The enterprise which creates a new future, 21 century

GEARED MOTOR

GEARED MOTER 2014.11
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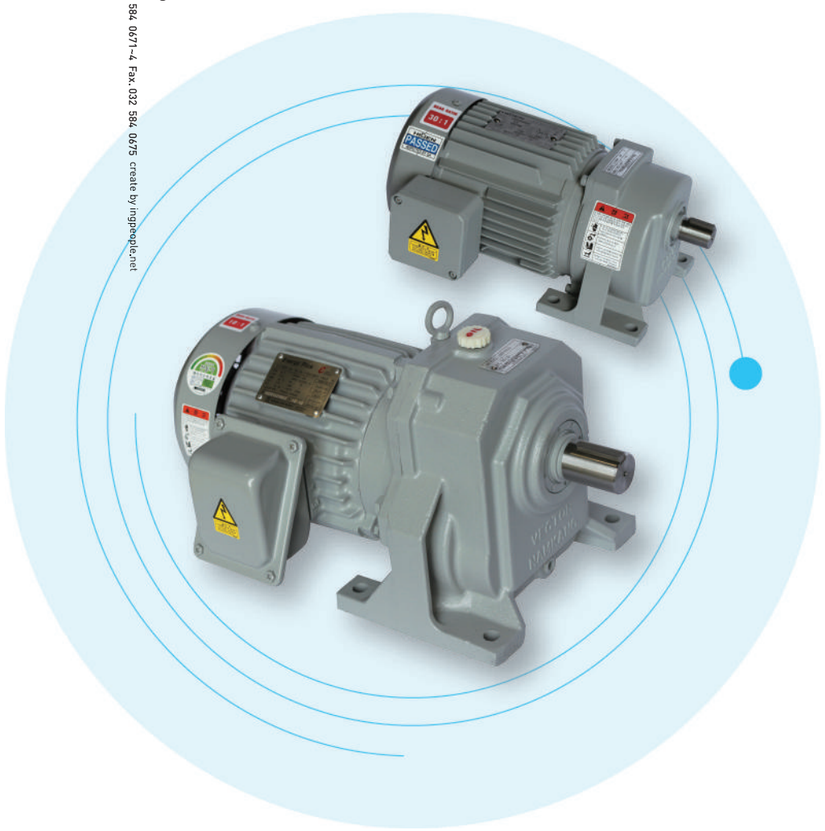
KQA Q.Assurance 품질경영시스템 인증



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GEARED MOTOR

The enterprise which creates a new future, 21 century



(주)남강엔지니어링

|본사 · 공장| 인천광역시 서구 가좌동 178-40 Tel. 032-584-0671 Fax. 032-584-0675
|O F F I C E| 178-40, Kajwa-Dong, Seo-Gu, INCHON, KOREA Tel. 82-32-584-0671 Fax. 82-32-584-0675

|감속기 영업직통| 평생전화번호 0502-584-0671 Tel. 82-32-584-0676~7 Fax. 82-32-584-0675
|Business Dept.| Tel. 82-32-584-0676~7 Fax. 82-32-584-0675

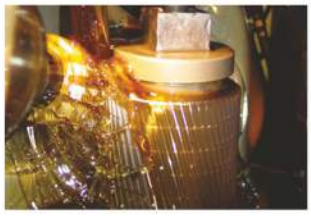
(주)남강엔지니어링

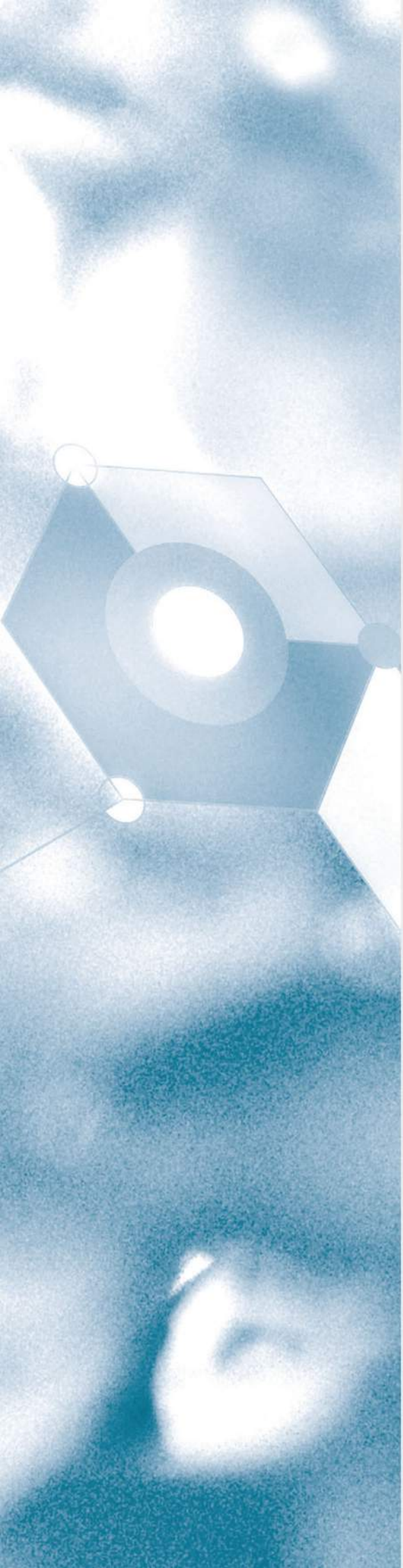
21세기 새로운 미래를 창조하는 기업

(주)남강엔지니어링 "VECTOR GEARED MOTOR"
신기술의 제품으로 세계시장을 …
축척된 기술과 최신 정밀설비를 보유하고 있는
(주) 남강 엔지니어링은 끊임없는 연구개발과 품질관리로
동력전달 장치의 주역이 되겠습니다
고객과의 약속을 지키는 기업으로 고객에게
이익을 돌려준다는 마음으로 신속하고 친절한 A/S로
최선을 다하여 자동화 설비 발전의 일익을 담당하겠사오니
귀사의 부름을 기다리겠습니다.
타사 제품과는 모든 사양이 동일하며
교체 사용이 가능 합니다

The enterprise which creates a new future, 21 century

With updated technology product,
Taking a step forward global market …
It possesses the accumulated technique and an up-to-date precise equipment,
Namgang engineering will become the leading actor in the field of power transmission device
by R&D and quality control.
As the enterprise which keep the promise
of the customer and returned a profit in the customer
Namgang engineering will play the role of automation equipment development
of your firm with the kind and quik A/S.
We will wait your call.
It is possible to use crossing the other company's products.



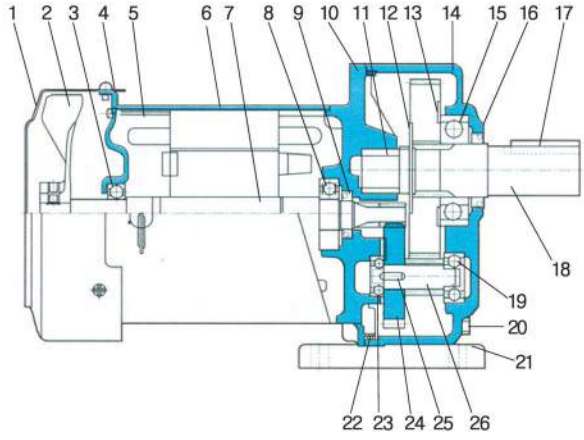


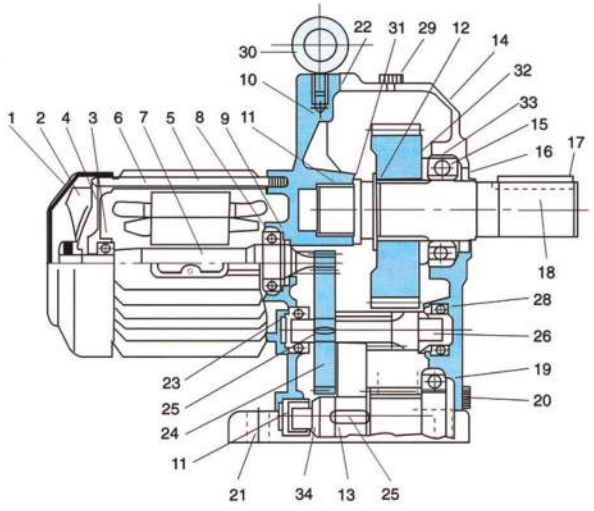
History

1965.	3	현대냉동 공업사 설립 (부산)
1970.	3	현대냉동 공업사 서울로 이전
1978.	4	(주) 현대냉동으로 법인 전환
1981.	11	(주)남강엔지니어링으로 법인명 변경
1987.	3	용접자동화 사업부 신설
1989.	3	용접 자동화 관련 SPFTWARE 도입 (일본 DELTA ENG)
1992.	9	감속기 사업부 설립
1992.	11	한일그룹, 인도네시아 공장 완공우수업체 선정 (PLANT부문)
1997.	6	감속기 사업부 2차 설비증설 완료
1997.	12	하이트 맥주(주) 홍천공장 PLANT공사 완공
2001.	2	감속기 ISO 9001인증
2013.	2	감속기 사업부 3차 설비증설 완료

Contents

내부 구조도 | Inside Structure





1. FAN COVER
2. FAN
3. BEARING
4. B-SHIELD
5. MOTOR BOLT
6. MOTOR FRAME
7. MOTOR SHAFT
8. BEARING
9. OIL SEAL
10. MOTOR FLANGE
11. DX-BUSH
12. STOP RING
13. B-GEAR
14. CASE
15. BEARING
16. OIL SEAL
17. KEY
18. OUTPUT SHAFT
19. BEARING
20. DRAIN PLUG
21. HEX BOLT
22. GASKET
23. BEARING
24. A-GEAR
25. KEY
26. B-PINION GEAR
27. HEX BOLT
28. BEARING
29. OIL 주유 CAP
30. EYE BOLT
31. THRUST COLLAR
32. C-GEAR
33. THRUSTER
34. SHAFT

출력의 선정 I Power Estimation

1. 필요한 출력축 회전수 N(RPM)에 따라 감속비를 결정하십시오.
2. 부하 토오크 T_1(kgf-m)에서 전달토오크 T(kgf-m)를 산출하십시오.

$T = T_1 \times SF$

SF(써비스 훽타) : 출력축에 작용하는 부하의 성질과 운전시간에 의하여 표1에 표시하였습니다.

3. 산출된 전달토오크 T(kgf-m) 및 부하 토오크 T_1(kgf-m)과 회전수 N(RPM)에 의하여그림1의 출력선정도에 의하여 각각의 모타용량을 구하고 가능한 높은 쪽으로선정하여 주십시오.

(예)

출력수 회전수 : N = 60 RPM(60Hz)
부하토오크 : T_1= 20 kgf-m
파동기 : 콘베어(균일하중)
운전시간 : 12시간 /일

a. 감속비 ℓ = 60/1800 = 1/30
b. 전달 토오크 T : 표2 및 표1에 의하여 Sf = 1.25
$T = T_1 \times Sf = 20 \times 1.25 = 25$(kgf-m)
c. 모타출력
부하 토오크 T_1에 의거 N = 60과 T_1= 20의 교차점을 구하시오.
교차점은 0.75Kw와 1.5Kw의 사이

1. According to required output shaft rotation N(RPM), calculate reduction ratio.
2. Calculate Transfer Load from load torque T_1(kgf-m) by

$T = T_1 \times Sf$

Where Sf is service factor. Types of service factor have been classifled in Table 1 according to characteristics and operation hours.

3. Using obtained transfer torque T, load torque T_1 and rotation N, choose motor capacity from Tabel 1. If possible, choose higher one.

(EX)
Output shaft rotation : N = 60 RPM(60Hz)
Load torque T_1 = 20 kgf-m
Driven Machine : Conveyor
Operation Hours : 12 Hours/day

a. Reduction Ratio : ℓ = 60/1800 = 1/30
b. Transfer Torque : T
Sf = 1.25 from Table 2 and Table 1
$T = T_1 \times Sf = 20 \times 1.25 = 25$(kgf-m)
c. Motor Output
Point the crosspoint of T_1(=20) and N(=60).
The crosspoint is between 0.75Kw and 1.5Kw.

표1. 써비스 훽타 Sf(Service Factor Sf)

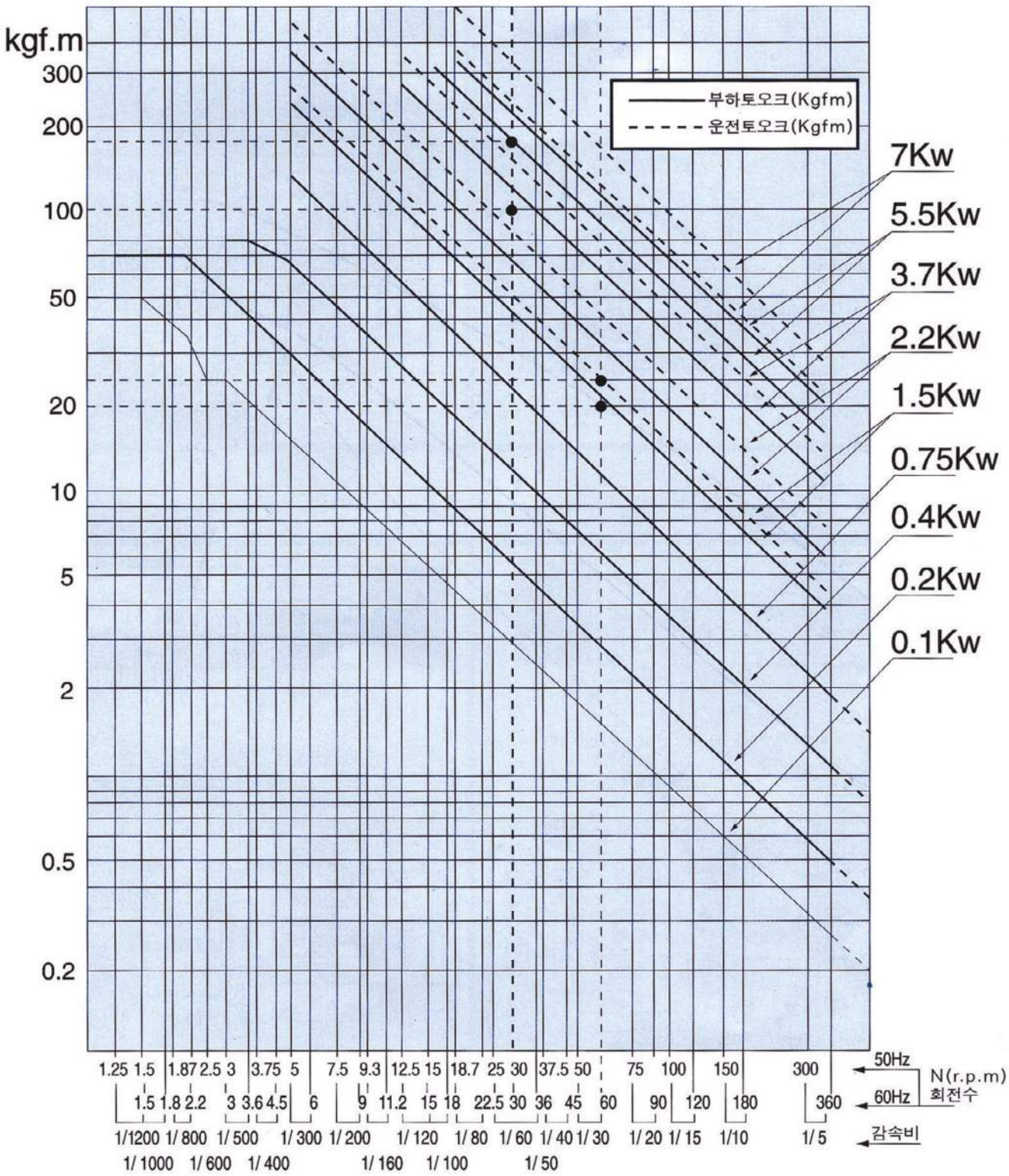
Load / peration Hr	U	M	H
3시간 이하/일 (Less 3Hr/Day)	1	1	1.5
3~10시간/일 (3~10Hr/Day)	1	1.25	1.75
10시간 이상/일 (More than 10Hr/Day)	1.25	1.5	2

U : 균일하중(Uniform Load)
M : 中 정도 충격(Medium Impact)
H : 重 정도 충격(Heavy Impact)

표2. 피동기계 부하 분류표(Driven Machine)

피동기계명(Driven Machine)	부하(Load)	피동기계명(Driven Machine)	부하(Load)
송풍기 Air Blower	U	호이스트 Hoist	M
주조 및 증류장치 Distillation	U	공작기계(주기동) Milling Machine(Main)	M
차량 Car	M	공작기계(보조기동) Milling Machine(Sub)	U
클라리 화이어 Clarifier	U	금속가공기계 Steel Process Machine	H
선별기 Sorter	M	회전밀 Turning Mill	M
요업기계(中 부하) Ceramic Machine(M.Load)	M	턴푸라 Tumbling Barrels	H
요업기계(重 부하) Ceramic Machine(H.Load)	H	믹서 Mixer	M
압축기 Compressor	M	유압정제기계 Oil Pressure Cleaner	M
콘베아(균일부하) Conveyor(Uniform)	U	제지기계 Paper Machine	M
콘베아(불균일부하) Conveyor(Non-unform)	M	제재기계 Wood Cutter	H
크레인 Crane	U	펌프 pump	M
크랏샤 Crusher	H	고무기계(中 부하) Rubber Machine(M.Load)	M
준설용선박(中 부하) Drainage(M.Load)	M	고무기계(重 부하) Rubber Machine(H.Load)	H
준설용선박(重 부하) Drainage(H.Load)	H	수처리기계(輕 부하) Water Cleaner(L.Load)	U
엘리베이타 Elevator	U	수처리기계(重 부하) Water Cleaner(H.Load)	M
압출기 Extruder	U	스크린(유체) Screen(Oil Based)	U
휀 Fan	U	제당기계 Sugar Machine	M
공급기 Supplier	M	섬유기계 Textile Machine	M
공급기(왕복동식) Supplier(Commuting)	H	제철기계(열간) Iron Works(Heat Treat)	H
식품기계 Food Machine	M	제철기계(냉간) Iron Works(Cold Treat)	U
햄머밀 Hammer Mill	H		

◎출력의 선정 | Power Estimation



O.H.L (Overhang Load)의 확인 Overhang Load

O.H.L은 출력축에 작용하는 굽힘하중의 위치를 표시합니다. 상대기계와 체인, 기어, 벨트 등으로 연결한 경우에 발생하고, 카프링에 의한 직결의 경우에는 발생하지 않습니다.

Overhang load indicates the position of side force occurred on output shaft.Overhang load is typically occurred when the motor has been coupled through chain, gear or belt and so forth. Direct coupling does not cause overhang load.

O.H.L(kgf) = T_1/ R x Sf x Ef x Lf x 1000
T_1(kg-m) : 사용 토오크
R(mm) : 스프로켓, 기어, 풀리등의 피치원반경
Ef : 연결방법에 따른 Ef 값 * [표3]에서 구함
Lf : 작용거리에 따른 Lf 값 * [표4]에서 구함

O.H.L(kgf) = T_1/ R x Sf x Ef x Lf x 1000
T_1(kg-m) : Applied Torpue
R(mm) : Diameter of pitch in sprocket, gear, of pulley
Ef : Ef value according coupling method(Refer Table 3)
Lf : Lf value according operation distance(Refer Table 4)

산출한 O.H.L은 사용 기어드모타의 허용 O.H.L의 이하에서 R 및 Lf을 결정합니다.
허용O.H.L은 규격별로 표시됩니다.

Obtained O.H.L should be lower than allowed O.H.L of selected gear motor, and R and Lf is obtained from the obtained O.H.L value, Allowed O.H.L is enlisted according to types.

플라이 휠 효과 Fly Wheel Effect

부하의 관성(GD^2)이 크거나 단속운전을 할 때 시동시(또는 브레이크에 의한 제동시)에 간헐적으로 커다란 토오크가 발생할 경우에 고장의 원인이 될 수 있으므로 [그림3]에 의한 부하의 관성과 허용시동 횟수를 확인합니다.

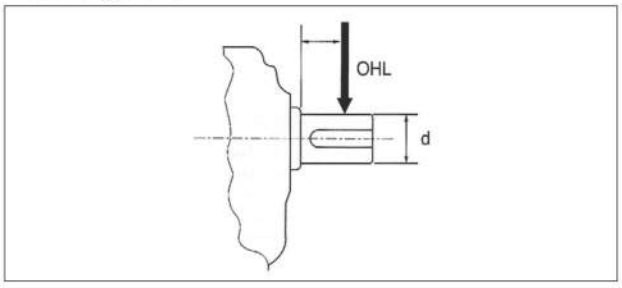
When load inertia(GD^2)is high or the motor is intermitantly operated, momentily occurred heavy torque may cause the reason of breakdown. Please make sure of load inertia and allowable starting number from Picture 3.

모타축환산부하 $GD^2(GD^2\ell)$ =
출력축환산 GD^2 x (속비)^2

$$GD^2\text{비}(R) = \frac{\text{모타축환산부하}GD^2(GD^2\ell)}{\text{기어드모타의 }GD^2(GD^2_M)}$$

Motor Shaft Conversion Load inertia($GD^2\ell$) =
Output Shaft Conversion Inertia x (Reduction Ratio)^2
where.
Ineria Ratio(R)=Motor Shaft Conversion Load inertia ($GD^2\ell$)/Geared Motor inertia(GD^2_M)

그림 2(Figure2)



Using obtained R and Figure 3, one can get allowable starting total number.

출력의 선정 I Power Estimation

[표3]연결방법(Coupling Ef)

단열체인(Single Row Chain)	1.00
타이밍 벨트(Timing Belt)	1.00
복열체인(Double Row Chain)	1.25
기어(Gear)	1.25
벨트(Belt)	1.50
평벨트(Plain Belt)	2.50

[표4]작용위치(Applied Point Lf)

ℓ	Lf
0.25d	0.85
0.50d	0.90
0.75d	0.95
1.00d	1.00
1.25d	1.25
1.25d	1.50

R 수치와 [그림3]에 의한 허용시동시 총횟수를 얻습니다.
(예) 모타출력 : 5.5 Kw 연결방법 : 체인
속 비 : 1/10 기동정도 : 20 sw / h
부하 GD^2(출력축환산) : 4.8 kg·m²

1) $GD^2\ell = 4.8 \times (1/10)^2 = 0.048$ kg·m²

2) $R = \frac{GD^2\ell}{GD^2} = \frac{0.048}{0.12} = 0.4$

3) [그림3]에 의한 R = 0.4의 수직선 체인의 선과 교점을 구하고 그점에 의한 수평선 5.5Kw 선의 교점이 허용시동 총횟수로 3×10^5 횟수입니다.

