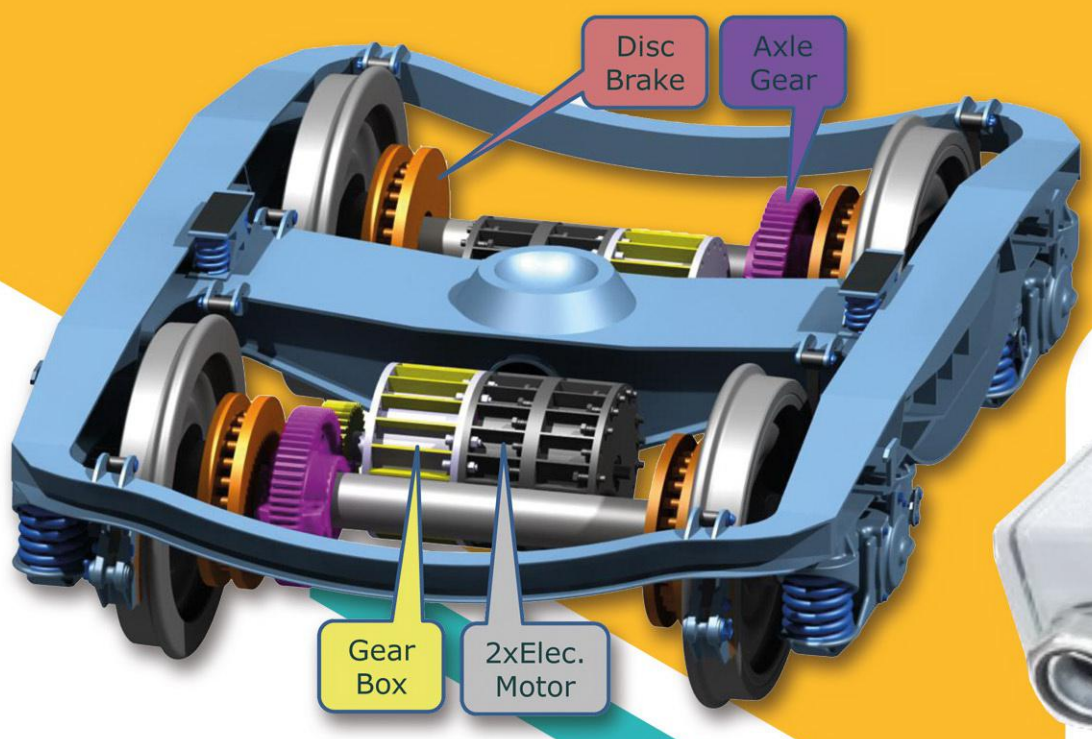
Javaneh Heavy Power

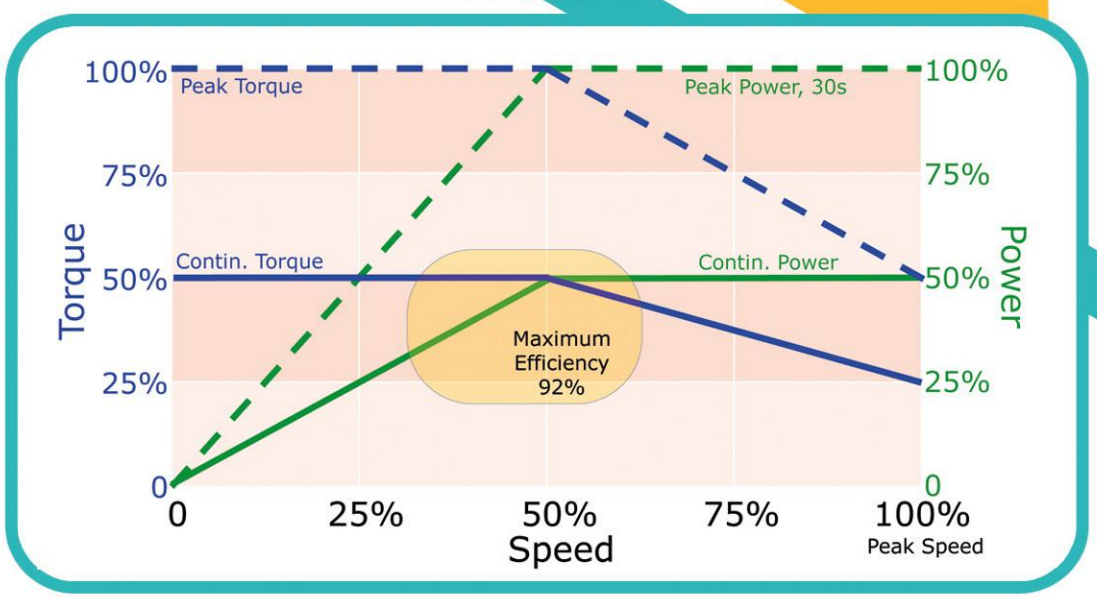
Knowledge Base Company

Axial Motor

- FOC Drive
- Wet Brake
- Planetary Gearbox
- Hub Bearing

This "Axial Flux Motor" with PMSM structure has 9 sizes.
Peak Power range is 62-1336 kW and can use on triple stack.





Motor, Axial Flux PMSM				Continuous			Peak			Electrical			Mechanical		
M # 1 2 3 4 5 6 7 8 9	Nominal Dia. Inches Ø08" ST Ø10" ST Ø12" ST Ø16" XS Ø20" XS Ø24" XS Ø32" XS Ø40" XS Ø48" XS	External Width mm 160 200 250	Total Weight kg 24 38 55 121 190 273 607 949 1366	Torque - Nm 96 150 216 384 600 864 1536 2400 3456	Speed - RPM 3000 2400 1800	Power - kW 31 48 70 99 155 223 297 464 668	Torque - Nm 192 300 432 768 1200 1728 3072 4800 6912	Speed - RPM 6000 4800 3600	Power - kW 62 97 139 198 309 445 594 928 1336	Stator Coils # 12 18 24	Rotor Magnets # 10 16 22	Input Cable mm2 3x10 3x25 3x35 3x50 3x70 3x95 3x120 3x185 3x300	Ref. Dia. DIN 5480 030-040 040-050 050-080	Bearing Size #### 6208 6210 6216	Oil ΔT=20℃ Lit/min 3 4 6 9 14 20 27 42 60

540 Volts AC, 2 Stators & 1 Rotor. Peak Power only for 30s, Continuous Torque & Power are 50% of Peaks. Motor is Stage 1.
Torques & RPMs between Continuous & Peak can be used Continuously when Power is less than 40% of Peak Power. Hub min hardness is 60RC.

