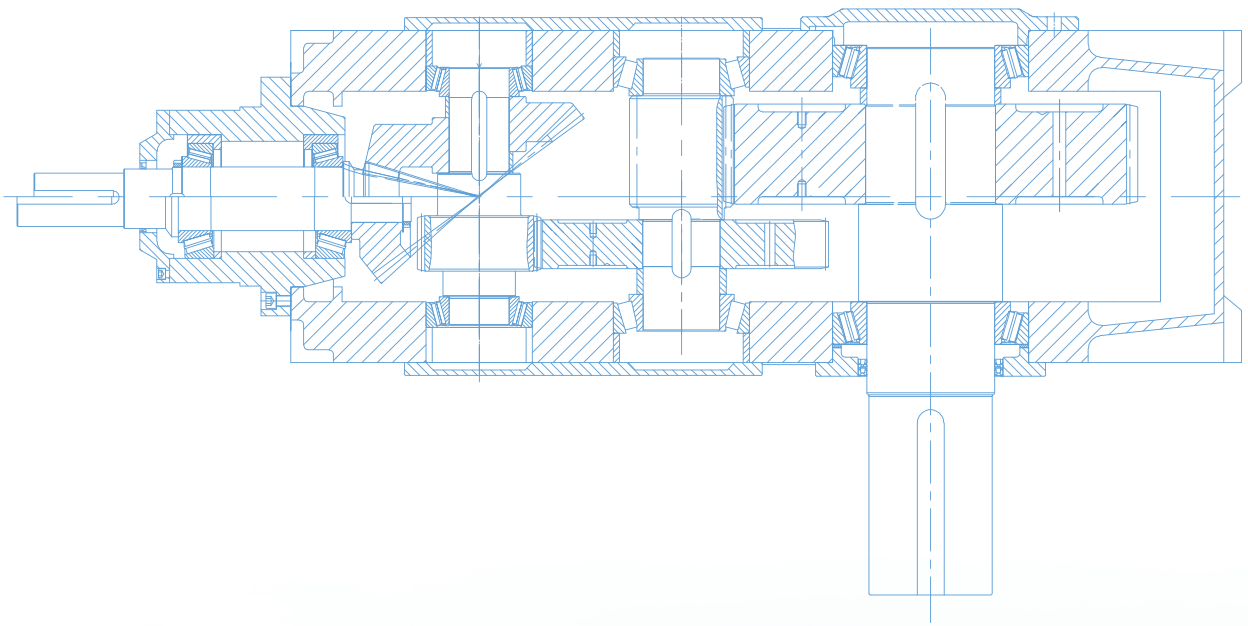


H Helical Gearbox & B Bevel Helical Gearbox

Size 13-18

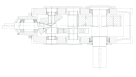
Modified date 04/2021



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

- » 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 TGE Transmission, it owns intellectual property rights.
- » Frame type load-carrying structure design, the whole structure is stronger, footing is more fastened.
- » Improved cooling fan 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.





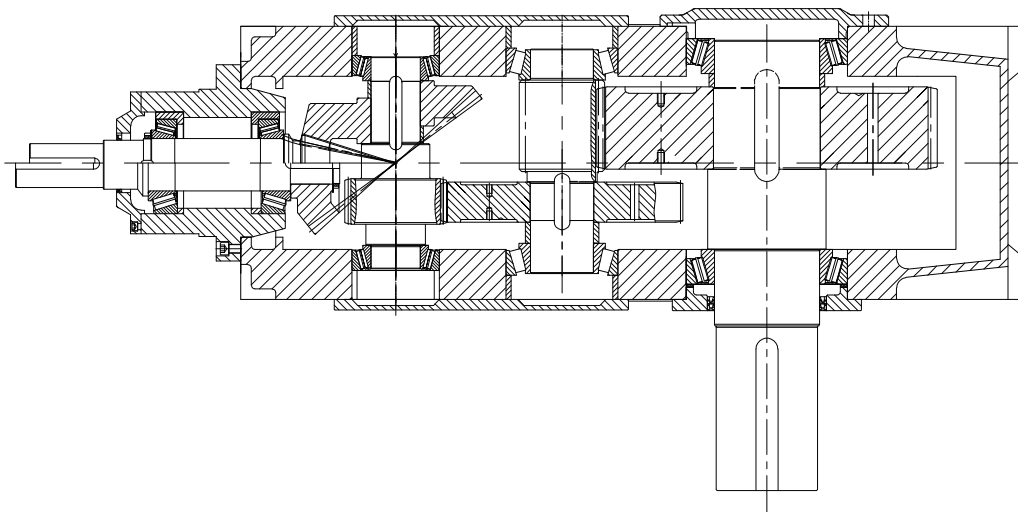
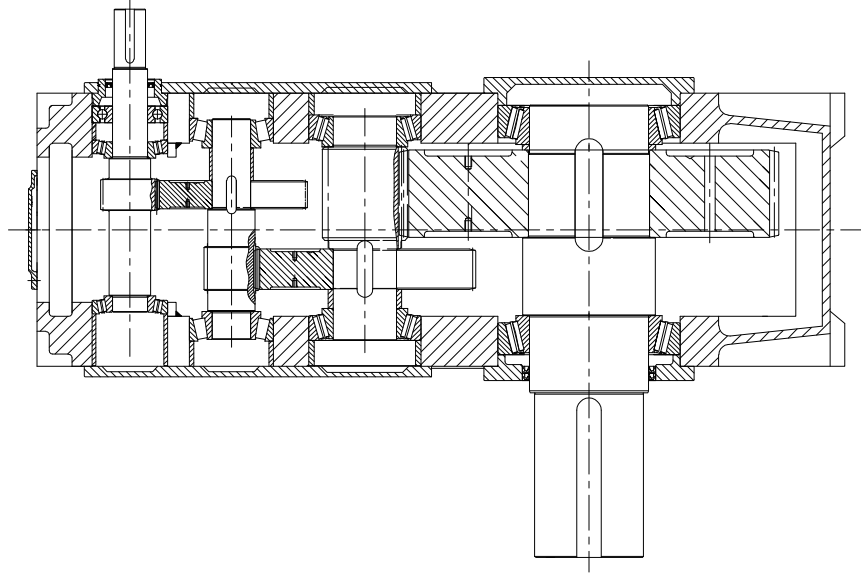
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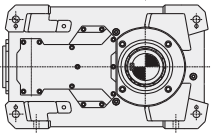
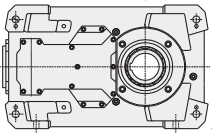
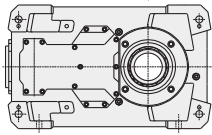
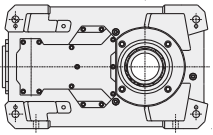
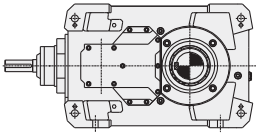
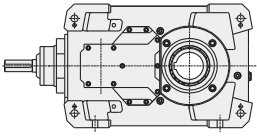
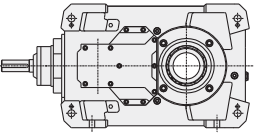
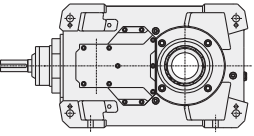
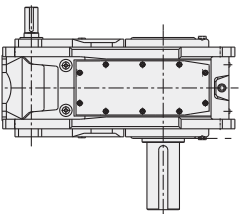
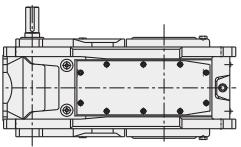
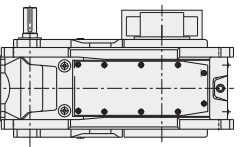
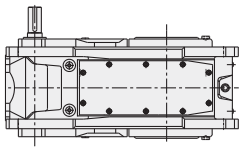
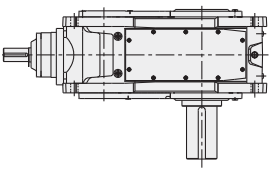
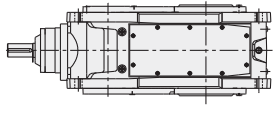
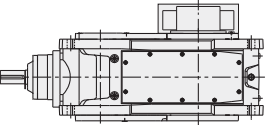
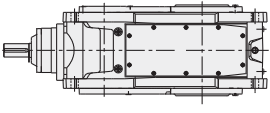


1 Structure scheme

HB



2 Mounting positions

Horizontal mounting				
	Solid shaft	Hollow shaft	Hollow shaft with shrink disk	Hollow shaft with involute spline
H series 5.6-450	 H...HS	 H...HH	 H...HD	 H...HK
B series 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 i _N = 5.6 - 450	 H...VS	 H...VH	 H...VD	 H...VK
B series i _N = 6.3 - 400	 B...VS	 B...VH	 B...VD	 B...VK

HB



3 Selection

HB

Serial	Definition	Symbol	Parameter calculation					
1	Driven equipment factor	f1	Refer to page 6 - f1 table					
2	Prime mover factor	f2	Prime mover factor			f2		
			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 page 5, 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	η	2-stage:96%, 3-stage:94%, 4-stage:92%					
6	Input speed	n1	≤1800r/min For higher speed, please consult us.					
7	Determination of ratio	i	$i=n1/n2$					
8	Confirm gear unit input power with torque or power needed by driven equipment.	P1	$P1=T2 \cdot n1/(9550 \cdot i \cdot \eta)$ $P1=P2/\eta$					
9	According to calculation, check transmission capacity table to determine gear unit size	T2N, P1N	$T2N \geq T2 \cdot f1 \cdot f2 \cdot SF$ $P1N \geq P1 \cdot f1 \cdot f2 \cdot SF$ If it doesn't satisfy conditions:3.33·P1≥P1N, Please consult us.					
10	Peak torque verification *	TA	$P1N \geq TA \cdot n1 \cdot f3/9550$	Load peaks per hour				
				f3	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	Fr1/Fr2 Fa1/Fa2	Radial load need to be checked when radial load imposed by belt pulley, chain sprocket and gear are present. (See page 33)					
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. $P1 \leq PGA \times f4 \times f8$ 2) If it satisfies the following condition, the gear unit will be equipped with cooling fan. $P1 \leq PGB \times f4 \times f8$ 3) If it satisfies the following condition, the gear unit will be equipped with water-oil cooler. $P1 \leq PGD \times f5 \times f8$ 4) 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 5 for f4, f5, f8 table)					
14	Determine each item according to type designation		Refer to page 5.					

* 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		S _F
For ordinary equipment, only single machine stops production when gear unit fails. easy to replace spare parts and minor loss occurred.		1.0 ≤ S _F ≤ 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 < S _F ≤ 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 < S _F

Thermal factor						f ₄
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						f ₅
Gear unit with water-oil cooler						
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	

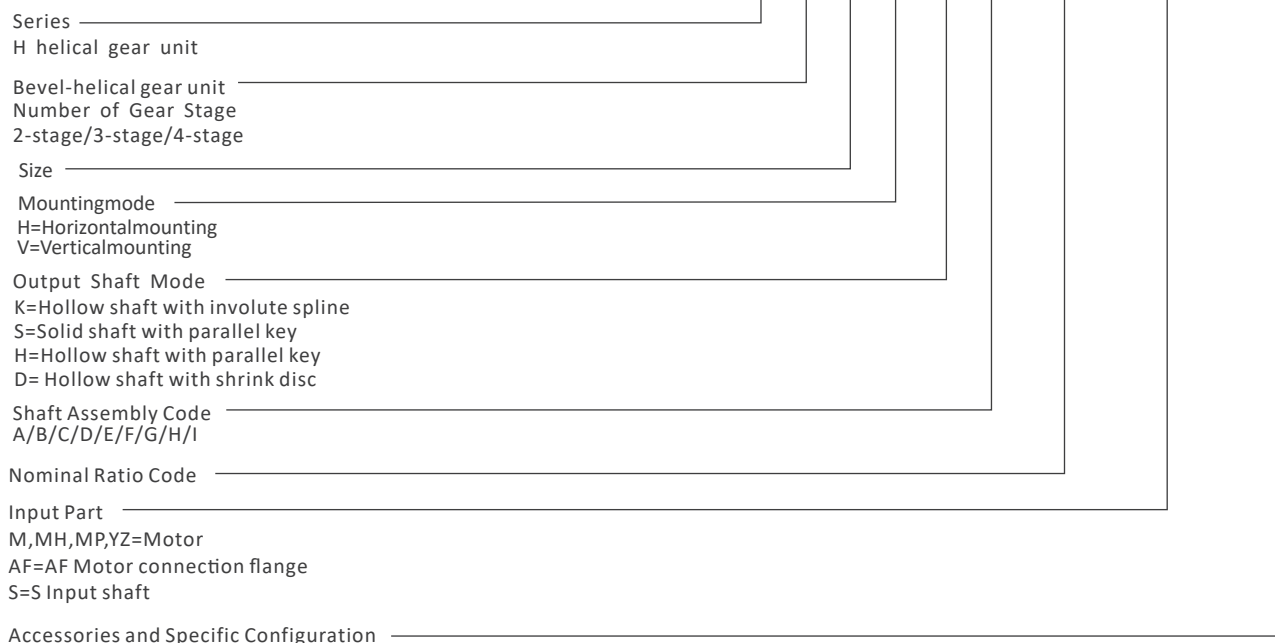
⚠ Note: Operating cycle ED : $ED = \frac{t_f}{t_f + t_r} \cdot 100\%$ (t_f: Working time with loading; t_r: Stop time.)

Vertical mounted gear unit oil supply factor. For horizontally mounted gear unit f ₈ =1.0 When forced lubrication applied, f ₈ =1.05						f ₈
Gear unit type	Oil supply method	Without auxiliary cooling device	With cooling fan	With cooling oil	With fan and cooling oil	
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:

B 3 15 H S A - C56 - AF280 + UF21





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
Sewage treatment				Conveying machine			
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				Various frequency device	-	1.8	2.0
Centrifugal pump	1.0	1.2	1.3	Reciprocating compressor	-	1.8	1.9
Volume-down pump				Hoisting mechanism**			
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
Dredge				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	Cooling tower			
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	Food industry			
Chopper	-	2.2	2.2	Sugar production	-	-	1.7
Traveling mechanism*	-	1.4	1.8	Sugar-cane cutter*	-	-	1.7
Plate blender	-	1.0	1.0	Sugar crane mill	-	-	1.7
Chemical industry				Beet sugar production	-	-	1.2
Extruder	-	-	1.6	Beet masher	-	-	1.4
Paste mixer	-	1.8	1.8	Squeeze machine, mechanical refrigerator,	-	-	1.5
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	Paper-making machinery			
Non-uniform medium	1.4	1.6	1.7	Various kinds***	-	1.8	2.0
Blender, be used for				Pulper driving device			
Uniform density medium	1.0	1.3	1.5	<small>Supply goods according to customer requirements</small>			
Un-uniformed medium	1.2	1.4	1.6	Centrifugal compressor	-	1.4	1.5
Un-uniformed gas absorption	1.4	1.6	1.8	Rope way cable car			
Oven	1.0	1.3	1.5	Delivery ropeway	-	1.3	1.4
Centrifugal machine	1.0	1.2	1.3	Cableway of shuttle system	-	1.6	1.8
Metal processing equipment				T rod elevator	-	1.3	1.4
Plate turnover	1.0	1.0	1.2	Continuous cableway	-	1.4	1.6
Steel pushing device	1.0	1.2	1.2	Cement industry			
Winding machine	-	1.6	1.6	Concrete blender	-	1.5	1.5
Cooling bed transverse frame	-	1.5	1.5	Crusher**	-	1.2	1.4
Roller leveler	-	1.6	1.6	Rotary kiln	-	-	2.0
Roller path				Tube mill	-	-	2.0
Continuous	-	1.5	1.5	Powder concentrator	-	1.6	1.6
Interval	-	2.0	2.0	Roller press	-	-	2.0
Reversing mill	-	1.8	1.8				
Cutter							
Continuous*	-	1.5	1.5				
Crank type*	1.0	1.0	1.0				
Continuous casting driving device	-	1.4	1.4				
Rolling mill							
Reversing cogging mill	-	2.5	2.5				
Reversing plate slab mill	-	2.5	2.5				
Reversing wire mill	-	1.8	1.8				
Reversing thin plate mill	-	2.0	2.0				
Reversing middle thickness plate mill	-	1.8	1.8				
Roll gap adjusting and driving device	0.9	1.0	-				

Driven equipment factor							f ₁
Driven equipment	Daily operating time with load(hour)			Driven equipment	Daily operating time with load(hour)		
	≤ 2	> 2-10	> 10		≤ 2	> 2-10	> 10
Wood industry				Plastics industry			
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			
Conveyor				Pipe type, Pile drawer	1.25	1.25	1.50
Burner, repeating saw,	1.25	1.25	1.50	Continuous mixer, Calender,	1.50	1.50	1.50
Rotary tower, transit transport				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				Rubber industry			
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				Generator and exciter	1.00	1.00	1.25
Charging tray,				Hammer crusher	1.75	1.75	2.00
Plywood lathe drive,	1.50	1.50	1.75	Sand miller	1.25	1.25	1.50
Conveying chain, Lifting							

Note: 1. Determine required power P₂ of the driven equipment;

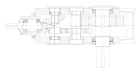
*) Determine rated power according to maximum torque

**) 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}	Rated 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 equipment	
P_{GB}	Nominal thermal capacity gearbox with cooling fan	
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	
S_F	Safety factor of gearbox	
n_1	Input speed	r/min
n_2	Output speed	
n_{2N}	Nominal output speed	
η	Efficiency	/
f	Motor frequency	Hz
U_m	Motor voltage	V
ED	Operating cycle per hour	%

6 Selection to example

HB

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°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:

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

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:

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

Thermal capacity not sufficient

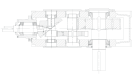
$$PGB \cdot f_4 \cdot f_8 = 330 \times 0.75 \times 1 = 248\text{kW} \geq P_1 = 165\text{kW}$$

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

7.1 H2(iN=5.6-20)

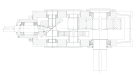
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Code	i _N	n ₁ (r/min)	n _{2N} (r/min)	H213			H214			H215		
				T _{2N} (kN·m)	i _{ex}	P _{1N} (kW)	T _{2N} (kN·m)	i _{ex}	P _{1N} (kW)	T _{2N} (kN·m)	i _{ex}	P _{1N} (kW)
B56	5.6	1740	310.7									
		1450	258.9									
		1150	205.4									
		960	171.4									
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 _{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)							
			215	5.462	5977				310.7	1740	5.6	B56			
					4740				258.9	1450					
					3957				205.4	1150					
									171.4	960					
176	5.996	5348*	215	6.374	5121	255	6.305		276.2	1740	6.3	B63			
		4457			4062				230.2	1450					
		3535			3391				4870	182.5			1150		
		2951							4065	152.4			960		
176	7.016	4570*	215	7.276	4486	255	7.359		245.1	1740	7.1	B71			
		3809			3558				204.2	1450					
		3021			2970				4173	162.0			1150		
		2522							3483	135.2			960		
176	7.994	4011*	215	8.255	4745*	255	8.400		217.5	1740	8	B80			
		3343			3954				4609	181.3			1450		
		2651			3136				3656	143.8			1150		
		2213			2618				3052	120.0			960		
176	8.736	3671*	215	9.003	4351*	255	9.530		4875*	193.3	1740	9	B90		
		3059			3626				4063	161.1	1450				
		2426			2876				3222	127.8	1150				
		2025			2401				2690	106.7	960				
176	9.875	3247*	215	10.119	3871*	255	10.393		4470*	174.0	1740	10	C10		
		2706			3226				3725	145.0	1450				
		2146			2559				2955	115.0	1150				
		1792			2136				2466	96.0	960				
176	10.892	2944*	215	11.101	3529*	255	11.681		3977*	155.4	1740	11.2	C11		
		2454			2941				3314	129.5	1450				
		1946			2332				2629	102.7	1150				
		1624			1947				2194	85.7	960				
176	12.199	2629*	215	12.392	3161*	255	12.816		3625*	139.2	1740	12.5	C13		
		2191			2634				3021	116.0	1450				
		1737			2089				2396	92.0	1150				
		1450			1744				2000	76.8	960				
176	13.698	2341*	215	13.875	2823*	255	14.306		3248*	124.3	1740	14	C14		
		1951			2353				2706	103.6	1450				
		1547			1866				2146	82.1	1150				
		1292			1558				1792	68.6	960				
176	15.153	2116*	215	15.285	2563*	255	16.017		2901*	108.8	1740	16	C16		
		1764			2136				2417	90.6	1450				
		1399			1694				1917	71.9	1150				
		1168			1414				1600	60.0	960				
176	17.196	1865*	215	17.253	2271*	255	17.646		2633*	96.7	1740	18	C18		
		1554			1892				2194	80.6	1450				
		1232			1501				1740	63.9	1150				
		1029			1253				1453	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



7.2 H3(iN=14-112)

Code	iN	n ₁ (r/min)	n _{2N} (r/min)	H313			H314			H315							
				T2N (kN·m)	ie _x	P1N (kW)	T2N (kN·m)	ie _x	P1N (kW)	T2N (kN·m)	ie _x	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 _{2N} (r/min)	n ₁ (r/min)	iN	Code	
T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	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			

