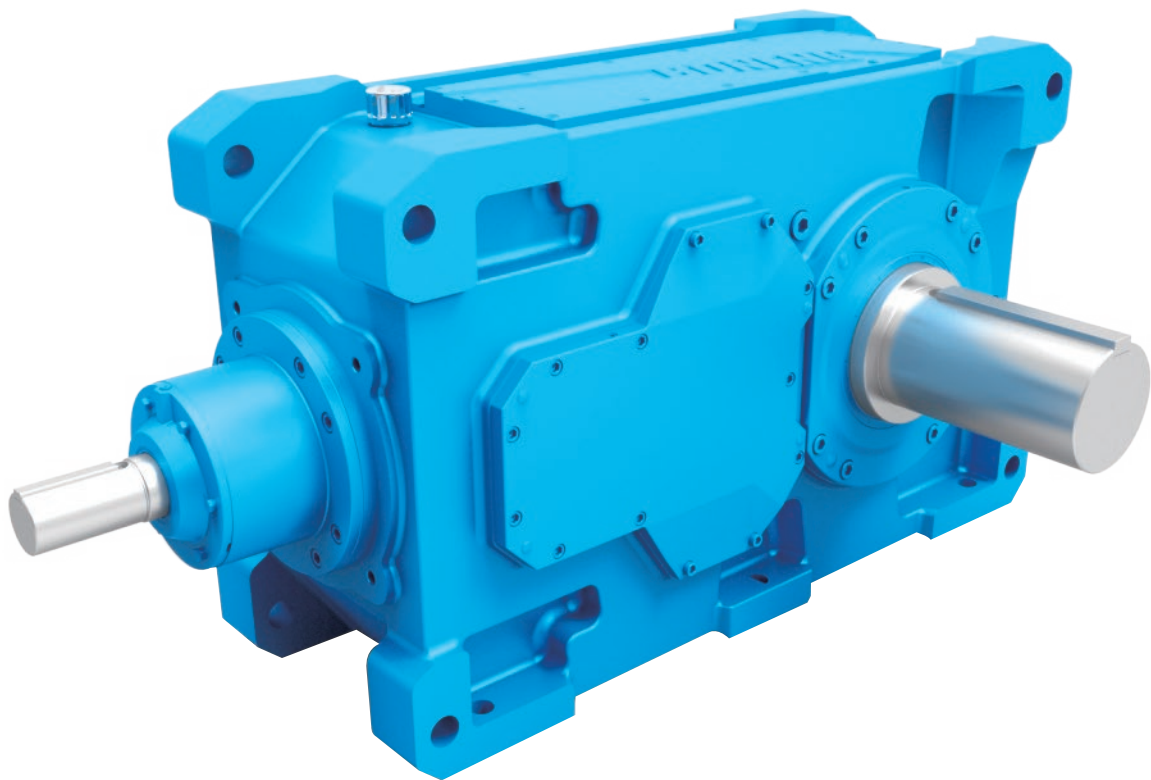


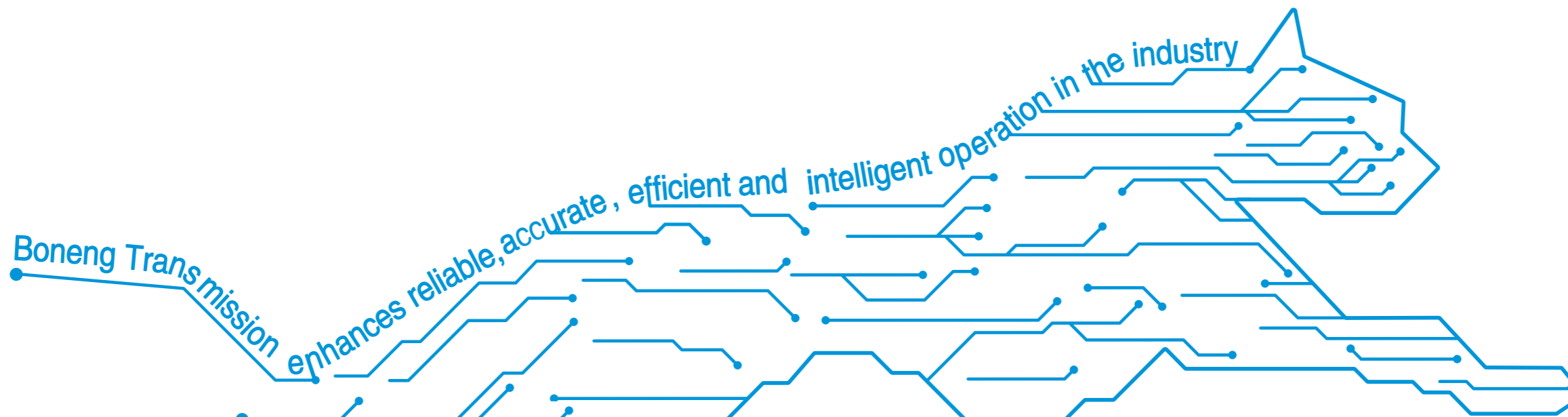
**BONENG**



**H Helical Gearbox & B  
Bevel-helical Gearbox Sizes 13-18**

Edit date 01/2023  
Selection Catalogue: C05.0028-EN

**Boneng Transmission**



Controller/ Drive/ Motor/ Gearmotor/ Gearbox

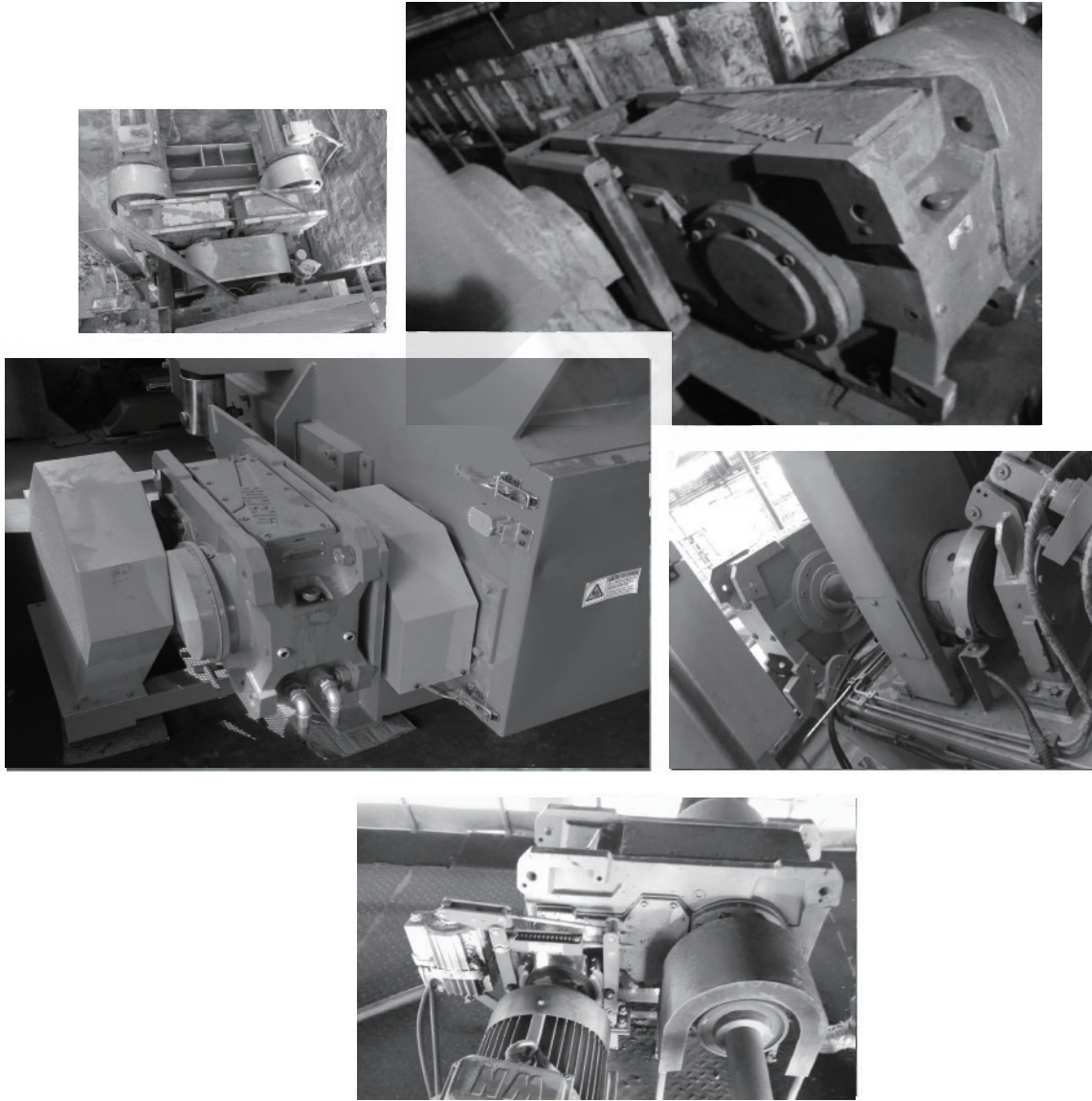
# **BONENG** H Helical Gearbox & B Bevel-helical Gearbox



On the basis of summarizing gearbox design and manufacturing experiences in the past twenty years, analyzing and absorbing advanced technology of international heavy duty gearbox production, Boneng transmission makes innovative development, pushing forward the new type H&B heavy duty gearbox to better satisfy customer requirements.

Compared with internationally advanced gearbox and the original H&B industrial gearbox of Boneng, the new type H&B heavy duty gearbox have the following characteristics:

- ◆ Unique modular design, general applications of components are maximized, which is convenient for international production. Storage quantity is small, supplement circle is short.
- ◆ Unique modular design, allocation exchange degree of functional attachments flexibly satisfy various kinds of required structures, arrangement form and different working situations of customer equipment.
- ◆ Transmission shaft is in line layout, under the same volume, transmission central distance is larger, bearing capacity is larger.
- ◆ Wheel pair meshing contact ratio increases, transmission is more stable, noise is lower.
- ◆ The appearance design shows world-wide product design idea of Boneng Transmission, it owns intellectual property rights.
- ◆ Frame type load-carrying structure design, the whole structure is stronger, footing is more fastened.
- ◆ Improved cooling fan and cooling coil design can effectively reduce the temperature during gearbox running.
- ◆ Output shaft sealing applies double oil sealing, the sealing is more reliable, the applications are wider.



For coal, electric power, petroleum, metallurgy, cement, shipping, port, hoisting and conveying industries, the high-quality and long lifespan new type gearbox of Boneng Transmission can satisfy your requirements.

## Note:

- ◆ The structure scheme, appearance diagram and other attached diagrams in sample are examples, there is no strict proportion requirement. (The unmarked dimension units are mm).
- ◆ The marked weight is average value, it has no constraint force.

## You must conform to the following instructions:

- ◆ To prevent accidents, all the rotation parts are added with protective covers according to the safety regulations of the nation and region.
- ◆ Before debugging, you should carefully read instruction book.
- ◆ Gearbox is on running—permission status when delivered, you should add lubrication oil before putting it into running.
- ◆ The marked oil quantity in sample is only reference value, actual oil filling quantity should be the same with the mark on oil immersion lens.
- ◆ Lubrication oil viscosity should be selected according to working situation and application environment temperature of gearmotor.
- ◆ You can only apply lubrication oil of internationally famous brand.

## Product Function Mark



Oil glass



Breather



Oil filler

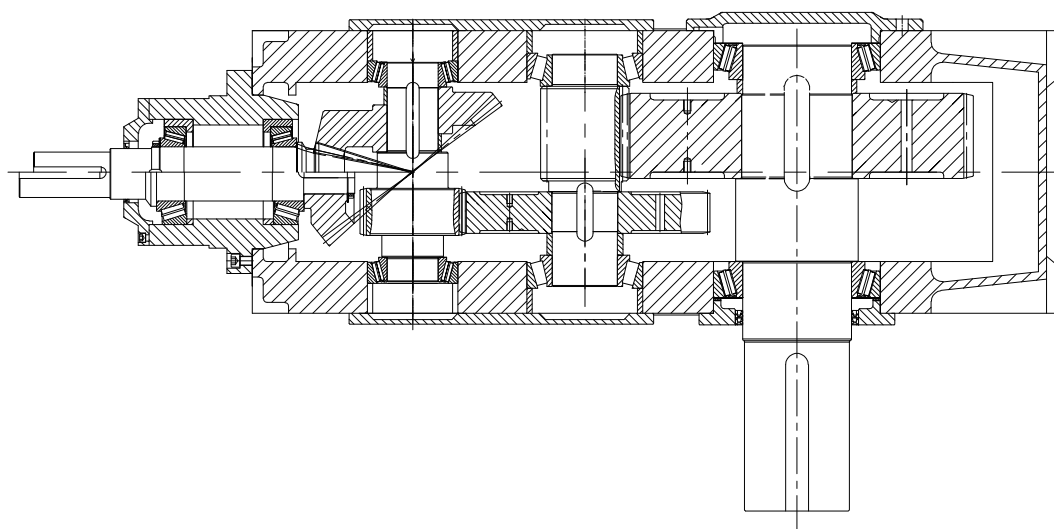
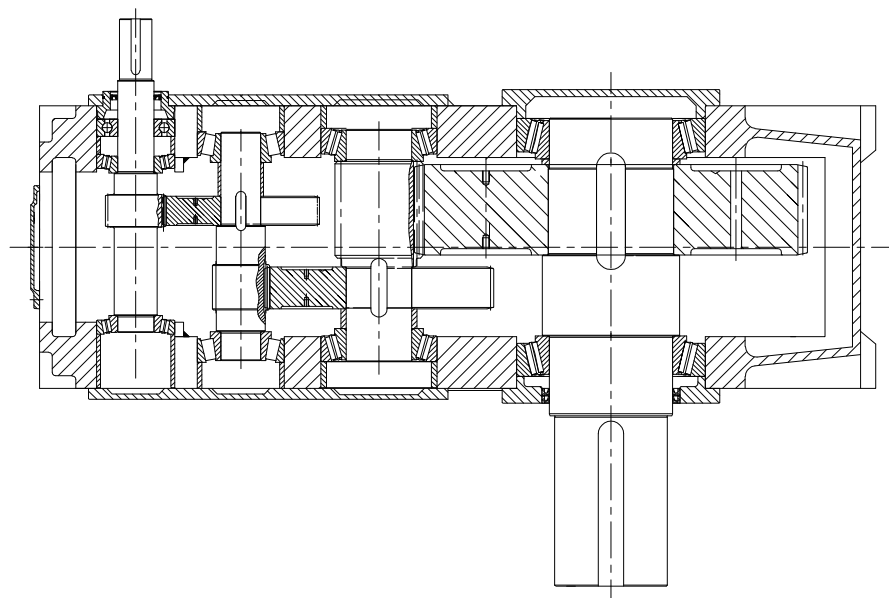


Oil drain

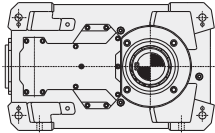
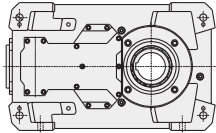
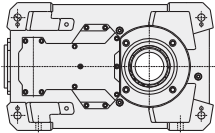
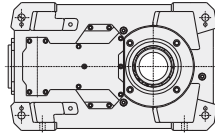
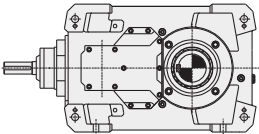
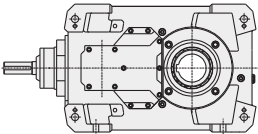
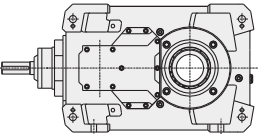
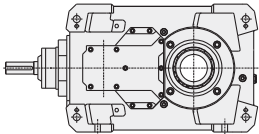
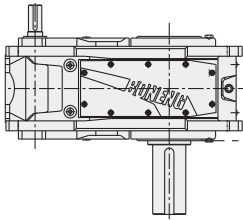
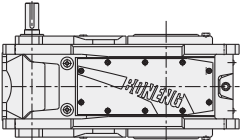
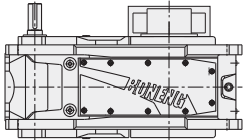
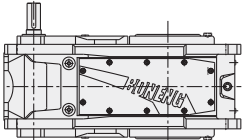
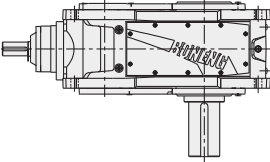
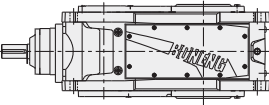
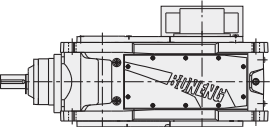
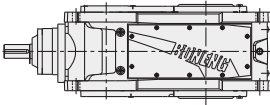
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## 1. Structure scheme:



## 2. Mounting positions:

Horizontal mounting				
	Solid shaft	Hollow shaft	Hollow shaft with shrink disk	Hollow shaft with involute spline
H series iN=3. 15-450	 H...HS	 H...HH	 H...HD	 H...HK
B series iN=6. 3-400	 B...HS	 B...HH	 B...HD	 B...HK
Vertical mounting				
	Solid shaft	Hollow shaft	Hollow shaft with shrink disk	Hollow shaft with involute spline
H series iN=3. 15-450	 H...VS	 H...VH	 H...VD	 H...VK
B series iN=6. 3-400	 B...VS	 B...VH	 B...VD	 B...VK



### 3.Selection:

Serial	Definition	Symbol	Parameter calculation						
1	Driven equipment factor	$f_1$	Refer to page5 $f_1$ table						
2	Prime mover factor	$f_2$	Prime mover factor		$f_2$				
			Motor, hydraulic motor, turbine		1.0				
			4-6 Cylinder piston engine, cyclic variation 1:100 to 1: 200		1.25				
			1-3 Cylinder piston engine, cyclic variation 1:100		1.5				
3	Gear unit safety factor	SF	Refer to page4 sf table						
4	Relation between input and output shafts	H、B	Parallel shaft select H series, right angle, select B series						
5	Transmission efficiency of gear unit	$\eta$	2-stage:96%, 3-stage:94%, 4-stage:92%						
6	Input speed	$n_1$	$\leq 1800r/min$ For higher speed, please consult us.						
7	Determination of ratio	$i$	$i = n_1/n_2$						
8	Confirm gear unit input power with torque or power needed by driven equipment.	$P_1$	$P_1 = T_2 \cdot n_1 / (9550 \cdot i \cdot \eta)$ 或 $P_1 = P_2 / \eta$						
9	According to calculation, check transmission capacity table to determine gear unit size	$T_2N$ 、 $P_1N$	$T_2N \geq T_2 \cdot f_1 \cdot f_2 \cdot SF$ 或 $P_1N \geq P_1 \cdot f_1 \cdot f_2 \cdot SF$ If it doesn't satisfy conditions: $3.33 \cdot P_1 \geq P_1N$ , Please consult us.						
10	Peak torque verification *	$T_A$	$P_1N \geq T_A \cdot n_1 \cdot f_3 / 9550$	Load peaks per hour					
				$f_3$		1-5	6-30	31-100	>100
				Single direction loading	0.5	0.65	0.7	0.85	
				Alternate loading	0.7	0.95	1.10	1.25	
11	After selecting connection mounting and accessories, check allowable strength of the shaft	$Fr_1/Fr_2$ $Fa_1/Fa_2$	Radial load need to be checked when radial load imposed by belt pulley, chain sprocket and gear are represent. (See page 32)						
12	Determine lubrication method, select lubrication oil		Horizontal mounting		Vertical mounting				
			Lubrication methods for selection: 1) Splash lubrication 2) Dip-in lubrication 3) Forced lubrication Shaft end pump lubrication Motor oil pump lubrication Oil station lubrication		Lubrication methods for selection: 1) Dip-in lubrication 2) Forced lubrication Shaft end pump lubrication Motor oil pump lubrication Oil station lubrication				
13	Determine cooling method		1) If it satisfies the following condition, the gear unit will not be equipped with auxiliary cooling device. $P_1 \leq P_{GA} \times f_4 \times f_8$ 2) If it satisfies the following condition, the gear unit will be equipped with cooling fan. $P_1 \leq P_{GB} \times f_4 \times f_8$ 3) If it satisfies the following condition, the gearbox will be equipped with cooling coil. $P_1 \leq P_{GC} \times f_5 \times f_8$ 4) If it satisfies the following condition, the gear unit will be equipped with water-oil cooler. $P_1 \leq P_{GD} \times f_5 \times f_8$ 5) Gear unit can be equipped with other cooling devices: air-oil cooler, water-oil cooler, users can equip petrol station by themselves to provide circulated cooling oil. (Refer to page 4 for $f_4$ , $f_5$ , $f_8$ ).						
14	Determine each item according to type designation		Refer to page 4.						

\* Peak torque: maximum loading torque means the maximum torque caused by starting, braking or maximum pulse loading. (Under common working conditions, peak torque is the maximum torque may occur when a machine starts or brakes)

Gearbox safety factor		SF
For ordinary equipment, only single machine stops production when gear unit fails. easy to replace spare parts and minor loss occurred.		$1.0 \leq SF \leq 1.3$
For important equipment, the production line or the whole plant will stop production, when gear unit fails, great loss occurred, stopping accident loss is large.		$1.3 < SF \leq 1.5$
High reliability requirement, it may cause heavy production stop accident, when gear unit fails, causing large economic loss and even may cause human life accident.		$1.5 < SF$

Thermal factor		f4				
Gear unit without cooling or with fan						
Ambient temperature	Operating cycle per hour					
	100	80	60	40	20	
10 °C	1.11	1.31	1.60	2.14	3.64	
20 °C	1.00	1.18	1.44	1.93	3.28	
30 °C	0.88	1.04	1.27	1.70	2.89	
40 °C	0.75	0.89	1.08	1.45	2.46	
50 °C	0.63	0.74	0.91	1.22	2.07	

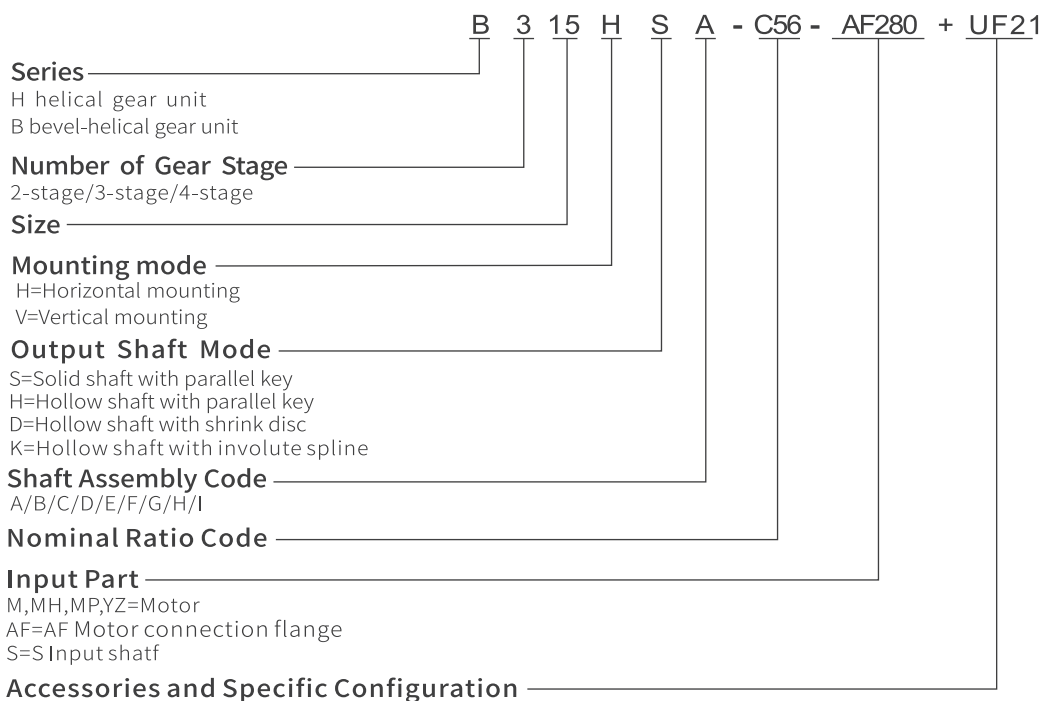
Thermal factor		f5				
Gearbox with cooling coil or with cooling coil and fan						
Ambient temperature	Operating cycle per hour					
	100	80	60	40	20	
10 °C	1.05	1.23	1.50	2.03	3.41	
20 °C	1.00	1.17	1.43	1.93	3.25	
30 °C	0.93	1.09	1.33	1.79	3.02	
40 °C	0.87	1.02	1.24	1.68	2.83	
50 °C	0.81	0.95	1.16	1.56	2.63	

⚠ Note: Operating cycle ED;  $ED = \frac{tf}{tf+tr} \cdot 100\%$   
 tf; Working time with loading; tr: Stop time.

Vertical mounted gear unit oil supply factor. For horizontally mounted gear unit f8=1.0 When forced lubrication applied, f8=1.05						f8
Gear unit type	Oil supply method	Without auxiliary cooling device	With cooling fan	With cooling coil	With fan and cooling coil	
H2..V, H3..V H4..V	Dip-in lubrication	0.95	*	0.95	*	
	Forced lubrication	1.15	*	1.05	*	
B2..V, B3..V B4..V	Dip-in lubrication	0.95	0.95	0.95	0.95	
	Forced lubrication	1.15	1.10	1.10	1.10	

\* Please consult us.

### Type designation:



## 4 Service factor:

Driven equipment factor							f1
Driven equipment	Daily operating time with load(hour)			Driven equipment	Daily operating time with load(hour)		
	≤ 2	> 2-10	> 10		≤ 2	> 2-10	> 10
<b>Sewage treatment</b>				<b>Conveying machine</b>			
Concentrator(Central Transmission)	-	-	1.2	Bucket conveyor	-	1.4	1.5
Compressed filter	1.0	1.3	1.5	Winch	1.4	1.6	1.6
Flocculator	0.8	1.0	1.3	Hoist	-	1.5	1.8
Aerator	-	1.8	2.0	Belt conveyor≤150kW	1.0	1.2	1.3
Collector	1.0	1.2	1.3	Belt conveyor≥150kW	1.1	1.3	1.4
Vertical,rotary group				Elevators for goods*	-	1.2	1.5
Blended collector	1.0	1.3	1.5	Elevators for customers*	-	1.5	1.8
Concentrator	-	1.1	1.3	Scraper conveyor	-	1.2	1.5
Screw pump	-	1.3	1.5	Automatic ladder	1.0	1.2	1.4
Water wheel machine	-	-	2.0	Rail traveling mechanism	-	1.5	-
Pump				<b>Various frequency device</b>	-	1.8	2.0
Centrifugal pump	1.0	1.2	1.3	<b>Reciprocating compressor</b>	-	1.8	1.9
Volume-down pump				<b>Hoisting mechanism**</b>			
1 Piston	1.3	1.4	1.8	Rotary mechanism*	-	1.4	1.8
>1 Piston	1.2	1.4	1.5	Pitching mechanism	-	1.1	1.4
<b>Dredge</b>				Traveling mechanism	-	1.6	2.0
Bucket conveyor	-	1.6	1.6	Lifting mechanism	-	1.1	1.4
Unloading device	-	1.3	1.5	Jibcrane	-	1.2	1.6
Caterpillar travelling mechanism	1.2	1.6	1.8	<b>Cooling tower</b>			
Bucket digger				Cooling tower fan	-	-	2.0
Be used for picking up	-	1.7	1.7	Fan (Shaft flow and centrifugal type)	-	1.4	1.5
Be used for rough materials	-	2.2	2.2	<b>Food industry</b>			
Chopper	-	2.2	2.2	Sugar production	-	-	1.7
Traveling mechanism*	-	1.4	1.8	Sugar-cane cutter*	-	-	1.7
<b>Plate blender</b>	-	1.0	1.0	Sugar crane mill	-	-	1.7
<b>Chemical industry</b>				Beet sugar production	-	-	1.2
Extruder	-	-	1.6	Beet masher	-	-	1.4
Paste mixer	-	1.8	1.8	Squeeze machine, mechanical refrigerator,	-	-	1.4
Rubber calendar	-	1.5	1.5	Cooking machine	-	-	1.5
Cooling cylinder	-	1.3	1.4	Beet cleaner	-	-	1.5
Material mixer, be used for				Beet chopper			
Uniform medium	1.0	1.3	1.4	<b>Paper-making machinery</b>			
Non-uniform medium	1.4	1.6	1.7	Various kinds***	-	1.8	2.0
Blender, be used for				Pulper driving device	Supply goods according to customer requirements		
Uniform density medium	1.0	1.3	1.5	<b>Centrifugal compressor</b>	-	1.4	1.5
Un-uniformed medium	1.2	1.4	1.6	<b>Rope way cable car</b>			
Un-uniformed gas absorption	1.4	1.6	1.8	Delivery ropeway	-	1.3	1.4
Oven	1.0	1.3	1.5	Cableway of shuttle system	-	1.6	1.8
Centrifugal machine	1.0	1.2	1.3	T rod elevator	-	1.3	1.4
<b>Metal processing equipment</b>				Continuous cableway	-	1.4	1.6
Plate turnover	1.0	1.0	1.2	<b>Cement industry</b>			
Steel pushing device	1.0	1.2	1.2	Concrete blender	-	1.5	1.5
Winding machine	-	1.6	1.6	Crusher**	-	1.2	1.4
Cooling bed transverse frame	-	1.5	1.5	Rotary kiln	-	-	2.0
Roller leveler	-	1.6	1.6	Tube mill	-	-	2.0
Roller path				Powder concentrator	-	1.6	1.6
Continuous	-	1.5	1.5	Roller press	-	-	2.0
Interval	-	2.0	2.0				
Reversing mill	-	1.8	1.8				
Cutter	-	1.5	1.5				
Continuous*	1.0	1.0	1.0				
Crank type*	-	1.4	1.4				
Continuous casting driving device							
Rolling mill	-	2.5	2.5				
Reversing cogging mill	-	2.5	2.5				
Reversing plate slab mill	-	1.8	1.8				
Reversing wire mill	-	2.0	2.0				
Reversing thin plate mill	-	1.8	1.8				
Reversing middle thickness plate mill	0.9	1.0	-				
Roll gap adjusting and driving device							

Driven equipment factor							f <sub>1</sub>		
Driven equipment	Daily running time with load(hour)			Driven equipment	Daily running time with load(hour)				
	≤ 2	> 2-10	> 10		≤ 2	>2-10	> 10		
<b>Wood industry</b>				<b>Plastics industry</b>					
Barking machine				Miller, compound grinding,	1.25	1.25	1.25		
Feed drive	1.25	1.25	1.50	Coating, film,					
Main drive	1.75	1.75	1.75	Conveying pipe, Pulling rod, thin type	1.25	1.25	1.50		
Conveyor				Pipe type, Pile drawer					
Burner, repeating saw,	1.25	1.25	1.50	Continuous mixer, Calender,	1.50	1.50	1.50		
Rotary tower, transit transport	1.50	1.50	1.50	Blow film, to plasticizing					
Main loading, heavy loading	1.50	1.50	1.50	Batch mixer	1.75	1.75	1.75		
Main original wood, land base	1.75	1.75	2.00						
Conveying chain				<b>Rubber industry</b>					
Floor	1.50	1.50	1.50	Continuous strong inner mixer, Mix roller,					
Green-wood	1.50	1.50	1.75	Batch feeding mixer (except for double sticks)	1.50	1.50	1.50		
Cutting Chain				Refiner, calender					
Saw transmission, traction	1.50	1.50	1.75	Double roller clamp feeding and mixed miller					
Peeling barrel	1.75	1.75	2.00	Batch strong inner mixer,	1.25	1.25	1.50		
Feed drive				Double stick single groove grain stick					
Edging, wood trimmer,	1.25	1.25	1.50	Miller heater, double sticks					
Planer feed, assorting table,				Batch feeding mixer	1.75	1.75	1.75		
Automatic incline lifting				Grinder, Crusher heater, double					
Multi-shaft feed, raw wood	1.75	1.75	1.75	Rolls, Batch charing grinder					
Transportation and rotation				Wave roll crusher	2.00	2.00	2.00		
Transportation				<b>Generator and exciter</b>	1.00	1.00	1.25		
Charging tray,				<b>Hammer crusher</b>	1.75	1.75	2.00		
Plywood lathe drive,	1.50	1.50	1.75	<b>Sand miller</b>	1.25	1.25	1.50		
Conveying chain, Lifting									

Note: 1. Determine required power P<sub>2</sub> of the driven equipment;

\*) Determine rated power according to maximum torque

\*\*) The actual service factor should be selected according to accurate loading classification, for specific information, please consult us.

