

# LAK DC Motors

Catalogue-2008/11 E



**LAK 4000**  
Series 112 - 280  
1-500 kW  
1-700 HP  
30-4500 Nm



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# Introduction

LAK 4000 d.c. motors are fully laminated, 4 pole, square frame.  
 Output: 7-500 kW  
 Torque: 40-4500 Nm

LAK 4000 motor range:

Frame size	Core lengths
4112	A, B
4132	A, B, C, D
4160	A, B, C, D
4180	A, B, C, D, E, F
4200	A, B, C
4225	A, B, C
4250	A, B, C
4280	A, B, C, D

To complete the output range, fully laminated, 2 pole, square frame DC motors are also available.

Frame size	Core lengths
2112	MA, LA
2132	M

Output: 1-25 kW  
 Torque: 30-65 Nm

Type designation example -  
 LAK 4160B:

LAK = Type of motor  
 4 = Number of poles  
 160 = Centre height in mm  
 B = Core length

## Basic design characteristics

- Fully laminated stator, main poles and interpoles.
- Compact square frame design.
- Easy installation of accessories.
- Large openings in end shields for easy inspection.
- Stator windings of varnish insulated copper wire.
- Laminated armature core of high grade insulated electro-plate.
- Large number of cooling ducts in armature provide excellent cooling.
- Scrambled armature laminations for low torque ripples.
- Armature windings of varnished copper designed for low commutating stresses and high mechanical strength.
- Armature is impregnated to ensure high degree of heat transfer.
- Brush holders with spring loaded pressure fingers.
- Prepared for a number of options and accessories ensuring high flexibility.
- Painting with excellent corrosion resistant properties.
- Conforms with IEC standards.
- Available as NEMA standard.
- CSA approved.



LAK 4280 B from the T-T Electric UNIQORE type range

# Options

Frame size	LAK	4112	4132	4160	4180	4200	4225	4250	4280
<b>Cooling forms</b>									
IC06	(IP23)	Force ventilated	0	0	0	0	0	0	0
IC17	(IP23)	Single pipe ventilated	0	0	0	0	0	0	0
IC37	(IP54)	Double pipe ventilated	0	0	0	0	0	0	0
IC410	(IP54)	Totally enclosed	0	0	0	0	0	0	0
IC416	(IP54)	Totally enclosed, fan cooled	0	0	0	0			
IC666	(IP54)	Air-air cooled		0	0	0	0	0	0
IC86W	(IP54)	Air-water cooled		0	0	0	0	0	0
<i>Other cooling forms available</i>									
<b>Protection</b>									
IP55			0	0	0	0	0	0	0
<b>Mounting forms</b>									
IM1001		Horizontal foot	0	0	0	0	0	0	0
IM1002		Horizontal foot, two shaft ends	0	0	0	0	0	0	0
IM2001		Horizontal foot and flange	0	0	0	0	0	0	0
IM2011		Vertical foot and flange	0	0	0	0	0	0	0
<i>Other mounting forms available</i>									
<b>Modifications and accessories</b>									
Compound winding			0	0	0	0	0	0	0
Pressure switch			0	0	0	0	0	0	0
Temperature sensor, interpole			0	0	0	0	0	0	0
Temperature sensor, field winding			0	0	0	0	0	0	0
Bearing sensor			0	0	0	0	0	0	0
Grounding brush			0	0	0	0	0	0	0
Heating element			0	0	0	0	0	0	0
Brush wear sensor			0	0	0	0	0	0	0
Special shaft			0	0	0	0	0	0	0
Roller bearing d-end			0	0	0	0	0	0	0
Shaft seal, d-end			0	0	0	0	0	0	0
Special balance Class 'B'			0	0	0	0	0	0	0
Special paint (RAL colour)			0	0	0	0	0	0	0
Special corrosion protection			0	0	0	0	0	0	0
Transparent inspection cover			0	0	0	0	0	0	0
Brake			0	0	0	0	0	0	0
Gearbox			0	0	0	0	0	0	0
<b>Tachos with coupling</b>									
REO 444RT1 (60v/1000 min <sup>-1</sup> )			0	0	0	0	0	0	0
TDP 0.2 T-4 (60v/1000 min <sup>-1</sup> )			0	0	0	0	0	0	0
<i>Others available</i>									
<b>Pulse generators</b>									
POG 9 D (1-1250 ppr)			0	0	0	0	0	0	0
DGS65 (1024 ppr)			0	0	0	0	0	0	0
<i>Others available</i>									

# Application data

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## Standards

IEC 60034-1

## Insulation

Class H

## Temperature rise

Frames 112-180: Class F

Frames 200-280: Class H

## Vibration class and balance

LAK 4000 motors follow IEC 60034-14 with vibration class A as standard. Grade B is available on request. The motors are balanced with half key as standard.

## Overload capacity

LAK 4112-4280:

1.6 x FLT for 15 sec. every 5 minutes

1.8 x FLC for 30 sec. every 30 minutes

## Terminal box position

LAK 4112-4180:

Standard: On right side of the motor (facing d-end).

Mounting of terminal box on top or left side on request.

LAK 4200-4280:

Standard: On top of the motor.

Mounting of terminal box on either side of the motor on request.

## Blower position

Standard: On top of the motor at the non-drive end.

Other positions on request.

Blower is supplied without filter as standard.

Filter on request.

## Bearings

Grease lubricated ball bearings on D-end as standard.

For belt drive please contact our sales offices.

## Painting

The standard LAK surface finish has excellent corrosion resistance properties. The standard colour of LAK motors is blue according to Munsell 8B 4.5/3.25 (similar to RAL 5024).

## Heat exchangers

Air/water (IC86W):

Air/water exchangers are especially recommended for polluted environment.

Standard is for clean water.

For corrosive water, please contact T-T Electric.

Position on top of the motor as standard. Water connection flanges at right hand side (facing D-end).

Max. water pressure 10 PSI

Max. inlet water temperature 25°C. A water temperature rise of 8-10°C must be expected.

LAK 4132-4180:

Fan motor at N-end.

LAK 4200-4280:

Fan motor at D-end.

A constant speed fan circulates the internal cooling air. A polyamide filter is provided to prevent circulation of carbon dust.

For motors with low loads or a low incoming water temperature, a temperature regulator is recommended to avoid condensation in the cooling air circuit and to minimize water consumption.

*Detailed heat exchanger information on request.*

Air/air (IC666):

Air/air heat exchangers are recommended where water is not available for cooling purposes.

The output of a motor with air/air exchanger will be approximately 20% lower compared to cooling forms IC06/17/37/86W.

LAK 4132-4280:

Position: On top of the motor as standard.

Two constant speed fans at top of the heat exchanger to provide air circulation for the outer and inner circuits.

A polyamid filter is provided to prevent circulation of carbon dust.

### Mechanical data

Frame	Inertia J - kgm <sup>2</sup>	Max. mechanical speed (min <sup>-1</sup> )
LAK 2112MA	0.030	5000
LAK 2112LA	0.040	5000
LAK 4112A	0.037	5000
LAK 4112B	0.050	5000
LAK 2132M	0.090	5000
LAK 4132A	0.10	4000
LAK 4132B	0.12	4000
LAK 4132C	0.14	4000
LAK 4132D	0.20	3000
LAK 4160A	0.22	3500
LAK 4160B	0.25	3500
LAK 4160C	0.31	3500
LAK 4160D	0.46	3000
LAK 4180AA	0.39	3800
LAK 4180BA	0.47	3800
LAK 4180CA	0.55	3800
LAK 4180DA	0.69	3800
LAK 4180EA	0.81	3200
LAK 4180FA	1.05	3000
LAK 4200A	0.95	4000
LAK 4200B	1.20	4000
LAK 4200C	1.40	4000
LAK 4225A	1.90	3600
LAK 4225B	2.20	3600
LAK 4225C	2.90	3600
LAK 4250A	3.30	3200
LAK 4250B	3.80	3200
LAK 4250C	4.30	3200
LAK 4280A	5.90	2800
LAK 4280B	6.80	2800
LAK 4280C	7.80	2800
LAK 4280D	8.90	2400

### Cooling data (IC06/17/37)

Frame	Air volume m <sup>3</sup> /h	Pressure drop in motor N/m <sup>2</sup>
LAK 2112MA-LA	235	375
LAK 4112A-B	270	480
LAK 2132M	435	400
LAK 4132A-B-C	470	550
LAK 4132D	510	810
LAK 4160A-B-C	880	980
LAK 4160D	600	915
LAK 4180AA-BA	1300	1250
LAK 4180CA-DA	1300	1250
LAK 4180EA	1500	1530
LAK 4180FA	1900	1400
LAK 4200A-B-C	1050	1150
LAK 4225A-B-C	1850	1450
LAK 4250A-B-C	2700	2100
LAK 4280A-B-C-D	3600	2600

### Bearings

Frame	Drive end		Commutator end
	Ball bearing	Roller bearing	Ball bearing
LAK 2112MA-LA	6308-C3	NU308-ECP	6208-2RS-C3
LAK 4112	6308-C3	NU308-ECP	6208-2RS-C3
LAK 2132M	6309-C3	NU309-ECP	6307-2RS-C3
LAK 4132	6309-C3	NU309-ECP	6307-2RS-C3
LAK 4160	6310-C3	NU310-ECP	6309-2RS-C3
LAK 4180AA-BA	6215-C3	NU2215-ECP	6312-2RS-C3
LAK 4180CA-DA	6215-C3	NU2215-ECP	6312-2RS-C3
LAK 4180EA	6215-C3	NU2215-ECP	6312-2RS-C3
LAK 4180FA	6315-C3	NU315-ECP	6312-2RS-C3
LAK 4200	6216-C3	NU216-EC/C3	6214-C3
LAK 4225	6218-C3	NU218-EC/C3	6216-C3
LAK 4250	6220-C3	NU220-EC/C3	6218-C3
LAK 4280	6222-C3	NU222-EC/C3	6220-C3

### Blower motor data

Frame	Electric supply	F.L.C. (A)	Output (kW)
LAK 2112MA-LA LAK 4112A-B LAK 2132M LAK 4132A-B-C	3x380-420 V 50 Hz	0.70	0.25
	3x220-240 V 50 Hz	1.20	0.25
	3x440-480 V 60 Hz	0.70	0.30
	3x250-280 V 60 Hz	1.20	0.30
	3x500 V 50 Hz	0.60	0.25
LAK 4132D LAK 4160A-B-C	3x380-420 V 50 Hz	2.10	0.75
	3x220-240 V 50 Hz	3.60	0.75
	3x440-480 V 60 Hz	2.00	0.90
	3x250-280 V 60 Hz	3.50	0.90
	3x500 V 50 Hz	1.40	0.75
LAK 4160D	3x380-420 V 50 Hz	2.90	1.30
	3x220-240 V 50 Hz	5.00	1.30
	3x440-480 V 60 Hz	2.80	1.50
	3x250-280 V 60 Hz	5.00	1.50
	3x500 V 50 Hz	2.30	1.30
LAK 4180 AA-BA-CA-DA	3x380-420 V 50 Hz	3.00	1.50
	3x220-240 V 50 Hz	5.20	1.50
	3x440-480 V 60 Hz	2.90	1.75
	3x250-280 V 60 Hz	5.00	1.75
	3x500 V 50 Hz	2.70	1.50

Frame	Electric supply	F.L.C. (A)	Output (kW)
LAK 4180EA-FA	3x380-420 V 50 Hz	5.80	2.70
	3x220-240 V 50 Hz	10.00	2.70
	3x440-480 V 60 Hz	5.80	3.00
	3x250-280 V 60 Hz	10.00	3.00
	3x500 V 50 Hz	4.60	2.70
LAK 4200A-B-C	3x380-420 V 50 Hz	3.00	1.50
	3x220-240 V 50 Hz	5.20	1.50
	3x440-480 V 60 Hz	2.90	1.75
	3x250-280 V 60 Hz	5.00	1.75
LAK 4225A-B-C	3x380-420 V 50 Hz	5.80	2.70
	3x220-240 V 50 Hz	10.00	2.70
	3x440-480 V 60 Hz	5.80	3.00
LAK 4250A-B-C	3x250-280 V 60 Hz	10.00	3.00
	3x380-420 V 50 Hz	8.40	4.00
	3x220-240 V 50 Hz	14.50	4.00
LAK 4280A-B-C-D	3x440-480 V 60 Hz	10.40	5.50
	3x250-280 V 60 Hz	18.00	5.50
	3x380-420 V 50 Hz	10.50	5.50
	3x220-240 V 50 Hz	18.20	5.50
LAK 4280A-B-C-D	3x440-480 V 60 Hz	14.50	7.50
	3x250-280 V 60 Hz	25.20	7.50

# Output data

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Select motor frame size against voltage, output and speed.

For intermediate output, take the nearest higher output listed for the same frame size.

For intermediate speed take the next lower speed listed giving the output required. The output lists are based on:

- **Cooling forms**  
IC06/IC17/IC37/IC86W.
- **The armature circuit resistance listed is for duty warm condition.**
- **The inductance listed is for the armature circuit.**
- **Motor supply from 3-phase fully controlled thyristor converter, form factor max. 1.05.**

## **Constant power/constant torque**

The full field or base speed and maximum speed through field control with constant output are listed for each winding.

Armature voltage: For -10% the output and speed are proportional to the voltage.

For higher shunt field ranges, please refer to sales offices.

With a combination of armature voltage/shunt control greater constant power ranges can be obtained.

## **Duty cycles**

Ratings: All outputs are duty type S1 and motors are fed from a 3-phase fully controlled thyristor converter with form factor max. 1.05.

## **Field windings**

All motors in the output lists have separate excitation, the field being shunt wound.

Compound winding can be supplied on request.

Motors with compound winding may have nominal data which differ from those shown in the output lists.

## **Armature voltage**

For other armature voltages, please contact our sales offices.

## **Ambient temperature and altitude**

Outputs in this catalogue are based on max. 40°C ambient temperature and motor located at max. 1000 metres above sea level.

If ambient temperature and/or altitude is higher, contact our sales office.

## **NEMA output data**

NEMA catalogue available on request.

## **Stock motors**

LAK 4112 – 4280:

Motors indicated with the sign # in the output data lists are available from stock and can be delivered promptly.

LAK 4200 – 4280:

Delivery time for motors with sign ## in the output data list is 3 weeks (ex. works).

For motor frames 4200 – 4280 in stock please contact our sales offices.



Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 154
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
3.2		1000				12.2	31.0	1605	61.1	9.84	120	241-AB
3.7			1145			12.2	31.0	1605	64.1	9.84	120	241-AB
3.9				1220		12.2	31.0	1605	65.4	9.84	120	241-AB
4.4					1365	12.0	30.8	1605	67.8	9.84	120	241-AB
2.0	645					13.5	29.1	1960	50.3	7.78	88	241-BB
3.8		1235				13.5	29.3	1960	65.0	7.78	88	241-BB
4.3			1400			13.5	29.3	1960	67.5	7.78	88	241-BB
4.6				1485		13.5	29.3	1960	68.7	7.78	88	241-BB
5.0					1660	13.4	29.0	1960	70.9	7.78	88	241-BB
2.8	860					17.0	30.8	2480	57.4	5.14	61	241-CB
5.1		1570				17.0	30.8	2480	70.0	5.14	61	241-CB
5.7			1770			17.0	30.8	2480	72.2	5.14	61	241-CB
6.0				1870		17.0	30.8	2480	73.6	5.14	61	241-CB
6.6					2080	16.9	30.3	2480	75.0	5.14	61	241-CB
3.2	1010					18.5	30.2	3060	61.1	4.21	49	251-CB
5.7		1795				18.5	30.2	3060	61.1	4.21	49	251-CB
6.4			2015			18.5	30.2	3060	74.5	4.21	49	251-CB
6.7				2130		18.5	30.2	3060	75.3	4.21	49	251-CB
7.4					2355	18.0	30.0	3060	76.9	4.21	49	251-CB
3.8	1185					21.0	30.4	3250	64.4	3.33	39	241-DB
6.6		2070				21.0	30.4	3250	74.8	3.33	39	241-DB
7.4			2320			21.0	30.4	3250	76.5	3.33	39	241-DB
7.8				2445		21.0	30.4	3250	77.3	3.33	39	241-DB
8.5					2705	20.8	30.0	3250	78.8	3.33	39	241-DB
# 4.5	1445					23.7	30.0	3835	69.1	2.42	30	241-EB
7.7		2450				23.7	30.0	3835	77.9	2.42	30	241-EB
8.6			2740			23.7	30.0	3835	79.4	2.42	30	241-EB
9.1				2885		23.7	30.0	3835	80.1	2.42	30	241-EB
9.9					3175	23.6	29.2	3835	82.6	2.42	30	241-EB
5.8	1740					29.0	31.6	3595	72.3	1.75	30	231-EB
9.6		2920				29.0	31.5	3595	80.1	1.75	30	231-EB
10.7			3255			29.0	31.5	3595	81.4	1.75	30	231-EB
7.0	2175					34.0	30.8	3835	75.7	1.25	15	231-FB
11.5		3590				34.0	30.7	3835	82.3	1.25	15	231-FB
12.8			3995			34.0	30.7	3835	83.4	1.25	15	231-FB
8.7	2820					41.0	29.6	5000	79.0	0.85	10	231-GB <sup>1</sup>
14.2		4590				41.0	29.6	5000	84.3	0.85	10	231-GB <sup>1</sup>

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 420 W

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 154
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
3.0		655				12.2	44.3	1055	56.3	11.51	164	141-AB
3.5			755			12.2	44.3	1055	59.7	11.51	164	141-AB
3.7				805		12.2	44.3	1055	61.1	11.51	164	141-AB
4.2					910	12.1	43.8	1055	64.0	11.51	164	141-AB
3.5		725				13.5	45.6	1280	58.6	9.85	141	151-AB
4.0			835			13.5	45.6	1280	61.8	9.85	141	151-AB
4.2				890		13.5	45.6	1280	63.1	9.85	141	151-AB
4.7					1005	13.4	45.0	1280	66.0	9.85	141	151-AB
3.5		790				13.7	42.6	1275	59.0	9.52	121	141-BB
4.0			910			13.7	42.6	1275	62.2	9.52	121	141-BB
4.3				970		13.7	42.6	1275	63.6	9.52	121	141-BB
4.8					1095	13.6	41.9	1275	66.4	9.52	121	141-BB
4.8		1040				17.0	44.0	1650	65.5	6.29	83	141-CB
5.4			1180			17.0	44.0	1650	68.1	6.29	83	141-CB
5.8				1250		17.0	44.0	1650	69.2	6.29	83	141-CB
6.4					1395	16.8	43.8	1650	71.4	6.29	83	141-CB
2.9	645					18.5	42.9	1895	54.8	5.16	67	141-DB
5.4		1200				18.5	43.1	1895	68.5	5.16	67	141-DB
6.1			1355			18.5	43.2	1895	70.8	5.16	67	141-DB
6.5				1435		18.5	43.2	1895	71.9	5.16	67	141-DB
7.1					1600	18.2	42.4	1895	74.0	5.16	67	141-DB
3.5	770					21.0	43.4	2200	58.7	4.07	54	141-EB
6.3		1390				21.0	43.5	2200	71.2	4.07	54	141-EB
7.1			1570			21.0	43.5	2200	73.4	4.07	54	141-EB
7.6				1660		21.0	43.5	2200	74.3	4.07	54	141-EB
8.3					1840	20.8	43.1	2200	76.1	4.07	54	141-EB
4.3	950					24.0	43.5	2610	64.2	2.97	41	141-FB
7.6		1660				24.0	43.5	2610	75.0	2.97	41	141-FB
8.5			1865			24.0	43.5	2610	76.9	2.97	41	141-FB
9.0				1970		24.0	43.5	2610	77.7	2.97	41	141-FB
9.8					2175	23.8	43.0	2610	79.2	2.97	41	141-FB
# 5.5	1165					29.2	45.1	3120	68.5	2.13	30	141-GB
9.4		1995				29.0	45.2	3120	77.9	2.13	30	141-GB
10.5			2230			29.0	45.2	3120	79.5	2.13	30	141-GB
11.1				2350		29.0	45.2	3120	80.2	2.13	30	141-GB
12.1					2590	28.7	44.6	3120	81.6	2.13	30	141-GB
# 6.2	1305					32.0	45.7	3120	70.7	1.76	25	131-CB
10.6		2210				32.0	45.7	3120	79.4	1.76	25	131-CB
11.8			2470			32.0	45.7	3120	80.0	1.76	25	131-CB
12.4				2600		32.0	45.7	3120	81.6	1.76	25	131-CB
13.2					2870	31.5	44.5	3120	82.9	1.76	25	131-CB
6.8	1470					34.0	44.0	3850	72.6	1.52	21	141-HB
11.4		2465				34.0	44.0	3850	80.7	1.52	21	141-HB
12.7			2750			34.0	44.0	3850	82.0	1.52	21	141-HB
13.3				2890		34.0	44.0	3850	82.6	1.52	21	141-HB
14.5					3180	33.6	43.5	3850	83.7	1.52	21	141-HB
# 7.8	1675					38.0	44.3	4340	75.0	1.22	17	141-KB
12.9		2785				38.0	44.3	4340	82.3	1.22	17	141-KB
14.4			3100			38.0	44.3	4340	83.5	1.22	17	141-KB
15.1				3260		38.0	44.3	4340	84.0	1.22	17	141-KB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 500 W

