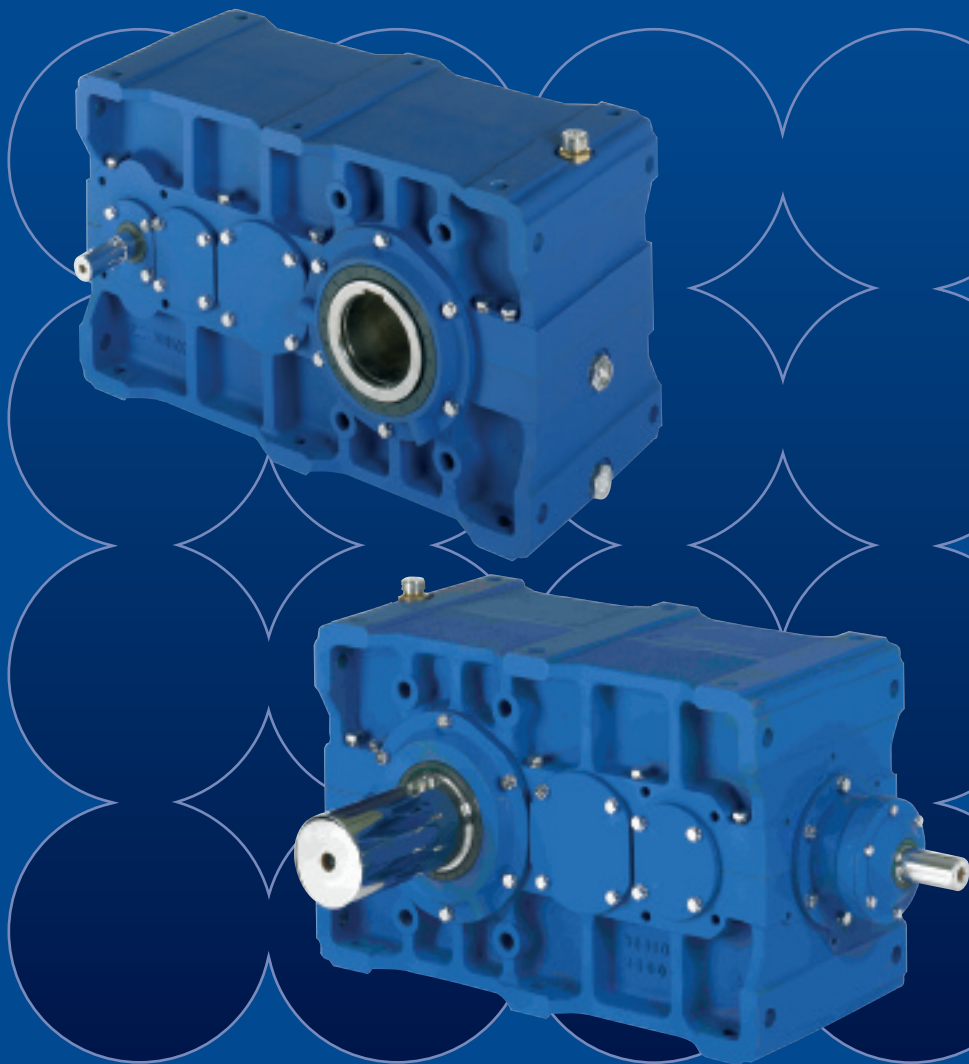


# *HC Series*

*Helical and  
Bevel-Helical Units*



**RENOLD**

*Superior Gear Technology*

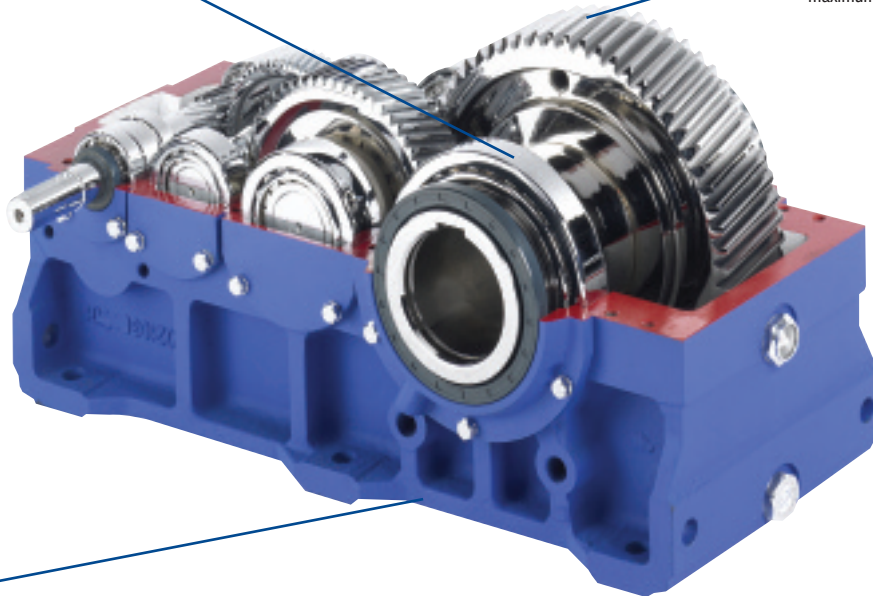
[www.renold.com](http://www.renold.com)

## HC Series - Helical

Heavy duty taper or self aligning bearings are used for maximum load capacity and long life.

Case hardened and profile ground helical gears with involute thread profile to give maximum power transmission, smooth operation and long life, with maximum efficiency.

All units are available with the option of output shaft, single or double extension, or hollow output for direct shaft mounting, suitable for all design options.



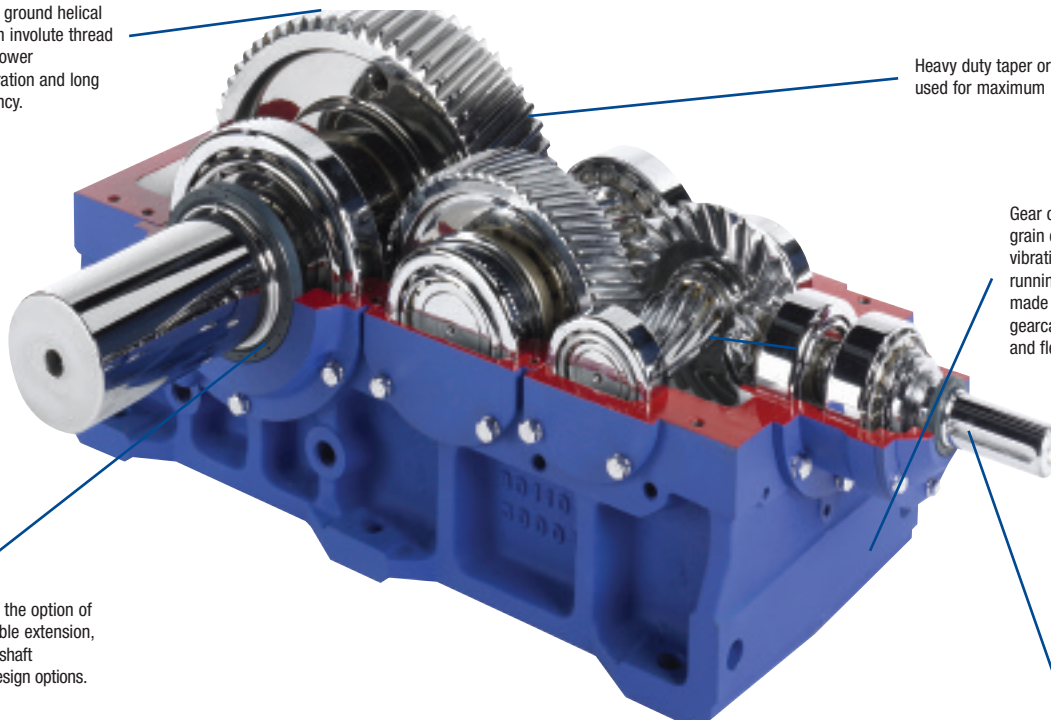
Gear cases manufactured in close grain cast iron for absorption of vibration and quietness of running, larger units and custom made units are housed in steel gearcases for maximum strength and flexibility of design.

Fan and water cooling are available as design and selection options to allow greater torques to be transmitted at higher input speeds.

## HC Series - Bevel Helical

Case hardened and profile ground helical gears and bevel gears with involute thread profile to give maximum power transmission, smooth operation and long life, with maximum efficiency.

Heavy duty taper or self aligning bearings are used for maximum load capacity and long life.



All units are available with the option of output shaft, single or double extension, or hollow output for direct shaft mounting, suitable for all design options.

Gear cases manufactured in close grain cast iron for absorption of vibration and quietness of running, larger units and custom made units are housed in steel gearcases for maximum strength and flexibility of design.

Fan and water cooling are available as design and selection options to allow greater torques to be transmitted at higher output speeds.

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*This catalogue cancels and replaces any previous edition and revision. All listed data are approximate and it's understood that this entails no obligation on our part. We reserve the right to implement modifications without notice.*

## ATEX Approval Details

### ATEX Approval

**RENOLD** Gears products for operating in potentially explosive atmospheres.

### General

- **RENOLD** Gears units are classified as ATEX Group II Category 2 equipment, which embodies sufficient safeguards to be suitable for use in potentially explosive atmospheres for normal operation and for operation during an expected malfunction.
- It is essential that there is sufficient lubricant to prevent the gears and bearings running 'dry'. Gear units should be inspected daily for signs of oil leakage, overheating or noisy operation.
- Gear units should be cleaned at regular intervals depending on the operating conditions, to ensure that dust coatings never exceed 5mm. Plastic parts should be wiped clean with a damp cloth.
- Oil leaks should be dealt with as quickly as practical. Compound joint faces and shims should be cleaned and thread-locking sealant should be applied to bolts and plugs prior to re-assembly.

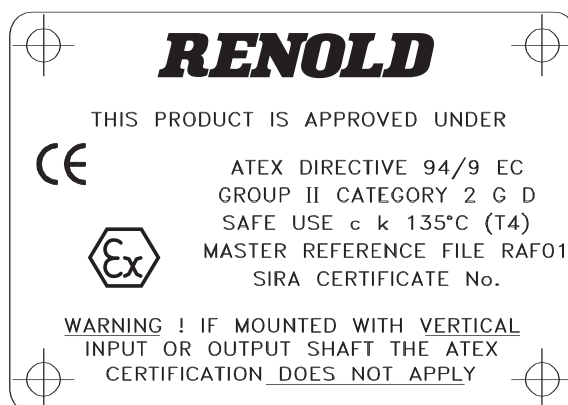
- The temperature of any external surfaces must not exceed the permitted maximum of 135°C (T4).
- Higher temperature class T3 is available dependant on unit mounting, ratio and gear type. For further details consult Renold.
- As a general rule, gear units should be mounted with their feet horizontal. For other mountings, particularly with shaft mounted units, consult **RENOLD** Gears.

**WARNING: IF MOUNTING WITH VERTICAL INPUT OR OUTPUT SHAFTS, THE ATEX CERTIFICATION DOES NOT APPLY.**

### Unit Selection

- The gear unit selection procedures must include an additional reliability factor of 1.25 for mechanical ratings and 1.25 for thermal ratings.

### ATEX Nameplate



## **HC Series – General Specification.**

The Renold HC Series are available in Helical and Bevel helical variations.

To offer the maximum flexibility and width of choice the range has been developed and is offered in two product ranges. Utilising different gearing dimensions and external mounting dimensions, total flexibility with design is achieved.

An additional technical catalogue called **HC Series Universal** is available which details alternative dimensions and ratings.

### **Gearcases**

The gear cases are of rigid close grained grey case iron construction, fabricated steel cases are available on larger sizes and where a custom made design is required.

### **Shafts**

Standard shaft extensions are to metric dimensions,AGMA dimensions to comply with the requirements of North America, and customer designs are available on request.

### **Gears**

All gears are manufactured from High quality case hardening materials to provide long life, wear resistance and fatigue strength. Helical and spiral bevel gears are ground to give a quiet smooth transmission; gears are designed to ISO 6336 , Din 3990 and AGMA 2001 standards.

### **Bearings**

Standard metric taper or spherical roller bearings are fitted throughout the HC series, sized generously to deliver long service life.

### **Lubrication**

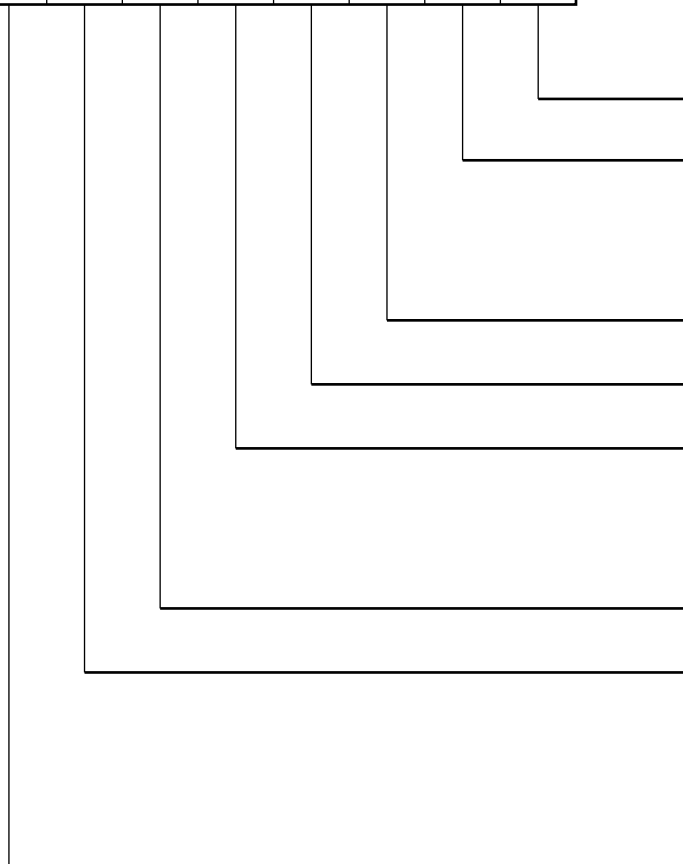
Gears and bearings are positively lubricated by oil from the sump when mounted in the horizontal position at normal motor speeds. For lower speeds and alternative mounting it may be necessary to provide grease or pump lubrication to the gears or bearings.

### **Cooling**

The units in the HC series have high thermal capacities, where extra cooling is required additional fans or water cooling systems can be provided.

## DESIGNATION

P	B	30	UB	16	B	S	2
---	---	----	----	----	---	---	---



**Mounting position**

**High speed shaft**

- S** solid
- PAM** hollow+motor flange
- B** solid+motor flange

**Shaft arrangement**

**Transmission ratio  $i_N$**

**Output shaft**

- S** solid
- C** hollow
- UB** hollow with shrink disc

**Size**

**No. of stages**

- A** single reduction
- B** double reduction
- C** triple reduction
- D** quadruple reduction

**Type**

- P** helical unit
- RH** horizontal bevel-helical unit
- RV** vertical bevel-helical unit

## KEY TO SYMBOLS

$f_m$	mechanical service factor	
$i$	transmission ratio	
$i_N$	nominal transmission ratio	
$\eta$	efficiency	
$f_a$	ambient correction factor	
$n_1$	high speed	min <sup>-1</sup> or rpm
$n_2$	low speed	min <sup>-1</sup> or rpm
$P_t$	thermal capacity	kW
$P_{IN}$	nominal thermal capacity	kW
$P_N$	nominal power	kW
$P$	absorbed motor power	kW
$t$	temperature	°C celsius
$T$	torque	Nm
$T_N$	nominal torque	Nm
$Fr_1$	high speed shaft overhung load	N
$Fr_2$	low speed shaft overhung load	N
$J_1$	high speed shaft mass moment of inertia	Kgm <sup>2</sup>

## EFFICIENCY ( $\eta$ )

- 99% Single reduction helical unit
- 98% Double reduction helical unit
- 98% Triple reduction helical unit
- 96% Quadruple reduction helical unit

- 97.5% Double reduction bevel-helical unit
- 96.5% Triple reduction bevel-helical unit
- 95.5% Quadruple reduction bevel-helical unit

## MECHANICAL SERVICE FACTOR $f_m$

For stop-starts per hour exceeding 5, please refer to us.

Prime Mover	Duration of service (hrs/day)	Load classification		
		Uniform load	Moderate shock	Heavy shock
El. motor, steam turbine, hydraulic motor.	< 3	0.8	1.0	1.5
	3 - 10	1.0	1.25	1.75
	>10	1.25	1.5	2.0
Multi-cylinder internal combustion engine.	< 3	1.0	1.25	1.75
	3 - 10	1.25	1.5	2.0
	>10	1.5	1.75	2.25
Single-cylinder internal combustion engine.	< 3	1.25	1.5	2.0
	3 - 10	1.5	1.75	2.25
	>10	1.75	2.0	2.5
	>10	1.75	2.0	2.5

## LOAD CLASSIFICATION

- U** Uniform load
- M** Moderate shock
- H** Heavy shock
- \* refer to us

Driven machine	Type of load
<b>Agitators</b>	
pure liquids	U
liquids and solids	M
liquids-variable density	M
<b>Blowers</b>	
centrifugal	U
lobe	M
vane	U
<b>Car pullers</b>	M
<b>Clarifiers</b>	U
<b>Clay working machinery</b>	
brick press	H
briquette machine	H
clay working machinery	M
<b>Compressors</b>	
centrifugal	U
lobe	M
reciprocating	
multi-cylinder	M
single-cylinder	H
<b>Conveyors-uniformly fed</b>	
apron	U
assembly	U
belt	U
bucket	U
chain	U
screw	U
<b>Conveyors-heavy duty</b>	
apron	M
assembly	M
belt	M
bucket	M
chain	M
reciprocating	H
screw	M
shaker	H

Driven machine	Type of load
<b>Cranes</b>	
main hoist	*
bridge travel	*
trolley travel	*
<b>Crushers</b>	
ore	H
stone	H
sugar	H
<b>Dredges</b>	
conveyors	M
cutter head drives	H
pumps	M
screen drive	H
stackers	M
<b>Elevators</b>	
bucket-uniform load	U
bucket-heavy load	M
centrifugal discharge	U
gravity discharge	U
<b>Fans</b>	
centrifugal	U
cooling towers	
induced draft	M
forced draft	*
large, mining	M
large, industrial	M
light, small diameter	U
<b>Feeders</b>	
apron	M
belt	M
disc	U
reciprocating	H
screw	M

Driven machine	Type of load
<b>Food industry</b>	
slicers	M
cereal cooker	U
dough mixer	M
meat grinders	M
<b>Generators</b>	U
<b>Hoists</b>	
heavy duty	H
medium duty	M
<b>Laundry tumblers</b>	M
<b>Lumber industry</b>	
de-barkers	M
burner conveyer	M
chain saw, drag saw	H
chain transfer	H
craneway transfer	H
conveyor	M
slab conveyor	H
conveyor-belt	U
conveyor-chain	M
tipple hoist conveyor	M
tipple hoist drive	M
waste conveyor	
<b>Machine tools</b>	
bending roll	M
punch press-gear driven	H
plate planers	H
tapping machine	H
other machine tools	
main drives	M
auxiliary drives	U
<b>Metal mills</b>	
slitters	M
table conveyors	
non-reversing	M
reversing	*
wire winding machine	M
<b>Mixers</b>	
concrete mixer	M
constant density	U
variable density	M
<b>Oil well pumping</b>	*
<b>Paper mills</b>	
agitators	M
de-barkers-hydraulic	M
de-barkers-mechanical	H
barking drum	H
bleacher	U
calenders	M
conveyors	U
cutters-plates	M

Driven machine	Type of load
cylinders	M
dryers	M
felt stretcher	M
felt wipper	H
jordans	M
<b>Printing press</b>	U
<b>Pumps</b>	
centrifugal	U
proportioning	M
reciprocating	
single acting >2 cylinders	M
single acting <3 cylinders	*
double acting >1 cylinder	M
double acting 1 cylinder	*
rotary,gear, lobe type	U
<b>Rubber and plastics</b>	
crackers	H
refiners	M
rubber calenders	M
films extruders	U
sheets extruders	U
extruders	U
<b>Sand muller</b>	M
<b>Sewage disposal equip.</b>	
bar screeners	U
chemical feeders	U
dewatering screws	M
scum breakers	M
mixers	M
thickeners	M
vacuum filter	M
<b>Screens</b>	
air washing	M
rotary-stone or gravel	U
travelling water intake	M
<b>Sugar industry</b>	
cane and beet knives	M
crushers	M
pulp conveyors	M
<b>Textile industry</b>	
calenders	M
cards	M
dryers	M
dyeing machinery	M
knitting machines	*
looms	M
mangles	M
soapers	M
spinners	M
washers	M



## THERMAL CAPACITY

### Nominal thermal capacities $P_{tN}$

The tables below show the values of the thermal capacities under different cooling conditions, viz : natural cooling, fan cooling and coil cooling. Values apply to an ambient temperature of 20°C. For different ambient temperatures, the nominal thermal capacity  $P_{tN}$  can be obtained by multiplying the thermal capacity  $P_t$  for the selected type of cooling, by the ambient thermal factor  $f_a$ . Whenever a high heat dissipation level is required together with high operational reliability, it is recommended to consider the application of a water-oil or air-oil heat exchanger.

$$P_{tN} = P_t \times f_a$$

### $f_a$ ambient correction factor

Ambient temperature	w/o auxiliary cooling	Auxiliary cooling
10 °C	1,14	1,04
20 °C	1	1
30 °C	0,86	0,94
40 °C	0,72	0,89
50 °C	0,56	0,83

## Thermal capacity (kW)

### A - No auxiliary cooling

	$n_1$	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
PA	1750	60	77	100	122	155	190	226	289	359	437	547						
	1500	55	72	93	115	148	180	212	271	338	408	505						
	1000	52	68	88	109	140	170	200	256	320	386	477						
	750	51	67	86	107	137	167	195	251	313	377	467						
PB	1750	33	44	57	72	94	116	136	175	223	275	345	429	549	683	835	1045	
	1500	30	40	52	66	86	106	125	163	206	252	316	395	502	630	768	960	
	1000	28	38	49	63	82	100	119	156	197	240	301	378	481	603	732	914	
	750	27	36	47	59	77	95	112	147	185	227	284	356	452	567	691	864	
PC	1750	25	34	44	56	72	89	107	138	177	217	275	349	441	538	678	848	
	1500	23	31	40	51	66	82	98	127	162	199	252	320	405	494	622	778	
	1000	21	29	37	47	61	76	91	118	151	185	234	298	377	459	578	724	
	750	21	28	36	46	59	74	88	114	146	179	227	288	365	445	560	700	
PD	1750	20	26	35	44	57	71	85	111	142	175	223	279	354	457	558	698	
	1500	18	24	32	40	52	65	78	102	130	161	205	256	325	419	512	640	
	1000	17	22	29	37	48	60	72	94	120	148	189	236	299	385	471	589	
	750	16	22	29	36	47	59	70	92	117	145	185	230	293	377	461	576	

	$n_1$	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
RB	1750	33	44	57	72	94	116	136	175	223	275	345	429	549	683	835	1045
	1500	30	40	52	66	86	106	125	163	206	252	316	395	502	630	768	960
	1000	28	38	49	63	82	100	119	156	197	240	301	378	481	603	732	914
	750	27	36	47	59	77	95	112	147	185	227	284	356	452	567	691	864
RC	1750	25	34	44	56	72	89	107	138	177	217	275	349	441	538	678	848
	1500	23	31	40	51	66	82	98	127	162	199	252	320	405	494	622	778
	1000	21	29	37	47	61	76	91	118	151	185	234	298	377	459	578	724
	750	21	28	36	46	59	74	88	114	146	179	227	288	365	445	560	700
RD	1750	20	26	35	44	57	71	85	111	142	175	223	279	354	457	558	698
	1500	18	24	32	40	52	65	78	102	130	161	205	256	325	419	512	640
	1000	17	22	29	37	48	60	72	94	120	148	189	236	299	385	471	589
	750	16	22	29	36	47	59	70	92	117	145	185	230	293	377	461	576

## Thermal capacity (kW)

### B - Fan cooling

	n <sub>1</sub>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
PA	1750	87	112	145	177	225	276	328	419	521	634	793						
	1500	80	104	135	167	215	261	307	393	490	592	732						
	1000	75	99	128	158	203	247	290	371	464	560	692						
	750	74	97	125	155	199	242	283	364	454	547	677						
PB	1750	48	64	83	104	136	168	197	254	323	399	500	622	796	990	1211	1515	
	1500	44	58	75	96	125	154	181	236	299	365	458	573	728	914	1114	1392	
	1000	41	55	71	91	119	145	173	226	286	348	436	548	697	874	1061	1325	
	750	39	52	68	86	112	138	162	213	268	329	412	516	655	822	1002	1253	
PC	1750	36	49	63	81	104	130	155	201	256	315	398	506	640	781	983	1230	
	1500	33	45	58	74	96	119	142	184	235	289	365	464	587	716	902	1128	
	1000	31	42	54	69	89	111	132	171	218	268	340	432	546	666	839	1049	
	750	30	40	52	67	86	107	128	166	211	260	329	418	529	645	812	1015	

With 2 fans, multiply by 1.2

	n <sub>1</sub>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
RB	1750	50	66	86	108	141	174	204	263	335	413	518	644	824	1025	1253	1568
	1500	45	60	78	99	129	159	188	245	309	378	474	593	753	945	1152	1440
	1000	42	57	74	95	123	150	179	234	296	360	452	567	722	905	1098	1371
	750	41	54	71	89	116	143	168	221	278	341	426	534	678	851	1037	1296
RC	1750	38	51	65	83	108	134	160	208	265	325	412	523	662	808	1017	1272
	1500	35	47	60	77	99	123	147	191	243	299	378	480	608	741	933	1167
	1000	32	43	56	71	92	114	137	177	226	278	352	446	565	689	868	1085
	750	31	42	54	69	89	111	132	171	219	269	340	432	547	667	840	1050
RD	1750	29	39	52	65	85	106	128	167	213	263	335	419	531	685	837	1046
	1500	27	36	48	60	78	98	117	153	195	242	308	384	488	629	768	960
	1000	25	33	44	55	72	90	108	141	179	222	283	353	449	578	707	883
	750	24	32	43	54	70	88	105	138	176	217	277	346	439	566	691	864

### C - Cooling coil

	n <sub>1</sub>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
PA	1750	87	112	145	177	225	276	328	419	521	634	793					
	1500	80	104	135	167	215	261	307	393	490	592	732					
	1000	75	99	128	158	203	247	290	371	464	560	692					
	750	74	97	125	155	199	242	283	364	454	547	677					
PB	1750	48	64	83	104	136	168	197	254	323	399	500	622	796	990	1211	1515
	1500	44	58	75	96	125	154	181	236	299	365	458	573	728	914	1114	1392
	1000	41	55	71	91	119	145	173	226	286	348	436	548	697	874	1061	1325
	750	39	52	68	86	112	138	162	213	268	329	412	516	655	822	1002	1253
PC	1750	36	49	63	81	104	130	155	201	256	315	398	506	640	781	983	1230
	1500	33	45	58	74	96	119	142	184	235	289	365	464	587	716	902	1128
	1000	31	42	54	69	89	111	132	171	218	268	340	432	546	666	839	1049
	750	30	40	52	67	86	107	128	166	211	260	329	418	529	645	812	1015

	n <sub>1</sub>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
RB	1750	48	64	83	104	136	168	197	254	323	399	500	622	796	990	1211	1515
	1500	44	58	75	96	125	154	181	236	299	365	458	573	728	914	1114	1392
	1000	41	55	71	91	119	145	173	226	286	348	436	548	697	874	1061	1325
	750	39	52	68	86	112	138	162	213	268	329	412	516	655	822	1002	1253
RC	1750	36	49	63	81	104	130	155	201	256	315	398	506	640	781	983	1230
	1500	33	45	58	74	96	119	142	184	235	289	365	464	587	716	902	1128
	1000	31	42	54	69	89	111	132	171	218	268	340	432	546	666	839	1049
	750	30	40	52	67	86	107	128	166	211	260	329	418	529	645	812	1015
RD	1750	28	38	51	63	82	103	123	161	205	254	324	405	514	662	809	1012
	1500	26	35	46	58	75	94	113	148	189	233	297	371	471	608	742	928
	1000	24	32	43	53	69	87	104	136	173	215	273	342	434	559	683	854
	750	23	31	42	52	68	85	102	133	170	210	268	334	424	547	668	835

## P Series - Helical units - Nominal power rating (kW)

PA	i <sub>n</sub>	n <sub>1</sub> n <sub>2</sub> min <sup>-1</sup>	Size																
			10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
1.12	1500	1339	301	416	587	824	1212	1661	2424	3385	4709	6679	9723						
	1000	893	220	296	410	578	856	1173	1702	2381	3316	4695	6847						
	750	670	165	229	321	447	656	901	1312	1836	2550	3619	5273						
1.25	1500	1200	295	398	563	788	1181	1610	2321	3257	4529	6418	9394						
	1000	800	214	299	417	584	865	1183	1710	2394	3336	4720	6912						
	750	600	167	224	319	450	662	906	1314	1834	2558	3622	5307						
1.4	1500	1071	286	389	548	772	1142	1573	2255	3148	4395	6229	9174						
	1000	714	198	275	388	537	800	1094	1580	2206	3072	4354	6411						
	750	536	155	212	302	419	629	861	1236	1729	2410	3416	5024						
1.6	1500	938	265	357	509	708	999	1453	2071	2897	4049	5735	8031						
	1000	625	190	258	366	519	732	1057	1510	2108	2945	4175	5848						
	750	469	148	204	284	399	564	818	1163	1627	2274	3221	4510						
1.8	1500	833	236	326	461	647	927	1337	1893	2654	3706	5258	7392						
	1000	556	181	248	349	485	689	1001	1413	1981	2766	3919	5517						
	750	417	136	186	266	372	526	765	1083	1513	2119	3001	4217						
2	1500	750	224	305	432	597	856	1250	1755	2452	3431	4860	6867						
	1000	500	166	224	319	445	639	926	1304	1822	2549	3611	5102						
	750	375	124	172	243	342	487	711	994	1390	1947	2760	3901						
2.25	1500	667	205	282	394	553	793	1161	1608	2250	3153	4467	6344						
	1000	444	150	207	290	410	584	856	1190	1664	2332	3305	4693						
	750	333	116	159	221	311	449	653	910	1273	1780	2524	3582						
2.5	1500	600	198	271	382	537	771	1058	1571	2178	3049	4324	6158						
	1000	400	141	189	272	380	544	748	1100	1540	2162	3060	4358						
	750	300	112	152	214	301	431	593	874	1224	1715	2427	3458						
2.8	1500	536	172	236	333	468	675	928	1368	1896	2656	3767	5398						
	1000	357	130	176	248	350	508	697	1015	1425	1996	2827	4053						
	750	268	101	138	195	271	392	540	790	1103	1548	2194	3143						
3.15	1500	476	149	203	309	435	587	866	1169	1635	2471	3504	4691						
	1000	317	112	152	231	325	441	651	875	1229	1857	2630	3522						
	750	238	87	119	181	254	343	507	684	959	1450	2054	2748						
3.55	1500	423	137	188	265	373	545	749	1081	1511	2119	3005	4355						
	1000	282	104	140	198	279	409	563	809	1136	1593	2256	3270						
	750	211	80	110	155	218	319	438	632	886	1244	1761	2552						
4	1500	375	128	174	265	373	508	698	998	1397	2135	3026	4060						
	1000	250	88	119	185	258	349	481	686	960	1470	2084	2796						
	750	188	68	93	145	201	274	378	538	753	1152	1633	2191						
4.5	1500	333	117	159	226	316	471	648	918	1286	1806	2559	3764						
	1000	222	80	108	155	218	323	446	631	883	1241	1757	2587						
	750	167	62	87	122	170	253	349	494	692	972	1377	2027						
5	1500	300	96	131	186	262	394	540	760	1064	1498	2119	3139						
	1000	200	66	90	126	179	267	367	517	724	1017	1442	2134						
	750	150	50	69	98	136	203	282	396	553	777	1102	1632						
5.6	1500	268	78	107	151	210	288	441	613	858	1209	1712	2303						
	1000	179	54	73	104	144	197	302	422	590	828	1174	1580						
	750	134	40	56	80	111	152	231	322	452	634	900	1211						
PB 6.3	1500	238	83	108	165	221	320	454	644	880	1324	1796	2547	3100	4342	6003	8893	11914	
	1000	159	57	76	113	153	220	331	443	605	911	1236	1754	2134	2988	4132	6120	8199	
	750	119	43	57	86	116	166	237	336	459	691	936	1328	1617	2264	3130	4638	6214	
7.1	1500	211	73	102	146	196	281	401	569	828	1177	1587	2243	2757	3858	5665	7964	10598	
	1000	141	50	71	101	135	194	277	392	570	810	1092	1545	1896	2655	3898	5481	7295	
	750	106	38	53	77	102	146	210	297	432	614	827	1170	1437	2012	2955	4153	5527	
8	1500	188	64	90	130	184	264	353	501	731	1043	1489	2102	2440	3418	5032	7094	9967	
	1000	125	44	63	89	127	181	243	345	419	718	1025	1448	1680	2352	3463	4882	6858	
	750	94	33	48	69	97	138	187	265	386	550	785	1108	1286	1800	2651	3738	5251	
9	1500	167	56	81	116	165	235	315	446	652	936	1328	1871	2187	3062	4525	6412	8957	
	1000	111	39	55	79	111	156	213	302	442	634	900	1267	1482	2074	3065	4343	6065	
	750	83	30	42	61	86	123	165	233	342	490	696	980	1146	1604	2370	3359	4691	
10	1500	150	53	71	102	144	219	294	433	570	822	1160	1627	2049	2869	3982	5660	7875	
	1000	100	36	48	69	97	148	199	282	386	557	786	1102	1388	1944	2696	3833	5334	
	750	75	28	37	54	75	115	154	218	299	430	607	852	1074	1503	2086	2965	4125	
11.2	1500	134	46	66	89	134	190	255	361	532	717	1081	1512	1791	2506	3726	4976	7367	
	1000	89	31	45	60	90	128	173	244	360	486	733	1024	1212	1697	2524	3370	4989	
	750	67	24	35	47	70	99	134	189	279	376	566	792	938	1312	1952	2606	3859	
12.5	1500	120	44	58	84	117	165	240	340	467	679	949	1318	1694	2371	3295	4730	6505	
	1000	80	29	40	58	80	112	164	232	318	462	646	897	1153	1613	2243	3219	4427	
	750	60	23	30	45	62	86	126	179	246	357	499	693	891	1247	1733	2488	3422	
14	1500	107	37	54	73	108	152	205	291	432	584	878	1216	1458	2041	3062	4102	6052	
	1000	71	25	37	50	74	103	140	198	295	398	598	827	993	1389	2084	2792	4119	
	750	54	19	28	39	57	80	108	153	228	307	462	639	767	1074	1611	2158	3183	
16	1500	94	34	46	67	92	128	189	267	367	540	745	1023	1346	1885	2622	3798	5190	
	1000	63	24	31	47	64	89	131	186	255	375	517	710	935	1308	1821	2638	3590	</

