ZERO GRAVITY
FILTERS
Brighton, MI

MAGNETIC SEPARATOR
TWENTY-SIX CORE
Operating and Maintenance Manual

Maggie
26-Core

TABLE OF CONTENTS

Version 1.1
Reference: Twelve Core
June 2008

Standard and Limited Warranty

Seller warrants that title to goods sold hereunder is unencumbered at time of sale. All other warranties are expressly disclaimed including, but not limited to, merchantability, fitness for purpose, and all other warranties, express or implied. Seller expressly disclaims any liability for damages, actual, consequential, incidental or otherwise, for injury to property of buyer, its agent or third persons in custody of goods sold hereunder. Seller may determine to repair or replace any defects in goods of its own manufacture, which arise from defective materials or workmanship during the twelve (12) months, following the date of tender of delivery to the end purchaser if buyer gives seller timely written notice with a description of the basis for claim. Seller may refund amounts paid by buyer without other liability to buyer. The buyer acknowledges and agrees that the limitations of warranty, liability and remedy are fair and not unconscionable and the sole and exclusive remedies afforded at law with all other statutory and common law remedies being hereby waived. A claim under the warranty by the buyer for repair or replacement of goods shall be timely filed with the seller in accordance with the written procedures of the seller in effect at the time of any such claim.

Maggie
26-Core

INSTALLATION GUIDE

POWER SUPPLY

The magnetic separator requires 110 VAC, single-phase supply at 5 Amps. A DIN plug is provided on the base of the 'ASCO' Timer/Air Solenoid valve. The plug is to be wired according to local electrical regulations.

FLOWRATE

Maximum flowrate of 250 gpm when used with water or water based machine coolants. As the viscosity of the fluid increases the flow rate through the Maggie will decrease.

PNEUMATIC CONNECTIONS

A minimum of 80 psi, clean and dry compressed air supply should be made to the ¼" push in connector labeled # 1 on the air solenoid valve, connections 3 and 5 are exhaust and are fitted with bronze air snubbers, these are not to be removed or tampered with.

PIPE CONNECTIONS

Maggie must be mounted in a vertical position with the two butterfly valves at the bottom.

The Inlet to Maggie is a 3" NPT male connection at the top of Maggie.

The Outlet connection is a 3" NPT flange situated at a right angle to Maggie.

The Purge connection is the remaining 1 ½" NPT flange on the bottom of Maggie. The purge connection should be plumbed to a suitable drain or tank capable of handling the system's pressure. **To avoid excessive pressure drops, which could impair the purge effectiveness, do not run the purge line more than 10 feet with the ID of the line no less than 1 1/4".**

MAGGIE SUPPORT

Maggie should be supported by the body mounting brackets.

DIMENSIONS AND WEIGHT

Weight: Dry = 306 lbs
Wet = 340 lbs

OPERATING REQUIREMENTS

Maggie requires a minimum system pressure of 25 psi on the inlet side of the separator at time of purge

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REGULATING VALVE

A regulating valve must be fitted on the discharge of Maggie, enabling the user to balance the separator's flow rate and pressure.

ISOLATING VALVES

It is recommended that inlet and discharge isolating valves be fitted to Maggie for ease of maintenance.

INLET STRAINER

A coarse strainer must be fitted to the inlet side of the magnetic separator if particulates are greater than ¼" in size.

Maggie
26-Core

OPERATING MANUAL

Description

Maggie consists of an 10” schedule 10 stainless steel body between two 10” flanges. Inside the 10” body supported by the two end flanges are 26 x 1” tubes or magnetic shuttle assemblies. The operation of the purge sequence is controlled by a small timer situated on an air solenoid valve. This control timer operates the frequency at which the purge takes place in minutes and also the duration of the purge in seconds.

