

Maintenance of the Hallett 1000

Introduction

This document describes the routine maintenance of the Hallett 1000 and is supplemental to the Instruction Manual GH44. The Instruction Manual should be thoroughly read first as it contains important safety information. The Hallett 1000 should be installed in compliance with all applicable federal, state/provincial, and local regulations. The maintenance is divided into weekly, monthly, and annual activities and can be modified if the unit is operating on a seasonal basis.

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Weekly Activities

Some Hallett 1000 installations may be fully monitored with data logging capabilities and telemetry for operator notification. For sites with no central controller, monitoring the performance of the system can be combined with maintenance activities.

First Week –After commissioning a new system, it is advisable to perform the following tasks:

Inspect piping for leaks particularly piping overhead of the Hallett.

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History for any incidents such as warnings or alarms
- Review the System Info screens for Total Starts (of the lamp) and Power Ups (of the unit) – this information can reveal excessive lamp cycling or unreliable input power
- Confirm PCB fan and UV fan are both operational
- Confirm purge valve is working and purge water flows to drain
- Confirm shutoff valve (if installed) stops the water flow when valve is deenergized

Weekly – For systems that are monitored, there are no weekly requirements.

For unmonitored systems, perform the following tasks every week for the first month of operation:

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History for any incidents such as warnings or alarms
- Review the System Info screens for Total Starts (of the lamp) and Power Ups (of the unit) – this information can reveal excessive lamp cycling or unreliable input power

Monthly Activities

Some activities may depend on the regulation requirements.

First Month – After the first month of operation, it is advisable to perform the following tasks:

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History for any incidents such as warnings or alarms
- Review the System Info screens for Total Starts (of the lamp) and Power Ups (of the unit) – this information can reveal excessive lamp cycling or unreliable input power
- Inspect cleanliness of air filter clean or replace if necessary. A dirty air filter will warrant monthly maintenance.
- Inspect the inside of the UV chamber for dust. This includes the UV Lamps, the
 outside of the quartz sleeves, the reflectors and the photodiodes of the UV
 sensors. Wipe off any dust with a clean, soft cloth or paper towel. Rubbing
 alcohol can be used on these surfaces.
- Inspect inside of quartz sleeve for cleanliness. If there is any sign of fouling in the first month, confirm operation of the wiper and purge valve. Lowering the purge valve setpoint may be required.

- Inspect the surfaces of the reflectors. If there is any sign of diminished surfaces, examine the room for exposure to chemicals. Remove any corrosive substances or increase ventilation.
- Confirm shutoff valve (if installed) stops the water flow when valve is deenergized
- If required, perform UV sensor reference check see document GH72.
- If required, perform Reflectance Check see document GH100.

Every 4 Months – After every four months of operation, perform the following tasks:

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History.
- Inspect cleanliness of air filter.
- Inspect the inside of the UV chamber for dust.
- Inspect inside of quartz sleeve for cleanliness.
- Inspect the surfaces of the reflectors.
- Confirm PCB fan and UV fan are both operational
- Confirm shutoff valve (if installed) stops the water flow when valve is deenergized

Every 16 Months – After every sixteen months of operation, perform the following tasks:

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History.
- Review the System Info screens for Total Starts (of the lamp) and Power Ups (of the unit).
- Replace UV Lamps (both lamps must be replaced). Reset Lamp Lifetime counter.
- Inspect cleanliness of air filter.
- Inspect the inside of the UV chamber for dust.
- Inspect inside of quartz sleeve for cleanliness.
- Inspect the surfaces of the reflectors.
- Inspect the pcb/ballast chamber for dust. Clean off any accumulated dust.
- Confirm PCB fan and UV fan are both operational
- Confirm shutoff valve (if installed) stops the water flow when valve is deenergized
- Perform UV sensor reference check see document GH72.
- Perform Reflectance Check see document GH100.

Annual Activities

Since the UV lamp lifetime for the Hallett 1000 is 16 months, it is more practical to perform the majority of the necessary maintenance when the UV lamps require replacement. However, if the unit is not operating continuously (batch process), or if used in a seasonal application, the maintenance tasks should be performed on an annual basis.

Every year – After every year of operation, perform the following tasks:

- Review the main operational parameters such as UV Dose, UVI, and UVT.
- Review the Message History.
- Review the System Info screens for Total Starts (of the lamp) and Power Ups (of the unit).
- Inspect cleanliness of air filter.
- Inspect the inside of the UV chamber for dust.
- Inspect inside of quartz sleeve for cleanliness.
- Inspect the surfaces of the reflectors.
- Inspect the pcb/ballast chamber for dust. Clean off any accumulated dust.
- Confirm PCB fan and UV fan are both operational
- Confirm shutoff valve (if installed) stops the water flow when valve is deenergized
- Perform UV sensor reference check see document GH72.
- Perform Reflectance Check see document GH100.

Every 5 years – After every five years of operation, perform the following tasks:

- Replace the quartz sleeve including quartz seals.
- Clean the automatic quartz cleaning device (wiper assembly). Remove any build up of scale or minerals.
- Replace the seals within the top manifold for the wiper adapter.
- Replace the O rings within the piping adapters.
- Replace UV sensor if it fails to meet the reference check.

Log Sheets

Suggested log sheet templates have been provided on the following pages.

