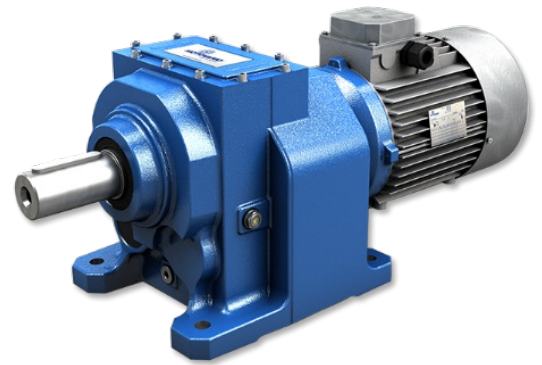


# TECHNICAL CATALOGUE



## HELICAL GEARED MOTORS



**MOTOVARIO**<sup>®</sup>

HEART OF MOTION

a TECO Group company



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## 1.1.1 Symbols

Physical dimension	Symbol	Symbol units of measure	Input	Output
Power	P	[HP]	P <sub>1</sub>	P <sub>2</sub>
Requested power	Pr	[HP]	Pr <sub>1</sub>	Pr <sub>2</sub>
Nominal power	Pn	[HP]	Pn <sub>1</sub>	Pn <sub>2</sub>
Torque	M	[in-lb]	M <sub>1</sub>	M <sub>2</sub>
Nominal torque	Mn	[in-lb]		Mn <sub>2</sub>
Requested torque	Mr	[in-lb]	Mr <sub>1</sub>	Mr <sub>2</sub>
Speed	n	[rpm]	n <sub>1</sub>	n <sub>2</sub>
Load	F	[lb]		
Radial load	Fr	[lb]	Fr <sub>1</sub>	Fr <sub>2</sub>
Radial axial	Fa	[lb]	Fa <sub>1</sub>	Fa <sub>2</sub>
Reduction ratio	i			
Dynamic efficiency	η <sub>d</sub>			
Speed	ips	[inch/second]		
Service factor	f.s.			
Static	s			
Dynamic	d			
Calculated	c			
Maximum	max			
Minimum	min			
Moment of inertia	J	[lb*in <sup>2</sup> ]	J <sub>1</sub>	
Ambient temperature	T <sub>amb</sub>	[°F]		
Dimensions		[inch]		

## 1.1.2 Formulas

REDUCER		
Starting or stopping time	$t = v / a$	[s]
Velocity in rotary motion	$v = \pi * d * n / 60$ $v = \omega * r$	[ft/s]
Speed velocity Angular velocity	$n = 60 * v / (\pi * d)$ $\omega = v / r$	[rpm] [rad/s]
Acceleration or deceleration according to a starting / stopping time	$a = v / t$	[ft/s <sup>2</sup> ]
Angular acceleration	$\alpha = n / (9,55 * t)$ $\alpha = \omega / t$	[rad/s <sup>2</sup> ]
Starting or stopping distance (according to acceleration / deceleration or angular velocity)	$s = a * t^2 / 2$ $s = v * t / 2$	[ft]
Horizontal translation force	$F = \mu * m * g$	[lbf]
Vertical translation force (lifting)	$F = m * g$	
Inclined plane translation force	$F = m * g (\mu * \cos\beta + \sin\beta)$	
m= mass [kg]; g= gravity acceleration [m/s <sup>2</sup> ]; $\mu$ = friction coefficient; $\beta$ = angle of inclination		
Moment of inertia	$J = m * v^2 / \omega^2$	[lb ft <sup>2</sup> ]
Torque	$M = F * d / 2$ $M = J * \omega / t$	[in-lb]

MOTOR and GEARMOTOR		
Starting time	$t_a = (J_{ext} + J_m) * n_n / 9,55 + (M_{peak} - M_r)$	[s]
Braking time	$t_s = (J_{ext} + J_m) * n_n / 9,55 + (M_{peak} + M_r)$	[s]
Motor rotation angle during starting	$\varphi = n_n * t_a / 19,1$	[rad]
Motor rotation angle during braking	$\varphi = n_n * t_s / 19,1$	[rad]
Power available at the shaft of single phase motor	$P = V * I * \eta * \cos\omega$	[W]
Power available at the shaft of three phase motor	$P = 1,73 * V * I * \eta * \cos\omega$	[W]

RUNNING at 60Hz		
Speed velocity at 60Hz	$n_{60Hz} = 1,2 * n_{50Hz}$	[rpm]
Power at 60Hz	$P_{1\ 60Hz} = P_{1\ 50Hz} * V_{60Hz} / V_{50Hz}$	[kW]
If input voltage at 60 Hz ( $V_{60Hz}$ ) corresponds to winding voltage at 50 Hz ( $V_{50Hz}$ ), power doesn't change $P_{1\ 60Hz} = P_{1\ 50Hz}$		
If input voltage at 60 Hz ( $V_{60Hz}$ ) is 20% higher than winding voltage at 50 Hz ( $V_{50Hz}$ ), power increases by 20% $P_{1\ 60Hz} = 1,2 P_{1\ 50Hz}$		
Torque at 60Hz	$M_{60Hz} = M_{50Hz} * P_{1\ 60Hz} / (1,2 * P_{1\ 50Hz})$	[in-lb]
Service factor at 60Hz	$f.s_{60Hz} = f.s_{50Hz} * 1,175 * P_{1\ 50Hz} / P_{1\ 60Hz}$	-

UNIT CONVERSION TABLE				
Description	Imperial units	International System of Units (SI)	Technical System (metric)	
Lenght, Distance	1 inch 1 foot	[in] = 0.0254 [ft] = 0.3048	meter	[m]
Mass	1 pound 1 ounce	[lb] = 0.4536 [oz] = 0.0283	kilogram	[kg]
Volume	US liquid gallon	[gal] = 3.7854	liter	[l]
Temperature	Fahrenheit degree	[°F] = 1.8 * °C + 32	Celsius degree	[°C]
Force	1 pound-force	[lb <sub>(f)</sub> ] = 4.4482	newton	[N]
		[lb <sub>(f)</sub> ] = 0.4536	kilogram force	[kg <sub>(f)</sub> ]
Power	1 horse power	[hp] = 0.7457	kilowatt	[kW]
Torque, Work	1 pound-force inch	[lb <sub>(f)</sub> in] = 0.1130	newton meter, joule kilogram-force meter	[N m], [J]
	1 pound-force foot	[lb <sub>(f)</sub> ft] = 1.3560 [lb <sub>(f)</sub> ft] = 0.1383		[kg <sub>(f)</sub> m]
Pressure	1 pound-force per square inch (psi)	[lb <sub>(f)</sub> /in <sup>2</sup> ] = 0.0689	bar	[bar]
Moment of inertia	1 WK <sup>2</sup>	[lb <sub>(f)</sub> ft <sup>2</sup> ] = 0.0421	kilogram square-meter	[kg m <sup>2</sup> ]

For correctly selecting a gear reducer or geared motor, several essential pieces of data are required:

- A. The rotational input speed to the gear reducer ( $n_1$ ) and the rotational output speed ( $n_2$ ). Through these two values it is possible to calculate the reduction ratio ( $i$ ) of the gear reducer using the following formula:  $i = n_1/n_2$
- B. The torque required by the application ( $M_{r2}$ ).

The geared motor or gear reducer can be selected once this data is known.

This guide helps you to select the right product in just a few steps:

#### Geared motor selection

1. Determine the application's actual service factor (**s.f.**). This parameter depends on the type of load of the powered machine, the number of starts per hour and the hours of operation (refer to the "Service factor" paragraph).
2. Calculate the input power  $P_{r1}$  using the required torque value  $M_{r2}$ , the speed  $n_2$  and dynamic efficiency value.  $P_{r1} = (M_{r2} * n_2) / (\mu_d * 63.025)$ . The dynamic efficiency value depends on the type of gear reducer and on the number of gear reduction stages. (To calculate the efficiency value see its page).
3. Consult the geared motor performance tables and identify a normalised power value  $P_{n1}$  exceeding the required power  $P_{r1}$ , such that:  $P_{n1} \geq P_{r1}$
4. Once the suitable nominal power has been identified, select the geared motor capable of generating the rotational speed closest to the desired  $n_2$  value and with service factor s.f. greater or equal to that required by the application.

In the geared motor selection tables the combinations include 2-pole, 4-pole and 6-pole motors powered at 50Hz.

#### Gear reducer selection

1. Determine the application's service factor (**s.f.**) (consult to the "Service factor" paragraph on its page).
2. Calculate the reduction ratio  $i$  from the requested output speed  $n_2$  and from the input speed  $n_1$ .  $i = n_1/n_2$
3. Calculate the torque  $M_{c2}$  for selecting the gear reducer through the torque required by the application  $M_{r2}$  and the service factor s.f.:  $M_{c2} = M_{r2} * (f.s.)$
4. Consult the Gear Reducer Performance tables looking for the reducer that, with the reduction ratio closer to the calculated one, has a nominal torque  $M_{n2}$  so that:  $M_{n2} \geq M_{c2}$

#### Checks

Once the gear reducer or geared motor has been selected, the following checks should be performed:

##### A. Thermal power

The gear reducer's thermal power must be equal to or greater than the installed mechanical power, or the power required by the application according to the indications contained in the section (refer to the "Thermal power" paragraph).

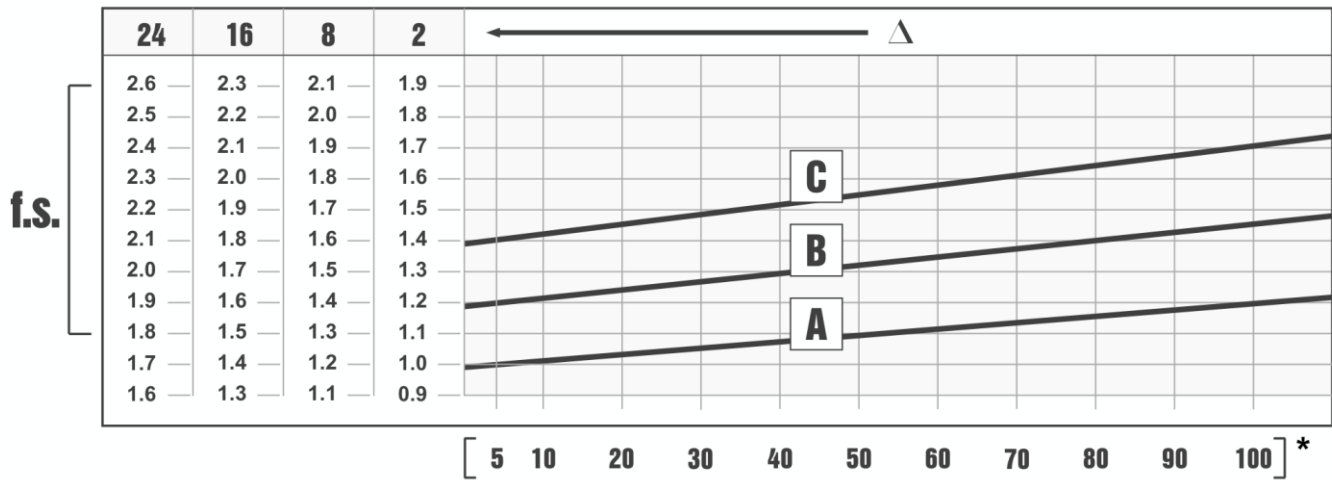
##### B. Maximum torque

Generally, the maximum torque (peak instantaneous load) that can be applied to the gear reducer must not exceed 200% of the nominal torque  $M_{n2}$  (ATEX -  $M_{2max}$ ).

##### C. Radial loads

1. Verify that the radial loads acting on the input and/or output shafts are within with the values indicated in the catalogue. If they exceed these values, increase the size of the gear reducer or modify the external load capacity. During the checking phase, it is important to remember that the values indicated in the catalogue refer to loads acting on the mid-point of the shaft protrusion, therefore, if the load is applied to a different position, appropriate formulas must be used to calculate the admissible load in the desired position (refer to the "Radial loads" paragraph).
2. If accessory output shafts are present, make sure that the applied load is compatible with shaft size. If help is needed: contact MOTOVARIO TECHNICAL SERVICE.

D. If an electric motor is going to be fitted to the selected gear reducer, check for its applicability by referring to the configuration table (see paragraph "Motor flange availability"). From IEC 180 motors, verify if necessary to support the motor with feet. In case of need please contact MOTOVARIO TECHNICAL SERVICE.



The service factor (f.s.) depends on the operating conditions the gear reducer is subjected to. The parameters that need to be taken into consideration to select the most adequate service factor correctly comprise:

- type of load of the operated machine : A - B - C
- length of daily operating time: hours/day ( $\Delta$ )
- start-up frequency: starts/hour (\*)

**LOAD:**

- **A** - uniform =  $f_a \leq 0,3$
- **B** - moderate shocks =  $f_a \leq 3$
- **C** - heavy shocks =  $f_a \leq 10$

**$f_a = J_e/J_m$**

- $J_e$  [ $lb\text{-in}^2$ ] moment of reduced external inertia at the drive-shaft
- $J_m$  [ $lb\text{-in}^2$ ] moment of inertia of motor

If  $f_a > 10$  call our Technical Service.

- A. Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.
- B. Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.
- C. Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders.

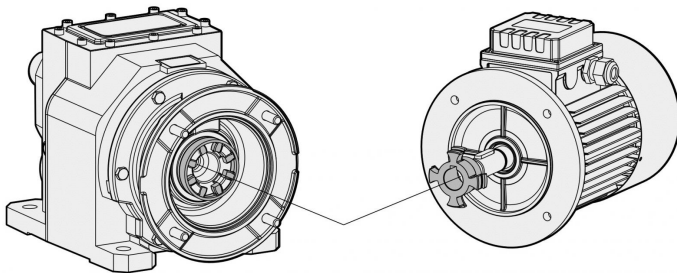
**To install the gear reducer it is necessary to note the following recommendations:**

- Check the correct direction of rotation of the gear reducer output shaft before fitting the unit to the machine.
- In the case of particularly lengthy periods of storage (4/6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it since the rubber could stick to the shaft or may even have lost the elasticity it needs to function properly.
- Whenever possible, protect the gear reducer against solar radiation and bad weather.
- Ensure the motor cools correctly by ensuring good passage of air from the fan side.
- In the case of ambient temperatures  $< 23^{\circ}\text{F}$  or  $> 104^{\circ}\text{F}$  call the Technical Service.
- The various parts (pulleys, gear wheels, couplings, shafts, etc.) must be mounted on the shafts using special threaded holes or other systems that anyhow ensure correct operation without risking damage to the bearings or external parts of the units. Lubricate the surfaces in contact to avoid seizure or oxidation.
- Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
- For units equipped with oil plugs, replace the closed plug used for shipping with the special breather plug.
- Check the correct level of the lubricant through the indicator, if there is one.
- Starting must take place gradually, without immediately applying the maximum load.
- When there are parts, objects or materials under the motor drive that can be damaged by even limited spillage of oil, special protection should be fitted.

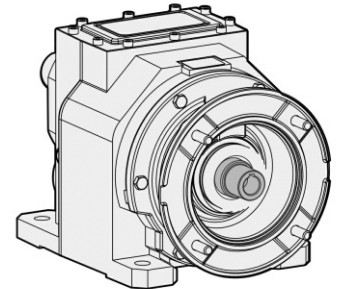
**Assembling motor on pam flange**

When the unit is supplied without motor, it is necessary to follow these recommendation to ensure the correct assembly of the electric motor. Check that the tolerances for the motor shaft and flange correspond to the "standard". Carefully clean the shaft, spigot and surfaces of the flange removing traces of paint and dirt, and confirm the key is fitted correctly. Fit the half coupling/sleeve to the motor shaft (see picture) taking care to ensure the motor shaft and bearings are not damaged by avoiding excessive force and where necessary using assembly equipment. Place the couplings elastic element onto the motor half coupling and position the motor up to the gear unit ensuring the coupling element is aligned with the driven half coupling. Complete the assembly using the fixing bolts. Key-ways with tightened tolerances.

**Flexible joint**



**PAM Sleeve**



Motovario products are supplied with the following surface treatment features:

#### Die-cast aluminium alloy cases for gears

Die-cast materials undergo the following surface cleaning operations:

- De-burring by means of a mechanically operated shearing system.
- Accurate shot-peening.
- Painting.
- Washing and passivation.

#### Grey-coloured cast-iron cases for gears

- Die-cast materials are always painted.

#### Painting specifications:

- Orange-peel blue epoxy-polyester RAL 5010. Polyester resin based heat-hardening powders, altered with epoxy resins.

#### Mechanical properties

- Tests carried out onto degreased Unichim white lattens film thickness: 2.5 mils comply with the following specifications: adherence (ISO2409).

#### Heat resistance

- 24 HOURS AT 302°F.

#### Corrosion strength

- ASTM B 117/97 salt fog from 100 to 500 hours depending on the support's preliminary treatment.

#### Performance:

- Loading capacity in accordance with DIN 3990, ISO 6336, AGMA 2101, ISO 10300, DIN 3991, ISO 281, DIN 743.

#### Dynamic efficiency $\eta_d$ :

- The operating efficiency is the ratio between the output power  $P_2$  and the power absorbed by the gear reducer  $P_1$ :  $\eta_d = P_2 / P_1$ .

H/HA-range helical gear reducers have an average value equal to:

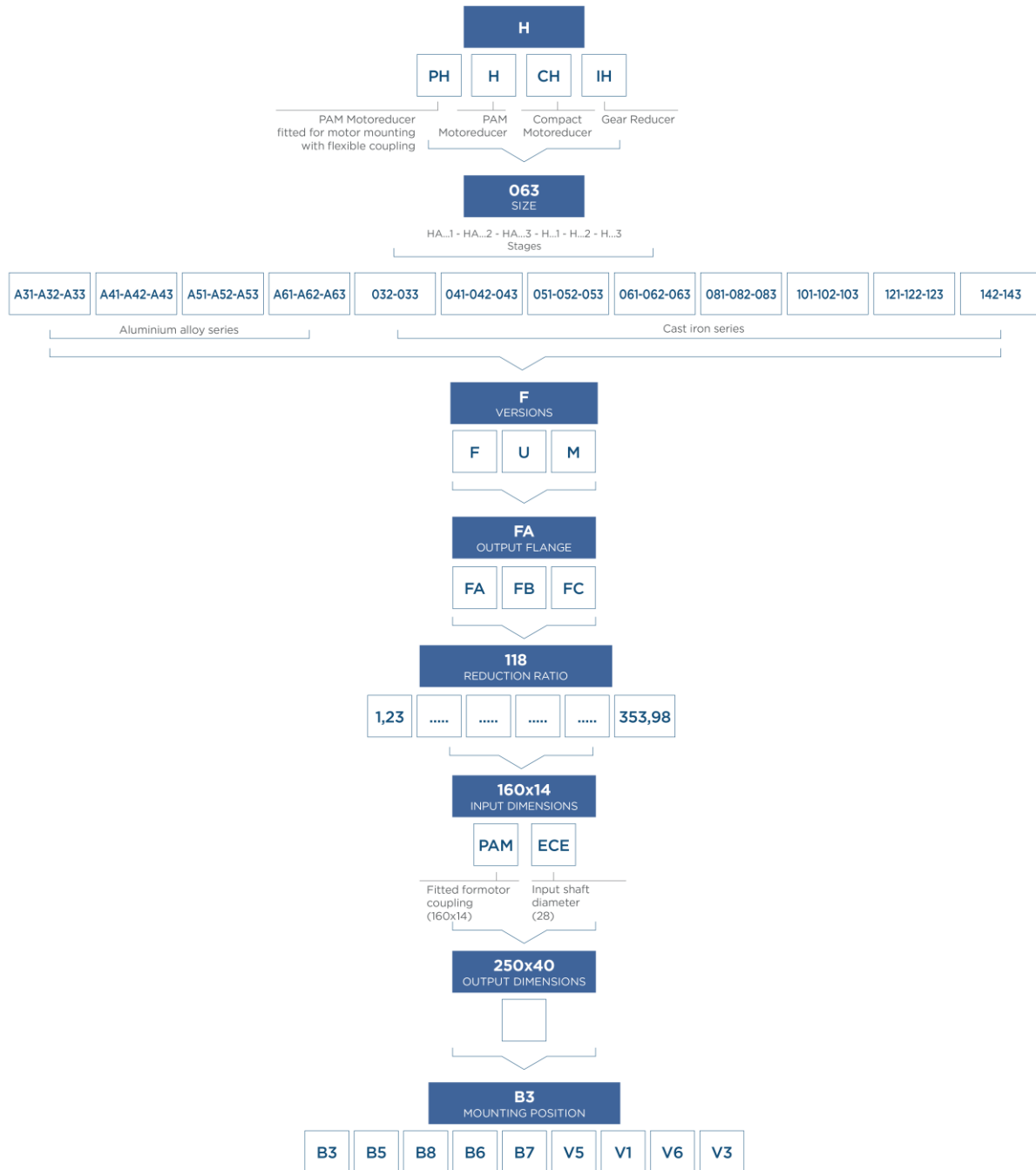
H..1 stages = 0.97

H..2 stages = 0.96

H..3 stages = 0.94



2.2.1 Designation

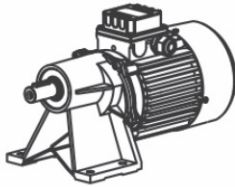


2.2.2 Versions

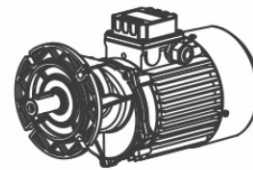
A30 - A40 - A50 - A60

SINGLE STAGE

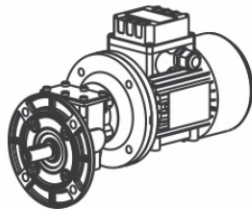
CASING WITH FOOT



F CASING WITH FLANGE

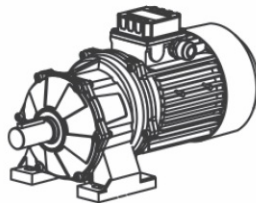


A31 CASING WITH FLANGE

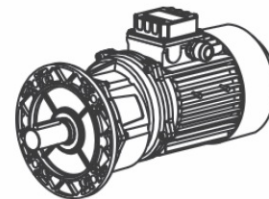


DOUBLE AND TRIPLE STAGE

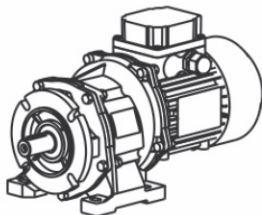
CASING WITH FOOT



F CASING WITH FLANGE



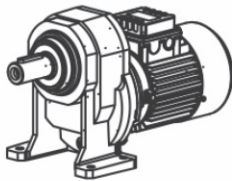
U CASING UNIVERSAL



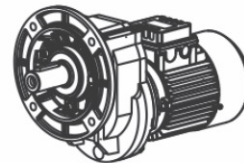
030 - 040 - 050 - 060 - 080 - 100 - 120 - 140

SINGLE STAGE

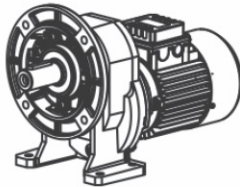
CASING WITH FOOT



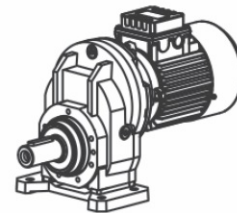
F CASING WITH FLANGE



U CASING UNIVERSAL

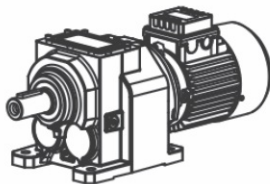


M CASING MONO

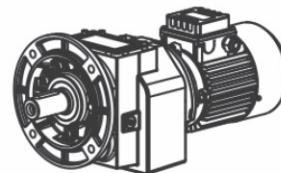


DOUBLE AND TRIPLE STAGE

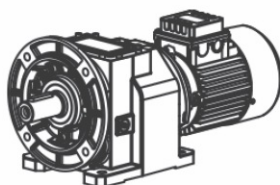
CASING WITH FOOT



F CASING WITH FLANGE

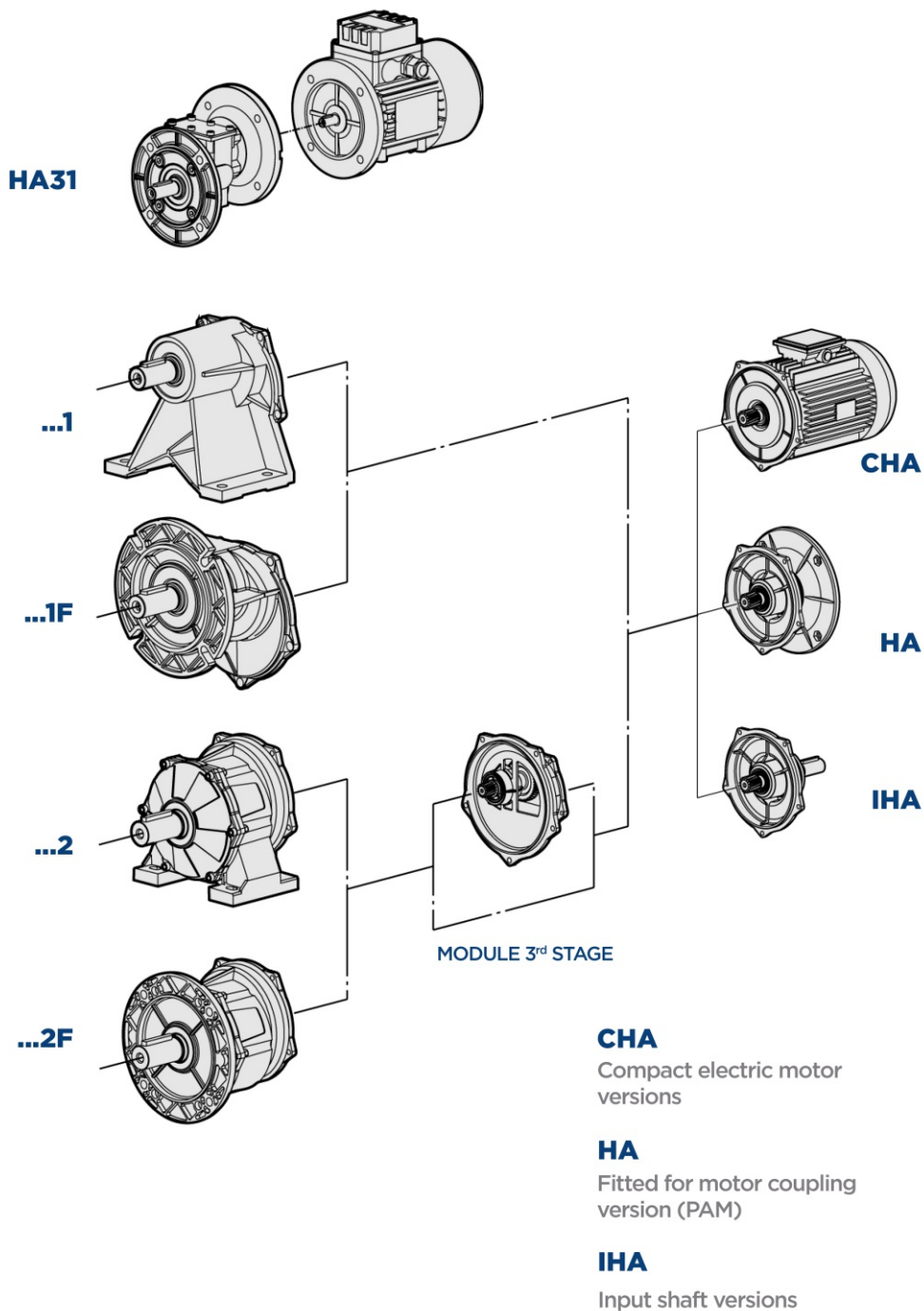


U CASING UNIVERSAL

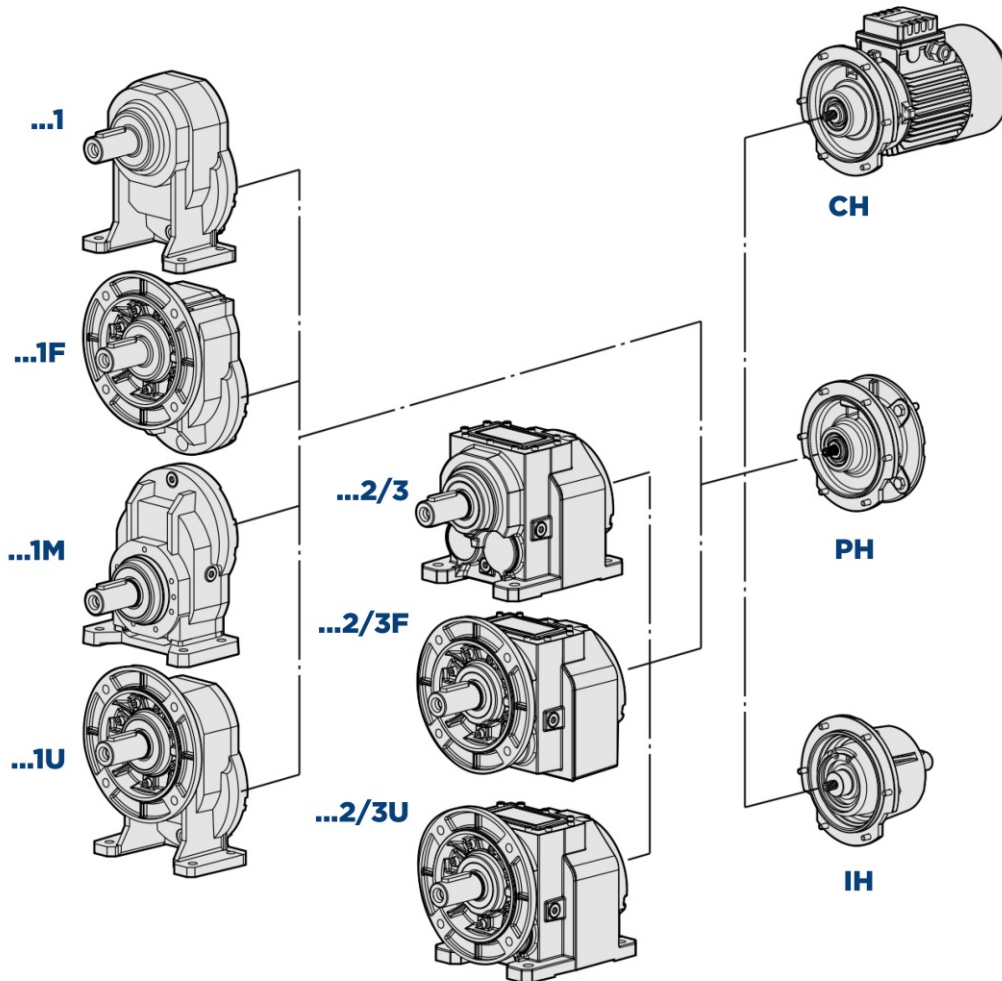


2.2.3 Modularity

HA ALUMINIUM ALLOY SERIES



H GREY CAST IRON SERIES



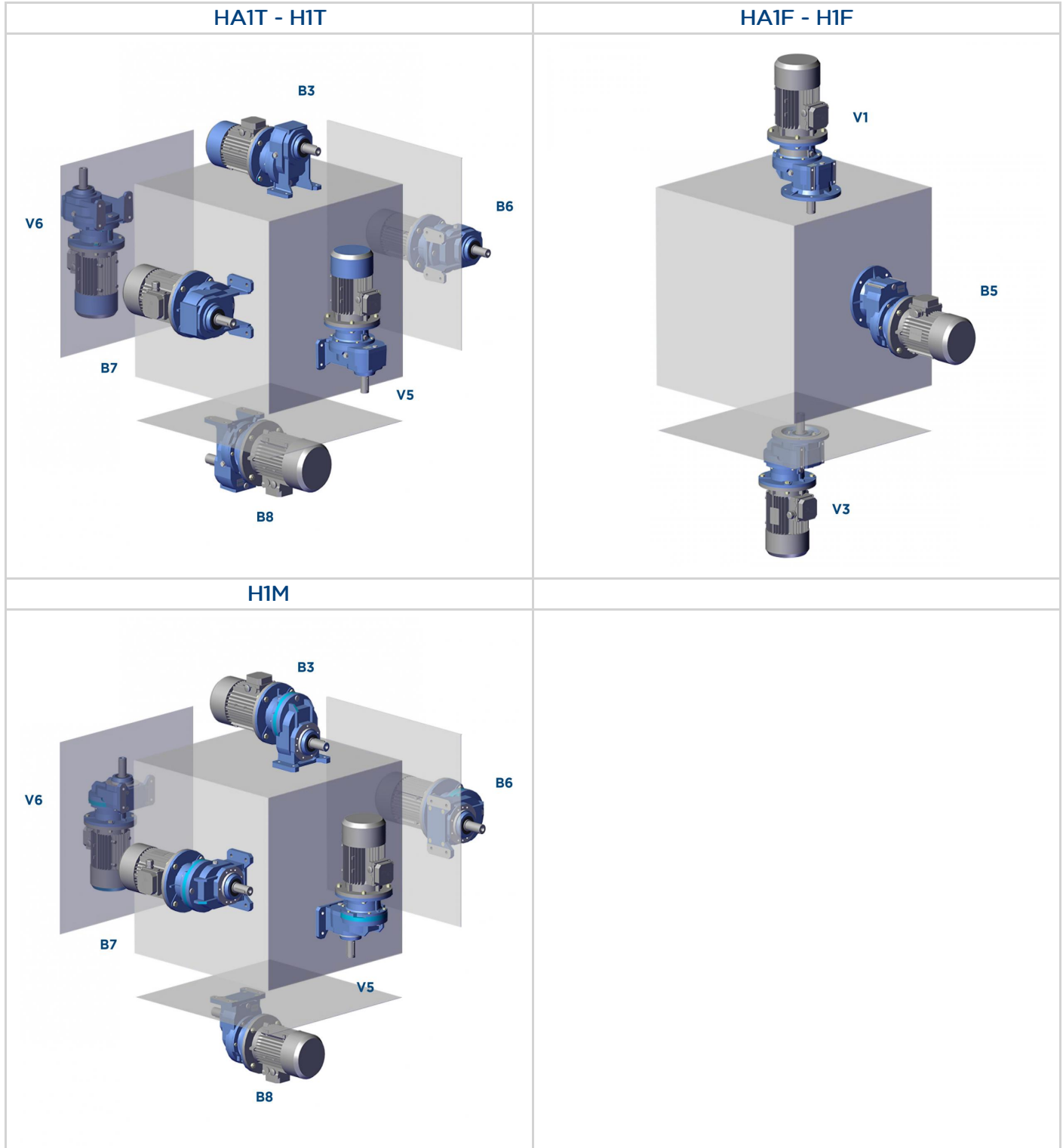
**CH**  
Compact electric motor  
versions

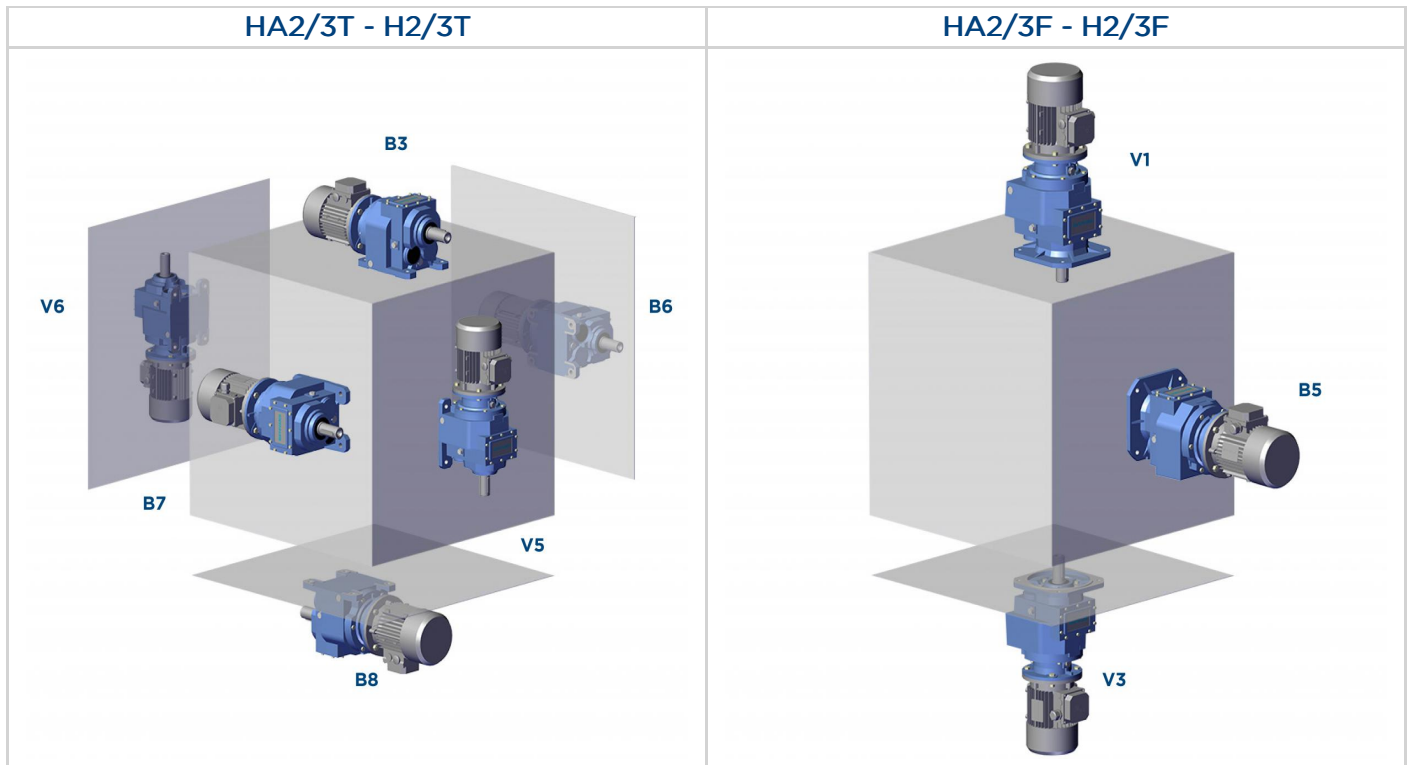
**IH**  
Input shaft versions

**PH**  
Fitted for motor mounting  
with flexible coupling

2.3.1 Mounting positions

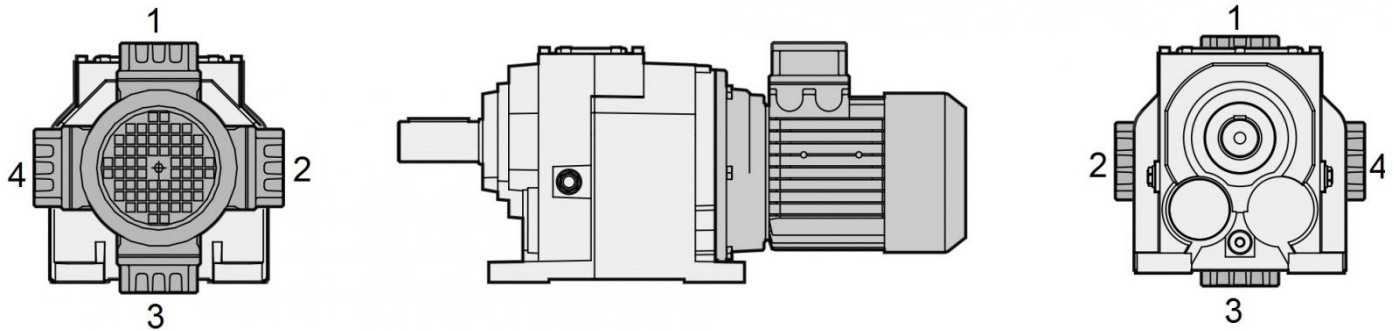
The mounting position of the gear unit identifies its space orientation. B3 mounting position, as from a technical point of view, ensures lower oil splash, better lubrication and less heating.





2.3.2 Position of terminal box

Unless otherwise specified when ordering, the gear reducer is supplied with terminal box in position 1.



### 2.4.1 Information

The scheme below indicates the nominal thermal power Pth capacity [HP] according to the following conditions:

- mounting position B3
- continuous operation at input speed  $\leq 1800$  rpm
- environment temperature 77°F
- sea level altitude
- air speed around the gear reducer  $\geq 38$ ips
- absence of external radial and/or axial loads

n <sub>1</sub> = 1,750rpm			
	Pth [HP]		Pth [HP]
HA31	/	H081	27
HA41	6.5	H101	38
HA51	9.4	H121	50
HA61	18	H032	5.6
HA32	5.5	H042	8
HA42	7.5	H052	9
HA52	12.5	H062	15
HA62	18.5	H082	24
H041	7.8	H102	36
H051	9.2	H122	42
H061	12	H142	50

**A correct lubrication and a proper running condition of the gearbox are guaranteed only applying an input power not exceeding Pth (at the above reference conditions) (T oil max=203°F).**

NOTE: Normally, three stages gearboxes do not require thermal power verification because the thermal rating usually exceed the mechanical one.



## 2.4.2 Verification

### Application check

Except for continuous operating times below two (2) hours and successive pauses capable of bringing the gear reducer back to ambient temperature, for each application it is advisable to verify the gear reducer's thermal limit according to the following formula:  $P_1 < P_{th} * F_c * F_v * F_a$ , where:

- $P_1$  = input power to the gear reducer
- $P_{th}$  = thermal power at the reference conditions (see above table)
- $F_c$  = ambient and operating temperature correction factor
- $F_v$  = ventilation correction factor
- $F_a$  = altitude correction factor

The correction factors refer to different operating conditions compared to the reference conditions, and are provided by the following ISO14179 tables:

		Duty per hour of operation %				
		100	80	70	40	20
Ambient temperature °F	$F_c$					
	13.4	1.15	1.21	1.32	1.55	2.07
	24.1	1.07	1.12	1.23	1.44	1.93
	33.5	1.00	1.05	1.15	1.35	1.80
	40.2	0.93	0.98	1.07	1.26	1.67
	53.6	0.83	0.87	0.95	1.12	1.49
	57.7	0.75	0.79	0.86	1.01	1.35
67.1	0.67	0.70	0.77	0.90	1.21	

Altitude correction factor	$F_a$
0*	1
2460	0.95
4921	0.9
7382	0.85
9843	0.81

Ventilation correction factor	$F_v$
Stagnant air (<1.12 mph)	0.75
Indoor installation with slight ventilation	1
Indoor installation with good ventilation (>3.13 mph)	1.4
Installazione all'aperto (>8.3 mph)	1.9

\*Sea level (ft)

In case of operation at input speeds exceeding 2000 rpm, or ambient temperatures greater than 104°F, it is advisable to contact our technical department.

### 2.5.1 Critical applications

H	A31	A30	A40	A50	A60
V5 - V1: 1500 < n1 < 3000	✓	✓	✓	✓	✓
n1 > 3000	B	B	B	B	B
V3 - V6	B	B	B	B	B

H	030	040	050	060	080	100	125	140
V5 - V1: 1500 < n1 < 3000	✓	✓	✓	✓	✓	✓	B	B
n1 > 3000	B	B	B	B	B	B	A	A
V3 - V6	B	B	B	B	B	B	B	B

✓ Verified application

A Application not recommended

B Check the application and/or call our technical service

### 2.5.2 Information

The performance given in the catalogue correspond to mounting position B3 or similar, when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables that highlight different critical situations for each size of gear reducer. It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service:

- To avoid the use as multiplier.
- Use in services that could be hazardous for people if the gear reducer fails.
- Applications with especially high inertia.
- Use as a lifting winch.
- Applications with high dynamic strain on the case of the gear reducer.
- In places with  $T_{amb}$  under 23°F °C or over 104°F.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Mounting positions not envisaged in the catalogue.
- Use in radioactive environments.
- Use in environments pressures other than atmospheric pressure.

Avoid applications where even partial immersion of the reducer is required.

In the presence of overloading due to full load, braking, shocks or other static and dynamic causes, please verify that the peak torque is less than  $2 \cdot Mn_2$ .

### 2.6.1 HA Motor flange availability

**B10** = Compact electric motor versions.

These tables report all possible dimensions. Please verify service factor.

	i	56C	140TC	180TC
H A32	5.38 - 30.55	•	•	
H A32	35.44 - 60.67	•		
H A33	51.32 - 347.29	•		
H A41	1.45 - 5.45	•	•	
H A41	7.88 - 10.83	•		
H A42	5.38 - 30.55	•	•	
H A42	35.44 - 60.67	•		
H A43	51.32 - 347.29	•		
H A51	1.45 - 5.45	•	•	
H A51	7.88 - 10.83	•		
H A52	5.14 - 25.43	•	•	•
H A52	29.89 - 61.87	•	•	
H A53	49.8 - 163.05	•	•	
H A53	200.27 - 353.98	•		
H A61	1.33 - 4.38	•	•	•
H A61	7.75 - 10.67	•	•	
H A62	5.14 - 25.43	•	•	•
H A62	29.89 - 61.87	•	•	
H A63	49.8 - 163.05	•	•	
H A63	200.27 - 353.98	•		

2.6.2 H Motor flange availability

These tables report all possible dimensions. Please verify service factor.