## P Series - Helical units - Nominal power rating (kW)

	i <sub>n</sub>	n <sub>1</sub>	n <sub>2</sub>	Size															
				10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>PC</b>	22.5	1500	67	25	35		68	100										3130	
		1000	44	17	24		46	68										2125	
		750	33	13	18		35	52										1617	
	25	1500	60	22	31	47	65	90	129	176	254	369	520		1044	1410	2015	2955	4097
		1000	40	15	21	31	43	61	88	120	172	251	353		709	958	1369	2008	2784
		750	30	11	16	24	33	47	67	91	131	191	269		540	729	1042	1528	2118
	28	1500	54	21	27	41	57	80	115	167	226	329	464	640	935	1331	1793	2639	3655
		1000	36	14	19	28	39	54	78	113	153	224	315	435	635	904	1218	1793	2483
		750	27	11	14	21	30	41	60	86	117	170	240	331	483	688	927	1364	1889
	31.5	1500	48	19	26	37	51	76	104	148	200	294	413	569	836	1184	1591	2347	3254
		1000	32	13	17	25	35	51	70	101	136	199	280	386	568	805	1081	1595	2210
		750	24	9.7	13	19	26	39	53	77	104	152	213	284	432	612	824	1213	1682
	35.5	1500	42	17	23	33	45	67	92	131	189	261	366	504	746	1051	1498	2087	2883
		1000	28	11	16	22	31	46	62	89	128	177	249	343	507	714	1017	1418	1959
		750	21	8.6	12	17	23	35	48	68	98	135	189	261	385	543	774	1079	1490
	40	1500	38	15	20	29	40	59	82	116	166	231	324	474	662	929	1323	1850	2549
		1000	25	10	14	19	27	40	56	79	113	157	220	322	450	631	898	1256	1731
		750	18.8	7.5	11	15	21	31	42	60	86	119	167	245	342	480	683	956	1317
45	1500	33	13	18	26	35	52	72	102	146	204	285	417	586	817	1162	1631	2244	
	1000	22	8.8	12	17	24	35	49	69	99	139	193	283	398	555	789	1108	1524	
	750	16.7	6.8	9.2	13	18	27	37	53	76	105	147	216	303	422	601	843	1160	
50	1500	30	12	17	24	33	45	64	96	137	191	266	365	515	764	1086	1527	2098	
	1000	20	8.2	11	16	22	31	43	65	93	130	181	248	349	519	738	1037	1425	
	750	15	6.3	9	12	17	24	33	49	71	99	137	189	266	395	516	789	1084	
56	1500	27	11	14	21	29	43	59	83	119	167	232	340	481	665	944	1333	1823	
	1000	17.9	7.1	10	14	19	29	40	56	81	113	157	231	327	452	641	905	1239	
	750	13.4	5.5	7.5	11	15	22	31	43	61	86	120	176	249	344	488	689	943	
63	1500	24	9.8	13	20	27	37	52	77	110	155	215	293	417	617	876	1242	1695	
	1000	15.9	6.7	9.1	13	18	25	35	52	75	106	146	199	284	419	595	844	1152	
	750	11.9	5	7	10	14	19	27	40	57	80	111	151	216	319	453	642	876	
71	1500	21	8.3	11	17	23	34	48	66	94	134	184	270	387	528	749	1070	1450	
	1000	14	5.7	7.7	11	15	23	32	45	64	91	125	184	263	359	509	727	985	
	750	10.6	4.4	5.9	9	12	18	25	34	49	69	95	140	200	273	387	553	749	
80	1500	18.8	7.8	11	16	21	31	41	61	87	123	169	249	329	486	689	988	1334	
	1000	12.5	5.2	7.2	11	14	21	28	41	59	84	115	169	224	330	468	671	906	
	750	9.4	4	5.4	8	11	16	21	31	45	64	87	129	170	251	356	511	689	
90	1500	16.7	7.1	9.7	13	19	26	37	56	79	104	155	208	302	445	630	832	1221	
	1000	11	4.8	6.6	8.9	13	18	25	38	54	71	105	141	205	302	428	565	830	
	750	8.3	3.7	5	6.8	9.9	13	19	29	41	54	80	107	156	230	326	430	631	
100	1500	15	6.5	8.8	12	17	24	34	50	65	94	140	187	275	405	519	757	1112	
	1000	10	4.3	6	8.1	12	17	23	34	44	64	95	127	187	275	353	515	756	
	750	7.5	3.3	4.6	6.1	9	13	19	26	33	49	73	97	142	209	288	392	575	
<b>PD</b>	100	1500	15				25												
		1000	10				17												
		750	7.5				13												
	112	1500	13.4	5.7	7.6	11	16	22	30	45	62	87	125	178	244	359	495	694	985
		1000	8.9	3.9	5.1	7.4	10	15	20	30	42	59	85	121	165	244	336	471	669
		750	6.7	2.9	3.9	5.6	7.9	11	15	23	32	44	64	92	125	184	254	356	506
	115	1500	12	5	6.8	9.7	14	20	28	40	56	82	111	159	230	320	442	656	878
		1000	8	3.4	4.6	6.6	9.3	13	19	27	38	56	76	108	156	217	300	446	596
		750	6	2.5	3.5	5	7	10	15	20	28	42	57	81	117	163	230	335	448
	140	1500	10.7	4.5	6.1	9.2	12	18	25	36	53	74	99	141	205	285	417	588	781
		1000	7.1	3.1	4.1	6.2	8.3	12	17	24	36	50	67	95	139	193	282	398	529
		750	5.4	2.3	3.1	4.7	6.2	8.9	13	18	27	37	50	71	104	144	212	299	396
	160	1500	9.4	4	5.5	7.7	11	16	23	32	44	62	88	125	182	253	350	497	693
		1000	6.3	2.6	3.7	5.2	7.3	10	15	21	30	42	59	84	122	170	235	334	466
		750	4.7	2	2.8	3.9	5.5	7.8	11	16	22	31	44	63	92	127	177	251	350
	180	1500	8.3	3.6	4.9	6.9	9.6	14	20	28	42	55	78	110	161	223	329	442	612
		1000	5.6	2.4	3.3	4.6	6.4	9.2	13	19	28	37	52	73	108	149	220	295	409
		750	4.2	1.8	2.5	3.5	4.8	6.9	10	14	21	28	39	55	81	112	165	222	307
200	1500	7.5	3.2	4.4	6.5	9	13	18	24	37	52	73	103	142	196	291	416	575	
	1000	5	2.1	2.9	4.3	6	8.5	12	16	24	35	49	68	95	130	194	278	384	
	750	3.8	1.6	2.2	3.3	4.5	6.4	8.8	12	18	26	36	51	71	98	145	208	288	
225	1500	6.7	2.9	3.9	5.7	7.8	11	16	23	32	46	64	89	133	182	253	366	501	
	1000	4.5	1.9	2.6	3.8	5.2	7.4	11	15	21	31	42	59	88	122	169	244	334	
	750	3.3	1.4	1.9	2.9	3.9	5.6	8.2	11	16	23	32	44	66	91	127	183	250	
250	1500	6	2.6	3.6	5	7.3	10	14	21	30	40	59	82	115	170	236	320	466	
	1000	4	1.7	2.4	3.3	4.9	6.9	9.5	14	20	27	39	55	77	113	157	213	311	
	750	3	1.3	1.8	2.5	3.7	5.2	7.1	11	15	20	30	41	57	85	118	160	233	
280	1500	5.4	2.3	3.2	4.7	6.3	8.8	13	18	26	37	51	70	107	146	203	298	400	
	1000	3.6	1.5	2.1	3.1	4.2	5.9	8.8	12	17	25	34	47	71	97	135	199	267	
	750	2.7	1.1	1.6	2.3	3.1	4.3	6.6	9.1	13	19	25	35	53	73	101	149	200	
315	1500	4.8	2.1	2.7	4	5.8	8.1	11	17	24	32	47	65	91	134	187	256	369	
	1000	3.2	1.4	1.8	2.7	3.9	5.4	7.5	11	16	21	31	43	61	90				

## RH • RV Series - Bevel-helical units - Nominal power rating (kW)

	i <sub>N</sub>	Size			Size																		
		n <sub>1</sub>	n <sub>2</sub>	min <sup>-1</sup>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160			
RHD RVB	5	1500	300		75	107	147	207	287	401	573	814	1186	1698	2363								
		1000	200		50	74	100	140	193	272	388	553	805	1153	1606								
		750	150		39	55	77	107	148	207	296	420	612	878	1221								
	5.6	1500	268		73	106	146	209	287	400	571	812	1186	1698	2363								
		1000	179		51	73	99	141	193	273	389	551	805	1154	1606								
		750	134		38	55	76	107	148	207	295	419	612	877	1222								
	6.3	1500	238		74	108	147	209	285	401	572	814	1187	1697	2363								
		1000	159		51	75	100	141	193	273	388	553	807	1152	1606								
		750	119		38	55	76	107	148	207	295	420	613	877	1222								
	7.1	1500	211		68	99	134	192	262	369	526	747	1092	1561	2175								
		1000	141		51	72	99	141	194	272	388	552	805	1152	1605								
		750	106		38	55	76	108	148	207	295	420	612	877	1221								
	8	1500	188		64	85	123	174	249	348	497	703	996	1413	2051								
		1000	125		47	64	93	129	185	260	370	524	742	1052	1528								
		750	94		37	51	74	103	148	206	295	418	592	839	1218								
	9	1500	167		63	86	124	173	225	350	502	702	993	1410	1825								
		1000	111		45	60	85	120	156	243	347	487	688	977	1265								
		750	83		33	45	65	91	119	185	264	371	524	743	962								
	10	1500	150		47	60	110	154	181	244	343	485	888	1262	1465								
		1000	100		32	41	75	105	123	166	233	330	603	857	995								
		750	75		24	32	57	80	94	126	177	251	459	652	757								
	11.2	1500	134		37	48	66	91	144	194	271	382	525	740	1163								
		1000	89		25	32	44	63	98	131	184	259	357	503	790								
		750	67		19	25	34	48	74	100	140	197	271	383	601								
	12.5	1500	120		33	46	64	91	125	177	250	357	517	731	993								
		1000	80		23	32	44	62	85	120	170	243	352	497	675								
		750	60		17	24	33	47	65	91	129	185	268	378	513								
	14	1500	107		33	47	64	91	126	177	250	357	517	730	992								
		1000	71		22	32	43	62	86	121	170	243	351	497	675								
		750	54		17	24	33	47	65	92	129	185	267	378	513								
	16	1500	94		32	42	59	82	121	171	241	341	467	657	956								
		1000	63		21	29	39	56	82	115	163	231	316	445	647								
		750	47		17	22	30	42	62	88	124	176	241	339	493								
	18	1500	83		25	32	44	61	96	130	181	254	348	490	766								
		1000	56		17	22	29	42	65	88	123	173	236	333	520								
		750	42		13	16	22	32	49	77	94	131	180	253	396								
RHC RVC	20	1500	75		26	35	50	71	101	137	194	283	406	576	810	1114	1560	2323					
		1000	50		20	26	37	53	75	102	144	211	303	429	604	831	1162	1732					
		750	38		15	20	29	41	59	79	112	164	236	334	471	648	906	1350					
	22.5	1500	67		26	35	49	70	99	143	203	279	403	567	794	1167	1641	2289					
		1000	44		18	24	33	48	67	98	148	190	274	385	539	792	1114	1555					
		750	33		13	18	25	36	51	74	105	144	209	293	411	604	849	1184					
	25	1500	60		22	32	46	66	92	125	177	260	377	529	740	1021	1430	2137					
		1000	40		15	22	31	44	63	85	120	177	256	359	502	693	971	1451					
		750	30		11	17	24	34	48	65	91	135	195	274	383	528	740	1106					
	28	1500	54		21	28	40	56	79	116	164	226	329	458	636	945	1329	1849					
		1000	36		14	19	27	38	54	79	112	153	223	311	432	642	903	1256					
		750	27		11	15	21	29	41	60	85	117	170	237	329	489	688	957					
	31.5	1500	48		18	26	35	53	73	99	140	209	284	424	587	807	1133	1718					
		1000	28		12	17	23	35	50	68	95	142	193	288	398	548	770	1167					
		750	24		9.2	13	18	27	38	51	73	108	147	220	304	417	586	889					
	35.5	1500	42		16	22	32	44	68	91	130	178	262	360	540	743	1042	1457					
		1000	25		11	15	22	30	46	62	88	121	178	245	366	505	708	989					
		750	21		8.4	11	16	23	35	47	67	92	136	186	279	385	539	754					
	40	1500	38		15	20	29	41	56	84	118	163	242	330	450	682	954	1337					
		1000	25		10	14	20	28	38	57	80	111	164	224	306	463	648	908					
		750	18.8		7.7	10	15	21	29	43	61	84	125	171	233	353	494	692					
	45	1500	33		14	18	27	37	51	76	108	148	221	300	407	622	869	1216					
		1000	22		9	12	18	25	34	52	73	101	150	204	276	422	590	826					
		750	16.7		7	9.5	14	19	26	39	56	77	114	155	211	322	449	629					
	50	1500	30		12	17	23	34	49	66	94	129	175	261	360	537	750	1045					
		1000	20		8	11	16	23	33	45	64	88	119	178	245	365	510	710					
		750	15		6.2	8.6	12	17	25	34	49	67	91	135	186	278	388	541					
	56	1500	27		11	14	21	30	41	61	86	119	161	240	330	492	690	960					
		1000	17.9		7.4	9.7	15	20	28	41	59	80	109	163	224	334	469	652					
		750	13.4		5.7	7.4	11	15	21	32	45	61	83	124	171	254	357	497					
	63	1500	24		10	13	18	27	38	51	79	109	148	220	300	611	575	881					
		1000	15.9		6.7	8.8	12	19	26	35	54	74	100	150	204								

## RH • RV Series - Bevel-helical units - Nominal power rating (kW)

i <sub>N</sub>	n <sub>1</sub> n <sub>2</sub> min <sup>-1</sup>	Size																
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
80	1500	18.8	7.9		16								339	506				
	1000	12.5	5.4		11								230	344				
	750	9.4	4.2		8.1								175	261				
90	1500	16.7	7.2	9.7	14	19	28	39	56	78	111	155	228	319	447	635	895	1236
	1000	11	4.8	6.6	9.4	13	19	27	38	53	75	106	155	217	304	432	608	840
	750	8.3	3.7	5.1	7.1	10	15	20	29	41	57	80	118	165	231	328	463	639
100	1500	15	6.2	8.4	12	17	25	35	49	69	98	136	200	281	391	556	787	1083
	1000	10	4.3	5.7	8.3	11	17	24	33	47	66	92	136	191	265	378	534	736
	750	7.5	3.2	4.4	6.3	8.7	13	18	25	35	50	70	103	145	202	287	407	560
112	1500	13.4	5.8	8	11	16	22	30	46	64	91	127	187	246	365	518	736	1010
	1000	8.9	4	5.3	7.7	11	15	21	31	44	62	86	127	167	248	352	500	686
	750	6.7	3	4.1	5.9	8.1	11	16	23	33	47	65	96	126	188	267	379	520
125	1500	12	5	6.9	9.9	15	20	28	40	55	79	118	162	230	316	449	640	874
	1000	8	3.4	4.7	6.8	9.9	14	19	27	38	54	80	110	156	215	305	435	594
	750	6	2.6	3.5	5.1	7.4	10	15	20	28	41	61	83	117	161	229	327	447
140	1500	10.7	4.6	6.3	9.3	13	19	24	37	51	74	102	150	198	293	415	595	811
	1000	7.1	3.1	4.3	6.3	8.5	13	17	25	35	50	69	102	134	199	282	404	550
	750	5.4	2.4	3.2	4.7	6.4	10	12	19	26	38	52	76	100	149	211	303	412
160	1500	9.4	4	5.4	7.9	12	16	23	31	44	63	94	127	183	249	353	509	689
	1000	6.3	2.6	3.6	5.3	7.9	11	15	21	29	42	63	86	123	167	237	342	463
	750	4.7	2	2.7	4	5.9	8	11	16	22	32	48	64	92	125	178	257	347
180	1500	8.3	3.6	5	7.3	10	15	21	28	40	58	79	117	168	228	322	468	631
	1000	5.6	2.4	3.3	4.9	6.6	9.8	14	19	27	39	53	78	113	152	216	313	422
	750	4.2	1.8	2.5	3.7	4.9	7.3	10	14	20	29	40	59	85	114	162	235	317
200	1500	7.5	3.3	4.5	6.7	8.9	13	17	26	36	53	72	106	140	207	294	428	574
	1000	5	2.2	3	4.4	5.9	8.8	12	17	24	35	48	71	94	138	196	285	383
	750	3.8	1.6	2.2	3.3	4.5	6.6	8.7	13	18	27	36	53	70	104	147	214	287
225	1500	6.7	2.8	3.9	5.7	7.7	11	16	22	33	47	62	92	131	179	254	363	491
	1000	4.5	1.9	2.6	3.8	5.1	7.6	11	15	22	31	42	61	88	119	169	242	327
	750	3.3	1.4	1.9	2.8	3.8	5.7	8.1	11	16	23	31	46	66	89	127	181	246
250	1500	6	2.6	3.6	5.2	7	10	15	20	29	40	57	84	121	164	232	334	450
	1000	4	1.7	2.4	3.5	4.7	7	10	14	19	26	38	56	81	109	155	222	300
	750	3	1.3	1.8	2.6	3.5	5.2	7.5	10	14	20	29	42	60	82	116	167	225
280	1500	5.4	2.4	3.2	4.8	6.4	10	12	19	26	36	52	77	101	149	212	306	410
	1000	3.6	1.6	2.2	3.2	4.3	6.4	8.3	12	17	24	35	51	67	100	141	204	273
	750	2.7	1.2	1.6	2.4	3.2	4.8	6.2	9.3	13	18	26	38	51	75	106	153	205
315	1500	4.8	2.1	2.9	3.9	5.8	8.7	11	17	24	33	47	62	92	135	192	252	372
	1000	3.2	1.4	2	2.6	3.9	5.8	7.6	11	16	22	31	42	61	90	128	168	248
	750	2.4	1.1	1.5	2	2.9	4.3	5.7	8.5	12	16	24	31	46	68	96	126	186
355	1500	4.2	1.9	2.6	3.6	5.2	7.7	10	15	19	29	42	56			173		
	1000	2.8	1.3	1.8	2.4	3.5	5.1	6.8	10	13	20	28	37			115		
	750	2.1	1	1.3	1.8	2.6	3.8	5.1	7.5	9.5	15	21	28			86		
400	1500	3.8							13		26	37						
	1000	2.5							8.9		18	25						
	750	1.9							6.7		13	19						

## P Series - Helical units - Output torques TN<sub>2</sub> (Nm)

	in	Size																
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
<b>PA</b>	1.12	2300	3200	4600	6400	9100	12800	18300	25600	36500	51800	73100						
	1.25	2600	3500	5100	7200	10200	14300	20500	28600	40900	57900	81800						
	1.4	2700	3700	5400	7500	10800	15100	21600	30200	43100	61100	86200						
	1.6	2900	4000	5700	8000	11400	16000	22800	31900	45600	64600	91200						
	1.8	3000	4100	6000	8400	11900	16700	23900	33400	47800	67700	95500						
	2	3100	4300	6200	8700	12400	17400	24800	34700	49600	70300	99300						
	2.25	3300	4500	6400	9000	12900	18000	25800	36100	51500	73000	103000						
	2.5	3400	4600	6600	9300	13200	18500	26500	37100	53000	75000	105900						
	2.8	3500	4800	6900	9600	13700	19200	27500	38400	54900	77800	109800						
	3.15	3500	4800	6900	9700	13800	19300	27600	38700	55300	78300	110500						
	3.55	3500	4800	6900	9700	13800	19300	27600	38700	55300	78300	110500						
	4	3500	4800	7000	9700	13900	19500	27800	38900	55600	78800	111200						
4.5	3500	4900	7000	9800	14000	19600	28000	39200	56000	79300	112000							
5	3100	4300	6200	8600	12300	17300	24700	34500	49300	69000	98700							
5.6	2800	3900	5600	7800	11200	15600	22300	31300	44600	63300	89300							
<b>PB</b>	6.3	3300	4500	6500	9100	13000	18200	26000	36400	52000	73600	103900	123900	175000	248200	349000	488500	
	7.1	3300	4500	6500	9100	13000	18200	26000	36400	52000	73600	103900	124700	176100	249000	351600	491900	
	8	3300	4600	6600	9200	13100	18400	26300	36800	52500	74400	105000	126800	179000	253100	357000	497900	
	9	3400	4600	6600	9300	13300	18600	26500	37100	53000	75100	106100	12900	182100	257400	363300	506500	
	10	3400	4600	6600	9300	13300	18600	26500	37100	53000	75100	106100	129400	182700	259100	365100	510000	
	11.2	3400	4600	6600	9300	13300	18600	26500	37100	53000	75100	106100	130400	184000	260000	367700	511800	
	12.5	3400	4700	6800	9500	13500	18900	27100	37900	54100	75100	108200	133500	188400	267200	376900	525700	
	14	3400	4700	6800	9500	13500	18900	27100	37900	54100	76700	108200	134500	189900	268200	379700	528400	
	16	3500	4800	6900	9700	13800	19300	27600	38600	55200	76700	110300	137700	194400	275700	388000	542400	
	18	3600	4900	7000	9800	14100	19700	28100	39400	56200	78100	112500	141700	199100	282300	399300	555800	
	20	3500	4800	6900	9600	13800	19300	27500	38600	55100	79700	110200	139400	196900	277800	392900	547100	
	22.5			6900			19300	27500	38600	55100	78000	110200	139600	197200	278200		548500	
	25											110200						
	28																	
	31.5																	
<b>PC</b>	18																	
	20																	
	22.5	3500	4800		9600	14000										445400		
	25	3500	4800	7000	9700	14100	19500	27800	39700	55800	78000						623500	
	28	3600	4900	7000	9800	14100	19600	28000	40000	56200	79100	112800	158400	224100	319200	449700	627500	
	31.5	3600	4900	7100	9800	14200	19800	28300	40200	56500	79600	113400	159300	224700	321900	451700	631600	
	35.5	3600	4900	7100	9900	14300	19900	28400	40500	56800	80100	114100	160200	226100	322100	454700	634500	
	40	3600	5000	7100	10000	14300	20000	28600	40600	57200	80600	114500	161200	227500	325200	457700	638500	
	45	3700	5000	7200	10100	14400	20200	28800	40800	57600	81100	115300	162100	228900	326600	461000	644000	
	50	3700	5000	7200	10100	14500	20300	28900	41100	57800	81700	116100	163300	230500	327600	462000	645900	
	56	3700	5100	7300	10200	14600	20400	29100	41300	58200	81900	116500	164300	231300	330300	465300	650400	
	63	3700	5100	7300	10200	14700	20500	29200	41600	58400	82600	117400	165000	233200	331400	467300	653400	
	71	3800	5100	7400	10300	14800	20600	29500	41700	58900	82900	117900	166200	233900	334200	471300	658400	
	80	3800	5100	7400	10400	14800	20800	29800	42100	59100	83600	118400	166800	235900	335600	473300	661400	
	90	3800	5200	7500	10400	15000	20900	29800	42300	59700	83900	119600	168300	236900	337300	477700	665500	
100	3800	5200	7500	10400		20900	29800	42500	59700	84300	119600	169100	238100	340000	479700	667900		
112																		
125																		
<b>PD</b>	100					15000												
	112	3800	5200	7500	10500	15000	21000	29900	42500	59900	84300	120000	170000	239600	339900	479800	668800	
	125	3800	5200	7500	10500	15000	21000	29900	42800	59700	84800	120000	169600	239600	339700	477900	668800	
	140	3800	5200	7500	10500	15000	20900	29900	42800	59700	84800	120000	169600	239500	338700	478000	668800	
	160	3800	5200	7500	10500	15000	21000	29900	42700	59900	84800	120000	169500	239600	339800	479200	668800	
	180	3800	5200	7500	10500	15000	20900	29900	42800	59900	84900	120000	170000	239600	338600	479000	668300	
	200	3800	5200	7500	10500	15000	21000	30000	42600	59900	84800	120000	170000	240000	340000	479000	670000	
	225	3800	5200	7500	10500	15000	21000	30000	42800	60000	84900	120000	170000	240000	340000	480000	670000	
	250	3800	5200	7500	10500	15000	21000	30000	43100	60000	85000	120000	170000	240000	340000	480000	670000	
	280	3800	5200	7500	10500	15000	21000	30000	43300	60000	85000	120000	170000	240000	340000	480000	670000	
	315	3800	5200	7500	10500	15000	21000	30000	43600	60000	85000	120000	170000	240000	340000	480000	670000	
	355	3800	5200	7500	10500	15000	21000	30000	43800	60000	85000	120000	170000	240000	340000	480000	670000	
	400	3800	5200	7500	10500	15000	21000	30000	44200	60000	85000	120000	170000	240000	340000	480000	670000	
	450	3800	5200	7500	10500		21000	30000	44400	60000	85000	120000	170000	240000	340000	480000	670000	
	500	3800	5200	7500			21000	30000	44600	60000	85000	120000	170000	240000	340000	480000	670000	

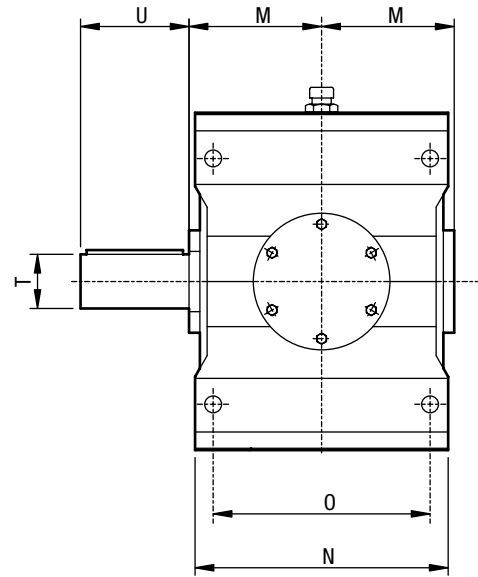
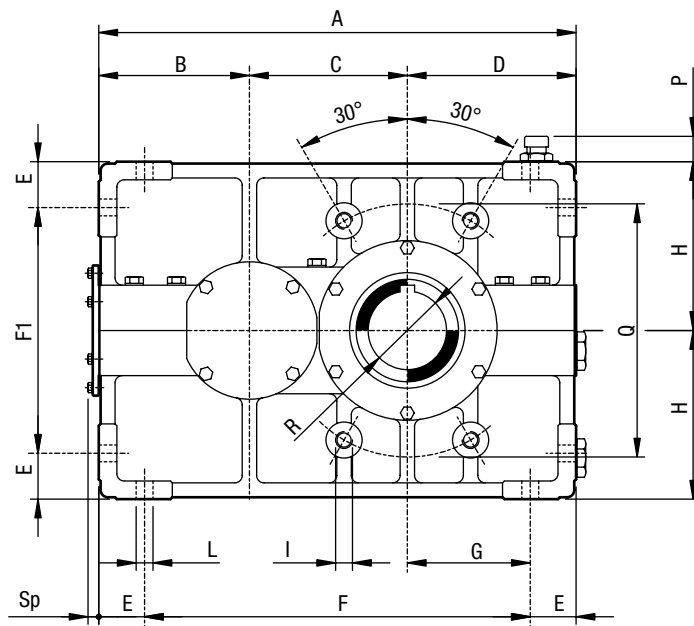
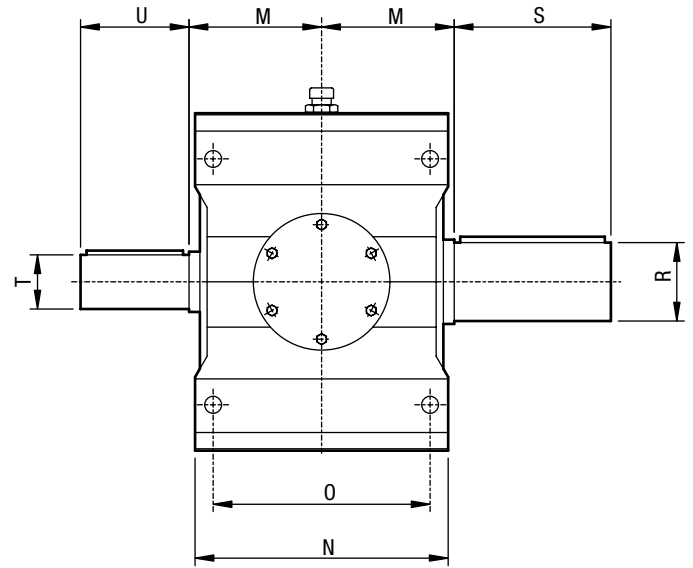
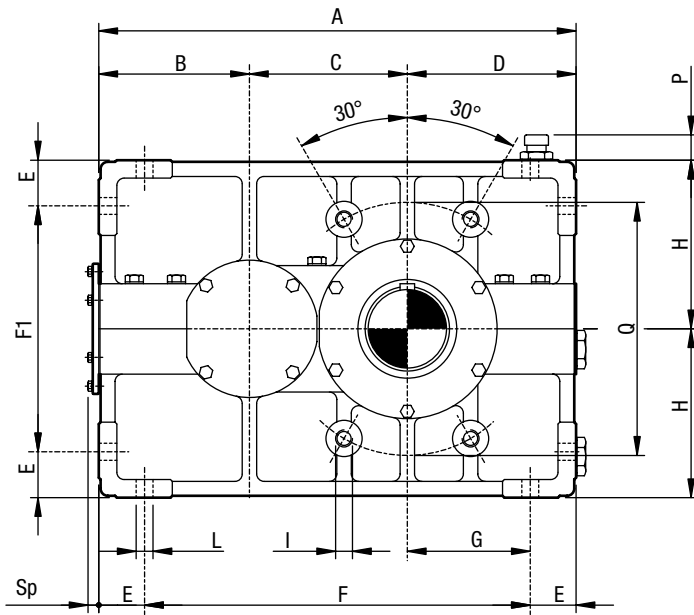
## RH • RV Series - Bevel-helical units - Output torques TN<sub>2</sub> (Nm)

	in	Size																
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
<b>RHB RVB</b>	<b>5</b>	2400	3400	4800	6700	9200	12300	18200	25800	38100	54500	74800						
	<b>5.6</b>	2500	3600	5100	7200	9800	14000	19400	27600	40800	58300	85400						
	<b>6.3</b>	2900	4200	5900	8300	11200	16000	22400	31900	47100	67200	91500						
	<b>7.1</b>	3400	4900	6300	9000	13000	17200	26100	37200	50700	78300	105800						
	<b>8</b>	3600	4900	7200	10100	14000	19900	28400	40200	57500	81300	114000						
	<b>9</b>	3500	4700	6900	9700	13300	19300	27700	38900	55500	78500	106400						
	<b>10</b>	3000	4000	6700	9300	11500	15700	22400	31700	53200	75400	91600						
	<b>11.2</b>	2700	3500	4800	6800	10000	13700	19600	27700	38400	54100	80000						
	<b>12.5</b>	2500	3600	5000	7100	9400	13500	19000	27200	40100	56600	74500						
	<b>14</b>	3000	4300	5400	7700	11100	16000	22700	32500	47800	61700	88000						
	<b>16</b>	3200	4200	5900	8300	11700	16800	24000	34000	47400	66700	92500						
	<b>18</b>	2700	3500	4900	6900	10200	14100	20100	28200	39300	55300	71800						
<b>RHC RVC</b>	<b>20</b>	3500	4800	6800	9700	13900	19400	27700	38700	55300	78300	110800	157300	221400	313500			
	<b>22.5</b>	3500	4800	6800	9700	13900	19500	27800	39000	55700	78800	111700	157300	222500	315600			
	<b>25</b>	3500	4800	6800	9800	14000	19600	28000	39100	55900	79200	112100	159400	224500	316600			
	<b>28</b>	3600	4900	6900	9900	14100	19700	28100	39400	56300	79800	112900	159400	225600	318700			
	<b>31.5</b>	3600	4900	6900	9900	14200	19900	28400	39600	56700	80100	113400	160400	226600	320800			
	<b>35.5</b>	3600	4900	6900	10000	14200	20000	28500	39900	56900	80800	113900	161400	227600	322800			
	<b>40</b>	3600	5000	7000	10000	14400	20000	28600	40100	57200	81100	115100	162500	228700	324900			
	<b>45</b>	3600	5000	7000	10100	14500	20100	28800	40400	57400	81500	115600	163500	229700	325900			
	<b>50</b>	3700	5000	7200	10100	14500	20300	29000	40700	58200	82200	116400	164500	231800	329100			
	<b>56</b>	3700	5100	7200	10200	14600	20400	29100	40800	58400	82500	116900	164500	232800	330100			
	<b>63</b>	3700	5100	7200	10200	14700	2066	29300	41000	58700	82900	117400	166600	234900	332200			
	<b>71</b>	3700	5100	7300	10300	14800	20700	29600	41200	59000	83300	118100	167600	235900	333200			
	<b>80</b>		5100		10400	14800	20800	29700	41400	59300	83700	118800			335300			
	<b>90</b>																	
	<b>100</b>																	
<b>RHD RVD</b>	<b>80</b>	3800		7400									168300	236800		473500	660700	
	<b>90</b>	3800	5200	7400	10300	14900	20800	29800	41700	59600	84500	119200	168800	238800	337100	476600	665900	
	<b>100</b>	3800	5200	7500	10400	14900	20900	30000	42000	59900	85000	120000	169900	239800	338100	479600	669800	
	<b>112</b>	3800	5200	7500	10500	15000	21000	30000	42000	59900	85000	120000	170000	240000	340000	480000	669500	
	<b>125</b>	3800	5200	7500	10500	15000	21000	30000	42000	59900	85000	120000	169900	240000	339900	479400	669500	
	<b>140</b>	3800	5200	7500	10400	15000	21000	30000	42000	59900	85000	120000	170000	240000	340000	479400	669700	
	<b>160</b>	3800	5200	7500	10500	15000	21000	30000	42000	59900	85000	120000	169800	240000	339900	479000	670000	
	<b>180</b>	3800	5200	7500	10500	15000	21000	30000	42000	59800	85000	120000	169600	240000	340000	479000	669800	
	<b>200</b>	3800	5200	7500	10500	15000	21000	30000	42000	59900	85000	120000	170000	240000	339400	480000	670000	
	<b>225</b>	3800	5200	7500	10500	15000	21000	30000	42000	60000	85000	120000	170000	240000	340000	480000	670000	
	<b>250</b>	3800	5200	7500	10500	15000	21000	30000	42000	60000	85000	120000	170000	240000	340000	480000	670000	
	<b>280</b>	3800	5200	7500	10500	15000	21000	30000	42000	60000	85000	120000	170000	240000	340000	480000	670000	
	<b>315</b>	3800	5200	7500	10500	15000	21000	30000	42000	60000	85000	120000	170000	240000	340000	480000	670000	
	<b>355</b>	3800	5200	7500	10500	15000	21000	30000	42000	60000	85000	120000		340000				
	<b>400</b>							30000										



