KODIVAC VACUUM PRODUCTS
발행 : 2011년 5월 12일

KS A 9001 / ISO 9001 / EN ISO 9001 / QS-9000 / ISO-14001
APPROVED BY KPC-QA / Clean 3D

It's customers and we will take a big step forward to becoming the first specialized company in the vacuum industry.

www.kodivac.com

KODIVAC VACUUM PRODUCTS

Cumulative High Technology Your Technological Parttner For The New Millennium

KODIVAC LTD.

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■ 대리점
- 태백진공 : 대전광역시 대덕구 대화동 289-1 산업용재 유통단지 8동 122호 TEL:(042)670-8778 FAX:(042)670-8779
- 베스 : 경북 포항시 남구 지곡동 601번지 포항 테크노파크 제1벤처동 103호 TEL:(054)223-2328 FAX:(054)223-2329
- SW 코디박 : 경기도 안산시 상록구 장상동 539-1 TEL:(031)439-3722 FAX:(031)439-3724
- 민성 코디박 : 인천광역시 서구 금곡동 278-5 TEL:(032)569-0165 FAX:(032)569-0166
- 동양진공기술 : 부산광역시 사상구 괘법동 568-10 TEL:(051)325-6960 FAX:(051)325-6961

■ 수리전문대리점
- 에어벡 : 충남 천안시 서북구 두정동 1685번지 TEL:(041)555-7082 FAX:(041)555-7083

KODIVAC LTD.

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Cumulative High Technology

Our Company

Your Technological Partner
For The New Millennium

창조적 정신과 첨단 기술의 정상을
주도하는 무한한 에너지 –
순수한 물성(物性)의 세계를 위한 완벽한
진공상태를 실현하는 KODIVAC
끊임없는 기술 개발을 통해 21세기
인류의 미래와 꿈을 실현하는 원동력이 될 것입니다.
첨단 진공기술의 결정체 – KODIVAC

Ultimated energy leading to a creative spirit, in pursuit of excellence in ultra technology.

For the purest world of physical properties, pursuing the perfect vacuum condition – KODIVAC

KODIVAC will be a leader in the 21C, to make dreams come true for human beings, for a better tomorrow, through endless technological development.

On the leading edge of vacuum technology – KODIVAC

Company Vision

▶ 2 in 1 목표
(주)코디박의 21세기 비전은 "글로벌 진공 전문 브랜드" 와 "우량기업" 이라는 2개의 목표 가치를 가지는 최고의 "글로벌 진공 전문 기업" 이 됨으로서 국가 진공 사업의 초석이 되고자 함에 있습니다.

▶ 3년마다 2배 성장
이를 위해 기존 조직 체계의 변화를 보다 강화함은 물론, 5대 핵심 역량을 배가 시키고 강화함으로서 기업 경쟁력을 보다 확고히 하고, 기업내 모든 분야에 걸쳐 "3년마다 2배 성장" 이라는 중.단기 목표를 설정보다 효율적이고 향상된 기업 구조를 만들어 갈 것입니다.

▶ 고객 감동의 실천
또한, 우수한 품질로 고객에게 최고의 만족과 더불어 부가가치 창출을 도와 드릴 수 있는 기업이 되고자 노력할 것입니다. 그리고, 회사의 발전은 곧 직원의 발전과 그 구성원의 행복으로 연결 될 수 있도록 함으로서 더불어 사는 사회적 나눔의 기업이 되도록 함에 있습니다.

▶ 2 in 1 Object
The Vision of KODIVAC for 21C is based on 2 big Objects becoming "Global expert vacuum brand' and Excellent company"

▶ 2 times growth every 3years
We will try to evaluate our company structure with big business scheme as " 2 times growth every 3years in long term.
To make this purpose, we will confirm our company competition power by changing existed organization in KODIVAC itself after increasing 5 core abilities above.

▶ Action of customers' impression
Also, we will try to help the customers earning the additional value from our superb quality with best satisfaction on products.
And, our best vision is to become the company which The Development of Company is directly going to employees' development and personnel happiness.

The future of KODIVAC -

New challenge with the customers

KODIVAC 의 4대 정신을 만나 보십시오.

Why don't you meet the 4 spirits of KODIVAC

창조적 정신의 결정체 – KODIVAC 설계 · R&D

10여명의 전문 설계요원과 국가 공인 부설연구소의 전문 연구원들이 축적된 기술과 끊임 없는 연구 개발 정신으로 미래지향적인 첨단 장비의 개발과 고객의 새로운 요구에 부응하기 위해 첨단 진공산업의 미래를 주도하고 있습니다.

초 고정밀을 추구하는 첨단 장인 정신 – KODIVAC Machining Technology

체계적이고 일괄 생산 Line으로 구축된 수치제어 Machining에 의해 생산된 KODIVAC의 제품은 1㎛의 오차도 허용하지 않는 초 고정밀도를 실현하여 최첨단 진공기기 및 장비를 생산하고 있습니다.

품질 경영정신 – KODIVAC Q.C

국내 진공관련 업계 최초로 ISO 9001을 획득한 KODIVAC은 엄격한 품질관리 System으로 가슴속의 氣를 제품속에 이입시켜 고객의 요구를 충족시키고 고객의 목적에 보다 적합한 제품을 제공하고 있습니다.

고객 감동 정신 – KODIVAC Marketing & Service

KODIVAC의 기술 영업팀과 Service팀은 고객의 위치에 서서 고객의 요구를 충족시켜 드리기 위해, 세계 어느곳에서나 바로 여러분의 곁에 있습니다. 작은 진공 부품에서 대규모 양산 시스템에 이르기 까지 저희 KODIVAC과 만나 보십시오.
놀라운 만족을 드릴 것입니다.

Creative spirit – KODIVAC's Design · R&D

KODIVAC employs over 10 specialists in design and research of sublaboratory authorized by the government, who are leading the future of up-to-date vacuum industry with a spirit of endless R&D and cumulative technology in order to keep with customers' new requirements and the future-oriented equipment development.

Master spirit pursuing ultra high precision – KODIVAC's Machining Technology

By computer controled machining in one systematic production line, it could be possible to make KODIVAC's products come true ultra high precision without 1㎛ error, and produce ultra high vacuum machinery.

Quality-oriented management spirit – KODIVAC's Q.C.

KODIVAC is registered to ISO 9001 first in domestic vacuum industry, has a rigid quality control system which imports the spirit into products, meets customer requirements, and provides more satisfactory goods for the clients' purposes.

Customer emotion spirit – KODIVAC's Marketing & Service

KODIVAC's sales and service teams should be by you all over the world to meet your requirement in your shoes.
KODIVAC ranges from a small vacuum part to a mass production system. You will receive amazing satisfaction when you choose KODIVAC for your vacuum solutions.

History

belief that clients are first

KODIVAC의 역사는 한국 진공산업의 역사입니다.

KODIVAC is the history of
Vacuum industry in Korea.

www.kodivac.com

KODIVAC Message

(주)코디박은 국내 진공기술 발전의 선두에서 일익을 담당해온 진공 전문 브랜드 기업으로 오랜 역사와 명성만큼이나 제품의 품질 및 서비스에서도 우수한 업체로 고객님들의 사랑을 받고 있습니다.

저희 업체는 진공 증착 장비를 비롯한 Oil Vane Rotary Pump, Oil Diffusion Pump, Vacuum Valve, Vacuum Gauge 및 각종 Vacuum Component 제품을 독자적으로 생산하여 삼성, LG를 포함한 반도체, TFT-LCD, PDP 생산 업체 및 여러 진공관련 업체, 정부 기관 연구소 등에 공급하고 있으며, 특히, 일본 대아진공과의 기술 합작을 통한 선진 기술 도입 및 진공 기술의 100% 국산화를 위한 끊임없는 연구개발로 진공 장비를 비롯한 진공 부품의 국산화를 실현함은 물론, 자사의 우수한 제품을 해외에 역수출 함으로서 국가 대외 경쟁력을 높이는데 최선을 다하고 있습니다.

이런, 노력들로 인해 2005년 중소 기업청으로부터 『기술 혁신형 중소기업(IN-NO BIZ)』에 선정되었습니다. 기술 혁신형 기업으로서 앞으로도 변화 무쌍한 국내 · 외 진공 산업 기술의 빠른 변화 속에서도 최선을 다해 최고의 기술, 최고의 품질, 최고의 서비스로 항상 고객 여러분들의 요구에 부응하는 기업이 되고자 모든 직원들은 각고의 노력을 다 할 것을 다짐하며, 저희 제품에 대한 여러분들의 많은 사랑과 지속적인 관심, 성원 부탁 드립니다.

KODIVAC Ltd. is one of the leading manufacturers of Vacuum pumps, Vacuum Valves, all kind of Vacuum components and Vacuum Equipment for Vacuum industries as well as Semi, TFT-LCD, PDP mass production lines by supplying to global companies such as SAMSUNG, LG, etc. Also, Various R&D, universities and Government's facilities are our great customers. Now, we are making an attempt to be re-born as small but strong company with the motto "Quality is our life". Up to now, we have been loved as superior company by many customers who have used our good products & services.

Our final destination is "endless development in technology to meet customers various demands.

We have fruitful result as one of steps on the way to go to the final destination. It is the certificate of IN-NO BIZ by Korean government in 2005. IN-NO BIZ certificate is given to the company which is admitted by Korean Government for Innovation of technology.

We are supposed this kind of certificates is whipping. We are not going to stop or stay here by satisfying now. We will put our all efforts on the development up-grading and the backup to customers always.

We do not think customers are only customers. We are always thinking customers as our friends or mothers or fathers. Therefore, please, keep looking at our growth and go with us. We will do our best to stay with you.

Thank you very much indeed to visit our website. And have a look around our pages in comfortable mind then if you have any questions or requests, please call or inform to us.
Our professional guides will help you.

KODIVAC History

회사연혁

- 1996 2월 한독진공(주) 설립
- 1999 4월 공장 확장 이전(서울 금천구 가산동) 토지(173.36㎡)/건물(9556.96㎡)
  일본 대아진공 (DIAVAC LTD.) 기술제휴
- 2003 3월 주식회사 피제이코디박(PJKODIVAC LTD.) 사명 변경
- 2005 5월 INNO-BIZ 기술혁신 중소기업 인증 획득(중소기업청 : 제-R5011-0137호)
  11월 부품소재전문기업 인증 획득 (산업자원부)
- 2006 11월 진공 기술연구소 설립 및 인가 획득 (산업기술진흥협회 : 제20063010호)
- 2007 7월 "2007년 중소기업청 기술혁신개발사업 선정 - 완료"
  〈전리현상 이용한 막중착 속도 및 막두께 측정 시스템 개발 및 양산 사업화 성공〉
- 2008 7월 "2008년 중소기업청 기술혁신개발사업 선정 - 완료"
  〈반도체 및 디스플레이 공정용 부등 Lead 경사각 Type Screw Dry Pump 개발〉
- 2009 2월 Rotary Vane Type Vacuum Pump 전 기종 CE 인증 획득
  6월 "2009년 중소기업청 산학선도과제 선정 - 진행중"
  〈태양전지 제조공정에 적합한 Screw type 20,000ℓ /min급 Dry Booster Pump와 2,000ℓ /min급 Dry Vacuum Pump 개발〉
  7월 경상북도, 경산시 MOU 체결 - 수도권 소재 본사 지방 이전 사업 관련 투자 협약 (토지 12,562㎡ 계약〉
  10월 Screw type Dry Booster Pump 및 Dry Vacuum Pump 관련 특허 3종 국내 출원
  12월 주식회사 코디박(KODIVAC LTD.) 사명 변경
- 2010 6월 경상북도지사 표창
  8월 본사 및 공장 신축 이전 (경상북도 진량읍 신제리) - 토지(12549.6㎡) / 건물(6814.09㎡)
  10월 Screw type Dry Booster Pump 및 Dry Vacuum Pump 관련 특허 3종 해외(미국, 중국, 유럽, 일본, 대만) 출원
  11월 지식경제부 장관상 수상

www.kodivac.com

고객감동의 실현 -

Marketing A/S

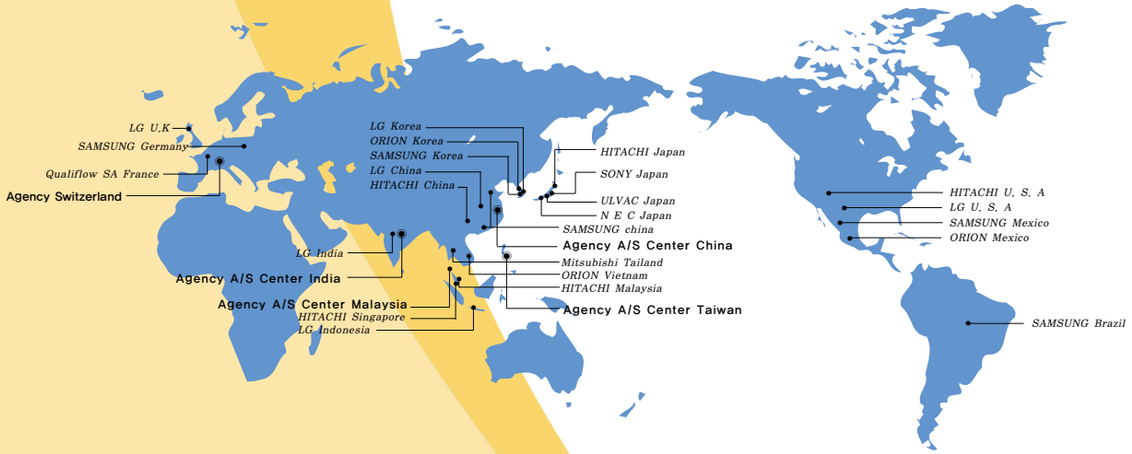
고객과 함께 만나는 KODIVAC의 마케팅 테마!

창의적이고 혁신적인 고객 서비스

KODIVAC은 다양한 품목과 Spec을 개발, 생산하여 고객의
요구에 한치의 오차도 없이 정확히 공급해 드립니다.
또한 국내는 물론 전세계 주요지역에 Communication Channel을
가동하여 상담에서 납품, A/S까지 만전을 기하고 있습니다.

For the creative and innovative customer services,
KODIVAC is trying
to meet all customer requirements perfectly
with development and
production of various items and specification.
Also, KODIVAC pays special attention,
to our customers,
from counseling to delivery and A/S by providing
the communication channel in main
regions all over the world.

KODIVAC Worldwide Vacuum & Plasma Products



Feedback

본사 (Head Office)

■ **본사/기술연구소**
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■ **서울 사무소 (Seoul Office)**
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대리점 (Agency)

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• 베스 : 경북 포항시 남구 지곡동 601번지 포항 테크노파크 제1벤처동 103호	TEL:(054)223-2328	FAX:(054)223-2329
• SW 코디박 : 경기도 안산시 상록구 장상동 539-1	TEL:(031)439-3722	FAX:(031)439-3724
• 민성 코디박 : 인천광역시 서구 금곡동 278-5	TEL:(032)569-0165	FAX:(032)569-0166
• 동양진공기술 : 부산광역시 사상구 괘법동 568-10	TEL:(051)325-6960	FAX:(051)325-6961

■ 수리전문대리점

• 에어벡 : 충남 천안시 서북구 두정동 1685번지	TEL:(041)555-7082	FAX:(041)555-7083

Contents in Detail

ROTARY PUMP

Oil Rotary Vane Pump는 Pump Housing, Motor, Pump Cylinder, Rotor, Vane 등의 부품으로 구성되어 있으며, 편심된 회전축의 Rotor에 장착된 Vane에 의해 기체입자들이 압축, 배기 되는 반복운동으로 챔버로부터 99%이상의 기체를 제거할 수 있는 Pump입니다.

The Oil Rotary Vane Pump is the preferred choice for your clean, high-vacuum requirements. The vanes of the rotor turn on an eccentric axile compress and discharge gas molecules, eliminating over 99% of gases from the chamber by repeating such movement. Adoption of double stages drastically enhances ultimate vacuum condition.

Introduction

KODIVAC의 GHP Series는 도달진공도를 높이고 Pumping 효율을 높이기 위해 Double Stage를 채택하였으며, Motor Directly Slide Vane Type으로 뛰어난 품질과 긴 수명으로 높은 신뢰성을 가지고 있습니다.
이 GHP-Series는 강제윤활 방식으로 순환 Pump와 윤활유의 흐름을 제어하는 분배기를 탑재하여 높은 흡입압의 운전에 있어 문제가 되었던 내구성을 실현하였습니다. 그리고 온도 감지기능을 가진 Oil Level Gauge를 장착하여 색의 변화에 대해 Pump의 과열을 쉽게 확인할 수 있도록 설계 하였습니다.

KODIVAC's GHP-Series rotary vacuum pumps are sliding vane type double stage pumps directly connected to the motors, offering reliable vacuum pumping performance due to excellent quality and long service life.
These GHP-Series offer high durability, (as has been considered as a matter of concern) in operation at high suction pressure, by dint of being mounted with a pump for compulsory circulation of lubrication oil and a dispenser for control of the flow of lubrication oil.
The oil level guage designed to have temperature-sensing function, gives warning indications on is overheating of the pump by changing colors.

■ 특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
- 가스 밸러스트밸브 부착 : 가스 밸러스트밸브를 갖추고 있으므로, 수증기, 응축가스 등을 효과적으로 제거합니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.
- 소형 경량 : 직결구동이므로, 종래에 비하여 소형 경량입니다.

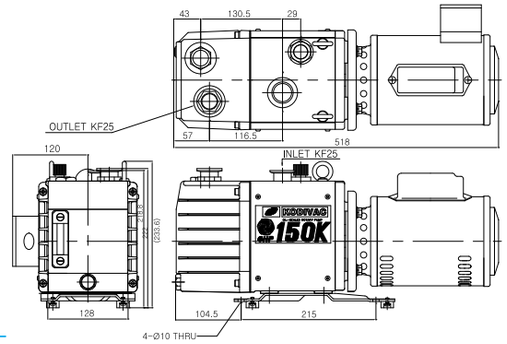
■ Features

- Low noise levels : This pump operates with low noise and low vibration by using technology.
- Easy disassembling and reassembling : All the parts and components of the systems have interchangeable compatibility. Securing of the location-settling parallel pins and connecting of stators are treated with O-Ring seal, making it possible to disassemble and reassemble with ease.
- Equipped with gas ballast valve : The Series are equipped with gas ballast valve, which effectively eliminates oil vapors and condensed gases.
- Prevention of oil leakage : The Series, designed to have a double seal structure with an oil berth installed in the intermediate position, minimize stress difference between both sides of the oil seal, preventing for no oil leaks from the oil seal.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP

▶ GHP-150K/240K

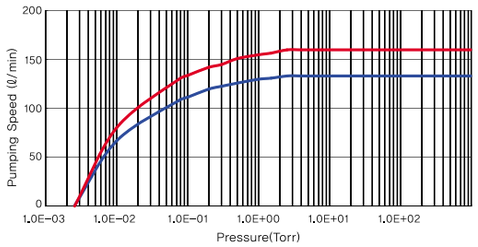
GHP-150K Design / Outline Drawing(mm)



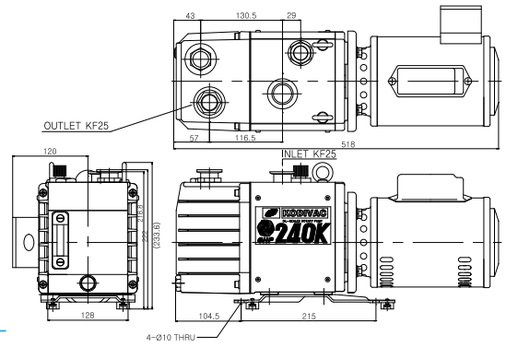
Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	150	180
Effective pumping speed		ℓ/min	130	160
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	1Φ (단상)	kW	0.65	
	3Φ (삼상)	kW	0.4	
Oil capacity	Max	ℓ	1.2	
	Min	ℓ	0.8	
Cooling			Air cooling	
Inlet connection			NW-25	
Outlet connection			NW-25	
Weight		kg	30	
Oil			MR-200/VAC-300	

Speed Curve



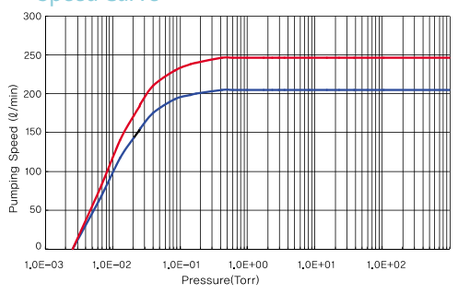
GHP-240K Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	240	290
Effective pumping speed		ℓ/min	205	245
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	1Φ (단상)	kW	0.65	
	3Φ (삼상)	kW	0.4	
Oil capacity	Max	ℓ	1.1	
	Min	ℓ	0.8	
Cooling			Air cooling	
Inlet connection			NW-25	
Outlet connection			NW-25	
Weight		kg	31	
Oil			MR-200/VAC-300	

Speed Curve



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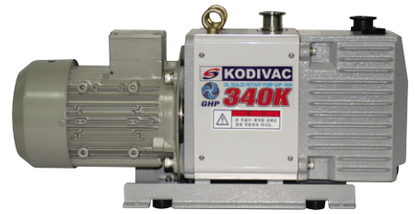
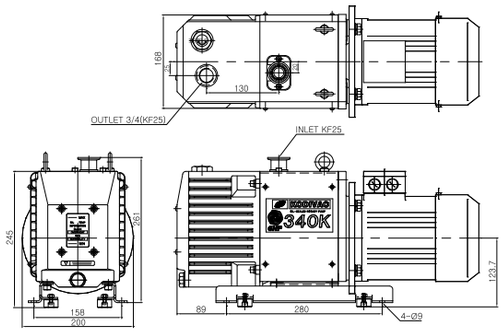
OIL ROTARY VANE PUMP

▶ GHP-340K/550K

GHP-340K Design / Outline Drawing(mm)

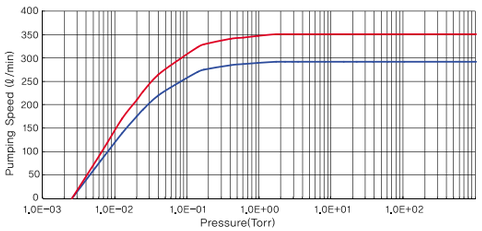




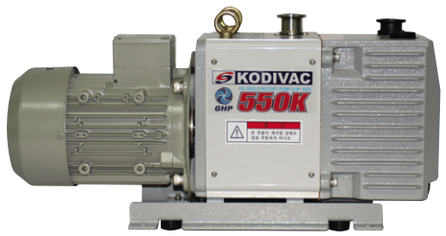
Technical Specification

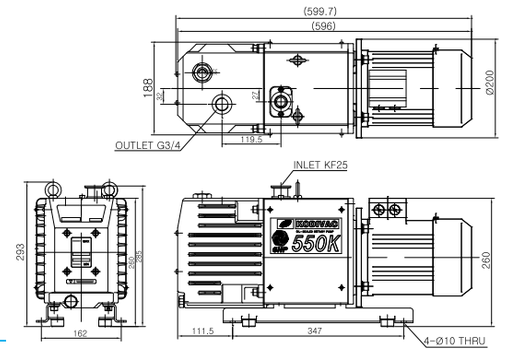
Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	340	408
Effective pumping speed		ℓ/min	290	350
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	1Φ (단상)	kW	0.75	
	3Φ (삼상)	kW	0.75	
Oil capacity	Max	ℓ	1.7	
	Min	ℓ	1.1	
Cooling			Air cooling	
Inlet connection			NW-25	
Outlet connection			NW-25	
Weight		kg	42	
Oil			MR-200/VAC-300	

Speed Curve



GHP-550K Design / Outline Drawing(mm)