PH 032			
i	56C	140TC	180TC
4.70	•	•	•
6.23	•	•	•
7.76	•	•	•
8.87	•	•	•
10.14	•	•	•
11.76	•	•	•
13.72	•	•	•
14.66	•	•	•
16.77	•	•	•
18.20	•	•	•
19.90	•	•	•
22.68	•	•	•
23.83	•	•	•
26.39	•	•	•
29.70	•	•	•
32.89	•	•	•
37.92	•	•	•
41.40	•	•	•
47.25	•	•	•

CH - H - PH 033		
i	56C	140TC
53.59	•	•
66.78	•	•
74.84	•	•
99.27	•	•
108.05	•	•
123.71	•	•
143.33	•	•
178.61	•	•
197.17	•	•
245.70	•	•

PH 041			
i	56C	140TC	180TC
1.44	•	•	•
2.00	•	•	•
2.55	•	•	•
2.71	•	•	•
3.11	•	•	•
3.59	•	•	•
4.20	•	•	•
5.00	•	•	•
5.50	•	•	•
6.09	•	•	•
7.67	•	•	•
8.75	•	•	•

PH 042			
i	56C	140TC	180TC
5.46	•	•	•
7.19	•	•	•
8.91	•	•	•
10.31	•	•	•
11.80	•	•	•
13.57	•	•	•
15.96	•	•	•
19.00	•	•	•
21.00	•	•	•
23.15	•	•	•
26.04	•	•	•
27.50	•	•	•
30.45	•	•	•
34.10	•	•	•
37.76	•	•	•
43.75	•	•	•
47.53	•	•	•
54.25	•	•	•

PH 043		
i	56C	140TC
61.83	•	•
76.67	•	•
87.05	•	•
114.55	•	•
125.69	•	•
142.04	•	•
165.38	•	•
205.07	•	•
227.50	•	•
282.10	•	•

## 2.6 MOTOR FLANGE AVAILABILITY

PH 051			
i	56C	140TC	180TC
1.27		•	•
1.42		•	•
2.13		•	•
2.57	•	•	•
3.17	•	•	•
3.69	•	•	•
4.00	•	•	•
4.77	•	•	•
5.25	•	•	•
5.82	•	•	•
7.33	•	•	•
8.38	•	•	•

PH 052			
i	56C	140TC	180TC
5.73	•	•	•
6.89	•	•	•
8.53	•	•	•
9.56	•	•	•
11.51	•	•	•
14.24	•	•	•
16.59	•	•	•
18.00	•	•	•
19.97	•	•	•
21.67	•	•	•
24.71	•	•	•
26.18	•	•	•
28.44	•	•	•
31.52	•	•	•
33.00	•	•	•
38.98	•	•	•
45.36	•	•	•
49.13	•	•	•
56.11	•	•	•

PH 053		
i	56C	140TC
58.81	•	•
72.75	•	•
90.51	•	•
108.95	•	•
134.76	•	•
157.29	•	•
194.56	•	•
216.38	•	•
267.65	•	•

PH 061			
i	56C	140TC	180TC
1.34	•	•	•
2.13	•	•	•
2.57	•	•	•
3.17	•	•	•
3.69	•	•	•
4.00	•	•	•
4.77	•	•	•
5.25	•	•	•
5.82	•	•	•
7.33	•	•	•
8.38	•	•	•

PH 062				
i	56C	140TC	180TC	210TC
5.38	•	•	•	•
5.93	•	•	•	•
7.39	•	•	•	•
8.50	•	•	•	•
9.39	•	•	•	•
11.69	•	•	•	•
12.67	•	•	•	•
14.75	•	•	•	•
16.29	•	•	•	•
17.67	•	•	•	•
20.28	•	•	•	•
23.27	•	•	•	•
25.70	•	•	•	•
29.33	•	•	•	•
32.00	•	•	•	•
36.99	•	•	•	•
40.33	•	•	•	•
46.06	•	•	•	•

PH 063			
i	56C	140TC	180TC
49.45	•	•	•
54.61	•	•	•
68.00	•	•	•
85.82	•	•	•
94.76	•	•	•
118.00	•	•	•
135.40	•	•	•
149.51	•	•	•
170.67	•	•	•
186.18	•	•	•
215.21	•	•	•
234.67	•	•	•
268.00	•	•	•

PH 081				
i	56C	140TC	180TC	210TC
1.30				•
1.43				•
1.93				•
2.54			•	•
3.25			•	•
3.72			•	•
4.00			•	•
4.67			•	•
5.54	•	•	•	•
6.08	•	•	•	•
7.50	•	•	•	•
8.44	•	•	•	•

PH 082					
i	56C	140TC	180TC	210TC	250TC
5.39				•	•
5.95				•	•
7.39				•	•
8.02				•	•
8.85				•	•
11.01				•	•
13.50			•	•	•
14.90			•	•	•
16.60			•	•	•
18.53			•	•	•
19.38			•	•	•
21.39			•	•	•
22.80			•	•	•
26.60			•	•	•
27.88	•	•	•	•	•
31.15	•	•	•	•	•
34.38	•	•	•	•	•
38.70	•	•	•	•	•
42.75	•	•	•	•	•
48.13	•	•	•	•	•

PH 083					
i	56C	140TC	180TC	210TC	250TC
56.53	•	•	•	•	•
71.48	•	•	•	•	•
78.87	•	•	•	•	•
85.60	•	•	•	•	•
98.09	•	•	•	•	•
112.78	•	•	•	•	•
124.44	•	•	•	•	•
142.15	•	•	•		
154.76	•	•	•	•	•
162.35	•	•			
179.13	•	•			
195.07	•	•			
222.78	•	•			

PH 101			
i	180TC	210TC	250TC
1.29		•	•
1.41		•	•
2.03		•	•
2.48		•	•
3.27	•	•	•
3.70	•	•	•
4.22		•	•
4.88	•	•	•
5.27	•	•	•
6.23	•	•	•
7.55	•	•	•
8.40	•	•	•

PH 102				
i	180TC	210TC	250TC	280TC
5.26		•	•	•
6.36		•	•	•
7.05		•	•	•
8.27		•	•	•
9.99		•	•	•
11.09		•	•	•
13.32	•	•	•	•
16.09	•	•	•	•
17.85	•	•	•	•
19.80	•	•	•	•
21.44	•	•	•	•
24.00	•	•	•	•
25.89	•	•	•	•
28.73	•	•	•	•
30.70	•	•	•	•
34.20	•	•	•	•
38.45	•	•	•	
41.30	•	•	•	•
45.82	•	•	•	•
51.52	•	•	•	

PH 103				
i	140TC	180TC	210TC	250TC
55.47			•	•
69.69		•	•	•
79.80		•	•	•
84.16		•	•	•
93.36		•	•	•
100.07		•	•	•
120.84		•	•	•
134.06		•	•	•
143.40	•	•	•	•
160.82	•	•	•	•
181.07	•	•	•	•
194.21	•	•	•	•
215.45	•	•	•	•
242.59	•	•	•	•

## 2.6 MOTOR FLANGE AVAILABILITY

PH 121			
i	210TC	250TC	280TC
1.23	•	•	•
1.42	•	•	•
1.81	•	•	•
2.00	•	•	•
2.48	•	•	•
2.95	•	•	•
3.14	•	•	•
3.58	•	•	•
4.12	•	•	•
4.80	•	•	•
5.21	•	•	•
6.25	•	•	•
7.70	•	•	•

PH 122				
i	210TC	250TC	280TC	320TC
5.27	•	•	•	•
5.78	•	•	•	•
7.05	•	•	•	•
7.74	•	•	•	•
8.48	•	•	•	•
10.35	•	•	•	•
12.66	•	•	•	•
13.86	•	•	•	•
16.92	•	•	•	•
19.30	•	•	•	•
20.57	•	•	•	•
22.52	•	•	•	•
24.47	•	•	•	•
27.49	•	•	•	•
29.86	•	•	•	•
33.00	•	•	•	•
36.13	•	•	•	•
44.10	•	•	•	•

PH 123					
i	180TC	210TC	250TC	280TC	320TC
45.77		•	•	•	•
55.87		•	•	•	•
67.32	•	•	•	•	•
73.71	•	•	•	•	•
83.30	•	•	•	•	•
89.97	•	•	•	•	•
100.30	•	•	•	•	•
108.34	•	•	•	•	•
118.62	•	•	•	•	•
128.18	•	•	•	•	•
144.79	•	•	•	•	•
155.22	•	•	•	•	•
172.80	•	•	•	•	•
189.19	•	•	•	•	•
207.40	•	•	•	•	•
230.92	•	•	•	•	•
259.60	•	•	•	•	•

PH 142					
i	210TC	250TC	280TC	320TC	360TC
5.27	•	•	•	•	•
6.36	•	•	•	•	•
7.04	•	•	•	•	•
7.84	•	•	•	•	•
9.45	•	•	•	•	•
10.47	•	•	•	•	•
13.07	•	•	•	•	•
15.75	•	•	•	•	•
17.45	•	•	•	•	•
20.04	•	•	•	•	•
24.15	•	•	•	•	•
26.76	•	•	•	•	•
32.24	•	•	•	•	•
38.85	•	•	•	•	•
43.05	•	•	•	•	•

PH 143						
i	180TC	210TC	250TC	280TC	320TC	360TC
48.35		•	•	•	•	•
53.50		•	•	•	•	•
59.22		•	•	•	•	•
63.00		•	•	•	•	•
71.35		•	•	•	•	•
79.07		•	•	•	•	•
86.40		•	•	•	•	•
96.21		•	•	•	•	•
104.51		•	•	•	•	•
115.92		•	•	•	•	•
128.47		•	•	•	•	•
139.55		•	•	•	•	•
154.33	•	•	•	•	•	•
185.96	•	•	•	•	•	•
206.08	•	•	•	•	•	•

	HA30	HA40	HA50	HA60
	Standard	Standard	Standard	Standard
<b>HA 1</b>	1	1	1	1
<b>HA 2/3</b>	1	1	1	1

	H030	H040	H050	H060	H080	H100	H125	H140
	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
<b>H 1/M</b>	/	1	1	1	1	1	1	/
<b>H 2/3</b>	2	2	2	2	2	2	2	2

1 - Ball Bearing

2 - Roller bearings

/ - Not available



2.8.1 Information

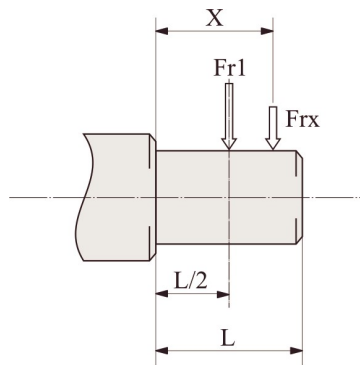
The value of the admissible radial load [lb] is given in the tables relating to the performance of the gear reducer at issue. It is related to the load applied on the centre line of the shaft and in the most unfavourable conditions of angle of application and direction of rotation. The maximum admissible axial loads are 1/5 of the value of the given radial load when they are applied in combination with the radial load. The tables relating to the output shafts give the maximum admissible value. This value must never be exceeded since it relates to the strength of the case. Particular conditions of radial load higher than the limits of the catalogue may occur. In this case, call our Technical Service and provide details on the application: direction of the load, direction of rotation of the shaft, type of service. The radial load on the shaft is calculated with the following formula:  $Fr_e = (2 \cdot M \cdot fz) / D \leq Fr_1$  or  $Fr_2$

- **Fr<sub>e</sub>** [lb] Resulting radial load
- **M** [lb-in] Torque on the shaft
- **D** [in] Diameter of the transmission member mounted on the shaft
- **Fr<sub>1</sub>-Fr<sub>2</sub>** [lb] Value of the maximum admitted radial load (see relative tables)
- **fz** = 1.1 gear pinion - 1.4 chain wheel - 1.7 v-pulley - 2.5 flat pulley

2.8.2 Input

When the radial load is not on the centre line of the shaft, it is necessary to adjust the admissible radial load Fr<sub>1</sub> with the following formula:  $Fr_x = (Fr_1 \cdot a) / (b + x)$

- **a**, **b** = values given in the tables
- **x** = distance from the point of application of the load to the shaft shoulder



IH	A32/A33/A41/A42/A43/A51/A53/A63	A52/A61/A62
a	3.31	3.50
b	2.52	2.72
Fr <sub>1</sub> max(**)	108	180

IH	041	051	061	081	101	121
a	4.13	4.13	4.13	5.39	6.89	6.89
b	3.15	3.15	3.15	4.25	5.31	5.31
Fr <sub>1</sub> max(**)	297	405	495	562	674	674

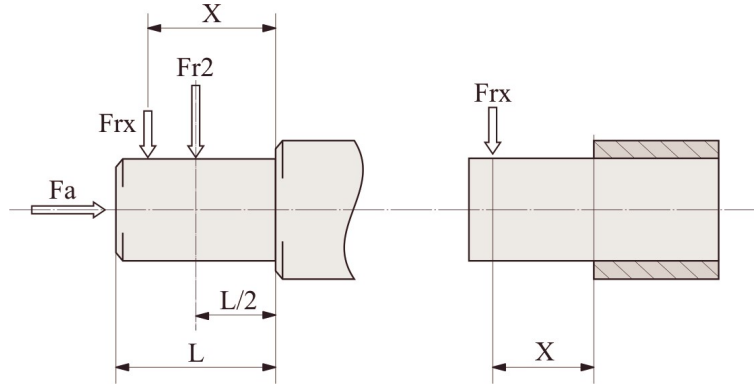
IH	032/033	042/043	052/053	062/063	082/083	102/103	122/123	142/143
a	4.13	4.13	4.13	5.39	5.39	6.89	6.89	8.86
b	3.15	3.15	3.15	4.25	4.25	5.31	5.31	6.69
Fr <sub>1</sub> max(**)	495	495	562	809	809	1619	1619	3372

(\*\*Fr<sub>1</sub> max) Max admissible value of the reducer in static conditions and/or for limited operations. For continuous overhung loads please check the values on the performances tables calculated according to the casing, the shaft and bearings.

2.8.3 Output

When the radial load is not on the centre line of the shaft, it is necessary to adjust the admissible radial load Fr2 with the following formula:  $Fr_x = (Fr_2 \cdot a) / (b + x)$

- **a**, **b** = values given in the tables
- **x** = distance from the point of application of the load to the shaft shoulder



H	A31	A41	A51	A61	A32/A33	A42/A43	A52/A53	A62/A63
<b>a</b>	3.09	3.19	3.27	4.06	4.13	4.53	5.31	6.10
<b>b</b>	2.30	2.40	2.28	2.87	3.35	3.54	4.13	4.53
<b>Fr2 max(**)</b>	247	247	674	1012	450	967	1349	1798

H	041	051	061	081	101	121
<b>a</b>	3.50	3.86	4.53	5.94	8.27	9.13
<b>b</b>	3.11	2.87	3.35	4.37	6.10	6.97
<b>Fr2 max(**)</b>	225	562	832	899	1124	1349
<b>Fa max (*)</b>	1236	1461	1574	1911	2585	3035

H	032/033	042/043	052/053	062/063	082/083	102/103	122/123	142/143
<b>a</b>	4.72	5.43	6.65	7.68	9.37	11.06	13.03	14.45
<b>b</b>	3.78	4.25	5.28	6.10	7.40	8.70	10.28	11.10
<b>Fr2 max(**)</b>	1236	1484	1798	2698	4047	4946	6744	12365

(\*\*Fr2 max) Max admissible value of the reducer in static conditions and/or for limited operations. For continuous overhung loads please check the values on the performances tables calculated according to the casing, the shaft and bearings.

(\* Fa) Max. axial load admissible in only one direction with the use of a thrust bearing (on request).

### 2.9.1 Information

In cases of ambient temperatures not envisaged in the table, call our Technical Service. In the case of temperatures under -22°F or over 140°F it is necessary to use oil seals with special properties.

For operating ranges with temperatures under 32°F it is necessary to consider the following:

1. The motors need to be suitable for operation at the envisaged ambient temperature.
2. The power of the electric motor needs to be adequate for exceeding the higher starting torques required.
3. In case of cast-iron gear reducers, pay attention to impact loads since cast iron may have problems of fragility at temperatures under 5°F.
4. During the early stages of service, problems of lubrication may arise due to the high level of viscosity taken on by the oil and so it is wise to have a few minutes of rotation under no load.

Oil must be changed after approx. 10000 hours/2 years of operation; this time varies based on the type of service and on the environment inside which the gear reducer is installed. Units not featuring any oil plug are life-lubricated, and therefore maintenance-free.

### 2.9.2 Lubricants

Specifications of lubricants recommended by Motovario.

All units are supplied with ENI BLASIA 220 oil, unless otherwise specified by the client.

	HA32/3 - A62/3 / H032/3 - 142/3	
	Mineral oil	
T <sub>amb</sub> °F ISO/SAE	(+23) - (+104) ISO VG220	(+5) - (+77) ISO VG150
ENI	BLASIA 220	BLASIA 150
SHELL	OMALA S2 G 220	OMALA S2 G 150
KLUBER	Kluberoil GEM 1-220N	Kluberoil GEM 1-150N
MOBIL	MOBILGEAR 600 XP220	MOBILGEAR 600 XP150
CASTROL	ALPHA SP 220	ALPHA SP 150
BP	ENERGOL GR-XP220	ENERGOL GR-XP150

## 2.9.3 Special lubricants

	$T_{amb}^{\circ F}$	Polyglycol synthetic oil
ENI	(-22) - (+86)	Blasia S 150 (ISO VG150)
	(-4) - (+104)	Blasia S 220 (ISO VG220)
MOBIL	(-49) - (+32)	SCH 624 (ISO VG32)
	(-40) - (+41)	SCH 626 (ISO VG68)
KLUBER	(-40) - (+41)	Klubersynth GH 6-32 (ISO VG32)
	(-31) - 50)	Klubersynth GH 6-80 (ISO VG80)
	(-22) - (+104)	Klubersynth GH 6-150 (ISO VG150)
	(-13) - (+104)	Klubersynth GH 6-220 (ISO VG220)
	(+5) - (+122)	Klubersynth GH 6-460 (ISO VG460)
	(+14) - (+158)	Klubersynth GH 6-680 (ISO VG680)
	$T_{amb}^{\circ F}$	Polyglycol synthetic oil for food grade
KLUBER	(-22) - (+59)	Klubersynth UH1-6 100 (ISO VG100)
	(-13) - (+104)	Klubersynth UH1-6 220 (ISO VG220)
	(+5) - (+104)	Klubersynth UH1-6 320 (ISO VG320)
	(+5) - (+122)	Klubersynth UH1-6 460 (ISO VG460)
	(+14) - (+122)	Klubersynth UH1-6 680 (ISO VG680)

If 'special' lubricant is required please contact for Technical Assistance.

## 2.9.4 Quantity

- For the gear reducer HA series with 2, 3 stages and for the reducers H series with 1, 2, 3 stages it is always necessary to specify the envisaged position.
- The gear reducer HA series with 1, 2, 3 stages all sizes, H series ...with 1 stage sizes 040, 050, 060 and H series ... with 2, 3 stages sizes 030, 040, 050 are supplied complete with lubricant, have no oil plugs and need no maintenance.
- The gear reducer H series ... with 1 stage sizes 80,100,125 and with 2, 3 stages sizes 060, 080, 100, 125, 140 are supplied complete with lubricant and are fitted with oil plugs to suit any mounting position included in the catalogue.

Oil quantity in the table (litres ~) are indicative; for a proper use you will have to refer to the level plug or the dipstick. Any level difference could depend on construction tolerances, but also by the placement of the unit or by the mounting surface at the customer's premises. It is appropriate to check and, if necessary, restores the level when the units are installed.

H - CH	HA31	HA41	CHA41	A51	A61	A32	A42	A52	A62	A33	A43	A53	A63
B3-B5	0.07	0.23	0.13	0.25	0.62	0.68	0.7	1.2	1.9	1.1	1.16	1.9	2.4
B8								1.6	2.1			2.5	3.1
B6-B7													
V5-V1													
V6-V3													

H - CH	041	051	061	081	101	121	041M	051M	061M	081M	101M	121M
B3-B5	0.5	0.7	0.7	1.45	3.5	4.7	0.5	0.5	0.5	1.5	3.5	3.9
B8	0.5	0.5	0.5	1.5	3.5	3.9	0.5	0.7	0.7	1.45	3.5	4.7
B6-B7	0.5	0.7	0.7	1.5	3.5	4.1	0.5	0.7	0.7	1.5	3.5	4.1
V5-V1	0.5	0.7	0.9	1.5	3.5	4.7	0.5	0.7	0.9	1.5	3.5	4.7
V6-V3	0.5	0.7	0.7	1.5	3.5	4.1	0.5	0.7	0.7	1.5	3.5	4.1

H - CH	032/033	042/043	052/053	062/063	082/083	102/103	122/123	142/143
B3-B5	0.8	1.2	1.4	2.4	4.5	8.1	12.5	22.5
B8	0.85	1.2	1.4	3.1	5	8.9	12.5	20
B6-B7	1	1.2	1.8	3	4.6	8.4	12.1	22.5
V5-V1	1.3	1.75	2.15	3.9	7.6	12.7	20.5	30.5
V6-V3	1.2	1.7	2.1	4.4	7.5	14.2	21	38

The following values of J1 moment of inertia are only estimated, referred to the maximum calculated, and to the gearbox input side.

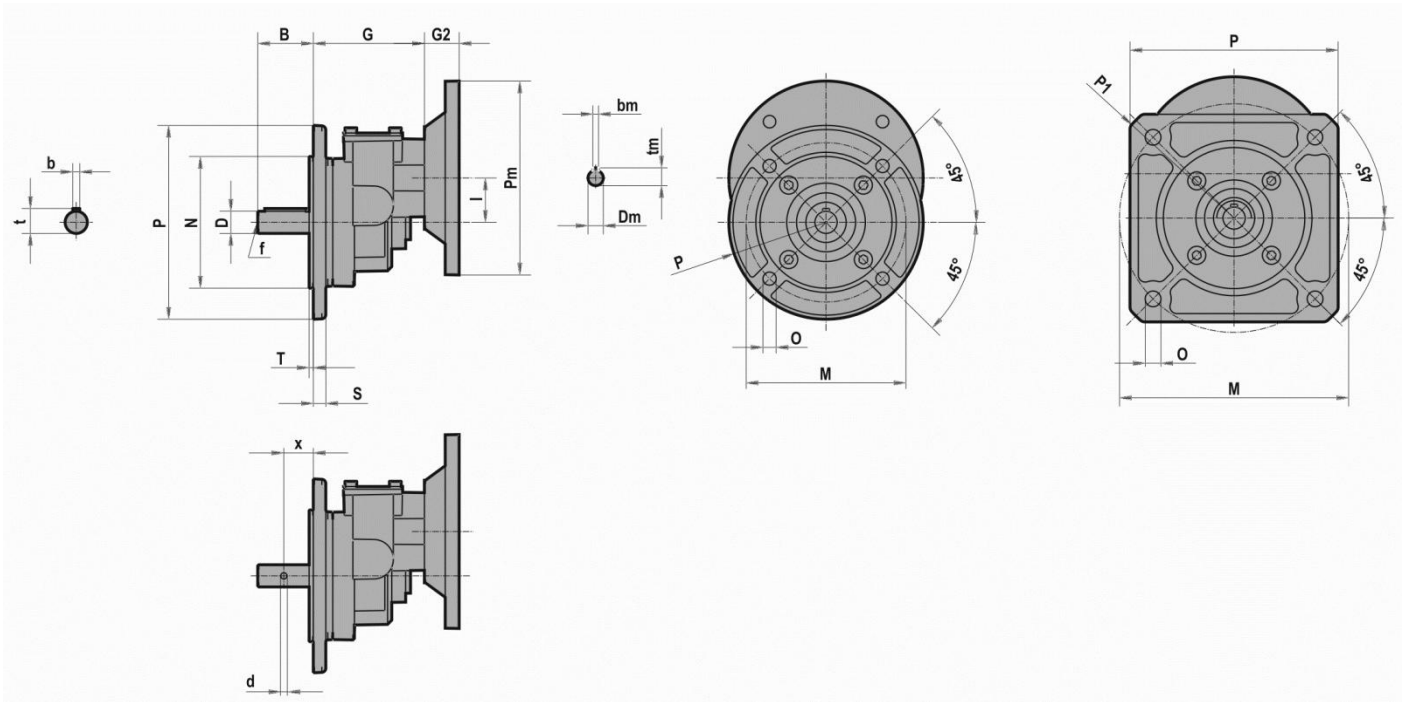
HA-1	J <sub>1</sub> [Kg*m <sup>2</sup> ]	J <sub>1</sub> [lb*in <sup>2</sup> ]
A31	0.0001	0.3313
A41	0.0001	0.1808
A51	0.0001	0.2818
A61	0.0004	1.4475

HA-2/3	J <sub>1</sub> [Kg*m <sup>2</sup> ]	J <sub>1</sub> [lb*in <sup>2</sup> ]
A32/A33	0.00005	0.1600
A42/A43	0.00005	0.1686
A52/A53	0.0003	0.8857
A62/A63	0.0003	1.0841

H-1	J <sub>1</sub> [Kg*m <sup>2</sup> ]	J <sub>1</sub> [lb*in <sup>2</sup> ]
041	0.0001	0.2901
051	0.0002	0.6522
061	0.0005	1.5685
081	0.0011	3.7625
101	0.0035	11.8013
121	0.0076	26.1080

H-2/3	J <sub>1</sub> [Kg*m <sup>2</sup> ]	J <sub>1</sub> [lb*in <sup>2</sup> ]
032/033	0.0001	0.2352
042/043	0.0001	0.2414
052/053	0.0001	0.3075
062/063	0.0002	0.6768
082/083	0.0007	2.3288
102/103	0.0011	3.6214
122/123	0.0028	9.6275
142/143	0.0044	15.1205

3.1.1 HA31



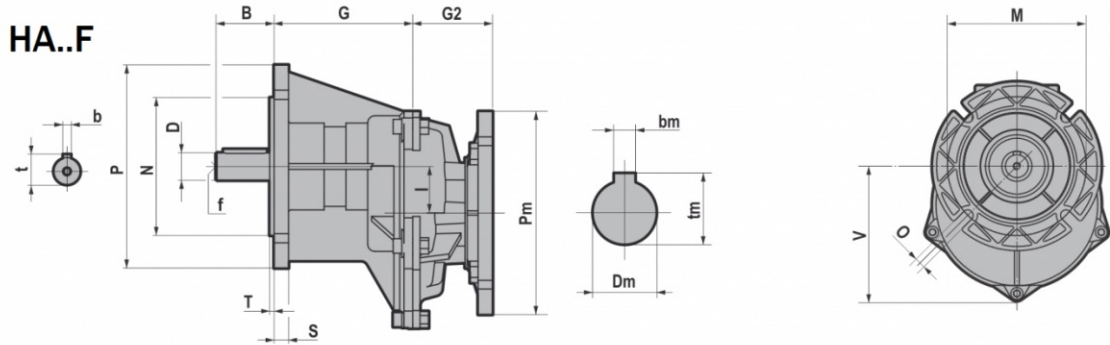
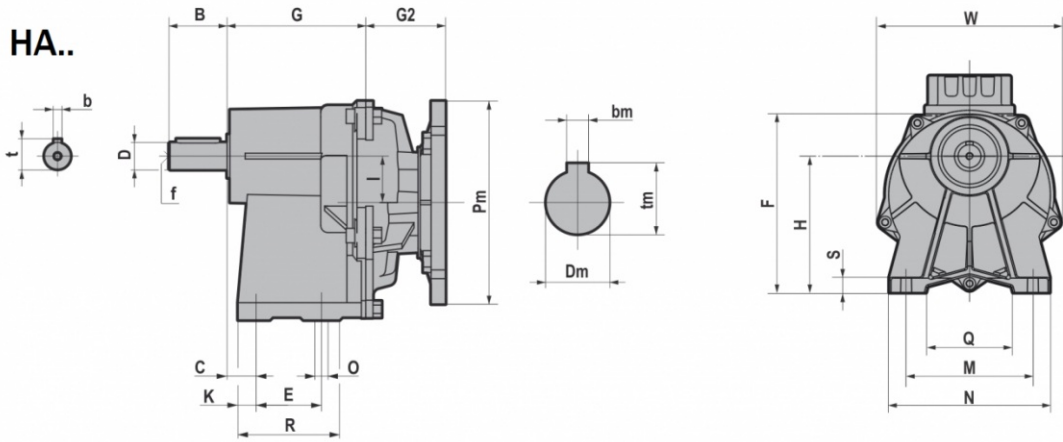
	D	B	b	t	x	d	f	G	I
HA31	0.43 +0.0003/-0.0001	0.91	0.16	0.49	-	-	-	3.15	1.26
	0.55 +0.0003/-0.0001	1.18	0.20	0.63	-	-	M6		
	0.63 +0.0003/-0.0001	1.57	0.20	0.71	-	-	M6		
	0.75 +0.0004/-0.0002	1.57	0.24	0.85	-	-	M6		
	0.63 +0.0003/-0.0001	1.97	-	-	1.14	0.28	-		
	0.75 0/-0.0079	2.36	-	-	1.46	0.26	-		
	0.78 +/-0.002	3.94	-	-	1.97	0.24	M8		
0.79 +0.0004/-0.0002	2.95	-	-	1.77	0.24	-			

	P	P1	M	N -0.0014/-0.0027	O	S	T
HA31	4.57	5.91	5.00	-	M8	-	-
	5.43	6.30	5.00	-	M8	-	-
	5.51	-	4.53	3.74	0.37	0.35	0.12
	5.91	7.87	6.50	-	0.43	-	-

IEC	Pm x Dm [mm]	G2
063	140x11	0.98
071	160x14	1.26
080	200x19	1.65

B5	Pm [mm]	Dm [mm]	bm [mm]	tm [mm]
063	140	11	4	12.8
071	160	14	5	16.3
080	200	19	6	21.8

3.1.2 HA.1



	D O/-0.0005	B	C	E	F	G	H	I	K	M	N	O	Q	R	S	W	b	t	f
HA41/F	0.75	1.57	0.79	1.77	5.94	3.76	4.45	1.26	0.49	4.13	5.12	0.35	2.95	2.76	0.47	5.98	0.1875	0.83	1/4-20
HA51/F	1	1.97	0.24	2.76	6.65	4.09	5.12	1.26	0.59	5.91	7.09	0.43	4.53	3.94	0.47	5.98	0.25	1.11	3/8-16
HA61/F	1.25	2.36	0.3	2.76	8.64	5.08	6.5	1.87	0.79	6.5	7.87	0.43	4.72	4.33	0.59	8.58	0.25	1.36	1/2-13

	M	N	O	P	S	T	V
HA41F	4.53	3.74 -0.0014/-0.0035	0.35	5.51	0.39	0.12	4.39
HA51F	5.12	4.33 -0.0014/-0.0035	0.35	6.30	0.39	0.14	4.39
HA61F	6.5	5.12 -0.0017/-0.0042	0.43	7.87	0.59	0.14	6.36

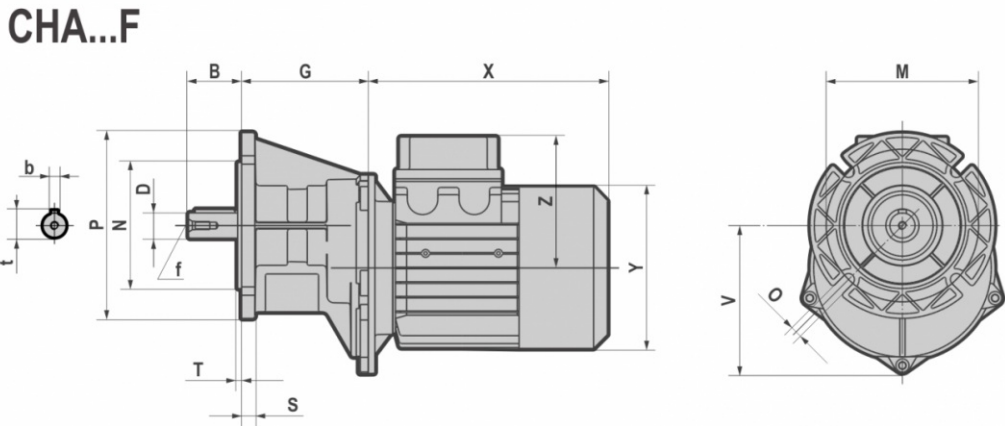
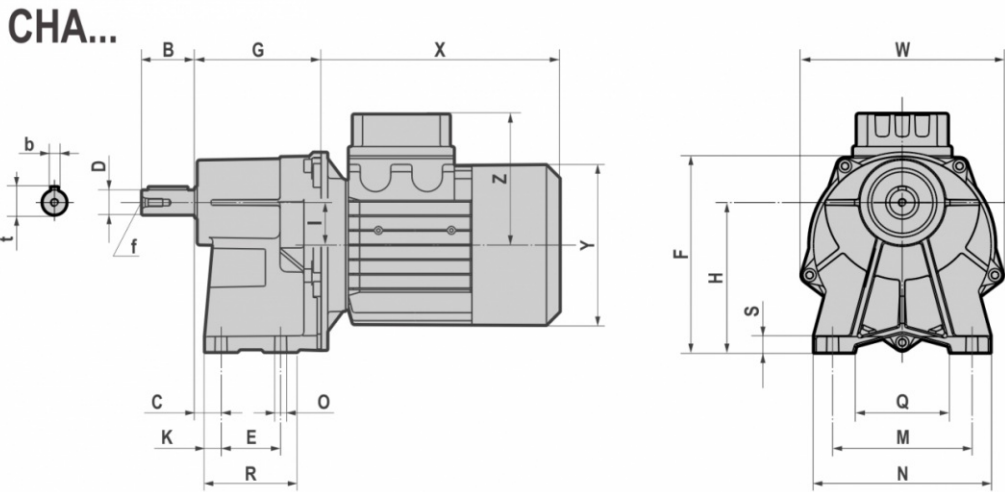
NEMA	Pm x Dm	G2	
		HA41/F - HA51/F	HA61/F
56C	6.5"x0.625"	3.78	3.98
140TC	6.5"x0.875"	3.78	3.98
180TC	9"x1.125"	/	3.98

NEMA	Pm x Dm	G2	
		HA41/F - HA51/F	HA61/F
56C	6.5"x0.625"	3.78	3.98
140TC	6.5"x0.875"	3.78	3.98
180TC	9"x1.125"	/	3.98

NEMA	Pm	Dm	tm	bm
56C	6.69	0.625	0.71	0.1875
140TC	6.69	0.875	0.97	0.1875
180TC	9.06	1.125	1.24	0.2500



3.1.3 CHA.1



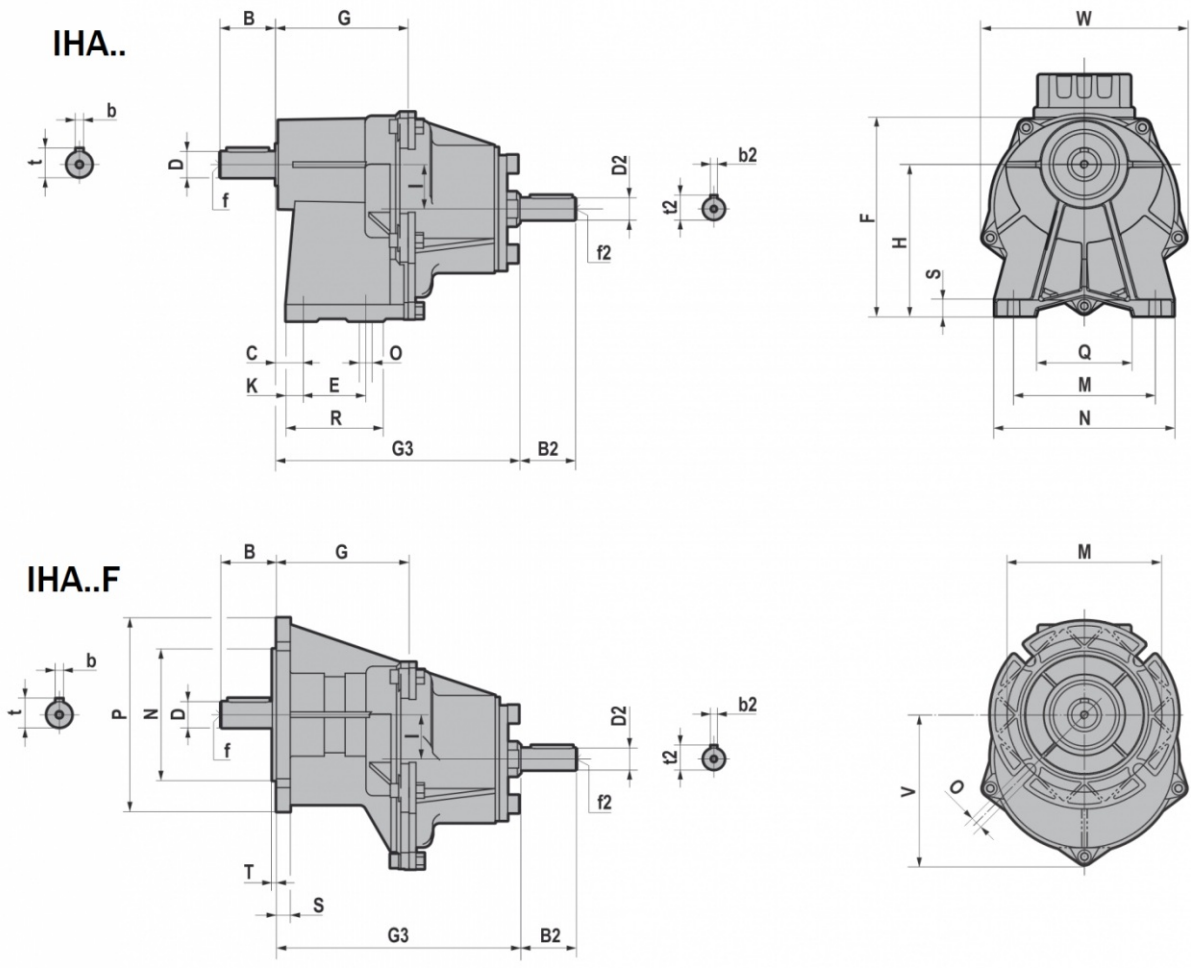
	D 0/-0.0005	B	C	E	F	G	H	I	K	M	N	O	Q	R	S	W	b	t	f
CHA41/F	0.75	1.57	0.79	1.77	5.94	3.76	4.45	1.26	0.49	4.13	5.12	0.35	2.95	2.76	0.47	5.98	0.1875	0.83	1/4-20
CHA51/F	1	1.97	0.24	2.76	6.65	4.09	5.12	1.26	0.59	5.91	7.09	0.43	4.53	3.94	0.47	5.98	0.25	1.11	3/8-16
CHA61/F	1.25	2.36	0.3	2.76	8.64	5.08	6.5	1.87	0.79	6.5	7.87	0.43	4.72	4.33	0.59	8.58	0.25	1.36	1/2-13

	M	N	O	P	S	T	V
CHA41F	4.53	3.74 -0.0014/-0.0035	0.35	5.51	0.39	0.12	4.39
CHA51F	5.12	4.33 -0.0014/-0.0035	0.35	6.30	0.39	0.14	4.39
CHA61F	6.5	5.12 -0.0017/-0.0042	0.43	7.87	0.59	0.14	6.36

	T (IE1 - IE2)							
	063	071	080	090S	090L	100	112	
CHA41/F CHA51/F	X	7.09	8.07	8.78	9.13	10.12	/	/
	Y	4.76	5.47	6.22	6.81	6.81	/	/
	Z	4.09	4.41	4.80	5.12	5.12	/	/
CHA61/F	X	/	/	8.58	9.13	10.12	11.42	11.89
	Y	/	/	6.22	6.81	6.81	7.52	8.31
	Z	/	/	4.80	5.12	5.12	5.47	6.06

	TB (IE1 - IE2)							
	063	071	080	090S	090L	100	112	
CHA41/F CHA51/F	X	9.37	10.67	11.57	12.17	13.15	/	/
	Y	4.76	5.47	6.22	6.81	6.81	/	/
	Z	4.69	5.08	5.39	6.18	6.18	/	/
CHA61/F	X	/	/	11.42	12.17	13.15	14.65	15.75
	Y	/	/	6.22	6.81	6.81	7.52	8.31
	Z	/	/	5.39	6.18	6.18	9.06	9.06

3.1.4 IHA.1

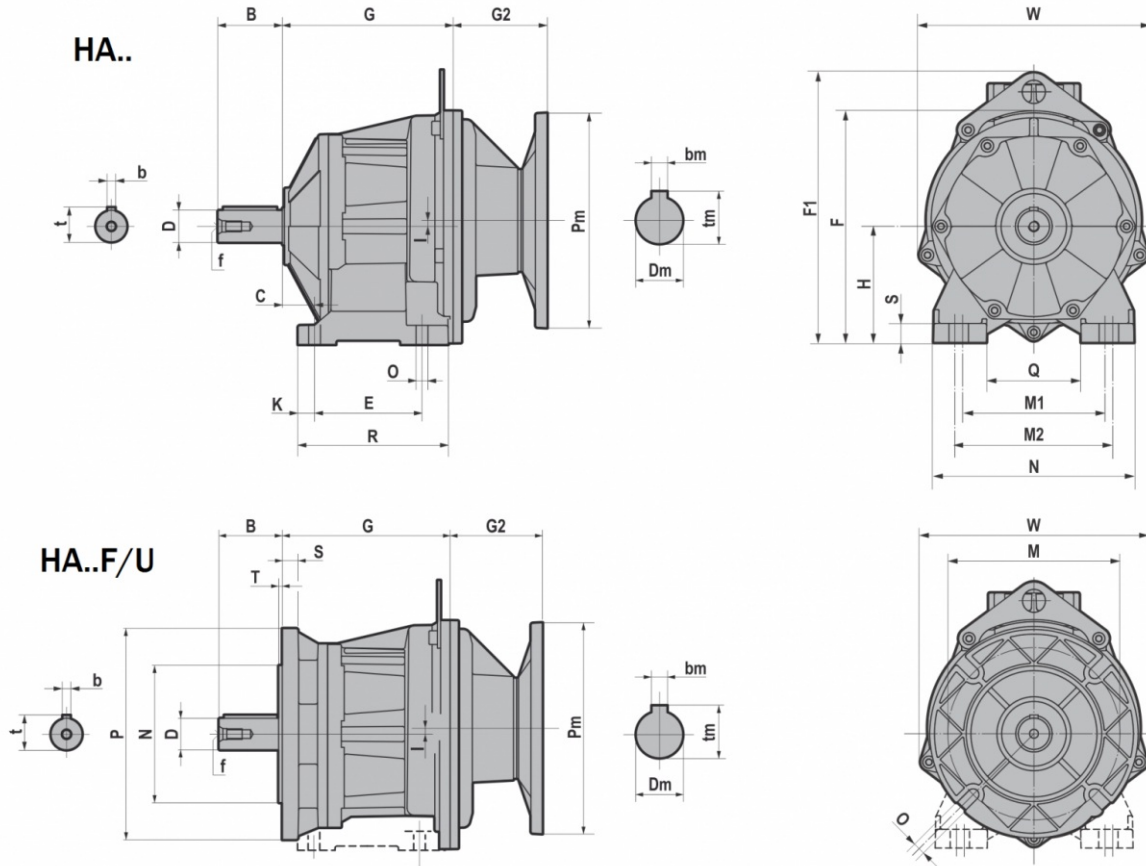


	D 0/-0.0005	B	C	E	F	G	H	I	K	M	N	O	Q	R	S	W	b	t	f
IHA41/F	0.75	1.57	0.79	1.77	5.94	3.76	4.45	1.26	0.49	4.13	5.12	0.35	2.95	2.76	0.47	5.98	0.1875	0.83	1/4-20
IHA51/F	1	1.97	0.24	2.76	6.65	4.09	5.12	1.26	0.59	5.91	7.09	0.43	4.53	3.94	0.47	5.98	0.25	1.11	3/8-16
IHA61/F	1.25	2.36	0.3	2.76	8.64	5.08	6.5	1.87	0.79	6.5	7.87	0.43	4.72	4.33	0.59	8.58	0.25	1.36	1/2-13

	M	N	O	P	S	T	V
IHA41F	4.53	3.74 -0.0014/-0.0035	0.35	5.51	0.39	0.12	4.39
IHA51F	5.12	4.33 -0.0014/-0.0035	0.35	6.30	0.39	0.14	4.39
IHA61F	6.5	5.12 -0.0017/-0.0042	0.43	7.87	0.59	0.14	6.36

	G3	D2 0/-0.0005	B2	b2	f2	t2
IHA41/F	6.93	0.75	1.57	0.19	1/4-20	0.83
IHA51/F	7.26	0.75	1.57	0.19	1/4-20	0.83
IHA61/F	8.23	0.875	1.97	0.19	1/4-20	0.96

3.1.5 HA.2



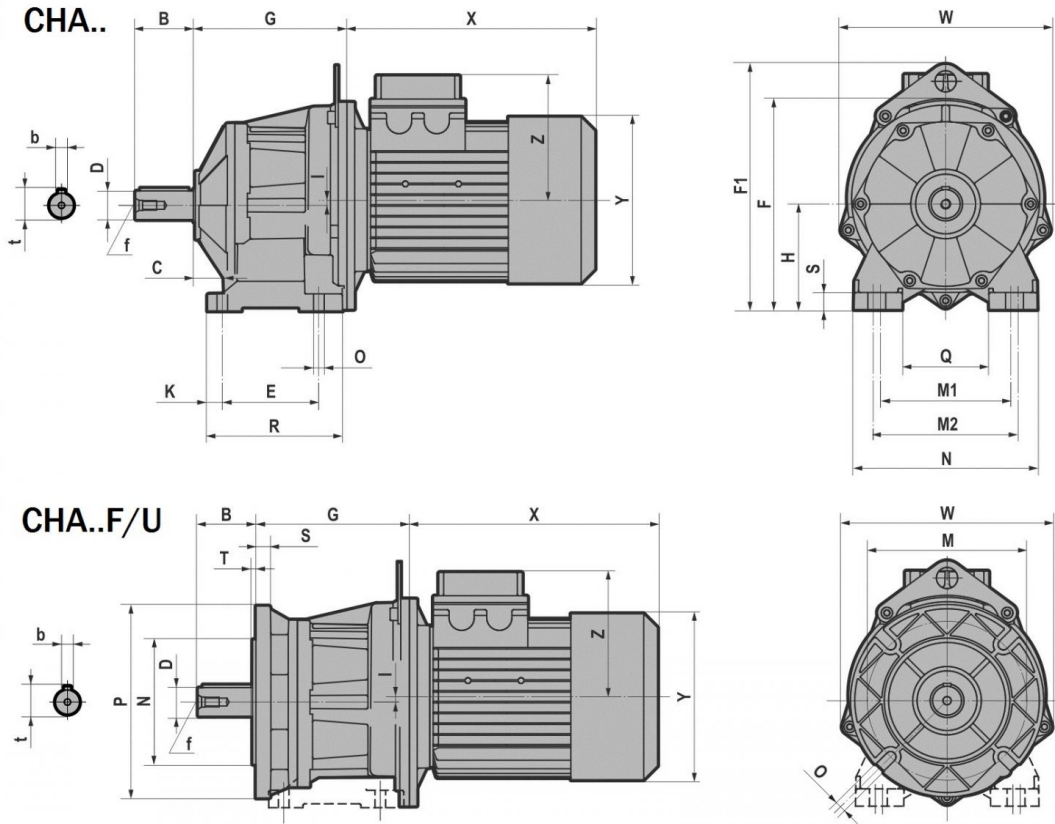
HA..F/U	$\frac{D}{0/-0.0005}$	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
HA32	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
HA42	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
HA52	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
HA62	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

	P	M	N	O	G	I	S	T	W
HA32F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
HA42F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
HA52F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
HA62F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

NEMA	Pm x Dm	G2	
		HA32F/U - HA42F/U	HA52F/U - HA62F/U
56C	6.5"x0.625"	3.78	3.98
140TC	6.5"x0.875"	3.78	3.98
180TC	9"x1.125"	/	3.98

NEMA	Pm	Dm	tm	bm
56C	6.69	0.625	0.71	0.1875
140TC	6.69	0.875	0.97	0.1875
180TC	9.06	1.125	1.24	0.2500

3.1.6 CHA.2



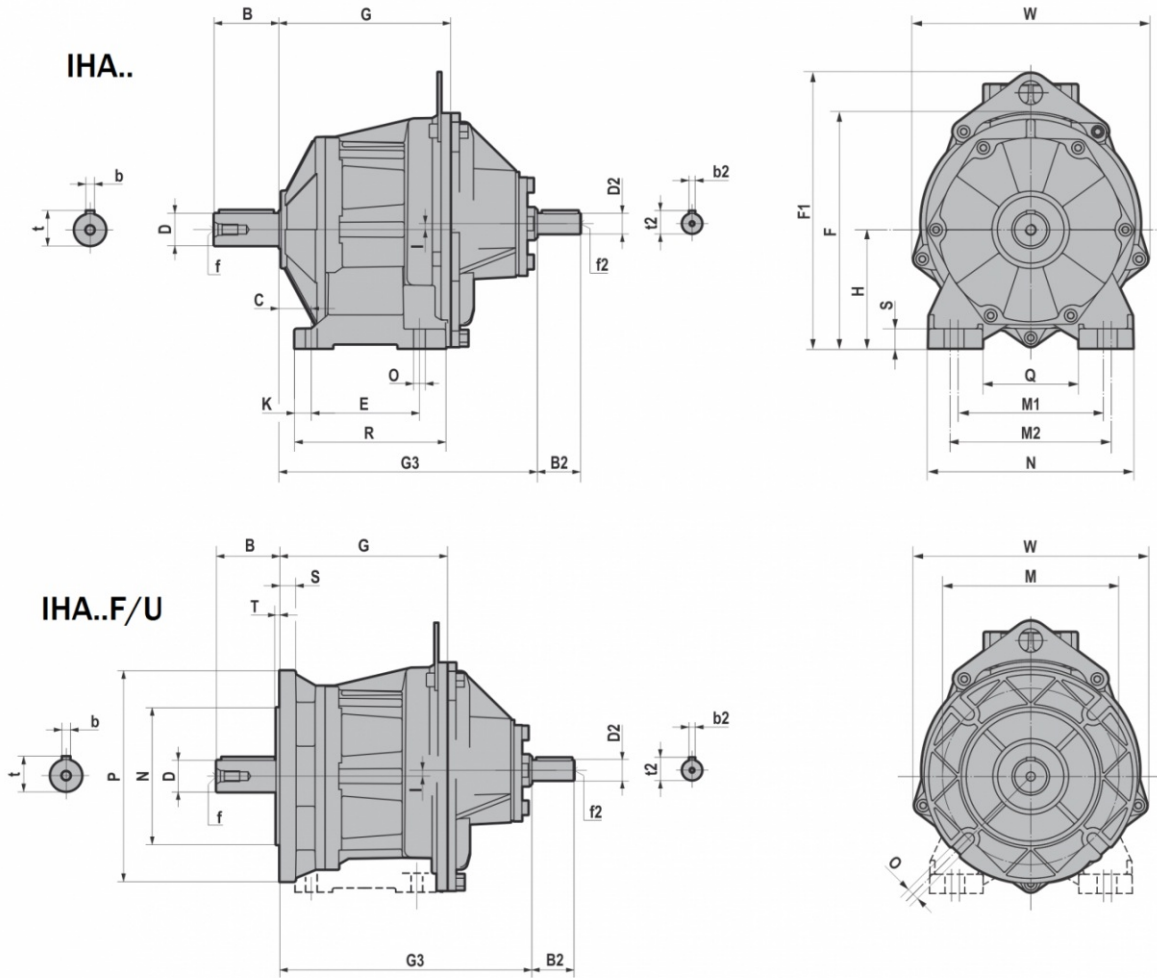
CHA..F/U	D 0/-0.0005	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
CHA32	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
CHA42	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
CHA52	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
CHA62	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

	P	M	N	O	G	I	S	T	W
CHA32F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
CHA42F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
CHA52F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
CHA62F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

		T (IE1 - IE2)						
CHA..F/U		063	071	080	090S	090L	100	112
CHA32 CHA42	X	7.1	8.07	8.78	9.13	10.12	/	/
	Y	4.8	5.47	6.22	6.81	6.81	/	/
	Z	4.09	4.41	4.80	5.12	5.12	/	/
CHA52 CHA62	X	/	/	8.58	9.13	10.12	11.42	11.89
	Y	/	/	6.22	6.81	6.81	7.52	8.31
	Z	/	/	4.80	5.12	5.12	5.47	6.06

		TB (IE1 - IE2)						
CHA..F/U		063	071	080	090S	090L	100	112
CHA32 CHA42	X	9.37	10.67	11.57	12.17	13.15	/	/
	Y	4.76	5.47	6.22	6.81	6.81	/	/
	Z	4.69	5.08	5.39	6.18	6.18	/	/
CHA52 CHA62	X	/	/	11.42	12.17	13.15	14.65	15.75
	Y	/	/	6.22	6.81	6.81	7.52	8.31
	Z	/	/	5.39	6.18	6.18	9.06	9.06

3.1.7 IHA.2

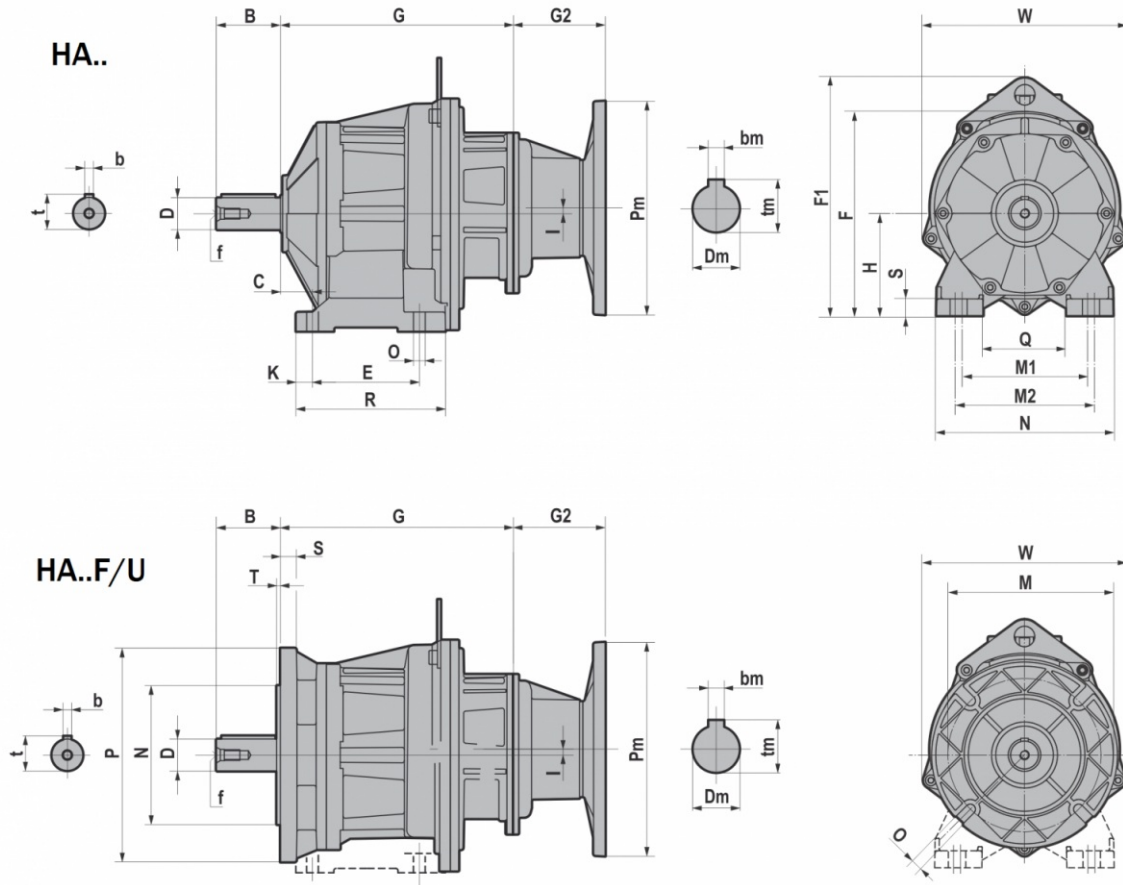


IHA..F/U	D 0/-0.0005	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
IHA32	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
IHA42	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
IHA52	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
IHA62	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

	P	M	N	O	G	I	S	T	W
IHA32F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
IHA42F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
IHA52F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
IHA62F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

	G3	D2 0/-0.0005	B2	b2	f2	t2
IHA32	7.80	0.75	1.57	0.1875	1/4-20	0.83
IHA42	8.07	0.75	1.57	0.1875	1/4-20	0.83
IHA52	9.41	0.875	1.97	0.1875	1/4-20	0.96
IHA62	9.76	0.875	1.97	0.1875	1/4-20	0.96

3.1.8 HA.3



HA..F/U	$\frac{D}{0/-0.0005}$	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
HA33	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
HA43	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
HA53	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
HA63	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

