



**Fluoroware<sup>®</sup> HTC 8020  
Cleaning Systems**

**D**ecrease potential contamination while increasing the life of your device handling products with Fluoroware® HTC 8020 Series Cleaning System – the clean solution.

HTC systems can be configured with a fluoropolymer-coated process chamber and a fluoropolymer DI water heater. Using this combination, all wetted surfaces are non-metallic, eliminating the potential for metallic contamination.

Use the HTC 8020 as a stand-alone cleaner with an internal heater in a low volume area or run multiple HTCs from one non-metallic water heater in a high volume area. The HTC flexibility allows you to create a system unique to your process.

Use of the HTC 8020 not only extends the life of your device handling products, it keeps particles from contaminating your devices. Our ultimate goal.

*Easy-to-use.* The HTC touch screen panel displays valuable process status information. All settings are controlled from a single area.

*Easy-to-maintain.* An on-board hour meter assists you with the preventive maintenance scheduling. Easy-to-access maintenance areas are available for routine servicing. Also, the components used in manufacture are commonly available and proven.

*Easy-to-read touch screen display panel.*



*The fluoropolymer-coated process chamber eliminates the possibility of metallic contamination from the chamber. The pumps and filters are easily accessible for routine maintenance.*



### *Clean, quick processing.*

Throughputs are increased with an optimized wash, rinse and dry cycle with maximum cleaning performance and minimum cycle time. And, each process rack is designed for maximum throughput.

### **OPTIONS**

Fluoroware will help you design your own system with these possible options:

#### *Process Chamber*

- Fluoropolymer-coated
- Stainless steel

#### *Water Heater*

- Internal deionized water heater, 316L stainless steel
- External deionized water heater, fluoropolymer

*Variety of Process Racks* to fit your device handling products. Many are stock items.

### **SUPPORT SERVICES**

Fluoroware field service personnel are ready and able to assist you with any questions you may have on any HTC system. Our highly-trained personnel will visit your site to ensure correct installation, conduct initial system start-up and train your maintenance personnel and equipment operators.

Additional support is available through the HTC Technical Support Hotline where a technical representative is on hand to answer any questions or concerns.

### **OUR COMMITMENT TO QUALITY**

Fluoroware® HTC products are thoroughly analyzed and tested. We are so confident in HTC products, we have warranted each unit against defects in materials or workmanship for a period of one (1) year from the date of shipment. Fluoroware will pay shipping expenses for any defective component.

If cleaning, reliability and flexibility is vital to your process, contact Fluoroware at 612/448-3131 for more information on HTC 8020 Series Cleaning Systems.



*Fluoroware offers a large variety of process racks for maximum throughput. Many are stocked items.*

18  
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NT20M PROGRAMMABLE THERMOC

