Rotary Drum Filter
Installation & Operation Manual

Drum Filter Assembly – DISPLAY EXAMPLE ONLY – actual installations vary. Refer to assembly drawings in manual for assembly instructions.

Introduction

Thank you for selecting the Ibis Rotary Drum Filter. The information in this manual will be helpful to install and apply the Ibis Filter System to the manufacturing process.
The Ibis Drum Filter is designed for each application to efficiently use the available space and power. When properly installed, the Ibis Drum Filter will operate with minimal maintenance.

The Ibis Drum Filter will interface with the other components in the production system and will provide reliable, automatic operation to remove fine particles from the air stream so that clean air can be exhausted back into the plant or atmosphere.

These instructions are for all sizes of Ibis Drum Filters, although the size may vary from the Drum Filters depicted in the drawings. The size of the Drum Filter is determined by the diameter of the drum and the number of sections. For example, a drum that is 7 feet in diameter and has 3 cages would be denoted as a 7-3 Drum Filter. All diameters are in feet (1 foot = 305 mm.)

OPERATION

Dirty air is introduced into the Drum Filter Enclosure to the outside of the drum. The air is drawn through the Filter Media by the Main System Fan and the particles become suspended in the media. The particles are then vacuumed off the media by Vacuum Nozzles installed in the drum chamber. The particles are then returned to the process or collected in an 'off-line' collector.

> **NOTE:** If your Drum Filter is equipped with multiple stages of filtration, refer to the provided manual for each stage of additional filtration.

The air pressure drop across the Filter Media is monitored constantly by electrical components. If the pressure drop goes beyond the operating set point a warning light and alert is given. (HIGH & LOW on the top of the control panel)

All electrical components of the Drum Filter are enclosed in the Control Panel. The electrical and mechanical sensors for the electrical system are located as necessary on the Drum Filter or Enclosure. Control of the Drum Filter motor is done through this panel. Auxiliary control is interfaced with other plant systems.

The operation of the Drum Filter should be checked on a daily basis by trained personnel. The mechanical and electrical condition of the entire system should be checked with particular attention being paid to the filter media, seals, nozzles and rotation.

INSTALLATION - **DRUM FILTER/PLENUM WALL AND 45° NOZZLE SYSTEM**

1. Inventory the entire shipment by using the provided crate list and inspect for missing parts or damage. Report any damaged or missing parts immediately.
2. Clean installation and assembly area thoroughly. Confirm that there is sufficient space around the unit for easy access for maintenance / service and the layout allows space for obstructions such as beams, plumbing, electrical conduits, emergency exit, walkways, doors, etc.
3. Use a marker or a piece of chalk to mark the location of the corners of the enclosure (make a box), the plenum wall, rear bearing stand and the main system fan. Make sure that the layout on the floor is square to within a 1/2" or 12mm and that the layout contains all the equipment that you are installing in that area.

4. Instructions for setting Drum Filter in place (Reference Ibis installation drawings in the job manual) please refer to the bill of material descriptions, not the item numbers on the installation drawing.
   - 4.1. Determine the location of the Plenum Wall from the Enclosure Panel layout drawing and mark an outline to represent where the Plenum Wall will be placed.
   - 4.2. Locate and mark the centerline of the Drum Filter Shaft, squaring (90°) it to the Plenum Wall.
   - 4.3. Place the Plenum Wall in position and mark the location of the holes for the anchors in the floor by marking through the holes in the Plenum Wall Base.
   - 4.4. Drill and install the floor anchors. Remove the Plenum Wall if necessary
   - 4.5. Place Plenum Wall and fasten securely to the floor. Verify that the Plenum Wall is level and plumb. Install shims / washers if necessary. The drum will not turn or operate properly if the Plenum Wall is not level and plumb.
   - 4.6. Support the Plenum Wall with the Plenum Wall Braces. Use the two Plenum Wall Connecting Braces if the Plenum Wall is split. The braces bolt to the Plenum Wall and are anchored to the floor.

4.7. If the plenum wall is split you will have to fill the gap in the angle rings between the top and bottom plenum wall panels with body filler (supplied by Ibis). Allow filler to dry and then sand smooth. This will allow the primary seal to slide smoothly around the angle ring

5.

5.1. Roll the Cages in place, starting with the Plenum/Front Cage, then the Center Cage(s) and then the Rear Cage. Align the cages in order toward the Rear Bearing Stand.