4) 내구시간은 $\left[\frac{\text{허용시동총횟수}}{\text{기동정도}}\right] = \frac{3 \times 10^5}{20} = 15{,}000$시간

(EX)
Motor Output : 5.5 Kw, Reduction Ratio : 1/10
Load inertia(Output shaft Conversion) : 4.8 kg·m²
Coupling method : Chain, Starting Coefficient : 20sw/h

1) $GD^2\ell = 4.8 \times (1/10)^2 = 0.048$ kg·m²

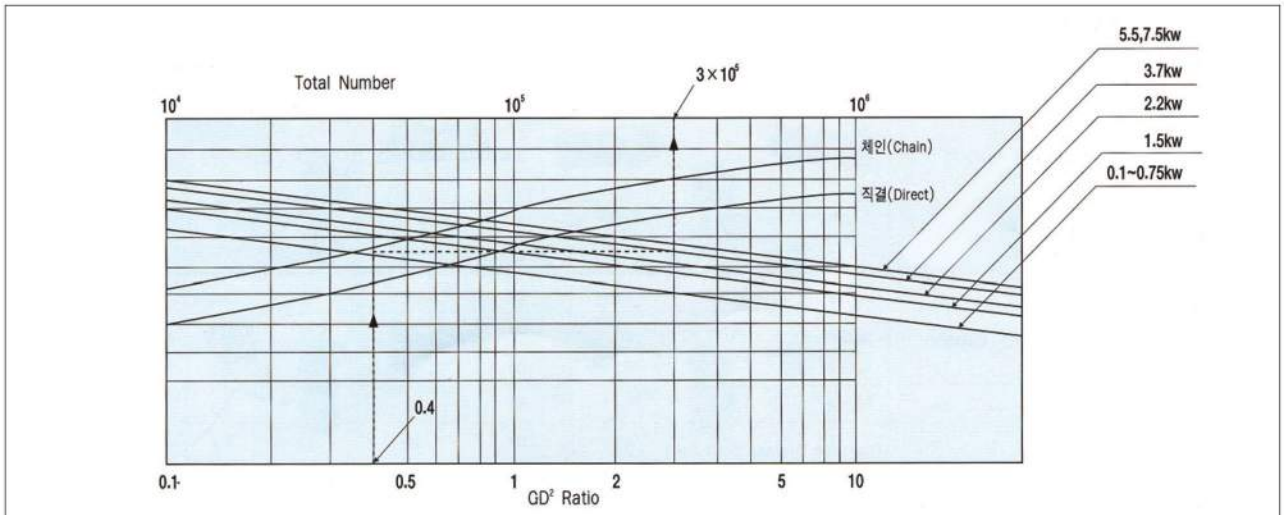
2) $R = \frac{GD^2\ell}{GD^2} = \frac{0.048}{0.12} = 0.4$

3) In [Picture 3], find the crosspoint(A) of R = 0.5 and the curve of chain. Then the allowable starting total number is the crosspoint between horizontal line from(A) and the required power 5.5 Kw. In this example the allowable starting total number becomes 3×10^5

4) Durable hours : Allowable starting total number / starting Coefficinet = 3×10^5 /20 = 15,000 hours

허용시동 총횟수 I Allowable Starting

그림3(Picture 3)



기어드 모터 규격별 그리이스 및 오일 주입량

(Grease or Oil Charging Quantity)

구분	H/T	V/T	OIL	GREASE
F88	0.1(G)	0.42(G)	ISO VG 150 ISO VG 220	EP 0
F105	0.3(G)	0.7(G)		
F135	0.48	1.4(G)		
F153	0.8	2.4(G)		
F172	1.3	2.0		
F181	1.8	3.0		
F205	2.6	6.0		
F235	3.8	8.0		
F270	6.0	13.0		
F300	9.0	15.2		
F350	15.0	28.0		

- Vertical Geared Motor에는 Grease윤활
- 공장 출하시에 0.2~0.4Kw의 전기종에 그리이스를 0.75~7.5Kw 전기종에는 오일을 충진하여 출하합니다.
- 그리이스의 교환시기는 2,000시간마다 교환해야 합니다.
- 오일의 교환시기는 500시간 가동 후 1회 교환 후 매 2,000시간 마다 교환해야 합니다.
- 그리이스 및 오일교환시 양은 상기표를 참고 하세요.

- Geared motors powered between 0.2 and 0.4Kw are charged with grease during factory shipment Also, geared motor powered beween 0.75 and 7.5Kw are charged with oil.
- Grease should be re-charged at every 2,000 hours.
- Oil needs to be changed first 500 hours operation, and hereafter to be changed at every 2,000 hours.

기어드 모터의 GD^2M(모터축 환산)

Geared Motor GD^2_M (Motor Shaft Conversion)

Kw	4P	
	일반형 General	브레이크 부착 With Brake
0.4	0.0056	0.0069
0.75	0.0099	0.0112
1.5	0.0271	0.0321
2.2	0.0301	0.0351
3.7	0.0456	0.0967
5.5	0.0633	0.114
7.5	0.106	0.167

Vector-GM 소음 수준

(Vector-Geared Motor Noise Level)

Geared Ratio		1/120	1/90	1/60	1/45	1/30	1/20	1/15	1/10	1/5
RPM		15	20	30	40	50	90	120	180	360
(kw) 출력 Output	0.4	62	62	62	62	62	62	62	62	62
	0.75	65	65	65	65	65	65	66	66	66
	1.5	70	70	70	70	70	70	70	71	71
	2.2	70	72	72	72	72	72	72	72	72
	3.7	70	72	72	72	72	72	72	72	72
	5.5	72	72	72	72	72	72	72	72	72
	7.5		74	73	73	74	75	75	74	75

삼상유도 전동기 참고 특성

DATA Three Phase Induction Motor Reference Characteristic Data

출력 kw(HP)	극수 Pole	정격전류 Regulat Current		기동전류 Starting Current		효율 Efficiency %	역율 Power Factor %	전부하 Factor Total Load Torque(kgfm)	Silp %	R,P,M
		220V	380V	220V	380V					
0.4(1/2)	2 4 6	2.4 2.6 3.0	1.4 1.5 1.7	17.4 16.4 19	10 9.5 11	62.0 63.5 62.0	72 63 55		8.5 9.0 10	3294 1638 1038
0.75(1)	2 4 6	3.6 3.8 4.4	2.1 2.2 2.5	28 25 29	16 15 17	68.0 69.5 63.0	77 70 63	0.42 0.65	7.5 8.0 8.5	3330 1656 1098
1.5(1½)	2 4 6	4.4 4.6 5.2	2.5 2.6 3	34 30 33	20 17 19	71.5 72.0 71.5	79 73 66		7.0 7.5 8.0	3348 1665 1104
1.5(2)	2 4 6	6.4 9.2 7.4	3.7 5.3 4.3	49 60 48	28 35 28	74.5 78.5 74.5	81 77 69	1.24 1.3	7.0 7.0 8.0	3348 16674 1104
2.2(3)	2 4 6	8.3 9.2 10.4	5.1 5.3 6.0	68 60 66	39 35 38	77.0 78.5 77.0	81 77 71	1.24 1.91	6.5 7.0 7.0	3366 1674 1116
3.7(5)	2 4 6	14 14.6 15.8	8.1 8.4 9.1	109 100 104	63 58 60	80.0 81.0 80.0	82 78 73	2.09 3.16	6.0 6.5 6.5	3384 1683 1122
5.5(7½)	2 4 6	21 21.8 23.6	12 12.6 13.6	159 150 154	92 87 89	82.0 82.5 82.0	79 77 72	3.09 4.65	6.0 6.0 6.0	3384 1692 1128
7.5(10)	2 4 6	28.2 29.2 31	16.3 16.8 17.9	209 191 205	121 110 118	83.0 83.5 83.0	80 78 73	4.2 6.3	6.0 6.0 6.0	3384 1692 1128

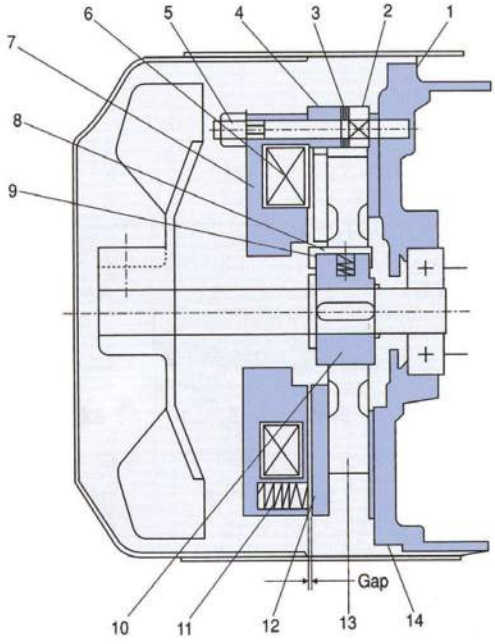
단상유도 전동기 참고 특성

DATA Single Phase Induction Motor Reference Characteristic Data

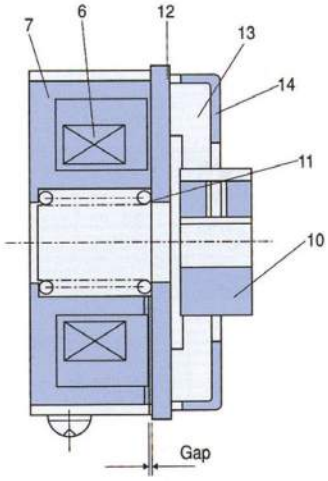
형식 Type	극수 Pole	출력 Output (Kw)	프레임 Frame No.	전압 Voltage (V)	전부하 Total Load			기동 Starting		최대토오크 Max Torque(%)	효율 efficiency (%)	컨덴서 Condenser Capa.(μF)
					Torque (Kg · m)	전류 Current (A)	R.P.M	Torque (%)	전류 Current(A)			
EOUP	4	0.1	71	110	0.056	2.8/1.4	1750	260	15.0/7.5	260	51	100
		0.2	71		0.112	5.6/2.8	1750	260	23/11.5	260	55	180
		0.25	71		0.139	6.4/3.2	1745	260	29/15	260	58	200
		0.3	71		0.167	7.2/3.6	1740	260	33/17	260	60	200
		0.4	90		0.222	8.7/4.4	1750	265	38/19	250	59	200

브레이크의 구조 | Brake Structure

SBB : 0.2~8.0



SBB : 0.1



No	명칭	Name
1	브라켓 쉴드	Bracket shield
2	스터드 볼트	Stud Bolt
3	어드져스트 라이너	Adjust Liner
4	칼라	Collar
5	육각 너트	Hex-Nut
6	코일	Coil
7	자석	Magnet
8	소음 브라켓	Sound Bracket
9	소음 스프링	Sound Spring
10	허브	Hub
11	브레이크 스프링	Brake Spring
12	아마츄어	Armature
13	내부 디스크	Inner Disk
14	브라켓	Bracket

브레이크 사양 | Brake specification

특징

a) 무여자 작동형 (스프링 크로스식)으로서 정전시에는 자동적으로 작동하는 안전 브레이크입니다.
b) 전원장치가 있어 배선이 용이합니다.
c) 간단한 구조로 브레이크 갭 조정도 용이합니다.

Features

a) Cross spring type geared motor is automatically operational event at power failure.
b) Power connector makes easy wiring
c) Simple structure makes brake gap adjustment easy

브레이크 사양

사양 Spec / 출력 Output(KW) 4p		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5
브레이크 Brake		SBB-01	SBB-02	SBB-04	SBB-08	SBB-15	SBB-22	SBB-40	SBB-55	SBB-80
토오크 Torque(kgf.m)		0.09	0.2	0.37	0.75	1.5	2.2	3.7	5.5	7.5
전원장치 Power Supplier		HD-11T	HD-12S			HD-106R			HD-110MS	
전압 Voltage		AC 220V (DC90V)								
전류 Current at 75℃(A)		0.082	0.19	0.19	0.25	0.33	0.33	0.37	0.37	0.37
용량 Capacity at 75℃(W)		7.3	17.1	17.1	22.1	29.4	29.4	33	33	33
규정 틈새 Regular Gap(mm)		0.2	0.3						0.4	
한계 틈새 Limit Cap(mm)		0.8	0.8						1.5	
허용별 열발산량 Allowable Heat Dissipation at 1500R.P.M. 50% ED(kgf.m/min)		100	500	500	600	800	800	1100	1100	1100
총사사양 E.T(kgf.m)75℃		9×10^5	2.2×10^7	2.2×10^7	3.6×10^7	4.5×10^7	4.5×10^7	6.3×10^7	8.4×10^7	8.4×10^7
개방시간 Amateur Release Time(sec)	동시절식	0.3	0.225	0.205	0.298	0.150	0.135	0.230	1.20	1.20
	교류절식	0.17	0.130	0.075	0.120	0.054	0.050	0.070	0.50	0.45
	직류절식	-	0.024	0.012	0.013	-	-	-	0.075	0.065

DC MAGNETIC DISC BRAKE("B" TYPE)

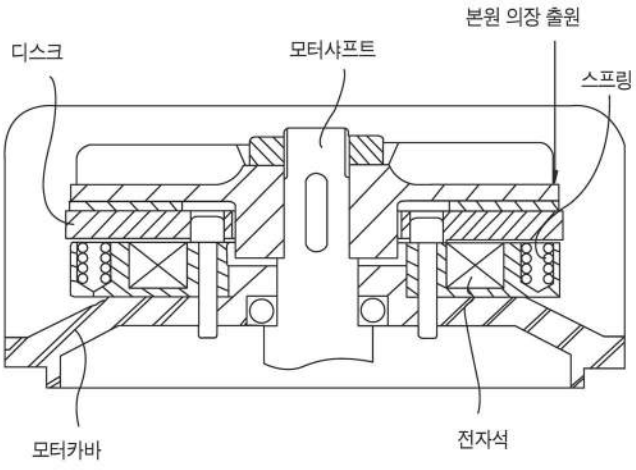
본 제품은 실용 신안과 의장등록출원이 되어있는 제품입니다.

특징

1) 스프링에 의한 제동 방식으로 정전시 정확히 제동합니다.
2) 타사 제품과 다르게 설계되었으므로 제동 토르크가 정확하고 브레이크를 분해하지 않고 간편하게 간격을 조정할 수 있습니다.
3) 기동과 제동시에 소음이 없고 사용이 편리(便利) 합니다.
4) 3.75KW 이하는 일체형으로 채택 개발하여 소음이 전혀없고 BRAKE 부착하여도 자체 FAN있어 연장되는 부분이 없습니다.
5) 11KW 이상은 기아(GEAR)로 제작되어 내치기아에 라이닝을 부착하므로 라이닝 교체가 간편합니다.
6) CONTROLS BOX(제어반) 부착

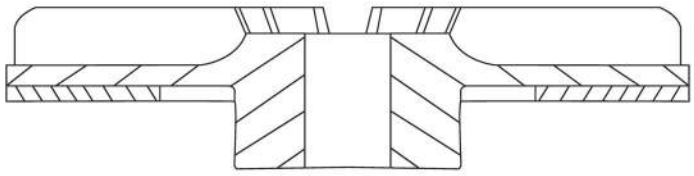
참고도 1 • 2 단면도

• 참고도1 단면도



• 참고도2 단면도

■ A-A선 단면도



GD²플라이 휠의 효과 계산법 I Calculation of Fly Wheel Inertia GD²

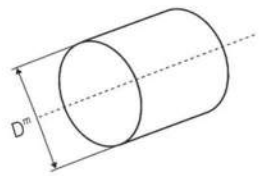
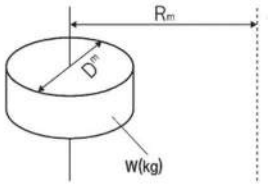
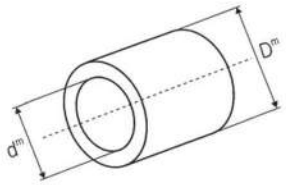
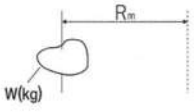
관성을 일반적인 관성모멘트 ℓ(kg · m · sec²)로 나타내고 있습니다. 그렇지만,
공업용으로 실제 사용할 경우는 GD²(kg-m²)을 사용하는 것이 편리합니다.

In general, inertia is represented by inertia momentum(kg · m · sec²), however,
GD²is more widely used for industrial purpose.

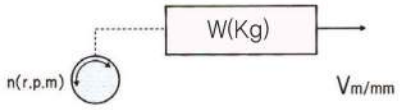
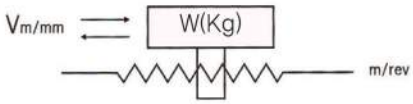
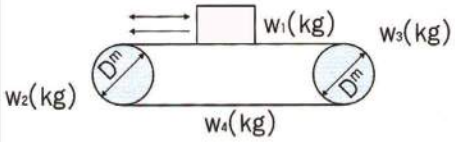
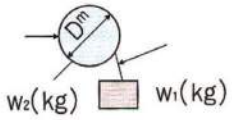
$GD^2=4g\ell$ 여기서

- G ····· 중량 Weight(Kg)
- D ····· 회전직경 Rotation Diamete (m)
- g ····· 중력가속도 Gravity(9.8 m/sec²)
- ℓ ····· 관성모멘트 Inertia Momentum(kg.m.sec²)

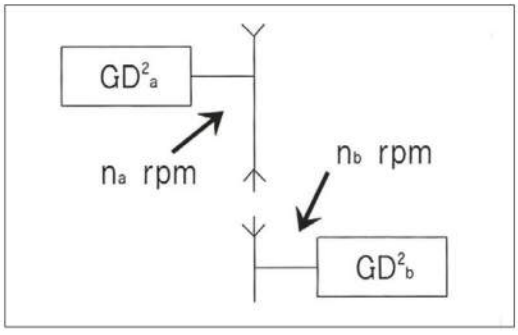
허용시동 총횟수 I Allowable Starting

회전중심이 무게중심과 일치할 때 Rotation Center = Gravity Center		회전중심이 무게중심과 일치하지 않을 때 Rotation Center ≠ Gravity Center	
 W(Kg)	$GD^2=\frac{1}{2}WD^2$ (kg · m²)		$GD^2=\frac{1}{2}WD^2+4WR^2$ (kg · m²)
 W(Kg)	$GD^2=\frac{1}{2}W(D^2+d^2)$ (kg · m²)		$GD^2=4WR^2$ (kg · m²)

직선운동을 하는 경우의 GD^2 | Inertia of Straightly Moving Object

일반적인 경우 General Case		$GD^2=W\cdot\left(\frac{V}{\pi n}\right)^2$ $(kg\cdot m^2)$
수평직선운동의 경우 Horizontal Straight Movement (리드스크류에 의한 물체의 이동) (Moved by Lead Screw)		$GD^2= W\cdot\left(\frac{P}{\pi^2}\right)^2$ $= W\cdot\left(\frac{V}{\pi n}\right)^2$ $(kg\cdot m^2)$
수평직선운동의 경우 Horizontal Straight Movement (콘베어 등) (Conveyor)		$GD^2=W_1D^2+\frac{1}{2}W_2D^2$ $+\frac{1}{2}W_3D^2+\frac{1}{2}W_4D^2$ $(kg\cdot m^2)$
수직운동의 경우 Vertical Straight Movement (크레인, 원치 등)		$GD^2=W_1D^2+\frac{1}{2}W_2D^2$ $(kg\cdot m^2)$

회전비가 있는 경우의 GD^2 | Inertia with Rotation Ratio



부하측의 GD^2_b를 n_a축에 환산할 경우
Conversion of load shaft inertia to n_a shaft

$GD^2=GD^2_a(n_b/n_a)^2GD^2_b$

설치 및 사용상 주의사항 I Cautions During Installation and Use

1. 설치전의 점검

기어드모터는 당공장에서 철저한 검사 및 점검한 후 납품합니다. 그러나, 운반 도중 진동이나 그 외 충격을 받을 경우가 있으므로 설치전에 반드시 다음 사항을 점검 하여야 합니다.
(1) 누유되는 곳은 없는가 (2) 파손된 부분는 없는가 (3) 명판은 주문 사항과 일치하는가

2. 상대기계와 연결 방식

(1) 직결방식
입출력축 모두 직결방식을 사용하는 것이 가장 좋으며 커플링은 가급적 가요성 커플링을 사용합시다.
(2) 기어, 체인 스프로켓 사용시
·입출력축에 체인, 스프로켓, 풀리 등을 취부하는 경우 아래의 공식에 의해서 스프로켓 및 기어의 직경을
체인스프로켓 기어의 피치원 직경 ≥ 3 x 입출력축의 직경
·입출력축의 선단에 하중이 작용하면 축에 무리한 힘이 걸려서 축이 파괴되거나 베어링이 손상될 우려가
있으므로 완전히 안쪽(카바쪽)으로 조립한 후 하십시요.

3. 가동전 무부하 상태로 6시간 시운전 후 가동 사용하십시요.

4. 윤활유의 선정 및 보존

(1) 주유 및 유량
윤활유는 반드시 추천 윤활유를 사용하고 완전 정지상태에서 유면계의 중심까지 오게 하십시요.
윤활유가 너무 많거나 적으면 기어와 베어링에 악영향을 미칠 우려가 있습니다.
(2) 윤활유의 교환
처음 가동시에는 기어의 초기 마모분이 기름에 떨어지므로 운전개시 후 500시간 정도 사용후 새로운 윤활유로 교환하여 사용하고 그 후는 매 2000시간마다 교환하여 주십시요.
윤활유 교환시 내부를 깨끗하게 세척하여 마모분을 제거하십시요.

1. Before Installation

Products get through inspection prior to shipment, however, vibration during delivery or other improper treatment may cause problem. Please make sure of following check point prior to installation.
(1) Oil Leakage (2) Cracks (3) Order Specification

2. Coupling Method with Machine

(1) Direct Coupling : Direct coupling is the best for both input and output shaft coupling.
(2) Use with Gear, Sprocket, or Chain
- When gear, sprocket or chain is connected with input or output shaft, please determine the diameter of sprocket or gear using following equation.
- If load is given to shaft end, excessive force harms to bearing and other parts. Make sure of coupling machine to deep side of shaft.

3. No Load operation

After 6 hour no load run, actual load running is recommended.

4. Grease

(1) Charging and Quantity : One should use only recommended grease, and charge grease up to the center of oil gauge at fully stoped mode. Both more and less grease may cause problems to gear and bearing.
(2) Grease Change : Fot the first 500 hour run, there are excessive particles in grease. Hereafter, grease can be replaced at every 2,000 hours. Rinse inside to remove paticles during grease change.