HB

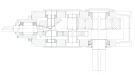


7.3 H4(iN=63-450)

Code	iN	n ₁ (r/min)	n _{2N} (r/min)	H413			H414			H415					
				T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	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 _{2N} (r/min)	n ₁ (r/min)	iN	Code
T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	P1N (kW)	T2N (kN·m)	iex	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			33			64	2.4	960		
190	456.670	76				265	477.459	101	3.9	1740	450	D45
		63						84	3.2	1450		
		50						67	2.6	1150		
		42						56	2.1	960		

HB



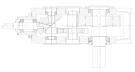
7.4 B2(iN=6.3-14)

Code	i _N	n ₁ (r/min)	n _{2N} (r/min)	B213			B214			B215		
				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)
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		253	7.139		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*			4267*	162.0	1150		
		2312			3018			3562*	135.2	960		
163	8.056	3687*	215	7.745		253	8.267		217.5	1740	8	B80
		3072*			4215*			4647*	181.3	1450		
		2437*			3343*			3685*	143.8	1150		
		2034			2790			3077	120.0	960		
163	8.713	3408*	215	9.070		253	8.941		193.3	1740	9	B90
		2840			3599*			4296*	161.1	1450		
		2253			2854*			3407*	127.8	1150		
		1881			2383			2844	106.7	960		
163	10.204	2910*	215	9.948		253	10.471		174.0	1740	10	C10
		2425			3281*			3669*	145.0	1450		
		1924			2602*			2910*	115.0	1150		
		1606			2173			2429	96.0	960		
163	10.863	2734*	215	11.141		253	11.484		155.4	1740	11.2	C11
		2278			2930*			3345*	129.5	1450		
		1807			2324*			2653*	102.7	1150		
		1508			1940			2215	85.7	960		
163	12.534	2369*	215	12.069		253	12.862		139.2	1740	12.5	C13
		1975			2705*			2987*	116.0	1450		
		1566			2145*			2369*	92.0	1150		
		1307			1791			1977	76.8	960		
163	13.578	2187*	215	13.606		253	13.933		124.3	1740	14	C14
		1823			2399			2757*	103.6	1450		
		1446			1903			2187*	82.1	1150		
		1207			1589			1825	68.6	960		

 Note: Forced lubrication required on horizontal gearbox
* On request



7.5 B3(iN=16-90)

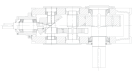
HB

Code	iN	n ₁ (r/min)	n _{2N} (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 lubrication required on horizontal gearbox
 * On request

B316			B317			B318			n _{2N} (r/min)	n ₁ (r/min)	iN	Code
T2N (kN·m)	ie _x	P1N (kW)	T2N (kN·m)	ie _x	P1N (kW)	T2N (kN·m)	ie _x	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	84.503	546*	265	88.350	546*	19.3	1740	90	C90
		341			455			455	16.1	1450		
		271			361			361	12.8	1150		
		226			302			302	10.7	960		

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



7.6 B4(iN=90-400)

Code	i _N	n ₁ (r/min)	n _{2N} (r/min)	B413			B414			B415			
				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)	
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	290	
		1450	14.5									171	241
		1150	11.5									143	191
		960	9.6									113	160
D11	112	1740	15.5	91	109.859		125	109.941		153	109.118	255	
		1450	12.9									151	213
		1150	10.3									126	169
		960	8.6									100	141
D13	125	1740	13.9	91	119.014		125	119.103		153	127.783	218	
		1450	11.6									139	182
		1150	9.2									116	144
		960	7.7									92	120
D14	140	1740	12.4	91	134.162		125	134.261		153	144.046	194	
		1450	10.4									124	161
		1150	8.2									103	128
		960	6.9									82	107
D16	160	1740	10.9	91	155.345		125	155.461		153	166.790	167	
		1450	9.1									107	139
		1150	7.2									89	110
		960	6.0									71	92
D18	180	1740	9.7	91	168.020		125	168.145		153	180.399	155	
		1450	8.1									99	129
		1150	6.4									82	102
		960	5.3									65	85
D20	200	1740	8.7	91	190.423		125	190.565		153	204.452	136	
		1450	7.3									87	114
		1150	5.8									73	90
		960	4.8									58	75
D22	224	1740	7.8	91	209.465		125	209.621		153	224.897	124	
		1450	6.5									79	103
		1150	5.1									66	82
		960	4.3									52	68
D25	250	1740	7.0	91	241.691		125	241.871		153	259.497	107	
		1450	5.8									69	90
		1150	4.6									57	71
		960	3.8									45	59
D28	280	1740	6.2	91	261.832		125	262.026		153	281.122	99	
		1450	5.2									63	83
		1150	4.1									53	66
		960	3.4									42	55
D32	315	1740	5.5	91	295.156		125	295.375		153	316.901	88	
		1450	4.6									56	73
		1150	3.7									47	58
		960	3.0									37	49
D36	355	1740	4.9	91	338.530		125	338.782		153	363.470	77	
		1450	4.1									49	64
		1150	3.2									41	51
		960	2.7									32	42
D40	400	1740	4.4	91	368.944		125	369.219		153	396.126	70	
		1450	3.6									45	59
		1150	2.9									37	47
		960	2.4									30	39

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		480	17.4	1740	100	D10
		300			338				400	14.5	1450		
		238			268				317	11.5	1150		
		199			224				265	9.6	960		
190	109.036	317	220	115.641	347	265	114.000		424	15.5	1740	112	D11
		265			289				353	12.9	1450		
		210			229				280	10.3	1150		
		175			191				234	8.6	960		
190	127.687	271	220	130.359	307	265	133.500		362	13.9	1740	125	D13
		226			256				301	11.6	1450		
		179			203				239	9.2	1150		
		150			170				200	7.7	960		
190	143.939	241	220	150.943	266	265	150.491		321	12.4	1740	140	D14
		200			221				267	10.4	1450		
		159			176				212	8.2	1150		
		133			147				177	6.9	960		
190	166.666	208	220	163.259	246	265	174.253		277	10.9	1740	160	D16
		173			205				231	9.1	1450		
		137			162				183	7.2	1150		
		115			135				153	6.0	960		
190	180.265	192	220	185.026	217	265	188.471		256	9.7	1740	180	D18
		160			181				213	8.1	1450		
		127			143				169	6.4	1150		
		106			120				141	5.3	960		
190	204.300	169	220	203.529	197	265	213.600		226	8.7	1740	200	D20
		141			164				188	7.3	1450		
		112			130				149	5.8	1150		
		93			109				125	4.8	960		
190	224.730	154	220	234.841	171	265	234.960		205	7.8	1740	224	D22
		128			142				171	6.5	1450		
		102			113				136	5.1	1150		
		85			94				113	4.3	960		
190	259.304	134	220	254.411	158	265	271.108		178	7.0	1740	250	D25
		111			131				148	5.8	1450		
		88			104				118	4.6	1150		
		74			87				98	3.8	960		
190	280.912	123	220	286.791	140	265	293.700		164	6.2	1740	280	D28
		103			116				137	5.2	1450		
		81			92				109	4.1	1150		
		68			77				91	3.4	960		
190	316.665	109	220	328.936	122	265	331.080		146	5.5	1740	315	D32
		91			102				122	4.6	1450		
		72			81				96	3.7	1150		
		60			67				80	3.0	960		
190	363.200	95	220	358.488	112	265	379.733		127	4.9	1740	355	D36
		79			93				106	4.1	1450		
		63			74				84	3.2	1150		
		53			62				70	2.7	960		
190	395.831	87				265	413.850		117	4.4	1740	400	D40
		73							97	3.6	1450		
		58							77	2.9	1150		
		48							64	2.4	960		

HB



8 Rated thermal capacity (kW)

8.1 H2 (kW)

HB

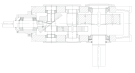
Code	iN		H213				H214				H215			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
B56	5.6	PGA												
		PGB												
		PGD												
B63	6.3	PGA	*	*	*	*	*	*	*	*	*	*	*	*
		PGB	579	415	442	*	632	486	523	376	563	*	*	*
		PGD	1553	1515	1793	1678	1690	1695	1736	1825	1782	1628	1824	1562
B71	7.1	PGA	*	*	*	*	*	*	*	*	*	*	*	*
		PGB	558	452	493	357	650	520	551	386	591	344	338	*
		PGD	1510	1497	1728	1710	1678	1682	1827	1906	1746	1636	1851	1666
B80	8	PGA	*	*	*	*	*	*	*	*	*	*	*	*
		PGB	591	484	537	436	656	526	580	453	613	407	422	*
		PGD	1455	1465	1700	1722	1658	1660	1923	1931	1696	1629	1860	1749
B90	9	PGA	195	*	*	*	212	*	*	*	*	*	*	*
		PGB	594	529	600	547	672	589	666	595	635	495	541	402
		PGD	1395	1436	1679	1755	1611	1651	1927	2003	1644	1635	1889	1877
C10	10	PGA	209	*	*	*	234	*	*	*	200	*	*	*
		PGB	587	549	631	611	673	624	715	683	640	545	612	526
		PGD	1326	1386	1628	1736	1551	1616	1896	2013	1571	1598	1861	1913
C11	11.2	PGA	226	*	*	*	247	*	*	*	218	*	*	*
		PGB	601	582	674	675	665	638	738	733	632	569	648	600
		PGD	1319	1393	1642	1775	1482	1561	1838	1980	1485	1535	1796	1886
C13	12.5	PGA	226	167	*	*	252	*	*	*	235	*	*	*
		PGB	572	567	660	677	648	638	742	756	637	596	685	662
		PGD	1212	1289	1523	1662	1401	1487	1755	1910	1459	1524	1790	1908
C14	14	PGA	225	179	*	*	266	207	*	*	240	*	*	*
		PGB	547	553	647	676	659	663	774	805	614	593	686	686
		PGD	1131	1211	1434	1578	1392	1489	1761	1933	1365	1440	1697	1832
C16	16	PGA	212	176	160	*	263	216	193	*	252	185	*	*
		PGB	501	514	603	639	626	640	751	792	617	610	710	727
		PGD	1007	1085	1286	1424	1276	1372	1626	1797	1341	1426	1684	1836
C18	18	PGA	219	191	181	*	259	223	209	*	248	197	170	*
		PGB	506	528	621	667	598	621	731	782	583	590	690	722
		PGD	1009	1093	1297	1446	1186	1286	1526	1698	1244	1333	1578	1736
C20	20	PGA					239	211	202	157				
		PGB					543	569	670	722				
		PGD					1056	1145	4360	1519				

*On request.

H216				H217				H218				in	Code	
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
				*	*	*	*					PGA	5.6	B56
				593	*	*	*					PGB		
				2230	1895	2091	1467					PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	6.3	B63
553	*	*	*	625	*	*	*	633	*	*	*	PGB		
1846	1642	1774	1559	2240	1954	2151	1661	2248	1940	1823	1568	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	7.1	B71
589	*	*	*	683	*	*	*	659	*	*	*	PGB		
1810	1670	1880	1644	2186	1971	2199	1832	2260	1997	2009	1759	PGD		
*	*	*	*	*	*	*	*	*	*	*	*	PGA	8	B80
620	386	390	*	733	*	*	*	719	*	*	*	PGB		
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		
1736	1710	1970	1930	2120	2059	2360	2262	2191	2103	2400	2254	PGD		
198	*	*	*	*	*	*	*	*	*	*	*	PGA	10	C10
668	554	617	510	812	645	710	547	830	635	691	495	PGB		
1674	1691	1964	1999	2053	2051	2374	2387	2143	2121	2447	2418	PGD		
222	*	*	*	229	*	*	*	223	*	*	*	PGA	11.2	C11
669	591	669	604	815	698	784	679	847	705	787	655	PGB		
1594	1638	1913	1994	1958	1994	2323	2393	2070	2092	2431	2478	PGD		
235	*	*	*	260	*	*	*	250	*	*	*	PGA	12.5	C13
656	604	691	656	833	748	851	786	844	742	840	754	PGB		
1506	1566	1836	1945	1914	1976	2311	2426	1965	2017	2355	2451	PGD		
252	*	*	*	274	*	*	*	281	*	*	*	PGA	14	C14
659	629	726	717	814	761	875	846	860	792	906	861	PGB		
1482	1557	1832	1969	1802	1883	2211	2358	1921	1998	2342	2482	PGD		
254	*	*	*	280	*	*	*	292	*	*	*	PGA	16	C16
634	620	721	731	782	754	873	872	837	797	919	905	PGB		
1381	1463	1726	1875	1680	1772	2088	2253	1810	1901	2236	2401	PGD		
268	207	*	*	292	217	*	*	199	*	*	*	PGA	18	C18
638	640	748	777	768	762	888	912	805	790	919	934	PGB		
1359	1453	1718	1885	1606	1710	2020	2206	1689	1792	2114	2299	PGD		
								304	230	*	*	PGA	20	C20
								787	785	915	944	PGB		
								1602	1708	2019	2209	PGD		

*On request.

HB



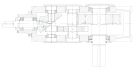
8.2 H3 (kW)

Code	in	H313				H314				H315				
		960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740	
C14	14	PGA												
		PGB												
		PGD												
C16	16	PGA	218	185	188	120	235	212	183	*	264	201	185	*
		PGB	337	352	385	350	374	339	396	371	465	421	470	420
		PGD	724	806	903	975	835	874	996	1082	1163	1174	1368	1402
C18	18	PGA	210	185	181	128	230	209	185	*	263	205	187	*
		PGB	324	336	370	354	366	337	394	374	452	411	467	427
		PGD	696	743	868	926	803	843	971	1058	1128	1158	1325	1393
C20	20	PGA	198	173	171	137	228	206	186	137	260	208	192	*
		PGB	306	310	349	360	358	335	391	376	443	403	452	438
		PGD	657	721	819	903	775	812	945	1024	1096	1103	1293	1362
C22	22.4	PGA	196	173	169	141	224	204	188	146	258	209	193	*
		PGB	303	295	346	352	346	328	385	380	432	393	463	446
		PGD	650	681	811	881	741	779	908	998	1043	1059	1267	1350
C25	25	PGA	191	170	137	140	219	203	190	155	253	207	192	*
		PGB	294	288	338	345	337	326	382	387	420	385	456	439
		PGD	617	647	771	839	709	748	884	962	986	1004	1201	1282
C28	28	PGA	186	170	169	148	214	193	191	165	254	216	206	*
		PGB	286	285	334	346	327	324	380	392	417	394	463	460
		PGD	583	617	734	803	680	718	854	932	957	987	1179	1269
C32	31.5	PGA	184	171	173	157	211	194	196	176	252	222	217	179
		PGB	279	283	332	348	319	322	377	394	411	399	468	475
		PGD	560	598	710	781	647	690	819	900	917	959	1143	1240
C36	35.5	PGA	180	171	175	164	206	194	198	184	244	222	222	194
		PGB	271	280	328	348	311	320	374	369	395	393	461	477
		PGD	534	576	683	755	612	658	781	862	854	905	1075	1176
C40	40	PGA	174	167	172	164	201	192	197	186	237	219	221	199
		PGB	261	272	318	339	302	313	366	390	380	383	449	469
		PGD	506	547	649	719	586	633	750	831	809	862	1024	1124
C45	45	PGA	167	161	166	159	194	186	192	183	237	220	223	203
		PGB	250	261	306	327	291	303	355	379	378	384	450	472
		PGD	475	516	611	678	557	603	714	792	793	847	1006	1107
C50	50	PGA	166	164	171	170	190	187	195	193	241	232	240	231
		PGB	245	262	306	332	283	301	352	381	378	395	462	495
		PGD	465	510	603	673	529	580	686	766	785	852	1009	1120
C56	56	PGA	161	161	170	171	183	183	192	194	232	228	239	236
		PGB	238	257	300	329	271	292	341	373	361	384	449	487
		PGD	441	486	574	644	499	550	650	728	735	805	952	1063
C63	63	PGA	154	156	166	170	180	182	194	198	222	222	235	238
		PGB	226	247	288	317	265	289	338	372	343	371	434	475
		PGD	411	456	538	606	486	540	637	716	681	753	889	998
C71	71	PGA	150	152	162	166	174	177	188	193	216	217	230	234
		PGB	219	239	279	308	255	279	325	359	333	361	422	463
		PGD	393	436	515	580	461	512	605	681	655	725	857	962
C80	80	PGA	145	148	158	162	165	167	178	183	208	210	223	228
		PGB	213	233	272	300	241	264	308	340	320	348	406	447
		PGD	378	420	496	559	429	478	564	635	620	688	812	912
C90	90	PGA	136	138	148	152	160	163	173	179	196	199	211	217
		PGB	199	218	255	282	233	256	298	330	301	328	383	422
		PGD	348	388	458	516	409	455	537	605	573	637	752	846
D10	100	PGA	128	131	140	143	156	160	171	178	188	190	202	208
		PGB	193	210	248	276	227	251	293	325	290	318	374	401
		PGD	327	367	436	462	394	441	520	587	543	600	702	806
D11	112	PGA									176	188	191	197
		PGB									281	309	360	390
		PGD									512	561	653	749

*On request.

H316				H317				H318				iN	Code	
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
				278	220	*	*					PGA	14	C14
				463	407	479	435					PGB		
				1223	1231	1402	1423					PGD		
271	201	176	*	276	218	*	*	271	170	*	*	PGA	16	C16
462	376	439	389	459	396	471	433	486	348	419	308	PGB		
1221	1163	1392	1457	1174	1185	1362	1372	1179	1165	1354	1360	PGD		
270	204	178	*	273	215	*	*	274	179	*	*	PGA	18	C18
459	381	443	401	456	390	460	426	481	354	426	335	PGB		
1189	1140	1365	1426	1123	1136	1306	1310	1136	1126	1314	1331	PGD		
269	208	181	*	271	207	*	*	275	188	*	*	PGA	20	C20
456	385	455	412	450	387	458	420	470	362	432	362	PGB		
1148	1119	1325	1402	1058	1063	1250	1263	1106	1085	1296	1315	PGD		
268	210	183	*	270	206	180	*	280	197	*	*	PGA	22.4	C22
451	390	461	429	440	382	450	416	460	377	440	390	PGB		
1096	1098	1296	1385	1029	1023	1228	1290	1077	1040	1257	1296	PGD		
265	212	193	*	263	203	180	*	276	207	*	*	PGA	25	C25
443	399	470	448	427	375	442	411	451	386	455	414	PGB		
1055	1066	1277	1356	972	970	1164	1226	1033	1021	1227	1285	PGD		
264	221	207	*	265	215	198	*	274	217	196	*	PGA	28	C28
434	404	475	466	425	387	455	439	441	394	464	439	PGB		
999	1024	1224	1312	942	956	1145	1219	981	987	1182	1252	PGD		
265	230	222	178	263	223	212	*	276	230	216	*	PGA	31.5	C32
432	415	487	490	418	394	463	459	440	408	480	470	PGB		
969	1008	1202	1300	906	935	1116	1200	952	975	1165	1248	PGD		
264	237	235	201	255	226	221	184	274	239	232	187	PGA	35.5	C36
425	420	493	507	401	391	459	467	433	417	489	493	PGB		
934	984	1171	1278	844	884	1052	1144	916	954	1137	1231	PGD		
253	231	232	205	247	223	221	190	264	235	231	194	PGA	40	C40
406	406	476	495	387	383	449	462	412	404	474	484	PGB		
867	921	1094	1199	799	843	1003	1095	853	895	1066	1160	PGD		
245	226	227	204	246	224	224	196	254	229	227	194	PGA	45	C45
390	393	460	481	383	382	448	464	397	392	460	473	PGB		
817	871	1034	1135	782	828	985	1077	804	848	1009	1101	PGD		
149	239	246	234	248	236	242	228	259	245	250	233	PGA	50	C50
393	410	479	512	381	394	462	491	399	410	480	508	PGB		
805	872	1033	1146	771	832	987	1092	793	853	1012	1117	PGD		
250	245	256	252	240	234	243	237	258	250	260	252	PGA	56	C56
390	414	484	523	367	387	453	488	394	414	485	521	PGB		
795	869	1028	1147	723	789	934	1040	777	846	1001	1114	PGD		
242	242	255	258	230	229	241	243	250	249	262	262	PGA	63	C63
375	405	473	517	349	375	439	479	378	406	474	517	PGB		
746	824	973	1091	672	741	876	981	730	804	950	1064	PGD		
229	230	243	247	221	222	234	237	237	236	249	251	PGA	71	C71
353	382	447	490	334	361	422	462	357	385	450	492	PGB		
690	764	902	1012	644	712	841	943	676	746	881	987	PGD		
222	224	237	242	213	214	227	230	228	228	241	244	PGA	80	C80
342	371	434	476	321	348	406	446	343	371	433	475	PGB		
663	735	868	975	608	673	795	892	648	716	846	949	PGD		
215	217	234	236	201	203	215	219	219	220	233	237	PGA	90	C90
328	358	418	460	302	329	384	422	329	357	417	458	PGB		
628	697	823	925	564	625	738	829	614	680	803	902	PGD		
203	207	221	229	192	194	205	210	208	212	226	233	PGA	100	D10
310	340	397	440	293	309	375	400	310	340	397	439	PGB		
581	648	764	862	524	584	688	759	569	634	748	843	PGD		
192	197	211	218					197	202	215	228	PGA	112	D11
297	332	385	412					296	330	378	419	PGB		
542	608	664	793					539	600	699	798	PGD		

*On request.