Figure 1 PLENUM/FRONT CAGE

Figure 2 CENTER CAGE

Figure 3 REAR CAGE

NOTE: Not all Drum Filters have Center Cage(s).

5.2. Slip the Shaft through all hubs. REFER TO SUPPLIED DRAWING FOR POSITIONING DRUM SHAFT. Place the Locking Collars on shaft as each cage slips on (see Ibis drawing #DRM-103-A). Locking collars belong on the Shaft in front of the cages toward the Plenum Wall. One Locking Collar goes on the Shaft in front of the Front Cage and one Locking Collar goes in front of the Rear Cage.

NOTE: Be sure the drive end (Keyed end) of the Shaft (Item 14) is facing the drive end, whether the drive end is in the front or the back of the Drum Filter.

5.3. Place the Pillow Block Bearings on each end of the Shaft journals.

5.4. Align and loosely bolt the Cages together. DO NOT tighten bolts at this time. Remember to line up zip molding / media channel on all cages.

5.5. Lift front end of the Shaft and place on horizontal support on the Plenum Wall.

5.6. REAR DRIVE FILTERS: Before mounting the Rear Pillow Block Bearing to the Rear Bearing Stand, **install the corresponding end**

wall shaft enclosure panel and shaft seal to shaft. Refer to enclosure assembly drawing.

5.7. Lift the rear end of the Shaft up on the Rear Bearing Stand. Use the 1/4 inch (6 mm.) thick Rear Bearing Shims to even the drum gap to plenum wall ring if needed. Use additional shims / washers of various thicknesses to level the Shaft if necessary. If the Shaft is not level and square (90^{o}) to the Plenum Wall and the gap between the Plenum Wall and the Drum Filter remains constant at 1/2 Inch (13 mm.) as the Drum Filter rotates, the Drum will not seal properly and the Drum Filter will not work properly.

5.8. The new standard Ibis drum filters are rear drive only. Older and customized equipment may vary, please contact Ibis International if this is the case.

5.9. The rear bearing stand/drive stand is not anchored to the floor until after the enclosure is assembled, squared and all dimensions have been doubled checked. Only then should you anchor the stand to the floor.

5.10. Before Anchoring the Rear Bearing Stand, make sure that the end wall shaft panel and the drive shaft seal is in place. Using the centerline previously marked and squared (90^{o}) with the Plenum Wall, anchor the rear drive stand securely to the floor. Set the rear drive stand so that the bearing seats against the shoulder of the drum shaft.

CAUTION: Before final anchoring, be sure the 1/2 inch/13mm. Gap between the Plenum Wall and the Drum has been maintained.

5.11. Bolt down front and rear Pillow Block Bearings.

5.12. Cage alignment and bolt down procedure

5.12.1. Many of the cages will be slightly out of sync and the holes will not line up. Also, the outside skin may not be even and flush with each other.

5.12.2. Aligning the cages requires one person inside the cages and one person on the outside of the cages.

5.12.3. The person inside the cages will require a hammer, C-Clamp or clamping pliers, drift pin, wrench and sockets. The person on the outside of the cage will require only a hammer.

5.12.4. Begin with joint between the Front Cage and the next cage, whether it is a Center Cage or the Rear Cage. Make sure that the media retaining channels on each of the cage sections are aligned with each other before they are bolted together.

5.12.5. To align the holes, work the drift tool through the holes until two of the holes align and a bolt can be slipped through the holes.

5.12.6. To even and flush the outside of the cages, put the C-Clamp on the rails near the aligned holes and then tap either on the outside or the inside of the cage on the angle rings. When the outside edge is even and flush, insert and tighten the bolt to secure.

5.12.7. Repeat the procedures in 5.12.5 and 5.12.6 for the entire joint between the two cages. A good idea is to skip a bolt hole to allow room to use the drift. After the drift pin is moved to the next location, the bolt should be placed in the hole that the drift was removed from and tightened. After the procedure is completed for the entire joint and all holes are aligned and the surfaces are flush, put bolts in any remaining holes.

5.12.8. Repeat 5.12.5 through 5.12.7 for each joint in between the cages.

5.12.9. After the procedures are completed, the entire drum should be brought into alignment and an accurate cylinder is formed.

5.13. Position the drum to give a 1/2 inch (13 mm.) space between the Front Cage Angle Ring and the Angle Ring on the Plenum Wall (See ibis drawing DRM-103-A).

