

75919 Prairie Oak Dr. Houston TX, 77086 281-893-4774 office 281-893-1027 fax www.psimax2000.com

Atmospheric Degasser Operation, Maintenance, & Technical Manual

Document File: DM-001



Revision Number	Date of Revision	Description of Revision	Revision Author
DRAFT	10/3/13	Draft	Daniel Vasquez
1	11/11/13	Approved copy	Daniel Vasquez
2	01/29/14	Updated drawings	D. Vasquez
3	7/24/14	Added Warranty	D. Vasquez

Company Propriety and Confidential

Table of Contents

- 1.0 SAFETY
- 2.0 WARRANTY
- 3.0 LIFTING PROCEDURE
- 4.0 INSTALLATION PROCEDURE
- 5.0 OPERATION
- 6.0 ROUTINE MAINTENANCE

7.0 SHUT DOWN AND STORAGE

- 7.1 EMERGENCY SHUTDOWN
- 7.2 EXTENDED SHUTDOWN
- 7.3 STORAGE

8.0 TECHNICAL MANUAL CONTENTS

- 8.1 GENERAL DESCRIPTION
- 8.2 GENERAL ARRANGEMENT DRAWING
- 9.0 PARTS LIST
- **10.0 INSPECTION AND TESTS**
- 11.0 CERTIFICATION(S)
- 12.0 ADDITIONAL DRAWINGS, DIAGRAMS, ETC.
- **13.0 CONTACT INFORMATION**

1.0 Safety

General safety rules and warnings

This manual contains important information concerning installation, operation and proper maintenance of the Process Solutions International Atmospheric Degasser. To prevent injury to personnel or equipment damage, this manual should be read by those responsible for the installation and operation of the equipment. In addition, the safety precautions below should be followed at all times, with no exceptions.

TURN OFF. LOCK OUT and TAG OUT the electrical power supply to the unit before working on the electrical system or electrical motors or starters.

- 1. Lift the Degasser only at lift points detailed in this manual and use properly rated slings capable of handling the equipment weight. Look for a buildup of dried solids or stored equipment in or on the equipment that may cause the lift load to exceed those listed in this manual.
- 2. The structure on which the unit is to be installed must be capable of supporting the operational (or wet) weight listed in this manual.
- 3. The unit should only be installed in an area where walkways, lighting, and handrails allow safe access for periodic maintenance.
- 4. Never make weld repairs to the Degasser or attach external loads, like cuttings chutes, to the vibrating or rotating components of the unit.
- 5. Never lay tools or equipment on the Degasser. Be aware that any object that is placed on or falls into the Degasser will be conveyed forward and discharged once the Degasser is placed in service.
- 6. Falling objects discharged from the Degasser can cause injury to persons working on or below the unit.
- 7. Inspect the unit regularly, and replace any damaged or worn component. Use only parts supplied by the original equipment manufacturer.

2.0 Warranty

Warranty Terms and Conditions

The MAX2000[®], MAKDADDY[®], and Vak[®] name are registered trade names of Kelbro, Inc dba Process Solutions International (PSI). Their use is reserved by Kelbro, Inc. dba Process Solutions International (PSI) and applicable laws. It shall not be used without permission and written authorization from Kelbro, Inc. dba Process Solutions International (PSI).

Terms of Sale

Any terms and conditions contained in any purchase order or other form of communication from PSI's customers, which are additional to or different from these terms and conditions, shall be deemed rejected by PSI unless expressly accepted in writing by PSI. In general, no modification, amendment, waiver or other change of any of these terms and conditions or attachments hereto, or of any of PSI's right or remedies thereunder, shall be binding on PSI unless expressly accepted in writing by PSI's authorized officers. No course of dealing, usage of trade or course of performance shall be relevant to explain or supplement any of these terms and conditions. If any document issued by any party hereto is sent by facsimile or another form of electronic document transmission, the parties hereto agree that (a) the copy of any such document printed on the facsimile machine or printer of the recipient thereof is a counterpart original copy thereof and is an "writing", (b) an electronically stored and reproduced copy of any such document shall be deemed to be legally sufficient evidence of the terms of such document for all purposes.

