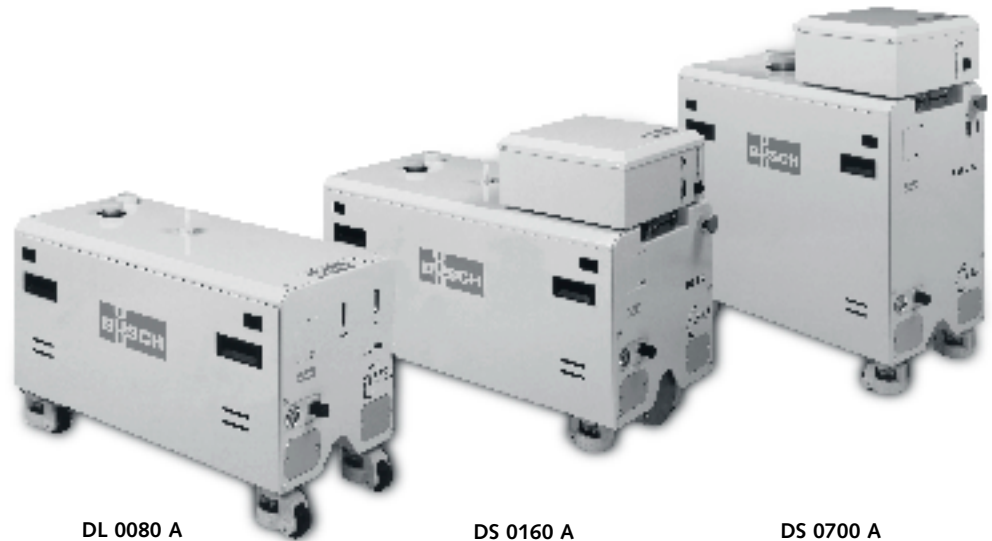


# Screw vacuum pumps for the semiconductor industry



## COBRA

### DS/DL 0080 - 2002 A



#### COBRA design

COBRA single-stage dry screw vacuum pump range takes advantage of the dry screw pump technology to maximize product uptime. The advanced single-stage, swept-volume design of our COBRA line of dry screw pumps allows for fewer moving parts, longer up-time between service, and lower nitrogen consumption than conventional multistage compression vacuum pumps.

The COBRA line is ideally suited for all harsh processes, that are found in the semiconductor industry of today and tomorrow.

#### Our vacuum solutions

Our Semiconductor Vacuum Group supplies a full range of vacuum accessories suited to all semiconductor applications.

In addition to this we offer a vacuum design facility providing turnkey/ project management to both the end user and equipment manufacturers. This includes gas abatement systems, pipework, valves, instrumentation and fabrication.

#### Advanced pump monitoring

The Busch dry screw vacuum pumps of the COBRA DS-series are well prepared for advanced monitoring either at the pump directly or by central monitoring system (CMS). With the latest version of the CMS vacuum pumps as well as abatement systems, vacuum valves and pipe heaters can be monitored.

#### Application oriented

Due to the modular design and the intelligent combination of components Busch can supply application specific variants of vacuum pumps without overstressing the number of basic components. For specific application we can provide easily customized pumps and systems.

