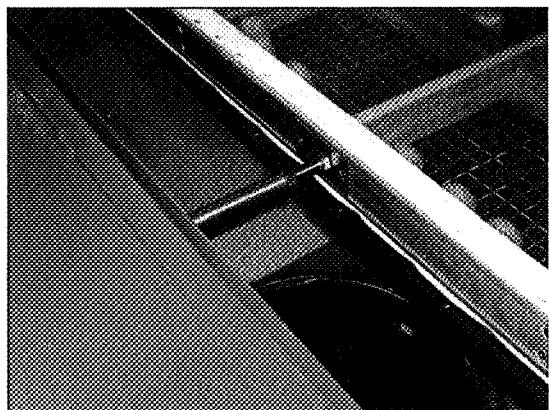
### GENERAL PURPOSE SCREENERS

Mesh cleaning balls, screen clothing and seals are critical components of screen frame assemblies. All can be visually inspected after the screen frames are removed.

#### DISASSEMBLY

1. Shut off feed to screener and allow the machine to run empty for five minutes to clear material from the deck(s).
2. Remove the inlet connector.
3. Loosen screen frame jacks and top cover jacking bolts, if supplied with the machine.
4. Unclamp top cover clamps.
5. Remove top cover.
6. Remove screen frame(s) and spacer frame(s) from the screen box assembly by lifting first at the discharge end.
7. Remove screen frame separators, if supplied, and inspect for wear.
8. Inspect all seals for wear and damage. Good seals will be soft with no gaps between sections or at corners where leakage can occur.

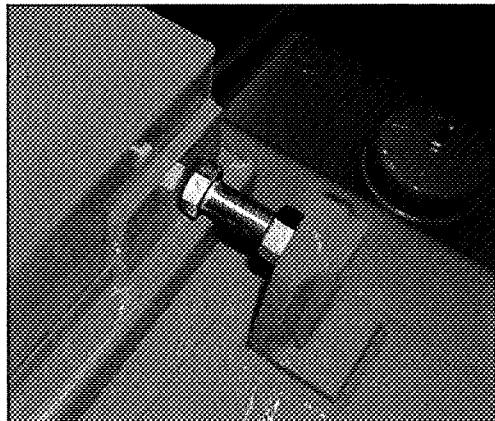
4. On multiple deck machines, install the spacer frame(s) and screen frame(s).
5. Tighten the spacer frame jack bolts to push the spacer and screen frame(s) to the opposite end of the screen box assembly.
6. Repeat for all remaining decks, tightening the jack bolts to move the frame(s) and spacer(s) into position. Tighten the lock nuts.
7. Install the top cover. If applicable, use the jack bolts to move the top cover against the stop plates.
8. Clamp the clamp handles.
9. Tighten top cover jack bolts and tighten lock nuts.



3.18. Screen Frame Jack Bolt

#### ASSEMBLY

1. Make sure all seals are in good condition and that there are no gaps where leakage can occur.
2. Lower the bottom screen frame(s) and screen frame separator(s) into the box frame. Make sure the seals are not removed or damaged if they slide across the edge of the screen box assembly.
3. Tighten the bottom deck screen frame jack bolts to push the screen frame(s) to the opposite end of the box frame. Tighten the lock nuts.



3.19. Top Cover Jack Bolt



## **3 MAINTENANCE**

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### **Screens**

Screen and ball support screens are attached to frames with staples. For maximum screen life and performance, screens must be installed so they are tight and flat.



#### **WARNING**

**Eye injury risk. Wear approved safety glasses.**

### **INSTALLATION**

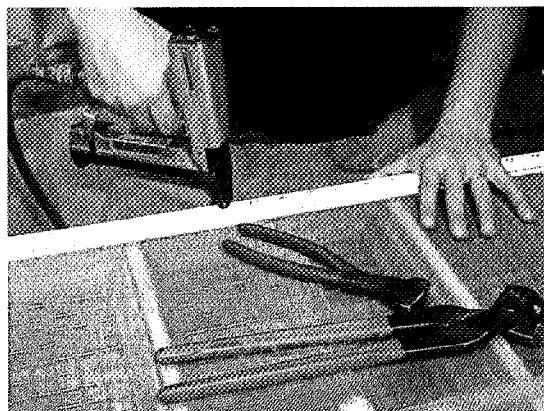
1. After removing old screen, inspect the screen frame for wear. Replace any frames where the bevel strips are worn to less than a 20° angle, because the ball mesh cleaning action will be reduced. Also check the horizontal surface around the outside since staples can loosen if the wood is soft or has too many holes.
2. Check all screen frame pockets for proper quantity and size of mesh cleaning balls.
3. Gently unpack the new screen to avoid bending or crimping. Sharp bends or crimps will cause premature failure.
4. Place the screen on the frame and align it along edges A and B as shown on the following illustration.
5. Check edges C and D to make sure there is additional screen, which will be used later for correct tensioning. Move the A and B edges as needed so there is  $\frac{1}{4}$  in. (6mm) or more screen for tensioning.
6. Staple corner 1 using three staples. Staples should be installed with an air operated (pneumatic) staple gun. See the following table for staple recommendations.
7. Pull and tension the screen in direction A by pulling at corner 4 and stapling with three staples.
8. Pull and tension the screen in direction B by pulling at corner 2 and stapling with three staples.

9. Start at corner 1 and staple toward corner 4 along edge A every 1 in. (2.5cm). Install staples approximately 45° to the edge so the screen will not loosen.
10. Go back to corner 1 and install staples along edge B to corner 2. Install staples every 1 in. (2.5 cm).
11. Pull and tension the screen at corner 3 and install three staples.
12. Staple along edge C from corner 2 to corner 3. Pull the screen every 1 in. (2.5 cm) before stapling to provide the best tension.
13. Staple along edge D from corner 3 to corner 4. Pull the screen as in step 12 above.
14. Screens with wire diameters greater than 0.063 in. (1.6mm) must be stapled to the longitudinal screen frame members every 3 in. to 4 in. (7.5 to 10cm).
15. Inspect all staples for tightness and tap any loose staples with a hammer.
16. Cut screen without edging so it is flush with the edge of the frame. Tap wires down with a hammer to prevent injury. Screen with edging should be tapped down over the edge of the frame to make installation easier.



#### **CAUTION**

**Sharp Wire Screen. Wear Protective Gloves.**



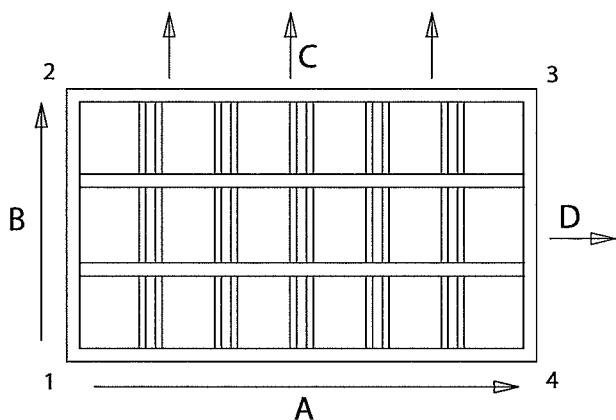
**3.20. Screen Installation on General-Purpose Screen Frame**



## 3 MAINTENANCE

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### Ball Support Installation



3.21. Installation & Tensioning Sequence on General-Purpose Screen Frame

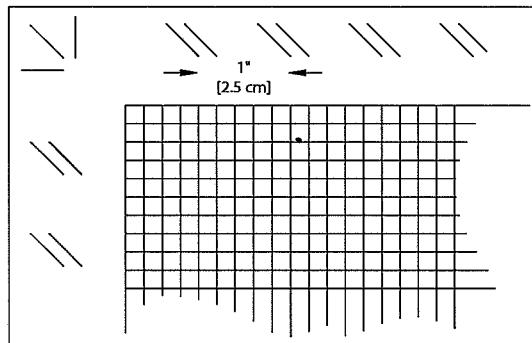
Place the pre-trimmed ball support screen on the frame and align it along the edges. If there is excess material, trim the screen with bolt cutters or a grinder before beginning the installation.

Begin at the outside of the frame and apply staples at all four corners. Continue to apply staples every 4-5 in. (10-13cm) and move from one end to the other so no areas are missed.

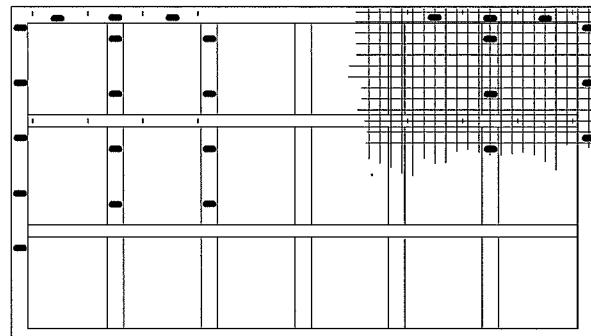
In the center of the frame, apply two staples per pocket along the longitudinal members. Apply three staples to the bevels across each pocket.

Tap all staples with a hammer to be sure they are tight.

Apply felt seal every 3-4 in. (8-10cm). Tap all staples to be sure they are tight and remove any that are loose or bent.



3.23. Staple Location, Installation & Spacing on General-Purpose Screen Frame



3.22. Ball Support Staple Location

		WOOD FRAMES		WOOD FRAMES WITH PLASTIC INSERER		MEGATEX / HI-CAP FRAMES	
Screen Size (in. & mm)	Screen No.	Bottom Screen	Side Screen	Bottom Screen	Side Screen	Bottom Screen	Side Screen
% in. x 16 in. (9.5 x 13mm) Part no. 102462	SLS - 20 M	A. All polyester and nylon  B. All tensile bolting cloth (TBC)  C. Mill or Market grade screens with wire diameter less than or equal to 0.025 in. (0.64mm)	N/A	A. All polyester and nylon  B. All tensile bolting cloth (TBC)  C. Mill or Market grade screens with wire diameter less than or equal to 0.025 in. (0.64mm)	N/A	A. All polyester and nylon  B. All tensile bolting cloth (TBC)  C. Mill or Market grades with wire diameter less than or equal to 0.025 in. (0.64mm)	N/A
% in. x 3/4 in. (4.8 x 19mm) Part no. 102460	SLS - 20 L	Mill or market grade screens with wire diameter more than 0.025 in. (0.64mm)  NOTE: Brittle abrasion resistant steel and stainless steel screens with wire diameter less than 0.041 in. (1.04mm) may require % in. x 1/2 in. (9.5mm x 13mm) staples to prevent screen breakage.	% in. (19mm) opening, 0.105 in. (2.7mm) diameter screen	Mill or market grade screens with wire diameter more than 0.025 in. (0.64mm)  NOTE: Brittle abrasion resistant steel and stainless steel screens with wire diameter less than 0.041 in. (1.04mm) may require % in. x 1/2 in. (9.5mm x 13mm) staples to prevent screen breakage.	N/A	N/A	N/A
% in. x 1 in. (4.8 x 25mm) Part no. 102461	SLS - 20 L					% in. x 1 in. (4.8mm x 25mm) driven through plastic insert into wood sub-frame	All ball support screen

3.24. Staple Chart

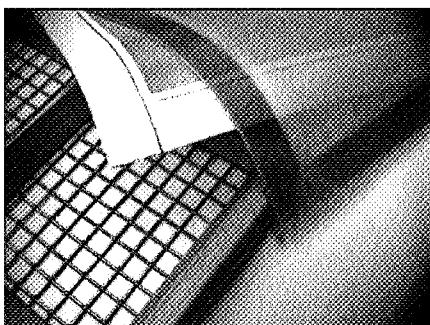


## **Screen Storage and Cleaning**

1. If the screen is removed from the frame, roll it smoothly onto the original shipping tube and store horizontally to avoid crimping or bending.
2. Screens should be gently cleaned with an appropriate nylon or steel brush if required.
3. If screens are washed, use temperatures less than 140°F (60°C) to prevent damage to the edging. Hang screen to dry.

