www.LOTvacuumAM.com

SERIES

DD105

DD225

LD

HD

GD

GHD

LEADER OF VACUUM TECHNOLOGY

2012 Vacuum Pump Catalog

lotvacuum
Leader Of Vacuum Technology

WELCOME TO LOT VACUUM CORPORATION

Since our establishment in 2002, LOT Vacuum Co. LTD has introduced 6 different series of dry vacuum pumps to support the needs of our global customers. In 2011 we achieved $85,000,000 in sales, installed our 8,000th vacuum pump and were qualified on our 34th OEM tool platform. We are truly grateful for the confidence the global community has placed in our products and services.

In this 2012 catalog, we are pleased to introduce the **GD Series** and **GHD** Series Dry Vacuum Pumps.

The GD Series builds upon the proven Dura-Dry dual screw design introduced by LOT Vacuum in 2002 and provides world class conservation of operating resources. The GD Series is well suited for demanding applications in Flat Panel Display, OLED / LED, Solar PV, and 450mm Semiconductor manufacturing. Both harsh duty CVD Process configurations and Transfer / Load Lock configurations are available.

The GHD Series provides large capacity dry pumps for Industrial, and large scale LCD and Solar applications. Custom GHD configurations provide single stage pumping capacity up to 2,200 M^3/Hr and added booster blowers increase capacities to over 10,000 M^3/Hr.

The **Dura-Dry** and energy efficient **LD Series** and **HD Series** pumps complete our product line offering. They are based on the original screw pumping designs that established the superior performance of LOT dry vacuum pumps. The Dura-Dry and HD lines provide world class performance in the most severe Semiconductor CVD and Deep Trench Etch applications. The LD line provides leadership in conservation of operating resources for On-Board Load Lock, Transfer, and Mild Process applications.

From the R&D Lab, to the largest Flat Panel and Solar PV applications, LOT Vacuum will provide proven technology to meet your needs. We invite you to review our products and contact us regarding any application you may want to discuss.

To your success,

Frank Jankowsky III
President
LOT Vacuum America, Inc.
FJ@LOTvacuumAM.com

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MILESTONES:

Since its establishment in 2002, LOT Vacuum has been demonstrating leadership in the global vacuum industry through its innovation and new technology development:

2010:

- Delivered its 7,000th vacuum pump unit
- Generated Revenues of $75,000,000
- Qualified Pumps on its 30th OEM Tool Platform
- Introduced the GD Series for Flat Panel, OLED/LED, Large Scale CIGS/Solar
- Introduced the GHD Series for Industrial and Very Large Scale CICG/Solar

2009:

- Delivered its 1000th pump to the Global Solar PV Market
- Registered the EcoSL and EcoScew Trademarks

2008

- Received the $10,000,000 Export Award from the Korean Industrial Trade Association
- Delivered its first High Energy Efficiency HD and LD Series Vacuum Pumps

2007

- Received the Korea New Technology Practical Application Award
- Delivered its 1st DD255 Series Pumps for 300mm Semiconductor Applications
- Received the Korean Semiconductor Technology Award
- Established an OEM Product Supply Agreement with Oerlikon Vacuum

2006

- Established LOT Vacuum America in Austin, Texas, USA
- Filed Patents for High Energy Efficiency HD and LD Vacuum Pump Lines
- Patented the Roots-Screw combination vacuum pump

2005

- Established its Initial Public Offering on the KOSDAQ Exchange
- Acquired BS EN ISO 14001 Certification
- Acquired CE certifications

2004

- Registered as a Korean “Venture Enterprise”
- Certified its 1st ERP System
- Filed Patents for the 1st Roots-Screw combination rotor design
- Expanded its Technical Research Center

2003

- Acquired ISO9001 Certification
- Established its Technical Research Center in Anseong, Korea
- Established 24/7 Global Support Center in Suwon, Korea
- Delivered its 1st DD105 Series Unit to the United States
- Delivered 1st DD105 Series Vacuum Pumps (16) to Samsung Electronics

2002

- Opened its Manufacturing Center in Cheonan, Korea
- Established LOT Vacuum Co. Ltd

LEADER OF VACUUM TECHNOLOGY

Revolution^2

DuraDry Revolution^2 Benefits

Energy Efficency

World Class Conservation of Resources

Industry Leading MTBF:

Simplicity of design minimizes parts and wear

Minimal Particle Deposition:

Short Gas Path enables quick exit of particles

Minimal Process Deposition:

Unique Temperature Control enables heated or cooled rotors

Extended Bearing Life:

Split Flow Design & Simply Supported Bearings cancel loads

Extended Seal Life:

Non-contact Piston Ring Labyrinth superior to shaft lip seals

LOT Vacuum Co. LTD is a Korean company developing, producing, and servicing High Energy Efficiency Dry Vacuum Pumps for Solar PV, Semiconductor, Flat Panel Display, and Industrial applications.

LOT Vacuum America, Inc. provides Sales, Service, Support, Systems Engineering, and Maintenance Services for LOT Vacuum Products. Contact us at **www.LOTVacuumAM.com**, or call us at **512-926-4750.** We will be glad to explain the design and operating advantages of LOT Vacuum products, and arrange a demonstration for your application.