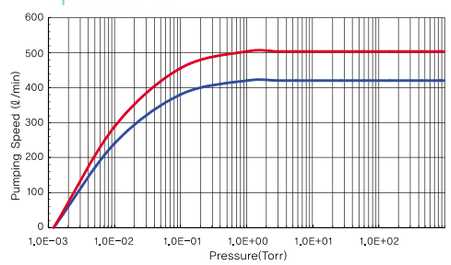




Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	550	650
Effective pumping speed		ℓ/min	420	500
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	3Φ	kW	0.75	
Oil capacity	Max	ℓ	2.0	
	Min	ℓ	1.5	
Cooling			Air cooling	
Inlet connection			NW-25	
Outlet connection			NW-25	
Weight		kg	48	
Oil			MR-200/VAC-300	

Speed Curve



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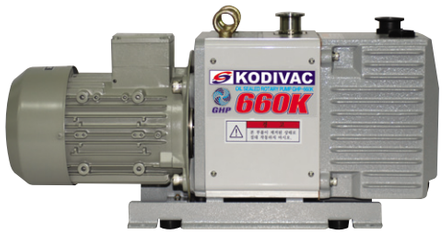
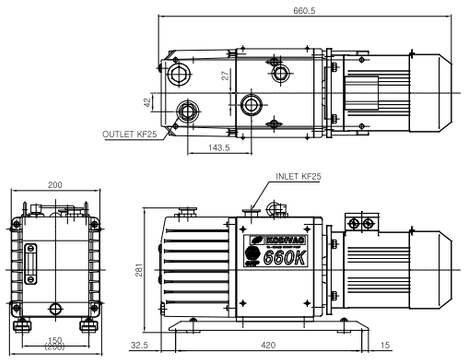
OIL ROTARY VANE PUMP

▶ GHP-660K/800K

GHP-660K Design / Outline Drawing(mm)

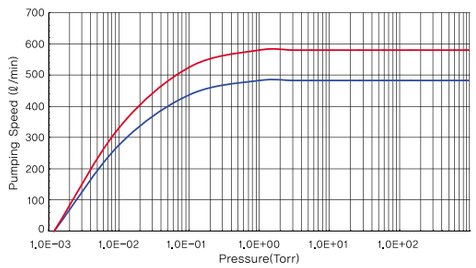




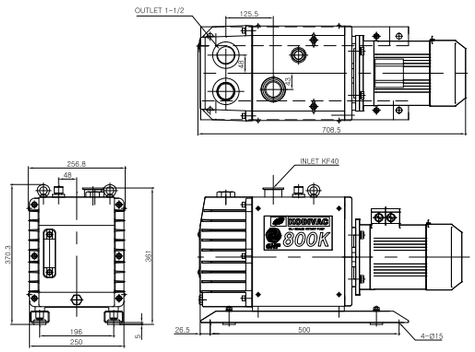
Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	550	660
Effective pumping speed		ℓ/min	480	580
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	3Φ	kW	1.5	
Oil capacity	Max	ℓ	2.6	
	Min	ℓ	2	
Cooling			Air cooling	
Inlet connection			NW-25	
Outlet connection			NW-25	
Weight		kg	52	
Oil			MR-200/VAC-300	

Speed Curve



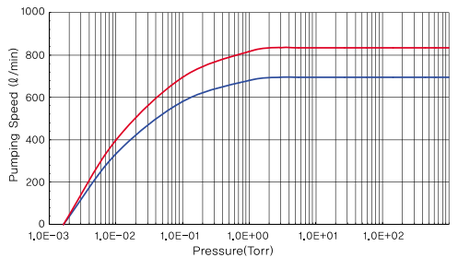
GHP-800K Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	800	960
Effective pumping speed		ℓ/min	700	830
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	3Φ	kW	1.5	
Oil capacity	Max	ℓ	4	
	Min	ℓ	3	
Cooling			Air cooling	
Inlet connection			NW-40	
Outlet connection			Rc1-1/2(NW-40)	
Weight		kg	60	
Oil			MR-200/VAC-300	

Speed Curve



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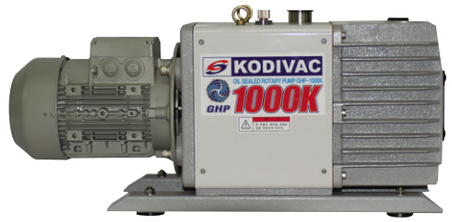
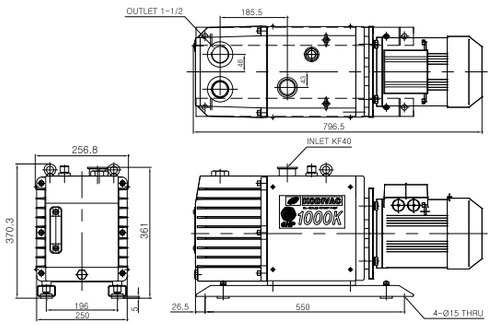
OIL ROTARY VANE PUMP

▶ GHP-1000K/1300K

GHP-1000K Design / Outline Drawing(mm)

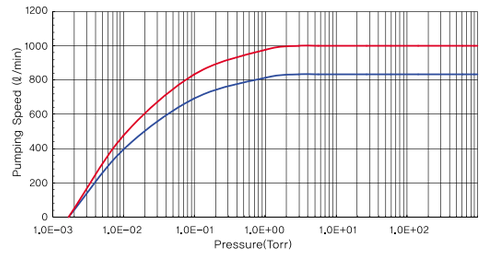




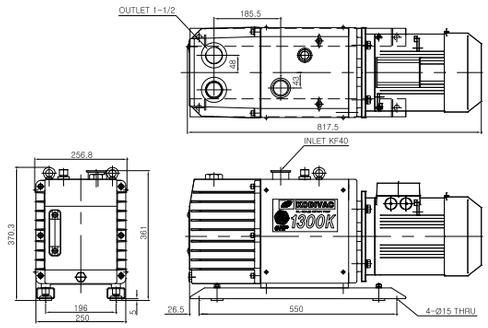
Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	1000	1200
Effective pumping speed		ℓ/min	830	1000
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	3Φ	kW	2.2	
Oil capacity	Max	ℓ	6	
	Min	ℓ	3.5	
Cooling			Air cooling	
Inlet connection			NW-40	
Outlet connection			Rc1-1/2(NW-40)	
Weight		Kg	85	
Oil			MR-200/VAC-300	

Speed Curve



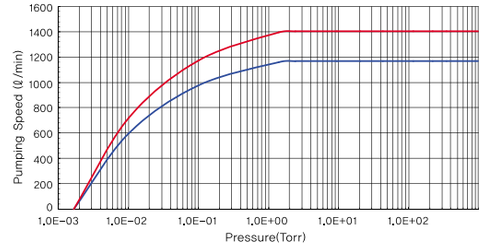
GHP-1300K Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	1300	1600
Effective pumping speed		ℓ/min	1170	1400
Ultimate vacuum	Gas V/V close	Torr(Pa)	$1.0\times10^{-3}(1.3\times10^{-1})$	
	Gas V/V open	Torr(Pa)	$2.2\times10^{-2}(3)$	
Motor power	3Φ	kW	3.7	
Oil capacity	Max	ℓ	6	
	Min	ℓ	3.5	
Cooling			Air cooling	
Inlet connection			NW-40	
Outlet connection			Rc1-1/2(NW-40)	
Weight		kg	95	
Oil			MR-200/VAC-300	

Speed Curve



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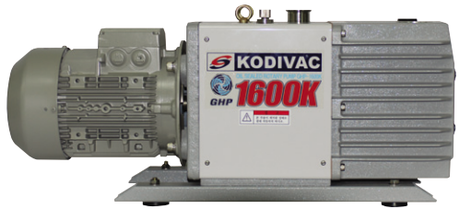
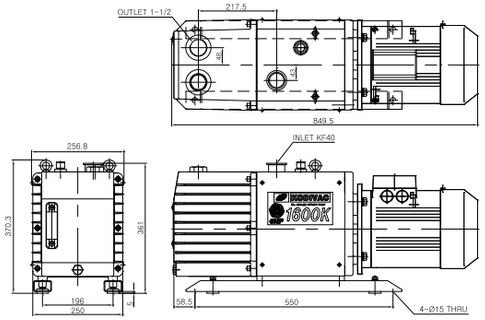
OIL ROTARY VANE PUMP

▶ GHP-1600K/3500D

GHP-1600K Design / Outline Drawing(mm)

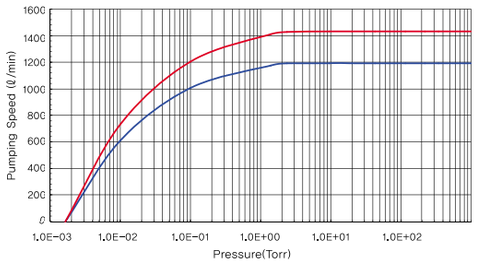




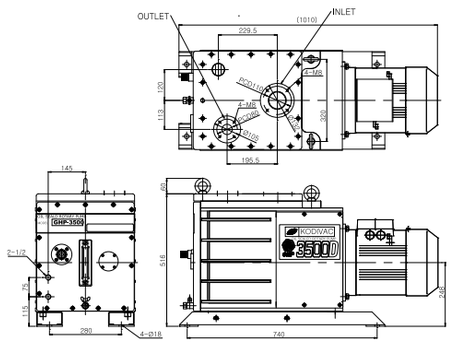
Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	1600	1900
Effective pumping speed		ℓ/min	1190	1430
Ultimate vacuum	Gas V/V close	Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
	Gas V/V open	Torr(Pa)	2.2×10^{-2} (3)	
Motor power	3Φ	kW	3.7	
Oil capacity	Max	ℓ	6.5	
	Min	ℓ	5.5	
Cooling			Air cooling	
Inlet connection			NW-40	
Outlet connection			Rc1-1/2(NW-40)	
Weight		kg	106	
Oil			MR-200/VAC-300	

Speed Curve



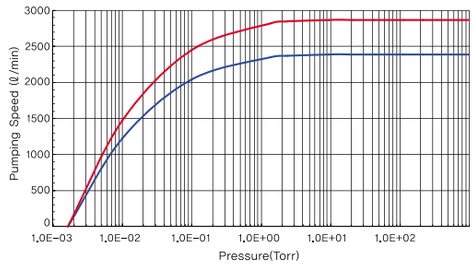
GHP-3500D (Double Stage) Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	2900	3500
Effective pumping speed		ℓ/min	2380	2860
Ultimate vacuum	Gas V/V close	Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
	Gas V/V open	Torr(Pa)	2.2×10^{-2} (3)	
Motor power	3Φ	kW	5.5	
Oil capacity	Max	ℓ	25	
	Min	ℓ	15	
Cooling			Water cooling	
Cooling water flow		ℓ/min	5 (at 20℃)	
Inlet connection			ISO 63	
Outlet connection			ISO 40	
Weight		kg	210	
Oil			MR-200/VAC-300	

Speed Curve



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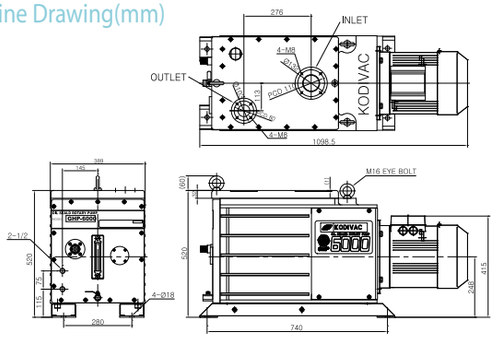
OIL ROTARY VANE PUMP

▶ GHP-6000D

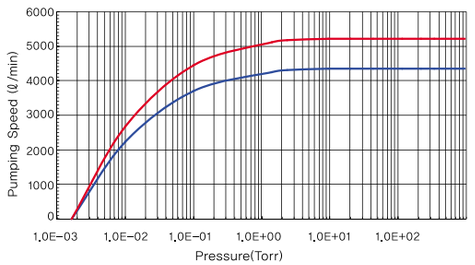
GHP-6000D (Double Stage) Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		ℓ/min	4600	5800
Effective pumping speed		ℓ/min	4350	5220
Ultimate vacuum	Gas V/V close	Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
	Gas V/V open	Torr(Pa)	2.2×10^{-2} (3)	
Motor power	3Φ	kW	7.5	
Oil capacity	Max	ℓ	28	
	Min	ℓ	18	
Cooling			Water cooling	
Cooling water flow		ℓ/min	7.5 (at 20℃)	
Inlet connection			ISO 63	
Outlet connection			ISO 40	
Weight		kg	242	
Oil			MR-200/VAC-300	

Speed Curve



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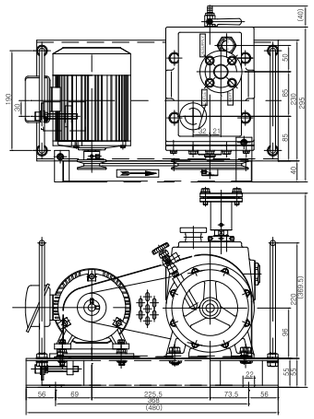
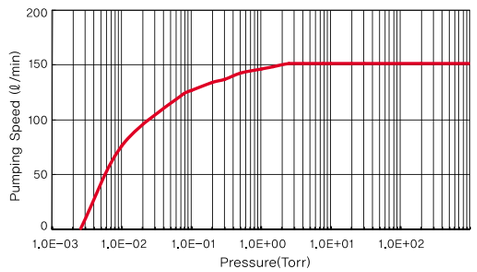
GRP-180 Design / Outline Drawing(mm)



Technical Specification

Item		Unit	60Hz
Designed Pumping Speed		ℓ/min	180
Effective Pumping Speed		ℓ/min	150
Ultimate vacuum	Gas V/V close	Torr(Pa)	$3.0\times10^{-3}(4.0\times10^{-1})$
Motor power	3Φ	kW	0.4
Oil capacity		ℓ	2.5
Cooling			Air cooling
Inlet connection			Φ26
Outlet connection			G3/4
Weight		kg	35Kg
Oil			ULTRA-200

Speed Curve



Feature

■ 특징

- 저소음, 저진동
- 연속운동 가능
- 우수한 성능
- Ultimate Pressure, 배기속도 특성이 매우 우수
- Gas Ballast 부착
- 수증기, 응축 Gas등을 효과적으로 제거

■ Features

- Low noise, Low Vibration
- Continuous Operating
- Excellent Performance
- Low Ultimate Pressure, High Pumping Speed
- Gas Ballast
- Eliminate of Vapor and Condensed Gas

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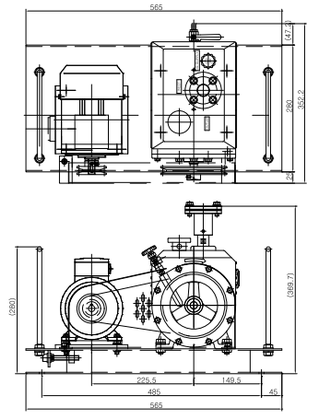
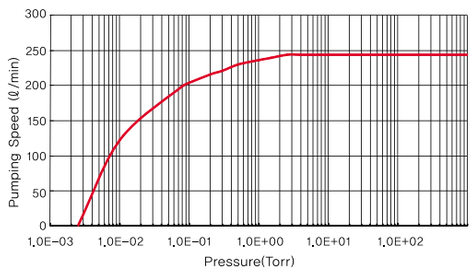
GRP-300N Design / Outline Drawing(mm)



Technical Specification

Item		Unit	60Hz
Designed Pumping Speed		ℓ/min	300
Effective Pumping Speed		ℓ/min	245
Ultimate vacuum	Gas V/V close	Torr(Pa)	$3.0\times10^{-3}(4.0\times10^{-1})$
Motor power	3Φ	kW	0.4
Oil capacity		ℓ	3.2
Cooling			Air cooling
Inlet connection			Φ26
Outlet connection			G3/4
Weight		kg	40Kg
Oil			ULTRA-200

Speed Curve



Feature

■ 특징

- 저소음, 저진동
- 연속운동 가능
- 우수한 성능
- Ultimate Pressure, 배기속도 특성이 매우 우수
- Gas Ballast 부착
- 수증기, 응축 Gas등을 효과적으로 제거

■ Features

- Low noise, Low Vibration
- Continuous Operating
- Excellent Performance
- Low Ultimate Pressure, High Pumping Speed
- Gas Ballast
- Eliminate of Vapor and Condensed Gas

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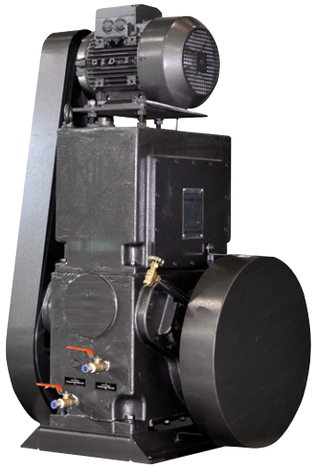
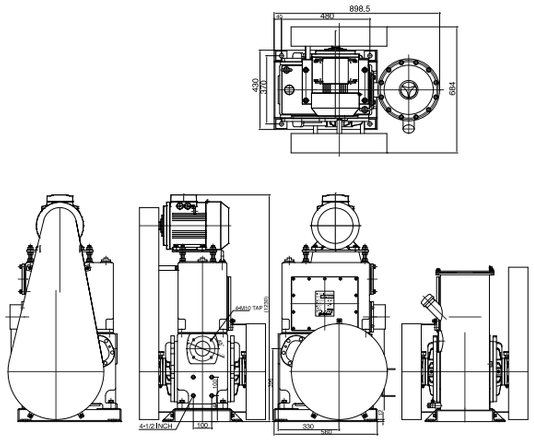
PISTON ROTARY PUMP ▶ KRP-4500

KRP-4500 Design / Outline Drawing(mm)

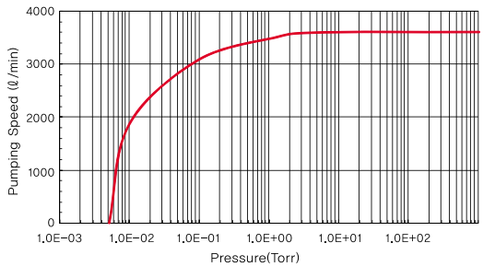




Technical Specification

Item		Unit	60Hz
Designed Pumping Speed		ℓ/min	4500
Effective Pumping Speed		ℓ/min	3600
Ultimate vacuum	Gas V/V close	Torr(Pa)	7.5×10^{-3}(1.0)
Motor power	3Φ	kW	5.5
Oil capacity		ℓ	35
Cooling			Water cooling
Cooling water flow		ℓ/min	3.5 (at 20˚C)
Inlet connection			VF-80
Outlet connection			VF-80
Weight		kg	440
Oil			ULTRA-200

Speed Curve



■특징

- 배기량에 비해 소음, 진동이 적다.
- 특수한 설계구조 방식으로 내구성이 강하다.
- 구조가 간단하며 정밀가공 핀 조립장식으로 제품 호환성이 양호하다.
- 고객이 원하는 모터를 쉽게 교체 할 수 있다.
- 대용량 배기시 MBP펌프 탑재가 용이하다.

■용도

- 대량의 공기를 짧게 배기사간을 요구하는 시스템에 적용
- 고순도 활성가스이 배기 및 흡입용으로 사용
- 진공배기, 진공열처리, 가스분석, 진공증착, 진공함침, 진공건조, 진공성형, 기타배기장치

■Feature

- Little vibration and noise against to exhaust capacity.
- strong durability by special structure type.
- Simple structure and pin-assemble type with a precise machining parts having good replacement.
- Easy to replace motor which customer requested.
- Easy to install a MBP motor when high capacity was exhausted.

■Application

- For short exhausting time with enormous air.
- For exhausting or suction of high purity activated gas.
- For vacuum exhausting, vacuum heat-treatment, residual gas analysis, vacuum evaporation sintering, vacuum dry, vacuum deformation and etc.

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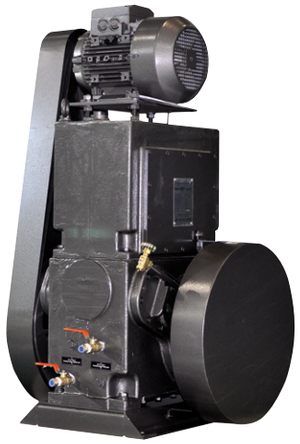
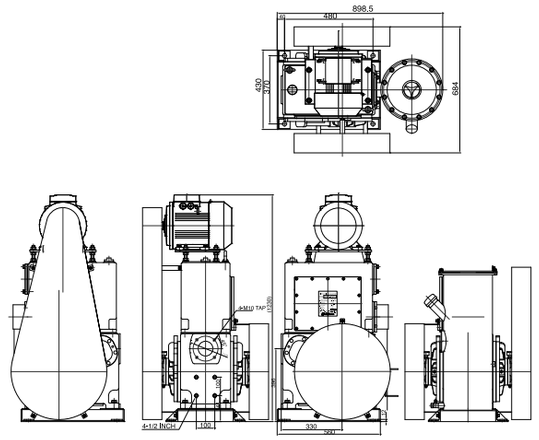
PISTON ROTARY PUMP ▶ KRP-8000

KRP-8000 Design / Outline Drawing(mm)

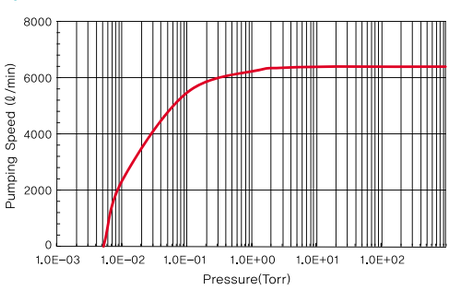




Technical Specification

Item		Unit	60Hz
Designed Pumping Speed		ℓ/min	8000
Effective Pumping Speed		ℓ/min	6400
Ultimate vacuum	Gas V/V close	Torr(Pa)	7.5×10^{-3}(1.0)
Motor power	3Φ	kW	11
Oil capacity		ℓ	40
Cooling			Water cooling
Cooling water flow		ℓ/min	5 (at 20˚C)
Inlet connection			VF-100
Outlet connection			VF-100
Weight		kg	770
Oil			ULTRA-200

Speed Curve



■특징

- 배기량에 비해 소음, 진동이 적다.
- 특수한 설계구조 방식으로 내구성이 강하다.
- 구조가 간단하며 정밀가공 핀 조립장식으로 제품 호환성이 양호하다.
- 고객이 원하는 모터를 쉽게 교체 할 수 있다.
- 대용량 배기시 MBP펌프 탑재가 용이하다.