## **Screen Edging**

Screen edging is available in several materials and widths, depending on the application, temperature and wire screen diameter. Contact Rotex for information on the proper edging for your application.



3.25. Screen Edging

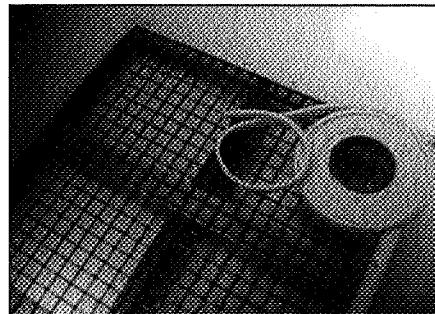
## **Seals**

Seals must be properly maintained to control leakage between the top cover, screen frame(s), spacer frame(s) and screen box assembly.

- ◆ Inspect seals any time the screener is disassembled for screen changes or other maintenance.
- ◆ Seals must be smooth, flat and resilient to control leakage.
- ◆ Confirm there are no gaps between seal sections or at corners.
- ◆ Do not stretch seals during installation, because shrinkage will cause gaps and product leakage.

### **FELT SEALS**

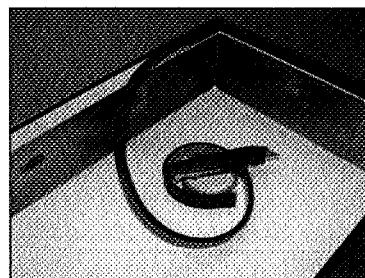
- ◆ Felt seals are used on wood screen frames and spacer frames.
- ◆ Use  $\frac{3}{8} \times \frac{1}{2}$  in. (9.5 x 13mm) staples.
- ◆ Staple seal every 3–4 in. (8–10cm) and at corners to prevent leakage.
- ◆ Tap all staples to be sure they are firmly attached.
- ◆ Remove any damaged staples.



3.26. Felt Seal

### **RUBBER SEALS**

- ◆ Urethane sponge or rubber seals are normally used on mild steel or aluminum top covers.
- ◆ Remove all old seals and check seal surfaces for flatness.
- ◆ Thoroughly clean surfaces before installing new seals.
- ◆ Do not stretch seals during installation since shrinkage can cause leakage.



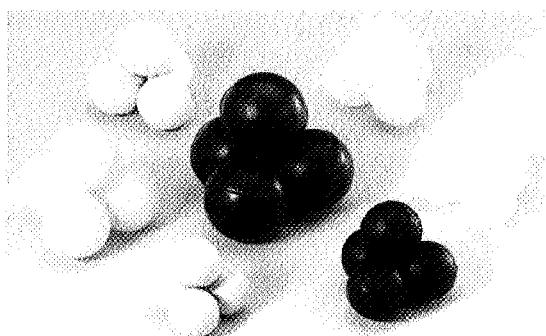
3.27. Installation of Top Cover Seal



## 3 MAINTENANCE

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### **Mesh Cleaning Balls**



3.28. Mesh cleaning balls

Mesh cleaning balls are important to the operation of the screener. They control screen blinding and improve performance by stratifying the material on the screen surface. Mesh cleaning becomes less effective as balls wear.

When replacing worn balls, use balls of the same size and material as specified on the spare parts list. If the product or application has changed, contact Rotex for

help in selecting the proper ball size and material. To replace balls, remove the screen frame from the screen box assembly.

NEW BALL SIZE	REPLACEMENT (WORN) SIZE
2 in. (50mm)	1 $\frac{3}{8}$ in. (35mm)
1 $\frac{5}{8}$ in. (41mm)	1 $\frac{1}{8}$ in. (29mm)
1 $\frac{3}{8}$ in. (35mm)	1 in. (25mm)
1 $\frac{1}{8}$ in. (29mm)	$\frac{3}{4}$ in. (19mm)

3.29. Ball Wear Table



#### **NOTE**

*Balls with a rough appearance, hard surface and reduced rebound can indicate damage by high temperature. Oils, solvents and fumigation chemicals can cause balls to swell or become excessively soft. To select the correct ball for these applications, refer to the following table or contact Rotex.*

### **NUMBER OF MESH CLEANING BALLS**

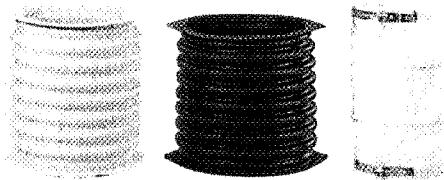
Refer to page 17 in Operation Section

MATERIAL	SIZE (inch and mm)	COLOR	ABRASION RESISTANCE	TEMPERATURE RANGE (°F AND °C)	FDA APPROVAL	OIL RESISTANCE	
						ANIMAL	VEGETABLE
Rubber	1 $\frac{1}{8}$ in., 1 $\frac{3}{8}$ in., 1 $\frac{5}{8}$ in., 2 in. 29, 35, 41, 50mm	White	Excellent	-20° to 150°F -29 to 66°C	Yes	Good	Poor
Neoprene	1 $\frac{3}{8}$ in., 2 in. 35, 50mm	White	Good	+10° to 180°F -12° to 82°C	Yes	Fair	Good
EPDM	1 $\frac{3}{8}$ in., 1 $\frac{5}{8}$ in., 2 in. 35, 41, 50mm	Black	Good	+10° to 250°F -12° to 121°C	No	Good	Good
EPDM	1 $\frac{3}{8}$ in., 1 $\frac{5}{8}$ in., 2 in. 35, 41, 50mm	White	Good	+10° to 250°F -12° to 121°C	Yes	Good	Good
Silicone	1 $\frac{3}{8}$ in., 1 $\frac{5}{8}$ in., 2 in. 35, 41, 50mm	Translucent	Fair	-40 to 400°F -40 to 204°C	Yes	Excellent	Excellent
Polyurethane	1 $\frac{3}{8}$ in., 1 $\frac{5}{8}$ in., 2 in 35, 41, 50mm .	Translucent	Excellent	32° to 170°F 0° to 77°C	Yes	Good	Good

3.30. Mesh Cleaning Ball Table



### Connectors



3.31. Molded and fabric sleeves

#### MOLDED AND FABRIC SLEEVES

Inspect connecting sleeves for the following problems:

- ◆ Tears
- ◆ Excessive wear or abrasion
- ◆ Accumulated material where the sleeve touches the beaded ring
- ◆ Swelling or stickiness of molded sleeves
- ◆ Stiffness or cracking of fabric sleeves

Sleeves that are worn or that have accumulated material must be replaced. Use the same size and material as originally specified on the spare parts list in the appendix.

Excessive temperatures or solvent action can cause sleeves to harden or become swollen and sticky. Oil or chemical attack will also cause early failure. Contact Rotex for help in selecting the proper sleeve material.

Replace sleeves by following the procedures on page 9 in the Installation section.



#### NOTE

*Extremely high or low temperatures will accelerate aging of sleeves, causing a loss of resiliency and premature failure. Refer to the following chart for sleeve material recommendations.*

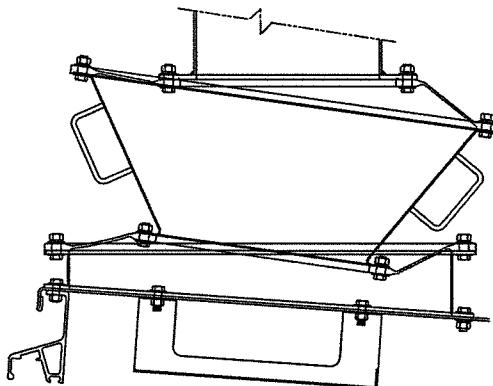


#### NOTE

*Misalignment is the most common reason for premature failure of a connecting sleeve. Refer to page 10, in the Installation section for alignment instructions*

### NUTATING INLETS

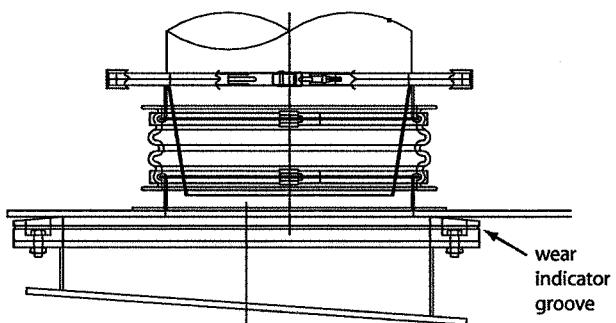
Periodically inspect top and bottom diaphragms for cracks. Premature failure is most often caused by improper installation. Refer to appendix for installation instructions.



3.32. Nutating inlet

### SLIDING INLET/OUTLETS

Inspect the wear ring weekly for wear. Replace the UHMW or Teflon® wear ring when it has worn to the horizontal groove on the side.



3.33. Sliding Inlet Connector



## MAINTENANCE

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	MATERIAL	COLOR	ABRASION RESISTANCE	TEMPERATURE LIMIT (°F AND °C)	FDA APPROVAL	OIL RESISTANCE	
						ANIMAL	VEGETABLE
<i>MOLDED</i>	Rubber	Black	Good	150° F 66°C	No	Good	Poor
	Neoprene	White	Good	180° F 82°C	Yes	Fair	Good
	EPDM	Black	Good	250° F 121°C	No	Good	Good
	Silicone	Translucent	Poor	400° F 204°C	Yes	Excellent	Excellent
<i>FABRIC</i>	Nylon, Type C	White	Fair	150° F 66°C	No	Good	Good
	Nylon, Type D	White	Fair	150° F 66°C	No	Good	Good
	High Temp.	Yellow	Poor	400° F 203°C	No	Good	Good

3.34. Flexible Connector Table

### Top Cover Clamps

Top cover clamps hold the top cover in place and provide uniform sealing pressure on the screen frames.

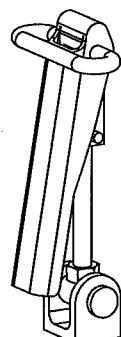
### Clamp Handles - used before 1999

For screeners manufactured before 1999, refer to Appendix for clamp handle installation and adjustment procedures.

### COMPENSATING CLAMPS

To ensure proper sealing and prevent warping of the top cover and screen frames, make sure that all compensating clamps are installed and the indicator tab is in the green or OK zone when clamped.

If the indicator tab is in a red zone, unclamp the assembly to adjust it. Rotate the handle clockwise to tighten or counter-clockwise to loosen. Do not adjust the clamp with the lock nuts



3.36. Old Style Clamp Handle



3.35. Compensating Clamp



### CAUTION

Excessive pressure is not required to clamp the top cover securely. Never use a prybar to force the handles tight.



## 3 MAINTENANCE

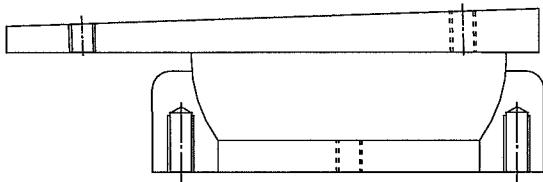
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### **Slide Bearings**

#### **CARBON BEARINGS**

Make sure that the gap between the slide plate and the slide ball socket is not less than  $\frac{1}{8}$  in. (3mm). If the gap is less, replace the carbon slide ball.

Refer to Appendix for installation instructions.