Delivery; Risk of Loss

All sales are F.O.B. PSI's plant or other point of shipment designated by PSI. Shipping dates are estimates only which are not guaranteed and are based upon prompt receipt from Buyer of all necessary shipping and other information. PSI reserves the right to make delivery in installments, all installments to be separately invoice and paid for by Buyer when due per invoice, without regard to subsequent deliveries. Delivery of equipment to a commercial carrier at PSI's plant or other loading pint shall constitute delivery to Buyer, and any risk of loss and further cost and responsibility thereafter for claims, delivery, loss or damage, including, if applicable, placement and storage, shall be borne by Buyer.

When equipment is delivered by PSI's truck, unloading at Buyer's dock shall constitute delivery to Buyer. Claims for shortages or other errors in delivery must be made in writing to PSI within ten (10) days after receipt of shipment and failure to give such notice shall constitute unqualified acceptance and a waiver of all such claims by Buyer. Claims for loss or damage to equipment in transit by common carrier must be made to the carrier and not to PSI. Freight and handling charges by PSI may not reflect actual freight charges prepaid to the carrier by PSI due to incentive discounts earned by PSI based upon PSI's aggregate volume of freight tendered to a carrier or when a carrier must be used which charges a rate which is different than the rate upon which PSI's freight and handling charged an amount approximating the prevailing common carrier rate.

Excusable Delays; Force Majeure

PSI shall not be liable for any ordinary, incidental, or consequential loss or damage as a result of PSI's delay in or failure of delivery or installation due to (i) any cause beyond PSI's reasonable control, (ii) an act of God, act of the Buyer, embargo or other government act, authority, regulation or request, fire, theft, accident, strike, slowdown, or other labor disturbance, war, riot, delay in transportation, or (iii) inability to obtain necessary labor, material, components, or facilities.

Should any of the aforementioned events of force majeure occur, PSI, at its option, may cancel Buyer's order with respect to any undelivered equipment or extend the delivery date for a period equal to the time lost because of delay. Notice of such election shall be given promptly to Buyer. In the event PSI elects to so cancel the order, PSI shall be released of and from all liability for failure to deliver the equipment, including, but not limited to, any and all claims on behalf of Buyer for lost profits, or any other claim of any nature which Buyer might have.

If shipping or progress of the work is delayed or interrupted by Buyer, directly or indirectly, Buyer shall pay PSI for all additional charges resulting therefrom.

Storage

If the equipment is not shipped within fourteen (14) days after notification has been made to Buyer that it is ready for shipping, for any reason beyond PSI's control, including Buyer's failure to give shipping instructions, PSI may store the equipment at Buyer's risk and expense in a warehouse or on PSI's premises, and Buyer shall pay all handling, transportation and storage costs at the prevailing commercial rates promptly following PSI's submission of invoices for such costs.

Warranty Period

PSI warrants the products manufactured under the Kelbro register trade name mentioned above to be free from defects in materials and workmanship and to conform to PSI written specifications for a period of 12 months from the date of manufacture.

Warranty Remedies

If, prior to expiration of the foregoing applicable warranty period, any of such products shall be proved to PSI's satisfaction to be defective or nonconforming, PSI will repair or replace such defective equipment or components thereof, F.O.B. PSI's plant or other destination designated by PSI, or will refund or provide Buyer with a credit in the amount of the purchase price paid therefore by Buyer, at PSI's sole option. Buyer's exclusive remedy and PSI's sole obligation under this warranty shall be limited to such repair or replacement, F.O.B. PSI's plant or other destination designated by PSI, or refund or credit by PSI, and shall be conditioned upon PSI's receiving written notice of any defect within a reasonable period of time (but in no event more than thirty (30) days) after it was discovered or by reasonable care should have been discovered. In no event shall PSI's liability for such defective or nonconforming products exceed the purchase price paid by Buyer therefore.