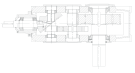


8.3 H4 (kW)

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

HB



8.4 B2 (kW)

HB

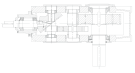
Code	iN		B213				B214				B215			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
B63	6.3	PGA	*	*	*	*	*	*	*	*	*	*	*	*
		PGB	637	657	633	528	771	789	753	612	779	740	664	419
		PGD	1574	1740	1839	1894	1954	2150	2267	2322	2168	2311	2393	2342
B71	7.1	PGA	151	*	*	*	176	*	*	*	*	*	*	*
		PGB	637	683	676	616	768	817	804	721	756	762	720	563
		PGD	1541	1733	1848	1946	1895	2124	2261	2371	2028	2218	2331	2367
B80	8	PGA	154	*	*	*	181	*	*	*	*	*	*	*
		PGB	588	643	646	616	705	767	768	723	705	735	713	609
		PGD	1375	1562	1674	1785	1663	1884	2016	2143	1830	2032	2152	2230
B90	9	PGA	159	130	*	*	193	*	*	*	169	*	*	*
		PGB	565	630	640	630	699	775	785	766	684	732	724	658
		PGD	1296	1484	1598	1721	1625	1875	1996	2144	1741	1956	2085	2195
C10	10	PGA	157	134	*	*	188	157	*	*	172	*	*	*
		PGB	535	601	616	617	642	719	734	729	643	698	698	655
		PGD	1200	1391	1490	1614	1444	1658	1787	1932	1596	1806	1933	2052
C11	11.2	PGA	145	127	*	*	185	160	*	*	162	*	*	*
		PGB	476	539	555	562	613	691	709	713		637	641	614
		PGD	1046	1208	1306	1420	1356	1563	1688	1831	1030	1605	1722	1839
C13	12.5	PGA	143	125	*	*	183	164	*	*	1411	*	*	*
		PGB	425	473	517	523	579	659	681	697	523	578	584	560
		PGD	958	1125	1211	1329	1255	1454	1574	1718	1328	1524	1805	1639
C14	14	PGA	139	121	*	*	168	154	*	*	148	*	*	*
		PGB	391	429	472	484	514	589	611	633	481	502	516	491
		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
838	778	684	*	850	762	646	*					PGB		
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		
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		
2059	2273	2400	2467	2174	2378	2499	2539	2402	2608	2729	2743	PGD		
176	*	*	*	*	*	*	*	*	*	*	*	PGA	9	B90
730	773	759	674	774	807	782	669	823	847	812	671	PGB		
1853	2073	2204	2306	2078	2308	2444	2533	2188	2414	2549	2619	PGD		
182	*	*	*	175	*	*	*	*	*	*	*	PGA	10	C10
704	759	753	694	737	783	770	688	799	839	818	712	PGB		
1760	1984	2118	2237	1935	2167	2306	2416	2085	2322	2464	2564	PGD		
181	*	*	*	169	*	*	*	187	*	*	*	PGA	11.2	C11
662	720	721	679	669	720	714	656	760	809	797	715	PGB		
1616	1831	1960	2083	1720	1938	2068	2183	1940	2175	2315	2428	PGD		
175	*	*	*	165	*	*	*	186	*	*	*	PGA	12.5	C13
598	661	669	650	637	658	685	621	691	750	749	701	PGB		
1430	1632	1754	1882	1623	1768	1809	1865	1730	1957	2093	2221	PGD		
163	*	*	*	160	*	*	*	185	*	*	*	PGA	14	C14
519	623	637	603	601	614	634	594	653	694	715	685	PGB		
1327	1465	1632	1704	1504	1632	1777	1783	1625	1768	1876	2056	PGD		

*On request.

HB



8.5 B3 (kW)

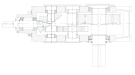
Code	iN		B313				B314				B315			
			960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740
C16	16	PGA	165	151	122	*	191	174	138	*	221	185	*	*
		PGB	388	426	445	450	448	492	511	513	553	597	597	568
		PGD	846	958	1047	1128	959	1085	1181	1268	1322	1486	1583	1662
C18	18	PGA	167	155	128	*	195	180	146	*	216	185	*	*
		PGB	392	432	454	462	452	498	520	527	531	575	581	560
		PGD	853	967	1060	1146	965	1093	1195	1289	1265	1424	1525	1610
C20	20	PGA	159	149	126	*	180	168	140	*	212	185	*	*
		PGB	367	406	428	440	413	456	480	489	513	557	568	555
		PGD	798	905	996	1081	877	995	1092	1182	1215	1370	1475	1566
C22	22.4	PGA	154	147	126	*	185	174	148	*	210	187	*	*
		PGB	349	387	412	426	417	462	489	503	498	544	559	554
		PGD	746	847	936	1019	885	1005	1107	1203	1155	1304	1412	1507
C25	25	PGA	149	144	128	102	176	170	150	116	204	189	153	*
		PGB	329	367	395	414	390	435	466	486	466	513	537	544
		PGD	687	783	870	954	827	941	1045	1143	1047	1186	1297	1399
C28	28	PGA	144	143	131	112	172	170	155	130	205	195	168	*
		PGB	312	350	380	404	373	417	452	479	453	503	535	554
		PGD	640	731	819	903	772	881	985	1085	1007	1145	1265	1378
C32	31.5	PGA	139	140	131	116	165	165	154	135	196	191	170	137
		PGB	296	333	365	391	350	393	430	460	423	473	508	534
		PGD	595	680	766	849	710	811	912	1009	917	1044	1162	1274
C36	35.5	PGA	135	137	130	119	159	160	151	137	192	189	173	146
		PGB	284	321	353	381	332	375	412	443	407	457	495	525
		PGD	566	648	732	814	662	758	855	949	873	996	1114	1228
C40	40	PGA	128	130	125	116	152	155	147	136	183	182	168	146
		PGB	267	302	334	362	315	355	392	424	383	430	469	500
		PGD	523	599	678	755	617	706	798	888	808	923	1035	1144
C45	45	PGA	119	122	117	110	147	150	144	134	171	171	160	142
		PGB	244	279	306	333	301	341	377	409	352	397	434	465
		PGD	467	535	607	677	586	671	760	847	728	832	936	1037
C50	50	PGA	122	126	124	120	141	146	142	138	178	182	174	163
		PGB	244	278	310	340	283	321	358	392	356	402	445	483
		PGD	466	535	610	684	543	623	709	794	728	834	944	1053
C56	56	PGA	113	118	117	116	131	136	135	133	165	171	167	161
		PGB	223	254	285	314	258	294	330	363	325	369	411	450
		PGD	416	478	547	614	486	558	637	716	652	748	852	954
C63	63	PGA	109	114	114	114	133	139	138	137	159	165	162	158
		PGB	214	244	275	303	259	296	332	367	309	352	393	431
		PGD	393	452	517	582	481	553	633	712	612	703	802	899
C71	71	PGA	103	108	107	107	122	128	127	127	151	158	155	153
		PGB	201	229	258	285	236	269	302	334	292	333	372	409
		PGD	356	410	469	528	431	495	567	638	567	651	743	834
C80	80	PGA	98	102	103	103	117	123	123	123	145	149	150	146
		PGB	217	233	243	261	227	259	291	323	282	312	351	376
		PGD	321	380	427	462	407	468	536	604	516	603	657	773
C90	90	PGA	92	98	98	97	110	115	115	116	139	143	145	140
		PGB	206	214	219	241	212	242	273	302	271	296	330	352
		PGD	307	356	386	412	369	425	487	549	463	554	601	724

*On request.

B316				B317				B318				iN	Code	
960	1150	1450	1740	960	1150	1450	1740	960	1150	1450	1740			
227	186	*	*	241	189	*	*	245	*	*	*	PGA	16	C16
579	621	615	575	713	758	737	671	732	774	741	658	PGB		
1366	1532	1621	1691	1654	1849	1937	2000	1682	1876	1949	1994	PGD		
230	193	*	*	237	191	*	*	263	205	*	*	PGA	18	C18
573	617	617	586	686	734	722	669	763	811	787	714	PGB		
1344	1510	1608	1687	1584	1775	1872	1946	1738	1942	2033	2096	PGD		
223	191	*	*	234	194	*	*	246	198	*	*	PGA	20	C20
548	593	599	577	662	711	708	668	700	749	736	681	PGB		
1280	1440	1542	1628	1523	1710	1815	1900	1589	1780	1876	1949	PGD		
219	192	*	*	236	201	*	*	243	202	*	*	PGA	22.4	C22
528	574	586	573	646	698	702	673	675	725	722	681	PGB		
1227	1383	1490	1582	1461	1644	1756	1851	1525	1712	1818	1902	PGD		
222	202	160	*	234	208	*	*	250	219	*	*	PGA	25	C25
513	563	585	587	607	662	681	674	661	718	732	714	PGB		
1168	1322	1440	1546	1333	1505	1629	1738	1467	1654	1780	1890	PGD		
216	204	172	*	239	222	183	*	248	227	182	*	PGA	28	C28
480	531	562	577	596	656	689	700	621	682	711	716	PGB		
1060	1204	1326	1440	1292	1465	1605	1734	1336	1513	1650	1776	PGD		
215	208	183	142	232	221	190	*	250	236	199	*	PGA	31.5	C32
468	521	558	582	557	619	658	681	608	673	712	731	PGB		
1020	1161	1288	1409	1184	1345	1487	1619	1296	1471	1620	1759	PGD		
205	201	181	149	228	221	196	155	241	232	203	155	PGA	35.5	C36
435	487	526	555	538	599	644	674	569	633	677	705	PGB		
929	1059	1181	1299	1129	1286	1429	1566	1188	1351	1498	1636	PGD		
199	197	180	153	220	215	194	160	236	230	204	164	PGA	40	C40
419	470	510	541	508	568	614	647	548	611	657	690	PGB		
884	1009	1129	1245	1053	1200	1339	1472	1132	1289	1434	1572	PGD		
190	189	176	154	206	204	187	159	228	224	203	169	PGA	45	C45
395	444	484	517	470	526	572	607	520	581	629	665	PGB		
818	934	1049	1160	955	1090	1221	1346	1057	1205	1346	1481	PGD		
178	182	174	161	219	221	210	191	216	218	204	184	PGA	50	C50
636	411	453	491	478	539	593	640	481	542	594	639	PGB		
738	845	956	1064	962	1101	1242	1380	963	1101	1240	1376	PGD		
186	191	186	179	205	210	203	193	228	233	225	211	PGA	56	C56
365	415	461	504	438	497	552	601	488	553	612	665	PGB		
738	846	962	1076	867	994	1128	1260	966	1107	1255	1401	PGD		
171	177	173	168	198	204	199	192	211	217	211	202	PGA	63	C63
333	378	422	463	419	475	529	579	447	507	563	615	PGB		
659	757	862	966	820	941	1071	1198	869	997	1133	1267	PGD		
164	170	167	163	187	194	190	184	204	210	205	198	PGA	71	C71
318	362	404	444	393	446	498	546	426	484	539	590	PGB		
621	713	813	912	757	869	990	1109	824	945	1075	1204	PGD		
157	163	161	158	178	184	185	173	193	200	196	190	PGA	80	C80
301	343	384	423	374	416	468	524	400	454	507	556	PGB		
573	658	751	843	695	794	875	1040	761	873	994	1114	PGD		
144	157	160	153					184	190	189	182	PGA	90	C90
289	332	364	402					383	414	476	502	PGB		
533	612	695	783					721	819	873	1027	PGD		

*On request.

HB



8.6 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

HB

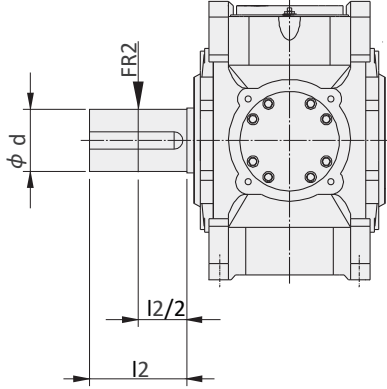


9 Permissible additional radial force on output shaft

9.1 Permissible additional radial force on output shaft d

HB

Permissible additional radial force FR2 (kN) , applied at midpoint of extension of output shaft*.								
Type	Arrangement	13	14	15	16	17	18	
H2..HS	A+B+G+H	150	150	140	205	205	205	
	C+D	112	112	85	135	135	135	
H3..HS	A+B+G+H	190	190	185	265	265	265	
	C+D	150	150	120	185	185	190	
H4..HS	C+D	190	190	185	265	265	265	
	A+B+G+H	150	150	120	185	185	190	
B2..HS	A+C	160	160	150	210	210	210	
	B+D	110	110	75	145	100	100	
B3..HS	A+C	190	190	185	265	265	265	
	B+D	150	150	120	185	185	190	
B4..HS	A+C	190	190	185	265	265	265	
	B+D	150	150	120	185	185	190	



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

9.2 Additional radial force allowed on output shaft d:

<p>Force is not applied at midpoint of shaft extension of output shaft</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $FR_{Z2} = FR_2 \times k$ </div>		<p>FR_{Z2} Permissible external radial force</p> <p>FR₂ Permissible additional radial force Determined according to table 9.1</p> <p>k Applied force factor should be determined according to the following table</p>													
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

- 1.FR_{Z2}: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.

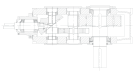
10 Shaft assemblies

10.1 H series shaft assemblies

10.1.1 Shaft assemblies

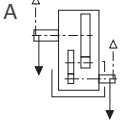
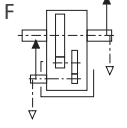
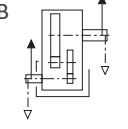
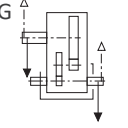
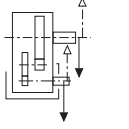
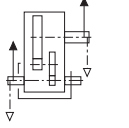
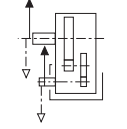
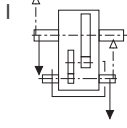
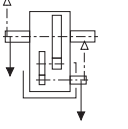
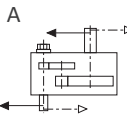
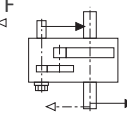
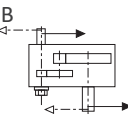
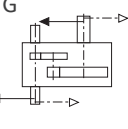
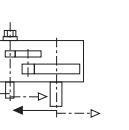
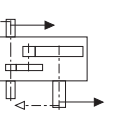
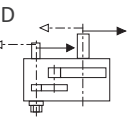
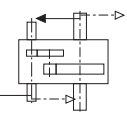
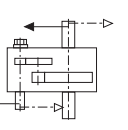
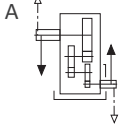
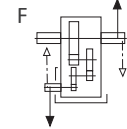
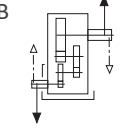
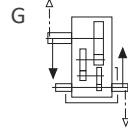
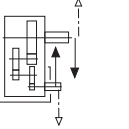
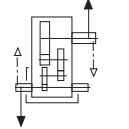
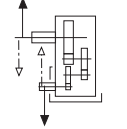
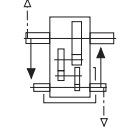
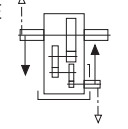
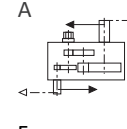
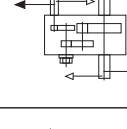
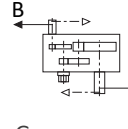
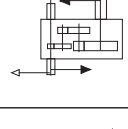
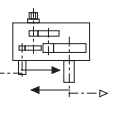
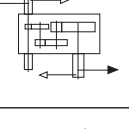
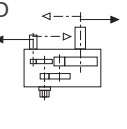
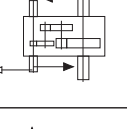
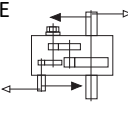
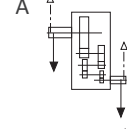
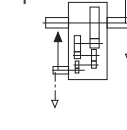
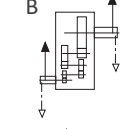
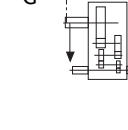
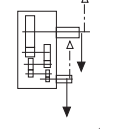
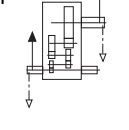
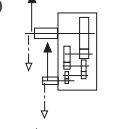
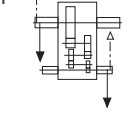
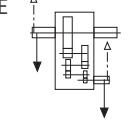
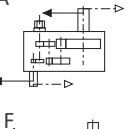
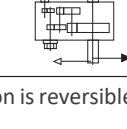
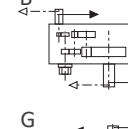
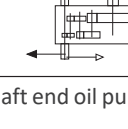
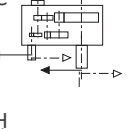
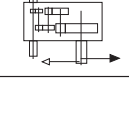
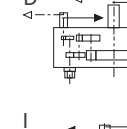
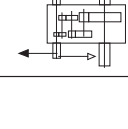
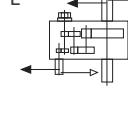
Parallel key solid shaft	A	B	C	D	E	F
	G*	H*	I*			
H...HS H...VS						
Parallel key hollow shaft	A	B	C	D	E	F
	G*	H*	I*			
H...HH H...VH						
Hollow shaft with shrink disc	A	B	C	D	G*	H*
H...HD H...VD						
Hollow shaft with involute spline	A	B	C	D	G*	H*
H...HK H...VK						
Size iN	13	14	15	16	17	18
Type						
H2	6.3-14	6.3-14	6.3-14	6.3-14	5.6-14	6.3-16
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

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



HB

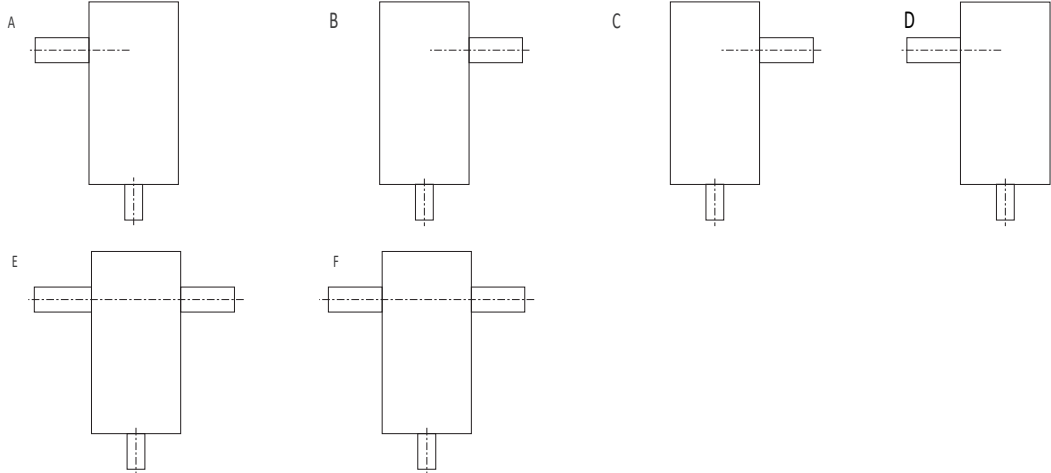
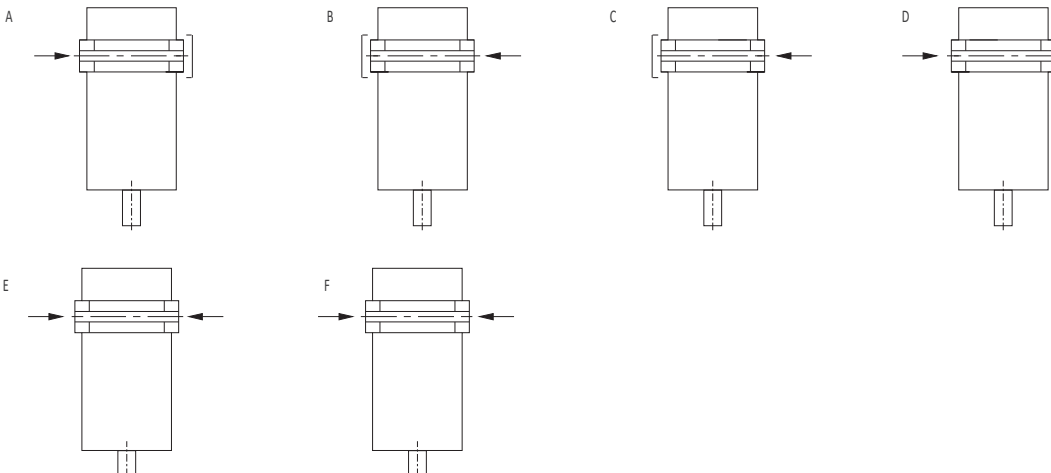
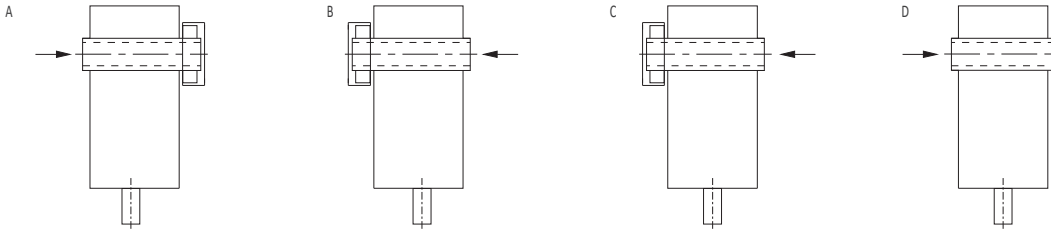
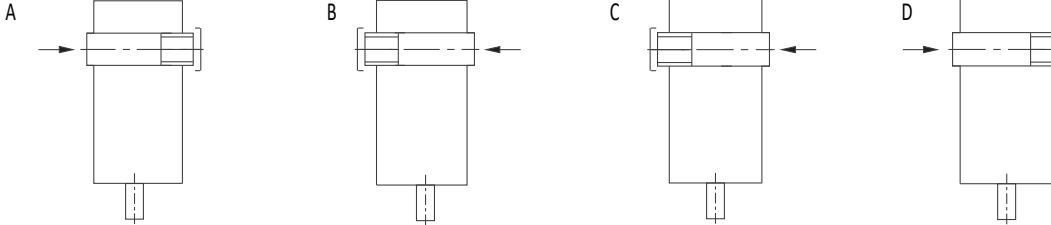
10.1.2 Direction of rotation

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

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>Diagrams A-F show various shaft assembly configurations for a parallel key on a solid shaft. A and D show the shaft protruding from the left and right respectively. B and C show the shaft protruding from the right. E and F show the shaft protruding from both ends.</p>
<p>Parallel key hollow shaft</p> <p>B...HH B...VH</p>	 <p>Diagrams A-F show various shaft assembly configurations for a parallel key on a hollow shaft. A and D show the shaft protruding from the left. B and C show the shaft protruding from the right. E and F show the shaft protruding from both ends.</p>
<p>Hollow shaft with shrink disc</p> <p>B...HD B...VD</p>	 <p>Diagrams A-D show shaft assembly configurations for a hollow shaft with a shrink disc. A and D show the shaft protruding from the left. B and C show the shaft protruding from the right.</p>
<p>Hollow shaft with involute spline</p> <p>B...HK B...VK</p>	 <p>Diagrams A-D show shaft assembly configurations for a hollow shaft with an involute spline. A and D show the shaft protruding from the left. B and C show the shaft protruding from the right.</p>

HB



10.2.2 Direction of rotation

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

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

HB

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

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.