#### COBRA DL series

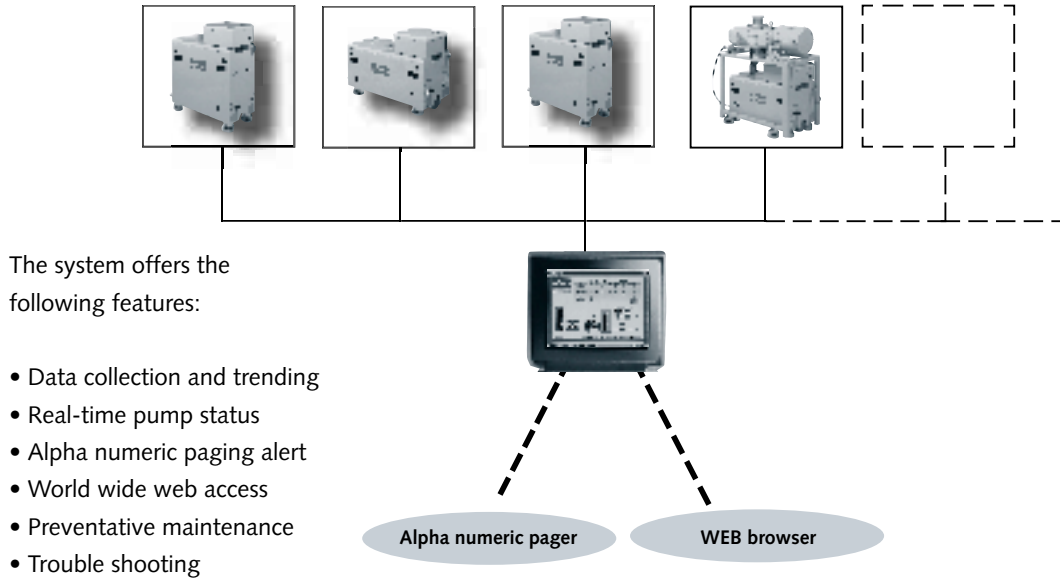
The COBRA DL series comes with the well proven twin screw technology, but electric and electronic components and controls are limited to a minimum. Basic pump monitoring is possible.

#### COBRA DS series

The COBRA DS series is well prepared for advanced monitoring, containing all features of a modern semiconductor vacuum pump. Naturally, it also comes with the twin screw technology. Electric and electronic components and controls are of state of the art.

# Screw vacuum pumps for the semiconductor industry

## Network capability



The system offers the following features:

- Data collection and trending
- Real-time pump status
- Alpha numeric paging alert
- World wide web access
- Preventative maintenance
- Trouble shooting

### High reliability

Due to the well proven twin screw design and the intelligent temperature management of the COBRA dry screw vacuum pumps the DS and DL series is highly reliable even in the harshest applications in semiconductor and related applications. The restart capability is unsurpassed. This finally results in a high life expectancy.

### Low cost of ownership

Long MTBF and preventive maintenance free operation are the main reasons for a low cost of ownership. Low utility consumption and the high reliability are responsible for lower production cost in the semiconductor industry.

### Improved serviceability

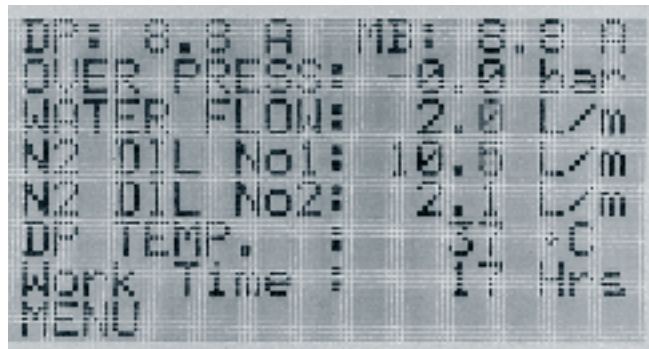
A smaller number of parts with rotors made from one piece and the modular design in general, result in lower costs for overhauls.

### COBRA features

- Single-stage screw design
- Short gas path
- Corrosion resistant variant
- Adjustable temperature control
- Device net compatible
- Ease of service
- Increased uptime
- Low power consumption
- Ideal for harsh applications
- Low cost of ownership
- Improved serviceability
- Improved maintainability

- Increased uptime
- Increased life expectancy of the pump
- Truly global service backup and support, available 24 hours per day/ 365 days per year

## Monitoring System



### Monitoring System

The COBRA DS series dry pump monitoring system features microprocessor design, adjustable thresholds for warnings and alarms and a permanent measurement display. Network compatible, the system offers plug and play ability.

The microprocessor control is available as local or remote control.

The monitoring system contains an adjustable threshold for:

- Warnings
- Alarms
- Permanent measurement
- Casing

Permanent measurement of:

- Casing temperature
- Motor current
- Nitrogen flow
- Water flow

### Universal tool/pump interface

With the introduction of the COBRA DS series dry vacuum pumps, we have simplified the communication between the dry vacuum pump and the process tool.