5.14. After the position on the Drum Cages has been determined on the Shaft, tighten the Bearing Locking Collars.

5.15. After the Bearing Locking Collars are tightened and the Drum Cages are secure, the set screws in the Drum Cage locking hub need to be removed one at a time and then drilled through the hole, taking care not to damage the threads, creating a 'dimple' in shaft and set screw replaced. This procedure needs to be completed for all holes on the Drum Cage locking hubs.

NOTE: The 'Dimple' effect on the shaft will prevent the Drum Cages from slipping as the shaft turns, and prevent the Drum from shifting forward against the Plenum Wall.

5.16. Drum Seal Alignment and Installation procedures.

5.16.1. Determine the direction of drum rotation by matching the direction of the INCOMING AIR FLOW, whether it is clockwise or counter clockwise.

5.16.2. To obtain the proper length of the Yellow Primary Seal, wrap the seal around the drum and overlap the starting end by at least 6 inches (152 mm.), plus 1 inch (25 mm.) for every foot of diameter above 6 foot diameter.

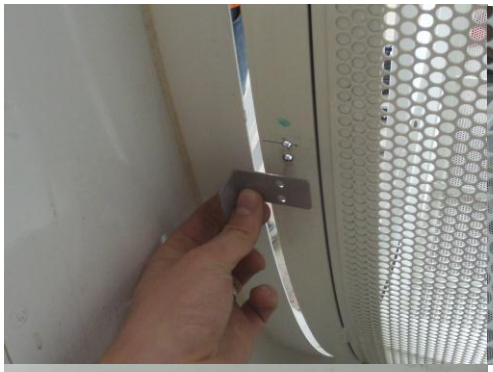
5.16.3. Place one end of the Yellow Primary seal 2 inches (51 mm.) to 3 inches (76 mm.) past a fastener hole with the cut end pointing in the opposite direction of rotation. IMPORTANT: MAKE SURE THE LEADING EDGE (AS THE DRUM ROTATES) OF THE YELLOW PRIMARY SEAL IS UNDER THE TRAILING EDGE. This will ensure that the yellow seal will not snag and pull off during rotation.

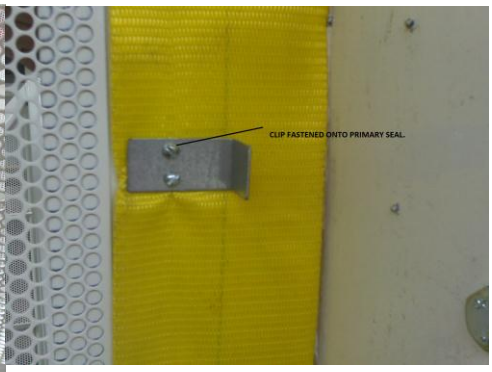
5.16.4. The drum section side of the yellow primary Seal should be aligned with the joint between the angle rings. This should leave a ½ inch (13 mm.) (Minimum) gap between the Plenum Wall and the Canvas Seal.

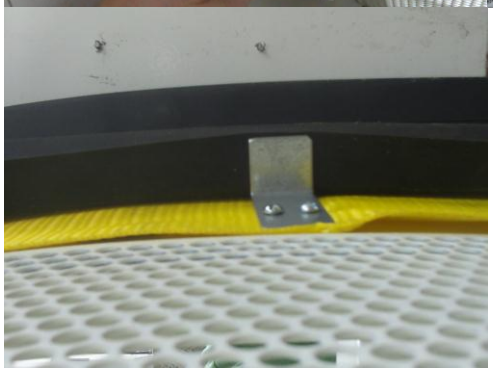
NOTE: The ½ inch (13 mm.) gap is required for the proper installation of the Secondary Rubber Seal.

5.16.5. To Fasten the Yellow Primary Seal to the Drum Cage, drill through the Yellow Primary Seal from the inside of the angle ring, spacing the holes 12"inches (300mm) apart. Use the existing holes in the angle ring as a guide.

NOTE: A Wooden block must be used and held firmly against the Yellow Seal to ensure accurate drilling.







5.16.6. Insert the fastener with the seal angle cleat on the media side of the drum as you drill each hole. Insert the lock washer and nut to the clean air side through the hole after the hole is drilled. Be sure to keep the distance of 1-1/2inch (38mm) from the plenum wall to the vertical face of the seal cleat.

NOTE: Be sure to use a flat washer under the head of the fastener and DO NOT over tighten.

5.16.7. Repeat the procedure for each hole as the drum is rotated. Be sure to keep the seal flat and maintain the ½ inch (13 mm) gap between the seal and the Plenum Wall.

