

# Hamatech HMR900 Mask Processor User Manual

Version of 2024-11-26.

## 1. Introduction

This user manual explains how to operate the Hamatech HMR 900 mask-processor for the complete fabrication of Cr blank masks after the exposure on the VPG200.

## 2. Login & System Initialization

- Login on “Hamatech mask Processor ...” with CAE on zone 6 accounting computer.

Z06 Hamatech Mask Processor

## 3. Preparation: Chuck Loading

- The chuck for 4, 5 and 6inch Cr-plate is installed by default (triple stage edge clamps).
- A special chuck for processing 7inch Cr-plate is also available. (single stage edge clamps). Switching the chuck does not require any specific tool, and can be done by the user.

## 4. Preparation: Load Cr-plate

- Line purge with DI is recommended as soon as the tool was in idle mode for more than 2 hours. In case of doubt always run the purge sequence first with a dummy glass plate.
- Put the mask to process correctly inside the 4 corners at the stage adapted to the Cr-plate size.  
**Warning:** There is no vacuum used to fix the plate during processing. Safe position needs to be check at least for 2 corners. Wrongly placed plates will be destroyed during the drying sequence!
- Rotate the plate in both directions briefly but

firmly to check that plate movement results in consistent chuck rotation.



Check the position of the plate corners as pointed out

## 5. Choose a recipe

Available recipe for standard application:

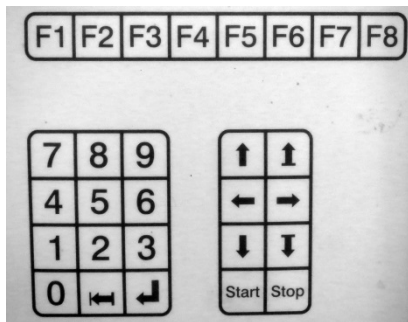
Prg: (min:sec)	Name	Purpose
1 (08:30)	DEV/ETCH/STRIP	Full mask fabrication process (4 to 5inch Cr- plate). Includes Standard development, Cr etching, resist stripping and final rinse dry.
11 (08:30)	LOW D/E/S	Full mask fabrication process with lower rotation speed for large size or thick mask (6 to 7 inch Cr-plate).
4 (03:00)	STRIP KOH	A sequence that can be used to clean the mask from PR (NOT SU-8) residues.
5 (03:00)	RINSE/DRY 50s	Final rinse and drying sequence after a manual stop.
8 (04:15)	Lines Purge	For use after long standby period (> 2 hours)

Additional recipes are available to proceed step by step.

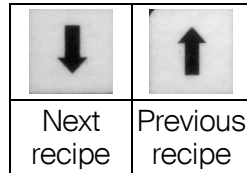
By default, the equipment is in automatic mode. Display at idle looks like this:



Example idle mode: Program No 5 selected 1



Use simple arrows up/down to navigate in available programs

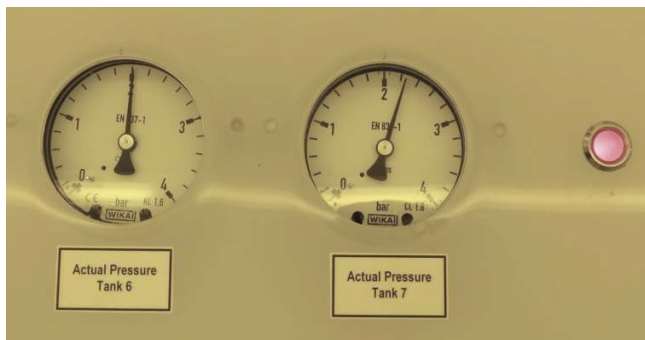


To start the recipe:

- Press start.
- Warning for N2 missing beep.



- Press F8 to stop the beep. The front safety door will close.
- Wait for the rise up of canisters N<sub>2</sub> pressure to be stable (Tank 6 > 2 bars)



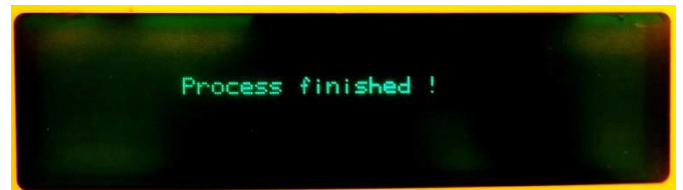
- Press enter to acknowledge:



- Recipe starts and run till end of last step. The current step parameters are displayed on line.



- Safety door open at end of process. Message will disappear after a few seconds.



- Note: In case warning for temperature occurs. Press F8 to stop the beep, and enter to acknowledge.



## 6. Unload and Close

The Hamatech chamber is rinsed with water but remains wet.

Remove plate from the chuck without touching the walls or the chuck.

Some DI-water moisture might still remain at the very center of the plate backside. Blow it off with a dry N<sub>2</sub> gun.

We recommend to let the mask dry in air for 30 minutes before use.

Don't forget to log out immediately after unloading.

## 7. Additional remarks

### 7.1 Initialization stops with “door not closed” error



You probably forgot to sign in to access the tool.

Login on “Hamatech mask Processor ...” with CAE on zone 6 accounting computer, and press enter:

### 7.2 Tank empty or waste full errors:

Call staff for refill. No handling of chemicals by users



**! Take care !**

The gun on the left chamber side is not a dry nitrogen gun but a water washer for safety use after any unexpected stops.