In line with our continuous development program, we offer a truly universal interface which allows for communication between any process tool and the COBRA dry vacuum pump, whilst retaining the same interface component. This compact universal interface unit allows a standard scope of supply and removes any custom design element.

- Universal interface suited to all pump/process tool requirements
- Dedicated connector to suit each tool manufacturer/model
- Magnetic fixing for ease of installation
- Compact design
- World-wide standard components
- Provision to monitor facility exhaust pressure

- Provides 24 V DC for visual and audible alerts
- Provides 24 V DC for solenoid operation

Busch are well established in the screw technology arena and have the highest level of screw design knowledge and experience in the market since 1993.

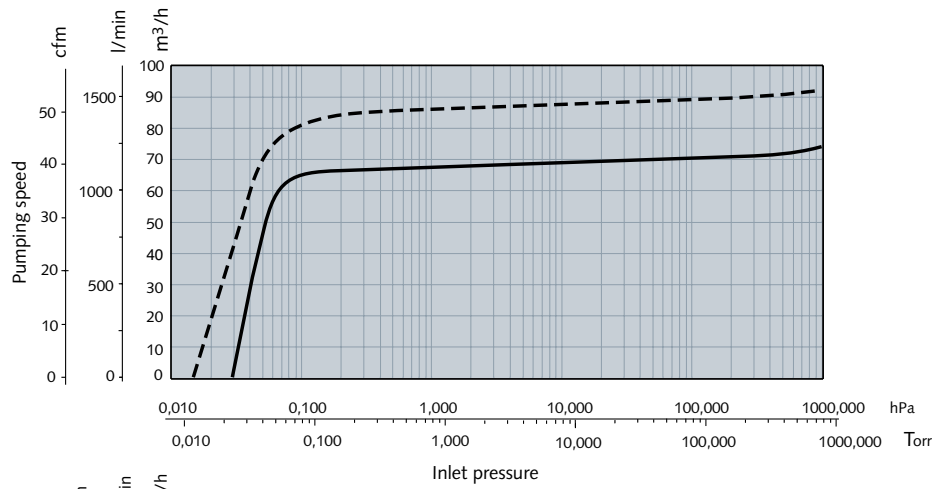
# Screw vacuum pumps for the semiconductor industry