Operating Parameters

Power Supply:	110 VAC, 5 Amp supply
Maximum Operating Pressure:	100 psi
Static Test Pressure:	150 psi
Maximum Operating Temperature:	150º F
Flow Rate:	**maximum of 250 gpm**
Minimum Air Pressure:	80 psi, self lubricated
Maximum Air Pressure:	100 psi

Materials Composition

Separator Body	Stainless steel
Flanges	Stainless steel
Butterfly Valves	3” and 1 ½” stainless steel disc with Viton seats operated by a double acting pneumatic actuator.
Pneumatic Actuator:	Double acting, developing 156 Lb Ins at 80 psi.
‘O’ Rings:	Viton throughout.

1. COMPONENTS

1.1 Magnetic Separator

Manufactured from stainless steel, with an 10” body, and 26 magnetic shuttle assemblies. Maggie has a 3” inlet and Outlet connection and a 1 ½” purge connection.

1.2 Butterfly Valves

Fitted on the outlet and purge connections of Maggie are pneumatically operated butterfly valves.

1.3 MAGNETS/POLES

The magnet/pole combinations are contained in a 1” diameter stainless steel tube. Each magnetic core generates 9,000 Gauss on the tubes surface.

1.4 CONTROLS

Maggie’s controls are provided by a small electronic timer. This timer operates an air solenoid valve fitted to the outlet pneumatic actuator and shuttles the magnets during purge.

2.0 OPERATION GUIDELINES

Maggie must not be put on line without POWER and AIR. To do so, will result in malfunction of the unit, which could result in the unit being returned to the factory for complete strip down and reassembly.

Before operating the magnetic separator, ensure that it has been installed per the INSTALLATION GUIDE provided. Failure to do so could affect the separator's performance and void the separator's warranty.

2.1 MAGGIE OPERATION

In normal mode fluid enters Maggie from the top 3" port and exits via the 3" port at the bottom side connection. Metal fines are attracted to the outside of the twelve 1" tubes where the magnets are positioned at the bottom half of the pod, below the internal baffle plate.

On a timed interval (factory set at 10 minutes) the control timer will energize the air solenoid valve. This will allow pneumatic air to first, shut the 3" outlet valve and open the purge 1 ½" valve, diverting the pods outlet to the purge port situated at the bottom of the separator. Second, the magnets are now driven upwards inside the 1" tubes above the internal baffle plate assembly. This causes the metal fines to fall off the outside of the 1" tubes and be washed away out the purge port. This position is held by the control timer for approximately 3 – 5 seconds depending on system pressure.

When the purge time has expired, the air solenoid valve is then de-energized and the magnets are driven down below the baffle plate and the 1 ½" purge valve is closed and the outlet valve is opened. The magnetic debris trapped on the magnets cannot travel upwards due to the baffle plate and the flow of liquid from the top.

2.2 PURGE DURATION TIMER

The purge duration is the length of time that the purge valve will remain in the purge position. The purge duration timer is the timer situated on the control timer and is graduated in seconds. This is how adjustments are made to achieve optimum purge efficiency. The purge duration can be set as low as 5 seconds without hindering purge efficiency. The longer the duration, the longer the magnetic separator remains in purge and the longer flow is diverted out the purge port.

The objective when setting the purge duration is to find the optimum balance between low purge volume and fines removed. For pressures lower than 25 psi the purge time will need to be between 5–8 seconds. For higher pressures the time can be as low as 2-3 seconds.

To alter the backwash duration, simply turn the knob (graduated in seconds) and then press the test button,

2.3 PURGE INTERVAL TIMER

The purge of Maggie is operated normally every 10 minutes. This ensures that the purge sequence will clean off the fines collected on the steel tube containing the magnets. For systems with a light load this time could be greater and for systems with a heavy load the time may be shorter.

To alter the interval time, simply turn the knob (graduated in minutes) and then press the test button.

NOTE: If the interval time is too short for the load of the system, there is the possibility that the outside of the metal tubes containing the magnets will be overburdened and the clamping force of the magnets to the tube will prevent the magnets from shuttling. When making adjustments to either timer ensure that the magnets move. To check for movement, the magnets will make a thud like sound when they have reached the end of their travel in either direction.

