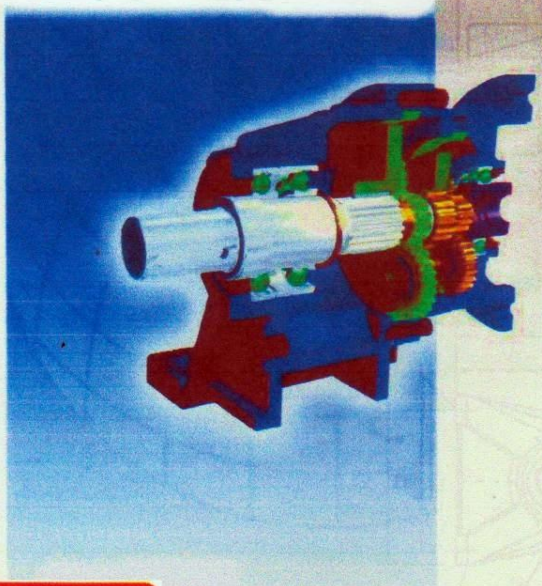
FORTA



FORTA *Planetary Gear*

Product Line of Planetary Gear

HM

Horizontal Type

(With Adaptor Flange)

HS

Horizontal Type

(with Input Shaft)

HV

Vertical Type

(With Adaptor Flange)

HW

Vertical Type

(with Input Shaft)

HRM

Special for Agitator

(With Adaptor Flange)

SH

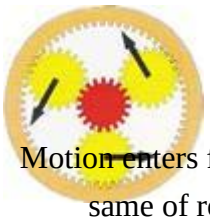
Special for Servo motor

(With Adaptor Flange)

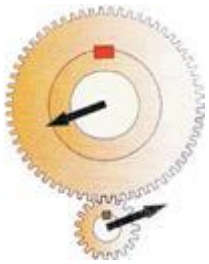
- Input Power 1/4 hp (0.18kw) to 150 hp (110kw)
- Ratio 1:3.5 to 1:2800
- Output Torque 17 kg-m (166.7N-m) to 6500kg-m (63739 N-m)
- Adapted to Standart motor IEC
- Many mounting position

Technical Features

High Loading Ability

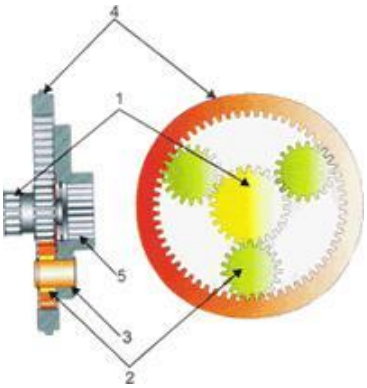


Every stage of module consists an internal gear meshing with 3 planetary gears, mounted on the planet carrier: these also engage with the sun pinion and the internal ring gear fixed to the stationary housing. Motion enters from the sun pinion and is transmitted out by the planet carrier maintaining the same of rotation. The planet carrier is connected to the output shaft of the gear unit. The design feature employed with the sun pinion floating among the planet gears, together with accurate machining of the part, grants uniform load distribution between the three planet gears.



Because of each planetary gear can contact more teeth at the same time and can share output radial force more stable therefore can afford high torque with high radial load on output shaft. Normal helical gears only have one point contact. Contact point easily broken the teeth by great impact on the contrary,

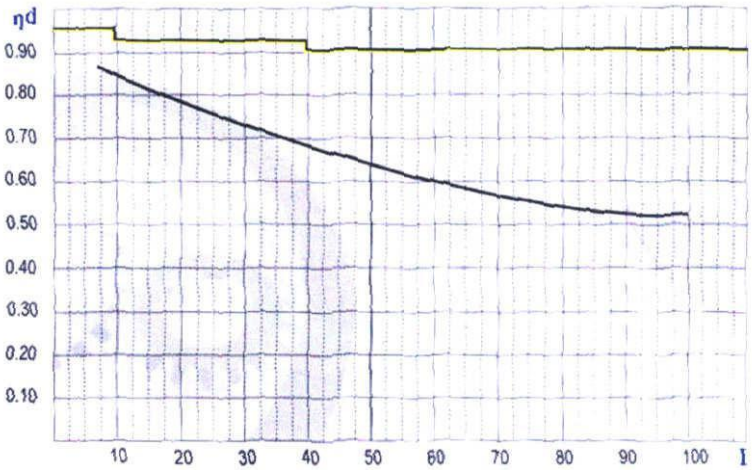
Transmission Method



The input power transmit through sun gear(1) and sun gear action to three or more planetary gears(2). All planetary gears turning along with static internal gear ring(3). All planetary gears were fixed onto a shaft pin and it will force planetary carrier(4) running as a circle movement. Therefore we get lower speed for planetary carrier and this carrier will transmit another stage gear(5) and on.

Efficiency

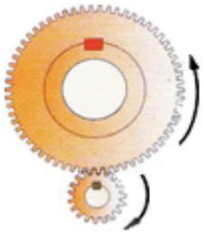
Stage	Reduction Ratio	Efficiency
L1	3.48 - 7.2	97%
L2	12.1 - 51.8	95%
L3	63 - 373	92%
L4	403 - 2687	90%



ηd : **Transmission Efficiency**
I : **Reduction Ratio**
└┘: **Efficiency of Planetary Gear**
└┘: **Efficiency of Helical Gear**

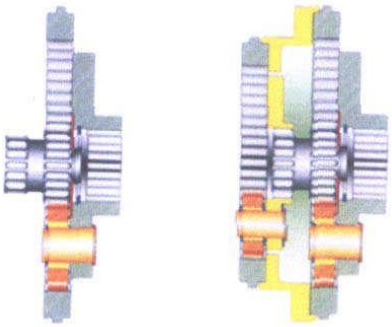
Technical Benefits

Small volume and light weight also can help designer do the good job, for helical gear only have one contact tooth and can't afford great impact torque.

Technical Data Compareration			
Specification	Type of Gear	 **Planetary Gear**	 **Helical Gear**
Ratio 1		5.2	5.25
Output Torque Nm		10000	10000
Gear Data	Module	4	6
	Teeth Z1	15	12
	Teeth Z2	63	63
	Lead Angle β	/	20
	Gear Width	60	80
Volume		6000	13000
Weight Kg		145	320

Only high quality material are used, with all gear's made from Ni-Cr-Mo alloy steel, planet carriers in nodular cast iron or steel, and housing in nodular or good quality grey cast iron, as necessary to enable them to with stand stresses from loads on the output shaft.
The planet gears run on needle roller bearings whist generally roller bearings are used on output shaft.

Various combination ratio



The planetary gear units have modular composition in ratio for each stages, also can joint into 1 to 4 reduction stages with various of ratio. Base on 9 different frame size, each one characterized by a different level of transmissible torque and available with various reduction ratios.
Planetary gear can easily reach high reduction ratio by increase planetary reduction stages.

For example: If you need ratio 1/30.7 then only need combine first stage ratio with 1/4.26 times second stage ratio with 1/7.2. You will get total ratio 1/30.7. It's very easy assembly and maintenance.

Maintenance

The planetary units do not require any specific maintenance procedures: however it is necessary to plan periodic inspections to avoid any lost efficiency in the unit. Special care must given to the lube oil (see “lubrication”): the oil level must be checked regularly and topped up as necessary. Remember also to avoid mixing oils of different type and in case of doubt, change the oil completed. Our gear units are shipped with lubrication oil; remember to fill them to correct level before they are put into service.

When the units must be store for a long period of time, particularly in humidity conditions. Fill them completely with oil and protect the machined part with rust inhibitors.

Oil should be change when hot to prevent build up of sludge deposit. It is advisable to check oil level at least once per month. If more than 10% of total oil capacity has to added. Check for oil leaks. Do not mix oil different types even of the same make. Never mix mineral and synthetic oils.

Gear Lubrication

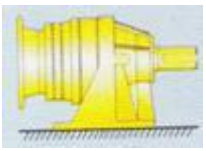
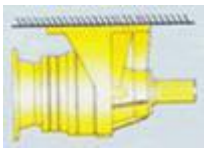
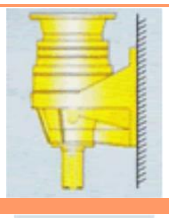
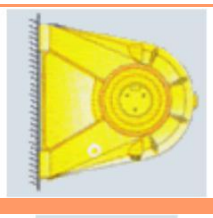
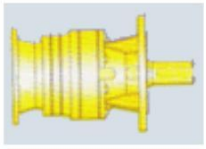
Suitable gear lubrication oil will increase gear surface contact running and extension gears, bearings & other parts life. Please reference following table of lubrication gear oil for your reducers.

Load	Ambient	SHELL OIL	MOBIL OIL	中国石油
Normal Load	-30℃ ~ 5℃	Omala oil 68	Mobil Comp 629	国光牌极压机油 HD-68
	5℃ ~ 40℃	Omala oil R220	Mobil Comp 632 600W Cylinder oil	国光牌极压机油 HD-220
	40℃ ~ 65℃	Omala oil R320	Mobil Comp 634 600W Cylinder oil	国光牌极压机油 HD-320
Heavy Load	-30℃ ~ 5℃	Omala oil 150	Mobil Comp 632	国光牌极压机油 HD-150
	5℃ ~ 40℃	Omala oil R320	Mobil Comp 634	国光牌极压机油 HD-320
	40℃ ~ 65℃	Omala oil R68	Mobil Comp 636	国光牌极压机油 HD-680

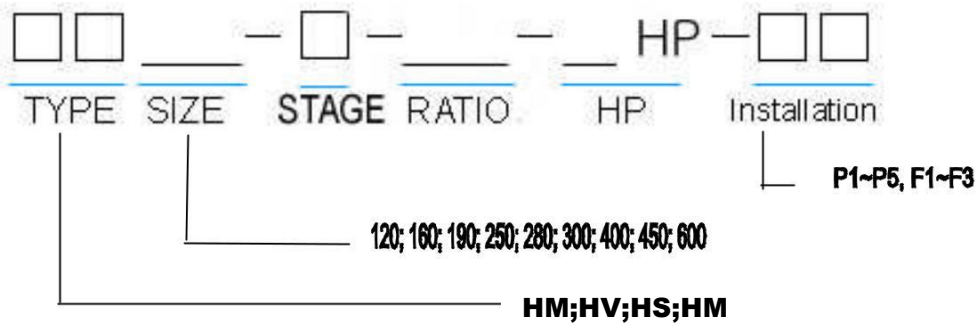
REMARK:

1. Max surface temperature allow to reach 80℃
2. Please change lub-oil for first 300 running hours and after so on for another 2500 running hours or at least every 12 months.
3. These intervals may be modified, depending on actual operating conditions. During oil change, we recommend that the inside of the gear case is flushed out with flushing fluid recommended by lubricant manufacturer.

Installation Type

Installation	Code	Installation	Code	Installation	Code
	P1		P2		P3
	P4		P5		F1
	F2		F3		

Order Code



Various Combination

Our planetary gear reducer can match with various combination with other transmission products. Such as: AC Motors, DC Motors, Servo Motors, HYD Motors, Worm Gear Reducers, DISCO Variators, Belt Variators...etc..

PLEASE CONTACT US OR OUR AGENTS FOR PRODUCE SPECIAL SPECIFICATION REDUCERS.

Quality Warranty

Every planetary gear reducer have passed our quality control. We are committed to delivery high quality product and have to improve our engineering capabilities with extensive machining to meet out customer satisfaction.

For any industrial application with proper selection and maintenance can get our standard warranty for 2 years. Evenly the end-user could get life-time for many years.

TABLE 1: O.H.L. Factor Table

Sprocket	1
Gear	1.25
V-Belt	1.5
Flat-Belt	2.5

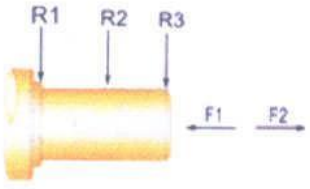
TABLE 2: Load Service Factor Table

Prime Mover	**Driven Machine Load Classification**	**Duration of Service Per Day**			
		Occasional 0.5hrs.	Intermittent 2 hrs.	8 ~ 10hrs.	10 ~ 24hrs.
Electric Motor	**Uniform (U)**	0.8	0.9	1	1.25
	Medium (M) Shock	0.9	1	1.3	1.75
	Heavy (H) Shock	1	1.5	1.75	2

TABLE 3: Radial and Axis Load Table

Frame Size	R1	R2	R3	F1	F2
120	1000	600	420	950	600
160	1360	800	560	1100	800
190	1900	1100	750	2000	1500
250	1900	1100	750	2000	1500
280	6000	3800	2800	5500	4400
300	6000	3800	2800	5500	4400
400	9500	4500	3500	9000	5000
450	17000	11000	8000	10000	6000
600	32000	21000	16000	20000	15000

MAX. LOAD OF RADIAL AND AXIS (Kg)



Technical Data

Nominal reduction ratio : i_n. The nominal reduction ratio provided by R20 series is shown in the table on pages _ _ along with the relevant i_{eff} Value.

Output limit torque : $T_{2\ Lim}$ (Kgm). Output torque value calculated for gear stresses corresponding to the limit value.

Effective ratio : i_{eff}. Actual reduction ratio provided by our standard execution for any size of gear unit.

Maximum output speed : $N_2(max)$ maximum allowable speed for intermittent duty, limited by the peripheral velocity of gears and bearings. The practical operational speed must be chose taking into account life requirements, proper lubrication, working temperature, (in this connection, contact SKT Planetary Gear in case of right angle units with continuous input speed above 1500 rpm).

Efficiency: This is normally quite high (0.97~ 0.95 for each stage, for middle value of torque and speed), but reduces with an increase in speed and decrease in output torque. Particular care should be taken, therefore, on applications involving fractional horse power especially where a right angle drive in concerned.

Service Factor s.f.: Approximate multiplication coefficient. It has been introduced to take into account the characteristics and working hours per day of the driven machines. The table on page _ _ into account the frequency of starts.

selection base on input 1500 Rpm — Size 160

stage

ratio i_n	$T_{2\ Lim}$ Kgm	ratio i_{eff}	out rpm N_2	P_2 Hp	s.f. (P_2/P_1)				
					0.25Hp	0.5Hp	1 Hp	2 Hp	3 Hp
3.5	35	3.48	431	19.61	78.44	39.22	19.61	9.81	6.54
4									
4.5	60	4.26	352	27.46	109.85	54.93	27.46	13.73	9.15
5.5	45	5.77	260	15.21	60.83	30.41	15.21	7.60	5.07
6.3									
7.2	35	7.2	208	9.48	37.91	18.96	9.48	4.74	3.16
10	30	10.6	142	5.52	22.07	11.04	5.52	2.76	1.84

Technical Formula

$$HP = \frac{T \times N}{716.2}$$

HP = Horse Power(HP)
T = Torque(kg-m)
N = rpm

$$kW = \frac{T \times N}{974}$$

kW = Power(kilowatt)
T = Torque(kg-m)
N = rpm

$$kW = \frac{T \times N}{9550}$$

kW = Power(kilowatt)
T = Nm
N = rpm

Guidelines for

Selection of gear units

The suggestions for selection given below are valid for machine load classification. It is based upon the tables of limit torques, shown on pages _ _ which will also indicate the unit type dependant on the required reduction ratio. Once the preliminary selection has been made, further checks must be carried out to confirm that is falls within the following limitations:

- maximum permitted output speed (same tables, page 10-17)
- maximum permitted thermal rating (page 4)
- permissible radial/axial loads on the output shafts (page 6)

Dimensions of each gear unit are shown on pages 18-26 to enable verification that they fit within the available space.

Example 1

Input motor 1Hp, Rpm motor 1500Rpm, Ratio 1:30, Efficiency 100%, intermittent duty for 8 hours per day, load classification Medium. Foot mounted. (P1), Torque T_2 = ? Kg-m , Type of selection = ?

Selection 1:

- From above requirement Operation time 8 hours/day, load classification Medium (s.f. 1.3 on TABEL 2).
- Output torque requirement $\mathbf{T_2}$ = 1.3 x 14.31 kg-m = 18.60 kg-m
- Ratio 30 for power 1Hp.
- From selection table on page_ _ , $\mathbf{T_2}_{\text{ Lim}} \geq \mathbf{T_2}$; $\mathbf{T_2}_{\text{ Lim}} \geq$18.60 kg-m for 1Hp
- Type was selected to be type EM-160-2-30.7-1-P1; $\mathbf{T_2}_{\text{ Lim}} \geq$ 60kg.m; s.f. 3.8 for 1 Hp

$$HP = \frac{T \times N}{716.2}$$

$$T = \frac{716.2 \times 1}{1500} = 0.477 \text{ kg-m}$$

$$To = 0.477 \times 30 \times 100\% = 14.31 \text{ kg-m}$$

Example 2

Machine Application for mixer, mounting position face down (F3), load classification Medium 10 hours/day operation, Rpm motor 1500Rpm 50 hz , 4 pole, output speed 15 rpm, required output torque 150kg-m, T_2 = ? Kg-m , HP=?, Type of selection = ?