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 153
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
6.7		1325				21.0	47.9	1655	75.1	3.258	40.75	201-NA
7.5			1485			21.0	47.9	1655	76.9	3.258	40.75	201-NA
7.9				1571		21.0	47.9	1655	78.0	3.258	40.75	201-NA
8.0					1740	19.2	43.8	1810	80.1	3.258	40.75	201-NA
7.1		1445				22.0	47.1	1795	76.8	2.776	35.80	201-MA
8.6			1615			22.0	47.0	1795	78.5	2.776	35.80	201-MA
8.4				1708		22.0	47.0	1795	79.5	2.776	35.80	201-MA
8.5					1885	20.1	43.1	1960	81.3	2.776	35.80	201-MA
4.6	920					24.0	48.0	1890	68.9	2.416	31.20	201-LA
7.8		1565				24.0	47.9	1890	77.9	2.416	31.20	201-LA
8.8			1745			24.0	47.9	1890	79.5	2.416	31.20	201-LA
9.2				1850		24.0	47.9	1890	80.1	2.416	31.20	201-LA
9.1					2034	21.4	42.8	2115	81.9	2.416	31.20	201-LA
4.9	1010					25.0	46.3	2105	70.2	2.174	26.90	201-KA
8.2		1700				25.0	46.3	2105	78.8	2.174	26.90	201-KA
9.2			1900			25.0	46.3	2105	80.2	2.174	26.90	201-KA
9.7				2006		25.0	46.3	2105	81.2	2.174	26.90	201-KA
9.8					2207	22.9	42.4	2295	82.5	2.174	26.90	201-KA
5.5	1120					27.5	47.0	2435	72.5	1.783	22.90	201-JA
9.2		1870				27.5	47.0	2435	80.3	1.783	22.90	201-JA
10.3			2085			27.5	47.0	2435	81.7	1.783	22.90	201-JA
10.0				2197		27.5	47.0	2435	82.5	1.783	22.90	201-JA
11.5					2418	26.6	45.5	2515	83.7	1.783	22.90	201-JA
6.1	1240					30.0	46.7	2655	73.8	1.549	19.25	201-IA
10.1		2060				30.0	46.6	2655	81.2	1.549	19.25	201-IA
11.2			2295			30.0	46.6	2655	82.5	1.549	19.25	201-IA
11.7				2417		30.0	46.6	2655	83.3	1.549	19.25	201-IA
12.4					2654	28.8	44.8	2760	84.4	1.549	19.25	201-IA
6.8	1390					33.0	46.7	2920	75.7	1.275	15.90	201-HA
11.2		2295				33.0	46.6	2920	82.5	1.275	15.90	201-HA
12.4			2550			33.0	46.6	2920	83.6	1.275	15.90	201-HA
13.1				2687		33.0	46.6	2920	84.4	1.275	15.90	201-HA
13.7					2947	31.4	44.3	3065	85.4	1.275	15.90	201-HA
8.2	1575					39.0	50.0	2975	77.9	0.973	12.90	201-GA
13.5		2575				39.0	49.9	2975	84.0	0.973	12.90	201-GA
14.9			2860			39.0	49.9	2975	85.0	0.973	12.90	201-GA
15.2				3014		37.7	48.2	3080	85.7	0.973	12.90	201-GA
9.4	1800					44.0	49.9	3425	79.7	0.772	10.20	201-FA
15.3		2930				44.0	49.8	3425	85.2	0.772	10.20	201-FA
17.0			3250			44.0	49.8	3425	86.1	0.772	10.20	201-FA
17.4				3426		43.0	48.7	3500	86.7	0.772	10.20	201-FA
11.2	2100					51.0	51.0	3855	81.8	0.573	7.80	201-EA
18.0		3390				51.0	50.8	3855	86.6	0.573	7.80	201-EA
20.0			3760			51.0	50.8	3855	87.3	0.573	7.80	201-EA
13.4	2495					60.0	51.3	4460	83.5	0.425	5.75	201-DA
21.4		4000				60.0	51.1	4460	87.7	0.425	5.75	201-DA
15.9	3055					70.0	49.8	5000	85.4	0.298	4.00	201-CA

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 625 W

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 153
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
7.9		1160				25.0	65.2	1545	75.0	2.679	32.75	101-KA
8.9			1300			25.0	65.2	1545	76.8	2.679	32.75	101-KA
9.4				1375		25.0	65.2	1545	77.9	2.679	32.75	101-KA
8.9		1280				27.5	66.2	1790	76.9	2.196	27.90	101-JA
9.9			1435			27.5	66.2	1790	78.5	2.196	27.90	101-JA
10.5				1512		27.5	66.2	1790	79.6	2.196	27.90	101-JA
12.5					1668	27.5	66.2	1790	81.0	2.196	27.90	101-JA
# 9.8		1410				30.0	66.2	1950	77.9	1.908	23.45	101-IA
10.9			1575			30.0	66.1	1950	79.5	1.908	23.45	101-IA
11.5				1712		30.0	66.1	1950	80.4	1.908	23.45	101-IA
12.7					1837	30.0	66.1	1950	81.8	1.908	23.45	101-IA
10.9		1575				33.0	66.2	2145	79.5	1.569	19.40	101-HA
12.2			1760			33.0	66.1	2145	80.9	1.569	19.40	101-HA
12.8				1855		33.0	66.1	2145	81.7	1.569	19.40	101-HA
14.1					2043	33.0	66.1	2145	83.0	1.569	19.40	101-HA
7.9	1070					39.0	70.6	2240	74.0	1.195	15.70	101-GA
13.1		1790				39.0	70.5	2240	81.3	1.195	15.70	101-GA
14.6			1980			39.0	70.5	2240	82.6	1.195	15.70	101-GA
15.4				2090		39.0	70.4	2240	83.3	1.195	15.70	101-GA
# 9.1	1230					44.0	70.8	2515	76.2	0.947	12.40	101-FA
15.0		2030				44.0	70.6	2515	82.8	0.947	12.40	101-FA
16.7			2255			44.0	70.6	2515	83.9	0.947	12.40	101-FA
17.5				2373		44.0	70.6	2515	84.6	0.947	12.40	101-FA
# 10.9	1445					51.0	71.8	2835	78.7	0.708	9.50	101-EA
17.7		2355				51.0	71.6	2835	84.4	0.708	9.50	101-EA
19.6			2615			51.0	71.6	2835	85.3	0.708	9.50	101-EA
# 13.0	1720					60.0	72.2	3280	80.7	0.526	7.00	101-DA
21.0		2785				60.0	72.0	3280	85.7	0.526	7.00	101-DA
23.3			3085			60.0	72.0	3280	87.0	0.526	7.00	101-DA
15.5	2115					70.0	70.2	4050	83.0	0.368	4.85	101-CA
24.8		3390				70.0	69.9	4050	87.1	0.368	4.85	101-CA
27.5			3755			70.0	69.8	4050	87.8	0.368	4.85	101-CA
18.6	2705					82.0	65.5	5000	84.9	0.251	3.10	101-BA
29.3		4300				82.0	65.2	5000	88.1	0.251	3.10	101-BA
32.4			4755			82.0	65.1	5000	88.6	0.251	3.10	101-BA
23.0	3690					100	59.5	5000	86.7	0.149	1.75	101-AA

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 740 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 155
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
4.0		605				16.4	63.1	1480	56.1	8.93	132	241-AB
4.6			700			16.4	63.1	1480	59.5	8.93	132	241-AB
4.9				750		16.4	63.1	1480	61.0	8.93	132	241-AB
5.5					850	16.2	62.1	1480	64.1	8.93	132	241-AB
5.6		830				20.5	64.3	1725	63.7	5.73	87	241-BB
6.4			945			20.5	64.3	1725	66.5	5.73	87	241-BB
6.8				1000		20.5	64.3	1725	67.7	5.73	87	241-BB
7.5					1125	20.3	63.7	1725	70.1	5.73	87	241-BB
6.6		980				23.3	64.6	1950	67.0	4.50	68	241-CB
7.5			1110			23.3	64.6	1950	69.5	4.50	68	241-CB
8.0				1180		23.3	64.6	1950	70.7	4.50	68	241-CB
8.8					1315	23.0	63.9	1950	72.8	4.50	68	241-CB
8.3		1200				27.5	66.1	2200	71.7	3.18	51	241-DB
9.3			1350			27.5	66.1	2200	73.9	3.18	51	241-DB
9.9				1430		27.5	66.1	2200	74.8	3.18	51	241-DB
10.9					1585	27.2	65.7	2200	76.6	3.18	51	241-DB
5.3	745					30.5	67.6	1860	62.2	2.60	43	231-AB
9.4		1330				30.5	67.7	1860	73.8	2.60	43	231-AB
10.6			1495			30.5	67.7	1860	75.8	2.60	43	231-AB
11.2				1580		30.5	67.7	1860	76.7	2.60	43	231-AB
12.1					1755	30.1	65.9	1860	78.4	2.60	43	231-AB
5.6	830					32.0	64.9	2650	63.6	2.37	36	251-EB
10.0		1465				32.0	65.0	2650	74.8	2.37	36	251-EB
11.2			1650			32.0	65.0	2650	76.7	2.37	36	251-EB
11.8				1740		32.0	65.0	2650	77.5	2.37	36	251-EB
13.0					1925	31.6	64.4	2650	79.1	2.37	36	251-EB
6.6	945					36.0	66.5	2840	66.5	1.93	30	241-EB
11.5		1650				36.0	66.4	2840	76.7	1.93	30	241-EB
12.9			1850			36.0	66.4	2840	78.5	1.93	30	241-EB
13.6				1950		36.0	66.4	2840	79.3	1.93	30	241-EB
14.8					2155	35.6	65.5	2840	80.7	1.93	30	241-EB
7.7	1100					40.0	66.5	3160	70.1	1.51	24	251-FB
13.1		1880				40.0	66.5	3160	79.1	1.51	24	251-FB
14.6			2105			40.0	66.5	3160	80.7	1.51	24	251-FB
15.4				2215		40.0	66.5	3160	81.4	1.51	24	251-FB
16.8					2440	39.5	65.7	3160	82.6	1.51	24	251-FB
9.1	1280					46.0	68.0	3480	73.0	1.16	19	241-FB
15.4		2155				46.0	68.1	3480	81.1	1.16	19	241-FB
17.1			2405			46.0	68.1	3480	82.5	1.16	19	241-FB
18.0				2530		46.0	68.1	3480	83.1	1.16	19	241-FB
19.6					2785	45.4	67.2	3480	84.2	1.16	19	241-FB
10.6	1505					52.0	67.3	4000	75.4	0.92	15	241-GB
17.6		2500				52.0	67.3	4000	82.7	0.92	15	241-GB
19.7			2790			52.0	67.3	4000	83.9	0.92	15	241-GB
20.7				2935		52.0	67.3	4000	84.5	0.92	15	241-GB
12.7	1820					60.0	66.9	4000	78.7	0.65	11	231-DB
20.8		2990				60.0	66.6	4000	84.9	0.65	11	231-DB
23.2			3320			60.0	66.6	4000	85.9	0.65	11	231-DB
24.3				3490		60.0	66.6	4000	86.4	0.65	11	231-DB
15.6	2240					72.0	66.5	4000	81.0	0.47	8	231-EB
25.3		3640				72.0	66.5	4000	86.3	0.47	8	231-EB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 550 W

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 156
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
7.7		690				27.5	107	1250	65.6	4.01	60.3	341-AB
8.8			785			27.5	107	1250	68.3	4.01	60.3	341-AB
9.4				837		27.5	107	1250	70.0	4.01	60.3	341-AB
10.4					942	27.0	105	1250	72.8	4.01	60.3	341-AB
9.1		820				31.0	106	1410	69.0	3.16	46.2	341-BB
10.3			930			31.0	106	1410	71.4	3.16	46.2	341-BB
11.0				993		31.0	105	1410	73.0	3.16	46.2	341-BB
12.0					1111	30.5	104	1410	75.5	3.16	46.2	341-BB
5.9	555					35.0	102	1750	60.1	2.41	33.9	341-CB
10.7		1000				35.0	102	1750	72.5	2.41	33.9	341-CB
12.1			1130			35.0	102	1750	74.7	2.41	33.9	341-CB
12.8				1199		35.0	102	1750	76.0	2.41	33.9	341-CB
14.0					1337	34.4	100	1750	78.2	2.41	33.9	341-CB
7.9	720					43.0	105	2000	66.2	1.61	23.6	341-DB
13.8		1260				43.0	105	2000	76.7	1.61	23.6	341-DB
15.4			1410			43.0	105	2000	78.5	1.61	23.6	341-DB
16.3				1493		43.0	105	2000	79.6	1.61	23.6	341-DB
17.8					1654	42.3	103	2000	81.4	1.61	23.6	341-DB
# 9.4	835					49.0	107	2160	69.5	1.26	19.4	341-EB
16.0		1430				49.0	107	2160	78.9	1.26	19.4	341-EB
18.0			1600			49.0	107	2160	80.5	1.26	19.4	341-EB
19.0				1693		49.0	107	2160	81.5	1.26	19.4	341-EB
20.7					1870	48.2	105	2160	83.1	1.26	19.4	341-EB
10.2	980					51.0	99.0	2630	72.6	1.04	15.3	341-FB
17.1		1650				51.0	99.1	2630	80.9	1.04	15.3	341-FB
19.1			1840			51.0	99.1	2630	82.3	1.04	15.3	341-FB
20.2				1943		51.0	99.0	2630	83.2	1.04	15.3	341-FB
21.8					2144	50.2	97.4	2630	84.6	1.04	15.3	341-FB
# 12.7	1150					62.0	106	2920	75.4	0.77	11.8	341-GB
21.2		1915				62.0	105	2920	82.8	0.77	11.8	341-GB
23.6			2135			62.0	105	2920	84.1	0.77	11.8	341-GB
24.9				2251		62.0	105	2920	84.9	0.77	11.8	341-GB
26.8					2481	61.0	104	2920	86.1	0.77	11.8	341-GB
14.5	1380					69.0	100	3750	77.6	0.61	8.70	341-HB
23.9		2270				69.0	101	3750	84.3	0.61	8.70	341-HB
26.6			2525			69.0	100	3750	85.4	0.61	8.70	341-HB
27.3				2662		69.0	100	3750	86.1	0.61	8.70	341-HB
30.2					2923	67.9	98.7	3750	87.2	0.61	8.70	341-HB
16.2	1725					74.0	89.7	4000	81.1	0.45	5.03	341-KB
26.2		2795				74.0	89.6	4000	86.4	0.45	5.03	341-KB
29.1			3100			74.0	89.4	4000	87.3	0.45	5.03	341-KB
30.5				3264		74.0	89.4	4000	87.8	0.45	5.03	341-KB
32.9					3572	72.8	87.9	4000	88.7	0.45	5.03	341-KB
22.6	2220					100	97.0	4000	84.3	0.26	3.20	331-GB
36.1		3560				100	96.8	4000	88.5	0.26	3.20	331-GB
39.9			3945			100	96.7	4000	89.3	0.26	3.20	331-GB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 750 W

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 156
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
10.2		730				35.0	133	1200	68.8	2.81	42.0	241-AB
11.6			830			35.0	133	1200	71.3	2.81	42.0	241-AB
12.3				881		35.0	133	1200	72.8	2.81	42.0	241-AB
13.6					990	34.4	131	1200	75.4	2.81	42.0	241-AB
7.4	515					43.0	137	1410	61.6	1.88	29.2	241-BB
13.3		930				43.0	137	1410	73.6	1.88	29.2	241-BB
15.0			1045			43.0	137	1410	75.7	1.88	29.2	241-BB
15.9				1106		43.0	137	1410	77.0	1.88	29.2	241-BB
17.3					1236	42.3	134	1410	79.1	1.88	29.2	241-BB
8.9	605					49.0	140	1520	65.6	1.46	23.6	241-CB
15.6		1060				49.0	140	1520	76.2	1.46	23.6	241-CB
17.5			1190			49.0	140	1520	78.1	1.46	23.6	241-CB
18.5				1258		49.0	140	1520	79.2	1.46	23.6	241-CB
20.2					1399	48.2	138	1520	81.1	1.46	23.6	241-CB
9.7	715					51.0	130	1860	69.0	1.22	18.7	241-DB
16.7		1230				51.0	130	1860	78.5	1.22	18.7	241-DB
18.6			1375			51.0	130	1860	80.1	1.22	18.7	241-DB
19.7				1449		51.0	130	1860	81.1	1.22	18.7	241-DB
21.4					1606	50.2	127	1860	82.8	1.22	18.7	241-DB
12.2	845					62.0	138	2050	72.2	0.89	14.2	241-EB
20.7		1430				62.0	138	2050	80.7	0.89	14.2	241-EB
23.1			1595			62.0	138	2050	82.2	0.89	14.2	241-EB
24.4				1683		62.0	138	2050	83.1	0.89	14.2	241-EB
26.4					1861	61.0	136	2050	84.5	0.89	14.2	241-EB
# 14.0	1015					69.0	132	2500	74.8	0.71	10.5	241-FB
23.4		1700				69.0	132	2500	82.4	0.71	10.5	241-FB
26.1			1895			69.0	132	2500	83.7	0.71	10.5	241-FB
27.5				1997		69.0	132	2500	84.5	0.71	10.5	241-FB
29.8					2202	67.9	129	2500	85.8	0.71	10.5	241-FB
15.8	1285					74.0	118	3350	78.8	0.52	7.3	241-GB
25.8		2100				74.0	118	3350	84.9	0.52	7.3	241-GB
28.7			2335			74.0	117	3350	86.0	0.52	7.3	241-GB
30.1				2461		74.0	117	3350	86.6	0.52	7.3	241-GB
32.6					2697	72.8	115	3350	87.6	0.52	7.3	241-GB
# 22.1	1665					100	127	3900	82.5	0.30	4.6	241-HB
35.7		2690				100	127	3900	87.4	0.30	4.6	241-HB
39.6			2980			100	127	3900	88.2	0.30	4.6	241-HB
41.6				3132		100	127	3900	88.7	0.30	4.6	241-HB
44.7					3433	98.3	125	3900	89.5	0.30	4.6	241-HB
27.7	2280					122	116	4000	85.1	0.19	2.6	231-HB
44.1		3645				122	116	4000	88.9	0.19	2.6	231-HB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 830 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 156
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
11.8		765				38.5	148	1460	72.0	2.14	35	141-AB
13.3			860			38.5	148	1460	74.2	2.14	35	141-AB
14.1				910		38.5	148	1460	75.5	2.14	35	141-AB
16.1					1019	37.9	145	1460	77.7	2.14	35	141-AB
7.7	495	875				43.0	149	1610	63.5	1.69	29	141-BB
13.6			980			43.0	149	1610	74.7	1.69	29	141-BB
15.3				1037		43.0	149	1610	76.7	1.69	29	141-BB
16.1					1154	43.0	149	1610	77.9	1.69	29	141-BB
17.7						42.3	146	1610	79.8	1.69	29	141-BB
9.0	580	1000				48.0	148	1830	66.8	1.35	23	141-CB
15.5			1125			48.0	148	1830	76.9	1.35	23	141-CB
17.4				1189		48.0	148	1830	78.7	1.35	23	141-CB
18.4					1317	48.0	148	1830	79.8	1.35	23	141-CB
20.0						47.2	146	1830	81.6	1.35	23	141-CB
10.7	690	1170				55.0	148	2080	70.0	1.05	17	141-DB
18.2			1310			55.0	148	2080	79.1	1.05	17	141-DB
20.3				1385		55.0	148	2080	80.7	1.05	17	141-DB
21.4					1528	55.0	148	2080	81.4	1.05	17	141-DB
23.3						54.1	146	2080	83.2	1.05	17	141-DB
# 13.0	825	1390				65.0	150	2470	72.7	0.80	13	141-EB
21.9			1550			65.0	150	2470	81.0	0.80	13	141-EB
24.4				1639		65.0	150	2470	82.4	0.80	13	141-EB
25.7					1803	65.0	150	2470	83.3	0.80	13	141-EB
27.9						63.9	148	2470	84.7	0.80	13	141-EB
# 16.2	1045	1720				77.0	148	3000	77.3	0.53	9.0	141-FB
26.7			1915			77.0	148	3000	84.0	0.53	9.0	141-FB
29.7				2016		77.0	148	3000	85.1	0.53	9.0	141-FB
31.2					2216	77.0	148	3000	85.8	0.53	9.0	141-FB
33.7						75.7	145	3000	86.9	0.53	9.0	141-FB
# 21.6	1365	2215				98.0	151	3780	81.5	0.32	6.0	141-GB
34.9			2455			98.0	151	3780	86.8	0.32	6.0	141-GB
38.7				2579		98.0	151	3780	87.7	0.32	6.0	141-GB
40.6					2827	98.0	151	3780	88.2	0.32	6.0	141-GB
43.7						96.4	148	3780	89.1	0.32	6.0	141-GB
25.7	1880	3010				114	131	4000	84.3	0.21	3.0	141-HB
41.0			3330			114	130	4000	88.4	0.21	3.0	141-HB
45.4				3494		114	130	4000	89.1	0.21	3.0	141-HB
47.6					3827	114	130	4000	89.4	0.21	3.0	141-HB
51.2						112	128	4000	90.1	0.21	3.0	141-HB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1000 W



Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)					Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 156
	260	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
11.7		465				43.0	242	920	65.2	2.74	44.5	401-AB
13.4			530			43.0	242	920	68.0	2.74	44.5	401-AB
14.4				568		43.0	242	920	69.8	2.74	44.5	401-AB
16.0					639	42.2	237	920	72.6	2.74	44.5	401-AB
13.5		545				47.0	238	1040	68.9	2.17	36.1	401-BB
15.4			620			47.0	238	1040	71.4	2.17	36.1	401-BB
16.4				661		47.0	238	1040	73.0	2.17	36.1	401-BB
18.1					740	46.2	234	1040	75.6	2.17	36.1	401-BB
15.3		635				51.0	229	1210	71.8	1.78	28.5	401-CB
17.3			720			51.0	229	1210	74.0	1.78	28.5	401-CB
18.4				763		51.0	229	1210	75.5	1.78	28.5	401-CB
20.2					856	50.1	225	1210	77.7	1.78	28.5	401-CB
10.3	415					60.0	236	1345	62.7	1.36	21.8	401-DB
18.5		750				60.0	236	1345	74.4	1.36	21.8	401-DB
20.9			845			60.0	236	1345	76.5	1.36	21.8	401-DB
22.1				896		60.0	236	1345	77.8	1.36	21.8	401-DB
24.2					1000	59.0	232	1345	79.9	1.36	21.8	401-DB
12.5	515					69.0	233	1645	66.8	1.03	16.0	401-EB
22.0		900				69.0	233	1645	77.2	1.03	16.0	401-EB
24.7			1010			69.0	233	1645	79.0	1.03	16.0	401-EB
26.1				1071		69.0	233	1645	80.1	1.03	16.0	401-EB
28.5					1192	67.8	229	1645	81.9	1.03	16.0	401-EB
16.5	660					85.0	239	1920	72.0	0.69	11.1	401-FB
28.2		1125				85.0	239	1920	80.8	0.69	11.1	401-FB
31.5			1260			85.0	239	1920	82.5	0.69	11.1	401-FB
33.3				1331		85.0	239	1920	83.2	0.69	11.1	401-FB
36.1					1466	83.5	235	1920	84.6	0.69	11.1	401-FB
20.9	895					99.0	223	2575	78.3	0.42	7.1	401-GB
34.4		1475				99.0	223	2575	84.9	0.42	7.1	401-GB
38.3			1645			99.0	223	2575	86.0	0.42	7.1	401-GB
40.3				1732		99.0	223	2575	86.8	0.42	7.1	401-GB
43.5					1899	97.3	219	2575	87.8	0.42	7.1	401-GB
26.8	1235					123	207	3000	81.3	0.28	4.0	401-HB
43.5		2010				123	207	3000	86.8	0.28	4.0	401-HB
48.3			2230			123	207	3000	87.8	0.28	4.0	401-HB
50.8				2344		123	207	3000	88.4	0.28	4.0	401-HB
54.7					2567	121	203	3000	89.2	0.28	4.0	401-HB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1350 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
12.4	650	735	783	870	41.0	182	980	71.2	2.14	33.6	301-RC
14.0					41.0	182	980	73.5	2.14	33.6	301-RC
15.0					41.0	182	980	75.0	2.14	33.6	301-RC
16.3					40.3	179	980	77.3	2.14	33.6	301-RC
14.0	735	825	871	971	45.0	182	1050	73.5	1.75	28.2	301-PC
15.7					45.0	182	1050	75.5	1.75	28.2	301-PC
16.6					45.0	182	1050	76.8	1.75	28.2	301-PC
18.3					44.3	179	1050	78.9	1.75	28.2	301-PC
15.9	825	925	979	1087	50.0	185	1205	75.7	1.44	23.3	301-NC
17.9					50.0	185	1205	77.6	1.44	23.3	301-NC
18.0					50.0	185	1205	78.8	1.44	23.3	301-NC
20.7					49.2	182	1205	80.7	1.44	23.3	301-NC
18.2	935	1045	1106	1226	56.0	186	1400	77.6	1.17	18.9	301-MC
20.4					56.0	186	1400	79.3	1.17	18.9	301-MC
21.5					56.0	186	1400	80.5	1.17	18.9	301-MC
23.5					55.1	183	1400	82.2	1.17	18.9	301-MC
20.9	1075	1200	1267	1399	63.0	186	1575	79.8	0.92	14.9	301-LC
23.4					63.0	186	1575	81.4	0.92	14.9	301-LC
24.8					63.0	186	1575	82.4	0.92	14.9	301-LC
26.8					62.0	183	1575	83.9	0.92	14.9	301-LC
24.3	1245	1390	1468	1615	72.0	187	1850	81.5	0.72	11.5	301-KC
27.1					72.0	187	1850	82.9	0.72	11.5	301-KC
28.7					72.0	187	1850	83.9	0.72	11.5	301-KC
31.1					70.8	183	1850	85.3	0.72	11.5	301-KC
29.5	1490	1660	1747	1923	85.0	189	2125	84.1	0.50	8.4	301-HC
32.8					85.0	189	2125	85.3	0.50	8.4	301-HC
34.5					85.0	189	2125	86.0	0.50	8.4	301-HC
37.3					83.6	186	2125	87.2	0.50	8.4	301-HC
# 36.1	1830	2030	2134	2346	102	189	2470	86.2	0.35	5.9	301-GC
40.1					102	189	2470	87.2	0.35	5.9	301-GC
42.0					102	189	2470	87.9	0.35	5.9	301-GC
45.5					100	185	2590	88.9	0.35	5.9	301-GC
45.8	2330	2580	2711	2971	127	188	3325	88.4	0.22	3.8	301-FC
50.8					127	188	3325	89.2	0.22	3.8	301-FC
53.3					127	188	3325	89.7	0.22	3.8	301-FC
57.4					124	185	3325	90.5	0.22	3.8	301-FC
51.6	2630	2910	3050	3335	142	188	3500	89.8	0.18	3.0	301-EB
57.2					142	188	3500	90.6	0.18	3.0	301-EB
59.8					142	188	3500	90.8	0.18	3.0	301-EB
64.6					140	185	3500	91.4	0.18	3.0	301-EB
61.0	3165				166	184	3500	90.4	0.13	2.1	301-EC

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1050 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
14.8	680	765	812	899	47.0	208	1080	75.4	1.59	26.3	601-RC
16.7					47.0	208	1080	77.3	1.59	26.3	601-RC
17.6					47.0	208	1080	78.6	1.59	26.3	601-RC
19.3					46.2	205	1080	80.5	1.59	26.3	601-RC
16.4	755	845	935	995	51.0	207	1180	76.9	1.36	22.1	601-PC
18.4					51.0	207	1180	78.7	1.36	22.1	601-PC
19.5					51.0	207	1180	79.5	1.36	22.1	601-PC
21.2					50.1	204	1180	81.7	1.36	22.1	601-PC
18.7	845	950	1003	1106	57.0	211	1280	78.9	1.12	18.3	601-NC
20.9					57.0	211	1280	80.5	1.12	18.3	601-NC
22.1					57.0	211	1280	81.6	1.12	18.3	601-NC
23.9					56.0	207	1280	83.0	1.12	18.3	601-NC
20.9	955	1065	1125	1245	63.0	210	1430	80.3	0.92	14.9	601-MC
23.4					63.0	210	1430	81.9	0.92	14.9	601-MC
24.8					63.0	210	1430	82.8	0.92	14.9	601-MC
26.8					61.9	206	1430	84.3	0.92	14.9	601-MC
24.4	1095	1220	1287	1418	72.0	213	1580	82.3	0.71	11.7	601-LC
27.3					72.0	213	1580	83.7	0.71	11.7	601-LC
28.8					72.0	213	1580	84.6	0.71	11.7	601-LC
31.2					70.8	210	1580	85.9	0.71	11.7	601-LC
28.5	1275	1420	1493	1644	82.5	214	1800	84.1	0.54	9.0	601-KC
31.7					82.5	214	1800	85.3	0.54	9.0	601-KC
33.4					82.5	214	1800	86.1	0.54	9.0	601-KC
36.2					81.1	210	1800	87.3	0.54	9.0	601-KC
34.1	1515	1680	1767	1942	97.0	215	2100	86.0	0.40	6.6	601-HC
37.9					97.0	215	2100	87.0	0.40	6.6	601-HC
39.8					97.0	215	2100	87.7	0.40	6.6	601-HC
43.0					95.3	212	2100	88.7	0.40	6.6	601-HC
41.1	1845	2050	2153	2365	115	213	2550	87.7	0.28	4.6	601-GC
45.6					115	213	2550	88.6	0.28	4.6	601-GC
48.0					115	213	2550	89.2	0.28	4.6	601-GC
51.7					113	209	2550	90.1	0.28	4.6	601-GC
43.2	2020	2240	2350	2570	120	204	3000	88.7	0.25	4.0	601-GB
47.9					120	204	3000	89.5	0.25	4.0	601-GB
50.2					120	204	3000	89.9	0.25	4.0	601-GB
54.3					119	202	3000	90.5	0.25	4.0	601-GB
52.5	2350	2605	2736	2995	144	213	3170	89.7	0.18	2.9	601-FC
58.1					144	213	3170	90.5	0.18	2.9	601-FC
61.0					144	213	3170	90.9	0.18	2.9	601-FC
65.0					140	207	3170	91.6	0.18	2.9	601-FC
56.4	2640	2925	3065	3350	154	204	3500	90.5	0.15	2.4	601-EB
62.4					154	204	3500	91.1	0.15	2.4	601-EB
65.2					154	203	3500	91.4	0.15	2.4	601-EB
70.4					152	201	3500	92.0	0.15	2.4	601-EB
70.0	3190				189	210	3500	91.6	0.10	1.7	601-EC <sup>1</sup>

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1050 W

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
15.4	620	700	744	827	50.0	237	925	72.5	1.64	28.3	201-NC
17.4					50.0	237	925	74.7	1.64	28.3	201-NC
18.4					50.0	237	925	76.0	1.64	28.3	201-NC
20.2					50.0	233	925	78.2	1.64	28.3	201-NC
17.6	710	795	842	937	56.0	238	1125	74.6	1.33	22.9	201-MC
19.8					56.0	238	1125	76.6	1.33	22.9	201-MC
21.0					56.0	238	1125	77.9	1.33	22.9	201-MC
23.0					55.1	234	1125	79.9	1.33	22.9	201-MC
20.4	815	915	969	1072	63.0	239	1265	77.1	1.05	18.1	201-LC
22.9					63.0	239	1265	78.9	1.05	18.1	201-LC
24.2					63.0	239	1265	80.0	1.05	18.1	201-LC
26.3					62.0	235	1265	81.8	1.05	18.1	201-LC
23.8	950	1065	1126	1245	72.0	238	1490	79.1	0.83	13.85	201-KC
26.6					72.0	238	1490	80.7	0.83	13.85	201-KC
28.1					72.0	238	1490	81.7	0.83	13.85	201-KC
30.5					70.8	234	1490	83.3	0.83	13.85	201-KC
28.9	1145	1275	1346	1481	85.0	242	1690	82.0	0.58	10.2	201-HC
32.2					85.0	242	1690	83.4	0.58	10.2	201-HC
34.0					85.0	242	1690	84.3	0.58	10.2	201-HC
36.8					83.6	237	1690	85.6	0.58	10.2	201-HC
35.5	1410	1565	1644	1812	102	241	2000	84.4	0.40	7.05	201-GC
39.5					102	241	2000	85.6	0.40	7.05	201-GC
41.4					102	241	2000	86.3	0.40	7.05	201-GC
44.9					100	237	2000	87.5	0.40	7.05	201-GC
45.2	1800	1995	2099	2298	127	240	2675	86.9	0.25	4.50	201-FC
50.2					127	240	2675	87.9	0.25	4.50	201-FC
52.8					127	240	2675	88.5	0.25	4.50	201-FC
56.9					125	236	2675	89.4	0.25	4.50	201-FC
50.3	2030	2250	2360	2585	140	237	2980	88.6	0.21	3.63	201-EB
55.8					140	237	2980	89.4	0.21	3.63	201-EB
58.5					140	237	2980	89.7	0.21	3.63	201-EB
63.3					138	233	2980	90.7	0.21	3.63	201-EB
60.4	2450	2715	2848	3120	166	235	3500	89.2	0.15	2.55	201-EC
66.8					166	235	3500	90.0	0.15	2.55	201-EC
70.0					166	235	3500	90.4	0.15	2.55	201-EC
75.3					163	231	3500	91.1	0.15	2.55	201-EC
73.5	2920	3230	3386		200	241	3500	91.0	0.09	1.85	201-CB
79.5					200	240	3500	91.5	0.09	1.85	201-CB
83.7					200	240	3500	91.8	0.09	1.85	201-CB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1250 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
18.1	640	720	763	846	57.0	270	1040	75.9	1.28	23.6	501-NC
20.3					57.0	270	1040	77.8	1.28	23.6	501-NC
21.5					57.0	270	1040	79.0	1.28	23.6	501-NC
23.5					56.0	265	1040	80.9	1.28	23.6	501-NC
20.4	725	815	861	957	63.0	269	1150	77.7	1.05	19.1	501-MC
22.9					63.0	269	1150	79.5	1.05	19.1	501-MC
24.2					63.0	269	1150	80.6	1.05	19.1	501-MC
26.3					61.9	264	1150	82.3	1.05	19.1	501-MC
23.9	840	935	989	1091	72.0	273	1280	80.1	0.81	15.1	501-LC
26.8					72.0	273	1280	81.6	0.81	15.1	501-LC
28.3					72.0	273	1280	82.6	0.81	15.1	501-LC
30.7					70.8	269	1280	84.1	0.81	15.1	501-LC
28.0	975	1090	1150	1264	82.5	274	1450	82.1	0.62	11.6	501-KC
31.2					82.5	274	1450	83.5	0.62	11.6	501-KC
33.0					82.5	274	1450	84.4	0.62	11.6	501-KC
35.7					81.1	269	1450	85.7	0.62	11.6	501-KC
33.6	1165	1295	1365	1500	97.0	276	1680	84.3	0.45	8.5	501-HC
37.4					97.0	276	1680	85.4	0.45	8.5	501-HC
39.4					97.0	276	1680	86.2	0.45	8.5	501-HC
42.6					95.3	271	1680	87.4	0.45	8.5	501-HC
40.6	1425	1585	1664	1832	115	273	2050	86.3	0.32	5.9	501-GC
45.2					115	273	2050	87.4	0.32	5.9	501-GC
47.5					115	273	2050	88.0	0.32	5.9	501-GC
51.2					113	268	2050	89.1	0.32	5.9	501-GC
42.5	1560	1730	1815	1990	120	260	2420	87.1	0.29	4.9	501-GB
47.2					120	260	2420	87.6	0.29	4.9	501-GB
49.4					120	260	2420	88.4	0.29	4.9	501-GB
53.6					118	257	2420	89.2	0.29	4.9	501-GB
52.0	1820	2015	2119	2322	144	273	2550	88.6	0.20	3.8	501-FC
57.6					144	273	2550	89.4	0.20	3.8	501-FC
60.5					144	273	2550	90.0	0.20	3.8	501-FC
65.2					142	268	2550	90.7	0.20	3.8	501-FC
55.8	2050	2270	2375	2600	154	261	3110	89.4	0.18	2.9	501-EB
61.8					154	261	3110	90.1	0.18	2.9	501-EB
64.8					154	261	3110	90.7	0.18	2.9	501-EB
69.5					151	256	3110	91.3	0.18	2.9	501-EB
69.5	2470	2735	2873	3139	189	269	3420	90.7	0.12	2.1	501-EC <sup>1</sup>
76.9					189	269	3420	91.3	0.12	2.1	501-EC <sup>1</sup>
80.6					189	269	3420	91.7	0.12	2.1	501-EC <sup>1</sup>
86.6					186	264	3420	92.3	0.12	2.1	501-EC <sup>1</sup>
77.9	2940	3250	3406		210	253	3500	91.6	0.09	1.5	501-CB
86.0					210	253	3500	92.1	0.09	1.5	501-CB
90.2					210	253	3500	92.4	0.09	1.5	501-CB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1250 W

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
19.6	605	680	724	803	63.0	310	1000	73.8	1.24	22.6	101-LC
22.1					63.0	310	1000	75.9	1.24	22.6	101-LC
23.5					63.0	310	1000	77.2	1.24	22.6	101-LC
25.6					62.0	305	1000	77.2	1.24	22.6	101-LC
23.0	710	795	842	933	72.0	310	1175	76.2	0.97	17.3	101-KC
25.8					72.0	310	1175	78.0	0.97	17.3	101-KC
27.3					72.0	310	1175	79.2	0.97	17.3	101-KC
29.8					70.8	305	1175	82.0	0.97	17.3	101-KC
28.2	860	960	1013	1120	85.0	313	1330	79.5	0.68	12.7	101-HC
31.5					85.0	313	1330	81.1	0.68	12.7	101-HC
33.3					85.0	313	1330	82.1	0.68	12.7	101-HC
36.1					83.6	308	1330	83.7	0.68	12.7	101-HC
34.7	1060	1180	1243	1370	102	313	1565	82.3	0.48	8.85	101-GC
38.7					102	313	1565	83.6	0.48	8.85	101-GC
40.7					102	313	1565	84.5	0.48	8.85	101-GC
44.1					100	308	1565	85.8	0.48	8.85	101-GC
# 44.4	1360	1510	1590	1745	127	312	2105	85.1	0.30	5.65	101-FC
49.4					127	312	2105	86.2	0.30	5.65	101-FC
52.0					127	312	2105	86.9	0.30	5.65	101-FC
56.2					125	307	2105	88.0	0.30	5.65	101-FC
49.6	1540	1710	1790	1965	140	308	2350	87.1	0.25	4.6	101-EB
55.1					140	308	2350	88.0	0.25	4.6	101-EB
57.8					140	308	2350	88.6	0.25	4.6	101-EB
62.5					138	302	2350	89.5	0.25	4.6	101-EB
# 59.6	1860	2060	2168	2375	166	306	2815	87.9	0.18	3.2	101-EC
66.1					166	306	2815	88.7	0.18	3.2	101-EC
69.4					166	306	2815	89.3	0.18	3.2	101-EC
74.7					163	301	2815	90.1	0.18	3.2	101-EC
# 73.1	2220	2460	2579	2822	200	314	3230	90.3	0.11	2.3	101-CB
80.9					200	314	3230	90.9	0.11	2.3	101-CB
84.9					200	314	3230	91.3	0.11	2.3	101-CB
92.7					200	314	3230	91.9	0.11	2.3	101-CB
# 86.4	2815	3100	3259		234	294	3500	91.4	0.08	1.5	101-BB
95.5					234	294	3500	91.9	0.08	1.5	101-BB
98.1					234	293	3500	92.3	0.08	1.5	101-BB

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1400 W

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
23.2	620	695	739	817	72.0	357	990	77.7	0.95	19.6	401-LC
26.0					72.0	357	990	79.5	0.95	19.6	401-LC
27.6					72.0	357	990	80.6	0.95	19.6	401-LC
30.0					70.8	350	990	82.0	0.95	19.6	401-LC
27.2	725	815	861	952	82.5	358	1130	80.0	0.73	15.0	401-KC
30.5					82.5	358	1130	81.2	0.73	15.0	401-KC
32.2					82.5	358	1130	82.2	0.73	15.0	401-KC
34.9					81.1	351	1130	83.8	0.73	15.0	401-KC
32.9	870	970	1023	1130	97.0	361	1310	82.4	0.53	11.0	401-HC
36.6					97.0	361	1310	83.8	0.53	11.0	401-HC
38.7					97.0	361	1310	84.7	0.53	11.0	401-HC
41.8					95.3	354	1310	85.7	0.53	11.0	401-HC
39.9	1070	1190	1253	1380	115	357	1590	84.8	0.37	7.6	401-GC
44.4					115	357	1590	85.9	0.37	7.6	401-GC
46.8					115	357	1590	86.7	0.37	7.6	401-GC
50.5					113	350	1590	87.6	0.37	7.6	401-GC
41.9	1180	1310	1375	1510	120	340	1900	85.7	0.33	6.6	401-GB
46.6					120	340	1900	86.7	0.33	6.6	401-GB
48.8					120	340	1900	87.2	0.33	6.6	401-GB
53.2					119	336	1900	88.1	0.33	6.6	401-GB
51.3	1370	1525	1600	1755	144	357	1985	87.5	0.24	4.9	401-FC
56.9					144	357	1985	88.4	0.24	4.9	401-FC
59.8					144	357	1985	89.0	0.24	4.9	401-FC
64.3					142	350	1985	89.5	0.24	4.9	401-FC
55.0	1550	1720	1805	1975	154	339	2450	88.0	0.21	4.0	401-EB
61.1					154	339	2450	88.9	0.21	4.0	401-EB
64.0					154	339	2450	89.4	0.21	4.0	401-EB
68.9					151	333	2450	90.2	0.21	4.0	401-EB
68.8	1870	2075	2178	2380	189	351	2690	89.8	0.14	2.8	401-EC <sup>1</sup>
76.2					189	351	2690	90.5	0.14	2.8	401-EC <sup>1</sup>
80.0					189	351	2690	90.9	0.14	2.8	401-EC <sup>1</sup>
85.8					186	344	2690	91.3	0.14	2.8	401-EC <sup>1</sup>
77.4	2230	2465	2589	2827	210	331	3480	90.8	0.10	2.0	401-CB
85.5					210	331	3480	91.4	0.10	2.0	401-CB
89.7					210	331	3480	91.8	0.10	2.0	401-CB
96.2					207	325	3480	92.3	0.10	2.0	401-CB
92.6	2810	3105	3254		250	315	3500	91.6	0.07	1.3	401-BB <sup>1</sup>
102					250	315	3500	92.1	0.07	1.3	401-BB <sup>1</sup>
107					250	315	3500	92.4	0.07	1.3	401-BB <sup>1</sup>