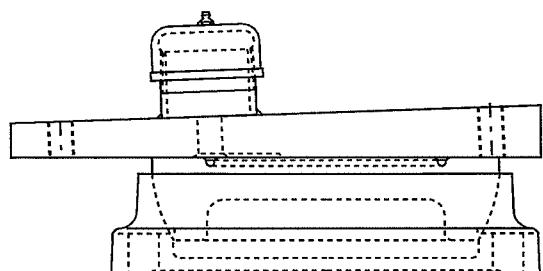


3.37. Typical Carbon Slide Bearing

#### **GREASE-LUBRICATED BEARINGS**

Inspect the underside of the slide plate for scratches and gouges. If the slide plate is damaged, both the slide ball and slide plate must be replaced. A damaged slide plate or slide ball will cause faster wear on the other part.

Refer to Appendix for installation and lubrication instructions.

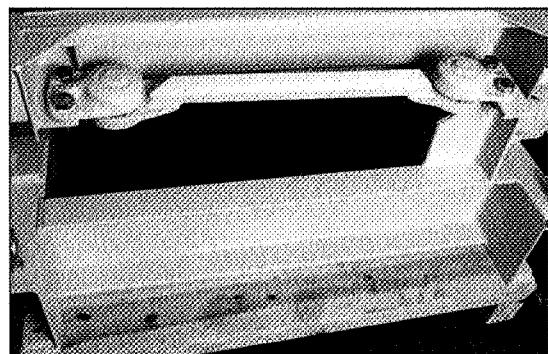


3.38. Typical Grease Lubricated Slide Bearing

### **Drag Link**

The drag link maintains alignment of the screen box assembly on the slide bearings and changes the gyratory motion at the feed end to linear motion at the discharge end.

Refer to Appendix for installation and adjustment instructions.

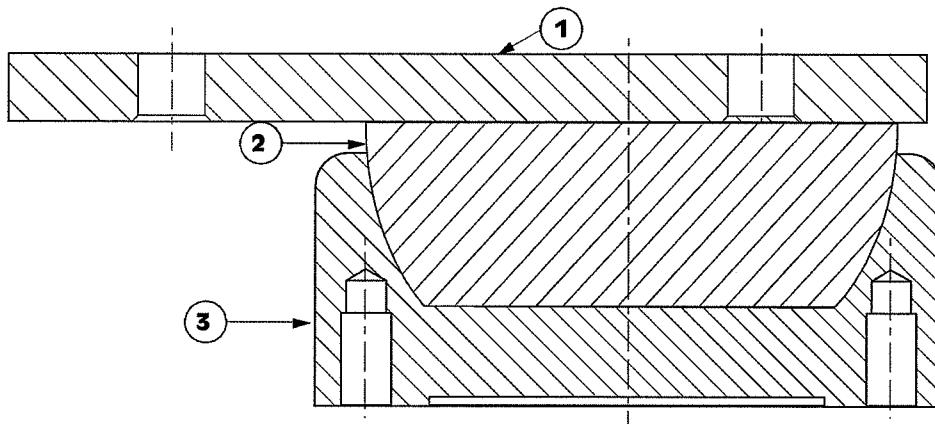


3.39. Drag Link Assembly

## A APPENDIX

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### **SLIDE BEARING ASSEMBLY - 18632 (20/30 Series)**



ITEM	PART NO.	QUANTITY	DESCRIPTION
1	24102	1	Slide Plate
2	27150	1	Carbon Slide Ball
3	27178	1	Ball Socket

### **MAINTENANCE INSTRUCTIONS**

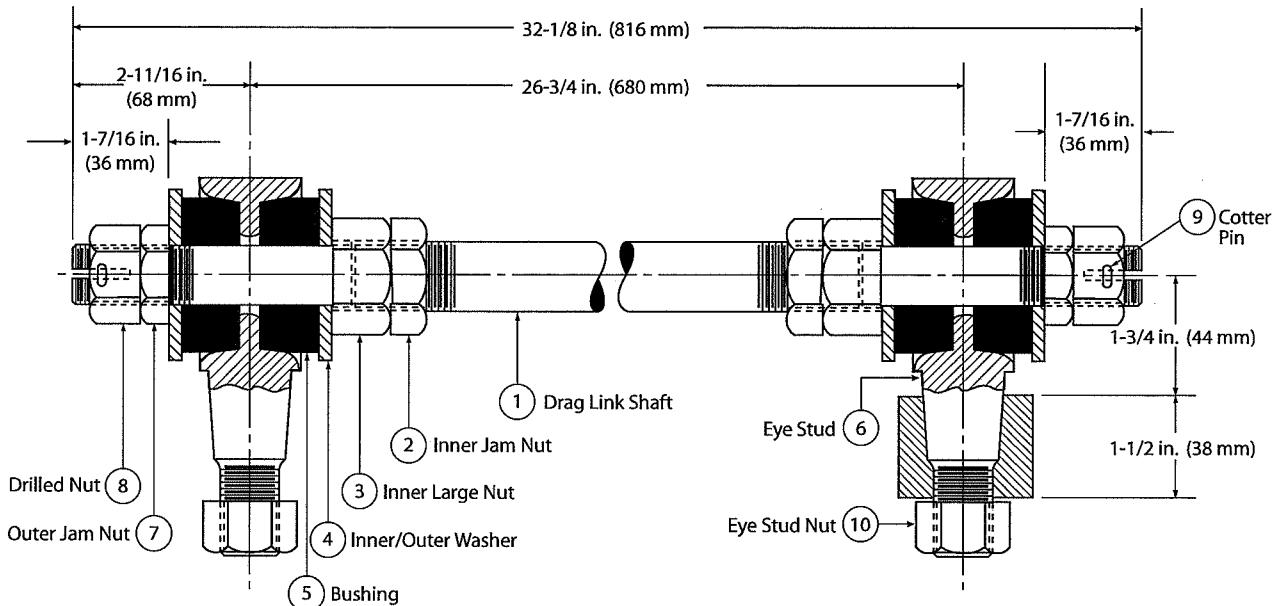
1. Make sure all parts are clean and rust free, including the interior and mounting surface of the slide ball socket. Inspect all surfaces of the slide ball and both sides of the slide plate.
2. Make sure there are no scratches on the ball socket, top surface of the slide ball or bottom surface of the slide plate.
3. Check the slide plate mounting surface on the box frame and the ball socket mounting surface on the base. Both surfaces must be clean and flat to prevent distortion and allow the slide ball to move.
4. If shims were used under the slide plate or slide ball socket, reinstall the same thickness and quantity in the same position.
5. Mount socket on base and install ball. The ball should move freely in all directions.
6. Install slide plate. Make sure the cap screws do not extend below the bottom surface.
7. If the slide plates are tapered, make sure both sides are oriented in the same direction.
8. Lower the screen box assembly onto the slide ball and check to be sure there is approximately  $\frac{1}{16}$  in. (8mm) clearance between the slide plate and socket with a new ball.
9. Move the screen box assembly through its entire stroke to make sure the slide balls are completely covered by the slide plates. If the slide balls are exposed, adjust the drag link assembly.



## APPENDIX

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### DRAG LINK ASSEMBLY 7700 (20 & 30 Series)



ITEM	PART NO.	QTY.	DESCRIPTION
1	7701	1	Drag Link Shaft
2	7453	2	Inner Jam Nut
3	2711	2	Inner Large Nut
4	7702	4	Inner/Outer Washer
5	7419	4	Rubber Bushing
6	27043	2	Eye Stud
7	2841	2	Outer Jam Nut
8	7452	2	Drilled Nut
9	2537	2	Cotter Pin
10	2710	2	Eye Stud Nut

### MAINTENANCE INSTRUCTIONS

The Rubber Bushings will wear and must be replaced when they move more than 1/8 in. (3 mm) inside the Eye Studs.

### DISASSEMBLY

1. Disconnect and lock out power to the machine.
2. Disconnect the Drag Link Assembly from the box frame and base by removing the two Eye Stud Nuts. Gently tap the Eye Studs if necessary because they are tapered and may be difficult to remove.
3. Disassemble the Drag Link and remove the worn bushings.

### ASSEMBLY AND ADJUSTMENT

To ensure long life of the Bushings, follow this procedure for the assembly and adjustment of the Drag Link.

1. Assemble all parts on the Shaft except for the cotter pins. Do not tighten the nuts.
2. Adjust the Outer Jam Nut on both ends to 1-7/16 in. (36 mm) from the end of the Shaft.
3. Turn the Drilled Nut against the Outer Jam Nut and insert the Cotter Pin. Tighten the Outer Jam Nut against the Drilled Nut on both ends.

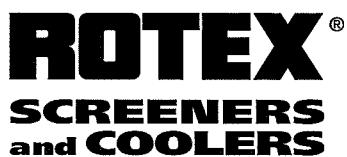
## **A APPENDIX**

### **DRAG LINK ASSEMBLY 7700 (20 & 30 Series)**

4. Turn the Inner Large Nut tightly against the Inner Washer to push the Bushings into the Eye Stud. This step is necessary to remove all clearance between the parts.
5. Loosen the Inner Large Nut until the Inner Washer is loose, and then tighten it by hand against the Inner Washer.
6. Tighten the Nut an additional **1-1/4 turns** after it contacts the Inner Washer.
7. Hold the Inner Large Nut with a wrench and tighten the Inner Jam Nut against it.
8. Repeat steps 1 through 7 for the other end.
9. Follow the detailed installation and alignment instructions below. If adjustment to the overall length is required, adjust the outer nuts first and repeat steps 4 through 7.

#### **INSTALLATION OF DRAG LINK ON SCREENER**

1. Manually rotate the drive head until the crankpin is at the **extreme discharge end or feed end** of the machine stroke.
2. Move the discharge end of the screen box assembly right or left until the slide plates are centered on the slide balls.
3. Measure the center-to-center distance between the Eye Stud holes on the base and screen box assembly. The approximate dimension is 26-3/4 in. (680 mm)
4. Preassemble the Drag Link Assembly using the center-to-center distance measured in step 3.
5. Manually rotate the drive head 90 degrees so the crankpin is offset to the maximum distance on either the **right or left** hand side. Hold the drive so it cannot move from this position.
6. Install the Drag Link Assembly into the eye stud sockets. Make sure the Eye Stud Nuts are tight so the Eye Studs cannot move.
7. Manually rotate the drive head through one complete revolution to make sure the slide balls are not exposed. Adjust the Drag Link if necessary.



## 32 SERIES DRIVE HEAD ASSEMBLY

### MAINTENANCE INSTRUCTIONS

The 30 Series ROTEX® drive head has been carefully designed to require a minimum of maintenance. All revolving parts are mounted on anti-friction bearings, and parts subject to wear are designed to be easily replaceable.

Repair the drive mechanism in a clean area. Refer to the drive head assembly drawing when following the instructions below. When overhauling the drive, it is generally good practice to replace all bearings.

**Caution:** The drive head assembly is fitted with steel plates to achieve the necessary counterbalancing. Use care when handling the drive and the drive weight. It may shift unexpectedly.

### REMOVING DRIVE HEAD FROM SCREENER

1. Disconnect the discharge end horizontal drag link from the screen box – see Drag Link instructions.
2. Remove cover bolt (25) and cover (28) from the top of the crankpin assembly.
3. Remove lock wire (26) and four cap screws (27) from the split tapered bushing (24).
4. Place three of the removed cap screws (27) in the tapped holes (not shown on drawing) provided in the bushing (24). Use them as push screws to loosen and remove the bushing from the housing.
5. Lift the screen box assembly up and clear of the drive head.
6. Remove the drive guard and motor guard – see page 5.
7. Remove v-belts.
8. To make handling of the drive weight easier, remove the nut (14) and threaded rod (12) which hold the drive weight plates (11) in place. Remove all of the drive weight plates (11).
9. To remove the drive head assembly from the base of the machine, loosen the four mounting bolts (19) which attach the drive to the base. Access to the top of these bolts is provided through a hole in the drive weight (3).

