물과 공기로 미래를 여는 기업

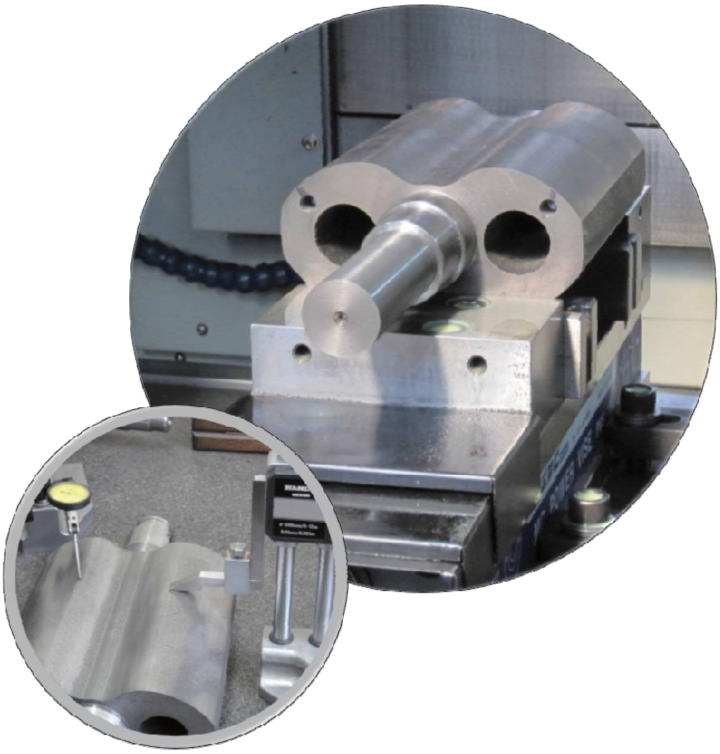
KS 2701 ISO 9001:2000,펌프,브로아

PUMP & BLOWER

내외기계공업(주)

NAEWAY

ROOTS BLOWER



STATE OF THE ART QUALITY

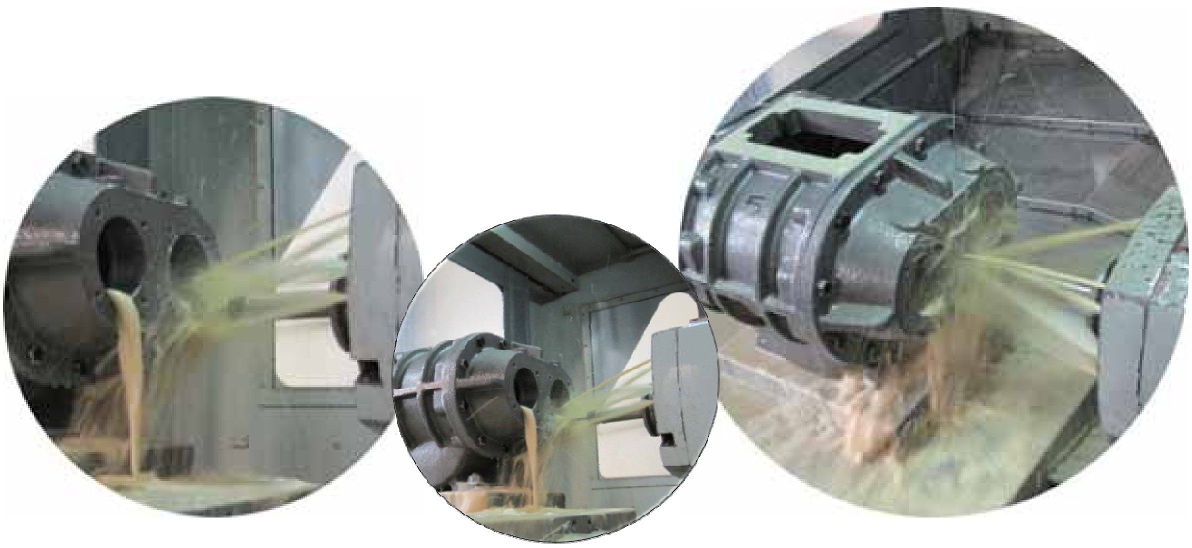
Manu-facture

- 품질제일주의 -

유럽 CE 인증

국가 조달청

중기청, 방위사업청



ROTARY TYPE ROOTS BLOWER

NRB TYPE
- 공기이송, 원료이송, 폭기용, 그리스 타입

NRH TYPE
- 수냉식, 오일타입 타입

NRVD TYPE
- 진공용

NRGS TYPE
- 가스이송용


ROTARY TYPE ROOTS BLOWER

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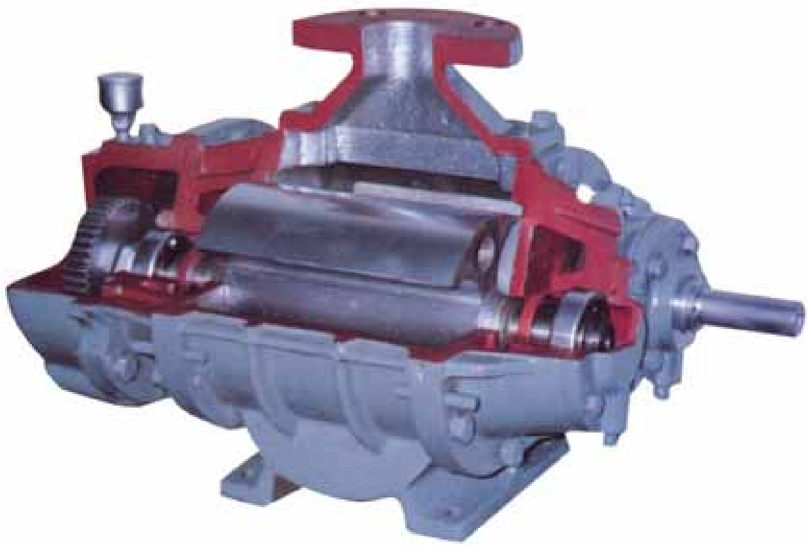
ROTARY TYPE ROOTS BLOWER SECTIONAL DRAWING(단면도)



FEATURES(특 징)

1. 종류가 다양하다.
2. 운전이 용이하다.
3. 내구성이 강하여 수명이 길다.
4. 토출 기체에 기름성분이 없다.
5. 소음 및 진동이 적다.
6. 동력소비가 적어 전력비가 적다.

1. The model is various
2. The operating is easy
3. The strength is strong and the life time is long
4. The discharge gas is not oil
5. The noise and vibration are small
6. The power consumption production and electric power cost are small

SALES ITEM(영업 안내)

1. ROTARY TYPE ROOTS BLOWER
2. VACUUM BLWER & BLOWER
3. PNEUMATIC CONVEYING SYSTEM
4. COOLER (PRE, INTER, AFTER)
5. MECHANICAL BOOSTER
6. DRAIN PUMP

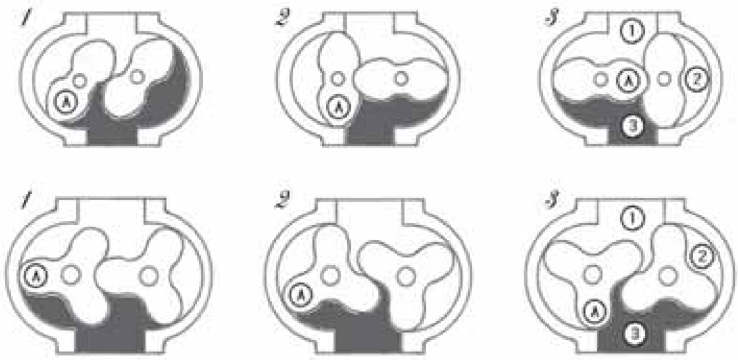
ROTARY TYPE ROOTS BLOWER

내외 브로아는 그 동안의 많은 경험을 바탕으로 기술을 향상시켜 새로운 시리즈로 발전시킨 루쓰 타입의 브로아입니다. 이 시리즈의 브로아들은 저압부터 고압까지 폭 넓은 적용범위를 갖고있으며 특수가스를 사용할 경우 메카니칼 씰을 장착할 수 있도록 되어 있습니다.

The NAE WAY BLOWERS are new series roots type blowers developed extensive experience and technical expertise. This series blowers have been wide applicable working pressure-ranging from low to high and mechanical seal can be setting, when used for special gas.

OPERATING PRINCIPLE - 작동 원리 -

2개의 같은 모양의 로타가 직접적으로 접촉이 없이 정반대로 회전을 합니다.
기체가 흡입측에서 브로아 케이싱 내부로 흡입①, 케이싱과 로타 사이에 형성된 일정한 배기량이 챔버②로 이송되고 토출구로③ 흘러 나갑니다.
토출구로 이송된 가스의 체적이 케이싱 하부의 역류하는 압력에 의해 압축되어 집니다. 1회전당 2엽 브로아는 일정한 압출량을 4회 연속압출, 그리고 3엽 브로아는 6회 연속적으로 압출을 합니다.



Two synchronized symmetrical rotors revolve in opposite directions without contact. The gas flows into the blower casing on the suction port①, and is conveyed a steady positive displacement in the chamber②, formed between the rotors and the casing, in the direction of the discharge port③. The volume of the gas conveyed at the discharge port is compressed by the back pressure on the downstream side of the casing.

ROTARY TYPE ROOTS BLOWER의 주요 구성

높은 내구성의 베어링

앵귤러 콘택트 볼 베어링과는 달리, 원통 롤러 베어링은 광범위하게 방사적으로 발생되는 힘을 100% 흡수할 수 있으며, 작동 수명 100,000시간을 실현시켜 줍니다.

마모가 없는 밀봉장치

기술적으로 입증된 압력 평형 홈을 지닌 래버린스 실은 기본 사양이며, 다른 타입이 샤프트 실 또한 주문 가능합니다.

정밀한 동기화

평행하게 연마된 타이밍 기어는 최대 공차 5f 21로 완성되어 기어와 기어사이의 틈을 최소화 합니다. 이러한 정밀성은 블록의 체적 효율을 결정짓는 주된 요인입니다.

최적의 윤활작용

제2로터 샤프트의 양끝에 장착된 오일 슬링어 디스크는 베어링 위에 윤활유를 떨어뜨림으로써 확실하게 긴 수명의 윤활을 보장합니다.

견고한 로터와 샤프트

로터와 샤프트는 이음선 없이 조립되고, 부드럽고 고장 없는 운행을 위해 제트기관 기준에 부합되는 균형을 이룹니다.

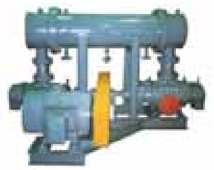
견고한 케이싱

특수하게 제작된 케이싱은 필요에 정확하게 부합되는 힘과 견고성을 가지며, 최적의 냉각 또한 보장합니다. 에어 챔버와 베어링 지지대는 이음새 없이 하나로 제작되어 내구성이 우수합니다.

실린 스트립을 지닌 로브

특수 형태의 로터 로브와 실링 스트립은 오염된 공기의 영향과 열 과부화를 감소시킵니다.

ROTARY TYPE ROOTS BLOWER 종류

번호	브로아 형식	모 델	성 능	용 도
1	일반 공기용 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 300㎥/min 토출압력 : 2,000 ~ 9,000mmAq 회전수 : 530 ~ 1,750rpm	저소음, 고성능으로 일반공기용 폐수처리의 폭기 뉴메틱(공기수송) 스컴분쇄 및 교반
2	일반 가스수송 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 300㎥/min 토출압력 : 2,000 ~ 9,000mmAq 회전수 : 530 ~ 1,750rpm	저소음, 고성능으로 일반가스 도시가스 암모니아 가스 메탄 가스 등
3	고압 가스수송 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 300㎥/min 토출압력 : 2,000 ~ 15,000mmAq 회전수 : 530 ~ 1,750rpm	화학 및 식품산업 의료산업 동결 건조시설 정수 및 담수시설 진공이송
4	2단 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 150㎥/min 토출압력 : 1,0kgf/㎠ ~ 2,0kgf/㎠	고성능, 고압가스이송 고진공 원료혼합이송 제조공정이송
5	일반 진공용 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 300㎥/min 토출압력 : -2,000~ -6,000mmAq 회 전 수 : 600 ~ 2,000rpm	저소음, 고성능으로 진공시스템 진공탈수 뉴메틱(공기수송) 제지공업
6	고진공용 브로아 (구경: 50 ~ 500mm)		토출풍량 : ~ 200㎥/min 토출압력 : -100 ~ -500mmAq 회 전 수 : 740 ~ 1,700rpm	고성능으로 진공시스템 진공탈수 뉴메틱(공기수송) 제지공업 식품공업 전자공업
7	메카니컬 부스타		특수사양의 주문자 요구에 맞게 제작한 제품	원료 혼합 및 이송 제조공정 이송 진공공정 이송 가스포집 및 이송 진공적출 및 압송

Type and application of the roots blowers

TYPE	USES	CAPACITY(m^3/min) (SUCTION STATE)	PRESSURE
Standard type roots blower	Low Pressure air	0~400	0~0.5kg/cm^2.G
Standard water cooling type Roots blower	Middle Pressure air	0~400	0.5~1.0kg/cm^2.G
2 stage roots blower (with inter cooler)	High Pressure air	0~400	1.0~2.3kg/cm^2.G
Wet type roots blower	Low vacuum air	0~400	0~ -400mmHg
Wet type 2 stage roots blower	High vacuum air	0~400	0~ -600mmHg
Standard gas type roots blower	Pressure and vacuum of the city gas, natural gas	0~400	0~0.5kg/cm^2.G
1 mechenical seal gas type roots blower	Pressure and vacuum of the city gas, Natural gas, H_2 gas, N_2 gas	0~400	0~1.0kg/cm^2.G
4 mechenical seal gas type roots blower	Pressure of the all kind gas	0~400	0~0.8kg/cm^2.G
Special gas type roots blower	Corrosion-resisting gas, SO_3 gas, NO_2 gas	0~400	0~1.0kg/cm^2.G
High pressure buster type roots blower	For high pressure buster	0~200	Discharge pressure 10kg/cm^2.G
High temp gas sending roots blower	Pressure and vacuum of the high Temp air(max 300℃)	2~160	Difference pressure (max 1.2kg/cm^2)
Steam gas sending roots blower	Pressure and vacuum of the steam(max 200℃)	2~200	Difference pressure (max 1.2kg/cm^2)

구 조 - CONSTRUCTION -

몸통

회주 철품으로써 상부흡입과 수평 토출로 되어 있고 충분한 강도와 내구성을 갖도록 설계되어 있다.
케이싱의 넓은 흡입구로서 케이싱 내부를 충분히 들여다 볼 수 있는 구조로 되어 있다.

CASING

Since piece body gray cast iron, consisting of the upper suction and the lower horizontal discharge sections, ensures sufficient strength and capability
Internal inspections are facilitated by large suction port in the casing.

로터

정밀도 있는 부품으로서 고급 주물로 가공되어 있다.
내부 간격은 정밀하게 맞추어 최적의 효율을 보장할 수 있도록 되어 있다.
추가하면 다이나믹 바란스로 바란싱하여 저 소음, 저 진동을 갖고 있다.

ROTOR

The rotor is built of cast iron of good quality subjected to high precision machining.
The inside clearances are precision matched and optimum efficiency is guaranteed.
In addition, as it is perfectly balanced by means of balancing machine, noise and vibration are minimized

사이드 후렘

베어링 또는 기어 부분과 케이싱 부분 사이에서 쳄버 역활을 한다.
이것은 윤활오일이 케이싱으로 들어가는 것을 방지하고 또한 이송물질로부터 더러운 이물질들이 오일에 섞이지 않도록 되어 있다

SIDE FRAME

The side frame functions as an intermediate chamber between the casing and the bearing/gear chamber.
This prevents lubricating oil from looking into the casing, while eliminating the fear of lubricating oil deteriorating due to contaminated water with gas or air handled

베어링

베어링들은 고 정밀급의 롤러베어링과 트러스트 볼 베어링을 사용하여 충분히 견딜 수 있는 구조이며 견고한 성능과 긴 수명을 보장합니다.

BEARING

The rotor is built of cast iron of good quality subjected to high precision machining.
The inside clearances are precision matched and optimum efficiency is guaranteed.
In addition, as it is perfectly balanced by means of balancing machine, noise and vibration are minimized

타이밍 기어

보수 및 타이밍 조정을 용이하도록 하여 선정된 타이밍 기어로서 조타만큼이나 중요한 부분이다.
재질은 크롬볼리브덴강으로 만들어졌으며, 침탄열처리와 연마를 한 것이며, 특별한 내구성을 갖도록 되어있다.

TIMING GEAR

Special consideration have been given to the timing gear, since it is as important part of blower as the rotor.
Made of chrome molybdenum steel, carburized, quenched and ground, it is excellent in durability.

소음기

흡입,토출 소음기는 소음을 줄이기 위한 표준 방비들이다. 만약 소음기가 먼지 등으로 막혔을 때는 진공도나 부로아의 온도 등이 상승되고 모타가 과열되어 소손될 우려가 있고 용량이 감소된다. 즉시 청소해야 한다.
이것들을 사용시 파이프의 공명현상을 고려해야 한다.

SILENCER

The inlet out let silencers are standard equipment and serves to decrease noise. When the silencer is clogged by dust, etc., the vacuum, power, and temperature of the blower rise, overheating and damaging the motor and decreasing capacity. Clean it immediately.
The inlet silencer is special equipment, but the use of one or two of them decreases resonance in the pipes considerably.

