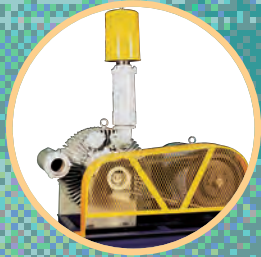
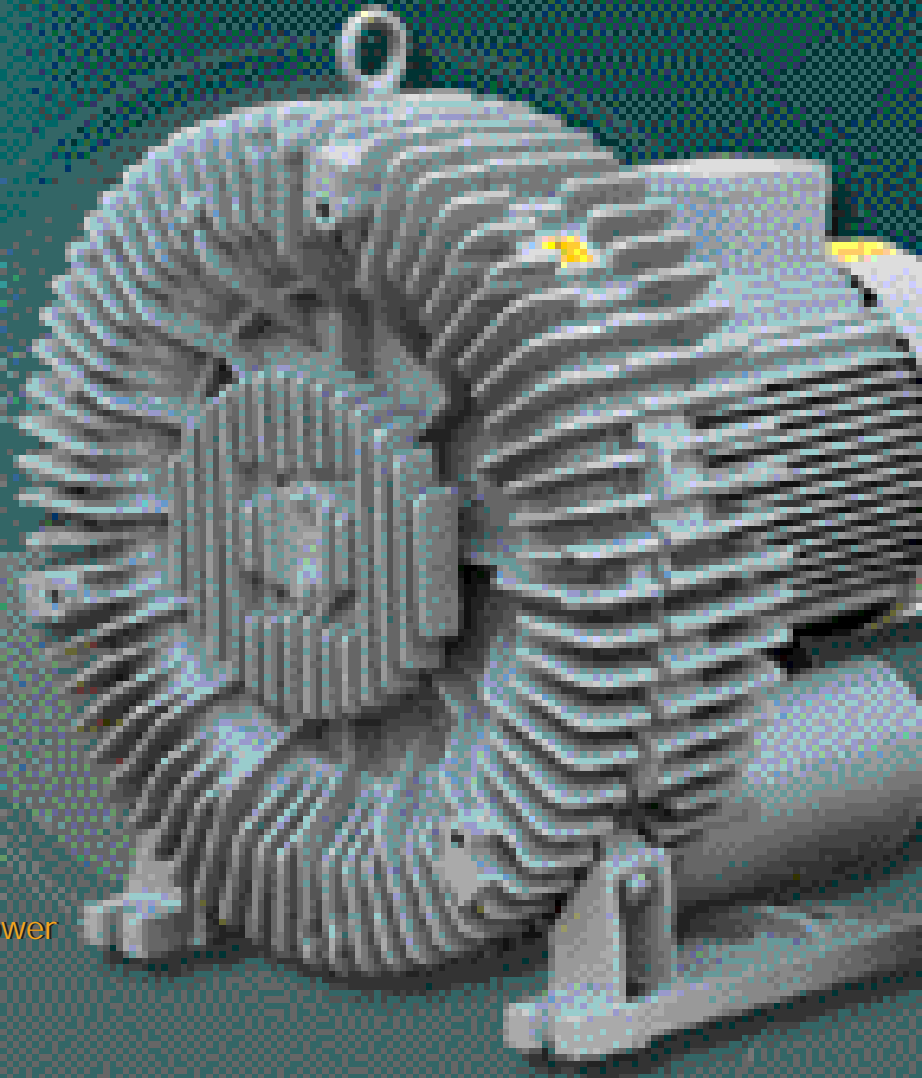




# RING BLOWER

## VACUUM & COMPRESSOR

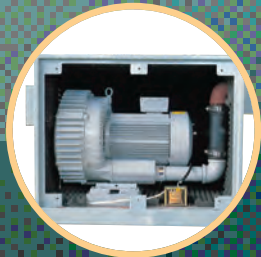


Belt Driven Blower

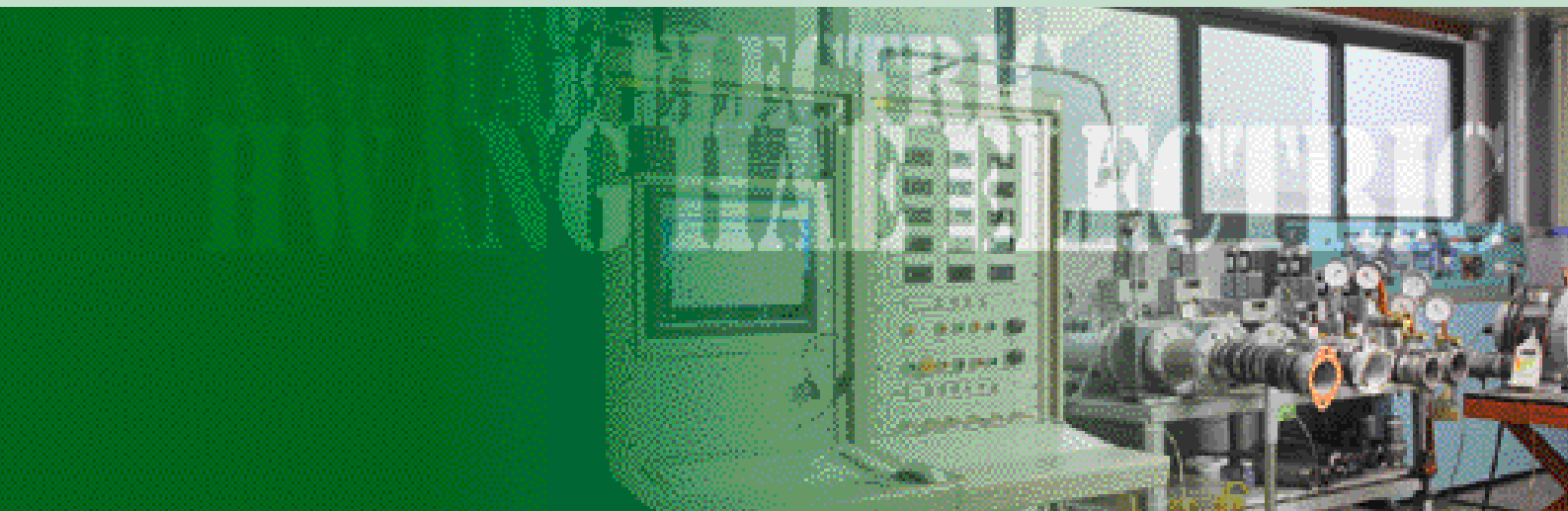
Coupling connected Blower

Acoustic Blower

Bare-shaft Blower



HWANG HAE ELECTRIC



## Hwang Hae Electric

Since the foundation of our company in 1989, through our advanced technology, our Ring Blower has been recognized for its excellent quality.

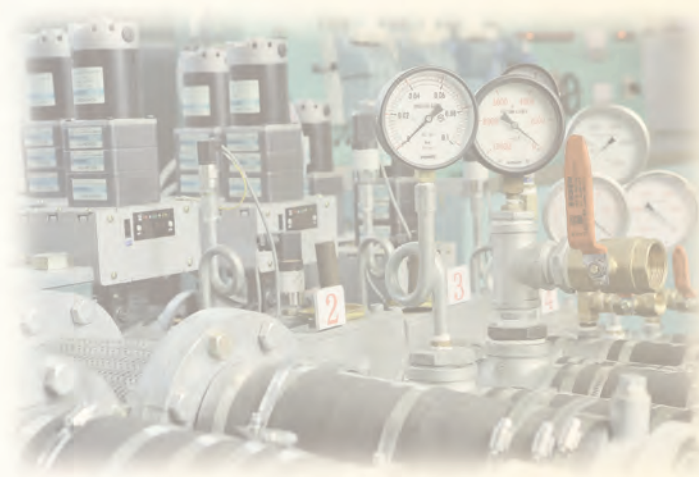
We have also provided the variation of Ring Blower and similar products systems to meet customers' demands.

Based on our accumulated technologies and know-how, we are manufacturing Blower system essential for our customers and promises our continuous endeavors for our valued customers' satisfaction, development of new technology, and creation of value.

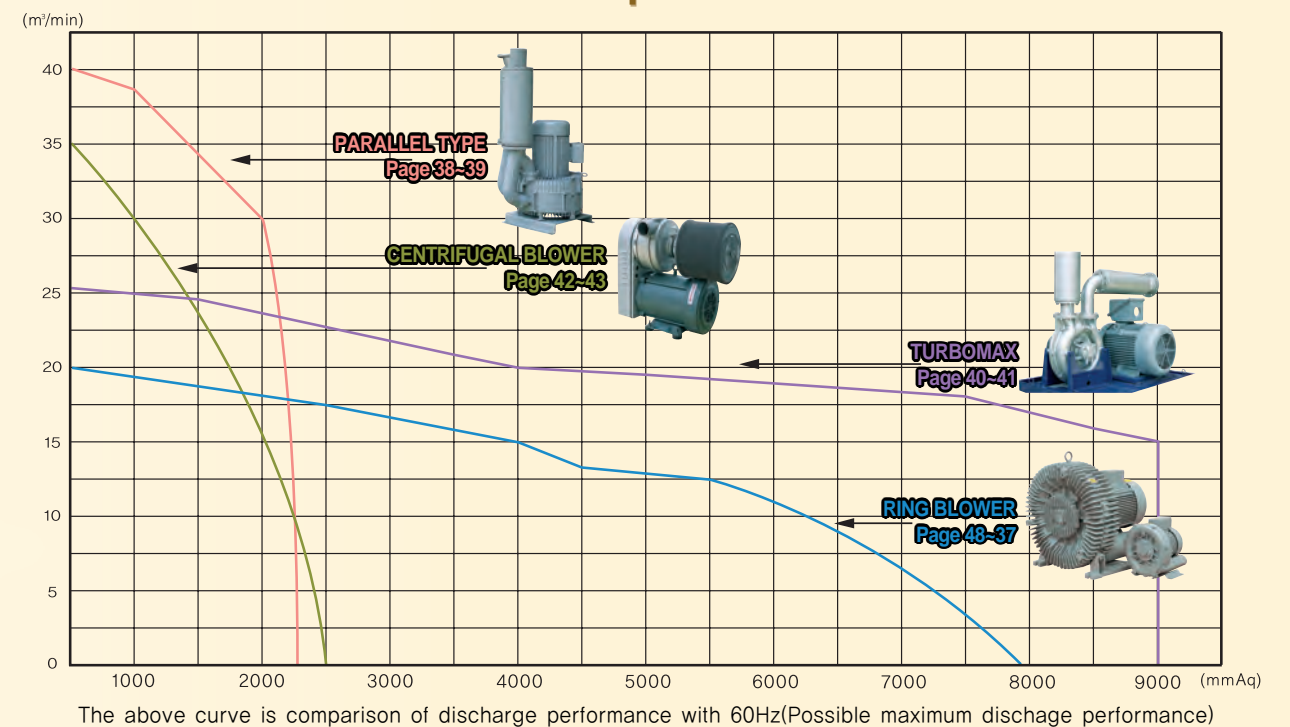


### Quality certified by

- ◆ ISO9001:2000 (Ref No.FM65918) Dated. 2002/12/30
- ◆ CE (Ref No.N89905 36050 001) Dated. 1999/5/3
- ◆ cUL (Ref No.E217553) Dated. 2001/6/22
- ◆ C.C.C (Ref No.2003010401067133) Dated. 2003/7/28
- ◆ RoHS ( Ref No.13601059001 ) Dated. 2007/5/17



## Performance Comparison of Blowers

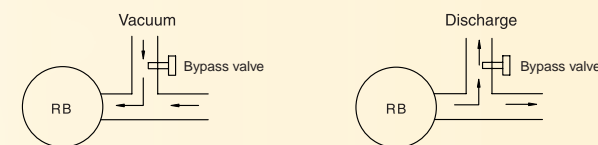


## General Cautions when use the Blower

### 1. Maximum Operating Temperature.

The maximum temperature of motor winding(stator coil) should not exceed 140°C for F class insulation. Blower outlet temperature should not exceed 140°C(inlet air temperature plus inside temperature rise). Performance curve rated pressure are based on 40°C inlet and ambient temperature .When use blower ambient temperature over 40°C , please do proper measures like the inlet air cooling down.

2. The pressure/vacuum relief valve should be installed in a "T" which is at least one pipe size larger than pipe of the blower .To properly protect a large H/P blower, set the Relief value to limit the blower's duty below it's continuous rating.

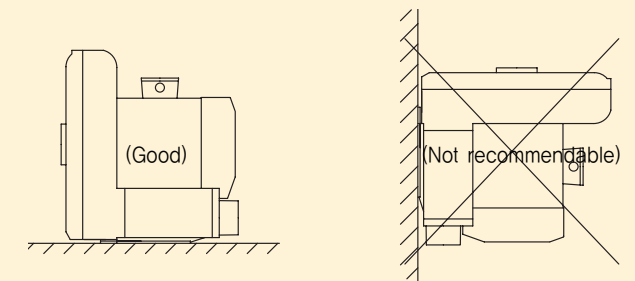


3. Ambient Condition : Temperature : -20°C ~ +40°C  
Relative Humidity : 80% ↓

4. This blower can be used only for pure air or gas. customer use for special gas or corrosive gas, a proper treatment(ex:Teflon Coating) should be needed .

5. This blower can be used only for dry gas or air. Customer should do special treatment(=remove the humidity) when use the wet gas or air .

### 6. Installation



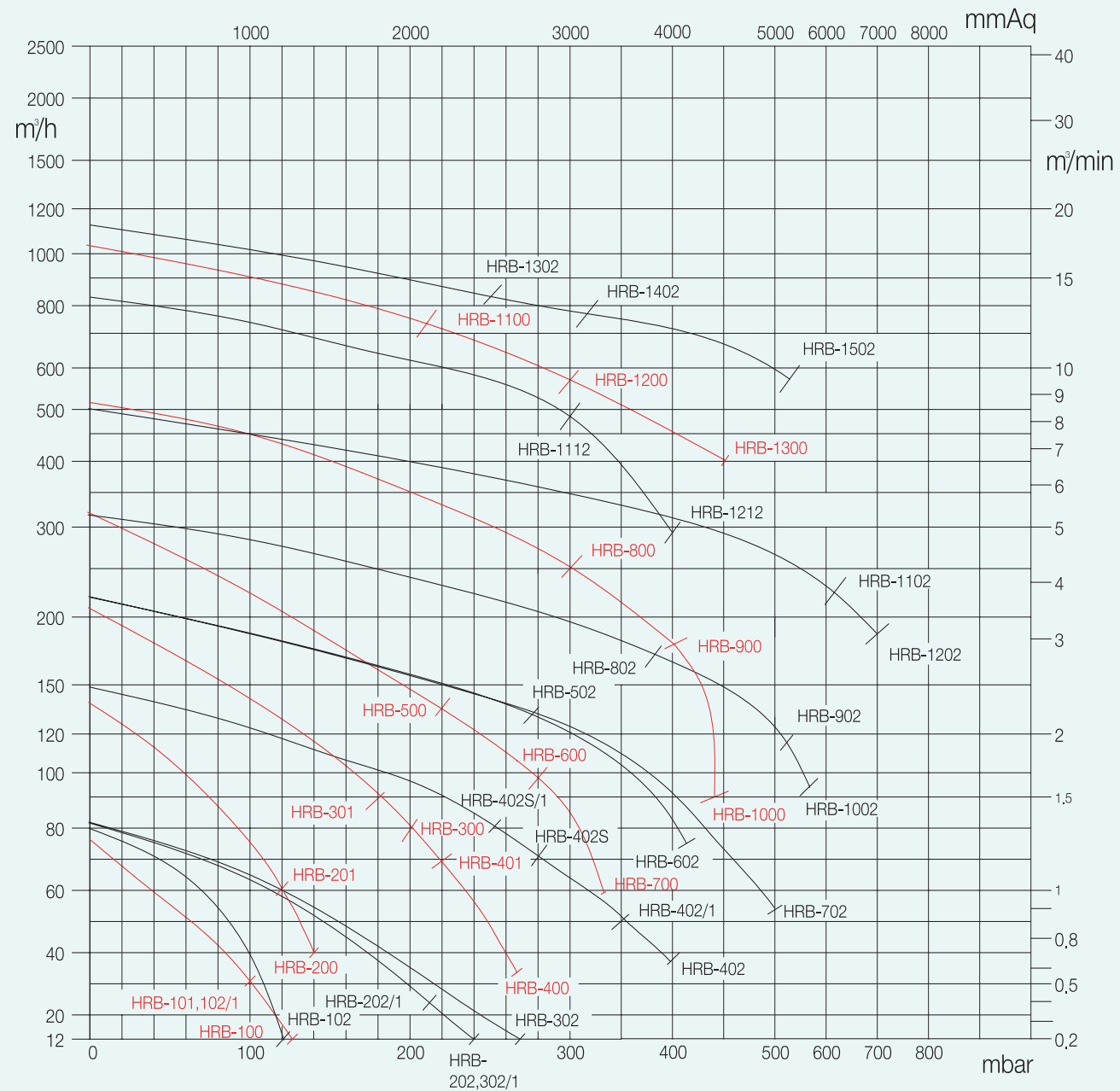
### 7. Filter Installation

If some particle is sucked into the inside of impeller housing, it can be caused the major reason of impeller broken. When use for the discharge purpose, customer should install the Filter before starting. When use for vacuum purpose, customer should install the inline filter

8. This blower can not be used for flammable, explosive, ignitable gas. When customer use the blower this like condition, proper treatment should be needed like explosion proof motor and higher protection grade.



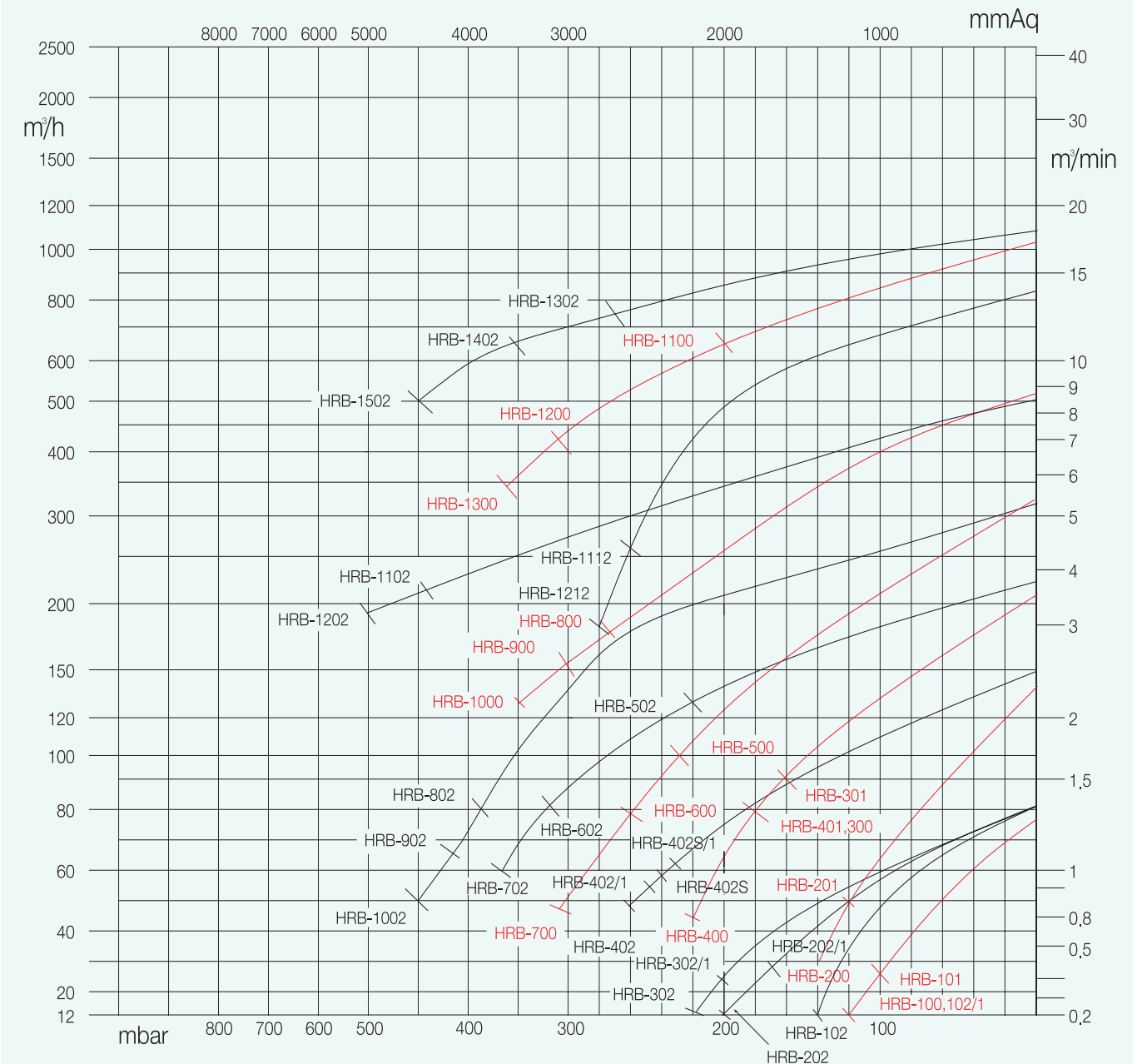
>> 50Hz 토출 50Hz Discharge <<



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선상 특성치의 허용오차는 ±10% 임  
 \*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The allowable tolerance of performance value is ±10%



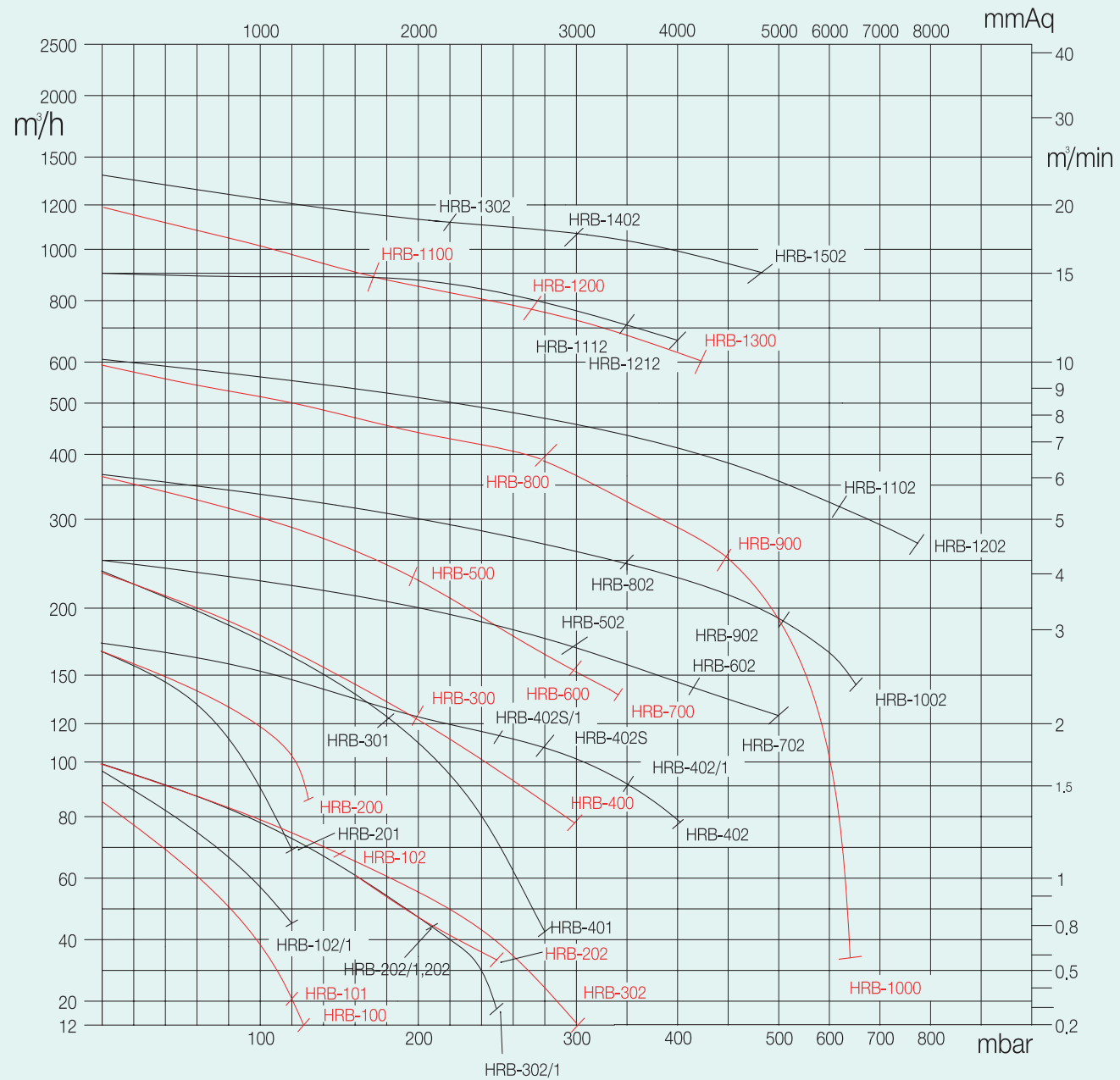
>> 50Hz 흡입 50Hz Vacuum <<



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선상 특성치의 허용오차는 ±10% 임  
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 \*The allowable tolerance of performance value is ±10%



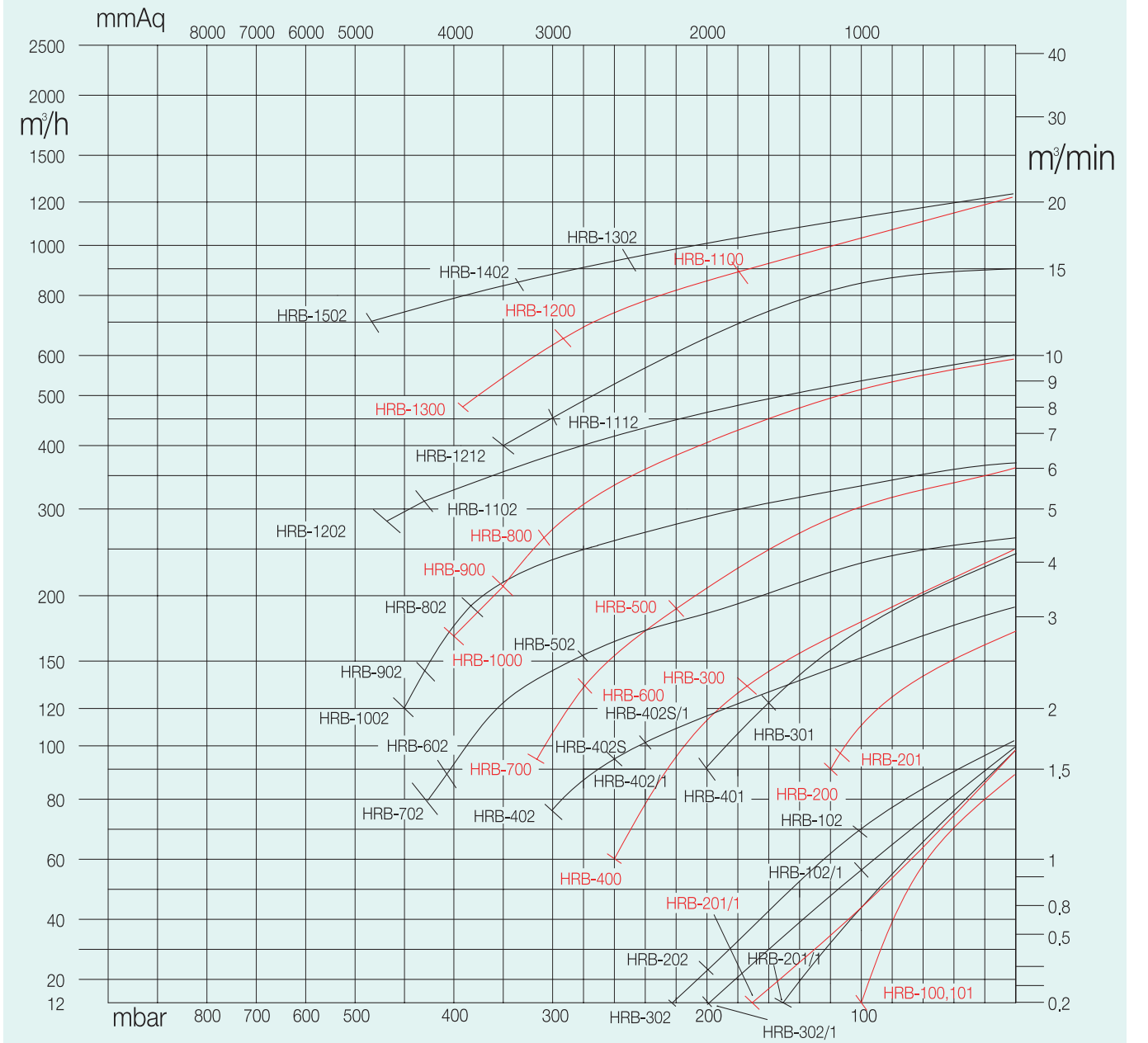
>> 60Hz 토출 60Hz Discharge <<



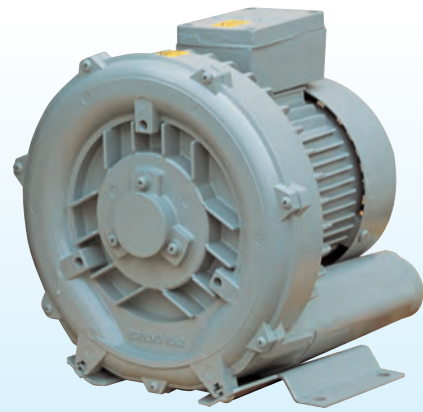
\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
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>> 60Hz 흡입 60Hz Vacuum <<



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
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 \*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The allowable tolerance of performance value is ±10%



HRB-101, 100

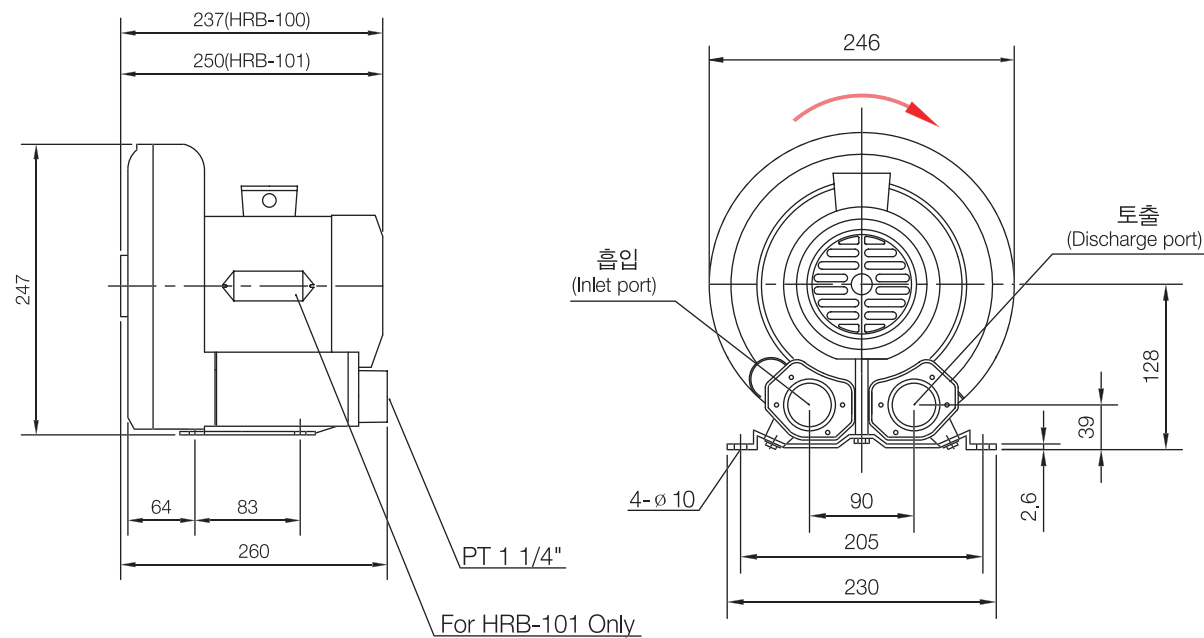
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-101	HRB-100
토출 Discharge (mmAq)	50Hz	1000	1300
	60Hz	1200	1300
흡입 Vacuum (mmAq)	50Hz	1000	1200
	60Hz	1000	1000
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	1.3	1.3
	60Hz	1.4	1.4
소음 Noise(dB)		64	64
중량 Weight(Kg)		14	11.5
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6203zc3	6203zc3
	중간(Middle)	-	-
	뒤(Rear)	6203zzc3	6203zzc3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice .



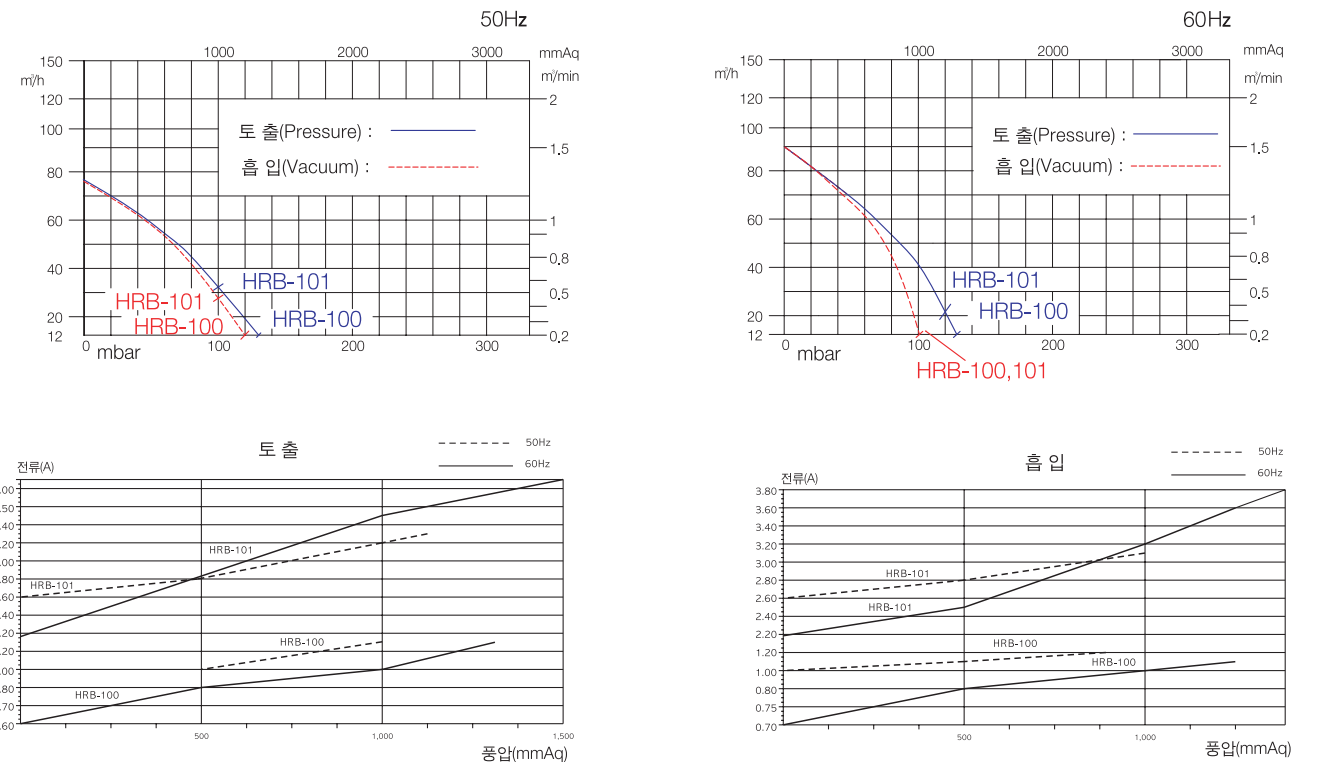
Products Specification

MODEL NUMBER	HRB-101	HRB-100
Phase	1	3
HP/KW	50 Hz	0.5HP / 0.4KW
	60 Hz	0.5HP / 0.4KW
Voltage	50 Hz	220
	60 Hz	220 / 380
Amps	50 Hz	4.5
	60 Hz	4.5
Starting Class	50 Hz	G
	60 Hz	G
Insulation Class	F	F
Capacitor	20μF / 300V	-
Net Weight (kg)	14	11.5

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

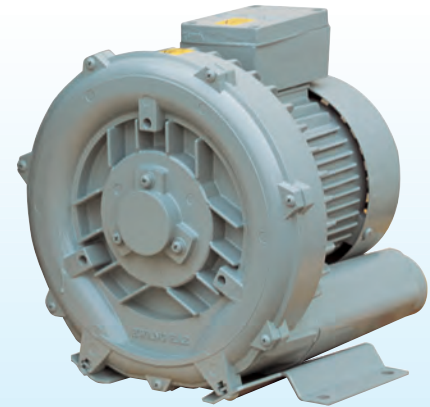
\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-201, 200

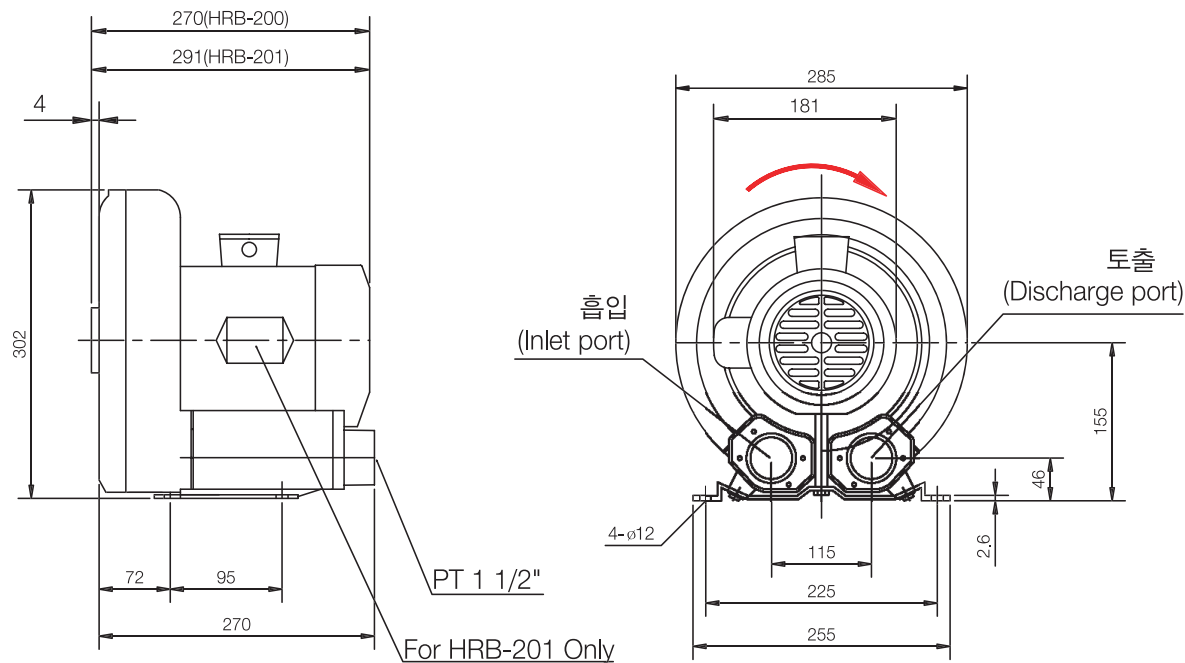
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-201	HRB-200
토출 Discharge (mmAq)	50Hz	1200	1400
	60Hz	1200	1300
흡입 Vacuum (mmAq)	50Hz	1200	1400
	60Hz	1100	1200
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	2.3	2.3
	60Hz	2.9	2.9
소음 Noise(dB)		66	66
중량 Weight(Kg)		20.5	16.5
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6204zC3	6204zC3
	중간(Middle)	-	-
	뒤(Rear)	6203zzC3	6203zzC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice .



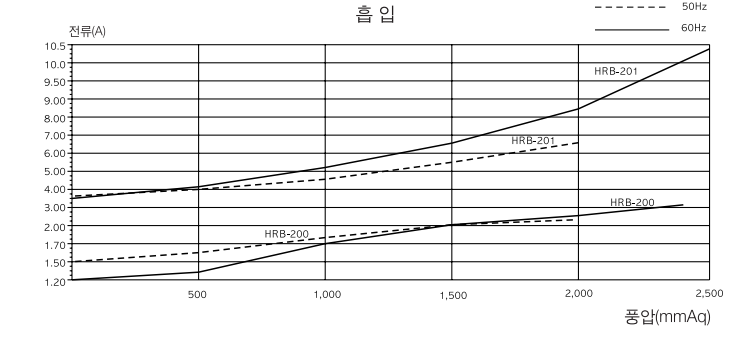
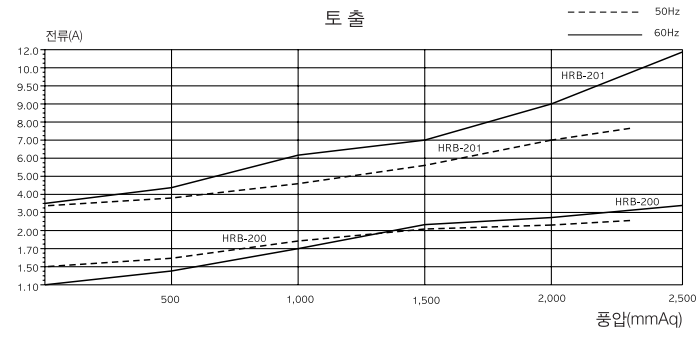
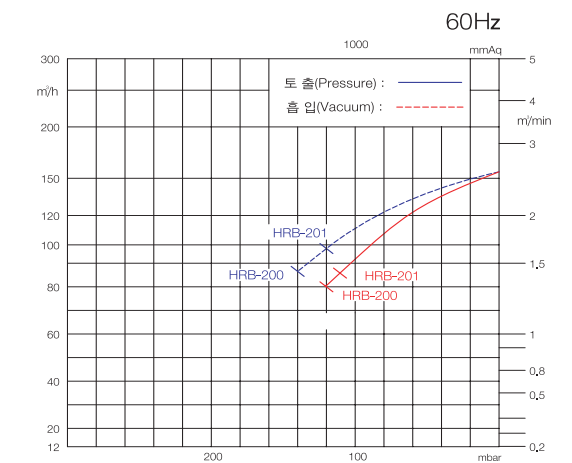
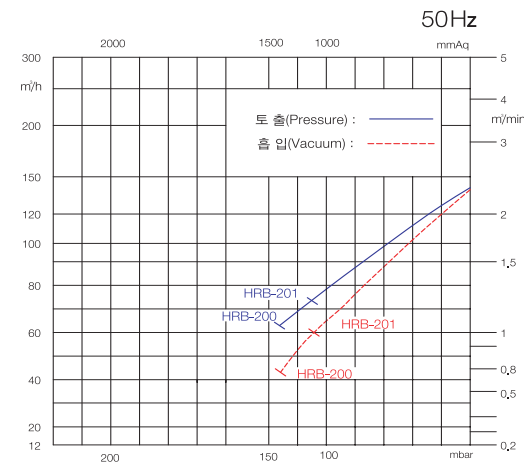
Product Specifications

MODEL NUMBER	HRB-201	HRB-200
Phase	1	3
HP/KW	50 Hz	1HP / 0.75KW
	60 Hz	1HP / 0.75KW
Voltage	50 Hz	220
	60 Hz	220 / 380
Amps	50 Hz	6.0
	60 Hz	6.0
Starting Class	50 Hz	G
	60 Hz	G
Insulation Class	F	F
Capacitor	40μF/300V	-
Net Weight (kg)	20.5	16.5

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-301, 401, 300, 400

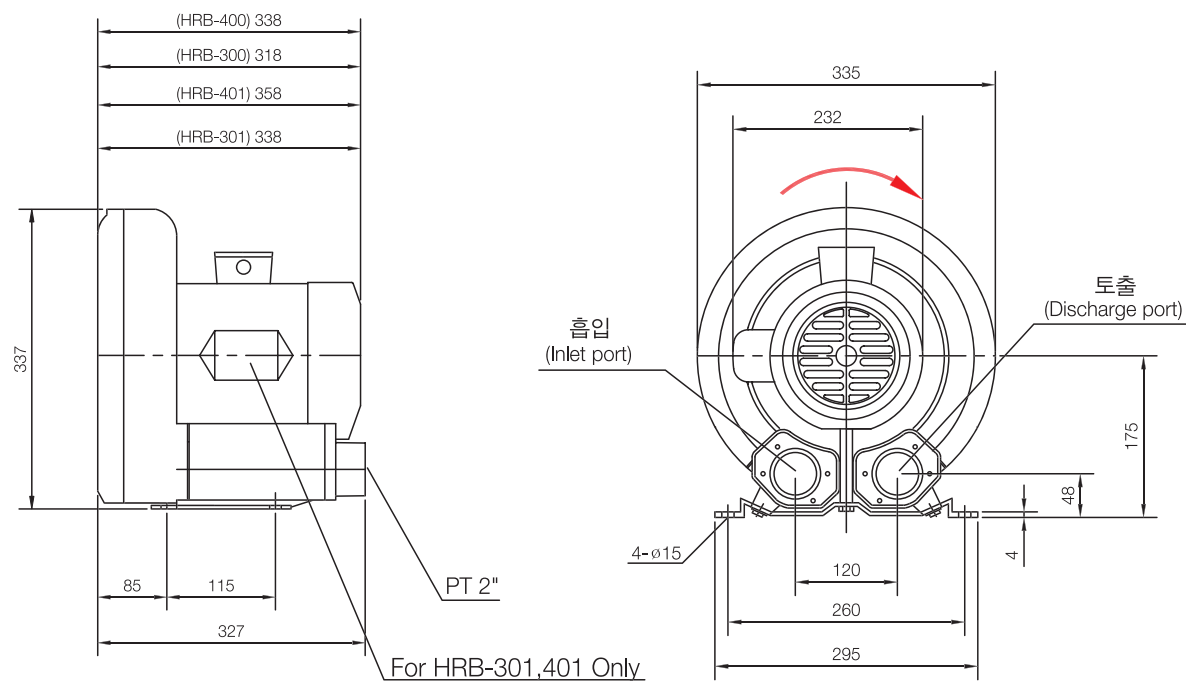
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
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 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ± 10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-301	HRB-401	HRB-300	HRB-400
토출 Discharge (mmAq)	50Hz	1800	2200	2000	2700
	60Hz	1800	2800	2000	3000
흡입 Vacuum (mmAq)	50Hz	1600	1800	1800	2200
	60Hz	1600	2000	1700	2600
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	3.2	3.2	3.4	3.4
	60Hz	4.0	4.0	4.0	4.0
소음 Noise(dB)		75	75	75	75
중량 Weight(Kg)		33	35	30.5	33
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6205zC3	6205zC3	6205zC3	6205zC3
	중간(Middle)	-	-	-	-
	뒤(Rear)	6205zzC3	6205zzC3	6205zzC3	6205zzC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

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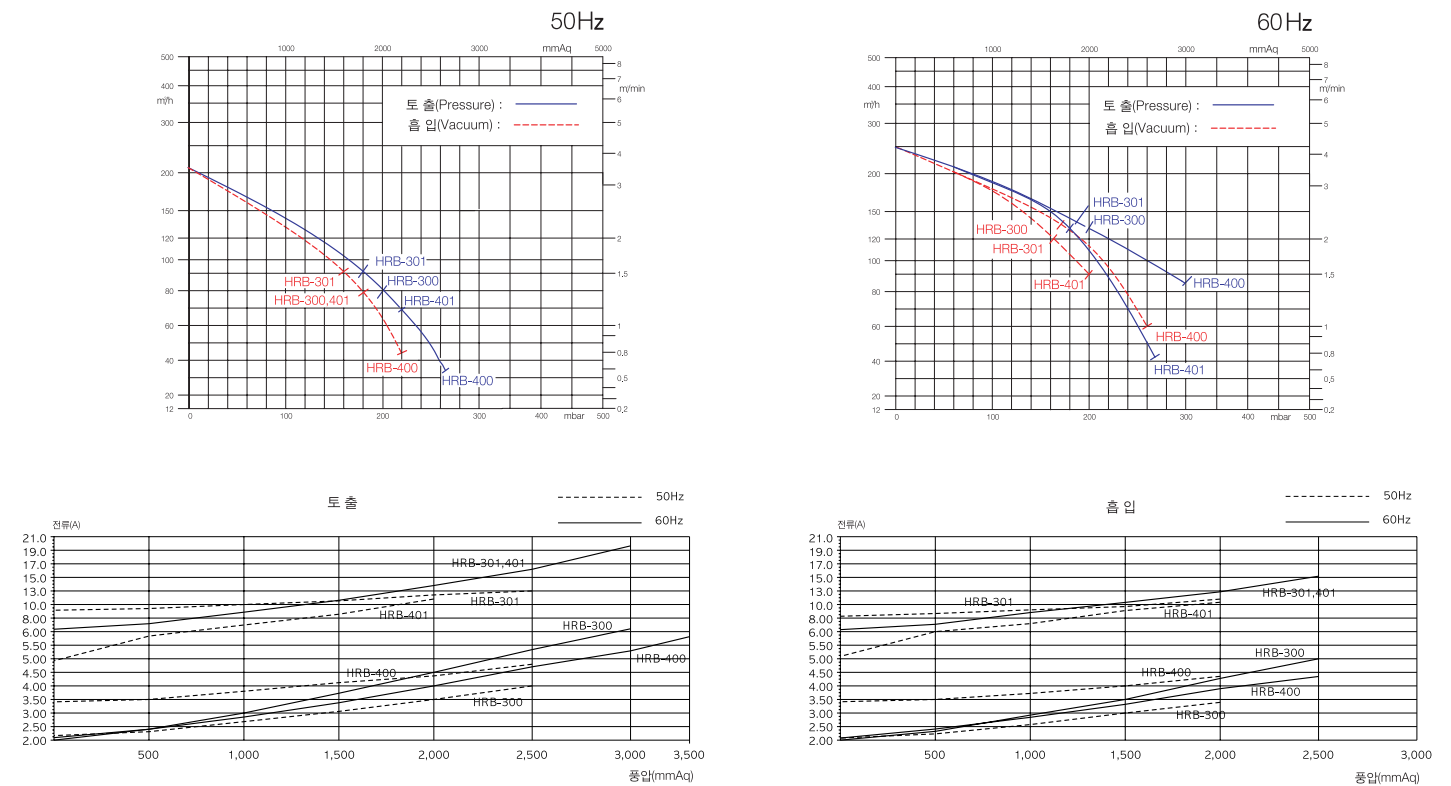
Product Specifications

MODEL NUMBER	HRB-301	HRB-401	HRB-300	HRB-400
Phase	1	1	3	3
HP/KW	50 Hz	2HP / 1.5KW	3HP / 2.2KW	2HP / 1.5KW
	60 Hz	2HP / 1.5KW	3HP / 2.2KW	2.3HP / 1.75KW
Voltage	50 Hz	220	220	220 / 380
	60 Hz	220	220	220 / 380
Amps	50 Hz	11.5	15	6.3 / 3.6
	60 Hz	11.5	15	6.7 / 3.8
Starting Class	50 Hz	G	G	G
	60 Hz	G	G	G
Insulation Class	F	F	F	F
Capacitor	400μF / 110V 40μF / 300V	400μF / 110V 40μF / 300V	-	-
Net Weight (kg)	33	35	30.5	33

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

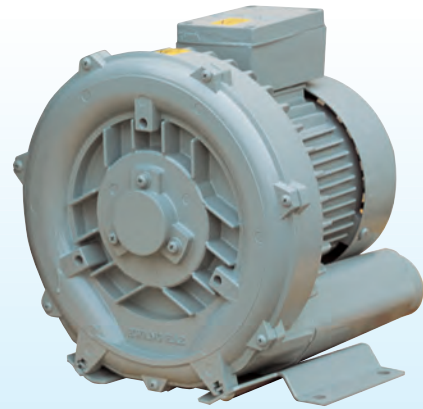
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Product Performance



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 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ± 10%



HRB-501, 500, 600, 700

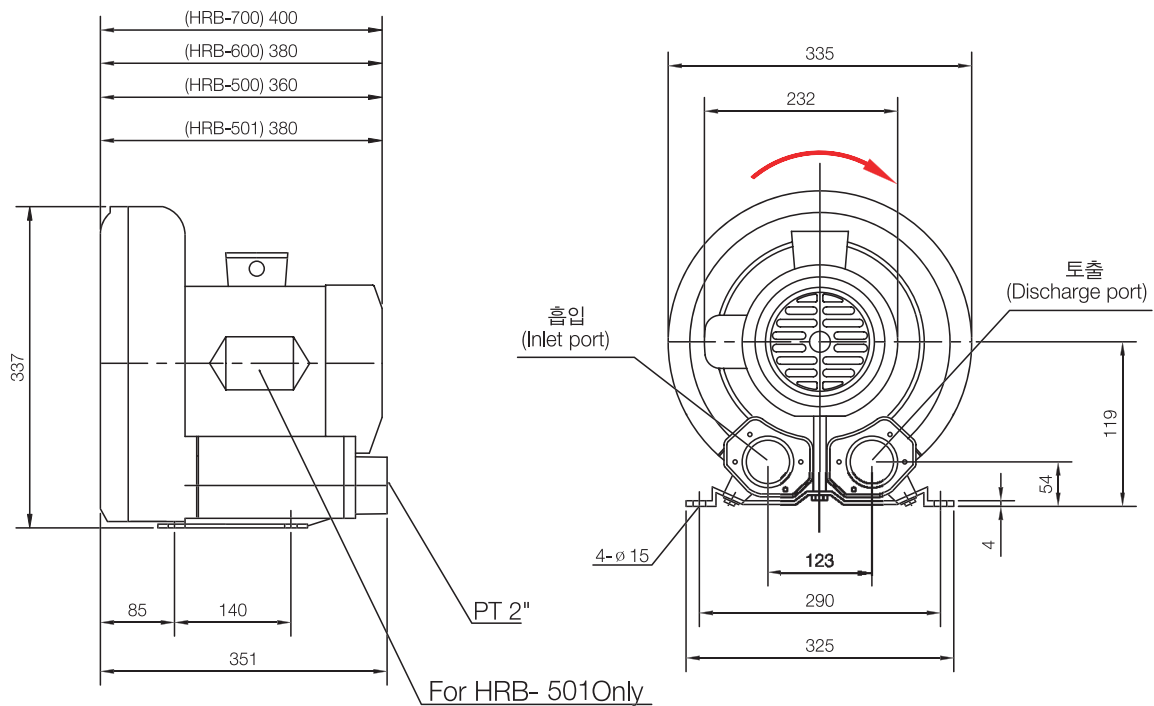
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-501	HRB-500	HRB-600	HRB-700
토출 Discharge (mmAq)	50Hz	2100	2200	2800	3300
	60Hz	2100	2000	3000	3400
흡입 Vacuum (mmAq)	50Hz	2000	2300	2600	3200
	60Hz	2000	2200	2800	3300
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	5	5	5	5
	60Hz	6	6	6	6
소음 Noise(dB)		76	76	76	76
중량 Weight(Kg)		39	37	40	42.5
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6206zC3	6206zC3	6206zC3	6206zC3
	중간(Middle)	-	-	-	-
	뒤(Rear)	6205zzC3	6205zzC3	6205zzC3	6205zzC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice .



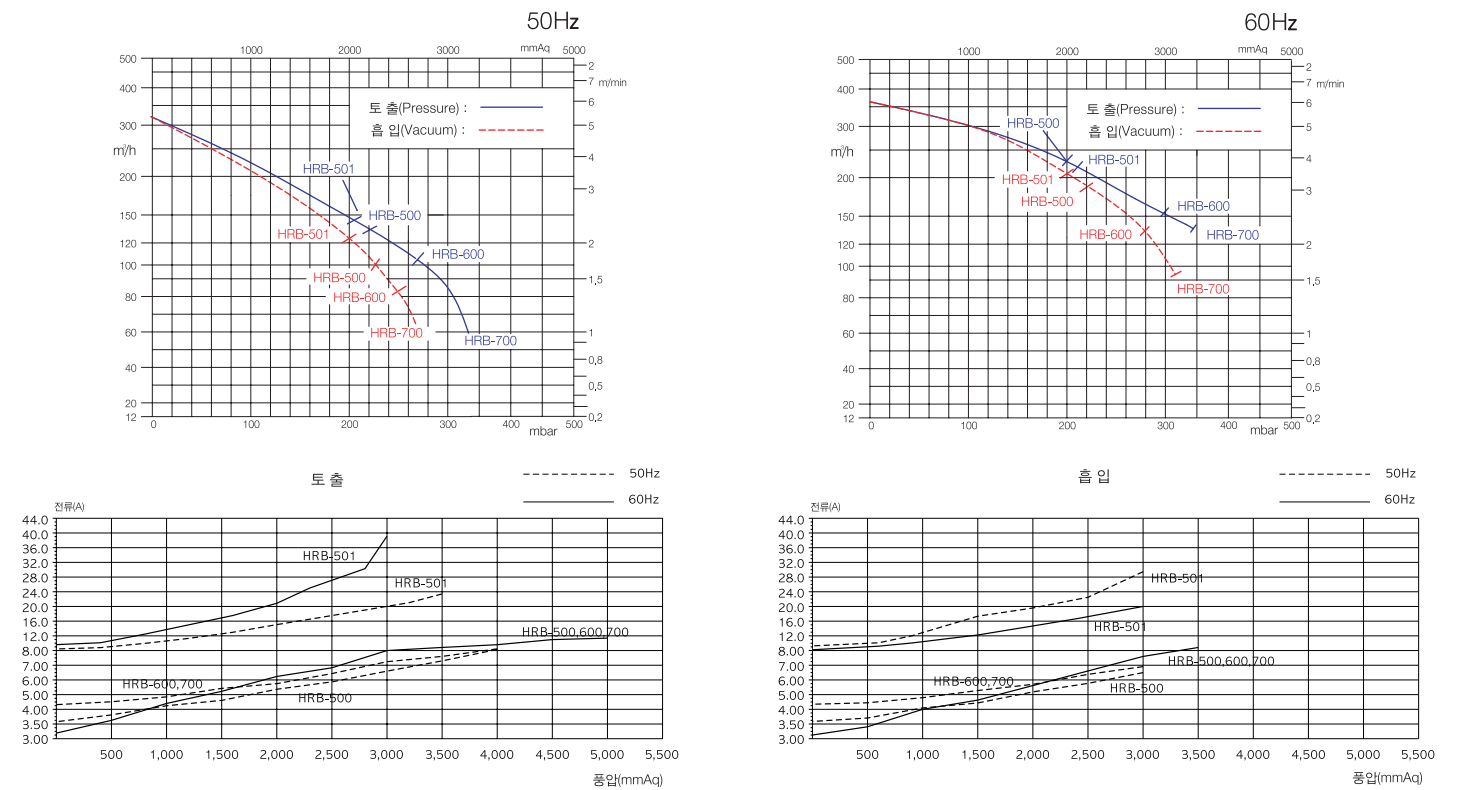
Product Specifications

MODEL NUMBER	HRB-501	HRB-500	HRB-600	HRB-700
Phase	1	3	3	3
HP/KW	50 Hz	3HP / 2.2KW	3HP / 2.2KW	4HP / 3KW
	60 Hz	3HP / 2.2KW	3.4HP / 2.55KW	5HP / 3.7KW
Voltage	50 Hz	220	220 / 380	220 / 380
	60 Hz	220	220 / 380	220 / 380
Amps	50 Hz	15.2	9.8 / 5.7	12 / 6.9
	60 Hz	15.5	9.5 / 5.5	14 / 8.1
Starting Class	50 Hz	G	G	G
	60 Hz	G	G	G
Insulation Class	F	F	F	F
Capacitor	400μF/110V	-	-	-
Net Weight (kg)	39	37	40	42.5

\*상기 전기 사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 차리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

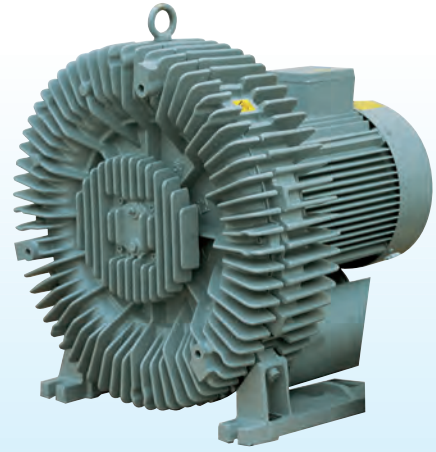
Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*국산의 아랫부분을 포함한 국산상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*국산상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%

# HRB-800, 900



HRB-800, 900

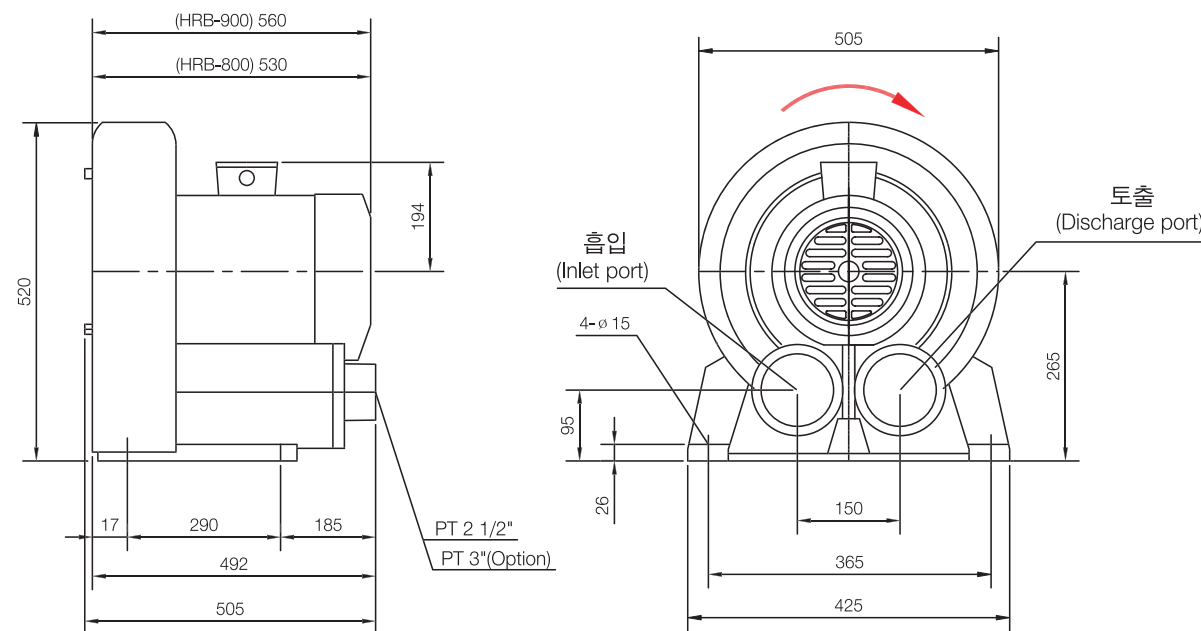
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

## Performance

		HRB-800	HRB-900
토출 Discharge (mmAq)	50Hz	3000	4000
	60Hz	2800	4500
흡입 Vacuum (mmAq)	50Hz	2700	3000
	60Hz	3100	3500
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	8.4	8.4
	60Hz	10	10
소음 Noise(dB)		78	78
중량 Weight(Kg)		144	151
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium
	케이스(Case)	Casted Iron	Casted Iron
베어링 Bearing	앞(Front)	6207zC3	6207zC3
	중간(Middle)	-	-
	뒤(Rear)	6307zC3	6307zC3

## Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice .

# HRB-800, 900



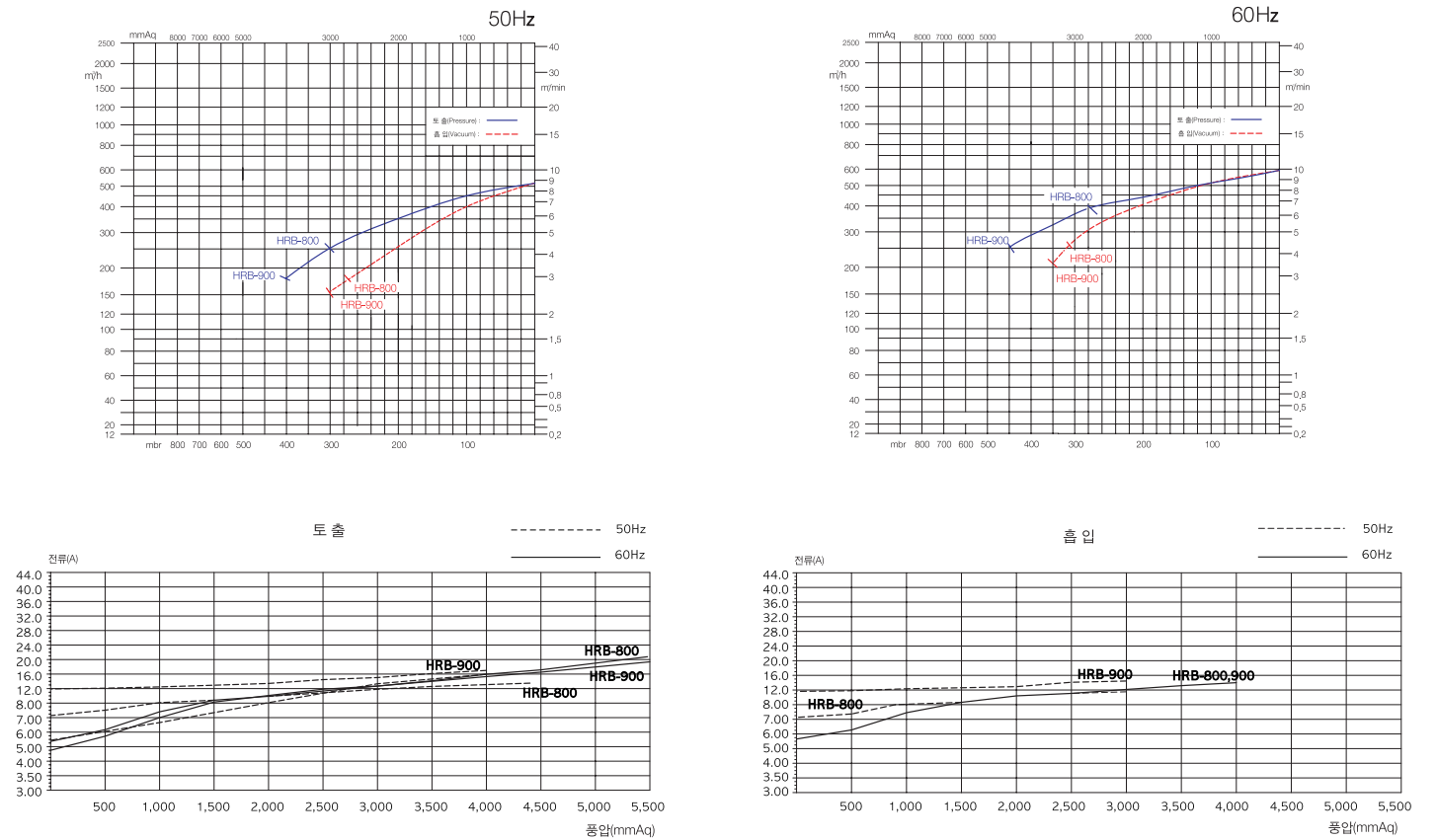
## Product Specifications

MODEL NUMBER	HRB-800	HRB-900
Phase	3	3
HP/KW	50 Hz	7.5HP / 5.5KW
	60 Hz	8.4HP / 6.3KW
Voltage	50 Hz	220 / 380
	60 Hz	220 / 380
Amps	50 Hz	22 / 12.7
	60 Hz	22 / 12.7
Starting Class	50 Hz	G
	60 Hz	G
Insulation Class	F	F
Net Weight (kg)	144	151

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

## Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정한 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-1000

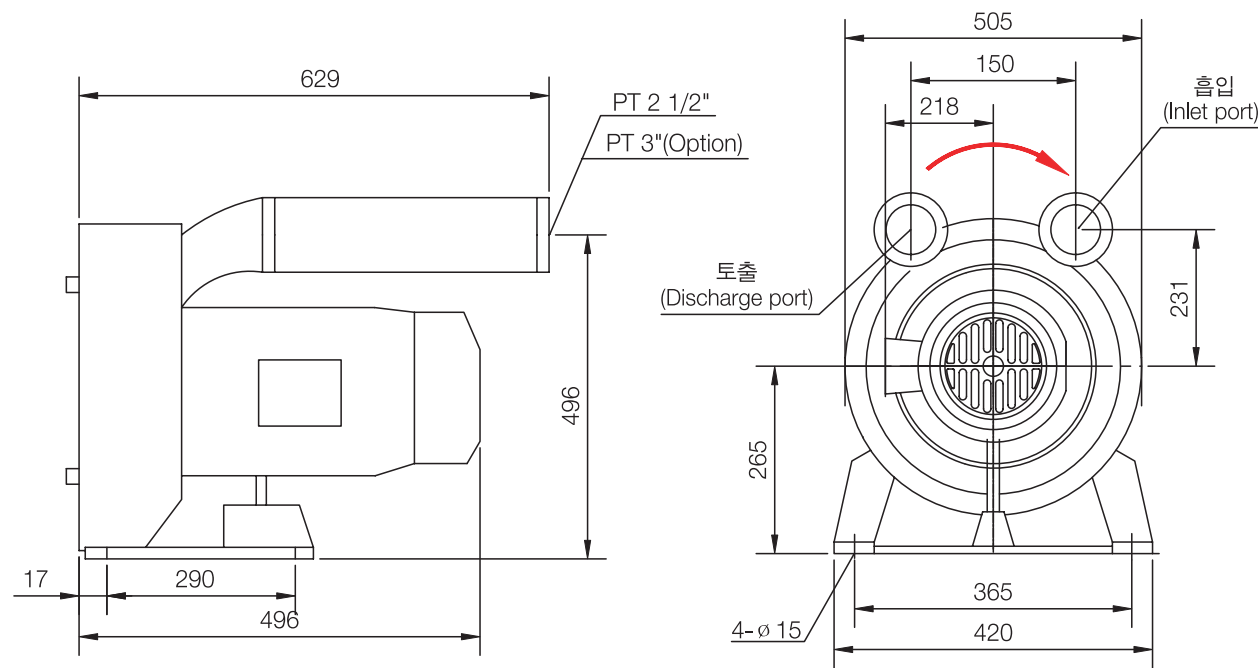
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-1000
토출 Discharge (mmAq)	50Hz	4400
	60Hz	6300
흡입 Vacuum (mmAq)	50Hz	3500
	60Hz	4000
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	8.4
	60Hz	10
소음 Noise(dB)		78
중량 Weight(Kg)		166
재질 Material	임펠러 (Impeller)	Aluminium
	케이스(Case)	Casted Iron
베어링 Bearing	앞(Front)	6207zC3
	중간(Middle)	-
	뒤(Rear)	6307zC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice .



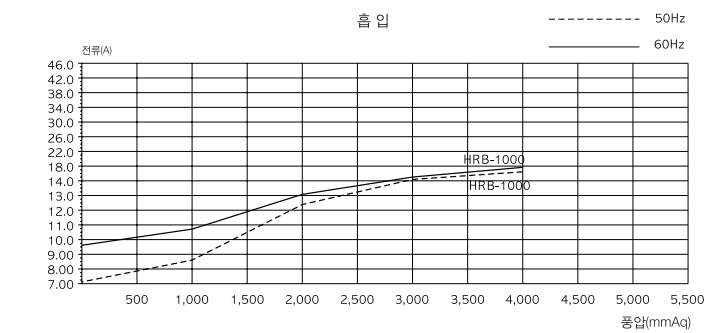
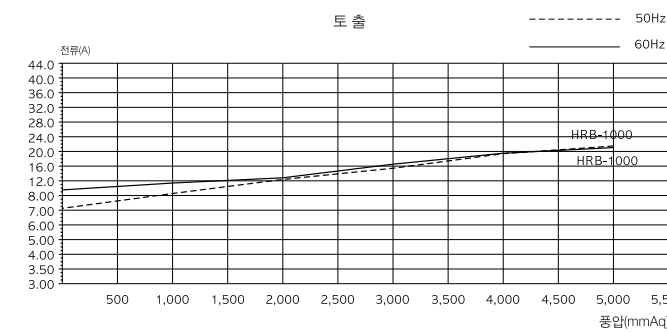
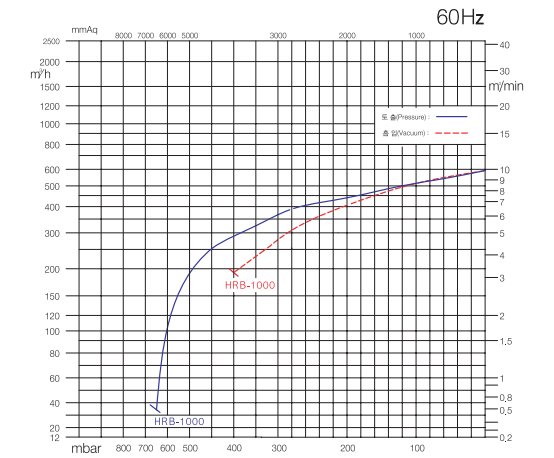
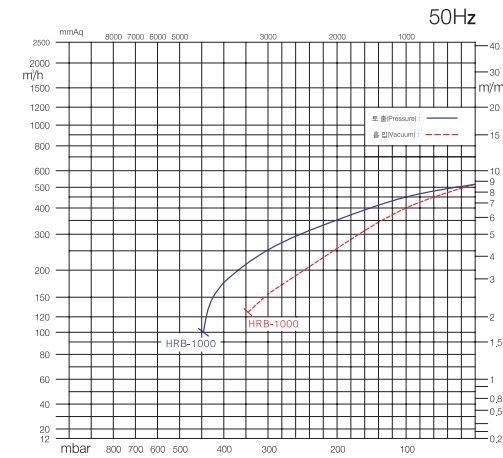
Product Specifications

MODEL NUMBER		HRB-1000
Phase		3
HP/KW	50 Hz	15HP / 11KW
	60 Hz	16.8HP / 12.6HP
Voltage	50 Hz	220 / 380
	60 Hz	220 / 380
Amps	50 Hz	40 / 23
	60 Hz	40 / 23
Starting Class	50 Hz	G
	60 Hz	G
Insulation Class		F
Net Weight (kg)		166

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

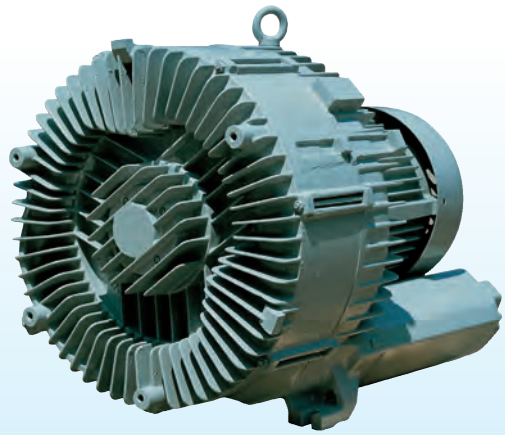
Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정한 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%

# HRB-1100, 1200, 1300



HRB-1100, 1200, 1300

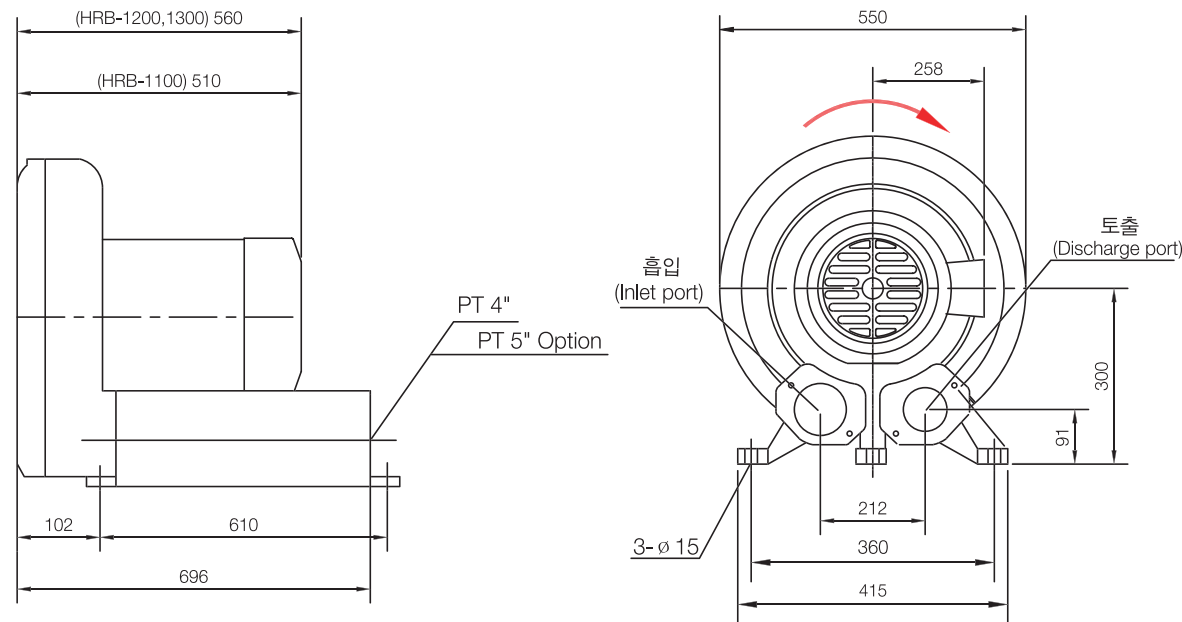
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

## Performance

		HRB-1100	HRB-1200	HRB-1300
토출 Discharge (mmAq)	50Hz	2100	3000	4500
	60Hz	1700	2700	4300
흡입 Vacuum (mmAq)	50Hz	2000	3100	3600
	60Hz	1800	2900	3800
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	17	17	17
	60Hz	20	20	20
소음 Noise(dB)		82	82	82
중량 Weight(Kg)		197	216	229
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Casted Iron	Casted Iron	Casted Iron
베어링 Bearing	앞(Front)	6308zC3	6308zC3	6308zC3
	중간(Middle)	-	-	-
	뒤(Rear)	6308zC3	6308zC3	6308zC3

## Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.

# HRB-1100, 1200, 1300



## Product Specifications

MODEL NUMBER	HRB-1100	HRB-1200	HRB-1300	
Phase	3	3	3	
HP/KW	50 Hz	15HP / 11KW	17.5HP / 13KW	25HP / 18.5KW
	60 Hz	16.8HP / 12.6KW	20.4HP / 15.3KW	30.3HP / 22.7KW
Voltage	50 Hz	220 / 380	220 / 380	220 / 380
	60 Hz	220 / 380	220 / 380	220 / 380
Amps	50 Hz	40 / 23.1	54 / 31.2	65 / 37.5
	60 Hz	40 / 23.1	54 / 31.2	76 / 43.9
Starting Class	50 Hz	G	G	G
	60 Hz	G	G	G
Insulation Class	F	F	F	
Net Weight (kg)	197	216	229	

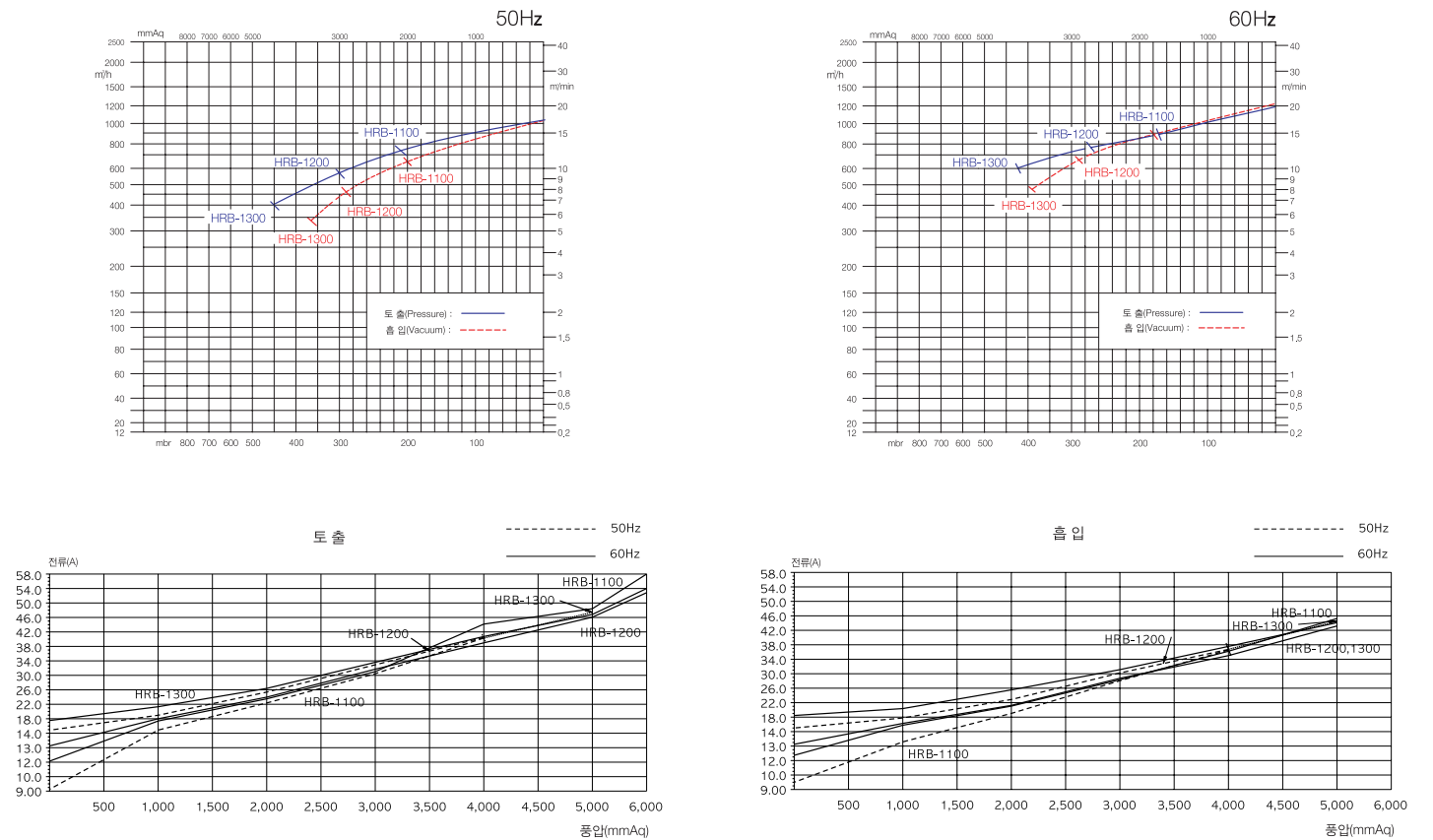
\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.

\*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order

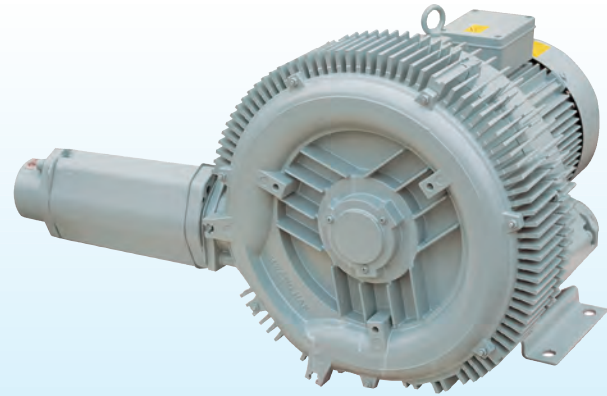
\*Anti-corrosive coating or Explosion-proof is available by customer's request

## Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터손손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-102, 202, 302

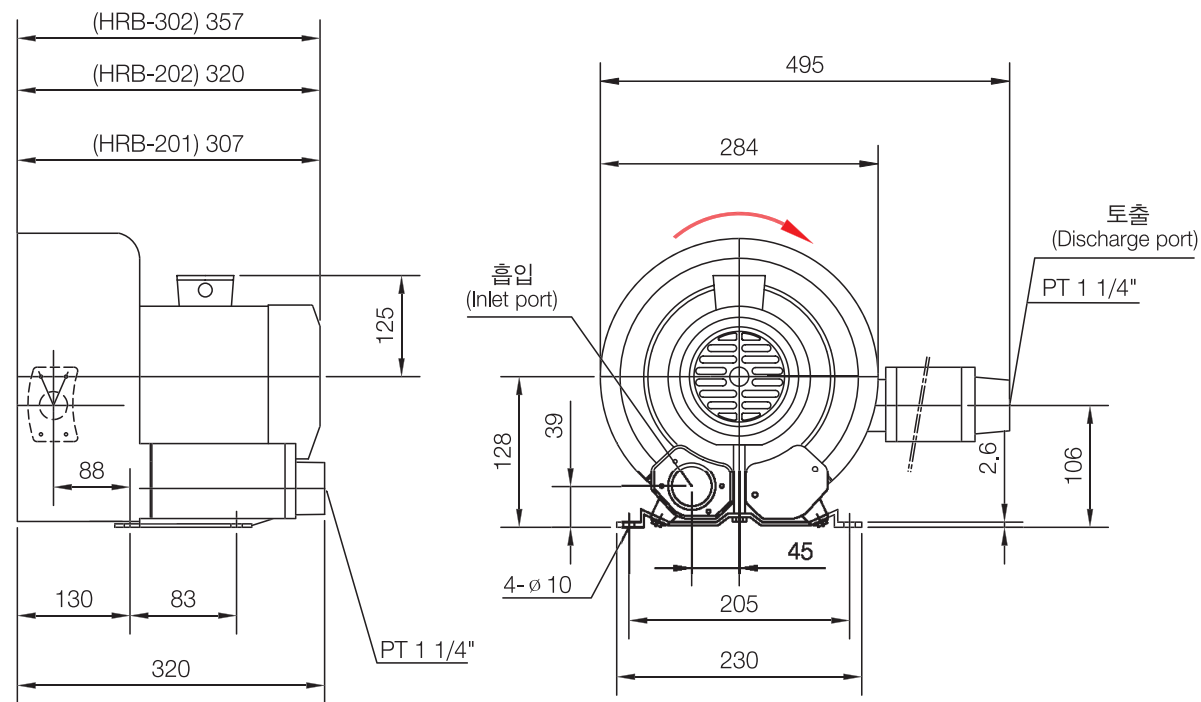
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정한 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-102	HRB-202	HRB-302
토출 Discharge (mmAq)	50Hz	1200	2400	2700
	60Hz	1500	2500	3000
흡입 Vacuum (mmAq)	50Hz	1000	2000	2200
	60Hz	1000	2000	2200
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	1.4	1.4	1.4
	60Hz	1.65	1.65	1.65
소음 (dB)		68	68	68
중량 Weight(Kg)		15	17.5	19.5
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6203zC3	6203zC3	6203zC3
	중간(Middle)	-	-	-
	뒤(Rear)	6303zzC3	6303zzC3	6303zzC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



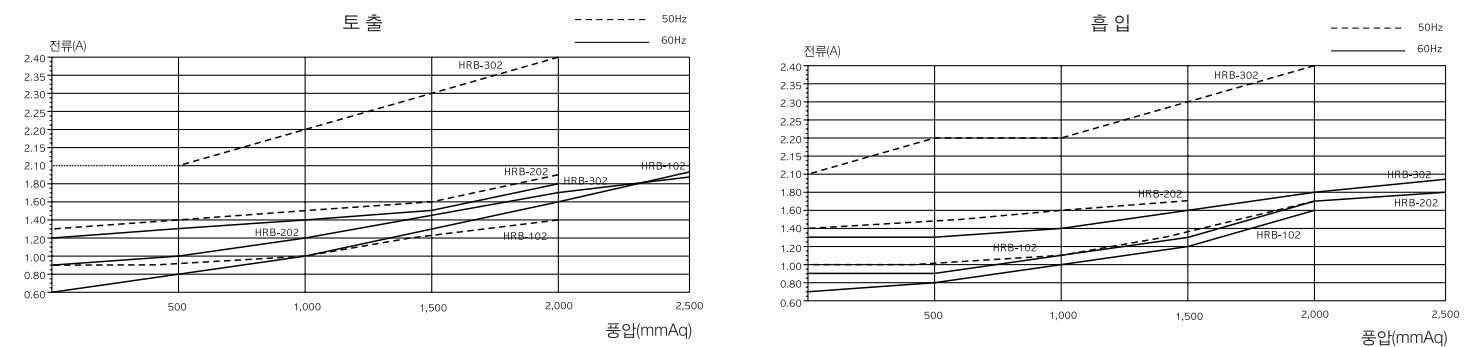
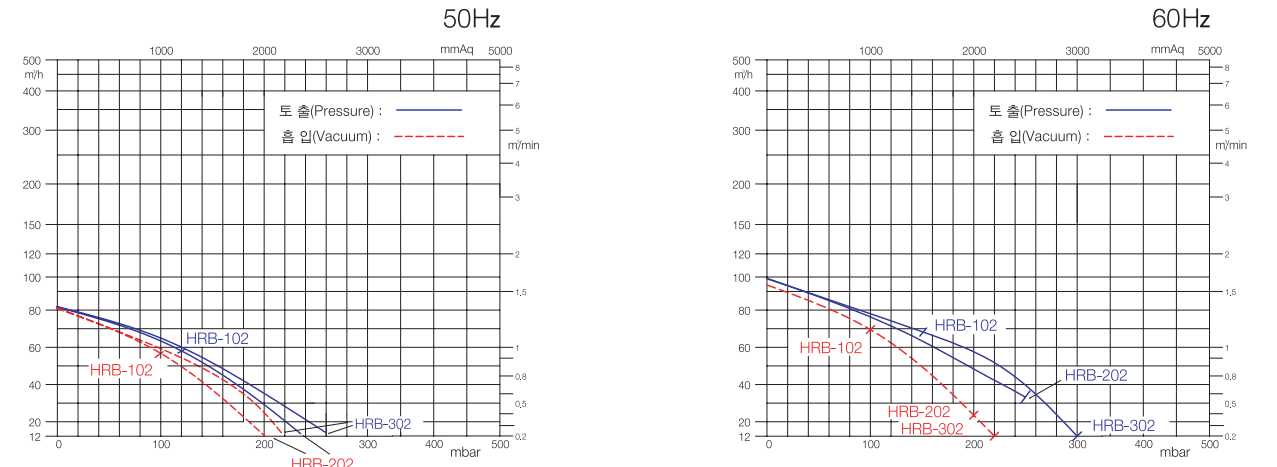
Product Specifications

MODEL NUMBER	HRB-102	HRB-202	HRB-302
Phase	3	3	3
HP/KW	50 Hz	0.5HP / 0.4KW	1HP / 0.75KW
	60 Hz	0.6HP / 0.5KW	1.2HP / 0.93KW
Voltage	50 Hz	220 / 380	220 / 380
	60 Hz	220 / 380	220 / 380
Amps	50 Hz	2.5 / 1.5	4.4 / 2.6
	60 Hz	2.4 / 1.4	4.2 / 2.4
Starting Class	50 Hz	G	G
	60 Hz	G	G
Insulation Class	F	F	F
Net Weight (kg)	15	17.5	19.5

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

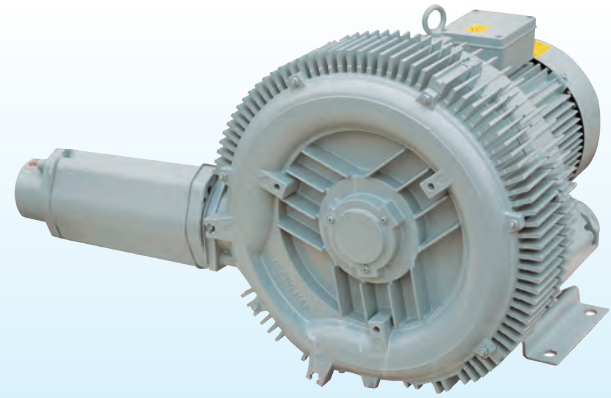
\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정한 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-102/1, 202/1, 302/1