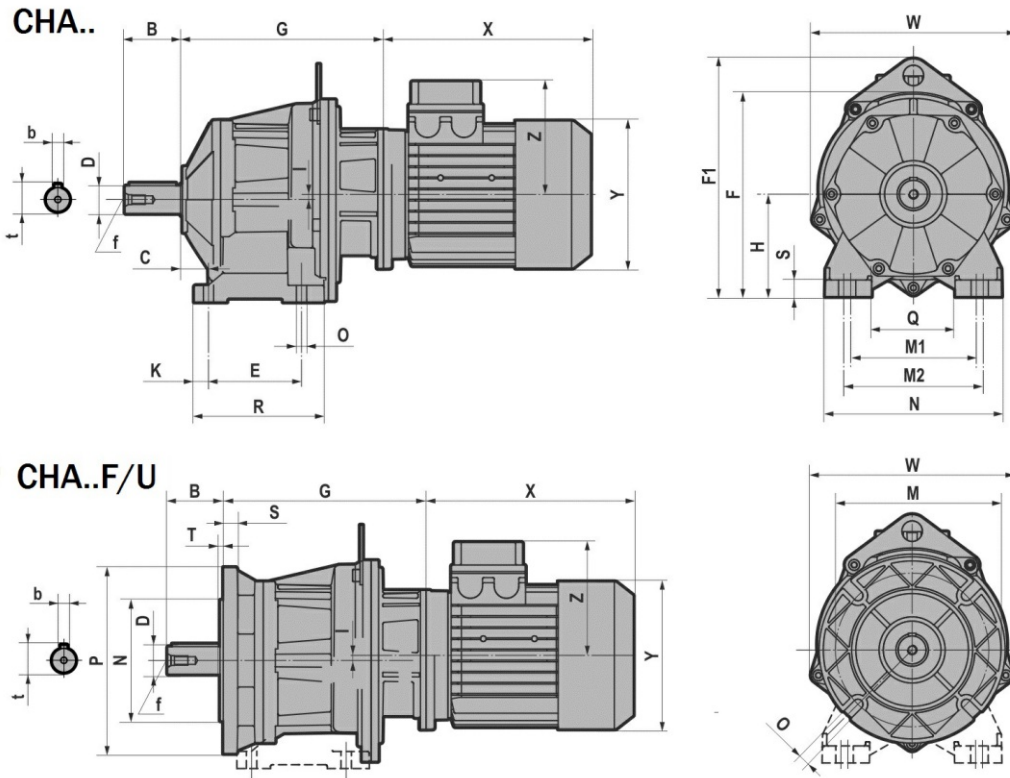
	P	M	N	O	G	I	S	T	W
HA33F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
HA43F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
HA53F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
HA63F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

NEMA	Pm x Dm	G2	
		HA33F/U - HA43F/U	HA53F/U - HA63F/U
56C	6.5"x0.625"	3.78	3.78
140TC	6.5"x0.875"	/	3.78

NEMA	Pm	Dm	tm	bm
56C	6.69	0.625	0.71	0.1875
140TC	6.69	0.875	0.97	0.1875



3.1.9 CHA.3



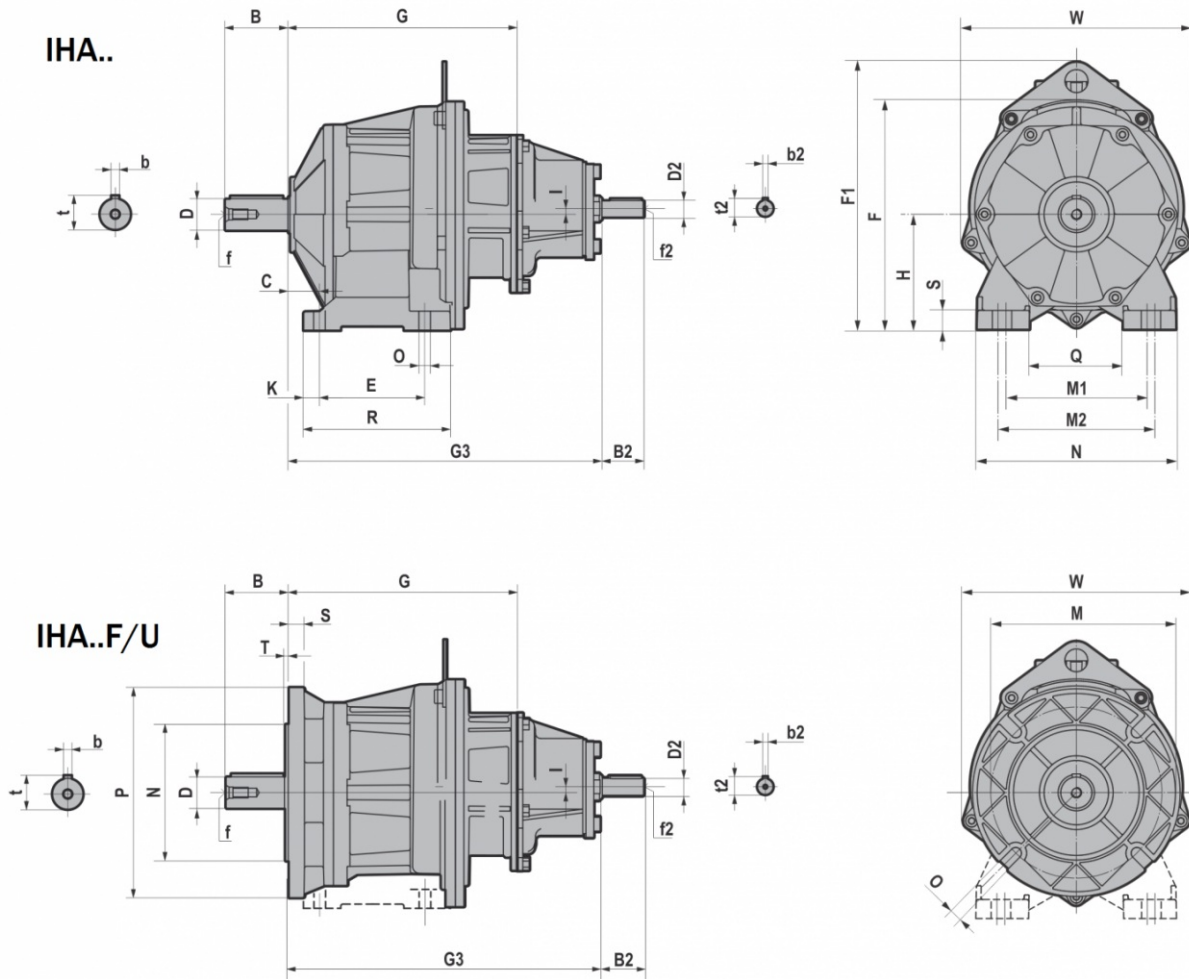
CHA..F/U	D 0/-0.0005	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
CHA33	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
CHA43	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
CHA53	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
CHA63	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

	P	M	N	O	G	I	S	T	W
CHA33F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
CHA43F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
CHA53F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
CHA63F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

		T (IE1 - IE2)				
CHA..F/U		063	071	080	090S	090L
CHA33 CHA43 CHA53 CHA63	X	7.09	8.07	8.78	9.13	10.12
	Y	4.76	5.47	6.22	6.81	6.81
	Z	4.09	4.41	4.80	5.12	5.12

		TB (IE1 - IE2)				
CHA..F/U		063	071	080	090S	090L
CHA33 CHA43 CHA53 CHA63	X	9.37	10.67	11.57	12.17	13.15
	Y	4.76	5.47	6.22	6.81	6.81
	Z	4.69	5.08	5.39	6.18	6.18

3.1.10 IHA.3



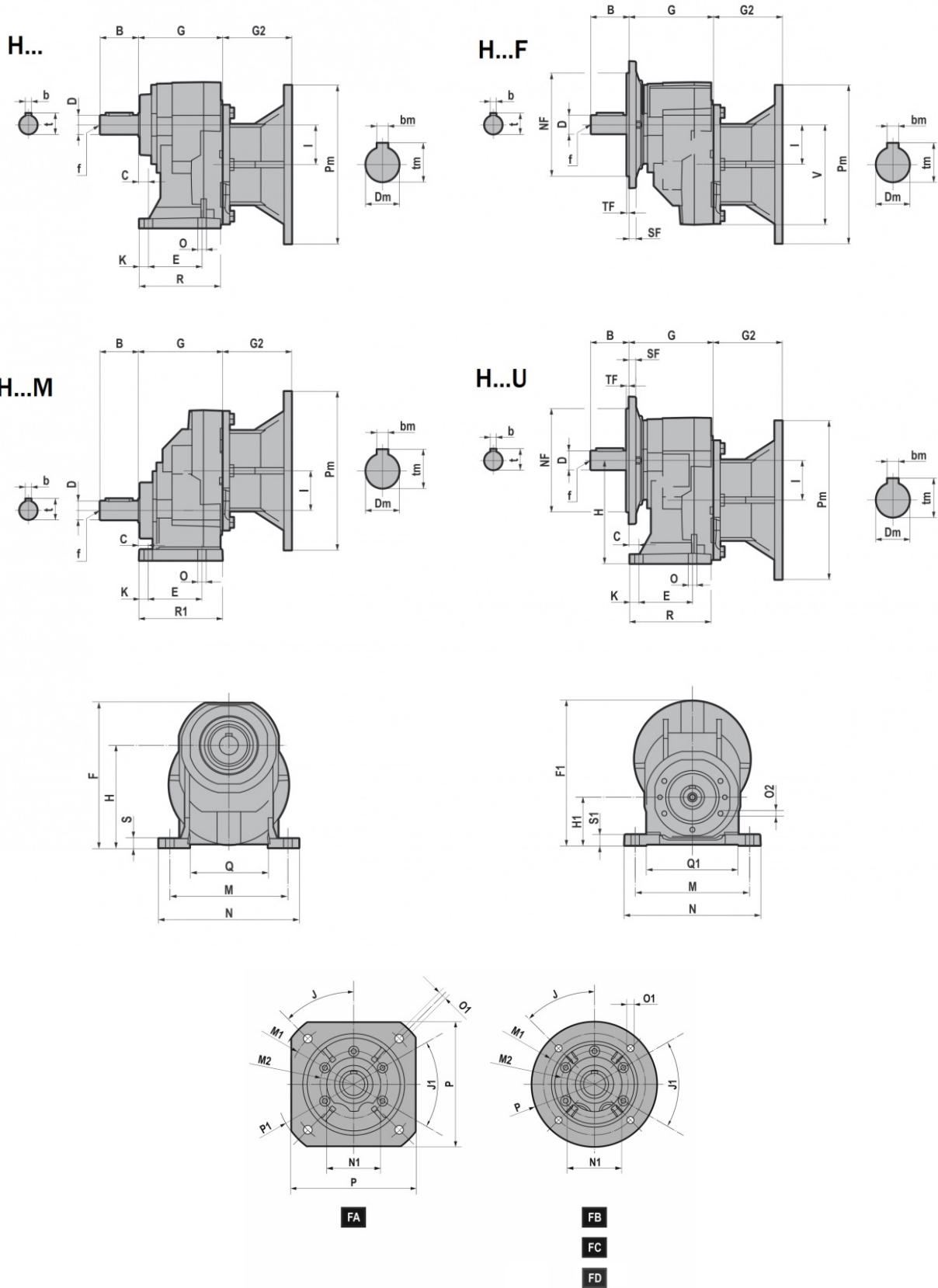
IHA..F/U	$\frac{D}{0/-0.0005}$	B	b	t	f	C	E	F	F1	G	H	I	K	M1	M2	N	O	Q	R	S	W
IHA33	0.75	1.57	0.1875	0.83	1/4-20	0.71	3.15	6.1	/	4.63	2.95	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
IHA43	1	1.97	0.25	1.11	3/8-16	0.98	3.35	6.3	/	4.9	3.15	0.39	0.51	4.33	4.72	5.71	0.35	2.95	4.37	0.59	5.98
IHA53	1.25	2.36	0.25	1.36	1/2-13	1.18	3.94	8.56	10.06	6.26	4.33	0.22	0.61	5.31	5.91	7.48	0.43	3.54	5.51	0.71	8.58
IHA63	1.625	3.15	0.375	1.79	5/8-11	1.38	4.33	9.35	10.85	6.61	4.72	0.61	0.79	6.69	7.28	9.06	0.55	4.72	5.91	0.79	8.58

	P	M	N	O	G	I	S	T	W
IHA33F/U	5.51	4.53	3.74 -0.0014/-0.0035	0.35	4.63	0.39	0.39	0.12	5.98
	4.72	3.94	3.15 -0.0012/-0.0030						
IHA43F/U	6.30	5.12	4.33 -0.0014/-0.0035	0.35	4.90	0.39	0.39	0.14	5.98
	5.51	4.53	3.74 -0.0014/-0.0035						
IHA53F/U	7.87	6.50	5.12 -0.0017/-0.0042	0.43	6.26	0.22	0.59	0.14	8.58
	6.30	5.12	4.33 -0.0014/-0.0035						
IHA63F/U	9.84	8.46	7.09 -0.0017/-0.0042	0.55	6.61	0.61	0.59	0.16	8.58
	7.87	6.50	5.12 -0.0017/-0.0042						

	G3	$\frac{D2}{0/-0.0005}$	B2	b2	f2	t2
IHA33	9.88	0.75	1.57	0.1875	1/4-20	0.83
IHA43	10.16	0.75	1.57	0.1875	1/4-20	0.83
IHA53	11.77	0.75	1.57	0.1875	1/4-20	0.83
IHA63	12.13	0.75	1.57	0.1875	1/4-20	0.83



3.1.11 H..1



H.../F/U/M	D 0/-0.0005	B	C	E	F	F1	G	H	H1	I	K	M	N
H041	0.75	1.57	0.51	1.77	6.63	6.61	3.94	4.72	1.97	1.65	0.47	4.13	5.12 4.92 (H041M)
H051	1	1.97	0.51	2.76	7.22	7.44	4.33	5.12	2.48	1.97	0.47	5.91	7.01
H061	1.25	2.36	0.63	2.76	9.09	8.5	4.92	6.5	3.15	2.36	0.55	6.5	7.68
H081	1.5	3.15	0.98	3.35	10.91	11.18	5.31	7.68	3.94	3.15	0.91	7.28	9.06 9.13 (H081M)
H101	1.875	4.33	0.75	5.12	13.98	14.84	7.09	9.92	4.92	3.94	0.67	9.45	11.61
H121	2.125	4.33	0.98	5.91	16.61	16.79	8.27	11.81	6.3	4.53	0.87	11.02	13.39

H.../F/U/M	O	O2	Q	Q1	R	R1	S	S1	-V	b	t	f
H041	0.35	M8x17 (n.5)	2.91	2.17	3.41	3.86	0.37	0.31	4.65	0.1875	0.83	1/4-20
H051	0.43	M8x17 (n.5)	3.94	4.78	4.17	4.29	0.45	0.55	4.96	0.25	1.11	1/4-20
H061	0.43	M8x17 (n.5)	4.33	5.33	4.72	4.84	0.59	0.63	5.35	0.25	1.36	1/4-20
H081	0.55	M10x20 (n.7)	4.84	5.94	5.12	5.31	0.59	0.79	7.24	0.375	1.66	1/2-13
H101	0.71	M10x20 (n.6)	6.38	7.3	6.81	7.01	0.63	0.87	9.9	0.5	2.09	5/8-11
H121	0.71	M12x25 (n.7)	7.2	8.82	7.95	8.15	0.75	0.98	10.49	0.5	2.35	5/8-11

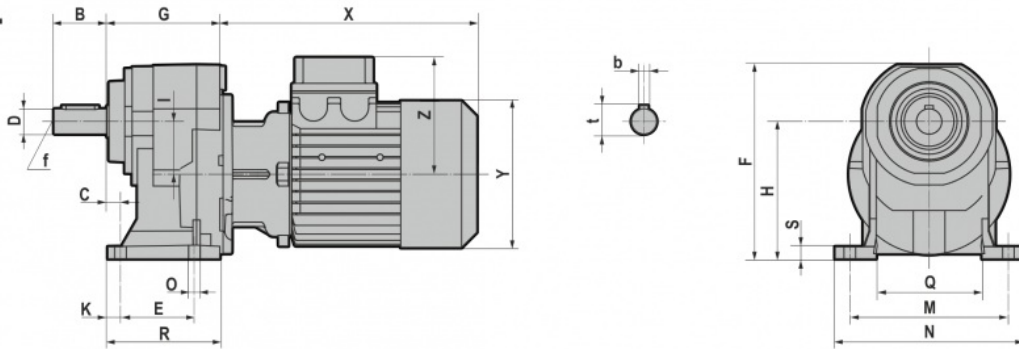
		J	J1	M1	M2	NF	NI	O1	P	P1	SF	TF
H041/F/U H051/F/U	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
H061/F/U	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
H081/F/U H101/F/U	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
H121/F/U	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16

NEMA	Pm x Dm	G2		
		H041/F/U/M H051/F/U/M H061/F/U/M	H081/F/U/M	H101/F/U/M H121/F/U/M
56C	6.5"x0.625"	3.74	2.95	/
140TC	6.5"x0.875"	3.74	2.95	/
180TC	9"x1.125"	4.33	3.54	3.17
210TC	9"x1.375"	/	6.02	5.65
250TC	9"x1.625"	/	/	5.65
280TC	11"x1.875"	/	/	6.89

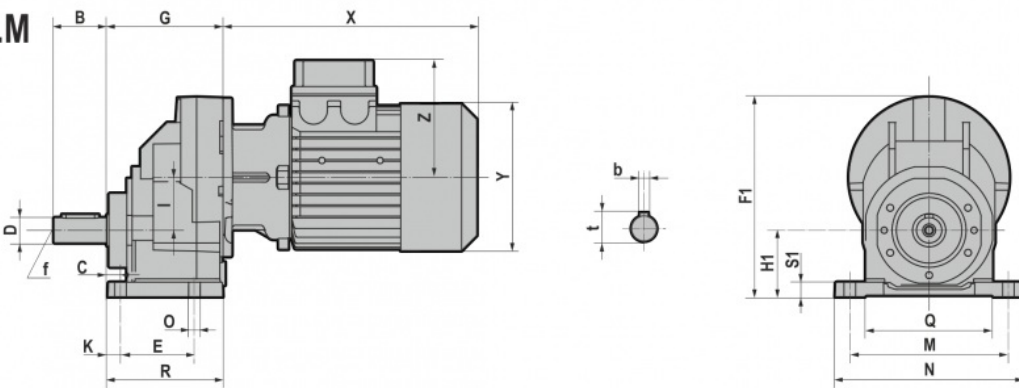
NEMA	Pm	Dm	tm	bm
56C	6.69	0.625	0.71	0.1875
140TC	6.69	0.875	0.97	0.1875
180TC	9.06	1.125	1.24	0.2500
210TC	9.06	1.375	1.52	0.3125
250TC	9.06	1.625	1.80	0.3750
280TC	11.02	1.875	2.10	0.5000

3.1.12 CH..1

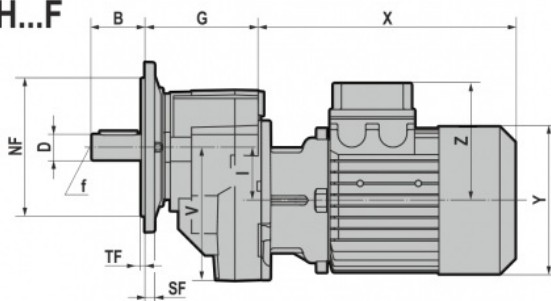
CH...



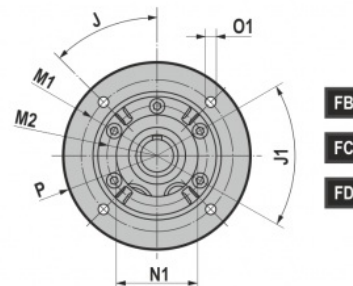
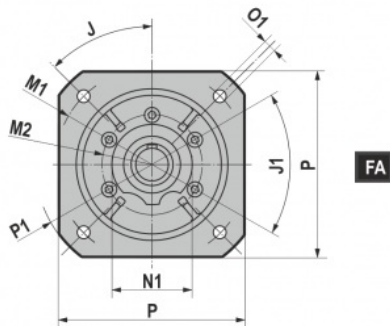
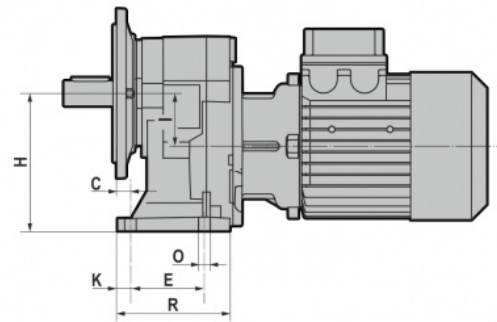
CH...M



CH...F



CH...U



CH.../F/U/M	D 0/-0.0005	B	C	E	F	F1	G	H	H1	I	K	M	N
CH041	0.75	1.57	0.51	1.77	6.63	6.61	3.94	4.72	1.97	1.65	0.47	4.13	5.12 4.92 (H041M)
CH051	1	1.97	0.51	2.76	7.22	7.44	4.33	5.12	2.48	1.97	0.47	5.91	7.01
CH061	1.25	2.36	0.63	2.76	9.09	8.5	4.92	6.5	3.15	2.36	0.55	6.5	7.68
CH081	1.5	3.15	0.98	3.35	10.91	11.18	5.31	7.68	3.94	3.15	0.91	7.28	9.06 9.13 (H081M)
CH101	1.875	4.33	0.75	5.12	13.98	14.84	7.09	9.92	4.92	3.94	0.67	9.45	11.61
CH121	2.125	4.33	0.98	5.91	16.61	16.79	8.27	11.81	6.3	4.53	0.87	11.02	13.39

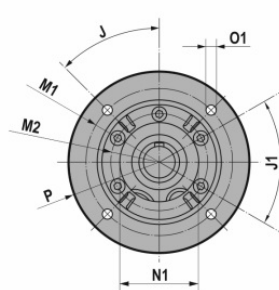
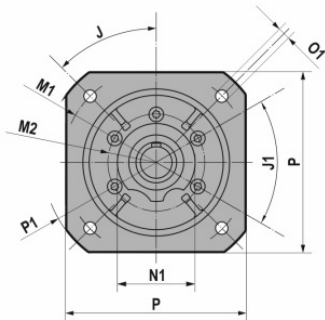
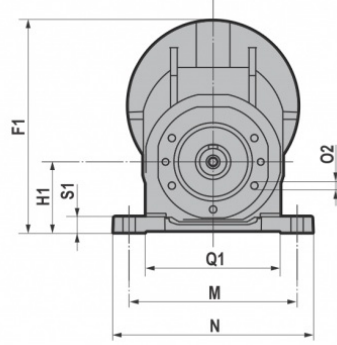
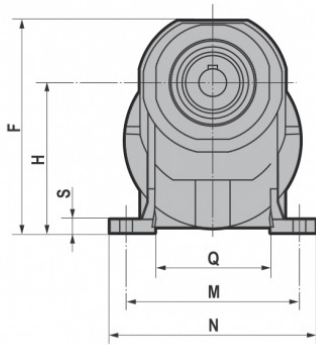
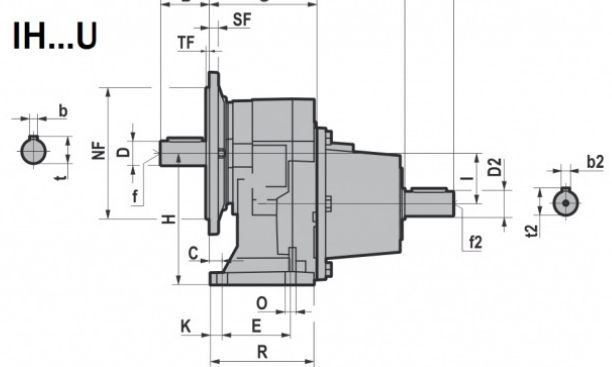
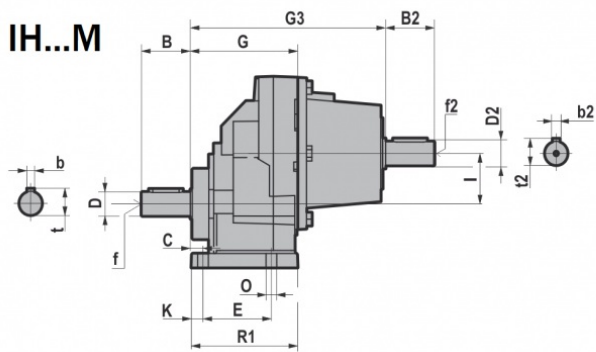
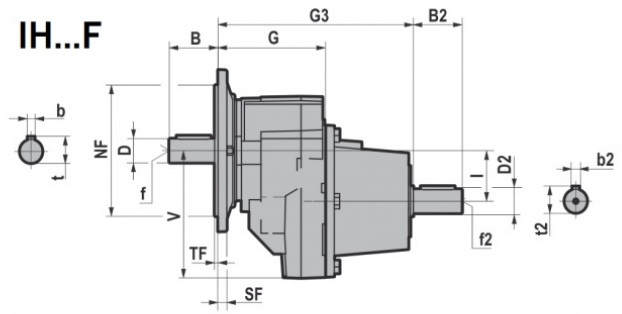
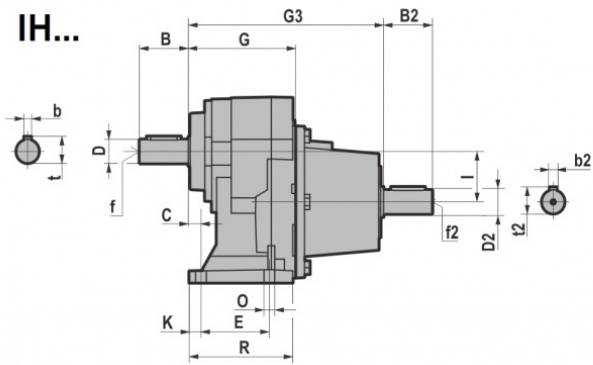
CH.../F/U/M	O	O2	Q	Q1	R	R1	S	S1	-V	b	t	f
CH041	0.35	M8x17 (n.5)	2.91	2.17	3.41	3.86	0.37	0.31	4.65	0.1875	0.83	1/4-20
CH051	0.43	M8x17 (n.5)	3.94	4.78	4.17	4.29	0.45	0.55	4.96	0.25	1.11	1/4-20
CH061	0.43	M8x17 (n.5)	4.33	5.33	4.72	4.84	0.59	0.63	5.35	0.25	1.36	1/4-20
CH081	0.55	M10x20 (n.7)	4.84	5.94	5.12	5.31	0.59	0.79	7.24	0.375	1.66	1/2-13
CH101	0.71	M10x20 (n.6)	6.38	7.3	6.81	7.01	0.63	0.87	9.9	0.5	2.09	5/8-11
CH121	0.71	M12x25 (n.7)	7.2	8.82	7.95	8.15	0.75	0.98	10.49	0.5	2.35	5/8-11

		J	J1	M1	M2	NF	N1	O1	P	P1	SF	TF
CH041/F/U CH051/F/U	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
CH061/F/U	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
CH081/F/U CH101/F/U	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
CH121/F/U	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16

		T (IE1 - IE2)									
		063	071	080	090S	090L	100	112	132S	132M/L	
CH041 CH051 CH061	X	8.5	9.1	10.5	11.6	12.6	13.1	13.8	/	/	
	Y	4.8	5.5	6.2	6.8	6.8	7.5	8.3	/	/	
	Z	4.1	4.4	4.8	5.1	5.1	5.5	6.1	/	/	
CH081	X	/	8.7	9.8	10.9	11.8	13.2	14	15.9	17.4	
	Y	/	5.5	6.2	6.8	6.8	7.5	8.3	9.8	9.8	
	Z	/	4.4	4.8	5.1	5.1	5.5	6.1	7.6	7.6	
CH101 CH121	X	/	/	/	10.5	11.5	12.8	13.7	15.6	17.1	
	Y	/	/	/	6.8	6.8	7.5	8.3	9.8	9.8	
	Z	/	/	/	5.1	5.1	5.5	6.1	7.6	7.6	

		TB (IE1 - IE2)										
		063	071	080	090S	090L	100	112	132S	132M/L		
CH041 CH051 CH061	X	10.7	12.1	13.4	14.7	15.7	16.3	17.6	/	/		
	Y	4.8	5.5	6.2	6.8	6.8	7.5	8.3	/	/		
	Z	4.7	5.1	5.4	6.2	6.2	6.6	7.2	/	/		
CH081	X	/	11.3	12.6	13.9	14.9	16.4	17.8	19.9	21.5		
	Y	/	5.5	6.2	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	5.1	5.4	6.2	6.2	6.6	7.2	9.1	9.1		
CH101 CH121	X	/	/	/	13.5	14.5	16	17.4	19.5	21.1		
	Y	/	/	/	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	/	/	6.2	6.2	6.6	7.2	9.1	9.1		

3.1.13 IH..1



**FA**

**FB**

**FC**

**FD**

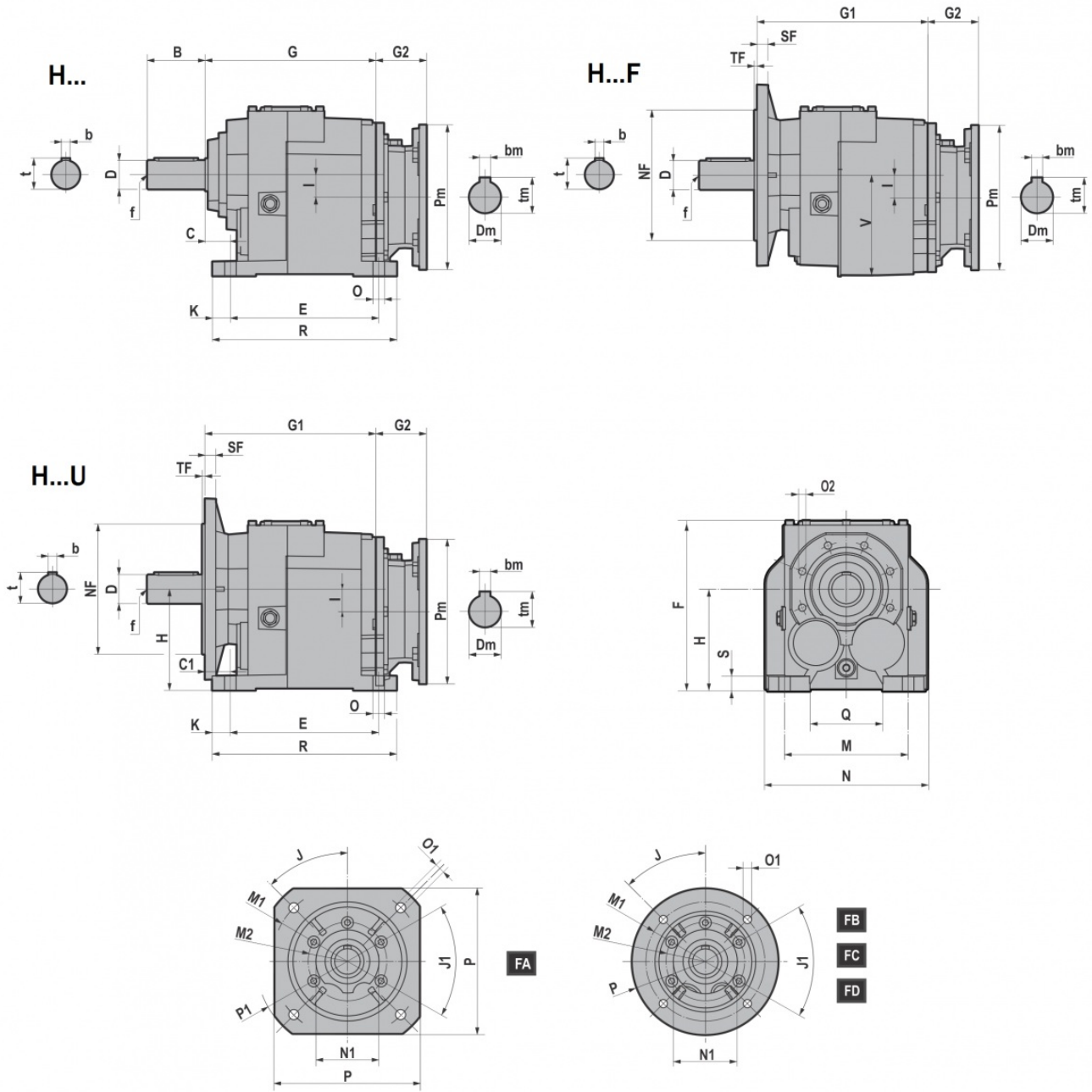
IH.../F/U/M	D 0/-0.0005	B	C	E	F	F1	G	H	H1	I	K	M	N
IH041	0.75	1.57	0.51	1.77	6.63	6.61	3.94	4.72	1.97	1.65	0.47	4.13	5.12 4.92 (H041M)
IH051	1	1.97	0.51	2.76	7.22	7.44	4.33	5.12	2.48	1.97	0.47	5.91	7.01
IH061	1.25	2.36	0.63	2.76	9.09	8.5	4.92	6.5	3.15	2.36	0.55	6.5	7.68
IH081	1.5	3.15	0.98	3.35	10.91	11.18	5.31	7.68	3.94	3.15	0.91	7.28	9.06 9.13 (H081M)
IH101	1.875	4.33	0.75	5.12	13.98	14.84	7.09	9.92	4.92	3.94	0.67	9.45	11.61
IH121	2.125	4.33	0.98	5.91	16.61	16.79	8.27	11.81	6.3	4.53	0.87	11.02	13.39

IH.../F/U/M	O	O2	Q	Q1	R	R1	S	S1	-V	b	t	f
IH041	0.35	M8x17 (n.5)	2.91	2.17	3.41	3.86	0.37	0.31	4.65	0.1875	0.83	1/4-20
IH051	0.43	M8x17 (n.5)	3.94	4.78	4.17	4.29	0.45	0.55	4.96	0.25	1.11	1/4-20
IH061	0.43	M8x17 (n.5)	4.33	5.33	4.72	4.84	0.59	0.63	5.35	0.25	1.36	1/4-20
IH081	0.55	M10x20 (n.7)	4.84	5.94	5.12	5.31	0.59	0.79	7.24	0.375	1.66	1/2-13
IH101	0.71	M10x20 (n.6)	6.38	7.3	6.81	7.01	0.63	0.87	9.9	0.5	2.09	5/8-11
IH121	0.71	M12x25 (n.7)	7.2	8.82	7.95	8.15	0.75	0.98	10.49	0.5	2.35	5/8-11

		J	J1	M1	M2	NF	N1	O1	P	P1	SF	TF
IH041/F/U IH051/F/U	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
IH061/F/U	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
IH081/F/U IH101/F/U	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
IH121/F/U	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16

	G3	B2	D2	b2	t2	f2
IH041	7.48	1.57	0.625 0/-0.0005	0.1875	0.70	1/4-20
IH051	7.87	1.97	0.875 0/-0.0005	0.1875	0.96	1/4-20
IH061	8.46	1.97	0.875 0/-0.0005	0.1875	0.96	1/4-20
IH081	9.75	2.76	1.375 0/-0.0005	0.3125	1.51	1/2-13
IH101	12.07	3.15	1.625 0/-0.001	0.3750	1.79	5/8-11
IH121	13.25	3.15	1.625 0/-0.001	0.3750	1.79	5/8-11

3.1.14 H..2/3



H.../F/U	D	B	b	t	f	C	C1	E	F	G	G1
H032/H033	<sup>1</sup> 0/-0.0005	1.97	0.25	1.11	3/8-16	0.98	1.34	5.12	6.65	5.55	5.91
H042/H043	<sup>1.25</sup> 0/-0.0005	2.36	0.25	1.36	1/2-13	1.18	1.18	6.5	7.44	5.98	5.98
H052/H053	<sup>1.375</sup> 0/-0.0005	2.76	0.3125	1.51	1/2-13	1.18	1.18	6.5	7.56	7.36	7.36
H062/H063	<sup>1.625</sup> 0/-0.001	3.15	0.375	1.79	5/8-11	1.38	1.38	8.07	9.21	9.29	9.29
H082/H083	<sup>2.125</sup> 0/-0.001	3.94	0.5	2.35	3/4-10	1.57	1.57	10.24	11.5	10.73	10.73
H102/H103	<sup>2.375</sup> 0/-0.001	4.72	0.625	2.65	3/4-10	1.57	1.57	12.2	14.33	12.44	12.44
H122/H123	<sup>2.875</sup> 0/-0.001	5.51	0.75	3.2	3/4-10	1.77	1.77	14.57	15.71	14.82	14.82
H142/H143	<sup>3.625</sup> 0/-0.001	6.69	0.875	4.01	1-8	1.97	1.97	16.14	19.29	16.93	16.93

H.../F/U	H	I	K	M	N	O	O2	Q	R	S	-V
H032/H033	3.54	0.36	0.59	4.33	5.51	0.43	M8x17 (n.5)	2.36	6.3	0.59	3.62
H042/H043	4.53	0.71	0.59	5.31	6.69	0.55	M8x17 (n.5)	3.35	7.68	0.59	4.53
H052/H053	4.53	1	0.71	5.31	7.28	0.55	M8x17 (n.5)	3.15	7.91	0.71	4.57
H062/H063	5.51	1.22	0.98	6.69	8.66	0.63	M10x20 (n.6)	3.94	10.04	0.79	5.51
H082/H083	7.09	1.22	1.08	8.46	11.02	0.71	M12x25 (n.7)	5.51	12.4	0.98	7.09
H102/H103	8.86	1.4	1.08	9.84	12.99	0.87	M14x28 (n.7)	6.26	14.37	1.18	8.94
H122/H123	9.84	1.87	1.38	11.42	15.98	1.02	M14x30 (n.7)	7.3	17.32	1.38	9.96
H142/H143	12.4	1.77	1.57	13.39	17.72	1.02	M16x32 (n.7)	9.06	19.29	1.38	12.6

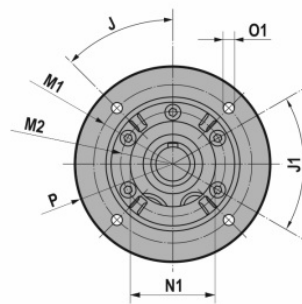
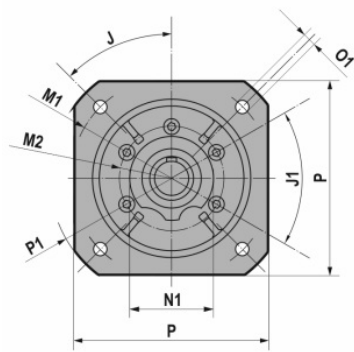
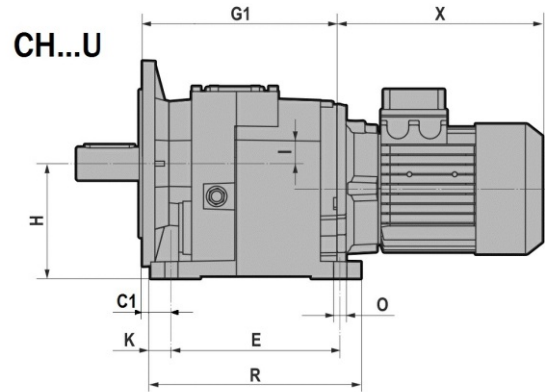
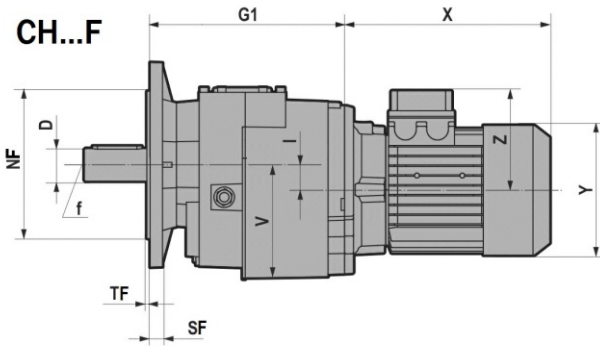
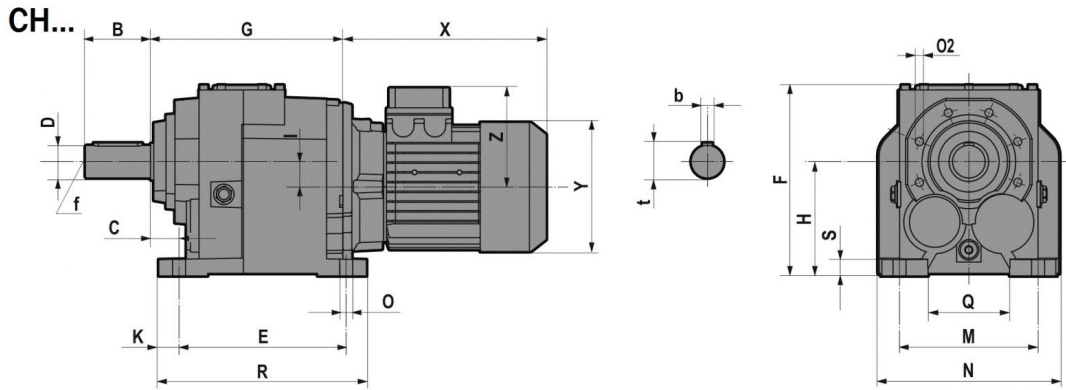
...F/U		J	J1	M1	M2	NF	N1	O1	P	P1	SF	TF
H032/H033 H042/H043	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
H052/H053	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
H062/H063	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
H082/H083	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16
H102/H103	FA	45	45	13.78	7.28	11.81	5.91	0.71	13.78	15.75	0.71	0.20
	FB			11.81	7.28	9.84		0.71	13.78	/	0.71	0.20
	FC			10.43	7.28	9.06		0.55	11.81	/	0.71	0.16
H122/H123	FB	45	45	13.78	7.87	11.81	6.69	0.71	15.75	/	0.71	0.20
H142/H143	FB	22.5	45	15.75	9.65	13.78	8.27	0.71	17.72	/	0.98	0.20
	FC	45		13.78	9.65	11.81		0.71	15.75	/	0.98	0.20

NEMA	Pm x Dm	G2 H.../F/U			
		H032/H033 H042/H043 H052/H053	H062/H063 H082/H083	H102/H103 H122/H123	H142/H143
56C	6.5"x0.625"	3.74	2.95	/	/
140TC	6.5"x0.875"	3.74	2.95	2.58	/
180TC	9"x1.125"	4.33	3.54	3.17	2.20
210TC	9"x1.375"	/	6.02	5.65	4.69
250TC	9"x1.625"	/	6.02	5.65	4.69
280TC	11"x1.875"	/	/	6.89	5.93
320TC	13.375"x2.125"	/	/	7.03	6.28
360TC	13.375"x2.375"	/	/	/	6.28

NEMA	Pm	Dm	tm	bm
56C	6.69	0.625	0.71	0.1875
140TC	6.69	0.875	0.97	0.1875
180TC	9.06	1.125	1.24	0.2500
210TC	9.06	1.375	1.52	0.3125
250TC	9.06	1.625	1.80	0.3750
280TC	11.02	1.875	2.10	0.5000
320TC	13.39	2.125	2.35	0.5000
360TC	13.39	2.375	2.65	0.6250



3.1.15 CH..2/3



- FC
- FD

CH.../F/U	D	B	b	t	f	C	C1	E	F	G	G1
CH032/CH033	<sup>1</sup> 0/-0.0005	1.97	0.25	1.11	3/8-16	0.98	1.34	5.12	6.65	5.55	5.91
CH042/CH043	<sup>1.25</sup> 0/-0.0005	2.36	0.25	1.36	1/2-13	1.18	1.18	6.5	7.44	5.98	5.98
CH052/CH053	<sup>1.375</sup> 0/-0.0005	2.76	0.3125	1.51	1/2-13	1.18	1.18	6.5	7.56	7.36	7.36
CH062/CH063	<sup>1.625</sup> 0/-0.001	3.15	0.375	1.79	5/8-11	1.38	1.38	8.07	9.21	9.29	9.29
CH082/CH083	<sup>2.125</sup> 0/-0.001	3.94	0.5	2.35	3/4-10	1.57	1.57	10.24	11.5	10.73	10.73
CH102/CH103	<sup>2.375</sup> 0/-0.001	4.72	0.625	2.65	3/4-10	1.57	1.57	12.2	14.33	12.44	12.44
CH122/CH123	<sup>2.875</sup> 0/-0.001	5.51	0.75	3.2	3/4-10	1.77	1.77	14.57	15.71	14.82	14.82
CH142/CH143	<sup>3.625</sup> 0/-0.001	6.69	0.875	4.01	1-8	1.97	1.97	16.14	19.29	16.93	16.93

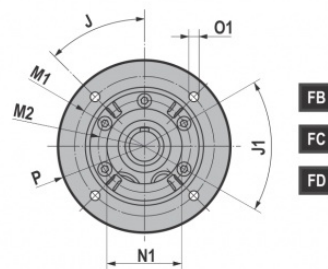
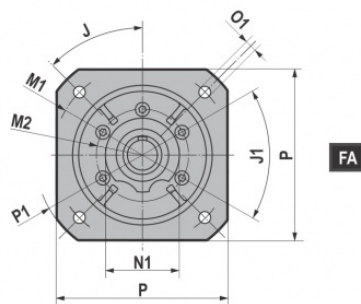
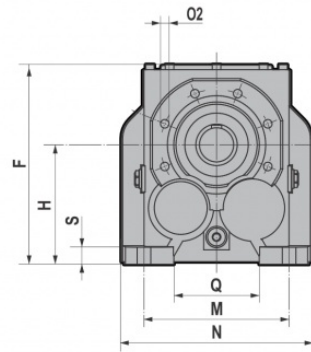
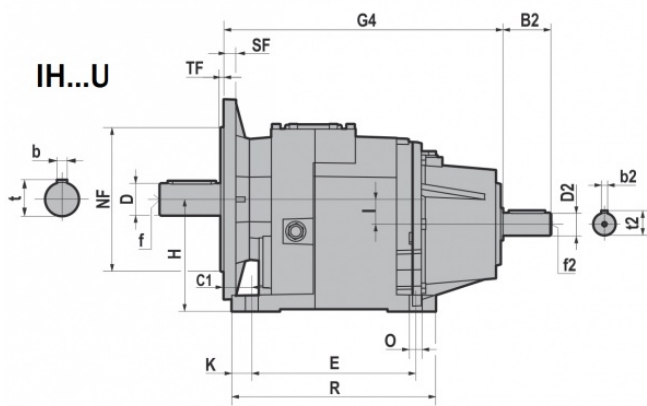
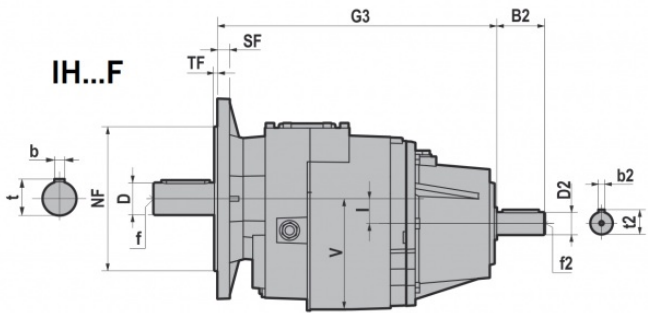
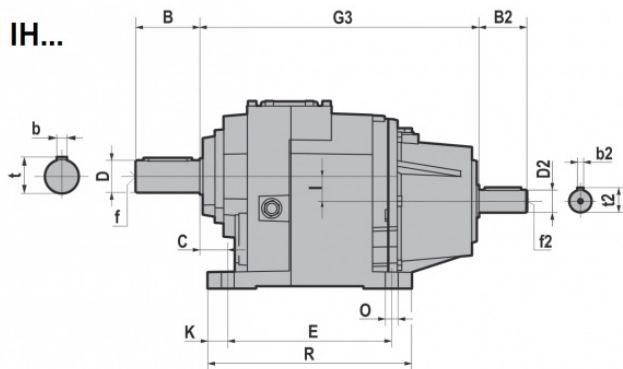
CH.../F/U	H	I	K	M	N	O	O2	Q	R	S	-V
CH032/CH033	3.54	0.36	0.59	4.33	5.51	0.43	M8x17 (n.5)	2.36	6.3	0.59	3.62
CH042/CH043	4.53	0.71	0.59	5.31	6.69	0.55	M8x17 (n.5)	3.35	7.68	0.59	4.53
CH052/CH053	4.53	1	0.71	5.31	7.28	0.55	M8x17 (n.5)	3.15	7.91	0.71	4.57
CH062/CH063	5.51	1.22	0.98	6.69	8.66	0.63	M10x20 (n.6)	3.94	10.04	0.79	5.51
CH082/CH083	7.09	1.22	1.08	8.46	11.02	0.71	M12x25 (n.7)	5.51	12.4	0.98	7.09
CH102/CH103	8.86	1.4	1.08	9.84	12.99	0.87	M14x28 (n.7)	6.26	14.37	1.18	8.94
CH122/CH123	9.84	1.87	1.38	11.42	15.98	1.02	M14x30 (n.7)	7.3	17.32	1.38	9.96
CH142/CH143	12.4	1.77	1.57	13.39	17.72	1.02	M16x32 (n.7)	9.06	19.29	1.38	12.6

....F/U		J	J1	M1	M2	NF	N1	O1	P	P1	SF	TF
CH032/CH033 CH042/CH043	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
CH052/CH053	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
CH062/CH063	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
CH082/CH083	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16
CH102/CH103	FA	45	45	13.78	7.28	11.81	5.91	0.71	13.78	15.75	0.71	0.20
	FB			11.81	7.28	9.84		0.71	13.78	/	0.71	0.20
	FC			10.43	7.28	9.06		0.55	11.81	/	0.71	0.16
CH122/CH123	FB	45	45	13.78	7.87	11.81	6.69	0.71	15.75	/	0.71	0.20
CH142/CH143	FB	22.5	45	15.75	9.65	13.78	8.27	0.71	17.72	/	0.98	0.20
	FC			13.78	9.65	11.81		0.71	15.75	/	0.98	0.20

		T (IE1 - IE2)										
		063	071	080	090S	090L	100	112	132S	132M/L		
CH032/CH033 CH042/CH043 CH052/CH053	X	8.5	9.5	10.5	11.6	12.6	13.1	13.8	/	/		
	Y	4.8	5.5	6.2	6.8	6.8	7.5	8.3	/	/		
	Z	4.1	4.4	4.8	5.1	5.1	5.5	6.1	/	/		
CH062/CH063 CH082/CH083	X	/	8.7	9.8	10.9	11.8	13.2	14	15.9	17.4		
	Y	/	5.5	6.2	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	4.4	4.8	5.1	5.1	5.5	6.1	7.6	7.6		
CH102/CH103 CH122/CH123	X	/	/	/	10.5	11.5	12.8	13.7	15.6	17.1		
	Y	/	/	/	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	/	/	5.1	5.1	5.5	6.1	7.6	7.6		

		TB (IE1 - IE2)										
		063	071	080	090S	090L	100	112	132S	132M/L		
CH032/CH033 CH042/CH043 CH052/CH053	X	10.7	12.1	13.4	14.7	15.7	16.3	17.6	/	/		
	Y	4.8	5.5	6.2	6.8	6.8	7.5	8.3	/	/		
	Z	4.7	5.1	5.4	6.2	6.2	6.6	7.2	/	/		
CH062/CH063 CH082/CH083	X	/	11.3	12.6	13.9	14.9	16.4	17.8	19.9	21.5		
	Y	/	5.5	6.2	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	5.1	5.4	6.2	6.2	6.6	7.2	9.1	9.1		
CH102/CH103 CH122/CH123	X	/	/	/	13.5	14.5	16	17.4	19.5	21.1		
	Y	/	/	/	6.8	6.8	7.5	8.3	9.8	9.8		
	Z	/	/	/	6.2	6.2	6.6	7.2	9.1	9.1		