5.16.8. Overlap the trailing edge at least as far as the second fastener. The end of the trailing edge does not need to be bolted down.

5.16.9. Use the seal lubricant provided in your shipment to pre-lube the secondary seal. This will make the installation of the seal much easier.

5.16.10. Place the Rubber Secondary Seal over the Yellow Primary Seal and the angle ring of the plenum wall.

5.16.11. Take the long flat side of the seal facing the plenum wall and the side with the large hump is facing the cage sections.

5.16.12. The secondary seal should ride up the plenum wall (about 1-1/2"or 38mm). Connect the two ends of the rubber seal with the two bolts provided. This will take two people.

5.16.13. After you have tightened the two bolts, rotate the drum to make sure the seal is straight and is making a continuous seal around the drum. Completely rotate the drum a few times and retighten the seal if necessary. If the seal bolts are

tightened all the way and the seal is still loose, REMOVE seal and relocate the brackets of one end and try the seal again.

- **CAUTION** – DO NOT use any form of liquid or spray lubricant. A liquid lubricate will cause the seal to become sticky and bind rotation.

NOTE: If there are any problems with seal alignment and installation, DO NOT operate until the factory has been consulted for assistance.

45 degree nozzle and optional 90 degree nozzle installation

5.17. The nozzle support channel can install at the 90 degree or the 45 degree position using the special angle brackets. The distance from the plenum wall to the end wall inside skin is crucial.

5.18. Mount the Angle Brackets to the End Wall (field drill holes in wall panel) and the Plenum Wall, and make sure the nozzle rail is parallel to the drum. Then bolt the Nozzle Channel between the Angle brackets. Note that the holes are not symmetrical, and the short side goes to the plenum wall. Be sure and align the Nozzle Channel holes with the center of the cages.

5.19. Mount the Nozzle Brackets to the Nozzle Channel with slot of Nozzle approximately ¼ inch (6 mm.) to 3/8inch (8mm) off media surface and plumb with each other.

5.20. Slip the big end of 45^{o} OVC Elbow Assembly over outlet of the Nozzle. Make sure it is a tight fit. Caulk if necessary.

5.21. Install the standard nozzle manifold or optional pneumatic manifold at any time after the roof panels have been installed. Place the manifold in line with the nozzle rail (make sure that the flange of the manifold will NOT strike the standing seams of the roof panels. Mark the location of the 4inch (100mm) pipe. Cut holes. Place the manifold in the cut holes, and then match drill hole locations. Mount the manifold with the round head bolts. Round head to the inside.

5.22. If using a standard media with no zipper, lay the media out in front of the drum inside of the enclosure. Attach one side to the zip strip with the pile (fluffy hairy) facing outward. Insert one end in the Zip Molding by pushing on the media and using a slight rolling motion. Make sure that you have lined it up to cover the entire drum front to back. Having excess lying over the secondary seal is ok. Try not to have too much excess on the drive side as this can cause accumulation of material.

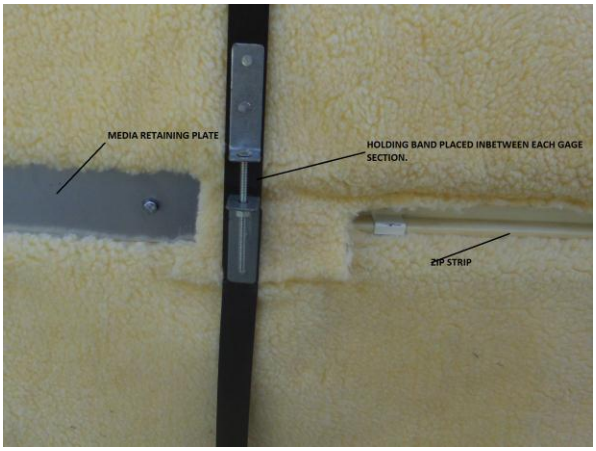
5.23. Rotate the drum so that the media slowly unrolls and covers the drum. Once rotated and the two ends meet, slightly pull the media tighter as you press into the zip strip using the provided zip tool. Do this all the way from one end to the other working out any wrinkles.

5.24. Insert the trailing end of the Filter Media into the other Zip Molding and CAREFULLY trim excess Filter Media.

NOTE: MEDIA SHOULD BE WRINKLE FREE!