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 1400 W

<sup>1</sup>) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 157
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
21.8	410				72.0	508	715	72.2	1.21	29.0	701-LC
24.6		460			72.0	508	715	74.4	1.21	29.0	701-LC
26.1			489		72.0	508	715	75.8	1.21	29.0	701-LC
28.7				548	70.8	500	715	78.2	1.21	29.0	701-LC
25.8	485				82.5	509	815	75.0	0.94	22.2	701-KC
29.0		545			82.5	510	815	77.0	0.94	22.2	701-KC
30.8			577		82.5	510	815	78.3	0.94	22.2	701-KC
33.7				644	81.1	501	815	80.2	0.94	22.2	701-KC
31.4	585				97.0	514	945	78.2	0.69	16.3	701-HC
35.2		655			97.0	514	945	79.9	0.69	16.3	701-HC
37.2			690		97.0	514	945	81.0	0.69	16.3	701-HC
40.6				769	95.3	505	945	82.6	0.69	16.3	701-HC
38.5	725				115	508	1145	81.2	0.47	11.3	701-GC
43.0		810			115	508	1145	82.6	0.47	11.3	701-GC
45.3			851		115	508	1145	83.6	0.47	11.3	701-GC
49.3				947	113	499	1145	85.1	0.47	11.3	701-GC
40.6	800				120	487	1350	82.2	0.43	9.6	701-GB
45.3		890			120	487	1350	83.6	0.43	9.6	701-GB
47.7			935		120	487	1350	84.2	0.43	9.6	701-GB
51.9				1030	119	481	1350	85.3	0.43	9.6	701-GB
49.9	935				144	509	1430	84.5	0.30	7.3	701-FC
55.5		1045			144	509	1430	85.7	0.30	7.3	701-FC
58.4			1096		144	509	1430	86.4	0.30	7.3	701-FC
63.3				1207	142	500	1430	87.6	0.30	7.3	701-FC
53.8	1060				154	487	1750	85.3	0.27	5.8	701-EB
59.8		1170			154	487	1750	86.4	0.27	5.8	701-EB
62.8			1235		154	487	1750	87.1	0.27	5.8	701-EB
67.7				1353	151	478	1750	88.2	0.27	5.8	701-EB
67.4	1290				189	500	1995	87.6	0.17	4.1	701-EC <sup>1</sup>
74.9		1430			189	500	1995	88.5	0.17	4.1	701-EC <sup>1</sup>
78.7			1502		189	500	1995	89.0	0.17	4.1	701-EC <sup>1</sup>
84.7				1644	186	492	1995	89.8	0.17	4.1	701-EC <sup>1</sup>
# 76.4	1540				210	473	2510	89.3	0.12	3.0	701-CB <sup>1</sup>
84.6		1705			210	473	2510	90.0	0.12	3.0	701-CB <sup>1</sup>
88.8			1791		210	473	2510	90.5	0.12	3.0	701-CB <sup>1</sup>
95.5				1962	206	465	2510	91.2	0.12	3.0	701-CB <sup>1</sup>
91.7	1945				250	450	2745	90.4	0.09	1.9	701-BB <sup>2</sup>
101		2155			250	450	2745	91.0	0.09	1.9	701-BB <sup>2</sup>
106			2261		250	450	2745	91.4	0.09	1.9	701-BB <sup>2</sup>
114				2471	246	442	2745	91.9	0.09	1.9	701-BB <sup>2</sup>

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 2000 W

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

2) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.



Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
27.0	650	730	770	850	85	400	2300	77.9	0.73	15.7	101-RC
31.0					85	400	2300	79.7	0.73	15.7	101-RC
32.2					85	400	2300	80.5	0.73	15.7	101-RC
35.3		84	397		2300	81.9	0.73	15.7	101-RC		
32.0	750	840	881	981	97	406	1500	80.2	0.63	12.4	101-PC
36.0					97	406	1500	81.7	0.63	12.4	101-PC
38.0					98	406	1500	82.7	0.63	12.4	101-PC
41.0		95	407		1500	84.2	0.63	12.4	101-PC		
37.0	880	980	1037	1144	111	407	2730	82.4	0.47	9.5	101-NC
42.0					111	407	2730	83.7	0.47	9.5	101-NC
44.0					111	400	2730	84.6	0.47	9.5	101-NC
48.0		109	396		2730	85.9	0.47	9.5	101-NC		
43.0	1040	1160	1223	1346	126	396	3740	84.0	0.37	7.0	101-LC
48.0					126	396	3740	85.2	0.37	7.0	101-LC
51.0					126	396	3740	86.0	0.37	7.0	101-LC
55.0		124	389		3740	87.1	0.37	7.0	101-LC		
53.0	1280	1420	1497	1635	152	398	3910*	86.0	0.26	4.8	101-HC
59.0					152	398	3910*	87.0	0.26	4.8	101-HC
63.0					152	398	3910*	87.7	0.26	4.8	101-HC
67.0		149	391		3910*	88.7	0.26	4.8	101-HC		
59.0	1400	1560	1644	1798	166	400	2100	87.2	0.21	4.1	101-GB
65.0					166	400	2100	88.1	0.21	4.1	101-GB
68.0					166	400	2100	88.7	0.21	4.1	101-GB
74.0		163	393		2100	89.6	0.21	4.1	101-GB		
69.0	1630	1810	1899	2087	192	402	4500*	88.2	0.16	3.1	101-FC
76.0					192	402	4500*	89.1	0.16	3.1	101-FC
80.0					192	402	4500*	89.6	0.16	3.1	101-FC
87.0		189	395		4500*	90.4	0.16	3.1	101-FC		
75.0	1840	2040	2153	2375	207	387	1950	89.0	0.13	2.5	101-EB
79.0					198	370	2040	89.9	0.13	2.5	101-EB
77.0					184	343	2200	90.6	0.13	2.5	101-EB
76.0		164	306		2470	91.3	0.13	2.5	101-EB		
89.0	2220	2460	2574	2817	245	384	4500*	90.2	0.10	1.7	101-DC <sup>1</sup>
99.0					245	384	4500*	90.8	0.10	1.7	101-DC <sup>1</sup>
104					245	384	4500*	91.2	0.10	1.7	101-DC <sup>1</sup>
116		241	377		4500*	91.9	0.10	1.7	101-DC <sup>1</sup>		
110	2640	2930	3073	3365	299	400	2660	91.4	0.06	1.3	101-CB <sup>1</sup>
111					272	363	2930	92.1	0.06	1.3	101-CB <sup>1</sup>
109					253	337	3140	92.5	0.06	1.3	101-CB <sup>1</sup>
112		227	318		3500	92.9	0.06	1.3	101-CB <sup>1</sup>		
137	3330	3690	3866*	4231*	368	393	3390	92.4	0.04	0.8	101-BB <sup>1</sup>
139					338	361	3960*	92.9	0.04	0.8	101-BB <sup>1</sup>
136					315	335	3950*	93.2	0.04	0.8	101-BB <sup>1</sup>
134		283	300		4400*	93.5	0.04	0.8	101-BB <sup>1</sup>		

\* Special design above 3800 rpm.

Field loss (hot) = 1520 W

\*\* Through field control with constant output. Please specify.

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
27.0	540	600	635	705	85	472	1800	75.6	0.81	18.7	201-RC
30.0					85	472	1800	77.5	0.81	18.7	201-RC
31.5					85	472	1800	78.5	0.81	18.7	201-RC
34.6					84	469	1800	80.1	0.81	18.7	201-RC
31	625	700	739	822	97	479	1200	78.4	0.69	14.8	201-PC
35					97	479	1200	80.1	0.69	14.8	201-PC
37					97	479	1200	81.2	0.69	14.8	201-PC
40					95	471	1200	82.9	0.69	14.8	201-PC
37	735	820	866	957	111	480	2360	81.0	0.52	11.3	201-NC
41					111	480	2360	82.5	0.52	11.3	201-NC
43					111	480	2360	83.4	0.52	11.3	201-NC
47					109	472	2360	84.9	0.52	11.3	201-NC
43	875	975	1028	1130	126	467	3230	82.8	0.41	8.3	201-LC
48					126	467	3230	84.1	0.41	8.3	201-LC
50					126	467	3230	85.0	0.41	8.3	201-LC
55					124	459	3230	86.3	0.41	8.3	201-LC
53	1075	1195	1258	1385	152	469	3390	85.1	0.28	5.8	201-HC
59					152	469	3390	86.3	0.28	5.8	201-HC
62					152	469	3390	87.0	0.28	5.8	201-HC
66					149	461	3390	88.1	0.28	5.8	201-HC
58	1175	1310	1380	1514	166	471	1700	86.1	0.24	4.9	201-GB
65					166	471	1700	87.1	0.24	4.9	201-GB
69					166	471	1700	87.8	0.24	4.9	201-GB
73					163	463	1700	88.8	0.24	4.9	201-GB
# 68	1375	1530	1605	1760	192	474	4200*	87.9	0.17	3.7	201-FC
76					192	474	4200*	88.6	0.17	3.7	201-FC
80					192	474	4200*	89.2	0.17	3.7	201-FC
86					189	456	4200*	90.0	0.17	3.7	201-FC
74	1550	1720	1820	2000	207	453	2500	88.3	0.15	3.0	201-EB
82					207	457	2500	89.2	0.15	3.0	201-EB
86					207	457	2500	89.9	0.15	3.0	201-EB
93					205	452	2500	90.8	0.15	3.0	201-EB
89	1870	2070	2173	2380	245	453	4500*	89.5	0.11	2.1	201-DC
98					245	453	4500*	90.2	0.11	2.1	201-DC
103					245	453	4500*	90.7	0.11	2.1	201-DC
111					241	445	4500*	91.4	0.11	2.1	201-DC
110	2230	2470	2603	2846	299	471	2300	91.0	0.07	1.5	201-CB <sup>1</sup>
113					278	438	2470	91.8	0.07	1.5	201-CB <sup>1</sup>
109					259	407	2660	92.2	0.07	1.5	201-CB <sup>1</sup>
109					232	364	2960	92.7	0.07	1.5	201-CB <sup>1</sup>
136	2810	3110	3269	3577	368	464	2930	92.0	0.05	1.0	201-BB <sup>1</sup>
142					346	436	3110	92.6	0.05	1.0	201-BB <sup>1</sup>
140					322	405	3340	92.9	0.05	1.0	201-BB <sup>1</sup>
136					289	363	3720	93.2	0.05	1.0	201-BB <sup>1</sup>
168	3800				450	424	4000*	93.0	0.03	0.5	201-AB <sup>1</sup>

\* Special design above 3800 rpm.

Field loss (hot) = 1670 W

\*\* Through field control with constant output. Please specify.

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
31	490				101	613	900	75.6	0.69	18.1	301-PC
35		550			101	613	900	77.6	0.69	18.1	301-PC
37			587		101	613	900	78.8	0.69	18.1	301-PC
41				649	99	603	900	80.8	0.69	18.1	301-PC
38	575				117	621	1860	78.2	0.53	13.9	301-NC
42		645			117	621	1860	80.0	0.53	13.9	301-NC
45			685		117	621	1860	81.1	0.53	13.9	301-NC
49				760	115	611	1860	82.8	0.53	13.9	301-NC
44	690				132	601	2550	80.5	0.40	10.2	301-LC
49		775			132	601	2550	82.1	0.40	10.2	301-LC
52			817		132	601	2550	83.0	0.40	10.2	301-LC
56				904	130	590	2550	84.6	0.40	10.2	301-LC
54	850				159	603	2690	83.1	0.28	7.1	301-HC
60		950			159	603	2690	84.4	0.28	7.1	301-HC
64			1003		159	603	2690	85.2	0.28	7.1	301-HC
68				1106	156	593	2690	86.5	0.28	7.1	301-HC
60	940				174	607	1360	84.6	0.26	6.0	301-GB
67		1050			174	607	1360	85.7	0.26	6.0	301-GB
70			1106		174	607	1360	86.5	0.26	6.0	301-GB
76				1216	171	597	1360	87.6	0.26	6.0	301-GB
70	1100				201	610	3330	86.3	0.19	4.5	301-FC
78		1225			201	610	3330	87.3	0.19	4.5	301-FC
82			1292		201	610	3330	88.0	0.19	4.5	301-FC
91				1418	198	599	3330	89.0	0.19	4.5	301-FC
77	1240				218	591	1330	86.9	0.17	3.6	301-EB
83		1380			211	571	1380	88.0	0.17	3.6	301-EB
81			1468		195	528	1500	88.9	0.17	3.6	301-EB
79				1615	173	469	1680	90.0	0.17	3.6	301-EB
# 93	1510				258	587	4500*	88.7	0.12	2.5	301-DC <sup>1</sup>
103		1670			258	587	4500*	89.5	0.12	2.5	301-DC <sup>1</sup>
108			1757		258	587	4500*	90.0	0.12	2.5	301-DC <sup>1</sup>
116				1923	254	576	4500*	90.7	0.12	2.5	301-DC <sup>1</sup>
115	1795				315	610	1810	90.1	0.08	1.8	301-CB <sup>1</sup>
116		2000			286	553	2000	91.0	0.08	1.8	301-CB <sup>1</sup>
113			2104		266	513	2150	91.6	0.08	1.8	301-CB <sup>1</sup>
111				2308	238	458	2400	92.2	0.08	1.8	301-CB <sup>1</sup>
# 142	2270				386	598	2310	91.3	0.05	1.2	301-BB <sup>1</sup>
144		2520			354	547	2520	92.0	0.05	1.2	301-BB <sup>1</sup>
141			2652		329	508	2710	92.4	0.05	1.2	301-BB <sup>1</sup>
138				2904	295	454	3020	92.9	0.05	1.2	301-BB <sup>1</sup>
167	3080				450	521	4000*	92.5	0.03	0.7	301-AB <sup>1</sup>
185		3400			450	521	4000*	92.9	0.03	0.7	301-AB <sup>1</sup>
194			3563		450	520	4000*	93.2	0.03	0.7	301-AB <sup>1</sup>

\* Special design above 3800 rpm.

Field loss (hot) = 1900 W

\*\* Through field control with constant output. Please specify.

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.

Data subject to change without prior notice.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
33	450	510	538	601	105	688	1500	74.8	0.77	17.1	401-NC
37					105	688	1500	76.8	0.77	17.1	401-NC
39					105	688	1500	78.0	0.77	17.1	401-NC
42					103	676	1500	80.0	0.77	17.1	401-NC
40	545	610	646	716	125	702	2210	77.9	0.55	12.6	401-LC
45					125	702	2210	79.6	0.55	12.6	401-LC
48					125	702	2210	80.7	0.55	12.6	401-LC
52					123	690	2210	82.5	0.55	12.6	401-LC
51	680	760	803	885	152	712	2310	81.4	0.37	8.7	401-HC
57					152	712	2310	82.8	0.37	8.7	401-HC
59					152	712	2310	83.7	0.37	8.7	401-HC
65					149	700	2310	85.2	0.37	8.7	401-HC
53	760	845	891	981	155	668	1100	83.4	0.30	7.4	401-GB
59					155	668	1100	84.6	0.30	7.4	401-GB
63					155	668	1100	85.5	0.30	7.4	401-GB
67					152	656	1100	86.7	0.30	7.4	401-GB
64	875	975	1028	1135	187	701	2930	84.3	0.24	5.6	401-FC
72					187	701	2930	85.5	0.24	5.6	401-FC
75					187	701	2930	86.3	0.24	5.6	401-FC
82					184	688	2930	87.4	0.24	5.6	401-FC
68	1000	1110	1174	1288	194	649	1300	86.0	0.19	4.5	401-EB
76					194	649	1300	87.0	0.19	4.5	401-EB
79					194	649	1340	87.6	0.19	4.5	401-EB
85					189	631	1340	88.6	0.19	4.5	401-EB
# 87	1210	1340	1409	1548	246	691	4500*	87.5	0.14	3.1	401-DC
97					246	691	4500*	88.4	0.14	3.1	401-DC
102					246	691	4500*	89.0	0.14	3.1	401-DC
110					242	679	4500*	89.8	0.14	3.1	401-DC
101	1445	1605	1683	1851	280	669	1770	89.3	0.09	2.3	401-CB <sup>1</sup>
112					280	669	1770	90.0	0.09	2.3	401-CB <sup>1</sup>
118					280	669	1770	90.5	0.09	2.3	401-CB <sup>1</sup>
119					257	614	1925	91.3	0.09	2.3	401-CB <sup>1</sup>
# 126	1835	2030	2129	2331	344	657	2250	90.7	0.06	1.5	401-BB <sup>1</sup>
140					344	657	2250	91.3	0.06	1.5	401-BB <sup>1</sup>
147					344	657	2250	91.6	0.06	1.5	401-BB <sup>1</sup>
149					320	609	2425	92.2	0.06	1.5	401-BB <sup>1</sup>
166	2470	2730	2868	3125	450	644	4000*	91.8	0.04	0.8	401-AB <sup>1</sup>
184					450	644	4000*	92.3	0.04	0.8	401-AB <sup>1</sup>
193					450	643	4000*	92.5	0.04	0.8	401-AB <sup>1</sup>
207					442	631	4000*	92.9	0.04	0.8	401-AB <sup>1</sup>

\* Special design above 3800 rpm.

Field loss (hot) = 2240 W

\*\* Through field control with constant output. Please specify.

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 10% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
49	570				148	815	1700	79.8	0.42	10.3	501-HC
54		635			148	815	1700	81.3	0.42	10.3	501-HC
58			587		148	815	1700	82.3	0.42	10.3	501-HC
63				745	146	801	1700	83.9	0.42	10.3	501-HC
54	630				162	820	920	81.3	0.34	8.7	501-GB
60		705			162	820	920	82.8	0.34	8.7	501-GB
64			744		162	820	920	83.7	0.34	8.7	501-GB
69				817	159	806	920	85.1	0.34	8.7	501-GB
62	735				181	795	2450	83.0	0.27	6.6	501-FC
69		820			181	795	2450	84.3	0.27	6.6	501-FC
72			851		181	795	2450	85.1	0.27	6.6	501-FC
78				952	178	783	2450	86.3	0.27	6.6	501-FC
70	835				202	790	1070	84.4	0.22	5.3	501-EB
77		930			202	790	1070	85.5	0.22	5.3	501-EB
81			979		202	790	1070	86.3	0.22	5.3	501-EB
87				1082	194	761	1125	87.5	0.22	5.3	501-EB
84	1020				239	789	3400*	86.5	0.15	3.7	501-DC
94		1130			239	789	3400*	87.5	0.15	3.7	501-DC
98			1189		239	789	3400*	88.1	0.15	3.7	501-DC
106				1308	235	775	3400*	89.0	0.15	3.7	501-DC
104	1215				292	821	1450	88.2	0.11	2.7	501-CB <sup>1</sup>
116		1345			292	821	1450	89.0	0.11	2.7	501-CB <sup>1</sup>
121			1414		292	821	1450	89.5	0.11	2.7	501-CB <sup>1</sup>
120				1558	263	736	1620	90.5	0.11	2.7	501-CB <sup>1</sup>
# 130	1545				358	805	3000	89.8	0.07	1.7	501-BB <sup>1</sup>
144		1710			358	805	3000	90.4	0.07	1.7	501-BB <sup>1</sup>
150			1796		358	805	3000	90.9	0.07	1.7	501-BB <sup>1</sup>
150				1971	324	727	3000	91.6	0.07	1.7	501-BB <sup>1</sup>
# 166	2100				450	757	3200	91.4	0.05	1.0	501-AB <sup>1</sup>
183		2320			450	756	3200	91.9	0.05	1.0	501-AB <sup>1</sup>
192			2427		450	756	3200	92.2	0.05	1.0	501-AB <sup>1</sup>
206				2654	442	742	3200	92.6	0.05	1.0	501-AB <sup>1</sup>

\* Special design above 3200 rpm.

Field loss (hot) = 2400 W

\*\* Through field control with constant output. Please specify.

1) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.

Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. elec. speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Code number FR 159
	400	440	460	500					Resistance (Ohm)	Inductance (mH)	
66	610				194	1024	1200	82.7	0.26	10.5	601-BF
74		680			194	1024	1200	84.0	0.26	10.5	601-BF
77			724		194	1024	1200	84.8	0.26	10.5	601-BF
84				798	190	1007	1200	86.1	0.26	10.5	601-BF
66	670				196	930	1050	81.7	0.29	8.5	601-FF
73		750			196	930	1050	83.0	0.29	8.5	601-FF
78			793		196	930	1050	83.9	0.29	8.5	601-FF
84				875	192	914	1050	85.3	0.29	8.5	601-FF
75	770				220	928	1200	83.3	0.22	6.8	601-EF
84		860			220	927	1200	84.5	0.22	6.8	601-EF
88			900		220	927	1200	85.3	0.22	6.8	601-EF
95				1000	216	911	1200	86.5	0.22	6.8	601-EF
90	880				255	977	1350	86.6	0.14	5.6	601-BD
100		980			255	977	1350	87.6	0.14	5.6	601-BD
105			1028		255	977	1350	88.2	0.14	5.6	601-BD
113				1125	250	960	1350	89.1	0.14	5.6	601-BD
86	890				249	918	1400	84.7	0.18	5.2	601-DF
96		990			249	918	1400	85.8	0.18	5.2	601-DF
101			1047		249	918	1400	86.5	0.18	5.2	601-DF
109				1154	244	902	1400	87.6	0.18	5.2	601-DF
103	1060				294	929	1700	86.5	0.13	3.8	601-CF
114		1180			294	929	1700	87.4	0.13	3.8	601-CF
120			1243		294	929	1700	88.0	0.13	3.8	601-CF
130				1356	289	913	1700	88.9	0.13	3.8	601-CF
# 142	1310				394	1039	2500	89.7	0.06	2.6	601-AF <sup>1</sup>
158		1450			394	1039	2500	90.4	0.06	2.6	601-AF <sup>1</sup>
166			1527		394	1039	2500	90.8	0.06	2.6	601-AF <sup>1</sup>
179				1673	387	1021	2500	91.4	0.06	2.6	601-AF <sup>1</sup>
# 174	1850				474	905	2800	91.4	0.05	1.4	601-AD <sup>1</sup>
193		2040			474	904	2800	91.9	0.05	1.4	601-AD <sup>1</sup>
202			2143		474	904	2800	92.2	0.05	1.4	601-AD <sup>1</sup>
217				2337	465	888	2800	92.6	0.05	1.4	601-AD <sup>1</sup>

\*\* Through field control with constant output. Please specify.

Field loss (hot) = 2650 W

<sup>1</sup>) Cooling air inlet at N-end. Can be used with cooling air inlet at D-end with 15% reduction of output.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2511
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	44.2	580	650	685	136	728	1980	81.1	0.494	9.3	2060	1320	
	49.5												755
	52.1	136	726	1980	83.3	0.495	9.3	2060	1320				
	57.4									136	726	1980	84.4
##	56.9	750	835	880	169	725	2540	84.4	0.319				
	63.5									965	169	726	2540
	66.8	169	725	2540	86.0	0.320	6.2	2060	1080				
	73.3									169	725	2450	86.9
	64.1	845	940	990	187	724	2400	85.5	0.261				
	71.4									1090	187	725	2400
	75.0	187	723	2400	87.1	0.262	5.2	2020	0984				
	82.3									187	721	2300	87.9
	81.5	1090	1210	1270	232	714	1950	87.7	0.170				
	90.6									1390	233	715	1950
	95.0	232	714	1950	88.9	0.171	3.3	2020	0792				
	103.0									230	708	1950	89.7
##	96.4	1320	1460	1530	271	697	3020	88.9	0.125				
	106									1680	268	693	3020
	112	271	699	3020	89.9	0.126	2.3	2050	0660				
	122									270	694	3020	90.5
##	109	1550	1720	1800	300	672	4000	90.8	0.0833				
	121									1970	301	672	4000
	127	302	674	4000	91.4	0.0845	1.6	2300	0540				
	138									301	669	4000	91.8
##	135	1880	2080	2180	370	686	4000	91.1	0.0660				
	149									2380	370	684	4000
	156	369	683	4000	91.8	0.0667	1.3	2020	0492				
	171									371	686	4000	92.1
##	153	2200	2440	2550	415	664	4000	92.2	0.0449				
	169									2770	415	661	4000
	176	391	659	4000	92.6	0.0457	0.84	2300	0396				
	182									391	627	4000	93.0
	161	2480	2730		435	620	4000	92.5	0.0354				
	177									434	619	4000	92.7
##	173	3120			464	530	4000	93.2	0.0223				

\*\* Through field control with constant output. Please specify.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2521
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	42.6	465	525	555	134	875	1620	79.4	0.557	11.6	2200	1320	
	47.8												610
	50.4	134	867	1640	81.7	0.560	11.6	2200	1320				
	55.6									134	870	1640	83.0
##	54.9	605	675	710	165	867	2110	83.0	0.362				
	61.4									780	166	869	2050
	64.6	166	869	2020	84.8	0.363	7.8	2190	1080				
	71.0									165	869	1960	85.9
	62.0	675	755	795	184	877	2000	84.3	0.296				
	69.1									870	184	874	1970
	72.7	184	873	1930	86.0	0.296	6.4	2220	0984				
	98.8									184	876	1840	86.9
##	79.3	885	985	1040	229	856	1610	86.7	0.193				
	88.1									1140	228	854	1610
	92.5	228	849	1610	88.1	0.193	4.2	2050	0792				
	101									227	846	1560	88.9
##	94.2	1060	1180	1240	267	849	2480	88.1	0.142				
	104									1350	266	842	2480
	109	265	839	2480	89.3	0.142	2.9	2190	0660				
	119									265	842	2480	89.9
##	108	1240	1380	1440	299	832	4000	90.2	0.0950				
	119									1580	298	824	4000
	125	299	829	4000	91.0	0.0957	1.9	2490	0540				
	136									297	822	4000	91.5
##	132	1490	1650	1730	365	846	4000	90.5	0.0756				
	146									1890	364	845	4000
	153	364	845	4000	91.3	0.0766	1.6	2220	0492				
	166									362	839	3920	91.7
##	151	1780	1970	2070	411	810	3590	91.8	0.0510				
	167									2250	412	810	3590
	174	410	803	3590	92.4	0.0518	1.0	2320	0396				
	190									410	806	3500	92.6
##	158	1990	2200	2310	428	758	4000	92.3	0.0406				
	174									2510	427	755	4000
	181	424	748	4000	92.7	0.0414	0.75	2570	0336				
	192									413	731	4000	93.0
##	195	2490			525	748	4000	92.9	0.0266				

\*\* Through field control with constant output. Please specify.



	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2531
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	41.2	385			133	1022	1340	77.1	0.631	14.5	2370	1320	
	46.5		430		134	1033	1370	78.9	0.634	14.5	2370	1320	
	49.1			455	134	1031	1370	79.8	0.634	14.5	2370	1320	
	54.2			505	133	1025	1370	81.3	0.634	14.5	2370	1320	
##	53.4	505			164	1010	1680	81.2	0.411	9.7	2210	1080	
	59.8		570		164	1002	1650	82.7	0.411	9.7	2210	1080	
	63.0			600	164	1003	1620	83.3	0.012	9.7	2210	1080	
	69.3			660	164	1003	1570	84.5	0.412	9.7	2210	1080	
	60.4	570			183	1012	1640	82.7	0.335	8.1	2240	0984	
	67.5		635		182	1015	1580	84.1	0.336	8.1	2240	0984	
	71.1			670	183	1013	1550	84.7	0.336	8.1	2240	0984	
	78.2			740	183	1009	1480	85.7	0.337	8.1	2240	0984	
	77.1	735			225	1002	1370	85.6	0.219	5.2	2270	0792	
	85.9		820		225	1000	1370	86.6	0.220	5.2	2270	0792	
	90.2			865	225	996	1350	87.1	0.220	5.2	2270	0792	
	99.0			950	225	995	1260	87.9	0.221	5.2	2270	0792	
##	92.8	900			266	985	2080	87.1	0.161	3.6	2180	0660	
	103		1000		266	984	2080	88.0	0.161	3.6	2180	0660	
	108			1050	265	982	2080	88.5	0.161	3.6	2180	0660	
	118			1150	265	980	2080	89.2	0.161	3.6	2180	0660	
##	106	1060			296	955	3710	89.6	0.107	2.4	2510	0540	
	118		1170		297	963	3930	90.2	0.108	2.4	2510	0540	
	123			1230	295	955	3880	90.6	0.107	2.4	2510	0540	
	135			1340	297	962	3720	91.0	0.108	2.4	2510	0540	
##	130	1270			362	978	3420	89.9	0.0850	2.0	2240	0492	
	144		1400		362	982	3400	90.5	0.0855	2.0	2240	0492	
	151			1470	361	981	3330	90.8	0.0857	2.0	2240	0492	
	165			1610	362	979	3150	91.3	0.0863	2.0	2240	0492	
##	148	1490			404	949	3060	91.5	0.0572	1.3	2540	0396	
	164		1650		405	949	3060	91.9	0.0579	1.3	2540	0396	
	172			1730	406	949	3060	92.1	0.0582	1.3	2540	0396	
	187			1890	404	945	2850	92.5	0.0587	1.3	2540	0396	
	158	1670			429	904	4000	92.1	0.0454	0.94	2760	0336	
	174		1850		428	898	4000	92.5	0.0458	0.94	2760	0336	
	182			1930	427	901	4000	92.6	0.0460	0.94	2760	0336	
	198			2110	426	896	4000	92.9	0.0466	0.94	2760	0336	
#	199	2090			536	909	4000	92.9	0.0297	0.63	2800	0276	
	214		2310		522	885	4000	93.2	0.0297	0.63	2800	0276	
	214			2410	498	848	4000	93.4	0.0292	0.63	2800	0276	
	215	2300			577	893	4000	93.1	0.0246	0.53	2830	0252	

\*\* Through field control with constant output. Please specify.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2611																
		400	440	460	500					Resistance (Ohm)	Inductance (mH)																		
##	46.8	350	395	420	152	1277	1220	77.1	0.559	14.9	2450	1480																	
	52.7												460	152	1274	1350	79.0	0.560	14.9	2450	1480								
	55.7																					152	1267	1350	79.8	0.560	14.9	2450	1480
	61.6																												
##	55.1	415	465	490	172	1268	1450	80.0	0.423	11.0	2500	1272																	
	61.8												540	172	1269	1620	81.6	0.425	11.0	2500	1272								
	65.2																					172	1271	1710	82.3	0.425	11.0	2500	1272
	71.9																												
##	69.4	520	580	610	209	1275	1610	83.0	0.290	7.9	2500	1080																	
	77.6												670	209	1278	1610	84.3	0.291	7.9	2500	1080								
	81.7																					209	1279	1610	84.8	0.292	7.9	2500	1080
	89.8																												
##	88.3	655	730	770	258	1287	1330	85.5	0.193	5.4	2530	0888																	
	98.4												845	258	1287	1330	86.6	0.194	5.4	2530	0888								
	103																					257	1277	1330	87.2	0.193	5.4	2530	0888
	113																												
##	105	795	885	930	301	1261	2710	87.2	0.141	3.7	2450	0740																	
	117												1020	302	1263	2710	88.1	0.142	3.7	2450	0740								
	123																					302	1263	2710	88.4	0.143	3.7	2450	0740
	135																												
##	121	930	1030	1080	342	1243	3250	88.5	0.108	2.8	2420	0636																	
	134												1190	341	1242	3480	89.3	0.108	2.8	2420	0636								
	141																					342	1247	3480	89.6	0.109	2.8	2420	0636
	154																												
##	149	1130	1250	1310	414	1259	3250	89.9	0.0745	2.0	2500	0540																	
	165												1430	414	1261	3250	90.6	0.0748	2.0	2500	0540								
	173																					414	1261	3250	90.8	0.0751	2.0	2500	0540
	189																												
##	170	1330	1470	1540	465	1221	2960	91.4	0.0509	1.3	2870	0444																	
	188												1680	465	1221	2960	91.8	0.0512	1.3	2870	0444								
	196																					463	1215	2960	92.1	0.0512	1.3	2870	0444
	214																												
##	198	1600	1770	1860	537	1182	3600	92.2	0.0375	0.92	2770	0368																	
	219												2030	538	1182	3600	92.5	0.0378	0.92	2770	0368								
	229																					537	1176	3600	92.7	0.0379	0.92	2770	0368
	250																												
##	226	1830	2020	2120	610	1179	3600	92.6	0.0292	0.71	2810	0324																	
	249												2310	609	1177	3600	92.9	0.0294	0.71	2810	0324								
	261																					610	1176	3600	93.1	0.0296	0.71	2810	0324
	284																												
#	250	2110	2330	2440	671	1132	3600	93.2	0.0211	0.52	3030	0276																	
	276												2660	671	1131	3600	93.4	0.0213	0.52	3030	0276								
	288																					669	1127	3600	93.5	0.0214	0.52	3030	0276
	312																												
#	288	2480	2740		771	1109	3600	93.3	0.0160	0.37	2920	0232																	
	302												734	1053	3600	93.6	0.0158	0.37	2920	0232									

\*\* Through field control with constant output. Please specify.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2621
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	44.5	280	315	335	147	1518	980	75.9	0.613	17.7	2780	1480	
	50.2												
	53.1												
	58.8												
##	52.6	335	375	395	167	1499	1170	78.9	0.464	13.1	2710	1272	
	59.1												
	62.3												
	68.8												
##	66.4	415	465	490	202	1528	1420	82.1	0.318	9.4	2810	1080	
	74.4												
	78.3												
	86.2												
##	84.8	530	595	625	250	1528	1170	84.8	0.318	6.4	2620	0888	
	94.6												
	99.5												
	109												
##	100	640	715	750	288	1492	2240	86.7	0.211	4.4	2810	0740	
	112												
	117												
	129												
##	117	750	835	875	333	1490	2620	87.9	0.155	3.3	2710	0636	
	130												
	136												
	149												
##	144	915	1010	1060	402	1503	2860	89.5	0.118	2.4	2810	0540	
	160												
	168												
	183												
##	164	1090	1200	1260	450	1437	2610	91.0	0.0812	1.6	2990	0444	
	181												
	190												
	207												
##	192	1310	1450	1520	523	1400	3310	91.8	0.0558	1.1	3120	0368	
	213												
	222												
	242												
##	220	1500	1650	1730	596	1401	3370	92.3	0.0412	0.85	3160	0324	
	242												
	253												
	276												
##	244	1710	1920	2010	656	1339	3500	93.0	0.0321	0.62	3410	0276	
	269												
	281												
	305												
##	278	2040	2250	2350	746	1301	3600	93.1	0.0178	0.44	3410	0232	
	297												
	297												

\*\* Through field control with constant output. Please specify.

Data subject to change without prior notice.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2631
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	41.4	240	270	285	139	1647	840	74.2	0.694	21.3	2920	1480	
	46.9												140
	49.6	320	340	375	139	1662	990	77.3	0.695	21.3	2920	1480	
	55.1				140	1644	1070	78.9	0.697	21.3	2920	1480	
##	49.0	285	325	340	158	1642	990	77.4	0.528	15.7	2840	1272	
	55.2												158
	58.2	375	375	375	158	1635	1190	80.1	0.529	15.7	2840	1272	
	64.4				158	1640	1250	81.5	0.531	15.7	2840	1272	
##	62.1	355	400	420	192	1671	1240	80.9	0.362	11.3	2970	1080	
	69.6												192
	73.4	465	465	465	192	1669	1200	83.1	0.363	11.3	2970	1080	
	80.9				192	1661	1160	84.3	0.363	11.3	2970	1080	
##	79.4	455	510	535	237	1667	1060	83.9	0.240	7.7	3010	0888	
	88.6												236
	93.2	590	590	590	236	1664	1060	85.8	0.241	7.7	3010	0888	
	102				235	1651	1040	86.8	0.241	7.7	3010	0888	
##	95.7	555	620	650	279	1647	1940	85.7	0.176	5.3	2920	0740	
	106												277
	112	715	715	715	279	1646	2150	87.2	0.177	5.3	2920	0740	
	122				277	1630	2150	88.2	0.176	5.3	2920	0740	
##	110	645	715	750	315	1629	2250	87.3	0.134	3.9	3090	0636	
	122												314
	128	825	825	825	314	1630	2620	88.7	0.134	3.9	3090	0636	
	141				316	1632	2750	89.3	0.135	3.9	3090	0636	
##	136	800	885	930	382	1624	2580	89.1	0.0917	2.8	2970	0540	
	151												382
	159	1020	1020	1020	384	1633	2580	90.1	0.0927	2.8	2970	0540	
	173				382	1620	2530	90.7	0.0928	2.8	2970	0540	
#	155	940	1040	1090	427	1575	2350	90.8	0.0630	1.9	3420	0444	
	172												428
	180	1190	1190	1190	427	1577	2350	91.6	0.0636	1.9	3420	0444	
	196				426	1573	2350	92.0	0.0638	1.9	3420	0444	
#	182	1140	1260	1320	496	1525	2980	91.7	0.0465	1.3	3380	0368	
	202												498
	211	1440	1440	1440	497	1527	2980	92.4	0.0469	1.3	3380	0368	
	230				496	1525	2980	92.7	0.0472	1.3	3380	0368	
#	208	1300	1430	1500	564	1528	3060	92.3	0.0361	1.0	3380	0324	
	230												564
	241	1640	1640	1640	564	1534	3060	92.8	0.0365	1.0	3380	0324	
	263				565	1531	3060	93.1	0.0368	1.0	3380	0324	
#	232	1510	1670	1750	623	1467	3160	93.1	0.0260	0.74	3530	0276	
	256												623
	268	1910	1910	1910	623	1463	3160	93.5	0.0263	0.74	3530	0276	
	292				623	1460	3160	93.7	0.0266	0.74	3530	0276	
#	265	1770	1950	2050	710	1430	3600	93.3	0.0199	0.52	3730	0232	
	293												712
	306	2230	2230	2230	710	1426	3600	93.7	0.0202	0.52	3730	0232	
	332				708	1422	3600	93.8	0.0204	0.52	3730	0232	

\*\* Through field control with constant output. Please specify.

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	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2711
	400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	67.9	315	355	375	221	2059	1100	76.9	0.389	11.5	3520	1272
	76.6				221	2061	1110	78.7	0.391	11.5	3520	1272
	80.9	415	415	221	2060	1110	79.6	0.391	11.5	3520	1272	
	89.4			221	2057	1110	81.0	0.392	11.5	3520	1272	
##	86.0	395	445	470	267	2079	1060	80.5	0.266	8.3	3660	1080
	96.5				267	2071	1060	82.1	0.267	8.3	3660	1080
	101	515	515	264	2052	1060	83.0	0.265	8.3	3660	1080	
	112			267	2077	1060	84.0	0.268	8.3	3660	1080	
##	97.4	445	500	525	297	2090	1020	82.0	0.219	6.9	3710	0984
	109				297	2082	1020	83.4	0.220	6.9	3710	0984
	114	580	580	294	2074	1020	84.3	0.218	6.9	3710	0984	
	126			296	2075	1020	85.2	0.220	6.9	3710	0984	
##	111	510	565	595	332	2079	970	83.5	0.176	5.6	3760	0888
	123				329	2079	970	85.0	0.175	5.6	3760	0888
	130	331	2087	970	85.5	0.177	5.6	3760	0888			
##	117	550	615	645	348	2032	1870	84.1	0.161	4.8	3610	0820
	131				349	2034	1870	85.3	0.162	4.8	3610	0820
	137	710	710	347	2028	1870	85.9	0.161	4.8	3610	0820	
	151			348	2031	1870	86.8	0.163	4.8	3610	0820	
##	153	725	810	850	440	2015	2240	87.0	0.0996	2.9	3520	0636
	170				439	2004	2240	88.0	0.100	2.9	3520	0636
	179	930	930	441	2011	2240	88.3	0.101	2.9	3520	0636	
	196			440	2013	2240	89.1	0.101	2.9	3520	0636	
##	173	850	940	985	484	1944	2340	89.4	0.0689	2.1	4150	0540
	192				484	1951	2340	90.1	0.0694	2.1	4150	0540
	201	1080	1080	483	1949	2340	90.4	0.0696	2.1	4150	0540	
	220			484	1945	2340	90.9	0.0701	2.1	4150	0540	
##	193	945	1050	1100	536	1950	2270	90.1	0.0570	1.7	4210	0492
	214				536	1946	2270	90.7	0.0575	1.7	4210	0492
	224	1200	1200	535	1945	2270	91.0	0.0576	1.7	4210	0492	
	245			536	1950	2270	91.4	0.0581	1.7	4210	0492	
##	217	1060	1170	1230	598	1955	2170	90.7	0.0461	1.4	4210	0444
	240				597	1959	2170	91.3	0.0465	1.4	4210	0444
	252	1350	1350	599	1957	2170	91.5	0.0467	1.4	4210	0444	
	275			598	1945	2170	92.0	0.0471	1.4	4210	0444	
##	233	1240	1370	1440	635	1794	2690	91.7	0.0350	0.96	4480	0368
	258				637	1798	2690	92.1	0.0354	0.96	4480	0368
	270	1570	1570	636	1791	2690	92.3	0.0355	0.96	4480	0368	
	295			637	1794	2690	92.6	0.0359	0.96	4480	0368	
##	266	1420	1570	1640	722	1789	2720	92.1	0.0278	0.74	4540	0324
	294				723	1788	2720	92.5	0.0281	0.74	4540	0324
	308	1790	1790	723	1794	2720	92.6	0.0283	0.74	4540	0324	
	325			699	1734	2810	93.0	0.0280	0.74	4540	0324	
##	324	1720	1900	1980	872	1799	2930	92.9	0.0193	0.54	4410	0276
	345				840	1734	3040	93.3	0.0191	0.54	4410	0276
	350	2150	2150	814	1688	3130	93.5	0.0189	0.54	4410	0276	
	354			754	1572	3200	93.9	0.0184	0.54	4410	0276	
##	339	2030	2220	2220	908	1595	3200	93.4	0.0142	0.38	4290	0232
	339				823	1458	3200	93.6	0.0138	0.38	4290	0232
##	350	2200			934	1519	3200	93.7	0.0115	0.33	4290	0216

\*\* Through field control with constant output. Please specify.