3.1.16 IH..2/3



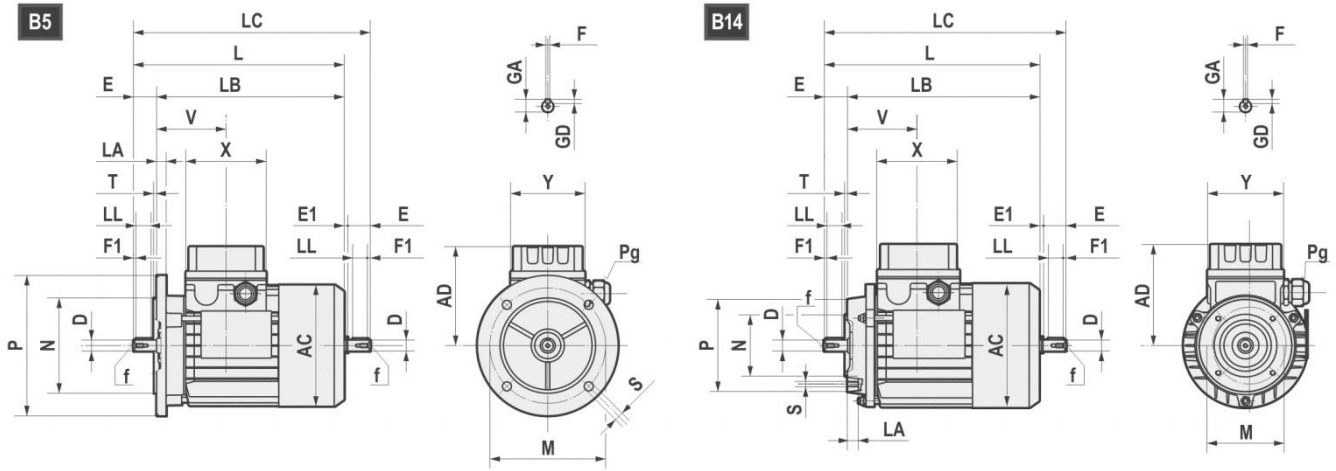
IH.../F/U	D	B	b	t	f	C	C1	E	F	G	G1
IH032/IH033	$\frac{1}{0/-0.0005}$	1.97	0.25	1.11	3/8-16	0.98	1.34	5.12	6.65	5.55	5.91
IH042/IH043	$\frac{1.25}{0/-0.0005}$	2.36	0.25	1.36	1/2-13	1.18	1.18	6.5	7.44	5.98	5.98
IH052/IH053	$\frac{1.375}{0/-0.0005}$	2.76	0.3125	1.51	1/2-13	1.18	1.18	6.5	7.56	7.36	7.36
IH062/IH063	$\frac{1.625}{0/-0.001}$	3.15	0.375	1.79	5/8-11	1.38	1.38	8.07	9.21	9.29	9.29
IH082/IH083	$\frac{2.125}{0/-0.001}$	3.94	0.5	2.35	3/4-10	1.57	1.57	10.24	11.5	10.73	10.73
IH102/IH103	$\frac{2.375}{0/-0.001}$	4.72	0.625	2.65	3/4-10	1.57	1.57	12.2	14.33	12.44	12.44
IH122/IH123	$\frac{2.875}{0/-0.001}$	5.51	0.75	3.2	3/4-10	1.77	1.77	14.57	15.71	14.82	14.82
IH142/IH143	$\frac{3.625}{0/-0.001}$	6.69	0.875	4.01	1-8	1.97	1.97	16.14	19.29	16.93	16.93

IH.../F/U	H	I	K	M	N	O	O2	Q	R	S	-V
IH032/IH033	3.54	0.36	0.59	4.33	5.51	0.43	M8x17 (n.5)	2.36	6.3	0.59	3.62
IH042/IH043	4.53	0.71	0.59	5.31	6.69	0.55	M8x17 (n.5)	3.35	7.68	0.59	4.53
IH052/IH053	4.53	1	0.71	5.31	7.28	0.55	M8x17 (n.5)	3.15	7.91	0.71	4.57
IH062/IH063	5.51	1.22	0.98	6.69	8.66	0.63	M10x20 (n.6)	3.94	10.04	0.79	5.51
IH082/IH083	7.09	1.22	1.08	8.46	11.02	0.71	M12x25 (n.7)	5.51	12.4	0.98	7.09
IH102/IH103	8.86	1.4	1.08	9.84	12.99	0.87	M14x28 (n.7)	6.26	14.37	1.18	8.94
IH122/IH123	9.84	1.87	1.38	11.42	15.98	1.02	M14x30 (n.7)	7.3	17.32	1.38	9.96
IH142/IH143	12.4	1.77	1.57	13.39	17.72	1.02	M16x32 (n.7)	9.06	19.29	1.38	12.6

...F/U		J	J1	M1	M2	NF	N1	O1	P	P1	SF	TF
IH032/IH033 IH042/IH043	FA	45	45	6.50	3.35	5.12	2.76	0.43	6.30	7.87	0.35	0.14
	FB			5.12	3.35	4.33		0.35	6.30	/	0.35	0.14
	FC			4.53	3.35	3.74		0.35	5.51	/	0.35	0.12
	FD			3.94	3.35	3.15		M8	4.72	/	0.35	0.12
IH052/IH053	FA	45	45	8.46	4.13	7.09	3.54	0.55	7.87	9.84	0.47	0.16
	FB			6.50	4.13	5.12		0.43	7.87	/	0.47	0.14
IH062/IH063	FA	45	45	10.43	5.12	9.06	4.33	0.55	9.84	11.81	0.59	0.16
	FB			8.46	5.12	7.09		0.55	9.84	/	0.59	0.16
	FC			6.50	5.12	5.12		0.43	7.87	/	0.59	0.14
IH082/IH083	FA	45	45	11.81	6.50	9.84	5.12	0.71	11.81	13.78	0.63	0.20
	FB			10.43	6.50	9.06		0.55	11.81	/	0.63	0.16
	FC			8.46	6.50	7.09		0.55	9.84	/	0.63	0.16
IH102/IH103	FA	45	45	13.78	7.28	11.81	5.91	0.71	13.78	15.75	0.71	0.20
	FB			11.81	7.28	9.84		0.71	13.78	/	0.71	0.20
	FC			10.43	7.28	9.06		0.55	11.81	/	0.71	0.16
IH122/IH123	FB	45	45	13.78	7.87	11.81	6.69	0.71	15.75	/	0.71	0.20
IH142/IH143	FB	22.5	45	15.75	9.65	13.78	8.27	0.71	17.72	/	0.98	0.20
	FC			13.78	9.65	11.81		0.71	15.75	/	0.98	0.20

	G3	G4	B2	D2	b2	t2	f2
IH032/IH033	9.09	9.45	1.97	0.625 0/-0.0005	0.1875	0.7	1/4-20
IH042/IH043	9.53	9.53	1.97	0.625 0/-0.0005	0.1875	0.7	1/4-20
IH052/IH053	10.91	10.91	1.97	0.625 0/-0.0005	0.1875	0.7	1/4-20
IH062/IH063	13.74	13.74	2.76	1.375 0/-0.0005	0.3125	1.51	1/2-13
IH082/IH083	15.18	15.18	2.76	1.375 0/-0.0005	0.3125	1.51	1/2-13
IH102/IH103	17.42	17.42	3.15	1.625 0/-0.001	0.375	1.79	5/8-11
IH122/IH123	19.80	19.80	3.15	1.625 0/-0.001	0.375	1.79	5/8-11
IH142/IH143	22.44	22.44	3.15	1.625 0/-0.001	0.375	1.79	5/8-11

3.2.1 Electric motors



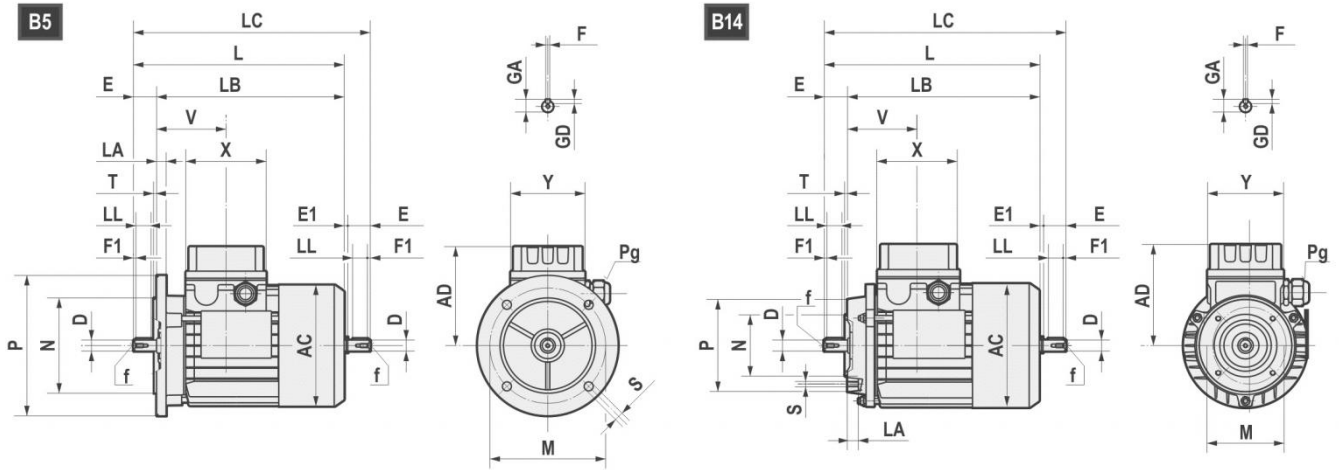
	AC	AD	L	LB	LC	X	Y	V	D	E	E1	f	F1	GA	F	GD
<b>063</b>	121	104	211	188	235.5	80	74	69	11 j6	23	1.5	M4x10	2.5	12.5	4	4
<b>071</b>	139	112	238.5	208.5	271	80	74	74.5	14 j6	30	2.5	M5x12.5	3	16	5	5
<b>080</b>	158	122	272.5 *(296)	232.5 *(256)	314 *(337)	80	74	78	19 j6	40	1.5	M6x16	5	21.5	6	6
<b>90S</b>	173	146	298 *(331)	248 *(281)	349.5 *(381)	98	98	89.5	24 j6	50	1.5	M8x19	5	27	8	7
<b>90L</b>	173	146	323 *(356)	273 *(306)	374.5 *(408)	98	98	89.5	24 j6	50	1.5	M8x19	5	27	8	7
<b>100</b>	191	155	368	308	431.5	98	98	97.5	28 j6	60	3.5	M10x22	7.5	31	8	7
<b>112</b>	211	170	382.5 *(408)	322.5 *(348)	447 *(472)	98	98	100	28 j6	60	3.5	M10x22	7.5	31	8	7
<b>132S</b>	249	195	452	372	536.5	118	118	115.5	38 k6	80	4	M12x28	10	41	10	8
<b>132L</b>	249	195	490	410	574.5	118	118	115.5	38 k6	80	4	M12x28	10	41	10	8
<b>160S</b>	249	195	520	410	/	118	118	115.5	42k6	100	/	M16x36	10	45	12	8

\*TP80B4, TP90S4, TP90L4, TP90S6, TP112M4, TP112M6

B5	M	N	P	LA	S	T
<b>063</b>	115	95	140	10	9	3
<b>071</b>	130	110	160	10	9.5	3.5
<b>080</b>	165	130	200	12	11	3.5
<b>090</b>	165	130	200	12	11	3.5
<b>100</b>	215	180	250	15	14	4
<b>112</b>	215	180	250	14.5	14	4
<b>132</b>	265	230	300	20	14	3.5
<b>160</b>	300	250	350	13	18.5	3.5

B14	M	N	P	LA	S	T
<b>063</b>	75	60	90	10	M5	2.5
<b>071</b>	85	70	105	10.5	M6	2.5
<b>080</b>	100	80	120	10.5	M6	3
<b>090</b>	115	95	140	11.5	M8	3
<b>100</b>	130	110	160	15	M8	3.5
<b>112</b>	130	110	160	11.5	M8	3.5
<b>132</b>	165	130	200	20.5	M10	3.5
<b>160</b>	215	180	250	-	M12	4

All dimensions are in mm



		AC	AD	L	LB	X	D	E	f	GA	F	GD	LL	Pg	
<b>160M</b>	2-4-6	314	251	600	490	158	42	110	M16	45	12	8	90	2-M40x1.5	1-M16x1.5
<b>160L</b>	2-4-6	314	251	645	535	158	42	110	M16	45	12	8	90	2-M40x1.5	1-M16x1.5
<b>180M</b>	2-4	355	267	680	570	158	48	110	M16	51.5	14	9	100	2-M40x1.5	1-M16x1.5
<b>180L</b>	4-6	355	267	720	610	158	48	110	M16	51.5	14	9	100	2-M40x1.5	1-M16x1.5
<b>200L</b>	2-4-6	397	300	785	675	187	55	110	M20	59	16	10	100	2-M50x1.5	1-M16x1.5
<b>225S</b>	4	446	325	820	680	187	60	140	M20	64	18	11	125	2-M50x1.5	1-M16x1.5
<b>225M</b>	2	446	325	815	705	187	55	110	M20	59	16	10	100	2-M50x1.5	1-M16x1.5
<b>225M</b>	4-6	446	325	845	705	187	60	140	M20	64	18	11	125	2-M50x1.5	1-M16x1.5
<b>250M</b>	2-4-6	485	360	910	770	238	60	140	M20	64	18	11	125	2-M63x1.5	1-M16x1.5
<b>250M</b>	2-4-6	485	360	910	770	238	65	140	M20	69	18	11	125	2-M63x1.5	1-M16x1.5
<b>280S</b>	2-4-6	547	390	970	830	238	65	140	M20	69	18	11	125	2-M63x1.5	1-M16x1.5
<b>280S</b>	2-4-6	547	390	970	830	238	75	140	M20	79.5	20	12	125	2-M63x1.5	1-M16x1.5
<b>280M</b>	2-4-6	547	390	1025	885	238	65	140	M20	69	18	11	125	2-M63x1.5	1-M16x1.5
<b>280M</b>	2-4-6	547	390	1025	885	238	75	140	M20	79.5	20	12	125	2-M63x1.5	1-M16x1.5

B5	M	N	P	LA	S	T
<b>160</b>	300	250	350	13	19	5
<b>180</b>	300	250	350	15	19	5
<b>200</b>	350	300	400	17	19	5
<b>225</b>	400	350	450	20	19	5
<b>250</b>	500	450	550	22	19	5
<b>280</b>	500	450	550	22	19	5

All dimensions are in mm

## 3.2.2 Nominal power - [HP]

	63A	63B	63C	71A	71B	71C	80A			80B		
Poles	TS	TS	TS	TS	TS	TS	TS	TH	TP	TS	TH	TP
2	0.24	0.34	0.5	0.5	0.75	-	-	1	1	-	1.5	1.5
4	0.16	0.24	0.3	0.34	0.5	0.75	0.75	-	-	-	1	1
6	0.12	0.16	0.2	0.24	0.34	0.5	0.5	-	-	0.75	-	-

	90S		90L		100LR	100L	100LA		112MR	112MS	112MA	112M
Poles	TH	TP	TH	TP	TP	TP	TH	TP	TP	TP	TH	TP
2	2	2	3	3	-	4	4	-	-	-	5.4	5.4
4	1.5	1.5	2	2	-	-	3	3	3	4	5.4	5.4
6	-	1	1	-	1.5	2	1.5	-	-	-	3	3

	112MR	112MS	132S	132SA	132MS	132SB	132M	132MA		132MB	
Poles	TP	TP	TP	TH	TP	TH	TP	TH	TP	TH	TP
2	-	-	7.5	7.5	-	10	10	12.5	-	-	-
4	3	4	-	7.5	7.5	-	10	10	-	12.5	-
6	-	-	4	4	-	-	-	5.4	5.4	7.5	7.5

	160M	160MA	160MB	160L	160LA	180M	180L
Poles	TP	TP	TP	TP	TP	TP	TP
2	-	15	20	25	-	30	-
4	-	15	-	-	20	25	30
6	10	-	-	15	-	-	20

	200L	200LA	200LB	225S	225M	250M	280S	280M
Poles	TP	TP	TP	TP	TP	TP	TP	TP
2	-	40	50	-	-	-	-	-
4	40	-	-	50	60	74	101	121
6	-	25	30	-	-	-	-	-

### 3.3 WEIGHT

The values reported in the tables are referred to the weight of the gearbox with lubricant excluded.

\*Weight without motor.

* H-PH	063	071	080	56C	140TC	180TC	210TC	250TC	280TC	320TC	360TC		IH	- lb
A31	4.2	4.4	4.8	/	/	/	/	/	/	/	/		A32	9.5
A32	/	/	/	9.5	10.1	/							A33	11
A33	/	/	/	10.6	/	/	/	/	/	/	/		A41	7.3
A41	/	/	/	6.8	7.7	/	/	/	/	/	/		A42	11.4
A42	/	/	/	11.7	12.1	/	/	/	/	/	/		A43	12.8
A43	/	/	/	13.2	-	/	/	/	/	/	/		A51	9.2
A51	/	/	/	9.2	9.9	/	/	/	/	/	/		A52	20.7
A52	/	/	/	20.9	22	28.6	/	/	/	/	/		A53	21.8
A53	/	/	/	22	22.4	/	/	/	/	/	/		A61	14.3
A61	/	/	/	14.5	15	15.4	/	/	/	/	/		A62	24.6
A62	/	/	/	24.9	26	32.6	/	/	/	/	/		A63	28.4
A63	/	/	/	27.7	29		/	/	/	/	/		032-033	25.3
032-033	/	/	/	18.4	19.3	20.6	/	/	/	/	/		042-043	30.9
042-043	/	/	/	24	24.9	26.2	/	/	/	/	/		41	16.4
41	/	/	/	9.6	10.5	11.8	/	/	/	/	/		052-053	42.1
052-053	/	/	/	35.3	36.2	37.5	/	/	/	/	/		51	20.6
51	/	/	/	13.8	14.7	16	/	/	/	/	/		062-063	77.4
062-063	/	/	/	63.1	64	68.6	73.3	/	/	/	/		61	25
61	/	/	/	18.2	19.1	20.4	/	/	/	/	/		082-083	125.6
082-083	/	/	/	111.8	111.6	116.8	121.4	125.8	/	/	/		81	53.9
81	/	/	/	40.3	40.1	45.3	49.7	55.4	/	/	/		102-103	208.3
102-103	/	/	/	/	181.4	186.6	191.6	197.8	211	/	/		101	95.5
101	/	/	/	/	/	63.9	78.8	84.9	/	/	/		121	100.8
121	/	/	/	/	/	/	90.5	90.2	103.4	/	/		122-123	282.3
122-123	/	/	/	/	/	250.6	265.5	271.7	284.9	317.9	/		142-143	466.8
142-143	/	/	/	/	/	414.6	428.6	433.6	451	482.2	486.2			

- lb

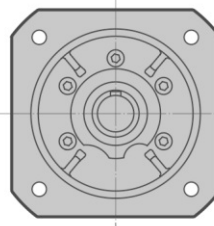
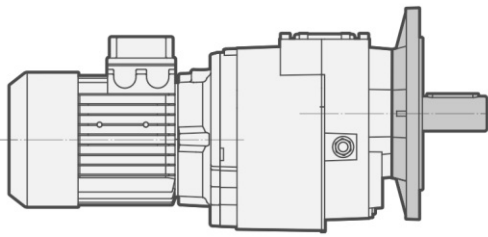


	TS									
CH	063	071	080	090S	090L	100	112	132S	132M	
A32	15.2	19.2	28	/	/	/	/	/	/	~ lb
A33	16.8	21	29.8	/	/	/	/	/	/	
A41	13	17.2	26	/	/	/	/	/	/	
A42	17.1	21.3	30.1	34.3	39.8	/	/	/	/	
A43	18.4	22.6	31.4	35.6	41.1	/	/	/	/	
A51	13.6	17.8	26.6	30.8	36.3	/	/	/	/	
A52	/	/	38	42.2	47.7	57.8	80.5	/	/	
A53	26.5	30.6	39.5	43.7	49.2	/	/	/	/	
A61	/	/	31.6	35.8	41.3	51.5	74.2	/	/	
A62	/	/	42.3	46.5	52	62.2	84.9	/	/	
A63	32.1	36.3	45.1	49.3	54.8	/	/	/	/	
032-033	26.2	28.2	38.5	47.1	51.6	63.7	89	/	/	
042-043	31.8	33.8	44.1	52.7	57.2	69.3	94.6	/	/	
41	/	19.3	29.7	38.3	42.7	/	/	/	/	
052-053	43.1	45.1	55.4	64	68.4	80.6	105.9	/	/	
51	/	23.5	33.9	42.5	46.9	59	84.4	/	/	
062-063	/	72.1	83.3	88.6	91.9	103.2	128.3	159.2	184.7	
61	/	/	38.3	46.9	51.3	63.4	88.8	/	/	
082-083	/	/	131.6	136.9	140.2	151.5	176.6	207.5	233	
81	/	/	59.7	65	68.3	79.6	104.7	135.6	161.2	
102-103	/	/	/	206.8	209	222.2	244.3	277.3	297.2	
101	/	/	/	/	/	109.3	131.4	164.5	184.3	
121	/	/	/	/	/	/	/	169.8	189.6	
122-123	/	/	/	/	/	296.5	318.6	351.6	371.5	

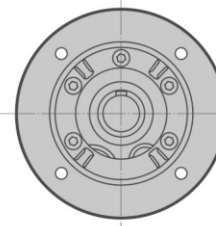
	TH							
CH	080	090S	090L	100	112	132S	132M	
A32	31.7	/	/	/	/	/	/	~ lb
A33	33.5	/	/	/	/	/	/	
A41	29.7	/	/	/	/	/	/	
A42	33.9	39.5	44.2	/	/	/	/	
A43	35.2	40.8	45.5	/	/	/	/	
A51	30.4	36	40.6	/	/	/	/	
A52	41.7	47.3	52	62.9	87.3	/	/	
A53	43.2	48.8	53.5	/	/	/	/	
A61	35.4	41	45.6	56.5	81	/	/	
A62	46.1	51.7	56.3	67.2	91.7	/	/	
A63	48.8	54.4	59.1	/	/	/	/	
032-033	42.3	52.3	55.9	68.7	95.8	/	/	
042-043	47.9	57.9	61.5	74.4	101.4	/	/	
41	33.4	43.4	47	/	/	/	/	
052-053	59.2	69.2	72.8	85.6	112.7	/	/	
51	37.6	47.7	51.2	64.1	91.2	/	/	
062-063	87.1	93.8	96.3	108.2	135.1	170.8	199.8	
61	42	52.1	55.6	68.5	95.6	/	/	
082-083	135.4	142.1	144.5	156.5	183.4	219.1	248.1	
81	63.5	70.2	72.7	84.7	111.5	147.3	176.2	
102-103	/	212	213.3	227.3	251.1	289	312.2	
101	/	/	/	114.4	138.2	176.1	199.4	
121	/	/	/	/	/	181.4	204.6	
122-123	/	/	/	301.6	325.4	363.3	386.5	

	TBS									
CH	063	071	080	090S	090L	100	112	132S	132M	
A32	18.1	23.4	34.8	/	/	/	/	/	/	~ lb
A33	19.7	25.2	36.6	/	/	/	/	/	/	
A41	15.8	21.3	32.8	/	/	/	/	/	/	
A42	20	25.5	37	45.1	50.6	/	/	/	/	
A43	21.3	26.8	38.3	46.4	51.9	/	/	/	/	
A51	16.5	22	33.5	41.6	47.1	/	/	/	/	
A52	/	/	44.8	53.6	58.5	68.6	98.8	/	/	
A53	29.3	34.8	46.3	54.5	60	/	/	/	/	
A61	/	/	38.5	46.6	52.1	62.3	92.5	/	/	
A62	/	/	49.2	57.3	62.8	73	103.2	/	/	
A63	34.9	40.5	51.9	60.1	65.6	/	/	/	/	
032-033	29.5	33	46.3	59.3	63.7	75.8	110.4	/	/	
042-043	35.1	38.6	51.9	64.9	69.3	81.4	116	/	/	
41	/	24.1	37.4	50.4	54.8	/	/	/	/	
052-053	46.4	49.9	63.2	76.2	80.6	92.7	127.3	/	/	
51	/	28.4	41.6	54.6	59	71.2	105.8	/	/	
062-063	/	76.9	91.1	100.8	104.1	115.3	149.7	181.9	217.2	
61	/	/	46	59	63.4	75.6	110.2	/	/	
082-083	/	/	139.3	149	152.3	163.6	198	230.2	265.4	
81	/	/	67.5	77.2	80.5	91.7	126.1	158.3	193.6	
102-103	/	/	/	219.1	221.3	234.6	265.9	300.3	329.8	
101	/	/	/	/	/	121.3	152.8	187.4	216.7	
121	/	/	/	/	/	/	/	192.5	222	
122-123	/	/	/	/	/	308.6	340	374.3	403.9	

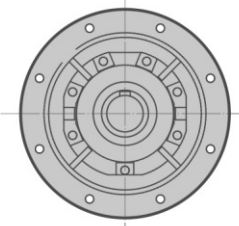
	TBH							
CH	080	090S	090L	100	112	132S	132M	
A32	38.6	/	/	/	/	/	/	~ lb
A33	40.4	/	/	/	/	/	/	
A41	36.6	/	/	/	/	/	/	
A42	40.7	50.2	55.1	/	/	/	/	
A43	42	51.5	56.4	/	/	/	/	
A51	37.2	46.7	51.5	/	/	/	/	
A52	48.6	58.7	62.9	76.8	105.7	/	/	
A53	50	59.5	64.4	/	/	/	/	
A61	42.2	51.7	56.5	70.4	99.3	/	/	
A62	52.9	62.4	67.2	81.1	110	/	/	
A63	55.7	65.2	70	/	/	/	/	
032-033	50	64.3	68.1	84	117.3	/	/	
042-043	55.6	69.9	73.7	89.6	122.9	/	/	
41	41.1	55.5	59.2	/	/	/	/	
052-053	66.9	81.2	85	100.9	134.1	/	/	
51	45.4	59.7	63.4	79.3	112.6	/	/	
062-063	94.8	105.8	108.5	123.5	156.5	193.6	231.5	
61	49.8	64.1	67.8	83.7	117	/	/	
082-083	143.1	154.1	156.7	171.7	204.8	241.8	279.8	
81	71.2	82.2	84.9	99.9	132.9	170	207.9	
102-103	/	224.2	225.8	242.7	272.7	312	344.1	
101	/	/	/	129.4	159.6	199.1	231	
121	/	/	/	/	/	204.1	236.3	
122-123	/	/	/	316.8	346.8	386	418.2	



FA



FB FC FD

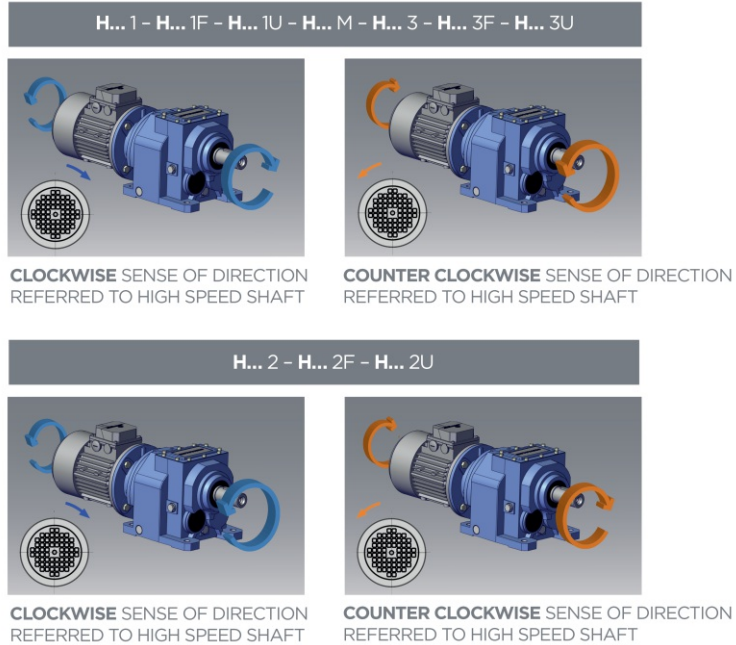


FB (H140)

H...F/H...U		
041 051	032/033 042/043	FA
		FB
		FC
		FD
061	052/053	FA
		FB
		FC
081 101	062/063	FA
		FB
		FC
121	082/083	FA
		FB
		FC
-	102/103	FA
		FB
		FC
	122/123	FA
		FB
		FC
	142/143	FA
		FB
		FC

The gear reducer can be supplied with backstop device on input shaft. Backstop device allows output shaft rotation in only one sense of direction; according to the size, it is available in the input flange or in the motor with the same dimensions. It is important to specify the required sense of direction on the order. The backstop device is not available for mounting position V1/V5 with motor size IEC 100...225.

SENSE OF DIRECTION AVAILABLE



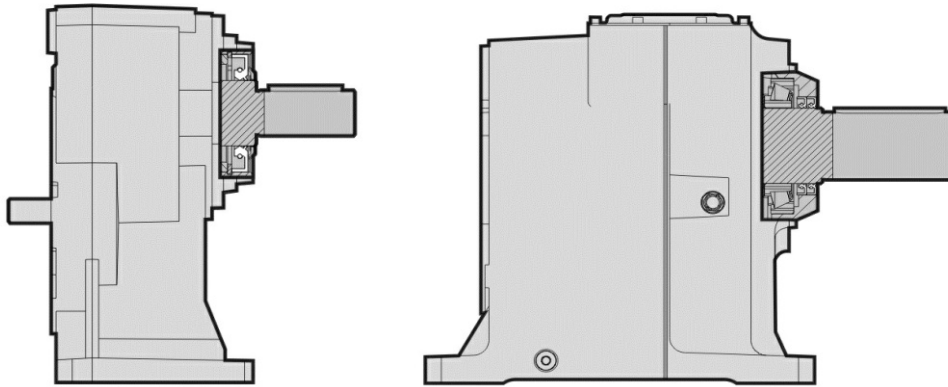
	063	071	080	090	100-112	132	160	180	200	225
	140x11	160x14	200x19	200x24	250x28	300x38	350x42	350x48	400x55	450x60
H032		B5	B5	B5	B5					
H033	B5	B5	B5	B5						
H041		B5	B5	B5						
H042		B5	B5	B5	B5					
H043	B5	B5	B5	B5						
H051		B5	B5	B5	B5					
H052		B5	B5	B5	B5					
H053	B5	B5	B5	B5						
H061			B5	B5	B5					
H062			B5	B5	B5	B5				
H063		B5	B5	B5	B5					
H081			B5	B5	B5	B5				
H082			B5	B5	B5	B5	B5			
H083			B5	B5	B5	B5				
H101					B5	B5	B5	B5		
H102					B5	B5	B5	B5		
H103				B5	B5	B5	B5			
H121						B5	B5	B5	B5	
H122						B5	B5	B5	B5	
H123					B5	B5	B5	B5	B5	
H142							B5	B5	B5	B5
H143						B5	B5	B5	B5	

Dimensions are only in mm.

The reinforced seal can be done depending on the gearbox size by means of two oil seals or through the standard oil seal with VRM ring. The difference of the two solutions is explained on the drawings.

The helical gear reducers from size 060 to size 140 (except for single stage) in V1/ V5 mounting position, are already equipped with 2 oil seals as standard.

On request the gear reducer can be supplied with fluoroelastomer FPM (FKM) seals.



	Double oil seal	VRM ring
H041		X
H051		X
H061		X
H081		X
H101		X
H121		X
H032/3		X
H042/3		X
H052/3		X
H062/3	X	
H082/3	X	
H102/3	X	
H122/3	X	
H142/3	X	

## 0.16 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
18.0	3.3	541	99.27	1770	1236	CH033	63A4	PH033	56C
16.0	3.0	589	108.05	1770	1236	CH033	63A4	PH033	56C
14.0	2.6	674	123.71	1770	1236	CH033	63A4	PH033	56C
12.0	2.3	781	143.33	1770	1236	CH033	63A4	PH033	56C
9.8	1.8	973	178.61	1770	1236	CH033	63A4	PH033	56C
8.9	1.6	1074	197.17	1770	1236	CH033	63A4	PH033	56C
7.1	1.3	1339	245.70	1770	1236	CH033	63A4	PH033	56C
14.0	3.9	685	125.69	2655	1484	CH043	63A4	PH043	56C
12.0	3.4	774	142.04	2655	1484	CH043	63A4	PH043	56C
11.0	2.9	901	165.38	2655	1484	CH043	63A4	PH043	56C
8.5	2.4	1117	205.07	2655	1484	CH043	63A4	PH043	56C
7.7	2.1	1239	227.50	2655	1484	CH043	63A4	PH043	56C
6.2	1.7	1537	282.10	2655	1484	CH043	63A4	PH043	56C
8.1	3.8	1179	216.38	4425	1798	CH053	63A4	PH053	56C
6.5	3.0	1458	267.65	4425	1798	CH053	63A4	PH053	56C
162.0	2.0	61	10.83	124	207	HA31	63A4	-	-
40.0	3.2	245	44.10	797	450	CHA32	63A4	HA32	56C
36.0	2.6	271	48.75	708	450	CHA32	63A4	HA32	56C
29.0	2.5	338	60.67	841	450	CHA32	63A4	HA32	56C
34.0	3.2	280	51.32	885	450	CHA33	63A4	HA33	56C
29.0	2.7	325	59.65	885	450	CHA33	63A4	HA33	56C
24.0	2.2	394	72.27	885	450	CHA33	63A4	HA33	56C
19.0	1.8	490	89.94	885	450	CHA33	63A4	HA33	56C
16.0	1.5	602	110.51	885	450	CHA33	63A4	HA33	56C
13.0	1.2	729	133.88	885	450	CHA33	63A4	HA33	56C
162.0	2.9	61	10.83	177	209	CHA41	63A4	HA41	56C
36.0	3.8	271	48.75	1018	967	CHA42	63A4	HA42	56C
29.0	3.4	338	60.67	1151	967	CHA42	63A4	HA42	56C
24.0	3.4	394	72.27	1328	967	CHA43	63A4	HA43	56C
19.0	2.7	490	89.94	1328	967	CHA43	63A4	HA43	56C
16.0	2.2	602	110.51	1328	967	CHA43	63A4	HA43	56C
13.0	1.8	729	133.88	1328	967	CHA43	63A4	HA43	56C
11.0	1.5	908	166.61	1328	967	CHA43	63A4	HA43	56C
9.1	1.3	1053	193.30	1328	967	CHA43	63A4	HA43	56C
7.3	1.0	1311	240.55	1328	967	CHA43	63A4	HA43	56C
162.0	3.6	61	10.83	221	575	CHA51	63A4	HA51	56C
13.0	3.5	756	138.71	2655	1349	CHA53	63A4	HA53	56C
11.0	3.0	888	163.05	2655	1349	CHA53	63A4	HA53	56C
8.7	2.4	1091	200.27	2655	1349	CHA53	63A4	HA53	56C
7.4	2.1	1283	235.41	2655	1349	CHA53	63A4	HA53	56C
6.1	1.7	1552	284.81	2655	1349	CHA53	63A4	HA53	56C

## 0.16 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
4.9	1.4	1929	353.98	2655	1349	CHA53	63A4	HA53	56C
8.7	3.9	1091	200.27	4248	1798	CHA63	63A4	HA63	56C
7.4	3.3	1283	235.41	4248	1798	CHA63	63A4	HA63	56C
6.1	2.7	1552	284.81	4248	1798	CHA63	63A4	HA63	56C
4.9	2.2	1929	353.98	4248	1798	CHA63	63A4	HA63	56C

## 0.25 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
26.0	3.2	546	66.78	1770	1236	CH033	63B4	PH033	56C
23.0	2.9	612	74.84	1770	1236	CH033	63B4	PH033	56C
18.0	2.2	811	99.27	1770	1236	CH033	63B4	PH033	56C
16.0	2.0	883	108.05	1770	1236	CH033	63B4	PH033	56C
14.0	1.8	1011	123.71	1770	1236	CH033	63B4	PH033	56C
12.0	1.5	1171	143.33	1770	1236	CH033	63B4	PH033	56C
9.8	1.2	1460	178.61	1770	1236	CH033	63B4	PH033	56C
8.9	1.1	1611	197.17	1770	1236	CH033	63B4	PH033	56C
20.0	3.7	711	87.05	2655	1484	CH043	63B4	PH043	56C
15.0	2.8	936	114.55	2655	1484	CH043	63B4	PH043	56C
14.0	2.6	1027	125.69	2655	1484	CH043	63B4	PH043	56C
12.0	2.3	1161	142.04	2655	1484	CH043	63B4	PH043	56C
11.0	2.0	1351	165.38	2655	1484	CH043	63B4	PH043	56C
8.5	1.6	1676	205.07	2655	1484	CH043	63B4	PH043	56C
7.7	1.4	1859	227.50	2655	1484	CH043	63B4	PH043	56C
6.2	1.2	2305	282.10	2655	1484	CH043	63B4	PH043	56C
11.0	3.4	1285	157.29	4425	1798	CH053	63B4	PH053	56C
9.0	2.8	1590	194.56	4425	1798	CH053	63B4	PH053	56C
8.1	2.5	1768	216.38	4425	1798	CH053	63B4	PH053	56C
6.5	2.0	2187	267.65	4425	1798	CH053	63B4	PH053	56C
7.5	3.9	1918	234.67	7523	2698	-	-	PH063	56C
6.5	3.4	2190	268.00	7523	2698	-	-	PH063	56C
278.0	3.8	53	6.30	204	172	HA31	63B4	-	-
222.0	2.9	66	7.88	195	186	HA31	63B4	-	-
162.0	1.4	91	10.83	124	207	HA31	63B4	-	-
71.0	3.7	205	24.55	752	379	CHA32	63B4	HA32	56C
57.0	2.8	255	30.55	708	408	CHA32	63B4	HA32	56C
49.0	2.7	296	35.44	797	429	CHA32	63B4	HA32	56C
40.0	2.2	368	44.10	797	450	CHA32	63B4	HA32	56C
36.0	1.7	407	48.75	708	450	CHA32	63B4	HA32	56C
29.0	1.7	506	60.67	841	450	CHA32	63B4	HA32	56C
34.0	2.1	419	51.32	885	450	CHA33	63B4	HA33	56C

## 0.25 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
29.0	1.8	488	59.65	885	450	CHA33	63B4	HA33	56C
24.0	1.5	591	72.27	885	450	CHA33	63B4	HA33	56C
19.0	1.2	735	89.94	885	450	CHA33	63B4	HA33	56C
222.0	3.3	66	7.88	221	188	CHA41	63B4	HA41	56C
162.0	1.9	91	10.83	177	209	CHA41	63B4	HA41	56C
40.0	3.4	368	44.10	1239	967	CHA42	63B4	HA42	56C
36.0	2.5	407	48.75	1018	967	CHA42	63B4	HA42	56C
29.0	2.3	506	60.67	1151	967	CHA42	63B4	HA42	56C
34.0	3.2	419	51.32	1328	967	CHA43	63B4	HA43	56C
29.0	2.7	488	59.65	1328	967	CHA43	63B4	HA43	56C
24.0	2.2	591	72.27	1328	967	CHA43	63B4	HA43	56C
19.0	1.8	735	89.94	1328	967	CHA43	63B4	HA43	56C
16.0	1.5	903	110.51	1328	967	CHA43	63B4	HA43	56C
13.0	1.2	1094	133.88	1328	967	CHA43	63B4	HA43	56C
162.0	2.4	91	10.83	221	575	CHA51	63B4	HA51	56C
20.0	3.7	719	88.02	2655	1349	CHA53	63B4	HA53	56C
16.0	2.9	912	111.61	2655	1349	CHA53	63B4	HA53	56C
13.0	2.3	1134	138.71	2655	1349	CHA53	63B4	HA53	56C
11.0	2.0	1333	163.05	2655	1349	CHA53	63B4	HA53	56C
8.7	1.6	1637	200.27	2655	1349	CHA53	63B4	HA53	56C
7.4	1.4	1924	235.41	2655	1349	CHA53	63B4	HA53	56C
6.1	1.1	2328	284.81	2655	1349	CHA53	63B4	HA53	56C
13.0	3.7	1134	138.71	4248	1798	CHA63	63B4	HA63	56C
11.0	3.2	1333	163.05	4248	1798	CHA63	63B4	HA63	56C
8.7	2.6	1637	200.27	4248	1798	CHA63	63B4	HA63	56C
7.4	2.2	1924	235.41	4248	1798	CHA63	63B4	HA63	56C
6.1	1.8	2328	284.81	4248	1798	CHA63	63B4	HA63	56C
4.9	1.5	2893	353.98	4248	1798	CHA63	63B4	HA63	56C

## 0.33 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
42.0	3.7	480	41.40	1770	1236	CH032	71A4	PH032	56C
37.0	3.2	548	47.25	1770	1236	CH032	71A4	PH032	56C
33.0	2.9	608	53.59	1770	1236	CH033	63D4/71A4	PH033	56C
26.0	2.3	758	66.78	1770	1236	CH033	63D4/71A4	PH033	56C
23.0	2.1	849	74.84	1770	1236	CH033	63D4/71A4	PH033	56C
18.0	1.6	1127	99.27	1770	1236	CH033	63D4/71A4	PH033	56C
16.0	1.4	1226	108.05	1770	1236	CH033	63D4/71A4	PH033	56C
14.0	1.3	1404	123.71	1770	1236	CH033	63D4/71A4	PH033	56C
12.0	1.1	1627	143.33	1770	1236	CH033	63D4/71A4	PH033	56C

## 0.33 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
32.0	3.9	629	54.25	2478	1484	CH042	71A4	PH042	56C
28.0	3.8	702	61.83	2655	1484	CH043	63D4/71A4	PH043	56C
23.0	3.1	870	76.67	2655	1484	CH043	63D4/71A4	PH043	56C
20.0	2.7	988	87.05	2655	1484	CH043	63D4/71A4	PH043	56C
15.0	2.0	1300	114.55	2655	1484	CH043	63D4/71A4	PH043	56C
14.0	1.9	1427	125.69	2655	1484	CH043	63D4/71A4	PH043	56C
12.0	1.6	1612	142.04	2655	1484	CH043	63D4/71A4	PH043	56C
11.0	1.4	1877	165.38	2655	1484	CH043	63D4/71A4	PH043	56C
8.5	1.1	2328	205.07	2655	1484	CH043	63D4/71A4	PH043	56C
7.7	1.0	2582	227.50	2655	1484	CH043	63D4/71A4	PH043	56C
16.0	3.6	1237	108.95	4425	1798	CH053	63D4/71A4	PH053	56C
13.0	2.9	1530	134.76	4425	1798	CH053	63D4/71A4	PH053	56C
11.0	2.5	1785	157.29	4425	1798	CH053	63D4/71A4	PH053	56C
9.0	2.0	2208	194.56	4425	1798	CH053	63D4/71A4	PH053	56C
8.1	1.8	2456	216.38	4425	1798	CH053	63D4/71A4	PH053	56C
6.5	1.5	3038	267.65	4425	1798	CH053	63D4/71A4	PH053	56C
10.0	3.9	1937	170.67	7523	2698	CH063	71A4	PH063	56C
9.4	3.6	2113	186.18	7523	2698	CH063	71A4	PH063	56C
8.1	3.1	2443	215.21	7523	2698	CH063	71A4	PH063	56C
7.5	2.8	2664	234.67	7523	2698	CH063	71A4	PH063	56C
6.5	2.5	3042	268.00	7523	2698	CH063	71A4	PH063	56C
415.0	3.8	49	4.21	186	151	HA31	63D4/71A4	-	-
368.0	3.5	56	4.75	195	157	HA31	63D4/71A4	-	-
343.0	3.4	60	5.10	204	161	HA31	63D4/71A4	-	-
321.0	3.2	64	5.45	204	164	HA31	63D4/71A4	-	-
278.0	2.8	74	6.30	204	172	HA31	63D4/71A4	-	-
222.0	2.1	92	7.88	195	186	HA31	63D4/71A4	-	-
106.0	3.7	191	16.49	708	332	CHA32	63D4/71A4	HA32	56C
86.0	3.4	235	20.26	797	356	CHA32	63D4/71A4	HA32	56C
71.0	2.6	285	24.55	752	379	CHA32	63D4/71A4	HA32	56C
57.0	2.0	354	30.55	708	408	CHA32	63D4/71A4	HA32	56C
49.0	1.9	411	35.44	797	429	CHA32	63D4/71A4	HA32	56C
40.0	1.6	511	44.10	797	450	CHA32	63D4/71A4	HA32	56C
36.0	1.3	565	48.75	708	450	CHA32	63D4/71A4	HA32	56C
29.0	1.2	703	60.67	841	450	CHA32	63D4/71A4	HA32	56C
34.0	1.5	583	51.32	885	450	CHA33	63D4/71A4	HA33	56C
29.0	1.3	677	59.65	885	450	CHA33	63D4/71A4	HA33	56C
24.0	1.1	820	72.27	885	450	CHA33	63D4/71A4	HA33	56C
222.0	2.4	92	7.88	221	188	CHA41	63D4/71A4	HA41	56C
162.0	1.4	127	10.83	177	209	CHA41	63D4/71A4	HA41	56C
57.0	3.5	354	30.55	1239	859	CHA42	63D4/71A4	HA42	56C



## 0.33 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
49.0	3.2	411	35.44	1328	903	CHA42	63D4/71A4	HA42	56C
40.0	2.4	511	44.10	1239	967	CHA42	63D4/71A4	HA42	56C
36.0	1.8	565	48.75	1018	967	CHA42	63D4/71A4	HA42	56C
29.0	1.6	703	60.67	1151	967	CHA42	63D4/71A4	HA42	56C
34.0	2.3	583	51.32	1328	967	CHA43	63D4/71A4	HA43	56C
29.0	2.0	677	59.65	1328	967	CHA43	63D4/71A4	HA43	56C
24.0	1.6	820	72.27	1328	967	CHA43	63D4/71A4	HA43	56C
19.0	1.3	1021	89.94	1328	967	CHA43	63D4/71A4	HA43	56C
16.0	1.1	1254	110.51	1328	967	CHA43	63D4/71A4	HA43	56C
222.0	3.8	92	7.88	354	517	CHA51	63D4/71A4	HA51	56C
162.0	1.7	127	10.83	221	575	CHA51	63D4/71A4	HA51	56C
28.0	3.6	717	61.87	2567	1349	-	-	HA52	56C
29.0	3.9	684	60.25	2655	1347	CHA53	63D4/71A4	HA53	56C
23.0	3.1	850	74.88	2655	1349	CHA53	63D4/71A4	HA53	56C
20.0	2.7	999	88.02	2655	1349	CHA53	63D4/71A4	HA53	56C
16.0	2.1	1267	111.61	2655	1349	CHA53	63D4/71A4	HA53	56C
13.0	1.7	1574	138.71	2655	1349	CHA53	63D4/71A4	HA53	56C
11.0	1.4	1851	163.05	2655	1349	CHA53	63D4/71A4	HA53	56C
8.7	1.2	2273	200.27	2655	1349	CHA53	63D4/71A4	HA53	56C
16.0	3.4	1267	111.61	4248	1798	CHA63	63D4/71A4	HA63	56C
13.0	2.7	1574	138.71	4248	1798	CHA63	63D4/71A4	HA63	56C
11.0	2.3	1851	163.05	4248	1798	CHA63	63D4/71A4	HA63	56C
8.7	1.9	2273	200.27	4248	1798	CHA63	63D4/71A4	HA63	56C
7.4	1.6	2672	235.41	4248	1798	CHA63	63D4/71A4	HA63	56C
6.1	1.3	3233	284.81	4248	1798	CHA63	63D4/71A4	HA63	56C
4.9	1.1	4018	353.98	4248	1798	CHA63	63D4/71A4	HA63	56C

## 0.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
66.0	3.9	453	26.39	1770	1236	CH032	71B4	PH032	56C
59.0	3.5	510	29.70	1770	1236	CH032	71B4	PH032	56C
53.0	3.1	564	32.89	1770	1236	CH032	71B4	PH032	56C
46.0	2.7	651	37.92	1770	1236	CH032	71B4	PH032	56C
42.0	2.5	710	41.40	1770	1236	CH032	71B4	PH032	56C
37.0	2.2	811	47.25	1770	1236	CH032	71B4	PH032	56C
33.0	2.0	900	53.59	1770	1236	CH033	71B4	PH033	56C
26.0	1.6	1122	66.78	1770	1236	CH033	71B4	PH033	56C
23.0	1.4	1257	74.84	1770	1236	CH033	71B4	PH033	56C
18.0	1.1	1668	99.27	1770	1236	CH033	71B4	PH033	56C
228.0	3.3	133	7.67	443	225	CH041	71B4	PH041	56C

## 0.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
200.0	3.2	152	8.75	487	225	CH041	71B4	PH041	56C
46.0	3.8	648	37.76	2478	1484	CH042	71B4	PH042	56C
40.0	3.3	751	43.75	2478	1484	CH042	71B4	PH042	56C
37.0	3.0	815	47.53	2478	1484	CH042	71B4	PH042	56C
32.0	2.7	931	54.25	2478	1484	CH042	71B4	PH042	56C
28.0	2.6	1039	61.83	2655	1484	CH043	71B4	PH043	56C
23.0	2.1	1288	76.67	2655	1484	CH043	71B4	PH043	56C
20.0	1.8	1462	87.05	2655	1484	CH043	71B4	PH043	56C
15.0	1.4	1924	114.55	2655	1484	CH043	71B4	PH043	56C
14.0	1.3	2111	125.69	2655	1484	CH043	71B4	PH043	56C
12.0	1.1	2386	142.04	2655	1484	CH043	71B4	PH043	56C
24.0	3.6	1222	72.75	4425	1798	CH053	71B4	PH053	56C
19.0	2.9	1520	90.51	4425	1798	CH053	71B4	PH053	56C
16.0	2.4	1830	108.95	4425	1798	CH053	71B4	PH053	56C
13.0	2.0	2264	134.76	4425	1798	CH053	71B4	PH053	56C
11.0	1.7	2642	157.29	4425	1798	CH053	71B4	PH053	56C
9.0	1.4	3268	194.56	4425	1798	CH053	71B4	PH053	56C
8.1	1.2	3635	216.38	4425	1798	CH053	71B4	PH053	56C
15.0	3.8	1982	118.00	7523	2698	CH063	71B4	PH063	56C
13.0	3.3	2275	135.40	7523	2698	CH063	71B4	PH063	56C
12.0	3.0	2512	149.51	7523	2698	CH063	71B4	PH063	56C
10.0	2.6	2867	170.67	7523	2698	CH063	71B4	PH063	56C
9.4	2.4	3128	186.18	7523	2698	CH063	71B4	PH063	56C
8.1	2.1	3615	215.21	7523	2698	CH063	71B4	PH063	56C
7.5	1.9	3942	234.67	7523	2698	CH063	71B4	PH063	56C
6.5	1.7	4502	268.00	7523	2698	CH063	71B4	PH063	56C
686.0	3.8	44	2.55	168	128	HA31	71B4	-	-
594.0	3.5	51	2.94	177	134	HA31	71B4	-	-
551.0	3.2	55	3.18	177	137	HA31	71B4	-	-
521.0	3.0	58	3.36	177	140	HA31	71B4	-	-
453.0	2.8	67	3.87	186	146	HA31	71B4	-	-
415.0	2.5	73	4.21	186	151	HA31	71B4	-	-
368.0	2.4	82	4.75	195	157	HA31	71B4	-	-
343.0	2.3	88	5.10	204	161	HA31	71B4	-	-
321.0	2.2	95	5.45	204	164	HA31	71B4	-	-
278.0	1.9	109	6.30	204	172	HA31	71B4	-	-
222.0	1.4	137	7.88	195	186	HA31	71B4	-	-
132.0	3.1	227	13.25	708	309	CHA32	71B4	HA32	56C
106.0	2.5	283	16.49	708	332	CHA32	71B4	HA32	56C
86.0	2.3	348	20.26	797	356	CHA32	71B4	HA32	56C
71.0	1.8	421	24.55	752	379	CHA32	71B4	HA32	56C

