

Installation, Operation & Maintenance Manual For MULTIGUARD™

Multi-Raked Bar Screen



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1.0

INTRODUCTION

1.1 GENERAL

We welcome you as a user of MULTIGUARD™ screens. Your MULTIGUARD™ is a product of careful engineering and skilled workmanship. We believe you have the best MULTIGUARD possible for the service intended. With reasonable care and preventive maintenance it will give you long, efficient, trouble-free service.

Refer to Safety Sheet in section 7.SAFETY.

This manual is furnished to acquaint you with some of the practical ways to install, operate and maintain this MULTIGUARD™. Read it completely before doing any work on your unit and keep it handy for future reference.

All SPIRAC MULTIGUARD's™ are built to screen materials upwards of 3mm in size which may be wet, sludgy, uneven and hygienically demanding etc. However every MULTIGUARD™ is custom built to give maximum efficiency for the specified material being screened. It is not acceptable to screen any product other than that noted in the Specification Sheets.

Any modification, change or rebuilding of the MULTIGUARD™ must be approved in writing by SPIRAC so that machine damage and personal injury are avoided and that documentation is relevant.

Only trained or instructed staff with clearly defined responsibilities for the operation, set up, maintenance or repair on the conveyer should be used.

In the event of any queries please contact your nearest SPIRAC representative.

1.2 PRODUCT IDENTIFICATION

There is one identification plate (ID) on each MULTIGUARD™. *Figure 1.2a* shows an example of a typical ID plate.



Figure 1.2a

Permanent records for this MULTIGUARD™ are kept by Serial Number and it must, therefore, be used with all correspondence and spare parts orders. The last sequence of numbers is specific to that MULTIGUARD and is utilised on orders of more than one MULTIGUARD. This sequence of numbers is also the end users equipment tag numbers

1.3 PRODUCT DESCRIPTION

The MULTIGUARDS™ parts can vary in appearance due to the fact that all MULTIGUARDS™ are custom built. The figure below (Figure 1.3a) shows the principal parts of the MULTIGUARD™. Please refer to the projects general arrangement drawings for specific MULTIGUARD™ construction and layout details.

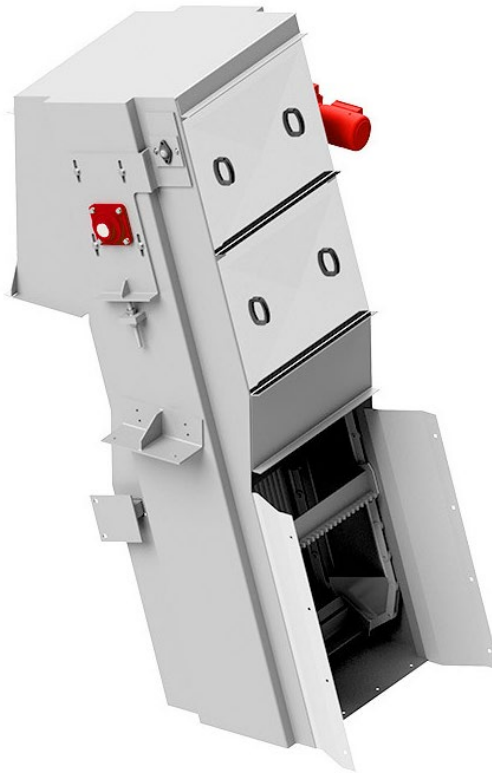


Figure 1.3a - Principal Parts of the MULTIGUARD

The MULTIGUARD™ Raked Bar Screen is a fabricated steel unit that is bolted to the civil walls and civil coping. The screen is basically a one-piece construction that houses the screening grid, guides the chains and mounts the drive assembly screenings wiper blade.

When the screen is active, the comb tines engage the screen grid at the channel invert and carry accumulated screenings up the grid and onto the face of the debris apron plate. Screenings are carried up the debris apron plate to the discharge point, where the screenings wiper blade is installed and positioned so that initial contact is on the comb beam lead in plate. As the comb tines continue upwards, the geometry dictated by the wiper blade pivot position, causes the blade to move to the tip of the comb tines, thus scraping them clean of collected screenings. After clearing the tine tips, the tines follow the inside profile of the wiper allowing the tines and carrier to pass over the top sprockets and in turn lower the wiper to its rest position.

The comb carrying beams that carry the comb tines descend and are returned around the profile semi-circular guide at the base of the screen back into screen bar grid engagement.

1.4 DECLARATION OF CONFORMITY

EC Declaration of Conformity (according to 2006/42/EC, Annex 2A)

SPIRAC Limited
SPIRAC House, Thorpe Mead
Banbury, OX16 4AB
United Kingdom

Declares under its own responsibility that the product:

Equipment Description: MULTIGUARD™
Model: Multiguard
Serial Number: GB0094-05

Equipment Description: MULTIGUARD™
Model: Multiguard
Serial Number: GB0094-06

Equipment Description: MULTIGUARD™
Model: Multiguard
Serial Number: GB0094-07

Equipment Description: MULTIGUARD™
Model: Multiguard
Serial Number: GB0094-08

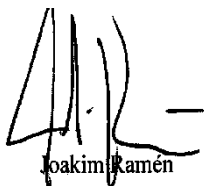
Is in conformity with all relevant provisions of ordinances in Machinery Directive 2006/42/EC.

Furthermore declares that the machinery is in conformity with all relevant provisions of ordinances in the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

Is manufactured according to the following standards:
EN ISO 12100-1, EN ISO 12100-2, EN 294, EN ISO 60204-1, EN ISO 13850:2006.