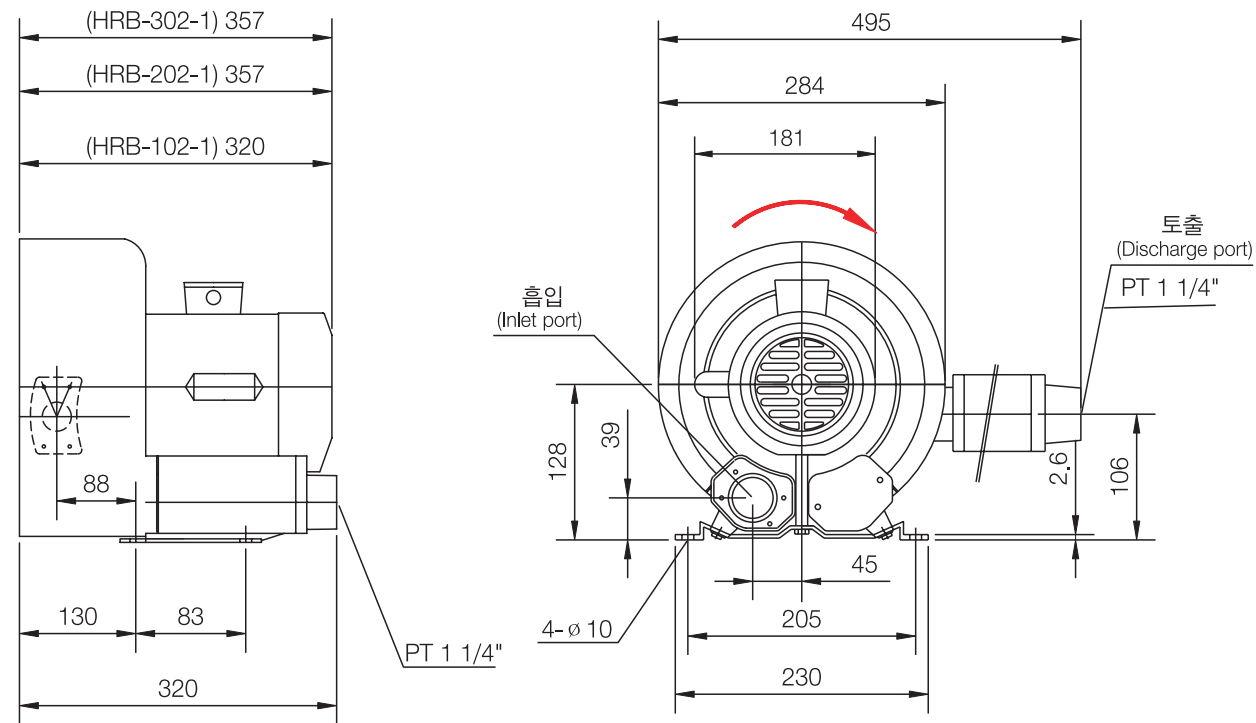
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-102/1	HRB-202/1	HRB-302/1
토출 Discharge (mmAq)	50Hz	1200	2100	2400
	60Hz	1200	2100	2500
흡입 Vacuum (mmAq)	50Hz	1000	1700	2000
	60Hz	1000	1700	2000
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	1.3	1.3	1.3
	60Hz	1.65	1.65	1.65
소음 Noise(dB)		68	68	68
중량 Weight(Kg)		18	20	23
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6203zc3	6203zc3	6203zc3
	중간(Middle)	-	-	-
	뒤(Rear)	6303zzc3	6303zzc3	6303zzc3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



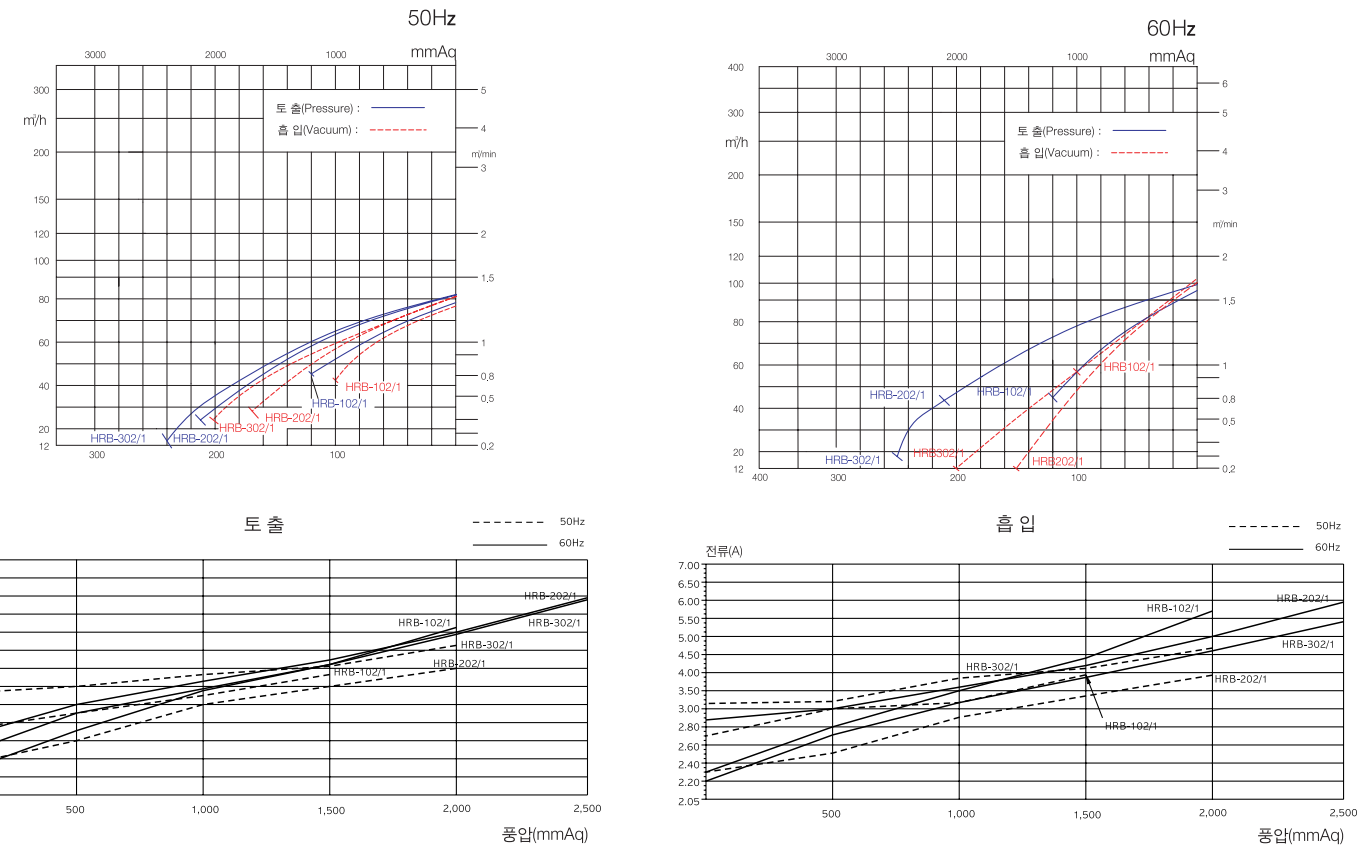
Product Specifications

MODEL NUMBER	HRB-102/1	HRB-202/1	HRB-302/1
Phase	1	1	1
HP/KW	50 Hz	0.5HP / 0.4KW	1HP / 0.75KW
	60 Hz	0.5HP / 0.4KW	1HP / 0.75KW
Voltage	50 Hz	220	220
	60 Hz	220	220
Amps	50 Hz	4.5	6.0
	60 Hz	4.5	6.0
Starting Class	50 Hz	G	G
	60 Hz	G	G
Insulation Class	F	F	F
Capacitor	200μF/300V	40μF/300V	400μF/110V 40μF/300V
Net Weight (kg)	18	20	23

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 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

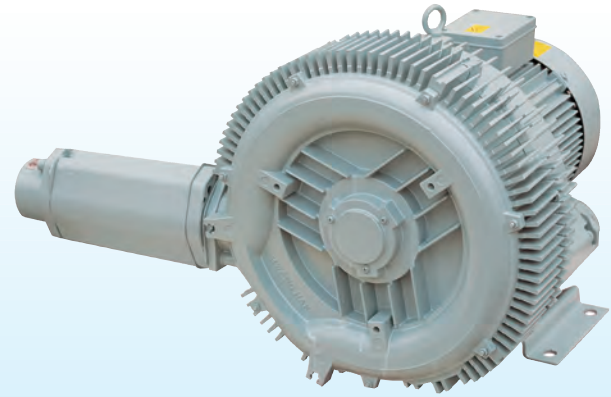
\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*국산의 아랫부분을 포함한 국산상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*국산상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-402S, 402, 402/1, 402S/1

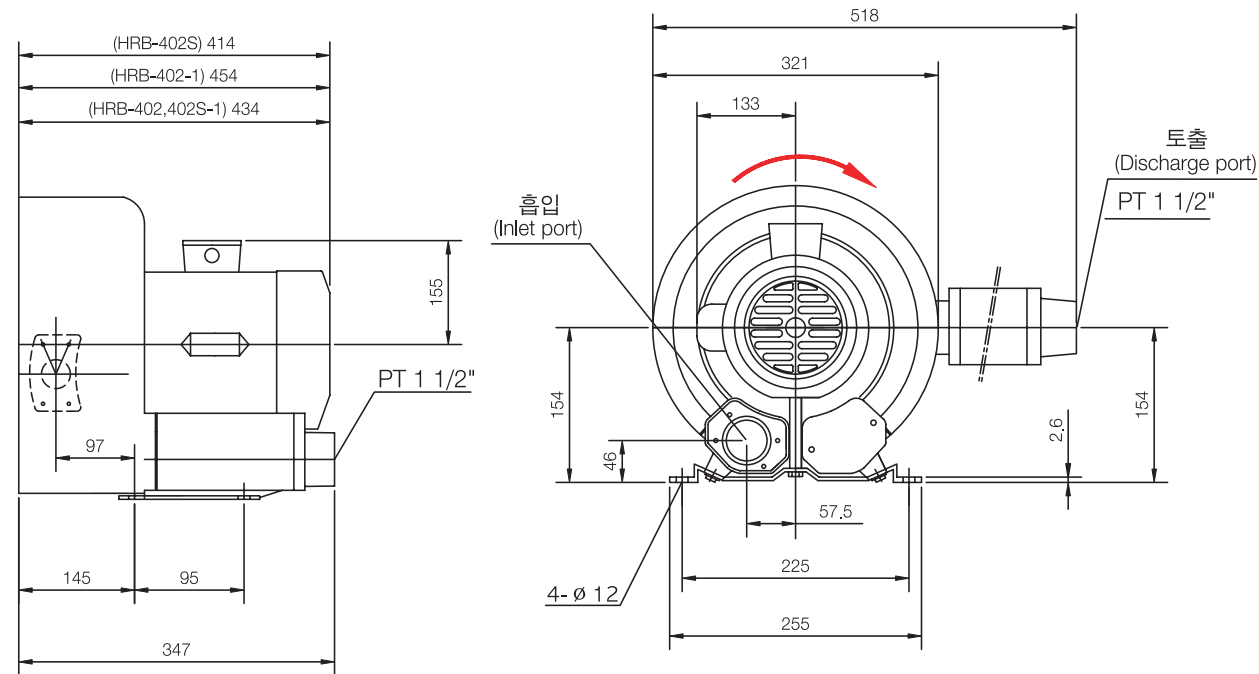
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-402S/1	HRB-402/1	HRB-402S	HRB-402
토출 Discharge (mmAq)	50Hz	2500	3500	2800	4000
	60Hz	2500	3500	2800	4000
흡입 Vacuum (mmAq)	50Hz	2300	2500	2400	2600
	60Hz	2400	2600	2800	3000
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	2.5	2.5	2.5	2.5
	60Hz	3.2	3.2	3.2	3.2
소음 Noise(dB)		75	75	75	71
중량 Weight(Kg)		37	39.5	35	37.5
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6204zC3	6204zC3	6204zC3	6204zC3
	중간(Middle)	6006zC3	6006zC3	6006zC3	6006zC3
	뒤(Rear)	6305zC3	6305zC3	6305zC3	6305zC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

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 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



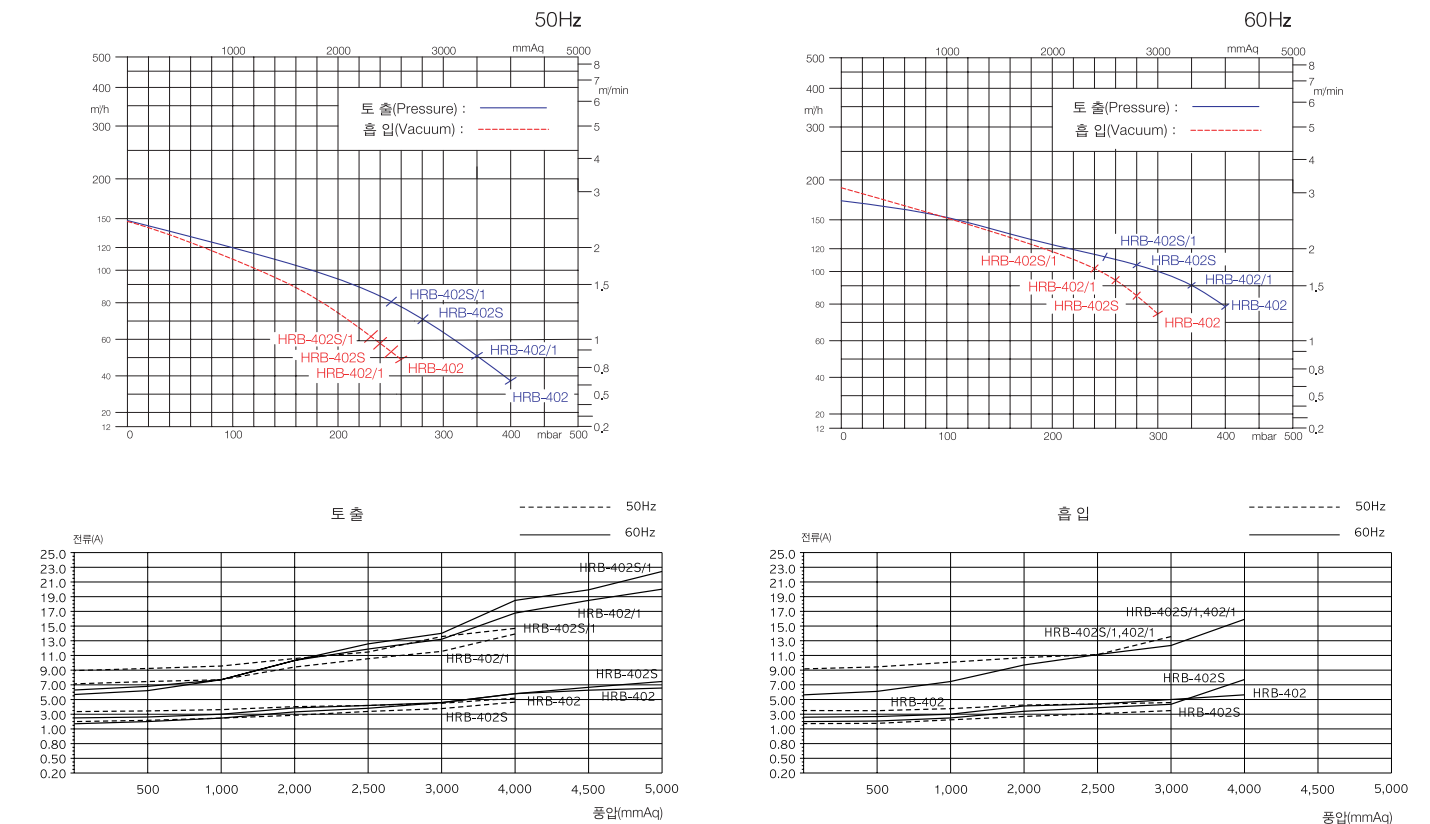
Product Specifications

MODEL NUMBER	HRB-402S/1	HRB-402/1	HRB-402S	HRB-402
Phase	1	1	3	3
HP/KW	50 Hz	2HP / 1.5KW	3HP / 2.2KW	2HP / 1.5KW
	60 Hz	2HP / 1.5KW	3HP / 2.2KW	2.3HP / 1.75KW
Voltage	50 Hz	220	220	220 / 380
	60 Hz	220	220	220 / 380
Amps	50 Hz	11.5	15	6.3 / 3.6
	60 Hz	11.5	15	6.7 / 3.9
Starting Class	50 Hz	G	G	G
	60 Hz	G	G	G
Insulation Class	F	F	F	F
Capacitor	400μF/110V 40μF/300V	400μF/110V 40μF/300V		
Net Weight (kg)	37	39.5	37.5	35

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



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 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-502, 602, 702

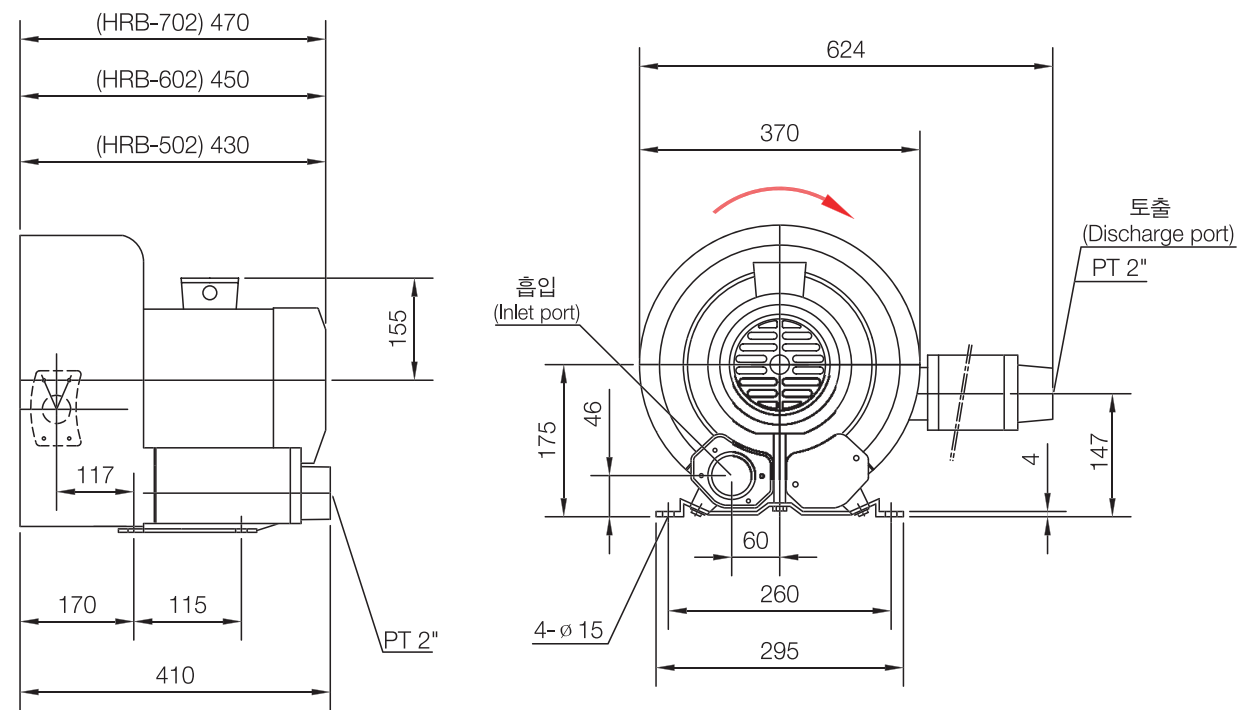
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-502	HRB-602	HRB-702
토출 Discharge (mmAq)	50Hz	2700	4200	5000
	60Hz	3000	4200	5000
흡입 Vacuum (mmAq)	50Hz	2200	3300	3700
	60Hz	2800	4100	4300
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	3.4	3.4	3.4
	60Hz	4.1	4.1	4.1
소음 Noise(dB)		78	78	78
중량 Weight(kg)		42.5	45.2	48
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6205zC3	6205zC3	6205zC3
	중간(Middle)	6006zC3	6006zC3	6006zC3
	뒤(Rear)	6305zC3	6305zC3	6305zC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



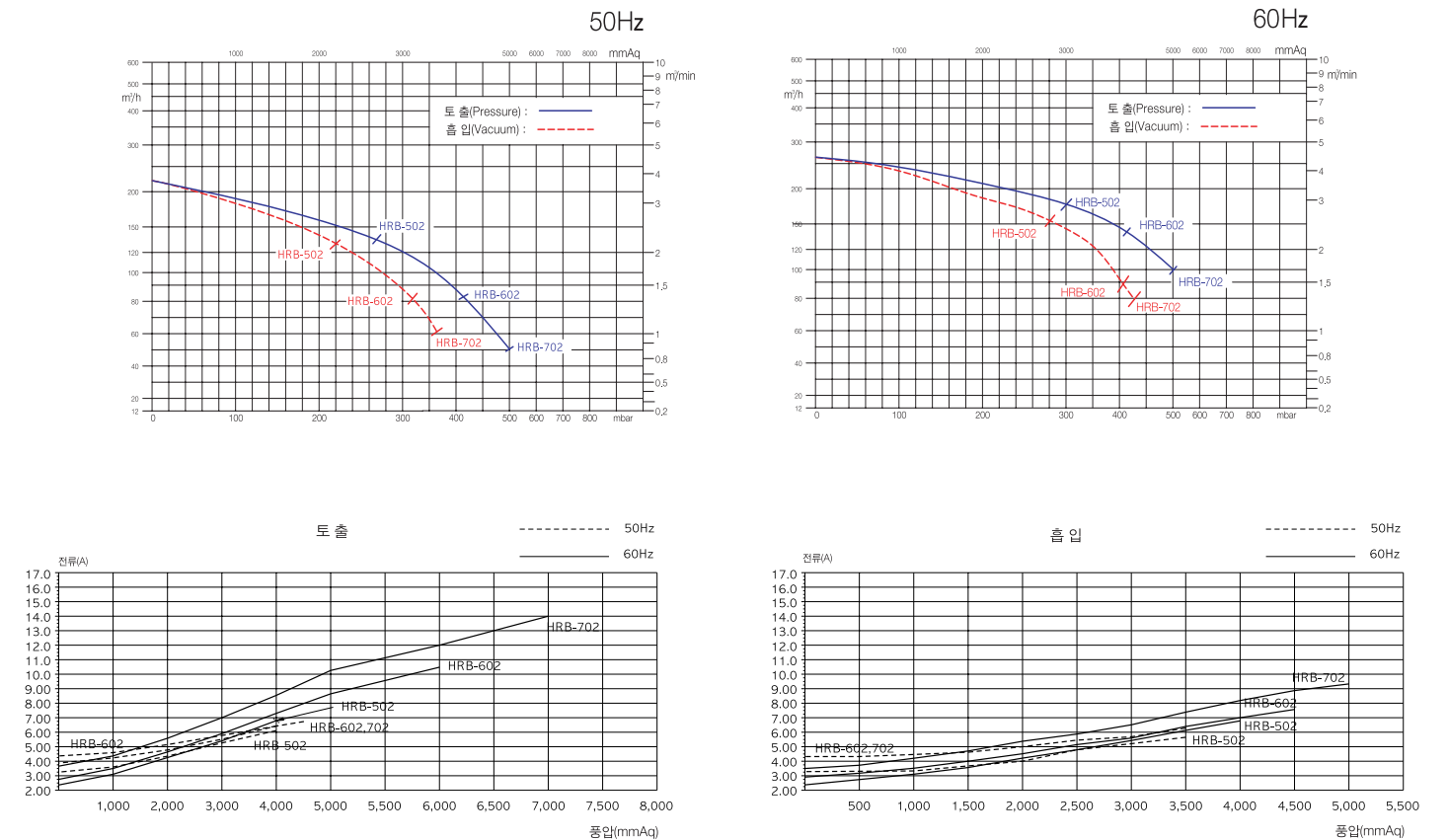
Product Specifications

MODEL NUMBER	HRB-502	HRB-602	HRB-702	
Phase	3	3	3	
HP/KW	50 Hz	3HP / 2.2KW	4HP / 3KW	5.3HP / 4KW
	60 Hz	3.4HP / 2.55KW	5HP / 3.7KW	6.1HP / 4.6KW
Voltage	50 Hz	220 / 380	220 / 380	220 / 380
	60 Hz	220 / 380	220 / 380	220 / 380
Amps	50 Hz	9.8 / 5.7	12 / 7.0	17 / 9.8
	60 Hz	9.5 / 5.5	14 / 8.1	17 / 9.8
Starting Class	50 Hz	G	G	G
	60 Hz	G	G	G
Insulation Class	F	F	F	
Net Weight (kg)	42.5	45.2	46	

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 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

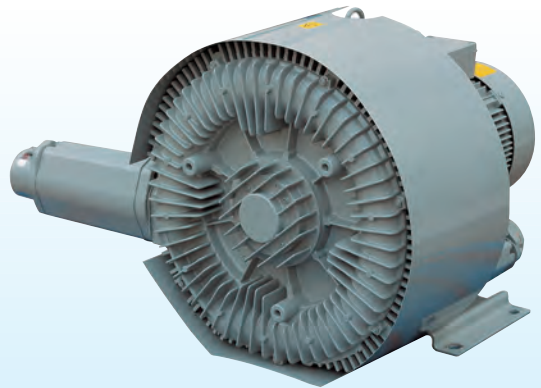
\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-802, 902, 1002

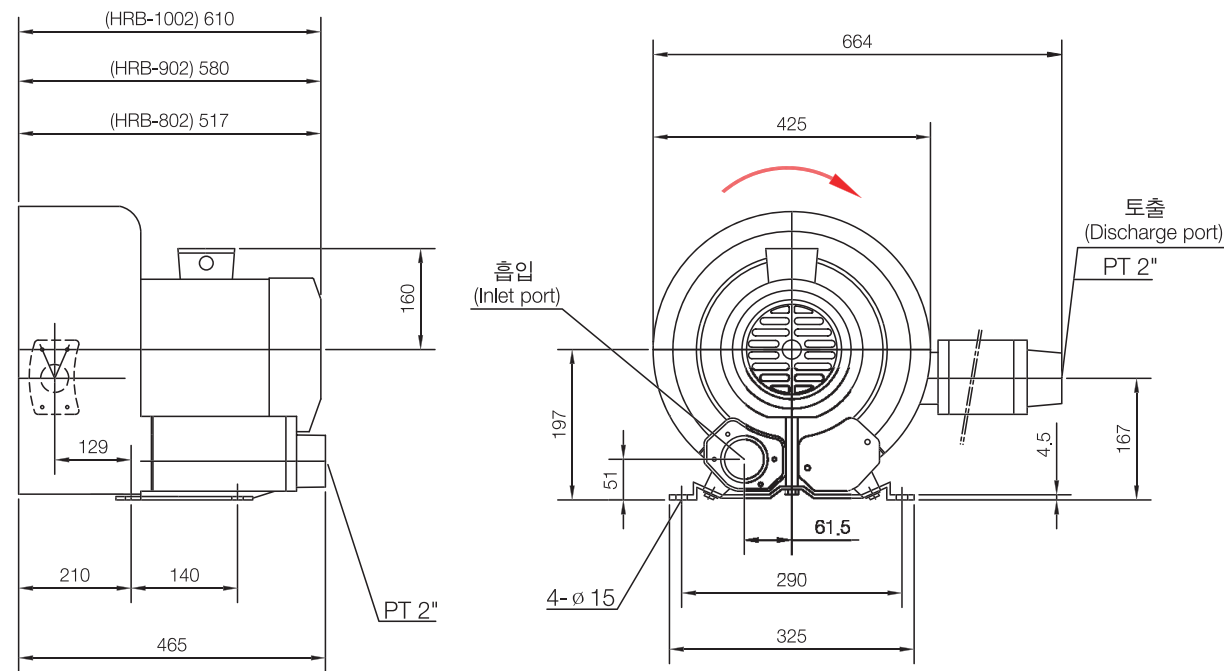
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-802	HRB-902	HRB-1002
토출 Discharge (mmAq)	50Hz	3700	5200	5800
	60Hz	3500	5000	6500
흡입 Vacuum (mmAq)	50Hz	3800	4200	4500
	60Hz	3800	4300	4500
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	5.2	5.2	5.2
	60Hz	6.1	6.1	6.1
소음 Noise(dB)		80	80	80
중량 Weight(kg)		57	78	85
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Aluminium	Aluminium	Aluminium
베어링 Bearing	앞(Front)	6206zC3	6206zC3	6206zC3
	중간(Middle)	6007zC3	6207zC3	6207zC3
	뒤(Rear)	6208zC3	6208zC3	6208zC3

Product Dimensions (unit : mm)



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 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



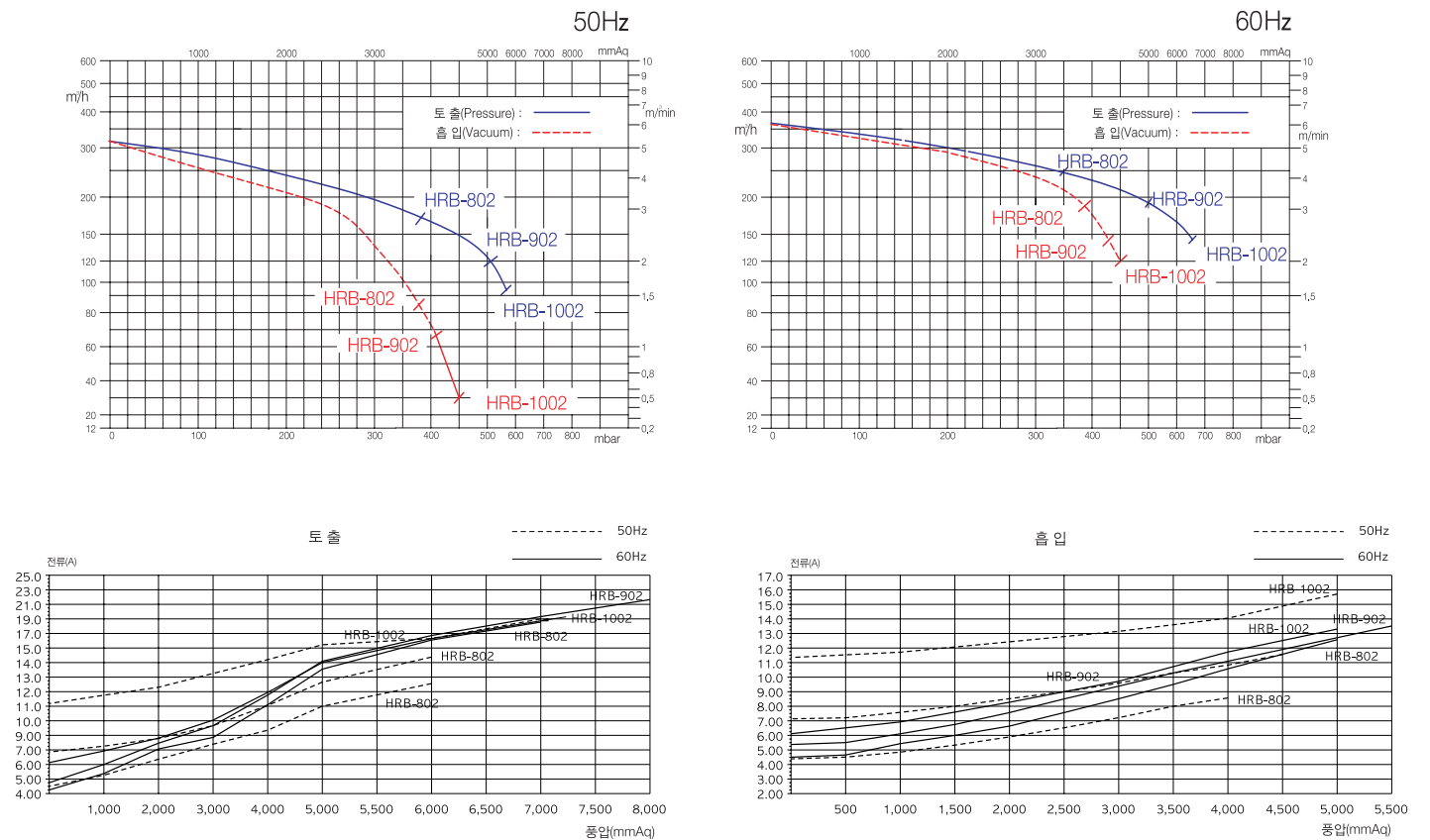
Product Specifications

MODEL NUMBER	HRB-802	HRB-902	HRB-1002
Phase	3	3	3
HP/KW	50 Hz	5.3HP / 4KW	7.5HP / 5.5KW
	60 Hz	6.1HP / 4.6KW	8.4HP / 6.3KW
Voltage	50 Hz	220 / 380	220 / 380
	60 Hz	220 / 380	220 / 380
Amps	50 Hz	17 / 9.8	22 / 12.7
	60 Hz	17 / 9.8	22 / 12.7
Starting Class	50 Hz	G	G
	60 Hz	G	G
Insulation Class	F	F	F
Net Weight (kg)	57	78	85