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Axial Motor

FOC Drive

Wet Brake

Planetary Gearbox

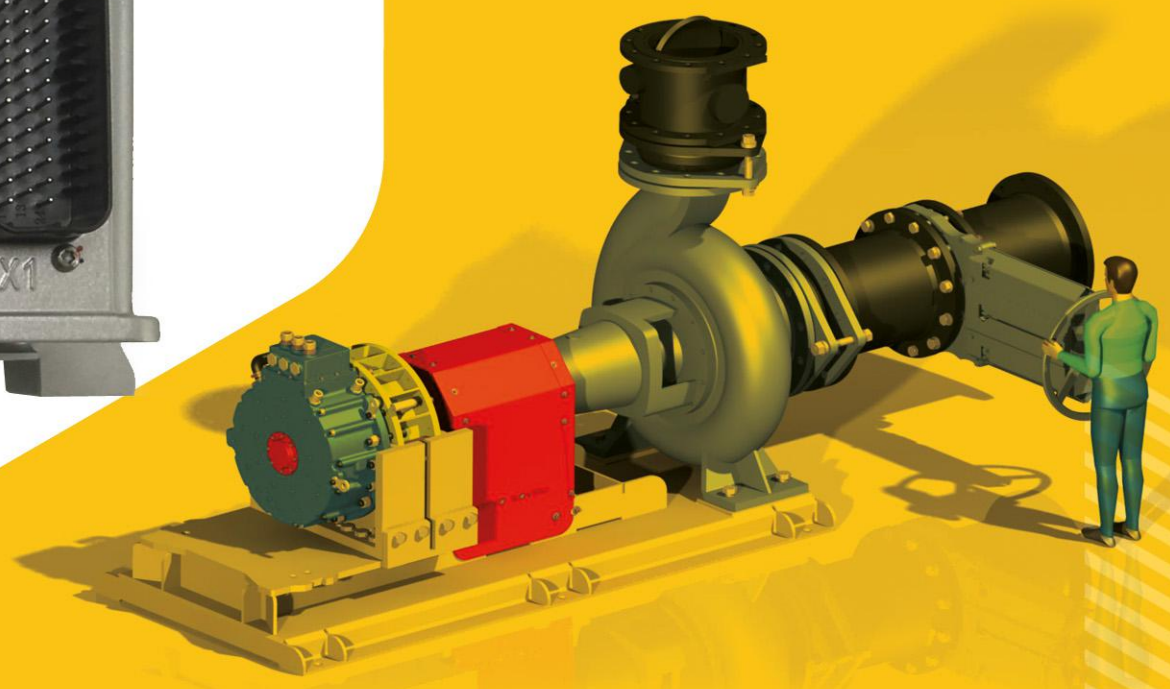
Hub Bearing

Drive, FOC, 0-500 Volts							
D #	Peak Power kW	Input Voltage V DC	Overal Length mm	Overal Width mm	Overal Height mm	Input Cable mm2	Total Weight kg
1	62	540±5%	350	250	140	4x10	13
2	97					4x25	
3	139					4x50	
4	198	540±5%	400	300	160	4x120	20
5	309					4x185	
6	445					4x300	
7	594	500±5%	450	350	180	4x400	29
8	928					4x500	
9	1336					4x625	

Peak power only for 30s, Continuous power is 50% of peak.
Brake efficiency is 80%.

This "FOC Drive" with IGBT switching has 9 sizes.

Peak Power range is 62-1336 kW.