5.25. Install the Cover Plate to the Drum Cages using M6-1x50mm bolts (provided). It is acceptable to let some excess media cover part of the V-ring seal. Check for HOLES or gaps, if you can see white metal or inside the cages STOP and FIX before you go any further

5.26. Install the Media Retaining Bands, making sure that they are centered between the Nozzles for a full 360^{o} revolution. There is to be a band on each side of the vacuum nozzles when installed.



NOTE: Check the band alignment by rotating the cages and inspecting closely to see if bands stay true.

5.27. Repeat the procedure in section 5.25 for all of the cages. If the bands are tightened all the way and are still loose, REMOVE band and relocate one of the brackets. Repeat step 5.25.

6. DRIVE ASSEMBLY

6.1. Mount the Drum Sprocket on the Drive end of Shaft

6.2. Mount the Gear-motor

6.3. Align the Sprockets and install the Chain. Adjust chain tension by rotating chain tensioner until properly tightened (see Lovejoy documentation in job manual)

6.4. Rotation Monitor, see drawing #DF-SSM-411 AND 2012DFSM-411

6.5. Mount drive-guard.

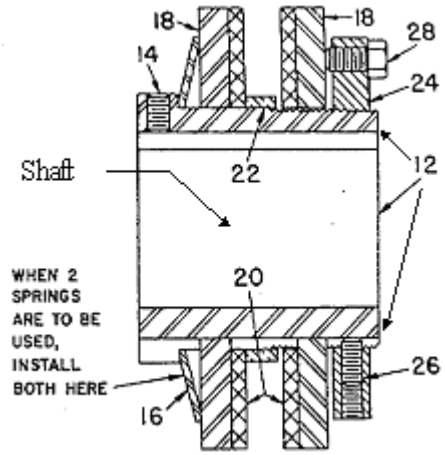
6.6. 

2010-DF1A Ibis standard drum drive

Torque-Tamer tm Installation Instructions

Ibis International, Inc uses an adjustable slip clutch on drum filter drives. In most instances, this device is used to transmit the rotational force provided by a gear motor to a driven shaft. In the case of the drum filter, it is used to provide adjustable resistance to protect the reducer and components. Over the years, the service department has seen some confusion among our customers on the proper procedure for adjusting these clutches. With the help of a diagram of a Dodge TORQUE-TAMER™, the brand most commonly used on Ibis drum filters, let's go through the proper adjustment procedure for this important device.

To understand these instructions it's helpful to know that this diagram is a cutaway through the length of the clutch. (Looking **at an actual TORQUE TAMER™** while reading this would be helpful.



INSTALLATION INSTRUCTIONS

CAUTION: Friction discs 20 must be kept clean and free of oil or moisture at all times to obtain proper functioning of the Torque-Tamer. Do not use washers under heads of tension screws 28.

1. Back off tension screws 28 at least three turns.
2. Loosen screw 26 nine full turns. Remove nut 24.
3. Remove one pressure plate 18 and one friction disc 20. Then place bushing 22 on hub 12.
4. Slide center member (sprocket, sheave, etc.) on bushing 22. NOTE: Bore finish must not exceed 125 micro-inch and both sides of center member, where contacted by discs 20, must be ground parallel (65 to 125 micro-inch) and must be clean and free of oil or moisture.
5. Replace friction disc 20 and pressure plate 18 with the ground side of plate against friction disc.
6. Replace nut 24 and tighten finger tight.
7. Tighten set screw 26 in nearest spline notch.
8. Tighten tension screws 28 alternately and evenly until heads bottom, and then back off one turn.
9. Slide unit in position on shaft and tighten hub set screw 14.
10. Run in by slipping for 500 revolutions at 50 rpm or below.
11. Tighten screws 28 until heads bottom on nut 24. This gives maximum torque setting--for less torque see "TO ADJUST TORQUE".
12. Check alignment of drive.

TO ADJUST TORQUE of the Torque Tamer:

1. Back off tension screws 28 at least three turns.
2. Loosen adjusting nut set screw 26 at least nine turns.
3. Reset adjusting nut 24 (Turn clockwise for more torque or counterclockwise for less. Do not tighten adjusting nut beyond finger tight.)
4. Tighten adjusting nut set screw 26 in nearest spline notch. (Do not tighten setscrew on threads of hub.)
5. Tighten tension screws 28 alternately and evenly until heads bottom. Do not use washers under heads of these screws.
6. Check alignment of drive. If necessary, loosen hub set screw 14 and shift hub 12 on shaft.