\*\*\*) It is necessary to check thermal capacity.

2. The factors are experience value. The premise of using these factors is that the above mechanical equipment should conform to common design regulation and loading conditions. If there is special situation, please consult us.

3. For machines that are not listed in this table, please consult us.

## 5. Key to symbols:

Symbols	Instruction	Unit
$i$	Actual ratio	/
$i_N$	Nominal ratio	
$i_{ex}$	Exact ratio	
$T_2$	Output torque	N · m
$T_{2N}$	Reted output torque	
$T_A$	Max.Torque occurring on input shaft, e.g.Peak operating,starting or braking torque	
$T_{n2atmax}$	Nominal output torque at highest speed	
$T_{n2atmin}$	Nominal output torque at lowest speed	
$P_{1N}$	Rated input power	kW
$P_{GA}$	Nominal thermal capacity of gearbox without auxiliary cooling equipmengt	
$P_{GB}$	Nominal thermal capacity gearbox with cooling fan	
$P_{GC}$	Nominal thermal capacity of gearbox with cooling coil	
$P_{GD}$	Normal thermal capacity of gearbox with water-oil cooler	
$P_1$	Input power	
$P_2$	Required power of driven machine	/
$f_1$	Driven machine factor	
$f_2$	Prime mover factor	
$f_3$	Peak load factor	
$f_4$	Thermal factor(Without auxiliary cooling,or witho fan cooling)	
$f_5$	Thermal factor(with water-oil cooler)	
$f_8$	Oil supply factor for vertical gearbox	r/min
$S_F$	Safety factor of gearbox	
$n_1$	Input speed	
$n_2$	Output speed	r/min
$n_{2N}$	Nominal output speed	
$\eta$	Efficiency	/
$f$	Motor frequency	Hz
$U_m$	Motor voltage	V
ED	Operating cycle per hour	%

## 6 Selection example

### Known conditions:

#### Prime mover:

Motor power: 185kW

Motor speed:  $n_1=1450\text{r/min}$

Maximum starting torque:  $T_A=1850\text{N.m}$

(This value is usually provided by the users. If not, normal torque  $\times 1.6$  preails)

#### Driven equipment (working machine):

Type: Belt conveyor

Speed:  $n_2=26\text{r/min}$

Required power:  $P_2=155\text{kW}$

Duty: 12 hours/day

Starts per hour: 7

Operating cycle per hour: 100%

Ambient temperature:  $40^\circ\text{C}$

Place of installation: Outdoor mounting

Altitude: 500m

#### Gear box:

Bevel-helical gear unit, horizontal mounting, with parallel key

solid shaft output

Shaft arrangement form C

Output shaft direction of rotation: run clockwise to output shaft

With backstop (accessory code UB11)

### Selection procedure:

#### 1. Calculation of ratio:

$$i = n_1/n_2 = 1450/26 = 55.8 \quad iN = C56$$

#### 2. Determine rated power of gear box

$$P_1 = P_2 / \eta = 155 / (94\%) = 165\text{kW}$$

$$P_{1N} \geq P_1 \cdot f_1 \cdot f_2 \cdot SF = 165 \times 1.4 \times 1 \times 1.4 = 323\text{kW}$$

Refer to transmission capacity table B3, select size 14  $P_{1N} = 340\text{kW}$

$$3.33 \cdot P_1 = 3.33 \times 165 = 549\text{kW} \geq P_{1N} \quad \text{Satisfy requirements}$$

#### 3. Peak torque verification

$$P_{1N} \geq T_A \cdot n_1 \cdot f_3 / 9550 = 1850 \times 1450 \times 0.65 / 9550 = 183\text{kW}$$

$$P_{1N} = 340\text{kW} \geq 183\text{kW} \quad \text{Satisfy requirements}$$

#### 4. Verify thermal capacity:

$$P_{GA} \cdot f_4 \cdot f_8 = 135 \times 0.75 \times 1 = 101\text{kW} \leq P_1 = 165\text{kW}$$

Thermal capacity not sufficient

$$P_{GB} \cdot f_4 \cdot f_8 = 330 \times 0.75 \times 1 = 248\text{kW} \geq P_1 = 165\text{kW}$$

Thermal capacity is sufficient

When gear unit with cooling fan, thermal capacity is sufficient.

Fan accessory code is UF 21

#### 5. Determine gear unit type: B314HSC-C56+UF21+UB11

## 7 Transmission Capacity table:

H2(iN=3.15-20):

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	H213			H214			H215			
				T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	
B32	3.15	1740	552.4				80	3.061	4762				
		1450	460.3						3968				
		1150	365.1						3147				
		960	304.8						2627				
B36	3.55	1740	490.1				90	3.429	4782				
		1450	408.5						3985				
		1150	323.9						3161				
		960	270.4						2638				
B40	4	1740	435.0				100	3.929	4637				
		1450	362.5						3864				
		1150	287.5						3065				
		960	240.0						2559				
B45	4.5	1740	386.7				100	4.387	4153				
		1450	322.2						3461				
		1150	255.6						2745				
		960	213.3						2291				
B50	5	1740	348.0				90	4.916	3336				
		1450	290.0						2780				
		1150	230.0						2205				
		960	192.0						1840				
B56	5.6	1740	310.7				90	5.558	2950				
		1450	258.9						2459				
		1150	205.4						1950				
		960	171.4						1628				
B63	6.3	1740	276.2	86	5.878	2666	117	5.882	3624	143	6.000	4342*	
		1450	230.2						2221			3020	3619
		1150	182.5						1762			2395	2870
		960	152.4						1471			1999	2396
B71	7.1	1740	245.1	86	6.583	2380	117	6.588	3236	143	7.022	3711*	
		1450	204.2						1983			2696	3092
		1150	162.0						1573			2139	2452
		960	135.2						1313			1785	2047
B80	8	1740	217.5	86	7.543	2077	117	7.549	2824	143	8.000	3257*	
		1450	181.3						1731			2353	2714
		1150	143.8						1373			1866	2152
		960	120.0						1146			1558	1797
B90	9	1740	193.3	86	8.423	1860	117	8.429	2529	143	8.742	2980*	
		1450	161.1						1550			2108	2484
		1150	127.8						1230			1671	1970
		960	106.7						1026			1395	1644
C10	10	1740	174.0	86	9.439	1660	117	9.446	2257	143	9.882	2636*	
		1450	145.0						1383			1881	2197
		1150	115.0						1097			1491	1742
		960	96.0						916			1245	1455
C11	11.2	1740	155.4	86	10.671	1468	117	10.679	1996	143	10.900	2390*	
		1450	129.5						1224			1663	1992
		1150	102.7						970			1319	1580
		960	85.7						810			1101	1319
C13	12.5	1740	139.2	86	11.918	1315	117	11.927	1787	143	12.208	2134*	
		1450	116.0						1096			1489	1779
		1150	92.0						869			1181	1411
		960	76.8						725			986	1178
C14	14	1740	124.3	86	13.621	1150	117	13.631	1564	143	13.708	1901*	
		1450	103.6						959			1303	1584
		1150	82.1						760			1034	1256
		960	68.6						635			863	1049
C16	16	1740	108.8	86	15.762	994	117	15.774	1351	143	15.164	1718*	
		1450	90.6						828			1126	1432
		1150	71.9						657			893	1136
		960	60.0						548			746	948
C18	18	1740	96.7	86	17.487	896	117	17.500	1218	143	17.209	1514*	
		1450	80.6						747			1015	1262
		1150	63.9						592			805	1001
		960	53.3						494			672	835
C20	20	1740	87.0	86	19.526	802	117	19.540	1091				
		1450	72.5						669			909	
		1150	57.5						530			721	
		960	48.0						443			602	

Note:   Forced lubrication required on horizontal gearbox.  
\* On request.

H216			H217			H218			n <sub>2N</sub> (r/min)	n <sub>1</sub> (r/min)	i <sub>N</sub>	Code
T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)				
125	3.148	7235							552.4	1740	3.15	B32
		6029							460.3	1450		
		4782							365.1	1150		
		3992							304.8	960		
144	3.684	7122				172	3.474	9021	490.1	1740	3.55	B36
		5935						7517	408.5	1450		
		4707						5962	323.9	1150		
		3929						4977	270.4	960		
130	4.198	5642				195	4.055	8762	435.0	1740	4	B40
		4702						7301	362.5	1450		
		3729						5791	287.5	1150		
		3113						4834	240.0	960		
130	4.587	5164				190	4.628	7480	386.7	1740	4.5	B45
		4303						6233	322.2	1450		
		3413						4944	255.6	1150		
		2849						4127	213.3	960		
135	5.185	4744				177	5.251	6142	348.0	1740	5	B50
		3953						5118	290.0	1450		
		3135						4059	230.0	1150		
		2617						3388	192.0	960		
130	5.719	4142	215	5.462		177	5.726	5632	310.7	1740	5.6	B56
		3451			5977			258.9	1450			
		2737			4740			205.4	1150			
		2285			3957			171.4	960			
176	5.996	5348*	215	6.374		255	6.305		276.2	1740	6.3	B63
		4457			5121			230.2	1450			
		3535			4062			182.5	1150			
		2951			3391			152.4	960			
176	7.016	4570*	215	7.276		255	7.359		245.1	1740	7.1	B71
		3809			4486			204.2	1450			
		3021			3558			162.0	1150			
		2522			2970			135.2	960			
176	7.994	4011*	215	8.255		255	8.400		217.5	1740	8	B80
		3343			3954			181.3	1450			
		2651			3136			143.8	1150			
		2213			2618			120.0	960			
176	8.736	3671*	215	9.003		255	9.530	4875*	193.3	1740	9	B90
		3059			3626			161.1	1450			
		2426			2876			127.8	1150			
		2025			2401			106.7	960			
176	9.875	3247*	215	10.119		255	10.393	4470*	174.0	1740	10	C10
		2706			3226			145.0	1450			
		2146			2559			115.0	1150			
		1792			2136			96.0	960			
176	10.892	2944*	215	11.101		255	11.681	3977*	155.4	1740	11.2	C11
		2454			2941			129.5	1450			
		1946			2332			102.7	1150			
		1624			1947			85.7	960			
176	12.199	2629*	215	12.392		255	12.816	3625*	139.2	1740	12.5	C13
		2191			2634			116.0	1450			
		1737			2089			92.0	1150			
		1450			1744			76.8	960			
176	13.698	2341*	215	13.875		255	14.306	3248*	124.3	1740	14	C14
		1951			2353			103.6	1450			
		1547			1866			82.1	1150			
		1292			1558			68.6	960			
176	15.153	2116*	215	15.285		255	16.017	2901*	108.8	1740	16	C16
		1764			2136			90.6	1450			
		1399			1694			71.9	1150			
		1168			1414			60.0	960			
176	17.196	1865*	215	17.253		255	17.646	2633*	96.7	1740	18	C18
		1554			1892			80.6	1450			
		1232			1501			63.9	1150			
		1029			1253			53.3	960			
						255	19.917	2333*	87.0	1740	20	C20
								1944	72.5	1450		
								1542	57.5	1150		
								1287	48.0	960		

Note:   Forced lubrication required on horizontal gearbox.  
\* On request.



H3(iN=14-112):

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	H313			H314			H315							
				T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)					
C14	14	1740	124.3														
		1450	103.6														
		1150	82.1														
		960	68.6														
C16	16	1740	108.8	88	14.974	1071	120	14.985	1459	153	15.047	1853					
		1450	90.6										892	1216	1544		
		1150	71.9										708	964	1224		
		960	60.0										591	805	1022		
C18	18	1740	96.7	88	16.884	950	120	16.897	1294	153	17.091	1631					
		1450	80.6										791	1078	1359		
		1150	63.9										628	855	1078		
		960	53.3										524	714	900		
C20	20	1740	87.0	88	19.502	822	120	19.517	1120	153	19.466	1432					
		1450	72.5										685	934	1193		
		1150	57.5										543	740	946		
		960	48.0										454	618	790		
C22	22.4	1740	77.7	88	22.247	721	120	22.264	982	153	21.285	1310					
		1450	64.7										601	818	1091		
		1150	51.3										476	649	866		
		960	42.9										398	542	723		
C25	25	1740	69.6	88	23.836	673	120	23.854	917	153	23.737	1174					
		1450	58.0										561	764	979		
		1150	46.0										445	606	776		
		960	38.4										371	506	648		
C28	28	1740	62.1	88	27.606	581	120	27.626	791	153	27.005	1032					
		1450	51.8										484	660	860		
		1150	41.1										384	523	682		
		960	34.3										320	437	570		
C32	31.5	1740	55.2	88	31.127	515	120	31.150	702	153	30.553	912					
		1450	46.0										429	585	760		
		1150	36.5										340	464	603		
		960	30.5										284	387	503		
C36	35.5	1740	49.0	88	35.954	446	120	35.981	608	153	34.800	801					
		1450	40.8										372	506	668		
		1150	32.4										295	402	529		
		960	27.0										246	335	442		
C40	40	1740	43.5	88	41.014	391	120	41.045	533	153	38.051	733					
		1450	36.3										326	444	611		
		1150	28.8										258	352	484		
		960	24.0										216	294	404		
C45	45	1740	38.7	88	43.944	365	120	43.976	497	153	42.435	657					
		1450	32.2										304	414	547		
		1150	25.6										241	329	434		
		960	21.3										201	274	362		
C50	50	1740	34.8	88	47.488	338	120	47.523	460	153	48.276	577					
		1450	29.0										281	383	481		
		1150	23.0										223	304	382		
		960	19.2										186	254	319		
C56	56	1740	31.1	88	54.930	292	120	54.971	398	153	54.559	511					
		1450	25.9										243	331	426		
		1150	20.5										193	263	338		
		960	17.1										161	219	282		
C63	63	1740	27.6	88	61.370	261	120	61.415	356	153	62.655	445					
		1450	23.0										218	297	371		
		1150	18.3										173	235	294		
		960	15.2										144	196	245		
C71	71	1740	24.5	88	69.171	232	120	69.222	316	153	71.706	389					
		1450	20.4										193	263	324		
		1150	16.2										153	209	257		
		960	13.5										128	174	214		
C80	80	1740	21.8	88	76.462	210	120	76.519	286	153	79.016	353					
		1450	18.1										175	238	294		
		1150	14.4										139	189	233		
		960	12.0										116	158	195		
C90	90	1740	19.3	88	85.977	186	120	86.041	254	153	88.911	314					
		1450	16.1										155	212	261		
		1150	12.8										123	168	207		
		960	10.7										103	140	173		
D10	100	1740	17.4	88	95.211	168	120	95.282	229	153	97.769	285					
		1450	14.5										140	191	238		
		1150	11.5										111	152	188		
		960	9.6										93	127	157		
D11	112	1740	15.5							153	109.118	255					
		1450	12.9														213
		1150	10.3														169
		960	8.6														141

H316			H317			H318			n <sub>2N</sub> (r/min)	n <sub>1</sub> (r/min)	iN	Code	
T2N (kN·m)	ies	P1N (kW)	T2N (kN·m)	ies	P1N (kW)	T2N (kN·m)	ies	P1N (kW)					
			220	13.683	2929				124.3	1740	14	C14	
					2441					103.6			1450
					1936					82.1			1150
					1616					68.6			960
190	15.035	2302	220	15.542	2579	265	15.796	3057	108.8	1740	16	C16	
		1919			2149			2547	90.6	1450			
		1522			1705			2020	71.9	1150			
		1270			1423			1686	60.0	960			
190	17.078	2027	220	17.702	2264	265	17.942	2691	96.7	1740	18	C18	
		1689			1887			2243	80.6	1450			
		1340			1497			1779	63.9	1150			
		1118			1249			1485	53.3	960			
190	19.452	1780	220	19.356	2071	265	20.436	2363	87.0	1740	20	C20	
		1483			1726			1969	72.5	1450			
		1176			1369			1562	57.5	1150			
		982			1143			1304	48.0	960			
190	21.269	1628	220	21.586	1857	265	22.345	2161	77.7	1740	22.4	C22	
		1356			1547			1801	64.7	1450			
		1076			1227			1428	51.3	1150			
		898			1025			1192	42.9	960			
190	23.719	1459	220	24.557	1632	265	24.919	1938	69.6	1740	25	C25	
		1216			1360			1615	58.0	1450			
		965			1079			1281	46.0	1150			
		805			901			1069	38.4	960			
190	26.985	1283	220	27.650	1450	265	28.350	1703	62.1	1740	28	C28	
		1069			1208			1419	51.8	1450			
		848			958			1126	41.1	1150			
		708			800			940	34.3	960			
190	30.530	1134	220	31.493	1273	265	31.920	1513	55.2	1740	31.5	C32	
		945			1061			1261	46.0	1450			
		749			841			1000	36.5	1150			
		626			702			835	30.5	960			
190	34.774	996	220	34.436	1164	265	36.357	1328	49.0	1740	35.5	C36	
		830			970			1107	40.8	1450			
		658			769			878	32.4	1150			
		549			642			733	27.0	960			
190	38.023	910	220	38.403	1044	265	39.754	1215	43.5	1740	40	C40	
		759			870			1012	36.3	1450			
		602			690			803	28.8	1150			
		502			576			670	24.0	960			
190	42.403	816	220	43.689	917	265	44.333	1089	38.7	1740	45	C45	
		680			765			908	32.2	1450			
		540			606			720	25.6	1150			
		450			506			601	21.3	960			
190	48.240	718	220	49.375	812	265	50.436	957	34.8	1740	50	C50	
		598			677			798	29.0	1450			
		474			537			633	23.0	1150			
		396			448			528	19.2	960			
190	54.518	635	220	56.702	707	265	57.000	847	31.1	1740	56	C56	
		529			589			706	25.9	1450			
		420			467			560	20.5	1150			
		350			390			467	17.1	960			
190	62.608	553	220	64.893	618	265	65.458	738	27.6	1740	63	C63	
		461			515			615	23.0	1450			
		365			408			488	18.3	1150			
		305			341			407	15.2	960			
190	71.653	483	220	71.509	561	265	74.914	645	24.5	1740	71	C71	
		403			467			537	20.4	1450			
		319			370			426	16.2	1150			
		267			309			356	13.5	960			
190	78.957	438	220	80.463	498	265	82.552	585	21.8	1740	80	C80	
		365			415			487	18.1	1450			
		290			329			387	14.4	1150			
		242			275			323	12.0	960			
190	88.845	390	220	88.480	453	265	92.889	520	19.3	1740	90	C90	
		325			378			433	16.1	1450			
		258			299			344	12.8	1150			
		215			250			287	10.7	960			
190	97.697	354	220	98.750	406	265	102.144	473	17.4	1740	100	D10	
		295			338			394	14.5	1450			
		234			268			312	11.5	1150			
		195			224			261	9.6	960			
190	109.036	317				265	114.000	424	15.5	1740	112	D11	
		265						353	12.9	1450			
		210						280	10.3	1150			
		175						234	8.6	960			

H4(iN=63-450):

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	H413			H414			H415					
				T2N (kN·m)	ie <sub>x</sub>	P1N (kW)	T2N (kN·m)	ie <sub>x</sub>	P1N (kW)	T2N (kN·m)	ie <sub>x</sub>	P1N (kW)			
C63	63	1740	27.6												
		1450	23.0												
		1150	18.3												
		960	15.2												
C71	71	1740	24.5	91	67.606	245	125	67.656	337	153	67.549	413			
		1450	20.4										204	281	344
		1150	16.2										162	222	273
		960	13.5										135	186	228
C80	80	1740	21.8	91	75.714	219	125	75.770	301	153	75.543	369			
		1450	18.1										182	250	308
		1150	14.4										145	199	244
		960	12.0										121	166	204
C90	90	1740	19.3	91	89.261	186	125	89.327	255	153	84.050	332			
		1450	16.1										155	212	276
		1150	12.8										123	169	219
		960	10.7										102	141	183
D10	100	1740	17.4	91	96.850	171	125	96.922	235	153	94.676	294			
		1450	14.5										143	196	245
		1150	11.5										113	155	195
		960	9.6										94	130	162
D11	112	1740	15.5	91	113.091	147	125	113.175	201	153	109.118	255			
		1450	12.9										122	168	213
		1150	10.3										97	133	169
		960	8.6										81	111	141
D13	125	1740	13.9	91	125.308	132	125	125.402	182	153	120.406	232			
		1450	11.6										110	151	193
		1150	9.2										87	120	153
		960	7.7										73	100	128
D14	140	1740	12.4	91	131.237	126	125	131.335	173	153	141.544	197			
		1450	10.4										105	145	164
		1150	8.2										83	115	130
		960	6.9										70	96	109
D16	160	1740	10.9	91	154.719	107	125	154.834	147	153	157.483	177			
		1450	9.1										89	123	148
		1150	7.2										71	97	117
		960	6.0										59	81	98
D18	180	1740	9.7	91	167.873	99	125	167.998	136	153	177.392	157			
		1450	8.1										82	113	131
		1150	6.4										65	90	104
		960	5.3										54	75	87
D20	200	1740	8.7	91	196.024	85	125	196.170	116	153	204.452	136			
		1450	7.3										70	97	114
		1150	5.8										56	77	90
		960	4.8										47	64	75
D22	224	1740	7.8	91	217.201	76	125	217.363	105	153	225.602	124			
		1450	6.5										64	87	103
		1150	5.1										50	69	82
		960	4.3										42	58	68
D25	250	1740	7.0	91	230.350	72	125	230.522	99	153	249.886	112			
		1450	5.8										60	82	93
		1150	4.6										48	65	74
		960	3.8										40	55	62
D28	280	1740	6.2	91	261.832	63	125	262.026	87	153	278.055	100			
		1450	5.2										53	72	84
		1150	4.1										42	57	66
		960	3.4										35	48	55
D32	315	1740	5.5	91	325.306	51	125	325.548	70	153	315.567	88			
		1450	4.6										42	58	74
		1150	3.7										34	46	58
		960	3.0										28	39	49
D36	355	1740	4.9	91	380.846	44	125	381.129	60	153	350.489	80			
		1450	4.1										36	50	66
		1150	3.2										29	39	53
		960	2.7										24	33	44
D40	400	1740	4.4	91	409.409	40	125	409.714	56	153	398.143	70			
		1450	3.6										34	46	58
		1150	2.9										27	37	46
		960	2.4										22	31	39
D45	450	1740	3.9	91	460.189	36	125	460.531	49	153	457.010	61			
		1450	3.2										30	41	51
		1150	2.6										24	33	40
		960	2.1										20	27	34

H416			H417			H418			n <sub>2N</sub> (r/min)	n <sub>1</sub> (r/min)	iN	Code	
T2N (kN·m)	ie <sub>x</sub>	P1N (kW)	T2N (kN·m)	ie <sub>x</sub>	P1N (kW)	T2N (kN·m)	ie <sub>x</sub>	P1N (kW)					
			220	61.131	656				27.6	1740	63	C63	
					546					23.0			1450
					433					18.3			1150
					362					15.2			960
190	67.499	513	220	68.365	586	265	70.571	684	24.5	1740	71	C71	
		427			489			570	20.4	1450			
		339			388			452	16.2	1150			
		283			323			377	13.5	960			
190	75.487	459	220	76.064	527	265	78.923	612	21.8	1740	80	C80	
		382			439			510	18.1	1450			
		303			348			404	14.4	1150			
		253			291			338	12.0	960			
190	83.988	412	220	85.680	468	265	87.811	550	19.3	1740	90	C90	
		343			390			458	16.1	1450			
		272			309			363	12.8	1150			
		227			258			303	10.7	960			
190	94.605	366	220	98.750	406	265	98.912	488	17.4	1740	100	D10	
		305			338			407	14.5	1450			
		242			268			323	11.5	1150			
		202			224			269	9.6	960			
190	109.036	317	220	108.966	368	265	114.000	424	15.5	1740	112	D11	
		265			307			353	12.9	1450			
		210			243			280	10.3	1150			
		175			203			234	8.6	960			
190	120.316	288	220	128.095	313	265	125.793	384	13.9	1740	125	D13	
		240			261			320	11.6	1450			
		190			207			254	9.2	1150			
		159			173			212	7.7	960			
190	141.438	245	220	142.520	281	265	147.877	327	12.4	1740	140	D14	
		204			234			272	10.4	1450			
		162			186			216	8.2	1150			
		135			155			180	6.9	960			
190	157.366	220	220	160.538	250	265	164.530	293	10.9	1740	160	D16	
		183			208			245	9.1	1450			
		145			165			194	7.2	1150			
		121			138			162	6.0	960			
190	177.260	195	220	185.026	217	265	185.329	261	9.7	1740	180	D18	
		163			181			217	8.1	1450			
		129			143			172	6.4	1150			
		108			120			144	5.3	960			
190	204.300	169	220	204.167	196	265	213.600	226	8.7	1740	200	D20	
		141			164			188	7.3	1450			
		112			130			149	5.8	1150			
		93			108			125	4.8	960			
190	225.434	154	220	226.143	177	265	235.697	205	7.8	1740	224	D22	
		128			148			171	6.5	1450			
		101			117			135	5.1	1150			
		85			98			113	4.3	960			
190	249.700	139	220	251.636	159	265	261.067	185	7.0	1740	250	D25	
		116			133			154	5.8	1450			
		92			105			122	4.6	1150			
		76			88			102	3.8	960			
190	277.848	125	220	285.584	140	265	290.496	166	6.2	1740	280	D28	
		104			117			139	5.2	1450			
		82			93			110	4.1	1150			
		69			77			92	3.4	960			
190	315.332	110	220	317.188	126	265	329.687	146	5.5	1740	315	D32	
		91			105			122	4.6	1450			
		73			84			97	3.7	1150			
		61			70			81	3.0	960			
190	350.228	99	220	360.314	111	265	366.171	132	4.9	1740	355	D36	
		82			93			110	4.1	1450			
		65			74			87	3.2	1150			
		55			61			73	2.7	960			
190	397.847	87	220	413.588	97	265	415.958	116	4.4	1740	400	D40	
		73			81			97	3.6	1450			
		58			64			77	2.9	1150			
		48			53			64	2.4	960			
190	456.670	76	220			265	477.459	101	3.9	1740	450	D45	
		63						84	3.2	1450			
		50						67	2.6	1150			
		42						56	2.1	960			

B2(iN=6.3-14):

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	B213			B214			B215		
				T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)
B63	6.3	1740	276.2	76	6.172	2244*	96	6.176	2832*	130	6.176	3835*
		1450	230.2			1870			2360			3196*
		1150	182.5			1483			1872			2535*
		960	152.4			1238			1562			2116
B71	7.1	1740	245.1	76	6.957	1990*	96	6.963	2512*	132	6.963	3454*
		1450	204.2			1659			2093			2879*
		1150	162.0			1315			1660			2283*
		960	135.2			1098			1386			1906
B80	8	1740	217.5	82	8.056	1855*	104	8.062	2350*	132	8.062	2983*
		1450	181.3			1545			1959			2486
		1150	143.8			1226			1553			1972
		960	120.0			1023			1297			1646
B90	9	1740	193.3	82	8.713	1715*	104	8.720	2173*	132	8.720	2758*
		1450	161.1			1429			1811			2298
		1150	127.8			1133			1436			1823
		960	106.7			946			1199			1522
C10	10	1740	174.0	82	10.204	1464*	109	10.212	1945*	132	10.212	2355*
		1450	145.0			1220			1621			1963
		1150	115.0			968			1285			1557
		960	96.0			808			1073			1299
C11	11.2	1740	155.4	82	10.863	1375*	111	10.871	1860*	132	10.871	2212*
		1450	129.5			1146			1550			1844
		1150	102.7			909			1230			1462
		960	85.7			759			1026			1221
C13	12.5	1740	139.2	82	12.534	1192*	111	12.543	1612*	132	12.543	1917*
		1450	116.0			993			1344			1598
		1150	92.0			788			1066			1267
		960	76.8			658			890			1058
C14	14	1740	124.3	82	13.578	1100*	111	13.588	1488*	132	13.588	1770*
		1450	103.6			917			1240			1475
		1150	82.1			727			984			1170
		960	68.6			607			821			977

Note:   Forced lubrication required on horizontal gearbox.  
\* On request.