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Axial Motor

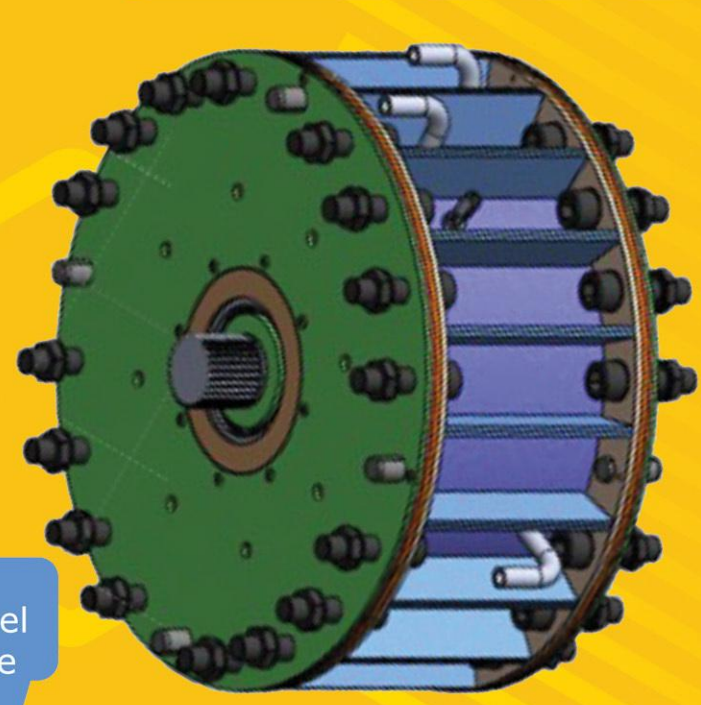
FOC Drive

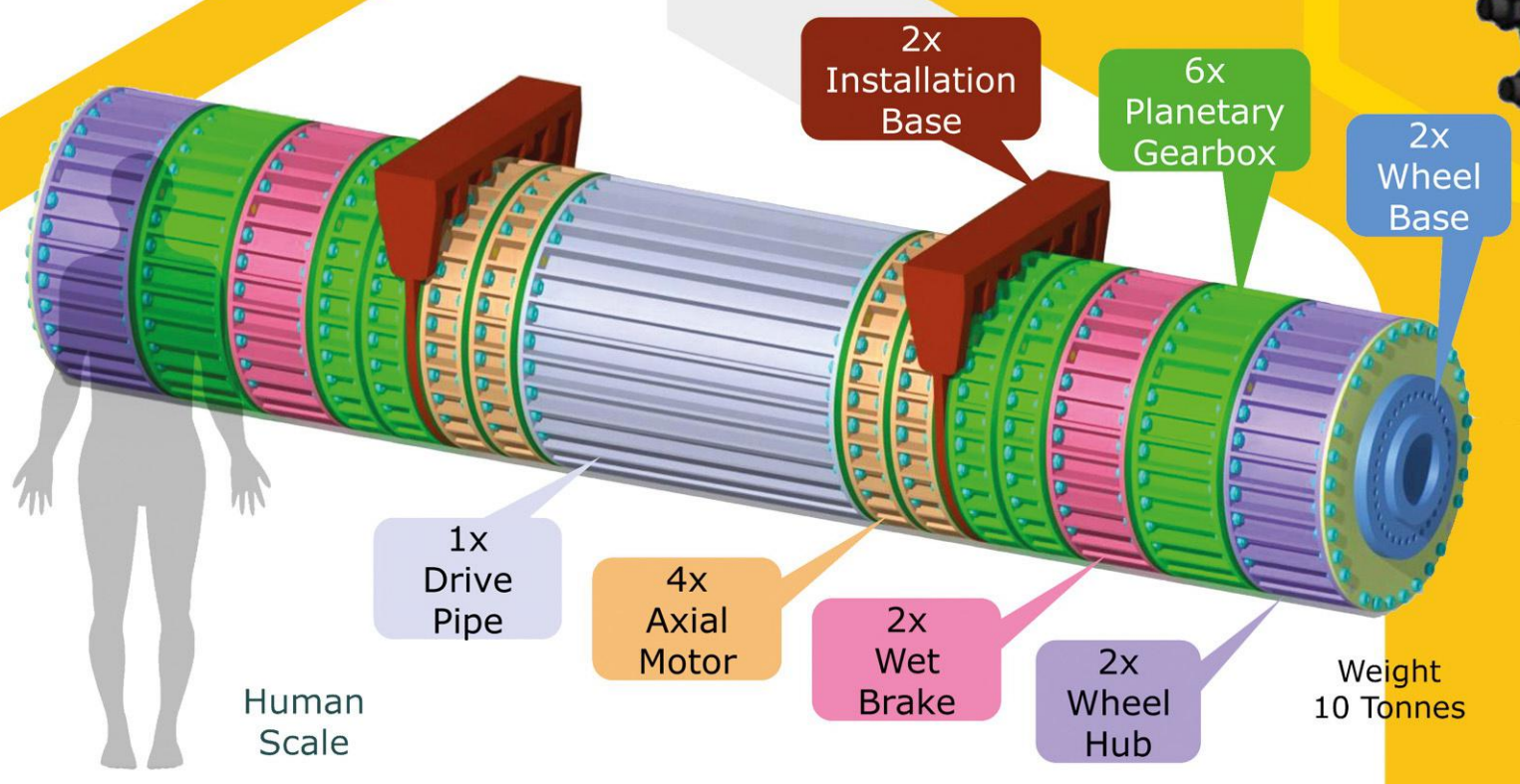
Wet Brake

Planetary Gearbox

Hub Bearing

This "Hydraulic Wet Brake" multi pad structure has 9 sizes in 4 stages. Peak Braking Torque range is 1-215 kNm.





Brake. Stage 1

B #	Shaft-Hub Ref. Dia. DIN 5480	Total Width mm	Total Weight kg	Pad Numbers #	Hydraulic Piston mm	Brake Torque kNm
11	030-040	170	22	02	04xø032	1.0
21			34			1.2
31			48			1.5
41	040-050	200	101	03	04xø060	10
51			158			13
61			228			15
71	050-080	220	445	04	06xø100	114
81			696			143
91			1002			172

Install after motor.

Brake. Stage 2

B #	Shaft-Hub Ref. Dia. DIN 5480	Total Width mm	Total Weight kg	Pad Numbers #	Hydraulic Piston mm	Brake Torque kNm
12	040-050	200	25	04	05xø32	3
22			40			3
32			57			4
42	050-080	220	111	05	06xø40	11
52			174			14
62			250			17
72	080-120	250	506	06	08xø50	57
82			790			71
92			1138			86

Install After Gearbox Stage2.

Brake. General Spec.