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

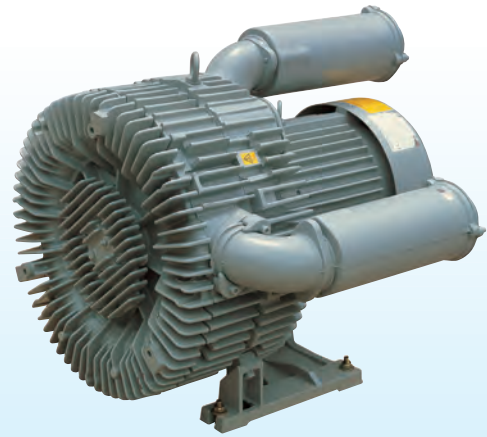
Product Performance



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 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%

# HRB-1102, 1202



HRB-1102, 1202

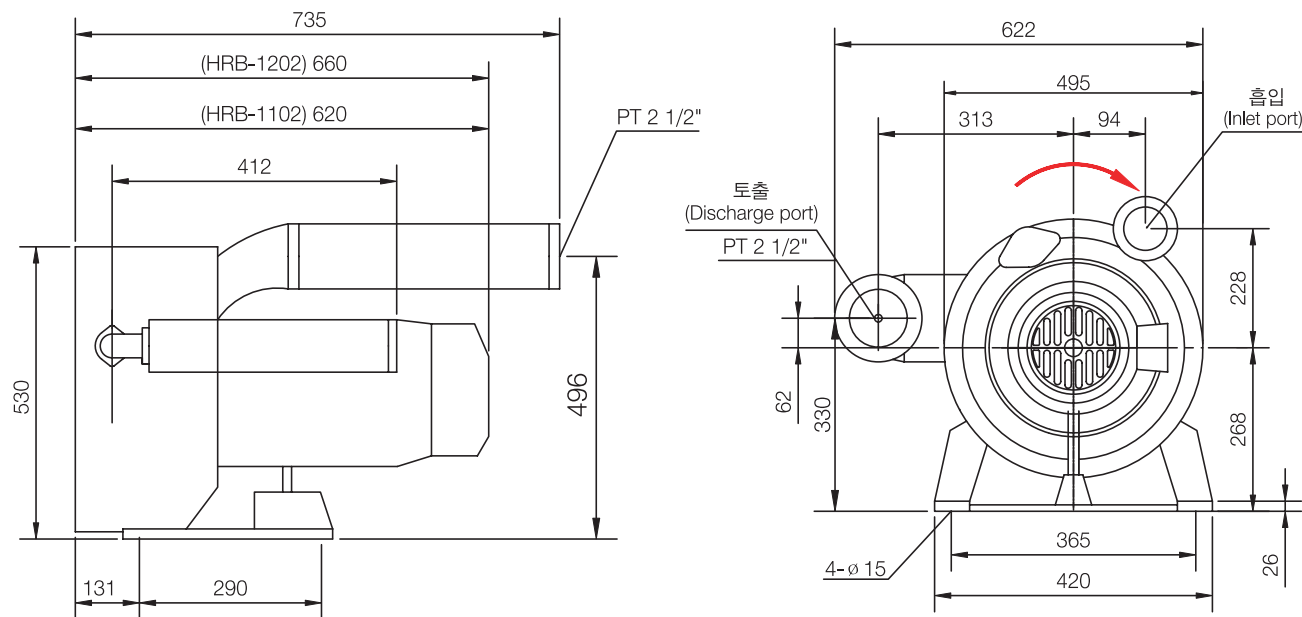
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

## Performance

		HRB-1102	HRB-1202
토출 Discharge (mmAq)	50Hz	6200	7000
	60Hz	6200	7800
흡입 Vacuum (mmAq)	50Hz	4300	4800
	60Hz	4300	4600
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	8.4	8.4
	60Hz	10	10
소음 Noise(dB)		82	82
중량 Weight(Kg)		220	227
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium
	케이스(Case)	Casted Iron	Casted Iron
베어링 Bearing	앞(Front)	6207zC3	6207zC3
	중간(Middle)	-	-
	뒤(Rear)	6208zC3	6208zC3

## Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request

# HRB-1102, 1202



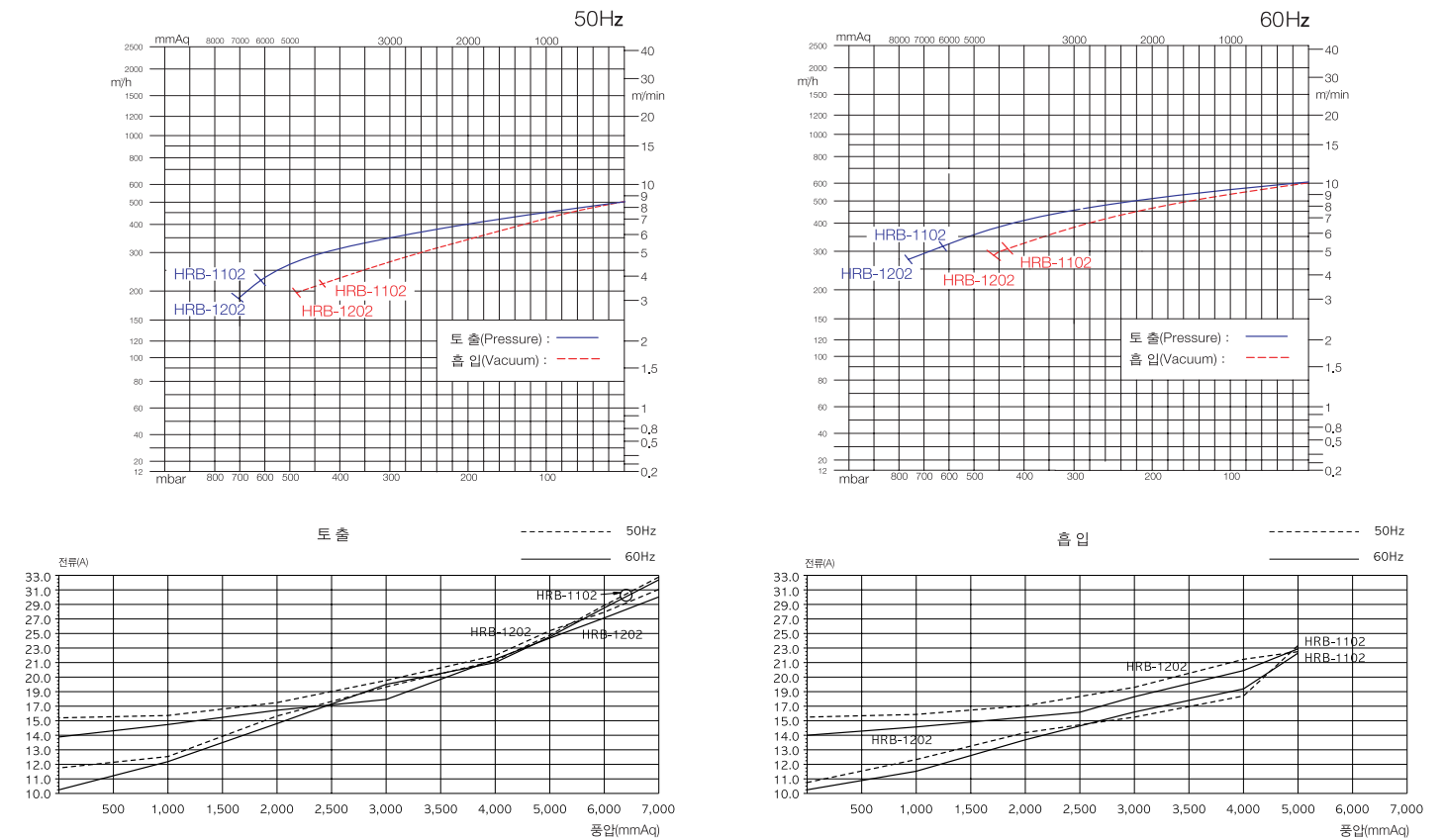
## Product Specifications

MODEL NUMBER	HRB-1102	HRB-1202
Phase	3	3
HP/KW	50 Hz	15HP / 11KW
	60 Hz	20HP / 15KW
Voltage	50 Hz	16.8HP / 12.6KW
	60 Hz	23HP / 17.3KW
Amps	50 Hz	220 / 380
	60 Hz	220 / 380
Starting Class	50 Hz	40 / 23.1
	60 Hz	54 / 31.2
Insulation Class	50 Hz	40 / 23.1
	60 Hz	56 / 32.3
Net Weight (kg)	50 Hz	H
	60 Hz	H
Insulation Class		F
Net Weight (kg)		F
		220
		227

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

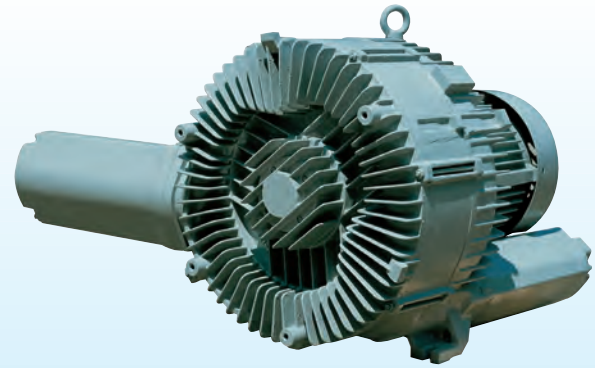
\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

## Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%



HRB-1112, 1212

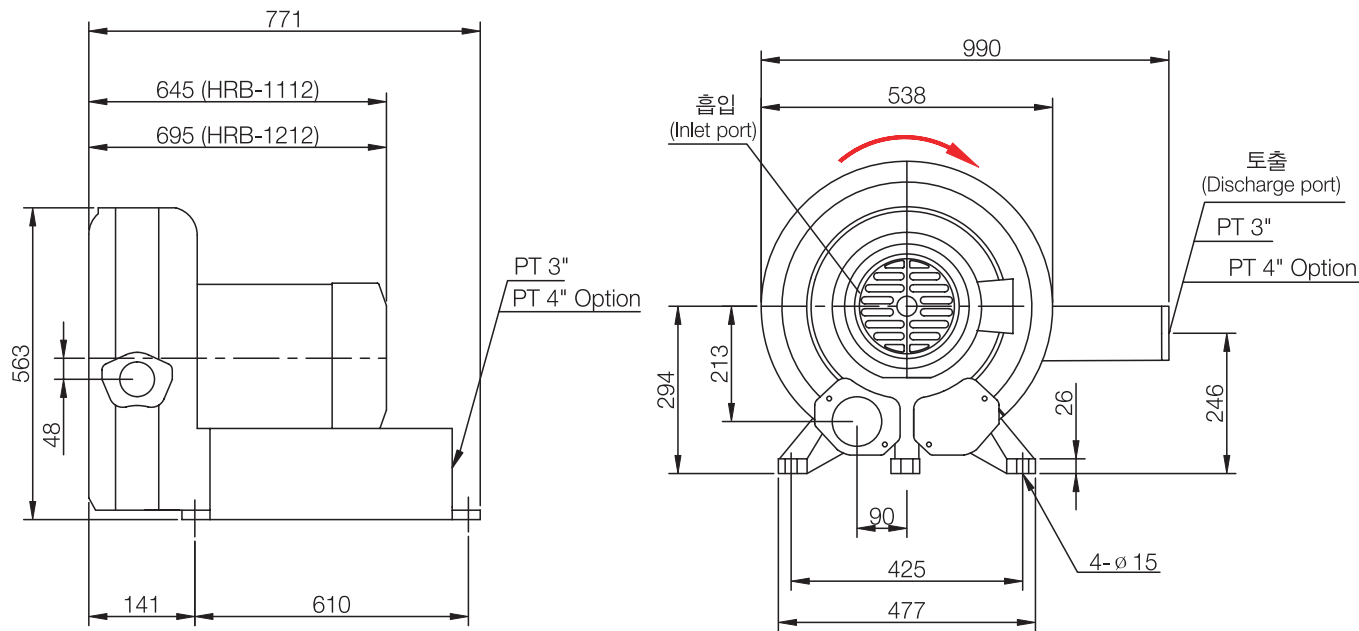
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

Performance

		HRB-1112	HRB-1212
토출 Discharge (mmAq)	50Hz	2800	4000
	60Hz	3000	4000
흡입 Vacuum (mmAq)	50Hz	2800	3000
	60Hz	3000	3500
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	12.8	12.8
	60Hz	15	15
소음 Noise(dB)		80	80
중량 Weight(Kg)		250	270
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium
	케이스(Case)	Casted Iron	Casted Iron
베어링 Bearing	앞(Front)	6208zC3	6208zC3
	중간(Middle)	-	-
	뒤(Rear)	6308zC3	6308zC3

Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
 \*성능개선을 위하여 사전고지 없이 외형이 변경될 수도 있음  
 \*토출구의 방향은 고객의 요구에 의해 후방 또는 상방향으로 변경이 가능함

\*The allowable tolerance of dimension is -0, +5mm  
 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request



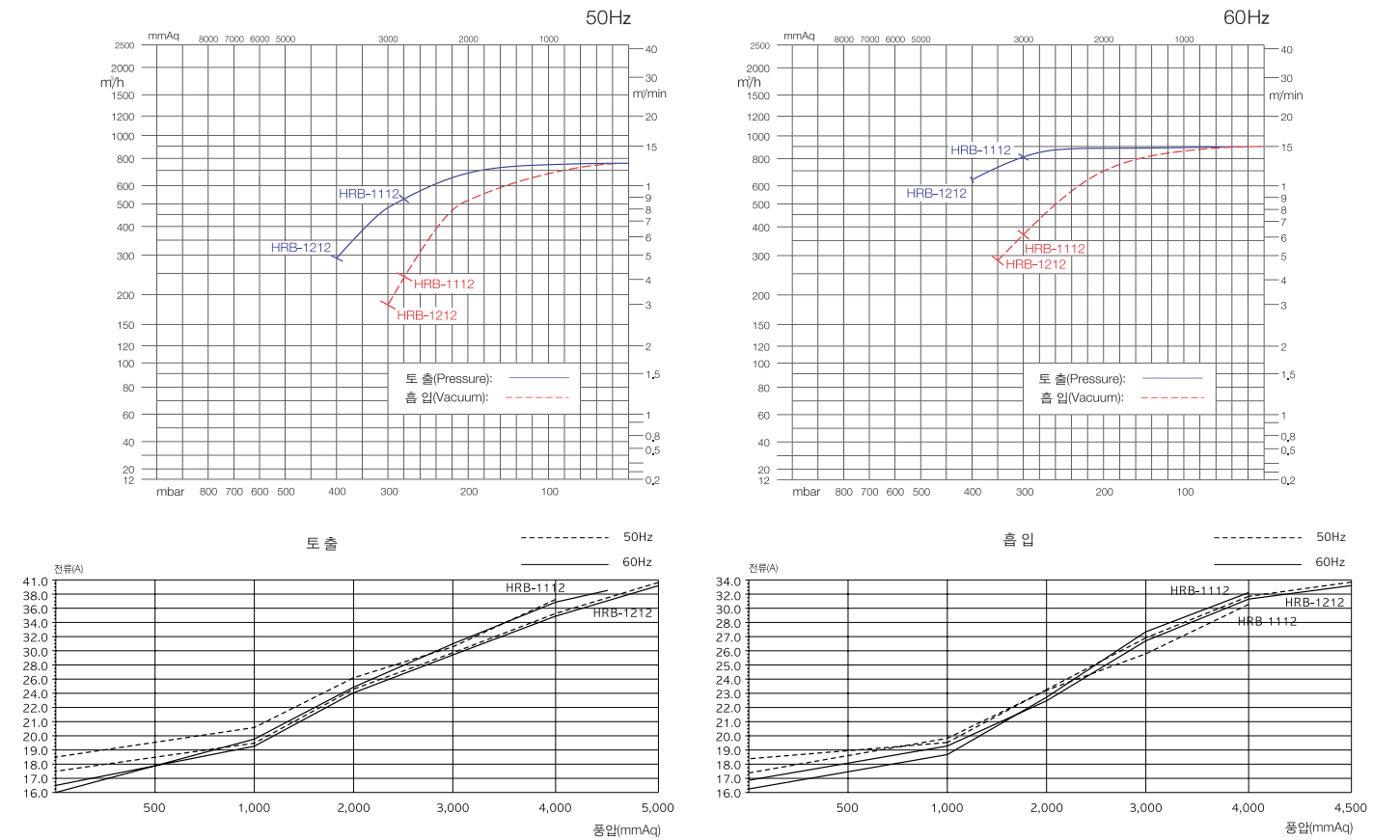
Product Specifications

MODEL NUMBER	HRB-1112	HRB-1212
Phase	3	3
HP/KW	50 Hz	15HP / 11KW
	60 Hz	20HP / 15KW
Voltage	50 Hz	220 / 380
	60 Hz	220 / 380
Amps	50 Hz	45 / 26
	60 Hz	54 / 31.2
Starting Class	50 Hz	H
	60 Hz	H
Insulation Class	F	F
Net Weight (kg)	250	269

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

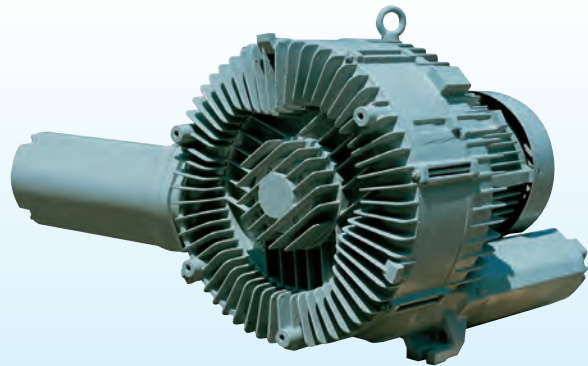
Product Performance



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 \*곡선의 아랫부분을 포함한 곡선상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터손손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*곡선상 특성치의 허용오차는 ±10% 임

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# HRB-1302, 1402, 1502



HRB-1302, 1402, 1502

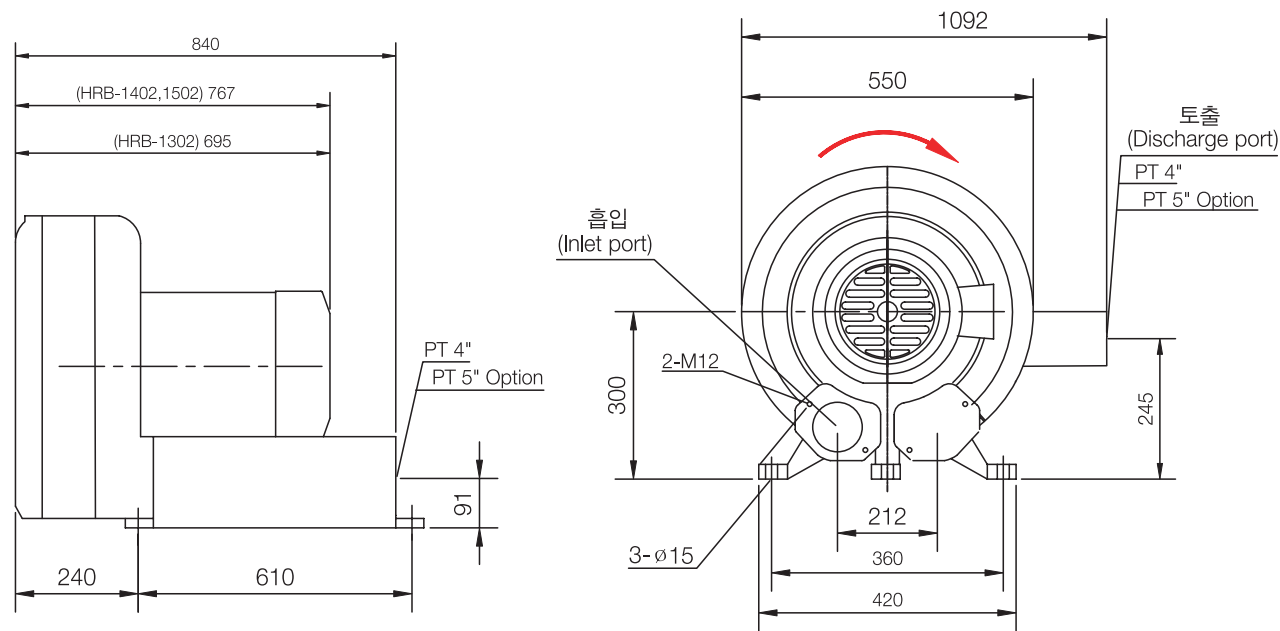
\*상기특성은 흡입공기가 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 하여 브로워 내부 온도가 포화상태에서의 측정값임  
 \*각 특성치의 허용오차는 ±10% 임  
 \*소음은 흡, 토출구 완전 개방후 1.5m 거리에서 측정된 수치임

\*The above performance was measured with the condition of 20℃ air temperature 1, 013mbar pressure.  
 \*The allowable tolerance of performance value is ±10%  
 \*The noise was measured by 1.5meter distance with opened inlet & discharge port

## Performance

		HRB-1302	HRB-1402	HRB-1502
토출 Discharge (mmAq)	50Hz	2500	3200	5300
	60Hz	2200	3000	4800
흡입 Vacuum (mmAq)	50Hz	2700	3500	4500
	60Hz	2500	3400	4800
풍량 Air Flow (m <sup>3</sup> /min)	50Hz	17.5	17.5	17.5
	60Hz	22	22	22
소음 Noise(dB)		88	88	88
중량 Weight(Kg)		280	295	310
재질 Material	임펠러 (Impeller)	Aluminium	Aluminium	Aluminium
	케이스(Case)	Casted Iron	Casted Iron	Casted Iron
베어링 Bearing	앞(Front)	6308zC3	6308zC3	6308zC3
	중간(Middle)	-	-	-
	뒤(Rear)	6308zC3	6308zC3	6308zC3

## Product Dimensions (unit : mm)



\*외형치수는 -0, +5mm 내로 관리됨  
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 \*The dimension can be changed for improvement without notice.  
 \*The direction of discharge port can be changed to backward or upward by customer's request

# HRB-1302, 1402, 1502



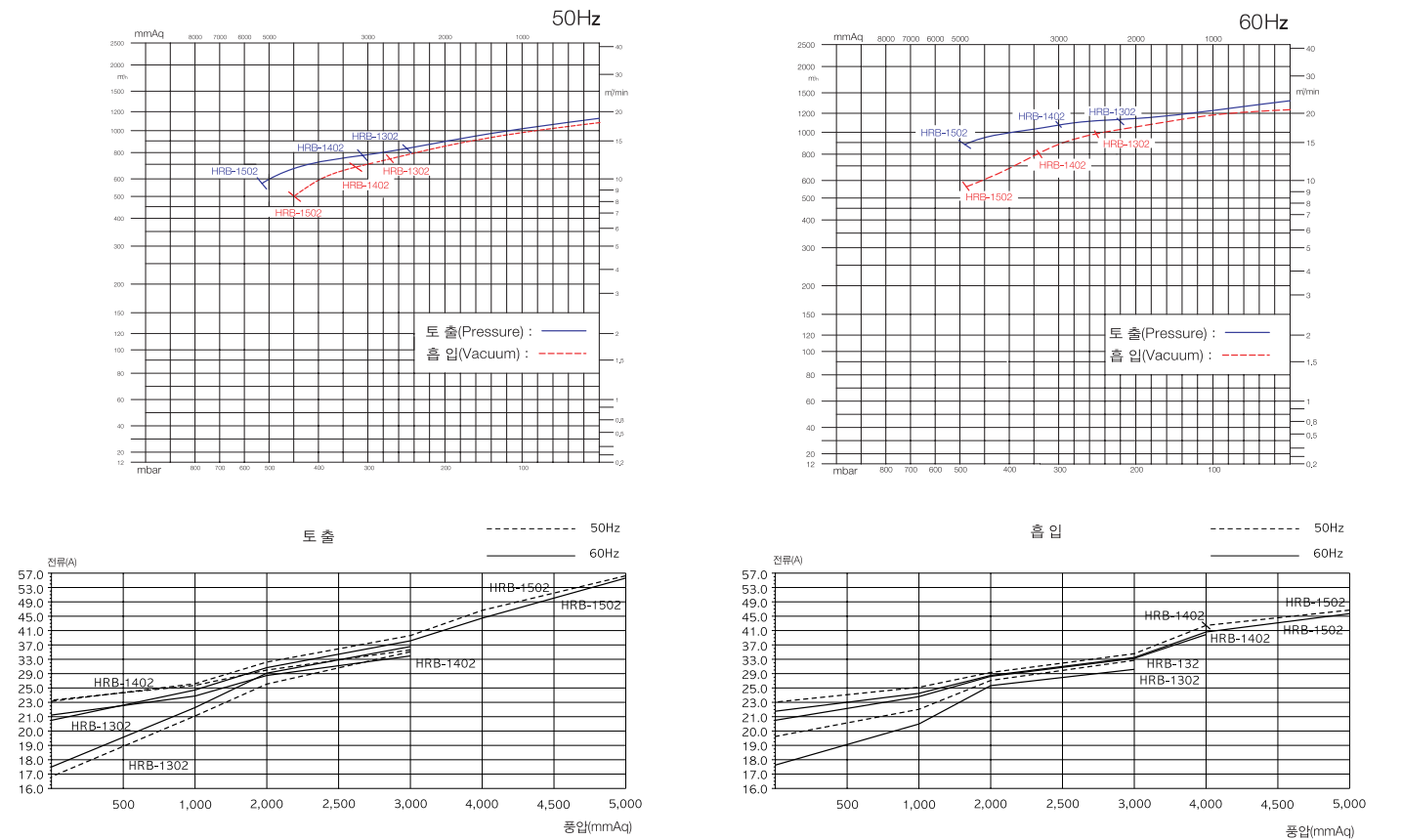
## Product Specifications

MODEL NUMBER	HRB-1302	HRB-1402	HRB-1502
Phase	3	3	3
HP/KW	50 Hz	17.5HP / 15KW	20.7HP / 18.5 KW
	60 Hz	20.7HP / 15.5KW	24.7HP / 18.5 KW
Voltage	50 Hz	220 / 380	220 / 380
	60 Hz	220 / 380	220 / 380
Amps	50 Hz	54 / 31.2	65 / 37.5
	60 Hz	54 / 31.2	65 / 37.5
Starting Class	50 Hz	H	H
	60 Hz	H	H
Insulation Class	F	F	F
Capacitor			
Net Weight (kg)	280	295	310

\*상기 전기사양외의 특수한 사양에 대해서는 문의 바랍니다.  
 \*내부식성 처리, 방폭형 모터 사용등 별도 처리를 요하는 제품에 대해서는 문의 바랍니다.