B216			B217			B218			$n_{2N}$ (r/min)	$n_1$ (r/min)	$i_N$	Code
$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)	$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)	$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)				
160	6.172	4723*	215	6.184					276.2	1740	6.3	B63
		3936*			5278*				230.2	1450		
		3122*			4189*				182.5	1150		
		2606			3495*				152.4	960		
160	6.957	4190*	215	7.161		253	7.139		245.1	1740	7.1	B71
		3492*			4559*				204.2	1450		
		2769*			3616*				162.0	1150		
		2312			3018				135.2	960		
163	8.056	3687*	215	7.745		253	8.267		217.5	1740	8	B80
		3072*			4215*				181.3	1450		
		2437*			3343*				143.8	1150		
		2034			2790				120.0	960		
163	8.713	3408*	215	9.070		253	8.941		193.3	1740	9	B90
		2840			3599*				161.1	1450		
		2253			2854*				127.8	1150		
		1881			2383				106.7	960		
163	10.204	2910*	215	9.948		253	10.471		174.0	1740	10	C10
		2425			3281*				145.0	1450		
		1924			2602*				115.0	1150		
		1606			2173				96.0	960		
163	10.863	2734*	215	11.141		253	11.484		155.4	1740	11.2	C11
		2278			2930*				129.5	1450		
		1807			2324*				102.7	1150		
		1508			1940				85.7	960		
163	12.534	2369*	215	12.069		253	12.862		139.2	1740	12.5	C13
		1975			2705*				116.0	1450		
		1566			2145*				92.0	1150		
		1307			1791				76.8	960		
163	13.578	2187*	215	13.606		253	13.933		124.3	1740	14	C14
		1823			2399				103.6	1450		
		1446			1903				82.1	1150		
		1207			1589				68.6	960		

Note:   Forced lubrication required on horizontal gearbox.  
\* On request.

B3 (iN=16-90)

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	B313			B314			B315		
				T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)
C16	16	1740	108.8	91	14.898	1113	112	14.909	1369	148	15.260	1767*
		1450	90.6			927			1141			1473
		1150	71.9			736			905			1168
		960	60.0			614			755			975
C18	18	1740	96.7	91	16.794	987	112	16.806	1214	148	17.202	1568*
		1450	80.6			823			1012			1306
		1150	63.9			653			802			1036
		960	53.3			545			670			865
C20	20	1740	87.0	91	19.445	853	119	19.460	1114	153	19.918	1400*
		1450	72.5			711			928			1166
		1150	57.5			564			736			925
		960	48.0			470			615			772
C22	22.4	1740	77.7	91	21.032	788	119	21.048	1030	153	21.543	1294*
		1450	64.7			657			858			1078
		1150	51.3			521			681			855
		960	42.9			435			568			714
C25	25	1740	69.6	91	23.836	696	125	23.854	955	153	24.415	1142*
		1450	58.0			580			796			951
		1150	46.0			460			631			755
		960	38.4			384			527			630
C28	28	1740	62.1	91	27.465	604	125	27.485	829	153	27.279	1022*
		1450	51.8			503			691			852
		1150	41.1			399			548			675
		960	34.3			333			457			564
C32	31.5	1740	55.2	91	30.960	536	125	30.983	735	153	30.751	907*
		1450	46.0			446			613			755
		1150	36.5			354			486			599
		960	30.5			295			406			500
C36	35.5	1740	49.0	91	35.849	463	125	35.876	635	153	35.607	783*
		1450	40.8			385			529			652
		1150	32.4			306			420			517
		960	27.0			255			350			432
C40	40	1740	43.5	91	38.774	428	125	38.803	587	153	38.512	724*
		1450	36.3			356			489			603
		1150	28.8			283			388			478
		960	24.0			236			324			399
C45	45	1740	38.7	91	43.944	377	125	43.976	518	153	43.647	639*
		1450	32.2			314			432			532
		1150	25.6			249			342			422
		960	21.3			208			286			352
C50	50	1740	34.8	91	48.338	343	125	48.374	471	153	48.012	581
		1450	29.0			286			392			484
		1150	23.0			227			311			384
		960	19.2			189			260			320
C56	56	1740	31.1	91	55.775	297	125	55.816	408	153	55.398	503
		1450	25.9			248			340			419
		1150	20.5			196			270			333
		960	17.1			164			225			278
C63	63	1740	27.6	91	60.423	274	125	60.468	377	153	60.015	464
		1450	23.0			229			314			387
		1150	18.3			181			249			307
		960	15.2			151			208			256
C71	71	1740	24.5	91	68.113	243	125	68.164	334	153	67.653	412
		1450	20.4			203			278			343
		1150	16.2			161			221			272
		960	13.5			134			184			227
C80	80	1740	21.8	91	78.122	212	125	78.180	291	153	77.595	359
		1450	18.1			177			243			299
		1150	14.4			140			193			237
		960	12.0			117			161			198
C90	90	1740	19.3	91	85.141	195	125	85.204	267	153	84.566	330
		1450	16.1			162			223			275
		1150	12.8			129			177			218
		960	10.7			107			147			182

Note:   Forced lubricati on required on horizontal gearbox.  
\* On request.

B316			B317			B318			n <sub>2N</sub> (r/min)	n <sub>1</sub> (r/min)	iN	Code
T2N (kN·m)	ieX	P1N (kW)	T2N (kN·m)	ieX	P1N (kW)	T2N (kN·m)	ieX	P1N (kW)				
183	15.248	2187*	220	15.643	2562*	253	16.020	2877*	108.8	1740	16	C16
		1822			2135			2398	90.6	1450		
		1445			1694			1902	71.9	1150		
		1206			1414			1588	60.0	960		
183	17.189	1940*	220	18.113	2213*	265	18.058	2674*	96.7	1740	18	C18
		1616			1844			2228	80.6	1450		
		1282			1463			1767	63.9	1150		
		1070			1221			1475	53.3	960		
183	19.903	1675*	220	19.591	2046*	265	20.910	2309*	87.0	1740	20	C20
		1396			1705			1924	72.5	1450		
		1107			1352			1526	57.5	1150		
		924			1129			1274	48.0	960		
190	21.527	1608*	220	22.943	1747*	265	22.616	2135*	77.7	1740	22.4	C22
		1340			1456			1779	64.7	1450		
		1063			1155			1411	51.3	1150		
		887			964			1178	42.9	960		
190	24.397	1419*	220	24.688	1624*	265	26.486	1823*	69.6	1740	25	C25
		1182			1353			1519	58.0	1450		
		938			1073			1205	46.0	1150		
		783			896			1006	38.4	960		
190	27.259	1270*	220	27.830	1440*	265	28.500	1694*	62.1	1740	28	C28
		1058			1200			1412	51.8	1450		
		839			952			1120	41.1	1150		
		701			795			935	34.3	960		
190	30.728	1127*	220	32.224	1244*	265	32.127	1503*	55.2	1740	31.5	C32
		939			1037			1252	46.0	1450		
		745			822			993	36.5	1150		
		622			686			829	30.5	960		
190	35.580	973*	220	34.853	1150*	265	37.200	1298*	49.0	1740	35.5	C36
		811			958			1082	40.8	1450		
		643			760			858	32.4	1150		
		537			635			716	27.0	960		
190	38.483	900*	220	40.817	982*	265	40.235	1200*	43.5	1740	40	C40
		750			818			1000	36.3	1450		
		595			649			793	28.8	1150		
		496			542			662	24.0	960		
190	43.615	794*	220	43.450	923*	265	47.120	1025*	38.7	1740	45	C45
		661			769			854	32.2	1450		
		525			610			677	25.6	1150		
		438			509			565	21.3	960		
190	47.976	722*	220	50.135	800*	265	50.160	963*	34.8	1740	50	C50
		601			666			802	29.0	1450		
		477			528			636	23.0	1150		
		398			441			531	19.2	960		
190	55.357	625	220	54.313	738*	265	57.877	834*	31.1	1740	56	C56
		521			615			695	25.9	1450		
		413			488			551	20.5	1150		
		345			407			460	17.1	960		
190	59.970	577	220	61.225	655*	265	62.700	770*	27.6	1740	63	C63
		481			546			642	23.0	1450		
		382			433			509	18.3	1150		
		318			361			425	15.2	960		
190	67.603	512	220	70.222	571*	265	70.680	683*	24.5	1740	71	C71
		427			476			569	20.4	1450		
		338			377			451	16.2	1150		
		283			315			377	13.5	960		
190	77.537	446	220	76.531	524*	265	81.067	596*	21.8	1740	80	C80
		372			436			496	18.1	1450		
		295			346			394	14.4	1150		
		246			289			329	12.0	960		
190	84.503	410	220			265	88.350	546*	19.3	1740	90	C90
		341						455	16.1	1450		
		271						361	12.8	1150		
		226						302	10.7	960		

Note:   Forced lubrication required on horizontal gearbox.  
\* On request.



B4(iN=90-400) :

Code	iN	n <sub>1</sub> (r/min)	n <sub>2N</sub> (r/min)	B413			B414			B415			
				T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	T <sub>2N</sub> (kN·m)	i <sub>ex</sub>	P <sub>1N</sub> (kW)	
C90	90	1740	19.3										
		1450	16.1										
		1150	12.8										
		960	10.7										
D10	100	1740	17.4	91	96.935		125	97.007		153	96.280		171
		1450	14.5										143
		1150	11.5										113
		960	9.6										94
D11	112	1740	15.5	91	109.859		125	109.941		153	109.118		151
		1450	12.9										126
		1150	10.3										100
		960	8.6										83
D13	125	1740	13.9	91	119.014		125	119.103		153	127.783		139
		1450	11.6										116
		1150	9.2										92
		960	7.7										77
D14	140	1740	12.4	91	134.162		125	134.261		153	144.046		124
		1450	10.4										103
		1150	8.2										82
		960	6.9										68
D16	160	1740	10.9	91	155.345		125	155.461		153	166.790		107
		1450	9.1										89
		1150	7.2										71
		960	6.0										59
D18	180	1740	9.7	91	168.020		125	168.145		153	180.399		99
		1450	8.1										82
		1150	6.4										65
		960	5.3										54
D20	200	1740	8.7	91	190.423		125	190.565		153	204.452		87
		1450	7.3										73
		1150	5.8										58
		960	4.8										48
D22	224	1740	7.8	91	209.465		125	209.621		153	224.897		79
		1450	6.5										66
		1150	5.1										52
		960	4.3										44
D25	250	1740	7.0	91	241.691		125	241.871		153	259.497		69
		1450	5.8										57
		1150	4.6										45
		960	3.8										38
D28	280	1740	6.2	91	261.832		125	262.026		153	281.122		63
		1450	5.2										53
		1150	4.1										42
		960	3.4										35
D32	315	1740	5.5	91	295.156		125	295.375		153	316.901		56
		1450	4.6										47
		1150	3.7										37
		960	3.0										31
D36	355	1740	4.9	91	338.530		125	338.782		153	363.470		49
		1450	4.1										41
		1150	3.2										32
		960	2.7										27
D40	400	1740	4.4	91	368.944		125	369.219		153	396.126		45
		1450	3.6										37
		1150	2.9										30
		960	2.4										25

B416			B417			B418			$n_{2N}$ (r/min)	$n_1$ (r/min)	$i_N$	Code
$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)	$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)	$T_{2N}$ (kN·m)	$i_{ex}$	$P_{1N}$ (kW)				
			220	87.132	460				19.3	1740	90	C90
					383				16.1	1450		
					304				12.8	1150		
					254				10.7	960		
190	96.209	360	220	98.750	406	265	100.588		17.4	1740	100	D10
		300			338				14.5	1450		
		238			268				11.5	1150		
		199			224				9.6	960		
190	109.036	317	220	115.641	347	265	114.000		15.5	1740	112	D11
		265			289				12.9	1450		
		210			229				10.3	1150		
		175			191				8.6	960		
190	127.687	271	220	130.359	307	265	133.500		13.9	1740	125	D13
		226			256				11.6	1450		
		179			203				9.2	1150		
		150			170				7.7	960		
190	143.939	241	220	150.943	266	265	150.491		12.4	1740	140	D14
		200			221				10.4	1450		
		159			176				8.2	1150		
		133			147				6.9	960		
190	166.666	208	220	163.259	246	265	174.253		10.9	1740	160	D16
		173			205				9.1	1450		
		137			162				7.2	1150		
		115			135				6.0	960		
190	180.265	192	220	185.026	217	265	188.471		9.7	1740	180	D18
		160			181				8.1	1450		
		127			143				6.4	1150		
		106			120				5.3	960		
190	204.300	169	220	203.529	197	265	213.600		8.7	1740	200	D20
		141			164				7.3	1450		
		112			130				5.8	1150		
		93			109				4.8	960		
190	224.730	154	220	234.841	171	265	234.960		7.8	1740	224	D22
		128			142				6.5	1450		
		102			113				5.1	1150		
		85			94				4.3	960		
190	259.304	134	220	254.411	158	265	271.108		7.0	1740	250	D25
		111			131				5.8	1450		
		88			104				4.6	1150		
		74			87				3.8	960		
190	280.912	123	220	286.791	140	265	293.700		6.2	1740	280	D28
		103			116				5.2	1450		
		81			92				4.1	1150		
		68			77				3.4	960		
190	316.665	109	220	328.936	122	265	331.080		5.5	1740	315	D32
		91			102				4.6	1450		
		72			81				3.7	1150		
		60			67				3.0	960		
190	363.200	95	220	358.488	112	265	379.733		4.9	1740	355	D36
		79			93				4.1	1450		
		63			74				3.2	1150		
		53			62				2.7	960		
190	395.831	87				265	413.850		4.4	1740	400	D40
		73							3.6	1450		
		58							2.9	1150		
		48							2.4	960		



H216				H217				H218				iN	Code	
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
*	*	*	*									PGA	3.15	B32
764	*	*	*									PGB		
1768	1245	1375	1104									PGC		
2215	1724	1951	1715									PGD		
*	*	*	*					*	*	*	*	PGA	3.55	B36
707	*	*	*					947	*	*	*	PGB		
1738	1281	1436	1189					1994	1502	1528	1582	PGC		
2172	1754	2068	1808					2629	2145	2280	2479	PGD		
*	*	*	*					*	*	*	*	PGA	4	B40
744	*	*	*					996	*	*	*	PGB		
1688	1289	1465	1282					1933	1517	1567	1711	PGC		
2126	1765	2101	1933					2572	2163	2325	2660	PGD		
*	*	*	*					*	*	*	*	PGA	4.5	B45
736	*	*	*					1016	*	*	*	PGB		
1639	1316	1525	1426					1864	1503	1568	1770	PGC		
2083	1796	2167	2123					2484	2134	2309	2726	PGD		
*	*	*	*					*	*	*	*	PGA	5	B50
702	*	*	*					1013	*	*	*	PGB		
1564	1297	1521	1480					1764	1451	1525	1758	PGC		
2009	1776	2160	2199					2358	2057	2237	2696	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	5.6	B56
703	*	*	*	844	*	*	*	1032	*	*	*	PGB		
1484	1260	1489	1485	1603	1361	1609	1604	1717	1438	1520	1785	PGC		
1913	1720	2104	2193	2066	1857	2273	2369	2305	2038	2225	2730	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	6.3	B63
553	*	*	*	625	*	*	*	633	*	*	*	PGB		
1178	949	1000	803	1389	1088	1128	816	1381	1062	1106	642	PGC		
1846	1642	1774	1559	2240	1954	2151	1661	2248	1940	1823	1568	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	7.1	B71
589	*	*	*	683	*	*	*	659	*	*	*	PGB		
1158	976	1044	865	1351	1104	1166	918	1390	1106	1154	864	PGC		
1810	1670	1880	1644	2186	1971	2199	1832	2260	1997	2009	1759	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	8	B80
620	386	390	*	733	*	*	*	719	*	*	*	PGB		
1126	982	1066	932	1319	1122	1206	1015	1354	1127	1200	975	PGC		
1772	1681	1910	1757	2154	2003	2261	2006	2203	2015	2260	1941	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	9	B90
655	490	530	363	786	552	584	*	789	523	542	*	PGB		
1093	1002	1109	1037	1289	1160	1274	1164	1330	1178	1286	1150	PGC		
1736	1710	1970	1930	2120	2059	2360	2262	2191	2103	2400	2254	PGD		
168	*	*	*	*	*	*	*	*	*	*	*	PGA	10	C10
668	554	617	510	812	645	710	547	830	635	691	495	PGB		
1042	988	1106	1076	1267	1157	1289	1233	1289	1190	1319	1244	PGC		
1674	1691	1964	1999	2053	2051	2374	2387	2143	2121	2447	2418	PGD		
189	*	*	*	195	*	*	*	190	*	*	*	PGA	11.2	C11
669	591	669	604	815	698	784	679	847	705	787	655	PGB		
990	960	1083	1080	1174	1126	1266	1246	1242	1179	1321	1287	PGC		
1594	1638	1913	1994	1958	1994	2323	2393	2070	2092	2431	2478	PGD		
200	*	*	*	221	*	*	*	213	*	*	*	PGA	12.5	C13
656	604	691	656	833	748	851	786	844	742	840	754	PGB		
931	918	1042	1057	1144	1117	1263	1268	1176	1138	1284	1278	PGC		
1506	1566	1836	1945	1914	1976	2311	2426	1965	2017	2355	2451	PGD		
214	*	*	*	233	*	*	*	239	*	*	*	PGA	14	C14
659	629	726	717	814	761	875	846	860	792	906	861	PGB		
910	910	1038	1069	1071	1062	1209	1234	1145	1128	1280	1298	PGC		
1482	1557	1832	1969	1802	1883	2211	2358	1921	1998	2342	2482	PGD		
216	*	*	*	238	*	*	*	248	*	*	*	PGA	16	C16
634	620	721	731	782	754	873	872	837	797	919	905	PGB		
847	857	981	1020	996	1001	1143	1182	1073	1073	1222	1257	PGC		
1381	1463	1726	1875	1680	1772	2088	2253	1810	1901	2236	2401	PGD		
228	176	*	*	248	184	*	*	169	*	*	*	PGA	18	C18
638	640	748	777	768	762	888	912	805	790	919	934	PGB		
830	849	975	1026	951	968	1110	1161	994	1008	1154	1202	PGC		
1359	1453	1718	1885	1606	1710	2020	2206	1689	1792	2114	2299	PGD		
								258	196	*	*	PGA	20	C20
								787	785	915	944	PGB		
								945	963	1106	1159	PGC		
								1602	1708	2019	2209	PGD		

\*On request.





H4 (kW)

Code	iN		H413				H414				H415			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
C63	63	PGA												
C71	71	PGA	130	133	136	144	147	151	162	173	180	187	196	199
C80	80	PGA	127	130	134	141	143	148	158	169	174	180	191	193
C90	90	PGA	123	126	133	138	139	144	154	162	168	175	183	187
D10	100	PGA	120	121	130	134	136	141	149	158	161	160	172	174
D11	112	PGA	117	120	129	133	132	136	146	153	154	156	167	141
D13	125	PGA	114	117	126	131	128	132	142	147	149	152	163	168
D14	140	PGA	110	114	123	128	125	129	139	145	144	148	158	165
D16	160	PGA	104	108	116	122	121	126	135	142	138	143	153	160
D18	180	PGA	100	105	113	119	118	123	132	139	136	142	152	160
D20	200	PGA	98.2	103	110	116	111	117	126	133	132	139	149	157
D22	224	PGA	93.7	98.8	106	112	107	113	121	128	123	130	140	148
D25	250	PGA	89.1	94	100	106	104	110	118	125	117	123	132	140
D28	280	PGA	86.3	91.1	97.7	103	99.1	104	112	118	113	120	128	136
D32	315	PGA	82.8	87.3	93.7	99.1	95.5	100	108	114	108	114	122	129
D36	355	PGA	78.9	83.3	89.4	94.6	91.9	96.9	104	110	106	112	120	127
D40	400	PGA	75.6	80.9	86	90.1	88.3	93.2	100	105	103	104	116	123
D45	450	PGA	72.9	78.8	82.3	88.2	84.2	88.8	95.3	100	97.7	102	111	117

Code	iN		H416				H417				H418			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
C63	63	PGA					206	210	215	218				
C71	71	PGA	193	200	210	215	199	203	210	213	211	214	225	228
C80	80	PGA	187	193	204	206	193	195	202	205	206	210	221	223
C90	90	PGA	180	187	196	203	185	190	195	197	199	204	213	215
D10	100	PGA	171	175	186	192	180	178	190	191	191	193	205	209
D11	112	PGA	166	167	179	183	173	173	186	189	185	185	198	201
D13	125	PGA	160	162	174	179	167	169	181	186	177	179	192	197
D14	140	PGA	153	158	169	175	161	164	176	183	171	175	188	194
D16	160	PGA	148	153	164	171	154	159	171	178	165	170	182	190
D18	180	PGA	142	148	159	167	151	157	169	177	158	165	177	185
D20	200	PGA	139	146	157	165	146	153	164	173	156	163	175	184
D22	224	PGA	136	144	154	163	136	144	154	163	151	159	170	180
D25	250	PGA	126	133	143	151	130	137	147	155	141	148	159	168
D28	280	PGA	120	126	135	143	126	133	143	151	133	141	151	160
D32	315	PGA	116	122	131	139	121	127	136	144	130	137	147	155
D36	355	PGA	111	118	126	134	118	124	133	141	124	131	141	149
D40	400	PGA	109	115	123	130	115	120	129	136	121	128	138	146
D45	450	PGA	102	109	116	123					116	125	130	139



B2 ( kW )

Code	iN		B213				B214				B215			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
B63	6.3	PGA	*	*	*	*	*	*	*	*	*	*	*	*
		PGB	906	996	1036	1028	1129	1241	1290	1274	1302	1422	1478	1406
		PGC	1132	1245	1295	1285	1411	1551	1613	1592	1627	1778	1847	1758
		PGD	1574	1740	1839	1894	1954	2150	2267	2322	2168	2311	2393	2342
B71	7.1	PGA	128	*	*	*	150	*	*	*	*	*	*	*
		PGB	637	683	676	616	768	817	804	721	756	762	720	563
		PGC	878	969	1009	1020	1082	1193	1242	1251	1206	1324	1378	1350
		PGD	1541	1733	1848	1946	1895	2124	2261	2371	2028	2218	2331	2367
B80	8	PGA	131	*	*	*	154	*	*	*	*	*	*	*
		PGB	588	643	646	616	705	767	768	723	705	735	713	609
		PGC	782	865	901	922	948	1047	1091	1113	1085	1194	1242	1239
		PGD	1375	1562	1674	1785	1663	1884	2016	2143	1830	2032	2152	2230
B90	9	PGA	135	111	*	*	164	*	*	*	144	*	*	*
		PGB	565	630	640	630	699	775	785	766	684	732	724	658
		PGC	731	810	844	872	922	1020	1063	1095	1026	1132	1179	1191
		PGD	1296	1484	1598	1721	1625	1875	1996	2144	1741	1956	2085	2195
C10	10	PGA	133	114	*	*	160	133	*	*	146	*	*	*
		PGB	535	601	616	617	642	719	734	729	643	698	698	655
		PGC	677	750	782	812	814	903	941	975	936	1034	1078	1098
		PGD	1200	1391	1490	1614	1444	1658	1787	1932	1596	1806	1933	2052
C11	11.2	PGA	123	108	*	*	157	136	*	*	138	*	*	*
		PGB	476	539	555	562	613	691	709	713		637	641	614
		PGC	587	651	679	708	762	845	881	916	465	911	949	972
		PGD	1046	1208	1306	1420	1356	1563	1688	1831	1030	1605	1722	1839
C13	12.5	PGA	122	106	*	*	156	139	*	*	1199	*	*	*
		PGB	425	473	517	523	579	659	681	697	523	578	584	560
		PGC	597	588	637	657	706	783	817	854	736	878	882	868
		PGD	958	1125	1211	1329	1255	1454	1574	1718	1328	1524	1805	1639
C14	14	PGA	118	103	*	*	143	131	*	*	126	*	*	*
		PGB	391	429	472	484	514	589	611	633	481	502	516	491
		PGC	506	526	546	583	610	678	707	743	652	790	803	730
		PGD	863	1034	1108	1233	1092	1270	1377	1509	1217	1406	1623	1428

\*On request

B216				B217				B218				iN	Code	
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
*	*	*	*	*	*	*	*					PGA	6.3	B63
1426	1555	1615	1522	1527	1661	1724	1598					PGB		
1782	1944	2019	1902	1909	2076	2155	1997					PGC		
2366	2499	2574	2482	2530	2633	2689	2533					PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	7.1	B71
815	809	754	560	838	811	740	503	897	849	760	473	PGB		
1316	1442	1500	1458	1430	1563	1625	1561	1535	1677	1742	1656	PGC		
2204	2394	2505	2519	2386	2563	2666	2639	2558	2723	2817	2751	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	8	B80
784	807	775	641	793	800	756	592	874	868	808	600	PGB		
1225	1346	1401	1387	1297	1424	1481	1452	1434	1572	1634	1589	PGC		
2059	2273	2400	2467	2174	2378	2499	2539	2402	2608	2729	2743	PGD		
150	*	*	*	*	*	*	*	*	*	*	*	PGA	9	B90
730	773	759	674	774	807	782	669	823	847	812	671	PGB		
1094	1206	1256	1262	1234	1358	1413	1409	1299	1429	1486	1471	PGC		
1853	2073	2204	2306	2078	2308	2444	2533	2188	2414	2549	2619	PGD		
155	*	*	*	149	*	*	*	*	*	*	*	PGA	10	C10
704	759	753	694	737	783	770	688	799	839	818	712	PGB		
1037	1145	1192	1209	1145	1262	1314	1322	1237	1362	1418	1418	PGC		
1760	1984	2118	2237	1935	2167	2306	2416	2085	2322	2464	2564	PGD		
154	*	*	*	144	*	*	*	159	*	*	*	PGA	11.2	C11
662	720	721	679	669	720	714	656	760	809	797	715	PGB		
946	1045	1088	1110	1014	1119	1166	1181	1151	1270	1322	1331	PGC		
1616	1831	1960	2083	1720	1938	2068	2183	1940	2175	2315	2428	PGD		
149	*	*	*	140	*	*	*	158	*	*	*	PGA	12.5	C13
598	661	669	650	637	658	685	621	691	750	749	701	PGB		
831	920	958	986	905	966	1062	1078	1021	1127	1174	1195	PGC		
1430	1632	1754	1882	1623	1768	1809	1865	1730	1957	2093	2221	PGD		
139	*	*	*	136	*	*	*	157	*	*	*	PGA	14	C14
519	623	637	603	601	614	634	594	653	694	715	685	PGB		
781	838	882	903	847	935	967	1012	886	1043	1061	1054	PGC		
1327	1465	1632	1704	1504	1632	1777	1783	1625	1768	1876	2056	PGD		

\*On request





B4 (kW)

Code	iN		B413				B414				B415			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
C90	90	PGA												
D10	100	PGA	112	117	121	123	130	135	140	142	146	150	156	155
D11	112	PGA	107	112	116	118	126	132	137	139	139	144	149	150
D13	125	PGA	102	108	112	114	119	125	130	133	132	138	143	144
D14	140	PGA	97.6	103	107	109	114	120	125	128	128	134	139	141
D16	160	PGA	92.4	97.8	101	104	110	116	121	124	121	127	132	135
D18	180	PGA	87.2	92.8	96.5	99.8	103	110	114	118	114	120	125	129
D20	200	PGA	85.2	91	94.7	98.3	98.5	105	109	113	112	119	124	128
D22	224	PGA	79.9	85.6	89.1	92.9	93.2	99.8	104	108	105	112	117	121
D25	250	PGA	77.3	83.1	86.6	90.6	90.6	97.4	101	106	102	109	114	119
D28	280	PGA	73	78.8	82.1	86.3	85.2	92	95.9	100	95	102	106	112
D32	315	PGA	69.6	75.2	78.4	82.3	82.4	89	92.7	97.4	89.7	96.9	100	106
D36	355	PGA	67	68.2	76.2	79.3	77.8	84	87.6	92	82.3	92.6	95	103
D40	400	PGA	63.2	65.1	72.8	76.5	74.1	80	83.4	87.6	79.6	89.1	92	99

B416				B417				B418					iN	Code
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
				175	176	178	183					PGA	90	C90
160	163	169	168	164	167	170	173	180	182	188	185	PGA	100	D10
151	155	161	161	157	161	165	167	169	173	179	177	PGA	112	D11
144	149	155	155	149	154	160	159	161	166	172	171	PGA	125	D13
137	143	148	150	144	149	156	155	154	159	165	166	PGA	140	D14
132	138	143	146	136	142	150	147	148	155	160	162	PGA	160	D16
124	131	136	140	128	135	143	140	139	146	152	155	PGA	180	D18
117	125	130	134	126	134	143	139	132	140	146	150	PGA	200	D20
116	123	128	133	117	125	135	130	130	138	144	149	PGA	224	D22
108	116	120	126	114	122	133	127	122	131	136	142	PGA	250	D25
104	113	117	123	107	115	126	120	117	127	132	139	PGA	280	D28
98.5	106	110	116	101	109	119	113	110	119	124	131	PGA	315	D32
92.4	99.7	103	109	97	102	113	108	104	113	117	123	PGA	355	D36
88	95.2	99	105					108	110	113	117	PGA	400	D40

## 9 Permissible additional radial force on output shaft

### 9.1 Permissible additional radial force on output shaft d:

Permissible additional radial force FR2 (kN) , applied at midpant of extension of output shaft*.								
	Type	Arrangement	13	14	15	16	17	18
	H2. . HS	A + B + G + H		150	150	160	205	205
C + D			112	112	120	135	135	135
H3. . HS	A + B + G + H		190	190	200	265	265	265
	C + D		150	150	160	185	185	190
H4. . HS	C + D		190	190	200	265	265	265
	A + B + G + H		150	150	160	185	185	190
B2. . HS	A + C		160	160	170	210	210	210
	B + D		110	110	115	145	145	145
B3. . HS	A + C		190	190	200	265	265	265
	B + D		150	150	160	185	185	190
B4. . HS	A + C		190	190	200	265	265	265
	B + D		150	150	160	185	185	190

- ⚠ Note: 1. If the angle of applied force and the direction of rotation are given, higher additional force can mostly allowed. Please consult us.  
 2. \*Permissible Additional Radial Forces FR2(kN) acting on the center of the output shaft. For application of force outside the center of the shaft end, see 9.2.  
 3. Lowest performance level of foundation bolt is 8.8. The foundation should be dry and grease free. If customers have requirements, radial force is allowed to be applied at input shaft d1. Please consult us.