Solution:

- The above requirement Operation time 10 hours/day, load classification Medium (s.f. 1.3 on TABEL 2),
- Output torque requirement $\mathbf{T_2}$ = 1.3 x 150 kg-m = 195 kg-m
- $P2 > \frac{15 \times 150}{716.2} = 3.14$ Hp ; P_2 = s.f. x P_1 = 1.3 x 3.14 = 4 Hp

$$R = \frac{Nl}{N2}$$

- $R = \frac{1500}{15} = 100$; Ratio = 100
- From selection table on page --, $\mathbf{T_2}_{\text{ Lim}} \geq \mathbf{T_2}$; $\mathbf{T_2}_{\text{ Lim}} \geq$ 195 kg-m for 4Hp
- Type was selected to be Type VM-280-3-104-5-F3 s.f.1.2 for 5Hp
- or Type VM-250-3-104-3-F3 s.f. 1.5 for 3Hp

Load Classification

BUILDING MACHINERY

M Concrete mixers
M Hoist
M Road Construction Machinery

CHEMICAL INDUSTRY

U Agitators (liquid material)
M Agitators (semi-liquid material)
M Cooling drums
M Drying drums
M Mixers

CONVEYORS

M Apron conveyors
M Ballast
M Band pocket conveyors
U Belt conveyors (Bulk material)
M Belt conveyors (piece goods)
U Bucket conveyors for flour
M Chain conveyors
M Circular conveyors
M Goods lifts
M Link conveyors M
Screw conveyors
M Steel belt conveyors
M Trough chain conveyors

CRANES

M Derricking Jib Gear
U Hoist Gear
U Lifting gear M
Slewing gear
H Traveling gear

DREGGERS

H Bucked conveyors
H Bucked wheels
H Cutter heads
M Slewing gear

FOOD INDUSTRY MACHINERY

U Bottling and container filling machines
M Cane crushers
M Cane knives
H Cane mills
M Kneading Machines
M Mash tubs
U Packaging machines
M Sugar beet cutters
M Sugar beet washing machines

METAL ROLLING MILLS

H Billet shears
M Chain transfers H
Cold rolling mills
H Continuous casting plant
M Cooling beds
H Cropping shears
M Cross transfers
H Ingot handling machinery
H Ingot pushers
H Manipulators
H Plate shears
M Plate tillers
M Roller adjustment drives
M Roller Strengtheners
H Roller tables
H Sheet mills
M Trimming shears
H Tube welding machines
M Winding machines (strip and wire)
M Wire drawing benches

METAL WORKING MACHINES

H Forging presses
H Hammers
H Metal planning machines
H plate straightening machines
H Presses
H Punch presses
M Shears
M Sheet metal bending machines

PAPER MACHINES

M Calendars
H Couches
H Drying cylinders
H Glazing cylinders
M Pulps
H Pulp Grinders
H Suction rolls
H Wet presses
H Willows

RUBBER MACHINERY

H Extruders
M Mixers
H Pug mills
H Rolling mills

STONE AND CLAY WORKING MACHINES

H Ball mills
H Beater mills
H Breakers
H Brick presses
H Hammer mills
H Rotary ovens
H Tube mills

TEXTILE MACHINE

M Batchers
M Looms
M Printing and dyeing machines
M Willows

WATER TREATMENT

M Aerators
M Screw pumps

WOOD WORKING MACHINES

H Bakers
M Planning Machines
H Saw frames
U Wood working machine

selection base on input 1500 Rpm

Size 120

	ratio	$T_{2\ Lim}$	ratio	out rpm	P2	s.f. (P2/P1)	
	in	Kgm	i eff	N2	Hp	0.25Hp	0.5Hp
ge	3.5	17	3.57	420	9.29	37.14	18.57
	4						
	4.5	28	4.94	304	11.05	44.21	22.10
	5.5	20	5.78	260	6.75	26.99	13.49
	6.3						
	7.2	17	7.09	212	4.68	18.70	9.35
	10	17	9.37	160	3.54	14.15	7.08
ge	12.5	17	12.75	118	2.60	10.40	5.20
	15						
	18	28	17.6	85	3.10	12.41	6.20
	20	20	20.6	73	1.89	7.57	3.79
	24.6	28	24.4	61	2.24	8.95	4.48
	30.7	17	25.3	59	1.31	5.24	2.62
	31	28	28.5	53	1.92	7.66	3.83
	33.3	17	33.4	45	0.99	3.97	1.98
	35.5	35	35	43	1.95	7.80	3.90
	38						
	41.5	20	41	37	0.95	3.80	1.90
	43						
	45	20	46.3	32	0.84	3.37	1.68
	50	17	50.3	30	0.66	2.64	1.32
	54	17	54.16	28	0.61	2.45	1.22
3 ge	63	17	63	24	0.53	2.10	1.05
	69						
	72	17	73.7	20	0.45	1.80	0.90
	79						
	85	28	87.1	17	0.63	2.51	1.25
	90	17	90.4	17	0.37	1.47	0.73
	100	28	101.9	15	0.54	2.14	1.07
	113	28	120.5	12	0.45	1.81	0.91
	125	20	125	12	0.31	1.25	0.62
	140	28	141	11	0.39	1.55	0.77
	160	28	165	9.1	0.33	1.32	0.66
	180	28	173	8.7	0.32	1.26	0.63
	200	28	202.4	7.4	0.27	1.08	0.54
	224	28	228.7	6.6	0.24	0.95	0.48
	250	20	248.3	6.0	0.16	0.63	0.31
	280	28	267.5	5.6	0.20	0.82	0.41
	300	20	313	4.8	0.12	0.50	0.25
	321	17	356.4	4.2	0.09	0.37	0.19
	388	17	383.9	3.9	0.09	0.35	0.17
4 ge	400						
	412						
	450	20	433.7	3.5	0.09	0.36	0.18
	500	28	503.5	3.0	0.11	0.43	0.22
	560						
	600	28	595.5	2.5	0.09	0.37	0.18
	650						
	700	20	696.6	2.2	0.06	0.22	0.11
	760	20	722.7	2.1	0.05	0.22	0.11
	800	20	815.3	1.8	0.05	0.19	0.10
	860	28	854.7	1.8	0.06	0.26	0.13
	900						
	950	20	954	1.6	0.04	0.16	0.08
	1000	28	1000	1.5	0.05	0.22	0.11
	1120	28	1129.5	1.3	0.05	0.19	0.10
	1177						
	1250	28	1226.7	1.2	0.04	0.18	0.09
	1400	28	1321.6	1.1	0.04	0.17	0.08
	1600	20	1621.2	0.9	0.02	0.10	0.05
	1800						
	2000						
	2240	20	2142.5	0.7	0.02	0.07	0.04
	2400						
	2800						

Size 160

ratio	$T_{2\ Lim}$	ratio	out rpm	P2	s.f (P2/P1 .)				
in	Kgm	i eff	N2	Hp	0.25Hp	0.5Hp	1 Hp	2 Hp	3 Hp
3.5	35	3.48	431	19.61	78.44	39.22	19.61	9.81	6.54
4									
4.5	60	4.26	352	27.46	109.85	54.93	27.46	13.73	9.15
5.5	45	5.77	260	15.21	60.83	30.41	15.21	7.60	5.07
6.3									
7.2	35	7.2	208	9.48	37.91	18.96	9.48	4.74	3.16
10	30	10.6	142	5.52	22.07	11.04	5.52	2.76	1.84
12.5	35	12.1	124	5.64	22.56	11.28	5.64	2.82	1.88
15	60	14.8	101	7.90	31.62	15.81	7.90	3.95	2.63
18	60	18.1	83	6.46	25.85	12.93	6.46	3.23	2.15
20	45	20	75	4.39	17.55	8.77	4.39	2.19	1.46
24.6	60	24.6	61	4.76	19.02	9.51	4.76	2.38	1.59
30.7	60	30.7	49	3.81	15.24	7.62	3.81	1.91	1.27
31									
33.3	45	33.3	45	2.63	10.54	5.27	2.63	1.32	0.88
35.5									
38									
41.5	45	41.5	36	2.11	8.46	4.23	2.11	1.06	0.70
43									
45									
50	35	51.8	29	1.32	5.27	2.63	1.32	0.66	0.44
54	45	61.5	24	1.43	5.71	2.85	1.43	0.71	0.48
63	60	63	24	1.86	7.43	3.71	1.86	0.93	0.62
69	45	69	22	1.27	5.09	2.54	1.27	0.64	0.42
72									
79	60	77	19	1.52	6.08	3.04	1.52	0.76	0.51
85	60	85	18	1.38	5.51	2.75	1.38	0.69	0.46
90	60	104	14	1.12	4.50	2.25	1.12	0.56	0.37
100	60	106	14	1.10	4.41	2.21	1.10	0.55	0.37
113	60	116	13	1.01	4.03	2.02	1.01	0.50	0.34
125	60	131	11	0.89	3.57	1.79	0.89	0.45	0.30
140	60	141	11	0.83	3.32	1.66	0.83	0.41	0.28
160	60	144	10	0.81	3.25	1.62	0.81	0.41	0.27
180	60	177	8.5	0.66	2.64	1.32	0.66	0.33	0.22
200	45	192	7.8	0.46	1.83	0.91	0.46	0.23	0.15
224	60	221	6.8	0.53	2.12	1.06	0.53	0.26	0.18
250	45	239	6.3	0.37	1.47	0.73	0.37	0.18	0.12
280									
300	45	299	5.0	0.29	1.17	0.59	0.29	0.15	0.10
321									
388									
400	45	403	3.7	0.22	0.87	0.44	0.22	0.11	0.07
412	60	446	3.4	0.26	1.05	0.52	0.26	0.13	0.09
450	60	454	3.3	0.26	1.03	0.52	0.26	0.13	0.09
500	45	503	3.0	0.17	0.70	0.35	0.17	0.09	0.06
560	60	557	2.7	0.21	0.84	0.42	0.21	0.11	0.07
600	60	604	2.5	0.19	0.77	0.39	0.19	0.10	0.06
650	45	616	2.4	0.14	0.57	0.28	0.14	0.07	0.05
700	45	669	2.2	0.13	0.52	0.26	0.13	0.07	0.04
760	60	754	2.0	0.16	0.62	0.31	0.16	0.08	0.05
800	60	818	1.8	0.14	0.57	0.29	0.14	0.07	0.05
860	45	834	1.8	0.11	0.42	0.21	0.11	0.05	0.04
900									
950	60	940	1.6	0.12	0.50	0.25	0.12	0.06	0.04
1000	60	1021	1.5	0.11	0.46	0.23	0.11	0.06	0.04
1120	45	1041	1.4	0.08	0.34	0.17	0.08	0.04	0.03
1177	45	1108	1.4	0.08	0.32	0.16	0.08	0.04	0.03
1250	60	1274	1.2	0.09	0.37	0.18	0.09	0.05	0.03
1400	45	1383	1.1	0.06	0.25	0.13	0.06	0.03	0.02
1600	60	1590	0.9	0.07	0.29	0.15	0.07	0.04	0.02
1800	45	1726	0.9	0.05	0.20	0.10	0.05	0.03	0.02
2000									
2240	45	2154	0.7	0.04	0.16	0.08	0.04	0.02	0.01
2400									
2800									

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500
Rpm

Size 190

	ratio	$T_{2\ Lim}$	ratio	out rpm	P_2	s.f. (P2/P1)						
	i_n	Kgm	i_{eff}	N2	Hp	0.25 Hp	0.5 Hp	1 Hp	2 Hp	3 Hp	5 Hp	7.5 Hp
ge	3.5	70	3.48	431	39.2	156.9	78.44	39.22	19.61	13.07	7.84	5.23
	4											
	4.5	120	4.26	352	54.9	219.7	109.9	54.93	27.46	18.31	10.99	7.32
	5.5	90	5.77	260	30.4	121.7	60.83	30.41	15.21	10.14	6.08	4.06
	6.3											
	7.2	70	7.2	208	19.0	75.83	37.91	18.96	9.48	6.32	3.79	2.53
	10	60	10.6	142	11.0	44.15	22.07	11.04	5.52	3.68	2.21	1.47
	12.5	70	12.1	124	11.3	45.12	22.56	11.28	5.64	3.76	2.26	1.50
	15	120	14.8	101	15.8	63.24	31.62	15.81	7.90	5.27	3.16	2.11
	18	120	18.1	83	12.9	51.71	25.85	12.93	6.46	4.31	2.59	1.72
	20	90	20	75	8.8	35.10	17.55	8.77	4.39	2.92	1.75	1.17
	24.6	120	24.6	61	9.5	38.05	19.02	9.51	4.76	3.17	1.90	1.27
	30.7	120	30.7	49	7.6	30.49	15.24	7.62	3.81	2.54	1.52	1.02
ge	31											
	33.3	90	33.3	45	5.3	21.08	10.54	5.27	2.63	1.76	1.05	0.70
	35.5											
	38											
	41.5	90	41.5	36	4.2	16.91	8.46	4.23	2.11	1.41	0.85	0.56
	43											
	45											
	50	70	51.8	29	2.6	10.54	5.27	2.63	1.32	0.88	0.53	0.35
	54	90	61.5	24	2.9	11.41	5.71	2.85	1.43	0.95	0.57	0.38
	63	120	63	24	3.7	14.86	7.43	3.71	1.86	1.24	0.74	0.50
	69	90	69	22	2.5	10.17	5.09	2.54	1.27	0.85	0.51	0.34
	72											
	79	120	77	19	3.0	12.16	6.08	3.04	1.52	1.01	0.61	0.41
	85	120	85	18	2.8	11.01	5.51	2.75	1.38	0.92	0.55	0.37
	90	120	104	14	2.2	9.00	4.50	2.25	1.12	0.75	0.45	0.30
	100	120	106	14	2.2	8.83	4.41	2.21	1.10	0.74	0.44	0.29
ge	113	120	116	13	2.0	8.07	4.03	2.02	1.01	0.67	0.40	0.27
	125	120	131	11	1.8	7.14	3.57	1.79	0.89	0.60	0.36	0.24
	140	120	141	11	1.7	6.64	3.32	1.66	0.83	0.55	0.33	0.22
	160	120	144	10	1.6	6.50	3.25	1.62	0.81	0.54	0.32	0.22
	180	120	177	8.5	1.3	5.29	2.64	1.32	0.66	0.44	0.26	0.18
	200	90	192	7.8	0.9	3.66	1.83	0.91	0.46	0.30	0.18	0.12
	224	120	221	6.8	1.1	4.24	2.12	1.06	0.53	0.35	0.21	0.14
	250	90	239	6.3	0.7	2.94	1.47	0.73	0.37	0.24	0.15	0.10
	280											
	300	90	299	5.0	0.6	2.35	1.17	0.59	0.29	0.20	0.12	0.08
	321											
	388	60	373	4.0	0.3	1.25	0.63	0.31	0.16	0.10	0.06	0.04
	400	90	403	3.7	0.4	1.74	0.87	0.44	0.22	0.15	0.09	0.06
	412	120	446	3.4	0.5	2.10	1.05	0.52	0.26	0.17	0.10	0.07
	450	120	454	3.3	0.5	2.06	1.03	0.52	0.26	0.17	0.10	0.07
	500	90	503	3.0	0.3	1.40	0.70	0.35	0.17	0.12	0.07	0.05
	560	120	557	2.7	0.4	1.68	0.84	0.42	0.21	0.14	0.08	0.06
	600	120	604	2.5	0.4	1.55	0.77	0.39	0.19	0.13	0.08	0.05
	650	90	616	2.4	0.3	1.14	0.57	0.28	0.14	0.09	0.06	0.04
	700	90	669	2.2	0.3	1.05	0.52	0.26	0.13	0.09	0.05	0.03
	760	120	754	2.0	0.3	1.24	0.62	0.31	0.16	0.10	0.06	0.04
	800	120	818	1.8	0.3	1.14	0.57	0.29	0.14	0.10	0.06	0.04
ge	860	90	834	1.8	0.2	0.84	0.42	0.21	0.11	0.07	0.04	0.03
	900											
4	950	120	940	1.6	0.2	1.00	0.50	0.25	0.12	0.08	0.05	0.03
	1000	120	1021	1.5	0.2	0.92	0.46	0.23	0.11	0.08	0.05	0.03
	1120	90	1041	1.4	0.2	0.67	0.34	0.17	0.08	0.06	0.03	0.02
	1177	90	1108	1.4	0.2	0.63	0.32	0.16	0.08	0.05	0.03	0.02
	1250	120	1274	1.2	0.2	0.73	0.37	0.18	0.09	0.06	0.04	0.02
	1400	90	1383	1.1	0.1	0.51	0.25	0.13	0.06	0.04	0.03	0.02
	1600	120	1590	0.9	0.1	0.59	0.29	0.15	0.07	0.05	0.03	0.02
	1800	90	1726	0.9	0.1	0.41	0.20	0.10	0.05	0.03	0.02	0.01
	2000											
	2240	90	2154	0.7	0.1	0.33	0.16	0.08	0.04	0.03	0.02	0.01
	2400											
	2800											