This warranty does not (i) cover shipping expenses to and from PSI factory or other destination designated by PSI for repair or replacement of defective equipment or any tax, duty, custom, inspection or testing fee, or any other charge of any nature related thereto, nor does it cover the cost of disassembling or removing defective equipment or reassembling, reinstalling, or testing repaired or replaced equipment or finishing the reinstallation thereof, (ii) apply and shall be void with respect to equipment operated in excess of rated capacity or otherwise not in accordance with installation, maintenance, or operating instructions or requirements, to equipment repaired or altered by others than PSI or PSI's authorized service agencies, or to equipment which was subjected to abuse, negligence, misuse, misapplication accident, damages by circumstances beyond PSI's control, to improper installation (if by others than PSI), operation, maintenance or storage, or to other than normal use or service, and (iii) apply to equipment or components not manufactured by or for PSI. With respect to equipment or components not manufactured by PSI, PSI's warranty obligations shall in all respects conform and be limited to the warranty actually extended to PSI by its suppliers, but in no event shall PSI's obligation be greater than those provided under PSI's warranty set forth in this section.

The fore going warranties are in lieu of all other express and implied warranties (except title0, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. No employee, representative, or agent of PSI other than an officer of PSI is authorized to alter or modify any provision of this section or to make any guarantee, warranty, or representation, express or implied, orally or in writing, which is contrary to the foregoing.

Any description of the equipment, whether in writing or made orally by PSI or PSI's agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets or similar material used in connection with Buyer's order are for the sole purpose of identifying the equipment and shall not be construed as an express warranty. Any suggestions by PSI or PSI's agents regarding use, application or suitability of the equipment shall not be construed as an express warranty unless confirmed to be such in writing by PSI's authorized officer.

Consequential Damage Disclaimer

PSI's liability with respect to equipment proved to its satisfaction to be defective within the warranty period shall be limited to repair, replacement or refund as provided hereof, and in no event shall PSI's liability exceed the purchase price of the equipment involved. Kelbro shall not be subject to any other obligations or liabilities, whether arising out of breach of contract, warranty, tort (including negligence) or other theories of law, with respect to equipment sold or services rendered by PSI, or any undertakings, act or omissions relating thereto. Without limiting the generality of the foregoing, PSI specifically disclaims any liability for property or personal injury damages, penalties, special or punitive damages, damages for lost profits or revenues, loss of use of equipment or any associated equipment, cost of capital, cost of substitute products, facilities or services, downtime, shutdown, or slowdown costs, or for any other types of economic loss, and for claims of Buyer's customer for any such damages.

PSI shall not be liable for and disclaims all consequential, incidental and contingent damages whatsoever. Even if the repair or replacement remedy shall be deemed to have failed of its essential purpose under section 2-719 of the uniform commercial code, PSI shall have no liability to Buyer for consequential damages, such as lost profits, lost revenue, damage to other equipment or liability or injury to a third party.

Indemnification by Buyer

Buyer shall indemnify, hold harmless, and defend PSI and PSI's employees and agents from and against any and all damages, liability, claims, losses and expenses (including reasonable attorneys' fees, court costs, and out-of-pocket expenses) arising out of or resulting in any way from claims by customers of Buyer or third parties against PSI alleging a breach of contract or warranty by PSI to the extent that such damages, liability claims, losses and expenses which may be payable by PSI to Buyer pursuant to the and as limited by PSI's warranty and damage obligations as contained hereof so as to effectively limit Kelbro's obligations to customers of Buyer or third parties to those set forth.

Return of Equipment

No equipment or part shall be returned to Kelbro without written authorization and shipping instructions first having been obtained from PSI under the company's Return Policy.

Return Policy:

- Client/Customer requests an RMA from Sales Department
- Sales shall issue an RMA with an assigned number along with the Product Warranty information and a quote for replacement cost.
- Client/Customer issues a Purchase Order to PSI (pending evaluation), with the RMA properly filled in.
- Product is returned back to PSI at Client/Customers expense with all RMA documents for reference. If the product is warrantied, then the freight cost will be credited back.
- An evaluation will be conducted to determine warranty status.
- If product is not returned within 30 days of issued RMA, then an invoice will be issued regardless of warranty status.
- A copy of the evaluation is available upon request.

3.0 Lifting Procedure

Match hoisting/lifting equipment to Degasser weights.

Standard-Pit size......1000 lbs. Deep-Pit size......1200 lbs.

Dimensions of the Standard-Tank and Deep-Tank units are shown below. To lift into a vertical position, attach an appropriate and approved hoist line through the loop in the channel brace. The degasser will hang vertically when lifted at this point.





