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

www.kodivac.com

(주)KODIVAC

(주)KODIVAC

■ 본 사 (Head Office)

경북 경산시 진량읍 신재리 524
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■ 서울 사무소 (Seoul Office)

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■ 진공기술연구소

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www.kodivac.com

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 - KODIVAC설계 · 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
	2월	군포공장 설립 (UHV장비제조)
	2월	일본대아진공(주) 기술 도입 계약체결, 진공장비 제작
1997	8월	Vacuum Dry Eguipment & Compoent 일본수출
1999	1월	(주)코디박 설립(계열사)
	2월	일본대아진공 국내 총대리점 계약
2000	7월	Dacro coating 사업부 신설
	12월	진공 코팅 관련 특허 출원
2001	5월	서울 공장 경산으로 확장이전(현, 경북 경산지점)
2002	4월	Vacuum Valve & Components **일본수출**
	4월	Oil Rotary Vane Pump **대만, 중국수출**
	6월	**현대자동차 품질 인증 획득**(SQ-MARK)
	12월	**QS-9000 / ISO-9001** 인증 획득
2003	3월	(주)피제이 코디박(PJ KODIVAC)상호변경
2004	9월	경북 경산시 진량공단 신사옥 증축 이전
2005	1월	Oil Rotary Vane Pump **신모델** 일본수출
	5월	**기술혁신형 중소기업 (INNO-BIZ)선정**
	6월	Oil Rotary Vane Pump **인도수출**
	7월	중소기업 기술 혁신협력 회원 등록
2006	1월	**환경경영시스템** 인증(크레비즈인증원-ISO14001:2004)
	2월	경산공장등록
	11월	기업부설 **진공기술 연구소 설립인가**
	12월	병력 특례 업체 선정
2007	1월	Booster Pumps 개발완료 판매개시
2008	6월	진량2공단 분양 (2010년 입주)
	6월	경일대학교 산학협력협정체결

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고객감동의 실현 –

Marketing A/S

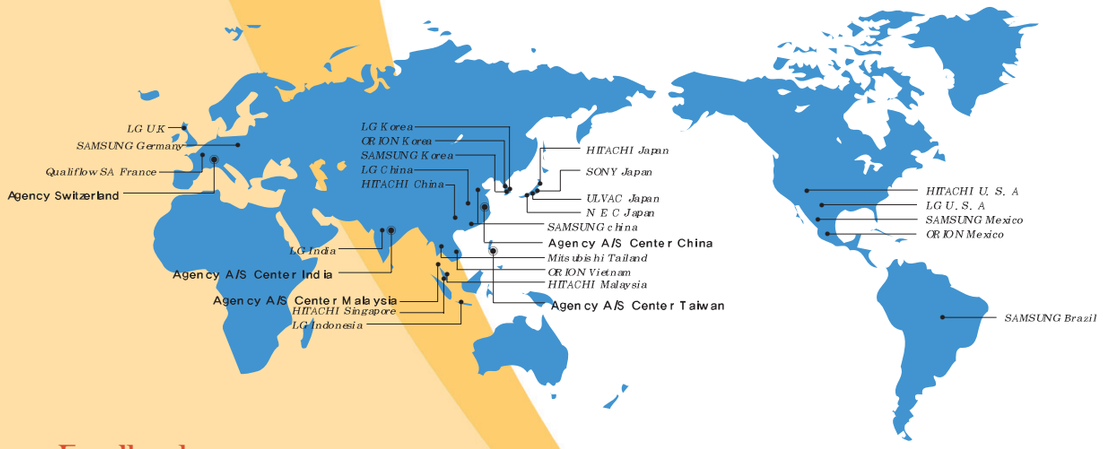
고객과 함께 만나는 KODIVAC의 마케팅 테마!

창의적이고 혁신적인 고객 서비스

KODIVAC은 다양한 품목과 Spec을 개발, 생산하여 고객의
요구에 한치의 오차도 없이 정확히 공급해 드립니다.
또한 국내는 물론 전세계 주요지역에 Communication Channel
을 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)

■ **본 사 (Head Office)**

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■ **서울 사무소 (Seoul Office)**

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#569-21, Kasan-dong, Kumchen-ku, Seoul, KOREA
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■ **진공기술연구소**

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대리점 (Agency)

■ **국내 (Domestic)**

· 베 스 :경북 포항시 남구 효장동 산32번지 RIST 창업보육센타	TEL : (054)278-2894	FAX : (054)278-2895
· 태백진공 :대전시 대덕 대화 289-1 공구상가 8-122	TEL : (042)670-8778	FAX : (042)670-8779
· 코 디 박 :서울시 동작구 신대방동 351-10 3층	TEL : (02)812-5506	FAX : (02)812-5508
· 민성코디박 : 인천광역시 서구 오류동 734-187	TEL : (032)569-0165	FAX : (032)569-0166
· 동양진공기술 : 부산광역시 사상구 괘법동 568-10	TEL : (051)325-6960	FAX : (051)325-6961

■ **국외(Abroad)**

· BBN Corporation No. 172-2, Gao Cui Road, Hsin-Chu, Taiwan 300	Taiwan	TEL : +886-3-562-5019	FAX : +886-3-562-5017
· BBN Corporation N 289 Zhe qiao RD, Pudong, Shanghai	China	TEL : +86-21-5031-1707	FAX : 86-21-5031-0952
· A.E.M.S	Lichetenstain	TEL : +41-423-380-550	
· VT VACUUM TECHNOLOGIES PVT LT	India	TEL : +91-80-2360-3253	
· SEMICONDUCTOR SERVICES (M) SDN BHD	Malaysia	TEL : +60-3-56376746	

Quality Control

자체 연구 및 세미나는 물론 한국 진공학회와 각종 국제 진공 학회의 연구 프로그램 및 국제적인 대형 Project에 참여하여 이론은 물론 진공기기 제작 실무를 익힌 우수한 두뇌집단인 PJ KODIVAC은 ISO 9001 인증의 공정관리를 통한 보다 차원 높은 Q.C와 R&D를 통해 품위 있는 제품으로 고객에게 다가 설 것입니다.

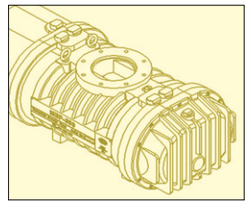
KODIVAC is an excellent think tank, trained through study programs of international vacuum institutes and big projects, under proper management of ISO 9001, and higher quality control, and R&D, will Satisfy customers with quality products.

www.kodivac.com

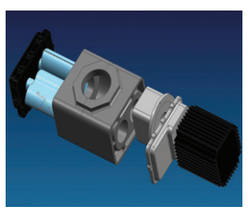
Design

제품의 Design은 생산의 기초.
각종 분석자료와 현장 경험에서 얻은 Know-how를 통해 축적된 설계 Mechanism으로 제품의 미세한 부분까지 세밀하게 설계합니다.

Design of products is the base of production. KODIVAC's design make even detail parts precise through cumulative design mechanism based on know-how from field experience and analytic datum.



Simulation



다차원 컴퓨터 Simulation Program을 통해 가공 · 조립 전단계에서 충분히 실험하여 본 제품의 효율성과 조작의 편의성, 그리고 경제성을 엄격히 검토 합니다.

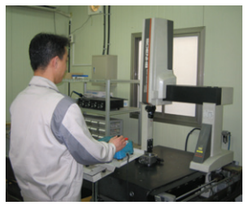
By having sufficient tests in every stage of process and assembly with simulation program of multi-dimensions PC, KODIVAC's complete inspection on economy, ease of maintenance, and efficiency of this product is made out.

Machining

각 단위 부품에 정확한 고품질의 소재를 사용함은 물론 첨단 자동화 공작 설비를 이용하여 ±1㎛의 오차도 허용하지 않는 일관성 있는 제품 생산에 최선을 다합니다.

By using ultra automated equipments as well as high quality material parts in each unit preceisly, KODIVAC don't allow even ±1㎛ error and do our best to produce consistent products.

Inspection



KODIVAC의 신뢰성은 3차원 Laser 측정기기 등을 이용한 부품 하나 하나의 Inspection에서 더욱 높아지며 철저한 검수에서 합격한 부품만이 조립 단계로 넘어갑니다.

You will be sure about KODIVAC's credence from the complete inspection on every part using three-dimension laser measurer, and the only passed parts in inspection could be put in the next assembly stage.

Assembly

Pump, Gauge 등의 Component 부터 대규모 장치 System에 이르기까지 Inspection에서 합격된 부품과 기기들은 전문가에 의해 정확한 조립 공정을 거쳐 비로소 하나의 완성된 진공 기기로 태어납니다.

From the components such as pump, gauge, etc. to a large scale system, the whole passed parts and equipments from inspection should be born as a complete vacuum tool through specialists' precise.

Testing

조립된 진공기기 및 장비들은 출하전 Leak Detection과 내구성 Test 등의 엄격한 검사 절차에 의해 품질 검증 후 출고 됩니다. 국내 · 외에 알려진 KODIVAC의 신뢰성과 명성은 바로 이 엄격한 품질 검증 절차로 부터 이룩되었습니다.

Assembled vacuum tools and equipments should be tested for Leak Detection and Durability before shipment. KODIVAC's trust and fame internationally recognized are formed from the very complete quality testing process.

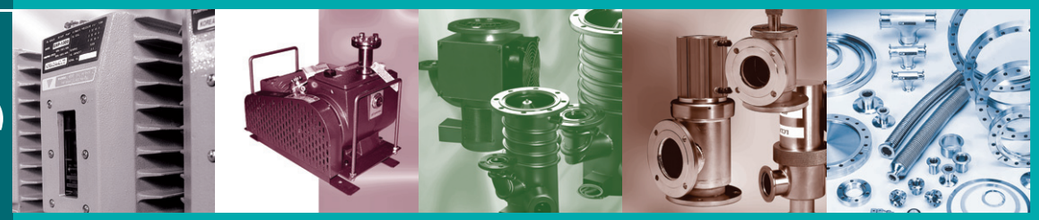
R & D

KODIVAC은 현 기술력에 만족하지 않고, 지속적인 기술 연구를 통해서 보다 나은 제품이 나올 수 있도록 많은 노력을 기울이고 있습니다.

KODIVAC haven't satisfied on our current technology and have been developing high technology through the ongoing scientific research developement which has been providing better commodities to customers in the market.

Realization of customer emotion KODIVAC's marketing theme, meeting with customers!

Contents in Detail



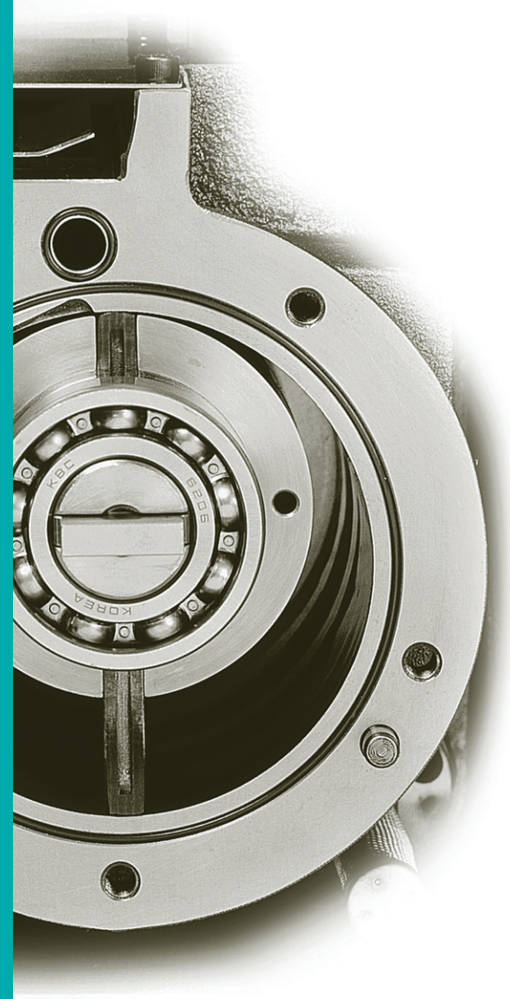
ROTARY PUMP

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.

www.kodivac.com
E-mail:sales@pjkodivac.co.kr

Oil ROtary Vane Pump



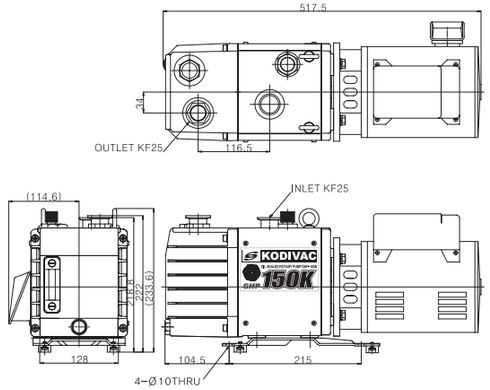
Introduction

KODIVAC의 GHP Series는 도달진공도를 높이고 Pumping 효율을 높이기 위해 Double Stage를 채택하였으며, Motor Direcly 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 감지 기능을 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.

OIL ROTARY VANE PUMP ▶ GHP-150K

Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	150	180
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×0.4kW(1Ø)	
Oil Capacity (Min/Max)		ℓ	0.8 / 1.2	
Cooling			Air cooling	
Inlet Size			NW 25	
Outlet Size			NW25(PF3/4)	
Weight		kg	30	
Oil			MR200	

Speed Curve

Feature

■특징

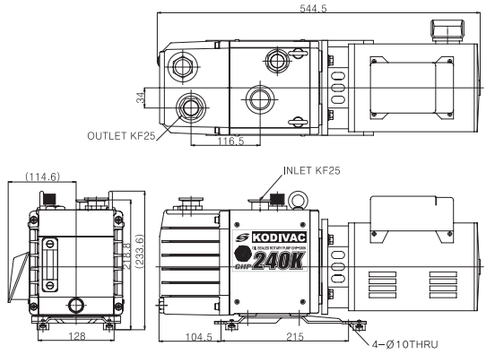
- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
- 오일 역류방지기구 내장 : 오일 역류방지기구 내장으로 정지시에 오일역류를 방지하므로 Pump Vent Valve가 필요없습니다.
- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
- 가스 밸러스트밸브 부착 : 가스 밸러스트밸브를 갖추고 있으므로, 수증기, 응축가스 등을 효과적으로 제거합니다.
- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의 응력차를 극소화하여, Oil Seal 에서의 오일누설이 없습니다.
- 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.
- Built-in anti-backstream device : The GHP-Series are perfectly protected from backstream when operation is suspended, thanks to the built-in anti-backstream device, which cut of any oil flow, where by eliminating the need for pump leak valve.
- 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.
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-240K

Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	240	290
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×0.4kW(1Ø)	
Oil Capacity (Min/Max)		ℓ	0.8 / 1.1	
Cooling			Air cooling	
Inlet Size			NW 25	
Outlet Size			NW25(PF3/4)	
Weight		kg	31	
Oil			MR200	

Speed Curve

Feature

■특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
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- 소형 경량 : 직결구동이므로, 종래에 비하여 소형 경량입니다.

■Features

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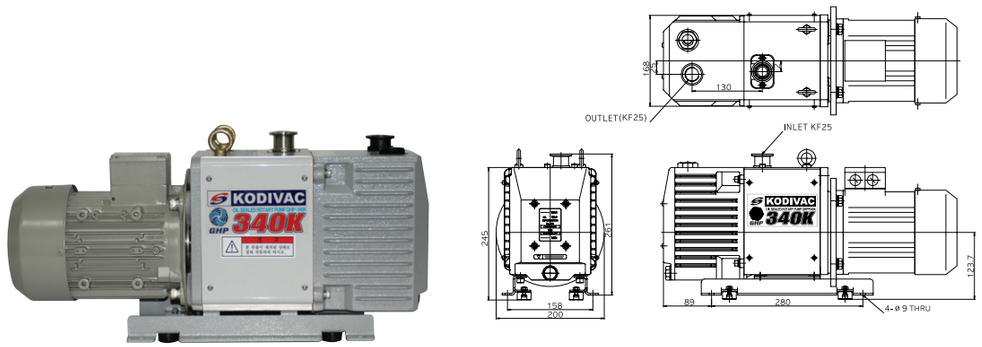
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-340K

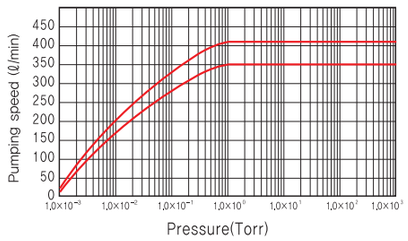
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	340	408
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V× 3ϕ × 0.75kW	
Oil Capacity (Min/Max)		ℓ	1.2 / 1.7	
Cooling			Air cooling	
Inlet Size			NW 25	
Outlet Size			NW25(PF3/4)	
Weight		kg	42	
Oil			MR200	

Speed Curve



Feature

■특징

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- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.
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- Equipped with gas ballast valve : The Series are equipped with gas ballast valve, which effectively eliminates oil vapors and condensed gases.
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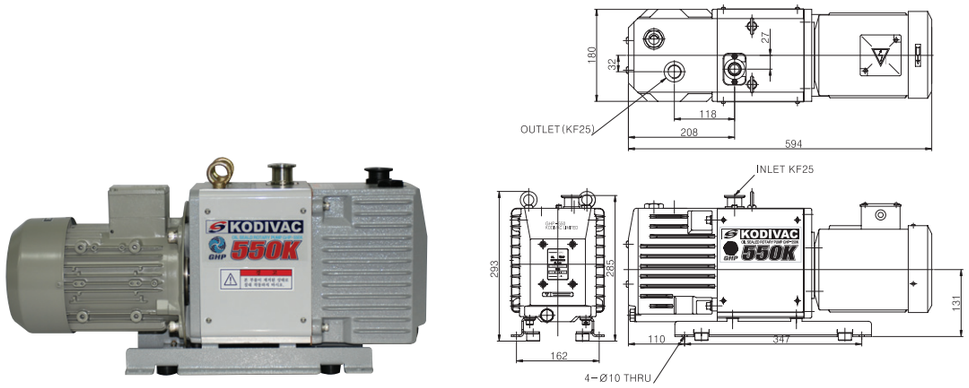
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-550K

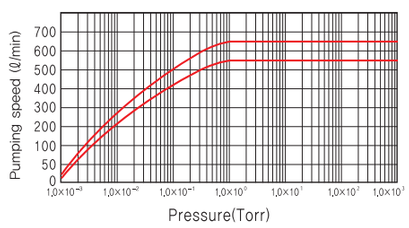
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	550	650
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V× 3ϕ × 0.75kW	
Oil Capacity (Min/Max)		ℓ	1.2 / 1.7	
Cooling			Air cooling	
Inlet Size			NW 25	
Outlet Size			NW25(PF3/4)	
Weight		kg	48	
Oil			MR200	

Speed Curve



Feature

■특징

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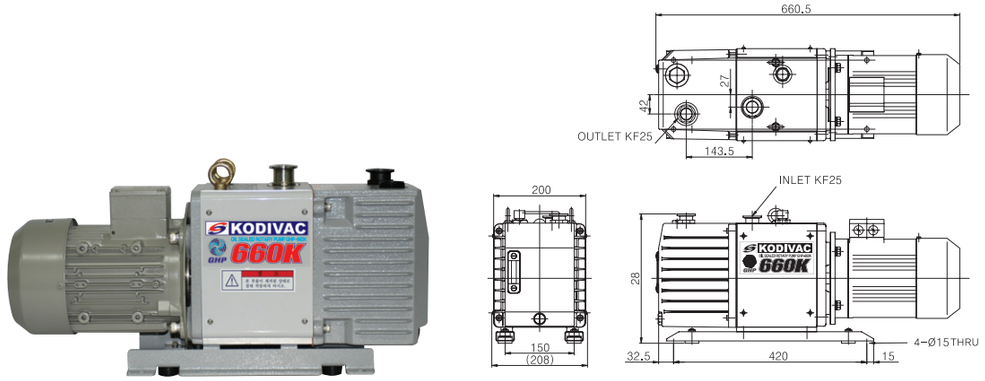
OIL ROTARY VANE PUMP ▶ GHP-660K

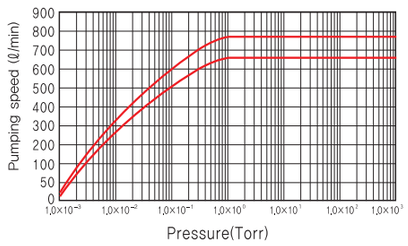
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	660	780
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×1.5kW	
Oil Capacity (Min/Max)		ℓ	2 / 2.6	
Cooling			Air cooling	
Inlet Size			NW 25	
Outlet Size			NW25(PF3/4)	
Weight		kg	52	
Oil			MR200	

