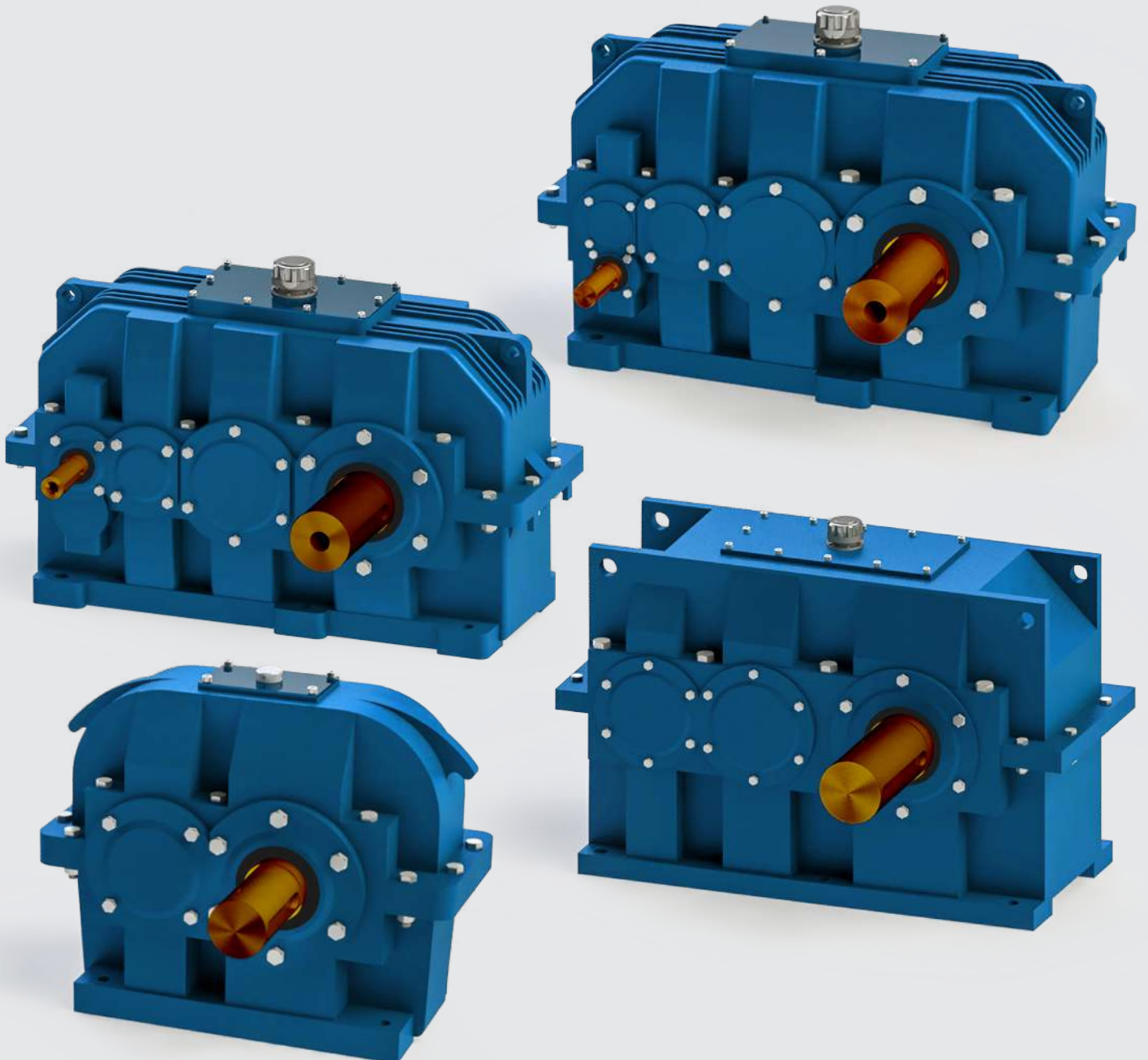


HELICAL GEARBOXES

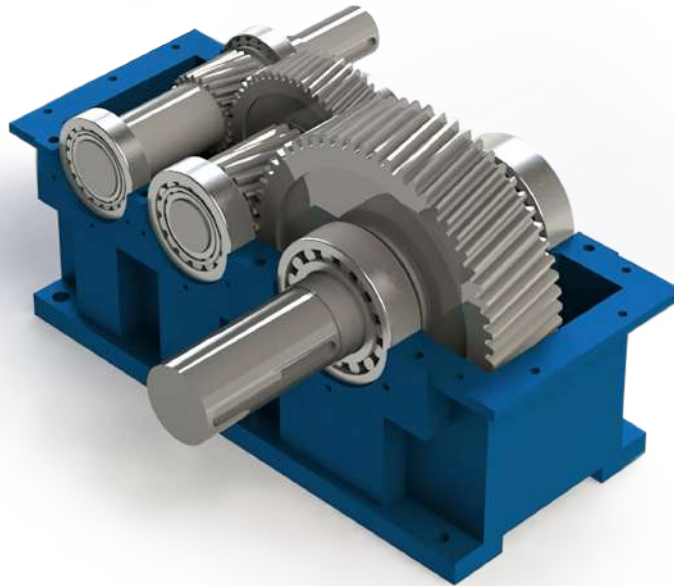
D/R-Series

Product Catalogue



Introduction

- Characteristics and Advantages
- Classification
- Selection procedure
- Service factor
- Dimensions and Power ratings



Introduction

'OMEX' D/R Series gearboxes are available in (single, double, triple, quadruple) stages. These gearboxes are intended to satisfy characteristics requirements and suitability for numerous applications.

The modular design of D/R series offer a great range of flexibility in the interchangeability of parts.

Features

- > Fully metric D/R series
- > Shaft extension referred to IS:2048
- > Cooling coil provision for additional cooling (Optional)
- > Handling left hand and right hand can be provided.
- > Horizontal and vertical mountings are possible.

Technical

- > Newly designed with as per DIN standards and easily replaceable with any other brands unit.
- > Designed with optimised performance and torque rating capacity.
- > Fitted in high graded C.I. casing or S.G. iron casing for anti-vibrating performance and high heat dissipation.
- > Assembled with low friction and high capacity roller bearings for silent running lower than 85dB.

Characteristics and Advantages

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Characteristics and advantages

Modular design principle - Gear sizes, transmission ratios and main dimensions according to standard series of numbers, economic mass production, comprehensive maintenance of stocks, favourable delivery period, easy servicing, low weight, compact design with high efficiency due to case hardened steels for highest strength, amply dimensioned bearings, very smooth running with low noise due to ground helical gears and lapped high precision spiral bevel gears, housing of vibration damping design of grey cast iron, the use of most up-to-date machining equipment with constant production control by means of the most recent measuring machines. 'OMEX' D/R Series gearboxes are the result of decades of experience in design and production, taking advantage of the most recent relevant research in the field of gearing technology.

Technical - The power tables apply to normal conditions, i.e. drive by an electric motor, smooth operation, operation for eight hours per day, 2.5-fold starting torque relative to catalogue performance P_N , 100% duration of operation, ambient temperature 20°C. Power for intermediate speeds can be interpolated linearly. Higher drive speeds than indicated and selection as finite-fatigue strength gears on request. Reinforced bearings are optional for heavy external forces (e.g. output drive by pinion).

Efficiencies of helical gearbox -

- > 99.0 % for single reduction helical gearboxes.
- > 98.0 % for double reduction helical gearboxes.
- > 97.5 % for triple reduction helical gearboxes.
- > 97.0 % for quadruple reduction helical gearboxes.

Dimensions, weight, oil quantity - The figures are not strictly binding. We reserve the right to modify dimensions. The indicated weight and oil quantities are average values. When filling gear unit with oil, note oil level markings

Additional equipments - The housing can be made of modular cast iron or fabricated steel. Additional heating cartridges can be built into the housings. Special seals may be provided when the plant has to be set up in dusty or humid surroundings.

Mountings - Before the gear unit is set up the operating instructions should be studied and followed. Inclined positions for installation are possible on request. The plant user should provide protection covers on rotating parts.

Noise level - Allowable noise level is generally mentioned below

- (a) Cast iron - 85 dB
- (b) Fabricated - 90 dB
- (c) Fan and built in pump - 5 dB higher than (a) and (b)

Vibration level - Allowable vibration limit is generally as per VDI-2056 group 'T'

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Classification

D A N - 1 2 5 - 1 - 0 1 - 12.5 : 1 - 1 1

Shaft arrangement
(handling) see pages (15 - 17)

Nominal ratio (catalogue)

Type of lubrication

- 1 - Splash
- 2 - Forced
- 3 - Special

Type of cooling

- 0 - None
- 1 - Cooling fan
- 2 - Cooling coil
- 3 - Cooling fan and coil

Type of gear cases

- 1 - Cast iron
- 2 - SG iron
- 3 - Fabricated steel
- 4 - Special

Gear unit size (catalogue)

Type of output shaft

- N - solid
- H - hollow

Number of stages

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

Geartype unit (helical)

Selection procedure

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Selection procedure

- i) Determination of the gearbox type.
- Establish whether helical gearbox.
 - Determine the transmission ratio. $I_N = (n_1/n_2)$
The type of gearbox is then determined
- ii) Determination of the gear size.
- Finding out gearbox size. $P_N \geq P_e \times f$
 - Determine the transmission ratio. $(M_k \times n_1) / (P_N \times 9550) \leq 2.5$
- iii) Checking heating effects
- Gearbox without additional cooling when $P_e \leq P_1 \times f_w$
 - Gearbox with cooling fan possible when $P_e \leq P_2 \times f_w$
 - Gearbox with built in cooling coil possible when $P_e \leq P_3 \times f_w$
 - Gearbox with built in cooling coil, fan possible when $P_e \leq P_4 \times f_w$
 - Gearbox with external oil cooler necessary when $P_e \leq P_4 \times f_w$