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500 Rpm

Size 250

	ratio i_n	$T_{2\ Lim}$ Kgm	ratio i_{eff}	out rpm N_2	P_2 Hp	s.f. (P2/P1) 0.25 Hp	0.5 Hp	1 Hp	2 Hp	3 Hp	5 Hp	7.5 Hp	10 Hp	15 Hp
ge	3.54	155	3.48	431	86.8	347.39	173.70	86.85	43.42	28.95	17.37	11.58	8.68	5.79
	4.5	240	4.26	352	109.9	439.41	219.70	109.9	54.93	36.62	21.97	14.65	10.99	7.32
	5.5	185	5.77	260	62.5	250.07	125.04	62.52	31.26	20.84	12.50	8.34	6.25	4.17
	6.3 7.2 10	155	7.2	208	42.0	167.91	83.95	41.98	20.99	13.99	8.40	5.60	4.20	2.80
	12.5	155	12.1	124	25.0	99.91	49.96	24.98	12.49	8.33	5.00	3.33	2.50	1.67
	15	240	14.8	101	31.6	126.48	63.24	31.62	15.81	10.54	6.32	4.22	3.16	2.11
	18	240	18.1	83	25.9	103.42	51.71	25.85	12.93	8.62	5.17	3.45	2.59	1.72
	20	185	20	75	18.0	72.15	36.07	18.04	9.02	6.01	3.61	2.40	1.80	1.20
	24.6	240	24.6	61	19.0	76.09	38.05	19.02	9.51	6.34	3.80	2.54	1.90	1.27
	30.7	240	30.7	49	15.2	60.97	30.49	15.24	7.62	5.08	3.05	2.03	1.52	1.02
ge	31 33.3 35.5	185	33.3	45	10.8	43.33	21.67	10.83	5.42	3.61	2.17	1.44	1.08	0.72
	38 41.5 43 45	185	41.5	36	8.7	34.77	17.38	8.69	4.35	2.90	1.74	1.16	0.87	0.58
	50	155	51.8	29	5.8	23.34	11.67	5.83	2.92	1.94	1.17	0.78	0.58	0.39
	54	240	52	29	9.0	36.00	18.00	9.00	4.50	3.00	1.80	1.20	0.90	0.60
	63	240	63	24	7.4	29.71	14.86	7.43	3.71	2.48	1.49	0.99	0.74	0.50
	69	185	69	22	5.2	20.91	10.46	5.23	2.61	1.74	1.05	0.70	0.52	0.35
	72 79	240	77	19	6.1	24.31	12.16	6.08	3.04	2.03	1.22	0.81	0.61	0.41
	85	240	85	18	5.5	22.02	11.01	5.51	2.75	1.84	1.10	0.73	0.55	0.37
	90	240	104	14	4.5	18.00	9.00	4.50	2.25	1.50	0.90	0.60	0.45	0.30
	100	240	106	14	4.4	17.66	8.83	4.41	2.21	1.47	0.88	0.59	0.44	0.29
ge	113	240	116	13	4.0	16.14	8.07	4.03	2.02	1.34	0.81	0.54	0.40	0.27
	125	240	131	11	3.6	14.29	7.14	3.57	1.79	1.19	0.71	0.48	0.36	0.24
3	140	240	141	11	3.3	13.28	6.64	3.32	1.66	1.11	0.66	0.44	0.33	0.22
	160	240	144	10	3.2	13.00	6.50	3.25	1.62	1.08	0.65	0.43	0.32	0.22
	180	240	177	8.5	2.6	10.58	5.29	2.64	1.32	0.88	0.53	0.35	0.26	0.18
	200	185	192	7.8	1.9	7.52	3.76	1.88	0.94	0.63	0.38	0.25	0.19	0.13
	224	240	221	6.8	2.1	8.47	4.24	2.12	1.06	0.71	0.42	0.28	0.21	0.14
	250	185	239	6.3	1.5	6.04	3.02	1.51	0.75	0.50	0.30	0.20	0.15	0.10
	280 300	185	299	5.0	1.2	4.83	2.41	1.21	0.60	0.40	0.24	0.16	0.12	0.08
	321 388	155	373	4.0	0.8	3.24	1.62	0.81	0.41	0.27	0.16	0.11	0.08	0.05
	400	185	403	3.7	0.9	3.58	1.79	0.90	0.45	0.30	0.18	0.12	0.09	0.06
	412	240	446	3.4	1.0	4.20	2.10	1.05	0.52	0.35	0.21	0.14	0.10	0.07
	450	240	454	3.3	1.0	4.12	2.06	1.03	0.52	0.34	0.21	0.14	0.10	0.07
	500	185	503	3.0	0.7	2.87	1.43	0.72	0.36	0.24	0.14	0.10	0.07	0.05
	560	240	557	2.7	0.8	3.36	1.68	0.84	0.42	0.28	0.17	0.11	0.08	0.06
	600	240	604	2.5	0.8	3.10	1.55	0.77	0.39	0.26	0.15	0.10	0.08	0.05
	650	185	616	2.4	0.6	2.34	1.17	0.59	0.29	0.20	0.12	0.08	0.06	0.04
	700	185	669	2.2	0.5	2.16	1.08	0.54	0.27	0.18	0.11	0.07	0.05	0.04
	760	240	754	2.0	0.6	2.48	1.24	0.62	0.31	0.21	0.12	0.08	0.06	0.04
	800	240	818	1.8	0.6	2.29	1.14	0.57	0.29	0.19	0.11	0.08	0.06	0.04
ge	860	185	834	1.8	0.4	1.73	0.87	0.43	0.22	0.14	0.09	0.06	0.04	0.03
	900 950	155	940	1.6	0.3	1.29	0.64	0.32	0.16	0.11	0.06	0.04	0.03	0.02
4	1000	240	1021	1.5	0.5	1.83	0.92	0.46	0.23	0.15	0.09	0.06	0.05	0.03
	1120	185	1041	1.4	0.3	1.39	0.69	0.35	0.17	0.12	0.07	0.05	0.03	0.02
	1177	185	1108	1.4	0.3	1.30	0.65	0.33	0.16	0.11	0.07	0.04	0.03	0.02
	1250	240	1274	1.2	0.4	1.47	0.73	0.37	0.18	0.12	0.07	0.05	0.04	0.02
	1400	185	1383	1.1	0.3	1.04	0.52	0.26	0.13	0.09	0.05	0.03	0.03	0.02
	1600	240	1590	0.9	0.3	1.18	0.59	0.29	0.15	0.10	0.06	0.04	0.03	0.02
	1800	185	1726	0.9	0.2	0.84	0.42	0.21	0.10	0.07	0.04	0.03	0.02	0.01
	2000 2240 2400 2800	185	2154	0.7	0.2	0.67	0.33	0.17	0.08	0.06	0.03	0.02	0.02	0.01

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500 Rpm

Size 280

	ratio	$T_{2\ Lim}$	ratio	out rpm	P_2	s.f. (P2/P1)									
	in	Kgm	i eff	N2	Hp	0.25 Hp	0.5 Hp	1 Hp	2 Hp	3 Hp	5 Hp	7.5 Hp	10 Hp	15 Hp	20 Hp
	3.5	210	3.6	417	113.7	454.97	227.49	113.7	56.87	37.91	22.75	15.17	11.37	7.58	5.69
	4														
ge	4.5	320	4.25	353	146.8	587.26	293.63	146.8	73.41	48.94	29.36	19.58	14.68	9.79	7.34
	5.5	280	5.33	281	102.4	409.73	204.86	102.4	51.22	34.14	20.49	13.66	10.24	6.83	5.12
	6.3	245	6.2	242	77.1	308.21	154.10	77.05	38.53	25.68	15.41	10.27	7.71	5.14	3.85
	7.2	210	7.5	200	54.6	218.39	109.19	54.60	27.30	18.20	10.92	7.28	5.46	3.64	2.73
	10														
	12.5	245	12.5	120	38.2	152.87	76.44	38.22	19.11	12.74	7.64	5.10	3.82	2.55	1.91
	15	320	15.3	98	40.8	163.13	81.56	40.78	20.39	13.59	8.16	5.44	4.08	2.72	2.04
	18	320	18.1	83	34.5	137.89	68.95	34.47	17.24	11.49	6.89	4.60	3.45	2.30	1.72
	20	320	20.8	72	30.0	119.99	60.00	30.00	15.00	10.00	6.00	4.00	3.00	2.00	1.50
	24.6	280	22.7	66	24.1	96.21	48.10	24.05	12.03	8.02	4.81	3.21	2.41	1.60	1.20
	30.7	320	24.5	61	25.5	101.87	50.94	25.47	12.73	8.49	5.09	3.40	2.55	1.70	1.27
ge	31	210	26.4	57	15.5	62.04	31.02	15.51	7.76	5.17	3.10	2.07	1.55	1.03	0.78
	33.3	280	30.7	49	17.8	71.14	35.57	17.78	8.89	5.93	3.56	2.37	1.78	1.19	0.89
	35.5	245	35.8	42	13.3	53.38	26.69	13.34	6.67	4.45	2.67	1.78	1.33	0.89	0.67
	38	280	38.4	39	14.2	56.87	28.44	14.22	7.11	4.74	2.84	1.90	1.42	0.95	0.71
	41.5	245	41.5	36	11.5	46.05	23.02	11.51	5.76	3.84	2.30	1.53	1.15	0.77	0.58
	43	280	43	35	12.7	50.79	25.39	12.70	6.35	4.23	2.54	1.69	1.27	0.85	0.63
	45	245	44.6	34	10.7	42.84	21.42	10.71	5.36	3.57	2.14	1.43	1.07	0.71	0.54
	50	210	54	28	7.6	30.33	15.17	7.58	3.79	2.53	1.52	1.01	0.76	0.51	0.38
	54	320	53	28	11.8	47.09	23.55	11.77	5.89	3.92	2.35	1.57	1.18	0.78	0.59
	63	320	63	24	9.9	39.62	19.81	9.90	4.95	3.30	1.98	1.32	0.99	0.66	0.50
	69	320	72	21	8.7	34.66	17.33	8.67	4.33	2.89	1.73	1.16	0.87	0.58	0.43
	72	320	77	19	8.1	32.41	16.21	8.10	4.05	2.70	1.62	1.08	0.81	0.54	0.41
	79	280	79	19	6.9	27.64	13.82	6.91	3.46	2.30	1.38	0.92	0.69	0.46	0.35
	85	320	85	18	7.3	29.36	14.68	7.34	3.67	2.45	1.47	0.98	0.73	0.49	0.37
	90	280	90	17	6.1	24.27	12.13	6.07	3.03	2.02	1.21	0.81	0.61	0.40	0.30
	100	320	104	14	6.0	24.00	12.00	6.00	3.00	2.00	1.20	0.80	0.60	0.40	0.30
3 ge	113	280	107	14	5.1	20.41	10.20	5.10	2.55	1.70	1.02	0.68	0.51	0.34	0.26
	125	280	131	11	4.2	16.67	8.34	4.17	2.08	1.39	0.83	0.56	0.42	0.28	0.21
	140	320	141	11	4.4	17.70	8.85	4.43	2.21	1.48	0.89	0.59	0.44	0.30	0.22
	160	280	163	9.2	3.3	13.40	6.70	3.35	1.67	1.12	0.67	0.45	0.33	0.22	0.17
	180	280	177	8.5	3.1	12.34	6.17	3.08	1.54	1.03	0.62	0.41	0.31	0.21	0.15
	200	245	190	7.9	2.5	10.06	5.03	2.51	1.26	0.84	0.50	0.34	0.25	0.17	0.13
	224	280	221	6.8	2.5	9.88	4.94	2.47	1.24	0.82	0.49	0.33	0.25	0.16	0.12
	250	245	258	5.8	1.9	7.41	3.70	1.85	0.93	0.62	0.37	0.25	0.19	0.12	0.09
	280	280	276	5.4	2.0	7.91	3.96	1.98	0.99	0.66	0.40	0.26	0.20	0.13	0.10
	300	245	311	4.8	1.5	6.14	3.07	1.54	0.77	0.51	0.31	0.20	0.15	0.10	0.08
	321	245	321	4.7	1.5	5.95	2.98	1.49	0.74	0.50	0.30	0.20	0.15	0.10	0.07
	388	210	388	3.9	1.1	4.22	2.11	1.06	0.53	0.35	0.21	0.14	0.11	0.07	0.05
	400														
	412	280	412	3.6	1.3	5.30	2.65	1.33	0.66	0.44	0.27	0.18	0.13	0.09	0.07
	450	280	456	3.3	1.2	4.79	2.39	1.20	0.60	0.40	0.24	0.16	0.12	0.08	0.06
	500	210	524	2.9	0.8	3.13	1.56	0.78	0.39	0.26	0.16	0.10	0.08	0.05	0.04
	560	280	558	2.7	1.0	3.91	1.96	0.98	0.49	0.33	0.20	0.13	0.10	0.07	0.05
	600	280	618	2.4	0.9	3.53	1.77	0.88	0.44	0.29	0.18	0.12	0.09	0.06	0.04
	650	210	654	2.3	0.6	2.50	1.25	0.63	0.31	0.21	0.13	0.08	0.06	0.04	0.03
	700	280	696	2.2	0.8	3.14	1.57	0.78	0.39	0.26	0.16	0.10	0.08	0.05	0.04
	760	280	756	2.0	0.7	2.89	1.44	0.72	0.36	0.24	0.14	0.10	0.07	0.05	0.04
	800	210	801	1.9	0.5	2.04	1.02	0.51	0.26	0.17	0.10	0.07	0.05	0.03	0.03
4 ge	860	210	869	1.7	0.5	1.88	0.94	0.47	0.24	0.16	0.09	0.06	0.05	0.03	0.02
	900														
	950	280	962	1.6	0.6	2.27	1.14	0.57	0.28	0.19	0.11	0.08	0.06	0.04	0.03
	1000	280	1024	1.5	0.5	2.13	1.07	0.53	0.27	0.18	0.11	0.07	0.05	0.04	0.03
	1120														
	1177	280	1177	1.3	0.5	1.86	0.93	0.46	0.23	0.15	0.09	0.06	0.05	0.03	0.02
	1250	280	1278	1.2	0.4	1.71	0.85	0.43	0.21	0.14	0.09	0.06	0.04	0.03	0.02
	1400	210	1447	1.0	0.3	1.13	0.57	0.28	0.14	0.09	0.06	0.04	0.03	0.02	0.01
	1600	280	1594	0.9	0.3	1.37	0.69	0.34	0.17	0.11	0.07	0.05	0.03	0.02	0.02
	1800	210	1798	0.8	0.2	0.91	0.46	0.23	0.11	0.08	0.05	0.03	0.02	0.02	0.01
	2000	280	1989	0.8	0.3	1.10	0.55	0.27	0.14	0.09	0.05	0.04	0.03	0.02	0.01
	2240	210	2244	0.7	0.2	0.73	0.36	0.18	0.09	0.06	0.04	0.02	0.02	0.01	0.01
	2400														
	2800	210	2799	0.5	0.1	0.59	0.29	0.15	0.07	0.05	0.03	0.02	0.01	0.01	0.01