## Technical data COBRA DS/DL 0080 - 0252 A

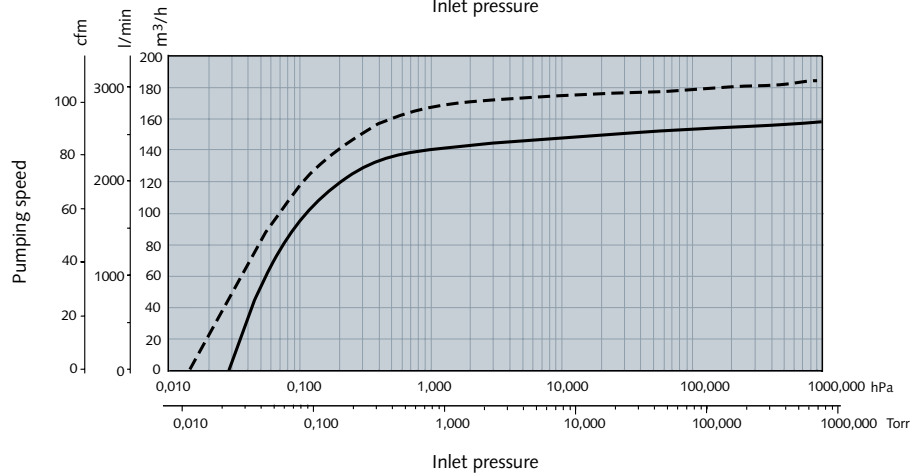
Technical data			DS 0080 A DL 0080 A	DS 0160 A DL 0160 A	DS 0250 A DL 0252 A
Pumping speed 60 Hz (50 Hz)	cfm		50 (41)	112 (93)	156 (130)
	m <sup>3</sup> /h		84 (70)	190 (158)	264 (220)
Base pressure	Torr		0.75 x 10 <sup>-2</sup>	0.75 x 10 <sup>-2</sup>	0.75 x 10 <sup>-3</sup>
	hPa		1x10 <sup>-2</sup>	1x10 <sup>-2</sup>	1x10 <sup>-3</sup>
Rotation speed	Booster	min <sup>-1</sup>	–	–	1800 (1500)
	COBRA	min <sup>-1</sup>	3600 (3000)	7200 (6000)	3600 (3000)
Inlet connection			DN 40 ISO-K	DN 40 ISO-K	DN 63 ISO-K
Outlet connection			DN 40 ISO-K	DN 40 ISO-K	DN 40 ISO-K
Weight		kg	276	338	430
Noise level		dB(A)	62	68	62
<b>Electrical</b>					
Power supply		V	200-230/346-400	200-230/346-400	200-230/346-400
COBRA motor 60 Hz (50 Hz)		kW	2.60 (2.20)	4.40 (4.0)	2.60 (2.20)
Booster motor 60 Hz (50 Hz)			–	–	1.50 (1.25)
<b>Lubrication</b>					
Oil capacity		l	1.4	1.6	2.8
Oil type			PFPE	PFPE	PFPE
<b>Cooling Water</b>					
Connection, quick coupler			3/8" NPT	3/8" NPT	3/8" NPT
Pressure (max)		bar	5	5	5
Pressure dif. (min)		bar	2	2	2
Flow (min)		l/min	2	2	2
Water temperature		°C	20	20	20
<b>Nitrogen</b>					
Overpressure seal flow		bar	1.5	1.5	1.5
Dilution flow (process dependent)		l/min	0-18	0-18	0-18

Technical data

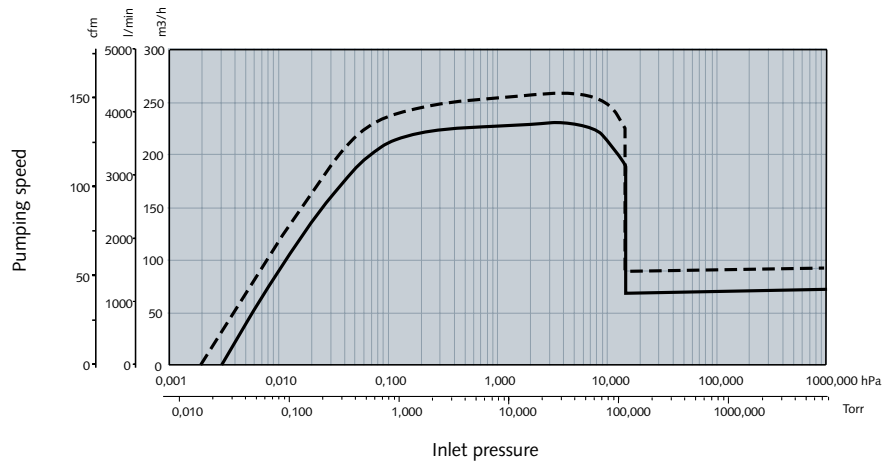
**DS 0080 A**  
**DL 0080 A**



**DS 0160 A**  
**DL 0160 A**



**DS 0250 A**  
**DL 0252 A**



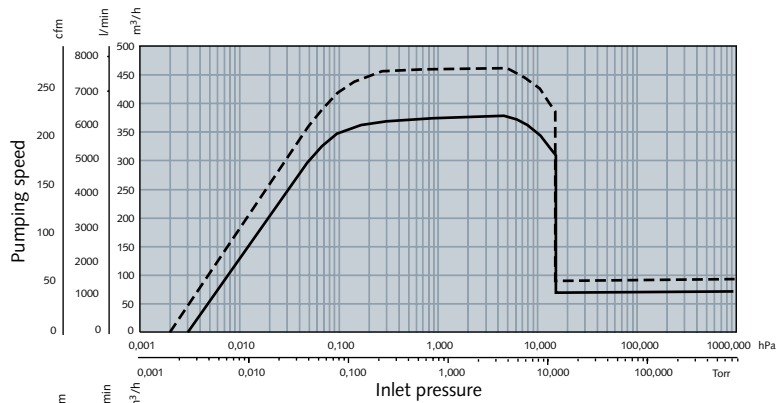
# Screw vacuum pumps for the semiconductor industry