Speed Curve



Feature

■특징

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- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
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- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의 응력차를 극소화하여, Oil Seal 에서의 오일누설이 없습니다.
- 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.
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- 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.
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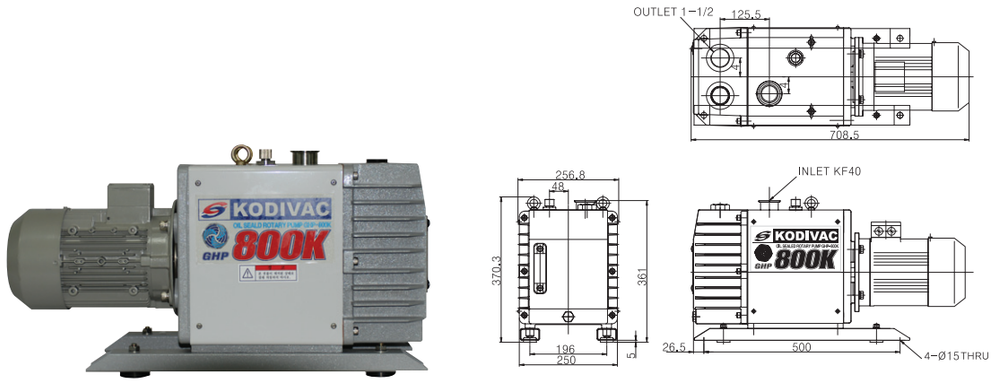
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-800K

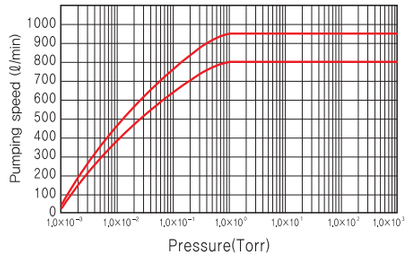
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	800	960
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×1.5kW	
Oil Capacity (Min/Max)		ℓ	3.0 / 4.3	
Cooling			Air cooling	
Inlet Size			NW 40	
Outlet Size			PF 1 ½(NW 40)	
Weight		kg	60	
Oil			MR200	

Speed Curve



Feature

■특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
- 오일 역류방지기구 내장 : 오일 역류방지기구 내장으로 정지시에 오일역류를 방지하므로 Pump Vent Valve가 필요없습니다.
- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
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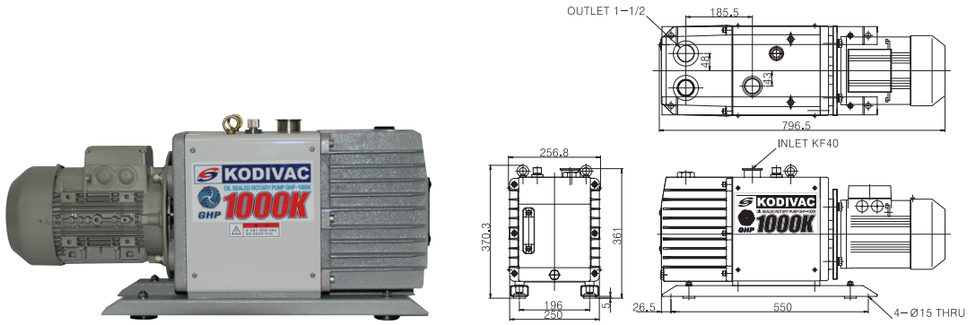
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-1000K

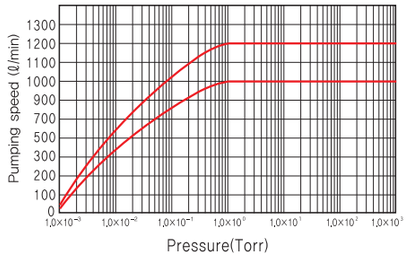
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	1000	1200
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×2.2kW	
Oil Capacity (Min/Max)		ℓ	3.5 / 6.2	
Cooling			Air cooling	
Inlet Size			NW 40	
Outlet Size			PF 1 ½(NW 40)	
Weight		kg	85	
Oil			MR200	

Speed Curve



Feature

■특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
- 오일 역류방지기구 내장 : 오일 역류방지기구 내장으로 정지시에 오일역류를 방지하므로 Pump Vent Valve가 필요없습니다.
- 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.
- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의응력차를 극소화하여, Oil Seal 에서의 오일누설이 없습니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.
- 소형 경량 : 직결구동이므로, 종래에 비하여 소형 경량입니다.

■Features

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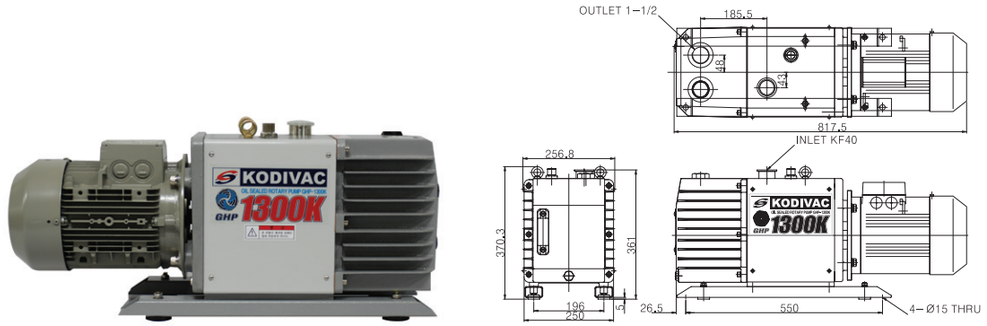
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-1300K

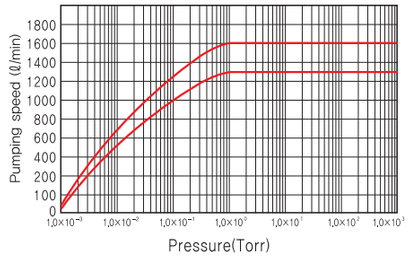
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	1300	1600
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×4kW	
Oil Capacity (Min/Max)		ℓ	3.5 / 6.2	
Cooling			Air cooling	
Inlet Size			NW 40	
Outlet Size			PF 1 ½(NW 40)	
Weight		kg	95	
Oil			MR200	

Speed Curve



Feature

■특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
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- 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.
- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의응력차를 극소화하여, Oil Seal 에서의 오일누설이 없습니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.
- 소형 경량 : 직결구동이므로, 종래에 비하여 소형 경량입니다.

■Features

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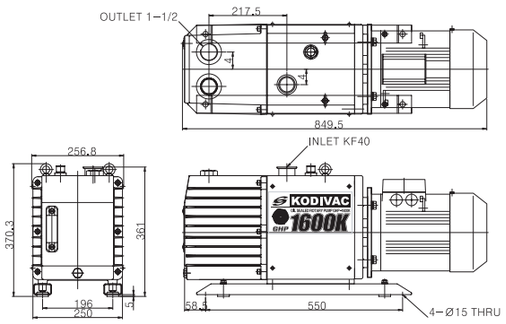
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.
- Driven by direct connection : The Series are small and light, compared to other systems.

OIL ROTARY VANE PUMP ▶ GHP-1600K

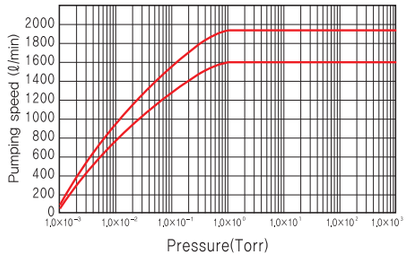
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	1600	1920
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×4kW	
Oil Capacity (Min/Max)		ℓ	5.6 / 6.5	
Cooling			Air cooling	
Inlet Size			NW 40	
Outlet Size			PF 1 ½(NW 40)	
Weight		kg	106	
Oil			MR200	

Speed Curve



Feature

■특징

- 저소음 : 정밀가공 기술에 의한 저소음, 저진동의 펌프입니다.
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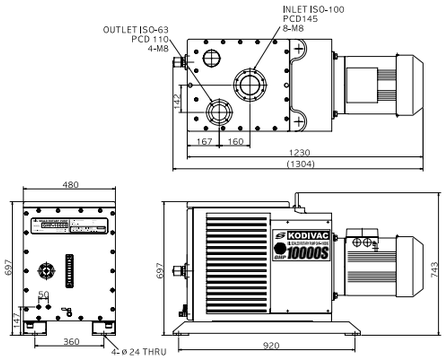
OIL ROTARY VANE PUMP ▶ GHP-10000S (Single Stage)

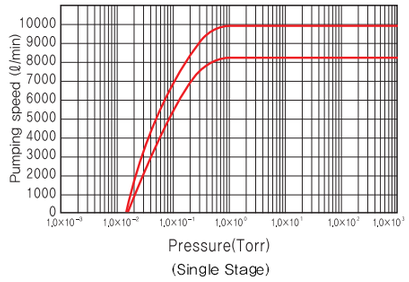
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	8200	10000
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.6)	
	Gas Ballast Valve Open		5×10^{-2}(6.6)	
Power		kW	220V/380V×3φ×15kW	
Oil Capacity (Min/Max)		ℓ	20 / 30	
Cooling			Water Cooling	
Inlet Size			ISO-100	
Outlet Size			ISO-63	
Weight		kg	280	
Oil			MR200	

Speed Curve



Feature

■특징

- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
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■Features

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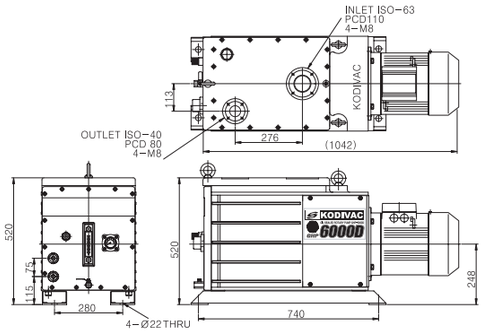
OIL ROTARY VANE PUMP

▶ GHP-6000D (Double Stage)

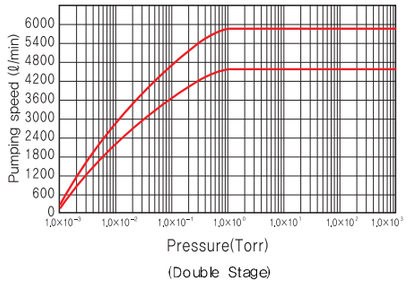
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	4600	5800
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3φ×8.6kW	
Oil Capacity (Min/Max)		ℓ	18 / 28	
Cooling			Water cooling	
Inlet Size			ISO-63	
Outlet Size			ISO-40	
Weight		kg	242	
Oil			MR200	

Speed Curve



(Double Stage)

Feature

■특징

- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의체결, 각 Stator 등의 접속은전부 O-Ring Seal로 되어 있으므로분해조립이 용이한 구조입니다.
- 가스 밸러스트밸브 부착 : 가스 밸러스트밸브를 갖추고 있으므로, 수증기, 응축가스 등을 효과적으로 제거합니다.
- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의응력차를 극소화하여, Oil Seal 에서의오일누설이 없습니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.

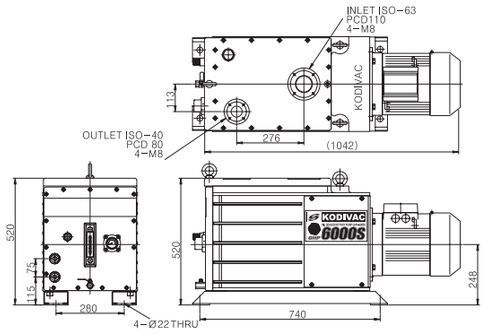
■Features

- 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.
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.

OIL ROTARY VANE PUMP

▶ GHP-6000S (Single Stage)

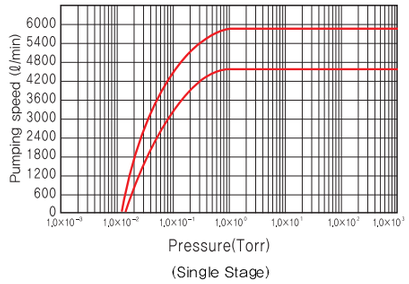
Design / Outline Drawing(mm)



Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	4600	5800
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.6)	
	Gas Ballast Valve Open		5×10^{-2}(6.6)	
Power		kW	220V/380V×3φ×8.6kW	
Oil Capacity (Min/Max)		ℓ	18 / 28	
Cooling			Water cooling	
Inlet Size			ISO-63	
Outlet Size			ISO-40	
Weight		kg	238	
Oil			MR200	

Speed Curve



(Single Stage)

Feature

■특징

- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로분해조립이 용이한 구조입니다.
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- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의응력차를 극소화하여, Oil Seal 에서의오일누설이 없습니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.

■Features

- 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.
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.

OIL ROTARY VANE PUMP

▶ GHP-3500D (Double Stage)

Design / Outline Drawing(mm)

Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	2900	3500
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.5×10^{-2})	
	Gas Ballast Valve Open		1×10^{-2}(1.3)	
Power		kW	220V/380V×3ϕ×5.5kW	
Oil Capacity (Min/Max)		ℓ	1.6 / 2.6	
Cooling			Water cooling	
Inlet Size			ISO-63	
Outlet Size			ISO-40	
Weight		kg	210	
Oil			MR200	

Speed Curve

Feature

■특징

- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
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- 오일 누설(漏洩) 방지 장치 : Oil Berth를 중간에 설치한 이중 Seal 구조로 되어 있으며, Oil Berth 양측면의 응력차를 극소화하여, Oil Seal 에서의 오일누설이 없습니다.
- 분진 무발생 : 직결구동이므로 벨트 마모에 의한 분진 발생이 없으므로 깨끗한 환경을 유지합니다.

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- 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.
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- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.

▶ GHP-3500S (Single Stage)

Design / Outline Drawing(mm)

Technical Specification

		Unit	50Hz	60Hz
Pumping Speed		ℓ /min	2900	3500
Ultimate Pressure	Gas Ballast Valve Close	Torr (Pa)	5×10^{-2}(6.6)	
	Gas Ballast Valve Open		5×10^{-2}(6.6)	
Power		kW	220V/380V×3ϕ×5.5kW	
Oil Capacity (Min/Max)		ℓ	1.6 / 2.6	
Cooling			Water cooling	
Inlet Size			ISO-63	
Outlet Size			ISO-40	
Weight		kg	205	
Oil			MR200	

Speed Curve

Feature

■특징

- 뛰어난 호환성 : 전부품의 호환성이 있으며 위치결정형 평형핀의 체결, 각 Stator 등의 접속은 전부 O-Ring Seal로 되어 있으므로 분해조립이 용이한 구조입니다.
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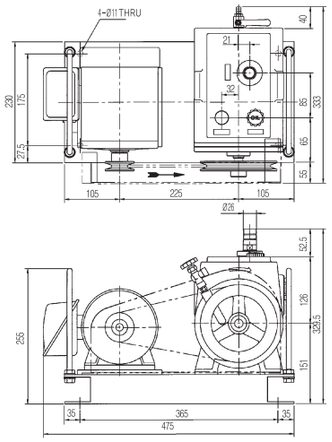
- Anti-dust producing : Driven by direct connection, the Series do not produce any dusts as it may, belt abrasion when driven by belt, contributing to maintaining clean environment.

BELT-DRIVEN ROTARY VANE PUMP ▶ GRP-180

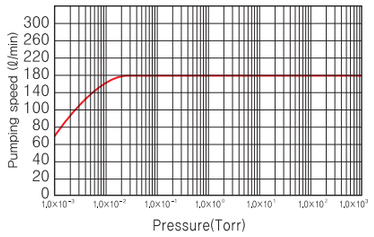
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	180ℓ /min
Ultimate Pressure	1×10^{-3} Torr
Power	220V/380V×3ϕ×0.4kW
R.P.M.	600 r.p.m.
Oil Capacity	2.5ℓ
Cooling	Air Cooling
Inlet Size	ϕ 26
Outlet Size	PF 3/4
Oil	ULTRA-200

Speed Curve



Feature

■특징

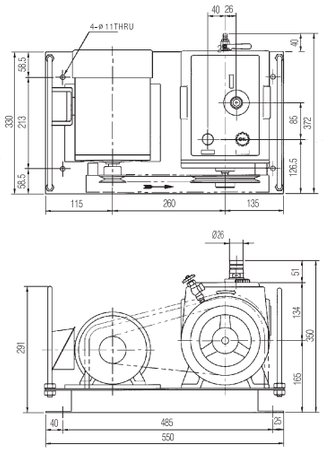
- 저소음, 저진동
- 연속운동가능
- 우수한 성능
- Ultimate Pressure, 배기속도 특성이 매우 우수
- Gas Ballast 부착
- 수증기, 응축 Gas등을 효과적으로 제거

■Features

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

BELT-DRIVEN ROTARY VANE PUMP ▶ GRP-300N

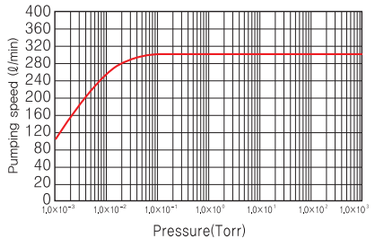
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	300ℓ /min
Ultimate Pressure	1×10^{-3} Torr
Power	220V/380V×3ϕ×0.4kW
R.P.M.	600 r.p.m.
Oil Capacity	3.2ℓ
Cooling	Air Cooling
Inlet Size	ϕ 26
Outlet Size	PF 3/4
Oil	ULTRA-200

Speed Curve



Feature

■특징

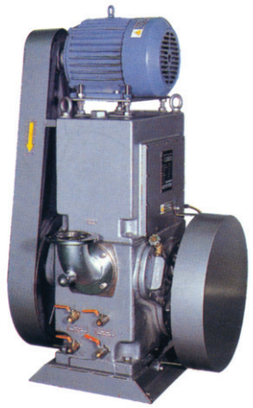
- 저소음, 저진동
- 연속운동가능
- 우수한 성능
- Ultimate Pressure, 배기속도 특성이 매우 우수
- Gas Ballast 부착
- 수증기, 응축 Gas등을 효과적으로 제거

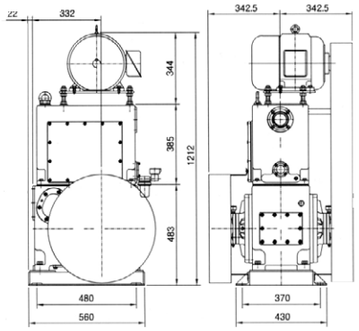
■Features

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

PISTION ROTARY PUMP ▶ KRP-4500

Design / Outline Drawing(mm)

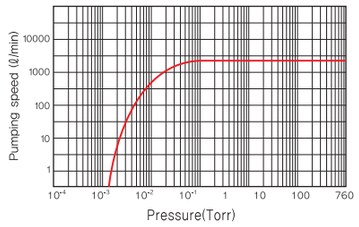




Technical Specification

Actual Pumping Speed(60Hz)	4500ℓ /min
Ultimate Pressure Torr(Pa)	5×10^{-3}(6.7×10^{-1})
Ultimate Pressure with Ballast	5×10^{-1} (67)
Motor Power	5.5kW
Oil Capacity	12ℓ
Inlet Connection	VG 80
Outlet Connection	VF 80
Electrical Power	220V / 380V, 60Hz, φ3
Cooling Water	3.5ℓ /min
Weight	440Kg
Option	
Oil Mist Trap	OMT-4500
Oil Fuelling Tank	OFT-4500

Speed Curve



Feature · Application

■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
- 고순도활성가스이 배기 및 흡입용으로 사용
- 진공배기, 진공열처리, 가스분석, 진공증착, 진공함침, 진공건조, 진공성형, 기타배기장치

■Feature

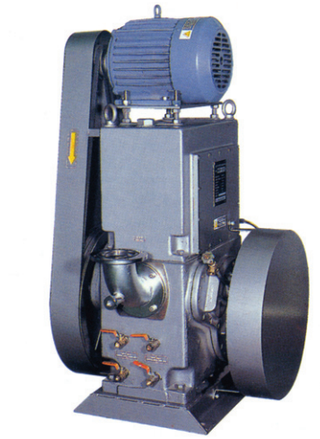
- Little vibration and noise against to exhaust capacity.
- strong durability by special structure type.
- Simple structure and pin-assemble type with a precise machining parts having good replacement.
- Easy to replace motor which customer requested.
- Easy to install a MBP motor when high capacity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

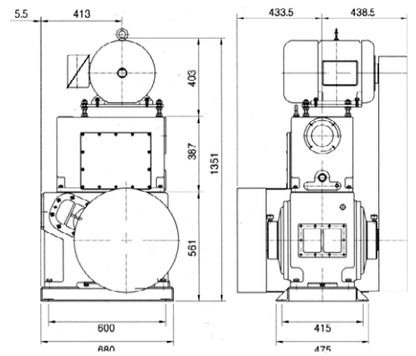
■Application

- 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.