■용도

- 대량의 공기를 짧게 배기사간을 요구하는 시스템에 적용
- 고순도 활성가스이 배기 및 흡입용으로 사용
- 진공배기, 진공열처리, 가스분석, 진공증착, 진공함침, 진공건조, 진공성형, 기타배기장치

■Feature

- Little vibration and noise against to exhaust capacity.
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- For short exhausting time with enormous air.
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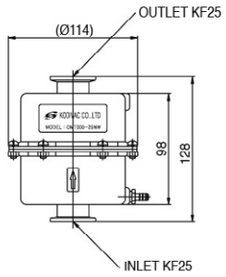
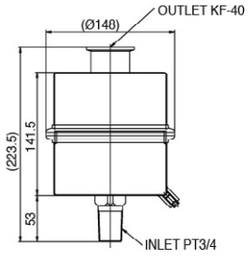
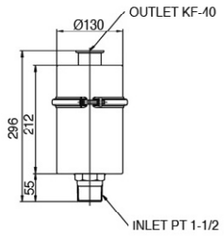
Outline Drawing(mm) OIL MIST TRAP



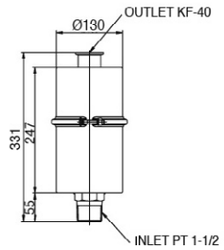
OMT-150K/240K/340K



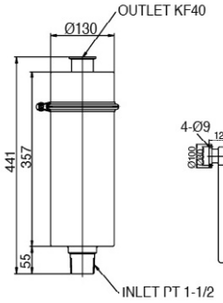
OMT-550K



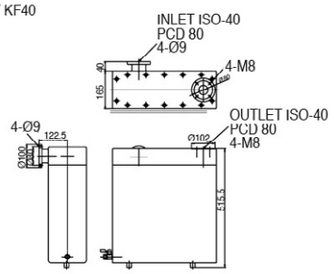
OMT-800K/1000K



OMT-1300K



OMT-1600K

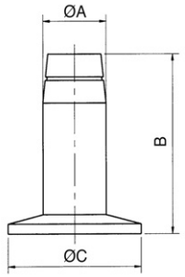


OMT-3500/6000

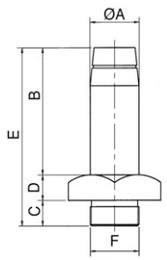
옵션 사양

1) OMT-55OK NW25-NW40
2) OMT-800K/1000K/300K/1600K NW40-NW40

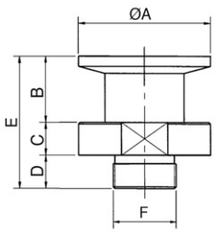
Outline Drawing(mm) INLET NOZZLE , OUTLET(HOSE TYPE), OUTLET(KF TYPE)



Inlet Nozzle



Outlet Nozzle(Horse Type)



Outlet Nozzle(KF Type)

Dimension Inlet Nozzle

Unit:mm

Reference	A	B	C	Model Type
CCFN-25-26	ϕ26	55	NW-25	GHP-150K
				GHP-240K
				GHP-340K
				GHP-550K

Dimension Outlet Nozzle(Horse Type)

Unit:mm

Reference	A	B	C	D	E	F	Model Type
EN-25-3/4	NW25	20	10	10	40	PF 3/4	GHP-150K, 240K, 340K, 550K
EN-40-1½	NW40	25	15	15	55	PF 1½	GHP-800K, 1000K, 1300K, 1600K

Dimension Outlet Nozzle(NW Type)

Unit:mm

Reference	A	B	C	D	E	F	Model Type
EN-26-3/4	ϕ26	50	10	10	70	PF 3/4	GHP-150K, 240K, 340K, 550K
EN-40-1½	ϕ40	70	15	15	100	PF 1½	GHP-800K, 1000K, 1300K, 1600K

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MECHANICAL BOOSTER PUMP

Mechanical Booster Pump는 케이스 내에 있는 2개의 로터가 그 축단의 구동 기어에 의해 상호 반대방향으로 등속 회전을 하여, Chamber 내의 기체를 배기해 내는 Pump입니다. 보조펌프로서 Oil Rotary Vane Pump와 조합하여 사용합니다.

Mechanical Booster Pump compresses and exhausts vapor by two rotors in the casing that are turning in opposite directions. The Mechanical Booster Pump does apply to the large volume chamber. It has a coordinated movement with oil rotary vane pump and leads to faster exhaust speed.

Introduction

KODIVAC의 Mechanical Booster Pump는 로터부에 오일을 사용하지 않으므로 유증기에 영향을 받지 않아 깨끗한 진공을 얻을 수 있으며, 부품 수량을 최소화하였기 때문에 펌프 수명이 깁니다. 또한 배기능력에 비해 운전비용이 매우 저렴합니다.

KODIVAC's Mechanical Booster Pump doesn't use oil in the rotation part. Hence, the Mechanical Booster Pump can produce uncontaminated vacuum that isn't effect by oil vapor and operates with minimum number of accessories, so the pump lasts longer. Also, compared to exhaust capability, the operating expenditure is very economical.

■ 특징

- 대기압 구동 실현 (KBP 1200제외)
- 배기시 부하량에 다른 자동적인 회전속도 조정으로 내마모성이 우수하다.
- 오일 박스는 냉각이 원활한 구조로 제작되어 오일 온도가 낮고 내구성이 강하다.
- 배기대 탑재가 용이하다.
- 고정밀 강성 타이밍 기어사용

■ 용도

- 오일이 없는 압축가스 및 증기의 분위기를 배기시 보조펌프로 사용
- 대량의 공기를 짧은 배기시간에 처리하는 시스템에 적용
- 고순도 활성가스의 배기 및 흡입용으로 사용
- 진공건조, 탈GAS, 탈포 진공증착, 성형, 함침, 식품, 동결건조, 기타배기장치

■ Features

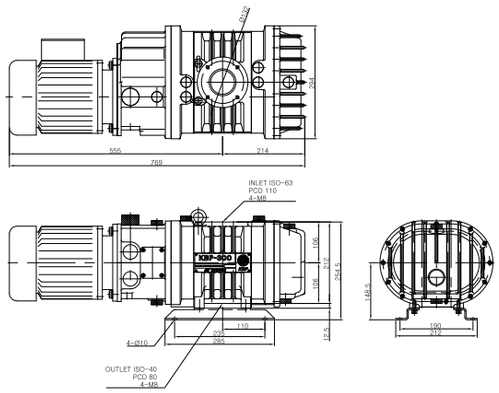
- It has a good abrasion resistant by auto speed adjustment according to load factor.
- Low oil temperature and high durability caused by installation of cooling fan in fluid coupling.
- Easy to combine with exhausting system for a backing pump.

■ Application

- It is combine for a backing pump when exhaust oiless compressed gas or vapour.
- Applicable to a system that require short pumping time
- For exhausting or suction of high puirty activated gas.
- Vacuum dry, vacuum evaporation, vacuum deformation, vacuum sintering, food, madical freezing dry, degas, bubble remotion.

MECHANICAL BOOSTER PUMP ▶ KBP-300/600

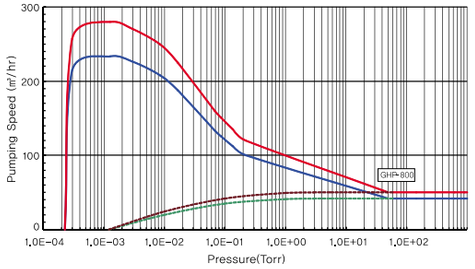
KBP-300 Design / Outline Drawing(mm)



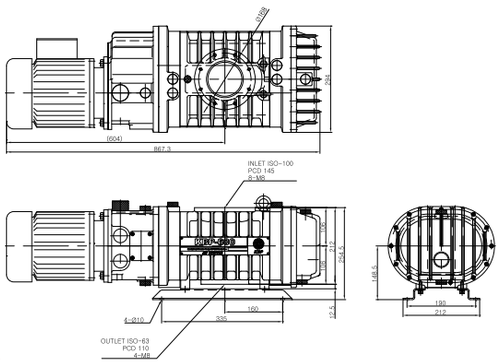
Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		㎥/hr	250	300
Ultimate vacuum		Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
Motor power	3Φ	kW	1.5	
Oil capacity	GEAR	ℓ	0.8	
	COUPLING	ℓ	1.5	
	SHAFT SEAL	ℓ	0.15	
Cooling			Air cooling	
Rotational speed (60Hz)		r.p.m	3400	
Inlet connection			ISO 63	
Outlet connection			ISO 40	
Weight		kg	65	
Recommended backing pump		GHP-800K/1000K/1300K		

Speed Curve



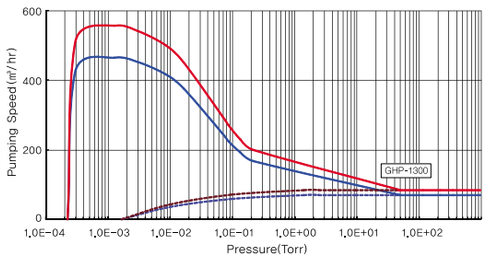
KBP-600 Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		㎥/hr	500	600
Ultimate vacuum		Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
Motor power	3Φ	kW	1.5	
Oil capacity	GEAR	ℓ	0.8	
	COUPLING	ℓ	1.5	
	SHAFT SEAL	ℓ	0.15	
Cooling			Air cooling	
Rotational speed (60Hz)		r.p.m	3400	
Inlet connection			ISO 100	
Outlet connection			ISO 63	
Weight		kg	80	
Recommended backing pump		GHP-1300K/ 1600K		

Speed Curve



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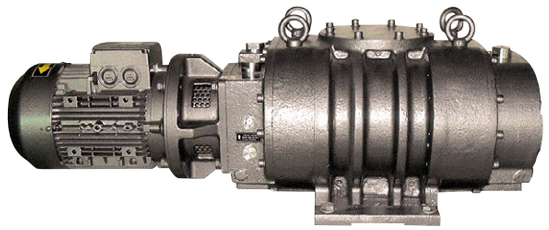
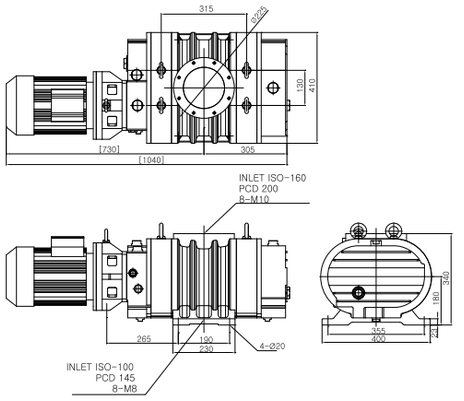
MECHANICAL BOOSTER PUMP ▶ KBP-1200/2700

KBP-1200 Design / Outline Drawing(mm)

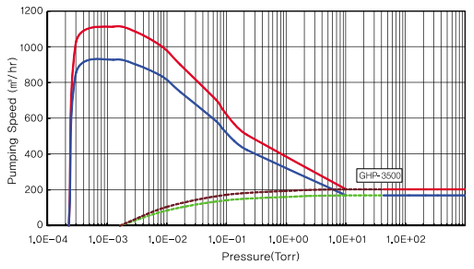




Technical Specification

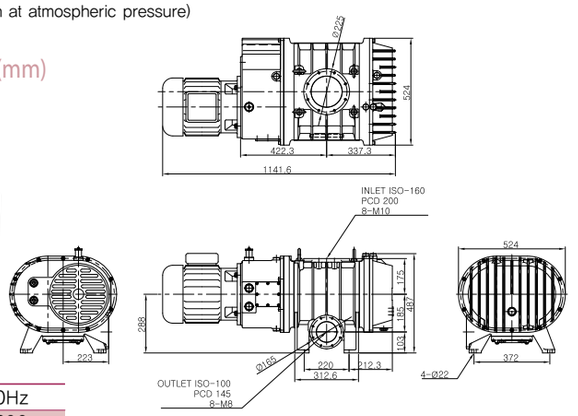
Item		Unit	50Hz	60Hz
Designed pumping speed		㎥/hr	1000	1200
Ultimate vacuum		Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
Motor power	3Φ	kW	3.7	
Oil capacity	GEAR	ℓ	1.1	
	COUPLING	ℓ	1.2	
	SHAFT SEAL	ℓ	0.1	
Cooling			Water cooling	
Cooling water flow		ℓ /min	6.5 (at 20℃)	
Rotational speed (60Hz)		r.p.m	3400	
Inlet connection			ISO 160	
Outlet connection			ISO 100	
Weight		kg	200	
Recommended backing pump		GHP-3500D/KRP-4500		

Speed Curve



* 인버터 사용시 대기압 구동 가능 (When using the inverter can be driven at atmospheric pressure)

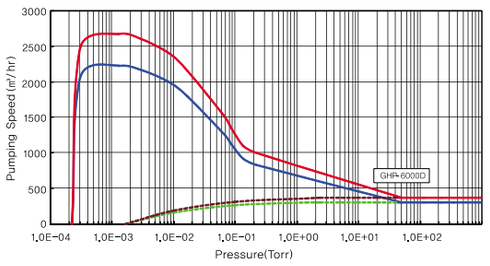
KBP-2700 Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		㎥/hr	2690	3200
Ultimate vacuum		Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
Motor power	3Φ	kW	7.5	
Oil capacity	GEAR	ℓ	3.5	
	COUPLING	ℓ	6.5	
	SHAFT SEAL	ℓ	0.2	
Cooling			Water cooling	
Cooling water flow		ℓ /min	15 (at 20℃)	
Rotational speed (60Hz)		r.p.m	3400	
Inlet connection			ISO 160	
Outlet connection			ISO 100	
Weight		kg	315	
Recommended backing pump		GHP-6000D/KRP-4500/8000		

Speed Curve



Remark) The real product can be different from photograph and product specification can be changed.
실제 제품은 사진과 다를 수 있으며 제품사양은 변경될 수도 있습니다.

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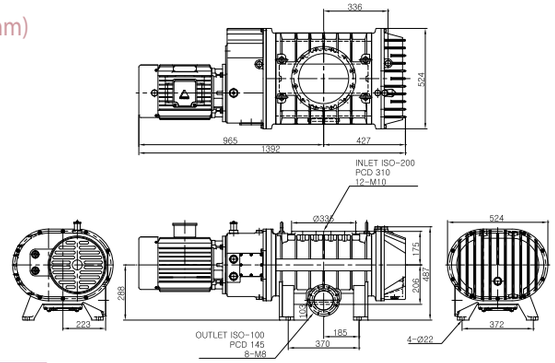
MECHANICAL BOOSTER PUMP ▶ KBP-3800

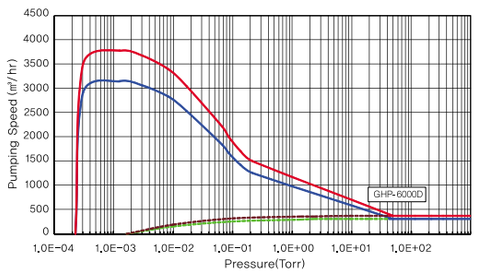
KBP-3800 Design / Outline Drawing(mm)



Technical Specification

Item		Unit	50Hz	60Hz
Designed pumping speed		㎥/hr	3800	4500
Ultimate vacuum		Torr(Pa)	1.0×10^{-3} (1.3×10^{-1})	
Motor power	3Φ	kW	11	
Oil capacity	GEAR	ℓ	3.5	
	COUPLING	ℓ	6.5	
	SHAFT SEAL	ℓ	0.2	
Cooling			Water cooling	
Cooling water flow		ℓ /min	16 (at 20℃)	
Rotational speed (60Hz)		r.p.m	3400	
Inlet connection			ISO 250	
Outlet connection			ISO 100	
Weight		kg	440	
Recommended backing pump			GHP-6000D, KRP-8000	

Speed Curve



Remark) The real product can be different from photograph and product specification can be changed.
실제 제품은 사진과 다를 수 있으며 제품사양은 변경될 수도 있습니다.

DIFFUSION PUMP

유확산 펌프는 증기를 발생시키는 보일러, 증기를 분리하는 노즐, 그리고 분사된 기체를 응축하는 벽으로 구성되며, 초음속 또는 이에 가까운 속도로 분사되는 증기류(타 기체보다 무겁고 고속에 의해 흡입기체를 압축배기하도록 하는 원리)를 이용한 펌프로써, 특히 흡입기체가 분자류 영역에 있을 때 가장 유용하게 작동합니다. 유확산 펌프는 구조가 간단하고 고속 Pumping의 특성과 Gas Load 처리능력, 높은 생산성 등으로 인해 진공산업에서 널리 사용되고 있습니다.

The oil diffusion pump consists of boiler which produce vapors, a nozzle which separates vapor, and a wall which condences vaporized gases. The oil diffusion pumps oil vapors which has a higher speed than the sonic speed, further more the residual molecules move into the lower part of the pump, and become compressed, thus attaining a high vacuum condition sufficient enough for them to be discharged into the primary pump.

Introduction

유확산 펌프의 구조에서 Jet Assembly는 First Stage에 다른 Stage와는 다른 분리된 Tube를 장착시켜 불순물이 없는 가장 순수한 Oil만이 Center Tube를 통해 Top Jet로 이동해서 펌프의 최상층부 즉 흡입구 부분이 가장 높은 진공상태가 되게 해주고, 오염된 Oil은 하부 Jet에서 동작하도록 설계하여 높은 Pumping Speed와 낮은 Oil Back Stream을 갖도록 설계 제작하였습니다. 또한 Jet는 조립이 간단하여 쉽게 분해되며 각단의 Nozzle을 쉽게 세척할 수 있도록 하였으며 시창을 Option으로 장착하여 Oil의 양과 변질상태를 육안으로 관찰할 수 있도록 설계 제작하였습니다. PJ KODIVAC의 유확산 펌프는 철저한 품질관리와 검사를 거쳐 생산되는 신뢰성 있는 Pump입니다. 현재 DPF-3Z에서 DPF-28Z까지의 수냉시리즈와 DPF-3ZA, DPF-4ZA 공냉시리즈가 생산되고 있습니다.

The diffusion pump features a simple structure, high pumping speed, excellent ability to treat gas load, and high throughput, thus playing an important role in the vacuum industry.
PJ KODIVAC DPF-Z type diffusion pump is designed to have high pumping speed, excellent backstream characteristics, low ultimate pressure, and high reliability. The jet assembly of the diffusion pump has a tube that separates the first stage vapors from others. This enables only the purest oil to come into the top jet through the center tube and the part closest to the chamber to attain the highest vacuum condition while any contaminated oil can be used at lower stages. In other words, it is designed to have the highest pumping speed and the least backstream pressure. Besides, the jet is built by an assembling method ensuring that it can be completely disassembled, so that the nozzles of every stage can be cleaned with ease. The pump can also be equipped with a viewing point, which is an option by which you can observe the oil surface and oil contamination/decomposition. In short, PJ KODIVAC supplies reliable pumps produced thorough quality control and test process. The pumps come in water-cooled versions from DPF-3Z Thru DPF-28Z and air-cooled versions from DPF-3ZA thru DPF-4ZA.

▪ 특징
- 뛰어난 배기속도 • Low Oil back stream.
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

▪ Features
- High pumping speed • High fore-vacuum pressure
- Precise leak test by Helium leak detector
- Removal of fluid pollution by jet designing of fraction
- Protection from oil loss of backing system by foreline baffle

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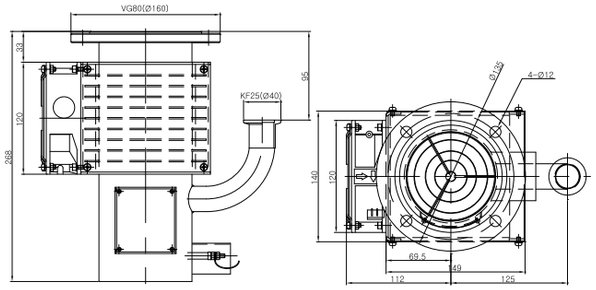
DIFFUSION PUMP ▶ DPF-3ZA/4ZA

DPF-3ZA Design / Outline Drawing(mm)

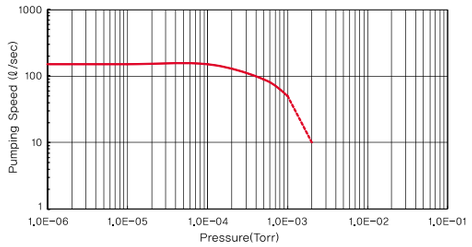


Technical Specification

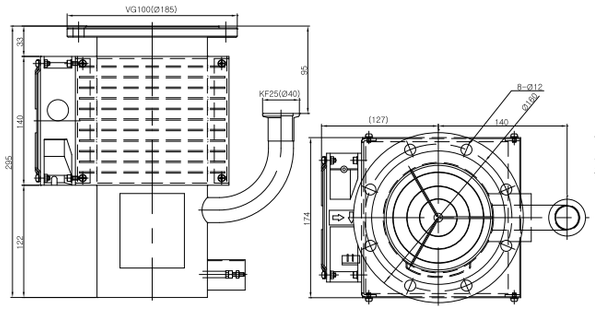
Item			DPF-3ZA	DPF-4ZA
Pumping speed With baffle		ℓ/sec	150	215
Ultimate Pressure		Torr(Pa)	$\times10^{-7}$($\times10^{-5}$) (Room temperature 30°C)	
Max. allowablefore pressure		Torr(Pa)	1.5×10^{-1}(20)	
Oil back stream rate	With baffle	mg/㎠ min	$\times10^{-4}$	
Oil			DC 704	
Oil capacity		mℓ	100	150
Electric power		V/Φ	220/1	
Heater power		kW	450	700
Warm-up time		min	27	
Weight		kg	7.5	10
Inlet size			VG80	VG100
Outlet size			NW25	NW25

* 자료는 DC 704 기준임 (Data is based on the DC 704)

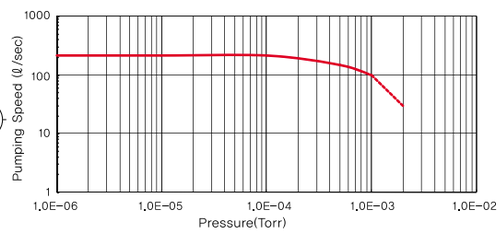
Speed Curve



DPF-4ZA Design / Outline Drawing(mm)



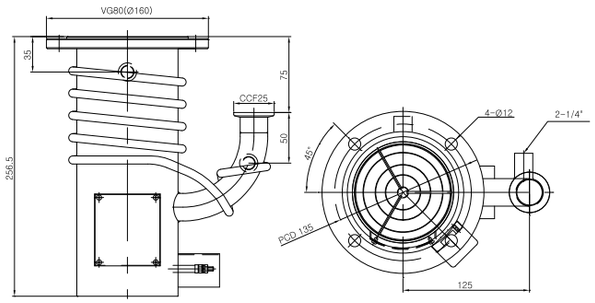
Speed Curve



Remark) Please check Inlet & Outlet size when you make an order for DPF Series.
DPF 시리즈 관련 주문시 흡입구 및 배기구 사이즈를 필히 확인하여 주시길 바랍니다.