Place: SPIRAC Ltd Date: 12.05.2023

Signature:



Joakim Ramén

2.0 INSTALLATION

2.1 GENERAL

These instructions must be carried out in the order stated to prevent machine damage and personal injury.

Check MULTIGUARD™ for shortages and damage immediately upon arrival (an absolute must !). Prompt reporting to the carriers agent, with notations on the freight bill, will expedite satisfactory adjustment by the carrier.

MULTIGUARDs™ are normally shipped from the factory within open sided crates or paletised. Gearboxes may either be completely assembled or packed separately for shipping. When the gearbox has been sent separately, fixing bolts will be packaged in a separate container and shipped with the MULTIGUARD™ or attached to the gearbox. Recommended torque settings for the coupling disc and drive shaft are as follows:

Torque Settings for the Coupling Disc	
A4/70 M12x55	62Nm (oiled thread)
A4/70 M16x55	152Nm (oiled thread)
A4/70 M20x60	296Nm (oiled thread)
Torque Settings for the Drive Shaft	
A4/70 M12x60	20Nm (oiled thread)
A4/70 M16x70	40Nm (oiled thread)
A4/70 M20x80	80Nm (oiled thread)
A4/70 M24x90	200Nm (oiled thread)

Before the MULTIGUARD™ is installed its dimensions must be checked against the dimensions on the installation drawing.

The MULTIGUARD™ should be positioned and the angle of its outlet chute checked to ensure correct alignment with the conveyor, launder or other screenings handling equipment that it is feeding.

The foundation must be substantial enough to absorb vibration (recommendations of the foundation to weigh at least 5 times the weight of the MULTIGUARD). The foundation must form a permanent and rigid base for the MULTIGUARD™ supports. This is important in maintaining the alignment of the MULTIGUARD™ within the channel..

2.2 MOUNTING THE DRIVE ASSEMBLY

Occasionally the drive assembly is delivered not attached to the MULTIGUARD™. If your MULTIGUARD has the drive assembly sent separately, it is delivered ready to be attached. If the MULTIGUARD™ is to work in a raised position it may be better to mount the drive unit with the MULTIGUARD™ on the ground before lifting into position..

1. Remove any transport locks from the drive shaft.
2. Remove the tape holding the key to the drive shaft.
3. If the drive shaft is not stainless steel it is treated with rust inhibitor. Use degreaser to remove this.
4. Remove the lid from the motors cooling fan so that the drive shaft can be turned using the fan.
5. Turn the drive shaft so that the key-way comes to the right position for the MULTIGUARDs™ drive shaft and then push the gearbox onto the drive shaft.
6. Fasten the locking bolt, spring washer and stepped spacer to the drive shaft in order to fasten this in the gearboxes drive bore (see Fig 2.4b). When the drive shaft is firmly positioned in the drive bore the locking bolt should be tightened to the torque specified (refer Sect. 2.1).
7. Replace the cooling fan lid on the motor.
8. Remove the screw on the top of the gearbox and attach the vent plug that is provided. (If not already done so.)
9. Check level of oil in the gearbox.

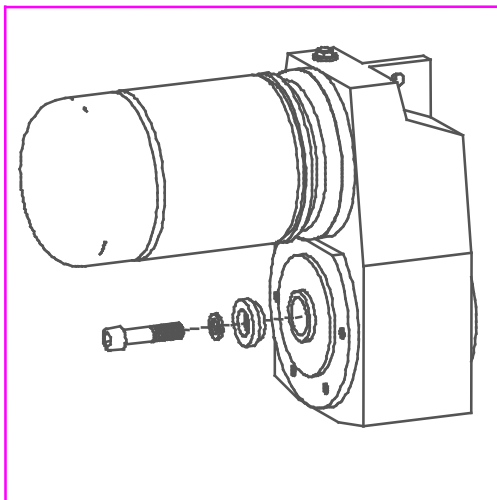


Figure 2.4b - Fastening the Motor

2.3 CONNECTION TO FOUNDATION/SUPPORT STRUCTURE

All MULTIGUARDS™ are fitted with support brackets welded to each side of the MULTIGUARD™ structure. These brackets are pre-drilled and positioned in the factory prior to shipment

If supports are supplied with the MULTIGUARD™ –

1. Make sure no one is standing beneath the MULTIGUARD™ while it is being lifted or mounted.
2. Lift the MULTIGUARD™ so that it assumes its operating position.
3. Fasten the supports to the foundation/support structure utilising the bolts, nuts and washers provided.
4. Make sure the MULTIGUARD™ is sufficiently anchored to the floor to withstand any working loads.

2.4 ELECTRICAL

Provision of control panels and wiring can be provided by Spirac but is typically supplied by the client. All control panels and wiring should be manufactured/installed to the relevant end users particular specifications.

Spirac Ltd will supply/free issue a motor protection safety device (power monitor) to the client or their chosen control panel manufacturer for all drives supplied.

The power monitor must be installed within the MCC to protect the motor and associated equipment from mechanical damage. Failure to do so will invalidate the warranty.

Other instrumentation maybe provided depending on the specific project requirements and will be listed on the 'MULTIGUARD™ data sheet' see Appendix A for details.

3.0 OPERATION

3.1 PRE-START CHECKS

Only persons completely familiar with the safety aspects (as detailed in *Sect. 7.0*) should be permitted to operate the MULTIGUARD™. The operator should thoroughly understand these instructions before attempting to use the MULTIGUARD™. Failure to follow these precautions may result in serious personal injury or damage to equipment.

Before the initial start-up of the MULTIGUARD, make the following inspections;

1. Check to make sure the gearbox is securely fastened to the MULTIGUARD™ drive plate.
2. Check all connections to the motor and starting device with the wiring diagram. Check the voltage, phase and frequency on motor nameplate.
3. Remove motor cooling fan cowl and rotate screen via fan to ensure that it rotates freely. At the same time check direction of rotation ensuring screenings are carried up toward the outlet.