PISTION ROTARY PUMP ▶ KRP-8000

Design / Outline Drawing(mm)

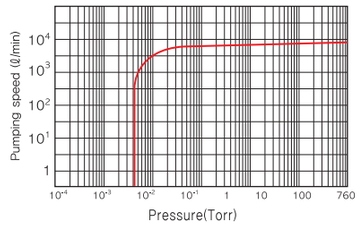




Technical Specification

Actual Pumping Speed(60Hz)	8000ℓ /min
Ultimate Pressure Torr(Pa)	5×10^{-3}(6.7×10^{-1})
Ultimate Pressure with Ballast	5×10^{-1} (67)
Motor Power	11kW
Oil Capacity	20ℓ
Inlet Connection	VG 100
Outlet Connection	VF 100
Electrical Power	220V / 380V, 60Hz, φ3
Cooling Water	5ℓ /min
Weight	7700Kg
Option	
Oil Mist Trap	OMT-8000
Oil Fuelling Tank	OFT-8000

Speed Curve



Feature · Application

■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.

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- 고순도활성가스이 배기 및 흡입용으로 사용
- 진공배기, 진공열처리, 가스분석, 진공증착, 진공함침, 진공건조, 진공성형, 기타배기장치

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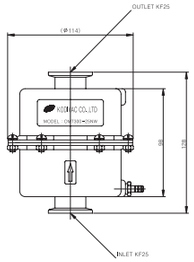
- For vacuum exhausting, vacuum heat-treatment, residual gas analysis, vacuum evaporation sintering, vacuum dry, vacuum deformation and etc.

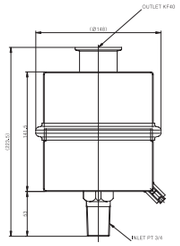
ACCESSORIES

ACCESSORIES

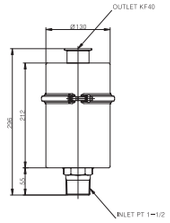
Outline Drawing(mm) OIL MIST TRAP



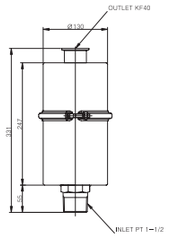
GHP-150/240/340



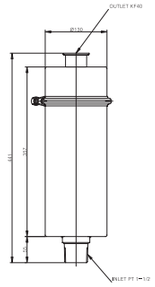
GHP-550



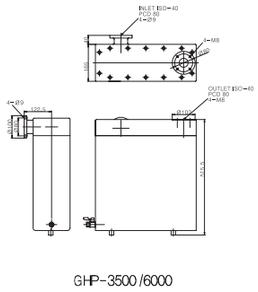
GHP-800/1000



GHP-1300

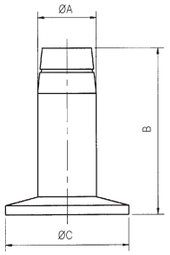


GHP-1600

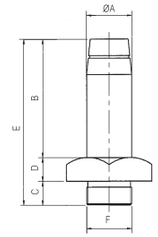


GHP-3500/6000

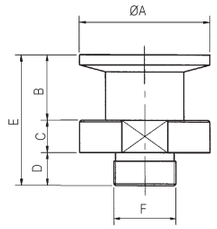
Outline Drawing(mm) INLET NOZZLE , OUTLET(HOSE TYPE), OUTLET(NW TYPE)



Inlet Nozzle



Outlet Nozzle(Horse Type)



Outlet Nozzle(NW Type)

Dimension Inlet Nozzle Unit:mm

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

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-150,240,340,550
EN-40-1½	NW40	25	15	15	55	PF 1½	GHP-800,1000,1300,1600

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-150,240,340,550
EN-40-1½	ϕ40	70	15	15	100	PF 1½	GHP-800,1000,1300, 1600

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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.

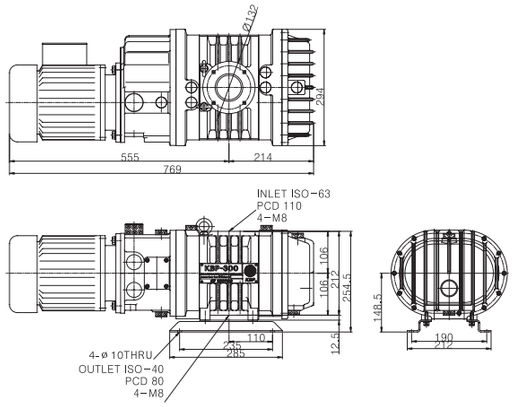
Introduction

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.

MECHANICAL BOOSTER PUMP ▶ KBP-300

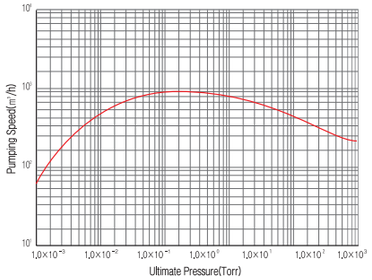
Design / Outline Drawing(mm)



Technical Specification

Item	Unit	KBP-300
Ultimate Pressure (N2)	Torr	5×10^{-4}
pumping speed (50/60)HZ	m^3/hr	370/445
pumping speed (50/60)HZ	ℓ/m	6,100/7,400
구동방식	Torr	대기압형
motor power	kw	1.5
voltage	v	220/380
rotation speed (60HZ기준)	r.p.m	3000
type oil		U/G 20/EP83
oil capacity / Gear	liter	0.8
oil capacity / Coupling	liter	1.5
oil capacity / Shaft Seal	liter	1.25
inlet port		ISO-63
outlet port		ISO-40
weight	kg	65
Backing Pump		GHP-800K / 1000K
Coolinge Method		공랭

Speed Curve



Feature

■특징

- 대기압 구동 실현
- 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

■Feature

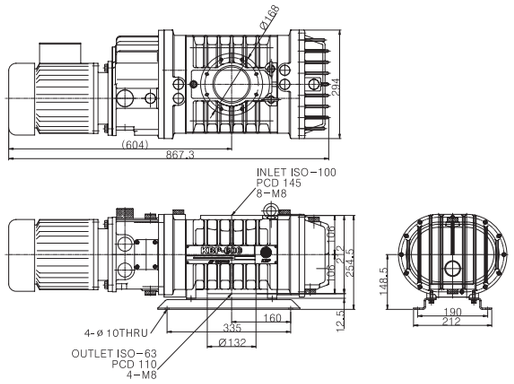
- It has a good abrasion resistant by auto speed adjustment according to load factor.
- Low oil temperature and high durability caused by installation of cooling fan in fluid coupling.
- Easy to combine with exhausting system for a backing pump.

■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-600

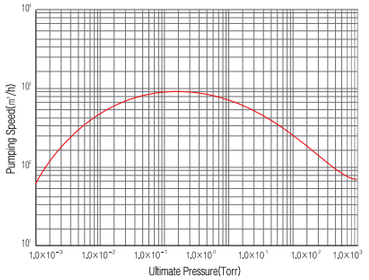
Design / Outline Drawing(mm)



Technical Specification

Item	Unit	KBP-600
Ultimate Pressure (N2)	Torr	5×10^{-4}
pumping speed (50/60)HZ	m^3/hr	560/672
pumping speed (50/60)HZ	ℓ/m	9,300/11,200
구동방식	Torr	대기압형
motor power	kw	1.5
voltage	v	220/380
rotation speed (60HZ기준)	r.p.m	3000
type oil		U/G 20/EP83
oil capacity / Gear	liter	0.8
oil capacity / Coupling	liter	1.5
oil capacity / Shaft Seal	liter	1.25
inlet port		ISO-100
outlet port		ISO-63
weight	kg	80
Backing Pump		GHP-1300K / 1600K
Coolinge Method		공랭

Speed Curve



Feature / Application

■특징

- 대기압 구동실현
- 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

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■Application

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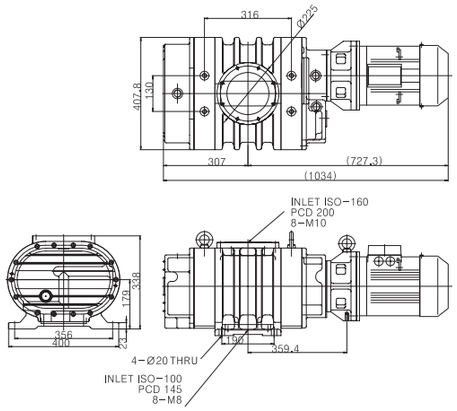
- Applicable to a system that require short pumping time
- For exhausting or suction of high puirty activated gas.
- Vacuum dry, vacuum evaporation, vacuum deformation, vacuum sintering, food, madical freezing dry, degas, bubble remotion.

MECHANICAL BOOSTER PUMP ▶ KBP-1200

Design / Outline Drawing(mm)



Technical Specification

Item	Unit	KBP-1200
Ultimate Pressure (N2)	Torr	5×10^{-4}
pumping speed (50/60)HZ	m^3/hr	1,000/1,200
pumping speed (50/60)HZ	ℓ/m	16,600/20,000
구동방식	Torr	대기압형
motor power	kw	4
voltage	v	220/380
rotation speed (60HZ기준)	r.p.m	3000
type oil		U/G 20/EP83
oil capacity / Gear	liter	1.1
oil capacity / Coupling	liter	1.2
oil capacity / Shaft Seal	liter	1.15
inlet port		ISO-160
outlet port		ISO-100
weight	kg	200
Backing Pump		GHP-3500S/D
Coolinge Method		수냉

* 인버터 사용시 대기압 구동 가능형.

Speed Curve

Feature

■특징

- 배기시 부하량에 다른 자동적인 회전속도 조정으로 내마모성이 우수하다.
- 오일 박스는냉각이 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

■Feature

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■Application

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- Applicable to a system that require short pumping time
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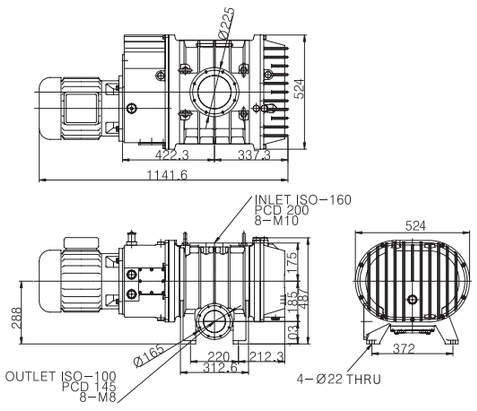
MECHANICAL BOOSTER PUMP ▶ KBP-2700

Design / Outline Drawing(mm)



Technical Specification

Item	Unit	KBP-2700
Ultimate Pressure (N2)	Torr	5×10^{-4}
pumping speed (50/60)HZ	m^3/hr	2690/3220
pumping speed (50/60)HZ	ℓ/m	44,800/53,600
구동방식	Torr	대기압형
motor power	kw	7.5/11
voltage	v	220/380
rotation speed (60HZ기준)	r.p.m	3000
type oil		U/G 20/EP83
oil capacity / Gear	liter	3.5
oil capacity / Coupling	liter	6.5
oil capacity / Shaft Seal	liter	1.5
inlet port		ISO-160
outlet port		ISO-100
weight	kg	315
Backing Pump		GHP-6000S/D
Coolinge Method		수냉

Speed Curve

Feature

■특징

- 대기압 구동실현
- 배기시 부하량에 다른 자동적인 회전속도 조정으로 내마모성이 우수하다.
- 오일 박스는냉각이 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
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- 진공건조, 탈GAS, 탈포 진공증착, 성형, 함침, 식품, 동결건조, 기타배기장치

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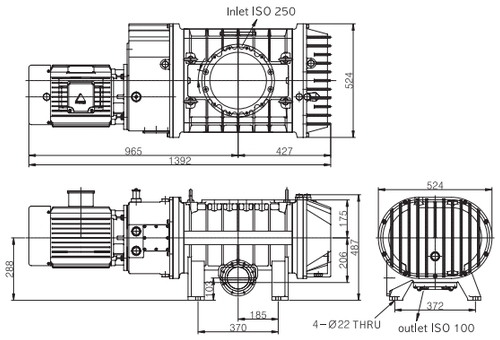
- Applicable to a system that require short pumping time
- For exhausting or suction of high puirty activated gas.
- Vacuum dry, vacuum evaporation, vacuum deformation, vacuum sintering, food, madical freezing dry, degas, bubble remotion.

MECHANICAL BOOSTER PUMP ▶ KBP-3800

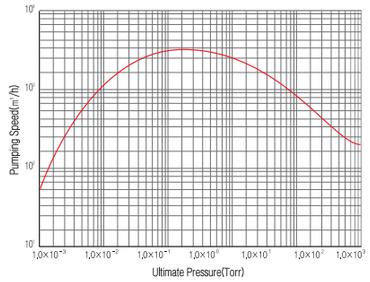
Design / Outline Drawing(mm)



Technical Specification

Item	Unit	KBP-3800
Ultimate Pressure (N2)	Torr	5×10^{-4}
pumping speed (50/60)HZ	m^3/hr	3,876/4,560
pumping speed (50/60)HZ	ℓ /m	64,600/76,000
구동방식	Torr	대기압형
motor power	kw	11
voltage	v	220/380
rotation speed (60HZ기준)	r.p.m	3000
type oil		U/G 20/EP83
oil capacity / Gear	liter	3.5
oil capacity / Coupling	liter	6.5
oil capacity / Shaft Seal	liter	1.5
inlet port		ISO-250
outlet port		ISO-100
weight	kg	436
Backing Pump		GHP-6000S/D / 10000S
Coolinge Method		수냉

Speed Curve



Feature

■특징

- 대기압 구동 실현
- 배기시 부하량에 다른 자동적인 회전속도 조정으로 내마모성이 우수하다.
- 오일 박스는 냉각이 원활한 구조로 제작되어 오일 온도가 낮고 내구성이 강하다.
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■용도

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

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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 처리 능력, 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.

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Introduction

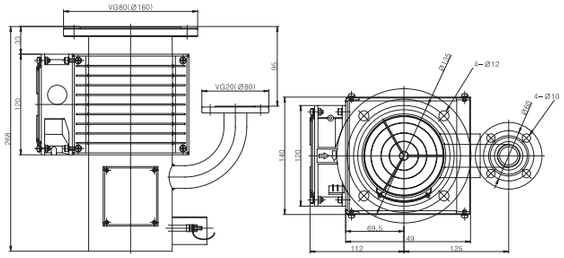
유확산 펌프의 구조에서 Jet Assembly는 First Stage에 다른 Stage와는 다른 분리된 Tube를 장착시켜 불순물이 없는 가장 순수한 Oil만이 Center Tube를 통해 Top Jet로 이동해서 펌프의 최상층부 즉 흡입구 부분이 가장 높은 진공상태가 되게 해주고, 오염된 Oil은 하부 Jet에서 동작하도록 설계하여 높은 Pumping Speed와 낮은 Oil Back Stream을 갖도록 설계 제작하였습니다. 또한 Jet는 조립이 간단하여 쉽게 분해되며 각단의 Nozzle을 쉽게 세척할 수 있도록 하였으며 시창을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

DIFFUSION PUMP ▶ DPF-3ZA

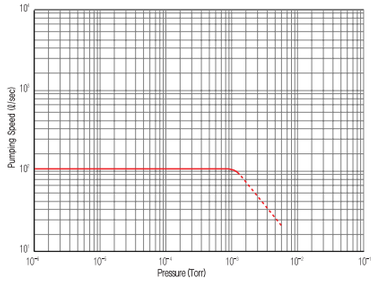
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	150ℓ /sec
Ultimate Pressure -With Baffle	1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate	7.5×10^{-4} mg/cm^2 • min
Oil Capacity	100 ml
Electrical Main Supply	220V/1Ø
Warm-up Time	20 min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	450W
Weight	7.5Kg
Cooling	Air

Speed Curve



Feature

■특징

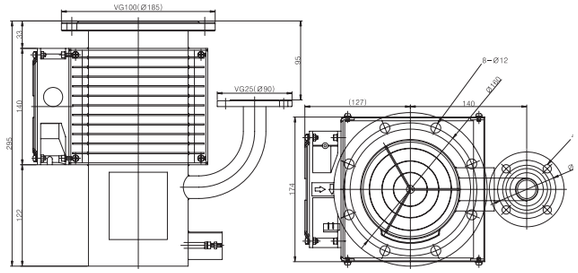
- 뛰어난 배기속도
- Low Oil back stream
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION PUMP ▶ DPF-4ZA

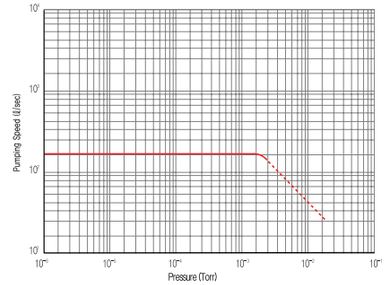
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	250ℓ /sec
Ultimate Pressure -With Baffle	1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate	7.5×10^{-4} mg/cm^2 • min
Oil Capacity	150 ml
Electrical Main Supply	220V/1Ø
Warm-up Time	20 min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	700W
Weight	10Kg
Cooling	Air

Speed Curve



Feature

■특징

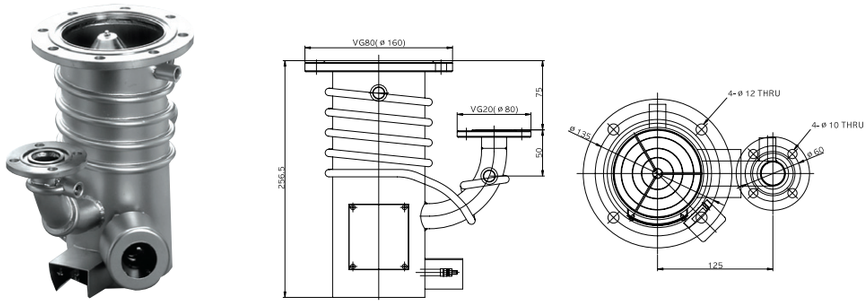
- 뛰어난 배기속도
- Low Oil back stream
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION ▶ DPF-3Z PUMP

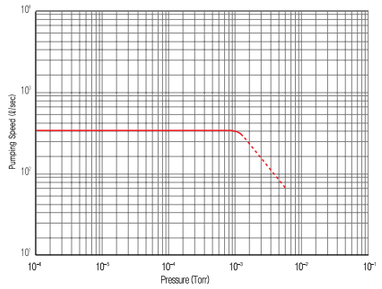
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	360ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Air Cooled Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 7.5×10^{-4} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	100 ml
Electrical Main Supply	220V/1Ø
Warm-up Time	20 min
Cooling Water Flow	1.0ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	450W
Weight	6Kg

Speed Curve



Feature

■특징

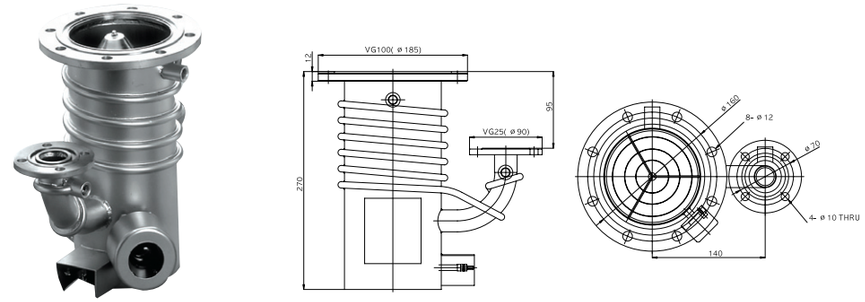
- 뛰어난 배기속도
- Low Oil back stream.
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION ▶ DPF-4Z PUMP

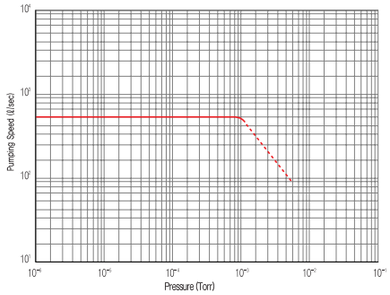
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	570ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr (6.7×10^{-5}Pa) $\times10^{-7}$Torr (1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Air Cooled Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 7.5×10^{-4} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	150 ml
Electrical Main Supply	220V/1ϕ
Warm-up Time	20 min
Cooling Water Flow	1.5ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	700W
Weight	8Kg

Speed Curve



Feature

■특징

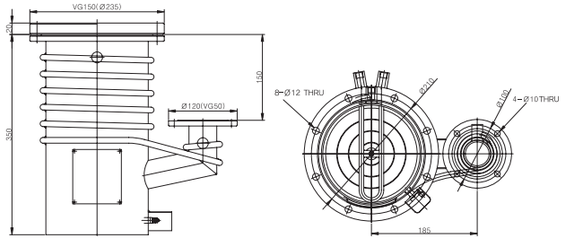
- 뛰어난 배기속도
- Low Oil back stream.
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION ▶ DPF-6Z PUMP

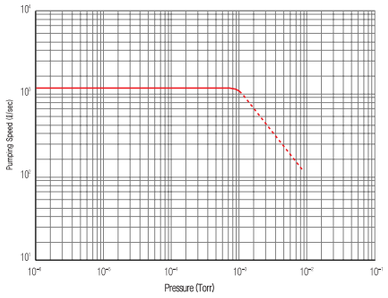
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	1200ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2•min 2×10^{-4} mg/cm^2•min
Oil Capacity	340 ml
Electrical Main Supply	220V/1ϕ
Warm-up Time	20 min
Cooling Water Flow	3.0ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	1KW
Weight	20Kg