## Technical data COBRA DS/DL 0500 - DS 2002 A

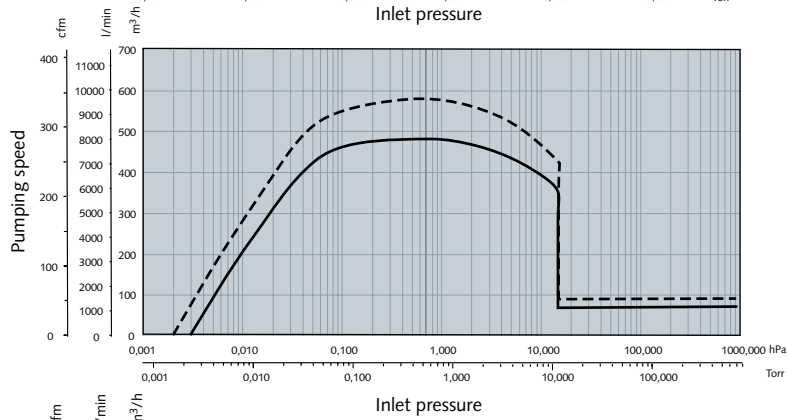
Technical data			DS 0500 A DL 0502 A	DS 0700 A DL 0702 A	DS 1000 A DL 1002 A	DS 2002 A DL 2000 A
Pumping speed 60 Hz (50 Hz)	cfm		276 (230 )	386 (321)	552 (460)	1040 (867)
	m <sup>3</sup> /h		468 (390)	654 (545)	936 (780)	1764 (1470)
Base pressure	Torr		0.75 x 10 <sup>-3</sup>	0.75 x 10 <sup>-3</sup>	0.75 x 10 <sup>-3</sup>	0.75 x 10 <sup>-3</sup>
	hPa		1 x 10 <sup>-3</sup>	1 x 10 <sup>-3</sup>	1 x 10 <sup>-3</sup>	1 x 10 <sup>-3</sup>
Rotation speed	Booster	min-1	3600 (3000)	3600 (3000)	3600 (3000)	3600 (3000)
	COBRA	min-1	3600 (3000)	3600 (3000)	3600 (3000)	7200 (6000)
Inlet connection			DN 63 ISO-K	DN 63 ISO-K	DN 100 ISO-K	DN 100 ISO-K
Outlet connection			DN 40 ISO-K	DN 40 ISO-K	DN 40 ISO-K	DN 40 ISO-K
Weight		kg	430	445	576	668
Noise level		dB(A)	62	62	62	68
<b>Electrical</b>						
Power supply		V	200-230/346-400	200-230/346-400	200-230/346-400	200-230/346-400
COBRA motor 60 Hz (50 Hz)		kW	2.60 (2.20)	2.60 (2.20)	2.60 (2.20)	2.60 (2.20)
Booster motor 60 Hz (50 Hz)		kW	2.60 (2.20)	3.60 (3.0)	4.40 (4.0)	6.6 (5.5)
<b>Lubrication</b>						
Oil capacity		l	2.8	2.8	2.8	4.3
Oil type			PFPE	PFPE	PFPE	PFPE
<b>Cooling Water</b>						
Connection, quick coupler			3/8" NPT	3/8" NPT	3/8" NPT	3/8" NPT
Pressure (max)		bar	5	5	5	5
Pressure dif. (min)		bar	2	2	2	2
Flow (min)		l/min	2	2	2	2
Water temperature		°C	20	20	20	20
<b>Nitrogen</b>						
Overpressure seal flow		bar	1.5	1.5	1.5	1.5
Dilution flow (process dependent)		l/min	0-18	0-18	0-18	0-18