Standard Tank

Deep Tank

4.0 Installation Procedure

When transporting the degasser it is to be supported at 3 points. Use both brackets and at the bottom of the pump end. The discharge spout of the spray tank should be pointing upwards.

Place alloy chains or other approved lifting slings over the supported areas only as shown. Do not clamp down with the chains, using excessive force. Do not use chains on any unsupported area. Care should be taken; several components are of light gauge material.

Store support pipes and electric cords inside the long trough. Also, you will need to secure the trough to the side of the degasser. ***The discharge trough and any electric cords are purchased as optional components and are not included in the base model units.

FAILURE TO PROPERLY INSTALL, OPERATE AND MAINTAIN DEGASSERS AND/OR COMPONENTS CAN CAUSE SEVERE INJURY.

Adjusting Degasser

Brackets can be bolted in place at six different height positions. Bracket placement determines the depth of the unit in the tank. The series of mounting holes on the riser pipe and pump frame allows for a total adjustment of 15". If there is existing rig framework, that will support the loads, they can also be used to adjust the height.

1. It is recommended that the suction inlet be located at minimum of 2' of the bottom of tank, to prevent solids build up in pump.

2. Position the spray tank so that the discharged fluid will easily use gravity to flow down to the next mud tank/pit.

Foundation/Substructure Requirements

The degasser brackets should rest on the two support pipes that are placed across the top of the tank. It is responsibility of the user to ensure the cross supports will support the load. Pipes or beams are typically used as cross support members.

- 1. For mounting the degasser, put the support pipes under or through the brackets as shown below.
- 2. Secure the support pipes across the tank by placing the end stop against one wall of the tank and sliding the clamp against the opposite wall to the tank. This will prevent a support pipe from rolling. See below for more details. Any extra length of support pipe or beam must be removed, for potential safety concern.



Diagonal Mouting with Support Pipes Through or Under Brackets



Flow Connections

Use a fluid return line back to the degasser pit to prevent the fluid level from being pumped down below the minimum level required for adequate flow. Keep mud level as high as possible above the pump inlets. Adjust the fluid return line so that it maintains mud level in the tank.

Obstruction and installation conditions in the tank may require changing the fluid discharge direction, which means you will rotate the spray tank to a new position. On newly manufactured degassers, the spray tank discharge points can be positioned in the direction as shown below.



The spray tank is assembled onto the riser pipe with 4-bolts, placed through the tank's bottom flange and is secured into the riser pipe flange, below. The rise flange has 16 holes, making it possible to rotate the spray head in 22-1/2 degree increments. Follow these instructions when changing spray tank discharge direction.

- 1. Remove the spray valve from the spray tank by removing the (2) 5/8" bolts and washers, located at each end of the mounting bracket. Save these items for reassembly; the same number of washers must be re-installed when re-assembled.
- 2. Rotate spray tank. It is best to use a ratcheting extension bar. Retain all bolts for reassembly. The spray tank will remain stable, providing unit is level, as it rests upon the riser pipe flange. Rotate spray tank to the desired position. You may use the positioning handles to aid in rotating the spray tank and also align the holes in the spray tank with those of the gasket and riser pipe flange. Looking down through the top of the spray tank, you can use a punch bar to assist with the alignment.
- 3. Replace and tighten the bolts.

- 4. Reinstall the spray valve, using the exact numbers of washers found when disassembled.
- 5. Select length of trough to be used. It must reach from the spray tank discharge spout to the next tank/pit. It has been found that an arrangement of 11 feet worth of trough is typically sufficient to transfer the degassed mud into the next vessel.
- 6. It is recommended that your discharge trough be around 1/4" wider than the discharge port of the spray tank. 5/8-11 x 1-1/2" long HHCS are commonly used to make this connection.

Electrical Installation

- 1. Install the power cord, fitted with the proper terminals through the cord connector of the switchbox.
- 2. Fasten the power cord wires, including ground, to the terminal screws of the switchbox.
- 3. Tighten the cord connector against the power cord.