DIFFUSION PUMP ▶ DPF-3Z/4Z

DPF-3Z Design / Outline Drawing(mm)

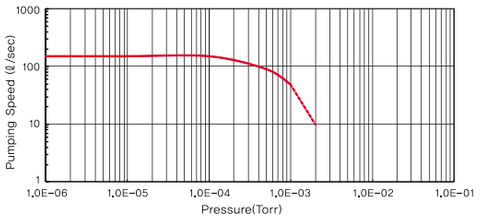


Technical Specification

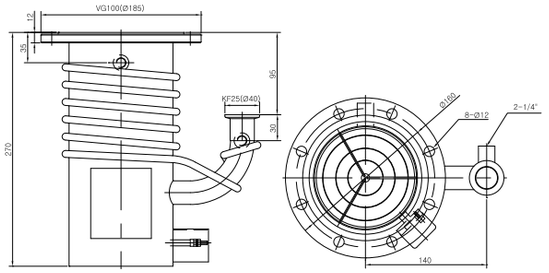
Item			DPF-3A	DPF-4A
Pumping speed	With baffle	ℓ/sec	150	215
	Without baffle		280	380
Ultimate Pressure		Torr(Pa)	$\times10^{-7}$($\times10^{-5}$)	
Max. allowablefore pressure		Torr(Pa)	1.5×10^{-1}(20)	
Oil back stream rate	With baffle	mg/㎠ min	$\times10^{-4}$	
	Without baffle		$\times10^{-2}$	
Oil			DC 704	
Oil capacity		mℓ	100	150
Electric power		V/Φ	220/1	
Heater power		kW	450	700
Warm-up time		min	27	
Cooling water flow		ℓ/min(at 20℃)	1	1.5
Weight		kg	6	8
Inlet size			VG80	VG100
Outlet size			NW25	NW25

* 자료는 DC 704 기준임 (Data is based on the DC 704)

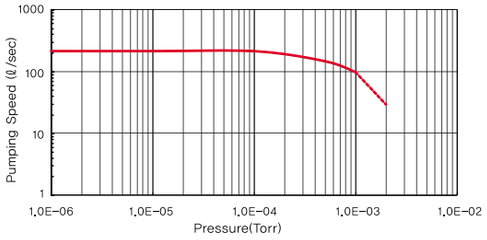
Speed Curve



DPF-4Z Design / Outline Drawing(mm)



Speed Curve



Remark) Please check Inlet & Outlet size when you make an order for DPF Series.
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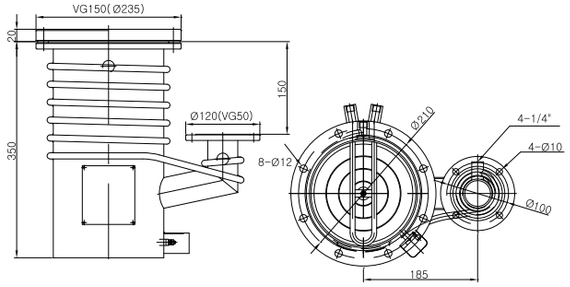
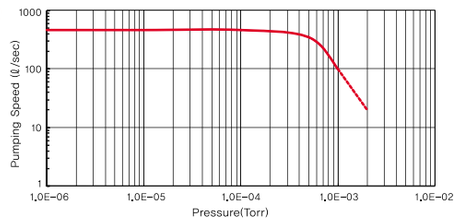
DIFFUSION PUMP ▶ DPF-6Z/8Z/10Z

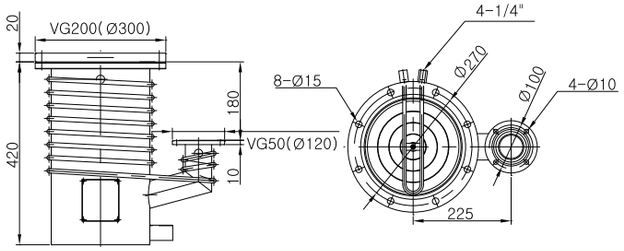
DPF-6Z Design / Outline Drawing(mm)



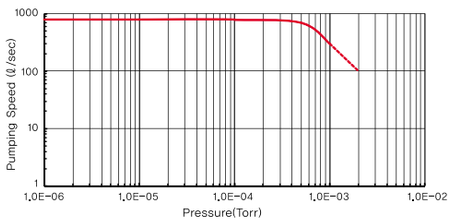
Speed Curve



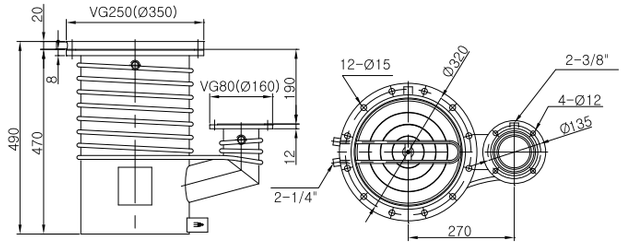
DPF-8Z Design / Outline Drawing(mm)



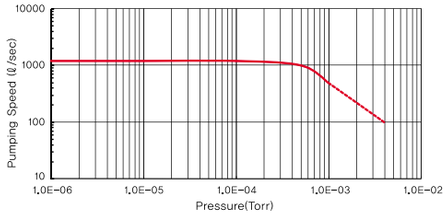
Speed Curve



DPF-10Z Design / Outline Drawing(mm)



Speed Curve



Remark) Please check Inlet & Outlet size when you make an order for DPF Series.
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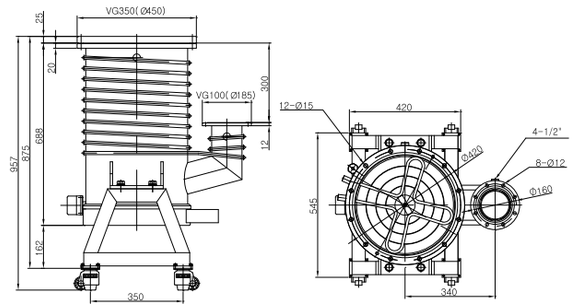
DIFFUSION PUMP ▶ DPF-14Z

Technical Specification

Item			DPF-6Z	DPF-8Z	DPF-10Z
Pumping speed	With baffle	ℓ/sec	465	790	1200
	Without baffle		810	1450	2070
Ultimate Pressure		Torr(Pa)	$\times10^{-7}(\times10^{-5})$		
Max. allowable fore pressure		Torr(Pa)	$1.1\times10^{-1}(15)$		
Oil back stream rate	With baffle	mg/㎠ min	$\times10^{-4}$		
	Without baffle		$\times10^{-2}$		
Oil			DC 704		
Oil capacity		mℓ	340	500	820
Electric power		V/Φ	220/1		
Heater power		kW	1000	1400	1900
Warm-up time		min	20	25	
Cooling water flow		ℓ/min(at 20℃)	3	4	5
Weight		kg	20	30	41
Inlet size			VG150	VG200	VG250
Outlet size			VG50	VG50	VG80

* 자료는 DC 704 기준임 (Data is based on the DC 704)

DPF-14Z Design / Outline Drawing(mm)

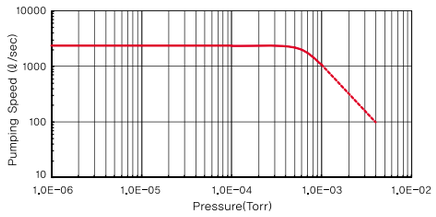


Technical Specification

Item			DPF-14Z
Pumping speed	With baffle	ℓ/sec	2350
	Without baffle		3600
Ultimate Pressure		Torr(Pa)	$\times10^{-7}(\times10^{-5})$
Max. allowable fore pressure		Torr(Pa)	$1.1\times10^{-1}(15)$
Oil back stream rate	With baffle	mg/㎠ min	$\times10^{-4}$
	Without baffle		$\times10^{-2}$
Oil			DC 704
Oil capacity		mℓ	1600
Electric power		V/Φ	220/3
Heater power		kW	4500
Warm-up time		min	30
Cooling water flow		ℓ/min(at 20℃)	7
Weight		kg	120
Inlet size			VG350
Outlet size			VG100

* 자료는 DC 704 기준임 (Data is based on the DC 704)

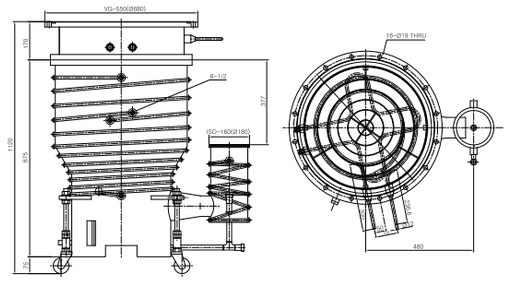
Speed Curve



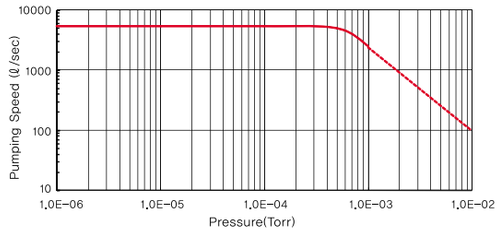
Remark) Please check Inlet & Outlet size when you make an order for DPF Series.
DPF 시리즈 관련 주문시 흡입구 및 배기구 사이즈를 필히 확인하여 주시길 바랍니다.

DIFFUSION PUMP ▶ DPF-22ZQ

DPF-22ZQ Design / Outline Drawing(mm)



Speed Curve



Technical Specification

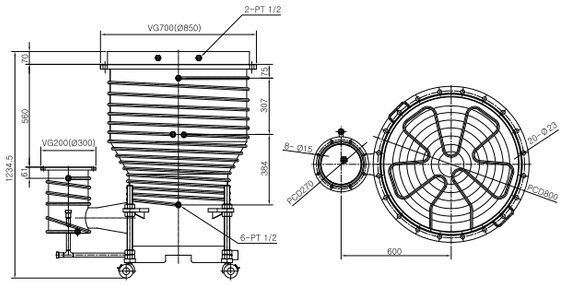
Item			DPF-22ZQ	DPF-28ZQ	DPF-36ZQ
Pumping speed	With baffle	ℓ/sec	5400	8000	12900
	Without baffle		12800	17700	28200
Ultimate Pressure		Torr(Pa)	$\times10^{-7}(\times10^{-5})$		
Max. allowablefore pressure		Torr(Pa)	$4.5\times10^{-1}(60)$		
Oil back stream rate	With baffle (Chevron type)	mg/㎠ min	$\times10^{-5}$		
Oil			DC 704		
Oil capacity		mℓ	4000	5000	8000
Electric power		V/Φ	220/380/3		
Heater power		kW	6000	9000	15000
Warm-up time		min	30		40
Cooling water flow		ℓ/min(at 20℃)	7	12	18
Weight		kg	167	255	450
Inlet size			VG550	VG700	VG900
Outlet size			VG150	VG200	VG200

* 자료는 DC 704 기준임 (Data is based on the DC 704)

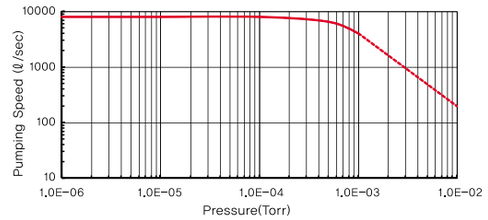
Remark) 1) Coolomg water temperature : Inlet part is more than 10°C, Outlet part is below 30°C
2) Please contact oru Sales Department when you make an order more than DPF-14Z.
3) Please check Inlet & Outlet size when you make an order for DPF Series.
1) 냉각수 온도는 흡입구 10도 이상 및 배기구 30도 미만
2) DPF-14Z0이상 주문시 당사 영업부로 연락주시기 바랍니다.
3) DPF 시리즈 관련 주문시 흡입구 및 배기구 사이즈를 필히 확인하여 주시길 바랍니다.

DIFFUSION PUMP ▶ DPF-28ZQ/36ZQ

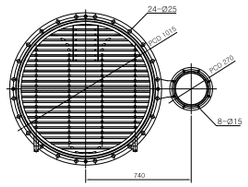
DPF-28ZQ Design / Outline Drawing(mm)

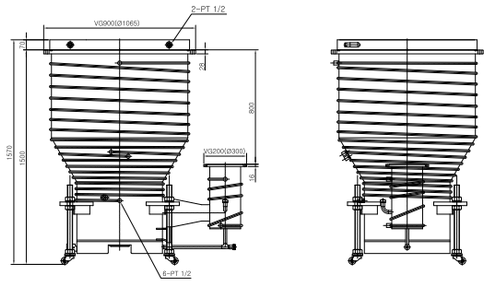


Speed Curve

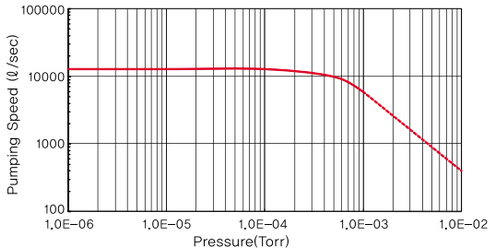


DPF-36ZQ Design / Outline Drawing(mm)





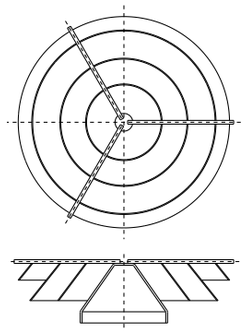
Speed Curve



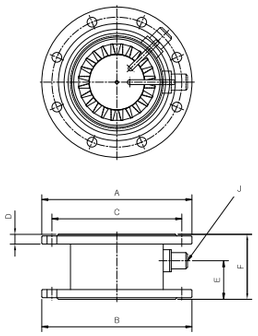
Remark) 1) Coolomg water temperature : Inlet part is more than 10°C, Outlet part is below 30°C
2) Please contact oru Sales Department when you make an order more than DPF-14Z.
3) Please check Inlet & Outlet size when you make an order for DPF Series.
1) 냉각수 온도는 흡입구 10도 이상 및 배기구 30도 미만
2) DPF-14Z0이상 주문시 당사 영업부로 연락주시기 바랍니다.
3) DPF 시리즈 관련 주문시 흡입구 및 배기구 사이즈를 필히 확인하여 주시길 바랍니다.

DIFFUSION PUMP
▶ ACCESSORIES

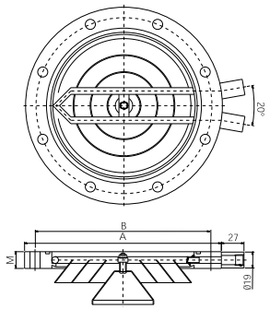
Outline Drawing(mm)



Air Cooled Baffle



LN2 Cooled Baffle



Water Cooled Baffle

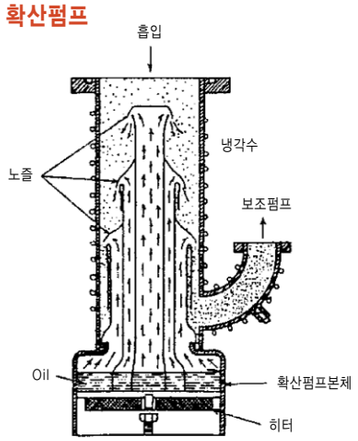
BAFFLE Oil Back Stream 방지

- Air Cooled Baffle : 3Z, 4Z
- Water Cooled Baffle : Above 3Z
- LN_2 Cold Trap : 4Z, 6Z, 8Z

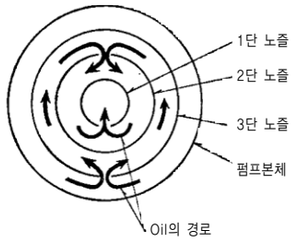
Water Cooled Baffle Dimwnsion(mm)

mark \ model	3Z	4Z	6Z	8Z	10Z	14Z
A	160	185	235	300	350	450
B	135	160	210	270	320	420
M	20	20	20	20	20	20

3단 분류식 확산펌프



(A)본체



(B)3단 분류식 확산펌프

작동액체와 도달압력

유확산펌프의 도달압력은 Oil의 증기압으로 결정된다.
도달압력을 내릴려면 증기압이 낮고 고온에서의 열분해와 산화에 강하며 불순물이 적은 양질의 기름을 선택해야 한다.

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VALVE

밸브의 이용은 대기와 진공과의 격리, 고진공과 저진공간의 격리를 목적으로 설치 이용하며 각 진공 영역에 따라 특성에 맞추어 적용하여야 합니다. 또한 Gate 밸브의 경우 In-line 등의 제품 이송에 알맞게 제작 되어야 하며 잘못 설계, 제작된 밸브의 경우 Leak, 표면적의 증가에 따른 탈가스, 재료의 부적절한 사용으로 인한 문제점들을 야기시킬 수 있습니다.

It is used for the purpose of separating the air and vacuum, and high vacuum and low vacuum range, It should be adapted for the special characteristic in each vacuum range. For Gate valve, it should be manufactured so it is applicable for the Specimen transport of In-line, if desinged and manufactured coarsely, the valve may bring about problems from wrong using and Out gassing from increasing surface area.

Introduction

KODIVAC의 밸브들은 다양한 시스템의 요구 조건에 따라 규격화된 여러 형태의 모양, 크기의 밸브들을 중진공, 고진공, 초고진공 등의 넓은 범위에서 사용될 수 있도록 각각 설계되어 있으며, 컴퓨터에 의해 정밀가공 되어 신뢰성, 내구성, 간단한 작동 시스템, 저가격화, 정확한 동작, 규격화, 넓은 호환성을 위해 철저한 품질관리 시스템에 따라 생산되고 있습니다. 각 밸브들은 고품질의 진공용 재료를 사용하여 제작되고 있습니다.
현재 PJ KODIVAC에서 생산되고 있는 밸브의 종류는

- Gate 밸브
- Angle 밸브
- In Line 밸브
- Butterfly 밸브
- 3 Way 밸브
- Auto Vent 밸브

등의 규격품을 생산하고 있으며, 고객여러분의 요구에 따라 주문제작도 가능합니다.

KODIVAC Valves are designed to be used in wide range of medium, high, and ultra high vacuum standardized by various requirements. And our products follow the rigid quality control system to get interchangeability, standardization, precise movement, low price, simple movement mechanism, durability, and reliability by using CNC controlled computers, we manufacture various valves and followed types of port flange using high quality vacuum materials.

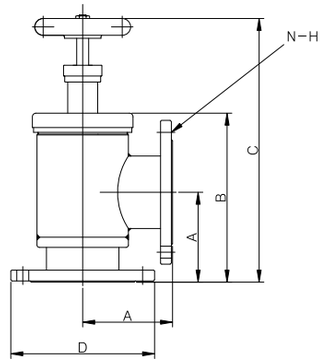
- Gate Valve
- Angle Valve
- In Line Valve
- Butterfly Valve
- 3 Way Valve
- Auto Vent Valve

in addition, special valves are possible meet the customer requirements.

▶ ANGLE VALVE (LV, LAV TYPE)

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • Manual Operated • Flange Type(VG/VF Type)

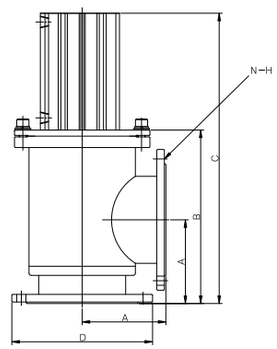


Technical Specification LV TYPE

Reference	A	B	C	ϕD	ϕH	N
LV-3/4B	50	95	167.3	80	10	4
LV-1B	55	105	196.7	90	10	4
LV-2B	75	141	262	120	10	4
LV-3B	95	195	338	160	12	4
LV-4B	110	228	390	185	12	8
LV-6B	130	282	519	235	12	8
LV-8B	175	305	639	300	15	8
LV-10B	200	355	759	350	15	12

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • Pneumatical Operated • Flange Type(VG/VF Type)



Technical Specification LAV TYPE

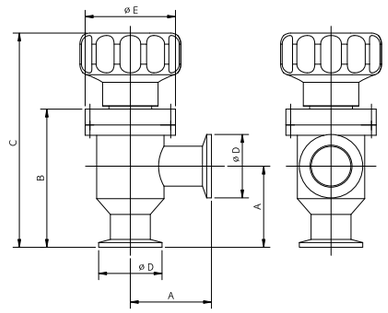
Reference	A	B	C	ϕD	ϕH	N	Fitting
LAV-1B	55	102	195	90	10	4	1/8
LAV-2B	75	139	258	120	10	4	1/14
LAV-3B	95	187	321	160	12	4	1/14
LAV-4B	110	220	381.5	185	12	8	3/8
LAV-6B	130	270	488.5	235	12	8	3/8
LAV-8B	175	295	628.5	300	15	8	3/8
LAV-10B	200	400	709.5	350	15	12	3/8
LAV-14B	260	510	918.5	450	15	12	1/2
LAV-16B	310	657	1098	520	19	12	3/4
LAV-22B	450	854	1410	680	19	16	3/4
LAV-26B	470	945	1766	840	23	20	3/4
LAV-28B	470	940	1564	850	23	20	R3/4
LAV-36B	600	1216	2178	1065	25	24	R3/4

* LAV-14B 이상 주문생산 (LAV-14B or upon request)

▶ ANGLE VALVE (LCV, LCAV TYPE)

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • Manual Operated

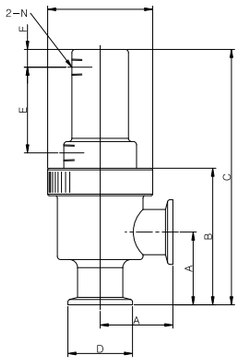


Technical Specification LCV TYPE

Reference	LCV 25	LCV 40	LCV 50	Max. Baking Temperature (℃)	60		
Flange Size	NW 25	NW 40	NW 50				
Conductance (l/s)	15	45	85	Weight (kg)	1.2	1.9	2.6
Leak Rate (Pa · l/s)	Max. 2×10^{-10}			A (mm)	45	55	65
Differential Pressure on Valve Seat	1.1			B (mm)	82.7	101.2	131
A : Body B : Sealing Material	A : SUS 304 B : VITON			C (mm)	125.7	151.7	185.7
				ϕD (mm)	40	55	75
Life Cycle	50,000 (Room Temperature)			ϕE (mm)	65	80	90

Design / Outline Drawing(mm)

• Viton Sealed for High Vacuum Application • Pneumatical Operated



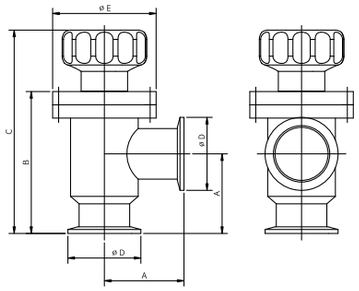
Technical Specification LCAV TYPE

Reference	LCAV 25	LCAV 40	LCAV 50	A (mm)	45	55	65
Flange Size	NW 25	NW 40	NW 50	B (mm)	84.5	103	131
Conductance (l/s)	15	45	85	C (mm)	158	179	215
Leak Rate (Pa · l/s)	Max. 2×10^{-10}			ϕD (mm)	40	55	75
Differential Pressure on Valve Seat	1.1			E (mm)	53	60	68.5
A : Body B : Sealing Material	A : SUS 304 B : VITON			F (mm)	11	8	8
				ϕG (mm)	65	80	90
Life Cycle	100,000 (Room Temperature)			N (mm)	1/8	1/8	1/8
				Sensor Voltage (Current)	DC 24V (5-50mA)	AC 100V (5-25mA)	AC 200V (5-12.5mA)
Max.Baking Temperature (℃)	70						
Air Cylinder (ml)	15	30	40	Protecting Circuit	Installed		
Weight (kg)	1.2	2.0	2.5	Extension	0.5m		

▶ ANGLE VALVE (LCVB, LCAVB TYPE)

Design / Outline Drawing(mm)

• Bellows Sealed Bonnets for High Vacuum Application • Manual Operated

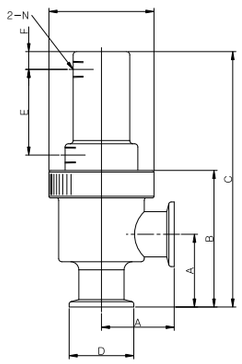


Technical Specification LCVB TYPE

Reference	LCVB 25	LCVB 40	Max. Baking Temperature (℃)	120,70(Operating Part)	
Flange Size	NW 25	NW 40			
Conductance (l/s)	13	42	Weight (kg)	1.3	2
Leak Rate (Pa · l/s)	Max. 2 ×10^{-10}		A (mm)	45	55
Differential Pressure on Valve Seat	1.3		B (mm)	82.7	101.2
A : Body B : Sealing Material	A : SUS 304 B : VITON		C (mm)	125.7	151.7
			ϕD (mm)	40	55
Life Cycle	50,000 (Room Temperature)		ϕE (mm)	65	80

Design / Outline Drawing(mm)

• Bellows Sealed Bonnets for High Vacuum Application • Pneumatical Operated



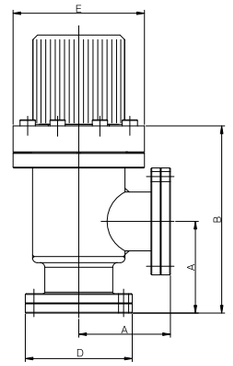
Technical Specification LCAVB TYPE

Reference	LCAVB 25	LCAVB 40	LCAVB 50	A (mm)	45	55	65
Flange Size	NW 25	NW 40	NW 50	B (mm)	84.5	103	131
Conductance (l/s)	13	53	85	C (mm)	158	179	215
Leak Rate (Pa · l/s)	Max. 2×10^{-10}			ϕD (mm)	40	55	75
Differential Pressure on Valve Seat	1.3			E (mm)	53	60	68.5
A : Body B : Sealing Material	A : SUS 304 B : VITON			F (mm)	11	8	8
				ϕG (mm)	65	80	90
Life Cycle	300,000 (Room Temperature)			N (mm)	1/8	1/8	1/8
				Sensor Voltage (Current)	DC 24V (5–50mA)	AC 100V (5–25mA)	AC 200V (5–12.5mA)
Max.Baking Temperature (℃)	120, 70 (Operating Part)			Protecting Circuit	Installed		
Air Cylinder (ml)	10	20	25	Extension	0.5m		
Weight (kg)	1.2	2.0	2.6				