## HELICAL UNITS

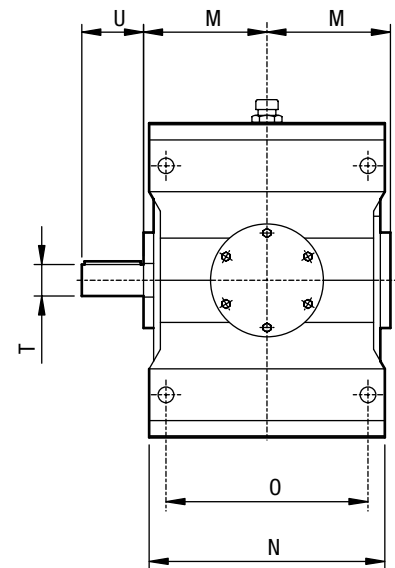
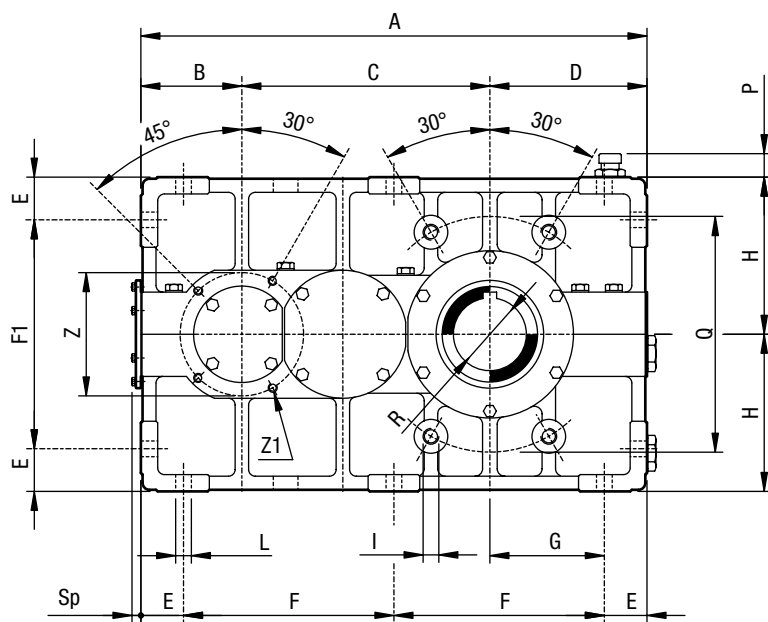
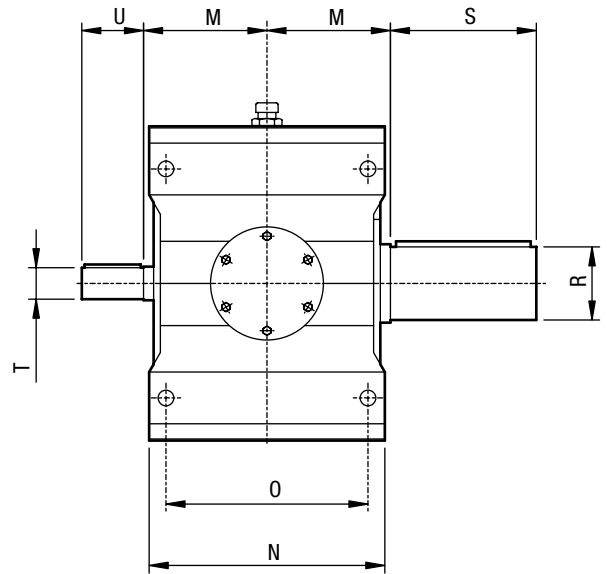
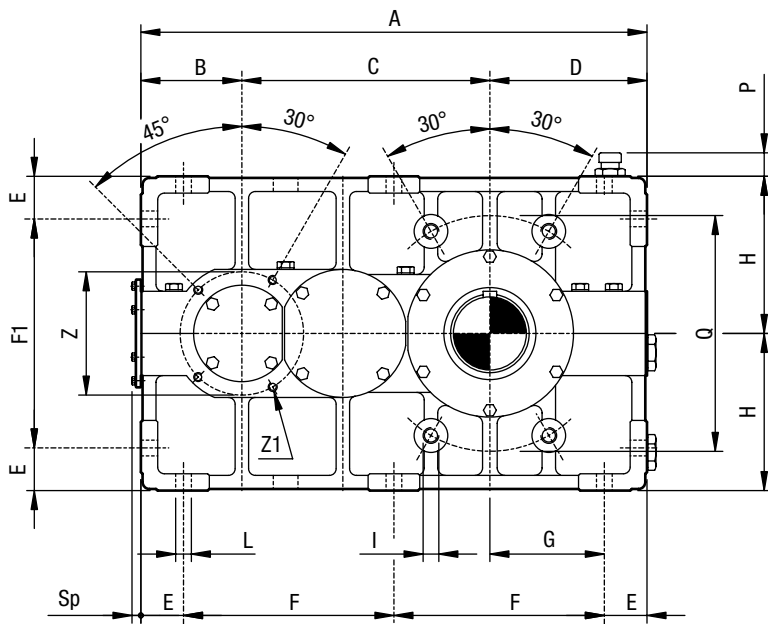
### PA series single reduction



Size	iN 1.12-2.5																iN 2.8-5.6				Sp		
	A	B	C	D	E	F	F1	G	H	I	L	M	N	O	P	Q	R	S	T	U		T	U
10	396	125	131	140	38	320	204	102	140	M16	14	115	210	180	20	210	65	110	45	90	35	70	13
20	450	140	150	160	42	366	236	118	160	M18	16	135	235	200	22	240	80	140	50	100	40	80	16
30	510	160	170	180	46	418	268	134	180	M20	18	145	260	220	22	270	90	160	55	110	45	90	17
40	570	180	190	200	52	466	296	148	200	M22	20	160	295	250	22	300	100	180	70	140	55	110	18
50	641	200	216	225	57	527	336	168	225	M24	22	170	325	275	22	340	110	200	75	150	60	120	22
60	715	225	240	250	62	591	376	188	250	M27	25	190	360	300	22	380	120	210	85	170	70	140	23
70	792	250	262	280	72	648	416	208	280	M30	27	225	415	350	25	430	140	250	90	180	80	160	25
80	895	280	300	315	80	735	470	235	315	M33	30	250	455	385	25	490	160	280	100	200	85	170	26
90	1010	315	340	355	87	836	536	268	355	M36	33	280	535	460	25	560	170	300	130	260	100	200	29
100	1135	355	380	400	93	949	614	307	400	M39	36	310	600	520	25	640	200	350	150	300	110	220	30
110	1282	400	432	450	100	1082	700	350	450	M42	39	375	710	620	25	730	220	390	160	320	130	260	32

## HELICAL UNITS

### PB series double reduction

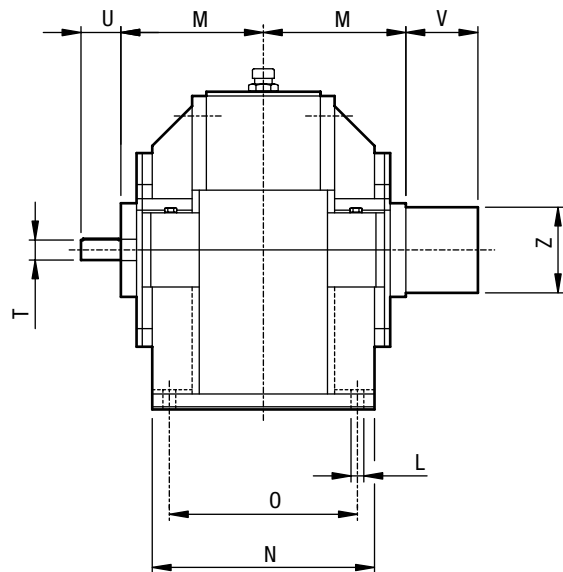
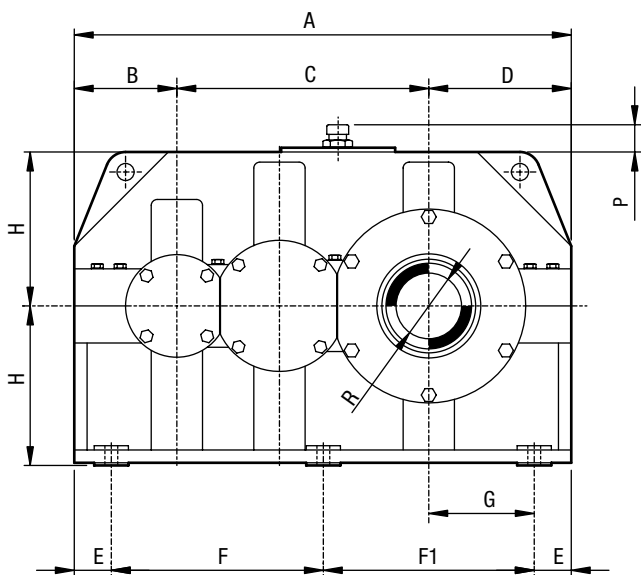
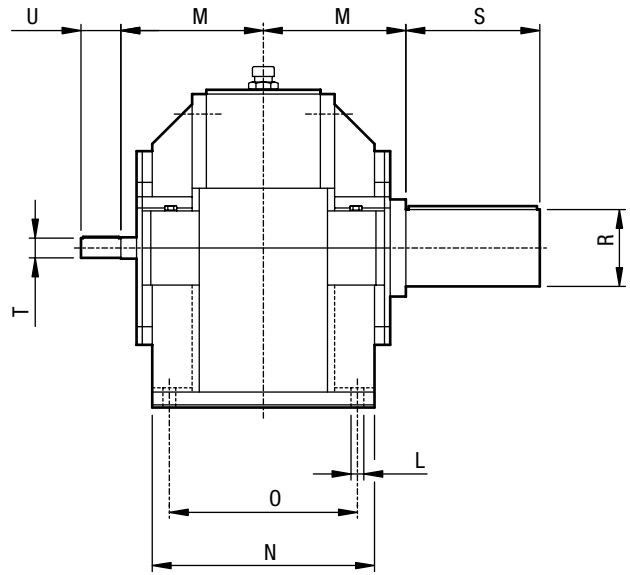
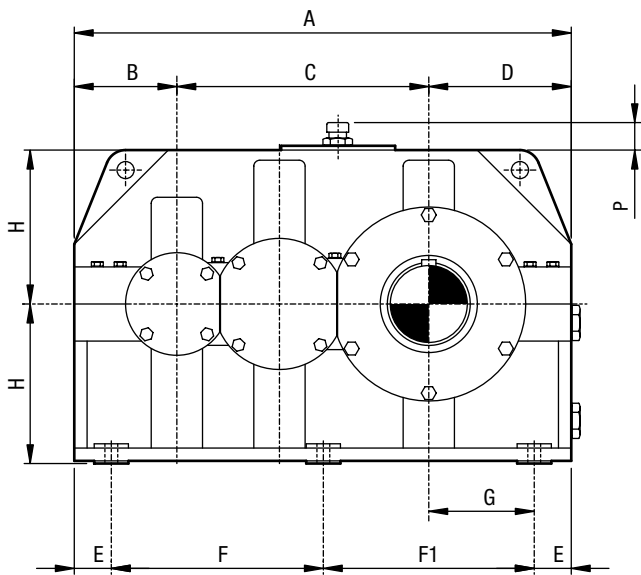


in 6.3-11.2 in 12.5-20

Size	A	B	C	D	E	F	F1	G	H	I	L	M	N	O	P	Q	R	S	T	U	T	U	Z	Z1	Sp
10	451	90	221	140	38	187,5	204	102	140	M16	14	115	210	180	20	210	65	110	28	55	24	50	110	M8	11
20	510	100	250	160	42	213	236	118	160	M18	16	135	235	200	22	240	8=0	140	32	65	28	55	125	M10	11
30	574	112	282	180	46	241	268	134	180	M20	18	145	260	220	22	270	90	160	35	70	32	65	140	M12	12
40	640	125	315	200	52	268	296	148	200	M22	20	160	295	250	22	300	100	180	45	90	35	70	160	M14	13
50	721	140	356	225	57	303,5	336	168	225	M24	22	170	325	275	22	340	110	200	50	100	40	80	175	M16	16
60	810	160	400	250	62	343	376	188	250	M27	25	190	360	300	22	380	120	210	55	110	45	90	200	M16	17
70	902	180	442	280	72	379	416	208	280	M30	27	225	415	350	25	430	140	250	70	140	55	110	220	M18	18
80	1015	200	500	315	80	427,5	470	235	315	M33	30	250	455	385	25	490	160	280	75	150	60	120	250	M20	22
90	1145	225	565	355	87	485,5	536	268	355	M36	33	280	535	460	25	560	170	300	85	170	70	140	275	M22	23
100	1280	250	630	400	93	547	614	307	400	M39	36	310	600	520	25	640	200	350	90	180	80	160	310	M24	25
110	1442	280	712	450	100	621	700	350	450	M42	39	375	710	620	25	730	220	390	100	200	85	170	350	M27	26

## HELICAL UNITS

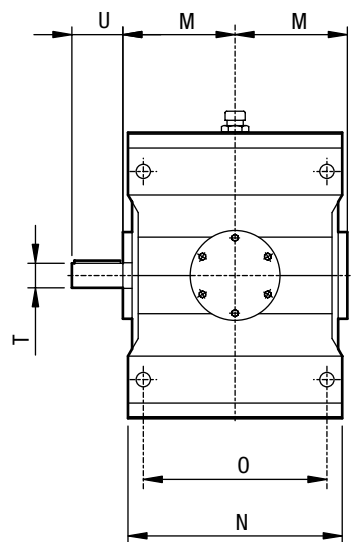
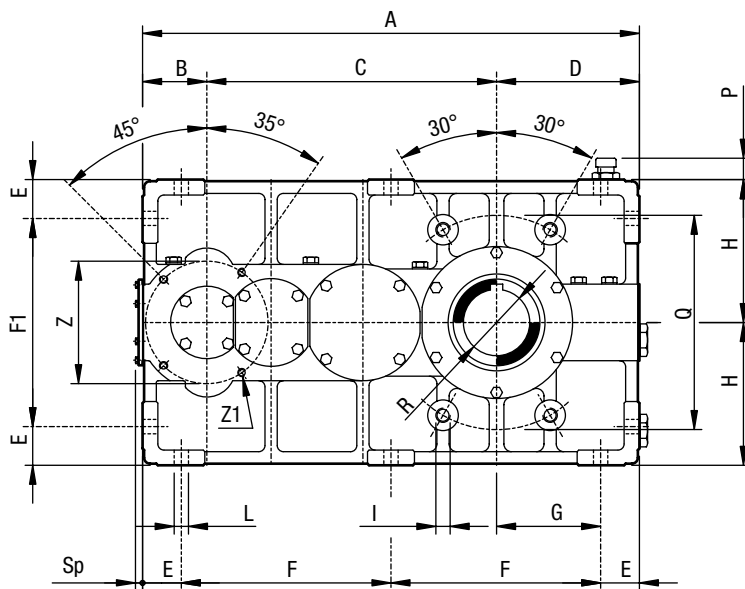
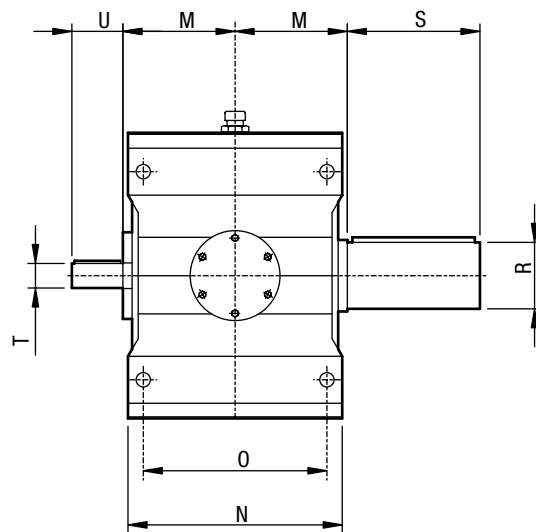
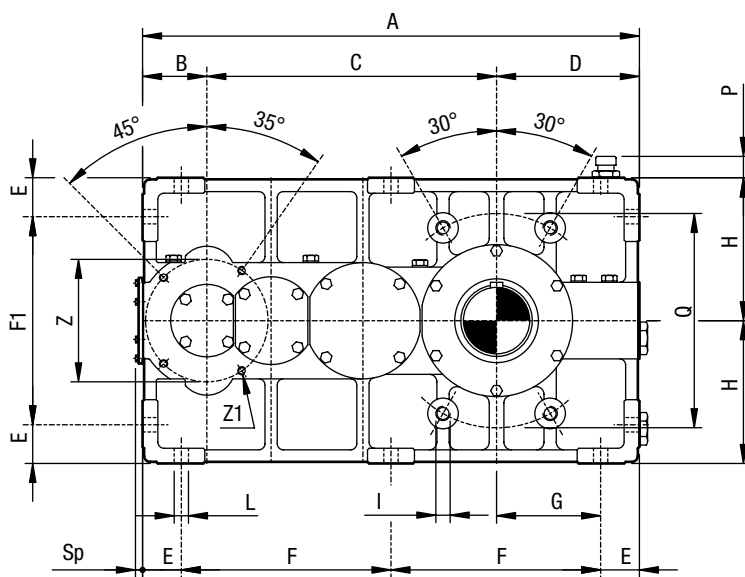
PB series double reduction



Size	iN 1.12-2.5																iN 2.8-5.6					
	A	B	C	D	E	F	F1	G	H	L	M	N	O	P	R	S	T	U	T	U	V	Z
120	1565	315	800	450	110	665	680	340	500	42	420	700	590	33	240	410	130	260	100	200	175	300
130	1739	355	884	500	125	739	750	375	560	45	480	780	660	35	270	470	150	300	110	220	190	340
140	1960	400	1000	560	150	840	820	410	630	48	505	850	720	37	300	500	160	320	130	260	205	380
150	2210	450	1130	630	170	950	920	460	710	52	565	930	790	40	340	550	180	360	140	280	235	420
160	2470	500	1260	710	200	1050	1020	510	800	56	630	1020	870	43	380	630	190	380	160	320	260	460

## HELICAL UNITS

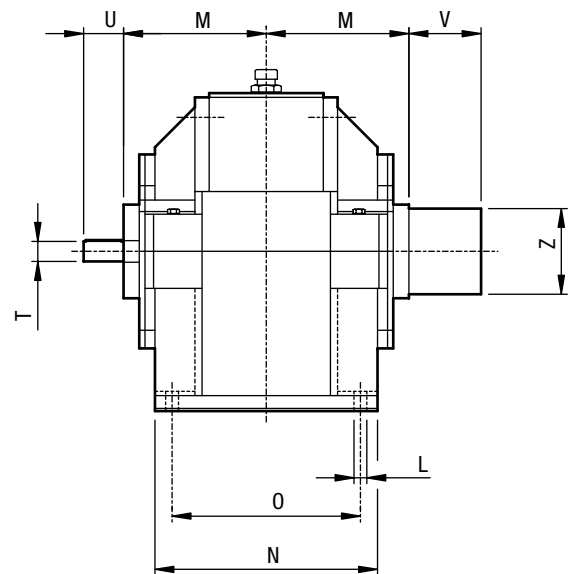
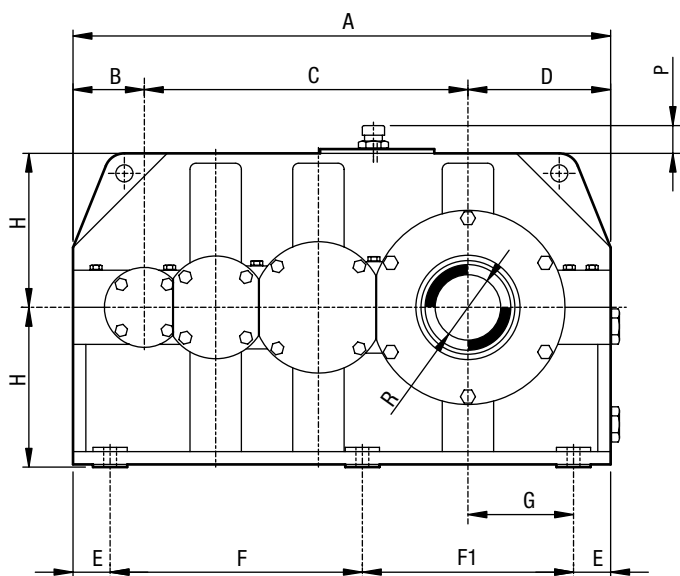
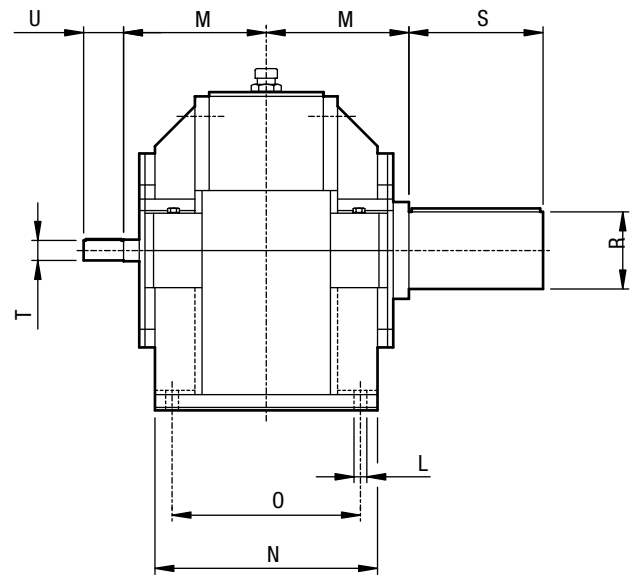
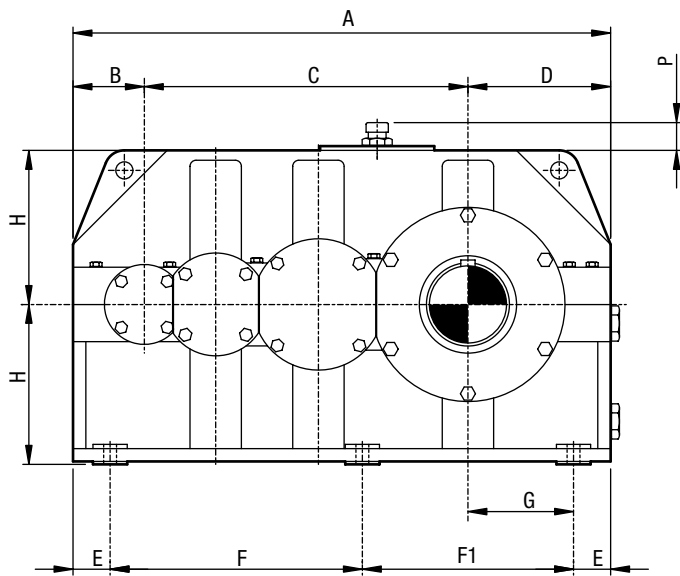
PC series triple reduction



Size	A	B	C	D	E	F	F1	G	H	I	L	M	N	O	P	Q	R	S	T	U	Z	Z1	Sp
10	487	63	284	140	38	205,5	204	102	140	M16	14	115	210	180	20	210	65	110	24	50	120	M8	10
20	550	70	320	160	42	233	236	118	160	M18	16	135	235	200	22	240	80	140	24	50	130	M10	10
30	622	80	362	180	46	265	268	134	180	M20	18	145	260	220	22	270	90	160	28	55	150	M12	11
40	695	90	405	200	52	295,5	296	148	200	M22	20	160	295	250	22	300	100	180	28	55	170	M12	11
50	781	100	456	225	57	333,5	336	168	225	M24	22	170	325	275	22	340	110	200	32	65	185	M12	11
60	874	112	512	250	62	375	376	188	250	M27	25	190	360	300	22	380	120	210	85	70	210	M14	12
70	972	125	567	280	72	414	416	208	280	M30	27	225	415	350	25	430	140	250	45	90	235	M14	13
80	1095	140	640	315	80	467,5	470	235	315	M33	30	250	455	385	25	490	160	280	50	100	260	M16	16
90	1240	160	725	355	87	533	536	268	355	M36	33	280	535	460	25	560	170	300	55	110	290	M16	17
100	1390	180	810	400	93	602	614	307	400	M39	36	310	600	520	25	640	200	350	70	140	320	M18	18
110	1562	200	912	450	100	681	700	350	450	M42	39	375	710	620	25	730	220	390	75	150	350	M18	22

## HELICAL UNITS

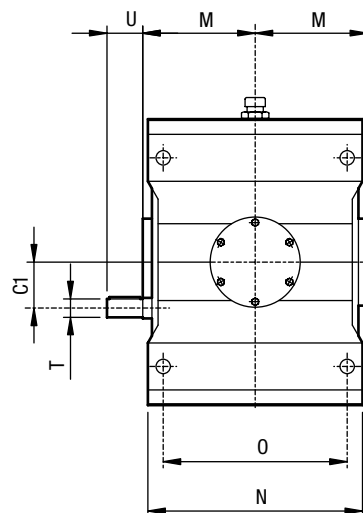
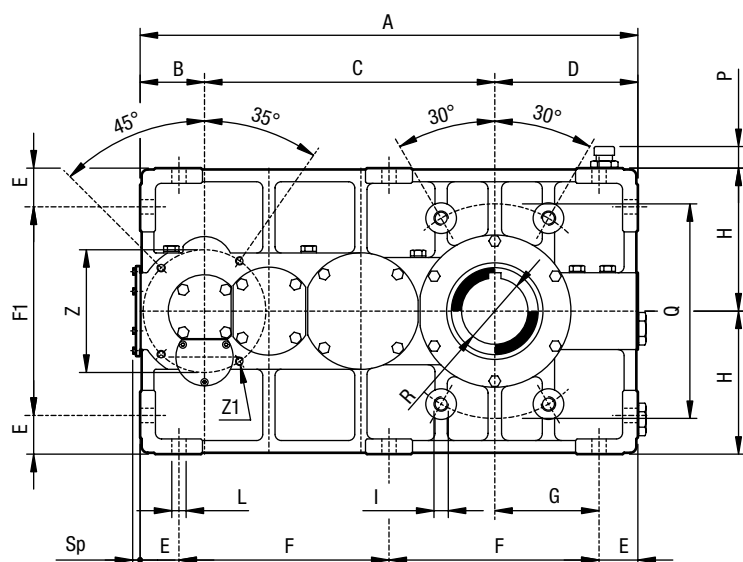
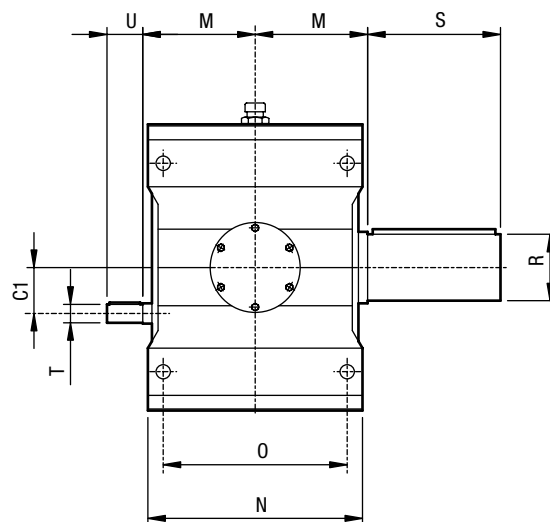
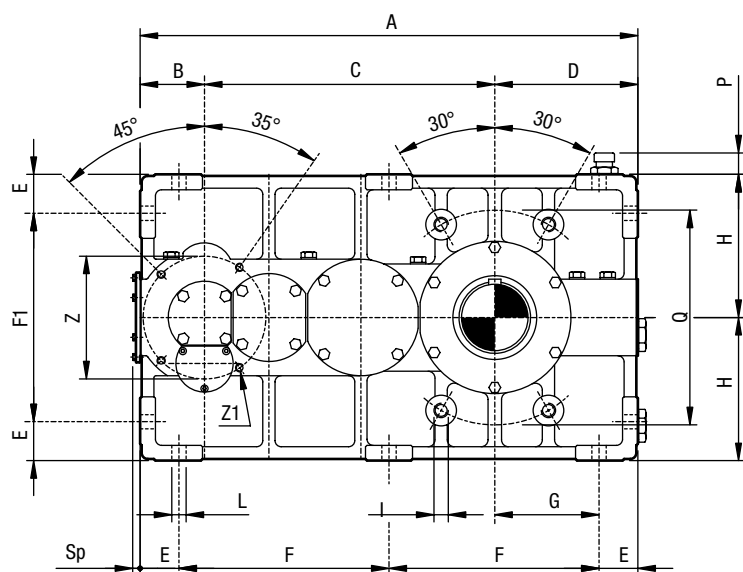
PC series triple reduction



Size	A	B	C	D	E	F	F1	G	H	L	M	N	O	P	R	S	T	U	V	Z
120	1700	225	1025	450	110	800	680	340	500	42	420	700	590	33	240	410	85	170	175	300
130	1884	250	1134	500	125	884	750	375	560	45	480	780	660	35	270	470	90	180	190	340
140	2120	280	1280	560	150	1000	820	410	630	48	505	850	720	37	300	500	100	200	205	380
150	2395	315	1450	630	170	1135	920	460	710	52	565	930	790	40	340	550	130	260	235	420
160	2685	355	1620	710	200	1265	1020	510	800	56	630	1020	870	43	380	630	150	300	260	460