## 0.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
57.0	1.4	524	30.55	708	408	CHA32	71B4	HA32	56C
49.0	1.3	608	35.44	797	429	CHA32	71B4	HA32	56C
40.0	1.1	757	44.10	797	450	CHA32	71B4	HA32	56C
34.0	1.0	862	51.32	885	450	CHA33	71B4	HA33	56C
368.0	3.2	82	4.75	266	159	CHA41	71B4	HA41	56C
321.0	2.8	95	5.45	266	166	CHA41	71B4	HA41	56C
222.0	1.6	137	7.88	221	188	CHA41	71B4	HA41	56C
86.0	3.8	348	20.26	1328	749	CHA42	71B4	HA42	56C
71.0	3.3	421	24.55	1372	799	CHA42	71B4	HA42	56C
57.0	2.4	524	30.55	1239	859	CHA42	71B4	HA42	56C
49.0	2.2	608	35.44	1328	903	CHA42	71B4	HA42	56C
40.0	1.6	757	44.10	1239	967	CHA42	71B4	HA42	56C
36.0	1.2	836	48.75	1018	967	CHA42	71B4	HA42	56C
29.0	1.1	1041	60.67	1151	967	CHA42	71B4	HA42	56C
34.0	1.5	862	51.32	1328	967	CHA43	71B4	HA43	56C
29.0	1.3	1002	59.65	1328	967	CHA43	71B4	HA43	56C
24.0	1.1	1214	72.27	1328	967	CHA43	71B4	HA43	56C
222.0	2.6	137	7.88	354	517	CHA51	71B4	HA51	56C
162.0	1.2	188	10.83	221	575	CHA51	71B4	HA51	56C
39.0	3.2	771	44.95	2478	1222	-	-	HA52	56C
35.0	3.1	854	49.78	2655	1264	-	-	HA52	56C
28.0	2.4	1061	61.87	2567	1349	-	-	HA52	56C
35.0	3.2	837	49.80	2655	1264	CHA53	71B4	HA53	56C
29.0	2.6	1012	60.25	2655	1347	CHA53	71B4	HA53	56C
23.0	2.1	1258	74.88	2655	1349	CHA53	71B4	HA53	56C
20.0	1.8	1479	88.02	2655	1349	CHA53	71B4	HA53	56C
16.0	1.4	1875	111.61	2655	1349	CHA53	71B4	HA53	56C
13.0	1.1	2330	138.71	2655	1349	CHA53	71B4	HA53	56C
164.0	3.4	185	10.67	620	857	-	-	HA61	56C
35.0	3.8	854	49.78	3275	1798	-	-	HA62	56C
28.0	3.7	1061	61.87	3894	1798	-	-	HA62	56C
23.0	3.4	1258	74.88	4248	1798	CHA63	71B4	HA63	56C
20.0	2.9	1479	88.02	4248	1798	CHA63	71B4	HA63	56C
16.0	2.3	1875	111.61	4248	1798	CHA63	71B4	HA63	56C
13.0	1.8	2330	138.71	4248	1798	CHA63	71B4	HA63	56C
11.0	1.6	2739	163.05	4248	1798	CHA63	71B4	HA63	56C
8.7	1.3	3364	200.27	4248	1798	CHA63	71B4	HA63	56C
7.4	1.1	3955	235.41	4248	1798	CHA63	71B4	HA63	56C

## 0.75 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
104.0	3.9	428	16.77	1682	1158	CH032	71C4/80A4	PH032	56C
96.0	3.8	464	18.20	1770	1183	CH032	71C4/80A4	PH032	56C
88.0	3.5	507	19.90	1770	1211	CH032	71C4/80A4	PH032	56C
77.0	3.1	578	22.68	1770	1236	CH032	71C4/80A4	PH032	56C
73.0	2.9	608	23.83	1770	1236	CH032	71C4/80A4	PH032	56C
66.0	2.6	673	26.39	1770	1236	CH032	71C4/80A4	PH032	56C
59.0	2.3	757	29.70	1770	1236	CH032	71C4/80A4	PH032	56C
53.0	2.1	839	32.89	1770	1236	CH032	71C4/80A4	PH032	56C
46.0	1.8	967	37.92	1770	1236	CH032	71C4/80A4	PH032	56C
42.0	1.7	1056	41.40	1770	1236	CH032	71C4/80A4	PH032	56C
37.0	1.5	1205	47.25	1770	1236	CH032	71C4/80A4	PH032	56C
33.0	1.3	1338	53.59	1770	1236	CH033	71C4/80A4	PH033	56C
26.0	1.1	1668	66.78	1770	1236	CH033	71C4/80A4	PH033	56C
645.0	3.8	70	2.71	266	174	CH041	71C4/80A4	PH041	56C
417.0	3.7	108	4.20	398	199	CH041	71C4/80A4	PH041	56C
350.0	3.1	129	5.00	398	209	CH041	71C4/80A4	PH041	56C
318.0	3.1	142	5.50	443	215	CH041	71C4/80A4	PH041	56C
287.0	2.8	157	6.09	443	221	CH041	71C4/80A4	PH041	56C
228.0	2.2	198	7.67	443	225	CH041	71C4/80A4	PH041	56C
200.0	2.2	225	8.75	487	225	CH041	71C4/80A4	PH041	56C
76.0	3.9	590	23.15	2301	1484	CH042	71C4/80A4	PH042	56C
67.0	3.5	664	26.04	2301	1484	CH042	71C4/80A4	PH042	56C
64.0	3.5	701	27.50	2478	1484	CH042	71C4/80A4	PH042	56C
57.0	3.2	777	30.45	2478	1484	CH042	71C4/80A4	PH042	56C
51.0	2.8	870	34.10	2478	1484	CH042	71C4/80A4	PH042	56C
46.0	2.6	963	37.76	2478	1484	CH042	71C4/80A4	PH042	56C
40.0	2.2	1116	43.75	2478	1484	CH042	71C4/80A4	PH042	56C
37.0	2.0	1212	47.53	2478	1484	CH042	71C4/80A4	PH042	56C
32.0	1.8	1383	54.25	2478	1484	CH042	71C4/80A4	PH042	56C
28.0	1.7	1544	61.83	2655	1484	CH043	71C4/80A4	PH043	56C
23.0	1.4	1915	76.67	2655	1484	CH043	71C4/80A4	PH043	56C
20.0	1.2	2174	87.05	2655	1484	CH043	71C4/80A4	PH043	56C
39.0	3.7	1157	45.36	4337	1798	CH052	71C4/80A4	PH052	56C
36.0	3.5	1253	49.13	4337	1798	CH052	71C4/80A4	PH052	56C
31.0	3.0	1431	56.11	4337	1798	CH052	71C4/80A4	PH052	56C
30.0	3.0	1469	58.81	4425	1798	CH053	71C4/80A4	PH053	56C
24.0	2.4	1817	72.75	4425	1798	CH053	71C4/80A4	PH053	56C
19.0	2.0	2260	90.51	4425	1798	CH053	71C4/80A4	PH053	56C
16.0	1.6	2721	108.95	4425	1798	CH053	71C4/80A4	PH053	56C
13.0	1.3	3365	134.76	4425	1798	CH053	71C4/80A4	PH053	56C
11.0	1.1	3928	157.29	4425	1798	CH053	71C4	PH053	56C

## 0.75 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
20.0	3.5	2143	85.82	7523	2698	CH063	71C4/80A4	PH063	56C
18.0	3.2	2366	94.76	7523	2698	CH063	71C4/80A4	PH063	56C
15.0	2.6	2947	118.00	7523	2698	CH063	71C4/80A4	PH063	56C
13.0	2.2	3381	135.40	7523	2698	CH063	71C4/80A4	PH063	56C
12.0	2.0	3733	149.51	7523	2698	CH063	71C4/80A4	PH063	56C
10.0	1.8	4262	170.67	7523	2698	CH063	71C4/80A4	PH063	56C
9.4	1.6	4649	186.18	7523	2698	CH063	71C4/80A4	PH063	56C
8.1	1.4	5374	215.21	7523	2698	CH063	71C4/80A4	PH063	56C
7.5	1.3	5860	234.67	7523	2698	CH063	71C4/80A4	PH063	56C
6.5	1.1	6692	268.00	7523	2698	CH063	71C4/80A4	PH063	56C
11.0	3.9	4054	162.35	15931	4047	CH083	80A4	PH083	56C
9.8	3.6	4473	179.13	15931	4047	CH083	80A4	PH083	56C
9.0	3.3	4871	195.07	15931	4047	CH083	80A4	PH083	56C
7.9	2.9	5563	222.78	15931	4047	CH083	80A4	PH083	56C
686.0	2.6	66	2.55	168	128	HA31	71C4/80A4	-	-
594.0	2.3	76	2.94	177	134	HA31	71C4/80A4	-	-
551.0	2.2	82	3.18	177	137	HA31	71C4/80A4	-	-
521.0	2.0	87	3.36	177	140	HA31	71C4/80A4	-	-
453.0	1.9	100	3.87	186	146	HA31	71C4/80A4	-	-
415.0	1.7	109	4.21	186	151	HA31	71C4/80A4	-	-
368.0	1.6	122	4.75	195	157	HA31	71C4/80A4	-	-
343.0	1.5	131	5.10	204	161	HA31	71C4	-	-
321.0	1.4	141	5.45	204	164	HA31	71C4	-	-
278.0	1.3	162	6.30	204	172	HA31	71C4	-	-
216.0	3.2	207	8.11	664	262	CHA32	71C4/80A4	HA32	56C
160.0	2.9	279	10.94	797	290	CHA32	71C4/80A4	HA32	56C
132.0	2.1	338	13.25	708	309	CHA32	71C4/80A4	HA32	56C
106.0	1.7	421	16.49	708	332	CHA32	71C4/80A4	HA32	56C
86.0	1.5	517	20.26	797	356	CHA32	71C4/80A4	HA32	56C
71.0	1.2	626	24.55	752	379	CHA32	71C4/80A4	HA32	56C
594.0	2.9	76	2.94	221	135	CHA41	71C4/80A4	HA41	56C
368.0	2.2	122	4.75	266	159	CHA41	71C4/80A4	HA41	56C
321.0	1.9	141	5.45	266	166	CHA41	71C4/80A4	HA41	56C
222.0	1.1	203	7.88	221	188	CHA41	71C4	HA41	56C
132.0	3.7	338	13.25	1239	651	CHA42	71C4/80A4	HA42	56C
106.0	2.9	421	16.49	1239	700	CHA42	71C4/80A4	HA42	56C
86.0	2.6	517	20.26	1328	749	CHA42	71C4/80A4	HA42	56C
71.0	2.2	626	24.55	1372	799	CHA42	71C4/80A4	HA42	56C
57.0	1.6	779	30.55	1239	859	CHA42	71C4/80A4	HA42	56C
49.0	1.5	904	35.44	1328	903	CHA42	71C4	HA42	56C
40.0	1.1	1125	44.10	1239	967	CHA42	71C4	HA42	56C

0.75 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
34.0	1.0	1282	51.32	1328	967	CHA43	71C4	HA43	56C
368.0	3.6	122	4.75	443	437	CHA51	71C4/80A4	HA51	56C
321.0	3.1	141	5.45	443	458	CHA51	71C4/80A4	HA51	56C
222.0	1.7	203	7.88	354	517	CHA51	71C4	HA51	56C
69.0	3.8	649	25.43	2478	1011	CHA52	80A4	HA52	56C
59.0	3.5	762	29.89	2655	1066	CHA52	80A4	HA52	56C
48.0	2.9	922	36.17	2655	1136	CHA52	80A4	HA52	56C
39.0	2.2	1146	44.95	2478	1222	CHA52	80A4	HA52	56C
35.0	2.1	1269	49.78	2655	1264	CHA52	80A4	HA52	56C
28.0	1.6	1578	61.87	2567	1349	CHA52	80A4	HA52	56C
35.0	2.1	1243	49.80	2655	1264	CHA53	71C4/80A4	HA53	56C
29.0	1.8	1504	60.25	2655	1347	CHA53	71C4/80A4	HA53	56C
23.0	1.4	1870	74.88	2655	1349	CHA53	71C4/80A4	HA53	56C
20.0	1.2	2198	88.02	2655	1349	CHA53	71C4/80A4	HA53	56C
226.0	4.0	200	7.75	797	770	CHA61	80A4	HA61	56C
164.0	2.3	275	10.67	620	857	CHA61	80A4	HA61	56C
39.0	3.4	1146	44.95	3894	1798	CHA62	80A4	HA62	56C
35.0	2.6	1269	49.78	3275	1798	CHA62	80A4	HA62	56C
28.0	2.5	1578	61.87	3894	1798	CHA62	80A4	HA62	56C
35.0	3.4	1243	49.80	4248	1798	CHA63	71C4/80A4	HA63	56C
29.0	2.8	1504	60.25	4248	1798	CHA63	71C4/80A4	HA63	56C
23.0	2.3	1870	74.88	4248	1798	CHA63	71C4/80A4	HA63	56C
20.0	1.9	2198	88.02	4248	1798	CHA63	71C4/80A4	HA63	56C
16.0	1.5	2787	111.61	4248	1798	CHA63	71C4/80A4	HA63	56C
13.0	1.2	3464	138.71	4248	1798	CHA63	71C4/80A4	HA63	56C
11.0	1.0	4072	163.05	4248	1798	CHA63	71C4/80A4	HA63	56C

1 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
197.0	3.7	308	8.87	1151	946	CH032	80B4	PH032	56C/143/145TC
173.0	3.5	353	10.14	1239	982	CH032	80B4	PH032	56C/143/145TC
149.0	3.1	409	11.76	1283	1021	CH032	80B4	PH032	56C/143/145TC
128.0	3.2	477	13.72	1505	1062	CH032	80B4	PH032	56C/143/145TC
119.0	3.0	510	14.66	1505	1080	CH032	80B4	PH032	56C/143/145TC
104.0	2.9	583	16.77	1682	1117	CH032	80B4	PH032	56C/143/145TC
96.0	2.8	633	18.20	1770	1139	CH032	80B4	PH032	56C/143/145TC
88.0	2.6	692	19.90	1770	1163	CH032	80B4	PH032	56C/143/145TC
77.0	2.2	789	22.68	1770	1197	CH032	80B4	PH032	56C/143/145TC
73.0	2.1	829	23.83	1770	1210	CH032	80B4	PH032	56C/143/145TC
66.0	1.9	918	26.39	1770	1236	CH032	80B4	PH032	56C/143/145TC

## 1 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
59.0	1.7	1033	29.70	1770	1236	CH032	80B4	PH032	56C/143/145TC
53.0	1.5	1144	32.89	1770	1236	CH032	80B4	PH032	56C/143/145TC
46.0	1.3	1319	37.92	1770	1236	CH032	80B4	PH032	56C/143/145TC
42.0	1.2	1440	41.40	1770	1236	CH032	80B4	PH032	56C/143/145TC
37.0	1.1	1643	47.25	1770	1236	CH032	80B4	PH032	56C/143/145TC
875.0	3.1	70	2.00	221	157	CH041	80B4	PH041	56C/143/145TC
688.0	3.0	89	2.55	266	168	CH041	80B4	PH041	56C/143/145TC
645.0	2.8	95	2.71	266	171	CH041	80B4	PH041	56C/143/145TC
564.0	3.2	109	3.11	354	178	CH041	80B4	PH041	56C/143/145TC
488.0	3.2	126	3.59	398	186	CH041	80B4	PH041	56C/143/145TC
417.0	2.7	148	4.20	398	194	CH041	80B4	PH041	56C/143/145TC
350.0	2.3	176	5.00	398	203	CH041	80B4	PH041	56C/143/145TC
318.0	2.3	193	5.50	443	208	CH041	80B4	PH041	56C/143/145TC
287.0	2.1	214	6.09	443	214	CH041	80B4	PH041	56C/143/145TC
228.0	1.6	269	7.67	443	225	CH041	80B4	PH041	56C/143/145TC
200.0	1.6	307	8.75	487	225	CH041	80B4	PH041	56C/143/145TC
110.0	4.0	555	15.96	2213	1437	CH042	80B4	PH042	56C/143/145TC
92.0	3.3	661	19.00	2213	1484	CH042	80B4	PH042	56C/143/145TC
83.0	3.0	730	21.00	2213	1484	CH042	80B4	PH042	56C/143/145TC
76.0	2.9	805	23.15	2301	1484	CH042	80B4	PH042	56C/143/145TC
67.0	2.5	906	26.04	2301	1484	CH042	80B4	PH042	56C/143/145TC
64.0	2.6	956	27.50	2478	1484	CH042	80B4	PH042	56C/143/145TC
57.0	2.3	1059	30.45	2478	1484	CH042	80B4	PH042	56C/143/145TC
51.0	2.1	1186	34.10	2478	1484	CH042	80B4	PH042	56C/143/145TC
46.0	1.9	1313	37.76	2478	1484	CH042	80B4	PH042	56C/143/145TC
40.0	1.6	1521	43.75	2478	1484	CH042	80B4	PH042	56C/143/145TC
37.0	1.5	1653	47.53	2478	1484	CH042	80B4	PH042	56C/143/145TC
32.0	1.3	1887	54.25	2478	1484	CH042	80B4	PH042	56C/143/145TC
28.0	1.3	2106	61.83	2655	1484	CH043	80B4	PH043	56C/143/145TC
23.0	1.0	2611	76.67	2655	1484	CH043	80B4	PH043	56C/143/145TC
239.0	3.4	258	7.33	885	562	CH051	80B4	PH051	56C/143/145TC
209.0	3.0	294	8.38	885	562	CH051	80B4	PH051	56C/143/145TC
56.0	4.0	1096	31.52	4337	1798	CH052	80B4	PH052	56C/143/145TC
53.0	3.8	1148	33.00	4337	1798	CH052	80B4	PH052	56C/143/145TC
45.0	3.2	1356	38.98	4337	1798	CH052	80B4	PH052	56C/143/145TC
39.0	2.7	1578	45.36	4337	1798	CH052	80B4	PH052	56C/143/145TC
36.0	2.5	1709	49.13	4337	1798	CH052	80B4	PH052	56C/143/145TC
31.0	2.2	1951	56.11	4337	1798	CH052	80B4	PH052	56C/143/145TC
30.0	2.2	2003	58.81	4425	1798	CH053	80B4	PH053	56C/143/145TC
24.0	1.8	2477	72.75	4425	1798	CH053	80B4	PH053	56C/143/145TC
19.0	1.4	3082	90.51	4425	1798	CH053	80B4	PH053	56C/143/145TC

## 1 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
16.0	1.2	3710	108.95	4425	1798	CH053	80B4	PH053	56C/143/145TC
26.0	3.2	2315	68.00	7523	2698	-	-	PH063	56C/143/145TC
20.0	2.6	2922	85.82	7523	2698	CH063	80B4	PH063	56C/143/145TC
18.0	2.3	3227	94.76	7523	2698	CH063	80B4	PH063	56C/143/145TC
15.0	1.9	4018	118.00	7523	2698	CH063	80B4	PH063	56C/143/145TC
13.0	1.6	4611	135.40	7523	2698	CH063	80B4	PH063	56C/143/145TC
12.0	1.5	5091	149.51	7523	2698	CH063	80B4	PH063	56C/143/145TC
10.0	1.3	5811	170.67	7523	2698	CH063	80B4	PH063	56C/143/145TC
9.4	1.2	6340	186.18	7523	2698	CH063	80B4	PH063	56C/143/145TC
8.1	1.0	7328	215.21	7523	2698	CH063	80B4	PH063	56C/143/145TC
14.0	3.8	4238	124.44	15931	4047	CH083	80B4	PH083	56C/143/145TC
12.0	3.3	4841	142.15	15931	4047	CH083	80B4	PH083	56C/143/145TC
11.0	3.0	5270	154.76	15931	4047	CH083	80B4	PH083	56C/143/145TC
11.0	2.9	5528	162.35	15931	4047	CH083	80B4	PH083	56C/143/145TC
9.8	2.6	6100	179.13	15931	4047	CH083	80B4	PH083	56C/143/145TC
9.0	2.4	6642	195.07	15931	4047	CH083	80B4	PH083	56C/143/145TC
7.9	2.1	7586	222.78	15931	4047	CH083	80B4	PH083	56C/143/145TC
7.2	3.9	8260	242.59	31863	4946	-	-	PH103	143/145TC
686.0	1.9	90	2.55	168	128	HA31	80B4	-	-
594.0	1.7	103	2.94	177	134	HA31	80B4	-	-
551.0	1.6	112	3.18	177	137	HA31	80B4	-	-
521.0	1.5	118	3.36	177	140	HA31	80B4	-	-
453.0	1.4	136	3.87	186	146	HA31	80B4	-	-
415.0	1.3	148	4.21	186	151	HA31	80B4	-	-
368.0	1.2	167	4.75	195	157	HA31	80B4	-	-
325.0	3.8	187	5.38	708	229	CHA32	80B4	HA32	56C/143/145TC
269.0	3.1	227	6.52	708	244	CHA32	80B4	HA32	56C/143/145TC
216.0	2.4	282	8.11	664	262	CHA32	80B4	HA32	56C/143/145TC
160.0	2.1	380	10.94	797	290	CHA32	80B4	HA32	56C/143/145TC
132.0	1.5	461	13.25	708	309	CHA32	80B4	HA32	56C/143/145TC
106.0	1.2	573	16.49	708	332	CHA32	80B4	HA32	56C/143/145TC
86.0	1.1	705	20.26	797	356	CHA32	80B4	HA32	56C/143/145TC
594.0	2.1	103	2.94	221	135	CHA41	80B4	HA41	56C/143/145TC
368.0	1.6	167	4.75	266	159	CHA41	80B4	HA41	56C/143/145TC
321.0	1.4	192	5.45	266	166	CHA41	80B4	HA41	56C/143/145TC
160.0	3.5	380	10.94	1328	610	CHA42	80B4	HA42	56C/143/145TC
132.0	2.7	461	13.25	1239	651	CHA42	80B4	HA42	56C/143/145TC
106.0	2.2	573	16.49	1239	700	CHA42	80B4	HA42	56C/143/145TC
86.0	1.9	705	20.26	1328	749	CHA42	80B4	HA42	56C/143/145TC
71.0	1.6	854	24.55	1372	799	CHA42	80B4	HA42	56C/143/145TC
57.0	1.2	1062	30.55	1239	859	CHA42	80B4	HA42	56C/143/145TC



1 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
49.0	1.1	1232	35.44	1328	903	-	-	HA42	56C
594.0	3.4	103	2.94	354	373	CHA51	80B4	HA51	56C/143/145TC
368.0	2.7	167	4.75	443	437	CHA51	80B4	HA51	56C/143/145TC
321.0	2.3	192	5.45	443	458	CHA51	80B4	HA51	56C/143/145TC
222.0	1.3	277	7.88	354	517	-	-	HA51	56C
86.0	3.6	712	20.46	2567	940	CHA52	80B4	HA52	56C/143/145TC
69.0	2.8	884	25.43	2478	1011	CHA52	80B4	HA52	56C/143/145TC
59.0	2.6	1040	29.89	2655	1066	CHA52	80B4	HA52	56C/143/145TC
48.0	2.1	1258	36.17	2655	1136	CHA52	80B4	HA52	56C/143/145TC
39.0	1.6	1563	44.95	2478	1222	CHA52	80B4	HA52	56C/143/145TC
35.0	1.5	1731	49.78	2655	1264	CHA52	80B4	HA52	56C/143/145TC
28.0	1.2	2151	61.87	2567	1349	CHA52	80B4	HA52	56C/143/145TC
35.0	1.6	1696	49.80	2655	1264	CHA53	80B4	HA53	56C/143/145TC
29.0	1.3	2052	60.25	2655	1347	CHA53	80B4	HA53	56C/143/145TC
23.0	1.0	2550	74.88	2655	1349	CHA53	80B4	HA53	56C/143/145TC
226.0	2.9	272	7.75	797	770	CHA61	80B4	HA61	56C/143/145TC
164.0	1.7	375	10.67	620	857	CHA61	80B4	HA61	56C/143/145TC
59.0	3.8	1040	29.89	3983	1574	CHA62	80B4	HA62	56C/143/145TC
48.0	3.3	1258	36.17	4160	1677	CHA62	80B4	HA62	56C/143/145TC
39.0	2.5	1563	44.95	3894	1798	CHA62	80B4	HA62	56C/143/145TC
35.0	1.9	1731	49.78	3275	1798	CHA62	80B4	HA62	56C/143/145TC
28.0	1.8	2151	61.87	3894	1798	CHA62	80B4	HA62	56C/143/145TC
35.0	2.5	1696	49.80	4248	1798	CHA63	80B4	HA63	56C/143/145TC
29.0	2.1	2052	60.25	4248	1798	CHA63	80B4	HA63	56C/143/145TC
23.0	1.7	2550	74.88	4248	1798	CHA63	80B4	HA63	56C/143/145TC
20.0	1.4	2997	88.02	4248	1798	CHA63	80B4	HA63	56C/143/145TC
16.0	1.1	3800	111.61	4248	1798	CHA63	80B4	HA63	56C/143/145TC

1.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
373.0	3.5	240	4.70	841	768	CH032	80D4/90S4	PH032	56C/143/145TC
281.0	2.9	318	6.23	929	830	CH032	80D4/90S4	PH032	56C/143/145TC
225.0	2.8	396	7.76	1106	878	CH032	80D4/90S4	PH032	56C/143/145TC
197.0	2.5	452	8.87	1151	908	CH032	80D4/90S4	PH032	56C/143/145TC
173.0	2.4	517	10.14	1239	938	CH032	80D4/90S4	PH032	56C/143/145TC
149.0	2.1	600	11.76	1283	971	CH032	80D4/90S4	PH032	56C/143/145TC
128.0	2.2	700	13.72	1505	1004	CH032	80D4/90S4	PH032	56C/143/145TC
119.0	2.0	748	14.66	1505	1017	CH032	80D4/90S4	PH032	56C/143/145TC
104.0	2.0	855	16.77	1682	1045	CH032	80D4/90S4	PH032	56C/143/145TC
96.0	1.9	928	18.20	1770	1061	CH032	80D4/90S4	PH032	56C/143/145TC

1.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
88.0	1.7	1015	19.90	1770	1077	CH032	80D4/90S4	PH032	56C/143/145TC
77.0	1.5	1157	22.68	1770	1100	CH032	80D4/90S4	PH032	56C/143/145TC
73.0	1.5	1216	23.83	1770	1108	CH032	80D4/90S4	PH032	56C/143/145TC
66.0	1.3	1346	26.39	1770	1123	CH032	80D4/90S4	PH032	56C/143/145TC
59.0	1.2	1515	29.70	1770	1137	CH032	80D4/90S4	PH032	56C/143/145TC
53.0	1.1	1678	32.89	1770	1148	CH032	80D4/90S4	PH032	56C/143/145TC
1217.0	3.0	74	1.44	221	139	CH041	80D4/90S4	PH041	56C/143/145TC
875.0	2.1	103	2.00	221	153	CH041	80D4/90S4	PH041	56C/143/145TC
688.0	2.0	131	2.55	266	163	CH041	80D4/90S4	PH041	56C/143/145TC
645.0	1.9	140	2.71	266	166	CH041	80D4/90S4	PH041	56C/143/145TC
564.0	2.2	160	3.11	354	172	CH041	80D4/90S4	PH041	56C/143/145TC
488.0	2.2	185	3.59	398	179	CH041	80D4/90S4	PH041	56C/143/145TC
417.0	1.8	216	4.20	398	186	CH041	80D4/90S4	PH041	56C/143/145TC
350.0	1.5	258	5.00	398	194	CH041	80D4/90S4	PH041	56C/143/145TC
318.0	1.6	283	5.50	443	198	CH041	80D4/90S4	PH041	56C/143/145TC
287.0	1.4	314	6.09	443	202	CH041	80D4/90S4	PH041	56C/143/145TC
228.0	1.1	395	7.67	443	212	CH041	80D4/90S4	PH041	56C/143/145TC
200.0	1.1	451	8.75	487	217	CH041	80D4/90S4	PH041	56C/143/145TC
243.0	3.9	367	7.19	1416	1114	CH042	80D4/90S4	PH042	56C/143/145TC
148.0	3.7	602	11.80	2213	1279	CH042	80D4/90S4	PH042	56C/143/145TC
129.0	3.2	692	13.57	2213	1327	CH042	80D4/90S4	PH042	56C/143/145TC
110.0	2.7	814	15.96	2213	1383	CH042	80D4/90S4	PH042	56C/143/145TC
92.0	2.3	969	19.00	2213	1443	CH042	80D4/90S4	PH042	56C/143/145TC
83.0	2.1	1071	21.00	2213	1478	CH042	80D4/90S4	PH042	56C/143/145TC
76.0	1.9	1181	23.15	2301	1484	CH042	80D4/90S4	PH042	56C/143/145TC
67.0	1.7	1328	26.04	2301	1484	CH042	80D4/90S4	PH042	56C/143/145TC
64.0	1.8	1403	27.50	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
57.0	1.6	1553	30.45	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
51.0	1.4	1739	34.10	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
46.0	1.3	1926	37.76	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
40.0	1.1	2231	43.75	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
37.0	1.0	2424	47.53	2478	1484	CH042	80D4/90S4	PH042	56C/143/145TC
438.0	3.9	206	4.00	797	484	CH051	80D4/90S4	PH051	56C/143/145TC
367.0	3.4	246	4.77	841	510	CH051	80D4/90S4	PH051	56C/143/145TC
333.0	3.3	271	5.25	885	525	CH051	80D4/90S4	PH051	56C/143/145TC
301.0	3.0	300	5.82	885	541	CH051	80D4/90S4	PH051	56C/143/145TC
239.0	2.3	378	7.33	885	562	CH051	80D4/90S4	PH051	56C/143/145TC
209.0	2.1	432	8.38	885	562	CH051	80D4/90S4	PH051	56C/143/145TC
88.0	4.0	1019	19.97	4071	1798	CH052	80D4/90S4	PH052	56C/143/145TC
81.0	3.8	1105	21.67	4160	1798	CH052	80D4/90S4	PH052	56C/143/145TC
71.0	3.3	1260	24.71	4160	1798	CH052	80D4/90S4	PH052	56C/143/145TC

## 1.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
67.0	3.2	1335	26.18	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
62.0	3.0	1450	28.44	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
56.0	2.7	1607	31.52	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
53.0	2.6	1683	33.00	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
45.0	2.2	1988	38.98	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
39.0	1.9	2314	45.36	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
36.0	1.7	2506	49.13	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
31.0	1.5	2862	56.11	4337	1798	CH052	80D4/90S4	PH052	56C/143/145TC
30.0	1.5	2937	58.81	4425	1798	CH053	80D4/90S4	PH053	56C/143/145TC
24.0	1.2	3633	72.75	4425	1798	CH053	80D4/90S4	PH053	56C/143/145TC
239.0	4.0	378	7.33	1505	832	CH061	80D4/90S4	PH061	56C/143/145TC
209.0	3.5	432	8.38	1505	832	CH061	80D4/90S4	PH061	56C/143/145TC
47.0	3.8	1887	36.99	7081	2698	CH062	80D4/90S4	PH062	56C/143/145TC
43.0	3.7	2057	40.33	7523	2698	CH062	80D4/90S4	PH062	56C/143/145TC
38.0	3.2	2349	46.06	7523	2698	CH062	80D4/90S4	PH062	56C/143/145TC
35.0	3.0	2470	49.45	7523	2698	CH063	90S4	PH063	56C/143/145TC
32.0	2.8	2727	54.61	7523	2698	CH063	90S4	PH063	56C/143/145TC
26.0	2.2	3396	68.00	7523	2698	CH063	90S4	PH063	56C/143/145TC
20.0	1.8	4286	85.82	7523	2698	CH063	80D4/90S4	PH063	56C/143/145TC
18.0	1.6	4732	94.76	7523	2698	CH063	80D4/90S4	PH063	56C/143/145TC
15.0	1.3	5893	118.00	7523	2698	CH063	80D4/90S4	PH063	56C/143/145TC
13.0	1.1	6762	135.40	7523	2698	CH063	80D4/90S4	PH063	56C/143/145TC
12.0	1.0	7467	149.51	7523	2698	CH063	80D4/90S4	PH063	56C/143/145TC
20.0	3.7	4273	85.56	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
18.0	3.3	4899	98.09	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
16.0	2.8	5633	112.78	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
14.0	2.6	6215	124.44	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
12.0	2.2	7099	142.15	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
11.0	2.1	7729	154.76	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
11.0	2.0	8108	162.35	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
9.8	1.8	8946	179.13	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
9.0	1.6	9742	195.07	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
7.9	1.4	11126	222.78	15931	4047	CH083	80D4/90S4	PH083	56C/143/145TC
11.0	3.9	8032	160.82	30978	4946	CH103	90S4	PH103	143/145TC
9.7	3.4	9043	181.07	30978	4946	CH103	90S4	PH103	143/145TC
9.0	3.2	9699	194.21	30978	4946	CH103	90S4	PH103	143/145TC
8.1	2.9	10760	215.45	30978	4946	CH103	90S4	PH103	143/145TC
7.2	2.6	12115	242.59	31863	4946	CH103	90S4	PH103	143/145TC
686.0	1.3	131	2.55	168	128	HA31	80D4	-	-
594.0	1.2	152	2.94	177	134	HA31	80D4	-	-
551.0	1.1	164	3.18	177	137	HA31	80D4	-	-

1.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
521.0	1.0	173	3.36	177	140	HA31	80D4	-	-
325.0	2.6	274	5.38	708	229	CHA32	80D4	HA32	56C/143/145TC
269.0	2.1	332	6.52	708	244	CHA32	80D4	HA32	56C/143/145TC
216.0	1.6	414	8.11	664	262	CHA32	80D4	HA32	56C/143/145TC
160.0	1.4	558	10.94	797	290	CHA32	80D4	HA32	56C/143/145TC
132.0	1.0	676	13.25	708	309	CHA32	80D4	HA32	56C/143/145TC
1208.0	3.0	75	1.45	221	107	CHA41	80D4	HA41	56C/143/145TC
594.0	1.5	152	2.94	221	135	CHA41	80D4	HA41	56C/143/145TC
368.0	1.1	245	4.75	266	159	CHA41	80D4	HA41	56C/143/145TC
269.0	3.7	332	6.52	1239	513	CHA42	80D4/90S4	HA42	56C/143/145TC
216.0	2.8	414	8.11	1151	552	CHA42	80D4/90S4	HA42	56C/143/145TC
160.0	2.4	558	10.94	1328	610	CHA42	80D4/90S4	HA42	56C/143/145TC
132.0	1.8	676	13.25	1239	651	CHA42	80D4/90S4	HA42	56C/143/145TC
106.0	1.5	841	16.49	1239	700	CHA42	80D4/90S4	HA42	56C/143/145TC
86.0	1.3	1033	20.26	1328	749	CHA42	80D4/90S4	HA42	56C/143/145TC
71.0	1.1	1252	24.55	1372	799	CHA42	80D4/90S4	HA42	56C/143/145TC
594.0	2.3	152	2.94	354	373	CHA51	80D4/90S4	HA51	56C/143/145TC
368.0	1.8	245	4.75	443	437	CHA51	80D4/90S4	HA51	56C/143/145TC
321.0	1.6	281	5.45	443	458	CHA51	80D4/90S4	HA51	56C/143/145TC
121.0	3.4	740	14.50	2478	838	CHA52	80D4/90S4	HA52	56C/143/145TC
103.0	3.1	863	16.91	2655	882	CHA52	80D4/90S4	HA52	56C/143/145TC
86.0	2.5	1044	20.46	2567	940	CHA52	80D4/90S4	HA52	56C/143/145TC
69.0	1.9	1297	25.43	2478	1011	CHA52	80D4/90S4	HA52	56C/143/145TC
59.0	1.7	1525	29.89	2655	1066	CHA52	80D4/90S4	HA52	56C/143/145TC
48.0	1.4	1845	36.17	2655	1136	CHA52	80D4/90S4	HA52	56C/143/145TC
39.0	1.1	2293	44.95	2478	1222	CHA52	80D4/90S4	HA52	56C/143/145TC
35.0	1.0	2539	49.78	2655	1264	CHA52	80D4/90S4	HA52	56C/143/145TC
35.0	1.1	2487	49.80	2655	1264	CHA53	80D4/90S4	HA53	56C/143/145TC
226.0	2.0	399	7.75	797	770	CHA61	80D4/90S4	HA61	56C/143/145TC
164.0	1.1	550	10.67	620	857	CHA61	80D4/90S4	HA61	56C/143/145TC
86.0	3.9	1044	20.46	4071	1387	CHA62	80D4/90S4	HA62	56C/143/145TC
69.0	2.9	1297	25.43	3806	1492	CHA62	80D4/90S4	HA62	56C/143/145TC
59.0	2.6	1525	29.89	3983	1574	CHA62	80D4/90S4	HA62	56C/143/145TC
48.0	2.3	1845	36.17	4160	1677	CHA62	80D4/90S4	HA62	56C/143/145TC
39.0	1.7	2293	44.95	3894	1798	CHA62	80D4/90S4	HA62	56C/143/145TC
35.0	1.3	2539	49.78	3275	1798	CHA62	80D4/90S4	HA62	56C/143/145TC
28.0	1.2	3155	61.87	3894	1798	CHA62	80D4/90S4	HA62	56C/143/145TC
35.0	1.7	2487	49.80	4248	1798	CHA63	80D4/90S4	HA63	56C/143/145TC
29.0	1.4	3009	60.25	4248	1798	CHA63	80D4/90S4	HA63	56C/143/145TC
23.0	1.1	3740	74.88	4248	1798	CHA63	80D4/90S4	HA63	56C/143/145TC

## 2 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
373.0	2.6	327	4.70	841	745	CH032	90LA4	PH032	56C/143/145TC
281.0	2.1	433	6.23	929	799	CH032	90LA4	PH032	56C/143/145TC
225.0	2.0	540	7.76	1106	840	CH032	90LA4	PH032	56C/143/145TC
197.0	1.9	617	8.87	1151	865	CH032	90LA4	PH032	56C/143/145TC
173.0	1.8	706	10.14	1239	888	CH032	90LA4	PH032	56C/143/145TC
149.0	1.6	818	11.76	1283	913	CH032	90LA4	PH032	56C/143/145TC
128.0	1.6	954	13.72	1505	936	CH032	90LA4	PH032	56C/143/145TC
119.0	1.5	1019	14.66	1505	946	CH032	90LA4	PH032	56C/143/145TC
104.0	1.4	1166	16.77	1682	963	CH032	90LA4	PH032	56C/143/145TC
96.0	1.4	1266	18.20	1770	972	CH032	90LA4	PH032	56C/143/145TC
88.0	1.3	1384	19.90	1770	980	CH032	90LA4	PH032	56C/143/145TC
77.0	1.1	1577	22.68	1770	989	CH032	90LA4	PH032	56C/143/145TC
73.0	1.1	1658	23.83	1770	991	CH032	90LA4	PH032	56C/143/145TC
1217.0	2.2	101	1.44	221	136	CH041	90LA4	PH041	56C/143/145TC
875.0	1.6	141	2.00	221	148	CH041	90LA4	PH041	56C/143/145TC
688.0	1.5	179	2.55	266	158	CH041	90LA4	PH041	56C/143/145TC
645.0	1.4	191	2.71	266	160	CH041	90LA4	PH041	56C/143/145TC
564.0	1.6	218	3.11	354	165	CH041	90LA4	PH041	56C/143/145TC
488.0	1.6	252	3.59	398	171	CH041	90LA4	PH041	56C/143/145TC
417.0	1.3	295	4.20	398	177	CH041	90LA4	PH041	56C/143/145TC
350.0	1.1	351	5.00	398	183	CH041	90LA4	PH041	56C/143/145TC
318.0	1.1	387	5.50	443	186	CH041	90LA4	PH041	56C/143/145TC
287.0	1.0	428	6.09	443	189	CH041	90LA4	PH041	56C/143/145TC
320.0	3.7	380	5.46	1416	1007	CH042	90LA4	PH042	56C/143/145TC
243.0	2.8	500	7.19	1416	1086	CH042	90LA4	PH042	56C/143/145TC
196.0	3.0	620	8.91	1859	1149	CH042	90LA4	PH042	56C/143/145TC
170.0	3.0	717	10.31	2124	1193	CH042	90LA4	PH042	56C/143/145TC
148.0	2.7	821	11.80	2213	1233	CH042	90LA4	PH042	56C/143/145TC
129.0	2.3	944	13.57	2213	1274	CH042	90LA4	PH042	56C/143/145TC
110.0	2.0	1110	15.96	2213	1320	CH042	90LA4	PH042	56C/143/145TC
92.0	1.7	1321	19.00	2213	1369	CH042	90LA4	PH042	56C/143/145TC
83.0	1.5	1461	21.00	2213	1396	CH042	90LA4	PH042	56C/143/145TC
76.0	1.4	1610	23.15	2301	1420	CH042	90LA4	PH042	56C/143/145TC
67.0	1.3	1811	26.04	2301	1448	CH042	90LA4	PH042	56C/143/145TC
64.0	1.3	1913	27.50	2478	1460	CH042	90LA4	PH042	56C/143/145TC
57.0	1.2	2118	30.45	2478	1482	CH042	90LA4	PH042	56C/143/145TC
51.0	1.0	2372	34.10	2478	1484	CH042	90LA4	PH042	56C/143/145TC
1375.0	4.0	89	1.27	354	336	CH051	90LA4	PH051	143/145TC
824.0	3.6	149	2.13	531	394	CH051	90LA4	PH051	143/145TC
681.0	3.4	181	2.57	620	417	CH051	90LA4	PH051	56C/143/145TC
553.0	3.2	223	3.17	708	444	CH051	90LA4	PH051	56C/143/145TC

2 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
475.0	3.1	259	3.69	797	464	CH051	90LA4	PH051	56C/143/145TC
438.0	2.8	281	4.00	797	475	CH051	90LA4	PH051	56C/143/145TC
367.0	2.5	335	4.77	841	500	CH051	90LA4	PH051	56C/143/145TC
333.0	2.4	369	5.25	885	514	CH051	90LA4	PH051	56C/143/145TC
301.0	2.2	409	5.82	885	529	CH051	90LA4	PH051	56C/143/145TC
239.0	1.7	515	7.33	885	562	CH051	90LA4	PH051	56C/143/145TC
209.0	1.5	589	8.38	885	562	CH051	90LA4	PH051	56C/143/145TC
123.0	3.8	990	14.24	3806	1682	CH052	90LA4	PH052	56C/143/145TC
105.0	3.5	1154	16.59	3983	1751	CH052	90LA4	PH052	56C/143/145TC
97.0	3.3	1252	18.00	4071	1788	CH052	90LA4	PH052	56C/143/145TC
88.0	2.9	1389	19.97	4071	1798	CH052	90LA4	PH052	56C/143/145TC
81.0	2.8	1507	21.67	4160	1798	CH052	90LA4	PH052	56C/143/145TC
71.0	2.4	1718	24.71	4160	1798	CH052	90LA4	PH052	56C/143/145TC
67.0	2.4	1821	26.18	4337	1798	CH052	90LA4	PH052	56C/143/145TC
62.0	2.2	1978	28.44	4337	1798	CH052	90LA4	PH052	56C/143/145TC
56.0	2.0	2192	31.52	4337	1798	CH052	90LA4	PH052	56C/143/145TC
53.0	1.9	2295	33.00	4337	1798	CH052	90LA4	PH052	56C/143/145TC
45.0	1.6	2711	38.98	4337	1798	CH052	90LA4	PH052	56C/143/145TC
39.0	1.4	3155	45.36	4337	1798	CH052	90LA4	PH052	56C/143/145TC
36.0	1.3	3417	49.13	4337	1798	CH052	90LA4	PH052	56C/143/145TC
31.0	1.1	3903	56.11	4337	1798	CH052	90LA4	PH052	56C/143/145TC
30.0	1.1	4005	58.81	4425	1798	CH053	90LA4	PH053	56C/143/145TC
301.0	3.7	409	5.82	1505	832	CH061	90LA4	PH061	56C/143/145TC
239.0	2.9	515	7.33	1505	832	CH061	90LA4	PH061	56C/143/145TC
209.0	2.6	589	8.38	1505	832	CH061	90LA4	PH061	56C/143/145TC
60.0	3.5	2040	29.33	7081	2698	CH062	90LA4	PH062	56C/143/145TC
55.0	3.4	2226	32.00	7523	2698	CH062	90LA4	PH062	56C/143/145TC
47.0	2.8	2573	36.99	7081	2698	CH062	90LA4	PH062	56C/143/145TC
43.0	2.7	2805	40.33	7523	2698	CH062	90LA4	PH062	56C/143/145TC
38.0	2.3	3204	46.06	7523	2698	CH062	90LA4	PH062	56C/143/145TC
35.0	2.2	3368	49.45	7523	2698	CH063	90LA4	PH063	56C/143/145TC
32.0	2.0	3719	54.61	7523	2698	CH063	90LA4	PH063	56C/143/145TC
26.0	1.6	4631	68.00	7523	2698	CH063	90LA4	PH063	56C/143/145TC
20.0	1.3	5844	85.82	7523	2698	CH063	90LA4	PH063	56C/143/145TC
18.0	1.2	6453	94.76	7523	2698	CH063	90LA4	PH063	56C/143/145TC
31.0	3.7	3850	56.53	14161	4047	CH083	90LA4	PH083	56C/143/145TC
24.0	3.3	4868	71.48	15931	4047	CH083	90LA4	PH083	56C/143/145TC
22.0	3.0	5371	78.87	15931	4047	CH083	90LA4	PH083	56C/143/145TC
20.0	2.7	5827	85.56	15931	4047	CH083	90LA4	PH083	56C/143/145TC
18.0	2.4	6680	98.09	15931	4047	CH083	90LA4	PH083	56C/143/145TC
16.0	2.1	7681	112.78	15931	4047	CH083	90LA4	PH083	56C/143/145TC

2 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
14.0	1.9	8475	124.44	15931	4047	CH083	90LA4	PH083	56C/143/145TC
12.0	1.6	9681	142.15	15931	4047	CH083	90LA4	PH083	56C/143/145TC
11.0	1.5	10540	154.76	15931	4047	CH083	90LA4	PH083	56C/143/145TC
11.0	1.4	11056	162.35	15931	4047	CH083	90LA4	PH083	56C/143/145TC
9.8	1.3	12199	179.13	15931	4047	CH083	90LA4	PH083	56C/143/145TC
9.0	1.2	13285	195.07	15931	4047	CH083	90LA4	PH083	56C/143/145TC
7.9	1.1	15172	222.78	15931	4047	CH083	90LA4	PH083	56C/143/145TC
12.0	3.2	9767	143.42	30978	4946	CH103	90LA4	PH103	143/145TC
11.0	2.8	10952	160.82	30978	4946	CH103	90LA4	PH103	143/145TC
9.7	2.5	12332	181.07	30978	4946	CH103	90LA4	PH103	143/145TC
9.0	2.3	13226	194.21	30978	4946	CH103	90LA4	PH103	143/145TC
8.1	2.1	14673	215.45	30978	4946	CH103	90LA4	PH103	143/145TC
7.2	1.9	16521	242.59	31863	4946	CH103	90LA4	PH103	143/145TC
325.0	1.9	374	5.38	708	229	-	-	HA32	56C/143/145TC
269.0	1.6	453	6.52	708	244	-	-	HA32	56C/143/145TC
216.0	1.2	564	8.11	664	262	-	-	HA32	56C/143/145TC
160.0	1.0	761	10.94	797	290	-	-	HA32	56C/143/145TC
1208.0	2.2	102	1.45	221	107	-	-	HA41	56C/143/145TC
594.0	1.1	207	2.94	221	135	-	-	HA41	56C/143/145TC
325.0	3.3	374	5.38	1239	482	CHA42	90LA4	HA42	56C/143/145TC
269.0	2.7	453	6.52	1239	513	CHA42	90LA4	HA42	56C/143/145TC
216.0	2.0	564	8.11	1151	552	CHA42	90LA4	HA42	56C/143/145TC
160.0	1.7	761	10.94	1328	610	CHA42	90LA4	HA42	56C/143/145TC
132.0	1.3	922	13.25	1239	651	CHA42	90LA4	HA42	56C/143/145TC
106.0	1.1	1147	16.49	1239	700	CHA42	90LA4	HA42	56C/143/145TC
1208.0	3.5	102	1.45	354	294	CHA51	90LA4	HA51	56C/143/145TC
594.0	1.7	207	2.94	354	373	CHA51	90LA4	HA51	56C/143/145TC
368.0	1.3	334	4.75	443	437	CHA51	90LA4	HA51	56C/143/145TC
321.0	1.2	383	5.45	443	458	CHA51	90LA4	HA51	56C/143/145TC
226.0	3.9	538	7.73	2124	680	CHA52	90LA4	HA52	56C/143/145TC
181.0	4.0	671	9.64	2655	731	CHA52	90LA4	HA52	56C/143/145TC
150.0	3.1	811	11.67	2478	779	CHA52	90LA4	HA52	56C/143/145TC
121.0	2.5	1008	14.50	2478	838	CHA52	90LA4	HA52	56C/143/145TC
103.0	2.3	1176	16.91	2655	882	CHA52	90LA4	HA52	56C/143/145TC
86.0	1.8	1423	20.46	2567	940	CHA52	90LA4	HA52	56C/143/145TC
69.0	1.4	1769	25.43	2478	1011	CHA52	90LA4	HA52	56C/143/145TC
59.0	1.3	2079	29.89	2655	1066	CHA52	90LA4	HA52	56C/143/145TC
48.0	1.1	2515	36.17	2655	1136	CHA52	90LA4	HA52	56C/143/145TC
399.0	3.2	308	4.38	974	637	CHA61	90LA4	HA61	56C/143/145TC
226.0	1.5	545	7.75	797	770	CHA61	90LA4	HA61	56C/143/145TC
121.0	3.7	1008	14.50	3717	1237	CHA62	90LA4	HA62	56C/143/145TC

## 2 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
103.0	3.8	1176	16.91	4425	1302	CHA62	90LA4	HA62	56C/143/145TC
86.0	2.9	1423	20.46	4071	1387	CHA62	90LA4	HA62	56C/143/145TC
69.0	2.2	1769	25.43	3806	1492	CHA62	90LA4	HA62	56C/143/145TC
59.0	1.9	2079	29.89	3983	1574	CHA62	90LA4	HA62	56C/143/145TC
48.0	1.7	2515	36.17	4160	1677	CHA62	90LA4	HA62	56C/143/145TC
39.0	1.2	3126	44.95	3894	1798	CHA62	90LA4	HA62	56C/143/145TC
35.0	1.3	3391	49.80	4248	1798	CHA63	90LA4	HA63	56C/143/145TC
29.0	1.0	4103	60.25	4248	1798	CHA63	90LA4	HA63	56C/143/145TC

## 3 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
373.0	1.8	479	4.70	841	705	CH032	100LA4	PH032	182/184TC
281.0	1.5	635	6.23	929	746	CH032	100LA4	PH032	182/184TC
225.0	1.4	792	7.76	1106	774	CH032	100LA4	PH032	182/184TC
197.0	1.3	904	8.87	1151	789	CH032	100LA4	PH032	182/184TC
173.0	1.2	1035	10.14	1239	801	CH032	100LA4	PH032	182/184TC
149.0	1.1	1200	11.76	1283	812	CH032	100LA4	PH032	182/184TC
128.0	1.1	1400	13.72	1505	819	CH032	100LA4	PH032	182/184TC
119.0	1.0	1495	14.66	1505	820	CH032	100LA4	PH032	182/184TC
1217.0	1.5	148	1.44	221	130	-	-	PH041	182/184TC
875.0	1.1	206	2.00	221	141	-	-	PH041	182/184TC
688.0	1.0	262	2.55	266	148	-	-	PH041	182/184TC
564.0	1.1	320	3.11	354	153	-	-	PH041	182/184TC
488.0	1.1	370	3.59	398	157	-	-	PH041	182/184TC
320.0	2.5	557	5.46	1416	970	CH042	100LA4	PH042	182/184TC
243.0	1.9	733	7.19	1416	1037	CH042	100LA4	PH042	182/184TC
196.0	2.0	909	8.91	1859	1088	CH042	100LA4	PH042	182/184TC
170.0	2.0	1052	10.31	2124	1122	CH042	100LA4	PH042	182/184TC
148.0	1.8	1204	11.80	2213	1152	CH042	100LA4	PH042	182/184TC
129.0	1.6	1384	13.57	2213	1181	CH042	100LA4	PH042	182/184TC
110.0	1.4	1628	15.96	2213	1211	CH042	100LA4	PH042	182/184TC
92.0	1.1	1938	19.00	2213	1239	CH042	100LA4	PH042	182/184TC
83.0	1.0	2142	21.00	2213	1252	CH042	100LA4	PH042	182/184TC
1375.0	2.7	131	1.27	354	331	CH051	100LA4	PH051	182/184TC
1233.0	3.6	146	1.42	531	342	CH051	100LA4	PH051	182/184TC
824.0	2.4	219	2.13	531	386	CH051	100LA4	PH051	182/184TC
681.0	2.3	265	2.57	620	408	CH051	100LA4	PH051	182/184TC
553.0	2.2	326	3.17	708	432	CH051	100LA4	PH051	182/184TC
475.0	2.1	380	3.69	797	451	CH051	100LA4	PH051	182/184TC
438.0	1.9	412	4.00	797	461	CH051	100LA4	PH051	182/184TC