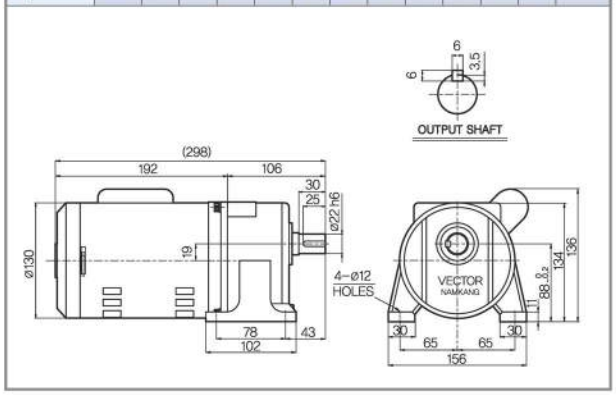
MEMO

단상 외형도

0.2kw 1/4HP, 1-Phase / 단상

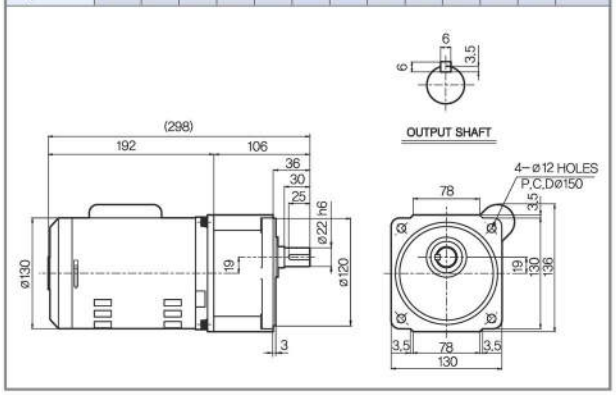
NH 88 / 0.2 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	10



NV 88 / 0.2 Kw

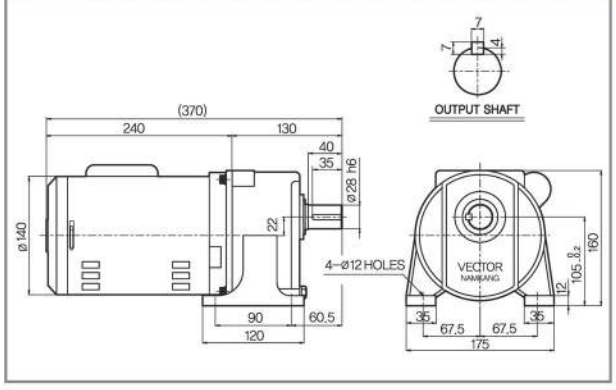
Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	10



0.4kw 1/2HP, 1-Phase / 단상

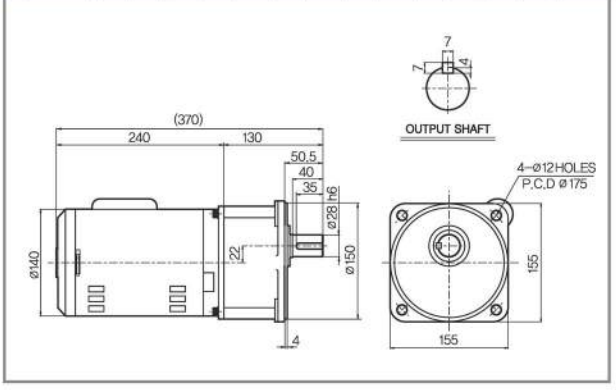
NH 105 / 0.4 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	15	16



NV 105 / 0.4 Kw

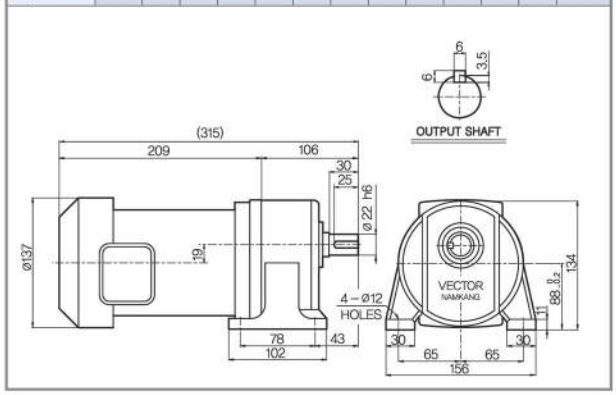
Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	15	16



0.2kw 1/4HP, 3-Phase / 삼상

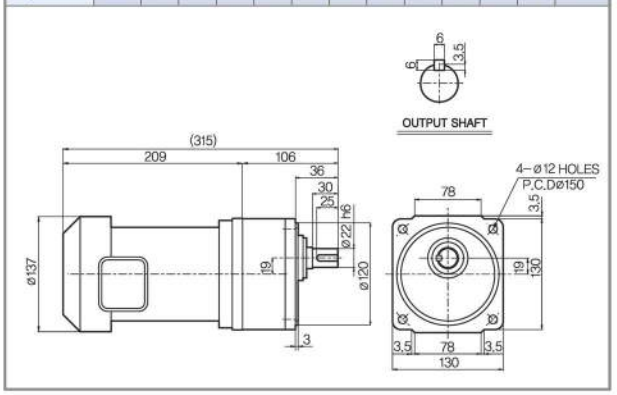
NH 88 / 0.2 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	9



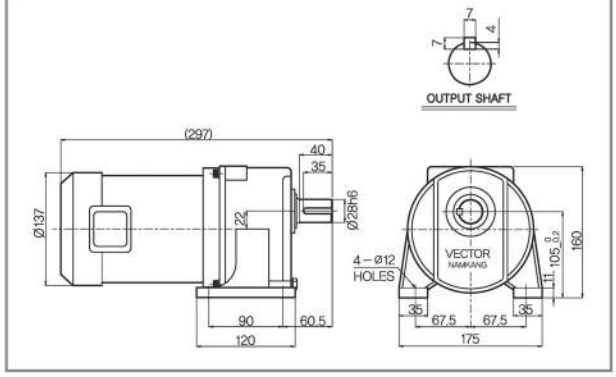
NV 88 / 0.2 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	9



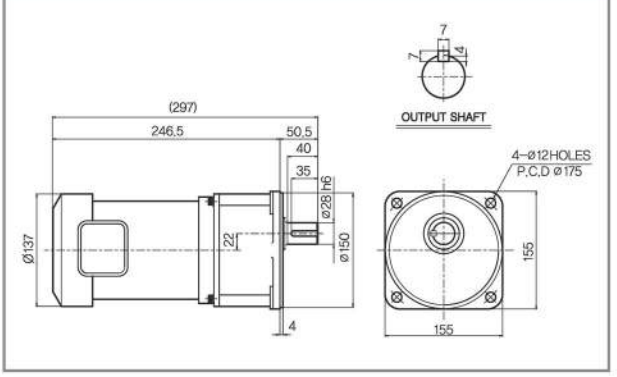
NH 105 / 0.2 Kw

Gear Ratio	1/150	1/200											Weight (kg)
Output R.P.M.	11	8											12



NV 105 / 0.2 Kw

Gear Ratio	1/150	1/200											Weight (kg)
Output R.P.M.	11	8											12



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21 century

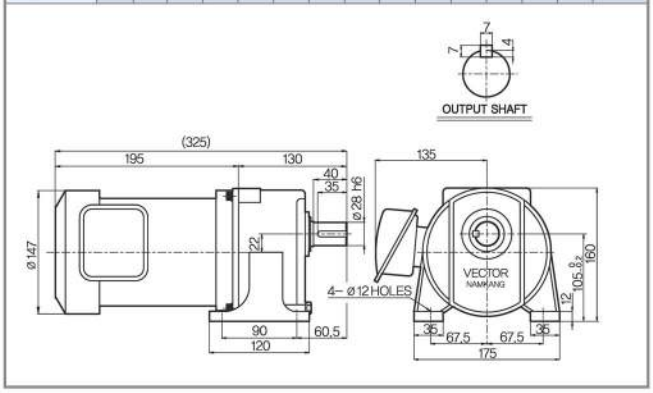


삼상 외형도

0.4kw 1/2HP, 3-Phase / 삼상

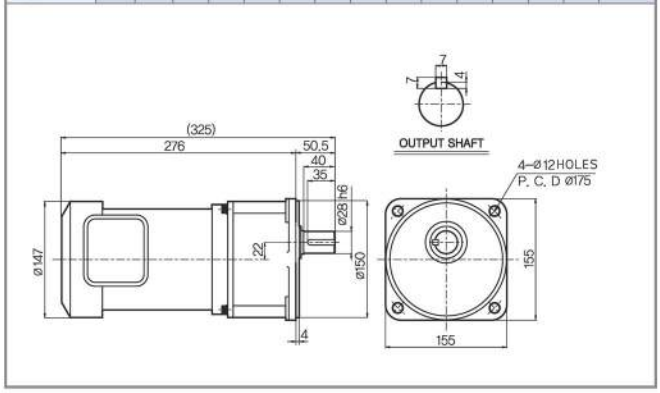
NH 105 / 0.4 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58	44	35	29	23	19	18	15	12



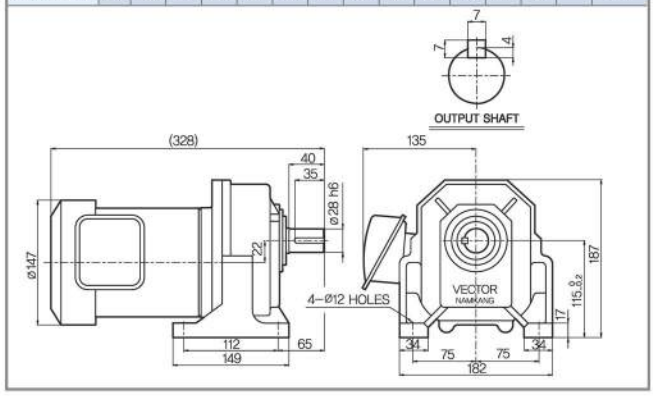
NV 105 / 0.4 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58	44	35	29	23	19	18	15	12



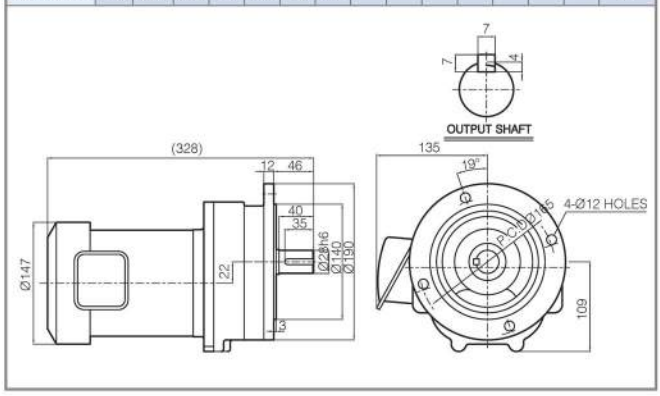
NH 115 / 0.4 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120		Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	15		21



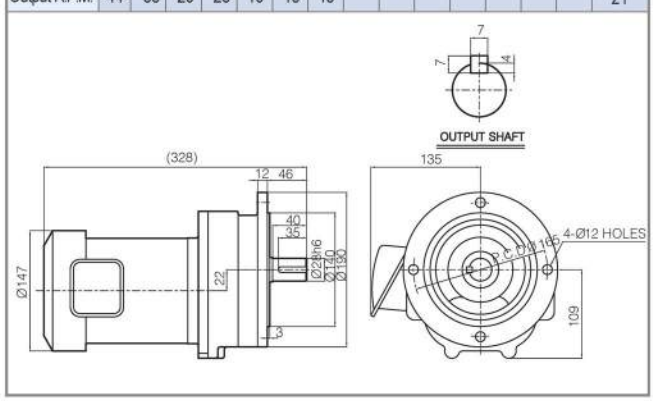
NV 115 / 0.4 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30								Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58								21



NV 115 / 0.4 Kw

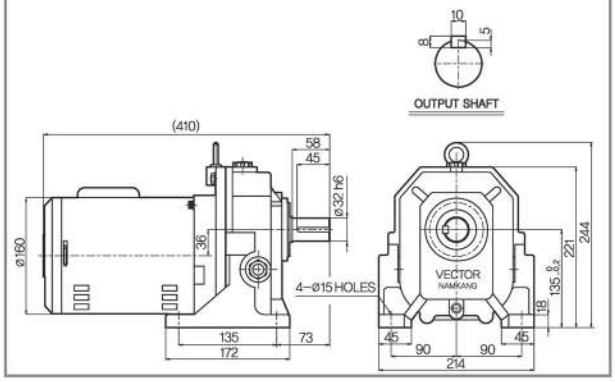
Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120								Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15								21



0.75kw 1HP, 1-Phase / 단상

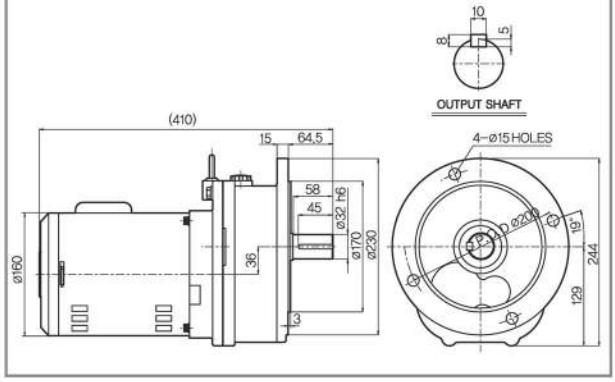
NH 135 / 0.75 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	350	250	175	117	88	58						29



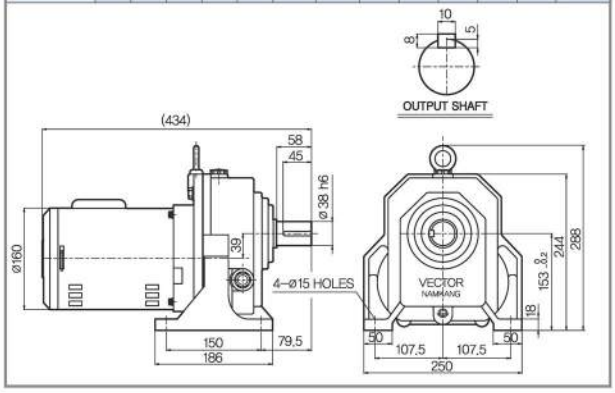
NV 135 / 0.75 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	350	250	175	117	88	58						29



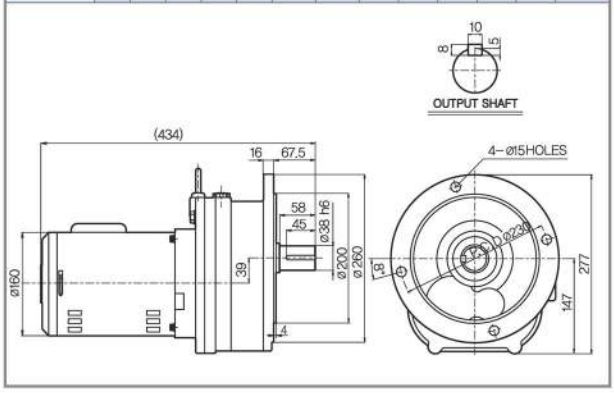
NH 153 / 0.75Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15					40



NV 153 / 0.75Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15					40



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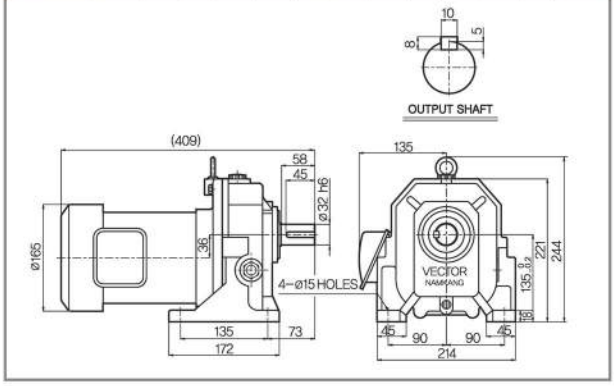
삼상 외형도

0.75kw 1HP, 3-Phase / 삼상

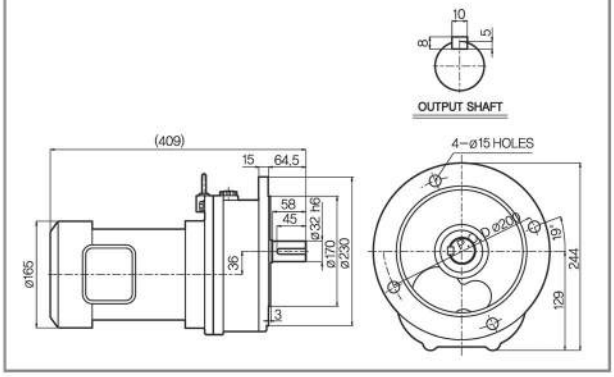
NH 135 / 0.75 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						28



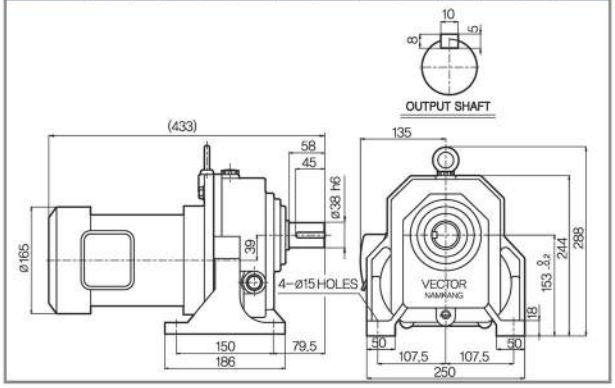
NV 135 / 0.75 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						28



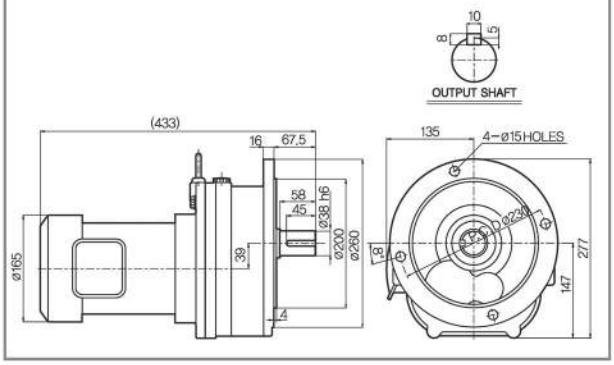
NH 153 / 0.75 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						36



NV 153 / 0.75 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						36



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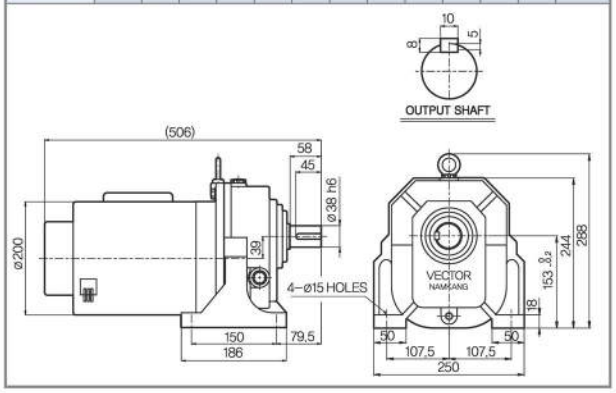
21 century

1.5kw 2HP, 1-Phase / 단상

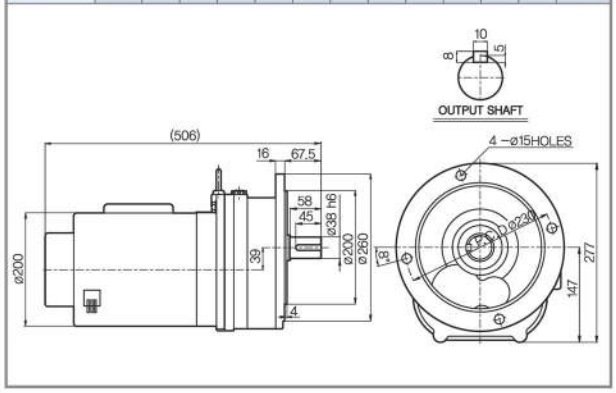
NH 153 / 1.5 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	48



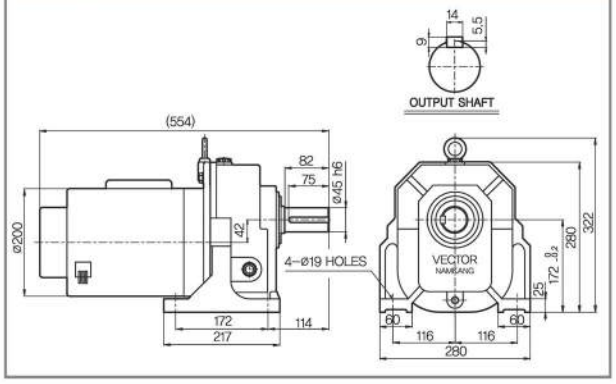
NV 153 / 1.5 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	48



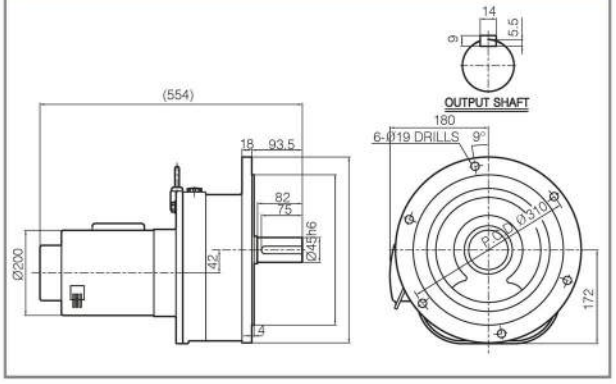
NH 172 / 1.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15	63



NV 172 / 1.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15	63



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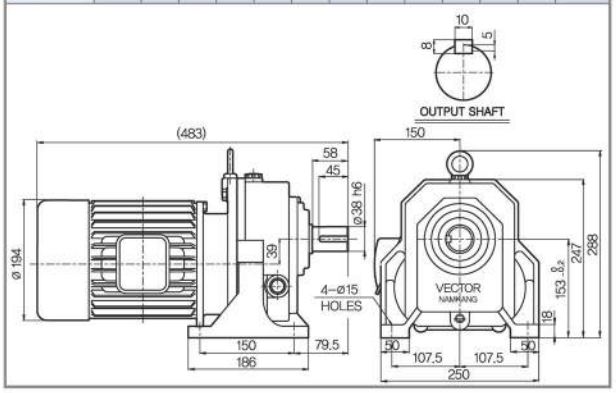
삼상 외형도

1.5kw 2HP, 3-Phase / 삼상

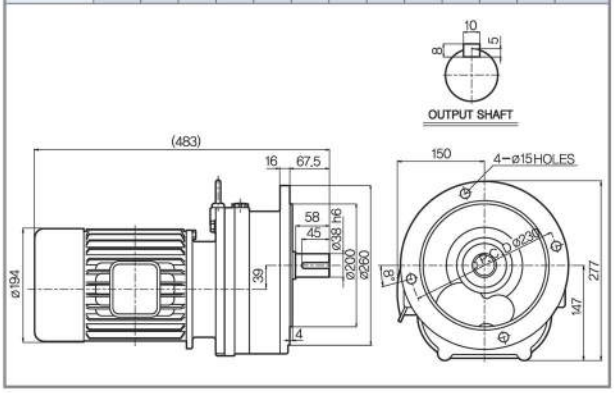
NH 153 / 1.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						49



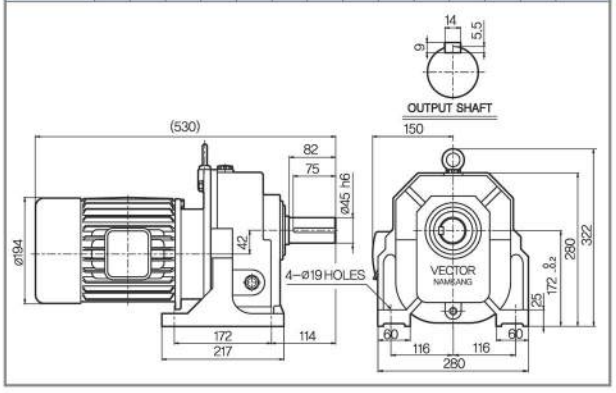
NV 153 / 1.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						49



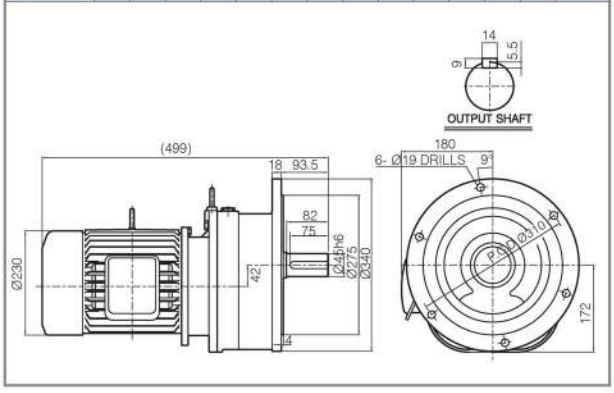
NH 172 / 1.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						62



NV 172 / 1.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						62



VECTOR

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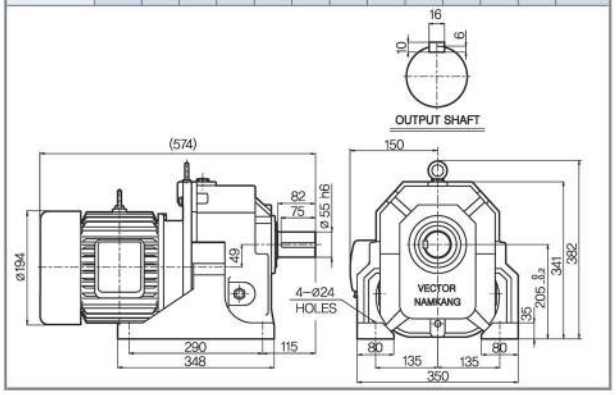
21 century