NB: it may be necessary to operate the MULTIGUARD™ in hand due to the weight of the rakes, chain etc

5. Check gearbox lubrication level.
6. Make sure all lids, guards and safety equipment are properly installed.

3.2 OPERATIONAL CHECK-LIST

The following should be used upon initial start-up and after extended shut-down periods.

1. Operate MULTIGUARD™ empty for 10-15mins (with addition of water), making a continuous check for heating of gearbox bearings and noisy operation.
2. Check that the discharge of the MULTIGUARD™ is clear before feeding any material.
3. Increase feed rate gradually until rated capacity is attained.
4. Stop and start MULTIGUARD™ several times, and allow to operate for several hours.
5. Shut off MULTIGUARD™ and lock out power supply. Remove lids and spot-check bolts for tightness.
6. Replace lids.
7. Ensure material is conveyed in the correct direction.
8. Make certain that the MULTIGUARD™ controls (e.g. motion sensor, power monitor) are interlocked correctly and functional.

3.3 EXTENDED SHUT-DOWN

If the MULTIGUARD™ is to be inoperative for a long period of time, it is advisable to permit it to operate for a period of time after the feed has been cut-off in order to discharge as much material as possible from the screen panels. The panels should be cleaned completely after the MULTIGUARD™ is shut down and the power locked out.

MULTIGUARDS™ that are shut down during freezing conditions should be protected by one of the following methods;

- Empty the unit completely.
- OR
- Insulate the MULTIGUARD™ to prevent the material from freezing.

3.4 STORAGE AND HANDLING ON SITE

In the situation where goods have arrived on site correct lifting considerations need to be made. Some items may be unloaded by forklift while others will require craneage. Soft slings are required for lifting any free MULTIGUARD™ sections to avoid damage. Keep MULTIGUARDS™ in the crates and boxes until ready for use. Items may become lost if separated.

The laydown area should ideally be a dirt free environment. If this is not possible then frequent cleaning of the surfaces may be required to help prevent tea staining. A build up of dirt and moist conditions is likely to lead to this condition. This also applies to installed equipment.

4.0

MAINTENANCE

4.1 GENERAL

Generally it is necessary to establish routine periodic inspections of the entire MULTIGUARD™ to ensure continuous maximum operating performance. Practice good house keeping. Keep the area around the MULTIGUARD™ and drive assembly clean and free of obstacles to provide easy access and to avoid interference with the function of the MULTIGUARD™ or drive.

Always –

1. Follow the established local regulations and/or procedures for isolation of equipment.

Or-

2. Lock-out power to motor before doing any maintenance work preferably with a padlock on control panel or isolator.
3. Do not remove padlock from control, nor operate MULTIGUARD™, until lids and guards are securely in place.

4.2 LUBRICATION

Lubricating the Gearbox

Oil levels are monitored via the site glass (where fitted), refer to appendix A “MULTIGUARD™ Data Sheet” for specific grade and quantity.

4.3 **SURFACE COATING**

This section describes how the MULTIGUARDS™ surfaces should be treated, if made of stainless steel or not. The materials of construction for your particular MULTIGUARD™ are specified in the Appendix 'MULTIGUARD™ Data Sheets'.

Operation in sewage treatment plant or damp environments exposes the MULTIGUARD™ to air that may contain chemically or biologically corrosive particles. In these cases painted, galvanised and stainless steel surfaces can be damaged. It is therefore important that personnel follow the operating instructions and remedy any corrosion or damage to coatings as soon as they occur.

- **Hot Dip Galvanised.**

The MULTIGUARD™ bell housing and supports (if applicable) have been Hot Dip Galvanised to AS1650 and AS1214.

Rust may be ground back to bare metal and the surface carefully cleaned before application of a suitable "Cold Galvanising" agent.

- **Stainless Steel.**

The materials used are 304 or 316SS (refer to Appendix 'MULTIGUARD™ Data Sheets'). These materials do not need any special treatment but the following should be observed.

Grinding or welding in close vicinity of the MULTIGUARD™ must be avoided. Showering sparks onto the stainless steel can cause a rust brown discolouration.

All stainless steel surfaces must be handled so that the corrosive resistance is not impaired. As a minimum the stainless steel should not come into contact with steel of other qualities during transportation or assembly. Wood, cloth or plastic should be used to pad the stainless steel when lifting or transporting the MULTIGUARD™.

The heat input during welding leads to the formation of chromium oxides on the steel surface. The underlying material is depleted of chromium, increasing the risk for corrosion. Passivating removes the oxides, scale and slag. The surface is cleaned to bare metal and a thin protective layer, or "passive" layer, is built up. This restores optimal corrosion resistance and ensures that the weld will have the longest possible life

4.4 **MAINTENANCE TIME TABLE**

The following checks outlined below are recommendations only. They can be adjusted to suit the operation time of the MULTIGUARD™ or incorporated into existing site maintenance procedures. It is important, particularly with all new equipment that it be monitored for performance / potential hazards and as a result specific procedures developed. Specific procedures for use on site need to be developed by the client which capture OHS and site access requirements. These should also be developed according to frequency of use and adapted to individual site process requirements.