기어 오일

오일의 품질이나 특별한 사양은 요구되지 않는다. 다만, 자동차용 엔진오일 계통이면 사용할 수 있다. 예를 들면 극동의 테라스 46, 유공의 하모니 46등 유사한 것들이면 가능하다. 교환이나 공급은 3개월에 1번씩 해야 한다.

GEAR OIL

Quality of oil is not specially required. Any kind of automotive oil you can obtain is adequate. Not specified to maker or brand. For instance. Tells #46, HAMONI #46 equalized quality is available.
Exchange or supply once every three months

베어링 그리스

내열 그리스가 요구되면 GM실리콘 그리스 TSK-5401L (-30℃~+180℃) 또는 동등이상의 제품이면 가능하다.
그러나 규정외의 제품을 사용하는 것은 위험하다.
베어링 온도가 60℃~100℃가 되면 3개월에 한번씩 공급해야 한다. 0.3kg/cm^2 이하인 경우는 #3도 가능하다.

GEAR OIL

Heatproof Grease is required. Specified to GM Silicone Grease TSK-5401L(-30℃~+180℃) and equalized quality is available.
It is not allowed to use any kinds except specified grease.
The temperature of bearing supposed to be within 60℃~100℃. Supply once to every 3 months.
When it is under 0.3kg/cm^2 , Albania No.3 is also acceptable.

축봉장치

NRB브로워는 표준 축봉장치 중에서 선택할 수 있도록 되어 있다. 축봉장치 선택은 취급 가스에 따라 다르다. 특수 가스를 취급할 경우는 메카니칼씰을 사용할 수 있도록 되어 있다.
축봉장치의 선택과 일반적으로 사용되는 것들은 다음과 같다.

1) 표준 밀폐형
주로 공기압송에 사용되는 표준형이다.

2) 표준 개방형
주로 진공용에 사용되는 표준형이다.

3) 밀폐형 1메카니칼씰 타입
주축에 1메카니칼씰을 사용하는 것으로서 질소, 수소, 헤륨, 탄산가스, 알곤가스 등 솔벤드 가스가 아닌 것들, 그리고 오븐가스, 도시가스, 소화를 위한 가스 등이 외부로 나오거나 또는 공기가 흡입도지 않도록 되어 있다. 또 사용하는 압력이나 수분함유량 등 사용하는 가스에 따라 4가지 방식으로 분류할 수 있다. (그림 참조)

4) 밀폐형 4메카니칼씰 타입
베어링 뒤쪽에 4개소에 메카니칼씰이 장착되므로 솔벤드 가스를 취급할 시 축봉에 사용된다. 취급하는 가스에 따라 싱글이나 더블 타입으로 선정할 수 있다.

5) 개방형 4메카니칼씰 타입
로타축부의 4지점에 메카니칼씰을 장착하므로 베어링으로부터 가스를 완전 분리할 수 있으며 특수가스나 스팀 등 오일과 결합되어 화학반응이 생기는 때에 사용할 수 있다.

Shaft Sealing type	Side cover structure	Shaft sealing part		
		A	B	C
Standard open type	Opened	Oil seal	Oil seal	Labyrinch seal
Standard closed type	Closed	Oil seal	Oil seal	Labyrinch seal
Closed one-mechanical seal type	Closed	Single mechanical seal	Oil seal	Labyrinch seal
		Double mechanical seal	Oil seal	Labyrinch seal
Closed four-mechanical seal type	Closed	Oil seal	Single mechanical seal	Labyrinch seal
		Oil seal	Double mechanical seal	Labyrinch seal
Opened four-mechanical seal type	Opened	Oil seal	Oil seal	Single mechanical seal
		Oil seal	Oil seal	Double mechanical seal

SHAFT SEALING

NRB-blowers are available with many types of standard shaft sealing. The type of blower shaft sealing is selected according to the gas handled.
When handing a special kind of gas, a mechanical seal is provided either single or double mechanical seal can be used. Available types of shaft sealing and their general uses are as follows.

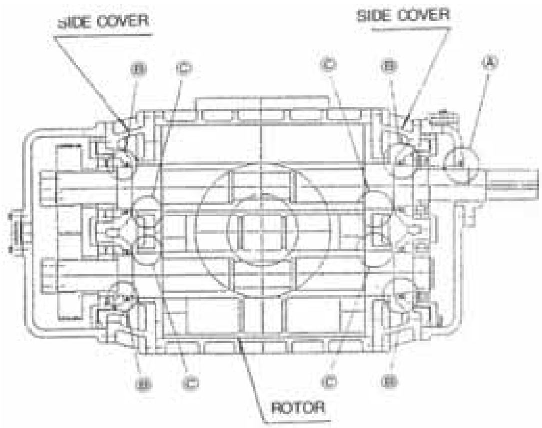
1) Standard closed types:
The standard type for blowers mainly suitable for blowers that handle air.

2) Standard open type:
The standard type for vacuum pumps mainly suitable for vacuum pumps that handle air.

3) Closed one-mechanical seal type:
provided with one mechanical seal on the shaft. Suitable for sealing the shaft when gases that should not be leaked into air are handled-N_2, H_2, Ar, He, CO, CO_2 and other non-solvent gases; and also coke oven gas, city gas, gas for fire fighting, etc.
This type is available with either of four systems according to working pressure and the water content of the gas being handled. (See the table)

4) Closed four mechanical seal type:
Mechanical seals are provided at four points on the back of the bearing. Used for sealing the shaft when handling solvent gases.
This type is available with either single mechanical seals or double mechanical seals according to the constituents of the gas being handled.

5) Open four mechanical seal type:
Mechanical seals are provided at four points on the rotor shaft. Handled gas is completely separated from the bearing, Suitable for sealing the shaft when handling a special type of gas or steam that reacts when coming in contact with lubricating oil



시동시의 소음

시동시 약간의 불규칙적인 소음이 생긴다. 그러나 15~30 후면 정상이 된다. (오일 점도에서 생김)

NOISE AT STARTING

At starting a little noise may arise extraordinary, and it will be normal in 15~30 minutes.
(causing from oil viscosity)

소 음 - NOISE -

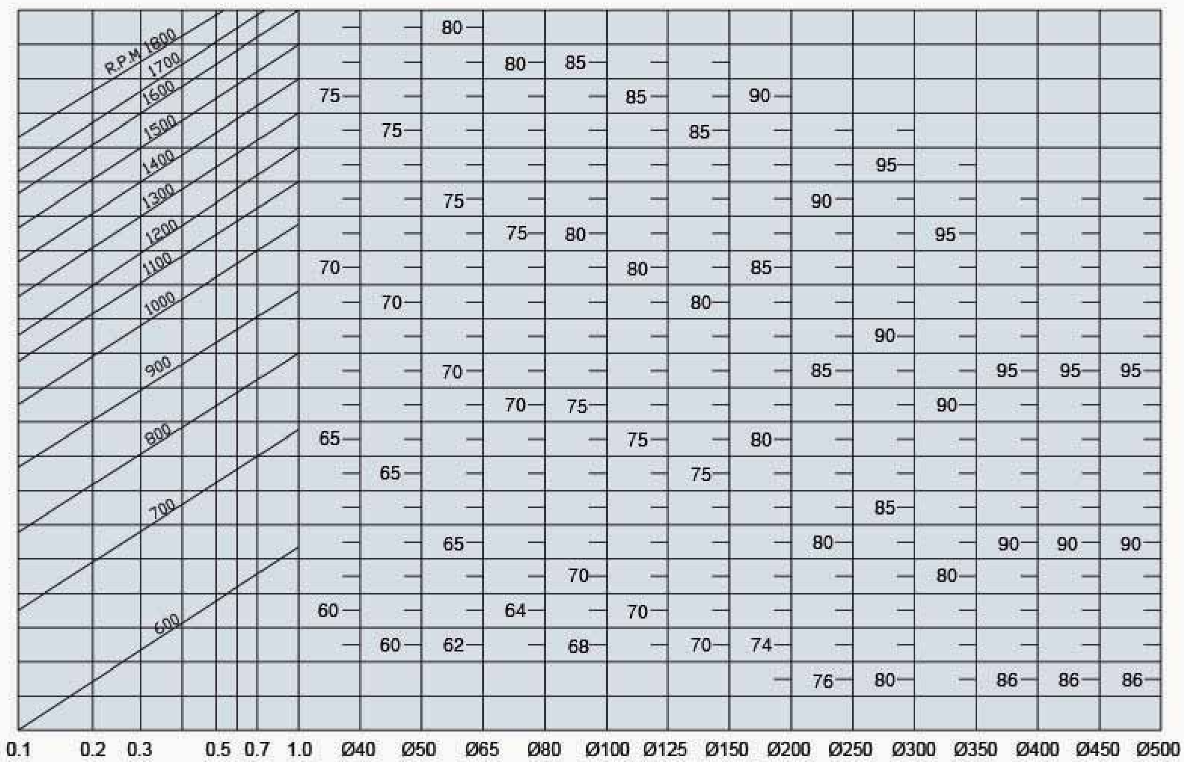
부로아의 맥동으로부터 나오는 소음은 부로아의 크기, 토출 압력, 회전수 등에 의해 달라진다. 부로아의 소음은 KSA 0701 "소음도 측정방법"에 의하여 측정하고 부로워에서 1m 떨어진 곳에서 4~6점을 측정한다.

Noise emissions from the rotary blower size, discharge pressure and number of revolutions. The blower noise level is measured according to JIS B8346 "Noise Lever Measuring Method for Blower and Compressors". Noise is measured at 4~6 spots which are in apart fro, the blower depending on its size.
Based on the measurement, a typical noise value is calculated according to the following formula.

$$L = 10\log_{10}\left(10^{\frac{L_1}{10}} + 10^{\frac{L_2}{10}} \cdots\cdots + 10^{\frac{L_n}{10}}\right) - 10\log_{10} n$$

L : 평균치 소음 (dB(A)) / L : typical noise level (dB(A))
L_1 L_2 : 측정치 (dB(A)) / L_1 L_2 ..... L_n : measured value (dB(A))
n : 측정수 / n : number of measured values

소음표 (Chart of NOISE)



풍량의 환산- NOTE FOR THE PERFORMANCE TABLE -

성능표상에서의 공기량은 온도 20℃ 절대압력 10,332mmAq 상대습도 65%에서의 흡입상태를 말한다.
공기량 환산은 일반적으로 다음 3가지가 쓰인다.

1) 흡입상태의 공기량
   :흡입상태에서의 (압력, 온도, 습도)를 기준할 때
2) 표준상태의 공기량
   :공기온도 20℃ 절대압력 760mmHg(10,330mmAq) 상대습도 65%를 기준할 때
3) 기준상태
   : 온도 0℃ 절대압(760mmHg)
   습도 건조상태

● 계산

압력 P_1 온도 T_1에서의 공기량을 압력 P_2 온도 T_2 상태에서의 공기량으로 환산할 때

$$Q_2 = Q_1 \times \frac{P_1}{P_2} \times \frac{T_1}{T_2}$$

Q_1 : 절대압력 P_1과 절대온도 T_1에서의 공기량
Q_2 : 절대압력 P_2과 절대온도 T_2에서의 공기량

Air volume listed in the rotary blower performance table represents an air volume at the standard suction state(temperature 20℃, absolute pressure 10,332mmAq (101.3 kPa), relative humidity 65%)
Air volume is generally shown in terms of the following three modes. Valves can be converted be teen them.

1) Air volume at suction state:
   Shown in terms of suction pressure, temperature and humidity.
2) Air volume at standard state:
   Ay temperature 20℃, absolute pressure 760mmHg(101.3 kPa) and relative humidity 65%
   When the temperature is 0℃ , absolute pressure 760mmHg(101.3 kPa) and when the air is dry.

The air volume conversion formula is as follows:

$$Q_2 = Q_1 \times \frac{P_1}{P_2} \times \frac{T_1}{T_2}$$

Where
Q_1 : air volume(m³/min) at absolute pressure of P_1(mmAq) and absolute temperature of T_2(K)
Q_2 : air volume(m³/min) at absolute pressure of P_2(mmAq) and absolute temperature of T_2(K)

온도(토출공기의 온도)

- THE DISCHARGE TEMPERATURE AT DISCHARGE AIR -

토출압력이 0.1Kg/cm² 상승함에 따라 대기온도보다 10~15℃씩 상승한다.

예) 흡입온도 15 ℃
토출압력 0.4Kg/cm²
이때 토출온도는 (4×10)+15≒55 ℃

When the discharge temperature at discharge air pressure increased every 0.1kg/cm², discharge temperature increase each 10~15℃ on the ambient temperature
Ex) suction temp 15 ℃
discharge pressure 0.4kg/cm²
discharge temp is (4×10)+15≒55 ℃

축동력 - MOTOR -

성능표상의 축동력은 V벨트 Type 에서 요구되는 수치이다 .
모터 출력은 축동력보다 10~20% 큰 것을 선정하여야 한다.

Shaft horse power listed in the performance table is the requirements for transmission(V-Belt)
Motor output will be 10-20% larger than the shaft horse power.

범 위 - RANGE -

부로워

배관구경 : 40~500mm
흡입압력 : 대기압
토출압력 : 1,000 ~ 20,000mmAq
공 기 압 : 1~450m³/min

BLOWERS

Piping dia : 40 ~ 500 mm
Suction pressure : atmospheric pressure.
Discharge pressure : 1,000 ~ 20,000 mmAq
Capacity : 1~450m³/min

진공부로워

배관구경 : 65~500mm
흡입압력 : -1,000 ~ -6,000mmAq
토출압력 : 대기압
공 기 압 : 2~450m³/min

VACUUM BLOWERS

Piping dia : 65 ~ 500 mm
Suction pressure : -1,000 ~ -6,000mmAq
Discharge pressure : atmospheric pressure.
Capacity : 2~450m³/min

적 용 - APPLICATION -

공기용

1) 공기 이송장치
2) 페수폭기용
3) 식품이나 파우다를 혼합시킬 때
4) 시멘트나 비닐을 교반시킬 때

AIR BLOWER

1) Pneumatic system
2) Aeration for waste water
3) Aeration for powder of granular food
4) Aeration for cement or vinyl

가스용

가스 이송이나 순환용
1) 수소
2) 질소
3) 산소
4) 아세틸렌
5) 아황산 가스
6) 기타

GAS BLOWER

Gas transportation or circulation
1) Hydrogen
2) Nitrogen
3) Oxygen
4) Acetylene
5) Sulfurous acid gas
6) Others

진공용

1) 이송장치
2) 제지기계에서의 탈수장치

VACUUM BLOWER

1) Pneumatic system
2) Dehydration for paper making machines

냉각장치 - WATER COOLING SYSTEM -

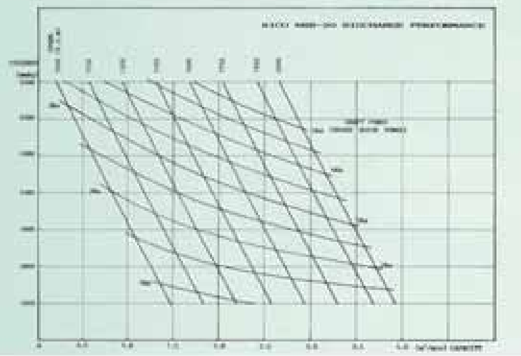
토출압력이 0.6kg/cm² 이상인 경우는 냉각장치를 설치 합니다.
이때에는 냉각수가 필요합니다.

