DNV·GL
2020. 01

HYOSUNG GEAR SOLUTION

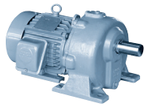
HYOSUNG HEAVY INDUSTRIES

HYOSUNG GEAR SOLUTION

GEARED MOTOR

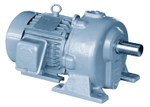
F1-Series

F2-Series



RP-Series

FN-Series



F-Series

H-Series

P-Series

K-Series

GEAR BOX

www.hyosungheavyindustries.com

Global Top Energy, Machinery & Plant Solution Provider

HYOSUNG HEAVY INDUSTRIES CORPORATION
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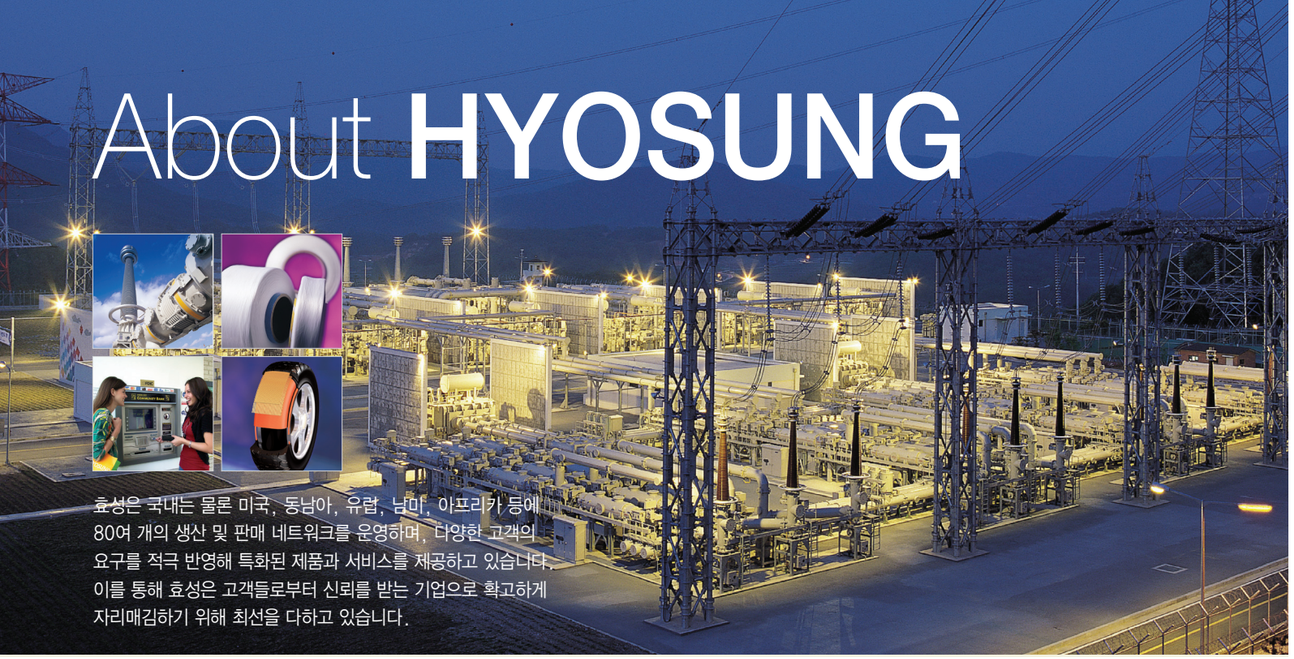
HYOSUNG HEAVY INDUSTRIES



About HYOSUNG

효성은 국내는 물론 미국, 동남아, 유럽, 남미, 아프리카 등에 80여 개의 생산 및 판매 네트워크를 운영하며, 다양한 고객의 요구를 적극 반영해 특화된 제품과 서비스를 제공하고 있습니다. 이를 통해 효성은 고객들로부터 신뢰를 받는 기업으로 확고하게 자리매김하기 위해 최선을 다하고 있습니다.

01 Our Business

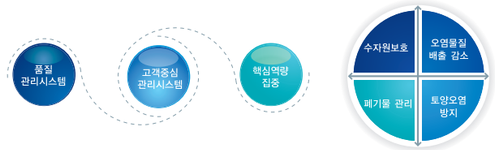
Brief introduction of Hyosung Power & Industrial Systems

효성 중공업PG (Performance Group)

'Global Top Energy, Machinery & Plant Solution Provider'를 지향하는 효성 중공업 퍼포먼스 그룹(PG : Performance Group)은 전세계 중공업을 선도하는 혁신기술을 통해 전력기기와 산업기자재, 펌프, 풍력발전 시스템 분야에서 글로벌 경쟁력을 키워왔습니다.
효성은 미주와 유럽, 중동, 아시아 등 글로벌 시장에서의 적극적인 세계화와 기술력, 제품경쟁력, 브랜드 인지도의 향상을 바탕으로 최근 수 년 간 지속적인 성장을 이어오고 있으며 글로벌 선진업체와 어깨를 나란히 하고 있습니다. 효성 중공업PG는 전력, 기전, 효성굿스프링스 등 3개의 퍼포먼스 유니트(PU : Performance Unit)와 풍력사업단으로 구성되어 있습니다.

기전PU (Performance Unit)

기전PU는 전동기, 발전기, 기어의 회전기기와 화학장치 등의 산업기계를 전문으로 생산합니다.
고객의 다양하고 폭 넓은 요구를 만족시키기 위한 최적의 통합 솔루션을 제공함은 물론, 지속적인 제품 혁신을 통해 신뢰성을 향상시키고 효율을 증대시켜 획기적인 비용 절감을 이룰 수 있도록 합니다.
전동기 부문에서는 저압 중소형 전동기에서부터 고압 초대형 전동기는 물론, 슈퍼 프리미엄 효율 전동기, 군사용 전동기, 차세대 방폭형 전동기, 영구자석 전동기까지 세계 시장을 무대로 KS, IEC, NEMA, GOST 규격을 모두 만족하는 전동기를 월 4만대 이상 생산할 수 있는 설비를 갖추고, 어떠한 목적과 장소에도 최적화된 전동기를 공급하고 있습니다. 발전기는 중속 및 고속 산업용 발전 설비, 선박용 발전기, 차세대 신재생 에너지인 풍력용 발전기 등의 핵심 발전시스템을 제공하고 있으며, 기어는 일반 산업용 기어, 오일 시추선 승강용 기어, 펄버라이저용 기어, 풍력용 기어 등의 고신뢰도를 요구하는 제품까지 제작이 가능합니다. 산업기계 부문에서는 석유화학, 오일, 가스 플랜트 공정에 사용되는 핵심 장비인 타워 (컬럼), 반응기, 압력 용기, 열교환기를 포함하는 화학장치 등을 수출함으로써 기술력과 품질을 인정받고 있습니다.
언제나 고객의 목표와 함께 하고, 국제표준 및 산업 표준을 엄격하게 준수하고 있습니다.
고품질의 효성중공업 제품은 철강, 석유화학, 시멘트, 풍력발전, 수력발전, 화력발전, 해양발전, 원자력, 선박용, 광업, 방위산업 등 산업 전반에 걸쳐 사용됩니다.

02 Sustainability

Our sustainability principles are the backbone of the way we design and manufacture products

Quality Assurance

효성은 언제나 최고를 추구합니다. 효성 임직원의 모든 활동은 완벽한 품질과 서비스만이 최고를 향한 길이라는 공통된 믿음을 기반으로 신뢰할 수 있는 품질의 제품과 서비스를 공급하는 일에 초점을 맞추고 있습니다.
효성은 품질보증 원칙을 세우고 이를 구체적으로 실현할 수 있는 품질 보증 정책 및 프로그램을 구축했습니다.
효성의 품질보증 정책은 정부의 관리정책에 기반하여 수립되었으며 ISO9001의 요구사항을 만족합니다.
글로벌 기업 효성은 품질관리 시스템, 고객중심 관리 시스템, 핵심역량 집중이라는 3가지 품질전략을 통해 포괄적인 품질관리를 실행하고 있습니다. 효성은 포괄적인 품질관리 시스템을 통해 관리자원을 효율적으로 운영하여 불필요한 낭비를 막고 모든 컴플라이언스와 적용 가능한 법률과 규정, 표준을 준수합니다.
고객중심 관리 시스템은 효성의 최우선 원칙인 고객만족을 명확하게 하며 임직원의 모든 활동이 고객의 요구를 뛰어넘어 품질표준, 유연성, 혁신을 통해 고객에게 특별한 가치를 제공합니다. 효성은 기술적 역량과 기술혁신의 개선을 통해 고객에게 뛰어난 품질의 제품과 비용 절감의 혜택을 제공하기 위해 지속적인 발전과 엄격한 품질 제어를 목표로 핵심역량을 집중하고 있습니다.
효성의 품질보증 정책은 제어와 평가의 연속적인 과정입니다. 효성은 최고에 한발 더 다가서기 위해 품질보증 정책을 지속적으로 보완, 개정, 수정하고 있습니다.

Environment Protection Policy

효성은 제조활동이 환경에 미치는 영향을 이해하고 환경을 오염으로부터 보호하기 위해 노력하고 있습니다. 또한 효성의 제품과 기술은 환경에 미치는 영향을 최소화 하기 위해 전과정을 관리하며, 환경친화적인 제품과 솔루션 개발에 투자하여 향후 발생 가능한 환경오염과 환경유해영향을 예방하기 위해 최선의 노력을 기울이고 있습니다. 효성은 자원을 보존하고 환경에 미치는 영향을 최소화하기 위해 함께 공유하는 책임에 대한 친환경 철학에 기반해 종합적인 환경보호 프로그램을 구축했습니다. 효성의 환경정책은 ISO14001의 모든 요구사항을 충족합니다.

03 R&D

Inspiring innovation, creation and expertise

중전기기와 산업용 전기, 전자, 에너지 분야에서 세계적인 경쟁력을 입증받은 효성의 기술력의 배경에는 1978년 설립 이래 한국 기술개발 역사와 궤를 함께 해온 중공업연구소가 있습니다. 안양연구소와 창원연구소의 이원화 체제로 운영되어온 효성의 중공업연구소는 중전기기와 에너지 시스템, 전력전자, 전력자동화 시스템 분야에서 핵심기술 개발와 제품일류화에 총력을 다하고 있습니다.
혁신과 창조, 전문성을 핵심가치로 중공업 연구소는 오늘도 고객만족과 품질우선, 성과지향을 행동철학으로 각 연구분야에서 글로벌 탑 역량의 R&D 활동을 지속적으로 펼쳐나가고 있습니다.

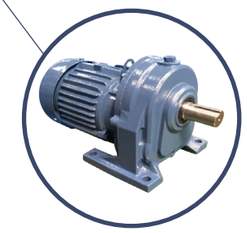
연구분야

효성 중공업연구소는 국내 중전기 분야의 기술선도를 통해 국가경쟁력 강화에 기여하고 있으며, 그 핵심기술의 결정체인 원자력발전소용 345kV 변압기와 800kV 2점절 가스 절연 개폐기는 장영실상과 에너지 대상을 수상하는 쾌거를 이룩했습니다. CNG 충전 시스템과 송전급 FACTS, 차세대 SAS 시스템, 원자력발전소용 전동기 등을 개발하며 기술개발 경쟁에서도 우위를 점하고 있는 중공업연구소는 녹색산업으로 각광받는 신재생 에너지 분야에서도 차별화된 'Solution & Technology Leadership'을 통해 'Global No. 1 연구소'로 발돋움하고 있습니다.
스마트 그리드(Smart Grid)를 비롯해 태양광, 풍력, 연료전지 등의 그린 비즈니스에 대한 지속적인 검토와 연구가 활발히 진행되고 있습니다. 스마트 그리드의 경우 정부에서 추진하는 제주 실증과제 3개 분야(Smart Place, Smart Transportation, Smart Renewable)에 참여하고 있으며 충전기 자체개발 등 충전 인프라 사업을 위한 기반 기술과 제품 확보를 위해 노력하고 있습니다. 태양광의 경우 EPC 사업과 발전사업, PCS와 태양전지 양산기술 개발이 진행 중입니다. 풍력은 주요부속품인 증속기와 발전기, PCS의 개발과 신뢰성제고를 위한 신뢰성연구에 집중하고 있습니다. 연료 전지는 가정용 1kW급 PEMFC 개발과 정부의 시범보급 사업에 참여하는 한편, 5kW급 SOFC 시스템용 BOP를 연구하고 있습니다.
IEC61850 기반 SA 시스템과 대용량 유연송전기기(FACTS) 등의 전력 시스템 자동화와 IT 기술 융복합 연구에 주력하고 있습니다. 국내 최초로 80MVA급 UPFC를 개발했으며 독자적인 기술력을 바탕으로 100MVA STATCOM을 개발하여 상용운전시험 중에 있습니다.
기존제품의 글로벌 경쟁력 강화를 위해 설비진단, 고장분석, 원격예방진단, 진단용 센서, 설비수명평가 등의 솔루션 분야 연구를 진행 중이며, 신뢰성 평가센터를 구축하여 설계신뢰성 향상, 시험 프로세스 선진화, 시험평가기술 개발, 인증시험 지원 등 기존제품의 품질경쟁력 확보를 위한 연구를 진행하고 있습니다.
구조진동, 열유동, 전자계 응용 분야의 핵심기반기술 연구를 바탕으로 차별화된 지능형 전력기기(GIS, IED, 컨트롤러, 용접기 등)와 고속, 고효율, 경량, 친환경의 산업기기, 특수용기기(FACTS용 변압기와 군수용 전동기 등)의 개발에도 박차를 가하고 있습니다.

Helical Geared Motor

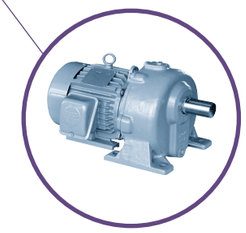
F1 Series

- Helical Gear Type
- 0.2 ~ 3.7kW, Ratio 5 ~ 120
- 4 ~ 6P, 50/60Hz
- Grease Lubrication
- S.F 1.4 ~ 2.0



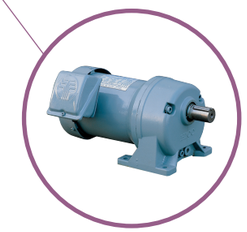
F2 Series

- Helical Gear Type
- 5.5 ~ 15kW, Ratio 5 ~ 30
- 4 ~ 6P, 50/60Hz
- Grease, Oil Lubrication
- S.F 1.4 ~ 2.0



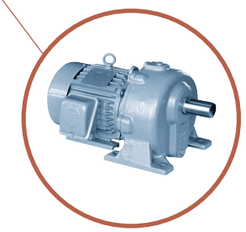
RP Series

- Helical Gear Type
- 0.4 ~ 3.7kW, Ratio 5 ~ 120
- 4 ~ 6P, 50/60Hz
- Grease Lubrication
- S.F 1.0 ~ 1.4



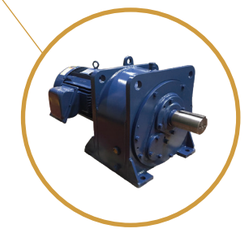
FN Series

- Helical Gear Type
- 0.4 ~ 3.7kW, Ratio 5 ~ 90
- 4 ~ 6P, 50/60Hz
- Grease Lubrication
- S.F 1.4 ~ 2.0



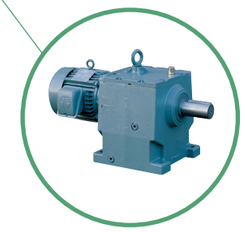
F Series

- Helical Gear Type
- 5.5 ~ 160kW, Ratio 5 ~ 30
- 4 ~ 6P, 50/60Hz
- Oil Lubrication
- S.F 1.4 ~ 2.0



H Series

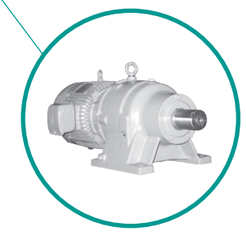
- Helical Gear Type
- 3.7 ~ 22kW, Ratio 40 ~ 120
- 4 ~ 6P, 50/60Hz
- Oil Lubrication
- S.F 1.4 ~ 2.0



Planetary Geared Motor

P Series

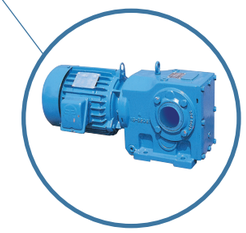
- Planetary Gear Type
- 0.4 ~ 55kW, Ratio 40 ~ 600
- 4 ~ 6P, 50/60Hz
- Oil Lubrication
- S.F 1.4 ~ 2.0



Right Angle Geared Motor

K Series

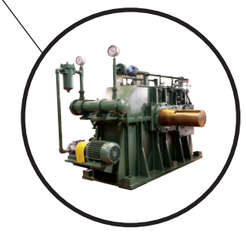
- Bevel Gear Type
- 0.4 ~ 55kW, Ratio 20 ~ 120
- 4 ~ 6P, 50/60Hz
- Oil Lubrication
- S.F 1.0 ~ 2.0



Gear Box

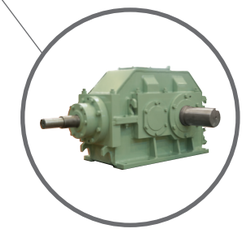
Parallel Shaft

- Helical Gear Type
- Ratio up to 500
- Torgue ratings up to 40,000kg.m Output
- Oil Lubrication



Right Angle

- Bevel Gear Type
- Ratio up to 355
- Torgue ratings up to 40,000kg.m Output
- Oil Lubrication



* 상기 사양을 초과하는 특수사양은 별도 문의 바랍니다.

선정

선정순서

1) 감속비

필요한 출력축 회전수에서 감속비를 선정합니다. 모터 회전수가 60Hz일 때 1,800rpm이므로 감속비는 간단히 구할 수 있습니다.

i = 모터 회전수/필요한 출력축 회전수

• 감속비 별 Output RPM

출력축 회전 속도			감속비												
주파수 (Hz)	극수	전동기 rpm[1]	5	10	15	20	30	40	45	50	60	75	90	100	120
60Hz	4P	1750	350	175	117	87.5	58.3	43.8	38.9	35	29.2	23.3	19.4	17.5	14.6
50Hz	4P	1450	290	145	96.7	72.5	48.3	36.3	32.2	29	24.2	19.3	16.1	14.5	12.1
60Hz	6P	1150	230	115	76.7	57.5	38.3	28.8	25.6	23	19.2	15.3	12.8	11.5	9.58
50Hz	6P	950	190	95	63.3	47.5	31.7	23.8	21.1	19	15.8	12.7	10.6	9.5	7.92

1. 전동기 종류와 프레임 사이즈에 따라 모터 RPM 상이될 수 있음.

2) 출력축 토크

부하 토크에서 출력축 토크를 계산합니다. 만약, 부하 토크의 변동이 있을 경우 최대 토크로 계산합니다.

$$T_L = T_E \times Sf_1$$

T_L : 출력축 토크 T_E : 부하 토크 Sf_1 : Service Factor(표1)

표1. Service Factor

Operating time/day (hours)	Load condition								
	E-motor driver						Engine driver		
	기동 빈도 10회/시간 이하			기동 빈도 10회/시간 초과					
	Uniform	Moderate Shock	Heavy Shock	Uniform	Moderate Shock	Heavy Shock	Uniform	Moderate Shock	Heavy Shock
0.5 이하	0.8	0.8	1.0	0.8	1.0	1.25	–	–	–
0.5 ~ 2	1.0	1.0	1.25	1.0	1.25	1.5	–	–	–
2 ~ 10	1.0	1.25	1.5	1.25	1.5	1.75	1.25	1.5	2.0
10 ~ 24	1.25	1.5	1.75	1.5	1.75	2.0	1.5	1.75	2.0

3) 출력선정

특성표에서 출력축 토크와 감속비를 만족하는 출력을 선정합니다.

4) 부하 관성(GD^2)

부하관성이 크고 기동빈도가 빈번한 경우에는 기동시 충격 토크가 발생하므로 GD^2와 시동빈도를 고려하여야 합니다.

① 모터축 환산의 부하관성(GD_L^2)을 구합니다.

$$GD_L^2 = \frac{GD^2}{i^2} \qquad \left(\frac{1}{i} = \text{감속비}\right)$$

② 3항에서 선정된 출력의 모터축 환산 부하관성 제품별 GD_M^2를 표2에서 구합니다.

표2. 기어드모터의 GD_M^2(예시)

모터출력	0.4kW	0.75kW	1.5kW	2.2kW	3.7kW
$GD_M^2(N \cdot m^2)$	0.0774	0.123	0.186	0.372	0.529

③ 부하관성비(Z)를 구합니다.

$$Z = \frac{GD_L^2}{GD_M^2}$$

GD_L^2 : 부하관성(모터축 환산) GD_M^2 : 기어드모터의 관성(모터축 환산)

④ 부하 관성비와 시동 빈도에 따른 Service Factor(Sf_2)를 표3에서 구합니다.

표3. 관성비와 시동빈도에 따른 계수

시동빈도 / 시간	연결방법 : 커플링 등 직접 연결				연결방법 : 체인 및 벨트 등 연결			
	Z≤0.5	0.5〈Z≤1.0	1.0〈Z≤2.0	2.0〈Z≤3.0	Z≤0.2	0.2〈Z≤0.5	0.5〈Z≤0.7	0.7〈Z≤1.0
1회	1.00	1.01	1.05	1.10	1.00	1.01	1.03	1.06
5회	1.01	1.04	1.17	1.26	1.01	1.0	1.10	1.19
10회	1.02	1.08	1.24	1.36	1.02	1.09	1.17	1.27
20회	1.04	1.14	1.34	1.47	1.04	1.15	1.24	1.37
50회	1.07	1.25	1.48	1.62	1.07	1.26	1.37	1.51
100회	1.10	1.34	1.61	1.76	1.10	1.35	1.47	1.63
150회	1.14	1.40	1.68	1.85	1.14	1.41	1.53	1.71

5) 필요한 출력축 토크

이상에서 보는 바와 같이 기어드모터의 필요한 출력축 토크(T)를 구합니다.

$$T = T_E \times Sf_1 \times Sf_2$$

T_E : 부하 토크 Sf_1 : 부하 상태에 따른 계수 Sf_2 : 부하 관성에 따른 계수

6) Overhung Load(O.H.L)

상대 기계와 연결은 직접 연결이 최적이지만 체인, 벨트 및 기어로 연결 될 경우, 축에 작용하는 O.H.L가 사용하는 기어드 모터의 허용 O.H.L 이하이어야 합니다.

$$O.H.L(N) = \frac{2000 \times T_E \times Sf_1 \times Sf_2}{D} \times \frac{Cf}{Lf}$$

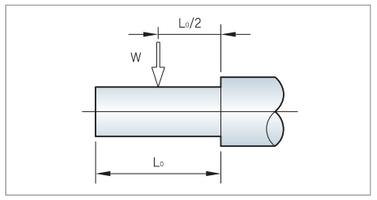
D : 체인, 풀리 등의 피치원 직경(mm)　　Cf : 연결방식에 따른 계수(표4 참조)　　Lf : 하중작용 위치에 따른 계수(표5 참조)

표4. 연결방식에 따른 계수

Transmission element	Factor	Remarks
Gears	1.1	Z≤17 teeth
Chain sprockets	1.4	Z≤13 teeth
Chain sprockets	1.2	Z≤20 teeth
V-belt pulleys	1.7	Pre-tension
Flat belt pulleys	2.5	Pre-tension

표5. 하중작용 위치에 따른 계수

Load applied point	Factor
0.3 L_0	1.10
0.5 L_0	1.00
0.7 L_0	0.83
0.9 L_0	0.70



선정 예

■ **사용조건**

구동장치
- 모터 극수 : 4극
- 모터 주파수 : 60Hz
- Load Condition : Uniform

피동장치
- 용도 : 컨베이어
- 회전수 : 29rpm
- 가동시간 : 1시간/일
- 기동빈도 : 5회/시간
- 부하 토크 : 98N · m
- 구동 장치와의 연결방식 : 체인(P.C.D=ø90)

1. 감속비 = 1/60

2. 출력축 토크
   $T_L = T_E \times Sf_1 = 98 \times 1.00 = 98N \cdot m$
   $Sf_1 = 1.00$ (표1)

3. 출력 선정
   출력축 토크 : TL = 98N · m
   감속비 : 1/60
   특성표에서 출력 : 0.4kW

4. 부하 관성(GD^2)
   1) $GD^2 = 158.6N \cdot m^2$
   2) $GD_L^2 = \frac{GD^2}{i^2} = \frac{158.6}{60^2} = 0.044N \cdot m^2$
   3) 기어드 모터 출력 0.4kW의 $GD_M^2 = 0.0774$ (표2)
   4) $Z = \frac{GD_L^2}{GD_M^2} = \frac{0.0442}{0.0774} = 0.57$
   5) $Sf_2 = 1.10$(표3)

5. 필요한 출력축 토크
   $T = T_E \times Sf_1 \times Sf_2 = 98 \times 1.00 \times 1.10$
   $= 108N \cdot m$
   감속비 : 1/60
   이상을 만족하는 기어드모터는 특성표에서 0.4kW에 해당됩니다.

6. O.H.L 확인

$$O.H.L = \frac{2000 \times T_E \times Sf_1 \times Sf_2}{D} \times \frac{Cf}{Lf}$$

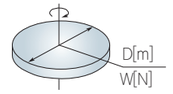
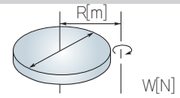
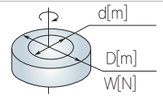
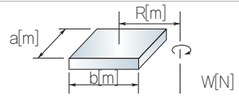
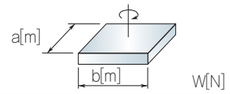
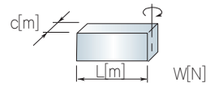
$$= \frac{2000 \times 98 \times 1.00 \times 1.10}{90} \times \frac{1.00}{1.00}$$

$$= 2395N$$

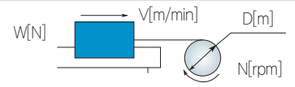
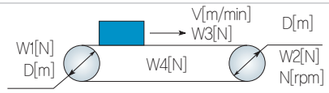
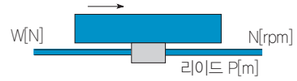
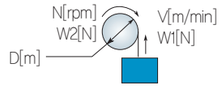
5항에서 선정된 기종의 허용 O.H.L는 2793N이므로 이 기종으로 사용 가능합니다.

GD^2 계산법

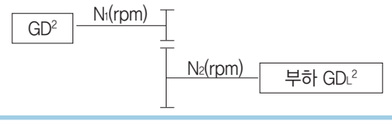
회전체

회전축이 중심인 경우		회전축이 중심이 아닌 경우	
	$GD^2 = 1/2WD^2$ [N · m²]		$GD^2 = W(1/2D^2+4R^2)$ [N · m²]
	$GD^2 = 1/2W(D^2+d^2)$ [N · m²]		$GD^2 = W(\frac{a^2+b^2}{3}+4R^2)$ [N · m²]
	$GD^2 = 1/3W(a^2+b^2)$ [N · m²]		$GD^2 = 1/3W(4L^2+c^2)$ [N · m²]

직선운동

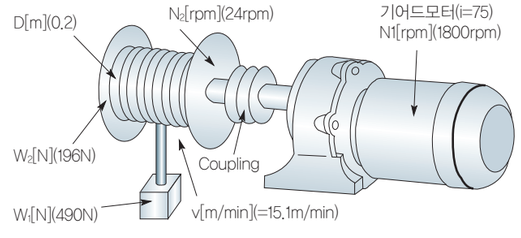
일반용도		$GD^2 = W(\frac{V}{\pi \cdot N})^2 = WD^2$ [N · m²]
컨베이어용 수평운동		$GD^2 = (\frac{W_1+W_2}{2} + W_3 + W_4) \times D^2$ [N · m²]
이송나사에 의한 수평운동		$GD^2 = W(\frac{V}{\pi \cdot N})^2 = W(\frac{P}{\pi})^2$ [N · m²]
권상기용 상하운동		$GD^2 = W_1D^2 + \frac{1}{2}W_2D^2$ [N · m²]

회전수가 서로 다른 축



$$GD^2 = (\frac{N_2}{N_1})^2 GD_L^2$$

계산 예

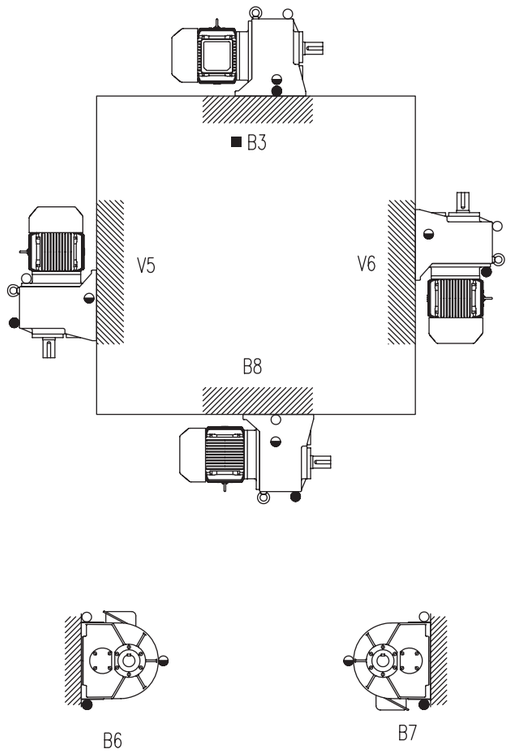


a)부하 $GD_L^2 = W_1D^2 + \frac{1}{2}W_2D^2$
$= 490 \times 0.2^2 + \frac{1}{2} \times 196 \times 0.2^2$
$= 23.5[N \cdot m^2]$

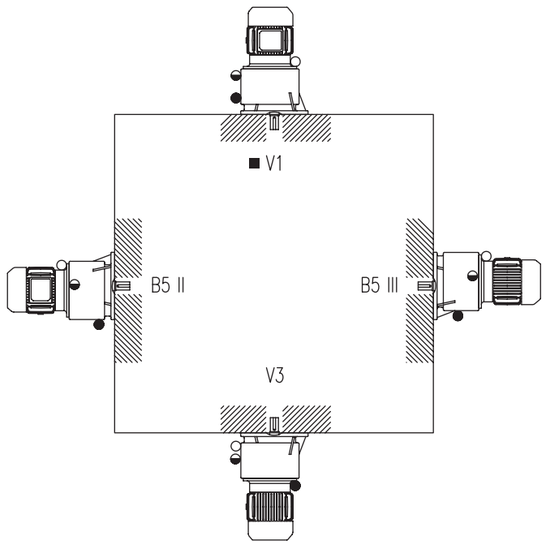
b)모터축 환산
$GD_L^2 = (\frac{N_2}{N_1})^2 \times$ 부하GD_L^2
$= (\frac{24}{1800})^2 \times 23.5$
$= 0.004[N \cdot m^2]$

설치방향

수평형



수직형

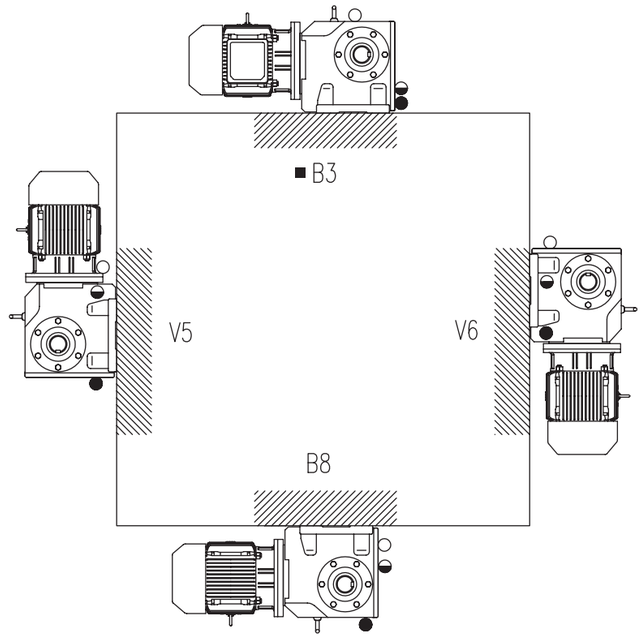


Symbols

- ○ Air Vent
- ◒ Oil Level
- ● Drain Plug
- ▨ Mounting Surface

■ 기본 설치방향, 그 외 방향에 대해서는 가격 및 납기를 본사에 문의하여 주시길 바랍니다.

중공축형



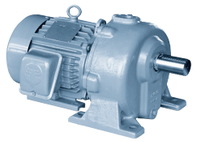
Symbols

- ○ Air Vent
- ◒ Oil Level
- ● Drain Plug
- ▨ Mounting Surface

GEARED MOTOR

F1-Series

F2-Series



동력 · 감속비별 기종 선정(60Hz, 4극 기준)

Ratio \ kW	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
1 / 10	■ F1시리즈 – 안전계수 : 1.4 ~ 2.0						■ F2시리즈 – 안전계수 : 1.4 ~ 2.0			
1 / 20										
1 / 30										
1 / 40										
1 / 60										
1 / 75										
1 / 80										
1 / 90										
1 / 100										
1 / 120										

· 상기 사방 이외에도 제작이 가능하니 당사에 문의하여 주십시오.

F1 Series

수평형

수직형

IEC FLANGE

라인파워

F1시리즈 특징

1. 고효율·치연마

최적설계 및 모든 기어를 연마하여 저소음과 효율 97%이상을 보장하며 수명, 강도를 증가시켰습니다.

2. 취부의 자유

윤활제로 Grease를 사용하여 완전 밀폐 시킴으로써 취부를 자유롭게 했습니다.

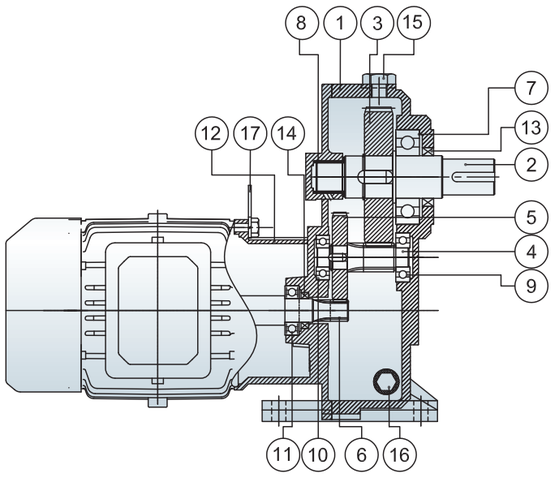
3. 신속한 공급

계획품 및 표준화된 모든 부품을 반제품화하여 확보해 둠으로써 수용가의 요구에 신속히 공급해 드립니다.

4. MAINTENANCE FREE-20,000시간

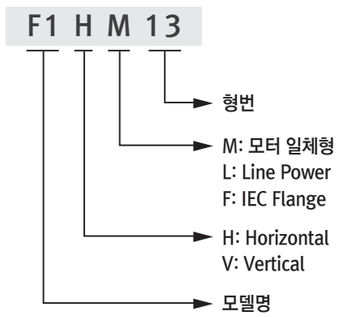
윤활성이 좋고 유동성이 높은 긴 수명의 Grease 사용으로 20,000시간 동안 수리, 보수가 필요 없습니다.

F1 구조도



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	6	MOTOR PINION	11	BEARING	16	PLUG
2	OUTPUT SHAFT	7	BEARING	12	MOTOR BRACKET	17	EYE PLATE
3	2'ND GEAR	8	BEARING	13	OIL SEAL		
4	2'ND PINION	9	BEARING	14	OIL SEAL		
5	1'ST GEAR	10	BEARING	15	AIR VENT		

형식표시

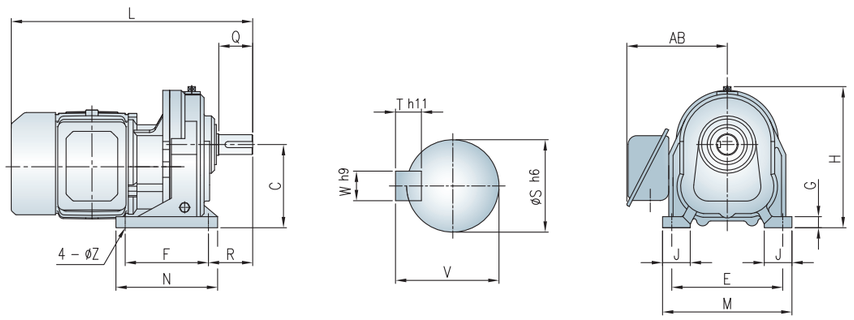


F1시리즈 GD², O.H.L표

kW	Ratio	형번	최대허용토크		모터축 환산GD²		출력축OHL	
			N·m	kgf·m	N·m²	kg·m²	N	kgf
0.2	1/5	08	28.6	2.9	0.0451	0.0046	2,156	220
	1/10	08	57.3	5.8	0.0450	0.0046	2,156	220
	1/15	08	85.9	8.8	0.0449	0.0046	2,156	220
	1/20	08	114.5	11.7	0.0449	0.0046	2,156	220
	1/25	08	143.2	14.6	0.0449	0.0046	2,156	220
	1/30	08	171.8	17.5	0.0449	0.0046	2,156	220
	1/40	08	229.1	23.4	0.0449	0.0046	2,156	220
	1/50	08	286.4	29.2	0.0449	0.0046	2,156	220
	1/60	08	343.6	35.1	0.0449	0.0046	2,156	220
	1/75	08	429.5	43.8	0.0449	0.0046	2,156	220
	1/90	08	515.4	52.6	0.0449	0.0046	2,156	220
	1/100	08	572.7	58.4	0.0449	0.0046	2,156	220
0.4	1/10	10	21.8	2.2	0.0794	0.0081	2,254	230
	1/15	10	32.8	3.4	0.0794	0.0081	2,254	230
	1/20	10	43.7	4.5	0.0794	0.0081	2,254	230
	1/30	10	65.5	6.7	0.0794	0.0081	2,254	230
	1/40	10	87.4	8.9	0.0794	0.0081	2,254	230
	1/45	10	98.3	10.0	0.0794	0.0081	2,254	230
	1/50	10	109.0	11.1	0.0794	0.0081	2,254	230
	1/60	10	131.0	13.4	0.0794	0.0081	2,254	230
	1/75	10	164.0	16.7	0.0794	0.0081	2,254	230
	1/90	10	197.0	20.1	0.0794	0.0081	2,254	230
	1/100	10	218.2	22.3	0.0794	0.0081	2,254	230
0.75	1/5	13	28.6	2.9	0.1386	0.0141	2,989	305
	1/10	13	57.3	5.8	0.1383	0.0141	2,989	305
	1/15	13	85.9	8.8	0.1382	0.0141	2,989	305
	1/20	13	114.5	11.7	0.1380	0.0141	2,989	305
	1/25	13	143.2	14.6	0.1379	0.0141	2,989	305
	1/30	13	171.8	17.5	0.1379	0.0141	2,989	305
	1/40	15	229.1	23.4	0.1380	0.0141	4,998	510
	1/45	15	257.7	26.3	0.1380	0.0141	4,998	510
	1/50	15	286.4	29.2	0.1380	0.0141	4,998	510
	1/60	15	343.6	35.1	0.1379	0.0141	4,998	510
	1/75	15	429.5	43.8	0.1379	0.0141	4,998	510
	1/90	15	515.4	52.6	0.1378	0.0141	4,998	510
	1/100	15	572.7	58.4	0.1378	0.0141	4,998	510
	1/120	15	687.3	70.1	0.1378	0.0141	4,998	510
1.5	1/5	15	57.3	5.8	0.2409	0.0246	4,998	510
	1/10	15	114.5	11.7	0.2386	0.0243	4,998	510
	1/15	15	171.8	17.5	0.2378	0.0243	4,998	510
	1/20	15	229.1	23.4	0.2374	0.0242	4,998	510
	1/25	15	286.4	29.2	0.2372	0.0242	4,998	510
	1/30	15	343.6	35.1	0.2371	0.0242	4,998	510
	1/40	17	458.2	46.8	0.2373	0.0242	6,664	680

kW	Ratio	형번	최대허용토크		모터축 환산GD²		출력축OHL	
			N·m	kgf·m	N·m²	kg·m²	N	kgf
1.5	1/45	17	515.4	52.6	0.2372	0.0242	6,664	680
	1/50	17	572.7	58.4	0.2372	0.0242	6,664	680
	1/60	17	687.3	70.1	0.2372	0.0242	6,664	680
	1/75	17	859.1	87.7	0.2369	0.0242	6,664	680
	1/90	17	1030.9	105.2	0.2369	0.0242	6,664	680
	1/100	17	1145.4	116.9	0.2369	0.0242	6,664	680
	1/120	17	1374.5	140.3	0.2368	0.0242	6,664	680
	1/100	23	1145.4	116.9	0.2382	0.0243	18,326	1,870
	1/120	23	1374.5	140.3	0.2380	0.0243	18,326	1,870
2.2	1/5	17	84.0	8.6	0.5516	0.0563	6,664	680
	1/10	17	168.0	17.1	0.5464	0.0558	6,664	680
	1/15	17	252.0	25.7	0.5448	0.0556	6,664	680
	1/20	17	336.0	34.3	0.5440	0.0555	6,664	680
	1/25	17	420.0	42.9	0.5436	0.0555	6,664	680
	1/30	17	504.0	51.4	0.5433	0.0554	6,664	680
	1/40	18	672.0	68.6	0.5436	0.0555	10,780	1,100
	1/45	18	756.0	77.1	0.5436	0.0555	10,780	1,100
	1/50	18	840.0	85.7	0.5435	0.0555	10,780	1,100
	1/60	18	1008.0	102.9	0.5433	0.0554	10,780	1,100
	1/75	18	1260.0	128.6	0.5431	0.0554	10,780	1,100
	1/90	18	1512.0	154.3	0.5430	0.0554	10,780	1,100
	1/100	18	1680.0	171.4	0.5429	0.0554	10,780	1,100
	1/75	20	1260.0	128.6	0.5447	0.0556	14,700	1,500
	1/90	20	1512.0	154.3	0.5443	0.0555	14,700	1,500
	1/100	20	1680.0	171.4	0.5442	0.0555	14,700	1,500
	1/120	20	2015.9	205.7	0.5442	0.0555	14,700	1,500
	1/75	23	1260.0	128.6	0.5448	0.0556	18,326	1,870
	1/90	23	1512.0	154.3	0.5444	0.0556	18,326	1,870
	1/100	27	1680.0	171.4	0.5455	0.0557	23,520	2,400
	1/120	27	2015.9	205.7	0.5447	0.0556	23,520	2,400
3.7	1/5	17	141.3	14.4	0.6986	0.0713	6,664	680
	1/10	17	282.5	28.8	0.6934	0.0708	6,664	680
	1/15	17	423.8	43.2	0.6918	0.0706	6,664	680
	1/20	17	565.1	57.7	0.6910	0.0705	6,664	680
	1/25	18	706.3	72.1	0.6923	0.0706	10,780	1,100
	1/30	18	847.6	86.5	0.6918	0.0706	10,780	1,100
	1/40	20	1130.2	115.3	0.6919	0.0706	14,700	1,500
	1/45	20	1271.4	129.7	0.6923	0.0706	14,700	1,500
	1/50	20	1412.7	144.2	0.6922	0.0706	14,700	1,500
	1/60	20	1695.2	173.0	0.6921	0.0706	14,700	1,500
	1/60	23	1695.2	173.0	0.6936	0.0708	18,326	1,870
	1/75	27	2119.0	216.2	0.6939	0.0708	23,520	2,400
	1/90	27	2542.8	259.5	0.6930	0.0707	23,520	2,400

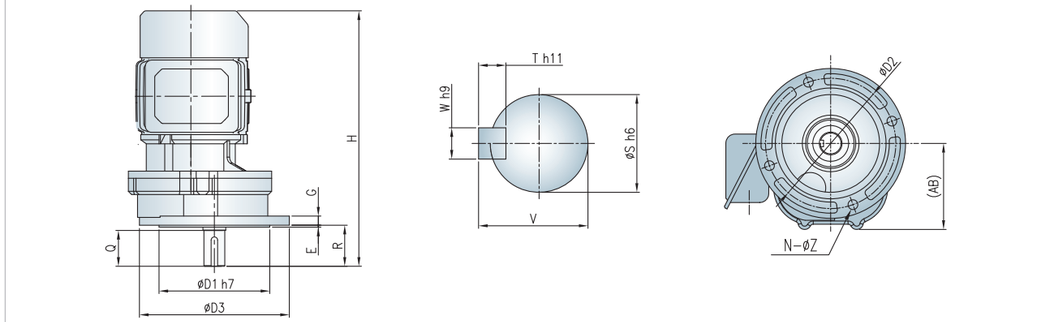
F1HM 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	Dimension												Output Shaft					그리스량 (kg)	중량 (kg)
			C	F	N	R	E	M	J	G	Z	H	L	AB	S	W	T	V	Q		
0.2	5~100	8	88	78	102	45	130	156	30	11	11	135	313.5	129	22	6	6	24.5	30	0.2	9
0.4	5~100	10	105	90	120	60	135	160	30	12	11	162	345	129	28	7	7	31	40	0.2	11
0.75	5~30	13	135	135	165	72	180	210	45	18	15	229	392	163	32	10	8	35	55	0.4	41
0.75	40~120	15	153	150	185	78	215	250	50	22	15	259	436	163	38	10	8	41	55	0.6	52
1.5	5~30	15	153	150	185	78	215	250	50	22	15	259	516	175	38	10	8	41	55	0.6	53
1.5	40~120	17	172	172	216	113.5	232	276	55	25	19	295	565	175	45	14	9	48.5	82	0.9	62
1.5	100~120	23	235	320	370	135	300	390	80	34	24	412	632	195	65	18	11	69	105	2.3	116
2.2	5~30	17	172	172	216	113.5	232	276	55	25	19	295	581	184	45	14	9	48.5	82	1.0	76
2.2	40~100	18	181	245	295	111	240	300	65	25	19	296	594	184	50	14	9	53.5	82	1.0	90
2.2	60~120	20	205	290	340	114	270	350	75	30	24	363	634	184	55	16	10	59	82	1.4	108
2.2	75~90	23	235	320	370	135	300	390	80	34	24	412	655	195	65	18	11	69	105	2.3	132
2.2	100~120	27	270	350	410	140	360	440	80	40	28	470	660	220	70	20	12	74.5	105	3.0	163
3.7	5~20	17	172	172	216	113.5	232	276	55	25	19	295	581	194	45	14	9	48.5	82	1.0	81
3.7	25~30	18	181	245	295	111	240	300	65	25	19	305	594	194	50	14	9	53.5	82	1.2	92
3.7	40~60	20	205	290	340	114	270	350	75	30	24	363	634	194	55	16	10	59	82	1.5	113
3.7	60	23	235	320	370	135	300	390	80	34	24	412	655	194	65	18	11	69	105	2.3	137
3.7	75~90	27	270	350	410	140	360	440	80	40	28	470	660	220	70	20	12	74.5	105	3.0	168

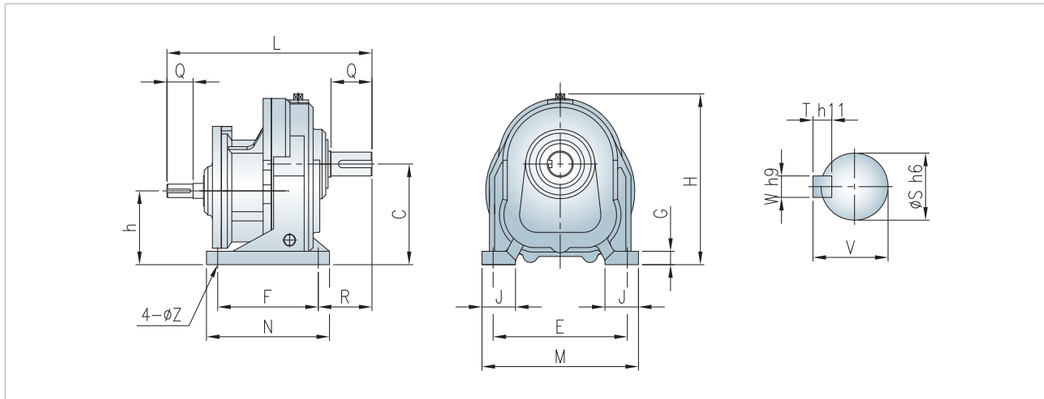
F1VM 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	Dimension										Output Shaft					그리스량 (kg)	중량 (kg)
			D1	D2	D3	R	E	G	H	N	Z	AB	S	W	T	V	Q		
0.2	5~100	8	120	150	130	39	4	11	313.5	4	11	65	22	6	6	24.5	30	0.2	9
0.4	5~100	10	150	175	155	45	3	11	345	4	11	77.5	28	7	7	31	40	0.2	11
0.75	5~30	13	170	200	230	63	3	14	392	4	15	132	32	10	8	35	55	1.1	41
0.75	40~120	15	200	230	260	65	4	16	436	4	15	151	38	10	8	41	55	1.7	53
1.5	5~30	15	200	230	260	65	4	16	516	4	15	151	38	10	8	41	55	1.9	54
1.5	40~120	17	275	310	340	69	4	18	565	6	19	169	45	14	9	48.5	82	2.7	74
1.5	100~120	23	355	400	440	113	5	24	632	6	19	232	65	18	11	69	105	7	121
2.2	5~30	17	275	310	340	69	4	18	581	6	19	169	45	14	9	48.5	82	3	88
2.2	40~100	18	275	310	340	89	5	18	594	6	19	178	50	14	9	53.5	82	3	94
2.2	60~120	20	295	340	380	89	5	18	634	6	19	199	55	16	10	59	82	4.1	112
2.2	75~90	23	355	400	440	113	5	24	655	6	19	232	65	18	11	69	105	7	138
2.2	100~120	27	435	480	520	115	5	24	660	6	19	265	70	20	12	74.5	105	8.9	174
3.7	5~20	17	275	310	340	69	4	18	581	6	19	169	45	14	9	48.5	82	3	93
3.7	25~30	18	275	310	340	89	5	18	594	6	19	178	50	14	9	53.5	82	3.5	96
3.7	40~60	20	295	340	380	89	5	18	634	6	19	199	55	16	10	59	82	4.6	117
3.7	60	23	355	400	440	113	5	24	655	6	19	232	65	18	11	69	105	7	142
3.7	75~90	27	435	480	520	115	5	24	660	6	19	265	70	20	12	74.5	105	8.9	179

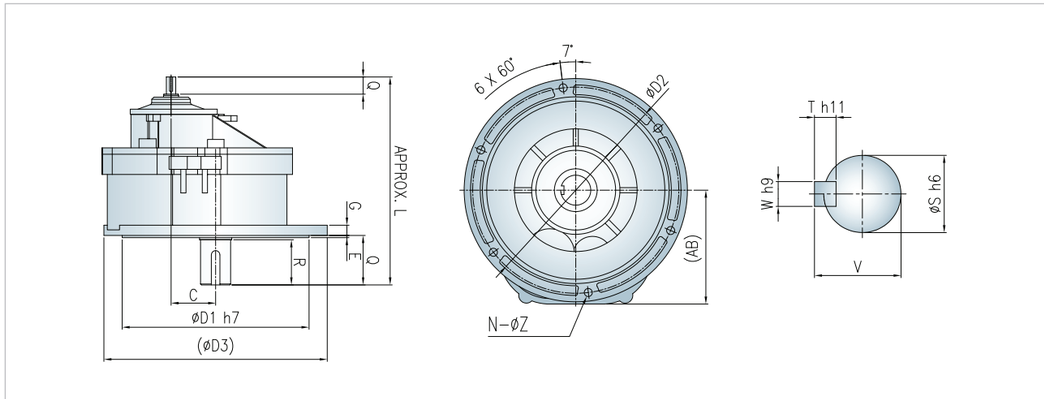
F1HL 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	Dimension												input Shaft					Output Shaft					그리스량 (kg)	중량 (kg)
			C	F	N	R	E	M	J	G	Z	H	L	h	S	W	T	V	Q	S	W	T	V	Q		
0.2	5~100	8	88	78	102	45	130	156	30	11	11	134	194	69	12	4	4	13.5	25	22	6	6	24.5	30	0.2	5.5
0.4	5~100	10	105	90	120	60	135	160	30	12	11	162	233	84	18	5	5	20	30	28	7	7	31	40	0.2	7.5
0.75	5~30	13	135	135	165	72	180	210	45	18	15	229	275	99	18	5	5	20	35	32	10	8	35	55	0.3	19
0.75	40~120	15	153	150	185	78	215	250	50	22	15	259	319.5	117.1	18	5	5	20	35	38	10	8	41	55	0.5	25
1.5	5~30	15	153	150	185	78	215	250	50	22	15	259	347.5	117.1	20	5	5	22	40	38	10	8	41	55	0.6	33
1.5	40~120	17	172	172	216	113.5	232	276	55	25	19	295	396.5	130.1	20	5	5	22	40	45	14	9	48.5	82	0.9	40
1.5	100~120	23	235	320	370	135	300	390	80	34	24	414	464	146.7	20	5	5	22	40	65	18	11	69	105	2.3	99
2.2	5~30	17	172	172	216	113.5	232	276	55	25	19	295	404.5	130.1	22	7	7	25	40	45	14	9	48.5	82	1	42
2.2	40~100	18	181	245	295	111	240	300	65	25	19	296	418	140.2	22	7	7	25	40	50	14	9	53.5	82	1	55
2.2	60~120	20	205	290	340	114	270	350	75	30	24	365	458	156.2	22	7	7	25	40	55	16	10	59	82	1.4	75
2.2	75~90	23	235	320	370	135	300	390	80	34	24	414	479.5	156	22	7	7	25	40	65	18	11	69	105	2.3	101
2.2	100~120	27	270	350	410	140	360	440	80	40	28	469	484	166.3	22	7	7	25	40	70	20	12	74.5	105	3	139
3.7	5~20	17	172	172	216	113.5	232	276	55	25	19	295	409.5	130.1	25	7	7	28	45	45	14	9	48.5	82	1	43
3.7	25~30	18	181	245	295	111	240	300	65	25	19	305	423	140.2	25	7	7	28	45	50	14	9	53.5	82	1.2	54
3.7	40~60	20	205	290	340	114	270	350	75	30	24	365	463	156.3	25	7	7	28	45	55	16	10	59	82	1.5	77
3.7	60	23	235	320	370	135	300	390	80	34	24	414	484.5	165.6	25	7	7	28	45	65	18	11	69	105	2.3	103
3.7	75~90	27	270	350	410	140	360	440	80	40	28	469	489	175.9	25	7	7	28	45	70	20	12	74.5	105	3	141

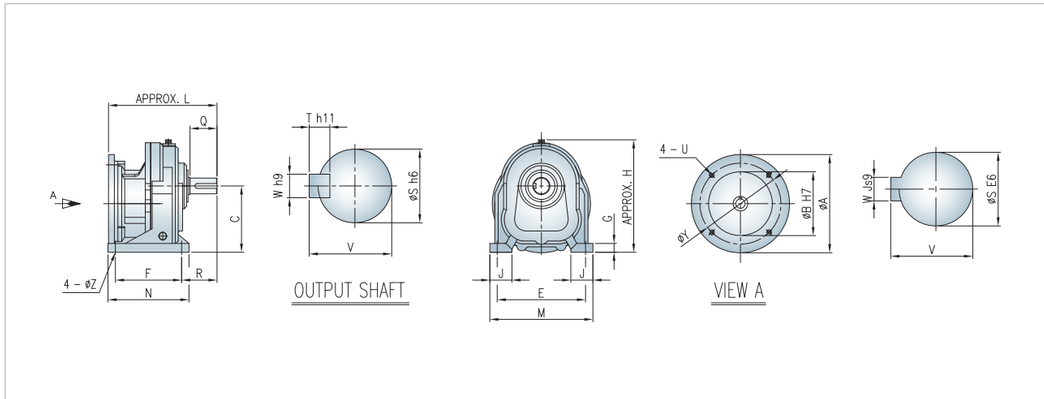
F1VL 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	Dimension										input Shaft					Output Shaft						그리스량 (kg)	중량 (kg)
			D1	D2	D3	E	G	C	L	N	Z	AB	S	W	T	V	Q	S	W	T	V	Q	R		
0.2	5~100	8	120	150	130	4	11	19	194	4	11	65	12	4	4	13.5	25	22	6	6	24.5	39	30	0.2	5.5
0.4	5~100	10	150	175	155	3	11	22	233	4	11	77.5	18	5	5	20	30	28	7	7	31	45	40	0.2	7.5
0.75	5~30	13	170	200	230	3	14	36	275	4	15	132	18	5	5	20	35	32	10	8	35	63	55	1.1	16
0.75	40~120	15	200	230	260	4	16	35.9	319.5	4	15	151	18	5	5	20	35	38	10	8	41	65	55	1.7	29
1.5	5~30	15	200	230	260	4	16	35.9	347.5	4	15	151	20	5	5	22	40	38	10	8	41	65	55	1.9	30
1.5	40~120	17	275	310	340	4	18	41.9	396.5	6	19	169	20	5	5	22	40	45	14	9	48.5	69	82	2.7	50
1.5	100~120	23	355	400	440	5	24	88.3	464	6	19	232	20	5	5	22	40	65	18	11	69	113	105	7	100
2.2	5~30	17	275	310	340	4	18	41.9	404.5	6	19	169	22	7	7	25	40	45	14	9	48.5	69	82	3	52
2.2	40~100	18	275	310	340	5	18	40.8	418	6	19	178	22	7	7	25	40	50	14	9	53.5	89	82	3	57
2.2	60~120	20	295	340	380	5	18	48.7	458	6	19	199	22	7	7	25	40	55	16	10	59	89	82	4.1	76
2.2	75~90	23	355	400	440	5	24	79	479.5	6	19	232	22	7	7	25	40	65	18	11	69	113	105	7	102
2.2	100~120	27	435	480	520	5	24	103.7	484	6	19	265	22	7	7	25	40	70	20	12	74.5	115	105	8.9	144
3.7	5~20	17	275	310	340	4	18	41.9	409.5	6	19	169	25	7	7	28	45	45	14	9	48.5	69	82	3	53
3.7	25~30	18	275	310	340	5	18	40.8	423	6	19	178	25	7	7	28	45	50	14	9	53.5	89	82	3.5	56
3.7	40~60	20	295	340	380	5	18	48.7	463	6	19	199	25	7	7	28	45	55	16	10	59	89	82	4.6	78
3.7	60	23	355	400	440	5	24	69.4	484.5	6	19	232	25	7	7	28	45	65	18	11	69	113	105	7	104
3.7	75~90	27	435	480	520	5	24	94.1	489	6	19	265	25	7	7	28	45	70	20	12	74.5	115	105	8.9	146

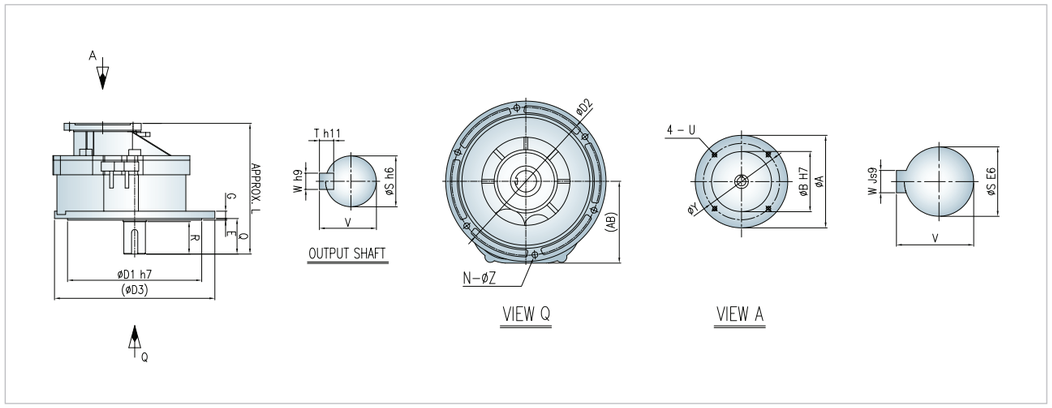
F1HF 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	Dimension											Input flange				Input shaft			Output Shaft					그리스량 (kg)	중량 (kg)
			C	F	N	R	Z	L	E	M	J	G	H	Y	U	A	B	W	V	S	W	T	V	S	Q		
0.2	5~100	8	88	78	102	45	11	173	130	156	30	11	139	115	M8	140	95	4	12.8	11	6	6	24.5	22	30	0.2	5.5
0.4	5~100	10	105	90	120	60	11	210	135	160	30	12	164	130	M8	160	110	5	16.3	14	7	7	31	28	40	0.2	7.5
0.75	5~30	13	135	135	165	72	15	221	180	210	45	18	229	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.4	19
0.75	40~120	15	153	150	185	78	15	265.5	215	250	50	22	259	165	M10	200	130	6	21.8	19	10	8	41	38	55	0.6	30
1.5	5~30	15	153	150	185	78	15	296	215	250	50	22	259	165	M10	200	130	8	27.3	24	10	8	41	38	55	0.6	33
1.5	40~120	17	172	172	216	113.5	19	345	232	276	55	25	295	165	M10	200	130	8	27.3	24	14	9	48.5	45	82	0.9	43
1.5	100~120	23	235	320	370	135	24	413	300	390	80	34	404	165	M10	200	130	8	27.3	24	18	11	69	65	105	2.3	102
2.2	5~30	17	172	172	216	113.5	19	344	232	276	55	25	295	215	M12	250	180	8	31.3	28	14	9	48.5	45	82	1	45
2.2	40~100	18	181	245	295	111	19	357	240	300	65	25	305	215	M12	250	180	8	31.3	28	14	9	53.5	50	82	1	58
2.2	60~120	20	205	290	340	114	24	398	270	350	75	30	365	215	M12	250	180	8	31.3	28	16	10	59	55	82	1.4	78
2.2	75~90	23	235	320	370	135	24	419	300	390	80	34	414	215	M12	250	180	8	31.3	28	18	11	69	65	105	2.3	105
2.2	100~120	27	270	350	410	140	28	424	360	440	80	40	469	215	M12	250	180	8	31.3	28	20	12	74.5	70	105	3	142
3.7	5~20	17	172	172	216	113.5	19	344	232	276	55	25	295	215	M12	250	180	8	31.3	28	14	9	48.5	45	82	1	46
3.7	25~30	18	181	245	295	111	19	358	240	300	65	25	305	215	M12	250	180	8	31.3	28	14	9	53.5	50	82	1.2	57
3.7	40~60	20	205	290	340	114	24	398	270	350	75	30	365	215	M12	250	180	8	31.3	28	16	10	59	55	82	1.5	80
3.7	60	23	235	320	370	135	24	419	300	390	80	34	414	215	M12	250	180	8	31.3	28	18	11	69	65	105	2.3	106
3.7	75~90	27	270	350	410	140	28	424	360	440	80	40	469	215	M12	250	180	8	31.3	28	20	12	74.5	70	105	3	144

F1VF 외형도 및 외형치수



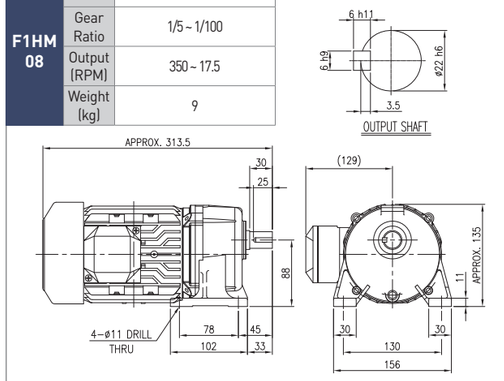
단위 : mm

kW	Ratio	형번	Dimension									Input flange				Input shaft			Output Shaft						그리스량 (kg)	중량 (kg)
			D1	D2	D3	E	G	L	N	Z	AB	Y	U	A	B	W	V	S	W	T	V	S	Q	R		
0.2	5~100	8	120	150	130	4	11	173	4	11	70	115	M8	140	95	4	12.8	11	6	6	24.5	22	39	30	0.2	5.5
0.4	5~100	10	150	175	155	3	11	209.5	4	11	75.5	130	M8	160	110	5	16.3	14	7	7	31	28	45	40	0.2	7.5
0.75	5~30	13	170	200	230	3	14	221	4	15	132	165	M10	200	130	6	21.8	19	10	8	35	32	63	55	1.1	17
0.75	40~120	15	200	230	260	4	16	266	4	15	151	165	M10	200	130	6	21.8	19	10	8	41	38	65	55	1.7	30
1.5	5~30	15	200	230	260	4	16	296	4	15	151	165	M10	200	130	8	27.3	24	10	8	41	38	65	55	1.9	33
1.5	40~120	17	275	310	340	4	18	345	6	19	169	165	M10	200	130	8	27.3	24	14	9	48.5	45	69	82	2.7	53
1.5	100~120	23	355	400	440	5	24	413	6	19	232	165	M10	200	130	8	27.3	24	18	11	69	65	113	105	7	102
2.2	5~30	17	275	310	340	4	18	344	6	19	169	215	M12	250	180	8	31.3	28	14	9	48.5	45	69	82	3	55
2.2	40~100	18	275	310	340	5	18	357	6	19	178	215	M12	250	180	8	31.3	28	14	9	53.5	50	89	82	3	60
2.2	60~120	20	295	340	380	5	18	398	6	19	199	215	M12	250	180	8	31.3	28	16	10	59	55	89	82	4.1	79
2.2	75~90	23	355	400	440	5	24	419	6	19	232	215	M12	250	180	8	31.3	28	18	11	69	65	113	105	7	106
2.2	100~120	27	435	480	520	5	24	424	6	19	265	215	M12	250	180	8	31.3	28	20	12	74.5	70	115	105	8.9	148
3.7	5~20	17	275	310	340	4	18	344	6	19	169	215	M12	250	180	8	31.3	28	14	9	48.5	45	69	82	3	56
3.7	25~30	18	275	310	340	5	18	358	6	19	178	215	M12	250	180	8	31.3	28	14	9	53.5	50	89	82	3.5	59
3.7	40~60	20	295	340	380	5	18	398	6	19	199	215	M12	250	180	8	31.3	28	16	10	59	55	89	82	4.6	81
3.7	60	23	355	400	440	5	24	419	6	19	232	215	M12	250	180	8	31.3	28	18	11	69	65	113	105	7	107
3.7	75~90	27	435	480	520	5	24	424	6	19	265	215	M12	250	180	8	31.3	28	20	12	74.5	70	115	105	8.9	149

F1 수평형

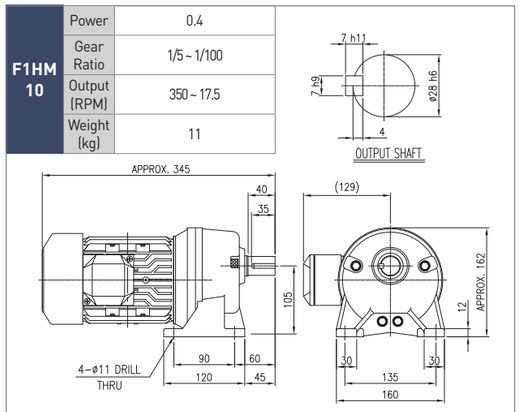
0.2kW

F1HM 08	
Power	0.2
Gear Ratio	1/5 ~ 1/100
Output (RPM)	350 ~ 17.5
Weight (kg)	9



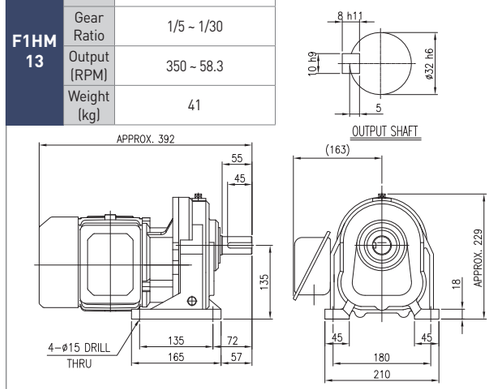
0.4kW

F1HM 10	
Power	0.4
Gear Ratio	1/5 ~ 1/100
Output (RPM)	350 ~ 17.5
Weight (kg)	11

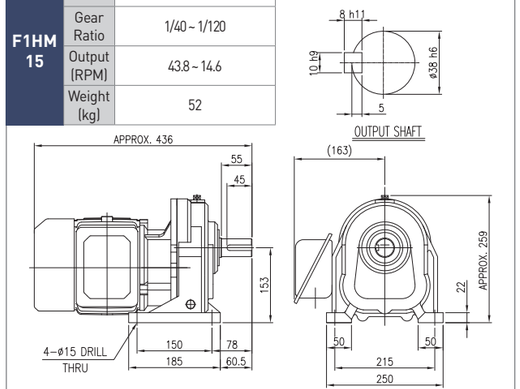


0.75kW

F1HM 13	
Power	0.75
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	41



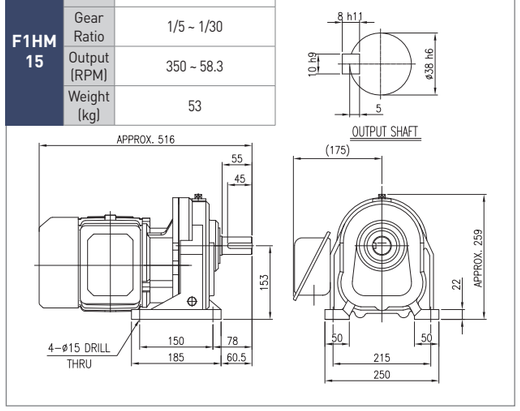
F1HM 15	
Power	0.75
Gear Ratio	1/40 ~ 1/120
Output (RPM)	43.8 ~ 14.6
Weight (kg)	52



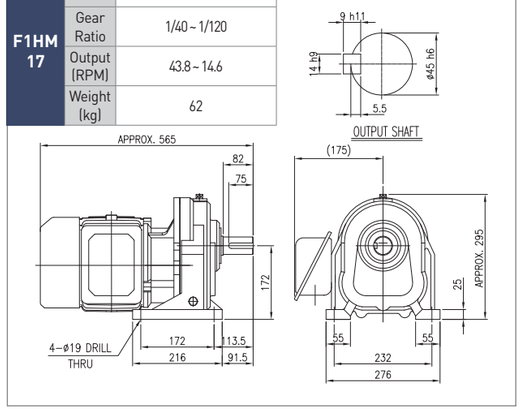
F1 수평형

1.5kW

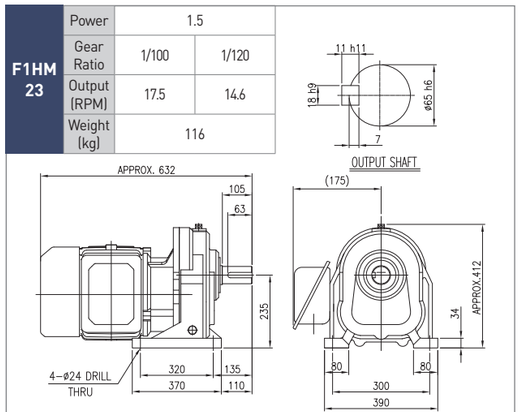
F1HM 15	
Power	1.5
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	53



F1HM 17	
Power	1.5
Gear Ratio	1/40 ~ 1/120
Output (RPM)	43.8 ~ 14.6
Weight (kg)	62

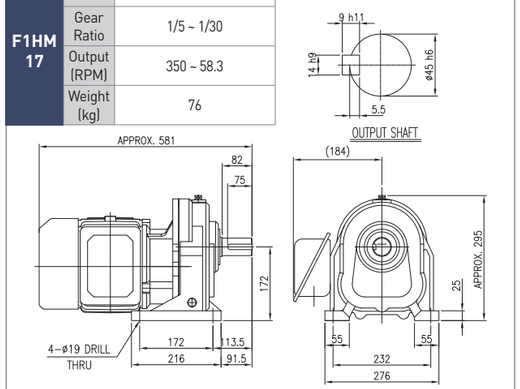


F1HM 23		
Power	1.5	
Gear Ratio	1/100	1/120
Output (RPM)	17.5	14.6
Weight (kg)	116	

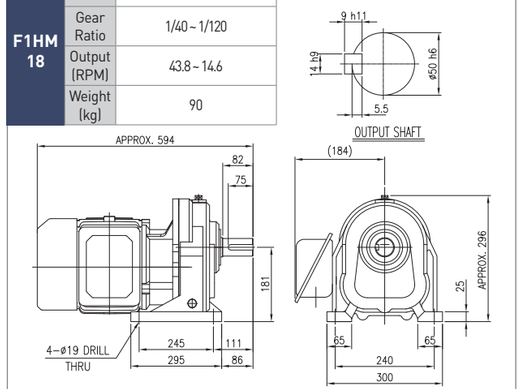


2.2kW

F1HM 17	
Power	2.2
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	76



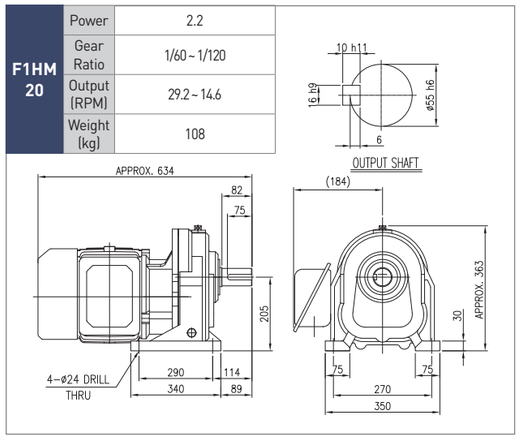
F1HM 18	
Power	2.2
Gear Ratio	1/40 ~ 1/120
Output (RPM)	43.8 ~ 14.6
Weight (kg)	90



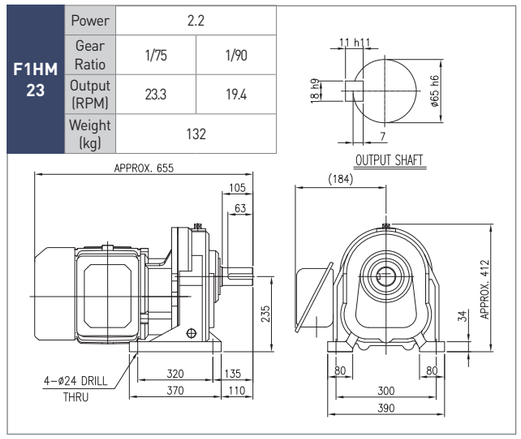
F1 수평형

2.2kW

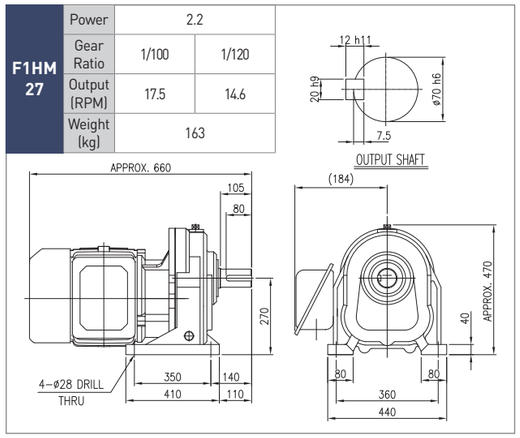
F1HM 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	108



F1HM 23		
	Power	2.2
	Gear Ratio	1/75 / 1/90
	Output (RPM)	23.3 / 19.4
	Weight (kg)	132

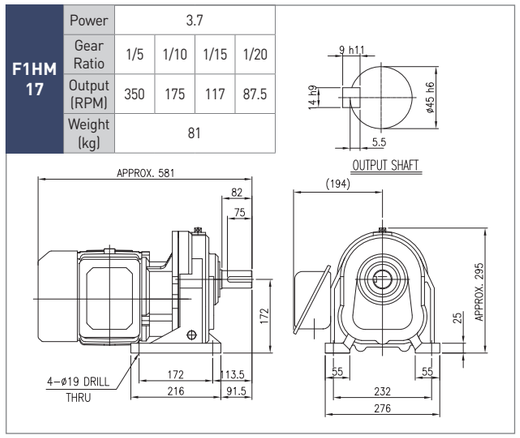


F1HM 27		
	Power	2.2
	Gear Ratio	1/100 / 1/120
	Output (RPM)	17.5 / 14.6
	Weight (kg)	163

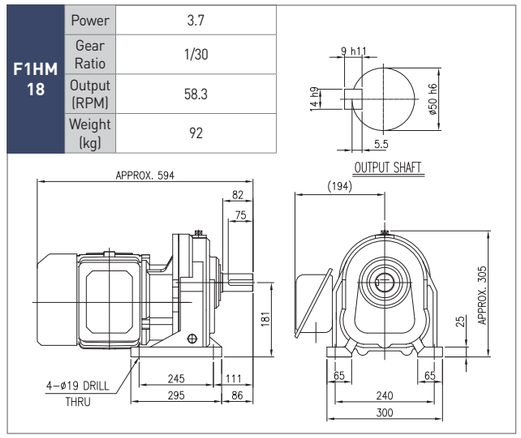


3.7kW

F1HM 17				
	Power	3.7		
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	81		