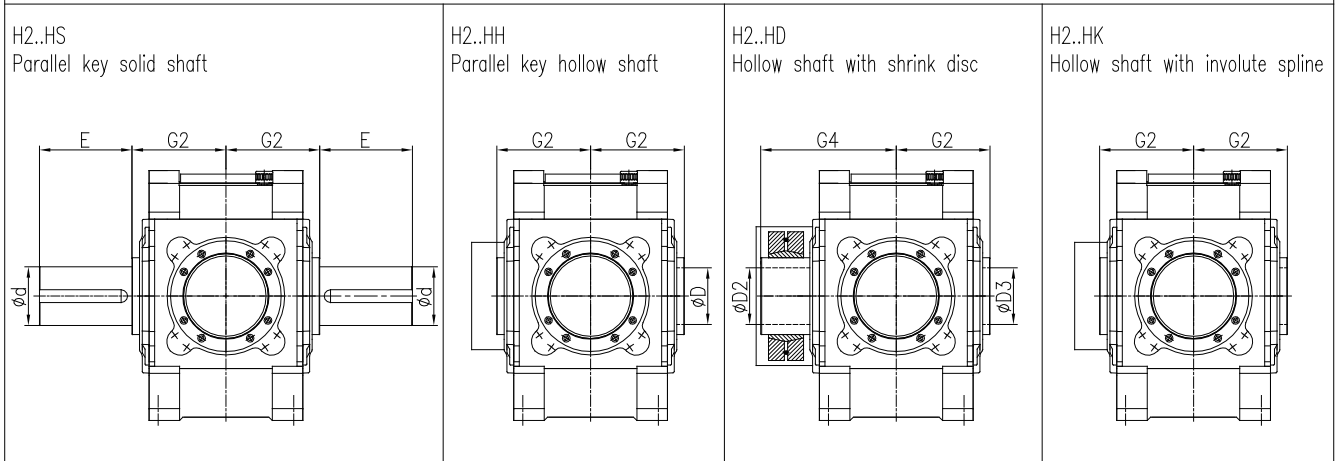
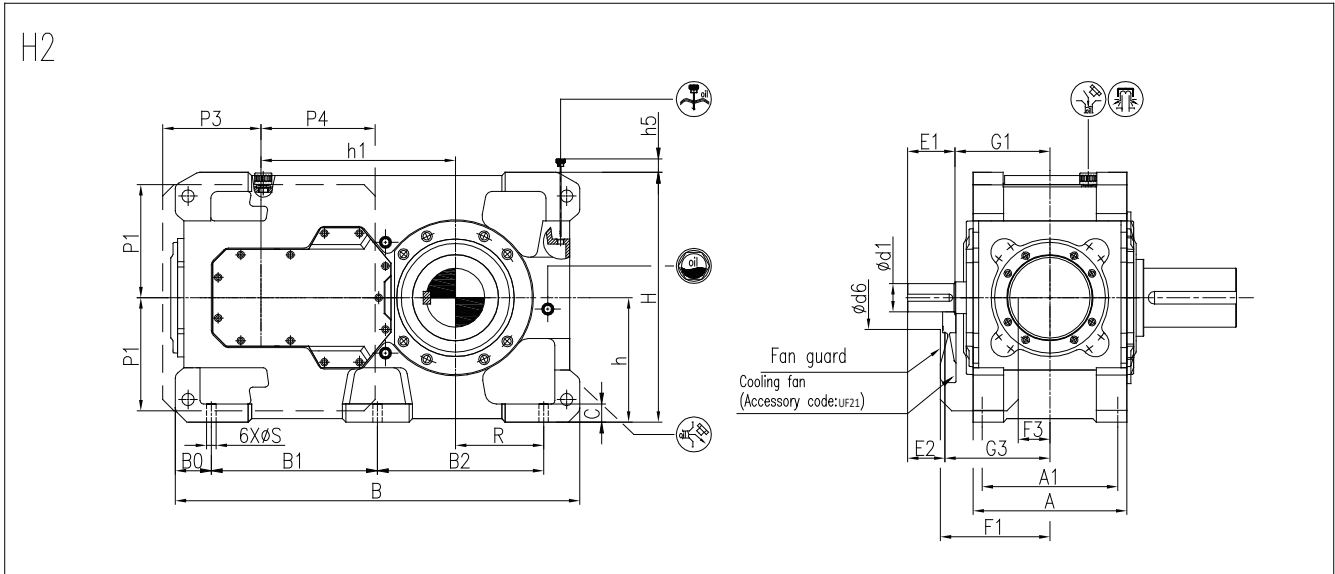
3. Shaft end oil pump can not be installed with backstop for all HB series, please consult us if both shaft end oil pump and backstop needed to be installed.



11 Outline dimension

11.1 H213H-H218H

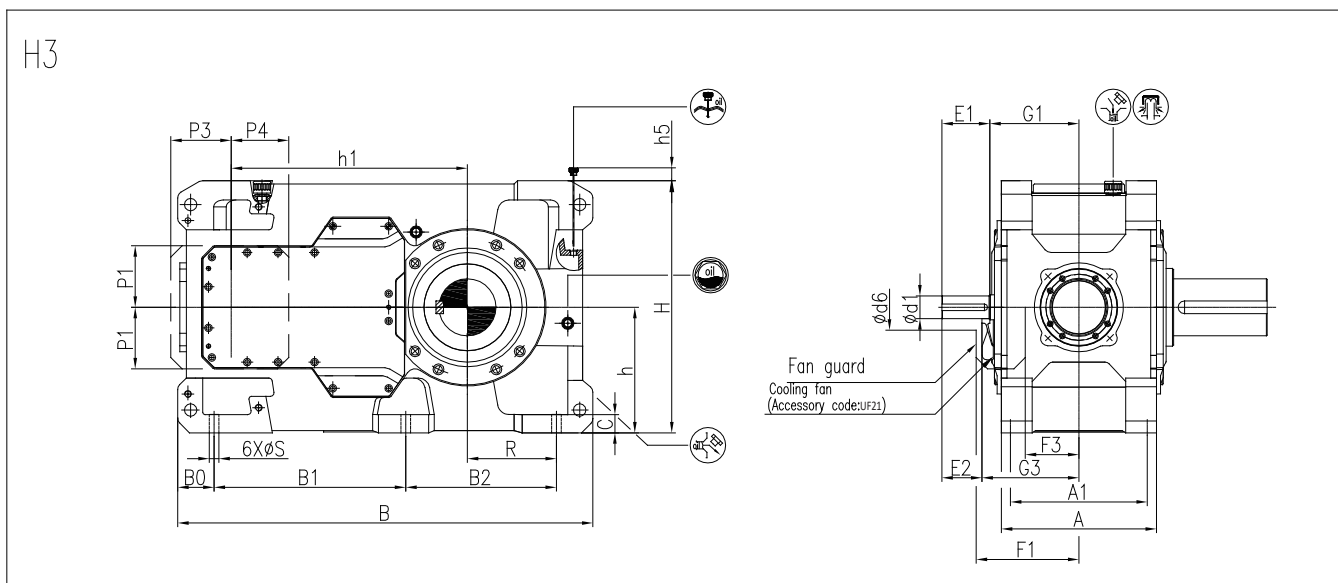
HB



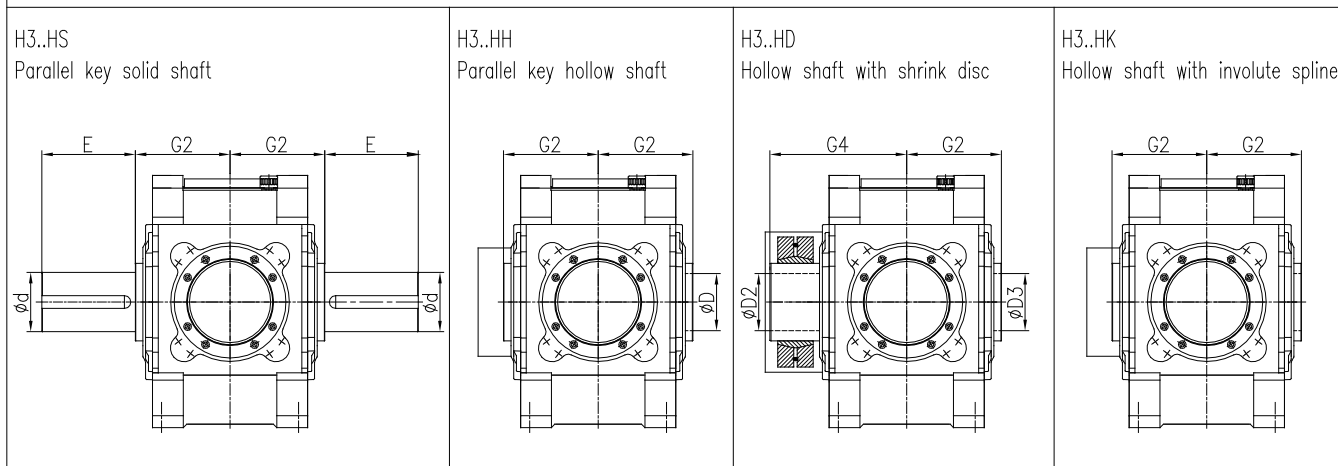
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	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2						
13				100m6	210	175							85m6	170	135				550	475	1375	142	545	545
14				100m6	210	175							85m6	170	135				550	475	1505	137	545	685
15				120m6	210	175				100m6	210	175							625	535	1630	160	655	655
16				120m6	210	175				100m6	210	175							625	535	1720	160	655	745
17	125m6	210	165							110m6	210	165							690	600	1790	160	735	735
18							125m6	210	165							110m6	210	165	690	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	260m6	280	250H7	250H7	250H7	410	485	140	420	415	465	600	1105	550	860	60	500	435	505	390	42	4765
18	80	280m6	280	275H7	275H7	275H7	470	485	140	420	415	465	600	1110	550	920	60	500	435	505	450	42	5265

11.2 H313H-H318H

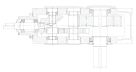


HB



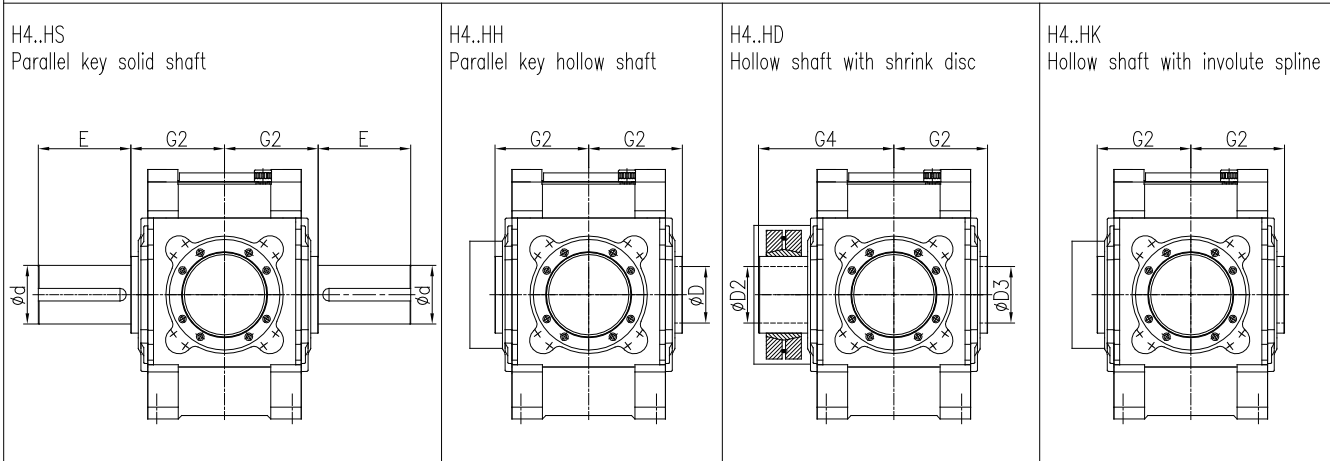
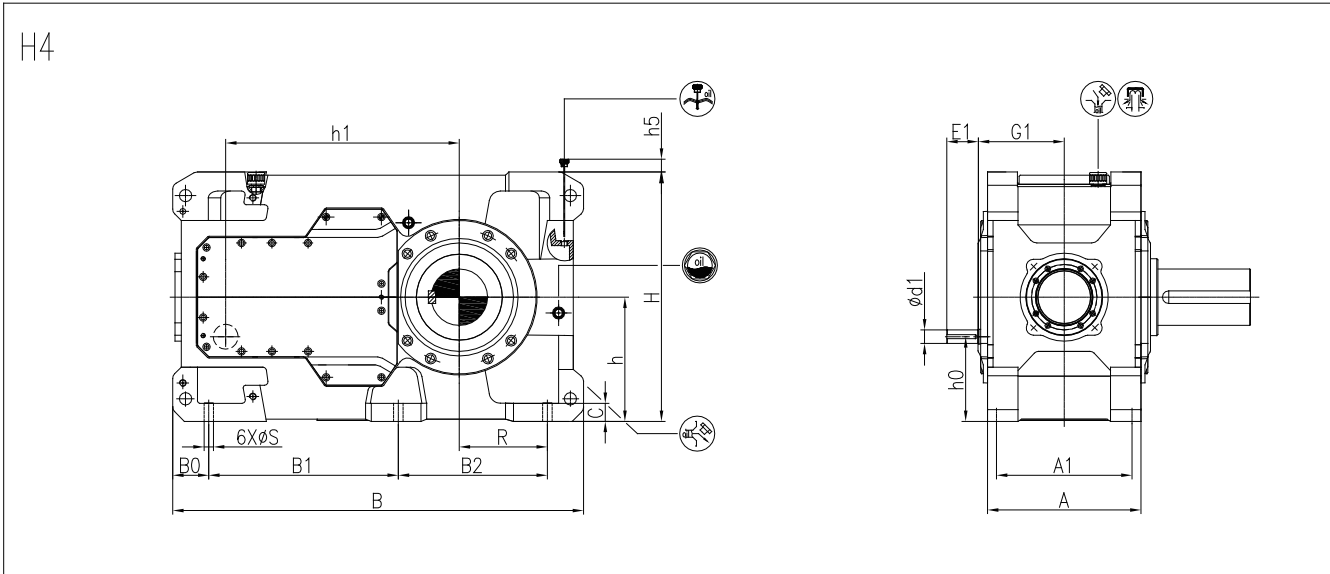
Size	iN=14-45			iN=16-50			iN=50-100			iN=56-100			iN=56-112			A	A1	B	B0	B1	B2	C
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2							
13				85m6	170	140				60m6	140	110				550	475	1470	137	667.5	527.5	60
14				85m6	170	140				60m6	140	110				550	475	1610	137	667.5	667.5	60
15				100m6	210	165							75m6	140	105	625	535	1760	161	840	600	70
16				100m6	210	165							75m6	140	105	625	535	1850	160	840	690	70
17	100m6	210	175				75m6	140	105							690	600	1820	160	840	660	80
18				100m6	210	175							75m6	140	105	690	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	365	195	325	335	355	480	875	440	820	0	225	225	215	305	35	2355
14	220m6	190	210H7	210H7	210H7	350	365	195	325	335	355	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	435	600	1105	550	1035	60	270	265	252	390	42	4670
18	280m6	200	275H7	275H7	275H7	470	450	235	400	415	435	600	1110	550	1095	70	270	265	252	450	42	5165



11.3 H413H-H418H

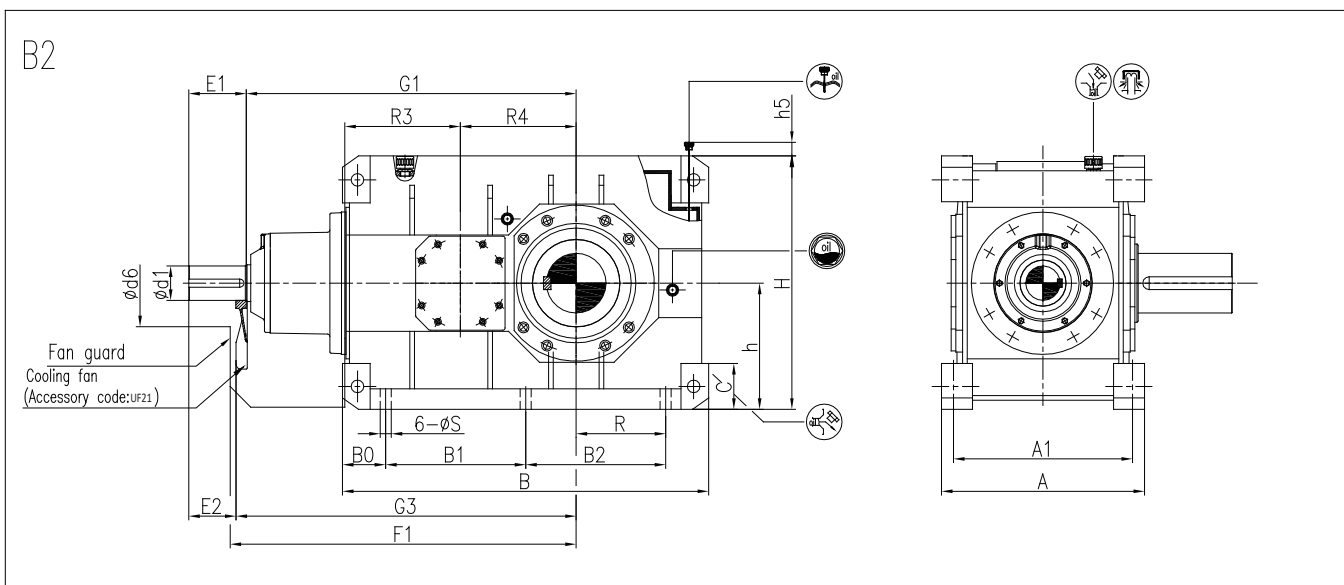
HB



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	550	475	1470	137	667.5	527.5	60	200m6
14			50k6	110			38k6	80	550	475	1610	137	667.5	667.5	60	220m6
15			60m6	140			50k6	110	625	535	1760	161	840	600	70	240m6
16			60m6	140			50k6	110	625	535	1850	160	840	690	70	250m6
17	60m6	140			50k6	110			690	600	1820	160	840	660	80	260m6
18			60m6	140			50k6	110	690	600	1940	160	840	780	80	280m6

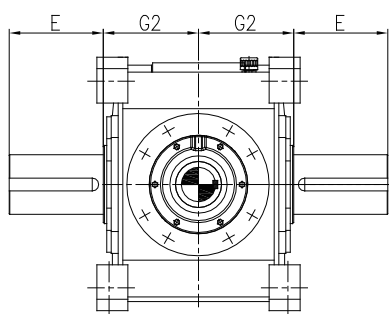
Size	D	D2	D3	E	G1	G2	G4	H	h	h0	h1	h5	R	S	Weight(kg)
13	190H7	190H7	190H7	350	305	335	480	875	440	300	820	0	305	35	2450
14	210H7	210H7	210H7	350	305	335	480	940	440	300	890	40	375	35	2995
15	230H7	230H7	230H7	410	345	380	550	1000	500	325	987	60	365	42	3810
16	240H7	240H7	240H7	410	345	380	550	1035	500	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