APPLICATION SUMMARY

SOLAR APPLICATIONS

	Process	LD SERIES	HD SERIES	GD & DD SERIES	DD105 SERIES	Recommended Options: Exhaust Heating	Recommended Options: Internal Gas Purge
Si Wafer Solar Cells	LP CVD		•	•	•	•	•
	PE CVD		•	•	•	•	•
	MO CVD		•	•	•	•	•
	PVD		•	•	•	•	•
	Lamination		•	•	•	•	•
Thin Film Solar Cells a-Si/μSi CIGS, CdTe	LP CVD		•	•	•	•	•
	PE CVD		•	•	•	•	•
	PVD		•	•	•	•	•
	Lamination		•	•	•	•	•
Si/Ge Wafer Ingot	Growth	•	•				
Support	Load Lock & Transfer	•			•		
	Metrology & Inspection	•			•		
	Preclean	•			•		

SEMICONDUCTOR & DISPLAY APPLICATIONS

	Process	LD SERIES	HD SERIES	GD & DD SERIES	DD105 SERIES	Recommended Options: Exhaust Heating	Recommended Options: Internal Gas Purge	Recommended Options: Internal Heat Exchanger
Dielectric Film Deposition	LP CVD SiN		•	•	•	•	•	
	LP CVD Others		•	•	•	•	•	
	PE CVD SiN		•	•	•	•	•	
	PE CVD Others		•	•	•	•	•	
	ALD		•	•	•		•	•
Metallic Film Deposition	PVD		•	•	•	•	•	
	CVD W, WSi, WN		•	•	•		•	•
	CVD Ti, TiN		•	•	•		•	•
	CVD Al		•	•	•		•	•
	ALD		•	•	•		•	•
Etch	Metal	•	•	•	•	•		
	Deep Trench / Others		•	•	•			
Clean	Load Lock & Transfer	•						
	Metrology & Inspection	•						
	Preclean	•						

Revolution²

Simple

Low CoO Technology

Extended sevice intervals in all semiconductor and display processes

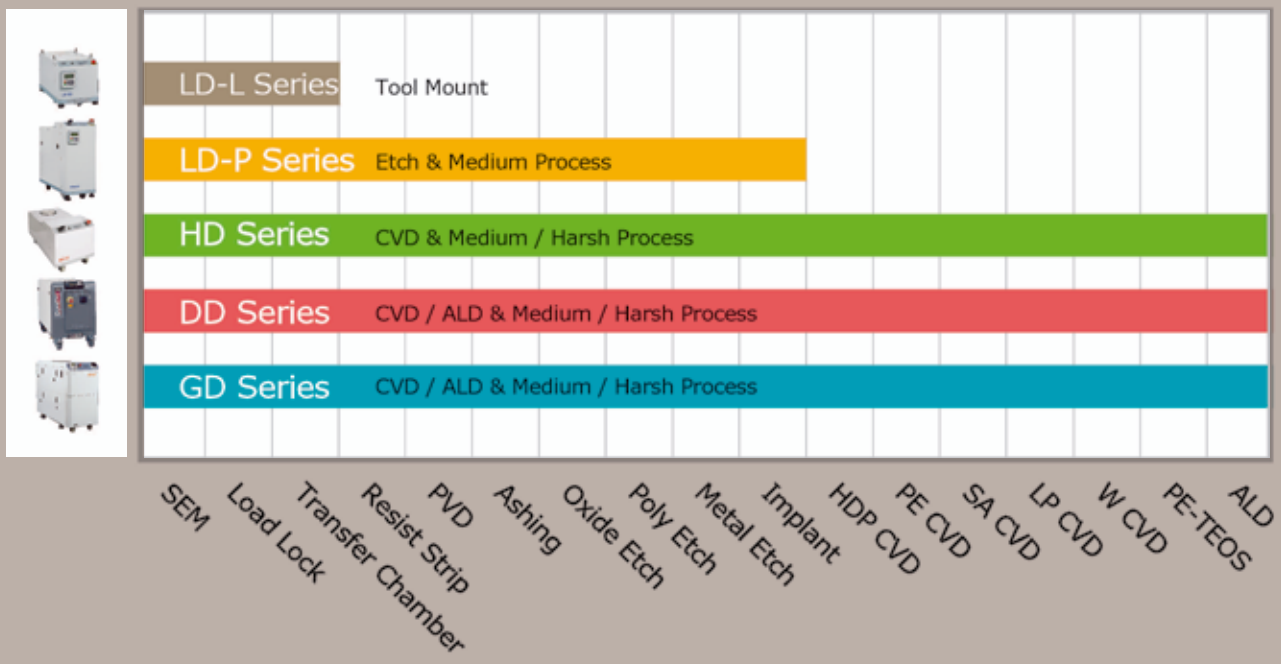
Reliable

Designed for the highest reliability standards

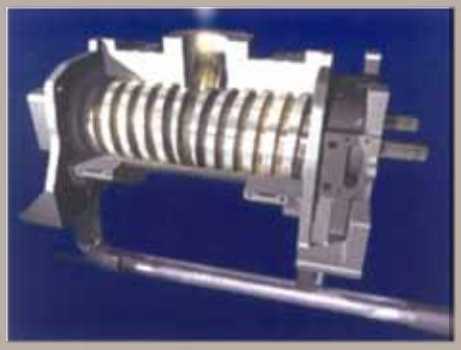
Robust

More than 10X particle handling over conventional designs

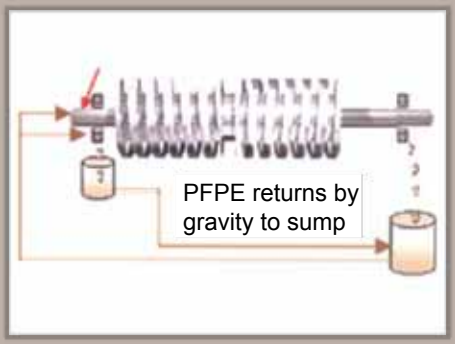
Leader of Vacuum Technology for all Semiconductor and Display Applications