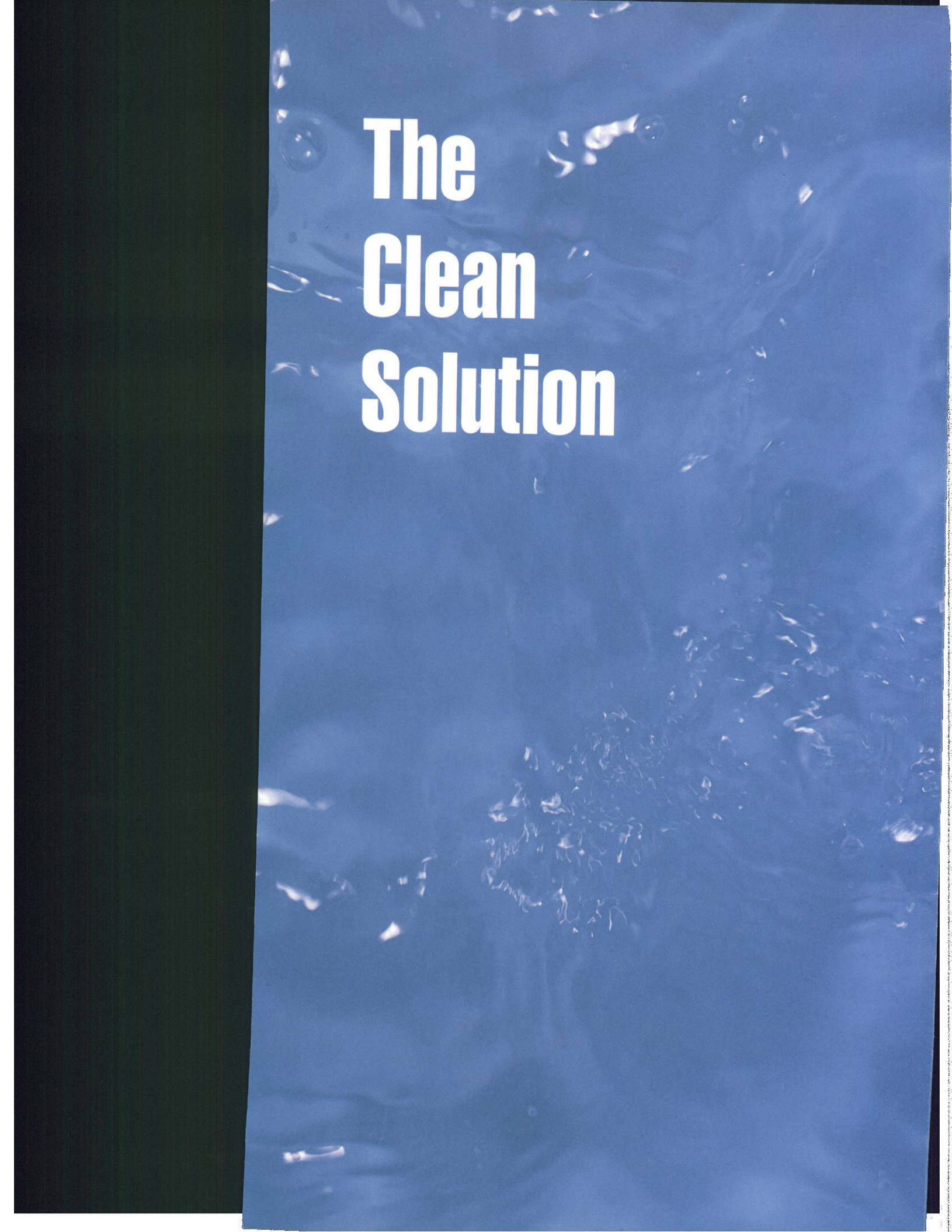
POWER RUN BAT LOW

FLUOROWARE HTC 8020

ON LINE WATER LEAK

EMERGENCY





# The Clean Solution

# HTC 8020 Series

## Cleaning Systems Product Overview

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Fluoroware's revolutionary HTC 8020 Cleaning Systems are designed to reduce contamination to your devices by removing surface contaminants from your device handling products. HTC 8020 Systems also increase the life of your device handling products.

HTC Systems can be configured with a *fluoropolymer process chamber* and a *fluoropolymer DI water heater*, making all wetted surfaces nonmetallic, virtually eliminating the potential for metallic contamination.

The HTC 8020 Series' performance surpasses its predecessor, the HTC 8010 Series, as shown below:

<b>FEATURE</b>	<b>BENEFIT</b>
Air knife operation.	Dries faster with less nitrogen/CDA.
Process pumping system.	Uses 15% less water and allows easier maintenance.
Door seals and sound insulation.	Operates quieter.
Touch-screen display.	Gives more process status information and allows for easier operator interface.
Pump monitoring system.	Assures complete cycles.
Self-cleaning spray system.	Improves reliability and reduces maintenance.
Quick-dump drain system.	Reduces process cycle time.
On-board hour meter.	Assists with preventive maintenance scheduling.
Machine access to maintenance areas.	Allows easier access and simpler maintenance.
Over 100 fewer component parts.	Reduces maintenance cost and improves reliability.

### SYSTEM FEATURES

- System dimensions: 52"Wx37"Dx70"H (1321mmx940mmx1778mm)
- Brushed stainless steel exterior surface.
- Bulkhead mountable.
- Part-specific process racks. Two are included with the machine.
- Batch process operation. Approximately 30 min/process cycle.
- Rotary spray wash/rinse process.
- Choice of fluoropolymer (F, FE, and FI versions) process chamber, or electropolished 316L process chamber (S, SE, and SI versions). Dimensions 40"Wx20"Dx20"H (1016mmx508mmx508mm).
- Available all fluoropolymer external water heater with overtemperature, low pressure and liquid level protection (FE and SE versions). Dimensions 39"Wx13"Lx37"H (991mmx330mmx940mm).
- Available on-board 13.5 kW DI water heater/reservoir system with redundant overtemperature protection circuitry, low level sensor, and circulation circuit to prevent idle-state bacterial contamination (FI and SI versions).
- 0.2µm point of use DI water filter.
- Fluoroware® valves of Teflon® material and Flaretek® fittings.
- Metered surfactant dispense system with low level sensor. Surfactant solution housed in a removable 1.6 gal (6 liter) HDPE reservoir.