▶ ANGLE VALVE (LUVB, LUAVB TYPE)

Design / Outline Drawing(mm)

• Metal Sealed Bonnets for Ultra–High Vacuum Application • Manual Operated

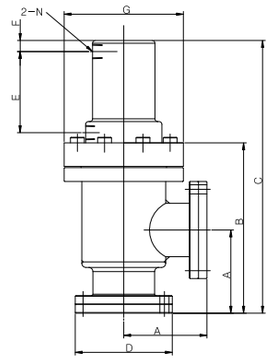


Technical Specification LUVB TYPE

Reference	LUVB 25	LUVB 40	Baking Temperature (℃)	Open 150, Close 125	
Flange Size	CF 35	CF 63	Air Cylinder (ml)	–	
Conductance (l/s)	30	65	Weight (kg)	2.6	6.4
Leak Rate (Torr l/s)	Below 1.0 × 10^{-10}		A (mm)	60	85
Differential Pressure on Valve Seat	1.3		B (mm)	132	157
A : Body B : Sealing Material	A : SUS 304 B : VITON		C (mm)	78	114
Air Pressure (kgf/cm^2)	–		ϕD (mm)	70	114
Life Cycle	100,000 (Room Temperature)		ϕE (mm)	86	114

Design / Outline Drawing(mm)

• Metal Sealed Bonnets for Ultra–High Vacuum Application • Pneumatical Operated



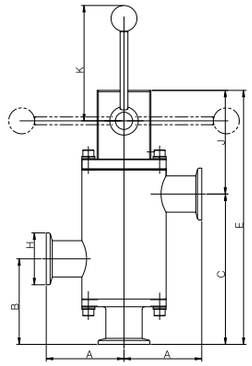
Technical Specification LUAVB TYPE

Reference	LUAVB 25	LUAVB 40	Baking Temperature (℃)	OPEN 150, CLOSE 125	
Flange Size	CF 35	CF 63	Air Cylinder (ml)	20	25
Conductance (l/s)	30	65	Weight (kg)	2.7	6.4
Leak Rate (Pa · l/s)	Below 1.0 × 10^{-11}		A (mm)	60	85
Differential Pressure on Valve Seat	1.3		B (mm)	132	157
			C (mm)	193	237
			ϕD (mm)	70	114
A : Body B : Sealing Material	A : SUS 304 B : VITON		E (mm)	55	63
			F (mm)	8	8
Life Cycle	300,000 (ROOM TEMPERATURE)		ϕG (mm)	86	114
Air Pressure (kgf/cm^2)	3 ~ 5		N (mm)	1/8	1/8

▶3 WAY VALVE (3W, 3AW TYPE)

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • Manual Operated

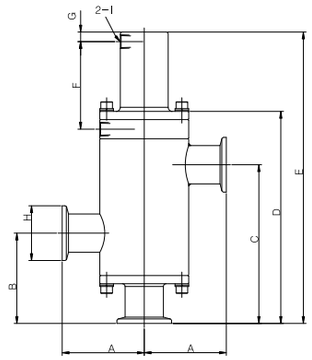


Technical Specification 3 W TYPE

Reference	3W-25	3W-40	Weight (kg)	2.5	4.8
Flange Size	NW 25	NW 40	A (mm)	60	65
Conductance (C-R)(l/s)	13	40	B (mm)	66	80
Conductance (C-F)(l/s)	7	23	C (mm)	116	150
Leak Rate (Torr l/s)	1.0 × 10^{-9}		E (mm)	208	264
Differential Pressure on Valve Seat	1.1		ϕH (mm)	40	55
A : Body B : Sealing Material	A : SUS 304 B : Viton		J (mm)	92	114
Life Cycle	30,000 (Room Temperature)		K (mm)	90	90

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • pneumatical Operated



Technical Specification 3 AW TYPE

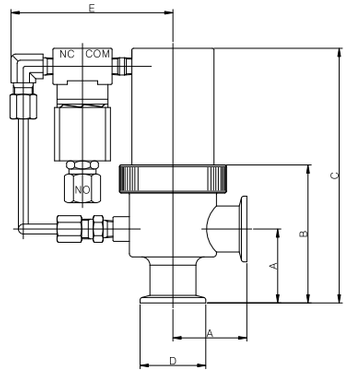
Reference	3AW-25	3AW-40	Air Cylinder (ml)	20	40
Flange Size	NW 25	NW 40	Weight (kg)	2.7	5.1
Conductance (C-R)(l/s)	13	40	A (mm)	60	65
Conductance (C-F)(l/s)	7	23	B (mm)	66	80
Leak Rate (Torr l/s)	1.0 × 10^{-9}		C (mm)	116	150
Differential Pressure on Valve Seat	1.1		D (mm)	154.7	201
A : Body B : Sealing Material	A : SUS 304 B : VITON		E (mm)	213	270
Life Cycle	30,000 (Room Temperature)		F (When lead exist+8) (mm)	64	75
			G (mm)	7	8
			ϕH (mm)	40	55
Air Pressure (kgf/cm^2)	3 ~ 5		I (mm)	1/8	1/8

Voltage	AC 24V	AC 100V	AC 200V
Current	10~20mA	25mA	12.5mA
Protecting Circuit	Installed		
Short Circuit	None		
Response Time	1.2msec		
Extension	0.5m, Heat Proof, Oil Proof		

▶AUTO VANT VALVE (LCLV TYPE)

Design / Outline Drawing(mm)

• Viton O-Ring Sealed Bonnets for High Vacuum Application • Electro Operated



Technical Specification LCLV TYPE

Reference	LCLV 25	LCLV 40	LCLV 50
Flange Size	NW 25	NW 40	NW50
Conductance (l/s)	15	45	85
Leak Rate (Torr l/s)	Max. 1.0 × 10^{-9}		
A : Body B : Sealing Material	A : SUS 304 B : VITON		
Life Cycle	10,000 (Room Temperature)		
Weight (kg)	1.8	2.8	3.7
A (mm)	45	55	65
B (mm)	84	103	125.5
C (mm)	155	180.5	205
ϕD (mm)	40	55	75
E (mm)	98	99	104
Voltage	AC 220V(AC100V, DC24V)	AC 220V(AC100V, DC24V)	AC 220V(AC100V, DC24V)
Connector	1/8 inch	1/8 inch	1/8 inch

Feature

■특징

• 일반적으로 진공 System에서는 안정성을 위해서 Vent valve의 구성이 필요하게 됩니다.
Rotary Pump의 동작이 중단 되었을 때 Roughing line 또는Foreline 내의 진공도에 따라 Pump의 Oil이 역류가 될 수 있습니다.
Auto Vent Valve는 Pump의 흡기구에 가까이 부착되어 Rotary Pump의 On/Off시 자동적으로 작동되며 Pump의 정지와 동시에 피배기계를 순간적으로 차단하고,
그후에 펌프 측을 Vent 합니다. 따라서, Pump로부터의 오일 역류를 방지하고 사용자의 오동작이나 정전시 Oil 역류사고를 방지 할 수 있습니다.

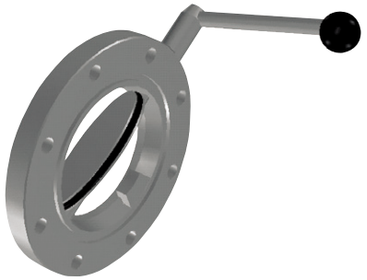
■Features

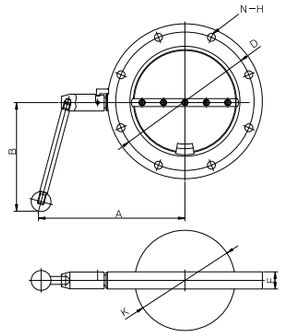
• For the stability of the system, Leak Valve is necessary.
When rotary pump stops, there may be back flow of oil by the vacuum condition within Foreline and Roughing line.
Automatic Leak Valve work automatically when Rotary Pump is on/off.
As placed near aspirator, it cuts off a non-exhaust valve at the same time with Pump stop, So,
it can prevent oil from flowing backwards from pump to protect from power failure and wrong handling.

BUTTERFLY VALVE (MANUAL, AIR)

Design / Outline Drawing(mm)

• Viton O-ring sealed bonnets at 150℃ • Manual operated



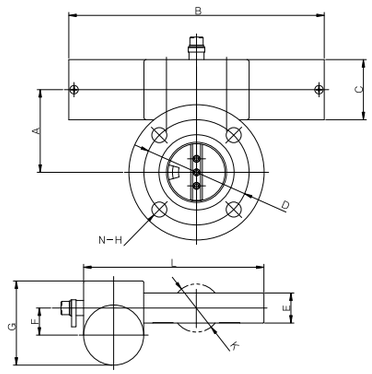


Technical Specification MANUAL

	A(mm)	B(mm)	ϕC(mm)	ϕD(mm)	E(mm)	ϕH(mm)	ϕK(mm)	N(mm)
BV-4	177	121.3	160	20	26	12	100	8
BV-6	218.3	150.2	210	26	26	12	155	8

Design / Outline Drawing(mm)

• Compact size and light Weight • Inexpensive in comparison to any other valves
• Space-saving type • High conductance • Auto-control



Technical Specification AIR

	A(mm)	B(mm)	ϕC(mm)	ϕD(mm)	E(mm)	F(mm)	G(mm)	ϕH(mm)	ϕI(mm)	K(mm)	L(mm)
BAV-1	55	170	40	70	20	18	16	10	33	4	135
BAV-4	103	200	47	160	20	18	61	12	100	8	220
BAV-6	128	270	70	210	26	21	80	12	155	8	300.5

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FLANGES & FITTING

Flange는 배관 및 Component의 결합에 있어 상호호환이 가능하도록 규격화 되어야 하며, 정확하게 Sealing이 이루어 질 수 있도록 제작 되어야 합니다. 고진공용 Flange의 경우 흔히 O-ring에 의해 Sealing 되어지는 방식을 이용하며 O-Ring의 재질은 용도에 따라 다양하게 선택되어 질 수 있습니다.

It should have precise sealing during connecting of components and inspection, and should be interchangeable. In case of HV flange, it should be standardized to be used in components adhesion and sealing by O-ring. In case of UHV flange, there's limit that it is can t be reused in sealing by using metal seal.

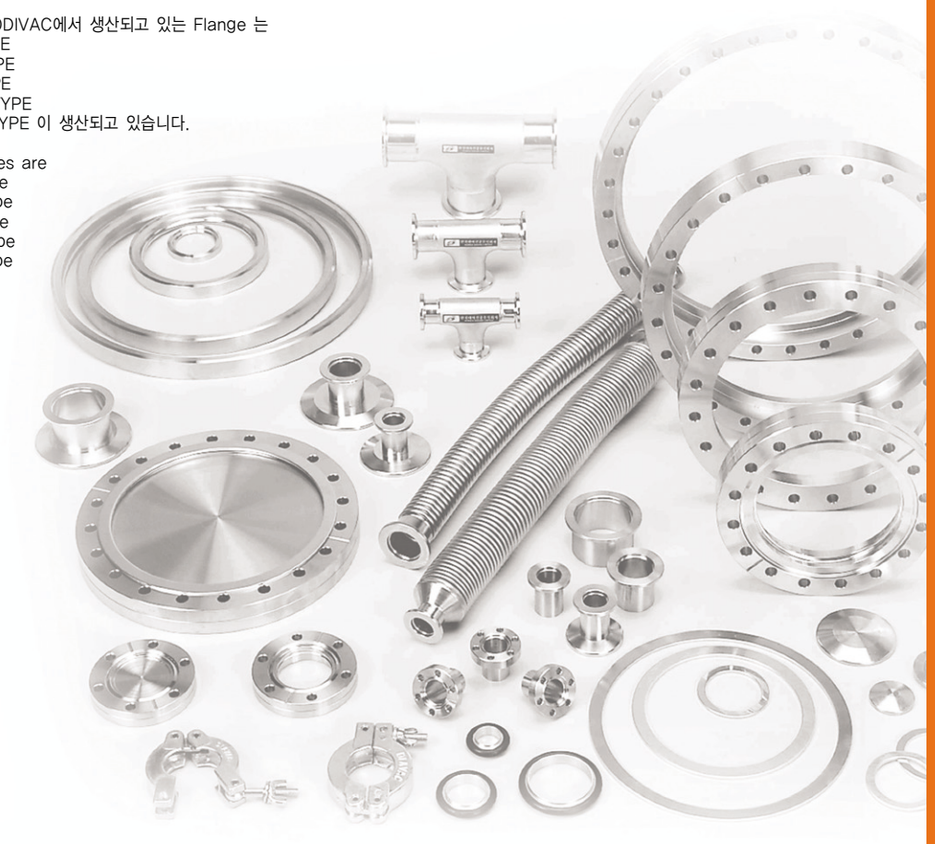
Introduction

초고진공(UHV)용의 경우 Cu, Ag, Au 등의 Gasket를 Sealing 재료로 사용하며 이러한 Gasket는 재질상의 특성으로 인해 반복 사용이 불가능한 제한이 있습니다. KODIVAC에서 생산되는 Flange는 넓은 범위의 규격화된 Size와 우수한 품질로 높은 신뢰성을 가지고 있으며 중진공, 고진공, 초고진공 등의 넓은 범위에서 사용될 수 있도록 생산되고 있습니다. 특히, 대부분의 Flange들은 국제적인 ISO표준규격과 호환성이 있도록 제작하여, 이 표준규격에 준한 어떠한 Flange와도 결합될 수 있으며 고객의 요구 사양에 따라 Special Flange도 제작이 가능합니다.

KODIVAC Flange takes advantage of standardized sizes of wide scope, credence from excellent quality, and availability in wide range of medium, high, and ultra high vacuum. specially, most of flanges have ISO Standard Sizes and interchangeability, and can be connected with standard size flanges.
Also it is possible to manufacture special flange to the customer requirements.

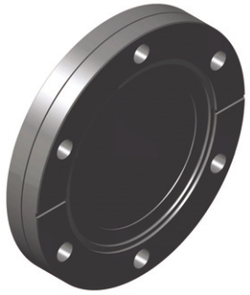
현재 PJ KODIVAC에서 생산되고 있는 Flange 는
- CF TYPE
- NW TYPE
- JIS TYPE
  · VG TYPE
  · VF TYPE 이 생산되고 있습니다.

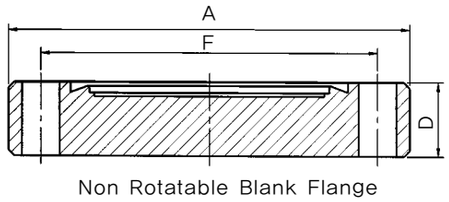
The Flanges are
- CF Type
- NW Type
- JIS Type
  · VG Type
  · VF Type



CF BLANK FLANGES

CF NON ROTABLE BLANK FLANGE Design / Outline Drawing(mm)



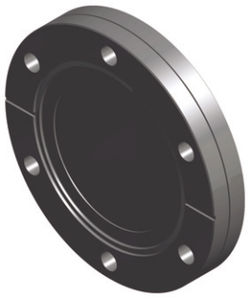


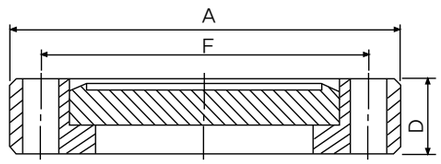
Non Rotatable Blank Flange

Technical Specification

Flange Type		Reference	A (mm)	D (mm)	F (mm)	Hole No. – ϕ
mm	inch					
34	1 – 1/3	CF 16 NRB	34	7.3	27.0	6 – 4.4
70	2 – 3/4	CF 35 NRB	70	12.7	58.7	6 – 6.6
86	3 – 3/8	CF 50 NRB	86	16.0	72.4	8 – 8.4
114	4 – 1/2	CF 63 NRB	114	17.5	92.1	8 – 8.4
152	6	CF 100 NRB	152	20.0	130.3	16 – 8.4
203	8	CF 150 NRB	203	22.0	181.0	20 – 8.4
253	10	CF 200 NRB	253	25.0	231.8	24 – 8.4
305	12	CF 250 NRB	305	28.0	284.0	32 – 8.4
336	13 – 1/4	CF 336 NRB	336.5	28.5	306.3	30 – 10.5

CF ROTABLE BLANK FLANGE Design / Outline Drawing(mm)





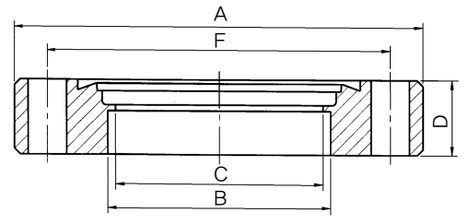
Rotatable Blank Flange

Technical Specification

Flange Type		Reference	A (mm)	D (mm)	F (mm)	Hole No. – ϕ
mm	inch					
34	1 – 1/3	CF 16 RB	34	7.3	27.0	6 – 4.4
70	2 – 3/4	CF 35 RB	70	12.7	58.7	6 – 6.6
86	3 – 3/8	CF 50 RB	86	16.0	72.4	8 – 8.4
114	4 – 1/2	CF 63 RB	114	17.5	92.1	8 – 8.4
152	6	CF 100 RB	152	20.0	130.3	16 – 8.4
203	8	CF 150 RB	203	22.0	181.0	20 – 8.4
253	10	CF 200 RB	253	25.0	231.8	24 – 8.4
305	12	CF 250 RB	305	28.0	284.0	32 – 8.4
336	13 – 1/4	CF 336 RB	336.5	28.5	306.3	30 – 10.5

CF BORED FLANGES

CF NON ROTABLE BORED FLANGES(TAPPED TYPE) Design / Outline Drawing(mm)

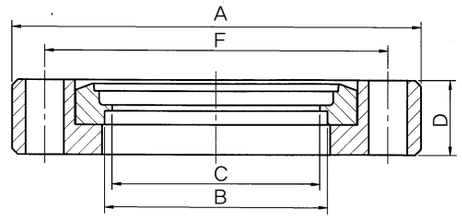


Non Rotatable Flange

Technical Specification

Flange Type		Reference	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	Hole No. – ϕ	Tapped Tye Taple No. – ϕ
mm	inch								
34	1 – 1/3	CF 16 NRO	34	19.2	16.5	7.3	27.0	27.0	(M4)
70	2 – 3/4	CF 35 NRO	70	38.5	35.5	12.7	58.7	58.7	(M6)
86	3 – 3/8	CF 50 NRO	86	51	49	16.0	72.4	72.4	(M8)
114	4 – 1/2	CF 63 NRO	114	63.8	61.0	17.5	92.1	92.1	(M8)
152	6	CF 100 NRO	152	102.0	97.0	20.0	130.3	130.3	(M8)
203	8	CF 150 NRO	203	153.5	148.5	22.0	181.0	181.0	(M8)
253	10	CF 200 NRO	253	203.5	198.5	25.0	231.8	231.8	(M8)
305	12	CF 250 NRO	305	255.5	251.5	28.0	284.0	284.0	(M8)
336	13 – 1/4	CF 336 NRO	336	274.5	268.5	28.5	306.3	306.3	(M10)

CF ROTABLE BORED FLANGES(TAPPED TYPE) Design / Outline Drawing(mm)



Rotatable Flange

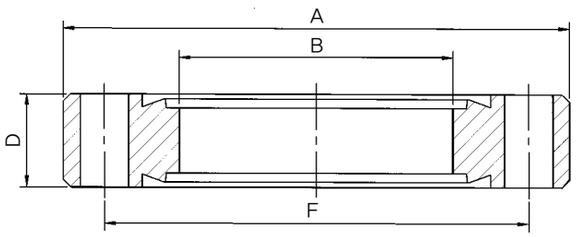
Technical Specification

Flange Type		Reference	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	Hole No. – ϕ	Tapped Tye Taple No. – ϕ
mm	inch								
34	1 – 1/3	CF 16 RO	34	19.2	16.5	7.3	27.0	6 – 4.4	(M4)
70	2 – 3/4	CF 35 RO	70	38.5	35.5	12.7	58.7	6 – 6.6	(M6)
86	3 – 3/8	CF 50 RO	86	51	49	16.0	72.4	8 – 8.4	(M8)
114	4 – 1/2	CF 63 RO	114	63.8	61.0	17.5	92.1	8 – 8.4	(M8)
152	6	CF 100 RO	152	102.0	97.0	20.0	130.3	16 – 8.4	(M8)
203	8	CF 150 RO	203	153.5	148.5	22.0	181.0	20 – 8.4	(M8)
253	10	CF 200 RO	253	203.5	198.5	25.0	231.8	24 – 8.4	(M8)
305	12	CF 250 RO	305	255.5	251.5	28.0	284.0	32 – 8.4	(M8)
336	13 – 1/4	CF 336 RO	336.5	274.5	268.5	28.5	306.3	30 – 10.5	(M10)

CF FLANGE

CF DOUBLE FLANGES

CF DOUBLE SIDE FLANGES Design / Outline Drawing(mm)



Double Side flange

Technical Specification

Flange Type		Reference	A (mm)	B (mm)	D (mm)	F (mm)	Hole No. – ϕ
mm	inch						
34	1 – 1/3	CF 16DS-1	34	Blank	7.3	27.0	6 – 4.4
34	1 – 1/3	CF 16DS-2	34	10.0	7.3	27.0	6 – 4.4
34	1 – 1/3	CF 16DS-3	34	17.4	7.3	27.0	6 – 4.4
70	2 – 3/4	CF 35DS-1	70	Blank	12.7	58.7	6 – 6.6
70	2 – 3/4	CF 35DS-2	70	10	12.7	58.7	6 – 6.6
70	2 – 3/4	CF 35DS-3	70	20	12.7	58.7	6 – 6.6
70	2 – 3/4	CF 35DS-4	70	30	12.7	58.7	6 – 6.6
70	2 – 3/4	CF 35DS-5	70	38.5	12.7	58.7	6 – 6.6
86	3 – 3/8	CF 50DS-1	86	Blank	16.0	72.4	8 – 8.4
86	3 – 3/8	CF 50DS-2	86	10	16.0	72.4	8 – 8.4
86	3 – 3/8	CF 50DS-3	86	20	16.0	72.4	8 – 8.4
86	3 – 3/8	CF 50DS-4	86	30	16.0	72.4	8 – 8.4
86	3 – 3/8	CF 50DS-5	86	40	16.0	72.4	8 – 8.4
86	3 – 3/8	CF 50DS-6	86	51.0	16.0	72.4	8 – 8.4
114	4 – 1/2	CF 63DS-1	114	Blank	17.5	92.1	8 – 8.4
114	4 – 1/2	CF 63DS-2	114	30	17.5	92.1	8 – 8.4
114	4 – 1/2	CF 63DS-3	114	40	17.5	92.1	8 – 8.4
114	4 – 1/2	CF 63DS-4	114	50	17.5	92.1	8 – 8.4
114	4 – 1/2	CF 63DS-5	114	63.8	17.5	92.1	8 – 8.4
152	6	CF 100DS-1	152	Blank	20.0	130.3	16 – 8.4
152	6	CF 100DS-2	152	102.0	20.0	130.3	16 – 8.4
203	8	CF 150DS-1	203	Blank	22.0	181.0	20 – 8.4
203	8	CF 150DS-2	203	153.5	22.0	181.0	20 – 8.4
253	10	CF 200DS-1	253	Blank	25.0	231.8	24 – 8.4
253	10	CF 200DS-2	253	203.5	25.0	231.8	24 – 8.4
305	12	CF 250DS-1	305	Blank	28.0	284.0	32 – 8.4
305	12	CF 250DS-2	305	255.5	28.0	284.0	32 – 8.4
336	13 – 1/4	CF 336DS-1	336.5	Blank	28.5	306.3	30 – 10.5
336	13 – 1/4	CF 336DS-2	336.5	274.5	28.5	306.4	30 – 10.5