Turn on power momentarily and check for correct shaft rotation (clock-wise viewed from above). If it is not correct, the qualified licensed electrician should shut off the power at the breaker and lock it out in the generator room. Then disconnect and interchange any two of the three wires of the power cord where the connection is made.

5.0 Operation

Before proceeding, check all fasteners to make sure that they are tight and that all parts are secure prior to continuing. Under no circumstances shall the degasser be operated without an installed belt drive guard.

For maintenance repair, or cleaning which involves tilting the degasser out of the pit, follow approved positive electrical "lock out and tag" procedures.

All wire connections must be secure, protected, and covered.

Turn on the switch; pumping action starts immediately. Within seconds, the fluid column inside the pump frame drops to the pump level and remains so while the unit is running.

- 1. Fluid enters the submerged pump through the spiraled inlets in a whirling motion. This action, enhanced by the inlet impeller, maintains a void around the shaft that prevents the pump from gas locking.
- 2. Fluid is discharged out the pump up the riser pipe to spray the valve, at the center of spray tank, above the mud surface.
- 3. Fluid fans out from the valve in a thin, high velocity sheet, and impacts on the wall of the spray tank.
- 4. Degassing is done as the gas particles are brought to the mud surface by the high impact and turbulence of the thin spray sheet at the wall of the spray tank.
- 5. The degassed fluid collects at the base of the spray tank and flows by gravity out the discharge trough to the next pit.

Start Up

Before turning the unit on, check for the following:

- 1. Complete installation and wiring.
- 2. Power band V-belt in both grooves of pulleys (look through shaft openings in the bottom of belt guard).
- 3. Motor's weight puts proper tension on V-belt. Full weight of motor hangs on motor base pivotpin.
- 4. The pump and motor shafts rotate freely. Turn the switch on momentarily and off again. Watch the pump shaft to see that it rotates up to speed and then spins feely to a halt after turning switch off. If shaft drags or is stuck.



While running

- 1. Check for shaft rotation. It should be turning clockwise when viewed from above. Turn unit on and off, and look at the shaft.
- 2. Fluid should flow continuously out of the discharge trough within seconds after unit is turned on. Downward slope of the trough must be adequate to prevent -fluid back up.
- 3. A straight steady -flow or stream of fluid, without gaps, should fan out from the valve and impact against the wall of the spray tank.
- 4. Make sure that no excessive vibration or noises originating in the unit.

6.0 Routine Maintenance

Use proper lock-out/tag-out precautions when performing maintenance and/or when necessary.

- 1. Run fluid through unit at least once a day to clean out solids build-up in pump, spray valve, and riser pipe. Heavy solids build-up that is not cleaned out can lock the pump. Heavy solids and foreign matter can reduce flow areas and impair the fluid spray out of the valve.
- 2. Clean motor housing and fan cover for proper motor ventilation.

Lubrication

1. Start out greasing new pump shaft bearings after six months of usage. New bearings come greased and sealed to keep out contaminants. Recommended greases are shown below and should be used. The grease plug must be replaced with a clean grease fitting. Hands, grease gun, and fittings must be completely clean when greasing. Pump enough quantity to purge the old grease. If the old grease is discolored and thinned out, reduce the next greasing interval. The next greasing interval can be extended if the old grease is still in good condition.

It is recommended to use Lithium-base grease for the impeller shaft bearings, due to their hydrophobic character.

- Chevron: BRB-2 or SRI #2
- Mobil: Mobilux #2
- Penzoil: Multipurpose Lube #705
- Texaco: Regal AFB #2
- Shell: Alvania #2

Clean optional inlet screen to maintain flow to pump inlet

2. Motor bearings are greased for normal life at the factory.

***READ THE INFORMATION ON THE MOTOR NAMEPLATE. IT IS AN ABSOLUTE TO USE ONLY THE GREASE SPECIFIED BY THE MOTOR MANUFACTURER. ***

CAUTION: THE GREATEST CAUSE OF BEARING FAILURE IS OVER GREASING RATHER THAN UNDER GREASING.