\*The special voltage is available by customer order  
 \*Anti-corrosive coating or Explosion-proof is available by customer's request

## Product Performance



\*상기특성곡선은 주위 온도 20℃, 기압 1,013mbar의 표준상태를 기준으로 한 정압, 풍량특성을 표시하고 있으며 흡입구측에서 측정된 결과임  
 \*국산의 아랫부분을 포함한 국산상에서는 연속운전이 가능하나 정격압력 근처에서의 연속운전은 과열에 의한 모터소손의 염려가 있으므로 바이패스 밸브의 설치등 적절한 대책이필요함.  
 \*국산상 특성치의 허용오차는 ±10% 임

\*The above performance was measured with the condition of 20℃ air temperature 1,013mbar pressure .  
 \*The continuous operation is available below curve, but the continuous operation nearby rated pressure point can cause trouble because of overheat.  
 \*When operate continuously nearby rated pressure, please use the bypass valve or relief valve  
 \*The allowable tolerance of performance value is ±10%

# 병렬형 링 브로워(Parallel Type Ring Blower)



- Parallel type(low pressure / big air volume) blower  
(Can reach to max air volume 40m<sup>3</sup>/min with no load)

## CHARACTERISTIC

- Wide range of choice along with motor output(20HP, 30HP, 40HP)
- Higher space efficiency compared than other blower



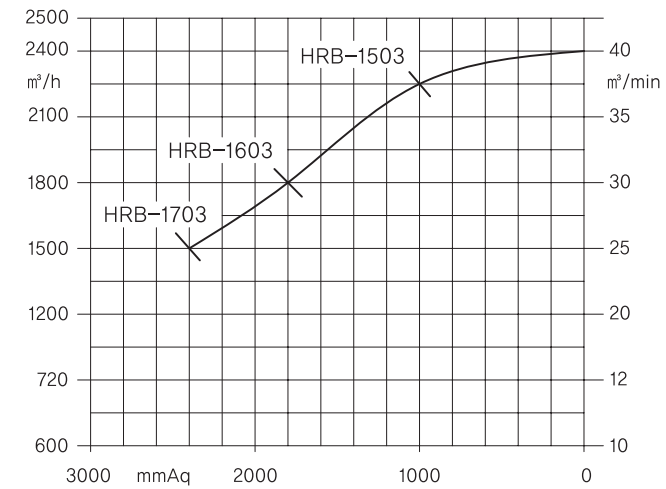
# 병렬형 링 브로워(Parallel Type Ring Blower)



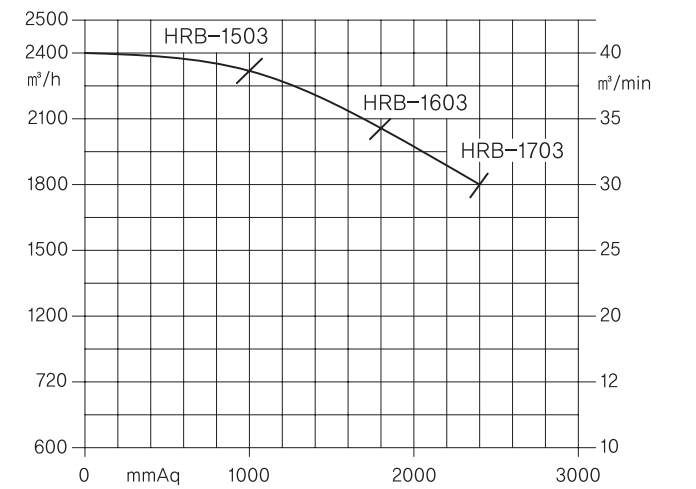
## >> 성능요약표 Performance

Model No	출력(Output)	정격토출압(Discharge) / mmAq	정격흡입압(Vacuum) / mmAq	최대풍량(Air Flow) / (m <sup>3</sup> /min)
HRB-1503	20HP	1000	1000	40
HRB-1603	30HP	1800	1800	40
HRB-1703	40HP	2400	2400	40

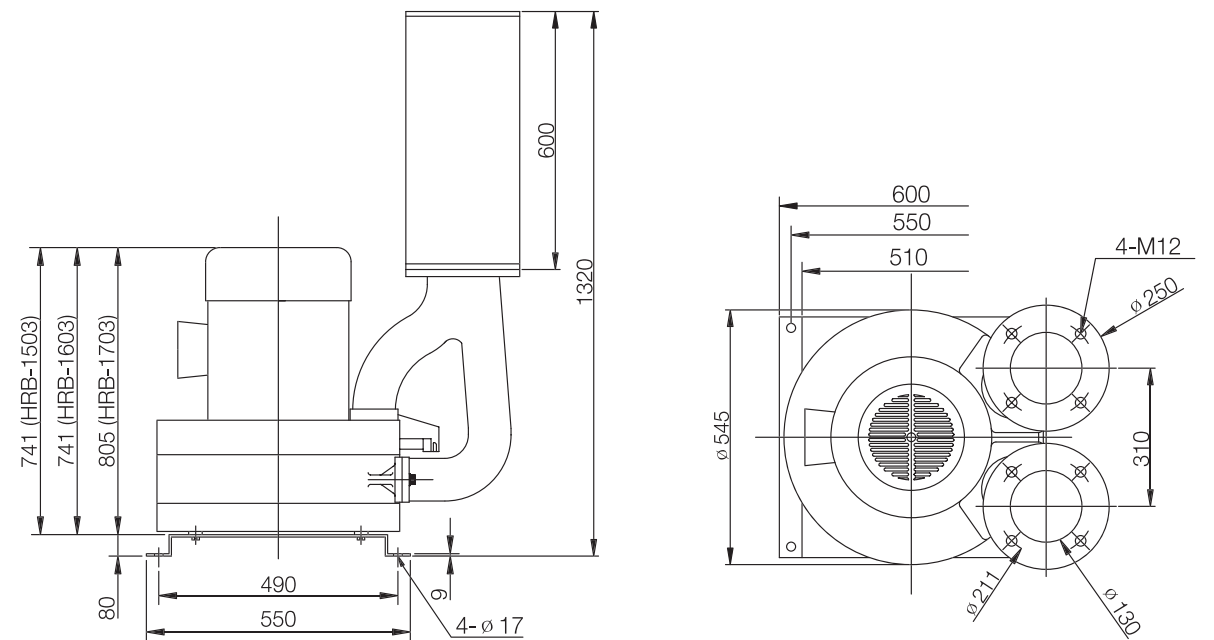
## >> 흡입 Vacuum



## >> 토출 Discharge

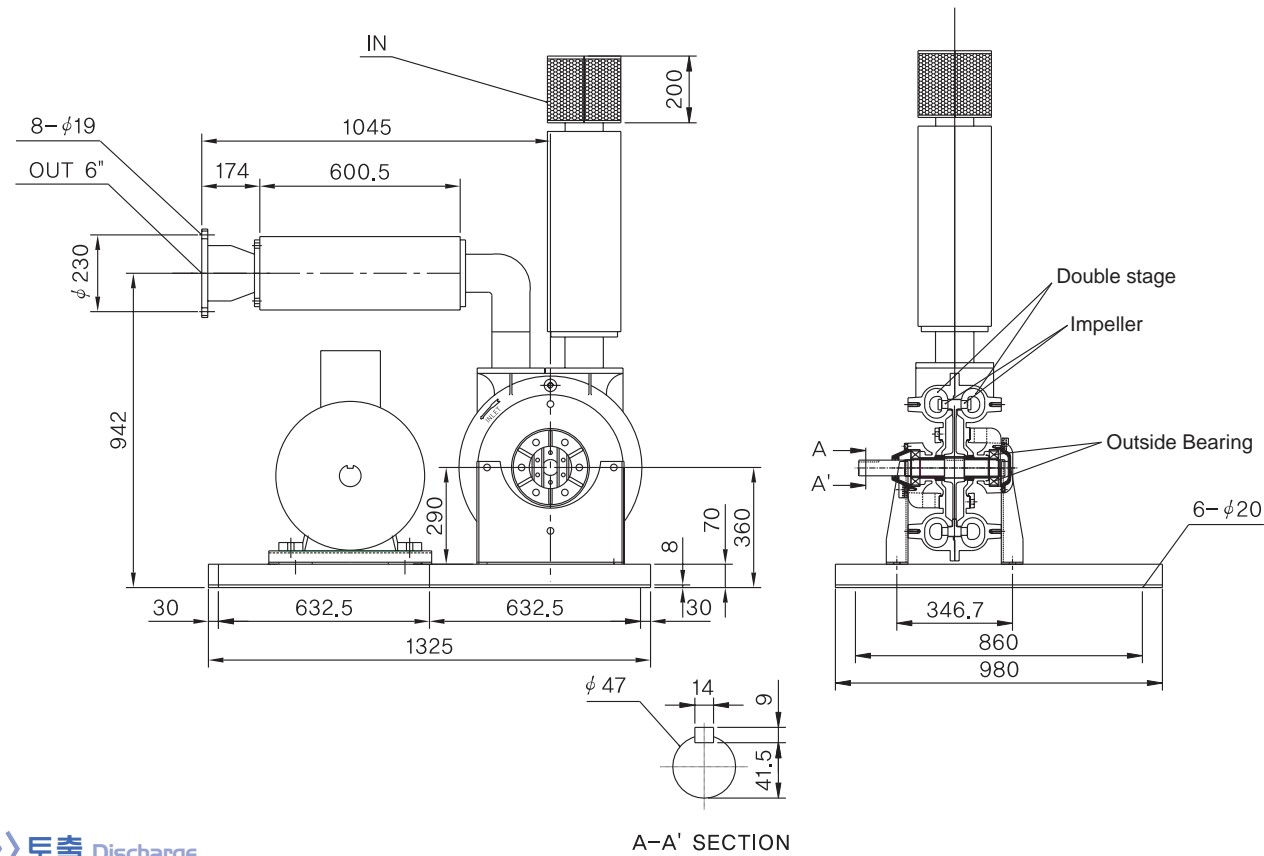


## >> 외형도 Dimension



\* The above dimension can be changed without notice for improvement

>> 외형도 Dimension



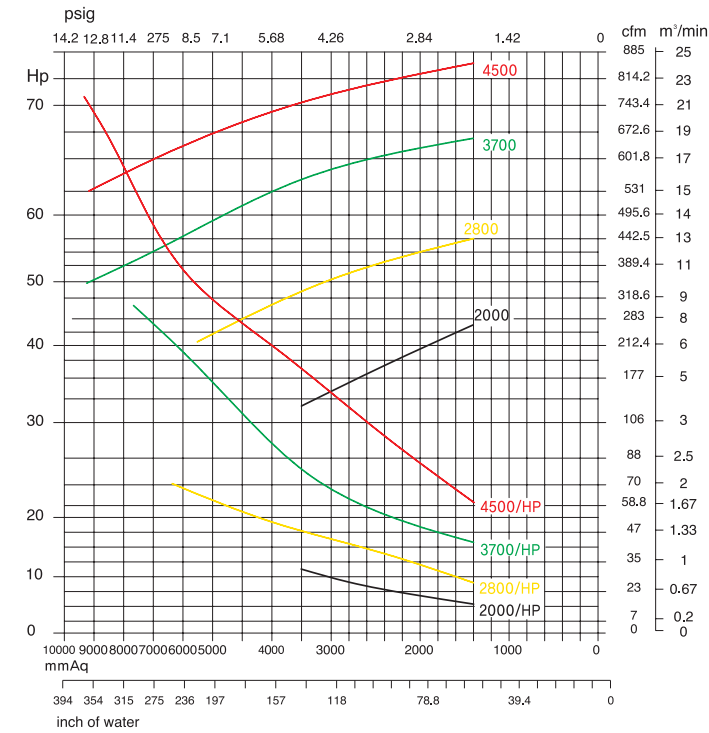
>> 토출 Discharge

RPM	풍량 동력	1,450mmAq	2,100mmAq	2,800mmAq	3,500mmAq	4,200mmAq	4,900mmAq
		2000	CMM 7.4 CFM 262 HP 5.1	5.97 211 7.1	4.64 164 9.1	3.4 120 11.1	
2800	CMM 13 CFM 458 HP 9	11.8 415 11.7	10.6 374 14.3	9.43 333 17	8.35 295 19.7	7.28 257 22.5	
3700	CMM 18.9 CFM 668 HP 15.3	17.8 629 18.9	16.7 591 22.4	15.7 555 22.8	14.7 520 29.3	13.8 486 32.9	
4500	CMM 24.3 CFM 858 HP 22.8	23.1 817 27.4	22.1 780 31.7	21.1 745 35.9	20.2 713 40.1	19.3 682 44.3	

RPM	풍량 동력	5,600mmAq	6,300mmAq	7,000mmAq	7,750mmAq	8,450mmAq	9,150mmAq
		2000					
2800	CMM 6.26 CFM 221 HP 25.2						
3700	CMM 12.9 CFM 454 HP 36.6	12 423 40.4	11.1 393 44.1	10.3 364 47.6			
4500	CMM 18.5 CFM 653 HP 48.6	17.7 626 52.9	17 600 57.3	16.3 575 61.6	15.6 552 66.6	15 529 70.2	

※ The above dimension can be changed without notice for improvement

>> 토출 Discharge



>> 흡입 Vacuum

RPM	풍량 동력	1,040mmAq	1,400mmAq	1,730mmAq	2,070mmAq	2,420mmAq	2,760mmAq
		2000	CMM 7.3 CFM 258 HP 3.8	6.1 217 4.8	5.07 179 5.8	4.05 143 6.8	3.09 109 7.7
2800	CMM 12.1 CFM 428 HP 7	11.1 393 8	9.97 352 9.3	8.83 312 10.5	7.76 274 11.7	6.65 235 13	
3700	CMM 17.8 CFM 630 HP 10.8	16.5 583 12.8	15.2 536 14.5	13.9 490 16.1	12.6 446 17.7	11.4 402 19.2	
4500	CMM 22.9 CFM 810 HP 15.7	21.4 757 18	19.9 702 20.3	18.3 648 22.3	16.9 596 24.2	15.5 546 26	

RPM	풍량 동력	3,110mmAq	3,450mmAq	3,800mmAq	4,140mmAq	4,490mmAq	4,830mmAq
		2000					
2800	CMM 5.64 CFM 199 HP 14.2	4.62 163 15.6	3.62 128 16.9				
3700	CMM 10.2 CFM 359 HP 20.7	9 318 22.4	7.87 278 24.1	6.77 239 25.8			
4500	CMM 14.1 CFM 498 HP 27.8	12.8 452 29.5	11.5 407 31.3	10.3 364 33.2	9.15 323 35	8 283 36.7	

※ The above dimension can be changed without notice for improvement

# 원심형 터보 브로워(Centrifugal Turbo Blower)-RB-800

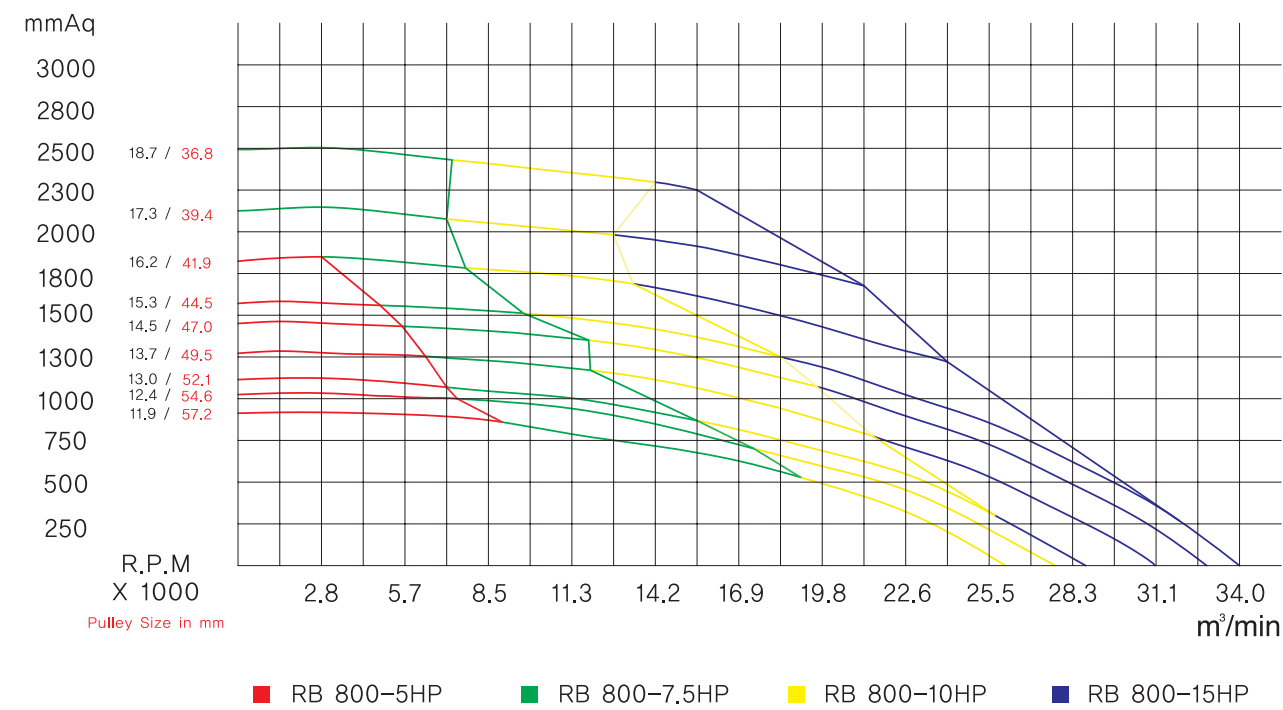


## >> 성능요약표 Performance

### <RB-800>

모터출력	5HP	7.5HP	10HP	15HP
정격압력 (mmAq)	1900	2500	2500	2500
최대풍량 (m³/분)	10	18	27	34
허용 회전수 (rpm)	12,000 ~ 16,000	12,000 ~ 19,000	12,000 ~ 19,000	12,000 ~ 19,000

## >> 성능곡선 Performance Curve



# 원심형 터보 브로워(Centrifugal Turbo Blower)-RB-1200

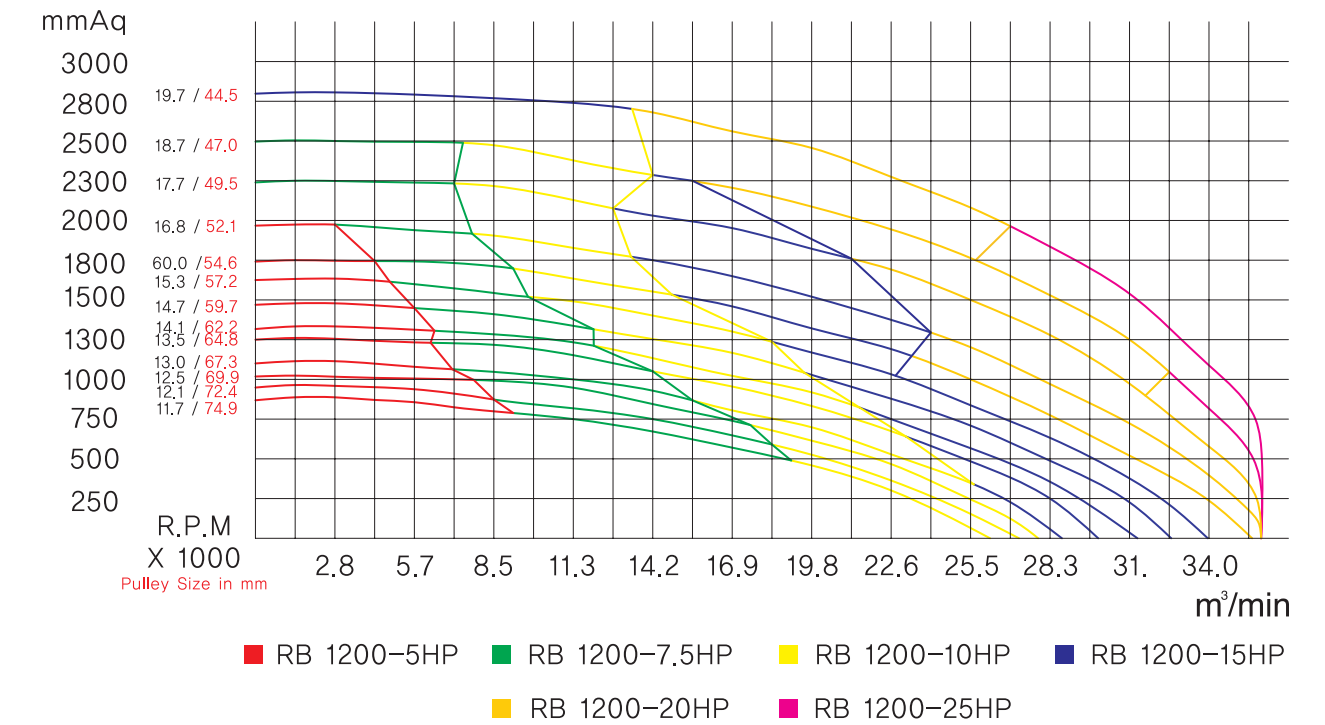


## >> 성능요약표 Performance

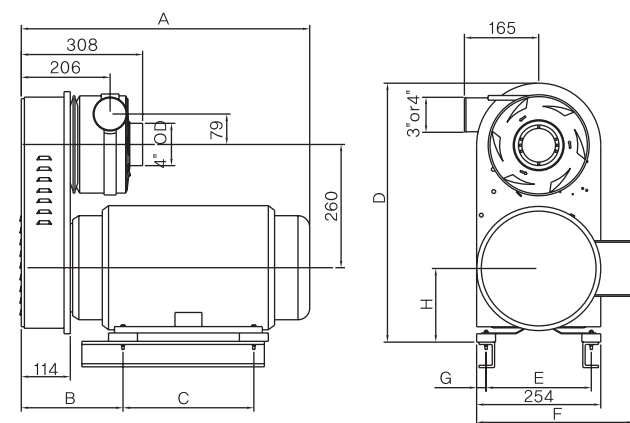
### <RB-1200>

모터출력	5HP	7.5HP	10HP	15HP	20HP	25HP
정격압력 (mmAq)	1900	2500	2500	2900	2900	2900
최대풍량 (m³/분)	10	18	27	34	37	37
허용 회전수 (rpm)	12,000~17,000	12,000~19,000	12,000~19,000	12,000~20,000	12,000~20,000	12,000~20,000

## >> 성능곡선 Performance Curve



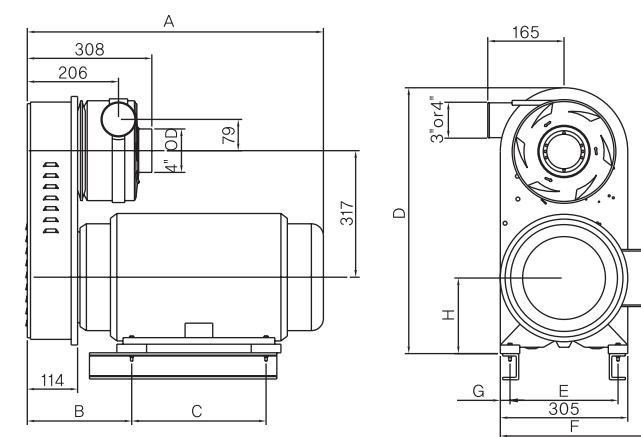
## >> 외형도 Dimension



HP	A	B	C	D	E	F	G	H	Est,WGT,(kg)
3	454	206	140	597	190	309	32	174	58
5	468	187	140	597	190	279	32	174	64
7.5	506	187	140	597	190	279	32	174	74
10	513	209	178	616	216	317	19	152	88
15	537	209	178	616	216	317	19	178	106

\* The above dimension can be changed without notice for improvement

## >> 외형도 Dimension



HP	A	B	C	D	E	F	G	H	Est,WGT,(kg)
3	450	184	114	587	190	301	57	134	63
5	450	184	140	587	190	301	57	134	70
7.5	523	203	140	606	216	340	44	152	80
10	523	203	178	606	241	340	44	152	93
15	613	222	209	632	254	397	25	178	111
20	613	222	254	632	254	397	25	178	159
25	666	235	241	632	254	485	13	178	200

\* The above dimension can be changed without notice for improvement



>> 벨트형 브로워 Belt Driven Blower <<

- \* 전기종 적용 가능  
Available for all blower
- \* 방폭형, 고효율 모터 등 다양한 모터 취부 가능  
Available for high efficiency motor and explosion proof motor
- \* 풀리 비율 조절에 의한 고속회전 가능  
Available for high speed by Pulley changing
- \* 일부 대형기종에 외장형 베어링 적용  
Outside bearing is available for big blower
- \* 견고한 베드 사용  
Strong bed frame
- \* 상세도면, 예상성능곡선은 고객요청에 의해 제공가능  
Detail dimension drawing and performance curve is available when customer request



>> 방음상자 내장형 링 브로워 Acoustic Blower <<

- \* 전기종 적용가능  
Available for all blower
- \* 흡음내장재 사용  
Sound-absorption material is used for interior upholstery
- \* 내부공기 배출용 팬 사용  
Fan is used for air ventilation
- \* 상세도면은 고객요청에 의해 제공가능  
Detail dimension drawing is available when customer request

>> 커플링 연결형 링 브로워 Coupling connected Blower <<

- \* 전기종 적용가능  
Available for all blower
- \* 방폭형, 고효율 모터 등 다양한 모터 취부 가능  
Available for high efficiency motor and explosion proof motor
- \* 취부 모터형태 : 수직형 모터  
Type of Motor : Vertical Type
- \* 견고한 베드 사용  
Strong bed frame
- \* 상세도면, 예상성능곡선은 고객요청에 의해 제공가능  
Detail dimension drawing and performance curve is available when customer request

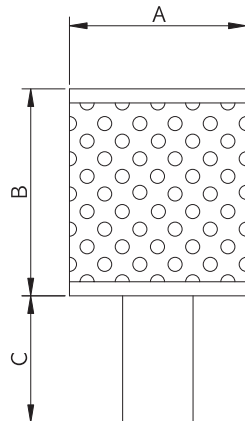


>> 엔진구동형 링 브로워 Bare-shaft Blower <<

- \* 전기종 적용가능  
Available for all blower
- \* 전원이 없는 장소에서 경운기등 대체 동력원에 연결하여 사용가능  
Can be used at where no electric power source .
- \* 견고한 구조  
Strong structure
- \* 상세도면은 고객요청에 의해 제공가능  
Detail dimension drawing is available when customer request



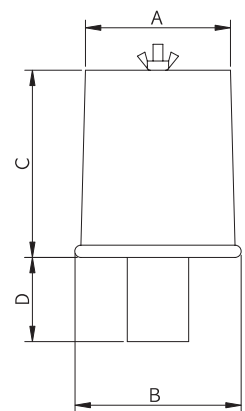
악세서리(필터, 소음기)  
Accessory(Inlet Filter & Additional Silencer)



Filter

Model	A	B	C	Applicable for
1 1/4"(32A)	100	162	72	1 stage HRB-100,101, 2 stage HRB-102/1~302/1,102~302
1 1/2"(38A)	100	162	130	1 stage HRB-200,201, 2 stage HRB-402,402S,402/1
2"(50A)	115	162	78	1 stage HRB-300~HRB-700, 2 stage HRB-502~1002
2 1/2"(65A)	150	252	52	1 stage HRB-800~HRB-1000, 2 stage HRB-1102,1202
3"(80A)	150	252	52	1 stage HRB-800~HRB-1000, 2 stage HRB-1102,1202,1112,1212
4"(100A)	150	252	62	1 stage HRB-1100~1300, 2 stage HRB-1302~1502

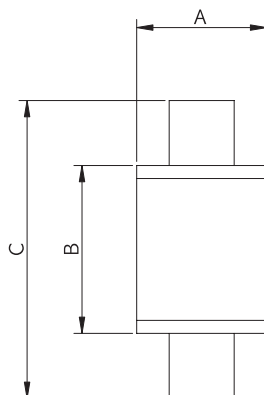
- Only for vacuum purpose / For Indoor usage only
- The estimated pressure loss by the filter is about 2~3mmAq per 1m<sup>3</sup>/min and it is varied proportionately by square value of air volume.
- Clean the mesh of filter often not be blocked by the dust



Cap Filter

Model	A	B	C	D	Applicable for
1 1/4"(36A)	122	138.6	175	66	1 stage HRB-100,101, 2 stage HRB-102/1~302/1,102~302
1 1/2"(42A)	122	138.6	175	130	1 stage HRB-200,201, 2 stage HRB-402,402S,402/1
2"(50A)	145	164	175	81	1 stage HRB-300~HRB-700, 2 stage HRB-502~1002
2 1/2"(65A)	183	202	276	118	1 stage HRB-800~HRB-1000, 2 stage HRB-1102,1202

- Only for vacuum purpose / For Indoor usage only
- The estimated pressure loss by the filter is about 2~3mmAq per 1m<sup>3</sup>/min and it is varied proportionately by square value of air volume.
- Clean the mesh of filter often not be blocked by the dust

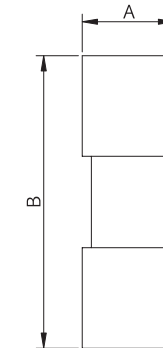
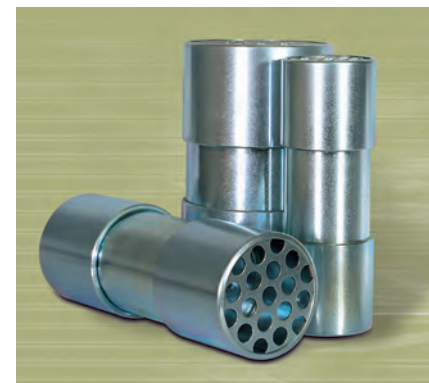


Additional Silencer

Model	A	B	C	Applicable for
1 1/4"(36A)	100	222	306	1 stage HRB-100,101, 2 stage HRB-102/1~302/1,102~302
1 1/2"(42A)	100	222	304	1 stage HRB-200,201, 2 stage HRB-402,402S,402/1
2"(50A)	120	283	383	1 stage HRB-300~HRB-700, 2 stage HRB-502~1002
2 1/2"(65A)	150	401	511	1 stage HRB-800~HRB-1000, 2 stage HRB-1102,1202
3"(80A)	154	440	555	1 stage HRB-800~HRB-1000, 2 stage HRB-1102,1202,1112,1212
4"(100A)	185	443	589	1 stage HRB-1100~1300, 2 stage HRB-1302~1502

- Noise down effect
- When installed in the middled of piping , not to be overloaded to both edge of silencer.

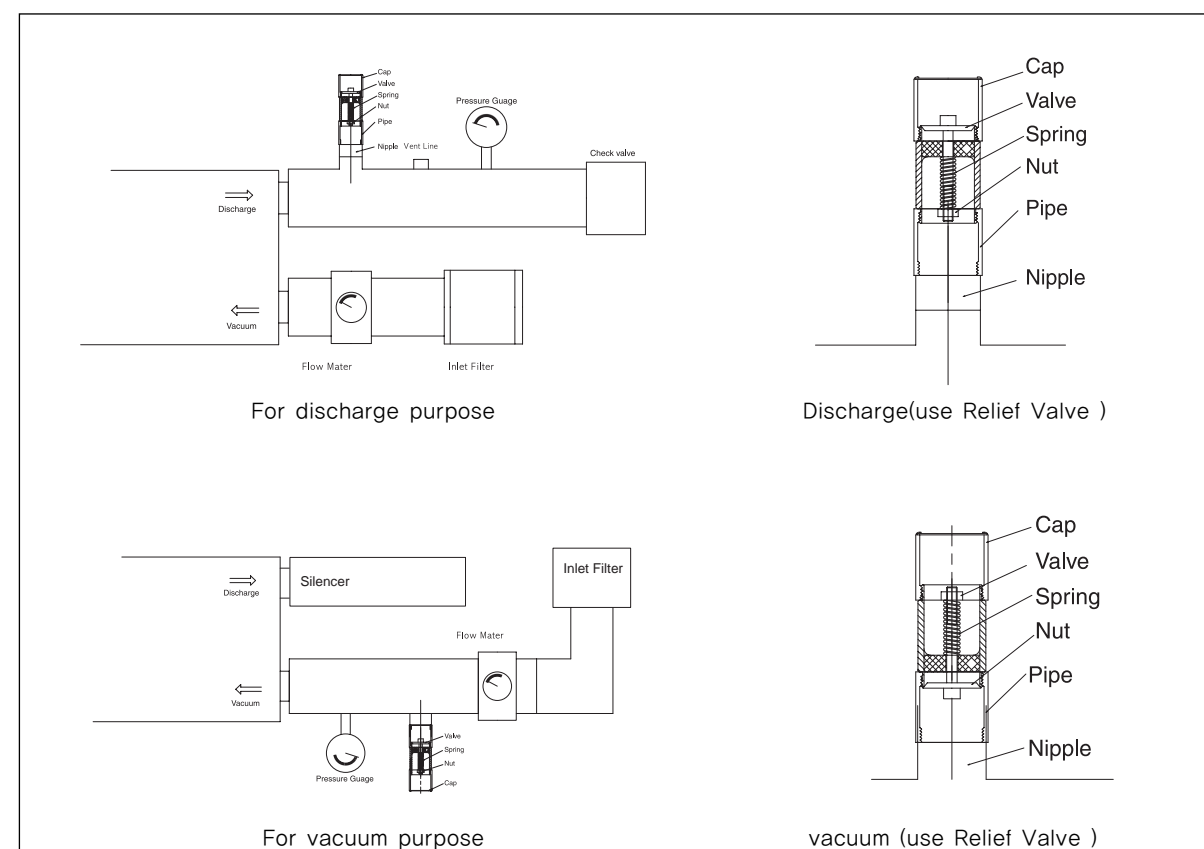
악세서리(릴리프밸브)  
Accessory(Relief Valve)



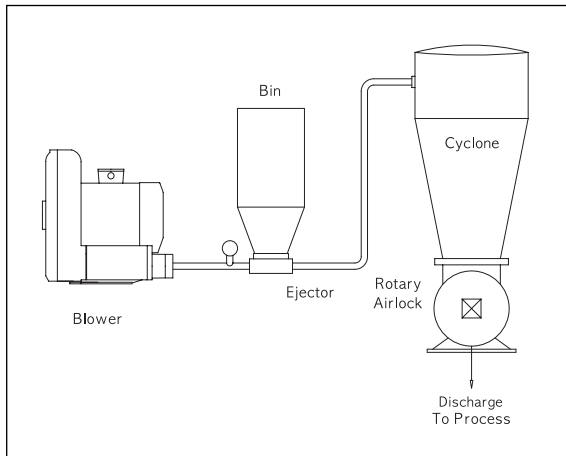
Relief Valve

Model	A	B	Applicable for
1 1/2"(36A)	55.3	156.9	1 stage HRB-200,201, 2 stage HRB-402,402S,402/1
2"(50A)	68.4	186.4	1 stage HRB-300~HRB-700, 2 stage HRB-502~1002
3"(80A)	93.6	163.2	1 stage HRB-800~HRB-1000, 2 stage HRB-1102, 1202, 1112, 1212

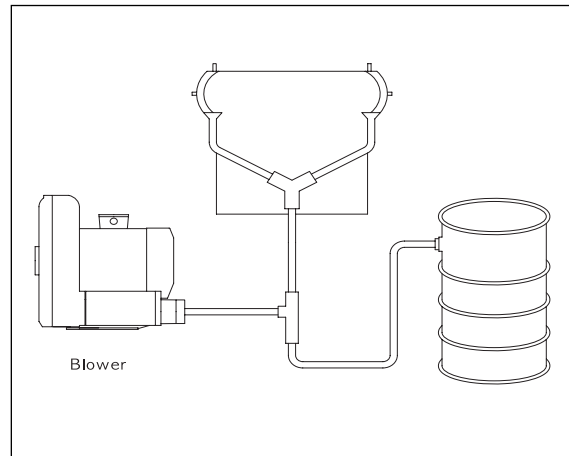
How to use Relief Valve



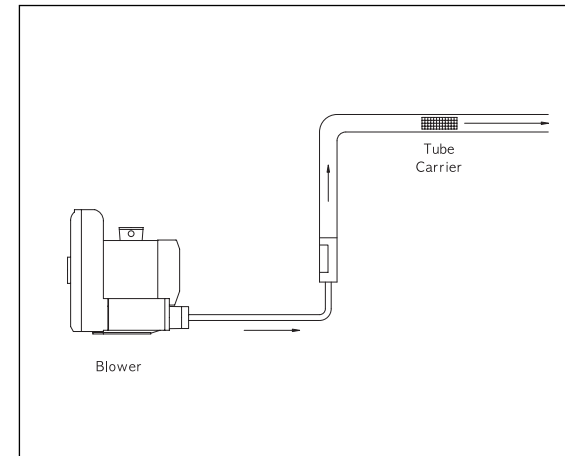
1. The relief valve is normally delivered to customer without pressure setting, when receive it, customer should set required pressure by loosen or tight the nut along with pressure gauge. The setted pressure should not over the rated pressure and recommend 10% below rated pressure for prevent overheat.
2. The pressure regulation is done by loosen or tighten the nut for spring pressure and it can be certified by pressure gauge.
3. Be sure that do not drop anything into the relief valve and when something be dropped into relief valve , remove it and operate.