PREVENTIVE MAINTENANCE	
PERIOD	ACTIVITY
Weekly	Listen for any abnormal noises, clanks or scraping sounds. If abnormal noises are heard, stop and isolate the screen and investigate.
	Check the gearbox and motors they should be warm without being hot and free from grease or oil leaks.
	Check rakes/screen for excess rag build up and clean as required
Three Monthly	Check gland packing box for leaks, adjust packing ring and regrease as required.
	Check operation of and grease bearings etc as required
Six Monthly	Run the Screen and check for excess noise and vibration.
	Visually inspect equipment externally and internally for defects, wear and tear, corrosion and damage.
	Check the oil level in the gearbox and its colour. If the oil is heavily emulsified (cream-like) there is water in the oil. Rectify and replace.
	Check all wearing parts e.g. chain. Adjust or replace as required.
	Assess and regrease all bearings and gland packing, check and refill gearbox oil as required.
	Check chain tension
	Check chain for damage and corrosion
Two Yearly	Change gearbox oil.
Six yearly	Inspect and replace/repairs moving parts as required

4.5 SACRIFICIAL ANODES

Replacing sacrificial anodes on a screen is an important maintenance task to prevent corrosion. Here are step-by-step instructions on how to replace the 2-hole sacrificial anodes:

Tools and Materials Needed:

1. New sacrificial anodes (make sure they are compatible with your screen)
2. Wrench or socket set (for M16 bolts)
3. Drainage equipment (if necessary)
4. Safety gear (gloves, eye protection)

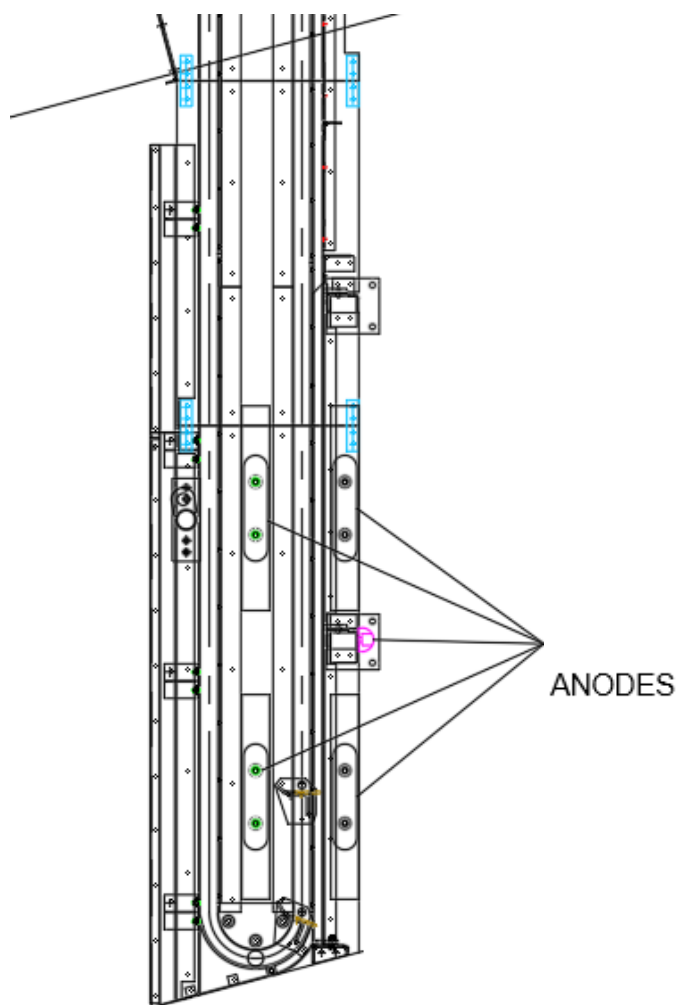
Procedure:

1. **Safety First:** Before you begin, ensure your safety by wearing appropriate protective gear, including gloves and eye protection. If necessary, shut off power to the screen and any associated equipment. Safety should always be the top priority.
2. **Isolate and Drain the Channel:** If the screen has a channel that needs to be isolated and drained, follow these steps:
 - a. Identify the inlet and outlet penstocks for the channel.
 - b. Close the inlet penstock to stop the flow of any liquids or materials into the channel.
 - c. Open the outlet penstock to allow any existing liquids or materials to drain out. If the screen doesn't have a drainage system, you may need to use a pump or other appropriate equipment to remove the contents from the channel.
3. **Gain Access to the Anodes:** Depending on the design of your screen, access to the anodes may be from the outside or inside. Follow these steps:
 - a. Remove any covers or panels that block access to the anodes.
 - b. If necessary, use any provided access hatches or doors to reach the anodes. In some cases, you may need to partially disassemble the screen to access the anodes.
4. **Remove the Old Anodes:** Once you have clear access to the anodes, proceed to remove the old ones:
 - a. Locate the 2 x M16 bolts that secure each anode to the screen side panel.
 - b. Use a wrench or socket set to carefully remove the M16 bolts. Be cautious not to damage the anodes or the surrounding area.
 - c. Carefully detach the old anodes from the screen. Dispose of the old anodes properly according to local regulations.
5. **Replace with New Anodes:** Install the new sacrificial anodes in place of the old ones:

- a. Position the new anodes in the same location as the old ones.
 - b. Reinsert the 2 x M16 bolts through the anodes and secure them to the screen side panel. Make sure they are tightened securely but not over-tightened, which could damage the anodes or the screen.
6. **Restore Channel and Power (if applicable):** If you had to isolate and drain a channel, reverse the process to reopen the channel for operation. If you turned off power, restore it according to your facility's procedures.
 7. **Inspect and Test:** After replacing the anodes, inspect the area for any signs of leaks or issues. Run a test cycle or process to ensure that the screen is functioning correctly.
 8. **Record Maintenance:** Maintain a record of the maintenance, including the date of replacement, condition of the old anodes, and any issues encountered.