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	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2721
	400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	64.4	260	295	310	212	2365	910	75.9	0.425	14.3	3860	1272
	72.8				213	2357	990	77.8	0.426	14.3	3860	1272
	76.9	345	212		2369	990	78.7	0.426	14.3	3860	1272	
	85.2		212		2358	990	80.2	0.428	14.3	3860	1272	
##	82.0	325	365	385	257	2410	930	79.6	0.290	10.3	4040	1080
	91.9				257	2405	930	81.3	0.291	10.3	4040	1080
	96.9	425	257		2404	930	82.1	0.291	10.3	4040	1080	
	107		257		2404	930	83.3	0.292	10.3	4040	1080	
##	92.7	365	410	430	285	2425	900	81.3	0.238	8.6	4100	0984
	103				282	2399	900	83.1	0.237	8.6	4100	0984
	109	475	284		2421	900	83.6	0.238	8.6	4100	0984	
	120		283		2413	900	84.7	0.239	8.6	4100	0984	
##	105	420	470	495	316	2388	870	83.2	0.190	7.0	3920	0888
	118				318	2398	870	84.3	0.192	7.0	3920	0888
	124	545	317		2392	870	85.0	0.192	7.0	3920	0888	
	137		319		2401	860	85.8	0.194	7.0	3920	0888	
##	112	445	500	525	336	2404	1550	83.4	0.176	5.9	3970	0820
	125				335	2388	1650	84.7	0.176	5.9	3970	0820
	131	580	333		2383	1650	85.4	0.176	5.9	3970	0820	
	144		333		2371	1650	86.4	0.176	5.9	3970	0820	
##	146	590	660	690	422	2363	2000	86.6	0.108	3.6	3980	0636
	163				423	2359	2000	87.5	0.109	3.6	3980	0636
	171	760	423		2367	2000	88.0	0.109	3.6	3980	0636	
	188		424		2362	2000	88.7	0.110	3.6	3980	0636	
##	181	730	810	850	512	2368	1880	88.4	0.0744	2.6	4030	0540
	201				512	2370	1880	89.2	0.0748	2.6	4030	0540
	211	930	512		2371	1880	89.6	0.0751	2.6	4030	0540	
	231		512		2372	1880	90.1	0.0756	2.6	4030	0540	
##	185	770	855	895	516	2294	2000	89.7	0.0623	2.1	4600	0492
	205				516	2290	2000	90.4	0.0627	2.1	4600	0492
	215	980	516		2294	2000	90.6	0.0630	2.1	4600	0492	
	235		516		2290	2000	91.1	0.0634	2.1	4600	0492	
##	208	870	965	1010	575	2283	1910	90.4	0.0504	1.7	4410	0444
	231				577	2286	1910	91.0	0.0508	1.7	4410	0444
	242	1110	576		2288	1910	91.3	0.0510	1.7	4410	0444	
	264		576		2271	1910	91.7	0.0513	1.7	4410	0444	
##	224	1010	1120	1180	612	2118	2380	91.4	0.0383	1.2	4810	0368
	248				613	2115	2380	91.9	0.0387	1.2	4810	0368
	260	1280	614		2104	2380	92.1	0.0389	1.2	4810	0368	
	283		612		2111	2380	92.4	0.0392	1.2	4810	0368	
##	256	1160	1280	1340	697	2108	2400	91.9	0.0304	0.93	4810	0324
	283				697	2111	2400	92.3	0.0308	0.93	4810	0324
	296	1460	696		2110	2400	92.4	0.0309	0.93	4810	0324	
	323		697		2113	2400	92.7	0.0313	0.93	4810	0324	
##	311	1390	1540	1610	839	2137	2600	92.7	0.0211	0.67	4950	0276
	344				841	2133	2600	93.0	0.0214	0.67	4950	0276
	355	1750	828		2106	2630	93.2	0.0213	0.67	4950	0276	
	363		776		1981	2810	93.6	0.0208	0.67	4950	0276	
##	346	1650	1810		930	2003	2810	93.1	0.0160	0.48	4870	0232
	351			854	1852	3060	93.5	0.0156	0.48	4870	0232	
##	361	1790	1960		965	1126	2900	93.5	0.0130	0.41	4870	0216
	361			875	1759	3200	93.8	0.0126	0.41	4870	0216	

\*\* Through field control with constant output. Please specify.

Data subject to change without prior notice.

	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2731
	400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	60.4	215	245	285	203	2683	750	74.4	0.475	16.6	4320	1272
	68.4				203	2666	850	76.5	16.6	4320	1272	
	72.4	255	203		2711	880	77.4	16.6	4320	1272		
	80.4				204	2694	870	79.0	16.6	4320	1272	
##	77.3	270	305	360	246	2734	840	78.4	0.324	12.0	4210	1080
	87.0				247	2724	840	80.2	12.0	4210	1080	
	91.7	325	246		2695	840	81.0	12.0	4210	1080		
	100				245	2679	820	82.4	12.0	4210	1080	
##	87.2	310	345	400	272	2686	820	80.2	0.267	9.9	4350	0984
	97.8				272	2707	820	81.8	9.9	4350	0984	
	103	365	271		2695	820	82.5	9.9	4350	0984		
	113				269	2698	800	83.9	9.9	4350	0984	
##	99.7	350	390	455	304	2720	780	81.9	0.215	8.1	4430	0888
	111				302	2718	780	83.6	8.1	4430	0888	
	117	415	302		2692	780	84.2	8.1	4430	0888		
	129				303	2708	750	85.2	8.1	4430	0888	
##	105	380	425	490	317	2639	1330	82.7	0.195	6.9	4200	0820
	118				320	2652	1480	83.9	6.9	4200	0820	
	124	445	319		2661	1490	84.5	6.9	4200	0820		
	136				317	2651	1490	85.7	6.9	4200	0820	
##	138	500	555	640	402	2636	1750	85.9	0.121	4.1	4320	0636
	154				403	2650	1800	86.9	4.1	4320	0636	
	162	585	403		2645	1800	87.3	4.1	4320	0636		
	177				401	2641	1800	88.2	4.1	4320	0636	
##	171	615	685	790	487	2655	1710	87.9	0.0829	3.0	4270	0540
	190				487	2649	1710	88.7	3.0	4270	0540	
	200	720	488		2653	1710	89.1	3.0	4270	0540		
	219				488	2647	1710	89.7	3.0	4270	0540	
##	193	690	765	880	545	2671	1640	88.6	0.0684	2.5	4350	0492
	214				544	2672	1640	89.4	2.5	4350	0492	
	224	805	542		2657	1640	89.8	2.5	4350	0492		
	246				545	2670	1640	90.4	2.5	4350	0492	
##	198	735	815	935	550	2573	1730	90.0	0.0565	2.0	4950	0444
	219				549	2566	1730	90.7	2.0	4950	0444	
	229	855	547		2558	1730	91.0	2.0	4950	0444		
	251				549	2564	1730	91.4	2.0	4950	0444	
##	235	900	995	1140	646	2494	1950	90.9	0.0411	1.4	4780	0368
	260				646	2495	1950	91.4	1.4	4780	0368	
	272	1040	645		2498	1950	91.7	1.4	4780	0368		
	297				645	2488	1950	92.1	1.4	4780	0368	
##	243	980	1080	1240	663	2638	2180	91.6	0.0340	1.1	5430	0324
	269				664	2379	2180	92.0	1.1	5430	0324	
	282	1140	665		2362	2180	92.2	1.1	5430	0324		
	307				664	2364	2180	92.5	1.1	5430	0324	
##	296	1190	1320	1500	800	2375	2360	92.5	0.0235	0.78	5100	0276
	327				801	2366	2360	92.8	0.78	5100	0276	
	343	1380	802		2374	2360	93.0	0.78	5100	0276		
	373				800	2375	2360	93.2	0.78	5100	0276	
#	341	1400	1540	1750	919	2326	2460	92.8	0.0182	0.55	5420	0232
	373				911	2313	2480	93.1	0.55	5420	0232	
	378	1610	881		2242	2560	93.3	0.55	5420	0232		
	382				816	2085	2770	93.6	0.55	5420	0232	
#	377	1540	1690	1920	1012	2338	2390	93.1	0.0152	0.48	5010	0216
	394				957	2226	2530	93.5	0.48	5010	0216	
	397	1770	921		2142	2630	93.7	0.48	5010	0216		
	397				845	1975	2860	93.9	0.48	5010	0216	

\*\* Through field control with constant output. Please specify.

Data subject to change without prior notice.

	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2811
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	116	335	375	395	435	357	3307	750	81.3	0.190	8.2	5290	0984
	131					361	3336	750	82.5	0.192	8.2	5290	0984
	138					361	3336	750	83.2	0.193	8.2	5290	0984
	152					360	3337	750	84.4	0.193	8.2	5290	0984
	132	385	430	450	400	398	3274	740	83.0	0.153	6.7	5370	0888
	148					399	3287	740	84.2	0.154	6.7	5370	0888
	156					400	3311	740	84.8	0.155	6.7	5370	0888
	149	445	495	525	575	442	3198	980	84.2	0.125	4.6	5390	0732
	166					441	3203	980	85.5	0.125	4.6	5390	0732
	175					443	3183	980	86.0	0.126	4.6	5390	0732
	192					442	3189	980	86.9	0.126	4.6	5390	0732
##	184	545	605	635	700	533	3224	1860	86.3	0.0881	3.4	5070	0636
	205					534	3236	1860	87.3	0.0886	3.4	5070	0636
	215					533	3233	1860	87.8	0.0886	3.4	5070	0636
	236					533	3220	1860	88.5	0.0891	3.4	5070	0636
	207	640	710	745	815	583	3089	1730	88.8	0.0615	2.5	5700	0540
	229					581	3080	1730	89.7	0.0617	2.5	5700	0540
	241					583	3089	1730	89.9	0.0620	2.5	5700	0540
	263					581	3082	1730	90.5	0.0622	2.5	5700	0540
##	232	715	790	830	910	647	3099	1680	89.7	0.0502	2.1	5780	0492
	257					647	3107	1680	90.4	0.0505	2.1	5780	0492
	269					645	3095	1680	90.7	0.0505	2.1	5780	0492
	294					645	3085	1680	91.2	0.0508	2.1	5780	0492
	263	810	895	940	1030	727	3101	1620	90.4	0.0402	1.7	5950	0444
	291					727	3105	1620	91.0	0.0404	1.7	5950	0444
	305					727	3099	1620	91.3	0.0406	1.7	5950	0444
	334					729	3097	1620	91.7	0.0409	1.7	5950	0444
##	290	935	1040	1090	1180	799	2962	2130	90.7	0.0336	1.2	5730	0372
	320					797	2938	2130	91.3	0.0338	1.2	5730	0372
	335					796	2935	2130	91.5	0.0340	1.2	5730	0372
	353					766	2857	2220	92.2	0.0335	1.2	5730	0372
	321	1080	1190	1250	1360	873	2838	2250	91.9	0.0244	0.89	6310	0324
	355					874	2849	2250	92.3	0.0247	0.89	6310	0324
	372					875	2842	2250	92.4	0.0249	0.89	6310	0324
	388					835	2725	2340	92.9	0.0245	0.89	6310	0324
##	393	1310	1440	1510	1640	1061	2865	2140	92.6	0.0171	0.65	5890	0276
	409					997	2712	2280	93.2	0.0166	0.65	5890	0276
	415					965	2625	2350	93.5	0.0165	0.65	5890	0276
	421					898	2452	2530	93.8	0.0161	0.65	5890	0276

\*\* Through field control with constant output. Please specify.



	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2821																
		400	440	460	500					Resistance (Ohm)	Inductance (mH)																		
##	110	285	320	335	338	3686	680	81.3	0.201	9.9	5760	0984																	
	124												370	341	3701	680	82.6	0.203	9.9	5760	0984								
	130																					339	3706	680	83.4	0.202	9.9	5760	0984
	144																												
125	325	360	380	376	3673	670	83.0	0.162	8.0	5750	0888																		
140												420	377	3714	670	84.3	0.163	8.0	5750	0888									
148																					380	3719	670	84.8	0.164	8.0	5750	0888	
163																													380
141	375	420	445	418	3591	880	84.3	0.133	5.5	5510	0732																		
157												485	417	3570	880	85.6	0.133	5.5	5510	0732									
166																					420	420	3562	880	86.0	0.134	5.5	5510	0732
182																													
173	455	510	535	500	3631	1590	86.5	0.0928	4.1	5370	0636																		
193												585	501	3614	1710	87.5	0.0934	4.1	5370	0636									
203																					502	3624	1710	87.9	0.0937	4.1	5370	0636	
223																													503
215	560	625	655	609	3667	1420	88.3	0.0640	3.0	5630	0540																		
239												715	609	3652	1420	89.1	0.0643	3.0	5630	0540									
251																					610	3660	1420	89.5	0.0645	3.0	5630	0540	
275																													610
243	635	705	740	681	3655	1360	89.2	0.0518	2.5	5730	0492																		
270												810	683	3657	1360	89.9	0.0522	2.5	5730	0492									
283																					682	3652	1360	90.2	0.0523	2.5	5730	0492	
310																													683
249	675	750	785	688	3523	1630	90.5	0.0428	2.0	6020	0444																		
276												860	689	3514	1630	91.1	0.0430	2.0	6020	0444									
290																					690	3528	1630	91.4	0.0432	2.0	6020	0444	
316																													688
274	785	870	910	753	3333	1950	90.9	0.0356	1.4	5930	0372																		
304												995	756	3337	1950	91.4	0.0360	1.4	5930	0372									
318																					754	3337	1950	91.7	0.0361	1.4	5930	0372	
347																													754
331	925	1020	1070	901	3417	1880	91.9	0.0253	1.1	6200	0324																		
365												1170	899	3417	1880	92.3	0.0255	1.1	6200	0324									
383																					900	3418	1880	92.5	0.0257	1.1	6200	0324	
417																													898
371	1080	1190	1250	1000	3281	1960	92.8	0.0182	0.78	6870	0276																		
409												1360	998	3282	1960	93.1	0.0184	0.78	6870	0276									
428																					998	3270	1960	93.2	0.0185	0.78	6870	0276	
460																													984
390	1180	1310	1370	1051	3156	2050	92.8	0.0166	0.63	6530	0248																		
430												1480	1050	3135	2050	93.1	0.0168	0.63	6530	0248									
439																					1023	3060	2110	93.2	0.0167	0.63	6530	0248	
441																													942
433	1360	1490		1162	3041	2120	93.1	0.0130	0.48	6720	0216																		
436															1059	2794	2330	93.6	0.0125	0.48	6720	0216							

\*\* Through field control with constant output. Please specify.

Data subject to change without prior notice.

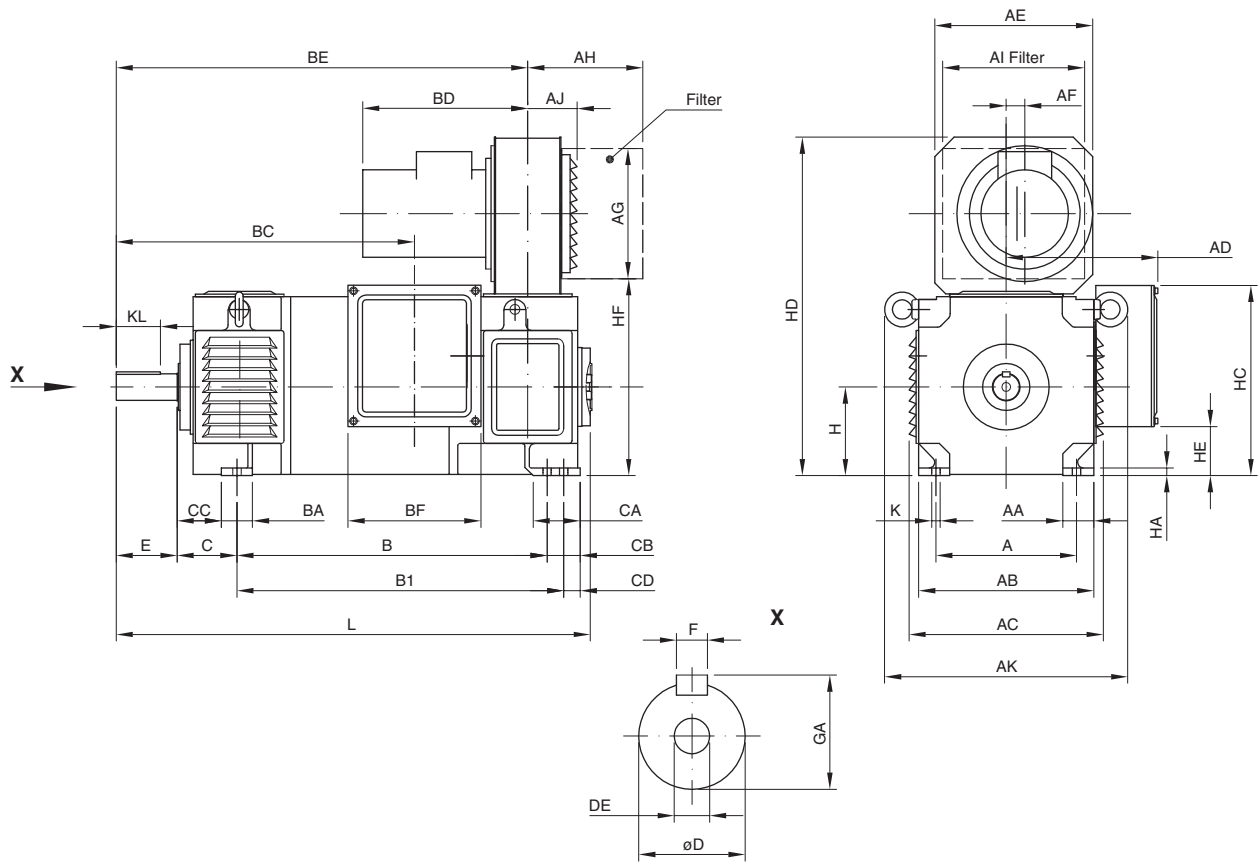
	Cont. output (kW)	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2831
		400	440	460	500					Resistance (Ohm)	Inductance (mH)		
##	103	235	265	280	326	4186	600	79.1	0.238	11.9	5690	0984	
	116												
	122												
	135												
##	117	270	300	315	360	4138	580	81.2	0.190	9.7	5790	0888	
	132												
	139												
	153												
##	133	310	350	365	403	4097	780	82.6	0.155	6.6	6070	0732	
	149												
	156												
	172												
##	163	380	425	445	479	4096	1330	85.0	0.110	5.0	5870	0636	
	182												
	191												
	210												
##	204	470	525	550	585	4145	1250	87.2	0.0749	3.6	5490	0540	
	227												
	239												
	261												
##	230	530	585	615	652	4144	1350	88.2	0.0609	3.0	5690	0492	
	256												
	269												
	294												
##	237	565	625	655	661	4006	1290	89.6	0.0500	2.4	6610	0444	
	262												
	275												
	301												
##	261	650	725	760	723	3835	1710	90.2	0.0415	1.7	6570	0372	
	290												
	304												
	332												
##	313	770	855	895	857	3882	1660	91.3	0.0295	1.3	6700	0324	
	347												
	363												
	396												
##	353	905	1000	1050	955	3725	1730	92.4	0.0211	0.94	6810	0276	
	390												
	408												
	445												
##	372	990	1090	1140	1007	3588	1800	92.4	0.0192	0.76	7150	0248	
	410												
	429												
	444												
#	423	1140	1260	1320	1140	3544	1820	92.7	0.0152	0.57	7010	0216	
	440												
	441												
	441												

\*\* Through field control with constant output. Please specify.

Data subject to change without prior notice.

	Base speed (min <sup>-1</sup> ) at armature voltage (V)				Rated armature current (A)	Torque (Nm)	Max. electrical speed** (min <sup>-1</sup> )	Efficiency (%)	Armature circuit		Field loss (W)	Code number FR 2841
	400	440	460	500					Resistance (Ohm)	Inductance (mH)		
#	404	860			1093	4486	1355	92.4	0.021	1.07	6800	0276
	446		950		1092	4483	1380	92.9	0.021	1.07	6800	0276
	467			995	1091	4482	1390	93.0	0.021	1.07	6800	0276
	493			1085	1054	4339	1400	93.5	0.021	1.07	6800	0276
	449	1025			1208	4183	1550	92.9	0.016	0.65	7480	0216
	482		1130		1174	4073	1560	93.3	0.016	0.65	7480	0216
	488			1180	1134	3949	1620	93.5	0.016	0.65	7480	0216
	493			1280	1050	3678	1730	93.9	0.016	0.65	7480	0216

\*\* Through field control with constant output. Please specify.  
 Other possibilities on request.