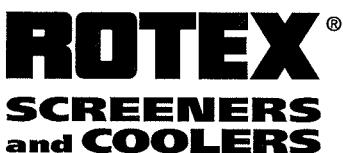
**ROTEX INC.**

CINCINNATI, OHIO, USA

**ROTEX**

EUROPE LTD

WARRINGTON, CHESHIRE, UK



# ROTEX®

## SCREENERS and COOLERS

### **DISASSEMBLY OF DRIVE HEAD**

#### **Crankpin Assembly Removal**

1. Insert a 5/8"-18 fine thread eyebolt into the top of the crankpin (33), and pull the crankpin assembly from the crank bearing housing (8).

#### **Crankpin Bearing Removal**

1. Remove spring clip (31) from the crankpin (33).
2. Press the crankpin (33) out of the crankpin bearing (32).
3. Replace the crankpin bearing and reassemble by reversing Step 1 and 2 above.

#### **Completion of Disassembly**

1. Remove the four socket head cap screws (9) holding the crank bearing housing (8) to the drive weight (3). Gently tap on the outside of the crank bearing housing (8) to remove it from the drive weight.
2. Remove the spring clip (6) from the top of the spindle assembly (1).
3. Move the drive head to an arbor press in preparation for pressing the spindle assembly (1) from the drive weight (3).
4. Support the drive weight at four points around its perimeter using 3-1/2" (90 mm) blocks. Using a 1-1/2" (38 mm) diameter bar, apply pressure to the spindle assembly (1) to press it through the upper and lower bearings (4) (5).
5. Press out both bearings (4) and (5) from the drive weight (3).
6. Clean the interior of the drive weight (3) thoroughly, including all grease passages.
7. Clean the spindle assembly (1) thoroughly and inspect for damage.

### **REASSEMBLY OF DRIVE HEAD**

1. Turn drive weight (3) upside down and insert lower bearing (4) by pressing on the outer race.
2. Insert the seal (2) into the bottom of the drive weight (3) until it is flush with the drive weight.
3. Carefully install the drive weight (3) on the top of the spindle assembly (1), being careful not to damage the seal (2).
4. Install the upper bearing (5) into the drive weight (3) and over the spindle assembly (1). Use a 3-7/16" (87 mm) diameter x 3/8" (10 mm) thick plate to press on the inner and outer races of the bearing at the same time. Apply pressure until the plate is even with the top of the spindle assembly (1).

### **32 SERIES DRIVE HEAD ASSEMBLY**

### **MAINTENANCE INSTRUCTIONS**

5. Remove the plate above and apply pressure to the outer race of the bearing with a 3-7/16" (87 mm) outside diameter steel tube or pipe. Continue to press on the outer race until the bearing is below the snap ring slot.
6. Align the four holes of the crank bearing housing (8) with the drive weight (3), and tap the crank bearing housing into place on the drive weight (3).
7. Use Loctite 242 (22) on threads of socket head cap screws (9), then install in drive weight (3).
8. Reinstall the crankpin assembly (31), (32) and (33).
9. Lubricate upper and lower bearings (4) and (5) with 14 grams NLGI Grade 2 Lithium Base EP grease.

### **INSTALLATION OF DRIVE HEAD ON SCREENER**

1. Bolt the drive head assembly down tightly to the machine base with four cap screws (19), lock washers (21) and nuts (20). Use Loctite 242 (22) on threads to insure that tightness is maintained.
2. Reinstall all of the drive weight plates (11) previously removed. Secure with threaded rod (12), washer (13), and nut (14) using Loctite 242 (22).
3. Reinstall and tension the v-belts (see page 4).
4. Reinstall the drive guard and motor guard.
5. Inspect and replace, if necessary, the felt seal (29) in the crankpin housing.
6. Carefully lower the box frame assembly onto the crankpin assembly (33).
7. Bolt the split tapered bushing (24) to the crankpin housing. Make certain that the mating surfaces of the bushing (24) and the crankpin (33) are in good condition to ensure a tight fit along the entire surface. Run lock wire (26) through the drilled heads of the cap screws (27).
8. Install cover (28) and cover bolt (25).
9. Grease crankpin bearing (32) through cover bolt (25).
10. Reconnect the discharge end drag link assembly.

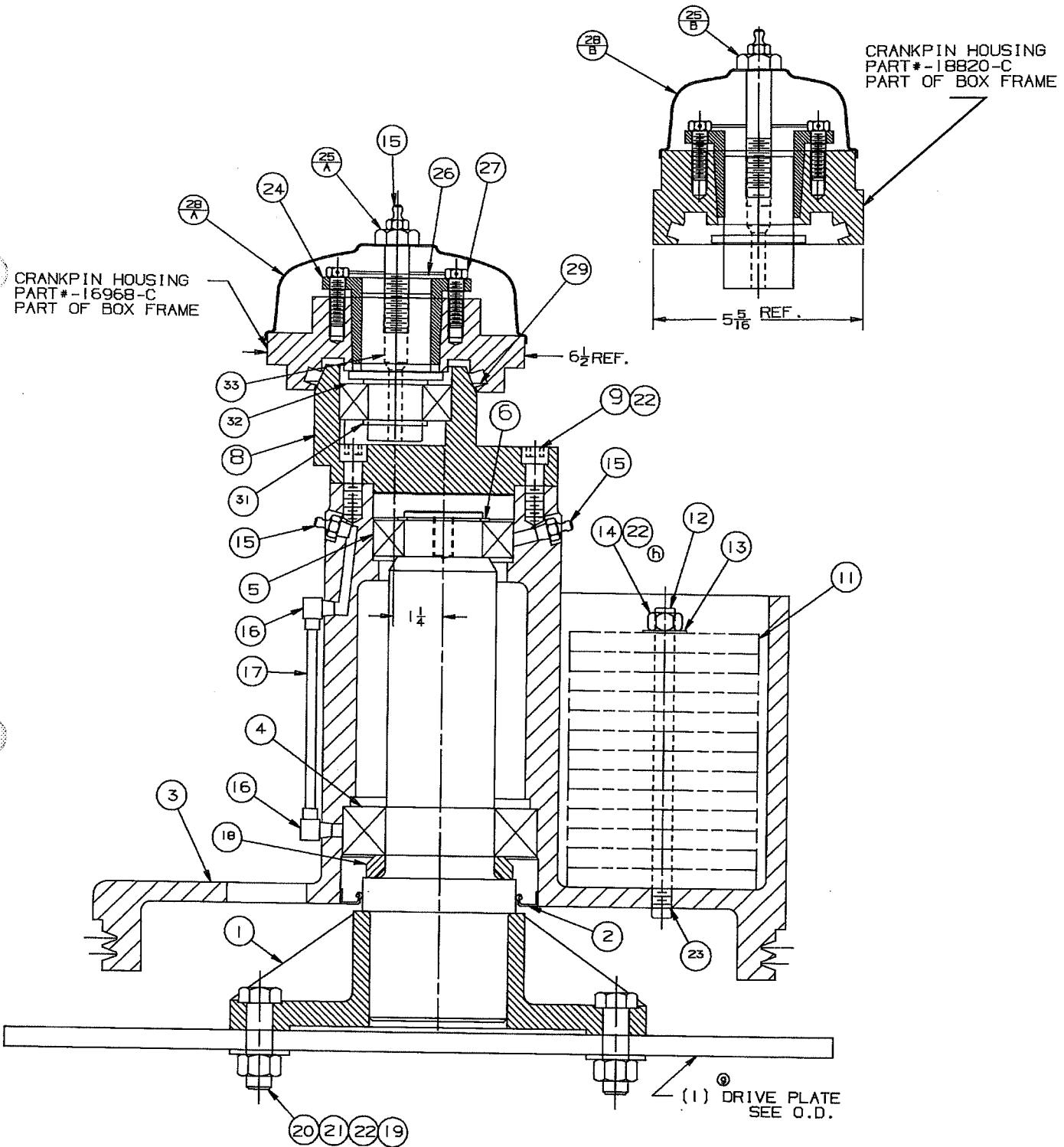
### **START-UP OF MACHINE**

On initial start-up, jog the machine and listen for unusual sounds. Then start machine. If there is excessive vibration, check to be certain that all of the balance weight plates are in place. If there is no vibration and the drive head seems to be running quietly, allow the machine to run for two or three minutes. Then shut down the machine and check the drive head for high bearing temperatures. This may be caused by improper installation of the felt seal (29) which bears on the crank bearing housing (8). If bearing temperature exceeds 140° F (60° C), monitor bearing closely for the first 40 hours of operation.

## 32 SERIES DRIVE HEAD ASSEMBLY

**SHOWN WITH CRANKPIN ASSEMBLY PARTS  
(ITEMS 24-33 TO BE ORDERED SEPARATELY)**

### ALTERNATE CRANKPIN HOUSING AND COVER ASSEMBLY



## 32 SERIES PARTS LIST

<b>Item</b>	<b>Part No.</b>	<b>Qty</b>	<b>Description</b>
1	158017-C	1	Spindle Assembly
2	109868-P	1	Seal CR#38691
3	109071-D	1	Drive Weight Machined
4	109869-T	1	Bearing SKF #22214 Per 104850-E
5	94200-T	1	Bearing SKF #22210 Per 104850-E
6	133491-P	1	Snap Ring Truarc 5108-196
7			
8	109073-D	1	Crankpin Bearing Housing (20 Series)
9	120596-P	4	Soc. Head Cap Screw 7/16"NC 1-1/4" Lg
10			
11	120539-T	AR	Drive Weight 1/2" Plate Per 120172-C
12	120597-X	2	Threaded Rod 1/2" NC 8" Lg
13	159233-P	2	Washer, Conical 1/2" MS
14	4557-P	2	Nut, Hex-1/2" NC PLTD. MS
15	8784-P	2	Grease Fitting Alemite #1610
16	67436-P	2	1/4" x 1/8" NPT Elbow
17	121244-X	1	Tubing, Copper 1/4" x 4-3/4" Lg
18	139546-B	1	Spacer Ring
19	94463-P	4	Cap Screw-HH-5/8"NC-MS GR5 2-1/2" Lg
20	26496-P	4	Nut, Hex-5/8"-PLTD-MS
21	120630-P	4	Washer, Conical 5/8" MS
22	75357-P	AR	Loctite 242
23	121242-P	AR	Loctite 262

The following items are for reference only and are not part of the drive head assembly

24	16970-B	1	Split Tapered Bushing
25A	16974-B	1	Crankpin Cover Bolt
25B	15203-B	1	Crankpin Cover Bolt
26	6408-M	1	Lockwire
27	6411-P	4	Cap Screw-Drilled Head 3/8"NFx1-1/4" Lg
28A	15177-C	1	Crankpin Assembly Cover
28B	26076-C	1	Crankpin Assembly Cover
29	17001-P	1	Gray Felt Seal
30			

The following items may be ordered individually or as complete crankpin assembly 24418

31	133489-B	1	Truarc 5108-137 Snap Ring
32	30058-T	1	Bearing SKF #22207 Per 104850-E
33	131987-B	1	Crankpin

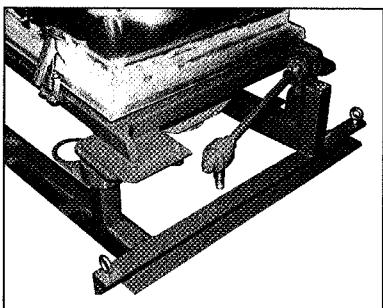
**MAINTENANCE - BELT REPLACEMENT**

FIGURE 1

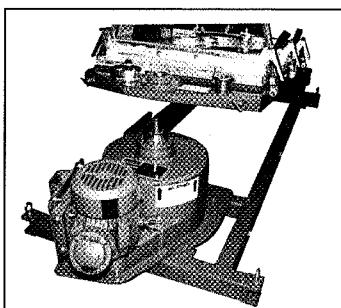


FIGURE 2



FIGURE 3

1. Detach one end of the discharge end drag link (Figure 1).
2. Remove the crankpin cover and split tapered bushing. Raise the feed end of the box frame 4" to 5" (10 to 13 cm) to clear the top of the crankpin (Figure 2).
3. Remove motor guard sections to expose motor sheave (Figure 3).
4. Loosen motor mounting bolts and motor jack bolts.
5. Slide motor forward in slide plate slots to loosen belts on motor sheave.
6. Remove drive weight guard mounting screws. Lift drive weight guard and position it so that it rests on top of the crankpin housing (Figure 3).
7. Remove belts from motor sheave and drive weight. Pull belts up around the outside of the drive guard and over the top of the crankpin (Figure 3).
8. Install new belts over top of crankpin and down around outside of drive guard.
9. Fit belts into grooves of drive weight first, then onto motor sheave.
10. Slide motor back in slots and tighten jack bolts to tension bolts. A belt is properly tensioned when it is deflected 1/4" (6 mm) by a 4 to 5 lb. (18-22 N) force applied midway between the motor and drive head sheaves. When new belts are installed, recheck tension after 24 operating hours.
11. Tighten motor mounting bolts.
12. Fasten drive guard and motor guard sections to drive plate with bolts.
13. Lower box frame onto crankpin and install split tapered bushing, bolts and lockwires. Then install crankpin cover and secure with bolt in top of crankpin.
14. Reinstall discharge end drag link.