Technical data

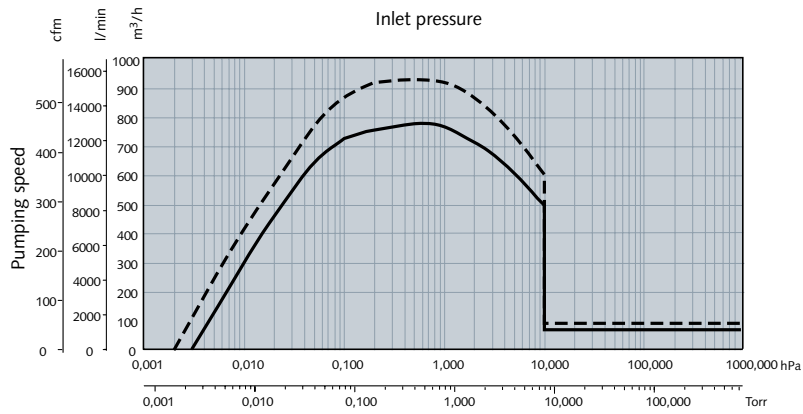
**DS 0500 A  
DL 0502 A**



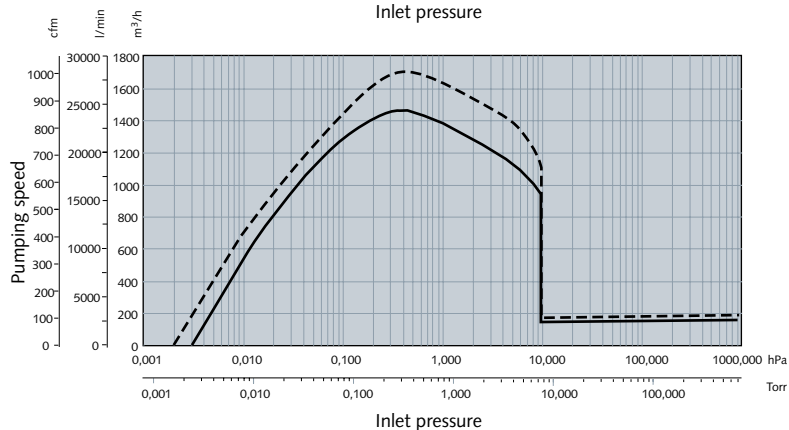
**DS 0700 A  
DL 0702 A**



**DS 1000 A  
DL 1002 A**

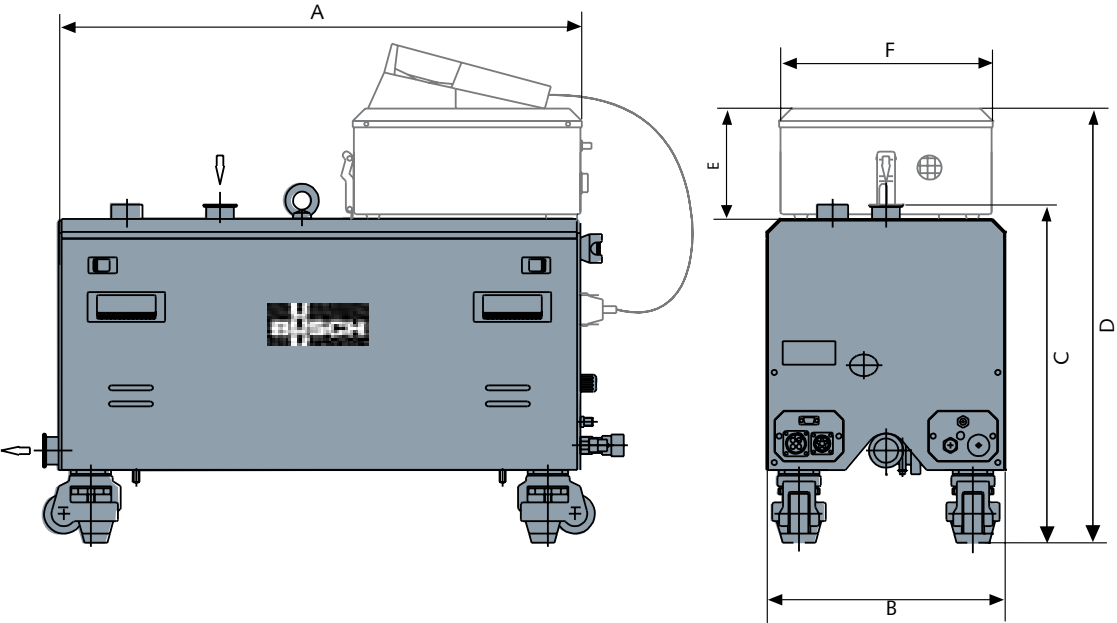


**DS 2002 A  
DL 2000 A**



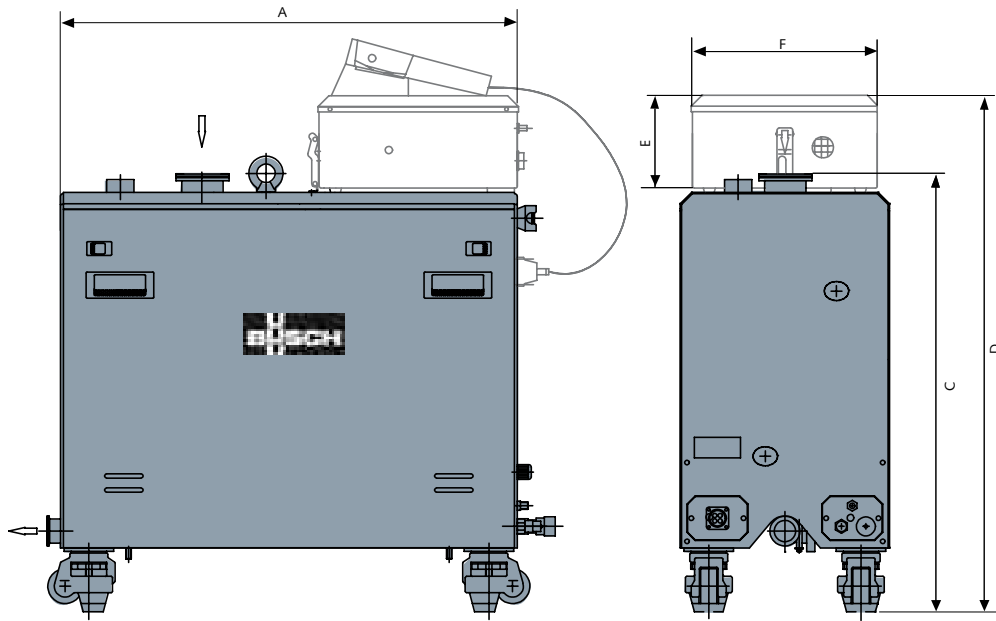
# Screw vacuum pumps for the semiconductor industry

## Dimensions COBRA DS/DL 0080 A, DS/DL 0160 A



Dimensions	mm	A	B	C	D	E	F
COBRA DL 0080 A		890	385	545	–	–	–
COBRA DS 0080 A		890	385	545	700	178	344
COBRA DL 0160 A		952	425	575	–	–	–
COBRA DS 0160 A		1207	106	607	730	178	344