1.5kw 2HP, 3-Phase / 삼상

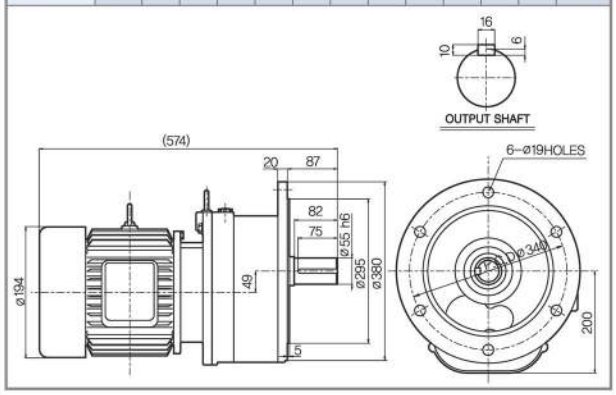
NH 205 / 1.5 Kw

Gear Ratio	1/90	Weight (kg)
Output R.P.M.	19	96



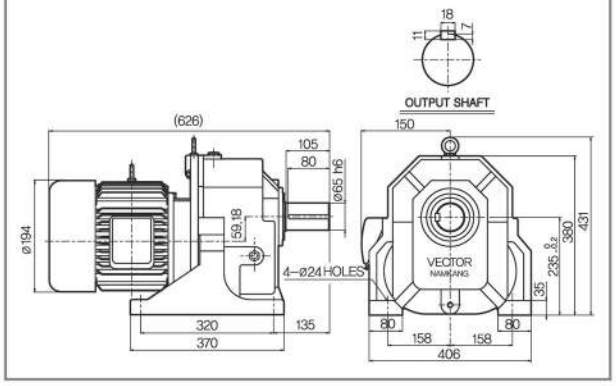
NV 205 / 1.5 Kw

Gear Ratio	1/90	Weight (kg)
Output R.P.M.	19	96



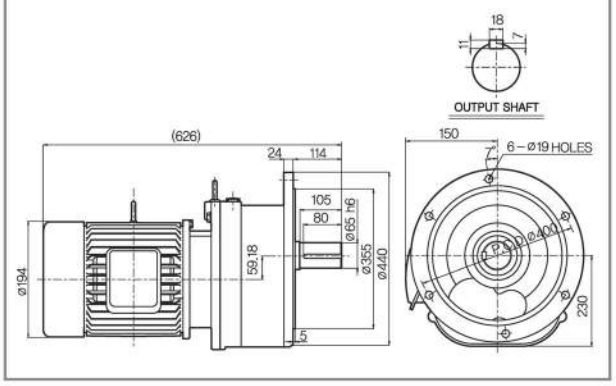
NH 235 / 1.5 Kw

Gear Ratio	1/100	1/120	Weight (kg)
Output R.P.M.	18	15	130



NV 235 / 1.5 Kw

Gear Ratio	1/100	1/120	Weight (kg)
Output R.P.M.	18	15	130



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21 century

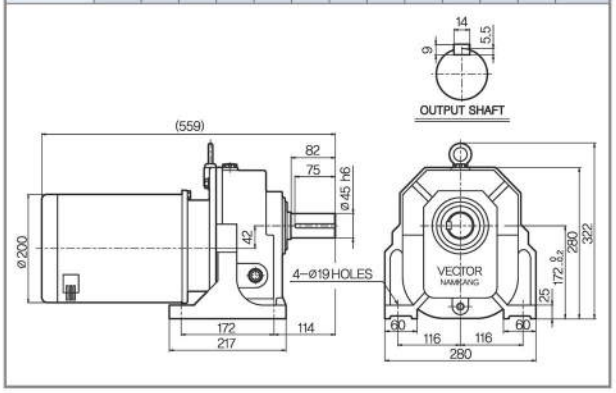


단상 외형도

2.2kw 3HP, 1-Phase / 단상

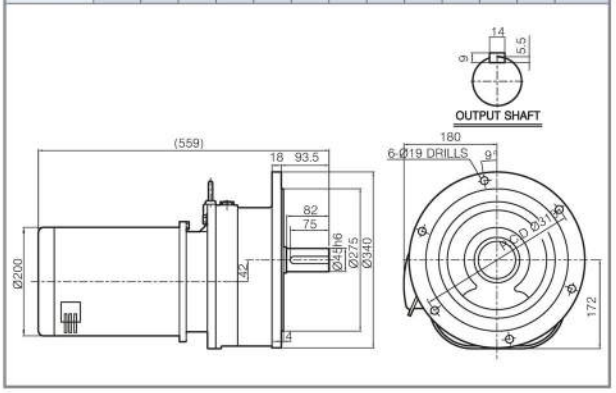
NH 172 / 2.2 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30							Weight (kg)
Output R.P.M.	350	250	175	117	88	58							68



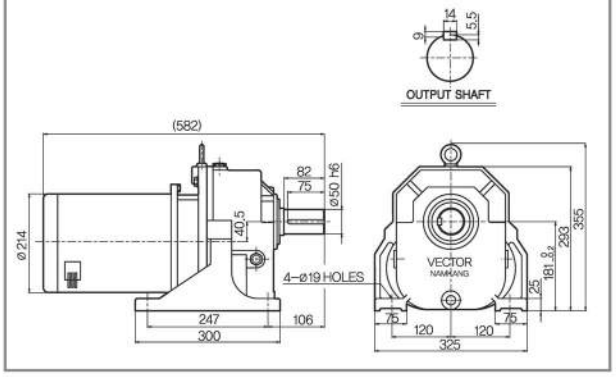
NV 172 / 2.2 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75		Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58	44	35	29	23		68



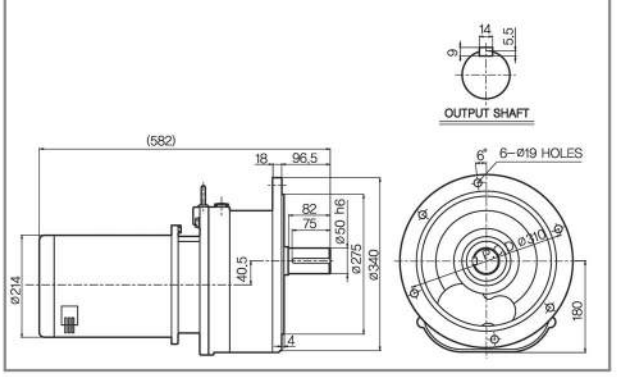
NH 181 / 2.2 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						86



NV 181/ 2.2 Kw

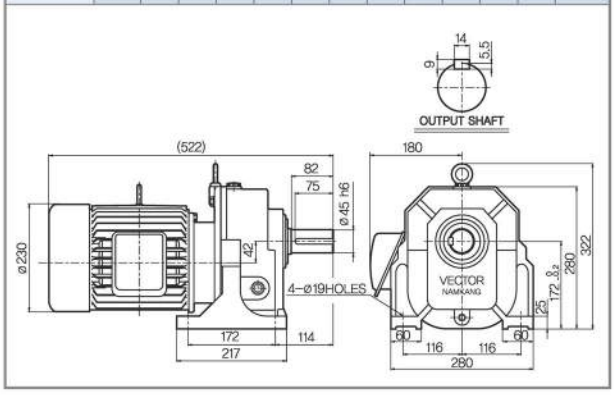
Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						86



2.2kw 3HP, 3-Phase / 삼상

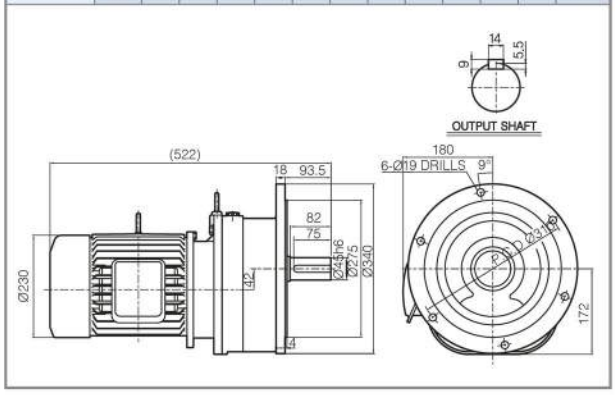
NH 172 / 2.2 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						68



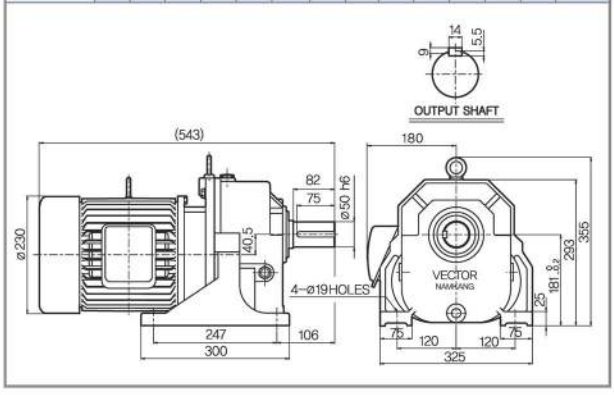
NV 172 / 2.2 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						68



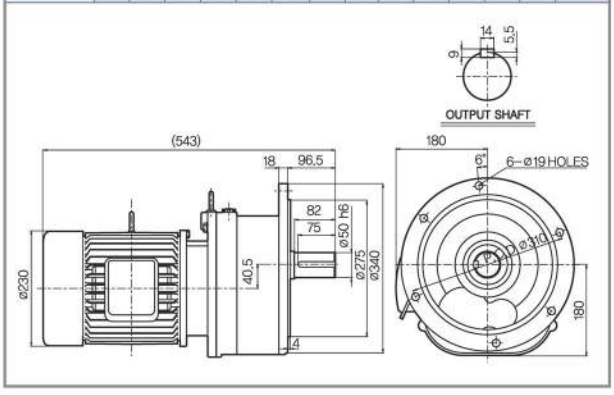
NH 181 / 2.2 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						86



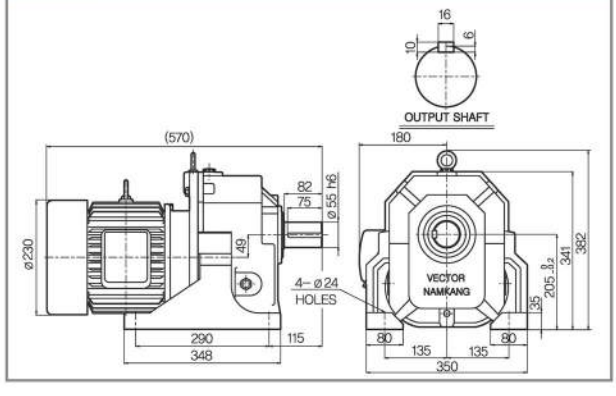
NV 181 / 2.2 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						86



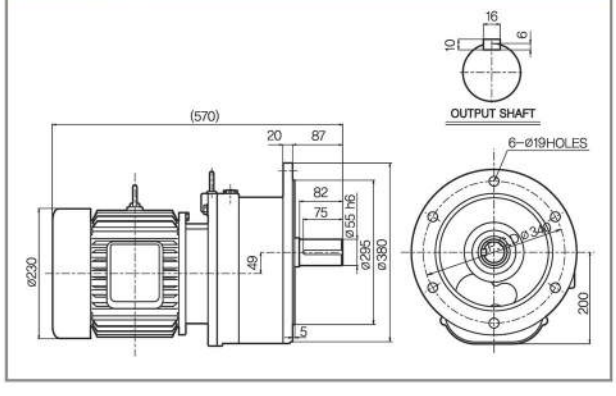
NH205 / 2.2 Kw

Gear Ratio	1/50	1/60	1/75	1/90	1/100	1/120							Weight (kg)
Output R.P.M.	35	29	23	19	18	15							110



NV 205 / 2.2 Kw

Gear Ratio	1/50	1/60	1/75	1/90	1/100	1/120							Weight (kg)
Output R.P.M.	35	29	23	19	18	15							110

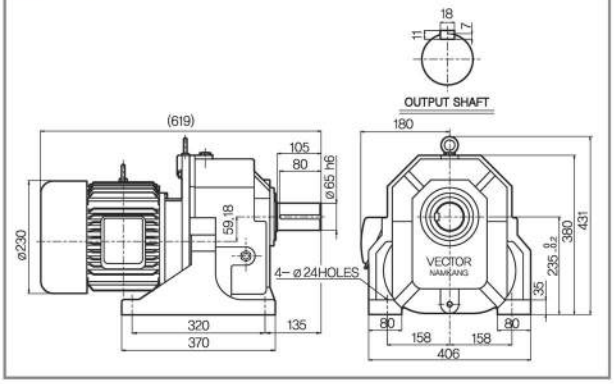


삼상 외형도

2.2kw 3HP, 3-Phase / 삼상

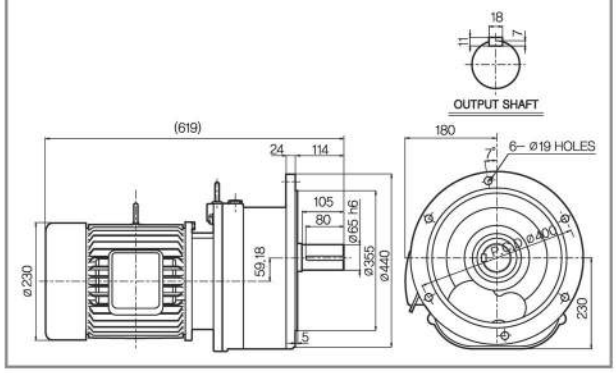
NH 235 / 2.2 Kw

Gear Ratio	1/60	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	29	19	18	15	140



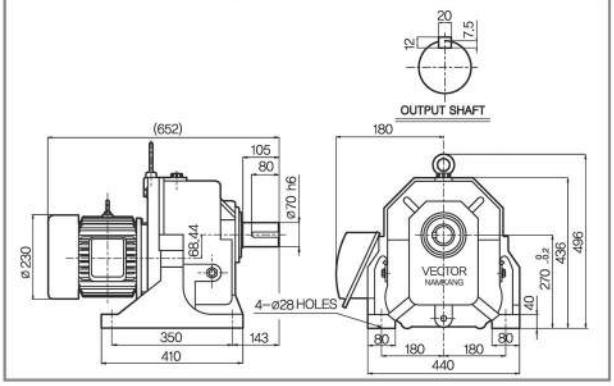
NV 235 / 2.2 Kw

Gear Ratio	1/60	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	29	19	18	15	140



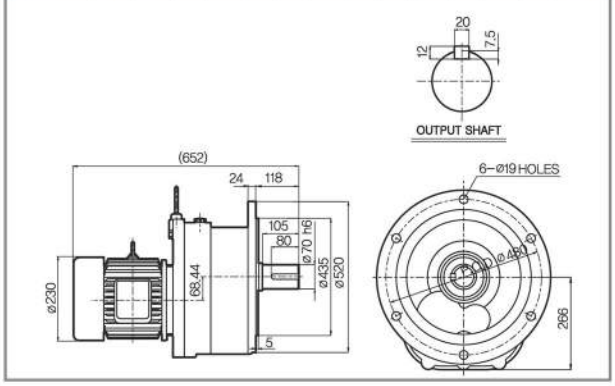
NH 270 / 2.2 Kw

Gear Ratio	1/100	1/120	1/150	Weight (kg)
Output R.P.M.	18	15	11	180



NV 270 / 2.2 Kw

Gear Ratio	1/100	1/120	1/150	Weight (kg)
Output R.P.M.	18	15	11	180



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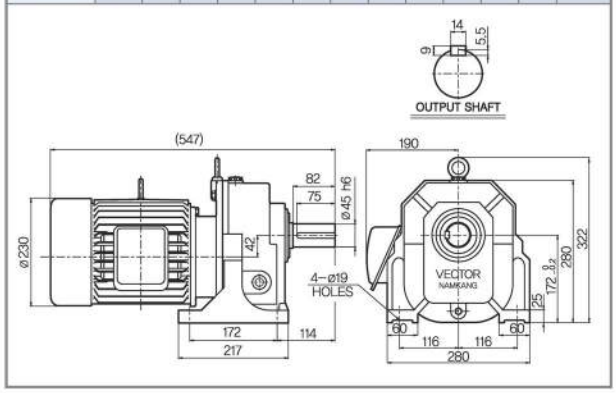
3.7kw 5HP, 3-Phase / 삼상

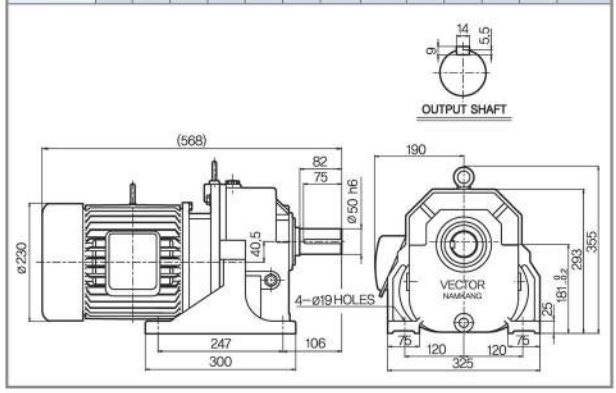
NH 172 / 3.7 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						81



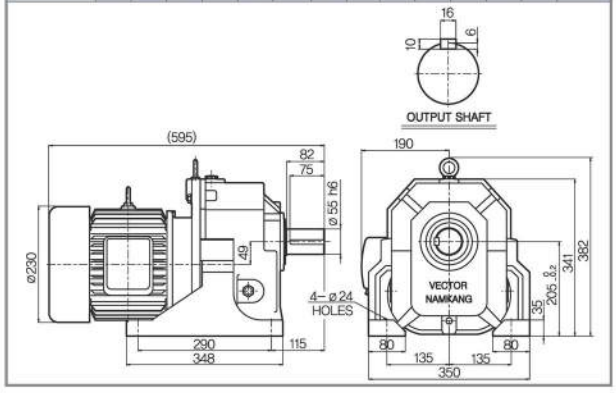
NH 181 / 3.7 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	58	44	35	29	23	19	18	15					99



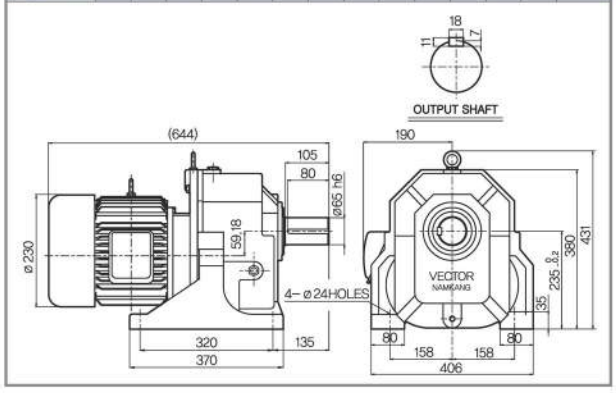
NH 205 / 3.7 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						119



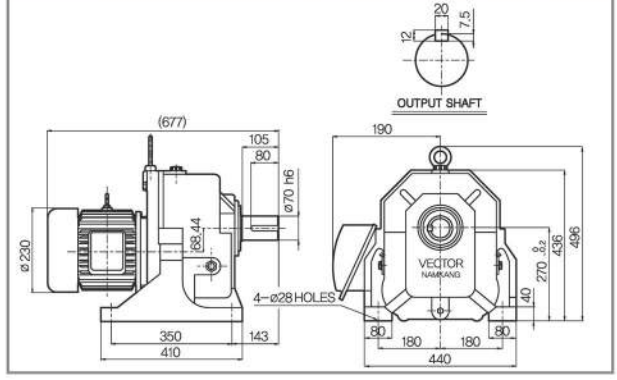
NH 235 / 3.7 Kw

Gear Ratio	1/60	1/90	1/100	1/120									Weight (kg)
Output R.P.M.	29	19	18	15									151



NH 270 / 3.7 Kw

Gear Ratio	1/75	1/90	1/100	1/120	1/150								Weight (kg)
Output R.P.M.	23	19	18	15	11								185

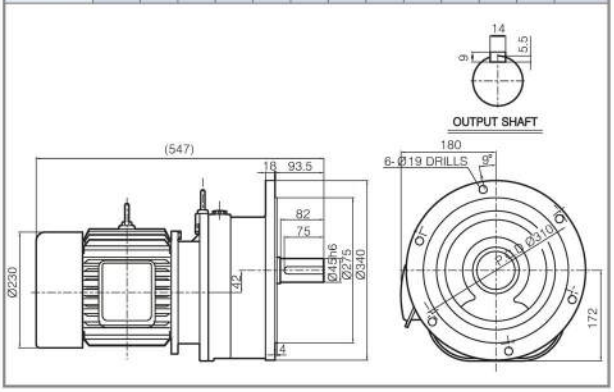


삼상 외형도

3.7kw 5HP, 3-Phase / 삼상

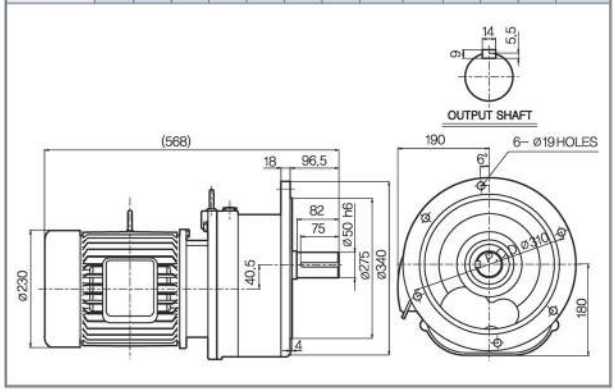
NV 172 / 3.7 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	583	350	250	175	117	88	58						81



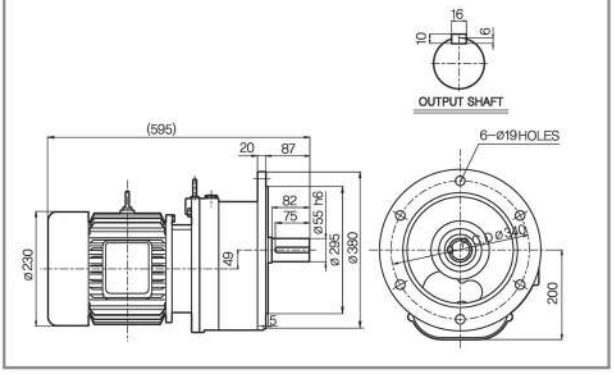
NV 181 / 3.7 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	58	44	35	29	23	19	18	15					99



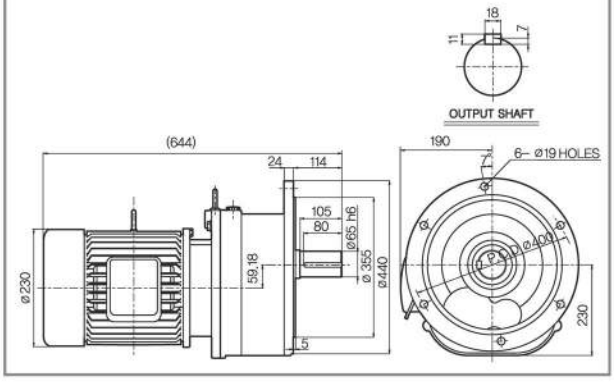
NV 205 / 3.7 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						119



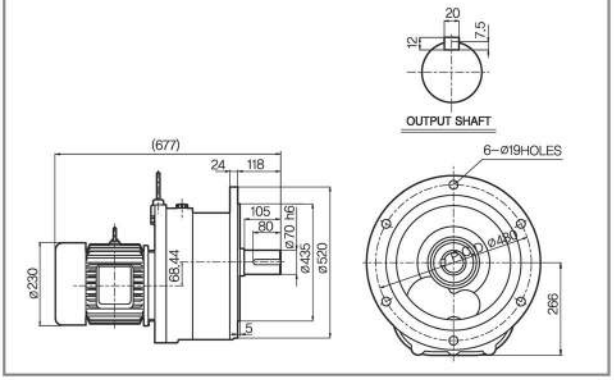
NV 235 / 3.7 Kw

Gear Ratio	1/60	1/90	1/100	1/120									Weight (kg)
Output R.P.M.	29	19	18	15									151



NV 270 / 3.7 Kw

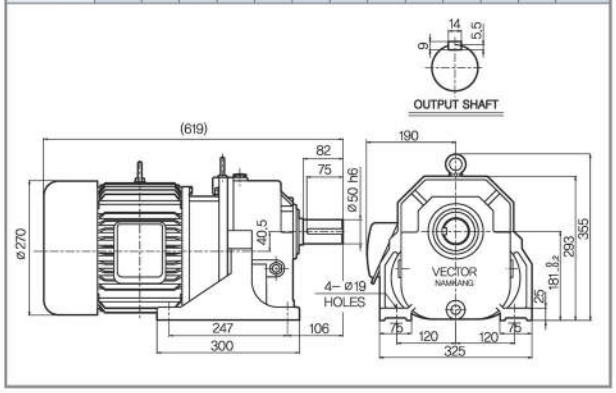
Gear Ratio	1/75	1/90	1/100	1/120	1/150								Weight (kg)
Output R.P.M.	23	19	18	15	11								185