## 3 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
367.0	1.7	492	4.77	841	483	CH051	100LA4	PH051	182/184TC
333.0	1.6	541	5.25	885	495	CH051	100LA4	PH051	182/184TC
301.0	1.5	600	5.82	885	508	CH051	100LA4	PH051	182/184TC
306.0	3.9	584	5.73	2301	1267	CH052	100LA4	PH052	182/184TC
254.0	3.6	703	6.89	2567	1334	CH052	100LA4	PH052	182/184TC
205.0	3.5	870	8.53	3009	1412	CH052	100LA4	PH052	182/184TC
183.0	3.4	975	9.56	3275	1455	CH052	100LA4	PH052	182/184TC
152.0	2.9	1174	11.51	3452	1524	CH052	100LA4	PH052	182/184TC
123.0	2.6	1452	14.24	3806	1604	CH052	100LA4	PH052	182/184TC
105.0	2.4	1693	16.59	3983	1660	CH052	100LA4	PH052	182/184TC
97.0	2.2	1836	18.00	4071	1689	CH052	100LA4	PH052	182/184TC
88.0	2.0	2038	19.97	4071	1725	CH052	100LA4	PH052	182/184TC
81.0	1.9	2210	21.67	4160	1753	CH052	100LA4	PH052	182/184TC
71.0	1.7	2520	24.71	4160	1796	CH052	100LA4	PH052	182/184TC
67.0	1.6	2671	26.18	4337	1798	CH052	100LA4	PH052	182/184TC
62.0	1.5	2901	28.44	4337	1798	CH052	100LA4	PH052	182/184TC
56.0	1.3	3215	31.52	4337	1798	CH052	100LA4	PH052	182/184TC
45.0	1.1	3977	38.98	4337	1798	CH052	100LA4	PH052	182/184TC
553.0	3.5	326	3.17	1151	691	CH061	100LA4	PH061	182/184TC
475.0	3.5	380	3.69	1328	722	CH061	100LA4	PH061	182/184TC
438.0	3.2	412	4.00	1328	738	CH061	100LA4	PH061	182/184TC
367.0	2.9	492	4.77	1416	775	CH061	100LA4	PH061	182/184TC
333.0	2.8	541	5.25	1505	796	CH061	100LA4	PH061	182/184TC
301.0	2.5	600	5.82	1505	818	CH061	100LA4	PH061	182/184TC
239.0	2.0	756	7.33	1505	832	CH061	100LA4	PH061	182/184TC
209.0	1.7	863	8.38	1505	832	CH061	100LA4	PH061	182/184TC
86.0	3.6	2069	20.28	7523	2698	CH062	100LA4	PH062	182/184TC
75.0	3.2	2374	23.27	7523	2698	CH062	100LA4	PH062	182/184TC
68.0	2.9	2621	25.70	7523	2698	CH062	100LA4	PH062	182/184TC
60.0	2.4	2992	29.33	7081	2698	CH062	100LA4	PH062	182/184TC
55.0	2.3	3264	32.00	7523	2698	CH062	100LA4	PH062	182/184TC
47.0	1.9	3773	36.99	7081	2698	CH062	100LA4	PH062	182/184TC
43.0	1.8	4114	40.33	7523	2698	CH062	100LA4	PH062	182/184TC
38.0	1.6	4699	46.06	7523	2698	CH062	100LA4	PH062	182/184TC
35.0	1.5	4940	49.45	7523	2698	CH063	100LA4	PH063	182/184TC
32.0	1.4	5454	54.61	7523	2698	CH063	100LA4	PH063	182/184TC
26.0	1.1	6792	68.00	7523	2698	CH063	100LA4	PH063	182/184TC
207.0	3.6	870	8.44	3098	899	CH081	100LA4	PH081	182/184TC
45.0	3.6	3948	38.70	14161	4047	CH082	100LA4	PH082	182/184TC
41.0	3.2	4361	42.75	14161	4047	CH082	100LA4	PH082	182/184TC
36.0	2.9	4910	48.13	14161	4047	CH082	100LA4	PH082	182/184TC

## 3 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
31.0	2.5	5646	56.53	14161	4047	CH083	100LA4	PH083	182/184TC
24.0	2.2	7140	71.48	15931	4047	CH083	100LA4	PH083	182/184TC
22.0	2.0	7878	78.87	15931	4047	CH083	100LA4	PH083	182/184TC
20.0	1.9	8546	85.56	15931	4047	CH083	100LA4	PH083	182/184TC
18.0	1.6	9797	98.09	15931	4047	CH083	100LA4	PH083	182/184TC
16.0	1.4	11265	112.78	15931	4047	CH083	100LA4	PH083	182/184TC
14.0	1.3	12430	124.44	15931	4047	CH083	100LA4	PH083	182/184TC
12.0	1.1	14199	142.15	15931	4047	CH083	100LA4	PH083	182/184TC
11.0	1.0	15458	154.76	15931	4047	CH083	100LA4	PH083	182/184TC
22.0	3.9	7972	79.82	30978	4946	CH103	100LA4	PH103	182/184TC
21.0	3.7	8406	84.16	30978	4946	CH103	100LA4	PH103	182/184TC
19.0	3.3	9326	93.36	30978	4946	CH103	100LA4	PH103	182/184TC
17.0	3.1	9995	100.07	30978	4946	CH103	100LA4	PH103	182/184TC
14.0	2.6	12070	120.84	30978	4946	CH103	100LA4	PH103	182/184TC
13.0	2.3	13391	134.06	30978	4946	CH103	100LA4	PH103	182/184TC
12.0	2.2	14325	143.42	30978	4946	CH103	100LA4	PH103	182/184TC
11.0	1.9	16063	160.82	30978	4946	CH103	100LA4	PH103	182/184TC
9.7	1.7	18086	181.07	30978	4946	CH103	100LA4	PH103	182/184TC
9.0	1.6	19398	194.21	30978	4946	CH103	100LA4	PH103	182/184TC
8.1	1.4	21520	215.45	30978	4946	CH103	100LA4	PH103	182/184TC
7.2	1.3	24230	242.59	31863	4946	CH103	100LA4	PH103	182/184TC
15.0	3.7	11848	118.62	44254	6744	CH123	100LA4	PH123	182/184TC
14.0	3.5	12803	128.18	44254	6744	CH123	100LA4	PH123	182/184TC
12.0	3.1	14462	144.79	44254	6744	CH123	100LA4	PH123	182/184TC
11.0	2.9	15504	155.22	44254	6744	CH123	100LA4	PH123	182/184TC
10.0	2.6	17260	172.80	44254	6744	CH123	100LA4	PH123	182/184TC
9.2	2.3	18897	189.19	44254	6744	CH123	100LA4	PH123	182/184TC
8.4	2.1	20719	207.43	44254	6744	CH123	100LA4	PH123	182/184TC
7.6	1.9	23066	230.92	44254	6744	CH123	100LA4	PH123	182/184TC
6.7	1.7	25934	259.64	44254	6744	CH123	100LA4	PH123	182/184TC
9.4	3.8	18574	185.96	70806	12364	-	-	PH143	182/184TC
8.5	3.4	20584	206.08	70806	12364	-	-	PH143	182/184TC
281.0	3.3	635	6.22	2124	632	CHA52	100LA4	HA52	182/184TC
226.0	2.7	789	7.73	2124	680	CHA52	100LA4	HA52	182/184TC
181.0	2.7	984	9.64	2655	731	CHA52	100LA4	HA52	182/184TC
150.0	2.1	1190	11.67	2478	779	CHA52	100LA4	HA52	182/184TC
121.0	1.7	1479	14.50	2478	838	CHA52	100LA4	HA52	182/184TC
103.0	1.5	1725	16.91	2655	882	CHA52	100LA4	HA52	182/184TC
86.0	1.2	2087	20.46	2567	940	CHA52	100LA4	HA52	182/184TC
700.0	3.1	258	2.50	797	528	CHA61	100LA4	HA61	182/184TC
399.0	2.2	452	4.38	974	637	CHA61	100LA4	HA61	182/184TC

3 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
150.0	3.3	1190	11.67	3894	1150	CHA62	100LA4	HA62	182/184TC
121.0	2.5	1479	14.50	3717	1237	CHA62	100LA4	HA62	182/184TC
103.0	2.6	1725	16.91	4425	1302	CHA62	100LA4	HA62	182/184TC
86.0	2.0	2087	20.46	4071	1387	CHA62	100LA4	HA62	182/184TC
69.0	1.5	2594	25.43	3806	1492	CHA62	100LA4	HA62	182/184TC

5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
320.0	1.4	1013	5.46	1416	874	CH042	112MA4	PH042	182/184TC
243.0	1.1	1333	7.19	1416	911	CH042	112MA4	PH042	182/184TC
196.0	1.1	1653	8.91	1859	932	CH042	112MA4	PH042	182/184TC
170.0	1.1	1913	10.31	2124	941	CH042	112MA4	PH042	182/184TC
148.0	1.0	2189	11.80	2213	944	CH042	112MA4	PH042	182/184TC
1375.0	1.5	239	1.27	354	319	CH051	112MA4	PH051	182/184TC
1233.0	2.0	266	1.42	531	329	CH051	112MA4	PH051	182/184TC
824.0	1.3	398	2.13	531	366	CH051	112MA4	PH051	182/184TC
681.0	1.3	482	2.57	620	384	CH051	112MA4	PH051	182/184TC
553.0	1.2	593	3.17	708	403	CH051	112MA4	PH051	182/184TC
475.0	1.2	691	3.69	797	417	CH051	112MA4	PH051	182/184TC
438.0	1.1	750	4.00	797	424	CH051	112MA4	PH051	182/184TC
306.0	2.2	1062	5.73	2301	1186	CH052	112MA4	PH052	182/184TC
254.0	2.0	1279	6.89	2567	1236	CH052	112MA4	PH052	182/184TC
205.0	1.9	1582	8.53	3009	1291	CH052	112MA4	PH052	182/184TC
183.0	1.8	1774	9.56	3275	1319	CH052	112MA4	PH052	182/184TC
152.0	1.6	2135	11.51	3452	1361	CH052	112MA4	PH052	182/184TC
123.0	1.4	2641	14.24	3806	1402	CH052	112MA4	PH052	182/184TC
105.0	1.3	3078	16.59	3983	1425	CH052	112MA4	PH052	182/184TC
97.0	1.2	3338	18.00	4071	1434	CH052	112MA4	PH052	182/184TC
88.0	1.1	3705	19.97	4071	1443	CH052	112MA4	PH052	182/184TC
81.0	1.0	4019	21.67	4160	1446	CH052	112MA4	PH052	182/184TC
1302.0	2.8	252	1.34	708	518	CH061	112MA4	PH061	182/184TC
824.0	2.7	398	2.13	1062	589	CH061	112MA4	PH061	182/184TC
681.0	2.2	482	2.57	1062	619	CH061	112MA4	PH061	182/184TC
553.0	1.9	593	3.17	1151	653	CH061	112MA4	PH061	182/184TC
475.0	1.9	691	3.69	1328	677	CH061	112MA4	PH061	182/184TC
438.0	1.8	750	4.00	1328	690	CH061	112MA4	PH061	182/184TC
367.0	1.6	894	4.77	1416	717	CH061	112MA4	PH061	182/184TC
333.0	1.5	984	5.25	1505	732	CH061	112MA4	PH061	182/184TC
301.0	1.4	1090	5.82	1505	747	CH061	112MA4	PH061	182/184TC
239.0	1.1	1374	7.33	1505	778	CH061	112MA4	PH061	182/184TC

5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
237.0	3.6	1371	7.39	4868	2277	CH062	112MA4	PH062	182/184TC
206.0	3.4	1577	8.50	5310	2365	CH062	112MA4	PH062	182/184TC
186.0	3.1	1741	9.39	5310	2428	CH062	112MA4	PH062	182/184TC
150.0	2.7	2168	11.69	5753	2568	CH062	112MA4	PH062	182/184TC
138.0	2.6	2349	12.67	6196	2620	CH062	112MA4	PH062	182/184TC
119.0	2.3	2736	14.75	6196	2698	CH062	112MA4	PH062	182/184TC
107.0	2.3	3021	16.29	7081	2698	CH062	112MA4	PH062	182/184TC
99.0	2.2	3277	17.67	7346	2698	CH062	112MA4	PH062	182/184TC
86.0	2.0	3762	20.28	7523	2698	CH062	112MA4	PH062	182/184TC
75.0	1.7	4316	23.27	7523	2698	CH062	112MA4	PH062	182/184TC
68.0	1.6	4766	25.70	7523	2698	CH062	112MA4	PH062	182/184TC
60.0	1.3	5440	29.33	7081	2698	CH062	112MA4	PH062	182/184TC
55.0	1.3	5935	32.00	7523	2698	CH062	112MA4	PH062	182/184TC
47.0	1.0	6861	36.99	7081	2698	CH062	112MA4	PH062	182/184TC
43.0	1.0	7481	40.33	7523	2698	CH062	112MA4	PH062	182/184TC
470.0	3.9	698	3.72	2744	855	CH081	112MA4	PH081	182/184TC
438.0	3.8	750	4.00	2832	872	CH081	112MA4	PH081	182/184TC
375.0	3.2	875	4.67	2832	899	CH081	112MA4	PH081	182/184TC
316.0	2.8	1038	5.54	2921	899	CH081	112MA4	PH081	182/184TC
288.0	2.6	1140	6.08	3009	899	CH081	112MA4	PH081	182/184TC
233.0	2.2	1406	7.50	3098	899	CH081	112MA4	PH081	182/184TC
207.0	2.0	1583	8.44	3098	899	CH081	112MA4	PH081	182/184TC
94.0	3.9	3436	18.53	13276	3682	CH082	112MA4	PH082	182/184TC
90.0	3.9	3595	19.38	14161	3726	CH082	112MA4	PH082	182/184TC
82.0	3.6	3967	21.39	14161	3821	CH082	112MA4	PH082	182/184TC
77.0	3.3	4229	22.80	14161	3882	CH082	112MA4	PH082	182/184TC
66.0	2.9	4934	26.60	14161	4031	CH082	112MA4	PH082	182/184TC
63.0	2.7	5171	27.88	14161	4047	CH082	112MA4	PH082	182/184TC
56.0	2.5	5778	31.15	14161	4047	CH082	112MA4	PH082	182/184TC
51.0	2.2	6376	34.38	14161	4047	CH082	112MA4	PH082	182/184TC
45.0	2.0	7178	38.70	14161	4047	CH082	112MA4	PH082	182/184TC
41.0	1.8	7929	42.75	14161	4047	CH082	112MA4	PH082	182/184TC
36.0	1.6	8927	48.13	14161	4047	CH082	112MA4	PH082	182/184TC
31.0	1.4	10265	56.53	14161	4047	CH083	112MA4	PH083	182/184TC
24.0	1.2	12981	71.48	15931	4047	CH083	112MA4	PH083	182/184TC
22.0	1.1	14324	78.87	15931	4047	CH083	112MA4	PH083	182/184TC
20.0	1.0	15538	85.56	15931	4047	CH083	112MA4	PH083	182/184TC
208.0	3.7	1574	8.40	5753	1124	CH101	112MA4	PH101	182/184TC
46.0	3.5	7132	38.45	24782	4946	CH102	112MA4	PH102	182/184TC
42.0	3.8	7660	41.30	29207	4946	CH102	112MA4	PH102	182/184TC
38.0	3.4	8498	45.82	29207	4946	CH102	112MA4	PH102	182/184TC

## 5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
34.0	3.1	9555	51.52	29207	4946	CH102	112MA4	PH102	182/184TC
25.0	2.4	12656	69.69	30978	4946	CH103	112MA4	PH103	182/184TC
22.0	2.1	14495	79.82	30978	4946	CH103	112MA4	PH103	182/184TC
21.0	2.0	15284	84.16	30978	4946	CH103	112MA4	PH103	182/184TC
19.0	1.8	16956	93.36	30978	4946	CH103	112MA4	PH103	182/184TC
17.0	1.7	18173	100.07	30978	4946	CH103	112MA4	PH103	182/184TC
14.0	1.4	21946	120.84	30978	4946	CH103	112MA4	PH103	182/184TC
13.0	1.3	24346	134.06	30978	4946	CH103	112MA4	PH103	182/184TC
12.0	1.2	26045	143.42	30978	4946	CH103	112MA4	PH103	182/184TC
11.0	1.1	29206	160.82	30978	4946	CH103	112MA4	PH103	182/184TC
26.0	3.6	12227	67.32	44254	6744	CH123	112MA4	PH123	182/184TC
24.0	3.3	13387	73.71	44254	6744	CH123	112MA4	PH123	182/184TC
21.0	2.9	15134	83.34	44254	6744	CH123	112MA4	PH123	182/184TC
19.0	2.7	16339	89.97	44254	6744	CH123	112MA4	PH123	182/184TC
17.0	2.4	18213	100.29	44254	6744	CH123	112MA4	PH123	182/184TC
16.0	2.2	19676	108.34	44254	6744	CH123	112MA4	PH123	182/184TC
15.0	2.1	21543	118.62	44254	6744	CH123	112MA4	PH123	182/184TC
14.0	1.9	23278	128.18	44254	6744	CH123	112MA4	PH123	182/184TC
12.0	1.7	26294	144.79	44254	6744	CH123	112MA4	PH123	182/184TC
11.0	1.6	28189	155.22	44254	6744	CH123	112MA4	PH123	182/184TC
10.0	1.4	31382	172.80	44254	6744	CH123	112MA4	PH123	182/184TC
9.2	1.3	34359	189.19	44254	6744	CH123	112MA4	PH123	182/184TC
8.4	1.2	37671	207.43	44254	6744	CH123	112MA4	PH123	182/184TC
7.6	1.1	41937	230.92	44254	6744	CH123	112MA4	PH123	182/184TC
11.0	2.5	28027	154.33	70806	12364	-	-	PH143	182/184TC
9.4	2.1	33771	185.96	70806	12364	-	-	PH143	182/184TC
8.5	1.9	37426	206.08	70806	12364	-	-	PH143	182/184TC
340.0	2.2	954	5.14	2124	593	CHA52	112MA4	HA52	182/184TC
281.0	1.8	1154	6.22	2124	632	CHA52	112MA4	HA52	182/184TC
226.0	1.5	1434	7.73	2124	680	CHA52	112MA4	HA52	182/184TC
181.0	1.5	1788	9.64	2655	731	CHA52	112MA4	HA52	182/184TC
150.0	1.1	2164	11.67	2478	779	CHA52	112MA4	HA52	182/184TC
1313.0	3.2	250	1.33	797	428	CHA61	112MA4	HA61	182/184TC
700.0	1.7	469	2.50	797	528	CHA61	112MA4	HA61	182/184TC
399.0	1.2	822	4.38	974	637	CHA61	112MA4	HA61	182/184TC
340.0	3.5	954	5.14	3363	875	CHA62	112MA4	HA62	182/184TC
281.0	2.9	1154	6.22	3363	933	CHA62	112MA4	HA62	182/184TC
226.0	2.3	1434	7.73	3363	1003	CHA62	112MA4	HA62	182/184TC
181.0	2.3	1788	9.64	4071	1080	CHA62	112MA4	HA62	182/184TC
150.0	1.8	2164	11.67	3894	1150	CHA62	112MA4	HA62	182/184TC
121.0	1.4	2689	14.50	3717	1237	CHA62	112MA4	HA62	182/184TC

5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
103.0	1.4	3137	16.91	4425	1302	CHA62	112MA4	HA62	182/184TC
86.0	1.1	3795	20.46	4071	1387	CHA62	112MA4	HA62	182/184TC

7.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
326.0	3.2	1371	5.38	4425	2027	CH062	132S4	PH062	213/215TC
295.0	3.2	1514	5.93	4868	2081	CH062	132S4	PH062	213/215TC
237.0	2.6	1885	7.39	4868	2201	CH062	132S4	PH062	213/215TC
206.0	2.4	2168	8.50	5310	2277	CH062	132S4	PH062	213/215TC
186.0	2.2	2393	9.39	5310	2331	CH062	132S4	PH062	213/215TC
150.0	1.9	2981	11.69	5753	2448	CH062	132S4	PH062	213/215TC
138.0	1.9	3230	12.67	6196	2489	CH062	132S4	PH062	213/215TC
119.0	1.6	3762	14.75	6196	2565	CH062	132S4	PH062	213/215TC
107.0	1.7	4153	16.29	7081	2612	CH062	132S4	PH062	213/215TC
99.0	1.6	4505	17.67	7346	2649	CH062	132S4	PH062	213/215TC
86.0	1.5	5172	20.28	7523	2698	CH062	132S4	PH062	213/215TC
75.0	1.3	5935	23.27	7523	2698	CH062	132S4	PH062	213/215TC
68.0	1.1	6553	25.70	7523	2698	CH062	132S4	PH062	213/215TC
689.0	3.8	655	2.54	2478	749	CH081	132S4	PH081	213/215TC
538.0	3.3	837	3.25	2744	800	CH081	132S4	PH081	213/215TC
470.0	2.9	959	3.72	2744	828	CH081	132S4	PH081	213/215TC
438.0	2.7	1031	4.00	2832	843	CH081	132S4	PH081	213/215TC
375.0	2.4	1203	4.67	2832	876	CH081	132S4	PH081	213/215TC
316.0	2.0	1427	5.54	2921	899	CH081	132S4	PH081	213/215TC
288.0	1.9	1568	6.08	3009	899	CH081	132S4	PH081	213/215TC
233.0	1.6	1933	7.50	3098	899	CH081	132S4	PH081	213/215TC
207.0	1.4	2176	8.44	3098	899	CH081	132S4	PH081	213/215TC
237.0	3.8	1886	7.39	7081	2786	CH082	132S4	PH082	213/215TC
218.0	3.5	2046	8.02	7081	2850	CH082	132S4	PH082	213/215TC
198.0	3.5	2257	8.85	7966	2928	CH082	132S4	PH082	213/215TC
159.0	3.5	2807	11.01	9736	3105	CH082	132S4	PH082	213/215TC
130.0	3.6	3443	13.50	12391	3273	CH082	132S4	PH082	213/215TC
117.0	3.5	3799	14.90	13276	3354	CH082	132S4	PH082	213/215TC
105.0	3.1	4237	16.62	13276	3443	CH082	132S4	PH082	213/215TC
94.0	2.8	4724	18.53	13276	3532	CH082	132S4	PH082	213/215TC
90.0	2.9	4944	19.38	14161	3569	CH082	132S4	PH082	213/215TC
82.0	2.6	5455	21.39	14161	3648	CH082	132S4	PH082	213/215TC
77.0	2.4	5815	22.80	14161	3698	CH082	132S4	PH082	213/215TC
66.0	2.1	6784	26.60	14161	3816	CH082	132S4	PH082	213/215TC
63.0	2.0	7111	27.88	14161	3851	CH082	132S4	PH082	213/215TC

## 7.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
56.0	1.8	7945	31.15	14161	3930	CH082	132S4	PH082	213/215TC
51.0	1.6	8766	34.38	14161	3997	CH082	132S4	PH082	213/215TC
45.0	1.4	9870	38.70	14161	4047	CH082	132S4	PH082	213/215TC
41.0	1.3	10902	42.75	14161	4047	CH082	132S4	PH082	213/215TC
36.0	1.2	12275	48.13	14161	4047	CH082	132S4	PH082	213/215TC
31.0	1.0	14115	56.53	14161	4047	CH083	132S4	PH083	213/215TC
281.0	3.5	1606	6.23	5664	1124	CH101	132S4	PH101	213/215TC
232.0	3.0	1944	7.55	5753	1124	CH101	132S4	PH101	213/215TC
208.0	2.7	2165	8.40	5753	1124	CH101	132S4	PH101	213/215TC
61.0	4.0	7326	28.73	29207	4946	CH102	132S4	PH102	213/215TC
57.0	3.6	7835	30.72	28322	4946	CH102	132S4	PH102	213/215TC
51.0	3.2	8722	34.20	28322	4946	CH102	132S4	PH102	213/215TC
46.0	2.5	9806	38.45	24782	4946	CH102	132S4	PH102	213/215TC
42.0	2.8	10532	41.30	29207	4946	CH102	132S4	PH102	213/215TC
38.0	2.5	11685	45.82	29207	4946	CH102	132S4	PH102	213/215TC
34.0	2.2	13138	51.52	29207	4946	CH102	132S4	PH102	213/215TC
32.0	2.2	13852	55.47	30978	4946	CH103	132S4	PH103	213/215TC
25.0	1.8	17402	69.69	30978	4946	CH103	132S4	PH103	213/215TC
22.0	1.6	19931	79.82	30978	4946	CH103	132S4	PH103	213/215TC
21.0	1.5	21015	84.16	30978	4946	CH103	132S4	PH103	213/215TC
19.0	1.3	23314	93.36	30978	4946	CH103	132S4	PH103	213/215TC
17.0	1.2	24988	100.07	30978	4946	CH103	132S4	PH103	213/215TC
14.0	1.0	30175	120.84	30978	4946	CH103	132S4	PH103	213/215TC
40.0	3.9	11247	44.10	44254	6744	CH122	132S4	PH122	213/215TC
38.0	3.9	11430	45.77	44254	6744	CH123	132S4	PH123	213/215TC
31.0	3.2	13951	55.87	44254	6744	CH123	132S4	PH123	213/215TC
26.0	2.6	16812	67.32	44254	6744	CH123	132S4	PH123	213/215TC
24.0	2.4	18407	73.71	44254	6744	CH123	132S4	PH123	213/215TC
21.0	2.1	20810	83.34	44254	6744	CH123	132S4	PH123	213/215TC
19.0	2.0	22466	89.97	44254	6744	CH123	132S4	PH123	213/215TC
17.0	1.8	25042	100.29	44254	6744	CH123	132S4	PH123	213/215TC
16.0	1.6	27054	108.34	44254	6744	CH123	132S4	PH123	213/215TC
15.0	1.5	29621	118.62	44254	6744	CH123	132S4	PH123	213/215TC
14.0	1.4	32007	128.18	44254	6744	CH123	132S4	PH123	213/215TC
12.0	1.2	36154	144.79	44254	6744	CH123	132S4	PH123	213/215TC
11.0	1.1	38760	155.22	44254	6744	CH123	132S4	PH123	213/215TC
10.0	1.0	43150	172.80	44254	6744	CH123	132S4	PH123	213/215TC
25.0	4.0	17817	71.35	70806	12364	CH143	132S4	PH143	213/215TC
22.0	3.6	19746	79.07	70806	12364	CH143	132S4	PH143	213/215TC
20.0	3.3	21583	86.43	70806	12364	CH143	132S4	PH143	213/215TC
18.0	2.9	24024	96.21	70806	12364	CH143	132S4	PH143	213/215TC

7.5 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
17.0	2.7	26097	104.51	70806	12364	CH143	132S4	PH143	213/215TC
15.0	2.4	28946	115.92	70806	12364	CH143	132S4	PH143	213/215TC
14.0	2.2	32079	128.47	70806	12364	CH143	132S4	PH143	213/215TC
13.0	2.0	34848	139.55	70806	12364	CH143	132S4	PH143	213/215TC
11.0	1.8	38538	154.33	70806	12364	CH143	132S4	PH143	213/215TC
9.4	1.5	46435	185.96	70806	12364	CH143	132S4	PH143	213/215TC
8.5	1.4	51460	206.08	70806	12364	CH143	132S4	PH143	213/215TC

10 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
326.0	2.4	1869	5.38	4425	1953	CH062	132MA4	PH062	213/215TC
295.0	2.4	2064	5.93	4868	1999	CH062	132MA4	PH062	213/215TC
237.0	1.9	2570	7.39	4868	2099	CH062	132MA4	PH062	213/215TC
206.0	1.8	2956	8.50	5310	2161	CH062	132MA4	PH062	213/215TC
186.0	1.6	3264	9.39	5310	2202	CH062	132MA4	PH062	213/215TC
150.0	1.4	4064	11.69	5753	2287	CH062	132MA4	PH062	213/215TC
138.0	1.4	4405	12.67	6196	2316	CH062	132MA4	PH062	213/215TC
119.0	1.2	5129	14.75	6196	2363	CH062	132MA4	PH062	213/215TC
107.0	1.3	5664	16.29	7081	2389	CH062	132MA4	PH062	213/215TC
99.0	1.2	6144	17.67	7346	2406	CH062	132MA4	PH062	213/215TC
86.0	1.1	7053	20.28	7523	2428	CH062	132MA4	PH062	213/215TC
1349.0	3.9	456	1.30	1770	605	CH081	132MA4	PH081	213/215TC
1225.0	3.9	502	1.43	1947	622	CH081	132MA4	PH081	213/215TC
906.0	3.0	679	1.93	2036	675	CH081	132MA4	PH081	213/215TC
689.0	2.8	893	2.54	2478	724	CH081	132MA4	PH081	213/215TC
538.0	2.4	1142	3.25	2744	768	CH081	132MA4	PH081	213/215TC
470.0	2.1	1308	3.72	2744	792	CH081	132MA4	PH081	213/215TC
438.0	2.0	1406	4.00	2832	805	CH081	132MA4	PH081	213/215TC
375.0	1.7	1640	4.67	2832	831	CH081	132MA4	PH081	213/215TC
316.0	1.5	1946	5.54	2921	858	CH081	132MA4	PH081	213/215TC
288.0	1.4	2138	6.08	3009	872	CH081	132MA4	PH081	213/215TC
233.0	1.2	2635	7.50	3098	899	CH081	132MA4	PH081	213/215TC
207.0	1.0	2967	8.44	3098	899	CH081	132MA4	PH081	213/215TC
325.0	3.3	1874	5.39	6196	2486	CH082	132MA4	PH082	213/215TC
294.0	3.0	2068	5.95	6196	2554	CH082	132MA4	PH082	213/215TC
237.0	2.8	2572	7.39	7081	2706	CH082	132MA4	PH082	213/215TC
218.0	2.5	2789	8.02	7081	2763	CH082	132MA4	PH082	213/215TC
198.0	2.6	3078	8.85	7966	2833	CH082	132MA4	PH082	213/215TC
159.0	2.5	3828	11.01	9736	2986	CH082	132MA4	PH082	213/215TC
130.0	2.6	4695	13.50	12391	3127	CH082	132MA4	PH082	213/215TC



## 10 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
117.0	2.6	5180	14.90	13276	3193	CH082	132MA4	PH082	213/215TC
105.0	2.3	5778	16.62	13276	3264	CH082	132MA4	PH082	213/215TC
94.0	2.1	6442	18.53	13276	3333	CH082	132MA4	PH082	213/215TC
90.0	2.1	6741	19.38	14161	3360	CH082	132MA4	PH082	213/215TC
82.0	1.9	7438	21.39	14161	3417	CH082	132MA4	PH082	213/215TC
77.0	1.8	7929	22.80	14161	3452	CH082	132MA4	PH082	213/215TC
66.0	1.5	9250	26.60	14161	3530	CH082	132MA4	PH082	213/215TC
63.0	1.5	9696	27.88	14161	3551	CH082	132MA4	PH082	213/215TC
56.0	1.3	10834	31.15	14161	3595	CH082	132MA4	PH082	213/215TC
51.0	1.2	11954	34.38	14161	3626	CH082	132MA4	PH082	213/215TC
45.0	1.1	13460	38.70	14161	3654	CH082	132MA4	PH082	213/215TC
414.0	3.6	1484	4.22	5399	1095	CH101	132MA4	PH101	213/215TC
359.0	3.2	1713	4.88	5487	1124	CH101	132MA4	PH101	213/215TC
332.0	3.0	1851	5.27	5487	1124	CH101	132MA4	PH101	213/215TC
281.0	2.6	2189	6.23	5664	1124	CH101	132MA4	PH101	213/215TC
232.0	2.2	2651	7.55	5753	1124	CH101	132MA4	PH101	213/215TC
208.0	1.9	2952	8.40	5753	1124	CH101	132MA4	PH101	213/215TC
82.0	3.8	7457	21.44	28322	4946	CH102	132MA4	PH102	213/215TC
73.0	3.5	8335	23.97	29207	4946	CH102	132MA4	PH102	213/215TC
68.0	3.2	9005	25.89	29207	4946	CH102	132MA4	PH102	213/215TC
61.0	2.9	9990	28.73	29207	4946	CH102	132MA4	PH102	213/215TC
57.0	2.7	10683	30.72	28322	4946	CH102	132MA4	PH102	213/215TC
51.0	2.4	11893	34.20	28322	4946	CH102	132MA4	PH102	213/215TC
46.0	1.9	13372	38.45	24782	4946	CH102	132MA4	PH102	213/215TC
42.0	2.0	14362	41.30	29207	4946	CH102	132MA4	PH102	213/215TC
38.0	1.8	15934	45.82	29207	4946	CH102	132MA4	PH102	213/215TC
34.0	1.6	17915	51.52	29207	4946	CH102	132MA4	PH102	213/215TC
32.0	1.6	18889	55.47	30978	4946	CH103	132MA4	PH103	213/215TC
25.0	1.3	23730	69.69	30978	4946	CH103	132MA4	PH103	213/215TC
22.0	1.1	27178	79.82	30978	4946	CH103	132MA4	PH103	213/215TC
21.0	1.1	28657	84.16	30978	4946	CH103	132MA4	PH103	213/215TC
280.0	3.6	2196	6.25	7966	1349	CH121	132MA4	PH121	213/215TC
227.0	3.3	2706	7.70	8851	1349	CH121	132MA4	PH121	213/215TC
53.0	3.9	11476	33.00	44254	6744	CH122	132MA4	PH122	213/215TC
48.0	3.5	12565	36.13	44254	6744	CH122	132MA4	PH122	213/215TC
40.0	2.9	15336	44.10	44254	6744	CH122	132MA4	PH122	213/215TC
38.0	2.8	15586	45.77	44254	6744	CH123	132MA4	PH123	213/215TC
31.0	2.3	19024	55.87	44254	6744	CH123	132MA4	PH123	213/215TC
26.0	1.9	22925	67.32	44254	6744	CH123	132MA4	PH123	213/215TC
24.0	1.8	25100	73.71	44254	6744	CH123	132MA4	PH123	213/215TC
21.0	1.6	28377	83.34	44254	6744	CH123	132MA4	PH123	213/215TC

## 10 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
19.0	1.4	30636	89.97	44254	6744	CH123	132MA4	PH123	213/215TC
17.0	1.3	34149	100.29	44254	6744	CH123	132MA4	PH123	213/215TC
16.0	1.2	36892	108.34	44254	6744	CH123	132MA4	PH123	213/215TC
15.0	1.1	40392	118.62	44254	6744	CH123	132MA4	PH123	213/215TC
14.0	1.0	43646	128.18	44254	6744	CH123	132MA4	PH123	213/215TC
33.0	3.9	18227	53.53	70806	12364	CH143	132MA4	PH143	213/215TC
30.0	3.5	20164	59.22	70806	12364	CH143	132MA4	PH143	213/215TC
28.0	3.3	21450	62.99	70806	12364	CH143	132MA4	PH143	213/215TC
25.0	2.9	24296	71.35	70806	12364	CH143	132MA4	PH143	213/215TC
22.0	2.6	26926	79.07	70806	12364	CH143	132MA4	PH143	213/215TC
20.0	2.4	29431	86.43	70806	12364	CH143	132MA4	PH143	213/215TC
18.0	2.2	32759	96.21	70806	12364	CH143	132MA4	PH143	213/215TC
17.0	2.0	35587	104.51	70806	12364	CH143	132MA4	PH143	213/215TC
15.0	1.8	39472	115.92	70806	12364	CH143	132MA4	PH143	213/215TC
14.0	1.6	43744	128.47	70806	12364	CH143	132MA4	PH143	213/215TC
13.0	1.5	47520	139.55	70806	12364	CH143	132MA4	PH143	213/215TC
11.0	1.3	52551	154.33	70806	12364	CH143	132MA4	PH143	213/215TC
9.4	1.1	63320	185.96	70806	12364	CH143	132MA4	PH143	213/215TC
8.5	1.0	70173	206.08	70806	12364	CH143	132MA4	PH143	213/215TC

## 15 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
326.0	1.6	2741	5.38	4425	1824	CH062	132MC4	-	-
295.0	1.6	3027	5.93	4868	1857	CH062	132MC4	-	-
237.0	1.3	3770	7.39	4868	1922	CH062	132MC4	-	-
206.0	1.2	4335	8.50	5310	1956	CH062	132MC4	-	-
186.0	1.1	4787	9.39	5310	1977	CH062	132MC4	-	-
1349.0	2.6	669	1.30	1770	583	CH081	132MC4	-	-
1225.0	2.6	736	1.43	1947	598	CH081	132MC4	-	-
906.0	2.0	995	1.93	2036	642	CH081	132MC4	-	-
689.0	1.9	1310	2.54	2478	681	CH081	132MC4	-	-
538.0	1.6	1675	3.25	2744	714	CH081	132MC4	-	-
470.0	1.4	1918	3.72	2744	729	CH081	132MC4	-	-
438.0	1.4	2061	4.00	2832	737	CH081	132MC4	-	-
375.0	1.2	2405	4.67	2832	752	CH081	132MC4	-	-
316.0	1.0	2854	5.54	2921	765	CH081	132MC4	-	-
325.0	2.3	2749	5.39	6196	2385	CH082	132MC4	PH082	254/256TC
294.0	2.0	3033	5.95	6196	2442	CH082	132MC4	PH082	254/256TC
237.0	1.9	3772	7.39	7081	2567	CH082	132MC4	PH082	254/256TC
218.0	1.7	4091	8.02	7081	2612	CH082	132MC4	PH082	254/256TC

15 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
198.0	1.8	4514	8.85	7966	2666	CH082	132MC4	PH082	254/256TC
159.0	1.7	5614	11.01	9736	2779	CH082	132MC4	PH082	254/256TC
130.0	1.8	6886	13.50	12391	2873	CH082	132MC4	PH082	254/256TC
117.0	1.7	7598	14.90	13276	2912	CH082	132MC4	PH082	254/256TC
105.0	1.6	8475	16.62	13276	2951	CH082	132MC4	PH082	254/256TC
94.0	1.4	9449	18.53	13276	2983	CH082	132MC4	PH082	254/256TC
90.0	1.4	9887	19.38	14161	2995	CH082	132MC4	PH082	254/256TC
82.0	1.3	10909	21.39	14161	3014	CH082	132MC4	PH082	254/256TC
77.0	1.2	11629	22.80	14161	3023	CH082	132MC4	PH082	254/256TC
66.0	1.0	13567	26.60	14161	3028	CH082	132MC4	PH082	254/256TC
861.0	3.8	1047	2.03	3983	866	CH101	132MC4	PH101	254/256TC
705.0	3.8	1279	2.48	4868	915	CH101	132MC4	PH101	254/256TC
535.0	3.1	1687	3.27	5310	985	CH101	132MC4	PH101	254/256TC
473.0	2.8	1907	3.70	5310	1016	CH101	132MC4	PH101	254/256TC
414.0	2.5	2176	4.22	5399	1050	CH101	132MC4	PH101	254/256TC
359.0	2.2	2512	4.88	5487	1087	CH101	132MC4	PH101	254/256TC
332.0	2.0	2714	5.27	5487	1106	CH101	132MC4	PH101	254/256TC
281.0	1.8	3211	6.23	5664	1124	CH101	132MC4	PH101	254/256TC
232.0	1.5	3889	7.55	5753	1124	CH101	132MC4	PH101	254/256TC
208.0	1.3	4329	8.40	5753	1124	CH101	132MC4	PH101	254/256TC
109.0	3.5	8207	16.09	28322	4420	CH102	132MC4	PH102	254/256TC
98.0	3.1	9105	17.85	28322	4517	CH102	132MC4	PH102	254/256TC
88.0	2.8	10123	19.85	28322	4613	CH102	132MC4	PH102	254/256TC
82.0	2.6	10937	21.44	28322	4681	CH102	132MC4	PH102	254/256TC
73.0	2.4	12225	23.97	29207	4773	CH102	132MC4	PH102	254/256TC
68.0	2.2	13207	25.89	29207	4834	CH102	132MC4	PH102	254/256TC
61.0	2.0	14652	28.73	29207	4910	CH102	132MC4	PH102	254/256TC
57.0	1.8	15669	30.72	28322	4946	CH102	132MC4	PH102	254/256TC
51.0	1.6	17444	34.20	28322	4946	CH102	132MC4	PH102	254/256TC
46.0	1.3	19612	38.45	24782	4946	CH102	132MC4	PH102	254/256TC
42.0	1.4	21065	41.30	29207	4946	CH102	132MC4	PH102	254/256TC
38.0	1.2	23369	45.82	29207	4946	CH102	132MC4	PH102	254/256TC
34.0	1.1	26275	51.52	29207	4946	CH102	132MC4	PH102	254/256TC
32.0	1.1	27704	55.47	30978	4946	CH103	132MC4	PH103	254/256TC
425.0	3.5	2122	4.12	7523	1349	CH121	132MC4	PH121	254/256TC
365.0	3.1	2474	4.80	7700	1349	CH121	132MC4	PH121	254/256TC
336.0	2.9	2687	5.21	7789	1349	CH121	132MC4	PH121	254/256TC
280.0	2.5	3221	6.25	7966	1349	CH121	132MC4	PH121	254/256TC
227.0	2.2	3968	7.70	8851	1349	CH121	132MC4	PH121	254/256TC
78.0	3.9	11488	22.52	44254	6744	CH122	132MC4	PH122	254/256TC
72.0	3.5	12479	24.47	44254	6744	CH122	132MC4	PH122	254/256TC

## 15 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
64.0	3.2	14022	27.49	44254	6744	CH122	132MC4	PH122	254/256TC
59.0	2.9	15232	29.86	44254	6744	CH122	132MC4	PH122	254/256TC
53.0	2.6	16832	33.00	44254	6744	CH122	132MC4	PH122	254/256TC
48.0	2.4	18428	36.13	44254	6744	CH122	132MC4	PH122	254/256TC
40.0	2.0	22493	44.10	44254	6744	CH122	132MC4	PH122	254/256TC
38.0	1.9	22860	45.77	44254	6744	CH123	132MC4	PH123	254/256TC
31.0	1.6	27902	55.87	44254	6744	CH123	132MC4	PH123	254/256TC
26.0	1.3	33623	67.32	44254	6744	CH123	132MC4	PH123	254/256TC
24.0	1.2	36813	73.71	44254	6744	CH123	132MC4	PH123	254/256TC
21.0	1.1	41619	83.34	44254	6744	CH123	132MC4	PH123	254/256TC
45.0	3.6	19815	38.85	70806	11826	-	-	PH142	254/256TC
41.0	3.2	21960	43.05	70806	12128	-	-	PH142	254/256TC
36.0	2.9	24146	48.35	70806	12364	-	-	PH143	254/256TC
33.0	2.6	26733	53.53	70806	12364	CH143	132MC4	PH143	254/256TC
30.0	2.4	29574	59.22	70806	12364	CH143	132MC4	PH143	254/256TC
28.0	2.3	31459	62.99	70806	12364	CH143	132MC4	PH143	254/256TC
25.0	2.0	35635	71.35	70806	12364	CH143	132MC4	PH143	254/256TC
22.0	1.8	39491	79.07	70806	12364	CH143	132MC4	PH143	254/256TC
20.0	1.6	43166	86.43	70806	12364	CH143	132MC4	PH143	254/256TC
18.0	1.5	48047	96.21	70806	12364	CH143	132MC4	PH143	254/256TC
17.0	1.4	52194	104.51	70806	12364	CH143	132MC4	PH143	254/256TC
15.0	1.2	57893	115.92	70806	12364	CH143	132MC4	PH143	254/256TC
14.0	1.1	64158	128.47	70806	12364	CH143	132MC4	PH143	254/256TC
13.0	1.0	69696	139.55	70806	12364	CH143	132MC4	PH143	254/256TC

## 20 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
325.0	1.7	3748	5.39	6196	2269	-	-	PH082	254/256TC
294.0	1.5	4136	5.95	6196	2314	-	-	PH082	254/256TC
237.0	1.4	5143	7.39	7081	2407	-	-	PH082	254/256TC
218.0	1.3	5579	8.02	7081	2439	-	-	PH082	254/256TC
198.0	1.3	6156	8.85	7966	2475	-	-	PH082	254/256TC
159.0	1.3	7655	11.01	9736	2542	-	-	PH082	254/256TC
130.0	1.3	9389	13.50	12391	2582	-	-	PH082	254/256TC
117.0	1.3	10360	14.90	13276	2591	-	-	PH082	254/256TC
105.0	1.1	11556	16.62	13276	2593	-	-	PH082	254/256TC
94.0	1.0	12884	18.53	13276	2584	-	-	PH082	254/256TC
90.0	1.1	13482	19.38	14161	2577	-	-	PH082	254/256TC
1354.0	3.9	908	1.29	3540	744	-	-	PH101	254/256TC
861.0	2.8	1428	2.03	3983	841	-	-	PH101	254/256TC

## 20 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
705.0	2.8	1744	2.48	4868	885	-	-	PH101	254/256TC
535.0	2.3	2300	3.27	5310	945	-	-	PH101	254/256TC
473.0	2.0	2600	3.70	5310	971	-	-	PH101	254/256TC
414.0	1.8	2967	4.22	5399	999	-	-	PH101	254/256TC
359.0	1.6	3426	4.88	5487	1028	-	-	PH101	254/256TC
332.0	1.5	3701	5.27	5487	1042	-	-	PH101	254/256TC
281.0	1.3	4379	6.23	5664	1072	-	-	PH101	254/256TC
232.0	1.1	5303	7.55	5753	1102	-	-	PH101	254/256TC
212.0	3.8	5755	8.27	22127	3620	-	-	PH102	254/256TC
175.0	3.6	6950	9.99	24782	3776	-	-	PH102	254/256TC
158.0	3.4	7710	11.09	26552	3859	-	-	PH102	254/256TC
131.0	3.0	9268	13.32	27437	4001	-	-	PH102	254/256TC
109.0	2.5	11191	16.09	28322	4133	-	-	PH102	254/256TC
98.0	2.3	12416	17.85	28322	4198	-	-	PH102	254/256TC
88.0	2.1	13805	19.85	28322	4259	-	-	PH102	254/256TC
82.0	1.9	14914	21.44	28322	4298	-	-	PH102	254/256TC
73.0	1.8	16671	23.97	29207	4345	-	-	PH102	254/256TC
68.0	1.6	18010	25.89	29207	4372	-	-	PH102	254/256TC
61.0	1.5	19980	28.73	29207	4397	-	-	PH102	254/256TC
57.0	1.3	21367	30.72	28322	4406	-	-	PH102	254/256TC
51.0	1.2	23787	34.20	28322	4409	-	-	PH102	254/256TC
42.0	1.0	28725	41.30	29207	4368	-	-	PH102	254/256TC
592.0	3.4	2076	2.95	7081	1233	-	-	PH121	254/256TC
557.0	3.3	2209	3.14	7258	1254	-	-	PH121	254/256TC
489.0	3.0	2515	3.58	7523	1297	-	-	PH121	254/256TC
425.0	2.6	2894	4.12	7523	1344	-	-	PH121	254/256TC
365.0	2.3	3373	4.80	7700	1349	-	-	PH121	254/256TC
336.0	2.1	3664	5.21	7789	1349	-	-	PH121	254/256TC
280.0	1.8	4392	6.25	7966	1349	-	-	PH121	254/256TC
227.0	1.6	5411	7.70	8851	1349	-	-	PH121	254/256TC
103.0	3.6	11769	16.92	42484	6648	-	-	PH122	254/256TC
91.0	3.3	13438	19.32	44254	6744	-	-	PH122	254/256TC
85.0	3.1	14308	20.57	44254	6744	-	-	PH122	254/256TC
78.0	2.8	15665	22.52	44254	6744	-	-	PH122	254/256TC
72.0	2.6	17017	24.47	44254	6744	-	-	PH122	254/256TC
64.0	2.3	19120	27.49	44254	6744	-	-	PH122	254/256TC
59.0	2.1	20771	29.86	44254	6744	-	-	PH122	254/256TC
53.0	1.9	22952	33.00	44254	6744	-	-	PH122	254/256TC
48.0	1.8	25130	36.13	44254	6744	-	-	PH122	254/256TC
40.0	1.4	30672	44.10	44254	6744	-	-	PH122	254/256TC
38.0	1.4	31172	45.77	44254	6744	-	-	PH123	254/256TC

## 20 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
31.0	1.2	38048	55.87	44254	6744	-	-	PH123	254/256TC
65.0	3.8	18615	26.76	70806	10360	-	-	PH142	254/256TC
54.0	3.2	22425	32.24	70806	10825	-	-	PH142	254/256TC
45.0	2.6	27021	38.85	70806	11279	-	-	PH142	254/256TC
41.0	2.4	29945	43.05	70806	11521	-	-	PH142	254/256TC
36.0	2.2	32926	48.35	70806	11838	-	-	PH143	254/256TC
33.0	1.9	36454	53.53	70806	12065	-	-	PH143	254/256TC
30.0	1.8	40329	59.22	70806	12279	-	-	PH143	254/256TC
28.0	1.7	42899	62.99	70806	12364	-	-	PH143	254/256TC
25.0	1.5	48593	71.35	70806	12364	-	-	PH143	254/256TC
22.0	1.3	53852	79.07	70806	12364	-	-	PH143	254/256TC
20.0	1.2	58862	86.43	70806	12364	-	-	PH143	254/256TC
18.0	1.1	65519	96.21	70806	12364	-	-	PH143	254/256TC

## 25 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
333.0	3.5	4515	5.26	15931	3155	-	-	PH102	284/286TC
275.0	3.2	5452	6.36	17701	3298	-	-	PH102	284/286TC
248.0	3.4	6048	7.05	20357	3375	-	-	PH102	284/286TC
212.0	3.1	7098	8.27	22127	3491	-	-	PH102	284/286TC
175.0	2.9	8571	9.99	24782	3620	-	-	PH102	284/286TC
158.0	2.8	9509	11.09	26552	3686	-	-	PH102	284/286TC
131.0	2.4	11430	13.32	27437	3792	-	-	PH102	284/286TC
109.0	2.1	13803	16.09	28322	3881	-	-	PH102	284/286TC
98.0	1.8	15313	17.85	28322	3919	-	-	PH102	284/286TC
88.0	1.7	17026	19.85	28322	3949	-	-	PH102	284/286TC
82.0	1.5	18394	21.44	28322	3963	-	-	PH102	284/286TC
73.0	1.4	20560	23.97	29207	3971	-	-	PH102	284/286TC
68.0	1.3	22212	25.89	29207	3967	-	-	PH102	284/286TC
61.0	1.2	24642	28.73	29207	3948	-	-	PH102	284/286TC
57.0	1.1	26352	30.72	28322	3926	-	-	PH102	284/286TC
969.0	4.0	1566	1.81	6196	1058	-	-	PH121	284/286TC
875.0	3.8	1733	2.00	6638	1088	-	-	PH121	284/286TC
706.0	3.3	2150	2.48	7081	1152	-	-	PH121	284/286TC
592.0	2.8	2561	2.95	7081	1205	-	-	PH121	284/286TC
557.0	2.7	2724	3.14	7258	1224	-	-	PH121	284/286TC
489.0	2.4	3102	3.58	7523	1263	-	-	PH121	284/286TC
425.0	2.1	3569	4.12	7523	1305	-	-	PH121	284/286TC
365.0	1.9	4160	4.80	7700	1349	-	-	PH121	284/286TC
336.0	1.7	4519	5.21	7789	1349	-	-	PH121	284/286TC