### 9.2 Additional radial force allowed on output shaft d:

Applied force factor k															
Size	Distance z (mm)														
	-200	-150	-100	-75	-50	-25	0	25	50	75	100	150	200	250	300
13/14		1.24	1.15	1.11	1.07	1.03	1	0.92	0.86	0.8	0.75	0.67	0.6	0.55	0.5
15/16		1.2	1.12	1.09	1.06	1.03	1	0.93	0.87	0.82	0.77	0.69	0.63	0.58	0.53
17/18	1.25	1.17	1.11	1.08	1.05	1.03	1	0.94	0.88	0.84	0.79	0.72	0.66	0.6	0.56

- ⚠ Note: 1.FRZ2:Permissible external radial force when the application of forces outside the center of shaft end.  
 2.FR2:Permissible additional radial force according to the table on P23.  
 3.K:The factor for action force is in the tale below.

## 10 Shaft assemblies:

### 10.1 H series shaft assemblies:

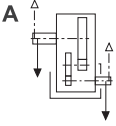
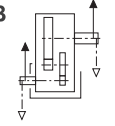
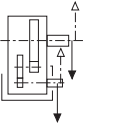
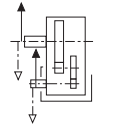
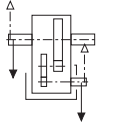
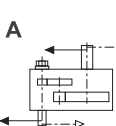
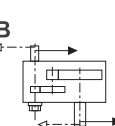
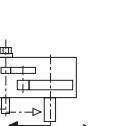
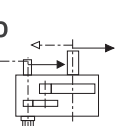
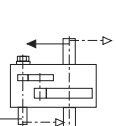
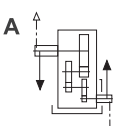
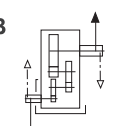
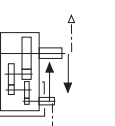
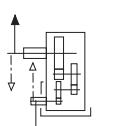
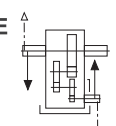
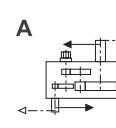
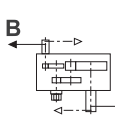
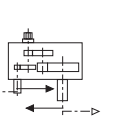
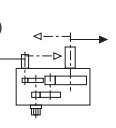
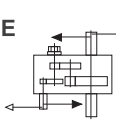
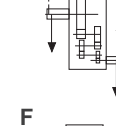
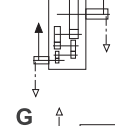
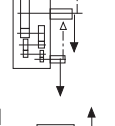
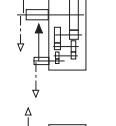
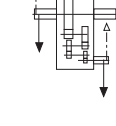
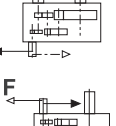
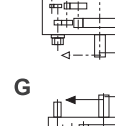
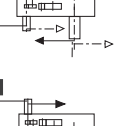
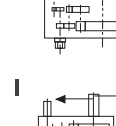
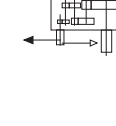
#### 10.1.1 Shaft assemblies:

Parallel key solid shaft  H...HS H...VS						
Parallel key hollow shaft  H...HH H...VH						
Hollow shaft with shrink disc  H...HD H...VD						
Hollow shaft with involute spline  H...HK H...VK						
Size iN Type	13	14	15	16	17	18
H2	6.3-14	3.15-14	6.3-14	3.15-14	5.6-14	3.55-16
H3	16-63	16-63	16-63	16-63	14-56	16-63
H4	71-280	71-280	71-280	71-280	63-250	71-280

⚠ Note: \*Shaft assemblies G/H/I is available when nominal ratio is within the range of value showed in right table.



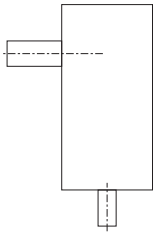
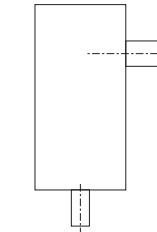
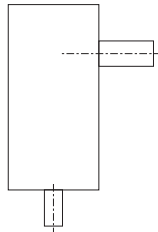
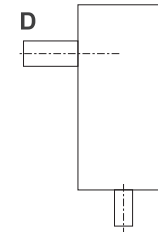
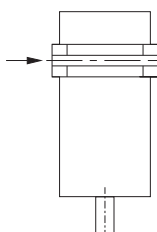
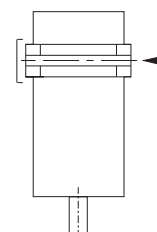
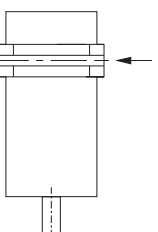
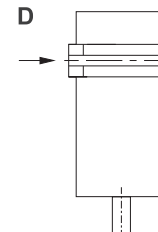
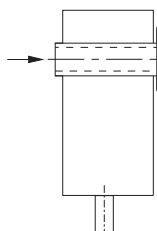
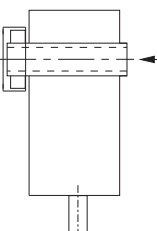
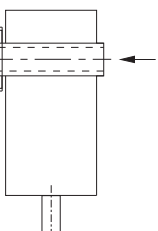
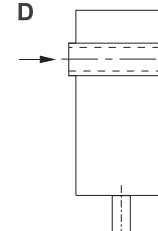
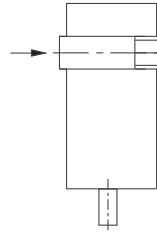
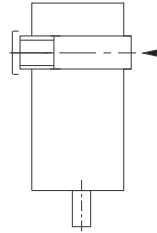
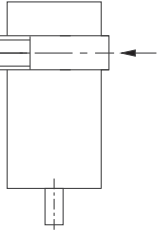
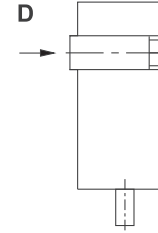
## 10.1.2 Direction of rotation:

H2..H					
H2..V					
H3..H					
H3..V					
H4..H					
H4..V					

⚠ Note: Direction of rotation is reversible, "☐" is shaft end oil pump.

## 10.2 B series shaft assemblies:

### 10.2.1 Shaft assemblies:

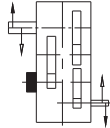
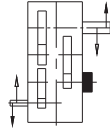
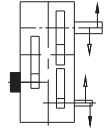
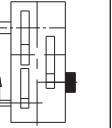
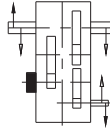
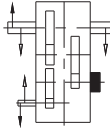
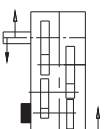
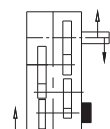
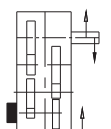
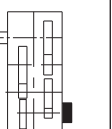
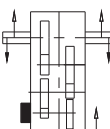
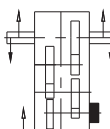
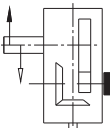
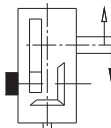
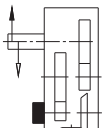
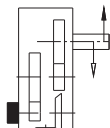
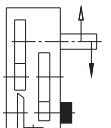
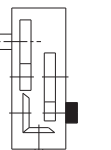
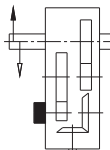
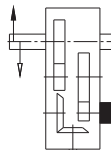
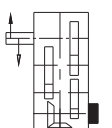
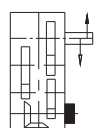
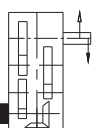
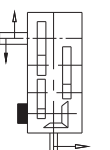
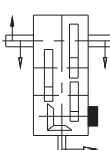
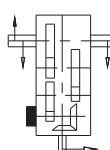
<p>Parallel key solid shaft</p> <p>B...HS B...VS</p>	<p><b>A</b></p> 	<p><b>B</b></p> 	<p><b>C</b></p> 	<p><b>D</b></p> 
<p>Parallel key hollow shaft</p> <p>B...HH B...VH</p>	<p><b>A</b></p> 	<p><b>B</b></p> 	<p><b>C</b></p> 	<p><b>D</b></p> 
<p>Hollow shaft with shrink disc</p> <p>B...HD B...VD</p>	<p><b>A</b></p> 	<p><b>B</b></p> 	<p><b>C</b></p> 	<p><b>D</b></p> 
<p>Hollow shaft with involute spline</p> <p>B...HK B...VK</p>	<p><b>A</b></p> 	<p><b>B</b></p> 	<p><b>C</b></p> 	<p><b>D</b></p> 

## 10.2.2 Direction of rotation:

B2..H	
B2..V	
B3..H	
B3..V	
B4..H	
B4..V	

- ⚠ Note: 1. Direction of rotation is reversible, "☐" is shaft end oil pump.  
 2. Two stage reduction B series gear unit is not equipped with backstop and shaft end oil pump when solid and hollow output shaft assemblies is B/D/E/F, please consult us if shaft end oil pump and backstop are needed.

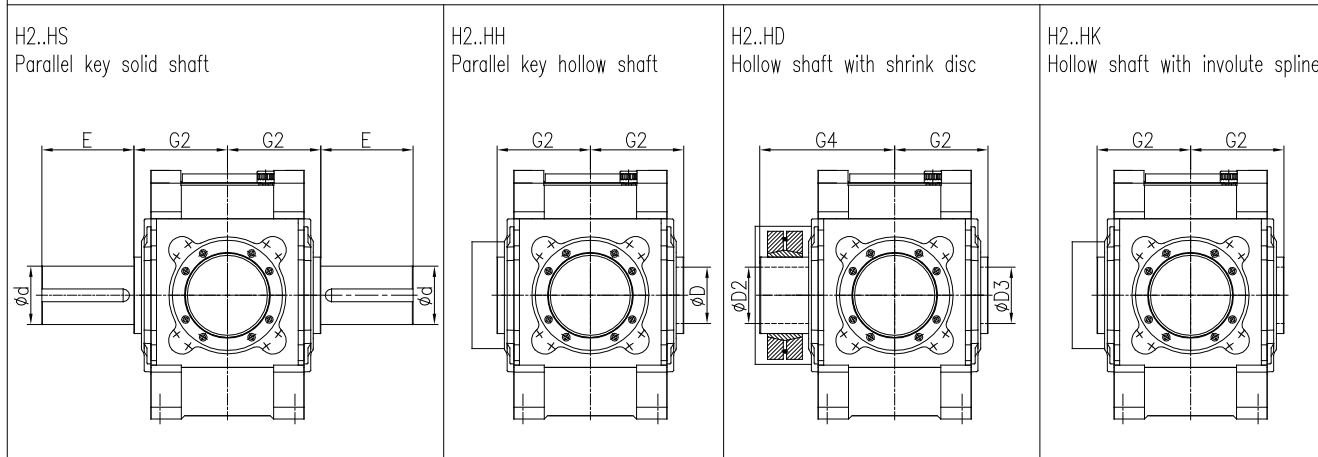
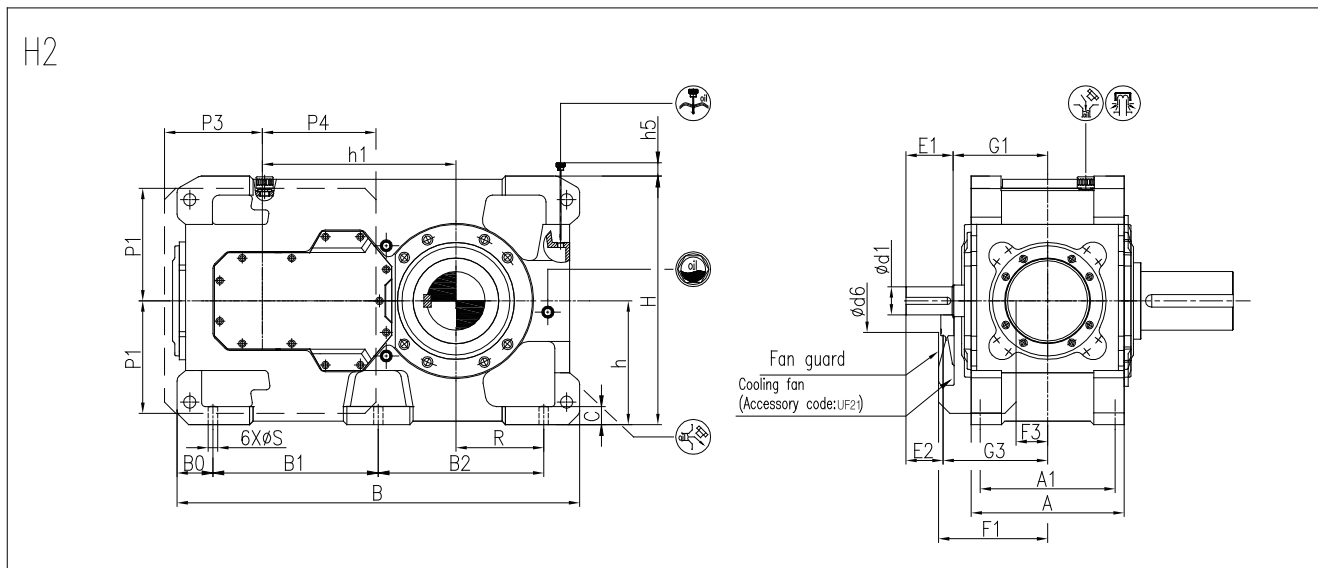
**10.3 Backstop assemblies and direction of shaft rotation direction:**

<p>H3...S H3...H H3...D H3...K</p>	<p><b>A</b> </p>	<p><b>B</b> </p>	<p><b>C</b> </p>	<p><b>D</b> </p>	<p><b>E</b> </p>	<p><b>F</b> </p>
<p>H4...S H4...H H4...D H4...K</p>	<p><b>A</b> </p>	<p><b>B</b> </p>	<p><b>C</b> </p>	<p><b>D</b> </p>	<p><b>E</b> </p>	<p><b>F</b> </p>
<p>B2...S B2...H B2...D B2...K</p>	<p><b>A</b> </p>	<p>///</p>	<p><b>C</b> </p>	<p>///</p>	<p>///</p>	<p>///</p>
<p>B3...S B3...H B3...D B3...K</p>	<p><b>A</b> </p>	<p><b>B</b> </p>	<p><b>C</b> </p>	<p><b>D</b> </p>	<p><b>E</b> </p>	<p><b>F</b> </p>
<p>B4...S B4...H B4...D B4...K</p>	<p><b>A</b> </p>	<p><b>B</b> </p>	<p><b>C</b> </p>	<p><b>D</b> </p>	<p><b>E</b> </p>	<p><b>F</b> </p>

- ⚠ Note:** 1. Gearbox with backstop only makes unidirectional rotation. Output shaft rotation direction has to be indicated when being ordered.  
 2. H2 series doesn't have backstop.  
 3. Shaft end oil pump can not be installed with backstop for all HB series, please consult us if both shaft end oil pump and backstop needed to be installed.

# 11 Outline dimension

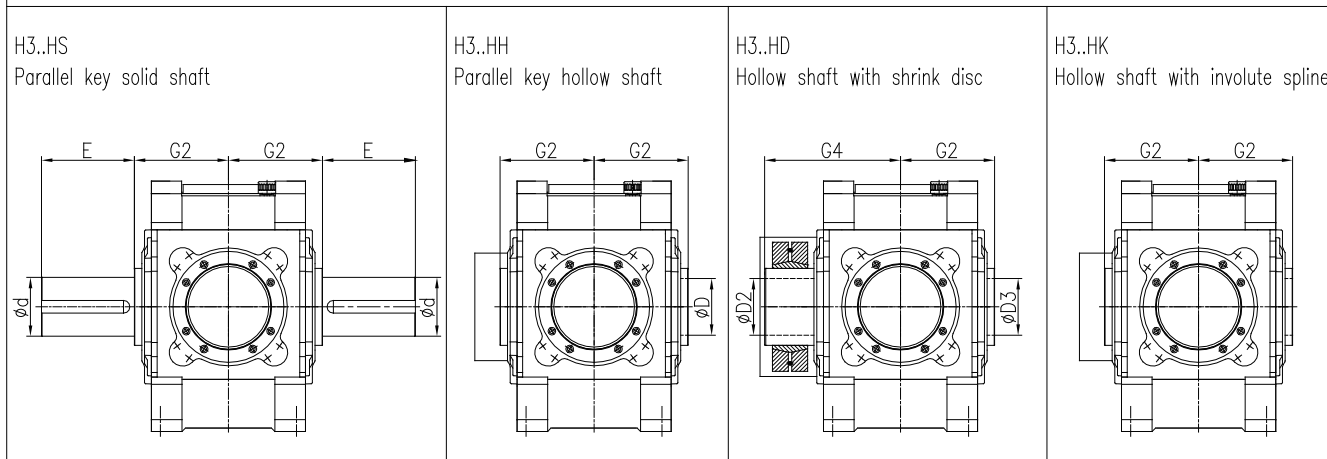
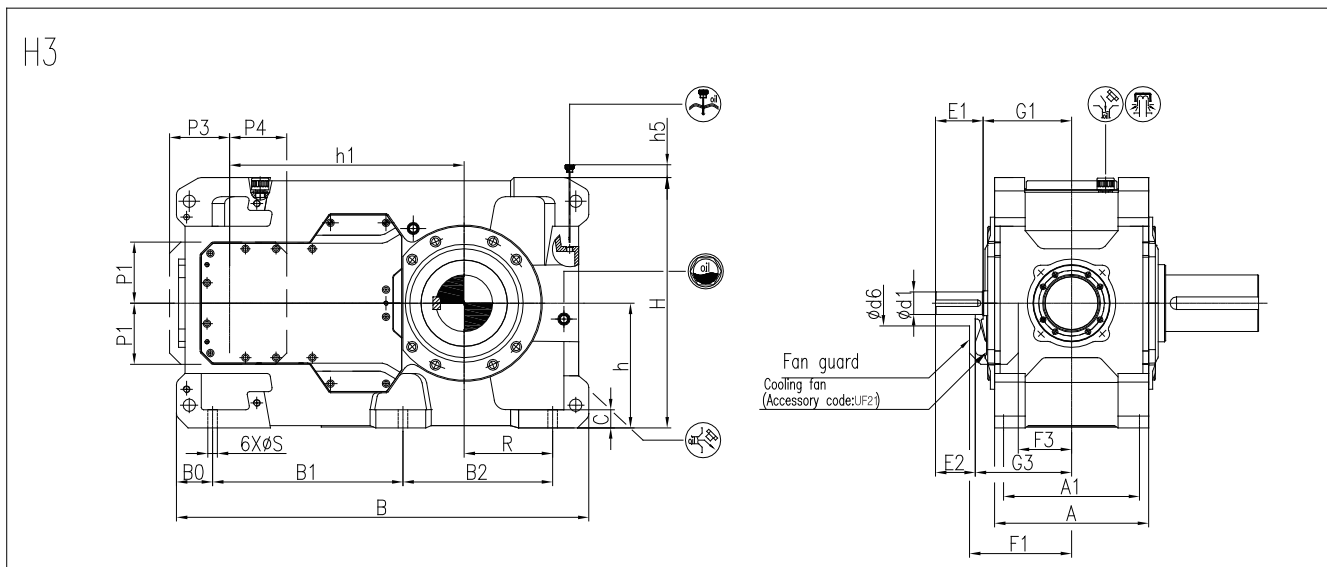
## H213H-H218H



Size	iN=3.15 -11.2			iN=3.15 -12.5			iN=12.5 -20			iN=14 -20			A	A1	B	B0	B1	B2			
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2									
13	100m6	210	175				85m6	170	135				545	475	1375	142	545	545			
14	100m6	210	175				85m6	170	135				545	475	1505	137	545	685			
15	120m6	210	175				100m6	210	175				620	535	1630	160	655	655			
16	120m6	210	175				100m6	210	175				620	535	1720	160	655	745			
17	125m6	210	165				110m6	210	165				680	600	1790	160	735	735			
18				125m6	210	165							110m6	210	165	680	600	1910	160	735	855

Size	C	d	d6	D	D2	D3	E	F1	F3	G1	G2	G3	G4	H	h	h1	h5	P1	P3	P4	R	S	Weight (kg)
13	60	200m6	250	190H7	190H7	190H7	350	385	135	330	335	365	480	875	440	635	40	400	330	365	305	35	2075
14	60	220m6	250	210H7	210H7	210H7	350	385	135	330	335	365	480	940	440	705	40	400	330	365	375	35	2825
15	70	240m6	280	230H7	230H7	230H7	410	430	155	365	380	400	550	1000	500	762	40	450	370	440	365	42	3610
16	70	250m6	280	240H7	240H7	240H7	410	430	155	365	380	400	550	1035	500	808	40	450	370	440	410	42	3970
17	80	260n6	280	250H7	250H7	250H7	410	485	140	420	415	465	600	1105	550	860	60	500	435	505	390	42	4765
18	80	280n6	280	275H7	275H7	275H7	470	485	140	420	415	465	600	1110	550	920	60	500	435	505	450	42	5265

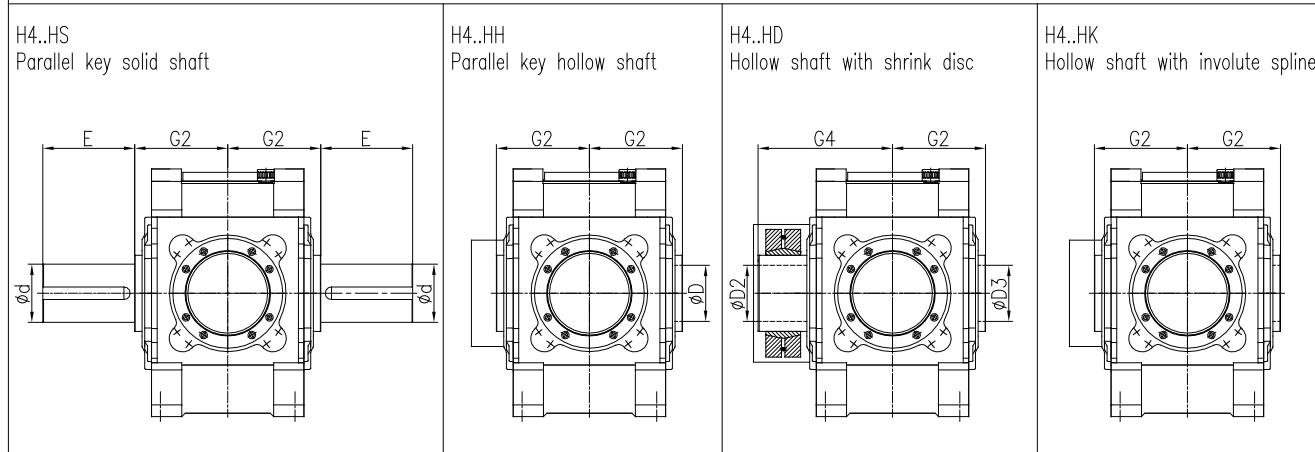
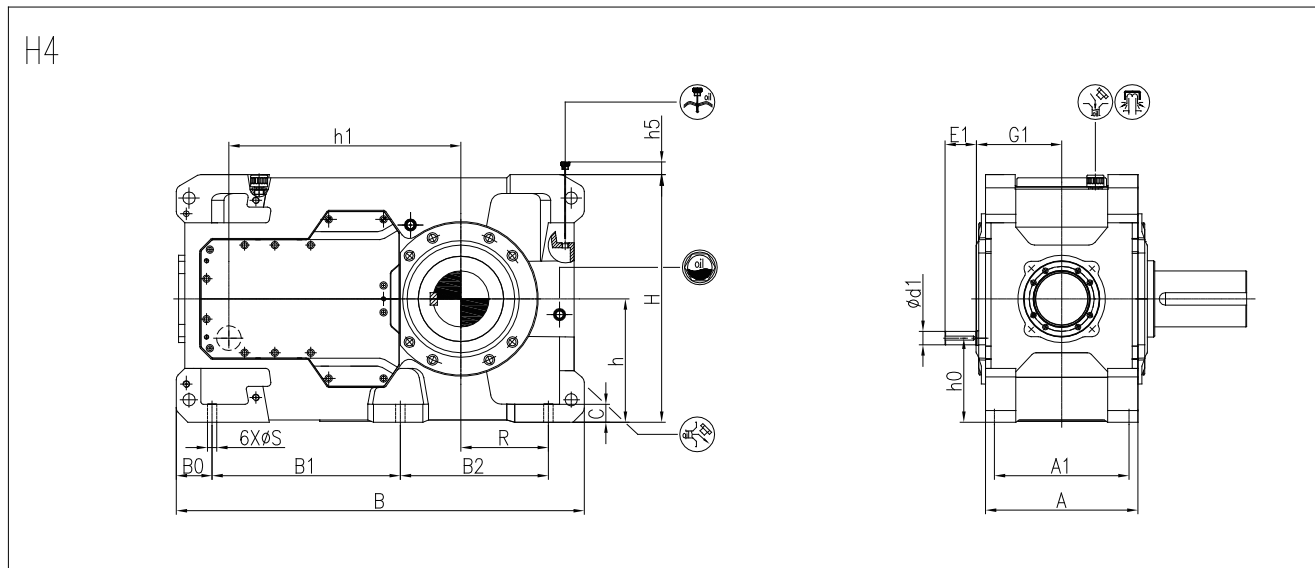
H313H-H318H



Size	iN=14-45			iN=16-50			iN=50-100			iN=56-100			iN=56-112			A	A1	B	B0	B1	B2	C
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2							
13				85m6	170	130				60m6	140	100				545	475	1470	137	667.5	527.5	60
14				85m6	170	130				60m6	140	100				545	475	1610	137	667.5	667.5	60
15				100m6	210	165							75m6	140	95	620	535	1760	161	840	600	70
16				100m6	210	165							75m6	140	95	620	535	1850	160	840	690	70
17	100m6	210	165				75m6	140	95							680	600	1820	160	840	660	80
18				100m6	210	165							75m6	140	95	680	600	1940	160	840	780	80