- HEPA filtered convection drying process with high pressure air knife assist.
- 30 kW air heater with overtemperature protection circuitry.
- 10µm air pre-filter. 0.3µm final HEPA filter.
- Ionizing nozzle.
- Easy machine maintenance.

## CONTROLS

- Touch screen display.
- Digital wash and dry temperature controllers.
- System fault messages.
- Microprocessor controller with EPROM recipe storage.
- Process status readout.
- Normal or dry-only process capability.

## SAFETY

- Interlocked process chamber door. Process will not start until process door and control panel cover are fully closed.
- Redundant thermal fuse overtemperature protection circuitry on air and water heaters. Automatically disables system at the main breaker in the event of an overtemperature condition.
- An exhaust pressure sensor in the main contactor protection circuit disconnects power to the unit if exhaust vacuum drops below 0.5" (13mm) H<sub>2</sub>O.
- Lockable maintenance access panels.
- Continuous monitoring water leak detection systems.
- Liquid tight conduit and fittings.
- Extensive use of low voltage components.
- Interlocked electrical enclosures.

Contact your local Fluoroware representative for more information.



Fluoroware, Inc. • 102 Jonathan Boulevard North • Chaska, Minnesota 55318 USA  
Telephone: 612/448-3131 • Telefax: 612/448-5576 • Customer Service: 612/448-8181

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# HTC 8020 Series Cleaning Systems Specifications

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## SYSTEMS SPECIFICATIONS

<b>Electrical</b>	Option 1	Systems Control:	10A @ 480VAC/3Ø/60Hz
		Heater Control:	60A @ 480VAC/3Ø/60Hz
	Option 2	Systems Control:	10A @ 380VAC/3Ø/50Hz*
		Heater Control:	70A @ 380VAC/3Ø/50Hz*
	Option 3	Systems Control:	15A @ 230VAC/3Ø/60Hz
	Heater Control:	120A @ 230VAC/3Ø/60Hz	
Option 4	Systems Control:	15A @ 220VAC/3Ø/50Hz	
	Heater Control:	120A @ 220VAC/3Ø/50Hz	
Option 5	Systems Control:	15A @ 208VAC/3Ø/50-60Hz**	
	Heater Control:	140A @ 208VAC/3Ø/50-60Hz**	

*Heater Control consists of air heater and internal DI water heater.*

**CDA (Solenoids)** ¼" Line 60 PSIG @ 1 SCFM (6.4mm line, 414kPa @ 28 l/min), lubricated

**CDA/N<sub>2</sub> (Air Knife)** Minimum line and regulator orifice size ½". Machine requires a minimum flow of 25 SCFM @ 45 PSI during air knife operation (12.7mm line, .71CMM @ 310kPa).

**DI Water** ¾" Line 20 PSIG @ 6 GPM (19.0mm line, 138 kPa @ 2.7 l/min)

**Exhaust** (2) 8" diameter ducts 1.5" to 2.0" H<sub>2</sub>O Vacuum (203mm ducts, 38 to 51mm H<sub>2</sub>O Vacuum). Each 8" duct should have an exhaust flow rate of 440 SCFM +/- 40 SCFM. The average flow velocity within the duct must be used to calculate SCFM. Circular ducting required, metal ducting recommended.

**Drain** 2" line 10 GPM (51mm line, 38 l/min). P-trap required.

**Dimensions** Overall: 52"Wx37"Lx73"H (1319mmWx940mmLx1854mmH)  
Weight: Approx. 1300 lbs (590 kg)

**Consumption** DI Water: Approx. 16 gal/process cycle (60.5 l/process cycle)  
CDA/N<sub>2</sub>: Approx. 450 cu ft/process cycle (12.75 cu m/process cycle)  
Surfactant: .35 oz/process cycle (10.4 ml/process cycle)  
Energy: Approx. 12kWH per 30 min process cycle

## NONMETALLIC DI WATER HEATER

**Electrical Systems Control** 80A @ 480VAC/3Ø/50-60Hz

**Dimensions** Overall: 39"Wx13"Lx37"H (991mmWx330mmLx940mmH)  
Weight: Approx. 220 lbs (100 kg)

**DI Water** ¾" Line operating pressure 30 PSI minimum  
(19.0mm line, 211 kPa)

\* Europe

\*\* Japan

Contact your local Fluoroware representative for more information.