**LUBRICATION****Location:**

Grease at two fittings located on crankshaft above drive guard

**Grease:**

Extreme pressure multipurpose type with NLGI No. 2 rating (Nominal base oil viscosity: 166 cSt @ 40° F; 875 SUS @ 100° F.)

**Quantity:**

14 grams per bearing or approximately 10 pumps from a standard lever-type grease gun

**Interval:**

Every 4,000 operating hours

**Note:** The service intervals and lubricants specified are for normal operation in areas between 40° F and 150° F (4° to 66° C). Under severe operating conditions, or if bearing temperatures exceed 150° F (66° C), consult ROTEX®.

**PROBLEM:** *Connecting Sleeve Failure.*

POSSIBLE CAUSE	CORRECTIVE ACTION
Misalignment – either horizontal or vertical	Adjust piping alignment per instructions in Installation section.
Temperature – either too high or too low	Check to make sure sleeve material is acceptable for the product temperature. Refer to connector chart in the Maintenance section.
Abrasion wear	Use coned inlet/outlet rings. Contact Rotex for availability.  Retrofit to Rotex Slider Inlet or Nutating Inlet.
Chemical or solvent action such as softening or crumbling	Substitute another material. Contact Rotex for recommendations.
Incorrect or damaged connecting ring	Check to make sure connecting ring is Rotex design and is in good condition.

**PROBLEM:** *Dust or Product Leakage Around Top Cover.*

POSSIBLE CAUSE	CORRECTIVE ACTION
Worn seal strips	Replace seals if flattened, hard or damaged. A good seal is indicated by a clean stripe where it contacts the screen. There should be no leakage paths caused by low or distorted areas.
Seal strips not installed correctly	Check to make sure there are no gaps along sides or at the corners.
Warped or distorted top cover	Check to make sure seal holder on top cover is flat and in good condition.
Top cover clamps missing or not installed correctly	Make sure all cover clamps are installed and adjusted.  Retrofit with self-adjusting Compensating Clamps.
Excessive pressure	Make sure pressure is not higher than 3 in. water column (0.75 kPa) for standard design machine.  Add vent connection to top cover.  Install secondary seal on top cover.





## B TROUBLESHOOTING GUIDE

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### PROBLEM: *Screen Failure – General*

POSSIBLE CAUSE	CORRECTIVE ACTION
Screener operating empty	Stop machine within 10 minutes after feed has stopped.
Excessive speed	Make sure screener speed is correct. Refer to Standard Operating Speed table in Operation section.
Screen clothing not installed correctly	Make sure screen is installed (centered) so the edging protects the screen from direct contact with the screen frame. Refer to Screen Installation in Maintenance Section.
Loose screen clothing	Replace screen tension clips on Automatic-Tensioning Screeners  Replace with higher tension clips. Contact Rotex for recommendation.  Replace screen with missing or loose grommets.  Re-tension screen on General-Purpose machines.
Bent or crimped screen	Carefully handle and store screen on a tube or flat to prevent damage.
Incorrect selection of screen and/or screen edging	Contact Rotex for screen and edging recommendations.
Screen not made to specification	Check to make sure screen is from Rotex.
Incorrect cleaning	Use nylon bristle brush on fine synthetic and stainless steel screens. Wash screen with water temperature less than 100°F (38°C) to prevent damage to edging.
Chemical damage	Use different stainless steel alloy (316 SS) or synthetic screen when premature failure is suspected.

## B TROUBLESHOOTING GUIDE

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### PROBLEM: *Screen Failure – Along Edging*

POSSIBLE CAUSE	CORRECTIVE ACTION
Screener operating empty for long period of time	Stop machine within 10 minutes after feed has stopped.
Excessive action of mesh cleaning balls that causes flexing and fatigue failure	<p>Reduce the number of mesh cleaning balls, especially at the discharge end of the screen frame. Use only the minimum number of balls to control screen blinding.</p> <p>Check to make sure hardness of mesh cleaning balls is in durometer range of 40 to 60A.</p> <p>Use wider edging (2 in. [50mm]) with screen having wire diameter of less than 0.010 in. (0.25mm).</p> <p>Contact Rotex for recommendation on ball size and number of balls per screen frame pocket</p>

### PROBLEM: *Screen Clothing Failure – In Center of Screen*

POSSIBLE CAUSE	CORRECTIVE ACTION
Screener operating empty	Stop machine within 10 minutes after feed has stopped.
Abrasion wear caused by abrasive or coarse particles	<p>Contact Rotex for recommendation on screen with larger wire diameter.</p> <p>Use longitudinal center strips and/or lateral strips to reduce wear between screen and screen frame.</p>
Impact damage that causes large ragged holes, often at the feed end of the screener	Check to make sure that spreader under the inlet is installed and in good condition.
Incorrect cleaning	Use nylon bristle brush on fine synthetic and stainless steel screens.
Chemical damage	Use different stainless steel alloy or synthetic screen when premature or crumbling failure is seen.
Bent or crimped screen	Carefully handle and store screen on a tube or flat to prevent damage.



## B TROUBLESHOOTING GUIDE

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### PROBLEM: *Mesh Cleaning Ball Wear*

POSSIBLE CAUSE	CORRECTIVE ACTION
Temperature too high or low that cause balls to harden and crumble	Check to make sure the ball material is acceptable for the product temperature. Refer to the ball chart in the Maintenance section.
Chemical, oil or solvent exposure that causes crumbling, softening or swelling	Substitute another material. Contact Rotex for recommendations.

### PROBLEM: *Screen Blinding or Pegging*

POSSIBLE CAUSE	CORRECTIVE ACTION
Wire diameter of screen is too large for effective cleaning by mesh cleaning balls	Select screen with smaller wire diameter and increased percentage of open area.  Contact Rotex for recommendations.
Mesh cleaning balls worn, not correct size or quantity	Replace balls. Refer to Screen / Ball Size table in Operation and Maintenance sections.
Low screen tension that allows the screen to sag on the screen frame.	Replace screen tension clips on Automatic-Tensioning Screeners so screen is flat.  Install higher tension clips. Contact Rotex for recommendation.  Replace screen with missing or loose grommets.  Re-tension clothing on General-Purpose machines.
Worn screen frame	Check condition of screen frame. Worn or flat bevels will reduce action of the ball mesh cleaning system.
Feed rate too high for effective ball mesh cleaning	Reduce feed rate.  Contact Rotex for recommendation on your specific application.
Change in particle characteristics, including: <ul style="list-style-type: none"><li>◆ particle size distribution, especially an increase in "near size" material</li><li>◆ density</li><li>◆ shape</li><li>◆ moisture</li><li>◆ oil content</li><li>◆ static charge</li></ul>	Change screen opening, wire diameter or material.  Change number and/or size of mesh cleaning balls.  Change speed.  Contact Rotex for recommendations on your specific application.

## **B TROUBLESHOOTING GUIDE**

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### **PROBLEM: Low Screening Efficiency or Product Yield.**

POSSIBLE CAUSE	CORRECTIVE ACTION
Change in particle characteristics, including: <ul style="list-style-type: none"><li>◆ particle size distribution, especially an increase in "near size" material</li><li>◆ density</li><li>◆ shape</li><li>◆ moisture</li><li>◆ oil content</li><li>◆ static charge</li></ul>	Change screen opening, wire diameter or material.  Change number and/or size of mesh cleaning balls.  Change speed.  Contact Rotex for recommendation on your specific application.
Worn mesh cleaning balls	Replace balls. Refer to Screen / Ball Size table in Operation and Maintenance sections.
Worn screen frame(s)	Replace screen frame(s)
Low screen tension that allows the screen to sag on the screen frame.	Replace screen tension clips on Automatic-Tensioning machines or re-tension screen on General-Purpose units.  Select higher tension clips. Contact Rotex for recommendation.  Replace screen with missing or loose grommets.
Overfeeding because of change in particle size	Reduce feed rate.
Poor product distribution on screening deck	Check to make sure feed is centered in inlet and velocity is low enough to allow adequate product retention on the deck.  Check condition of spreader beneath inlet.
Excessive vent volume	Reduce vent volume to 200-300 cfm (5.7-8.5 m <sup>3</sup> /min) to control product fluidization.

### **PROBLEM: Product "Tracking"**

POSSIBLE CAUSE	CORRECTIVE ACTION
Poor product distribution on screening deck	Check to make sure feed is centered in inlet and velocity is low enough to allow adequate product retention on the deck.  Check condition of spreader beneath inlet. Reverse direction of rotation. Reduce action of mesh cleaning balls when deck is fed with small quantity of material. Install center baffle on top cover to retain material on each side.



## TROUBLESHOOTING GUIDE

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### PROBLEM: *Product Contamination or Leakage*

POSSIBLE CAUSE	CORRECTIVE ACTION
Worn seals on screen frame(s) that allow oversize or fines to leak into product hopper.	Replace seals after checking condition of screen frame(s) and seal surfaces in screen box assembly.
Worn or damaged screen frame(s) and/or spacer frames	Check screen frame(s) for flatness and warping. Straighten or replace.  Inspect and replace worn jack plates at end of frame(s) because they can allow screen frame movement if damaged.
Worn or damaged seal surfaces in screen box assembly	Check flatness of seal surfaces, including hopper partitions, using a square and straight steel bar. Repair or replace.  Check flat portion of hopper partition(s) to make sure seal makes complete contact.
Gap between screen edging and screen frame cross member at discharge end	Check screen tension clips to make sure grommets are not rising on tip of clips. Replace or slightly bend tip of clip so grommet is pulled down.  Add extension or flap to edging.
Screen frame jacks are too tight	If machine is equipped with screen frame jacks, adjust jacks per instructions in Maintenance section.

### PROBLEM: *Slide Ball Wear - Carbon Type*

POSSIBLE CAUSE	CORRECTIVE ACTION
Rough slide plate caused by rust or contact with slide ball socket.	Replace slide plate.
Ball not free to move in slide ball socket	Apply grease to ball and socket per slide bearing installation instructions in Appendix.  Inspect interior of slide ball socket to make sure it is smooth. Replace if necessary.  Check ball socket mounting surface on base for flatness with a machinist straightedge or steel rule. A warped socket can cause the ball to lock. Install shims as necessary.