Size	d	d6	D	D2	D3	E	F1	F3	G1	G2	G3	G4	H	h	h1	h5	P1	P3	P4	R	S	Weight (kg)
13	200m6	190	190H7	190H7	190H7	350	370	195	325	335	365	480	875	440	820	0	225	225	215	305	35	2355
14	220m6	190	210H7	210H7	210H7	350	370	195	325	335	365	480	940	440	890	40	225	225	215	375	35	2880
15	240m6	200	230H7	230H7	230H7	410	415	205	365	380	410	550	1000	500	987	60	270	265	252	365	42	3640
16	250m6	200	240H7	240H7	240H7	410	415	205	365	380	410	550	1035	500	1033	20	270	265	252	410	42	4195
17	260m6	200	250H7	250H7	250H7	410	450	235	400	415	445	600	1105	550	1035	60	270	265	252	390	42	4670
18	280n6	200	275H7	275H7	275H7	470	450	235	400	415	445	600	1110	550	1095	70	270	265	252	450	42	5165

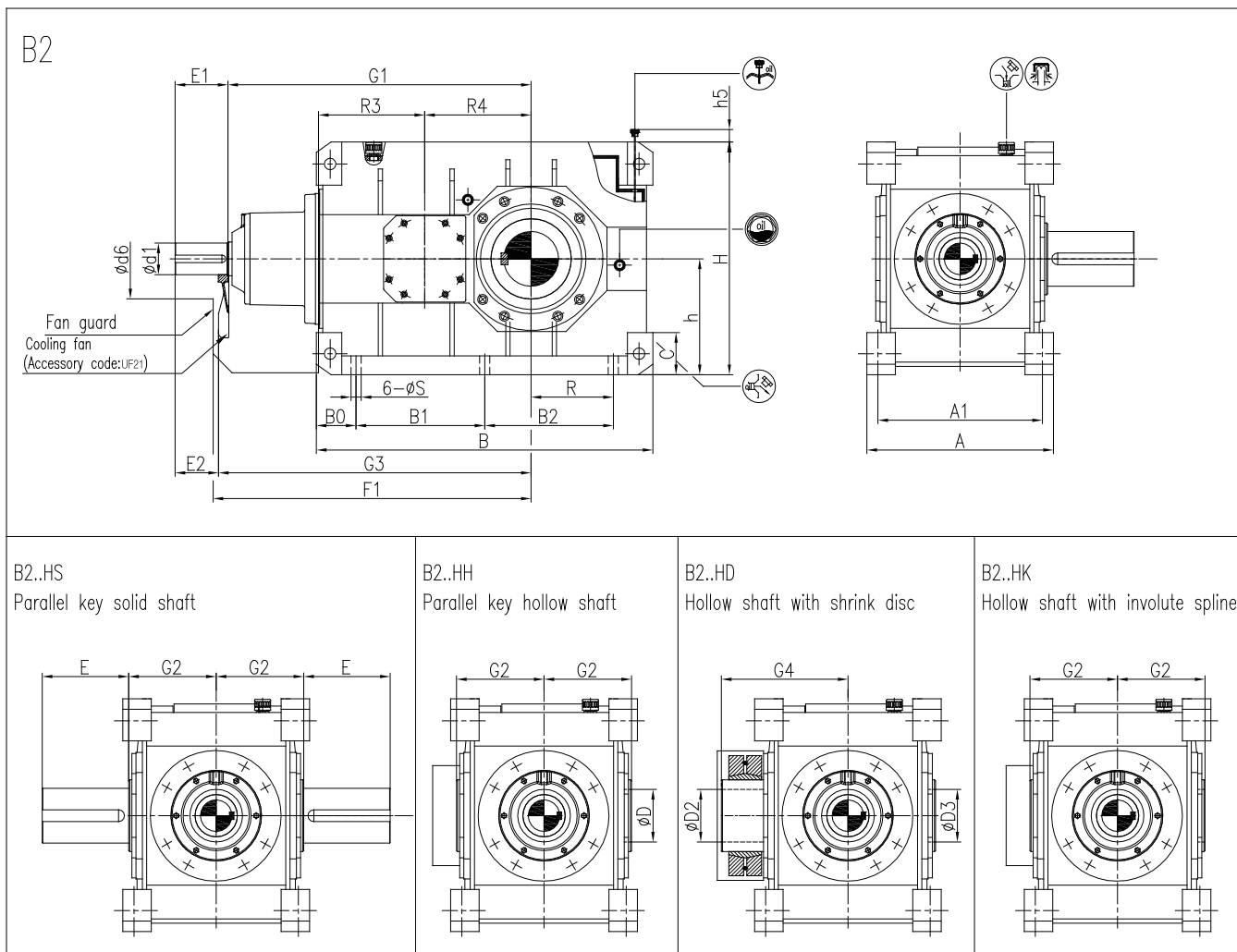
H413H-H418H



Size	iN=63-200		iN=71-224		iN=224-400		iN=250-450		A	A1	B	B0	B1	B2	C	d
	d1	E1	d1	E1	d1	E1	d1	E1								
13			50k6	110			38k6	80	545	475	1470	137	667.5	527.5	60	200m6
14			50k6	110			38k6	80	545	475	1610	137	667.5	667.5	60	220m6
15			60m6	140			50k6	110	620	535	1760	161	840	600	70	240m6
16			60m6	140			50k6	110	620	535	1850	160	840	690	70	250m6
17	60m6	140			50k6	110			680	600	1820	160	840	660	80	260m6
18			60m6	140			50k6	110	680	600	1940	160	840	780	80	280m6

Size	D	D2	D3	E	G1	G2	G4	H	h	h0	h1	h5	R	S	Weight (kg)
13	190H7	190H7	190H7	350	305	335	480	875	440	300	820	0	305	35	2450
14	210H7	210H7	210H7	350	305	335	480	940	440	300	890	40	375	35	2995
15	230H7	230H7	230H7	410	345	380	550	1000	500	325	987	60	365	42	3810
16	240H7	240H7	240H7	410	345	380	550	1035	500	325	1033	20	410	42	4290
17	250H7	250H7	250H7	410	380	415	600	1105	550	375	1035	60	390	42	4795
18	275H7	275H7	275H7	470	380	415	600	1110	550	375	1095	70	450	42	5325

B213H-B218H

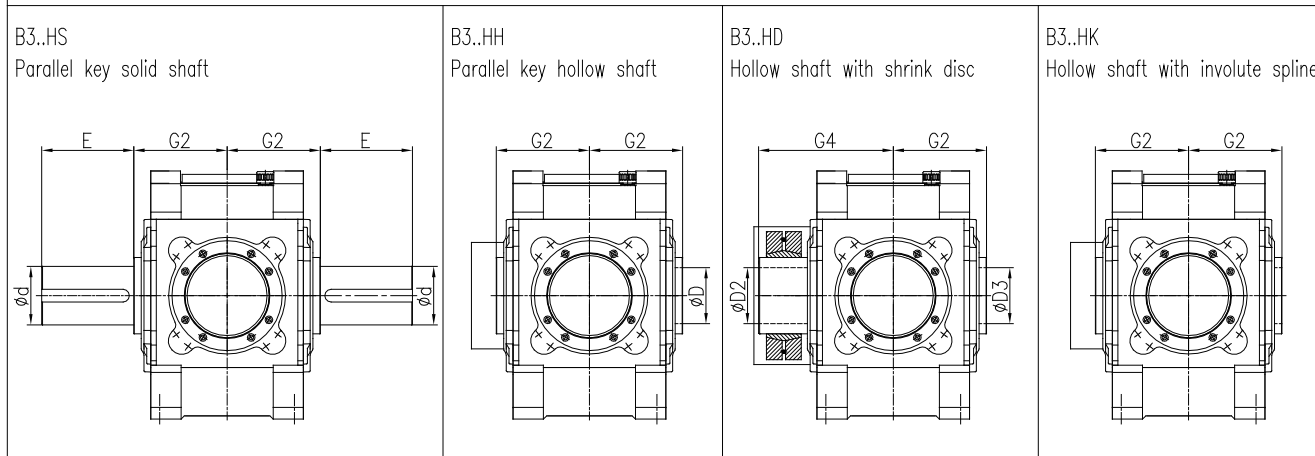
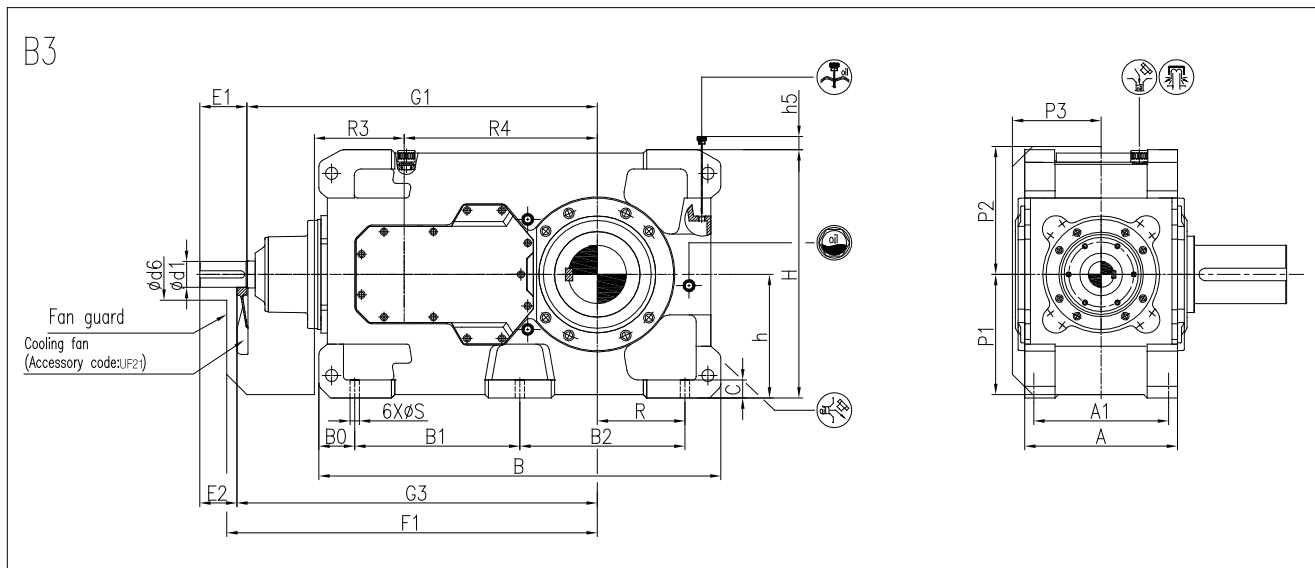


Size	iN=6. 3-14			iN=7. 1-14			A	A1	B	B0	B1	B2	C	d	d6	D	D2	D3
	d1	E1	E2	d1	E1	E2												
13	115m6	210	175				655	580	1205	137	465	465	60	200m6	245	190H7	190H7	190H7
14	115m6	210	175				655	580	1345	137	465	605	60	220m6	245	210H7	210H7	210H7
15	140m6	250	200				765	670	1430	160	555	555	70	240m6	280	230H7	230H7	230H7
16	140m6	250	200				765	670	1520	160	555	645	70	250m6	280	240H7	240H7	240H7
17	150m6	250	200				885	780	1595	188	610	610	80	260n6	380	250H7	250H7	250H7
18				150m6	250	200	885	780	1715	188	610	730	80	280n6	380	275H7	275H7	275H7

Size	E	F1	G1	G2	G3	G4	H	h	h5	P1	P2	P3	R	R3	R4	S	Weight (kg)
13	350	1175	1092	335	1127	480	870	440	60	430	450	375	305	370	392	35	2530
14	350	1245	1170	335	1205	480	885	440	20	430	450	375	375	370	470	35	2945
15	410	1385	1305	380	1355	550	1000	500	20	490	495	435	365	442	470	42	4230
16	410	1430	1330	380	1380	550	1035	500	60	490	495	435	410	442	495	42	4750
17	410	1520	1450	415	1500	600	1105	550	40	540	555	505	390	490	505	48	5990
18	470	1580	1515	415	1565	600	1110	550	100	540	555	505	450	490	570	48	6555



**B313H-B318H**

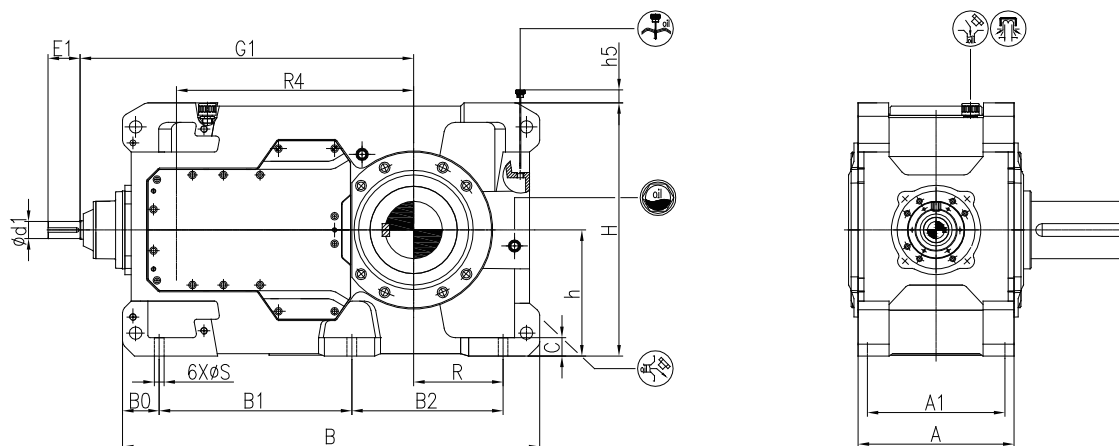


Size	iN=16-56			iN=16-63			iN=63-80			iN=71-90			A	A1	B	B0	B1	B2	C	d	d6
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2									
13				85m6	170	135				70m6	140	105	545	475	1375	142	545	545	60	200m6	210
14				85m6	170	135				70m6	140	105	545	475	1505	137	545	685	60	220m6	210
15				95m6	170	135				75m6	140	105	620	535	1630	160	655	655	70	240m6	210
16				95m6	170	135				75m6	140	105	620	535	1720	160	655	745	70	250m6	210
17	115m6	210	175				90m6	170	135				680	600	1790	160	735	735	80	260m6	230
18				115m6	210	175				90m6	170	135	680	600	1910	160	735	855	80	280m6	230

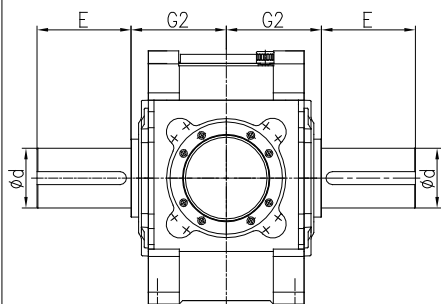
Size	D	D2	D3	E	F1	G1	G2	G3	G4	H	h	h5	P1	P2	P3	R	R3	R4	S	Weight (kg)
13	190H7	190H7	190H7	350	1165	1110	335	1145	480	875	440	40	425	435	325	305	265	635	35	2470
14	210H7	210H7	210H7	350	1235	1180	335	1215	480	940	440	40	425	435	325	375	265	705	35	3025
15	230H7	230H7	230H7	410	1420	1367	380	1402	550	1000	500	40	485	520	365	365	320	762	42	3925
16	240H7	240H7	240H7	410	1470	1413	380	1448	550	1035	500	40	485	520	365	410	320	808	42	4295
17	250H7	250H7	250H7	410	1620	1560	415	1595	600	1105	550	60	535	570	395	390	370	860	42	5110
18	275H7	275H7	275H7	470	1680	1620	415	1655	600	1110	550	60	535	570	395	450	370	920	42	5645

## B413H-B418H

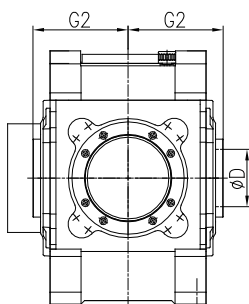
B4



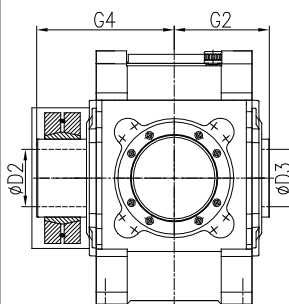
B4..HS  
Parallel key solid shaft



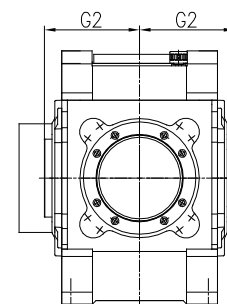
B4..HH  
Parallel key hollow shaft



B4..HD  
Hollow shaft with shrink disc



B4..HK  
Hollow shaft with involute spline

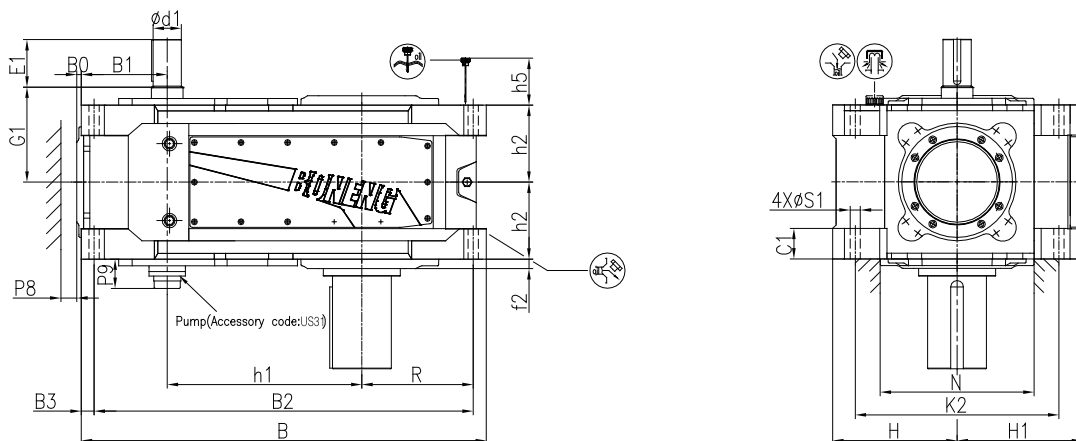


Size	iN=90-250		iN=100-280		iN=280-355		iN=315-400		A	A1	B	B0	B1	B2	C
	d1	E1	d1	E1	d1	E1	d1	E1							
13			60m6	140			50k6	110	545	475	1470	137	667.5	527.5	60
14			60m6	140			50k6	110	545	475	1610	137	667.5	667.5	60
15			75m6	140			60m6	140	620	535	1760	161	840	600	70
16			75m6	140			60m6	140	620	535	1850	160	840	690	70
17	75m6	140			60m6	140			680	600	1820	160	840	660	80
18			75m6	140			60m6	140	680	600	1940	160	840	780	80

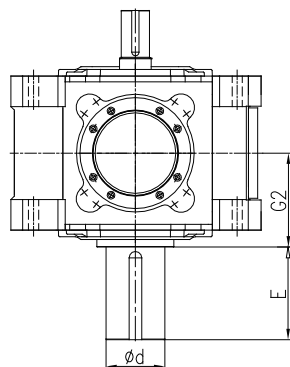
Size	d	D	D2	D3	E	G1	G2	G4	H	h	h5	R	R4	S	Weight (kg)
13	200m6	190H7	190H7	190H7	350	1170	335	480	875	440	0	305	820	35	2455
14	220m6	210H7	210H7	210H7	350	1240	335	480	940	440	40	375	890	35	3000
15	240m6	230H7	230H7	230H7	410	1407	380	550	1000	500	60	365	987	42	3805
16	250m6	240H7	240H7	240H7	410	1453	380	550	1035	500	20	410	1033	42	4315
17	260m6	250H7	250H7	250H7	410	1455	415	600	1105	550	60	390	1035	42	4810
18	280m6	275H7	275H7	275H7	470	1515	415	600	1110	550	70	450	1095	42	5340

## H213V-H218V

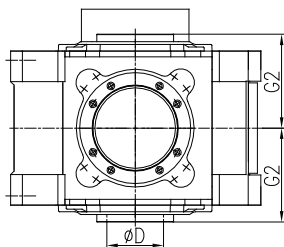
H2(With forced lubrication)



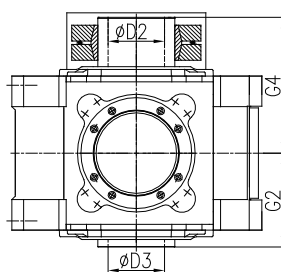
H2..VS  
Parallel key solid shaft



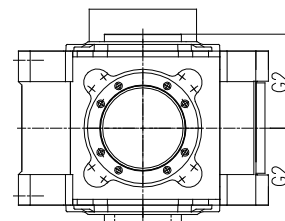
H2..VH  
Parallel key hollow shaft



H2..VD  
Hollow shaft with shrink disc



H2..VK  
Hollow shaft with involute spline



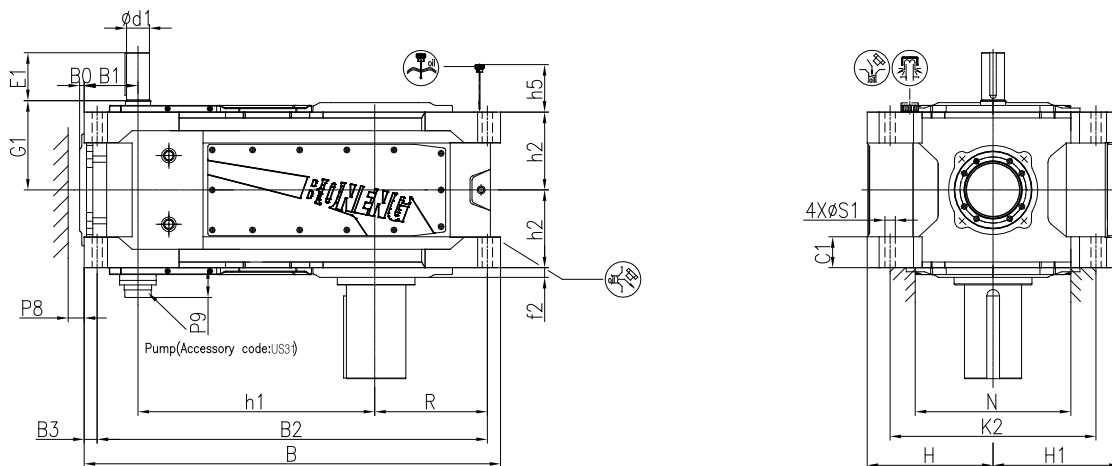
Size	iN=3. 15-11. 2		iN=3. 15-12. 5		iN=12. 5-20		iN=14-20		B	B0	B1	B2	B3	C1	d	D
	d1	E1	d1	E1	d1	E1	d1	E1								
13	100m6	210			85m6	170			1375	0	292	1270	52	105±2	200m6	190H7
14	100m6	210			85m6	170			1505	2	287	1410	47	105±2	220m6	210H7
15	120m6	210			100m6	210			1630	7	343	1515	57	125±2	240m6	230H7
16	120m6	210			100m6	210			1720	8	342	1605	57	125±2	250m6	240H7
17	125m6	210			110m6	210			1790	20	380	1675	57	135±2	260m6	250H7
18			125m6	210			110m6	210	1910	20	380	1795	57	135±2	280m6	275H7

Size	D2	D3	E	f2	G1	G2	G4	H	H1	h1	h2	h5	K2	N	P8	P9	R	S1	Weight (kg)
13	190H7	190H7	350	35	330	335	480	440	435	635	272.5	210	720	550	50	130	395	48	2075
14	210H7	210H7	350	35	330	335	480	440	500	705	272.5	210	740	570	50	130	465	48	2825
15	230H7	230H7	410	32	365	380	550	500	500	762	310	230	820	640	50	130	467	55	3610
16	240H7	240H7	410	32	365	380	550	500	535	808	310	230	860	650	50	130	512	55	3970
17	250H7	250H7	410	42	420	415	600	550	555	860	340	250	900	690	70	170	492	55	4765
18	275H7	275H7	470	42	420	415	600	550	560	920	340	250	900	710	70	170	552	55	5265

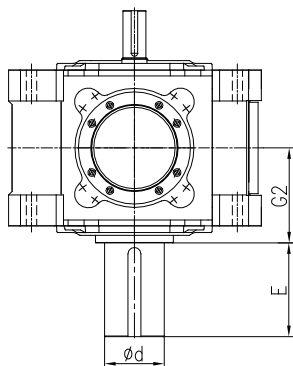
\*The general mounting is up position, if down mounting position, please mention in the order.

H313V-H318V

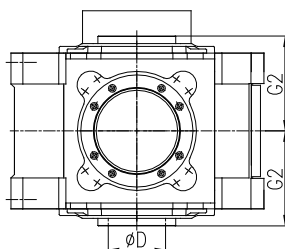
H3(With forced lubrication)



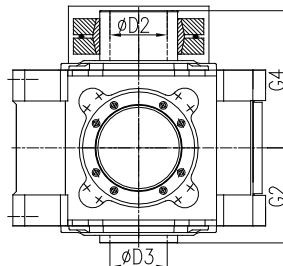
H3..VS  
Parallel key solid shaft



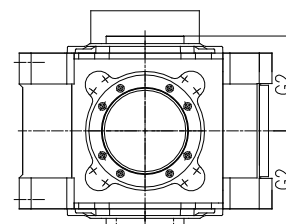
H3..VH  
Parallel key hollow shaft



H3..VD  
Hollow shaft with shrink disc



H3..VK  
Hollow shaft with involute spline



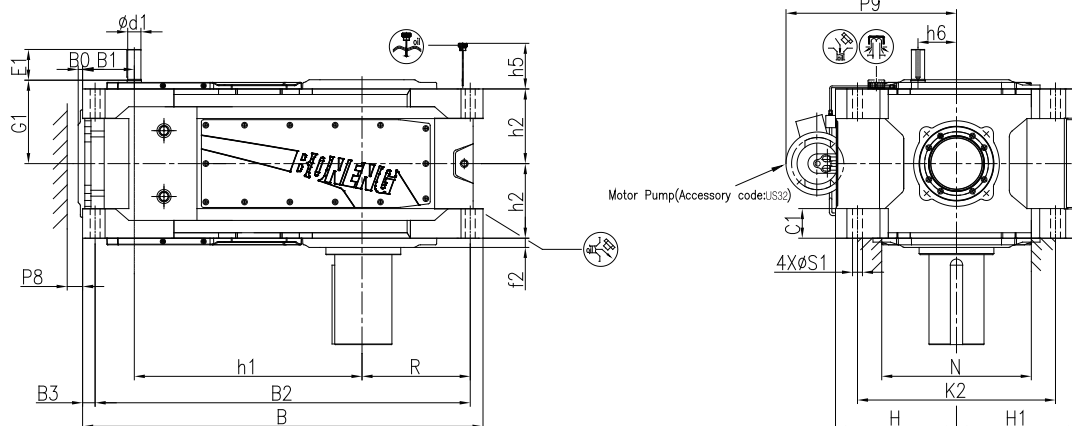
Size	iN=14-45		iN=16-50		iN=50-100		iN=56-100		iN=56-112		B	B0	B1	B2	B3	C1	d	D
	d1	E1	d1	E1	d1	E1	d1	E1	d1	E1								
13			85m6	170			60m6	140			1470	0	207	1375	47	105±2	200m6	190H7
14			85m6	170			60m6	140			1610	0	207	1515	48	105±2	220m6	210H7
15			100m6	210					75m6	140	1760	0	249	1655	51	125±2	240m6	230H7
16			100m6	210					75m6	140	1850	2	247	1735	57	125±2	250m6	240H7
17	100m6	210			75m6	140					1820	14	235	1705	57	135±2	260m6	250H7
18			100m6	210					75m6	140	1940	14	235	1825	57	135±2	280n6	275H7

Size	D2	D3	E	f2	G1	G2	G4	H	H1	h1	h2	h5	K2	N	P8	P9	R	S1	Weight (kg)
13	190H7	190H7	350	35	325	335	480	440	435	820	272.5	210	720	570	50	170	395	48	2355
14	210H7	210H7	350	35	325	335	480	440	500	890	272.5	210	740	570	50	170	465	48	2880
15	230H7	230H7	410	32	365	380	550	500	500	987	310	230	820	710	50	170	470	55	3640
16	240H7	240H7	410	32	365	380	550	500	535	1033	310	230	860	710	50	170	512	55	4195
17	250H7	250H7	410	42	400	415	600	550	555	1035	340	250	900	790	70	210	492	55	4670
18	275H7	275H7	470	42	400	415	600	550	560	1095	340	250	900	790	70	210	552	55	5165

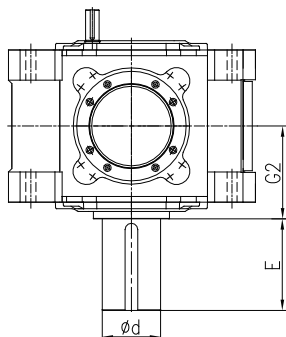
\*The general mounting is up position, if down mounting position, please mention in the order.