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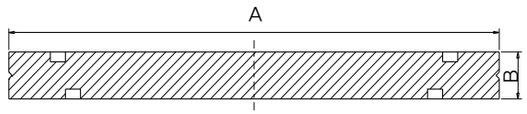
FLANGE

ISO FLANGES

ISO BLANK FLANGES Design / Outline Drawing(mm)

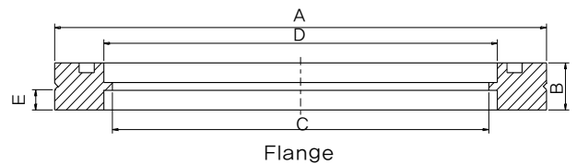


Blank Flange

Technical Specification

Flange Type	A (mm)	B (mm)
ISO 63	95	12
ISO 80	110	12
ISO 100	130	12
ISO 160	180	12
ISO 200	240	12
ISO 250	290	12
ISO 320	370	17
ISO 400	450	17
ISO 500	550	17
ISO 630	690	22

ISO BORED FLANGES Design / Outline Drawing(mm)



Flange

Technical Specification

Flange Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
ISO 63	95	12	60.2	70	5
ISO 80	110	12	72.9	83	5
ISO 100	130	12	98.3	102	5
ISO 160	180	12	148	153	5
ISO 200	240	12	197	213	5
ISO 250	290	12	247.7	261	5
ISO 320	370	17	310	318	7.5
ISO 400	450	17	396.7	400	7.5
ISO 500	550	17	498.3	501	7.5
ISO 600	690	22	643	651	10

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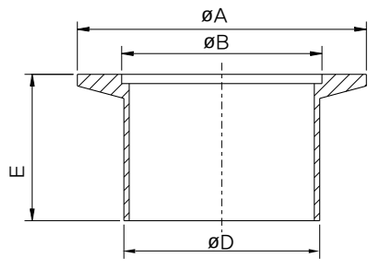
FLANGES

KF SOCKET FLANGES Design / Outline Drawing(mm)

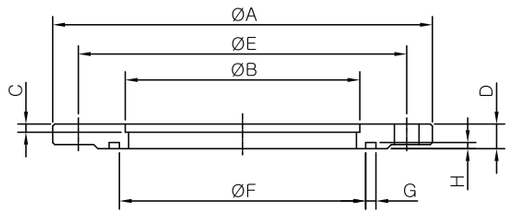


Socket Flange

Technical Specification

Flange Type	A (mm)	B (mm)	D (mm)	E (mm)
NW 10	30	12.2	13.5	30
NW 16	30	17.2	20	30
NW 25	40	26.2	28	30
NW 40	55	41.2	44.5	30
NW 50	75	52.5	60.5	30

NON ROTATABLE VG BORED FLANGES (JIS) Design / Outline Drawing(mm)



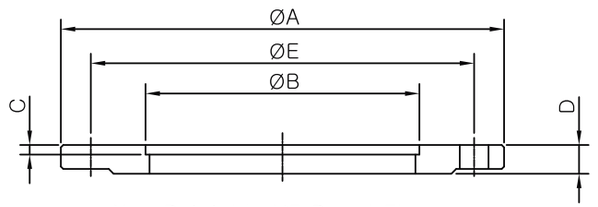
Non Rotatable VG Bored Flange

Technical Specification

Flange Type(JIS) A	Flange Type(JIS) B	Reference	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	Hole No. – ϕ
10	3/8	VG 10	70	17.3	2.5	8	50	24	5	3	4 – 10
20	3/4	VG 20	80	27.2	2.5	8	60	34	5	3	4 – 10
25	1	VG 25	90	34.0	3	8	70	40	5	3	4 – 10
40	1 1/2	VG 40	105	48.6	3	10	85	55	5	3	4 – 10
50	2	VG 50	120	60.5	3	10	100	70	5	3	4 – 10
65	2 1/2	VG 65	145	76.3	3	10	120	85	5	3	4 – 12
80	3	VG 80	160	89.1	4	12	135	100	5	3	4 – 12
100	4	VG 100	185	114.3	4	12	160	120	5	3	8 – 12
125	5	VG 125	210	139.8	4	12	185	150	5	3	8 – 12
150	6	VG 150	235	165.2	4	12	210	175	5	3	8 – 12
200	8	VG 200	300	216.3	7	16	270	225	8	4.5	8 – 15
250	10	VG 250	350	267.4	7	16	320	275	8	4.5	12 – 15
300	12	VG 300	400	318.5	7	16	370	325	8	4.5	12 – 15
350	14	VG 350	450	355.6	9	20	420	380	8	4.5	12 – 15
400	16	VG 400	520	406.4	9	20	480	430	8	4.5	12 – 19
450	18	VG 450	575	457.2	9	20	535	480	12	7	16 – 19
500	20	VG 500	625	508.0	10	22	585	530	12	7	16 – 19
550	22	VG 550	680	558.8	11	24	640	585	12	7	16 – 19
600	24	VG 600	750	609.6	11	24	700	640	12	7	16 – 23
650	26	VG 650	800	660.4	11	24	750	690	12	7	20 – 23
700	28	VG 700	850	711.2	11	26	800	740	12	7	20 – 23
750	30	VG 750	900	762.0	11	26	850	790	12	7	20 – 23
800	32	VG 800	955	812.8	11	26	905	845	12	7	24 – 23
900	36	VG 900	1065	914.4	11	28	1015	950	12	7	24 – 25
1000	42	VG 1000	1170	1016.0	11	28	1120	1055	12	7	24 – 25

VF FLANGES

NON ROTATABLE VF BORED FLANGES (JIS) Design / Outline Drawing(mm)



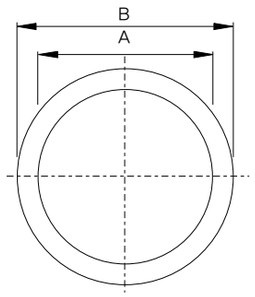
Non Rotatable VF Bored Flange

Technical Specification

Flange Type mm	Flange Type inch	Reference	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Hole No. – ϕ
10	3/8	VF 10	70	17.3	2.5	8	50	4 – 10
20	3/4	VF 20	80	27.2	2.5	8	60	4 – 10
25	1	VF 25	90	34.0	3	8	70	4 – 10
40	1 1/2	VF 40	105	48.6	3	10	85	4 – 10
50	2	VF 50	120	60.5	3	10	100	4 – 10
65	2 1/2	VF 65	145	76.3	3	10	120	4 – 12
80	3	VF 80	160	89.1	4	12	135	4 – 12
100	4	VF 100	185	114.3	4	12	160	8 – 12
125	5	VF 125	210	139.8	4	12	185	8 – 12
150	6	VF 150	235	165.2	4	12	210	8 – 12
200	8	VF 200	300	216.3	7	16	270	8 – 15
250	10	VF 250	350	267.4	7	16	320	12 – 15
300	12	VF 300	400	318.5	7	16	370	12 – 15
350	14	VF 350	450	355.6	9	20	420	12 – 15
400	16	VF 400	520	406.4	9	20	480	12 – 19
450	18	VF 450	575	457.2	9	20	535	16 – 19
500	20	VF 500	625	508.0	10	22	585	16 – 19
550	22	VF 550	680	558.8	11	24	640	16 – 19
600	24	VF 600	750	609.6	11	24	700	16 – 23
650	26	VF 650	800	660.4	11	24	750	20 – 23
700	28	VF 700	850	711.2	11	26	800	20 – 23
750	30	VF 750	900	762.0	11	26	850	20 – 23
800	32	VF 800	955	812.8	11	26	905	24 – 23
900	36	VF 900	1065	914.4	11	28	1015	24 – 25
1000	42	VF 1000	1170	1016.0	11	28	1120	24 – 25

GASKETS & CLAMPS

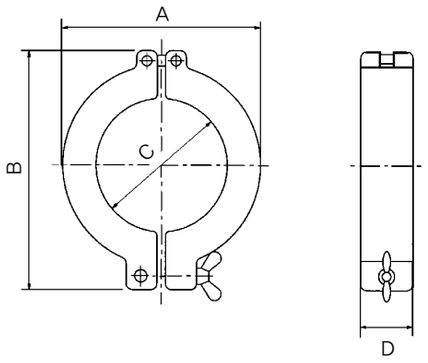
CF COPPER GASKETS Design / Outline Drawing(mm)



Technical Specification

Flange Type	KODIVAC Reference	A (mm)	B (mm)
1 – 1/3"	CF 16	15	21.3
2 – 3/4"	CF 35	37	48.2
3 – 3/8"	CF 50	51	61.6
4 – 1/2"	CF 63	68.4	82.3
6"	CF 100	106.5	120.5
8"	CF 150	157.3	171.3
10"	CF 200	208.1	222.1

NW QUICK CLAMPS Design / Outline Drawing(mm)

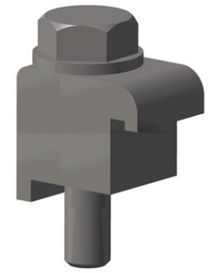


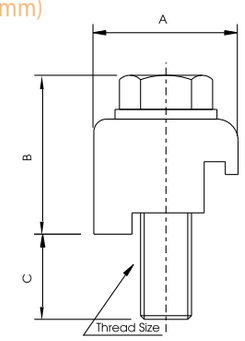
Technical Specification

KODIVAC Reference	A (mm)	B (mm)	C (mm)	D (mm)
CCR 10	45	61	22	16
CCR 16	45	61	22	16
CCR 25	55	72	32	16
CCR 40	72	90	48	18
CCR 50	96	123	63	25

ISO CLAW CLAMPS

ISO SINGLE CLAW CLAMPS Design / Outline Drawing(mm)

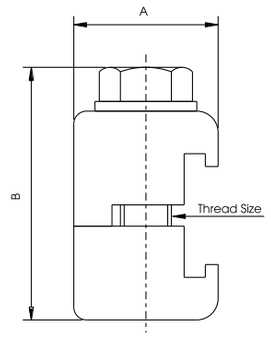




Technical Specification

Flange Type	A (mm)	B (mm)	Thread Size	Clamps Requierd
ISO 63	23.9	23.6	M8	4
ISO 80	23.9	23.6	M8	8
ISO 100	23.9	23.6	M8	8
ISO 160	27.9	23.6	M10	8
ISO 200	27.9	23.6	M10	12
ISO 250	27.9	23.6	M10	12
ISO 320	33.8	30	M12	12
ISO 400	33.8	30	M12	16
ISO 500	33.8	30	M12	16

ISO DOUBLE CLAW CLAMPS Design / Outline Drawing(mm)



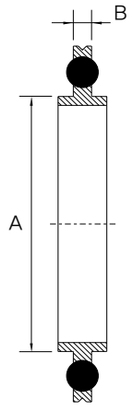
Technical Specification

Flange Type	A (mm)	B (mm)	Thread Size	Clamps Requierd
ISO 63	23.9	43.7	M8	3–4
ISO 80	23.9	43.7	M8	4–8
ISO 100	23.9	43.7	M8	4–8
ISO 160	27.9	43.7	M10	4–8
ISO 200	27.9	43.7	M10	6–12
ISO 250	27.9	43.7	M10	6–12
ISO 320	33.8	51.6	M12	8–12
ISO 400	33.8	51.6	M12	8–12
ISO 500	33.8	51.6	M12	12–16

CENTER RINGS

ISO CENTER RINGS Design / Outline Drawing(mm)

• Oring – NBR (Option : Viton)



Technical Specification

Flange Type	A (mm)	B (mm)
ISO 63	70	3.9
ISO 80	83	3.9
ISO 100	102	3.9
ISO 160	153	3.9
ISO 200	213	3.9
ISO 250	261	3.9
ISO 320	318	5.6
ISO 400	400	5.6
ISO 500	501	5.6
ISO 630	651	5.6

NW CENTER RINGS Design / Outline Drawing(mm)

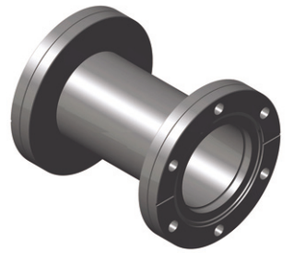
• Oring – NBR (Option : Viton)

Technical Specification

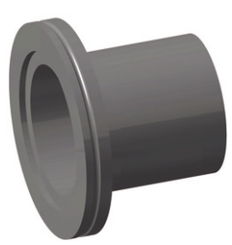
Flange Type	A (mm)	B (mm)
NW 10	12	3.9
NW 16	17	3.9
NW 25	26	3.9
NW 40	41	3.9
NW 50	52.3	3.9

FLANGES

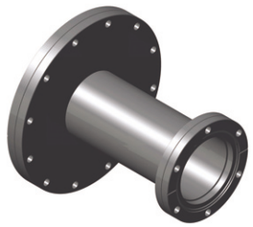
Design NIPPLES - CF HALF, CF FULL



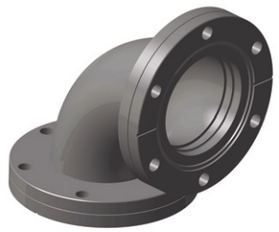
Design NIPPLES - NW HALF, ISO HALF, ISO FULL



Design REDUCER - CF, CF CONICAL, NW CONICAL



Design ELBOWS - CF90° , NW 90° , ISO 90°



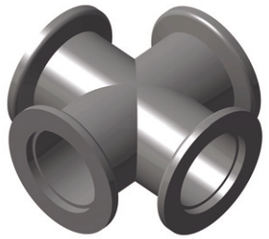
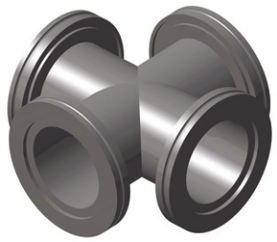
FLANGE

▶ FLANGES

Design TEES - CF, NW, ISO



Design 4-WAYS - NW, ISO

Design TUBES - NW FLEXIBLE

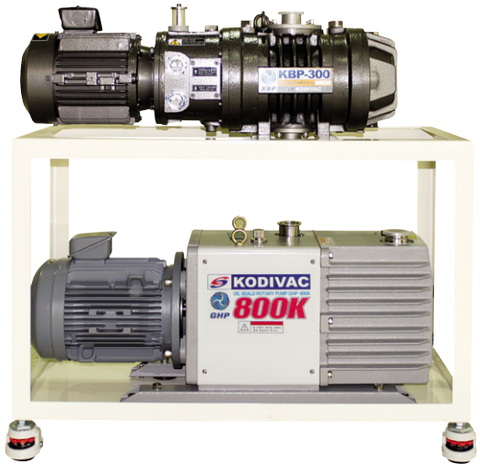
SYSTEM

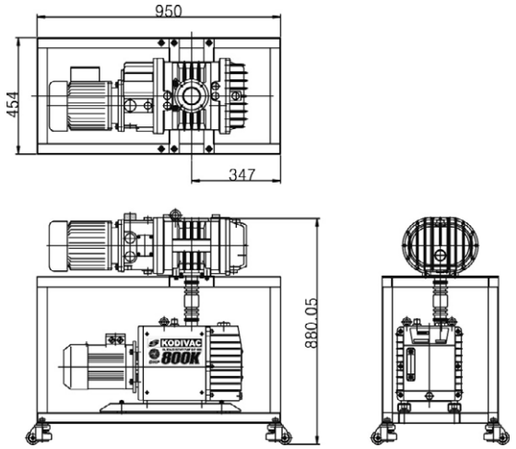
대기에 노출된 물질들은 이미 그 순수성을 상실한 상태로 물리적, 화학적 변화의 억제를 위해서는 진공이 꼭 필요하며, 완벽한 진공 상황에서의 Process만이 신뢰도가 인정될 수 있습니다.
KODIVAC에서는 축적된 진공기술을 바탕으로 다양한 진공시스템을 개발, 생산하고 있으며 지속적인 Vacuum System에 대한 기술개발로 고객의 요구사항에 맞는 최상의 system을 만들도록 노력하고 있습니다.

Vacuum is indispensible to restrain any physical and chemical changes because the materials in the air have already lost their purity and the reliability of process in the perfect vacuum can be accepted.
KODIVAC is developing and manufacturing various vacuum systems with accumulating vacuum technology We are always trying the best system for your requirements through the continuous development of vacuum system.

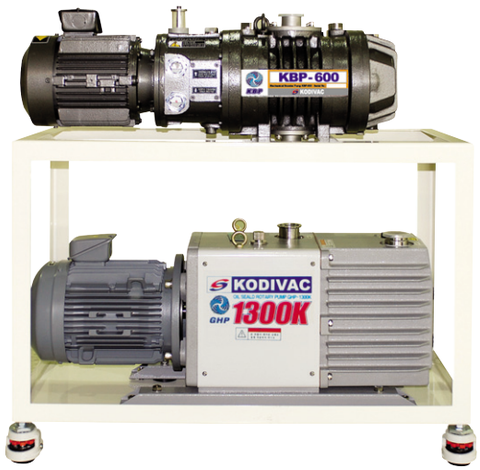
▶ Combination Exhaust System

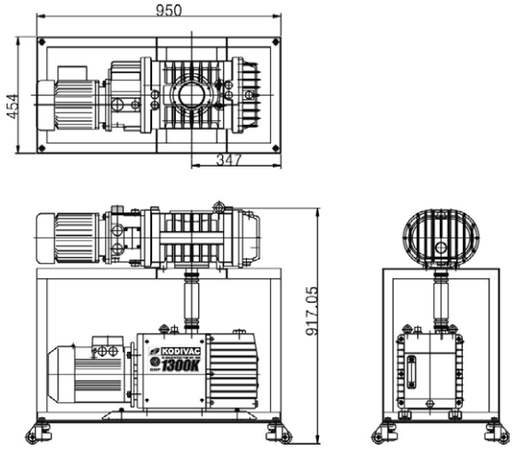
KBP-300/GHP-800K Design / Outline Drawing(mm)





KBP-600/GHP-1300K Design / Outline Drawing(mm)



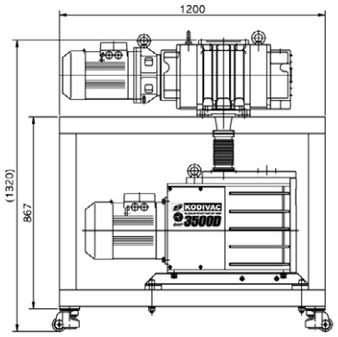


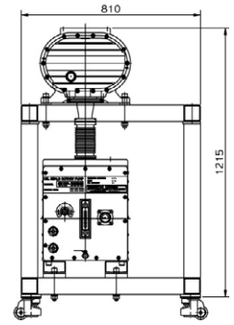
Remark) The real product can be different from photogaph and product specification can be changed
실제 제품은 사진과 다를 수 있으며 제품사양은 변경될 수도 있습니다.

COMBINATION EXHAUST SYSTEM

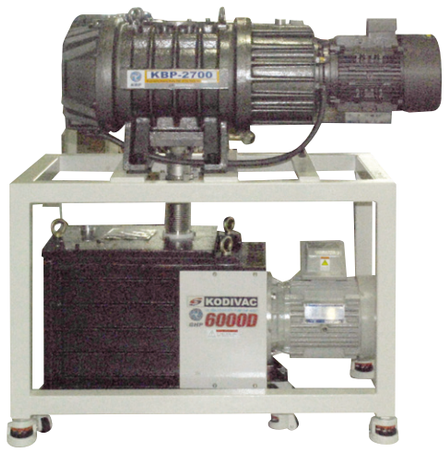
▶ Combination Exhaust System

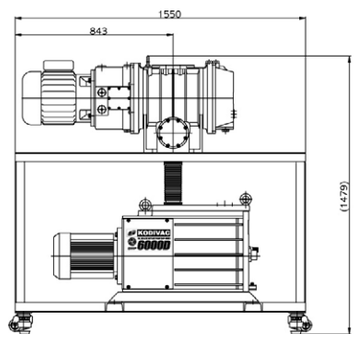
KBP-1200/GHP-3500D Design / Outline Drawing(mm)

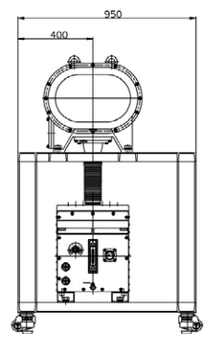




KBP-2700/GHP-6000D Design / Outline Drawing(mm)

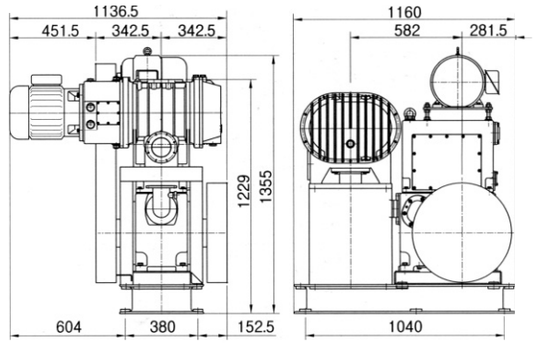




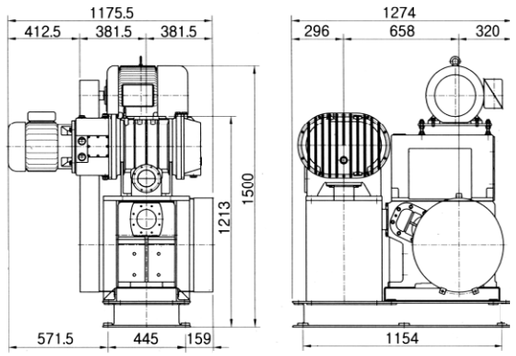


Remark) The real product can be different from photogaph and product specification can be changed
실제 제품은 사진과 다를 수 있으며 제품사양은 변경될 수도 있습니다.

KBP-2700/KRP-4500 Design / Outline Drawing(mm)



KBP-2700/KRP-8000 Design / Outline Drawing(mm)



Remark) The real product can be different from photogaph and product specification can be changed
실제 제품은 사진과 다를 수 있으며 제품사양은 변경될 수도 있습니다.

GAUGE

진공계측기는 진공도를 비례측정하여 시각적으로 나타내는 계측기로 진공영역에 따라 저진공, 중진공, 고진공, 초고진공으로 구분되며 영역에 따라 측정하는 방법이 다릅니다.
KODIVAC에서 생산되고 있는 진공계측기 종류로는 Pirani Gauge, Penning Gauge, Ionization Gauge로 대기압에서 초고진공까지 고객의 요구에 따라 다양하게 선택하여 사용할 수 있습니다.

The vaccum gauge, which visually shows the vaccum condition by measuring propotionately, is divided into low, mid, high and ultra high vacuum. It also takes various measurement by the range of vacuum. KODIVAC is manufacturing Pirani Gauge, Penning Gauge and Ionization Gauge. We offer various choices, ranging from low-vacuum to ultra high vacuum.

Introduction

Pirani Gauge : 물질이 가진 특성상 열이 발생하면 전기저항이 증대하게 되는데 이를 이용한 Bridge Circuit의 구성에 의해 저항의 변화를 전기적 신호로 나타내는 방법으로 Bridge Circuit에서 저항의 변화에 의해 전압차이가 나는 것을 이용한 원리입니다.