Trouble shooting

Problem	lem Solution		
	1. Disconnect the degasser from the power source and lock it out.		
	2. Remove the guard for access to the pulley.		
	3. Try rotating the pump pulley. If the shaft is completely stuck, continue with these instructions. If the shaft seems to be dragging, see the section for trouble shooting a dragging impeller.		
STUCK PUMP SHAFT CLOGGED	4. Drain the pit, or tilt or lift the degasser above the pit so that the pump casing is safely accessible.		
MATERIAL AND/OR SETTLED BARITE OR SAND IN PUMP	5. Reach through the inlets of the pump frame and feel for any materials clogged around the inlet impeller and the main impeller. If found, try to remove materials through the pump inlets.		
AND/OR IMPELLER.	6. If settled barite is suspected, spray high pressure fluid down through the pump frame tube while working the pulley back and forth to dislodge the solids build up.		
	7. If the above two procedures fail, remove the pump casing and clean it. Also wash out the impeller and inlet impeller.		
	 Reassemble and check for free rotation of the pump shaft. Raise the mud level in the pit. 		
DRAGGING IMPELLER	2. Clean the impeller of any clogs.		
LOW MUD LEVEL IN PIT	3. Check the shaft at impeller for damage or erosion, which could cause the impeller to wobble.		
CLOGGING OF THE IMPELLER.	4. Check impeller alignment with pump frame flange.		
	5. Check impeller to pump frame clearance (1/8").		
MUD IS NOT DEGASSED SURFACE AIR BUBBLES CAUGHT	1. Check the mud weight. Take samples below surface foam in all pits to get a good idea of the problem. Read the mud weight at the shale Degasser, at the degasser, at the degasser discharge, and in the rig pump suction pit. Do not worry about several hundred points of gas showing at the mud logging trailer, for this instrument is very sensitive. The natural error in weighing mud may be 0.1 pounds per gallon and this will not affect the rig pumps. Mud weights may be low at the Degasser because of water or oil from formation. The degasser cannot correct for this.		
IN MUD CUP OR DECREASED FLOW INTO PUMP BECAUSE OF LOW	2. Some muds, especially polymer based muds, may trap air bubbles in the degasser. The mixers in the pit will bring this air to the surface. Check the mud weight in the rig pump suction pit for best readings.		
DEGASSER PIT	3. When the mud level in the degasser pit is low, try to get more return mud from the second pit. Estimate the –flow rate of mud into the degasser by measuring the distance from the surface of the mud to the opening in the pump frame.		

	1. The pump bearings can be flushed with clean grease. If a noisy bearing is greased and the noise continues or increases rapidly over a
	few days, replace the bearing.
BEARINGS ARE NOISY	
	2. The motor bearings are closed on both sides to keep out moisture
BEARINGS ARE	and dirt. Re-greasing flushes the grease reservoir, not bearing itself.
CONTAMINATED WITH	Therefore, when bearings begin to make noise, have a qualified
DIRT OR WORN OUT	licensed repair shop replace them. Replace with the same type
	bearing; do not substitute another type. (It is a good idea to keep a
	spare motor on hand, so the degasser is not shut down while the motor
	beanings are being replaced.)
PULLEYS ARE	1. Check to see that the pulleys are in line. If the pulleys are in line with
DRAGGING IN BELT	each other it will prevent excessive belt and groove wear.
GUARD	
	2. The belt must be in the grooves of both pulleys. If the belt has been
PULLEYS	running in only one groove of one of the pulleys, examine the belt for
OUT OF LINE, BELT	wear, and replace if necessary.
NOT IN GROOVES	
OF BOTH PULLEYS,	3. The belt guard clears the pulleys when it is bolted correctly to the
BELT GUARD NOT	pump frame and the motor is attached correctly. Check to see that
CLEAR OF	both bolts attaching the belt guard to the pump frame are tight and
PULLEYS, OR	that the motor pulley hub is not rubbing the bottom of the belt guard. If
MOTOR ATTACHED	the hub is rubbing, it should be moved up on the motor shaft. The belt
INCORRECTLY	guard may need to be straightened with a hammer and re-welded.

7.0 Shut down and Storage

7.1 Emergency Shutdown

An emergency shutdown may be necessary to clear obstructions or to replace damaged or worn components.