Peak Power kW	Nominal Dia. Inches	Pad Ext Dia mm	Pad Int Dia mm
62	ø08" ST	185	130
97	ø10" ST	228	152
139	ø12" ST	274	182
198	ø16" XS	362	241
309	ø20" XS	453	302
445	ø24" XS	545	363
594	ø32" XS	727	485
928	ø40" XS	910	607
1336	ø48" XS	1094	729

Brake. Stage 3

B #	Shaft-Hub Ref. Dia. DIN 5480	Total Width mm	Total Weight kg	Pad Numbers #	Hydraulic Piston mm	Brake Torque kNm
13	050-080	220	28	05	06xø32	4
23			43			5
33			63			6
43	080-120	250	126	07	08xø40	21
53			198			27
63			285			32
73	120-180	280	567	08	10xø50	95
83			885			119
93			1275			143

Install After Gearbox Stage3.

Brake. Stage 4

B #	Shaft-Hub Ref. Dia. DIN 5480	Total Width mm	Total Weight kg	Pad Numbers #	Hydraulic Piston mm	Brake Torque kNm
14	080-120	250	32	07	07xø32	6
24			49			7
34			71			9
44	120-180	280	142	09	10xø40	34
54			221			43
64			319			51
74	180-240	300	607	10	12xø50	143
84			949			179
94			1366			215

Install After Gearbox Stage4.

All the Bearings are 618##
Rubber Seal: DIN 3760
Hub min. Hardness is 60RC.

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Knowledge Base Company

Axial Motor

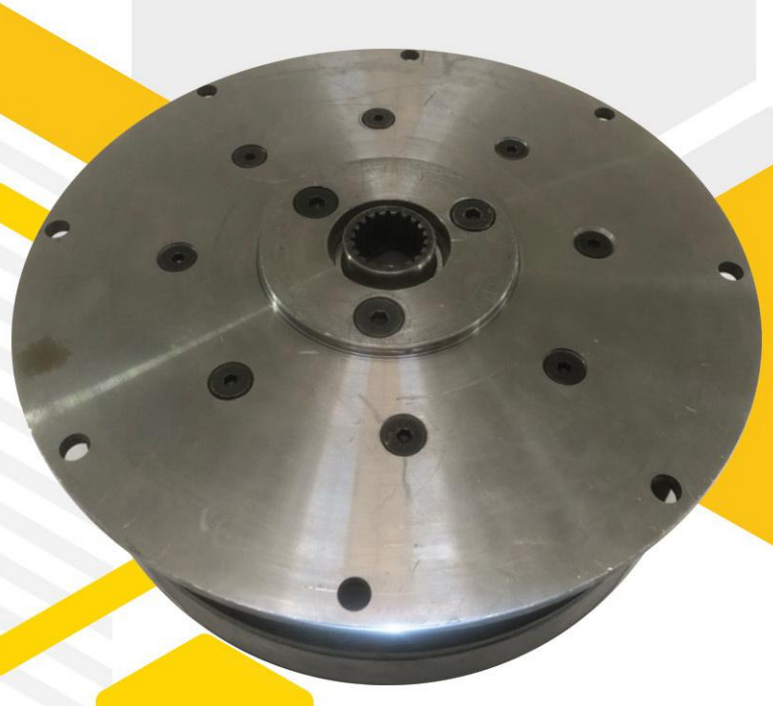
FOC Drive

Wet Brake

Planetary Gearbox

Hub Bearing

This "Planetary Gearbox" has 9 ratios for each motor size with capability of triple stages. Peak Power range is 62-3x1336 kW.



Gearbox Combi Ratios						
Stage 1	Stage 2		Stage 3			
			Ratio7 4.00	Ratio8 3.25	Ratio9 2.50	- -
Ratio1 6.00	Ratio4	4.67	112.00	91.00	70.00	28.00
	Ratio5	3.75	90.00	73.13	56.25	22.50
	Ratio6	2.69	64.62	52.50	40.38	16.15
	-	-	24.00	19.50	15.00	6.00
Ratio2 5.29	Ratio4	4.67	98.67	80.17	61.67	24.67
	Ratio5	3.75	79.29	64.42	49.55	19.82
	Ratio6	2.69	56.92	46.25	35.58	14.23
	-	-	21.14	17.18	13.21	5.29
Ratio3 3.00	Ratio4	4.67	56.00	45.50	35.00	14.00
	Ratio5	3.75	45.00	36.56	28.13	11.25
	Ratio6	2.69	32.31	26.25	20.19	8.08
	-	-	12.00	9.75	7.50	3.00
-	Ratio4	4.67	18.67	15.17	11.67	4.67
	Ratio5	3.75	15.00	12.19	9.38	3.75
	Ratio6	2.69	10.77	8.75	6.73	2.69
	-	-	4.00	3.25	2.50	1.00

