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TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

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Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

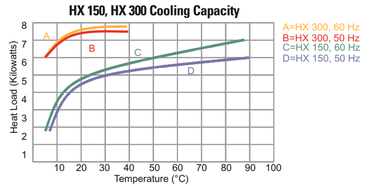
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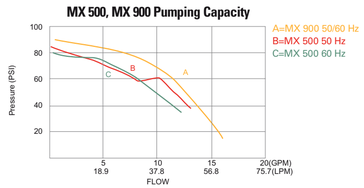
Find the *Thermo / Neslab Steelhead 3 CHX* at our website: ***Click HERE***

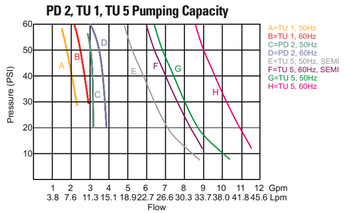
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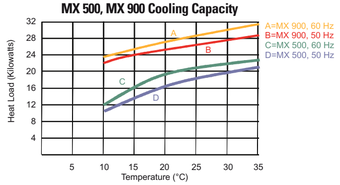
NESLAB Refrigerated Recirculating Chiller Specifications

	HX 150 TU 1	HX 150 PD 2	HX 300 Semi	HX 300	MX 500	MX 900
Part number	388216061604	388216041606	390299071613	390299071603	293299751601	295229752001
Refrigerant	R404A	R404A	R404A	R404A	R404A	R404A
Temperature range						
C	+5° to +90°	+5° to +90°	+5° to +40°	+5° to +40°	+10° to +35°	+10° to +35°
F	+41° to +194°	+41° to +194°	+41° to +104°	+41° to +104°	+50° to +95°	+50° to +95°
Cooling capacity						
50 Hz	4.5 kW	4.5 kW	7.3kW	7.3kW	16.4 kW	24.0 kW
60 Hz	4.8 kW	4.8 kW	7.5kW	7.5kW	19.3 kW	25.2 kW
Heater capacity	1kW	1kW	n/a	n/a	n/a	n/a
Pump performance						
50 Hz LPM	7.6 LPM @ 2.8 bar	11.4 LPM @ 3.4 bar	19.7 LPM @ 3.4 bar	26 LPM @ 3.4 bar	24.6 LPM @ 4.8 bar	47.7 LPM @ 3.4 bar
50 Hz GPM	2 GPM @ 40 psi	3 GPM @ 50 psi	5.2 GPM @ 50 psi	6.9 GPM @ 50 psi	6.5 GPM @ 70 psi	12.6 GPM @ 50 psi
60 Hz LPM	9.5 LPM @ 3.1 bar	13.2 LPM @ 3.4 bar	24 LPM @ 3.4 bar	34 LPM @ 3.4 bar	20.4 LPM @ 4.8 bar	47.7 LPM @ 3.4 bar
60 Hz GPM	2.5 GPM @ 45 psi	3.5 GPM @ 45 psi	6.3 GPM @ 50 psi	9.0 GPM @ 50 psi	5.4 GPM @ 70 psi	12.6 GPM @ 50 psi
Compliance	CE, SEMI-S2-0200	CE, SEMI-S2-0200	CE, SEMI-S2-0200	CE	CE, UL, SEMI S2-0200, SEMI F 47	CE,CSA/NRTL, SEMI S2-0200, UL
Temperature stability						
C	±0.5°	±0.5°	±0.5°	±0.5°	±0.5°	±0.5°
F	±0.9°	±0.9°	±0.9°	±0.9°	±0.9°	±0.9°
Reservoir Volume						
gallon	8.0	8.0	4.5	4.5	8.0	8.0
liter	3.03	3.03	17	17	30	30
Unit dimensions						
H x W x D in	39 x 36 x 21	39 x 36 x 21	39 x 33 x 25	39 x 26 x 21	48 x 36.25 x 26.5	48 x 36.25 x 26.5
H x W x D cm	99 x 92 x 54	99 x 92 x 54	99 x 84 x 64	99 x 66 x 53	122 x 92 x 67	122 x 92 x 67
Power Requirements						
50 Hz	208V	208V	208-230V	208-230V	200 VAC	200 VAC
60 Hz	200V	200V	200V	200V	208 VAC	208 VAC
Deionization filter	Yes	Yes	No	No	No	No
Plumbing connections						
inlet/outlet	1/2" female NPT	1/2" female NPT	3/4" quick disconnects	3/4" female NPT	3/4" female NPT	3/4" female NPT
drain	1/2" female NPT	1/2" female NPT	1/2" female NPT	1/2" female NPT	3/4" female NPT	3/4" female NPT
Unit weight						
lb	220	220	319	314	567	567
kg	99.8	99.8	145	142	257	257
Communications	Analog	Analog	Analog, Digital	Analog, Digital	Analog, RS232	Analog











Low Cost of Ownership
- **Support multiple applications**
- **Guaranteed Leak Free**
- **Extreme reliability**
- **Ensures more uptime**

Thermo

Optional enhancements: Industry Leadership Backed by Custom Service Options

Thermo Electron Corporation has a well-established reputation as a proven provider of temperature control technology, global service and support. With the addition of formerly independent companies NESLAB and HAAKE to the Thermo family, the company has more than 75 years of industry experience. Thermo professionals worldwide develop and support the solutions that help you analyze, detect, measure, and control your applications with increasingly advanced precision.