Discharge pressure higher than 0.6kg/cm², then use water cooling system

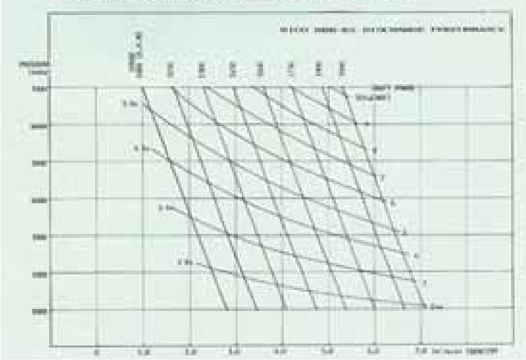
ROTARY TYPE ROOTS BLOWER

NICO NRB TYPE FOOTS BLOWER PERFORMANCE TABLE

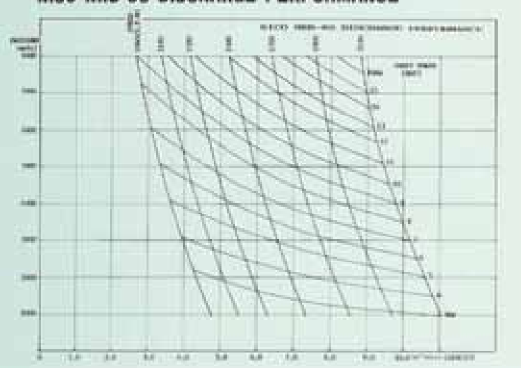
NICO NRB-50 DISCHARGE PERFORMANCE



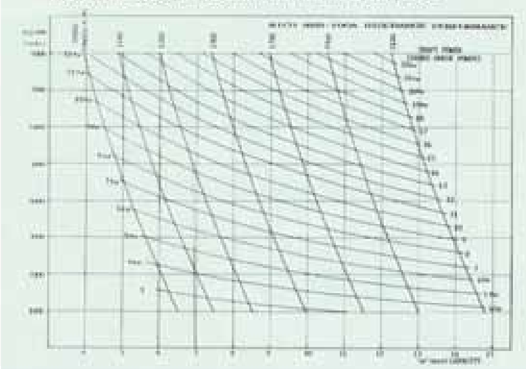
NICO NRB-65 DISCHARGE PERFORMANCE



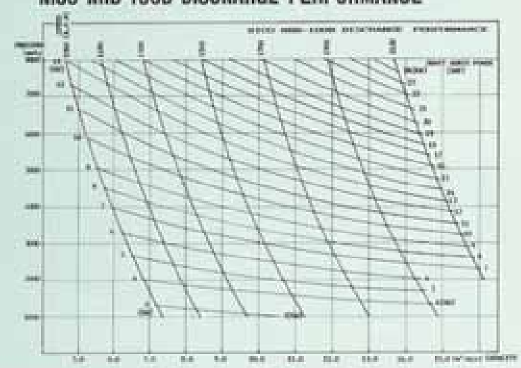
NICO NRB-80 DISCHARGE PERFORMANCE



NICO NRB-100A DISCHARGE PERFORMANCE

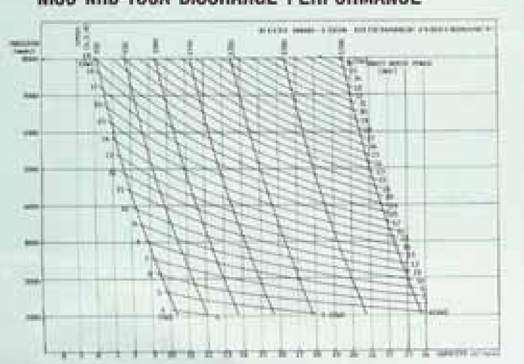


NICO NRB-100B DISCHARGE PERFORMANCE

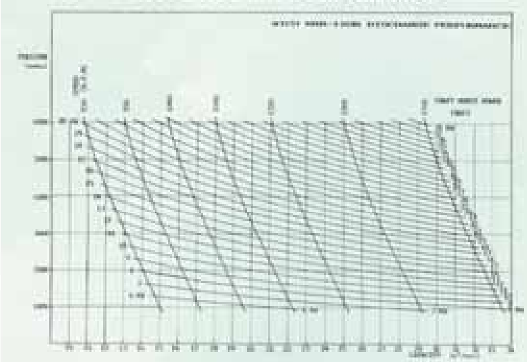


NICO NRB-125A DISCHARGE PERFORMANCE

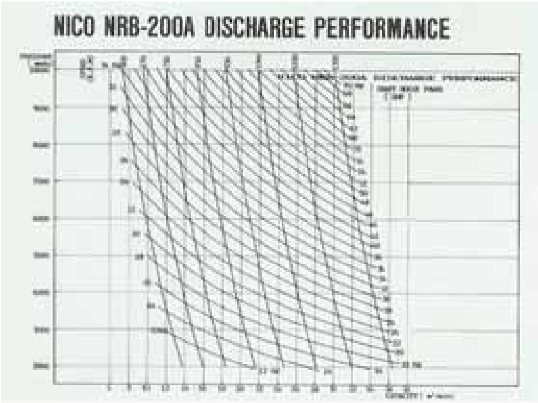
NICO NRB-150A DISCHARGE PERFORMANCE

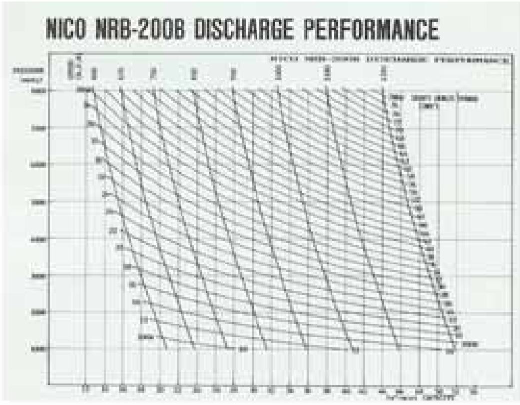


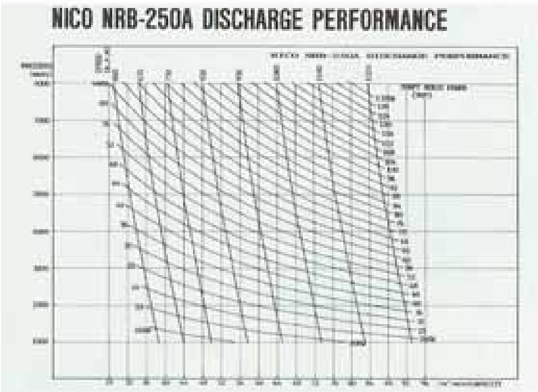
NICO NRB-150B DISCHARGE PERFORMANCE

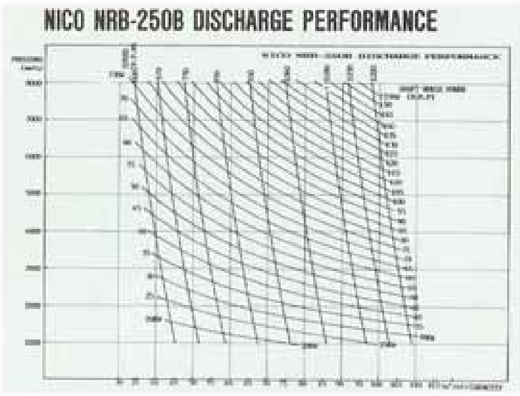


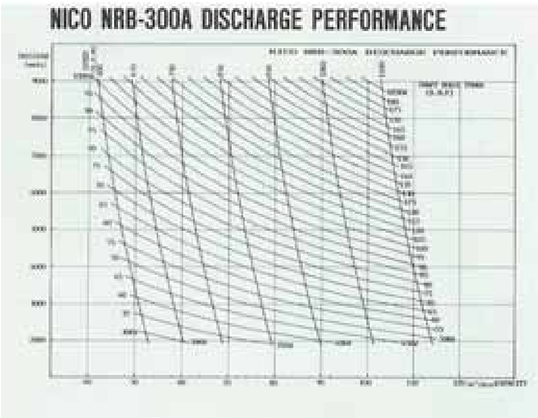
NICO NRB TYPE FOOTS BLOWER PERFORMANCE TABLE

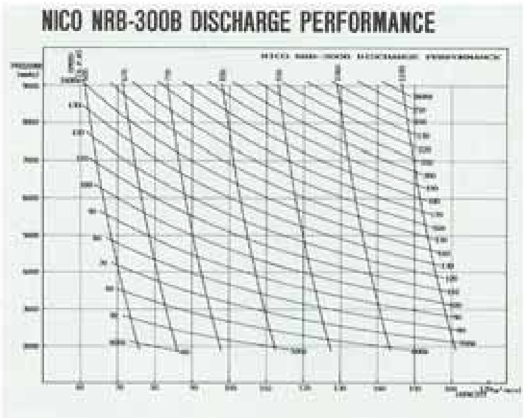












NAE WAY ROOTS BLOWER PERFORMANCE TABLE(FOR LOW PRESSURE)

TYPE	SPEED	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
BORE	(RPM)	2000mmAq		3000mmAq		4000mmAq		5000mmAq		6000mmAq		7000mmAq		8000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRB −50	1000	1.26	1.2	1.06	1.6	0.86	2.0	0.61	2.4	0.41	2.8	0.21	3.2	0.01	3.6
	1150	1.62	1.3	1.42	1.8	1.22	2.3	0.97	2.7	0.77	3.2	0.57	3.6	0.37	4.1
	1300	1.99	1.5	1.79	2.0	1.59	2.5	1.34	3.0	1.14	3.6	0.94	4.0	0.74	4.6
	1450	2.36	1.6	2.16	2.2	1.96	2.8	1.7	3.3	1.5	3.9	1.3	4.5	1.1	5.1
	1600	2.73	1.7	2.53	2.4	2.33	3.0	2.08	3.6	1.88	4.3	1.68	4.9	1.48	5.6
	1750	3.09	1.8	2.89	2.6	2.69	3.2	2.44	3.9	2.24	4.6	2.04	5.3	1.84	6.0
	1900	3.46	1.9	3.26	2.7	3.06	3.5	2.8	4.2	2.6	5.0	2.4	5.7	2.2	6.5
	2000	3.7	2.0	3.52	2.8	3.32	3.6	3.06	4.4	2.86	5.2	2.66	6.0	2.46	6.8
NRB −65	1000	2.5	1.9	2.2	2.6	1.9	3.3	1.6	4.0	1.3	4.7	1.03	5.4	0.74	6.1
	1150	3.14	2.1	2.84	2.9	2.54	3.7	2.24	4.5	1.96	5.3	1.67	6.1	1.38	6.9
	1300	3.78	2.3	3.48	3.2	3.18	4.1	2.88	5.0	2.6	5.9	2.3	6.8	2.02	7.7
	1450	4.42	2.5	4.12	3.5	3.82	4.5	3.52	5.5	3.24	6.5	2.95	7.5	2.66	8.6
	1600	5.06	2.7	4.76	3.6	4.46	4.9	4.16	6.0	3.88	7.2	3.59	8.3	3.3	9.4
	1750	5.7	3.0	5.4	4.2	5.1	5.4	4.8	6.6	4.5	7.8	4.2	9.1	3.94	10.3
	1900	6.34	3.1	6.04	4.5	5.74	5.8	5.44	7.1	5.16	8.4	4.87	9.7	4.58	11.1
	2000	6.77	3.3	6.47	4.7	6.17	6.1	5.87	7.5	5.59	8.9	5.3	10.3	5.0	11.7
NRB −80	1060	4.41	2.9	4.05	3.9	3.68	4.9	3.38	5.9	3.12	6.9	2.87	7.9	2.62	8.9
	1180	5.11	3.1	4.75	4.2	4.38	5.4	4.08	6.5	3.82	7.6	3.57	8.7	3.35	9.9
	1320	5.92	3.4	5.56	4.6	5.19	5.9	4.89	7.2	4.63	8.4	4.38	9.7	4.16	10.9
	1500	6.97	3.7	6.61	5.2	6.24	6.6	5.94	8.0	5.68	9.4	5.43	10.8	5.21	12.3
	1700	8.13	4.1	7.77	5.7	7.4	7.3	7.1	8.9	6.84	10.6	6.6	12.2	6.37	13.8
	1900	9.3	4.5	8.94	6.3	8.57	8.1	8.27	9.9	8.0	11.7	7.76	13.5	7.54	15.3
	2120	10.5	4.9	10.21	6.9	9.84	8.9	9.54	10.9	9.28	13.0	9.03	15.0	8.81	17.0
NRB −100A	1060	6.13	3.6	5.68	5.0	5.22	6.4	4.85	7.7	4.53	9.1	4.22	10.4	3.94	11.8
	1180	7.07	3.9	6.62	5.5	6.16	7.0	5.8	8.5	5.47	10.0	5.16	11.5	4.88	13.0
	1320	8.17	4.3	7.72	6.0	7.26	7.7	6.9	9.4	6.57	11.1	6.26	12.8	5.98	14.5
	1500	9.58	4.8	9.13	6.7	8.67	8.6	8.3	10.5	8.0	12.5	7.67	14.4	7.4	16.3
	1700	11.2	5.3	10.7	7.5	10.2	9.6	9.87	11.8	9.55	14.0	9.24	16.2	8.96	18.4
	1900	12.7	5.8	12.2	8.2	11.7	10.7	11.4	13.1	11.1	15.5	10.8	18.0	10.5	20.4
	2120	14.4	6.4	13.99	9.1	13.5	11.8	13.1	14.5	12.8	17.2	12.5	20.0	12.2	22.6
NRB −100B	1060	6.89	4.0	6.41	5.5	5.92	7.0	5.53	8.5	5.18	10.0	4.86	11.5	4.56	13.0
	1180	7.93	4.3	7.64	6.0	7.34	7.7	6.57	9.4	6.22	11.1	5.9	12.7	5.6	14.4
	1320	9.15	4.7	8.67	6.6	8.18	8.5	7.8	10.4	7.44	12.2	7.12	13.1	6.82	16.0
	1500	10.72	5.2	10.2	7.4	9.75	9.5	9.36	11.6	9.0	13.8	8.7	15.9	8.4	18.1
	1700	12.5	5.8	11.9	8.2	11.4	10.6	11.1	13.1	10.7	15.5	10.4	17.9	10.1	20.3
	1900	14.2	6.4	13.7	9.1	13.2	11.8	12.8	14.5	12.5	17.2	12.1	19.9	11.8	22.6
	2120	16.1	7.1	15.6	10.0	15.1	13.0	14.7	16.1	14.4	19.1	14.1	22.0	13.7	25.1
NRB −125A	1060	9.73	5.6	9.14	7.6	8.5	9.7	8.0	11.7	7.6	13.8	7.2	15.8	6.8	17.9
	1180	11.1	6.1	10.5	8.3	10.0	10.6	9.5	12.9	9.07	15.2	8.68	17.5	8.31	19.8
	1320	12.8	6.6	12.2	9.2	11.6	11.7	11.1	14.3	10.7	16.8	10.3	19.4	9.96	21.9
	1500	14.9	7.3	14.3	10.2	13.7	13.1	13.3	16.1	12.8	18.9	12.4	21.8	12.1	24.7

1. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/㎥.
2. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.
3. The real using motor out put is to be preferred blower shaft power of Lsx1.2 (Shaft power : Ls)

NAE WAY ROOTS BLOWER PERFORMANCE TABLE (FOR LOW PRESSURE)

TYPE	SPEED	CAPACITY AT SUCTION STATE QS(m^3/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
BORE	(RPM)	2000mmAq		3000mmAq		4000mmAq		5000mmAq		6000mmAq		7000mmAq		8000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRB-125A	1700	17.3	8.1	16.7	11.4	16.1	14.7	15.6	17.9	15.2	21.2	14.8	24.5	14.4	27.8
	1900	19.7	8.9	19.1	12.5	18.5	16.2	18.0	19.9	17.6	23.6	17.2	27.3	16.8	30.9
	2120	22.3	9.7	21.7	13.8	21.1	17.9	20.6	22.0	20.2	26.1	19.8	30.2	19.4	34.4
NRB-125B, 150A	850	9.7	5.8	8.9	8.0	8.2	10.2	7.6	12.3	7.1	14.5	6.6	16.7	6.1	18.9
	950	11.3	6.4	10.5	8.8	9.8	11.2	9.2	13.7	8.7	16.1	8.2	18.5	7.7	20.9
	1060	13.0	6.9	12.2	9.6	11.5	12.3	10.9	15.1	10.4	17.7	9.9	20.5	9.4	23.3
	1180	14.9	7.5	14.1	10.5	13.4	13.6	12.8	16.6	12.3	19.6	11.8	22.6	11.3	25.6
	1320	17.1	8.2	16.3	11.6	15.6	15.0	15.0	18.4	14.5	21.8	14.0	25.2	13.5	28.6
	1500	20.0	9.2	19.2	13.1	18.5	16.9	17.9	20.8	17.4	24.6	16.9	28.5	16.4	32.4
	1700	23.1	10.2	22.3	14.5	21.6	18.9	21	23.3	20.5	27.7	20.2	32.0	19.9	36.3
NRB-150B	850	14.0	8.0	13.1	11.1	12.2	14.1	11.4	17.1	10.8	20.1	10.2	23.1	9.6	26.2
	950	16.2	8.8	15.3	12.1	14.4	15.5	13.6	18.9	13.0	22.3	12.3	25.7	11.8	29.0
	1060	18.6	9.5	17.7	13.3	16.8	17.1	16.0	20.8	15.4	24.6	14.7	28.4	14.2	32.2
	1180	21.2	10.4	20.3	14.6	19.4	18.8	18.7	22.9	18.0	27.2	17.4	31.4	16.8	35.6
	1320	24.3	11.4	23.4	16.1	22.4	20.8	21.7	25.5	21.2	30.2	20.4	34.9	19.8	39.6
	1500	28.2	12.7	27.3	18.0	26.3	23.4	25.6	28.7	25.0	34.0	24.3	39.4	23.8	44.7
	1700	32.6	14.0	31.6	20.1	30.7	26.2	30.0	32.3	29.3	38.3	28.7	44.3	28.1	50.4
NRB-200A	600	13.7	9.4	12.6	12.5	11.6	15.5	10.7	18.6	10.0	21.7	9.2	24.8	8.5	27.8
	670	15.9	10.1	14.8	13.6	13.8	17.0	13.0	20.4	12.1	23.8	11.4	27.3	10.7	30.7
	750	18.4	11.0	17.3	14.9	16.3	18.7	15.4	22.5	14.6	26.4	14.0	30.2	13.2	34.1
	850	21.6	12.0	20.5	16.4	19.5	20.7	18.6	25.1	17.8	29.4	17.1	33.8	16.4	38.2
	950	24.7	13.0	23.6	17.9	22.6	22.7	21.7	27.6	21.0	32.5	20.2	37.3	19.5	42.2
	1060	28.2	14.1	27.1	19.6	26.1	25.0	25.2	30.5	24.4	35.9	23.7	41.3	23.0	46.8
	1180	32.0	15.4	31.0	21.5	30.0	27.5	29.0	33.6	28.2	39.6	27.5	45.7	26.8	51.7
	1320	36.4	16.9	53.3	23.7	34.3	30.5	33.4	37.3	32.6	44.1	32.0	50.9	31.2	57.7
NRB-200B	600	19.4	13.0	18.0	17.3	16.6	21.5	15.5	25.7	14.5	30.0	13.6	34.2	12.8	38.5
	670	22.4	14.0	21.0	18.8	19.6	23.5	18.5	28.2	17.5	32.9	16.6	37.7	15.8	42.4
	750	25.9	15.1	24.5	20.4	23.1	25.7	22.0	31.0	21.0	36.4	20.1	41.7	19.3	47.0
	850	30.2	16.5	28.8	22.6	27.4	28.6	26.3	34.6	25.3	40.6	24.4	46.6	23.6	52.6
	950	34.5	17.9	33.1	24.7	31.7	31.4	30.6	38.1	29.6	44.8	28.7	51.5	27.9	58.2
	1060	39.3	19.5	37.9	27.0	36.5	34.5	35.4	42.0	34.4	49.5	33.5	57.0	32.7	64.5
	1180	44.5	21.3	43.1	29.8	41.7	38.2	40.6	46.6	39.6	55.0	38.7	62.9	37.9	71.3
	1320	50.6	23.2	49.2	32.6	47.8	41.9	46.7	51.2	45.7	60.6	44.8	70.0	44.0	79.3
NRB-200C	600	28.9	14.1	27.3	20.1	25.7	26.1	24.4	32.1	23.2	38.1	22.1	44.1	21.1	50.2
	670	33.2	15.4	31.6	22.2	30.0	28.9	28.7	35.6	27.5	42.3	26.4	49.1	25.4	55.8
	750	38.1	17.1	36.5	24.5	34.9	32.0	33.6	39.6	32.4	47.2	31.3	54.7	30.0	62.2
	850	44.3	19.1	42.7	27.6	41.0	36.1	39.7	44.6	38.5	53.2	37.4	61.7	36.4	70.2
	950	50.4	21.1	48.8	30.6	47.2	40.1	45.8	49.6	44.7	59.2	43.6	68.7	42.6	78.3
	1060	57.2	23.3	55.5	33.6	53.9	43.9	52.6	55.2	51.4	65.8	50.3	76.4	49.3	90.1
	1150	62.7	25.1	61.1	36.1	59.4	47.2	58.1	59.7	56.9	71.2	55.9	82.8	54.8	94.3

4. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/m^3.

5. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.

6. The real using motor out put is to be preferred blower shaft power of Lsx1.2 (Shaft power:Ls)

NAE WAY ROOTS BLOWER PERFORMANCE TABLE(FOR LOW PRESSURE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		2000mmAq		3000mmAq		4000mmAq		5000mmAq		6000mmAq		7000mmAq		8000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRB-250A	600	37.3	20.7	35.6	28.1	34.0	35.5	32.5	43.0	31.3	50.4	30.2	57.8	29.1	65.3
	670	42.6	22.4	40.9	30.7	39.2	39.0	37.8	47.3	36.6	55.6	35.5	63.9	34.4	72.2
	750	48.7	24.4	47.0	33.7	45.3	43.0	44.0	52.3	42.7	61.6	41.6	70.9	40.5	80.2
	850	56.3	26.9	54.7	37.5	53.0	48.0	51.5	58.5	50.3	69.0	49.2	79.6	48.1	90.1
	950	63.8	29.3	62.1	41.1	60.4	52.9	59.0	64.6	57.8	76.4	56.7	88.2	55.6	100.0
	1060	72.2	32.1	70.5	45.3	68.8	58.4	67.4	71.5	66.2	84.6	65.1	97.8	64.0	111.0
	1180	81.3	35.0	79.7	49.7	78.0	64.3	76.5	78.9	75.3	93.5	74.2	108.2	73.1	122.8
	1320	91.8	38.5	90.1	54.8	88.4	71.1	87.0	87.5	85.8	103.8	84.7	120.1	83.6	136.5
NRB-250B	600	43.6	23.7	41.7	32.4	39.7	41.0	38.1	49.7	36.7	58.4	35.4	67.0	34.1	75.6
	670	49.8	25.7	47.9	35.4	45.9	45.1	44.3	54.8	42.9	64.4	41.6	74.1	40.3	83.8
	750	57.0	28.0	55.0	38.9	53.0	49.7	51.4	60.6	50.0	71.4	48.7	82.3	47.4	93.2
	850	65.7	30.9	63.8	43.2	61.8	55.5	60.2	67.7	58.8	80.0	57.5	92.3	56.2	104.6
	950	74.6	33.8	72.7	47.6	70.7	61.3	69.1	75.0	67.7	88.8	66.4	102.5	65.1	116.2
	1060	84.3	37.0	82.4	52.3	80.4	67.6	78.8	83.0	77.4	98.3	76.1	113.6	74.8	128.9
	1180	95.0	40.5	93.1	57.6	91.1	74.6	89.5	91.7	88.1	108.8	86.8	125.8	85.5	142.8
	1320	107.5	44.5	105.6	63.6	103.6	82.7	102.0	101.8	100.6	121.0	99.3	140.1	98.0	159.2
NRB-300A	600	53.0	28.1	51.0	38.4	48.9	48.7	47.2	59.0	45.7	69.3	44.3	79.6	43.0	89.9
	670	60.4	30.5	58.4	42.0	56.3	53.5	54.6	65.0	53.1	76.5	51.7	88.0	50.4	99.6
	750	68.8	33.3	66.8	46.2	64.7	59.0	63.0	71.9	61.5	84.8	60.1	97.7	58.8	110.5
	850	79.3	36.7	77.3	51.3	75.2	65.9	73.5	80.5	72.0	95.1	70.6	109.7	69.3	124.3
	950	89.8	40.1	87.8	56.5	85.7	72.8	84.0	89.1	82.5	105.4	81.1	121.7	79.8	138.0
	1060	101.3	43.9	99.3	62.1	97.2	80.3	95.5	98.5	94.0	116.6	92.6	134.8	91.3	153.0
	1180	114.0	48.1	112.0	68.4	110.0	88.6	108.2	108.9	106.7	129.1	105.3	149.4	104.0	169.6
NRB-300B	600	75.6	38.8	73.0	53.2	70.3	67.6	68.2	82.1	66.2	96.5	64.5	110.0	62.9	125.3
	670	85.9	42.2	83.3	58.3	80.6	74.4	78.5	90.5	76.5	106.6	74.8	122.7	73.2	138.8
	750	97.7	46.1	95.1	64.1	92.4	82.1	90.3	100.1	88.3	118.1	86.6	136.2	85.0	154.2
	850	112.4	50.9	109.8	71.3	107.1	91.7	105.0	112.2	103.0	132.6	101.3	153	99.7	173.4
	950	127.4	55.8	124.8	78.7	122.1	101.5	120.0	124.4	118.0	147.3	116.3	170.1	114.7	193.0
	1060	143.4	61.0	140.8	86.5	138.1	112.0	136.0	137.5	134.0	163.0	132.3	188.5	130.7	214.0
	1180	160.9	66.7	158.3	95.1	155.6	123.4	153.5	151.8	151.5	180.0	149.8	208.5	148.2	236.8
NRB-350	530	94.0	40.5	91.0	59.5	88.0	77.0	86.0	94.5	81.5	112.0	79.5	129.5	77.5	149.5
	600	108.0	46.0	105.0	67.0	102.2	87.0	100.0	107.0	96.0	127.0	94.0	147.0	92.0	169.0
	670	122.0	51.5	119.0	74.5	116.0	97.0	114.0	119.5	110.5	142.0	108.5	164.5	106.5	188.5
	740	136.0	57.0	133.0	82.0	130.0	107.0	128.0	132.0	125.0	157.0	123.0	182.0	121.0	208.0
	880	164.0	68.0	161.0	97.0	158.0	127.0	156.0	157.0	154.0	187.0	152.0	217.0	150.0	247.0
	980	185.0	75.0	182.0	108.0	179.0	142.0	176.0	175.0	174.0	208.0	172.0	242.0	169.0	288.0
NRB-400	530	201.5	92.8	197.1	129.2	192.6	165.5	189.1	201.9	186.0	238.3	183.0	274.6	180.3	311.0
	560	214.1	96.9	209.7	135.4	205.2	173.8	201.7	212.2	198.6	250.6	195.6	289.0	193.0	327.5
	600	231.0	102.4	226.5	143.6	222.0	184.7	218.5	225.9	215.4	267.4	212.4	308.3	209.7	349.4
	630	243.5	106.5	239.1	149.8	234.6	193.0	231.0	236.2	228.0	279.4	225.0	322.3	222.3	365.9
	670	260.3	112.0	255.9	158	251.4	204.0	248.0	250.0	244.8	296.0	241.8	342.0	239.1	389.0
	710	277.1	117.5	272.7	166.3	268.2	215.0	264.7	263.7	261.6	312.4	258.6	361.1	256.0	410.0

7. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/㎥.

8. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.

9. The real using motor out put is to be preferred blower shaft power of Lsx1.2(Shaft power:Ls)

NAE WAY ROOTS BLOWER PERFORMANCE TABLE(FOR LOW PRESSURE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(m³/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		3000mmAq		4000mmAq		5000mmAq		65000mmAq		7000mmAq		8000mmAq		9000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRH-50	1450	2.2	2.3	2.0	2.9	1.7	3.5	1.5	4.1	1.3	4.7	1.1	5.3	0.9	5.9
	1600	2.6	2.5	2.4	3.1	2.1	3.8	1.9	4.4	1.7	5.1	1.5	5.7	1.3	6.5
	1750	2.9	2.6	2.7	3.4	2.5	4.1	2.3	4.8	2.1	5.5	1.9	6.2	1.7	7.0
	1900	3.3	2.8	3.1	3.6	2.8	4.4	2.6	5.2	2.4	6.0	2.2	6.7	2.0	7.5
	2000	3.6	2.9	3.4	3.8	3.1	4.6	2.9	5.4	2.7	6.3	2.5	7.1	2.3	7.9
NRH-65	1450	4.2	3.6	3.9	4.7	3.6	5.7	3.3	6.8	3.0	7.8	2.7	8.9	2.4	9.9
	1600	4.9	4.0	4.5	5.1	4.2	6.3	3.4	7.4	3.7	8.6	3.4	9.7	3.1	10.8
	1750	5.5	4.4	5.3	5.6	4.9	6.9	4.6	8.1	4.3	9.4	4.0	10.6	3.7	11.9
	1900	6.2	4.6	5.9	6.0	5.6	7.4	5.3	8.7	5.0	10.1	4.7	11.4	4.4	12.8
	2000	6.6	4.9	6.3	6.4	6.0	7.8	5.7	9.2	5.4	10.6	5.1	12.1	4.8	13.5
NRH-80	1060	4.1	4.1	3.7	5.1	3.4	6.1	3.2	7.2	2.9	8.2	2.7	9.3	2.5	10.3
	1180	4.8	4.4	4.5	5.6	4.2	6.7	3.9	7.9	3.6	9.0	3.4	10.2	3.0	11.3
	1320	5.7	4.8	5.3	6.1	5.0	7.4	4.7	8.7	4.5	10.0	4.2	11.3	3.9	12.6
	1500	6.8	5.3	6.4	6.8	6.1	8.3	5.8	9.7	5.5	11.2	5.3	12.7	5.1	14.2
	1700	8.0	5.9	7.6	7.6	7.3	9.3	7.0	11.0	6.8	12.6	6.5	14.3	6.3	15.9
	1900	9.2	6.5	8.8	8.7	8.5	10.3	8.2	12.1	7.9	14.0	7.7	15.8	7.5	17.2
	2120	10.5	7.2	10.1	9.3	9.8	11.3	9.5	13.4	9.3	15.5	9.0	17.5	8.8	19.6
NRH-100A	1060	5.8	5.2	5.3	6.6	5.0	8.0	4.6	9.4	4.3	10.8	4.0	12.2	2.7	9.3
	1180	6.8	5.7	6.3	7.2	5.9	8.8	5.6	10.3	5.3	11.9	5.0	13.5	3.4	10.2
	1320	7.9	6.2	7.4	7.9	7.1	9.7	6.7	11.5	6.4	13.1	6.1	14.9	4.2	11.3
	1500	9.4	6.9	8.9	8.9	8.5	10.9	8.2	12.9	7.9	14.8	7.6	16.8	5.3	12.7
	1700	11.0	7.7	10.5	9.9	10.1	12.2	9.8	14.4	9.5	16.7	9.2	19.4	6.5	14.3
	1900	12.5	8.5	12.0	11.0	11.7	13.5	11.4	16.0	11.1	18.5	10.8	21.0	7.8	15.8
	2120	14.4	9.4	13.9	12.2	13.5	14.9	13.2	17.8	12.9	20.6	12.6	23.4	9.0	17.5
NRH-100B	1060	6.6	5.7	6.1	7.3	5.7	8.8	5.3	10.4	5.0	11.9	4.7	13.5	4.4	15.0
	1180	7.8	6.2	7.5	7.9	6.7	9.7	6.4	11.4	6.0	13.1	5.7	14.9	5.4	16.6
	1320	8.9	6.8	8.4	8.8	8.0	10.7	7.6	12.6	7.3	13.5	7.0	16.5	6.7	18.4
	1500	10.5	7.6	10.0	9.8	9.6	12.0	9.2	14.2	8.9	16.4	8.6	18.6	8.3	20.8
	1700	12.3	8.5	11.8	11.0	11.4	13.5	11.0	16.0	10.7	18.5	10.4	21.0	10.1	23.5
	1900	14.1	9.4	13.6	12.2	13.2	14.9	12.8	17.7	12.5	20.5	12.2	23.3	11.9	26.1
	2120	16.1	10.3	15.5	13.5	15.1	16.6	14.8	19.7	14.5	22.8	14.1	25.9	13.9	29.0
NRH-125A	1060	9.4	7.9	8.8	10.0	8.3	12.2	7.8	14.3	7.4	16.4	7.0	18.5	6.7	20.6
	1180	10.9	8.6	10.3	11.0	9.7	13.3	9.3	15.7	8.9	18.1	8.5	20.4	8.1	22.8
	1320	12.5	9.5	11.9	12.1	11.4	14.7	11.0	17.4	10.6	20.0	10.2	22.6	9.8	25.3
	1500	14.8	10.6	14.1	13.6	13.7	16.6	13.2	19.5	12.8	22.5	12.4	25.5	12.0	28.5
	1700	17.2	11.7	16.6	15.1	16.1	18.5	15.6	21.9	15.2	25.3	14.9	28.7	14.5	32.1
	1900	19.6	12.9	19.1	16.7	18.5	20.5	18.1	24.3	17.7	28.1	17.3	31.9	16.9	35.7
	2120	22.3	14.3	21.7	18.5	21.2	22.7	20.8	26.9	20.4	31.2	20.0	35.4	19.6	39.6
NRH-125B ~	850	9.2	8.3	8.4	10.5	7.8	12.7	7.3	14.9	6.8	17.2	6.3	19.5	5.7	21.8
	950	10.8	9.1	10.0	11.6	9.4	14.1	8.9	16.6	8.4	19.1	7.9	21.5	7.4	24.1
	1060	12.6	9.9	11.8	12.7	11.2	15.6	10.7	18.3	10.2	21.2	9.6	24.0	9.1	26.9

10. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/m³.
11. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.
12. The real using motor out put is to be preferred blower shaft power of Lsx1.2 (Shaft power:Ls)