 I_N = nominal transmission ratio n_1 = input speed (rpm) n_2 = output speed (rpm) P_N = nominal gearbox rating (kw) (power table) P_e = absorbed power of connected machine (kw) f = service factor ($f_1 \times f_2$) f_w = factor for ambient temperature (table 3) t = ambient temperature (°C) E_D = running period (%), e.g. $E_D=80\%$ P_1 = thermal capacity without additional cooling at $t=20^\circ\text{C}$, $E_D=100$ (see power table) P_2 = thermal capacity with cooling fan P_3 = thermal capacity with built in cooling coil P_4 = thermal capacity with built in cooling coil and fan M_k = starting torque or max. input torque (da Nm)**Selection procedure example**

Given (Prime mover)

Electric motor = 500kW

 $n_1 = 1500$ rpm, Torque $M_k = 6370$ Nm

Working machine (Heavy rubber belt conveyer)

Required output power, $P_e = 400$ kWSpeed, $n_2 = 60$ rpm

Operation period = 16 hours per day

Starts = 1 per hour

Running duration per hour, $E_D = 100\%$ Ambient temperature = 40°C

Gearbox type = Helical gearbox

Selection of gear (Helical gearbox)

Design

i) Determination of the gearbox type.

a) Helical gearbox

b) Determine the transmission ratio.

$$I_N = (n_1/n_2) = (1500/60) = 25:1$$

The type of gearbox is DCN(triple reduction gearbox)

ii) Determination of the gear size.

a) Operating factor : 'f' from tables 1 and 2 = 1.5

b) Required nominal gearbox rating :

$$P_N = P_e \times f = 400 \times 1.5 = 600 \text{ kW}$$

c) From power table select DCN gearbox size 450 with $P_N = 660$ kWd) $P_N \geq P_e \times f$, as $660 \text{ kW} \geq 400 \text{ kW} \times 1.5 = 600 \text{ kW}$

e) Checking starting torque

$$(M_k \times n_1) / (P_N \times 9550) \leq 2.5$$

$$(6370 \times 1500) / (660 \times 9550) = 1.43 \leq 2.5$$

iii) Checking the thermal capacity

a) From table 3

 $f_w = 0.75$ for gearbox without additional cooling $P_e \geq P_1 \times f_w$ as $400 \text{ kW} \geq 251.25 \text{ kW}$ ($335 \text{ kW} \times 0.75$)

i.e. , additional cooling is required

b) From table 3

 $f_w = 0.85$ for gearbox with cooling coil $P_e \leq P_2 \times f_w$ as $400 \text{ kW} \leq 463 \text{ kW}$ ($545 \text{ kW} \times 0.85$)

i.e. , additional cooling coil is required

c) The Selected gearbox is DCN-450, $I_N = 25:1$, with cooling coil

Load parameters							
Driven machines	Load	Driven machines	Load	Driven machines	Load	Driven machines	Load
Excavators and stackers		Assembly line conveyors	M	Folding presses	S	Bobbin winding machines	M
Bucket chain excavators	S*	Conveyors winders	M**	Plate bending machines	M**	Printing machines	M
Travelling gear		Conveyors	S*	Plate straightening machines	S	Dyeing machines	M
caterpillar track	S*	Belt conveyors	M	Eccentric presses	S	Tan-liquor vessels	M
rail	M	Chain conveyors	G	Hammers	S**	Calenders	M
Bucket-wheel stackers	M*	Goods lifts	M	Planing machines	S	Willowing machines	M
Bucket wheels		Passengers lifts	***	Crank presses	S	Drying machines	M
clearing	S	Apron conveyors	M	Shearing machines	M**	Looms	M
coal	S	Shaker conveyors	M	Forging presses	S	Compressors	
lime	S	Worm conveyors	M	Punching machines	S	Rotary piston compressors	
Cutter heads	S*	Inclined lifts	S**	Mills		U < 1:100	S
Slewing machines	M*	Blowers, fans, ventilators		Hammer mills	H**	U > 1:100 to 1:200	M
Suction pumps	M*	Axial blowers	M	Edge mills	H**	Centrifugal compressors	M
Cable drums	M	Rotary piston blowers	M	Ball mills	H**	Turbo compressors	M
Winches	M	Large ventilators (mining)	M	Pendulum mills	H**	Rolling mills	
Mining, rock, earth		Colloing tower fans	***	Impact mills	H**	Plate filters	M**
Concrete mixers	M	Radial blowers	M	Tube mills	H**	Bloom pushers	H**
Crushers	S	Induced draft fans	M	Beating mills	H**	Bloom conveying plant	S**
Briquetting presses	H	Impeller blowers	G	Rod mills	H**	Wire pulls	M
Rotary kilns	S**	Turbo blowers	G	Roller mills	H**	Revolving turrets (contin. casting)	M**
Pneumatic sifters	M*	Centrifugal blowers	G	Foodstuffs machines		De-scaling crushers	S**
Clay mixers	M	Generators		Filling machines	G	Reels	
Chemical industry		Generators under uniform loads	G	Kneading machines	M	strip	M*
Mixers	M	Welding generators	***	Packing machines	G	wire	M**
Agitators		Rubber and plastics		Weighing machines	M	Walking beam conveyers	M*
pure liquids	G	Extruders		Sugarcane crushers	M**	Chain transporter	M**
liquids and solids	M	rubber	S**	Sugarcane mills	S**	Cooling troughs	M**
liquids with various densities	M	plastics	M**	Sugarcane cutters	M**	Traverse tractors	M**
Rotary dryer	M	Calenders	M**	Sugar-beet cutters	M	Pipe welding machine	S
Centrifuges		Kneading machines, rubber	S**	Paper machines		Pipe drawing machine	S*
light	G	Mixers	M**	Couchers	S**	Roller straightening machine	M**
heavy	M	Mills, rubber	M**	Glazing cylinders	S**	Roller gear beds	
Petroleum industry		Rolling mills, rubber	S**	Calenders	M**	light	M**
Drilling pumps	***	Wood working machinery		Mixers	M	heavy	S**
Rotary kilns	M	Decorlicating drums	S	Presses		Shears	
Filter presses	M**	Planing machines	M	glue	S**	plate	S**
Pipeline pumps	M**	Saw frames	M	wet	S**	wire	M**
Scavenging pumps	M**	Iron and steel industry		suction	S**	billet	S**
Conveying plants		Foundry crane (hoisting gear)	S**	Suction rollers	S**	cropping	S**
Uniform load		Converters	***	Drying cylinders	S**	plate trimming	M**
Bucket conveyors	G	Slag cars	G**	Pumps		Winding turret	M**
Roasting furnace conveyors	G	Sintering belts	M**	Proportioning pumps	M	Winding tractor	M**
Assembly line belts	G	Crusher	S**	Piston pumps		Continuous casting plants	S**
Band conveyors	G	Torpedo mixers	***	U < 1:100	S	Shifting device	S
Overhead conveyors	G	Car tipper	S	U > 1:100 to 1:200	M**	Roller adjusting device	M
Chain conveyors	G	Cranes		Centrifugal pumps		Water recycling machine	
Apron conveyors	G	Luffing gear	G*	light liquids	G	Thickeners	M
Worm conveyors	G	Travelling gear	M*	viscous liquids	M	Gyroscopic ventilators	M
Medium and heavy load		Hoisting gear	M*	Compression pumps	S	Mixers	M
Shaft sinking machines	S*	Slewing gear	M*	Plunger pumps	S**	Water screws	M
Bucket conveyors	M	Winches	G	Sand pumps	M**	Vaccum filter presses	M
Bucket belts	M**	Metal working		Machines for textile industry		Rate screen drives	G

Note : The load parameters quoted above are gained from experience. Calculations for driven machines not mentioned above or deviations from the norm obtainable on request.

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Service factor (f_1)

Table 2

Prime mover	Operational hrs per day	Load parameters			
		Uniform load (G)	Medium load (M)	Heavy load (H)	Extra heavy load (H+)
Electric motor turbine	up to 3	0.80	1.00	1.50	2.00
	over 3 to 10	1.00	1.25	1.75	2.25
	over 10 to 24	1.25	1.50	2.00	2.50
Piston engines 4-6 cylinders U>1:100- 1:200	up to 3	1.00	1.25	1.75	2.25
	over 3 to 10	1.25	1.50	2.00	2.50
	over 10 to 24	1.50	1.75	2.25	2.75
Piston engines 1-3 cylinders U<1:100	up to 3	1.25	1.50	2.00	2.50
	over 3 to 10	1.50	1.75	2.25	2.75
	over 10 to 24	1.75	2.00	2.50	3.00

Factor for amb temp. (f_w)