By following these steps carefully, you can successfully replace the 2-hole sacrificial anodes on your screen, helping to protect it from corrosion and extend its lifespan.

ANODE Location shown below:



5.0 SERVICE

5.1 REPLACING THE DRIVE SHAFT

1. Undo the bolts holding the protective cover.
2. Undo the bolts fixing the gearmotor to the MULTIGUARD™.
3. Unscrew the locking bolt, spring washer and stepped spacer from the drive shaft, located at the rear of the gearbox (see fig. 5.4a).
4. Remove the gland cover screws from the packing box (see Fig 5.4b).

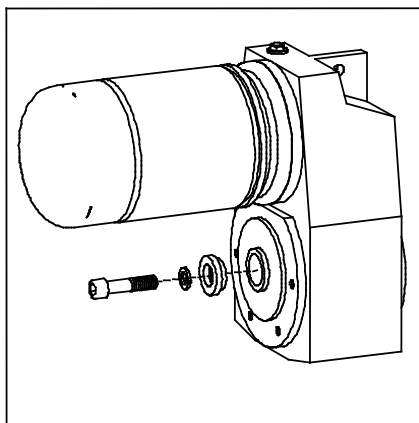


Figure 5.4a - Remove the Locking Bolt, Spring Washer and Stepped Spacer

5. Support the gearmotor with suitable lifting gear.
6. Use an extractor tool to push the drive shaft/pull the gearbox and remove the key from the gearbox keyway before the drive shaft goes through the packing box.

NOTE - The end of the drive shaft must be protected so that the threads are not damaged. A screw can be threaded into the end of the shaft before this is placed under pressure.

7. Place the gearmotor on the floor.
8. Remove the old drive shaft from the MULTIGUARD™ and lift in the new one.
9. Lift the gearmotor back into position and insert onto the driveshaft.

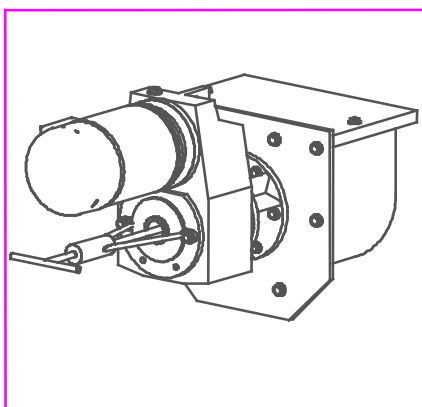


Figure 5.4c - Using an Extractor Tool

10. Turn the gearbox hollow shaft so that the key way is in the correct position in relation to the spirals drive shaft. Push the new drive shaft in so that it takes the place of the old shaft. Place the key in the key way before the drive shaft goes into the gearboxes hollow shaft.
11. Replace all gearmotor fixing hardware and torque correctly.
12. Screw the locking bolt, spring washer and stepped spacer into the new drive shaft.

5.2 CHAIN ADJUSTMENT

The chain will require checking after 500 hours of use or 3 months whichever is the earliest.

Thereafter check the tension every 6 months.

The need for chain adjustment is more likely to be over the first 3 months of installation when chains and guides are bedding in to each other. The requirement for adjustment is usually detected by an unusual sound. Should adjustment be necessary and providing the chain rollers can be seen entering the bottom guide. Adjust the tension nuts until sufficient tension in the chain lifts the guide rollers clear from the front edge of the bottom chain guide as they enter. Chain tension does not have to be excessively tight or the chains rigid as this pre-load the sprocket bearings and can lead to failure. It is essential that tension is kept equal in both chains and the drive shaft level. When the screen is set to run again after adjustment, ensure that the ammeter readings are the same as those for normal running.

When the screen is set to run again after adjustment, ensure that the ammeter readings are the same as the normal reading.

If after adjusting the chain tension the ammeter readings are significantly higher than the normal readings then the chain tension is too tight and requires backing off further.

Remove the front screen cover and stand well clear and run the screen, visually check the conditions of the screen panels and seal plates.

5.3 SCREEN MOTOR REPLACEMENT

Assembly/Fitting

The drive motor is supplied fitted to the gear unit. In the event of it being removed the following instructions should be observed.

Fitting the Motor

1. Clean the locating faces of the motor and gearbox flange and the motor shaft.
2. Fit the key provided into the motor shaft.
3. Slide on the geared drive bush provided with the gearbox and when fully in position lock in situ with the grub screw.
4. Offer the motor to the gearbox and align the teeth on the drive bush before sliding into position.

5. Rotate the motor until the terminal box is in the desired position and secure the motor to the gear unit using the four flange bolts, ensuring the bolts are tightened uniformly.

Electrical Connection

Ensure that the voltage range specified on the motor corresponds to the supply voltage and the wires are connected in accordance with the wiring diagram.

Note: The motor is wired for a specific direction of rotation and is clearly marked. Start the motor in hand to check that the direction is correct.

A qualified electrician must make all electrical connections.