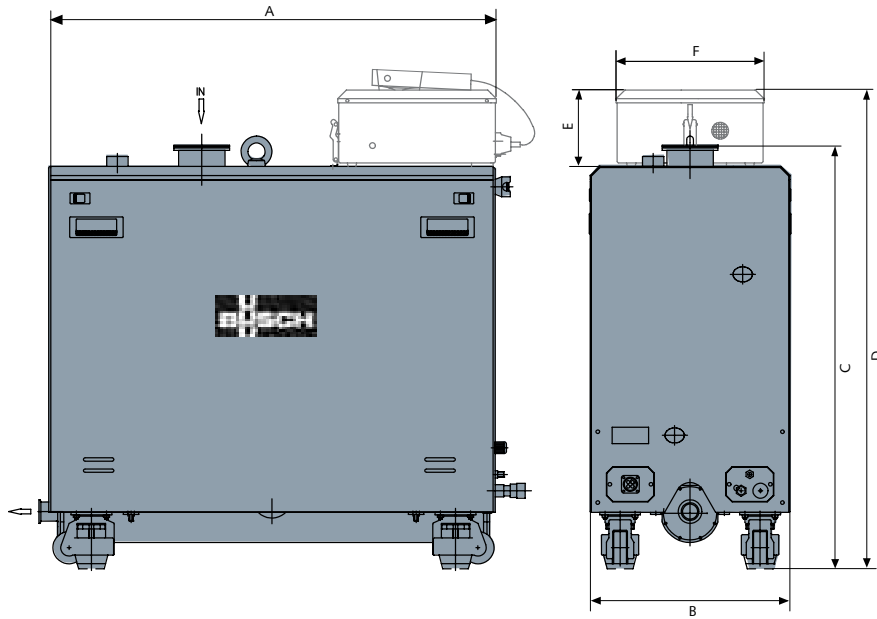
## Dimensions COBRA DS 0250 - 0700 A



Dimensions	mm	A	B	C	D	E	F
COBRA DS 0250 A		840	385	805	950	179	344
COBRA DS 0500 A		840	385	805	950	179	344
COBRA DS 0700 A		840	385	805	950	179	344

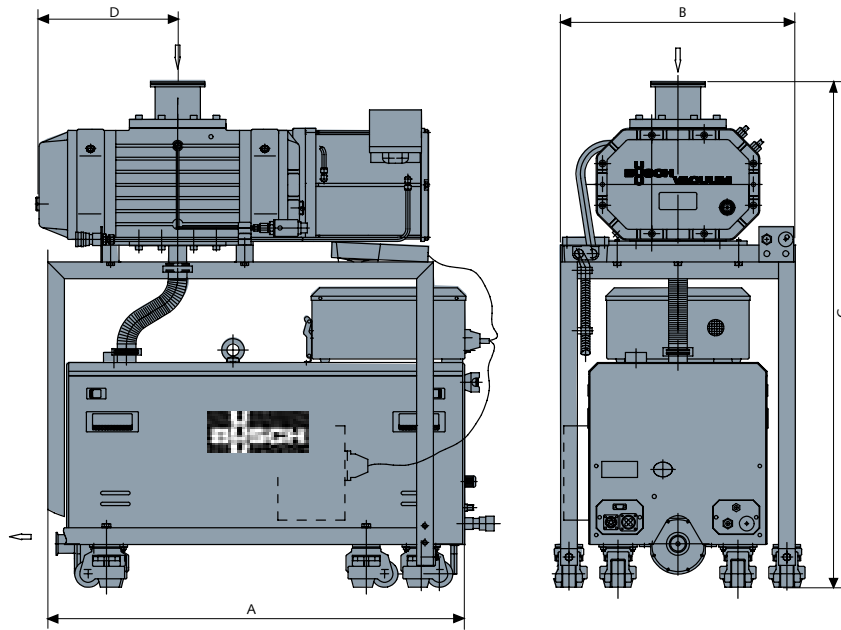
# Screw vacuum pumps for the semiconductor industry

## Dimensions COBRA DL 1000 - 2000 A



Dimensions	mm	A	B	C	D	E	F
COBRA DS 1000 A		1027	425	936	1065	178	344
COBRA DS 2000 A		1065	465	987	1116	178	344

## Dimensions COBRA DS 0252 - 2002 A



Dimensions	mm	A	B	C	D
COBRA DS 0252 A		920	520	1076	310
COBRA DL 0502 A		920	520	1076	310
COBRA DL 0702 A		920	520	1076	310
COBRA DS 1002 A		920	520	1126	310
COBRA DS 2002 A		995	560	1206	338

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