5.5kw 7.5HP, 3-Phase / 삼상

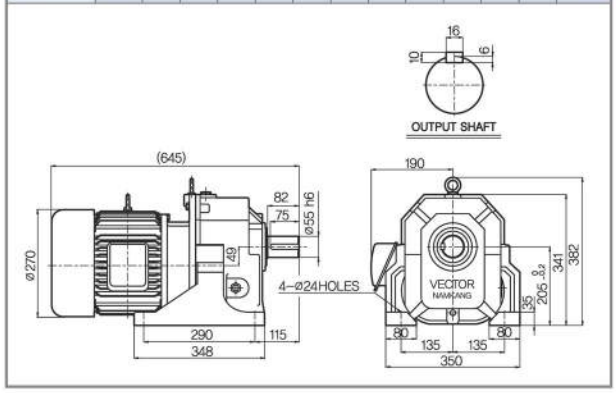
NH 181 / 5.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	583	350	250	175	117	88	105



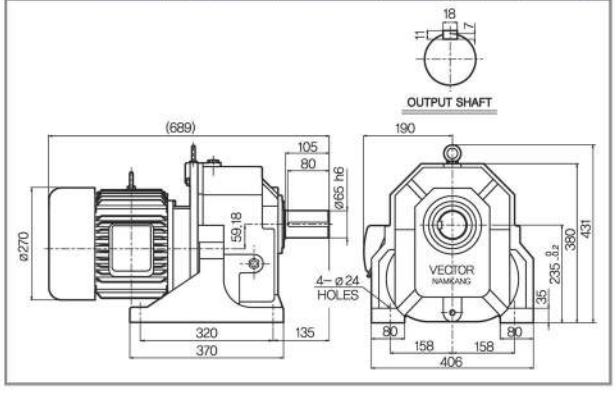
NH205 / 5.5 Kw

Gear Ratio	1/30	Weight (kg)
Output R.P.M.	58	134



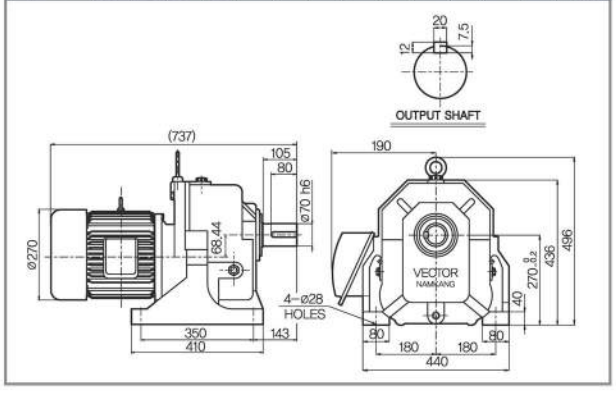
NH 235 / 5.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	Weight (kg)
Output R.P.M.	44	35	29	23	151



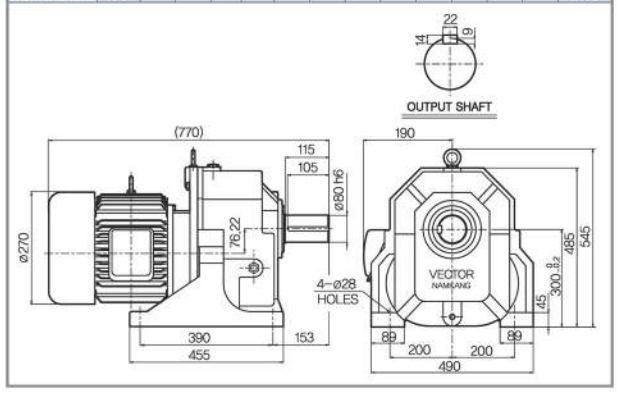
NH 270 / 5.5 Kw

Gear Ratio	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	29	23	19	18	188



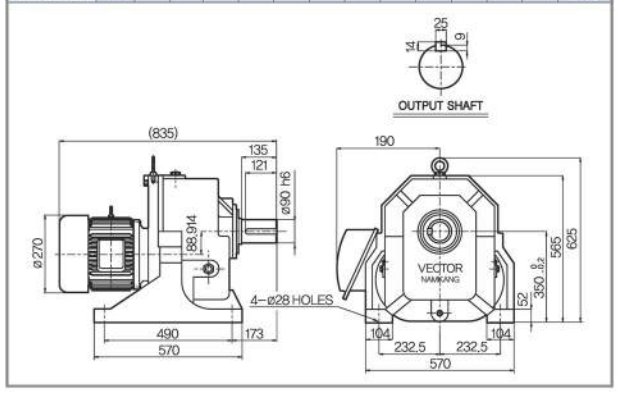
NH 300 / 5.5 Kw

Gear Ratio	1/120	Weight (kg)
Output R.P.M.	15	355



NH 350 / 5.5 Kw

Gear Ratio	1/150	Weight (kg)
Output R.P.M.	12	435

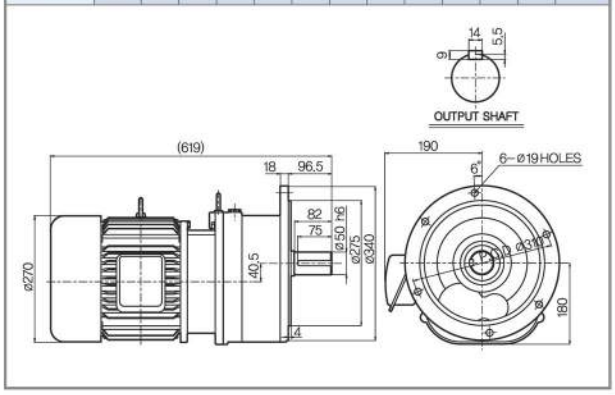


삼상 외형도

5.5kw 7.5HP, 3-Phase / 삼상

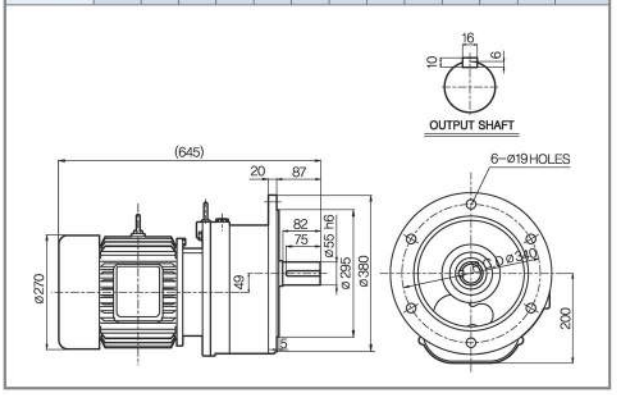
NV 181 / 5.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	583	350	250	175	117	88	105



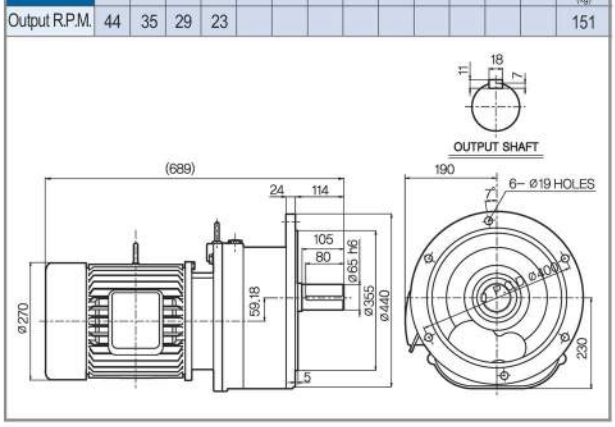
NV 205 / 5.5 Kw

Gear Ratio	1/30	Weight (kg)
Output R.P.M.	58	134



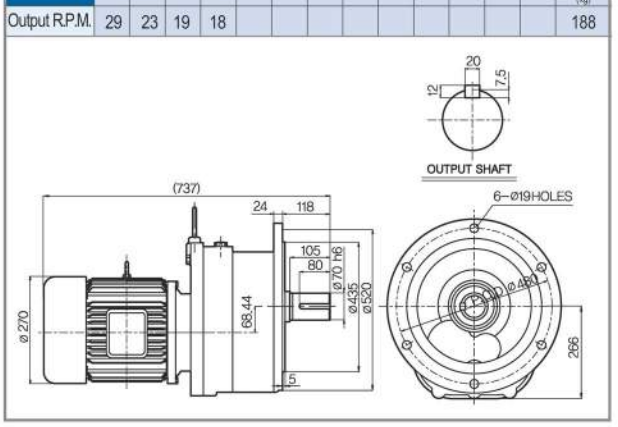
NV 235 / 5.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	Weight (kg)
Output R.P.M.	44	35	29	23	151



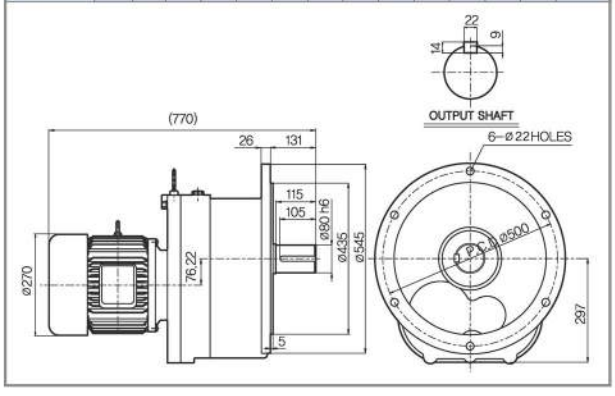
NV 270 / 5.5 Kw

Gear Ratio	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	29	23	19	18	188



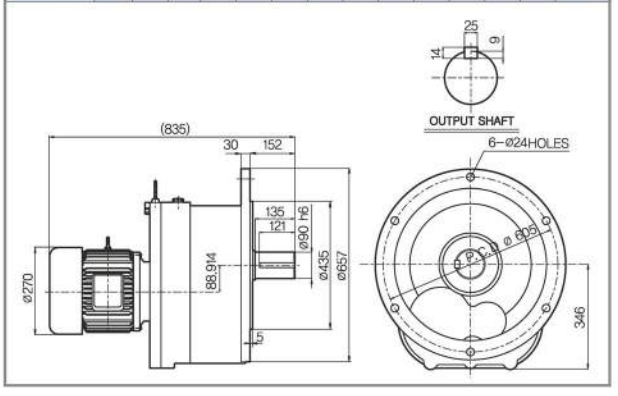
NV 300 / 5.5 Kw

Gear Ratio	1/120	Weight (kg)
Output R.P.M.	15	355



NV 350 / 5.5 Kw

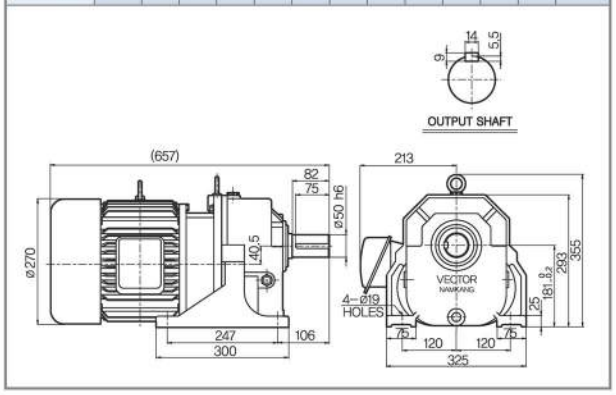
Gear Ratio	1/150	Weight (kg)
Output R.P.M.	12	435



7.5kw 10HP, 3-Phase / 삼상

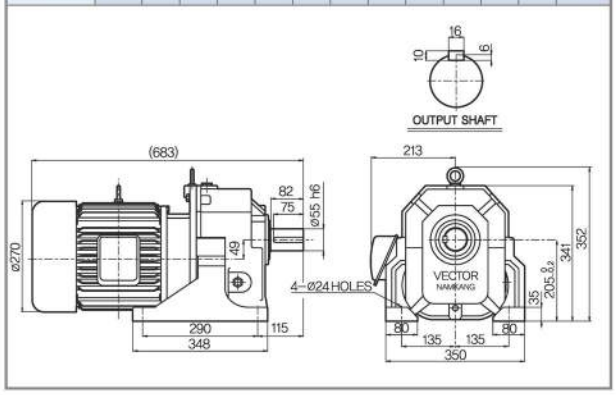
NH 181 / 7.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	583	350	250	175	117	88	131



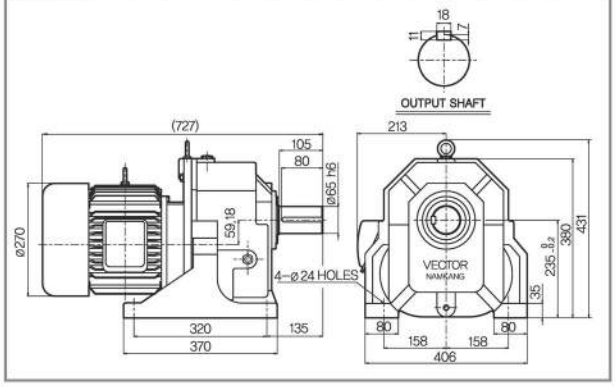
NH 205 / 7.5 Kw

Gear Ratio	1/10	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	175	117	88	58	148



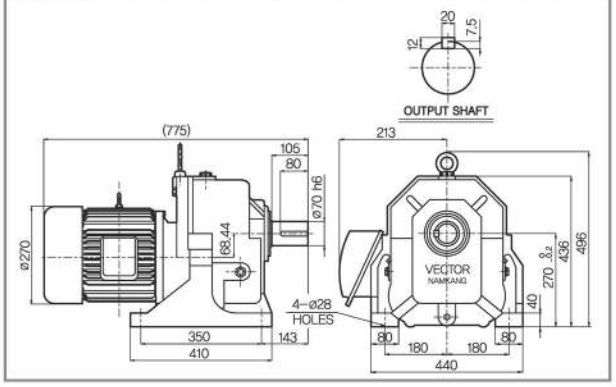
NH 235 / 7.5 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	Weight (kg)
Output R.P.M.	58	44	35	29	23	163



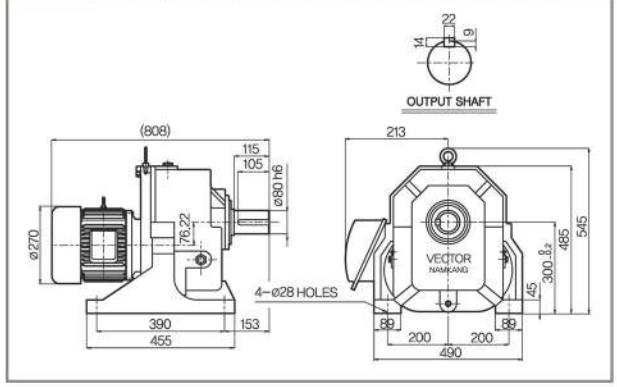
NH 270 / 7.5 Kw

Gear Ratio	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	44	35	29	200



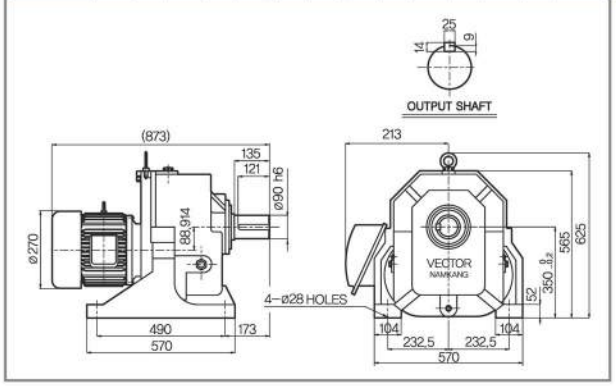
NH 300 / 7.5 Kw

Gear Ratio	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	23	19	18	15	355



NH 350 / 7.5 Kw

Gear Ratio	1/150	Weight (kg)
Output R.P.M.	12	435

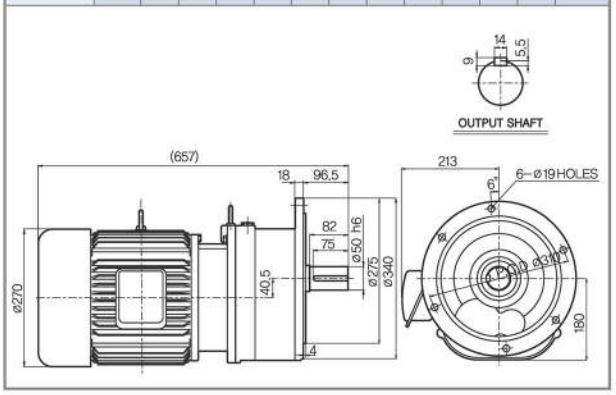


삼상 외형도

7.5kw 10HP, 3-Phase / 삼상

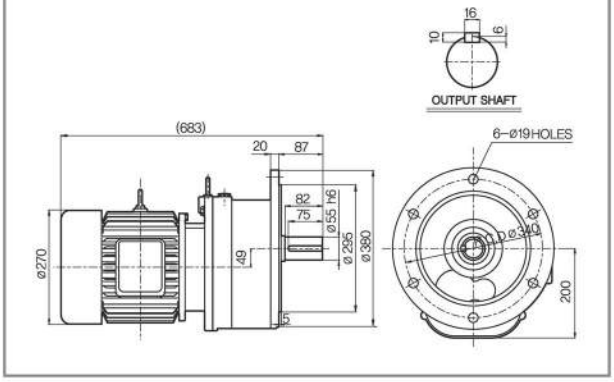
NV 181 / 7.5 Kw

Gear Ratio	1/3	1/5	1/7	1/10	1/15	1/20							Weight (kg)
Output R.P.M.	583	350	250	175	117	88							131



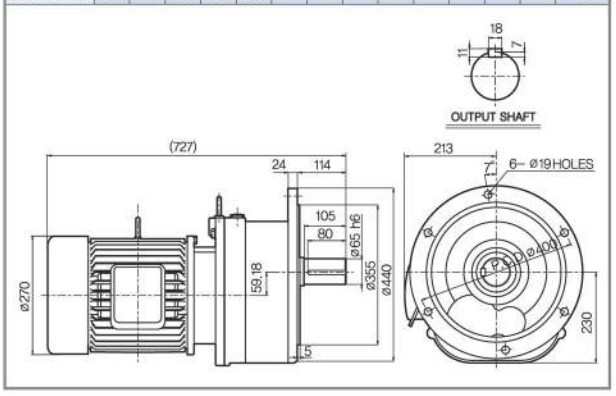
NV 205 / 7.5 Kw

Gear Ratio	1/10	1/15	1/20	1/30									Weight (kg)
Output R.P.M.	175	117	88	58									148



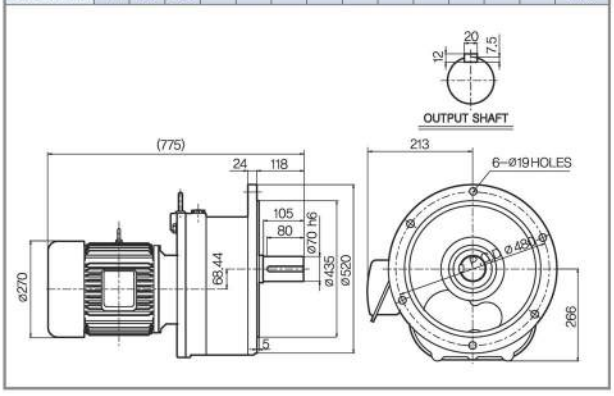
NV 235 / 7.5 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75								Weight (kg)
Output R.P.M.	58	44	35	29	23								163



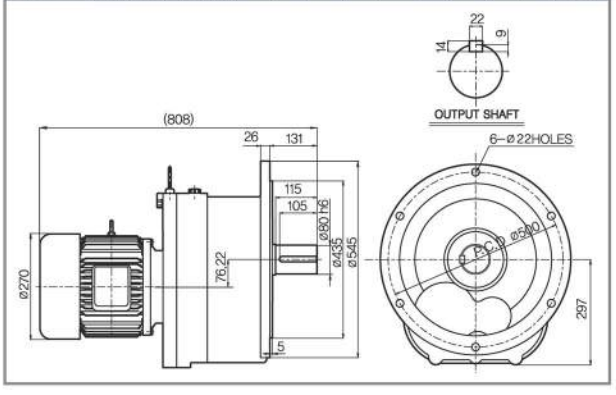
NV 270 /7.5 Kw

Gear Ratio	1/40	1/50	1/60										Weight (kg)
Output R.P.M.	44	35	29										200



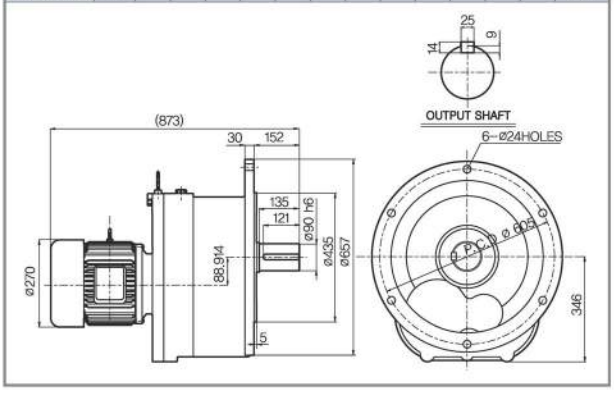
NV300 / 7.5 Kw

Gear Ratio	1/75	1/90	1/100	1/120									Weight (kg)
Output R.P.M.	23	19	18	15									355



NV 350/ 7.5 Kw

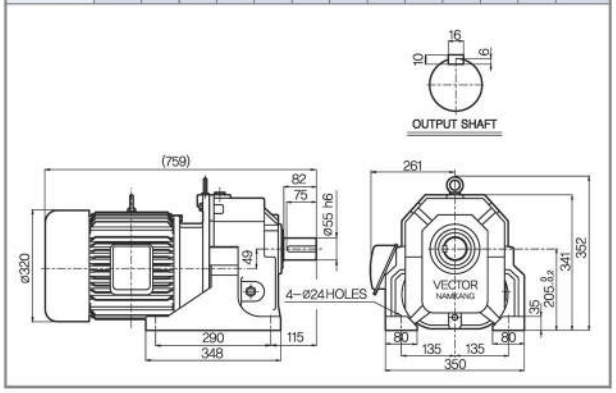
Gear Ratio	1/150												Weight (kg)
Output R.P.M.	12												435



11kw 15HP, 3-Phase / 삼상

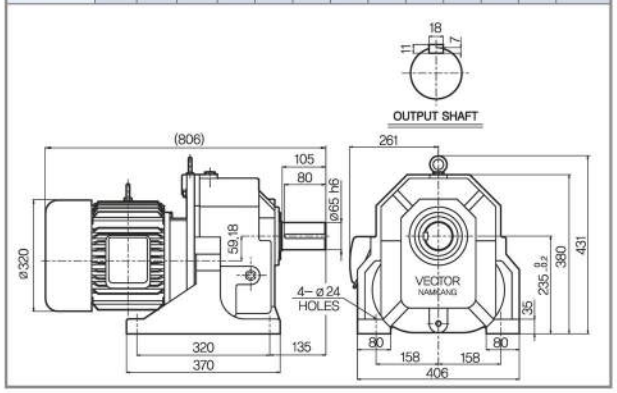
NH 205 / 11 Kw

Gear Ratio	1/5	1/7	1/10	Weight (kg)
Output R.P.M.	350	250	175	181



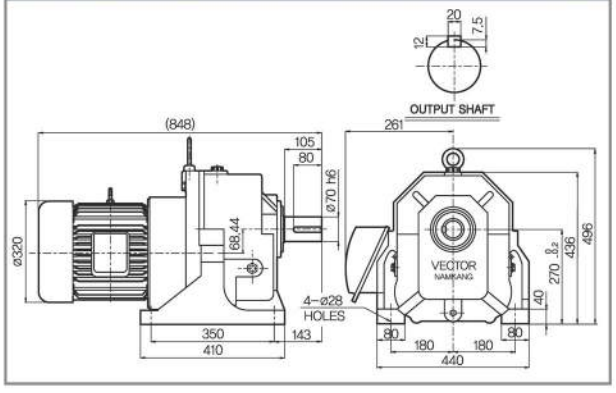
NH 235 / 11 Kw

Gear Ratio	1/3	1/15	1/20	Weight (kg)
Output R.P.M.	583	117	88	198



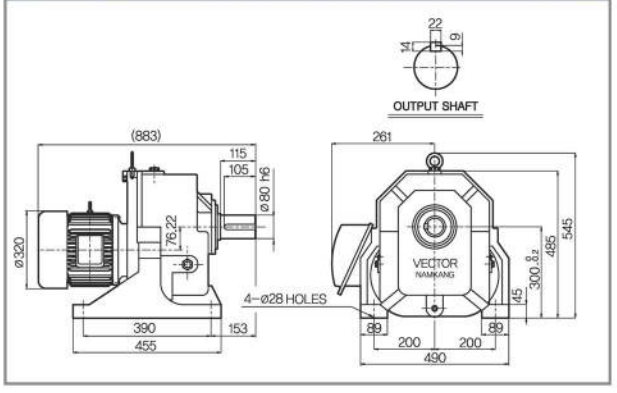
NH 270 / 11 Kw

Gear Ratio	1/30	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	58	44	35	29	220