## HELICAL UNITS

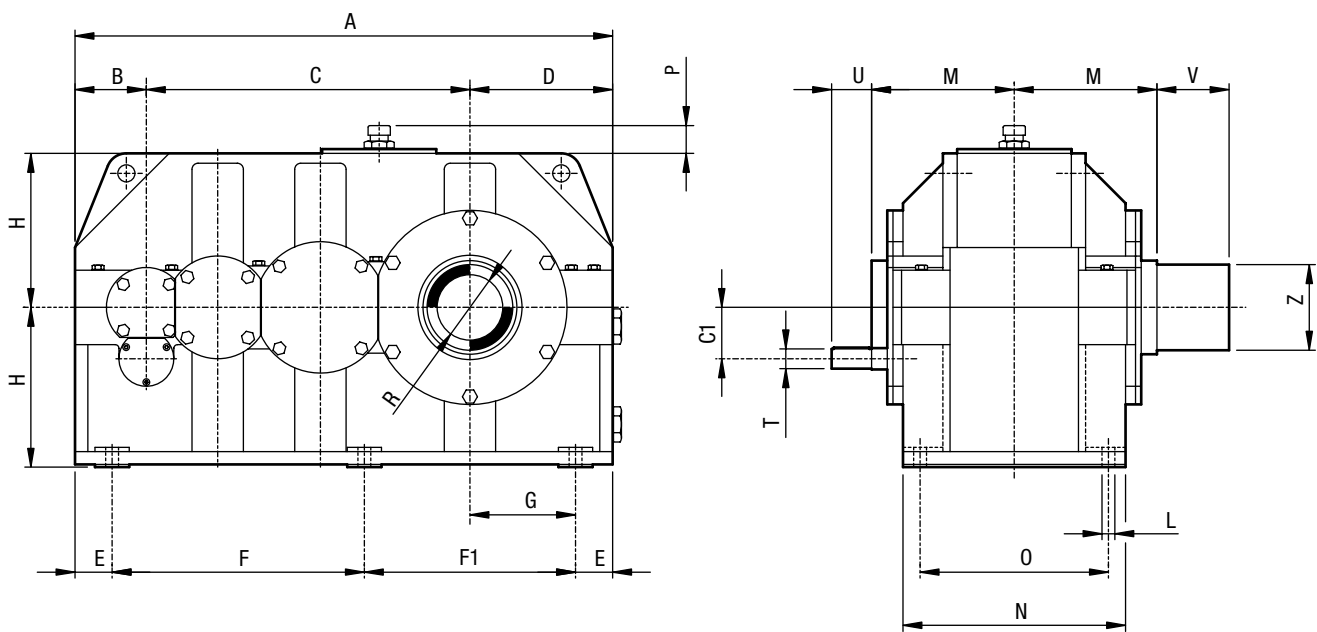
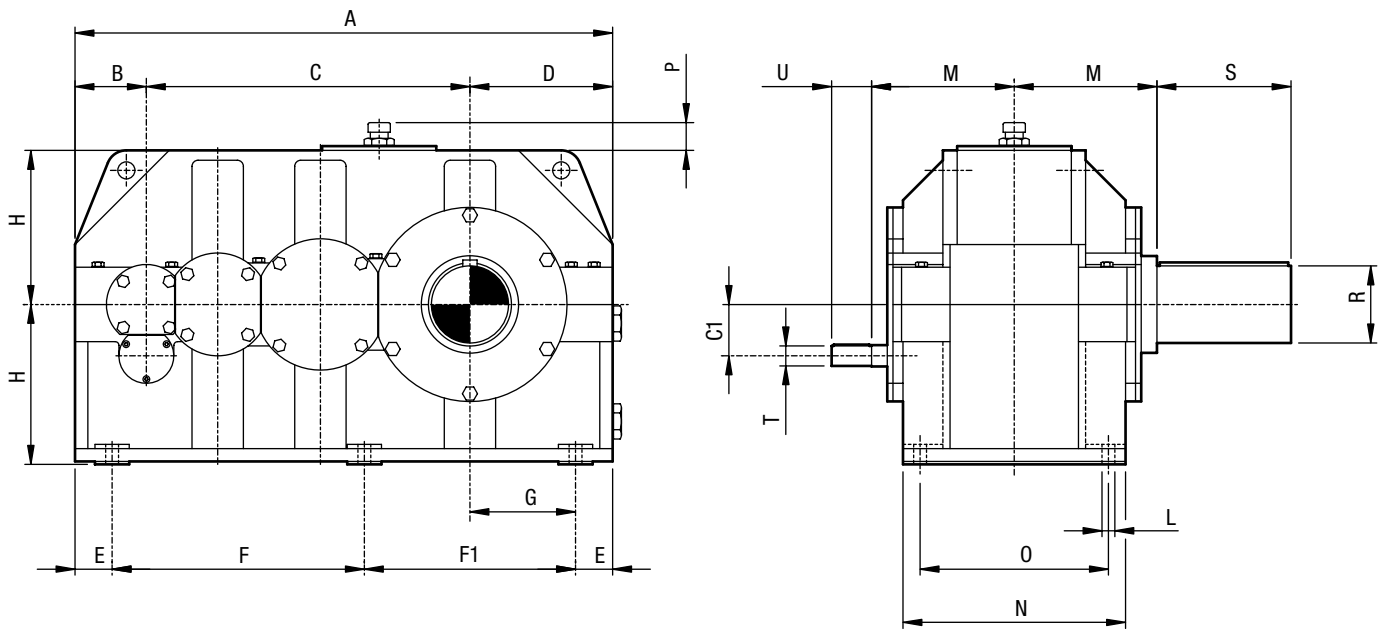
PD series quadruple reduction



Size	A	B	C	C1	D	E	F	F1	G	H	I	L	M	N	O	P	Q	R	S	T	U	Z	Z1	Sp
10	487	63	284	45	140	38	205,5	204	102	140	M16	14	115	210	180	20	210	65	110	18	35	120	M8	10
20	550	70	320	50	160	42	233	236	118	160	M18	16	135	235	200	22	240	80	140	18	35	130	M10	10
30	622	80	362	56	180	46	265	268	134	180	M20	18	145	260	220	22	270	90	160	24	50	150	M12	11
40	695	90	405	63	200	52	295,5	296	148	200	M22	20	160	295	250	22	300	100	180	24	50	170	M12	11
50	781	100	456	70	225	57	333,5	336	168	225	M24	22	170	325	275	22	340	110	200	24	50	185	M12	11
60	874	112	512	80	250	62	375	376	188	250	M27	25	190	360	300	22	380	120	210	28	55	210	M14	12
70	972	125	567	90	280	72	414	416	208	280	M30	27	225	415	350	25	430	140	250	28	55	235	M14	13
80	1095	140	640	100	315	80	467,5	470	235	315	M33	30	250	455	385	25	490	160	280	32	65	260	M16	16
90	1240	160	725	112	355	87	533	536	268	355	M36	33	280	535	460	25	560	170	300	35	70	290	M16	17
100	1390	180	810	125	400	93	602	614	307	400	M39	36	310	600	520	25	640	200	350	45	90	320	M18	18
110	1562	200	912	140	450	100	681	700	350	450	M42	39	375	710	620	25	730	220	390	50	100	350	M18	22

## HELICAL UNITS

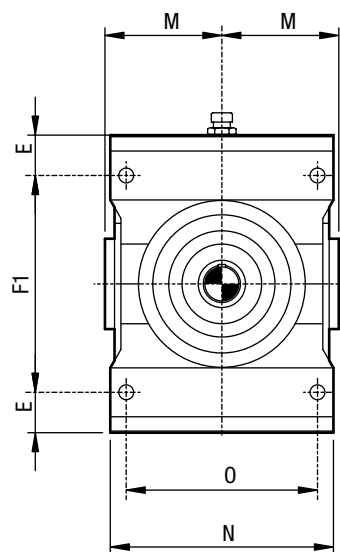
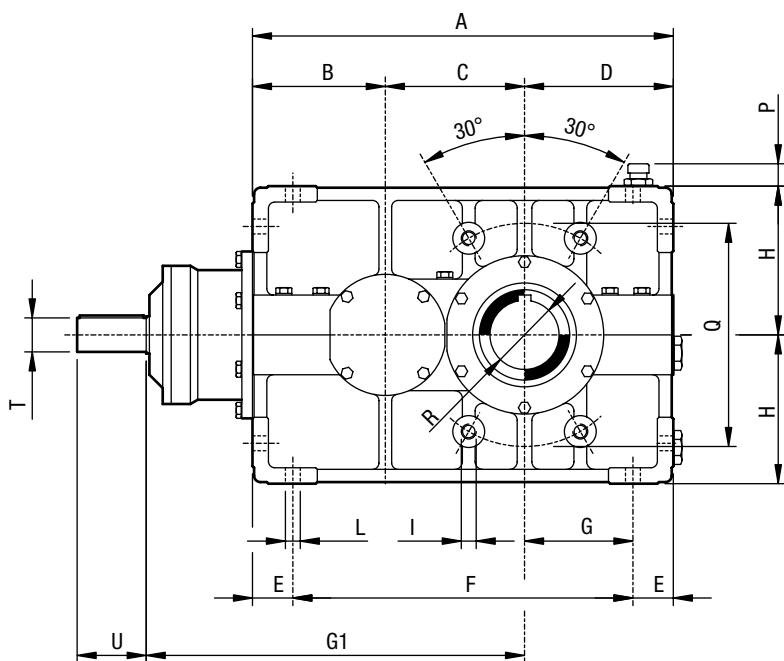
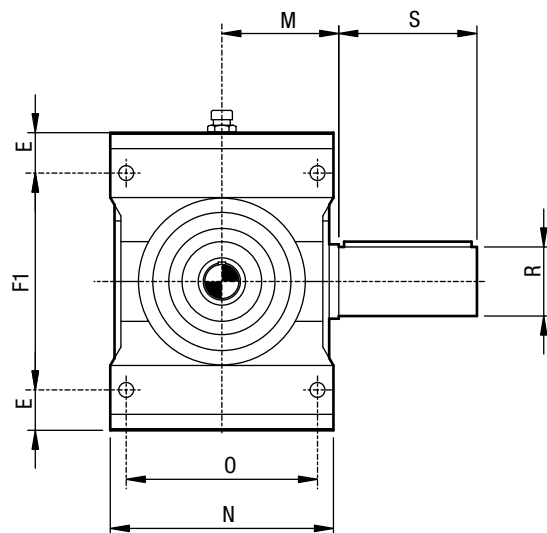
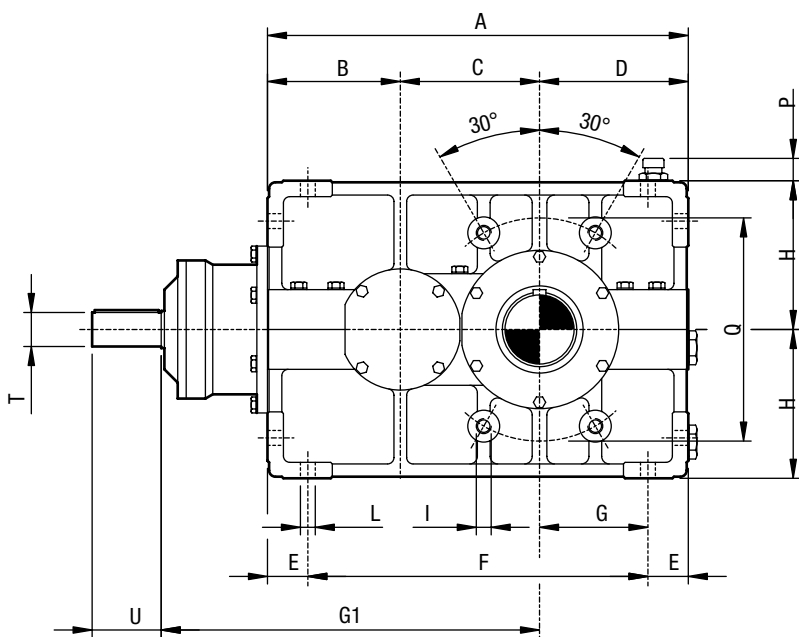
PD series quadruple reduction



Size	A	B	C	C1	D	E	F	F1	G	H	L	M	N	O	P	R	S	T	U	V	Z
120	1700	225	1025	160	450	110	800	680	340	500	42	420	700	590	33	240	410	55	110	175	300
130	1884	250	1134	180	500	125	884	750	375	560	45	480	780	660	35	270	470	70	140	190	340
140	2120	280	1280	200	560	150	1000	820	410	630	48	505	850	720	37	300	500	75	150	205	380
150	2395	315	1450	225	630	170	1135	920	460	710	52	565	930	790	40	340	550	85	170	235	420
160	2685	355	1620	250	710	200	1265	1020	510	800	56	630	1020	870	43	380	630	90	180	260	460

## BEVEL-HELICAL UNITS

RHB series double reduction

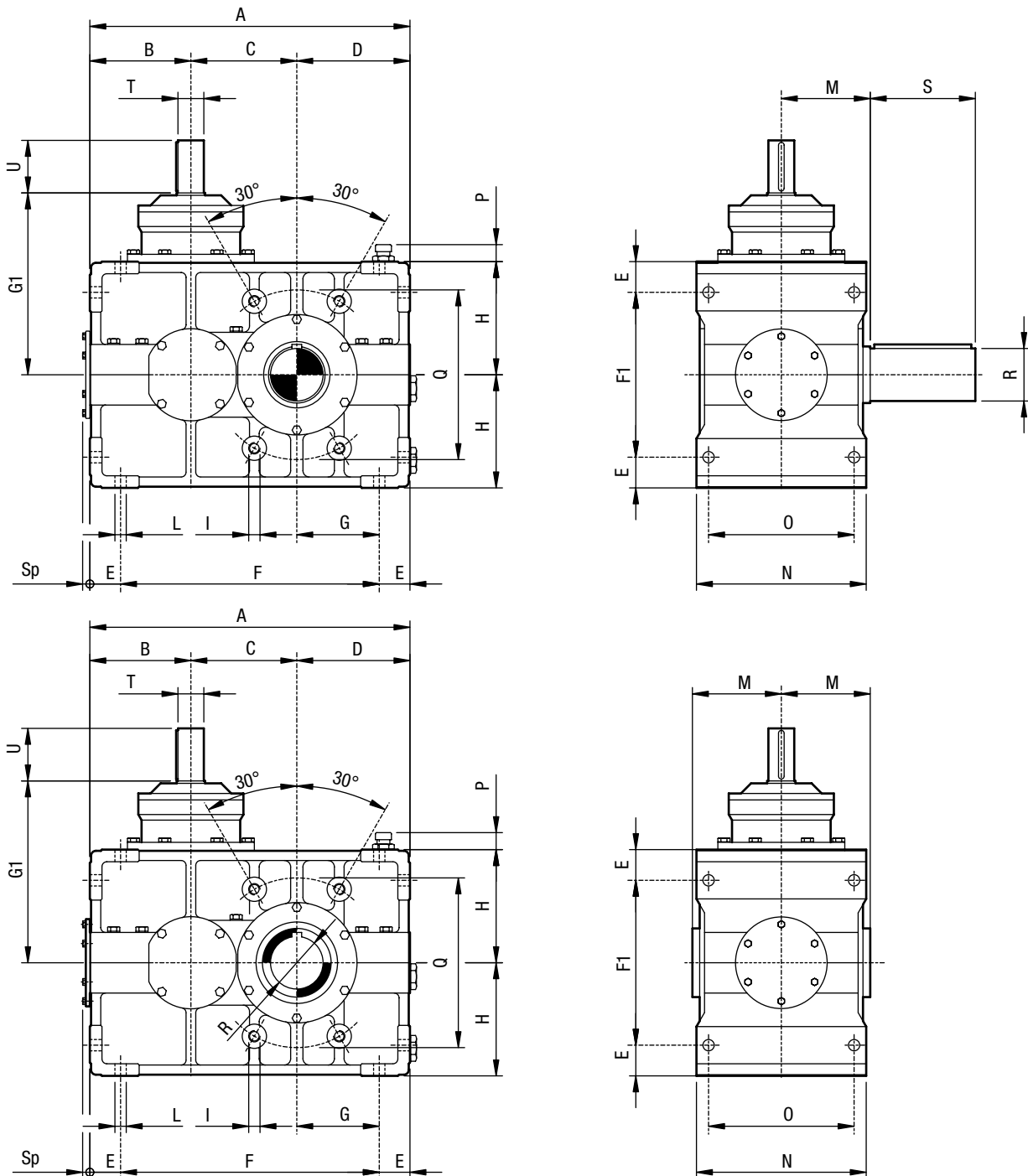


Size																		iN 5-11.2		iN 12.5-18			
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U	T	U
10	396	125	131	140	38	320	204	102	356	140	M16	14	115	210	180	20	210	65	110	35	70	32	65
20	450	140	150	160	42	366	236	118	400	160	M18	16	135	235	200	22	240	80	140	40	80	35	70
30	510	160	170	180	46	418	268	134	450	180	M20	18	145	260	220	22	270	90	160	45	90	40	80
40	570	180	190	200	52	466	296	148	505	200	M22	20	160	295	250	22	300	100	180	50	100	45	90
50	641	200	216	225	57	527	336	168	571	225	M24	22	170	325	275	22	340	110	200	55	110	50	100
60	715	225	240	250	62	591	376	188	640	250	M27	25	190	360	300	22	380	120	210	60	120	55	110
70	792	250	262	280	72	648	416	208	712	280	M30	27	225	415	350	25	430	140	250	70	140	60	120
80	895	280	300	315	80	735	470	235	800	315	M33	30	250	455	385	25	490	160	280	80	160	70	140
90	1010	315	340	355	87	836	536	268	900	355	M36	33	280	535	460	25	560	170	300	90	180	80	160
100	1135	355	380	400	93	949	614	307	1010	400	M39	36	310	600	520	25	640	200	350	100	200	90	180
110	1282	400	432	450	100	1082	700	350	1142	450	M42	39	375	710	620	25	730	220	390	110	220	100	200



## BEVEL-HELICAL UNITS

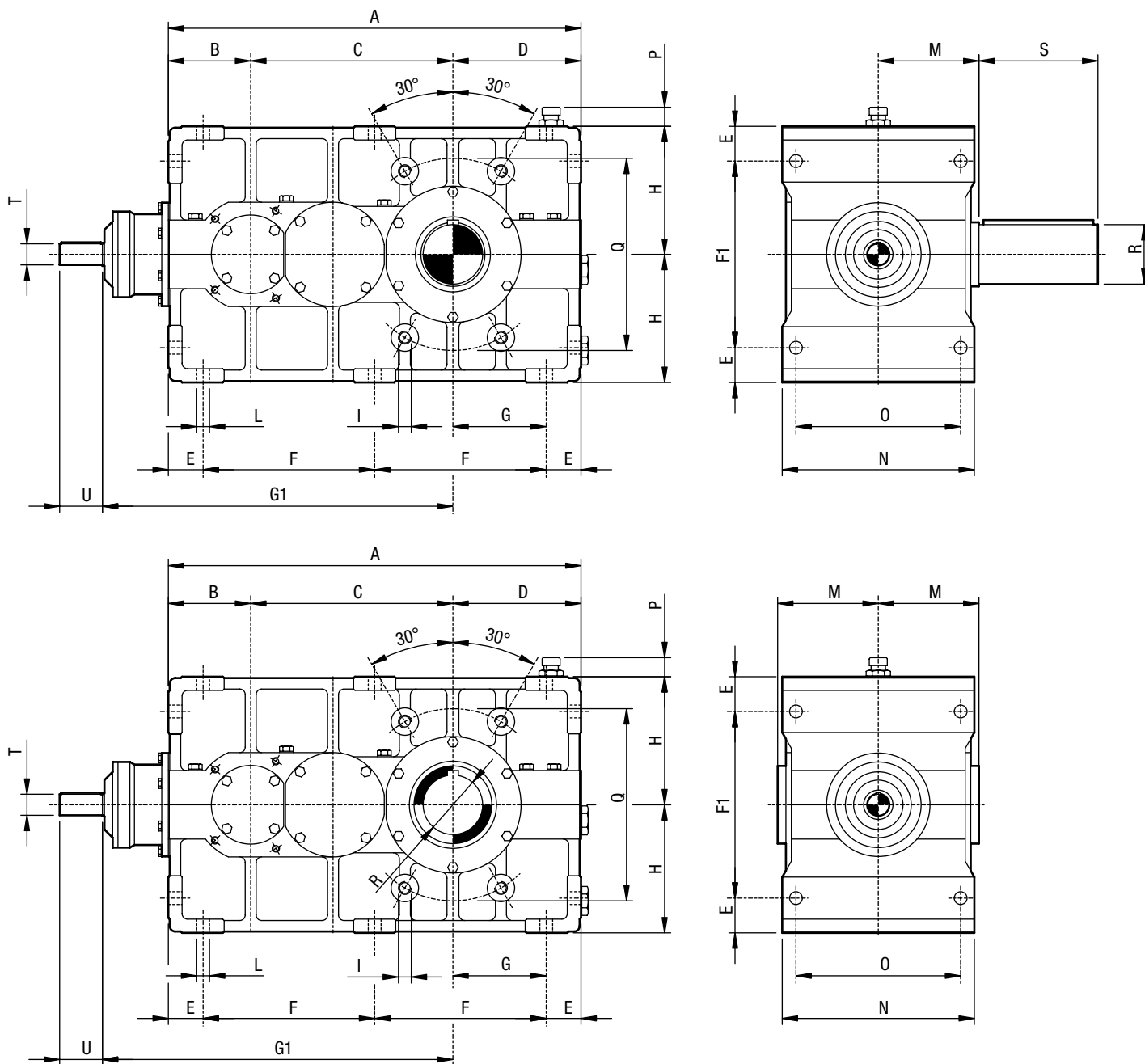
RVB series double reduction



Size	iN 5-11.2																	iN 12.5-18				Sp		
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U		T	U
10	396	125	131	140	38	320	204	102	225	140	M16	14	115	210	180	20	210	65	110	35	70	32	65	13
20	450	140	150	160	42	366	236	1118	250	160	M18	16	135	235	200	22	240	80	140	40	80	35	70	16
30	510	160	170	180	46	418	268	134	280	180	M20	18	145	260	220	22	270	90	160	45	90	40	80	17
40	570	180	190	200	52	466	296	148	315	200	M22	20	160	295	250	22	300	100	180	50	100	45	90	18
50	641	200	216	225	57	527	336	168	355	225	M24	22	170	325	275	22	340	110	200	55	110	50	100	22
60	715	225	240	250	62	591	376	188	400	250	M27	25	190	360	300	22	380	120	210	60	120	55	110	23
70	792	250	262	280	72	648	416	208	450	280	M30	27	225	415	350	25	430	140	250	70	140	60	120	25
80	895	280	300	315	80	735	470	235	500	315	M33	30	250	455	385	25	490	160	280	80	160	70	140	26
90	1010	315	340	355	87	836	536	268	560	355	M36	33	280	535	460	25	560	170	300	90	180	80	160	29
100	1135	355	380	400	93	949	614	307	630	400	M39	36	310	600	520	25	640	200	350	100	200	90	180	30
110	1282	400	432	450	100	1082	700	350	710	450	M42	39	375	710	620	25	730	220	390	110	220	100	200	32

## BEVEL-HELICAL UNITS

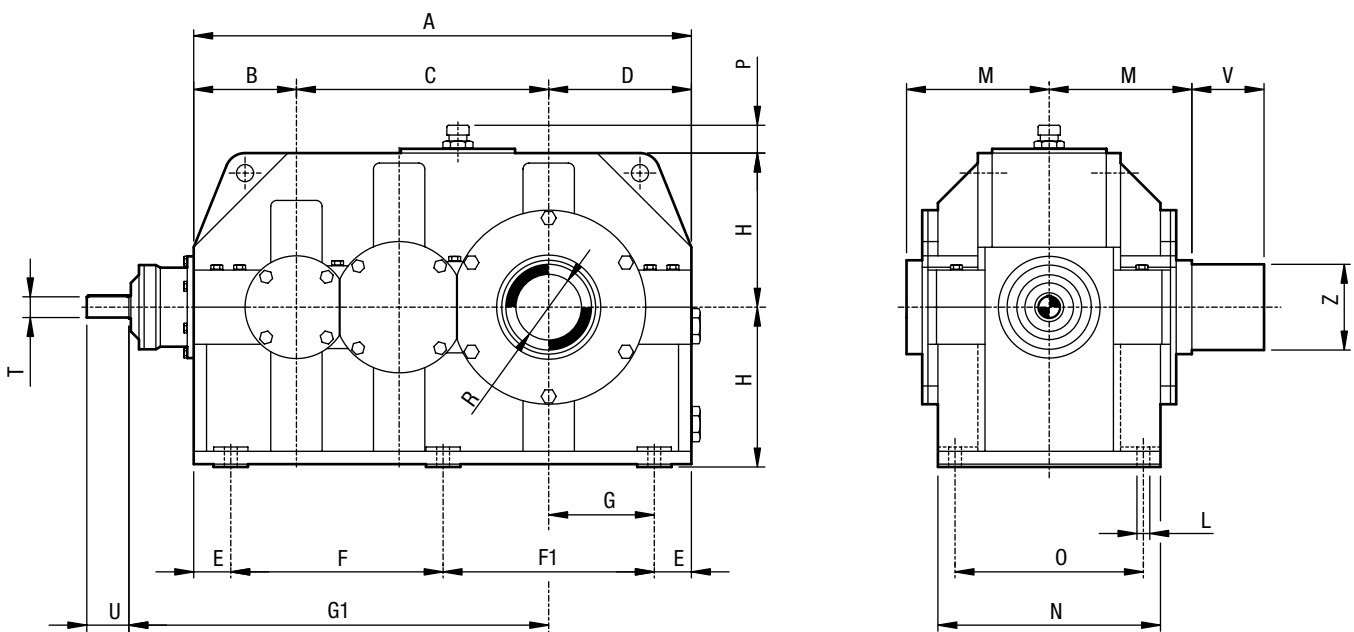
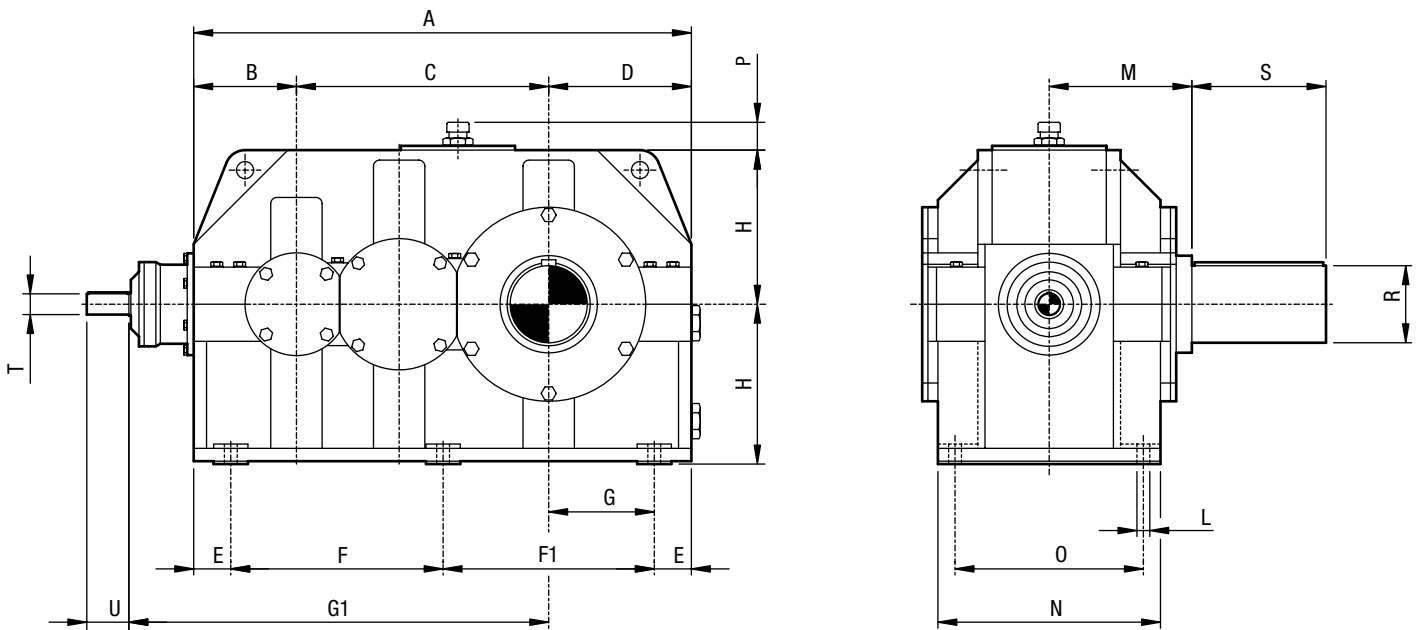
RHC series triple reduction



Size	iN 1.12-2.5																			iN 2.8-5.6			
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U	T	U
10	451	90	221	140	38	187,5	204	102	381	140	M16	14	115	210	180	20	210	65	110	24	50	22	45
20	510	100	250	160	42	213	236	118	430	160	M18	16	135	235	200	22	240	80	140	28	55	24	50
30	574	112	282	180	46	241	268	134	482	180	M20	18	145	260	220	22	270	90	160	32	65	28	55
40	640	125	315	200	52	268	296	148	540	200	M22	20	160	295	250	22	300	100	180	35	70	32	65
50	721	140	356	225	57	303,5	336	168	606	225	M24	22	170	325	275	22	340	110	200	40	80	35	70
60	810	160	400	250	62	343	376	188	680	250	M27	25	190	360	300	22	380	120	210	45	90	40	80
70	902	180	442	280	72	379	416	208	757	280	M30	27	225	415	350	25	430	140	250	50	100	45	90
80	1015	200	500	315	80	427,5	470	235	855	315	M33	30	250	455	385	25	490	160	280	55	110	50	100
90	1145	225	565	355	87	485,5	536	268	965	355	M36	33	280	535	460	25	560	170	300	60	120	55	110
100	1280	250	630	400	93	547	614	307	1080	400	M39	36	310	600	520	25	640	200	350	70	140	60	120
110	1442	280	712	450	100	621	700	350	1212	450	M42	39	375	710	620	25	730	220	390	80	160	70	140

## BEVEL-HELICAL UNITS

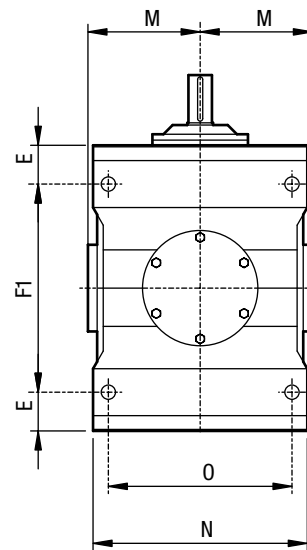
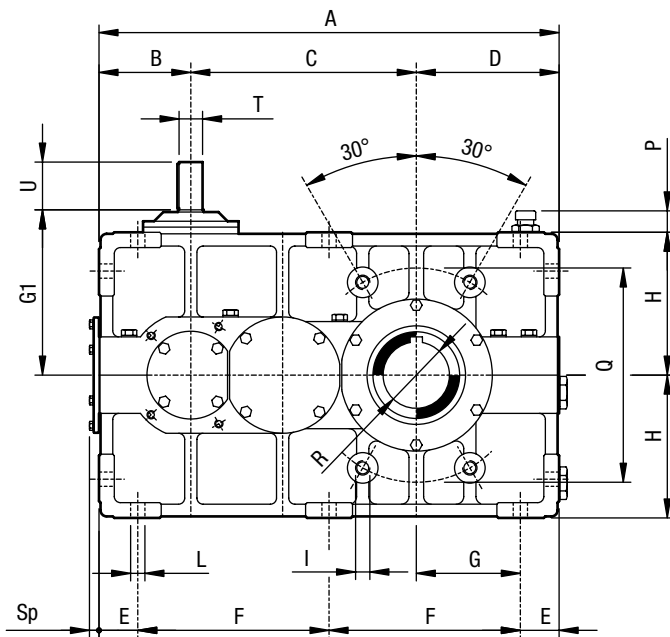
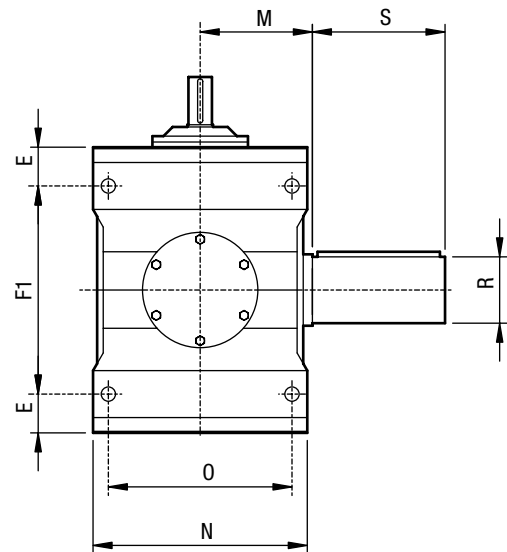
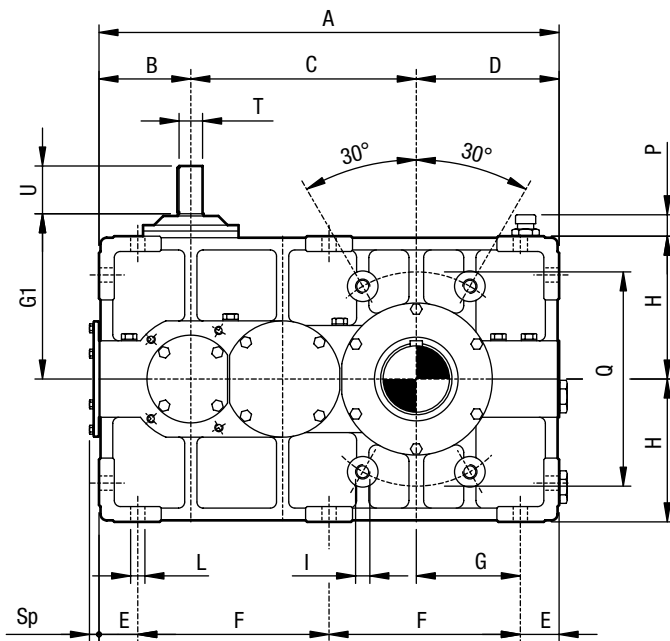
RHC series triple reduction