BENEFITS OF DURADRY SCREW TECHNOLOGY

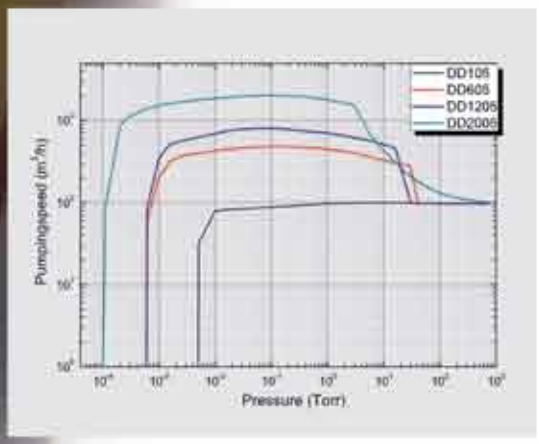


- ☐ Wide range of temperature control
- ☐ Simply supported bearings
- ☐ Piston ring shaft sealing mechanism
- ☐ Highest pumping speed
- ☐ Ease of maintenance
- ☐ Increased reliability
- ☐ 30% reduction in CoO

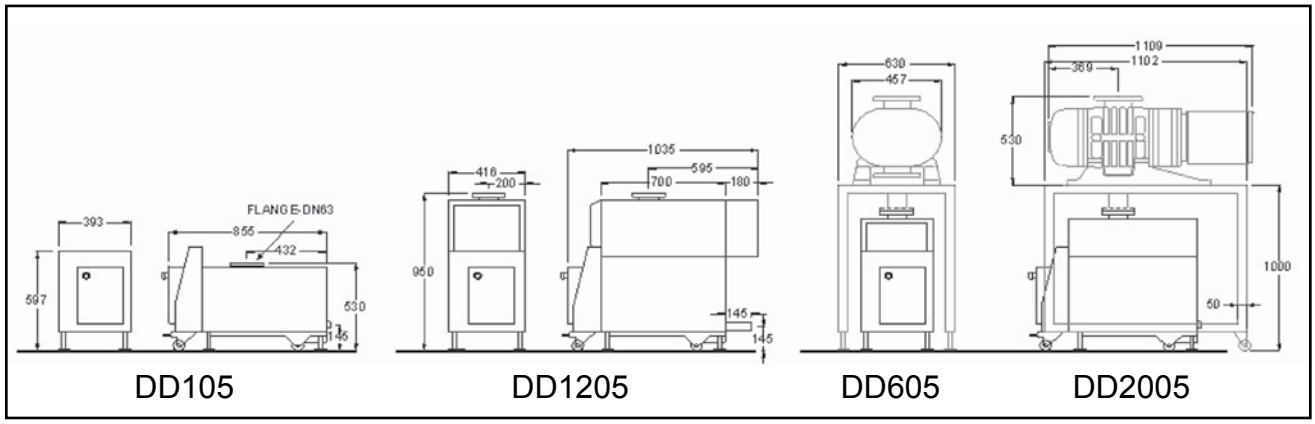


- ☐ Short gas path
- ☐ Minimum particle deposition
- ☐ PFPE-cooled rotors
- ☐ PFPE lubricated bearings
- ☐ Long bearing life

DD105 Series



PLAN



ORDERING INFORMATION

	DD105			DD605			DD1205		DD2005	
	L	P	PW	L	P	PW	P	PW	P	PW
Low Voltage (200V~230V) 50/60Hz	172100	172506	172508	172700 172701	172706	172708	172806	172808	172906	172908
High Voltage (308V~415V, 460V~480V) 50X60Hz	172100HV	172506HV	172508HV	172700HV 172701HV	172706HV	172708HV	172806HV	172808HV	172906HV	172908HV

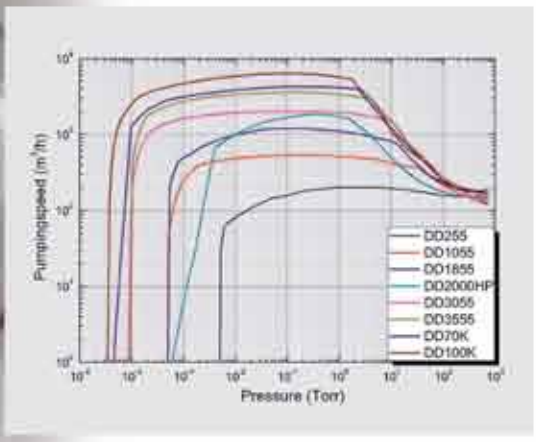
6th Digit in Catalog Number(x) / 0=Load lock / 1=Inverter Control / 6=Exhaust heating, CVD purge / 8=Heat exchanger, CVD purge