Gearbox. Stage 2						Shaft- Hub				Ratio 1		Ratio 2		Ratio 3	
G #	Nominal Dia. Inches	Peak Torque Nm	Internal Dia. mm	Gear Width mm	Total Width mm	Ref. Dia. DIN 5480 Input	Output	Gearbox Weight kg	Gears Module mm	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #
1	ø08" ST	192	ø0205					12							
2	ø10" ST	300	ø0253	20	90	030-040	040-050	18	2.0	18:36:090	6.00	21:34:090	5.29	45:22:090	3.00
3	ø12" ST	432	ø0304					25							
4	ø16" XS	768	ø0402					54							
5	ø20" XS	1200	ø0503	20	110	040-050	050-080	85	4.0	18:36:090	6.00	21:34:090	5.29	45:22:090	3.00
6	ø24" XS	1728	ø0605					123							
7	ø32" XS	3072	ø0808					300							
8	ø40" XS	4800	ø1011	20	150	050-080	080-120	470	8.0	18:36:090	6.00	21:34:090	5.29	45:22:090	3.00
9	ø48" XS	6912	ø1215					678							

Example: G42 = 198 kW, Ratio 5.29

Planet numbers: 3

Gearbox. Stage 3						Shaft- Hub				Ratio 4		Ratio 5		Ratio 6	
G #	Nominal Dia. Inches	Peak Torque Nm	Internal Dia. mm	Gear Width mm	Total Width mm	Ref. Dia. DIN 5480 Input	Output	Gearbox Weight kg	Gears Module mm	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #
1	ø08" ST	192	ø0205					17							
2	ø10" ST	300	ø0253	40	130	040-050	050-080	25	2.0	24:32:088	4.67	32:28:088	3.75	52:18:088	2.69
3	ø12" ST	432	ø0304					37							
4	ø16" XS	768	ø0402					84							
5	ø20" XS	1200	ø0503	40	170	050-080	080-120	132	4.0	24:32:088	4.67	32:28:088	3.75	52:18:088	2.69
6	ø24" XS	1728	ø0605					191							
7	ø32" XS	3072	ø0808					480							
8	ø40" XS	4800	ø1011	40	240	080-120	120-180	751	8.0	24:32:088	4.67	32:28:088	3.75	52:18:088	2.69
9	ø48" XS	6912	ø1215					1085							

Example: G73 G76 = 594 kW, Ratio 3.00x2.69=8.07

Planet numbers: 4

Gearbox. Stage 4						Shaft- Hub				Ratio 7		Ratio 8		Ratio 9	
G #	Nominal Dia. Inches	Peak Torque Nm	Internal Dia. mm	Gear Width mm	Total Width mm	Ref. Dia. DIN 5480 Input	Output	Gearbox Weight kg	Gears Module mm	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #	Teeth Number #	Gearbox Ratio #
1	ø08" ST	192	ø0205					27							
2	ø10" ST	300	ø0253	80	210	050-080	080-120	41	2.0	30:30:090	4.00	40:25:090	3.25	60:15:090	2.50
3	ø12" ST	432	ø0304					59							
4	ø16" XS	768	ø0402					139							
5	ø20" XS	1200	ø0503	80	280	080-120	120-180	217	4.0	30:30:090	4.00	40:25:090	3.25	60:15:090	2.50
6	ø24" XS	1728	ø0605					314							
7	ø32" XS	3072	ø0808					760							
8	ø40" XS	4800	ø1011	80	380	120-180	180-240	1190	8.0	30:30:090	4.00	40:25:090	3.25	60:15:090	2.50
9	ø48" XS	6912	ø1215					1718							

Example: G21 G24 G29 = 97 kW, Ratio 6.00x4.67x2.50=70.05

Planet numbers: 5

General Notes: All the Bearings are 618##.
Ring Gear on G2&G3 G5&G6 G8&G9 connected to Casing with a Rim.

Carrier is double sided.
Rubber Seal: DIN 3760

Hubs & Gears min Hardness is 60RC.
Triple Motors is available for all Stages.

