

# Vacuum Generation - Turbomolecular Pump Systems

## Turbomolecular Pump Systems CDK - in a Housing, Compact

The functional units for generating high and ultra-high vacuums are completely mounted in a housing and ready for operation. The individual components are perfectly matched to each other. The SST turbomolecular pump is equipped with dry-running, solid-lubricated hybrid ceramic bearings which prevent the vacuum being contaminated by greases, oils or their decomposition products. This means that the design excludes residual hydrocarbon gas spectra.

CDK turbomolecular pump systems are compact and dry running. The automatic shut-off system stops the backing pump when the required final vacuum is reached.

CDK turbomolecular pump systems comprise:

- an SST turbomolecular pump with integrated drag stages stage
- a three-stage diaphragm pump - types CDK 180/280 or
- a piston-diaphragm pump set - types CDK 181/281
- a solenoid valve in the fore vacuum piping to the turbomolecular pump
- a power supply unit for supplying all the modules
- a fan for the cooling required in the device casing

Automatic switch off:

All CDK turbomolecular pump systems have an automatic switch off device for the fore vacuum system. The backing pump system is switched off as soon as the ultimate pressure has been reached in the receptacle. The solenoid valve in the backing line to the turbomolecular pump is closed simultaneously. This prevents reverse venting of the turbomolecular pump and receptacle.

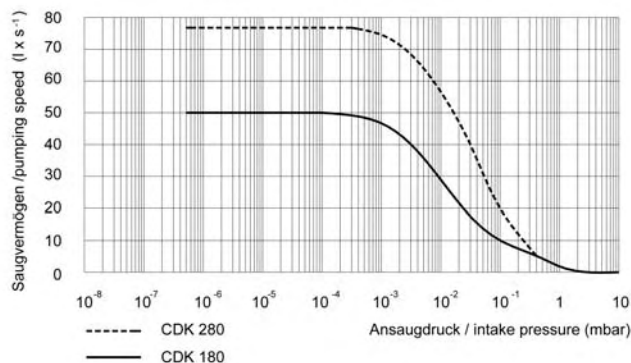
The major advantages of this automatic switch off are:

- the service life of the diaphragm pump is substantially increased to up to 10,000 operating hours
- the noise level is noticeably reduced by at least 3 dB(A)
- the operating costs for energy consumption are reduced, this becomes especially noticeable when several CDK turbomolecular pump systems are used.

The SST turbomolecular pump consists of:

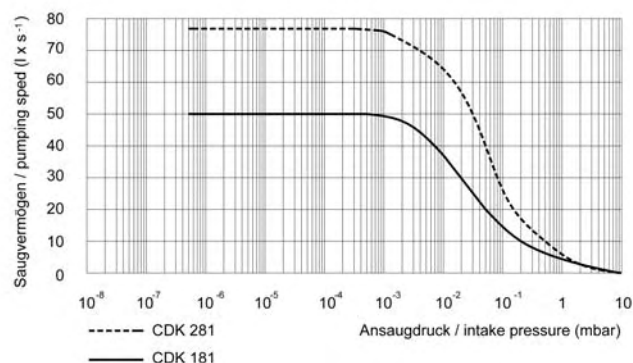
- monobloc rotors with extremely low residual vibrations
- special blade design for high pumping speeds and high compression ratios, particularly for light gases
- the gap-free rotor structure gives fast degassing on the high vacuum side

Ultimate pressure statements: see note in chapter SST turbomolecular pumps



### Special characteristics:

- very long life span- up to 10,000 operating hours
- very low noise level: CDK 180/280 below 51 dB (A), CDK 181/281 below 53 dB (A)
- optimized, hydrocarbon free backing pump system
- rapid evacuation to high vacuum
- compact and low weight
- very long service intervals



### Technical Features

Type	Ult. pressure mbar	Pumping speed eff N <sub>2</sub> /He/H <sub>2</sub> l/s	Dim. (W/D/H) mm	Weight (230 / 115 V) kg
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Pumping speed fore vacuum 0.7 m<sup>3</sup>