ROTARY TYPE ROOTS BLOWER

NAE WAY ROOTS BLOWER PERFORMANCE TABLE(FOR LOW PRESSURE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		3000mmAq		4000mmAq		5000mmAq		6000mmAq		7000mmAq		8000mmAq		9000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRH-150A	1180	14.5	10.9	13.8	14.0	13.1	17.1	12.6	20.2	12.1	23.3	11.6	26.4	11.1	29.5
	1320	16.8	11.9	16.1	15.5	–	18.9	14.9	22.4	14.4	26.0	13.9	29.5	13.4	33.0
	1500	19.8	13.5	19.0	17.4	18.4	21.4	17.9	25.3	17.4	29.4	16.8	33.4	16.3	37.4
	1700	23.0	15.0	22.2	19.5	21.6	24.0	21.1	28.6	20.6	32.9	20.5	37.4	20.4	41.8
NRH-150B	850	13.5	11.4	12.5	14.5	11.8	17.6	11.1	20.7	10.5	23.9	9.9	26.9	9.3	30.1
	950	15.8	12.5	14.8	15.6	14.0	19.5	13.4	22.9	12.7	26.4	12.1	29.9	11.6	33.4
	1060	18.2	13.7	17.3	17.6	16.5	21.5	15.9	25.4	15.2	29.3	14.6	33.2	14.1	37.1
	1180	20.9	15.1	20.0	19.4	19.2	23.7	18.6	28.0	17.9	32.3	17.3	36.7	16.8	40.9
	1320	24.1	16.6	23.1	21.4	22.3	26.3	21.7	31.1	21.0	35.9	20.4	40.8	19.9	45.6
	1500	28.1	18.6	27.1	24.1	26.4	29.6	25.7	35.1	25.1	40.5	24.5	45.1	23.9	51.5
	1700	32.6	20.7	31.6	27.0	30.9	33.3	30.2	39.5	29.5	45.7	29.0	51.9	28.4	58.2
NRH-200A	600	13.0	12.8	11.9	16.0	11.0	19.2	10.3	22.4	9.4	25.5	8.7	28.1	8.1	31.8
	670	15.3	13.9	14.2	17.5	13.3	21.0	12.4	24.5	11.7	28.1	11.0	31.6	10.4	35.2
	750	17.8	15.3	16.7	19.3	15.8	23.2	15.0	27.2	14.4	31.1	13.6	35.1	12.9	39.1
	850	21.1	16.8	20.0	21.3	19.1	25.9	18.3	30.3	17.6	34.8	16.8	39.4	16.2	43.8
	950	24.3	18.4	23.2	23.4	22.33	28.4	21.6	33.5	20.8	38.4	20.0	43.5	19.4	44.9
	1060	27.9	20.1	26.8	25.8	25.9	31.4	25.1	36.9	24.4	42.5	23.6	48.2	23.0	53.7
	1180	31.9	22.1	30.9	28.3	29.8	34.6	29.0	40.8	28.0	47.1	27.6	53.3	26.9	59.6
	1320	37.2	24.4	35.3	31.4	34.4	38.4	33.5	45.4	32.9	52.4	32.1	59.4	31.5	66.5
NRH-200B	600	18.5	17.7	17.1	22.1	15.9	26.5	14.9	30.9	14.0	35.2	13.1	39.7	12.3	44.1
	670	21.6	19.3	20.1	24.2	19.0	29.1	18.0	33.8	17.1	38.8	16.2	43.7	15.4	48.5
	750	25.2	21.0	23.8	26.5	22.6	31.9	21.6	37.5	20.7	42.9	19.8	48.4	19.1	53.9
	850	29.6	23.2	28.2	29.5	27.0	35.6	26.0	41.8	25.1	48.0	24.3	54.2	23.4	60.4
	950	34.0	25.4	32.6	32.3	31.5	29.2	30.4	46.1	29.5	53.1	28.7	59.9	27.9	66.9
	1060	39.0	27.8	37.6	35.5	36.4	43.3	35.4	51.0	34.5	58.7	33.6	66.5	32.8	74.2
	1180	44.4	30.6	42.9	39.4	41.8	48.7	40.7	56.7	39.8	64.8	39.0	73.5	38.2	82.1
	1320	50.6	33.5	49.2	43.2	48.1	52.7	47.0	62.4	46.1	72.1	45.3	81.7	44.5	91.3
NRH-200C	600	28.1	20.7	26.4	26.9	25.1	33.1	23.9	39.3	22.7	45.5	21.7	51.7	20.7	57.9
	670	32.6	22.8	30.9	29.7	29.5	36.7	28.3	43.6	27.2	50.5	26.1	57.5	25.2	64.4
	750	37.6	25.3	35.9	32.9	34.6	40.8	33.4	48.5	32.2	56.3	31.2	64.1	30.2	71.8
	850	43.9	28.4	42.2	37.2	40.9	45.9	39.7	54.7	38.6	63.5	37.5	72.3	36.6	81.1
	950	50.3	31.5	48.6	41.3	47.2	51.1	46.0	60.9	44.9	70.8	43.3	80.6	42.9	90.4
	1060	57.2	34.6	55.5	45.9	54.2	56.8	53.0	67.7	51.8	78.7	50.8	89.7	49.8	100.5
	1150	62.9	37.2	61.2	49.6	59.9	61.5	58.7	73.4	57.5	85.3	56.5	97.0	55.5	109.0
NRH-250A	600	36.7	28.9	35.0	36.6	33.5	44.3	32.2	51.9	31.1	59.5	29.9	67.3	28.8	75.0
	670	42.1	31.6	40.3	40.2	38.9	48.7	37.7	57.3	36.5	65.8	35.4	74.4	34.3	82.9
	750	48.4	34.7	46.6	44.3	45.3	53.9	43.9	64.4	42.8	73.0	41.7	82.6	40.6	92.2
	850	56.3	38.6	54.5	49.4	53.0	60.3	51.8	71.1	50.6	81.9	49.5	92.8	48.4	103.6
	950	63.9	42.3	62.2	54.5	60.7	66.5	59.5	78.7	58.4	90.9	57.3	103.0	56.1	115.2
	1060	72.6	46.7	70.8	60.2	69.4	73.7	68.2	87.2	67.0	100.7	65.9	114.3	64.7	127.9
	1180	82.0	51.2	80.3	66.2	78.8	81.3	77.6	96.3	76.4	111.5	75.3	126.5	74.1	141.5
	1320	92.8	56.4	91.0	72.3	89.6	90.1	88	106.9	87.2	123.7	86.1	140.6	84.9	157.5

13. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/㎥.
14. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.
15. The real using motor out put is to be preferred blower shaft power of Lsx1.2 (Shaft power:Ls)

NAE WAY ROOTS BLOWER PERFORMANCE TABLE(FOR HIGH PRESSURE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		3000mmAq		4000mmAq		5000mmAq		6000mmAq		7000mmAq		8000mmAq		9000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRH-250B	600	42.9	33.4	40.8	42.2	39.2	51.2	37.8	60.2	36.4	69.0	34.1	77.9	31.7	86.7
	670	49.3	36.5	47.2	46.5	45.6	56.5	44.1	66.4	42.8	76.3	41.5	86.3	40.1	96.3
	750	56.6	40.1	54.5	51.2	52.9	62.4	51.5	73.5	50.1	84.8	48.8	96.0	47.4	107.2
	905	70.8	46.9	67.7	60.4	67.0	73.9	65.6	87.4	64.2	100.9	62.9	114.4	61.5	127.9
	1060	84.8	53.9	82.8	69.6	81.1	85.5	79.7	101.3	78.3	117.0	77.0	132.8	75.7	148.5
	1180	95.8	59.3	93.8	76.8	92.1	94.5	90.7	112.1	89.4	129.6	88.0	147.1	86.7	164.6
	1320	108.7	65.5	106.7	85.2	105.0	104.9	103.6	124.6	102.2	144.3	100.9	163.9	99.6	183.7
NRH-300A	600	52.5	39.6	50.3	50.2	48.6	60.8	47.0	71.4	45.6	81.9	44.2	92.6	40.1	103.2
	670	60.1	43.3	57.9	55.1	56.2	66.9	54.6	78.8	53.2	90.6	51.9	102.6	50.7	114.4
	750	68.8	47.6	66.6	60.8	64.8	74.1	63.3	87.3	61.9	100.6	60.5	113.8	59.3	127.1
	905	85.5	55.8	83.3	71.8	81.6	87.8	80.0	103.7	78.6	119.7	77.3	135.7	76.1	151.7
	1060	102.2	63.9	100.1	82.8	98.3	101.5	96.8	120.1	95.3	138.8	94.0	157.6	92.8	176.3
	1180	115.3	70.5	113.3	91.3	111.4	112.2	109.9	132.9	108.4	153.9	107.1	174.7	105.9	195.6
NRH-300B	600	75.1	54.8	72.4	69.6	70.2	84.6	68.2	99.4	66.4	114.3	64.8	129.1	63.2	143.9
	670	85.8	60.0	83.0	76.6	80.9	93.2	78.8	109.8	77.0	126.4	75.4	143.0	73.8	159.6
	750	98.0	66.0	95.1	84.6	93.0	103.1	90.9	121.6	89.2	140.3	87.6	158.8	86.0	177.3
	905	121.5	77.6	118.6	100.0	116.5	122.3	114.4	144.8	112.7	167.3	111.1	189.6	109.5	211.9
	1060	145.0	89.1	142.2	115.4	140.1	141.6	138.0	167.9	136.3	194.2	134.6	220.4	133.0	246.6
	1180	163.0	98.0	160.3	127.1	158.1	156.4	156.0	185.4	154.3	214.8	152.6	243.9	150.9	273.0
NRH-350	530	93.7	61.3	90.6	79.3	88.5	97.3	83.9	115.4	81.8	133.4	79.8	153.9	77.7	174.6
	600	108.1	69.0	105.1	89.6	103.0	110.2	98.8	130.8	96.8	151.4	94.7	174.1	92.7	196.7
	670	122.5	76.7	119.4	99.9	117.4	123.1	113.8	146.3	111.7	169.4	109.7	194.2	107.6	218.9
	740	136.9	84.5	133.9	110.2	131.8	135.9	128.7	161.7	126.7	187.5	124.6	214.2	122.5	241.0
	880	165.8	99.9	162.7	130.8	160.6	160.7	158.6	192.6	156.5	223.5	154.5	254.4	152.4	285.3
	980	187.4	111.2	184.3	146.3	181.2	181.3	179.2	214.3	177.1	249.3	174.1	296.6	170.9	344.1
NRH-400	530	203.0	133.1	198.4	170.5	194.8	208.0	191.6	245.4	188.5	282.8	185.7	320.3	182.9	357.8
	560	216.0	139.5	211.4	179.0	207.8	218.6	204.6	258.1	201.5	297.7	198.8	337.3	196.1	376.9
	600	233.3	147.9	228.7	190.2	225.1	232.7	221.9	275.1	218.8	317.5	216.0	360.0	213.2	402.5
	670	263.6	162.7	258.9	210.1	255.4	257.5	252.1	304.9	249.1	352.3	246.3	400.7	243.5	449.1
	710	280.9	171.3	276.2	222.5	272.6	271.6	269.4	321.8	266.4	371.9	263.7	422.3	261.0	472.7
NRH-450	530	226.5	148.2	221.5	190.0	217.3	231.9	213.5	273.8	209.7	315.7	205.9	357.6	202.1	399.5
	560	240.9	155.3	235.9	199.5	231.8	243.7	227.9	287.9	224.1	332.1	220.3	376.3	216.5	420.5
	600	260.3	164.8	255.1	212.2	251.0	260.0	247.3	306.9	243.6	354.3	239.9	401.7	236.2	449.1
	670	294.1	181.4	288.9	234.2	284.8	287.1	281.2	340.0	277.6	392.9	274.0	445.9	270.4	498.9
	710	313.4	190.9	308.3	246.9	304.2	302.9	300.5	359.0	296.7	415.0	293.0	471.0	289.3	527.0
NRH-500	530	375.5	230.8	370.0	297.5	365.4	364.1	361.5	430.7	357.7	497.5	354.3	564.0	350.9	630.5
	560	398.5	242.2	392.8	312.5	388.4	382.9	384.4	453.2	380.7	523.7	377.2	594.1	373.7	664.5
	600	429.3	257.2	423.6	332.7	419.2	408.0	415.2	483.5	411.5	558.9	408.0	634.3	404.5	709.7
	630	452.4	268.5	446.7	347.7	442.3	426.9	438.3	506.1	434.6	585.3	431.1	664.6	427.6	734.9

16. Suction state pressure 760mmHg, temperature 20℃, relative humidity 65%, specific weight 1.2kg/㎥.
17. Discharge pressure are over 0.6kg/㎠ gear lubricating oil cooling water is required.
18. The real using motor out put is to be preferred blower shaft power of Ls x1.2(Shaft power:Ls)

ROTARY TYPE ROOTS BLOWER

NAE WAY ROOTS BLOWER PERFORMANCE TABLE (VACUUM, DRY TYPE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(m³/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		−2000mmAq		−3000mmAq		35000mmAq		−4000mmAq		−4500mmAq		−5000mmAq		−6000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRVD−50	1000	1.15	1.25	0.69	0.7	0.42	1.9	−	−	−	−	−	−	−	−
	1250	1.76	1.5	1.3	1.9	1.0	2.2	0.77	2.5	0.5	2.7	−	−	−	−
	1375	2.07	1.6	1.6	2.1	1.3	2.4	1.08	2.7	0.8	2.9	−	−	−	−
	1500	2.37	1.7	1.9	2.3	1.64	2.6	1.38	2.9	1.1	3.2	0.82	3.5	−	−
	1625	2.68	1.8	2.22	2.4	1.95	2.7	1.69	3.1	1.42	3.4	1.13	3.7	−	−
	1750	2.98	1.9	2.52	2.6	2.25	2.9	1.99	3.3	1.72	3.6	1.43	3.9	−	−
	2000	3.6	2.05	3.14	2.9	2.87	3.3	2.61	3.7	2.34	4.1	2.05	4.5	−	−
NRVD−65	1000	2.2	1.9	1.5	2.6	1.1	2.9	0.75	3.4	0.34	3.7	−	−	−	−
	1250	3.26	2.3	2.5	3.2	2.19	3.6	1.8	4.0	1.4	4.5	0.95	4.9	−	−
	1375	3.8	2.5	3.1	3.4	2.7	3.9	2.3	4.4	1.9	4.9	1.49	5.4	−	−
	1500	4.3	2.6	3.6	3.7	3.2	4.2	2.8	4.7	2.4	5.3	2.0	5.8	−	−
	1625	4.8	2.8	4.1	3.9	3.8	4.5	3.4	5.1	3.0	5.7	2.5	6.2	−	−
	1750	5.4	3.0	4.7	4.2	4.3	4.8	3.9	5.4	3.5	6.0	3.0	6.7	−	−
	2000	6.4	3.4	5.7	4.7	5.4	5.4	5.0	6.2	4.6	6.8	4.1	7.5	−	−
NRVD−80	1060	4.0	2.9	3.4	3.9	3.2	4.4	2.9	4.9	2.6	5.4	2.4	5.9	1.87	6.9
	1180	4.7	3.2	4.1	4.3	3.9	4.8	3.6	5.4	3.3	5.9	3.1	6.5	2.5	7.6
	1320	5.5	3.4	4.9	4.7	4.7	5.3	4.4	5.9	4.1	6.6	3.9	7.2	3.4	8.5
	1500	6.6	3.7	6.0	5.2	5.8	5.9	5.5	6.6	5.2	7.3	5.0	8.0	4.4	9.5
	1700	7.8	4.2	7.1	5.8	6.9	6.6	6.7	7.4	6.4	8.2	6.1	9.0	5.5	10.6
	1900	8.9	4.5	8.3	6.3	8.1	7.2	7.8	8.1	7.5	9.0	7.3	9.9	6.7	11.8
NRVD−100B	1060	6.7	4.0	6.0	5.5	5.7	6.3	5.3	7.0	5.0	7.8	4.7	8.5	4.0	10.1
	1180	7.7	4.3	7.0	6.0	6.7	6.9	6.4	7.7	6.0	8.5	5.7	9.4	5.0	11.1
	1320	8.9	4.8	8.2	6.6	7.9	7.6	7.5	8.5	7.2	9.5	6.9	10.4	6.3	12.3
	1500	10.5	5.3	9.8	7.4	9.5	8.5	9.1	9.5	8.8	10.6	8.5	11.7	7.8	13.8
	1700	12.2	5.8	11.5	8.3	11.2	9.5	10.8	10.7	10.5	11.9	10.3	13.1	9.5	15.5
	1900	14.0	6.4	13.3	9.1	13.0	10.5	12.6	11.8	12.3	13.2	12	14.5	11.3	17.2
NRVD−125A	1060	9.47	5.6	8.6	7.7	8.2	8.7	7.8	9.7	7.4	10.7	7.0	11.8	6.2	13.8
	1180	10.9	6.1	10.1	8.4	9.7	9.5	9.3	10.6	8.9	11.8	8.5	12.9	7.7	15.2
	1320	12.5	6.6	11.7	9.2	11.3	10.4	10.9	11.7	10.5	13	10.1	14.3	9.3	16.8
	1500	14.7	7.3	13.9	10.2	13.5	11.7	13.1	13.1	12.7	14.6	12.3	16	11.5	18.9
	1700	17.0	8.1	16.2	11.4	15.8	13.01	15.4	14.7	15.0	16.3	14.6	17.9	13.8	21.3
	1900	19.4	8.9	18.6	12.6	18.2	14.4	17.8	16.3	17.4	18.1	17.0	19.9	16.2	23.6
NRVD−125B ~150A	850	9.5	5.8	8.4	8.0	7.9	9.1	7.5	10.2	7.0	11.3	6.5	12.3	5.5	14.5
	950	11.1	6.4	10.0	8.8	9.5	10.0	9.1	11.2	8.6	12.5	8.1	13.7	7.1	16.1
	1060	12.8	6.9	11.7	9.6	11.2	11.0	10.8	12.3	10.3	13.7	9.8	15.1	8.8	17.8
	1180	14.7	7.5	13.6	10.5	13.1	12.1	12.7	13.6	12.2	15.1	11.7	16.6	10.7	19.6
	1320	16.9	8.2	15.8	11.6	15.3	13.3	14.9	15.0	14.4	16.7	13.9	18.4	12.9	21.8
	1500	19.8	9.2	18.7	13.0	18.2	15.0	17.8	16.9	17.3	18.9	16.8	20.8	15.8	24.6
NRVD−150B	850	13.7	8.0	12.4	11.1	11.8	12.6	11.2	14.1	10.6	15.6	10.0	17.1	8.7	20.1
	950	15.9	8.8	14.6	12.1	14.0	13.8	13.4	15.5	12.8	17.2	12.2	18.9	10.9	22.3
	1060	18.3	9.5	17.0	13.3	16.4	15.2	15.8	17.1	15.2	18.9	14.6	20.8	13.3	24.6
	1180	20.9	10.4	19.6	14.6	19.0	16.7	18.4	18.8	17.8	20.9	17.2	22.9	15.9	27.2
	1320	24.0	11.4	22.7	16.1	22.0	18.5	21.4	20.8	20.8	23.1	20.2	25.5	19.0	30.2
	1500	27.9	12.7	26.6	18.0	26.0	20.7	25.4	23.4	24.8	26	24.2	28.7	22.9	34.0
NRVD−200A	670	15.6	10.1	14.0	13.5	13.3	15.3	12.6	17.0	11.9	18.8	11.2	20.4	9.7	24.0
	750	18.1	11.0	16.5	14.8	15.8	16.8	15.1	18.7	14.4	20.6	13.7	22.5	12.2	26.5
	850	21.3	12.0	19.7	16.3	19.0	18.6	18.3	20.7	17.6	23.0	16.9	25.1	15.4	29.6