Note: Adjustments to both timers must be done when on line and not in purge mode. Therefore, it is advisable to initiate a manual purge using the TEST button on the control timer.

2.4 CONTROL TIMER

The control timer is situated on the air solenoid valve mounted to the pneumatic actuator. This timer has two functions as described above. Power supply for the timer is 120 VAC. The timer has two ranges, which are adjustable. One is in minutes (Interval Timer) and the other in seconds (Duration Timer). There is also a TEST button which is used to manually purge the Magnetic Separator.

There are also two visual lamp indicators on the timer. The OFF lamp indicates that there is power to the timer and the ON lamp indicates that the duration timer (Purge) is in operation.

3.0 MAGGIE START-UP

Once Maggie has been properly installed, the separator may now be started by following the procedure below.

1. Ensure that there is power and air to Maggie.
2. With the inlet valve to the separator closed, start any pumps serving the system. Slowly open the inlet Isolating valve. Check and correct for any possible leaks.
3. The discharge-isolating valve may now be slowly opened and the regulating valve adjusted to give the desired flow rate and pressure combination.
4. A final, on-line purge should be performed. Manually initiate a purge by depressing the TEST button on the control timer and check for any leaks.
5. During the purge process, visually notice the indicators on each actuator rotate and listen for the shuttling of the magnets.

4.0 RECOMMENDED MAINTENANCE

The only recommended maintenance required is to verify operation of Maggie on a regular basis.

5.0 FAULT FINDING

Listed below is a guide to the action required for the following faults.

INDICATION	REASON	ACTION
Timer OFF lamp not illuminated.	Loss of power. Malfunction of timer.	Restore power Immediately take separator off line and replace timer. Upon remedial action, carry out a manual purge and check for correct operation of purge sequence.
Timer ON lamp illuminated but three-way valve or magnets do not move.	Loss of pneumatic air. Malfunction of timer.	Restore air supply. Immediately take separator off line and replace timer. Upon remedial action, carry out a manual purge and check for correct operation of purge sequence.
Pneumatic actuator does not operate	Loss of pneumatic air pressure Pneumatic air pressure to low. Actuator malfunction.	Immediately take separator off line Restore air pressure or increase air pressure. Replace actuator. Upon remedial action, carry out a manual purge and check for correct operation of purge sequence.
Magnets doe not move.	Loss of air pressure Magnetic tube bound with excessive fines Loss of power to timer. Malfunction of timer	Immediately take separator off line. Restore air and check for correct air pressure of 80 psi or more. Purge interval to long. Shorten time. Purge duration to short. Lengthen time. Restore power or replace timer.

6.0 Spare Parts

Recommended spare parts for Maggie are as follows. Please call Zero Gravity Filters for pricing.

Part Description	Part Number
MAGGIE	
¾" Pneumatically Operated 3-Way Valve, Bronze Wetted Parts	7511-003
¾" Pneumatically Operated 3-Way Valve, Stainless Steel Wetted Parts	7511-004
1" Pneumatically Operated 3-Way Valve, Bronze Wetted Parts	7510-001
1" Pneumatically Operated 3-Way Valve, Stainless Steel Wetted Parts	7510-002
1.5" Butterfly Valve/Actuator with Viton Seals	4200-001
1.5" Butterfly Valve with Viton Seals	4201-000
1.5" Butterfly Valve/Actuator with Viton Seals and control timer package	4220-000
2" Butterfly Valve/Actuator with Viton Seals	4202-000
2" Butterfly Valve with Viton Seals	4203-000
3" Butterfly Valve/Actuator with Viton Seals	4204-000
3" Butterfly Valve with Viton Seals	4205-000
Direct Mount Air Solenoid Valve	4210-001
Timer Kit	4211-001
Control Timer Package including direct mount solenoid valve, electronic timer, timer kit, and custom air manifold block	4215-001