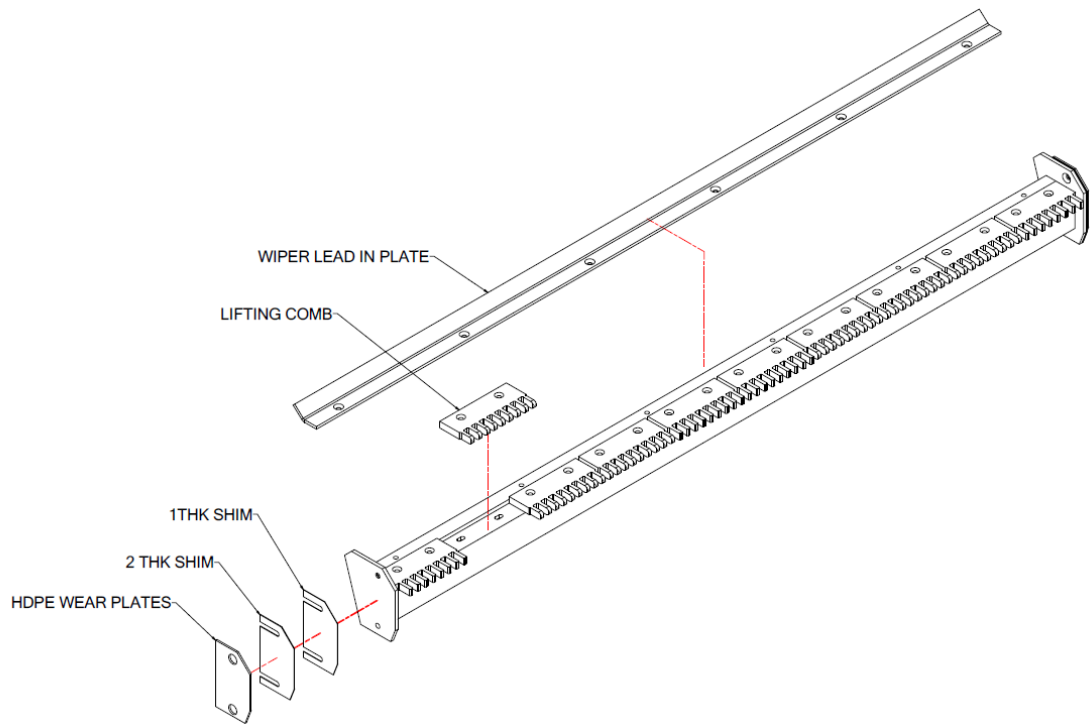
5.4 BEAMS & LIFTING COMBS

Check the High Density Plastic wear plates at the Comb Beam ends periodically and replace if worn through or broken. It is important to maintain the same number of shim plates if fitted.

Removing the cross carriers can be achieved without disturbing the chains from above coping level where access to the bolt heads is possible by removing the small cover plate in the head end side plates.

Damaged combs can be replaced by unbolting them from the comb carrier. In order to refit, they must be positioned in the same orientation as the combs that have been removed. If this is not observed, it is possible the combs and/or carrier could be damaged when the screen is next put into use.

The wiper lead in plate is removable but is not a wearing part. It is unlikely this will need to be replaced.



6.0 TROUBLESHOOTING

6.1 GENERAL

Between regular maintenance inspections, be alert for signs of motor or MULTIGUARD™ trouble. Common symptoms are listed below.

Correct any trouble immediately and AVOID COSTLY REPAIR AND SHUTDOWN.

Troubleshooting shall be done with the power supply disconnected and locked off, except for those checks which cannot be performed without voltage.

Always make sure there is no one near the MULTIGUARD™ when the power supply is turned on. Use the following table as an aid to troubleshooting. It is assumed the MULTIGUARD™ and installation have formerly functioned satisfactorily.

6.2 TROUBLESHOOTING CHART

PROBLEM	CAUSE	REMEDY
MULTIGUARD™ Fails to Start	Blown Fuse	Determine and correct cause of failure and replace fuse
	Motor protection device activated	Reset protective device. Identify and correct cause for failure
	Motor protection device faulty or will not reset	Check protection device for faults
	Motor not connected for proper voltage	Check connection diagram in conduit box lid and correct the wiring.
MULTIGUARD™ starts but motor protection device trips immediately	Rake jam from foreign object entering screen.	Remove object and restart
	Gearbox seizure due to no oil	Remove gearbox and service
	Settings on motor protection incorrect	Check and re-set
	Motor improperly connected	Check connection diagram in conduit box lid and correct the wiring
Excessive vibration	Loose drive	Check and re-tighten fixing bolts
	Unstable ground conditions	Rectify
	Loose support/trough connections	Check and re-tighten
MULTIGUARD™ output is too low	Worn/damaged rakes or bars	Replace as required
	Material being conveyed is not as originally specified	Contact SPIRAC

TROUBLESHOOTING CHART cont.

PROBLEM	CAUSE	REMEDY
Motor overheats	Motor not connected for proper supply voltage	Check connection diagram on conduit box lid and correct wiring
	Insufficient cooling air volume due to obstructed air flow	Provide clearance around fan area
	Motor allowable duty cycle is exceeded. Too many starts per hour	The problem may not be solved by a larger unit. Review with manufacturer
	Single phasing due to break or loose connection in supply line or blown fuse	Repair supply line. Replace fuse
MULTIGUARD™ jamming	Excess rag ball jamming rakes	Reduce material inflow. Break up rag ball
	Foreign object in MULTIGUARD™	Remove object
MULTIGUARD™ runs in wrong direction	Electrical cable leads wired incorrectly	Reconnect two phase wires.
Noisy Screen Band	Incorrect chain tension	Check for broken or flattened off rollers on the chain band.
Screen Trips	Blockage in band	Check and remove blockage
	Incorrect band tension	Check for broken or flattened off rollers on the chain band.
	Electrical issue	Check electrical controls and sensors
Carry over	Damaged bars and/or rakes	Check and replace damaged components



7.1 GENERAL

The following instructions should be observed when handling or working with the MULTIGUARD™ –