19. When the design pressure are over − 4000mmAq. Gear lubricating oil cooling water is required.

20. The real using motor out put is to be preferred blower shaft power of Ls x1.2 (Shaft power:Ls)

NAE WAY ROOTS BLOWER PERFORMANCE TABLE (VACUUM, DRY TYPE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE													
		-2000mmAq		-3000mmAq		-3500mmAq		-4000mmAq		-4500mmAq		-5000mmAq		-6000mmAq	
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls
NRVD-200A	950	24.4	13.0	22.8	17.9	22.1	20.4	21.4	22.7	20.7	25.3	20.0	27.6	18.5	32.6
	1060	27.9	14.1	26.3	19.6	25.6	22.4	24.9	25.0	24.2	27.8	23.5	30.5	22.0	36.0
	1180	31.7	15.4	30.1	21.4	29.4	24.6	28.7	27.5	28.0	30.6	27.3	33.6	25.8	39.8
NRVD-200B	670	21.9	14.0	20.0	18.7	19.1	21.1	18.2	23.5	17.3	25.8	16.4	28.2	14.5	33.0
	750	25.4	15.1	23.5	20.4	22.6	23.1	21.7	25.7	20.8	28.4	19.6	31.0	18.0	36.4
	850	29.7	16.5	27.8	22.5	26.9	25.5	26.0	28.6	25.1	31.5	24.2	34.6	22.3	40.6
	950	34.0	17.9	32.1	24.6	31.2	28.0	30.3	31.4	29.4	34.7	28.5	38.1	26.6	44.8
	1060	38.8	19.5	36.9	27.0	36	30.7	35.1	34.5	34.2	38.2	33.3	42.0	31.4	49.5
	1180	44.0	21.3	42.1	29.7	41.2	33.7	40.3	38.2	39.4	42.0	38.5	46.6	36.6	54.6
NRVD-200C	670	32.9	15.5	30.4	22.2	29.3	25.5	28.2	28.9	27.1	32.3	26.1	35.6	23.9	42.3
	750	37.6	17.1	35.3	24.6	34.2	28.3	33.1	32.1	32.0	35.8	31.0	39.6	28.8	47.2
	850	43.7	19.1	41.4	27.6	40.3	31.8	39.3	36.1	38.2	40.4	37.1	44.6	34.9	53.1
	950	49.9	21.1	47.5	30.6	46.5	35.4	45.4	40.1	44.3	44.9	43.3	49.6	41.1	59.2
	1060	56.6	23.3	54.3	33.9	53.2	39.2	52.2	44.5	51.1	49.8	50.0	55.2	47.8	65.8
	1180	64.0	25.7	61.7	37.5	60.6	43.4	59.6	49.4	58.4	55.3	57.4	61.2	55.2	73.2
NRVD-250A	670	42.1	22.4	39.7	30.7	38.5	34.8	37.4	39.0	36.3	43.1	35.2	47.3	31.8	55.6
	750	48.2	24.2	45.8	33.7	44.6	38.3	43.5	43.0	42.4	47.6	41.3	52.3	37.9	61.6
	850	55.8	26.9	53.4	37.4	52.2	42.6	51.1	48.0	50.0	53.2	48.9	58.5	45.5	69.0
	950	63.3	29.3	60.9	41.1	59.7	46.9	58.6	52.9	57.5	58.7	56.4	64.6	53.0	76.4
	1060	71.7	32.1	69.3	45.2	68.1	51.7	67.0	58.4	65.9	64.9	64.8	71.5	61.4	84.6
	1180	80.8	35.0	78.4	49.7	77.2	56.9	76.1	64.3	75.0	71.6	73.9	78.9	70.5	93.6
NRVD-250B	670	49.2	25.7	46.4	35.4	45.1	40.2	43.8	45.1	42.5	49.9	41.3	54.8	38.6	64.5
	750	56.3	28.0	53.5	38.9	52.2	44.2	50.9	49.7	49.6	55.1	48.4	60.6	45.7	71.4
	850	65.1	30.9	62.3	43.2	61.0	49.3	59.7	55.5	58.4	61.6	57.2	67.7	54.5	80.0
	950	74.0	33.8	71.2	47.5	69.9	54.4	68.6	61.3	67.3	68.1	66.1	75.0	63.4	88.8
	1060	83.7	37.0	80.9	52.3	79.6	59.9	78.3	67.6	77.0	75.2	75.8	83.0	73.1	98.3
	1180	94.4	40.5	91.6	57.5	90.3	66.0	89.0	74.6	87.7	83.1	86.5	91.7	83.0	108.8
NRVD-300A	670	59.1	30.5	56.0	42.0	54.5	47.7	53.1	53.5	51.7	59.2	50.3	65.0	47.3	76.5
	750	67.5	33.2	64.4	46.1	62.9	52.5	61.5	59.0	60.1	65.4	58.7	71.8	55.7	84.7
	850	78.0	36.7	74.9	51.2	73.4	58.5	72.0	65.8	70.6	73.1	69.2	80.4	66.2	95.0
	950	88.5	40.1	85.4	56.4	83.9	64.5	82.5	72.7	81.1	80.9	79.7	89.0	76.7	105.3
	1060	100.1	43.9	96.9	62.0	95.4	71.1	94.0	80.2	92.6	89.3	91.2	98.4	88.2	116.6
	1180	112.7	48.0	109.6	68.3	108.1	78.4	106.7	88.5	105.3	98.7	103.9	108.8	100.9	129.0
NRVD-300B	670	85.0	42.2	81.3	58.3	79.5	66.3	77.9	74.4	76.1	82.4	74.4	90.5	70.8	106.6
	750	96.8	46.1	93.1	64.1	91.3	73.0	89.7	82.1	87.9	91.1	85.2	100.1	82.6	118.2
	850	111.5	50.9	107.8	71.3	106	81.5	104.4	91.7	102.6	101.9	100.9	112.2	97.3	132.6
	950	126.5	55.8	122.8	78.7	121.0	90.0	119.4	101.5	117.6	112.9	115.9	124.4	112.3	147.3
	1060	142.5	61.0	138.8	86.5	137.0	99.2	135.4	112.0	133.6	124.7	131.9	137.5	128.3	163.0
	1180	160.0	66.7	156.3	95.1	154.5	109.2	152.9	123.4	151.1	137.5	148.4	151.8	145.8	180.1
NRVD-350	600	105.0	47.0	101.0	67.0	98.0	76.0	95.0	87.0	92.0	98.0	92.0	109.0	90.0	129.0
	740	134.0	57.0	130.0	82.0	127.0	94.0	124.0	107.0	122.0	120.0	113.0	133.0	110.0	156.0
	880	163.0	67.0	158.0	97.0	155.0	112.0	153.0	127.0	150.0	142.0	147.0	157.0	143.0	179.0
	980	183.0	75.0	178.0	108.0	176.0	125.0	173.0	142.0	170.0	158.0	167.0	175.0	164.0	198.0
NRVD-400	600	229.3	102.4	223.1	143.6	220.2	164.1	217.4	184.7	214.4	205.3	211.6	225.9	205.6	246.5
	630	241.9	106.5	235.7	149.7	232.8	171.3	230.0	193.0	227.0	214.5	224.2	236.2	218.2	258.2
	670	258.7	112.0	252.5	158	249.6	180.9	246.8	204.0	243.8	226.9	241.0	250.0	235.0	273.0
	710	275.5	117.5	269.3	166.2	266.4	190.5	263.6	215.0	260.6	239.2	257.8	263.7	251.8	287.7

21. When the design pressure are over - 4000mmAq, Gear lubricating oil cooling water is required.

22. The real using motor out put is to be preferred blower shaft power of Ls x1.2(Shaft power:Ls)

ROTARY TYPE ROOTS BLOWER

NAE WAY ROOTS BLOWER PERFORMANCE TABLE (VACUUM, WET TYPE)

TYPE BORE	SPEED (RPM)	CAPACITY AT SUCTION STATE QS(㎥/min)& SHAFT POWER Ls(Kw) AT DISCHARGE PRESSURE												
		-100mmHg		-200mmHg		-300mmHg		-400mmHg		-450mmHg		-500mmHg		Sealing Water
		QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	QS	Ls	
NRVW -50	1180	2.7	1.3	2.4	2.1	2.1	2.8	1.8	3.6	1.7	3.9	1.5	4.3	2ℓ
	1320	3.1	1.4	2.8	2.3	2.5	3.1	2.2	3.9	2.1	4.4	1.9	4.8	
	1500	3.6	1.5	3.3	2.5	3.0	3.4	2.7	4.4	2.6	4.9	2.4	5.3	
	1700	4.2	1.7	3.9	2.7	3.6	3.8	3.3	4.9	3.1	5.4	3.0	5.9	
NRVW -65	1180	5.0	2.1	4.6	3.4	4.2	4.7	3.8	5.9	3.8	6.6	3.6	7.3	5ℓ
	1320	5.7	2.2	5.3	3.7	4.9	5.1	4.5	6.6	4.4	7.3	4.3	8.0	
	1500	6.6	2.4	6.2	4.1	5.8	5.7	5.4	7.4	5.2	8.2	5.0	9.0	
	1700	7.6	2.6	7.2	4.5	6.8	6.4	6.4	8.3	6.3	9.2	6.2	10.1	
NRVW -80	1180	5.8	2.7	5.3	4.2	4.8	5.7	4.4	7.3	4.2	8.0	4.0	8.8	5ℓ
	1320	6.6	2.9	6.1	4.6	5.6	6.3	5.3	8.0	5.0	8.8	4.8	9.7	
	1500	7.7	3.1	7.2	5.0	6.7	6.9	6.3	8.9	6.1	9.9	5.9	10.8	
	1700	8.8	3.4	8.3	5.5	7.8	7.8	7.4	9.9	7.3	11.1	7.0	12.2	
NRVW -100B	1180	9.0	3.6	8.4	5.8	7.8	8.1	7.3	10.4	7.1	11.6	6.8	12.7	10ℓ
	1320	10.2	3.8	9.6	6.4	9.0	8.9	8.5	11.5	8.3	12.8	8.0	14.1	
	1500	11.8	4.2	11.2	7.1	10.6	10.0	10.1	12.9	9.9	14.4	9.6	15.8	
	1700	13.5	4.6	12.9	7.8	12.3	11.2	11.8	14.5	11.6	16.1	11.3	17.7	
NRVW -125	1180	12.5	5.0	11.8	8.1	11.1	11.3	10.4	14.4	10.0	15.9	9.7	17.5	10ℓ
	1320	14.1	5.4	13.4	8.9	12.7	12.4	12.0	15.9	11.7	17.8	11.3	19.3	
	1500	16.3	5.9	15.6	9.8	14.9	13.8	14.2	17.8	13.8	19.7	13.5	21.7	
	1700	18.6	6.4	17.9	10.9	17.3	15.4	16.5	19.8	16.2	22.1	15.8	24.4	
NRVW -125B NRVW -150A	1060	14.8	5.6	13.9	8.5	13.0	10.9	12.0	13.0	11.5	14.0	11.0	15.0	10ℓ
	1180	16.7	6.0	15.8	9.3	14.9	12.2	13.9	14.6	13.4	15.8	12.9	17.1	
	1320	18.9	6.5	18.0	10.3	17.1	13.7	16.1	16.6	15.6	16.8	15.1	17.1	
	1500	21.7	7.1	20.8	11.5	19.9	15.6	18.9	19.1	18.4	20.9	17.9	22.7	
NRVW -150B	1060	20.8	7.4	19.7	12.5	18.6	17.7	17.4	22.8	16.9	25.4	16.3	27.9	15ℓ
	1180	23.4	8.0	22.3	13.7	21.2	19.4	20.0	25.1	19.5	28.0	18.9	30.8	
	1320	26.5	8.6	25.4	15.1	24.3	21.5	23.1	27.8	22.5	31.0	21.9	34.2	
	1500	30.4	9.5	29.3	16.8	28.2	24.1	27.0	31.03	26.4	34.9	25.9	38.6	
NRVW -200A	950	27.3	10.8	26.0	16.4	24.7	21.3	23.5	25.7	22.9	27.9	22.3	30.1	15ℓ
	1060	30.7	11.6	29.5	17.9	28.2	23.6	26.8	28.8	26.2	31.4	25.5	33.9	
	1180	34.5	12.5	33.2	19.6	31.9	26.1	30.7	32.2	30.1	35.2	29.5	38.2	
NRVW -200B	950	37.8	14.9	36.2	22.6	34.5	29.5	33.0	35.8	32.2	39	31.5	42.2	15ℓ
	1060	42.5	15.9	40.9	24.7	39.3	32.7	37.8	40.1	37.0	43.8	36.3	47.5	
	1180	47.8	17.1	46.2	27.0	44.5	36.2	43.0	44.7	42.2	48.9	41.5	53.3	
NRVW -200C	950	54.5	15.9	52.4	28.9	50.3	41.9	47.8	54.8	45.5	61.3	45.2	67.8	15ℓ
	1060	61.2	17.5	59.2	31.9	57.0	46.4	54.5	60.8	53.2	68.1	52.0	75.3	
	1180	68.6	19.1	66.5	35.2	64.3	51.3	61.9	67.4	60.7	75.4	59.4	83.5	
NRVW -250A	750	52.7	20.1	50.6	30.9	48.6	40.8	46.8	50.0	45.9	54.6	45.0	59.2	20ℓ
	950	67.9	23.5	65.8	37.6	63.8	50.9	62.0	63.5	61.1	69.8	60.2	76.1	
	1180	85.3	27.3	83.2	45.4	81.2	62.5	79.4	79.1	78.5	87.2	77.6	95.5	
NRVW -250B	750	61.6	22.9	59.2	35.5	56.8	47.1	54.7	57.9	53.7	63.3	52.6	68.6	20ℓ
	950	79.3	26.8	76.9	43.4	74.5	58.9	72.4	73.6	71.4	80.9	70.3	88.3	
	1180	99.7	31.3	97.3	52.4	94.9	72..5	92.8	91.7	91.7	101.3	90.7	110.9	
NRVW -300A	750	73.4	27.2	70.8	42.4	68.1	55.3	65.7	69.3	64.5	76.3	63.3	83.4	25ℓ
	950	94.4	32.8	91.8	51.7	89.1	70.3	86.7	88.0	85.5	96.8	84.3	105.7	
	1180	118.6	38.6	116.0	62.5	113.3	86.4	110.9	109.5	109.7	120.9	108.5	132.5	
NRVW -300B	750	103.8	37.5	100.7	59.2	97.6	79.5	94.7	98.6	93.3	108.2	91.8	117.7	25ℓ
	950	133.2	44.0	130.1	72.2	127.0	99.1	124.1	124.7	122.7	137.6	121.2	150.4	
	1180	167.0	51.5	163.9	87.3	160.8	121.6	157.9	154.8	156.5	171.4	155	187.9	
NRVW -350	740	144.0	45.0	141.0	79.0	137.0	113.0	128.0	147.0	120.0	163.0	112.0	179.0	35ℓ
	880	172.0	54.0	170.0	94.0	165.0	134.0	156.0	174.0	148.0	194.0	140.0	214.0	
	980	193.0	60.0	190.0	105.0	185.0	149.0	177.0	194.0	169.0	216.0	161.0	238.0	

NAE WAY ROOTS BLOWER TWO-STAGE VACUUM PUMP PERFORMANCE TABLE(WET)

TYPE BORE	BORE (Suction× Discharge)	SPEED (rpm)	CAPACITY AT SUCTION STATE Q_S(m^3/min) & SHAFT POWER L_S(KW) AT EACH DISCHARGE PRESURE										
			-400mmHg		-450mmHg		-500mmHg		-550mmHg		-600mmHg		Sealing water ℓ/min
			Qs	Ls	Qs	Ls	Qs	Ls	Qs	Ls	Qs	Ls	
NRD-80	86×65	1,000	3.84	6.16	3.74	6.69	3.64	7.22	3.53	7.74	3.42	8.29	5 ℓ
		1,300	5.55	7.54	5.45	8.24	5.35	8.93	5.24	9.60	5.13	10.30	
		1,600	7.26	8.93	7.16	9.78	7.06	10.60	6.95	11.40	6.84	12.30	
		2,000	9.54	10.70	9.44	11.80	9.34	12.90	9.23	13.90	9.12	15.00	
NRD-100	100B×80	1,000	5.48	9.26	5.28	10.00	5.15	10.70	4.94	11.40	4.73	12.20	10 ℓ
		1,300	8.07	11.20	7.87	12.20	7.74	13.20	7.53	14.10	7.32	15.10	
		1,600	10.60	13.20	10.40	14.50	10.30	15.70	10.10	16.80	9.91	18.10	
		2,000	14.10	15.90	13.90	17.50	13.70	19.00	13.50	20.40	13.30	22.10	
NRD-125	125×100	1,000	8.12	12.70	7.89	13.80	7.67	14.90	7.41	16.00	7.16	17.10	10 ℓ
		1,300	11.60	15.60	11.40	17.00	11.20	18.40	10.90	19.80	10.70	21.20	
		1,600	15.20	18.40	14.90	20.20	14.70	21.90	14.40	23.60	14.20	25.40	
		2,000	19.90	22.20	19.60	24.40	19.40	26.60	19.20	28.70	18.90	30.90	
NRD-150	150A×125	1,000	10.70	15.00	10.40	16.20	10.20	17.50	9.90	18.70	9.69	19.90	10 ℓ
		1,300	15.30	18.40	15.00	20.00	14.70	21.60	14.40	23.20	14.20	24.80	
		1,600	19.80	21.80	19.50	23.80	19.20	25.80	18.90	27.70	18.70	29.70	
		2,000	25.80	26.40	25.50	28.80	25.30	31.30	25.00	33.70	24.70	36.20	
NRD-200	200B×200A	650	21.60	23.90	21.30	35.50	20.90	38.10	20.60	40.60	20.20	43.20	15ℓ
		900	32.40	41.60	32.10	45.10	31.70	48.70	31.30	52.10	31.00	55.80	
		1,150	43.20	50.20	42.80	54.80	42.50	59.30	42.10	63.70	41.70	68.20	
		1,400	54.00	58.80	53.60	64.40	53.30	69.90	52.90	75.30	52.50	81.00	