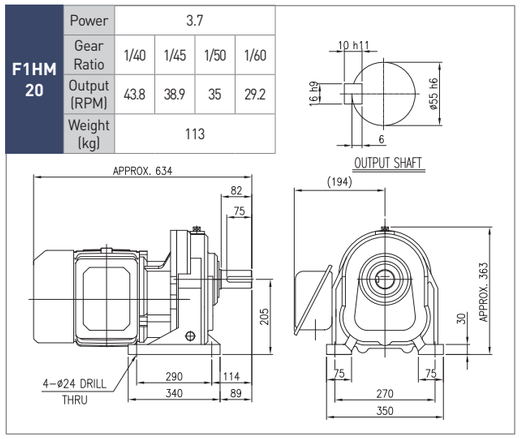


F1HM 18		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	92

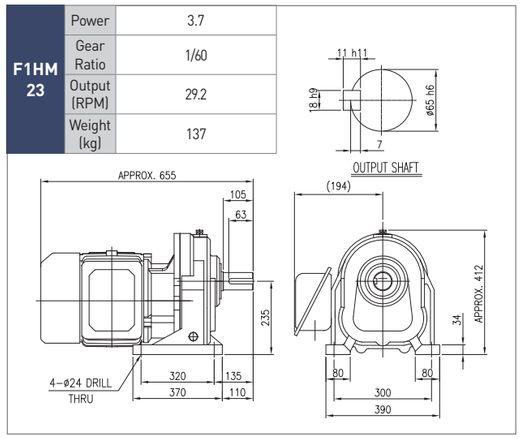


3.7kW

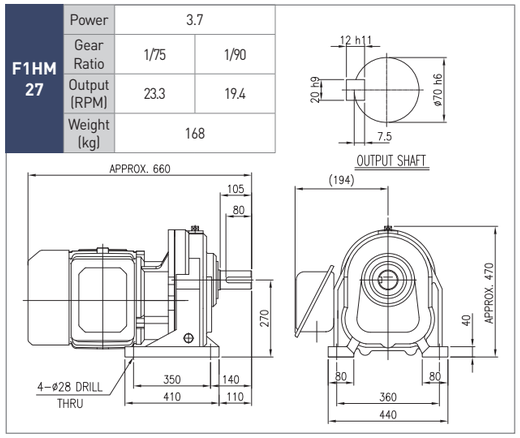
F1HM 20					
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	113			



F1HM 23		
	Power	3.7
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	137



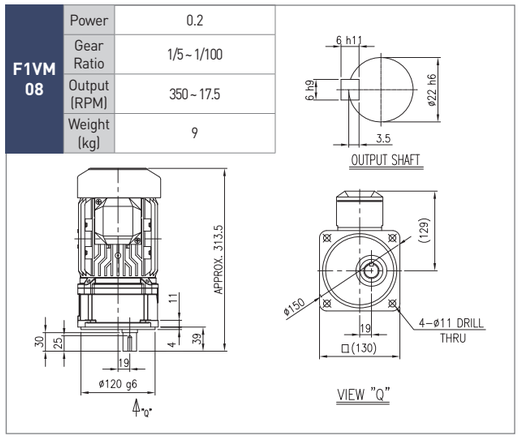
F1HM 27		
	Power	3.7
	Gear Ratio	1/75 / 1/90
	Output (RPM)	23.3 / 19.4
	Weight (kg)	168



F1 수직형

0.2kW

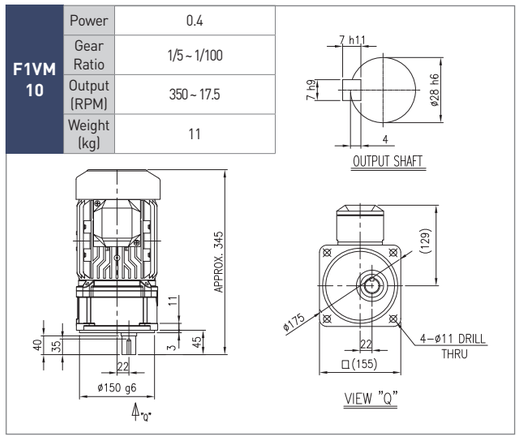
F1VM 08		
	Power	0.2
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	9



F1 수직형

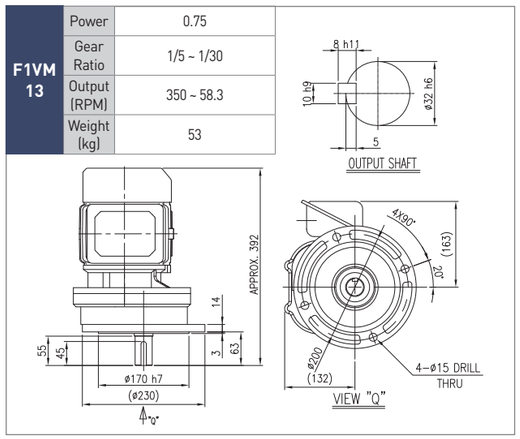
0.4kW

F1VM 10		
	Power	0.4
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	11

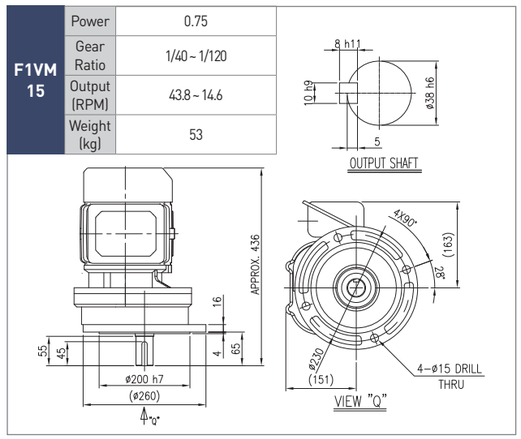


0.75kW

F1VM 13		
	Power	0.75
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	53

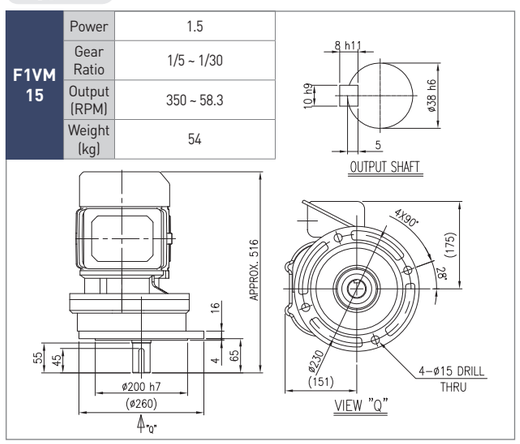


F1VM 15		
	Power	0.75
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	53

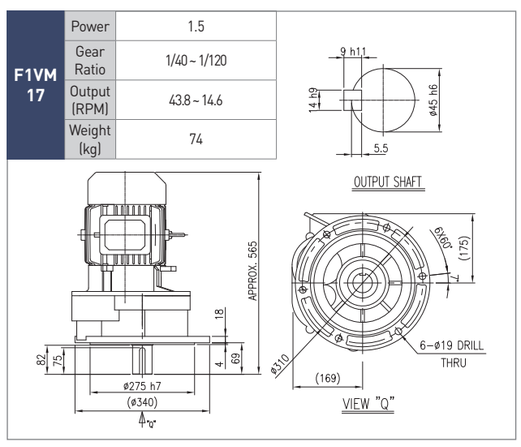


1.5kW

F1VM 15		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	54



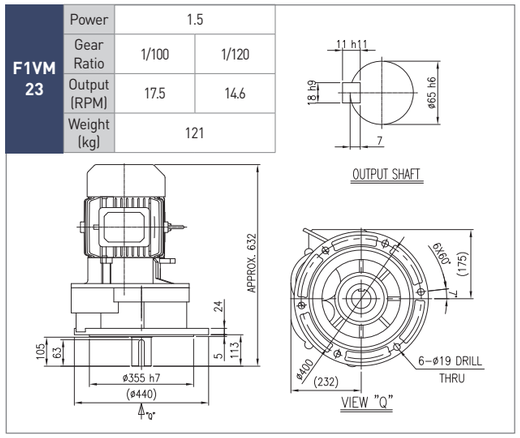
F1VM 17		
	Power	1.5
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	74



F1 수직형

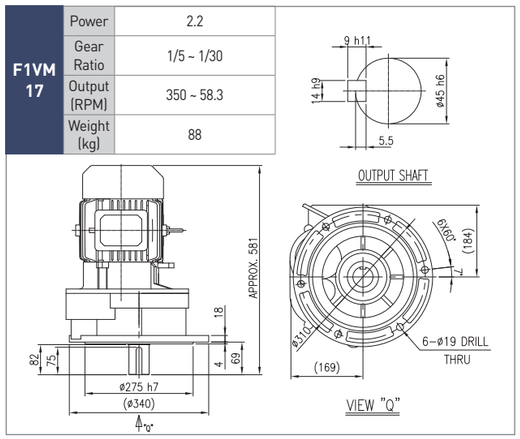
1.5kW

F1VM 23			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	121	

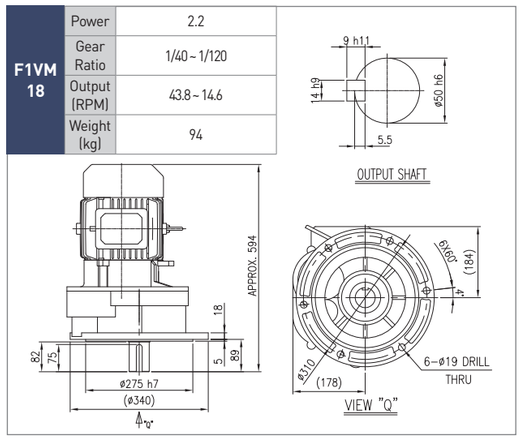


2.2kW

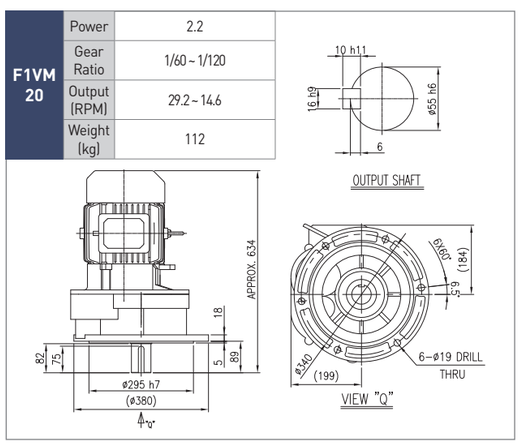
F1VM 17		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	88



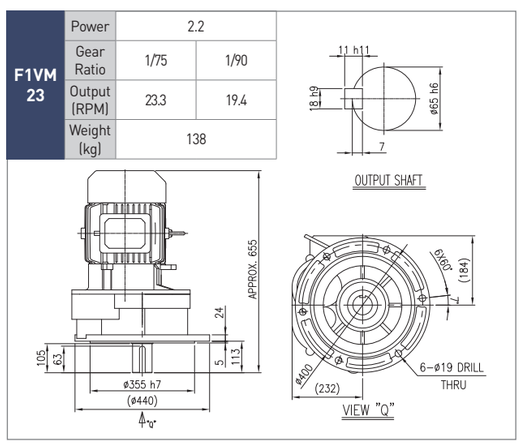
F1VM 18		
	Power	2.2
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	94



F1VM 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	112



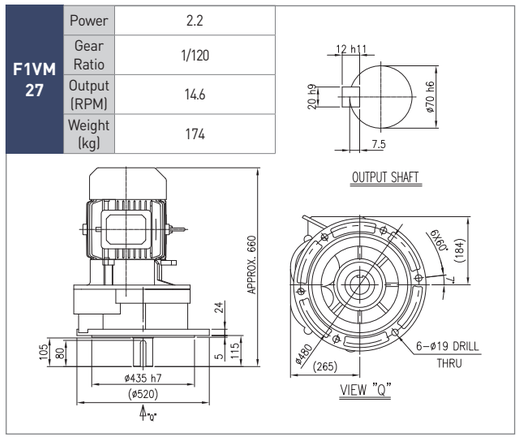
F1VM 23			
	Power	2.2	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	138	



F1 수직형

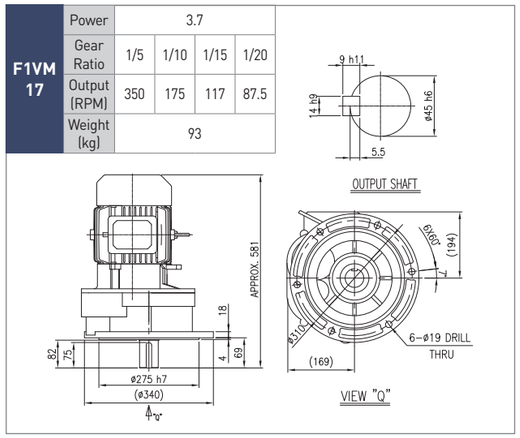
2.2kW

F1VM 27		
	Power	2.2
	Gear Ratio	1/120
	Output (RPM)	14.6
	Weight (kg)	174

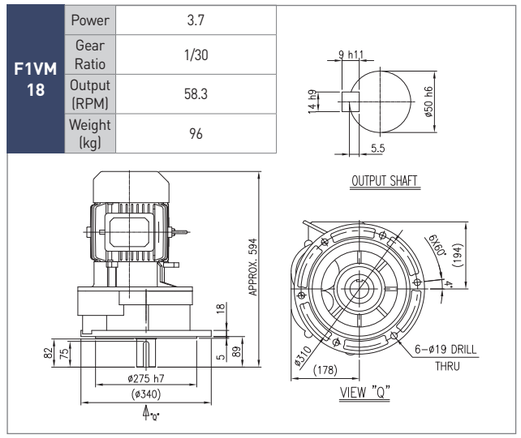


3.7kW

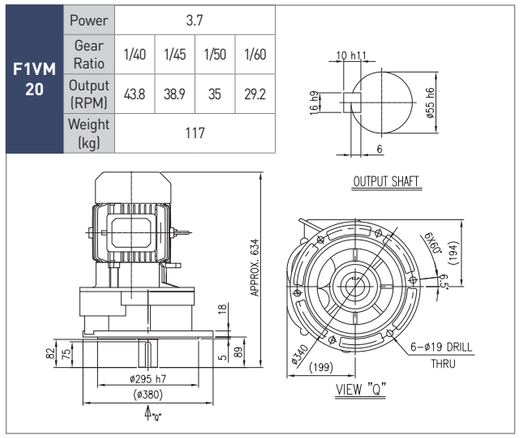
F1VM 17					
	Power	3.7			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	93			



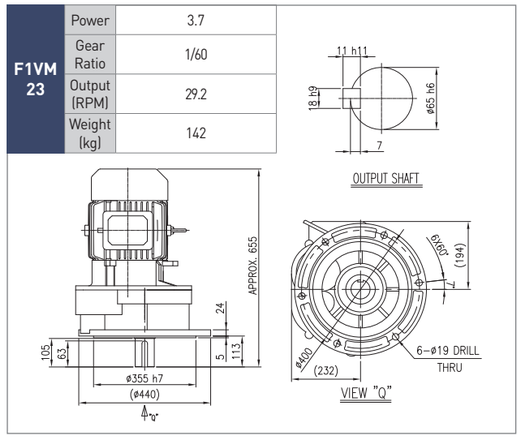
F1VM 18		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	96



F1VM 20					
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	117			



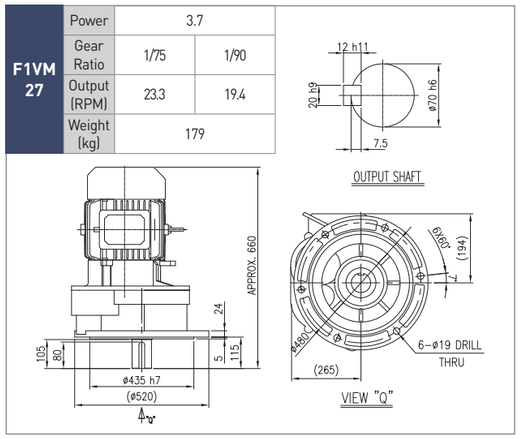
F1VM 23		
	Power	3.7
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	142



F1 수직형

3.7kW

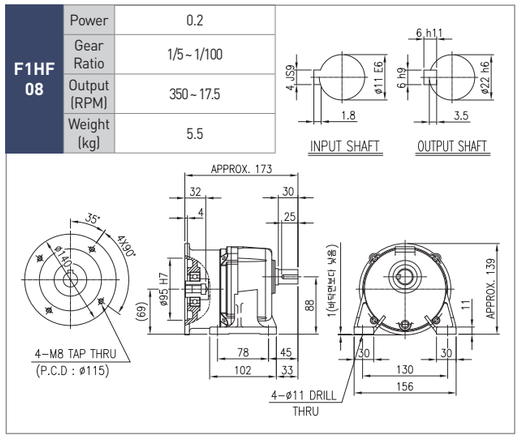
F1VM 27			
	Power	3.7	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	179	



F1 IEC Flange(수평형)

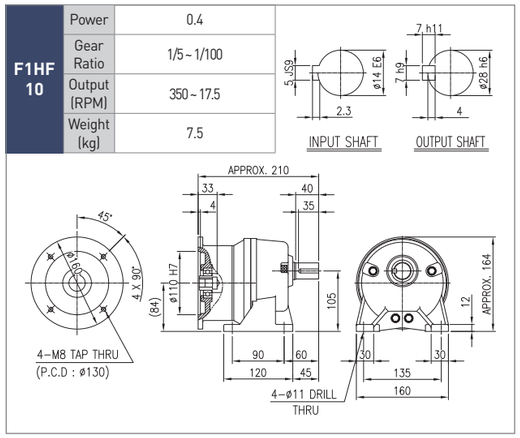
0.2kW

F1HF 08		
	Power	0.2
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	5.5



0.4kW

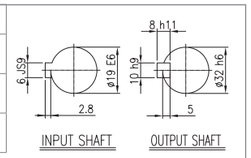
F1HF 10		
	Power	0.4
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	7.5

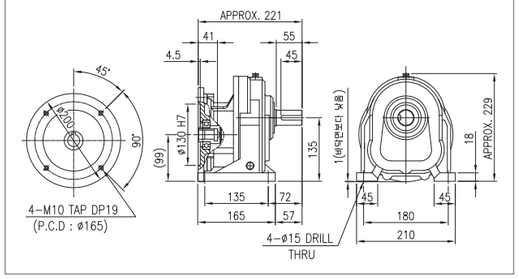


F1 IEC Flange(수평형)

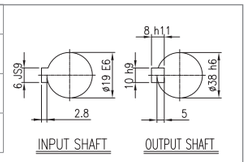
0.75kW

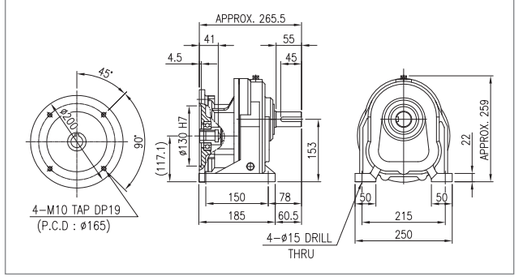
F1HF 13		
	Power	0.75
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	19





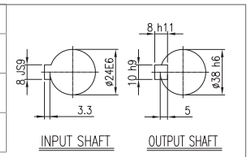
F1HF 15		
	Power	0.75
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	30

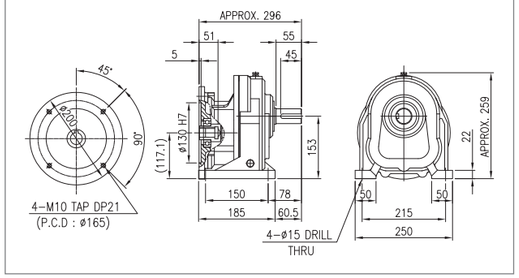




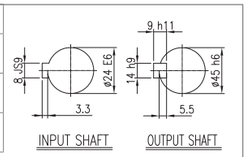
1.5kW

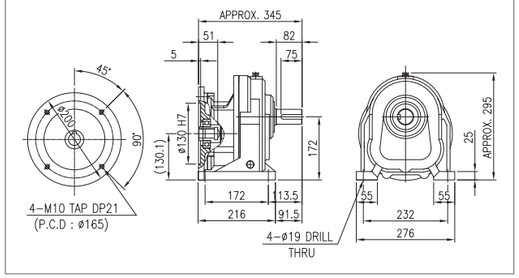
F1HF 15		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	33



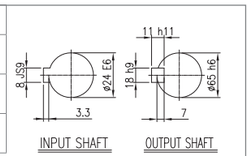


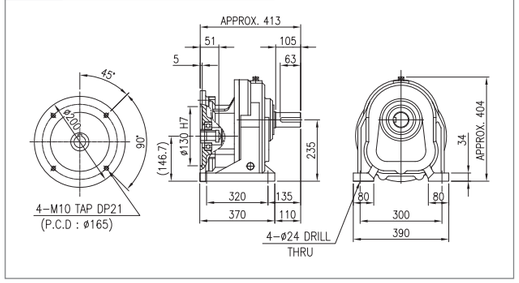
F1HF 17		
	Power	1.5
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	43





F1HF 23			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	102	

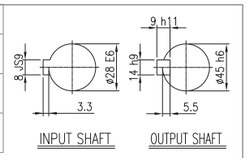


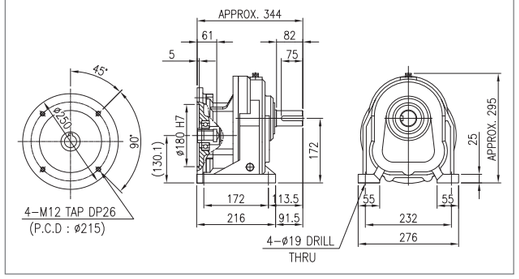


F1 IEC Flange(수평형)

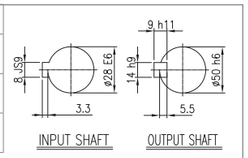
2.2kW

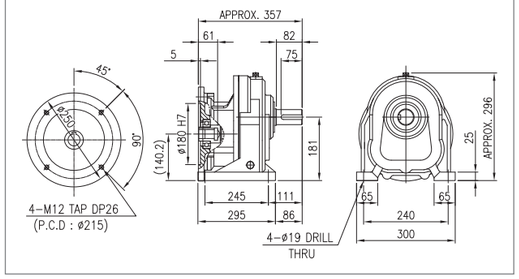
F1HF 17		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	45



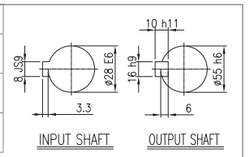


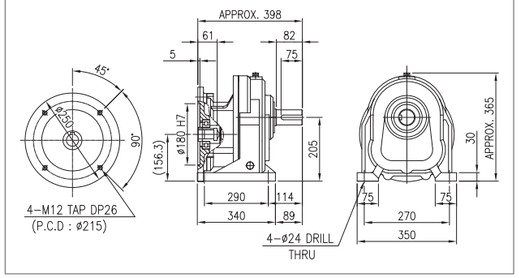
F1HF 18		
	Power	2.2
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	58



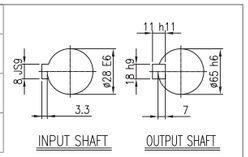


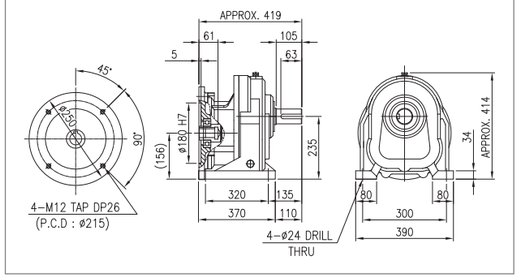
F1HF 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	78



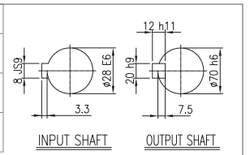


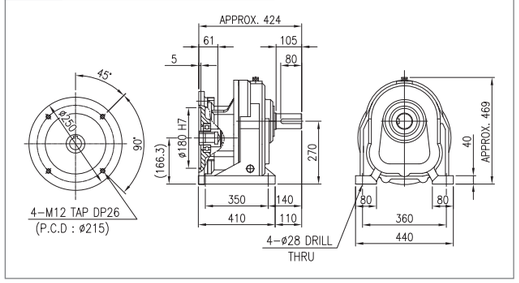
F1HF 23		
	Power	2.2
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	105





F1HF 27			
	Power	2.2	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	142	

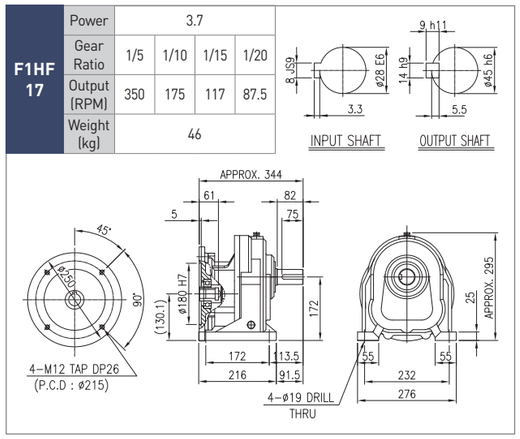




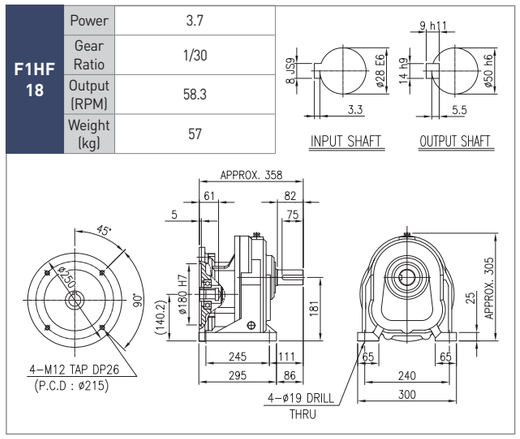
F1 IEC Flange(수평형)

3.7kW

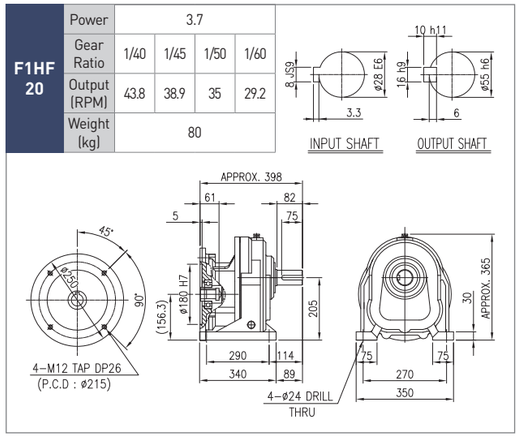
F1HF 17					
Power	3.7				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	46				



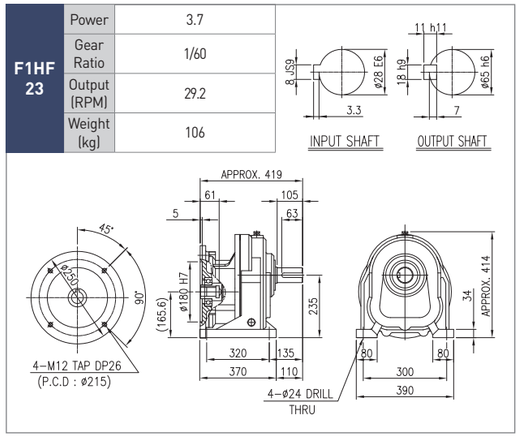
F1HF 18		
Power	3.7	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	57	



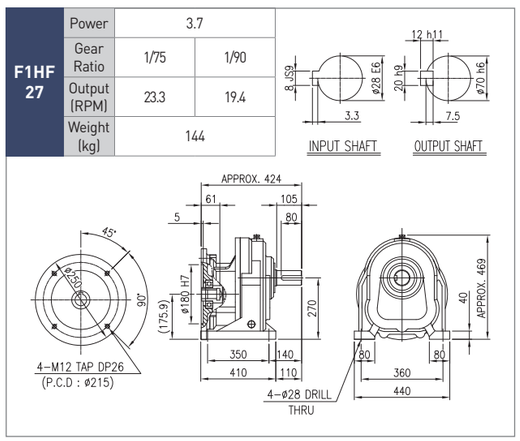
F1HF 20				
Power	3.7			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	80			



F1HF 23		
Power	3.7	
Gear Ratio	1/60	
Output (RPM)	29.2	
Weight (kg)	106	



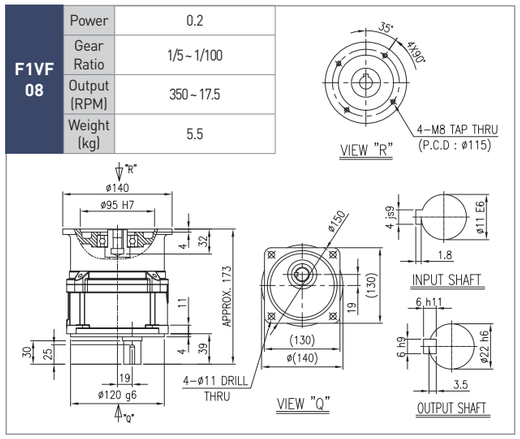
F1HF 27		
Power	3.7	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	144	



F1 IEC Flange(수직형)

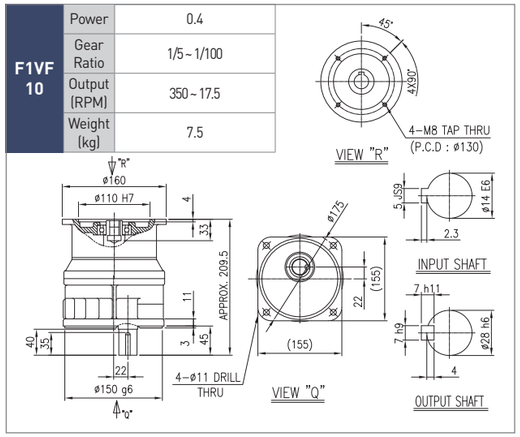
0.2kW

F1VF 08	
Power	0.2
Gear Ratio	1/5 ~ 1/100
Output (RPM)	350 ~ 17.5
Weight (kg)	5.5



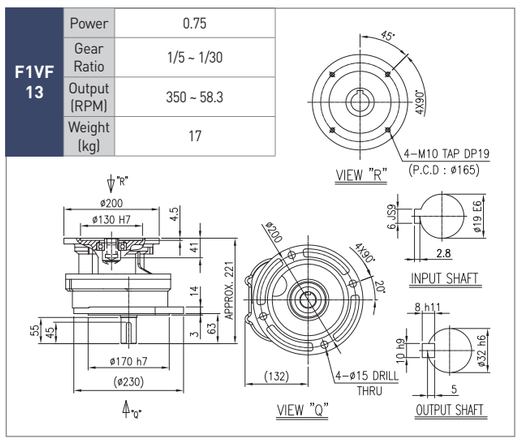
0.4kW

F1VF 10	
Power	0.4
Gear Ratio	1/5 ~ 1/100
Output (RPM)	350 ~ 17.5
Weight (kg)	7.5

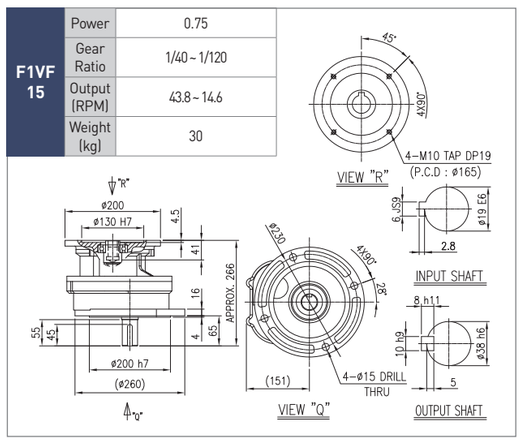


0.75kW

F1VF 13	
Power	0.75
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	17



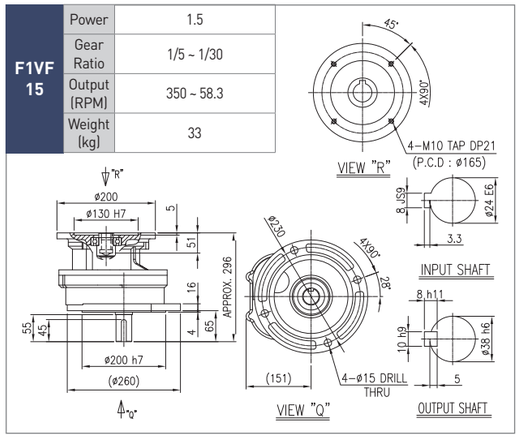
F1VF 15	
Power	0.75
Gear Ratio	1/40 ~ 1/120
Output (RPM)	43.8 ~ 14.6
Weight (kg)	30



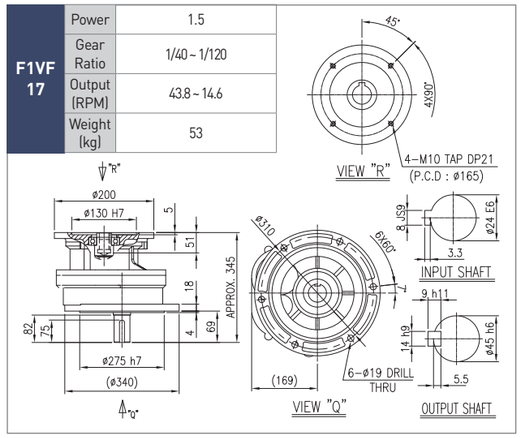
F1 IEC Flange(수직형)

1.5kW

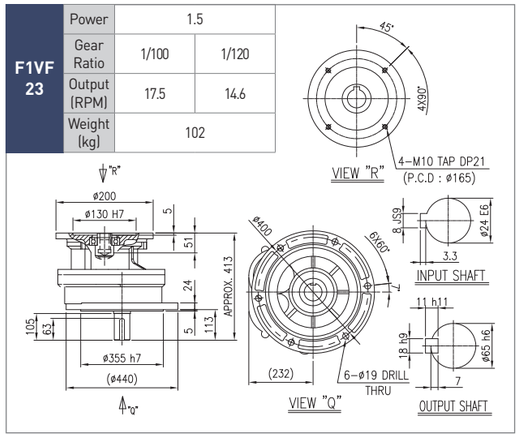
F1VF 15		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	33



F1VF 17		
	Power	1.5
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	53

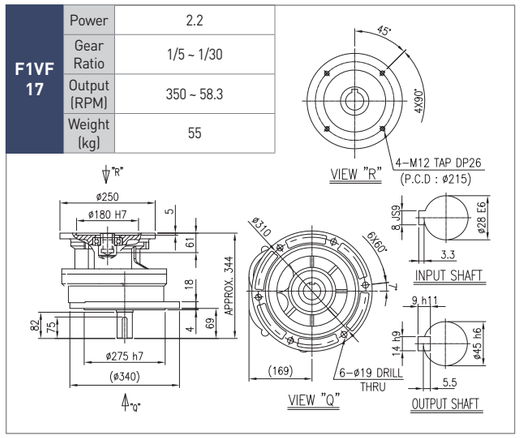


F1VF 23			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	102	

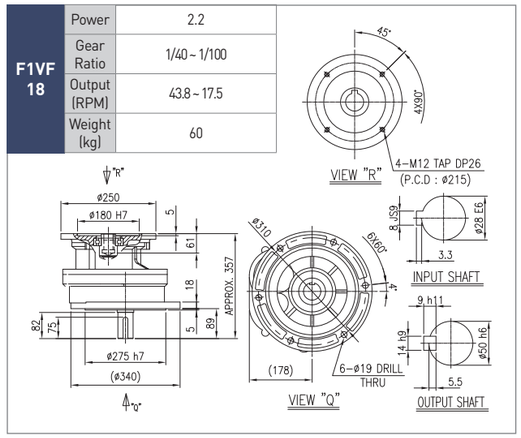


2.2kW

F1VF 17		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	55



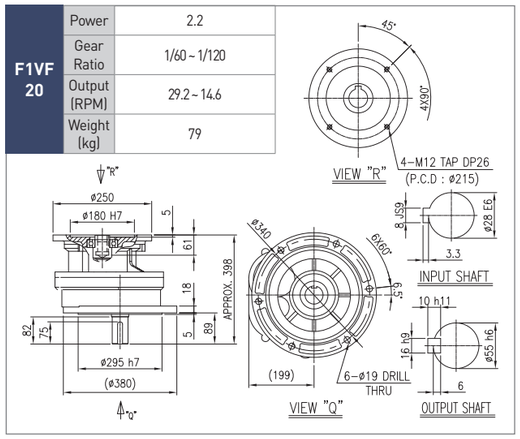
F1VF 18		
	Power	2.2
	Gear Ratio	1/40 ~ 1/100
	Output (RPM)	43.8 ~ 17.5
	Weight (kg)	60



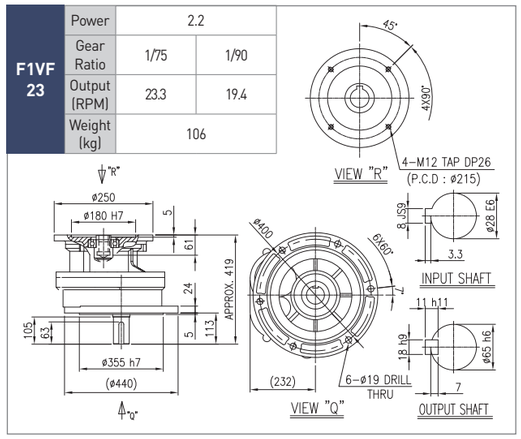
F1 IEC Flange(수직형)

2.2kW

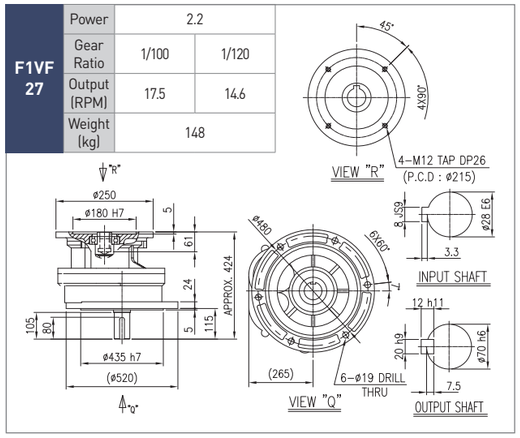
F1VF 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	79



F1VF 23		
	Power	2.2
	Gear Ratio	1/75 1/90
	Output (RPM)	23.3 19.4
	Weight (kg)	106

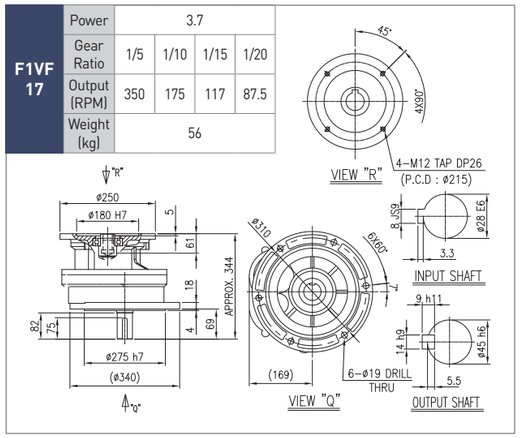


F1VF 27			
	Power	2.2	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	148	

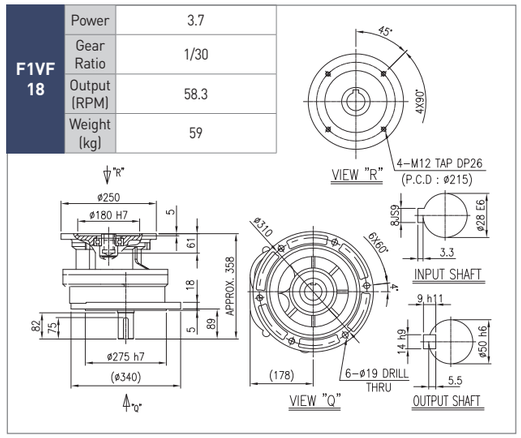


3.7kW

F1VF 17				
	Power	3.7		
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	56		



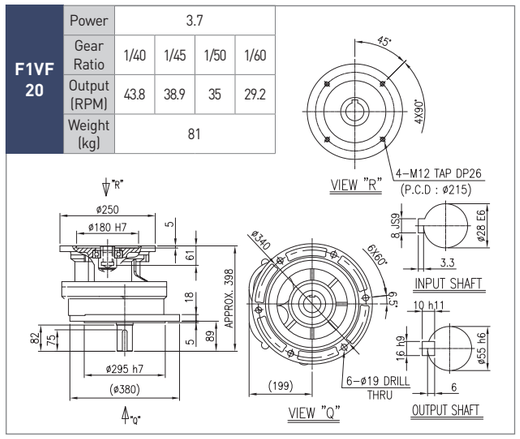
F1VF 18		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	59



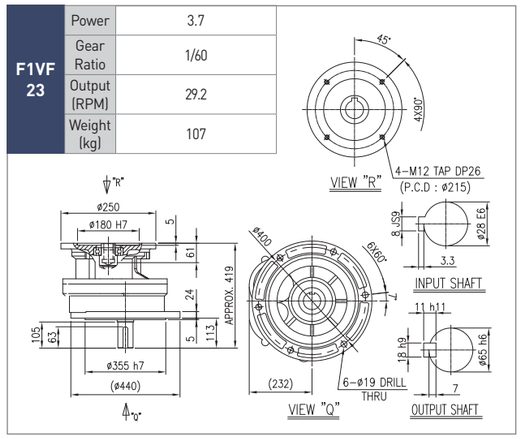
F1 IEC Flange(수직형)

3.7kW

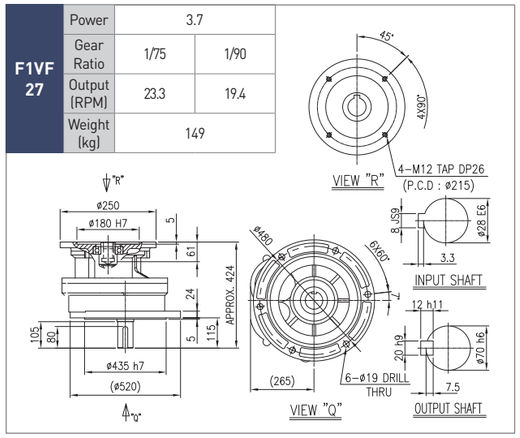
F1VF 20					
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	81			



F1VF 23		
	Power	3.7
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	107



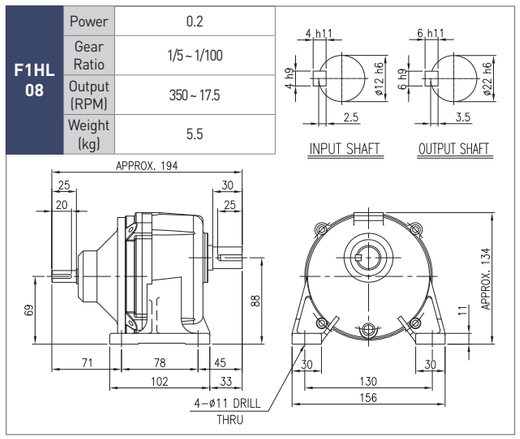
F1VF 27			
	Power	3.7	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	149	



F1 라인파워(수평형)

0.2kW

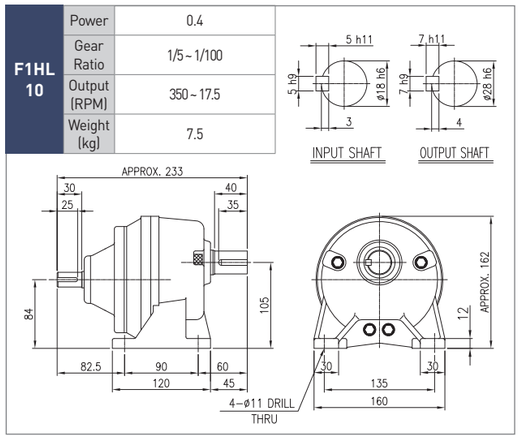
F1HL 08		
	Power	0.2
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	5.5



F1 라인파워(수평형)

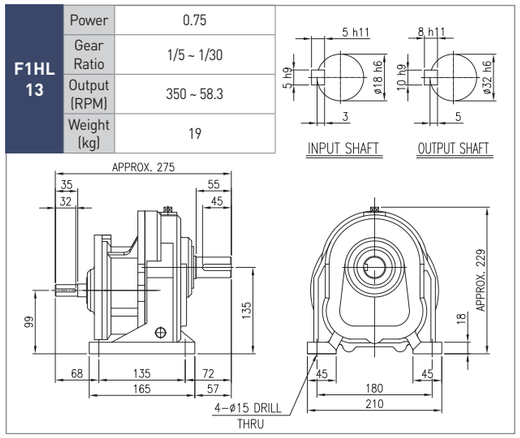
0.4kW

F1HL 10		
	Power	0.4
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	7.5

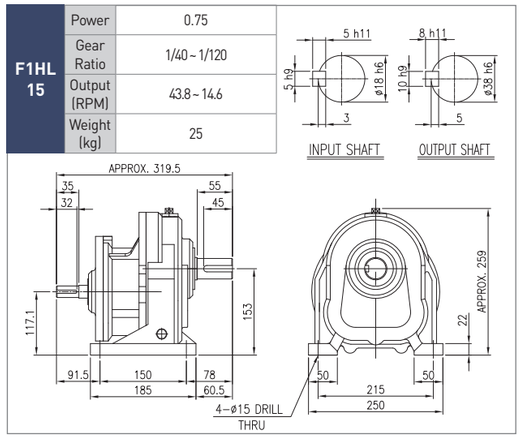


0.75kW

F1HL 13		
	Power	0.75
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	19

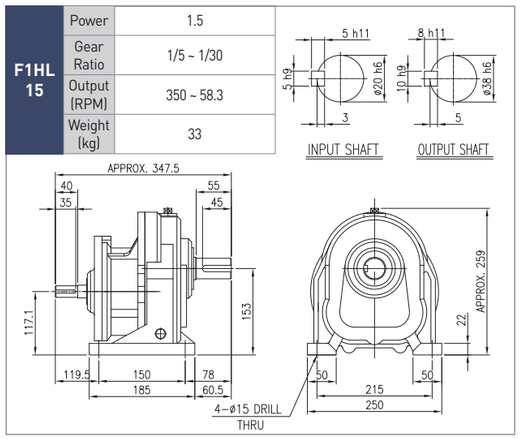


F1HL 15		
	Power	0.75
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	25

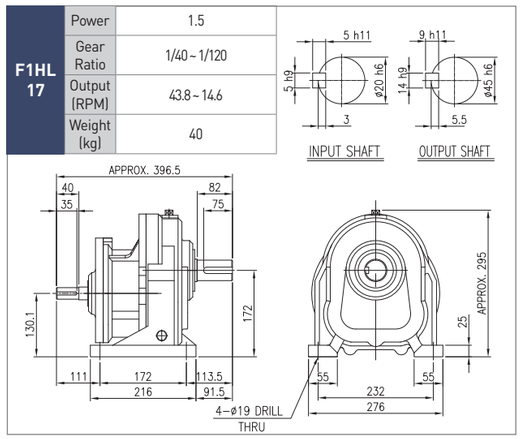


1.5kW

F1HL 15		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	33



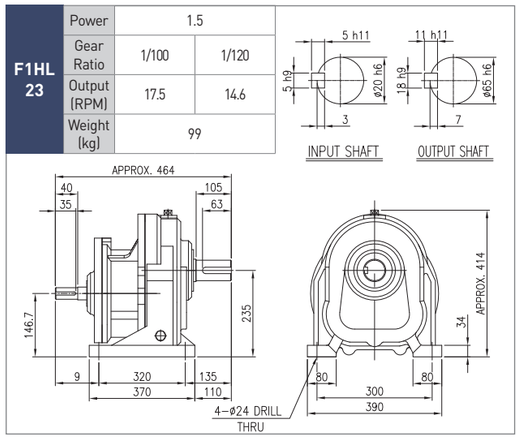
F1HL 17		
	Power	1.5
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	40



F1 라인파워(수평형)

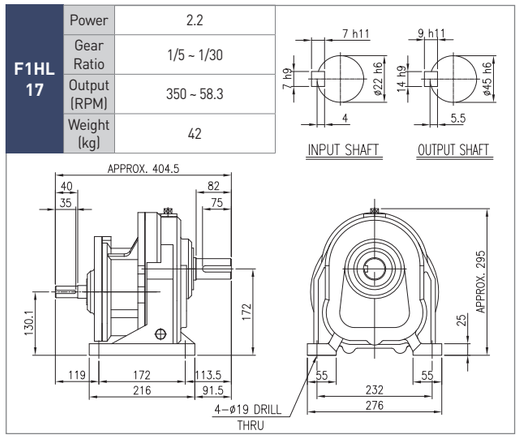
1.5kW

F1HL 23			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	99	

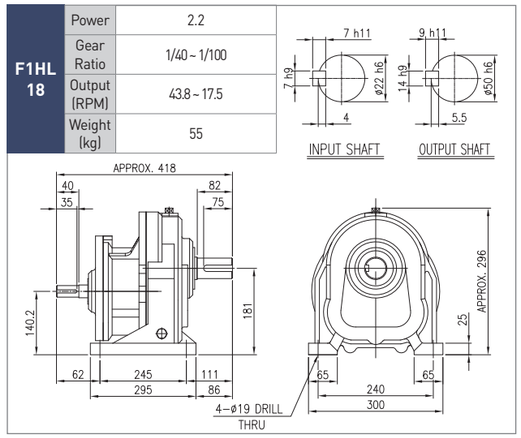


2.2kW

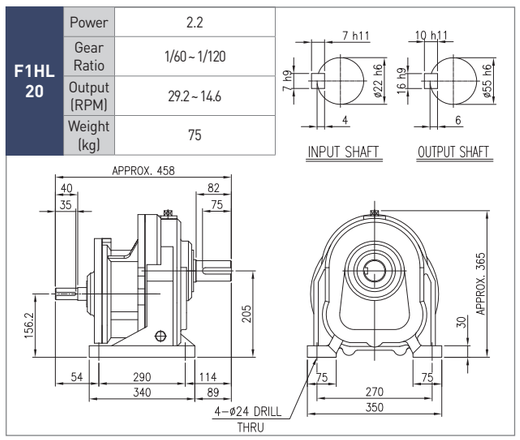
F1HL 17		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	42



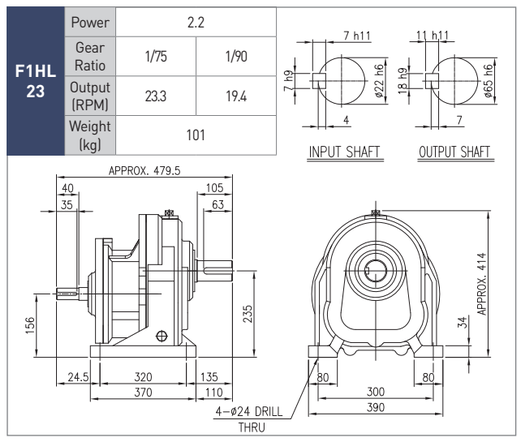
F1HL 18		
	Power	2.2
	Gear Ratio	1/40 ~ 1/100
	Output (RPM)	43.8 ~ 17.5
	Weight (kg)	55



F1HL 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	75



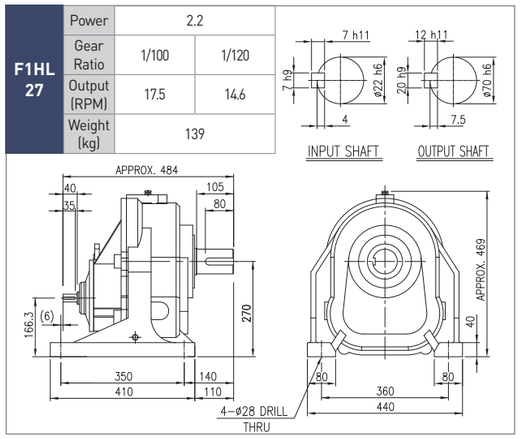
F1HL 23			
	Power	2.2	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	101	



F1 라인파워(수평형)

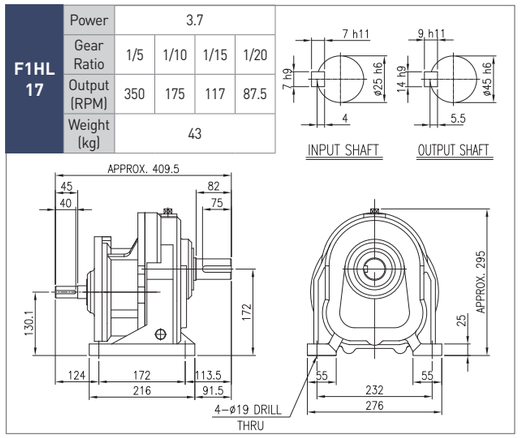
2.2kW

F1HL 27			
	Power	2.2	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	139	

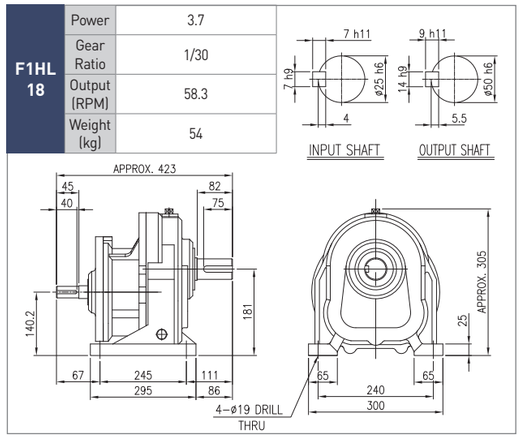


3.7kW

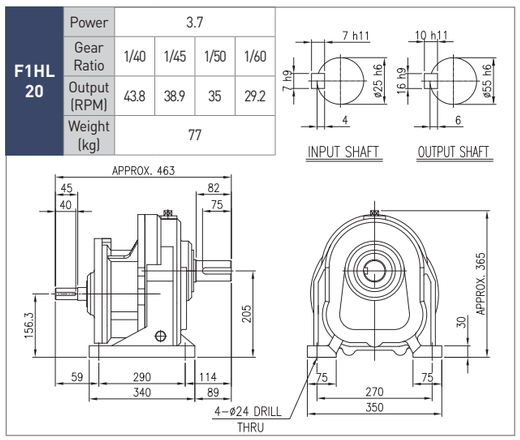
F1HL 17					
	Power	3.7			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	43			



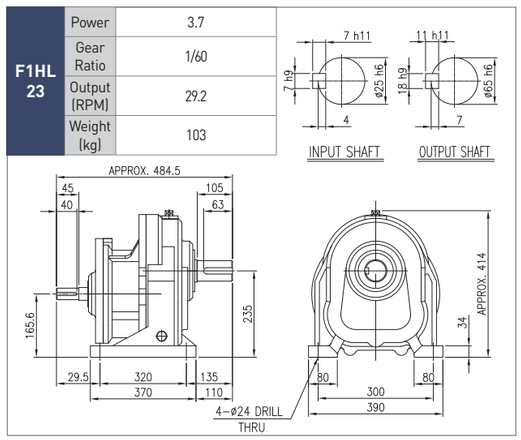
F1HL 18		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	54



F1HL 20					
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	77			



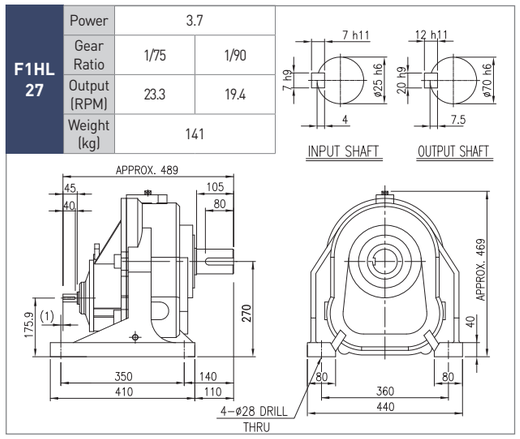
F1HL 23		
	Power	3.7
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	103



F1 라인파워(수평형)

3.7kW

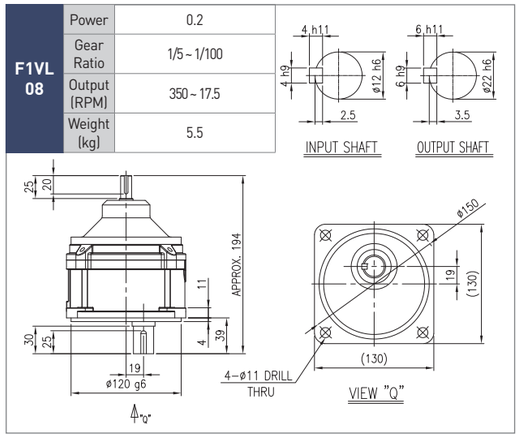
F1HL 27			
	Power	3.7	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	141	



F1 라인파워(수직형)

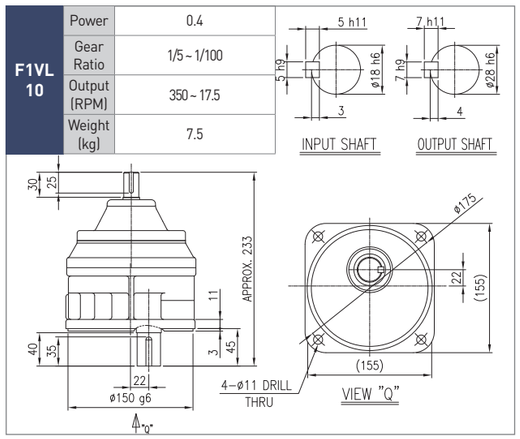
0.2kW

F1VL 08		
	Power	0.2
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	5.5



0.4kW

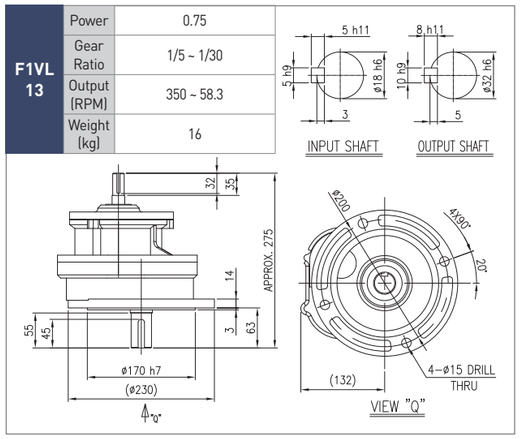
F1VL 10		
	Power	0.4
	Gear Ratio	1/5 ~ 1/100
	Output (RPM)	350 ~ 17.5
	Weight (kg)	7.5



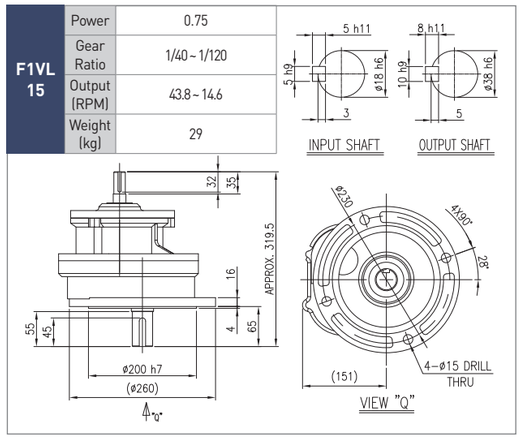
F1 라인파워(수직형)

0.75kW

F1VL 13		
	Power	0.75
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	16

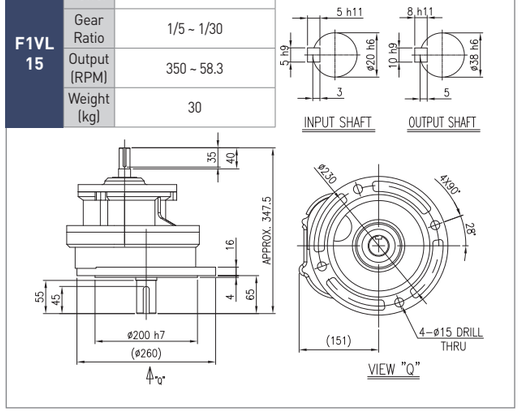


F1VL 15		
	Power	0.75
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	29

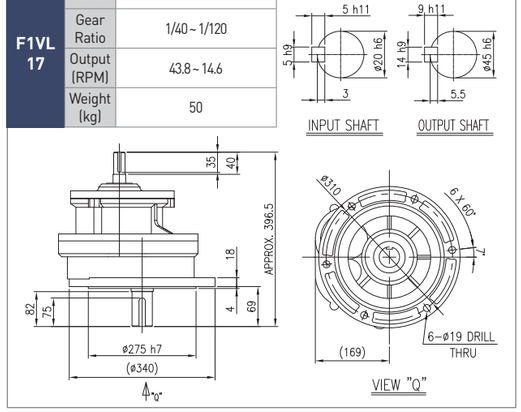


1.5kW

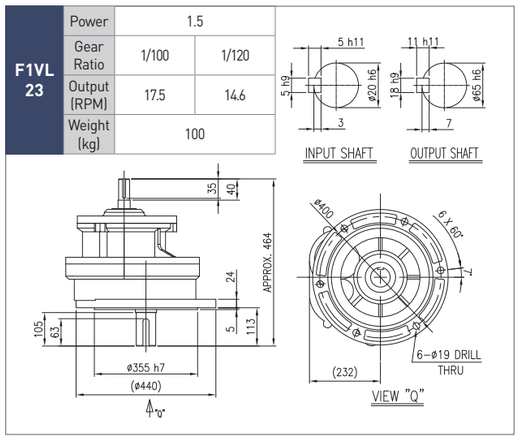
F1VL 15		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	30



F1VL 17		
	Power	1.5
	Gear Ratio	1/40 ~ 1/120
	Output (RPM)	43.8 ~ 14.6
	Weight (kg)	50



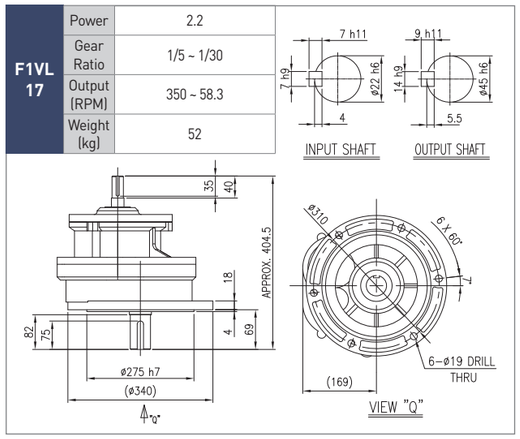
F1VL 23			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	100	



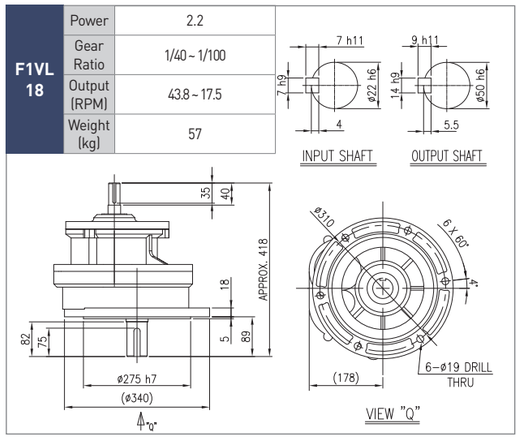
F1 라인파워(수직형)

2.2kW

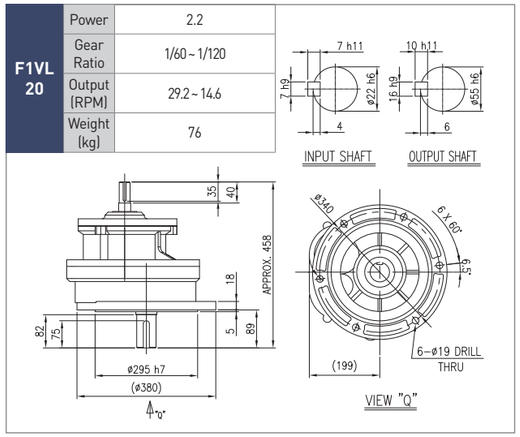
F1VL 17		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	52



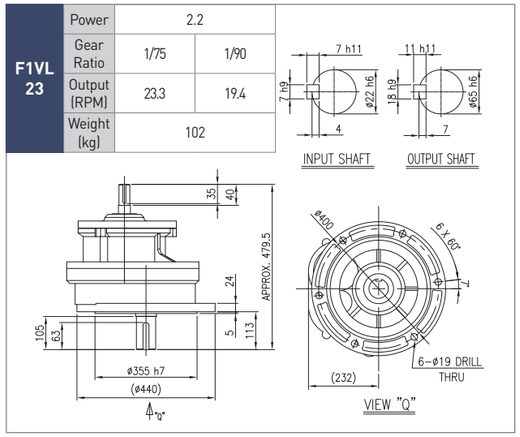
F1VL 18		
	Power	2.2
	Gear Ratio	1/40 ~ 1/100
	Output (RPM)	43.8 ~ 17.5
	Weight (kg)	57



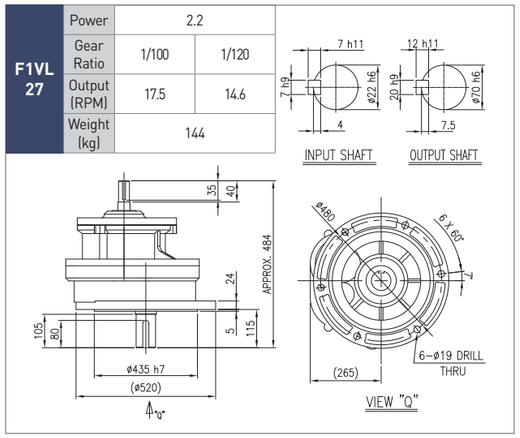
F1VL 20		
	Power	2.2
	Gear Ratio	1/60 ~ 1/120
	Output (RPM)	29.2 ~ 14.6
	Weight (kg)	76



F1VL 23		
	Power	2.2
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	102



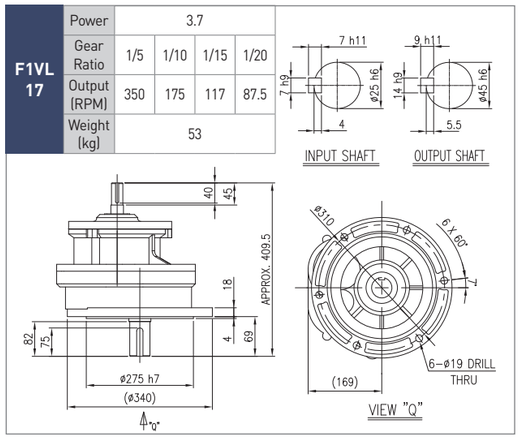
F1VL 27			
	Power	2.2	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	144	



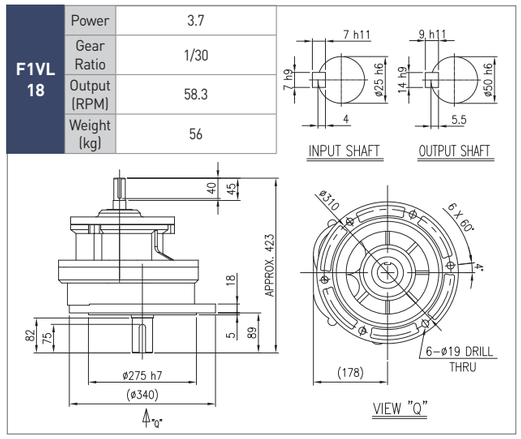
F1 라인파워(수직형)

3.7kW

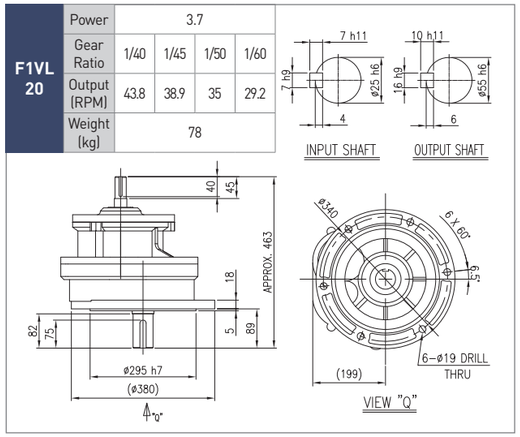
F1VL 17					
	Power	3.7			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	53			



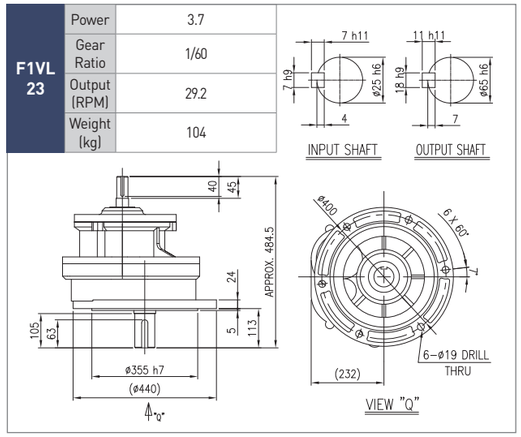
F1VL 18		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	56



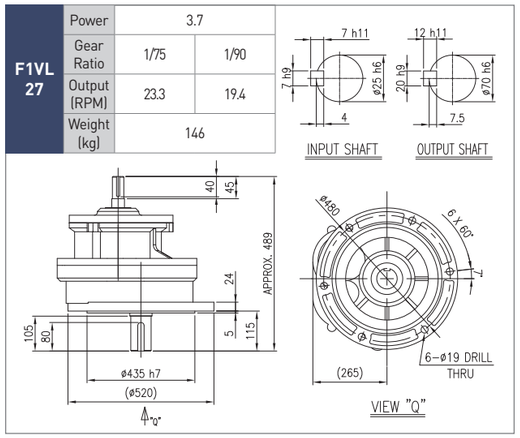
F1VL 20					
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	78			



F1VL 23		
	Power	3.7
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	104



F1VL 27			
	Power	3.7	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	146	



F2 Series

수평형

수직형

F2시리즈 특징

1. 소형, 경량, 최적화 설계

기어 및 베어링의 최적 설계로 소형, 경량화, 다양한 설계 프로그램을 활용하여 부하 시 기어축 및 케이싱 변형을 고려하여 부품 신뢰성을 확보하였습니다.

2. 고성능 강력한 프레임

기어 치형의 최적 설계 및 구조물의 구조해석과 시험평가로 강력한 프레임에 의해 저소음, 고효율 품질을 실현하였습니다.

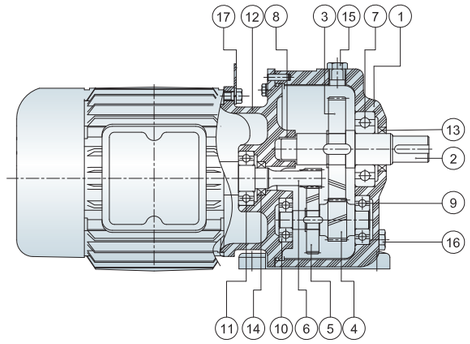
3. 신속한 공급

표준화된 모든 부품을 반제품화하여 확보해 둠으로써 수용가의 요구에 신속히 공급해 드립니다.