Penning Gauge : Penning Gauge는 하나의 Gauge Tube와 Control Unit로 되어 있으며 기체에 고전압을 가하면 전자와 분자의 충돌로 발생하는 이온전류의 흐름을 압력단위로 측정하는 것입니다.

Ionization Gauge : 원자나 분자에 에너지를 가하면 전자를 잃고 하전된다. 이 하전된 분자 또는 이온들이 중성이 되기 위하여 전자를 얻을 때 이온전류를 측정함으로써 진공도가 측정됩니다.

Pirani Gauge : Electrifying the pyrogen(filament) generates heat. Since the heat has different conductivity by the sort of gases and the number of particles (the vaccum condition), theresistivility differs with the change of the pyrogen's temperature. The gauge shows the change of resistivility with electric signals, by composing Bridge Circuit and converting the electric signals into vacuum condition, and divides the fixed temperature type and the constant voltage type.

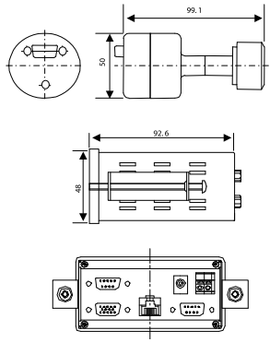
Penning Gauge : It consists of a single gauge tube and control unit, which measures the flow pressure of ion current which is generated by the collision of electrons and molecules in proportionate to the particle numbers of it (the vaccum condition) in high voltage gases.

Ionization Gauge : When atoms or molecules are changed energy, they lose their electrons and have the electric charge. The vacuum condition is measured when the charged molecules or ions get electrons in order to accomplish neutralization.

(S):Meter separate (M):Meter Relay A:Automatically Change

Products	Model (Indicator)	Gauge Head	Range	(Torr) 10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} (Pa) 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{-0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5}
High-accuracy capacitance diaphram gauge	FTR-1	F-133K	-	
Pirani gauge	TRP-10(SP)	P-10	-	
	PSG-1	P-09	-	
	TR-1DB	TRP-10	A	
	PT-3DA	PSG-1	A	
Cold-cathode ionization gauge	CT-3DA	C-4A	A	
Combonation vacuum gauge	PC-3DA	PSG-1x2 C-4A	A	
Hot-cathode ionization gauge	IT-3DA(BA)	IV-55	A	
	IT-3DA(SC)	SC-45	A	
	IT-L20P	IV-2000	1	

FTR-1 Design / Outline Drawing(mm)



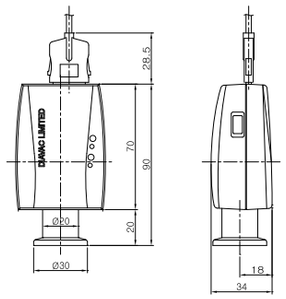
Features and application

- 펄스신호 전송방식-노이즈 내성강화 · 고속데이터 통신 및 단시간 자동영보정이 가능
- 부식성이 없는 곳은 전부 가능(반도체 사용안됨)
- 센서 실리콘 · 고분해 능력 (표시분해능력 1/1,000,000)
- 사용용도 : 성막장치, 가스치환, 가스봉입, 진공증류, 진공건조등의 압력 모니터링
- Resolving power of display: 6 1/2 orders of magnitude (digits) (about 2 digits improved vs. conventional)
- Precision: 0.1% R
- Notable improvement in noise resistance due to pulsed signal transmission
- High-speed data communication and automatic zero-point correction possible
- 1/2 or less of unit volume vs. conventional
- Process pressure monitoring for film-making device
- Pressure monitoring for gas-replacement and gas-inclusion
- Pressure monitoring for vacuum distillation, drying, etc.

Product specification

Full-scale range	133kPa
Display resolving power	1ppm @ F.S.
Precision	0.1% R (at 23ºC)
Zero temperature coefficient	between 10 to 50ºC of service temperature
Temperature coefficient span	between 10 to 50ºC; of service temperature
Data-renewal rate	2.2 msec MAX
Digital communication	4-line system, all dual ch.
Output signal	DC0V – 10V
Set point output	3-points, photo-coupler, 30VDC, 0.2 A or less
Input power	non-heating type: +24 VDC 0.2 A MAX
Ambient temperature	at operation:10 to 50ºC at storage:-10 to 70ºC
Material used in vacuum part	Silicon, SiO2, SUS304, Viton

TRP-10/TRP-10SP Design / Outline Drawing(mm)



Features and application

- Low-cost design by unified sensor and control circuit
- Wide range measurement covering from atmospheric pressure to 5x10 Pa
- High-accuracy with significant improvement in temperature correction due to adoption of digital circuit
- Light-weight and compact due to digital circuit and unique filament structure
- Output of 0 to10 VDC in proportion to pressure can be converted to pressure by means of log-linear equation
- Best suitable for automation with standard installation of RS-485 digital communication
- Transducer TRP-10: driven by 12 to 30 VDC power, power-indicator TR-1DA and TR-1DB: driven by 100 to 240 VAC power
- Best suitable for low vacuum measurement of various vacuum systems
- Best suitable for pressure monitoring of various processes
- Optional TRP-10SP: equipped with 2 set-points and best suitable for pressure detection at valve on/off etc. as a vacuum switch
- Best suitable for automation of various vacuum systems.

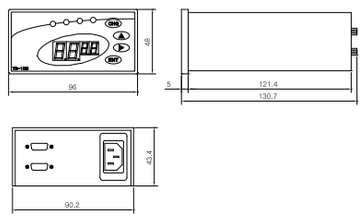
Sensor Part

Temperature range	at operation: 5 to 60ºC at storage: -10 to 65ºC
Material used in cover	ABS-resin
Protector structure	corresponding to IP40
Vacuum connection	NW16 (standard) / Ø15 (option)

Circuit Part

Measuring system	constant temperature system
Measuring range	1.0 X 10^{5} to 5.0 X 10^{-2}Pa
Pressure resolving power	Mantissa (2-digits including 1 digit under decimal point) + exponential with sign
Analog output	DC 0 to 10V output voltage =LOG(P)+3 load resistance: 10kΩ or more voltage resolving power: 2.4mV
Attachment	atmospheric pressure (ATM), high vacuum (HV), volume adjustable from outside
Digital communication	RS-485, 2-line system, semi-dual, number of channels: 0 to 15ch (9600bps, 8databits, even parity, 1stopbit)
Set point*	2-points independent, NPN-open collector system, negative logic, output rating:DC 30V 50mA
Power rating	DC24V(12 to 30V) 35mA/55mA(TRP-10SP)

TR-1DB Design / Outline Drawing(mm)



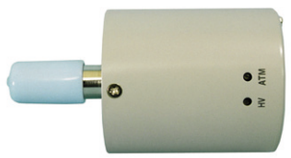
Features and application

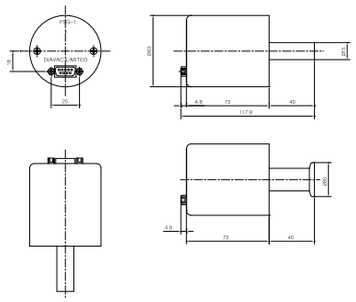
- 텅스텐 필라멘트 사용
- Set Points 출력은(Only TRP-10SP센서)
- 2점 Set Point출력
- 디지털통신으로 표시기에 압력 변환 오차가 없음
- Power indicator for Pirani gauge transducer : TRP-10
- No pressure conversion error occurs on indicator due to digital communication of pressure signal from transducer
- Maximum 3 units of TRP-10 can be connected for real-time measurement. Monitoring from outside possible due to installment of 3-channeled analog output and RS-485
- Six set-point output can be assigned freely to any of 3 transducers : for example, to each one of 3 transducers can be assigned 2 points respectively, or to 1 transducer 6 points.
- Power voltage is flexible between 100 to 240VAC.

Product specification

Responding transducer	TRP-10 connection number: 1 point Connector: D-SUB 9P	
Measuring range	1.0 X 10^{5} to 5.0 X 10^{-2}Pa	
Pressure display	Mantissa (2-digits including 1 digit under decimal point) + sign + exponential 1 digit, unit: Pa	
Transducer communication	RS-485 communication: zero-fixed channel number, communication cycle: 100 msec.	
Setting	Front key-input program system Set function: SP 1 to 2	
Output/input from outside	Output :	set-point 1,2, status NPN open collector output (photo-coupler insulated) rating: 30VDC/50mA or less
	Input :	Outside mode selection, sensor on/off Voltage input (photo-coupler insulated) Rating: DC24V ±10%, 4.1mA Typ.
	Connector :	high density D-SUB 15P
Rating power Service temperature range	AC100 to 240V ±10%, 50/60Hz 5 to 60ºC(storage temperature: -10 to 65ºC)	

PSG-1 Design / Outline Drawing(mm)





Features and application

- 극세필라멘트와 정온도회로에서 응답속도 빠르다
- 4-20mA 출력에서 케이블의 저항이 없다.
- 센서와 제어 회로가 분리 가능하기 때문에 필라멘트 단선 경우 센서부의 교환이 가능
- 압력 스위치로서 사용 가능
- Sensor + control circuit unified
- Driven by power voltage of 12 to 24DCV
- Recording output installed
- In the case of filament breaking, for example, replacement of sensor part only is feasible to cope with, since sensor and control circuit are separable.
- Optionally, 2-points setting of set-point output is feasible to use one as pressure switch.

Sensor Part

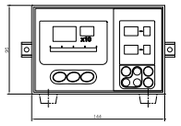
Service ambient temperature	0 to 40ºC
Color	Munsell value N-6.5
Exterior dimension	Ø63 X 120L
Vacuum connection	Ø15, option-NW16
Connector shape	9-pins D-SUB connector

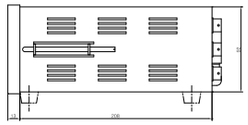
Circuit Part

Measuring method		Constant temperature system
Measuring range		1.0 X 10^{5} to 5.0 X 10^{-1}Pa
Pressure signal output	System	4-20mA
	Load resistance	400Ω or less
Wire-breaking signal output	System	open collector
	Output logic	normal/close, open(option)
	Rating	DC 30V/50mA
	Option	set-point:2points independent
Power voltage		DC 12 to 15, 24V
Current consumption		150mA

GAUGE PT-3DA, CT-3DA

PIRANI GAUGE PT-3DA Design / Outline Drawing(mm)





Features and application

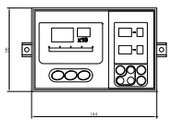
· 자동온도 조절시스템 제어기능(히스테리시스치)
· BCD출력 등 확장기능으로 장치제어 FA화 적당
· 6점 Set point 출력

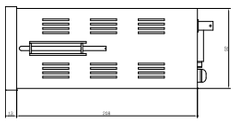
· The key operation is simple.
· The set point is equipped with six.
· With the recorder output.
· It is equipped with RS485/RS422 serial communication(option) and it controls it with the host computer to 16 1 lines.
It is possible to do the data management and it supports to make FA.
· It is possible to connect a measurement child in a maximum of three. Option
· The simultaneous display is possible in three measures with multi- display mode feature of it.
· Various for the vacuum equipment.

Product specification

Measuring range		1.0 X 10^{5} to 1.0 X 10^{-1}Pa
Sampling cycle		100msec
Exterior output	Set-point	6 points
	Auxiliary function	hysterics value, output theory
	Rating	AC110V 0.5A load resistance
	Status	AC110V 0.5A load resistance
REC OUTPUT		full range DC 0 to 5V/0 to 10V
Service temperature		0 to 40ºC
Power voltage		AC100~240V 50/60Hz 30VA
Gauge head		PSG-1 (Ø15, option-NW16)

COLD-CATHODE IONIZATION GAUGE CT-3DA Design / Outline Drawing(mm)





Features and application

· 넓은 측정 범위
· 금속제 측정자로 Baking 및 분해세정이 편리
· 장기간의 연속측정가능

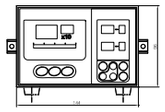
· The key operation is simple.
· The set point is equipped with two
· With the recorder output
· It is equipped with RS485/RS422 serial communication(option) and it controls it with the host computer to 16 1 lines.
· It is possible to do the data management and it supports to make FA.
· Various for the vacuum equipment

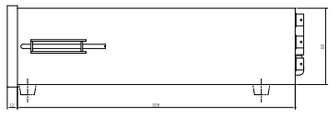
Product specification

Measuring range		4.9 X 10^{-1} to 1.0 X 10^{-6}Pa
Sampling cycle		100msec.
Exterior output	Set-point	2 points
	Auxiliary function	hysteresis value, output theory
	Rating	AC110V 0.5A load resistance
	Status	AC110V 0.5A load resistance
REC OUTPUT		full range DC DC 0 to 5V/0 to 10V
Service temperature		0 to 40ºC
Input from outside		INT/EXIT. DISCHARGE ON/OFF
Power voltage		AC100~240V 50/60Hz 30VA
Gauge head		C-4A (Ø15, option-NW25, ICF70)

GAUGE IT-3DA, PC-3DA

HOT-CATHODE IONIZATION GAUGE IT-3DA Design / Outline Drawing(mm)





Features and application

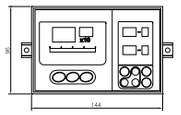
· Set Point 2점
· 사용목적에 따라 IV-55 or SC-45(슐츠)사용

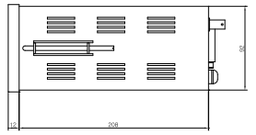
· The key operation is simple.
· The set point is equipped with two.
· With the recorder output
· It is equipped with RS485/RS422 serial communication(option) and it controls it with the host computer to 16 1 lines.
· It is possible to do the data management and it supports to make FA.
· Various for the vacuum equipment

Product specification

Measuring range		B-A type : 9.9 X 10^{-2} to 1.0 X 10^{-7}Pa Schultz type : 9.9 X 100 to 1.0 X 10^{-3}Pa
Sampling cycle		100msec
Exterior output	Set-point	2 points
	Auxiliary function	hysterics value, output theory
	Rating	AC110V 0.5A load resistance
	Status	AC110V 0.5A load resistance
REC OUTPUT		full range DC 0 to 5V/0 to 10V
Service temperature		0 to 40ºC
Power voltage		AC100~240V 50/60Hz 100VA
Gauge head		IV-55(B-A), SC-45(Schultz) (Ø15)

COMBINATION GAUGE PC-3DA Design / Outline Drawing(mm)





Features and application

· 피라니영역 2개
· 피라니 와 CCG의 연동 광범위한 콤비네이션 진공계
· 멀티 표시 기능에 의한 3점 측정치 동시표시 가능
· 응답속도가 빠르다
· C-4A 센서의 필라멘트 소선이 없고 세정이 가능
· 관리가 용의하고 고장이 없다

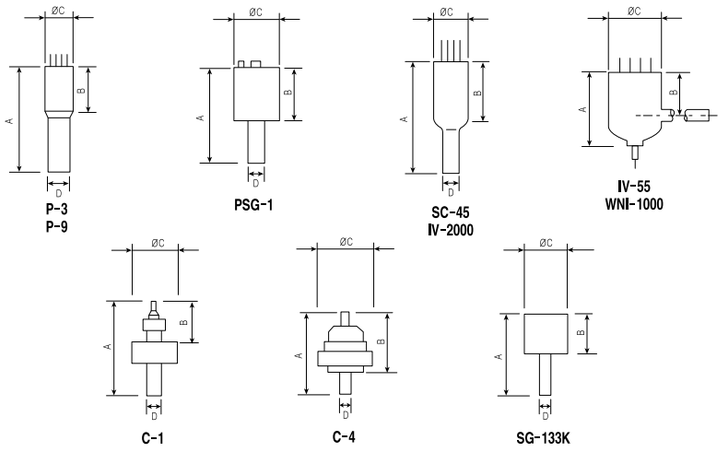
· The set point is equipped with six. · With the recorder output
· Of Pirani gauges and CCG being connected it is possible to measure a wide range.(The atmosphere pressure to 1.0 X 10-6Pa)
· The simultaneous display is possible in three measures with multi-display mode feature of it.
· Irrespective of the channel display, it is possible to measure all of the connection gauge real time.
It is equipped with RS485/RS422 serial communication(option) and it controls it with the host computer to 16 1 lines.
It is possible to do the data management and it supports to make FA.

Product specification

Gauge heads used		PSG-1 X 2 (Ø15, option-NW16) C-4A X 1 (Ø15, option-NW25, ICF70)
Measuring range		Pirani only: 1.0 X 10^{5} to 1.0 X 10^{-1}Pa CCG only: 4.9 X 10^{-1} to 1.0 X 10^{-6}Pa Pirani and CCG in related operation: 1.0 X 10^{5} to 1.0 X 10^{-6}Pa
Sampling cycle		100msec.
Exterior output	Setting of set-point	6 points
	Number of setting	hysterics value, output theory, The sensor channel layout
	Output mode	NPN open collector 30VDC, 50 mA AC110V 0.5A load resistance
REC OUTPUT		independent for each channel 0 to 5/0 to 10V
Exterior input		INT/EXIT. DISCHARGE ON/OFF
Service temperature		0 to 40ºC
Power voltage		AC100~240V 50/60Hz 40VA

GAUGE HEAD

Outline Drawing(mm)



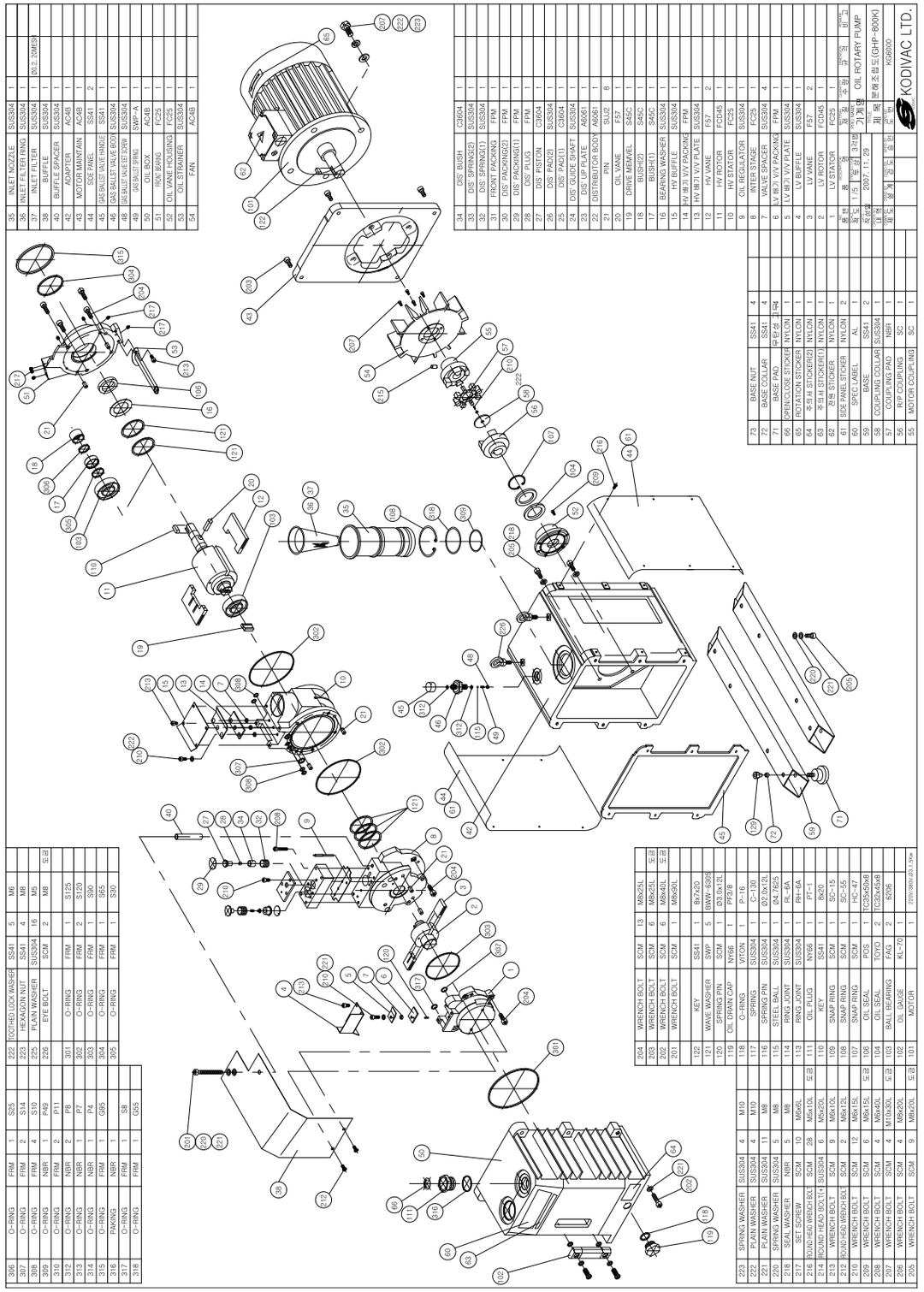
Dimension

	A (mm)	B (mm)	C (mm)	D (mm)
P-3	105	55	20	15
P-9	134	85	45	15
PSG-1	113	73	63	15
SC-45	170~180	75	38	15
IV-2000	180	70	40	15/9
IV-55	120	65	60	15
WNI-1000	110	70	50	15
C-1	160	70	60	15
C-4	111	86	72	15
SG-133K	149	110	72	15

진공계의 사양

부 품 명		CONTROLER	CHANNEL	SENSOR	FITTING	SET POINT	REC OUT	통 신	POWER
CAPACITANCE MANOMETER	DIGITAL DISPLAY	FTR-1	1 ch	F-113K	8VCR	3	0-10V	RS-485	AC100-240V
PIRANI GAUGE	DIGITAL DISPLAY	TR-1DB	1 ch	TRP-10	NW16(Ø15)	2	0-10V	RS-485	AC100-240V
		PT-3DA	3 ch 가능	PSG-1	Ø15	6	0-5V/0-10V	RS-485/422A	AC100-240V
COLD GATHODE GAUGE	DIGITAL DISPLAY	CT-3DA	3 ch 가능	C-4A	Ø15	2		RS-485/422A	AC100-240V
COMBINATION GAUGE	DIGITAL DISPLAY	PC-3DA	2 ch	PSG-1×2	Ø15(NW16)	2 EACH CH	0-5V/0-10V	RS-422A	AC100-240V
			1 ch	C-4A	Ø15(NW25)				
HOT GATHODE GAUGE	ANALOG METER	IT-L20P	1 ch	IV-2000	Ø15		0-10 mv		AC100V
	DIGITAL DISPLAY	IT-3DA		IV-55		2	0-5V/0-10V	RS-485/422A	AC100-240V
				SC-45		2			
VACUUM SWITCH	ANALOG METER	TRP-10SP	1 ch	TRP-10	NW16(Ø15)	2	0-10V	RS-485	
		VS-5P		C-1A	Ø15	1(3)	0-10 mv		

조립도 예



진공의 계산 Conductance

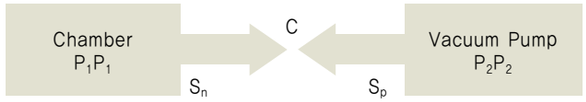
저진공(760 torr ~ 10^{-2}torr) $C_{air}=182(D^4/L)\bar{P}$ (1/sec)

D:파이프의 직경(cm);
L:파이프의 길이(cm)

$\bar{P}$:평균압력 $\bar{P}=\frac{P_1+P_1}{2}$ (torr)

고진공(10^{-3}~10^{-10}torr) $C = 3.18KA\left(\frac{T}{M}\right)^{1/2} = 11.6KA\ (1/sec) = 3.81(T/M)^{1/2} D^3/[L+1.33D]$