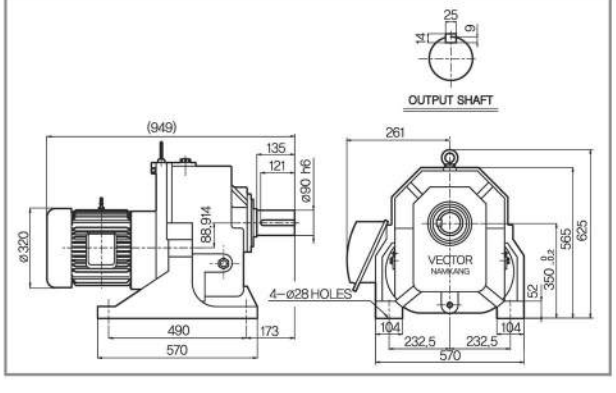
NH 300 / 11 Kw

Gear Ratio	1/75	1/80	1/90	Weight (kg)
Output R.P.M.	23	22	19	414



NH 350 / 11 Kw

Gear Ratio	1/75	1/80	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	23	22	19	18	15	490

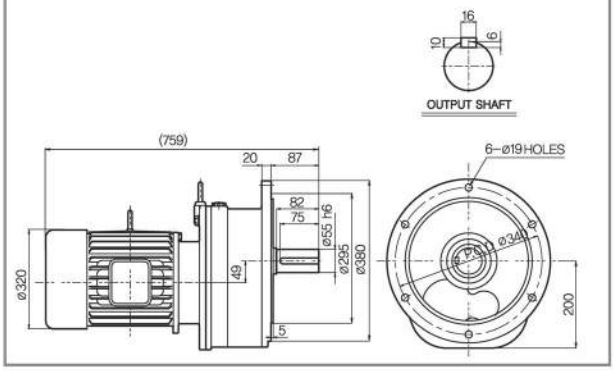


삼상 외형도

11kw 15HP, 3-Phase / 삼상

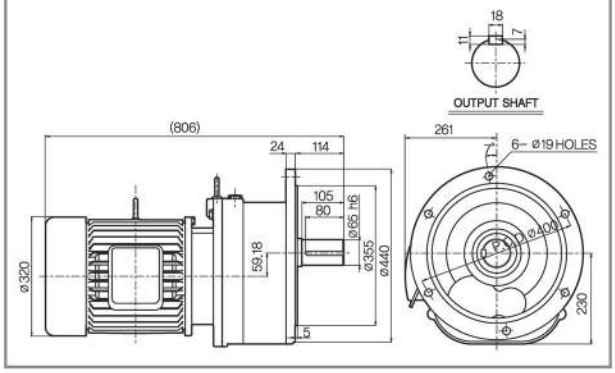
NV 205 / 11 Kw

Gear Ratio	1/5	1/7	1/10	Weight (kg)
Output R.P.M.	350	250	175	181



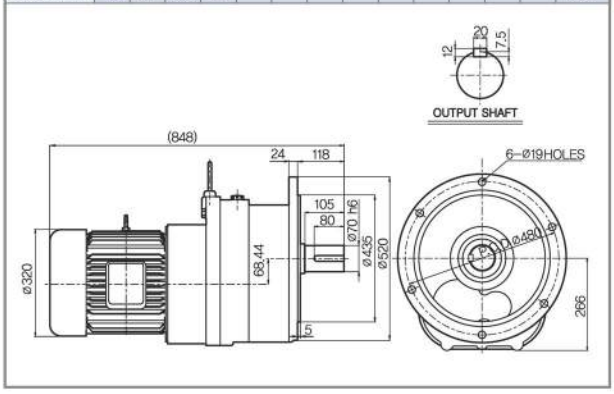
NV 235 / 11 Kw

Gear Ratio	1/3	1/15	1/20	Weight (kg)
Output R.P.M.	583	117	88	198



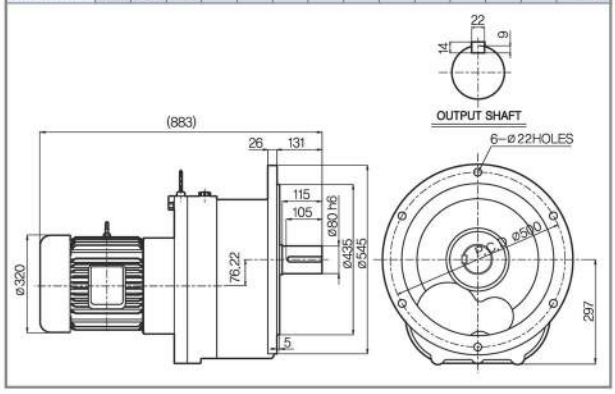
NV 270 / 11 Kw

Gear Ratio	1/30	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	58	44	35	29	220



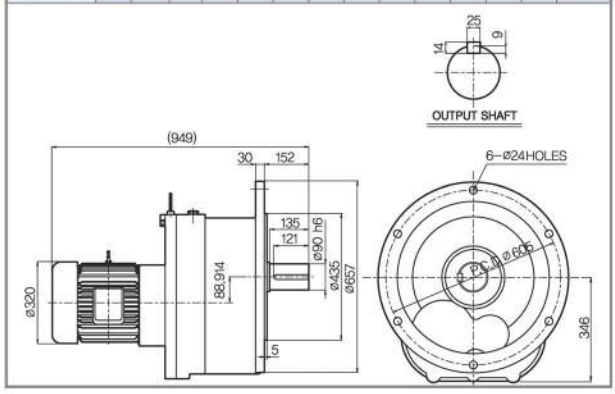
NV 300 / 11 Kw

Gear Ratio	1/75	1/80	1/90	Weight (kg)
Output R.P.M.	23	22	19	414



NV 350 / 11 Kw

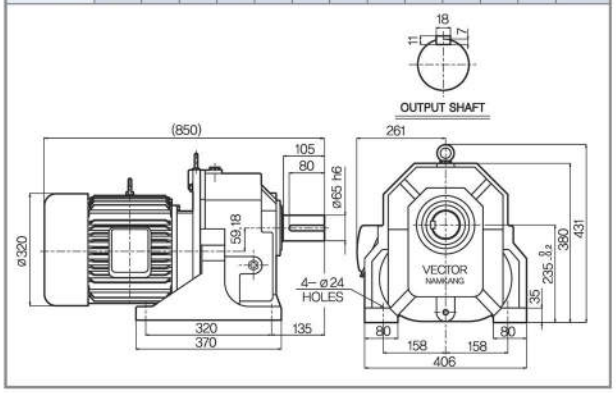
Gear Ratio	1/75	1/80	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	23	22	19	18	15	490



15kw 20HP, 3-Phase / 삼상

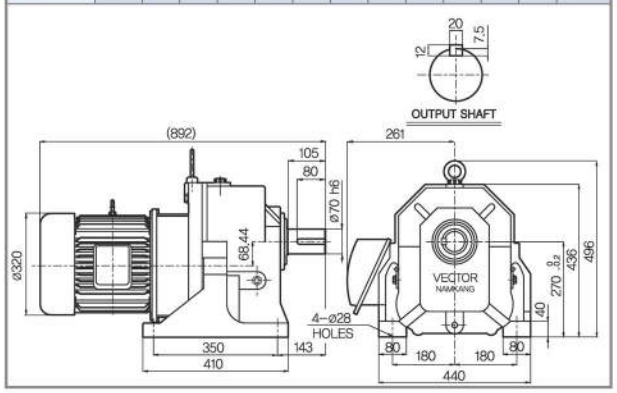
NH 235 / 15 Kw

Gear Ratio	1/3	1/5	1/10	Weight (kg)
Output R.P.M.	583	350	175	225



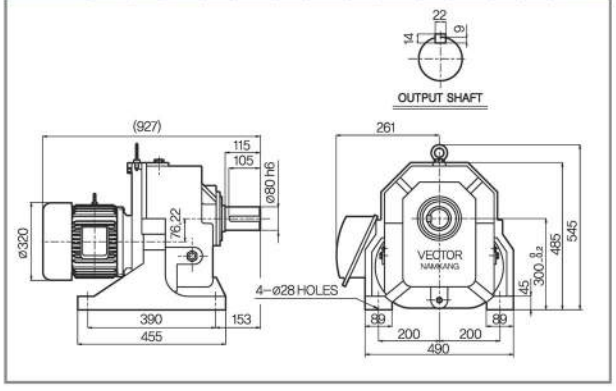
NH 270 / 15 Kw

Gear Ratio	1/15	1/20	Weight (kg)
Output R.P.M.	117	88	245



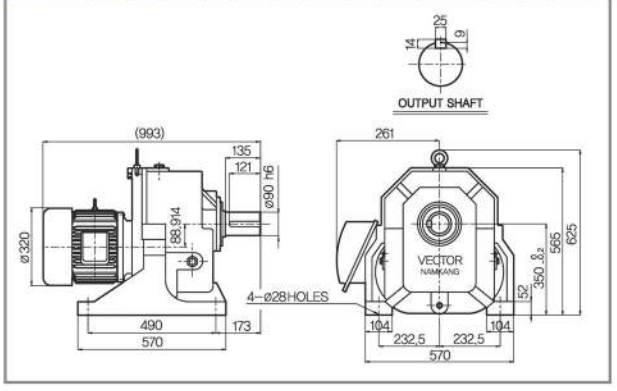
NH 300 / 15 Kw

Gear Ratio	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	44	35	29	414



NH 350 / 15 Kw

Gear Ratio	1/75	1/80	1/90	Weight (kg)
Output R.P.M.	23	22	19	490

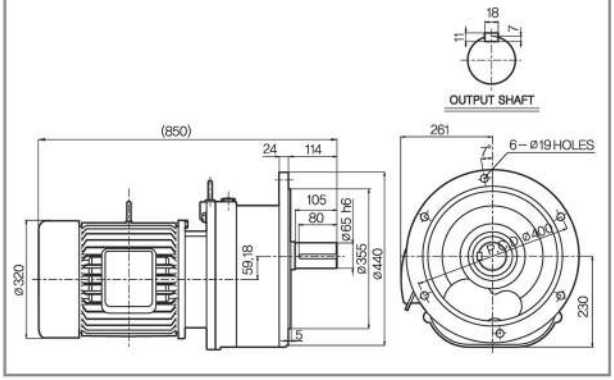


삼상 외형도

15kw 20HP, 3-Phase / 삼상

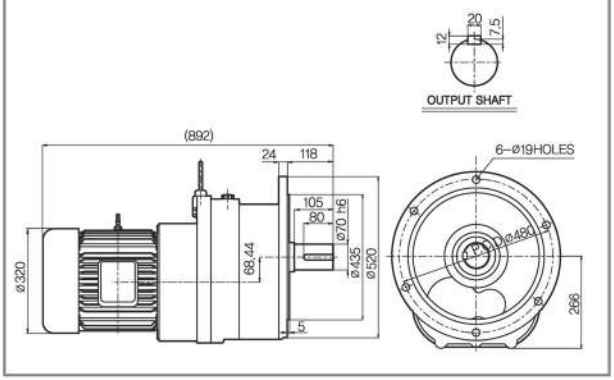
NV 235 / 15 Kw

Gear Ratio	1/3	1/5	1/10									Weight (kg)
Output R.P.M.	583	350	175									225



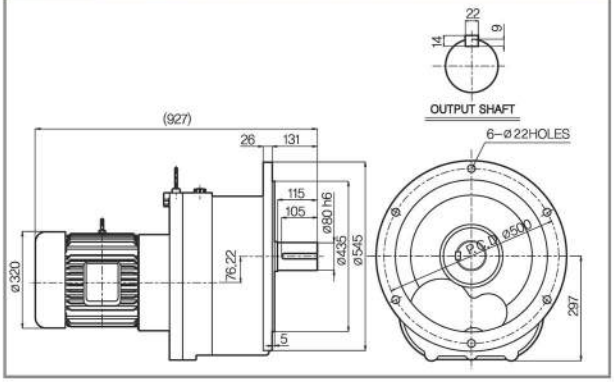
NV 270 / 15 Kw

Gear Ratio	1/15	1/20										Weight (kg)
Output R.P.M.	117	88										245



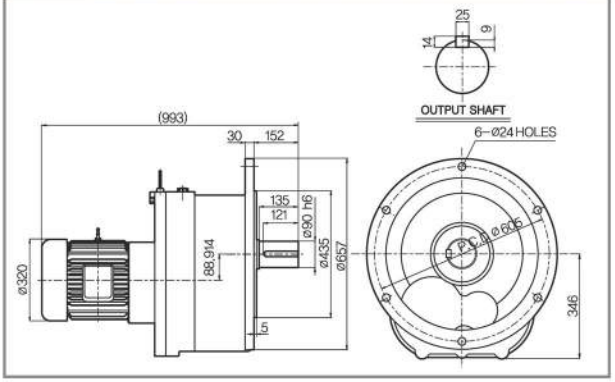
NV 300 / 15 Kw

Gear Ratio	1/40	1/50	1/60									Weight (kg)
Output R.P.M.	44	35	29									414



NV 350 / 15 Kw

Gear Ratio	1/75	1/80	1/90									Weight (kg)
Output R.P.M.	23	22	19									490



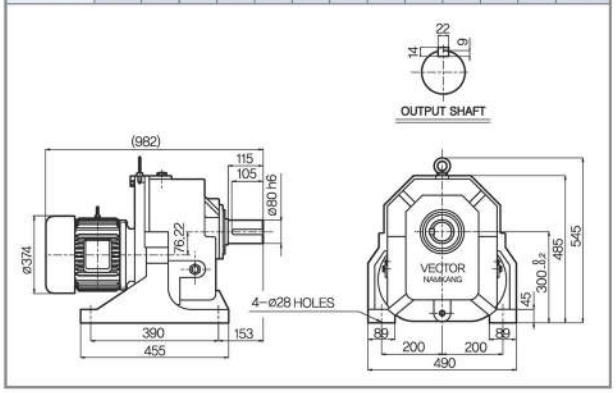
VECTOR

The enterprise which creates a new future,
21 century

19,22 kw 25, 30HP, 3-Phase / 삼상

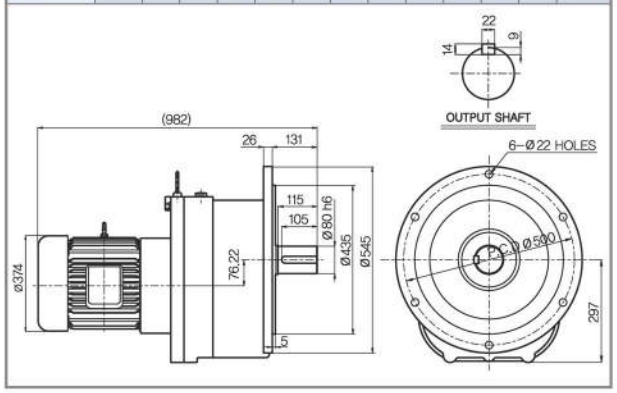
NH 300 / 19,22 Kw

Gear Ratio	1/5	1/10	1/15	1/20	1/30							Weight (kg)
Output R.P.M.	350	175	117	88	58							429



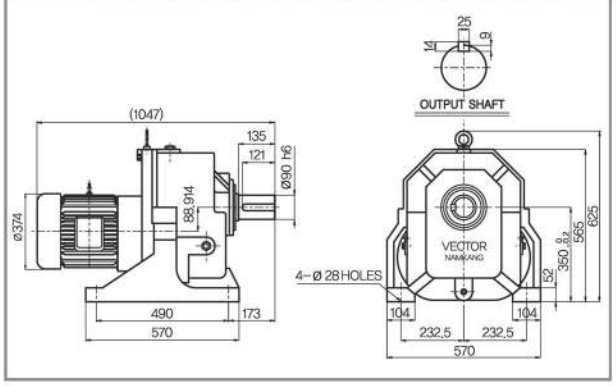
NV 300 / 19,22 Kw

Gear Ratio	1/5	1/10	1/15	1/20	1/30							Weight (kg)
Output R.P.M.	350	175	117	88	58							429



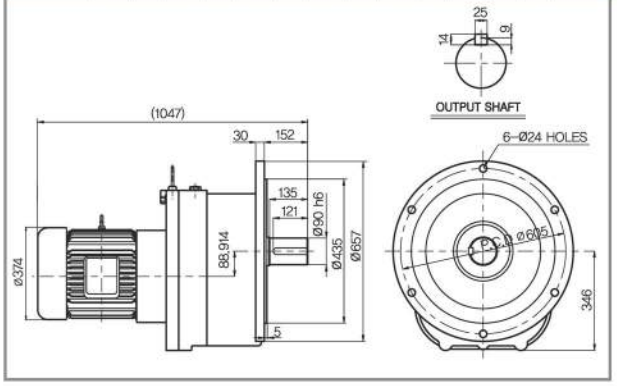
NH 350 / 19,22 Kw

Gear Ratio	1/40	1/50	1/60									Weight (kg)
Output R.P.M.	44	35	29									509



NV 350 / 19,22 Kw

Gear Ratio	1/40	1/50	1/60									Weight (kg)
Output R.P.M.	44	35	29									509



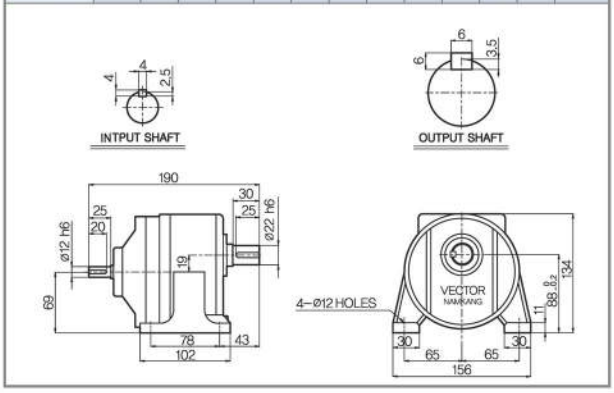
VECTOR

The enterprise which creates a new future, 21 century

0.2kw 1/4HP, LINE POWER

NL 88 / 0.2 Kw

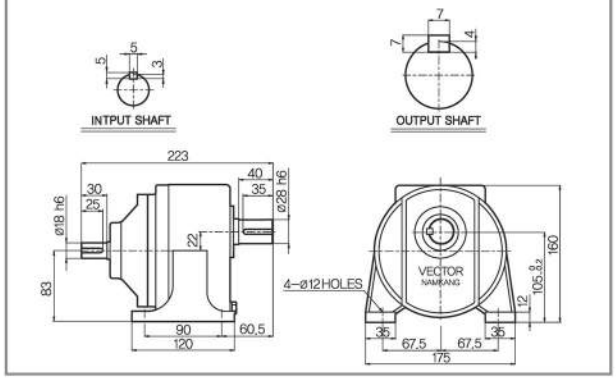
Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	5.2



O.4kw 1/2HP, LINE POWER

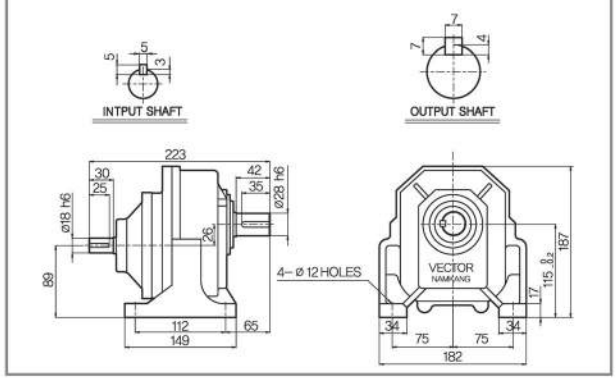
NL 105 / 0.4 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	15	7.1



NL 115 / 0.4 Kw

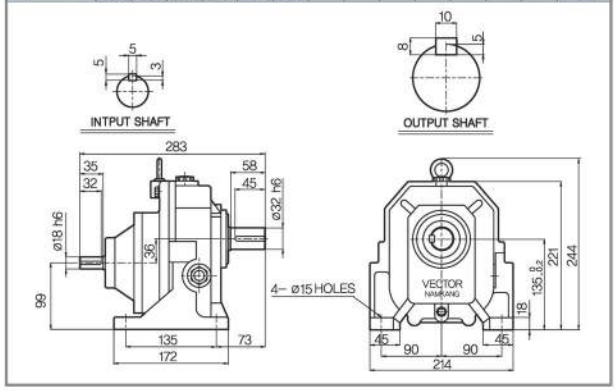
Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	1/40	1/50	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	44	35	29	23	19	18	16



O.75kw 1HP, LINE POWER

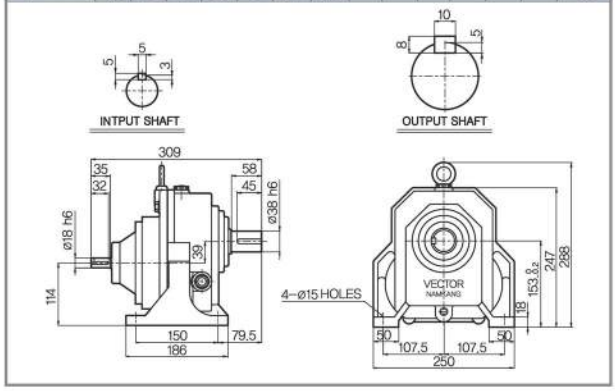
NL 135 / 0.75 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	350	250	175	117	88	58	20



NL 153 / 0.75 Kw

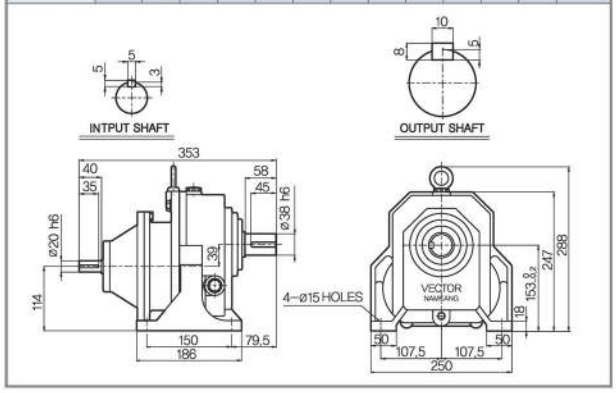
Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120	Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15	29



1.5kw 2HP, LINE POWER

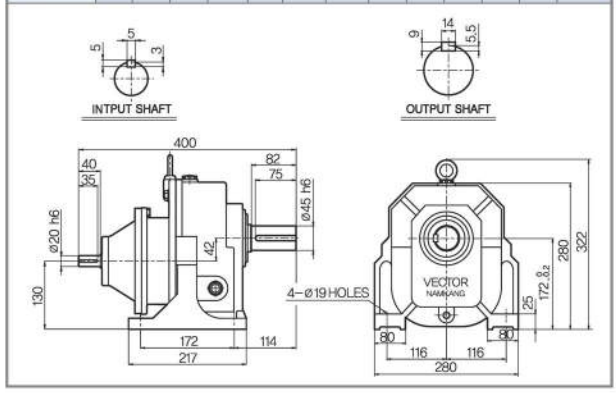
NL 153 / 1.5 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30							Weight (kg)
Output R.P.M.	350	250	175	117	88	58							27



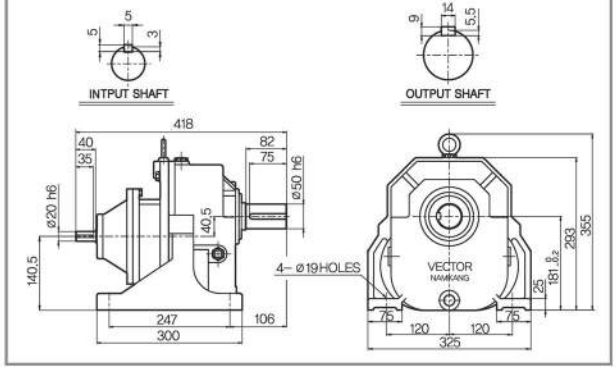
NL 172 / 1.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						43