11.4 B213H-B218H

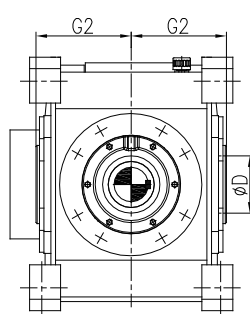


HB

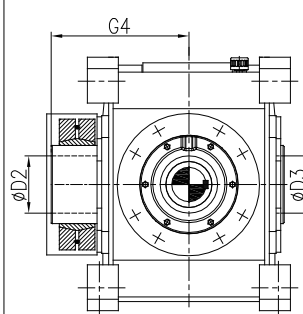
B2..HS
Parallel key solid shaft



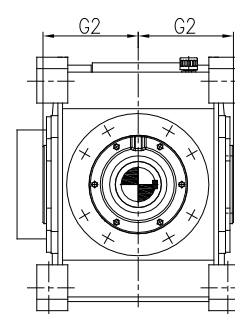
B2..HH
Parallel key hollow shaft



B2..HD
Hollow shaft with shrink disc

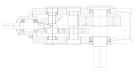


B2..HK
Hollow shaft with involute spline



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				115k6	210	175	655	580	1205	137	465	465	60	200m6	245	190H7	190H7	190H7
14				115k6	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	260m6	380	250H7	250H7	250H7
18				150m6	250	200	885	780	1715	188	610	730	80	280m6	380	275H7	275H7	275H7

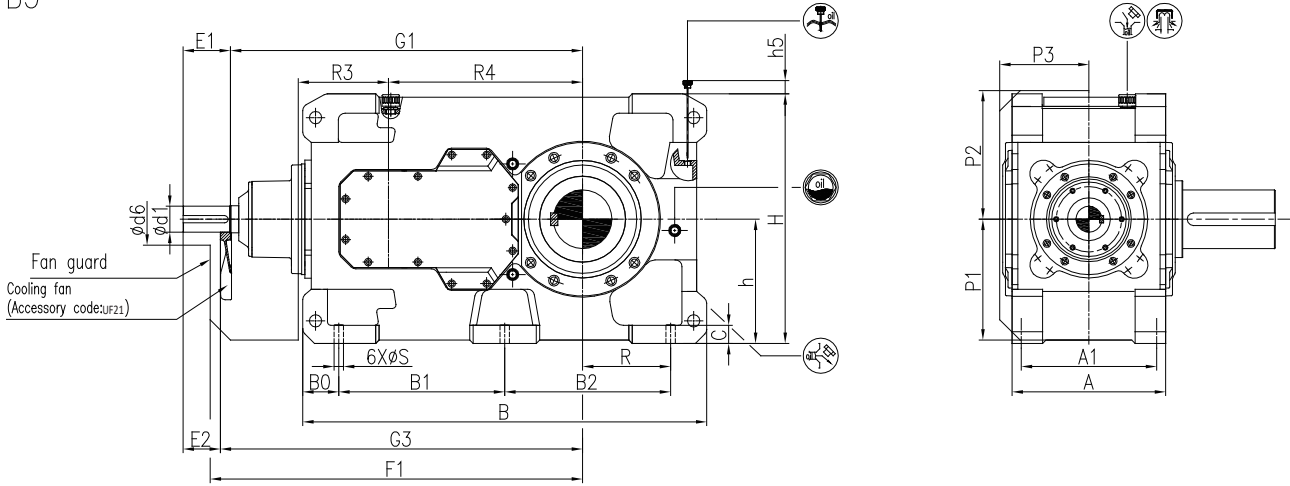
Size	E	F1	G1	G2	G3	G4	H	h	h5	P1	P2	P3	R	R3	R4	S	Weight(kg)
13	350	1175	1092	335	1127	480	870	440	60	430	450	375	305	403	392	35	2530
14	350	1245	1170	335	1205	480	885	440	20	430	450	375	375	395	470	35	2945
15	410	1385	1305	380	1355	550	1000	500	20	490	495	435	365	467	470	42	4230
16	410	1430	1330	380	1380	550	1035	500	60	490	495	435	410	487	495	42	4750
17	410	1520	1450	415	1500	600	1105	550	40	540	555	505	390	515	505	48	5990
18	470	1580	1515	415	1565	600	1110	550	100	540	555	505	450	510	570	48	6555



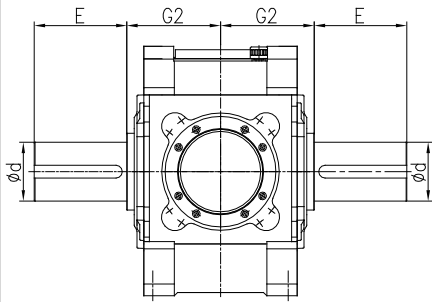
11.5 B313H-B318H

HB

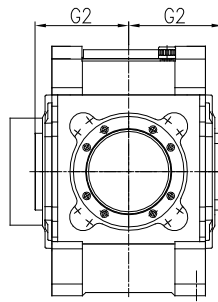
B3



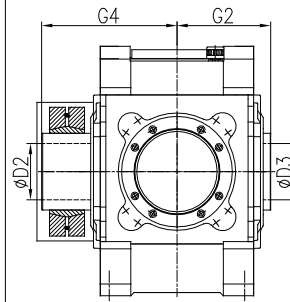
B3..HS
Parallel key solid shaft



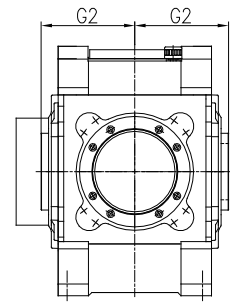
B3..HH
Parallel key hollow shaft



B3..HD
Hollow shaft with shrink disc



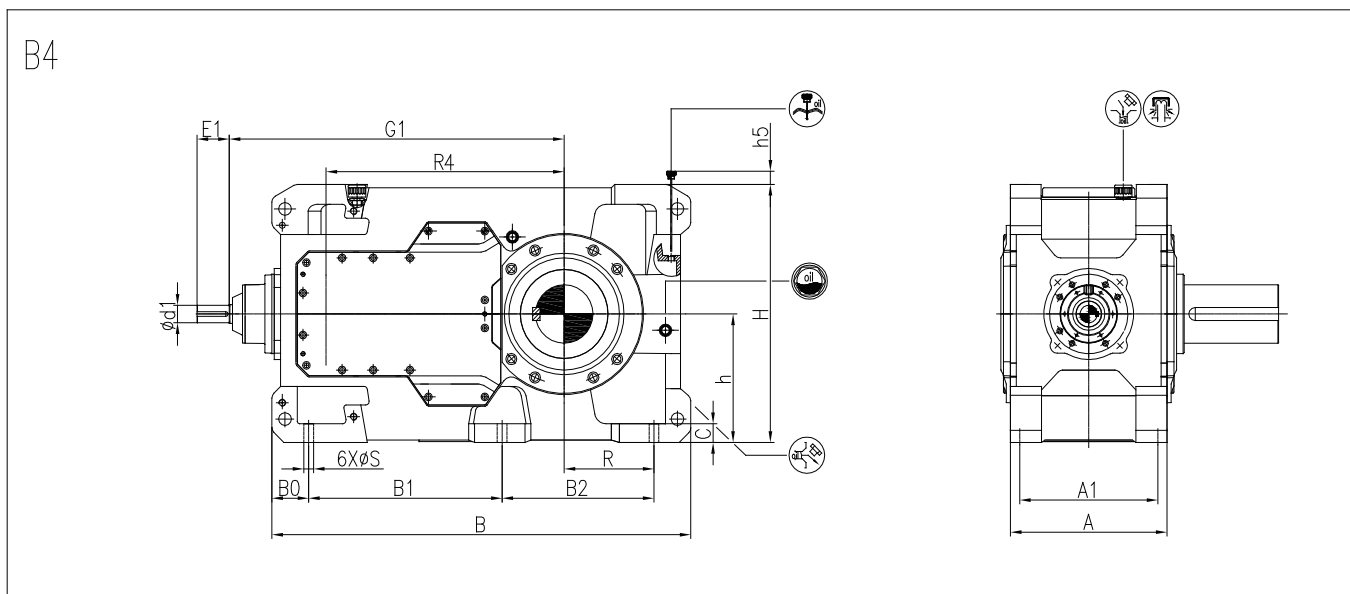
B3..HK
Hollow shaft with involute spline



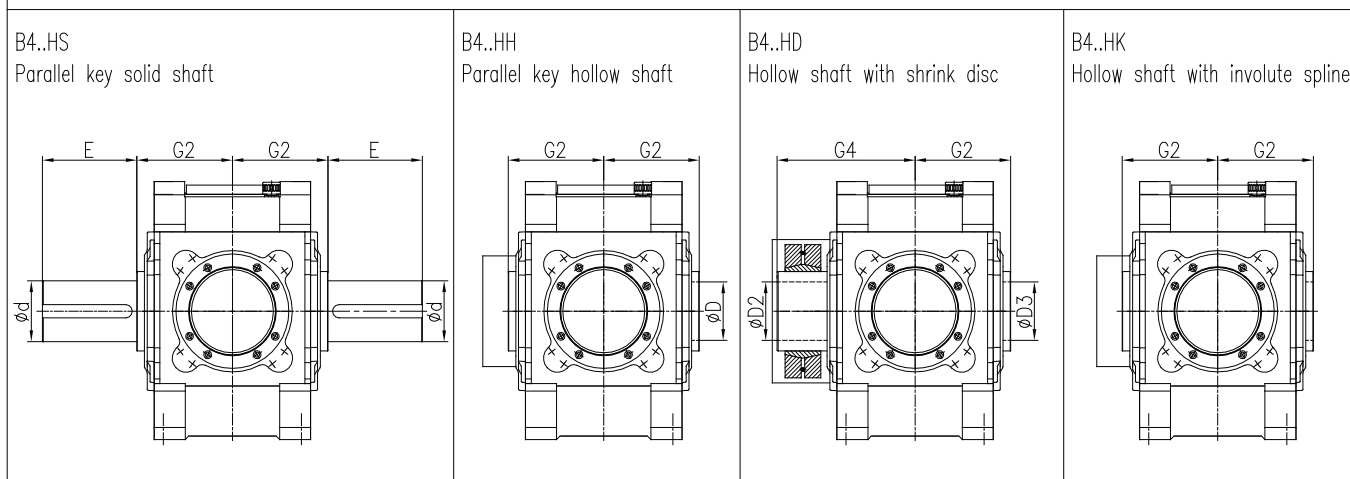
Size	iN=16-56			iN=16-63			iN=63-80			iN=71-90			A	A1	B	B0	B1	B2	C	d	d6
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2									
13				85m6	170	135				70m6	140	105	550	475	1375	142	545	545	60	200m6	210
14				85m6	170	135				70m6	140	105	550	475	1505	137	545	685	60	220m6	210
15				95m6	170	135				75m6	140	105	625	535	1630	160	655	655	70	240m6	210
16				95m6	170	135				75m6	140	105	625	535	1720	160	655	745	70	250m6	210
17	115m6	210	175				90m6	170	135				690	600	1790	160	735	735	80	260m6	230
18				115m6	210	175				90m6	170	135	690	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	300	635	35	2470
14	210H7	210H7	210H7	350	1235	1180	335	1215	480	940	440	40	425	435	325	375	300	705	35	3025
15	230H7	230H7	230H7	410	1420	1367	380	1402	550	1000	500	40	485	520	365	365	346	762	42	3925
16	240H7	240H7	240H7	410	1470	1413	380	1505	550	1035	500	40	485	520	365	410	350	808	42	4295
17	250H7	250H7	250H7	410	1650	1560	415	1595	600	1105	550	60	535	570	395	390	400	860	42	5110
18	275H7	275H7	275H7	470	1710	1620	415	1655	600	1110	550	60	535	570	395	450	400	920	42	5645

11.6 B413H-B418H



HB



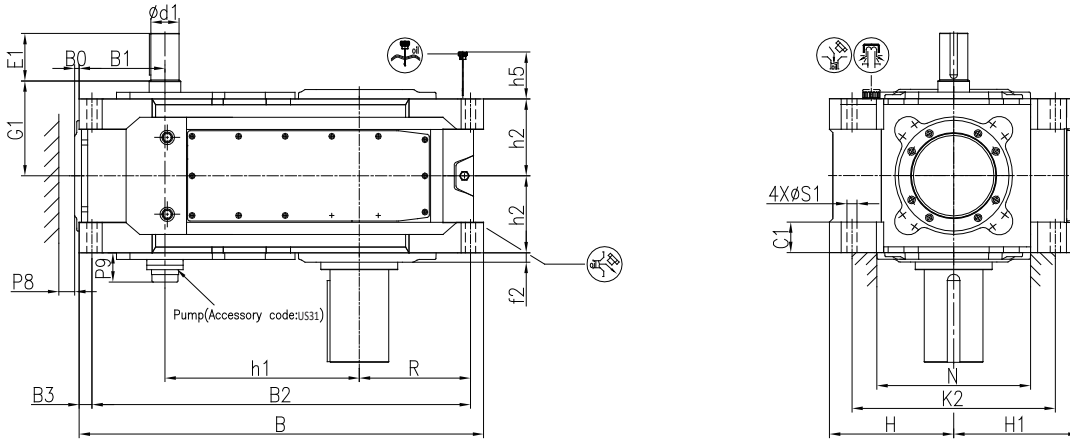
Size	iN=90-250		iN=100-280		iN=280-355		iN=315-400		A	A1	B	B0	B1	B2	C
	d1	E1	d1	E1	d1	E1	d1	E1							
13			60m6	140			50k6	110	550	475	1470	137	667.5	527.5	60
14			60m6	140			50k6	110	550	475	1610	137	667.5	667.5	60
15			75m6	140			60m6	140	625	535	1760	161	840	600	70
16			75m6	140			60m6	140	625	535	1850	160	840	690	70
17	75m6	140			60m6	140			690	600	1820	160	840	660	80
18			75m6	140			60m6	140	690	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

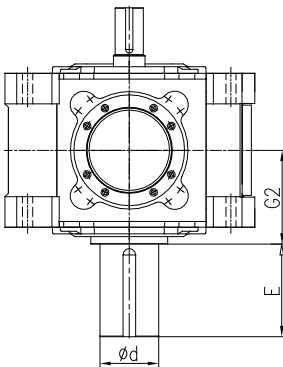


11.7 H213V-H218V

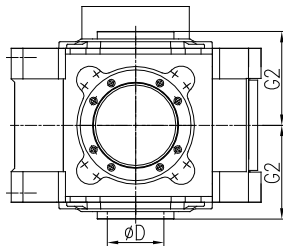
H2(With forced lubrication)



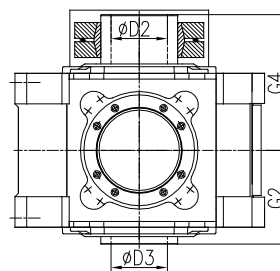
H2..VS
Parallel key solid shaft



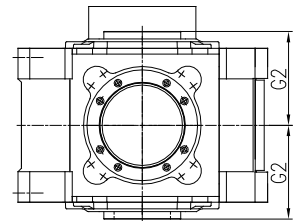
H2..VH
Parallel key hollow shaft



H2..VD
Hollow shaft with shrink disc



H2..VK
Hollow shaft with involute spline



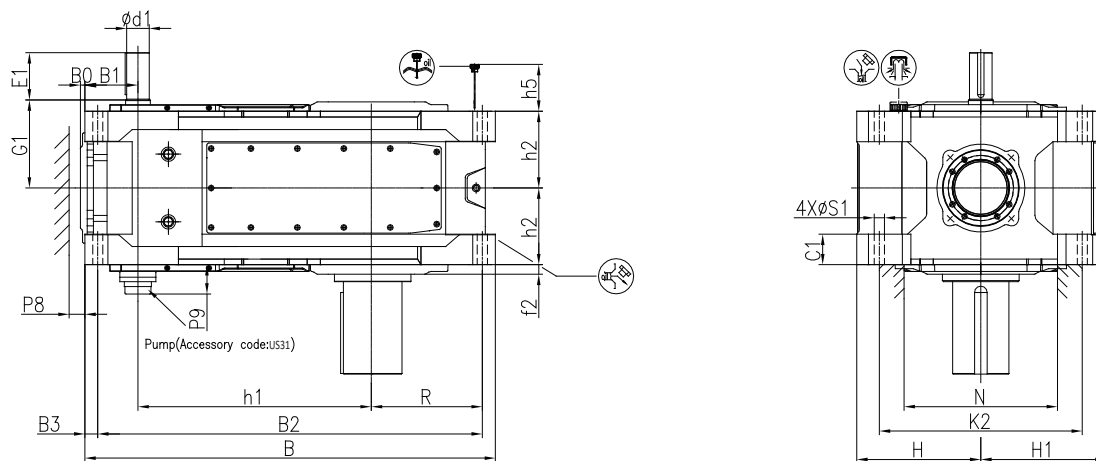
Size	iN=5.6-11.2		iN=6.3-11.2		iN=6.3-12.5		iN=12.5-18		iN=12.5-20		iN=14-20		B	B0	B1	B2	B3	C1	d	D
	d1	E1	d1	E1	d1	E1	d1	E1	d1	E1	d1	E1								
13			100m6	210					85m6	170			1365	0	292	1270	52	105±2	200m6	190H7
14			100m6	210					85m6	170			1505	2	287	1410	47	105±2	220m6	210H7
15			120m6	210			100m6	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.

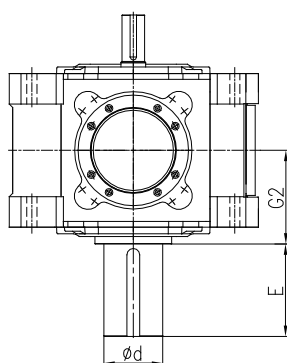
11.8 H313V-H318V

H3(With forced lubrication)

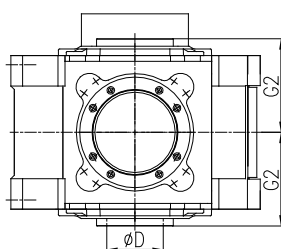


HB

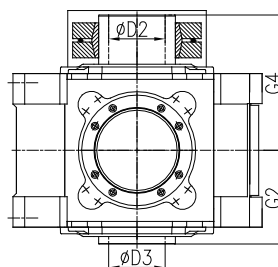
H3..VS
Parallel key solid shaft



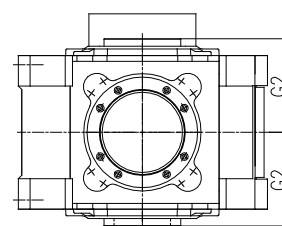
H3..VH
Parallel key hollow shaft



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	280m6	275H7

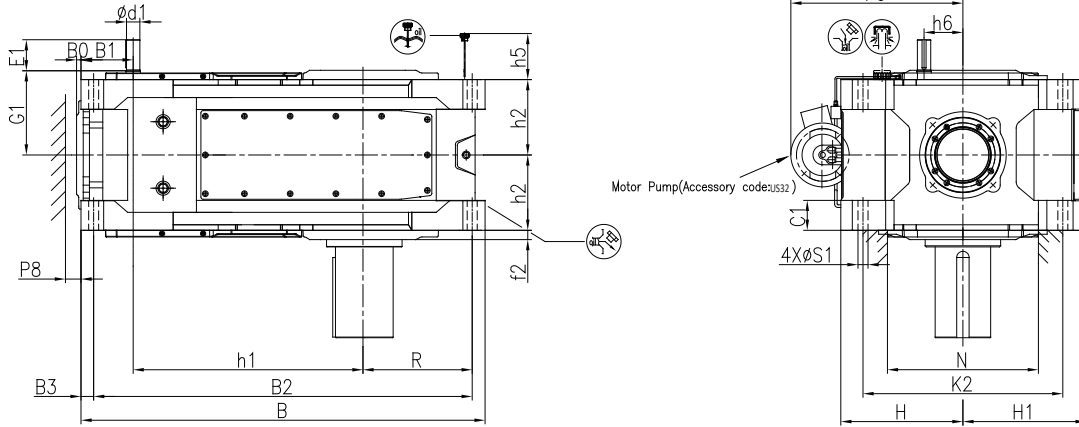
Size	D2	D3	E	f2	G1	G2	G4	H	H1	h1	h2	h5	K2	N	P8	P9	R	S1	Weight(kg)
13	190H7	190H7	350	35	325	335	480	440	435	820	272.5	210	720	570	50	170	395	48	2355
14	210H7	210H7	350	35	325	335	480	440	500	890	272.5	210	740	570	50	170	465	48	2880
15	230H7	230H7	410	32	365	380	550	500	500	987	310	230	820	710	50	170	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.