Speed Curve



Feature

■특징

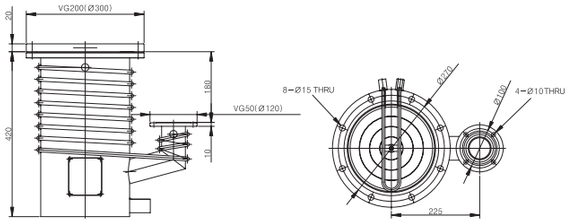
- 뛰어난 배기속도
- Low Oil back stream
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION ▶ DPF-8Z PUMP

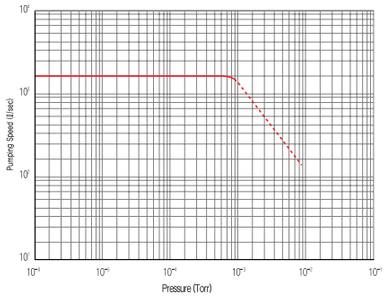
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	1950ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr (1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2•min 2×10^{-4} mg/cm^2•min
Oil Capacity	500 ml
Electrical Main Supply	220V/1ϕ
Warm-up Time	25 min
Cooling Water Flow	4.0ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	1.5kW
Weight	30Kg

Speed Curve



Feature

■특징

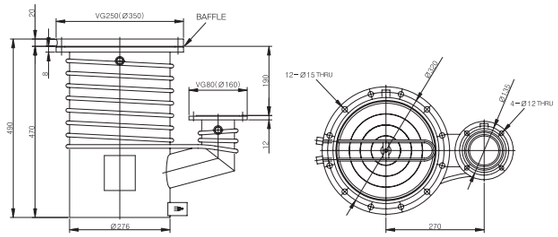
- 뛰어난 배기속도
- Low Oil back stream
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지

■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

DIFFUSION ▶ DPF-10Z PUMP

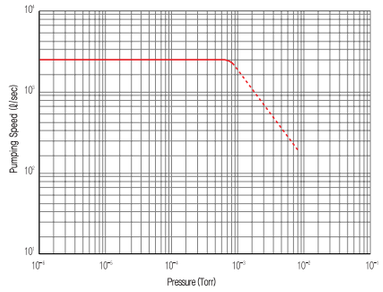
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	3000ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	820 ml
Electrical Main Supply	220V/1ϕ
Warm-up Time	25 min
Cooling Water Flow	5.0ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	1.9KW
Weight	41Kg

Speed Curve



Feature

■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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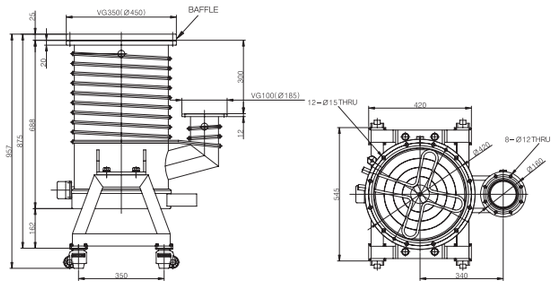
E-mail:sales@pjkodivac.co.kr

DIFFUSION ▶ DPF-14Z PUMP

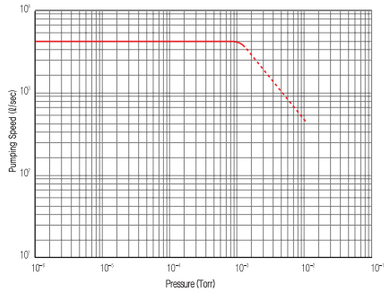
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	5500ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	1600ml
Electrical Main Supply	220V/3ϕ
Warm-up Time	30 min
Cooling Water Flow	7.0ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	4.5KW
Weight	120Kg

Speed Curve



Feature

■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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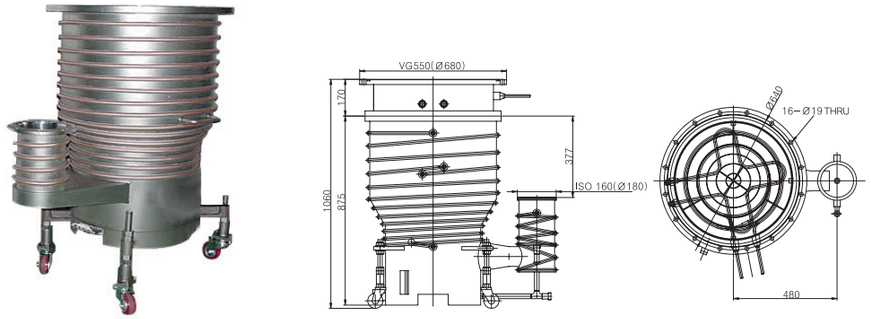
DIFFUSION PUMP ▶ DPF-22ZQ

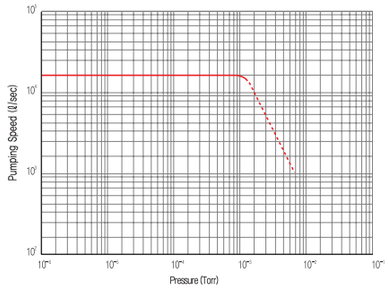
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	13,000ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	5000 ml
Electrical Main Supply	220V/3Ø
Warm-up Time	35 min
Cooling Water Flow	11ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	9KW
Weight	180Kg

Speed Curve



Feature

■특징

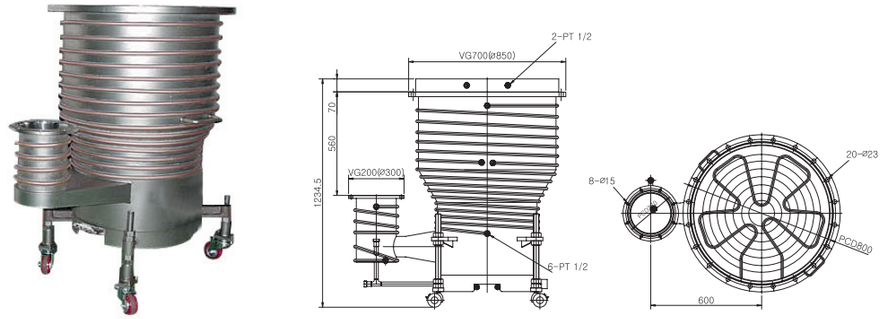
- 뛰어난 배기속도
- Low Oil back stream.
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지
- 22ℓ이상은 주문생산되고 있습니다.

■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

DIFFUSION PUMP ▶ DPF-28ZQ

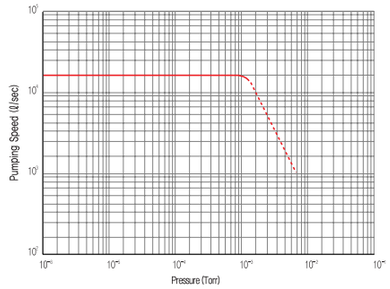
Design / Outline Drawing(mm)



Technical Specification

Pumping Speed	25,000ℓ /sec
Ultimate Pressure -Without Baffle -With Baffle	 5×10^{-7}Torr(6.7×10^{-5}Pa) 1×10^{-7}Torr(1×10^{-5}Pa)
Oil Backstream Rate -Without Baffle -Water Cooled Baffle	 2.5×10^{-2} mg/cm^2 • min 2×10^{-4} mg/cm^2 • min
Oil Capacity	9000 ml
Electrical Main Supply	220V/3Ø
Warm-up Time	40 min
Cooling Water Flow	15ℓ /min
Fore-Vacuum Pressure	2×10^{-1} Torr(27Pa)
Heater Power	15KW
Weight	270Kg

Speed Curve



Feature

■특징

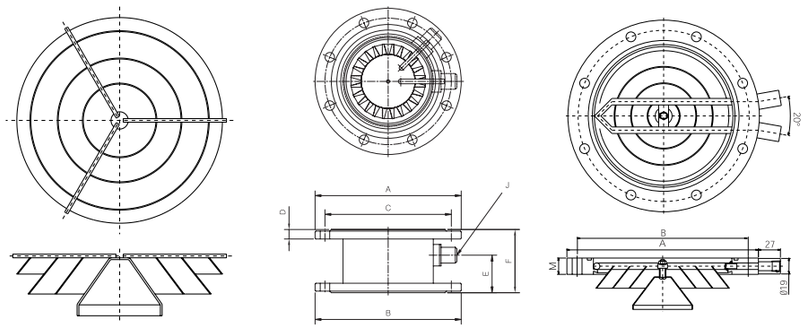
- 뛰어난 배기속도
- Low Oil back stream.
- High Fore-Vacuum Pressure
- 헬륨 누설 탐지기에 의한 정밀한 누설검사
- 분류법에 의한 Jet의 설계로 Oil의 오염을 제거
- Baffle의 장착으로 Backing System의 Oil손실을 방지
- 22ℓ이상은 주문생산되고 있습니다.

■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

DIFFUSION PUMP ▶ ACCESSORIES

Outline Drawing(mm)



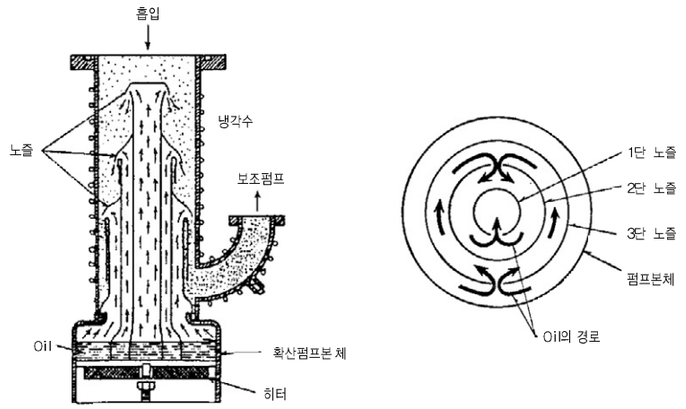
Air Cooled Baffle　　LN2 Cooled Baffle　　Water Cooled Baffle

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.

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 정밀 가공 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
- 3 Way 밸브
- Auto Vent 밸브
- Butterfly 밸브
- Throttle 밸브
- In Line 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.

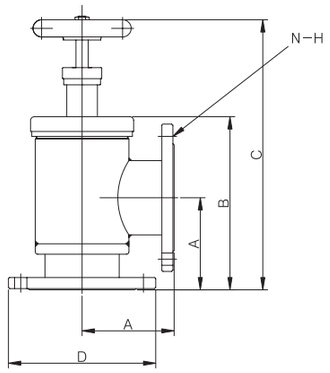
- Gate Valve
- Angle Valve
- 3 Way Valve
- Auto Vent Valve
- Butterfly Valve
- Throttle Valve
- In Line Valve

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)

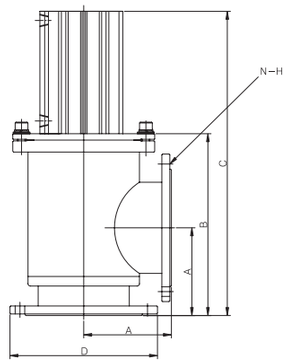


Technical Specification LV TYPE

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



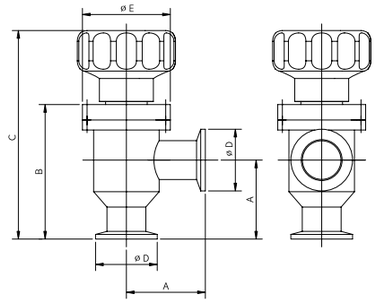
Technical Specification LAV TYPE

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

ANGLE VALVE (LCV, LCAV TYPE)

Design / Outline Drawing(mm)

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

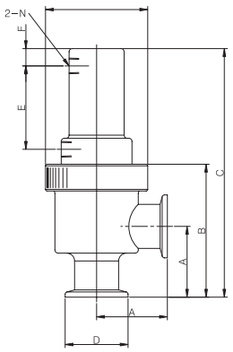


Technical Specification LCV TYPE

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
				ϕ D (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



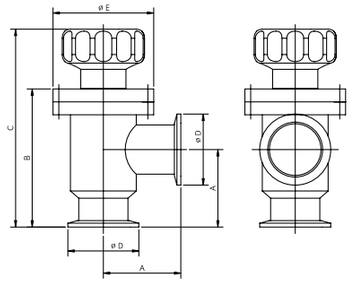
Technical Specification LCAV TYPE

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}			ϕ D (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
				ϕ G (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)
MaxBaking 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

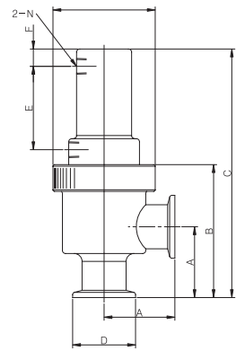


Technical Specification LCVB TYPE

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



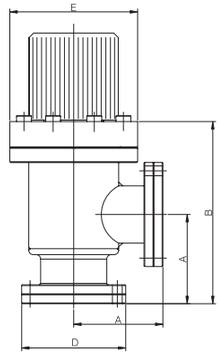
Technical Specification LCAVB TYPE

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^{-9}			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)
MaxBaking Temperature (C)	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

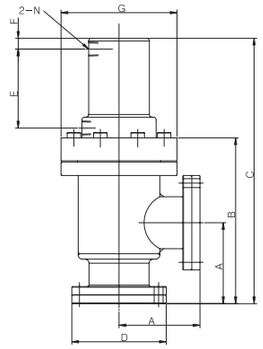


Technical Specification LUVB TYPE

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



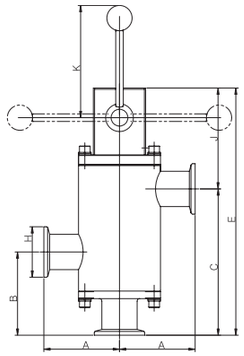
Technical Specification LUAVB TYPE

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
A : Body B : Sealing Material	A : SUS 304 B : VITON		ϕD (mm)	70	114
			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 (3 W , 3 AW TYPE)

Design / Outline Drawing(mm)

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

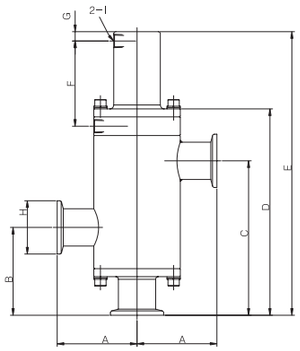


Technical Specification 3 W TYPE

Reference	3W-25	3W-40	Weight (kg)	2.5	4.8
Flange Size	NW 25	NW 40	A (mm)	60	65
Conductance (C-RN l/s)	13	40	B (mm)	66	80
Conductance (C-FX 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-RN l/s)	13	40	A (mm)	60	65
Conductance (C-FX 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
			F (When exd exist+B) (mm)	64	75
Life Cycle	30,000 (Room Temperature)		G (mm)	7	8
			ϕH (mm)	40	55
Air Pressure (kgf/cm²)	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		

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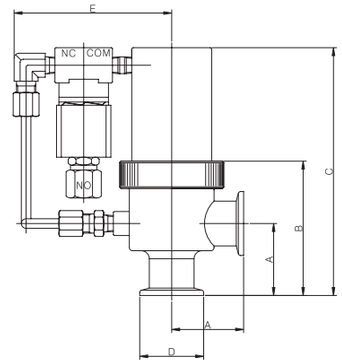
AUTO ▶ AUTO VANT VALVE (LCLV TYPE)

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 정지와동시에 피배기계를 순간적으로 차단하고,
그후에 펌프 측을 Vent 합니다. 따라서, Pump로부터의 오일 역류를방지하고 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.

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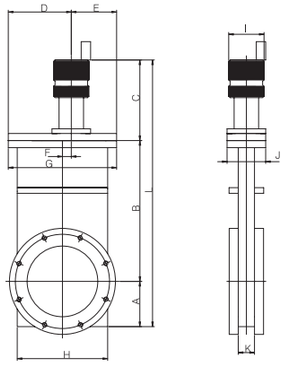
GATE VALVE (TV, TAV TYPE)

Design / Outline Drawing(mm)

• Viton O-ring sealed bonnets at 150℃ • Metal sealed bonnets at 250℃ • Manual operated

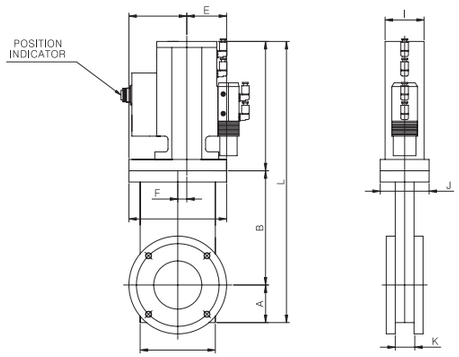


Technical Specification TV TYPE

Reference	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	I (mm)	L (mm)
TV-2.5	52.5	142	86	89	43	23	132	99.5	Φ57	64	32.5	280.5
TV-4	75	223	170	123	61	31	184	140	Φ73	73	40	477
TV-6	97	277	170	162	68	47	230	190	Φ73	83	42	554.5
TV-8	121.5	353.5	153	211	68	71.5	279	239	Φ80	83	42	669.5
TV-10	150.5	438.5	172.8	248	82	83	330	290	Φ95	89	48	803.3

Design / Outline Drawing(mm)

• Viton O-ring sealed bonnets at 150℃ • Metal sealed bonnets at 250℃ • Pneumatical operated



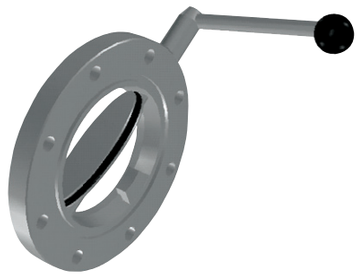
Technical Specification TAV TYPE

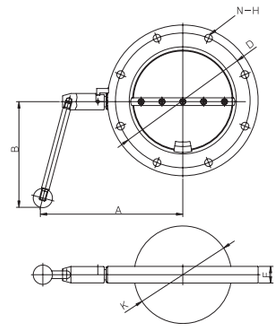
Reference	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	I (mm)	L (mm)
TAV-2.5	52.5	142	117.5	89	43	23	132	99.5	Φ52	64	32.5	312
TAV-4	73.5	223	157.5	123	61	31	184	140	Φ64	83	40	454
TAV-6	97	277	157.5	162	68	47	230	190	Φ64	83	42	531.5
TAV-8	121.5	353.5	176	211	68	71.5	279	239	Φ77	83	42	651
TAV-10	150.5	438.5	208.5	248	82	83	330	290	Φ98	89	48	797.5

BUTTERFLY VALVE (MANUAL, AIR)

Design / Outline Drawing(mm)

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



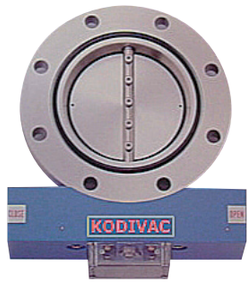


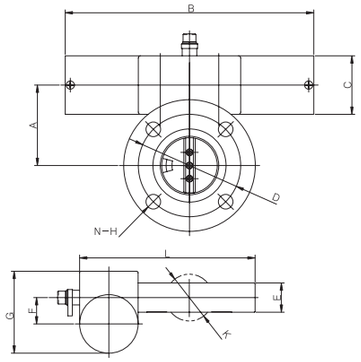
Technical Specification MANUAL

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





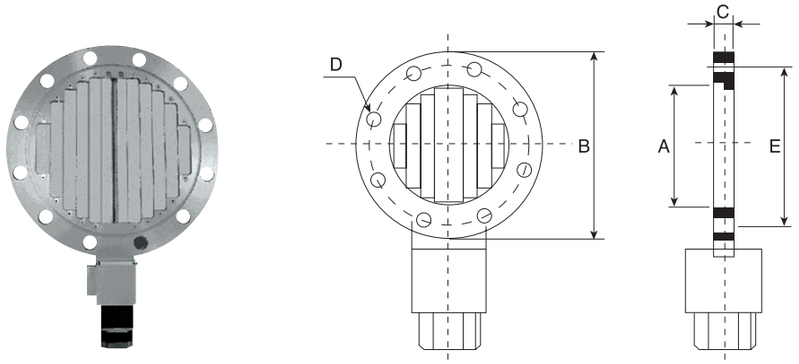
Technical Specification AIR

	A(mm)	B(mm)	φC(mm)	φD(mm)	E(mm)	F(mm)	G(mm)	φH(mm)	φ I(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

THROTTLE VALVE

▶ THROTTLE VALVE (BLIND TYPE)

Design / Outline Drawing(mm)



Technical Specification **BLIND TYPE**

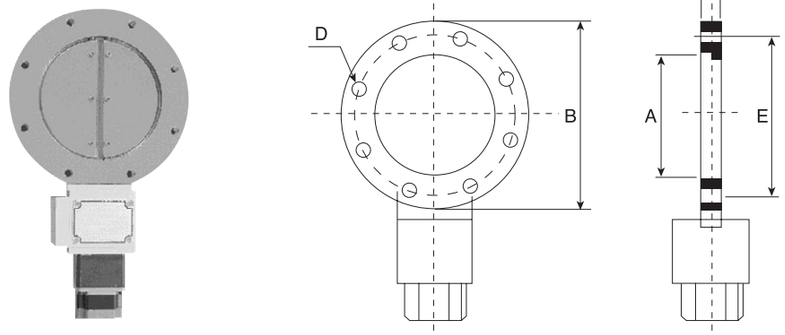
SIZE	A (Inch)	B (Inch)	C (Inch)	D (Inch)	No of Hole (ea)	E (Inch)	Remarks
ISO NW200	8	11.22	0.87	0.43	12	10.24	
ISO NW250	10	13.19	0.87	0.43	12	12.20	
ISO NW320	12	16.73	0.87	0.54	12	15.55	
ISO NW350	14	17.71	0.87	0.54	12	16.53	
ISO NW400	16	20.07	0.87	0.54	16	18.90	
ISO NW500	20	24.01	0.87	0.54	16	22.83	
ISO NW630	25	-	-	-	-	-	Customer Order Made
ISO NW800	31.5	-	-	-	-	-	Customer Order Made
ISO NW1000	40	-	-	-	-	-	Customer Order Made
ANSI ASA8	8	11.00	0.87	0.75	8	9.50	
ANSI ASA10	10	16.00	0.87	0.08	12	14.25	
ANSI ASA12	12	19.00	0.87	1	12	17.00	
ANSI ASA14	14	-	-	-	-	-	Customer Order Made
ANSI ASA16	16	-	-	-	-	-	Customer Order Made
ANSI ASA20	20	-	-	-	-	-	Customer Order Made
ANSI ASA25	25	-	-	-	-	-	Customer Order Made
ANSI ASA31	31.5	-	-	-	-	-	Customer Order Made
ANSI ASA40	40	-	-	-	-	-	Customer Order Made
JIS 200	8	11.81	0.87	0.59	8	10.63	
JIS 250	10	13.77	0.87	0.59	12	12.60	
JIS 300	12	15.74	0.87	0.59	12	14.56	
CF 10″	8	9.97	0.87	0.33	24	9.12	
CF 13.25″	10	13.25	0.87	0.39	30	12.06	
CF 14	12	14.00	0.87	0.03	30	12.81	
CF 16	16	-	-	-	-	-	Customer Order Made

※ 주문제작 사양으로 사전에 문의 바랍니다.