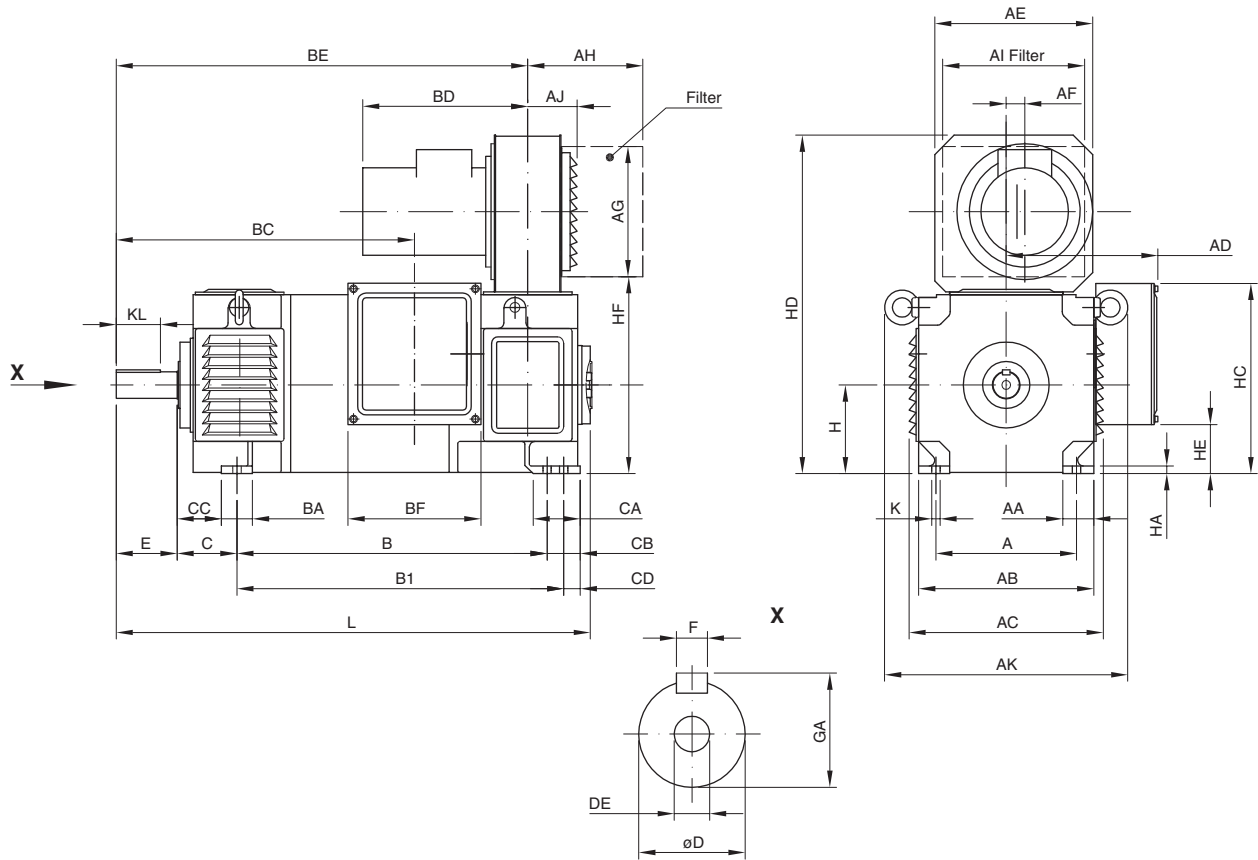


Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	B	BA	BC	BD	BE	BF	B1	CD	C	CA	CB
LAK 2112MA	190	45	220	256	203	220	17	195	175	195	77	326	373	50	336	235	514	190	403	11	70	71	41
LAK 2112LA													428		391		569		458				
LAK 4112A													373		336		514		403				
LAK 4112B													428		391		569		458				
LAK 2132M	216	47.5	260	295	223	220	17	195	175	195	77	366	482	50	419	235	590	190	89	60	25		
LAK 4132A						220	17	195	175	195	77		437		374	235	545						
LAK 4132B						220	17	195	175	195	77		482		419	235	590						
LAK 4132C						220	17	195	175	195	77		532		469	235	640						
LAK 4132D						285	33.5	235	208	235	89		642		609	298	780						

Type	CC	D	DE	E	F	GA	H	HA	HC	HD	HE	HF	K	KL	L	L+REO444R1	L+TDP0.2LT	Weight (kg)	
LAK 2112MA	45	38	M10	80	10	41	112	10	241	451	66	250	12	57	594.5	805.5	811.5	97	
LAK 2112LA															649.5	860.5	866.5	103	
LAK 4112A															594.5	805.5	811.5	110	
LAK 4112B															649.5	860.5	866.5	117	
LAK 2132M	64	38	M10	80	10	41	132	12	261	491	86	290	12	57	695.5	906.5	912.5	139	
LAK 4132A										491				290	57	650.5	861.5	867.5	122
LAK 4132B										491				290	57	695.5	906.5	912.5	152
LAK 4132C										491				290	57	745.5	956.5	962.5	177
LAK 4132D										569				314	80	885	1096	1102	236

Dimensions are not binding.

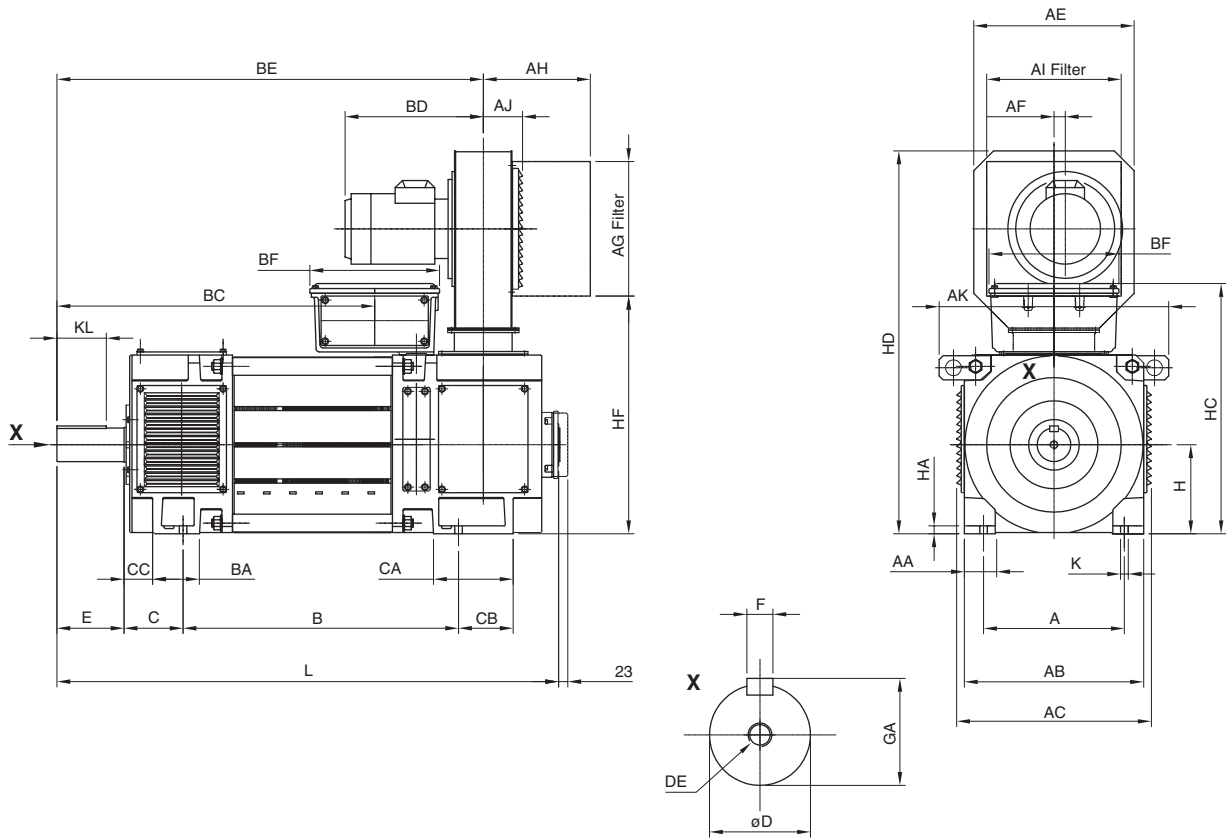


Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	B	BA	BC	BD	BE	BF	B1	CD	C	
LAK 4160A/AA	254	56	316	351	274	285	33.5	235	208	235	89	439	475	56	426	298	631	240			108	
LAK 4160B/BB						285	33.5	235	208	235	89		522		473	298	678					
LAK 4160C/CC						285	33.5	235	208	235	89		587		538	298	743					
LAK 4160D						315	21.5	300	209	300	80		712		663.5	299	868.5					
LAK 4180AA	279	66	356	391	297	355	25.5	340	265	340	95	479	561	66	499	305	718	240			121	
LAK 4180BA		66				297	355		25.5		265		95	612	66	535	305					754
LAK 4180CA		66				297	355		25.5		265		95	677	66	616	305					835
LAK 4180DA		66				297	355		25.5		265		95	707	66	681	305					900
LAK 4180EA		66				297	405		28.5		270		105	720	66	741	349					960
LAK 4180FA		61				322	405		28.5		270		105	795	85	821	349					1071

Type	CA	CB	CC	D	DE	E	F	GA	H	HA	HC	HD	HE	HF	K	KL	L	L+REO 444R1	L+TDP 0.2LT	Weight (kg)
LAK 4160A/AA	65	28	80	48	M16	110	14	51.5	160	14	343.5	611	88.5	356	15	80	744	955	961	205/215
LAK 4160B/BB												611		356			791	1002	1008	245/255
LAK 4160C/CC												611		356			856	1067	1073	290/300
LAK 4160D												641		338			981	1192	1198	400
LAK 4180AA	195	50	91	55	M16	110	16	59	180	16	364	745	109	402	15	80	848.5	1059.5	1065.5	310
LAK 4180BA	195	35		55	M16	110	16	59		16	364	745	109	402	15	80	884.5	1095.5	1101.5	350
LAK 4180CA	195	21		60	M16	140	18	64		16	364	745	109	402	15	110	965.5	1176.5	1182.5	400
LAK 4180DA	195	56.5		70	M20	140	20	74.5		16	364	745	109	402	15	110	1030.5	1241.5	1247.5	490
LAK 4180EA	195	103.5		70	M20	140	20	74.5		16	364	815	109	448	15	110	1090.5	1301.5	1307.5	540
LAK 4180FA	95	40		70	M20	140	20	74.5		16	372.5	815	117.5	448	19	110	1248	1459	1465	650

Dimensions are not binding.

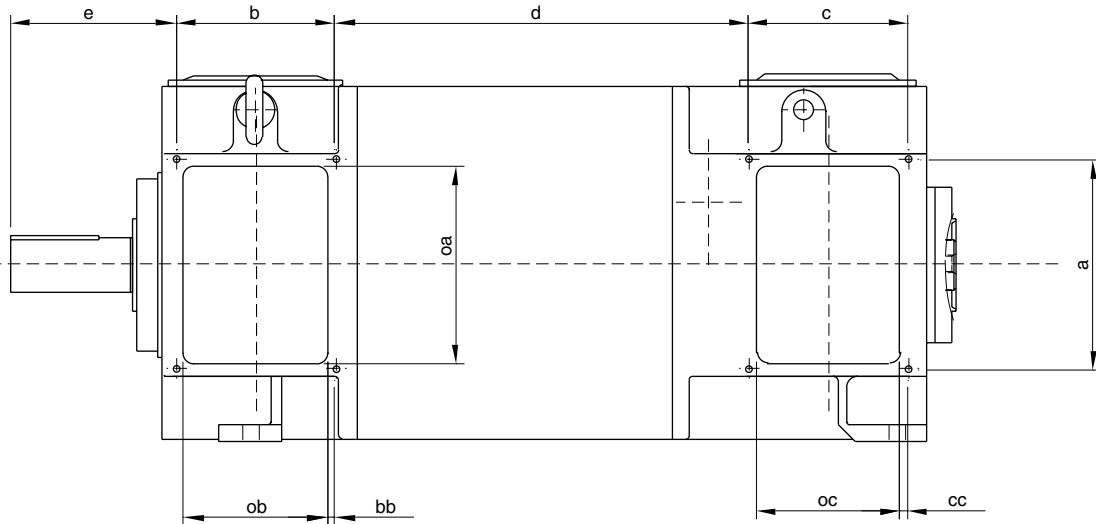


Dimensions in mm

Type	A	AA	AB	AC	AE	AF	AG	AH	AI	AJ	AK	B	BA	BC	BD	BE	BF	C	CA	CB
LAK 4200A	318	70	404	443	355	25.5	340	265.5	340	94	500	542	113	616	305.5	854.5	278	133	178	116
LAK 4200B												610		684		922.5				
LAK 4200C												678		752		990.5				
LAK 4225A	356	78	453	492	405	28.5	340	271	340	99	580	630	118	737	349	1012	328	149	201	138
LAK 4225B												696		803		1078				
LAK 4225C												762		869		1144				
LAK 4250A	406	84	502	541	460	40	450	346	450	135	629	679	138	793	426	1083	328	168	229	160
LAK 4250B												751		865		1155				
LAK 4250C												823		937		1227				
LAK 4280A	457	89	560	599	460	40	450	346	450	135	687	735	155	863	426	1208	423	190	242	166
LAK 4280B												815		943		1288				
LAK 4280C												895		1023		1368				
LAK 4280D												975		1103		1448				

Type	CC	D	DE	E	F	GA	H	HA	HC	HD	HF	K	KL	L	L+REO 444R1	L+TDP0.2LT	Weight (kg)
LAK 4200A	59	75	M20	140	20	79.5	200	20	550	858	515	19	100	1032	1243	1249	530
LAK 4200B														1100	1311	1317	590
LAK 4200C														1168	1379	1385	660
LAK 4225A	72	85	M20	170	22	90	225	20	633	968	601	19	125	1202	1413	1419	760
LAK 4225B														1268	1479	1485	830
LAK 4225C														1334	1545	1551	930
LAK 4250A	75	95	M20	170	25	100	250	23	682	1107	652	24	125	1309	1520	1526	1030
LAK 4250B														1381	1592	1598	1140
LAK 4250C														1453	1664	1670	1310
LAK 4280A	81	100	M20	210	28	106	280	26	790	1206	751	24	160	1468	1679	1685	1290
LAK 4280B														1548	1759	1765	1500
LAK 4280C														1628	1839	1845	1700
LAK 4280D														1708	1919	1925	1900

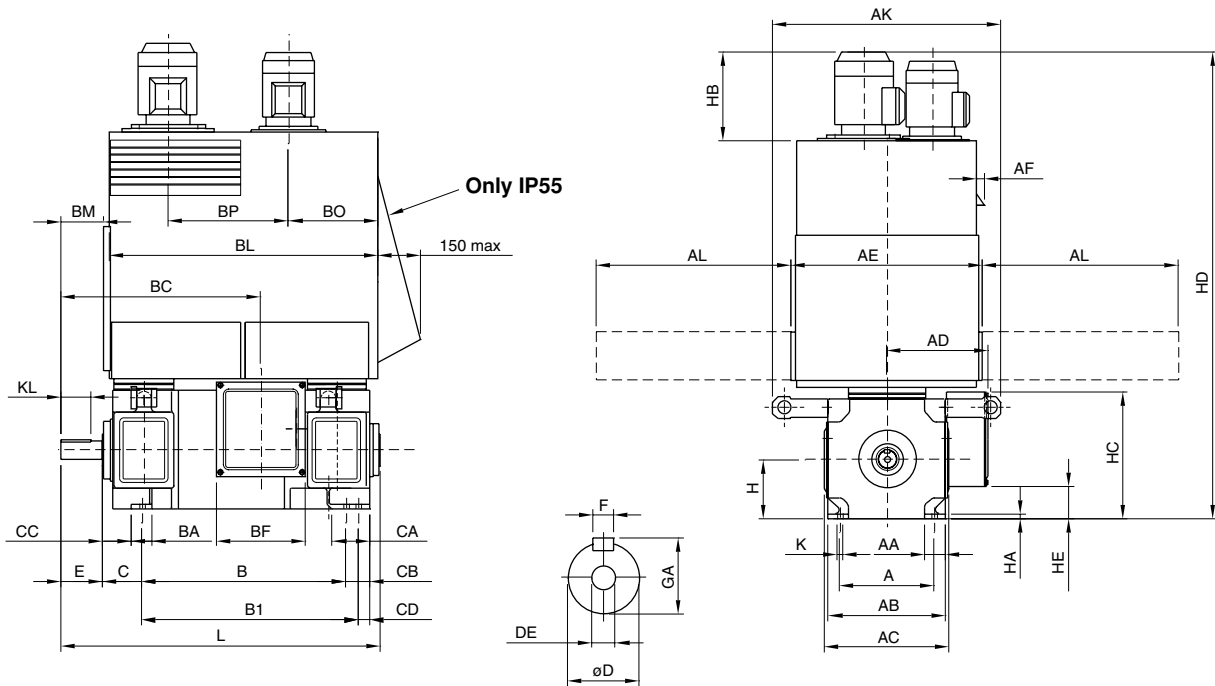
Dimensions are not binding.



Dimensions in mm

Type	a	b	bb	c	cc	d	e	oa	ob	oc	t	Weight (kg)
LAK 2112MA	110	110	5	110	5	245	104	110	100	100	M6	90
LAK 2112LA						300						96
LAK 4112A						245						103
LAK 4112B						300						110
LAK 2132M	150	125	7.5	125	7.5	286	116.5	145	110	110	M6	132
LAK 4132A						241						115
LAK 4132B						286						145
LAK 4132C						336						170
LAK 4132D						446	146.5					220
LAK 4160AA	190	145	7.5	145	7.5	263	150	180	130	130	M6	190/200
LAK 4160B/BB						310						230/240
LAK 4160C/CC						375						275/285
LAK 4160D						500						380
LAK 4180AA	210	160	7.5	160	7.5	320	158.5	200	145	145	M8	290
LAK 4180BA			7.5		7.5	356	158.5	200	145	145		330
LAK 4180CA			7.5		7.5	407	188.5	200	145	145		380
LAK 4180DA			7.5		7.5	472	188.5	200	145	145		470
LAK 4180EA			7.5		7.5	532	188.5	200	145	145		520
LAK 4180FA			10		10	660	171	210	140	155		630
LAK 4200A	220	175	8	175	8	400	192.5	210	159	159	M8	495
LAK 4200B						468						560
LAK 4200C						536						630
LAK 4225A	254	209	17	209	11	485	211	239	170	191	M8	730
LAK 4225B						551						800
LAK 4225C						617						900
LAK 4250A	274	209	14.5	209	9	526	227.5	260	180	191	M8	970
LAK 4250B						598						1070
LAK 4250C						670						1240
LAK 4280A	330	240	15	240	9	585	263	312	200	222	M8	1210
LAK 4280B						665						1420
LAK 4280C						745						1620
LAK 4280D						825						1820

Dimensions are not binding.