Size	iN 1.12-2.5																iN 2.8-5.6						
	A	B	C	D	E	F	F1	G	G1	H	L	M	N	O	P	R	S	T	U	T	U	V	Z
120	1565	315	800	450	110	665	680	340	1360	500	42	420	700	590	33	240	410	90	180	80	160	175	300
130	1739	355	884	500	125	739	750	375	1514	560	45	480	780	660	35	270	470	100	200	90	180	190	340
140	1960	400	1000	560	150	840	820	410	1710	630	48	505	850	720	37	300	500	110	220	100	200	205	380

## BEVEL-HELICAL UNITS

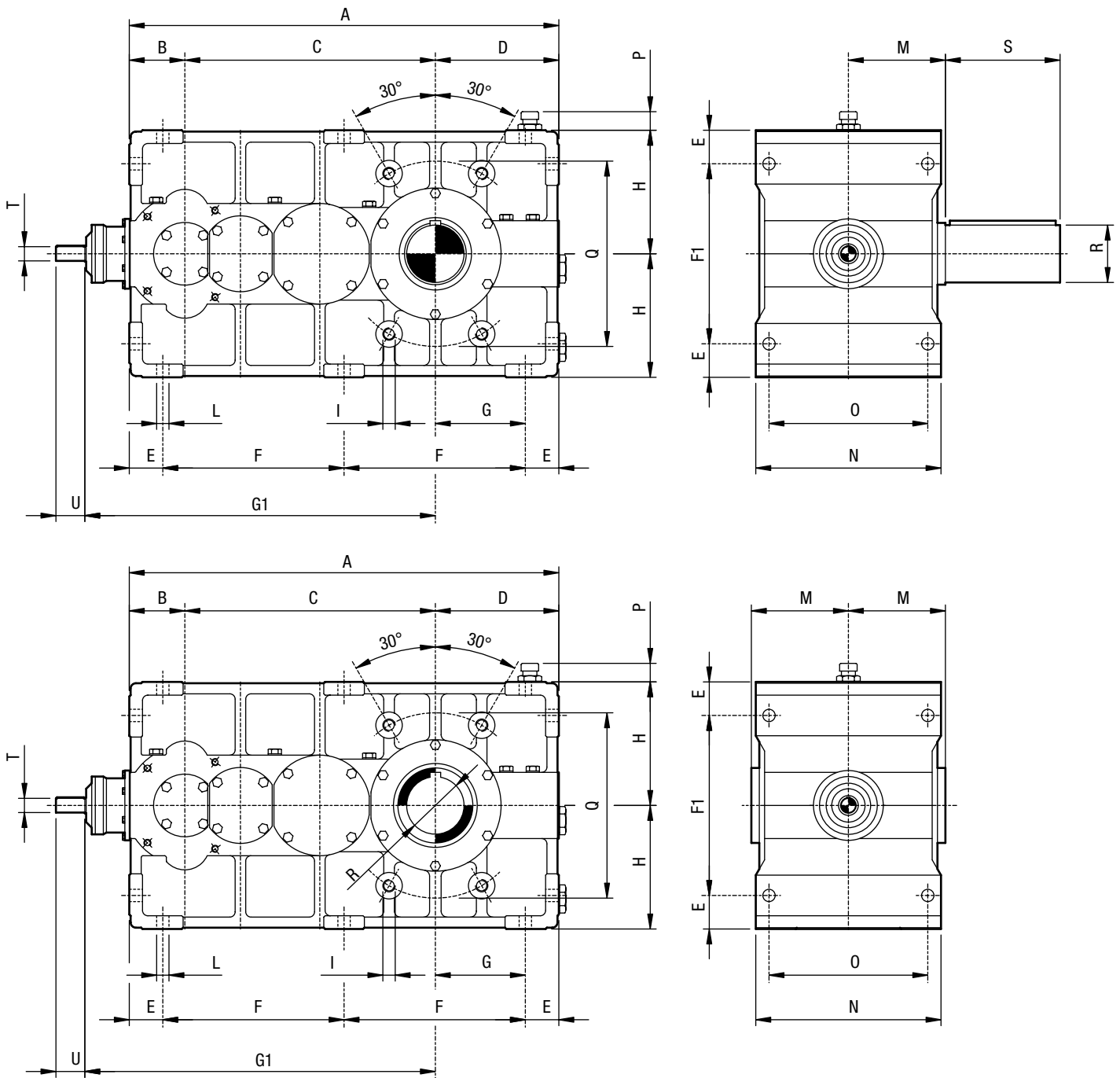
RVC series triple reduction



Size	iN 20-45																			iN 50-71				
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U	T	U	Sp
10	451	90	221	140	38	187,5	204	102	160	140	M16	14	115	210	180	20	210	65	110	24	50	22	45	11
20	510	100	250	160	42	213	236	118	180	160	M18	16	135	235	200	22	240	80	140	28	55	24	50	11
30	574	112	282	180	46	241	268	134	200	180	M20	18	145	260	220	22	270	90	160	32	65	28	55	12
40	640	125	315	200	52	268	296	148	225	200	M22	20	160	295	250	22	300	100	180	35	70	32	65	13
50	721	140	356	225	57	303,5	336	168	250	225	M24	22	170	325	275	22	340	110	200	40	80	35	70	16
60	810	160	400	250	62	343	376	188	280	250	M27	25	190	360	300	22	380	120	210	45	90	40	80	17
70	902	180	442	280	72	379	416	208	315	280	M30	27	225	415	350	25	430	140	250	50	100	45	90	18
80	1015	200	500	315	80	427,5	470	235	355	315	M33	30	250	455	385	25	490	160	280	55	110	50	100	22
90	1145	225	565	355	87	485,5	536	268	400	355	M36	33	280	535	460	25	560	170	300	60	120	55	110	23
100	1280	250	630	400	93	547	614	307	450	400	M39	36	310	600	520	25	640	200	350	70	140	60	120	25
110	1442	280	712	450	100	621	700	350	500	450	M42	39	375	710	620	25	730	220	390	80	160	70	140	26

## BEVEL-HELICAL UNITS

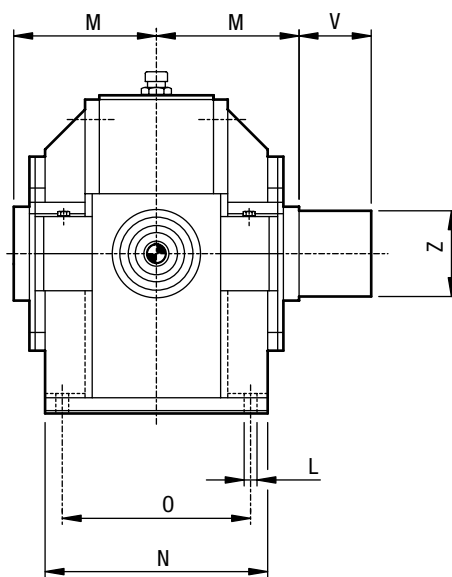
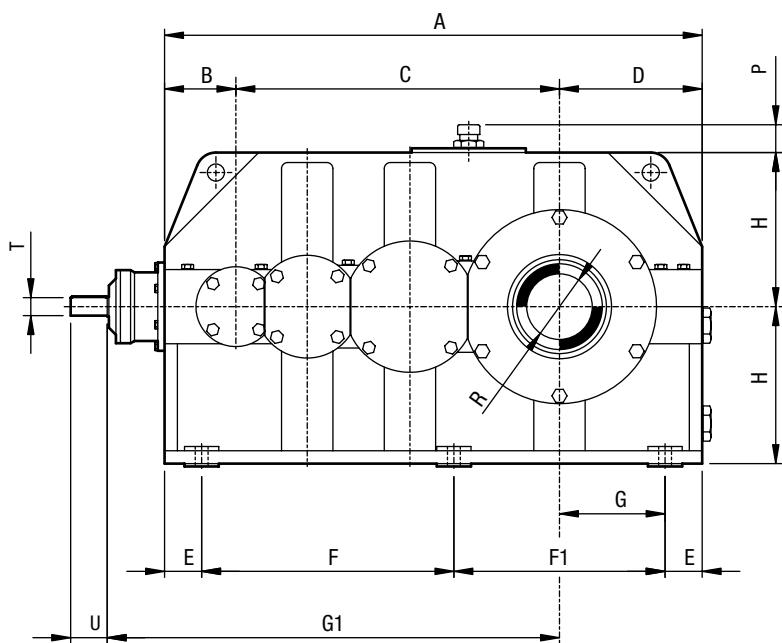
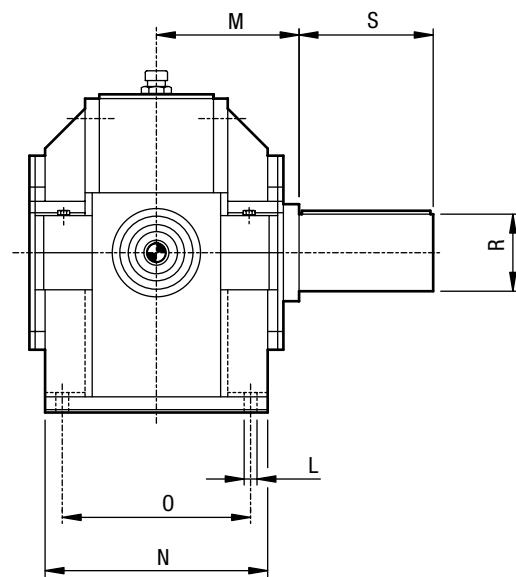
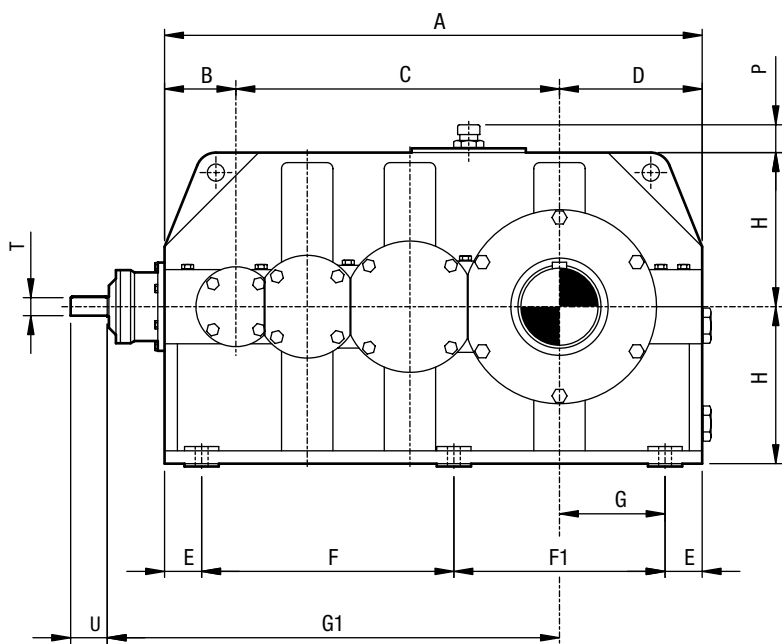
RHD series quadruple reduction



Size	iN 80-225																			iN 250-355			
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U	T	U
10	487	63	284	140	38	205,5	204	102	396	140	M16	14	115	210	180	20	210	65	110	20	40	20	40
20	550	70	320	160	42	233	236	118	445	160	M18	16	135	235	200	22	240	80	140	20	40	20	40
30	622	80	362	180	46	265	268	134	502	180	M20	18	145	260	220	22	270	90	160	22	45	20	40
40	695	90	405	200	52	295,5	296	148	565	200	M22	20	160	295	250	22	300	100	180	24	50	22	45
50	781	100	456	225	57	333,5	336	168	636	225	M24	22	170	325	275	22	340	110	200	28	55	24	50
60	874	112	512	250	62	375	376	188	712	250	M27	25	190	360	300	22	380	120	210	32	65	28	55
70	972	125	567	280	72	414	416	208	792	280	M30	27	225	415	350	25	430	140	250	35	70	32	65
80	1095	140	640	315	80	467,5	470	235	890	315	M33	30	250	455	385	25	490	160	280	40	80	35	70
90	1240	160	725	355	87	533	536	268	1005	355	M36	33	280	535	460	25	560	170	300	45	90	40	80
100	1390	180	810	400	93	602	614	307	1125	400	M39	36	310	600	520	25	640	200	350	50	100	45	90
110	1562	200	912	450	100	681	700	350	1247	450	M42	39	375	710	620	25	730	220	390	55	110	50	100

## BEVEL-HELICAL UNITS

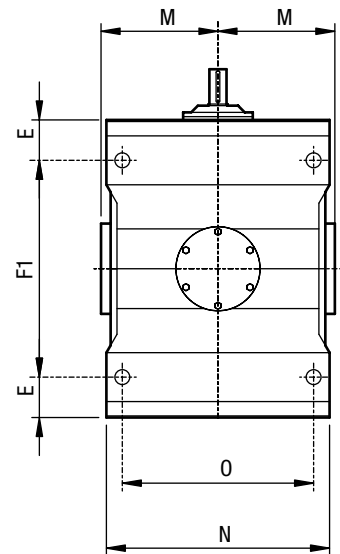
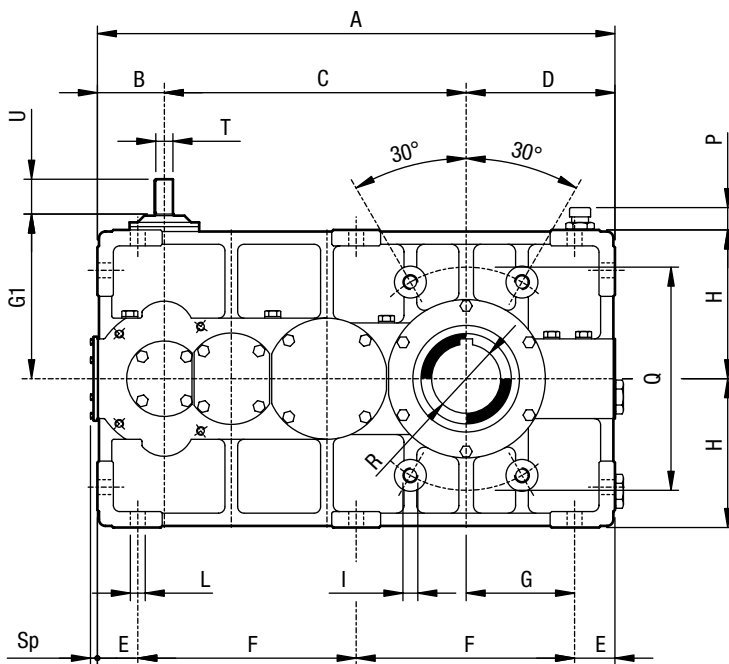
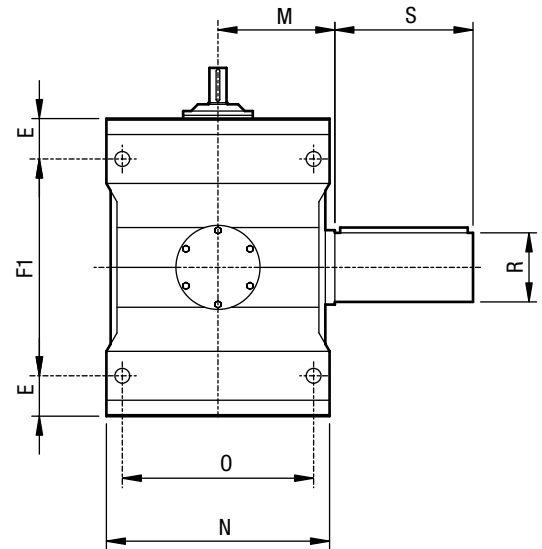
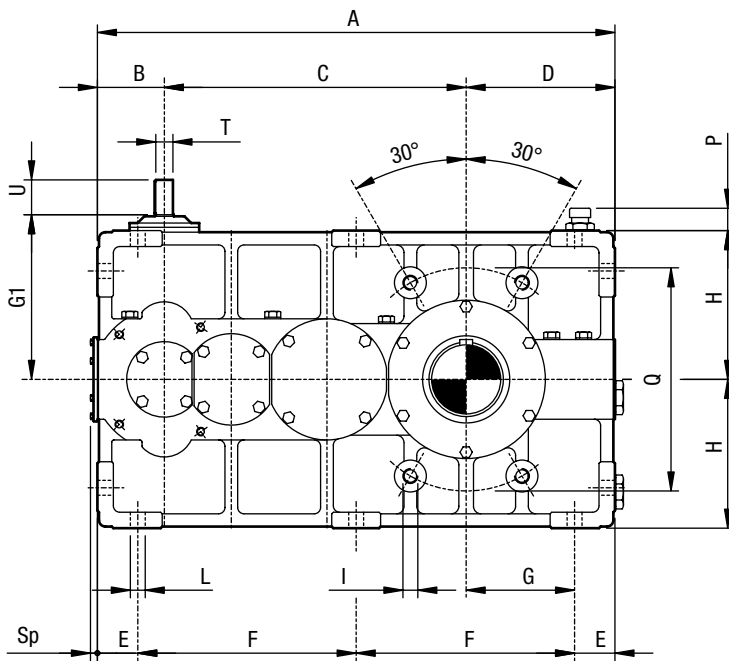
RHD series quadruple reduction



Size	IN 80-225																	IN 250-355					
	A	B	C	D	E	F	F1	G	G1	H	L	M	N	O	P	R	S	T	U	T	U	V	Z
120	1700	225	1025	450	110	800	680	340	1425	500	42	420	700	590	33	240	410	60	120	55	110	175	300
130	1884	250	1134	500	125	884	750	375	1584	560	45	480	780	660	35	270	470	70	140	60	120	190	340
140	2120	280	1280	560	150	1000	820	410	1780	630	48	505	850	720	37	300	500	80	160	70	140	205	380
150	2395	315	1450	630	170	1135	920	460	2010	710	52	565	930	790	40	340	550	90	180	80	160	235	420
160	2685	355	1620	710	200	1265	1020	510	2250	800	56	630	1020	870	43	380	630	100	200	90	180	260	460

## BEVEL-HELICAL UNITS

RVD series quadruple reduction



Size	iN 80-225																	iN 250-355						
	A	B	C	D	E	F	F1	G	G1	H	I	L	M	N	O	P	Q	R	S	T	U	T	U	Sp
10	487	63	284	140	38	205,5	204	102	160	140	M16	14	115	210	180	20	210	65	110	20	40	20	40	10
20	550	70	320	160	42	233	236	118	180	160	M18	16	135	235	200	22	240	80	140	20	40	20	40	10
30	622	80	362	180	46	265	268	134	200	180	M20	18	145	260	220	22	270	90	160	22	45	20	40	11
40	695	90	405	200	52	295,5	296	148	225	200	M22	20	160	295	250	22	300	100	180	24	50	22	45	11
50	781	100	456	225	57	333,5	336	168	250	225	M24	22	170	325	275	22	340	110	200	28	55	24	50	11
60	874	112	512	250	62	375	376	188	280	250	M27	25	190	360	300	22	380	120	210	32	65	28	55	12
70	972	125	567	280	72	414	416	208	315	280	M30	27	225	415	350	25	430	140	250	35	70	32	65	13
80	1095	140	640	315	80	467,5	470	235	355	315	M33	30	250	455	385	25	490	160	280	40	80	35	70	16
90	1240	160	725	355	87	533	536	268	400	355	M36	33	280	535	460	25	560	170	300	45	90	40	80	17
100	1390	180	810	400	93	602	614	307	450	400	M39	36	310	600	520	25	640	200	350	50	100	45	90	18
110	1562	200	912	450	100	681	700	350	500	450	M42	39	375	710	620	25	730	220	390	55	110	50	100	22

## P Series - Helical units - Actual ratios

Size	in																
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
<b>PA</b>	1.12	1.118	1.118	1.147	1.147	1.111	1.139	1.118	1.118	1.147	1.147	1.111					
	1.25	1.25	1.25	1.281	1.281	1.235	1.265	1.25	1.25	1.281	1.281	1.235					
	1.4	1.4	1.4	1.433	1.433	1.375	1.406	1.4	1.4	1.433	1.433	1.375					
	1.6	1.571	1.571	1.607	1.607	1.621	1.567	1.571	1.571	1.607	1.607	1.621					
	1.8	1.769	1.769	1.808	1.808	1.815	1.75	1.769	1.769	1.808	1.808	1.815					
	2	2	2	2.042	2.042	2.04	1.962	2	2	2.042	2.042	2.04					
	2.25	2.273	2.273	2.318	2.318	2.3	2.208	2.273	2.273	2.318	2.318	2.304					
	2.5	2.429	2.429	2.476	2.476	2.455	2.5	2.429	2.429	2.476	2.476	2.455					
	2.8	2.789	2.789	2.842	2.842	2.8	2.85	2.789	2.789	2.842	2.842	2.8					
	3.15	3.235	3.235	3.056	3.056	3.222	3.053	3.235	3.235	3.056	3.056	3.222					
3.55	3.5	3.5	3.563	3.563	3.471	3.529	3.5	3.5	3.563	3.563	3.471						
4	4.143	4.143	3.867	3.867	4.067	4.133	4.143	4.143	3.867	3.867	4.067						
4.5	4.538	4.538	4.615	4.615	4.429	4.5	4.538	4.538	4.615	4.615	4.429						
5	5	5	5.083	5.083	4.846	4.923	5	5	5.083	5.083	4.846						
5.6	5.545	5.545	5.636	5.636	5.909	5.417	5.545	5.545	5.636	5.636	5.909						
<b>PB</b>	6.3	6.321	6.484	6.154	6.429	6.397	6.268	6.321	6.484	6.154	6.429	6.397	6.268	6.321	6.484	6.154	6.429
	7.1	7.157	6.892	6.923	7.278	7.263	7.096	7.157	6.892	6.923	7.278	7.263	7.096	7.157	6.892	6.923	7.278
	8	8.131	7.806	7.811	7.754	7.75	8.063	8.131	7.806	7.811	7.754	7.75	8.063	8.131	7.806	7.811	7.754
	9	9.283	8.88	8.846	8.829	8.857	9.205	9.283	8.88	8.846	8.829	8.857	9.205	9.283	8.88	8.846	8.829
	10	9.941	10.158	10.170	10.110	9.490	9.857	9.941	10.158	10.170	10.110	9.490	9.857	9.941	10.158	10.170	10.110
	11.2	11.466	10.892	11.538	10.846	10.955	11.368	11.466	10.892	11.538	10.846	10.955	11.368	11.466	10.892	11.538	10.846
	12.5	12.355	12.607	12.389	12.564	12.765	12.25	12.355	12.607	12.389	12.564	12.765	12.25	12.355	12.607	12.389	12.564
	14	14.466	13.615	14.389	13.575	13.839	14.344	14.466	13.615	14.389	13.575	13.839	14.344	14.466	13.615	14.389	13.575
	16	15.733	16.036	15.577	16	16.449	15.6	15.733	16.036	15.577	16	16.449	15.6	15.733	16.036	15.577	16
	18	17.181	17.505	18.462	17.473	18.055	18.692	17.181	17.505	18.462	17.473	18.055	18.692	17.181	17.505	18.462	17.473
	20	20.801	19.201	20.237	19.172	19.929	20.625	20.801	19.201	20.237	19.172	19.929	20.625	20.801	19.201	20.237	19.172
	22.5			22.308			22.909	23.105	23.517	22.308	23.497	22.143	22.909	23.105	23.517	22.143	22.909
	25											24.8					
28																	
31.5																	
<b>PC</b>	18																
	20																
	22.5	22.751	22.503		23.137	22.42										22.984	
	25	25.655	25.415	24.399	24.566	25.243	24.492	25.655	25.415	24.399	24.566		24.492	25.655	25.415	24.566	24.566
	28	27.257	28.744	27.513	27.719	28.469	27.5	27.257	28.744	27.513	27.719	28.469	27.5	27.257	28.744	27.513	27.719
	31.5	30.817	30.593	31.071	31.339	30.262	30.938	30.817	32.584	31.071	31.339	32.192	30.938	30.817	32.584	31.071	31.339
	35.5	34.946	34.734	35.178	35.538	34.277	34.904	34.946	34.734	35.178	35.538	34.277	34.904	34.946	34.734	35.178	35.538
	40	39.794	39.596	39.968	40.468	38.991	39.531	39.794	39.596	39.968	40.468	38.991	39.531	39.794	39.596	39.968	40.468
	45	45.565	45.385	45.629	46.337	44.602	45	45.565	45.385	45.629	46.337	44.602	45	45.565	45.385	45.629	46.337
	50	48.883	48.713	48.864	49.712	51.395	51.563	48.883	48.713	48.864	49.712	51.395	51.563	48.883	48.713	48.864	49.712
	56	56.626	56.479	56.356	57.585	55.357	55.362	56.626	56.479	56.356	57.585	55.357	55.362	56.626	56.479	56.356	57.585
	63	61.18	61.047	60.726	62.217	64.768	64.301	61.18	61.047	60.726	62.217	64.768	64.301	61.18	61.047	60.726	62.217
	71	72.111	72.01	71.106	73.333	70.414	69.609	72.111	72.01	71.106	73.333	70.414	69.609	72.111	72.01	71.106	73.333
	80	78.748	78.667	77.333	80.082	76.867	82.5	78.748	78.667	77.333	80.082	76.867	82.5	78.748	78.667	77.333	80.082
	90	86.405	86.347	92.663	87.87	93	90.433	86.405	86.347	92.663	87.87	93	90.433	86.405	86.347	92.663	87.87
100	95.339	95.308	102.24	96.955		99.688	95.339	105.9	102.24	96.955	103.27	99.688	95.34	105.9	102.24	96.955	
112																	
125																	
<b>PD</b>	100					98.813											
	112	110.01	114.93	114.64	112.59	111.6	115.77	110.72	113.75	114.64	112.59	111.6	115.77	110.72	113.75	114.64	112.59
	125	127.12	128.07	128.63	127.04	126.21	12295	124.93	128.17	121.41	127.04	126.21	12295	124.93	128.17	121.41	127.04
	140	140.2	142.96	136.32	143.64	143.08	138.85	141.24	136.15	136.32	143.64	143.08	138.85	141.24	136.15	136.32	143.64
	160	163	159.98	162.83	162.88	162.75	157.2	160.17	163.93	162.83	162.88	162.75	157.2	160.17	163.93	162.83	162.89
	180	180.82	179.62	184.04	185.48	186	178.61	182.39	174.73	184.04	185.48	186	178.61	182.39	174.73	184.04	185.48
	200	201.27	202.53	195.97	198.32	199.29	203.91	208.84	199.28	195.97	198.32	199.29	203.91	208.84	199.28	195.97	198.32
	225	225	229.6	223.08	227.84	230.05	218.36	224.05	228.74	223.08	227.84	230.05	218.36	224.05	228.74	223.08	227.85
	250	252.86	245.08	255.61	244.94	248	251.84	240.86	245.79	255.61	244.94	248	251.84	240.86	245.79	255.61	244.94
	280	286.02	280.91	274.44	285.16	290.63	271.37	280.41	285.92	274.44	285.16	290.63	271.37	280.41	285.92	274.44	285.16
	315	305.09	325.17	318.76	309.04	316.2	317.75	303.89	309.75	318.76	309.04	316.2	317.75	303.89	309.75	318.76	309.04
	355	349.58	351.45	345.07	367.04	345.43	345.58	360.93	367.62	345.07	367.04	345.43	345.58	360.93	367.62	345.07	367.04
	400	405.19	415.27	408.97	402.74	418.5	414.09	396.02	403.22	408.97	402.74	418.5	414.09	396.02	403.22	408.97	402.74
	450	438.56	454.54	448.3	444.38		456.9	436.97	444.77	448.30	444.38	465	456.90	436.97	444.77	448.30	444.38
	500	520.7	500.37	494.18			507.5	485.36	493.87	494.18	493.59	520.8	507.5	485.36	493.87	494.18	493.59