Table 3

Type of cooling	Ambient Temp.	Duration of operation per hour				
		100 %	80 %	60 %	40 %	20 %
For gearbox without additional cooling	10°C	1.12	1.34	1.57	1.79	2.05
	20°C	1.00	1.20	1.40	1.60	1.80
	30°C	0.88	1.06	1.23	1.41	1.58
	40°C	0.75	0.90	1.05	1.20	1.35
	50°C	0.63	0.76	0.88	1.01	1.13
For gearbox with cooling fan	10°C	1.15	1.38	1.61	1.84	2.07
	20°C	1.00	1.20	1.40	1.60	1.80
	30°C	0.90	1.08	1.26	1.44	1.62
	40°C	0.80	0.96	1.12	1.29	1.44
	50°C	0.70	0.84	0.98	1.12	1.26
For gearbox with cooling coil	10°C	1.10	1.32	1.54	1.76	1.98
	20°C	1.00	1.20	1.40	1.60	1.80
	30°C	0.90	1.08	1.26	1.44	1.62
	40°C	0.85	1.02	1.19	1.36	1.53
	50°C	0.60	0.96	1.12	1.29	1.44
For gearbox with fan and cooling coil	10°C	1.12	1.34	1.57	1.79	2.05
	20°C	1.00	1.20	1.40	1.60	1.80
	30°C	0.92	1.10	1.29	1.47	1.66
	40°C	0.83	1.00	1.16	1.33	1.50
	50°C	0.78	0.94	1.09	1.25	1.40

Starting frequency factor (f_2)

Table 4

Starts per hour	Driven machines factor					
	1.2	1.2	1.4	1.6	1.8	2.0
1	1	1	1	1	1	1
2 to 20	1.20	1.10	1.08	1.07	1.07	1.06
21 to 40	1.30	1.20	1.17	1.16	1.15	1.08
41 to 80	1.50	1.40	1.25	1.23	1.18	1.10
81 to 160	1.60	1.50	1.35	1.30	1.20	1.10
160 to 320	2.00	1.80	1.70	1.60	1.50	1.40
Over 320	2.50	2.25	2.00	1.90	1.80	1.75

Note : Cooling water temperature must be below 20 °C for effective cooling.

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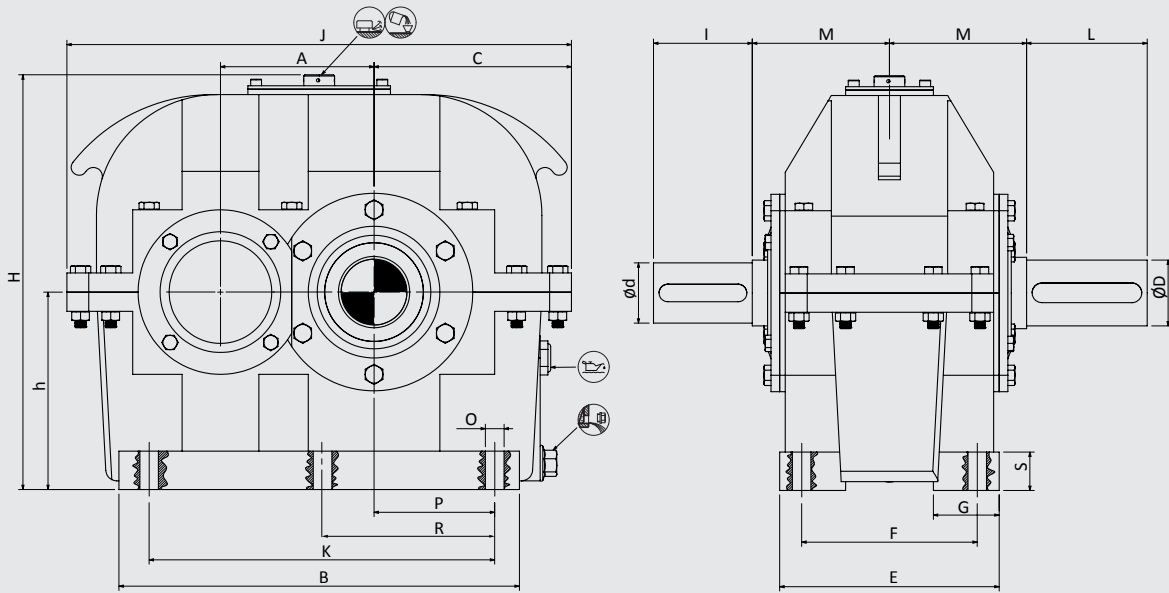
Selection procedure

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DAN (Helical - Single stage)



Dimensions

Size of gear unit	Input shaft						Output shaft		Dimensions (mm)													Avg. wt. (kg)	Oil qty (l)		
	$i_n \leq 3.15$		$i_n > 3.15$ to 5		$i_n > 3.15$		D	L	A	B	C	E	F	G	h	H	J	K	M	O	P			R	S
	d	l	d	l	d	l																			
80	25	60	20	50			32	80	80	205	115	140	110	45	100	240	280	175	90	14	60		20	18	0.7
90	30	80	25	60			38	80	90	230	125	150	120	50	110	260	310	200	95	14	70		20	25	0.9
100	35	80	30	80	20	50	45	110	100	260	135	155	125	50	125	290	340	220	100	14	75		25	35	1.2
110	45	110	35	80	25	60	48	110	110	290	145	170	140	50	140	320	370	250	105	14	85		25	50	1.7
125	50	110	40	110	30	80	55	110	125	330	165	185	155	55	160	355	420	290	115	14	100		25	65	2.2
140	55	110	45	110	35	80	60	140	140	365	180	200	160	60	180	410	460	315	125	14	110		35	95	3
160	60	140	50	110	40	110	70	140	160	410	205	230	190	65	200	450	520	350	135	18	120		35	120	4
180	70	140	55	110	45	110	80	170	180	470	220	250	210	70	225	505	560	410	150	18	145		35	170	6.5
200	75	140	60	140	50	110	90	170	200	520	250	270	220	75	250	550	640	450	160	23	155		40	225	8.5
225	85	170	70	140	55	110	100	210	225	590	275	290	240	80	280	605	710	520	175	23	180		45	320	12
250	95	170	80	170	60	140	110	210	250	650	305	325	265	90	315	665	790	570	185	27	195		50	415	16
280	105	210	90	170	70	140	120	210	280	720	340	350	290	100	355	735	880	630	200	27	215	370	55	570	21
315	115	210	95	170	80	170	140	250	315	805	375	390	315	110	400	815	975	705	215	33	240	420	60	760	30
355	130	250	110	210	90	170	160	300	355	910	425	400	325	120	450	905	1100	810	235	33	280	480	65	1025	42
400	145	250	120	210	100	210	170	300	400	1020	475	430	350	130	500	1000	1230	910	250	33	315	540	70	1400	58
450	160	300	130	250	110	210	190	350	450	1145	535	475	390	140	560	1120	1385	1025	280	39	355	615	80	1900	80
500	180	300	140	250	120	210	210	350	500	1275	590	510	425	150	630	1275	1535	1155	295	39	400	680	90	2800	105
560	190	350	160	300	130	250	240	410	560	1425	650	550	465	160	710	1410	1700	1305	310	39	450	760	100	3810	140
630	210	350	180	300	140	250	260	410	630	1600	730	570	485	170	800	1580	1910	1480	330	39	510	840	110	5100	190

DAN (Helical - Single stage)

Nominal power rating (kW)

