



**Encyclon Inc.**

Cyclonic Filtration Systems

**INSTALLATION OPERATION  
AND  
MAINTENANCE INSTRUCTIONS  
FOR  
ENCYCLON FILTRATION SYSTEMS**

**MODEL NO. 651SP-MWTT**

**SERIAL NO. 20347**

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PRESSURE WASH SECONDARY FILTER	

## PRE-TEXT & WARNINGS

In order that this ENCYCLON filtration system may give continuous, satisfactory and safe service it is necessary that the filter be properly installed, operated and maintained. Please review this instruction book thoroughly before installation and operation of the filter.

### WARNINGS

Caution is advised when installing this system. The hoses and piping should never be used for lifting purposes.

The system should be plugged into a 120V / 1 / 60 Hz minimum 20 Amp GFCI receptacle.

DO NOT service the system while in operation.

DO NOT place hands in front of pump suction port while the system is running.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY  
RESULT IN SERIOUS PERSONAL SHOCK, INJURY  
OR DEATH.

## ENCYCLON SYSTEM DESCRIPTION

The ENCYCLON filtration system continuously cleans and filters wash water without using filter media to provide clean water for your application.

The ENCYCLON hydrocyclone is the core of a continuous filtration system for water applications. The cyclone removes metallic and non-metallic particles as small as 5 microns with a specific gravity greater than 1.5. Through continuous filtration and aeration of the water by the cyclones, bacteria growth is retarded, thus preventing the water from becoming rancid.

## Here's How Cyclonic Filtration Works

Dirty liquid enters the cyclone at the inlet orifice (1) of the cyclonic chamber (3). The shape and tangential location of the orifice develop a downward, spiraling flow of the liquid. This is called the primary whirl (4) which follows the chamber walls downward, developing centrifugal force of up to 7500 times that of gravity.

This same force spins out the solid particles to 5 microns, or .00019" diameter from the liquid. The solid particles (often referred to as swarf) strike the wall and slide down to the discharge orifice (7).

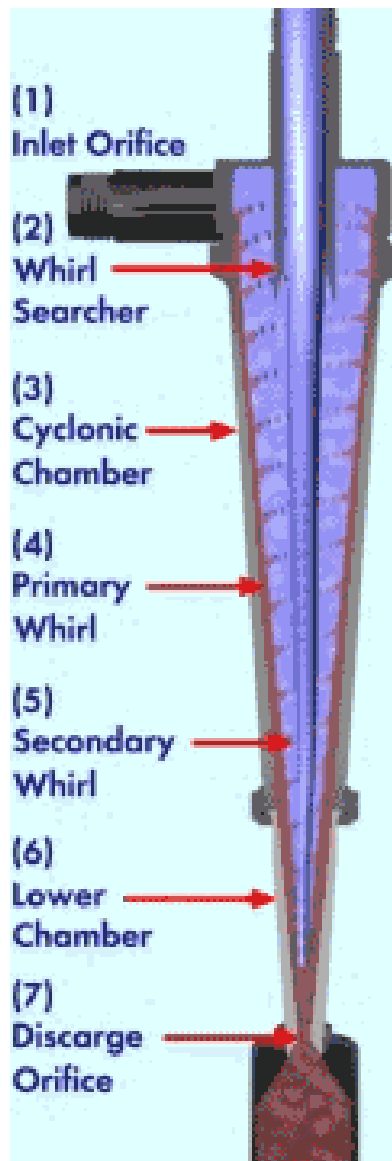
A throttling effect in the lower cyclonic chamber (6) reverses the descent of the liquid but not the rotation. This forms the secondary whirl (5), a rising, spiraling flow of cleaned liquid that passes up through the primary whirl to the whirl searcher (2).

The diameter of the whirl searcher is smaller than the secondary whirl, and the whirl searcher accepts only the center of the upward, secondary whirl flow.

The outside portion of the secondary whirl (containing impurities missed by the primary whirl) is diverted back to the primary whirl for further cleansing. This double cleansing action is significant to the efficiency of the Encyclon Cyclonic Filtration Systems.

Liquid that passes through the whirl searcher is then piped out to the clean water storage tank or can be directly used with 5 micron filtration with 98% efficiency.