TECHNICAL DATA

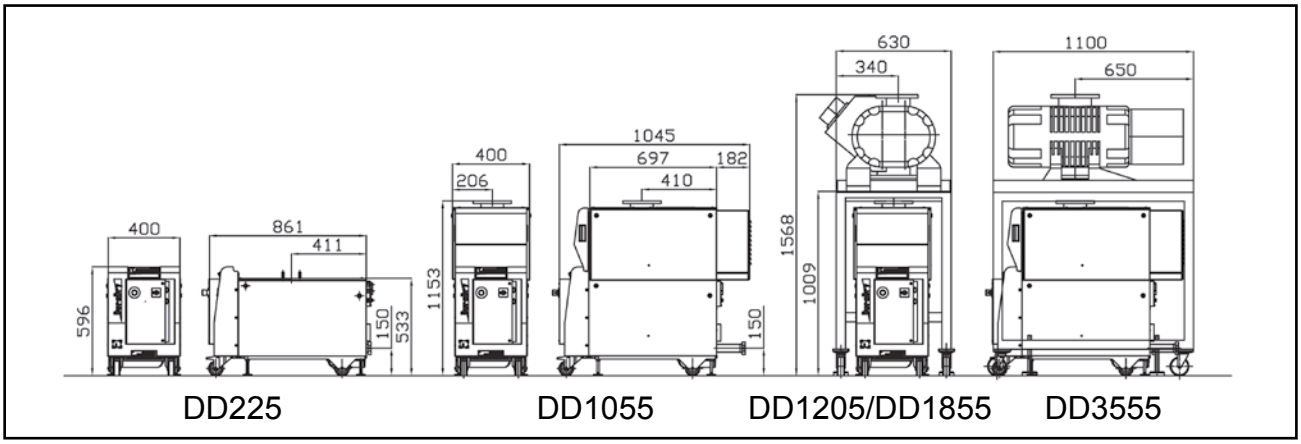
	UNITS	DD105	DD605	DD1205	DD2005
Theoretical Displacement	m^3/hr	120	606	1200	2460
	l/min	2000	10102	20004	41008
Nominal Pumping Speed	m^3/hr	105	480	810	2020
	l/min	1750	8002	13503	33673
Ultimate Pressure with Full CVD Purge	Torr	≤$5.0x10^{-3}$	≤$6.0x10^{-4}$		≤$5.0x10^{-4}$
Maximum Intake Pressure in Continuous Operation	Torr	760	20	10	10
Maximum Exhaust Pressure	bar	1.5			
Nitrogen Supply Pressure	bar	4 to 8			
Internal Purge-Gas Pressure	bar	3			
Nitrogen Consumption (ETCH)	slm	12			
Nitrogen Consumption (CVD)	slm	50			
Exhaust Flush Purge (Optional)	slm	100			
Exhaust Hot N2 Purge (Optional)	ºC	≤180			
Nitrogen Connection	inch	3/8” NPTF with 1/4” NPT Tube Connector			
Cooling Water Flow	L/min	1.8 to 2.8			
Cooling Water Temp	ºC	15 to 30			
Cooling Water Pressure with ΔP≥1 bar	bar	3.5 to 9			
Cooling Water Connection	inch	1/2” NPTF with 3/8” Tube Connector			
Intake Port	mm	DN 63 ISO-K		DN 100 ISO-K	DN160 ISOK
Exhaust Port	mm	DN 40 KF			
Dimensions (WxLxH)	mm	400x987x596	400x987x840	400x1153x1065	720x1150x1550
Weight	kg	278	435	578	965
Maximum Ambient Temperature	ºC	40			
Minimum Ambient Temperature	ºC	10			
Typical Power Consumption	kw	4	5	6	9
Typical Motor Power	kw	5	7.4	9	15.9
Supply Voltage-Multi-Voltage Motor	V/□/Hz	200-208-230/460-480V(±10%), 3□, 60HZ, 200-208/380-415V(±5%), 3□, 50Hz			
Short Circuit Interrupt Capacity (SCIC)	kA	100			
PFPE oil Quantity in Gear Box	Liters	1.1 †	1.1+1 for blower †	1.14+2 for blowers †	1.1+5 for blowers †
Frequency Converter		No	No	No	No

† The DuraDry models with the optional external heat exchanger require an additional 0.3 liters of PFPE oil.

DD255 Series



PLAN



ORDERING INFORMATION

	DD255		DD1055		DD1855		DD2055		DD3055		DD3555	
	P	PW	P	PW	P	PW	P	PW	P	PW	P	PW
Low Voltage (200V~230V) 50/60Hz	272506	272508	272716	272718	272816	272818	272616	272618	272216	272218	272916	272918
High Voltage (308V~415V, 460V~480V) 50X60Hz	272506HV	272508HV	272716HV	275718HV	272816HV	272818HV	272616HV	272618HV	272216HV	272218HV	272916HV	272918HV

6th Digit in Catalog Number(x) / 0=Load lock / 1=Inverter Control / 6=Exhaust heating, CVD purge / 8=Heat exchanger, CVD purge