F2시리즈 GD², O.H.L표

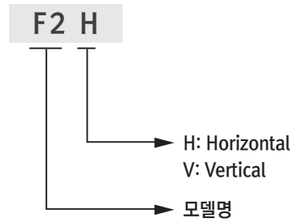
kW	Ratio	최대허용토크		모터축 환산GD²		출력축OHL	
		N·m	kgf·m	N·m²	kg·m²	N	kgf
5.5	1/5	209.7	21.4	1.441	0.147	9,800	1,000
	1/10	420.4	42.9	1.441	0.147	9,800	1,000
	1/15	631.1	64.4	1.441	0.147	9,800	1,000
	1/20	840.8	85.8	1.441	0.147	9,800	1,000
	1/30	1264.2	129.0	1.460	0.149	11,760	1,200
7.5	1/5	287.1	29.3	1.695	0.173	10,486	1,070
	1/10	573.3	58.5	1.695	0.173	10,486	1,070
	1/15	860.4	87.8	1.695	0.173	10,486	1,070
	1/20	1146.6	117.0	1.695	0.173	10,486	1,070
	1/30	1724.8	176.0	1.764	0.180	11,760	1,200
11	1/5	420.4	42.9	3.704	0.378	11,760	1,200
	1/10	840.8	85.8	3.704	0.378	11,760	1,200
	1/15	1264.2	129.0	3.704	0.378	11,760	1,200
	1/20	1685.6	172.0	3.704	0.378	11,760	1,200
	1/30	2518.6	257.0	3.714	0.379	12,740	1,300
15	1/5	573.3	58.5	4.508	0.460	11,760	1,200
	1/10	1146.6	117.0	4.508	0.460	11,760	1,200
	1/15	1724.8	176.0	4.508	0.460	11,760	1,200
	1/20	2293.2	234.0	4.508	0.460	11,760	1,200
	1/30	3440.0	351.0	4.518	0.461	12,740	1,300

F2 구조도(5.5kW 1/5 ~ 7.5kW 1/20, Grease 주입형)

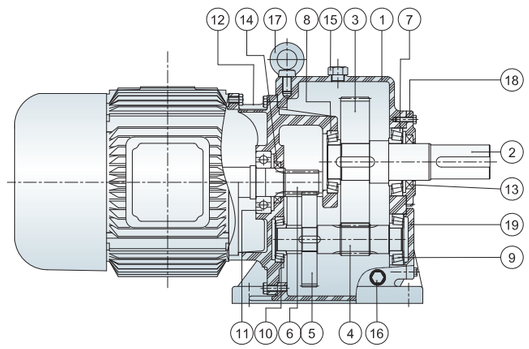


NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	6	MOTOR PINION	11	BEARING	16	PLUG
2	OUTPUT SHAFT	7	BEARING	12	MOTOR BRACKET	17	EYE PLATE
3	2'ND GEAR	8	BEARING	13	OIL SEAL		
4	2'ND PINION	9	BEARING	14	OIL SEAL		
5	1'ST GEAR	10	BEARING	15	AIR VENT		

형식표시



F2 구조도(7.5kW 1/30 ~ 15kW 1/30, Oil 주입형)



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	6	MOTOR PINION	11	BEARING	16	PLUG
2	OUTPUT SHAFT	7	BEARING	12	MOTOR BRACKET	17	EYE BOLT
3	2'ND GEAR	8	BEARING	13	OIL SEAL	18	OUTPUT COVER
4	2'ND PINION	9	BEARING	14	OIL SEAL	19	2'ND COVER
5	1'ST GEAR	10	BEARING	15	AIR VENT		

F2H 외형도 및 외형치수

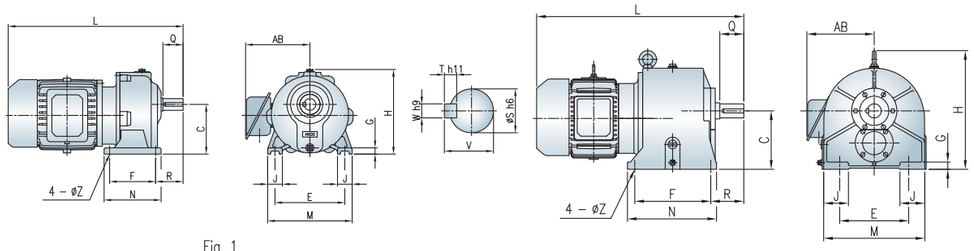


Fig. 1 Fig. 2

단위 : mm

kW	Ratio	Fig	Dimension												Output Shaft					유량	중량 (kg)
			C	F	N	R	E	M	J	G	Z	H	L	AB	S	W	T	V	Q		
5.5	5~20	1	190	160	210	90	240	295	55	33	19	315	590	230	48	14	9	51.5	80	0.6kg	92
	25~30	1	200	180	230	95	275	340	65	27	19	351	600	230	48	14	9	51.5	80	0.8kg	138
7.5	5~20	1	200	180	230	95	275	340	65	27	19	351	640	230	48	14	9	51.5	80	0.8kg	147
	25~30	2	200	260	305	113	236	346	85	25	19	406	760	230	48	14	9	51.5	82	5 L	168
11	5~20	2	225	280	334	110	265	346	70	30	19	416	845	290	55	16	10	59	82	7 L	232
	25~30	2	250	282	337	144	284	384	85	30	24	461	860	290	60	18	11	64	105	5 L	257
15	5~20	2	225	280	334	110	265	346	70	30	19	416	890	290	55	16	10	59	82	7 L	240
	25~30	2	250	282	337	144	284	384	85	30	24	461	905	290	60	18	11	64	105	9 L	256

* 윤활종류 : Fig.1 – Grease, Fig.2 – Oil

F2V 외형도 및 외형치수

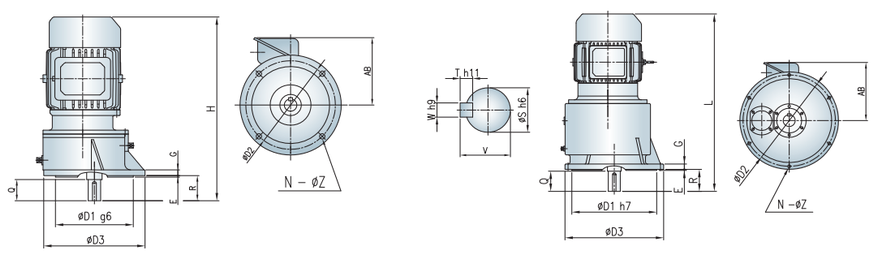


Fig. 1 Fig. 2

단위 : mm

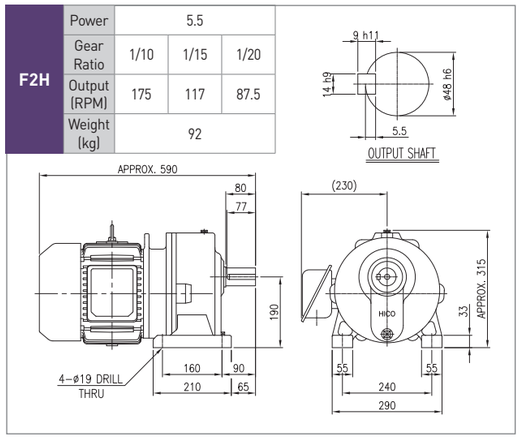
kW	Ratio	Fig	Dimension										Output Shaft					유량	중량 (kg)
			D1	D2	D3	R	E	G	H	N	Z	AB	S	W	T	V	Q		
5.5	5~20	1	280	320	350	85	5	18	575	6	14	230	48	14	9	51.5	80	0.6kg	127
	25~30	1	320	360	393	82	5	15	585	6	14	230	48	14	9	51.5	80	0.8kg	144
7.5	5~20	1	320	360	393	82	5	15	620	6	14	230	48	14	9	51.5	80	0.8kg	149
	25~30	2	340	370	395	89	4	22	770	6	12	230	48	14	9	51.5	82	7.5 L	170
11	5~20	2	390	410	435	92	4	22	855	6	12	290	55	16	10	59	82	7 L	264
	25~30	2	420	455	485	122	4	25	890	6	15	290	60	18	11	64	105	5 L	267
15	5~20	2	390	410	435	92	4	22	905	6	12	290	55	16	10	59	82	7 L	270
	25~30	2	420	455	485	122	4	25	930	6	15	290	60	18	11	64	105	5 L	273

* 윤활종류 : Fig.1 – Grease, Fig.2 – Oil

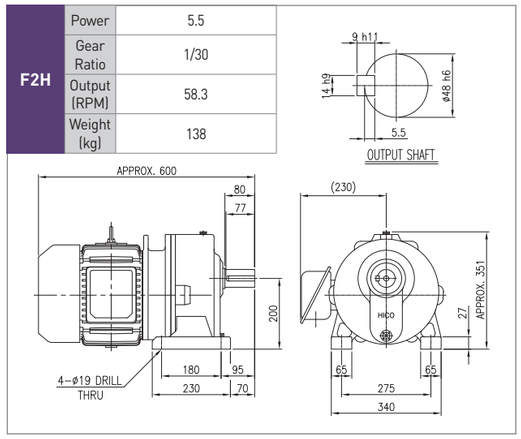
F2 수평형

5.5kW

F2H				
	Power	5.5		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	92		

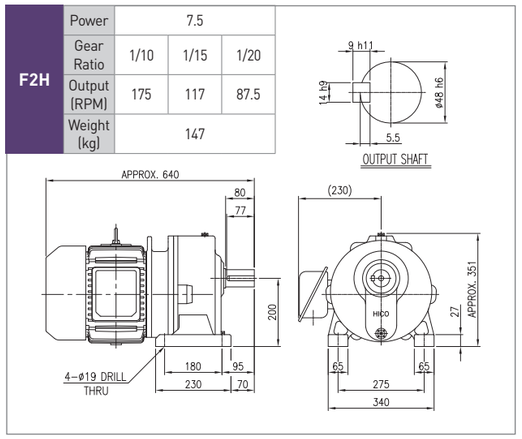


F2H		
	Power	5.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	138

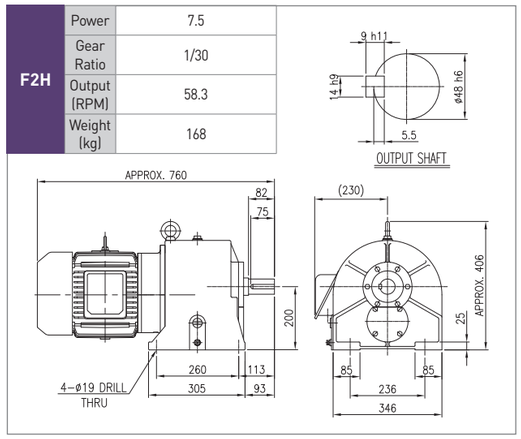


7.5kW

F2H				
	Power	7.5		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	147		

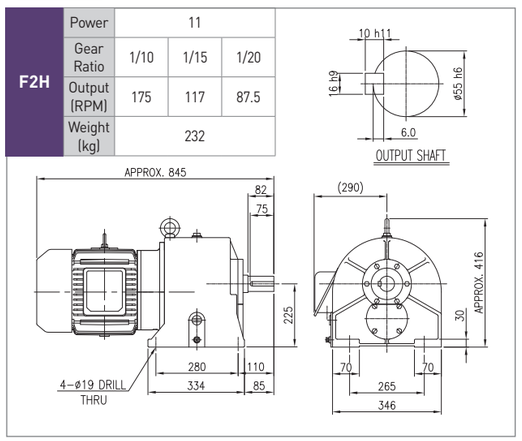


F2H		
	Power	7.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	168

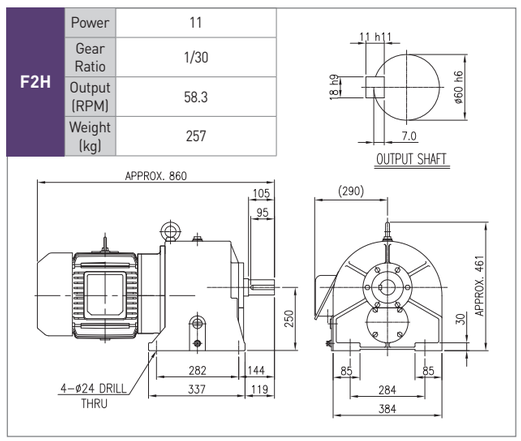


11kW

F2H				
	Power	11		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	232		



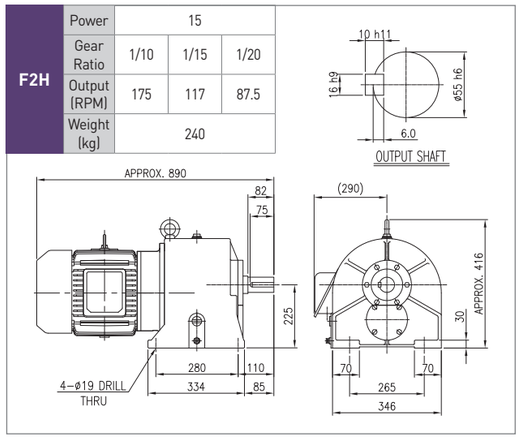
F2H		
	Power	11
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	257



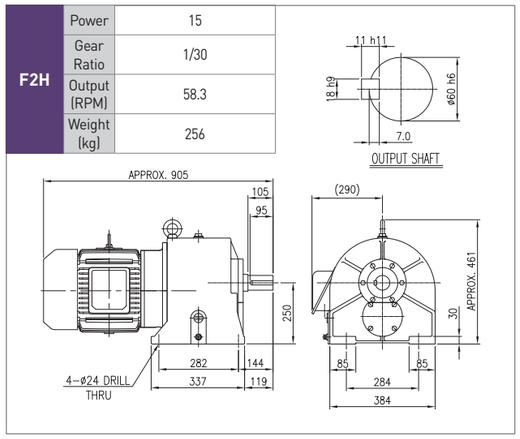
F2 수평형

15kW

F2H				
	Power	15		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	240		



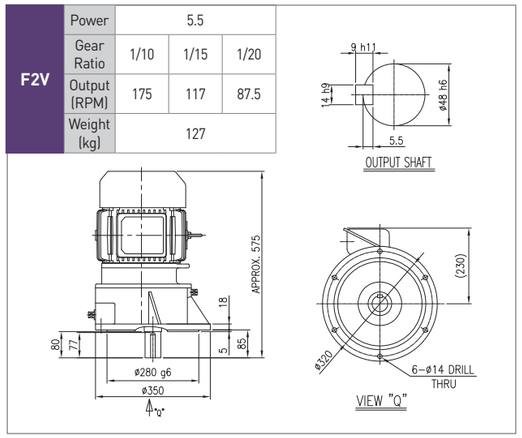
F2H		
	Power	15
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	256



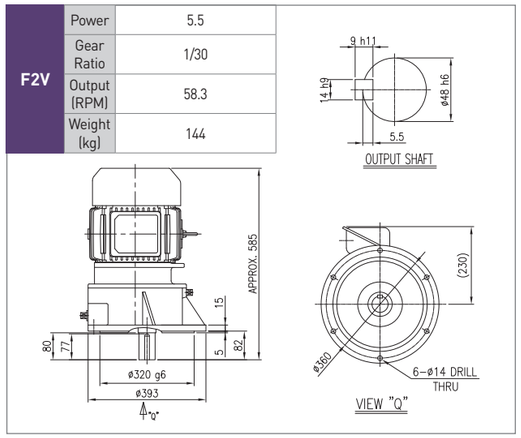
F2 수직형

5.5kW

F2V				
	Power	5.5		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	127		

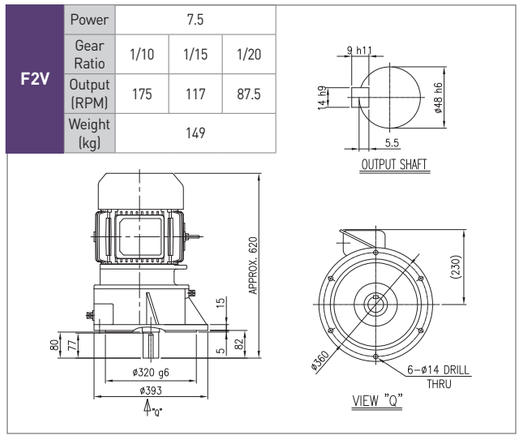


F2V		
	Power	5.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	144

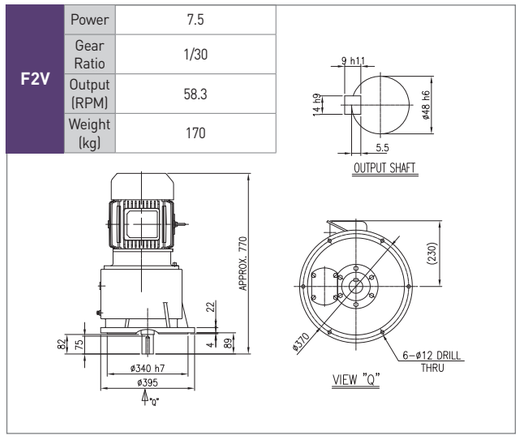


7.5kW

F2V				
	Power	7.5		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	149		



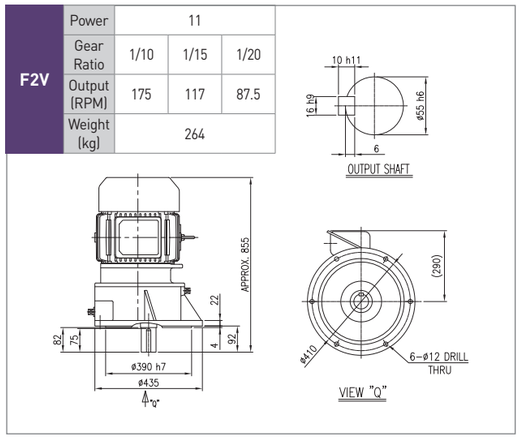
F2V		
	Power	7.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	170



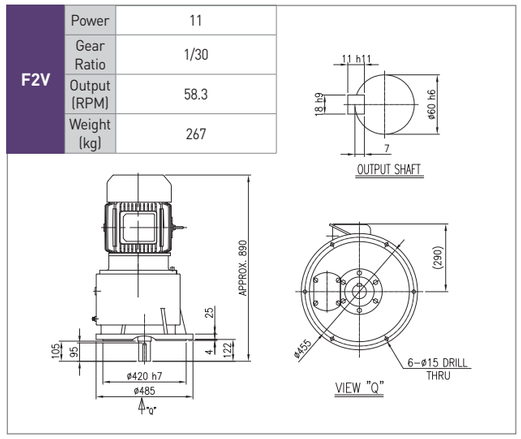
F2 수직형

11kW

F2V				
	Power	11		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	264		

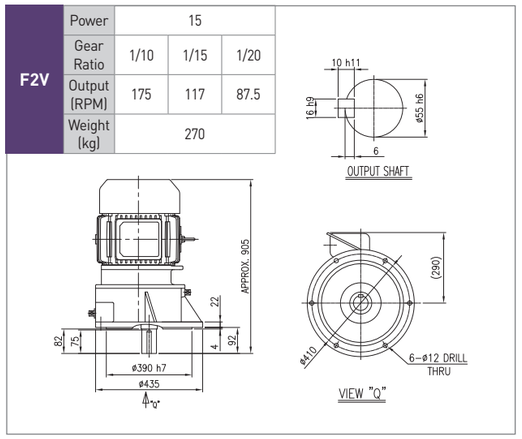


F2V		
	Power	11
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	267

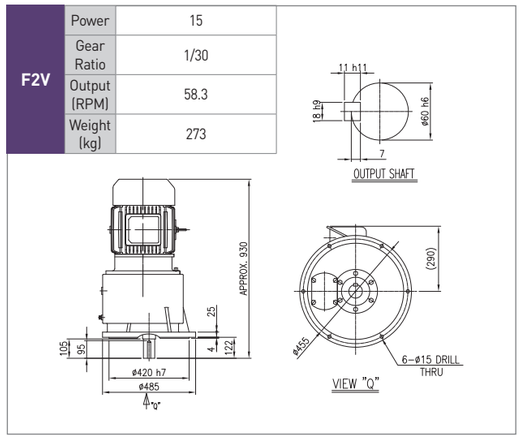


15kW

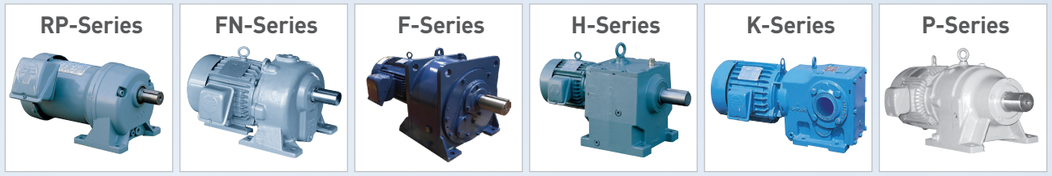
F2V				
	Power	15		
	Gear Ratio	1/10	1/15	1/20
	Output (RPM)	175	117	87.5
	Weight (kg)	270		



F2V		
	Power	15
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	273



GEARED MOTOR



동력 · 감속비별 기종 선정(60Hz, 4극 기준)

Ratio \ kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160
1/10						■F시리즈 – 안전계수 : 1.4~2.0														
1/20																				
1/30	■RP시리즈 – 안전계수 : 1.0~1.4																			
1/40	■FN시리즈 – 안전계수 : 1.4~2.0					■H시리즈 – 안전계수 : 1.4~2.0														
1/60																				
1/75																				
1/80																				
1/90																				
1/100																				
1/120																				
1/150																				
1/180																				
1/240	■P시리즈 – 안전계수 : 1.4~2.0																■RP시리즈			
1/320																	■H시리즈			
1/470																				
1/600																				

· 상기 사항 이외에도 제작이 가능하니 당사에 문의하여 주십시오.

RP Series

수평형

수직형

RP시리즈 특징

1. 소형·경량

이상적인 강도 분배 설계로써 소형, 경량화를 실현하였으며 취급이 용이할 뿐만 아니라 좁은 공간에서도 설치 가능합니다.

2. MAINTENANCE FREE-20,000시간

윤활성이 좋고 유동성이 높은 긴 수명의 Grease 사용으로 20,000시간 동안 수리, 보수가 필요 없습니다.

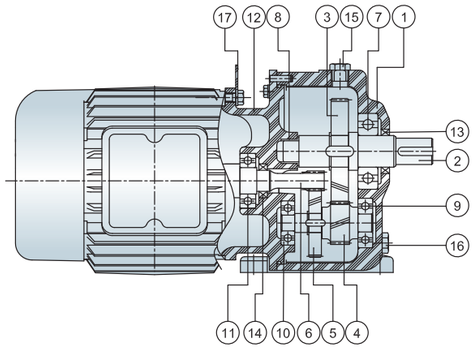
3. 취부의 자유

윤활제로 Grease를 사용하여 완전 밀폐 시킴으로써 취부를 자유롭게 했습니다.

4. 신속한 공급

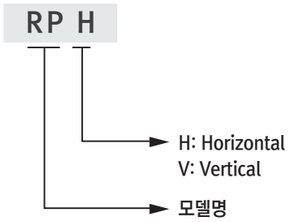
계획품 및 표준화된 모든 부품을 반제품화하여 확보해 둠으로써 수용가의 요구에 신속히 공급해 드립니다.

RPH 구조도



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	6	MOTOR PINION	11	BEARING	16	PLUG
2	OUTPUT SHAFT	7	BEARING	12	MOTOR BRACKET	17	EYE PLATE
3	2'ND GEAR	8	BEARING	13	OIL SEAL		
4	2'ND PINION	9	BEARING	14	OIL SEAL		
5	1'ST GEAR	10	BEARING	15	AIR VENT		

형식표시



RP시리즈 GD², O.H.L표

kW	Ratio	최대허용토크		모터축 환산GD²		출력축OHL	
		N·m	kgf·m	N·m²	kg·m²	N	kgf
0.4	1/10	21.8	2.22	0.079	0.008	1568	160
	1/15	32.8	3.35	0.079	0.008	1764	180
	1/20	43.7	4.46	0.079	0.008	1960	200
	1/30	65.5	6.68	0.079	0.008	2254	230
	1/40	87.4	8.92	0.079	0.008	2450	250
	1/45	98.3	10	0.079	0.008	2548	260
	1/50	109	11.1	0.079	0.008	2646	270
	1/60	131	13.4	0.079	0.008	2793	285
	1/75	164	16.7	0.079	0.008	3038	310
	1/90	197	20.1	0.079	0.008	3234	330
0.75	1/10	40.9	4.17	0.139	0.014	3675	375
	1/15	61.4	6.27	0.139	0.014	4214	430
	1/20	81.9	8.36	0.139	0.014	4606	470
	1/30	123	12.6	0.137	0.014	5292	540
	1/40	164	16.7	0.137	0.014	5439	555
	1/45	184	18.8	0.137	0.014	5684	580
	1/50	205	20.9	0.137	0.014	5880	600
	1/60	246	25.1	0.137	0.014	6272	640
	1/75	307	31.3	0.138	0.014	7644	780
	1/90	369	37.7	0.138	0.014	8134	830
1.5	1/10	81.9	8.36	0.239	0.024	3675	375
	1/15	123	12.6	0.239	0.024	4214	430
	1/20	164	16.7	0.239	0.024	4606	470
	1/30	246	25.1	0.236	0.024	5292	540
	1/40	328	33.5	0.236	0.024	6223	635
	1/45	369	37.7	0.236	0.024	6468	660
	1/50	409	41.7	0.236	0.024	6664	680
	1/60	491	50.1	0.236	0.024	7105	725
	1/75	614	62.7	0.236	0.024	12544	1280
	1/90	737	75.2	0.236	0.024	13328	1360
2.2	1/10	120	12.2	0.556	0.057	3675	375
	1/15	180	18.4	0.556	0.057	4214	430
	1/20	240	24.5	0.556	0.057	4606	470
	1/30	360	36.7	0.551	0.056	5292	540
	1/40	480	49	0.541	0.055	10192	1040
	1/45	541	55.2	0.541	0.055	10584	1080
	1/50	601	61.3	0.541	0.055	10976	1120
	1/60	721	73.6	0.541	0.055	11662	1190
	1/75	901	91.9	0.551	0.056	14896	1520
	1/90	1081	110	0.551	0.056	15827	1615
3.7	1/10	202	20.6	0.693	0.071	3871	395
	1/15	303	30.9	0.693	0.071	4410	450
	1/20	404	41.2	0.693	0.071	4900	500
	1/30	606	61.8	0.689	0.070	5978	610
	1/40	808	82.4	0.689	0.070	12054	1230
	1/45	909	92.8	0.689	0.070	12544	1280
	1/50	1010	103	0.689	0.070	13181	1345
	1/60	1212	124	0.689	0.070	13818	1410
	1/75	1515	155	0.689	0.070	20286	2070
	1/90	1818	186	0.689	0.070	21560	2200

RPH 외형도 및 외형치수

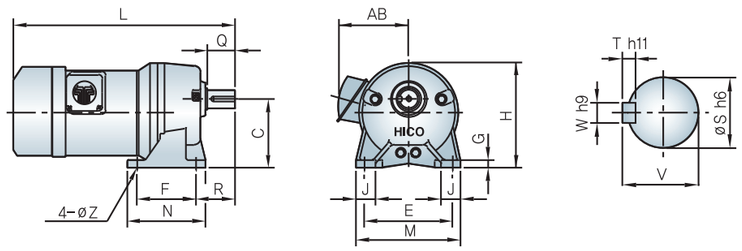


Fig. 1

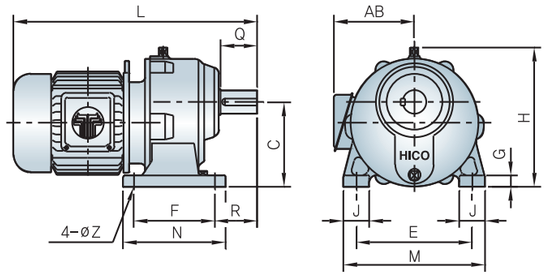


Fig. 2

단위 : mm

kW	Ratio	Fig	Dimension												Output Shaft					그리스량 (kg)	중량 (kg)
			C	F	N	R	E	M	J	G	Z	H	L	AB	S	W	T	V	Q		
0.4	10~90	1	105	90	120	60	135	160	30	12	11	162	340	130	28	8	7	31	42	0.2	11
0.75	10~30	2	115	120	145	50	155	190	35	15	12	200	405	165	25	8	7	28	35	0.25	31
	40~60		120	120	145	56	155	190	35	15	12	195	410	165	28	8	7	31	42	0.3	35
	70~90		135	150	190	65	190	235	45	17	14	220	455	165	32	10	8	35	55	0.5	40
1.5	10~30		135	125	155	75	190	230	40	17	12	230	485	175	32	10	8	35	55	0.3	46
	40~60		135	150	190	65	190	235	45	17	14	220	510	175	32	10	8	35	55	0.5	51
	70~90		165	175	220	80	215	265	50	20	19	260	540	175	42	12	8	45	65	0.8	62
2.2	10~30		160	130	170	75	215	260	45	20	14	270	510	200	38	12	8	41	58	0.3	69
	40~60		165	175	220	80	215	265	50	20	19	260	555	200	42	12	8	45	65	0.8	75
	70~90		180	185	235	95	240	295	55	23	19	285	585	200	48	14	9	51.5	75	1.2	90
3.7	10~20		160	130	170	75	215	260	45	20	14	270	510	210	38	12	8	41	58	0.3	73
	30		180	160	210	90	240	295	55	23	19	305	545	210	48	14	9	51.5	80	0.6	89
	40~60		180	185	235	95	240	295	55	23	19	285	580	210	48	14	9	51.5	75	1.2	94
	70~90		200	220	270	100	270	330	60	27	22	315	615	210	55	16	10	59	85	1.8	117

주 : 1. 극수는 4극 기준임.
2. HB TYPE 브레이크 부착시 외형치수 상기와 동일함.

RPV 외형도 및 외형치수

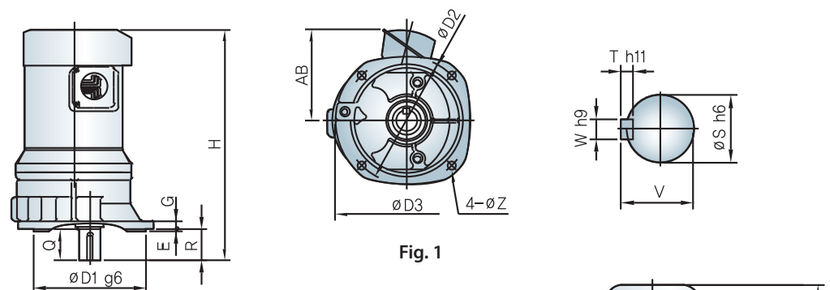


Fig. 1

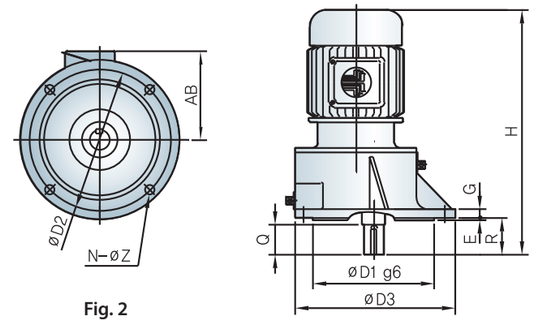


Fig. 2

단위 : mm

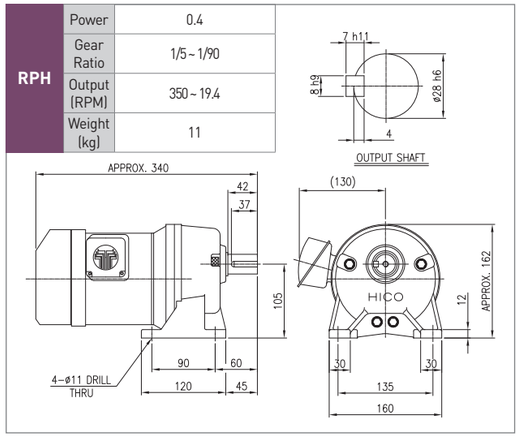
kW	Ratio	Fig	Dimension										Output Shaft					그리스량 (kg)	중량 (kg)
			D1	D2	D3	R	E	G	H	N	Z	AB	S	W	T	V	Q		
0.4	10~90	1	150	170	180	42	3	11	350	4	11	130	28	8	7	31	42	0.2	11
0.75	10~30	2	165	195	225	45	4	13	405	4	14	165	25	8	7	28	35	0.25	35
	40~60		175	205	235	42	4	13	410	4	14	165	28	8	7	31	42	0.3	36
	70~90		200	230	260	55	4	15	455	4	14	165	32	10	8	35	55	0.5	45
1.5	10~30		200	230	260	65	4	15	485	4	14	175	32	10	8	35	55	0.3	50
	40~60		200	230	260	55	4	15	510	4	14	175	32	10	8	35	55	0.5	56
	70~90		240	280	320	65	4	17	540	4	18	175	42	12	8	45	65	0.8	69
2.2	10~30		230	270	305	70	4	17	510	4	18	200	38	12	8	41	58	0.3	74
	40~60		240	280	320	65	4	17	555	4	18	200	42	12	8	45	65	0.8	78
	70~90		280	320	355	75	5	19	585	6	14	200	48	14	9	51.5	75	1.2	94
3.7	10~20		230	270	305	70	4	17	515	4	18	210	38	12	8	41	58	0.3	77
	30		280	320	350	85	5	18	545	6	14	210	48	14	9	51.5	80	0.6	94
	40~60		280	320	355	75	5	19	580	6	14	210	48	14	9	51.5	75	1.2	98
	70~90		310	355	395	85	5	22	615	6	18	210	55	16	10	59	85	1.8	122

주 : 1. 극수는 4극 기준임.
2. HB TYPE 브레이크 부착시 외형치수 상기와 동일함.

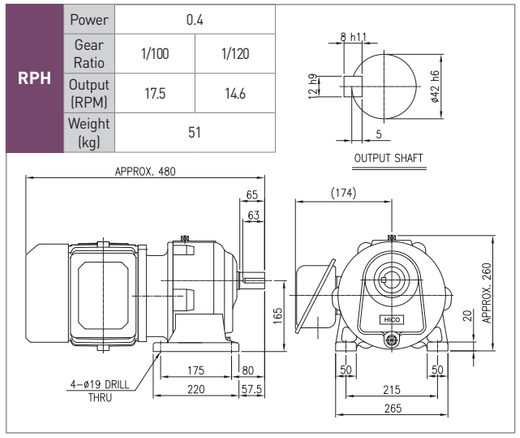
RP 수평형

0.4kW

RPH		
	Power	0.4
	Gear Ratio	1/5 ~ 1/90
	Output (RPM)	350 ~ 19.4
	Weight (kg)	11

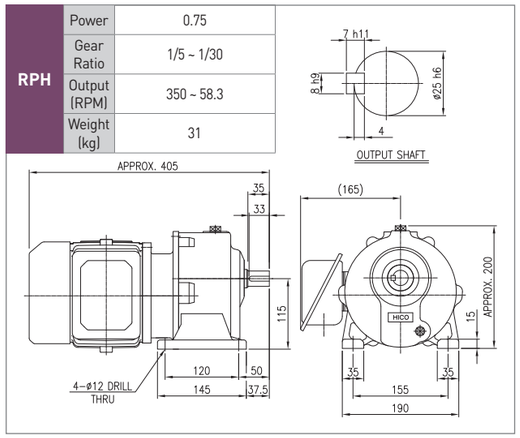


RPH			
	Power	0.4	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	51	

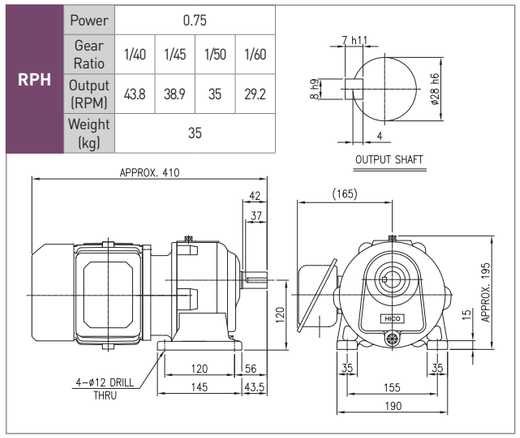


0.75kW

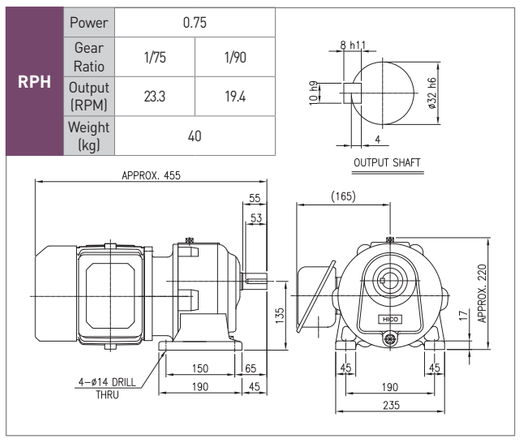
RPH		
	Power	0.75
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	31



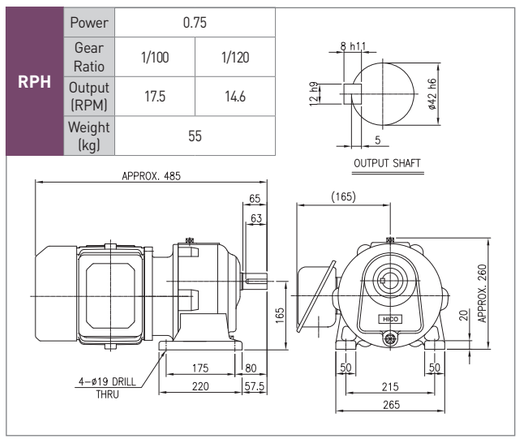
RPH				
	Power	0.75		
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	35		



RPH			
	Power	0.75	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	40	



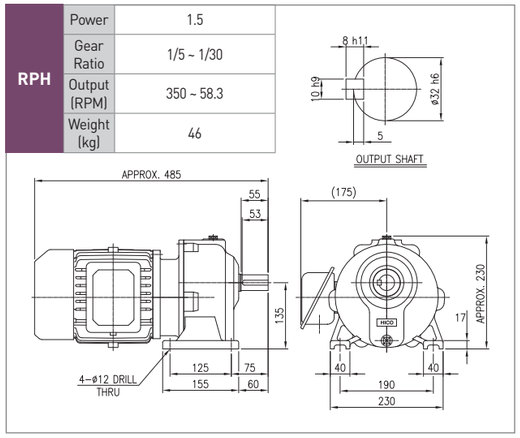
RPH		
	Power	0.75
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	55



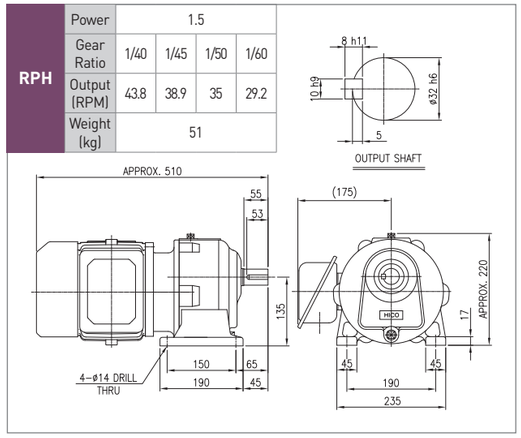
RP 수평형

1.5kW

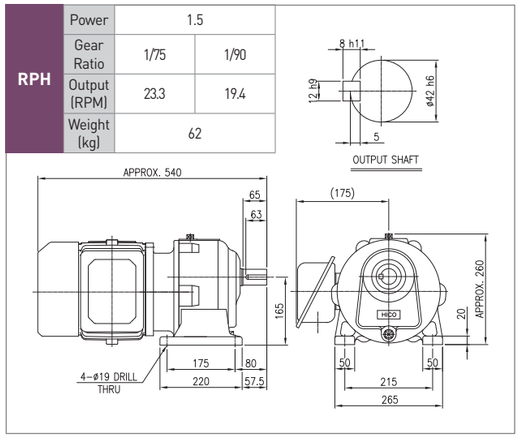
RPH		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	46



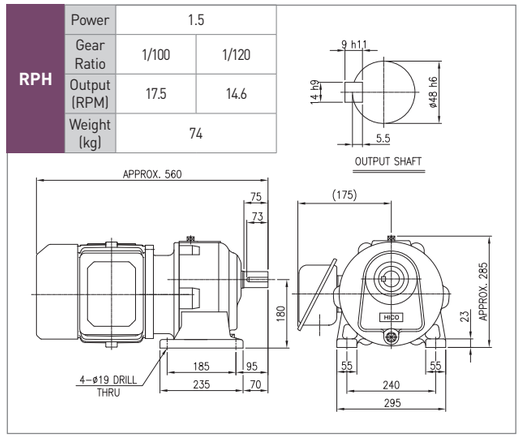
RPH				
	Power	1.5		
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	51		



RPH			
	Power	1.5	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	62	

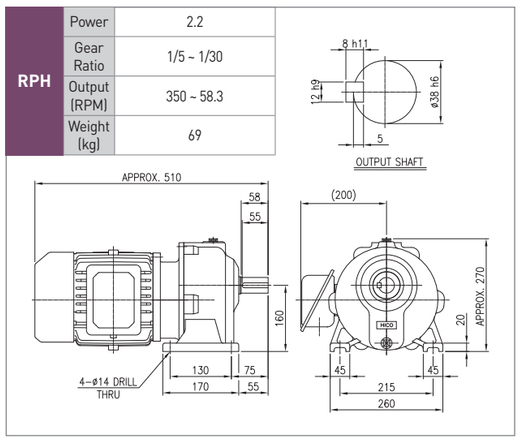


RPH			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	74	

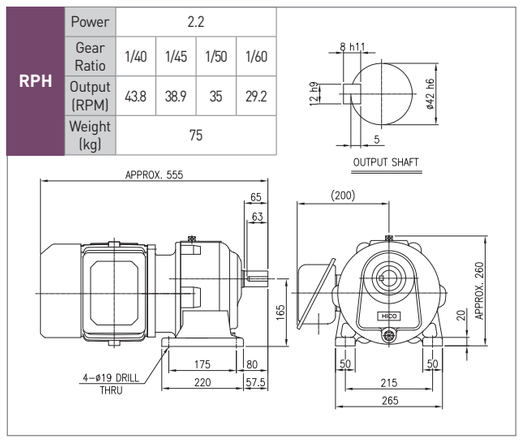


2.2kW

RPH		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	69



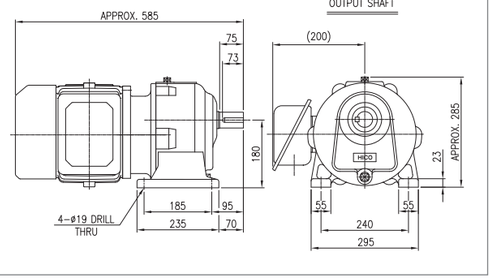
RPH				
	Power	2.2		
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	75		



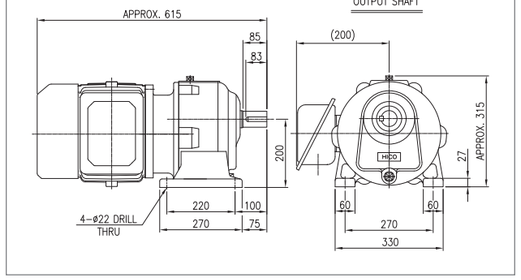
RP 수평형

2.2kW

RPH			
Power	2.2		
Gear Ratio	1/75	1/90	
Output (RPM)	23.3	19.4	
Weight (kg)	90		

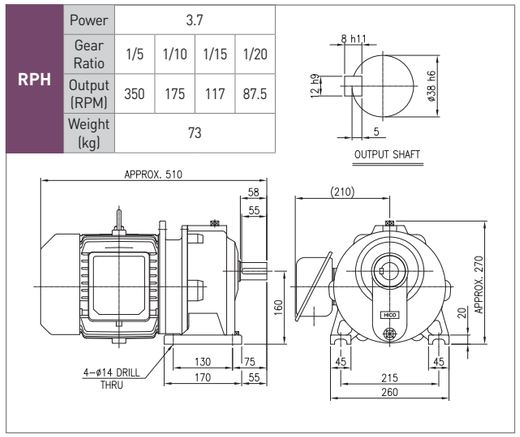


RPH			
Power	2.2		
Gear Ratio	1/100	1/120	
Output (RPM)	17.5	14.6	
Weight (kg)	115		

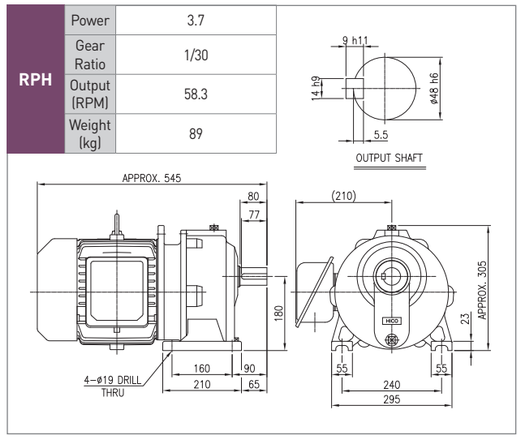


3.7kW

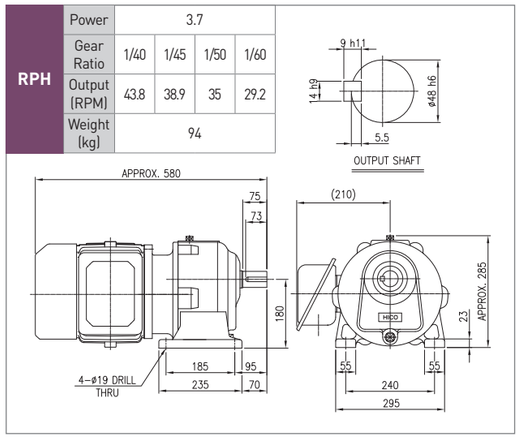
RPH				
Power	3.7			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	73			



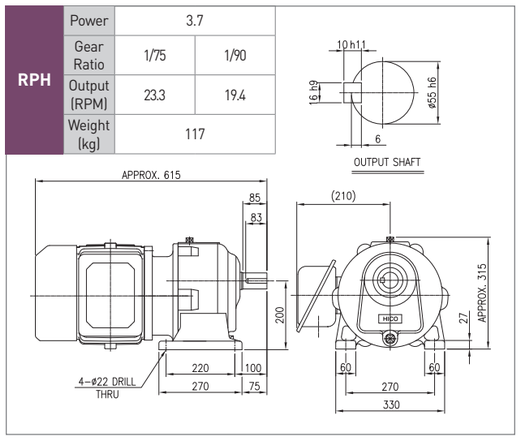
RPH			
Power	3.7		
Gear Ratio	1/30		
Output (RPM)	58.3		
Weight (kg)	89		



RPH				
Power	3.7			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	94			



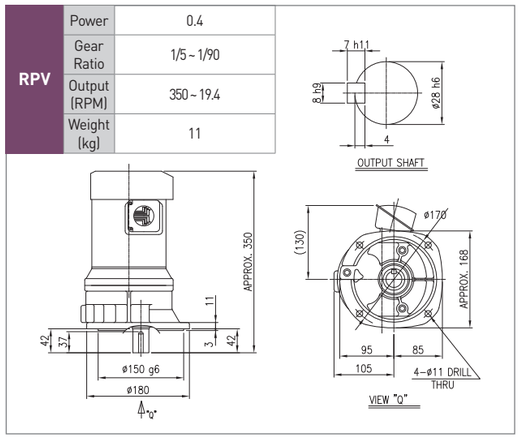
RPH			
Power	3.7		
Gear Ratio	1/75	1/90	
Output (RPM)	23.3	19.4	
Weight (kg)	117		



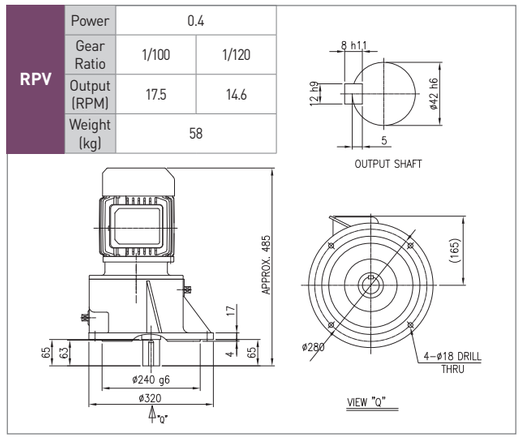
RP 수직형

0.4kW

RPV		
Power	0.4	
Gear Ratio	1/5 ~ 1/90	
Output (RPM)	350 ~ 19.4	
Weight (kg)	11	

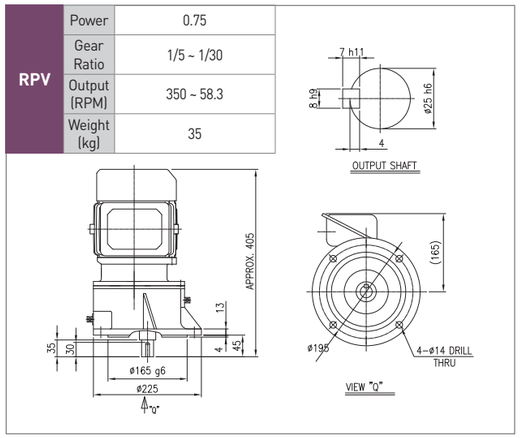


RPV			
Power	0.4		
Gear Ratio	1/100	1/120	
Output (RPM)	17.5	14.6	
Weight (kg)	58		

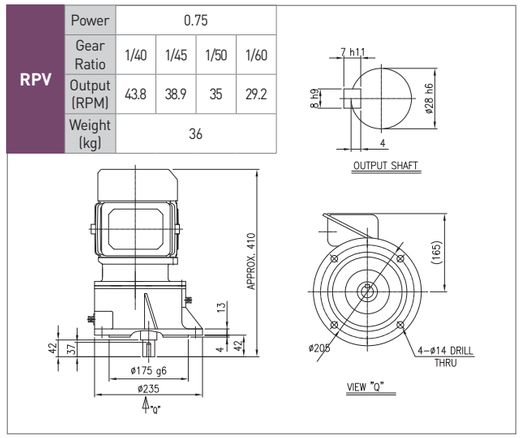


0.75kW

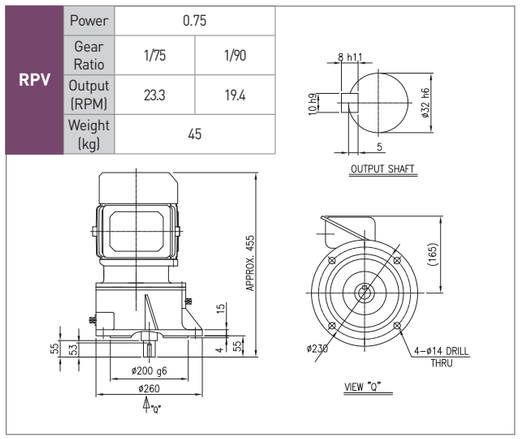
RPV		
Power	0.75	
Gear Ratio	1/5 ~ 1/30	
Output (RPM)	350 ~ 58.3	
Weight (kg)	35	



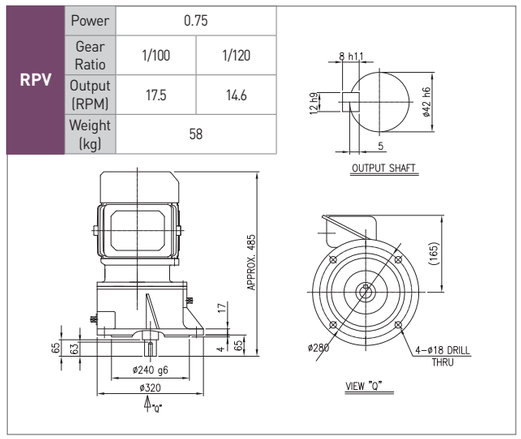
RPV				
Power	0.75			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	36			



RPV			
Power	0.75		
Gear Ratio	1/75	1/90	
Output (RPM)	23.3	19.4	
Weight (kg)	45		



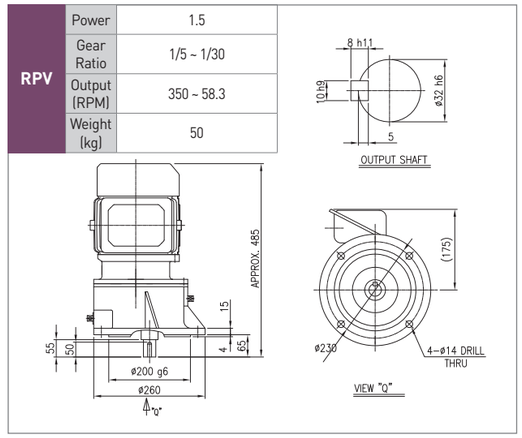
RPV			
Power	0.75		
Gear Ratio	1/100	1/120	
Output (RPM)	17.5	14.6	
Weight (kg)	58		



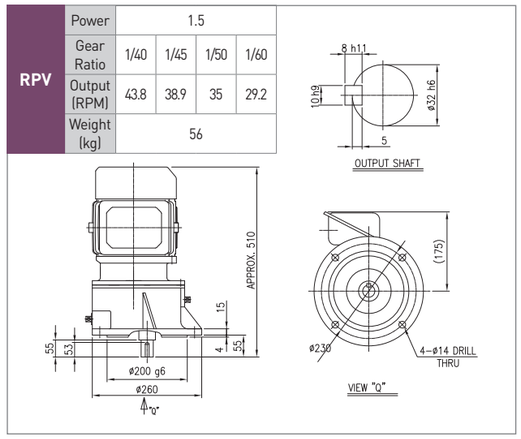
RP 수직형

1.5kW

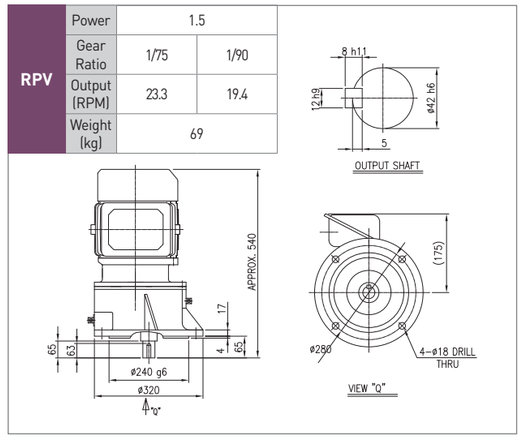
RPV		
	Power	1.5
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	50



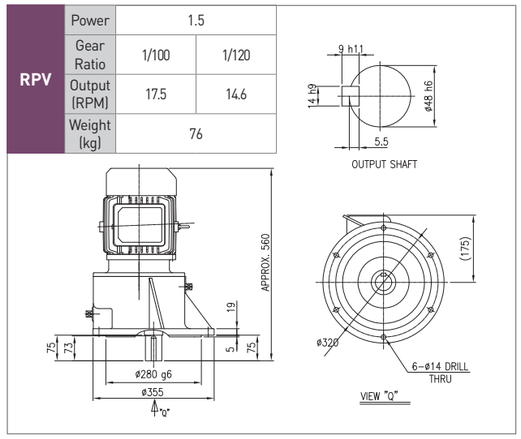
RPV				
	Power	1.5		
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	56		



RPV			
	Power	1.5	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	69	

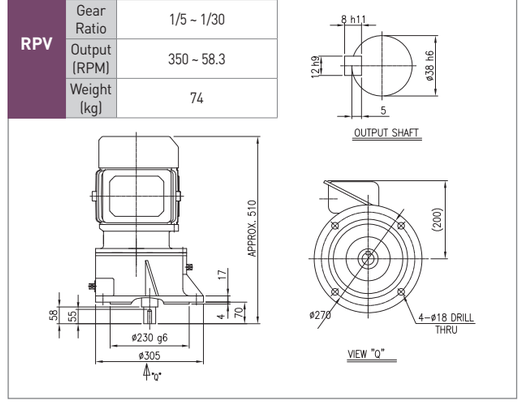


RPV			
	Power	1.5	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	76	

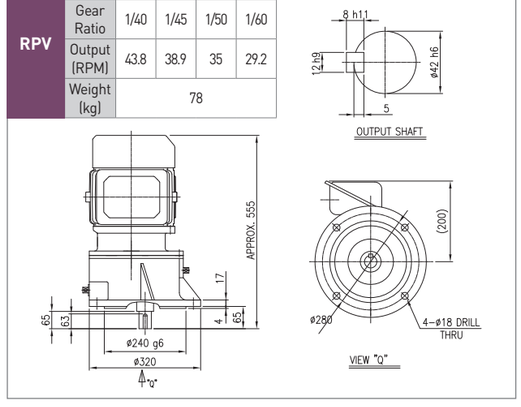


2.2kW

RPV		
	Power	2.2
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	74



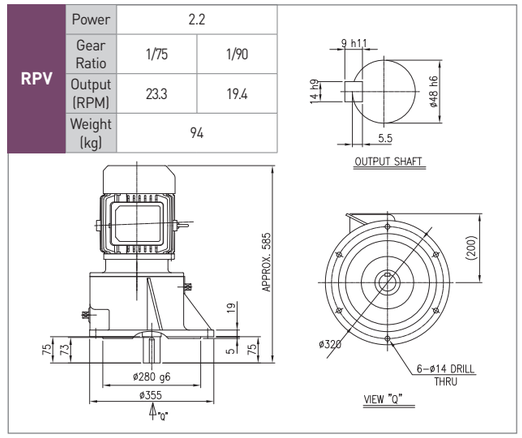
RPV				
	Power	2.2		
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	78		



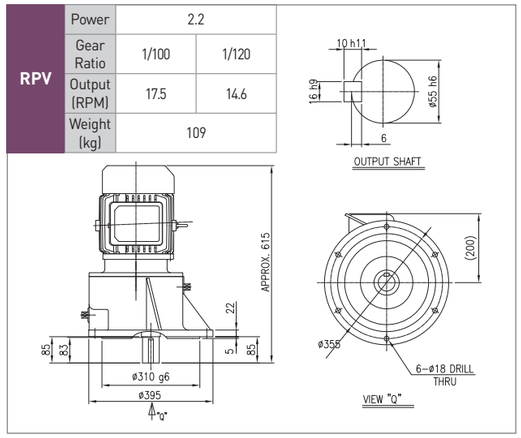
RP 수직형

2.2kW

RPV			
	Power	2.2	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	94	

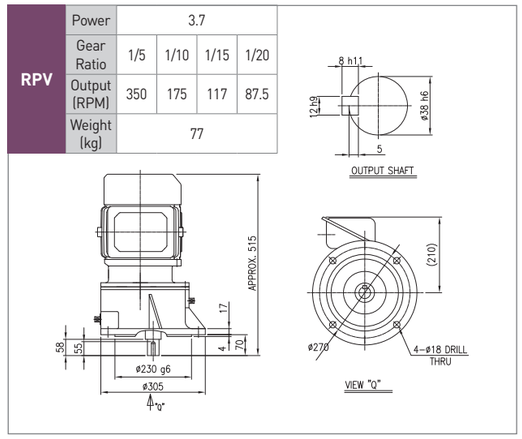


RPV			
	Power	2.2	
	Gear Ratio	1/100	1/120
	Output (RPM)	17.5	14.6
	Weight (kg)	109	

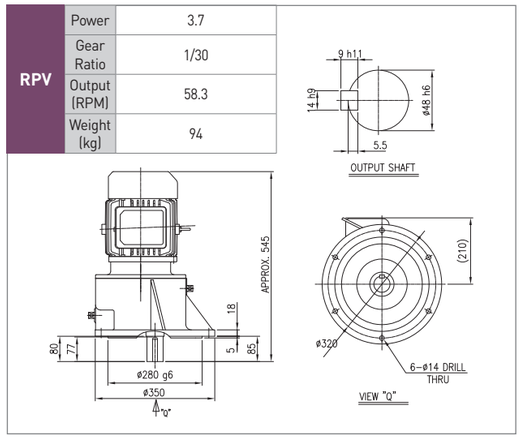


3.7kW

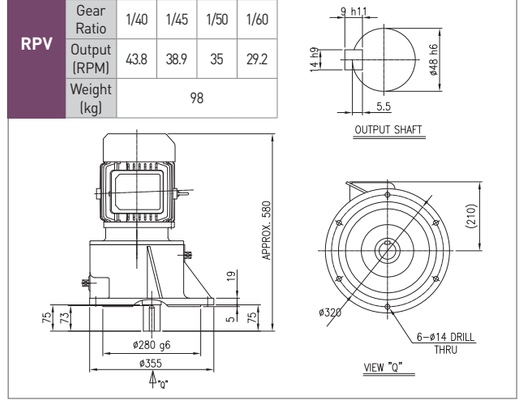
RPV					
	Power	3.7			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	77			



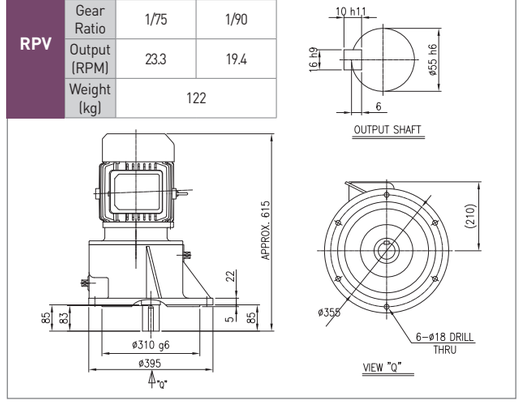
RPV		
	Power	3.7
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	94



RPV				
	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	98			



RPV			
	Power	3.7	
	Gear Ratio	1/75	1/90
	Output (RPM)	23.3	19.4
	Weight (kg)	122	



FN Series

수평형

수직형

IEC FLANGE

라인파워

FN시리즈 특징

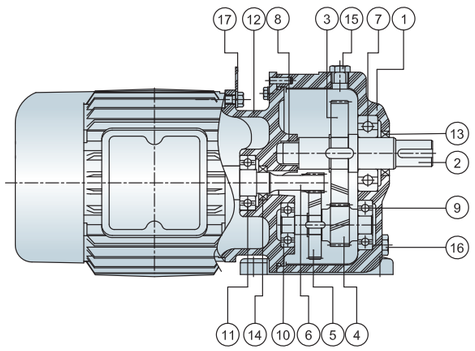
1. 소형·경량
출력축 반하부측 베어링을 DX부시를 사용하여 극소형, 경량화를 시켰습니다.

2. 고효율·치연마
최적설계 및 모든 기어를 연마하여 저소음과 효율 97%이상을 보장하며 수명, 강도를 증가시켰습니다.

3. 취부의 자유
윤활제로 Grease를 사용하여 완전 밀폐 시킴으로써 취부를 자유롭게 했습니다.

4. 신속한 공급
계획품 및 표준화된 모든 부품을 반제품화하여 확보해 둠으로써 수용가의 요구에 신속히 공급해 드립니다.

FHB 구조도



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	6	MOTOR PINION	11	BEARING	16	PLUG
2	OUTPUT SHAFT	7	BEARING	12	MOTOR BRACKET	17	EYE PLATE
3	2'ND GEAR	8	BEARING	13	OIL SEAL		
4	2'ND PINION	9	BEARING	14	OIL SEAL		
5	1'ST GEAR	10	BEARING	15	AIR VENT		

형식표시

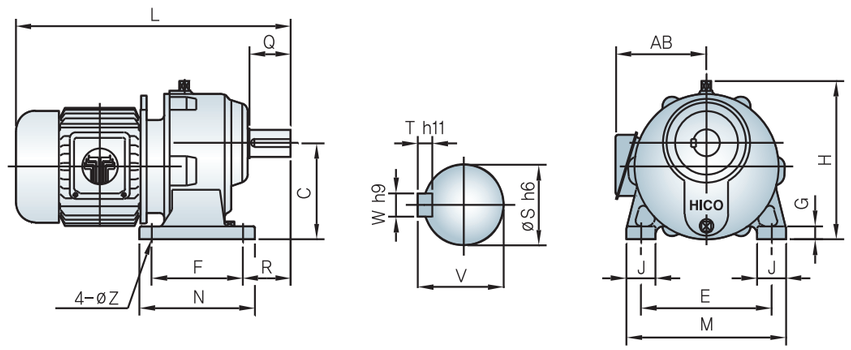
F H B

- B: 2단형(1/10~1/30)
  C: 3단형(1/40~1/90)
- H: Horizontal
  V: Vertical
  C: Line Power / IEC Flange
- 모델명

FN시리즈 GD², O.H.L표

kW	Ratio	최대허용토크		모터축 환산GD²		출력축OHL	
		N·m	kgf·m	N·m²	kg·m²	N	kgf
0.75	1/5	28.6	2.9	0.139	0.0142	2646	270
	1/10	57.3	5.8	0.139	0.0142	2646	270
	1/15	85.9	8.8	0.139	0.0142	2646	270
	1/20	114.5	11.7	0.139	0.0142	2646	270
	1/30	171.8	17.5	0.138	0.0141	4018	410
	1/40	229.1	23.4	0.138	0.0141	4606	470
	1/45	257.7	26.3	0.138	0.0141	4606	470
	1/50	286.4	29.2	0.138	0.0141	4606	470
	1/60	343.6	35.1	0.138	0.0141	4606	470
	1/75	429.5	43.8	0.138	0.0141	6860	700
	1/90	515.4	52.6	0.138	0.0141	6860	700
1.5	1/5	57.3	5.8	0.239	0.0244	3430	350
	1/10	114.5	11.7	0.239	0.0244	3430	350
	1/15	171.8	17.5	0.239	0.0244	3430	350
	1/20	229.1	23.4	0.239	0.0244	3430	350
	1/30	343.6	35.1	0.237	0.0242	5880	600
	1/40	458.2	46.8	0.237	0.0242	7840	800
	1/45	515.4	52.6	0.237	0.0242	7840	800
	1/50	572.7	58.4	0.237	0.0242	7840	800
	1/60	687.3	70.1	0.237	0.0242	7840	800
	1/75	859.1	87.7	0.237	0.0242	10290	1050
	1/90	1030.9	105.2	0.237	0.0242	10290	1050
2.2	1/5	84.0	8.6	0.556	0.0567	5978	610
	1/10	168.0	17.1	0.556	0.0567	5978	610
	1/15	252.0	25.7	0.556	0.0567	5978	610
	1/20	336.0	34.3	0.556	0.0567	5978	610
	1/30	504.0	51.4	0.551	0.0562	5978	610
	1/40	672.0	68.6	0.551	0.0562	8820	900
	1/45	756.0	77.1	0.551	0.0562	8820	900
	1/50	840.0	85.7	0.551	0.0562	8820	900
	1/60	1008.0	102.9	0.551	0.0562	8820	900
	1/75	1260.0	128.6	0.551	0.0562	13720	1400
	1/90	1512.0	154.3	0.551	0.0562	13720	1400
3.7	1/5	141.3	14.4	0.693	0.0706	6370	650
	1/10	282.5	28.8	0.693	0.0706	6370	650
	1/15	423.8	43.2	0.693	0.0706	6370	650
	1/20	565.1	57.7	0.692	0.0706	6370	650
	1/30	847.6	86.5	0.693	0.0707	9310	950
	1/40	1130.2	115.3	0.693	0.0707	13720	1400
	1/45	1271.4	129.7	0.693	0.0707	13720	1400
	1/50	1412.7	144.2	0.691	0.0705	13720	1400
	1/60	1695.2	173.0	0.691	0.0705	13720	1400

FHB, FHC 외형도 및 외형치수

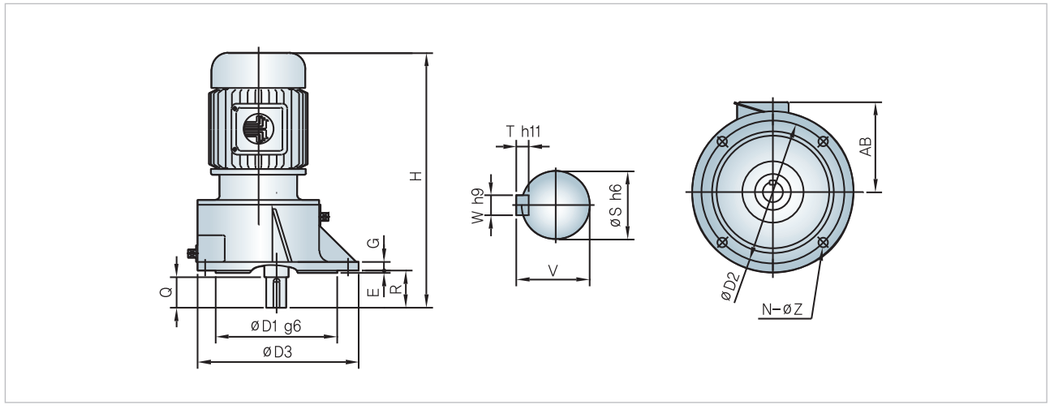


단위 : mm

kW	Ratio	Dimension												Output Shaft					그리스량 (kg)	중량 (kg)
		C	F	N	R	E	M	J	G	Z	H	L	AB	S	W	T	V	Q		
0.4 0.75	10~20	115	120	145	50	155	190	35	15	12	200	405	165	25	8	7	28	35	0.25	27
	30	135	125	155	75	190	230	40	17	12	230	430	165	32	10	8	35	55	0.3	36
	40~60	135	150	190	65	190	235	45	17	14	230	455	165	32	10	8	35	55	0.5	40
	70~90	165	175	220	80	215	265	50	20	19	260	485	165	42	12	8	45	65	0.8	55
1.5	10~20	135	125	155	75	190	230	40	17	12	230	485	175	32	10	8	35	55	0.3	46
	30	160	130	170	75	215	260	45	20	14	265	485	175	38	12	8	41	58	0.3	53
	40~60	165	175	220	80	215	265	50	20	19	260	540	175	42	12	8	45	65	0.8	62
	70~90	180	185	235	95	240	295	55	23	19	285	560	175	48	14	9	51.5	75	1.2	74
2.2	10~30	160	130	170	75	215	260	45	20	14	265	510	200	38	12	8	41	58	0.3	69
	40~60	180	185	235	95	240	295	55	23	19	285	585	200	48	14	9	51.5	75	1.2	90
	70~90	200	220	270	100	270	330	60	27	22	315	615	200	55	16	10	59	85	1.8	115
3.7	10~20	180	160	210	90	240	295	55	23	19	305	545	210	48	14	9	51.5	80	0.6	89
	30	200	180	230	95	275	340	65	23	19	350	555	210	48	14	9	51.5	80	0.8	102
	40~60	200	220	270	100	270	330	60	27	22	315	615	210	55	16	10	59	85	1.8	117

주 : 1. 극수는 4극 기준임.
2. HB TYPE 브레이크 부착시 외형치수 상기와 동일함.

FVB, FVC 외형도 및 외형치수

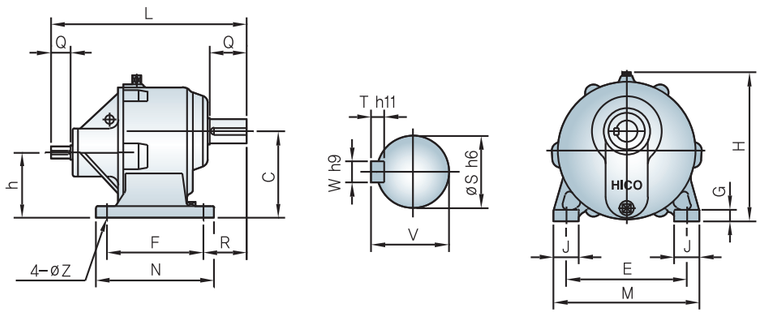


단위 : mm

kW	Ratio	Dimension										Output Shaft					그리스량 (kg)	중량 (kg)
		D1	D2	D3	R	E	G	H	N	Z	AB	S	W	T	V	Q		
0.4 0.75	10~20	165	195	225	45	4	13	405	4	14	165	25	8	7	28	35	0.25	35
	30	200	230	260	65	4	15	530	4	14	165	32	10	8	35	55	0.3	40
	40~60	200	230	260	55	4	15	455	4	14	165	32	10	8	35	55	1	45
	70~90	240	280	320	65	4	17	485	4	18	165	42	12	8	45	65	1.2	62
1.5	10~20	200	230	260	65	4	15	485	4	14	175	32	10	8	35	55	0.3	50
	30	230	270	305	70	4	17	485	4	18	175	38	12	8	41	58	0.3	58
	40~60	240	280	320	65	4	17	540	4	18	175	42	12	8	45	65	1.2	69
	70~90	280	320	355	75	5	19	560	6	14	175	48	14	9	51.5	75	1.2	76
2.2	10~30	230	270	305	70	4	17	510	4	18	200	38	12	8	41	58	0.3	74
	40~60	280	320	355	75	5	19	585	6	14	200	48	14	9	51.5	75	1.2	98
	70~90	310	355	395	85	5	22	615	6	18	200	55	16	10	59	85	1.8	109
3.7	10~20	280	320	350	85	5	18	550	6	14	210	48	14	9	51.5	80	0.6	93
	30	320	360	393	85	5	18	555	6	14	210	48	14	9	51.5	80	0.8	113
	40~60	310	355	395	85	5	22	615	6	18	210	55	16	10	59	85	1.8	122

주 : 1. 극수는 4극 기준임.
2. HB TYPE 브레이크 부착시 외형치수 상기와 동일함.

FCB, FCC 외형도 및 외형치수

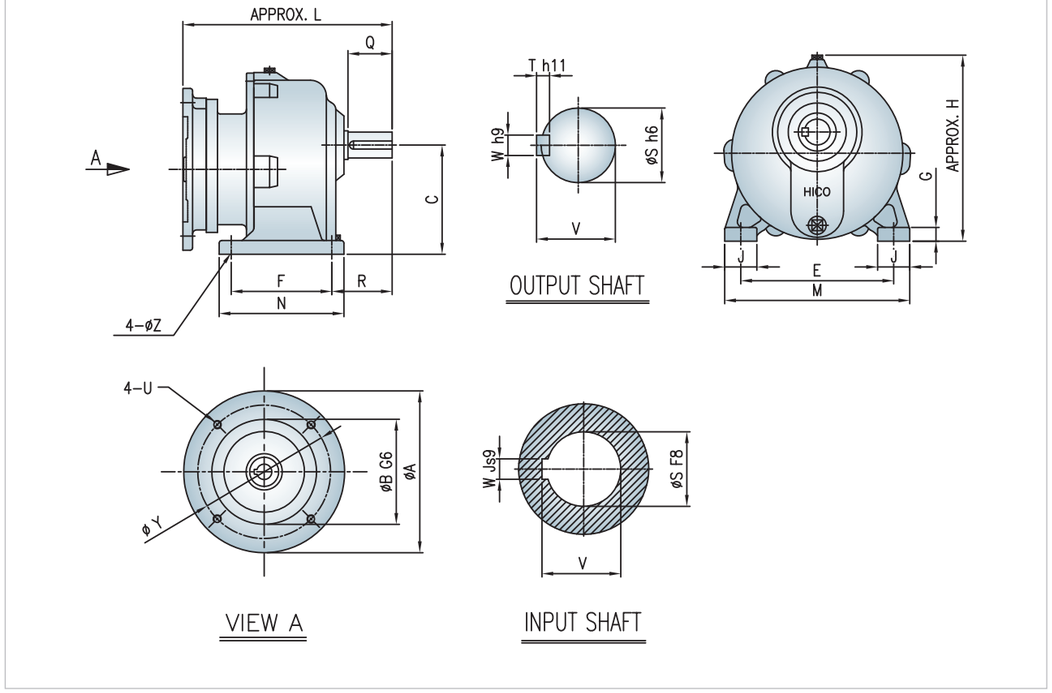


단위 : mm

kW	Ratio	Dimension												Input shaft					Output Shaft					그리스량 (kg)	중량 (kg)
		C	F	N	R	E	M	J	G	Z	H	L	h	S	W	T	V	Q	S	W	T	V	Q		
0.4	10~20	115	120	145	50	155	190	35	15	12	200	270	87	18	6	6	20.5	30	25	8	7	28	35	0.25	18
	30	135	125	155	75	190	230	40	17	12	230	295	105	18	6	6	20.5	30	32	10	8	35	55	0.3	24
0.75	40~60	135	150	190	65	190	235	45	17	14	230	320	107	18	6	6	20.5	30	32	10	8	35	55	0.5	24
	70~90	165	175	220	80	215	265	50	20	19	260	352	126	18	6	6	20.5	30	32	10	8	35	65	0.8	38
1.5	10~20	135	125	155	75	190	230	40	17	12	230	315	105	22	6	6	24.5	35	32	10	8	35	55	0.3	28
	30	160	130	170	75	215	260	45	20	14	265	320	126	22	6	6	24.5	35	38	12	8	41	58	0.3	33
	40~60	165	175	220	80	215	265	50	20	19	260	374	126	22	6	6	24.5	35	42	12	8	45	65	0.8	40
	70~90	180	185	235	95	240	295	55	23	19	285	396	137	22	6	6	24.5	35	48	14	9	51.5	75	1.2	46
2.2	10~30	160	130	170	75	215	260	45	20	14	265	340	126	25	8	7	28	40	38	12	8	41	58	0.3	35
	40~60	180	185	235	95	240	295	55	23	19	285	416	137	25	8	7	28	40	48	14	9	51.5	75	1.2	47
	70~90	200	220	270	100	270	330	60	27	22	315	449	152	25	8	7	28	40	55	16	10	59	85	1.8	61
3.7	10~20	180	160	210	90	240	295	55	23	19	305	375	135	28	8	7	31	45	48	14	9	51.5	80	0.6	49
	30	200	180	230	95	275	340	65	27	19	351	382	166	28	8	7	31	45	48	14	9	51.5	80	0.8	56
	40~60	200	220	270	100	270	330	60	27	22	315	447	151.5	28	8	7	31	45	55	16	10	59	85	1.8	62

주 : 1. 극수는 4극 기준임.