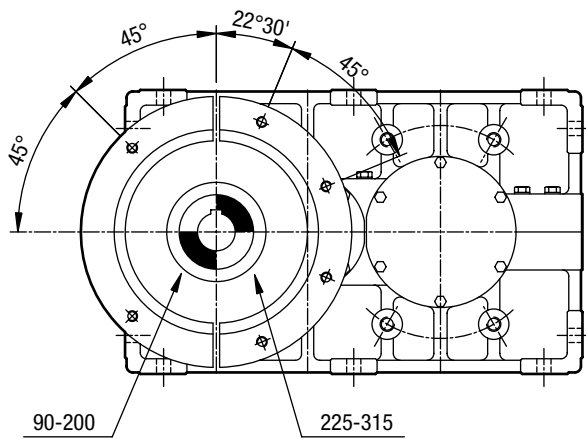


## RH • RV Series - Helical units - Actual ratios

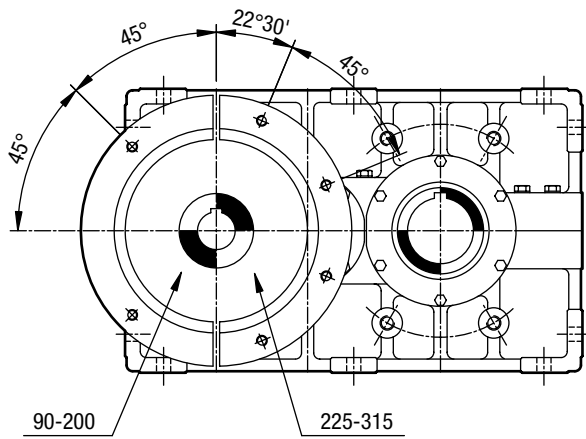
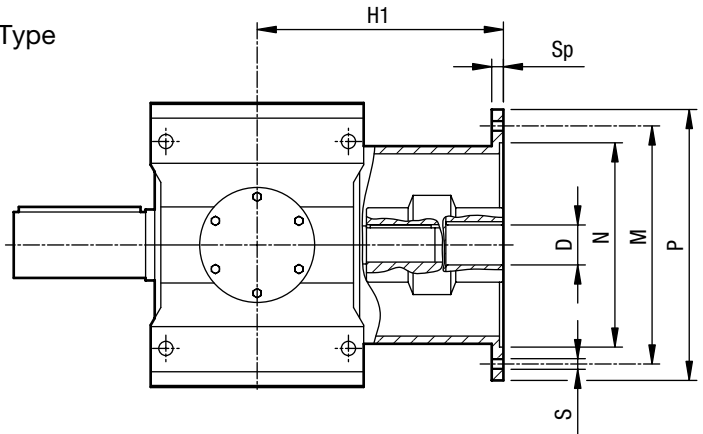
		Size															
i <sub>n</sub>		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>RHB RVB</b>	<b>5</b>	5.078	5.078	5.177	5.177	5.132	4.409	5.078	5.078	5.143	5.129	5.063					
	<b>5.6</b>	5.436	5.436	5.541	5.541	5.476	5.576	5.436	5.436	5.504	5.489	5.775					
	<b>6.3</b>	6.273	6.273	6.389	6.389	6.273	6.383	6.273	6.273	6.346	6.329	6.188					
	<b>7.1</b>	7.318	7.318	6.888	6.888	7.257	6.854	7.318	7.318	6.842	7.379	7.158					
	<b>8</b>	7.945	7.945	8.085	8.085	7.841	7.972	7.945	7.945	8.031	8.01	7.734					
	<b>9</b>	8.662	8.662	8.812	8.812	9.26	8.642	8.662	8.662	8.753	8.73	9.134					
	<b>10</b>	10.455	10.455	9.65	9.65	10.133	10.294	10.455	10.455	9.586	9.56	9.995					
	<b>11.2</b>	11.595	11.595	11.785	11.785	11.152	11.326	11.595	11.595	11.706	11.675	11					
	<b>12.5</b>	12.16	12.16	12.373	12.373	12	12.2	12.16	12.16	12.373	12.373	12					
	<b>14</b>	14.523	14.523	13.486	13.486	14.171	14.4	14.523	14.523	14.769	13.486	14.171					
	<b>16</b>	16	16	16.267	16.267	15.508	15.754	16	16	16.267	16.267	15.508					
	<b>18</b>	17.745	17.745	18.036	18.036	17.067	17.333	17.745	17.745	18.036	18.036	17.067					
<b>RHG RVC</b>	<b>20</b>	19.41	19.842	19.72	19.739	19.842	20.61	20.787	19.842	19.72	19.739	19.842	20.473	20.593	19.572		
	<b>22.5</b>	22.3	22.775	22.517	22.678	22.906	22.111	22.3	22.775	22.517	22.678	22.906	21.963	22.093	22.465		
	<b>25</b>	25.833	24.473	24.126	24.38	24.693	25.614	25.833	24.473	24.126	24.38	24.693	25.442	25.592	24.14		
	<b>28</b>	27.91	28.469	27.879	28.383	28.937	27.674	27.91	28.469	27.879	28.383	28.937	27.489	27.65	28.082		
	<b>31.5</b>	32.897	30.841	32.57	30.76	31.483	32.618	32.897	30.841	32.57	30.76	31.483	32.4	32.59	30.422		
	<b>35.5</b>	35.925	36.602	35.385	36.533	34.393	35.62	35.925	36.602	35.385	36.533	34.393	35.382	35.59	36.105		
	<b>40</b>	39.418	40.148	38.601	40.086	41.669	39.084	39.418	40.148	38.601	40.086	41.669	38.822	39.051	39.602		
	<b>45</b>	43.494	44.284	42.313	44.231	46.299	43.125	43.494	44.284	42.313	44.231	46.299	42.837	43.088	43.683		
	<b>50</b>	50.347	49.015	49.846	49.129	48.183	49.92	50.347	51.315	54.154	51.2	52.637	49.92	50.347	51.315		
	<b>56</b>	54.98	58.092	54.154	55.912	57.776	54.514	54.98	56.018	59.077	55.912	57.776	54.514	54.98	56.018		
	<b>63</b>	60.327	63.678	64.757	61.349	63.771	66	60.327	61.444	64.757	61.349	63.771	66	66.564	61.444		
	<b>71</b>	73.936	70.195	71.385	75.189	70.857	73.309	73.936	67.774	71.385	67.692	70.857	73.309	73.936	67.774		
	<b>80</b>		77.897		84.185	79.36	82.08	82.782	75.256	79.217	75.189	79.36			75.256		
	<b>90</b>																
	<b>100</b>																
<b>RHD RVD</b>	<b>80</b>	77.926		78.361									82.656	77.926		77.837	78.508
	<b>90</b>	88.964	88.569	89.231	90.472	87.126	88.125	88.964	88.569	89.231	90.472	87.126	88.125	88.964	88.569	88.634	89.629
	<b>100</b>	102.21	101.85	102.17	103.94	100.01	100.625	102.21	101.85	102.17	103.94	100.01	100.63	102.21	101.85	101.49	102.974
	<b>112</b>	109.88	109.55	109.61	111.74	115.75	115.757	109.88	109.55	109.61	111.74	107.46	115.76	109.88	109.55	108.88	110.7
	<b>125</b>	127.92	127.64	126.97	120.41	125.01	124.583	127.92	127.64	126.97	120.41	125.01	124.58	127.92	127.64	126.12	128.88
	<b>140</b>	138.64	138.39	137.19	140.99	135.42	145.547	138.64	138.39	137.19	140.99	135.42	145.55	138.64	138.39	136.27	139.67
	<b>160</b>	164.65	164.49	161.7	153.33	160.72	158.125	164.654	164.48	161.7	153.33	160.72	158.13	164.65	164.49	160.62	165.89
	<b>180</b>	180.67	180.54	176.58	183.73	176.29	172.5	180.67	180.54	176.58	183.73	176.29	172.5	180.67	180.54	175.4	182.02
	<b>200</b>	199.35	199.28	193.75	202.72	194.46	208.438	199.35	199.28	193.75	202.72	194.45	208.44	199.35	199.28	192.45	200.84
	<b>225</b>	230.76	230.43	227.54	234.67	225.33	222.75	230.76	221.42	219.69	234.67	225.33	222.75	230.76	230.43	227.54	234.67
	<b>250</b>	251.99	251.73	247.47	256.26	245.98	242	251.99	251.73	260.92	256.26	245.98	242	251.99	251.73	247.47	256.26
	<b>280</b>	276.5	276.31	270.24	281.18	269.8	289.385	276.5	276.31	286.3	281.18	269.8	289.4	276.5	276.31	270.24	281.18
	<b>315</b>	305.09	304.99	327.18	310.26	297.6	319	305.09	304.98	315.9	310.26	330.45	319	305.09	304.99	327.18	310.26
	<b>355</b>	338.87	338.87	363.41	344.62	335.78	354	338.871	338.871	379.54	350.88	369.87			338.87		
	<b>400</b>						379.415										

## MOTORIZED GEAR UNITS

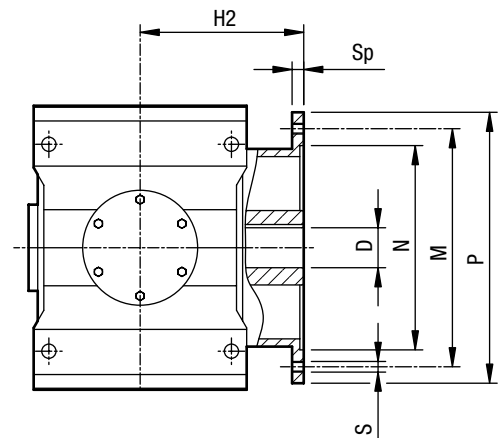
Helical unit PB series



BC Type



PAM Type



Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
10	90	24	165	130	200	M10	12	224	130
	100-112	28	215	180	250	M12	14	234	140
	132	38	265	230	300	M12	16	254	160
	160	42	300	250	350	M16	18	284	190
	180	48	300	250	350	M16	18	284	
20	100-112	28	215	180	250	M12	14	264	145
	132	38	265	230	300	M12	16	284	165
	160	42	300	250	350	M16	18	314	195
	180	48	300	250	350	M16	18	314	195
	200	55	350	300	400	M16	20	314	
30	100-112	28	215	180	250	M12	14	279	160
	132	38	265	230	300	M12	16	299	180
	160	42	300	250	350	M16	18	329	210
	180	48	300	250	350	M16	18	329	210
	200	55	350	300	400	M16	20	329	210
40	225	60	400	350	450	M16	20	359	
	132	38	265	230	300	M12	16	334	180
	160	42	300	250	350	M16	18	364	210
	180	48	300	250	350	M16	18	364	210
	200	55	350	300	400	M16	20	364	210
50	225	60	400	350	450	M16	20	394	240
	250	65	500	450	550	M16	20	394	
	132	38	265	230	300	M12	16	354	200
	160	42	300	250	350	M16	18	384	230
	180	48	300	250	350	M16	18	384	230

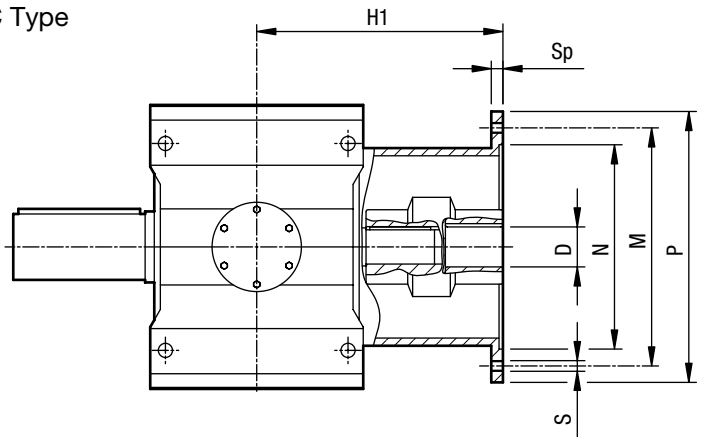
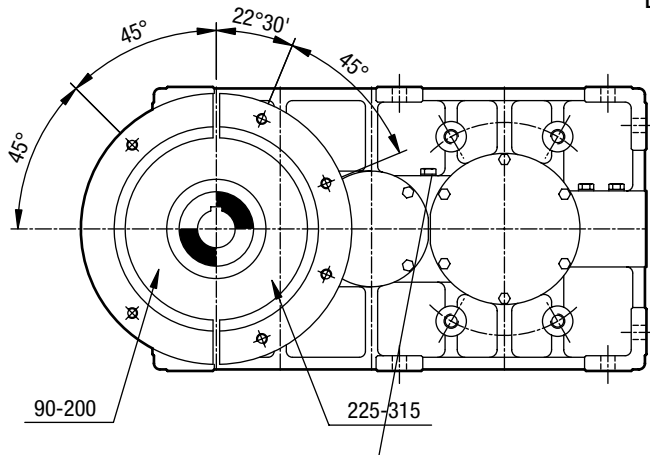
Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
60	160	42	300	250	350	M16	18	414	220
	180	48	300	250	350	M16	18	414	220
	200	55	350	300	400	M16	20	414	220
	225	60	400	350	450	M16	20	444	250
	250	65	500	450	550	M16	20	444	250
70	280	75	500	450	550	M16	20	444	250
	160	42	300	250	350	M16	18	479	245
	180	48	300	250	350	M16	18	479	245
	200	55	350	300	400	M16	20	479	245
	225	60	400	350	450	M16	20	509	275
80	250	65	500	450	550	M16	20	509	275
	280	75	500	450	550	M16	20	509	275
	200	55	350	300	400	M16	20	514	275
	225	60	400	350	450	M16	20	544	305
	250	65	500	450	550	M16	20	544	305
90	280	75	500	450	550	M16	20	544	305
	315	80	600	550	660	M20	24	574	335
	200	55	350	300	400	M16	20	564	320
	225	60	400	350	450	M16	20	594	350
	250	65	500	450	550	M16	20	594	350

All dimensions refer to IEC frame size motors

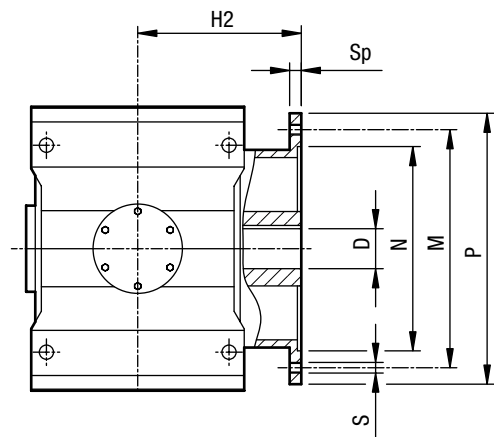
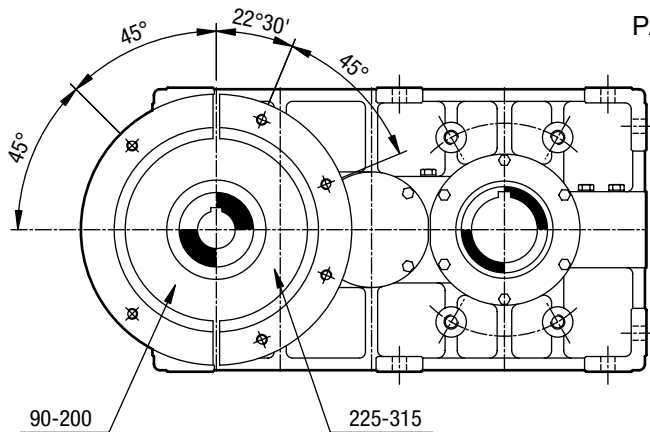
## MOTORIZED GEAR UNITS

### Helical unit PC series

BC Type



PAM Type



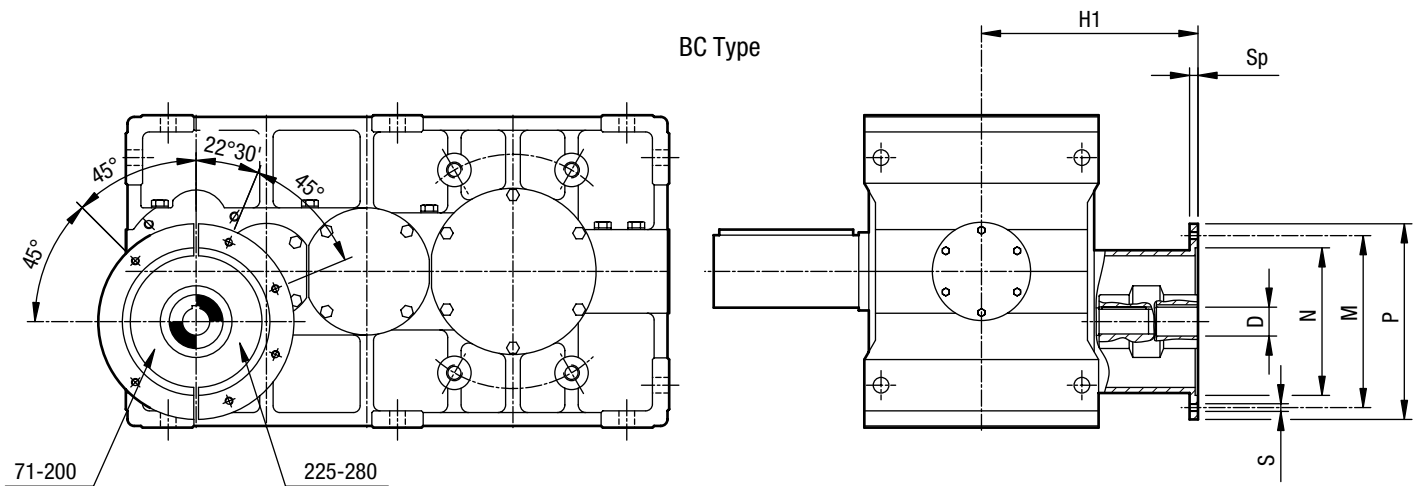
Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
10	90	24	165	130	200	M10	12	219	125
	100-112	28	215	180	250	M12	14	229	135
	132	38	265	230	300	M12	16	249	
	160	42	300	250	350	M16	18	279	
	180	48	300	250	350	M16	18	279	
20	100-112	28	215	180	250	M12	14	249	140
	132	38	265	230	300	M12	16	269	
	160	42	300	250	350	M16	18	299	
	180	48	300	250	350	M16	18	299	
	200	55	350	300	400	M16	20	299	
30	100-112	28	215	180	250	M12	14	264	155
	132	38	265	230	300	M12	16	284	175
	160	42	300	250	350	M16	18	314	
	180	48	300	250	350	M16	18	314	
	200	55	350	300	400	M16	20	314	
40	225	60	400	350	450	M16	20	344	
	132	38	265	230	300	M12	16	229	175
	160	42	300	250	350	M16	18	329	205
	180	48	300	250	350	M16	18	329	
	200	55	350	300	400	M16	20	329	
50	225	60	400	350	450	M16	20	359	
	250	65	500	450	550	M16	20	359	
	132	38	265	230	300	M12	16	319	195
	160	42	300	250	350	M16	18	349	225
	180	48	300	250	350	M16	18	349	

Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
60	132	38	265	230	300	M12	16	344	215
	160	42	300	250	350	M16	18	374	245
	180	48	300	250	350	M16	18	374	245
	200	55	350	300	400	M16	20	374	245
	225	60	400	350	450	M16	20	404	
70	250	65	500	450	550	M16	20	404	
	280	75	500	450	550	M16	20	404	
	160	42	300	250	350	M16	18	429	245
	180	48	300	250	350	M16	18	429	245
	200	55	350	300	400	M16	20	429	245
80	225	60	400	350	450	M16	20	459	275
	250	65	500	450	550	M16	20	459	
	280	75	500	450	550	M16	20	459	
	180	48	300	250	350	M16	18	464	270
	200	55	350	300	400	M16	20	464	270
90	225	60	400	350	450	M16	20	494	300
	250	65	500	450	550	M16	20	494	300
	280	75	500	450	550	M16	20	494	
	200	55	350	300	400	M16	20	504	315
	225	60	400	350	450	M16	20	534	345
90	250	65	500	450	550	M16	20	534	345
	280	75	500	450	550	M16	20	534	345
	315	80	600	550	660	M20	24	564	

All dimensions refer to IEC frame size motors

## MOTORIZED GEAR UNITS

Helical unit PD series



Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1
10	71	14	130	110	160	M8	12	184
	80	19	165	130	200	M10	12	194
	90	24	165	130	200	M10	12	204
	100-112	28	215	180	250	M12	14	214
	132	38	265	230	300	M12	16	234
20	80	19	165	130	200	M10	12	214
	90	24	165	130	200	M10	12	224
	100-112	28	215	180	250	M12	14	234
	132	38	265	230	300	M12	16	254
30	80	19	165	130	200	M10	12	239
	90	24	165	130	200	M10	12	249
	100-112	28	215	180	250	M12	14	259
	132	38	265	230	300	M12	16	279
40	160	42	300	250	350	M16	18	309
	90	24	165	130	200	M10	12	264
	100-112	28	215	180	250	M12	14	274
	132	38	265	230	300	M12	16	294
50	160	42	300	250	350	M16	18	324
	100-112	28	215	180	250	M12	14	284
	132	38	265	230	300	M12	16	304
	160	42	300	250	350	M16	18	334
	180	48	300	250	350	M16	18	334

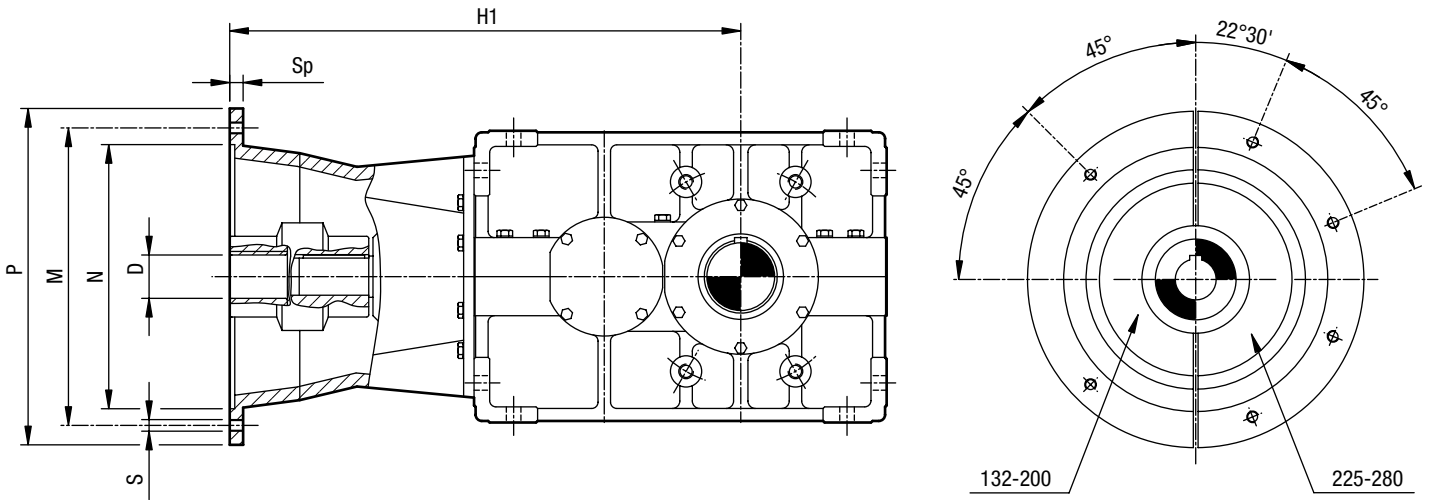
All dimensions refer to IEC frame size motors

Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1
60	100-112	28	215	180	250	M12	14	309
	132	38	265	230	300	M12	16	329
	160	42	300	250	350	M16	18	359
	180	48	300	250	350	M16	18	359
	200	55	350	300	400	M16	20	359
70	100-112	28	215	180	250	M12	14	344
	132	38	265	230	300	M12	16	364
	160	42	300	250	350	M16	18	394
	180	48	300	250	350	M16	18	394
	200	55	350	300	400	M16	20	394
80	225	60	400	350	450	M16	20	424
	132	38	265	230	300	M12	16	399
	160	42	300	250	350	M16	18	429
	180	48	300	250	350	M16	18	429
	200	55	350	300	400	M16	20	429
90	225	60	400	350	450	M16	20	459
	250	65	500	450	550	M16	20	459
	132	38	265	230	300	M12	16	434
	160	42	300	250	350	M16	18	464
	180	48	300	250	350	M16	18	464
	200	55	350	300	400	M16	20	464
	225	60	400	350	450	M16	20	494
	250	65	500	450	550	M16	20	494
	280	75	500	450	550	M16	20	494

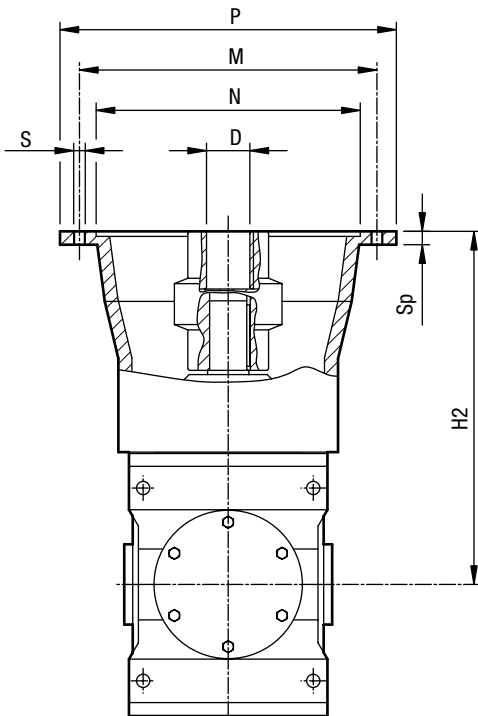
## MOTORIZED GEAR UNITS

Bevel-helical units RHB/RVB series

### RHB



### RVB



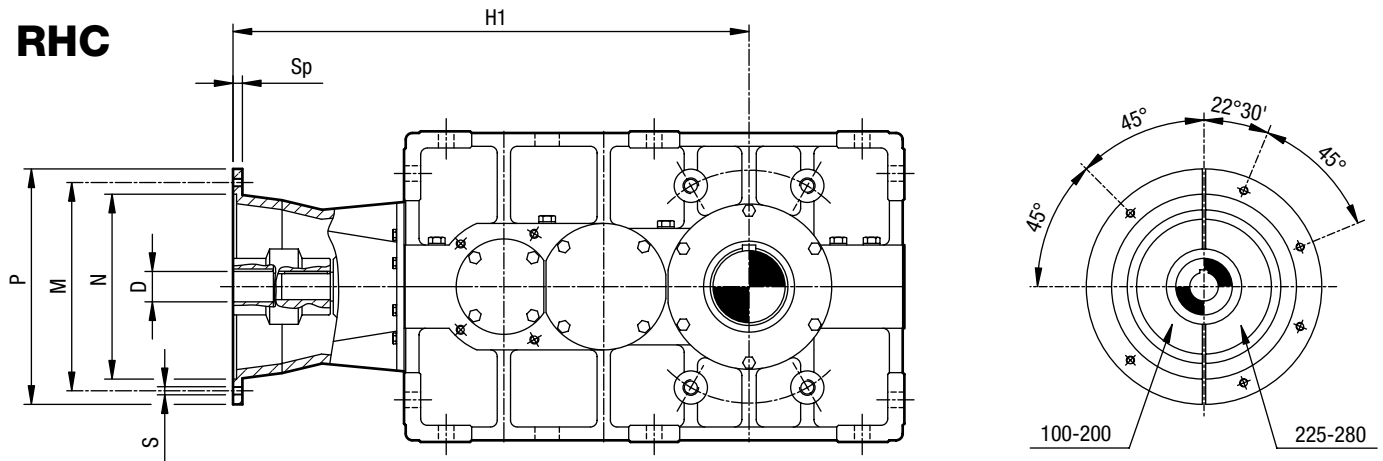
Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
10	132	38	265	230	300	M12	16	510	379
	160	42	300	250	350	M16	18	540	409
	180	48	300	250	350	M16	18	540	409
	200	55	350	300	400	M16	20	540	409
20	132	38	265	230	300	M12	16	564	414
	160	42	300	250	350	M16	18	594	444
	180	48	300	250	350	M16	18	594	444
	200	55	350	300	400	M16	20	594	444
	225	60	400	350	450	M16	20	624	474
30	160	42	300	250	350	M16	18	654	484
	180	48	300	250	350	M16	18	654	484
	200	55	350	300	400	M16	20	654	484
	225	60	400	350	450	M16	20	684	514
40	250	65	500	450	550	M16	20	684	514
	160	42	300	250	350	M16	18	719	529
	180	48	300	250	350	M16	18	719	529
	200	55	350	300	400	M16	20	719	529
50	225	60	400	350	450	M16	20	749	559
	250	65	500	450	550	M16	20	749	559
	160	42	300	250	350	M16	18	795	579
	180	48	300	250	350	M16	18	795	579
60	200	55	350	300	400	M16	20	795	579
	225	60	400	350	450	M16	20	825	609
	250	65	500	450	550	M16	20	825	609
	280	75	500	450	550	M16	20	825	609
	200	55	350	300	400	M16	20	874	634
70	225	60	400	350	450	M16	20	904	664
	250	65	500	450	550	M16	20	904	664
	280	75	500	450	550	M16	20	904	664
	200	55	350	300	400	M16	20	966	704
80	225	60	400	350	450	M16	20	996	734
	250	65	500	450	550	M16	20	996	734
	280	75	500	450	550	M16	20	996	734
	200	55	350	300	400	M16	20	1074	774
90	225	60	400	350	450	M16	20	1104	804
	250	65	500	450	550	M16	20	1104	804
	280	75	500	450	550	M16	20	1104	804
	200	55	350	300	400	M16	20	1194	854
90	225	60	400	350	450	M16	20	1224	884
	250	65	500	450	550	M16	20	1224	884
	280	75	500	450	550	M16	20	1224	884

All dimensions refer to IEC frame size motors

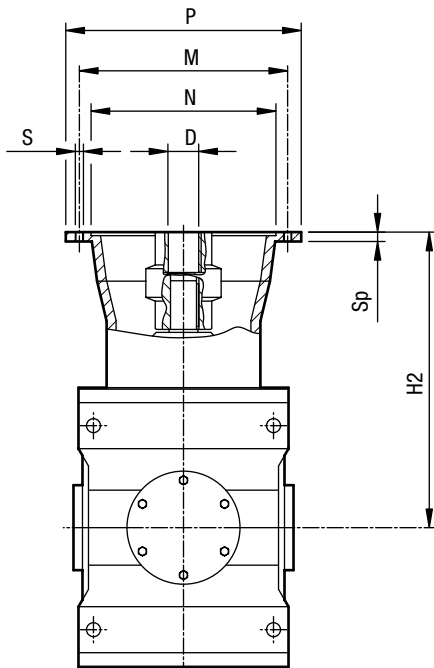
## MOTORIZED GEAR UNITS

Bevel-helical units RHC/RVC series

### RHC



### RVC

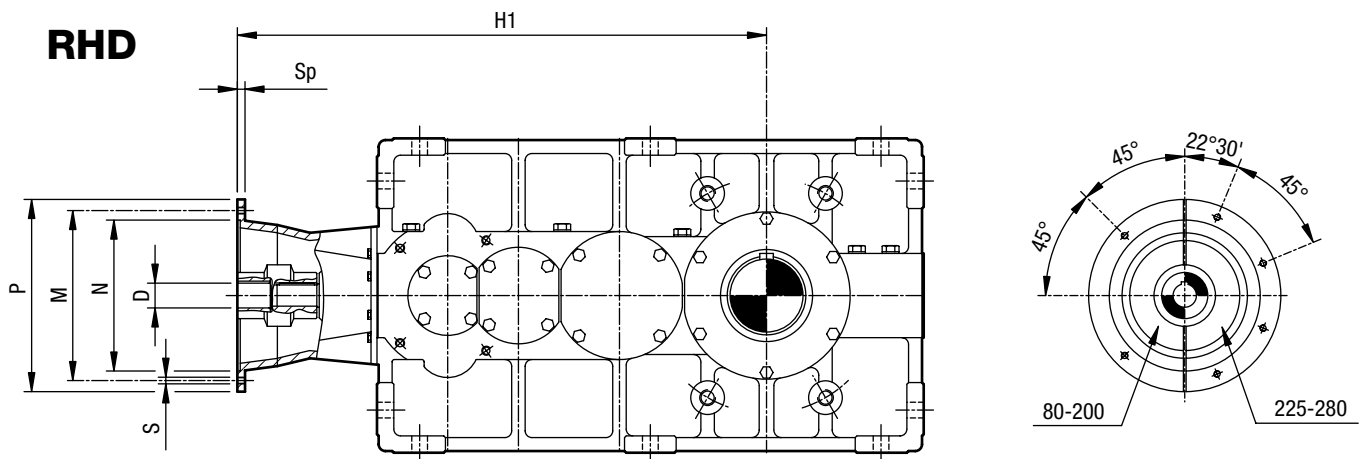


Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
10	100-112	28	215	180	250	M12	14	495	274
	132	38	265	230	300	M12	16	515	294
	160	42	300	250	350	M16	18	545	324
	180	48	300	250	350	M16	18	545	324
20	100-112	28	215	180	250	M12	14	549	299
	132	38	265	230	300	M12	16	569	319
	160	42	300	250	350	M16	18	599	349
	180	48	300	250	350	M16	18	599	349
20	200	55	350	300	400	M16	20	599	349
	132	38	265	230	300	M12	16	631	349
	160	42	300	250	350	M16	18	661	379
	180	48	300	250	350	M16	18	661	379
30	200	55	350	300	400	M16	20	661	379
	225	60	400	350	450	M16	20	691	409
	132	38	265	230	300	M12	16	694	379
	160	42	300	250	350	M16	18	724	409
40	180	48	300	250	350	M16	18	724	409
	200	55	350	300	400	M16	20	724	409
	225	60	400	350	450	M16	20	754	439
	250	65	500	450	550	M16	20	754	439
50	160	42	300	250	350	M16	18	800	444
	180	48	300	250	350	M16	18	800	444
	200	55	350	300	400	M16	20	800	444
	225	60	400	350	450	M16	20	830	474
50	250	65	500	450	550	M16	20	830	474
	280	75	500	450	550	M16	20	830	474
	180	48	300	250	350	M16	18	884	484
	200	55	350	300	400	M16	20	884	484
60	225	60	400	350	450	M16	20	914	514
	250	65	500	450	550	M16	20	914	514
	280	75	500	450	550	M16	20	914	514
	200	55	350	300	400	M16	20	971	529
70	225	60	400	350	450	M16	20	1001	559
	250	65	500	450	550	M16	20	1001	559
	280	75	500	450	550	M16	20	1001	559
	225	60	400	350	450	M16	20	1109	609
80	250	65	500	450	550	M16	20	1109	609
	280	75	500	450	550	M16	20	1109	609
	250	65	500	450	550	M16	20	1229	664
	280	75	500	450	550	M16	20	1229	664

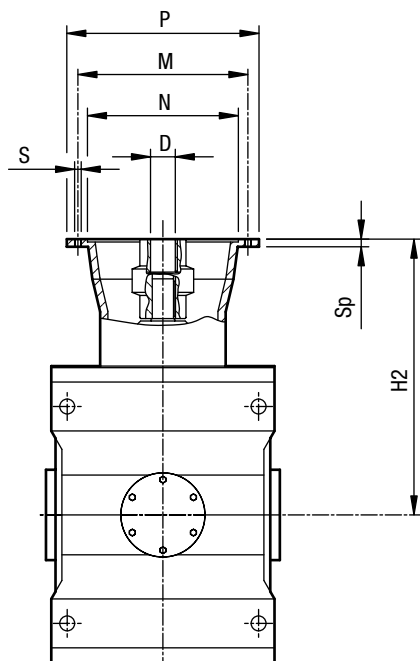
All dimensions refer to IEC frame size motors