TECHNICAL DATA

	UNITS	DD225	DD1055	DD1855	DD2000HP	DD3055	DD3555	DD70K	DD100K
Theoretical Displacement	m^3/hr	225	606	1613	2800	2460	3694	5280	8400
	l/min	3751	10102	26889	46676	41008	61579	88018	140028
Nominal Pumping Speed	m^3/hr	200	540	1210	1800	2020	3660	4250	6730
	l/min	3334	9002	20171	30006	33673	61012	70848	112189
Ultimate Pressure	Torr	≤$5.0x10^{-3}$	≤$5.0x10^{-4}$		≤$8.0x10^{-4}$				
Maximum Exhaust Pressure	bar	1.5							
Nitrogen Supply Pressure	bar	4 to 8							
Internal Purge-Gas Pressure	bar	3							
Nitrogen Consumption (ETCH)	slm	12							
Nitrogen Consumption (CVD)	slm	50							
Exhaust Flush Purge (Optional)	slm	100							
Exhaust Hot N2 Purge (Optional)	ºC	≤180							
Nitrogen Connection	inch	3/8" NPTF with 1/4" NPT Tube Connector							
Cooling Water Flow	L/min	1.8 to 2.8							
Cooling Water Temp	ºC	15 to 30							
Cooling Water Pressure with ΔP≥1 bar	bar	3.5 to 9							
Cooling Water Connection	inch	1/2" NPTF with 3/8" Tube Connector							
Intake Port	mm^3	DN 63 ISO-K		DN 100 ISO-K	DN160 ISO-K	DN160 ISO-K		DN 250 ISO-K	DN 320 ISO-K
Exhaust Port	mm	DN 40 KF							
Dimensions (WxLxH)	mm	400x987x596	400x987x840	400x1153x1065	420x1153x1013	700x1310x1490	700x1310x1600	700x1265x1640	1000x1700x2050
Weight	kg	278	435	578	578(1274)	871	1014	1168(2571)	1228(2703)
Maximum Ambient Temperature	ºC	40							
Minimum Ambient Temperature	ºC	10							
Typical Power Consumption	kw	4	5	6	6	8	9	9	9
Typical Motor Power	kw	5	7.4	9	9	14.3	15.9	20	15.9
Supply Voltage-Multi-Voltage Motor	V/□/Hz	200-208-230/460-480V(±10%), 3□, 60HZ, 200-208/380-415V(±5%), 3□, 50Hz							
Short Circuit Interrupt Capacity (SCIC)	kA	100							
PFPE Oil Quantity in Gear Box	Liters	1.1 †	1.4+1 for blower †	1.4+2 for blowers †	1.4+2 for blowers †	1.1+4 for blowers †	1.1+5 for blowers †	1.1+7 for blowers †	1.1+7 for blowers †
Frequency Converter		No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

† The DuraDry models with the optional external heat exchanger require an additional 0.3 liters of PFPE oil.

LD Series


MAIN POWER
MERZ
PCE

LD120
LD1000
Pumpingspeed(m³/h)
Pressure (Torr)


LD1000P
LD120

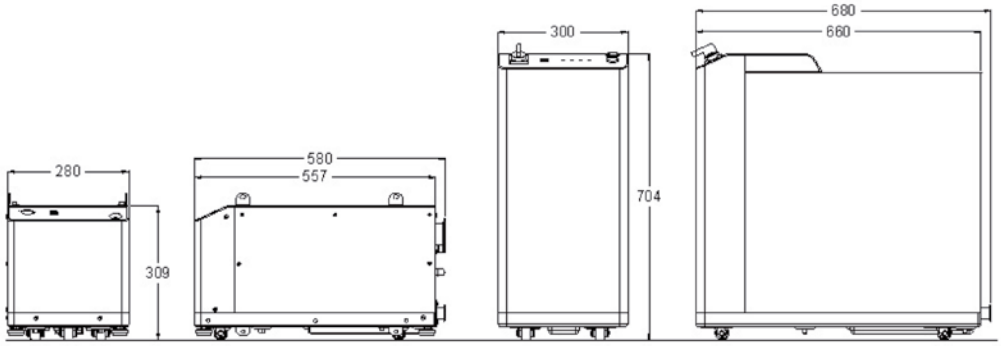
FEATURES:

HYBRID SCREW ROTOR

SHORT GAS PATH / COMPACT SIZE / ENERGY SAVINGS

- Excellent Power Handling
- Low Compression Ratio = Low Gas Temperature = Low Deposition In Pump
- Low Reaction in Pump
- Direct Drive and Frequency Converter

PLAN



LD120L LD1000P

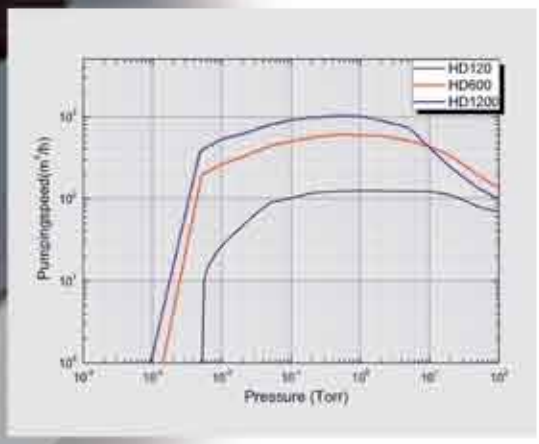
ORDERING INFORMATION

	LD120	LD1000P
Application	Load Lock	Etch, DVD
Catalog Number	370000	370031

TECHNICAL DATA

	UNITS	LD120L	LD1000P
Theoretical Displacement	m^3/hr	150	1298
	l/min	2501	21638
Nominal Pumping Speed	m^3/hr	120	900
	l/min	2000	15003
Ultimate Pressure	Torr	$\leq 5.0 \times 10^{-3}$	
Maximum Exhaust Pressure	bar	1.5	
Nitrogen Consumption	slm	0	12(etch), 32(CVD)
Nitrogen Connection	inch	1/4" Tube (Swagelock Type Fitting)	
Cooling Water Flow	L/min	1.9	
Cooling Water Temp	ºC	15 to 30	
Cooling Water Pressure with ΔP≥1 bar	bar	3.5 to 9	
Cooling Water Connection	inch	1/4" Tube (Swagelock Type Fitting)	
Intake Port	mm^3	DN 50 KF	DN 100 ISO-K
Exhaust Port	mm	DN 25 KF	DN 40 KF
Dimensions (WxLxH)	mm	280x557x309	300x660x704
Weight	kg	102	265
Maximum Ambient Temperature	ºC	40	
Minimum Ambient Temperature	ºC	12	
Power Consumption @ <1 mbar Discharge Pressure	kw	1.5	2.2
Supply Voltage-Multi-Voltage Motor	V/□/Hz	200-208-230/460-480V(±10%), 3□, 60HZ, 200-208/380-415V(±5%), 3□, 50Hz	
Oil for Lubrication		PFPE	