FN – IEC Flange(수평형) 외형도 및 외형치수

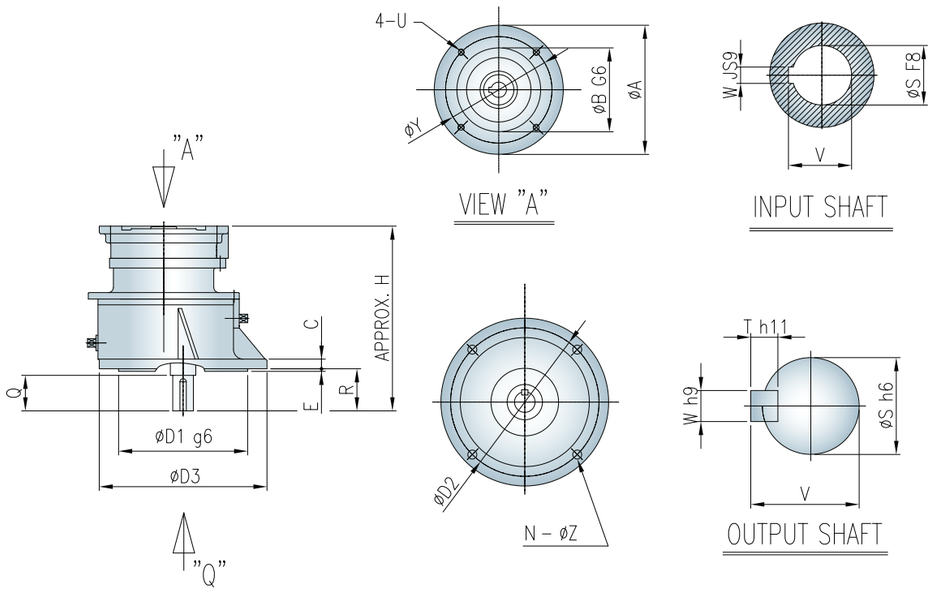


단위 : mm

kW	Ratio	Dimension											Input flange				Input shaft			Output Shaft					그리스량 (kg)	중량 (kg)
		C	F	N	R	Z	L	E	M	J	G	H	Y	U	A	B	W	V	S	W	T	V	S	Q		
0.4	10~20	135	125	155	75	12	285	190	230	40	17	230	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.3	24
	30	135	125	155	75	12	260	190	230	40	17	230	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.3	20
0.75	40~60	135	150	190	65	14	286	190	235	45	17	225	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.5	24
	70~90	165	175	220	80	19	317	215	265	50	20	260	165	M10	200	130	6	21.8	19	12	8	45	42	65	0.8	39
1.5	10~20	135	125	155	75	12	285	190	230	40	17	230	165	M10	200	130	8	27.3	24	10	8	35	32	55	0.3	24
	30	160	130	170	75	14	287	215	260	45	20	265	165	M10	200	130	8	27.3	24	12	8	41	38	58	0.3	31
	40~60	165	175	220	80	19	339	215	265	50	20	260	165	M10	200	130	8	27.3	24	12	8	45	42	65	0.8	40
	70~90	180	185	235	95	19	361	240	295	55	23	285	165	M10	200	130	8	27.3	24	14	9	51.5	48	75	1.2	52
2.2	10~30	160	130	170	75	14	299	215	260	45	20	266	215	M12	250	180	8	31.3	28	12	8	41	38	58	0.3	32
	40~60	180	185	235	95	19	374	240	295	55	23	285	215	M12	250	180	8	31.3	28	14	9	51.5	48	75	1.2	53
	70~90	200	220	270	100	22	407	270	330	60	27	325	215	M12	250	180	8	31.3	28	16	10	59	55	85	1.8	78
3.7	10~20	180	160	210	90	19	340	240	295	55	23	305	215	M12	250	180	8	31.3	28	14	9	51.5	48	80	0.6	49
	30	200	180	230	95	19	347	275	340	65	27	351	215	M12	250	180	8	31.3	28	14	9	51.5	48	80	0.8	62
	40~60	200	220	270	100	22	412	270	330	60	27	325	215	M12	250	180	8	31.3	28	16	10	59	55	85	1.8	77

* FN series 취부와 동일하여 기존제품 호환 가능
* 전동기 취부 IEC 국제표준에 부합하여 전동기 maker 호환 가능

FN – IEC Flange(수직형) 외형도 및 외형치수



단위 : mm

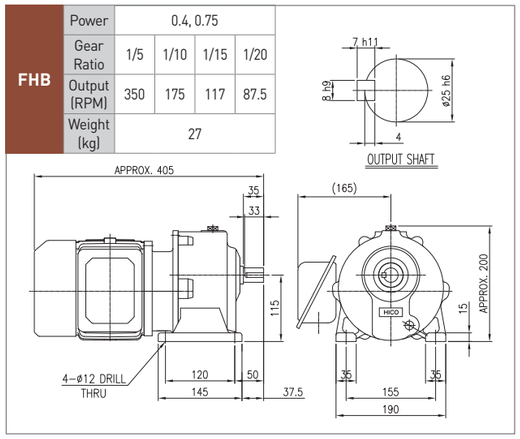
kW	Ratio	Dimension									Input flange				Input shaft			Output Shaft					그리스량 (kg)	중량 (kg)
		D1	D2	D3	R	E	C	H	N	Z	Y	U	A	B	W	V	S	W	T	V	S	Q		
0.4	10~20	200	230	260	65	4	15	295	4	14	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.3	28
	30	200	230	260	65	4	15	270	4	14	165	M10	200	130	6	21.8	19	10	8	35	32	55	0.3	24
0.75	40~60	200	230	260	55	4	15	295	4	14	165	M10	200	130	6	21.8	19	10	8	35	32	55	1	29
	70~90	240	280	320	65	4	17	325	4	18	165	M10	200	130	6	21.8	19	12	8	45	42	65	1.2	46
1.5	10~20	200	230	260	65	4	15	295	4	14	165	M10	200	130	8	27.3	24	10	8	35	32	55	0.3	28
	30	230	270	305	70	4	17	295	4	18	165	M10	200	130	8	27.3	24	12	8	41	38	58	0.3	36
	40~60	240	280	320	65	4	17	345	4	18	165	M10	200	130	8	27.3	24	12	8	45	42	65	1.2	47
	70~90	280	320	355	75	5	19	370	6	14	165	M10	200	130	8	27.3	24	14	9	51.5	48	75	1.2	54
2.2	10~30	230	270	305	70	4	17	305	4	18	215	M12	250	180	8	31.3	28	12	8	41	38	58	0.3	37
	40~60	280	320	355	75	5	19	380	6	14	215	M12	250	180	8	31.3	28	14	9	51.5	48	75	1.2	61
	70~90	310	355	395	85	5	22	415	6	18	215	M12	250	180	8	31.3	28	16	10	59	55	85	1.8	78
3.7	10~20	280	320	350	85	5	18	350	6	14	215	M12	250	180	8	31.3	28	14	9	51.5	48	80	0.6	53
	30	320	360	393	85	5	18	355	6	14	215	M12	250	180	8	31.3	28	14	9	51.5	48	80	0.8	73
	40~60	310	355	395	85	5	22	420	6	18	215	M12	250	180	8	31.3	28	16	10	59	55	85	1.8	82

* FN series 취부와 동일하여 기존제품 호환 가능
* 전동기 취부 IEC 국제표준에 부합하여 전동기 maker 호환 가능

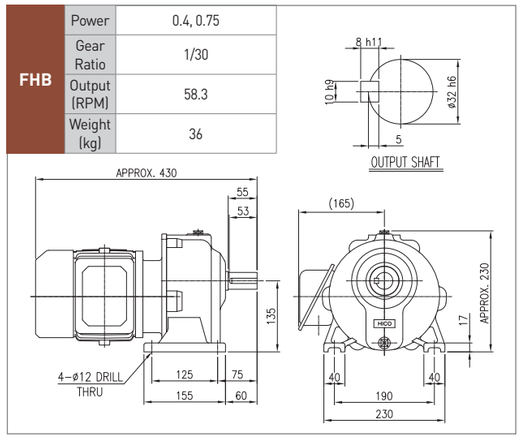
FN 수평형

0.4, 0.75kW

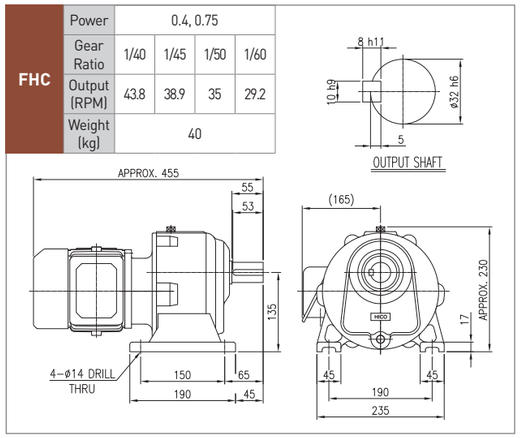
FHB					
Power	0.4, 0.75				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	27				



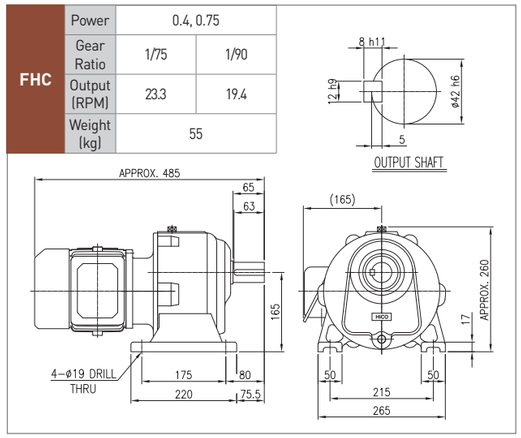
FHB		
Power	0.4, 0.75	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	36	



FHC					
Power	0.4, 0.75				
Gear Ratio	1/40	1/45	1/50	1/60	
Output (RPM)	43.8	38.9	35	29.2	
Weight (kg)	40				

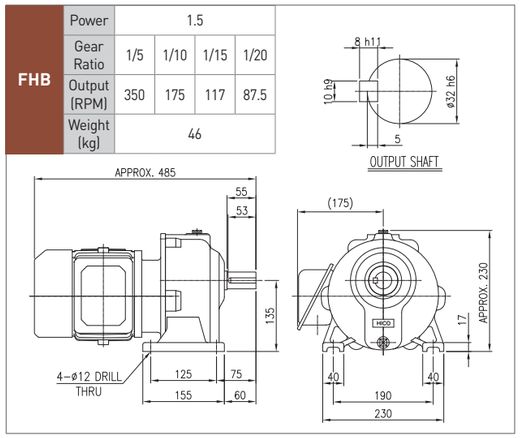


FHC		
Power	0.4, 0.75	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	55	

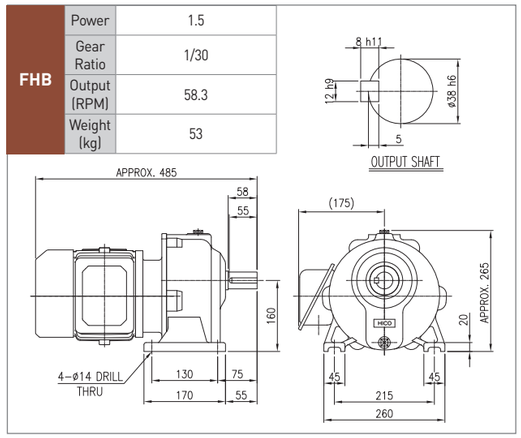


1.5kW

FHB					
Power	1.5				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	46				



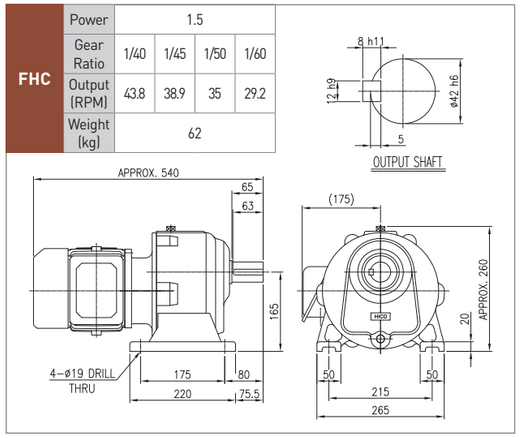
FHB		
Power	1.5	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	53	



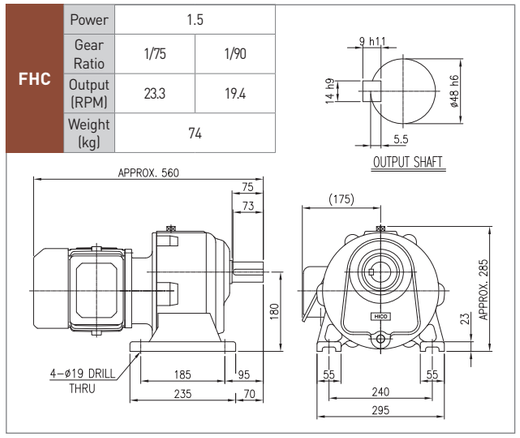
FN 수평형

1.5kW

FHC					
Power	1.5				
Gear Ratio	1/40	1/45	1/50	1/60	
Output (RPM)	43.8	38.9	35	29.2	
Weight (kg)	62				

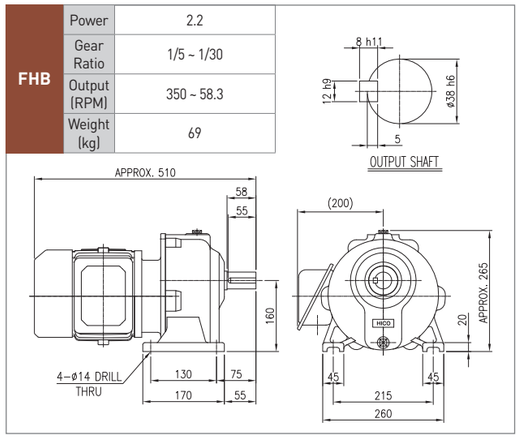


FHC		
Power	1.5	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	74	

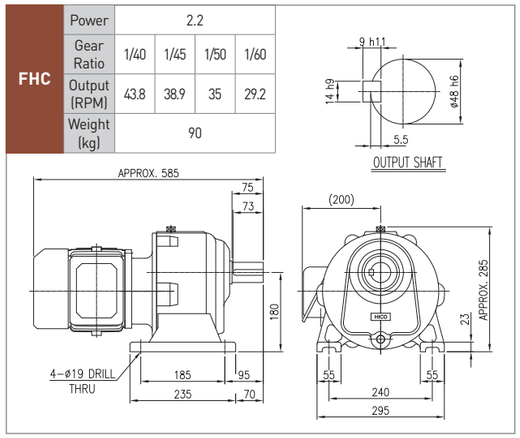


2.2kW

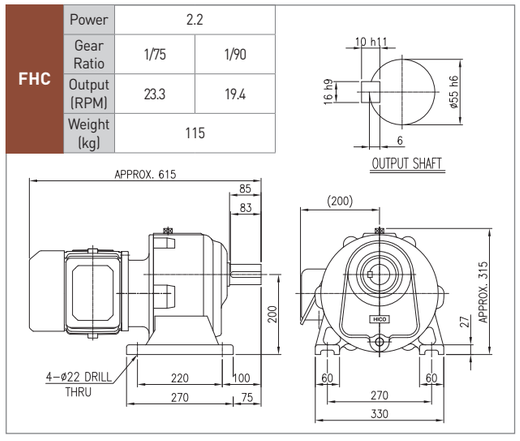
FHB	
Power	2.2
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	69



FHC				
Power	2.2			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	90			



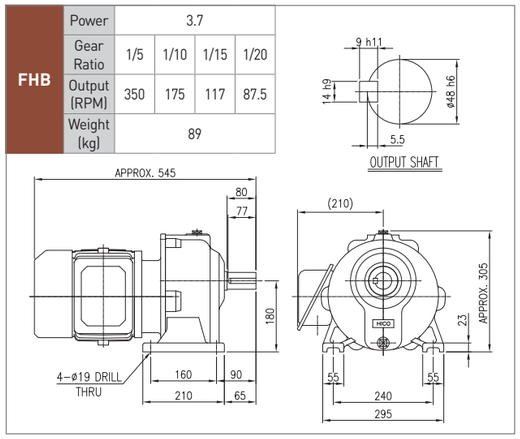
FHC		
Power	2.2	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	115	



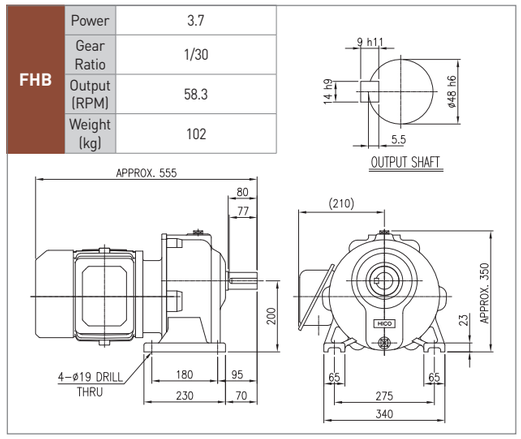
FN 수평형

3.7kW

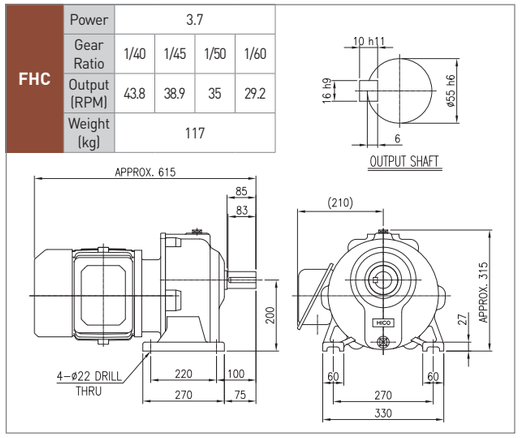
FHB				
Power	3.7			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	89			



FHB	
Power	3.7
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	102



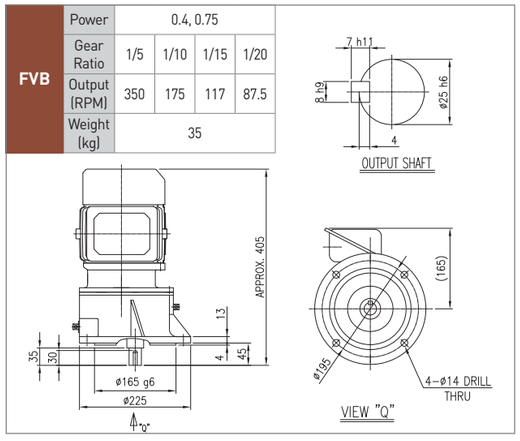
FHC				
Power	3.7			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	117			



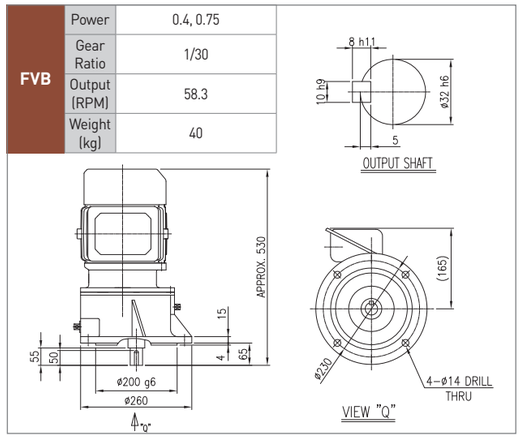
FN 수직형

0.4, 0.75kW

FVB				
Power	0.4, 0.75			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	35			



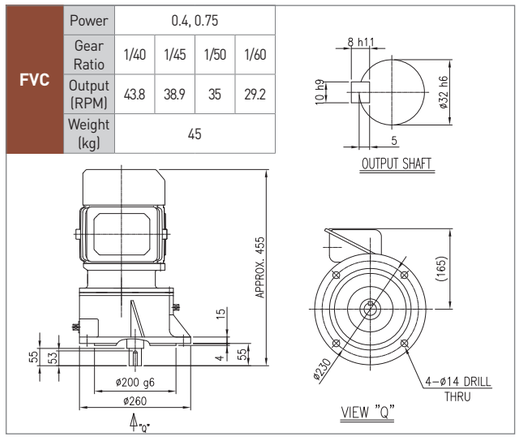
FVB	
Power	0.4, 0.75
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	40



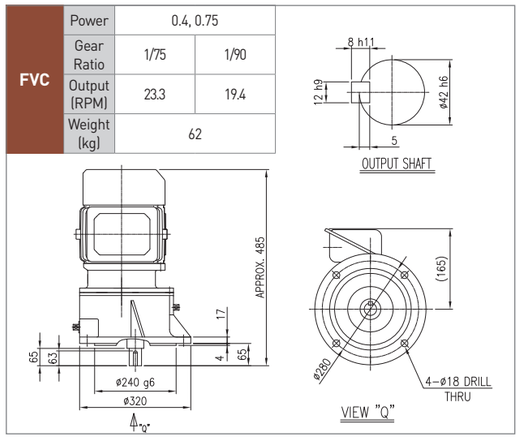
FN 수직형

0.4, 0.75kW

FVC					
Power	0.4, 0.75				
Gear Ratio	1/40	1/45	1/50	1/60	
Output (RPM)	43.8	38.9	35	29.2	
Weight (kg)	45				

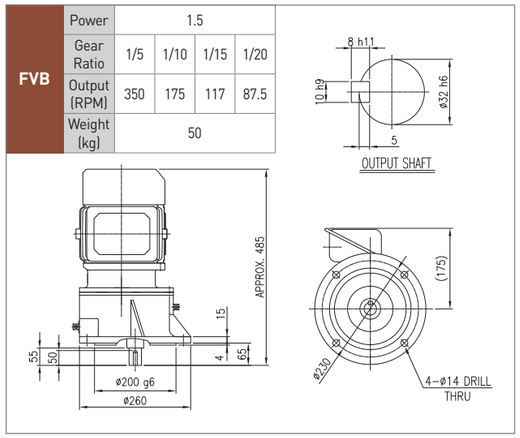


FVC		
Power	0.4, 0.75	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	62	

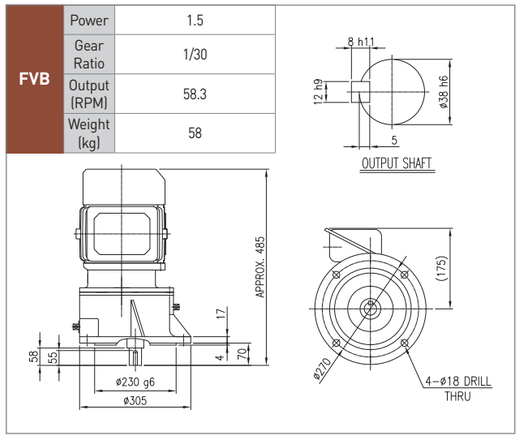


1.5kW

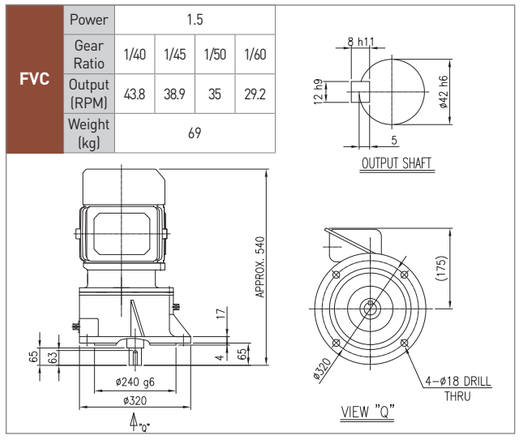
FVB					
Power	1.5				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	50				



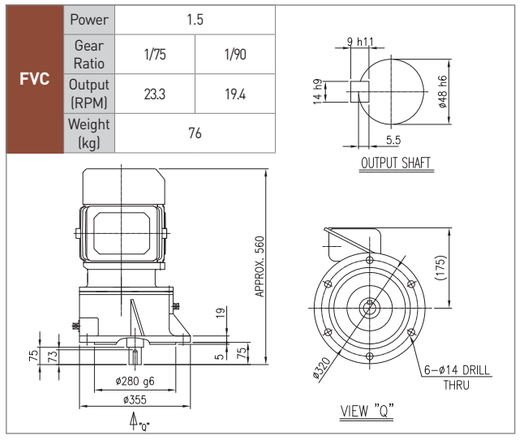
FVB		
Power	1.5	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	58	



FVC				
Power	1.5			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	69			



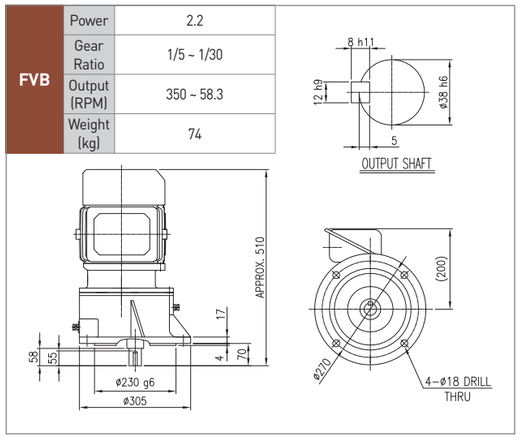
FVC		
Power	1.5	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	76	



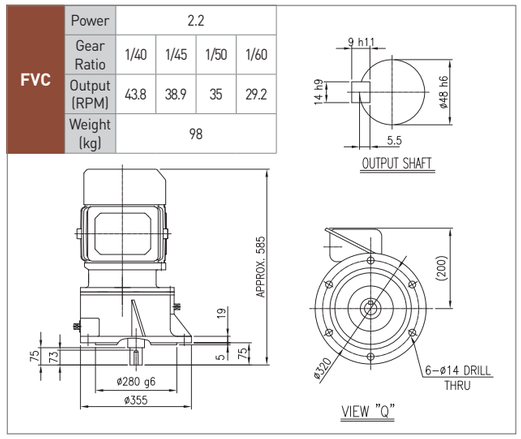
FN 수직형

2.2kW

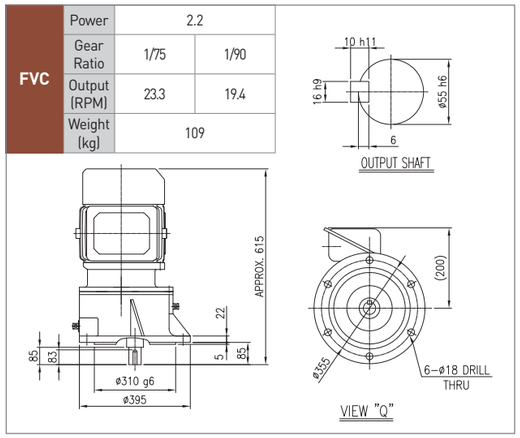
FVB		
Power	2.2	
Gear Ratio	1/5 ~ 1/30	
Output (RPM)	350 ~ 58.3	
Weight (kg)	74	



FVC				
Power	2.2			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	98			

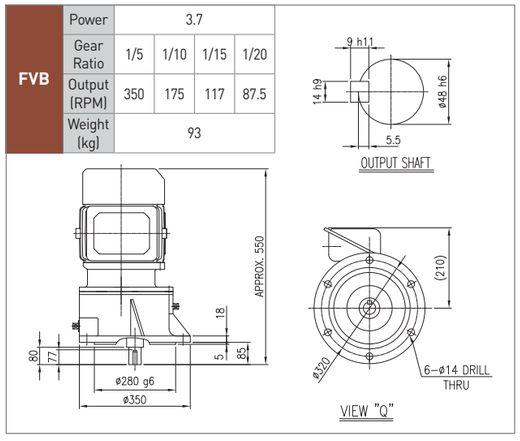


FVC		
Power	2.2	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	109	

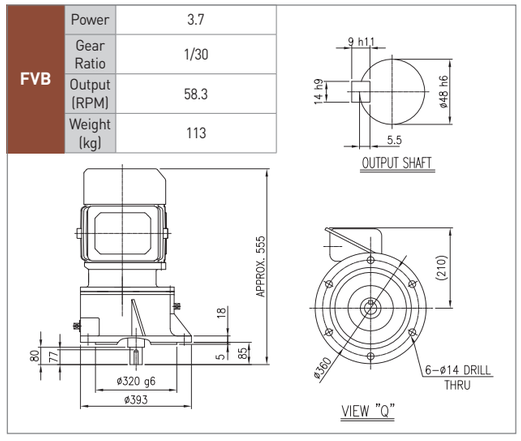


3.7kW

FVB					
Power	3.7				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	93				



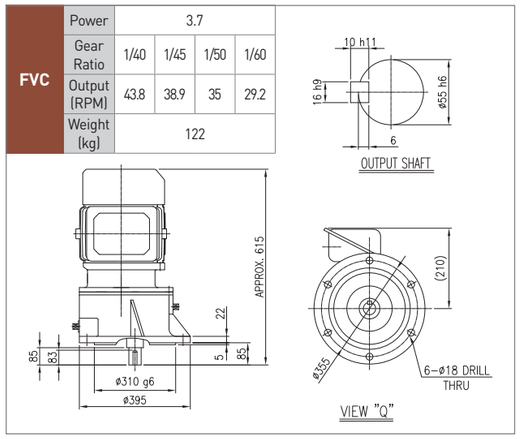
FVB	
Power	3.7
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	113



FN 수직형

3.7kW

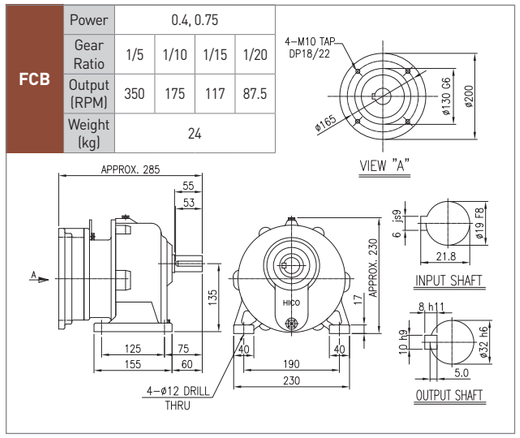
FVC				
Power	3.7			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	122			



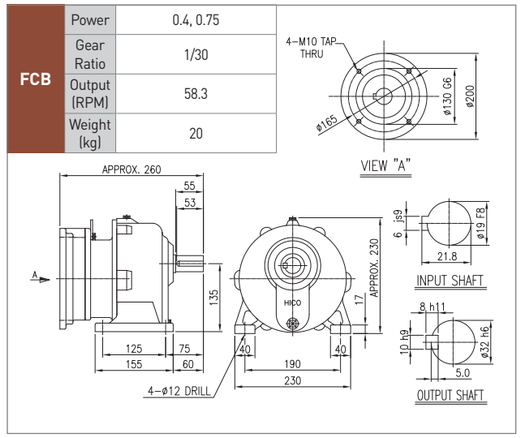
FN IEC FLANGE(수평형)

0.4, 0.75kW

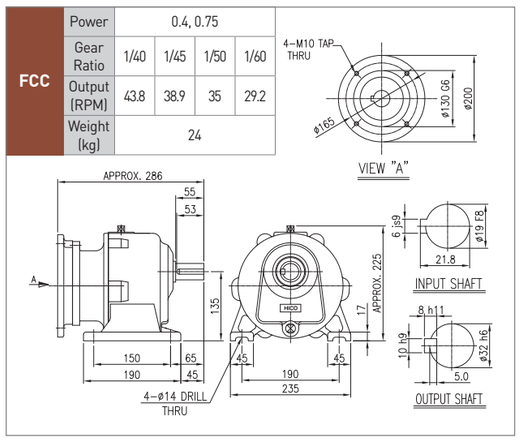
FCB				
Power	0.4, 0.75			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	24			



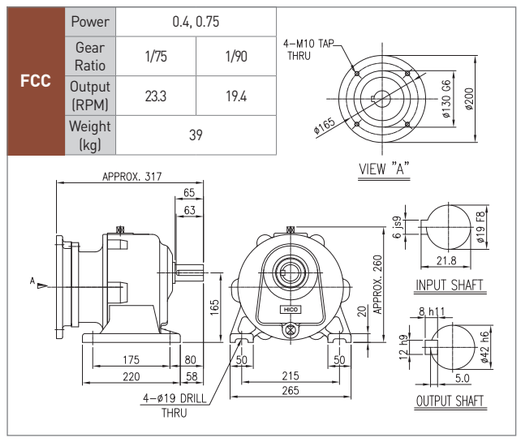
FCB				
Power	0.4, 0.75			
Gear Ratio	1/30			
Output (RPM)	58.3			
Weight (kg)	20			



FCC				
Power	0.4, 0.75			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	24			



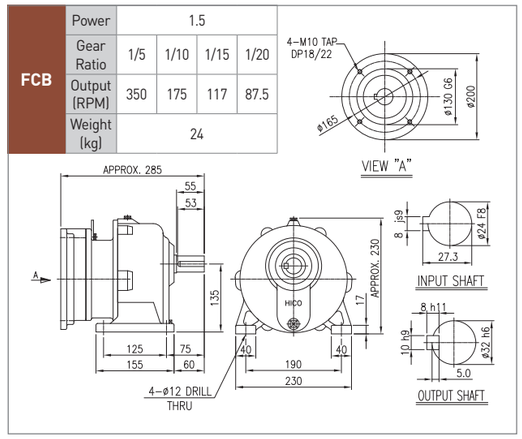
FCC		
Power	0.4, 0.75	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	39	



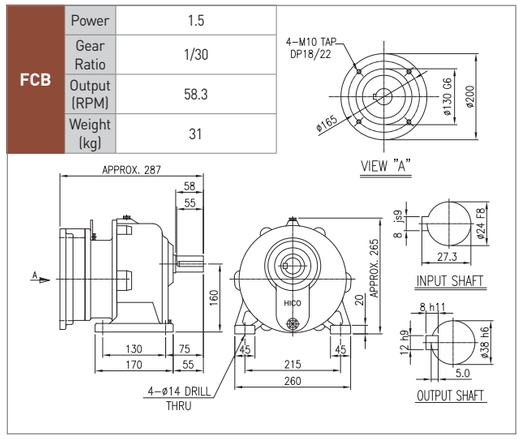
FN IEC FLANGE(수평형)

1.5kW

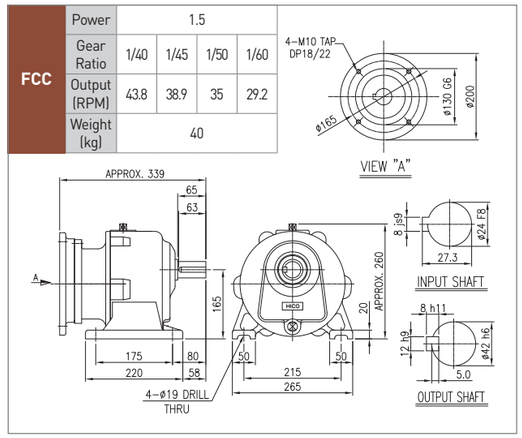
FCB				
Power	1.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	24			



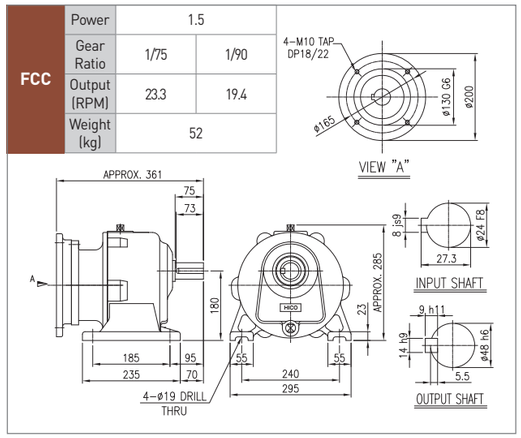
FCB	
Power	1.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	31



FCC				
Power	1.5			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	40			

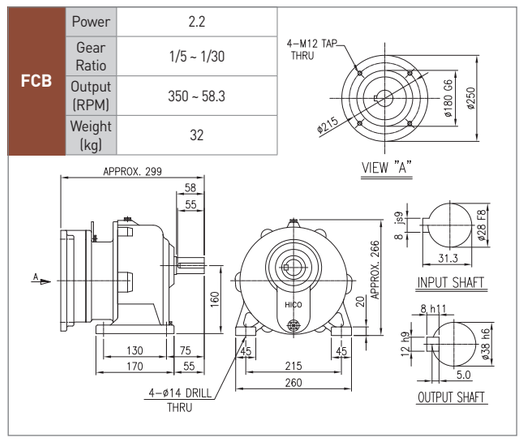


FCC		
Power	1.5	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	52	

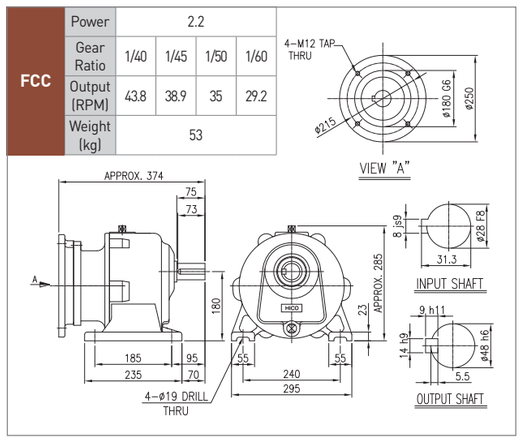


2.2kW

FCB	
Power	2.2
Gear Ratio	1/5 ~ 1/30
Output (RPM)	350 ~ 58.3
Weight (kg)	32



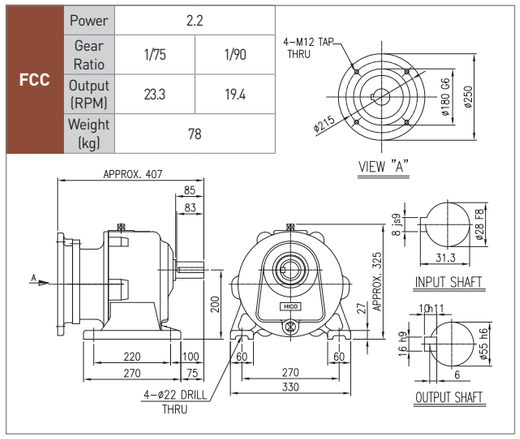
FCC				
Power	2.2			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	53			



FN IEC FLANGE(수평형)

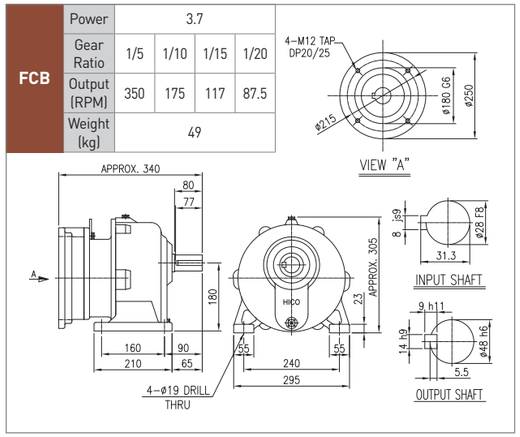
2.2kW

FCC			
Power	2.2		
Gear Ratio	1/75	1/90	
Output (RPM)	23.3	19.4	
Weight (kg)	78		

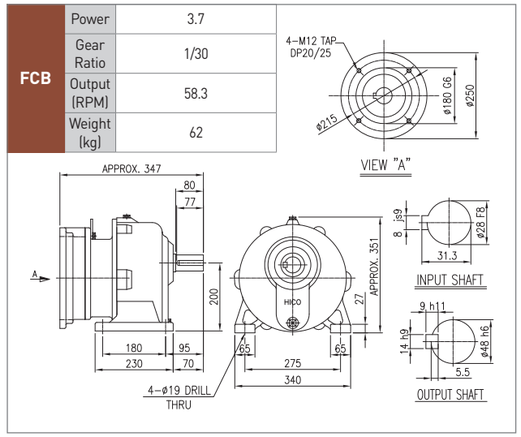


3.7kW

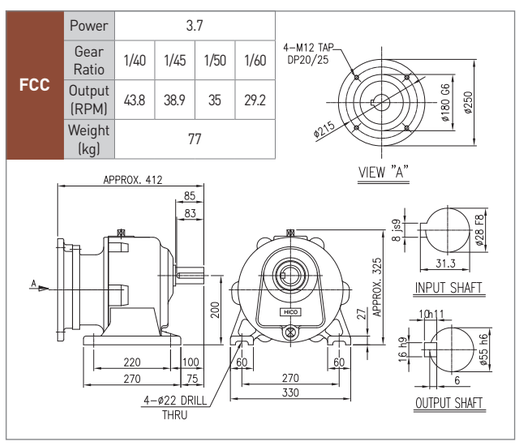
FCB				
Power	3.7			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	49			



FCB		
Power	3.7	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	62	



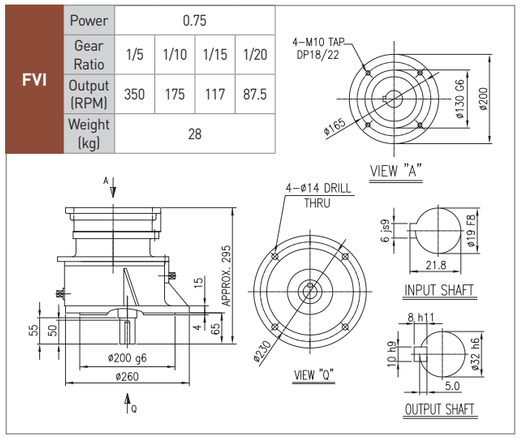
FCC				
Power	3.7			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	77			



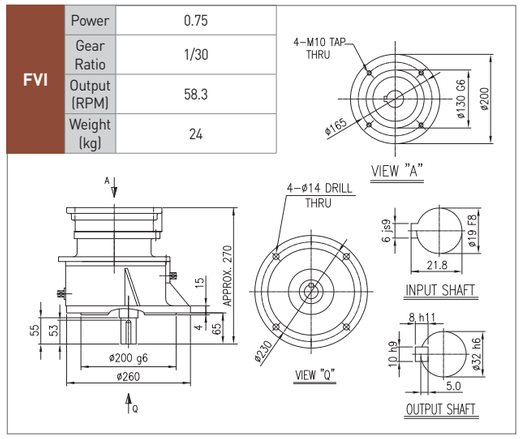
FN IEC FLANGE(수직형)

0.75kW

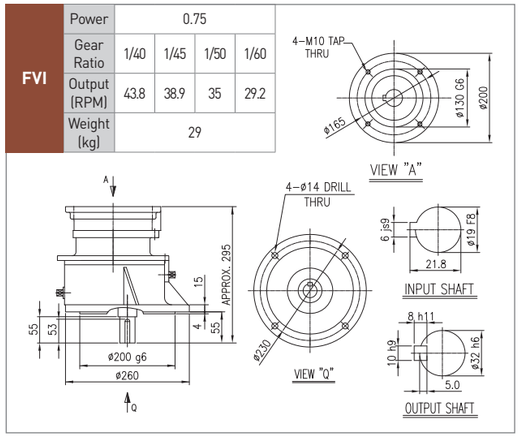
FVI				
Power	0.75			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	28			



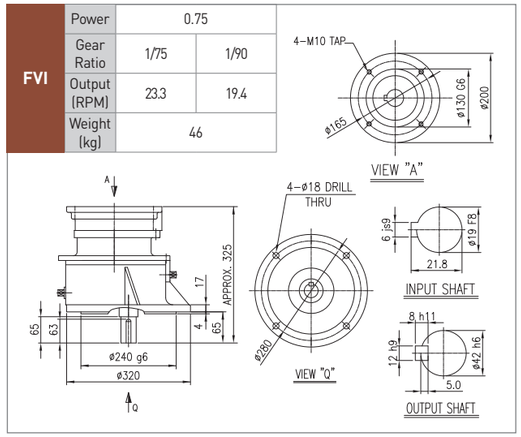
FVI		
Power	0.75	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	24	



FVI				
Power	0.75			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	29			

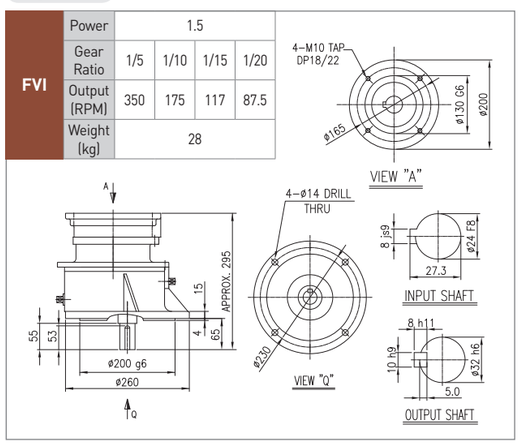


FVI			
Power	0.75		
Gear Ratio	1/75	1/90	
Output (RPM)	23.3	19.4	
Weight (kg)	46		

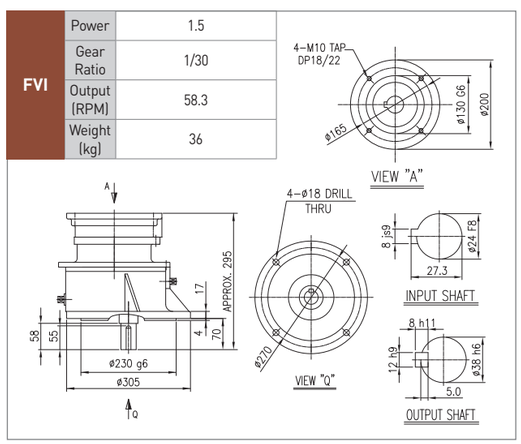


1.5kW

FVI				
Power	1.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	28			



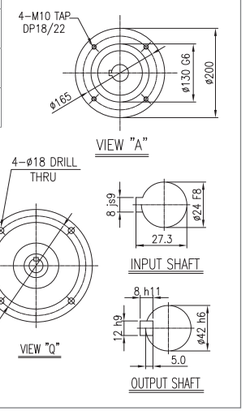
FVI		
Power	1.5	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	36	



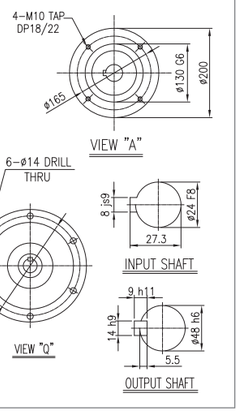
FN IEC FLANGE(수직형)

1.5kW

FVI					
Power	1.5				
Gear Ratio	1/40	1/45	1/50	1/60	
Output (RPM)	43.8	38.9	35	29.2	
Weight (kg)	47				

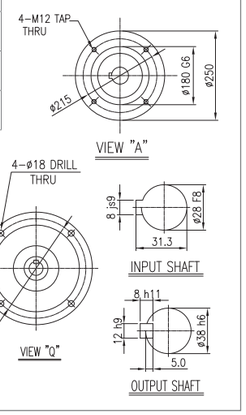


FVI		
Power	1.5	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	54	

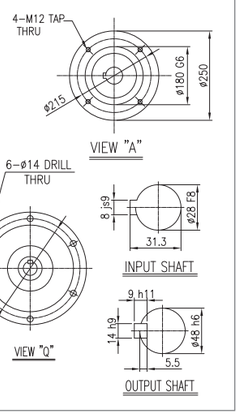


2.2kW

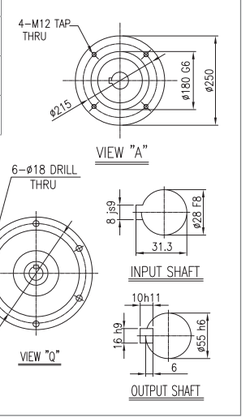
FVI		
Power	2.2	
Gear Ratio	1/5 ~ 1/30	
Output (RPM)	350 ~ 58.3	
Weight (kg)	37	



FVI				
Power	2.2			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	61			



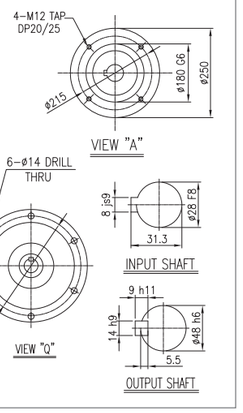
FVI		
Power	2.2	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	78	



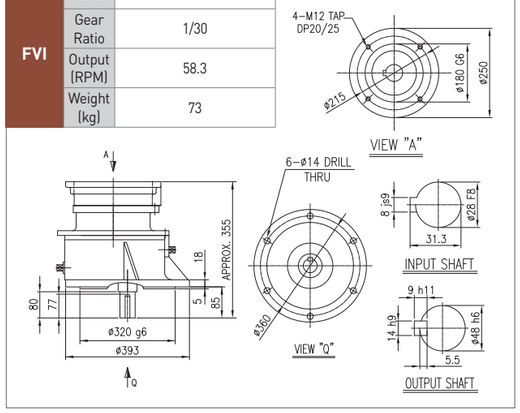
FN IEC FLANGE(수직형)

3.7kW

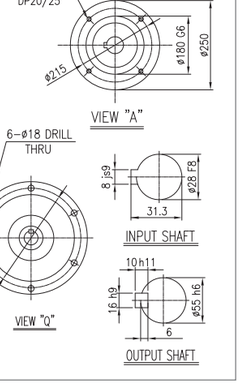
FVI					
Power	3.7				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	53				



FVI	
Power	3.7
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	73



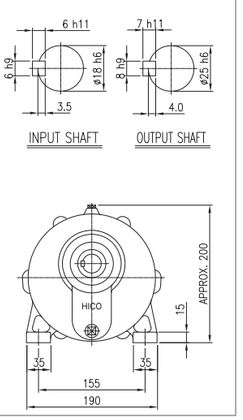
FVI	
Power	3.7
Gear Ratio	1/60
Output (RPM)	29.2
Weight (kg)	82



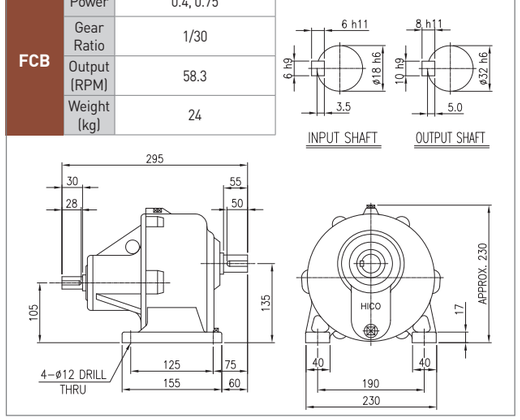
FN 라인파워

0.4, 0.75kW

FCB				
Power	0.4, 0.75			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	18			



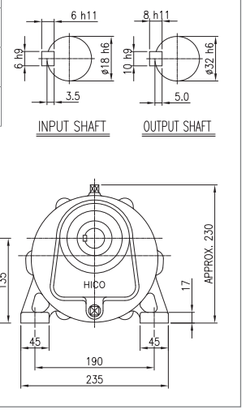
FCB	
Power	0.4, 0.75
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	24



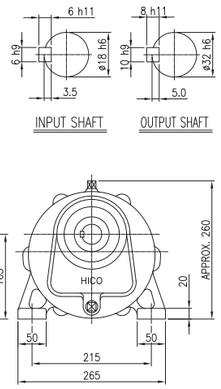
FN 라인파워

0.4, 0.75kW

FCC				
Power	0.4, 0.75			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	24			

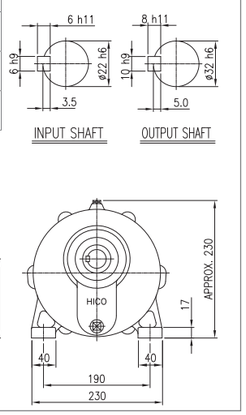


FCC		
Power	0.4, 0.75	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	38	

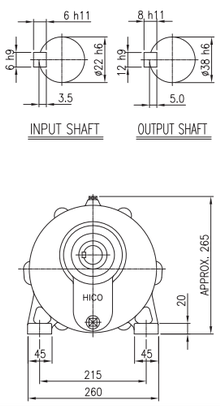


1.5kW

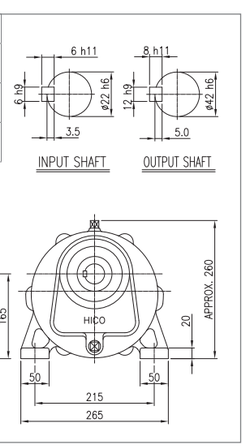
FCB				
Power	1.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	28			



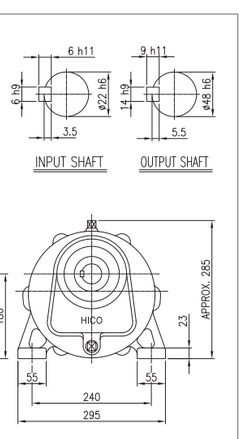
FCB		
Power	1.5	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	33	



FCC				
Power	1.5			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	40			



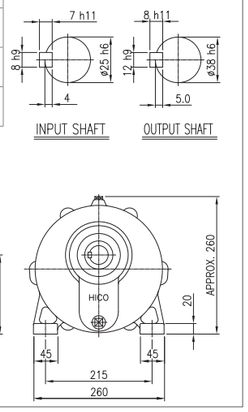
FCC		
Power	1.5	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	46	



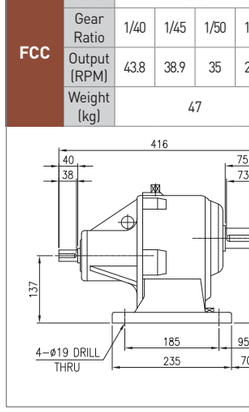
FN 라인파워

2.2kW

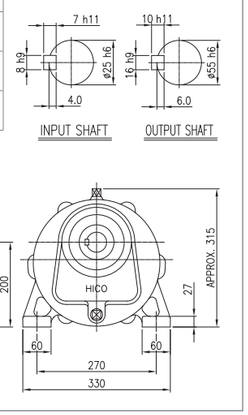
FCB		
Power	2.2	
Gear Ratio	1/5 ~ 1/30	
Output (RPM)	350 ~ 58.3	
Weight (kg)	35	



FCC				
Power	2.2			
Gear Ratio	1/40	1/45	1/50	1/60
Output (RPM)	43.8	38.9	35	29.2
Weight (kg)	47			

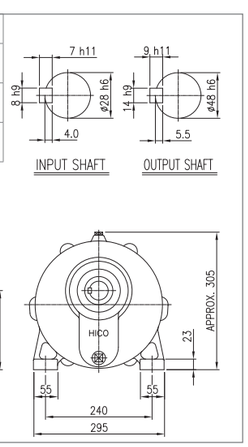


FCC		
Power	2.2	
Gear Ratio	1/75	1/90
Output (RPM)	23.3	19.4
Weight (kg)	61	

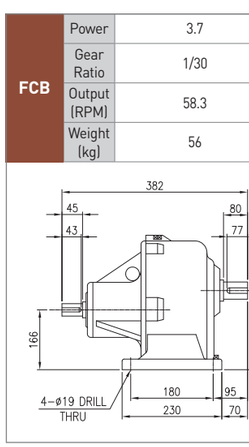


3.7kW

FCB				
Power	3.7			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	49			



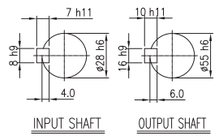
FCB	
Power	3.7
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	56

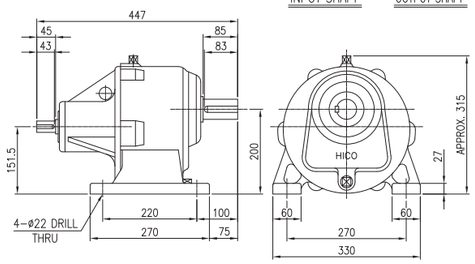


FN 라인파워

3.7kW

FCC	Power	3.7			
	Gear Ratio	1/40	1/45	1/50	1/60
	Output (RPM)	43.8	38.9	35	29.2
	Weight (kg)	62			





F Series

수평형

수직형

IEC FLANGE

라인파워

F시리즈 특징

1. 신속한 공급

표준화된 모든 부품을 반제품화하여 확보해 둠으로써 수용가의 요구에 신속하게 공급해 드립니다.

2. 충격강도의 증가

기어드 모터의 1단 피니언은 모터축과 일체로 되어 충격강도가 향상되었으며 소음이 적습니다.

3. 소형·경량

1단 피니언은 모터축과 일체로 하며 2단 축간거리를 다르게 하여 소형·경량화 되었습니다.

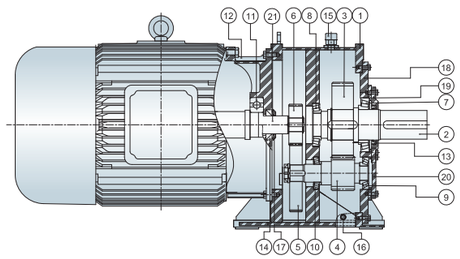
4. 확실한 Seal 구조

오일의 누유를 방지하기 위하여 고급 오일 Seal과 자체개발의 특수 봉입장치를 사용하였습니다.

5. 고성능 강력프레임

치차의 치형을 이상적인 치형으로 수정하고 개스 침탄 후 모든 기어를 연마하여 저소음, 고효율을 얻을 수 있으며 충분한 강성의 프레임으로 되어있습니다.

FHB 구조도



형식표시

• 5.5 ~ 15kW

F H B

- B: 2단형 (1/10~1/30)
- H: Horizontal / V: Vertical / C: Line Power
- 모델명

• 18.5 ~ 160kW

F H M

- M: 모터 일체형 / L: Line Power
- H: Horizontal / V: Vertical
- 모델명

NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	7	BEARING	13	OIL SEAL	19	OUTPUT COVER
2	OUTPUT SHAFT	8	BEARING	14	OIL SEAL	20	2'ND COVER
3	2'ND GEAR	9	BEARING	15	AIR VENT	21	MOTOR SHAFT
4	2'ND PINION	10	BEARING	16	PLUG		
5	1'ST GEAR	11	BEARING	17	GAMMA SEAL		
6	1'ST PINION	12	MOTOR BRACKET	18	OUTPUT FLANGE		

F시리즈 GD², O.H.L표

kW	Ratio	최대허용토크		모터축 환산GD²		출력축OHL	
		N·m	kgf·m	N·m²	kg·m²	N	kgf
5.5	1/5	209.7	21.4	1.578	0.161	11270	1150
	1/10	420.4	42.9	1.578	0.161	11270	1150
	1/15	631.1	64.4	1.578	0.161	11270	1150
	1/20	840.8	85.8	1.558	0.159	11270	1150
	1/30	1264.2	129.0	1.558	0.159	11760	1200
7.5	1/5	287.1	29.3	2.029	0.207	10486	1070
	1/10	573.3	58.5	2.029	0.207	10486	1070
	1/15	860.4	87.8	2.029	0.207	10486	1070
	1/20	1146.6	117.0	2.009	0.205	10486	1070
	1/30	1724.8	176.0	2.009	0.205	11760	1200
11	1/5	420.4	42.9	4.273	0.436	12740	1300
	1/10	840.8	85.8	4.273	0.436	12740	1300
	1/15	1264.2	129.0	4.273	0.436	12740	1300
	1/20	1685.6	172.0	4.224	0.431	12740	1300
	1/30	2518.6	257.0	4.234	0.432	17640	1800
15	1/5	573.3	58.5	5.204	0.531	11760	1200
	1/10	1146.6	117.0	5.204	0.531	11760	1200
	1/15	1724.8	176.0	5.204	0.531	11760	1200
	1/20	2293.2	234.0	5.155	0.526	11760	1200
	1/30	3440.0	351.0	5.165	0.527	16660	1700
18.5	1/5	707	72.1	10.69	1.091	18620	1900
	1/10	1414	144	10.11	1.032	18620	1900
	1/15	2121	216	10.08	1.029	18620	1900
	1/20	2828	289	10.06	1.027	18620	1900
	1/30	4242	433	10.2	1.041	28420	2900
22	1/5	841	85.8	10.69	1.091	17640	1800
	1/10	1682	172	10.11	1.032	17640	1800
	1/15	2523	257	10.08	1.029	17640	1800
	1/20	3363	343	10.06	1.027	17640	1800
	1/30	5045	515	10.2	1.041	26460	2700
30	1/5	1147	117	13.02	1.329	23520	2400
	1/10	2293	234	11.74	1.198	23520	2400
	1/15	3440	351	11.68	1.192	23520	2400
	1/20	4586	468	11.65	1.189	23520	2400
	1/30	6880	702	11.9	1.214	38220	3900
37	1/5	1414	144	16.12	1.645	21560	2200
	1/10	2828	289	14.84	1.514	21560	2200
	1/15	4242	433	14.78	1.508	21560	2200
	1/20	5657	577	14.75	1.505	21560	2200
	1/30	8485	866	14.99	1.53	35280	3600
45	1/5	1720	176	20.23	2.064	32340	3300
	1/10	3440	351	17.59	1.795	32340	3300
	1/15	5160	527	17.47	1.783	32340	3300
	1/20	6880	702	17.4	1.776	32340	3300
	1/30	10319	1053	17.76	1.812	42140	4300
55	1/5	2102	214	36.52	3.727	29400	3000
	1/10	4204	429	33.89	3.458	29400	3000
	1/15	6306	643	33.77	3.446	29400	3000
	1/20	8408	858	33.7	3.439	29400	3000
	1/30	12613	1287	34.06	3.475	39200	4000

* 75kW 이상 제품의 데이터는 당사 문의하시기 바랍니다.

FHB, FHM 외형도 및 외형치수

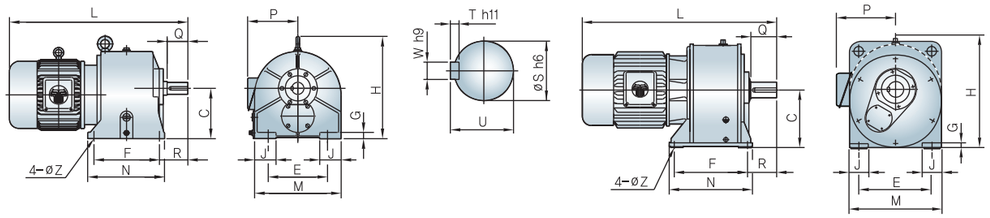


Fig. 1(FHB) Fig. 2(FHM)

단위 : mm

Type	KW	Ratio	Fig	Dimension												Output Shaft					오일량 (L)	중량 (kg)
				C	E	F	G	H	J	L	M	P	R	N	Z	Q	S	T	U	W		
FHB	5.5	10~20	1	200	236	260	25	406	85	715	346	230	113	305	19	82	48	9	51.5	14	5	147
	7.5		1	200	236	260	25	406	85	750	346	230	113	305	19	82	48	9	51.5	14	5	152
	11		1	250	284	282	30	461	85	855	384	290	144	337	24	105	60	11	64	18	9	224
	15		1	250	284	282	30	461	85	900	384	290	144	337	24	105	60	11	64	18	9	228
FHM	18.5		2	290	370	370	24	570	100	1010	470	315	145	420	24	130	80	14	85	22	10	442
	22		2	290	370	370	24	570	100	1010	470	315	145	420	24	130	80	14	85	22	10	442
	30		2	350	430	420	28	665	110	1085	540	315	145	480	28	130	90	14	95	25	15	656
	37		2	350	430	420	28	665	110	1155	540	370	145	480	28	130	90	14	95	25	15	730
	45		2	400	520	470	28	750	120	1220	640	370	170	550	28	165	100	16	106	28	22	795
	55		2	400	520	470	28	800	120	1235	640	395	170	550	28	165	100	16	106	28	22	835
	75		2	400	520	470	28	890	120	1310	640	450	170	550	28	165	100	16	106	28	22	995
	90		2	450	560	520	28	935	150	1415	710	450	200	610	33	180	112	18	119	32	31	1075
FHB	5.5	30	1	225	265	280	30	413	70	735	346	230	110	334	19	82	55	10	59	16	7	157
	7.5		1	225	265	280	30	413	70	770	346	230	110	334	19	82	55	10	59	16	7	162
	11		1	280	355	355	30	524	80	895	448	290	130	415	24	105	70	12	74.5	20	10	296
	15		1	280	355	355	30	524	80	940	448	290	130	415	24	105	70	12	74.5	20	10	302
FHM	18.5		2	350	430	420	28	665	110	1040	540	315	145	480	28	130	90	14	95	25	15	537
	22		2	350	430	420	28	665	110	1040	540	315	145	480	28	130	90	14	95	25	15	537
	30		2	400	520	470	28	750	120	1145	640	315	170	550	28	165	100	16	106	28	22	821
	37		2	400	520	470	28	750	120	1210	640	370	170	550	28	165	100	16	106	28	22	895
	45		2	450	560	520	28	805	150	1285	710	370	200	610	33	180	112	18	119	32	31	1045
	55		2	450	560	520	28	855	150	1300	710	395	200	610	33	180	112	18	119	32	31	1103
	75		2	450	560	520	28	935	150	1375	710	450	200	610	33	180	112	18	119	32	31	1263
	90		2	510	600	555	28	990	180	1460	780	450	225	655	39	210	120	18	127	32	41	1370
	110	10~30	2	510	600	555	28	1035	180	1600	780	520	225	655	39	210	120	18	127	32	41	1590
	130		2	600	940	840	45	1121	220	1965	1040	520	270	1000	33	240	140	20	148	36	170	2820
	160		2	600	940	840	45	1121	220	2115	1040	520	270	1000	33	240	140	20	148	36	170	2950

주 : 1. 극수는 4극 기준임.

FVB, FVM 외형도 및 외형치수

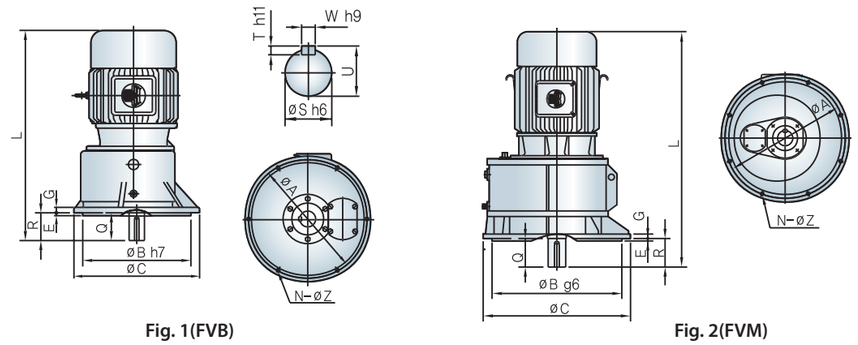


Fig. 1(FVB) Fig. 2(FVM)

단위 : mm

Type	KW	Ratio	Fig	Dimension									Output Shaft					오일량 (L)	중량 (kg)
				A	B	C	E	G	L	R	N	Z	Q	S	T	U	W		
FVB	5.5	10~20	1	370	340	395	4	22	720	89	6	12	82	48	9	51.5	14	7.5	160
	7.5		1	370	340	395	4	22	765	89	6	12	82	48	9	51.5	14	7.5	165
	11		1	455	420	485	4	25	880	122	6	15	105	60	11	64	18	14	242
	15		1	455	420	485	4	25	925	122	6	15	105	60	11	64	18	14	250
FVM	18.5		2	630	590	670	5	20	1065	130	8	18	130	80	14	85	22	16	502
	22		2	630	590	670	5	20	1065	130	8	18	130	80	14	85	22	16	502
	30		2	715	675	755	5	20	1135	130	8	18	130	90	14	95	25	24	730
	37		2	715	675	755	5	20	1195	130	8	18	130	90	14	95	25	24	804
	45		2	810	760	860	6	22	1265	165	8	22	165	100	16	106	28	35	939
	55		2	810	760	860	6	22	1280	165	8	22	165	100	16	106	28	35	997
	75		2	810	760	860	6	22	1355	165	8	22	165	100	16	106	28	35	1157
	90		2	900	840	960	6	26	1465	180	8	26	180	112	18	119	32	50	1270
FVB	5.5	30	1	410	390	435	4	22	740	92	6	12	82	55	10	59	16	11	172
	7.5		1	410	390	435	4	22	780	92	6	12	82	55	10	59	16	11	177
	11		1	515	480	545	4	25	920	118	6	15	105	70	12	74.5	20	15	327
	15		1	515	480	545	4	25	965	118	6	15	105	70	12	74.5	20	15	330
FVM	18.5		2	715	675	755	5	20	1085	130	8	18	130	90	14	95	25	24	592
	22		2	715	675	755	5	20	1085	130	8	18	130	90	14	95	25	24	592
	30		2	810	760	860	6	22	1190	165	8	22	165	100	16	106	28	35	920
	37		2	810	760	860	6	22	1255	165	8	22	165	100	16	106	28	35	994
	45		2	900	840	960	6	26	1340	180	8	26	180	112	18	119	32	50	1240
	55		2	900	840	960	6	26	1355	180	8	26	180	112	18	119	32	50	1298
	75		2	900	840	960	6	26	1425	180	8	26	180	112	18	119	32	50	1458

주 : 1. 극수는 4극 기준임.

FCB, FHL 외형도 및 외형치수

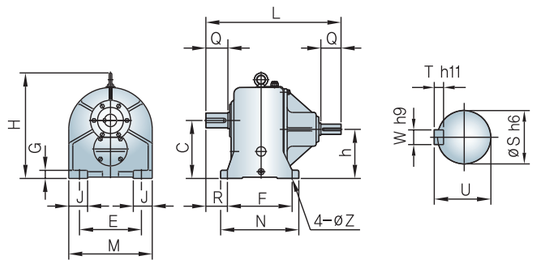


Fig. 1(FCB)

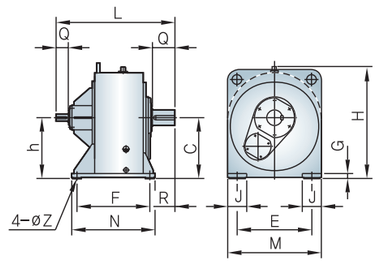


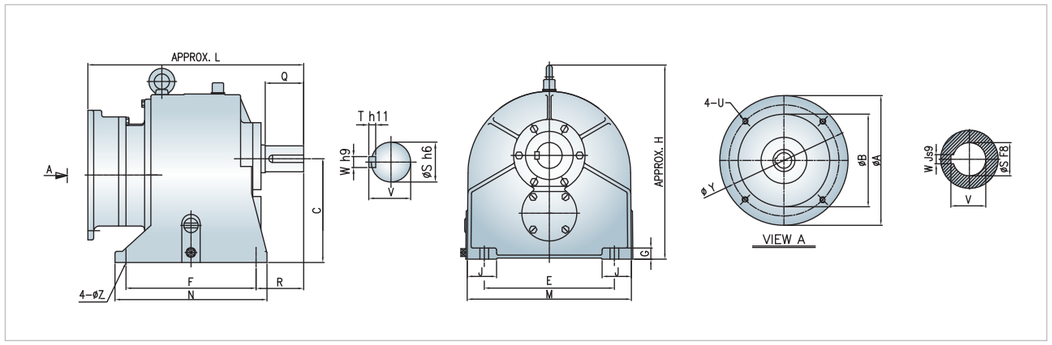
Fig. 2(FHL)

단위 : mm

Type	KW	Ratio	Fig	Dimension												Input Shaft					Output Shaft					오일량 (L)	중량 (kg)
				C	E	F	G	H	J	L	M	N	R	Z	h	S	W	T	U	Q	S	W	T	U	Q		
FCB	5.5	10 ~ 20	1	200	236	260	25	415	85	560	346	305	113	19	174	38	10	8	41	75	48	14	9	51.5	82	5	96
	7.5		1	200	236	260	25	415	85	560	346	305	113	19	174	38	10	8	41	75	48	14	9	51.5	82	5	96
	11		1	250	284	282	30	470	85	645	384	337	143.5	24	214	45	14	9	48.5	95	60	18	11	64	105	9	127
	15		1	250	284	282	30	470	85	645	384	337	143.5	24	214	45	14	9	48.5	95	60	18	11	64	105	9	127
FHL	18.5		2	290	370	370	24	570	100	633	470	420	145	24	290	40	12	8	43	70	80	22	14	85	130	10	230
	22		2	290	370	370	24	570	100	633	470	420	145	24	290	40	12	8	43	70	80	22	14	85	130	10	230
	30		2	350	430	420	28	663	110	705	540	480	145	28	350	50	14	9	53.5	80	90	25	14	95	130	15	365
	37		2	350	430	420	28	663	110	705	540	480	145	28	350	50	14	9	53.5	80	90	25	14	95	130	15	365
	45		2	400	520	470	28	750	120	800	640	550	170	28	400	60	18	11	64	90	100	28	16	106	165	22	480
	55		2	400	520	470	28	750	120	800	640	550	170	28	400	60	18	11	64	90	100	28	16	106	165	22	480
	75		2	400	520	470	28	750	120	800	640	550	170	28	400	60	18	11	64	90	100	28	16	106	165	22	480
	90		2	450	560	520	28	805	150	880	710	610	200	32	450	60	18	11	64	90	112	32	16	117	180	31	650
FCB	5.5	30	1	225	265	280	30	420	70	620	346	334	110	19	180	38	10	8	41	75	55	16	10	59	82	7	115
	7.5		1	225	265	280	30	420	70	620	346	334	110	19	180	38	10	8	41	75	55	16	10	59	82	7	115
	11		1	280	355	355	30	520	80	690	448	415	130	24	236	45	14	9	48.5	95	70	20	12	74.5	105	10	189
	15		1	280	355	355	30	520	80	690	448	415	130	24	236	45	14	9	48.5	95	70	20	12	74.5	105	10	189
FHL	18.5		2	350	430	420	28	665	110	685	540	480	145	28	350	40	12	8	43	70	90	25	14	95	130	15	370
	22		2	350	430	420	28	665	110	685	540	480	145	28	350	40	12	8	43	70	90	25	14	95	130	15	370
	30		2	400	520	470	28	750	120	785	640	550	170	28	400	50	14	9	53.5	80	100	28	16	106	165	22	480
	37		2	400	520	470	28	750	120	785	640	550	170	28	400	50	14	9	53.5	80	100	28	16	106	165	22	480
	45		2	450	560	520	28	805	150	880	710	610	200	32	450	60	18	11	64	90	112	32	16	119	180	31	650
	55		2	450	560	520	28	805	150	880	710	610	200	32	450	60	18	11	64	90	112	32	16	119	180	31	650
	75		2	450	560	520	28	805	150	880	710	610	200	32	450	60	18	11	64	90	112	32	18	119	180	31	650

주 : 1. 극수는 4극 기준임.