## 25 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
280.0	1.5	5417	6.25	7966	1349	-	-	PH121	284/286TC
227.0	1.3	6674	7.70	8851	1349	-	-	PH121	284/286TC
169.0	4.0	8875	10.35	35403	5734	-	-	PH122	284/286TC
138.0	3.6	10862	12.66	38943	6021	-	-	PH122	284/286TC
126.0	3.4	11892	13.86	40713	6149	-	-	PH122	284/286TC
103.0	2.9	14515	16.92	42484	6424	-	-	PH122	284/286TC
91.0	2.7	16574	19.32	44254	6599	-	-	PH122	284/286TC
85.0	2.5	17646	20.57	44254	6680	-	-	PH122	284/286TC
78.0	2.3	19320	22.52	44254	6744	-	-	PH122	284/286TC
72.0	2.1	20988	24.47	44254	6744	-	-	PH122	284/286TC
64.0	1.9	23582	27.49	44254	6744	-	-	PH122	284/286TC
59.0	1.7	25617	29.86	44254	6744	-	-	PH122	284/286TC
53.0	1.6	28308	33.00	44254	6744	-	-	PH122	284/286TC
48.0	1.4	30993	36.13	44254	6744	-	-	PH122	284/286TC
40.0	1.2	37829	44.10	44254	6744	-	-	PH122	284/286TC
38.0	1.2	38446	45.77	44254	6744	-	-	PH123	284/286TC
72.0	3.4	20716	24.15	70806	9804	-	-	PH142	284/286TC
65.0	3.1	22958	26.76	70806	10030	-	-	PH142	284/286TC
54.0	2.6	27658	32.24	70806	10427	-	-	PH142	284/286TC
45.0	2.1	33326	38.85	70806	10800	-	-	PH142	284/286TC
41.0	1.9	36932	43.05	70806	10990	-	-	PH142	284/286TC
36.0	1.7	40608	48.35	70806	11255	-	-	PH143	284/286TC
33.0	1.6	44959	53.53	70806	11419	-	-	PH143	284/286TC
30.0	1.4	49739	59.22	70806	11564	-	-	PH143	284/286TC
28.0	1.3	52909	62.99	70806	11642	-	-	PH143	284/286TC
25.0	1.2	59931	71.35	70806	11773	-	-	PH143	284/286TC
22.0	1.1	66417	79.07	70806	11849	-	-	PH143	284/286TC

## 30 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
333.0	3.0	5369	5.26	15931	3073	-	-	PH102	284/286TC
275.0	2.7	6483	6.36	17701	3199	-	-	PH102	284/286TC
248.0	2.8	7193	7.05	20357	3265	-	-	PH102	284/286TC
212.0	2.6	8440	8.27	22127	3362	-	-	PH102	284/286TC
175.0	2.4	10193	9.99	24782	3464	-	-	PH102	284/286TC
158.0	2.3	11308	11.09	26552	3513	-	-	PH102	284/286TC
131.0	2.0	13592	13.32	27437	3584	-	-	PH102	284/286TC
109.0	1.7	16414	16.09	28322	3630	-	-	PH102	284/286TC
98.0	1.6	18210	17.85	28322	3640	-	-	PH102	284/286TC
88.0	1.4	20247	19.85	28322	3638	-	-	PH102	284/286TC

## 30 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
82.0	1.3	21874	21.44	28322	3628	-	-	PH102	284/286TC
73.0	1.2	24450	23.97	29207	3596	-	-	PH102	284/286TC
68.0	1.1	26415	25.89	29207	3562	-	-	PH102	284/286TC
969.0	3.3	1862	1.81	6196	1041	-	-	PH121	284/286TC
875.0	3.2	2061	2.00	6638	1069	-	-	PH121	284/286TC
706.0	2.8	2556	2.48	7081	1129	-	-	PH121	284/286TC
592.0	2.3	3045	2.95	7081	1177	-	-	PH121	284/286TC
557.0	2.2	3239	3.14	7258	1194	-	-	PH121	284/286TC
489.0	2.0	3689	3.58	7523	1229	-	-	PH121	284/286TC
425.0	1.8	4244	4.12	7523	1266	-	-	PH121	284/286TC
365.0	1.6	4947	4.80	7700	1304	-	-	PH121	284/286TC
336.0	1.4	5374	5.21	7789	1324	-	-	PH121	284/286TC
280.0	1.2	6442	6.25	7966	1349	-	-	PH121	284/286TC
227.0	1.1	7937	7.70	8851	1349	-	-	PH121	284/286TC
206.0	3.9	8647	8.48	33633	5337	-	-	PH122	284/286TC
169.0	3.4	10554	10.35	35403	5597	-	-	PH122	284/286TC
138.0	3.0	12917	12.66	38943	5853	-	-	PH122	284/286TC
126.0	2.9	14142	13.86	40713	5965	-	-	PH122	284/286TC
103.0	2.5	17261	16.92	42484	6199	-	-	PH122	284/286TC
91.0	2.2	19709	19.32	44254	6343	-	-	PH122	284/286TC
85.0	2.1	20985	20.57	44254	6407	-	-	PH122	284/286TC
78.0	1.9	22976	22.52	44254	6493	-	-	PH122	284/286TC
72.0	1.8	24959	24.47	44254	6565	-	-	PH122	284/286TC
64.0	1.6	28043	27.49	44254	6653	-	-	PH122	284/286TC
59.0	1.5	30464	29.86	44254	6706	-	-	PH122	284/286TC
53.0	1.3	33663	33.00	44254	6744	-	-	PH122	284/286TC
48.0	1.2	36857	36.13	44254	6744	-	-	PH122	284/286TC
100.0	3.9	17805	17.45	69921	8858	-	-	PH142	284/286TC
87.0	3.5	20446	20.04	70806	9139	-	-	PH142	284/286TC
72.0	2.9	24635	24.15	70806	9506	-	-	PH142	284/286TC
65.0	2.6	27301	26.76	70806	9700	-	-	PH142	284/286TC
54.0	2.2	32891	32.24	70806	10030	-	-	PH142	284/286TC
45.0	1.8	39631	38.85	70806	10321	-	-	PH142	284/286TC
41.0	1.6	43920	43.05	70806	10459	-	-	PH142	284/286TC
36.0	1.5	48291	48.35	70806	10671	-	-	PH143	284/286TC
33.0	1.3	53465	53.53	70806	10773	-	-	PH143	284/286TC
30.0	1.2	59149	59.22	70806	10849	-	-	PH143	284/286TC
28.0	1.1	62919	62.99	70806	10882	-	-	PH143	284/286TC



## 40 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
332.0	3.6	7337	5.27	26552	4560	-	-	PH122	324/326TC
303.0	3.5	8033	5.78	28322	4662	-	-	PH122	324/326TC
248.0	3.2	9805	7.05	31863	4882	-	-	PH122	324/326TC
226.0	3.0	10769	7.74	32748	4984	-	-	PH122	324/326TC
206.0	2.9	11791	8.48	33633	5080	-	-	PH122	324/326TC
169.0	2.5	14392	10.35	35403	5283	-	-	PH122	324/326TC
138.0	2.2	17614	12.66	38943	5469	-	-	PH122	324/326TC
126.0	2.1	19285	13.86	40713	5544	-	-	PH122	324/326TC
103.0	1.8	23538	16.92	42484	5686	-	-	PH122	324/326TC
91.0	1.6	26877	19.32	44254	5757	-	-	PH122	324/326TC
85.0	1.5	28616	20.57	44254	5782	-	-	PH122	324/326TC
78.0	1.4	31330	22.52	44254	5809	-	-	PH122	324/326TC
64.0	1.2	38241	27.49	44254	5819	-	-	PH122	324/326TC
134.0	3.6	18183	13.07	64610	7891	-	-	PH142	324/326TC
111.0	3.2	21909	15.75	69036	8202	-	-	PH142	324/326TC
100.0	2.9	24280	17.45	69921	8366	-	-	PH142	324/326TC
87.0	2.5	27880	20.04	70806	8574	-	-	PH142	324/326TC
72.0	2.1	33593	24.15	70806	8826	-	-	PH142	324/326TC
65.0	1.9	37229	26.76	70806	8946	-	-	PH142	324/326TC
54.0	1.6	44851	32.24	70806	9121	-	-	PH142	324/326TC
45.0	1.3	54042	38.85	70806	9226	-	-	PH142	324/326TC
41.0	1.2	59890	43.05	70806	9246	-	-	PH142	324/326TC
36.0	1.1	65852	48.35	70806	9336	-	-	PH143	324/326TC

## 50 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
332.0	2.9	9049	5.27	26552	4420	-	-	PH122	324/326TC
303.0	2.9	9908	5.78	28322	4508	-	-	PH122	324/326TC
248.0	2.6	12093	7.05	31863	4695	-	-	PH122	324/326TC
226.0	2.5	13282	7.74	32748	4778	-	-	PH122	324/326TC
206.0	2.3	14542	8.48	33633	4855	-	-	PH122	324/326TC
169.0	2.0	17750	10.35	35403	5008	-	-	PH122	324/326TC
138.0	1.8	21724	12.66	38943	5133	-	-	PH122	324/326TC
126.0	1.7	23785	13.86	40713	5176	-	-	PH122	324/326TC
103.0	1.5	29031	16.92	42484	5236	-	-	PH122	324/326TC
91.0	1.3	33148	19.32	44254	5243	-	-	PH122	324/326TC
85.0	1.3	35293	20.57	44254	5236	-	-	PH122	324/326TC
78.0	1.1	38641	22.52	44254	5211	-	-	PH122	324/326TC
275.0	4.0	10903	6.36	43369	6463	-	-	PH142	324/326TC
248.0	3.7	12083	7.04	44254	6627	-	-	PH142	324/326TC

## 50 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
223.0	3.5	13455	7.84	46909	6799	-	-	PH142	324/326TC
185.0	3.5	16212	9.45	57530	7090	-	-	PH142	324/326TC
167.0	3.5	17967	10.47	63725	7247	-	-	PH142	324/326TC
134.0	2.9	22425	13.07	64610	7569	-	-	PH142	324/326TC
111.0	2.6	27021	15.75	69036	7814	-	-	PH142	324/326TC
100.0	2.3	29945	17.45	69921	7936	-	-	PH142	324/326TC
87.0	2.1	34386	20.04	70806	8080	-	-	PH142	324/326TC
72.0	1.7	41432	24.15	70806	8230	-	-	PH142	324/326TC
65.0	1.5	45916	26.76	70806	8286	-	-	PH142	324/326TC
54.0	1.3	55316	32.24	70806	8326	-	-	PH142	324/326TC
45.0	1.1	66651	38.85	70806	8267	-	-	PH142	324/326TC

## 60 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
332.0	3.7	11005	5.27	40713	6016	-	-	PH142	364/365TC
275.0	3.3	13261	6.36	43369	6284	-	-	PH142	364/365TC
248.0	3.0	14696	7.04	44254	6429	-	-	PH142	364/365TC
223.0	2.9	16365	7.84	46909	6577	-	-	PH142	364/365TC
185.0	2.9	19718	9.45	57530	6824	-	-	PH142	364/365TC
167.0	2.9	21852	10.47	63725	6952	-	-	PH142	364/365TC
134.0	2.4	27274	13.07	64610	7200	-	-	PH142	364/365TC
111.0	2.1	32863	15.75	69036	7370	-	-	PH142	364/365TC
100.0	1.9	36420	17.45	69921	7444	-	-	PH142	364/365TC
87.0	1.7	41820	20.04	70806	7515	-	-	PH142	364/365TC
72.0	1.4	50390	24.15	70806	7549	-	-	PH142	364/365TC
65.0	1.3	55844	26.76	70806	7531	-	-	PH142	364/365TC
54.0	1.1	67276	32.24	70806	7417	-	-	PH142	364/365TC

## 75 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
332.0	3.0	13451	5.27	40713	5830	-	-	PH142	364/365TC
275.0	2.7	16207	6.36	43369	6060	-	-	PH142	364/365TC
248.0	2.5	17961	7.04	44254	6181	-	-	PH142	364/365TC
223.0	2.3	20001	7.84	46909	6301	-	-	PH142	364/365TC
185.0	2.4	24100	9.45	57530	6491	-	-	PH142	364/365TC
167.0	2.4	26708	10.47	63725	6583	-	-	PH142	364/365TC
134.0	1.9	33335	13.07	64610	6740	-	-	PH142	364/365TC
111.0	1.7	40166	15.75	69036	6815	-	-	PH142	364/365TC

## 75 HP

Output speed [rpm]	Service factor sf	Output torque [in-lbs]	Exact ratio i	Max. torque [in-lbs]	OHL	Gearmotor		Gear Reducer	
					Output shaft [lbs]	Reducer	Motor	Reducer	NEMA C-input
100.0	1.6	44513	17.45	69921	6829	-	-	PH142	364/365TC
87.0	1.4	51114	20.04	70806	6809	-	-	PH142	364/365TC
72.0	1.1	61588	24.15	70806	6698	-	-	PH142	364/365TC
65.0	1.0	68253	26.76	70806	6588	-	-	PH142	364/365TC

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	373.0	4.70	5.2	609	157	PH032	IH032
929	281.0	6.23	4.3	668	184	PH032	IH032
1106	225.0	7.76	4.1	691	190	PH032	IH032
1151	197.0	8.87	3.8	724	201	PH032	IH032
1239	173.0	10.14	3.5	746	208	PH032	IH032
1283	149.0	11.76	3.2	790	219	PH032	IH032
1505	128.0	13.72	3.2	790	219	PH032	IH032
1505	119.0	14.66	3	819	225	PH032	IH032
1682	104.0	16.77	2.9	828	227	PH032	IH032
1770	96.0	18.20	2.8	839	230	PH032	IH032
1770	88.0	19.90	2.6	878	237	PH032	IH032
1770	77.0	22.68	2.3	939	247	PH032	IH032
1770	73.0	23.83	2.1	964	250	PH032	IH032
1770	66.0	26.39	1.9	1013	256	PH032	IH032
1770	59.0	29.70	1.7	1069	263	PH032	IH032
1770	53.0	32.89	1.6	1125	268	PH032	IH032
1770	46.0	37.92	1.4	1202	274	PH032	IH032
1770	42.0	41.40	1.2	1236	278	PH032	IH032
1770	37.0	47.25	1.1	1236	282	PH032	IH032
1770	33.0	53.59	1	1236	286	PH033	IH033
1770	26.0	66.78	0.8	1236	292	PH033	IH033
1770	23.0	74.84	0.7	1236	295	PH033	IH033
1770	18.0	99.27	0.5	1236	300	PH033	IH033
1770	16.0	108.05	0.5	1236	301	PH033	IH033
1770	14.0	123.71	0.4	1236	303	PH033	IH033
1770	12.0	143.32	0.4	1236	305	PH033	IH033
1770	9.8	178.60	0.3	1236	307	PH033	IH033
1770	8.9	197.17	0.3	1236	308	PH033	IH033
1770	7.1	245.70	0.2	1236	309	PH033	IH033
221	1217.0	1.44	4.4	122	224	PH041	IH041
221	875.0	2.00	3.2	139	248	PH041	IH041
266	688.0	2.55	3	147	251	PH041	IH041
266	645.0	2.71	2.8	151	254	PH041	IH041
354	564.0	3.11	3.3	149	246	PH041	IH041
398	488.0	3.59	3.2	154	247	PH041	IH041
398	417.0	4.20	2.7	164	256	PH041	IH041
398	350.0	5.00	2.3	177	264	PH041	IH041
443	318.0	5.50	2.3	179	264	PH041	IH041
443	287.0	6.09	2.1	187	268	PH041	IH041
443	228.0	7.67	1.7	206	276	PH041	IH041
487	200.0	8.75	1.6	212	278	PH041	IH041
1416	320.0	5.46	7.5	789	98	PH042	IH042
1416	243.0	7.19	5.7	894	151	PH042	IH042

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
1859	196.0	8.91	6	889	141	PH042	IH042
2124	170.0	10.31	6	895	144	PH042	IH042
2213	148.0	11.80	5.4	940	159	PH042	IH042
2213	129.0	13.57	4.7	1006	180	PH042	IH042
2213	110.0	15.96	4	1086	202	PH042	IH042
2213	92.0	19.00	3.4	1182	221	PH042	IH042
2213	83.0	21.00	3	1239	230	PH042	IH042
2301	76.0	23.15	2.9	1272	235	PH042	IH042
2301	67.0	26.04	2.6	1347	245	PH042	IH042
2478	64.0	27.50	2.6	1338	243	PH042	IH042
2478	57.0	30.45	2.4	1411	251	PH042	IH042
2478	51.0	34.10	2.1	1484	258	PH042	IH042
2478	46.0	37.76	1.9	1484	265	PH042	IH042
2478	40.0	43.75	1.6	1484	272	PH042	IH042
2478	37.0	47.53	1.5	1484	276	PH042	IH042
2478	32.0	54.25	1.3	1484	282	PH042	IH042
2655	28.0	61.83	1.3	1484	284	PH043	IH043
2655	23.0	76.67	1	1484	291	PH043	IH043
2655	20.0	87.05	0.9	1484	295	PH043	IH043
2655	15.0	114.55	0.7	1484	301	PH043	IH043
2655	14.0	125.69	0.6	1484	303	PH043	IH043
2655	12.0	142.04	0.6	1484	305	PH043	IH043
2655	11.0	165.38	0.5	1484	307	PH043	IH043
2655	8.5	205.06	0.4	1484	310	PH043	IH043
2655	7.7	227.50	0.3	1484	311	PH043	IH043
2655	6.2	282.10	0.3	1484	313	PH043	IH043
354	1375.0	1.27	8	307	186	PH051	IH051
531	1233.0	1.42	10.7	300	142	PH051	IH051
531	824.0	2.12	7.2	351	199	PH051	IH051
620	681.0	2.57	6.9	369	203	PH051	IH051
708	553.0	3.17	6.4	390	211	PH051	IH051
797	475.0	3.69	6.2	405	214	PH051	IH051
797	438.0	4.00	5.7	418	222	PH051	IH051
841	367.0	4.77	5	444	232	PH051	IH051
885	333.0	5.25	4.8	457	236	PH051	IH051
885	301.0	5.82	4.4	476	243	PH051	IH051
885	239.0	7.33	3.5	522	258	PH051	IH051
885	209.0	8.38	3	550	265	PH051	IH051
2301	306.0	5.73	11.6	975	58	PH052	IH052
2567	254.0	6.89	10.8	1017	77	PH052	IH052
3009	205.0	8.53	10.2	1050	89	PH052	IH052
3275	183.0	9.56	9.9	1065	96	PH052	IH052
3452	152.0	11.51	8.7	1138	123	PH052	IH052

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	123.0	14.24	7.7	1204	144	PH052	IH052
3983	105.0	16.59	6.9	1274	161	PH052	IH052
4071	97.0	18.00	6.5	1311	170	PH052	IH052
4071	88.0	19.97	5.9	1377	184	PH052	IH052
4160	81.0	21.67	5.6	1420	192	PH052	IH052
4160	71.0	24.71	4.9	1516	207	PH052	IH052
4337	67.0	26.18	4.8	1529	209	PH052	IH052
4337	62.0	28.44	4.4	1588	217	PH052	IH052
4337	56.0	31.52	4	1669	227	PH052	IH052
4337	53.0	33.00	3.8	1713	231	PH052	IH052
4337	45.0	38.98	3.2	1798	243	PH052	IH052
4337	39.0	45.36	2.8	1798	253	PH052	IH052
4337	36.0	49.13	2.6	1798	258	PH052	IH052
4337	31.0	56.11	2.2	1798	265	PH052	IH052
4425	30.0	58.81	2.2	1798	266	PH053	IH053
4425	24.0	72.75	1.8	1798	276	PH053	IH053
4425	19.0	90.51	1.4	1798	283	PH053	IH053
4425	16.0	108.95	1.2	1798	289	PH053	IH053
4425	13.0	134.76	1	1798	293	PH053	IH053
4425	11.0	157.29	0.8	1798	296	PH053	IH053
4425	9.0	194.56	0.7	1798	300	PH053	IH053
4425	8.1	216.38	0.6	1798	301	PH053	IH053
4425	6.5	267.65	0.5	1798	304	PH053	IH053
708	1302.0	1.34	15.1	453	471	PH061	IH061
1062	824.0	2.12	14.3	493	481	PH061	IH061
1062	681.0	2.57	11.8	535	514	PH061	IH061
1151	553.0	3.17	10.4	572	532	PH061	IH061
1328	475.0	3.69	10.3	585	534	PH061	IH061
1328	438.0	4.00	9.5	606	544	PH061	IH061
1416	367.0	4.77	8.5	642	557	PH061	IH061
1505	333.0	5.25	8.2	657	561	PH061	IH061
1505	301.0	5.82	7.4	687	572	PH061	IH061
1505	239.0	7.33	5.9	759	592	PH061	IH061
1505	209.0	8.38	5.1	804	601	PH061	IH061
4425	326.0	5.38	23.8	1574	192	PH062	IH062
4868	295.0	5.93	23.7	1584	193	PH062	IH062
4868	237.0	7.39	19	1758	281	PH062	IH062
5310	206.0	8.50	18.1	1812	300	PH062	IH062
5310	186.0	9.39	16.4	1902	332	PH062	IH062
5753	150.0	11.69	14.2	2036	371	PH062	IH062
6196	138.0	12.67	14.1	2052	373	PH062	IH062
6196	119.0	14.75	12.1	2202	411	PH062	IH062
7081	107.0	16.29	12.6	2183	403	PH062	IH062

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
7346	99.0	17.67	12	2229	413	PH062	IH062
7523	86.0	20.28	10.7	2362	437	PH062	IH062
7523	75.0	23.27	9.3	2524	463	PH062	IH062
7523	68.0	25.70	8.5	2645	480	PH062	IH062
7081	60.0	29.33	7	2698	508	PH062	IH062
7523	55.0	32.00	6.8	2698	511	PH062	IH062
7081	47.0	36.99	5.5	2698	535	PH062	IH062
7523	43.0	40.33	5.4	2698	538	PH062	IH062
7523	38.0	46.06	4.7	2698	550	PH062	IH062
7523	35.0	49.45	4.5	2698	556	PH063	IH063
7523	32.0	54.61	4.1	2698	564	PH063	IH063
7523	26.0	68.00	3.3	2698	579	PH063	IH063
7523	20.0	85.82	2.6	2698	591	PH063	IH063
7523	18.0	94.76	2.3	2698	596	PH063	IH063
7523	15.0	118.00	1.9	2698	604	PH063	IH063
7523	13.0	135.40	1.6	2698	609	PH063	IH063
7523	12.0	149.51	1.5	2698	611	PH063	IH063
7523	10.0	170.67	1.3	2698	615	PH063	IH063
7523	9.4	186.18	1.2	2698	617	PH063	IH063
7523	8.1	215.21	1	2698	620	PH063	IH063
7523	7.5	234.67	0.9	2698	621	PH063	IH063
7523	6.5	268.00	0.8	2698	624	PH063	IH063
1770	1349.0	1.30	39.1	470	207	PH081	IH081
1947	1225.0	1.43	39	473	208	PH081	IH081
2036	906.0	1.93	30.2	535	316	PH081	IH081
2478	689.0	2.54	27.9	561	343	PH081	IH081
2744	538.0	3.25	24.2	604	389	PH081	IH081
2744	470.0	3.72	21.1	645	426	PH081	IH081
2832	438.0	4.00	20.3	658	436	PH081	IH081
2832	375.0	4.67	17.4	708	472	PH081	IH081
2921	316.0	5.54	15.1	758	499	PH081	IH081
3009	288.0	6.08	14.2	782	511	PH081	IH081
3098	233.0	7.50	11.8	853	539	PH081	IH081
3098	207.0	8.44	10.5	899	555	PH081	IH081
6196	325.0	5.39	33.3	1984	183	PH082	IH082
6196	294.0	5.95	30.1	2075	230	PH082	IH082
7081	237.0	7.39	27.7	2181	266	PH082	IH082
7081	218.0	8.02	25.5	2266	298	PH082	IH082
7966	198.0	8.85	26	2264	290	PH082	IH082
9736	159.0	11.01	25.6	2300	297	PH082	IH082
12391	130.0	13.50	26.5	2230	283	PH082	IH082
13276	117.0	14.90	25.8	2258	294	PH082	IH082
13276	105.0	16.62	23.1	2397	334	PH082	IH082

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
13276	94.0	18.52	20.7	2546	369	PH082	IH082
14161	90.0	19.38	21.1	2502	363	PH082	IH082
14161	82.0	21.39	19.1	2633	392	PH082	IH082
14161	77.0	22.80	18	2724	410	PH082	IH082
14161	66.0	26.60	15.4	2954	448	PH082	IH082
14161	63.0	27.88	14.7	3026	459	PH082	IH082
14161	56.0	31.15	13.1	3213	481	PH082	IH082
14161	51.0	34.38	11.9	3367	500	PH082	IH082
14161	45.0	38.70	10.6	3580	519	PH082	IH082
14161	41.0	42.75	9.6	3745	534	PH082	IH082
14161	36.0	48.13	8.5	3984	550	PH082	IH082
14161	31.0	56.52	7.4	4047	569	PH083	IH083
15931	24.0	71.48	6.6	4047	581	PH083	IH083
15931	22.0	78.87	6	4047	590	PH083	IH083
15931	20.0	85.56	5.5	4047	596	PH083	IH083
15931	18.0	98.09	4.8	4047	607	PH083	IH083
15931	16.0	112.78	4.2	4047	616	PH083	IH083
15931	14.0	124.44	3.8	4047	621	PH083	IH083
15931	12.0	142.15	3.3	4047	628	PH083	IH083
15931	11.0	154.76	3	4047	632	PH083	IH083
15931	11.0	162.35	2.9	4047	634	PH083	IH083
15931	9.8	179.13	2.6	4047	638	PH083	IH083
15931	9.0	195.07	2.4	4047	641	PH083	IH083
15931	7.9	222.78	2.1	4047	646	PH083	IH083
3540	1354.0	1.29	78.4	573	408	PH101	IH101
3983	1241.0	1.41	80.8	568	393	PH101	IH101
3983	861.0	2.03	56.1	676	546	PH101	IH101
4868	705.0	2.48	56.2	683	545	PH101	IH101
5310	535.0	3.27	46.4	750	605	PH101	IH101
5310	473.0	3.70	41.1	796	638	PH101	IH101
5399	414.0	4.22	36.6	842	666	PH101	IH101
5487	359.0	4.88	32.2	894	693	PH101	IH101
5487	332.0	5.27	29.8	927	707	PH101	IH101
5664	281.0	6.23	26	989	731	PH101	IH101
5753	232.0	7.55	21.8	1073	757	PH101	IH101
5753	208.0	8.40	19.6	1124	770	PH101	IH101
15931	333.0	5.26	87.5	2054	389	PH102	IH102
17701	275.0	6.36	80.6	2120	432	PH102	IH102
20357	248.0	7.05	83.5	1998	414	PH102	IH102
22127	212.0	8.27	77.3	2040	451	PH102	IH102
24782	175.0	9.99	71.7	2060	485	PH102	IH102
26552	158.0	11.09	69.3	2044	500	PH102	IH102
27437	131.0	13.32	59.6	2255	559	PH102	IH102



Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
28322	109.0	16.09	50.9	2479	611	PH102	IH102
28322	98.0	17.85	45.9	2667	642	PH102	IH102
28322	88.0	19.85	41.3	2864	670	PH102	IH102
28322	82.0	21.44	38.2	2998	688	PH102	IH102
29207	73.0	23.97	35.2	3139	706	PH102	IH102
29207	68.0	25.89	32.6	3281	722	PH102	IH102
29207	61.0	28.73	29.4	3506	742	PH102	IH102
28322	57.0	30.72	26.7	3735	758	PH102	IH102
28322	51.0	34.20	24	3979	775	PH102	IH102
24782	46.0	38.45	18.6	4555	807	PH102	IH102
29207	42.0	41.30	20.5	4343	796	PH102	IH102
29207	38.0	45.82	18.4	4585	808	PH102	IH102
29207	34.0	51.52	16.4	4865	820	PH102	IH102
30978	32.0	55.47	16.5	4851	822	PH103	IH103
30978	25.0	69.69	13.1	4946	842	PH103	IH103
30978	22.0	79.82	11.5	4946	852	PH103	IH103
30978	21.0	84.16	10.9	4946	855	PH103	IH103
30978	19.0	93.36	9.8	4946	862	PH103	IH103
30978	17.0	100.07	9.1	4946	866	PH103	IH103
30978	14.0	120.84	7.6	4946	875	PH103	IH103
30978	13.0	134.06	6.8	4946	879	PH103	IH103
30978	12.0	143.42	6.4	4946	882	PH103	IH103
30978	11.0	160.82	5.7	4946	886	PH103	IH103
30978	9.7	181.07	5.1	4946	890	PH103	IH103
30978	9.0	194.21	4.7	4946	892	PH103	IH103
30978	8.1	215.45	4.2	4946	895	PH103	IH103
31863	7.2	242.59	3.9	4946	897	PH103	IH103
5753	1422.0	1.23	133.8	677	195	PH121	IH121
6196	1235.0	1.42	125.2	700	240	PH121	IH121
6196	969.0	1.81	98.2	789	379	PH121	IH121
6638	875.0	2.00	95	804	395	PH121	IH121
7081	706.0	2.48	81.7	866	463	PH121	IH121
7081	592.0	2.95	68.6	943	531	PH121	IH121
7258	557.0	3.14	66.1	961	544	PH121	IH121
7523	489.0	3.58	60.2	1007	574	PH121	IH121
7523	425.0	4.12	52.3	1076	615	PH121	IH121
7700	365.0	4.80	45.9	1144	648	PH121	IH121
7789	336.0	5.21	42.8	1183	664	PH121	IH121
7966	280.0	6.25	36.5	1276	696	PH121	IH121
8851	227.0	7.70	32.9	1349	715	PH121	IH121
26552	332.0	5.27	145.6	2987	175	PH122	IH122
28322	303.0	5.78	141.8	3002	194	PH122	IH122
31863	248.0	7.05	130.7	3080	249	PH122	IH122

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
32748	226.0	7.74	122.3	3186	292	PH122	IH122
33633	206.0	8.48	114.8	3298	330	PH122	IH122
35403	169.0	10.35	99	3566	409	PH122	IH122
38943	138.0	12.66	88.9	3728	459	PH122	IH122
40713	126.0	13.86	84.9	3796	479	PH122	IH122
42484	103.0	16.92	72.6	4146	541	PH122	IH122
44254	91.0	19.32	66.2	4322	573	PH122	IH122
44254	85.0	20.57	62.2	4505	593	PH122	IH122
44254	78.0	22.52	56.8	4741	621	PH122	IH122
44254	72.0	24.47	52.3	4967	643	PH122	IH122
44254	64.0	27.49	46.6	5311	672	PH122	IH122
44254	59.0	29.86	42.9	5557	691	PH122	IH122
44254	53.0	33.00	38.8	5891	711	PH122	IH122
44254	48.0	36.13	35.4	6210	728	PH122	IH122
44254	40.0	44.10	29	6744	760	PH122	IH122
44254	38.0	45.77	28.6	6744	765	PH123	IH123
44254	31.0	55.87	23.4	6744	791	PH123	IH123
44254	26.0	67.32	19.4	6744	810	PH123	IH123
44254	24.0	73.71	17.7	6744	819	PH123	IH123
44254	21.0	83.34	15.7	6744	829	PH123	IH123
44254	19.0	89.97	14.5	6744	834	PH123	IH123
44254	17.0	100.29	13	6744	842	PH123	IH123
44254	16.0	108.34	12.1	6744	846	PH123	IH123
44254	15.0	118.62	11	6744	852	PH123	IH123
44254	14.0	128.18	10.2	6744	856	PH123	IH123
44254	12.0	144.79	9	6744	861	PH123	IH123
44254	11.0	155.22	8.4	6744	864	PH123	IH123
44254	10.0	172.80	7.6	6744	869	PH123	IH123
44254	9.2	189.19	6.9	6744	872	PH123	IH123
44254	8.4	207.43	6.3	6744	875	PH123	IH123
44254	7.6	230.92	5.7	6744	878	PH123	IH123
44254	6.7	259.64	5	6744	-	PH123	-
40713	332.0	5.27	223.2	3757	1147	PH142	IH142
43369	275.0	6.36	197.4	3999	1288	PH142	IH142
44254	248.0	7.04	181.7	4188	1373	PH142	IH142
46909	223.0	7.84	173	4258	1421	PH142	IH142
57530	185.0	9.45	176.1	3954	1404	PH142	IH142
63725	167.0	10.47	176	3772	1405	PH142	IH142
64610	134.0	13.07	143	4360	1585	PH142	IH142
69036	111.0	15.75	126.8	4625	1673	PH142	IH142
69921	100.0	17.45	115.9	4907	1733	PH142	IH142
70806	87.0	20.04	102.2	5325	1807	PH142	IH142
70806	72.0	24.15	84.8	6022	1902	PH142	IH142

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
70806	65.0	26.76	76.5	6418	1947	PH142	IH142
70806	54.0	32.24	63.5	7170	2018	PH142	IH142
70806	45.0	38.85	52.7	7956	2077	PH142	IH142
70806	41.0	43.05	47.6	8376	2105	PH142	IH142
70806	36.0	48.35	43.3	8986	2134	PH143	IH143
70806	33.0	53.53	39.1	9409	2156	PH143	IH143
70806	30.0	59.22	35.3	9886	2176	PH143	IH143
70806	28.0	62.99	33.2	10241	2188	PH143	IH143
70806	25.0	71.35	29.3	10843	2208	PH143	IH143
70806	22.0	79.07	26.4	11549	2224	PH143	IH143
70806	20.0	86.43	24.2	12095	2236	PH143	IH143
70806	18.0	96.21	21.7	12364	2249	PH143	IH143
70806	17.0	104.51	20	12364	2258	PH143	IH143
70806	15.0	115.92	18	12364	2269	PH143	IH143
70806	14.0	128.47	16.3	12364	2278	PH143	IH143
70806	13.0	139.55	15	12364	2285	PH143	IH143
70806	11.0	154.33	13.6	12364	2293	PH143	IH143
70806	9.4	185.96	11.2	12364	2305	PH143	IH143
70806	8.5	206.08	10.1	12364	2311	PH143	IH143
168	686.0	2.55	1.9	128	-	HA31	-
177	594.0	2.94	1.7	134	-	HA31	-
177	551.0	3.18	1.6	137	-	HA31	-
177	521.0	3.36	1.5	140	-	HA31	-
186	453.0	3.87	1.4	146	-	HA31	-
186	415.0	4.21	1.3	151	-	HA31	-
195	368.0	4.75	1.2	157	-	HA31	-
204	343.0	5.10	1.1	161	-	HA31	-
204	321.0	5.45	1.1	164	-	HA31	-
204	278.0	6.30	0.9	172	-	HA31	-
195	222.0	7.88	0.7	186	-	HA31	-
124	162.0	10.83	0.3	206	-	HA31	-
708	325.0	5.38	3.8	229	74	HA32	IHA32
708	269.0	6.52	3.1	244	92	HA32	IHA32
664	216.0	8.11	2.4	262	84	HA32	IHA32
797	160.0	10.94	2.1	290	99	HA32	IHA32
708	132.0	13.25	1.5	309	82	HA32	IHA32
708	106.0	16.49	1.2	332	89	HA32	IHA32
797	86.0	20.26	1.1	356	102	HA32	IHA32
752	71.0	24.55	0.9	380	87	HA32	IHA32
708	57.0	30.55	0.7	409	84	HA32	IHA32
797	49.0	35.44	0.7	430	108	HA32	IHA32
797	40.0	44.10	0.5	450	89	HA32	IHA32
708	36.0	48.75	0.4	450	89	HA32	IHA32

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	29.0	60.67	0.4	450	106	HA32	IHA32
885	34.0	51.32	0.5	450	106	HA33	IHA33
885	29.0	59.65	0.4	450	106	HA33	IHA33
885	24.0	72.27	0.4	450	106	HA33	IHA33
885	19.0	89.94	0.3	450	106	HA33	IHA33
885	16.0	110.51	0.2	450	106	HA33	IHA33
885	13.0	133.88	0.2	450	106	HA33	IHA33
885	11.0	166.61	0.2	450	106	HA33	IHA33
885	9.1	193.30	0.1	450	106	HA33	IHA33
885	7.3	240.55	0.1	450	106	HA33	IHA33
885	6.3	279.07	0.1	450	106	HA33	IHA33
885	5.0	347.29	0.1	450	106	HA33	IHA33
221	1208.0	1.45	4.4	107	74	HA41	IHA41
221	594.0	2.94	2.2	135	74	HA41	IHA41
266	368.0	4.75	1.6	159	74	HA41	IHA41
266	321.0	5.45	1.4	166	74	HA41	IHA41
221	222.0	7.88	0.8	188	74	HA41	IHA41
177	162.0	10.83	0.5	209	74	HA41	IHA41
1239	325.0	5.38	6.7	482	74	HA42	IHA42
1239	269.0	6.52	5.5	513	92	HA42	IHA42
1151	216.0	8.11	4.1	552	83	HA42	IHA42
1328	160.0	10.94	3.5	610	95	HA42	IHA42
1239	132.0	13.25	2.7	651	86	HA42	IHA42
1239	106.0	16.49	2.2	700	89	HA42	IHA42
1328	86.0	20.26	1.9	751	97	HA42	IHA42
1372	71.0	24.55	1.6	800	95	HA42	IHA42
1239	57.0	30.55	1.2	861	81	HA42	IHA42
1328	49.0	35.44	1.1	905	103	HA42	IHA42
1239	40.0	44.10	0.8	967	83	HA42	IHA42
1018	36.0	48.75	0.6	967	93	HA42	IHA42
1151	29.0	60.67	0.5	967	96	HA42	IHA42
1328	34.0	51.32	0.8	967	96	HA43	IHA43
1328	29.0	59.65	0.7	967	96	HA43	IHA43
1328	24.0	72.27	0.5	967	92	HA43	IHA43
1328	19.0	89.94	0.4	967	89	HA43	IHA43
1328	16.0	110.51	0.4	967	91	HA43	IHA43
1328	13.0	133.88	0.3	967	92	HA43	IHA43
1328	11.0	166.61	0.2	967	89	HA43	IHA43
1328	9.1	193.30	0.2	967	96	HA43	IHA43
1328	7.3	240.55	0.2	967	89	HA43	IHA43
1328	6.3	279.07	0.1	967	96	HA43	IHA43
1328	5.0	347.29	0.1	967	89	HA43	IHA43
354	1208.0	1.45	7	294	74	HA51	IHA51

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
354	594.0	2.94	3.4	373	74	HA51	IHA51
443	368.0	4.75	2.7	437	74	HA51	IHA51
443	321.0	5.45	2.3	458	74	HA51	IHA51
354	222.0	7.88	1.3	518	74	HA51	IHA51
221	162.0	10.83	0.6	575	74	HA51	IHA51
2124	340.0	5.14	11.9	593	124	HA52	IHA52
2124	281.0	6.22	9.9	632	153	HA52	IHA52
2124	226.0	7.73	7.9	680	149	HA52	IHA52
2655	181.0	9.64	8	732	186	HA52	IHA52
2478	150.0	11.67	6.1	779	143	HA52	IHA52
2478	121.0	14.50	4.9	837	149	HA52	IHA52
2655	103.0	16.91	4.5	883	170	HA52	IHA52
2567	86.0	20.46	3.6	938	148	HA52	IHA52
2478	69.0	25.43	2.8	1010	144	HA52	IHA52
2655	59.0	29.89	2.6	1064	169	HA52	IHA52
2655	48.0	36.17	2.1	1139	153	HA52	IHA52
2478	39.0	44.95	1.6	1221	139	HA52	IHA52
2655	35.0	49.78	1.5	1266	179	HA52	IHA52
2567	28.0	61.87	1.2	1349	144	HA52	IHA52
2655	35.0	49.80	1.6	1266	74	HA53	IHA53
2655	29.0	60.25	1.3	1348	92	HA53	IHA53
2655	23.0	74.88	1	1349	90	HA53	IHA53
2655	20.0	88.02	0.9	1349	95	HA53	IHA53
2655	16.0	111.61	0.7	1349	88	HA53	IHA53
2655	13.0	138.71	0.6	1349	90	HA53	IHA53
2655	11.0	163.05	0.5	1349	95	HA53	IHA53
2655	8.7	200.27	0.4	1349	91	HA53	IHA53
2655	7.4	235.41	0.3	1349	95	HA53	IHA53
2655	6.1	284.81	0.3	1349	92	HA53	IHA53
2655	4.9	353.98	0.2	1349	90	HA53	IHA53
797	1313.0	1.33	17.1	428	124	HA61	IHA61
797	700.0	2.50	9.1	528	124	HA61	IHA61
974	399.0	4.38	6.4	637	124	HA61	IHA61
797	226.0	7.75	2.9	770	124	HA61	IHA61
620	164.0	10.67	1.7	857	124	HA61	IHA61
3363	340.0	5.14	18.9	876	124	HA62	IHA62
3363	281.0	6.22	15.6	933	153	HA62	IHA62
3363	226.0	7.73	12.6	1003	149	HA62	IHA62
4071	181.0	9.64	12.2	1081	180	HA62	IHA62
3894	150.0	11.67	9.7	1150	147	HA62	IHA62
3717	121.0	14.50	7.4	1236	142	HA62	IHA62
4425	103.0	16.91	7.6	1304	189	HA62	IHA62
4071	86.0	20.46	5.8	1385	141	HA62	IHA62

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	69.0	25.43	4.3	1490	139	HA62	IHA62
3983	59.0	29.89	3.9	1570	165	HA62	IHA62
4160	48.0	36.17	3.3	1682	160	HA62	IHA62
3894	39.0	44.95	2.5	1798	140	HA62	IHA62
3275	35.0	49.78	1.9	1798	141	HA62	IHA62
3894	28.0	61.87	1.8	1798	177	HA62	IHA62
4248	35.0	49.80	2.5	1798	74	HA63	IHA63
4248	29.0	60.25	2.1	1798	92	HA63	IHA63
4248	23.0	74.88	1.7	1798	90	HA63	IHA63
4248	20.0	88.02	1.4	1798	95	HA63	IHA63
4248	16.0	111.61	1.1	1798	88	HA63	IHA63
4248	13.0	138.71	0.9	1798	90	HA63	IHA63
4248	11.0	163.05	0.8	1798	95	HA63	IHA63
4248	8.7	200.27	0.6	1798	91	HA63	IHA63
4248	7.4	235.41	0.5	1798	95	HA63	IHA63
4248	6.1	284.81	0.4	1798	92	HA63	IHA63
4248	4.9	353.98	0.4	1798	90	HA63	IHA63

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	243.0	4.70	3.4	737	157	PH032	IH032
929	183.0	6.23	2.8	808	184	PH032	IH032
1106	147.0	7.76	2.7	841	190	PH032	IH032
1151	129.0	8.87	2.4	880	201	PH032	IH032
1239	112.0	10.14	2.3	914	208	PH032	IH032
1283	97.0	11.76	2.1	963	219	PH032	IH032
1505	83.0	13.72	2.1	974	219	PH032	IH032
1505	78.0	14.66	1.9	1003	225	PH032	IH032
1682	68.0	16.77	1.9	1021	227	PH032	IH032
1770	63.0	18.20	1.8	1036	230	PH032	IH032
1770	57.0	19.90	1.7	1087	237	PH032	IH032
1770	50.0	22.68	1.5	1156	247	PH032	IH032
1770	48.0	23.83	1.4	1179	250	PH032	IH032
1770	43.0	26.39	1.3	1236	256	PH032	IH032
1770	38.0	29.70	1.1	1236	263	PH032	IH032
1770	35.0	32.89	1	1236	268	PH032	IH032
1770	30.0	37.92	0.9	1236	274	PH032	IH032
1770	28.0	41.40	0.8	1236	278	PH032	IH032
1770	24.0	47.25	0.7	1236	282	PH032	IH032
1770	21.0	53.59	0.6	1236	286	PH033	IH033
1770	17.0	66.78	0.5	1236	292	PH033	IH033
1770	15.0	74.84	0.5	1236	295	PH033	IH033
1770	11.0	99.27	0.3	1236	300	PH033	IH033
1770	11.0	108.05	0.3	1236	301	PH033	IH033
1770	9.2	123.71	0.3	1236	303	PH033	IH033
1770	8.0	143.32	0.2	1236	305	PH033	IH033
1770	6.4	178.60	0.2	1236	307	PH033	IH033
1770	5.8	197.17	0.2	1236	308	PH033	IH033
1770	4.6	245.70	0.1	1236	309	PH033	IH033
221	793.0	1.44	2.9	144	224	PH041	IH041
221	570.0	2.00	2.1	164	248	PH041	IH041
266	448.0	2.55	1.9	175	251	PH041	IH041
266	420.0	2.71	1.8	179	254	PH041	IH041
354	367.0	3.11	2.1	179	246	PH041	IH041
398	318.0	3.59	2.1	184	247	PH041	IH041
398	271.0	4.20	1.8	197	256	PH041	IH041
398	228.0	5.00	1.5	211	264	PH041	IH041
443	207.0	5.50	1.5	215	264	PH041	IH041
443	187.0	6.09	1.4	224	268	PH041	IH041
443	149.0	7.67	1.1	225	276	PH041	IH041
487	130.0	8.75	1	225	278	PH041	IH041
1416	209.0	5.46	4.9	955	98	PH042	IH042
1416	159.0	7.19	3.7	1075	151	PH042	IH042

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
1859	128.0	8.91	3.9	1085	141	PH042	IH042
2124	111.0	10.31	3.9	1101	144	PH042	IH042
2213	97.0	11.80	3.5	1153	159	PH042	IH042
2213	84.0	13.57	3.1	1232	180	PH042	IH042
2213	71.0	15.96	2.6	1330	202	PH042	IH042
2213	60.0	19.00	2.2	1434	221	PH042	IH042
2213	54.0	21.00	2	1484	230	PH042	IH042
2301	49.0	23.15	1.9	1484	235	PH042	IH042
2301	44.0	26.04	1.7	1484	245	PH042	IH042
2478	41.0	27.50	1.7	1484	243	PH042	IH042
2478	37.0	30.45	1.5	1484	251	PH042	IH042
2478	33.0	34.10	1.4	1484	258	PH042	IH042
2478	30.0	37.76	1.2	1484	265	PH042	IH042
2478	26.0	43.75	1.1	1484	272	PH042	IH042
2478	24.0	47.53	1	1484	276	PH042	IH042
2478	21.0	54.25	0.9	1484	282	PH042	IH042
2655	18.0	61.83	0.8	1484	284	PH043	IH043
2655	15.0	76.67	0.7	1484	291	PH043	IH043
2655	13.0	87.05	0.6	1484	295	PH043	IH043
2655	10.0	114.55	0.4	1484	301	PH043	IH043
2655	9.1	125.69	0.4	1484	303	PH043	IH043
2655	8.0	142.04	0.4	1484	305	PH043	IH043
2655	6.9	165.38	0.3	1484	307	PH043	IH043
2655	5.6	205.06	0.2	1484	310	PH043	IH043
2655	5.0	227.50	0.2	1484	311	PH043	IH043
2655	4.0	282.10	0.2	1484	313	PH043	IH043
354	896.0	1.27	5.2	360	186	PH051	IH051
531	803.0	1.42	7	355	142	PH051	IH051
531	536.0	2.12	4.7	415	199	PH051	IH051
620	443.0	2.57	4.5	436	203	PH051	IH051
708	360.0	3.17	4.2	462	211	PH051	IH051
797	309.0	3.69	4	481	214	PH051	IH051
797	285.0	4.00	3.7	496	222	PH051	IH051
841	239.0	4.77	3.3	527	232	PH051	IH051
885	217.0	5.25	3.1	542	236	PH051	IH051
885	196.0	5.82	2.8	562	243	PH051	IH051
885	155.0	7.33	2.3	562	258	PH051	IH051
885	136.0	8.38	2	562	265	PH051	IH051
2301	199.0	5.73	7.6	1185	58	PH052	IH052
2567	165.0	6.89	7	1242	77	PH052	IH052
3009	134.0	8.53	6.6	1287	89	PH052	IH052
3275	119.0	9.56	6.5	1315	96	PH052	IH052
3452	99.0	11.51	5.6	1403	123	PH052	IH052



### 5.3 IH/IHA GEAR REDUCER - fs=1, 1140 rpm

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	80.0	14.24	5	1489	144	PH052	IH052
3983	69.0	16.59	4.5	1567	161	PH052	IH052
4071	63.0	18.00	4.3	1621	170	PH052	IH052
4071	57.0	19.97	3.8	1700	184	PH052	IH052
4160	53.0	21.67	3.6	1743	192	PH052	IH052
4160	46.0	24.71	3.2	1798	207	PH052	IH052
4337	44.0	26.18	3.1	1798	209	PH052	IH052
4337	40.0	28.44	2.9	1798	217	PH052	IH052
4337	36.0	31.52	2.6	1798	227	PH052	IH052
4337	35.0	33.00	2.5	1798	231	PH052	IH052
4337	29.0	38.98	2.1	1798	243	PH052	IH052
4337	25.0	45.36	1.8	1798	253	PH052	IH052
4337	23.0	49.13	1.7	1798	258	PH052	IH052
4337	20.0	56.11	1.5	1798	265	PH052	IH052
4425	19.0	58.81	1.4	1798	266	PH053	IH053
4425	16.0	72.75	1.2	1798	276	PH053	IH053
4425	13.0	90.51	0.9	1798	283	PH053	IH053
4425	10.0	108.95	0.8	1798	289	PH053	IH053
4425	8.5	134.76	0.6	1798	293	PH053	IH053
4425	7.2	157.29	0.5	1798	296	PH053	IH053
4425	5.9	194.56	0.4	1798	300	PH053	IH053
4425	5.3	216.38	0.4	1798	301	PH053	IH053
4425	4.3	267.65	0.3	1798	304	PH053	IH053
708	848.0	1.34	9.8	538	471	PH061	IH061
1062	536.0	2.12	9.3	593	481	PH061	IH061
1062	443.0	2.57	7.7	641	514	PH061	IH061
1151	360.0	3.17	6.8	686	532	PH061	IH061
1328	309.0	3.69	6.7	704	534	PH061	IH061
1328	285.0	4.00	6.2	729	544	PH061	IH061
1416	239.0	4.77	5.5	772	557	PH061	IH061
1505	217.0	5.25	5.3	791	561	PH061	IH061
1505	196.0	5.82	4.8	826	572	PH061	IH061
1505	155.0	7.33	3.8	832	592	PH061	IH061
1505	136.0	8.38	3.3	832	601	PH061	IH061
4425	212.0	5.38	15.5	1918	192	PH062	IH062
4868	192.0	5.93	15.5	1939	193	PH062	IH062
4868	154.0	7.39	12.4	2142	281	PH062	IH062
5310	134.0	8.50	11.8	2212	300	PH062	IH062
5310	121.0	9.39	10.7	2316	332	PH062	IH062
5753	98.0	11.69	9.3	2476	371	PH062	IH062
6196	90.0	12.67	9.2	2506	373	PH062	IH062
6196	77.0	14.75	7.9	2689	411	PH062	IH062
7081	70.0	16.29	8.2	2674	403	PH062	IH062