HD Series


HD120
HD600
HD1200
Pumpingspeed(m³/h)
Pressure (Torr)


HD 600P
HD120P
EcoSL

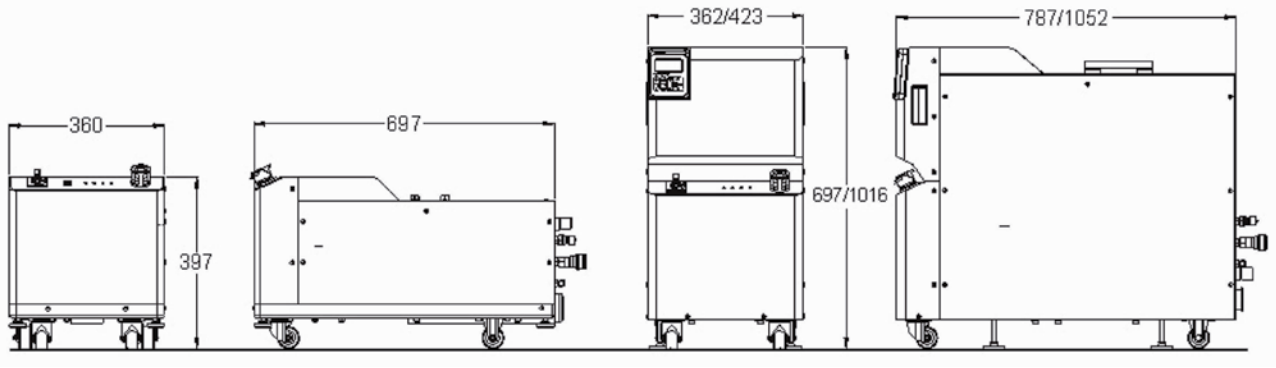
FEATURES:

HYBRID SCREW ROTOR

SHORT GAS PATH / COMPACT SIZE / ENERGY SAVINGS

- Low Compression Ratio = Low Gas Temperature = Low Deposition In Pump
- Excellent Power Handling
- Low Reaction in Pump
- Direct Drive and Frequency Converter

PLAN



HD120 HD 1600 &1200/1855

ORDERING INFORMATION

	HD120	HD600	HD1200	HD1855
Catalog Number	47000X	47002X	47003X	2724XX

6th Digit in Catalog Number(x)

0=Load lock:NO PURGE / 1=ETCH:Exhaust heating, ETCH Purge(0~35slm) / 2=CVD Exhaust heating, CVD purge (0~50slm)

TECHNICAL DATA

	UNITS	HD120	HD600	HD1200	HD1855
Theoretical Displacement	m^3/hr	150	793	1442	2579
	l/min	2501	13219	24038	42992
Nominal Pumping Speed	m^3/hr	120	680	1135	1800
	l/min	2000	11336	18920	30006
Ultimate Pressure	Torr	≤$5.0x10^{-3}$	≤$5.0x10^{-4}$		
Maximum Exhaust Pressure	bar	1.5			
Nitrogen Consumption	slm	14~50	50		12~100
Nitrogen Connection	inch	3/8” NPTF with 1/4” NPT Tube Connector			
Cooling Water Flow	L/min	1.9			
Cooling Water Temp	ºC	15 to 30			
Cooling Water Pressure with ΔP≥1 bar	bar	3.5 to 9			
Cooling Water Connection	inch	1/4” NPTF with Quick Connector			1/2” NPTF with 3/8” Tube Connector
Intake Port	mm	DN 63KF		DN 100 ISO-K	DN 160
Exhaust Port	mm	DN 40 KF			
Dimensions (WxLxH)	mm^3	360x680x397	360x786x690		423x1052x1016
Weight	kg	150	250		600
Maximum Ambient Temperature	ºC	40			
Minimum Ambient Temperature	ºC	12			
Power Consumption @ <1 mbar Discharge Pressure	kw	2.6	3.3		6
Supply Voltage-Multi-Voltage Motor	V/□/Hz	200-208-230/460-480V(±10%), 3□, 60HZ, 200-208/380-415V(±5%), 3□, 50Hz			
Oil for Lubrication		PFPE			

GD Series


WARNING
ALARM
M
ENTER
ALARAM
RESET

Pumping Speed [m³/h]
Pressure [Torr]
1E-4
1E-3
0.01
0.1
1
10
100
1000
0
500
1000
1500
2000
2500
3000
3500
4000
4500