F – IEC Flange(수평형) 외형도 및 외형치수

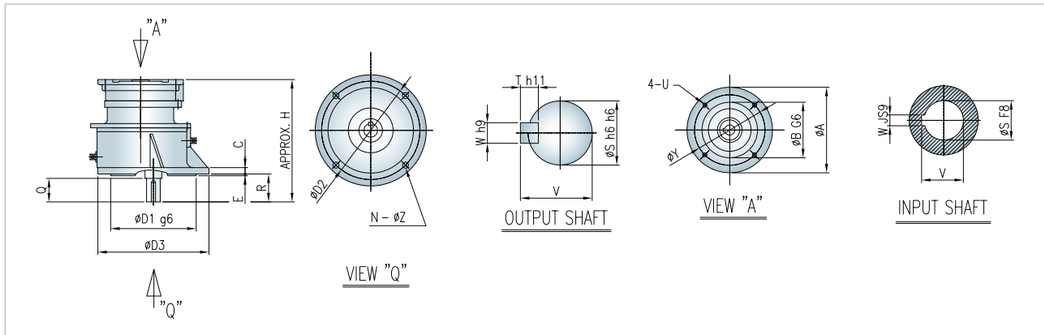


단위 : mm

kW	Ratio	Dimension											Input flange				Input shaft			Output Shaft					그리스량 (L)	중량 (kg)
		C	F	N	R	Z	L	E	M	J	G	H	Y	U	A	B	W	V	S	W	T	V	S	Q	(L)	(kg)
5.5	10~20	200	260	305	113	19	503	236	346	85	25	406	265	M12	300	230	10	41.3	38	14	9	51.5	48	82	5	100
7.5	30	225	280	334	110	19	514	265	346	70	30	413	265	M12	300	230	10	41.3	38	16	10	59	55	82	7	120
11	10~20	250	282	337	144	24	549	284	384	85	30	461	300	M16	350	250	12	45.3	42	18	11	64	60	105	9	133
15	30	280	355	415	130	24	589	355	448	80	30	524	300	M16	350	250	12	45.3	42	20	12	74.5	70	105	10	195

* F series 취부와 동일하여 기존제품 호환 가능
* 전동기 취부 IEC 국제표준에 부합하여 전동기 maker 호환 가능

F – IEC Flange(수직형) 외형도 및 외형치수



단위 : mm

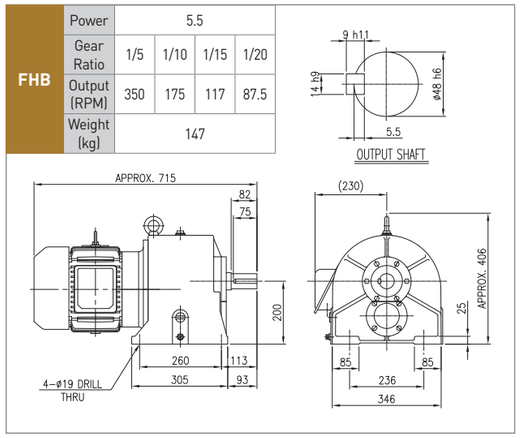
kW	Ratio	Dimension									Input flange				Input shaft			Output Shaft					그리스량 (L)	중량 (kg)
		D1	D2	D3	R	E	C	H	N	Z	Y	U	A	B	W	V	S	W	T	V	S	Q		
5.5	10~20	340	370	395	89	4	22	520	6	12	265	M12	300	230	10	41.3	38	14	9	51.5	48	82	7.5	113
7.5	30	390	410	435	92	4	22	540	6	12	265	M12	300	230	10	41.3	38	16	10	59	55	82	11	135
11	10~20	420	455	485	122	4	25	580	6	15	300	M16	350	250	12	45.3	42	18	11	64	60	105	14	151
15	30	480	515	545	118	4	25	620	6	15	300	M16	350	250	12	45.3	42	20	12	74.5	70	105	15	226

* F series 취부와 동일하여 기존제품 호환 가능
* 전동기 취부 IEC 국제표준에 부합하여 전동기 maker 호환 가능

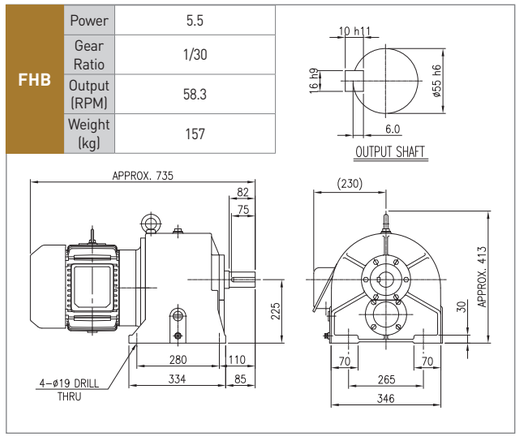
F 수평형

5.5kW

FHB				
Power	5.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	147			

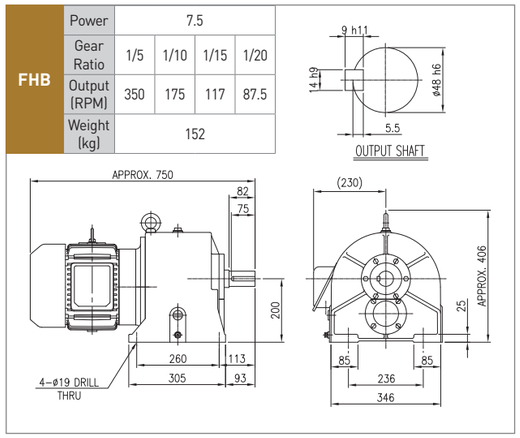


FHB	
Power	5.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	157

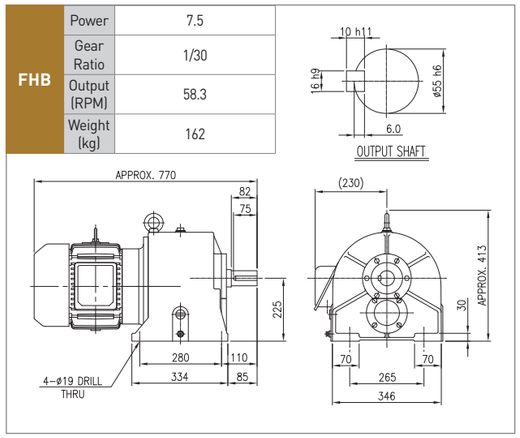


7.5kW

FHB				
Power	7.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	152			

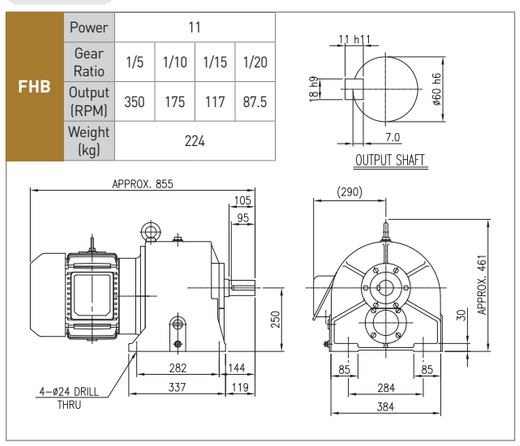


FHB	
Power	7.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	162

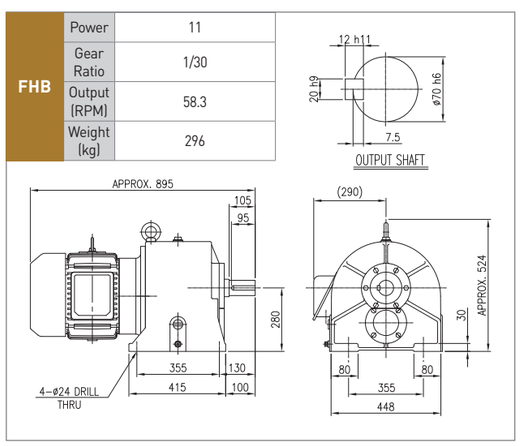


11kW

FHB				
Power	11			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	224			



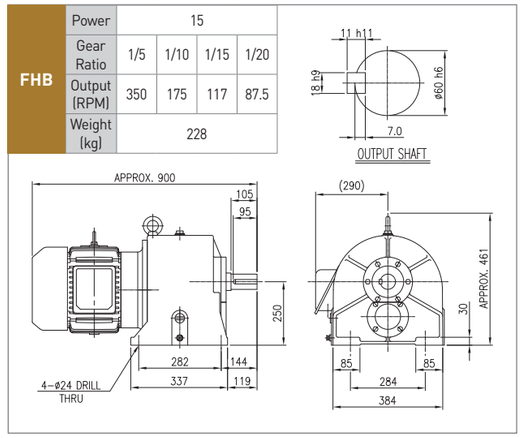
FHB	
Power	11
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	296



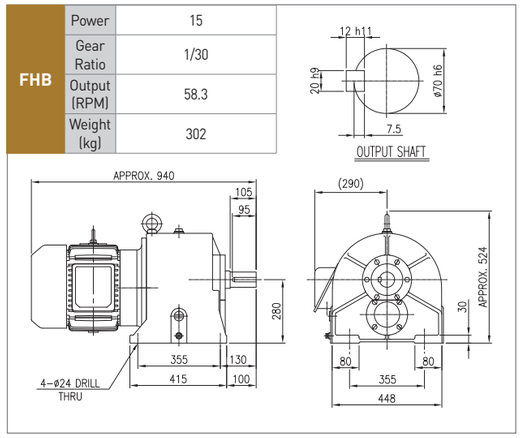
F 수평형

15kW

FHB				
Power	15			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	228			

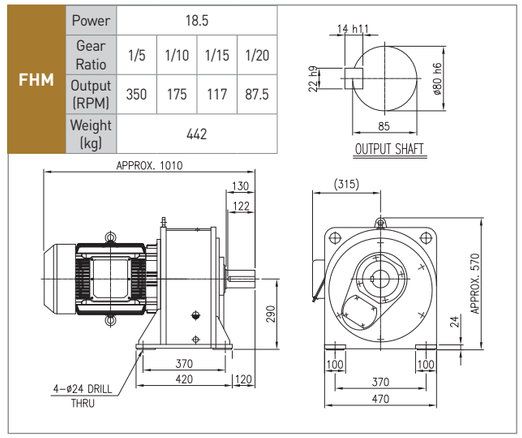


FHB	
Power	15
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	302

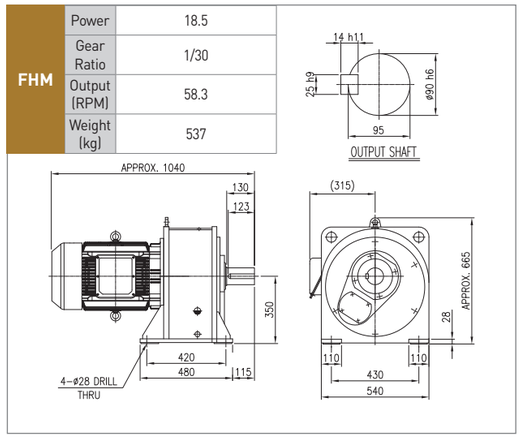


18.5kW

FHM				
Power	18.5			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	442			

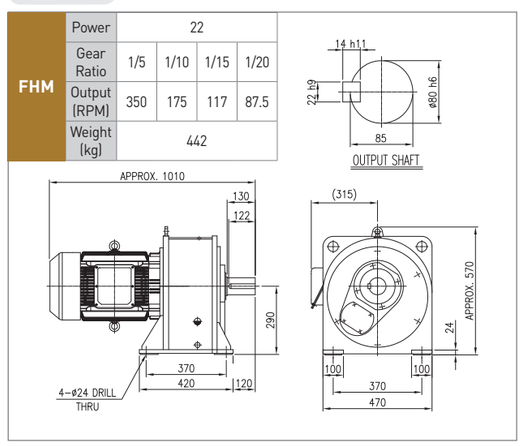


FHM	
Power	18.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	537

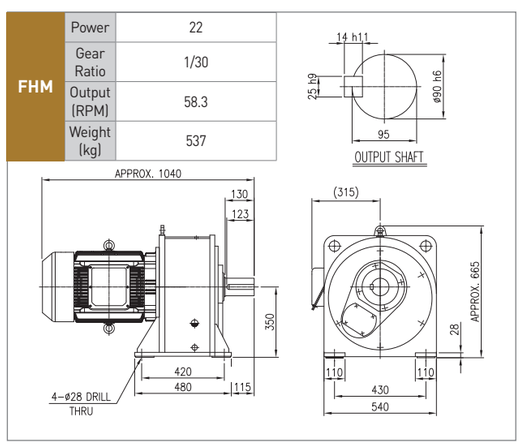


22kW

FHM				
Power	22			
Gear Ratio	1/5	1/10	1/15	1/20
Output (RPM)	350	175	117	87.5
Weight (kg)	442			



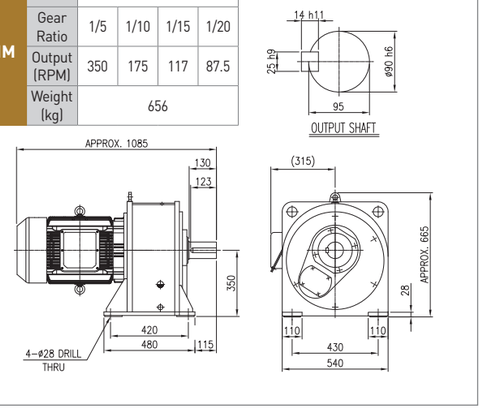
FHM	
Power	22
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	537



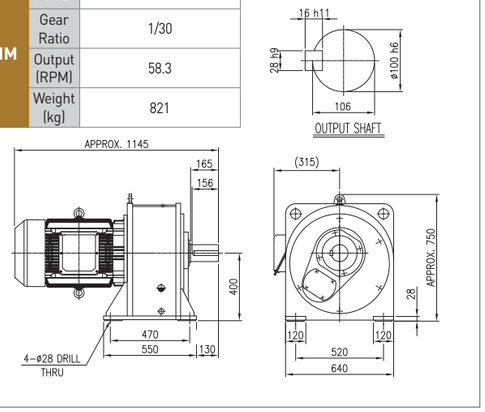
F 수평형

30kW

FHM					
Power	30				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	656				

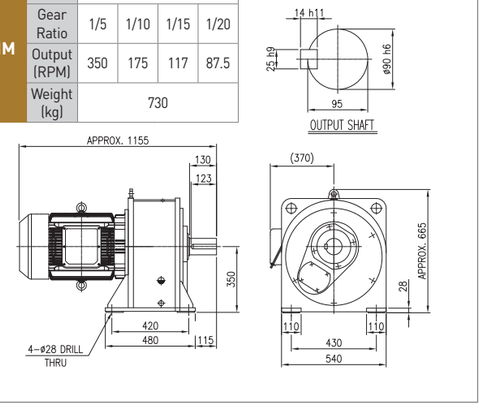


FHM		
Power	30	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	821	

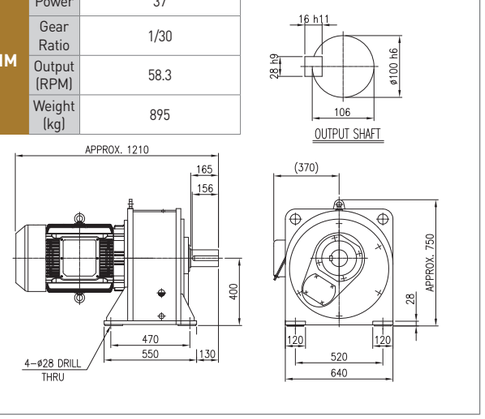


37kW

FHM					
Power	37				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	730				

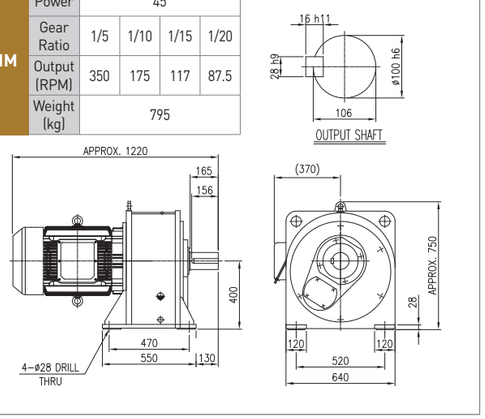


FHM		
Power	37	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	895	

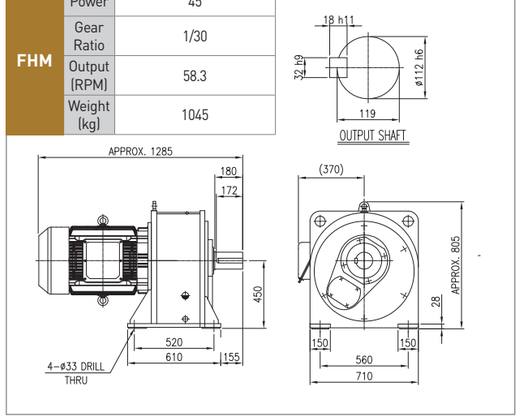


45kW

FHM					
Power	45				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	795				



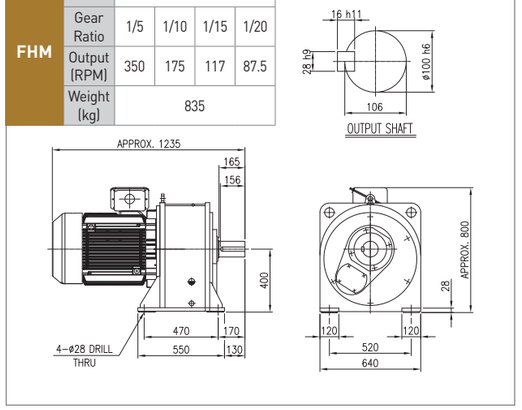
FHM		
Power	45	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	1045	



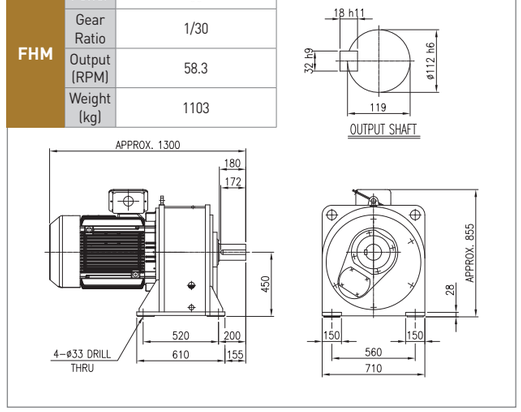
F 수평형

55kW

FHM					
Power	55				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	835				

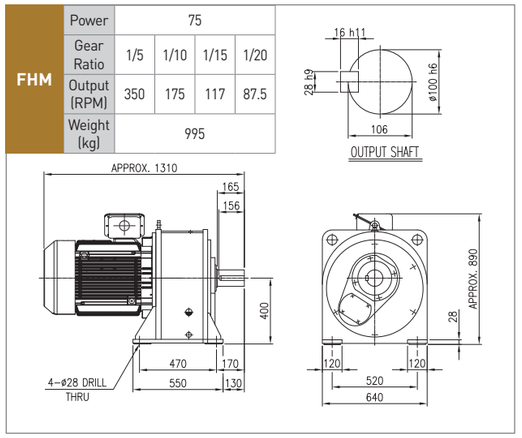


FHM		
Power	55	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	1103	

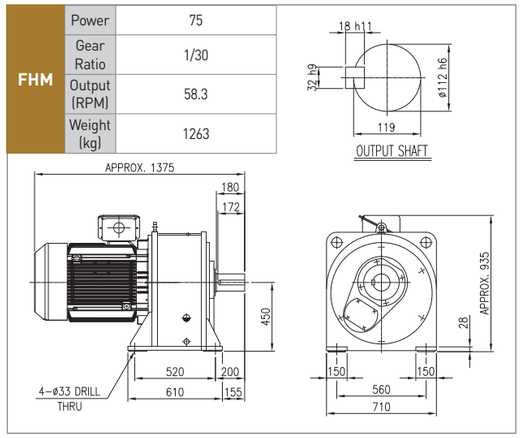


75kW

FHM					
Power	75				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	995				

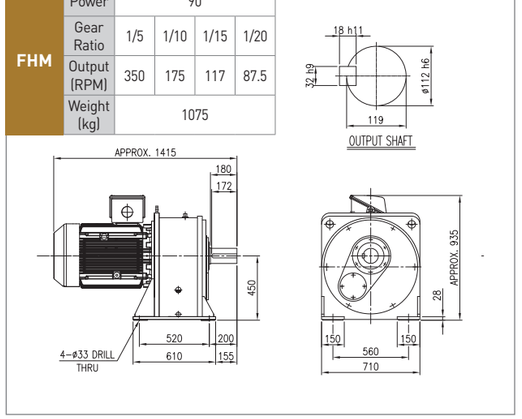


FHM		
Power	75	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	1263	

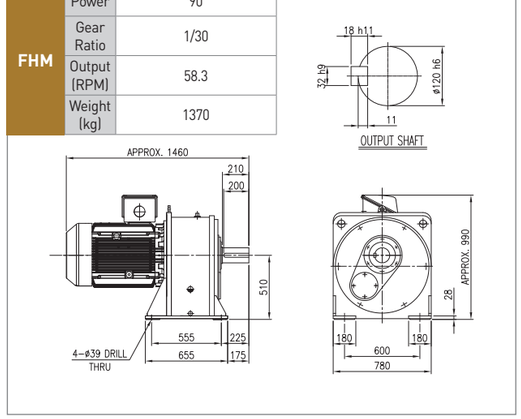


90kW

FHM					
Power	90				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	1075				



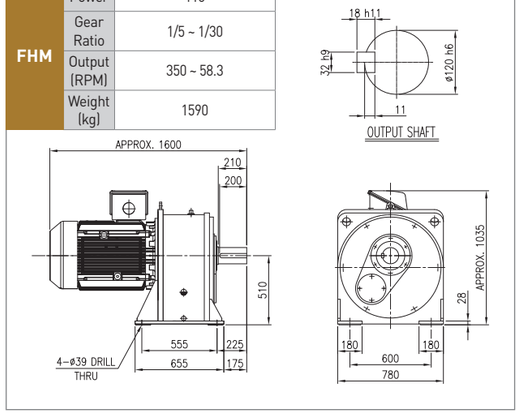
FHM		
Power	90	
Gear Ratio	1/30	
Output (RPM)	58.3	
Weight (kg)	1370	



F 수평형

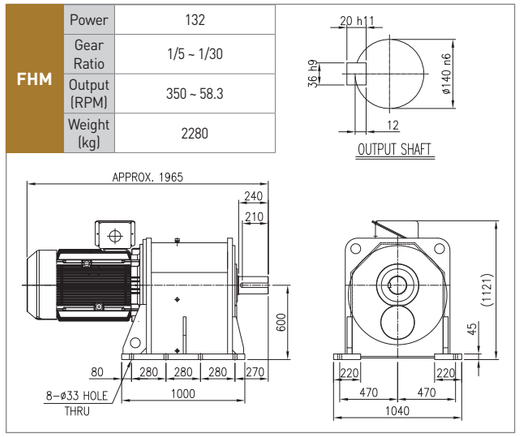
110kW

FHM	Power	110
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	1590



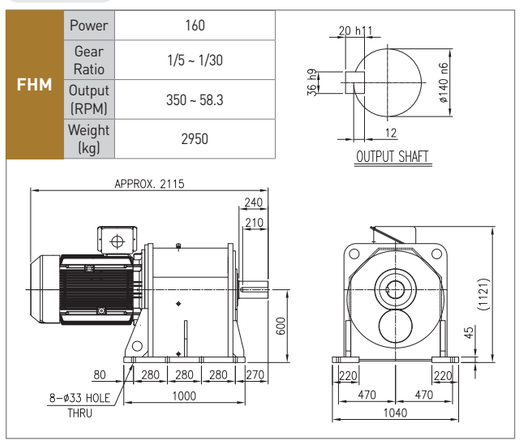
132kW

FHM	Power	132
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	2280



160kW

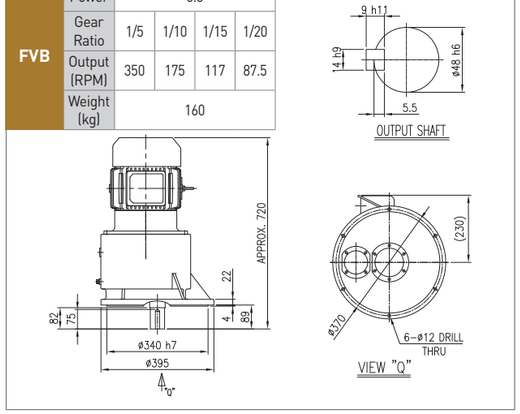
FHM	Power	160
	Gear Ratio	1/5 ~ 1/30
	Output (RPM)	350 ~ 58.3
	Weight (kg)	2950



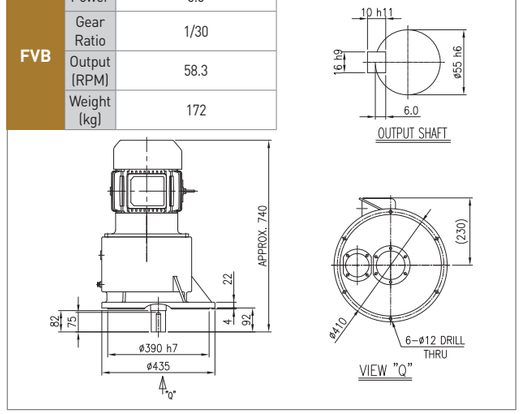
F 수직형

5.5kW

FVB	Power	5.5			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	160			

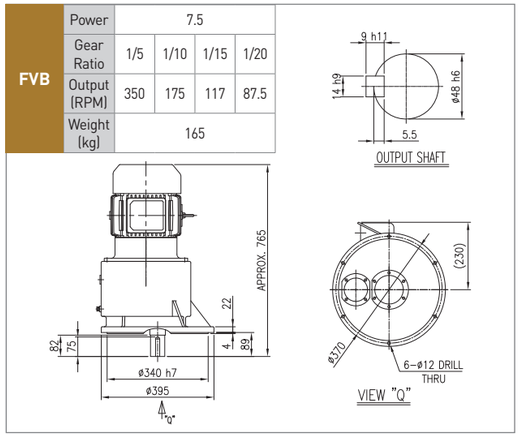


FVB	Power	5.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	172

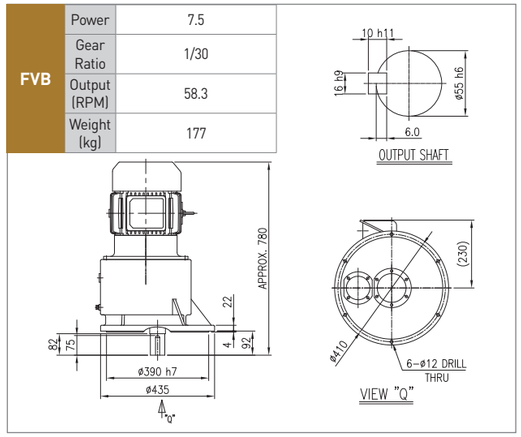


7.5kW

FVB	Power	7.5			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	165			

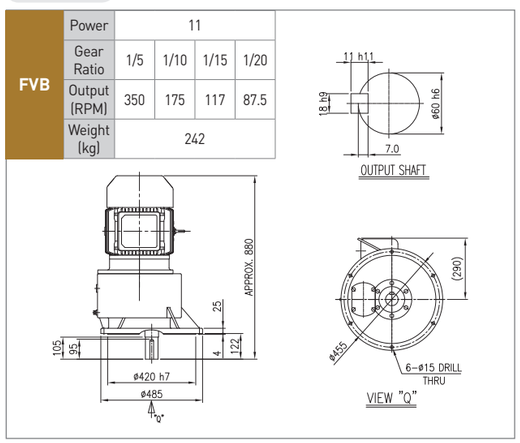


FVB	Power	7.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	177

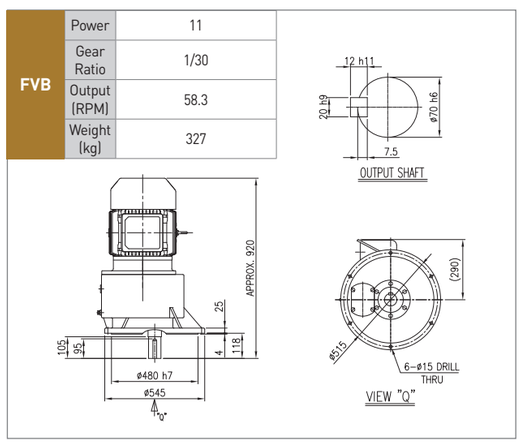


11kW

FVB	Power	11			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	242			



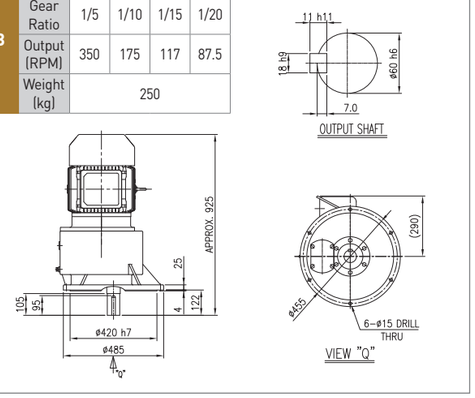
FVB	Power	11
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	327



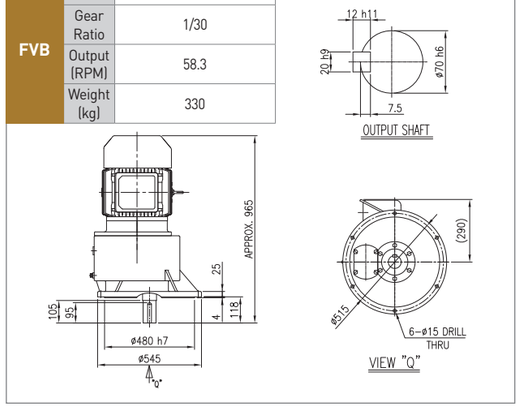
F 수직형

15kW

FVB	Power	15			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	250			

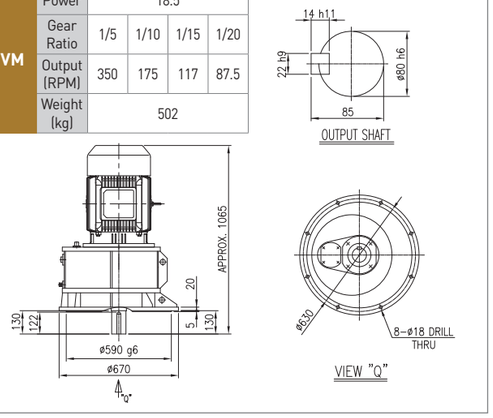


FVB	Power	15
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	330

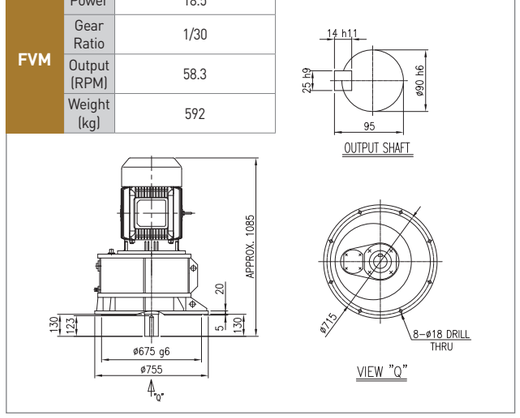


18.5kW

FVM	Power	18.5			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	502			

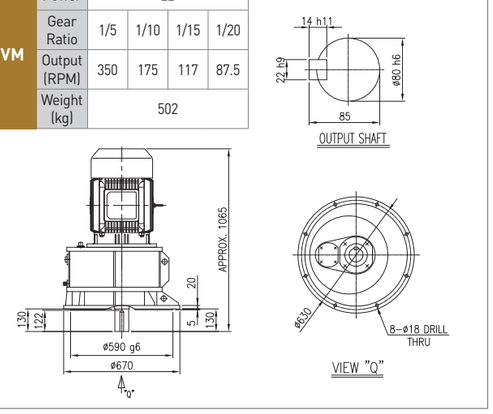


FVM	Power	18.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	592

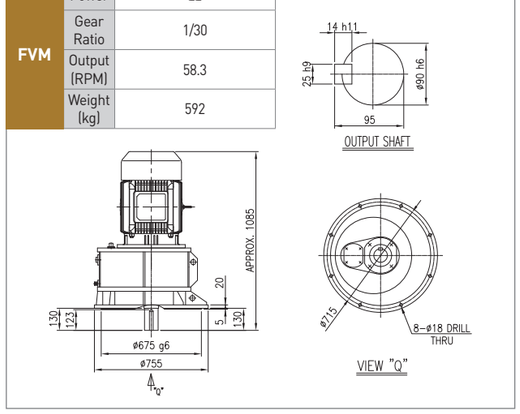


22kW

FVM	Power	22			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	502			



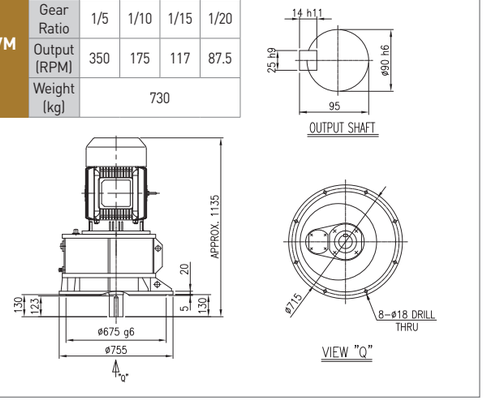
FVM	Power	22
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	592



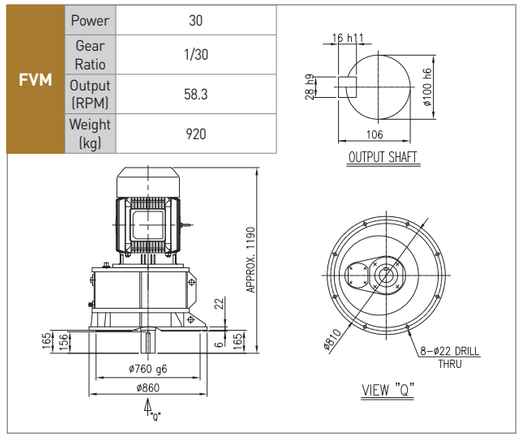
F 수직형

30kW

FVM	Power	30			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	730			

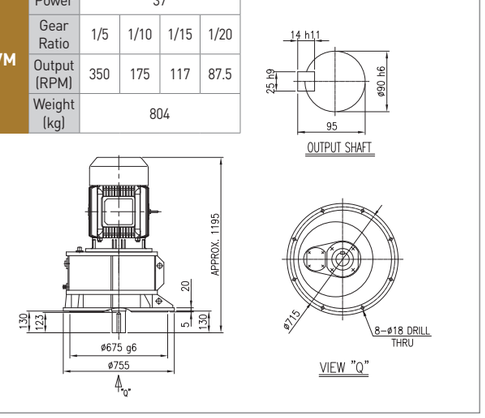


FVM	Power	30
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	920

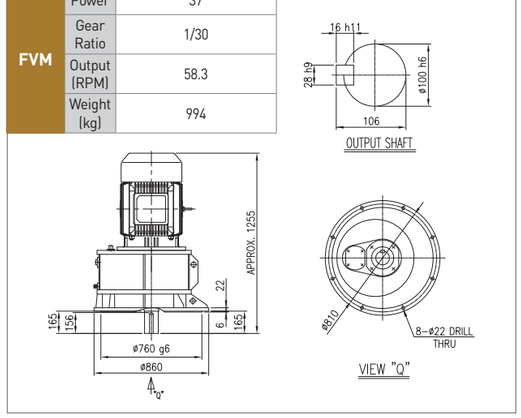


37kW

FVM	Power	37			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	804			

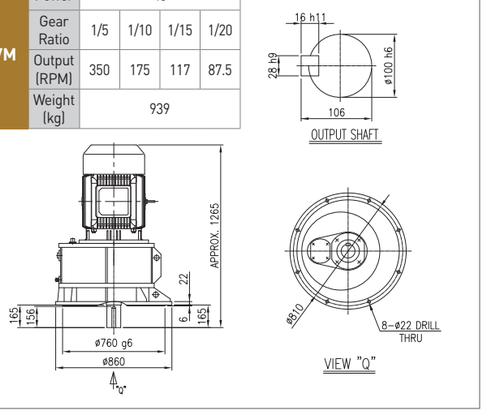


FVM	Power	37
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	994

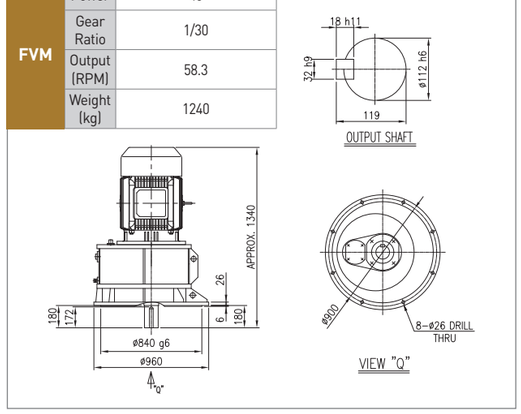


45kW

FVM	Power	45			
	Gear Ratio	1/5	1/10	1/15	1/20
	Output (RPM)	350	175	117	87.5
	Weight (kg)	939			



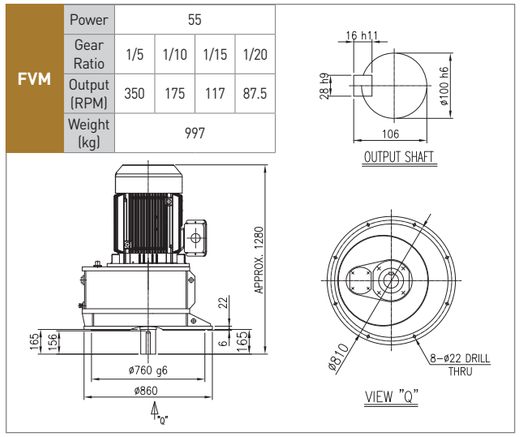
FVM	Power	45
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	1240



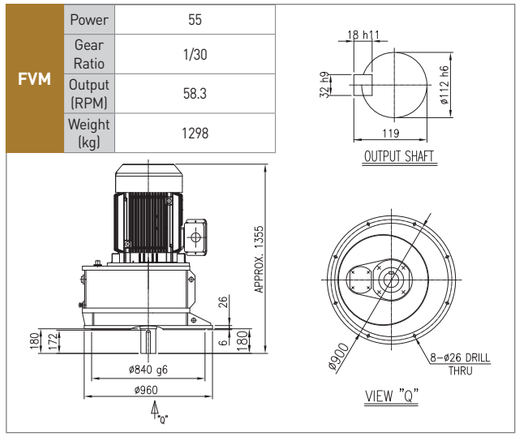
F 수직형

55kW

FVM					
Power	55				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	997				

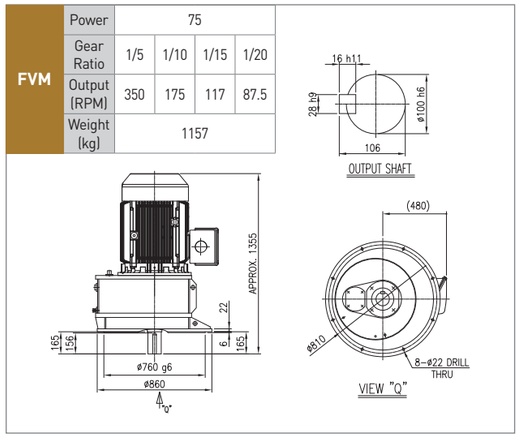


FVM	
Power	55
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	1298

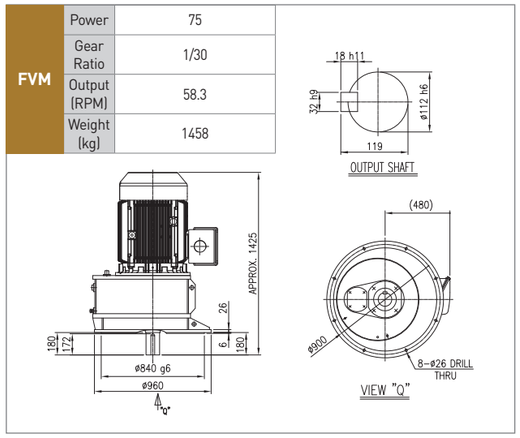


75kW

FVM					
Power	75				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	1157				

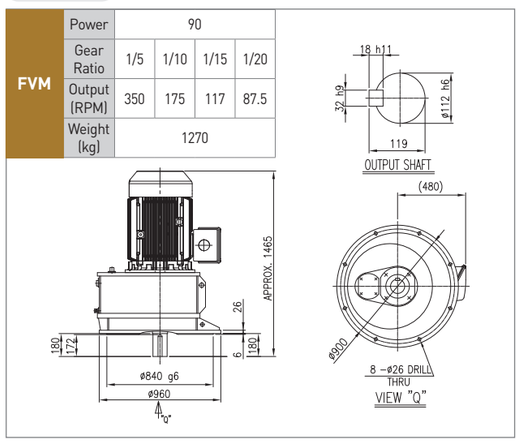


FVM	
Power	75
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	1458



90kW

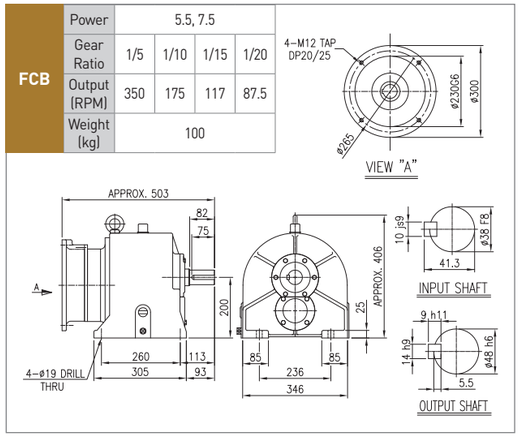
FVM					
Power	90				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	1270				



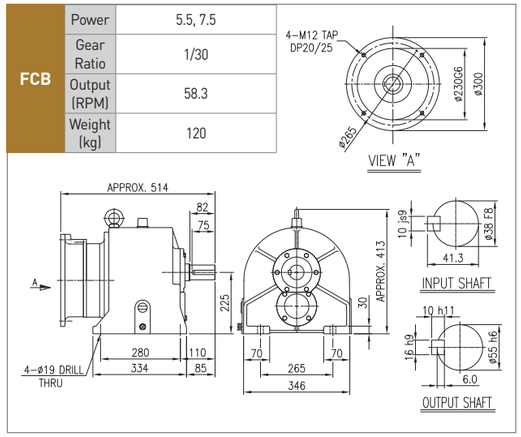
F IEC FLANGE

5.5, 7.5kW

FCB					
Power	5.5, 7.5				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	100				

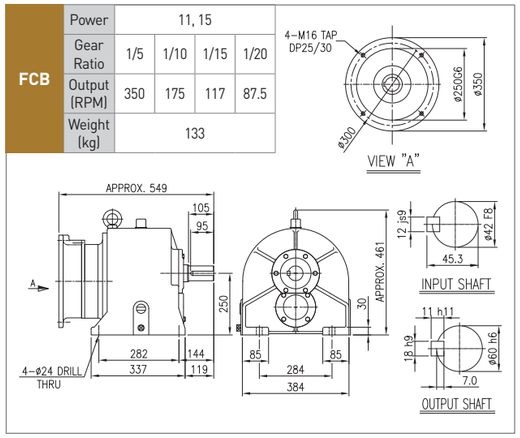


FCB	
Power	5.5, 7.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	120

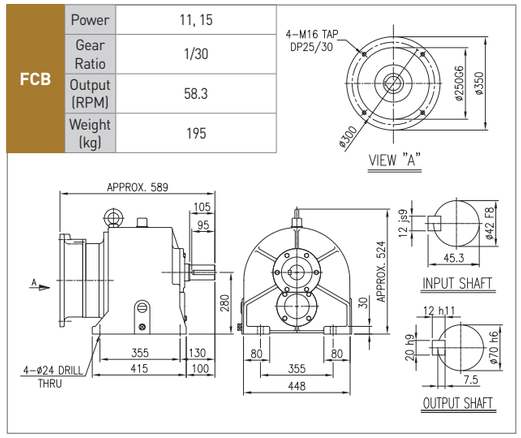


11, 15kW

FCB					
Power	11, 15				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	133				



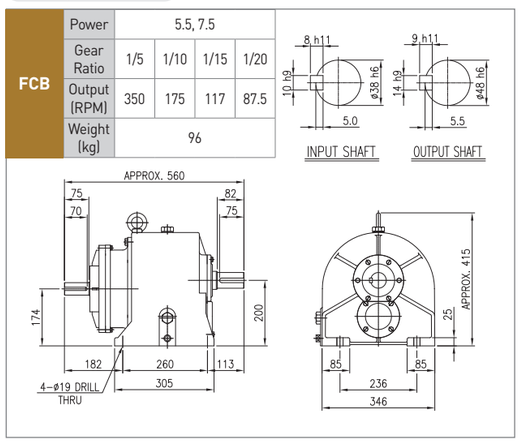
FCB	
Power	11, 15
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	195



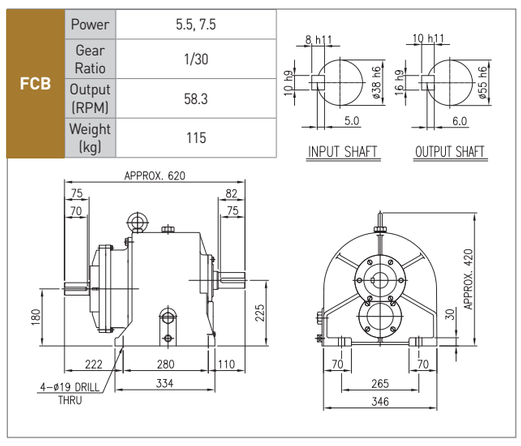
F 라인파워

5.5, 7.5kW

FCB					
Power	5.5, 7.5				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	96				



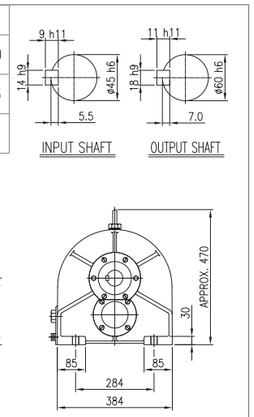
FCB	
Power	5.5, 7.5
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	115



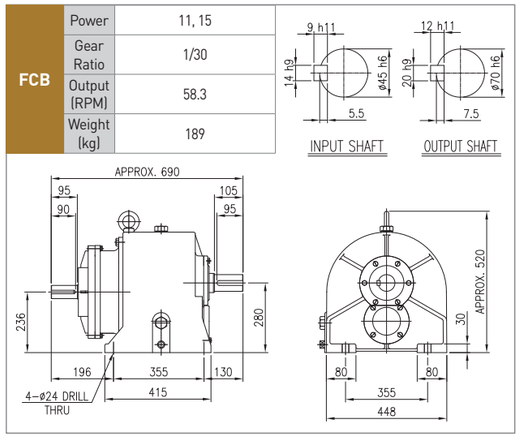
F 라인파워

11, 15kW

FCB					
Power	11, 15				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	127				

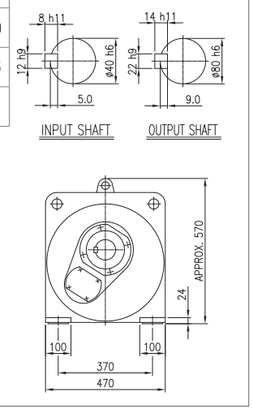


FCB	
Power	11, 15
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	189

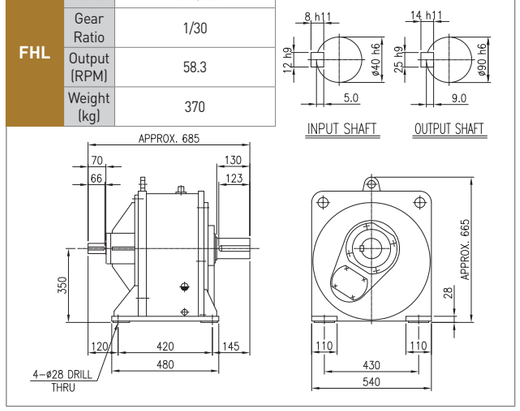


18.5, 22kW

FHL					
Power	18.5, 22				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	230				

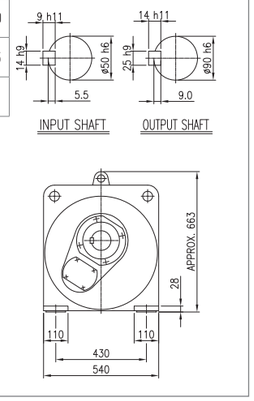


FHL	
Power	18.5, 22
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	370

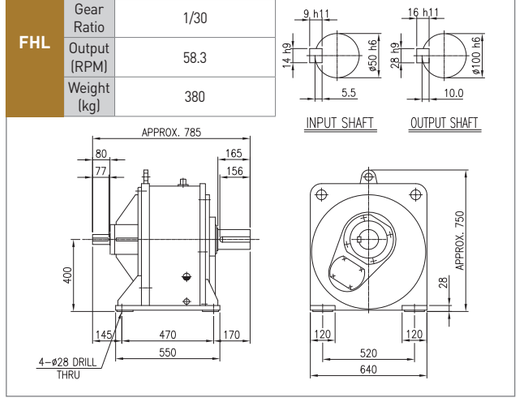


30, 37kW

FHL					
Power	30, 37				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	365				



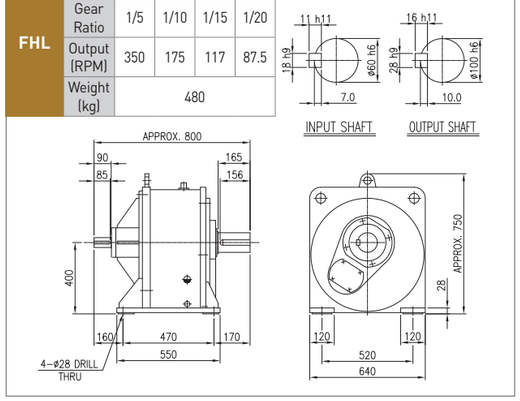
FHL	
Power	30, 37
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	380



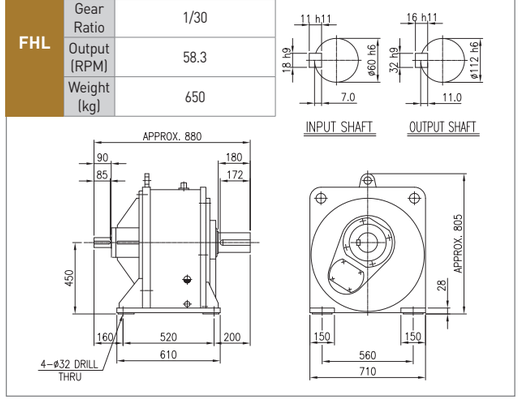
F 라인파워

45, 55, 75kW

FHL					
Power	45, 55, 75				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	480				

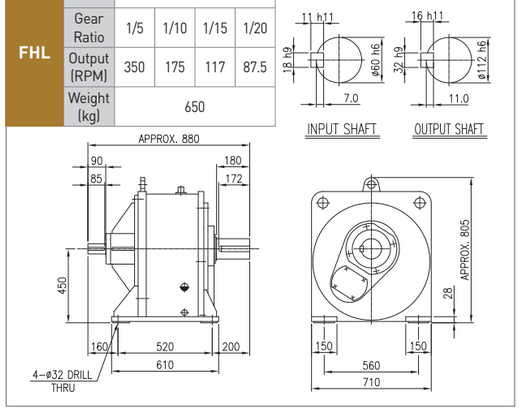


FHL	
Power	45, 55, 75
Gear Ratio	1/30
Output (RPM)	58.3
Weight (kg)	650



90kW

FHL					
Power	90				
Gear Ratio	1/5	1/10	1/15	1/20	
Output (RPM)	350	175	117	87.5	
Weight (kg)	650				



H Series

수평형

수직형

라인파워

H시리즈 특징

1. 고강도·견고성

출력측에 볼트로 고정된 커버가 없고 케이싱이 overhung load 또는 thrust load를 충분히 지탱하여 줍니다.

2. 부드러운 운전과 낮은 소음

진동을 흡수하고 기어 치합음을 낮출 수 있는 케이싱 및 기어 설계와 최상의 설비를 이용한 정밀도가 높은 기어를 제작함으로써 원활한 운전과 낮은 소음을 실현하였습니다.

3. 고정밀도

단 한 번의 기계 setting으로 모든 Bearing housing을 동시에 기계 가공함으로써 고정밀도를 실현하였습니다.

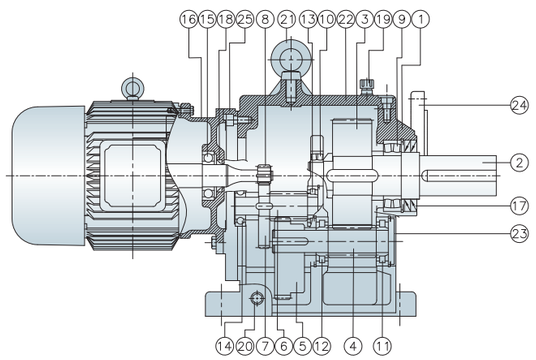
4. MOUNTING POSITIONS FREE

현장의 설치조건에 따라 자유자재로 설치가 가능하여 설치상의 제약이 적도록 되어 있습니다.

5. 낮은 유지보수비

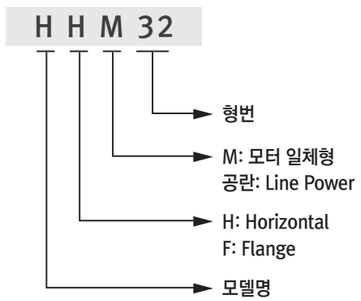
기존 제품보다 부품 수를 대폭 축소하여 running trouble이 현저히 줄었습니다.

H 구조도



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	8	1'ST PINION	15	BEARING	22	CASING COVER
2	OUTPUT SHAFT	9	BEARING	16	MOTOR BRACKET	23	SEALING CAP
3	3'RD GEAR	10	BEARING	17	OIL SEAL	24	HFM TYPE FLANGE
4	3'RD PINION	11	BEARING	18	OIL SEAL	25	INPUT FLANGE
5	2'ND GEAR	12	BEARING	19	AIR VENT	26	MOTOR SHAFT
6	2'ND PINION	13	BEARING	20	PLUG		
7	1'ST GEAR	14	BEARING	21	EYE BOLT		

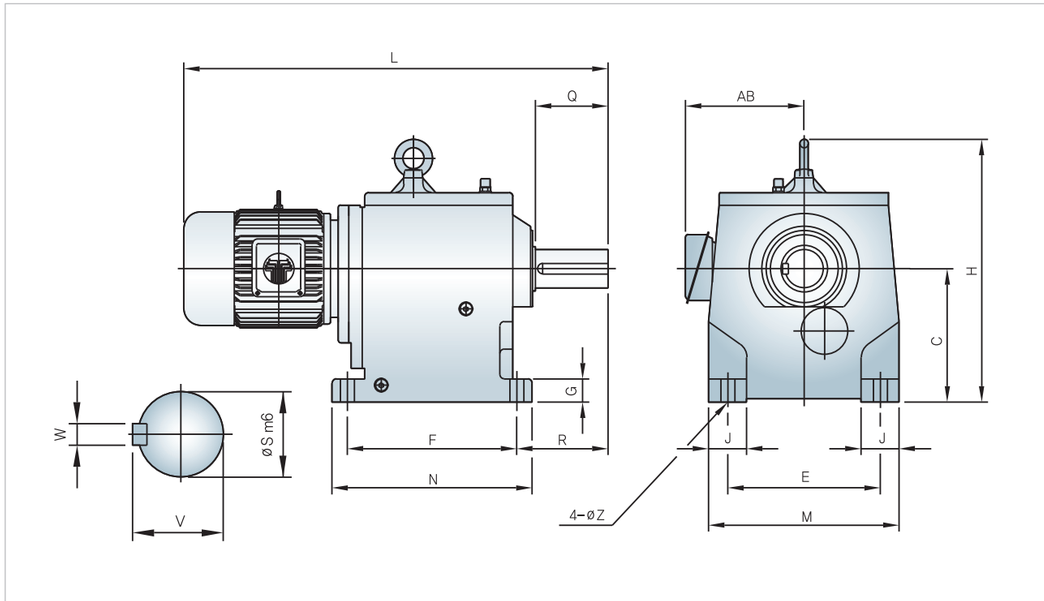
형식표시



H시리즈 GD², O.H.L표

Type	kW	Ratio	최대허용토크		모터축 환산GD²		출력축OHL	
			N·m	kgf·m	N·m²	kg·m²	N	kgf
HHM25 HFM25	3.7	1/120	3394	346	0.696	0.071	17032	1738
	3.7	1/100	2828	289	0.696	0.071	17032	1738
	3.7	1/90	2545	260	0.696	0.071	17032	1738
	3.7	1/80	2263	231	0.696	0.071	17032	1738
	5.5	1/60	2523	257	1.578	0.161	17287	1764
	5.5	1/50	2102	214	1.588	0.162	17287	1764
	5.5	1/45	1892	193	1.588	0.162	17287	1764
	5.5	1/40	1682	172	1.588	0.162	17287	1764
	7.5	1/50	2866	292	2.038	0.208	17209	1756
	7.5	1/45	2580	263	2.038	0.208	17209	1756
	7.5	1/40	2293	234	2.038	0.208	17209	1756
HHM28 HFM28	5.5	1/120	5045	515	1.568	0.16	23471	2395
	5.5	1/100	4204	429	1.568	0.16	23471	2395
	5.5	1/90	3784	386	1.568	0.16	23471	2395
	5.5	1/80	3363	343	1.568	0.16	23471	2395
	7.5	1/60	3440	351	2.058	0.21	24167	2466
	11	1/60	5045	515	4.243	0.433	21589	2203
	11	1/50	4204	429	4.243	0.433	21589	2203
	11	1/45	3784	386	4.253	0.434	21589	2203
	11	1/40	3363	343	4.253	0.434	21589	2203
	15	1/40	4586	468	5.184	0.529	24255	2475
HHM32 HFM32	7.5	1/120	6880	702	2.038	0.208	42248	4311
	7.5	1/100	5733	585	2.038	0.208	42248	4311
	7.5	1/90	5160	527	2.038	0.208	42248	4311
	7.5	1/80	4586	468	2.038	0.208	42248	4311
	11	1/80	6727	686	4.224	0.431	42346	4321
	15	1/60	6880	702	5.214	0.532	42248	4311
	15	1/50	5733	585	5.223	0.533	42248	4311
	15	1/45	5160	527	5.233	0.534	42248	4311
	15	1/40	4586	468	5.243	0.535	42248	4311
	18.5	1/50	7071	721	9.829	1.003	43051	4393
	18.5	1/45	6364	649	9.839	1.004	43051	4393
	18.5	1/40	5657	577	9.849	1.005	43051	4393
HHM39 HFM39	11	1/120	10090	1030	4.292	0.438	60623	6186
	11	1/100	8408	858	4.302	0.439	60623	6186
	11	1/90	7568	772	4.302	0.439	60623	6186
	15	1/100	11466	1170	5.233	0.534	62122	6339
	15	1/90	10319	1053	5.233	0.534	62122	6339
	15	1/80	9173	936	5.243	0.535	62122	6339
	18.5	1/80	11313	1153	9.840	1.004	63622	6492
	18.5	1/60	8485	865	10.07	1.028	63622	6492
	22	1/60	10090	1029	10.07	1.028	63622	6492
	22	1/50	8408	857	10.10	1.031	63622	6492
	22	1/45	7568	771	10.13	1.033	63622	6492

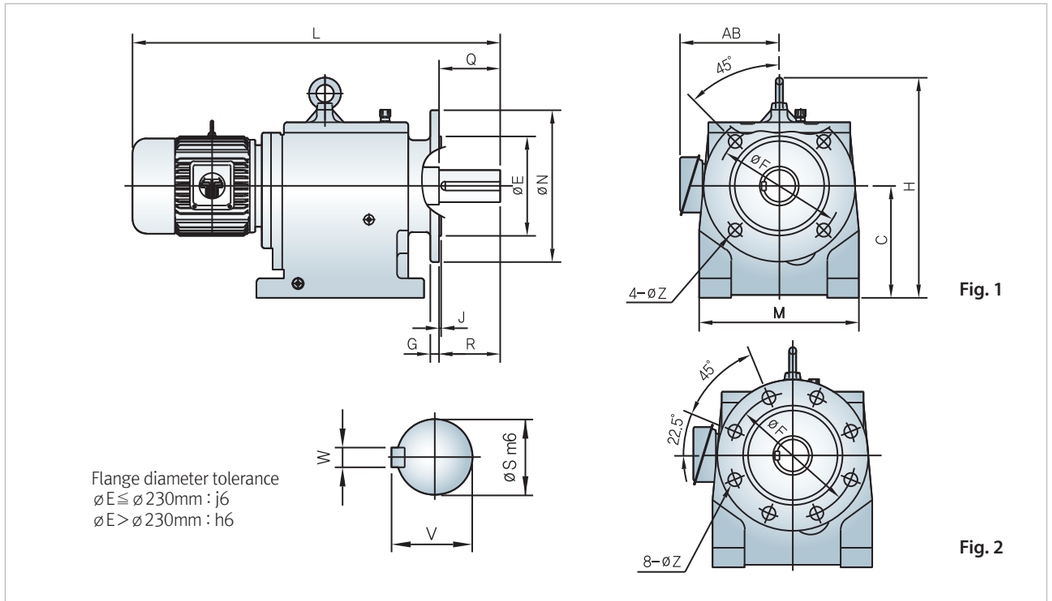
HHM 외형도 및 외형치수



단위 : mm

Type	Frame No.	Dimension												Output Shaft			
		C	F	N	R	E	M	J	G	Z	H	L	AB	S	V	W	Q
HHM25	112M	250	295	345	163	260	330	70	45	22	485	805	210	65	69	18	127
	132S											850	230				
	132M											865	230				
	160M											916	280				
	160L											960	280				
HHM28	132S	280	330	385	179	325	400	70	55	26	560	890	230	76	81	22	140
	132M											930	230				
	160M											1010	290				
	160L											1050	290				
HHM32	132M	315	400	472	216	360	450	90	55	33	630	1025	230	90	95	25	172
	160M											1090	290				
	160L											1135	290				
HHM39	160M	390	450	540	271	440	550	110	70	33	790	1185	290	110	116	28	216
	160L											1230	290				

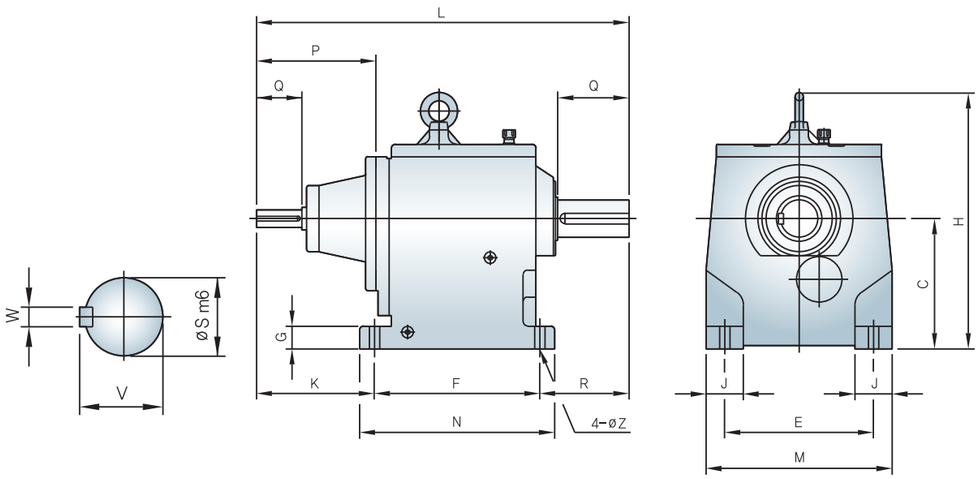
HFM 외형도 및 외형치수



단위 : mm

Type	Frame No.	Fig	Dimension												Output Shaft			
			C	F	N	R	E	M	J	G	Z	H	L	AB	S	V	W	Q
HFM25	112M	1	250	265	300	127	230	330	4	24	14	485	805	210	65	69	18	127
	132S												850	230				
	132M												885	230				
	160M												960	280				
	160L												1004	280				
HFM28	132S		280	300	350	140	250	400	5	24	18	560	890	230	76	81	22	140
	132M												930	230				
	160M												1010	290				
	160L												1050	290				
HFM32	132M	2	315	400	450	167	350	450	5	26	18	630	1025	230	90	95	25	172
	160M												1090	290				
	160L												1135	290				
HFM39	160M		390	400	450	216	350	550	5	26	18	790	1185	290	110	116	28	216
	160L												1230	290				

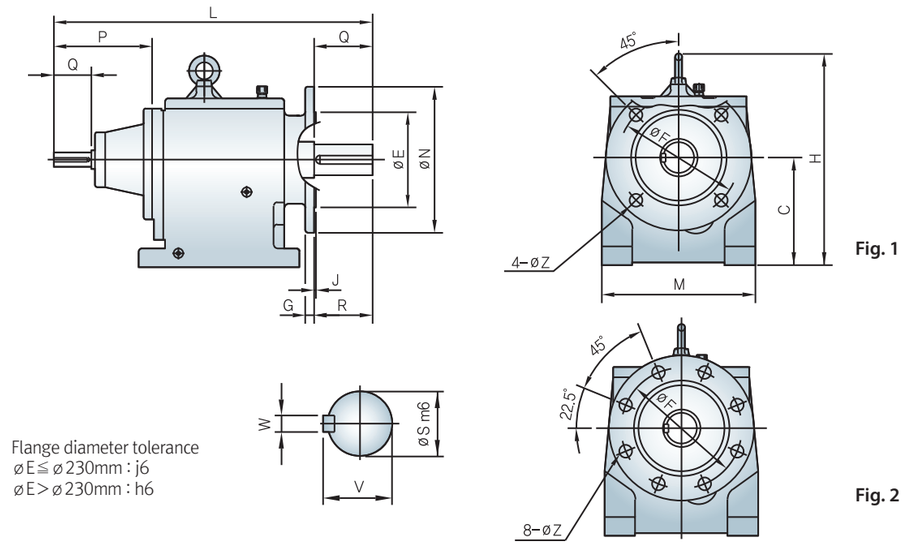
HH 외형도 및 외형치수



단위 : mm

Type	Dimension													Output Shaft				Input Shaft			
	C	F	N	R	K	E	M	J	G	Z	H	L	P	S	V	W	Q	S	V	W	Q
HH25	250	295	345	163	212	260	330	70	45	22	490	670	212	65	69	18	127	38	41	10	79
HH28	280	330	385	179	311	325	400	70	55	26	551	820	289	76	81	22	140	42	45	12	110
HH32	315	400	472	216	285	360	450	90	55	33	630	901	289	90	95	25	172	42	45	12	110
HH39	390	450	540	271	276	440	550	110	70	33	790	997	289	110	116	28	216	42	45	12	110

HF 외형도 및 외형치수



단위 : mm

Type	Fig	Dimension												Output Shaft				Input Shaft			
		C	F	N	R	E	M	J	G	Z	H	L	P	S	V	W	Q	S	V	W	Q
HF25	1	250	265	300	127	230	330	4	24	14	480	670	212	65	69	18	127	38	41	10	79
HF28		280	300	350	140	250	400	5	24	18	551	820	289	76	81	22	140	42	45	12	110
HF32	2	315	400	450	172	350	450	5	26	18	630	901	289	90	95	25	172	42	45	12	110
HF39		390	400	450	216	350	550	5	26	18	790	997	289	110	116	28	216	42	45	12	110

Lubricant filling quantity(approx)

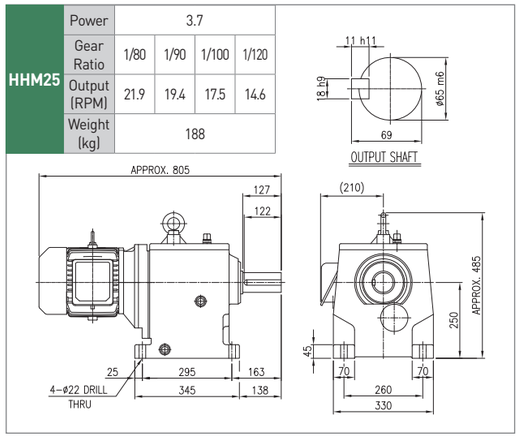
단위 : L

Type	Mounting Position											
	B3	B6	B7	B8	B5	B5I	B5II	B5III	V1	V3	V5	V6
H25	10	13	13	11	11	12	14	14	18	14	16	15
H28	14	20	20	18	14	18	20	20	28	23	27	20
H32	22	33	33	26	23	27	34	34	40	34	37	31
H39	55	67	67	55	55	59	67	67	99	78	97	71

H 수평형

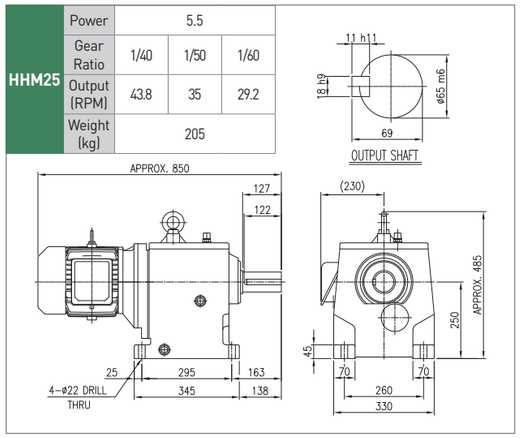
3.7kW

HHM25	Power	3.7			
	Gear Ratio	1/80	1/90	1/100	1/120
	Output (RPM)	21.9	19.4	17.5	14.6
	Weight (kg)	188			

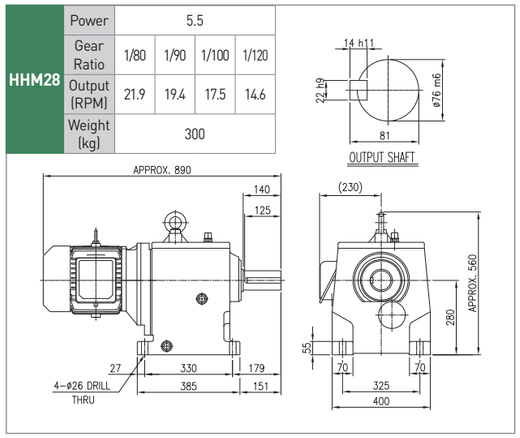


5.5kW

HHM25	Power	5.5		
	Gear Ratio	1/40	1/50	1/60
	Output (RPM)	43.8	35	29.2
	Weight (kg)	205		

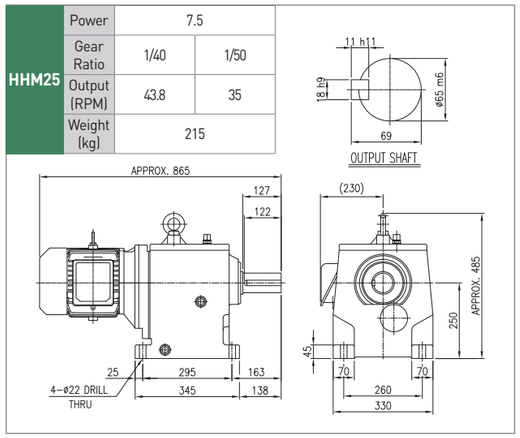


HHM28	Power	5.5			
	Gear Ratio	1/80	1/90	1/100	1/120
	Output (RPM)	21.9	19.4	17.5	14.6
	Weight (kg)	300			

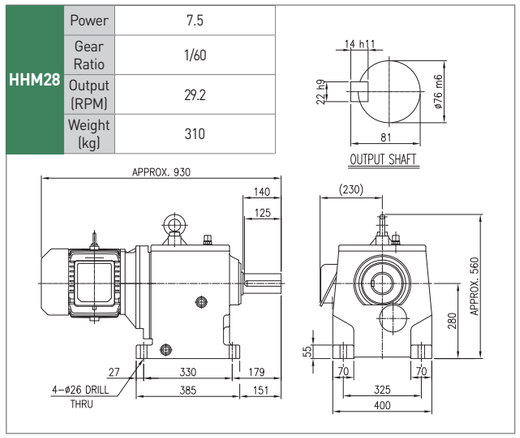


7.5kW

HHM25	Power	7.5	
	Gear Ratio	1/40	1/50
	Output (RPM)	43.8	35
	Weight (kg)	215	



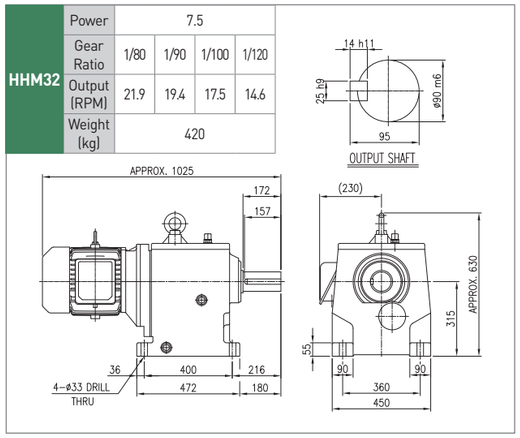
HHM28	Power	7.5
	Gear Ratio	1/60
	Output (RPM)	29.2
	Weight (kg)	310



H 수평형

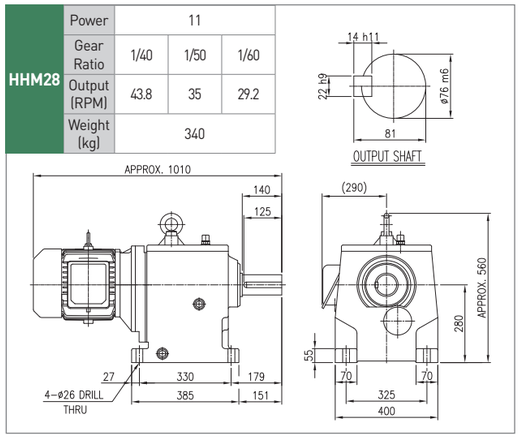
7.5kW

HHM32	Power	7.5			
	Gear Ratio	1/80	1/90	1/100	1/120
	Output (RPM)	21.9	19.4	17.5	14.6
	Weight (kg)	420			

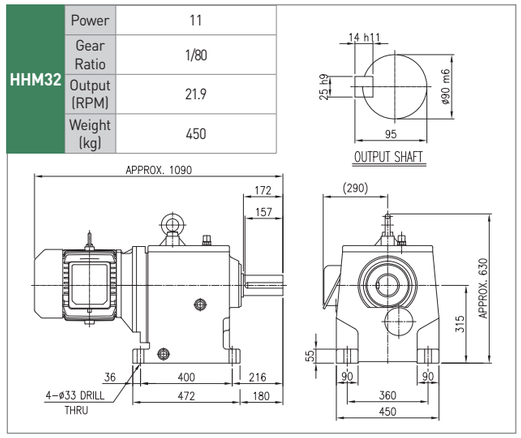


11kW

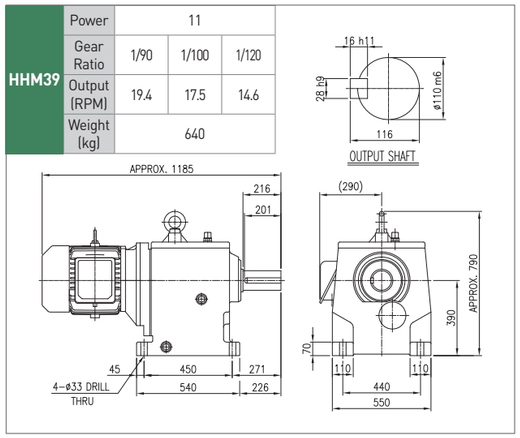
HHM28	Power	11		
	Gear Ratio	1/40	1/50	1/60
	Output (RPM)	43.8	35	29.2
	Weight (kg)	340		



HHM32	Power	11
	Gear Ratio	1/80
	Output (RPM)	21.9
	Weight (kg)	450



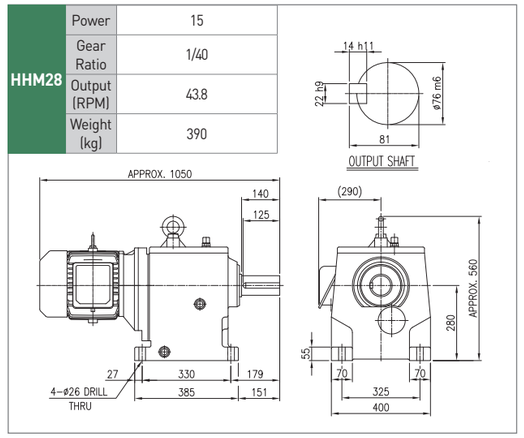
HHM39	Power	11		
	Gear Ratio	1/90	1/100	1/120
	Output (RPM)	19.4	17.5	14.6
	Weight (kg)	640		



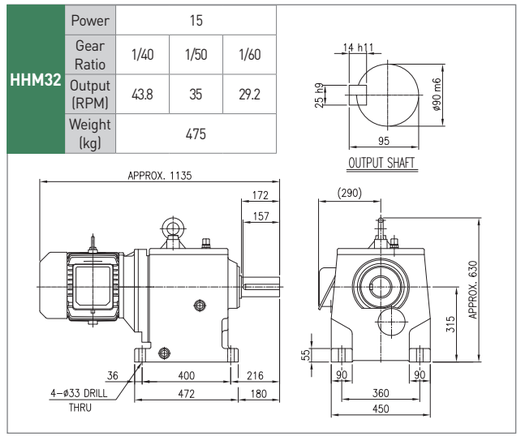
H 수평형

15kW

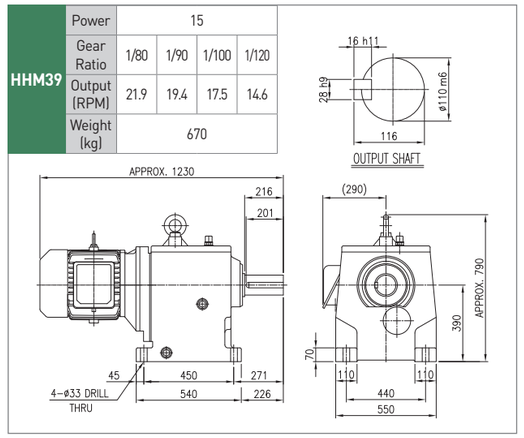
HHM28	Power	15
	Gear Ratio	1/40
	Output (RPM)	43.8
	Weight (kg)	390



HHM32	Power	15		
	Gear Ratio	1/40	1/50	1/60
	Output (RPM)	43.8	35	29.2
	Weight (kg)	475		

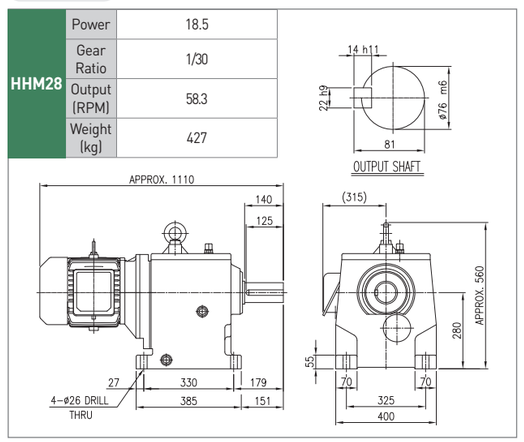


HHM39	Power	15			
	Gear Ratio	1/80	1/90	1/100	1/120
	Output (RPM)	21.9	19.4	17.5	14.6
	Weight (kg)	670			

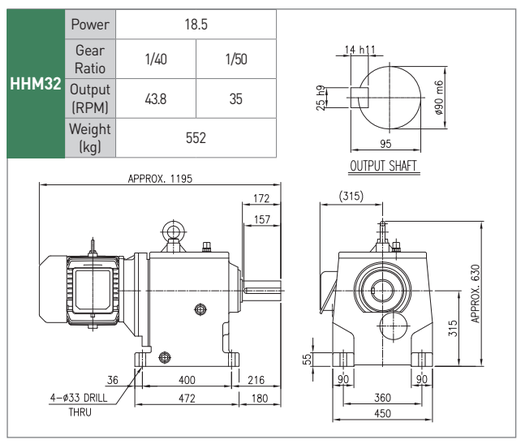


18.5kW

HHM28	Power	18.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	427



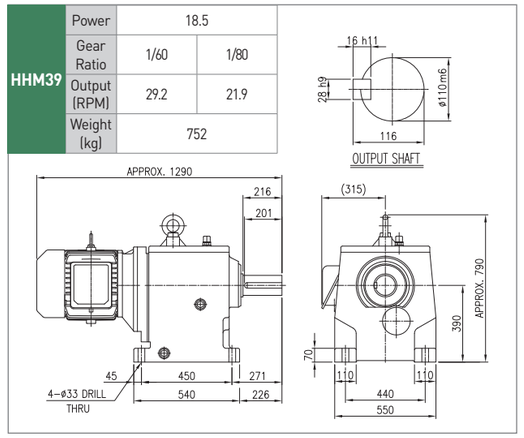
HHM32	Power	18.5	
	Gear Ratio	1/40	1/50
	Output (RPM)	43.8	35
	Weight (kg)	552	



H 수평형

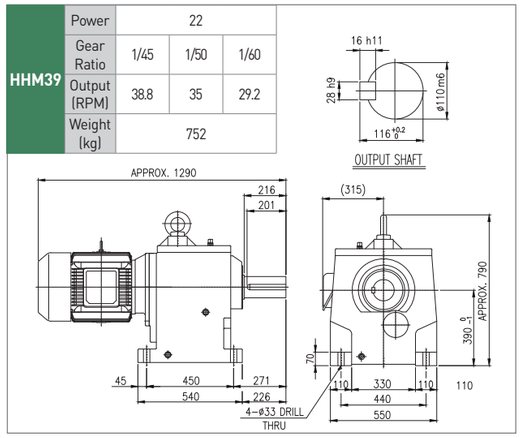
18.5kW

HHM39	Power	18.5	
	Gear Ratio	1/60	1/80
	Output (RPM)	29.2	21.9
	Weight (kg)	752	



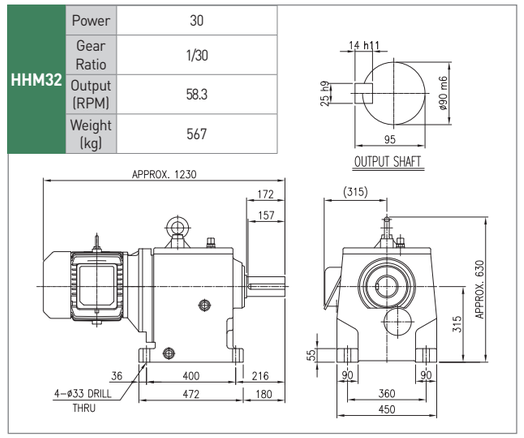
22kW

HHM39	Power	22		
	Gear Ratio	1/45	1/50	1/60
	Output (RPM)	38.8	35	29.2
	Weight (kg)	752		

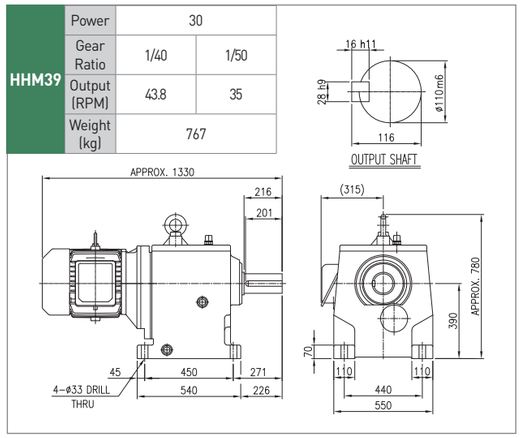


30kW

HHM32	Power	30
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	567

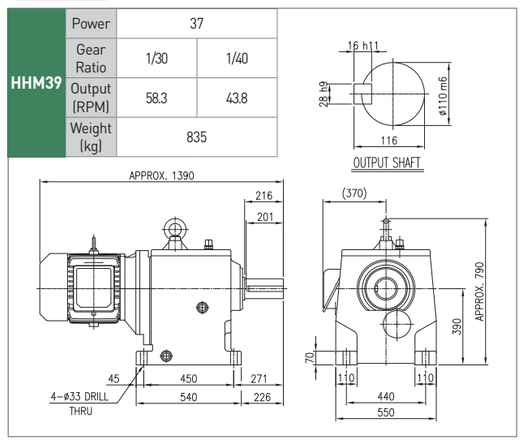


HHM39	Power	30	
	Gear Ratio	1/40	1/50
	Output (RPM)	43.8	35
	Weight (kg)	767	



37kW

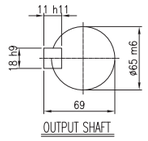
HHM39	Power	37	
	Gear Ratio	1/30	1/40
	Output (RPM)	58.3	43.8
	Weight (kg)	835	