THROTTLE VALVE

▶ THROTTLE VALVE (COMBINATION TYPE)

Design / Outline Drawing(mm)



Technical Specification **COMBINATION TYPE**

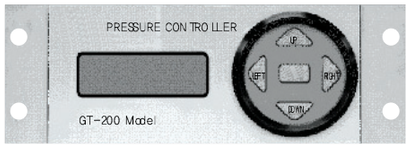
SIZE	A (Inch)	B (Inch)	C (Inch)	D (Inch)	No of Hole (ea)	E (Inch)	Remarks
ISO NW40	1.5	2.16	0.87	-	-	-	Round
ISO NW50	2.0	2.95	0.87	-	-	-	Round
ISO NW63	2.5	5.12	0.87	0.35	4	4.33	Round
ISO NW80	3.0	5.71	0.87	0.35	8	4.92	Round
ISO NW100	4.0	6.50	0.87	0.35	8	5.71	Round & Combination
ISO NW160	6.0	8.86	0.87	0.43	8	7.87	Combination
ISO NW200	8.0	11.22	0.87	0.43	12	10.24	Combination
ANSI ASA2	2.5	6	0.87	0.75	4	4.75	Round
ANSI ASA3	3	7.5	0.87	0.75	4	6.00	Round
ANSI ASA4	4	9	0.87	0.75	8	7.50	Round & Combination
ANSI ASA5	5	9	0.87	0.75	8	7.50	Combination
ANSI ASA6	6	11	0.87	0.75	8	9.50	Combination
ANSI ASA8	8	11	0.87	0.75	8	9.50	Combination
JIS 50	2	4.72	0.87	0.39	4	3.94	Round
JIS 100	4	7.28	0.87	0.47	8	6.30	Round & Combination
JIS 150	6	9.25	0.87	0.47	8	8.27	Combination
JIS 150	8	11.81	0.87	0.59	8	10.63	Combination
CF 2-3/4″	1.5	2.73	0.87	0.26	6	2.31	Round
CF 2-3/8″	2	3.37	0.87	0.33	8	2.85	Round
CF 4-1/2″	2.5	4.47	0.87	0.33	8	3.63	Round
CF 4-5/8″	3	4.62	0.87	0.33	10	4.03	Round
CF 6″	4	5.97	0.87	0.33	16	5.13	Round & Combination
CF 6-3/4″	5	6.75	0.87	0.33	18	5.97	Combination
CF 8″	6	7.97	0.87	0.33	20	7.13	Combination
CF 10″	8	9.97	0.87	0.33	24	9.13	Combination

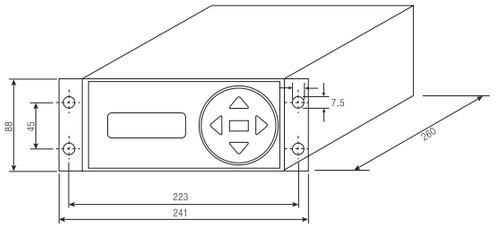
※ 주문제작 사양으로 사전에 문의 바랍니다.

THROTTLE VALVE

▶ THROTTLE VALVE CONTROLLER

Design / Outline Drawing(mm)





Technical Specification **CONTROLLER**

Description	Model GT-200
Speed-Open to Close	Less than 2sec
Resolution	1/10,000
Pressure Input Signal	0-10VDC, 0-5V Selectable
Input Power Requirement	100-110V, 180-220V, 50/60Hz
Set Point Position(Channel)	6 Total Position adjustable from front Pannel, RS-232C
Controller Repeatability	±0.1% of Full Scale
Ambient Operating Temperature	15℃~45℃
Output Votage	Standard±15VDC @ 0.5Amp Max
Valve Operated	All Throttle Valve
Zeroing	Local / Remote transducer
Valve Position	Standard
Self-Tuning Control	Standard
PID Control	Standard
Size	Standard 1/2 Rack Packing, 88*241*260
Display	20 Character by 4- Line LCD(Backlight)
Display Vacuum	mTorr, Torr, mBar, Pascal
Interface	Front Pannel, RS-232C,TTL
Controller Methode	Pressure
MFC Set Point Function	3 Point, 0-5V
Speed of Response Time	Less than 0.1Sec
Software Methode	PID Auto Tunning
Valve Heater Loctaion	Inside of Valve Body

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FLANGES & FITTING

Flange는 배관 및 Component의 결합에 있어 상호호환이 가능하도록 규격화 되어야 하며, 정확하게 Sealing 이 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.

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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.

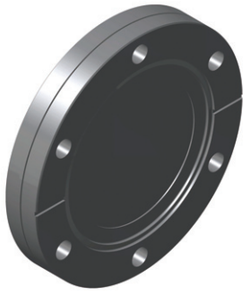
KODIVAC Flange takes advantage of standardized sizes of wide scope, credence from excellent quality, and availability in wide range of medium, high, and ultra high vacuum. specially, most of flanges have ISO Standard Sizes and interchangeability, and can be connected with standard size flanges. Also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

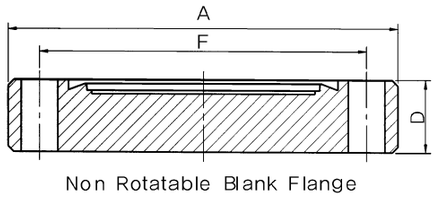
현재 PJ KODIVAC에서 생산되고 있는 Flange는
- CF TYPE
- NW TYPE
- JIS TYPE
  - · VG TYPE
  - · VF TYPE 이 생산되고 있습니다.

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

CF BLANK FLANGES

Design / Outline Drawing(mm)



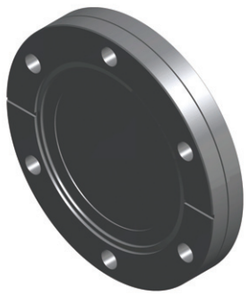


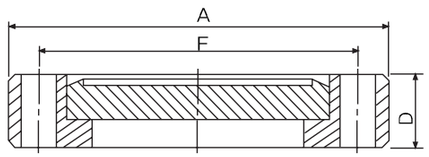
Non Rotatable Blank Flange

Technical Specification CF NON ROTABLE BLANK FLANGE

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

Design / Outline Drawing(mm)





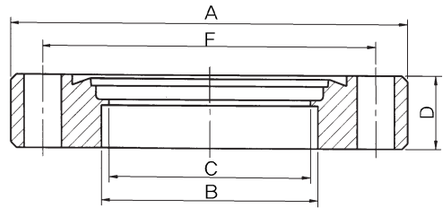
Rotatable Blank Flange

Technical Specification CF ROTABLE BLANK FLANGE

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

Design / Outline Drawing(mm)

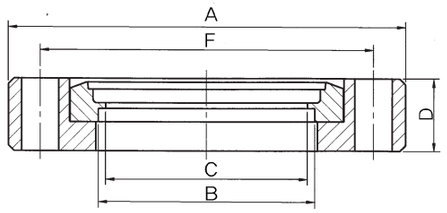


Non Rotatable Flange

Technical Specification CF NON ROTABLE BORED FLANGES(TAPPED TYPE)

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)

Design / Outline Drawing(mm)



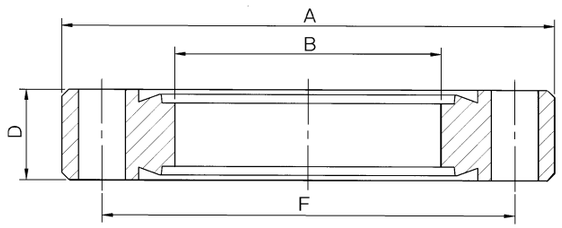
Rotatable Flange

Technical Specification CF ROTABLE BORED FLANGES(TAPPED TYPE)

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

Design / Outline Drawing(mm)



Double Side flange

Technical Specification CF DOUBLE SIDE FLANGES

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 100 DS-1	152	Blank	20.0	130.3	16 - 8.4
152	6	CF 100 DS-2	152	102.0	20.0	130.3	16 - 8.4
203	8	CF 150 DS-1	203	Blank	22.0	181.0	20 - 8.4
203	8	CF 150 DS-2	203	153.5	22.0	181.0	20 - 8.4
253	10	CF 200 DS-1	253	Blank	25.0	231.8	24 - 8.4
253	10	CF 200 DS-2	253	203.5	25.0	231.8	24 - 8.4
305	12	CF 250 DS-1	305	Blank	28.0	284.0	32 - 8.4
305	12	CF 250 DS-2	305	255.5	28.0	284.0	32 - 8.4
336	13 - 1/4	CF 336 DS-1	336.5	Blank	28.5	306.3	30 - 10.5
336	13 - 1/4	CF 336 DS-2	336.5	274.5	28.5	306.4	30 - 10.5

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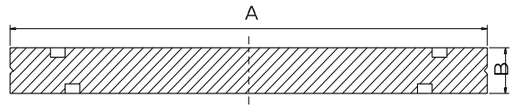
FLANGE
▶ ISO FLANGES

Design / Outline Drawing(mm)

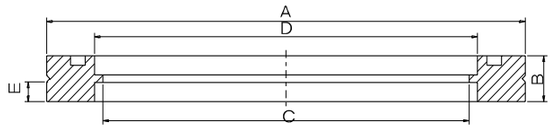


Blank Flange

Technical Specification ISO BLANK FLANGES

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

Design / Outline Drawing(mm)



Flange

Technical Specification ISO BORED FLANGES

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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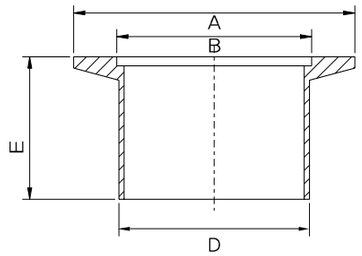
FLANGE ▶ FLANGES

Design / Outline Drawing(mm)

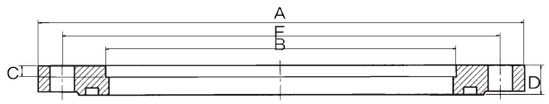


Socket Flange

Technical Specification NW SOCKET FLANGES

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

Design / Outline Drawing(mm)



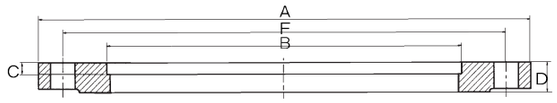
Non Rotatable VG Bored Flange

Technical Specification NON ROTATABLE VG BORED FLANGES (JIS)

Flange Type(JIS) A	Flange Type(JIS) B	Reference	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	E (mm)
10	3/8	VG 10	70	17.3	2.5	8	50	4 - 10
20	3/4	VG 20	80	27.2	2.5	8	60	4 - 10
25	1	VG 25	90	34.0	3	8	70	4 - 10
40	1 1/2	VG 40	105	48.6	3	10	85	4 - 10
50	2	VG 50	120	60.5	3	10	100	4 - 10
65	2 1/2	VG 65	145	76.3	3	10	120	4 - 12
80	3	VG 80	160	89.1	4	12	135	4 - 12
100	4	VG 100	185	114.3	4	12	160	8 - 12
125	5	VG 125	210	139.8	4	12	185	8 - 12
150	6	VG 150	235	165.2	4	12	210	8 - 12
200	8	VG 200	300	216.3	7	16	270	8 - 15
250	10	VG 250	350	267.4	7	16	320	12 - 15
300	12	VG 300	400	318.5	7	16	370	12 - 15
350	14	VG 350	450	355.6	9	20	420	12 - 15
400	16	VG 400	520	406.4	9	20	480	12 - 19
450	18	VG 450	575	457.2	9	20	535	16 - 19
500	20	VG 500	625	508.0	10	22	585	16 - 19
550	22	VG 550	680	558.8	11	24	640	16 - 19
600	24	VG 600	750	609.6	11	24	700	16 - 23
650	26	VG 650	800	660.4	11	24	750	20 - 23
700	28	VG 700	850	711.2	11	26	800	20 - 23
750	30	VG 750	900	762.0	11	26	850	20 - 23
800	32	VG 800	955	812.8	11	26	905	24 - 23
900	36	VG 900	1065	914.4	11	28	1015	24 - 25
1000	42	VG 1000	1170	1016.0	11	28	1120	24 - 25

FLANGE ▶ VF FLANGES

Design / Outline Drawing(mm)



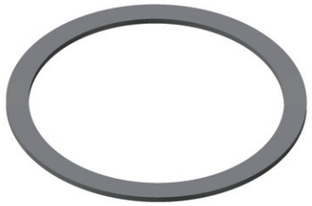
Non Rotatable VF Bored Flange

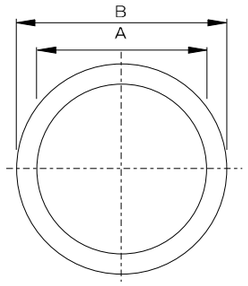
Technical Specification NON ROTATABLE VF BORED FLANGES (JIS)

Flange Type mm	Flange Type inch	Reference	A (mm)	B (mm)	C (mm)	D (mm)	F (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

Design / Outline Drawing(mm)

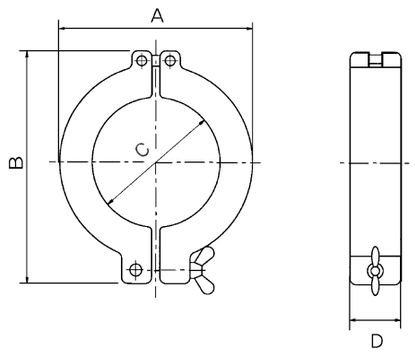




Technical Specification CF COPPER GASKETS

Flange Type	PJKODIVAC Flange	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

Design / Outline Drawing(mm)

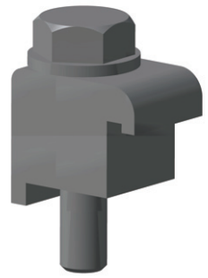


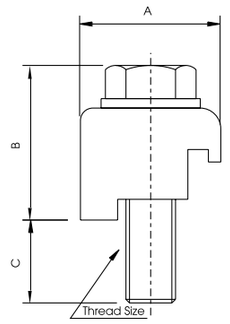
Technical Specification NW QUICK CLAMPS

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

ISO CLAW CLAMPS

Design / Outline Drawing(mm)

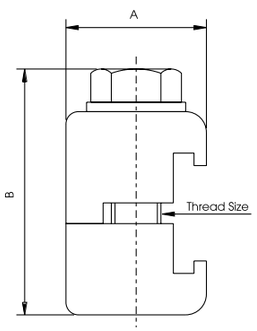




Technical Specification ISO SINGLE CLAW CLAMPS

Flange Type	A (mm)	B (mm)	Thread Size	Clamps Required
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

Design / Outline Drawing(mm)



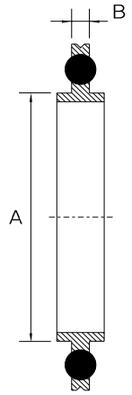
Technical Specification ISO DOUBLE CLAW CLAMPS

Flange Type	A (mm)	B (mm)	Thread Size	Clamps Required
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

Design / Outline Drawing(mm)

• Oring – NBR (Option : Viton)



Technical Specification ISO CENTER RINGS

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

Design / Outline Drawing(mm)

• Oring – NBR (Option : Viton)

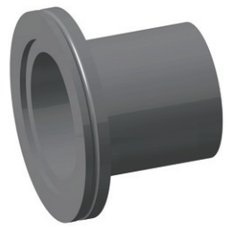
Technical Specification NW CENTER RINGS

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

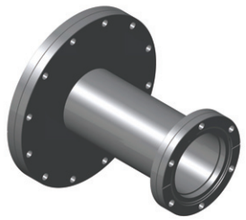
FLANGES

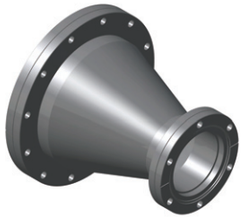
Design NIPPLES - CF HALF, CF FULL

Design NIPPLES - NW HALF, ISO HALF, ISO FULL



Design REDUCER - CF, CF CONICAL, NW CONICAL





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

FLANGE

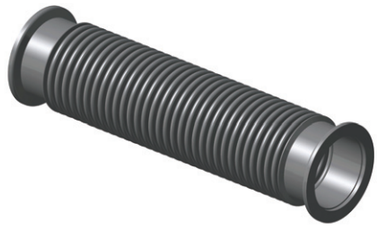
▶ FLANGES

Design TEES - CF, NW, ISO



Design 4-WAYS - NW, ISO


Design TUBES - NW FLEXIBLE



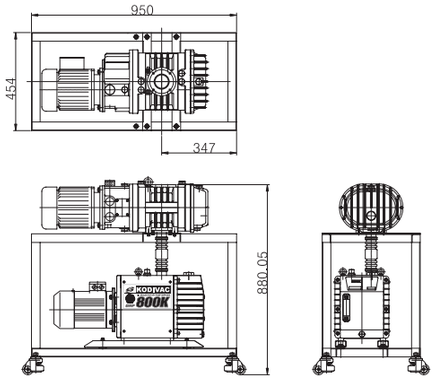
SYSTEM

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)

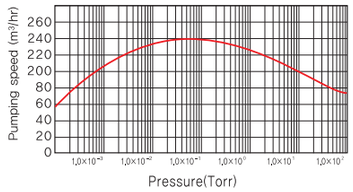


Technical Specification

NO.	구 분	기 종	Booster KBP-300	Oil Rotary GHP-800K
1	Ultimate Pressure	Torr	5×10^{-4}	
2	Pumping speed 60HZ	m³/hr	445	58
3	Pumping speed 60HZ	L/min	7,400	960
4	Effective pumping sp	L/min	3,900	
5	Motor power	KW	1.5	1.5
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	1750
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	0.8	3.5
	Oil capacity / Coupling	liter	1.5	
	Oil capacity / Shaft Seal	liter	1.25	
10	Inlet port		ISO-63	NW 40
11	Outlet port		ISO-40	PF 1½
12	Weight	kg	65	68
13	Backing Pump		GHP-800K / 1000K	
14	Coolinge Method		공랭	

Effective pumping sp = $S_{BP}{}^2/2S_{BP}-S_{RP}$

Speed Curve



Feature

■특징

• 콤팩트한 설계구조로 조합된 대용량 배기 시스템
• 운송이 용이하며 설치가 간편

■Features

• High capacity system which is assembled by compact structure
• Easy installation and transpotation