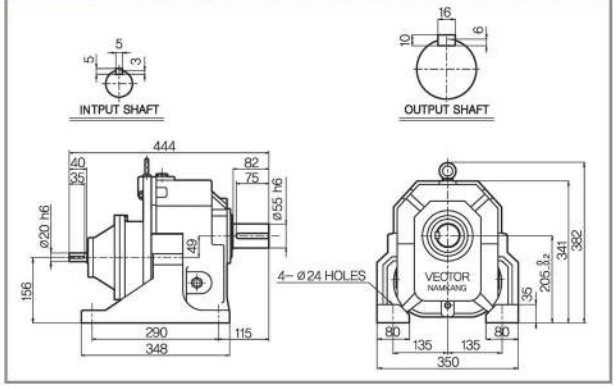
NL 181 / 1.5 Kw

Gear Ratio	1/60												Weight (kg)
Output R.P.M.	29												59



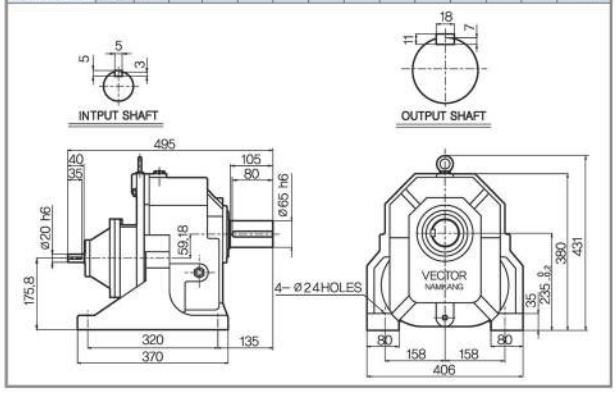
NL 205 / 1.5 Kw

Gear Ratio	1/90												Weight (kg)
Output R.P.M.	19												78



NL 235 / 1.5 Kw

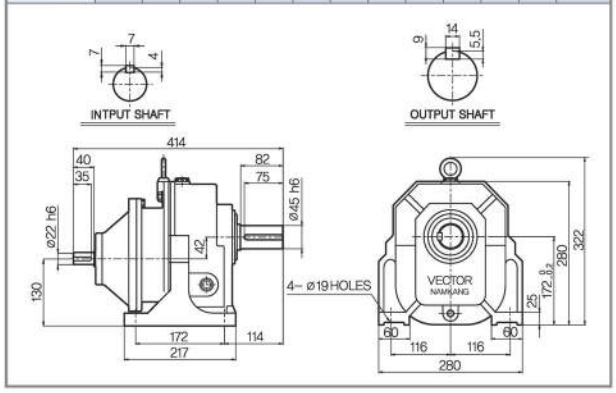
Gear Ratio	1/100	1/120											Weight (kg)
Output R.P.M.	18	15											114



2.2kw 3HP, LINE POWER

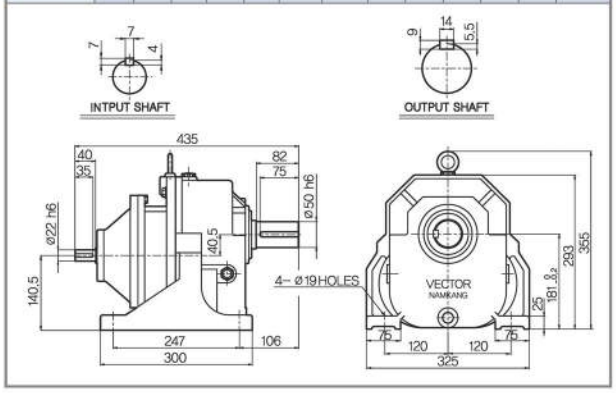
NL 172 / 2.2 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	350	250	175	117	88	58						45



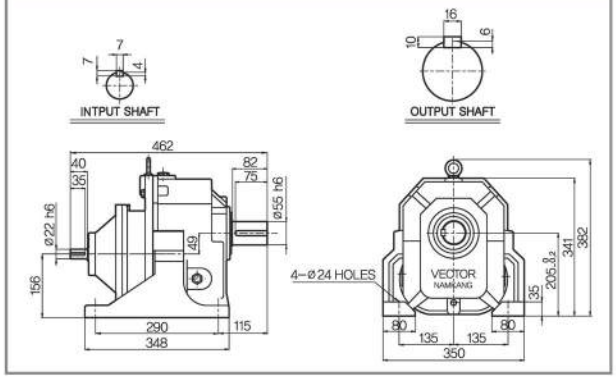
NL 181 / 2.2 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15					59



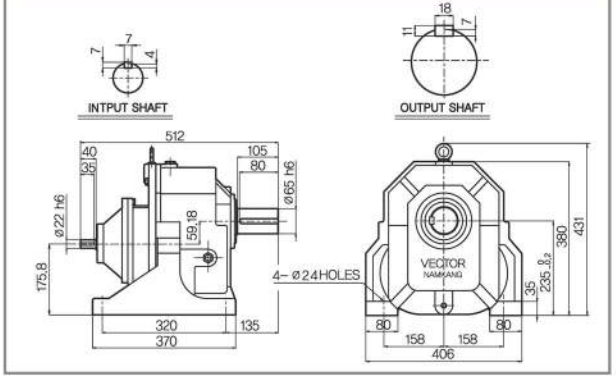
NL 205 / 2.2 Kw

Gear Ratio	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	35	29	23	19	18	15						83



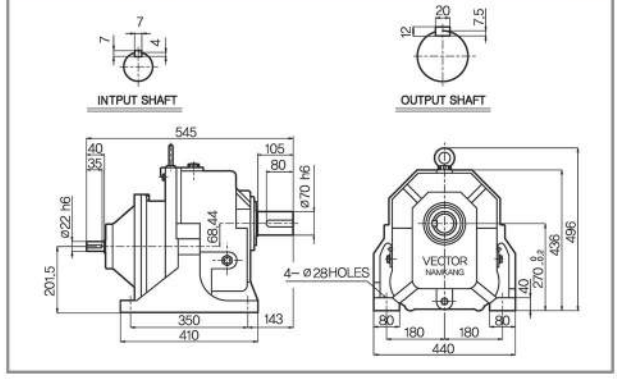
NL 235 / 2.2 Kw

Gear Ratio	1/90	1/100	1/120									Weight (kg)
Output R.P.M.	19	18	15									135



NL 270 / 2.2 Kw

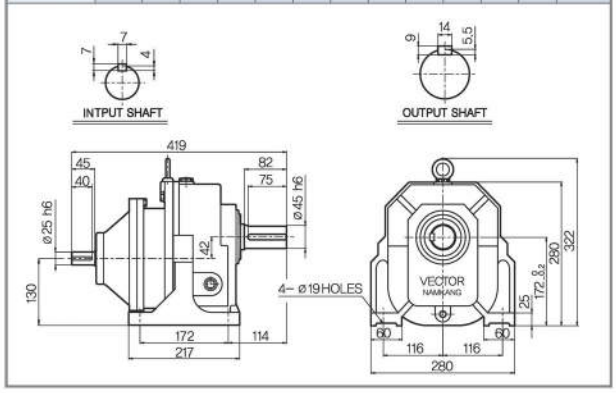
Gear Ratio	1/100	1/120										Weight (kg)
Output R.P.M.	18	15										153



3.7kw 5HP, LINE POWER

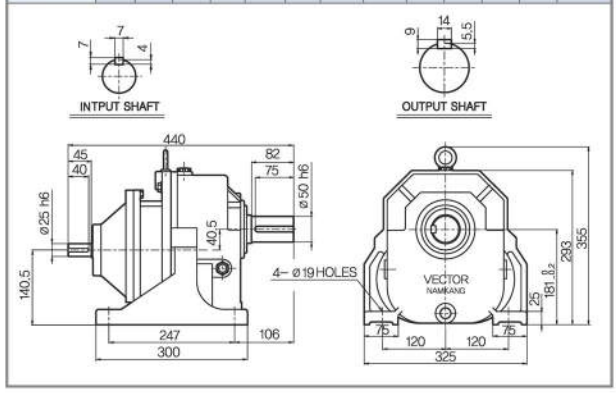
NL 172 / 3.7 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	1/30						Weight (kg)
Output R.P.M.	350	250	175	117	88	58						74



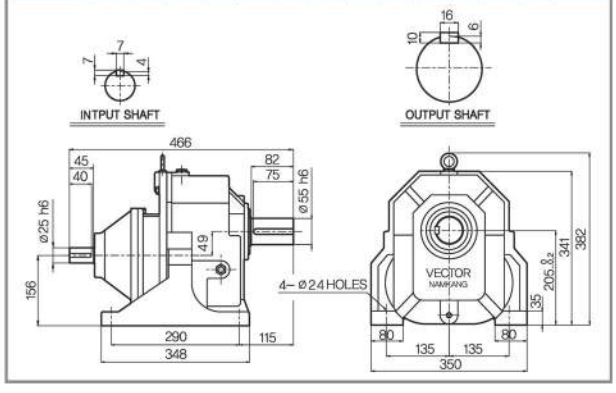
NL 181 / 3.7 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	58	44	35	29	23	19	18	15					88



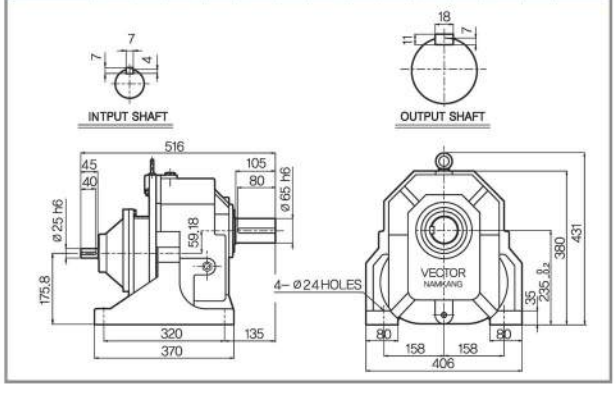
NL 205 / 3.7 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120						Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15						86



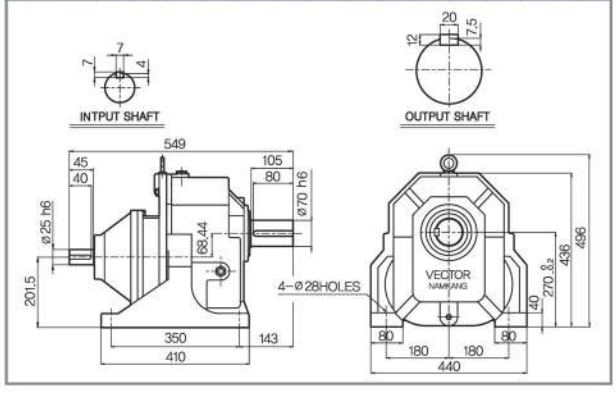
NL 235 / 3.7 Kw

Gear Ratio	1/60												Weight (kg)
Output R.P.M.	29												121



NL 270 / 3.7 Kw

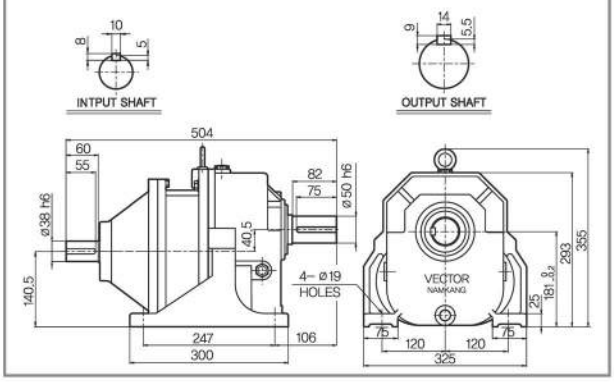
Gear Ratio	1/75	1/90	1/100	1/120									Weight (kg)
Output R.P.M.	23	19	18	15									155



5.5kw 7.5HP, LINE POWER

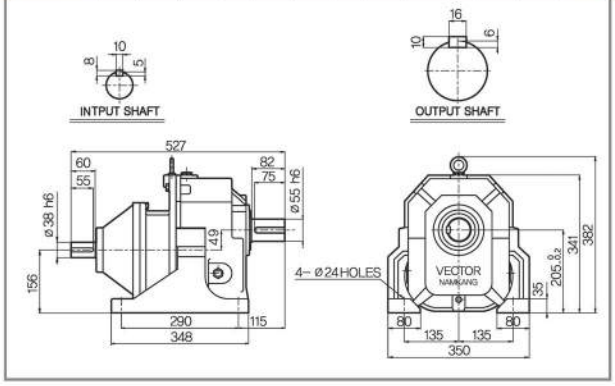
NL 181 / 5.5 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	350	250	175	117	88	60



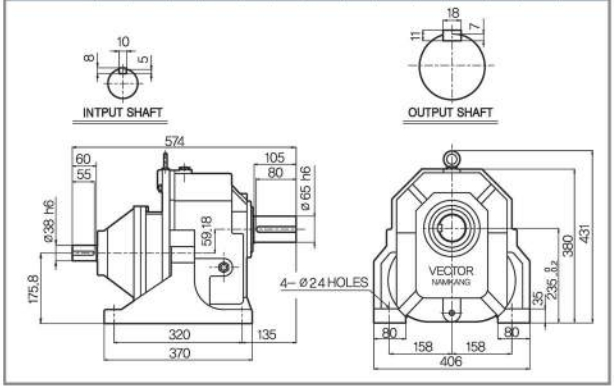
NL 205 / 5.5 Kw

Gear Ratio	1/30	Weight (kg)
Output R.P.M.	58	84



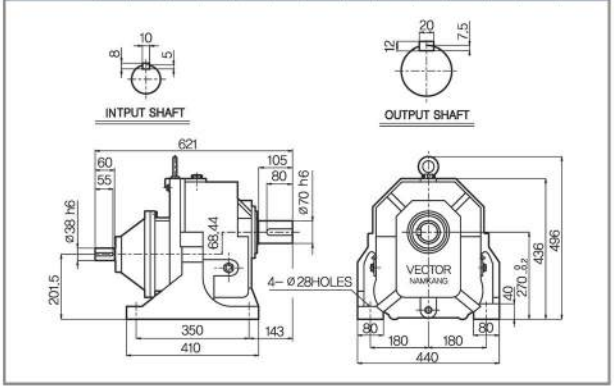
NL 235 / 5.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	Weight (kg)
Output R.P.M.	44	35	29	23	98



NL 270 / 5.5 Kw

Gear Ratio	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	29	23	19	18	132



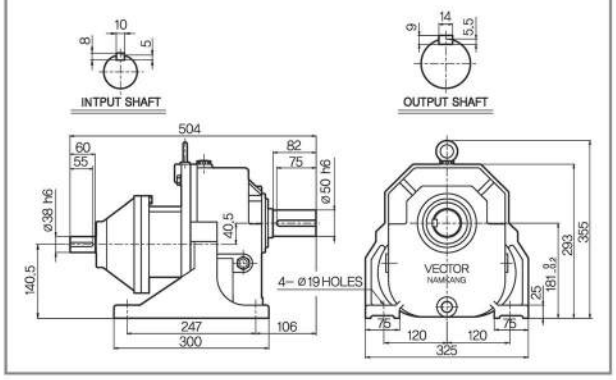
VECTOR

The enterprise which creates a new future,
21 century

7.5kw 10HP, LINE POWER

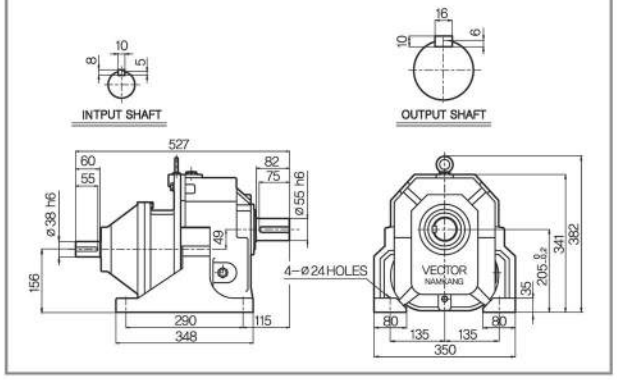
NL 181 / 7.5 Kw

Gear Ratio	1/5	1/7	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	350	250	175	117	88	60



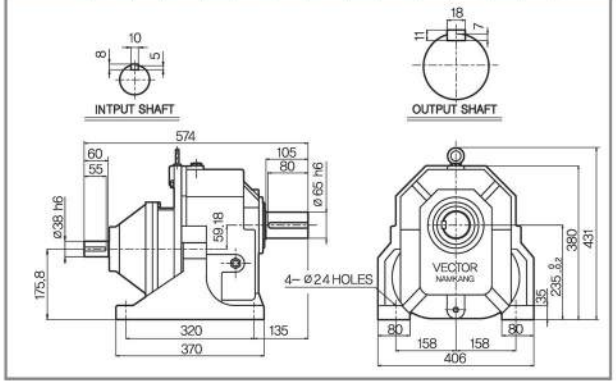
NL 205 / 7.5 Kw

Gear Ratio	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	117	88	58	84



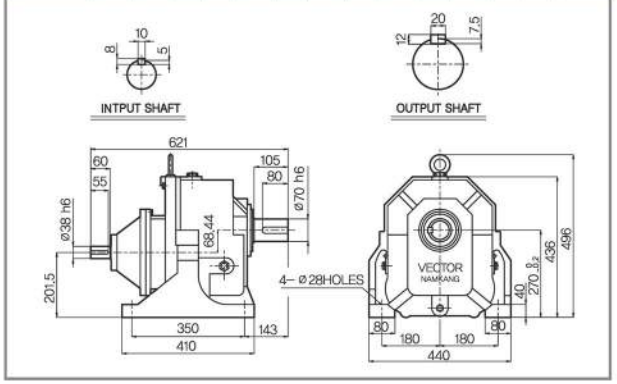
NL 235 / 7.5 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	Weight (kg)
Output R.P.M.	58	44	35	29	23	19	98



NL 270 / 7.5 Kw

Gear Ratio	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	44	35	29	132



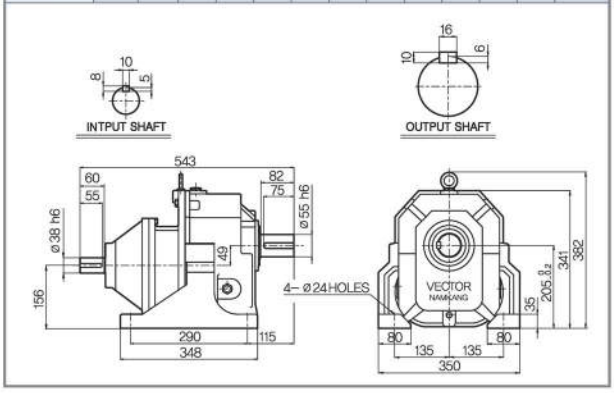
VECTOR

The enterprise which creates a new future, 21 century

11.15kw 15,20HP, LINE POWER

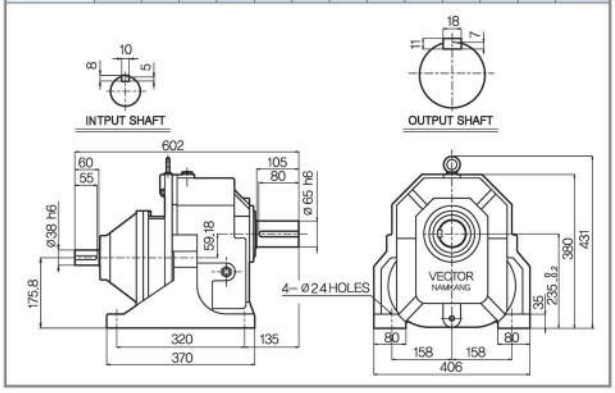
NL 205 / 11 Kw

Gear Ratio	1/5	1/10	Weight (kg)
Output R.P.M.	350	175	89



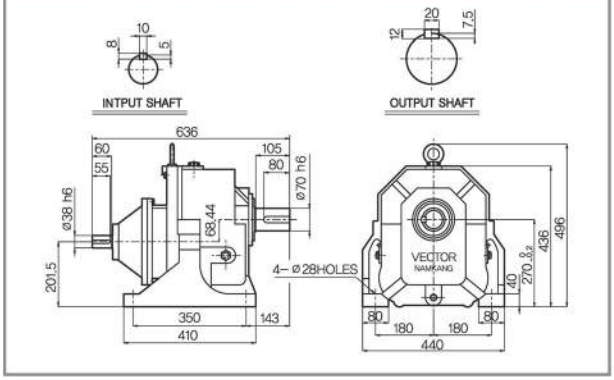
NL 235 / 11 Kw

Gear Ratio	1/5	1/10	1/15	1/20	Weight (kg)
Output R.P.M.	350	175	117	88	99



NL 270 / 11,15 Kw

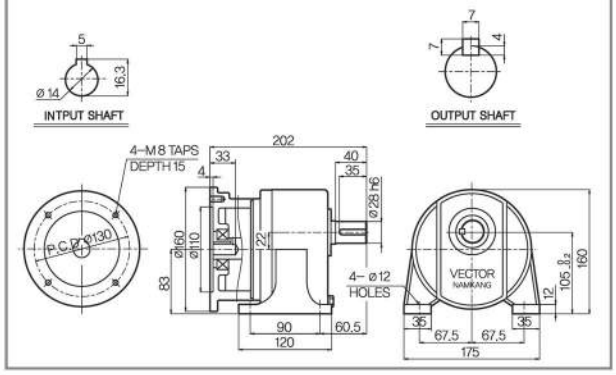
Gear Ratio	1/15	1/20	1/30	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	117	88	58	50	35	29	137



0.4kw 1/2HP, I.E.C FLANGE TYPE

NF 105 / 0.4 Kw

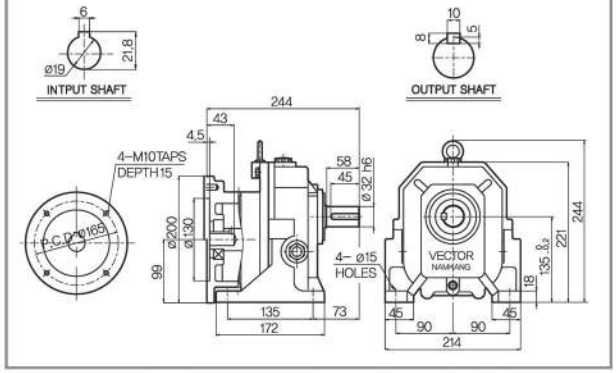
Gear Ratio	1/5	1/10	1/20	1/30	1/40	1/50	1/60	1/75					Weight (kg)
Output R.P.M.	350	175	88	58	44	35	29	23					7



0.75kw 1HP, I.E.C FLANGE TYPE

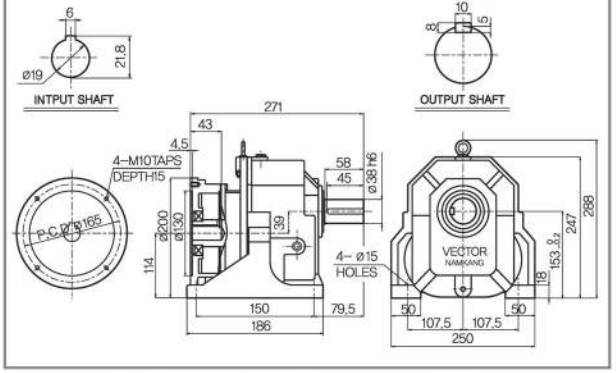
NF 135 / 0.75 Kw

Gear Ratio	1/5	1/10	1/20	1/30									Weight (kg)
Output R.P.M.	350	175	88	58									23