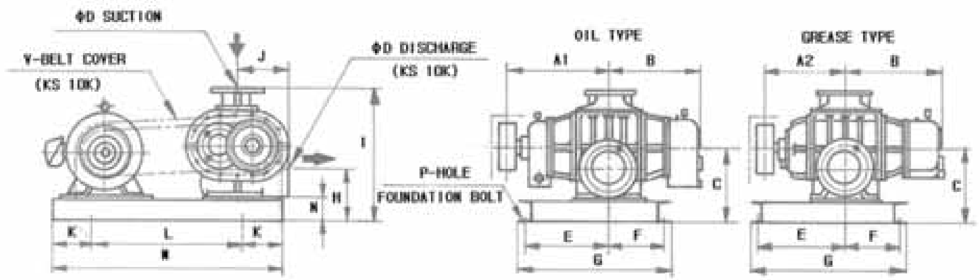
1. Wet type vacuum blowers are need supply water inside of casing. But water is too much flowed in casing, then increased power, and too small flowed in casing then decreased capacity of air.
2. Of course wet type vacuum blowers are not need cooling water and cooling system.
3. The real using motor out put is to be Preferred blower shaft power of Ls × 1.2 (Shaft power : Ls)

NAE WAY ROOTS BLOWER TWO-STAGE ROOTS BLOWER PERFORMANCE TABLE (DRY)

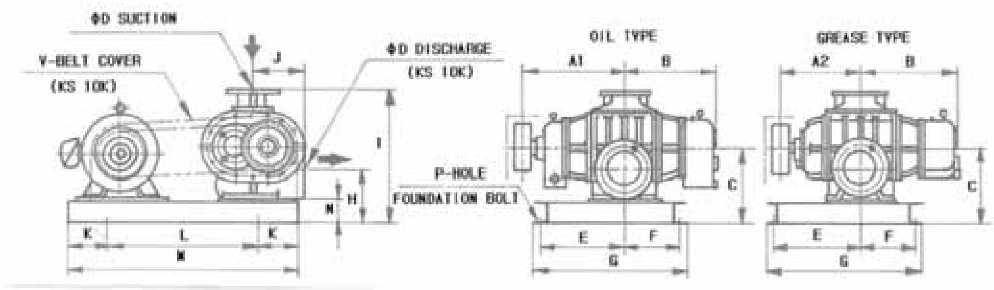
TYPE	BORE (Suction×Discharge)	SPEED (rpm)	CAPACITY AT SUCTION STATE Q_S(m^3/min) & SHAFT POWER L_S(KW) AT EACH DISCHARGE PRESURE											
			1.0 kgf/cm^2		1.2 kgf/cm^2		1.4 kgf/cm^2		1.6 kgf/cm^2		1.8 kgf/cm^2		2.0 kgf/cm^2	
			Q_S	L_S	Q_S	L_S	Q_S	L_S	Q_S	L_S	Q_S	L_S	Q_S	L_S
NRT-65	65×50	1,180	3.75	9.00	3.55	10.30	3.45	11.60	3.25	12.80	3.00	14.20		
		1,320	4.44	10.00	4.24	11.40	4.04	12.90	3.84	14.20	3.64	15.70		
		1,500	5.34	11.20	5.14	12.80	5.04	14.50	4.84	16.00	4.64	18.00		
		1,700	6.33	12.50	6.13	14.40	6.03	16.30	5.83	18.10	5.63	20.10		
NRT-80	80×50	1,180	4.37	10.70	4.17	12.30	3.97	13.80	3.77	15.30	3.57	16.60		
		1,320	5.18	11.80	4.98	13.60	4.78	15.30	4.58	16.90	4.38	18.40		
		1,500	6.23	13.30	6.03	15.20	5.83	17.20	5.63	19.00	5.43	20.70		
		1,700	7.39	14.80	7.19	17.00	6.99	19.30	6.79	21.30	6.59	23.30		
NRT-100	100B×80	1,180	6.96	16.00	6.66	18.20	6.36	20.60	6.16	22.70	5.96	24.70	5.76	26.80
		1,320	8.18	17.60	7.88	20.10	7.58	22.70	7.38	25.10	7.18	27.40	6.98	29.70
		1,500	9.75	19.70	9.45	22.60	9.15	25.50	8.95	28.20	8.75	30.80	8.55	33.40
		1,700	11.49	22.10	11.19	25.40	10.89	28.70	10.69	31.70	10.49	34.60	10.29	37.60
NRT-125	125×80	1,180	9.90	22.00	9.60	25.00	9.30	28.00	9.00	31.00	8.70	34.00		
		1,320	11.55	24.00	11.25	27.00	10.95	31.00	10.65	34.00	10.35	38.00		
		1,500	13.70	27.00	13.40	31.00	13.10	35.00	12.80	39.00	12.50	44.00		
		1,700	16.06	30.00	15.76	35.00	15.46	39.00	15.16	44.00	14.86	50.00		
NRT-150	150B×125	1,060	19.40	40.00	18.90	46.00	18.40	52.00	17.90	57.00	17.50	62.00		
		1,180	22.40	44.00	21.90	50.00	21.40	57.00	20.90	63.00	20.50	69.00		
		1,320	25.90	49.00	25.40	56.00	24.90	63.00	24.40	70.00	24.00	76.00		
		1,500	30.30	55.00	29.80	63.00	29.30	71.00	28.80	79.00	28.40	86.00		
NRT-200A	200A×150A	950	22.40	46.00	21.80	53.00	21.30	59.00	20.80	65.00	20.30	73.00		
		1,060	25.90	51.00	25.30	58.00	24.80	66.00	24.30	74.00	23.80	82.00		
		1,180	29.70	56.00	29.10	64.00	28.60	73.00	28.10	82.00	27.60	91.00		
		1,320	34.10	62.00	33.50	71.00	33.00	81.00	32.50	91.00	32.00	101.00		
NRT-200B	200B×150B	950	31.60	63.00	30.80	72.00	30.10	82.00	29.40	90.00	28.90	98.00	28.40	106.00
		1,060	36.40	70.00	35.60	80.00	34.90	90.00	34.20	100.00	33.70	109.00	33.20	118.00
		1,180	41.60	77.00	40.80	88.00	40.10	100.00	39.40	110.00	38.30	120.00	38.40	130.00
		1,320	47.70	85.00	46.90	98.00	46.20	111.00	45.50	122.00	45.00	134.00	44.50	145.00
NRT-250A	250A×200B	850	52.70	99.00	51.80	113.00	50.90	128.00	50.00	141.00	49.10	154.00		
		950	60.20	109.00	59.30	125.00	58.40	141.00	57.50	156.00	56.60	171.00		
		1,060	68.60	120.00	67.70	138.00	66.80	156.00	65.90	173.00	65.00	190.00		
		1,180	77.70	133.00	76.80	153.00	75.90	173.00	75.00	193.00	74.10	213.00		
NRT-250B	250B×200B	850	61.60	114.00	60.50	130.00	59.50	147.00	58.50	164.00	57.50	181.00		
		950	70.50	126.00	69.40	145.00	68.40	163.00	67.40	181.00	66.40	199.00		
		1,060	80.20	139.00	79.10	160.00	78.10	181.00	77.10	202.00	76.10	223.00		
		1,180	90.90	154.00	89.80	177.00	88.80	200.00	87.80	223.00	86.80	246.00		
NRT-300A	300A×250A	850	83.40	148.00	82.20	170.00	81.00	192.00	79.90	213.00	79.00	232.00	78.30	252.00
		950	95.00	164.00	93.80	188.00	92.60	213.00	91.50	236.00	90.60	257.00	89.90	280.00
		1,060	107.80	181.00	106.60	209.00	105.40	236.00	104.30	262.00	103.40	286.00	102.70	310.00
		1,180	121.80	200.00	120.60	231.00	119.40	262.00	118.30	290.00	117.40	317.00	116.70	344.00
NRT-300B	300B×250B	750	92.10	167.00	90.70	192.00	89.30	216.00	87.90	236.00	86.50	256.00		
		850	106.80	187.00	105.40	215.00	104.00	243.00	102.60	271.00	101.20	299.00		
		950	121.80	207.00	120.40	239.00	119.00	270.00	117.60	301.00	116.20	332.00		
		1,060	137.80	229.00	136.40	264.00	135.00	299.00	133.60	334.00	132.20	369.00		
NRT-350A	350A×300A	750	124.80	221.00	123.00	254.00	121.20	287.00	119.60	318.00	118.20	347.00		
		750	144.30	248.00	142.50	285.00	140.70	323.00	139.10	357.00	137.70	390.00		

1. Suction State Pressure 760mmHg. Temperature 20℃, Relative Humidity 65%, Specific Weight 1.2kg/m^2.
2. The air Volume and the Shaft horse power of these two-stage blowers represent values measured by Providing an inter-cooler between the rotary blower on the first stage and that on the second stage, and when air temperature at the second stage's inlet is 35℃.
3. All the models require cooling water to be sent to the gear and the pulley side oil basins.
4. The real using motor out put is to be Preferred blower shaft power of Ls×1.2(Shaft power : Ls)

OUT LINE DF DIMENSION OF BLOWER

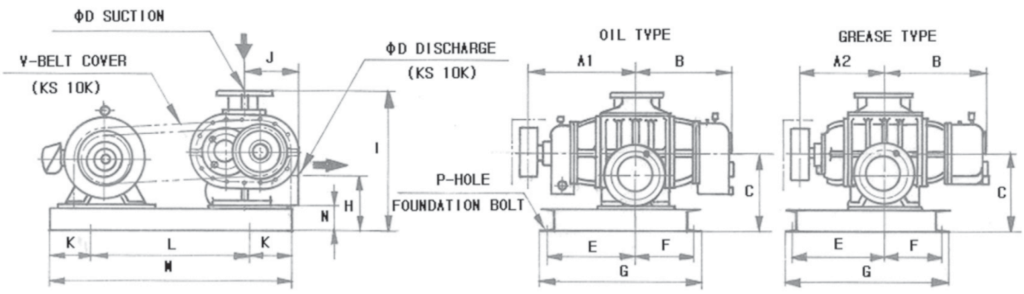


MODEL	D	A1	A2	B	C	E	F	G	H	I	J	K	L	M	N	P	WT(Kg) WITHOUT MOTOR
NRB-50	50	–	255	242	180	220	190	450	140	344	142	100	540	740	56	4 – ø15	140
NRB-65	65	344	270	268	215	250	170	460	150	400	170	100	590	790	56	4 – ø15	160

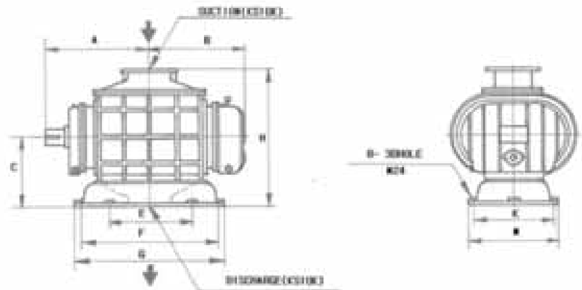


MODEL	D	A1	A2	B	C	E	F	G	H	I	J	K	L	M	N	P	WT(Kg) WITHOUT MOTOR
NRB-80	80	372	290	300	265	155	155	350	187	478	192	100	300	800	75	6 – ø19	240
NRB-100A	100	410	328	338	272	170	170	380	202	487	192	100	300	800	75	6 – ø19	280
NRB-100B	100	432	351	361	327	205	205	450	237	572	220	100	400	1000	100	6 – ø19	320
NRB-125A	125	472	391	400	332	205	205	450	247	577	220	100	400	1000	100	6 – ø19	350
NRB-150A	150	515	434	443	352	255	255	550	262	597	220	150	400	1100	100	6 – ø19	400
NRB-150B	150	500	473	486	352	255	255	550	262	532	260	150	400	1100	100	6 – ø19	550

ROTARY TYPE ROOTS BLOWER

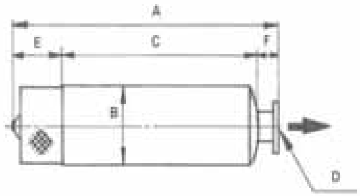


MODEL	D	A1	A2	B	C	E	F	G	H	I	J	K	L	M	N	WT(Kg) WITHOUT MOTOR
NRB-200A	200	568	494	515	474	390	250	700	319	799	310	150	525	1350	125	800
NRB-200B	200	643	569	590	484	440	300	800	354	819	340	150	525	1350	125	1000
NRB-250A	250	748	675	778	570	465	325	850	380	770	390	200	590	1580	150	1250
NRB-250B	250	798	728	828	620	520	370	950	430	820	390	200	590	1580	200	1300
NRB-300A	300	740	641	784	700	650	370	1100	460	1155	480	200	700	1800	200	1700
NRB-300B	300	840	741	884	700	750	370	1200	460	1205	480	200	700	1800	200	2300
NRB-350	350	808	930	900	745	910	410	1400	483	1169	500	200	900	2200	200	2800



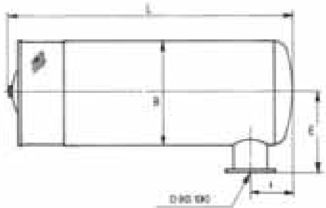
MODEL	D	A	B	C	E	F	G	H	J	K	WT(Kg) WITHOUT MOTOR
NRB-400	400	915	935	610	500	1020	1100	1200	800	700	1200
NRB-450	450	1000	1040	670	700	1320	1400	1250	800	700	4600
NRB-500	500	1120	1180	735	900	1520	1600	1400	800	700	5200

SUCTION SILENCER (FLANGE KS 10K F.F)



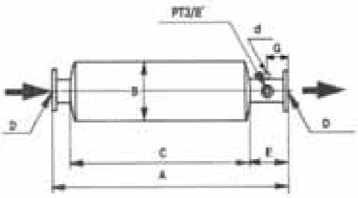
MODEL	D	A	B	C	E	F	WT(Kg)
NSS – 50	50	780	180	560	140	80	14
NSS – 65	65	990	200	750	150	90	16
NSS – 80	80	1060	230	800	170	100	22
NSS – 100	100	1200	260	900	200	100	34
NSS – 125A	125	1300	300	1000	200	120	40
NSS – 125B	125	1470	400	1100	250	120	50
NSS – 150A	150	1470	400	1100	250	120	50
NSS – 150B	150	1600	500	1230	250	120	70
NSS – 200	200	1720	500	1250	350	120	120
NSS – 250	250	2000	600	1480	400	120	200
NSS – 300	300	2500	750	1850	500	150	320
NSS – 350	350	3000	900	2350	500	150	550

SUCTION SILENCER (FLANGE KS 10K F.F)



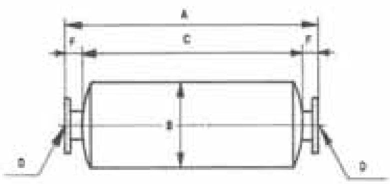
MODEL	D	B	I	E	F	L	WT(Kg)
NSS – 400	400	1160	550	750	510	2730	580
NSS – 450	450	1450	600	900	580	2900	620
NSS – 500	500	1450	650	900	650	3000	650

DISCHARGE SILENCER (FLANGE KS 10K F.F)



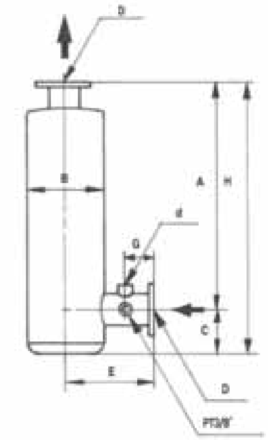
MODEL	D	A	B	C	E	F	G	D	WT(Kg)
NDS – 50	50	670	180	460	150	60	60	20	12
NDS – 65	65	720	200	500	150	70	60	20	14
NDS – 80	80	830	230	600	150	80	60	20	20
NDS – 100	100	1120	260	850	170	100	60	25	30
NDS – 125A	125	1200	300	930	170	100	75	32	35
NDS – 125B	125	1370	350	1070	200	100	75	40	45
NDS – 150A	150	1370	350	1070	200	100	75	40	45

DISCHARGE SILENCER (FLANGE KS 10K F.F)



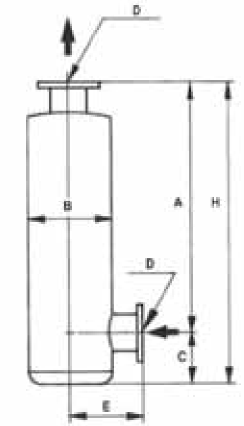
MODEL	D	A	B	C	F	WT(Kg)
NDS – 150B	150	1500	500	1260	120	12
NDS – 200	200	1530	500	1290	120	14
NDS – 250	250	1800	600	1560	120	20
NDS – 300	300	2200	600	1900	150	30
NDS – 350	350	2600	700	2300	150	35
NDS – 400	400	3000	800	2700	150	45

SUCTION SILENCER (FLANGE KS 10K F.F)