Nominal Transmission Ratio (i_n)	Nominal Speeds (rpm)		Size of gear unit																		
			80	90	100	110	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630
	n_1	n_2	Nominal gearbox rating P_N (kW)																		
1.6	1500 100 750	940 625 470	50 36 28	74 53 41	97 71 56	120 90 70	170 130 105	230 175 140	305 230 190	390 290 240	550 400 310	740 550 455	1100* 800 660	1500* 1100 900	2050* 1450 1180	2700* 2100 1560	2790* 2280	3450	4340		
1.8	1500 100 750	835 555 415	45 32 25	67 48 37	91 66 52	110 85 66	160 120 98	210 160 130	290 220 180	355 265 220	500 370 280	690 520 425	1000 750 610	1400* 1020 830	2000* 1400 1120	2600* 1800 1450	2620 2140	3860* 3150	4030		
2	1500 100 750	750 500 375	38 27 21	58 43 34	79 57 44	105 77 60	150 110 89	200 150 120	270 200 165	340 250 210	480 350 265	630 475 390	950 700 580	1300 940 770	1800* 1300 1020	2400* 1680 1370	2500 1990	3630 2970	4630* 3790	4810	
2.24	1500 100 750	670 445 335	37 26 20	51 36 28	68 48 37	95 68 52	135 100 82	180 135 110	250 190 155	310 235 190	450 300 240	600 450 370	890 650 530	1200 900 740	1650* 1200 970	2200* 1600 1260	2300 1820	3360 2750	4250* 3480	4420	4510*
2.5	1500 100 750	600 400 300	30 21 17	47 33 25	57 41 32	78 55 43	125 95 77	170 125 105	230 170 140	290 220 180	400 280 230	550 410 335	820 620 500	1100 820 670	1500 1120 900	2050* 1450 1180	2100 1720	3080 2520	4050* 3310	4120	4200
2.8	1500 100 750	535 360 270	27 19 15	42 30 23	48 34 27	66 46 36	115 80 62	160 120 93	210 160 130	265 200 165	370 260 210	495 375 305	750 560 460	1000 750 610	1350 1000 820	1850 1310 1070	1910 1560	2890 2360	3700 3030	3830	3930
3.15	1500 100 750	475 315 235	23 16 13	34 24 18	47 33 26	63 44 35	91 62 47	140 105 82	190 140 110	240 180 150	330 235 190	460 350 285	680 510 410	920 690 570	1250 920 750	1650 1200 960	2320 1750 1430	3500* 3640 2150	4430* 3330 2730	4220 3450	3570
3.55	1500 100 750	425 280 210	20 14 11	28 20 16	43 31 24	59 41 31	92 63 47	125 88 67	185 130 100	240 180 150	330 225 180	460 350 275	680 490 380	920 630 550	1240 900 710	1510 1140 930	2200 1660 1350	3230* 2430 1990	4120* 3100 2530	4250 3300	3470
4	1500 100 750	375 250 187	16 11 8.5	23 16 13	35 25 19	51 36 27	75 53 40	105 75 56	160 105 81	205 140 110	310 215 170	460 350 265	640 455 355	850 600 490	1230 880 670	1350 1020 830	1990 1500 1220	2930 2200 1800	3620* 2730 2230	4240 3060	3280
4.5	1500 100 750	335 220 166	14 10 7.5	18 13 10	31 22 17	37 26 20	54 39 30	73 52 40	140 97 75	195 140 105	265 185 145	375 255 195	540 380 295	780 560 430	1110 820 620	1240 940 770	1770 1230 950	2560 1790 1400	3280 2470 1970	5170* 3850 2960	3230
5	1500 100 750	300 200 150		17 12 9.5	27 19 15	33 23 18	50 36 28	73 51 40	125 86 65	140 98 77	220 145 110	375 265 200	475 340 260	670 475 360	1020 710 540	1110 840 690	1660 1250 1020	2470 1750 1350	3080 2320 1750	4670 3290 2540	3200
5.6	1500 100 750	270 180 134			22 15 12	30 21 16	41 29 22	68 48 37	100 72 54	130 90 70	200 140 105	310 210 155	415 285 215	560 405 305	870 610 440	1010 760 550	1520 1050 790	2020 1350 1040	2730 1840 1400	3940 2700 2070	3000
6.3	1500 100 750	240 160 120				23 16 13	41 29 22	57 41 32	83 59 45	120 84 63	155 110 87	240 170 130	345 230 175	495 350 270	720 480 360	940 700 530	1210 830 640	1840 1240 950	2160 1450 1100	3160 2150 1640	2500
Nominal Transmission Ratio (i_n)	Input Speeds (rpm) n_1		Size of gear unit																		
			80	90	100	110	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630
	Thermal capacity, P_1 (kW), for gearboxes without additional cooling																				
1.6 to 2.8	1500 100 750		23 21 20	29 27 26	37 34 32	50 42 40	59 54 51	75 70 64	92 87 81	115 112 103	145 136 130	175 167 160	225 218 211	280 275 270	355 350 345	450 440 430	540 530	660 650	820 800	1050 1000	1200
3.15 to 6.3	1500 100 750		18 16 14	24 20 18	31 29 22	38 33 29	51 45 40	66 62 60	82 79 78	102 94 86	125 120 115	160 151 140	220 210 200	270 260 240	345 335 320	440 425 415	560 535 525	690 650 640	810 790	1020 980	1180
Thermal capacity, P_2 (kW), for gearboxes with cooling fan																					
1.6 to 2.8	1500 100 750		42 35 30	48 44 40	65 55 50	85 70 62	102 85 75	130 110 98	158 132 120	200 180 165	262 225 205	310 280 260	400 325 310	500 422 390	640 560 525	790 690 630	860 810	1160 1065	1400 1310	1800 1700	2000
3.15 to 6.3	1500 100 750		38 38 24	42 34 30	60 43 37	75 56 50	92 75 65	120 90 80	152 122 110	190 150 135	235 202 182	300 240 240	378 320 285	475 415 360	615 525 475	785 685 605	980 835 765	1245 1050 1000	1560 1360 1260	1750 1650	1900
Thermal capacity, P_3 (kW), for gearboxes with built in cooling coil																					
1.6 to 6.3	1500 100 750		101 96 95	121 113 111	144 141 140	175 175 168	212 204 196	245 240 231	289 285 271	335 332 328	393 381 375	470 457 450	555 543 536	650 643 640	765 760 750	920 910 890	1070 1060	1260 1245	1530 1510	1850 1780	2000
Thermal capacity, P_4 (kW), for gearboxes with built in cooling coil and fan																					
1.6 to 6.3	1500 100 750		120 110 105	140 130 125	172 162 158	210 200 190	255 235 220	300 280 265	355 330 310	420 400 390	510 470 450	605 570 550	730 650 635	870 790 760	1050 970 930	1260 1160 1090	1390 1340	1760 1660	2110 2020	2600 2480	2800

Introduction

Characteristics and Advantages

Classification

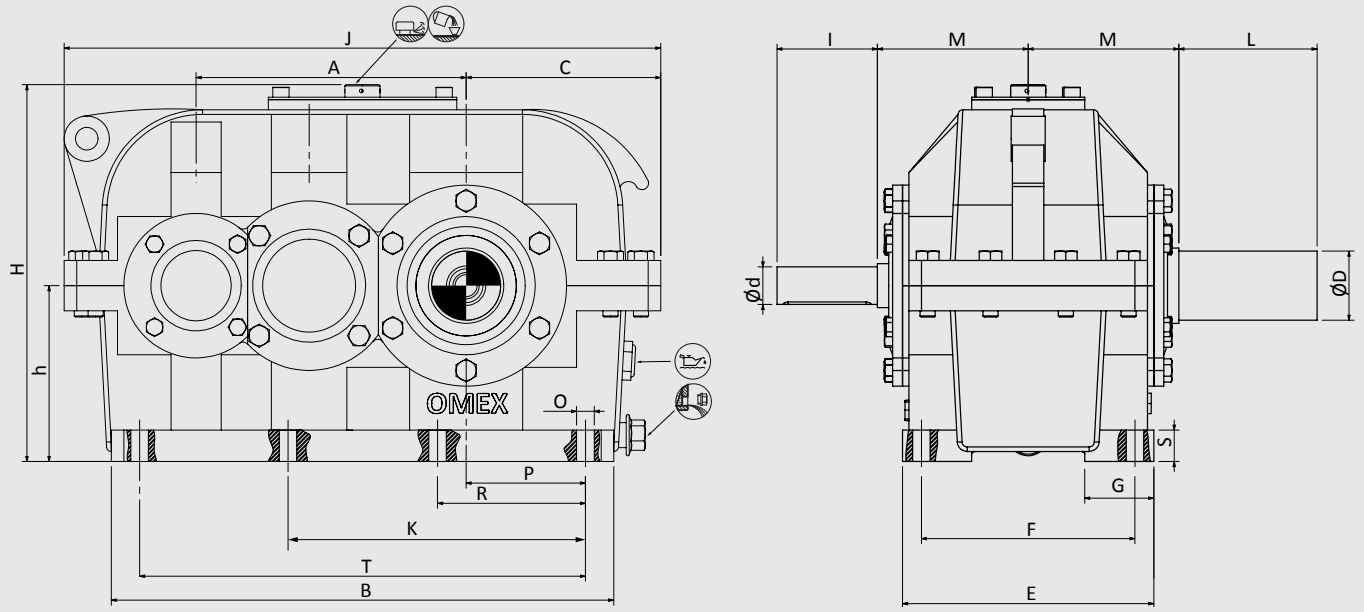
Selection procedure

Service factor

Dimensions and Power ratings

Shaft arrangement

DBN (Helical - Double stage)



Dimensions

Size of gear unit	Input shaft						Output shaft		Dimensions (mm)													Avg. wt. (kg)	Oil qty (l)			
	$I_n \leq 12.5$		$I_n > 12.5$ to 20		$I_n > 20$		D	L	A	B	C	E	F	G	h	H	J	K	M	O	P			R	S	T
	d	l	d	l	d	l																				
110	25	60	20	50			48	110	190	350	140	180	150	50	125	310	430		110	14	80	140	25	310	58	2
125	30	80	25	60			55	110	215	395	155	200	170	55	140	340	475		120	14	95	170	25	355	78	3
140	35	80	30	80	20	50	60	140	240	440	175	220	190	60	160	380	530		135	14	110	195	30	400	110	4
160	45	110	35	80	25	60	70	140	270	500	190	250	210	65	180	430	590		145	18	115	210	35	440	145	5
180	50	110	40	110	30	80	80	170	305	565	215	270	230	70	200	475	665		160	18	135	240	35	505	200	8
200	55	110	45	110	35	80	90	170	340	625	240	300	250	75	225	520	745		175	23	145	255	40	555	270	11
225	60	140	50	110	40	110	100	210	385	705	260	320	270	80	250	570	825		190	23	165	290	45	635	360	14
250	70	140	55	110	45	110	110	210	430	785	290	370	310	90	280	625	925		210	27	180	315	50	705	490	21
280	75	140	60	140	50	110	120	210	480	875	325	400	340	100	315	690	1035		230	27	200	355	55	785	675	29
315	85	170	70	140	55	110	140	250	540	975	355	450	380	110	355	785	1145		260	33	220	405	60	875	910	42
355	95	170	80	170	60	140	160	300	605	1085	390	480	410	120	400	865	1265		285	33	245	450	65	975	1230	60
400	105	210	90	170	70	140	170	300	680	1215	440	530	460	130	450	960	1425		305	33	280	510	70	1105	1675	85
450	115	210	95	170	80	170	190	350	765	1365	490	600	510	140	500	1065	1595	940	345	39	315	575	80	1245	2260	115
500	125	250	110	210	90	170	220	350	855	1525	550	650	560	150	560	1185	1785	1050	475	39	350	645	90	1385	3500	165
560	145	250	120	210	100	210	250	410	960	1705	610	750	640	160	630	1325	1985	1165	510	45	390	715	100	1545	4800	235
630	160	300	130	250	110	210	300	470	1080	1915	675	800	690	170	710	1460	2215	1305	560	45	445	800	110	1755	6500	330
710	180	300	140	250	120	210	340	550	1210	2150	760	900	770	190	800	1665	2480	1490	600	45	500	900	125	1970	9100	440
800	190	300	160	300	130	250	400	650	1360	2420	840	1000	870	200	900	1870	2770	1680	645	45	560	1100	140	2240	12500	600