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Axial Motor

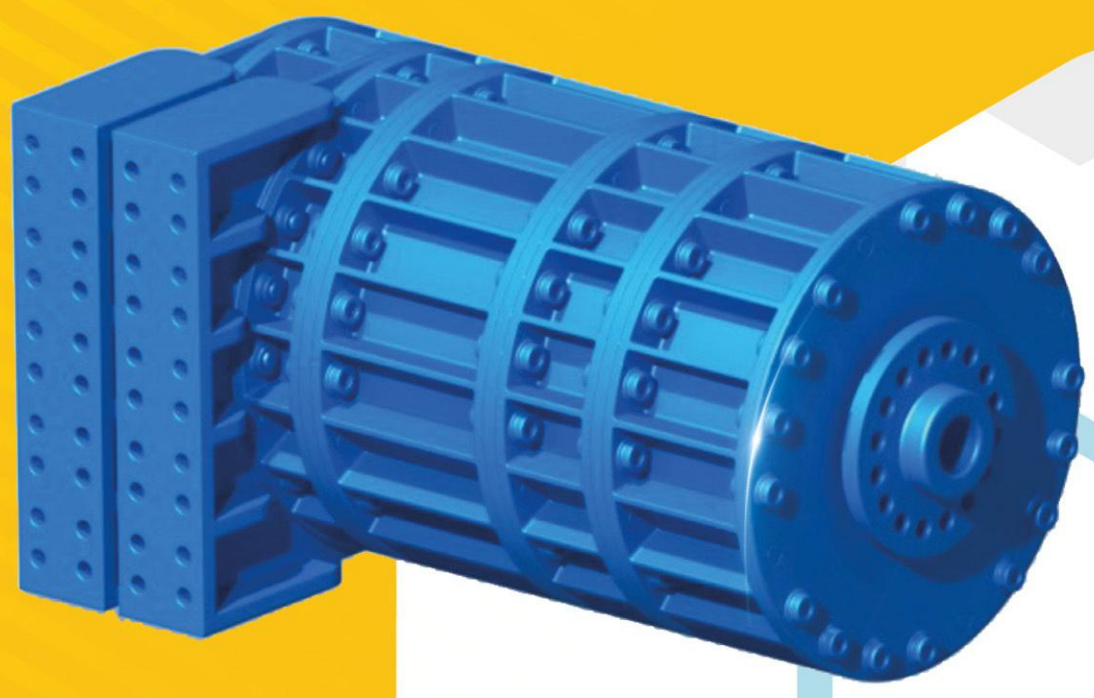
FOC Drive

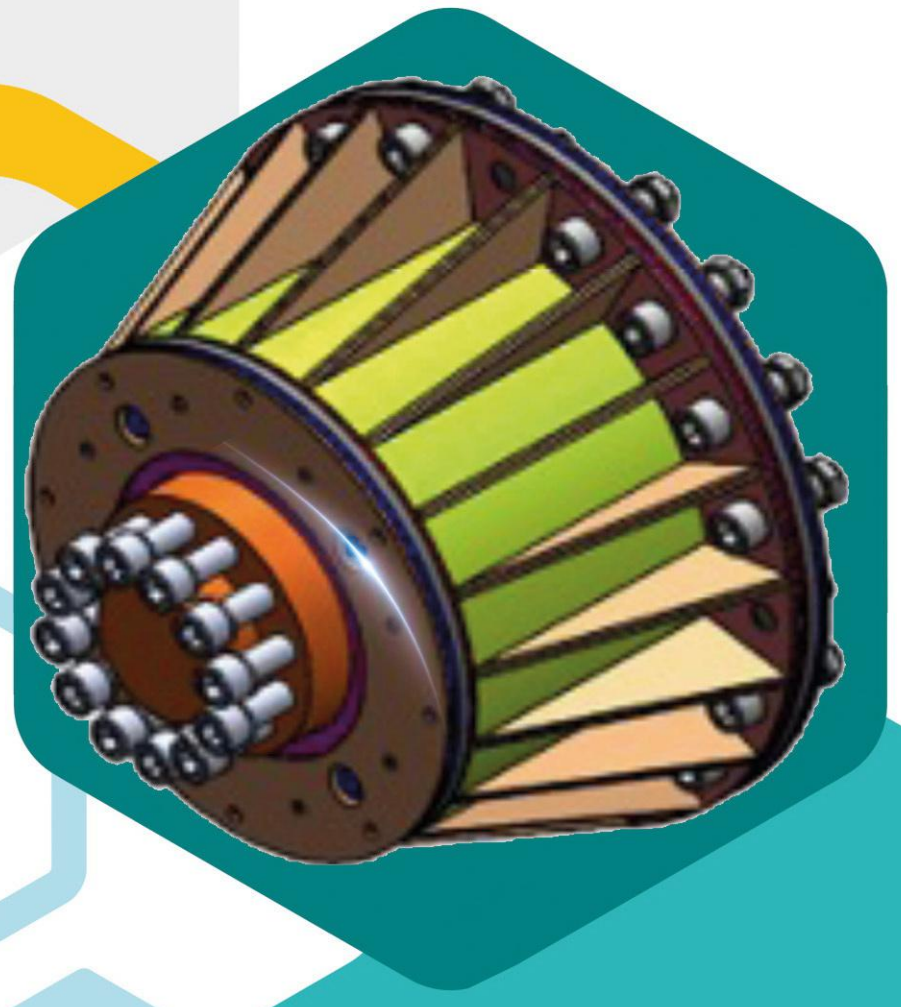
Wet Brake

Planetary Gearbox

Hub Bearing

This "Hub Bearing" double bearing structure has 9 sizes in 4 stages. Peak Load range is 2x9-2x320 kN for 1 Bilion Rev.





Hub. Stage 1

H #	Peak Power kW	Nominal Dia. Inches	Shaft-Hub Ref. Dia. DIN 5480	Hub Bearings 313##	Load 1 BRev kN	Total Width mm	Total Weight kg
11	62	ø08" ST	030-040	31308	9	150	19
21	97	ø10" ST					30
31	139	ø12" ST					43
41	198	ø16" XS	040-050	31312	18	170	86
51	309	ø20" XS					134
61	445	ø24" XS					194
71	594	ø32" XS	050-080	31320	62	200	405
81	928	ø40" XS					632
91	1336	ø48" XS					911

Install after motor or Brake Stage1.

Hub. Stage 2

H #	Peak Power kW	Nominal Dia. Inches	Shaft Ref. Dia. DIN 5480	Hub Bearing 313##	Load 1 BRev kN	Total Width mm	Total Weight kg
12	62	ø08" ST	040-050	31312	18	170	22
22	97	ø10" ST					34
32	139	ø12" ST					48
42	198	ø16" XS	050-080	31320	62	200	101
52	309	ø20" XS					158
62	445	ø24" XS					228