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500 Rpm

Size 300

	ratio i_n	$T_{2\,Lim}$ Kgm	ratio i_{eff}	out rpm N2	P_2 Hp	s.f. (P2/P1) 0.5 Hp	1 Hp	2 Hp	3 Hp	5 Hp	7.5 Hp	10 Hp	15 Hp	20 Hp	25 Hp	30 Hp
	3.5	470	3.6	417	254.6	833.33	416.67	127.3	84.86	50.91	33.94	25.46	16.97	12.73	10.18	8.49
	4															
ge	4.5	630	4.25	353	289.0	705.88	352.94	144.5	96.35	57.81	38.54	28.90	19.27	14.45	11.56	9.63
	5.5	550	5.33	281	201.2	562.85	281.43	100.6	67.07	40.24	26.83	20.12	13.41	10.06	8.05	6.71
	6.3	470	6.2	242	147.8	483.87	241.94	73.91	49.27	29.56	19.71	14.78	9.85	7.39	5.91	4.93
	7.2	410	7.5	200	106.6	400.00	200.00	53.30	35.53	21.32	14.21	10.66	7.11	5.33	4.26	3.55
	10															
	12.5	470	12.5	120	73.3	240.00	120.00	36.66	24.44	14.66	9.78	7.33	4.89	3.67	2.93	2.44
	15	630	15.3	98	80.3	196.08	98.04	40.14	26.76	16.06	10.71	8.03	5.35	4.01	3.21	2.68
	18	630	18.1	83	67.9	165.75	82.87	33.93	22.62	13.57	9.05	6.79	4.52	3.39	2.71	2.26
	20	630	20.8	72	59.1	144.23	72.12	29.53	19.69	11.81	7.87	5.91	3.94	2.95	2.36	1.97
	24.6	550	22.7	66	47.2	132.16	66.08	23.62	15.75	9.45	6.30	4.72	3.15	2.36	1.89	1.57
	30.7	630	24.5	61	50.1	122.45	61.22	25.07	16.71	10.03	6.69	5.01	3.34	2.51	2.01	1.67
ge	31	410	26.4	57	30.3	113.64	56.82	15.14	10.09	6.06	4.04	3.03	2.02	1.51	1.21	1.01
	33.3	550	30.7	49	34.9	97.72	48.86	17.47	11.64	6.99	4.66	3.49	2.33	1.75	1.40	1.16
	35.5	470	35.8	42	25.6	83.80	41.90	12.80	8.53	5.12	3.41	2.56	1.71	1.28	1.02	0.85
	38	550	38.4	39	27.9	78.13	39.06	13.96	9.31	5.59	3.72	2.79	1.86	1.40	1.12	0.93
	41.5	470	41.5	36	22.1	72.29	36.14	11.04	7.36	4.42	2.94	2.21	1.47	1.10	0.88	0.74
	43	550	43	35	24.9	69.77	34.88	12.47	8.31	4.99	3.33	2.49	1.66	1.25	1.00	0.83
	45	470	44.6	34	20.5	67.26	33.63	10.27	6.85	4.11	2.74	2.05	1.37	1.03	0.82	0.68
	50	410	54	28	14.8	55.56	27.78	7.40	4.93	2.96	1.97	1.48	0.99	0.74	0.59	0.49
	54	630	53	28	23.2	56.60	28.30	11.59	7.73	4.64	3.09	2.32	1.55	1.16	0.93	0.77
	63	630	63	24	19.5	47.62	23.81	9.75	6.50	3.90	2.60	1.95	1.30	0.97	0.78	0.65
	69	630	72	21	17.1	41.67	20.83	8.53	5.69	3.41	2.27	1.71	1.14	0.85	0.68	0.57
	72	630	77	19	16.0	38.96	19.48	7.98	5.32	3.19	2.13	1.60	1.06	0.80	0.64	0.53
	79	550	79	19	13.6	37.97	18.99	6.79	4.53	2.72	1.81	1.36	0.91	0.68	0.54	0.45
	85	630	85	18	14.5	35.29	17.65	7.23	4.82	2.89	1.93	1.45	0.96	0.72	0.58	0.48
	90	550	90	17	11.9	33.33	16.67	5.96	3.97	2.38	1.59	1.19	0.79	0.60	0.48	0.40
	100	550	96.7	16	11.1	31.02	15.51	5.55	3.70	2.22	1.48	1.11	0.74	0.55	0.44	0.37
	113	630	104	14	11.8	28.85	14.42	5.91	3.94	2.36	1.57	1.18	0.79	0.59	0.47	0.39
3 ge	125	550	107	14	10.0	28.04	14.02	5.01	3.34	2.00	1.34	1.00	0.67	0.50	0.40	0.33
	140	550	131	11	8.2	22.90	11.45	4.09	2.73	1.64	1.09	0.82	0.55	0.41	0.33	0.27
	160	630	141	11	8.7	21.28	10.64	4.36	2.90	1.74	1.16	0.87	0.58	0.44	0.35	0.29
	180	550	163	9.2	6.6	18.40	9.20	3.29	2.19	1.32	0.88	0.66	0.44	0.33	0.26	0.22
	200	550	177	8.5	6.1	16.95	8.47	3.03	2.02	1.21	0.81	0.61	0.40	0.30	0.24	0.20
	224	410	190	7.9	4.2	15.79	7.89	2.10	1.40	0.84	0.56	0.42	0.28	0.21	0.17	0.14
	250	550	221	6.8	4.9	13.57	6.79	2.43	1.62	0.97	0.65	0.49	0.32	0.24	0.19	0.16
	280	470	258	5.8	3.6	11.63	5.81	1.78	1.18	0.71	0.47	0.36	0.24	0.18	0.14	0.12
	300	550	276	5.4	3.9	10.87	5.43	1.94	1.30	0.78	0.52	0.39	0.26	0.19	0.16	0.13
	321	470	311	4.8	2.9	9.65	4.82	1.47	0.98	0.59	0.39	0.29	0.20	0.15	0.12	0.10
	388	470	321	4.7	2.9	9.35	4.67	1.43	0.95	0.57	0.38	0.29	0.19	0.14	0.11	0.10
	400	410	388	3.9	2.1	7.73	3.87	1.03	0.69	0.41	0.27	0.21	0.14	0.10	0.08	0.07
	412	550	412	3.6	2.6	7.28	3.64	1.30	0.87	0.52	0.35	0.26	0.17	0.13	0.10	0.09
	450	550	456	3.3	2.4	6.58	3.29	1.18	0.78	0.47	0.31	0.24	0.16	0.12	0.09	0.08
	500	410	524	2.9	1.5	5.73	2.86	0.76	0.51	0.31	0.20	0.15	0.10	0.08	0.06	0.05
	560	550	558	2.7	1.9	5.38	2.69	0.96	0.64	0.38	0.26	0.19	0.13	0.10	0.08	0.06
	600	550	618	2.4	1.7	4.85	2.43	0.87	0.58	0.35	0.23	0.17	0.12	0.09	0.07	0.06
	650	410	654	2.3	1.2	4.59	2.29	0.61	0.41	0.24	0.16	0.12	0.08	0.06	0.05	0.04
	700	550	696	2.2	1.5	4.31	2.16	0.77	0.51	0.31	0.21	0.15	0.10	0.08	0.06	0.05
	760	550	756	2.0	1.4	3.97	1.98	0.71	0.47	0.28	0.19	0.14	0.09	0.07	0.06	0.05
	800	410	801	1.9	1.0	3.75	1.87	0.50	0.33	0.20	0.13	0.10	0.07	0.05	0.04	0.03
ge	860	410	869	1.7	0.9	3.45	1.73	0.46	0.31	0.18	0.12	0.09	0.06	0.05	0.04	0.03
	900															
4	950	550	962	1.6	1.1	3.12	1.56	0.56	0.37	0.22	0.15	0.11	0.07	0.06	0.04	0.04
	1000	550	1024	1.5	1.0	2.93	1.46	0.52	0.35	0.21	0.14	0.10	0.07	0.05	0.04	0.03
	1120															
	1177	550	1177	1.3	0.9	2.55	1.27	0.46	0.30	0.18	0.12	0.09	0.06	0.05	0.04	0.03
	1250	550	1278	1.2	0.8	2.35	1.17	0.42	0.28	0.17	0.11	0.08	0.06	0.04	0.03	0.03
	1400	410	1447	1.0	0.6	2.07	1.04	0.28	0.18	0.11	0.07	0.06	0.04	0.03	0.02	0.02
	1600	550	1594	0.9	0.7	1.88	0.94	0.34	0.22	0.13	0.09	0.07	0.04	0.03	0.03	0.02
	1800	410	1798	0.8	0.4	1.67	0.83	0.22	0.15	0.09	0.06	0.04	0.03	0.02	0.02	0.01
	2000	550	1989	0.8	0.5	1.51	0.75	0.27	0.18	0.11	0.07	0.05	0.04	0.03	0.02	0.02
	2240	410	2244	0.7	0.4	1.34	0.67	0.18	0.12	0.07	0.05	0.04	0.02	0.02	0.01	0.01
	2400															
	2800	410	2799	0.5	0.3	1.07	0.54	0.14	0.10	0.06	0.04	0.03	0.02	0.01	0.01	0.01

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500 Rpm

Size 400

	ratio	$T_{2\ Lim}$	ratio	out rpm	P_2	s.f. (P2/P1)											
	i_n	Kgm	i_{eff}	N2	Hp	1 Hp	2 Hp	3 Hp	5 Hp	7.5 Hp	10 Hp	15 Hp	20 Hp	25 Hp	30 Hp	40 Hp	50 Hp
ge	3.5	1075	3.43	437	611.1	611.1	305.6	203.7	122.2	81.48	61.11	40.74	30.56	24.44	20.37	15.28	12.22
	4	1525	4.09	367	727.0	727.0	363.5	242.3	145.4	96.94	72.70	48.47	36.35	29.08	24.23	18.18	14.54
	4.5																
	5.5	1245	5.25	286	462.4	462.4	231.2	154.1	92.48	61.65	46.24	30.83	23.12	18.50	15.41	11.56	9.25
	6.3	1075	6.23	241	336.5	336.5	168.2	112.2	67.29	44.86	33.65	22.43	16.82	13.46	11.22	8.41	6.73
	7.2																
	10																
ge	12.5	1075	12.3	122	170.4	170.4	85.21	56.81	34.08	22.72	17.04	11.36	8.52	6.82	5.68	4.26	3.41
	15	1525	14.7	102	202.3	202.3	101.1	67.43	40.46	26.97	20.23	13.49	10.11	8.09	6.74	5.06	4.05
	18	1525	17.4	86	170.9	170.9	85.45	56.96	34.18	22.79	17.09	11.39	8.54	6.84	5.70	4.27	3.42
	20	1245	18.9	79	128.4	128.4	64.22	42.81	25.69	17.13	12.84	8.56	6.42	5.14	4.28	3.21	2.57
	24.6	1245	21.8	69	111.4	111.4	55.68	37.12	22.27	14.85	11.14	7.42	5.57	4.45	3.71	2.78	2.23
	30.7	1075	25.4	59	82.5	82.52	41.26	27.51	16.50	11.00	8.25	5.50	4.13	3.30	2.75	2.06	1.65
	31	1245	27.9	54	87.0	87.01	43.51	29.00	17.40	11.60	8.70	5.80	4.35	3.48	2.90	2.18	1.74
ge	33.3	1075	30.7	49	68.3	68.28	34.14	22.76	13.66	9.10	6.83	4.55	3.41	2.73	2.28	1.71	1.37
	35.5	1075	32.5	46	64.5	64.50	32.25	21.50	12.90	8.60	6.45	4.30	3.22	2.58	2.15	1.61	1.29
	38	1075	38	39	55.2	55.16	27.58	18.39	11.03	7.35	5.52	3.68	2.76	2.21	1.84	1.38	1.10
	41.5	1075	46	33	45.6	45.57	22.78	15.19	9.11	6.08	4.56	3.04	2.28	1.82	1.52	1.14	0.91
	43	1525	43	35	69.2	69.15	34.58	23.05	13.83	9.22	6.92	4.61	3.46	2.77	2.31	1.73	1.38
	45																
	50	1525	50	30	59.5	59.47	29.74	19.82	11.89	7.93	5.95	3.96	2.97	2.38	1.98	1.49	1.19
	54	1525	60	25	49.6	49.56	24.78	16.52	9.91	6.61	4.96	3.30	2.48	1.98	1.65	1.24	0.99
	63	1525	63	24	47.2	47.20	23.60	15.73	9.44	6.29	4.72	3.15	2.36	1.89	1.57	1.18	0.94
	69																
	72	1245	77	19	31.5	31.53	15.76	10.51	6.31	4.20	3.15	2.10	1.58	1.26	1.05	0.79	0.63
	79	1245	80	19	30.3	30.34	15.17	10.11	6.07	4.05	3.03	2.02	1.52	1.21	1.01	0.76	0.61
	85	1525	89	17	33.4	33.41	16.71	11.14	6.68	4.45	3.34	2.23	1.67	1.34	1.11	0.84	0.67
	90	1525	93	16	32.0	31.97	15.99	10.66	6.39	4.26	3.20	2.13	1.60	1.28	1.07	0.80	0.64
	100	1525	100	15	29.7	29.74	14.87	9.91	5.95	3.96	2.97	1.98	1.49	1.19	0.99	0.74	0.59
ge	113	1075	113	13	18.5	18.55	9.27	6.18	3.71	2.47	1.85	1.24	0.93	0.74	0.62	0.46	0.37
	125	1245	125	12	19.4	19.42	9.71	6.47	3.88	2.59	1.94	1.29	0.97	0.78	0.65	0.49	0.39
	140	1075	139	11	15.1	15.08	7.54	5.03	3.02	2.01	1.51	1.01	0.75	0.60	0.50	0.38	0.30
	160	1245	152	10	16.0	15.97	7.99	5.32	3.19	2.13	1.60	1.06	0.80	0.64	0.53	0.40	0.32
	180	1245	177	8.5	13.7	13.72	6.86	4.57	2.74	1.83	1.37	0.91	0.69	0.55	0.46	0.34	0.27
	200	1245	202	7.4	12.0	12.02	6.01	4.01	2.40	1.60	1.20	0.80	0.60	0.48	0.40	0.30	0.24
	224	1525	221	6.8	13.5	13.46	6.73	4.49	2.69	1.79	1.35	0.90	0.67	0.54	0.45	0.34	0.27
	250	1245	234	6.4	10.4	10.37	5.19	3.46	2.07	1.38	1.04	0.69	0.52	0.41	0.35	0.26	0.21
	280	1075	278	5.4	7.5	7.54	3.77	2.51	1.51	1.01	0.75	0.50	0.38	0.30	0.25	0.19	0.15
	300	1075	284	5.3	7.4	7.38	3.69	2.46	1.48	0.98	0.74	0.49	0.37	0.30	0.25	0.18	0.15
	321																
	388	1075	336	4.5	6.2	6.24	3.12	2.08	1.25	0.83	0.62	0.42	0.31	0.25	0.21	0.16	0.12
	400	1525	396	3.8	7.5	7.51	3.75	2.50	1.50	1.00	0.75	0.50	0.38	0.30	0.25	0.19	0.15
	412																
	450	1525	455	3.3	6.5	6.54	3.27	2.18	1.31	0.87	0.65	0.44	0.33	0.26	0.22	0.16	0.13
	500	1075	492	3.0	4.3	4.26	2.13	1.42	0.85	0.57	0.43	0.28	0.21	0.17	0.14	0.11	0.09
	560	1525	546	2.7	5.4	5.45	2.72	1.82	1.09	0.73	0.54	0.36	0.27	0.22	0.18	0.14	0.11
	600	1075	603	2.5	3.5	3.48	1.74	1.16	0.70	0.46	0.35	0.23	0.17	0.14	0.12	0.09	0.07
	650	1525	669	2.2	4.4	4.44	2.22	1.48	0.89	0.59	0.44	0.30	0.22	0.18	0.15	0.11	0.09
	700	1075	693	2.2	3.0	3.02	1.51	1.01	0.60	0.40	0.30	0.20	0.15	0.12	0.10	0.08	0.06
	760	1525	755	2.0	3.9	3.94	1.97	1.31	0.79	0.53	0.39	0.26	0.20	0.16	0.13	0.10	0.08
	800	1075	816	1.8	2.6	2.57	1.28	0.86	0.51	0.34	0.26	0.17	0.13	0.10	0.09	0.06	0.05
ge	860	1075	848	1.8	2.5	2.47	1.24	0.82	0.49	0.33	0.25	0.16	0.12	0.10	0.08	0.06	0.05
	900	1525	906	1.7	3.3	3.28	1.64	1.09	0.66	0.44	0.33	0.22	0.16	0.13	0.11	0.08	0.07
4	950	1525	942	1.6	3.2	3.16	1.58	1.05	0.63	0.42	0.32	0.21	0.16	0.13	0.11	0.08	0.06
	1000	1525	1022	1.5	2.9	2.91	1.45	0.97	0.58	0.39	0.29	0.19	0.15	0.12	0.10	0.07	0.06
	1120	1525	1130	1.3	2.6	2.63	1.32	0.88	0.53	0.35	0.26	0.18	0.13	0.11	0.09	0.07	0.05
	1177	1075	1149	1.3	1.8	1.82	0.91	0.61	0.36	0.24	0.18	0.12	0.09	0.07	0.06	0.05	0.04
	1250	1525	1275	1.2	2.3	2.33	1.17	0.78	0.47	0.31	0.23	0.16	0.12	0.09	0.08	0.06	0.05
	1400	1075	1433	1.0	1.5	1.46	0.73	0.49	0.29	0.20	0.15	0.10	0.07	0.06	0.05	0.04	0.03
	1600	1525	1591	0.9	1.9	1.87	0.93	0.62	0.37	0.25	0.19	0.12	0.09	0.07	0.06	0.05	0.04
	1800	1075	1721	0.9	1.2	1.22	0.61	0.41	0.24	0.16	0.12	0.08	0.06	0.05	0.04	0.03	0.02
	2000	1075	1941	0.8	1.1	1.08	0.54	0.36	0.22	0.14	0.11	0.07	0.05	0.04	0.04	0.03	0.02
	2240	1075	2122	0.7	1.0	0.99	0.49	0.33	0.20	0.13	0.10	0.07	0.05	0.04	0.03	0.02	0.02
	2400	1075	2422	0.6	0.9	0.87	0.43	0.29	0.17	0.12	0.09	0.06	0.04	0.03	0.03	0.02	0.02
	2800																