DBN (Helical - Double stage)

Nominal power rating (kW)

Nominal Transmission Ratio (i_n)	Nominal Speeds (rpm)		Size of gear unit																	
			110	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710	800
	n_1	n_2	Nominal gearbox rating P_N (kW)70																	
6.3	1500 1000 750	240 160 120	36 24 18	50 34 25	70 47 36	105 71 54	145 100 74	205 145 110	285 215 170	370 280 230	530 400 310	790 560 425	1060* 800 600	1450* 1100 900	2020* 1520 1200	3740* 2650 1990	5060* 3650* 2790	7020* 4780* 3600	7120* 5420*	7700*
7.1	1500 1000 750	210 140 105	36 24 18	48 32 24	66 44 33	100 66 50	140 93 71	195 135 100	280 200 150	380 255 210	490 365 275	730 490 370	990 720 550	1350* 1000 790	1900* 1400 1050	3400* 2330 1760	4760* 3270* 2470	6200* 4210* 3170	6270* 4730	6700*
8	1500 1000 750	188 125 94	32 22 16	44 30 22	62 41 31	91 60 46	125 85 65	180 125 92	255 180 135	350 245 190	450 335 250	660 450 340	920 680 520	1300 950 710	1750* 1270 950	3070* 2120 1590	4300* 2970 2230	5600* 3820 2870	5700* 4270	6070
9	1500 1000 750	167 111 83	29 19 15	40 27 20	56 38 28	83 56 43	130 86 67	185 125 95	225 160 125	320 215 170	450 300 235	580 430 340	820 620 500	1100 800 650	1500 1120 900	2740* 1890 1470	3840* 2640 2080	5000* 3400 2750	5070* 4020	5760
10	1500 1000 750	150 100 75	25 17 13	35 24 18	50 33 25	74 49 37	100 68 50	150 95 80	210 145 110	280 195 155	390 265 210	540 360 280	760 540 420	1050 750 600	1420 1000 800	2540* 1700 1320	3560* 2380 1860	4590* 3060 2460	4560* 3600	5160
11.2	1500 1000 750	134 89 67	22 15 11	32 21 16	45 30 22	66 45 35	95 65 49	140 95 72	180 130 95	250 175 130	330 245 185	480 360 270	680 500 400	900 680 500	1250 940 720	2270 1530 1180	3180* 2140 1660	4090* 2750 2200	4320 3220	4610
12.5	1500 1000 750	120 80 60	21 14 11	29 19 15	40 27 20	55 37 28	80 52 42	110 77 58	170 115 88	225 165 125	320 220 165	430 300 225	640 450 330	850 600 450	1200 850 640	2020 1390 1050	2830 1970 1480	3630* 2600 1950	5420* 3800 2860	4090
14	1500 1000 750	107 71 53	18 12 9	26 17 13	35 24 18	48 32 24	68 46 35	100 70 52	150 105 78	205 145 110	280 195 145	380 265 200	550 400 290	710 520 420	950 710 560	1790 1240 930	2510 1750 1310	3230* 2310 1730	4820* 3380 2530	3630
16	1500 1000 750	94 62 47	15 10 8	22 15 11	30 20 15	43 29 22	60 40 32	90 62 47	135 92 69	185 130 97	250 175 130	340 235 175	490 350 270	650 490 370	860 650 500	1590 1100 820	2230 1550 1170	2870 2050 1540	4270* 3000 2250	3220
18	1500 1000 750	83 56 41	13 8.5 6.5	19 14 10	27 19 15	37 25 19	55 39 30	73 51 40	120 80 62	140 98 77	220 145 110	310 230 180	430 320 250	550 410 340	740 540 440	1470 970 770	1760 1230 950	2570 1820 1440	4020 2730 2140	3110
20	1500 1000 750	75 50 38	17 12 9	24 17 12	35 23 18	49 33 25	73 49 38	110 74 58	140 98 77	210 140 110	280 190 145	410 280 230	520 380 310	700 500 400	1320 880 700	1860 1240 990	2460 1640 1290	3600 2400 1920	2780	
22.4	1500 1000 750	67 45 33	21 14 11	30 20 16	41 27 21	65 44 34	99 66 52	135 92 70	185 125 98	250 170 130	330 245 185	480 360 270	680 500 400	900 680 500	1250 940 720	2270 1530 1180	3180* 2140 1660	4090* 2750 2200	4320 3220	4610
Nominal Transmission Ratio (i_n)	Input Speeds (rpm) n_1		Size of gear unit																	
			110	125	140	160	180	200	225	250	280	315	355	400	450	500	560	630	710	800
	Thermal capacity, P_1 (kW), for gearboxes without additional cooling																			
6.3 to 14	1500 1000 750	30 26 23	40 35 32	48 46 40	62 55 53	80 72 67	100 92 90	122 120 110	155 150 142	205 190 180	245 240 230	300 290 285	390 380 370	480 470 465	630 620 610	780 770 760	1000 980 950	1200 1180 1160	1500 1470 1450	
16 to 22.4	1500 1000 750	25 22 20	34 29 25	42 36 33	56 48 42	73 61 56	94 84 75	120 108 100	147 132 122	185 175 162	240 230 212	290 280 275	380 360 345	465 460 440	610 560 550	760 740 730	970 955 940	1170 1150 1130	1470 1450 1420	
Thermal capacity, P_2 (kW), for gearboxes with cooling fan																				
6.3 to 14	1500 1000 750	52 40 32	65 50 42	82 65 58	110 85 75	135 105 100	162 145 130	205 180 170	260 220 210	320 280 260	405 370 340	500 450 420	650 580 530	800 730 680	1000 920 880	1300 1200 1150	1600 1500 1400	1) 1) 1)	1)	
16 to 22.4	1500 1000 750	45 34 30	58 44 38	75 55 50	95 70 62	120 95 85	155 120 105	200 160 140	250 210 180	290 270 240	390 350 300	490 440 400	630 570 520	780 700 650	950 900 850	1200 1100 1000	1500 1400 1300	1) 1) 1)	1)	
Thermal capacity, P_3 (kW), for gearboxes with built in cooling coil																				
6.3 to 22.4	1500 1000 750	148 136 121	165 156 140	186 181 162	202 195 188	225 217 207	248 237 230	267 260 250	295 290 282	345 340 330	390 380 370	450 440 425	540 520 510	680 660 645	830 800 780	880 870 860	1100 1080 1050	1) 1) 1)	1)	
Thermal capacity, P_4 (kW), for gearboxes with built in cooling coil and fan																				
6.3 to 22.4	1500 1000 750	170 150 130	190 170 150	220 200 180	250 225 210	280 250 240	310 290 270	350 320 310	400 360 350	460 430 410	550 510 480	650 600 560	800 720 670	1000 920 860	1200 1100 1050	1400 1300 1250	1700 1600 1500	1) 1) 1)	1)	

Introduction

Characteristics and Advantages

Classification

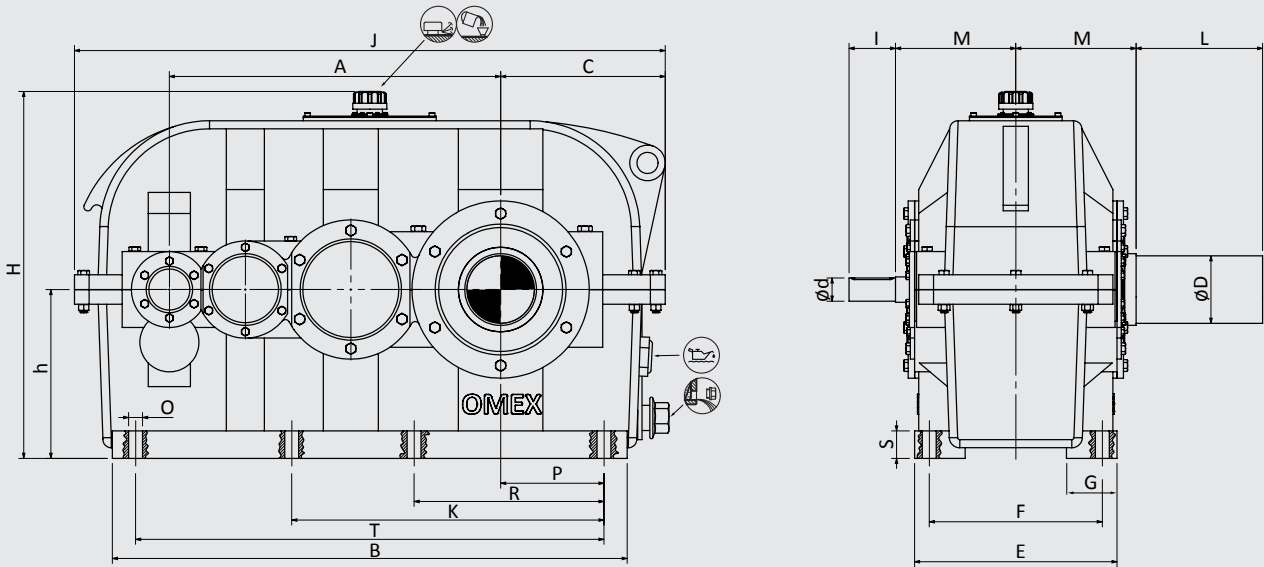
Selection procedure

Service factor

Dimensions and Power ratings

Shaft arrangement

DCN (Helical - Triple stage)