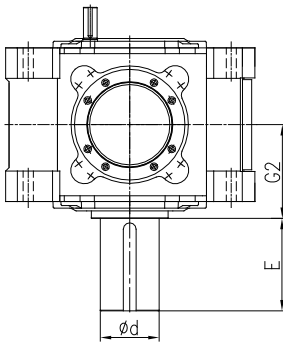


11.9 H413V-H418V

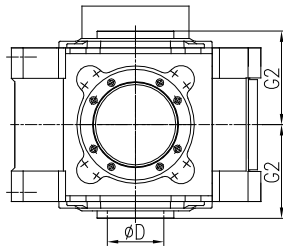
H4(With forced lubrication)



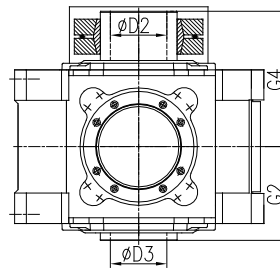
H4..VS
Parallel key solid shaft



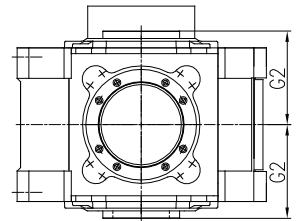
H4..VH
Parallel key hollow shaft



H4..VD
Hollow shaft with shrink disc



H4..VK
Hollow shaft with involute spline

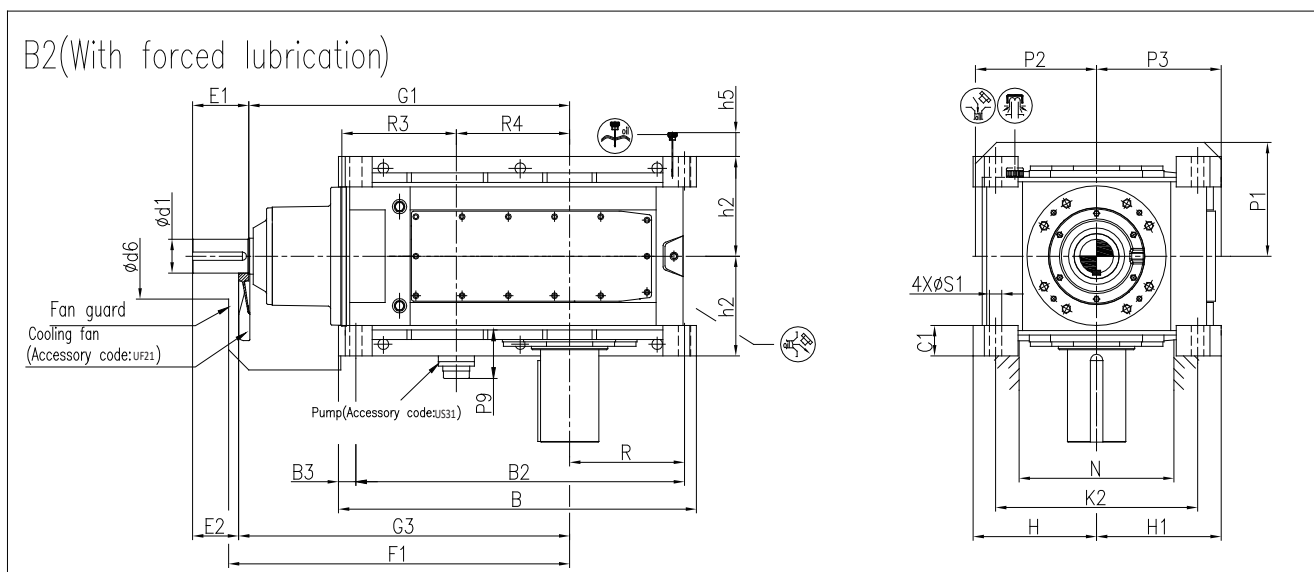


Size	iN=63-200		iN=71-224		iN=224-400		iN=250-450		B	B0	B1	B2	B3	C1	d	D	D2	D3
	d1	E1	d1	E1	d1	E1	d1	E1										
13			50k6	110			38k6	80	1470	0	207	1375	47	105±2	200m6	190H7	190H7	190H7
14			50k6	110			38k6	80	1610	0	207	1515	48	105±2	220m6	210H7	210H7	210H7
15			60m6	140			50k6	110	1760	0	249	1655	51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

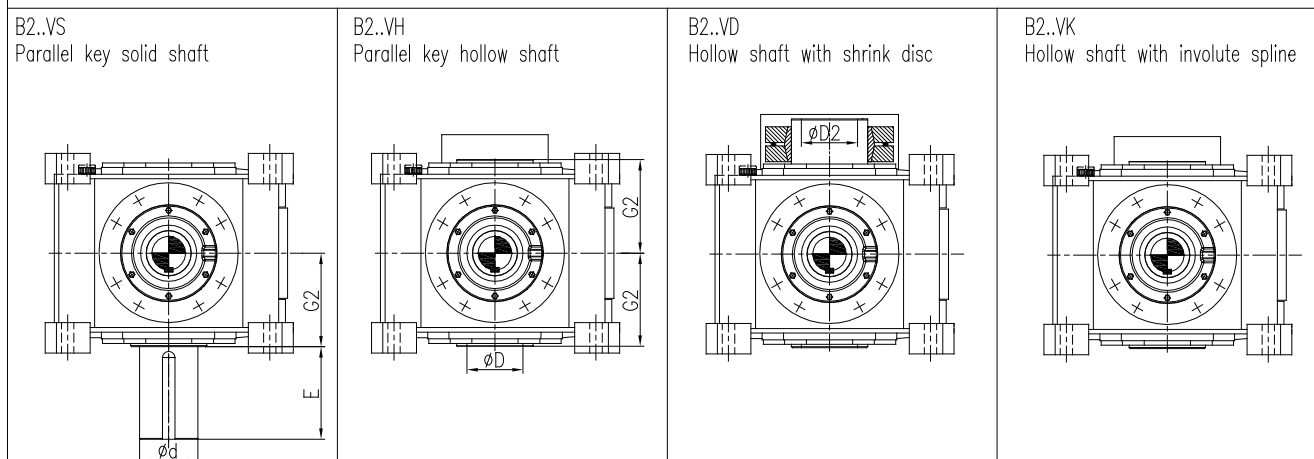
Size	E	f2	G1	G2	G4	H	H1	h1	h2	h5	h6	K2	N	P8	P9	R	S1	Weight(kg)
13	350	35	305	335	480	440	435	820	272.5	210	140	720	570	50	670	395	48	2450
14	350	35	305	335	480	440	500	890	272.5	210	140	740	570	50	670	465	48	2995
15	410	32	345	380	550	500	500	987	310	230	175	820	710	50	710	470	55	3810
16	410	32	345	380	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.

11.10 B213V-B218V



HB



Size	iN=6.3-14			iN=7.1-14			B	B2	B3	C1	d	d6	D	D2	D3	E	F1	f2	G1
	d1	E1	E2	d1	E1	E2													
13				115k6	210	175	1205	1110	47	105±2	200m6	245	190H7	190H7	190H7	350	1175	35	1092
14				115k6	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

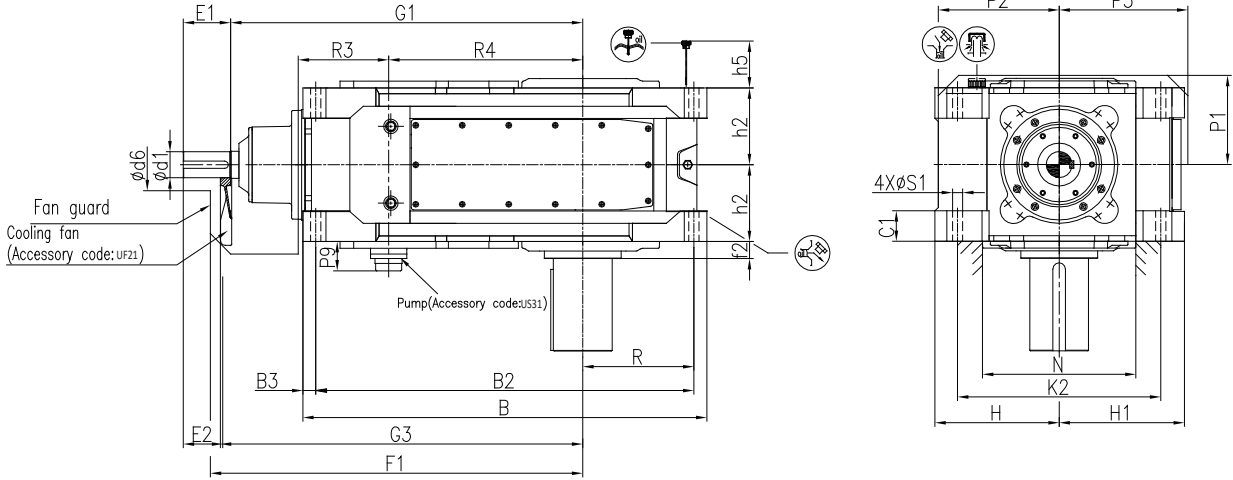
Size	G2	G3	G4	H	H1	h2	h5	K2	N	P1	P2	P3	P9	R	R3	R4	S1	Weight(kg)
13	335	1127	480	440	430	325	210	720	550	375	430	450	200	395	403	392	48	2530
14	335	1205	480	440	445	325	210	740	570	375	430	450	200	465	395	470	48	2945
15	380	1355	550	500	500	380	230	820	590	435	490	495	200	467	467	470	55	4230
16	380	1380	550	500	535	380	230	860	650	435	490	495	200	512	487	495	55	4750
17	415	1500	600	550	555	437.5	250	900	690	505	540	555	200	512	515	505	55	5990
18	415	1565	600	550	560	437.5	250	900	710	505	540	555	200	572	510	570	55	6555

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

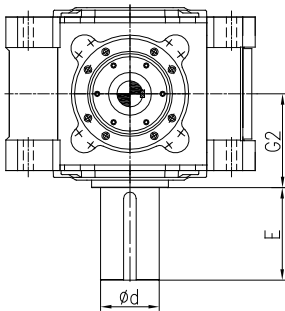


11.11 B313V-B318V

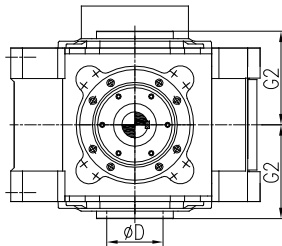
B3(With forced lubrication)



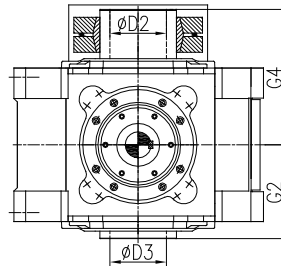
B3..VS
Parallel key solid shaft



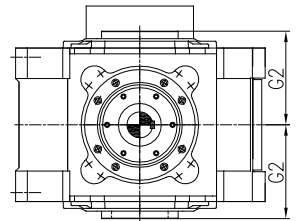
B3..VH
Parallel key hollow shaft



B3..VD
Hollow shaft with shrink disc



B3..VK
Hollow shaft with involute spline

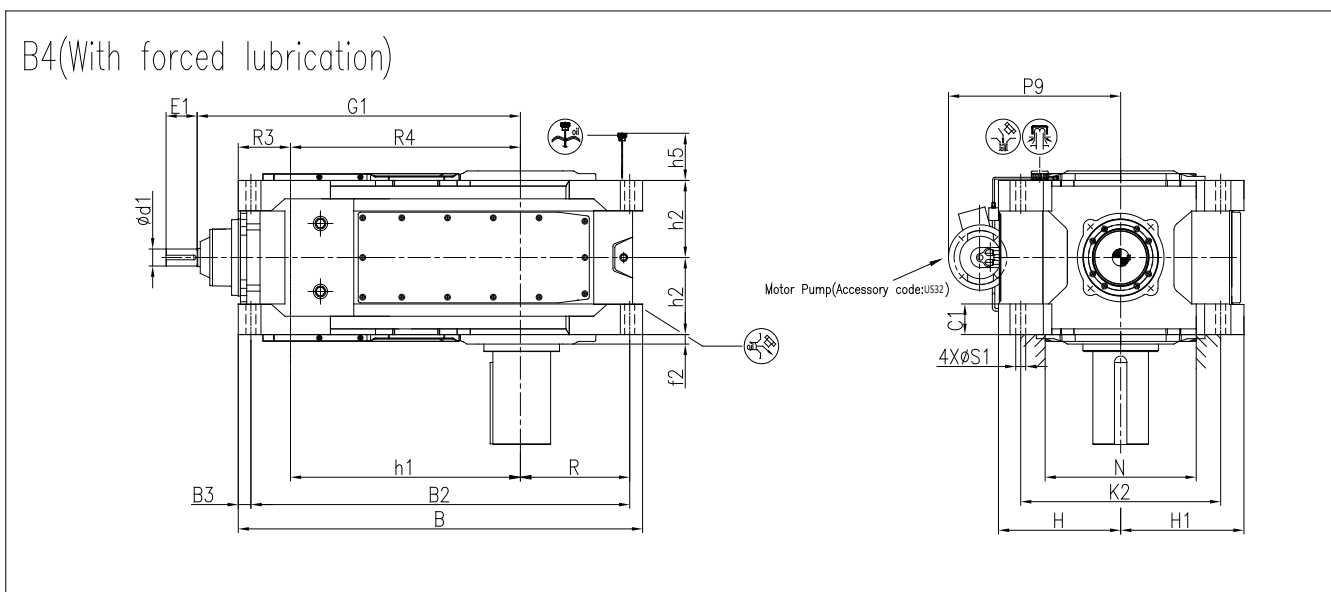


Size	iN=16-56			iN=16-63			iN=63-80			iN=71-90			B	B2	B3	C1	d	d6	D	D2	D3
	d1	E1	E2	d1	E1	E2	d1	E1	E2	d1	E1	E2									
13				85m6	170	135				70m6	140	105	1365	1270	52	105±2	200m6	210	190H7	190H7	190H7
14				85m6	170	135				70m6	140	105	1505	1410	47	105±2	220m6	210	210H7	210H7	210H7
15				95m6	170	135				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

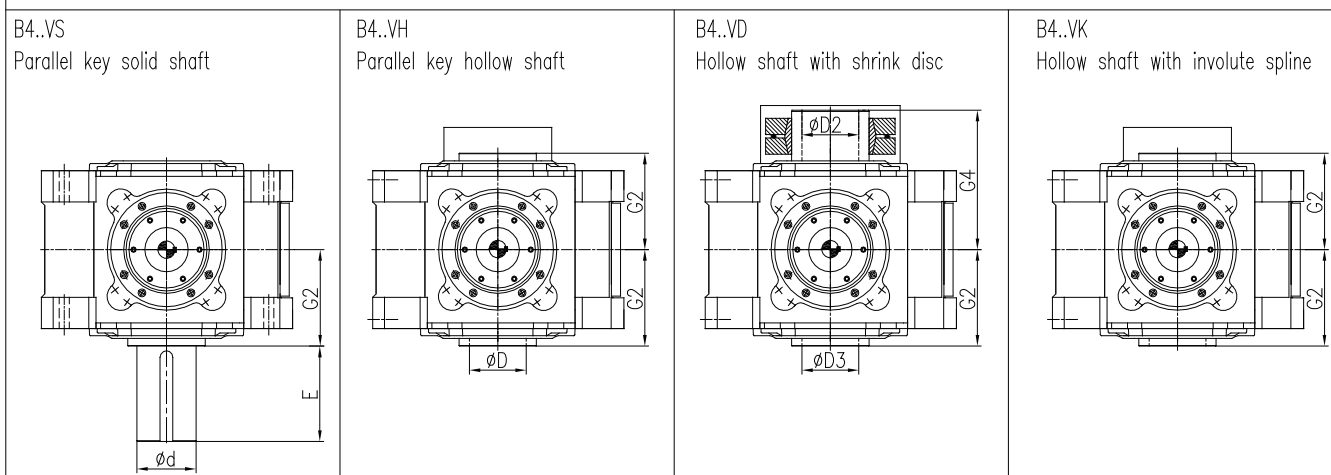
Size	E	F1	f2	G1	G2	G3	G4	H	H1	h2	h5	K2	N	P1	P2	P3	P9	R	R3	R4	S1	Weight(kg)
13	350	1165	35	1110	335	1145	480	440	635	272.5	210	720	550	325	425	435	170	395	300	635	48	2470
14	350	1235	35	1180	335	1215	480	440	705	272.5	210	740	570	325	425	435	170	465	300	705	48	3025
15	410	1420	32	1367	380	1402	550	500	762	310	230	820	640	365	485	520	170	467	346	762	55	3925
16	410	1470	32	1413	380	1505	550	500	808	310	230	860	650	365	485	520	170	512	350	808	55	4295
17	410	1650	42	1560	415	1595	600	550	860	340	250	900	690	395	535	570	170	492	400	860	55	5110
18	470	1710	42	1620	415	1655	600	550	920	340	250	900	710	395	535	570	170	552	400	920	55	5645

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

11.12 B413V-B418V



HB



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

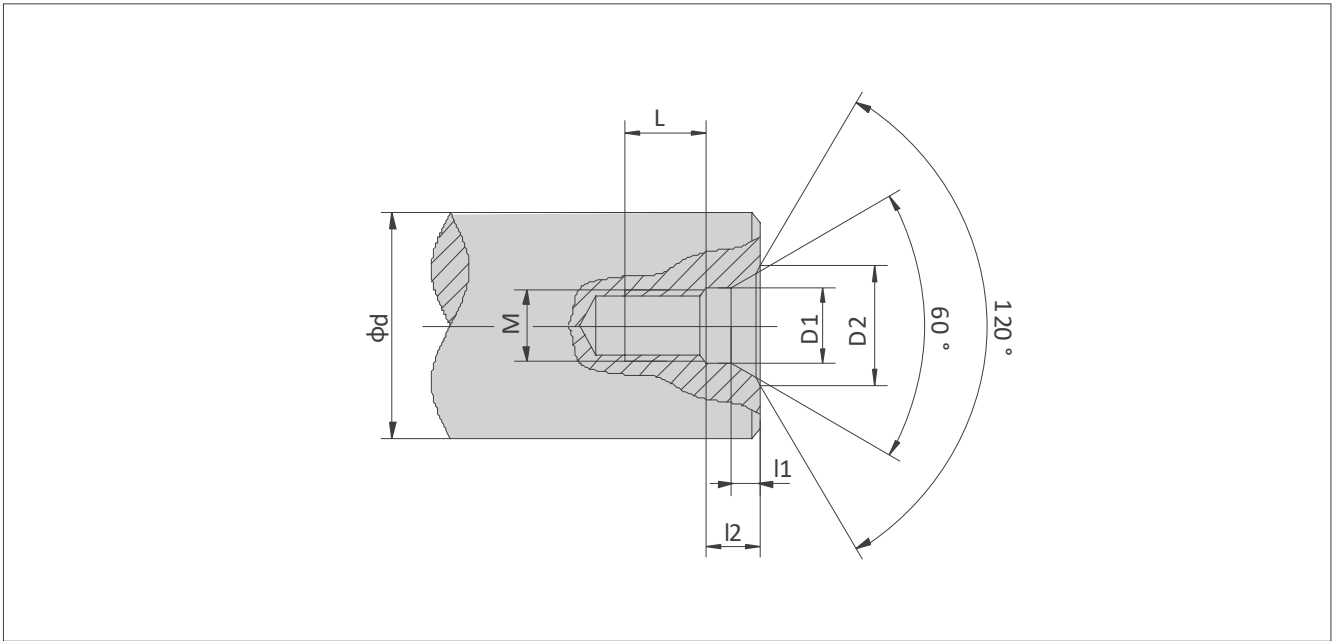
Size	E	f2	G1	G2	G4	H	H1	h2	h5	K2	N	P9	R	R4	S1	Weight(kg)
13	350	35	1170	335	480	440	435	272.5	210	720	570	670	395	820	48	2455
14	350	35	1240	335	480	440	500	272.5	210	740	570	670	465	890	48	3000
15	410	32	1407	380	550	500	500	310	230	820	710	710	470	987	55	3805
16	410	32	1453	380	550	500	535	310	230	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.