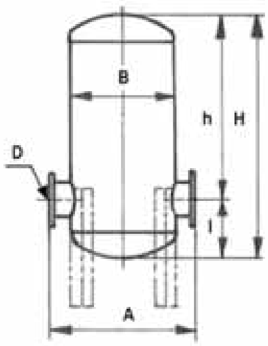
MODEL	D	A	B	C	d	E	G	H	WT(Kg)
NDV – 50	50	610	180	100	20	240	60	710	12
NDV – 65	65	660	200	100	20	250	60	760	14
NDV – 80	80	820	230	110	20	265	60	930	20
NDV – 100	100	1110	260	140	25	300	60	1250	30
NDV – 125A	125	1250	300	150	32	320	75	1400	35
NDV – 125B	125	1350	350	180	40	375	75	1530	45
NDV – 150A	150	1350	350	180	40	375	75	1530	45
NDV – 150B	150	1350	400	180	40	425	100	1530	55

SUCTION SILENCER (FLANGE KS 10K F.F)



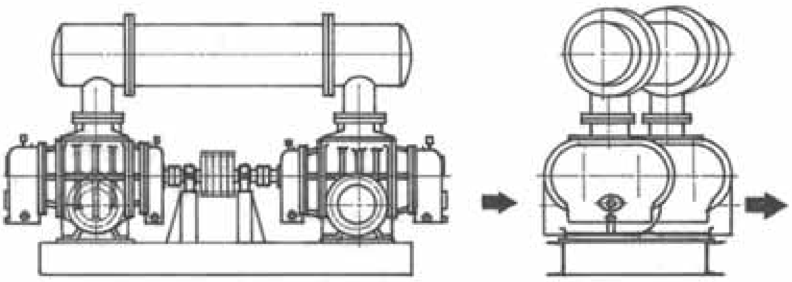
MODEL	D	A	B	C	E	H	WT(Kg)
NDV – 200	200	1550	500	230	360	1780	180
NDV – 250	250	1750	600	280	460	2030	300
NDV – 300	300	1850	750	350	510	2200	500
NDV – 350	350	2200	900	450	550	2650	600

DISCHARGE SILENCER (FLANGE KS 10K F.F)

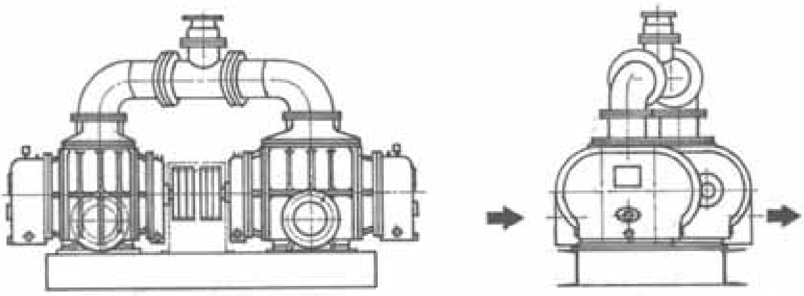


MODEL	D	A	B	H	h	I	WT(Kg)
NDV – 50	50	340	190	730	610	120	22
NDV – 65	65	380	220	780	650	130	25
NDV – 80	80	410	250	850	715	135	28
NDV – 100	100	460	300	900	750	150	30
NDV – 125	125	540	370	1050	880	170	60
NDV – 150A	150	650	470	1200	1000	200	120
NDV – 150B	150	720	520	1640	1000	440	170
NDV – 200	200	850	610	1640	1200	440	190
NDV – 250	250	950	710	1810	1350	460	300
NDV – 300	300	1160	880	1800	1500	300	380
NDV – 350	350	1260	980	2150	1800	350	490
NDV – 400	400	1460	1160	2500	2100	400	600
NDV – 450	450	1760	1450	3200	2750	450	950
NDV – 500	500	1760	1450	3200	2750	500	960

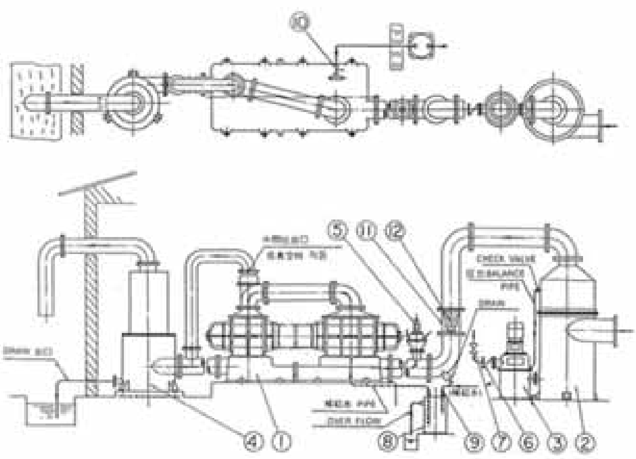
2STAGE PRESSURE BLOWER



2STAGE VACUUM BLOWER



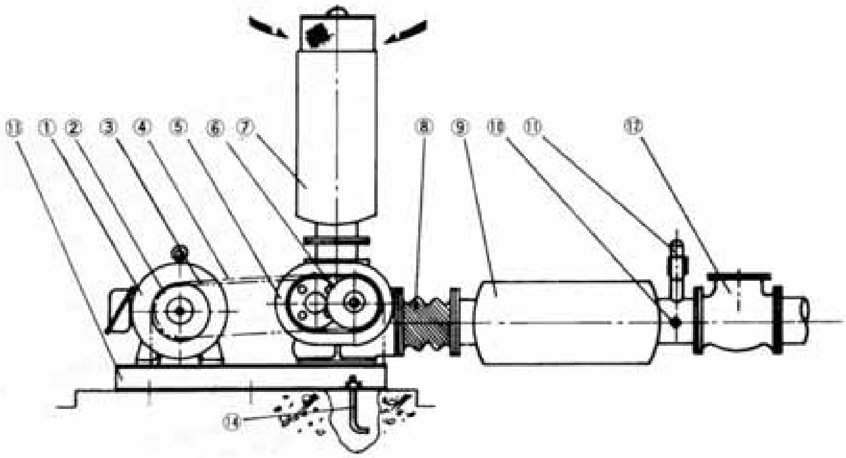
2STAGE VACUUM BLOWER 배관 예



NO.	내 용
1	BLOWER
2	SUCTION SEPERATOR
3	DRAIN PUMP
4	SILENCER
5	VACUUM BREAKER
6	CHECK VALVE
7	GATE VALVE
8	보급수 TANK
9	보급수 PIPE
10	보급수 입구 VALVE
11	단관
12	STRAINER

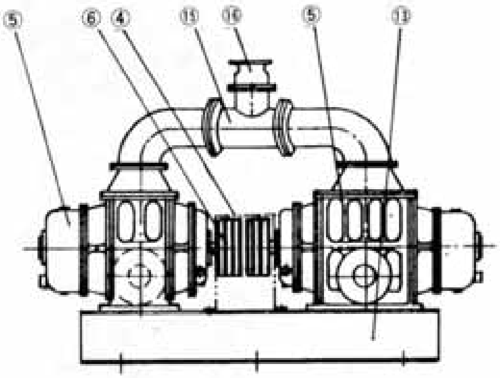
ROTARY TYPE ROOTS BLOWER

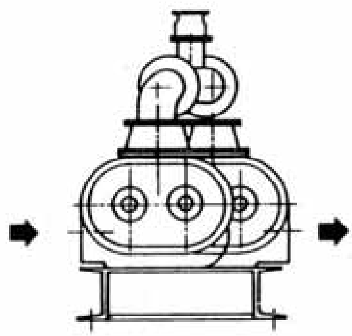
1 STAGE BLOWER



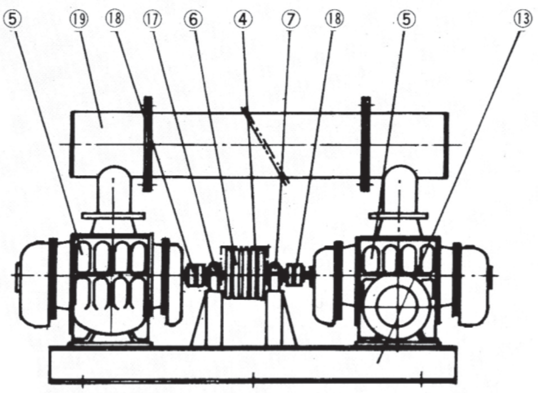
1. Motor
2. Motor Pulley
3. V-Belt
4. Safety Cover
5. Roots Blower
6. Blower Pulley
7. Suction Silencer
8. Flexible Joint
9. Disch. Silencer
10. Pressure Gauge
11. Safety Valve
12. Check Valve
13. Commen Base
14. Anchor Bolt
15. T-Pipe
16. Check Valve
17. Stand Bearing
18. Coupling
19. Cooler

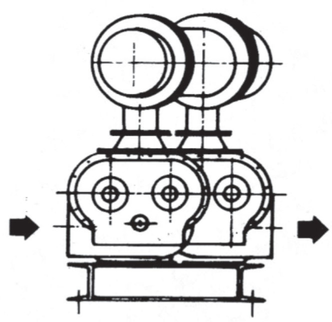
VACUUM PUMP (2STAGE)





2 STAGE BLOWER





TECHNICAL DATE

CONVERSIONS TABLE OF FLOW RATE

ℓ/sec	m^3/min	U.S gal/min	ft^3/min
1	0.06	15.8514	2.1192
16.66	1	264.1833	35.3165
0.06309	0.00378	1	0.17768
0.47192	0.02832	7.4855	1

CONVERSIONS TABLE OF CUBIC

ℓ	m^3	ft^3	U.S gal	in^3
1	0.001	0.035317	0.26418	61.026
1000	1	35.317	264.19	61026
28.3153	0.028315	1	7.4006	1727.969
3.7852	0.003785	0.13368	1	231

CONVERSIONS TABLE OF CALORIE

joule	kg · m	ft · lb	kwh	kcal
1	0.10196	0.7376	2.778×10^{-7}	0.0002389
9.807	1	7.233	2.724×10^{-6}	0.002343
3.6×10^{6}	3.67×10^{5}	2.655×10^{6}	1	860
4186	426.9	3087	0.001163	1

CONVERSIONS TABLE OF WEIGHT

kg	t	lb	U.S t	ounce
1	0.001	2.20462	0.001102	35.27
1000	1	2204.62	1.1023	35270
0.45359	0.0004536	1	0.00051	16

CONVERSIONS TABLE OF POWER

PS	KW	kg · m/sec	Kcal/ht	Ft · lb/sec
1	0.7355	75	632.6	542.5
1.3596	1	101.97	860	737.6
0.01333	0.009807	1	8.43	7.233

CONVERSIONS TABLE OF CUBIC

cm^2	m^2	in^2	ft^2	yd^2
1	0.0001	0.155	0.0010764	0.0001196
10000	1	1550.0	10.764	1.1960
6.4516	0.000645	1	0.006244	0.000771
929.03	0.09293	0.44	1	0.11111

CONVERSIONS TABLE OF PRESSURE

Kg/cm^2	mmAq	mmHg	Lb/in^2	kPa	bar
1	10010	735.5	14.233	98.07	0.9807
0.09991	1000	73.49	1.421	9.81	0.09807
0.00136	13.61	1	0.01934	0.1333	0.001333
0.07031	703.8	51.71	1	6.895	0.06895
0.01019	102.07	7.50	0.145	1	0.01

CONVERSIONS TABLE OF SCALE

cm	m	mm	in	ft	yd
1	0.01	10.0	0.3937	0.032808	0.01094
100	1	1000	39.37	3.2808	1.0936
2.54	0.0254	25.4	1	0.8333	0.02778
30.48	0.3084	304.8	12	1	0.3333

PHYSICAL PROPERTIES OF GAS

Name	M·theory	M·Weigh	R·gas const M·kg/kg·C^2	Viscocity Kcal/kg·C^2	k·spcif h·rop/cu
Acetylene	C_2H_2	26.038	32.58	0.403	1.234
Air		28.967	29.28	0.2404	1.399
Ammonia	NH_3	17.032	49.80	0.5006	1.304
Alcohol	A	39.944	21.25	0.1244	1.668
Benzene	C_6H_6	78.114	10.85	0.2497	1.113
Butane	C_4H_{10}	58.108	15.11	0.3646	1.111
Carbonic acid gas	CO_2	44.011	19.27	0.2015	1.288
Carbonic Monoxide	CO	28.011	30.27	0.2485	1.399
Ethane	C_2H_6	30.07	28.21	0.4183	1.188
Ethylene	C_2H_4	28.054	30.24	0.3708	1.236
Freon 12	CF_2Cl_2	120.925	7.01	0.1369	1.136
Helium	HE	4.003	211.96	1.241	1.667
Hydrogen	H_2	2.016	420.6	3.416	1.405
Methane	CH_4	16.043	52.88	0.5318	1.304
Neon	Ne	20.183	42.02	0.246	1.667
Oxide Nitrogen	NO	30.008	28.24	0.2377	1.386
Nitrogen	N_2	28.016	30.25	0.2483	1.40
Oxigen	O_2	32.00	26.49	0.2191	1.396
Propane	C_3H_8	44.097	19.24	0.3982	1.128
Sulfunic acid gas	SO_2	64.066	13.23	0.1483	1.264
Water	H_2O	18.016	47.02	0.445	1.320

BLOWER설치 시 주의 점

1. 브로아의 배관하중이 실리지 않게 하고 진동의 전달을 방지하기 위해 FLEXLBLE JOINT와 방진고무를 사용.
2. SAFETY VALVE는 토출 사이렌사에 수직으로 배관 할 것

BLOWER운전시 점검사항 및 적용윤활유

기 간	점 검 내 용
매 일	1. 유면계 내 오일의 적정여부와 누유 확인(윤활유 1회 교환)
	2. 베어링 온도, 압력, 전류 등의 확인
매 월	1. 벨트 장력의 측정과 수정
	2. 윤활유가 깨끗하게 유지되는지 조사 (윤활유 2회 교환)
4개월마다	1. 윤활유와 그리스를 전량 보충 및 교환
	2. 일, 월별 전체의 체크사항 비교검토
1 년	1. 흡입 카바, 벨트 카바, 흡입측 배관을 분해하고 로타와 케이싱내부를 점검
	2. 오일 씰, V-BELT 의 마모상태와 베어링을 점검
기 타	1. 운전 후 3년을 경과할 때는 베어링을 교환

	Oil	Grease
극동석유(SHELL)	SHELL TELLUS #46	ALVANIA GREASE NO.2
대한석유(SK)	HAMONY #46	CROW GREASE NO.2
호남정유(CALTEX)	RAMDO #46	MULTI FAK GREASE NO.2
모빌코리아(MOBILL)	D.T.E HEAVY 25	MOBILUX GREASE NO.2
한일정유	NICONOC AWH 46	NICO AL NICOMAX MP

(1) Oil의 교환

24시간 연속운전의 경우
제1회 전량교환 : 시동 후 100시간(4일 후)
제2회 전량교환 : 시동 후 480시간(20일 후)
제3회 이후에 전량교환 : 4개월에 1회씩 교환

(2) Grease의 교환

24시간 연속운전의 경우
2000 ~ 3000시간 (90-130일) 마다 한번씩 보충하고 사이드 후레임의 베어링캡의 아래쪽 플러그를 빼고 그리스캡의 4배정도 그리스를 주입할 것.

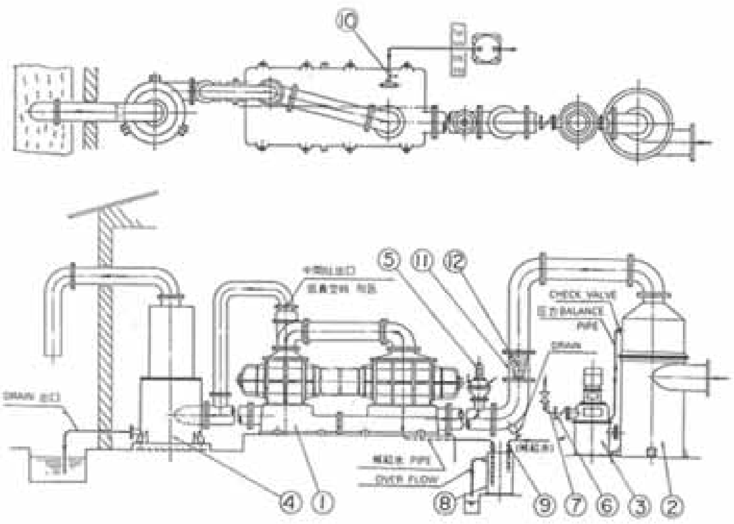
BLOWER의 소음방지 대책

일반적인 소음방지의 방법으로 기류소음에 대한 방음, 고체소음에 대한 방음과 방진으로 분류되고 브로아의 경우
(1) 기류소음에 대해서는 소음기를 흡입과 토출측에 부착하여 사용
(2) 고체소음에 대해서는 방음 카바, 방음벽, 그리고 방음실을 설치
(3) 방진고무와 FLEXIBLE JOINT를 부착하여 브로아와 배관의 진동을 방지
(4) 브로아의 회전속도가 적은 브로아를 선정하고 수음 점에서 먼 곳에 브로아를 설치

브로아 생산 품목 / The production model of blower

- 일반공기 용 브로아 (구경: 50~500mm)
- 일반가스수송 브로아 (구경: 50~500mm)
- 고압가스수송 브로아 (구경: 50~500mm)
- 특수가스수송 브로아 (구경: 50~500mm)
- 일반진공 용 브로아 (구경: 50~500mm)
- 고진공 용 브로아 (구경: 50~500mm)
- 메카니컬 부스타

2STAGE VACUUM BLOWER



NO.	내 용
1	BLOWER
2	SUCTION SEPERATOR
3	DRAIN PUMP
4	SILENCER
5	VACUUM BREAKER
6	CHECK VALVE
7	GATE VALVE
8	보급수 TANK
9	보급수 PIPE
10	보급수 입구 VALVE
11	단관
12	STRAINER