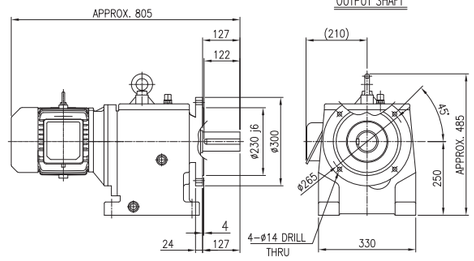


H 수직형

3.7kW

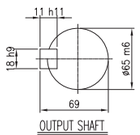
HFM25				
Power	3.7			
Gear Ratio	1/80	1/90	1/100	1/120
Output (RPM)	21.9	19.4	17.5	14.6
Weight (kg)	188			

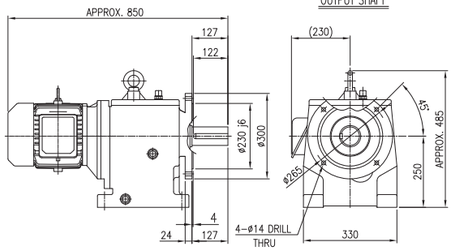




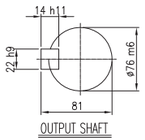
5.5kW

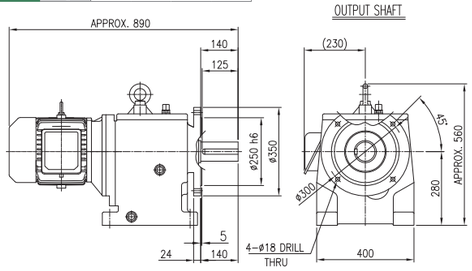
HFM25			
Power	5.5		
Gear Ratio	1/40	1/50	1/60
Output (RPM)	43.8	35	29.2
Weight (kg)	205		





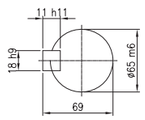
HFM28				
Power	5.5			
Gear Ratio	1/80	1/90	1/100	1/120
Output (RPM)	21.9	19.4	17.5	14.6
Weight (kg)	300			

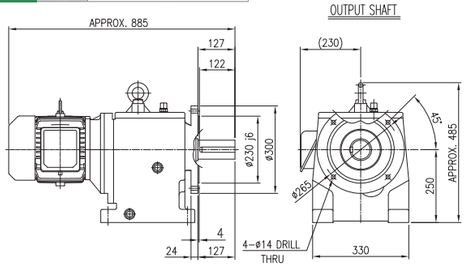




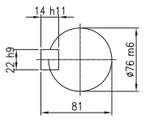
7.5kW

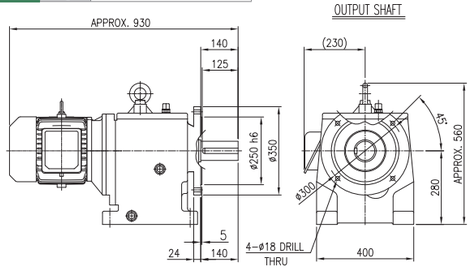
HFM25		
Power	7.5	
Gear Ratio	1/40	1/50
Output (RPM)	43.8	35
Weight (kg)	215	





HFM28	
Power	7.5
Gear Ratio	1/60
Output (RPM)	29.2
Weight (kg)	310

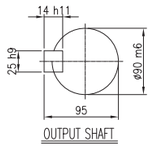


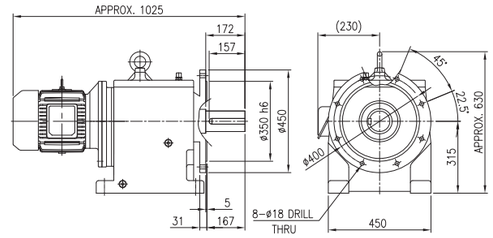


H 수직형

7.5kW

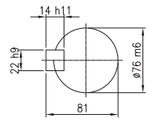
HFM32				
Power	7.5			
Gear Ratio	1/80	1/90	1/100	1/120
Output (RPM)	21.9	19.4	17.5	14.6
Weight (kg)	420			

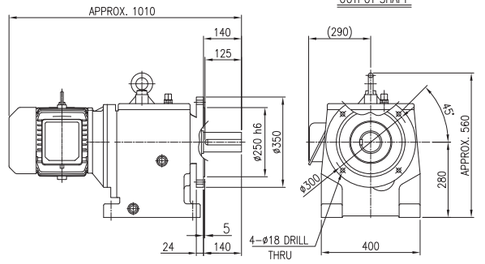




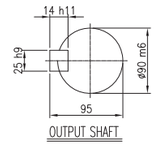
11kW

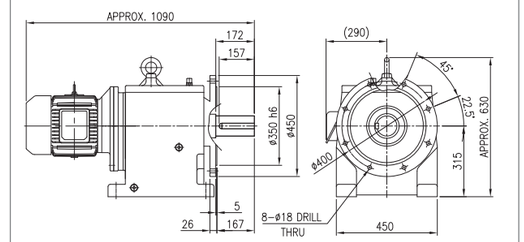
HFM28			
Power	11		
Gear Ratio	1/40	1/50	1/60
Output (RPM)	43.8	35	29.2
Weight (kg)	340		





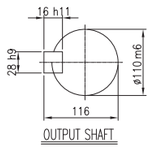
HFM32	
Power	11
Gear Ratio	1/80
Output (RPM)	21.9
Weight (kg)	450

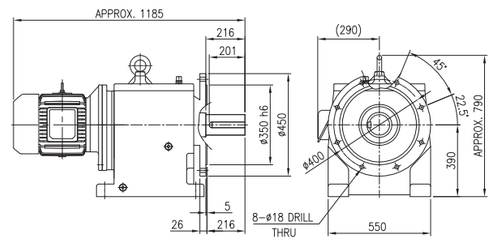




7.5kW

HFM39			
Power	11		
Gear Ratio	1/90	1/100	1/120
Output (RPM)	19.4	17.5	14.6
Weight (kg)	640		

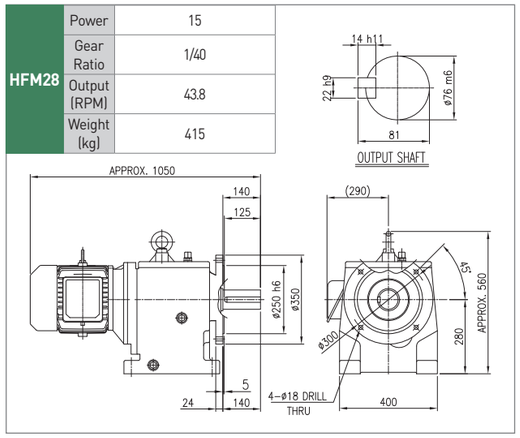




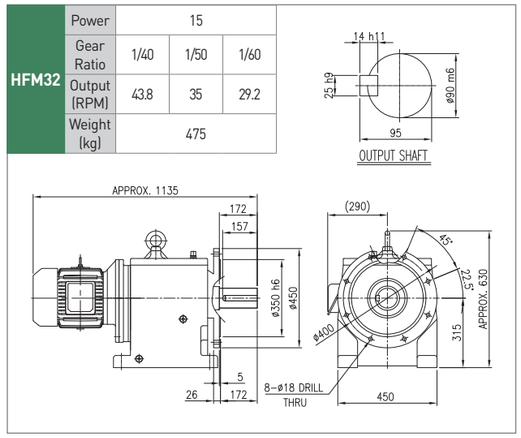
H 수직형

15kW

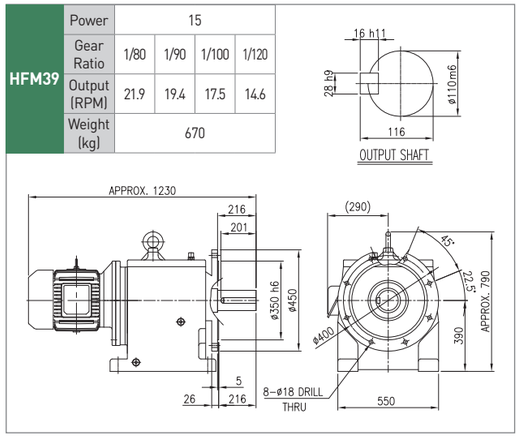
HFM28		
	Power	15
	Gear Ratio	1/40
	Output (RPM)	43.8
	Weight (kg)	415



HFM32			
	Power	15	
	Gear Ratio	1/40	1/50	1/60
	Output (RPM)	43.8	35	29.2
	Weight (kg)	475	

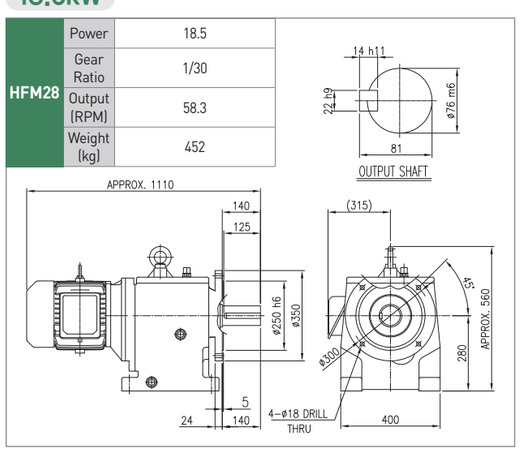


HFM39				
	Power	15		
	Gear Ratio	1/80	1/90	1/100	1/120
	Output (RPM)	21.9	19.4	17.5	14.6
	Weight (kg)	670	

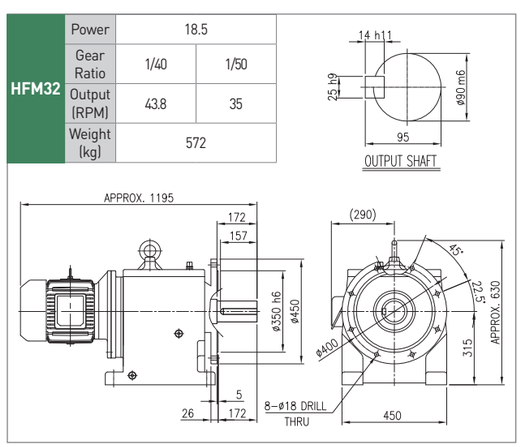


18.5kW

HFM28		
	Power	18.5
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	452

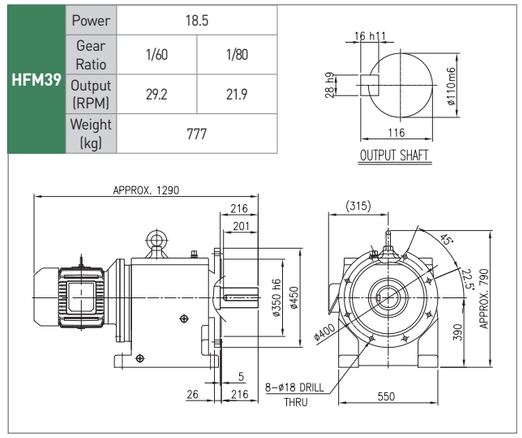


HFM32		
	Power	18.5
	Gear Ratio	1/40	1/50
	Output (RPM)	43.8	35
	Weight (kg)	572



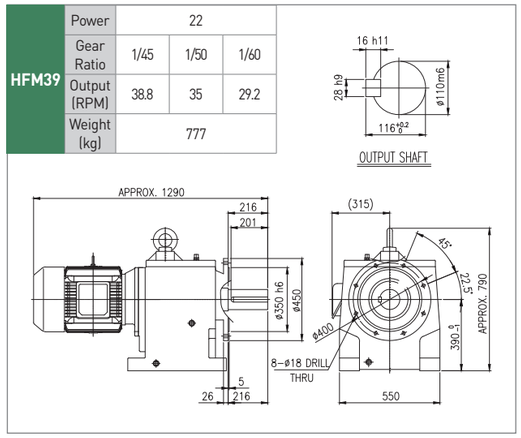
18.5kW

HFM39			
	Power	18.5	
	Gear Ratio	1/60	1/80
	Output (RPM)	29.2	21.9
	Weight (kg)	777	



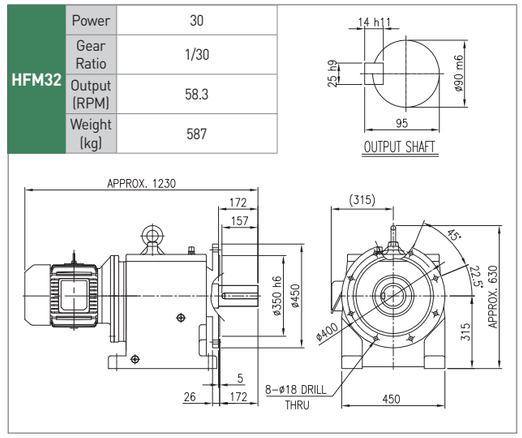
22kW

HFM39				
	Power	22		
	Gear Ratio	1/45	1/50	1/60
	Output (RPM)	38.8	35	29.2
	Weight (kg)	777	

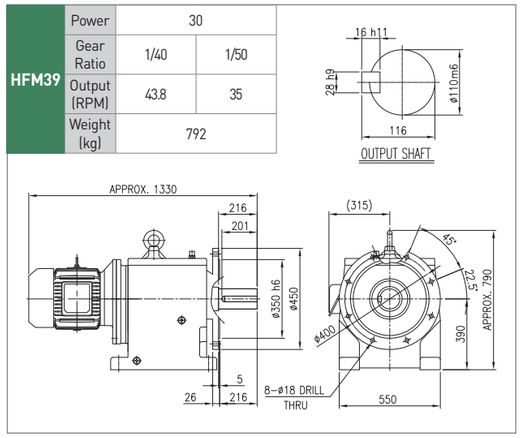


30kW

HFM32		
	Power	30
	Gear Ratio	1/30
	Output (RPM)	58.3
	Weight (kg)	587

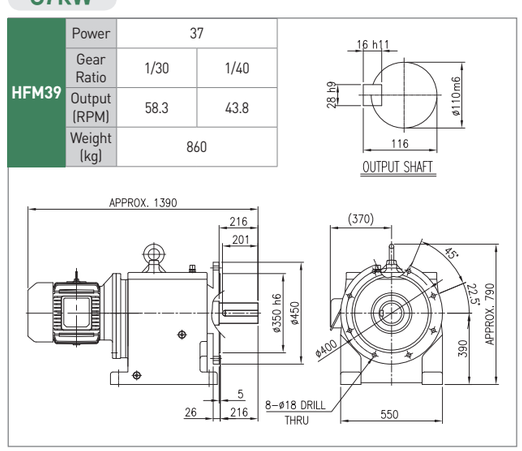


HFM39			
	Power	30	
	Gear Ratio	1/40	1/50
	Output (RPM)	43.8	35
	Weight (kg)	792	



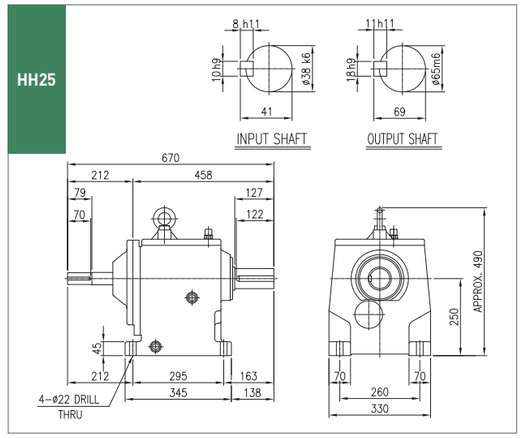
37kW

HFM39			
	Power	37	
	Gear Ratio	1/30	1/40
	Output (RPM)	58.3	43.8
	Weight (kg)	860	

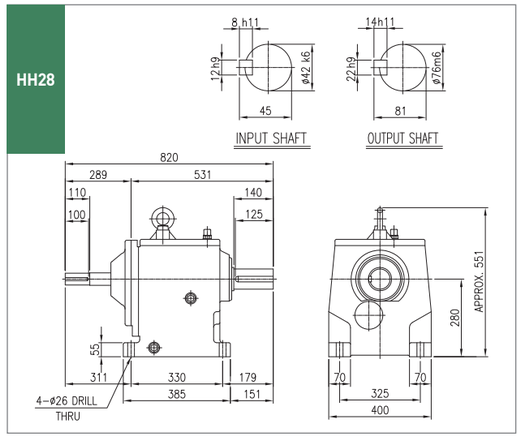


H 라인파워(수평형)

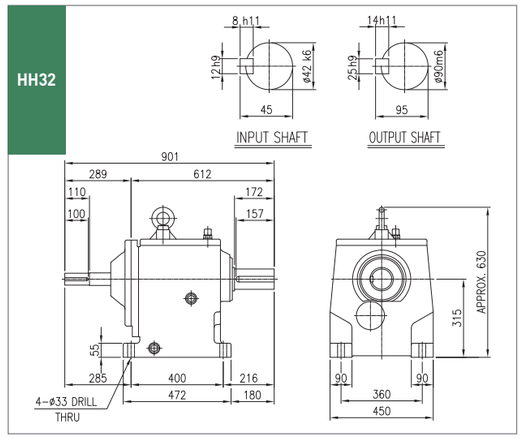
HH25



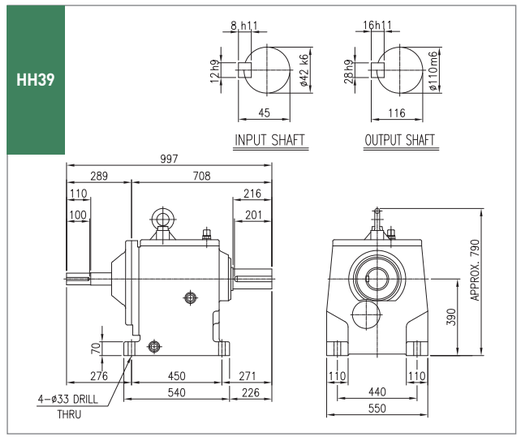
HH28



HH32

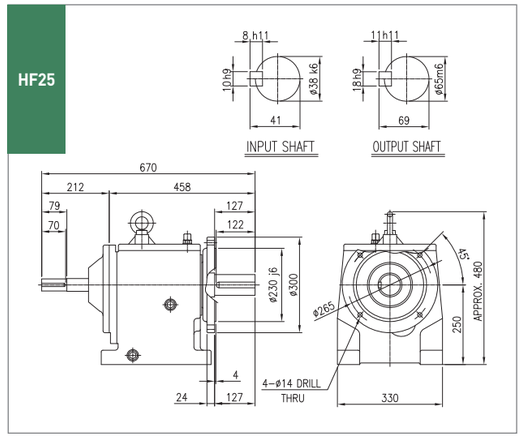


HH39

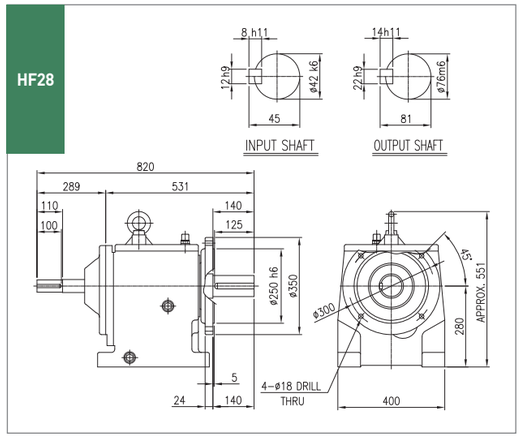


H 라인파워(수직형)

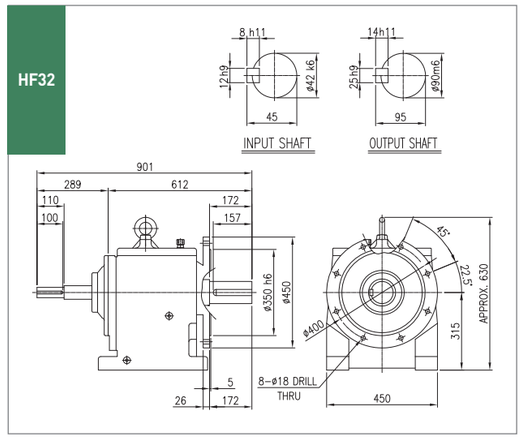
HF25



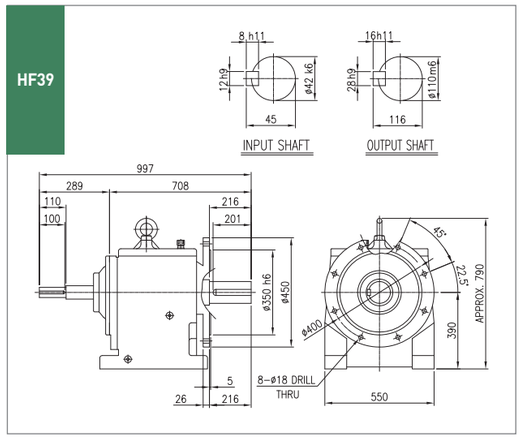
HF28



HF32



HF39



P Series

수평형

수직형

라인파워

P시리즈 특징

1. 소형·경량
여러 개의 유성치차에 의한 힘의 분배와 동심축에 의한 케이싱의 콤팩트화로 소형, 경량화 시켰습니다.

2. 고정도·고효율
치차의 치형을 이상적인 치형으로 수정하고 고급 합금강을 사용하여 침탄열처리 한후 치연마함으로써 치합 손실을 줄여 고효율을 보장합니다.

3. 긴수명·저소음
태양치차의 강도가 같은 동력의 일반 기어드 모터와 동일한 반면 동력이 여러 개의 유성치차에 의해 분배되므로 일반 기어드 모터보다 배 이상의 수명이 보장되며 소음도 적습니다.

4. 분해·조립 및 취급이 용이함
입·출력이 동심이며 대칭구조를 이루고 있으므로 특수 공구 없이 분해·조립의 취급이 용이합니다.

5. 소형·경량 및 높은 신뢰도 보장
유성치차에 의한 감속으로 1/1,000,000이상의 고감속비도 소형·경량이 가능합니다.

동력, 감속비에 따른 표준 축기호표

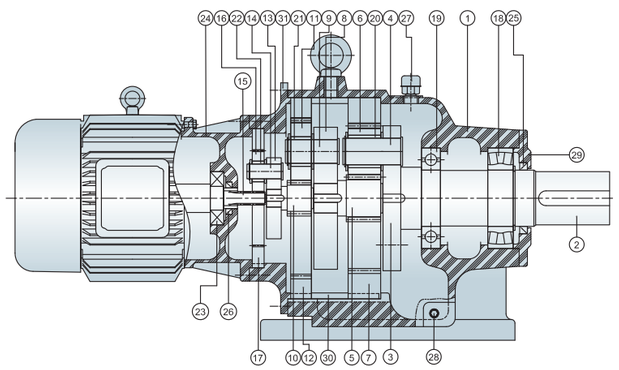
단위 : kW

kW \ Ratio	40	60	80	120	150	180	240	320	470	600
0.4	RP시리즈 FN시리즈			B	B	B	B	C	D	E
0.75				B	C	C	D	E	F	G
1.5				D	E	E	F	G	H	I
2.2				E	G	G	H	H	I	J
3.7					H	H	I	I	J	J
5.5	H시리즈				I	I	J	J	L	N
7.5					J	J	J	L	N	
11					J	J	L	N		
15				J	L	L	N			
18.5			J	L	L	N				
22			J	L	N					
30		J	L	N						
37		L	N							
45	J	L	N							
55	L	N								

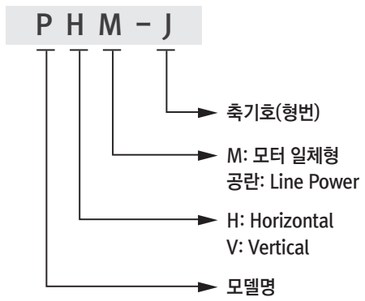
N형번보다 큰 허용 토크의 감속기는 GEAR BOX 또는 유성 감속기 RPS-Series를 적용하면 됩니다.

주 : 1. 위의 표는 S.F=1.4에 기준을 두었으며 60Hz 4극 MOTOR 기준임.
2. RP, FN, H시리즈 제품은 해당 시리즈 치수표를 참고할 것

P 구조도



형식표시



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	9	PLANETARY SHAFT	17	INTERNAL GEAR	25	OIL SEAL
2	OUTPUT SHAFT	10	SUN GEAR	18	BEARING	26	OIL SEAL
3	3'RD CARRIER	11	PLANETARY GEAR	19	BEARING	27	AIR VENT
4	PLANETARY SHAFT	12	INTERNAL GEAR	20	BEARING	28	PLUG
5	SUN GEAR	13	1'ST CARRIER	21	BEARING	29	OUTPUT COVER
6	PLANETARY GEAR	14	PLANETARY SHAFT	22	BEARING	30	INTERNAL FIX RING
7	INTERNAL GEAR	15	MOTOR PINION	23	BEARING	31	1'ST CASING
8	2'ND CARRIER	16	PLANETARY GEAR	24	MOTOR BRACKET		

비표준의 선정 방법

· 동력, 감속비, 회전수 S.F등을 고려하여 저속축의 토르크를 구한 후 아래의 축기호를 표에서 형번을 선정합니다.
· 감속비가 크나 요구 토르크가 적은 경우, 요구 Service Factor가 1.4이상 큰 경우, MOTOR가 표준 FRAME보다 클 경우 등은 당사로 문의하여 주십시오.
· 동일한 축기호를 갖는 감속기는 설치를 위한 주요 치수는 감속비, 단수에 관계없이 같습니다.

축기호에 따른 저속축 허용 토크

축기호	B	C	D	E	F	G	H	I	J	L	N
토크(kg.m)	60	100	125	190	220	340	450	680	1350	1750	2350
토크(N.m)	588	980	1225	1862	2156	3332	4410	6664	13230	17150	23030

P시리즈 GD², O.H.L표

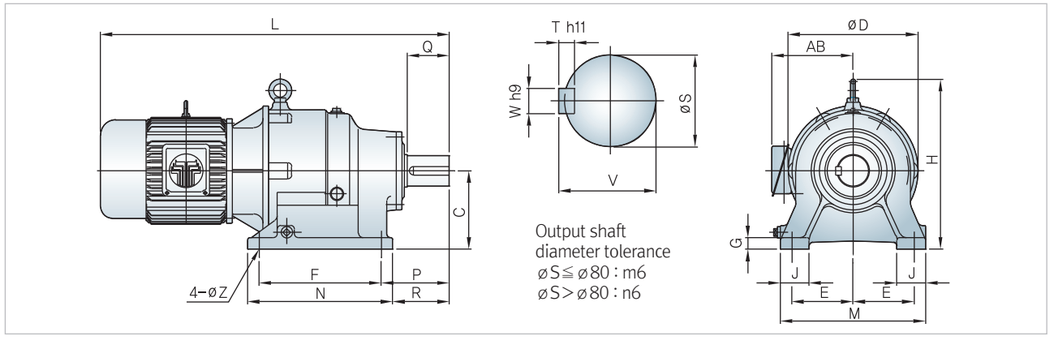
GD²	MOTOR축 환산 kg.m²
O.H.L	출력축 kg

감속비/kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55
1/40	–	–	–	0.0384	0.0534	0.1003	0.1455	0.2785	0.4227	0.547	0.694	1.2379	1.3219	2.2819	2.943
	–	–	–	1260	1740	1740	1740	2510	3150	3150	3150	4030	4030	4030	4120
1/60	–	–	–	0.0384	0.0524	0.1003	0.1456	0.2841	0.4227	0.5969	0.7439	1.2379	1.376	2.336	3.461
	–	–	–	1440	1990	1990	2870	3600	3600	4610	4610	4610	4720	4720	4320
1/80	–	–	0.0187	0.0384	0.0534	0.1014	0.1456	0.2841	0.4726	0.5969	0.7439	1.292	1.894	2.854	–
	–	–	1590	1590	2190	3160	3160	3970	5070	5070	5070	5190	4760	4760	–
1/120	0.0112	0.0112	0.0184	0.0384	0.0535	0.1004	0.1458	0.2993	0.4378	0.5838	0.7308	1.4194	–	–	–
	1280	1280	1820	2500	3610	3610	4550	5800	5800	5950	5950	5450	–	–	–
1/150	0.0112	0.0112	0.0184	0.0384	0.0535	0.1004	0.1458	0.2993	0.4378	0.5838	0.7308	1.4194	–	–	–
	1280	1280	1820	2500	3610	3610	4550	5800	5800	5950	5950	5450	–	–	–
1/180	0.0112	0.0124	0.0187	0.039	0.0535	0.1016	0.1664	0.2993	0.4595	0.7784	–	–	–	–	–
	1460	2080	2870	4140	4140	5200	6640	6640	6810	6230	–	–	–	–	–
1/240	0.0122	0.0124	0.0187	0.039	0.0547	0.1221	0.1664	0.3209	0.6541	–	–	–	–	–	–
	1610	2290	3150	4550	5730	7310	7310	7500	6860	–	–	–	–	–	–
1/320	0.0124	0.0127	0.0193	0.039	0.0547	0.1221	0.188	0.5155	–	–	–	–	–	–	–
	2520	3470	5010	5010	6300	8050	8250	7550	–	–	–	–	–	–	–
1/470	0.0124	0.0127	0.0193	0.0402	0.0753	0.1438	0.3826	–	–	–	–	–	–	–	–
	2860	3940	5700	7160	9150	9370	8580	–	–	–	–	–	–	–	–
1/600	0.0127	0.0133	0.0205	0.0608	0.0753	0.3384	–	–	–	–	–	–	–	–	–
	4280	6180	7770	9920	9920	9310	–	–	–	–	–	–	–	–	–

GD²	MOTOR축 환산 N.m²
O.H.L	출력축 N

감속비/kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55
1/40	–	–	–	0.376	0.523	0.983	1.426	2.729	4.142	5.361	6.801	12.131	12.955	22.363	28.841
	–	–	–	12348	17052	17052	17052	24598	30870	30870	30870	39494	39494	39494	40376
1/60	–	–	–	0.376	0.514	0.983	1.427	2.784	4.142	5.850	7.290	12.131	13.485	22.893	33.918
	–	–	–	14112	19502	19502	28126	35280	35280	45178	45178	45178	46256	46256	42336
1/80	–	–	0.183	0.376	0.523	0.994	1.427	2.784	4.631	5.850	7.290	12.662	18.561	27.969	–
	–	–	15582	15582	21462	30968	30968	38906	49686	49686	49686	50862	46648	46648	–
1/120	0.110	0.110	0.180	0.376	0.524	0.984	1.429	2.933	4.290	5.721	7.162	13.910	–	–	–
	12544	12544	17836	24500	35378	35378	44590	56840	56840	58310	58310	53410	–	–	–
1/150	0.110	0.110	0.180	0.376	0.524	0.984	1.429	2.933	4.290	5.721	7.162	13.910	–	–	–
	12544	12544	17836	24500	35378	35378	44590	56840	56840	58310	58310	53410	–	–	–
1/180	0.110	0.122	0.183	0.382	0.524	0.996	1.631	2.933	4.503	7.628	–	–	–	–	–
	14308	20384	28126	40572	40572	50960	65072	65072	66738	61054	–	–	–	–	–
1/240	0.120	0.122	0.183	0.382	0.536	1.197	1.631	3.145	6.410	–	–	–	–	–	–
	15778	22442	30870	44590	56154	71638	71638	73500	67228	–	–	–	–	–	–
1/320	0.122	0.124	0.189	0.382	0.536	1.197	1.842	5.052	–	–	–	–	–	–	–
	24696	34006	49098	49098	61740	78890	80850	73990	–	–	–	–	–	–	–
1/470	0.122	0.124	0.189	0.394	0.738	1.409	3.749	–	–	–	–	–	–	–	–
	28028	38612	55860	70168	89670	91826	84084	–	–	–	–	–	–	–	–
1/600	0.124	0.130	0.201	0.596	0.738	3.316	–	–	–	–	–	–	–	–	–
	41944	60564	76146	97216	97216	91238	–	–	–	–	–	–	–	–	–

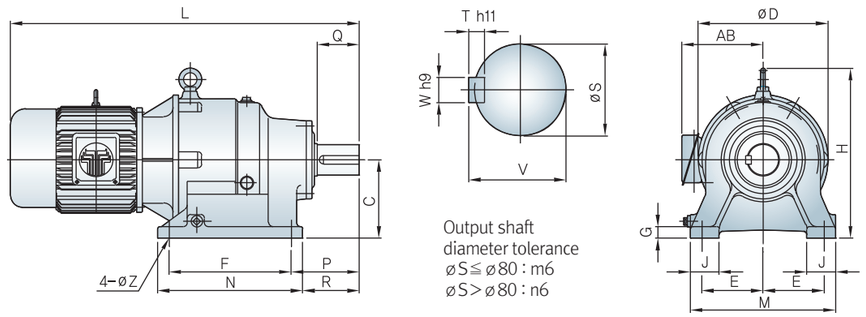
PHM 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	C	D	E	F	G	H	J	L	M	N	P	R	Z	AB	S	W	T	V	Q	오일량 (l)	중량 (kg)
5.5	1/40	E	180	280	135	240	25	375	70	830	330	300	172	142	22	225	65	18	11	69	95	3	182
7.5		F	180	280	135	240	25	375	70	830	330	300	172	142	22	225	65	18	11	69	95	3	190
11		G	205	340	160	320	30	445	75	975	380	380	178	148	22	280	80	22	14	85	110	4	312
15		I	240	390	190	360	35	520	100	1090	450	430	195	160	26	280	90	25	14	95	125	6.5	365
18.5		I	240	390	190	360	35	520	100	1105	450	430	195	160	26	305	90	25	14	95	125	6.5	423
22		I	240	390	190	360	35	520	100	1132	450	430	195	160	26	305	90	25	14	95	125	6.5	432
30		J	270	440	215	400	40	575	115	1315	510	480	271	231	33	338	112	32	18	119	165	10	738
37		J	270	440	215	400	40	575	115	1370	510	480	271	231	33	338	112	32	18	119	165	10	808
45		J	270	440	215	400	40	575	115	1385	510	480	271	231	33	410	112	32	18	119	165	10	844
55		L	300	470	240	480	45	620	135	1460	580	560	270	230	39	410	125	32	18	132	185	13	1109
5.5	1/60	F	180	280	135	240	25	375	70	830	330	300	172	142	22	225	65	18	11	69	95	3	187
7.5		G	205	340	160	320	30	445	75	910	380	380	178	148	22	225	80	22	14	85	110	4	245
11		I	240	390	190	360	35	520	100	1045	450	430	195	160	26	280	90	25	14	95	125	6.5	362
15		I	240	390	190	360	35	520	100	1090	450	430	195	160	26	280	90	25	14	95	125	6.5	370
18.5		J	270	440	215	400	40	575	115	1270	510	480	271	231	33	305	112	32	18	119	165	10	653
22		J	270	440	215	400	40	575	115	1283	510	480	271	231	33	305	112	32	18	119	165	10	662
30		J	270	440	215	400	40	575	115	1315	510	480	271	231	33	338	112	32	18	119	165	10	741
37		L	300	470	240	480	45	620	135	1420	580	560	270	230	39	338	125	32	18	132	185	13	975
45		L	300	470	240	480	45	620	135	1435	580	560	270	230	39	410	125	32	18	132	185	13	1082
55		N	420	670	400	660	50	900	150	1605	880	810	372	297	39	410	140	36	20	148	230	17	1325
3.7	1/80	F	180	280	135	240	25	375	70	780	330	300	172	142	22	205	65	18	11	69	95	3	159
5.5		G	205	340	160	320	30	445	75	875	380	380	178	148	22	225	80	22	14	85	110	4	237
7.5		H	205	340	160	320	30	445	75	910	380	380	178	148	22	225	80	22	14	85	110	4	250
11		I	240	390	190	360	35	520	100	1045	450	430	195	160	26	280	90	25	14	95	125	6.5	367
15		J	270	440	215	400	40	575	115	1235	510	480	271	231	33	305	112	32	18	119	165	10	630
18.5		J	270	440	215	400	40	575	115	1270	510	480	271	231	33	305	112	32	18	119	165	10	656
22		J	270	440	215	400	40	575	115	1305	510	480	271	231	33	305	112	32	18	119	165	10	667
30		L	300	470	240	480	45	620	135	1370	580	560	270	230	39	338	125	32	18	132	185	13	976
37		N	420	670	400	660	50	900	150	1570	880	810	372	297	39	338	140	36	20	148	230	17	1193
45		N	420	670	400	660	50	900	150	1580	880	810	372	297	39	410	140	36	20	148	230	17	1300
0.4	1/120	B	130	200	105	190	18	275	50	655	250	230	120	100	14	142	40	12	8	43	55	1.7	82
0.75		B	130	200	105	190	18	275	50	655	250	230	120	100	14	142	40	12	8	43	55	1.7	86
1.5		D	150	235	120	240	20	320	60	780	290	280	134	114	18	158	50	14	9	53.5	70	2.2	111
2.2		E	180	280	135	240	25	375	70	850	330	300	172	142	22	205	65	18	11	69	95	3.2	163
3.7		G	205	340	160	320	30	445	75	910	380	380	178	148	22	205	80	22	14	85	110	4.3	228
5.5		H	205	340	160	320	30	445	75	935	380	380	178	148	22	225	80	22	14	85	110	4.3	258
7.5		I	240	390	190	360	35	520	100	1050	450	430	195	160	26	225	90	25	14	95	125	6.8	333
11		J	270	440	215	400	40	575	115	1265	510	480	271	231	33	280	112	32	18	119	165	12	661
15		J	270	440	215	400	40	575	115	1310	510	480	271	231	33	280	112	32	18	119	165	12	667
18.5		L	300	470	240	480	45	620	135	1380	580	560	270	230	39	305	125	32	18	132	185	15	996
22		L	300	470	240	480	45	620	135	1420	580	560	270	230	39	305	125	32	18	132	185	15	1006
30		N	420	670	400	660	50	900	150	1505	880	810	372	297	39	338	140	36	20	148	230	20	1335
0.4	1/150	B	130	200	105	190	18	275	50	655	250	230	120	100	14	142	40	12	8	43	55	1.7	82
0.75		C	150	235	120	240	20	320	60	710	290	280	134	114	18	142	50	14	9	53.5	70	2.2	99
1.5		E	180	280	135	240	25	375	70	840	330	300	172	142	22	158	65	18	11	69	95	3.2	139
2.2		G	205	340	160	320	30	445	75	905	380	380	178	148	22	157	80	22	14	85	110	4.3	218
3.7		H	205	340	160	320	30	445	75	910	380	380	178	148	22	205	80	22	14	85	110	4..3	228
5.5		I	240	390	190	360	35	520	100	1030	450	430	195	160	26	225	90	25	14	95	125	6.8	327
7.5		J	270	440	215	400	40	575	115	1180	510	480	271	231	33	225	112	32	18	119	165	12	598
11		J	270	440	215	400	40	575	115	1265	510	480	271	231	33	280	112	32	18	119	165	12	661
15		L	300	470	240	480	45	620	135	1320	580	560	270	230	39	280	125	32	18	132	185	15	938
18.5		L	300	470	240	480	45	620	135	1380	580	560	270	230	39	305	125	32	18	132	185	15	1035
22		N	420	670	400	660	50	900	150	1480	880	810	372	297	39	305	140	36	20	148	230	20	1259

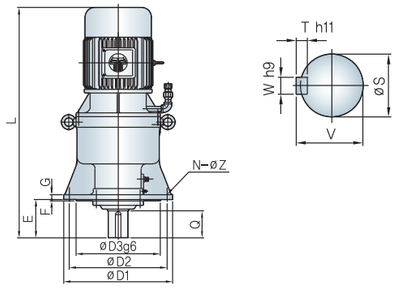
PHM 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	C	D	E	F	G	H	J	L	M	N	P	R	Z	AB	S	W	T	V	Q	오일량 (l)	중량 (kg)
0.4	1/180	B	130	200	105	190	18	275	50	655	250	230	120	100	14	142	40	12	8	43	55	1.7	82
0.75		C	150	235	120	240	20	320	60	710	290	280	134	114	18	142	50	14	9	53.5	70	2.2	99
1.5		F	180	280	135	240	25	375	70	840	330	300	172	142	22	158	65	18	11	69	95	3.2	139
2.2		G	205	340	160	320	30	445	75	905	380	380	178	148	22	205	80	22	14	85	110	4.3	224
3.7		H	205	340	160	320	30	445	75	910	380	380	178	148	22	205	80	22	14	85	110	4.3	229
5.5		I	240	390	190	360	35	520	100	1015	450	430	195	160	26	225	90	25	14	95	125	6.8	327
7.5		J	270	440	215	400	40	575	115	1180	510	480	271	231	33	225	112	32	18	119	165	12	595
11		J	270	440	215	400	40	575	115	1265	510	480	271	231	39	280	112	32	18	132	165	12	610
15		L	300	470	240	480	45	620	135	1320	580	560	270	230	39	280	125	32	18	132	185	15	941
18.5		N	420	670	400	660	50	900	150	1445	880	810	372	297	39	305	140	36	20	148	230	20	1250
0.4	1/240	B	130	200	105	190	18	275	50	660	250	230	120	114	14	142	40	12	8	43	55	1.7	82
0.75		D	150	235	120	240	20	320	60	710	290	280	134	142	18	142	50	14	9	53.5	70	2.2	99
1.5		F	180	280	135	240	25	375	70	840	330	300	172	148	22	158	65	18	11	69	95	3.2	141
2.2		H	205	340	160	320	30	445	75	905	380	380	178	148	22	205	80	22	14	85	110	4.3	224
3.7		I	240	390	190	360	35	520	100	980	450	430	195	160	26	205	90	25	14	95	125	6.8	297
5.5		J	270	440	215	400	40	575	115	1140	510	480	271	231	33	225	112	32	18	119	165	12	576
7.5		J	270	440	215	400	40	575	115	1180	510	480	271	231	39	225	112	32	18	119	165	15	598
11		L	300	470	240	480	45	620	135	1275	580	560	270	230	39	280	125	32	18	132	185	15	933
15		N	420	670	400	660	50	900	150	1470	880	810	372	297	39	280	140	36	20	148	230	20	1192
0.4	1/320	C	150	235	120	240	20	320	60	710	290	280	134	114	18	142	50	14	9	53.5	70	22	93
0.75		E	180	280	135	240	25	375	70	775	330	300	172	142	22	158	65	18	11	69	95	3.2	135
1.5		G	205	340	160	320	30	445	75	890	380	380	178	148	22	158	80	22	14	85	110	4.3	202
2.2		H	205	340	160	320	30	445	75	905	380	380	178	148	22	205	80	22	14	85	110	4.3	224
3.7		I	240	390	190	360	35	520	100	980	450	430	195	160	26	205	90	25	14	95	125	6.8	297
5.5		J	270	440	215	400	40	575	115	1140	510	480	271	231	33	225	112	32	18	119	165	12	593
7.5		L	300	470	240	480	45	620	135	1235	580	560	270	230	39	225	125	32	18	132	185	15	869
11		N	420	670	400	660	50	900	150	1425	880	810	372	297	39	280	140	36	20	148	230	20	1187
0.4	1/470	D	150	235	120	240	20	320	60	710	290	280	134	114	18	142	50	14	9	53.5	70	2.2	94
0.75		F	180	280	135	240	25	375	70	775	330	300	172	142	22	142	65	18	11	69	95	3.2	134
1.5		H	205	340	160	320	30	445	75	890	380	380	178	148	22	158	80	22	14	85	110	4.3	202
2.2		I	240	390	190	360	35	520	100	995	450	430	195	160	26	205	90	25	14	95	125	6.8	293
3.7		J	270	440	215	400	40	575	115	1095	510	480	271	231	33	205	112	32	18	119	165	12	562
5.5		L	300	470	240	480	45	620	135	1200	580	560	270	230	39	225	125	32	18	132	185	15	865
7.5		N	420	670	400	660	50	900	150	1330	880	810	372	297	39	225	140	36	20	148	230	20	1123
0.4	1/600	E	180	280	135	240	25	375	70	775	330	300	172	142	22	142	65	18	11	69	95	3.2	130
0.75		G	205	340	160	320	30	445	75	820	380	380	178	148	22	158	80	22	14	85	110	4.3	197
1.5		I	240	390	190	360	35	520	100	965	450	430	195	160	26	158	90	25	14	95	125	6.8	269
2.2		J	270	440	215	400	40	575	115	1165	510	480	271	231	33	205	112	32	18	119	165	12	559
3.7		J	270	440	215	400	40	575	115	1210	510	480	271	231	33	205	112	32	18	119	165	12	564
5.5		N	420	670	400	660	50	900	150	1290	880	810	372	297	39	225	140	36	20	148	230	20	1117

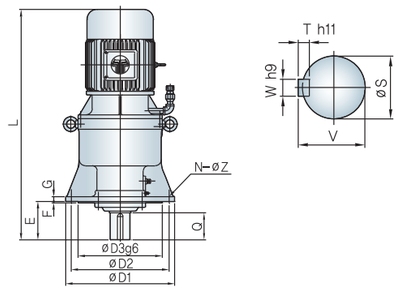
PVM 외형도 및 외형치수



단위 : mm

kW	Ratio	형번	D1	D2	D3	E	F	G	L	N	Z	S	W	T	V	Q	오일량 (l)	중량 (kg)
2.2	1/40	C	315	275	230	110	5	16	720	6	14	50	14	9	53.5	70	3.3	130
3.7		E	370	330	275	140	5	16	805	6	14	65	18	11	69	95	5.5	159
5.5		E	370	330	275	140	5	16	845	6	14	65	18	11	69	95	5.5	192
7.5		F	370	330	275	140	5	16	885	6	14	65	18	11	69	95	5.5	200
11		H	440	395	340	155	5	20	1000	6	18	80	22	14	85	110	10	328
15		I	495	445	390	170	5	20	1110	6	18	90	25	14	95	125	15	392
18.5		I	495	445	390	170	5	20	1120	6	18	90	25	14	95	125	15	450
22		I	495	445	390	170	5	20	1160	6	18	90	25	14	95	125	15	459
30		J	560	510	455	215	8	25	1335	8	22	112	32	18	119	165	23	768
37		J	560	510	455	215	8	25	1370	8	22	112	32	18	119	165	23	838
45		J	560	510	455	215	8	25	1405	8	22	112	32	18	119	165	23	874
55		L	620	570	515	245	8	25	1485	8	22	125	32	18	132	185	30	1185
2.2	1/60	D	315	275	230	110	5	16	720	6	14	50	14	9	53.5	70	3.3	135
3.7		E	370	330	275	140	5	16	805	6	14	65	18	11	69	95	5.5	164
5.5		F	370	330	275	140	5	16	845	6	14	65	18	11	69	95	5.5	197
7.5		G	440	395	340	155	5	20	925	6	18	80	22	14	85	110	10	261
11		I	495	445	390	170	5	20	1060	6	18	90	25	14	95	125	15	389
15		I	495	445	390	170	5	20	1110	6	18	90	25	14	95	125	15	397
18.5		J	560	510	455	215	8	25	1240	8	22	112	32	18	119	165	23	683
22		J	560	510	455	215	8	25	1280	8	22	112	32	18	119	165	23	692
30		J	560	510	455	215	8	25	1320	8	22	112	32	18	119	165	23	772
37		L	620	570	515	245	8	25	1425	8	22	125	32	18	132	185	30	1040
45		L	620	570	515	245	8	25	1460	8	22	125	32	18	132	185	30	1160
55		N	690	640	585	290	8	30	1560	8	26	140	36	20	148	230	40	1425
1.5	1/80	C	315	275	230	110	5	16	690	6	14	50	14	9	53.5	70	3.3	108
2.2		D	315	275	230	110	5	16	720	6	14	50	14	9	53.5	70	3.3	140
3.7		F	370	330	275	140	5	16	805	6	14	65	18	11	69	95	5.5	169
5.5		G	440	395	340	155	5	20	890	6	18	80	22	14	85	110	10	253
7.5		H	440	395	340	155	5	20	925	6	18	80	22	14	85	110	10	266
11		I	495	445	390	170	5	20	1060	6	18	90	25	14	95	125	15	394
15		J	560	510	455	215	8	25	1250	8	22	112	32	18	119	165	23	625
18.5		J	560	510	455	215	8	25	1240	8	22	112	32	18	119	165	23	686
22		J	560	510	455	215	8	25	1280	8	22	112	32	18	119	165	23	694
30		L	620	570	515	245	8	25	1390	8	22	125	32	18	132	185	30	1026
37		N	690	640	585	290	8	30	1505	8	26	140	36	20	148	230	40	1270
45		N	690	640	585	290	8	30	1540	8	26	140	36	20	148	230	40	1380
0.4	1/120	B	275	235	190	95	5	16	660	6	14	40	12	8	43	55	2.4	87
0,75		B	275	235	190	95	5	16	660	6	14	40	12	8	43	55	2.4	93
1.5		D	315	275	230	110	5	16	790	6	14	50	14	9	53.5	70	4	116
2.2		E	370	330	275	140	5	16	870	6	14	65	18	11	69	95	6.2	177
3.7		G	440	395	340	155	5	20	935	6	18	80	22	14	85	110	13	248
5.5		H	440	395	340	170	5	20	960	6	18	80	22	14	85	110	13	279
7.5		I	495	445	390	215	5	20	1085	6	18	90	25	14	95	125	18	364
11		J	560	510	455	215	8	25	1290	8	22	112	32	18	119	165	27	691
15		J	560	510	455	215	8	25	1335	8	22	112	32	18	119	165	27	697
18.5		L	620	570	515	245	8	25	1350	8	22	125	32	18	132	185	38	1072
22		L	620	570	515	245	8	25	1390	8	22	125	32	18	132	185	38	1082
30		N	690	640	585	290	8	30	1600	8	26	140	36	20	148	230	50	1424

PVM 외형도 및 외형치수

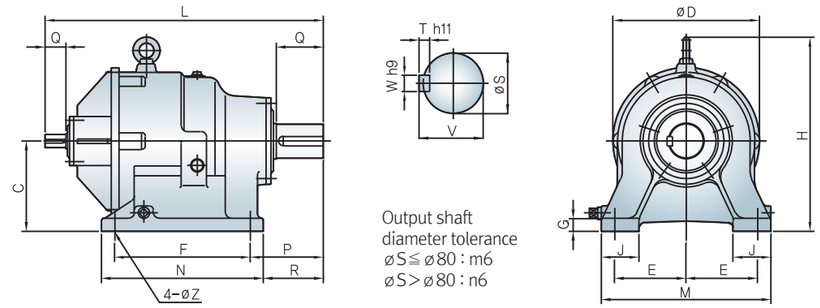


Output shaft diameter tolerance
øS≦ø80 : m6
øS>ø80 : n6

단위 : mm

kW	Ratio	형번	D1	D2	D3	E	F	G	L	N	Z	S	W	T	V	Q	오일량 (l)	중량 (kg)
0.4		B	275	235	190	95	5	16	660	6	14	40	12	8	43	55	2.4	87
0,75		C	315	275	230	110	5	16	730	6	14	50	14	9	53.5	70	4	106
1.5		E	370	330	275	140	5	16	850	6	14	65	18	11	69	95	6.2	156
2.2		G	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	249
3.7		H	440	395	340	155	5	20	910	6	18	80	22	14	85	110	13	250
5.5	1/150	I	495	445	390	170	5	20	1050	6	18	90	25	14	95	125	18	359
7.5		J	560	510	455	215	8	25	1200	8	22	112	32	18	119	165	27	628
11		J	560	510	455	215	8	25	1290	8	22	112	32	18	119	165	27	691
15		L	620	570	515	245	8	25	1340	8	22	125	32	18	132	185	38	1014
18.5		L	620	570	515	245	8	25	1350	8	22	125	32	18	132	185	38	1077
22		N	690	640	585	290	8	30	1550	8	26	140	36	20	148	230	50	1348
0.4		B	275	235	190	95	5	16	660	6	14	40	12	8	43	55	2.4	88
0,75		C	315	275	230	110	5	16	730	6	14	50	14	9	53.5	70	4	106
1.5		F	370	330	275	140	5	16	850	6	14	65	18	11	69	95	6.2	156
2.2		G	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	245
3.7		H	440	395	340	155	5	20	910	6	18	80	22	14	85	110	13	250
5.5	1/180	I	495	445	390	170	5	20	1050	6	18	90	25	14	95	125	18	359
7.5		J	560	510	455	215	8	25	1200	8	22	112	32	18	119	165	27	628
11		J	560	510	455	215	8	25	1290	8	22	112	32	18	119	185	27	693
15		L	620	570	515	245	8	25	1340	8	22	125	32	18	132	185	38	1015
18.5		N	690	640	585	290	8	30	1510	8	26	140	36	20	148	230	50	1339
0.4		B	275	235	190	95	5	16	660	6	14	40	12	8	43	55	2.4	90
0,75		D	315	275	230	110	5	16	730	6	14	50	14	9	53.5	70	4	106
1.5		F	370	330	275	140	5	16	850	6	14	65	18	11	69	95	6.2	156
2.2		H	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	247
3.7	1/240	I	495	445	390	170	5	20	975	6	18	90	25	14	95	125	18	328
5.5		J	560	510	455	215	8	25	1160	8	22	112	32	18	119	125	27	624
7.5		J	560	510	455	215	8	25	1200	8	22	112	32	18	119	165	27	630
11		L	620	570	515	245	8	25	1300	8	22	125	32	18	132	185	38	1008
15		N	690	640	585	290	8	30	1420	8	26	140	36	20	148	230	50	1281
0.4		C	315	275	230	110	5	16	730	6	14	50	14	9	53.5	70	4	100
0,75		E	370	330	275	140	5	16	795	6	14	65	18	11	69	95	6.2	151
1.5		G	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	224
2.2		H	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	247
3.7	1/320	I	495	445	390	170	5	20	975	6	18	90	25	14	95	125	18	328
5.5		J	560	510	455	215	8	25	1160	8	22	112	32	18	119	165	27	624
7.5		L	620	570	515	245	8	25	1260	8	22	125	32	18	132	185	38	945
11		N	690	640	585	290	8	30	1380	8	26	140	36	20	148	230	50	1275
0.4		D	315	275	230	110	5	16	730	6	14	50	14	9	53.5	70	4	100
0,75		F	370	330	275	140	5	16	795	6	14	65	18	11	69	95	6.2	151
1.5		H	440	395	340	155	5	20	930	6	18	80	22	14	85	110	13	226
2.2	1/470	I	495	445	390	170	5	20	1010	6	18	90	25	14	95	125	18	325
3.7		J	560	510	455	215	8	25	1110	8	22	112	32	18	119	165	27	592
5.5		L	620	570	515	245	8	25	1220	8	22	125	32	18	132	185	38	940
7.5		N	690	640	585	290	8	30	1320	8	26	140	36	20	148	230	50	1213
0.4		E	370	330	275	140	5	16	795	6	14	65	18	11	69	95	6.2	144
0,75		G	440	395	340	155	5	20	870	6	18	80	22	14	85	110	13	218
1.5	1/600	I	495	445	390	170	5	20	1000	6	18	90	25	14	95	125	18	300
2.2		J	560	510	455	215	8	25	1165	8	22	112	32	18	119	165	27	589
3.7		J	560	510	455	215	8	25	1110	8	22	112	32	18	119	165	27	594
5.5		N	690	640	585	290	8	30	1280	8	26	140	36	20	148	230	50	1207

PH 외형도 및 외형치수



Output shaft
diameter tolerance
øS≦ø80 : m6
øS>ø80 : n6

단위 : mm

kW	Ratio	형번	C	D	E	F	G	H	J	L	M	N	P	R	Z	고속축					저속축					오일량 (l)	중량 (kg)
																S	W	T	V	Q	S	W	T	V	Q		
1.5		B	130	200	105	190	18	275	50	475	250	230	120	100	14	20	6	6	22.5	35	40	12	8	43	55	1.6	53
2.2		C	150	235	120	240	20	320	60	540	290	280	134	114	18	25	8	7	28	40	50	14	9	53.5	70	2	69
3.7		E	180	280	135	240	25	375	70	615	330	300	172	142	22	25	8	7	28	40	65	18	11	69	95	3	100
5.5	1/40	E	180	280	135	240	25	375	70	630	330	300	172	142	22	30	8	7	33	45	65	18	11	69	95	3	105
7.5		F	180	280	135	240	25	375	70	630	330	300	172	142	22	30	8	7	33	45	65	18	11	69	95	3	107
11		G	205	340	160	320	30	450	75	705	380	380	178	148	22	35	10	8	38	55	80	22	14	85	110	4	173
15		I	240	390	190	360	35	520	100	765	450	430	195	160	26	35	10	8	38	55	90	25	14	95	125	6.5	234
1.5		C	150	235	120	240	20	320	60	530	290	280	134	114	18	20	6	6	22.5	35	50	14	9	53.5	70	2	67
2.2		D	150	235	120	240	20	320	60	540	290	280	134	114	18	25	8	7	28	40	50	14	9	53.5	70	2	73
3.7		E	180	280	135	240	25	375	70	615	330	300	172	142	22	25	8	7	28	40	65	18	11	69	95	3	104
5.5	1/60	F	180	280	135	240	25	375	70	630	330	300	172	142	22	30	8	7	33	45	65	18	11	69	95	3	108
7.5		G	205	340	160	320	30	450	75	685	380	380	178	148	22	30	8	7	33	45	80	22	14	85	110	4	166
11		I	240	390	190	360	35	520	100	760	450	430	195	160	26	35	10	8	38	55	90	25	14	95	125	6.5	230
15		I	240	390	190	360	35	520	100	765	450	430	195	160	26	35	10	8	38	55	90	25	14	95	125	6.5	237
0.75		B	130	200	105	190	18	275	50	475	250	230	120	100	14	20	6	6	22.5	35	40	12	8	43	55	1.6	49
1.5		C	150	235	120	240	20	320	60	530	290	280	134	114	18	20	6	6	22.5	35	50	14	9	53.5	70	2	70
2.2		D	150	235	120	240	20	320	60	530	290	280	134	114	18	20	6	6	22.5	35	50	14	9	53.5	70	2	77
3.7	1/80	F	180	280	135	240	25	375	70	615	330	300	172	142	22	20	6	6	22.5	35	65	18	11	69	95	3	107
5.5		G	205	340	160	320	30	450	75	675	380	380	178	148	22	25	8	7	28	40	80	22	14	85	110	4	164
7.5		H	205	340	160	320	30	450	75	675	380	380	178	148	22	25	8	7	28	40	80	22	14	85	110	4	170
11		I	240	390	190	360	35	520	100	745	450	430	195	160	26	30	8	7	33	45	90	25	14	95	125	6.5	232
15		J	270	440	215	400	40	575	115	875	510	480	271	231	33	30	8	7	33	45	112	32	18	119	165	10	465

K Series

중실축형

중공축형

중실축 FLANGE

중공축 FLANGE

K시리즈 특징

1. 고성능 강력한 프레임

기어 치형의 최적 설계 및 구조물의 구조해석과 시험평가로 강력한 프레임에 의해 저소음, 고효율 품질을 실현하였습니다.

2. 확실한 Seal 구조

오일의 누유를 최소화하기 위하여 고품질의 Seal 장치를 사용하였습니다.

3. 설치 Application의 다양화

중실, 중공축의 다양한 조합으로 고객의 니즈를 만족시킵니다.

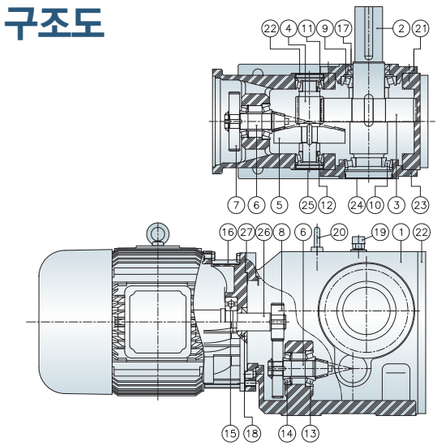
4. 부드러운 운전과 낮은 소음

진동을 흡수하고 기어 치합음을 낮출 수 있는 케이싱 및 기어 설계와 최상의 설비를 이용한 정밀도가 높은 기어를 제작함으로써 원활한 운전과 낮은 소음을 실현하였습니다.

5. 최적화 설계

다양한 설계 프로그램을 활용한 최적화 설계로 축단하중이 고려된 출력 베어링의 사용과 베어링 자체 수명을 증대하였습니다.

K 구조도



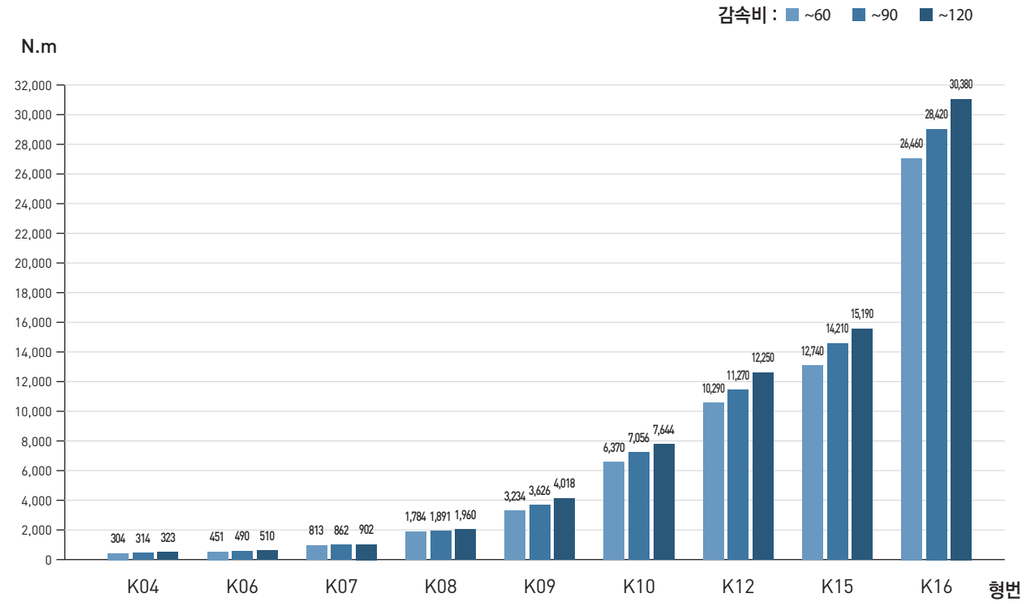
형식표시

K HH M 12

- 12 → 형번
- M → M: 모터 일체형 / 공란: Line Power
- HH → H: 중실축형 / F: 중실축 Flange / HH: 중공축형 / FH: 중공축 Flange
- K → 모델명

NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	CASING	8	1'ST PINION	15	BEARING	22	CASING COVER
2	OUTPUT SHAFT	9	BEARING	16	MOTOR BRACKET	23	COVER
3	3'RD GEAR	10	BEARING	17	OIL SEAL	24	SEALING CAP
4	3'RD PINION	11	BEARING	18	OIL SEAL	25	SEALING CAP
5	BEVEL GEAR	12	BEARING	19	AIR VENT	26	MOTOR SHAFT
6	BEVEL PINION	13	BEARING	20	EYE BOLT	27	INPUT PLATE
7	1'ST GEAR	14	BEARING	21	SEALING CAP		

K 시리즈 허용 토크 및 O.H.L 표



SIZE TYPE	RATIO	최대 허용		출력축 허용	
		토크(N·m)	토크(kg·m)	O.H.L(N)	O.H.L(kg)
K04	~ 60	304	31	4,116	420
	~ 90	314	32	4,410	450
	~ 120	323	33	4,704	480
K06	~ 60	451	46	6,468	660
	~ 90	490	50	6,664	680
	~ 120	510	52	6,860	700
K07	~ 60	813	83	8,820	900
	~ 90	862	88	9,212	940
	~ 120	902	92	9,604	980
K08	~ 60	1,784	182	13,034	1,330
	~ 90	1,891	193	17,150	1,750
	~ 120	1,960	200	20,384	2,080
K09	~ 60	3,234	330	19,894	2,030
	~ 90	3,626	370	26,656	2,720
	~ 120	4,018	410	32,046	3,270
K10	~ 60	6,370	650	24,108	2,460
	~ 90	7,056	720	33,418	3,410
	~ 120	7,644	780	43,512	4,440
K12	~ 60	10,290	1,050	37,240	3,800
	~ 90	11,270	1,150	49,000	5,000
	~ 120	12,250	1,250	62,034	6,330
K15	~ 60	12,740	1,300	44,100	4,500
	~ 90	14,210	1,450	61,348	6,260
	~ 120	15,190	1,550	73,696	7,520
K16	~ 60	26,460	2,700	76,440	7,800
	~ 90	28,420	2,900	103,488	10,560
	~ 120	30,380	3,100	121,814	12,430

동력, 감속비에 따른 표준 형번 선정표

*4P 60Hz기준

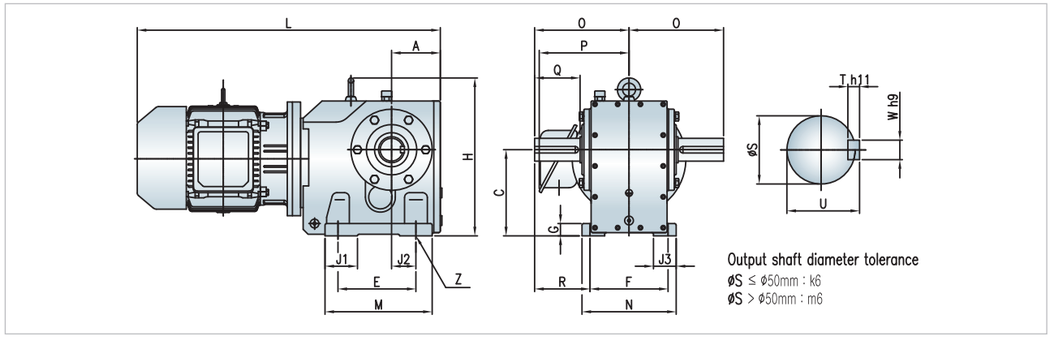
kW \ Ratio	20	30	40	50	60	75	90	120
0.75	04	04	04	04	06	06	06	07
1.5	04	06	06	07	07	07	08	08
2.2	06	07	07	08	08	08	08	09
3.7	07	08	08	08	08	09	09	09
5.5	08	08	08	09	09	09	09	10
7.5	08	08	09	09	09	10	10	10
11	08	09	10	10	10	10	10	12
15	09	10	10	10	10	12	12	15
22	10	10	12	12	12	15	15	16
30	10	12	12	15	15	16	16	16
37	10	12	15	15	16	16	16	
45	12	12	15	16	16	16		
55	12	15	16	16	16			
75	15	16	16	16				
90	15	16	16					

K시리즈 GD²

SIZE TYPE	FRAME	모터축 환산	
		$GD^2(N\cdot m^2)$	$GD^2(kg\cdot m^2)$
K04	80M	0.142	0.015
	90L	0.240	0.025
K06	80M	0.147	0.015
	90L	0.245	0.025
	100L	0.549	0.056
	112M	0.696	0.071
K07	80M	0.168	0.017
	90L	0.266	0.027
	100L	0.570	0.058
	112M	0.717	0.073
	132S	1.579	0.161
K08	90L	0.359	0.037
	100L	0.662	0.068
	112M	0.809	0.083
	132S	1.672	0.171
	132M	2.123	0.217
	160M	4.308	0.440
K09	112M	0.902	0.092
	132S	1.764	0.180
	132M	2.215	0.226
	160M	4.401	0.449
	160L	5.332	0.544
	180M	9.928	1.013

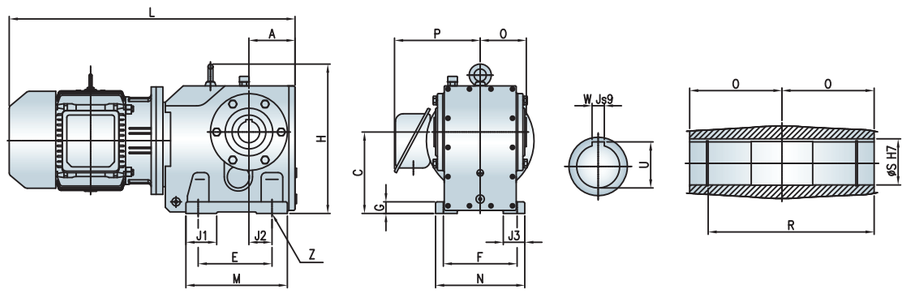
SIZE TYPE	FRAME	모터축 환산	
		$GD^2(N\cdot m^2)$	$GD^2(kg\cdot m^2)$
K10	132S	2.083	0.213
	132M	2.534	0.259
	160M	4.720	0.482
	160L	5.651	0.577
	180M	10.247	1.046
	180L	11.423	1.166
	200L	16.244	1.658
K12	160M	5.481	0.559
	160L	6.412	0.654
	180M	11.008	1.123
	180L	12.184	1.243
	200L	17.006	1.735
	225S	33.303	3.398
K15	160L	7.009	0.715
	180M	11.605	1.184
	180L	12.781	1.304
	200L	17.603	1.796
	225S	33.900	3.459
	250S	48.924	4.992
K16	180M	13.409	1.368
	180L	14.585	1.488
	200L	19.407	1.980
	225S	35.704	3.643
	250S	50.727	5.176
	250M	57.921	5.910

KHM 외형도 및 외형치수



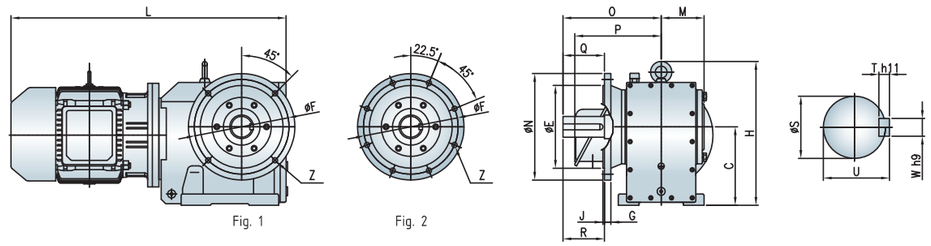
SIZE TYPE	FRAME	A	C	Z	E F	G H	J1 J3	J2	O	L	M N	P	Q R	S T	U W	중량 (kg)
K04	80M 90L	71	112	4-ø11	130 120	16 192	45 –	35	135	500 555	172 145	165 175	60 75	30 7	33 8	46 50
K06	80M 90L 100L 112M	87	140	4-ø14	120 140	22 261	55 45	30	161	530 585 615 610	185 170	165 175 200 210	70 91	35 8	38 10	60 64 87 92
K07	80M 90L 100L 112M 132S	107	173	4-ø18	150 165	25 321	70 55	40	196	560 640 670 665 745	230 200	165 175 200 210 230	90 113.5	45 9	48.5 14	93 97 120 125 156
K08	90L 100L 112M 132S 132M 160M	127	212	4-ø22	180 180	32 388	80 55	55	240	695 725 720 760 800 830	260 230	175 200 210 230 230 290	120 150	60 11	64 18	121 125 148 179 184 247
K09	112M 132S 132M 160M 160L 180M	150	265	4-ø26	240 240	38 485	100 70	75	291	790 830 870 935 980 1025	330 290	210 230 230 295 295 315	140 171	70 12	74.5 20	234 265 270 333 339 391
K10	132S 132M 160M 160L 180M 180L 200L	188	315	4-ø33	280 270	42 560	110 90	95	347	910 950 1015 1060 1105 1145 1205	390 340	230 230 295 295 315 315 370	170 212	90 14	95 25	344 349 412 418 470 485 552
K12	160M 160L 180M 180L 200L 225S	213	375	4-ø39	350 330	45 670	120 90	115	418	1110 1155 1200 1240 1300 1320	470 400	295 295 315 315 370 395	210 253	110 16	116 28	549 555 607 622 689 709
K15	160L 180M 180L 200L 225S 250S	280	450	4-ø39	380 420	50 737	130 87.5	140	470	1270 1315 1355 1415 1435 1510	510 495	295 315 315 370 395 450	210 260	120 18	127 32	953 1005 1020 1117 1172 1232
K16	180M 180L 200L 225S 250S 250M	315	500	6-ø33	540 480	50 830	150 –	200	555	1435 1475 1535 1550 1625 1665	690 566	315 315 370 395 450 450	250 315	160 22	169 40	1361 1413 1428 1515 1580 1640

KHHM 외형도 및 외형치수



SIZE TYPE	FRAME	A	C	Z	E F	G H	J1 J3	J2	O	L	M N	P	R	S	U W	중량 (kg)
K04	80M 90L	71	112	4-ø11	130 120	16 192	45 –	35	74	500 555	172 145	165 175	130	35	38.3 10	51 56
K06	80M 90L 100L 112M	87	140	4-ø14	120 140	22 261	55 45	30	90	530 585 615 610	185 170	165 175 200 210	156	40	43.3 12	68 72 95 100
K07	80M 90L 100L 112M 132S	107	173	4-ø18	150 165	25 321	70 55	40	105	560 640 670 665 745	230 200	165 175 200 210 230	183	50	53.8 14	87 91 114 122 150
K08	90L 100L 112M 132S 132M 160M	127	212	4-ø22	180 180	32 388	80 55	55	120	695 725 720 760 800 830	260 230	175 200 210 230 230 290	210	60	64.4 18	116 120 143 174 179 242
K09	112M 132S 132M 160M 160L 180M	150	265	4-ø26	240 240	38 485	100 70	75	150	790 830 870 935 980 1025	330 290	210 230 230 295 295 315	270	70	74.9 20	229 260 265 328 334 386
K10	132S 132M 160M 160L 180M 180L 200L	188	315	4-ø33	280 270	42 560	110 90	95	175	910 950 1015 1060 1105 1145 1205	390 340	230 230 295 295 315 315 370	313	80	85.4 22	344 349 412 418 470 485 552
K12	160M 160L 180M 180L 200L 225S	213	375	4-ø39	350 330	45 670	120 90	115	205	1110 1155 1200 1240 1300 1320	470 400	295 295 315 315 370 395	373	100	106.4 28	549 555 607 622 689 709
K15	160L 180M 180L 200L 225S 250S	280	450	4-ø39	380 420	50 737	130 87.5	140	250	1270 1315 1355 1415 1435 1510	510 495	295 315 315 370 395 450	460	120	127.4 32	923 975 990 1077 1142 1202
K16	180M 180L 200L 225S 250S 250M	315	500	6-ø33	540 480	50 830	150 –	200	305	1435 1475 1535 1550 1625 1665	690 566	315 315 370 395 450 450	560	130	137.4 32	1281 1333 1348 1435 1500 1560

KFM 외형도 및 외형치수



Output shaft diameter tolerance
øS ≤ ø50mm : k6
øS > ø50mm : m6

Flange diameter tolerance
øE ≤ ø230mm : j6
øE > ø230mm : h6

SIZE TYPE	FRAME	FIG	C	E F	G H	J	Z	O	L	M N	P	Q R	S T	U W	중량 (kg)
K04	80M 90L	1	112	130 165	12 192	3.5	4-ø11	154	500 555	71 200	165 175	60 60	30 7	33 8	51 56
K06	80M 90L 100L 112M	1	140	180 215	15 261	4	4-ø14	183	530 585 615 610	89 250	165 175 200 210	70 70	35 8	38 10	61 65 88 93
K07	80M 90L 100L 112M 132S	1	173	180 215	15 321	4	4-ø14	232	560 640 670 665 745	104 250	165 175 200 210 230	90 90	45 9	48.5 14	97 101 121 129 160
K08	90L 100L 112M 132S 132M 160M	1	212	250 300	20 388	5	4-ø18	267	695 725 720 760 800 830	113 350	175 200 210 230 230 290	120 120	60 11	64 18	126 130 153 184 189 252
K09	112M 132S 132M 160M 160L 180M	2	265	350 400	22 485	5	8-ø18	332	790 830 870 935 980 1025	142 450	210 230 230 295 295 315	140 140	70 12	74.5 20	244 275 280 343 349 401
K10	132S 132M 160M 160L 180M 180L 200L	2	315	350 400	22 560	5	8-ø18	386	910 950 1015 1060 1105 1145 1205	168 450	230 230 295 295 315 315 370	170 170	90 14	95 25	364 369 432 438 490 505 572
K12	160M 160L 180M 180L 200L 225S	2	375	450 500	25 670	5	8-ø18	465	1110 1155 1200 1240 1300 1320	224 550	295 295 315 315 370 395	210 210	110 16	116 28	569 575 627 642 709 729

Lubricant filling quantity(approx)

단위 : L

형번	Mounting Position						종류
	B3	V6	B8	V5	B6	V5	
K04	0.6	1.1	1.2	1.6	1.3	1.2	오일
K06	0.9	2.0	2.1	2.8	2.1	2.1	오일
K07	1.8	3.3	3.5	4.7	3.4	3.4	오일
K08	3.0	6.4	7.0	8.8	6.4	6.4	오일
K09	5.6	11.2	12.6	16.0	12.6	12.6	오일
K10	8	17	21	27	20	20	오일
K12	17	33	36	44	32	32	오일
K15	25	50	52	72	47	47	오일
K16	27	76	84	99	–	–	오일

Accessory

브레이크

1. 특징

1) 안전 브레이크(B-TYPE BRAKE)

무여자 제동방식(스프링 제동방식)이므로 전원이 차단되면 자동으로 제동됩니다.