There are no filter media to clog or replace. Encyclon aerates water to check anaerobic bacterial growth.



## START-UP PROCEDURE

1. Locate the ENCYCLON system as close as possible to the below grade sump.
2. Fill the "Clean Tank" (Front) first, then the "Dirty Tank" (Rear) and then the "Swarf Container" with clean water up to the overflow fittings.
3. Prime both pumps by removing the plugs on the impeller housings. Open 1-1/2" Ball Valve leading to the Cyclone Pump. Open 1" Ball Valve leading to the Clean Pump. DO NOT open 1" Ball valves attached to the drain of each tank as these are only used for drainage of the tanks.
4. Attach the supplied 1" hose to the 1" fitting on top of the "Dirty Tank" and the other end to the below grade "Sump Pump" supplied by others.
5. The Dirty Tank 2" overflow hose, and the 1-1/2" overflow hose from the Swarf Container should be directed towards the wash pad or below grade sump.
6. Make sure the "ON / OFF" rotary control for both pumps is in the "OFF" position. Plug shore cord into a minimum 120 Volt / 1 / 60 Hz, 20 Amp outlet.
7. Turn Cyclone Pump "ON", Turn Clean Pump "ON" using the rotary switch. The Clean Pump has a separate ON/OFF rocker switch which is in the "ON" position from the factory. The Clean Pump will not function without the Cyclone pump running.
8. Connect pressure washer to hose bib and open valve.

## SYSTEM OPERATION

1. Both tanks and the swarf container should be filled up to the overflow fittings.
2. Make sure the below grade sump is filled up to the height of the return from the wash pad. Connect the Sump Pump to the supplied 1" hose, and then connect the other end to the 1" fitting on top of the dirty tank.
3. Connect the power washer hose to the hose bib on the trailer and open the valve.
4. The ENCYCLON filter system is now ready to operate. During the wash operation, the ENCYCLON system should be run continuously and can be run after the wash operation is shut down if further filtration is desired or required.
5. Turn "ON /OFF" control to "ON" position for the Cyclone Pump. Inlet pressure to the cyclone should be 25 – 40 P.S.I. and the outlet pressure should be less than 10 P.S.I.
6. When mud appears on the surface of the swarf container, it must be emptied to prevent swarf from re-entering the below grade sump.
7. Keep water levels in all tanks up throughout the washing operation.
8. Cyclone Pump can run continuous as it is set up for closed loop operation, and the Clean Pump can run continuous as a pressure switch is used.
9. Make sure the Sump Pump does not send more liquid to the Dirty Tank than 20 GPM. This can be controlled with a ball valve on the Sump Pump. The Dirty Tank has an overflow to return excess water back to the sump.
10. The system will have a running water level of approximately 120 gallons in the Clean Tank and a running level in the Dirty Tank of approximately 110 gallons. The 2" overflow line should be directed back to the sump.
11. If the pressure washer is pulsing purge the secondary filter by opening the red valve for a few seconds to clear it.