- 1. LOCKOUT/TAGOUT ALL POWER.
- 2. Remove all obstructions and product from the degasser.
- 3. Inspect all components for damage or wear. Check degasser components in accordance with the Maintenance Section of this document.
- 4. Replace all damaged or worn components.
- 5. Turn drive unit by hand to check for alignment and obstructions.
- 6. Restart the degasser in accordance with the Operation Section of this document.

7.2 Extended Shutdown

An extended shutdown may be necessary if the degasser is not in operation for a long period of time.

- 1. LOCKOUT/TAGOUT ALL POWER.
- 2. Remove all obstructions and product from the degasser.
- 3. Inspect all components for damage or wear. Check degasser components in accordance with the Maintenance Section of this document.
- 4. Replace all damaged or worn components.
- 5. Coat all exposed metal surfaces with rust preventative.
- 7. Rotate shaft by hand every week.

NOTE: When operation is to resume, restart degasser in accordance with the Operation Section of this document.

7.3 Storage

Follow these instructions if the degasser is to be shutdown longer than 6 months.

- 1. Protect the degasser from weather, moisture and extreme temperatures. DO NOT use coverings that promote condensation.
- 2. Coat all exposed metal surfaces with rust preventative.
- 3. Rotate the shaft by hand every week. The shafts may sag and permanently deform if not rotated.
- 4. Clean the degasser using a low pressure water source.

Consider storing the Atmospheric degasser upright to prevent any damage to the shaft and/or bearing. If you are unable to, be sure to follow the instructions in number 3 above.

NOTE: When operation is to resume, restart the pump in accordance with the Operation Section of this document

8.0 Technical Manual Contents

8.1 General Description

Since their introduction to the industry, drilling contractors have come to rely upon both Atmospheric and Vacuum Degasser to remove entrained gasses from the drilling mud.

The atmospheric degassers remove trapped gasses from drilling mud by accelerating fluids through a submerged pump impeller and impinging the fluid on a stationary baffle to maximize surface area and thus enabling the gasses to escape into the atmosphere.

The base model Atmospheric Degasser is not supplied with the extractor fan assembly. The extractor fan can be purchased as an additional option, when required.

8.2 General Arrangement Drawing

Deep Tank Assembly







Standard Tank Assembly







9.0 Parts List



Item Number	Description	Quantity
1	BOWL	1
2	RISER PIPE WELDMENT	1
3	IMPELLER HOUSING LOWER	1
4	SHAFT PUMP WELDMENT DEEP TANK	1
5	MOTOR ASSY 460V 60HZ	1
6	BRACE DG-ATM	1
7	SHAFT ASSY DEEP TANK	1
8	BRACKET SUPPORT DG-ATM	2
9	BAFFLE PLATE RISER DG-ATM	1
10	GASKET 6'	1
11	SCREW 5/8-11NC X 2' HHC GR 8	14
12	NUT 5/8-UNC HEX GR8	22
13	WASHER LOCK 5/8 GR8	24
14	SCREW 5/8-11NC X 7' HHC GR8	6
15	GASKET BOWL RISER	14
16	GASKET HOUSING	1
17	NAMEPLATE SERIAL NUMBER	1
18	SCREW DRIVE	4

Deep Tank Shaft Assembly



Item Number	Description	Quantity
1	SHAFT DEEP TANK DEGASSER	1
2	BEARING SHAFT	2
3	IMPELLER UPPER INLET	1
4	IMPELLER LOWER DISCHARGE	1
5	NUT HEX 1-8 GR8	1
6	SHAFT GUARD	1
7	SCREW HHC 5/8-11X7	1
8	WASHER 5/8 FLAT	9
9	LOCK WASHER 5/8	5
10	NUT HEX 5/8-11	5
11	SCREW HHC 5/8-11 X 2 1/2	4
12	KEY 3/16 SQ X 2" X CUT TO FIT	1

Standard Tank Assembly





Item Number	Description	Quantity
1	BOWL	1
2	RISER PIPE WELDMENT	1
3	IMPELLER HOUSING LOWER	1
4	SHAFT PUMP WELDMENT STANDARD TANK	1
5	MOTOR ASSY 460V 60HZ	1
6	BRACE DG-ATM	1
7	SHAFT ASSY STANDARD TANK	1
8	BRACKET SUPPORT DG-ATM	2
9	BAFFLE PLATE RISER DG-ATM	1
10	GASKET 6'	1
11	SCREW 5/8-11NC X 2' HHC GR 8	14
12	NUT 5/8-UNC HEX GR8	22
13	WASHER LOCK 5/8 GR8	24
14	SCREW 5/8-11NC X 7' HHC GR8	6
15	GASKET BOWL RISER	14
16	GASKET HOUSING	1
17	NAMEPLATE SERIAL NUMBER	1
18	SCREW DRIVE	4