Thermo understands your business and its cyclical nature. That is why our Fab *Performance* Services are designed for flexibility, allowing customers to select the level of services required to meet current business needs. Whether you are operating one shift per day or 24/7, Thermo has just the right combination of Fab *Performance* Services to meet your operational and budgetary requirements.

Our Thermo Direct program includes local, customized service options to help you manage the life of your recirculating chillers and heat exchangers and reduce your downtime risk and costs. Rather than simply respond to service problems as they occur, we will help minimize downtime incidents.

	FAB Performance Assist	FAB Performance Advantage	FAB Performance Management
Business Priority	Maintenance Budget	Reduce downtime	Minimize downtime and improve Fab maintenance personnel utilization
Program Description	Equipment maintenance training & spare parts management support to optimize budget	Proactive equipment replacement and staging support to remove high-risk equipment from your temperature control installed base	FAB Performance Advantage program features plus: Dedicated Thermo certified service resources onsite to ensure optimal temperature control equipment uptime and performance
Cost Controls	• Improve maintenance personnel productivity • Improve inventory management & control • Optimize maintenance budget	• Contract unit pricing • Reduce Fab spares inventory via shared inventory model • Improve Fab maintenance personnel utilization	• Fab maintenance resources reallocated to other critical tasks • Dedicated Thermo certified application support to optimize temperature control system performance • Extended product lifecycles lowering COO
Uptime	• Extend PM frequency • Fast in-situ repair, or, replacement decisions • Improve maintenance resource utilization	• Proactive equipment replacements made during scheduled downtime • Certified Spares** management minimize unplanned downtime risk • Targeted incident prevention	• Maximize temperature control equipment up-time • 100% turnkey factory support • Temperature Control Equipment up-time guarantee
Dependability	• Parts availability guarantee • Priority factory technical support • Trained and certified Fab maintenance staff	• Streamline maintenance support via inventory controls and technical support • Factory service technician onsite two times per year for PM/calibrations • Certified Spare** unit availability guarantee	• Certified Thermo personnel • Optimize temperature control equipment performance • Minimize critical process equipment temperature variability

**A Thermo Certified Spare is a product remanufactured and tested to meet new product performance specifications. Certified Spare products include current software, firmware and refrigerant upgrades as well as a new product warranty

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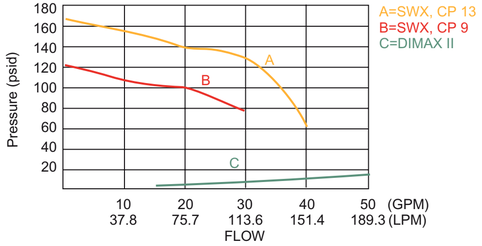
NESLAB Water-to-Water Heat Exchanger Specifications

	DIMAX 2	Steelhead 0	Steelhead 1	System III	SWX 100 CP 9	SWX 100 CP 13
Part number	*622018991803 / 622023991803	620000000015	620000000005	327027991701	603099991601	603099991602
Temperature range						
C	+20° to +30°	+30° to 85°	+30° to +101°	+15° to +30°	+15° to +30°	+15° to +30°
F	+68° to +86°	+86° to +125°	+86° to +214°	+59° to +86°	+59° to +86°	+59° to +86°
Cooling capacity						
50 Hz / 60 Hz	200 kW	8 kW	8 kW	50 kW	100 kW	100 kW
Number of channels	n/a	4 (2GPM per channel)	4 (2GPM per channel)	n/a	n/a	n/a
Materials	copper, stainless	brass, copper, stainless	all stainless	brass, copper, stainless	Stainless, nickel	copper, stainless
Pump performance						
60 Hz LPM	150 LPM @ 1.6 bar	30 LPM @ 5.5 bar	30 LPM @ 5.5 bar	49 LPM @ 2.4 bar	95 LPM @ 6.2 bar	114 LPM @ 8.6 bar
60 Hz GPM	40 GPM @ 23 psi	8 GPM @ 80 psi	8 GPM @ 80 psi	13 GPM @ 35 psi	25 GPM @ 90 psi	30 GPM @ 125 psi
Compliance	CE, CSA/NRTL, SEMI S2-0200 SEMI F47, SEMI S2-0703	CE, IBM Safety standards including EMO	CE, IBM Safety standards including EMO	CE	CE, SEMI 52-0703	CE, SEMI 52-0703
Reservoir volume						
gallon	23	5	5	21.7	23.7	23.7
liter	87	19	19	82.1	90	90
Unit dimensions						
H x W x D in	53.6 x 33.2 x 32.1	30.25 x 20.25 x 29.25	30.25 x 20.25 x 29.25	30.50 x 25 x 26	45.5 x 36 x 37.5	45.5 x 36 x 37.5
H x W x D cm	136.0 x 84.3 x 81.6	76.8 x 51.4 x 74.3	76.8 x 51.4 x 74.3	90.2 x 63.5 x 66.0	115.6 x 91.4 x 95.2	115.6 x 91.4 x 95.2
Power requirements						
50 Hz	*200-208V / 460V, 3 phase, 8 amps	200V / 208V, 3 phase, 23 amps	200V / 208V, 3 phase 23 amps	208V, 1 phase 10 amps	380-460V, 3 phase, 9.6 amps	380-460V, 3 phase, 9.6 amps
60 Hz	*200V / 380-400V, 3 phase, 8 amps	200V / 208V, 3 phase, 25 amps	200V / 208V, 3 phase, 25 amps	208V, 1 phase 10 amps	380-460V, 3 phase, 9.6 amps	380-460V, 3 phase, 9.6 amps
Plumbing connections						
inlet/outlet	2" female NPT	1/2" quick disconnects	1/2" quick disconnects	1" 37° flare fittings	1" female NPT	1" female NPT
drain	1/2" female NPT	1/2" female NPT	1/2" female NPT	3/4" female NPT	1/2" female NPT	1/2" female NPT
Unit weight						
lb	626	166	166	311	636	636
kg	284	365	365	141	636	636
Serial Communications	Analog, Digital, DeviceNet	Analog, Digital	Analog, Digital	Analog, Digital	Analog	Analog