Pumping Speed 계산



- 기체 법칙 (보일의 법칙) : $P_1P_1 = P_2P_2$
- 시간에 대한 변화 : $P_1V_1 / t = P_2V_2 / t$
- V/t를 펌핑 속도 S로 정의 하면 $P_1S_n = P_2S_p$
- 배기량 $Q=P_1S_n = P_2S_p$ $P_1 = Q/S_n$, $P_2 = Q/S_p$
- Conductance는 저항의 역수 이므로 1/C=R
- $Q=(P_1P_2)/(1/C)=(P_1-P_2)C=(Q/S_n-Q/S_p)C$

  ∴ $1=C/S_n-C/S_p$ $1/C=1/S_n-1/S_p$

  $S_n=C\ S_p/(C+S_p)$

Conductance

Angle Valve	(1/s)
5/8"(16mm)	5
1½"(40mm)	45
2½"(60mm)	160
Gate Valve	(1/s)
2½"(63mm)	660
4"(100mm)	1700
6"(160mm)	6000
8"(200mm)	12000
10"(250mm)	26000

Ex)펌프속도 100 l/sec
Conductance 100 l/sec
S_n = 100×100 / (100 + 100)
= 50l/sec

Mechanical Pump에 의한 배기 (760torr~10^{-3}Torr):outgassing무시
V = 시스템 부피, S = 펌프속도, P^1 = 초기 진공값, P^2 = 최종진공값
시스템을 떠나는 gas = -V (dP/dt)
펌프로 들어오는 gas = SP
$-V\ (dP/dt) = SP \Rightarrow -dP/P = (S/V)dt$
∴ $\Delta t = t1-t2 = (V/S)\ 1n\ (P^1P^2) = 2.303\ (V/S)\ \log10(P^1/P^2)$

760 torr ~ 0.001 torr까지의 실험적인 값은

$t=2.303K\frac{V}{S}\ \log\ 10\frac{P_1}{P_2}$

K
760~1.0torr : 1.1
1.0~0.1torr : 1.5
0.1~0.001torr : 4.0

고진공 펌프에 의한 배기

고진공 펌프에 의한 배기 $Q=Q_L + Q_O + Q_V + Q_P$
Leak, outgassing, vapor pressure, permeation ⇒main outgassing

$$P = P_0e^{-st/v} + (P_u + Q/S)\ (1-e^{-st/v}) = Q/S$$

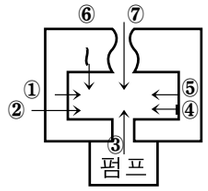
P_o = 총압력 (t=O), S = 펌핑속도, V = 시스템 부피,
P_u = 최종도달진공도, Q = 시스템 outgassing date

Outgassing date (torr 1/sec cm^2) : 1시간 뒤의 값

알루미늄	1.7×10^{-7}	철	5×10^{-7}
sus	2×10^{-7}	구리	2.3×10^{-6}
나이론	1.2×10^{-5}	테프론	5×10^{-6}
실리콘 고무	3×10^{-5}	지르코늄	1.3×10^{-6}

잔류기체(residual gas)

기체 방출(outgassing)
- 진공용기 내벽의 표면이나 진공용기속에 사용되는 각종 물질 속에 흡착되어 있던 입자들이 서서히 방출되는 것으로 그원인은 매우 다양함
- 내부표면에 부착된 입자의 방출 - 금속등의 grain boundary등과 같이 더 깊은 곳에 숨어 있던 입자의 방출



① 확산(diffusion) ②투과(permeation) ③역류(backstream) ④탈락(desorption)
⑤증발(evaporation) ⑥누설(leak:진성누출) ⑦가성누설(virtual leak)

유량단위 환산표

	pa m^3/s W	mbar l/s	Torr l/s	atm cm^3/s	lusec	sccm	slm	Mol/s
pa m^3/s W	1	10	7.5	9.87	7.5×10^{-3}	592	0.592	4.41×10^{-4}
mbar l/s	0.1	1	0.75	0.987	750	59.2	59.2×10^{-2}	4.41×10^{-5}
Torr l/s	0.113	1.33	1	1.32	1000	78.9	78.9×10^{-2}	5.85×10^{-5}
atm cm^3/s	0.101	0.101	0.76	1	760	59.8	59.8×10^{-2}	4.45×10^{-5}
lusec	1.33×10^{-4}	1.33×10^{-3}	10^{-3}	1.32×10^{-3}	1	7.89×10^{-2}	7.89×10^{-5}	5.86×10^{-8}
sccm	1.69×10^{-3}	1.69×10^{-2}	1.27×10^{-2}	1.67×10^{-2}	12.7	1	10^{-3}	7.45×10^{-7}
slm	1.69	1.69	12.7	16.7	1.27×10^{4}	1000	1	7.45×10^{-4}
Mol/s	2.27×10^{3}	2.27×10^{4}	1.7×10^{4}	2.24×10^{4}	1.7×10^{7}	1.34×10^{6}	1.34×10^{3}	1

압력단위 환산표

	bar	mbar	pa (N/m^2)	kPa(kN/m^2)	mmHg(0℃)	mH2O(4℃)	kg/cm^2	inch Hg(0℃)	inch H_2O(4℃)	psi(lb/in^2)	atm
bar	1	1000	1×10^{-5}	100	750.062	10.1972	1.01972	29.530	401.463	14.5038	0.986923
mbar	1×10^{-3}	1	100	0.100	0.750062	1.01972×10^{-2}	1.01972×10^{-3}	0.029530	0.401463	0.014504	9.86923×10^{-4}
pa (N/m^2)	1×10^{-5}	1×10^{-2}	1	1×10^{-3}	7.501×10^{-3}	1.01972×10^{-4}	1.01972×10^{-5}	2.953×10^{-4}	4.015×10^{-3}	1.45038×10^{-4}	9.86923×10^{-6}
kPa(kN/m^2)	1×10^{-2}	10	1000	1	7.501	0.10197	0.010197	0.2953	4.015	0.145038	9.86923×10^{-3}
mmHg(0℃)	1.33322×10^{-3}	1.33322	133.322	0.133322	1	1.3595×10^{-2}	1.35951×10^{-3}	0.039370	0.535240	0.019337	1.31579×10^{-3}
mH2O(4℃)	0.098067	98.0665	9.80665×10^{-3}	9.80665	73.5559	1	0.1	2.8959	39.3701	1.42233	0.096784
kg/cm^2	0.980665	980.665	9.80665×10^{-4}	98.0665	735.559	10	1	28.959	393.701	14.2233	0.967841
inch Hg(0℃)	0.033864	33.8639	3386	3.386	25.4	0.345316	0.034532	1	13.5951	0.491154	0.033421
inch H_2O(4℃)	2.49089×10^{-3}	2.49089	249.089	0.249089	1.86832	2.540×10^{-2}	2.540×10^{-2}	0.073556	1	0.03613	2.458×10^{-3}
psi(lb/in^2)	0.06895	68.9476	6894.76	6.89476	51.7149	0.70307	0.070307	2.03602	27.68	1	0.68046
atm	1.01325	1013.25	1.01325×10^{-5}	1.01325×10^{-2}	760	10.3323	1.03323	29.921	406.78	14.6959	1

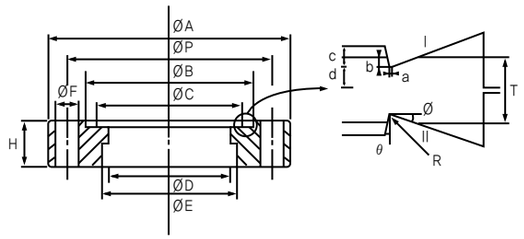
CONVERSION TABLE Leak Rate

	mbr ℓ /sec	cm^3/sec (N.T.P)	Torr ℓ /sec	kg/h air(at20℃)
1mbar/sec	1	0.99	0.75	4.3×10^{-3}
1cm^3/sec (N.T.P)	1.01	1	0.76	4.3×10^{-3}
1 Torr ℓ /sec	1.33	1.32	1	5.7×10^{-3}
1kg/h air(at20℃)	230	230	175	1
1g/year(Freon12)	6.4×10^{-6}	6.4×10^{-6}	4.8×10^{-6}	2.7×10^{-8}

PUMPING SPEED UNIT

Pressure (Pa)	ℓ /s	ℓ /min	ft/min	m^3/hr
1 ℓ /s	1	60	2.12	3.6
1 ℓ /min	0.167	1	0.0353	0.06
1 ft/min	0.472	28.32	1	1.7
1 m^3/hr	0.278	16.67	0.589	1

Conflat(CF) 플랜지 날의 상세도



날 부의 치수
Ø : 날 등(redgi)의 각도=20˚, Θ : 날 벽의 각도 = 2~30˚
a : 날 선단(apex),
Ⅰ. 평평한 날(flat edge)의 경우, 날의 폭 a=0.1~0.2mm
Ⅱ. 둥근 날의 경우, 곡률반경 R = 0.35~0.4mm(알루미늄 합금일 때)
R = 0.1~0.25mm(스테인리스강일 때)
d : 플랜지 윗면에서 날 끝까지의 간격 = 0.6mm
e : 날의 높이 = 0.6mm이상
= 0.9~1.4mm(알루미늄일 때)
b : 날의 파고드는 깊이(depth of bite) = 0.15~0.4mm
T : 개스킷의 두께 = 2mm

Conflat(CF) 플랜지와 개스킷의 치수(mm)

공칭 내경	플랜지								볼트			개스킷
	A	B	C	D	E	P	F	H	직경-길이	볼트 수 SS	볼트 수 Al	O.D-I.D-T
16	33.8	21.4	18.3	16.6	19.1	27.0	4.4	8	M4-20	6	6	21.3-16.3-2
25	54.0	35.0	29.6	21.0	25.0	43.0	5.5	10	M5-25	6	6	34.9-26-2
40	69.3	48.3	41.9	40.1	41.3	58.7	6.5	13	M6-35	6	6	48.2-37-2
63	113.5	82.5	77.2	61.2	63.6	92.2	8.5	18	M8-45	8	8	82.4-64-2
100	151.6	120.6	115.3	99.4	101.9	130.3	8.5	20	M8-50	16	16	120.5-102-2
160	202.4	171.4	166.1	149.7	152.6	181.1	8.5	23	M8-60	20	20	171.3-153-2
200	253.2	222.2	216.9	200.4	203.5	231.9	8.5	25	M8-60	24	24	222.1-204-2
250	306.0	273.4	268.0	250.7	254.4	284.0	8.5	27	M8-65	32	32	273.3-256-2
300	362.0	321.3	314.0	302.0	305.2	334.0	10.5	30	M10-75	36	-	321.2-305-2
320	375.0	338.0	331.9	310	320	352.0	10.5	30	M10-75	-	24	337.8-322.8-2

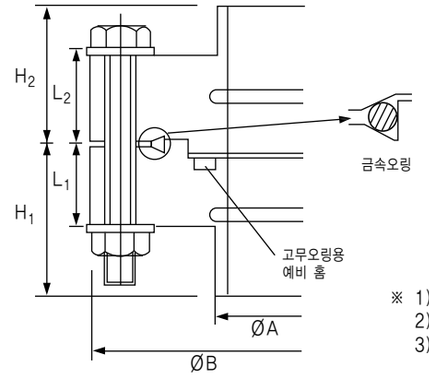
※ SS : 스테인리스 강, Al : 알루미늄 합금.
a)실제 치수는 제조자마다 조금씩 차이가 있다. 단, 개스킷의 O.D가 플랜지의 B보다 크지 않아야 한다.
b)기밀면의 표면거칠기(surface roughness)는 1S(최대 높이가 1㎛)이하가 바람직 하다.

Conflat 플랜지의 체결 토크 권장 값

구 분	사용 토크 [kg · cm] (최소~최대)		단계별 토크 [kg · cm]						
	알루미늄	스테인리스강	1회	2회	3회	4회	5회	6회	7회
M4	10~20	20~30	손힘	10	20				
M6	40~60	70~100	손힘	20	40	70			
M8	80~100	100~150	손힘	20	40	70	100		
						60	80		
M10	180~220	120~250	손힘	20	40	80	120	160	200
						70	100	140	180

※ 굵은 선 오른쪽으로 토크 값은 스테인리스 강에만 적용한다.

Capture(CS) 플랜지의 기밀 구조



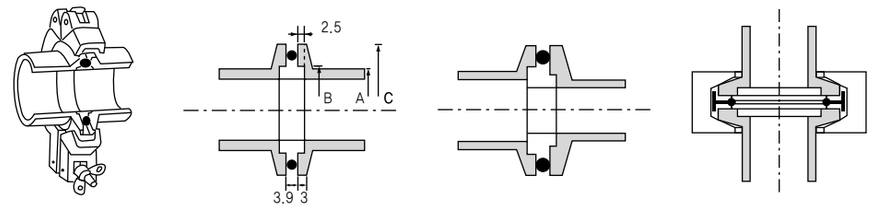
※ 1) 대구경 도관, 외경 250~450mm의 접속에 사용
2) 무산소동 금속제 오링(Oring)사용
3) 가열이 없는 때는 Viton고무링을 사용

Capture(CS) 플랜지와 개스킷의 규격 예

※ 단위는 mm

플랜지									개스킷
호칭	A	B	L_1	L_2	H_1	H_2	볼트수	내경	선경
Ø 300	300	384	27.2	30	150	150	20	343.7	2.3
Ø 350	350	434	27.2	40	150	150	24	393.7	2.3
Ø 400	400	484	35.2	34	150	150	24	443.7	2.3

KF 플랜지의 구조



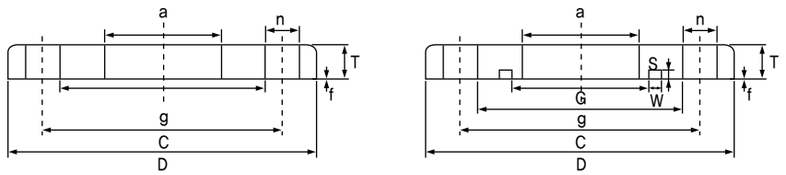
a) 절개도 b) 동일한 두 관의 연결 c) 굵기가 다른 두 관의 연결 d) 금속 개스킷을 사용하는 경우 (초고진공 일 때 이용)

KF 플랜지의 치수

※ 단위는 mm

호칭 내경	A	B	C
10	14	12.2	30
16	20	17.2	30
20	24	26.2	40
25	28	26.2	40
32	36	41.2	55
40	44.5	41.2	55
50	50.8	52.4	75

고무 개스킷용 플랜지 (KS B1540), (a)출구 쪽, (b)입구 쪽



고무 개스킷용 플랜지의 치수

※ 단위는 mm

호칭 지름	d	D	플랜지				볼트			개스킷 홈			개스킷
			T		f	g	C	굵기×개수	H	G	W	S	굵기
			주조 플랜지	기타 플랜지									
10	17.3	70	10	8	1	38	50	M8×4	10	24	5	3	4
20	27.2	80	10	8	1	48	60	M8×4	10	34	5	3	4
25	34.0	90	10	8	1	58	70	M8×4	10	40	5	3	4
40	48.6	105	12	10	1	72	85	M8×4	10	55	5	3	4
50	60.5	120	12	10	1	88	100	M8×4	10	70	5	3	4
65	76.3	145	12	10	1	105	120	M10×4	12	85	5	3	4
80	89.1	160	14	12	2	120	136	M10×4	12	100	5	3	4
100	114.3	185	14	12	2	145	160	M10×8	12	120	5	3	4
125	139.8	210	14	12	2	170	185	M10×8	12	150	5	3	4
150	165.2	235	14	12	2	195	210	M10×8	12	175	5	3	4
200	216.3	300	18	16	2	252	270	M12×8	15	225	8	4.5	6
250	267.4	350	18	16	2	302	320	M12×12	15	275	8	4.5	6
300	318.5	400	18	16	2	352	370	M12×12	15	325	8	4.5	6
350	355.6	450	–	20	2	402	420	M12×12	15	380	8	4.5	6
400	406.4	520	–	20	2	458	480	M16×12	19	430	8	4.5	6
450	457.2	575	–	20	2	511	535	M16×16	19	480	12	7	10
500	508.0	625	–	22	2	561	585	M16×16	19	530	12	7	10
550	558.8	680	–	24	2	616	640	M16×16	19	585	12	7	10
600	609.6	750	–	24	2	672	700	M20×16	23	640	12	7	10
650	660.4	800	–	24	2	722	750	M20×20	23	690	12	7	10
700	711.2	850	–	26	2	772	800	M20×20	23	740	12	7	10
750	762.0	900	–	26	2	822	850	M20×20	23	790	12	7	10
800	812.8	955	–	26	2	877	905	M20×24	23	845	12	7	10
900	914.4	1065	–	28	2	983	1015	M22×24	25	950	12	7	10
1000	1016.0	1170	–	28	2	1088	1120	M22×24	25	1055	12	7	10

고무 및 수지 개스킷의 사용 온도 범위

개스킷 재료		영구사용 ℃		순간온도 ℃	
		최저	최고	최저	최고
천연고무	natual gum	-30	60	-65	75
부나 S	Butadiene-styrene	-25	75	-55	100
부틸, 이소프렌고무	Isobutylene-isoprene	–	–	-55	150
부나N, 퍼부난하이카	Butadiene-acrylonitrile	-25	85	-50	150
네오프렌	Chloroprene	-40	90	-50	150
실리콘고무	Dimethyl polysiloxene	-40	180	-120	250
바이톤	Viton, Vinyldene, fluoride-Hexafluoropropylene	-15	200	–	270
칼레츠	Kalez, Tetrafluoroethyl, ene-perfluoromethylvinyl, Ether	-12	315	–	–
테플론	Teflon, Polyetrafluoroethylene	-190	280	–	400
캡톤	Kapton, Polypyromellitimide	-190	300	–	–

※ a) 고무를 일래스토머(elastomer), 수지를 플래스토커(plastomer)라 부른다.

TEMPERATURE AND PRESSURE IN THE EARTH'S ATMOSPHERE

Hight km	Temp k	Pressure mbar	Hight km	Temp k	Pressure mbar	Hight km	Temp k	Pressure mbar
0	288	1013	120	335	3	280	963	2
5	256	540	125	390	2	290	968	1
10	223	264	130	445	1	300	973	1
15	222	120	135	499	1	310	977	9×10^{-8}
20	222	55	140	549	7×10^{-6}	320	980	8
25	222	25	145	595	6	330	982	6
30	231	12	150	635		340	985	5
35	241	6	155	671	4	350	987	4
40	255	3	160	703	3	360	988	4
45	268	2	165	731	3	370	990	3
50	272	8×10^{-1}	170	756	2	380	991	3
55	264	4	175	778	2	390	992	2
60	249	2	180	798	2	400	993	2×10^{-8}
65	233	1	185	816	1	410	993	2
70	216	5×10^{-2}	190	832	1	420	994	1
75	205	2	195	846	1	430	995	1
80	195	1	200	859	1×10^{-6}	440	995	1
85	185	4×10^{-3}	210	882	8×10^{-7}	450	996	8×10^{-9}
90	183	2	220	901	6	460	996	7
95	189	7×10^{-4}	230	916	5	470	996	6
100	199	3	240	929	4	480	997	5
105	217	1	250	940	3	490	997	5
110	245	7×10^{-5}	260	949	2	500	997	4
115	285	4	270	957	2			

VACUUM RANGE & CHARCTERISTICS

	Rough Vacuum	Medium Vacuum	High Vacuum	UHV
Pressure Range (Torr)	ATM~1Torr	1Torr~10^{-3}Torr	10^{-3}Torr~10^{-7}Torr	〈 10^{-7}Torr
Particle numberDensity (cm^{-3})	10^{23} – 10^{20}	10^{16} – 10^{13}	10^{13} – 10^{9}	〈 10^{9}
Mean FreePath (cm)	〈10^{-2}	10^{-2} – 10	10 – 10^{5}	〉10^{5}
Impingementrate ($cm^{-2}s^{-1}$)	10^{19} – 10^{16}	10^{20} – 10^{17}	10^{17} – 10^{13}	〈10^{13}
Monolayertime (second)	〈10^{-5}	10^{-5} – 10^{-2}	10^{-2} – 100	〉10 0
Type of gas flow	Viscous flow	Knudsen flow	Molecular flow	Molecular flow

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품 질 보 증

KODIVAC에서 생산된 모든 제작품은 KODIVAC의 기술적 결함 또는 원재료의 결함 등으로 발생되는 모든 문제에 대해 제품 출하후 또는 선적후 12개월 동안 교환 또는 수리를 보증받습니다. (별도 협의) 단, 고객 또는 대리인에 의한 제품의 임의 변경에서 발생하는 문제에 대해서는 보증을 받으실 수 없습니다.

Heater, O-ring, Source, Bellows, Oil 등과 같은 소모성부품은 그재질의 특성상 1년기간의 보증이 불가능하므로 임의의 기간을 설정하고 이에 따른 보증을 실행합니다.

유효 보증기간내에 정상적 작동과 안정된 공정에도 불구하고 발생되는 모든 문제에 대해 교환 또는 수리를 보증하며, 설비의 오용이나 비정상적 작동 또는 안전공정에 따라 수행하지 않아 발생한 어떠한 손실과 손해에 대해서는 보증을 하지 않습니다. 따라서 위험요소를 피해 사용하도록 적절한 주의가 필요할 것입니다.

보증수리 또는 교환을 하였던 부품에 대해서는 최초 보증기간에서 잔여기간동안 보증을 하여 드립니다.

유효보증기간이 경과된 부품의 수리 또는 교환시에는 구매자께서 추가 인건비 및 소요부품, 운반경비 등의 추가경비를 부담하셔야 합니다. 여기에 명시되지 않은 상황의 발생시는 기타 상관습에 따라 보증을 시행합니다.

감사합니다.

Warranty

Products manufactured by KODIVAC are warranted against defects in materaial and workmanship for a period of twelve(12) months from the date of shipment from KODIVAC to the buyer. Any modification to the product by the buyer or their agent voids this warranty.

Liability under this warranty is expressly, limited to replacement or repair of defective parts. KODIVAC may at any time discharge its warranty as to any of its products by refunding the purchase price and taking back the products. This warranty applies only to part manufactured, and labor provided, by KODIVAC under valid warranty claims received by KODIVAC within the applicable warranty period and shall be subject to the terms and conditions hereof.

Expendable items such as tubes, heaters sources, bellows, etc.., by their nature may not function for one year;if such items fail to give reasonable service for a reasonable period of time, as determined solely by KODIVAC ,they will be repaired or replaced by KODIVAC at its election.

All warrenty replacement or repair of parts shall be limited to equipment malfunction which, in the sole opinion of KODIVAC, are due or traceable to defects in original materials or workmanship. Malfunction caused by abuse or neglect of the equipment are expressly not coverd by this warranty. KODIVAC expressly disclaims responsibility for any loss or damage caused by the use of its products other than in accordance with proper operating and safety procedures.

Reasonable care must be taken by the user to avoid hazards.
In-warranty repaird or replacement parts are warranted only for the remaining unexpired portion of the original warranty period applicable to the parts which have been repaired or replaced.

After expiration of the applicable warranty period,the buyer shall be charged at KODIVAC`s then current prices for parts and labor plus transportation.

Except as stated herein, KODIVAC makes no warranty, expressed or implied(either in fact or by operation of law), statutory or otherwise:And, except as stated herein, KODIVAC shall have no liability for special or consequential damages of any kind or from any cause arising out of the sale, installation, or use of any of its products.

KODIVAC LTD.

한국을 대표하는 **Global Vacuum Brand Enterprise**

(주)코디박의 21세기 비전은 글로벌 **'진공 전문 브랜드와 우량기업'**이라는 2개의 목표 가치를 가지는
최고의 **'글로벌 진공 전문 기업'**이 됨으로서 국가 진공 사업의 초석이 되고자 함에 있습니다.