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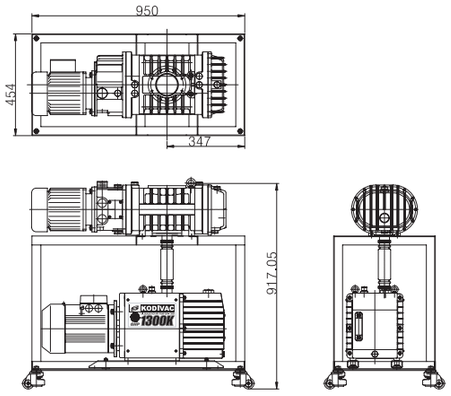
E-mail:sales@pjkodivac.co.kr

▶ Combination Exhaust System KBP-600 / GHP-1300K

Design / Outline Drawing(mm)

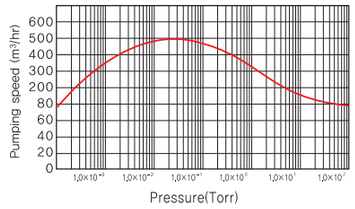


Technical Specification

NO.	구 분	기 종	Booster KBP-600	Oil Rotary GHP-1300K
1	Ultimate Pressure	Torr	5×10^{-4}	
2	Pumping speed 60HZ	m³/hr	672	96
3	Pumping speed 60HZ	L/min	11,200	1,600
4	Effective pumping sp	L/min	6,000	
5	Motor power	KW	1.5	4
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	1750
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	0.8	6.2
	Oil capacity / Coupling	liter	1.5	
	Oil capacity / Shaft Seal	liter	1.25	
10	Inlet port		ISO-100	NW 40
11	Outlet port		ISO-63	PF 1½
12	Weight	kg	80	95
13	Backing Pump		GHP-1300K / 1600K	
14	Coolinge Method		공랭	

Effective pumping sp = $S_{BP}{}^2/2S_{BP}-S_{RP}$

Speed Curve



Feature

■특징

• 콤팩트한 설계구조로 조합된 대용량 배기 시스템
• 운송이 용이하며 설치가 간편

■Features

• High capacity system which is assembled by compact structure
• Easy installation and transpotation

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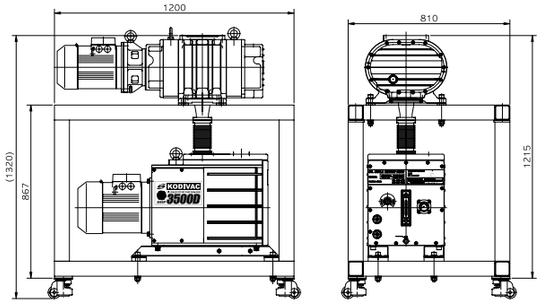
▶ Combination Exhaust System KBP-1200 / GHP-3500D

Design / Outline Drawing(mm)

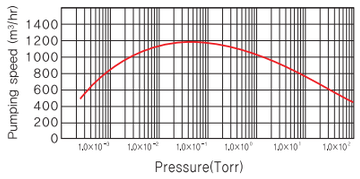


Technical Specification

NO.	구 분	기 종	Booster KBP-1200	Oil Rotary GHP-3500D
1	Ultimate Pressure	Torr	5×10^{-4}	
2	Pumping speed 60HZ	m³/hr	1,200	211
3	Pumping speed 60HZ	L/min	20,000	3500
4	Effective pumping sp	L/min	10,900	
5	Motor power	KW	4	5.5
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	1750
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	1.1	20
	Oil capacity / Coupling	liter	1.2	
	Oil capacity / Shaft Seal	liter	1.15	
10	Inlet port		ISO-160	ISO-63
11	Outlet port		ISO-100	ISO-40
12	Weight	kg	200	180
13	Backing Pump		GHP3500D / GHP-6000	
14	Coolinge Method		수냉	

Effective pumping sp = $S_{BP}{}^2/2S_{BP}{}^{-S}{}_{RP}$

Speed Curve



Feature

■특징

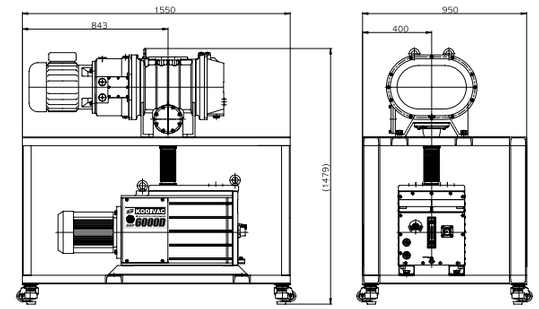
• 콤팩트한 설계구조로 조합된 대용량 배기 시스템
• 운송이 용이하며 설치가 간편

■Features

• High capacity system which is assembled by compact structure
• Easy installation and transpotation

▶ Combination Exhaust System KBP-2700 / GHP-6000D

Design / Outline Drawing(mm)

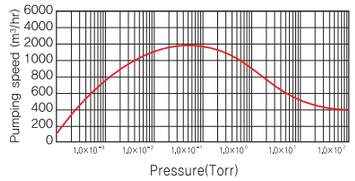


Technical Specification

NO.	구 분	기 종	Booster KBP-2700	Oil Rotary GHP-6000D
1	Ultimate Pressure	Torr	5×10^{-4}	
2	Pumping speed 60HZ	m³/hr	3,220	350
3	Pumping speed 60HZ	L/min	53,600	5,800
4	Effective pumping sp	L/min	28,300	
5	Motor power	KW	7.5/11	8.6
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	1750
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	3.5	28
	Oil capacity / Coupling	liter	6.5	
	Oil capacity / Shaft Seal	liter	1.5	
10	Inlet port		ISO-160	ISO-63
11	Outlet port		ISO-100	ISO-40
12	Weight	kg	315	200
13	Backing Pump		GHP-6000D	
14	Coolinge Method		수냉	

Effective pumping sp = $S_{BP}{}^2/2S_{BP}{}^{-S}{}_{RP}$

Speed Curve



Feature

■특징

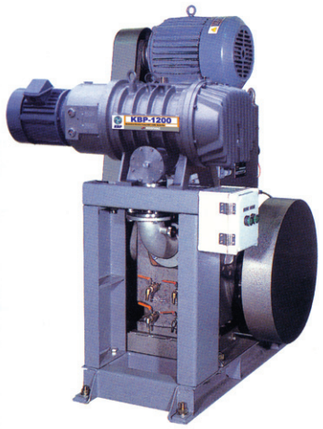
• 콤팩트한 설계구조로 조합된 대용량 배기 시스템
• 운송이 용이하며 설치가 간편

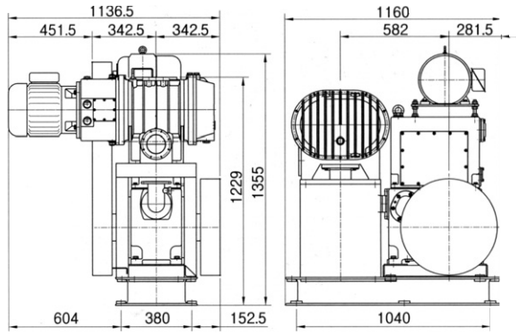
■Features

• High capacity system which is assembled by compact structure
• Easy installation and transpotation

▶ Combination Exhaust System KBP-1200 / KRP-4500

Design / Outline Drawing(mm)

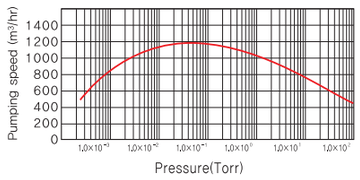




Technical Specification

NO.	구 분	기 종	Booster KBP-1200	Oil Rotary KRP-4500
1	Ultimate Pressure(N2)	Torr(pa)	5×10^{-4}(6.5×10^{-2})	
2	Pumping speed 60HZ	m^3/hr	1,200	270
3	Pumping speed 60HZ	L/min	20,000	4500
4	Effective pumping sp	L/min	11,260	
5	Motor power	KW	4	5.5
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	450
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	1.1	12
	Oil capacity / Coupling	liter	1.2	
	Oil capacity / Shaft Seal	liter	1.15	
10	Inlet port		ISO-160	ISO-80
11	Outlet port		ISO-100	ISO-80
12	Weight	kg	200	440
13	Coolinge Method		수냉	

Speed Curve



Feature

■특징

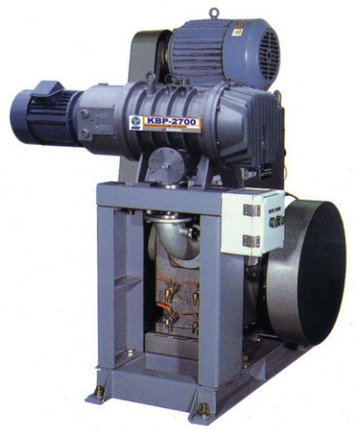
- 콤팩트한 설계구조로 조합된 대용량 배기 시스템
- 운송이 용이하며 설치가 간편
- 간편한 유니트 조작기능 부착
- 오일트랩이 내장되어 오일의 비산방지를 최소화

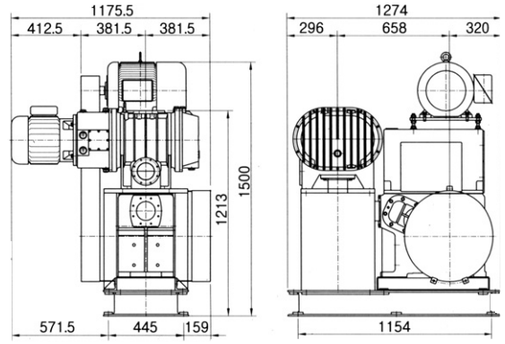
■Features

- High capacity system which is assembled by compact structure.
- Easy installation and transpotation.
- Convenient operation function unit.
- Minimize to prevent oil flying caused by installation of exhausting filter.
- Built-in trap minimize oil scattering.

▶ Combination Exhaust System KBP-2700 / KRP-8000

Design / Outline Drawing(mm)

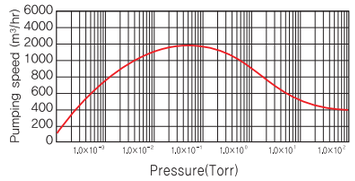




Technical Specification

NO.	구 분	기 종	Booster KBP-2700	Oil Rotary KRP-8000
1	Ultimate Pressure(N2)	Torr(pa)	5×10^{-4}(6.5×10^{-2})	
2	Pumping speed 60HZ	m^3/hr	3,220	480
3	Pumping speed 60HZ	L/min	53,600	8000
4	Effective pumping sp	L/min	28,800	
5	Motor power	KW	7.5/11	11
6	Voltage	Volt	220/380	220/380
7	Rotation speed(60HZ기준)	r.p.m	3000	450
8	Type oil		U/G 20	MR-200
9	Oil capacity / Gear	liter	3.5	20
	Oil capacity / Coupling	liter	6.5	
	Oil capacity / Shaft Seal	liter	1.5	
10	Inlet port		ISO-160	ISO-100
11	Outlet port		ISO-100	ISO-100
12	Weight	kg	315	770
13	Coolinge Method		수냉	

Speed Curve



Feature

■특징

- 콤팩트한 설계구조로 조합된 대용량 배기 시스템
- 운송이 용이하며 설치가 간편
- 간편한 유니트 조작기능 부착
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■Features

- High capacity system which is assembled by compact structure.
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- Convenient operation function unit.
- Minimize to prevent oil flying caused by installation of exhausting filter.
- Built-in trap minimize oil scattering.

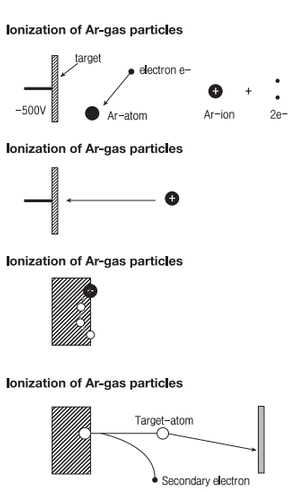
▶ SPUTTERING SYSTEM, PRODUCT

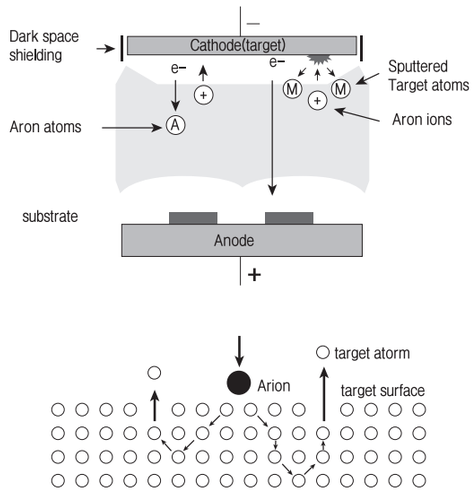
SPUTTERING SYSTEM

■SPUTTERING 이란?

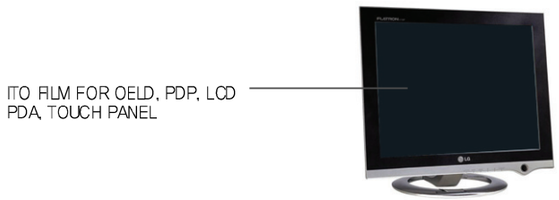
– 활성화된 입자의 충돌에 의한, Target 물질에서의 입자의 방출로서 이루어지는 증착기술

■STEP of SPUTTERING



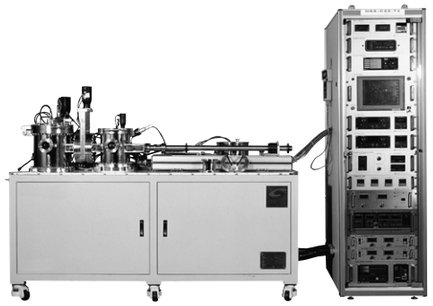


SPUTTERING PRODUCT



▶ SPUTTERING SYSTEM GAIA-30S, 60S, 140S

Design / Technical Specification GAIA-30S



Vacuum Chamber	ϕ 260 × 265H Load-Lock Chamber
Ultimate Pressure	2× 10^{-7} Torr
Substrate(Lens Dome)	ϕ 115 / Rotation / Up-Down
Vacuum Pumping	R/P, TMP
Cathode Gun	4 inch
Power Supply	RF / DC (ETCH, BIAS Included)
APC System	Up-Stream Method
Coating Controll	Thickness Monitor
Controller	Touch with PLC Program

※Application : E-Beam device coating (Os, Ru, W)

Design / Technical Specification GAIA-60S

Vacuum Chamber	ϕ 700 × 1100H
Ultimate Pressure	2× 10^{-6}Torr
Substrate(Lens Dome)	ϕ 500 × 350 ℓ / Rotation / Cooling
Vacuum Pumping	R/P, MBP, D/P Separate T.MP IN SPUTTER ZONE
Cathode Gun	100W × 350L/3SET
Power Supply	RF / DC (ETCH, BIAS Included)
APC System	Down-Stream Method
Controller	PLC Program

※Application : Optical film multi-layer coating, Decoration, Reactive Sputtering, etc

Design / Technical Specification GAIA-140S

Vacuum Chamber	ϕ 1400 × 1400H
Substrate Jig	OD1200 × 1150H
Vacuum Pumping	R/P, MBP, D/P
Cathode Target	3", 6 Sets
Power Supply	DC
APC System	Down-Stream Method
Controller	PLC Program

※Application : Decoration, Reactive coating, Spectacles flame, Mirror, Watch band & frame, etc

▶ EVAPORATION SYSTEM GAIA-75E

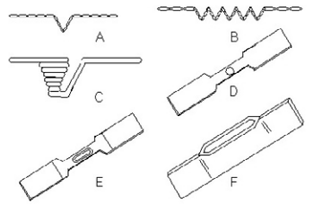
EVAPORATION SYSTEM

■EVAPORATION 이란?

- 진공분위기 (10^{-5}~10^{-6} Torr)에서, Heating Source에서의 원자가 Vaporized형태로 형성되어 Substrate에 증착되는 과정

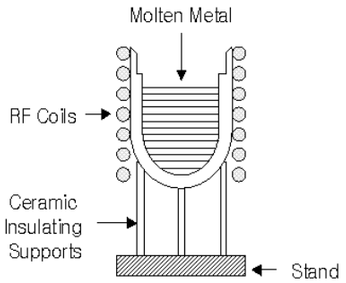
■EVAPORATION SOURCE

①Resistance Heated Sources



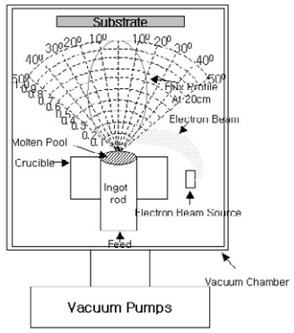
■Heating Element : Refractory Metal, W, Mo, etc

②Induction Heated Sources



■RF Coil에 의한 발열로서 Source를 가열하는 방식

③Electron Beam Heated Sources



■Electron Source로 부터의 전자의 방출이 전기장 내에서 가속, 가열하여 원자들을 Vaporizing 시키는 방법

Design / Technical Specification GAIA-75E

Vacuum Chamber	ϕ750 × 1000
Ultimate Pressure	3 × 10^{-7} Torr
Substrate (Lens Dome)	ϕ200 / Revolution & Rotation, Both Side Coating
Vacuum Pumping	R/P : 960ℓ/sec MBP : 600 m3/h D/P : 13,000ℓ/sec
Evaporation Source	Resistive Heating, Ion-Gun
Coating Controller	Touch Screen with PLC Thickness Monitor
Poly Cold	PFC 550

※Application : Optical lens, Spectales lens, etc

▶ CVD SYSTEM GAIA-80C

CVD SYSTEM

■CVD(Chemical Vapor Deposition) 이란?

- 반응성의 Gas를 Chamber에 주입하여 적당한 활성 및 반응에너지를 가하여 기판의 표면에 원하는 박막을 증착하는 기술

■CVD 사용예

- 반도체 : Si, GaAs, Sic -절연막 : SiO_2, Si_3, N_4 -금속막 : W, Al

■CVD 장점

- 반도체 산업에 있어서 응용분야가 다양
- 공정의 정밀한 제어가 가능
- 여러가지 화합물 증착에 유리
- 같은 원료로부터 조성이나 결정구조가 다른 재료를 얻을 수 있다.
- PVD에 비해 저온 공정이 가능하다.

■CVD 종류

■기판과 반응기 벽의 온도에 따라 : • Hot Wall CVD • Cold Wall CVD
■반응기 내부의 압력에 따라 : • APCVD(Atmosphere Pressure CVD) • LPCVD(Low Pressure CVD)
■활성화 에너지 공급방법에 따라 : • Thermal CVD • PECVD(Plasma Enhanced CVD) • PCVD(Photo CVD)
■반응온도에 따라 : • High Temperature CVD • Low Temperature CVD
■증착되는 막의 종류에 따라 : • Dielectric CVD • Poly and Metal CVD

Design / Technical Specification GAIA-80C

CVD Type	PECVD
Vacuum Chamber	ϕ800 × 350H
Substrate Jig	OD620 × 150H
Vacuum Pumping	R/P, TMP
Shower Head	OD650 × 100H
Power Supply	RF
APC System	Down-Stream Method
Controller	PLC Program

※Application : Anti-corrosive, Deabrasive coating, etc

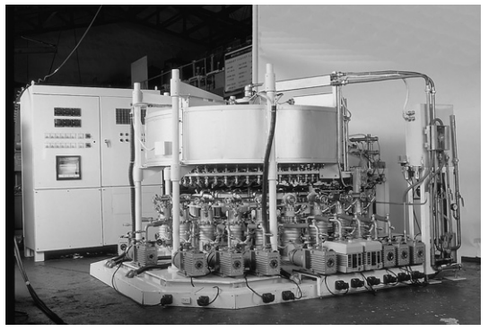
CENTER VALVE TYPE SEALING EQUIPMENT

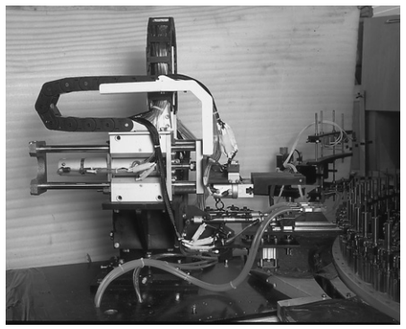
Center Valve Type VFD 배기장치

Center Valve Type Sealing Equipment는 자동차, Audio, 가전제품의 Monitor 등 우리들의 일상생활에 널리 사용되고 있는 형광표시관(V.F.D)을 진공배기 하기 위한 Center Valve식 장치입니다. Center Valve Type Sealing Equipment는 다품종 생산에 적합하도록 개발되었고, 현재 입출구 자동화 System의 개발로 생산성 향상에 큰 도움을 주고 있습니다. Center Valve Type Sealing Equipment는 Turn Table위의 배기 Head에 취부된 표시관을 Index Less구동으로 배기, K-분해, TIP-OFF의 순서로 자동처리하며 도중 승온, 진공CHECK, 자동 취출 등의 기능이 있습니다.