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# HTC 8020 Series Cleaning Systems Functional Evaluation

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## SUMMARY

This evaluation presents the results of an experiment designed to test the particle and surfactant removal effectiveness of HTC 8020 Series Cleaning Systems. The results show that one cleaning cycle in a HTC 8020 Series Cleaning System significantly reduces particles and leaves no residual surfactant.

## PROCEDURE

In a class 100 portable cleanroom, twelve polypropylene wafer carriers (ordering number PA194-60MB-0603) were cleaned in a HTC 8020 FI\* using the following settings:

Wash Time:	30 Seconds
Wash Temperature:	60°C
Rinse Time:	30 Seconds
Dry Time:	20 Minutes
Dry Temperature:	60°C
Surfactant:	Triton® CF-10
Surfactant Pump Time:	5 Seconds

The following tests were performed:

### Surfactant Removal - FGTM 1333

After cleaning in the HTC 8020, the carriers were rinsed with isopropyl alcohol (IPA) to dissolve any surfactant remaining on the carrier surface. The IPA was evaporated to concentrate the surfactant and then reconstituted with a few drops of IPA. This IPA was evaporated onto a salt crystal and the salt crystal was scanned in a FTIR to obtain a spectra of any contaminants. The spectra was then inspected to determine if the surfactant was present. The detection limit for Triton® CF-10 using a FTIR is one ppm.

### Particle Removal - FGTM 1336

Non-cleaned carriers and carriers cleaned in the HTC 8020 were rinsed with 250ml of DI water in a class 10 cleanroom. The DI water was then filtered through a 0.45µm gridded filter and the particles on the filter were counted using a microscope. Control samples of the DI water were also filtered and counted.

## RESULTS

### Surfactant Removal

No evidence of residual surfactant was found on the carriers.

### Particle Removal

Please see the graph for a comparison of the average number of particles per filter on the non-cleaned carriers, the HTC cleaned carriers and the water control samples. Four non-cleaned carriers, five cleaned carriers and five water controls were analyzed. The table on next page lists particle average, median and standard deviation.

## CONCLUSIONS

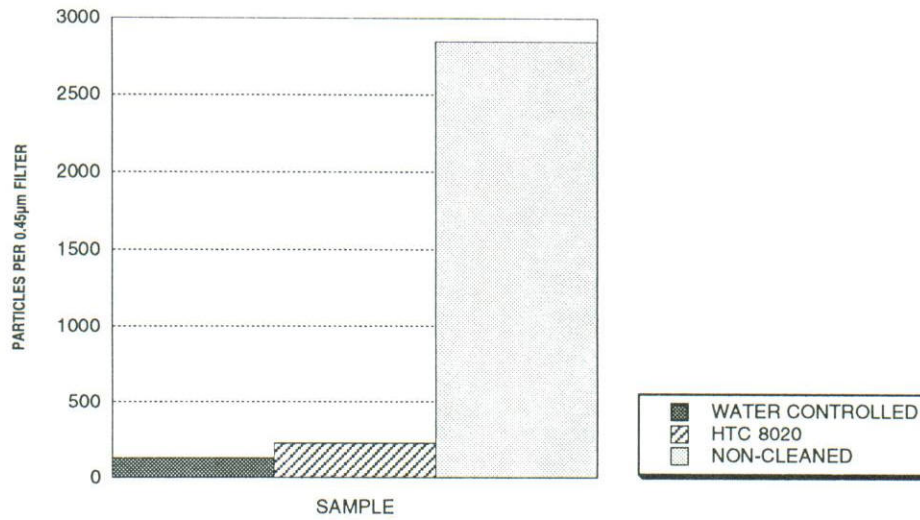
One cleaning cycle in a HTC 8020 Series Cleaning System removes virtually all particles greater than .45µm on polypropylene wafer carriers with no evidence of residual surfactant.

## AVERAGE NUMBER OF PARTICLES PER 0.45µm FILTER

Data	Water Control	HTC Cleaned Carrier	Non-cleaned Carrier
Average	130	225	2850
Median	90	180	2900
Standard Deviation	110	160	740

## TABLE

### AVERAGE NUMBER OF PARTICLES PER FILTER



Contact your local Fluoroware representative for more information.

\* These test results remain constant for each machine configuration.