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

selection base on input 1500 Rpm

Size 450

	ratio	$T_{2\ Lim}$	ratio	out rpm	P_2	s.f. (P2/P1)													
	in	Kgm	i eff	N2	Hp	2 Hp	3 Hp	5 Hp	7.5 Hp	10 Hp	15 Hp	20 Hp	25 Hp	30 Hp	40 Hp	50 Hp	60 Hp	75 Hp	100 Hp
	3.5	1600	3.43	437	909.6	454.8	303.2	181.9	121.3	90.96	60.64	45.48	36.38	30.32	22.74	18.19	15.16	12.13	9.10
	4	2250	4.09	367	1,073	536.3	357.6	214.5	143.0	107.3	71.51	53.63	42.91	35.76	26.82	21.45	17.88	14.30	10.73
	4.5																		
ge	5.5	1800	5.25	286	668.5	334.3	222.8	133.7	89.14	66.85	44.57	33.43	26.74	22.28	16.71	13.37	11.14	8.91	6.69
	6.3	1600	6.23	241	500.8	250.4	166.9	100.2	66.77	50.08	33.38	25.04	20.03	16.69	12.52	10.02	8.35	6.68	5.01
	7.2																		
	10																		
	12.5	1600	12.3	122	253.6	126.8	84.55	50.73	33.82	25.36	16.91	12.68	10.15	8.45	6.34	5.07	4.23	3.38	2.54
	15	2250	14.7	102	298.5	149.2	99.48	59.69	39.79	29.85	19.90	14.92	11.94	9.95	7.46	5.97	4.97	3.98	2.98
	18	2250	17.4	86	252.1	126.1	84.05	50.43	33.62	25.21	16.81	12.61	10.09	8.40	6.30	5.04	4.20	3.36	2.52
	20	1800	18.9	79	185.7	92.85	61.90	37.14	24.76	18.57	12.38	9.29	7.43	6.19	4.64	3.71	3.10	2.48	1.86
	24.6	1800	21.8	69	161.0	80.50	53.67	32.20	21.47	16.10	10.73	8.05	6.44	5.37	4.02	3.22	2.68	2.15	1.61
	30.7	1600	25.4	59	122.8	61.41	40.94	24.57	16.38	12.28	8.19	6.14	4.91	4.09	3.07	2.46	2.05	1.64	1.23
	31	1800	27.9	54	125.8	62.90	41.93	25.16	16.77	12.58	8.39	6.29	5.03	4.19	3.14	2.52	2.10	1.68	1.26
ge	33.3	1600	30.7	49	101.6	50.81	33.87	20.32	13.55	10.16	6.77	5.08	4.06	3.39	2.54	2.03	1.69	1.35	1.02
	35.5	1600	32.5	46	96.0	48.00	32.00	19.20	12.80	9.60	6.40	4.80	3.84	3.20	2.40	1.92	1.60	1.28	0.96
	38	1600	38	39	82.1	41.05	27.37	16.42	10.95	8.21	5.47	4.10	3.28	2.74	2.05	1.64	1.37	1.09	0.82
	41.5	1600	46	33	67.8	33.91	22.61	13.56	9.04	6.78	4.52	3.39	2.71	2.26	1.70	1.36	1.13	0.90	0.68
	43	2250	43	35	102.0	51.01	34.01	20.41	13.60	10.20	6.80	5.10	4.08	3.40	2.55	2.04	1.70	1.36	1.02
	45																		
	50	2250	50	30	87.7	43.87	29.25	17.55	11.70	8.77	5.85	4.39	3.51	2.92	2.19	1.75	1.46	1.17	0.88
	54	2250	60	25	73.1	36.56	24.37	14.62	9.75	7.31	4.87	3.66	2.92	2.44	1.83	1.46	1.22	0.97	0.73
	63	2250	63	24	69.6	34.82	23.21	13.93	9.29	6.96	4.64	3.48	2.79	2.32	1.74	1.39	1.16	0.93	0.70
	69																		
	72	1800	77	19	45.6	22.79	15.19	9.12	6.08	4.56	3.04	2.28	1.82	1.52	1.14	0.91	0.76	0.61	0.46
	79	1800	80	19	43.9	21.94	14.62	8.77	5.85	4.39	2.92	2.19	1.75	1.46	1.10	0.88	0.73	0.58	0.44
	85	2250	89	17	49.3	24.65	16.43	9.86	6.57	4.93	3.29	2.46	1.97	1.64	1.23	0.99	0.82	0.66	0.49
	90	2250	93	16	47.2	23.59	15.72	9.43	6.29	4.72	3.14	2.36	1.89	1.57	1.18	0.94	0.79	0.63	0.47
	100	2250	100	15	43.9	21.94	14.62	8.77	5.85	4.39	2.92	2.19	1.75	1.46	1.10	0.88	0.73	0.58	0.44
3 ge	113	1600	113	13	27.6	13.80	9.20	5.52	3.68	2.76	1.84	1.38	1.10	0.92	0.69	0.55	0.46	0.37	0.28
	125	1800	125	12	28.1	14.04	9.36	5.62	3.74	2.81	1.87	1.40	1.12	0.94	0.70	0.56	0.47	0.37	0.28
	140	1600	139	11	22.4	11.22	7.48	4.49	2.99	2.24	1.50	1.12	0.90	0.75	0.56	0.45	0.37	0.30	0.22
	160	1800	152	10	23.1	11.55	7.70	4.62	3.08	2.31	1.54	1.15	0.92	0.77	0.58	0.46	0.38	0.31	0.23
	180	1800	177	8.5	19.8	9.91	6.61	3.97	2.64	1.98	1.32	0.99	0.79	0.66	0.50	0.40	0.33	0.26	0.20
	200	1800	202	7.4	17.4	8.69	5.79	3.48	2.32	1.74	1.16	0.87	0.70	0.58	0.43	0.35	0.29	0.23	0.17
	224	2250	221	6.8	19.9	9.93	6.62	3.97	2.65	1.99	1.32	0.99	0.79	0.66	0.50	0.40	0.33	0.26	0.20
	250	1800	234	6.4	15.0	7.50	5.00	3.00	2.00	1.50	1.00	0.75	0.60	0.50	0.37	0.30	0.25	0.20	0.15
	280	1600	278	5.4	11.2	5.61	3.74	2.24	1.50	1.12	0.75	0.56	0.45	0.37	0.28	0.22	0.19	0.15	0.11
	300	1600	284	5.3	11.0	5.49	3.66	2.20	1.46	1.10	0.73	0.55	0.44	0.37	0.27	0.22	0.18	0.15	0.11
	321																		
	388	1600	336	4.5	9.3	4.64	3.10	1.86	1.24	0.93	0.62	0.46	0.37	0.31	0.23	0.19	0.15	0.12	0.09
	400	2250	396	3.8	11.1	5.54	3.69	2.22	1.48	1.11	0.74	0.55	0.44	0.37	0.28	0.22	0.18	0.15	0.11
	412																		
	450	2250	455	3.3	9.6	4.82	3.21	1.93	1.29	0.96	0.64	0.48	0.39	0.32	0.24	0.19	0.16	0.13	0.10
	500	1600	492	3.0	6.3	3.17	2.11	1.27	0.85	0.63	0.42	0.32	0.25	0.21	0.16	0.13	0.11	0.08	0.06
	560	2250	546	2.7	8.0	4.02	2.68	1.61	1.07	0.80	0.54	0.40	0.32	0.27	0.20	0.16	0.13	0.11	0.08
	600	1600	603	2.5	5.2	2.59	1.72	1.03	0.69	0.52	0.34	0.26	0.21	0.17	0.13	0.10	0.09	0.07	0.05
	650	2250	669	2.2	6.6	3.28	2.19	1.31	0.87	0.66	0.44	0.33	0.26	0.22	0.16	0.13	0.11	0.09	0.07
	700	1600	693	2.2	4.5	2.25	1.50	0.90	0.60	0.45	0.30	0.23	0.18	0.15	0.11	0.09	0.08	0.06	0.05
	760	2250	755	2.0	5.8	2.91	1.94	1.16	0.77	0.58	0.39	0.29	0.23	0.19	0.15	0.12	0.10	0.08	0.06
	800	1600	816	1.8	3.8	1.91	1.27	0.76	0.51	0.38	0.25	0.19	0.15	0.13	0.10	0.08	0.06	0.05	0.04
ge	860	1600	848	1.8	3.7	1.84	1.23	0.74	0.49	0.37	0.25	0.18	0.15	0.12	0.09	0.07	0.06	0.05	0.04
	900	2250	906	1.7	4.8	2.42	1.61	0.97	0.65	0.48	0.32	0.24	0.19	0.16	0.12	0.10	0.08	0.06	0.05
4	950	2250	942	1.6	4.7	2.33	1.55	0.93	0.62	0.47	0.31	0.23	0.19	0.16	0.12	0.09	0.08	0.06	0.05
	1000	2250	1022	1.5	4.3	2.15	1.43	0.86	0.57	0.43	0.29	0.21	0.17	0.14	0.11	0.09	0.07	0.06	0.04
	1120	2250	1130	1.3	3.9	1.94	1.29	0.78	0.52	0.39	0.26	0.19	0.16	0.13	0.10	0.08	0.06	0.05	0.04
	1177	1600	1149	1.3	2.7	1.36	0.91	0.54	0.36	0.27	0.18	0.14	0.11	0.09	0.07	0.05	0.05	0.04	0.03
	1250	2250	1275	1.2	3.4	1.72	1.15	0.69	0.46	0.34	0.23	0.17	0.14	0.11	0.09	0.07	0.06	0.05	0.03
	1400	1600	1433	1.0	2.2	1.09	0.73	0.44	0.29	0.22	0.15	0.11	0.09	0.07	0.05	0.04	0.04	0.03	0.02
	1600	2250	1591	0.9	2.8	1.38	0.92	0.55	0.37	0.28	0.18	0.14	0.11	0.09	0.07	0.06	0.05	0.04	0.03
	1800	1600	1721	0.9	1.8	0.91	0.60	0.36	0.24	0.18	0.12	0.09	0.07	0.06	0.05	0.04	0.03	0.02	0.02
	2000	1600	1941	0.8	1.6	0.80	0.54	0.32	0.21	0.16	0.11	0.08	0.06	0.05	0.04	0.03	0.03	0.02	0.02
	2240	1600	2122	0.7	1.5	0.74	0.49	0.29	0.20	0.15	0.10	0.07	0.06	0.05	0.04	0.03	0.02	0.02	0.01
	2400	1600	2422	0.6	1.3	0.64	0.43	0.26	0.17	0.13	0.09	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.01
	2800																		