CDK 180	5x10 <sup>-7</sup>	50/56/46	193/344/400	13.7 / 14.4
CDK 180 UHV	5x10 <sup>-8</sup>	50/56/46	193/344/400	14.7 / 15.4
CDK 280	5x10 <sup>-7</sup>	77/65/50	193/344/381	13.7 / 14.4
CDK 280 UHV	5x10 <sup>-8</sup>	77/65/50	193/344/381	14.7 / 15.4

Pumping speed fore vacuum 1.5 m<sup>3</sup>

CDK 181	5x10 <sup>-7</sup>	50/56/46	193/414/400	15 / 15
CDK 181 UHV	5x10 <sup>-8</sup>	50/56/46	193/414/400	16 / 16
CDK 281	5x10 <sup>-7</sup>	77/65/50	193/414/400	15 / 15
CDK 281 UHV	5x10 <sup>-8</sup>	77/65/50	193/414/400	16 / 16

### Ordering Information

Type	Mains supply V / Hz	Mandatory accessories Connection cable	PU pcs.	Order-No.
CDK 180	230 / 50/60	yes	1	101224
CDK 180	115 / 50/60	yes	1	101224-01
CDK 180 UHV	230 / 50/60	yes	1	101225
CDK 180 UHV	115 / 50/60	yes	1	101225-01
CDK 280	230 / 50/60	yes	1	101226
CDK 280	115 / 50/60	yes	1	101226-01
CDK 280 UHV	230 / 50/60	yes	1	101227
CDK 280 UHV	115 / 50/60	yes	1	101227-01
CDK 181	230 / 50/60	yes	1	101228
CDK 181	115 / 50/60	yes	1	101228-01
CDK 181 UHV	230 / 50/60	yes	1	101229
CDK 181 UHV	115 / 50/60	yes	1	101229-01
CDK 281	230 / 50/60	yes	1	101230
CDK 281	115 / 50/60	yes	1	101230-01
CDK 281 UHV	230 / 50/60	yes	1	101231
CDK 281 UHV	115 / 50/60	yes	1	101231-01

Note:  
Country specific  
mains connection  
cable separately  
to the device, see  
page 146.



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## Turbomolecular Pump Systems STP - on the Pillar, Mobile

Complete, ready-to-use units for generating high vacuum with an extremely high pumping speed in the roughing range.

The turbomolecular pump, the controller and the vacuum gauges are mounted on the central aluminium profile pillar at an optimum working height. The backing pump is solidly mounted on a mobile base plate, to which the profile pillar is also attached. The vacuum apparatus (receptacle) may be either flange-mounted directly to the suction port of the turbomolecular pump, or the turbomolecular pump can be removed from its holder on the profile pillar and connected to the receptacle. The mobility of the pillar pump systems enables them to be positioned as near as possible to the receptacles, which means that only short vacuum lines are needed. A short vacuum line guarantees low flow losses and high pumping speeds at the receptacle. All the individual components are perfectly matched to each other. The SST turbomolecular pump is equipped with dry-running, solid-lubricated hybrid ceramic bearings which prevent the vacuum being contaminated by greases, oils or their decomposition products. This means that the design excludes residual hydrocarbon gas spectra.

This STP series provides flexibility in the layout of the pump system for your needs. You can change your backing pump at any time. An automatic shut-down turns off the backing pump when reaching the required pressure.