2) 소형

Brake coil이 motor 반부하측 bracket에 내장된 형식으로 motor와 brake의 구조가 일체로 되어 있으므로 표준 Geared motor와 비교하여 외형 변동이 없습니다.

3) 배선용이

DC변환기(반파 정류기)의 사용으로 AC입력 전압을 DC전압으로 변환하여 사용하며 motor, 정류기, brake의 결선이 완료된 상태로 출하되므로 motor 전원만 연결 후 사용합니다.

4) 보수 · 점검 용이

구조가 간단하여 라이닝 교환이 용이하며 이상 전압 공급시 정류기가 1차 소손되므로 정류기만 교환하여 주시면 됩니다.
Break coil은 외부에서 물리적인 충격으로 인한 단락이 없는 한 반영구적으로 사용 가능합니다.

5) 제동 속도

표준 Type의 정류기 사용시 제동시간이 약간 느립니다. 그러나 승강용 및 정확한 정지를 요하는 장치 등 용도에 따라 magnet switch의 A접점의 사용은 사용자의 작업 사항으로 대개 전기 배선 작업시 고려하여야 합니다.
현장 여건상 magnet A접점 사용이 불가능 할 경우 제동시간을 보다 빠르게 할 수 있는 정류기를 주문하시면 됩니다. (option)

6) 입력 전원의 주파수에 관계 없습니다.

2. 시방

모터출력(kW)		0.75	1.5	2.2	3.7	5.5	7.5
Frame No.		80	90L	100L	112M	132S	132M
브레이크 형식		HB 1.2	HB 2.0	HB 6.0	HB 8.0	HB 12.0	
제동방식		무여자 작동					
제동 토크(N · m)		11.8	19.6	58.8	78.4	118	
규정간격(mm)		$0.3^{\pm 0.1}$			$0.4^{\pm 0.1}$	$0.5^{\pm 0.1}$	
한계간격(mm)		0.8				1.0	
제동속도	기준(sec)	0.3 ~ 0.5(HB 20.0:0.3 ~ 0.8)					
	A접점 사용(sec)	0.1 ~ 0.15					
작동전압	입력 AC전압(V)	220, 220/380, 220/440				380, 440	
	작동 DC전압(V)	90				170, 190	

주 : 출하시 기준 제동속도로 결선됨. (별도 절환형 결선)

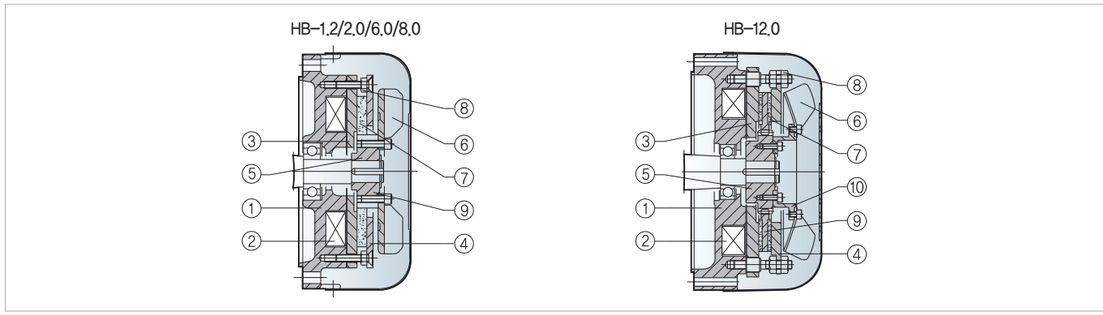
3. 전원장치

D.C B Type brake는 A.C 전원 차단시 D.C로 전환된 전류전원이 전원장치내에 존재하여 브레이크 제동시간이 늦습니다. (약 0.3~0.5 (0.8)sec) slip을 요구하는 기계장치(충격 완화용)에는 그대로 사용하시면 되고 급제동을 요구하는 기계장치에는 magnet switch의 A접점을 사용하여 A.C전원차단시 D.C전원도 함께 차단되어 제동이 신속합니다.(약 0.1~0.15 sec) 그러나, 현장 여건상 magnet switch A접점 사용이 불가능 할 경우 magnet switch A접점을 내장시킨 전원장치(무접점 스위치 내장형)를 주문하시면 됩니다.(Option)

4. 간격조정

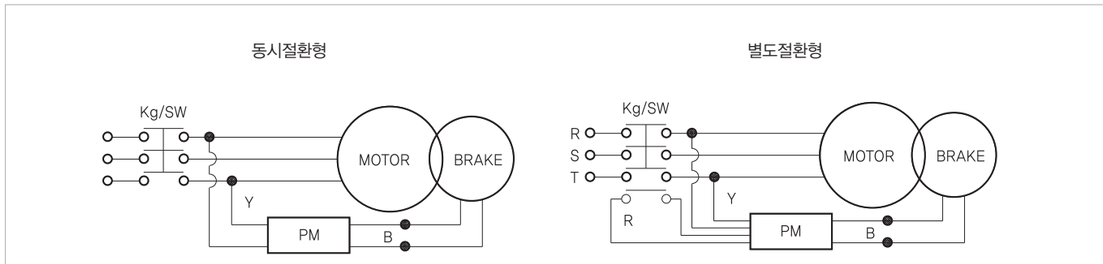
출하시 간격이 조정되어 있으나 장시간 사용하면 lining이 마모하여 armature와 magnet와의 간격이 커지게 되어 제동능력이 감소하게 됩니다. 간격측정은 armature와 magnet 사이에 gap gauge를 원주 방향으로 3~4개소 삽입하여 측정하여야 하며 간격은 원주 방향으로 동일하게 해야 됩니다. 간격 측정후 한계 간격 범위를 벗어났으면 간격 조정 너트를 이완한 다음 gap gauge를 사용하여 원주 방향으로 3~4개소 삽입하여 규정 간격으로 조정합니다.

5. 구조



NO	NAME	NO	NAME	NO	NAME	NO	NAME
1	MOTOR BRACKET	2	BRAKE COIL	3	ARMATURE	4	FLANGE
5	HUB	6	FAN	7	LINING	8	STAY BOLT/NUT
9	GEAR	10	FAN FLANGE				

6. 결선



주 : PM-직류 전원 장치(B : Black, Y : Yellow, R : Red)

GEARED MOTOR

유지보수 매뉴얼

목 차

1. 안전지침

1.1 서론

이 기어드모터는 높은 전압, 회전체 및 뜨거운 표면으로 인하여 심각한 부상이나 재산상 손해를 초래할 수 있습니다. 설치, 유지, 보수는 자격이 부여되고 교육 되어진 사람에 의해서 안전법규, 규격사항을 준수하여 수행되어야 합니다. 발생 가능한 위험을 예방하기 위해서는 이 취급설명서에 명기되어있는 안전에 대한 주의사항을 숙지하여야 합니다.
설치 또는 운전을 하기 전에 취급설명서의 모든 내용을 반드시 읽어 주십시오.

1.2 경고, 주의, 공지사항

이 취급지침서에는 안전상에 중요한 문구에 대해서 강조하기 위해 경고, 주의, 공지사항을 표기하였습니다. 이 취급설명서에 경고, 주의, 공지사항은 아래와 같이 정의되어 있습니다.

⚠ 경 고

만일 주의하지 않으면 사망 또는 심각한 부상의 결과를 일으킬 수 있는 잠재적 위험 상황을 가리킨다.

⚠ 주 의

만일 주의하지 않으면 부상 또는 물적 피해의 결과를 일으킬 수 있는 잠재적 위험 상황을 가리킨다.

1.3 안전에 대한 주의사항

⚠ 경 고

- 인원 수송장치에 사용되는 경우, 장치쪽에 안전 보호장치를 설치해 주십시오. 장치의 이상으로 인해 신체상 치명적인 부상 또는 물적 피해를 일으킬 수 있습니다.
- 승강장치에 사용되는 경우, 장치쪽에 낙하방지용 안전 보호장치를 설치해 주십시오. 장치의 이상으로 인해 신체상 치명적인 부상 또는 물적 피해를 일으킬 수 있습니다.

⚠ 주 의

- 기어드모터의 설계사양 내에서만 사용해 주십시오. 다른 용도로 사용했을 경우 제품의 파손으로 인해 신체 또는 물적 피해를 입을 수 있습니다.
- 부품 또는 제품을 임의 개조해서 사용하지 마십시오. 임의 수정해서 사용할 경우 비정상 작동으로 심각한 상해 또는 물적 피해를 초래할 수 있습니다.
- 명판을 훼손하지 마십시오.

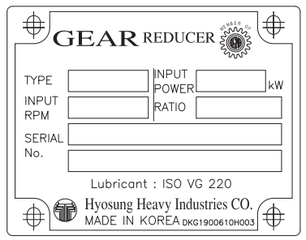
2. 개요

이 취급설명서는 효성 기어드모터를 안전하고 올바르게 사용토록 하기 위하여 작성되었습니다. 기어드모터의 부적절한 설치, 사용 및 보수는 화재, 폭발, 감전 등의 피해를 초래할 수 있으므로 반드시 읽고 난 후에 제품을 취급하여 주십시오. 읽고 난 후에는 항상 볼 수 있는 곳에 보관하십시오.

3. 검사, 운반 및 보관

3.1 검사

(1) 운송 도중에 발생할 수 있는 손상에 대해서 제품 인수 즉시 이상 여부를 확인하십시오.
(2) 명판에 기재되어 있는 형식, 전압, 감속비, 입력회전수 및 제조번호 등이 주문 사양과 일치하는지 확인하고 축을 손으로 돌렸을 때 잘 돌아가는지, 오일 및 그리스 양은 적정한지 등 기본적인 사항은 반드시 확인하여 주십시오. 만약, 문제가 발생된 경우에는 구매하신 대리점이나, 당사 영업팀 또는 A/S 부서로 제품사양과 제조번호를 확인 후 연락하여 주십시오.



〈 명판 〉
TYPE : 제품 형식
INPUT POWER : 동력
INPUT RPM : 입력회전수
RATIO : 감속비
SERIAL NO : 제조번호

3.2 운반

(1) 인양장치가 있는 기어드모터는 반드시 인양장치를 사용하여 주십시오. 설치시 축 부위, 배관, 부착품 등 주요부품이 손상되지 않도록 주의 하십시오.
(2) 감속기측과 전동기측의 인양고리를 함께 사용하여 안전하게 인양하여 주시기 바랍니다.
(3) 수직형 기어드모터의 경우, 감속기측에 인양용 홀이 없는 소형은 모터의 양쪽 인양용 아이볼트를 이용하여 안전하게 인양하고, 감속기측에 인양용 홀이 있는 중,대형은 감속기측 인양용 홀과 모터측 인양용 아이볼트를 같이 이용하여 인양 하십시오.


〈수평형〉


〈수직형(소형)〉


〈수직형(중,대형)〉

⚠ 경 고

- 기어드모터의 인양고리를 이용하여 기계장치를 함께 들어올리지 마십시오. 만일 준수하지 않을 경우 낙하 등에 의하여 심각한 상해를 입을 수 있습니다.
- 운반하기 위해 포장을 거꾸로 해서, 제품을 아래 방향으로 가게 하는 것은 절대로 하지 말아 주십시오. 낙하나 전도로 인해서 심각한 상해를 입을 수 있습니다.

⚠ 주 의

- 운반시 제품 상하의 확인 및 인양고리와 고정볼트의 상태를 확인 후 인양하시기 바랍니다. 또한, 기어드모터의 중량을 확인 후 이에 맞는 장비를 이용하여 운반하십시오.
- 크레인으로 운반하거나 매달린 기어드모터 밑으로 보행하지 마십시오. 낙하나 전도로 인하여 신체 상에 치명적인 부상 또는 사망에 이를 수 있습니다.
- 수직형 중,대형 기어드모터의 경우 감속기측 인양 홀과 모터측 아이볼트를 같이 인양하지 않을 경우 제품의 파손이 발생할 수 있고 뒤집힘으로 인한 상해 또는 파손의 위험이 있습니다.

3.3 보관

기어드모터는 실내에 진동이 없고, 온도변화가 적으며 청결 및 건조하고 통풍이 잘되는 장소에 보관하여 주십시오. 만일 **3개월 이상 장기간 보관할 경우** 아래와 같이 관리하여 주십시오.

(1) 베어링과 기어류의 녹방지를 위해 **매월 1회 5분 이상 축을 회전**시켜 주십시오.

(2) 3개월마다 500V급 절연저항계를 이용하여 **절연저항을 측정**하여 절연상태를 관리하여 주십시오.(기준치 = 정격전압(KV) + 1MΩ 이상)

(3) 제품 인도시 녹이 발생하지 않도록 방청도료가 도포 되어 있으나, 보관조건에 따라 녹이 발생할 수도 있으므로 주기적으로 점검하여 **방청도료를 도포**하여 주십시오.
* 출력축과 같이 외부로 노출된 가공 부위는 보관 도중에도 녹이 발생할 수 있으므로, 주기적으로 용제 희석형 방청유(JIS NP19에 상당하는)를 도포하여 주십시오.

(4) 오일시일은 온도나 주위환경의 영향으로 노화되는 경우가 있습니다. **오일시일의 노화방지**를 위해 주위온도 15~30℃, 습도40~70%에서 보관하십시오. 또한 직사광선(햇빛), 먼지, 오존에 노출되지 않도록 주의 하십시오. **장기간 보관 후 사용 전에 이상 유무를 점검하고 이상이 있을 경우 교체하십시오.** 오일시일은 소모품으로 장기간 사용하지 않을 경우, 노화(산화)되어 누유 발생의 원인이 됩니다.

(5) 기어드모터를 취부한 상태에서 3개월이상 사용하지 않을 경우 습도가 높은 장소, 수분 및 이물질의 침입이 우려되는 장소에서는 기어드모터 전체를 **방수커버로 덮고 내부에 방습제를 넣은 후 밀봉**하여 주십시오. 방습제는 정기적으로 교환하여 주십시오.

(6) 6개월이상 보관할 경우에는 **기화성 방청유 (JIS NP20에 상당하는)를 적당량 주입후에 밀폐**해 주십시오.

(7) 부하운전 시작 전에 이상음, 진동, 발열 등이 있지 않은가 확인해 주십시오. 이상이 있을 경우에는 대리점이나, 당사 영업팀 또는 A/S 부서로 연락해 주십시오.

4. 설치

4.1 설치장소 조건

(1) 해발고도 1000m이하이고, 주위온도 −10℃~40℃ 사이인 옥내장소에서 사용하여 주십시오. 만약, 해발고도와 주위온도가 규정치를 벗어나는 장소에서 사용 시에는 당사의 기술부서와 협의하여 주시기 바랍니다.

(2) 통풍이 양호하고 먼지 및 습기가 적고, 점검이 용이한 장소를 선정하여 설치하십시오

(3) 수분, 기름 및 폭발성 가스가 존재하거나 진동이 심하게 전달되는 장소는 피하여 주십시오.

⚠ 경 고

- 크레인 등으로 이송시 제품의 밑에서 작업을 하면 낙하로 인해 생명이 위험할 수 있습니다.

⚠ 주 의

- 기어드모터 주위에는 통풍을 방해하는 장해물이 없도록 해 주십시오. 냉각 저하로 인해 화재의 우려가 있습니다.
- 기어드모터의 축단부, 내경부, 키 부위 등을 맨손으로 만지지 마십시오.
- 오일이 들어가면 안되는 식품기계 등에는 오일증기의 침입을 방지할 수 있는 장치를 설치해 주십시오. 오일증기나 찌꺼기로 인해서 생산제품이 불량이 발생될 수 있습니다.

4.2 기초 및 설치

(1) 콘크리트 기초 위에 설치하는 경우에는 기초면을 바닥면보다 충분히 높게하여 배수가 양호하게 하고 취부면이 모두 설치면에 안전하게 지지되어 움직이지 않게 설치 하십시오. 필요한 경우 심(SHIM)을 사용하십시오.

(2) 취부대에 고정되는 경우에는 취부각도는 바닥과 ±1°이내에서 설치하고 운전시 동적 하중이 추가되어 진동 발생의 원인이 될 수 있으므로 견고한 구조로 하여 주십시오. 설치 상태가 부적절하면 진동에 의해 고장을 초래할 수 있으므로 주의하여 주십시오.

(3) 수평 타입 이외의 설치 방향에 대해서는 〈그림1〉과 같이 Air Vent 와 Oil Level Gauge, Drain Plug의 위치를 반드시 확인하여 필요 시 위치를 변경하여 설치하시기 바랍니다.

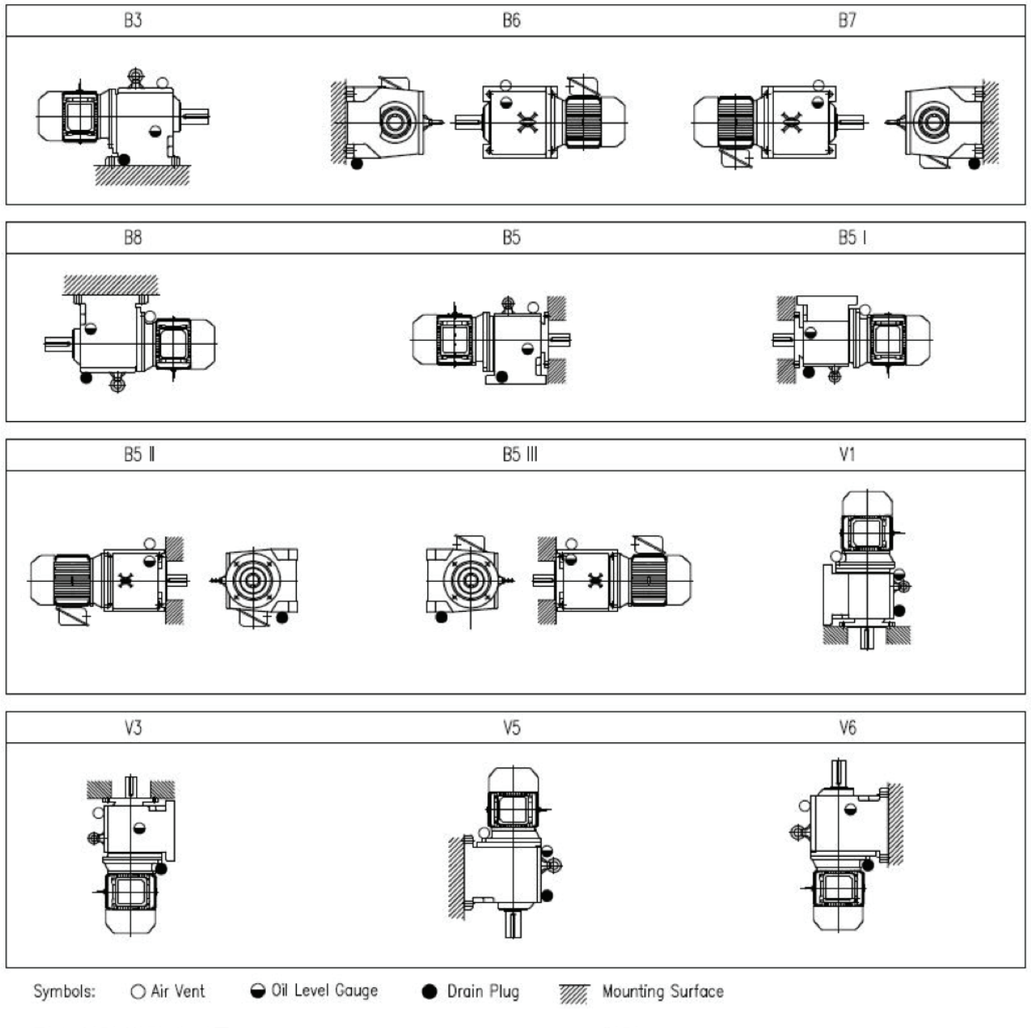
⚠ 주 의

- 취부 방향에 따라 Air Vent, Oil Level Gauge, Drain Plug 위치를 변경하지 않을 시 누유, 제품 파손 등이 발생 될 수 있습니다.
- 상기 부품의 위치 변경시 누유가 될 수 있으므로 주의하여 교체하시기 바랍니다.

4.3 부하연결

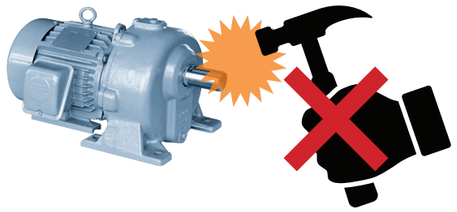
(1) BED가 포함되어 납품된 제품은 BED와 기어드모터의 ALIGNMENT를 조정하여 납품되나, 이동 또는 설치시 제품의 정렬 상태가 틀어질 수 있습니다. MIS-ALIGNMENT는 진동, 소음, 수명에 영향을 줄 수 있으므로 재 확인하여 설치 바랍니다.

(2) 축에 커플링, 풀리, 스프로켓 등을 취부 할 때에는



〈그림1〉 설치 방향에 따른 Air Vent, Oil Level Gauge, Drain Plug 위치

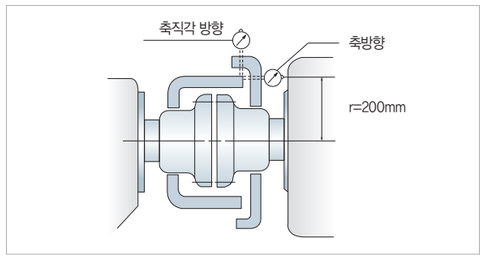
부품의 공차를 고려하고 기름 등을 도포하고 윤활을 하여 수지헤머 등과 같이 충격과 손상이 가지 않는 방법으로 가볍게 쳐서 압입하여 주십시오. 또는 커플링을 80~100℃ 로 가열하여 무리없이 축에 끼워주시기 바랍니다.
(출력축에 부착된 충격금지 스티커는 커플링 취부시까지 유지하여 주십시오.)
커플링을 과다하게 가열할 경우 오일시일이 손상되어 누유가 될 수 있습니다.



〈출력축 충격 금지〉

(3) 기어드모터는 직결방식으로 사용하는 것이 좋은 방법이며, 커플링은 가급적 플렉시블(Flexible) 커플링을 사용해 주십시오.
(4) 커플링 취부 시 기어드모터 축 중심과 부하기계 축의 중심이 일직선이 되도록 하여 주십시오.
(5) 일반적으로 커플링의 연결방법 및 허용오차는 하기와 같습니다.

카플링 종류	축직각 방향 눈금	축방향 눈금 r=200mm
고정 커플링	0.03	0.02
기어 커플링	0.05	0.05
가요성 커플링	0.1	0.1

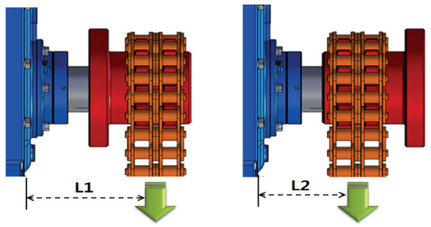


- 축방향 기준 눈금 반경 r=200mm보다 크거나 작을 경우 위 표의 기준값에 비례하여 커지거나 작아집니다.
  * 최상의 조건으로 설치되면 노크핀으로 기어드모터 위치를 고정시켜 주십시오.

(6) 스프로켓 및 기어를 취부하는 경우, 출력축 중앙에 하중이 작용하도록 아래의 공식에 의하여 스프로켓 및 기어의 직경을 선정하시고 최대한 축의 돌출부 밑까지 완전히 삽입한 후 사용하십시오.

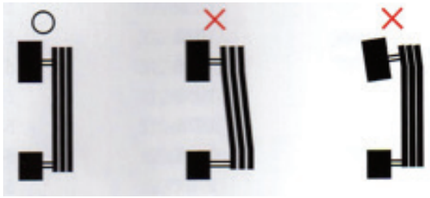
체인스프로켓 기어 피치원직경 ≧ 4×출력축 직경

(7) 출력축에 스프로켓, 풀리 및 기어를 취부하는 경우 하기 그림과 같이 가능하면 기어드모터 본체쪽으로 부착하여 주십시오.(L2가 L1 보다 기어드모터 수명에 유리합니다.)

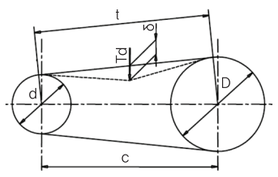


〈나쁜 예〉 〈좋은 예〉

(8) 스프로켓, 풀리 및 기어의 연결 시 기어드모터와 부하기계의 축을 평행하게 하고서 스프로켓, 풀리 및 기어는 양쪽의 중심이 일치되고 축과 직각이 되도록 취부하여 주십시오.



(9) 스프로켓, 체인을 사용하여 상대 기계와 연결하는 경우 체인이 느슨하지 않을 정도의 길이로 사용하여 주십시오.
(10) 벨트 장력 및 풀리 직경은 기어드모터의 베어링 수평 및 축 강도에 큰 영향을 주므로 KS M 6535 규격을 준수하여 설치 사용하는 것이 좋습니다. V-벨트의 속도는 원칙적으로 30m/sec까지로 합니다. V-벨트 장력 및 속도는 다음과 같이 계산할 수 있습니다.



$$t = \sqrt{c^2 - \frac{(D-d)^2}{4}}$$

D : 큰 풀리경(mm)
d : 작은 풀리경(mm)
c : 축간 거리(mm)
Td : 텐션 하중(kgf)
t : 접촉간 거리(mm)
δ: 장력의 허용범위(mm), δ=0.016 x t

⚠ 주 의

- 회전부분에 안전 커버를 설치해서 신체와 직접적인 접촉을 막아주십시오.
- 기어드모터를 설비와 연결하는 경우 오차는 취급설명서, 도면, 카다로그 등에 표시되어 있는 관리치 이내로 연결해 주십시오. 그렇지 못할 경우 파손을 일으킬 수 있습니다.
- 체결부위 볼트는 도면, 카다로그 등에 표시된 규격에 맞는 것을 사용하십시오. 파손시 파편이 비상하여 신체상 상해나 제품에 손상을 줄 수 있습니다.
- 기계와 연결하기 전에 회전방향을 확인해 주십시오. 역 회전으로 인하여 장치의 파손이 일어날 수 있습니다.
- 제품과 상대기계의 연결이 벨트로 되어 있는 경우에는 풀리와의 평행도를 직결되는 경우에는 직결정도를 관리치 이내로 관리해주십시오. 또한 모든 벨트식 구동장치는 벨트로 인한 상해를 예방하기 위하여 보호망을 반드시 설치하십시오.
- 기어드모터 설치시 원동기와 기어드모터, 기어드모터와 피동기기의 조립시 MIS-ALIGNMENT 발생으로 진동, 소음등이 생길 수 있으며, 축의 변형량이 규정치 이상으로 발생하여 축절손 가능성이 있으며 내부베어링에 악영향을 미칠 수 있습니다.
- 기어드모터와 부착용 모터는 반드시 접지해 주십시오. 만약 접지하지 않고 사용하면 운전중 신체접촉으로 감전되어 사망에 이를 수 있습니다.
- 기어드모터 출력축에 철재해머와 같은 과도한 충격이 가해질 경우 출력축 및 기어, 베어링 손상과 케이싱 파손을 일으킬 수 있습니다.
- 고무 벨트 설치시 구동 후 반드시 텐션을 재확인하여 조정하여 주시기 바랍니다.

5. 운전

5.1 기본 점검사항

설치 후 기어드모터의 시운전시 아래의 사항을 먼저 확인해 주십시오.
(1) 본체와의 연결은 정확하게 되어있는가?
(2) 취부 볼트는 확실하게 조여져 있는가?
(3) 사용하고자 하는 방향과 회전방향은 맞는가?
(4) 오일은 유면계의 지시선까지 주입되었는가?

5.2 시험운전

(1) 부하에 연결하지 않은 상태에서 운전하여 회전방향을 확인하고 원하는 방향이 아닐 때에는 전원의 2상을 바꾸어 결선하면 회전방향이 바뀌게 됩니다. 이때, 일정방향으로 회전을 하는 방향성 팬의 경우 회전방향을 바꾸어 다시 조립하여야 합니다.
(2) 전동기 제어회로, 과부하 보호장치와 접지는 전기관계 규격(법규)에 부합되어야 합니다. 배선 및 결선과 관련한 모든 사항은 검증되고 전문직종의 자격이 있는자에 의하여 수행되어야 합니다. 인가 전원 및 주파수가 명판과 반드시 일치하는지를 확인하여 주십시오.
단자박스내의 리드선 결선작업에는 전기안전을 고려하여 충분한 절연처리가 되도록 하여 주십시오. 감전의 위험이 있으니 결선 작업이 끝난 후에는 반드시 단자박스 커버를 닫아 주십시오.
(3) 기본적인 점검사항 확인 후 무부하 상태에서 서서히 부하를 증가시켜 운전을 하고 아래와 같은 이상여부를 확인해 주십시오. 이상원인이 밝혀지지 않은 경우에는 운전을 중지하고, 대리점이나, 당사 영업팀 또는 A/S 부서로 연락해 주십시오.

시 운 전 시 확 인 사 항	
이상음이나 진동이 발생하지는 않습니까?	취부면의 수평이 틀어져 있지는 않습니까? 취부구조물의 강도가 부족하거나, 공진이 일어나지는 않습니까? 본체와의 축 센터가 일치합니까? 본체의 진동이 기어드모터로 전달되지는 않습니까?
기어드모터의 표면온도가 이상하게 높지 않습니까?	모타 전류치가 명판에 기재된 정격 전류치를 넘지 않습니까? 모타의 전압 상승과 하강이 크지 않습니까? 사용장소의 주위온도가 높지 않습니까? 오일레벨은 적당합니까?

⚠ 주 의

- 운전중 회전체에 접근하지 말아주십시오. 신체와의 접촉이나 늘어진 옷에 걸려서 중상 또는 사망에 이를 수 있습니다.
- 운전 전에 반드시 회전방향을 확인해 주십시오. 반대방향으로 회전하여 인적사고 및 재산상의 피해를 일으킬 수 있습니다.

⚠ 경 고

- 기어드모터를 역회전하는 경우 제품의 회전이 완전히 정지한 후 역방향으로 운전하여 주십시오. 제품 파손이 일어날 수 있습니다
- 운전중인 기어드모터의 표면에 손 등 신체의 접촉에 주의하십시오. 운전중인 기어드모터의 표면은 고온일 수 있으므로 화상의 피해를 입을 수 있습니다.
- 운전중 이상음 또는 소음이 심할 경우 즉시 운전을 멈추고 대리점이나, 당사 영업팀 또는 A/S 부서로 연락하여 주십시오.
- 명판에 표시된 정격 전류치 이상의 전류로 운전하지 마십시오. 과부하 운전으로 인하여 기어드모터의 수명저하 및 열, 소음발생, 파손 등의 원인이 될 수 있습니다.
- 이상이 발생했을 경우에는 운전을 정지해 주십시오.

5.3 온도 상승 기준

구 분	Helical Type	Bevel Type
CASE 표면	80℃ 이하	82℃ 이하

5.4 소음 기준

(1) GEARED MOTOR
부표2.에 따라 Max.Sound Level을 정하며, Motor가 부착된 형태와 미부착된 Geared의 감속기(HELICAL 또는 유성 GEARED MOTOR)에 적용하며, 소음 기준은 부표2의 Horse Power 기준에 따라 결정한다.

<부표2>

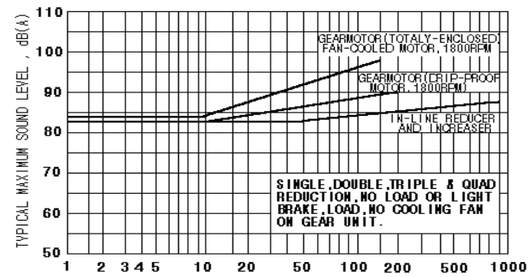


FIG1. TYPICAL MAXIMUM SOUND LEVEL VS. CATALOG HOSEPOWER RATING

(2) 주위소음에 대한 보증
기어 장치의 소음을 측정 시 주위소음을 먼저 측정한다. 그 차이가 10dB(A) 이내이면 주위 소음이 측정치에 영향을 주므로 다음 표에 따라 측정치에 해당 LEVEL값을 감하여 보증한다.

기어장치와 주위소음 LEVEL의 차이 dB(A)	0 ~ 3	4 ~ 5	6 ~ 9	10이상
기어장치의 측정치에서 감하는 보증치 dB(A)	-3	-2	-1	0

5.5 진동 기준

진동 검사의 기준은 ISO 10816에 준하며, 일반적인 경우의 감속기는 ISO 10816 CLASS Ⅰ.Ⅱ 의 GRADE "B"를 적용으로 한다.

Table B. 1 – Typical zone boundary limits

R.m.s. vibration velocity mm/s	Class Ⅰ	Class Ⅱ	Class Ⅲ	Class Ⅳ
0.28	A	A	A	A
0.45				
0.71				
1.12	B			
1.8		B		
2.8	C		B	
4.5		C		B
7.1	D		C	
11.2		D		C
18			D	
28				D
45				

Class Ⅰ: Individual parts of engines and machines, integrally connected to the complete machine in its normal operating condition. (Production electrical motors of up to 15 kW are typical examples of machines in this category.)

Class Ⅱ: Medium-sized machines (typically electrical motors with 15 kW to 75 kW output) without special foundations, rigidly mounted engines or machines (up to 300 kW) on special foundations.

Class Ⅲ: Large prime-movers and other large machines with rotating masses mounted on rigid and heavy foundations which are relatively stiff in the direction of vibration measurements.

Class Ⅳ: Large prime-movers and other large machines with rotating masses mounted on foundations which are relatively soft in the direction of vibration measurements (for example, turbogenerator sets and gas turbines with outputs greater than 10 MW).

6. 일상점검 및 보수

6.1 일상점검

아래의 사항은 반드시 실시해 주십시오.
일상점검을 소홀히 할 경우 고장의 원인이 될 수 있습니다.

점검항목	점검내용
이상음	구동 소음이 급하게 변하지 않는가?
진 동	기어드모터의 진동이 급하게 변하거나 진동 레벨이 높지 않는가?
표면 온도	기어드모터의 표면온도가 이상하게 높지는 않은가? (90℃이상) 또한 급하게 상승하지는 않는가?(운전중인 기어드모터의 온도 상승이 기종에 따라 다르지만 기어드모터의 표면온도가 80℃ 정도에 진동이 조금 있는 것은 특별히 문제가 되지는 않습니다.)
오일 레벨	오일레벨이 감소하지는 않았는가?
오일 누유	오일실 부위에 누유가 발생하지는 않았는가?
취부 볼트	볼트가 풀리지는 않았는가?
체인, V-벨트	체인 또는 V-벨트에 손상이 발생하지는 않았는가?

일상점검에서 이상이 확인된 경우에는 "8. 문제해결"에 기록되어 있는 대로 적절한 조치를 해주시기 바랍니다. 그래도 조치되지 않았다면 당사로 연락해 주시기 바랍니다.

- 6개월~1년마다 감속기 취부면 상태와 ALIGNMENT 상태를 확인하여 주십시오.
- 오일시일은 소모품으로 주기적인 교환이 필요하며, 주위 환경이 악조건(분진, 가스, 고온 등)일 경우, 경화 또는 노화(산화)가 빨리 오기 때문에 수명이 단축되어 누유 발생의 원인이 됩니다.

⚠ 경 고

- 운전중 보수, 점검을 하는 경우에는 회전체(샤프트 등)에는 접근하지 말아주십시오. 접근했을 경우에는 신체와의 접촉이나 늘어진 옷에 걸려서 중상 또는 사망에 이를 수 있습니다.
- 정지시에 제품의 상태를 점검하는 경우에는 구동기의 전원을 차단하고, 기어드모터가 완전히 정지한 후에 점검해 주십시오. 치차의 치합부위에 손이 들어가서 상해를 입을 수 있습니다.
- 운전중에 제품을 분해하지 마시기 바랍니다.
- 점검을 마친 후에 각각의 안전커버 등을 외부에 설치하기 전까지는 운전하지 말아 주십시오. 안전커버 설치 전에 운전시 신체나 의복이 회전체에 걸려서 사망이나 중상이 일어날 수 있습니다.
- 제품 중 중공축과 쉬링크 디스크를 사용하는 제품의 쉬링크 디스크 분해 시에는 락킹 링 혹은 압력 링이 각각 느슨해 지기 전에는 절대 체결볼트를 완전 분해하지 마십시오. 체결볼트 완전 분해시 잔여응력에 의한 링 이탈로 인해 생명이 위험할 수 있습니다.

⚠ 주 의

- 기어드모터의 표면은 고온이므로 맨손으로 만지지 말아 주십시오. 화상을 입을 수 있습니다.
- 기어드모터 점검 후에는 점검에 사용한 공구와 기타 자재들을 확인해 주십시오. 기어드모터 내부에 들어가서 이물질로 남아 부품을 손상시킬 수 있습니다.

6.2 분해 조립

⚠ 주 의

- 수리, 분해, 조립은 반드시 전문가가 실시해 주십시오. 장치 파손이 일어날 수 있습니다.

6.3 폐기

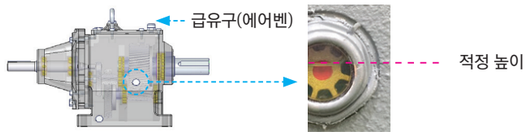
⚠ 주 의

- 기어드모터를 폐기할 경우에는 내부에 주입되어 있는 오일은 지정폐기물로 처리하시고, 오일이 제거된 케이싱과 기어류는 고철로 처리하십시오.

7. 윤활유

7.1 윤활유의 교환

(1) 운전을 시작하고부터 500시간 이거나 2개월 이내에 1차 윤활유 교환을 실시해 주십시오. 이후 2,500시간 이거나 6개월 이내에 2차 윤활유 교환을 실시해 주십시오.
(2) 그런 후에 하우징 표면온도가 70℃미만인 경우에는 5,000시간 마다 이거나 1년마다 중에 빠른 시기에 교환해 주십시오.
(3) 하우징 표면온도가 70℃ 이상인 경우에는 2,500시간 또는 6개월마다 교환해 주십시오.
(4) 주위온도가 급변하는 장소이거나, 부식성 가스가 많은 분위기에서는 윤활유의 노화가 빨리 이루어지므로, 윤활유 메이커에 문의해 주십시오.
(5) 교체 후 폐기하는 윤활유는 지정폐기물로 분류하여 법규에 따라 처리해 주십시오.
(6) 바닥에 흘린 윤활유는 깨끗하게 청소해 주십시오. 미끄러짐으로 인해서 신체상의 사고가 발생될 수 있으며, 지면으로 스며들어 토양오염과 수질오염의 원인이 될 수 있습니다.
(7) OIL 급유
급유는 본체 상부의 급유구를 통해서 실시하고, 오일게이지 또는 유면계의 적정 눈금까지 급유해 주십시오. 오일게이지로 유량을 확인할 때는 유면계의 눈금을 반드시 눈으로 확인하시고 윤활유의 양이 적으면 기어나 베어링을 손상시킬 수 있습니다.



(8) 윤활유 선정

주위 온도	점도 (40℃) ISOVG	추천메이커 하우톤 (HOUGHTON)	모빌 (MOBIL)	쉘 (SHELL)	SK (GULF)
31℃ ~ 50℃	320	MP GEAR OIL 320	MOBIL GEAR 632	SHEEL OMALA 320	EP LUBRICANT 320
0℃ ~ 30℃	220	MP GEAR OIL 220	MOBIL GEAR 630	SHEEL OMALA 220	EP LUBRICANT 220
0℃ 미만	150	MP GEAR OIL 150	MOBI GEAR 629	SHEEL OMALA 150	EP LUBRICANT 150
50℃ 초과	당사문의				

(9) 배유
배유는 윤활유가 따뜻할 때에, 본체 하부에 있는 드레인 플러그를 통해서 바깥으로 배유해 주십시오. 이때 폐유는 지정폐기물로 처리해 주십시오.
(10) GREASE 교환 (5 HP 이하에 적용)
당사에서 사용하는 그리스(GREASE EP 00)는 매 20,000 시간마다 교환해 주십시오.
고온장소 및 연속운전 시에는 매 10,000 시간마다 교환해 주십시오.

(11) GREASE 선정

주위 온도	혼화주도 (25℃, 0.1mm)	추천메이커 하우톤(HOUGHTON)	쉘(SHELL)
-25℃~50℃	400~430	COMBI EP NO.00	GADUS S2 V220 00
50℃ 초과	당사문의		

⚠ 주 의

- 운전중인 기어드모터를 완전히 정지시킨 후, 2시간이상 냉각시켜서 윤활유의 냉각을 확인한 후에 윤활유를 교환해 주십시오.
- 기어드모터 윤활유의 교체시간을 지키지 않음으로 인해 윤활유의 점도 저하로 발열 및 소손을 일으킬 수 있습니다.
- 기어드모터의 휴지기간 없이 계속 운전 된다면 윤활유 교환주기는 더 짧아질 수 있습니다.
- 윤활유 테이블에 나와 있는 윤활유와 다른 윤활유를 혼합하여 사용해서는 안됩니다.
- 윤활유의 교환은 취급설명서에 따라 주십시오. 취급설명서에 명기된 윤활유를 반드시 사용하여 기어드모터를 완전히 정지 후 오일 게이지 레벨에 맞게 교환해 주십시오.
- 윤활유량이 많으면 온도 상승이나 누유가 발생될 수 있으니 적정량을 주입하시기 바랍니다.

8. 문제해결

고 장	원 인	대 책
발열	과부하 운전	적정부하로 운전
	윤활유의 과소 또는 과다	유면계의 지시선에 맞게 조정한다
	윤활유의 불량 또는 부적당	노화, 오염된 것은 새 윤활유로 교체
	베어링 틈새 과소 (테이퍼롤러베어링)	베어링 틈새 조정
	오일시일 불량	오일 시일 교체
	전동기의 통풍방해	방해요인 제거
	3상중 1상이 열려있거나 접속 불완전	접속여부를 점검, 단단히 한다
	고정자 코일이 중간에서 단락	수리한다
	전압의 불평형	변압기 및 회로조사
	코일 접지	변압기 및 회로조사
	축이 휘었거나 연결부의 장력이 세다	축심점검, 장력을 조절
	베어링의 불량(마모, 거칠다)	베어링 교체
	부품의 마찰	분해 점검 후 수정
심한 소음 및 이음	규칙적 소음-기어의 치합 상태불량, 베어링 손상	기어교체, 베어링교체, 윤활유 보충교체
	높은 금속음-윤활유 부족	윤활유 보충, 교체
	불규칙소음(이음)-이물질 침입, 베어링 손상	이물질제거(세척), 베어링 교체
	회전자와 고정자의 접촉	수리한다
	팬이 후드에 닿는다	수리(팬을 후드와 닿지 않게 재조립)
	3상전동기가 단상운전하고 있다	회로조사
	고정부위가 헐겁다(축과 기어, 플랜지 접합부)	분해후 점검, 원인제거, 교체
	인버터 고주파 전기음	캐리어 주파수(스위칭 전압) 조정
심한 진동	치의 마모	기어교체
	이물질 침입	이물질 제거 및 윤활유 교체
	베어링 마모 및 손상	베어링 교체
	취부 볼트 및 고정볼트의 이완	볼트 조임
	조립부위(축, 기어)의 이완	분해 점검후 재조립
	축심이 일직선이 아니다.(바란스가 나쁘다)	부하의 연결상태 조사 및 재연결
	전동기의 엔드 플레이가 너무 크다	베어링 조사, 와샤를 넣어 재조립
	케이스 및 연결 부위 파손	교체
오일의 누유	오일 시일 손상 및 경화	오일 시일 교체
	패킹 불량(접합부)	패킹 교체 및 재 씰링
	배유구 플러그 이완	단단히 체결(테프론 테이프)
	유면계 파손 및 이완	교체
	기타 용접부위 누유	재용접 또는 교체
	출력축 마모(씰링부위)	출력축 교체, 도금 또는 SLEEVE 삽입
	출력커버 그리스 부족(그리스링 부위: 유성수직형)	커버의 그리이스 보충
전동기 가동불능 또는 기동곤란	퓨우즈가 끊어진다	퓨우즈의 용량조사, 교체
	기동 토오크가 모자란다	기동방식 교체 또는 용량 늘림
	회로가 열려있다. 접촉불안전	과부하 릴레이, 기동시 푸시버튼 조사
	코일의 단선	수리
	정전 또는 전원의 이상	전원점검
	과부하	전류 측정 및 부하조사
	베어링 및 부품의 끼임 현상	재조립 또는 교체

⚠ 주 의

- 기어 및 축, 케이스 등을 교체할 때는 당사로 문의하시기 바라며, 임시방편 또는 잘못된 부품 교체는 전체를 손상시키므로 각별히 주의하시기 바랍니다.
- 입/출력 축의 오일시일을 분해할 경우 표면 손상이 보이지 않아도 재사용하지 마시고, 반드시 새 오일시일로 교체하시기 바랍니다.

9. 품질보증

9.1 보증내용

취급설명서에 기재되어 있는 적절한 설치, 운전, 보수 등 정상적인 조건하에 운전하였을 경우 감속기가 정상적으로 작동함을 보증합니다.

9.2 보증범위

기어드모타는 성능, 재료 및 외관에 있어서 발생하는 문제에 대하여 보증합니다.

9.3 보증 제한

(1) 감속기를 취부하거나, 다른장치와 연결시 불량품을 사용하였을 경우
(2) 보수관리를 하지 않고, 정상적인 조건하에서 사용하지 않았을 경우
(3) 정상보다 혹독한 환경하에서 사용하였을 경우
(4) 감속기를 개조하거나, 구조변경을 하였을 경우
(5) 연결장치의 불량으로 인해서, 감속기에 2차적인 고장이 발생하였을 경우
(6) 지진, 화재, 수해, 낙뢰 등 불가항력적인 사태로 인한 고장
(7) 기타 사용자의 오사용이 확실시 되는 경우

9.4 문의사항 안내

제품의 고장이나 의문사항 등으로 문의하실 때에는 다음 사항을 확인하여 주십시오:
(1) 명판기재사항
가. 제조번호
나. 제품 형식
다. 동력/입력회전수/감속비
(2) 사용환경
가. 부하기의 종류 및 운전 조건
나. 사용 기간
다. 설치 장소 및 기타 특이사항

효성중공업(주) 서비스 연락처

- A/S 센터 연락처
  국내 TEL : 080-024-8282
  해외 TEL : +82-55-268-8282
  E - Mail : hicoservice@hyosung.com

- 영업부서 연락처
  기어솔루션영업팀
  TEL : 02-707-6322~8
  FAX : 02-707-6444

- 기술부서
  기어솔루션설계팀
  TEL : 055-279-7130
  FAX : 055-279-7159

인터넷 홈페이지 주소 :
http://www.hyosungheavyindustries.com
주소(본사) : 서울특별시 마포구 마포대로 119(공덕동)
주소(공장) : 경상남도 창원시 성산구 공단로 303

본 취급설명서의 내용은 예고 없이 변경될 수 있음을 양해바랍니다.
본 취급설명서의 내용에 대하여 만전을 기하고 있습니다만 만일 오기,누락 등 불분명한 점이 발견되면 연락 주십시오.

GEAR BOX

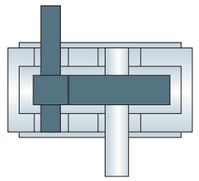
평행형 기어박스
직교형 기어박스

Type & Construction

Parallel Shaft Type : SH

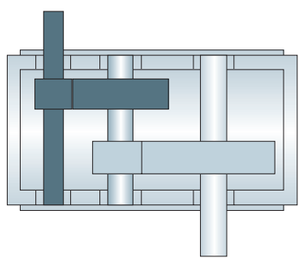
Single Reduction

SHA



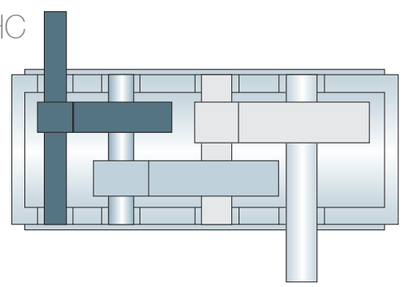
Double Reduction

SHB



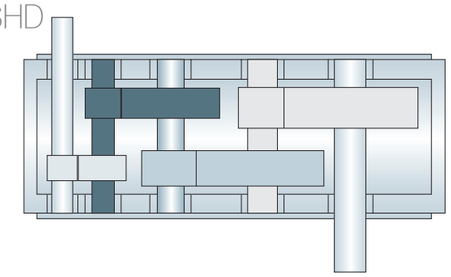
Triple Reduction

SHC



Quadruple Reduction

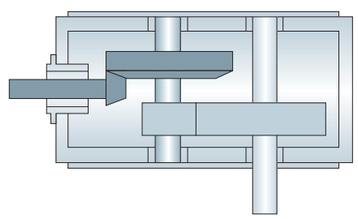
SHD



Right Angle Type : SK

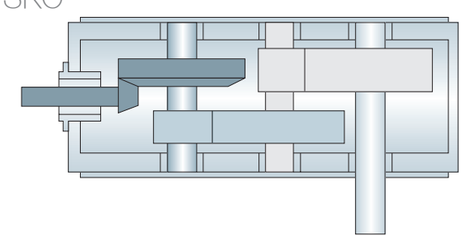
Double Reduction

SKB



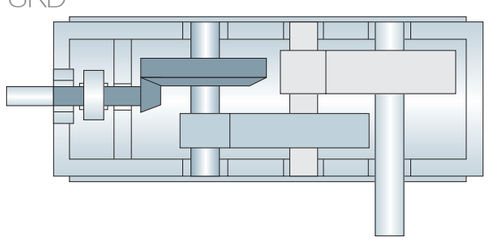
Triple Reduction

SKC

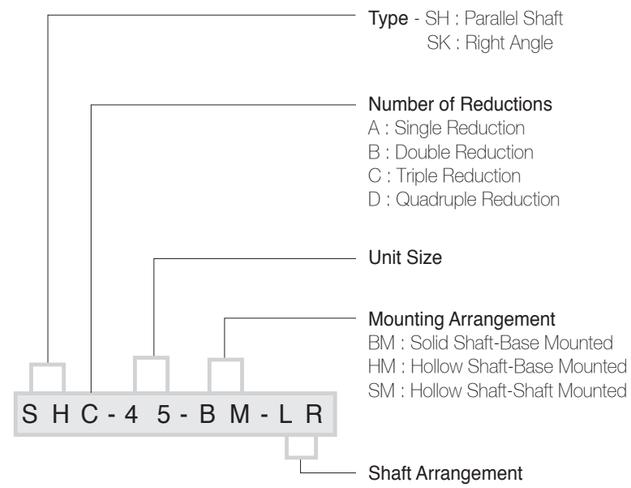


Quadruple Reduction

SKD



Example of Unit Identification

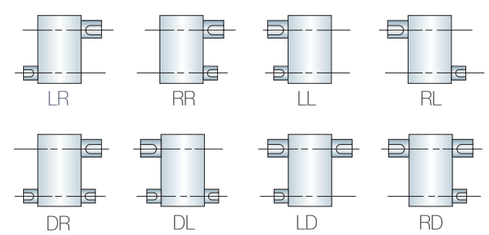


Example of Unit Identification

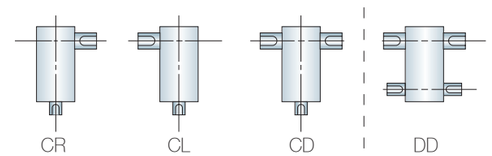
- Solid Output Shaft
- Hollow Shaft with Shrink Disk
- Hollow Shaft with Keyway

Shaft Arrangement

Parallel Shaft Type (Horizontal)



Right Angle Type



* VIEW FROM TOP.

Modifications' Electric Motor

Optional equipments and modifications are available with HYOSUNG reducers to meet the exact specifications of your installation.
Contact our Sales Representative with your requirements for :

- Special Shaft Extentions
- Lubrication Systems
- Auxiliary Cooling
- Sump Heaters
- Bedplates
- Coupling and Coupling Guards
- Backstops, Clutches and Brakes
- Outboard Pinions and Bearings

Service Factors & Load Characteristics

Service factors and load characteristics in the tables on page 9 and in the conversion chart below classify the character of the load in various applications so that a proper speed reducer can be selected for a given service. The actual load, and not the rating of the motor or prime mover, is to be used in determining the unit selection. Applications with high torque motors, and motors for intermittent operations, and applications where extreme repetitive shock occurs, or where high energy loads must be absorbed, as when stalling, require special consideration and are not covered by service factors given in the tables. Applications involving unusual or severe loading or requiring a high degree of dependability should be carefully reviewed with our Engineering Department.

Service factors represent the normal relationship between gear desingn power rating and the continuous power requirements. Commonly recognized classifications of service factors are uniform, moderate shock, and heavy shock.

When drives are equipped with brakes on the input, and the torque rating of the brake exceeds the rating of the motor, the rating of the brake dictates the selection of the gear unit.

For infrequent starting(less than 5 starts per hour) the maximum momentary or starting load should not exceed 275% of rated load(175%overload). For frequent starting(More than 5 starts per hour), the actual maximum momentary or starting load shall not exceed 200% of rated load (100% overload). Rated load is defined as the unit rating with a service factor of 1.0.

Responsibility : The manufacturer's published warranty applies to the enclosed drives described in this publication provided the following conditions are met.

The unit is protected from the elements, as prescribed by the manufacturer, in either inside or outside storage, between the interval of its receipt by the buyer and actual installation.

The unit is properly installed and lubricated in accordance with the manufacturer's instructions.

The system of connected rotating parts is compatible, free from critical speed, torsional or other type vibration, which the specified operating speed range, no matter how induced. Responsibility for system analysis, in compliance with these requirements, rests with purchaser of the gear unit.

The transmitted load, imposed torsional, thrust and overhung loads are within the capacity limits for which the unit was sold, or as specified in the purchase contract.

Exceptions to any of the foregoing provisions are a matter of specific contractual agreements.

Service Factor Conversions

Multi-cylinder engine driven applications and intermittent operations up to 3 hours per day require and upgraded service factor. Locate the service factor for your application in the electric or hydraulic motor drives table and convert by substituting the factor from this conversion table.

Prime Mover	Duration of Service	Load Class		
		U	M	H
Electric or Hydraulic Motor	Up to 3 hrs/day	0.80	1.00	1.50
	3 to 10 hrs/day	1.00	1.25	1.75
	Over 10 hrs/day	1.25	1.50	2.00
Multi-Cylinder Engine	Up to 3 hrs/day	1.00	1.25	1.75
	3 to 10 hrs/day	1.25	1.50	2.00
	Over 10 hrs/day	1.5	1.75	2.25

* Footnotes for service factors table
* Service factors are minimum values recommended. Refer to conversion table on page 8.
Δ Contact HYOSUNG Sales Representative or Engineering Department.
Note 1 : Service factors for paper mill application are applied to name plate rating of electric drive motor at the motor rated base speed.
Note 2 : A service factor of 1.00 may be applied at base speed of a super calender operating over speed range of part range, constant horsepower, part range, constant torque where the constant horsepower speed range is greater than 1.5 to 1.0 A service factor of 1.25 is applicable to super calendar operating over the entire speed range at constant torque or where the constant horsepower speed range is less than 1.5 to 1.0.

Service Factors Table

Application	Service 10 Hrs/Day	Service 24 Hrs/Day
Agitators(Mixers)		
Pure Liquids	1.00	1.25
Liquids and Solid	1.25	1.50
Liquids-Variable Density	1.25	1.50
Blowers		
Centrifugal	1.00	1.25
Lobe	1.25	1.50
Vane	1.00	1.25
Brewing and Distilling		
Bottling Machinery	1.00	1.25
Brew Kettles, Cont. Duty	1.00	1.25
Cookers-Cont. Duty	1.00	1.25
Mash Tubs-Cont. Duty	1.00	1.25
Scale Hopper. Freq. Starts	1.25	1.50
Can Filling Machines	1.00	1.25
Car Dumpers	1.75	2.00
Car Pullers	1.25	1.50
Clarifiers	1.00	1.25
Classifiers	1.25	1.50
Clay Working Machinery		
Brick Press	1.75	2.00
Briquette Machine	1.75	2.00
Pug Mill	1.25	1.50
Compactors	2.00	2.00
Compressors		
Centrifugal	1.00	1.25
Lobe	1.25	1.50
Reciprocating Multi Cyl.	1.50	1.75
Reciprocating Single-Cyl.	1.75	2.00
Conveyors		
Uniformly Loaded or Fed	1.00	1.25
Not Uniformly Fed	1.25	1.50
Reciprocating or Shaker	1.75	2.00
Cranes	Δ	Δ
Crusher		
Stone or Ore	1.75	2.00
Dredges		
Cable Reels	1.25	1.50
Conveyors	1.25	1.50
Cutter Head Drives	2.00	2.00
Pumps	2.00	2.00
Screen Drives	1.75	2.00
Stackers	1.25	1.50
Winches	1.25	1.50
Elevators		
Bucket	1.25	1.50
Centrifugal Discharge	1.00	1.25
Escalators	1.00	1.25
Freight	1.25	1.50
Gravity Discharge	1.00	1.25
Extruders		
General	1.50	1.50
Plastics-Var. Speed Dr.	1.50	1.50
Fixed Speed Drive	1.75	1.75
Rubber-Cont. Screw	1.75	1.75
Intermittent Screw	1.75	1.75
Fans		
Centrifugal	1.00	1.25
Cooling Towers	2.00	2.00
Forced Draft	1.25	1.25
Induced Draft	1.50	1.50
Industrial & Mine	1.50	1.50
Feeders		
Apron or Belt	1.25	1.50
Disc	1.00	1.25
Reciprocating	1.75	2.00
Screw	1.25	1.50
Food Industry		
Cereal Cooker	1.00	1.25
Dough Mixer	1.25	1.50
Meat Grinders	1.25	1.50
Slicers	1.25	1.50
Generators & Exciters	1.00	1.25
Hammer Mills	1.75	2.00
Hoists	Δ	Δ
Laundry Tumblers	1.25	1.50
Laundry Washers	1.50	2.00

Application	Service 10 Hrs/Day	Service 24 Hrs/Day
Lumber Industry		
Barkers-Spindle Feed	1.25	1.50
- Main Drive	1.75	1.75
Conveyors-Burner	1.25	1.50
- Main of Heavy Duty	1.50	1.50
- Main Log	1.75	2.00
- Re-Saw		
Merry-Go-Round	1.25	1.50
- Slab	1.75	2.00
-Transfer	1.25	1.50
Chains-Floor	1.50	1.50
- Green	1.50	1.75
Cut-Off Saws	1.50	1.75
Debarking Drums	1.75	2.00
Feeds-Edger	1.25	1.50
- Gang	1.75	1.75
- Trimmer	1.25	1.50
Log Deck	1.75	1.75
Log Hauls-Incline-Well Type	1.75	1.75
Log Turning Devices	1.75	1.75
Planer Feed	1.25	1.50
Planer Tilting Hoists	1.50	1.50
Rolls-Live-Off Brg-Roll-Casses	1.75	1.75
Sorting Table	1.25	1.50
Tripple Hoist	1.25	1.50
Transfers-Chain or Craneway	1.50	1.75
Tray Drives	1.25	1.50
Veneer Lathe Drives	1.25	1.50
Metal Mills		
Draw Bench Carriage and Main Drive	1.25	1.50
Run Out Tables		
Non-Reversing		
Group Drives	1.50	1.50
Individual Drives	2.00	2.00
Reversing	2.00	2.00
Slab Pushers	1.50	1.50
Shears	2.00	2.00
Wire Drawing	1.25	1.50
Wire Winding Machine	1.50	1.50
Metals Strip Processing Machinery		
Bridles	1.25	1.50
Coilers & Unicoilers	1.00	1.25
Edge Trimmers	1.25	1.50
Flatteners	1.25	1.50
Loopers(Acuummulators)	1.00	1.25
Pinch Rolls	1.25	1.50
Scrap Choppers	1.25	1.50
Shears	2.00	2.00
Slitters	1.25	1.50
Mills, Rotary Type		
Ball & Rod		
Spur Ring Gear	2.00	2.00
Helical Ring Gear	1.50	1.50
Direct Connected	2.00	2.00
Cement Kilns	1.50	1.50
Dryers & Coolers	1.50	1.50
Mixer, Concrete	1.25	1.50
Paper Mills(See Note 1)		
Agitators(Mixer)	1.50	1.50
Agitator for Pure Liquors	1.25	1.25
Barking Drums	2.00	2.00
Barkers-Mechanical	2.00	2.00
Beater	1.50	1.50
Breaker Stack	1.25	1.25
Calender	1.25	1.25
Chipper	2.00	2.00
Chip Feeder	1.50	1.50
Coating Rolls	1.25	1.25
Conveyors-Chip, Bark, Chemical	1.25	1.25
-Log(including Slab)	2.00	2.00
Couch Rolls	1.25	1.25
Cutter	2.00	2.00
Cylinder Molds	1.25	1.25
Dryers(Anti-Frcition, Bearings)	1.25	1.25
Embosser	1.25	1.25

Application	Service 10 Hrs/Day	Service 24 Hrs/Day
Extruder	1.50	1.50
Fourdrinier Rolls	1.25	1.25
Jordan	1.50	1.50
Kiln Drive	1.50	1.50
Mt. Hope Rolls	1.25	1.25
Paper Rolls	1.25	1.25
Platter	1.50	1.50
Presses-Felt & Suction	1.25	1.25
Pulper	2.00	2.00
Pumps-Vaccum	1.50	1.50
Reel(Surface Type)	1.25	1.25
Screens-Chip & Rotary	1.50	1.50
- Vibrating	2.00	2.00
Size Press	1.25	1.25
Super Calender-(See Note 2)	1.25	1.25
Thickener(AC Motor)	1.50	1.50
- (DC Motor)	1.25	1.25
Washer(AC Motor)	1.50	1.50
- (DC Motor)	1.25	1.25
Wind & Unwind Stand	1.00	1.25
Winders(Surface Type)	1.25	1.25
Plastic Industry		
Blow Molders	1.50	1.50
Coating	1.25	1.25
Film	1.25	1.25
Pipe	1.25	1.25
Pre-plasticizers	1.50	1.50
Rods	1.25	1.25
Sheet	1.25	1.25
Tubing	1.25	1.50
Pumps		
Centrifugal	1.00	1.25
Proportioning	1.25	1.50
Reciprocating		
Single or Double Acting	1.25	1.50
Rotary	1.00	1.25
Rubber Industry	Δ	Δ
Sand Muller	1.25	1.50
Sewage Disposal Equipment		
Bar Screens	1.25	1.25
Chemical Feeders	1.25	1.25
Dewatering Screens	1.50	1.50
Scum Breakers	1.50	1.50
Slow or Rapid Mixers	1.50	1.50
Sludge Collectors	1.25	1.25
Thickeners	1.50	1.50
Vacuum Filters	1.50	1.50
Screens		
Air Washing	1.00	1.25
Rotary-Stone or Gravel	1.25	1.50
Traveling Water Intake	1.00	1.25
Sugar Industry		
Beet Slicer	2.00	2.00
Cane Knives	1.50	1.50
Crushers	1.50	1.50
Mills(low speed end)	1.75	1.75
Textile Industry		
Batchers	1.25	1.50
Calenders	1.25	1.50
Cards	1.25	1.50
Dry Cans	1.25	1.50
Dryers	1.25	1.50
Dyeing Machinery	1.25	1.50
Looms	1.25	1.50
Mangles	1.25	1.50
Nappers	1.25	1.50
Pads	1.25	1.50
Slashers	1.25	1.50
Soapers	1.25	1.50
Spinners	1.25	1.50
Tenter Frames	1.25	1.50
Washers	1.25	1.50
Winders	1.25	1.50

*Foot Note : See Page8

Service Factors

Service factors serve to modify the mechanical power ratings. In practice the actual power rating to be transmitted is multiplied by the selected service factor to obtain what is called the equivalent power. This equivalent (mechanical) power is used to select the reducer from the rating tables. Service factors are not applied to the thermal power but only to the mechanical power.

Mechanical Ratings

The mechanical power rating listings on pages 12 throught 25 are for continuous 8 to 10 hour service and allow 100% overload in starting and for momentary shock loads. All components are designed to permit fewer than 5 starts per hour peak loads of 275% of catalog ratings without stresses exceeding 75% of the material yield point.

Where the mechanical rating exceeds the thermal rating, the full mechanical rating may be applied, provided that adequate cooling provisions are made.

Thermal Ratings

Thermal ratings are listed in power rating on pages 12 through 25. The thermal power rating is the rating of how much power a unit will continuously transmit for 3 hours or more without undue temperature rise. It is applied only when the mechanical power is higher and no cooling provisions are made.

Thermal ratings need not be considered when the continuous operating period does not exceed three hours and the shutdown time equals or exceeds the operating time. When the running time exceeds the shutdown time, selection must be made on the basis of the thermal rating or cooling provisions must be made. Consult our Engineering Department for cooling system recommendations.

Overhung Loads

Overhung load ratings in kg for low speed shafts are listed on page 26. High speed shaft overhung load values are not listed.
When the shaft of the speed reducer carries an overhung load, find the allowable shaft pull for the selected unit from the following formula.

$$\text{pull} = \frac{F \times 1{,}948{,}000 \times kW}{D \times rpm}$$

Where, kW=actual power to be transmitted.
RPM=revolutions per minute of shaft.
D=Pitch diameter in mm of pinion, sprocket, or diameter of pulley or sheave on shaft.
F=factor having following values;
Sprocket = 1.0 / pinion = 1.25 / V Belt = 1.5 / Flat Belt = 2.5

The allowable overhung loads, as listed, are calculated to be applied at the center of the shaft extensions which are designed as dimensions “L1” and “L2” on the dimension pages. For overhung loads in excess of those listed, consult company for suitable recommendations.

Warranty

HYOSUNG warrants for one year that the speed reducers shown in this catalog will conform to applicable rated specification as indicated, provided the unit is properly installed, maintained and operated within the limit of speed, torque and load conditions for which it was sold.

The equipment is expressly not warranted against failure or unsatisfactory operation resulting from dynamic vibrations of any from imposed upon it by the drive system in which it is installed, no matter how induced, unless the specific conditions have been made known to HYOSUNG and explicitly accepted as a condition of the order.

Install and operate HYOSUNG products in conformance with applicable local and national safety codes and per installation manuals which are available upon request.
Refer to HYOSUNG quotation from full warranty statement.

Power Method

1. Determine Service Factor
2. Calculate Equivalent kW
3. Determine Ratio
4. Determines Size of Unit
5. Verify Overhung Load Rating
6. Check Shaft and Mounting Dimensions

Torque Method

1. Determine Service Factor
2. Calculate Equivalent Torque
3. Determine Ratio
4. Determine Size of Unit
5. Verify Overhung Load Rating
6. Check Shaft and Mounting Dimensions

Example 1

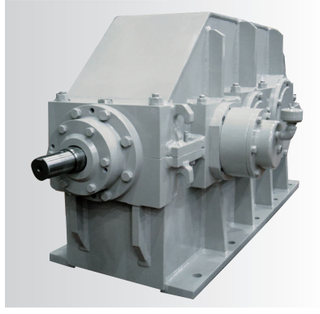
Require a parallel shaft type reducer to transmit 75 kW at 1750 rpm input, for 10 hours per day operation, driving a centrifugal pump at 30 rpm. Motor is electric and pump load is uniform

1. Service factor from page 9 is 1.0.
2. Equivalent kW = 75 kW × 1.0 SF
   = 75 kW
3. Ratio = $\frac{1750rpm}{30rpm}$ = 58.3 :1
4. Unit Selection-Start at the top of page 16 and read down the first column to 56:1 ratio, then read across unit the mechanical kW value is 89.
   The columm heading indicates unit size of SHC 26 for this application.
5. Solution-Size SHC 26, ratio 56:1 ± 3% rated 89 kW at 1750 rpm input, Actual SF = 1.19

Example 2

Require a parallel shaft type reducer to transmit 780 Kg-m of output torque at 72 rpm. Driver is a multi-cylinder gas engine driving a cement mixer up to 10 hrs. per day.

1. Service factor from page 9 is 1.25. Converted service factor from table on page 8 is 1.50.
2. Calculate Equivalent Torque 780 × 1.50 = 1,170 Kg-m
3. Determine Ratio = $\frac{1750rpm\ input}{72rpm\ Mixer}$ = 24.3
4. Unit Selection-Start at the top of page 14 and read down the first column to 25:1, then read across until the output torque value is 1,215.
   The columm heading indicates a unit size of SHB22.
5. Solution-Size SHB22, ratio 25:1 ± 3% rated 1.215 Kg-m output torque at 1750 rpm input, actual SF=1.56.



Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size								
	Input rpm	Output rpm	12	16	18	22	26	32	38	45	50
			Mechanical Power Ratings								
2	1800	900	214	456	690	1212	1812	-	-	-	-
	1200	600	142	300	474	804	1212	2646	3930	5922	-
	900	450	108	228	348	606	906	1992	2946	4440	-
2.24	1800	804	202	402	606	1098	1662	3024	-	-	-
	1200	536	132	264	402	732	1110	1920	3618	5418	-
	900	402	101	204	300	546	834	1512	2712	4062	-
2.5	1800	720	176	336	528	996	1512	2682	-	-	-
	1200	480	118	228	354	660	1003	1788	3150	4914	-
	900	360	88	168	264	498	756	1344	2364	3684	-
2.8	1800	643	151	288	456	858	1476	2520	-	-	-
	1200	429	101	192	300	570	984	1680	2898	4422	5604
	900	321	76	144	228	426	738	1260	2172	3318	4206
3.15	1800	571	126	240	402	732	1236	2280	3654	-	-
	1200	381	84	156	270	486	822	1518	2436	3930	4752
	900	286	62	120	204	366	618	1140	1824	2946	3564
3.55	1800	507	114	204	348	630	1093	1716	3150	4752	-
	1200	338	76	132	228	420	732	1140	2100	3168	4092
	900	254	56	102	174	312	546	858	1572	2376	3072
4	1800	450	108	174	300	552	930	1650	2682	4422	-
	1200	300	72	119	204	372	618	1098	1788	2946	3684
	900	225	53	88	150	276	468	828	1344	2208	2760
4.5	1800	400	88	156	264	438	792	1338	2394	3462	3389
	1200	267	58	104	174	294	528	888	1596	2310	3054
	900	200	44	78	132	222	396	666	1188	1734	2292
5	1800	360	70	132	228	390	678	1198	1966	3024	3840
	1200	240	46	88	150	258	456	793	1308	2016	2562
	900	180	34	66	114	192	342	540	984	1512	1920
5.6	1800	321	60	108	204	330	594	942	1728	2706	3276
	1200	214	40	72	132	216	396	630	1080	1806	2184
	900	161	30	53	101	162	294	474	864	1356	1638
6.3	1800	286	49	89	174	282	504	804	1410	2052	2862
	1200	190	32	60	118	186	336	534	942	1368	1908
	900	143	24	44	89	138	252	402	708	1026	1428

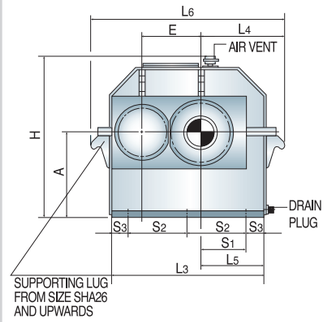
Thermal Ratings

UNIT : kW

Nominal Ratio	Speed	Unit Size								
	Input rpm	12	16	18	22	26	32	38	45	50
		Without Auxiliary Cooling								
2 - 3.15	1800	56	84	111	170	216	328	393	-	-
	1200	53	80	106	162	206	312	374	581	711
	900	51	76	101	155	197	298	357	555	679
3.55 - 6.3	1800	52	77	103	157	200	303	363	564	691
	1200	49	73	97	148	188	285	342	529	649
	900	47	70	93	142	180	273	328	508	622
		With Fan Cooling								
2 - 3.15	1800	87	130	173	264	335	508	608	946	1157
	1200	81	120	159	244	309	415	498	774	946
	900	75	111	147	225	286	384	461	716	875
3.55 - 6.3	1800	81	119	160	245	310	416	500	776	94
	1200	74	110	145	222	283	379	455	707	864
	900	68	102	135	207	223	352	423	655	802

Permissible Torque Ratings / GD²

	Nomina Ratio	Unit Size								
		12.5	16	18	22	26	32	38	45	50
Permissible Torque Ratings (UNIT : kgm)	2	230	486	742	1292	1932	4247	6281	9466	-
	2.24	241	487	716	1304	1991	3610	6476	9699	-
	2.5	233	448	704	1327	2015	3582	6300	9818	-
	2.8	226	609	681	1272	2203	3761	6483	9903	12554
	3.15	210	403	685	1229	2075	3828	6125	9892	11967
	3.55	213	386	658	1181	2066	3247	5949	8991	11625
	4	225	374	640	1177	1996	3531	5731	9415	11769
	4.5	213	374	633	1065	1900	3195	5699	8318	10995
	5	179	352	608	1023	1823	2878	5245	8059	10233
	5.6	179	315	602	967	1755	2830	5158	8095	9778
	6.3	161	298	596	927	1692	2700	4755	6890	9590
Moment of Inertia GD² (UNIT : kgm²)	2	0.0231	0.0768	0.148	0.3759	0.8529	2.1640	5.7827	12.4992	21.5027
	2.24	0.0217	0.0652	0.1328	0.3372	0.7538	1.9268	5.1773	11.0480	18.0741
	2.5	0.0196	0.0584	0.122	0.3049	0.7209	1.7272	4.4061	9.8197	16.1534
	2.8	0.0168	0.0562	0.1103	0.2616	0.6065	1.5438	3.9432	8.6818	13.6000
	3.15	0.0125	0.0445	0.0911	0.2351	0.5498	1.3728	3.4323	7.6254	12.4838
	3.55	0.0123	0.0373	0.0844	0.2050	0.4988	1.1230	3.1388	6.2881	11.1589
	4	0.0107	0.0345	0.0700	0.1669	0.3965	1.0242	2.6370	5.8862	10.4790
	4.5	0.0090	0.0321	0.0620	0.1422	0.3512	0.8611	2.2549	4.5034	8.8108
	5	0.0074	0.0243	0.0512	0.1322	0.2920	0.7090	1.8253	3.9265	7.0100
	5.6	0.0067	0.0215	0.0471	0.1107	0.2672	0.6242	1.5938	3.5242	5.9883
	6.3	0.0056	0.0179	0.0397	0.0959	0.2156	0.5369	1.3936	2.7650	4.9715



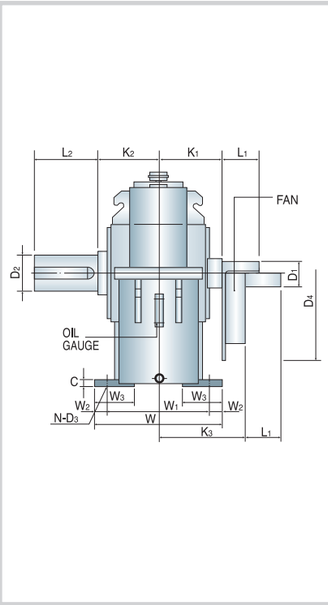
UNIT : mm

Unit Size	High Speed Shaft								
	Ratio : 2 - 2.8			Ratio : 3.15 - 4.5			Ratio : 5 - 6.3		
	D_1	L_1	Key	D_1	L_1	Key	D_1	L_1	Key
12	45	70	14 x 9	35	60	10 x 8	30	50	8 x 7
16	55	90	16 x 10	45	70	14 x 9	35	60	10 x 8
18	60	105	18 x 11	55	90	16 x 10	45	70	14 x 9
22	75	120	20 x 12	65	105	18 x 11	50	80	14 x 9
26	85	140	22 x 14	75	120	20 x 12	60	105	18 x 11
32	105	180	28 x 16	95	160	25 x 14	75	120	20 x 12
38	125	210	32 x 18	110	180	28 x 16	90	160	25 x 14
45	145	240	36 x 20	125	210	32 x 18	100	180	28 x 16
50	155	240	40 x 22	135	210	36 x 20	115	200	32 x 18

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	W	C
12	125	120	110	370	220	140	530	160	330	235	15
16	160	135	130	450	250	170	610	200	405	275	15
18	185	155	145	510	275	195	670	250	490	330	20
22	220	180	170	600	305	225	760	315	595	370	20
26	265	200	190	690	340	260	850	355	670	410	28
32	320	240	220	840	400	320	1000	400	780	480	28
38	385	270	250	970	440	360	1130	500	950	530	28
45	450	310	290	1150	540	440	1350	560	1070	620	35
50	500	335	320	1280	590	490	1480	630	1190	670	35

*Dimension 'H' can be flexible according to Technical Specifications.