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

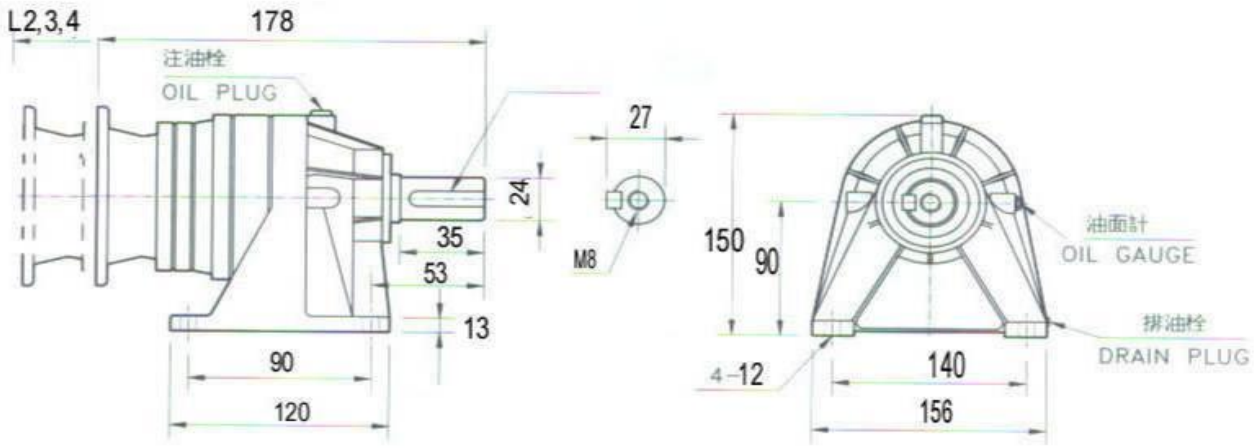
selection base on input 1500 Rpm

Size 600

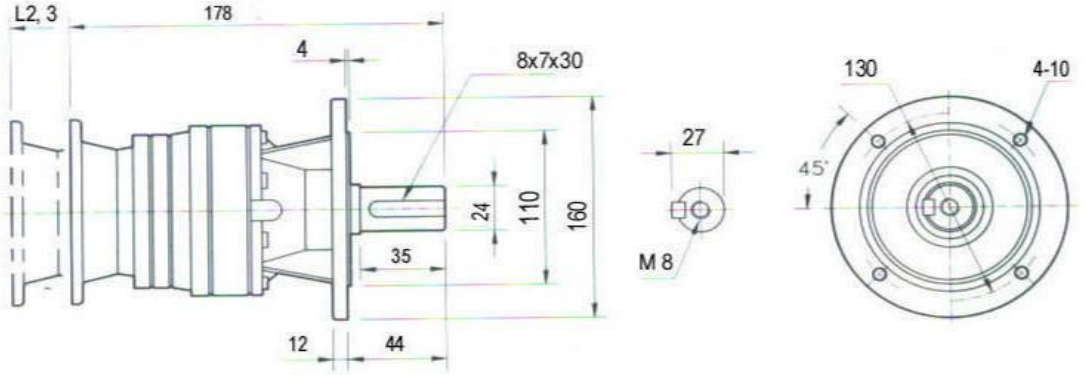
	ratio	$T_{2\ Lim}$	ratio	out rpm	P_2	s.f. (P2/P1)											
	i_n	Kgm	i_{eff}	N2	Hp	10 Hp	15 Hp	20 Hp	25 Hp	30 Hp	40 Hp	50 Hp	60 Hp	75 Hp	100 Hp	125 Hp	150 Hp
ge	3.5																
	4																
	4.5	6500	4.14	362	3,061.4	306.1	204.1	153.1	122.46	102.05	76.53	61.23	51.02	40.82	30.61	24.49	20.41
	5.5	5000	5.4	278	1,805.4	180.5	120.4	90.3	72.22	60.18	45.14	36.11	30.09	24.07	18.05	14.44	12.04
	6.3	4100	6.5	231	1,229.9	123.0	81.99	61.5	49.20	41.00	30.75	24.60	20.50	16.40	12.30	9.84	8.20
	7.2																
	10																
	12.5	6500	14.2	106	892.5	89.3	59.50	44.6	35.70	29.75	22.31	17.85	14.88	11.90	8.93	7.14	5.95
	15	6500	16.9	89	750.0	75.0	50.00	37.5	30.00	25.00	18.75	15.00	12.50	10.00	7.50	6.00	5.00
	18	5000	18.5	81	527.0	52.7	35.13	26.3	21.08	17.57	13.17	10.54	8.78	7.03	5.27	4.22	3.51
	20	5000	21.7	69	449.3	44.9	29.95	22.5	17.97	14.98	11.23	8.99	7.49	5.99	4.49	3.59	3.00
	24.6	5000	25.8	58	377.9	37.8	25.19	18.9	15.12	12.60	9.45	7.56	6.30	5.04	3.78	3.02	2.52
	30.7	4100	26.6	56	300.5	30.1	20.04	15.0	12.02	10.02	7.51	6.01	5.01	4.01	3.01	2.40	2.00
ge	31	5000	28.3	53	344.5	34.5	22.97	17.2	13.78	11.48	8.61	6.89	5.74	4.59	3.45	2.76	2.30
	33.3	5000	33.6	45	290.2	29.0	19.34	14.5	11.61	9.67	7.25	5.80	4.84	3.87	2.90	2.32	1.93
	35.5	4100	34.1	44	234.4	23.4	15.63	11.7	9.38	7.81	5.86	4.69	3.91	3.13	2.34	1.88	1.56
	38																
	41.5	5000	40.5	37	240.7	24.1	16.05	12.0	9.63	8.02	6.02	4.81	4.01	3.21	2.41	1.93	1.60
	43																
	45																
	50	6500	51	29	248.5	24.9	16.57	12.4	9.94	8.28	6.21	4.97	4.14	3.31	2.49	1.99	1.66
	54																
	63	6500	61	25	207.8	20.8	13.85	10.4	8.31	6.93	5.19	4.16	3.46	2.77	2.08	1.66	1.39
	69																
	72	6500	71	21	178.5	17.9	11.90	8.9	7.14	5.95	4.46	3.57	2.98	2.38	1.79	1.43	1.19
	79	6500	78	19	162.5	16.2	10.83	8.1	6.50	5.42	4.06	3.25	2.71	2.17	1.62	1.30	1.08
	85																
	90	6500	92	16	137.8	13.8	9.18	6.9	5.51	4.59	3.44	2.76	2.30	1.84	1.38	1.10	0.92
	100	6500	105	14	120.7	12.1	8.05	6.0	4.83	4.02	3.02	2.41	2.01	1.61	1.21	0.97	0.80
ge	113	6500	110	14	115.2	11.5	7.68	5.8	4.61	3.84	2.88	2.30	1.92	1.54	1.15	0.92	0.77
	125	5000	120	13	81.2	8.1	5.42	4.1	3.25	2.71	2.03	1.62	1.35	1.08	0.81	0.65	0.54
3	140	5000	135	11	72.2	7.2	4.81	3.6	2.89	2.41	1.81	1.44	1.20	0.96	0.72	0.58	0.48
	160	5000	143	10	68.2	6.8	4.55	3.4	2.73	2.27	1.70	1.36	1.14	0.91	0.68	0.55	0.45
	180	5000	151	10	64.6	6.5	4.30	3.2	2.58	2.15	1.61	1.29	1.08	0.86	0.65	0.52	0.43
	200	5000	176	8.5	55.4	5.5	3.69	2.8	2.22	1.85	1.38	1.11	0.92	0.74	0.55	0.44	0.37
	224	4100	181	8.3	44.2	4.4	2.94	2.2	1.77	1.47	1.10	0.88	0.74	0.59	0.44	0.35	0.29
	250	6500	193	7.8	65.7	6.6	4.38	3.3	2.63	2.19	1.64	1.31	1.09	0.88	0.66	0.53	0.44
	280	5000	208	7.2	46.9	4.7	3.12	2.3	1.87	1.56	1.17	0.94	0.78	0.62	0.47	0.37	0.31
	300	5000	252	6.0	38.7	3.9	2.58	1.9	1.55	1.29	0.97	0.77	0.64	0.52	0.39	0.31	0.26
	321	4100	303	5.0	26.4	2.6	1.76	1.3	1.06	0.88	0.66	0.53	0.44	0.35	0.26	0.21	0.18
	388	6500	383	3.9	33.1	3.3	2.21	1.7	1.32	1.10	0.83	0.66	0.55	0.44	0.33	0.26	0.22
	400																
	412																
	450																
	500	5000	501	3.0	19.5	1.9	1.30	1.0	0.78	0.65	0.49	0.39	0.32	0.26	0.19	0.16	0.13
	560	6500	541	2.8	23.4	2.3	1.56	1.2	0.94	0.78	0.59	0.47	0.39	0.31	0.23	0.19	0.16
	600	6500	586	2.6	21.6	2.2	1.44	1.1	0.87	0.72	0.54	0.43	0.36	0.29	0.22	0.17	0.14
	650	6500	649	2.3	19.5	2.0	1.30	1.0	0.78	0.65	0.49	0.39	0.33	0.26	0.20	0.16	0.13
	700	5000	706	2.1	13.8	1.4	0.92	0.7	0.55	0.46	0.35	0.28	0.23	0.18	0.14	0.11	0.09
	760																
	800	6500	793	1.9	16.0	1.6	1.07	0.8	0.64	0.53	0.40	0.32	0.27	0.21	0.16	0.13	0.11
ge	860	5000	847	1.8	11.5	1.2	0.77	0.6	0.46	0.38	0.29	0.23	0.19	0.15	0.12	0.09	0.08
	900	6500	913	1.6	13.9	1.4	0.93	0.7	0.56	0.46	0.35	0.28	0.23	0.19	0.14	0.11	0.09
4	950	5000	956	1.6	10.2	1.0	0.68	0.5	0.41	0.34	0.25	0.20	0.17	0.14	0.10	0.08	0.07
	1000	6500	990	1.5	12.8	1.3	0.85	0.6	0.51	0.43	0.32	0.26	0.21	0.17	0.13	0.10	0.09
	1120	5000	1033	1.5	9.4	0.9	0.63	0.5	0.38	0.31	0.24	0.19	0.16	0.13	0.09	0.08	0.06
	1177	5000	1192	1.3	8.2	0.8	0.55	0.4	0.33	0.27	0.20	0.16	0.14	0.11	0.08	0.07	0.05
	1250																
	1400	6500	1393	1.1	9.1	0.9	0.61	0.5	0.36	0.30	0.23	0.18	0.15	0.12	0.09	0.07	0.06
	1600																
	1800	5000	1814	0.8	5.4	0.5	0.36	0.3	0.21	0.18	0.13	0.11	0.09	0.07	0.05	0.04	0.04
	2000																
	2240																
	2400																
	2800																

*)Selection gear shold be consider to S.F. (fs), load, and aplication of machine

HM 120 (1)

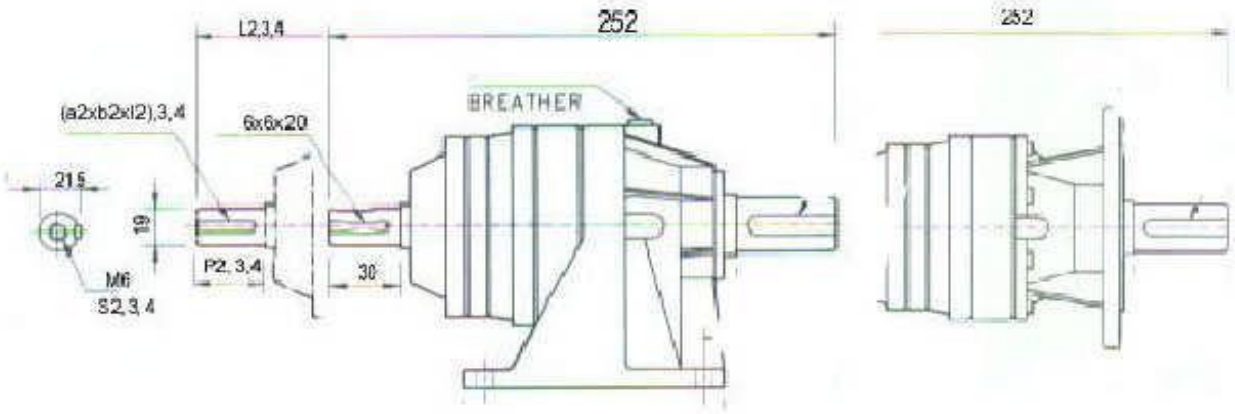


HV 120 (2)



HS 120 (3)

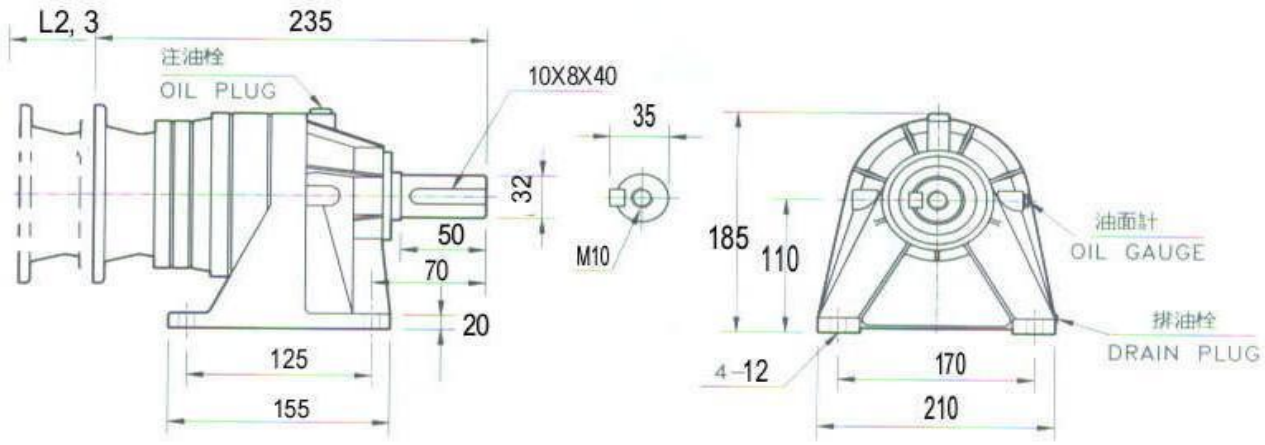
(4) HW 120



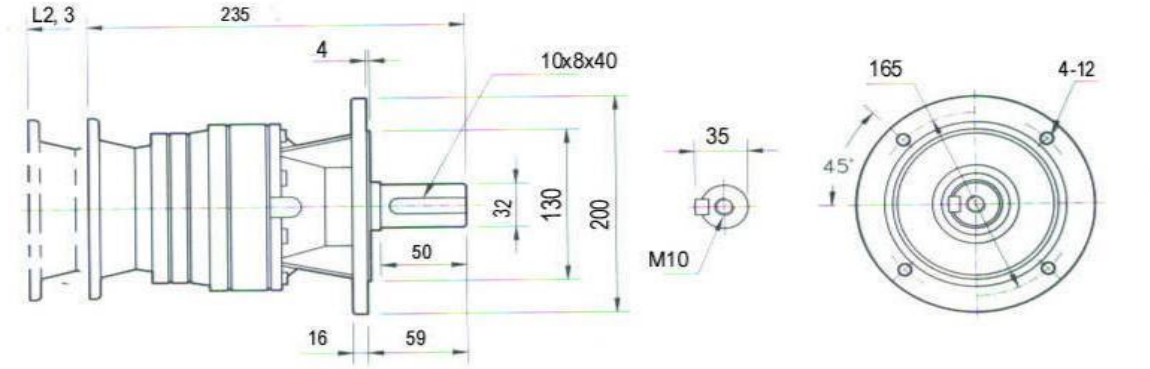
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	**Weight (1)**	**Weight (2)**	**Weight (3)**	**Weight (4)**
1stage /L1	178	252	30	M6	21.5	6 x 6 x 20	19	**10**	**9**	**13**	**12**
2stage /L2	208	282	30	M6	21.5	6 x 6 x 20	19	**12**	**11**	**15**	**14**
3stage /L3	238	312	30	M6	21.5	6 x 6 x 20	19	**14**	**13**	**17**	**15**
4stage /L4	268	342	30	M6	21.5	6 x 6 x 20	19	**17**	**15**	**20**	**18**

frame120 Avaible for Motor Frame 63-71 (0.18 - 0.37kw/1/4-1/2HP)

HM 160 (1)

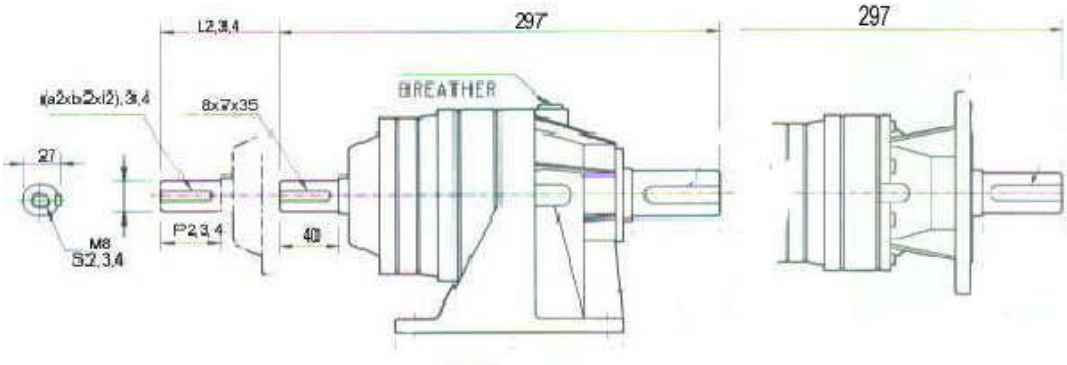


HV 160 (2)



HS 160 (3)

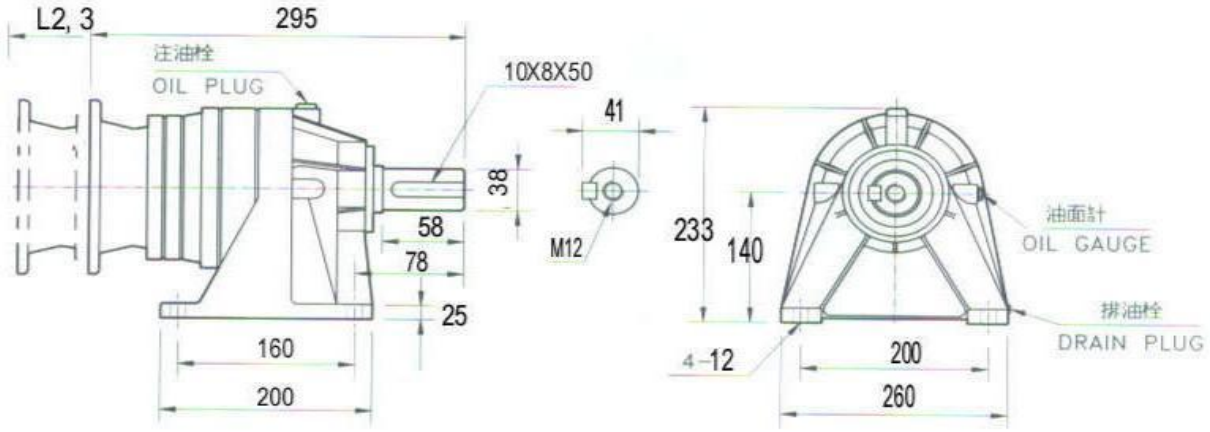
(4) HW 160



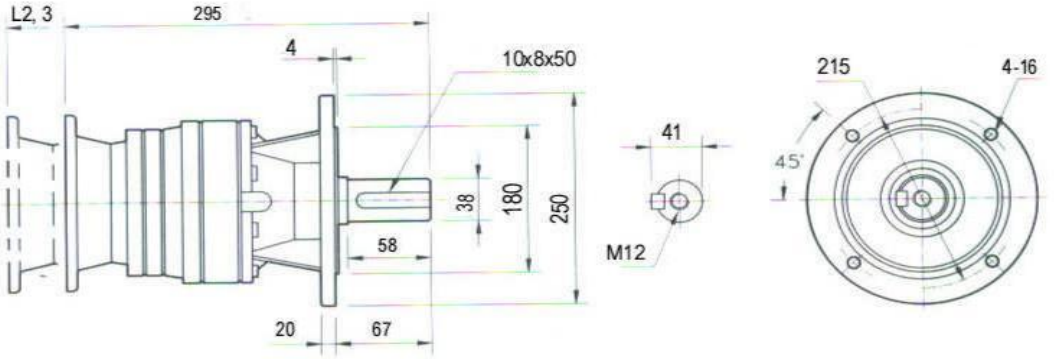
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	235	297	40	M8	27	8 x 7 x 35	24	20	18	25	23
2stage /L2	269	331	40	M8	27	8 x 7 x 35	24	23	21	28	26
3stage /L3	303	365	40	M8	27	8 x 7 x 35	24	27	24	32	29
4stage /L4	337	399	40	M8	27	8 x 7 x 35	24	31	27	36	32

frame120 Avaible for Motor Frame 63-90L (0.18-1.5kw/1/4-2HP)