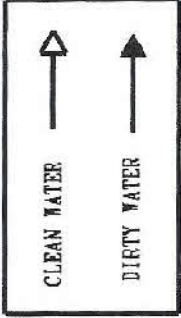
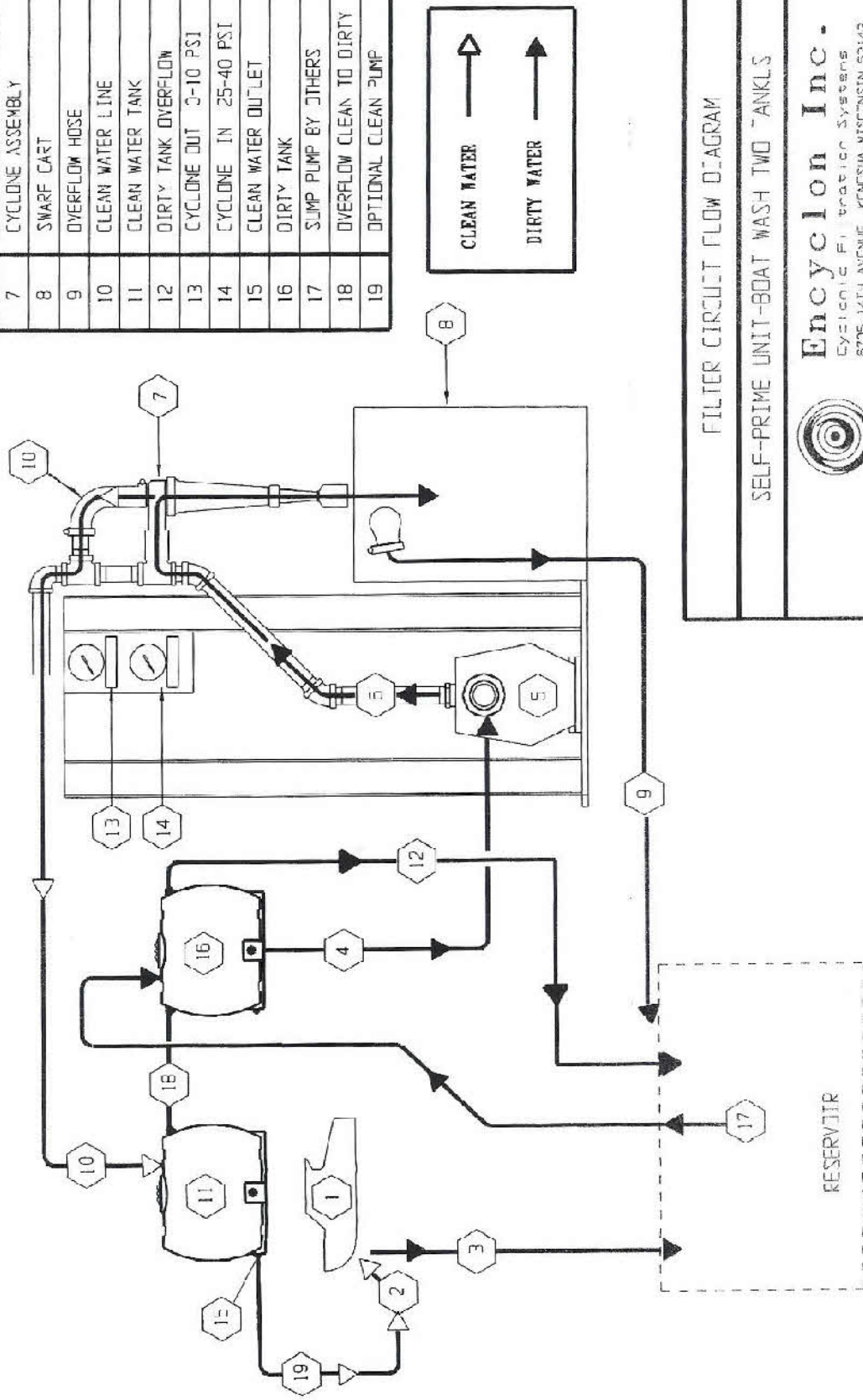
NOTE: Cyclone pump must be ON before the clean pump can be turned ON. Finally the pressure washer can be turned ON.

## TROUBLESHOOTING & MAINTENANCE

Normally the ENCYCLON system needs no maintenance. However, there are some things to watch for. Most problems can be detected by monitoring the pressure gauges mounted on the cyclone manifold assembly.

1. Low "Cyclone In" pressure below 25 P.S.I. gauge
  - A. Disassemble and check for obstruction in suction line from the dirty tank to the pump.
  - B. Disassemble and check for obstructions in pump casing and impeller.
  - C. Disassemble and check for obstructions in pressure line.
2. High "Cyclone Out" pressure above 10 P.S.I. gauge
  - A. Check for obstruction in the piping from the cyclone to the clean tank.
  - B. Check for clogged cyclone assembly.
3. Clogging of nozzles
  - A. Stop pump motor and unscrew the cap nut that secures the ceramic nozzle.
  - B. The cleaning of the nozzle and the conical part of the cyclone is done with a wire of about 1/8 inch in diameter rounded off at the end, so that there is no damage done to the inside cone surface.
  - C. Reassemble nozzle after cleaning by reversing above step.
4. Clean pump surging
  - A. Purge the secondary filter by opening the red valve while the clean pump is running for a few seconds to clear the filter.