## TROUBLESHOOTING GUIDE

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**PROBLEM:** *Slide Ball Wear - Greased Metal Type*

POSSIBLE CAUSE	CORRECTIVE ACTION
Not sufficient lubrication or incorrect lubricant	Lubricate weekly with EP 2 grease containing molybdenum anti-wear additive. Refer to grease specification in slide bearing installation instructions in Appendix.
Rough slide plate caused by rust or contact with slide ball socket.	Replace slide plate.
Ball not free to move in slide ball socket	Apply grease to ball and socket per slide bearing installation instructions in Appendix.  Inspect interior of slide ball socket to make sure it is smooth. Replace if necessary.  Check to make sure ball socket mounting surface on Rotex base is flat by using a precision machinist's straightedge or steel rule. A warped socket can cause the ball to lock in the socket. Install shims as necessary.

**PROBLEM:** *Hot Slide Bearing - Greased Metal & Carbon Types*

POSSIBLE CAUSE	CORRECTIVE ACTION
Not sufficient lubrication Rough slide plate Ball not free to move in socket	Refer to Slide Ball Wear above.
Worn Slide Ball	Replace Slide Ball

**PROBLEM:** *Clamp Breakage*

POSSIBLE CAUSE	CORRECTIVE ACTION
Clamps not correctly adjusted	Adjust compensating clamps so indicator tab is in green zone.  Adjust original design clamp handle assembly (used before 1999) so handle is approximately 30 degrees below horizontal before clamping. Recheck tightness of all clamps before operating machine.
Not all clamps are installed	Make sure all clamps are installed, since operating with fewer clamps increases the load on remaining clamps.
Top cover moves because it is not correctly jacked	Make sure jack bolts are installed and tightened against jack plates on top cover.

## **B TROUBLESHOOTING GUIDE**

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### **PROBLEM: Excessive Vibration or Base Motion.**

POSSIBLE CAUSE	CORRECTIVE ACTION
Unbalanced screen box assembly caused by change in weight of screen box, top cover or screen frame(s)	Contact Rotex to determine correct weight for use with a specific drive head.  Install correct counterweights after weight of screen box is determined.
Incorrect drive head counterweights	Install correct counterweights after weight of screen box is determined.
Product backup in screen box assembly	Confirm outlets are correctly sized for the volume.  Contact Rotex for recommendations.
Product buildup in bottom pan	Clean bottom pan.
Excessive speed	Make sure screener speed is correct. Refer to Standard Operating Speed table in Operation section.
Drive head counterweights not correctly timed on machine equipped with gear-type drive head	Refer to Appendix for timing instructions for your specific drive head.
Broken spring pack assemblies on machine equipped with Dynamic Absorber drive head	Replace all spring pack assemblies when one assembly has failed.
Cable assemblies too long or not correctly tensioned	Make sure cable assemblies are not longer than 120 in. (3m) to prevent excessive motion or "whipping."  Adjust turnbuckles so all cables have the same tension.

### **PROBLEM: Oil Leakage.**

POSSIBLE CAUSE	CORRECTIVE ACTION
Too much oil in gear type drive head, with leakage usually around the pinion shaft.	Check and adjust oil level. Refer to Lubrication Recommendations in Appendix.



## TROUBLESHOOTING GUIDE

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### PROBLEM: *Slider Inlet Leakage*

POSSIBLE CAUSE	CORRECTIVE ACTION
Worn wear ring	Replace wear ring when it is worn to horizontal groove.
Worn or warped slider ring	Check slider ring for rough surface and flatness. Replace if necessary.
Too much pressure inside machine	Reduce internal pressure to not more than 3 in. water column (0.75 kPa).
Incorrectly installed inlet receiver or ring and cone assembly	Make sure ring and cone assembly and inlet receiver are installed horizontal.
Incorrect spacing between ring and cone assembly and inlet receiver	Adjust vertical spacing between the two assemblies so the connecting sleeve is compressed to the specified dimension. Refer to installation instructions in Appendix.

### PROBLEM: *Slider Sleeve Failure.*

POSSIBLE CAUSE	CORRECTIVE ACTION
Incorrect spacing between ring and cone assembly and inlet receiver	Adjust spacing per installation instructions in Appendix

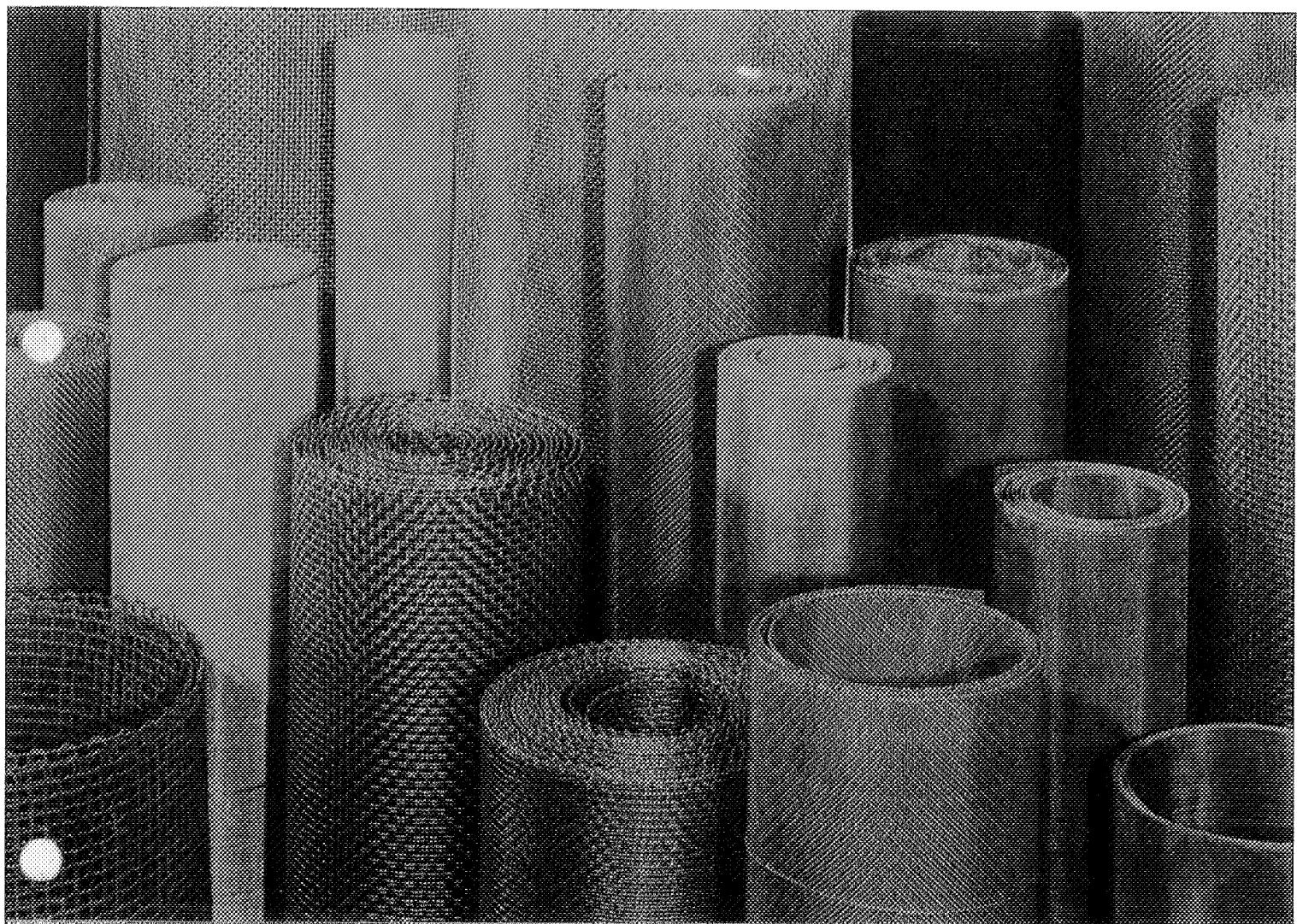
### PROBLEM: *Noisy machine*

POSSIBLE CAUSE	CORRECTIVE ACTION
Loose top cover, screen frame(s) or spacer frame	Make sure all top cover clamps are installed and correctly adjusted.  Make sure top cover jack bolts are firmly installed against top cover jack plates. Tighten lock nuts.  Make sure screen frame jacks are tight if screener is equipped with them.  Adjust bumper bolts on screen frames if machine is equipped with roller jacks.
Excessive speed	Make sure screener speed is correct. Refer to Standard Operating Speed table in Operation section.
Loose drag link assembly	Repair or replace.



**ROTEX**  
**WIRE CLOTH**  
and screen clothing

CATALOG 309





## Reference Table – Comparative Openings for Screen Clothing

In screening any material, the size of the particles passing through the screen is determined by the *actual screen opening* and not by the mesh count per lineal inch. This table, therefore, is arranged to show the relationship between various meshes and grades of screen cloth-

ing according to the *actual* opening size in each mesh. It is convenient for use in selecting a screen having a specific opening, or a heavier or lighter screen of approximately the same size opening.

The various types of screen clothing

are arranged numerically by opening size (inches and microns), and by type of material. The Tyler and U.S. Testing Screen series are included only for reference, since these screens are used ordinarily only for particle size analyses.

Screen Opening		Synthetic Monofilament Bolting Cloth		Tensile Bolting Cloth①				Mill Grade②		Market Grade③		Screen Opening		U.S. Sieve No. ④	Tyler Equivalent ④			
Inch	Micron	Nylon	Polyester	Mesh	Dia.	% Open Area	Mesh	Dia.	% Open Area	Mesh	Dia.	% Open Area	Inch	Micron				
.2230	5600						4	.0350	74%	4	.0470	66%	.2230	5600	3½	3½		
.2150	5460						5	.0320	71%	5	.0410	63%	.2150	5460	4	4		
.2030	5156			7-5000/72			6	.0260	70%	6	.0350	63%	.2030	5156	5	5		
.1969	5000						7	.0280	65%				.1969	5000				
.1870	4750						8	.0250	64%	8	.0290	60%	.1870	4750	6	6		
.1881	4270						9	.0230	63%				.1881	4270				
.1580	4039						10	.0200	64%	10	.0250	56%	.1580	4039	7	7		
.1570	4000												.1570	4000				
.1390	3520												.1390	3520				
.1323	3360												.1323	3360				
.1320	3350												.1320	3350				
.1150	2920												.1150	2920				
.1100	2800												.1100	2800				
.1000	2540												.1000	2540				
.0955	2426												.0955	2426				
.0937	2360												.0937	2360	8	8		
.0982	2240												.0982	2240				
.0789	2030			7-2000/64									.0789	2030				
.0787	2000												.0787	2000	10	9		
.0750	1905												.0750	1905				
.0710	1803												.0710	1803				
.0709	1800	3-1800/61	7-1800/61										.0709	1800				
.0661	1700												.0661	1700	12	10		
.0650	1650												.0650	1650				
.0630	1600	3-1600/60	7-1600/61										.0630	1600				
.0622	1580												.0622	1580				
.0600	1524			7-1400/57									.0600	1524				
.0555	1400												.0555	1400	14	12		
.0540	1371												.0540	1371				
.0535	1358												.0535	1358				
.0520	1320	3-1320/59	7-1320/59	16	.0090	73%	14	.0170	58%				.0520	1320				
.0510	1295						18	.0090	70%				.0510	1295				
.0469	1190												.0469	1190				
.0469	1180												.0469	1180	16	14		
.0465	1180	3-1180/59	7-1180/59										.0465	1180				
.0445	1130			7-1120/58			20	.0090	67%	18	.0160	55%	16	.0160	51%			
.0441	1120												.0441	1120				
.0410	1041												.0410	1041				
.0406	1030												.0406	1030				
.0394	1000	3-1000/58	7-1000/57										.0394	1000	18	16		
.0386	980												.0386	980				
.0385	977												.0385	977				
.0374	950	3-950/57	7-950/58	22	.0075	70%				20	.0140	52%			.0374	950		
.0358	910			7-900/56			24	.0075	67%				.0358	910				
.0354	900												.0354	900				
.0342	869												.0342	869				
.0340	864												.0340	864				
.0331	850												.0331	850				
.0320	813												.0320	813				
.0315	800	3-800/55	7-800/55	26	.0075	65%				22	.0135	50%			.0315	800		
.0310	787												.0310	787				
.0305	774												.0305	774				
.0295	750			7-750/53						24	.0130	47%			.0295	750		
.0287	730												.0287	730				
.0282	716												.0282	716				
.0280	710	3-710/53	7-710/54	28	.0075	62%				26	.0110	51%			.0280	710	25	24
.0275	698												.0275	698				
.0269	682												.0269	682				
.0267	678												.0267	678				
.0264	670	3-670/53	7-670/52										.0264	670				
.0258	650												.0258	650				
.0248	630	3-630/52	7-630/51	32	.0065	63%				30	.0095	51%			.0248	630		
.0240	610												.0240	610				
.0238	600	3-600/51	7-600/51	34	.0065	61%				32	.0090	51%			.0238	600	30	28
.0229	581												.0229	581				
.0223	566												.0223	566				
.0220	560			6-560/49									.0220	560				
.0213	541												.0213	541				
.0209	530	3-530/50	7-530/50	36	.0065	59%				34	.0090	48%			.0209	530		
.0205	520												.0205	520				
.0198	503												.0198	503				
.0197	500	3-500/49	7-500/48	38	.0065	59%				36	.0090	46%			.0197	500	35	32
.0188	478												.0188	478				
.0187	475			7-475/48									.0187	475				
.0185	471												.0185	471				
.0183	465												.0183	465				
.0182	465												.0182	465				
.0178	452												.0178	452				
.0177	450	3-450/48	7-450/48										.0177	450				
.0176	447												.0176	447				
.0172	437												.0172	437				
.0172	437												.0172	437				
.0167	425	3-425/46	7-425/48	44	.0055	57%				40	.0085	44%			.0167	425	40	35
.0165	420												.0165	420				
.0163	414												.0163	414				