HM 190 (1)

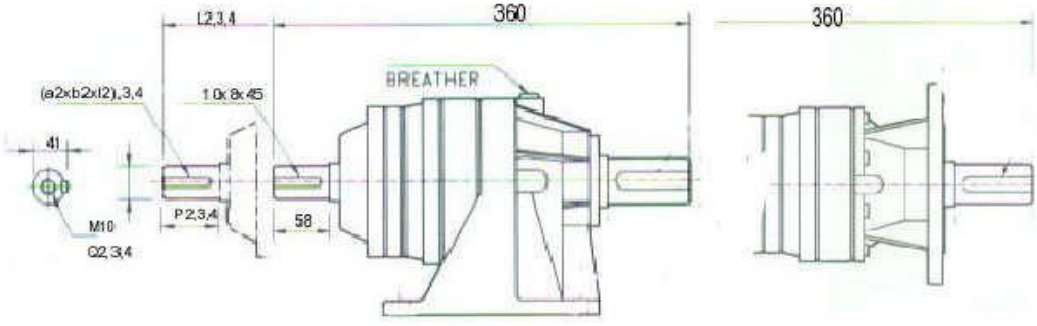


HV 190 (2)



HS 190 (3)

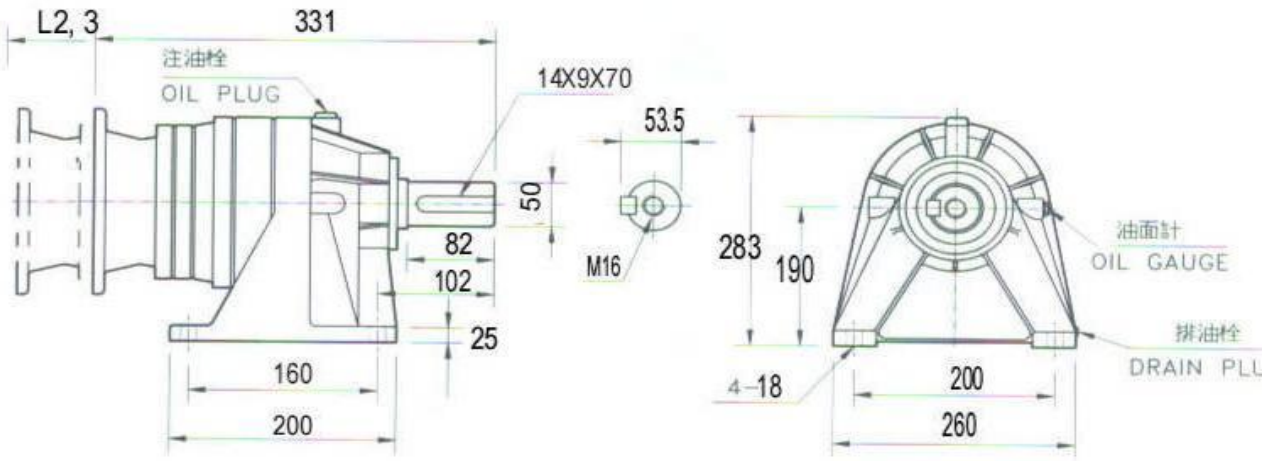
(4) HW 190



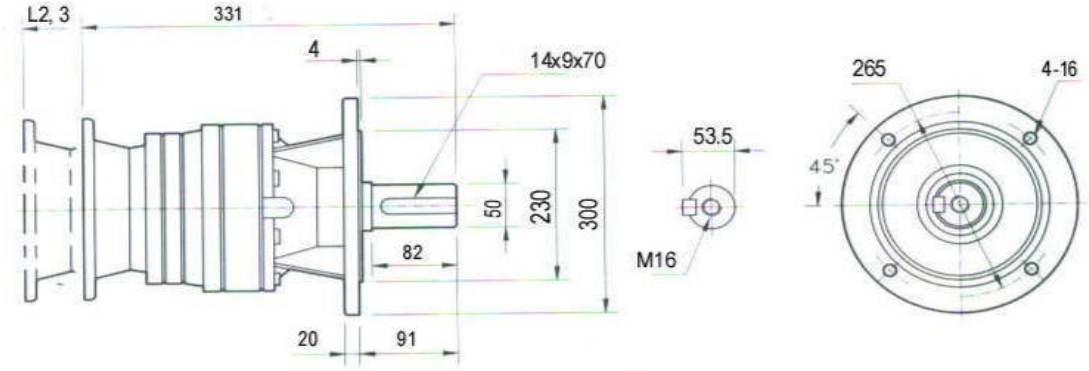
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	**Weight (1)**	**Weight (2)**	**Weight (3)**	**Weight (4)**
1stage /L1	295	360	58	M10	41	10 x 8 x 45	38	32	29	38	35
2stage /L2	318	370	40	M8	27	8 x 7 x 35	24	34	31	40	37
3stage /L3	342	404	40	M8	27	8 x 7 x 35	24	38	35	44	41
4stage /L4	376	438	40	M8	27	8 x 7 x 35	24	43	40	49	46

frame190 Avaible for Motor Frame 63-112M (0.18-3.7kw/1/4-5HP)

HM 250 (1)

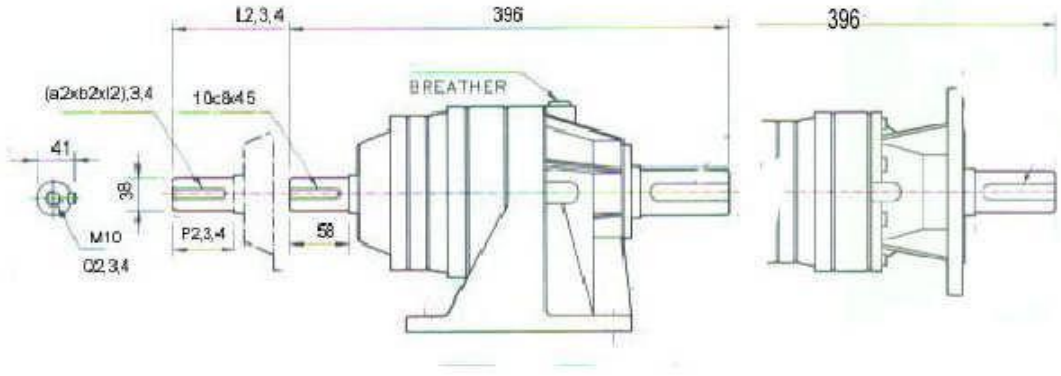


HV 250 (2)



HS 250 (3)

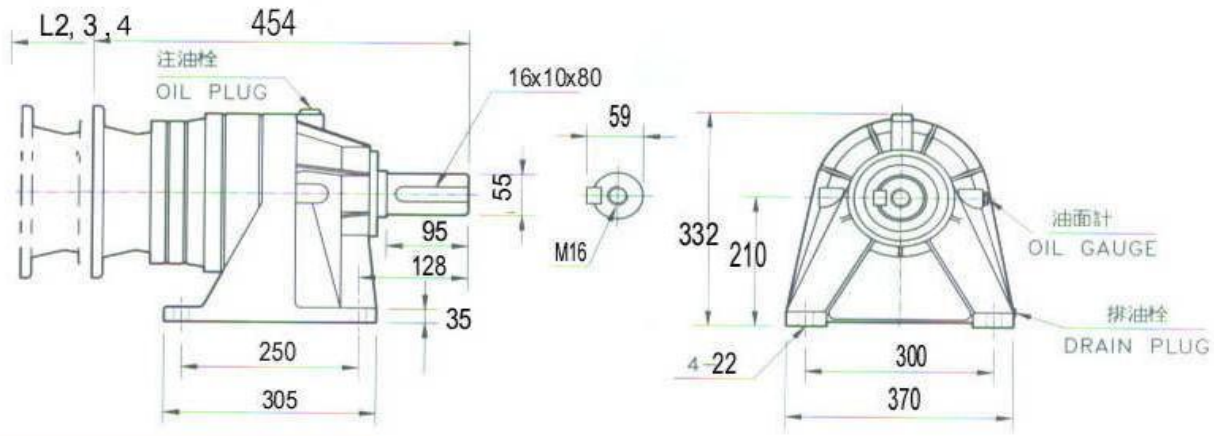
(4) HW 250



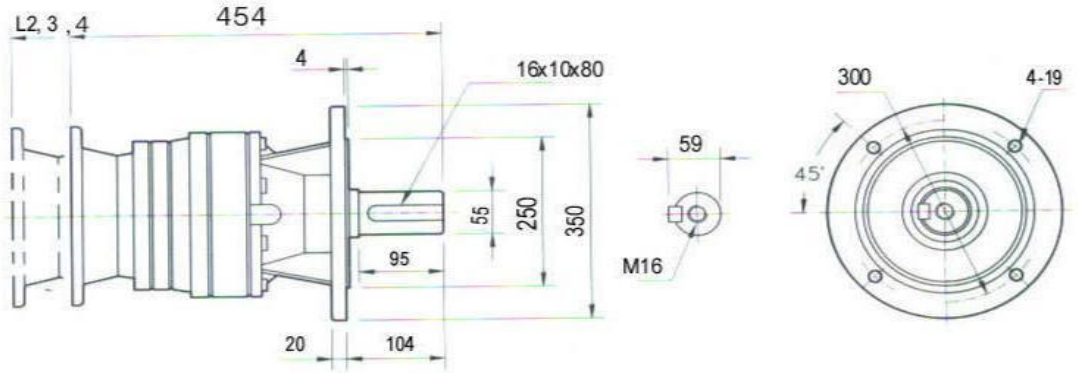
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	331	396	58	M10	41	10 x 8 x 45	38	39	36	48	45
2stage /L2	373	438	58	M10	41	10 x 8 x 45	38	41	38	50	47
3stage /L3	386	448	40	M8	27	8 x 7 x 35	24	44	41	53	50
4stage /L4	420	482	40	M8	27	8 x 7 x 35	24	48	45	57	54

frame 250 Avaible for Motor Frame 63-160M (0.18-11kw/1/4-15HP)

HM 280 (1)

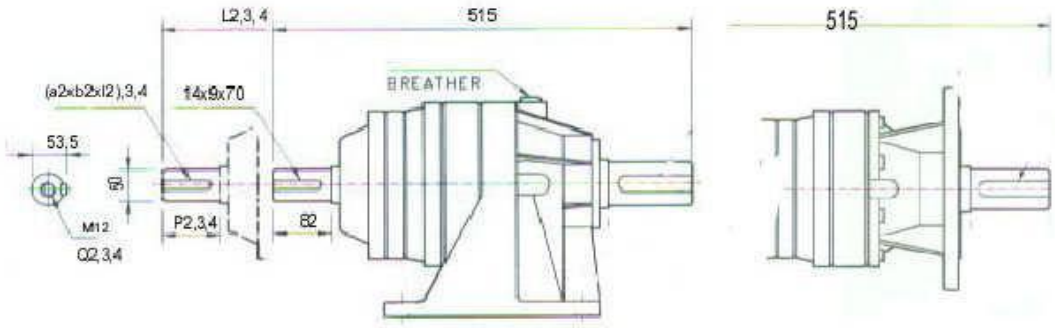


HV 280 (2)



HS 280 (3)

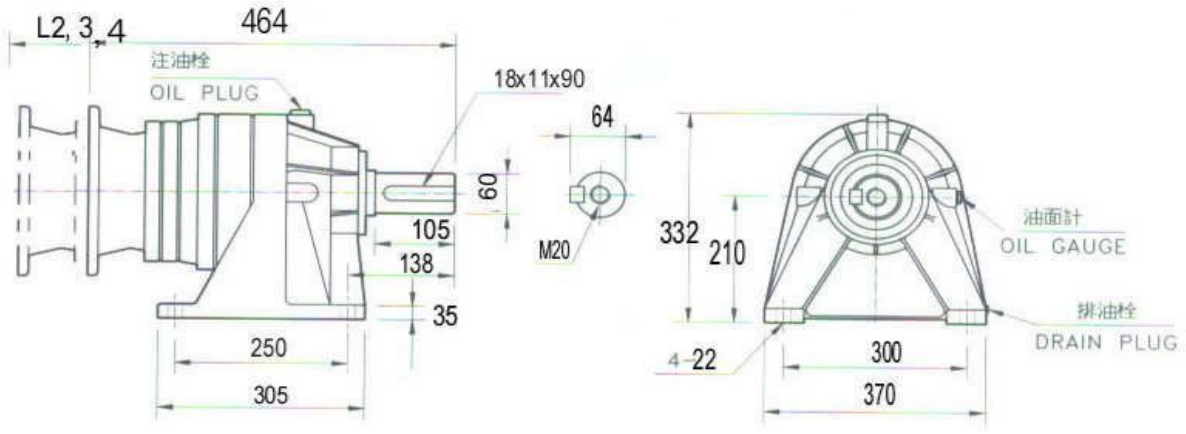
(4) HW 280



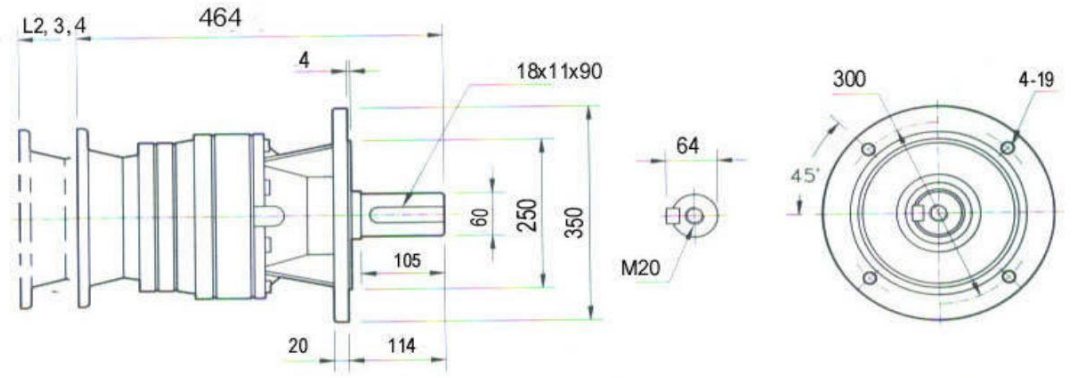
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	454	515	82	M12	53.5	14 x 9 x 70	50	75	71	84	80
2stage /L2	496	519	58	M10	41	10 x 8 x 45	38	83	79	92	88
3stage /L3	502	561	58	M10	41	10 x 8 x 45	38	89	85	98	94
4stage /L4	509	571	40	M8	27	8 x 7 x 35	24	95	91	104	100

frame 280 Avaible for Motor Frame 63-160L (0.18-15kw/ 1/4-20HP)

HM 300 (1)

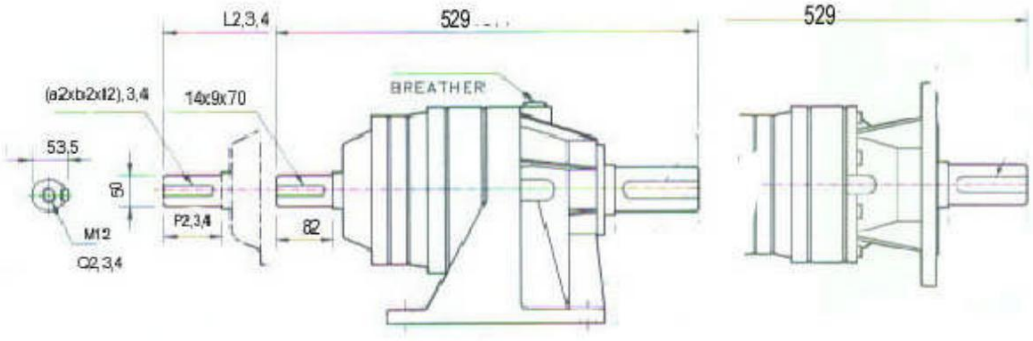


HV 300 (2)



HS 300 (3)