H413V-H418V

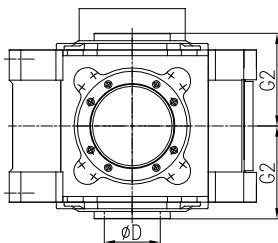
H4(With forced lubrication)



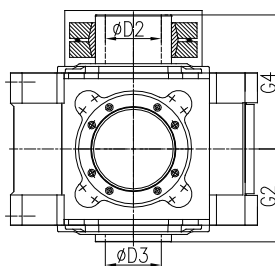
H4..VS  
Parallel key solid shaft



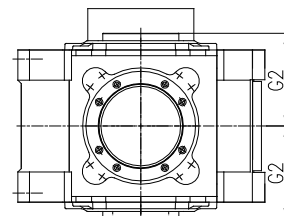
H4..VH  
Parallel key hollow shaft



H4..VD  
Hollow shaft with shrink disc



H4..VK  
Hollow shaft with involute spline



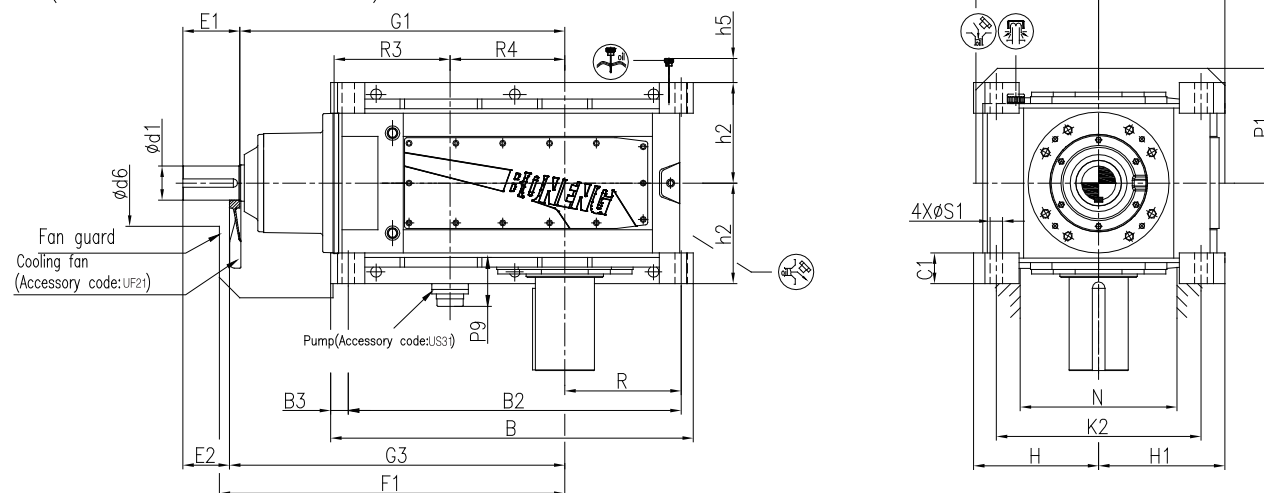
Size	iN=63-200		iN=71-224		iN=224-400		iN=250-450		B	B0	B1	B2	B3	C1	d	D	D2	D3
	d1	E1	d1	E1	d1	E1	d1	E1										
13			50k6	110			38k6	80	1470	0	207	1375	47	105±2	200m6	190H7	190H7	190H7
14			50k6	110			38k6	80	1610	0	207	1515	48	105±2	220m6	210H7	210H7	210H7
15			60m6	140			50k6	110	1760	0	249	1655	51	125±2	240m6	230H7	230H7	230H7
16			60m6	140			50k6	110	1850	2	247	1735	57	125±2	250m6	240H7	240H7	240H7
17	60m6	140			50k6	110			1820	14	235	1705	57	135±2	260n6	250H7	250H7	250H7
18			60m6	140			50k6	110	1940	14	235	1825	57	135±2	280n6	275H7	275H7	275H7

Size	E	f2	G1	G2	G4	H	H1	h1	h2	h5	h6	K2	N	P8	P9	R	S1	Weight (kg)
13	350	35	305	335	480	440	435	820	272.5	210	140	720	570	50	670	395	48	2450
14	350	35	305	335	480	440	500	890	272.5	210	140	740	570	50	670	465	48	2995
15	410	32	345	380	550	500	500	987	310	230	175	820	710	50	710	470	55	3810
16	410	32	345	380	550	500	535	1033	310	230	175	860	710	50	710	512	55	4290
17	410	42	380	415	600	550	555	1035	340	250	175	900	790	70	775	492	55	4795
18	470	42	380	415	600	550	560	1095	340	250	175	900	790	70	775	552	55	5325

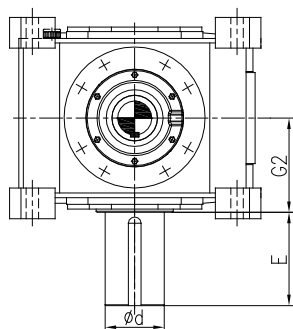
\*The general mounting is up position, if down mounting position, please mention in the order.

## B213V-B218V

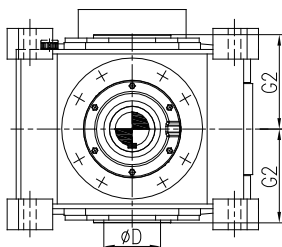
B2(With forced lubrication)



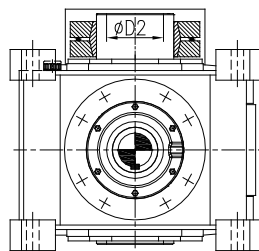
B2..VS  
Parallel key solid shaft



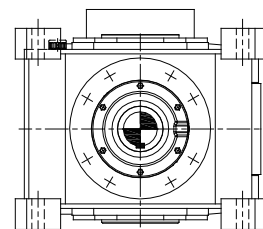
B2..VH  
Parallel key hollow shaft



B2..VD  
Hollow shaft with shrink disc



B2..VK  
Hollow shaft with involute spline



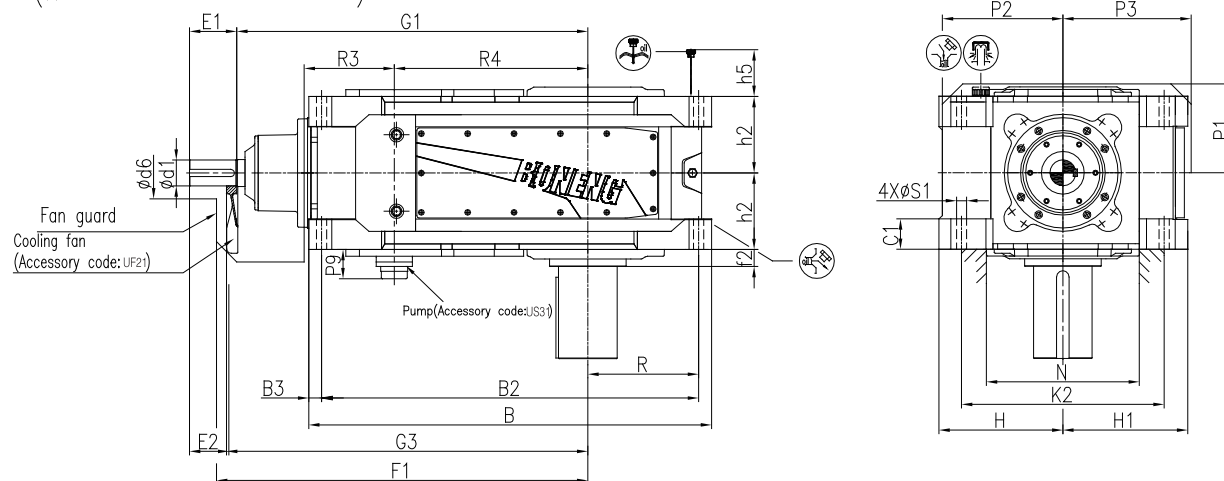
Size	iN=6.3-14			iN=7.1-14			B	B2	B3	C1	d	d6	D	D2	D3	E	F1	f 2	G1
	d1	E1	E2	d1	E1	E2													
13	115m6	210	175				1205	1110	47	105±2	200m6	245	190H7	190H7	190H7	350	1175	35	1092
14	115m6	210	175				1345	1250	47	105±2	220m6	245	210H7	210H7	210H7	350	1245	35	1170
15	140m6	250	200				1430	1315	57	125±2	240m6	280	230H7	230H7	230H7	410	1385	32	1305
16	140m6	250	200				1520	1405	57	125±2	250m6	280	240H7	240H7	240H7	410	1430	32	1330
17	150m6	250	200				1595	1465	65	135±2	260m6	380	250H7	250H7	250H7	410	1520	42	1450
18				150m6	250	200	1715	1585	65	135±2	280m6	380	275H7	275H7	275H7	470	1580	42	1515

Size	G2	G3	G4	H	H1	h2	h5	K2	N	P1	P2	P3	P9	R	R3	R4	S1	Weight (kg)
13	335	1127	480	440	430	325	210	720	550	375	430	450	200	395	370	392	48	2530
14	335	1205	480	440	445	325	210	740	570	375	430	450	200	465	370	470	48	2945
15	380	1355	550	500	500	380	230	820	590	435	490	495	200	467	442	470	55	4230
16	380	1380	550	500	535	380	230	860	650	435	490	495	200	512	442	495	55	4750
17	415	1500	600	550	555	437.5	250	900	690	505	540	555	200	512	490	505	55	5990
18	415	1565	600	550	560	437.5	250	900	710	505	540	555	200	572	490	570	55	6555

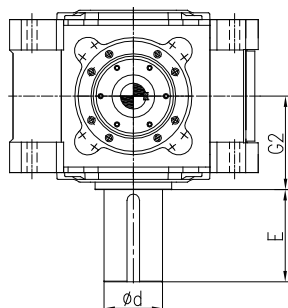
\*The general mounting is up position, if down mounting position, please mention in the order.

B313V-B318V

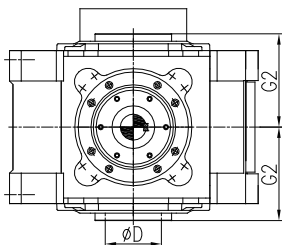
B3(With forced lubrication)



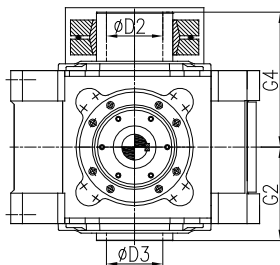
B3..VS  
Parallel key solid shaft



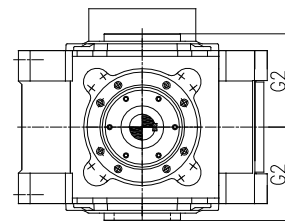
B3..VH  
Parallel key hollow shaft



B3..VD  
Hollow shaft with shrink disc



B3..VK  
Hollow shaft with involute spline



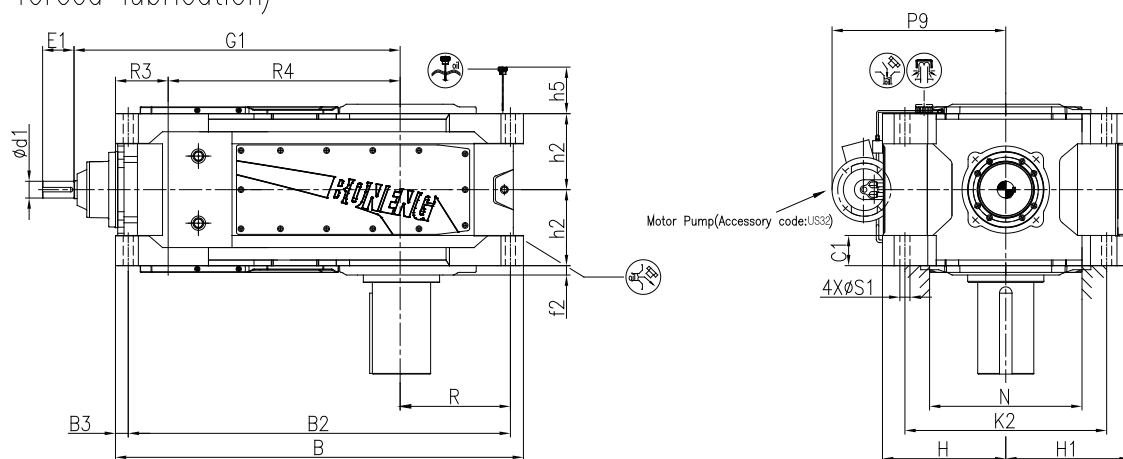
Size	iN=16-56			iN=16-63			iN=63-80			iN=71-90			B	B2	B3	C1	d	d6	D	D2	D3
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2									
13				85m6	170	135				70m6	140	105	1365	1270	52	105±2	200m6	210	190H7	190H7	190H7
14				85m6	170	135				70m6	140	105	1505	1410	47	105±2	220m6	210	210H7	210H7	210H7
15				95m6	170	135				75m6	140	105	1630	1515	57	125±2	240m6	210	230H7	230H7	230H7
16				95m6	170	135				75m6	140	105	1720	1605	57	125±2	250m6	210	240H7	240H7	240H7
17	115m6	210	175				90m6	170	135				1790	1675	57	135±2	260m6	230	250H7	250H7	250H7
18				115m6	210	175				90m6	170	135	1910	1795	57	135±2	280m6	230	275H7	275H7	275H7

Size	E	F1	f2	G1	G2	G3	G4	H	H1	h2	h5	K2	N	P1	P2	P3	P9	R	R3	R4	S1	Weight (kg)
13	350	1165	35	1110	335	1145	480	440	635	272.	5210	720	550	325	425	435	170	395	265	635	48	2470
14	350	1235	35	1180	335	1215	480	440	705	272.	5210	740	570	325	425	435	170	465	265	705	48	3025
15	410	1420	32	1367	380	1402	550	500	762	310	230	820	640	365	485	520	170	467	320	762	55	3925
16	410	1470	32	1413	380	1448	550	500	808	310	230	860	650	365	485	520	170	512	320	808	55	4295
17	410	1620	42	1560	415	1595	600	550	860	340	250	900	690	395	535	570	170	492	370	860	55	5110
18	470	1680	42	1620	415	1655	600	550	920	340	250	900	710	395	535	570	170	552	370	920	55	5645

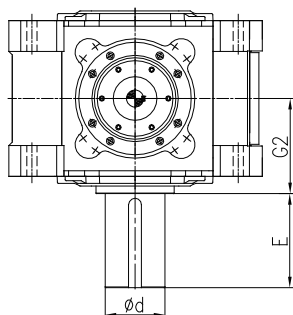
\*The general mounting is up position, if down mounting position, please mention in the order.

## B413V-B418V

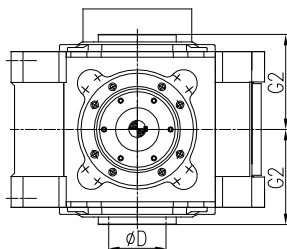
B4(With forced lubrication)



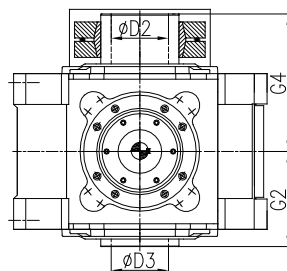
B4..VS  
Parallel key solid shaft



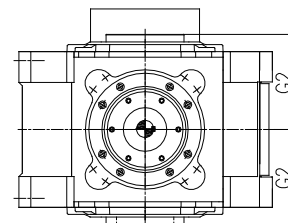
B4..VH  
Parallel key hollow shaft



B4..VD  
Hollow shaft with shrink disc



B4..VK  
Hollow shaft with involute spline



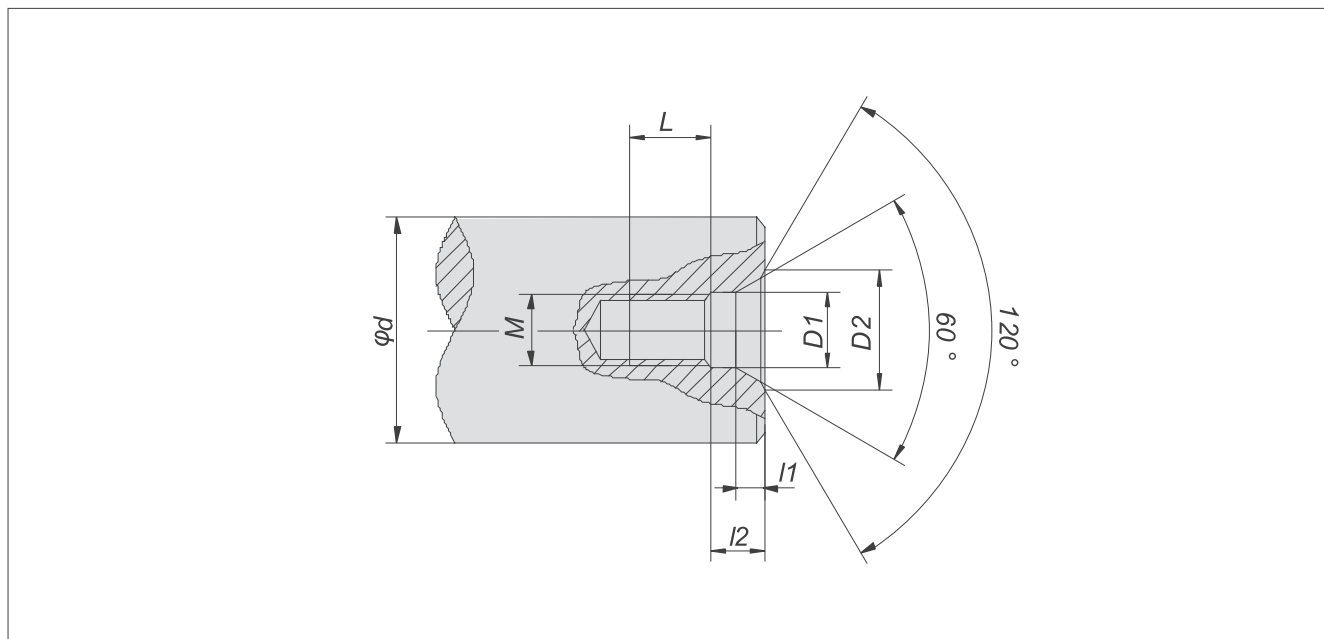
Size	iN=90-250		iN=100-280		iN=280-355		iN=315-400		B	B2	B3	C1	d	D	D2	D3
	d1	E1	d1	E1	d1	E1	d1	E1								
13			60m6	140			50k6	110	1470	1375	47	105±2	200m6	190H7	190H7	190H7
14			60m6	140			50k6	110	1610	1515	48	105±2	220m6	210H7	210H7	210H7
15			75m6	140			60m6	140	1760	1655	51	125±2	240m6	230H7	230H7	230H7
16			75m6	140			60m6	140	1850	1735	57	125±2	250m6	240H7	240H7	240H7
17	75m6	140			60m6	140			1820	1705	57	135±2	260m6	250H7	250H7	250H7
18			75m6	140			60m6	140	1940	1825	57	135±2	280m6	275H7	275H7	275H7

Size	E	f2	G1	G2	G4	H	H1	h2	h5	K2	N	P9	R	R4	S1	Weight (kg)
13	350	35	1170	335	480	440	435	272.5	210	720	570	670	395	820	48	2455
14	350	35	1240	335	480	440	500	272.5	210	740	570	670	465	890	48	3000
15	410	32	1407	380	550	500	500	310	230	820	710	710	470	987	55	3805
16	410	32	1453	380	550	500	535	310	230	860	710	710	512	1033	55	4315
17	410	42	1455	415	600	550	555	340	250	900	790	775	492	1035	55	4810
18	470	42	1515	415	600	550	560	340	250	900	790	775	552	1095	55	5340

\*The general mounting is up position, if down mounting position, please mention in the order.

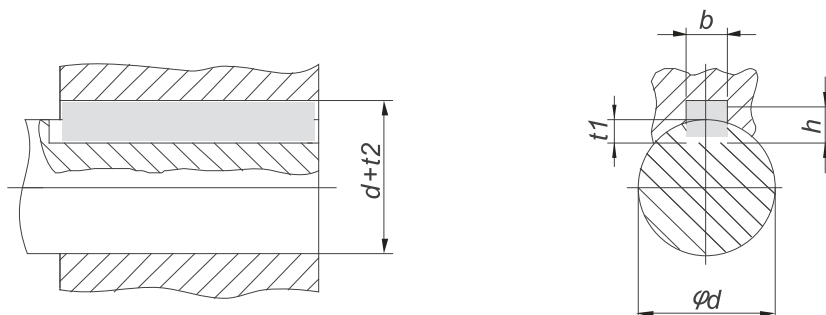


## 12 Shaft end central hole:



d	M	L	l2	l1	D1	D2
$7 < d \leq 10$	M3	10	2.6	1.8	3.2	5.8
$10 < d \leq 13$	M4	10	3.2	2.1	4.3	7.4
$13 < d \leq 16$	M5	10	4	2.4	5.3	8.8
$16 < d \leq 21$	M6	12	5	2.8	6.4	10.5
$21 < d \leq 24$	M8	12	6	3.3	8.4	13.2
$24 < d \leq 30$	M10	15	7.5	3.8	10.5	16.3
$30 < d \leq 38$	M12	20	9.5	4.4	13	19.8
$38 < d \leq 50$	M16	25	12	5.2	17	25.3
$50 < d \leq 85$	M20	30	15	6.4	21	31.3
$85 < d \leq 130$	M24	35	18	8	26	38
$130 < d \leq 225$	M30	45	18	11	31	48
$225 < d \leq 320$	M36	55	22	15	37	60
$320 < d \leq 500$	M42	60	26	19	43	71
$500 < d \leq 710$	M48	65	30	23	49	83

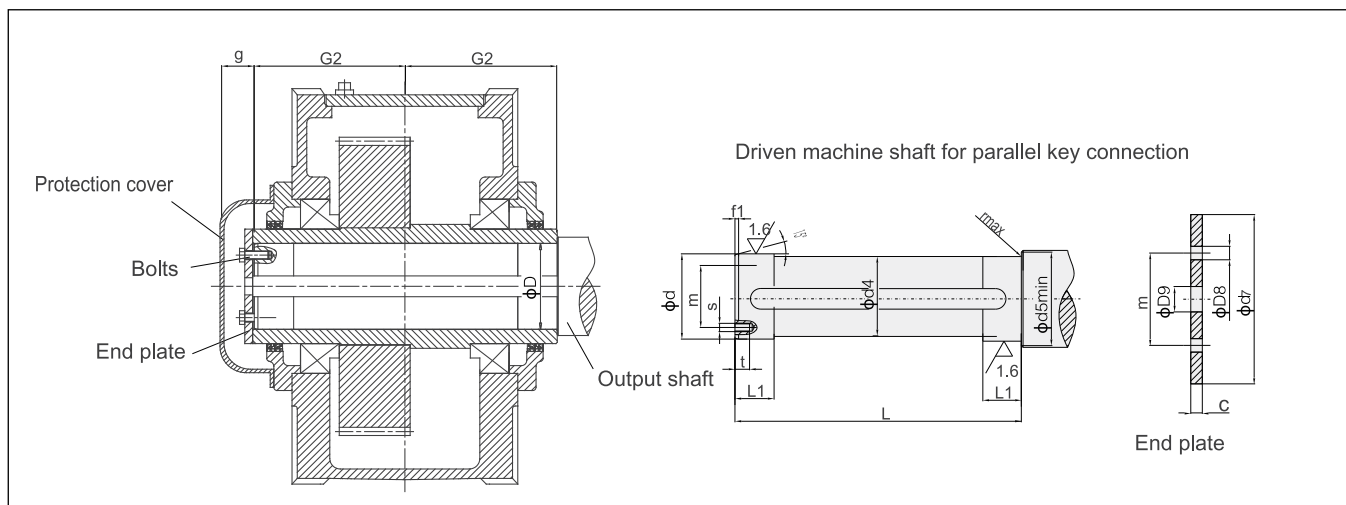
### 13 Dimension of parallel key and keyway:



d	b	h	t <sub>1</sub>	d + t <sub>2</sub>
8 < d ≤ 10	3	3	1.8	d + 1.4
10 < d ≤ 12	4	4	2.5	d + 1.8
12 < d ≤ 17	5	5	3	d + 2.3
17 < d ≤ 22	6	6	3.5	d + 2.8
22 < d ≤ 30	8	7	4	d + 3.3
30 < d ≤ 38	10	8	5	d + 3.3
38 < d ≤ 44	12	8	5	d + 3.3
44 < d ≤ 50	14	9	5.5	d + 3.8
50 < d ≤ 58	16	10	6	d + 4.3
58 < d ≤ 65	18	11	7	d + 4.4
65 < d ≤ 75	20	12	7.5	d + 4.9
75 < d ≤ 85	22	14	9	d + 5.4
85 < d ≤ 95	25	14	9	d + 5.4
95 < d ≤ 110	28	16	10	d + 6.4
110 < d ≤ 130	32	18	11	d + 7.4
130 < d ≤ 150	36	20	12	d + 8.4
150 < d ≤ 170	40	22	13	d + 9.4
170 < d ≤ 200	45	25	15	d + 10.4
200 < d ≤ 230	50	28	17	d + 11.4
230 < d ≤ 260	56	32	20	d + 12.4
260 < d ≤ 290	63	32	20	d + 12.4
290 < d ≤ 330	70	36	22	d + 14.4
330 < d ≤ 380	80	40	25	d + 15.4
380 < d ≤ 440	90	45	28	d + 17.4
440 < d ≤ 500	100	50	31	d + 19.5
500 < d ≤ 560	110	56	34.3	d + 22.2
560 < d ≤ 640	120	63	39	d + 24.5

## 14 Suggested output connection dimensions:

### 14.1 Hollow shaft with parallel key connection:



Type H2...H,H3...H,H4...H,B3...H,B4...H(Size 13-18)

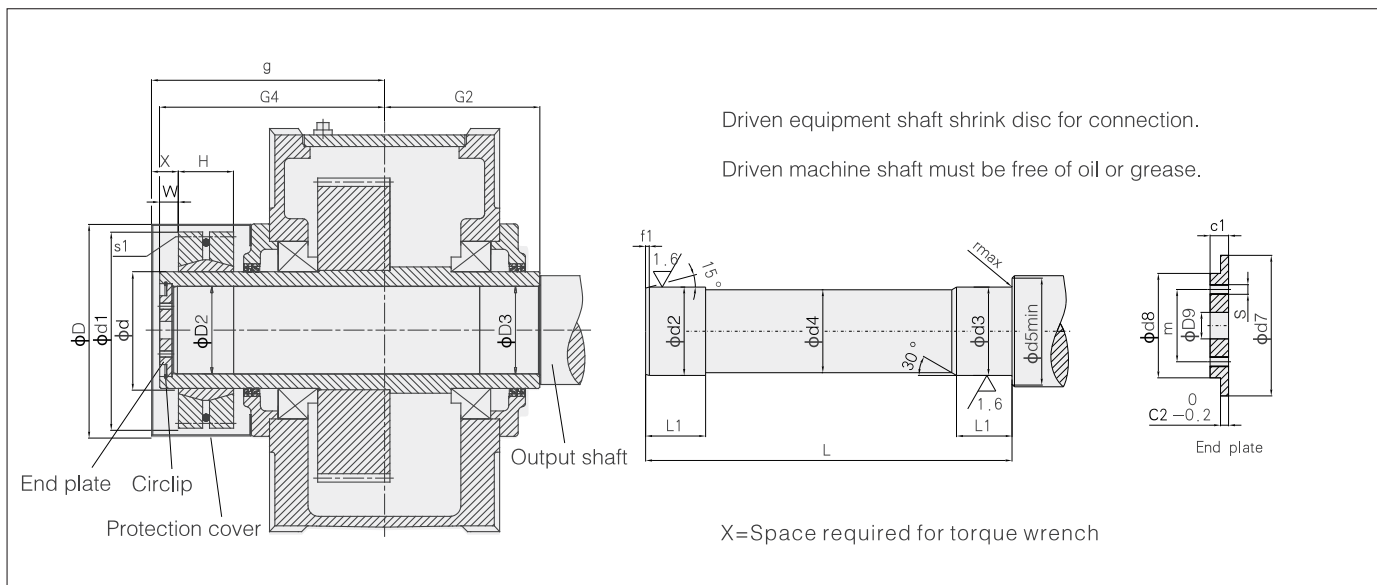
Size	Driven equipment shaft									End plate					Bolt		Hollow shaft		
	d	d4	d5	f1	L	L1	r	s	t	c	D8	D9	d7	m	Size	Number	D	G2	g
13	190h6	189.5	206	7	667	80	3	M16	28	18	17.5	33	230	140	M16x40	2	190H7	335	42.5
14	210h6	209.5	226	8	667	85	3	M16	28	18	17.5	33	250	160	M16x40	2	210H7	335	42.5
15	230h6	229.5	248	8	756	100	3	M20	38	25	22	39	270	180	M20x55	4	230H7	380	57
16	240h6	239.5	258	8	756	100	3	M20	38	25	22	39	280	180	M20x55	4	240H7	380	57
17	250h6	249.5	270	8	826	110	4	M20	38	25	22	39	300	190	M20x55	4	250H7	415	57
18	275h6	274.5	295	9	826	120	4	M20	38	25	22	39	330	210	M20x55	4	275H7	415	57

Type B2...H(Size 13-18)

Size	Driven equipment shaft									End plate					Bolt		Hollow shaft		
	d	d4	d5	f1	L	L1	r	s	t	c	D8	D9	d7	m	Size	Number	D	G2	g
13	190h6	189.5	206	7	667	80	3	M16	28	18	17.5	33	230	140	M16x40	2	190H7	335	65
14	210h6	209.5	226	8	667	85	3	M16	28	18	17.5	33	250	160	M16x40	2	210H7	335	65
15	230h6	229.5	248	8	756	100	3	M20	38	25	22	39	270	180	M20x55	4	230H7	380	92
16	240h6	239.5	258	8	756	100	3	M20	38	25	22	39	280	180	M20x55	4	240H7	380	92
17	250h6	249.5	270	8	826	110	4	M20	38	25	22	39	300	190	M20x55	4	250H7	415	97
18	275h6	274.5	295	9	826	120	4	M20	38	25	22	39	330	210	M20x55	4	275H7	415	97

- ⚠ Note: 1.Material of driven equipment shaft:40Cr or steel with higher strength.  
 2.Shaft and parallel key of driven equipment are not within the scope of supply. Please order if required.  
 3.Protection cover, end plate and bolts are supplied with gearbox as standard.