*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	Low Speed Shaft				Unit Size
	Ratio : 2 - 2.8				
	WT(kg)	D_2	L_2	Key	
12	95	55	90	16 x 10	Consult HYOSUNG Engineering Department
16	170	70	120	20 x 12	
18	280	85	140	22 x 14	
22	395	100	180	28 x 16	
26	625	120	210	32 x 18	
32	1020	140	240	36 x 20	
38	1490	155	240	40 x 22	
45	2260	190	310	45 x 25	
50	3100	210	350	50 x 28	

UNIT : mm

Unit Size	Dimensions								Fan Cooling		Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	D_4	K_3	Liter
12	95	140	45	195	20	80	14	6	265	200	3.2
16	125	180	45	230	23	90	18	6	310	225	5.5
18	140	200	55	270	30	110	22	6	335	245	11
22	175	250	50	310	30	120	22	6	480	270	21
26	195	280	65	350	30	130	26	6	480	290	27
32	260	240	60	420	30	150	26	8	540	330	46
38	280	270	80	470	30	155	26	8	540	360	73
45	365	250	75	550	35	180	33	10	635	400	100
50	420	285	70	600	35	190	33	10	735	425	150

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size										
	Input rpm	Output rpm	18	22	26	32	38	45	50	56	61	66	71
			Mechanical Power Ratings										
7.1	1800	254	216	378	594	1020	1614	-	-	-	-	-	-
	1200	169	144	252	396	678	1074	2064	2598	3366	4500	4926	5340
	900	127	108	186	294	510	804	1548	1944	2520	3372	3696	4008
8	1800	225	190	334	522	882	1512	2748	-	-	-	-	-
	1200	150	126	222	348	588	1008	1830	2304	2940	4056	4434	4860
	900	113	94	166	262	438	756	1374	1728	2250	3042	3324	3648
9	1800	200	176	300	468	780	1374	2430	-	-	-	-	-
	1200	133	116	202	312	522	918	1620	2076	2760	3642	3996	5742
	900	100	88	150	234	390	684	1218	1560	2070	2730	2994	4308
10	1800	180	162	264	414	702	1206	2142	-	-	-	-	-
	1200	120	108	174	276	468	804	1428	1890	2520	3324	3618	5142
	900	90	82	132	210	354	606	1068	1416	1890	2496	2712	3858
11.2	1800	161	138	234	370	630	1092	1962	2484	3276	-	-	-
	1200	107	90	156	246	420	732	1308	1656	2184	2976	3198	4836
	900	80	66	114	186	312	546	984	1242	1638	2232	2400	3288
12.5	1800	144	132	211	330	564	954	1710	2220	2934	3906	4794	-
	1200	96	88	140	220	378	636	1140	1476	1956	2604	2796	3942
	900	72	66	106	164	282	480	853	1110	1470	1950	2100	2958
14	1800	129	114	188	320	504	870	1446	2004	2484	3528	4092	-
	1200	86	77	126	214	336	582	966	1338	1656	2352	2730	3666
	900	64	56	94	160	252	432	726	1002	1242	1764	2046	2748
16	1800	113	101	176	288	444	780	1362	1650	2202	3264	3816	-
	1200	75	66	116	192	300	516	906	1098	1470	2178	3744	3264
	900	56	55	88	144	222	390	678	822	1104	1632	1908	2448
18	1800	100	90	151	254	396	692	1248	1422	1914	2893	3312	4344
	1200	67	60	101	168	264	462	832	948	1276	1932	2208	2898
	900	50	46	76	127	198	346	624	714	958	1446	1656	2172
20	1800	90	76	138	228	390	612	1110	1322	1764	2544	2910	3703
	1200	60	50	92	152	263	408	739	882	1176	1698	1938	2472
	900	45	38	70	114	196	306	552	660	882	1272	1452	1854
22.4	1800	80	70	108	192	316	535	816	1198	1462	2076	2520	3150
	1200	54	48	70	128	210	358	546	793	972	1386	1680	2100
	900	40	34	53	96	158	264	408	598	732	1039	1260	1572
25	1800	72	60	94	174	282	486	744	1032	1284	1890	2268	2923
	1200	48	41	62	116	190	324	496	690	858	1260	1512	1950
	900	36	30	46	88	142	244	372	516	642	946	1134	1462
28	1800	64	54	84	156	252	436	655	946	1164	1663	2004	2584
	1200	43	36	55	104	168	288	438	630	778	1109	1336	1722
	900	32	26	42	84	126	216	328	472	582	832	1002	1291

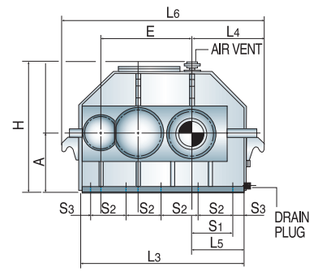
Thermal Ratings

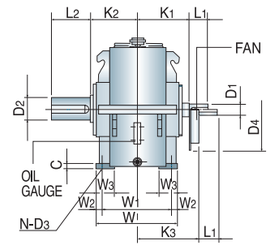
UNIT : kW

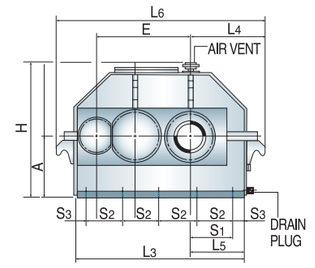
Ratio	Speed	Unit Size										
	Input rpm	18	22	26	32	38	45	50	56	61	66	71
		Without Auxiliary Cooling										
7.1 - 14	1800	73	99	141	201	259	376	462	549	690	771	-
	1200	70	94	134	192	246	358	440	523	657	735	837
	900	66	90	128	183	235	342	420	499	626	701	799
16 - 28	1800	67	92	131	187	240	350	430	510	641	717	818
	1200	63	85	123	175	225	327	401	478	600	670	766
	900	61	83	118	168	216	314	385	458	575	643	734
		With Fan Cooling										
7.1 - 14	1800	99	134	190	272	349	508	623	742	933	1040	1189
	1200	91	124	176	251	323	469	576	685	861	962	1100
	900	84	114	163	232	298	434	532	634	796	890	1015
16 - 28	1800	92	125	177	253	325	473	579	690	867	969	1104
	1200	83	113	160	229	294	429	526	625	787	878	1003
	900	77	105	149	213	274	398	488	581	730	816	931

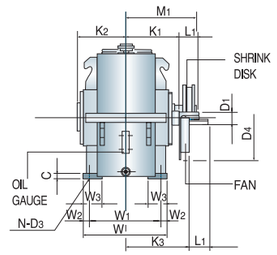
Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size										
		18	22	26	32	38	45	50	56	61	66	71
Permissible Torque Ratings (UNIT : kgm)	7.1	817	1408	2225	3860	6085	11716	14713	19073	25521	27973	30335
	8	798	1412	2231	3735	6447	11717	14736	19188	25942	28347	31110
	9	840	1439	2245	3742	6562	11685	14966	19859	26191	28724	41331
	10	870	1407	2239	3774	6460	11385	15094	20147	26607	28910	41126
	11.2	783	1361	2221	3725	6519	11748	14828	19556	26648	28654	39256
	12.5	879	1407	2191	3758	6396	11433	14791	19588	25983	27982	39415
	14	842	1397	2382	3761	6447	10835	14954	18535	26326	30534	41011
	16	941	1494	2456	3786	6652	11564	14020	18830	27835	32543	41753
	18	875	1451	2441	3799	6631	11973	13700	18374	27746	31775	41676
	20	819	1484	2430	4170	6524	11769	14071	18804	27119	30956	39527
	22.4	802	1261	2292	3782	6304	9742	14270	17479	24814	30086	37536
	25	799	1215	2335	3774	6492	9914	13751	17109	25200	30221	38951
	28	788	1254	2507	3761	6447	9778	14076	17371	24821	29907	38539
Moment of Inertia GD² (UNIT : kgm²)	7.1	0.0788	0.1232	0.2710	0.6453	1.6313	3.6605	8.3737	10.0026	19.999	21.8899	36.4019
	8	0.0668	0.1021	0.2311	0.5504	1.3792	3.1134	7.2080	8.522	16.9865	18.477	29.9804
	9	0.0580	0.0881	0.2010	0.4748	1.2274	2.6721	6.0005	7.0696	14.5424	15.7215	25.7306
	10	0.0503	0.0772	0.1759	0.3985	1.0291	2.3136	5.2212	6.1096	12.5209	13.4748	21.4881
	11.2	0.0417	0.0650	0.1444	0.3476	0.9004	2.0006	4.4867	5.2477	10.7056	11.4657	19.0505
	12.5	0.0385	0.0521	0.1292	0.2818	0.7377	1.6110	3.9524	4.5529	8.6571	9.2665	16.1590
	14	0.0373	0.0495	0.1209	0.2742	0.6978	1.5817	3.8397	4.3235	8.2558	8.9751	15.4114
	16	0.0327	0.0441	0.1003	0.2214	0.5414	1.3706	3.0422	3.5133	7.3510	7.9030	13.0207
	18	0.0203	0.0377	0.0788	0.1847	0.4756	1.1435	2.6031	3.0155	5.8158	6.2520	10.7628
	20	0.0176	0.0323	0.0666	0.1701	0.4138	0.9686	2.1873	2.5108	5.0565	5.4156	9.3973
	22.4	0.0173	0.0313	0.0652	0.1645	0.4014	0.9192	2.1209	2.4575	4.8875	5.2744	7.7461
	25	0.0144	0.0273	0.0570	0.1332	0.3558	0.7757	1.7886	2.0333	4.2904	4.6007	7.8943
	28	0.0125	0.0231	0.469	0.1131	0.2908	0.6609	1.5396	1.7529	3.4014	3.6485	6.5992









*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	High Speed Shaft								
	Ratio : 7.1 - 11.2			Ratio : 12.5 - 22.4			Ratio : 25 - 28		
	D_1	L_1	Key	D_1	L_1	Key	D_1	L_1	Key
18	45	70	14 x 9	35	60	10 x 8	30	50	8 x 7
22	55	90	16 x 10	45	70	14 x 9	35	60	10 x 8
26	65	105	18 x 11	50	80	14 x 9	42	70	12 x 8
32	75	120	20 x 12	60	105	18 x 11	50	80	14 x 9
38	90	160	25 x 14	75	120	20 x 12	60	100	18 x 11
45	100	180	28 x 16	90	160	25 x 14	70	120	20 x 12
50	120	210	32 x 18	100	180	28 x 16	80	140	22 x 14
56	130	210	32 x 18	110	180	28 x 16	90	160	25 x 14
61	150	240	36 x 20	120	210	32 x 18	100	180	28 x 16
66	150	240	36 x 20	120	210	32 x 18	100	180	28 x 16
71	170	270	40 x 22	140	240	36 x 20	110	180	28 x 16

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	W	C
18	310	190	180	610	270	190	770	200	452	292	20
22	380	220	200	730	310	230	890	250	561	332	20
26	450	260	240	840	340	260	1000	280	640	408	28
32	540	305	280	1000	380	300	1160	355	765	490	28
38	650	330	310	1170	450	350	1370	400	860	530	28
45	770	390	370	1390	510	410	1590	500	1019	650	35
50	885	420	400	1570	575	455	1810	560	1119	710	35
56	940	470	440	1680	620	500	1920	630	1239	780	40
61	1060	525	500	1870	670	550	2110	710	1379	900	45
66	1110	530	510	1990	710	590	2230	750	1469	920	45
71	1205	580	560	2140	775	635	2480	800	1549	1010	50

*Dimension 'H' can be flexible according to Technical Specifications.

UNIT : mm

Unit Size	Low Speed Shaft				
	Solid Shaft				Hollow Shaft
	WT(kg)	D_2	L_2	Key	WT(kg)
18	285	80	140	22 x 14	262
22	470	100	180	28 x 16	432
26	745	120	210	32 x 18	685
32	1300	140	240	36 x 20	1196
38	1905	170	270	40 x 22	1753
45	3150	200	350	45 x 25	2898
50	4160	220	350	50 x 28	3827
56	5170	240	400	56 x 32	4756
61	7100	270	450	63 x 32	6531
66	7740	290	450	63 x 32	1721
71	9710	310	500	70 x 36	8933

Refer to page 21 and 22 for shaft dimensions

UNIT : mm

Unit Size	Dimensions								Fan Cooling	Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	D_4	K_3	Liter
18	155	135	35	260	16	56	14	10	350	280	13
22	195	165	35	290	21	66	18	10	430	310	21
26	220	190	40	355	26.5	89	22	10	430	350	32
32	250	225	50	430	30	95	26	10	480	395	65
38	305	270	45	465	32.5	100	26	10	480	420	85
45	365	325	45	570	40	120	33	10	540	480	170
50	390	360	65	640	35	125	33	10	575	510	240
56	440	390	60	690	45	135	39	10	635	560	330
61	475	430	75	800	50	155	45	10	635	615	470
66	515	460	75	820	50	160	45	10	735	620	550
71	545	490	90	910	50	168	45	10	735	670	680

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size										
	Input rpm	Output rpm	18	22	26	32	38	45	50	56	61	66	71
			Mechanical Power Ratings										
28	1800	64	55	98	158	262	475	732	1080	1320	2004	-	-
	1200	43	36	66	106	174	317	487	720	878	1336	1505	2024
	900	32	28	48	79	131	238	366	540	660	1002	1128	1518
31.5	1800	57	53	92	138	232	415	648	967	1164	1836	1904	-
	1200	38	34	60	90	154	277	432	644	774	1224	1272	1784
	900	29	28	46	68	116	206	324	482	581	918	952	1338
35.5	1800	51	46	82	122	226	402	588	871	1046	1630	1750	-
	1200	34	30	54	82	150	268	394	581	696	1086	1166	1614
	900	25	23	41	60	112	200	294	436	522	814	876	1208
40	1800	45	41	73	110	199	361	569	773	944	1260	1544	-
	1200	30	26	48	73	132	240	378	515	630	840	1030	1458
	900	23	20	36	55	98	180	283	386	473	630	772	1092
45	1800	40	37	65	98	175	322	515	692	868	1152	1493	1956
	1200	27	24	42	66	116	214	343	462	578	768	996	1304
	900	20	18	31	48	86	161	258	346	432	576	744	987
50	1800	36	34	58	95	158	290	468	564	654	996	1304	1750
	1200	24	23	38	64	106	192	312	376	436	664	869	1166
	900	18	17	29	48	79	145	234	282	328	498	653	876
56	1800	32	30	53	89	149	258	420	556	667	1038	1172	1410
	1200	21	19	34	58	98	172	280	370	444	691	781	940
	900	16	16	26	43	74	128	210	277	334	518	586	704
63	1800	29	25	46	79	138	224	367	492	592	847	1021	1274
	1200	19	17	30	53	91	149	244	328	406	628	680	850
	900	14	12	23	40	68	112	184	245	295	472	510	637
71	1800	25	23	41	70	120	202	326	442	538	830	894	1200
	1200	17	16	26	46	79	134	216	294	358	552	596	799
	900	13	11	19	34	60	100	162	221	268	414	448	600
80	1800	23	20	37	62	108	176	296	396	498	734	799	1098
	1200	15	13	25	41	72	118	198	264	331	488	533	732
	900	11	10	18	30	54	89	148	198	248	366	400	548
90	1800	20	18	32	55	96	161	258	337	442	652	733	978
	1200	13	12	20	36	64	108	172	224	294	434	488	652
	900	10	9	16	28	48	80	127	168	221	326	366	488
100	1800	18	-	29	52	85	145	234	305	383	592	672	850
	1200	12	-	18	34	56	96	156	204	254	394	448	566
	900	9	-	14	25	42	72	116	151	191	295	336	425
112	1800	16	-	26	44	76	132	211	275	348	517	594	772
	1200	11	-	17	29	50	86	139	182	230	344	396	515
	900	8	-	13	23	36	66	106	138	173	258	296	385

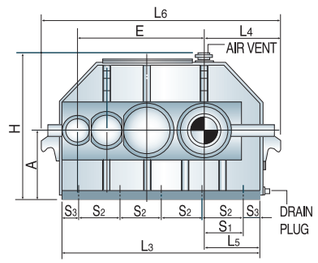
Thermal Ratings

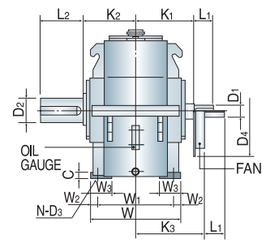
UNIT : kW

Ratio	Speed	Unit Size										
	Input rpm	18	22	26	32	38	45	50	56	61	66	71
		Without Auxiliary Cooling										
28 - 45	1800	49	72	97	135	181	263	338	366	495	537	637
	1200	46	67	91	126	170	246	317	343	464	503	597
	900	44	63	86	119	160	232	298	323	437	474	562
51 - 112	1800	44	64	87	120	162	235	303	328	444	481	570
	1200	42	61	83	115	155	225	290	314	425	460	546
	900	41	60	81	112	151	219	282	305	413	448	531
		With Fan Cooling										
28 - 45	1800	62	89	122	168	227	328	423	458	619	670	796
	1200	56	81	111	153	206	298	385	416	563	610	724
	900	51	74	101	140	188	272	351	379	514	557	661
51 - 112	1800	0	80	109	151	203	294	379	410	554	601	713
	1200	0	75	100	139	190	270	352	381	515	560	663
	900	0	70	95	132	178	257	331	358	485	526	623

Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size										
		18	22	26	32	38	45	50	56	61	66	71
Permissible Torque Ratings (UNIT : kgm)	28	824	1433	2364	3904	7092	10924	16118	19699	29907	33668	45309
	31.5	927	1531	2297	3909	6931	10879	16198	19502	30825	31953	44928
	35.5	863	1544	2271	4223	7584	11126	16484	19754	30789	33150	45729
	40	870	1535	2354	4196	7675	12076	16476	20160	26863	32901	46562
	45	863	1497	2303	4145	7713	12376	16578	20723	27630	35689	46914
	50	895	1535	2558	4221	7739	12472	15030	17461	26543	34794	46690
	56	931	1576	2576	4441	7665	12536	16548	19914	30946	34958	42049
	63	806	1531	2659	4594	7495	12330	16440	19825	31671	34250	42793
	71	863	1453	2543	4541	7538	12261	16711	20253	31334	33877	45411
	80	890	1535	2558	4605	7573	12587	16885	21183	31212	34078	46767
	90	898	1497	2648	4605	7713	12203	16118	21183	31314	35114	46857
	100	0	1535	2686	4477	7675	12408	16118	20339	31468	35817	45283
	112	0	1576	2722	4298	7880	12608	16476	20631	30803	35387	45989
Moment of Inertia GD² (UNIT : kgm²)	28	0.0085	0.0313	0.0481	0.1376	0.3147	0.7379	1.7635	1.8537	4.1494	4.3517	9.2290
	31.5	0.0074	0.0277	0.0415	0.1131	0.2652	0.6232	1.4819	1.5553	3.5111	3.6736	7.8851
	35.5	0.0062	0.0239	0.0353	0.0965	0.2275	0.1088	1.3066	1.3669	2.9984	3.1292	6.5368
	40	0.0053	0.0197	0.0289	0.0822	0.1938	0.0172	1.0757	1.1254	2.5483	2.6649	5.6029
	45	0.0045	0.0162	0.0239	0.0686	0.1587	0.0331	0.9293	0.9708	2.1646	2.2615	4.7681
	50	0.0037	0.0151	0.0213	0.0566	0.1382	0.3119	0.7857	0.8202	1.7500	1.8325	4.1676
	56	0.0035	0.0147	0.0197	0.0528	0.1268	0.2967	0.7345	0.7640	1.6887	1.7589	3.9937
	63	0.0029	0.0125	0.0165	0.0463	0.1037	0.2437	0.5805	0.5983	1.4803	1.5294	3.2572
	71	0.0024	0.0102	0.0131	0.0373	0.0887	0.1980	0.4892	0.5047	1.2005	1.2331	2.7517
	80	0.0021	0.0085	0.0110	0.0199	0.0740	0.1785	0.4090	0.4220	1.0051	1.0316	2.2713
	90	0.0020	0.0083	0.0105	0.0297	0.0714	0.1699	0.3913	0.4022	0.9423	0.9638	2.1787
	100	0.0000	0.0072	0.0092	0.0257	0.0648	0.1392	0.3436	0.3550	0.8119	0.8300	1.8642
	112	0.0000	0.0059	0.0076	0.0211	0.0542	0.1161	0.2750	0.2916	0.6828	0.6976	1.5908





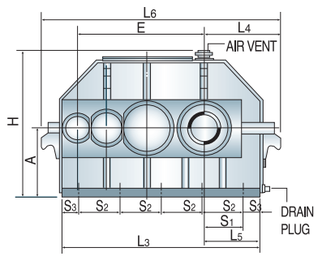
UNIT : mm

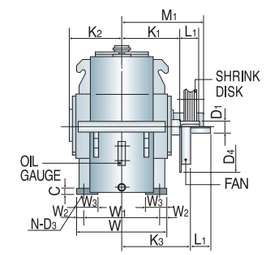
Unit Size	High Speed Shaft					
	Ratio : 28 - 63			Ratio : 71 - 112		
	D_1	L_1	Key	D_1	L_1	Key
18	25	40	8 x 7	20	35	6 x 6
22	30	50	8 x 7	25	40	8 x 7
26	38	60	10 x 8	28	50	8 x 7
32	45	70	14 x 9	35	60	10 x 8
38	55	90	16 x 10	42	70	12 x 8
45	65	105	18 x 11	50	80	14 x 9
50	75	120	20 x 12	60	105	18 x 11
56	80	140	22 x 14	65	105	18 x 11
61	90	160	25 x 14	75	120	20 x 12
66	100	180	28 x 16	80	140	22 x 14
71	110	180	28 x 16	90	160	25 x 14

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	W	C
18	400	175	170	670	265	185	830	200	445	270	20
22	505	195	190	820	295	215	980	250	525	310	20
26	575	220	215	940	335	255	1100	280	640	360	28
32	700	260	250	1130	395	295	1330	355	740	430	28
38	835	300	285	1330	445	345	1530	400	870	490	28
45	990	360	350	1570	530	410	1810	500	1030	600	35
50	1150	400	390	1830	620	500	2070	560	1125	680	35
56	1205	400	390	1910	645	525	2150	630	1230	680	40
61	1380	470	460	2170	715	575	2450	710	1370	820	45
66	1430	470	460	2260	755	615	2540	750	1470	820	45
71	1590	510	500	2500	810	670	2780	800	1570	900	50

*Dimension 'H' can be flexible according to Technical Specifications.





*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	Low Speed Shaft					
	Solid Shaft				Hollow Shaft	
	WT(kg)	D_2	L_2	Key	WT(kg)	
18	295	80	140	22 x 14	271	Refer to page 21 and 22 for shaft dimensions
22	455	100	180	28 x 16	419	
26	730	120	210	32 x 18	672	
32	1150	140	240	36 x 20	1058	
38	1750	170	270	40 x 22	1610	
45	3150	200	350	45 x 25	2899	
50	4120	220	350	50 x 28	3790	
56	4925	240	400	56 x 32	4531	
61	7395	260	450	56 x 32	6803	
66	8345	280	450	63 x 32	7677	
71	10650	300	500	70 x 36	9798	

UNIT : mm

Unit Size	Dimensions								Fan Cooling		Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	D_4	K_3	Liter
18	150	200	35	230	20	55	14	8	265	255	12
22	155	175	60	270	20	60	18	10	310	285	24
26	205	210	50	310	25	70	22	10	335	310	43
32	220	245	75	370	30	90	26	10	335	350	70
38	260	290	85	430	30	95	26	10	430	390	110
45	345	360	65	520	40	125	33	10	430	450	190
50	425	420	75	600	40	140	33	10	480	490	280
56	450	440	75	590	45	140	39	10	480	490	340
61	490	500	85	710	55	175	45	10	540	560	530
66	525	520	90	710	55	175	45	10	540	560	590
71	580	580	90	790	55	190	45	10	575	600	740

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size									
	Input rpm	Output rpm	22	26	32	38	45	50	56	61	66	71
			Mechanical Power Ratings									
112	1800	16	27	44	76	132	210	296	363	545	620	824
	1200	11	18	29	51	88	140	197	242	363	414	550
	900	8	13	22	38	66	105	148	181	272	310	412
125	1800	14	23	37	61	110	171	261	319	485	546	735
	1200	10	15	25	41	74	113	174	213	323	364	489
	900	7	11	18	31	55	85	130	160	242	273	367
140	1800	13	21	32	54	97	227	235	283	446	462	650
	1200	9	14	21	36	65	101	157	188	298	308	433
	900	6	11	16	27	48	76	117	141	223	231	325
160	1800	11	19	28	52	92	136	209	250	390	419	580
	1200	8	13	19	35	62	90	139	167	260	280	386
	900	6	9	14	26	46	68	104	125	195	210	290
180	1800	10	17	26	46	84	131	186	227	302	371	524
	1200	7	11	17	30	55	87	124	151	201	247	350
	900	5	8	13	23	42	66	92	113	151	186	262
200	1800	9	15	23	41	75	121	169	210	280	362	475
	1200	6	10	15	27	50	81	112	140	186	242	317
	900	5	7	11	20	37	60	84	105	140	181	237
224	1800	8	13	22	37	67	108	136	157	240	315	422
	1200	5	9	15	25	45	72	90	105	160	210	281
	900	4	7	11	18	34	54	68	79	120	157	211
250	1800	7	12	20	35	60	98	134	161	251	283	341
	1200	5	8	13	23	40	65	89	107	167	189	227
	900	4	6	10	17	30	49	67	81	125	142	171
280	1800	6	11	19	32	52	86	119	144	228	248	309
	1200	4	7	12	21	35	57	80	95	152	166	207
	900	3	5	9	16	26	43	60	72	114	124	155
315	1800	6	10	16	28	47	76	107	130	201	218	292
	1200	4	6	11	19	31	51	72	87	134	145	195
	900	3	5	8	14	24	38	54	65	101	109	146
355	1800	5	9	14	25	41	69	96	121	178	194	267
	1200	3	6	10	17	28	46	64	81	119	130	178
	900	3	4	7	13	21	34	48	60	89	97	133
400	1800	5	7	13	22	37	60	82	107	158	177	237
	1200	3	5	9	15	25	40	54	72	106	119	158
	900	2	4	6	11	19	30	41	54	79	89	119
450	1800	4	7	12	20	34	54	73	91	142	161	204
	1200	3	5	8	13	22	36	48	61	94	107	136
	900	2	3	6	10	16	27	37	45	71	81	102
500	1800	4	6	10	18	31	49	66	84	125	143	187
	1200	2	4	7	12	20	33	45	56	84	95	125
	900	2	3	5	9	15	25	34	42	63	72	93

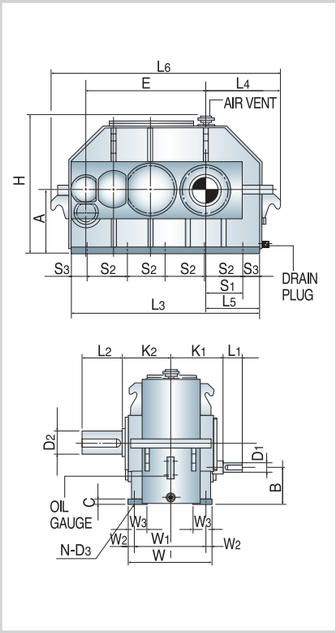
Thermal Ratings

UNIT : kW

Ratio	Speed	Unit Size									
	Input rpm	22	26	32	38	45	50	56	61	66	71
		Without Auxiliary Cooling									
112 - 280	1800	47	65	92	128	181	232	257	337	367	435
	1200	44	61	86	120	170	218	241	316	345	409
	900	41	57	80	112	159	204	226	297	324	384
315 - 500	1800	42	58	83	115	163	209	231	304	331	393
	1200	39	54	78	108	153	196	217	285	311	369
	900	37	51	74	103	146	188	208	273	298	353
		With Fan Cooling									
112 - 280	1800	64	89	126	175	247	317	352	461	502	597
	1200	59	82	117	162	229	294	326	427	465	553
	900	54	76	108	150	213	273	303	397	432	514
315 - 500	1800	59	82	117	162	229	294	327	428	466	555
	1200	53	74	106	147	208	267	297	389	424	505
	900	49	69	98	136	193	248	276	362	394	469

Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size									
		22	26	32	38	45	50	56	61	66	71
Permissible Torque Ratings (UNIT : kgm)	112	1603	2617	4523	7835	12553	17628	21634	32496	37036	49144
	125	1520	2464	4074	7353	11327	17389	21264	32293	36367	48887
	140	1580	2382	4029	7234	11351	17472	21033	33275	34499	48521
	160	1603	2404	4439	7885	11574	17806	21367	33195	35739	49475
	180	1603	2461	4378	8013	12591	17742	21749	29046	35628	50365
	200	1574	2448	4324	7949	12878	17965	22416	29889	38633	50556
	224	1585	2671	4398	8013	12998	16203	18874	28668	37571	50391
	250	1669	2703	4650	7949	13116	17885	21463	33386	37758	45508
	280	1603	2782	4763	7790	12909	17806	21367	34054	36947	46295
	315	1603	2679	4732	8013	12770	18029	21784	33803	36558	49078
	355	1637	2709	4741	7901	12981	18343	22858	33581	36685	50512
	400	1558	2766	4801	7949	12719	17488	22893	33704	37838	50556
	450	1645	2754	4722	7870	12878	17528	21820	33982	38633	49006
	500	1590	2742	4690	7949	13116	17885	22257	33386	38156	49682
Moment of Inertia GD² (UNIT : kgm²)	112	0.0040	0.0064	0.0170	0.0419	0.0939	0.2351	0.2409	0.5532	0.5801	1.2348
	125	0.0036	0.0054	0.0156	0.0353	0.0846	0.2046	0.2176	0.4681	0.4898	1.1130
	140	0.0034	0.0046	0.0144	0.0305	0.0776	0.1841	0.1998	0.3998	0.4172	1.0045
	160	0.0032	0.0038	0.0134	0.0259	0.0716	0.1709	0.1855	0.3398	0.3552	0.9519
	180	0.0026	0.0030	0.0106	0.0211	0.0602	0.1432	0.1552	0.2884	0.3015	0.7905
	200	0.0024	0.0028	0.0106	0.0185	0.0566	0.1344	0.1452	0.2333	0.2443	0.7472
	224	0.0024	0.0026	0.0106	0.0168	0.0575	0.1368	0.1482	0.225	0.2345	0.7590
	250	0.0020	0.0020	0.0084	0.0138	0.0485	0.1151	0.1242	0.1974	0.2038	0.6370
	280	0.0020	0.0016	0.0082	0.0116	0.0469	0.1119	0.1212	0.1601	0.1643	0.6174
	315	0.0016	0.0014	0.0066	0.0098	0.0375	0.0903	0.0971	0.1340	0.1374	0.4914
	355	0.0016	0.0012	0.0068	0.0094	0.0393	0.0935	0.1009	0.1256	0.1284	0.5151
	400	0.0016	0.0012	0.0066	0.0086	0.0375	0.0923	0.0997	0.1081	0.1105	0.5073
	450	0.0016	0.0012	0.0064	0.0072	0.0369	0.0891	0.0971	0.0909	0.0929	0.4954
	500	0.0012	0.0012	0.0054	0.0066	0.0311	0.0746	0.0808	0.0756	0.0772	0.4246



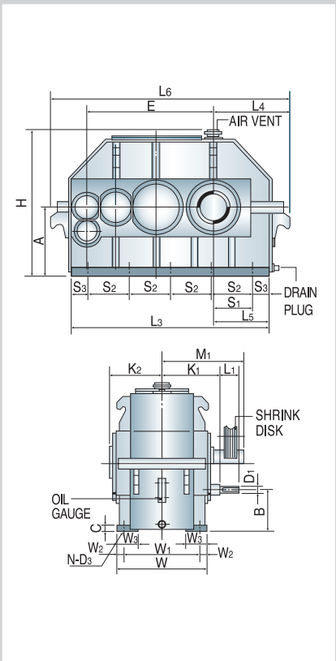
UNIT : mm

Unit Size	High Speed Shaft					
	Ratio : 112 - 280			Ratio : 315 - 500		
	D_1	L_1	Key	D_1	L_1	Key
22	22	35	6 x 6	19	35	6 x 6
26	25	40	8 x 7	20	35	6 x 6
32	32	60	10 x 8	28	50	8 x 7
38	38	60	10 x 8	30	50	8 x 7
45	45	70	14 x 9	35	60	10 x 8
50	55	90	16 x 10	42	70	12 x 8
56	60	105	18 x 11	45	70	14 x 9
61	65	105	18 x 11	50	80	14 x 9
66	70	110	20 x 12	55	90	16 x 10
71	75	120	20 x 12	60	105	18 x 11

UNIT : mm

Unit Size	Dimensions											
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	B	W	C
22	505	190	190	810	295	215	970	250	525	160	310	20
26	575	220	215	930	335	255	1090	315	640	225	360	28
32	700	260	250	1130	395	295	1330	355	740	243	430	28
38	835	300	285	1310	445	345	1510	400	870	275	490	35
45	990	360	350	1560	530	410	1800	500	1030	340	600	35
50	1150	400	390	1830	620	500	2070	560	1140	375	680	40
56	1205	400	390	1920	655	525	2180	630	1230	445	680	45
61	1380	470	460	2170	705	575	2430	710	1380	490	820	45
66	1430	470	460	2270	745	615	2530	750	1470	530	820	45
71	1590	510	500	2520	800	670	2780	800	1570	535	900	50

*Dimension 'H' can be flexible according to Technical Specifications.



*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	Low Speed Shaft					
	Solid Shaft				Hollow Shaft	
	WT(kg)	D_2	L_2	Key	WT(kg)	
22	465	100	180	28 x 16	442	Refer to page 21 and 22 for shaft dimensions
26	660	120	210	32 x 18	627	
32	1200	140	240	36 x 20	1140	
38	1800	170	270	40 x 22	1710	
45	2800	200	350	45 x 25	2660	
50	4250	220	350	50 x 28	3910	
56	5150	240	400	56 x 32	4738	
61	6950	270	450	63 x 32	6394	
66	8030	290	450	63 x 32	7388	
71	10500	310	500	70 x 36	9660	

UNIT : mm

Unit Size	Dimensions									Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	B	Liter
22	160	175	55	270	20	60	18	10	160	26
26	190	200	65	310	25	70	22	10	225	45
32	230	250	65	370	30	90	26	10	243	83
38	290	300	55	430	30	95	26	10	275	155
45	330	350	80	520	40	125	33	10	340	275
50	425	420	75	600	40	140	33	10	375	380
56	445	440	80	590	45	140	39	10	445	500
61	490	500	85	710	55	175	45	10	490	560
66	520	520	95	710	55	175	45	10	530	620
71	570	580	100	790	55	190	45	10	535	940

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size								
	Input rpm	Output rpm	18	22	26	32	38	45	50	56	61
			Mechanical Power Ratings								
5.6	1800	321	174	289	434	944	1676	-	-	-	-
	1200	214	115	192	289	630	1116	1826	2504	3480	-
	900	161	86	144	216	473	840	1370	1878	2610	3622
6.3	1800	286	150	216	325	787	1448	-	-	-	-
	1200	190	100	144	216	526	966	1543	2047	2936	-
	900	143	76	108	162	394	725	1158	1536	2202	3072
7.1	1800	254	174	289	434	944	1676	-	-	-	-
	1200	169	115	192	289	630	1117	1826	2504	3480	-
	900	127	86	144	216	473	840	1370	1878	2610	3622
8	1800	225	150	216	325	787	1448	-	-	-	-
	1200	150	100	144	216	526	966	1543	2047	2936	-
	900	113	76	108	162	394	725	1158	1536	2202	3072
9	1800	200	150	216	325	787	1448	-	-	-	-
	1200	133	100	144	216	526	966	1543	2047	2630	-
	900	100	76	108	162	394	725	1158	1536	1973	3072
10	1800	180	120	174	312	594	1070	1934	-	-	-
	1200	120	79	115	206	396	638	1291	1638	2332	-
	900	90	60	86	155	296	535	968	1229	1748	2363
11.2	1800	161	92	138	252	506	984	1512	1914	-	-
	1200	107	60	90	168	337	656	1008	1277	2016	2834
	900	80	46	67	126	252	492	756	958	1512	2126
12.5	1800	144	84	120	205	473	780	1236	1638	-	-
	1200	96	55	79	137	314	521	824	1092	1654	2252
	900	72	42	60	103	236	390	618	818	1241	1690
14	1800	129	84	120	205	473	780	1236	1638	-	-
	1200	86	55	79	137	314	521	824	1092	1550	2252
	900	64	42	60	103	236	390	618	818	1164	1690
16	1800	113	70	98	181	354	630	968	1402	1866	-
	1200	75	47	66	120	235	420	646	936	1243	1795
	900	56	36	49	90	178	314	485	702	934	1346
18	1800	100	55	76	149	282	511	835	1094	1622	-
	1200	67	36	50	100	180	341	557	730	1082	1465
	900	50	28	37	74	140	256	418	548	811	1098

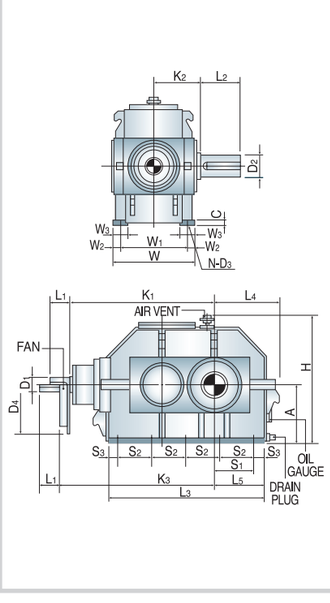
Thermal Ratings

UNIT : kW

Nominal Ratio	Speed	Unit Size								
	Input rpm	18	22	26	32	38	45	50	56	61
		Without Auxiliary Cooling								
5.6 - 11.2	1800	58	79	113	161	207	301	370	438	552
	1200	56	76	108	155	199	290	356	423	531
	900	53	72	103	146	188	274	336	399	502
12.5 - 18	1800	54	73	104	149	192	279	342	407	511
	1200	51	70	99	141	182	264	324	385	484
	900	49	66	94	134	172	251	308	366	460
		With Fan Cooling								
5.6 - 11.2	1800	102	139	197	282	362	526	647	769	966
	1200	95	129	184	263	338	491	630	717	902
	900	87	119	169	241	309	450	553	657	825
12.5 - 18	1800	94	128	183	260	335	488	599	711	895
	1200	87	118	168	239	308	448	550	654	823
	900	80	108	154	221	283	412	506	602	757

Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size								
		18	22	26	32	38	45	50	56	61
Permissible Torque Ratings (UNIT : kgm)	5.6	516	860	1289	2822	5014	8181	11121	15580	21619
	6.3	508	725	1088	2643	4868	7777	10315	14788	21358
	7.1	654	1090	1635	3578	6358	10372	14214	19754	27410
	8	645	921	1382	3357	6181	9875	13099	18778	26198
	9	725	1036	1554	3776	6954	11110	14736	18927	29472
	10	640	921	1650	3160	5705	10323	13099	18638	25187
	11.2	544	802	1504	3009	5874	9026	11433	18052	25387
	12.5	560	799	1375	3150	5197	8235	10905	16533	22514
	14	627	895	1540	3528	5820	9223	12222	17371	25215
	16	614	839	1535	3029	5362	8269	11973	15923	22964
	18	530	714	1428	2694	4904	8013	10523	15565	21068
Moment of Inertia GD² (UNIT : kgm²)	5.6	0.0706	0.1645	0.4639	1.1601	2.4982	5.5261	9.0766	17.4657	30.5083
	6.3	0.0610	0.1428	0.3951	1.0205	2.2210	4.8253	8.1854	15.1388	26.3525
	7.1	0.0646	0.1510	0.4204	1.0546	2.3083	4.9348	8.4640	16.0737	28.7578
	8	0.0562	0.1322	0.3602	0.9365	2.0688	4.3539	7.6944	14.0284	24.9501
	9	0.0534	0.1258	0.3386	0.9162	1.9653	4.2691	7.4031	13.5023	23.9298
	10	0.0471	0.1081	0.2902	0.8045	1.6395	3.9054	6.6134	11.7655	20.8712
	11.2	0.0363	0.0836	0.2483	0.6421	1.4925	3.2546	5.4559	10.1693	17.5345
	12.5	0.0309	0.0682	0.1964	0.5456	1.1750	2.7397	4.5798	7.9509	14.2631
	14	0.0301	0.0656	0.1911	0.5315	1.1395	2.6079	4.4103	7.8247	13.8373
	16	0.0251	0.0542	0.1623	0.4326	0.8697	1.8764	2.9359	5.9403	10.4842
	18	0.0213	0.0467	0.1376	0.3632	0.7371	1.5798	2.4505	4.9663	8.7378



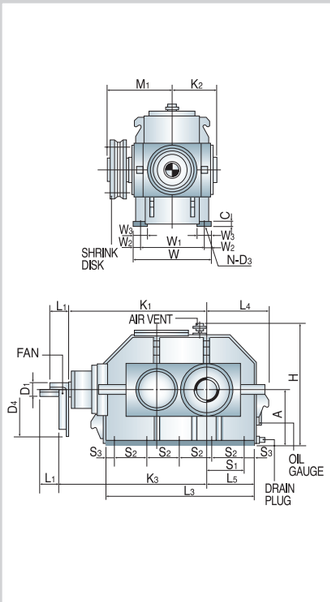
UNIT : mm

Unit Size	High Speed Shaft					
	Ratio : 5.6 - 10			Ratio : 11.2 - 18		
	D_1	L_1	Key	D_1	L_1	Key
18	45	70	14 x 9	35	60	10 x 8
22	50	80	14 x 9	40	70	12 x 8
26	60	105	18 x 11	55	90	16 x 10
32	75	120	20 x 12	70	120	20 x 12
38	90	160	25 x 14	80	140	22 x 14
45	100	180	28 x 16	90	160	25 x 14
50	110	180	28 x 16	100	180	28 x 16
56	130	210	32 x 18	110	180	28 x 16
61	140	240	36 x 20	120	210	32 x 18

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	W	C
18		540	180	560	270	190		200	452	292	20
22		620	200	690	310	230		250	561	332	20
26		715	240	790	340	260		280	640	408	28
32		890	280	940	380	300		355	765	490	28
38		1050	310	1110	450	350		400	860	530	28
45		1195	370	1315	510	410		500	1019	650	35
50		1315	400	1500	575	455		560	1119	710	35
56		1485	440	1600	620	500		630	1239	780	40
61		1630	500	1790	670	550		710	1357	900	45

*Dimension 'H' can be flexible according to Technical Specifications.



*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	Low Speed Shaft					
	Ratio : 2 - 2.8				Hollow Shaft	
	WT(kg)	D_2	L_2	Key	WT(kg)	
18	315	80	140	22 x 14	289	Refer to page 21 and 22 for shaft dimensions
22	490	100	180	28 x 16	450	
26	770	120	210	32 x 18	707	
32	1340	140	240	36 x 20	1230	
38	2015	170	270	40 x 22	1850	
45	3270	200	350	45 x 25	3002	
50	4240	220	350	50 x 28	3893	
56	5580	240	400	56 x 32	5123	
61	7450	270	450	63 x 32	6840	

UNIT : mm

Unit Size	Dimensions								Fan Cooling	Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	D_4	K_3	Liter
18	160	125	30	260	16	56	14	10	430	630	11
22	195	155	35	290	21	66	18	10	430	710	19
26	225	180	35	355	26.5	89	22	10	480	805	28
32	250	210	50	430	30	95	26	10	575	980	55
38	305	255	45	465	32.5	100	26	10	635	1140	75
45	362.5	305	47.5	570	40	120	33	10	735	1285	150
50	385	340	70	640	35	125	33	10	735	1405	220
56	440	370	60	690	45	135	39	10	830	1575	290
61	475	410	75	800	50	155	45	10	830	1720	420

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size										
	Input rpm	Output rpm	18	22	26	32	38	45	50	56	61	66	71
			Mechanical Power Ratings										
20	1800	90	54	115	180	304	456	950	1484	1758	-	-	-
	1200	60	36	77	120	209	310	660	990	1170	1914	-	2622
	900	45	26	56	90	152	228	474	742	876	1434	-	1968
22.4	1800	80	54	115	180	304	456	950	1402	1650	-	-	-
	1200	54	36	77	120	209	310	660	936	1099	1732	-	2172
	900	40	26	56	90	152	228	474	700	824	1232	-	1624
25	1800	72	54	108	180	296	456	854	1178	1674	-	-	-
	1200	48	36	72	120	198	310	588	786	1116	1560	1632	2094
	900	36	26	54	90	148	228	426	588	836	1168	1224	1578
28	1800	64	54	90	168	288	456	758	1122	1302	-	-	-
	1200	43	36	60	110	192	310	522	746	869	1368	1584	1946
	900	32	26	44	84	144	228	378	560	650	1026	1188	1459
31.5	1800	57	46	82	151	228	341	690	996	1170	-	-	-
	1200	38	30	54	92	156	234	475	666	780	1230	1418	1734
	900	29	22	41	74	114	168	344	498	584	922	1064	1298
35.5	1800	51	44	72	122	228	341	650	890	1046	-	-	-
	1200	34	29	48	82	151	234	432	594	696	1112	1286	1490
	900	25	22	36	60	114	168	324	444	522	834	965	1164
40	1800	45	36	66	113	198	324	588	792	924	1484	1698	-
	1200	30	24	44	72	132	218	384	528	614	990	1133	1368
	900	23	17	32	55	98	162	312	396	462	742	848	1026
45	1800	40	28	56	96	144	264	510	701	824	1310	1518	1730
	1200	27	18	38	65	96	178	341	468	550	874	1010	1152
	900	20	13	36	48	72	132	254	348	412	654	758	864
50	1800	36	22	50	84	125	214	462	636	742	1188	1296	1650
	1200	24	14	32	58	84	142	307	422	493	792	864	1099
	900	18	11	25	42	61	108	170	317	371	594	648	824
56	1800	32	22	48	85	125	214	408	552	642	1046	1212	1468
	1200	21	14	31	56	84	142	270	422	427	696	808	978
	900	16	11	24	42	61	108	204	276	320	522	606	732
63	1800	29	17	42	73	112	188	364	486	569	924	1014	1278
	1200	19	11	28	48	73	125	242	324	378	614	676	852
	900	14	8	20	36	55	94	180	242	283	462	506	638
71	1800	25	17	36	60	100	188	265	386	468	726	924	1104
	1200	17	11	24	40	66	125	176	257	312	482	614	737
	900	13	8	17	30	50	94	132	192	235	362	462	550
80	1800	23	14	31	54	85	154	228	346	420	650	824	990
	1200	15	10	20	36	56	103	151	229	280	432	550	660
	900	11	7	16	26	42	77	114	173	210	324	412	494

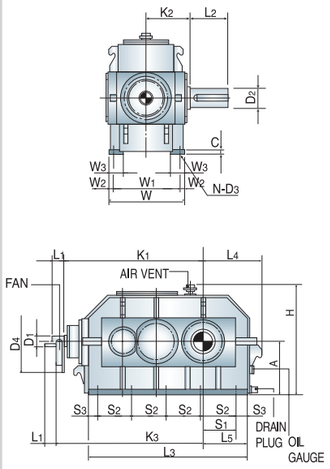
Thermal Ratings

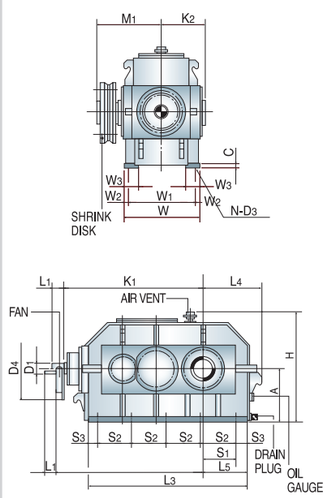
UNIT : kW

Ratio	Speed	Unit Size										
	Input rpm	18	22	26	32	38	45	50	56	61	66	71
		Without Auxiliary Cooling										
20 - 35.5	1800	42	61	83	115	155	225	290	314	425	460	546
	1200	39	57	78	108	145	210	271	293	396	430	510
	900	37	54	73	101	136	197	254	275	372	403	478
40 - 80	1800	37	54	74	102	138	199	257	278	376	408	484
	1200	35	51	70	96	130	188	242	261	354	384	455
	900	34	49	66	92	124	179	231	250	338	366	434
		With Fan Cooling										
20 - 35.5	1800	64	92	125	173	233	337	435	471	637	691	819
	1200	58	83	113	157	211	306	394	426	576	625	742
	900	52	76	103	142	192	278	358	387	523	567	673
40 - 80	1800	56	81	111	153	207	299	385	417	564	611	726
	1200	51	74	101	140	188	273	352	380	515	558	661
	900	48	69	94	129	174	252	325	352	476	516	613

Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size										
		18	22	26	32	38	45	50	56	61	66	71
Permissible Torque Ratings (UNIT : kgm)	20	563	1202	1919	3249	4861	10106	15811	18676	30573	-	41957
	22.4	630	1347	2149	3639	5444	11318	16705	19685	29427	-	38769
	25	704	1439	2398	3933	6076	11353	15670	22290	31116	32619	42053
	28	788	1325	2507	4298	6805	11282	16727	19413	30624	35459	43554
	31.5	725	1370	2498	3828	5641	11564	16722	19623	30946	35741	43699
	35.5	817	1362	2271	4314	6358	12261	16802	19754	31561	36511	44049
	40	716	1382	2354	4196	6908	13304	16885	19699	31621	36175	43748
	45	633	1727	2303	3454	6332	12203	16693	19744	31372	36380	41446
	50	595	1343	2239	3262	5756	9082	16885	19763	31660	34538	43940
	56	666	1433	2507	3653	6447	12178	16476	19126	31161	36175	43697
	63	564	1370	2418	3707	6286	12088	16279	19019	31027	34008	42873
	71	636	1272	2271	3815	7084	9990	14532	17801	27428	34967	41597
	80	614	1330	2251	3582	6549	9722	14736	17909	27630	35101	42162
Moment of Inertia GD² (UNIT : kgm²)	20	0.0134	0.0429	0.0846	0.1942	0.4998	1.3318	2.689	2.9714	6.4464	6.4241	10.8962
	22.4	0.0130	0.0419	0.0814	0.1916	0.4840	1.3206	2.6444	2.8797	6.2917	6.2369	10.5989
	25	0.0117	0.0375	0.0732	0.1701	0.4377	1.1652	2.3847	2.6043	5.5013	5.6699	9.5846
	28	0.0115	0.0369	0.0712	0.1683	0.4276	1.1579	2.3562	2.5459	5.4028	5.5935	9.3953
	31.5	0.0100	0.0321	0.0616	0.1462	0.3669	1.0201	2.0900	2.2629	4.7366	4.8875	8.4537
	35.5	0.0095	0.0311	0.0576	0.1368	0.338	0.9810	1.955	2.1199	4.5766	4.6973	8.0101
	40	0.0079	0.0265	0.0503	0.1167	0.2888	0.8543	1.6126	1.7583	4.1873	4.2811	7.0806
	45	0.0060	0.0209	0.0389	0.0903	0.2471	0.6814	1.3886	1.5862	3.4419	3.5161	5.8254
	50	0.0051	0.0174	0.0329	0.0734	0.1952	0.5761	1.1609	1.2474	2.8831	2.9431	4.8646
	56	0.0048	0.0167	0.0317	0.0696	0.1887	0.5538	1.1150	1.1935	2.7186	2.7734	4.6322
	63	0.0040	0.0137	0.0263	0.0576	0.1611	0.4519	0.8282	0.9166	1.9729	2.0160	3.1268
	71	0.0040	0.0136	0.0263	0.0570	0.1597	0.4467	0.8212	0.9116	1.9563	2.0014	3.1086
	80	0.0027	0.0113	0.0221	0.0489	0.1356	0.3741	0.6832	0.7698	1.6381	1.6734	2.5851





*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	High Speed Shaft					
	Ratio : 20 - 40			Ratio : 45 - 80		
	D_1	L_1	Key	D_1	L_1	Key
18	28	50	8 x 7	22	35	6 x 6
22	35	60	10 x 8	28	50	8 x 7
26	45	70	14 x 9	35	60	10 x 8
32	50	80	14 x 9	40	70	12 x 8
38	60	105	18 x 11	55	90	16 x 10
45	75	120	20 x 12	70	120	20 x 12
50	80	140	22 x 14	75	120	20 x 12
56	90	160	25 x 14	80	140	22 x 14
61	100	180	28 x 16	90	160	25 x 14
66	100	180	28 x 16	90	160	25 x 14
71	110	180	28 x 16	100	180	28 x 16

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	L_6	A	H	W	C
18		580	170	630	265	185		200	445	270	20
22		685	190	780	295	215		250	525	310	20
26		805	215	890	335	255		280	640	360	28
32		940	250	1070	395	295		355	740	430	28
38		1100	285	1260	445	345		400	870	490	28
45		1340	350	1500	530	410		500	1030	600	35
50		1550	390	1760	620	500		560	1125	680	35
56		1605	390	1840	645	525		630	1230	680	40
61		1805	460	2090	715	575		710	1370	820	45
66		1855	460	2180	755	615		750	1470	820	45
71		2020	500	2420	810	670		800	1570	900	50

*Dimension 'H' can be flexible according to Technical Specifications.

UNIT : mm

Unit Size	Low Speed Shaft				
	Solid Shaft				Hollow Shaft
	WT(kg)	D_2	L_2	Key	WT(kg)
18	305	80	140	22 x 14	280
22	470	100	180	28 x 16	431
26	750	120	210	32 x 18	689
32	1160	140	240	36 x 20	1065
38	1815	170	270	40 x 22	1666
45	3175	200	350	45 x 25	2915
50	4285	220	350	50 x 28	3934
56	5035	240	400	56 x 32	4623
61	7430	260	450	56 x 32	6821
66	8400	280	450	63 x 32	7712
71	10750	300	500	70 x 36	9869

Refer to page 21 and 22 for shaft dimensions

UNIT : mm

Unit Size	Dimensions								Fan Cooling	Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N	D_4	K_3	Liter
18	140	180	45	230	20	55	14	8	310	670	12
22	155	165	60	270	20	60	18	10	335	775	24
26	190	190	65	310	25	70	22	10	430	895	41
32	220	230	75	370	30	90	26	10	430	1030	65
38	255	270	90	430	30	95	26	10	480	1190	100
45	340	340	70	520	40	125	33	10	575	1430	180
50	420	400	80	600	40	140	33	10	635	1640	270
56	445	420	80	590	45	140	39	10	735	1695	330
61	490	480	85	710	55	175	45	10	735	1895	500
66	525	500	90	710	55	175	45	10	735	1945	560
71	580	560	90	790	55	190	45	10	735	2110	720

*Dimension 'D_4' can be flexible according to Technical Specifications.

Permissible Transmitting Power Ratings

UNIT : kW

Nominal Ratio	Speed		Gear Unit Size									
	Input rpm	Output rpm	22	26	32	38	45	50	56	61	66	71
			Mechanical Power Ratings									
80	1800	23	34	58	94	154	286	404	483	761	877	1059
	1200	15	23	38	63	103	190	269	322	508	585	706
	900	11	17	29	47	77	142	202	242	381	438	529
90	1800	20	27	42	72	107	224	350	413	676	764	927
	1200	13	18	28	48	72	149	233	276	451	509	618
	900	10	13	21	36	54	112	174	207	338	382	463
100	1800	18	27	42	72	107	225	333	391	616	716	773
	1200	12	18	28	48	72	151	221	261	411	477	515
	900	9	13	21	36	54	113	166	195	308	358	387
112	1800	16	25	42	70	108	202	279	396	553	579	746
	1200	11	17	28	47	72	135	186	264	369	386	497
	900	8	12	21	35	54	101	139	198	277	289	374
125	1800	14	21	40	68	108	180	265	309	487	564	693
	1200	10	14	27	46	72	120	177	206	324	376	462
	900	7	11	20	34	54	90	133	154	243	282	347
140	1800	13	19	36	54	81	164	237	279	440	508	620
	1200	9	13	24	36	54	110	158	186	293	339	413
	900	6	10	18	27	40	82	119	139	220	254	310
160	1800	11	17	29	53	80	153	210	245	392	453	538
	1200	8	11	19	36	53	101	139	163	262	303	359
	900	6	9	14	27	40	76	104	123	196	227	269
180	1800	10	16	26	47	76	139	186	218	350	400	483
	1200	7	10	17	31	51	92	125	145	233	267	322
	900	5	8	13	23	38	69	93	109	174	200	242
200	1800	9	14	23	34	63	122	167	197	312	362	412
	1200	6	9	15	23	42	81	111	131	208	241	274
	900	5	7	11	17	31	61	84	98	156	181	206
224	1800	8	12	20	30	51	110	150	175	281	306	391
	1200	5	8	13	20	34	73	100	117	187	204	260
	900	4	6	10	15	25	54	75	88	140	153	195
250	1800	7	11	20	30	51	97	131	152	248	288	348
	1200	5	7	13	20	34	65	87	101	166	192	232
	900	4	6	10	15	25	48	66	76	124	144	174
280	1800	6	10	17	26	48	87	116	135	220	242	305
	1200	4	6	11	18	30	58	78	90	147	161	204
	900	3	5	9	13	22	43	58	68	110	121	152
315	1800	6	8	14	24	45	63	92	112	173	221	263
	1200	4	6	9	16	30	42	61	75	116	147	176
	900	3	4	7	12	22	31	46	56	87	110	132
355	1800	5	8	13	20	37	54	83	100	155	197	236
	1200	5	5	9	13	25	37	55	67	103	131	157
	900	3	4	6	10	19	27	41	50	78	98	119

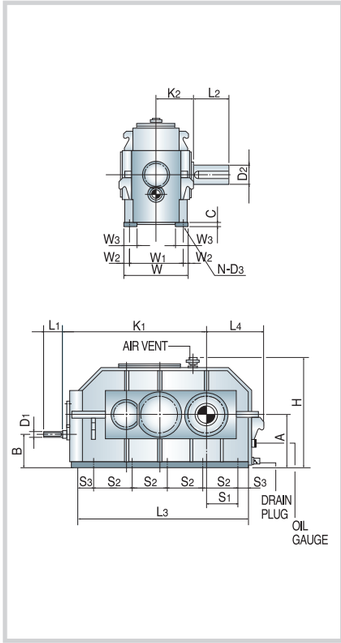
Thermal Ratings

UNIT : kW

Ratio	Speed	Unit Size									
	Input rpm	22	26	32	38	45	50	56	61	66	71
		Without Auxiliary Cooling									
80 - 200	1800	41	56	81	110	156	200	222	291	317	376
	1200	38	52	73	102	145	187	207	272	296	351
	900	35	49	68	96	136	176	194	256	278	330
224 - 355	1800	36	50	70	98	139	178	198	259	282	335
	1200	33	47	66	92	130	167	186	243	265	315
	900	31	45	63	87	124	159	177	232	253	300
		With Fan Cooling									
80 - 200	1800	62	84	119	166	235	302	335	438	478	567
	1200	56	76	108	150	213	199	304	399	434	515
	900	51	69	98	136	193	249	276	363	394	468
224 - 355	1800	55	74	105	147	209	268	298	390	425	504
	1200	50	67	95	133	190	243	271	354	386	458
	900	46	62	87	123	175	224	250	327	356	423

Permissible Torque Ratings / GD²

	Nominal Ratio	Unit Size									
		22	26	32	38	45	50	56	61	66	71
Permissible Torque Ratings (UNIT : kgm)	80	1437	2461	4013	6550	12146	17234	20604	32496	37392	45151
	90	1295	2025	3441	5151	10731	16741	19817	32408	36629	44427
	100	1447	2265	3855	5803	12003	17726	20827	32830	38156	41256
	112	1514	2628	4175	6410	12019	16649	23682	33030	34544	44604
	125	1431	2663	4561	7254	12023	17687	20568	32392	37559	46204
	140	1447	2660	4073	6010	12242	17695	20811	32830	37838	46295
	160	1450	2442	4553	6868	12973	17806	20986	33450	38664	45914
	180	1502	2504	4464	7297	13307	17885	20830	33482	38346	46359
	200	1463	2448	3688	6677	13036	17806	20986	33227	38633	43879
	224	1407	2350	3543	6054	12998	17984	21011	33475	36502	46473
	250	1471	2683	3975	6757	12917	17488	20270	32989	38354	46502
	280	1447	2560	3940	6677	12909	17361	20254	32941	36057	46405
	315	1402	2379	4006	7512	10517	15525	18780	29046	37059	44320
	355	1411	2427	3838	7055	10159	15521	18907	29348	37249	44869
Moment of Inertia GD² (UNIT : kgm²)	80	0.0085	0.0166	0.0215	0.0465	0.1149	0.2684	0.3153	0.6431	0.7768	0.9939
	90	0.0042	0.0080	0.0187	0.0403	0.0995	0.2323	0.2728	0.5562	0.6719	0.8597
	100	0.0032	0.0062	0.0162	0.0391	0.0967	0.2255	0.2648	0.5396	0.6519	0.8340
	112	0.0031	0.0060	0.0156	0.0379	0.0937	0.2186	0.2567	0.5233	0.6322	0.8089
	125	0.0026	0.0052	0.0138	0.0337	0.0832	0.1946	0.2285	0.4657	0.5626	0.7199
	140	0.0026	0.0050	0.0139	0.0325	0.0806	0.1885	0.2214	0.4517	0.5456	0.6982
	160	0.0022	0.0042	0.0116	0.0281	0.0700	0.1639	0.1926	0.3925	0.4746	0.6073
	180	0.0020	0.0038	0.0064	0.0255	0.0650	0.1522	0.1629	0.3653	0.4436	0.5648
	200	0.0016	0.0030	0.0088	0.0211	0.0538	0.1262	0.1484	0.3031	0.3763	0.4687
	224	0.0012	0.0024	0.0070	0.0168	0.0429	0.1009	0.1187	0.2423	0.2928	0.3749
	250	0.0008	0.0020	0.0058	0.0136	0.0355	0.0836	0.0985	0.2010	0.2429	0.3111
	280	0.0006	0.0016	0.0054	0.0126	0.0333	0.0784	0.0925	0.1885	0.2283	0.2922
	315	0.0004	0.0012	0.0044	0.0104	0.0275	0.0650	0.0766	0.1564	0.1885	0.2425
	355	0.0002	0.0012	0.0042	0.0098	0.0263	0.0624	0.0732	0.1484	0.1805	0.2327



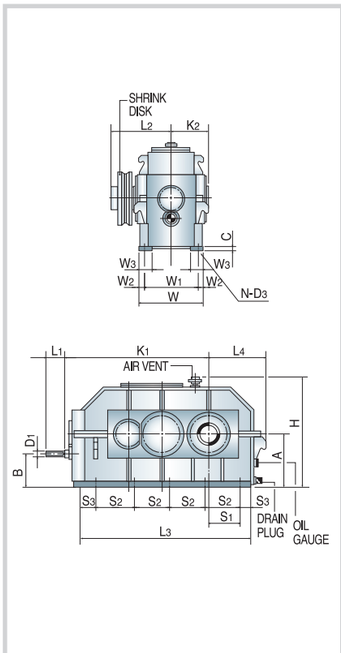
UNIT : mm

Unit Size	High Speed Shaft					
	Ratio : 80 - 200			Ratio : 224 - 355		
	D_1	L_1	Key	D_1	L_1	Key
22	24	40	8 x 7	22	35	6 x 6
26	32	55	10 x 8	28	50	8 x 7
32	32	55	10 x 8	28	50	8 x 7
38	42	70	12 x 8	32	60	10 x 8
45	48	80	14 x 9	38	60	10 x 8
50	55	90	16 x 10	42	70	12 x 8
56	60	105	18 x 11	42	70	12 x 8
61	65	105	18 x 11	48	80	14 x 9
66	75	120	20 x 12	60	105	18 x 11
71	90	160	25 x 14	65	105	18 x 11

UNIT : mm

Unit Size	Dimensions										
	E	K_1	K_2	L_3	L_4	L_5	A	H	B	W	C
22		690	190	850	295	215	250	525	160	310	20
26		810	215	1010	335	255	315	640	203	360	28
32		950	250	1190	395	295	355	740	230	430	28
38		1110	285	1400	445	345	400	870	240	490	28
45		1330	350	1680	530	410	500	1030	315	600	35
50		1535	390	1970	620	500	560	1125	340	680	35
56		1590	390	2050	645	525	630	1230	410	680	40
61		1810	460	2310	715	575	710	1370	445	820	45
66		1860	460	2400	755	615	750	1470	485	820	45
71		2025	500	2610	810	670	800	1570	480	900	50

*Dimension 'H' can be flexible according to Technical Specifications.



*Shaft Tolerance $D_{1,2} \leq 80$=m6
$D_{1,2} > 80$=n6

UNIT : mm

Unit Size	Low Speed Shaft					
	Solid Shaft				Hollow Shaft	
	WT(kg)	D_2	L_2	Key	WT(kg)	
22	480	100	180	28 x 16	441	Refer to page 21 and 22 for shaft dimensions
26	690	120	210	32 x 18	635	
32	1260	140	240	36 x 20	1159	
38	1800	170	270	40 x 22	1656	
45	3100	200	350	45 x 25	2852	
50	4500	220	350	50 x 28	4140	
56	5300	240	400	56 x 32	4876	
61	7300	270	450	63 x 32	6716	
66	8000	280	450	63 x 32	7360	
71	10500	310	500	70 x 36	9660	

UNIT : mm

Unit Size	Dimensions										Oil Cap.
	S_1	S_2	S_3	W_1	W_2	W_3	D_3	N			Liter
22	105	210	110	270	20	60	14	8			38
26	150	200	105	310	25	70	22	10			57
32	200	250	95	370	30	90	26	10			98
38	245	300	100	430	30	95	26	10			165
45	290	360	120	520	40	125	33	10			310
50	355	420	145	600	40	140	33	10			400
56	400	450	125	590	45	140	39	10			500
61	440	510	135	710	55	175	45	10			570
66	475	530	140	710	55	175	45	10			600
71	505	570	165	790	55	190	45	10			900

*Dimension 'D_4' can be flexible according to Technical Specifications.

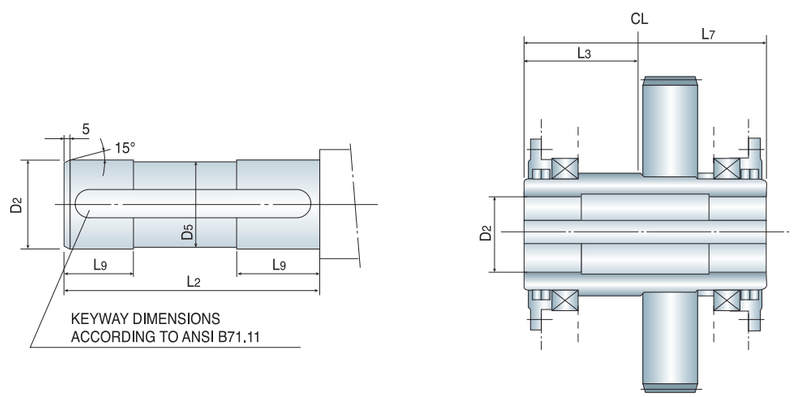
Low Speed Overhung Loads

UNIT : kg

Unit Size	Low Speed Shaft R.P.M							
	20	40	60	80	100	150	200	250
18	3942	3942	3942	3429	3071	2472	2082	1792
22	5770	5770	4899	4119	3502	3502	3198	2748
26	7108	6101	4921	4259	3529	3529	3302	3175
32	10002	8750	7498	6151	5298	4898	4082	3379
38	13000	11449	9789	7498	5702	4999	4999	4999
45	13898	13898	12501	8750	6999	6500	6001	-
50	18080	18080	13998	11970	8001	6999	-	-
56	19999	19999	14501	13000	8500	7979	-	-
61	21999	19187	15998	13499	8999	-	-	-
66	23002	21500	17001	13998	9498	-	-	-
71	24997	22199	17998	14501	10501	-	-	-

*NOTE : Overhung load value for worst condition.
Allowable overhung loads acting at the center of the standard shaft extension.
Overhung loads for 20 RPM and below use 20 RPM value.

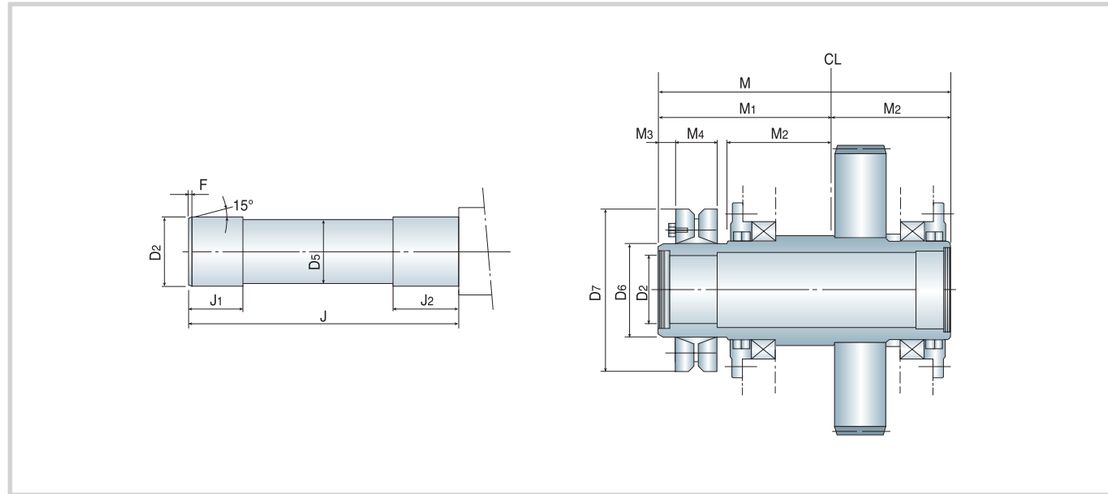
Hollow Shaft Design with Keyway



UNIT : mm

Unit Size	Double Reduction						Triple/Quadruple Reduction					
	D_2	L_2	L_7	L_3	D_9	D_5	D_2	L_2	L_7	L_3	D_9	D_5
18	90	357	360	180	85	87	90	337	340	170	85	87
22	110	397	400	200	115	107	110	377	380	190	115	107
26	130	477	480	240	130	127	130	427	430	215	130	127
32	155	557	560	280	150	152	156	155	500	250	150	152

Hollow Shaft Design with Shrink Disk



Double Reduction

UNIT : mm

Unit Size	Hollow Shaft										Shrink Disk		
	D_2	J	J_1	J_2	D_5	F	M	M_1	M_2	M_3	M_4	D_6	D_7
18	90	440	75	115	87	5	455	275	180	30	54	125	215
22	110	490	85	120	107	5	510	310	200	35	64	155	265
26	130	575	95	135	127	5	600	360	240	37	71	175	300
32	155	675	120	160	152	5	700	420	280	38	86	200	350
38	200	775	135	180	197	5	800	490	310	45	120	260	430
45	220	905	155	200	217	9	940	570	370	48	134	280	460
50	280	995	240	290	277	9	1040	640	400	60	162	350	580
56	310	1090	260	310	307	9	1135	695	440	67	168	390	660
61	340	1235	275	330	337	12	1280	780	500	70	188	420	690
66	350	1275	290	340	347	12	1320	810	510	72	202	440	750
71	370	1370	305	350	367	12	1420	860	560	73	202	460	770

Triple / Quadruple Reduction

UNIT : mm

Unit Size	Hollow Shaft										Shrink Disk		
	D_2	J	J_1	J_2	D_5	F	M	M_1	M_2	M_3	M_4	D_6	D_7
18	90	420	75	115	87	5	435	265	170	30	54	125	215
22	110	470	85	120	107	5	490	300	190	35	64	155	265
26	130	525	95	135	127	5	550	335	215	37	71	175	300
32	155	615	120	160	152	5	640	390	250	38	86	200	350
38	200	725	135	180	197	5	750	465	285	45	120	260	430
45	220	865	155	200	217	9	900	550	350	48	134	280	460
50	280	975	240	290	277	9	1020	630	390	60	162	350	580
56	310	990	260	310	307	9	1035	645	390	67	168	390	660
61	340	1155	275	330	337	12	1200	740	460	70	188	420	690
66	350	1175	290	340	347	12	1220	760	460	72	202	440	750
71	370	1250	305	350	367	12	1300	800	500	73	202	460	770

*NOTE : All data throughout the catalog subject to change without notice.

국내 사업장

16 공장

5 연구소

해외 사업장

35 제조법인

28 무역법인

29 무역사무소

GLOBAL NETWORK

국내사업장

섬유
울산공장 (나일론/폴리에스터 칩, 나일론원사)
구미공장 (스판덱스, 폴리에스터원사, 폴리에스터 칩)
대구공장 (염색가공)

중공업
창원공장 (변압기, 차단기, 전동기)
세종공장 (용접기, 태양광 인버터)
효성굿스프링스 창원공장 (펌프)

산업자재
울산공장 (타이어코드지, 산업용원사, 아라미드, PET BCF)
안양공장 (롤 카페트, 자동차용 카페트, 나일론 BCF)
경주공장 (스틸코드)
대전공장 (타일 카페트, PP BCF)
전주공장 (탄소섬유)

화학
용연공장 (PP/DH, TPA, 폴리케톤, NF3, TAC필름, PET필름)
대전공장 (Nylon필름)
구미공장 (PET필름, Nylon필름)
옥산공장 (TAC필름)

정보통신
효성티앤에스 구미공장 (금융자동화기기)

북미

USA
Hyosung Holdings U.S.A., Inc. (Headquarter)
Hyosung Holdings U.S.A., Inc. (LA Office)
Hyosung U.S.A., Inc. (Headquarter)
Hyosung U.S.A., Inc. (Decatur Plant)
Hyosung U.S.A., Inc. (L.A. Office)
GST LLC - South Hill
GST Automotive Safety Components International LLC
GST U.S.A ., Holdings, Inc.
HICO America Sales and Technology, Inc.
Nautilus Hyosung America, Inc.
Nautilus Hyosung America, Inc. Global Software Center (Ohio, USA)

남미

BRAZIL
Hyosung Brasil Industria E Comercio De Fibras Ltda.
Hyosung Brasil Industria E Comercio De Fibras Ltda. (Sao Paulo Trading)
Hyosung Do Brasil Importadora E Exportadora Ltda

MEXICO
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Hyosung Mexico S. de R.L. de C.V.
Hyosung Mexico City S.A. de C.V.
GST Safety Textiles Mexico S. de R.L. de C.V.

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Hyosung TNC Corporation Panama Office

유럽

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Hyosung TNC Corporation Frankfurt Office
GST Global GmbH
GST GmbH - Maulburg
GST GmbH - Murg
GST GmbH - Bad Säckingen

ITALY
Hyosung Europe S.R.L.

LUXEMBOURG
Hyosung Luxembourg S.A.

POLAND
GST Automotive Safety Poland Sp.z o.o.

ROMANIA
GST Automotive Safety RO S.R.L.
GST Safety Textiles RO S.R.L.

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Hyosung Russia LLC.

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Hyosung Corporation Barcelona Office
Hyosung Corporation Madrid Office

TURKEY
Hyosung Istanbul Tekstil Ltd Sti
Hyosung Corporation Istanbul Office

UK
Hyosung Heavy Industries UK Branch

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Hyosung South Africa (Pty) Ltd.

아시아

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Hyosung Chemicals (Jiaxing) Co., Ltd.
Hyosung Spandex (Jiaxing) Co., Ltd.
Hyosung International Trade (Jiaxing) Co., Ltd.
Beijing Branch Company
Guangzhou Branch Company
Shanghai Branch Company
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Hyosung Spandex (Zhuhai) Co., Ltd.
Hyosung Spandex (Quzhou) Co., Ltd.
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Nantong Hyosung Transformer Co., Ltd.
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Hyosung Spandex Corporation Dongguan Office
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Hyosung Spandex Corporation Guangzhou Office
Hyosung Spandex Corporation Shanghai Office
Hyosung Spandex Corporation Shaoxing Office
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Hyosung Spandex Corporation Zhongshan Office
Zhangjiagang Xiao-Sha Coil Service Co., Ltd.
Hyosung Financial System Co., Ltd.
Hyosung Financial System (Huizhou) Co., Ltd.
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Hyosung India Pvt. Ltd.
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Hyosung Corporation India Pvt. Ltd. (Pune)
Hyosung TNS India Office (Mumbai)
Hyosung TNS India Office (Chennai)

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Hyosung Japan
Hyosung Japan Osaka Branch
Hyosung TNC Corporation (Kuala Lumpur Office)

MYANMAR
Hyosung Corporation Yangon Representative office
Hyosung TNC Corporation Yangon branch office

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Hyosung Heavy Industries Corporation Qatar Office

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Hyosung Heavy Industries Corporation
Saudi Arabia Office

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Hyosung TNC (Taiwan) Corporation Kaohsiung Office

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U.A.E.
Hyosung Heavy Industries Corporation
Abu Dhabi Office
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Hyosung Dong Nai Co., Ltd.
Hyosung Dong Nai Co., Ltd. (Hochiminh Trading)
Hyosung Vina Chemicals Co., Ltd.
Hyosung Quang Nam Co.,Ltd.
Hyosung Vina Construction Company Limited