SYMBOL	DESCRIPTION	PART NO.
1	BOAT	
2	PRESSURE WASHER	
3	DIRTY WATER RETURN	
4	SUCTION INLET	
5	SELF-PRIMING PUMP	
6	PRESSURE LINE	
7	CYCLONE ASSEMBLY	PAGE 10
8	SWARE CART	
9	OVERFLOW HOSE	
10	CLEAN WATER LINE	
11	CLEAN WATER TANK	
12	DIRTY TANK OVERFLOW	
13	CYCLONE OUT 0-10 PSI	
14	CYCLONE IN 25-40 PSI	
15	CLEAN WATER OUTLET	
16	DIRTY TANK	
17	SUMP PUMP BY OTHERS	
18	OVERFLOW CLEAN TO DIRTY	
19	OPTIONAL CLEAN PUMP	



FILTER CIRCUIT FLOW DIAGRAM

SELF-PRIME UNIT-BOAT WASH TWO TANKLS

**Encyclon Inc.**  
 Cyclonic Filtration Systems  
 6735 14TH AVENUE KENOSHA, WISCONSIN 53143



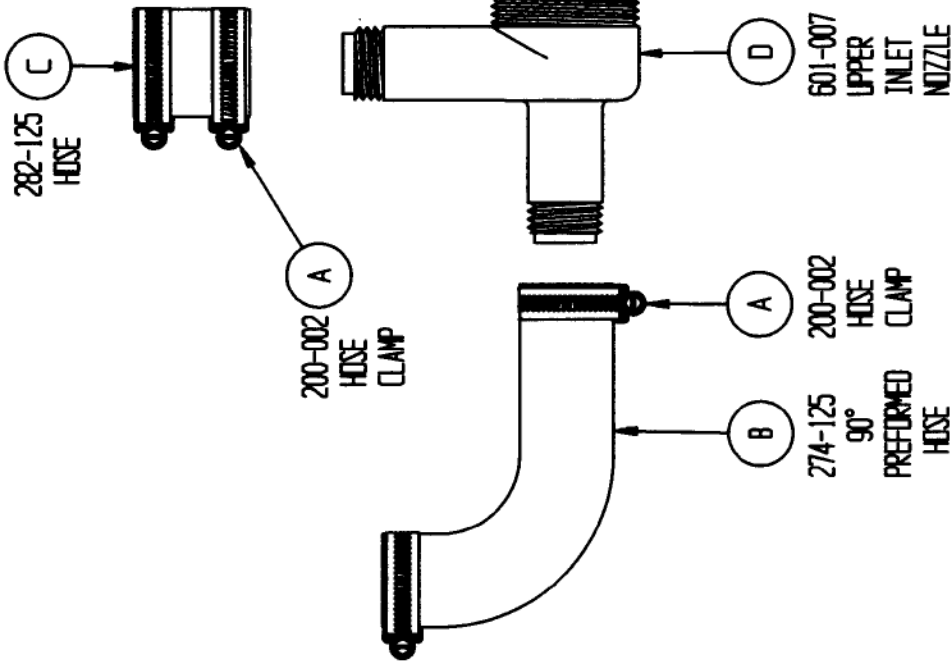
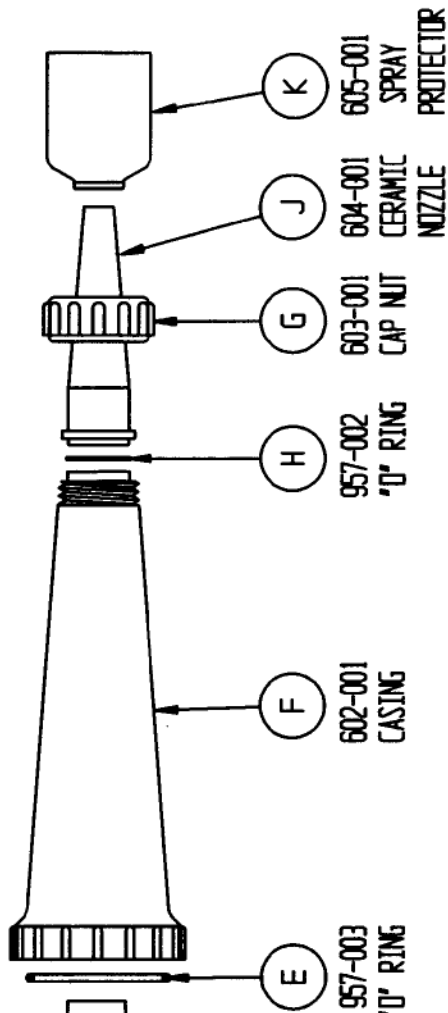
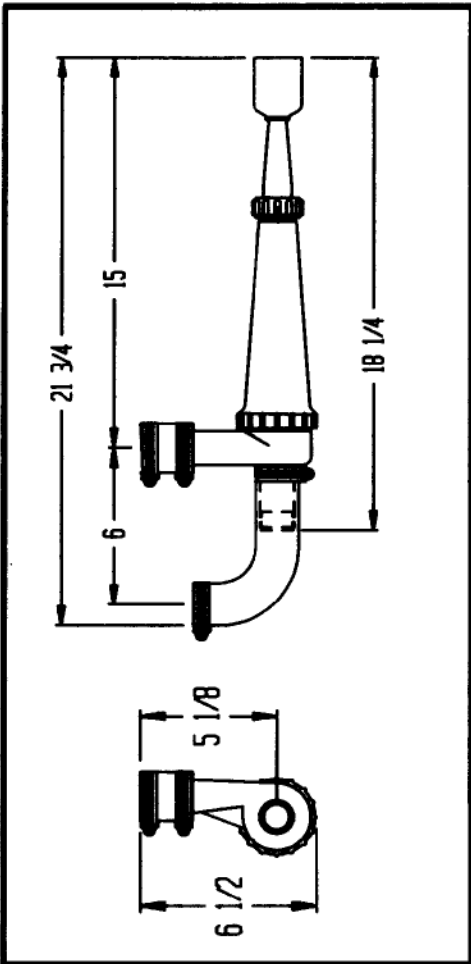
DATE	DRAWN BY	FLOT SCALE	UMG. NO.
08/30/10	JACKL	.083	S10 SPBWT