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**September 1995**

## **HTC 8020 Series Cleaning Systems Process Racks**

Process racks are used to hold device handling products during cleaning in HTC 8020 cleaning systems. Each HTC 8020 holds two racks. Racks are made of stainless steel coated with a fluoropolymer material and are available from stock for many Fluoroware® and other device handling products. Custom rack designs are also available. Contact your local Fluoroware representative for information.

Each process rack is designed to:

- Thoroughly wash, rinse and dry specific products.
- Maximize product throughput.
- Minimize cycle time.
- Ensure no damage to the product being cleaned.
- Reduce potential metallic contamination.

Fluoroware thoroughly tests each new rack design to ensure they meet the above requirements.

### **Machine Throughput**

Machine throughput is the number of a specific product that can be processed by the machine per hour. Each HTC 8020 holds two process racks. The following equation is used to calculate hourly machine throughput:

Machine throughput per hour = (60 min/approximate cycle time) × (products per rack × 2 racks)

### **Note**

Cycle time is an estimate based on standard conditions and should be used only as a guide. Cycle time includes the time it takes to remove and replace racks in the machine, but does not include the time it takes to load and unload products on the racks. Estimated cycle time also affects machine throughput. To achieve stated throughput, duplicate racks must be prepared during the machine cycle. Actual results may vary. Contact your local Fluoroware representative for more information.

## Racks by Product Held

PRODUCT HELD	MACHINE CYCLE TIME	PRODUCTS PER RACK	MACHINE THROUGHPUT/HOUR	RACK ORDERING NUMBER
<b>200mm Wafer Carriers</b>				
A192-80M	27 min	8	35	L-1652-FC
A192-81M	27 min	8	35	L-1652-FC
A198-80M	27 min	8	35	L-1652-FC
A198-80MB	27 min	8	35	L-1652-FC
A200 Series	27 min	8	35	L-1664-FC
FA200 Series	27 min	8	35	L-1664-FC
KA200 Series	27 min	8	35	L-1664-FC
PA192-80M	27min	8	35	L-1652-FC
PA195-80M	27 min	8	35	L-1652-FC
PA200 Series	27 min	8	35	L-1664-FC
<b>150mm Wafer Carriers</b>				
A182-60M	27 min	12	52	L-1637-FC*
A182-60MB	27 min	12	52	L-1637-FC*
A182-60MC	27 min	12	52	L-1637-FC*
A182-60MU	27 min	12	52	L-1662-FC
A190-60M	27 min	12	52	L-1637-FC*
A190-60MH	27 min	12	52	L-1637-FC*
A194-60MB	27 min	12	52	L-1637-FC*
A196-60ML	27 min	12	52	L-1637-FC*
A196-60MLB	27 min	12	52	L-1637-FC*
PA182-60MB	27 min	12	52	L-1637-FC*
PA182-60MC	27 min	12	52	L-1637-FC*
PA182-60MU	27 min	12	52	L-1662-FC
PA194-60MB	27 min	12	52	L-1637-FC*
PA194-60MBJ	27 min	12	52	L-1637-FC*
PA195-60M	27 min	12	52	L-1637-FC*
<b>125mm Wafer Carriers</b>				
A72-50M	27 min	12	52	L-1662-FC
A182-50M	27 min	12	52	L-1637-FC*
A182-50MB	27 min	12	52	L-1637-FC*
A182-50MBH	27 min	12	52	L-1637-FC*
A182-50MC	27 min	12	52	L-1637-FC*
A182-50MEB	27 min	12	52	L-1637-FC*
A182-50MEC	27 min	12	52	L-1637-FC*
A182-50MU	27 min	12	52	L-1662-FC
A190-50M	27 min	12	52	L-1637-FC*
A190-50MH	27 min	12	52	L-1637-FC*
A194-50MB	27 min	12	52	L-1637-FC*
PA72-50M	27 min	12	52	L-1662-FC
PA182-50M	27 min	12	52	L-1637-FC*
PA182-50MB	27 min	12	52	L-1637-FC*
PA182-50MC	27 min	12	52	L-1637-FC*
PA194-50MB	27 min	12	52	L-1637-FC*
PA195-50M	27 min	12	52	L-1637-FC*

\*The L-1637-FC rack is recommended for these products. They will also fit in an L-1662-FC rack.