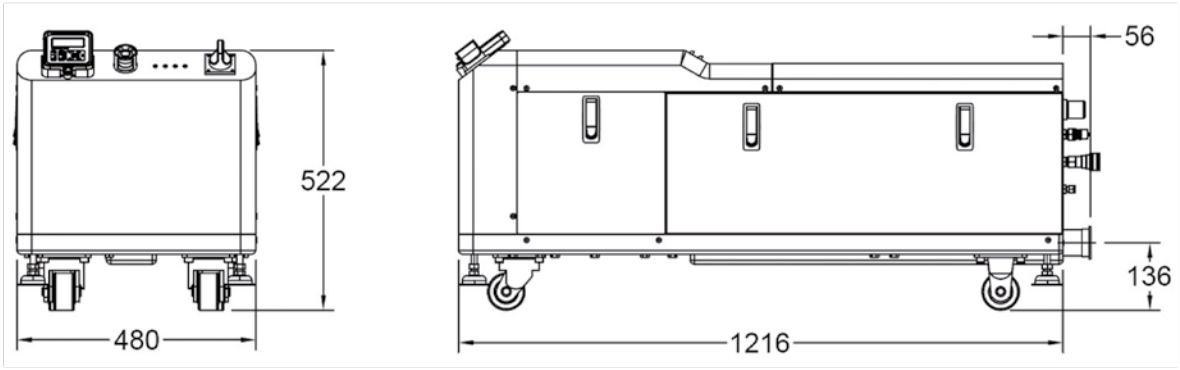

GD3000
EcoSL


GD 400
EcoSL

FEATURES:

- Herringbone Type Split-flow Hybrid-screw Rotor
- Direct Drive
- Frequency Converter
- AC Synchronous Motor (PMAC)