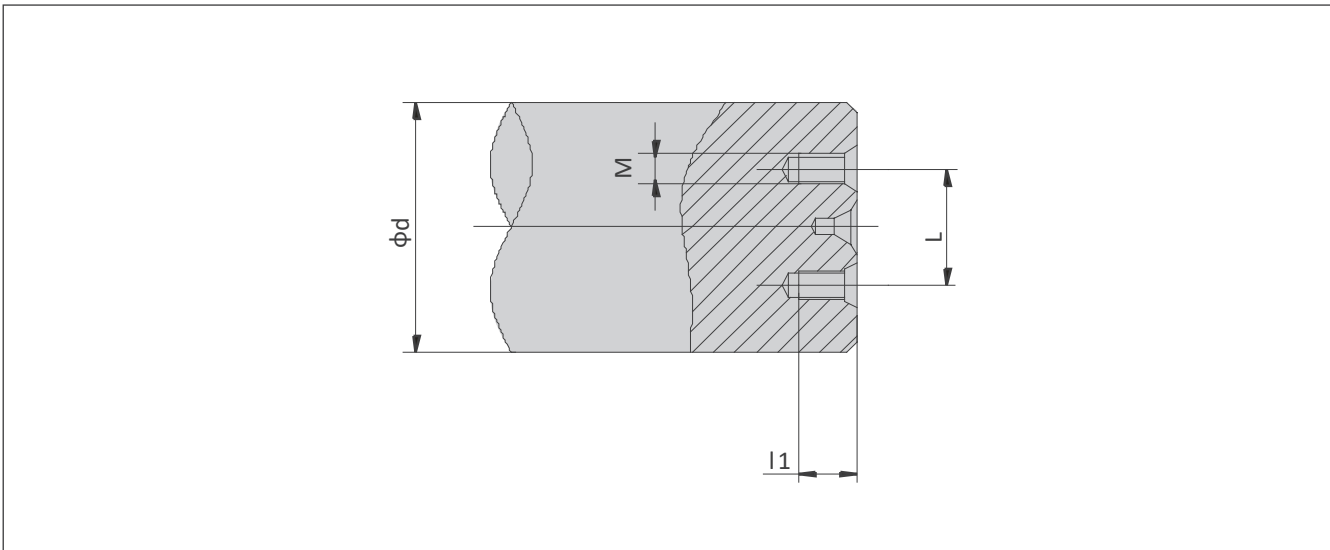
12 Shaft end central hole

HB



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	25	38
$130 < d \leq 225$	M30	45	18	11	31	48

Note: If $d > 255$, double screw hole in shaft end is taken.

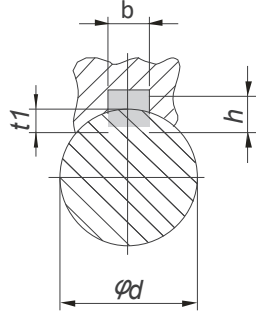
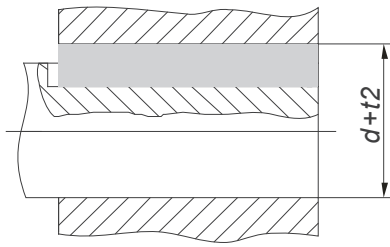


d	M	l1	L
225 < d ≤ 230	M16	28	160
230 < d ≤ 280	M20	38	180
280 < d ≤ 290			190
290 < d ≤ 310	M24	45	220
310 < d ≤ 330			230
330 < d ≤ 340			240
340 < d ≤ 360			250
360 < d ≤ 390			270
390 < d ≤ 420	M30	55	300
420 < d ≤ 460			320
460 < d ≤ 500			350
500 < d ≤ 530			380
530 < d ≤ 560			400
560 < d ≤ 600			430



13 Dimension of parallel key and keyway

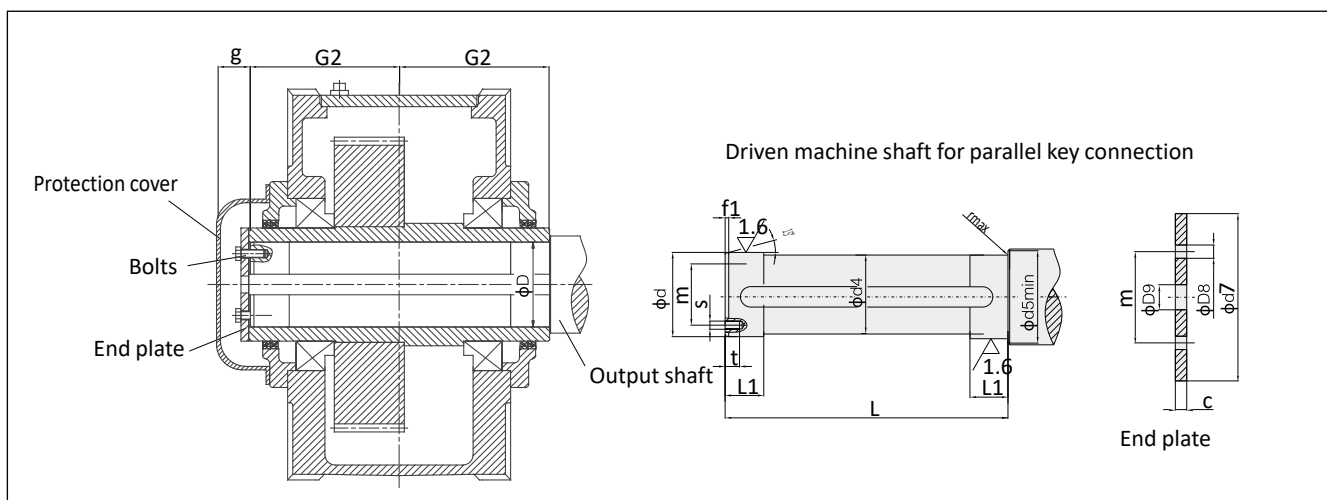
HB



d	b	h	t ₁	d + t ₂
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:



HB

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	45
14	210h6	209.5	226	8	667	85	3	M16	28	18	17.5	33	250	160	M16x40	2	210H7	335	45
15	230h6	229.5	248	8	756	100	3	M20	38	25	22	39	270	180	M20x55	4	230H7	380	60
16	240h6	239.5	258	8	756	100	3	M20	38	25	22	39	280	180	M20x55	4	240H7	380	60
17	250h6	249.5	270	8	826	110	4	M20	38	25	22	39	300	190	M20x55	4	250H7	415	60
18	275h6	274.5	295	9	826	120	4	M20	38	25	22	39	330	210	M20x55	4	275H7	415	60

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	45
14	210h6	209.5	226	8	667	85	3	M16	28	18	17.5	33	250	160	M16x40	2	210H7	335	45
15	230h6	229.5	248	8	756	100	3	M20	38	25	22	39	270	180	M20x55	4	230H7	380	60
16	240h6	239.5	258	8	756	100	3	M20	38	25	22	39	280	180	M20x55	4	240H7	380	60
17	250h6	249.5	270	8	826	110	4	M20	38	25	22	39	300	190	M20x55	4	250H7	415	60
18	275h6	274.5	295	9	826	120	4	M20	38	25	22	39	330	210	M20x55	4	275H7	415	60

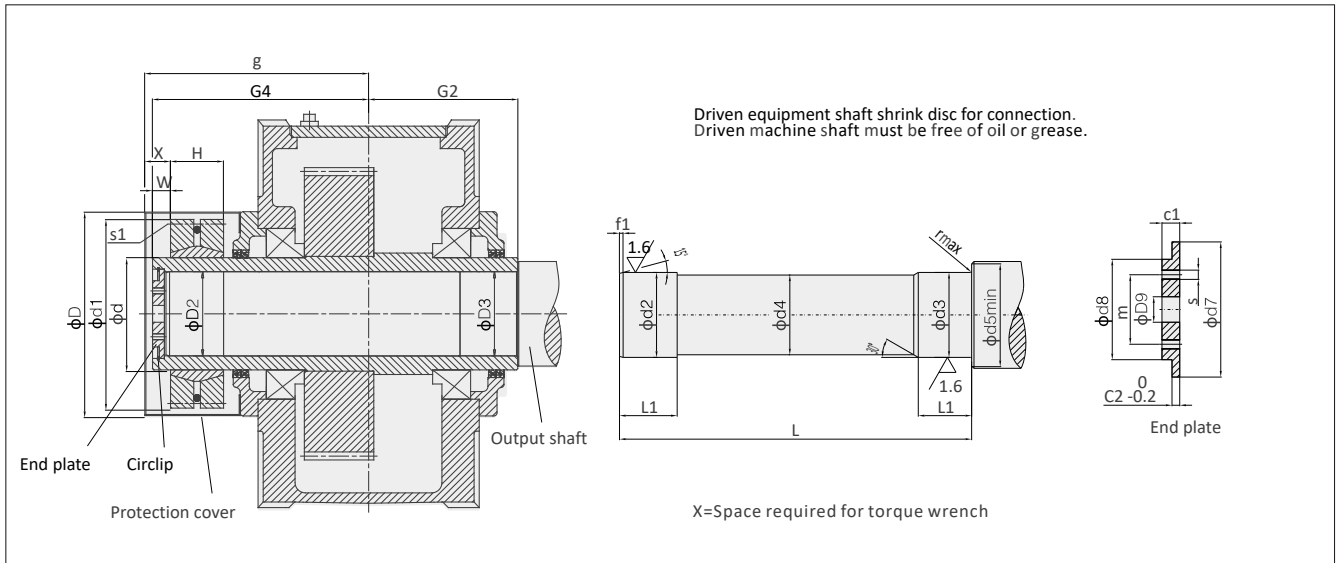
1. Material of driven equipment shaft: 40Cr or steel with higher strength.

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 Discs:



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

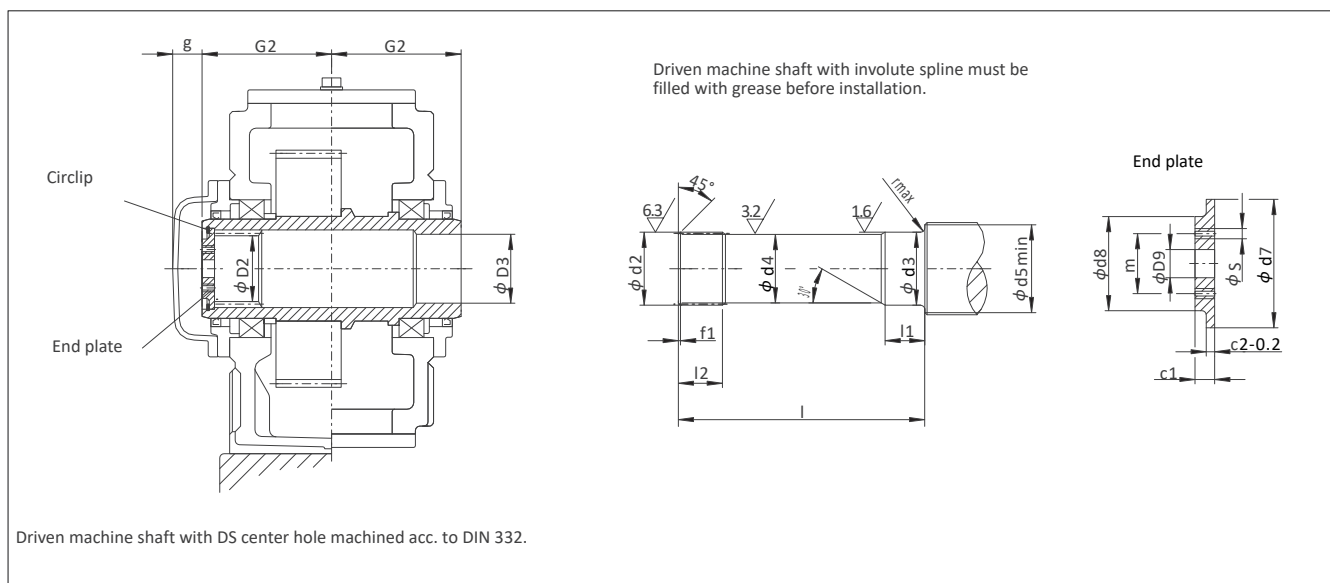
Size	Driven equipment shaft								End plate								Circlip	Hollow shaft				Shrink disc				Bolt	Protection cover		
	d2	d3	d4	d5	f1	L	L1	r	c1	c2	d7	d8	D9	m	s	Number		D2	D3	G2	G4	Type	d	d1	H		W	s1	D
13	190f6	190g6	189.5	213	7	789	137	5	23	10	200	150	33	110	M16	2	200	190H7	190	335	480	SP2-260	260	430	119	30	M20	500	505
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	525	505
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	575	575
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	595	575
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	615	625
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	635	625

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	500	505
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	525	505
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	575	575
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	595	575
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	615	630
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	635	625

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
		d2	d3	d4	d5	f1	L	L1	L2	r	c1	c2	d7	d8	D9	m	s	Number		D2	D3	G2	G	s1	
13	W190x5x30x36x8f	189h11	195g6	188	213	5	644	137	180	5	23	10	200d9	150	33	110	M16	2	200	180H11	195H7	335	45	M30	
14	W190x5x30x36x8f	189h11	215g6	188	233	5	644	147	180	5	23	10	200d9	150	33	110	M16	2	200	180H11	215H7	335	45	M20	
15-18	On request																								

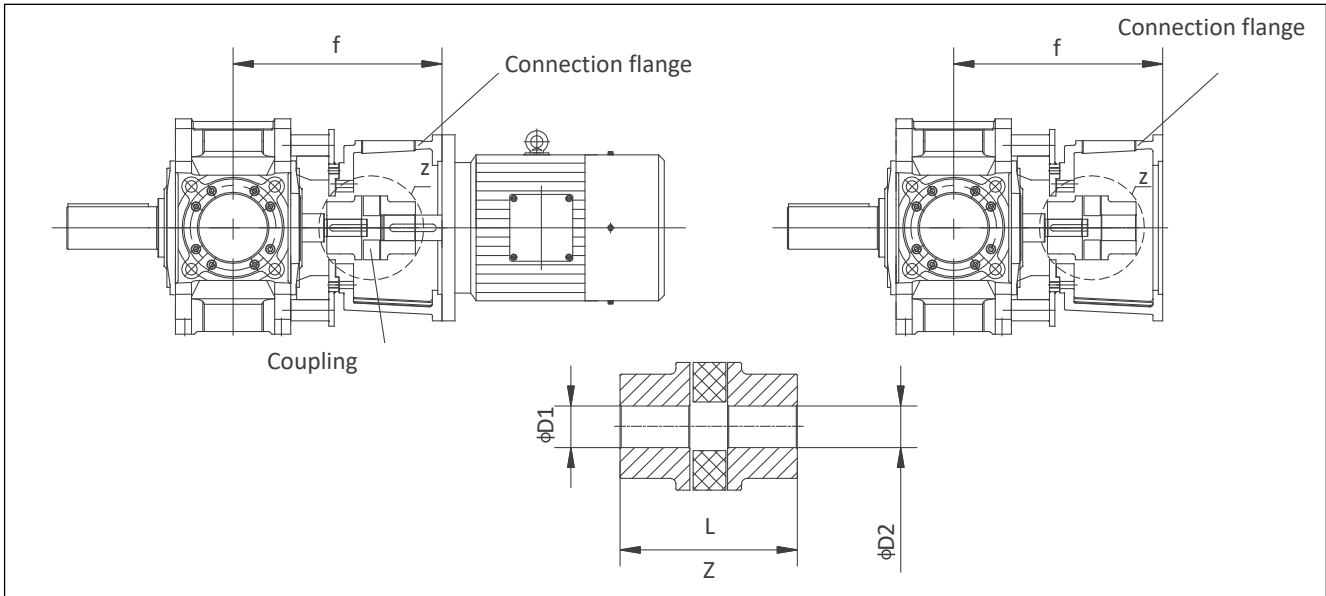
1. Material of driven equipment shaft: 40cr or steel with higher strength.
2. Driven equipment shaft is not in scope of supply, please order if required.
3. Shrink disc, protection cover, end plate and circlip are supplied with gearbox as standard.
4. Driven machine shaft with involute spline must be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



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

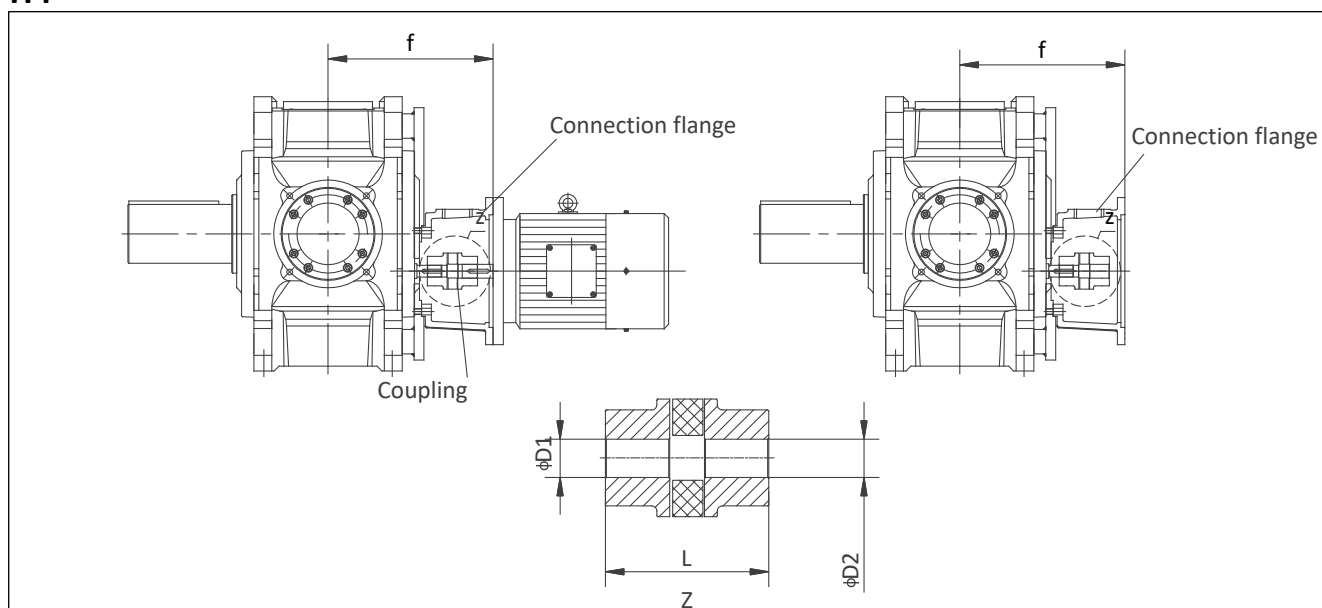
H3

HB



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	635	
	280						GA75	60	75	210	635	
	315	GA90	85	80	245	689	GA90	60	80	245	689	
	355	Gc110	85	95	185	689	Gc110	60	95	185	689	
15/16	250						GA75	75	65	210	730	
	280						GA75	75	75	210	730	
	315	Gc110	100	80	185	784	GA90	75	80	245	784	
	355	Gc110	100	95	185	784	Gc110	75	95	185	784	
17/18	315						GA90	75	80	245	794	
	355	Gc110	100	95	185	794	Gc110	75	95	185	794	

H4

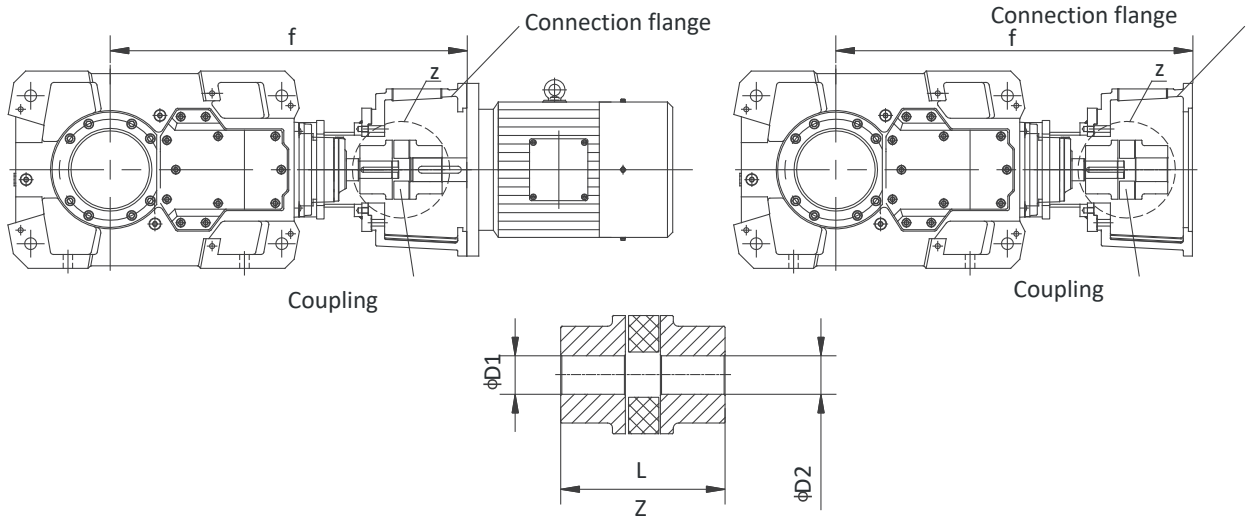


HB

H4			iN≤224 (Size : 13, 14, 15, 16, 18) iN≤200 (Size : 17)				iN≥250 (Size : 13, 14, 15, 16, 18) iN≥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	542	
	180						GA55	38	48	160	542	
	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	