Standard Tank Shaft Assembly



Item Number	Description	Quantity
1	SHAFT STANDARD TANK DEGASSER	1
2	BEARING SHAFT	2
3	IMPELLER UPPER INLET	1
4	IMPELLER LOWER DISCHARGE	1
5	NUT HEX 1-8 GR8	1
6	SHAFT GUARD	1
7	SCREW HHC 5/8-11X7	1
8	WASHER 5/8 FLAT	9
9	LOCK WASHER 5/8	5
10	NUT HEX 5/8-11	5
11	SCREW HHC 5/8-11 X 2 1/2	4
12	KEY 3/16 SQ X 2" X CUT TO FIT	1



Item Number	Description	Quantity
1	MOTOR BASE	1
2	CHECK MOTOR SERIAL TAG FOR SIZE	1
3	CABLE ASSEMBLY	1
4	SHEAVE PUMP 10.6-60 HZ	1
5	SHEAVE MOTOR 5.6-60 HZ	1
6	BUSHING PUMP PULLEY	1
7	BUSHING MOTOR PULLEY	1
8	BELT V	1
9	BELT GUARD	1
10	STARTER	1
11	DECAL STARTER	1
12	HEATER	3
13	NUT HEX 3/8 – 16 NYLOCK	8
14	SCREW HHC 3/8 – 16 NYLOCK	8
15	WASHER FLAT 3/8	4
16	WASHER LOCK 3/8	8
17	DECAL "DANGER DISCONNECT"	1
18	SCREW 1/2 - 13 X 1"	2
19	WASHER FLAT 1/2	2
20	WASHER LOCK 1/2	2
21	NUT HEX 1/2 - 13	2
22	SCREW 5/8 – 11 X 1"	2

Cable Assembly



Item Number	Description	Quantity
1	CABLE ARMOR	4
2	CONNECTORS 3/4 XP	2
3	TERMINAL WIRE RING	6
4	SHROUD CABLE GLAND	2

One Year Recommended Spare Parts List

Item Number	Description	Quantity
1	BEARING SHAFT	2
2	IMPELLER UPPER INLET	1
3	IMPELLER LOWER DISCHARGE	1
4	NUT HEX 1-8 GR8	1
5	SCREW HHC 5/8 – 11 X 7	1
6	WASHER FLAT 5/8	4
7	WASHER LOCK 5/8	2
8	NUT HEX 5/8 – 11	2
9	SCREW HHC 5/8 – 11 X 2 1/2	4
10	KEY 3/16 SQ X 2" X CUT TO FIT	1
11	GASKET 6'	2
12	SCREW 5/8 – 11NC X 2' HHC GR8	16
13	NUT HEX 5/8 – UNC	3
14	WASHER LOCK 5/8 GR8	3
15	SCREW 5/8 – 11NC X 7' HHC GR8	3
16	GASKET BOWL RISER	2
17	GASKET HOUSING	2
18	MOTOR-CHECK MOTOR SERIAL TAGS FOR CORRECT	1
19	CABLE ASSEMBLY	1
20	BELT V	2
21	HEATER	9

10.0 Inspection and Tests

SEE ATTACHED (if applicable)

11.0 Certification(s)

SEE ATTACHED (if applicable)

12.0 Additional drawings, diagrams, etc.

SEE ATTACHED (if applicable)

13.0 Contact Information

Replacement parts for PSI SUPPLIED equipment can be ordered from Process Solutions International or any of their agents, worldwide. Please include the model number if possible.

To order parts or to receive technical support via telephone, contact Process Solutions International using the information listed below.

Process Solutions International A Division of Kelbro, Inc. 7519 Prairie Oak Drive Houston, TX 77086 (281) 893-4774; FAX (281) 893-1027