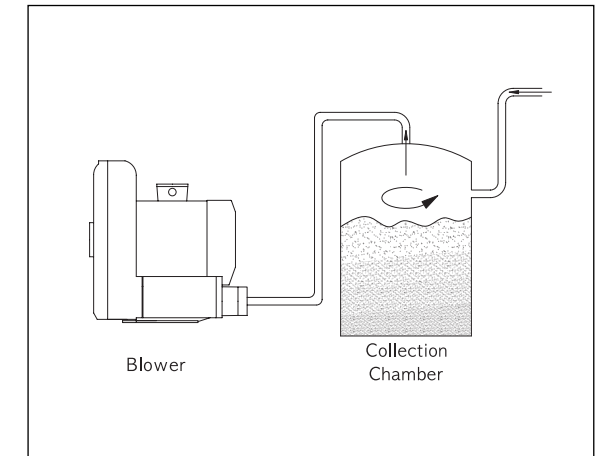
**Dilute Phase Pneumatic Conveying**  
(분체 또는 미립자의 토출이송)



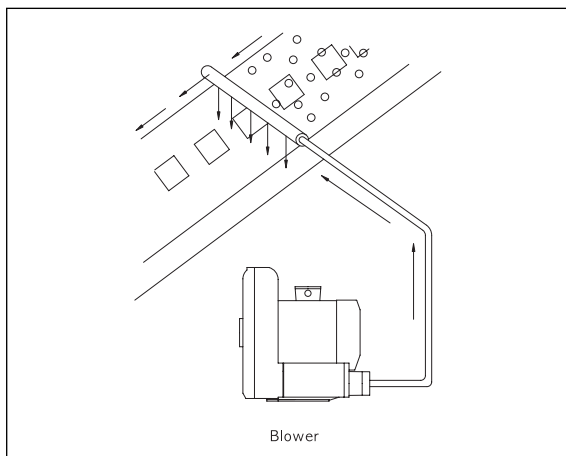
**Paper, Plastic, Film & Textile (Trim) Removal**  
(토출특성을 이용한 종이, 플라스틱 쉬트, 섬유등의 가공공정 에서 발생하는 잔재물의 제거)



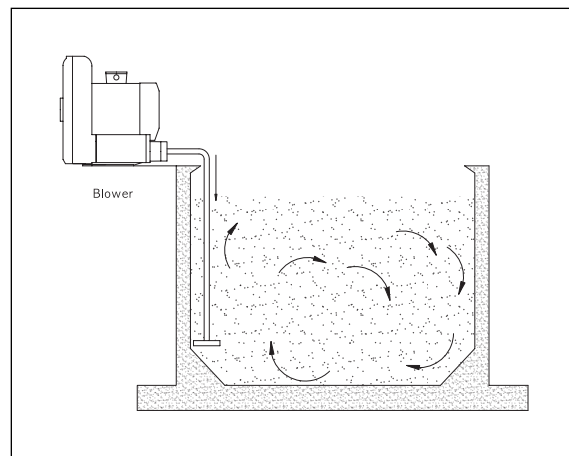
**Pneumatic Tube**  
(토출특성을 이용한 문서등의 자동이송)



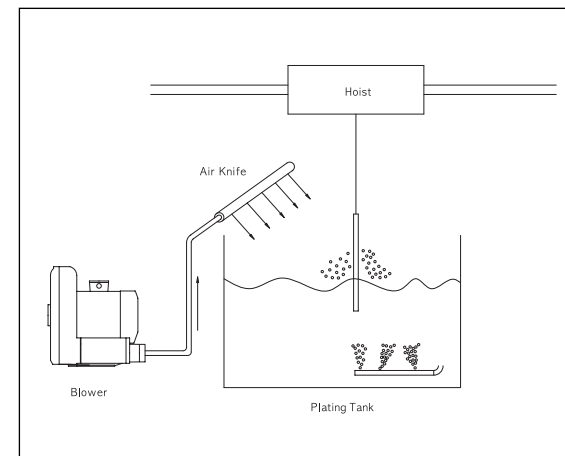
**General Material Separation & Collection**  
(토출특성을 이용한 물질의 비중차이에 의한 분리 및 회수)



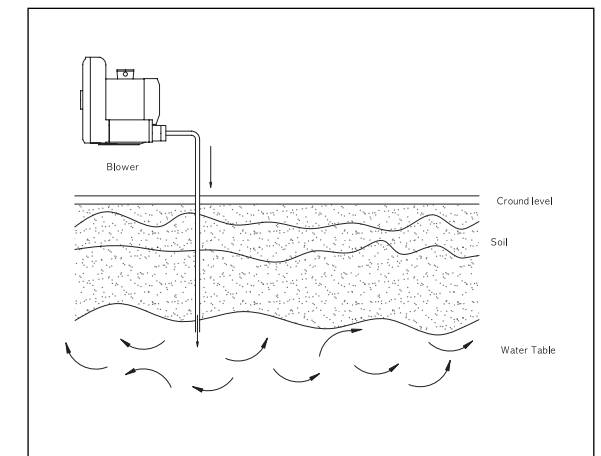
**General Parts Blow-off & Drying**  
(토출특성을 이용한 부품등의 수분제거 및 건조)



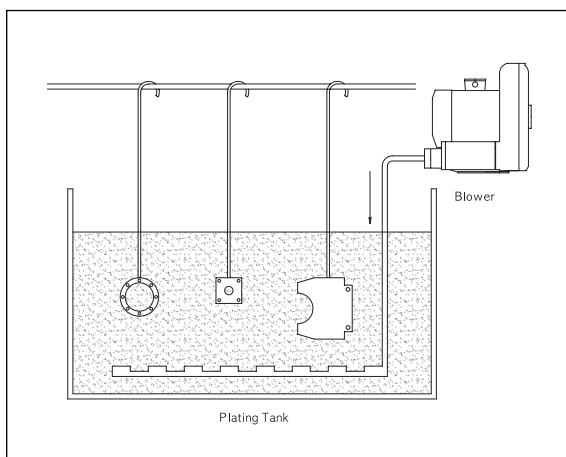
**Wastewater Treatment Tank Aeration**  
(토출특성을 이용한 오폐수처리 탱크내의 호기성 미생물의 증식을 위한 산소공급)



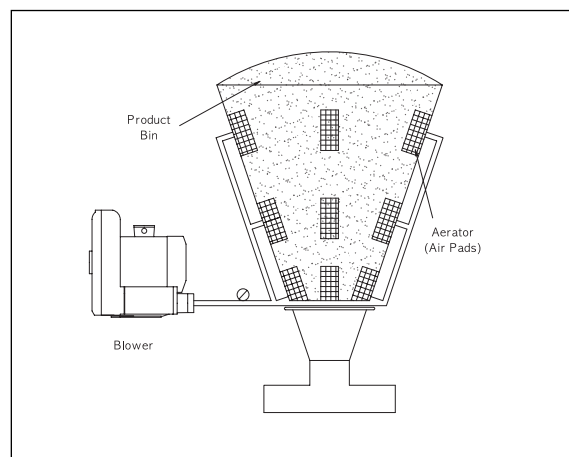
**Solution Blow-Back**  
(토출특성을 이용한 에어ナイ프의 강한 바람으로 수분제거)



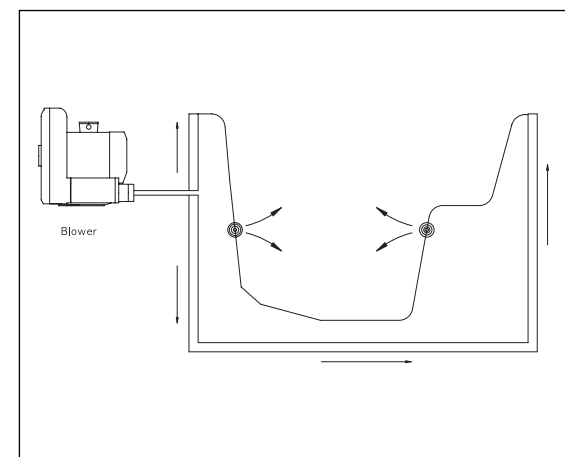
**Groundwater Sparging**  
(토출특성을 이용한 오염된 지표수의 분산,정화처리)



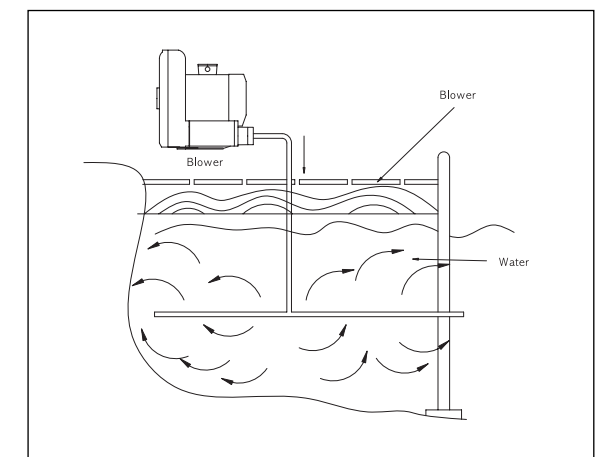
**Electroplating Tank Aeration**  
(토출특성을 이용한 도금조의 공기교반)



**Bin Pad & Fluidized Bed Aeration**  
(토출특성을 이용한 용기내의 대상물질의 유동화 및 고착방지)

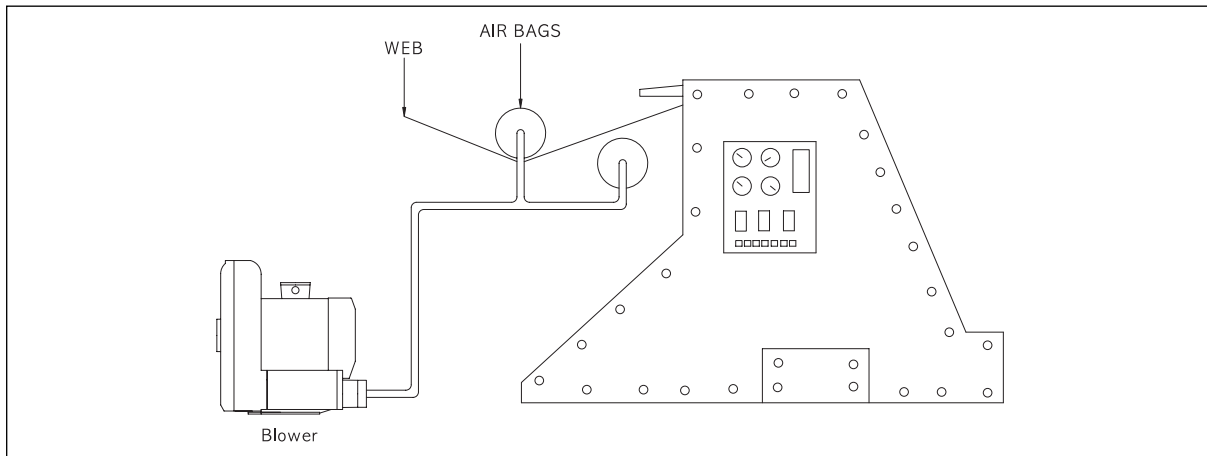


**Commercial Spa Aeration**  
(토출특성을 이용한 사우나 욕조의 기포발생장치)

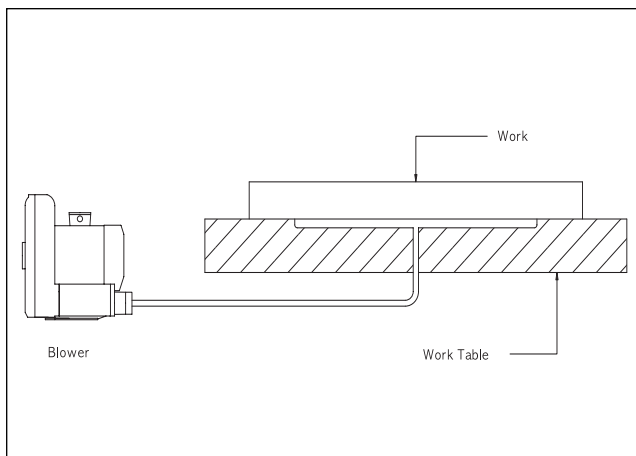


**Boat & Dock Deicing**  
(토출특성을 이용한 선착장등의 동결방지)

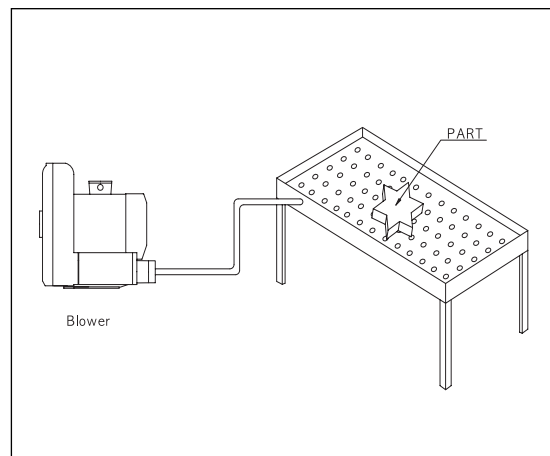




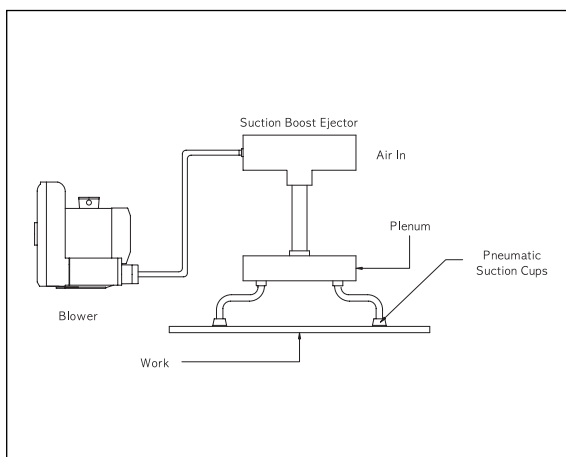
**Turning & Forming Bars**  
(흡입특성을 이용하여 섬유, 합성수지 등 쉬트상태의 가공공정에서 대상물질을 Roll Bar를 통해 흡입 고정시킴)



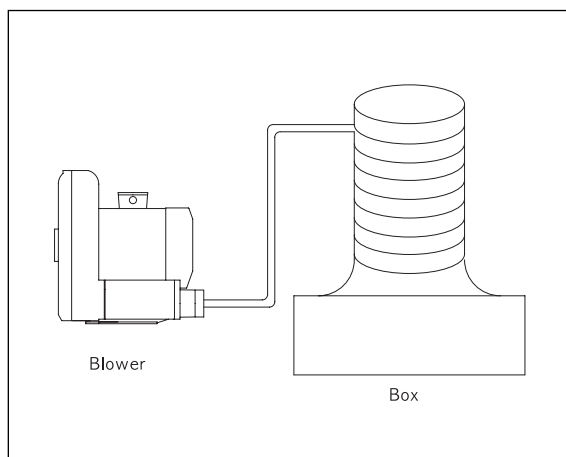
**General Part Hold-Down**  
(흡입특성을 이용하여 가공대상 물질의 밑에서 흡입, 고정시킴)



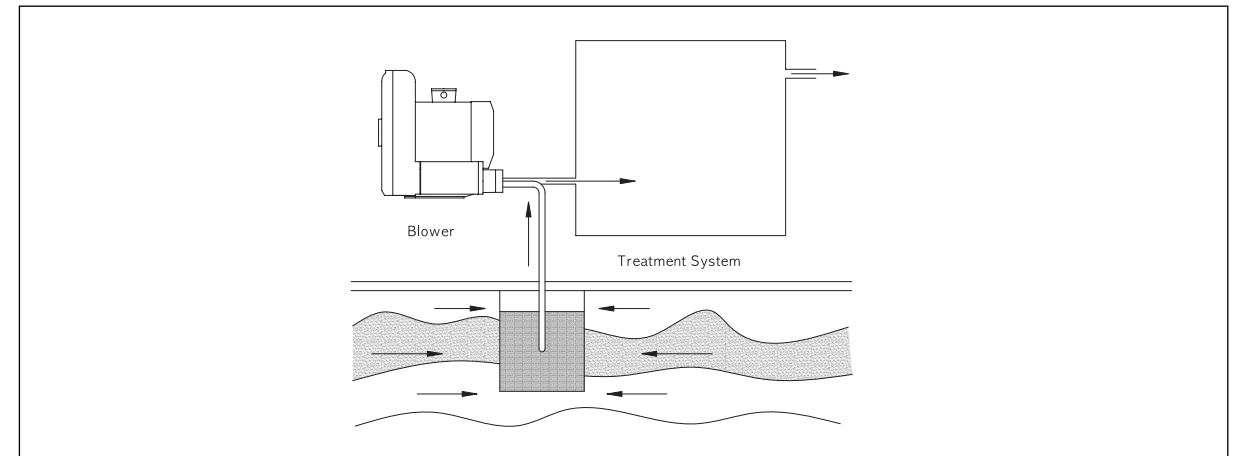
**Cutting & Printing Hold-Down Table**  
(흡입특성을 이용하여 가공대상 물질의 밑에서 흡입, 고정시켜 재단, 인쇄공정등에서 이용)



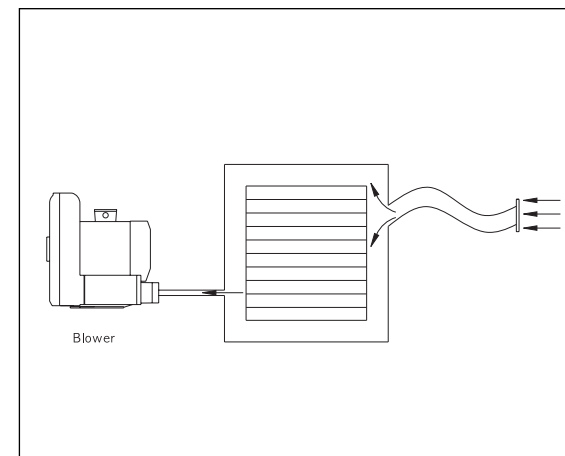
**General Part Pick-uP**  
(흡입특성을 이용하여 가공대상 물질의 위에서 흡입, 고정시킴)



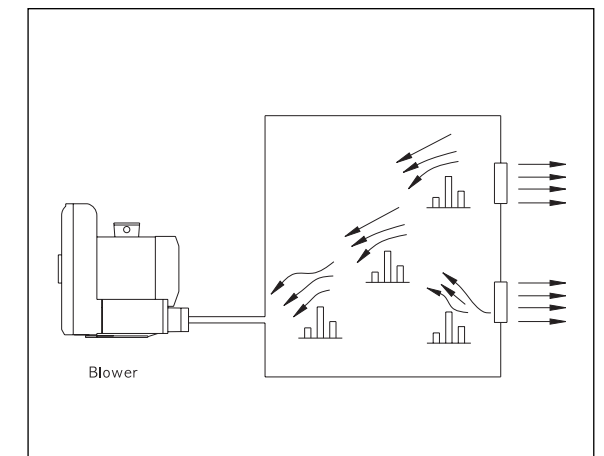
**Vacuum Manipulator**  
(흡입특성을 이용한 흡착이송 장치)



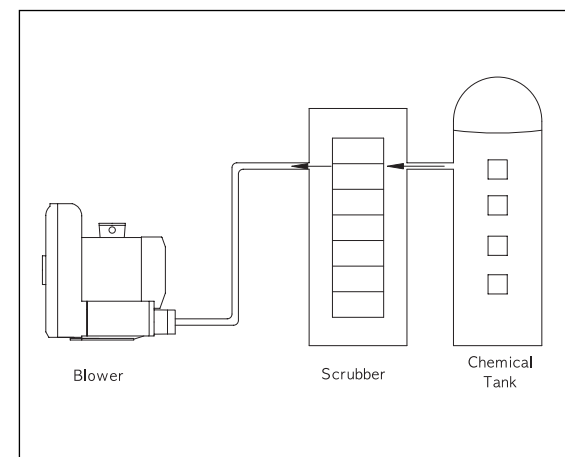
**Soil Vapor Extraction & Landfill Gas Recovery**  
(흡입특성을 이용하여 매립지등에서 발생하는 가스를 포집, 배출)



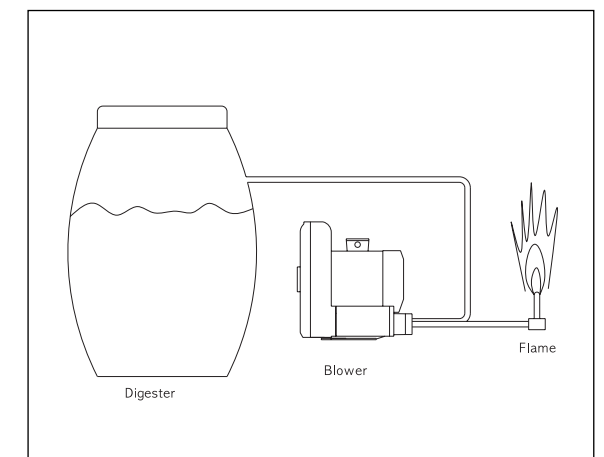
**Fume & Smoke Removal**  
(흡입특성을 이용하여 용접작업등에서 발생하는 유해가스등을 포집, 배출)



**Vacuum pull-Through Cabinet**  
(흡입특성을 이용하여 안정적인 흡입을 위한 진공장치)



**Vent Header Off-Gassing**  
(흡입특성을 이용하여 탱크내부에서 발생한 가스를 포집)



**Digester Gas Collection**  
(흡입특성을 이용하여 화학약품등의 침적기에서 발생한 가스를 포집, 배출하여 연소처리)

# 기술사항(적용가능기체) / Applicable Gas



A:우수(Good) B:가능(Acceptable) C:영향있음(Questionable) D:사용불가(Can not use) E:미확인(Not Tested)	A L U M I N I U M	C A S T I R O N	C A R B O N	T E F L O N	S U S 3 0 4	H A S T E L L O Y	A:우수(Good) B:가능(Acceptable) C:영향있음(Questionable) D:사용불가(Can not use) E:미확인(Not Tested)	A L U M I N I U M	C A S T I R O N	C A R B O N	T E F L O N	S U S 3 0 4	H A S T E L L O Y
Acetaldehyde	B	E	C	A	A	A	Carbon Dioxide	C	C	E	A	A	A
Acetate Solv	B	B	A	A	B	E	Carbon Disulfide	C	B	C	A	B	A
Acetic Acid	B	D	C	A	B	A	Carbon Monoxide	A	E	E	E	A	E
Acetic Anhydride	B	B	D	A	A	A	Carbon Tetrachloride	C	C	D	A	C	A
Acetylene	A	A	A	E	A	E	Carbonated Water	A	C	E	E	A	E
Acrylonitrile	B	C	E	E	A	B	Carbonic Acid	A	D	E	A	A	A
Alcohols-Amyl	C	C	C	A	A	A	Chloroacetic Acid	C	D	E	A	D	A
Alcohols-Benzyl	B	E	E	E	A	A	Chlorinated Glue	D	D	E	E	A	E
Alcohols-Butyl	C	C	C	A	A	A	Chlorine (Dry)	D	A	E	A	D	A
Alcohols-Diacetone	A	E	A	E	A	A	Chlorobenzene (Mono)	B	B	C	A	A	A
Alcohols-Ethyl	B	A	A	E	A	A	Chloroform	D	D	C	A	A	A
Alcohols-Hexyl	A	E	A	E	A	A	Chlorosulfonic Acid	D	E	D	A	D	B
Alcohols-Isopropyl	B	C	A	E	A	A	Chlorox (Bleach)	C	D	C	A	A	A
Alcohols-Methyl	B	A	A	A	A	A	Chromic Acid	C	D	E	E	A	A
Alcohols-Octyl	A	E	A	E	A	A	Citric Acid	C	D	E	A	A	A
Alcohols-Propyl	A	E	A	A	A	A	Citric Oils	C	E	E	E	A	E
Aluminium Chloride	D	D	B	A	D	A	Copper Chloride	D	D	E	A	D	A
Aluminium Hydroxide	A	D	A	A	A	E	Copper Cyanide	D	D	E	A	A	A
Aluminium Sulfate	A	D	A	A	C	A	Copper Nitrate	D	E	E	A	A	A
Amines	A	A	B	A	A	A	Copper Sulfate (5% Solution)	D	D	E	A	A	A
Ammonia ,Anhydrous	B	D	B	A	B	A	Cresols	B	E	E	E	A	E
Ammonia ,Liquids	D	A	A	A	A	B	Cresylic Acid	C	E	E	A	A	B
Ammonia ,Nitrate	C	E	A	E	A	E	Cyclohexane	A	E	A	E	A	E
Ammonium ,Carbonate	C	C	B	A	A	B	Detergents	A	E	A	E	A	E
Ammonium Hydroxide	C	A	C	A	A	A	Diesel Fuel	A	A	A	E	A	E
Ammonium nitrate	B	A	D	A	A	A	Diethylamine	A	E	E	A	A	E
Ammonium Persulfate	C	D	A	A	A	A	Dyes	B	E	E	E	A	E
Ammonium Phosphate, Monobasic	B	E	A	A	A	A	Epsom Salts (Magnesium Sulfate)	A	E	E	E	A	B
Ammonium Sulfate	B	C	C	A	A	A	Ethane	A	E	E	E	A	E
Amyl-Acetate	B	E	C	A	A	A	Ether	A	E	B	E	A	B
Amyl Alcohol	B	E	A	A	A	A	Ethyl Acetate	B	E	C	A	A	B
Amyl Chloride	D	E	A	A	E	A	Ethyl Chloride	B	C	D	A	A	B
Aniline	C	E	C	A	A	B	Ethylene Glycol	A	B	C	A	A	A
Anti-Freeze	A	B	C	A	A	A	Ethyene Oxide	A	E	E	A	E	E
Antimony Trichloride	B	E	E	A	A	A	Fatty Acids	B	D	E	A	A	A
Aromatic Hydrocarbons	A	A	A	E	A	E	Ferric chloride	D	D	E	A	D	B
Arsenic Acid	D	D	D	A	A	E	Ferric Sulfate	D	D	E	A	A	A
Barium Carbonate	B	B	B	A	A	A	Fluorine	D	D	D	C	D	A
Barium Chloride	D	D	C	A	A	A	Fluosilicic Acid	D	D	E	A	E	B
Barium Hydroxide	C	D	D	A	A	B	Formaldehyde	A	D	A	A	A	B
Barium Sulfide	D	C	C	A	A	E	Formic Acid	D	D	D	A	A	A
Benzaldehyde	B	B	A	A	A	A	Freon 11	B	C	B	A	E	E
Benzoic Acid	B	D	E	A	A	A	Freon 22	B	E	E	E	E	E
Benzol	B	E	E	A	A	A	Freon T.F.	B	E	E	E	E	E
Borax(Sodium Borate)	C	A	C	A	A	A	Fuel Oils	A	C	B	A	A	A
Boric Acid	B	D	E	A	A	A	Furan Resin	A	A	A	A	A	E
Bromine (Wet)	D	D	D	A	A	A	Furfural	A	E	A	A	A	E
Butadiene	A	C	C	A	A	E	Gallic Acid	A	D	D	A	A	A
Butane	A	C	C	A	A	E	Gasoline	A	A	A	A	A	A
Butanol	A	E	E	A	A	A	Glycerine	A	B	B	A	A	A
Butylene	A	A	A	A	A	E	Heptane	A	E	B	A	E	A
Butyric Acid	B	D	E	A	A	A	Hexane	A	E	B	A	A	A
Calcium Bisulfate	D	D	E	A	A	E	Hydraulic oils (Synthetic)	A	A	E	E	A	E
Calcium Bisulfite	C	E	E	A	A	A	Hydrobromic Acid	D	D	D	A	D	A
Calcium Carbonate	C	D	E	A	A	A	Hydrobromic Acid (Dry Gas)	D	E	D	A	C	A
Calcium Chloride	C	C	E	A	A	A	Hydrofluoric Acid 100%	D	D	E	A	D	C
Calcium Hydroxide	C	E	E	A	A	A	Hydrofluosilicic Acid	C	E	E	A	D	C
Calcium Hypochlorite	C	D	E	A	A	B	Hydrogen Gas	A	B	B	A	A	E
Calcium Sulfate	B	E	E	A	A	B	Hydrogen Peroxide	A	D	D	A	A	A
Carbon Bisulfide	A	B	E	E	E	E	Hydrogen Sulfide (Dryu)	D	B	B	A	C	A