1. SPIRAC equipment is supplied conforming to AS 4024.1 - 2006 - Safeguarding of Machinery and complies providing all guards remain locked in place with the bolts supplied. Any work that necessitates removal of any guarding must be carried out in strict accordance with the SPIRAC Operation and Maintenance manual supplied. However Local work practices and regulations should be applied to the selection of any protective equipment or labeling that may be required.
2. Ensure the MULTIGUARD™ is maintained in accordance with section 4. MAINTENANCE of this manual.
3. Any person who will install, operate, service, repair or supervise the operation of this equipment must be trained and informed in accordance with local regulations and legislation.
4. Where local regulations dictate that Work method statements, Safe working practice statements, Job Safety Analysis, Pre-commencement Hazard checks and attendance to tool box meeting be adhered to, it is the responsibility of the owner/operator of this equipment to ensure the forenoted is actioned and recorded.
5. Always isolate the MULTIGUARD™ main power source and ensure that the MULTIGUARD™ cannot be started before commencing any servicing work.
6. Ensure that all service equipment, such as but not restricted to, chain blocks, slings, staging is well maintained and is in accordance with local regulation and legislation.
7. Never try to lift more than one item at a time i.e. protective lids (or lids).
8. Take care to avoid compression injuries when removing or replacing any element of the MULTIGUARD™.
9. Personnel operating or servicing the MULTIGUARD™ should be equipped with the correct protective wear should a biological or mechanical hazard be present. Local work practices and regulations should be applied to the selection of the protective equipment.
10. Personnel working frequently in these areas where MULTIGUARDs™ have remote control or automatic start/stop, must be informed of the operation.
11. On completion of any service work, please refer to this manual's section 3. OPERATION, for the necessary instruction on re-starting.
12. Ensure that no one is working on the MULTIGUARD™ before it is started.
13. Never use the MULTIGUARD™ for other purposes other than which it is designed or above its given capacity.
14. Personnel should never use the MULTIGUARD™ as a walkway/access platform to go to other areas.

7.2 NOISE

The equivalent continual A-wave noise level during normal operation is <70dB.

In cases where the equivalent continual A-wave noise level exceeds 70 dB, ear protection must be worn.

8.1 MULTIGUARD™ PARTS DESCRIPTION

The list of spare parts gives the correct names for the parts of the MULTIGUARD™ and therefore eases the ordering of spare parts.

The dimensions and technical data for your MULTIGUARD™ are specified on the GA Drawing. Make sure you have the drawing available when ordering parts by telephone. Also refer to Technical Specifications in Appendix A 'MULTIGUARD™ Data Sheets'.

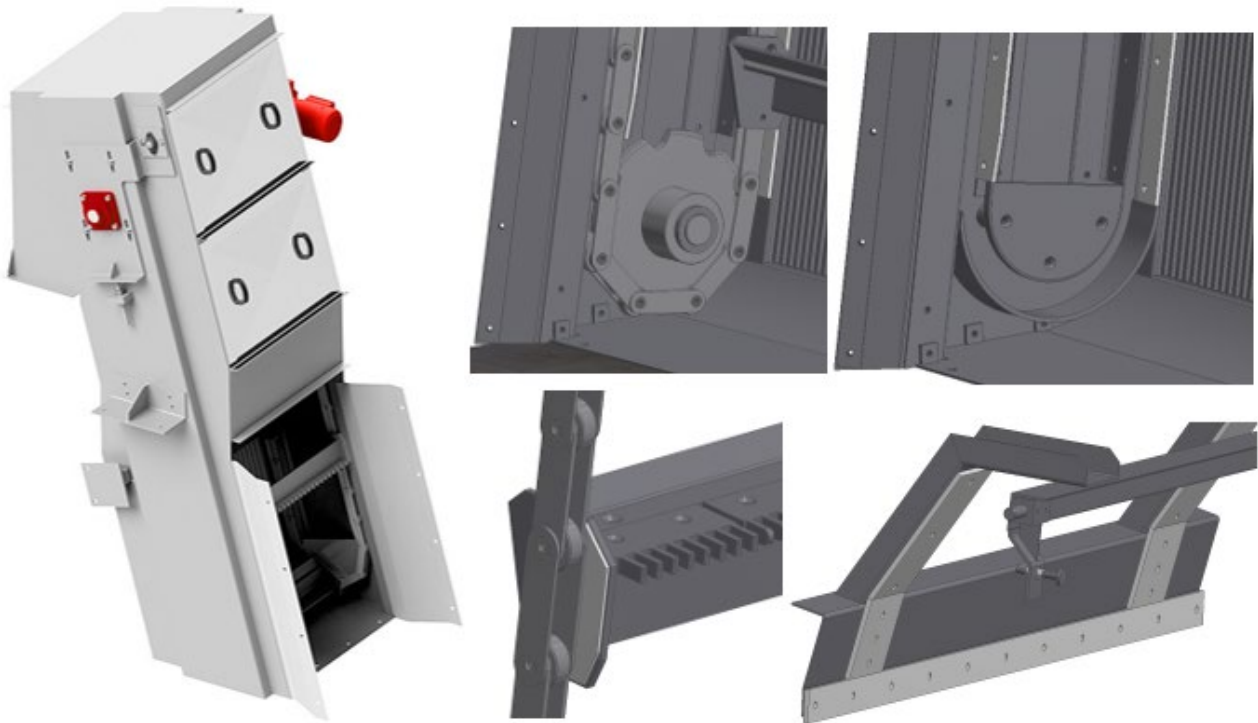


Figure 8-1. MULTIGUARD Parts

MULTIGUARD Standard Parts			
	Chains		Wiper wear blade
	Comb beam wear plastics		Guide plastic/block
	Comb plates		

8.2 **RECOMMENDED SPARE PARTS**

SPIRAC have endeavoured to provide you with equipment that will give you continued and long lasting service. However, we recommend that the following wear items be kept as a minimum to ensure uninterrupted service:

Drive Station - screen drive	• Gland Packing • Motor • Gearbox • Driveshaft	1 of each per MULTIGUARD.
MULTIGUARD™	• Chain set (both sides) • Guide plastic set • Guide plastics • Comb plates • Wiper blade • Anodes	1 set of each per MULTIGUARD

For actual part numbers and descriptions, please refer to Technical Specifications in Appendix A 'MULTIGUARD Data Sheet' and the General Arrangement Drawings, also quoting the drawing number.