## MOTORIZED GEAR UNITS

Bevel-helical units RHD/RVD series



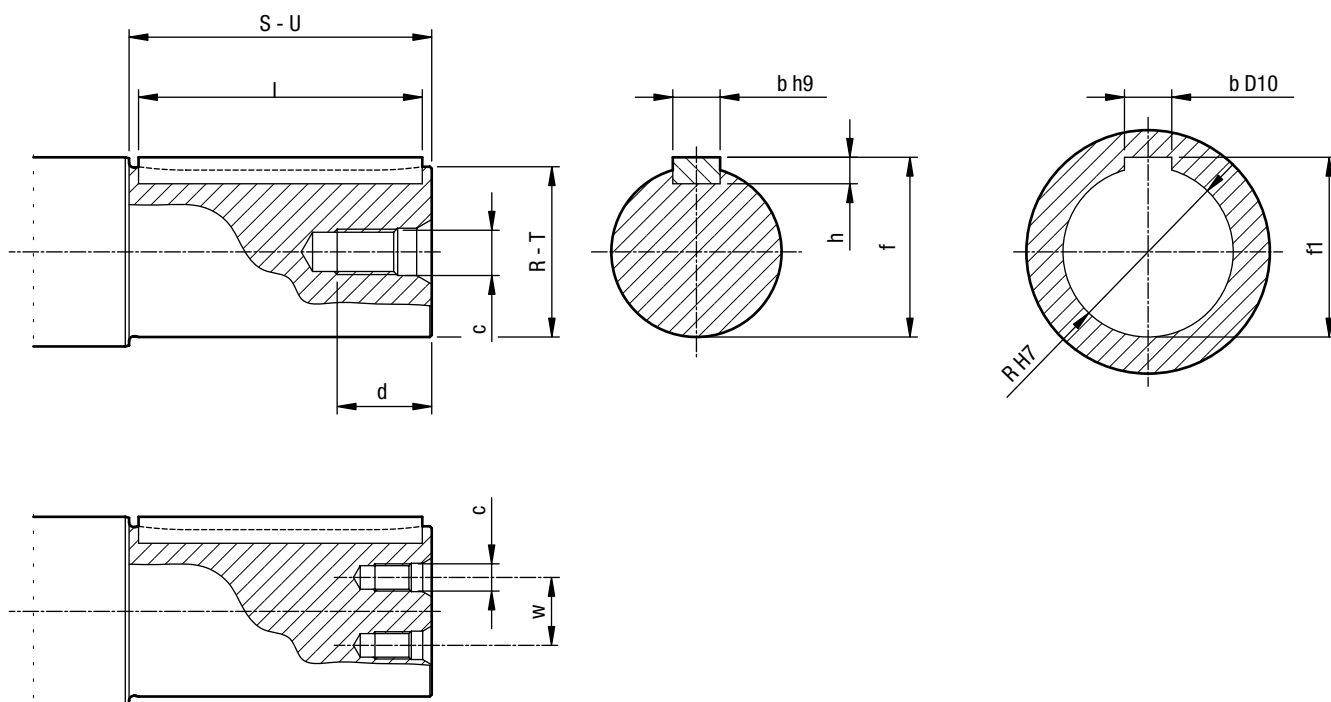
## RVD



Unit Size	Motor IEC	D H7	M	N	P	S	Sp	H1	H2
10	80	19	165	130	200	M10	12	475	239
	90	24	165	130	200	M10	12	485	249
	100-112	28	215	180	250	M12	14	495	259
20	90	24	165	130	200	M10	12	539	274
	100-112	28	215	180	250	M12	14	549	284
	132	38	265	230	300	M12	16	569	304
30	90	24	165	130	200	M10	12	601	299
	100-112	28	215	180	250	M12	14	611	309
	132	38	265	230	300	M12	16	631	329
40	160	42	300	250	350	M16	18	661	359
	100-112	28	215	180	250	M12	14	679	339
	132	38	265	230	300	M12	16	699	359
50	160	42	300	250	350	M16	18	729	389
	100-112	28	215	180	250	M12	14	755	369
	132	38	265	230	300	M12	16	775	389
60	160	42	300	250	350	M16	18	805	419
	180	48	300	250	350	M16	18	805	419
	100-112	28	215	180	250	M12	14	841	409
70	132	38	265	230	300	M12	16	861	429
	160	42	300	250	350	M16	18	891	459
	180	48	300	250	350	M16	18	891	459
80	200	55	350	300	400	M16	20	891	459
	132	38	265	230	300	M12	16	946	469
	160	42	300	250	350	M16	18	976	499
90	180	48	300	250	350	M16	18	976	499
	200	55	350	300	400	M16	20	976	499
	225	60	400	350	450	M16	20	1006	529
90	132	38	265	230	300	M12	16	1054	519
	160	42	300	250	350	M16	18	1084	549
	180	48	300	250	350	M16	18	1084	549
	200	55	350	300	400	M16	20	1084	549
	225	60	400	350	450	M16	20	1114	579
	250	65	500	450	550	M16	20	1114	579
	160	42	300	250	350	M16	18	1209	604
90	180	48	300	250	350	M16	18	1209	604
	200	55	350	300	400	M16	20	1209	604
	225	60	400	350	450	M16	20	1239	634
	250	65	500	450	550	M16	20	1239	634
	280	75	500	450	550	M16	20	1239	634

All dimensions refer to IEC frame size motors

## SHAFT ENDING



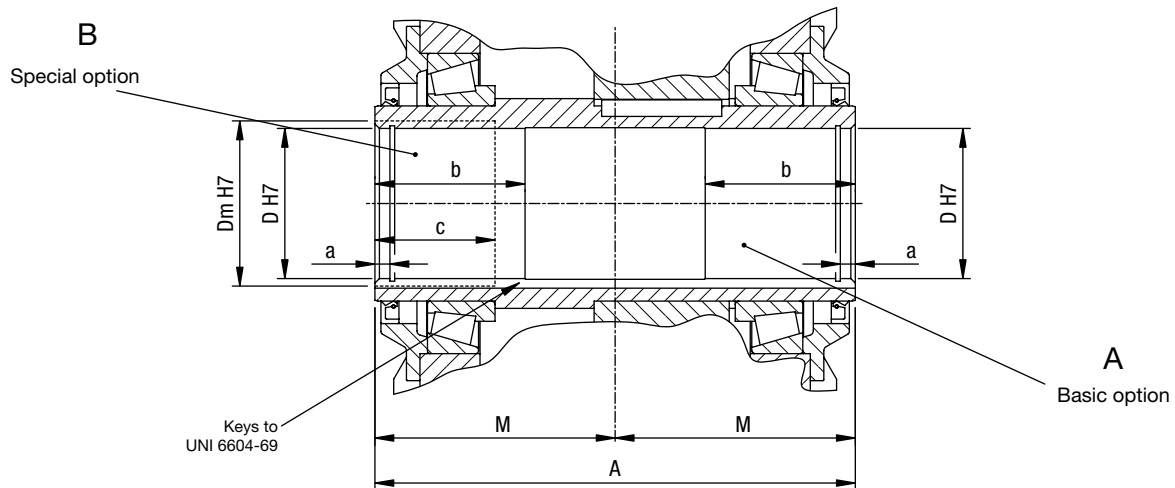
Tapped holes on top according to DIN 332  
Keys according to UNI 6604-69

R-T	S-U a11	c	d	w	Key			f	f1
					b	h	l		
15 j6	30	M6	16		6	6	25	17,5	
18 j6	35	M6	16		6	6	30	20,5	
20 j6	40	M6	16		6	6	35	22,5	
22 j6	45	M6	16		6	6	40	24,5	
24 j6	50	M8	19		8	7	45	27	
28 j6	55	M8	19		8	7	50	31	
32 k6	65	M10	22		10	8	60	35	
35 k6	70	M10	22		10	8	60	38	
40 k6	80	M10	22		12	8	70	43	
45 k6	90	M10	22		14	9	80	48,5	
50 k6	100	M12	28		14	9	90	53,5	
55 m6	110	M12	28		16	10	100	59	
60 m6	120	M12	28		18	11	110	64	
65 m6	110	M16	36		18	11	100	69	69,4
70 m6	140	M16	36		20	12	125	74,5	
75 m6	150	M16	36		20	12	125	79,5	
80 m6	140	M16	36		22	14	125	85	
80 m6	160	M16	36		22	14	140	85	85,4
85 m6	170	M16	36		22	14	140	90	
90 m6	160	M16	36		25	14	140	95	95,4
90 m6	180	M16	36		25	14	160	95	
100 m6	180	M20	42		28	16	160	106	106,4
100 m6	200	M20	42		28	16	180	106	
110 m6	200	M20	42		28	16	180	116	116,4
110 m6	22	M20	42		28	16	200	116	
120 m6	210	M20	42		32	18	180	127	127,4
130 m6	260	M20	42		32	18	220	137	
140 m6	250	M24	50		36	20	220	148	148,4
140 m6	280	M24	50		36	20	250	148	
150 m6	300	M24	50		36	20	280	158	
160 m6	280	M24	50		40	22	250	169	169,4
160 m6	320	M24	50		40	22	280	169	
170 m6	300	M24	50		40	22	280	179	179,4
180 m6	360	M24	50		45	25	320	190	
190 m6	380	M30	64		45	25	360	200	
200 m6	350	M30	64		45	25	320	210	210,4
220 m6	390	M30	64		50	28	360	231	231,4
240 m6	410	2 off M30	64	150	56	32	360	252	
270 m6	470	2 off M30	64	150	63	32	400	282	
300 m6	500	2 off M30	64	180	70	36	450	314	
340 m6	550	2 off M30	64	180	80	40	500	355	
380 m6	630	2 off M30	64	210	90	45	550	397	



## SHAFT ENDING

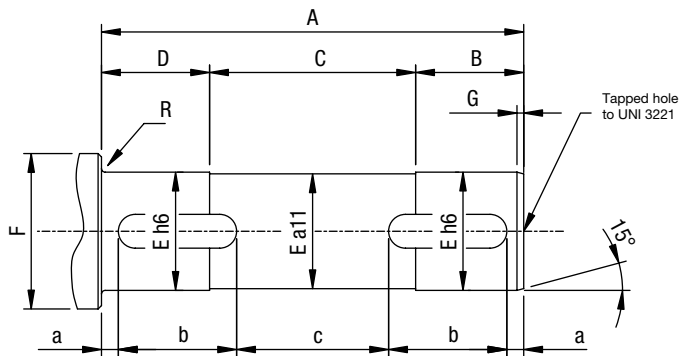
### Hollow shaft with keyway



Size	10	20	30	40	50	60	70	80	90	100	110
A	230	270	290	320	340	380	450	500	560	620	750
D	65	80	90	100	110	120	140	160	170	200	220
Dm	70	90	100	110	120	130	155	175	185	215	235
M	115	135	145	160	170	190	225	250	280	310	375
a	7	8	9	10	11	12	14	16	18	20	22
b	65	80	90	100	110	120	140	160	170	200	220
c	56	70	80	90	100	110	125	140	160	180	200

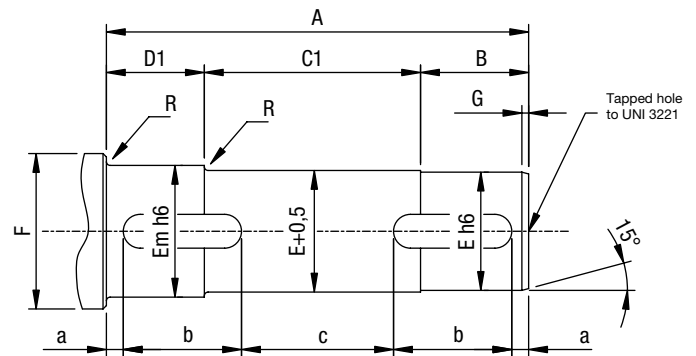
### Driven machine shaft end

Option A



Keys dimensioned on E to UNI 6604

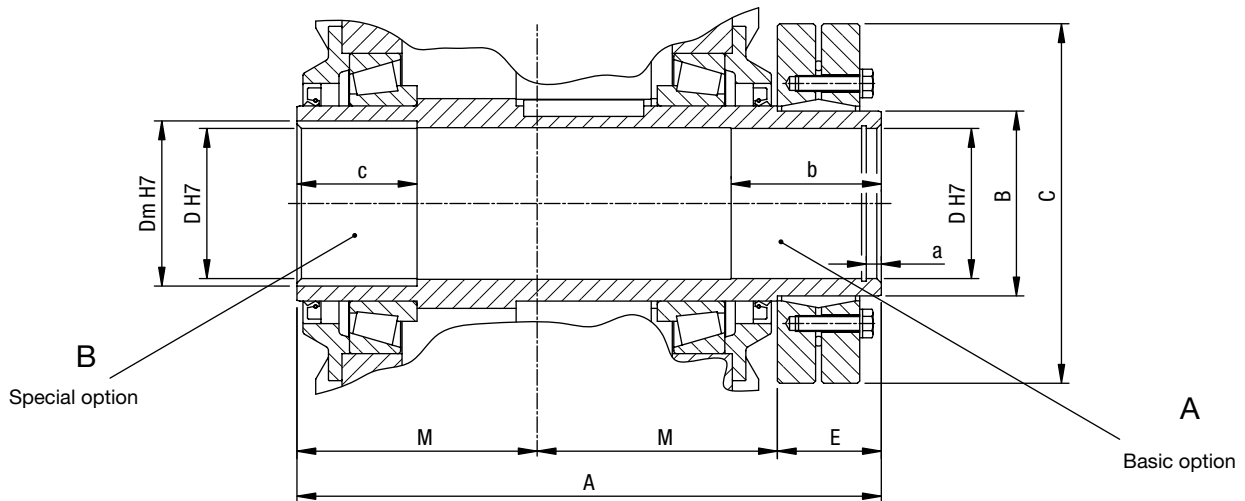
Option B



Size	10	20	30	40	50	60	70	80	90	100	110
A	212	250	265	295	310	350	415	460	515	570	695
B	50	65	70	80	85	95	110	125	130	155	170
C	97	105	105	115	115	135	165	175	215	215	305
C1	108	117	117	127	127	147	182	197	227	237	327
D	65	80	90	100	110	120	140	160	170	200	220
D1	54	68	78	88	98	108	123	138	158	178	198
E	65	80	90	100	110	120	140	160	170	200	220
Em	70	90	100	110	120	130	155	175	185	215	235
F	83	97	107	122	135	145	175	195	205	235	255
G	3	3,5	4	4,5	5	5,5	6	7	8	9	10
R	2	2,2	2,5	2,8	3	3,5	4	4,5	5	5,5	6
a	5	5	5	5	8	8	8	8	10	10	10
b	60	80	90	100	110	110	125	150	160	180	200
c	82	80	75	85	74	114	149	144	175	190	275

## SHAFT ENDING

Hollow shaft with shrink disc

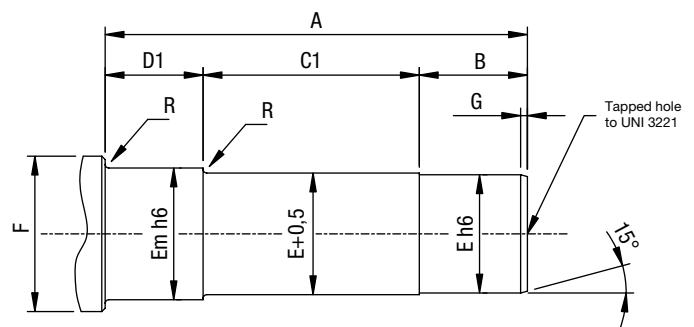
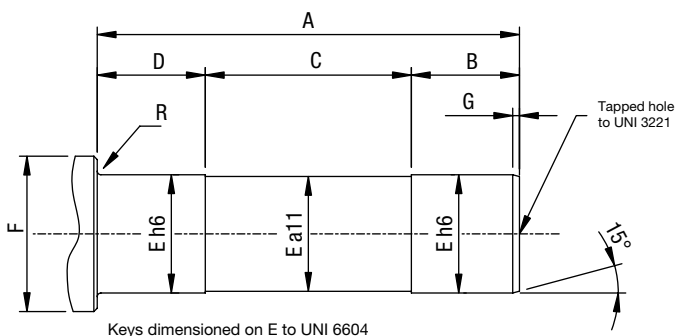


Size	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
A	278	333	366	396	429	476	564	614	694	770	914	1015	1150	1215	1365	1520
B	80	100	120	130	155	165	185	200	220	260	280	300	340	380	420	460
C	145	170	215	215	265	290	330	350	370	430	460	485	570	645	690	770
D	65	80	90	100	110	120	140	160	170	200	220	240	270	300	340	380
Dm	70	90	100	110	120	130	155	175	185	215	235	260	290	320	360	400
E	48	63	76	76	89	96	114	114	134	150	164	175	190	205	235	260
M	115	135	145	160	170	190	225	250	280	310	375	420	480	505	565	630
a	7	8	9	10	11	12	14	16	18	20	22	25	28	31	35	40
b	65	80	90	100	110	120	140	160	170	200	220	240	270	300	340	380
c	56	70	80	90	100	110	125	140	160	180	200	225	250	280	310	350

## Driven machine shaft end

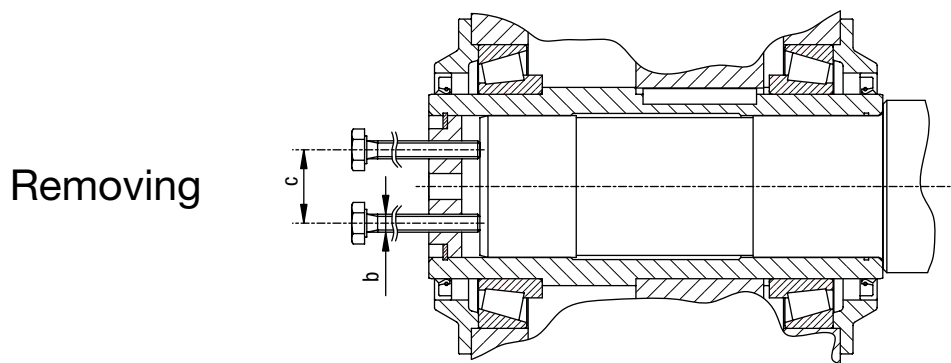
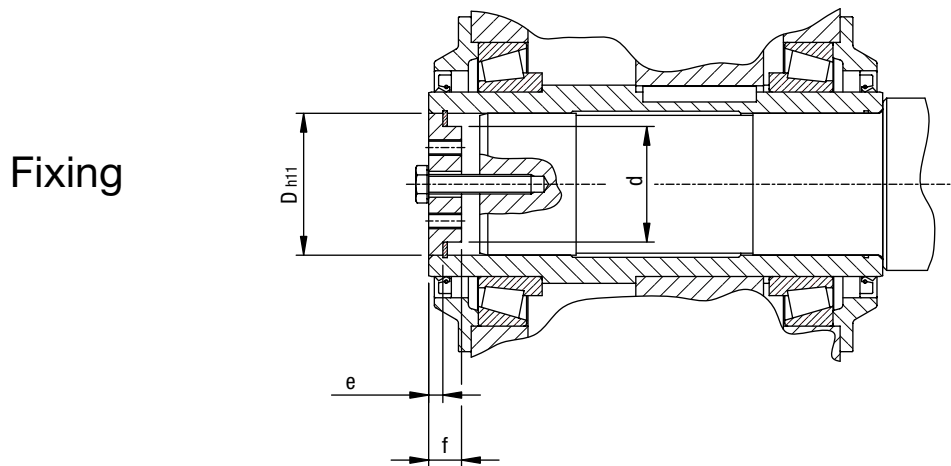
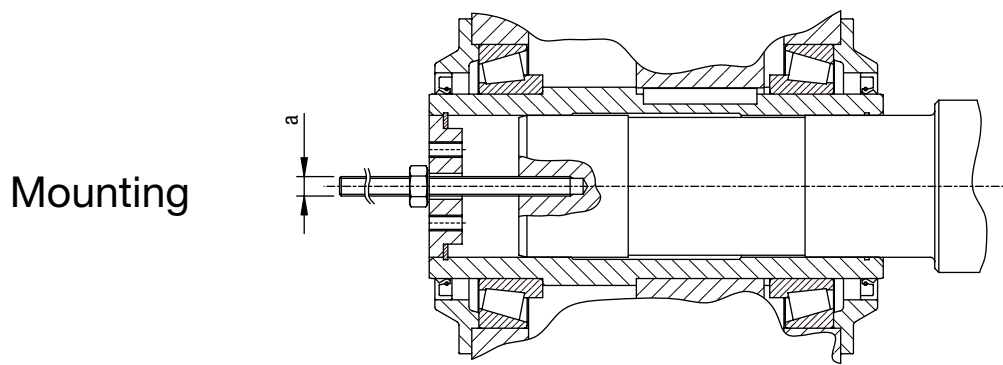
Option A

Option B



Size	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
A	260	313	341	371	399	446	529	574	649	720	859	955	1085	1140	1280	1425
B	50	65	70	80	85	95	110	125	130	155	170	185	210	230	260	290
C	145	168	181	191	204	231	279	289	349	365	469	530	605	610	680	755
C1	156	180	193	203	216	243	296	311	361	387	491	548	628	633	713	788
D	65	80	90	100	110	120	140	160	170	200	220	240	270	300	340	380
D1	54	68	78	88	98	108	123	138	158	178	198	222	247	277	307	347
E	65	80	90	100	110	120	140	160	170	200	220	240	270	300	340	380
Em	70	90	100	110	120	130	155	175	185	215	235	260	290	320	360	400
F	83	97	107	122	135	145	175	195	205	235	255	290	320	350	390	430
G	3	3,5	4	4,5	5	5,5	6	7	8	9	10	11	12	14	16	18
R	2	2,2	2,5	2,8	3	3,5	4	4,5	5	5,5	6	6,5	7	8	9	10

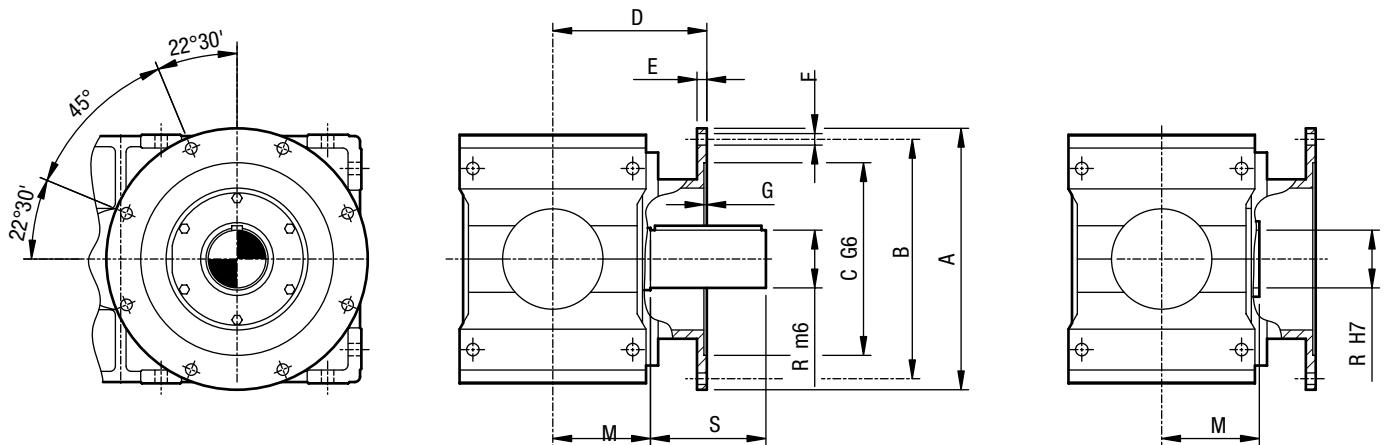
## INSTALLATION



Size	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
a	M16	M16	M16	M20	M20	M20	M24	M24	M24	M30	M30	M30	M30	M36	M36	M36
b	M10	M12	M14	M14	M16	M16	M18	M18	M20	M20	M24	M24	M24	M24	M30	M30
c	37	48	55	60	65	75	95	105	115	140	155	165	190	210	235	260
Ø D	65	80	90	100	110	120	140	160	170	200	220	240	270	300	340	380
Ø d	52	66	74	82	90	100	120	136	148	172	190	205	230	255	290	320
e	7	8	9	10	11	12	14	16	18	20	22	25	28	32	35	40
f	16	18	20	22	25	28	32	36	40	45	50	55	60	70	80	90
Circlip	165	180	190	1100	1110	1120	1140	1160	1170	1200	1220	1240	1270	1300	1340	1380

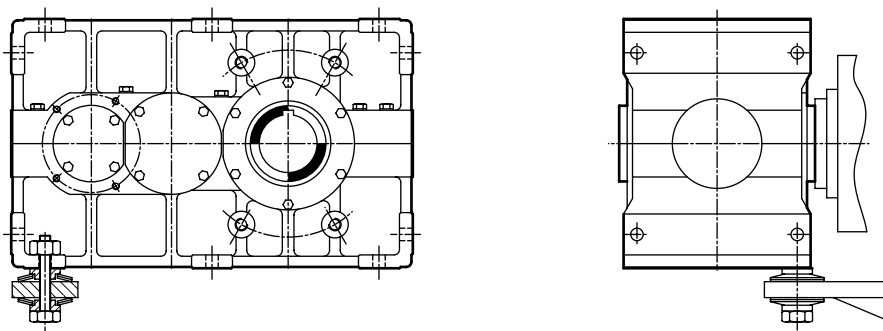
## OUTPUT FLANGES

Flanged gearbox output casing normally allows direct assembly to the driven machine. Special designs, as well as B5 standard patterns (see dimensional data sheet), are available.



Size	Ø A	Ø B	Ø C	D	E	Ø F	G	M	Ø R	S
10	300	265	230	170	14	18	5	115	65	110
20	300	265	230	185	14	20	5	135	80	140
30	350	300	250	210	16	22	6	145	90	160
40	400	350	300	225	16	22	6	160	100	180
50	450	400	350	245	16	24	6	170	110	200
60	550	500	450	270	18	27	7	190	120	210
70	550	500	450	300	20	30	7	225	140	250
80	660	600	550	350	22	33	7	250	16	280
90	660	600	550	390	22	36	7	280	170	300
100	ON REQUEST									
110	ON REQUEST									

## SHAFT-MOUNTED APPLICATIONS



All units can be supplied with elastic constraint, semi-flexible and rigid reaction arrangement.

## OVERHUNG LOADS

Whenever transmission components, generating radial loads, are fitted on input and output shafts, it is necessary to check that the values of such loads are compatible with the gearbox capacity.

In the table below, maximum admissible overhung loads on high speed shaft Fr1 and on the low speed shaft Fr2 are shown, having as reference the load operating at the middle of the shaft ends ( dimensions U and S of relevant dimensional tables ).

- a) if acting at 0.25 U or S from the gearbox side, multiply such values by 2.
- b) if acting at 0.75 U or S from the gearbox side, multiply such values by 0.67.

When overhung load is less than 20% of admissible load shown in the table, no check is required.

Along with overhung load, a **thrust load** of 20% of overhung load is acceptable. For higher value, please refer to us.

Roughly overhung loads can be obtained by using the following formula :

$$Fr = k \cdot \frac{T}{D}$$

T (Nm) : torque

D (mm) : pitch circle diameter of the driving or driven component

Where k :

1. 2000 for chain drive
2. 2100 for gear drive
3. 3000 for cog belt drive
4. 5000 for V-belt drive

## MASS MOMENTS OF INERTIA

The mass moments of inertia  $J_1$  refer to the high speed shaft of a standard gearbox without fan.

The mass moments of inertia  $J_2$  refer to the low speed shaft and are given by the following formula :

$$J_2 = J_1 \cdot i_r^2$$

$i_r$  : actual ratio

## HELICAL GEAR UNITS

Overhung loads  $Fr_1, Fr_2$  - Mass Moment of Inertia  $J_1$

		Size																	
$i_n$		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160		
<b>PA</b>	<b>1.12</b>	$Fr_1$	N	on request															
		$Fr_2$	N	14400	22000	28800	35500	42700	49400	69800	85700	112900	147800	156400					
		$J_1$	kgm <sup>2</sup>	0,0300	0,0530	0,0941	0,1667	0,2969	0,5232	0,8987	1,6120	2,8570	4,9945	8,8947					
	<b>1.25</b>	$Fr_1$	N	on request															
		$Fr_2$	N	13900	21400	27500	34600	42000	47800	68900	83200	109000	145800	153900					
		$J_1$	kgm <sup>2</sup>	0,0270	0,0477	0,0847	0,1502	0,2675	0,4714	0,8097	1,4523	2,5739	4,4996	8,0131					
	<b>1.4</b>	$Fr_1$	N	on request															
		$Fr_2$	N	13600	20900	26600	33500	41500	47400	67900	80300	106100	143300	150300					
		$J_1$	kgm <sup>2</sup>	0,0243	0,0430	0,0763	0,1353	0,2410	0,4246	0,7295	1,3084	2,3188	4,0537	7,2191					
	<b>1.6</b>	$Fr_1$	N	on request															
		$Fr_2$	N	13500	20800	25500	33100	40600	46000	66500	77100	104400	141300	149100					
		$J_1$	kgm <sup>2</sup>	0,0217	0,0383	0,0682	0,1208	0,2151	0,3792	0,6512	1,1682	2,0704	3,6194	6,4458					
	<b>1.8</b>	$Fr_1$	N	on request															
		$Fr_2$	N	12600	19600	24900	32600	39800	45100	65500	75300	102200	139500	147800					
		$J_1$	kgm <sup>2</sup>	0,0194	0,0343	0,0608	0,1078	0,1921	0,3385	0,5815	1,0430	1,8486	3,2316	5,7552					
	<b>2</b>	$Fr_1$	N	5200	6700	9200	13500	14500	22100	27900	34000	46300	55500	67900					
		$Fr_2$	N	12400	19200	24100	31700	39200	44100	64300	71500	100000	137300	146600					
		$J_1$	kgm <sup>2</sup>	0,0173	0,0306	0,0543	0,0963	0,1716	0,3023	0,5192	0,9313	1,6505	2,8853	5,1385					
<b>2.25</b>	$Fr_1$	N	5500	7000	9500	14000	15100	23100	29000	35400	48200	57800	70300						
	$Fr_2$	N	11800	18200	23400	31000	38300	42900	63100	67700	98100	135200	145400						
	$J_1$	kgm <sup>2</sup>	0,0154	0,0273	0,0484	0,0858	0,1527	0,2691	0,4622	0,8292	1,4695	2,5690	4,5751						
<b>2.5</b>	$Fr_1$	N	4400	5700	8100	11600	12600	19900	26800	31300	40100	46300	60500						
	$Fr_2$	N	10400	16100	21600	30100	36400	38800	56700	66000	87500	125400	144200						
	$J_1$	kgm <sup>2</sup>	0,0138	0,0245	0,0433	0,0770	0,1370	0,2413	0,4146	0,7437	1,3180	2,3041	4,1034						
<b>2.8</b>	$Fr_1$	N	4600	5900	8300	12000	13100	20700	27800	32500	41600	48100	62800						
	$Fr_2$	N	10400	16100	21600	30100	36400	38800	56700	66000	87500	125400	144200						
	$J_1$	kgm <sup>2</sup>	0,0123	0,0217	0,0384	0,0681	0,1081	0,2136	0,3670	0,6582	1,1665	2,0393	3,6317						
<b>3.15</b>	$Fr_1$	N	4800	6100	8600	12500	13600	21500	28800	33800	43200	49900	64000						
	$Fr_2$	N	10400	16100	21600	30100	36400	38800	56700	66000	87500	125400	144200						
	$J_1$	kgm <sup>2</sup>	0,0109	0,0194	0,0344	0,0610	0,1087	0,1914	0,3288	0,5898	1,0453	1,8274	3,2545						
<b>3.55</b>	$Fr_1$	N	4900	6300	8900	13000	14100	22300	29800	35000	44800	51700	65000						
	$Fr_2$	N	10400	16100	21600	30100	36400	38800	56700	66000	87500	125400	144200						
	$J_1$	kgm <sup>2</sup>	0,0095	0,0169	0,0299	0,0530	0,0945	0,1665	0,2863	0,5129	0,9090	1,5891	2,8300						
<b>4</b>	$Fr_1$	N	5100	6400	9100	13500	14600	23100	30800	36200	46400	53500	66000						
	$Fr_2$	N	8800	14200	19400	24500	35000	37600	53400	53300	79400	118300	125800						
	$J_1$	kgm <sup>2</sup>	0,0082	0,0146	0,0260	0,0460	0,0819	0,1443	0,2479	0,4445	0,7878	1,3772	2,4527						
<b>4.5</b>	$Fr_1$	N	5200	6700	9500	13800	15100	23800	31900	37400	48000	55300	66500						
	$Fr_2$	N	10400	16100	21800	27200	30400	33400	48100	59800	82800	110300	123400						
	$J_1$	kgm <sup>2</sup>	0,0072	0,0127	0,0225	0,0398	0,0708	0,1248	0,2145	0,3846	0,6817	1,1918	2,1224						
<b>5</b>	$Fr_1$	N	5400	6900	9800	14300	15600	24600	32900	38700	49600	57100	68200						
	$Fr_2$	N	11700	18000	24500	30000	35000	38200	55700	67300	93000	121200	128300						
	$J_1$	kgm <sup>2</sup>	0,0062	0,0110	0,0195	0,0345	0,0614	0,1082	0,1858	0,3334	0,5908	1,0328	1,8394						
<b>5.6</b>	$Fr_1$	N	5600	7100	10000	14800	16100	25400	33900	39900	51200	58900	69400						
	$Fr_2$	N	13000	20000	26700	32300	38100	42900	61300	74800	101100	130300	142900						
	$J_1$	kgm <sup>2</sup>	0,0054	0,0096	0,0170	0,0300	0,0536	0,0944	0,1621	0,2906	0,5151	0,9005	1,6037						
<b>PB</b>	<b>6.3</b>	$Fr_1$	N	4400	5600	6800	9100	9900	11500	18500	20600	29300	34400	43100	53800	61200	63900	67000	71100
		$Fr_2$	N	10100	15700	22800	23300	28400	36900	48700	59800	82200	108200	123400	128200	142200	154600	163300	183300
		$J_1$	kgm <sup>2</sup>	0,0118	0,0211	0,0376	0,0665	0,1187	0,2135	0,3738	0,6661	1,1922	2,1014	3,7540	6,7507	11,819	21,063	37,693	66,430
	<b>7.1</b>	$Fr_1$	N	4500	5800	7000	9300	10300	12000	18800	21500	30200	35500	44600	55500	63100	65900	69100	73200
		$Fr_2$	N	12700	19700	22800	29200	32800	43000	57100	67500	97100	128400	147700	153400	170100	185000	195400	219300
		$J_1$	kgm <sup>2</sup>	0,0103	0,0184	0,0330	0,0582	0,1040	0,1870	0,3274	0,5836	1,0444	1,8407	3,2884	5,9133	10,353	18,450	33,018	58,190
	<b>8</b>	$Fr_1$	N	4600	6000	7100	9500	10700	12500	19200	22300	31200	36600	46100	57100	65000	67900	71100	75400
		$Fr_2$	N	12700	19700	22500	29200	31000	40200	52900	65300	90900	120700	140000	145000	160800	174900	184700	207300
		$J_1$	kgm <sup>2</sup>	0,0091	0,0161	0,0289	0,0510	0,0911	0,1638	0,2868	0,5111	0,9149	1,6125	2,8805	5,1799	9,0692	16,162	28,923	50,973
	<b>9</b>	$Fr_1$	N	4700	6200	7300	9700	11100	13000	19500	23200	32100	37700	47300	58800	66900	69800	73200	77600
		$Fr_2$	N	12100	19200	22500	28200	30400	37400	47700	58200	84800	114400	130700	135100	149800	162900	172000	193200
		$J_1$	kgm <sup>2</sup>	0,0079	0,0140	0,0250	0,0443	0,0791	0,1421	0,2488	0,4435	0,7936	1,3989	2,4990	4,4940	7,8682	14,022	25,092	44,223
	<b>10</b>	$Fr_1$	N	4800	6300	7200	9900	11500	13500	19900	24100	33100	38800	49100	60500	68800	71800	75300	79800
		$Fr_2$	N	12100	19200	22500	28200	30400	36600	45900	56700	84800	114400	123500	128100	136500	148500	156800	176000
		$J_1$	kgm <sup>2</sup>	0,0068	0,0120	0,0214	0,0379	0,0677	0,1216	0,2129	0,3794	0,6790	1,1967	2,1378	3,8443	6,7307	11,995	21,465	37,830
	<b>11.2</b>	$Fr_1$	N	4900	6581	7700	10100	11900	14000	20200	24900	34100	39900	50600	62100	70600	73800	77300	82000
		$Fr_2$	N	12100	19200	21900	28200	30400	36600	45900	56700	84800	114400	123500	125100	127100	138200	145900	163800
		$J_1$	kgm <sup>2</sup>	0,0058	0,0102	0,0182	0,0322	0,0577	0,1035	0,1812	0,3229	0,5779	1,0186	1,8196	3,2720	5,7288	10,209	18,270	32,198
<b>12.5</b>	$Fr_1$	N	4200	5900	7200	8000	9800	11800	16200	20600	28800	36400	44200	49000	53200	61500	61700	70900	
	$Fr_2$	N	11500	18500	21900	27200	29800	35700	44700	54600	83500	110000	120000	121200	123300	134000	141600	159000	
	$J_1$	kgm <sup>2</sup>	0,0048	0,0085	0,0152	0,0269	0,0480	0,0864	0,1512	0,2696	0,4824	0,8502	1,5189	2,7315	4,7824	8,5226	15,251	26,879	
<b>14</b>	$Fr_1$	N	4300	6000	7300	8300	10100	12200	16500	21300	29600	37400	45500	50300	54600	63100	63300	72700	
	$Fr_2$	N	11500	18500	21900	27200	29800	35700	44700	54600	83500	110000	120800	121200	123300	134100	141600	159000	
	$J_1$	kgm <sup>2</sup>	0,0041	0,0073	0,0130	0,0234	0,0410	0,0739	0,1294	0,230									