# 기술사항(적용가능기체) / Applicable Gas



A:우수(Good) B:가능(Acceptable) C:영향있음(Questionable) D:사용불가(Can not use) E:미확인(Not Tested)	A L U M I N I U M	C A S T I R O N	C A R B O N	T E F L O N	S U S 3 0 4	H A S T E L L O Y	A:우수(Good) B:가능(Acceptable) C:영향있음(Questionable) D:사용불가(Can not use) E:미확인(Not Tested)	A L U M I N I U M	C A S T I R O N	C A R B O N	T E F L O N	S U S 3 0 4	H A S T E L L O Y
Ink	C	D	D	E	A	E	Potassium Ferrocyanide	C	E	C	A	A	B
Iodine	D	D	E	A	D	B	Potassium Hydroxide (50%)	D	C	A	A	B	A
Iodoform	A	C	B	A	D	E	Potassium Nitrate	B	E	B	A	A	B
Isotne	A	C	B	A	D	E	Potassium Permanganate	B	B	B	A	A	B
Isopropyl Acetate	C	E	E	E	E	E	Potassium Sulfate	A	B	B	A	A	A
Isopropyl Ether	A	E	A	A	E	E	Potassium Sulfide	B	B	B	A	A	B
Jet Fuel (Jp3, Jp4, JP5)	A	A	A	A	A	E	Propane (Liquified)	A	E	B	A	A	E
Kerosene	A	A	B	A	A	A	Propylene Glycol	A	B	B	A	B	E
Ketones	B	A	A	A	A	A	Pyridine	B	B	A	A	C	E
Lacquers	A	C	C	E	A	E	Pyrogallic Acid	B	B	B	A	A	A
Lactic Acid	C	D	D	A	A	A	Silver Bromide	D	E	E	E	C	E
Lubricants	A	E	E	A	A	A	Silver Nitrate	D	D	D	A	A	A
Magnesium Hydroxide	D	B	B	A	A	A	Sodium Acetate	B	C	C	A	A	A
Magnesium Sulfate	B	C	B	A	B	B	Sodium Aluminate	C	E	C	A	E	B
Maleic Acid	B	E	B	A	A	A	Sodium Bicarbonate	A	C	C	A	A	E
Malic Acid	C	E	D	A	A	A	Sodium Bisulfate	D	D	D	A	A	B
Mercuric Chloride (Dilute Solution)	D	D	D	A	D	B	Sodium Borate	C	C	C	A	A	A
Mercuric Cyanide	D	E	D	A	A	E	Sodium Carbonate	C	B	B	A	A	A
Mercury	C	A	A	A	A	A	Sodium Chlorate	B	E	C	A	A	B
Methane	A	A	A	A	A	A	Sodium Chromate	D	B	B	A	A	B
Methyl Acetate	A	E	B	A	E	A	Sodium Cyanide	D	B	B	A	A	E
Methyl Alcohol 10%	C	E	B	A	E	A	Sodium Fluoride	C	D	D	A	C	A
Methyl Butyl Ketone	A	E	E	E	E	E	Sodium Hydrosulfite	A	E	E	A	E	A
Methyl Cellosolve	A	E	E	E	E	E	Sodium Hydroxide (20%)	D	A	E	A	A	A
Methyl Chloride	D	E	E	A	C	A	Sodium Hypochlorite (to 20%)	C	D	E	A	C	A
Methyl Ethy ketone	A	E	E	A	A	A	Sodium Hypochlorite	D	D	D	A	E	A
Methylamine	A	B	B	E	E	E	Sodium Hyposulfate	D	E	E	A	A	E
Methylene Chloride	A	E	B	A	A	A	Sodium Metaphosphate	A	B	B	A	E	E
Methyl Ethy ketone	A	E	E	A	A	A	Sodium Metasilicate	B	C	C	A	E	E
Methylamine	A	B	B	E	E	E	Sodium Nitrate	A	A	B	A	A	B
Methylene Chloride	A	E	B	A	A	A	Sodium Perborate	B	B	B	A	E	E
Naptha	A	B	B	A	A	A	Sodium Peroxide	C	D	C	A	A	B
Napthalene	B	B	A	A	A	A	Sodium Polyphosphate	D	E	E	A	A	A
Nickel Chloride	D	D	E	A	A	A	Sodium Silicate	C	E	B	A	A	B
Nickel Sulfate	D	D	D	A	A	B	Sodium Sulfide	D	A	B	A	A	B
Nitric Acid (Concentrated Solution)	B	D	E	A	D	B	Stannic Chloride	D	D	D	A	D	B
Nitrobenzende	C	B	B	A	A	B	Stannous Chloride	D	D	D	A	D	A
Oleum	B	E	B	A	E	E	Stearic Acid	B	C	C	A	A	A
Oxalic Acid (cold)	C	D	D	A	A	B	Stoddard Solvent	A	B	B	A	A	A
Pentane	A	B	B	A	C	B	Styrene	A	E	A	A	A	E
Perchloroethylene	A	B	B	A	A	E	Sulfate Liquors	B	E	E	E	C	A
Petrolatum	B	C	C	A	E	E	Sulfur Chloride	D	E	E	A	D	E
Phenol 10%	A	B	D	A	A	B	Sulfur Dioxide	A	E	E	A	A	B
Phosphoric Acid (to 40% Solution)	D	D	E	A	B	A	Sulfurous Acid	C	D	D	A	C	B
Phosphoric Acid (40%-100% solution)	D	D	E	A	C	A	Tannic Acid	C	C	C	A	A	B
Phosphoric Acid (Crude)	D	D	D	A	D	A	Tanning Liquors	C	E	E	A	A	A
Phosphoric Anhydride (Molten)	D	E	E	A	A	E	Tartaric Acid	C	D	D	A	A	B
Photographic (Developer)	C	D	E	E	C	A	Tetrahydrofuran	D	D	A	A	A	E
Phthalic Anhydride	B	C	C	A	A	A	Toluene, Toluol	A	A	A	A	A	A
Picric Acid	C	D	D	A	A	A	Trichlorethylene	B	C	B	A	A	A
Potash	C	B	E	E	A	A	Water, Acid, Mine	C	C	E	E	A	E
Potassium Bicarbonate	C	D	E	A	A	B	Water, Fresh	A	B	D	A	A	E
Potassium Bromide	C	D	D	A	A	B	Water,Salt	B	D	E	E	A	E
Potassium Carbonate	C	B	B	A	A	A	Weed Killers	C	E	E	E	A	E
Potassium Chloride	B	B	B	A	A	A	Whiskey and Wines	D	D	D	A	A	E
Potassium Chromate	A	A	E	E	E	B	Xylene	A	A	B	A	A	A
Potassium Cyanide Solutions	D	B	B	A	A	A	Zinc Chloride	D	D	D	A	A	B
Potassium Dichromate	A	B	C	A	A	B	Zinc Sulfate	D	C	D	A	A	B

# 단위환산(Unit Conversion)



MULTIPLY	BY	TO OBTAIN
Atmospheres	76.0	Cms. Of Mercury
Atmospheres	29.92	Inches of Mercury
Atmospheres	33.90	Feet of Water
Atmospheres	10.333	Kgs./Sq. Inch
Atmospheres	$1.013 \times 10^5$	Pascals
Atmospheres	14.70	Pounds/Sq. Inch
Atmospheres	<b>10.333</b>	<b>Mms. Of Water</b>
Bars	0.9869	Atmospheres
Bars	$1. \times 10^6$	Dynes/Sq. Cm.
Bars	$1.020 \times 10^4$	Kgs./ Square Meter
Bars	14.50	Pounds/Sq.Inch
Bars	10.197	Mms. Of Water
Bars	29.5	Inches of Mercury
Bars	<b>100</b>	<b>Kpa</b>
Centimeters of Mercury	0.01316	Atmospheres
Centimeters of Mercury	0.4461	Feet of Water
Centimeters of Mercury	136.0	Kgs./Square Meter
Centimeters of Mercury	0.1934	Pounds/Sq.Inch
Centimeters of Mercury	1,333.2	Pascals
Centimeters of Mercury	1.3332	Kpa
Centimeters of Mercury	0.01333	Bars
Centimeters of Mercury	135.95	Mms. Of Water
Cubic Centimeters	$3.531 \times 10^{-5}$	Cubic Feet
Cubic Centimeters	$6.102 \times 10^{-2}$	Dubic Inches
Cubic Centimeters	$10^{-6}$	Cubic Meters
Cubic Centimeters	$10^{-3}$	Liters
Cubic Feet	$2.832 \times 10^4$	Cubic Cms.
Cubic Feet	1728	Cubic Inches
Cubic Feet	0.02832	Cubic Meters
Cubic Feet	0.03704	Cubic Yards
Cubic Feet	7.481	Gallons
Cubic Feet	28.32	Liters
Cu.Ft of Water (60° F)	62.37	Pounds
Cubic Feet/Minute	472.0	Cubic Cms./Ses.
Cubic Feet/Minute	0.4720	Liters/Second
Cubic Feet/Minute	62.4	Lbs. of water/Min
Cubic Inches	16.39	Cubic Centimeters
Cubic Inches	$5.787 \times 10^{-4}$	Cubic Feet
Cubic Inches	$1.639 \times 10^{-5}$	Cubic Meters
Cubic Inches	$2.143 \times 10^{-5}$	Cubic Yards
Cubic Meters	$10^6$	Cubic Centimeters
Cubic Meters	35.31	Cubic Feet
Cubic Meters	61.023	Cubic Inches
Cubic Meters	1.308	Cubic Yards
Cubic Yards	$7.646 \times 10^5$	Cubic Centimeters
Cubic Yards	27	Cubic Feet
Cubic Yards	46.656	Cubic Inches
Cubic Yards	<b>0.7646</b>	<b>Cubic Meters</b>
Feet	30.48	Centimeters
Feet	12	Inches
Feet	0.3048	Meters
Feet	1/3	Yards
Feet of Aif		
Feet/Minute	0.5080	Centimeters/Sec.
Feet/Minute	0.01667	Feet/Second
Feet/Minute	0.01829	Kilometers/Hour
Feet/Minute	0.3048	Meters/minute
Feet/Minute	<b>0.01136</b>	<b>Miles/Hour</b>
Gams/Cu. Cm	<b>62.43</b>	<b>Pounds/Cubic Foot</b>
Horsepower	42.44	British Thermal Units/Min.
Horsepower	33.000	Foot-Pounds/Min.
Horsepower	10.70	Kg-Calories/Min.
Horsepower	745.7	Watts
Horsepower-Hours	<b>2547</b>	<b>British Thermal Units</b>
Inches	2540	Centimeters
Inches	$10^3$	Mils
Inches of mercury	0.03342	Atmospheres
Inches of mercury	13.60	Inches of water
Inches of mercury	345.3	Kfs./Square Meter
Inches of mercury	25.40	Mms. Of Mercury
Inches of mercury	0.4912	Pounds/Square In.
Inches of Water	0.002458	Atmospheres
Inches of Water	0.07355	Inches of Mercury
Inches of Water	25.40	Kgs./Square Meter
Inches of Water	5.204	Pounds/Square Ft
Inches of Water	0.0363	Pounds/Square In.

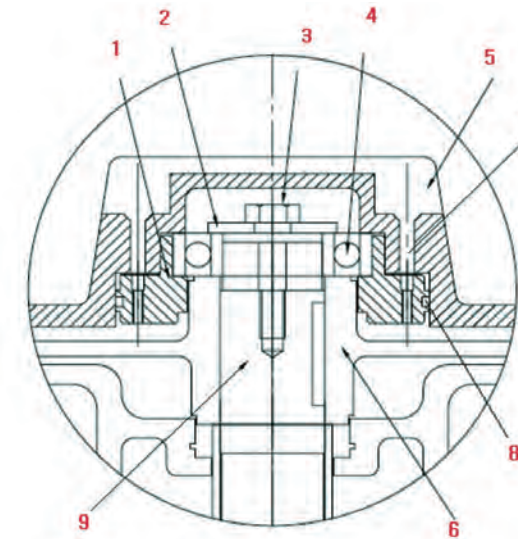
MULTIPLY	BY	TO OBTAIN
KGS/Cubic Meter	0.06243	Pounds/ Cubic Foot
Kilometers	3281	Feet
Kilowatts	56.92	British Thermal Units/Min
Kilowatts	737.6	Foot-Pounds/Sec.
Kilowatts	1.341	Horsepower
Kilowatts	14.34	Kg-Calories/Min
Kilowatt-Hours	<b>3415</b>	<b>British Thermal Units</b>
Liters	$10^3$	Cubic Centimeters
Liters	61.02	cubic Inches
Liters	$10^{-3}$	Cubic Meters
Log <sub>10</sub> N	2.303	LogEN or LN N
Log <sub>10</sub> N or Ln N	<b>0.4343</b>	<b>Log<sub>10</sub>N</b>
Mms. Of Water	0.000097	Atmospheres
Mms. Of Water	0.001422	Pounds/Sq. Inch
Mms. Of Water	0.0001	Kgs./ Square Centimeter
Mms. Of Water	9.80665	Pascals
Mms. Of Water	0.009807	Kpa
Mms. Of Water	0.000098	Bars
Mms. Of Water	98.0665	Dynes/Sq. Cm.
Mms. Of Water	0.07355	Mms. Of Mercury
Mms. Of Water	0.002896	Inches of Mercury
Mms. Of Water	0.03937	Inches of Water
Miles/Hour	44.70	Centimeters/Sec.
Miles/Hour	88	Feet/Minute
Miles/Hour	1.467	Feet/Second
Miles/Hour	1.6093	Kilometers/Hour
Miles/Hour	26.82	Meters/Minute
Mms. Of Mercury	0.0394	Inches of Mercury
Mms. Of Mercury	$1.3595^{-3}$	Kgs./Square Cm.
Mms. Of Mercury	<b>0.01934</b>	<b>Pounds/aquare Inch</b>
Pints (Liq.)	28.87	Cubic Inches
Pints (U,S,liquid)	473.179	Cubic Centimeters
Pints (U,S,liquid)	16	Ounces (U.S. fluid)
Pounds	444.823	Dynes
Pounds	453.6	Gramx
Pounds	16	Ounces
Pounds of Carbon to CO <sup>2</sup>	14.544	British Thermal Unite (mean)
Pounds of Water	27.68	Cubic Inches
Pounds of Water	0.1198	Gallons
Pounds of Water	970.3	British Thermal Unite
Evaporated at 212°F	16.02	Kgs./Cubic Meter
Pounds/Cubic Foot	4.882	Kgs./Square Meter
Pouns/Square Foot	0.06804	Atmospheres
Pouns/Square Inch	27.7	Inches of Water
Pouns/Square Inch	2.036	Inches of Mercury
Pouns/Square Inch	703.1	Kgs./Square Meter
Pouns/Square Inch	$6.895 \times 10^3$	Pascals
Pouns/Square Inch	<b>51.715</b>	<b>Millimeters of Mercury at 0°C</b>
Square Centimeters	$1.973 \times 10^5$	Circular Mils
Square Centimeters	$1.076 \times 10^{-3}$	Square Feet
Square Centimeters	0.1550	Square Inches
Square Feet	929.0	Centimeters
Square Feet	0.09290	Square Meters
Square Inches	$1.273 \times 10^6$	Circular Mils
Square Inches	6.452	Square Centimeters
Square Inches	$6.944 \times 10^{-3}$	Square Feet
Square Inches	$10^6$	Square Mils
Square Inches	645.2	Square Millimeters
Square Kilometers	$10.76 \times 10^6$	Square Feet
Square Kilometers	$10^6$	Sqrare Meters
Square Kilometers	$1.196 \times 10^6$	Square Yards
Square Meters	10.764	Square Feet
Square Meters	<b>1.196</b>	<b>Square Yards</b>
Temp. (Degs. C.) +273	1	Abs. Temp. (Degs. C.)
Temp. (Degs. C.) +17.8	1.8	Temp. (Degs. Fahr.)
Temp. (Degs. F.) +460	1	Abs. Temp. (Degs. F.)
Temp. (Degs. F.) -32	<b>5/9</b>	<b>Temp. (Des.Cent.)</b>
Watts	0.05692	British Thermal Units/Min.
Watts	$10^7$	Ergs/Second
Watts	44.26	Foot-Pounds/Min.
Watts	$1.341 \times 10^{-3}$	Horsepower
Watts	0.01434	Kg.-Calories/Min
Watts	$10^{-3}$	Kilowatts
Watts-Hour	3.415	British Thermal Units
Watts-Hour	$1.341 \times 10$	Horsepower/Hours
Watts-Hour	$10^{-3}$	Kilowatt -Hours

# 앞 베어링 부의 구조 및 분해,조립 요령

## How the front bearing to be assembled & disassembled



The shape of each part is discrepancy in accordance with each machine but the basic operation principle is same.



Number	Name
1	Bearing Cover
2	Disc
3	Bolt
4	Bearing
5	Impeller Housing (Front)
6	Impeller
7	Connection part of Impeller housing & Bearing cover by long bolt
8	O-ring
9	Shaft

### >>Structural Summary

Bearing(4) locates inside of Bearing cover(1) and Bearing cover(1) is fixed to Impeller Housing(Front) by long bolt(7). Also this Bearing(4) and Bearing cover(1) is fixed to motor shaft(9) and as a result, locates on the center of Impeller(6). Because of this structure, the evenness of Bearing cover affect to right rotation of Impeller(6) and take notice the evenness of Bearing cover(1) when assembly and disassembly.

To prevent the grease leakage from Bearing, tighten the Bolt(3) with Disc(2) carefully and To prevent breakaway the O-ring(8) from Bearing cover(1), take care of tightening long bolt(7) not to be biased.

In case of biased tightening long bolt(7), there will be a possibility of contacting the impeller(6) to impeller housing(5) by biased pulling up .

### >>Process of Disassembly (Assembly is the reverse process of Disassembly)

1. Loosen the long bolt ( 7) one by one with the electric tool .
2. Loosen the bolt of impeller housing(front & rear) connection with the electric tool
3. Detach the front impeller housing from rear housing
4. Reconfirm the status of bearing and grease
5. Loosen the bolt (3) from the shaft (9) and detach bearing cover (1)
6. Detach the bearing (4) from the bearing cover ( 1)
7. Refill the grease into bearing



Grease replacement term of normal load operation

Using time	Replacement term
8Hour/Day	2Year
24Hour	1Year
12Hour/Day	6개월=6Month
Overload Operation	3Month

The life of Bearing is depends on the maintenance of grease.

In general, Ring blower is operated with load condition, the inside temperature of impeller housing can be raised up to over 80°C in accordance with load rising up and in case of severe overload, the temperature can be raised upto over 120°C.

In case of continuous operation in high temperature, the liquefaction of grease also be continuously and this is the major reason of leakage of grease from bearing and let bearing broken, take notice not to be overheat operation.

Also, the ingredient of inlet air can be a reason of grease liquefaction and bearing broken. Corrosive gas or Salt content gas or Wet gas can be bad affect to grease leakage, before using this gas, the proper action of protecting it should be required. The dust from outside also can be a bad affect to bearing & grease, the proper action of protecting should be required.

When replace the grease, remove the remained grease as much as possible, and refill new grease upto the ball can not be seen.

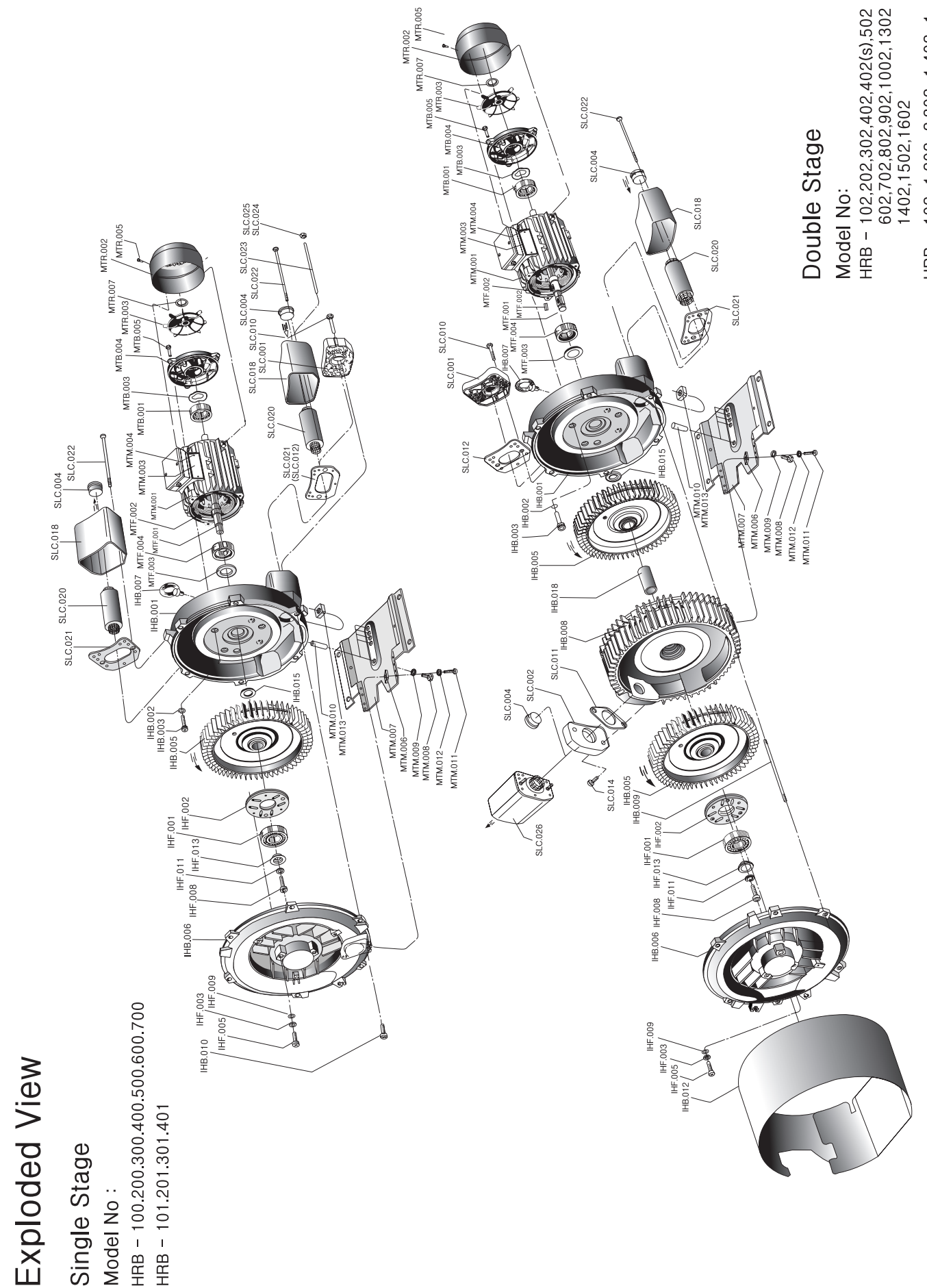
●High Temperature , High Speed Grease

Recommend NLGI grade N3

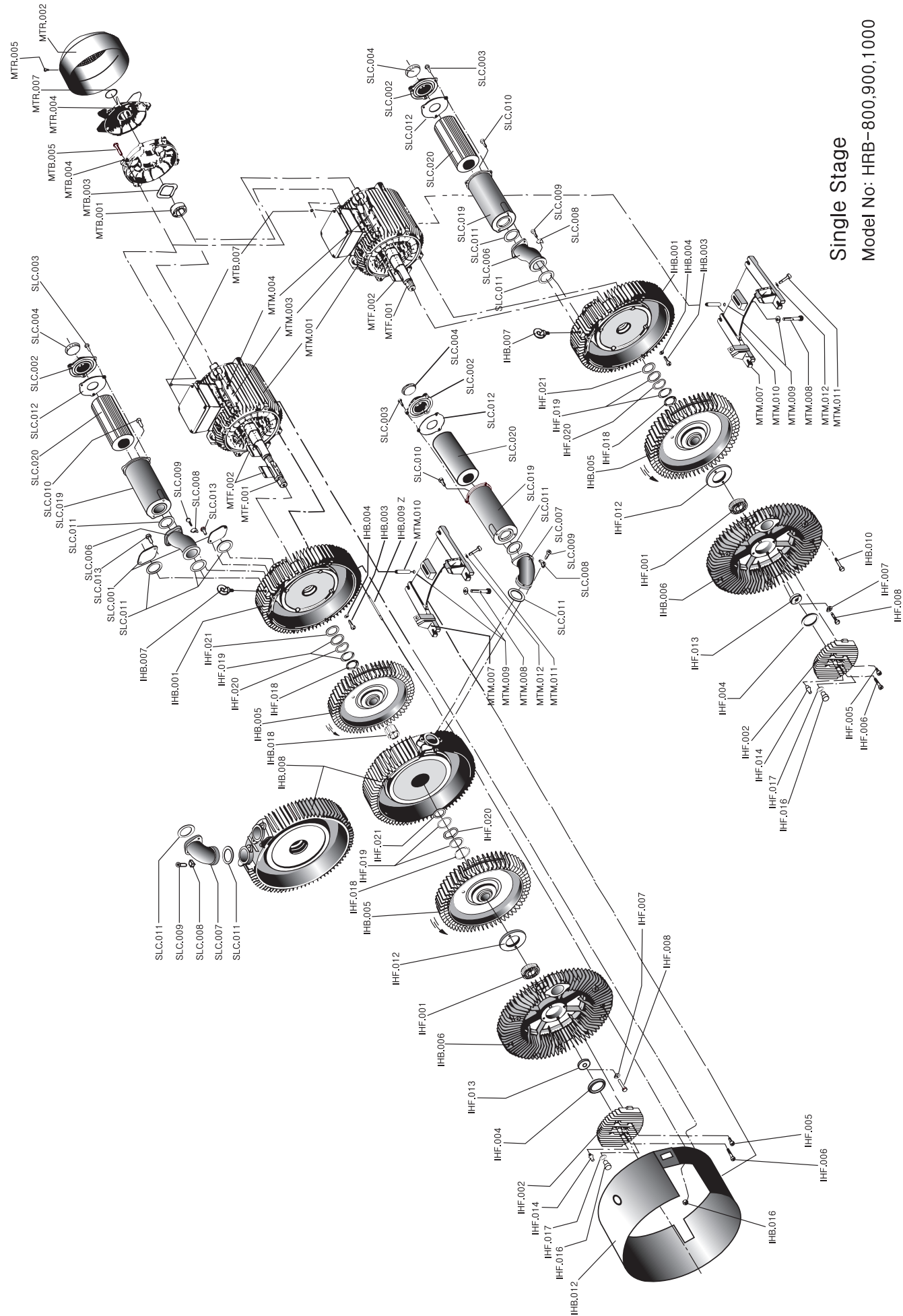
Recommendable Grease : UNIREX N3 ( Exxon Mobile Corporation)

If customer can not find the same grease , the same kind of greas will be allowable

Thickener type	Lithium-complex
NLGI Grade	N3
Texture	Smooth, Buttery
Dropping Point	230°C
Penetration	235mm/10
Base Oil Viscosity Index	95
Oil Separation	0.6



# Exploded View(2단)



Single Stage  
Model No: HRB-800,900,1000

# Ring Blower Part List



신규 Number	Name in English
IHF.001	Bearing
IHF.002	Bearing Cover
IHF.003	Plain Washer
IHF.004	Space washer
IHF.005	Cheese Head Screw
IHF.006	Socket head cap screw
IHF.007	Lock Plate
IHF.008	Cap Bolt
IHF.009	O-ring seal
IHF.011	Spring Washer
IHF.012	Mating Ring
IHF.013	Disc
IHF.014	Grease Nipple
IHF.016	Hexa head bolt
IHF.017	Plain washer
IHF.018	Internal retaining ring
IHF.019	Compensate Ring
IHF.020	Spring Washer
IHF.021	Sealing Ring

신규 Number	Name in English
MTM.001	Stator
MTM.003	Rating plate
MTM.004	Screw
MTM.006	Square Nut
MTM.007	Foot
MTM.008	Hexagonal Head Screw
MTM.009	Spring Washer
MTM.010	Sleeve
MTM.011	Cap Bolt
MTM.012	Spring Washer
MTM.013	Square Nut

신규 Number	Name in English
MTR.002	Fan cowl
MTR.003	External fan
MTR.004	External fan
MTR.005	Screw
MTR.007	Circlip

신규 Number	Name in English
IHB.001	Compressor housing
IHB.002	Spring Washer
IHB.003	Cap Bolt
IHB.004	Spring Washer
IHB.005	Impeller
IHB.006	Compressor Cover
IHB.007	Eye Bolt
IHB.008	Center Section
IHB.009	Threaded Rod
IHB.010	Cheese Head Screw
IHB.012	Compressor cowl
IHB.015	Disc
IHB.016	Plain washer
IHB.018	Sleeve

신규 Number	Name in English
SLC.001	Plug
SLC.002	Flange
SLC.003	Cap Bolt
SLC.004	Plug
SLC.005	Hexagonal Nut
SLC.006	Graded tube
SLC.007	Graded tube
SLC.008	Clip
SLC.009	Cap Bolt
SLC.010	Cap Bolt
SLC.011	Gasket
SLC.012	Gasket
SLC.013	Cap Bolt
SLC.014	Cap Bolt
SLC.015	Cap Bolt
SLC.016	Cap Bolt
SLC.017	Silencer casing
SLC.018	Silencer casing
SLC.019	Silencer insert
SLC.020	Gasket
SLC.021	Flat Head Screw
SLC.022	Threaded Rod
SLC.023	Hexagon Nut
SLC.024	Hexagon Cap Nut
SLC.025	Silencer

신규 Number	Name in English
MTF.001	Compressor housing
MTF.002	Spring Washer
MTF.003	Cap Bolt
MTF.004	Spring Washer

신규 Number	Name in English
MTB.001	Bearing
MTB.003	Resilient preloading ring
MTB.004	Endshield
MTB.005	Cheese Head Screw
MTB.007	Hexagonal Nut

# HWANG HAE ELECTRIC

AGENT



**HWANG HAE ELECTRIC**

82B-2L, NAM DONG INDUSTRIAL COMPLEX, 679-1 GO JAN-DONG NAM DONG-GU, INCHEON CITY, KOREA 405-819  
TEL : +82-32-817-2671 FAX : +82-32-816-7881 URL : <http://www.ringblower.net> E-mail : [hmmotor@hanmail.net](mailto:hmmotor@hanmail.net)

Designed by 巨美(032)863-9055 2007. 7