PLAN

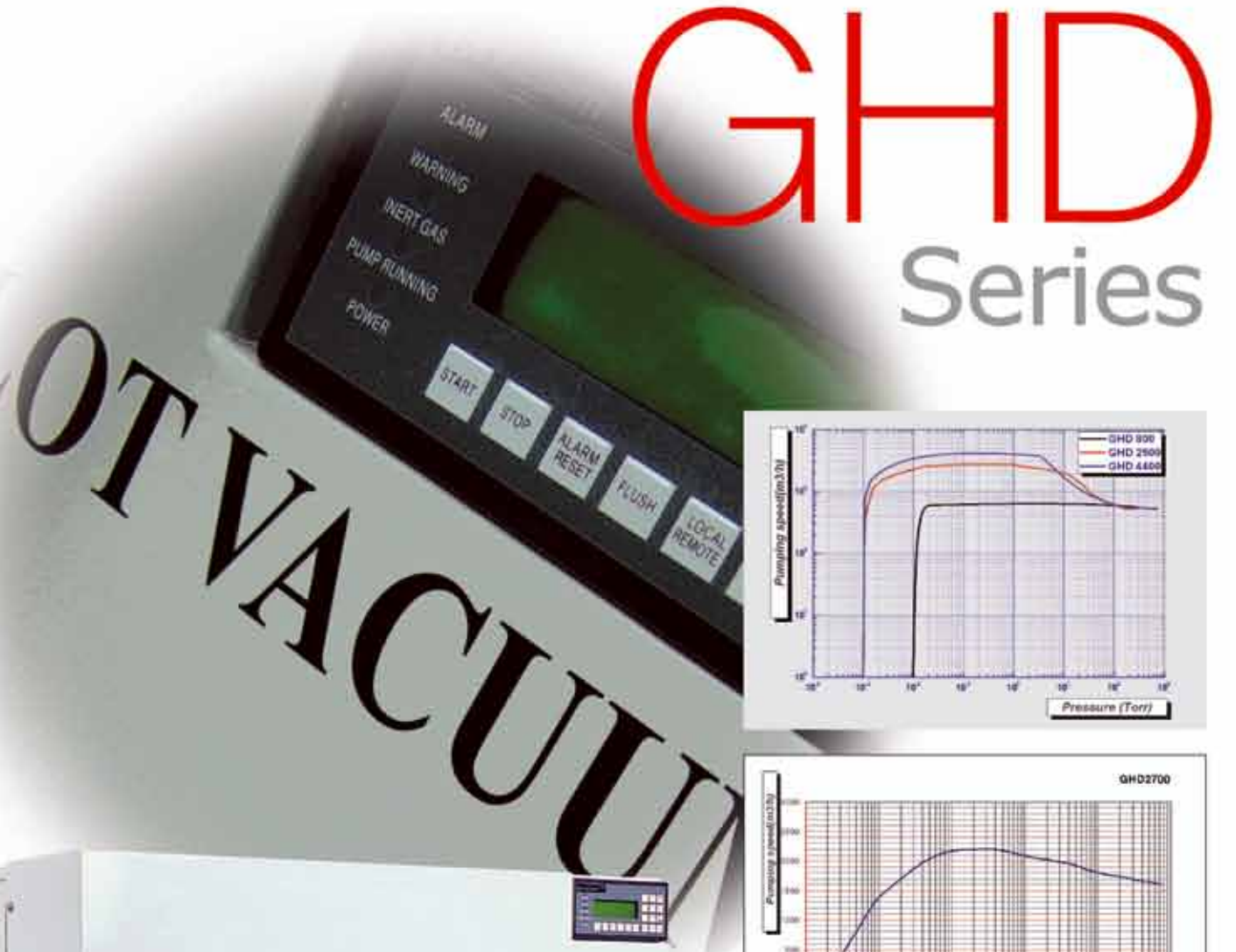


GD400 GD3000

TECHNICAL DATA

	UNITS	GD400	GD3000	GD4000
Pumping speed / Hz operation	m^3/hr	360	3000	4000
	l/min	6000	50000	67000
Ultimate pressure with purge	mbar (Torr)	≤$1.2x10^{-2}$ (≤$9.0x10^{-3}$)	≤$1.2x10^{-3}$ (≤$9.0x10^{-4}$)	≤$1.2x10^{-3}$ (≤$9.0x10^{-4}$)
Maximum Exhaust Pressure	bar (psig)	1.3 (4.16)		
Nitrogen Supply Pressure	bar (psig)	4 to 8 (43 to 100psig), (400 to 800KPa), (4 to 8kg/cm^2)		
Internal purge-gas pressure	bar (psig)	3 (29)		
Nitrogen consumption (CVD)	slm	15 ~ 100		
Nitrogen connection	inch	3/8” Tube (Swagelock Type Fitting)		
Cooling Water flow	ltr/min	5.5 ~ 6.5		
Cooling Water temp.	ºC (ºF)	15 to 25 (59 to 77)		
Cooling water pressure with ΔP ≥15 psi (1 bar)	bar (psig)	3.5 to 9 (36 to 116)		
Cooling water connection	inch	3/8” Tube (Swagelok Type Fitting)		
Intake Port	mm	DN 100 ISO-K	DN 250 ISO-K	
Exhaust Port	mm	DN 50 KF		
Dimensions (WxLxH)	mm	480x1216x522	506x1274x990	625x1328x1167
Weight	kg(lbs)	390	900	1200
Maximum Ambient Temperature	ºC (ºF)	40 (104)		
Minimum Ambient Temperature	ºC (ºF)	10 (50)		
Power Consumption @ ultimate pressure	kw	8	9	9
Typical Motor	kw	10	18.5	21
Supply Voltage-Multi-Voltage Motor	V/□/Hz	200-230V, 3□, 50/60Hz, 380-460V, 3□, 50/60Hz		
Short Circuit Interrupt Capacity (SCIC)	KA	20(200-230V) / 10(400-415V) / 6(440V)		
PFPE oil quantity in gear box	Liters	1.3	1.3+1.2 (for blower)	1.3+4.8 (for blower)

GHD Series


ALARM
WARNING
INERT GAS
PUMP RUNNING
POWER
START
STOP
ALARM RESET
FLUSH
LOCAL REMOTE
OT VACUUM

GHD 900
GHD 2500
GHD 4400
Pumping speed[m3/h]
Pressure (Torr)

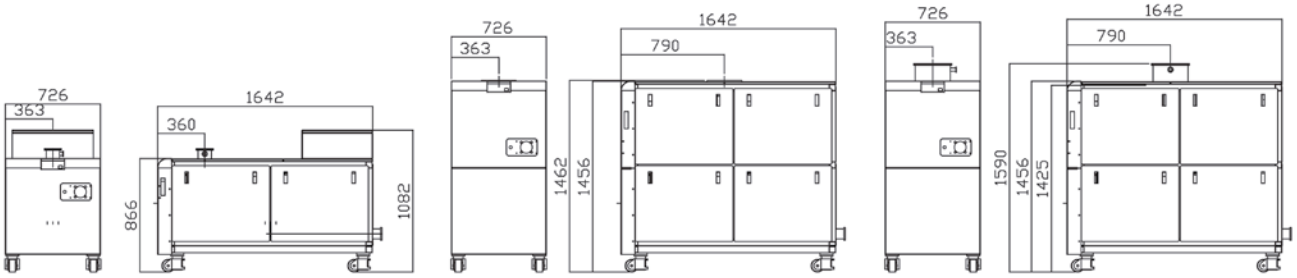
GHD2700
Pressure (Torr)

LOT VACUUM
GHD2500
GHD800
LOT VACUUM
GHD800
lotvacuum
lotvacuum

FEATURES: LARGEST STANDARD SINGLE STAGE DRY SCREW VACUUM PUMP (2700m³/hr)

- Various capacity from 650m³/hr to 10000m³/hr with blower
- No sealing oil or sealing water for vacuum process
- Screw rotor dry vacuum pump
- Suitable for large LCD & solar tools
- Ease of maintenance

PLAN



GHD800 GHD2500 GHD4400

TECHNICAL DATA

	UNITS	GHD800	GHD2500	GHD4400	GHD7000
Rotor type		Screw	Screw+Blower	Screw+Blower	Screw+Blower
Nominal pumping speed (60Hz)	m³/hr	640	2600	4200	6300
Ultimate pressure	Torr	0.01	0.001	0.001	0.001
Power consumption	kw	14.5 (3500)	15.5	16	18
Weight	kg	800	1250	1360	1460
Dimensions (WxLxH)	mm	726x1630x871	726X1640X1471	726X1640X1571	726X1740X1571
Exhaust temp.	ºC	Max. : 250	Max. : 250	Max. : 250	Max. : 250
Noise	dB	<70	<75	<75	<75
Gear oil	liter	1.8	1.8+2.0	1.8+4.75	1.8+4.75
Cooling water	l/min	15	19	21	21
Intake/Exhaust Port	mm	ISO100/ISO63	ISO160/ISO63	ISO250/ISO63	ISO320/ISO63
Power supply voltage		200-280-230/460-480V(±10%), 3Phase, 60Hz			

GHD2700

TECHNICAL DATA

	UNITS	GHD2700
Pumping speed (60Hz)	m³/hr	2700
Ultimate pressure (60Hz)	Torr	>0.1
Min. Warm up time	min	60
Motor rate	kw	55
Power consumption	kw	45
Cooling water	l/min	30 to 40
Cooling water pressure	bar	3.5 to 6
Cooling water connection	inch	1”
Dimensions (WxLxH)	mm	862x1615x660
Weight (Approx)	kg	1800
Port size intake	mm	150A (6B)
Port size exhuast	mm	100A (4B)
Power supply voltage		200-208--230/460-480BV(±10%), 3Phase, 60Hz

Leader Of Vacuum Technology

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