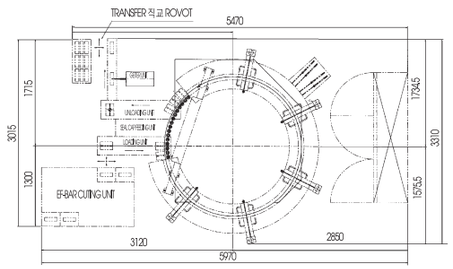
Center Valve Type sealing equipment is used for ventilation Vacuum Fluorescence Display(V. F. D) used in our daily lives like cars, audio, appliance's monitor and so on. Center Valve Type Sealing Valve is designed to comply with multi-purpose production. And it contributes to improve production efficiency through entrance-exit automation system development. Center Valve Type Sealing Equipment is designed to enable automatic exhaust, lighting(degassing), Tip-Off of target product(VFD) which are inserted into exhaust head on Turn Table, and it can raise the temperature during process, check the vacuum degree, unloading automatically.

Design

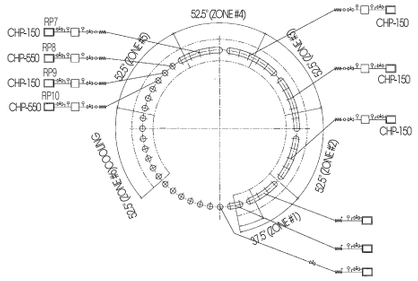




Outline Drawing(mm)



Lay Out



Technical Specification

Item	Specification	Remarkable
Ultimate Pressure	at compression head : 4.0×10^{-4} Torr or less	at room tempeature after outgassing without specimen
	at diffusion pump manifold : 3.0×10^{-6} Torr or less	at room tempeature after outgassing without specimen
Pump Down Time	head vacuum pressure : take 940sec from 1atm to 4×10^{-3} Torr	at room tempeature after outgassing without specimen
Index	travel time : 2.5sec stop time : 14 – 40sec division No : 48 division	
Power	3φ, 220V, 50kW, 60Hz	
Water Cooling	1 – 2Kg/Cm²	
Air Pressure	4 – 6Kg/Cm²	
Gas	O^2, LPG, AIR	
Furnace	MAX500℃ NOR340℃ 균열 :165W×165H 350℃±7℃	

■구성

- Turn Table 및 구동기구
- 진공배기계
- 가열로
- Lighting (K-분해)
- 자동 절취 gas burner부
- 전기부

■System Configuration

- Turn table & driving system
- Vacuum pumping system
- Hot zone assembly
- Lighting
- Automatic cutting, gas burner part
- Electric control panel

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.

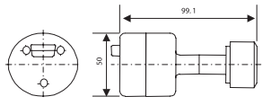
(S):Meter separate (M):Meter Relay A:Automatically Change

Products	Model (Indicator)	Gauge Head	Range
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
	PT-9P(S)	P-09	A
	PT-3P(M)	P-3	1
	PT-4P	P-3	1
Cold-cathode ionization gauge	CT-3DA	C-4A	A
	CT-2P(M)	C-1A	1
Combonation vacuum gauge	PC-3DA	RG-1X2 C-4A	A
Hot-cathode ionization gauge	IT-3DA(BA)	IV-55	A
	IT-3DA(SC)	SC-45	A
	IT-10P	V-2000 W/N T-1000	4 5
	IT-L20P	IV-2000	1

(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}

GAUGE TRANSDUCER ▶ GAUGE FTR-1, TRP-10/TRP-10SP

Design / Outline Drawing(mm) FTR-1



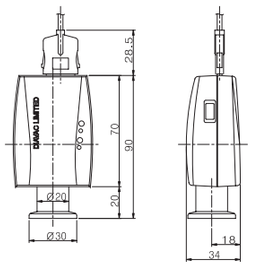
Features and application

- 펄스신호 전송방식-노이즈 내성강화
- 고속데이터 통신 및 단시간 자동영보정이 가능
- 부식성이 없는곳은 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 23℃)
Zero temperature coefficient	between 10 to 50℃ of service temperature
Temperature coefficient span	between 10 to 50℃ 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 50℃ at storage: -10 to 70℃
Material used in vacuum part	Silicon, SiO2, SUS304, Viton

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



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 to 10 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

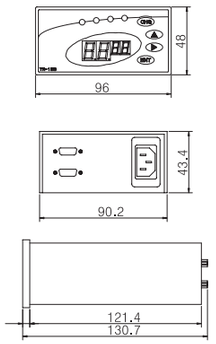
Temperature range	at operation: 5 to 60℃ at storage: -10 to 65℃
Material used in cover	ABS-resin
Protector structure	corresponding to IP40
Vacuum connection	NW16 (standard) / Ø15 (option)

Circuit Part

Measuring system	constant temperature system
Measuring range	1.0 X 10 to 5.0X 10⁵Pa
Pressure resolving power	Mantissa (2-digits including 1 digit under decimal point) + exponential with sign
Analog output	DC 0to 10V output voltage =LOG(P+3)load resistance: 10kΩ or more voltage resolving power 2.4mV
Attachment	atmospheric pressure (ATM), high vacuum (H/V), volume adjustable from outside
Digital communication	RS-485, 2-line system, semi-dial, number of channels: 0 to 15ch (9600bps, 8databits, even parity, 1stopbit)
Set point*	2-points independent, NPN-open collector system negative logic, output ratingDC 30V 50mA
Power rating	DC24V(12 to 30V 35mA/55mA(TRP-10SP)

GAUGE TRANSDUCER ▶ GAUGE TR-1DB, PSG-1

Design / Outline Drawing(mm) TR-1DB



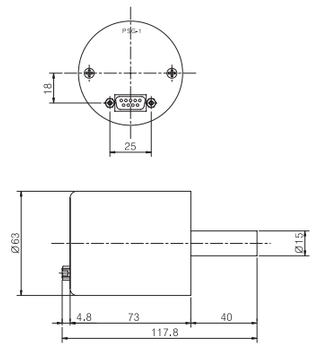
Features and application

- 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 10⁻⁷ to 5.0 X 10³Pa	
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 60℃(storage temperature: -10 to 65℃)	

Design / Outline Drawing(mm) PSG-1



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

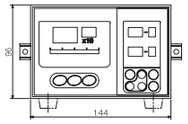
Service ambient temperature	0 to 40℃
Color	Munsell value N-6.5
Exterior dimension	Ø63 X 120L
Vacuum connection	Ø15, option-NW16
Connector shape	9-pins D-SUB connector

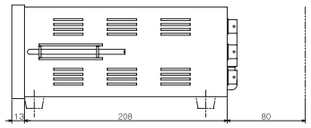
Circuit Part

Measuring method		Constant temperature system
Measuring range		1.0 X 10⁻⁷ to 5.0 X 10³Pa
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-point2 points independent
Power voltage		DC 12 to 15, 24V
Current consumption		150mA

GAUGE TRANSDUCER ▶ GAUGE PT-3DA, PT-9P

Design / Outline Drawing(mm) PT-3DA





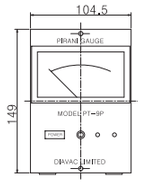
Features and application

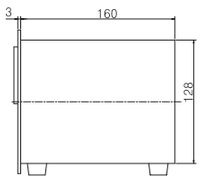
·자동온도 조절시스템 제어기능(히스테리시스치)
·BCD출력 등 확장기능으로 장치제어 FA화 적용
·6점 Set point 출력
·The key operation is simple.
·The set point is equipped with six.
·With the recorder output.
·It is equipped with RS485/RS422 serial communication(option) and it controls it with the host computer to 16 1 lines.
It is possible to 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 10³ to 1.0 X 10⁻¹Pa
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 40℃
Power voltage		AC100~240V 50/60Hz 30VA
Gauge head		FSG-1 (Ø15, option-NW16)

Design / Outline Drawing(mm) PT-9P(M)





Features and application

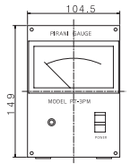
·정오도형 측정회로 신뢰성 높음
·필라멘트 Pt-Wire사용 수명이 길다.
·입력변화에 따른 응답속도가 빠름(2초이내)
·오염에 강함
·Sensor 포터취부 방향은 수평 방향
·Easy readout due to adoption of large-sized analog meter of 2-ranges automatic switching
·Low-price
·Equipped with recorder output
·For pressure monitoring
·For research and development

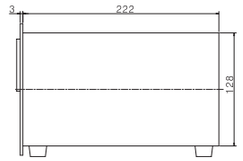
Product specification

Measuring range	1.0 X 10 to 1.3 X 10⁻¹Pa
Range	2-range automatic switching
Measurement	constant temperature measuring circuit
REC OUT output	1R+2R DC 0 to 10mV 1R , 2R DC 0 to 10mV
Service temperature	0 to 40℃
Power voltage	AC100V 50/60Hz 10VA
Gauge head	P-9 (Ø15)

GAUGE TRANSDUCER ▶ GAUGE PT-3P(M), PT-4P

Design / Outline Drawing(mm) PT-3P(M)





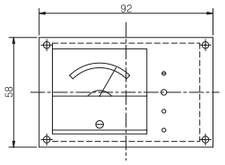
Features and application

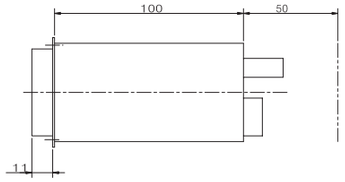
· 정전압형 측정회로 신뢰성 높음
· 필라멘트 Au-Coating으로 내부식, 산화 강하여 수명이 길다
· 온도보상회로를 내장 안정된 측정
· 2개의 Set Point로 각 장치의 Interlock에 사용가능(3PM)
· Easy readout due to adoption of 1-range large-sized analog meter
· Low-price
· Equipped with recorder output
· Meter-relay attached type available
· Meter-relay attached type available
· For research and development

Product specification

Measuring range	1.3 X 10 to 1.3 X 10⁻¹Pa
Range	1-range
Measurement	constant voltage measuring circuit
REC OUT output	1-range DC 0 to 10mV
Set output (M)	2-points AC100V 1A
Service temperature	0 to 40℃
Power voltage	AC100V 50/60Hz 4VA
Gauge head	P-3 (Ø15)

Design / Outline Drawing(mm) PT-4P





Features and application

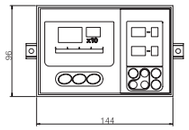
· 소형 Analog메터 사용
· 필라멘트 Au-Coating사용 수명이 길다
· 저가격, 소형, 경량제품
· 오염에 강함
· Small-sized analog meter adopted
· Low-price
· Recorder output attached
· Compact and light-weight
· For pressure monitoring
· For research and development

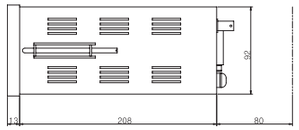
Product specification

Measuring range	1.3 X 10 to 1.3 X 10⁻¹Pa
Range	1-range
Measurement	constant voltage measuring circuit
REC OUT output	DC 0 to 10mV
Service temperature	0 to 40℃
Power voltage	AC100V 50/60Hz 2VA
Gauge head	P-3 (Ø15)

GAUGE CT-3DA, CT-2PM

Design / Outline Drawing(mm) CT-3DA





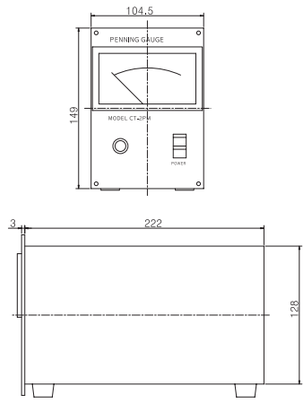
Features and application

· 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 10⁴Pa
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 0 to 5V/0 to 10V
Service temperature		0 to 40℃
Input from outside		INT/EXIT, DISCHARGE ON/OFF
Power voltage		AC100~240V 50/60Hz 30VA
Gauge head		C-4A (Ø15, option-NW25, ICF70)

Design / Outline Drawing(mm) CT-2PM



Features and application

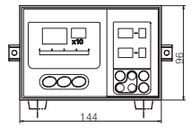
· 측정자의 분해세정 가능
· 회선보호 회로설치
·PT-3PM을 조립하여 다목적으로 사용
·Simple key operation
·Two set-points equipped
·Recording output installed
·Equipped with RS422A serial communication (optional), and with 1 line of it up to 16 units can be controlled, data-wise, with a host computer, to fit to AF system
·For various vacuum systems

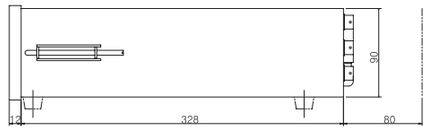
Product specification

Measuring range	1.3 X 10⁻¹ to 1.3 X 10⁻⁴Pa
Measuring range	1-range
REC OUTPUT	DC 0 to 10mV
Contact point capacity(M)	NO, NC-contact point
Service temperature	0 to 40℃
Power voltage	AC100V 11VA
Gauge head	C-1A (Ø15)

GAUGE IT-3DA, IT-10P

Design / Outline Drawing(mm) IT-3DA





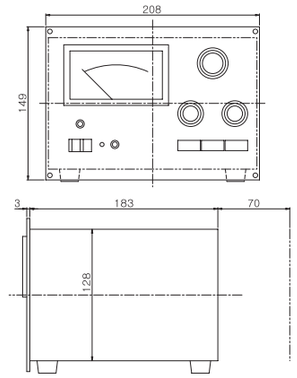
Features and application

· 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 10⁻¹ to 1.0X 10⁻⁸Pa Schultz type: 9.9 X 100 to1.0 X 10⁻³Pa
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 40℃
Power voltage		AC100~240V 50/60Hz 100VA
Gauge head		IV-55(B-A), SC-45(Schultz) (Ø15)

Design / Outline Drawing(mm) IT-10P



Features and application

· Analog ionization vacuum gauge with each-range switching system by use of large-sized indicator
· Separate use between B-A tube and triode possible
· Recorder output equipped
· For pressure monitoring
· For research and developmen

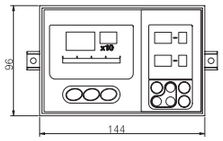
Product specification

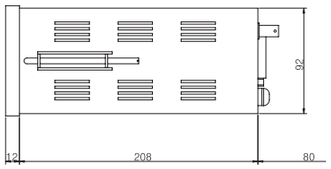
Measuring reg.	1.3 X 10⁻¹ to 1.3 X 10⁻⁷Pa
Measuring range	5-ranges
REC OUTPUT	DC 0 to 10mV
Filament protection	switch off at 120% of full scale
Degassing system	electron bombardment
Vacuum connection	Ø15
Service temperature	0 to 40℃
Power voltage	AC100V 40VA
Gauge head	WNI-1000 (B-A), IV-2000 (triode)

GAUGE TRANSDUCER

GAUGE PC-3DA, IT-L20P

Design / Outline Drawing(mm) PC-3DA





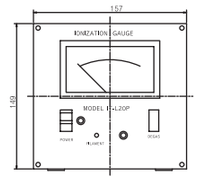
Features and application

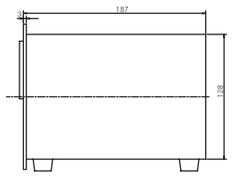
- 피라니 와 CCG의 연동 광범위한 콤비네이션 진공계
- 멀티 표시 기능에 의한 3점 측정치 동시표시 가능
- 응답속도가 빠르다
- C-4A 센서의 필라멘트 소선이 없고 세정이 가능
- 관리가 용의하고 고장이 없다
- The set point is equipped with six. · With the recorder output
- Of Pirani gauges and CCG being connected it is possible to measure a wide range.(The atmosphere pressure to 1.0 X 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^{2} 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^{2} 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 bad resistance
REC OUTPUT		independent for each channel 0 to 5/0 to 10V
Exterior input		INT/EXIT, DISCHARGE ON/OFF
Service temperature		0 to 40℃
Power voltage		AC100~240V 50/60Hz 40VA

Design / Outline Drawing(mm) IT-L20P





Features and application

- 탈가스 회로 내장(레코더 출력첨부)
- PT-3P와 조합하여 넓은범위 측정
- B-A관 3극관 가장 높은 진공계측 가능
- Analog ionization vacuum gauge by use of large-sized indicator
- Simple operation
- Recorder output equipped
- For pressure monitoring
- For research and development

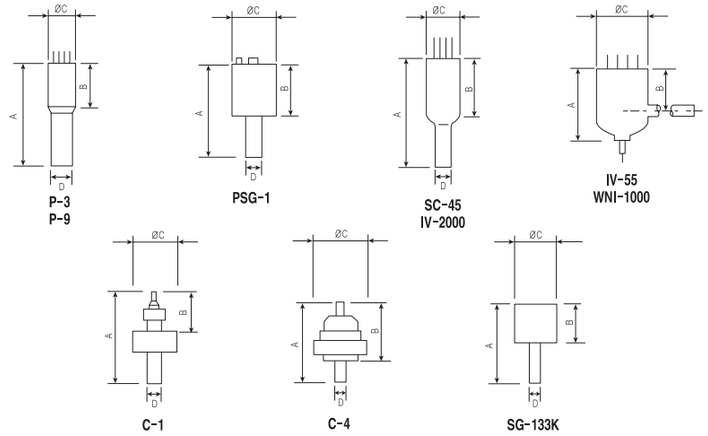
Product specification

Measuring reg.	2.7 X 1.0^{1} to 1.3 X 10^{-5}Pa
Measuring range	1-range
REC OUTPUT	full range DC 0 to 10mV
Filament protection	switch off at 4 x 10 Pa or more
Degassing system	electron bombardment
Service temperature	0 to 40℃
Power voltage	AC100V 50/60Hz 40VA
Gauge head	IV-2000 (triode)Ø15

GAUGE HEAD

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	통신	POWER
CAPACITANCE MANOMETER	DIGITAL DISPLAY	FTR-1	1 ch	F-113K	8VCR	3	0-10V	RS-485	AC100-240V
PIRANI GAUGE	ANALOG METER	PT-4P	1 ch	P-3	Ø15		0-10 mv		AC100V
		PT-3P							
		PT-3PM				2			
		PT-9P		P-9					
		PT-9PS				(2)			
	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 CATHODE GAUGE	ANALOG METER	CT-2PM	1 ch	C-1A	Ø15	2			AC100V
	DIGITAL DISPLAY	CT-3DA	3 ch 가능	C-4A		2		RS-485/422A	AC100-240V
COMBINATION GAUGE	DIGITAL DISPLAY	PC-3DA	2 ch	PSG-1 X2	Ø15(NW16)	2 EACH CH	0-5V/0-10V	RS-422A	AC100-240V
			1 ch	C-4A	Ø15(NW25)				
HOT CATHODE GAUGE	ANALOG METER	IT-L20P	1 ch	IV-2000	Ø15		0-10 mv		AC100V
		IT-10P		IV-2000					
				WNI-1000					
	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		

MFC(NEOS) MODEL ▶ NEOS MFC - KAM-5L / KDM-5L

NEOS MFC

Mechanical

- ▶ 13개의 Sub-부품으로 구성
- ▶ 유선형 내부유로
- ▶ Dead Space최소화
- ▶ 피팅과 베이스 일체형
- ▶ 다이아프램 용접구조
- ▶ No O-Ring
- ▶ 가스 내성 소재 적용
- ▶ 선형비례제어형 솔레노이드

Software

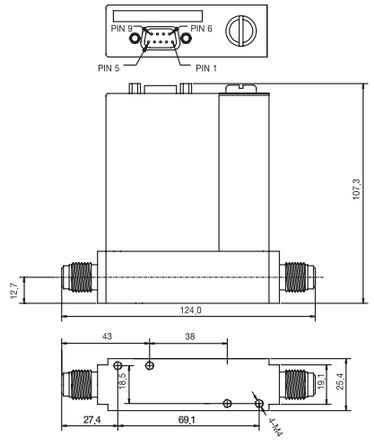
- ▶ 시리얼 통신지원 (RS-232 or RS-485)
- ▶ 사용자 MFC를 진단 기능
- ▶ Auto-Zeroing기능 Enable/Disable
- ▶ Multi-Drop
- ▶ 데이터 수집 및 저장 기능
- ▶ MFC기본정보 표시 예)Serial No., Gas, Full Range

Performance

- ▶ 빠른 응답특성
- ▶ 우수한 정확도
- ▶ 낮은 유량범위에서 제어능력 우수
- ▶ 설치방향 민감성 최소화
- ▶ 주위온도 보상
- ▶ Valve Return

Design / Outline Drawing(mm)

"NEOS"MFC는 Simple한 Mechanism과 안정된 Control Logic으로 반도체 및 비반도체 공정에서 문제가 되어 온 Leak Integrity, Cleanliness, Accuracy, Drift, Low Flow Operation 및 Reliability에 대한 근본적 해답을 제공합니다.