A shaft would extend from left to right through the bore of the hub #12 (through the area marked shaft on the diagram). In most cases, a sprocket would be captured between the two friction discs #20 and this sprocket is free to rotate on the bushing #22. The hub # 12 is keyed to the shaft; therefore any rotational force applied to the sprocket will be transmitted to the shaft through the friction discs #20 to the pressure plates # 18 which are splined to the hub #12. The amount of torque transmitted to the shaft depends on how much the spring #16 is compressed, which is determined by the distance between the spring and the adjusting nut #24. It is important to understand that in order to increase or decrease the amount of torque transmitted, the adjusting nut #24 must be turned clockwise to increase, or counter clockwise to decrease the torque. See the above instructions for details. Do not try to adjust the clutch by loosening or tightening the tension screws #28, results will be unpredictable. The only position these screws should be in when the clutch is in operation is fully bottomed out. Do not over tighten these bolts, the heads twist off easily.

MAINTENANCE

PREVENTATIVE MAINTENANCE

Every Day	1. Check magnehelic pressure gauge on control panel. It should be between .5" to 2" (13 to 51 mm.) water. An increased reading indicates that the filter media is starting to block/clog. Also, too low of pressure indicates a large hole/leak in the media. 2. Visually check media and vacuum nozzles 3. Check the amount of dust/fluff on floor. Clean if necessary. 4. Inspect media and seal for looseness or damage. 5. Check for proper diverter valve operation 6. Check graphite applicator to ensure proper level.
Every Month	1. Check drum drive, including reducer and motor lubrication. 2. Check condition of fan belts. 3. Visually check system for damage or leaks.
EVERY 3 Months	1. Lubricate fan and drum bearings

FILTER MEDIA MAINTENANCE

Filter Media on the Drum Filter is most commonly a one-piece high-pile filter blanket that efficiently collects particles from the air stream. The Filter Media is a knit fabric and will wear, stretch and tear if proper maintenance and care is not taken. Lack of care can reduce the efficiency of the Drum Filter and could allow particles to past through the Filter Media.

Proper operation of the Vacuum Nozzles is critical to proper care and maintenance of the Filter Media. The Vacuum Nozzles remove particles from the Filter Media and prevent particles from building up and clogging the filter. If the nozzles are too far from the media, the vacuum will not remove the particles. If the nozzles are too close to the media, they may rub on the media and wear or tear the media. See the Vacuum Nozzle section for more detailed information on setting the Vacuum Nozzles.

The best way to check the condition of the Filter Media is to visually inspect the media and to check the differential pressure across the media. A gauge should be installed in the panel to show the differential pressure across the media. The differential pressure should be checked daily. The engineering staff will determine the proper differential pressure. If the pressure is out of the normal limits, the causes of the increase or decrease should be determine and corrected before further operation of the drum. High pressure can be caused by a blocked or clogged Filter Media. Check the nozzles to ensure proper location and sufficient vacuum. Low pressure can be caused by torn media.

To replace worn or damaged media, remove the old media and refer to the Assembly and Installation Instructions for Drum Filters sections 5.21 through 5.26 on how to properly install the Filter Media.

VACUUM NOZZLE MANIFOLD OPERATION

The Vacuum Nozzle Manifold on your Drum Filter is used in conjunction with the Vacuum Nozzles to remove the particles from the Filter Media. The Vacuum Nozzle manifold on a Drum Filter uses a series of Diverter Valves to direct the vacuum to the appropriate nozzles in a controlled sequence.

The Vacuum Nozzle Manifold assembly, the flexible duct to the Vacuum Nozzles and the duct to the Vacuum Fan must be maintained properly to provide adequate vacuum to clean the Filter Media. If the Filter Media is not cleaned properly, the Drum Filter system will cease to operate correctly and could cause hazardous conditions.

The Vacuum Nozzle Manifold Diverter Valve operation sequence is specifically designed for each type of Drum Filter. Changing the sequence may alter the effectiveness of the Drum Filter system. The Control Panel regulates the sequence of the valves and the sequence should not be changed without consulting with ibis technicians first.

The Vacuum Nozzle Manifold Diverter Valves are opened and closed by air operated solenoids and actuators. The air supply to the Diverter Valves should be clean, dry and reach the Diverter Valves at 60 PSI and 1 CFM in order to operate correctly. If water reaches the

solenoids or actuators, they will corrode and cease to operate correctly. The air exhaust should be adjusted on the Diverter Valves to cushion the valve when it opens and closes.