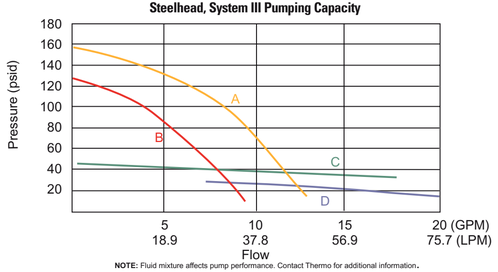


Reliable Performance
- **Proven quality**
- **Extended DI Life**
- **Next Generation AMAT 0/1**
- **Medium / High temp. Options**

DIMAX 2, SWX Pumping Capacity



Steelhead, System III Pumping Capacity



NOTE: Fluid mixture affects pump performance. Contact Thermo for additional information.

A=SH0/1, 60 Hz
B=SH0/1, 50 Hz
C=SYSTEM III, 60 Hz
D=SYSTEM III, 50 Hz



Innovative Technologies
- **Modular Construction**
- **Multi-channel support**
- **VFD Power conditioning**
- **Integrated plumbing assy**

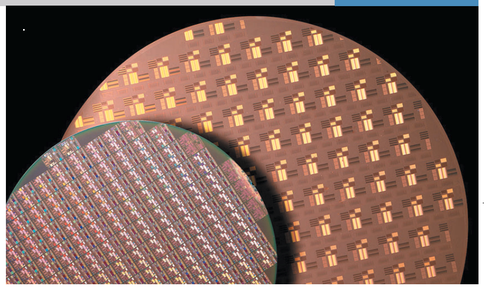
NESLAB recirculating chillers and heat exchangers maintain precise temperature control of your critical process components insuring process stability.

NESLAB Recirculating Chillers and Heat Exchangers for Semiconductor Applications

Reliable, easy-to-maintain units that minimize total cost of ownership

Typical semiconductor applications:
Processes:
- **Dry etch – plasma (e.g RF/Microwave)**
- **Wet etch**
- **Dry deposition (e.g. CVD, SACVD, PVD)**
- **Wet deposition (e.g. ECP)**
- **Ion implantation**
- **Plasma asher**
- **Planarization**

Components:
- **Chamber walls**
- **Cathodes**
- **Domes**
- **Upper/lower electrodes**
- **Chucks/disks**
- **Ozone generators**
- **Cleaning baths and plating tanks**
- **RF power supplies**





Unequaled product quality, performance and overall value.
NESLAB recirculating chillers and heat exchangers from Thermo Electron Corporation are designed to meet the demanding productivity requirements of the semiconductor industry.

Low Operating Cost
- Minimal water usage and energy consumption.

Ease of Use
- Intuitive menu driven configuration.
- Flow is user configurable for optimized temperature control.
- Controller LED shows status and troubleshooting information.

Long Term Reliability
- Robust modular design & construction.
- Proven performance with large installed base.

Backwards Compatibility
- Performance and integration compatible with original NESLAB equipment supplied by the OEM.

Worldwide Factory Support
- Backed by a comprehensive customer support program.
- Flexible and customized service programs available to meet your operational needs.

Remote Control Operation
- RS232, RS485, DeviceNet, Analog I/O available.

Compliance
- SEMI 0200, CE, UL, CSA.

Analyze • Detect • Measure • Control™

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