## RECOMMENDED REPAIR PARTS

When ordering repair parts the following should be given to assure delivery of proper parts for your filter system.

1. Model No.:
2. Serial No.:
3. Part No.:
4. Quantity:
5. Description:
6. Send Order To:      Encyclon, Inc.  
6705 14<sup>th</sup> Avenue  
Kenosha, WI 5314  
800-767-3551  
262-657-7435 – Fax

<u>Part No.</u>	<u>Qty.</u>	<u>Description</u>	<u>Page</u>
650-023	1	Pressure Gauge 0-30	N/A
650-024	1	Pressure Gauge 0-60	N/A
274-125	1	90 degree Hose	10
200-002	4	Hose Clamp	10
601-001	1	Inlet Nozzle	10
957-003	1	2-1/2" O' Ring	10
602-001	1	Cone Shaped Casing	10
957-002	1	1" O' Ring	10
603-001	1	Cap Nut	10
604-001	1	Ceramic Nozzle	10
605-001	1	Spray Protector	10
282-125	1	Straight Hose	10
800-117	1	Filter Pump / Gusher 2 H.P.	N/A
RH30425	1	Pump Mechanical Seal	N/A
61051-EPDM	1	Pump Housing Gasket	N/A
800-123	1	Clean Pump – "WEL-BILT"	N/A



**ORDERING REPLACEMENT PARTS**

PARTS D, E, F, G, H, J, & K ARE AVAILABLE IN ASSEMBLY 606-001 OR CAN BE ORDERED SEPARATELY

PARTS A, B & C MUST BE ORDERED SEPARATELY

**Encyclon 5 MICRON PURIFIER MODEL 65 ASSEMBLY**

**TYPE 65 ASSEMBLY COMPONENTS**



**Encyclon Inc.**

Cyclonic Filtration Systems

6705-14TH AVENUE KENOSHA, WISCONSIN 53143

DATE	DRAWN BY	SCALE	DWG. NO.
8/02/96	JACKL	NONE	S-13A