PRODUCT HELD	MACHINE CYCLE TIME	PRODUCTS PER RACK	MACHINE THROUGHPUT/HOUR	RACK ORDERING NUMBER
<b>Wafer Shippers</b>				
E124-60-101	28 min	4	21	L-1642-FC
E205-50	28 min	2	8	L-1656-FC
E206-60-101	28 min	2	8	L-1657-FC
Empak® H2150-1	36 min	2	7	L-1651-FC
TI 5" (2) capacity	28 min	2	9	L-1653-FC
E126-40	41 min	4 sets	12 sets	L-1625-FC
E126-80	41 min	2 sets	6 sets	L-1636-FC
Empak® PH9100	41 min	6 sets	18 sets	L-1625-FC
Empak® PH9150	41 min	3 sets	9 sets	L-1627-FC
H22 Individual				L-1671-FC
<b>Data Storage Products</b>				
S300-048 Disk Shipper	28 min	12 sets	51 sets	L-1628-FC
S800-065 Disk Shipper	28 min	12sets	51 sets	L-1629-FC
S800 095 Disk Shipper	28 min	8 sets	34 sets	L-1630-FC
Empak® 95mm 2-piece Shipper	54 min	8 sets	18 sets	L-1632-FC
PA806-065 Process Carrier	30 min	48	192	L-1631-FC
PA806-095 Process Carrier	38 min	45	71	L-1666-FC
95mm Disk Caddie	36 min	6	20	L-1661-FC
E800 Storage Box	43 min	7	10	L-1668-FC
<b>Other Products</b>				
Miscellaneous	Varies	Varies	Varies	L-1648-FC
200mm Microenvironment	Varies by mfg.	2 pods and 2 carriers	Varies by mfg.	L-1670-FC
Asyst 100mm SMIF-POD™	31 min	4	15	L-1660-FC
Hoya® 5" Mask Shipper	43 min	3 sets	8 sets	L-1650-FC
Hoya® 5"-A Mask Shipper	38 min	3 sets	9 sets	L-1654-FC
Hoya® 6" Mask Shipper	43 min	3 sets	8 sets	L-1649-FC
Chip and Bar/Head Trays, 2"	30 min	594	2,376	L-1665-FC
Chip and Bar/Head Trays, 4"	30 min	176	704	L-1667-FC

### Racks by Rack Ordering Number

RACK ORDERING NUMBER	PRODUCT HELD
L-1625-FC	Wafer Shippers: E12640, Empak® PH9100
L-1627-FC	WaferShipper: Empak® PH9150
L-1628-FC	Disk Shipper: S800-048
L-1629-FC	Disk Shipper: S800-065
L-1630-FC	Disk Shipper: S800-095
L-1631-FC	Process Carrier: PA806-065
L-1632-FC	Disk Shipper: Empak® 95mm 2-piece
L-1633-FC	Storage Boxes: E93-101, E93-102
L-1635-FC	Storage Boxes: E98-101, E98-102, E98-103, E90-101, E90-102
L-1636-FC	Wafer Shipper: E126-80
L-1637-FC*	Wafer Carriers: A182-39M, PA182-39M, A182-39MLB, A182-39MLBH, PA182-39MLB, A182-39MLC, PA182-39MLC, A190-40M, PA194-40, PA195-40M, A182-50M, PA182-50M,

\*The L-1637-FC rack is recommended for these products. They will also fit in an L-1662-FC rack.