# Hamatech - Tanks, Media and Nozzles

No.	Description	Media	Output	Media	Output
1	Nozzle 1	DI H <sub>2</sub> O + NH <sub>4</sub> OH (Tank 1)	A 4		
2	Nozzle 2 KOH	Tank 6 - CR-ETCH	A 14	DI H <sub>2</sub> O	A 1
3	Nozzle 3			DI H <sub>2</sub> O + CO <sub>2</sub>	A 9
4	Nozzle 4 ETCH	Tank 5 KOH STRIP	A 15	DI H <sub>2</sub> O	A 3
5	Acid Arm			DI H <sub>2</sub> O	A 8
6	FullJet Arm	DI H <sub>2</sub> O + NH <sub>4</sub> OH (Tank 1)	A 6	DI H <sub>2</sub> O + CO <sub>2</sub>	A 7
7	Nozzle 7 DEV	Tank 7 DEV	A 16	DI H <sub>2</sub> O	A 5
8	Backside Rinse Nozzle	DI H <sub>2</sub> O + NH <sub>4</sub> OH (Tank 1)	A 2		
9	Backside Rinse Nozzle			DI H <sub>2</sub> O + CO <sub>2</sub>	A 10
10	Backside Rinse Nozzle				
CR	Chamber Rinse			DI H <sub>2</sub> O	A 8

Image number	Description/ color	Media 1	Media OutP	Media 2 (PURGE)	Purge OutP	Waste OutL	Comment
1	NA						Missing Nozzle
2	Spray Nozzle	Stripper AZ 400K	A14	DI H <sub>2</sub> O	A1	1	Tank 6
3	Spray Nozzle	DI H <sub>2</sub> O	A9				Topside rinse
4	Spray Nozzle	Chrome etch Cr01	A15	DI H <sub>2</sub> O	A3	3	Tank 5
5	Acid arm						Tank 1 chemistry - Not used
6 (YELLOW)	NA						Missing Nozzle
6 (RED)	Full Jet Arm	DI H <sub>2</sub> O	A7				Jet scan rinse
7	Spray Nozzle	Developer AZ 351B:H <sub>2</sub> O / 1:3.7	A16	DI H <sub>2</sub> O	A5	1	Tank 7
8	Backside Nozzle						Tank 1 chemistry - Not used
9	Backside Nozzle	DI H <sub>2</sub> O	A10				Backside rinse
10 (RED)	Back side Nozzle	DI H <sub>2</sub> O	A10				
10 (YELLOW)	NA						Missing Nozzle
CR	Chamber Rinse	DI H <sub>2</sub> O	A8				Chamber rinse spray nozzles

Program No. 1 Process DEVELOP/ETCH/STRIP

Step	Step time	Ramp	Speed	Tol. Speed	OutP	Waste	Unit	Fkt	Pos	V	Comment	Chemistry
/26	[s]	[s]	[rpm]	[rpm]		no.						
1	6	5	500	50		0	0	0	0	0		
2	15	10	0	50	5	1	0	0	0	0	Develop. purge	
3	50	20	-60	50	16	1	0	0	0	0	Development	Dev AZ 351: DI 1:3.7
4	6	5	0	50	16	1	0	0	0	0	Development	Dev AZ 351: DI 1:3.7
5	50	20	60	50	16	1	0	0	0	0	Development	Dev AZ 351: DI 1:3.7
6	3	2	350	50	7, 9,10	1	1	1	0	0	Init. rinse	
7	30	5	350	50	7, 9,10	1	1	2	2	0	Rinse (Top + Back + Jet scan)	
8	30	5	350	50	5, 7, 9,10	1	1	2	2	0	Develop. purge + rinse	
9	30	15	500	50	8, 9,10	1	1	1	3	0	Chamber rinse	
10	15	10	0	50	3	3	0	0	0	0	Cr etchant CR01 purge	
11	24	10	150	50	15	3	0	0	0	0	Cr etch	CR01
12	7	5	0	50	15	3	0	0	0	0	Cr etch	CR01
13	24	10	-150	50	15	3	0	0	0	0	Cr etch	CR01
14	3	2	-350	50	7, 9,10	3	1	1	0	0	Init. rinse	
15	30	5	-350	50	7, 9,10	3	1	2	2	0	Rinse (Top + Back + Jet scan)	
16	30	5	-350	50	3, 7, 9,10	3	1	2	2	0	Cr etchant purge + rinse	
17	30	15	-500	50	8, 9,10	3	1	1	3	0	Chamber rinse	
18	6	5	-500	50		3	0	0	0	0	Quick dry	
19	5	4	-150	50	14	1	0	0	0	0	Striper KOH 30%	AZ 400K pur
20	30	2	-80	50	10, 14	1	0	0	0	0	Striper KOH 30%, BS Neutralize	AZ 400K pur
21	20	5	-150	50	1	1	0	0	0	0	Striper KOH purge	
22	3	2	-350	50	7, 9,10	1	1	1	0	0	Init. rinse	
23	30	5	-350	50	7, 9,10	1	1	2	2	0	Rinse (Top + Back + Jet scan)	
24	30	5	-350	50	8, 9,10	1	1	1	3	0	Chamber rinse	
25	90	9	-1500	50		1	0	0	0	0	Drying	
26	11	10	0	0		0	0	0	0	0	Finish	

Tot: 608s