### 14.2 Hollow shaft for shrink Disks:



Types H2...D, H3...D, H4...D, B3...D, B4...D (size 13-18)

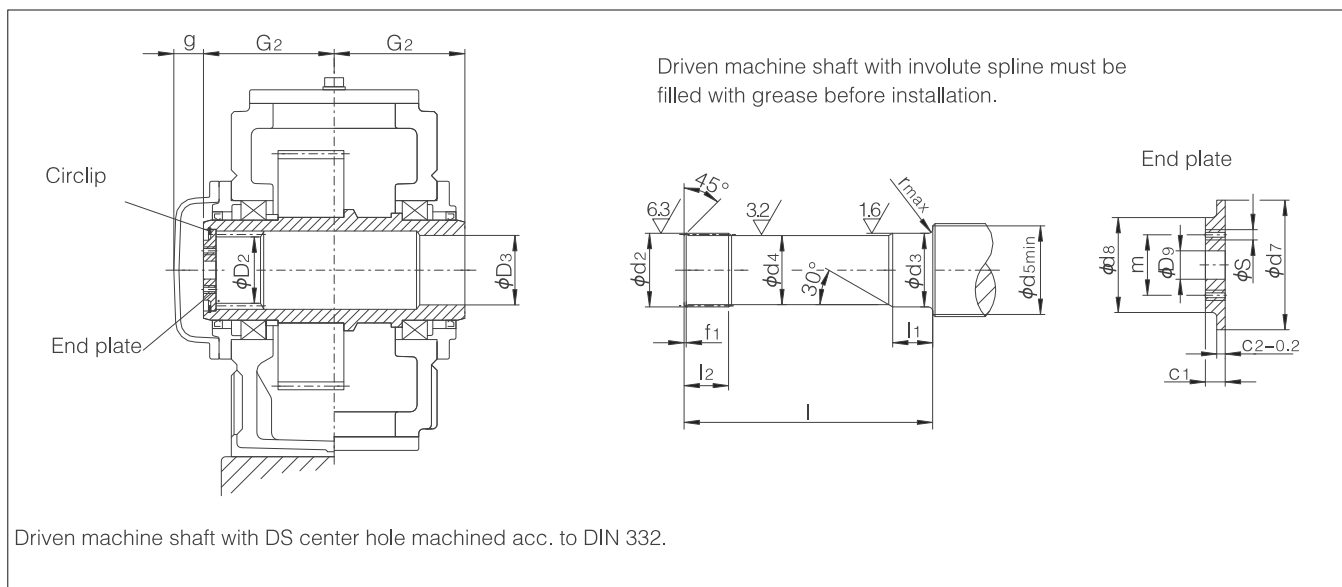
Size	Driven equipment shaft								End plate								Circlip	Hollow shaft				Shrink disc				Bolt	Protection cover		
	d2	d3	d4	d5	f1	L	L1	r	c1	c2	d7	d8	D9	m	s	Number		D2	D3	G2	G4	Type	d	d1	H		W	s1	D
13	190f6	190g6	189.5	213	7	789	137	5	23	10	200	150	33	110	M16	2	200	190H7	190	335	480	SP2-260	260	430	119	30	M20	480	510.5
14	210f6	210g6	209.5	233	8	784	147	5	28	14	220	170	33	130	M16	2	220	210H7	210	335	480	SP2-280	280	460	132	30	M20	480	510.5
15	230f6	230g6	229.5	253	8	899	157	5	28	14	240	180	39	140	M16	2	240	230H7	230	380	550	SP2-300	300	485	140	35	M20	540	590
16	240f6	240g6	239.5	263	8	899	157	5	28	14	250	190	39	150	M20	2	250	240H7	240	380	550	SP2-320	320	520	140	35	M20	540	590
17	250f6	250g6	249.5	278	8	982	177	5	30	14	265	200	39	150	M20	2	265	250H7	250	415	600	SP2-340	340	570	155	35	M20	620	640
18	280f6	280g6	279.5	306	9	982	177	5	30	14	290	210	39	160	M20	2	290	280H7	280	415	600	SP2-360	360	590	162	35	M24	620	640

Type B2...D(Size 13-18)

Size	Driven equipment shaft								End plate								Circlip	Hollow shaft				Shrink disc				Bolt	Protection cover		
	d2	d3	d4	d5	f1	L	L1	r	c1	c2	d7	d8	D9	m	s	Number		D2	D3	G2	G4	Type	d	d1	H		W	s1	D
13	190f6	190g6	189.5	213	7	789	137	5	23	10	200	150	33	110	M16	2	200	190H7	190	335	480	SP2-260	260	430	119	30	M20	480	533
14	210f6	210g6	209.5	233	8	784	147	5	28	14	220	170	33	130	M16	2	220	210H7	210	335	480	SP2-280	280	460	132	30	M20	480	533
15	230f6	230g6	229.5	253	8	899	157	5	28	14	240	180	39	140	M16	2	240	230H7	230	380	550	SP2-300	300	485	140	35	M20	540	625
16	240f6	240g6	239.5	263	8	899	157	5	28	14	250	190	39	150	M20	2	250	240H7	240	380	550	SP2-320	320	520	140	35	M20	540	625
17	250f6	250g6	249.5	278	8	982	177	5	30	14	265	200	39	150	M20	2	265	250H7	250	415	600	SP2-340	340	570	155	35	M20	620	670
18	280f6	280g6	279.5	306	9	982	177	5	30	14	290	210	39	160	M20	2	290	280H7	280	415	600	SP2-360	360	590	162	35	M24	620	670

- ⚠ Note: 1. Material of driven equipment shaft: 40cr or steel with higher strength.  
 2. Driven equipment shaft is not in scope of supply, please order if required.  
 3. Shrink disc, protection cover, end plate and circlip are supplied with gearbox as standard.  
 4. Driven machine shaft must be free of oil or grease.

### 14.3 Hollow shaft with involute spline:



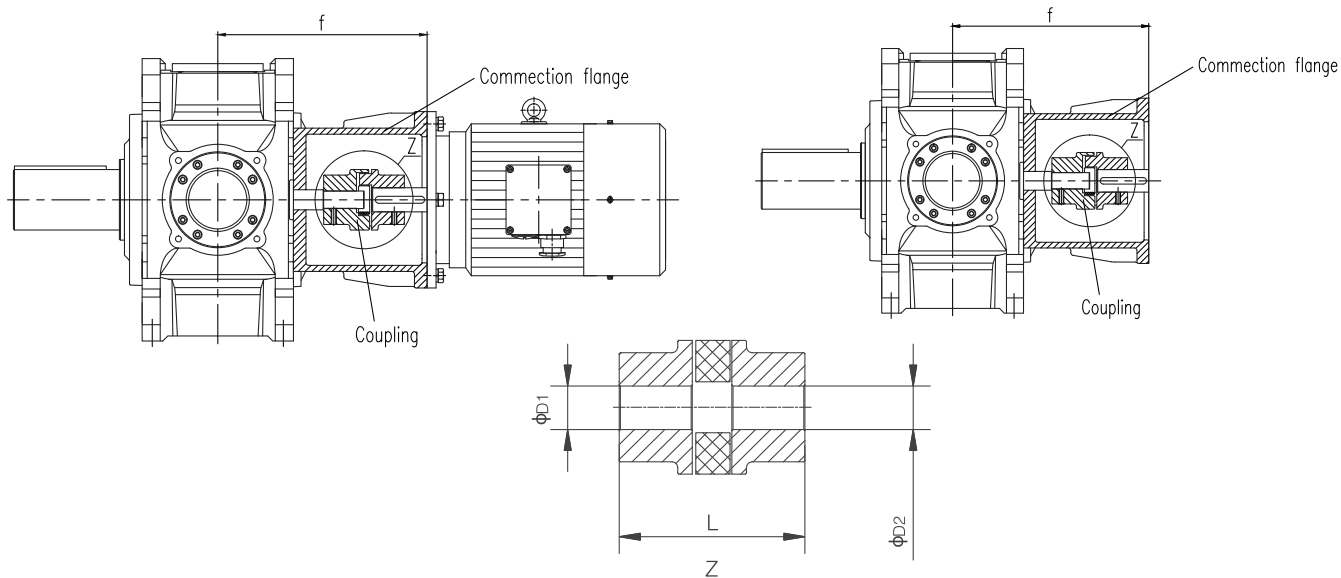
Types H2...K, H3...K, H4...K, B2...K, B3...K, B4...K (size 13-18)

Size	Involute splines DIN5480	Driven equipment shaft										End plate								Circlip	Hollow shaft				Bolt s1
		d2	d3	d4	d5	f1	L	L1	L2	r	c1	c2	d7	d8	D9	m	s	Number	D2		D3	G2	G		
13	W190x5x30x36x8f	189h11	195g6	188	213	5	644	137	180	5	23	10	200d9	150	33	110	M16	2	200	180H11	195H7	335	42.5	M30	
14	W190x5x30x36x8f	189h11	215g6	188	233	5	644	147	180	5	23	10	200d9	150	33	110	M16	2	200	180H11	215H7	335	42.5	M20	
15-18	On request																								

- ⚠ Note:
1. Material of driven equipment shaft: 40cr or steel with higher strength.
  2. Driven equipment shaft is not in scope of supply, please order if required.
  3. Shrink disc, protection cover, end plate and circlip are supplied with gearbox as standard.
  4. Driven machine shaft with involute spline must be filled with grease before installation.

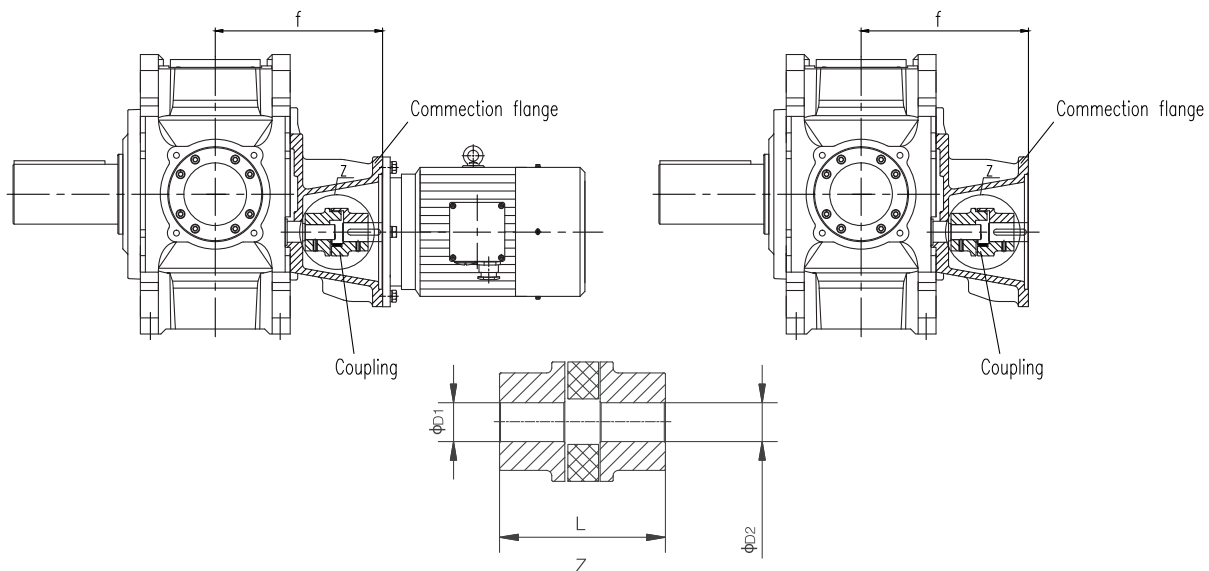
### 15 Input with motor and flange input( Code:AF)

H3



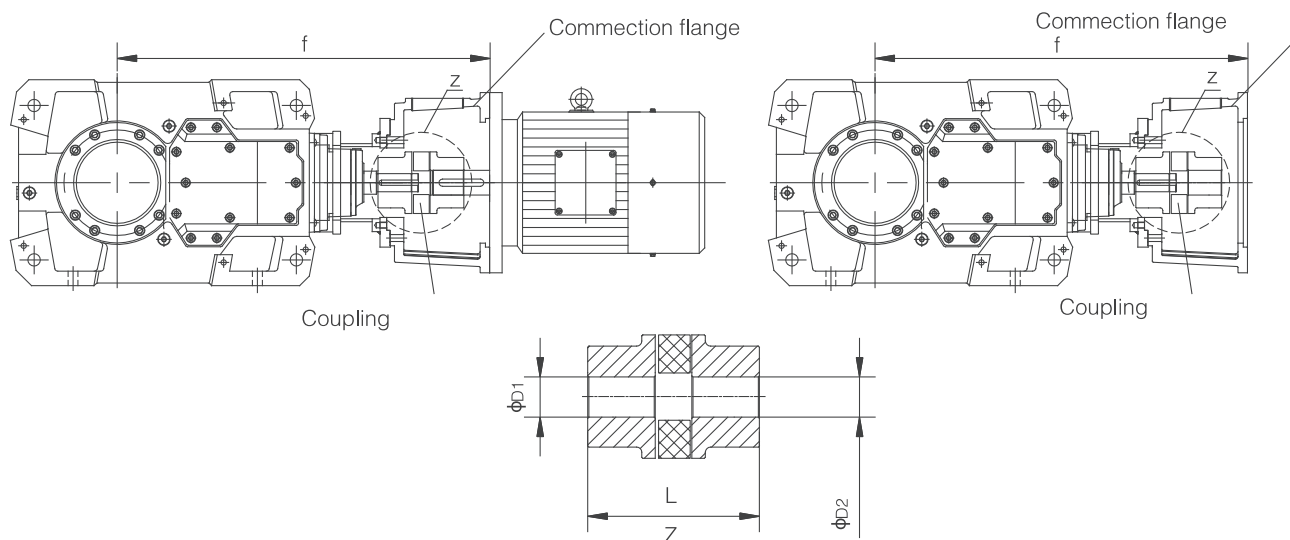
H3			iN≤50 (Size: 13, 14, 15, 16, 18) iN≤45 (Size: 17)				iN≥56 (Size: 13, 14, 15, 16, 18) iN≥50 (Size: 17)					
Size	M Motor	AF Flange	Coupling				f	Coupling				f
			Type	D1	D2	L		Type	D1	D2	L	
13/14	250						GA75	60	65	210	615	
	280						GA75	60	75	210	615	
	315	GA90	85	80	245	675	GA90	60	80	245	675	
	355	GA110	85	95	185	675	GA110	60	95	185	675	
15/16	250						GA75	75	65	210	660	
	280						GA75	75	75	210	660	
	315	GA110	100	80	185	755	GA100	75	80	245	755	
	355	GA110	100	95	185	755	GA110	75	95	185	755	
17/18	315						GA90	75	80	245	725	
	355	GA110	100	95	185	790	GA110	75	95	185	790	

H4



H4			$iN \leq 224$ (Size: 13, 14, 15, 16, 18) $iN \leq 200$ (Size: 17)				$iN \geq 250$ (Size: 13, 14, 15, 16, 18) $iN \geq 224$ (Size: 17)					
Size	M Motor	AF Flange	Coupling				f	Coupling				f
			Type	D1	D2	L		Type	D1	D2	L	
13/14	160						GA55	38	42	160	533	
	180						GA55	38	48	160	533	
	200	GA65	50	55	185	542	GA65	38	55	185	542	
	225	GA65	50	60	185	572	GA65	38	60	185	572	
	250	GA75	50	65	210	575	GA75	38	65	210	575	
	280	GA75	50	75	210	575						
15/16	200						GA65	50	55	185	617	
	225	GA65	60	60	185	647	GA65	50	60	185	647	
	250	GA75	60	65	210	650	GA75	50	65	210	650	
	280	GA75	60	75	210	650	GA75	50	75	210	650	
17/18	225						GA65	50	60	185	677	
	250						GA75	50	65	210	680	
	280	GA75	60	75	210	680	GA75	50	75	210	680	
	315	GA90	60	80	245	734	GA90	50	80	245	734	

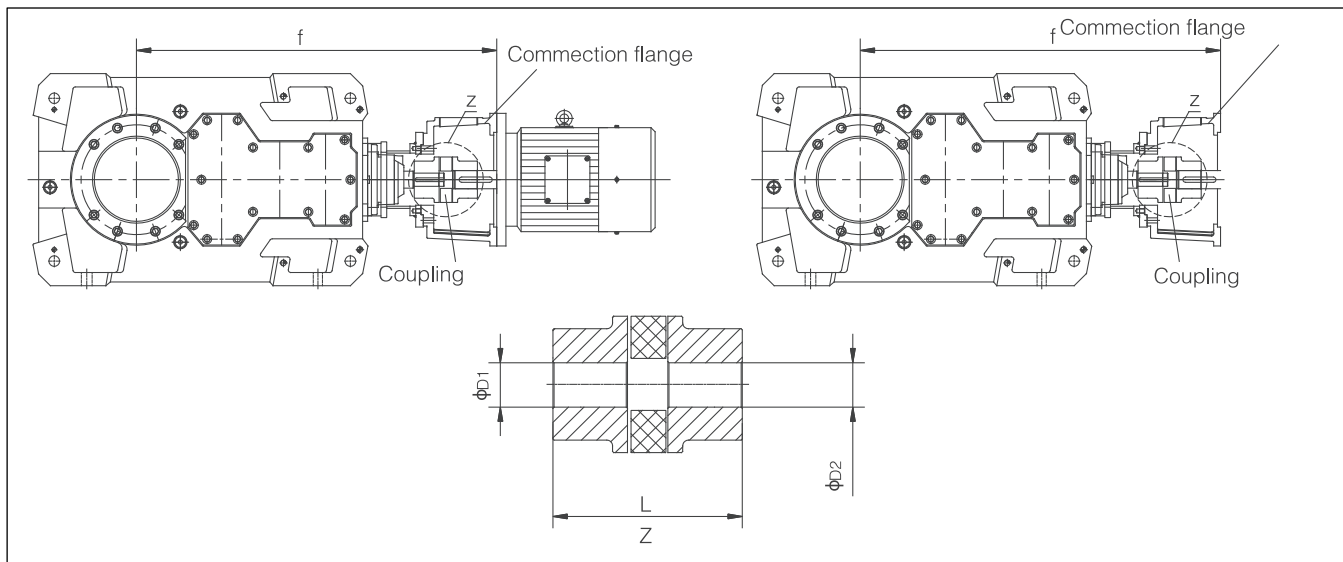
B3



B3			iN≤63 (Size:13, 14, 15, 16, 18) iN≤56 (Size:17)					iN≥71 (Size:13, 14, 15, 16, 18) iN≥63 (Size:17)				
Size	M Motor	AF Flange	Coupling				f	Coupling				f
			Type	D1	D2	L		Type	D1	D2	L	
13	250						GA75	70	65	210	1420	
	280						GA75	70	75	210	1420	
	315	GA90	85	80	245	1474	GA90	70	80	245	1474	
	355	GA110	85	95	185	1474	GA110	70	95	185	1474	
14	250						GA75	70	65	210	1490	
	280						GA75	70	75	210	1490	
	315	GA90	85	80	245	1544	GA90	70	80	245	1544	
	355	GA110	85	95	185	1544	GA110	70	95	185	1544	
15	315	GA110	95	80	185	1731	GA90	75	80	245	1731	
	355	GA110	95	95	185	1731	GA110	75	95	185	1731	
16	315	GA110	95	80	185	1777	GA90	75	80	245	1777	
	355	GA110	95	95	185	1777	GA110	75	95	185	1777	
17	315						GA90	90	80	245	1959	
	355	GA110	115	95	185	1959	GA110	90	95	185	1959	
18	315						GA90	90	80	245	2019	
	355	GA110	115	95	185	2019	GA110	90	95	185	2019	



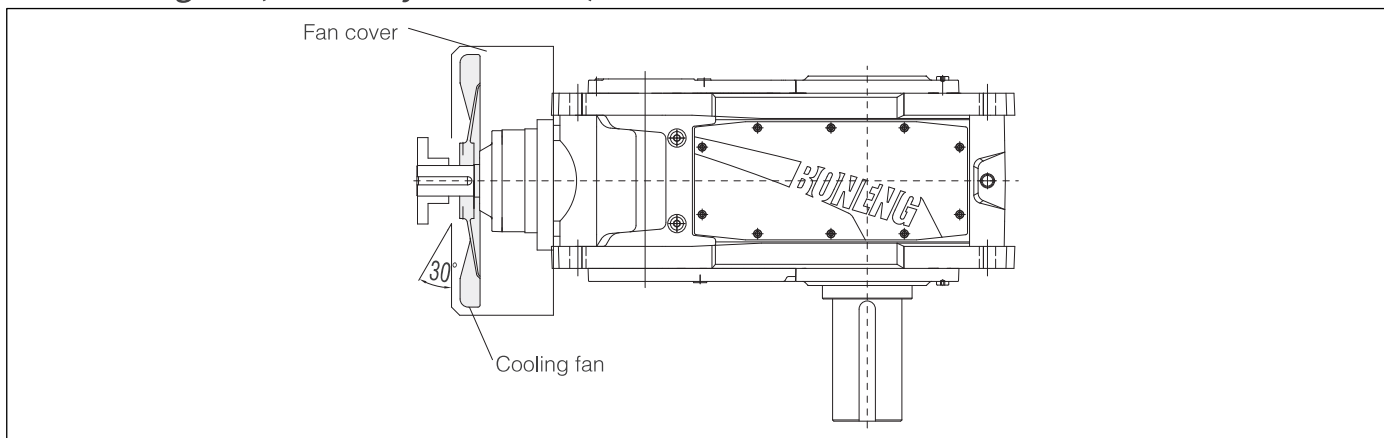
B4



B4			iN ≤ 280 (Size: 13, 14, 15, 16, 18) iN ≤ 250 (Size: 17)				iN ≥ 315 (Size: 13, 14, 15, 16, 18) iN ≥ 280 (Size: 17)					
Size	M Motor	AF Flange	Coupling				f	Coupling				f
			Type	D1	D2	L		Type	D1	D2	L	
13		180						GA55	50	48	160	1429
		200	GA65	60	55	185	1437	GA65	50	55	185	1437
		225	GA65	60	60	185	1467	GA65	50	60	185	1467
		250	GA75	60	65	210	1470	GA75	50	65	210	1470
		280	GA75	60	75	210	1470	GA75	50	75	210	1470
		315	GA90	60	80	245	1524					
14		180						GA55	50	48	160	1499
		200	GA65	60	55	185	1507	GA65	50	55	185	1507
		225	GA65	60	60	185	1537	GA65	50	60	185	1537
		250	GA75	60	65	210	1540	GA75	50	65	210	1540
		280	GA75	60	75	210	1540	GA75	50	75	210	1540
		315	GA90	60	80	245	1594					
15		200						GA65	60	55	185	1679
		225	GA75	75	60	210	1709	GA65	60	60	185	1709
		250	GA75	75	65	210	1712	GA75	60	65	210	1712
		280	GA75	75	75	210	1712	GA75	60	75	210	1712
		315	GA90	75	80	245	1766	GA90	60	80	245	1766
		355	GA110	75	95	185	1766					
16		200						GA65	60	55	185	1725
		225	GA75	75	60	210	1755	GA65	60	60	185	1755
		250	GA75	75	65	210	1758	GA75	60	65	210	1758
		280	GA75	75	75	210	1758	GA75	60	75	210	1758
		315	GA90	75	80	245	1812	GA90	60	80	245	1812
		355	GA110	75	95	185	1812					
17		225						GA65	60	60	185	1757
		250						GA75	60	65	210	1760
		280	GA75	75	75	210	1760	GA75	60	75	210	1760
		315	GA90	75	80	245	1814	GA90	60	80	245	1814
		355	GA110	75	95	185	1814					
18		225						GA65	60	60	185	1817
		250						GA75	60	65	210	1820
		280	GA75	75	75	210	1820	GA75	60	75	210	1820
		315	GA90	75	80	245	1874	GA90	60	80	245	1874
		355	GA110	75	95	185	1874					

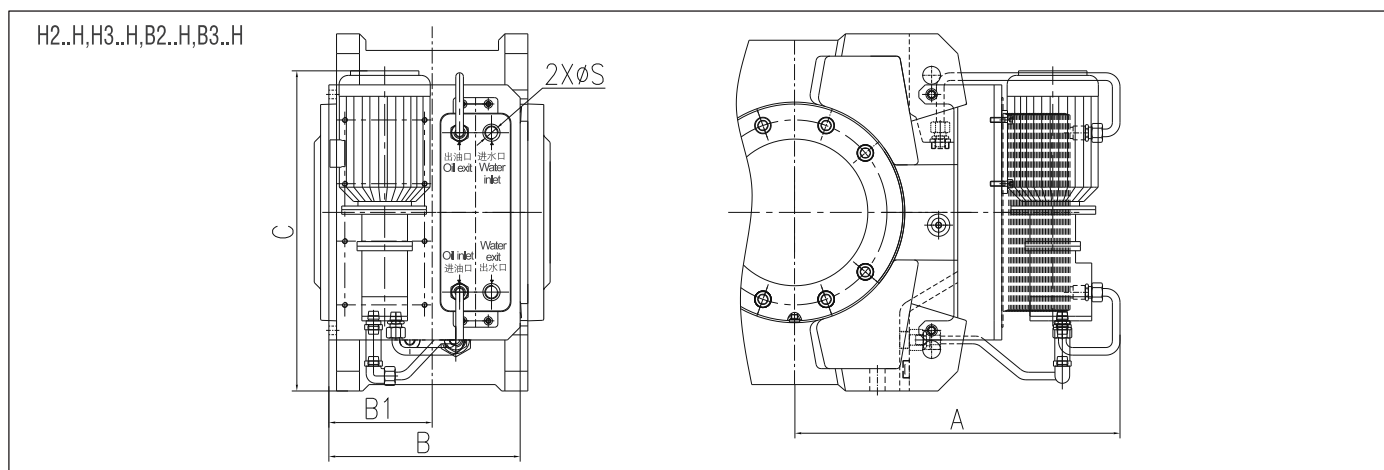
## 16 Accessory

### 16.1 Cooling fan (Accessory code:UF21)



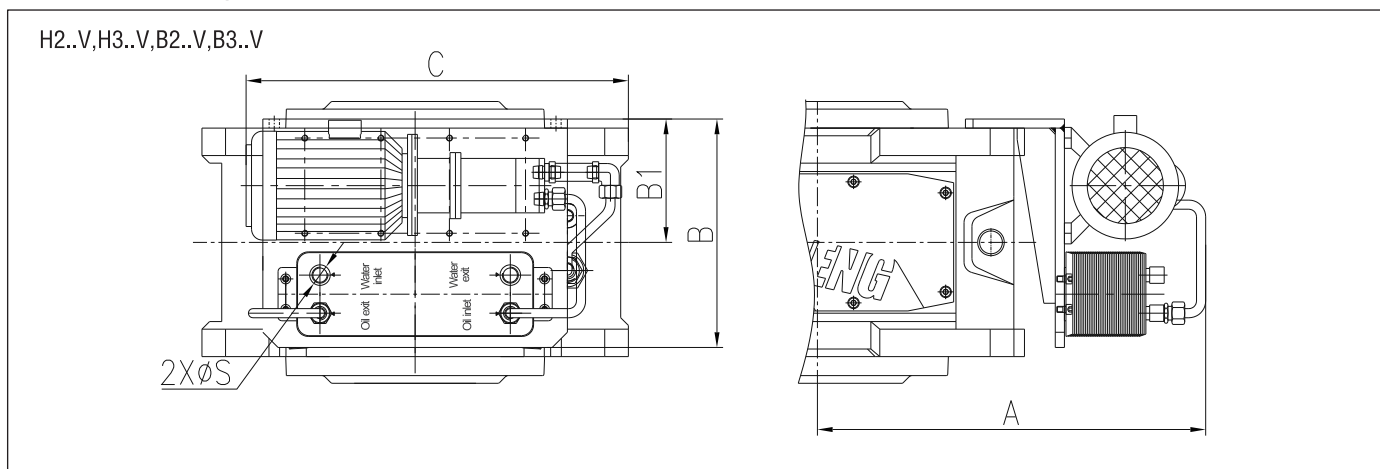
### 16.2 Water oil cooler (Accessory code:UC22)

1) Horizontal mounting:



Size	A	B	B1	C	S	Water quantity (L/min)
13	772	405	288.5	714	G1/2	10
14	842	405	288.5	714	G1/2	10
15	883	405	326	774	G1/2	10
16	925	405	326	774	G1/2	10
17	929	405	356	849	G1/2	14
18	989	405	356	849	G1/2	14

## 2) Vertical mounting:



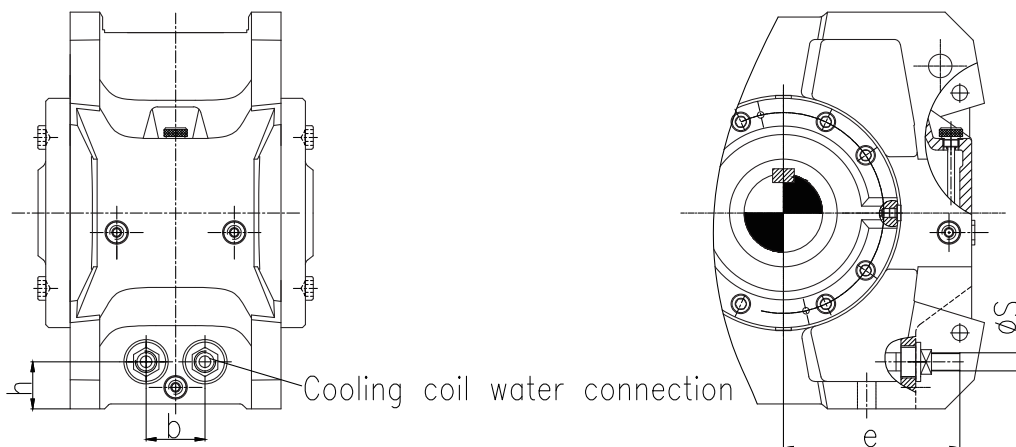
Size	A	B	B1	C	S	Water quantity (L/min)
13	772	405	288.5	714	G1/2	10
14	842	405	288.5	714	G1/2	10
15	883	405	326	774	G1/2	10
16	925	405	326	774	G1/2	10
17	929	405	356	849	G1/2	14
18	989	405	356	849	G1/2	14

**16.3 Cooling coil(Code:UC21)**

**\*For exquisite vibration applications the water-oil cooler is recommended (Code: UC22)**

1) Horizontal mounting:

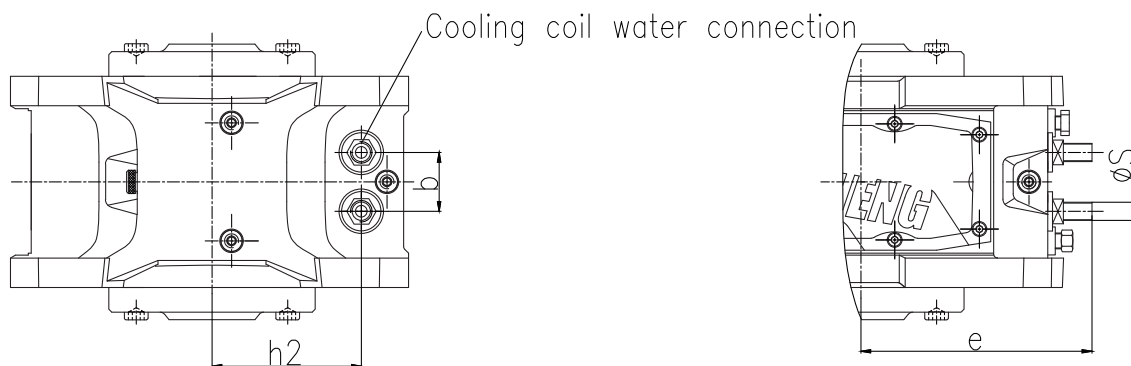
H2..H,H3..H,B2..H,B3..H



Size	H2..H/HB..H					H3..H					H2..H				
	b	e	h	s	Water quantity (L/min)	b	e	h	s	Water quantity (L/min)	b	e	h	s	Water quantity (L/min)
13	150	386	120	G1/2	10	150	386	120	G1/2	10	150	386	120	G1/2	10
14	150	456	120	G1/2	10	150	446	120	G1/2	10	150	446	120	G1/2	10
15	200	439	120	G1/2	10	200	424	120	G1/2	10	200	424	120	G1/2	10
16	200	494	120	G1/2	10	200	494	120	G1/2	10	200	494	120	G1/2	10
17	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

## 2) Vertical mounting:

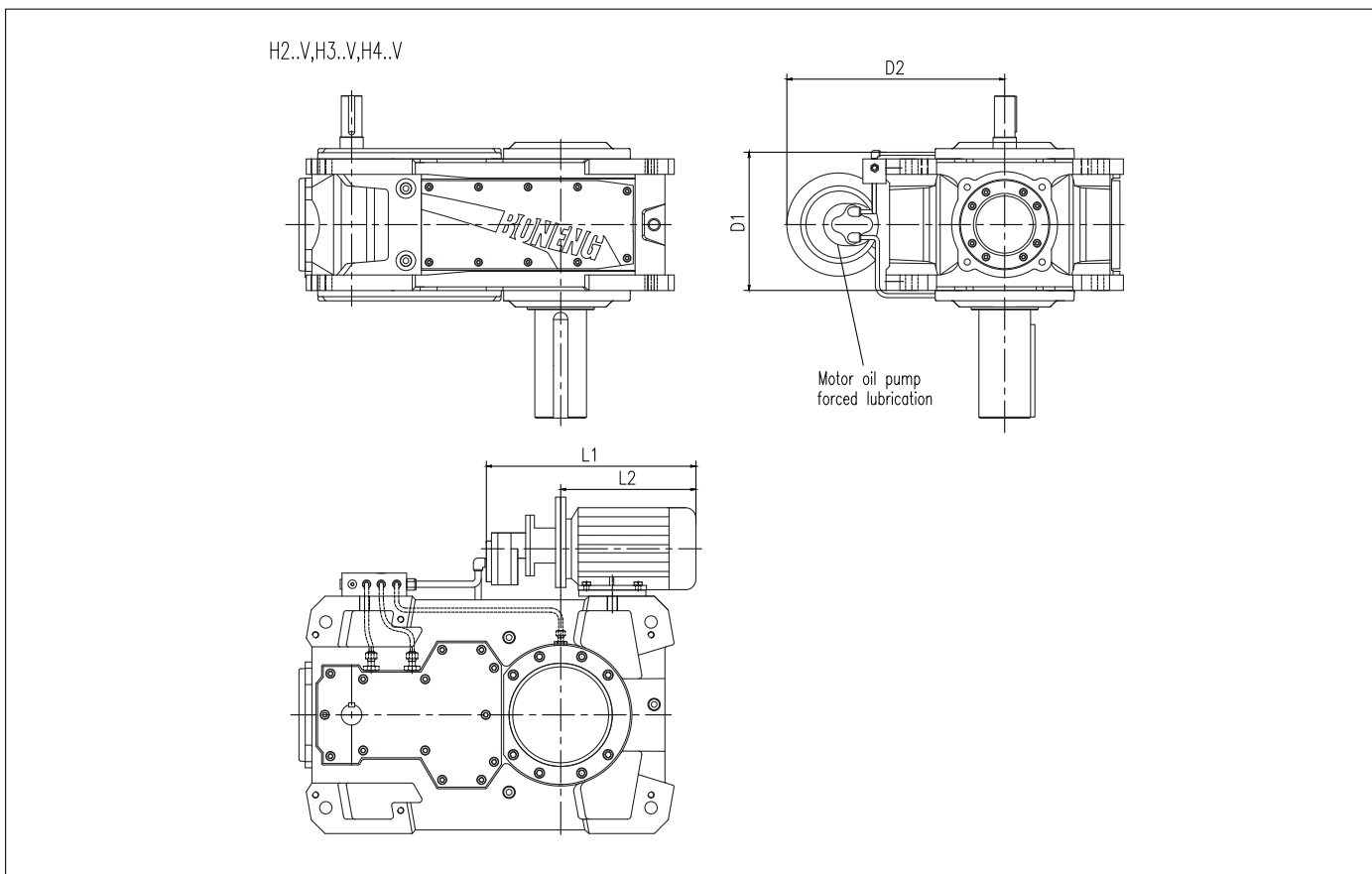
H2..V,H3..V,B2..V,B3..V



Size	H2..V/B3..V					H3..V					H2..V				
	b	e	h	s	Water quantity (L/min)	b	e	h	s	Water quantity (L/min)	b	e	h	s	Water quantity (L/min)
13	150	386	120	G1/2	10	150	386	120	G1/2	10	150	386	120	G1/2	10
14	150	456	120	G1/2	10	150	446	120	G1/2	10	150	446	120	G1/2	10
15	200	439	120	G1/2	10	200	424	120	G1/2	10	200	424	120	G1/2	10
16	200	494	120	G1/2	10	200	494	120	G1/2	10	200	494	120	G1/2	10
17	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

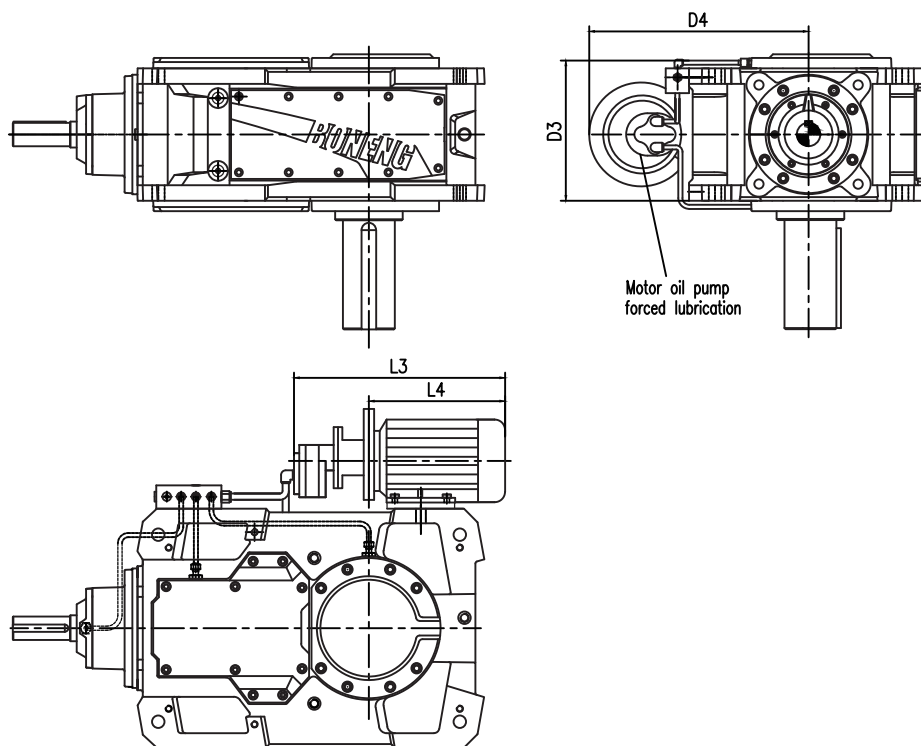
Type	Cooling coil is appropriate for		
	Size	Flange pump forced lubrication	Motor oil pump forced lubrication
		Applicable shaft assemblies	Applicable shaft assemblies
H2..V	13-18	B+D+F+H	B+D+F+H
H3..V	13-18	B+D+F+H	B+D+F+H
B2..V	13-18	C+D+F	C+D+F
B3..V	13-18	C+D+F	C+D+F

**16.4 Motor oil pump forced lubrication(Code:US32)**



Mounting dimension						
Type	Size	Shaft assemblies	L2	L1	D2	D1
H2..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701
H3..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701
H4..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701

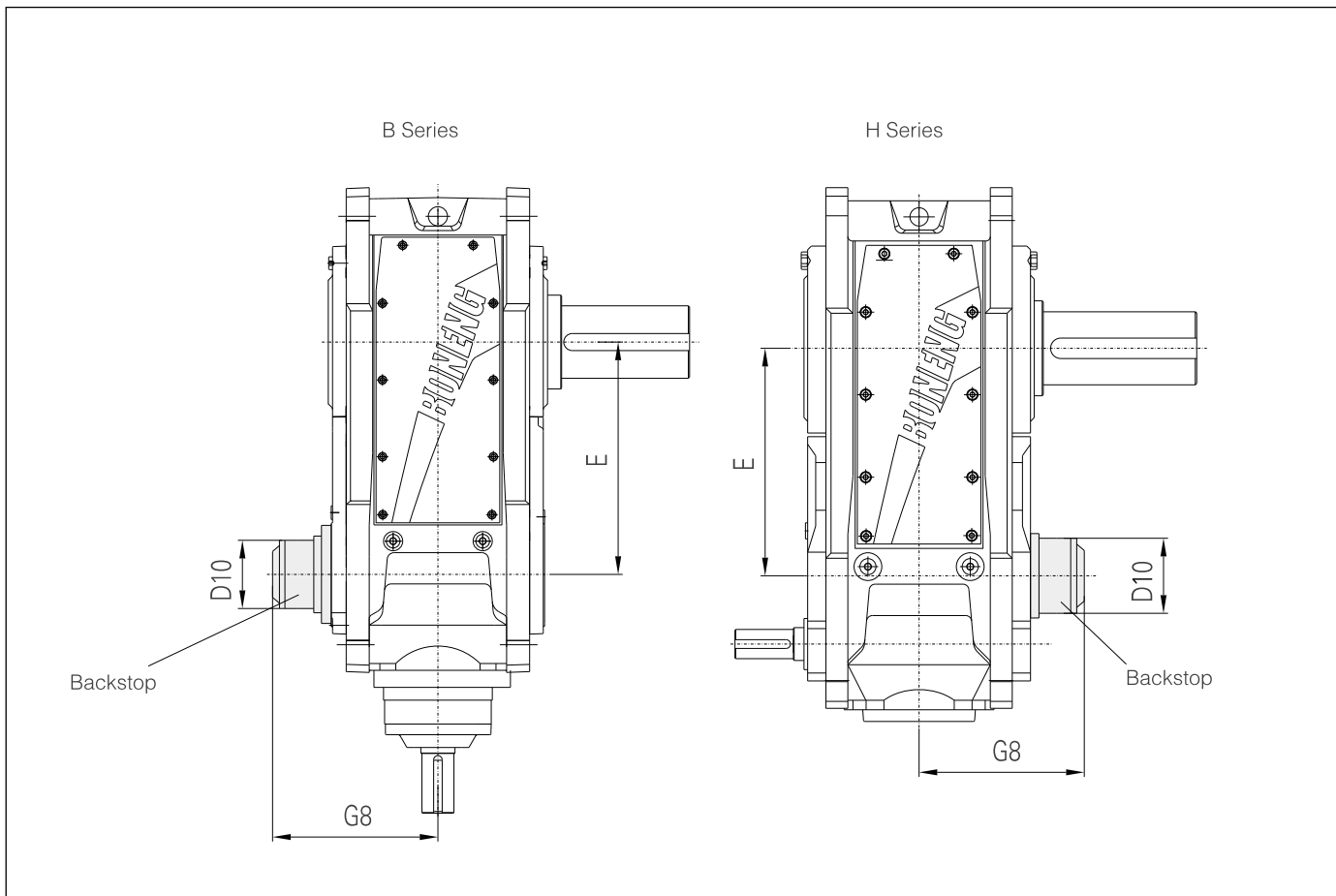
B2..V,B3..V,B4..V



Mounting dimension

Type	Size	Shaft assemblies	L4	L3	D4	D3
H2..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701
H3..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701
H4..V	13/14	A+B+C+D+E+F+G+H+I	484/554	456	624	566
	15/16	A+B+C+D+E+F+G+H+I	544/589	456	702	640
	17/18	A+B+C+D+E+F+G+H+I	569-629	460	752	701

16.5 Backstop (Accessory code UB11)



Size	13			14			15			16			17			18		
	D10	G8	E	D10	G8	E	D10	G8	E	D10	G8	E	D10	G8	E	D10	G8	E
B3	290	426	635	290	426	705	310	472	762	310	472	808	310	498	860	310	498	920
B4/H4	175	373	820	175	373	890	230	465	987	230	465	1033	230	495	1035	230	495	1095
H3	290	426	610	290	426	680	310	472	731	310	472	777	310	502	779	310	502	839

⚠ Note: The rotation direction is the direction of output shaft while face the output shaft.



## 16.6 Lubrication oil

### 16.6.1 Oil quantity

Oil Quantity Table(L)												
Size	H2..H	H3..H	H4..H	B2..H	B3..H	B4..H	H2..V	H3..V	H4..V	B2..V	B3..V	B4..V
	①	①	①	①	①	①	③	③	③	③	③	③
13	135	160	130	140	130	145	80	115	95	100	95	130
14	140	165	140	155	140	150	90	126	105	110	110	150
15	210	235	230	220	210	230	140	180	150	145	165	200
16	215	245	235	230	220	235	150	190	160	160	190	235
17	290	305	290	320	290	295	175	190	190	210	210	215
18	300	315	305	335	300	305	185	200	200	220	240	250

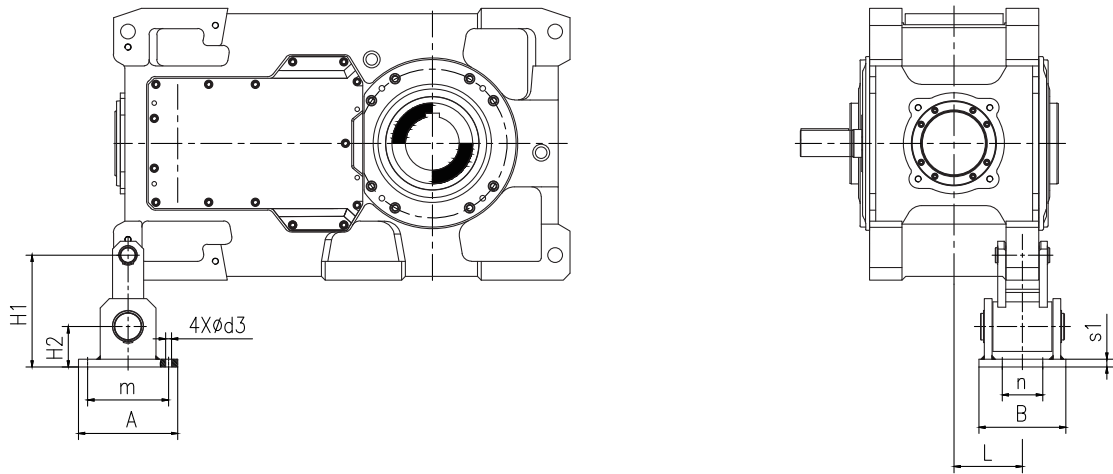
⚠ Note:1.① Oil tank splash lubrication ② Dip-in lubrication ③ Forced lubrication.  
2.The above data are average values.

### 16.6.2 Lubrication oil (heavy-loading industrial gear oil) viscosity number selection[VG320(Accessory code:UV32);VG460(Accessory code:UV46)]

Ambient temperature℃	-20℃~+40℃	+30℃~+50℃
Viscosity number	VG320	VG460

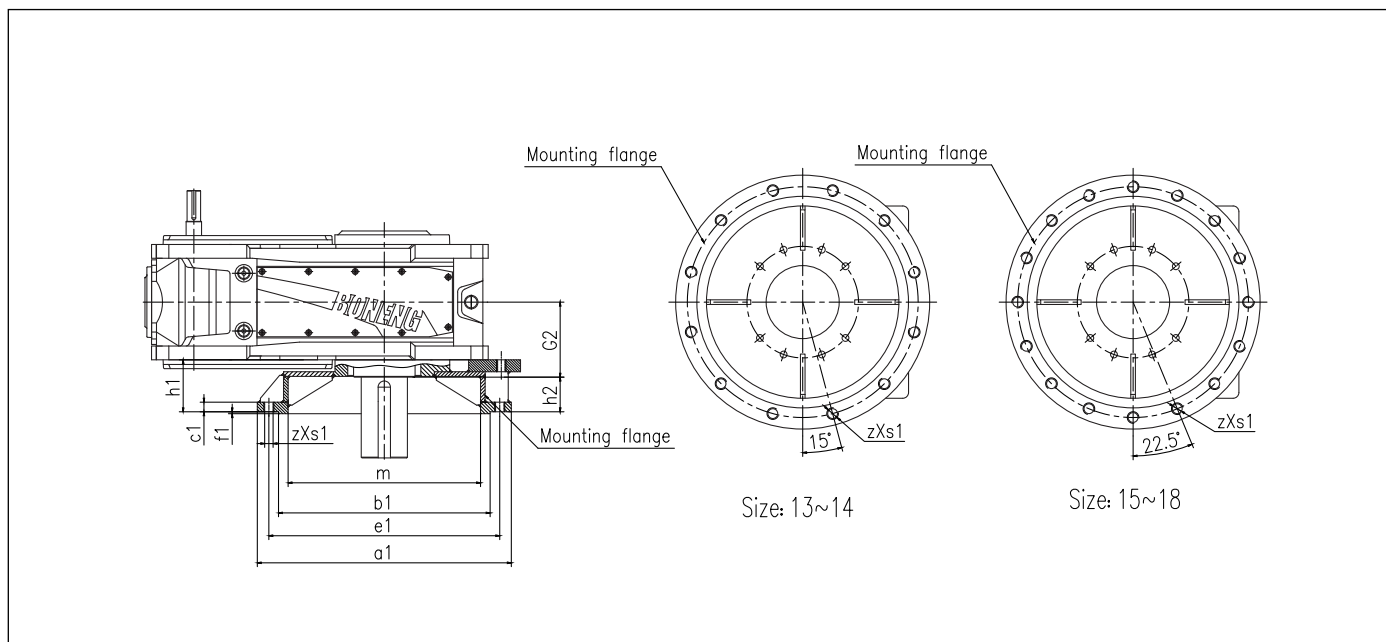
⚠ Note:1.Viscosity in the above table is ISO-VG Viscosity under 40 °C  
2.When ambient temperature is lower than-10℃,synthetic oil must be used.  
3.To ensure product lifespan, we suggest synthetic oil.  
4.IF ambient temperature exceeds the above range, please consult.

16.7 Torque arm (Code:UT61)



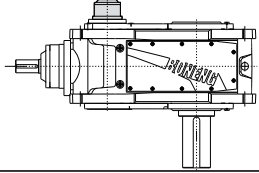
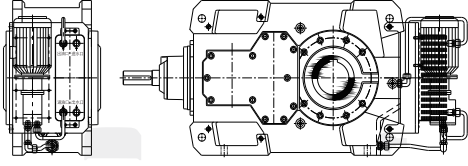
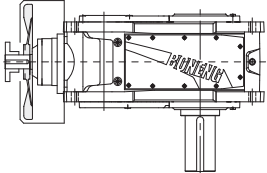
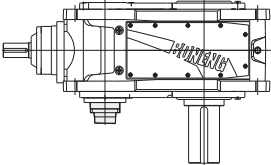
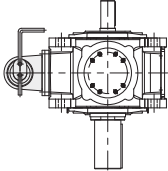
Size	A	B	φ d3	H1	H2	m	n	s1	B2	B3/B4/H2/H3/H4	Weight (kg)
									L	L	
13	320	280	19	360	130	260	130	25	272.5	220	73.1
14	320	280	19	360	130	260	130	25	272.5	220	73.1
15	400	300	24	455	160	320	240	30	317.5	247.5	117.7
16	400	300	24	455	160	320	240	30	317.5	247.5	117.7
17	400	300	24	455	160	320	240	30	370	272.5	117.7
18	400	300	24	455	160	320	240	30	370	272.5	117.7

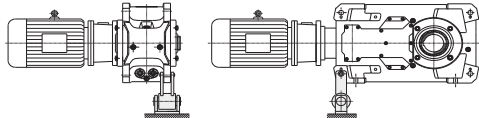
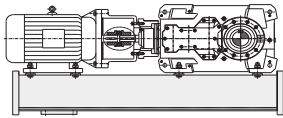
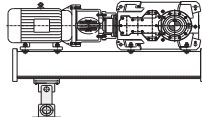
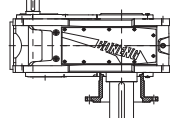
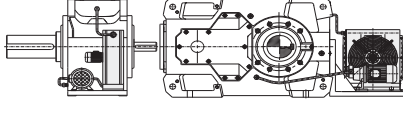
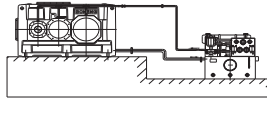
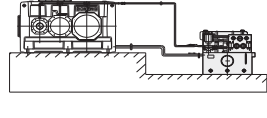
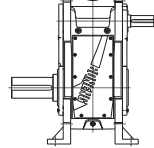

16.8 Output mounting flange (Code:UF32)



Size	a1	b1	c1	e1	f1	G2	h2	m	zxs1	h1		Weight (kg)
										B2	H2, H3, H4, B3, B4	
13	840	650f7	50	760	5	335	37.5	450	12xM30	77.5	100	245
14	840	650f7	50	760	5	335	37.5	480	12xM30	77.5	100	255
15	960	750f7	50	880	5	380	30	530	16xM30	65	100	315
16	960	750f7	50	880	5	380	30	540	16xM30	65	100	325
17	1100	850f7	57	1000	8	415	62	540	16xM36	107	137	595
18	1100	850f7	57	1000	8	415	62	540	16xM36	107	137	605

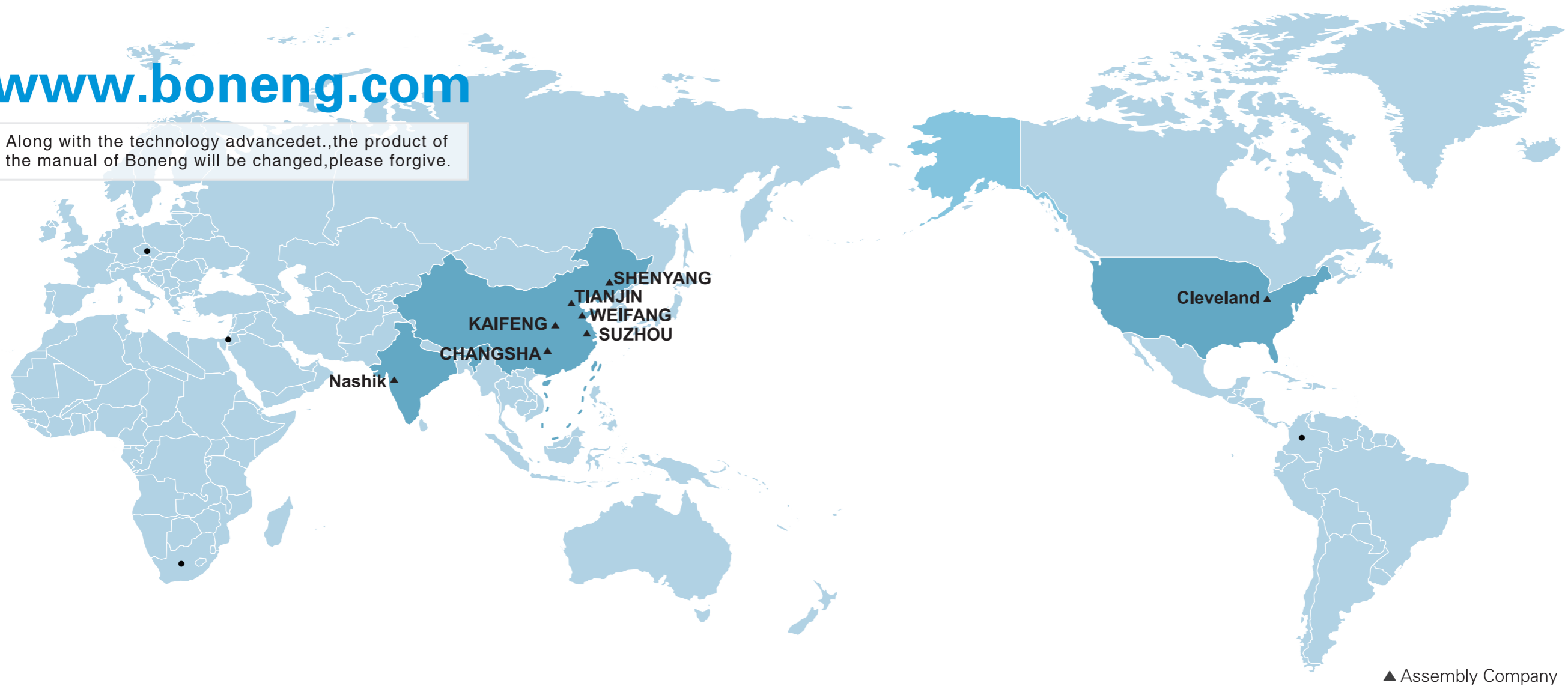
**16.9 Accessories code table:**

Code	Accessories	Example
UB11	Backstop	
U C22	Water-Oil cooler	
UF21	Cooling fan	
US31	Shaft end oil pump forced lubrication	
US32	Motor oil pump forced lubrication	
UV32	Lubrication oil VG320	
UV46	Lubrication oil VG460	

Code	Accessories	Example
Please consult	Torque arm UT61	
	Gear box swing base	
	Swing base with torque arm	
	Mounting flange UF32	
	External wind air-oil cooler UC23	
	Pipeline (Customer build oil station)	
	Oil station	
	Upright mounting	
	Electric heater	
	Shaft sealing of other categories	



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