NF 153 / 0.75 Kw

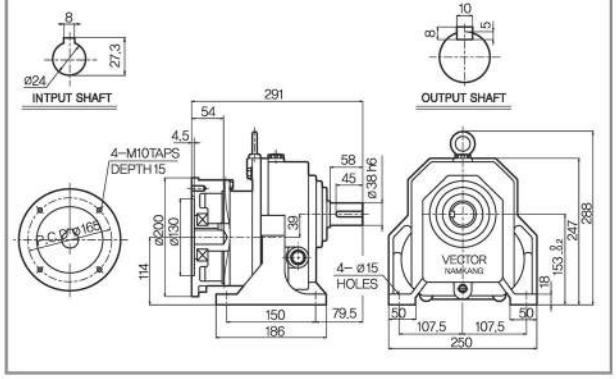
Gear Ratio	1/40	1/50	1/60	1/75									Weight (kg)
Output R.P.M.	44	35	29	23									28



1.5kw 2HP, I.E.C FLANGE TYPE

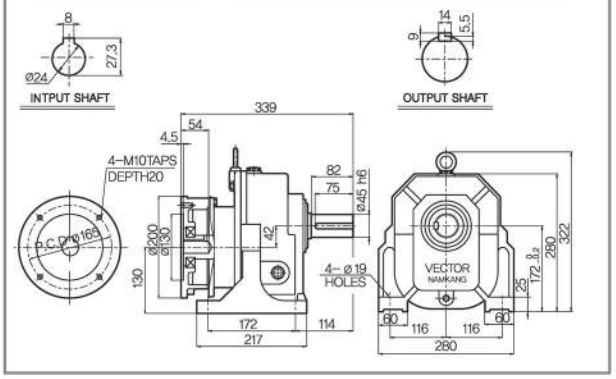
NF 153 / 1.5 Kw

Gear Ratio	1/5	1/10	1/20	1/30									Weight (kg)
Output R.P.M.	350	175	88	58									28



NF 172 / 1.5 Kw

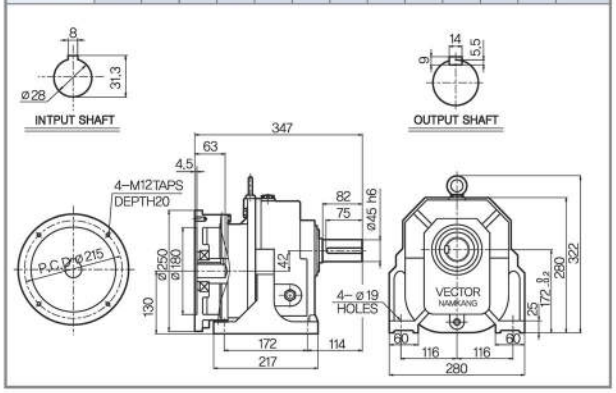
Gear Ratio	1/40	1/50	1/60	1/75									Weight (kg)
Output R.P.M.	44	35	29	23									59



2.2kw 3HP, I.E.C FLANGE TYPE

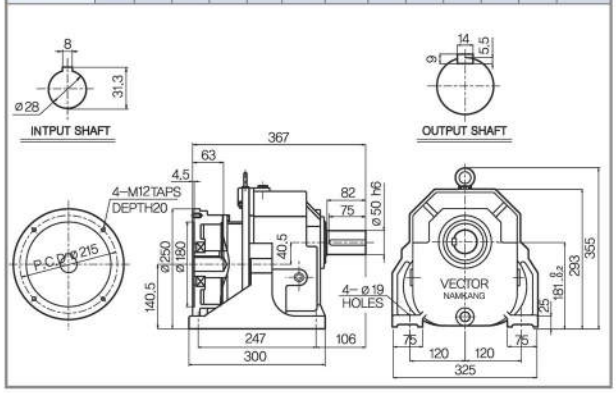
NF 172 / 2.2 Kw

Gear Ratio	1/5	1/10	1/20	1/30								Weight (kg)
Output R.P.M.	350	175	88	58								59



NF 181 / 2.2 Kw

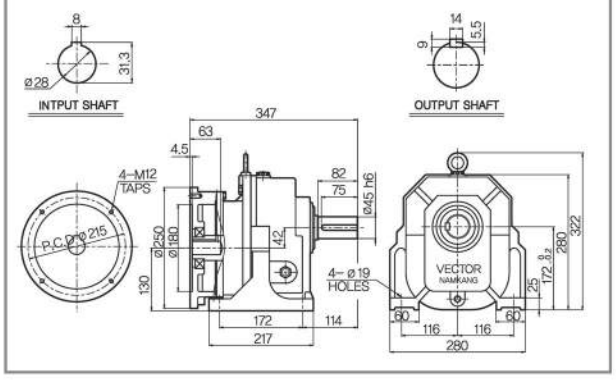
Gear Ratio	1/40	1/50	1/60	1/75	1/90	1/100	1/120					Weight (kg)
Output R.P.M.	44	35	29	23	19	18	15					66



3.7kw 5HP, I.E.C FLANGE TYPE

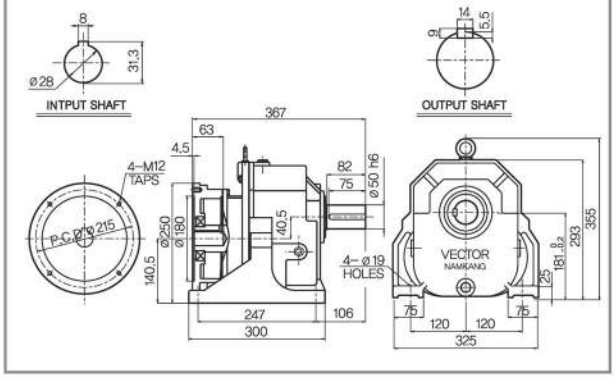
NF 172 / 3.7 Kw

Gear Ratio	1/5	1/10	1/20	1/30								Weight (kg)
Output R.P.M.	350	175	88	58								59



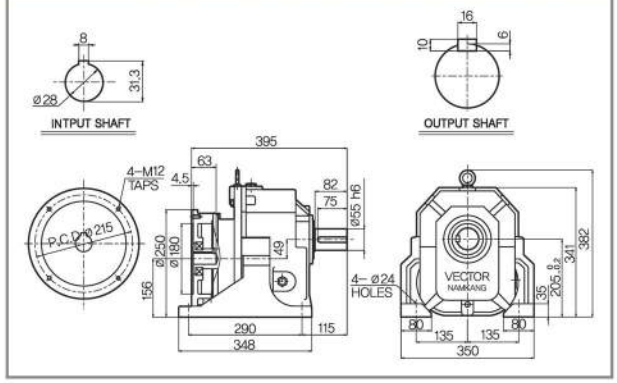
NF 181 / 3.7 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	1/100	1/120				Weight (kg)
Output R.P.M.	58	44	35	29	23	19	18	15				66



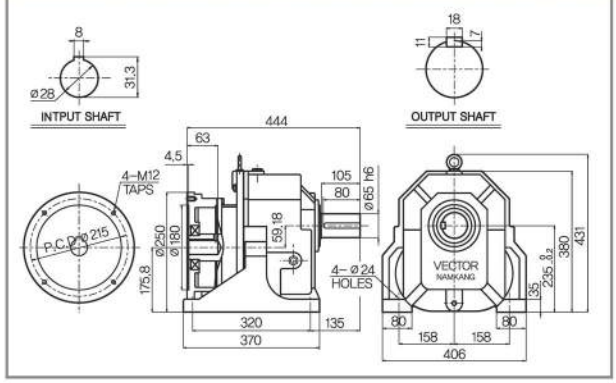
NF 205 / 3.7 Kw

Gear Ratio	1/40	1/50	1/60	1/75								Weight (kg)
Output R.P.M.	44	35	29	23								79



NF 235 / 3.7 Kw

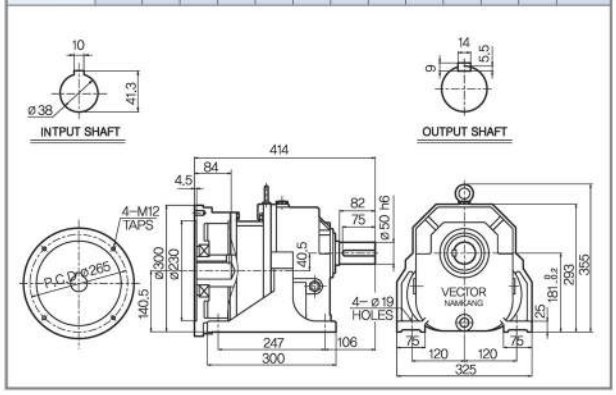
Gear Ratio	1/60											Weight (kg)
Output R.P.M.	29											115



5.5kw 7.5HP, I.E.C FLANGE TYPE

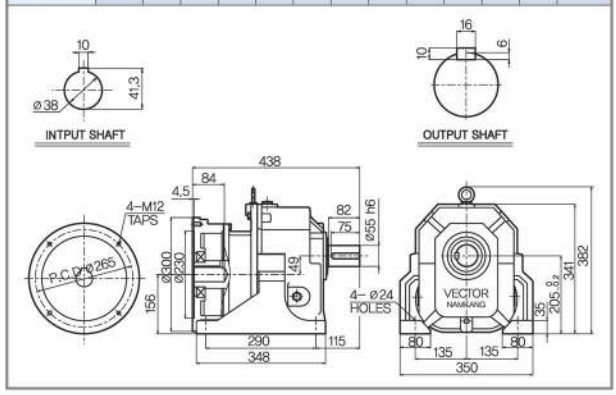
NF 181 / 5.5 Kw

Gear Ratio	1/5	1/10	1/20	Weight (kg)
Output R.P.M.	350	175	88	66



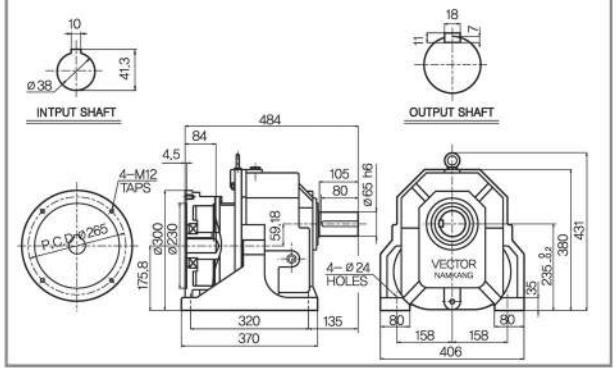
NF 205 / 5.5 Kw

Gear Ratio	1/30	Weight (kg)
Output R.P.M.	58	79



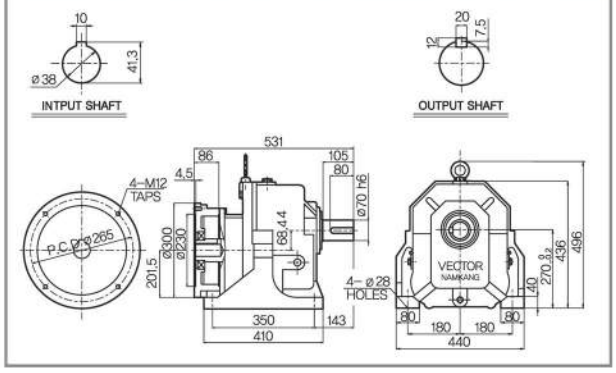
NF 235 / 5.5 Kw

Gear Ratio	1/40	1/50	1/60	1/75	1/90	Weight (kg)
Output R.P.M.	44	35	29	23	19	115



NF 270 / 5.5 Kw

Gear Ratio	1/60	1/75	1/90	1/100	Weight (kg)
Output R.P.M.	29	23	19	18	143



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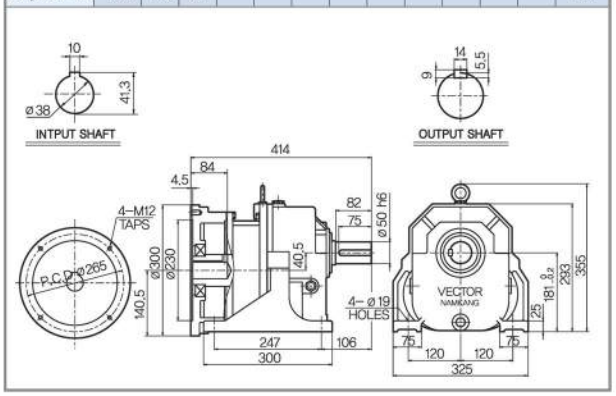
7.5kw 10HP, I.E.C FLANGE TYPE

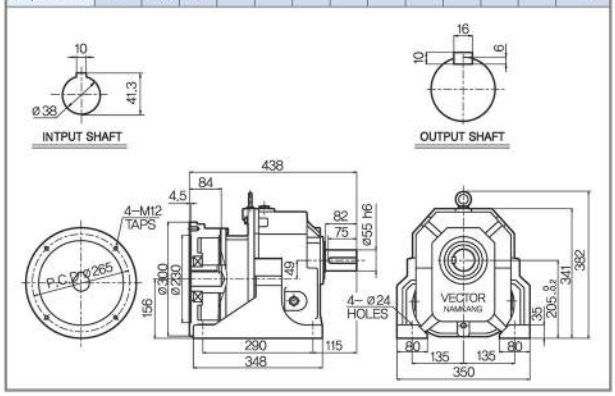
NF 181 / 7.5 Kw

Gear Ratio	1/5	1/10	1/20	Weight (kg)
Output R.P.M.	350	175	88	66



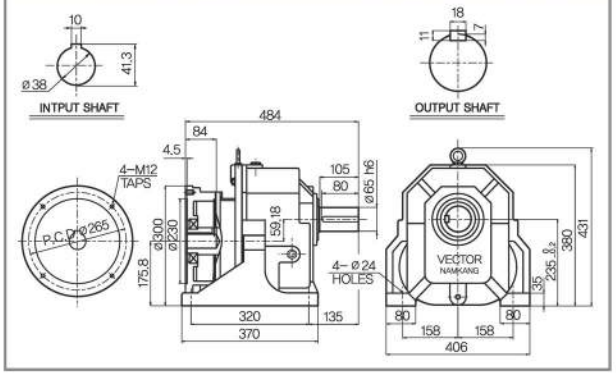
NF 205 / 7.5 Kw

Gear Ratio	1/15	1/20	1/30	Weight (kg)
Output R.P.M.	117	88	58	79



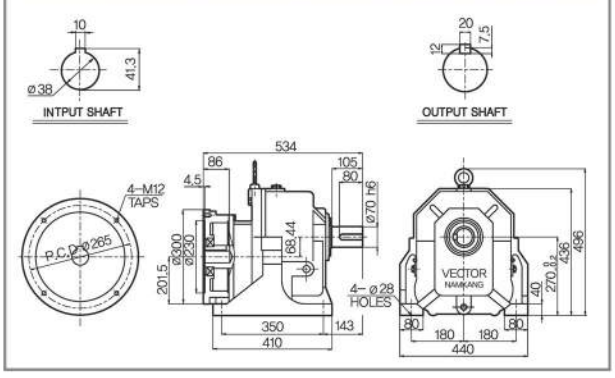
NF 235 / 7.5 Kw

Gear Ratio	1/30	1/40	1/50	1/60	1/75	1/90	Weight (kg)
Output R.P.M.	58	44	35	29	23	19	115



NF 270 / 7.5 Kw

Gear Ratio	1/40	1/50	1/60	Weight (kg)
Output R.P.M.	44	35	29	143



VECTOR

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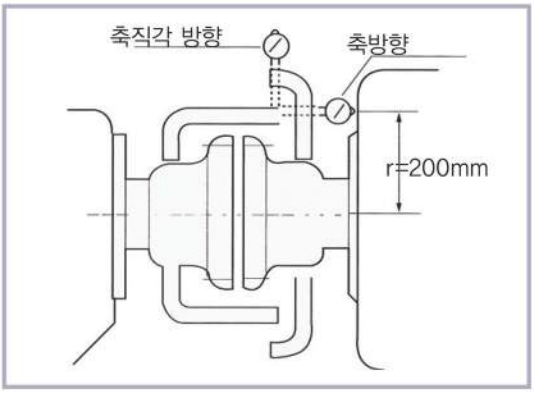
21 century

설치시 주의 사항

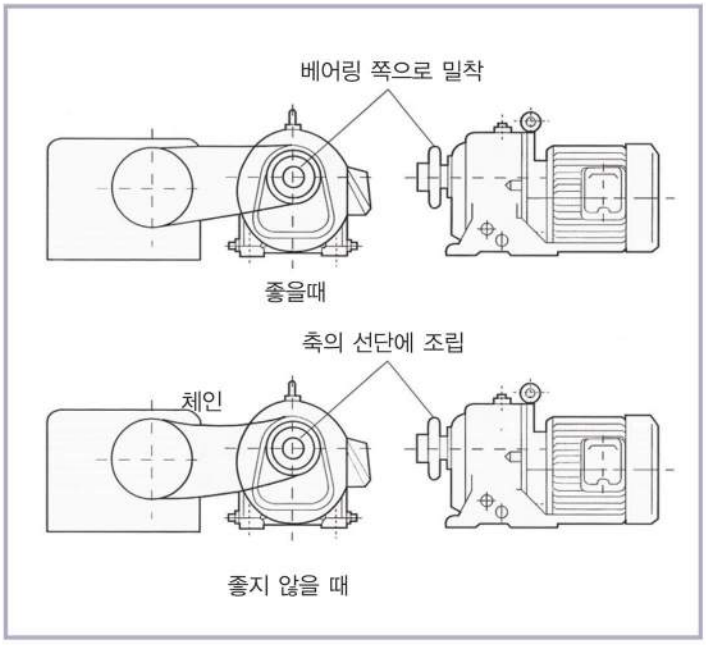
직결축연결 요령



카프링 종류	축직각 방향 눈금	축방향눈금 r=200mm
고정 카프링	0.03	0.02
기어카프링	0.05	0.05
가요성 카프링	0.1	0.1

- 축방향 기준눈금 반경 r=200mm보다 크거나 작을 경우 위 표의 기준값에 비례하여 커지거나 작아집니다.
- 최상의 조건으로 설치되면 노크핀으로 감속기 위치를 고정시켜 주십시오.

체인 및 벨트 연결 요령



고장 원인 및 대책

고장	원 인	대 책
발열	· 과부하 운전 · 윤활유의 과소 또는 과다 · 윤활유의 불량 또는 부적당 · 베어링 틈새 과소(테피어롤러) · 오일 시일 불량 · 전동기의 통풍 방해 · 3상중 1상이 열려 있거나 접속 불완전 · 고정자 코일이 중간에서 단락 · 전압의 불평형 · 코일 접지 · 축이 휘었거나 연결부의 장력이 팽팽하다. · 베어링의 불량(마모, 거칠다) · 베어링 부위의 억지 조립 · 부품의 마찰	· 적정부하로 운전 · 유면계의 지시선에 맞게 한다. · 노화, 오염된 것은 새 윤활유로 교체 · 베어링 틈새 조정 · 오일 시일 교체 · 방해 요인 제거 · 접속 여부를 점검, 단단히 한다. · 수리한다. · 변압기 및 회로 조사 · 접지 장소 찾아서 수리 · 축심 점검, 장력을 조절 · 교체 · 분해 점검 후 수정 · 분해 점검 후 수정
심한 소음 및 이음	· 규칙적 소음치의 치합 상태불량, 베어링 손상 · 높은 금속음-윤활류 부족 · 불규칙소음(이음)-이물질침입 베어링 손상 · 회전자와 고정자의 접촉 · 팬이 후드에 닿는다. · 3상 전동기가 단상운전하고 있다. · 고정 부위가 헐겁다(축과 기어, 프랜지 접합부)	· 기어교체, 베어링교체, 윤활유 보충 교체. · 윤활유 보충, 고체 · 이물질 제거(세척), 베어링 교체 · 수리 · 수리(팬을 이격시켜 재조립) · 회로조사 · 분해 후 점검, 원인 제거, 교체

고장	원 인	대 책
심한 진동	· 치의 마모 · 이물질 침입 · 베어링 마모 및 손상 · 취부 볼트 및 고정볼트의 이완 · 조립부위(축, 기어)의 이완 · 축심이 일직선이 아니다. (바란스가 나쁘다) · 전동기의 엔드프레이가 너무 크다. · 캐이스 및 연결 부위 파손	· 기어교체 · 이물질 제거 및 윤활유 교체 · 베어링 교체 · 볼트조임 · 분해 점검후 재조립 · 부하의 연결상태 조사 및 재연결 · 베어링 조사, 와셔를 넣어 재조립 · 교체
오일의 누수	· 오일 시일 손상 · 패킹 불량(접합부) · 배유구 프로그 이완 · 유면계 파손 및 이완 · 기타 용접 부위 누유 · 출력축 마모(씰링 부위) · 출력 카바 그리이스 부족 (그리이스링 부위:수직형) · 제품의 잘못된 부착	· 오일 시일 교체 · 패킹 교체 및 재씰링 · 단단히 체결(테프론테이프) · 교체 · 재용접 또는 교체 · 출력축 교체 · 카바의 그리이스 보충 · 당사에 문의
전동기 기동 불능 또는 기동 곤란	· 퓨우즈가 끊어진다. · 기동 토르크가 모자란다. · 회로가 열려있다. 접속 불완전 · 코일이 단선 · 정전 또는 전원이 이상 · 과부하 · 베어링 및 부품의 끼임 현상	· 퓨우즈의 용량조사, 교체 · 기동방식 교체 또는 용량 늘임 · 과부하 릴레이, 기동기 푸시버턴 조사 · 조하 · 전원점검 · 전류측정 및 부하조사 · 재조리 또는 교체

- 기어 및 축, 케이스 등을 교체할 때는 당사로 문의 하시기 바라며 임시방편 또는 잘못된 부품교체는 전체를 손상시키므로 각별히 주의하시기 바랍니다

보증기간과 보증 범위

· 제품의 무상보증기간은 당사 출고일로부터 1년입니다. 또한 물품의 운전시간으로 2,000 운전시간 중 선도래 시점까지를 적용합니다.
· 당사 출고일이 명확하지 않은 경우에는 명판의 제조년월을 기준으로 합니다.

다음에 해당하는 경우에는 이 보증 범위에서 제외가 됩니다.

1. 사용자측의 과실로 인한 문제 발생시.
2. 아래의 설치조건에 적합하지 않은 경우.
   2-1. 사용 시 주위 온도가 명판에 기재된 온도 범위내일 것.(기재가 없는경우 -15℃~40℃)
   2-2. 주위의 조건이 냉각 Fan 또는 통풍구 주변이 공기의 흐름에 방해하지 않을 것.
   2-3. 정격전압 및 정격주파수에서 운전 할 것.
   2-4. 기타사항은 명판 또는 보조 명판에 의할 것.
3. 공급자 외에 개조 또는 수리에 의한 것.
4. 그 외 천재지변, 화재 등으로 공급자측의 책임에 있지 않은 경우.

※ 보증의 내용은 납입 단품의 보증을 의미하는 것이며 수리된 납입품의 고장에 의해 발생된 손해는 별도의 협의가 필요합니다.
보증은 별도의 계약에 의하지 않는 한 대한민국 국내에 있어서만 유효합니다.

유상수리

· 고장이 아닌 경우 서비스를 요청하면 요금을 받게 되므로 반드시 사용설명서를 읽어주십시오.

수출제품, 보증기간 후의 제품 수리는 모두 유상입니다.
보증기간 중에 있어서도 상기 보증범위 외의 이유에 의한 고장의 수리 및 고장원인 조사는 유상으로 대응하고 있기 때문에 구입처 또는 당사 영업팀에 문의해 주십시오.

문의사항 안내

· 제품의 고장이나 의문사항 등으로 문의하실 때에는 다음 사항을 확인하여 주십시오.

1. 명판기재 사항 : 모델, 제조번호, 형식, 출력, 감속비, 취부방식 등
2. 사용되는 환경 : 부하의 종류, 특이사항 등

KQA 품질경영 인증서

적용 표준 :
KS A 9001:2001
ISO 9001:2000
EN ISO 9001:2000

인증범위 :
감속기에 대한 설계/개발,
생산 및 부가 서비스

주요 생산품

- GEARED MOTOR
- HORIZONTAL
- VERTICAL
- 특수 감속기

(주)남강엔지니어링 은 그동안 축적한
첨단 기술로 끊임없는 연구개발 및 엄격한 품질관리를 통해 21세기의
주역으로 새로운 미래를 함께 열어나가겠습니다.

The Enterprise Which Creates A New Future, 21 Century

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