## HELICAL GEAR UNITS

Overhung loads  $Fr_1, Fr_2$  - Mass Moment of Inertia  $J_1$

PC	$i_n$	Size	Size																
			10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	
PC	22.5	$Fr_1$	N	2000	2700		6100	8300										81500	
		$Fr_2$	N	13000	18200		42200	52800										382500	
		$J_1$	kgm <sup>2</sup>	0,0007	0,0017		0,0055	0,0103										3,0326	
PC	25	$Fr_1$	N	2000	2700	5400	6100	8300	9700	12600	15200	17500	27500		40800	47200	58300	81600	103600
		$Fr_2$	N	13000	18200	23600	42200	52800	57800	70500	85500	93500	166600		229000	270000	299000	382500	499400
		$J_1$	kgm <sup>2</sup>	0,0007	0,0016	0,0026	0,0053	0,0097	0,0156	0,0263	0,0477	0,0910	0,1527		0,4993	0,9019	1,6085	2,8761	5,0752
PC	28	$Fr_1$	N	2100	2800	5500	6200	8400	9800	12600	15300	17600	27700	33700	40800	47300	58400	81800	103800
		$Fr_2$	N	13000	18200	23600	42200	52800	57800	70500	85600	93500	166600	206800	229000	270000	299000	382500	499400
		$J_1$	kgm <sup>2</sup>	0,0007	0,0015	0,0025	0,0050	0,0086	0,0150	0,0257	0,0473	0,0860	0,1517	0,2704	0,4815	0,8463	1,5094	2,6989	4,7624
PC	31.5	$Fr_1$	N	2100	2800	5500	6200	8400	9800	12600	15400	17800	27900	33800	40900	47400	58500	81900	104000
		$Fr_2$	N	13000	18200	23600	42200	52800	57800	70500	85600	93500	166600	206800	229000	270000	299000	382500	499400
		$J_1$	kgm <sup>2</sup>	0,0007	0,0014	0,0024	0,0046	0,0081	0,0142	0,0245	0,0447	0,0809	0,1428	0,2547	0,4534	0,7970	1,4213	2,5415	4,4847
PC	35.5	$Fr_1$	N	2100	2800	5500	6200	8400	9900	12700	15400	17900	28000	33900	41000	47500	58600	82000	104100
		$Fr_2$	N	12400	17700	22500	40000	50600	55600	67200	82200	88100	161100	202000	223600	259200	294600	371800	488500
		$J_1$	kgm <sup>2</sup>	0,0007	0,0013	0,0024	0,0043	0,0076	0,0134	0,0237	0,0422	0,0761	0,1345	0,2399	0,4269	0,7505	1,3384	2,3933	4,2231
PC	40	$Fr_1$	N	2100	2800	5500	6200	8400	9900	12700	15500	17900	28000	34000	41000	47600	58700	82100	104300
		$Fr_2$	N	12400	17700	22500	40000	50600	55600	67200	82200	88100	161100	202000	223600	259200	294600	371800	488500
		$J_1$	kgm <sup>2</sup>	0,0007	0,0012	0,0023	0,0040	0,0071	0,0127	0,0223	0,0399	0,0716	0,1266	0,2260	0,4020	0,7067	1,2604	2,2536	3,9768
PC	45	$Fr_1$	N	2200	2900	5600	6300	8500	9900	12700	15500	18000	28100	34100	41200	47700	58900	82400	104600
		$Fr_2$	N	12400	17700	22500	40000	50600	55600	67200	82200	88100	161100	202000	223600	259200	294600	371800	488500
		$J_1$	kgm <sup>2</sup>	0,0006	0,0012	0,0022	0,0038	0,0068	0,0119	0,0210	0,0377	0,0674	0,1192	0,2129	0,3786	0,6655	1,1869	2,1223	3,7451
PC	50	$Fr_1$	N	2200	2900	5600	6300	8500	10000	12800	15600	18000	28200	34200	41300	47800	59000	82500	104800
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0006	0,0011	0,0020	0,0036	0,0063	0,0113	0,0198	0,0354	0,0635	0,1123	0,2005	0,3566	0,6267	1,1176	1,9984	3,5264
PC	56	$Fr_1$	N	2200	2900	5600	6300	8500	10000	12800	15600	18100	28300	34300	41400	47900	59100	82600	104900
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0005	0,0010	0,0019	0,0034	0,0059	0,0106	0,0187	0,0334	0,0597	0,1056	0,1885	0,3353	0,5894	1,0512	1,8796	3,3167
PC	63	$Fr_1$	N	2200	2900	5600	6300	8500	10000	12800	15700	18200	28400	34400	41500	48000	59100	82800	105100
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0005	0,0010	0,0018	0,0032	0,0056	0,0101	0,0177	0,0315	0,0564	0,0998	0,1783	0,3170	0,5570	0,9933	1,7761	3,1341
PC	71	$Fr_1$	N	2300	3000	5600	6300	8600	10100	12900	15700	18200	28500	34500	41600	48200	59300	83000	105400
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0005	0,0009	0,0017	0,0030	0,0054	0,0095	0,0166	0,0298	0,0533	0,0943	0,1684	0,2995	0,5265	0,9389	1,6789	2,9626
PC	80	$Fr_1$	N	2300	3000	5600	6300	8600	10100	12900	15800	18300	28600	34500	41700	48300	59400	83200	105600
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0004	0,0009	0,0016	0,0029	0,0051	0,0091	0,0160	0,0285	0,0511	0,0904	0,1613	0,2869	0,5043	0,8993	1,6081	2,8376
PC	90	$Fr_1$	N	2300	3000	5600	6300	8600	10200	13000	15800	18400	28700	34600	41800	48400	59500	83300	105700
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0004	0,0008	0,0016	0,0027	0,0049	0,0087	0,0153	0,0275	0,0492	0,0871	0,1555	0,2766	0,4861	0,8670	1,5503	2,7356
PC	100	$Fr_1$	N	2300	3000	5600	6300	8600	10200	13000	15900	18400	28700	34700	41900	48500	59400	83400	105900
		$Fr_2$	N	11900	17100	21300	37700	48400	53400	64900	79900	85000	157700	195800	218100	253800	291400	371800	477700
		$J_1$	kgm <sup>2</sup>	0,0004	0,0008	0,0015	0,0027	0,0085	0,0150	0,0267	0,0478	0,0847	0,1512	0,2689	0,4725	0,8426	1,5067	2,6587	
PD	100	$Fr_1$	N					8800											
		$Fr_2$	N					62700											
		$J_1$	kgm <sup>2</sup>					0,0028											
PD	112	$Fr_1$	N	1900	3200	5700	6400	8800	9800	12400	15600	17500	23800	28400	31600	43600	56400	73700	92200
		$Fr_2$	N	18600	27500	39800	48300	62700	76700	94400	108500	164600	197900	224500	243900	266700	323300	370100	390800
		$J_1$	kgm <sup>2</sup>	0,0003	0,0005	0,0009	0,0016	0,0028	0,0049	0,0086	0,0152	0,0258	0,0488	0,0862	0,1566	0,2699	0,4856	0,8777	1,5630
PD	115	$Fr_1$	N	1900	3200	5700	6400	8800	9800	12400	15600	17500	23800	28400	31600	43600	56400	73700	92200
		$Fr_2$	N	18600	27500	39800	48300	62700	76700	94400	108500	164600	197900	224500	243900	266700	323300	370100	390800
		$J_1$	kgm <sup>2</sup>	0,0003	0,0005	0,0009	0,0016	0,0028	0,0049	0,0086	0,0152	0,0258	0,0488	0,0862	0,1566	0,2699	0,4856	0,8777	1,5630
PD	140	$Fr_1$	N	1900	3200	5700	6400	8800	9800	12400	15600	17500	23800	28400	31600	43600	56400	73700	92200
		$Fr_2$	N	18600	27500	39800	48300	62700	76700	94400	108500	164600	197900	224500	243900	266700	323300	370100	390800
		$J_1$	kgm <sup>2</sup>	0,0003	0,0005	0,0009	0,0016	0,0028	0,0049	0,0086	0,0152	0,0258	0,0488	0,0862	0,1566	0,2699	0,4856	0,8777	1,5630
PD	160	$Fr_1$	N	1900	3200	5700	6400	8800	9800	12400	15600	17500	23800	28400	31600	43600	56400	73700	92200
		$Fr_2$	N	18600	27500	39800	48300	62700	76700	94400	108500	164600	197900	224500	243900	266700	323300	370100	390800
		$J_1$	kgm <sup>2</sup>	0,0003	0,0005	0,0009	0,0016	0,0028	0,0049	0,0086	0,0152	0,0258	0,0488	0,0862	0,1566	0,2699	0,4856	0,8777	1,5630
PD	180	$Fr_1$	N	2000	3300	5800	6500	8900	10000	12500	15800	17700	24200						

## BEVEL-HELICAL UNITS

Overhung loads  $Fr_1, Fr_2$  - Mass Moment of Inertia  $J_1$

in	Size	Size															
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
5	$Fr_1$ N	4100	5300	7800	9200	11500	12400	14300	22400	33100	42500	52000					
	$Fr_2$ N	14200	18600	24800	30600	37000	44700	60800	77800	102700	131000	144000					
	$J_1$ kgm <sup>2</sup>	0,0036	0,0062	0,0111	0,0199	0,0357	0,0634	0,1097	0,1990	0,3663	0,6611	1,1745					
5.6	$Fr_1$ N	4300	5500	8200	9700	12100	13000	15000	23600	34900	44800	54800					
	$Fr_2$ N	13300	17400	23500	29200	35300	42700	58200	74700	100300	128400	141000					
	$J_1$ kgm <sup>2</sup>	0,0035	0,0059	0,0106	0,0188	0,0339	0,0602	0,1042	0,1890	0,3480	0,6279	1,1154					
6.3	$Fr_1$ N	4500	5800	8600	10200	12800	13700	15800	24800	36600	47000	57500					
	$Fr_2$ N	12500	16800	22800	28200	33000	40200	56600	72600	97300	124700	137000					
	$J_1$ kgm <sup>2</sup>	0,0033	0,0056	0,0100	0,0179	0,0322	0,0572	0,0990	0,1795	0,3305	0,5962	1,0592					
7.1	$Fr_1$ N	4800	6100	9000	10700	13400	14300	16500	26000	38400	49300	60200					
	$Fr_2$ N	14100	18500	25700	31800	36600	48100	65400	83900	93200	142000	156100					
	$J_1$ kgm <sup>2</sup>	0,0031	0,0054	0,0096	0,0173	0,0311	0,0553	0,0956	0,1733	0,3192	0,5662	1,0059					
8	$Fr_1$ N	5000	6400	9400	11200	14000	15000	17300	27100	40100	51500	63000					
	$Fr_2$ N	10900	14200	32500	26500	34600	42200	60000	73300	107800	126800	139300					
	$J_1$ kgm <sup>2</sup>	0,0030	0,0051	0,0092	0,0163	0,0294	0,0522	0,0903	0,1638	0,3015	0,5467	0,9713					
9	$Fr_1$ N	5200	6700	9900	11700	14600	15600	18100	28300	41900	53800	65700					
	$Fr_2$ N	11100	14500	21600	22300	33200	40100	58100	71400	95400	131400	144300					
	$J_1$ kgm <sup>2</sup>	0,0029	0,0049	0,0087	0,0155	0,0278	0,0495	0,0856	0,1552	0,2859	0,5167	0,9179					
10	$Fr_1$ N	5400	6900	10300	12200	15200	16300	18800	29500	43600	56000	68500					
	$Fr_2$ N	11300	13200	20800	25100	30000	38800	56600	69900	86400	124900	137300					
	$J_1$ kgm <sup>2</sup>	0,0027	0,0046	0,0083	0,0148	0,0266	0,0473	0,0819	0,1486	0,2735	0,4897	0,8700					
11.2	$Fr_1$ N	5600	7200	10700	12700	15800	16900	19600	30700	45300	58200	71200					
	$Fr_2$ N	13000	15400	21900	28100	30900	34900	56400	69100	86100	123600	135800					
	$J_1$ kgm <sup>2</sup>	0,0026	0,0045	0,0080	0,0143	0,0258	0,0459	0,0793	0,1438	0,2648	0,4686	0,8325					
12.5	$Fr_1$ N	5400	6600	9900	11800	14900	16100	17400	27900	41900	55400	67200					
	$Fr_2$ N	16400	21400	31000	38200	44800	48400	69900	86200	84600	155300	170600					
	$J_1$ kgm <sup>2</sup>	0,0025	0,0042	0,0076	0,0135	0,0243	0,0431	0,0746	0,1352	0,2490	0,4536	0,8059					
14	$Fr_1$ N	5600	6800	10200	12300	15500	16700	18100	28900	43400	56400	69700					
	$Fr_2$ N	17900	23500	32900	40400	46000	53400	75500	96300	119300	166400	182800					
	$J_1$ kgm <sup>2</sup>	0,0023	0,0041	0,0074	0,0132	0,0237	0,0422	0,0730	0,1324	0,2438	0,4266	0,7578					
16	$Fr_1$ N	6200	7500	11300	13600	17100	18500	20000	32000	48100	62500	77200					
	$Fr_2$ N	16200	21400	28900	37300	44800	49300	65600	84400	126500	161000	176900					
	$J_1$ kgm <sup>2</sup>	0,0023	0,0039	0,0071	0,0127	0,0228	0,0407	0,0704	0,1276	0,2350	0,4176	0,7419					
18	$Fr_1$ N	6300	7700	11500	13800	17400	18800	20300	32500	48800	63500	78400					
	$Fr_2$ N	15600	20600	30300	36300	43500	45600	67700	82900	124300	163600	179700					
	$J_1$ kgm <sup>2</sup>	0,0022	0,0038	0,0070	0,0124	0,0214	0,0397	0,0688	0,1248	0,2298	0,4026	0,7152					
20	$Fr_1$ N	2000	3600	6900	7400	9900	11700	14600	17100	19600	28800	33200	37600	42600	48200		
	$Fr_2$ N	11300	13700	21200	27500	29900	35700	43100	54000	79500	114400	129600	147000	171800	199900		
	$J_1$ kgm <sup>2</sup>	0,0025	0,0044	0,0073	0,0131	0,0238	0,0426	0,0744	0,1326	0,2375	0,4187	0,7474	1,3437	2,3522	4,1911		
22.5	$Fr_1$ N	2000	3600	6900	7400	9900	11800	14700	17200	19900	29000	33400	37800	42800	48500		
	$Fr_2$ N	11300	13700	21200	27500	29900	35700	43100	54000	79500	114400	129600	147000	171800	199900		
	$J_1$ kgm <sup>2</sup>	0,0024	0,0040	0,0069	0,0123	0,0222	0,0397	0,0694	0,1238	0,2216	0,3907	0,6976	1,2542	2,1956	3,9119		
25	$Fr_1$ N	2000	3600	6900	7400	10000	11900	14800	17400	20100	29200	33600	38000	43100	48800		
	$Fr_2$ N	10100	12200	20300	26000	28200	33700	40600	50900	75000	108000	122300	138700	162100	188600		
	$J_1$ kgm <sup>2</sup>	0,0021	0,0037	0,0064	0,0116	0,0207	0,0371	0,0648	0,1155	0,2068	0,3646	0,6511	1,1705	2,0491	3,6511		
28	$Fr_1$ N	2200	3700	7000	7500	10000	12100	14900	17600	20300	29400	33800	38200	43300	49000		
	$Fr_2$ N	10100	12200	20300	26000	28200	33700	40600	50900	75000	108000	122300	138700	162100	188600		
	$J_1$ kgm <sup>2</sup>	0,0019	0,0034	0,0061	0,0108	0,0193	0,0346	0,0605	0,1078	0,1930	0,3402	0,6077	1,0926	1,9127	3,4079		
31.5	$Fr_1$ N	2200	3700	7000	7500	10100	12200	15000	17800	20400	29700	34100	38500	43500	49300		
	$Fr_2$ N	10100	12200	20300	26000	28200	33600	40600	50900	75000	108000	122300	138700	162100	188600		
	$J_1$ kgm <sup>2</sup>	0,0018	0,0032	0,0057	0,0101	0,0179	0,0323	0,0565	0,1006	0,1801	0,3175	0,5671	1,0198	1,7853	3,1809		
35.5	$Fr_1$ N	2200	3700	7000	7500	10100	12300	15100	17900	20600	29700	34300	38700	43800	49600		
	$Fr_2$ N	9500	11700	19800	24500	26600	31800	38400	48100	70900	102000	115500	131000	153100	178100		
	$J_1$ kgm <sup>2</sup>	0,0017	0,0030	0,0053	0,0094	0,0167	0,0301	0,0530	0,0939	0,1681	0,2963	0,5293	0,9518	1,6662	2,9688		
40	$Fr_1$ N	2200	3700	7000	7500	10200	12400	15200	18100	20900	30100	34500	38900	44000	49900		
	$Fr_2$ N	9500	11700	19800	24500	26600	31800	38400	48100	70900	102000	115500	131000	153100	178100		
	$J_1$ kgm <sup>2</sup>	0,0016	0,0028	0,0049	0,0088	0,0156	0,0281	0,0492	0,0877	0,1569	0,2766	0,4941	0,8884	1,5551	2,7709		
45	$Fr_1$ N	2300	3800	7100	7700	10200	12500	15400	18200	21100	30300	34700	39100	44300	50200		
	$Fr_2$ N	9500	11700	19800	24500	26600	31800	38400	48100	70900	102000	115500	131000	153100	178100		
	$J_1$ kgm <sup>2</sup>	0,0015	0,0026	0,0047	0,0081	0,0146	0,0262	0,0460	0,0818	0,1465	0,2581	0,4611	0,8292	1,4515	2,5862		
50	$Fr_1$ N	1900	3100	5800	6400	8400	10300	12600	15200	17600	25300	28600	32200	36400	41300		
	$Fr_2$ N	7900	11300	19200	23600	25600	30700	37000	46300	68300	98300	111300	126300	147600	171700		
	$J_1$ kgm <sup>2</sup>	0,0014	0,0025	0,0043	0,0076	0,0136	0,0244	0,0428	0,0763	0,1365	0,2406	0,4298	0,7729	1,3530	2,4108		
56	$Fr_1$ N	1900	3100	5800	6400	8400	10400	12700	15300	17800	25500	28800	32400	36600	41500		
	$Fr_2$ N	7900	11300	19200	23600	25600	30700	37000	46300	68300	98300	111300	126300	147600	171700		
	$J_1$ kgm <sup>2</sup>	0,0012	0,0023	0,0040	0,0071	0,0126	0,0227	0,0397	0,0707	0,1266	0,2231	0,3986	0,7167	1,2547	2,2355		
63	$Fr_1$ N	1900	3100	5800	6400	8500	10500	12800	15500	18000	25700	28900	32500	36800	41700		
	$Fr_2$ N	7900	11300	19200	23600	25600	30700	37000	46300	68300	98300	111300	126300	147600	171500		
	$J_1$ kgm <sup>2</sup>	0,0011	0,0021	0,0037	0,0065	0,0116	0,0209	0,0366	0,0652	0,1167	0,2056	0,3673	0,6605	1,1562	2,0601		
71	$Fr_1$ N	2000	3200	5900	6400	8500	10600	12900	15600	18200	25900	29100	32700	37000	42000		





**WEIGHTS (kg)**

## Helical units

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>PA</b>	72	120	164	237	324	450	616	915	1250	1490						
<b>PB</b>	81	138	166	250	390	540	753	955	1465	2040	2810	3750				
<b>PC</b>	96	165	228	309	438	591	814	1190	1520	1810	3280	4450	6100	8900		
<b>PD</b>	116	177	241	327	461	636	865	1298	1620	2400	3410	4690	6550	9650		

## Bevel-helical units

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>RB</b>	91	126	176	248	362	494	688	910	1320	1870						
<b>RC</b>	106	126	206	294	360	569	785	1110	1510	2180	3080	4210				
<b>RD</b>	110	159	225	312	436	618	873	1205	1626	2315	3350	4490	6350	8900		

**LUBRICANT QUANTITIES (liters)**

If not stated otherwise, all units are despatched without oil (a warning label is attached). The approximate quantity of oil required for horizontal mounting is given in the Table below. For mounting positions different from pos.1 (page 32) unit should be filled to the level marked on the level plug or on the dipstick. Do not overfill the unit as this can cause leakage and overheating.

## Helical units

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>PA</b>	2,8	3,9	5,4	7,3	9,8	13,8	19	26	37	52	72					
<b>PB</b>	3,6	5	6,5	10	13	18	28	35	49	69	96	135	189	235	289	343
<b>PC</b>	4,5	6,3	8,1	13	17	26	36	52	73	102	145	208	297	407	537	692
<b>PD</b>	4,5	6,3	8,1	13	17	26	36	52	73	102	145	208	297	407	537	692

## Bevel-helical units

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
<b>RB</b>	3,4	4,7	6,5	8,8	12	16,5	22,8	31	44,4	62	86,5					
<b>RC</b>	4,7	6,5	9	13	18	25	35	49	69	96	135	189	243	303		
<b>RD</b>	5,5	7,7	10,1	16,2	21	32,5	45	65	91	127	178	255	365	500	660	851

## SHAFT ARRANGEMENT

<p><b>PA - PC</b></p>	
<p><b>PB - PD</b></p>	
<p><b>RH - RV</b></p>	

## MOUNTING POSITION

<p><b>P</b></p>	
<p><b>RH</b></p>	
<p><b>RV</b></p>	

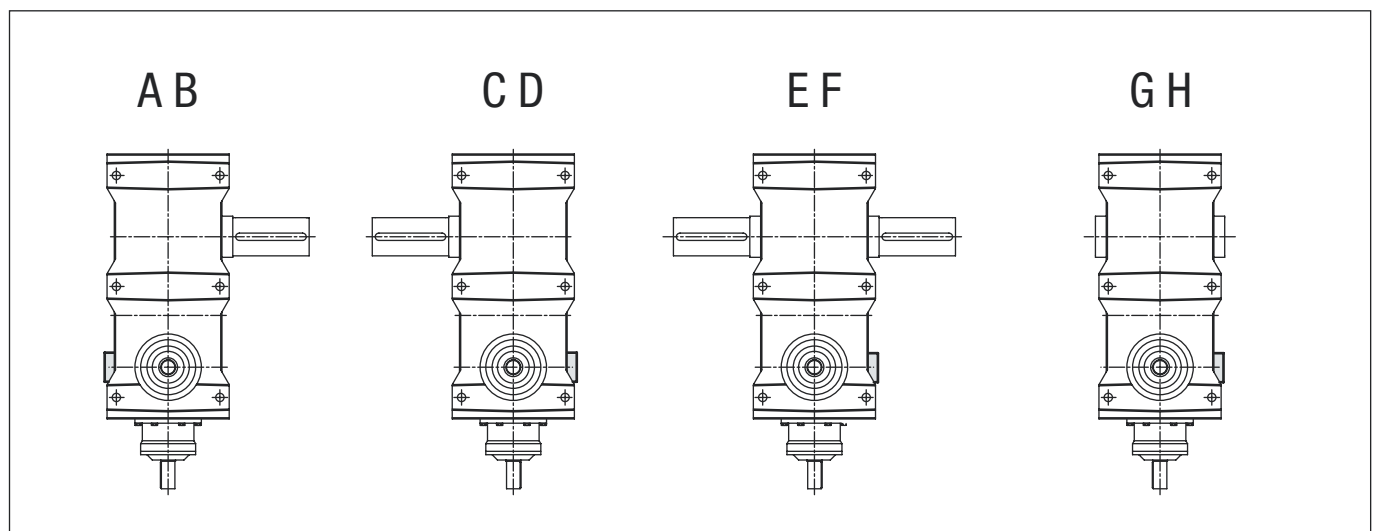
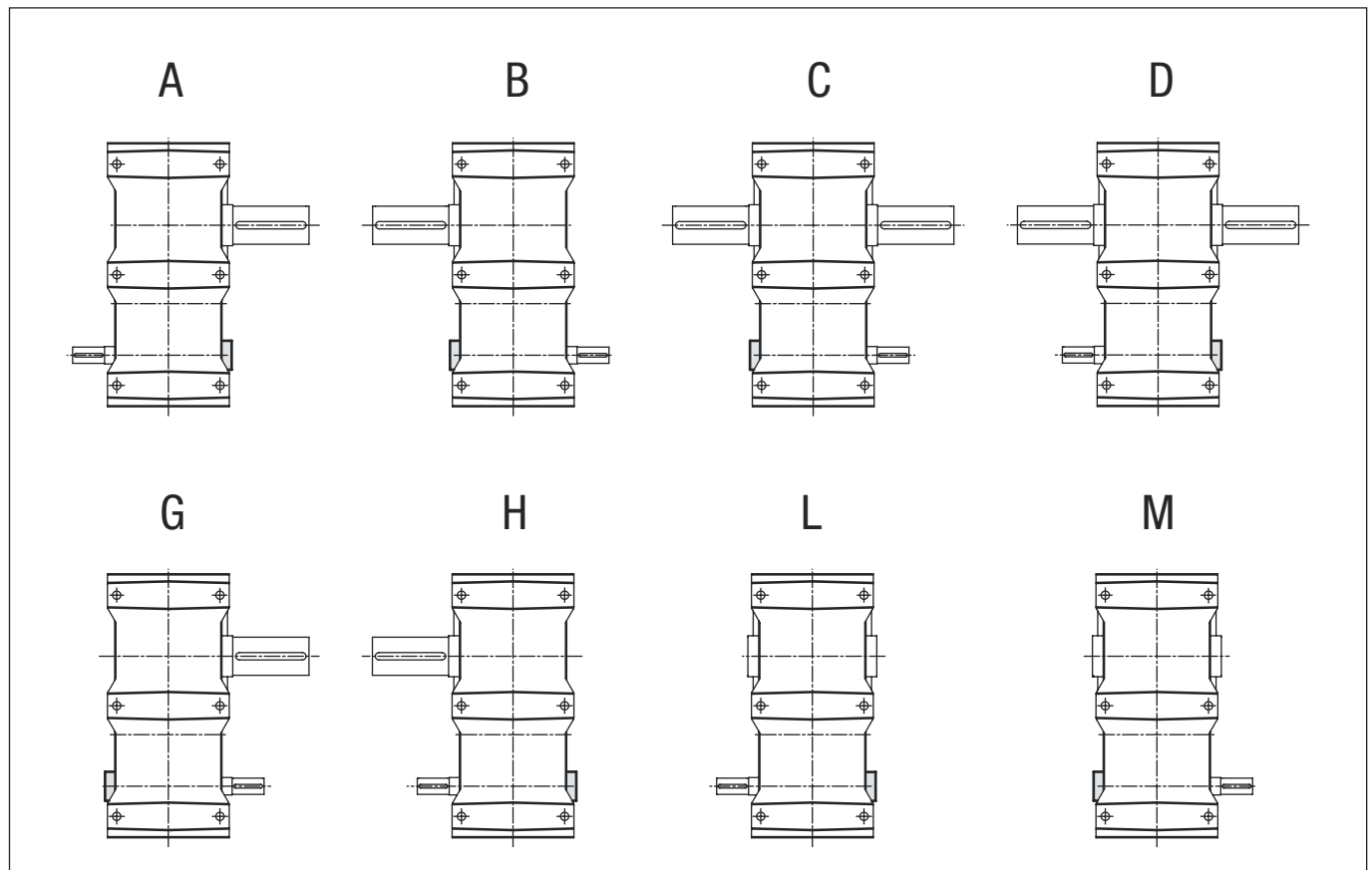
▼ Breather plug

● Level plug

▲ Drain plug

## BACKSTOP DEVICES

Holdbacks can be fitted to all gear units. They are located externally on helical pinion shaft as shown in the diagrams below.



# LUBRICATION

## ISO & AGMA Viscosity grade

Speed $n_2$ (min <sup>-1</sup> )	Standard	Ambient temperature range (°C)		
		from -10 to -15	from 0 to +30	from +10 to +50
<b>Under 100</b>	ISO - AGMA	VG 68 2 EP	VG 150 4 EP	VG 220 5 EP
<b>Over 100</b>	ISO - AGMA	VG 100 3 EP	VG 220 5 EP	VG 320 6 EP

## Recommended Mineral Lubricants

ISO viscosity at 40°Celsius (cSt)	BP Energol	ESSO Spartan	MOBIL Mobilgear	SHELL Omala	TEXACO Meropa	TOTAL Carter	AGIP Blasia
<b>VG 320</b>	GR-XP 320	EP 320	632	320	320	EP 320	320
<b>VG 220</b>	GR-XP 220	EP 220	630	220	220	EP 220	220
<b>VG 150</b>	GR-XP 150	EP 150	629	150	150	EP 150	150
<b>VG 100</b>	GR-XP 100	EP 100	627	100	100	EP 100	100
<b>VG 68</b>	GR-XP 68	EP 68	626	68	68	EP 68	68

## Recommended Synthetic Lubricants

ISO viscosity at 40°Celsius (cSt)	BP Enersyn	CASTROL Tribol	MOBIL SHC	KLUEBER EG4
<b>VG 320</b>	EPX 320	1510/320	632	320
<b>VG 220</b>	EPX 220	1510/220	630	220
<b>VG 150</b>	HTX 150	1510/150	629	150
<b>VG 68</b>			626	

Mineral oil : max running temperature 90°Celsius

Synthetic oil: max running temperature 100°Celsius (110°Celsius for short running).

**Do not mix** up different brands.

## Oil change interval (h)

TYPE	Oil temperature		
	65°C	80°C	90°C
Mineral	8000	4000	2000
Synthetic	20000	15000	10000

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