PRODUCT HELD	MACHINE CYCLE TIME	PRODUCTS PER RACK	MACHINE THROUGHPUT/HOUR	RACK ORDERING NUMBER
<b>100mm Wafer Carriers</b>				
A72-38M	27 min	12	52	L-1662-FC
A72-39M-06	27 min	12	52	L-1662-FC
A72-40MB	27 min	12	52	L-1662-FC
A72-41M	27 min	12	52	L-1662-FC
A72-41MB	27 min	12	52	L-1662-FC
A182-39M	27 min	12	52	L-1637-FC*
A182-39MLB	27 min	12	52	L-1637-FC*
A182-39MLBH	27 min	12	52	L-1637-FC*
A182-39MLC	27 min	12	52	L-1637-FC*
A182-39MU	27 min	12	52	L-1662-FC
A190-40M	27 min	12	52	L-1637-FC*
PA72-39M-06	27 min	12	52	L-1662-FC
PA72-40MB	27 min	12	52	L-1662-FC
PA182-39M	27 min	12	52	L-1637-FC*
PA182-39MLB	27 min	12	52	L-1637-FC*
PA182-39MLC	27 min	12	52	L-1637-FC*
PA194-40	27 min	12	52	L-1637-FC*
PA195-40M	27 min	12	52	L-1637-FC*
<b>Storage Boxes</b>				
E34-101	31 min	6	23	L-1658-FC
E34-102	31 min	6	23	L-1658-FC
E46-101	28 min	2	8	L-1643-FC
				L-1644-FC
E46-103	28 min	2	8	L-1644-FC
E50-101	28 min	4	17	L-1644-FC
E53-102	28 min	2	8	L-1635-FC
E88-101	28 min	2	8	L-1643-FC
E88-102	28 min	2	8	L-1643-FC
E88-103	28 min	2	8	L-1643-FC
E89-101	28 min	4	17	L-1638-FC
				L-1644-FC
E89-102	28 min	4	17	L-1644-FC
				L-1638-FC
E90-101	28 min	4	17	L-1635-FC
				L-1643-FC
				L-1644-FC
E90-102	28 min	4	17	L-1644-FC
				L-1643-FC
				L-1635-FC
E93-101	28 min	2	8	L-1644-FC
				L-1633-FC
E93-102	28 min	2	8	L-1644-FC
	28 min	2	8	L-1633-FC
E93-103	28 min	2	8	L-1644-FC
E97	28 min	6	26	L-1663-FC
E98-101	28 min	2	8	L-1635-FC
E98-102	28 min	2	8	L-1635-FC
E98-103	28 min	2	8	L-1635-FC
E99-101	30 min	2	8	L-1655-FC

\*The L-1637-FC rack is recommended for these products. They will also fit in an L-1662-FC rack.

RACK  
ORDERING  
NUMBER  
L-1637-FC\* (cont.)

PRODUCT HELD  
A182-50MB, PA182-50MB, PA182-50MBH, A182-50MC,  
PA182-50MC, A182-50MEB, A182-50MEC, A190-50M,  
A190-50MH, A194-50MB, PA194-50MB, PA195-50M,  
A182-60M, A182-60MB, PA182-60MB, A182-60MC,  
PA182-60MC, A190-60M, A194-60MB, PA194-60MB,  
PA194-60MBJ, PA195-60M, A196-60ML, A196-60MLB  
Storage Boxes: E89-101, E89-102  
Storage Box: E124-60-101  
Storage Boxes: E88-101, E88-102, E88-103, E46-10, E90-101,  
E90-102  
Storage Boxes: E50-101, E89-101, E89-102, E90-101, E90-102,  
E93-101, E93-102, E93-103, E46-101, E46-103  
Storage Boxes: E53-102, E98-101, E98-102, E98-103  
Miscellaneous  
Mask Shipper: Hoya® 6"  
Mask Shipper: Hoya® 5"  
Storage Box: Empak® H2150-1  
Wafer Carriers: A192-80M, PA192-80M, A192-81M, PA195-80M,  
A198-80M, A198-80MB  
Storage Box: TI 5" (2) Capacity  
Mask Shipper: Hoya® 5"-A  
Storage Boxes: E99-101  
Storage Box: E205-50  
Storage Box: E206-60-101  
Storage Boxes: E34-101, E34-102  
Microenvironment: Asyst 100mm SMIF-POD™  
Disk Caddie: 95mm  
Wafer Carriers: A72-38M, A72-39M-06, PA72-39M-06,  
A72-40MB, PA72-40MB, A72-41M, A72-41MB, A182-39MU,  
A72-50M, PA72-50M, A182-50MU, A182-60MU, PA182-60MU  
Storage Box: E97  
Wafer Carriers: A200 Series, PA200 Series, KA200 Series,  
FA200 Series  
Chip and Bar/Head Trays: 2"  
Process Carrier: PA806-095  
Chip and Bar/Head Trays: 4"  
Storage Box: E800  
Microenvironment: 200mm  
Wafer Shipper: H22 Individual

\*The L-1637-FC rack is recommended for these products. They will also fit in an  
L-1662-FC rack.

(Page 5 of 5)

## HOW TO RECEIVE A QUOTE

Appendix A contains a form entitled *HTC PROSPECT INFORMATION SHEET*. The information on this form is necessary to receive a quote on a HTC 8020 System for a prospective customer. After completing this form, fax it to Nancy Batcher, the Sales Administrative Coordinator, at 612-448-5576 to receive a quote.