At the start of the each shift, the operator should observe the entire sequence of opening and closing for the Diverter Valves. If there is any operational failure or damage, it should be corrected immediately before further damage can occur.

SETTING AND MAINTAINING NOZZLES

The Vacuum Nozzles on the Drum Filter must be set and maintained properly for satisfactory removing of particles from the Filter Media. The Vacuum Nozzles should be adjusted so they clear the Filter Media by approximately 3/8 inch / 8-10 mm, or just enough room to slip a finger tip into the gap. If the nozzle is too far away from the Filter Media, the vacuum will be insufficient to clean the media, and if the nozzle is allowed to ride on the Filter Media, the media will be worn or damaged. The Nozzle Bracket should be cleaned and checked for wear periodically to allow the nozzle to move freely in the bracket.

Proper nozzle opening size must be used for each particular operation. Contact ibis for assistance in selecting the proper size nozzle to meet your requirements.

LUBRICATION SCHEDULES

The ibis Drum Filter should be lubricated as a part of the overall maintenance or lubricating schedules or the entire manufacturing plant. The lubrication schedules of the Drum Filter will include checking and maintaining the level of the oil in the gear boxes and lubrication of the drum and fan shaft bearings.

The Bearings on the Drum Shaft and Blower Shafts should be greased with High Grade grease every three months. The bearings do not require a large amount of grease (two or three shots from a grease gun will be sufficient). Do not pump enough grease in the bearings to force grease out of the seals. Be sure to wipe any excess grease from around the bearings. Too much grease in the bearing will cause heat to build up and break down the grease, and forcing grease out around the seals will cause the seal to fail. Any excess grease that is left on the bearings will collect dust and fibers and will become abrasive and wear out the bearings.

The bearing in the Drum Filter Drive Motors may need grease depending upon the type and application. If the bearings are able to be greased, do it every three months. To grease a greaseable motor bearing, the top and bottom fill plugs need to be removed and a grease fitting installed in the top hole. Grease should be pumped into the bearing to flush out the old grease until only new grease is being pumped through the bearing. Allow the motor to run for five minutes and then wipe away the excess grease. Reinstall the filler plugs in the motor bearing access holes.

The Gear Box Reducer oil level should be checked every month. The oil level is checked by removing the check plug on the side of gearbox. The oil in the gearbox should be at the level of the hole. If the oil is below the hole, the gearbox should be filled with the proper oil until oil runs out the check hole. Once a year the Gear Box cover should be removed and the gears and seals checked for wear. If excessive wear is detected, the gear should be replaced.

It may be necessary to place all gears at the same time to ensure that excess wear will not occur to the new gear. Any time the Gear Box is open, the gears should be checked for wear.

CLEANING

ALL surfaces of the Drum Filter should be vacuumed periodically using an ibis Central Vacuum System to remove built up dust and fluff particles. DO NOT use compressed air to clean the Drum Filter. Blowing off the dust will only move it to another area. When vacuuming, give close attention to the Filter Media and the main Drum Seals to check for signs of wear or tears.

All bearings should be cleaned periodically of all excess grease and all dust and fluff should be cleaned from inside and outside the housings.

PARTS LIST

When ordering parts for your Ibis Drum Filter, ALL of the following information must be included. If ordering by phone, be sure to have this information available when the call is placed.

1. Part number
2. COMPLETE description of part.
3. Product model number – this is ESSENTIAL
4. Product serial number
5. Quantity needed
6. Length, size, color – where applicable
7. Voltage, RPM, cycle (hertz), ratios, shaft size, etc.
8. Shipping address and method – normal or priority?
9. Customer order number
10. Customer telephone, FAX, E-mail and contact person

TROUBLESHOOTING

Troubleshooting should be done in an orderly and logical step-by-step manner with only one procedure followed at a time. Trying more than one corrective measure at a time may in some instances mask the real cause of the trouble. The trouble-shooting guide for the Drum Filter is designed to give assistance to plant maintenance personnel in the event of the failure of the Drum Filter.

CAUTION: Before performing any trouble-shooting, repair, or service to the Drum Filter, be sure all electrical power is disconnected from the Drum Filter.

The first step is to identify the problem that has caused the failure. If the problem is not known, start by looking at the result of the failure and then try to determine the cause. Look in the Problem column in the Troubleshooting Guide and find the specific problem. Most of the common problems are listed here. If the specific problem is not listed, find a similar problem.