- ① Tensile Bolting Cloth is woven from extremely smooth stainless steel wire.
- ② Mill Grade screens are woven from tinned annealed or stainless steel wire.

- ① Tensile Bolting Cloth is woven from extremely smooth stainless steel wire.
- ② Mill Grade screens are woven from tinned annealed or stainless steel wire.

③ Market Grade screens are woven of plain steel or stainless steel.

④ U.S. Sieve Number and Tyler Equivalent refer to standard testing sieve openings. NOTE: Testing sieve quality screens are woven to very close tolerances for particle size analyses and are not normally used on process

# When you need screen clothing order from the screening specialists...



- Complete selection of meshes, weaves and materials
- Manufacturing to your exact specifications
- Expedited on-time delivery
- Laboratory testing for proper screen selection

As manufacturer of ROTEX® Screeners and LIQUATEX® Separators for literally thousands of applications over 80 years, ROTEX INC. is also a major supplier of wire cloth and screen clothing — mild steel, stainless steel, nylon, polyester, etc. Our application engineers are thoroughly experienced in proper screen selection, and our high volume usage produces economical pricing and fast, efficient delivery. You are assured of highest quality, because our manufacturing requirements dictate that all screen clothing must meet the most stringent specifications — *both yours and ours!*

Proper screen selection is essential to efficient performance of screening equipment — and this is where ROTEX application specialists can help you. No matter how difficult your application, ROTEX specialists will recommend the best combination of screen opening, wire diameter and material consistent with reasonable price and delivery. Count on ROTEX to keep your equipment operating efficiently and economically.

## Grades of screen clothing available from ROTEX INC.

The screen grades listed in the Reference Tables offer a wide choice for many applications. Along with efficiency of separations and long life, these grades are competitively priced and readily available for prompt delivery.

**1. Polyester Monofilament Screen Cloth** — One of the most popular synthetic fabric screens because of its low cost and good chemical resistance. The flexibility of its threads permits successful screening of many materials that tend to blind light wire metallic screen. Specification is by actual screen opening expressed in microns.

**2. Nylon (Nitex) Monofilament Screen Cloth** — Offers the same advantages as polyester, except nylon screens tend to sag and stretch when wet and thus should not be used where moisture is present.

**3. Tensile Bolting Cloth** — Types 304 or 316 stainless steel as fine as 230 mesh .0029" opening. This grade is recommended on most screening applications 60 mesh and finer.

**4. Mill Grade** — Stainless steel and tinned steel in 4-60 mesh range. Blinding problems may occur on mill grade screens of 30 mesh and finer.

**5. Market Grade** — Available in plain steel and stainless steel, and most often used in the 4-20 mesh range because of possible blinding problems with the smaller opening sizes.

## Specialty screens also available

For applications requiring larger screen openings, "space cloth" wire screens are available in mild steel, stainless steel and abrasion-resistant steel. They are specified using the actual opening as expressed in fractions of an inch, and are available in sizes from  $\frac{1}{8}$ " clear opening and larger.

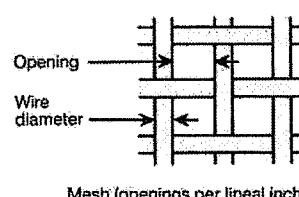
## Ordering wire cloth

ROTEX wire cloth is available in any form or size needed — full rolls, cut pieces, cut and edged sizes, with plastic, metal or Bond-Tite edging. A new heat-resistant edging for elevated process temperatures is also available.

When ordering replacement screen clothing for your ROTEX Screener, be sure to include the following:

1. ROTEX model number and serial number.
2. Wire cloth specification. At least two of the following must be known:

- a. Mesh — defined as the number of openings per *lineal* inch.
- b. Wire diameter — usually expressed in decimals of an inch.
- c. Opening — the actual *lineal* opening between the wires, expressed in decimals of an inch.



**3. Type of material** — e.g. plain steel, abrasion-resistant steel, Type 304 stainless steel, tinned steel, polyester, etc.

## Temperature Limitations

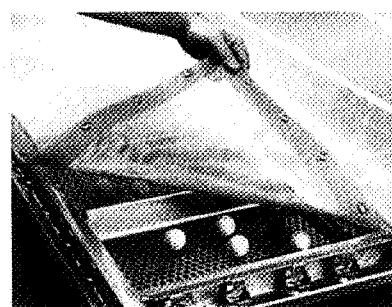
Metallic screen clothing normally is designed for use up to 400°F. For synthetic screens the limitations are 200°F for Nylon (Nitex) and 300°F for Polyester.

**4. Overall screen size.** Specify width and length in inches. For multiple deck screeners, identify the deck on which the cloth will be used.

**5. Type of edging,** which depends on the screening application. On Automatic-Tensioning ROTEX models featuring spring tension clips for cloth attachment, Bond-Tite is the standard edging on all screens with wire diameters less than .063". Plastic edging is used on sanitary applications. Metal edging is used on wire screen with wire diameters .063" and larger. For screens with .009" diameter wire and smaller, reinforcing center strips are also recommended.

On General-Purpose ROTEX Screeners, edging and center strips are furnished on wire cloth of .009" diameter and smaller for improved screen life.

For economy and minimum storage space, most wire screen clothing (without edging) can be purchased in 100-ft. length rolls, and in the proper widths to fit screen frames used in General-Purpose ROTEX Screeners.



An example of wire cloth with plastic edging, used on Automatic-Tensioning ROTEX Screeners. Grommets in screen edge provide easy means of attachment to frame, in conjunction with ROTEX patented tension-clip design.

For further information, consult your local ROTEX Representative or contact the Customer Service Department at our Cincinnati headquarters.

# ROTEX INC.

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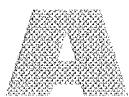
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## GLOSSARY OF SCREENING TERMS



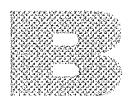
**Abrasion Resistant Lining:** Replaceable wear panels, including ultra high molecular weight (UHMW) polyethylene, urethane or mild steel/stainless steel. Generally used in high capacity or abrasive applications and applied to product contact areas such as inlet chutes and discharge hoppers.

**Accuracy of Separation:** One of the principal considerations for evaluating screener performance. To determine the accuracy of separation, a particle size analysis of a screened fraction is conducted to determine the amount of offsize material within the fraction. This analysis is usually presented as a percentage of offsize in the fraction. This result should not be confused with efficiency. (Also see Sharpness of Separation.)

**Amplitude:** See Stroke.

**Angle of Repose:** The angle of material on a normal freely formed pile.

**Aperture:** The size of the individual openings in screen media, defined in inches or microns, through which material can pass.



**Balls:** Resilient balls in the screen frame that bounce against the underside of the screen media to control blinding. (Also see Slide Balls.)

**Ball Support:** A wire screen or perforated plate on the bottom of the screen frame that retains mesh cleaning balls below screen media.

**Base:** The structural support members of the screener that are rigidly attached to the plant's foundation or suspended by cables from an overhead structure.

**Bed Depth:** The thickness of material on the screen media.

**Belt Guard:** A protective enclosure around the drive system.

**Blinding:** Any condition that prevents the passage of undersize material and reduces the open area of the screen medium. Common reasons are nearsize particles and adhesion caused by moisture, static, particle shape and oil or fat content. Also see pegging, plugging and coating.

**Bolting Cloth:** See Tensile Bolting Cloth

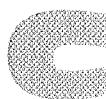
**Bondtite Edging:** A woven fabric tape folded over the perimeter of the screen clothing and attached with an adhesive. It also may be applied as protective strips located over the longitudinal or lateral screen frame members

**Bottom Pan:** Mild steel or stainless steel hoppers under the screen media through which screened materials are discharged.

**Box Frame:** The structural assembly of the screener that is attached to the drive head and holds the screen frame(s). When the bottom pan is attached to the box frame, these two components become a screen box assembly.



## GLOSSARY OF SCREENING TERMS



**Cable Assembly:** Forged steel and stainless steel wire rope assemblies used to support a screener from an overhead structure or support stand.

**Cable Suspension:** An installation method using wire rope cable assemblies to suspend a screener from overhead supports. Cable suspension isolates or reduces transmission of horizontal out-of-balance forces.

**Capacity:** The volume or mass flow of material that a screener can handle under specified, steady state conditions. Capacity statements cannot be made unless related to screening efficiency, accuracy of separation and particle size distribution of the feed material. Note that capacity is always stated as the feed rate to the screener, not the product rate produced by the machine.



**Carbon Slide Bearings (Balls):** The hemispherical carbon-graphite bearing that supports the screen box assembly at the discharge end of the screener. (Syn.: Slide Balls, Carbon Slide Balls, Slipper Balls)

**Center Strips:** Bondtite or plastic strips often applied to finer screen clothing to protect against wear along the longitudinal members of the screen frame.

**Clamp Handles:** Toggle type clamps that secure the top cover to the box frame of the screener. (Also see Compensating Clamps.)

**Clear Opening:** The distance between the inside edges of two parallel wires of a screen. (Syn.: Aperture)

**Clothing:** Woven wire screening media with square or rectangular openings.

**Coating:** A blinding condition where undersize particles cling to the screen clothing because of static, moisture, oil or other attraction. Such particles usually build up on each other and cause the opening to become blinded.

**Compensating Clamps:** A spring loaded, self-adjusting top cover clamp equipped with a gauge to indicate when the clamping force is correct.

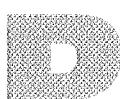
**Connecting Ring:** A mild steel or stainless steel ring welded to the screener or piping and equipped with a bead on one end for attachment of connecting sleeves.