## STANDARD PRICING

Effective June 26, 1995

HTC 8020 Standard Configurations			
	Process Chamber	Water Heater	Price
HTC 8020 F	Fluoropolymer	None	\$98,175
HTC 8020 FI	Fluoropolymer	Internal 316 SSTL/Incoloy® material	\$103,425
HTC 8020 FE	Fluoropolymer	External Fluoropolymer	\$130,725
HTC 8020 S	Stainless Steel	None	\$89,040
HTC 8020 SI	Stainless Steel	Internal 316 SSTL/Incoloy® material	\$94,290
HTC 8020 SE	Stainless Steel	External Fluoropolymer	\$121,590

## AVAILABILITY

Standard delivery is 12 weeks after receipt of order (ARO). The HTC Prospect Information Sheet must be at Fluoroware on or before the time the order is received. If not, the delivery will be 12 weeks after the Prospect Sheet is received.

Early delivery may be possible. Contact Sharon Wendlandt for specific information



*Flourens HTC's*  
Cassette/Box Washer Comparison

	A	B	C	D
1		<b>HTC 8020</b>	<b>HTC 8010</b>	<b>4000</b>
2	<b>Technology</b>	current	3 years old	13 years old
3				
4	<b>Cycle Time:</b>			
5	Wash	5 min.	5 min.	8 min.
6	Dry	20 min.	20 min.	60 min.
7	Drying Technique	Heated air knife	Heater air	Evaporative
8				
9	<b>Throughput:</b>			
10	150mm cassettes	52 per hour	52 per hour	18 hr (35% of 8020)
11	125mm cassettes	52 per hour	52 per hour	18 hr (35% of 8020)
12	100mm cassettes	52 per hour	52 per hour	18 hr.(35% of 8020)
13	Rack availability	Multiple, part specific	Multiple, part specific	2, not readily available
14				
15	<b>Process Chamber</b>	40"x 20" x 20"	40" x 20"x 20"	20" x 20" x 18"
16	316 S.S.	Yes	Yes	Yes
17	Fluoropolymer	Yes	No	No
18				
19	<b>Footprint</b>	52"W x 37"D x 73"H	52"W x 37"D x 73"H	40"W x 31"L x 68"H
20				
21	DI Water Consumption	16 gal. per cycle	16 gal per cycle	12 gal per cycle
22				
23	Surfactant Consumption	.35fl. oz./h per cycle		.20fl.oz/hr.
24				
25	Energy Consumption	approx. 10kWH per cycle		approx. 25kWH per cycle
26				
27	Bulkhead Installable	yes	yes	yes
28				
29	External all Polymer heater	yes	no	no
30	External all Quartz heater	yes	no	no
31				
32	<b>Controls:</b>			
33	Touch screen	yes	no	no
34	Digital wash & dry temp. control	yes	yes	yes
35	System fault messages	yes	no	no
36	Microprocess E prom	yes	yes	yes
37	Process status readout	yes	no	no
38	Normal/dry only process capabili	yes	yes	no
39	Rinse cycle adjustable	yes	yes	no
40	Temperature selectable	multiple	multiple	two, hardwired
41				
42	<b>Reliability:</b>			
43	Uptime guarantee	98%	98%	none
44	MTBF guarantee	>1000 hours	>1000 hours	None
45	MTTR	< 3 hours	< 3 hours	No
46	Warranty	1 year	1 year	none
47	Training	yes, std. with system	yes, std. with system	NO
48				
49	<b>Maintenance:</b>			
50	Components	baseline	100 more than 8020	????
51	On board hour meter	yes	no	no
52	DI Pump	Iwaki, still mfg.	Iwaki, still mfg.	Hobart, not avail.304 S.S.
53	Magnetically coupled pump	yes	no	no

Cassette/Box Washer Comparison

	A	B	C	D
54	Pump monitoring system	yes	no	no
55	Spray arms	yes	yes	discontinued by Hobart
56	Fluoroware valves	yes	yes	no
57	Flaretek fittings	yes	yes	no
58	Parts	Readily available	Available	Difficult to find
59	Field service availability	yes	yes	minimal
60				
61	<b>SAFETY:</b>			
62	Interlocked process door	yes	yes	by handle,
63	Ext. use of low voltage parts	yes	yes	no, high voltage 120volts
64	Finger guards on blower	yes	yes	no
65	Shielded electrical components	yes	yes	no
66	Liquid tight conduit & fittings	yes	yes	no
67	Interlocked Electrical enclosures	yes	no	no
68	Redundant overtemp protection	yes	yes	no