72	594	ø32" XS	080-120	31328	74	250	506
82	928	ø40" XS					790
92	1336	ø48" XS					1138

Install after Gearbox Stage2 or Brake Stage2.

Hub. Stage 3

H #	Peak Power kW	Nominal Dia. Inches	Shaft Ref. Dia. DIN 5480	Hub Bearing ####	Load 1 BRev kN	Total Width mm	Total Weight kg
13	62	ø08" ST	050-080	31320	62	200	25
23	97	ø10" ST					40
33	139	ø12" ST					57
43	198	ø16" XS	080-120	31328	74	250	126
53	309	ø20" XS					198
63	445	ø24" XS					285
73	594	ø32" XS	120-180	31340	140	300	607
83	928	ø40" XS					949
93	1336	ø48" XS					1366

Install after Gearbox Stage3 or Brake Stage3.

Hub. Stage 4

H #	Peak Power kW	Nominal Dia. Inches	Shaft Ref. Dia. DIN 5480	Hub Bearing ####	Load 1 BRev kN	Total Width mm	Total Weight kg
14	62	ø08" ST	080-120	31328	74	250	32
24	97	ø10" ST					49
34	139	ø12" ST					71
44	198	ø16" XS	120-180	31340	140	300	152
54	309	ø20" XS					237
64	445	ø24" XS					341
74	594	ø32" XS	180-240	31360	320	350	708
84	928	ø40" XS					1107
94	1336	ø48" XS					1594

Install after Gearbox Stage4 or Brake Stage4.

General Notes: Rubber Seal: DIN 3760 Hub min. Hardness is 60RC.