**Corner Support Stand:** Floor mounted structures located at each corner of a screener to allow for cable suspension.





## GLOSSARY OF SCREENING TERMS



**DA Drive:** See Dynamic Absorber Drive.

**DX Drive:** See Dynamic Absorber Drive.

**Deck:** The screening surface. Often used to describe the number of surfaces within a machine, such as a single deck, double deck or two-deck, etc., machine.

**Degradation:** The breakage of material caused by handling, sometimes in the screener itself.

**Discharge Chute:** A sloped chute to convey material out of the machine at the discharge end. Chutes may discharge to the side or parallel to the screen deck.

**Discharge End:** The discharge end of the machine.

**Drag Link:** The horizontal arm that connects the moving screen box assembly to the Rotex base at the discharge end. Sometimes referred to as a stabilizer bar.

**Drive Head:** The mechanical drive on a Rotex screener that generates the gyratory motion using an offset crankpin.

**Dynamic Absorber Drive:** A patented drive based on the construction of a single weight drive, combined with a dynamic absorber that is harmonically tuned to the operating frequency of the screener.

The dynamic absorber consists of weight plates suspended from leaf springs on both sides of the drive. The drive is not motor driven, rather it absorbs energy when set in motion by the machine's natural base motion. Screeners with Dynamic Absorber Drives must be cable suspended.



**Edging:** Fabric, plastic or metal material attached to the perimeter of screen clothing to allow mounting on a screen frame. (Also see: Bondtite Edging, High-Temperature Edging and Metal Edging.)

**Efficiency:** In basic terms, efficiency is the ratio of material passing through the screen to the amount of undersize material available in the feed. Product recovery efficiency is more representative because it factors in the percentage of on-size material. Therefore, product recovery efficiency will be less than raw efficiency.

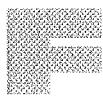
$$\text{Product Recovery Efficiency} = \frac{\text{percent on-size in product} \times \text{percent product yield}}{\text{percent on-size available in feed}}$$

**Note:** Yield is the amount of material separated as product, and is expressed as a percentage of the total feed rate to the screener.





## GLOSSARY OF SCREENING TERMS



**Feed End:** The inlet end of the screener where material enters.

**Feed Rate:** The amount of material entering the screener.

**Fines:** Particles smaller in size than the screen clothing openings. Also called throughs and undersize.

**Fines Removal:** The removal of a low percentage (typically less than 10%) of material that is considerably smaller than the average particle size of the feed.

**Frequency:** Number of times a peak-to-peak amplitude occurs per unit of time, usually stated as RPM or CPM.



**Gauge:** The thickness of metal, or less common, the specification for wire diameter. Metric and decimal specifications for wire thickness are preferred over "gauge number."

**Gear Drive:** A Rotex drive head using gears to rotate the internal counterweights.

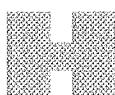
**Gradex 2000:** A patented sieve analyzer using a PC control to automate weighing, calculation and cleaning processes.

**Gradex Chip Classifier:** A patented wood chip analyzer for automated thickness and chip size classification in a woodroom or chip production facility.

**Grading:** The separation of material on single or multiple screen surfaces to produce grades with distinct particle size limits. Capacities will vary depending on the particle size distribution of the feed, the separation(s) to be made, and the product specifications.

**Grommets:** Round or oval metal eyelets applied to the screen edging on Automatic-Tensioning screeners.

**Gyratory Motion:** The long stroke circular motion on Rotex and Megatex screeners. Is particularly effective at spreading and stratifying material to produce efficient separations. This high force motion also contributes to effective ball mesh cleaning of the screen.



**Hopper:** The mild steel or stainless steel collection chamber on the bottom of the screener for discharging separated material. (Also see: Bottom Pan.)





## GLOSSARY OF SCREENING TERMS



**Inlet:** The entry location on the top cover of the screener.

**Inspection Port:** Access openings on the top cover for inspection of the screen surface. Generally 10 in. (25cm) diameter and equipped with a stainless steel cap and resilient insert to provide a tight fit.



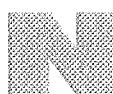
**Market Grade:** A group or family of screens with larger wire diameters than Mill Grade and Tensile Bolting Cloth grades with the same mesh count. As a result, market grade screens have a lower percentage of open area.

**Mesh:** Screening media with uniform size and shape fabricated of woven or perforated material. Also the number of openings, or fractional openings, per linear inch, as measured from the center of one wire to a point one inch away.

**Mesh Cleaning Balls:** See Balls

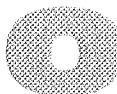
**Metal Edging:** Mild steel or stainless steel edging on wire screens where the wire diameter, opening or temperature does not allow the use of bondtite or plastic edging.

**Mill Grade:** A group or family of screens with smaller wire diameters than Market Grade screens having the same mesh count. Mill grade screens offer a good balance of open area and wear life in the 425 to 5500 micron range (4 to 40 U.S. mesh).



**Near Size:** Particles that are very close to the screen opening, generally within a ±25% range.

**Nutating Inlet:** An inlet connector consisting of a mild steel or stainless steel cone suspended between two flexible rubber diaphragms. The unique patented design offers longer life than conventional molded or fabric connecting sleeves.



**Open Area:** The ratio of the area of the screen openings to the total area of the screen and stated as a percent. For screens specified by mesh, open area is calculated as:

$$\text{Percent open area} = (\text{opening} \times \text{mesh count})^2 \times 100$$

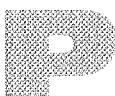
For screens not specified by mesh, open area is calculated as:

$$\text{Percent Open Area} = \left( \frac{\text{opening}}{\text{opening} + \text{wire diameter}} \right)^2 \times 100$$





## GLOSSARY OF SCREENING TERMS



**Particle Distribution:** The size range of a material, stated as percentages retained on specified testing sieve openings.

**Pegging:** See Blinding.

**Perforated Plate:** Mild steel, stainless steel or plastic screen media with punched holes.

**Plain Weave:** Wire cloth in which each warp and weft (shoot) wire passes over one and under the next adjacent wire in both directions.

**Plastic edging:** Clear flexible edging around the perimeter of a wire screen.

**Plugging:** The wedging or jamming of particles in screen media that prevents the passage of undersize material. (Also see Blinding, Coating and Pegging.)

**Plug-in Seal:** A resilient seal used on Rotex and Megatex screeners that is held in place by friction in a seal holder. Various compounds are available depending on the application, temperature, and design of the top cover and screen frame(s).

**Product:** The desired material produced by the screener.



**Rate of Travel:** The conveying rate of material over the screen surface, usually expressed in feet or meters per minute.

**Rejects:** Undesirable material, either oversize or undersize.

**Retention Time:** The time the material remains on the screen surface.

**Ring:** A mild steel or stainless steel ring, welded to the screener piping, and equipped with a bead on one end for attachment of connecting sleeves. (Also see Connecting Ring.)

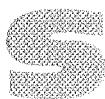
**SGN:** See Size Guide Number.

**Scalping:** The removal of a low percentage of oversize (typically less than 5%) from feed containing more than 50% fines less than half the size of the screen opening.





## GLOSSARY OF SCREENING TERMS



**Screen:** A woven wire mesh for separating material by particle size. Screens may be specified when any two of the following are known: opening size, number of openings per lineal inch or "mesh," and wire diameter.

**Screen Box Assembly (integral type):** A box frame with a one piece internal liner, either mild steel or stainless steel, that forms the discharge hoppers.

**Screen Box Assembly (rivet type):** A box frame to which a bottom pan with discharge hoppers is attached with rivets.

**Screen Clothing:** See Clothing.

**Screen Edging:** See Edging.

**Screen Frame:** The structure that supports the screening medium and normally includes the ball support, either wire screen or perforated plate.

**Screen Frame Jack:** A threaded assembly, often with a tee handle, to prevent screen frame motion within the screen box assembly.

**Sharpness of Separation:** See Accuracy of Separation.

**Sieve:** See Test Sieve.

**Sieve Analysis:** A statement of particle size distribution of a representative sample of material. It is expressed as percentages of particle size grouping passing through or retained on standard test sieves.

**Sieve Jack:** See Screen Frame Jack.

**Sieve Series:** A standardized testing sieve scale. U.S., ISO, Canadian, British, French and German scales are identified with openings in millimeters and microns. The Tyler series identifies sieves by the number of meshes (openings) per inch. U.S. and Tyler series sieves are used interchangeably.

**Size Guide Number (SGN):** A measure of product quality used by the fertilizer industry. To calculate SGN, the opening in millimeters that would pass or retain 50% by weight is determined, then multiplied by 100. Determined graphically by interpolation or through computer-aided curve fitting. Fertilizer particles have SGNs in the range of 160 to 280. Also see Uniformity Index (UI).

**Sleeve:** A molded or flexible fabric connector.

**Slide Ball:** The part of the slide bearing assembly under the slide plate that supports the discharge end of the screen box assembly. Self-lubricating carbon or greasable cast iron construction is available, depending on application and machine design. (Syn.: Carbon Slide Balls, Slipper Balls)





## GLOSSARY OF SCREENING TERMS

**Slide Bearings:** The discharge end support bearings for the screen box assembly. May be self-lubricating carbon or greaseable, depending on application and machine design.

**Slide Plate:** The steel plate attached to the screen box assembly that moves back and forth on the slide ball.

**Sliding Inlet/Outlet:** A sliding connector consisting of a metal disc in contact with an ultra high molecular weight polyethylene (UHMW) or Teflon® wear ring.

**Spacer Frame:** A wood or metal structure that separates the screen decks on General-Purpose screeners.

**Square Mesh:** A screen with equal dimensions on each side of an opening.

**Spreader:** A metal plate located under the inlet to improve spreading of material and reduce direct impact on the screen deck surface.

**Stabilizer Bar:** See Drag Link

**Stratification:** The process during screening where larger particles rise to the top of the bed of material and smaller particles sift through the voids to the bottom of the bed.

**Stroke:** The peak-to-peak distance traveled by the screen deck during one cycle. On Rotex screeners the stroke is the diameter of the circular motion.

**Synthetic Screen:** Screens primarily produced in nylon and polyester.

**TBC:** See Tensile Bolting Cloth.

**Tailings:** See Overs.

**Tensile Bolting Cloth (TBC):** A group or family of stainless steel wire screens woven in a plain square mesh pattern. Wire diameters are smaller than mill or market grades, so TBC screens have the highest percent open area of commercially available screens.

**Test Sieve:** Stainless steel, brass or plastic frames with precision woven wire cloth in standard openings for a specified sieve series. Used for testing in industrial, governmental and research institutions.

**Throughs:** See Fines.

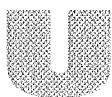
**Top Cover:** The fabricated metal cover over the screen decks through which material is fed. Clamped to the screen box assembly and equipped with resilient seals.





## GLOSSARY OF SCREENING TERMS

**Tyler Sieve Series:** An early sieve series introduced in 1910 by W.S. Tyler, Inc. This screen scale is based on an opening of 0.0029 inches (200 mesh), with openings increasing or decreasing in the ratio of the square root of 2 or 1.414. Intermediate sieves for closer sizing increase in the ratio of the fourth root of 2 or 1.189.



**U. S. Sieve Series:** The current series (ASTM specification E-11-95 and adopted by ISO) uses 1.00 mm (18 mesh) as the base, with openings increasing or decreasing in the ratio of the fourth root of 2 or 1.189. U. S. and Tyler series are used interchangeably.

**Uniformity Index (UI):** A measure of quality used by the fertilizer industry and closely related to Size Guide Number (SGN). The UI is easiest to determine graphically.

**Undersize:** See Fines.



**Vent:** A connection on the top cover, normally located at the discharge end for aspiration of nuisance dust.