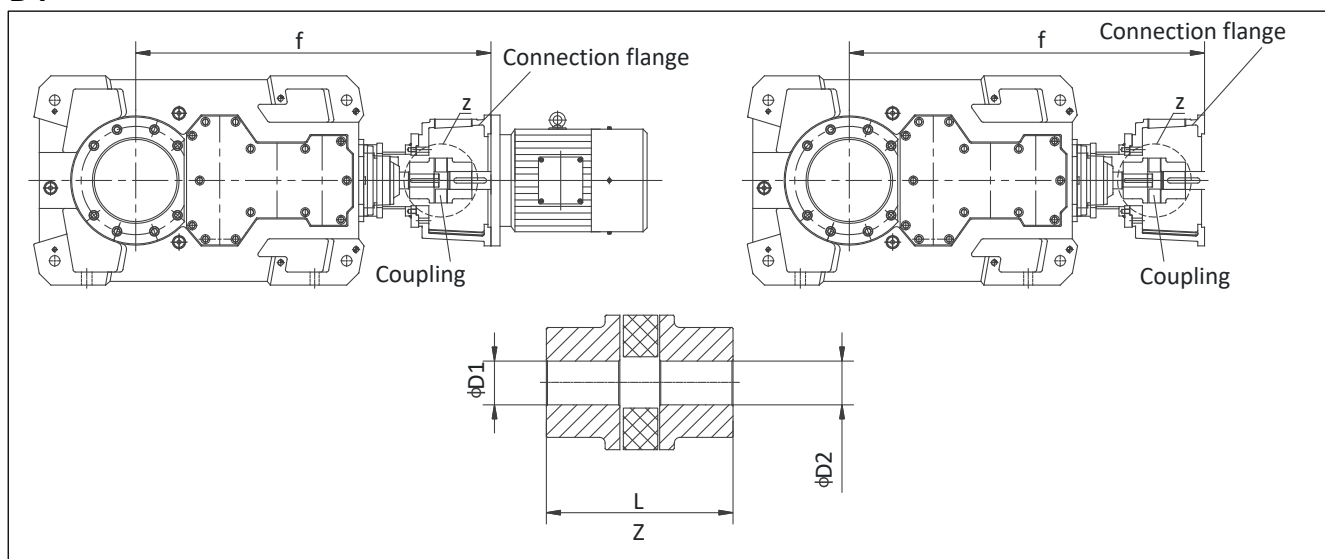


B3



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	Gc110	85	95	185	1474	Gc110	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	Gc110	85	95	185	1544	Gc110	70	95	185	1544	
15	315	Gc110	95	80	185	1731	GA90	75	80	245	1731	
	355	Gc110	95	95	185	1731	Gc110	75	95	185	1731	
16	315	Gc110	95	80	185	1777	GA90	75	80	245	1777	
	355	Gc110	95	95	185	1777	Gc110	75	95	185	1777	
17	315						GA90	90	80	245	1959	
	355	Gc110	115	95	185	1959	Gc110	90	95	185	1959	
18	315						GA90	90	80	245	2019	
	355	Gc110	115	95	185	2019	Gc110	90	95	185	2019	

B4



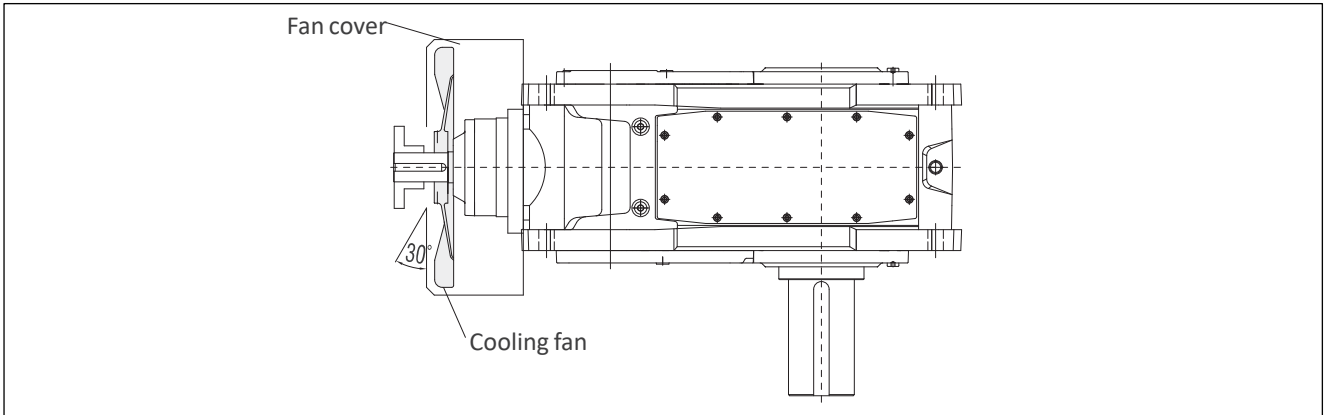
HB

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	1437	GA65	50	60	185	1437
	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		Gc110	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		Gc110	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		Gc110	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		Gc110	75	95	185	1874					



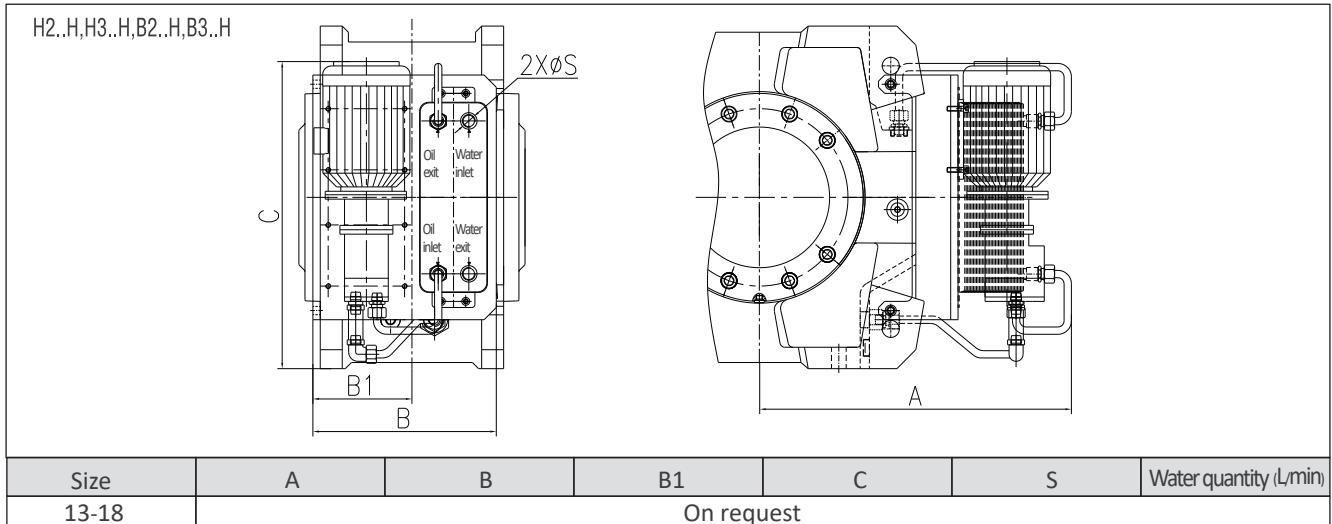
16 Accessory

16.1 Cooling fan (Accessory code:UF21)

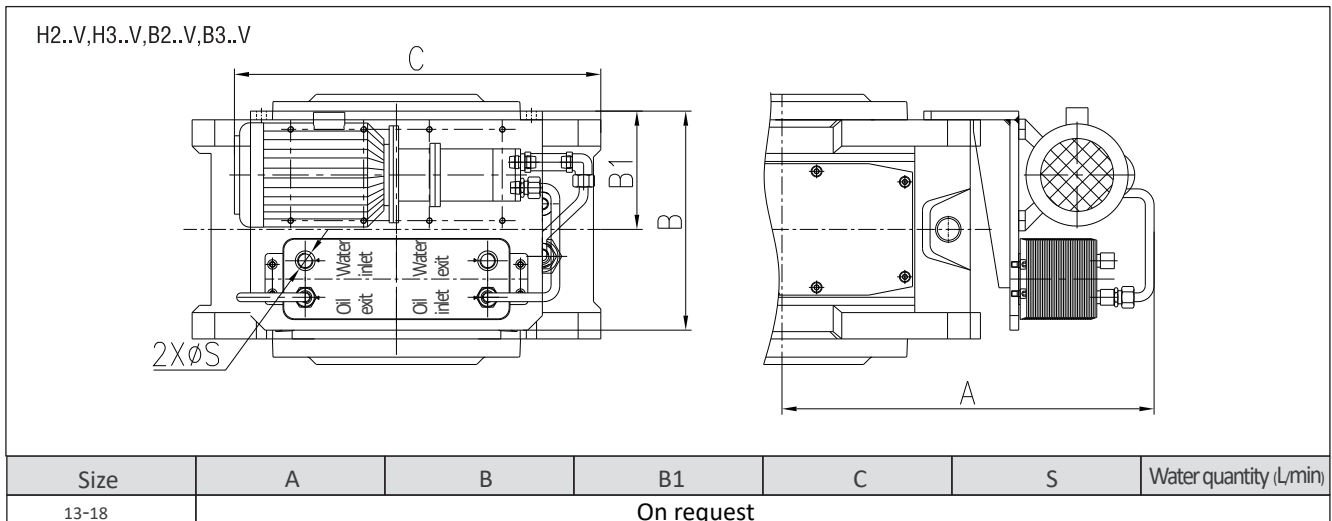


16.2 Water oil cooler (Accessory code:UC22)

1) Horizontal mounting:

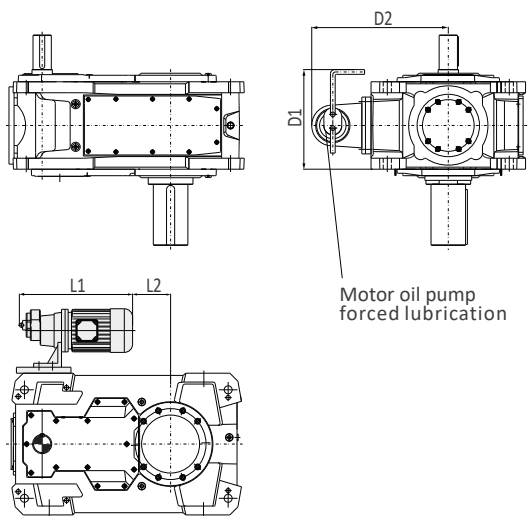


2) Vertical mounting:

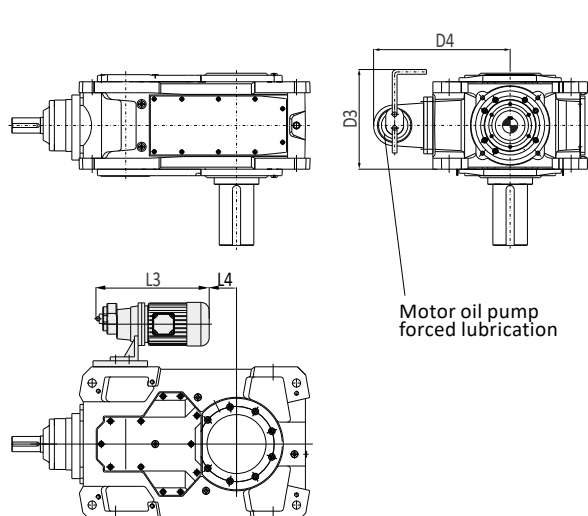


16.3 Motor oil pump forced lubrication(Accessory code:US32)

H3..V,H4..V



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



HB

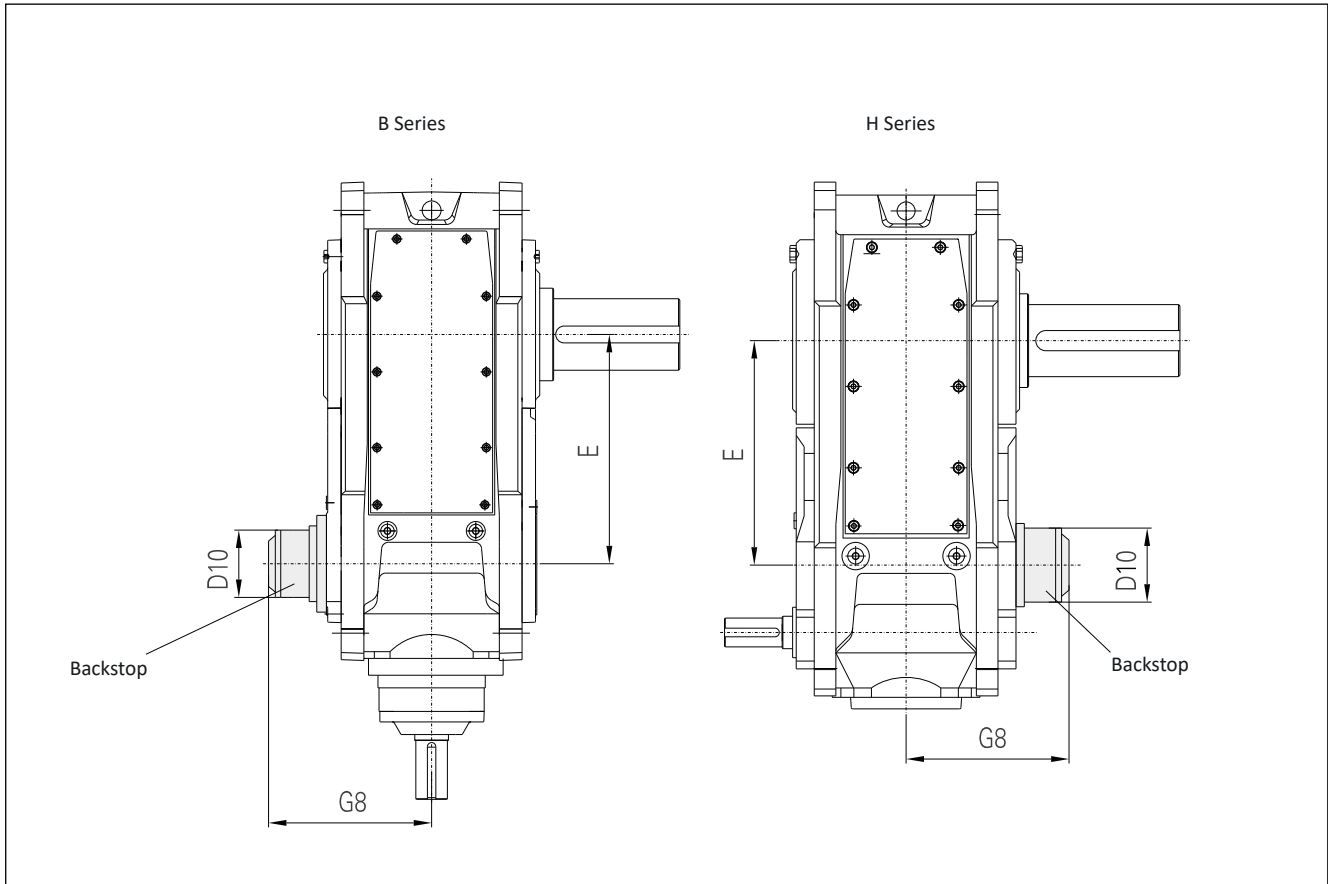
Mounting dimension						
Type	Size	Shaft assemblies	L2	L1	D2	D1
H3..V	13/14	A+C	155/225	880	670	700
	13/14	B+D	100/170	935	670	700
	15/16	A+C	275/320	965	710	770
	15/16	B+D	220/265	1020	710	770
	17/18	A+C	250/310	1040	770	835
	17/18	B+D	195/255	1095	770	835
H4..V	13/14	A+B+C+D	135/205	910	670	700
	15/16	A+B+C+D	255/300	1000	710	775
	17/18	A+B+C+D	230/290	1070	775	835

Mounting dimension						
Type	Size	Shaft assemblies	L2	L1	D2	D1
B2..V	13/14	A+B+C+D	-70/0	755	670	805
	15/16	A+B+C+D	15/60	780	710	910
	17/18	A+B+C+D	-5/55	890	775	1025
B3..V	13/14	A+B+C+D	35/105	810	670	700
	15/16	A+B+C+D	120/165	875	710	775
	17/18	A+B+C+D	165/225	970	775	835
B4..V	13/14	A+B+C+D	135/205	905	670	700
	15/16	A+B+C+D	255/300	990	710	775
	17/18	A+B+C+D	230/290	1065	775	835



16.4 Backstop (Accessory code UB11)

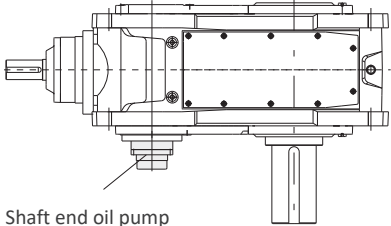
HB



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	820	290	426	890	310	472	987	310	472	1033	310	502	1035	310	502	1095

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

16.5 Shaft end oil pump (Accessory code:US31)

 <p>Shaft end oil pump Running speed should be provided for selection</p>	Input speed limit		
	Type	Size	US31
			n1>
	H2..V	13-18	900
	H3..V	13-18	1200
	H4..V	13-18	1200
	B2..V	13-18	1200
	B3..V	13-18	1200
B4..V	13-18	1200	

HB

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 °C	-20°C – +40°C	+30°C – +50°C
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°C,synthetic oil must be used.

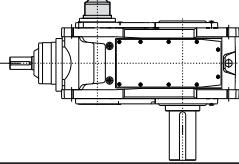
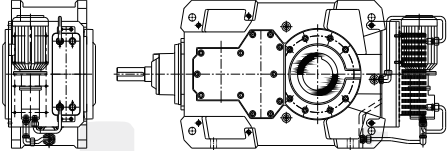
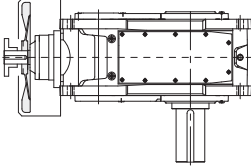
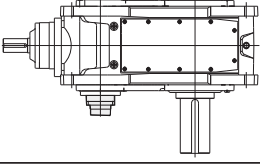
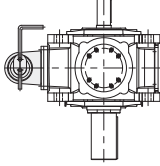
3.To ensure product lifespan, we suggest synthetic oil.

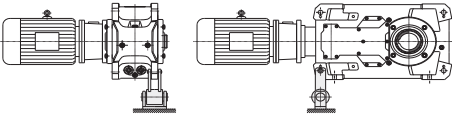
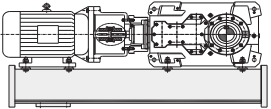
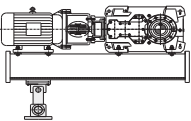
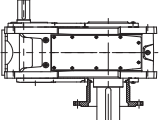
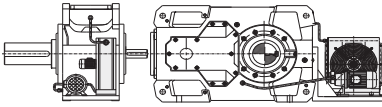
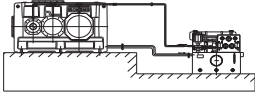
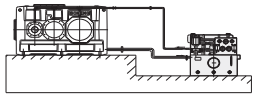
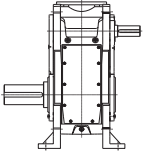

4.IF ambient temperature exceeds the above range, please consult.



HB

16.7 Accessories code table

Code	Accessories	Example
UB11	Backstop	
UC22	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	
	Gear box swing base	
	Swing base with torque arm	
	Mounting flange	
	External wind air-oil cooler	
	Pipeline(Customer build oil station)	
	Oil station	
	Upright mounting	
	Electric heater	
	Shaft sealing of other categories	



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.
- ◆ 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 dipstick.
- ◆ Lubrication oil viscosity should be selected according to working situation and application environment temperature of gearbox.
- ◆ You can only apply lubrication oil of internationally famous brand.

Product Function Mark



Oil glass



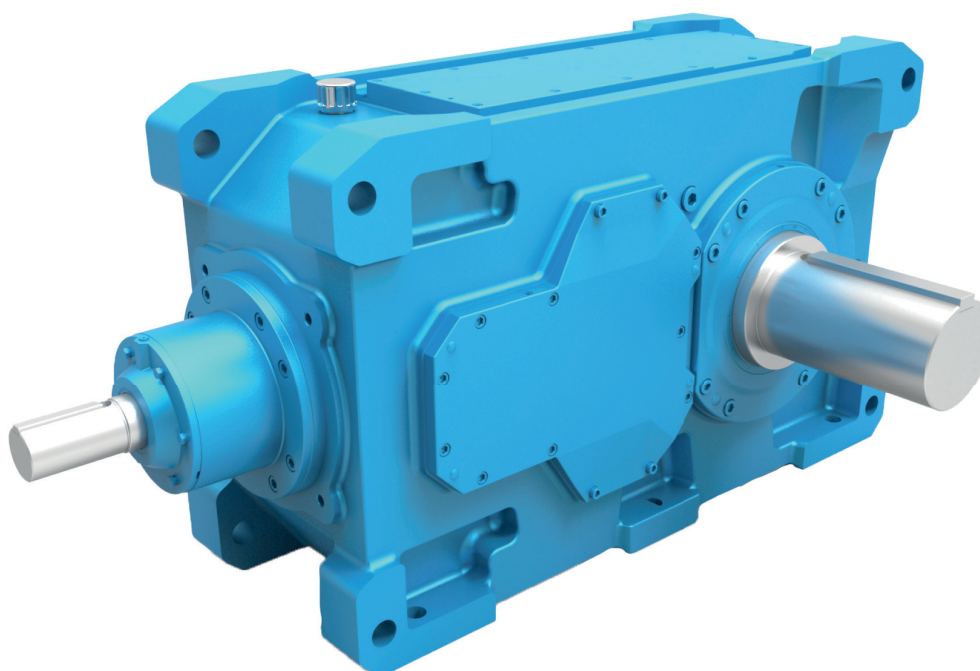
Oil filler



Breather



Oil drain





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