Dimensions

Size of gear unit	Input shaft						Output shaft		Dimensions (mm)														Avg. wt. (kg)	Oil qty (l)		
	$I_N \leq 45$		$I_N > 45$ to 100		$I_N > 100$		D	L	A	B	C	E	F	G	h	H	J	K	M	O	P	R			S	T
160	25	60	20	50			70	140	350	555	190	250	210	65	180	430	645		145	18	115	210	35	495	160	8
180	30	80	25	60			80	170	395	625	215	270	230	70	220	475	725		160	18	135	240	35	565	215	10
200	35	80	30	80	20	50	90	170	440	685	240	300	250	75	225	520	805		175	23	145	255	40	615	295	14
225	45	110	35	80	25	60	100	210	495	775	260	320	270	80	250	570	895		190	23	165	290	45	705	405	22
250	50	110	40	110	30	80	110	210	555	860	290	370	310	90	280	625	1000		210	27	180	315	50	780	540	28
280	55	110	45	110	35	80	120	210	620	970	325	400	340	100	315	690	1130		230	27	200	355	55	880	720	39
315	60	140	50	110	40	110	140	250	700	1085	355	450	380	110	355	785	1255	655	260	33	220	405	60	985	970	56
355	70	140	55	110	45	110	160	300	785	1220	390	480	410	120	400	865	1400	740	285	33	245	450	65	1110	1300	80
400	75	140	60	140	50	110	170	300	880	1355	440	530	460	130	450	960	1565	840	305	33	280	510	70	1245	1770	115
450	85	170	70	140	55	110	190	350	990	1520	490	600	510	140	500	1065	1750	940	345	39	315	575	80	1400	2350	165
500	95	170	80	170	60	140	220	350	1105	1690	550	650	560	150	560	1185	1950	1050	475	39	350	645	90	1550	3850	220
560	105	210	90	170	70	140	250	410	1240	1895	610	750	640	160	630	1325	2175	1165	510	45	390	715	110	1735	5300	310
630	115	210	85	170	80	170	300	470	1395	2145	695	800	690	170	710	1485	2485	1320	560	45	445	800	110	1985	7250	450
710	125	250	110	210	90	170	340	550	1565	2400	760	900	770	190	800	1665	2740	1490	600	45	500	900	125	2220	10100	670
800	145	250	120	210	100	210	400	650	1760	2700	840	1000	870	200	900	1870	3040	1680	645	45	560	1100	140	2520	14100	900

DCN (Helical - Triple stage)

Nominal power rating (kW)

Nominal Transmission Ratio (i_n)	Nominal Speeds (rpm)		Size of gear unit														
			160	180	200	225	250	280	315	355	400	450	500	560	630	710	800
	n_1	n_2	Nominal gearbox rating P_N (kW)														
14	1500 100 750	107 71 53	50 34 26	70 47 36	105 73 55	140 95 74	200 135 105	280 190 150	380 270 215	500 390 300	660 500 390	930 700 580	1810* 1250 940	2540* 1770 1330	3270* 2340 1760	4880* 3420* 2580	4900* 3700
16	1500 100 750	94 62 47	46 32 24	65 44 33	95 66 50	130 88 68	180 120 95	260 170 135	350 250 200	460 350 270	600 460 360	860 640 530	1610* 1120 830	2260* 1580 1180	2910* 2090 1560	4330* 3060* 2280	4390* 3270
18	1500 100 750	83 56 41	42 30 22	62 42 32	85 60 45	120 80 62	160 105 85	230 150 120	320 220 170	420 320 250	550 420 330	800 590 480	1490* 1000 780	2110* 1410 1110	2790* 1860 1460	4080* 2720* 2170	3900* 3140
20	1500 100 750	75 50 38	39 27 20	59 39 30	73 54 43	105 70 55	145 98 77	205 140 110	295 200 160	385 290 240	500 380 305	740 550 445	1320* 880 690	1860* 1240 990	2460* 1640 1290	3600* 2400* 1920	3440* 2770
22.4	1500 100 750	67 45 33	35 24 18	52 35 26	66 50 38	93 65 49	130 91 69	185 130 96	270 190 140	350 265 215	480 345 275	700 520 400	1170* 780 620	1640* 1100 880	2170* 1450 1140	3180* 2120 1710	3040* 2460
25	1500 100 750	60 40 30	30 20 15	44 30 22	62 42 31	83 57 43	115 80 60	160 110 85	235 165 125	330 255 195	450 315 240	660 460 350	1030* 730 550	1460* 1040 780	1930* 1350 1010	2820* 2010 1510	2900* 2180
28	1500 100 750	54 36 27	27 18 14	40 27 20	56 38 28	75 52 39	105 72 54	145 100 77	215 150 115	310 230 165	405 285 215	590 420 315	910* 640 490	1290* 910 690	1700* 1190 890	2440* 1770 1330	2550* 1920
31.5	1500 100 750	48 32 24	24 16 13	33 22 17	48 33 25	69 46 34	95 63 49	130 87 65	200 130 100	290 200 150	385 255 190	560 370 280	820* 580 440	1170* 820 620	1540* 1070 810	2260* 1600 1200	2310* 1740
35.5	1500 100 750	42 28 21	22 15 11	32 22 16	46 30 23	62 41 31	87 58 43	120 82 61	180 120 90	280 185 140	345 230 175	500 340 250	770 510 385	1100* 720 550	1430* 950 710	2120* 1410 1060	3070* 2030* 1530
40	1500 100 750	38 25 19	20 14 10	30 21 15	43 28 22	56 37 29	78 52 41	110 72 56	160 105 82	240 165 125	310 205 155	450 300 230	700 465 350	990 660 495	1290 860 640	1920* 1280 960	2770* 1850 1390
45	1500 100 750	33.5 22 16.6	17 12 8.5	26 17 13	36 25 18	50 33 26	69 46 36	97 64 50	145 95 74	220 150 115	275 180 140	400 265 205	620 455 320	880 640 455	1150* 760 600	1710* 1140 880	2480* 1650 1260
50	1500 100 750	30 20 15	15 11 8	23 15 12	32 22 16	44 31 23	62 43 32	87 60 44	130 87 65	200 135 100	245 165 120	360 240 180	550 365 290	780 520 410	1030 690 540	1540* 1020 780	2220* 1480 1130
56	1500 100 750	27 18 13.4	14 9.5 7	20 14 10	28 19 15	39 27 21	55 38 28	77 53 40	115 77 59	175 120 91	220 145 110	320 215 165	500 340 255	700 485 360	920 640 475	1370 930 690	1980* 1330 990
63	1500 100 750	24 16 12	11 7.5 6	17 11 8.5	23 16 12	35 24 18	45 30 23	63 43 32	100 69 52	150 105 78	195 130 98	285 190 145	440 300 230	630 430 325	810 560 430	1220 820 630	1760 1180 900
71	1500 100 750	21 14 10.5	9.5 6.5 5	15 10 7.5	21 14 11	31 22 16	40 27 20	56 39 29	90 61 46	135 92 69	175 115 86	250 170 125	395 270 200	560 380 285	730 500 380	1090 730 550	1570 1050 790
80	1500 100 750	18.8 12.5 9.4	8.5 6 4.5	14 9 7	19 13 10	29 19 14	36 24 19	51 34 27	82 54 40	120 82 63	155 100 76	230 150 110	350 240 180	495 340 255	640 450 340	960 650 495	1390 940 700
90	1500 100 750	16.7 11.1 8.3	8 5.5 4	12 8 6.5	17 11 9	26 17 13	32 22 17	46 31 24	74 49 37	110 74 57	140 92 69	205 135 100	320 210 160	455 300 225	600 395 295	880 570 430	1260 820 620
100	1500 100 750	15 10 7.5	9.5 6.5 5	16 11 8	24 16 12	30 21 16	44 30 22	60 40 30	95 63 47	130 86 65	175 115 87	290 190 145	410 270 205	540 360 270	780 520 395	1130 750 560	
112	1500 100 750	13.4 8.9 6.7	9.5 6.7 5	15 10 7.5	21 14 11	29 19 15	40 27 20	53 36 27	84 57 43	115 78 58	155 105 78	255 170 130	360 245 185	475 325 245	690 470 355	990 670 510	
Nominal Transmission Ratio (i_n)	Input Speeds (rpm) n_1		Size of gear unit														
			160	180	200	225	250	280	315	355	400	450	500	560	630	710	800
Thermal capacity, P_1 (kW), for gearboxes without additional cooling																	
14 to 35.5	1500 100 750	42 49 33	53 48 44	65 60 54	90 80 75	108 98 90	132 125 118	172 168 152	212 202 195	265 255 242	335 330 312	405 400 388	510 490 485	650 630 620	790 760 750	1010 990 970	
40 to 112	1500 100 750	36 32 30	48 44 40	60 55 50	80 70 65	97 88 80	122 112 100	165 155 135	202 192 172	255 243 222	330 310 295	395 375 368	495 475 468	630 605 595	770 740 720	990 960 940	
Thermal capacity, P_2 (kW), for gearboxes with cooling fan																	
14 to 35.5	1500 100 750	75 65 61	90 83 78	110 100 95	140 130 125	170 160 152	220 205 196	270 250 240	340 320 305	420 380 362	520 492 470	640 590 560	800 750 710	1050 1002 960	1) (1) 1) (1) 1) (1)	1) (1) 1) (1) 1) (1)	
40 to 112	1500 100 750	72 63 58	88 80 75	106 95 90	138 128 120	162 153 140	205 195 180	260 245 232	324 305 290	387 360 342	500 466 445	590 552 522	755 700 670	100 942 900	1) (1) 1) (1) 1) (1)	1) (1) 1) (1) 1) (1)	
Thermal capacity, P_3 (kW), for gearboxes with built in cooling coil																	
14 to 112	1500 100 750	100 96 92	120 115 110	140 132 126	170 160 150	200 195 190	250 245 240	288 280 272	360 348 340	430 425 420	545 535 515	640 615 605	750 720 715	850 820 805	1) (1) 1) (1) 1) (1)	1) (1) 1) (1) 1) (1)	
Thermal capacity, P_4 (kW), for gearboxes with built in cooling coil and fan																	
14 to 112	1500 100 750	133 122 120	157 150 144	185 172 167	220 210 200	262 257 252	338 325 318	386 362 360	488 466 450	585 550 540	730 697 673	875 805 777	1040 980 940	1250 1192 1145	1) (1) 1) (1) 1) (1)	1) (1) 1) (1) 1) (1)	