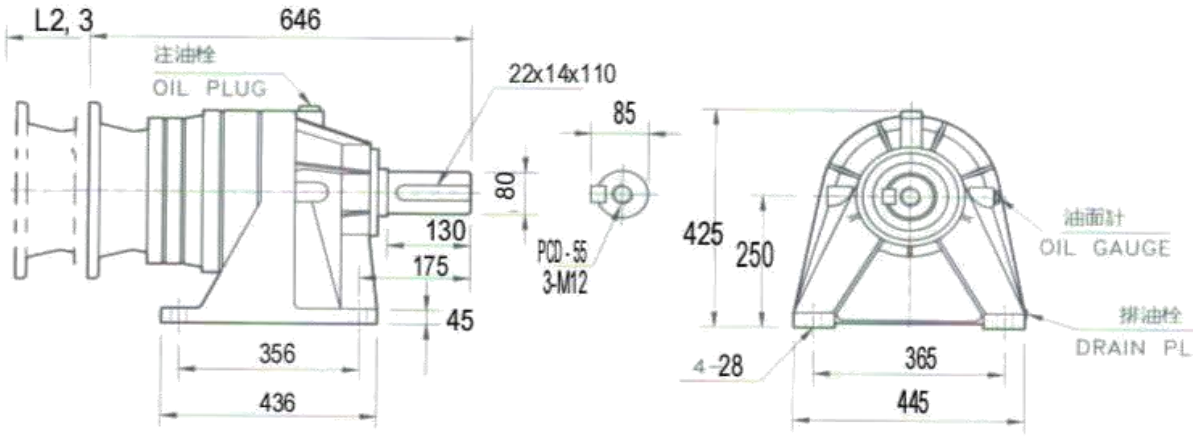
(4) HW 300



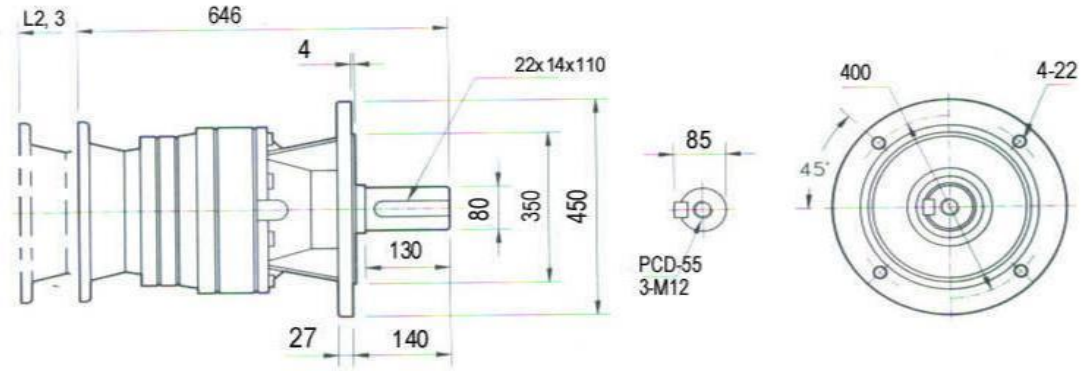
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	464	529	82	M12	53.5	14 x 9 x 70	50	79	72	99	92
2stage /L2	506	535	58	M10	41	10 x 8 x 45	38	85	78	105	98
3stage /L3	512	571	58	M10	41	10 x 8 x 45	38	90	83	110	103
4stage /L4	519	581	40	M8	27	8 x 7 x 35	24	95	88	115	108

frame 300 Avaible for Motor Frame 71-180L (0.37-30kw/ 1/2-40HP)

HM 400 (1)

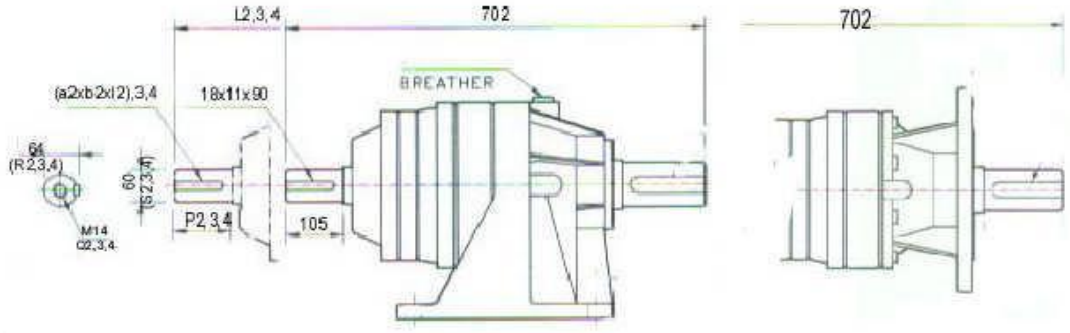


HV 400 (2)



HS 400 (3)

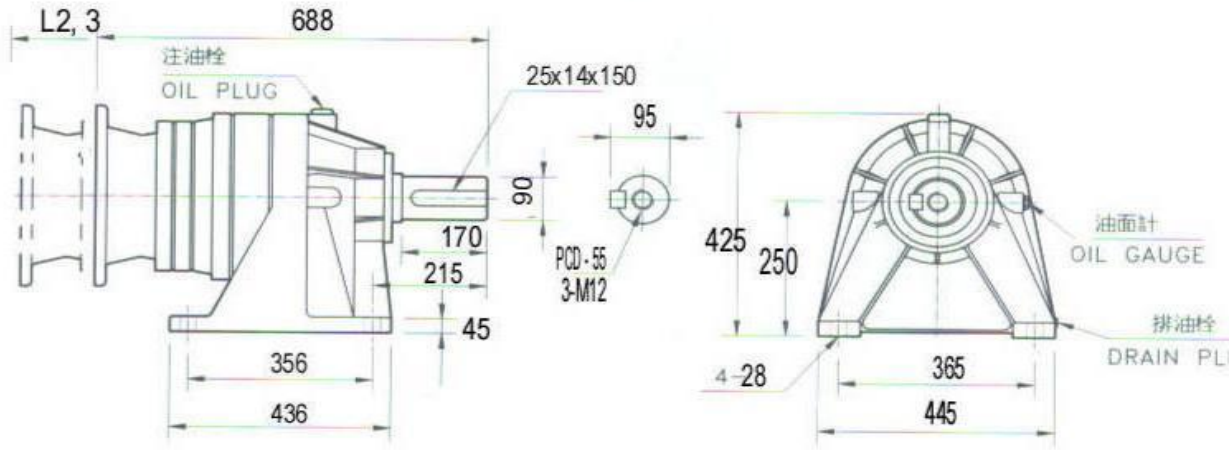
(4) HW 400



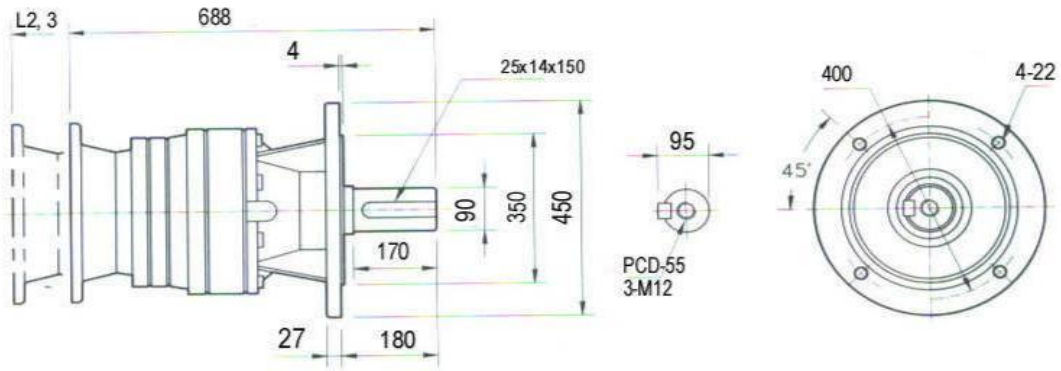
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	646	702	105	M14	64	18 x 11 x 90	60	174	160	189	175
2stage /L2	686	740	82	M12	53.5	14 x 9 x 70	50	198	182	213	197
3stage /L3	679	744	58	M10	41	10 x 8 x 45	38	203	186	218	201
4stage /L4	721	786	58	M10	41	10 x 8 x 45	38	244	214	249	229

frame 400 Avaible for Motor Frame 80-200L (0.75-45kw/ 1-60HP)

HM 450 (1)

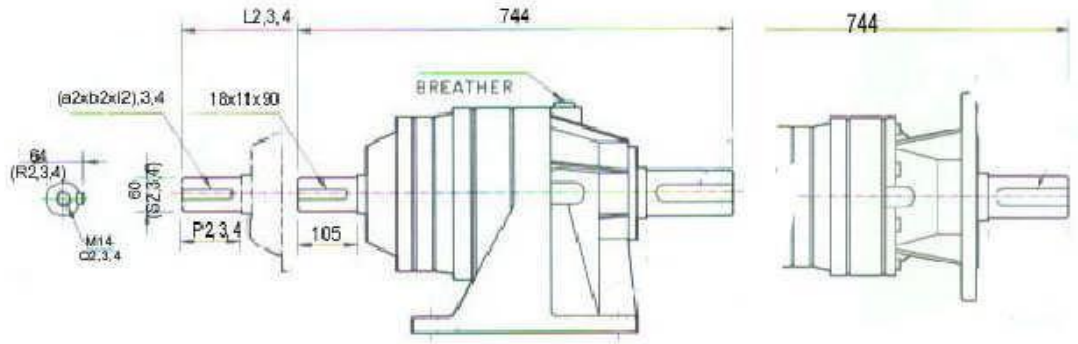


HV 450 (2)



HS 450 (3)

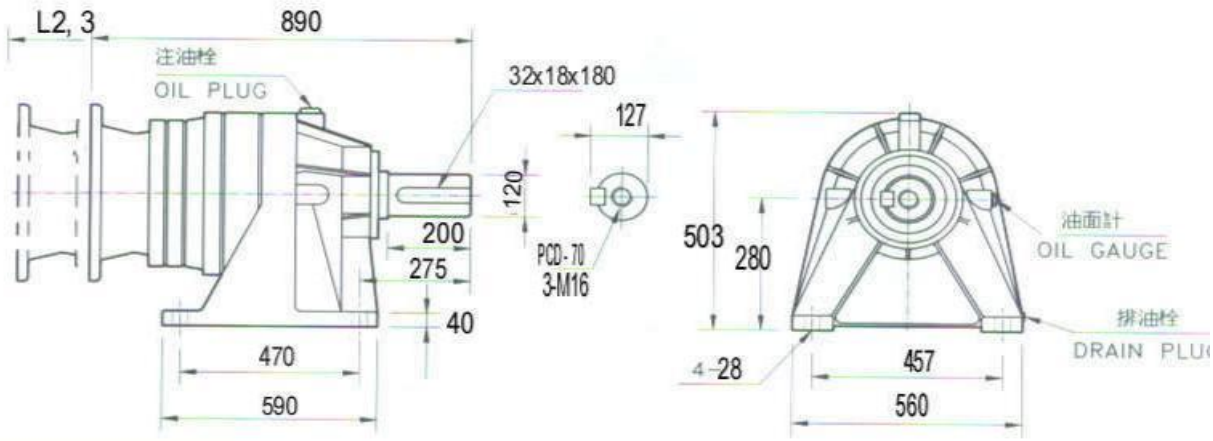
(4) HW 450



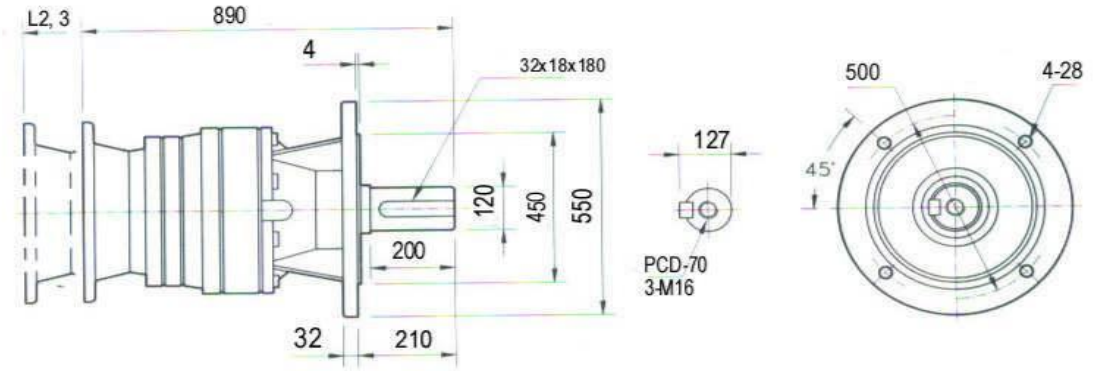
	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	Weight (1)	Weight (2)	Weight (3)	Weight (4)
1stage /L1	688	744	105	M14	64	18 x 11 x 90	60	179	165	194	180
2stage /L2	721	782	82	M12	53.5	14 x 9 x 70	50	203	187	218	202
3stage /L3	728	796	58	M10	41	10 x 8 x 45	38	218	201	233	216
4stage /L4	763	828	58	M10	41	10 x 8 x 45	38	238	218	253	233

frame 450 Avaible for Motor Frame 90L-225S (1.5-55kw/ 2-75HP)

HM 600 (1)

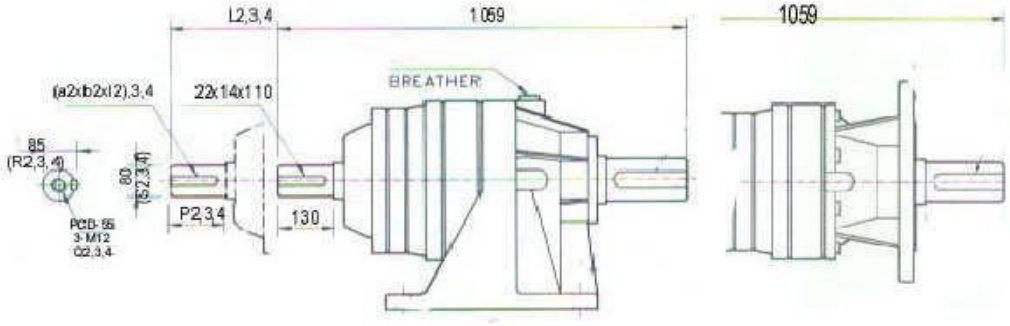


HV 600 (2)



HS 600 (3)

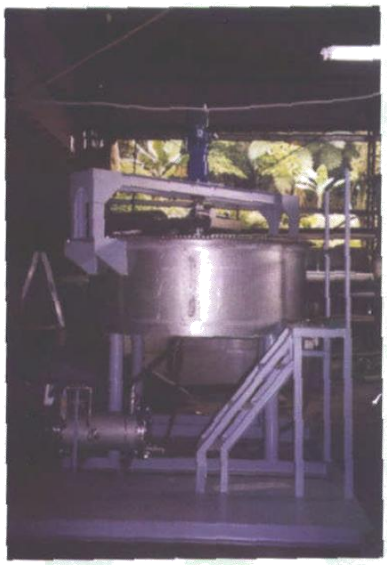
(4) HW 600



	L (1),(2)	L (3),(4)	P	Q	R	a x b x l	S	**Weight (1)**	**Weight (2)**	**Weight (3)**	**Weight (4)**
1stage /L1	890	1059	130	**PCD-55(3-M12)**	85	22x14x110	80	390	359	453	422
2stage /L2	1035	1091	105	M14	64	18 x11x 90	60	554	510	617	447
3stage /L3	1074	1129	82	M12	53.5	14 x 9 x 70	50	549	550	535	487
4stage /L4	1116	1133	58	M10	41	10 x 8 x 45	38	649	593	708	530

frame 600 Avaible for Motor Frame 132M-280S (7.5-110kw/ 10-150HP)

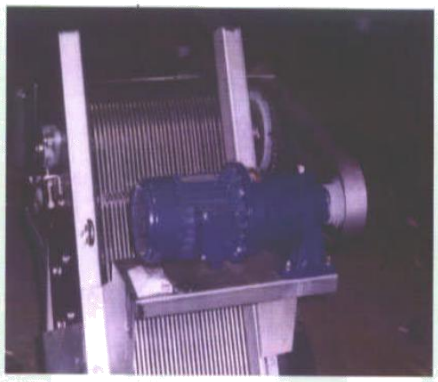
刮泥機



刮泥機

刮泥機

閘門機



刮沙機

Conversions Table.

Power :

Kw	Hp	cal/s	Kcal/h	PS
0.7457	1	178.2223	641.302	1.0142

Torque :

Kg-m	Oz-in	Lb-in	N-m	lb-ft
1	1388	86.796	9.806	7.233

Pressure :

kPa	mbar	Psi	atm
1	10	0.145	0.0099

Energy :

kWh	kpm	kcal	kJ
1	367000	860	3600

Flow rate

M^3/min	l/min	l/s	Cfm
1	1000	16.6667	35.3107