8.3 SUPPLIER CONTACT

SPIRAC has Sales Offices throughout the world. Manufacturing is undertaken in Australia and Sweden. If you are unsure of your Agent, please make your initial contact to –

America

SPIRAC (USA) Inc.

75 Jackson Street, Suite 300
Newnan, GA 30263, USA

Tel: +1 770 632 9833

Fax: +1 770 632 9838

Europe:

Sweden

SPIRAC AB

Krossverksgatan 8
Box 60333
SE-216 08 Malmö
Sweden

Tel: +46 40 36 22 00

Fax: +46 40 15 36 50

United Kingdom

SPIRAC Ltd

SPIRAC House
Thorpe Mead
Thorpe Way Industrial Estate
Banbury, Oxon, OX16 4AB
Tel: +44 1295 270 335
Fax: +44 1295 273 334

Australia and Asia Pacific

SPIRAC Pty Ltd

30 Cocos Drive
Bibra Lake, Western Australia 6163

Tel: +61 8 9434 0777

Fax: +61 8 9434 0778

Netherlands

SPIRAC BV

P.O. Box 2623
6026 ZG Maarheeze
Netherlands

Tel: +31 0495 430 203

Fax: +31 0495 497 452

Please refer to the Supplier Index for additional Vendor Contact Information.

	Document Number :			
	Project :			
	SPIRAC Client :			
	MULTIGUARD Type :			
	SPIRAC MULTIGUARD Tag :			
	Drawing No :		Rev :	

MULTIGUARD DATA SHEET

Screen drive - Motor Details	
Manufacturer	
Frame Size / Poles	
Rated Power (kW)	
Rated Current (A)	
Motor Speed (rpm)	
Voltage / Hertz / Phase	
IP Rating	
Finish	

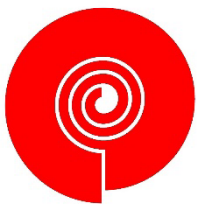
Lubrication	
Grease	
Packing Gland	
Type and capacity	

Construction Details	
Frame / Lid Material	316SS
Rake (Material/Thkness)	316SS / 50mm
Dry MULTIGUARD weight (kg)	4120kg
Anodes weight (kg)	Aluminium 4.5kgs

Screen drive - Gearbox Details	
Manufacturer	
Model	
Ratio (i)	
Output Speed (rpm)	
Mounting Position	
Anti-Condensation Heater (230V)	
Oil Level Sight Gauge	
Torque Limiter	
Finish	

Application Details	
Material to screen	
Capacity (L/s)	

Screen Details	
Comb plate width	
Combe plate quantity	

 SPIRAC®	Document Number :			
	Project :			
	SPIRAC Client :			
	MULTIGUARD Type :			
	SPIRAC MULTIGUARD Tag :			
	Drawing No :		Rev :	

MULTIGUARD DATA SHEET

Screen drive - Motor Details	
Manufacturer	
Frame Size / Poles	
Rated Power (kW)	
Rated Current (A)	
Motor Speed (rpm)	
Voltage / Hertz / Phase	
IP Rating	
Finish	

Lubrication	
Grease	
Packing Gland	
Type and capacity	

Construction Details	
Frame / Lid Material	
Rake (Material/Thickness)	
Dry MULTIGUARD weight (kg)	
Anodes weight (kg)	

Screen drive - Gearbox Details	
Manufacturer	
Model	
Ratio (i)	
Output Speed (rpm)	
Mounting Position	
Anti-Condensation Heater (230V)	
Oil Level Sight Gauge	
Torque Limiter	
Finish	

Application Details	
Material to screen	
Capacity (L/s)	

Screen Details	
Comb plate width	
Comb plate quantity	

	Document Number :	
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	Project :			
	SPIRAC Client :			
	MULTIGUARD Type :			
	SPIRAC MULTIGUARD Tag :			
	Drawing No :		Rev :	

MULTIGUARD DATA SHEET

Screen drive - Motor Details	
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Frame Size / Poles	
Rated Power (kW)	
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Motor Speed (rpm)	
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Finish	

Lubrication	
Grease	
Packing Gland	
Type and capacity	

Construction Details	
Frame / Lid Material	
Rake (Material/Thkness)	
Dry MULTIGUARD weight (kg)	
Anodes weight (kg)	

Screen drive - Gearbox Details	
Manufacturer	
Model	
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Output Speed (rpm)	
Mounting Position	
Anti-Condensation Heater (230V)	
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Application Details	
Material to screen	
Capacity (L/s)	

Screen Details	
Comb plate width	
Combe plate quantity	

 SPIRAC®	Document Number :			
	Project :			
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MULTIGUARD DATA SHEET

Screen drive - Motor Details	
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Frame Size / Poles	
Rated Power (kW)	
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Lubrication	
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Packing Gland	
Type and capacity	

Construction Details	
Frame / Lid Material	
Rake (Material/Thickness)	
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Ratio (i)	
Output Speed (rpm)	
Mounting Position	
Anti-Condensation Heater (230V)	
Oil Level Sight Gauge	
Torque Limiter	
Finish	

Application Details	
Material to screen	
Capacity (L/s)	

Screen Details	
Comb plate width	
Comb plate quantity	