Introduction

Characteristics and Advantages

Classification

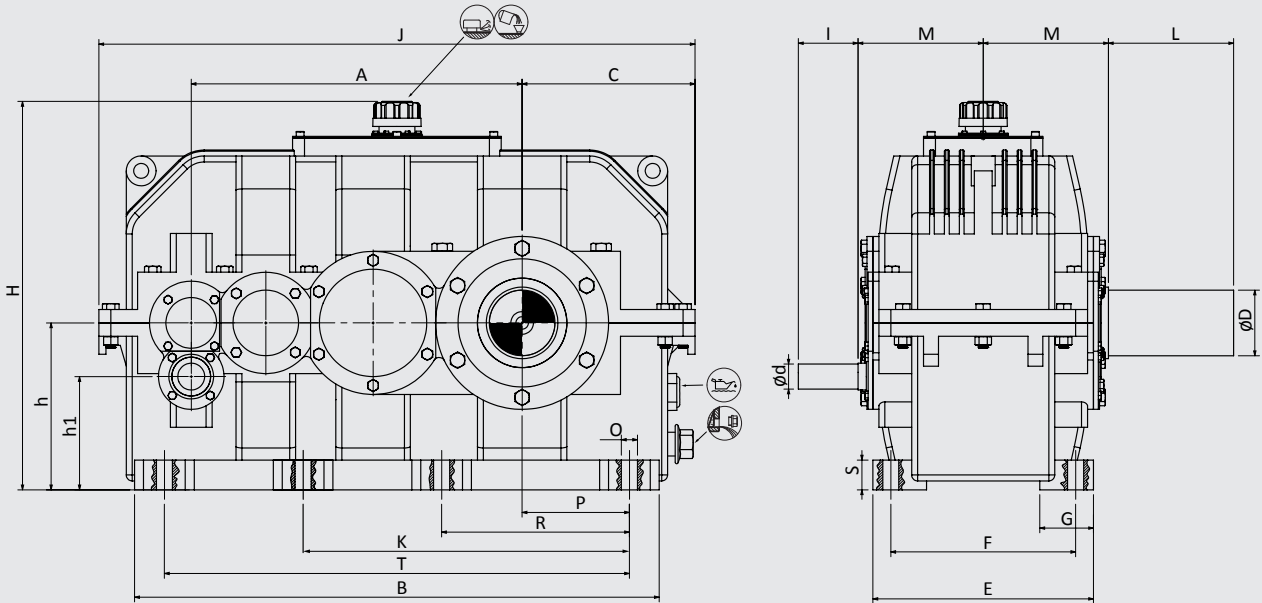
Selection procedure

Service factor

Dimensions and Power ratings

Shaft arrangement

DDN (Helical - Quadruple stage)



Dimensions

Size of gear unit	Input shaft				Output shaft		Dimensions (mm)															Avg. wt. (kg)	Oil qty (l)		
	$I_n \leq 500$		$I_n > 500$		D	L	A	B	C	E	F	G	h	h_1	H	J	K	M	O	P	R			S	T
	d	l	d	l																					
225	18	40			100	210	495	775	260	320	270	80	250	170	570	895		190	23	165	290	45	705	405	22
250	22	50			110	210	555	860	290	370	310	90	280	190	625	1000		210	27	180	315	50	780	540	28
280	25	60	20	50	120	210	620	970	325	400	340	100	315	215	690	1130		230	27	200	355	55	880	720	39
315	30	80	25	60	140	250	700	1085	355	450	380	110	355	245	785	1255	655	260	33	220	405	60	985	970	56
355	40	110	30	80	160	300	785	1220	390	480	410	120	400	275	865	1400	740	285	33	245	450	65	1110	1300	80
400	45	110	35	80	170	300	880	1355	440	530	460	130	450	310	960	1565	840	305	33	280	510	70	1245	1770	115
450	50	110	40	110	190	350	990	1520	490	600	510	140	500	340	1065	1750	940	345	39	315	575	80	1400	2350	165
500	55	110	45	110	220	350	1105	1690	550	650	560	150	560	380	1185	1950	1050	475	39	350	645	90	1550	3850	220
560	60	140	50	110	250	410	1240	1895	610	750	630	160	630	430	1325	2175	1165	510	45	390	715	100	1735	5300	310
630	70	140	55	110	300	470	1395	2145	695	800	710	170	710	485	1485	2485	1320	560	45	445	800	110	1985	7250	450
710	75	140	60	140	340	550	1565	2400	760	900	800	190	800	550	1665	2740	1490	600	45	500	900	125	2220	10100	670
800	85	170	70	140	400	650	1760	2700	840	1000	900	200	900	620	1870	3040	1680	645	45	560	1100	140	2520	14100	900

DDN (Helical - Quadruple stage)

Nominal power rating (kW)

Nominal Transmission Ratio (i_N)	Nominal Speeds (rpm)		Size of gear unit											
			225	250	280	315	355	400	450	500	560	630	710	800
	n_1	n_2	Nominal gearbox rating P_N (kW)											
112	1500	13.4	20	29	40	59	91	110	160	255	360	480	690	990
	1000	8.9	14	20	27	39	59	70	105	170	240	320	470	670
	750	6.7	10	15	20	29	43	53	83	130	185	235	355	500
125	1500	12	18	26	36	52	81	97	145	230	320	425	610	880
	1000	8	12	17	23	34	53	64	95	155	210	285	420	570
	750	6	9	13	18	26	40	48	71	115	160	210	310	440
140	1500	10.7	16	23	32	46	72	87	130	205	290	380	550	800
	1000	7.15	11	16	21	31	47	58	85	135	190	250	365	520
	750	5.4	8	12	16	23	36	44	65	100	145	190	275	395
160	1500	9.37	14	20	28	41	63	76	115	180	255	340	495	710
	1000	6.25	9.5	14	18	27	42	51	75	120	170	225	330	470
	750	4.68	7.5	10	14	21	32	39	58	91	130	170	250	360
180	1500	8.34	13	19	25	37	57	69	100	160	225	295	435	630
	1000	5.56	8.5	12	17	25	38	46	68	105	150	200	290	420
	750	4.17	6.5	9.5	13	18	29	35	51	81	115	155	220	320
200	1500	7.5	12	15	22	33	51	62	92	145	205	270	395	560
	1000	5	8	10	14	22	34	41	61	96	135	180	260	375
	750	3.75	6	8	11	17	26	30	44	72	100	135	200	280
224	1500	6.7	10	14	19	29	45	55	82	130	185	240	355	500
	1000	4.47	7	9	13	20	30	37	54	86	120	160	235	340
	750	3.35	5	7	10	15	23	28	41	65	92	120	175	255
250	1500	6	9.5	12	17	26	40	48	71	115	165	215	315	450
	1000	4	6	8.5	12	17	27	32	48	77	110	145	210	300
	750	3	4.5	6.5	9	13	20	24	36	58	82	110	155	225
280	1500	5.35	8	11	15	23	36	44	65	100	145	190	275	395
	1000	3.57	5.5	7.5	10	15	24	29	43	67	95	125	185	265
	750	2.67	4	5.5	8	12	18	22	32	50	71	95	140	195
315	1500	4.76	7.5	9.5	13	21	32	39	58	91	130	170	250	355
	1000	3.17	5	6.5	9	14	21	25	37	60	86	115	165	235
	750	2.38	3.5	5	7	10	16	20	29	46	65	86	125	180
355	1500	4.23	6.5	8.5	12	18	29	35	51	82	115	155	225	320
	1000	2.82	4.5	6	8.5	12	19	23	34	53	75	99	145	205
	750	2.12	3	4.5	6.5	9.5	14	17	25	41	58	77	110	160
400	1500	3.75	6	8	11	16	26	31	45	71	100	135	195	280
	1000	2.5	4	5	7.5	11	17	20	30	48	68	90	130	190
	750	1.88	3	4	5.5	8	13	15	23	35	52	66	98	135
450	1500	3.33	5	7.5	10	13	21	29	39	65	92	120	175	255
	1000	2.22	3.5	5	6.5	9	14	19	26	43	60	81	115	170
	750	1.66	2.5	3.5	5	6.5	11	14	19	32	46	60	88	125
500	1500	3	6.5	9	12	19	26	35	58	82	110	155	225	
	1000	2	4.5	6	8	13	17	23	38	54	72	105	150	
	750	1.6	3	4.5	6	9.5	13	17	29	41	54	79	115	
560	1500	2.68		8	11	17	23	30	50	71	95	140	195	
	1000	1.78		5.5	7	11	16	21	35	49	65	94	135	
	750	1.34		4	5.5	8.5	12	16	26	37	49	71	100	
630	1500	2.38			15	15	21	28	46	65	86	125	180	
	1000	1.59			10	10	14	18	30	43	57	83	120	
	750	1.19			7.5	7.5	10	14	23	33	43	63	90	
Nominal Transmission Ratio (i_N)	Input Speeds (rpm) n_1		Size of gear unit											
			110	125	140	160	180	200	225	250	280	315	355	400
	Thermal capacity, P_t (kW), for gearboxes without additional cooling													
112 to 630	1500	38	50	66	90	105	135	170	210	275	360	430	550	
	1000	35	45	55	80	95	120	150	200	255	340	410	530	
	750	30	40	53	74	90	110	140	180	225	290	385	490	