### 5.3 IH/IHA GEAR REDUCER - fs=1, 1140 rpm

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
7346	65.0	17.67	7.8	2698	413	PH062	IH062
7523	56.0	20.28	7	2698	437	PH062	IH062
7523	49.0	23.27	6.1	2698	463	PH062	IH062
7523	44.0	25.70	5.5	2698	480	PH062	IH062
7081	39.0	29.33	4.5	2698	508	PH062	IH062
7523	36.0	32.00	4.4	2698	511	PH062	IH062
7081	31.0	36.99	3.6	2698	535	PH062	IH062
7523	28.0	40.33	3.5	2698	538	PH062	IH062
7523	25.0	46.06	3.1	2698	550	PH062	IH062
7523	23.0	49.45	2.9	2698	556	PH063	IH063
7523	21.0	54.61	2.7	2698	564	PH063	IH063
7523	17.0	68.00	2.1	2698	579	PH063	IH063
7523	13.0	85.82	1.7	2698	591	PH063	IH063
7523	12.0	94.76	1.5	2698	596	PH063	IH063
7523	9.7	118.00	1.2	2698	604	PH063	IH063
7523	8.4	135.40	1.1	2698	609	PH063	IH063
7523	7.6	149.51	1	2698	611	PH063	IH063
7523	6.7	170.67	0.8	2698	615	PH063	IH063
7523	6.1	186.18	0.8	2698	617	PH063	IH063
7523	5.3	215.21	0.7	2698	620	PH063	IH063
7523	4.9	234.67	0.6	2698	621	PH063	IH063
7523	4.3	268.00	0.5	2698	624	PH063	IH063
1770	879.0	1.30	25.4	570	207	PH081	IH081
1947	798.0	1.43	25.4	577	208	PH081	IH081
2036	590.0	1.93	19.7	650	316	PH081	IH081
2478	449.0	2.54	18.2	686	343	PH081	IH081
2744	351.0	3.25	15.7	739	389	PH081	IH081
2744	306.0	3.72	13.7	787	426	PH081	IH081
2832	285.0	4.00	13.2	804	436	PH081	IH081
2832	244.0	4.67	11.3	862	472	PH081	IH081
2921	206.0	5.54	9.8	899	499	PH081	IH081
3009	187.0	6.08	9.2	899	511	PH081	IH081
3098	152.0	7.50	7.7	899	539	PH081	IH081
3098	135.0	8.44	6.8	899	555	PH081	IH081
6196	212.0	5.39	21.7	2397	183	PH082	IH082
6196	192.0	5.95	19.6	2502	230	PH082	IH082
7081	154.0	7.39	18	2645	266	PH082	IH082
7081	142.0	8.02	16.6	2740	298	PH082	IH082
7966	129.0	8.85	17	2753	290	PH082	IH082
9736	104.0	11.01	16.7	2821	297	PH082	IH082
12391	84.0	13.50	17.3	2805	283	PH082	IH082
13276	77.0	14.90	16.8	2827	294	PH082	IH082
13276	69.0	16.62	15.1	2989	334	PH082	IH082

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
13276	62.0	18.52	13.5	3154	369	PH082	IH082
14161	59.0	19.38	13.8	3129	363	PH082	IH082
14161	53.0	21.39	12.5	3303	392	PH082	IH082
14161	50.0	22.80	11.7	3400	410	PH082	IH082
14161	43.0	26.60	10	3660	448	PH082	IH082
14161	41.0	27.88	9.6	3745	459	PH082	IH082
14161	37.0	31.15	8.6	3933	481	PH082	IH082
14161	33.0	34.38	7.8	4047	500	PH082	IH082
14161	29.0	38.70	6.9	4047	519	PH082	IH082
14161	27.0	42.75	6.2	4047	534	PH082	IH082
14161	24.0	48.13	5.5	4047	550	PH082	IH082
14161	20.0	56.52	4.8	4047	569	PH083	IH083
15931	16.0	71.48	4.3	4047	581	PH083	IH083
15931	14.0	78.87	3.9	4047	590	PH083	IH083
15931	13.0	85.56	3.6	4047	596	PH083	IH083
15931	12.0	98.09	3.1	4047	607	PH083	IH083
15931	10.0	112.78	2.7	4047	616	PH083	IH083
15931	9.2	124.44	2.5	4047	621	PH083	IH083
15931	8.0	142.15	2.2	4047	628	PH083	IH083
15931	7.4	154.76	2	4047	632	PH083	IH083
15931	7.0	162.35	1.9	4047	634	PH083	IH083
15931	6.4	179.13	1.7	4047	638	PH083	IH083
15931	5.8	195.07	1.6	4047	641	PH083	IH083
15931	5.1	222.78	1.4	4047	646	PH083	IH083
3540	882.0	1.29	51.1	697	408	PH101	IH101
3983	808.0	1.41	52.7	696	393	PH101	IH101
3983	561.0	2.03	36.5	819	546	PH101	IH101
4868	459.0	2.48	36.6	836	545	PH101	IH101
5310	348.0	3.27	30.3	919	605	PH101	IH101
5310	308.0	3.70	26.8	971	638	PH101	IH101
5399	270.0	4.22	23.8	1024	666	PH101	IH101
5487	234.0	4.88	21	1086	693	PH101	IH101
5487	216.0	5.27	19.4	1124	707	PH101	IH101
5664	183.0	6.23	17	1124	731	PH101	IH101
5753	151.0	7.55	14.2	1124	757	PH101	IH101
5753	136.0	8.40	12.8	1124	770	PH101	IH101
15931	217.0	5.26	57	2605	389	PH102	IH102
17701	179.0	6.36	52.5	2709	432	PH102	IH102
20357	162.0	7.05	54.4	2602	414	PH102	IH102
22127	138.0	8.27	50.4	2682	451	PH102	IH102
24782	114.0	9.99	46.7	2743	485	PH102	IH102
26552	103.0	11.09	45.1	2749	500	PH102	IH102
27437	86.0	13.32	38.8	2993	559	PH102	IH102

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
28322	71.0	16.09	33.2	3279	611	PH102	IH102
28322	64.0	17.85	29.9	3491	642	PH102	IH102
28322	57.0	19.85	26.9	3735	670	PH102	IH102
28322	53.0	21.44	24.9	3894	688	PH102	IH102
29207	48.0	23.97	23	4031	706	PH102	IH102
29207	44.0	25.89	21.3	4233	722	PH102	IH102
29207	40.0	28.73	19.2	4460	742	PH102	IH102
28322	37.0	30.72	17.4	4737	758	PH102	IH102
28322	33.0	34.20	15.6	4946	775	PH102	IH102
24782	30.0	38.45	12.1	4946	807	PH102	IH102
29207	28.0	41.30	13.3	4946	796	PH102	IH102
29207	25.0	45.82	12	4946	808	PH102	IH102
29207	22.0	51.52	10.7	4946	820	PH102	IH102
30978	21.0	55.47	10.7	4946	822	PH103	IH103
30978	16.0	69.69	8.6	4946	842	PH103	IH103
30978	14.0	79.82	7.5	4946	852	PH103	IH103
30978	14.0	84.16	7.1	4946	855	PH103	IH103
30978	12.0	93.36	6.4	4946	862	PH103	IH103
30978	11.0	100.07	6	4946	866	PH103	IH103
30978	9.4	120.84	4.9	4946	875	PH103	IH103
30978	8.5	134.06	4.4	4946	879	PH103	IH103
30978	7.9	143.42	4.2	4946	882	PH103	IH103
30978	7.1	160.82	3.7	4946	886	PH103	IH103
30978	6.3	181.07	3.3	4946	890	PH103	IH103
30978	5.9	194.21	3.1	4946	892	PH103	IH103
30978	5.3	215.45	2.8	4946	895	PH103	IH103
31863	4.7	242.59	2.5	4946	897	PH103	IH103
5753	926.0	1.23	87.2	833	195	PH121	IH121
6196	805.0	1.42	81.5	863	240	PH121	IH121
6196	631.0	1.81	63.9	966	379	PH121	IH121
6638	570.0	2.00	61.9	986	395	PH121	IH121
7081	460.0	2.48	53.2	1062	463	PH121	IH121
7081	386.0	2.95	44.7	1151	531	PH121	IH121
7258	363.0	3.14	43.1	1173	544	PH121	IH121
7523	319.0	3.58	39.2	1227	574	PH121	IH121
7523	277.0	4.12	34.1	1308	615	PH121	IH121
7700	238.0	4.80	29.9	1349	648	PH121	IH121
7789	219.0	5.21	27.9	1349	664	PH121	IH121
7966	182.0	6.25	23.8	1349	696	PH121	IH121
8851	148.0	7.70	21.4	1349	715	PH121	IH121
26552	216.0	5.27	94.8	3782	175	PH122	IH122
28322	197.0	5.78	92.4	3823	194	PH122	IH122
31863	162.0	7.05	85.2	3947	249	PH122	IH122

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
32748	147.0	7.74	79.7	4090	292	PH122	IH122
33633	134.0	8.48	74.8	4230	330	PH122	IH122
35403	110.0	10.35	64.5	4560	409	PH122	IH122
38943	90.0	12.66	57.9	4786	459	PH122	IH122
40713	82.0	13.86	55.3	4893	479	PH122	IH122
42484	67.0	16.92	47.3	5321	541	PH122	IH122
44254	59.0	19.32	43.2	5557	573	PH122	IH122
44254	55.0	20.57	40.5	5774	593	PH122	IH122
44254	51.0	22.52	37	6013	621	PH122	IH122
44254	47.0	24.47	34.1	6279	643	PH122	IH122
44254	41.0	27.49	30.3	6740	672	PH122	IH122
44254	38.0	29.86	27.9	6744	691	PH122	IH122
44254	35.0	33.00	25.3	6744	711	PH122	IH122
44254	32.0	36.13	23.1	6744	728	PH122	IH122
44254	26.0	44.10	18.9	6744	760	PH122	IH122
44254	25.0	45.77	18.6	6744	765	PH123	IH123
44254	20.0	55.87	15.2	6744	791	PH123	IH123
44254	17.0	67.32	12.6	6744	810	PH123	IH123
44254	15.0	73.71	11.6	6744	819	PH123	IH123
44254	14.0	83.34	10.2	6744	829	PH123	IH123
44254	13.0	89.97	9.5	6744	834	PH123	IH123
44254	11.0	100.29	8.5	6744	842	PH123	IH123
44254	11.0	108.34	7.9	6744	846	PH123	IH123
44254	9.6	118.62	7.2	6744	852	PH123	IH123
44254	8.9	128.18	6.6	6744	856	PH123	IH123
44254	7.9	144.79	5.9	6744	861	PH123	IH123
44254	7.3	155.22	5.5	6744	864	PH123	IH123
44254	6.6	172.80	4.9	6744	869	PH123	IH123
44254	6.0	189.19	4.5	6744	872	PH123	IH123
44254	5.5	207.43	4.1	6744	875	PH123	IH123
44254	4.9	230.92	3.7	6744	878	PH123	IH123
44254	4.4	259.64	3.3	6744	-	PH123	-
40713	216.0	5.27	145.4	4812	1147	PH142	IH142
43369	179.0	6.36	128.6	5122	1288	PH142	IH142
44254	162.0	7.04	118.4	5339	1373	PH142	IH142
46909	145.0	7.84	112.7	5465	1421	PH142	IH142
57530	121.0	9.45	114.7	5219	1404	PH142	IH142
63725	109.0	10.47	114.6	5088	1405	PH142	IH142
64610	87.0	13.07	93.1	5796	1585	PH142	IH142
69036	72.0	15.75	82.6	6157	1673	PH142	IH142
69921	65.0	17.45	75.5	6485	1733	PH142	IH142
70806	57.0	20.04	66.6	6946	1807	PH142	IH142
70806	47.0	24.15	55.2	7764	1902	PH142	IH142

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
70806	43.0	26.76	49.8	8160	1947	PH142	IH142
70806	35.0	32.24	41.4	9122	2018	PH142	IH142
70806	29.0	38.85	34.3	10060	2077	PH142	IH142
70806	26.0	43.05	31	10632	2105	PH142	IH142
70806	24.0	48.35	28.2	11065	2134	PH143	IH143
70806	21.0	53.53	25.5	11814	2156	PH143	IH143
70806	19.0	59.22	23	12364	2176	PH143	IH143
70806	18.0	62.99	21.6	12364	2188	PH143	IH143
70806	16.0	71.35	19.1	12364	2208	PH143	IH143
70806	14.0	79.07	17.2	12364	2224	PH143	IH143
70806	13.0	86.43	15.8	12364	2236	PH143	IH143
70806	12.0	96.21	14.2	12364	2249	PH143	IH143
70806	11.0	104.51	13	12364	2258	PH143	IH143
70806	9.8	115.92	11.8	12364	2269	PH143	IH143
70806	8.9	128.47	10.6	12364	2278	PH143	IH143
70806	8.2	139.55	9.8	12364	2285	PH143	IH143
70806	7.4	154.33	8.8	12364	2293	PH143	IH143
70806	6.1	185.96	7.3	12364	2305	PH143	IH143
70806	5.5	206.08	6.6	12364	2311	PH143	IH143
168	447.0	2.55	1.2	147	-	HA31	-
177	387.0	2.94	1.1	154	-	HA31	-
177	359.0	3.18	1	158	-	HA31	-
177	340.0	3.36	1	161	-	HA31	-
186	295.0	3.87	0.9	169	-	HA31	-
186	271.0	4.21	0.8	174	-	HA31	-
195	240.0	4.75	0.8	181	-	HA31	-
204	224.0	5.10	0.7	185	-	HA31	-
204	209.0	5.45	0.7	190	-	HA31	-
204	181.0	6.30	0.6	199	-	HA31	-
195	145.0	7.88	0.5	214	-	HA31	-
124	105.0	10.83	0.2	238	-	HA31	-
708	212.0	5.38	2.5	264	74	HA32	IHA32
708	175.0	6.52	2	281	92	HA32	IHA32
664	141.0	8.11	1.5	302	84	HA32	IHA32
797	104.0	10.94	1.4	335	99	HA32	IHA32
708	86.0	13.25	1	356	82	HA32	IHA32
708	69.0	16.49	0.8	384	89	HA32	IHA32
797	56.0	20.26	0.7	411	102	HA32	IHA32
752	46.0	24.55	0.6	439	87	HA32	IHA32
708	37.0	30.55	0.4	450	84	HA32	IHA32
797	32.0	35.44	0.4	450	108	HA32	IHA32
797	26.0	44.10	0.3	450	89	HA32	IHA32
708	23.0	48.75	0.3	450	89	HA32	IHA32

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	19.0	60.67	0.3	450	106	HA32	IHA32
885	22.0	51.32	0.3	450	106	HA33	IHA33
885	19.0	59.65	0.3	450	106	HA33	IHA33
885	16.0	72.27	0.2	450	106	HA33	IHA33
885	13.0	89.94	0.2	450	106	HA33	IHA33
885	10.0	110.51	0.2	450	106	HA33	IHA33
885	8.5	133.88	0.1	450	106	HA33	IHA33
885	6.8	166.61	0.1	450	106	HA33	IHA33
885	5.9	193.30	0.1	450	106	HA33	IHA33
885	4.7	240.55	0.1	450	106	HA33	IHA33
885	4.1	279.07	0.1	450	106	HA33	IHA33
885	3.3	347.29	-	450	106	HA33	IHA33
221	787.0	1.45	2.8	123	74	HA41	IHA41
221	387.0	2.94	1.4	156	74	HA41	IHA41
266	240.0	4.75	1	183	74	HA41	IHA41
266	209.0	5.45	0.9	192	74	HA41	IHA41
221	145.0	7.88	0.5	216	74	HA41	IHA41
177	105.0	10.83	0.3	241	74	HA41	IHA41
1239	212.0	5.38	4.3	556	74	HA42	IHA42
1239	175.0	6.52	3.6	592	92	HA42	IHA42
1151	141.0	8.11	2.7	636	83	HA42	IHA42
1328	104.0	10.94	2.3	704	95	HA42	IHA42
1239	86.0	13.25	1.8	751	86	HA42	IHA42
1239	69.0	16.49	1.4	808	89	HA42	IHA42
1328	56.0	20.26	1.2	866	97	HA42	IHA42
1372	46.0	24.55	1.1	925	95	HA42	IHA42
1239	37.0	30.55	0.8	967	81	HA42	IHA42
1328	32.0	35.44	0.7	967	103	HA42	IHA42
1239	26.0	44.10	0.5	967	83	HA42	IHA42
1018	23.0	48.75	0.4	967	93	HA42	IHA42
1151	19.0	60.67	0.4	967	96	HA42	IHA42
1328	22.0	51.32	0.5	967	96	HA43	IHA43
1328	19.0	59.65	0.4	967	96	HA43	IHA43
1328	16.0	72.27	0.4	967	92	HA43	IHA43
1328	13.0	89.94	0.3	967	89	HA43	IHA43
1328	10.0	110.51	0.2	967	91	HA43	IHA43
1328	8.5	133.88	0.2	967	92	HA43	IHA43
1328	6.8	166.61	0.2	967	89	HA43	IHA43
1328	5.9	193.30	0.1	967	96	HA43	IHA43
1328	4.7	240.55	0.1	967	89	HA43	IHA43
1328	4.1	279.07	0.1	967	96	HA43	IHA43
1328	3.3	347.29	0.1	967	89	HA43	IHA43
354	787.0	1.45	4.6	339	74	HA51	IHA51

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
354	387.0	2.94	2.2	430	74	HA51	IHA51
443	240.0	4.75	1.7	504	74	HA51	IHA51
443	209.0	5.45	1.5	528	74	HA51	IHA51
354	145.0	7.88	0.8	597	74	HA51	IHA51
221	105.0	10.83	0.4	664	74	HA51	IHA51
2124	222.0	5.14	7.8	684	124	HA52	IHA52
2124	183.0	6.22	6.4	729	153	HA52	IHA52
2124	147.0	7.73	5.2	785	149	HA52	IHA52
2655	118.0	9.64	5.2	844	186	HA52	IHA52
2478	98.0	11.67	4	898	143	HA52	IHA52
2478	79.0	14.50	3.2	965	149	HA52	IHA52
2655	67.0	16.91	3	1020	170	HA52	IHA52
2567	56.0	20.46	2.4	1082	148	HA52	IHA52
2478	45.0	25.43	1.8	1164	144	HA52	IHA52
2655	38.0	29.89	1.7	1232	169	HA52	IHA52
2655	32.0	36.17	1.4	1304	153	HA52	IHA52
2478	25.0	44.95	1	1349	139	HA52	IHA52
2655	23.0	49.78	1	1349	179	HA52	IHA52
2567	18.0	61.87	0.8	1349	144	HA52	IHA52
2655	23.0	49.80	1	1349	74	HA53	IHA53
2655	19.0	60.25	0.8	1349	92	HA53	IHA53
2655	15.0	74.88	0.7	1349	90	HA53	IHA53
2655	13.0	88.02	0.6	1349	95	HA53	IHA53
2655	10.0	111.61	0.5	1349	88	HA53	IHA53
2655	8.2	138.71	0.4	1349	90	HA53	IHA53
2655	7.0	163.05	0.3	1349	95	HA53	IHA53
2655	5.7	200.27	0.3	1349	91	HA53	IHA53
2655	4.8	235.41	0.2	1349	95	HA53	IHA53
2655	4.0	284.81	0.2	1349	92	HA53	IHA53
2655	3.2	353.98	0.1	1349	90	HA53	IHA53
797	855.0	1.33	11.1	494	124	HA61	IHA61
797	456.0	2.50	5.9	609	124	HA61	IHA61
974	260.0	4.38	4.1	735	124	HA61	IHA61
797	147.0	7.75	1.9	889	124	HA61	IHA61
620	107.0	10.67	1.1	988	124	HA61	IHA61
3363	222.0	5.14	12.3	1009	124	HA62	IHA62
3363	183.0	6.22	10.2	1077	153	HA62	IHA62
3363	147.0	7.73	8.2	1158	149	HA62	IHA62
4071	118.0	9.64	8	1246	180	HA62	IHA62
3894	98.0	11.67	6.3	1326	147	HA62	IHA62
3717	79.0	14.50	4.8	1424	142	HA62	IHA62
4425	67.0	16.91	4.9	1505	189	HA62	IHA62
4071	56.0	20.46	3.7	1598	141	HA62	IHA62



Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	45.0	25.43	2.8	1718	139	HA62	IHA62
3983	38.0	29.89	2.5	1798	165	HA62	IHA62
4160	32.0	36.17	2.2	1798	160	HA62	IHA62
3894	25.0	44.95	1.6	1798	140	HA62	IHA62
3275	23.0	49.78	1.2	1798	141	HA62	IHA62
3894	18.0	61.87	1.2	1798	177	HA62	IHA62
4248	23.0	49.80	1.6	1798	74	HA63	IHA63
4248	19.0	60.25	1.4	1798	92	HA63	IHA63
4248	15.0	74.88	1.1	1798	90	HA63	IHA63
4248	13.0	88.02	0.9	1798	95	HA63	IHA63
4248	10.0	111.61	0.7	1798	88	HA63	IHA63
4248	8.2	138.71	0.6	1798	90	HA63	IHA63
4248	7.0	163.05	0.5	1798	95	HA63	IHA63
4248	5.7	200.27	0.4	1798	91	HA63	IHA63
4248	4.8	235.41	0.3	1798	95	HA63	IHA63
4248	4.0	284.81	0.3	1798	92	HA63	IHA63
4248	3.2	353.98	0.2	1798	90	HA63	IHA63

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	186.0	4.70	2.6	826	157	PH032	IH032
929	140.0	6.23	2.2	907	184	PH032	IH032
1106	113.0	7.76	2.1	945	190	PH032	IH032
1151	99.0	8.87	1.9	989	201	PH032	IH032
1239	86.0	10.14	1.8	1028	208	PH032	IH032
1283	74.0	11.76	1.6	1086	219	PH032	IH032
1505	64.0	13.72	1.6	1098	219	PH032	IH032
1505	60.0	14.66	1.5	1131	225	PH032	IH032
1682	52.0	16.77	1.5	1159	227	PH032	IH032
1770	48.0	18.20	1.4	1179	230	PH032	IH032
1770	44.0	19.90	1.3	1227	237	PH032	IH032
1770	39.0	22.68	1.1	1236	247	PH032	IH032
1770	37.0	23.83	1.1	1236	250	PH032	IH032
1770	33.0	26.39	1	1236	256	PH032	IH032
1770	29.0	29.70	0.9	1236	263	PH032	IH032
1770	27.0	32.89	0.8	1236	268	PH032	IH032
1770	23.0	37.92	0.7	1236	274	PH032	IH032
1770	21.0	41.40	0.6	1236	278	PH032	IH032
1770	19.0	47.25	0.5	1236	282	PH032	IH032
1770	16.0	53.59	0.5	1236	286	PH033	IH033
1770	13.0	66.78	0.4	1236	292	PH033	IH033
1770	12.0	74.84	0.3	1236	295	PH033	IH033
1770	8.8	99.27	0.3	1236	300	PH033	IH033
1770	8.1	108.05	0.2	1236	301	PH033	IH033
1770	7.1	123.71	0.2	1236	303	PH033	IH033
1770	6.1	143.32	0.2	1236	305	PH033	IH033
1770	4.9	178.60	0.1	1236	307	PH033	IH033
1770	4.4	197.17	0.1	1236	308	PH033	IH033
1770	3.6	245.70	0.1	1236	309	PH033	IH033
221	609.0	1.44	2.2	160	224	PH041	IH041
221	438.0	2.00	1.6	182	248	PH041	IH041
266	344.0	2.55	1.5	194	251	PH041	IH041
266	322.0	2.71	1.4	199	254	PH041	IH041
354	282.0	3.11	1.6	199	246	PH041	IH041
398	244.0	3.59	1.6	206	247	PH041	IH041
398	208.0	4.20	1.4	219	256	PH041	IH041
398	175.0	5.00	1.1	225	264	PH041	IH041
443	159.0	5.50	1.2	225	264	PH041	IH041
443	144.0	6.09	1	225	268	PH041	IH041
443	114.0	7.67	0.8	225	276	PH041	IH041
487	100.0	8.75	0.8	225	278	PH041	IH041
1416	160.0	5.46	3.7	1072	98	PH042	IH042
1416	122.0	7.19	2.8	1202	151	PH042	IH042

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
1859	98.0	8.91	3	1222	141	PH042	IH042
2124	85.0	10.31	3	1245	144	PH042	IH042
2213	74.0	11.80	2.7	1306	159	PH042	IH042
2213	64.0	13.57	2.4	1394	180	PH042	IH042
2213	55.0	15.96	2	1484	202	PH042	IH042
2213	46.0	19.00	1.7	1484	221	PH042	IH042
2213	42.0	21.00	1.5	1484	230	PH042	IH042
2301	38.0	23.15	1.4	1484	235	PH042	IH042
2301	34.0	26.04	1.3	1484	245	PH042	IH042
2478	32.0	27.50	1.3	1484	243	PH042	IH042
2478	29.0	30.45	1.2	1484	251	PH042	IH042
2478	26.0	34.10	1.1	1484	258	PH042	IH042
2478	23.0	37.76	0.9	1484	265	PH042	IH042
2478	20.0	43.75	0.8	1484	272	PH042	IH042
2478	18.0	47.53	0.8	1484	276	PH042	IH042
2478	16.0	54.25	0.7	1484	282	PH042	IH042
2655	14.0	61.83	0.6	1484	284	PH043	IH043
2655	11.0	76.67	0.5	1484	291	PH043	IH043
2655	10.0	87.05	0.5	1484	295	PH043	IH043
2655	7.6	114.55	0.3	1484	301	PH043	IH043
2655	7.0	125.69	0.3	1484	303	PH043	IH043
2655	6.2	142.04	0.3	1484	305	PH043	IH043
2655	5.3	165.38	0.2	1484	307	PH043	IH043
2655	4.3	205.06	0.2	1484	310	PH043	IH043
2655	3.8	227.50	0.2	1484	311	PH043	IH043
2655	3.1	282.10	0.1	1484	313	PH043	IH043
354	688.0	1.27	4	396	186	PH051	IH051
531	616.0	1.42	5.4	393	142	PH051	IH051
531	412.0	2.12	3.6	458	199	PH051	IH051
620	340.0	2.57	3.4	482	203	PH051	IH051
708	276.0	3.17	3.2	512	211	PH051	IH051
797	237.0	3.69	3.1	533	214	PH051	IH051
797	219.0	4.00	2.9	550	222	PH051	IH051
841	183.0	4.77	2.5	562	232	PH051	IH051
885	167.0	5.25	2.4	562	236	PH051	IH051
885	150.0	5.82	2.2	562	243	PH051	IH051
885	119.0	7.33	1.7	562	258	PH051	IH051
885	104.0	8.38	1.5	562	265	PH051	IH051
2301	153.0	5.73	5.8	1330	58	PH052	IH052
2567	127.0	6.89	5.4	1395	77	PH052	IH052
3009	103.0	8.53	5.1	1452	89	PH052	IH052
3275	92.0	9.56	5	1482	96	PH052	IH052
3452	76.0	11.51	4.3	1586	123	PH052	IH052

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	61.0	14.24	3.9	1691	144	PH052	IH052
3983	53.0	16.59	3.5	1773	161	PH052	IH052
4071	49.0	18.00	3.3	1798	170	PH052	IH052
4071	44.0	19.97	2.9	1798	184	PH052	IH052
4160	40.0	21.67	2.8	1798	192	PH052	IH052
4160	35.0	24.71	2.4	1798	207	PH052	IH052
4337	33.0	26.18	2.4	1798	209	PH052	IH052
4337	31.0	28.44	2.2	1798	217	PH052	IH052
4337	28.0	31.52	2	1798	227	PH052	IH052
4337	27.0	33.00	1.9	1798	231	PH052	IH052
4337	22.0	38.98	1.6	1798	243	PH052	IH052
4337	19.0	45.36	1.4	1798	253	PH052	IH052
4337	18.0	49.13	1.3	1798	258	PH052	IH052
4337	16.0	56.11	1.1	1798	265	PH052	IH052
4425	15.0	58.81	1.1	1798	266	PH053	IH053
4425	12.0	72.75	0.9	1798	276	PH053	IH053
4425	9.7	90.51	0.7	1798	283	PH053	IH053
4425	8.0	108.95	0.6	1798	289	PH053	IH053
4425	6.5	134.76	0.5	1798	293	PH053	IH053
4425	5.6	157.29	0.4	1798	296	PH053	IH053
4425	4.5	194.56	0.3	1798	300	PH053	IH053
4425	4.0	216.38	0.3	1798	301	PH053	IH053
4425	3.3	267.65	0.2	1798	304	PH053	IH053
708	651.0	1.34	7.5	597	471	PH061	IH061
1062	412.0	2.12	7.2	661	481	PH061	IH061
1062	340.0	2.57	5.9	715	514	PH061	IH061
1151	276.0	3.17	5.2	764	532	PH061	IH061
1328	237.0	3.69	5.2	787	534	PH061	IH061
1328	219.0	4.00	4.8	813	544	PH061	IH061
1416	183.0	4.77	4.2	832	557	PH061	IH061
1505	167.0	5.25	4.1	832	561	PH061	IH061
1505	150.0	5.82	3.7	832	572	PH061	IH061
1505	119.0	7.33	2.9	832	592	PH061	IH061
1505	104.0	8.38	2.6	832	601	PH061	IH061
4425	163.0	5.38	11.9	2153	192	PH062	IH062
4868	147.0	5.93	11.9	2186	193	PH062	IH062
4868	118.0	7.39	9.5	2407	281	PH062	IH062
5310	103.0	8.50	9	2487	300	PH062	IH062
5310	93.0	9.39	8.2	2600	332	PH062	IH062
5753	75.0	11.69	7.1	2698	371	PH062	IH062
6196	69.0	12.67	7.1	2698	373	PH062	IH062
6196	59.0	14.75	6.1	2698	411	PH062	IH062
7081	54.0	16.29	6.3	2698	403	PH062	IH062

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
7346	50.0	17.67	6	2698	413	PH062	IH062
7523	43.0	20.28	5.4	2698	437	PH062	IH062
7523	38.0	23.27	4.7	2698	463	PH062	IH062
7523	34.0	25.70	4.2	2698	480	PH062	IH062
7081	30.0	29.33	3.5	2698	508	PH062	IH062
7523	27.0	32.00	3.4	2698	511	PH062	IH062
7081	24.0	36.99	2.8	2698	535	PH062	IH062
7523	22.0	40.33	2.7	2698	538	PH062	IH062
7523	19.0	46.06	2.4	2698	550	PH062	IH062
7523	18.0	49.45	2.2	2698	556	PH063	IH063
7523	16.0	54.61	2	2698	564	PH063	IH063
7523	13.0	68.00	1.6	2698	579	PH063	IH063
7523	10.0	85.82	1.3	2698	591	PH063	IH063
7523	9.2	94.76	1.2	2698	596	PH063	IH063
7523	7.4	118.00	0.9	2698	604	PH063	IH063
7523	6.5	135.40	0.8	2698	609	PH063	IH063
7523	5.9	149.51	0.7	2698	611	PH063	IH063
7523	5.1	170.67	0.7	2698	615	PH063	IH063
7523	4.7	186.18	0.6	2698	617	PH063	IH063
7523	4.1	215.21	0.5	2698	620	PH063	IH063
7523	3.7	234.67	0.5	2698	621	PH063	IH063
7523	3.3	268.00	0.4	2698	624	PH063	IH063
1770	674.0	1.30	19.5	640	207	PH081	IH081
1947	613.0	1.43	19.5	648	208	PH081	IH081
2036	453.0	1.93	15.1	729	316	PH081	IH081
2478	344.0	2.54	14	774	343	PH081	IH081
2744	269.0	3.25	12.1	834	389	PH081	IH081
2744	235.0	3.72	10.5	886	426	PH081	IH081
2832	219.0	4.00	10.1	899	436	PH081	IH081
2832	188.0	4.67	8.7	899	472	PH081	IH081
2921	158.0	5.54	7.5	899	499	PH081	IH081
3009	144.0	6.08	7.1	899	511	PH081	IH081
3098	117.0	7.50	5.9	899	539	PH081	IH081
3098	104.0	8.44	5.3	899	555	PH081	IH081
6196	162.0	5.39	16.6	2690	183	PH082	IH082
6196	147.0	5.95	15.1	2802	230	PH082	IH082
7081	118.0	7.39	13.8	2967	266	PH082	IH082
7081	109.0	8.02	12.8	3068	298	PH082	IH082
7966	99.0	8.85	13	3092	290	PH082	IH082
9736	79.0	11.01	12.8	3201	297	PH082	IH082
12391	65.0	13.50	13.3	3183	283	PH082	IH082
13276	59.0	14.90	12.9	3232	294	PH082	IH082
13276	53.0	16.62	11.6	3406	334	PH082	IH082

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
13276	47.0	18.52	10.4	3608	369	PH082	IH082
14161	45.0	19.38	10.6	3580	363	PH082	IH082
14161	41.0	21.39	9.6	3745	392	PH082	IH082
14161	38.0	22.80	9	3883	410	PH082	IH082
14161	33.0	26.60	7.7	4047	448	PH082	IH082
14161	31.0	27.88	7.3	4047	459	PH082	IH082
14161	28.0	31.15	6.6	4047	481	PH082	IH082
14161	25.0	34.38	6	4047	500	PH082	IH082
14161	23.0	38.70	5.3	4047	519	PH082	IH082
14161	20.0	42.75	4.8	4047	534	PH082	IH082
14161	18.0	48.13	4.3	4047	550	PH082	IH082
14161	15.0	56.52	3.7	4047	569	PH083	IH083
15931	12.0	71.48	3.3	4047	581	PH083	IH083
15931	11.0	78.87	3	4047	590	PH083	IH083
15931	10.0	85.56	2.8	4047	596	PH083	IH083
15931	8.9	98.09	2.4	4047	607	PH083	IH083
15931	7.8	112.78	2.1	4047	616	PH083	IH083
15931	7.0	124.44	1.9	4047	621	PH083	IH083
15931	6.2	142.15	1.7	4047	628	PH083	IH083
15931	5.7	154.76	1.5	4047	632	PH083	IH083
15931	5.4	162.35	1.4	4047	634	PH083	IH083
15931	4.9	179.13	1.3	4047	638	PH083	IH083
15931	4.5	195.07	1.2	4047	641	PH083	IH083
15931	3.9	222.78	1.1	4047	646	PH083	IH083
3540	677.0	1.29	39.2	782	408	PH101	IH101
3983	620.0	1.41	40.4	784	393	PH101	IH101
3983	431.0	2.03	28	918	546	PH101	IH101
4868	353.0	2.48	28.1	941	545	PH101	IH101
5310	267.0	3.27	23.2	1035	605	PH101	IH101
5310	236.0	3.70	20.5	1093	638	PH101	IH101
5399	207.0	4.22	18.3	1124	666	PH101	IH101
5487	179.0	4.88	16.1	1124	693	PH101	IH101
5487	166.0	5.27	14.9	1124	707	PH101	IH101
5664	140.0	6.23	13	1124	731	PH101	IH101
5753	116.0	7.55	10.9	1124	757	PH101	IH101
5753	104.0	8.40	9.8	1124	770	PH101	IH101
15931	166.0	5.26	43.8	2991	389	PH102	IH102
17701	138.0	6.36	40.3	3108	432	PH102	IH102
20357	124.0	7.05	41.7	3027	414	PH102	IH102
22127	106.0	8.27	38.7	3125	451	PH102	IH102
24782	88.0	9.99	35.9	3205	485	PH102	IH102
26552	79.0	11.09	34.6	3240	500	PH102	IH102
27437	66.0	13.32	29.8	3512	559	PH102	IH102

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
28322	54.0	16.09	25.5	3853	611	PH102	IH102
28322	49.0	17.85	22.9	4070	642	PH102	IH102
28322	44.0	19.85	20.6	4318	670	PH102	IH102
28322	41.0	21.44	19.1	4486	688	PH102	IH102
29207	37.0	23.97	17.6	4651	706	PH102	IH102
29207	34.0	25.89	16.3	4865	722	PH102	IH102
29207	30.0	28.73	14.7	4946	742	PH102	IH102
28322	28.0	30.72	13.3	4946	758	PH102	IH102
28322	26.0	34.20	12	4946	775	PH102	IH102
24782	23.0	38.45	9.3	4946	807	PH102	IH102
29207	21.0	41.30	10.2	4946	796	PH102	IH102
29207	19.0	45.82	9.2	4946	808	PH102	IH102
29207	17.0	51.52	8.2	4946	820	PH102	IH102
30978	16.0	55.47	8.2	4946	822	PH103	IH103
30978	13.0	69.69	6.6	4946	842	PH103	IH103
30978	11.0	79.82	5.7	4946	852	PH103	IH103
30978	10.0	84.16	5.4	4946	855	PH103	IH103
30978	9.4	93.36	4.9	4946	862	PH103	IH103
30978	8.7	100.07	4.6	4946	866	PH103	IH103
30978	7.2	120.84	3.8	4946	875	PH103	IH103
30978	6.5	134.06	3.4	4946	879	PH103	IH103
30978	6.1	143.42	3.2	4946	882	PH103	IH103
30978	5.4	160.82	2.8	4946	886	PH103	IH103
30978	4.8	181.07	2.5	4946	890	PH103	IH103
30978	4.5	194.21	2.4	4946	892	PH103	IH103
30978	4.1	215.45	2.1	4946	895	PH103	IH103
31863	3.6	242.59	1.9	4946	897	PH103	IH103
5753	711.0	1.23	66.9	940	195	PH121	IH121
6196	618.0	1.42	62.6	975	240	PH121	IH121
6196	484.0	1.81	49.1	1089	379	PH121	IH121
6638	438.0	2.00	47.5	1112	395	PH121	IH121
7081	353.0	2.48	40.9	1198	463	PH121	IH121
7081	296.0	2.95	34.3	1295	531	PH121	IH121
7258	278.0	3.14	33	1321	544	PH121	IH121
7523	244.0	3.58	30.1	1349	574	PH121	IH121
7523	213.0	4.12	26.1	1349	615	PH121	IH121
7700	182.0	4.80	23	1349	648	PH121	IH121
7789	168.0	5.21	21.4	1349	664	PH121	IH121
7966	140.0	6.25	18.2	1349	696	PH121	IH121
8851	114.0	7.70	16.5	1349	715	PH121	IH121
26552	166.0	5.27	72.8	4328	175	PH122	IH122
28322	152.0	5.78	70.9	4377	194	PH122	IH122
31863	124.0	7.05	65.4	4558	249	PH122	IH122

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
32748	113.0	7.74	61.2	4711	292	PH122	IH122
33633	103.0	8.48	57.4	4870	330	PH122	IH122
35403	85.0	10.35	49.5	5229	409	PH122	IH122
38943	69.0	12.66	44.5	5525	459	PH122	IH122
40713	63.0	13.86	42.5	5648	479	PH122	IH122
42484	52.0	16.92	36.3	6096	541	PH122	IH122
44254	45.0	19.32	33.1	6424	573	PH122	IH122
44254	43.0	20.57	31.1	6577	593	PH122	IH122
44254	39.0	22.52	28.4	6744	621	PH122	IH122
44254	36.0	24.47	26.2	6744	643	PH122	IH122
44254	32.0	27.49	23.3	6744	672	PH122	IH122
44254	29.0	29.86	21.4	6744	691	PH122	IH122
44254	27.0	33.00	19.4	6744	711	PH122	IH122
44254	24.0	36.13	17.7	6744	728	PH122	IH122
44254	20.0	44.10	14.5	6744	760	PH122	IH122
44254	19.0	45.77	14.3	6744	765	PH123	IH123
44254	16.0	55.87	11.7	6744	791	PH123	IH123
44254	13.0	67.32	9.7	6744	810	PH123	IH123
44254	12.0	73.71	8.9	6744	819	PH123	IH123
44254	10.0	83.34	7.8	6744	829	PH123	IH123
44254	9.7	89.97	7.3	6744	834	PH123	IH123
44254	8.7	100.29	6.5	6744	842	PH123	IH123
44254	8.1	108.34	6	6744	846	PH123	IH123
44254	7.4	118.62	5.5	6744	852	PH123	IH123
44254	6.8	128.18	5.1	6744	856	PH123	IH123
44254	6.0	144.79	4.5	6744	861	PH123	IH123
44254	5.6	155.22	4.2	6744	864	PH123	IH123
44254	5.1	172.80	3.8	6744	869	PH123	IH123
44254	4.6	189.19	3.5	6744	872	PH123	IH123
44254	4.2	207.43	3.2	6744	875	PH123	IH123
44254	3.8	230.92	2.8	6744	878	PH123	IH123
44254	3.4	259.64	2.5	6744	-	PH123	-
40713	166.0	5.27	111.6	5538	1147	PH142	IH142
43369	138.0	6.36	98.7	5884	1288	PH142	IH142
44254	124.0	7.04	90.9	6150	1373	PH142	IH142
46909	112.0	7.84	86.5	6277	1421	PH142	IH142
57530	93.0	9.45	88	6099	1404	PH142	IH142
63725	84.0	10.47	88	5989	1405	PH142	IH142
64610	67.0	13.07	71.5	6770	1585	PH142	IH142
69036	56.0	15.75	63.4	7153	1673	PH142	IH142
69921	50.0	17.45	57.9	7563	1733	PH142	IH142
70806	44.0	20.04	51.1	8056	1807	PH142	IH142
70806	36.0	24.15	42.4	8986	1902	PH142	IH142



Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
70806	33.0	26.76	38.3	9409	1947	PH142	IH142
70806	27.0	32.24	31.8	10432	2018	PH142	IH142
70806	23.0	38.85	26.4	11300	2077	PH142	IH142
70806	20.0	43.05	23.8	12095	2105	PH142	IH142
70806	18.0	48.35	21.6	12364	2134	PH143	IH143
70806	16.0	53.53	19.5	12364	2156	PH143	IH143
70806	15.0	59.22	17.7	12364	2176	PH143	IH143
70806	14.0	62.99	16.6	12364	2188	PH143	IH143
70806	12.0	71.35	14.7	12364	2208	PH143	IH143
70806	11.0	79.07	13.2	12364	2224	PH143	IH143
70806	10.0	86.43	12.1	12364	2236	PH143	IH143
70806	9.1	96.21	10.9	12364	2249	PH143	IH143
70806	8.4	104.51	10	12364	2258	PH143	IH143
70806	7.5	115.92	9	12364	2269	PH143	IH143
70806	6.8	128.47	8.1	12364	2278	PH143	IH143
70806	6.3	139.55	7.5	12364	2285	PH143	IH143
70806	5.7	154.33	6.8	12364	2293	PH143	IH143
70806	4.7	185.96	5.6	12364	2305	PH143	IH143
70806	4.2	206.08	5.1	12364	2311	PH143	IH143
168	343.0	2.55	0.9	161	-	HA31	-
177	297.0	2.94	0.9	169	-	HA31	-
177	275.0	3.18	0.8	173	-	HA31	-
177	261.0	3.36	0.8	176	-	HA31	-
186	226.0	3.87	0.7	185	-	HA31	-
186	208.0	4.21	0.6	190	-	HA31	-
195	184.0	4.75	0.6	198	-	HA31	-
204	172.0	5.10	0.6	202	-	HA31	-
204	160.0	5.45	0.5	207	-	HA31	-
204	139.0	6.30	0.5	217	-	HA31	-
195	111.0	7.88	0.4	234	-	HA31	-
124	81.0	10.83	0.2	247	-	HA31	-
708	163.0	5.38	1.9	288	74	HA32	IHA32
708	134.0	6.52	1.6	308	92	HA32	IHA32
664	108.0	8.11	1.2	330	84	HA32	IHA32
797	80.0	10.94	1.1	365	99	HA32	IHA32
708	66.0	13.25	0.8	389	82	HA32	IHA32
708	53.0	16.49	0.6	419	89	HA32	IHA32
797	43.0	20.26	0.6	449	102	HA32	IHA32
752	36.0	24.55	0.4	450	87	HA32	IHA32
708	29.0	30.55	0.3	450	84	HA32	IHA32
797	25.0	35.44	0.3	450	108	HA32	IHA32
797	20.0	44.10	0.3	450	89	HA32	IHA32
708	18.0	48.75	0.2	450	89	HA32	IHA32

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
841	14.0	60.67	0.2	450	106	HA32	IHA32
885	17.0	51.32	0.3	450	106	HA33	IHA33
885	15.0	59.65	0.2	450	106	HA33	IHA33
885	12.0	72.27	0.2	450	106	HA33	IHA33
885	9.7	89.94	0.1	450	106	HA33	IHA33
885	7.9	110.51	0.1	450	106	HA33	IHA33
885	6.5	133.88	0.1	450	106	HA33	IHA33
885	5.3	166.61	0.1	450	106	HA33	IHA33
885	4.5	193.30	0.1	450	106	HA33	IHA33
885	3.6	240.55	0.1	450	106	HA33	IHA33
885	3.1	279.07	-	450	106	HA33	IHA33
885	2.5	347.29	-	450	106	HA33	IHA33
221	604.0	1.45	2.2	135	74	HA41	IHA41
221	297.0	2.94	1.1	170	74	HA41	IHA41
266	184.0	4.75	0.8	200	74	HA41	IHA41
266	160.0	5.45	0.7	209	74	HA41	IHA41
221	111.0	7.88	0.4	237	74	HA41	IHA41
177	81.0	10.83	0.2	247	74	HA41	IHA41
1239	163.0	5.38	3.3	606	74	HA42	IHA42
1239	134.0	6.52	2.7	647	92	HA42	IHA42
1151	108.0	8.11	2.1	696	83	HA42	IHA42
1328	80.0	10.94	1.8	769	95	HA42	IHA42
1239	66.0	13.25	1.4	820	86	HA42	IHA42
1239	53.0	16.49	1.1	882	89	HA42	IHA42
1328	43.0	20.26	0.9	946	97	HA42	IHA42
1372	36.0	24.55	0.8	967	95	HA42	IHA42
1239	29.0	30.55	0.6	967	81	HA42	IHA42
1328	25.0	35.44	0.5	967	103	HA42	IHA42
1239	20.0	44.10	0.4	967	83	HA42	IHA42
1018	18.0	48.75	0.3	967	93	HA42	IHA42
1151	14.0	60.67	0.3	967	96	HA42	IHA42
1328	17.0	51.32	0.4	967	96	HA43	IHA43
1328	15.0	59.65	0.3	967	96	HA43	IHA43
1328	12.0	72.27	0.3	967	92	HA43	IHA43
1328	9.7	89.94	0.2	967	89	HA43	IHA43
1328	7.9	110.51	0.2	967	91	HA43	IHA43
1328	6.5	133.88	0.1	967	92	HA43	IHA43
1328	5.3	166.61	0.1	967	89	HA43	IHA43
1328	4.5	193.30	0.1	967	96	HA43	IHA43
1328	3.6	240.55	0.1	967	89	HA43	IHA43
1328	3.1	279.07	0.1	967	96	HA43	IHA43
1328	2.5	347.29	0.1	967	89	HA43	IHA43
354	604.0	1.45	3.5	371	74	HA51	IHA51

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
354	297.0	2.94	1.7	470	74	HA51	IHA51
443	184.0	4.75	1.3	551	74	HA51	IHA51
443	160.0	5.45	1.2	577	74	HA51	IHA51
354	111.0	7.88	0.6	652	74	HA51	IHA51
221	81.0	10.83	0.3	674	74	HA51	IHA51
2124	170.0	5.14	6	748	124	HA52	IHA52
2124	141.0	6.22	4.9	796	153	HA52	IHA52
2124	113.0	7.73	4	857	149	HA52	IHA52
2655	91.0	9.64	4	921	186	HA52	IHA52
2478	75.0	11.67	3.1	982	143	HA52	IHA52
2478	60.0	14.50	2.5	1058	149	HA52	IHA52
2655	52.0	16.91	2.3	1109	170	HA52	IHA52
2567	43.0	20.46	1.8	1182	148	HA52	IHA52
2478	34.0	25.43	1.4	1278	144	HA52	IHA52
2655	29.0	29.89	1.3	1348	169	HA52	IHA52
2655	24.0	36.17	1.1	1349	153	HA52	IHA52
2478	19.0	44.95	0.8	1349	139	HA52	IHA52
2655	18.0	49.78	0.8	1349	179	HA52	IHA52
2567	14.0	61.87	0.6	1349	144	HA52	IHA52
2655	18.0	49.80	0.8	1349	74	HA53	IHA53
2655	15.0	60.25	0.7	1349	92	HA53	IHA53
2655	12.0	74.88	0.5	1349	90	HA53	IHA53
2655	9.9	88.02	0.4	1349	95	HA53	IHA53
2655	7.8	111.61	0.4	1349	88	HA53	IHA53
2655	6.3	138.71	0.3	1349	90	HA53	IHA53
2655	5.4	163.05	0.2	1349	95	HA53	IHA53
2655	4.4	200.27	0.2	1349	91	HA53	IHA53
2655	3.7	235.41	0.2	1349	95	HA53	IHA53
2655	3.1	284.81	0.1	1349	92	HA53	IHA53
2655	2.5	353.98	0.1	1349	90	HA53	IHA53
797	656.0	1.33	8.6	540	124	HA61	IHA61
797	350.0	2.50	4.6	666	124	HA61	IHA61
974	200.0	4.38	3.2	802	124	HA61	IHA61
797	113.0	7.75	1.5	970	124	HA61	IHA61
620	82.0	10.67	0.8	1012	124	HA61	IHA61
3363	170.0	5.14	9.5	1103	124	HA62	IHA62
3363	141.0	6.22	7.8	1174	153	HA62	IHA62
3363	113.0	7.73	6.3	1264	149	HA62	IHA62
4071	91.0	9.64	6.1	1359	180	HA62	IHA62
3894	75.0	11.67	4.8	1449	147	HA62	IHA62
3717	60.0	14.50	3.7	1561	142	HA62	IHA62
4425	52.0	16.91	3.8	1638	189	HA62	IHA62
4071	43.0	20.46	2.9	1745	141	HA62	IHA62

Maximum torque [in-lbs]	Output speed [rpm]	Exact ratio i	Maximum Power [HP]	OHL		Gear Reducer	
				Output shaft [lbs]	Input shaft [lbs]	Motorized Input	Shaft Input
3806	34.0	25.43	2.2	1798	139	HA62	IHA62
3983	29.0	29.89	1.9	1798	165	HA62	IHA62
4160	24.0	36.17	1.7	1798	160	HA62	IHA62
3894	19.0	44.95	1.3	1798	140	HA62	IHA62
3275	18.0	49.78	1	1798	141	HA62	IHA62
3894	14.0	61.87	0.9	1798	177	HA62	IHA62
4248	18.0	49.80	1.3	1798	74	HA63	IHA63
4248	15.0	60.25	1	1798	92	HA63	IHA63
4248	12.0	74.88	0.8	1798	90	HA63	IHA63
4248	9.9	88.02	0.7	1798	95	HA63	IHA63
4248	7.8	111.61	0.6	1798	88	HA63	IHA63
4248	6.3	138.71	0.5	1798	90	HA63	IHA63
4248	5.4	163.05	0.4	1798	95	HA63	IHA63
4248	4.4	200.27	0.3	1798	91	HA63	IHA63
4248	3.7	235.41	0.3	1798	95	HA63	IHA63
4248	3.1	284.81	0.2	1798	92	HA63	IHA63
4248	2.5	353.98	0.2	1798	90	HA63	IHA63

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<http://www.motovario.com/eng/corporate/sales-conditions>