First Week Log Sheet

Date	Location	UV Dose	
Model #	Operator Name	UVI	
Serial #	Unit Status	UVT	

Lamp Life Rema	aining	Max Flow	Real-time clock correct? Y / N
PCB Temp.	Sys Temp.	Water Temp.	. Lamp Temp.
Firmware Ver.	Total Starts	Power ups	Life-time Cnt
Left Lamp	Left Water	Right Lamp	Right Water

#	Task Description	Performed	Comments
1	Inspect piping for Leaks		
2	Review/record operational parameters		
3	Review the Message History		
4	Confirm PCB Fan Operating		
5	Confirm UV Fan Operating		
6	Confirm Purge System is working		
7	Confirm Shutoff Valve Opens & Closes		

Notes:				

Weekly Log Sheet

Date	Location	UV Dose
Model #	Operator Name	UVI
Serial #	Unit Status	UVT

Lamp Life Remaining	Max F	low	Real-time clock correct? Y / N
PCB Temp.	Sys Temp.	Water Temp.	Lamp Temp.
Firmware Ver.	Total Starts	Power ups	Life-time Cnt
Left Lamp	Left Water	Right Lamp	Right Water

#	Task Description	Performed	Comments
1	Review/record operational parameters		
2	Review the Message History		

Notes:				
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First Month Log Sheet

Date	Location	UV Dose	
Model #	Operator Name	UVI	
Serial #	Unit Status	UVT	

Lamp Life Rema	aining	Max Flow	Real-time clock correct? Y / N
PCB Temp.	Sys Temp.	Water Temp.	. Lamp Temp.
Firmware Ver.	Total Starts	Power ups	Life-time Cnt
Left Lamp	Left Water	Right Lamp	Right Water

#	Task Description	Performed	Comments
1	Review/record operational parameters		
2	Review the Message History		
3	Inspect Air Filter		
4	Inspect Inside of UV Chamber		
5	Inspect Inside of Quartz Sleeve		
6	Inspect Reflectors		
7	Confirm Shutoff Valve Opens & Closes		
8	Perform UV Sensor Ref. Check		
9	Perform Reflectance Check		

Notes:			

Every 4 Months Log Sheet

Date	Location	UV Dose
Model #	Operator Name	UVI
Serial #	Unit Status	UVT

Lamp Life Rema	aining	Max Flow	Real-time clock correct? Y / N
PCB Temp.	Sys Temp.	Water Temp.	Lamp Temp.
Firmware Ver.	Total Starts	Power ups	Life-time Cnt
Left Lamp	Left Water	Right Lamp	Right Water

#	Task Description	Performed	Comments
1	Review/record operational parameters		
2	Review the Message History		
3	Inspect Air Filter		
4	Inspect Inside of UV Chamber		
5	Inspect Inside of Quartz Sleeve		
6	Inspect Reflectors		
7	Confirm PCB Fan Operating		
8	Confirm UV Fan Operating		
9	Confirm Shutoff Valve Opens & Closes		

Notes:		

				Eve	ery 16	Months Log She	eet				
Date Location		1					UV Dose				
Model #			Operato	r Name					UVI		
Serial #			Unit Sta	tus					UVT		
Lamp Life Rer	naining			Max Flo	NA/	<u> </u>	7	Poal	-time clock co	orroct?	Y/N
PCB Temp.		Sv	o Tomp	IVIAX I IO	VV	Water Temp.				JII C CL!	1 / IN
Firmware Ver.			rs Temp. Ital Starts						p Temp. time Cnt		
			ft Water			Power ups					
Left Lamp		Le	it vvater			Right Lamp		Righ	t Water		
2 Review th 3 Replace 0 4 Reset Lat 5 Inspect In 7 Inspect In 8 Inspect In 9 Inspect th 10 Confirm In 11 Confirm In 12 Confirm In 13 Perform In 14 Perform In 15 Perform In 16 Perform In 17 Perform In 18 Perform In 19 Perform In 19 Perform In 10 Perform In 10 Perform In 11 Perform In 11 Perform In 12 Perform In 14 Perform In 15 Perform In 16 Perform In 17 Perform In 18 Perform I	ecord operational te Message Histo JV Lamps np Lifetime Coun ir Filter side of UV Cham side of Quartz SI	ter ber eeve	e Closes	Performed	Com	ments					
Notes:											

					Annı	ıal Log Sheet				
Date	ate Location		cation			UV Dose				
Model #			Operat	or Name				UVI		
Serial #		Unit Sta		atus				UVT		
Lamp Life Rem	naining			Max Flo)W		Real	-time clock co	orrect?	Y/N
PCB Temp.		Sv	s Temp.			Water Temp.		p Temp.		
Firmware Ver.			tal Starts			Power ups		time Cnt		
Left Lamp			ft Water			Right Lamp		t Water		
# Task Desc	cription cord operational	para	meters	Performed	Comi	ments				
	e Message Histor									
5 Inspect Air										
6 Inspect Ins	side of UV Cham	ber								
7 Inspect Ins	side of Quartz Sle	eve	;							
8 Inspect Re										
	e PCB Area for D									
	CB Fan Operatin									
	V Fan Operating									
	hutoff Valve Ope									
	V Sensor Ref. Ch									
14 Perform R	eflectance Check	(
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