Introduction

Characteristics and Advantages

Classification

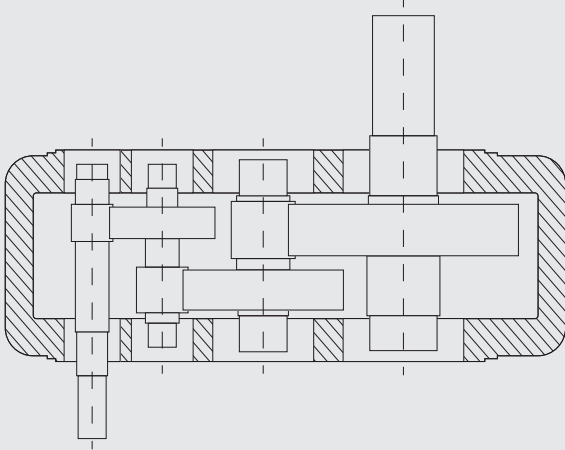
Selection procedure

Service factor

Dimensions and Power ratings

Shaft arrangement

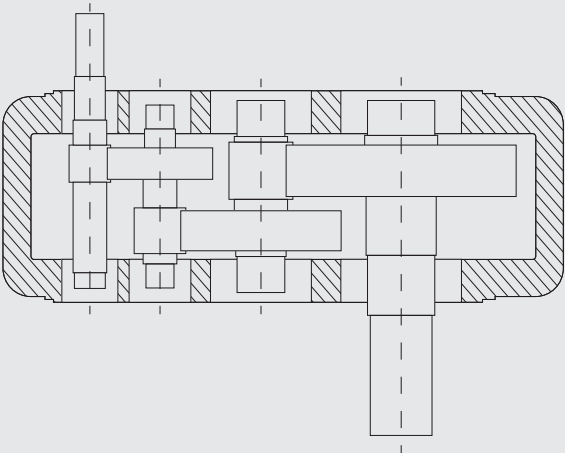
Types of shaft arrangement



11

Input - Single

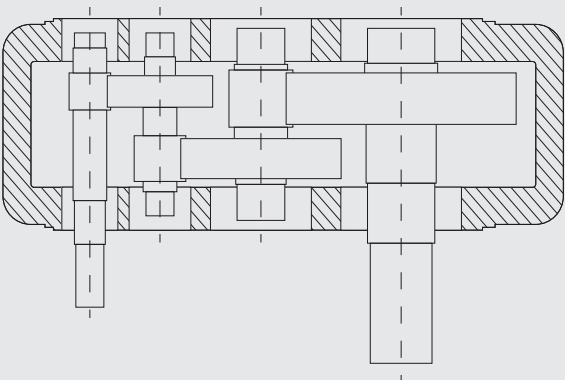
Output- Single



12

Input - Single

Output- Single



13

Input - Single

Output- Single

Note : Above pictured shaft arrangement implies to the all stage (single, double, triple, quadruple) of the gearboxes.

Introduction

Characteristics and Advantages

Classification

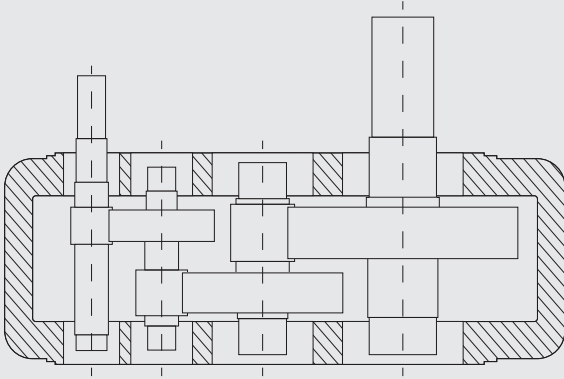
Selection procedure

Service factor

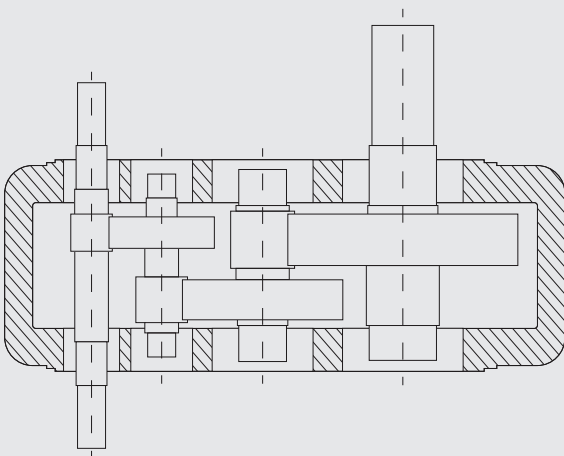
Dimensions and Power ratings

Shaft arrangement

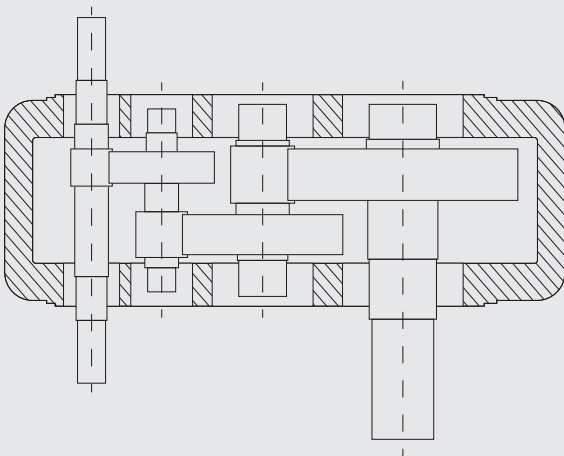
Types of shaft arrangement



14 Input - Single
Output - Single



15 Input - Double
Output - Single



16 Input - Double
Output - Single

Note : Above pictured shaft arrangement implies to the all stage (single, double, triple, quadruple) of the gearboxes.

Introduction

Characteristics and Advantages

Classification

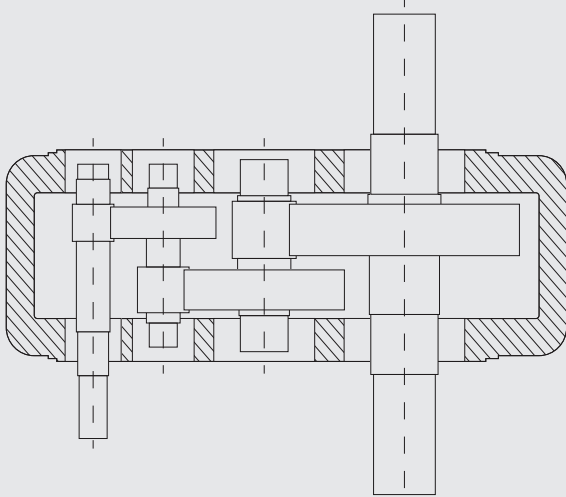
Selection procedure

Service factor

Dimensions and Power ratings

Shaft arrangement

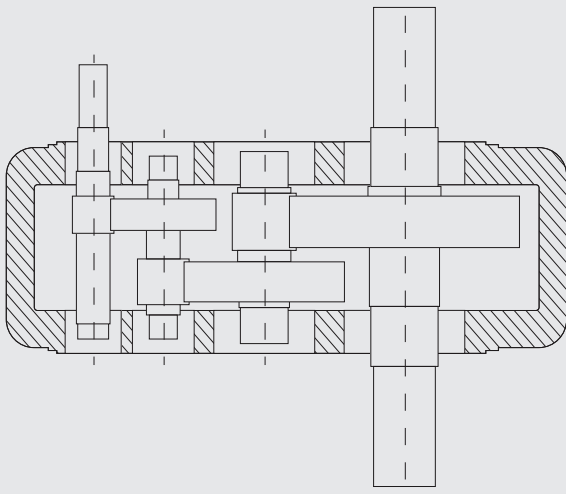
Types of shaft arrangement



17

Input - Single

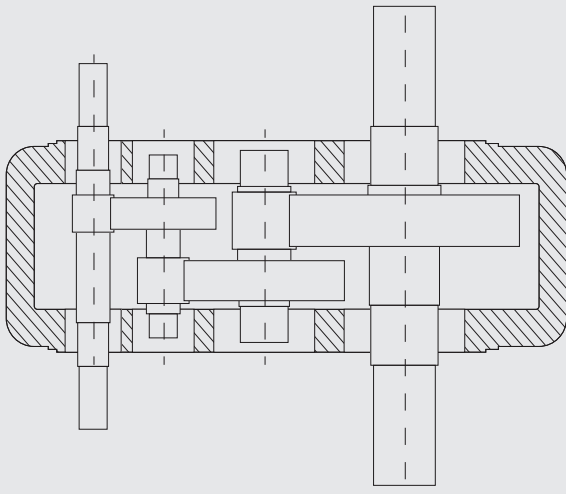
Output - Double



18

Input - Single

Output - Double



19

Input - Double

Output - Double

Note : Above pictured shaft arrangement implies to the all stage (single, double, triple, quadruple) of the gearboxes.



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