SPECIFICATIONS

MFC Model KAM-5L / KDM-5L / KAM-200

PERFORMANCE

Flow Range(full scale)	5-20,000 sccm (N_2 equivalent)
Control Range	2-100% of F.S.(except min. flow 2 sccm in any range)
Accuracy	± 1% of Setpoint (See Graph)
Repeatability	± 0.2% Full scale
Linearity	± 0.2% Full scale
Response	1.0 sec. (typical)
Temperature Coefficient	± 0.05%/℃
Pressure Coefficient	<0.025%/psi
Helium Leakage	1×10^{-9} atm-cc/sec(He)
Warm Up Time	30 minutes

MECHANICAL

Wetted Materials	SS 316L, Al_2O_3, Si_3N_4, Ni200, No elastomers
O-Ring Seals	only KAM-200
Fittings	1/4"VCR® / 1/4" LOK
Weight	1.0 kg
Valve	Solenoid, Normally closed standard, Normally open optional

ELECTRICAL

Internal Operation	Digital control algorithm(KDM) / Analog Control(KAM)
Input Voltage	±15 VDC
Maximum Input Current	101mA @ +15 VDC, 320mA @ -15 VDC
Maximum Input Power	6.3 Watts @ ±15 VDC
Normal Input Power	4.1 Watts @ ±15 VDC
Connector	9 pin D sub standard 20 pin AMP 583718-1 optional
Output Signal	0-5 VDC into 10KΩ
Communication	RS-485 or RS-232 (Digital)

MFC PIN OUT 9 PIN (MALE)	
PIN OUT	DESCRIPTION
PIN 1	Valve Return
PIN 2	Flow Signal Output (0~5VDC)
PIN 3	+15 VDC Power Supply
PIN 4	Power Common
PIN 5	- 15 VDC Power Supply
PIN 6	Setpoint Input (0~5VDC)
PIN 7	Signal Common
PIN 8	TxD (-)
PIN 9	RxD (+)

ENVIRONMENTAL

Operating Temperature Range	0-50℃
Maximum Operating Pressure	50 psig
Mounting Attitude	Any Position
Maximum Differential Pressure	60 psid

OTHER

Automatic or manual zero
Operation from analog or digital input commands
Internal surfaces polished to 0.4 μm Ra
No trapped internal volumes or internal threads
Diaphragm valve seal
Usable control range 50:1

AS SHIPPED, DEFAULT SETTINGS

Input Mode	Analog
Auto Zero	Disabled
MFC I.D. No.	1

MFC(NEOS) MODEL ▶ MFC

NEOS MFC

A. Separate Valve Return

Electrical power supplied to electrical equipment over extended cable length can develop significant voltage drop. This becomes a source of error if power and signal lines share the same ground connection. To minimize such errors, the MFC uses a separate return line, Pin 1, for the solenoid valve which consumes approximately 70% of the total power. To utilize this feature, Pin 1 must be directly connected to the power supply ground.

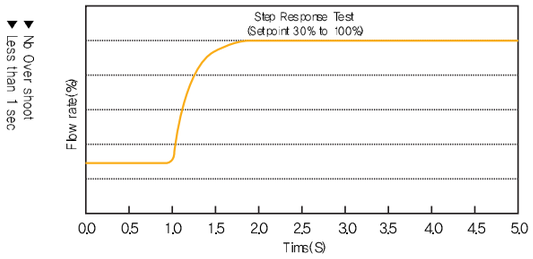
B. Inlet and Exhaust Gas Pressure

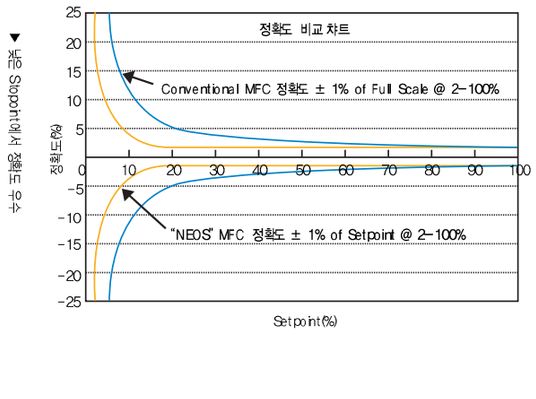
An isolation diaphragm in the MFC prevents the process gas from entering the solenoid actuator. The diaphragm is designed to withstand a maximum safe inlet pressure of 100 psig without damage, and a burst pressure of 2000 psig. The maximum operating inlet pressure is 50 psig. The maximum operating differential pressure (inlet/exhaust) is 60 psid ; therefore, when a MFC is exhausting into a vacuum, the inlet pressure should not exceed 45.3 psig.

C. Valve Leakage

The MFC utilizes a hard valve element for the purpose of reducing moisture retention and particulate contamination. All valve elements are tested for internal leakage of less than 0.1 sccm N_2 at 50 psid. This low leakage may be compromised by introduction of contaminants into the MFC. A point of use 1 micron filter is recommended for prolonged use of the entire 2-100% control range.

Performance





MFC READOUT POWER SUPPLY

MGF-E Series (Features)

- Precision 10-Turn potention meter for mass flow setting
- Display for actual mass flow rate SCCM / SLM
- 3½ digit bright red LED readout
- Error alarm indicate
- Remote analog interface
- Independent shutoff valve control voltage out put
- Output short circuit protection
- Full range 90~260Vac input
- Dimension(H×W×D) :
  - MGF-1E : 96×96×222 (mm)
  - MGF-4E : 88×485×260 (mm) (2U, full rack)

APPENDIX

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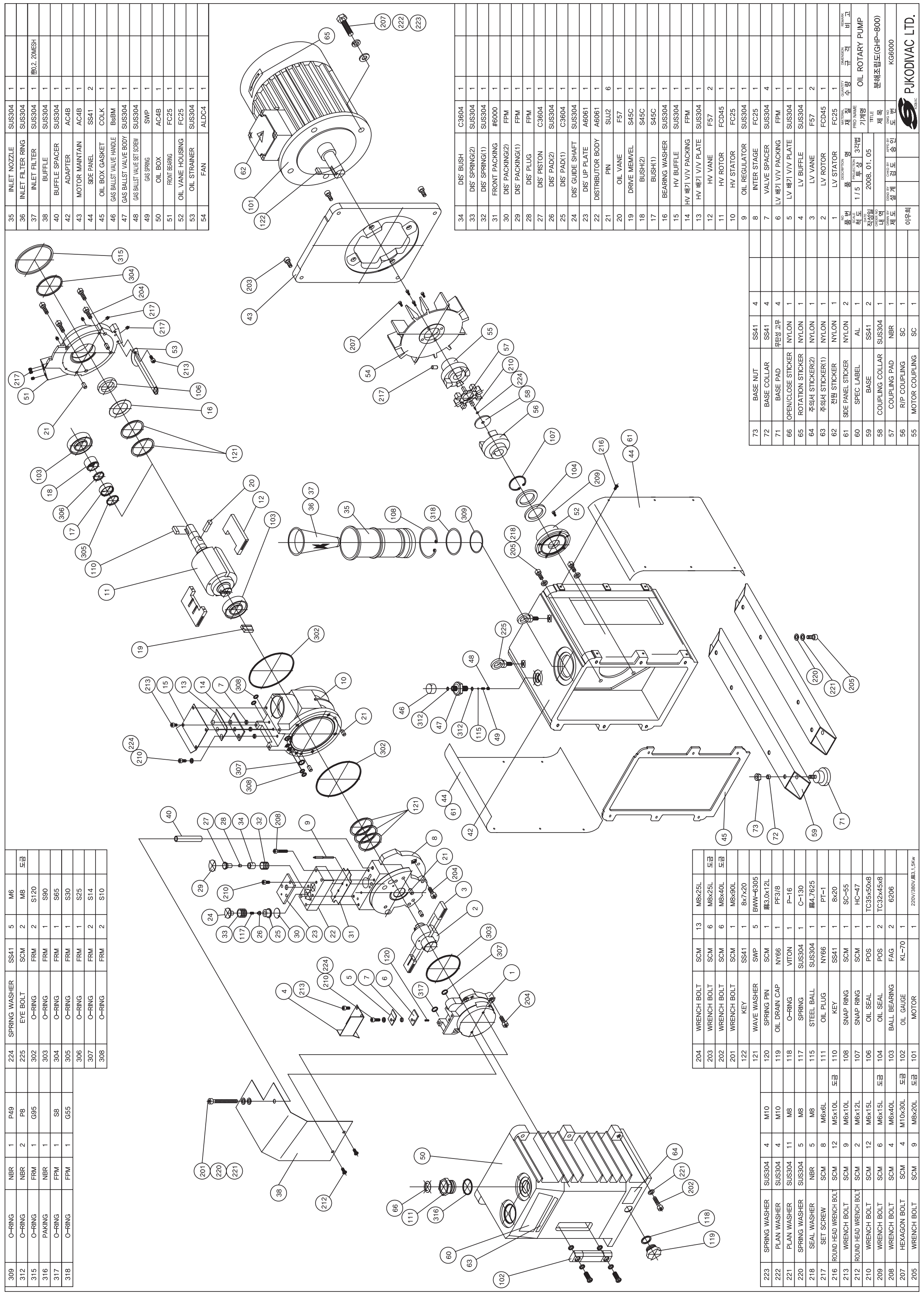
조립도 예



품번	품명	재질	수량	규격	비고
35	INLET NOZZLE	SUS304	1		
36	INLET FILTER RING	SUS304	1		
37	INLET FILTER	SUS304	1	厚0.2, 20MESH	
38	BUFFLE	SUS304	1		
40	BUFFLE SPACER	SUS304	1		
42	ADAPTER	AC4B	1		
43	MOTOR MAINTAIN	AC4B	1		
44	SIDE PANEL	SS41	2		
45	OIL BOX GASKET	COLK	1		
46	GAS BALLST VALVE HANDLE	BsBM	1		
47	GAS BALLST VALVE BODY	SUS304	1		
48	GAS BALLST VALVE SET SCREW	SUS304	1		
49	GAS SPRING	SWP	1		
50	OIL BOX	AC4B	1		
51	FRONT BEARING	FC25	1		
52	OIL VANE HOUSING	FC25	1		
53	OIL STRAINER	SUS304	1		
54	FAN	ALDC4	1		

품번	품명	재질	수량	규격	비고
34	DIS' BUSH	C3604	1		
33	DIS' SPRING(2)	SUS304	1		
32	DIS' SPRING(1)	SUS304	1		
31	FRONT PACKING	#6000	1		
30	DIS' PACKING(2)	FPM	1		
29	DIS' PACKING(1)	FPM	1		
28	DIS' PLUG	FPM	1		
27	DIS' PISTON	C3604	1		
26	DIS' PAD(2)	SUS304	1		
25	DIS' PAD(1)	C3604	1		
24	DIS' GUIDE SHAFT	SUS304	1		
23	DIS' UP PLATE	A6061	1		
22	DISTRIBUTOR BODY	A6061	1		
21	PIN	SUJ2	6		
20	OIL VANE	F57	1		
19	DRIVE MEMVEL	S45C	1		
18	BUSH(2)	S45C	1		
17	BUSH(1)	S45C	1		
16	BEARING WASHER	SUS304	1		
15	HV BUFFLE	SUS304	1		
14	HV 배기 V/V PACKING	FPM	1		
13	HV 배기 V/V PLATE	SUS304	1		
12	HV VANE	F57	2		
11	HV ROTOR	FCD45	1		
10	HV STATOR	FC25	1		
9	OIL REGULATOR	SUS304	1		
8	INTER STAGE	FC25	1		
7	VALVE SPACER	SUS304	4		
6	LV 배기 V/V PACKING	FPM	1		
5	LV 배기 V/V PLATE	SUS304	1		
4	LV BUFFLE	SUS304	1		
3	LV VANE	F57	2		
2	LV ROTOR	FCD45	1		
1	LV STATOR	FC25	1		

척도	1/5	투상	3각법
작성일	2008. 01. 05	기계명	OIL ROTARY PUMP
내역		제목	분해조립도(GHP-800)
제도	이우희	도번	KG6000
설계		검도	승인

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품번	품명	재질	수량
73	BASE NUT	SS41	4
72	BASE COLLAR	SS41	4
71	BASE PAD	무탄성 고무	4
66	OPEN/CLOSE STICKER	NYLON	1
65	ROTATION STICKER	NYLON	1
64	주의서 STICKER(2)	NYLON	1
63	주의서 STICKER(1)	NYLON	1
62	전원 STICKER	NYLON	1
61	SIDE PANEL STICKER	NYLON	2
60	SPEC LABEL	AL	1
59	BASE	SS41	2
58	COUPLING COLLAR	SUS304	1
57	COUPLING PAD	NBR	1
56	R/P COUPLING	SC	1
55	MOTOR COUPLING	SC	1

품번	품명	재질	수량	규격	비고
204	WRENCH BOLT	SCM	13	M8x25L	
203	WRENCH BOLT	SCM	6	M8x25L	도금
202	WRENCH BOLT	SCM	6	M8x40L	도금
201	WRENCH BOLT	SCM	1	M8x90L	
122	KEY	SS41	1	8x7x20	
121	WAVE WASHER	SWP	5	BWW-6305	
120	SPRING PIN	SCM	1	厚3.0x12L	
119	OIL DRAIN CAP	NY66	1	PF3/8	
118	O-RING	VITON	1	P-16	
117	SPRING	SUS304	1	C-130	
115	STEEL BALL	SUS304	1	厚4.7625	
111	OIL PLUG	NY66	1	PT-1	
110	KEY	SS41	1	8x20	
108	SNAP RING	SCM	1	SC-55	
107	SNAP RING	SCM	1	HC-47	
106	OIL SEAL	POS	1	TC35x50x8	
104	OIL SEAL	POS	2	TC32x45x8	
103	BALL BEARING	FAG	2	6206	
102	OIL GAUGE	KL-70	1		
101	MOTOR		1	220V/380V,厚3,1.5Kw	

품번	품명	재질	수량	규격	비고
223	SPRING WASHER	SUS304	4	M10	
222	PLAN WASHER	SUS304	4	M10	
221	PLAN WASHER	SUS304	11	M8	
220	SPRING WASHER	SUS304	5	M8	
218	SEAL WASHER	NBR	5	M8	
217	SET SCREW	SCM	8	M6x6L	
216	ROUND HEAD WRENCH BOLT	SCM	12	M5x10L	도금
213	WRENCH BOLT	SCM	9	M6x10L	
212	ROUND HEAD WRENCH BOLT	SCM	2	M6x12L	
210	WRENCH BOLT	SCM	12	M6x15L	
209	WRENCH BOLT	SCM	6	M6x15L	도금
208	WRENCH BOLT	SCM	4	M6x40L	
207	HEXAGON BOLT	SCM	4	M10x30L	도금
205	WRENCH BOLT	SCM	9	M8x20L	도금

품번	품명	재질	수량	규격	비고
224	SPRING WASHER	SS41	5	M6	
225	EYE BOLT	SCM	2	M8	도금
302	O-RING	FRM	2	S120	
303	O-RING	FRM	1	S90	
304	O-RING	FRM	1	S65	
305	O-RING	FRM	1	S30	
306	O-RING	FRM	1	S25	
307	O-RING	FRM	2	S14	
308	O-RING	FRM	2	S10	

품번	품명	재질	수량	규격
309	O-RING	NBR	1	P49
312	O-RING	NBR	2	P8
315	O-RING	FRM	1	G95
316	PAKING	NBR	1	
317	O-RING	FPM	1	S8
318	O-RING	FPM	1	G55

진공의 계산 Conductance

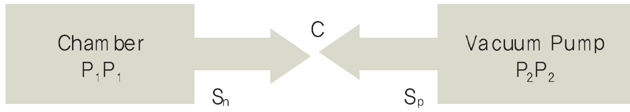
저진공(760 torr ~ 10^{-2} torr) $C_{air} = 182(D^4/L)\bar{P}$ (1/sec)

D: 파이프의 직경(cm);
L: 파이프의 길이(cm)

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

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

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
$S_n = 100 \times 100 / (100 + 100)$
= 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 ==〉 −dP/P = (S/V)dt
∴ $\Delta t = t1 - t2 - (V/S)\ 1n\ (P^1P^2) = 2.303\ (V/S)\ \log 10(P^1/P^2)$

760 torr ~ 0.001 torr까지의 실험적인 값은
$t = 2.303K\dfrac{V}{S}\ \log 10\dfrac{P_1}{P_2}$

	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

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

P_o = 총압력 (t=O), S = 펌핑속도, V = 시스템 부피,
Pu = 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}

APPENDIX

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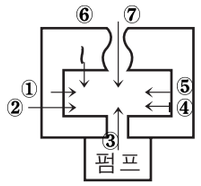
잔류기체(residual gas)

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 m³/s W	mbar l/s	Torr l/s	atm cm³/s	lusec	sccm	slm	Mol/s
pa m³/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 cm³/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/m²)	kPa(kN/m²)	mmHg(0℃)	mH2O(4℃)	kg/cm²	inch Hg(0℃)	inch H_2O(4℃)	psi(lb/in²)	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/m²)	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/m²)	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/cm²	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/in²)	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^{-3}	760	10.3323	1.03323	29.921	406.78	14.6959	1

CONVERSION TABLE Leak Rate

	mbr ℓ /sec	cm³/sec (N.T.P)	Torr ℓ /sec	kg/h air(at20℃)
1mbar/sec	1	0.99	0.75	4.3×10^{-3}
1cm³/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	m³/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 m³/hr	0.278	16.67	0.589	1

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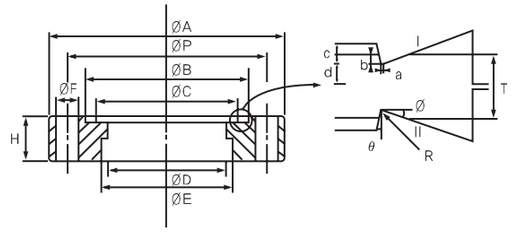
Conflat(CF) 플랜지 날의 상세도



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

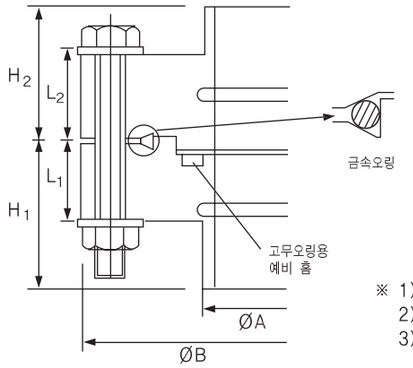
※ SS : 스테인리스 강, Al : 알루미늄 합금.
a)실제 치수는 제조자마다 조금씩 차이가 있다. 단, 개스킷의 O.D가 플랜지의 B보다 크지 않아야 한다.
b)기밀면의 표면거칠기(surface roughness)는 1S(최대 높이가 1㎛)이하가 바람직 하다.

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



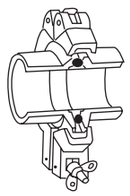
※ 1) 대구경 도관, 외경 250~450mm의 접속에 사용
2) 무산소동 금속제 오링(Oring)사용
3) 가열이 없는 때는 Viton고무링을 사용

Capture(CS) 플랜지와 개스킷의 규격 예

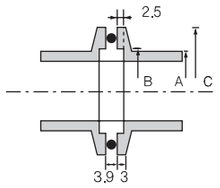
※ 단위는 mm

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

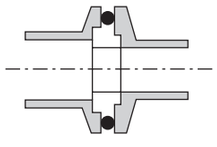
KF 플랜지의 구조



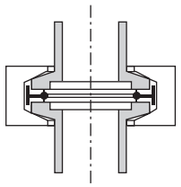
a) 절개도



b) 동일한 두 관의 연결



c) 굵기가 다른 두 관의 연결



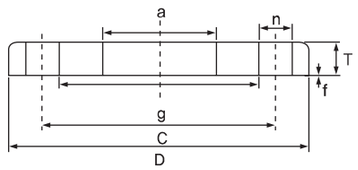
d) 금속 개스킷을 사용하는 경우
(초고진공 일 때 이용)

KF 플랜지의 치수

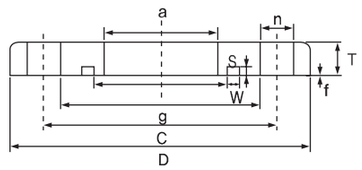
※ 단위는 mm

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



(a)



(b)

고무 개스킷용 플랜지의 치수

※ 단위는 mm

호칭 지름	d	D	플랜지				볼트			개스킷홈			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

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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, 이소 프렌고무	Isobutylene-isoprene	-	-	-55	150
부나N, 패부난하이카	Butadiene-acrylonitrile	-25	85	-50	150
네오프렌	Chloroprene	-40	90	-50	150
실리콘고무	Dimethyl polysiloxere	-40	180	-120	250
바이톤	Viton, Vinylidene, fluoride-Hexafluoropropylene	-15	200	-	270
칼레츠	Kalez, Tetrafluoroethyl, ene-perfluoromethylvinyl, Ether	-12	315	-	-
테플론	Teflon, Polyetrafluoroethylene	-190	280	-	400
캡톤	Kapton, Pdypyromellitimide	-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}
Mondayertime (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 출하 후 또는 선적후 12개월 동안 교환 또는 수리를 보증받습니다. 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 상황의발생시는 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.

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