Next, look at the Possible Cause column to further isolate the problem. In most cases there are several causes listed. Verify with maintenance and operators the closest possible cause of the problem.

Lastly, look in the Possible Solution column to determine the appropriate solution to the problem. Verify that the suggested solution seems appropriate for the problem before proceeding with the repair.

Finally, if all of the possible solutions in the guide have been used and problem persists, call an Ibis Technician for assistance.

TROUBLESHOOTING GUIDE		
Problem	**Possible Cause**	**Possible Solution**
1. Drive Motor stops on overload. Drum jerks while rotating or pin sheaves. Chain pops or binds	A. Seal too tight. B. Seal not lubricated properly. C. Drum shifted toward Plenum Wall. D. Incorrect voltage on motor. E. Loose chain. F. Drum is obstructed.	A. Check size of the Seal. B. Lubricate seal with graphite. C. Reset drum to Plenum Wall gap. Dimple drill and tighten setscrews. D. Replace and/or rewire motor. E. Inspect and tighten. F. Remove obstruction and repair as necessary
2. Excessive sprocket or chain wear.	A. Poor sprocket alignment. B. Poor V-ring seal lubrication	A. Align sprockets and tighten. B. Add graphite

3. Drum shifts against the Plenum Wall and/or Seal gap uneven.	A. Excessive pressure drop across drum. B. Drum Cage sections loose on the shaft. Shaft loose in bearings. C. The Plenum Wall moving due to excessive pressure differential D. Bearing is moving.	A. Check media conditions and repair or replace as needed. B. Reset ½" drum to Plenum Wall gap. Dimple drill and tighten setscrews. C. Align and true wall and replace any missing anchor or enclosure fastening bolts. D. Shift and/or shim bearings than fasten securely.
4. The nozzles, manifold, or ducts clog.	A. Vacuum fan not adequate. Rotating slowly or backwards. B. Large scrap material entering drum filter. C. Flex or rigid duct has bends, kinks, holes, burrs, etc. D. Nozzle slot too small for type or amount of waste. E. Nozzle too close to media. F. Back Pressure from final collection device or duct. G. Defective Diverter Valve	A. Check Vacuum Fan duty specifications, speed and rotating then correct as needed. B. Screen ducting openings to prevent large scrap from entering. C. Repair, seal, or replace as necessary. D. Replace with a larger size nozzle. E. Adjust and secure. F. Replace and/or repair as necessary. G. Inspect, repair or replace.
5. Filter Media will not stay in place.	A. Media holding bands too loose. B. Slack in media at the Zip Strips. Media retaining plate is loose. C. Zip Strip loose or broken.	A. Check band alignment and tighten as necessary. B. Remove media retainer, tighten media and secure. C. Repair or replace and reinstall.
6. Media tagging or wearing. Media is clogged or blocked with fines.	A. Suction at nozzles not adequate. B. Nozzles set too close or too far away from media. C. Incorrect Filter Media. D. Excess SAP coming to filter. E. Drum rotating too slow or too fast. F. Nozzle sequence failure. G. Inlet air 'blasting' media. H. Drum filter is shut down and SAP embeds media and collects moisture.	A. Check Vacuum Nozzle System and correct as necessary. B. Adjust to 1/4" gap and secure. C. Contact Ibis for requirements. D. Check SAP introduction process. E. Complete system analysis required. Consult an Ibis Technician. F. Check control panel, correct timer and controls, consult an ibis Technician. G. Install baffle/deflectors or relocate inlet. H. Reduce ambient moisture to below 55% relative humidity.

7. Discharge air is contaminated/dirty.	A. Filter Media is damaged. B. Drum Seal is leaking. C. Incorrect Filter Media. D. Leak in enclosure or ducts. E. Vacuum fan leaking (if in a clean air plenum). F. Filter Media loose in holder. G. Inlet air 'blasting' media. H. Media velocity is too high. I. Nozzle fan diverter stuck in recirculation mode	A. Repair or replace Filter Media. B. Check seal components, ½" seal gap, Plenum Wall alignment and repair or replace as needed. C. Contact ibis for correct Filter Media Specifications. D. Seal, flash, repair, etc. E. Install Shaft seal (consult factory). F. Reinstall Filter Media. G. Install baffle/deflector or relocate inlet. H. Measure air volume and divide sq. ft. area of Drum into CFM. Contact ibis for Field Technician visit. I. Check power to nozzle fan diverter. Check pneumatic control of diverter. Check physical switching of diverter.

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