Pillar turbomolecular pump systems comprise:

- an SST turbomolecular pump with an integrated drag stages
- type STP pump systems: a P 4 Z oil lubricated, two-stage rotary vane pump
- type STP/D pump systems: a MP 601 Tp dry running, three-stage diaphragm pump
- a backing line gauge MRV 100 with measuring sensor CAP 121 for the automatic switch off (types STP/D)
- a solenoid valve in the backing line to the turbomolecular pump
- an aluminum profile pillar, with fixing and holding elements, mounted on a mobile base plate

Automatic switch off:

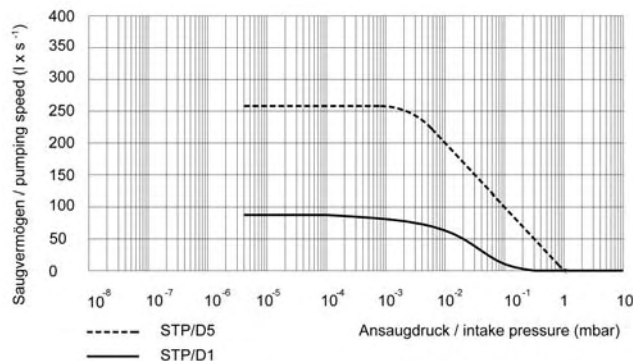
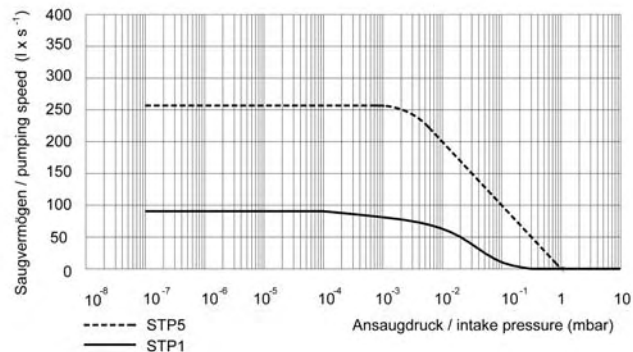
All STP turbomolecular pump systems have an automatic switch off device for the backing pump system. The backing pump combination is switched off as soon as the ultimate pressure has been reached in the receptacle. The solenoid valve in the backing line to the turbomolecular pump is closed simultaneously. This prevents reverse venting of the turbomolecular pump and receptacle.

The major advantages of this automatic switch off are:

- The service lives of the diaphragm pump are substantially increased to up to 10,000 operating hours
- The noise level is noticeably reduced by at least 3 dB(A)
- The operating costs for energy consumption are reduced, this becomes especially noticeable when several STP turbomolecular pump systems are used.

Ultimate pressure statements:

see note in chapter SST turbo molecular pumps



### Special characteristics:

- high pumping speed in the roughing range
- mobile baseplate
- only short backing line piping necessary
- no residual hydrocarbons - STP / D versions
- energy-saving



### Technical Features

Type	Ult. pressure mbar	Pumping speed for N <sub>2</sub> l/s	Dim. (W/D/H) mm	Weight kg
with rotary vane pump, oil lubricated				
STP/1	1x10 <sup>-7</sup>	77	480/500/700	20
STP/1	1x10 <sup>-7</sup>	77	450/450/800	20
STP/5	1x10 <sup>-7</sup>	250	480/500/700	25
STP/5	1x10 <sup>-7</sup>	250	450/450/800	25
with dry running diaphragm pump				
STP/D1	5x10 <sup>-6</sup>	77	480/500/700	20
STP/D1	5x10 <sup>-6</sup>	77	480/500/700	20
STP/D5	5x10 <sup>-6</sup>	250	480/500/700	25
STP/D5	5x10 <sup>-6</sup>	250	480/500/700	25

### Ordering Information

Type	Mains supply V / Hz	Mandatory accessories Connection cable	PU pcs.	Order-No.
STP/1	230 / 50	yes	1	101311
STP/1	115 / 50/60	yes	1	101311-03
STP/5	230 / 50	yes	1	101315
STP/5	115 / 50/60	yes	1	101315-03
STP/D1	230 / 50	yes	1	101331
STP/D1	115 / 50/60	yes	1	101331-04
STP/D5	230 / 50	yes	1	101335
STP/D5	115 / 50/60	yes	1	101335-03

Note:  
Country specific  
mains connection  
cable separately  
to the device, see  
page 146.