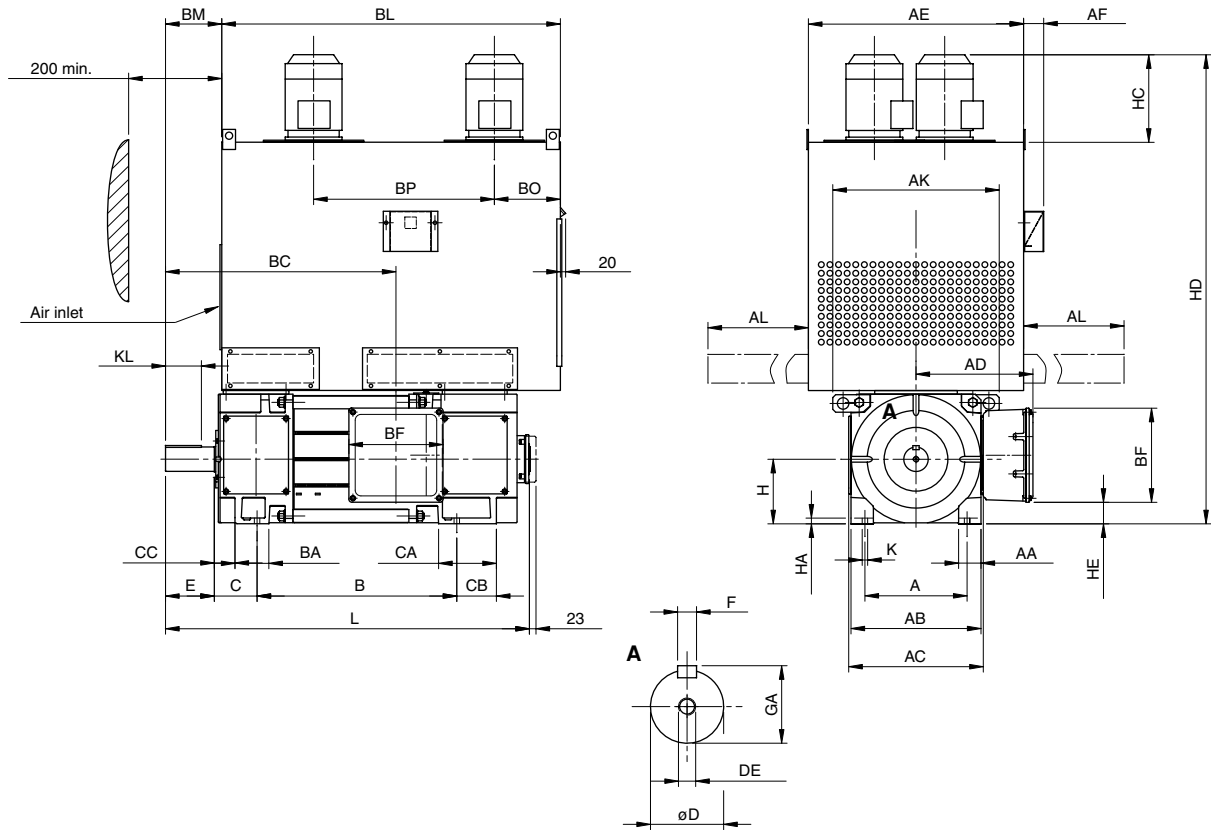
Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AF	AK	AL	B	BA	BC	BF	BL	BM	BP	BO	C	B1	CA	
LAK 2132M	216	47.5	260	279	223	390	20	440	390	482	50	419	190	647	91	290	223	89		60	
LAK 4132A										437		374		647		290					
LAK 4132B										482		419		647		290					
LAK 4132C										532		469		647		290					
LAK 4132D										642		609		772		400					
LAK 4160A/AA	254	56	316	335	274	515	20	616	527.5	475	56	426	240	723	115	325	240	108		65	
LAK 4160B/BB						515			522	473		723		325							
LAK 4160C/CC						515			587	538		723		325							
LAK 4160D						606			712	663		843		320							
LAK 4180AA	279	66	356	375	297	606	25	656	597	561	66	499	240	843	126.5	320	278	121	720	195	
LAK 4180BA		66			297	606			597	612	66	535		843	126.5	320	278			195	
LAK 4180CA		66			297	606			597	677	66	616		843	156.5	320	278			195	
LAK 4180DA		66			297	606			597	707	66	681		843	156.5	320	278			195	
LAK 4180EA		66			297	720			715	720	66	741		1047	164	500	337			795	195
LAK 4180FA		61			322	720			715	795	85	821		1047	131	500	337			95	

Type	CB	CC	CD	D	DE	E	F	GA	H	HA	HB	HC	HD	HE	K	KL	L	Weight (kg)	
LAK 2132M	25	64		38	M10	80	10	41	132	12	215	261	1089	86	12		57	695.5	212
LAK 4132A				38		80	10	41									57	650.5	205
LAK 4132B				38		80	10	41									57	695.5	225
LAK 4132C				38		80	10	41									57	745.5	250
LAK 4132D				42		110	12	45									80	885.5	310
LAK 4160A/AA	28	80		48	M16	110	14	51.5	160	14	240	343.5	1259	88.5	15	80	744	310	
LAK 4160B/BB											240		1259				791	340	
LAK 4160C/CC											240		1259				856	385	
LAK 4160D											240		1334				981	500	
LAK 4180AA	50.5	91		55	M16	110	16	59	180	16	240	364	1356	109	15	80	848.5	525	
LAK 4180BA	35.5			55	M16	110	16	59		16	240	364	1356	109	15	80	884.5	555	
LAK 4180CA	21.5			60	M16	140	18	64		16	240	364	1356	109	15	110	965.5	615	
LAK 4180DA	56.5			43.5	70	M20	140	20		74.5	16	240	364	1356	109	15	110	1030.5	645
LAK 4180EA	103.5			28.5	70	M20	140	20		74.5	16	280	364	1451	109	15	110	1090.5	725
LAK 4180FA	40			70	M20	140	20	74.5		16	280	372.5	1451	117.5	19	110	1248	820	

Dimensions are not binding.



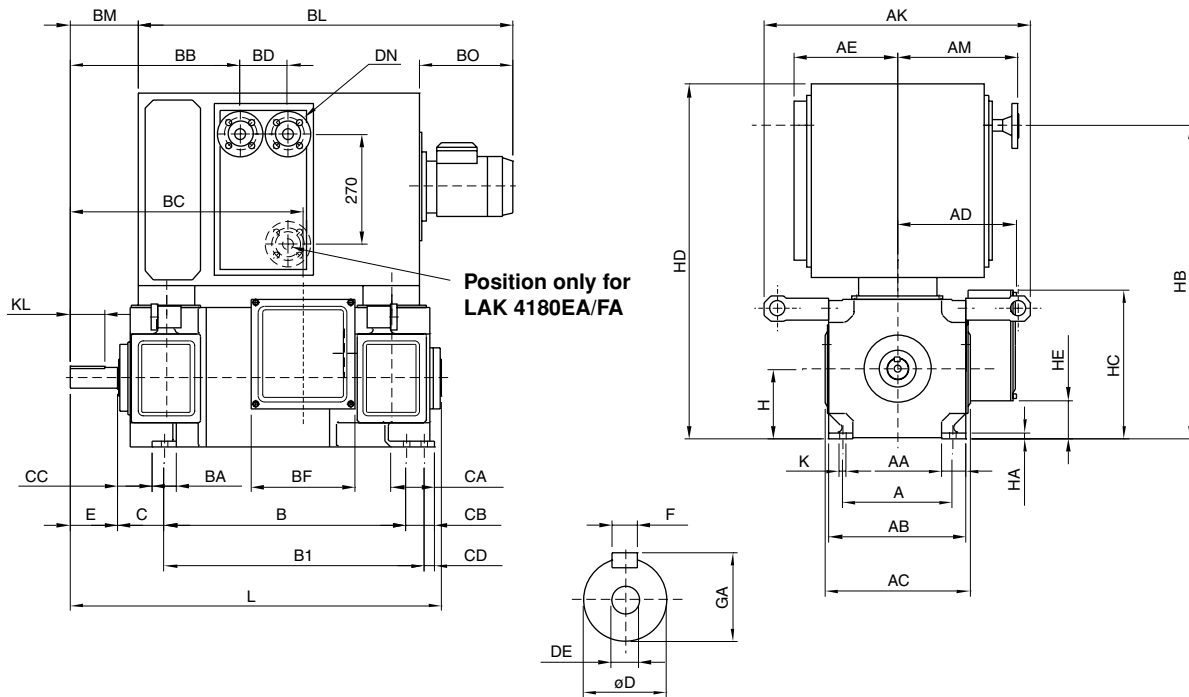


Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AF	AL	AK	B	BA	BC	BF	BL	BM	BO	BP	C	CA	CB
LAK 4200A	318	70	404	420	350	690	70	680	500	542	113	616	278	1030	170	200	500	133	178	116
LAK 4200B										610		684								
LAK 4200C										678		752								
LAK 4225A	356	78	453	469	408	750	70	375	580	630	118	737	328	1180	196	230	630	149	201	138
LAK 4225B										696		803								
LAK 4225C										762		869								
LAK 4250A	406	84	502	518	432	750	70	375	629	679	138	793	328	1180	212	230	630	168	229	160
LAK 4250B										751		865								
LAK 4250C										823		937								
LAK 4280A	457	89	560	576	510	860	70	430	687	735	155	863	423	1500	240	310	720	190	242	166
LAK 4280B										815		943								
LAK 4280C										895		1023								
LAK 4280D										975		1103								

Type	CC	D	DE	E	F	GA	H	HA	HC	HE	HD	K	KL	L	L+REO444R1	L+TDP0.2LT	Weight (kg)
LAK 4200A	59	75	M20	140	20	79.5	200	20	280	77	1455	19	100	1032	1243	1249	700
LAK 4200B														1100	1311	1317	760
LAK 4200C														1168	1379	1385	835
LAK 4225A	72	85	M20	170	22	90	225	20	305	75	1635	19	125	1202	1413	1419	1030
LAK 4225B														1268	1479	1485	1100
LAK 4225C														1334	1545	1551	1200
LAK 4250A	75	95	M20	170	25	100	250	23	305	106	1684	24	125	1309	1520	1526	1270
LAK 4250B														1381	1592	1598	1370
LAK 4250C														1453	1664	1670	1540
LAK 4280A	81	100	M20	210	28	106	280	26	310	93.5	2013	24	160	1468	1679	1685	1610
LAK 4280B														1548	1759	1765	1820
LAK 4280C														1628	1839	1845	2020
LAK 4280D														1708	1919	1925	2220

Dimensions are not binding.

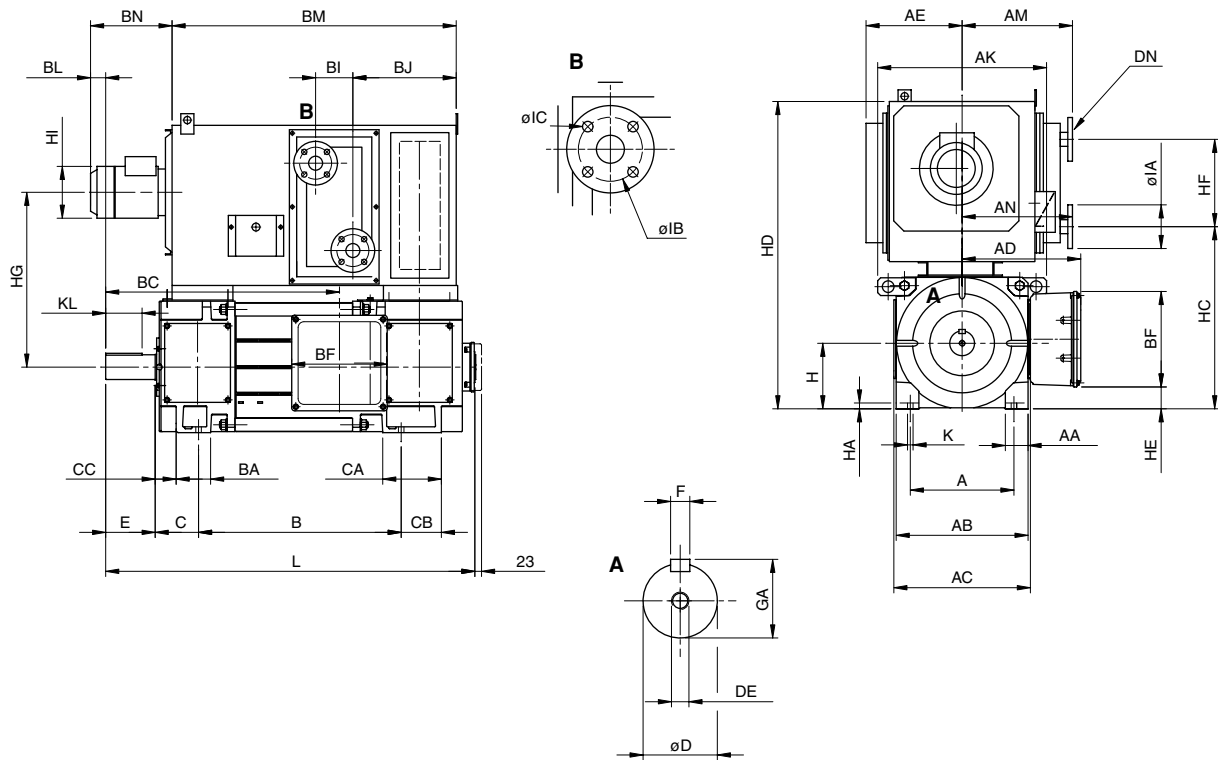


Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AK	AM	B	BA	BB	BC	BD	BF	BL	BM	BO	C	B1	CA	CB
LAK 2132M	216	47.5	260	279	223	195	440	230	482	50	314	419	110	190	791	99	220	89	60	25	
LAK 4132A									437		314	374			741	99					
LAK 4132B									482		314	419			841	99					
LAK 4132C									532		314	469			841	99					
LAK 4132D									642		344	609			951	129					
LAK 4160A/AA	254	56	316	335	274	240	616	278	475	56	393	426	110	240	753	158	215	108	65	28	
LAK 4160B/BB									522			473			800						
LAK 4160C/CC									587			538			865						
LAK 4160D									712			663			990						
LAK 4180AA	279	66	356	375	297	295	656	328	561	66	453.5	499	110	240	860	168.5	240	121	195	50.5	
LAK 4180BA					297	295		328	612	66	453.5	535	110		896	168.5	240		195	35.5	
LAK 4180CA					297	295		328	677	66	483.5	616	110		947	198.5	240		195	21.5	
LAK 4180DA					297	295		328	707	66	483.5	681	110		1012	198.5	240		720	195	56.5
LAK 4180EA					297	292		337	720	66	542.5	741	142		1112	198.5	280		795	195	103.5
LAK 4180FA					322	292		337	795	85	525	821	142		1240	181	280		95	40	

Type	CC	D	DE	DN	E	F	GA	H	HA	HB	HC	HD	HE	K	KL	L	CD	Weight (kg)
LAK 2132M	64	38	M10	20	80	10	41	132	12	599	261	719	86	12	57	695.5		220
LAK 4132A		38			80	10	41								57	650.5		200
LAK 4132B		38			80	10	41								57	695.5		235
LAK 4132C		38			80	10	41								57	745.5		260
LAK 4132D		42			110	12	45								80	885		330
LAK 4160A/AA	80	48	M16	20	110	14	51.5	160	14	723	343.5	819	88.5	15	80	744		310
LAK 4160B/BB															80	791		340
LAK 4160C/CC															80	856		400
LAK 4160D															80	981		500
LAK 4180AA	91	55	M16	20	110	16	59	180	16	761	364	857	109	15	80	848.5		410
LAK 4180BA		55	M16	20	110	16	59		16	761	364	857	109	15	80	884.5		460
LAK 4180CA		60	M16	20	140	18	64		16	761	364	857	109	15	110	965.5		510
LAK 4180DA		70	M20	20	140	20	74.5		16	761	364	857	109	15	110	1030.5	43.5	600
LAK 4180EA		70	M20	25	140	20	74.5		16	769	364	867	109	15	110	1090.5	28.5	660
LAK 4180FA		70	M20	25	140	20	74.5		16	769	372.5	867	117.5	19	110	1248		790

Dimensions are not binding.

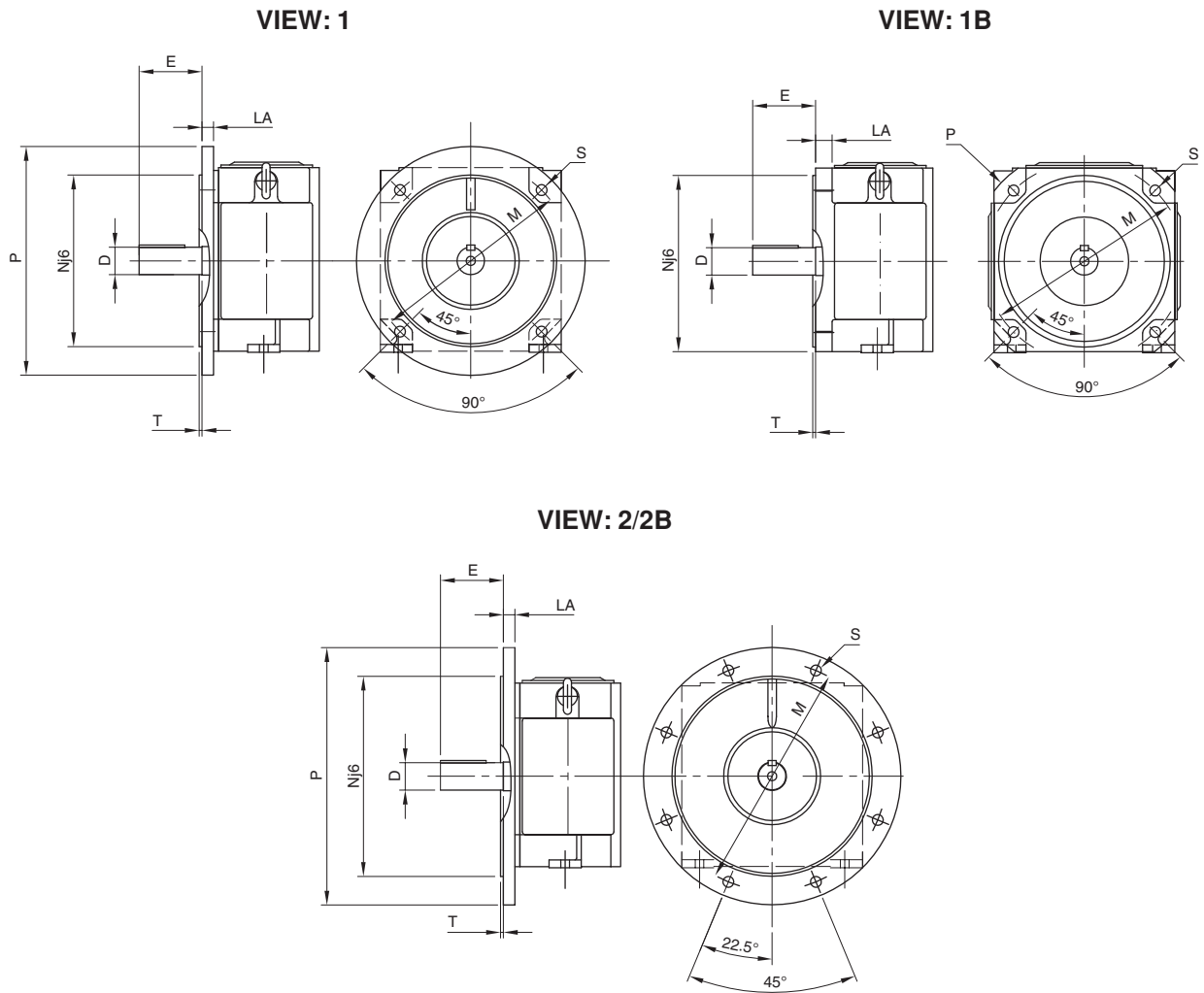


### Dimensions in mm

Type	A	AA	AB	AC	AD	AE	AK	AM/N	B	BA	BC	BF	BI	BJ	BL	BM	BN	C	CA	CB	CC
LAK 4200A	318	70	404	420	350	280	500	329	542	113	616	278	128	283	38	730	240	133	178	116	59
LAK 4200B									610		684					798					
LAK 4200C									678		752					866					
LAK 4225A	356	78	453	469	408	330	580	379	630	118	737	328	128	355	52	910	280	149	201	138	72
LAK 4225B									696		803					976					
LAK 4225C									762		869					1042					
LAK 4250A	406	84	502	518	432	330	629	379	679	138	793	328	128	355	39	959	280	168	229	160	75
LAK 4250B									751		865					1031					
LAK 4250C									823		937					1103					
LAK 4280A	457	89	560	576	510	480	687	529	735	155	863	423	120	500	99	1072	380	190	242	166	81
LAK 4280B									815		943					1152					
LAK 4280C									895		1023					1232					
LAK 4280D									975		1103					1312					

Type	D	DE	DN	E	F	GA	H	HA	HC	HD	HE	HF	HG	HI	IA	IB	IC	K	KL	L	Weight (kg)
LAK 4200A	75	M20	32	140	20	79.5	200	20	610	910	77	150	515	158	140	100	18	19	100	1032	660
LAK 4200B																				1100	720
LAK 4200C																				1168	800
LAK 4225A	85	M20	40	170	22	90	225	20	625	1055	75	300	600	178	150	110	18	19	125	1202	940
LAK 4225B																				1268	1010
LAK 4225C																				1334	1100
LAK 4250A	95	M20	40	170	25	100	250	23	675	1105	106	300	625	178	150	110	18	24	125	1309	1180
LAK 4250B																				1381	1280
LAK 4250C																				1453	1450
LAK 4280A	100	M20	40	210	28	106	280	26	933	1508	93.5	300	841	250	150	110	18	24	160	1468	1540
LAK 4280B																				1548	1750
LAK 4280C																				1628	1950
LAK 4280D																				1708	2140

Dimensions are not binding.



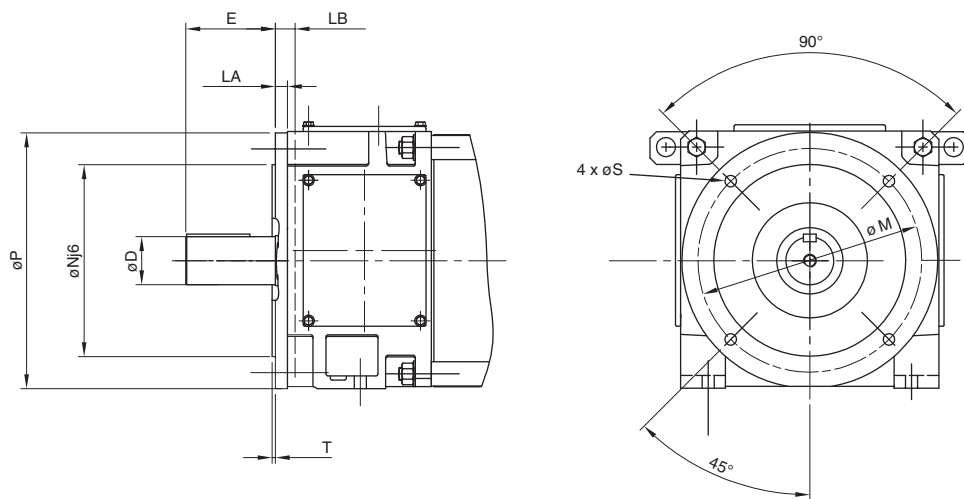
Dimensions in mm

Type	Shaft diameter D	Shaft length E	Flange size	LA	M	Nj6	P	S	T	View
LAK 2112MA/LA	38	80	F215	14	215	180	250	15	4	1B
			F265	14	265	230	300	15	4	1B
LAK 4112A/B	38	80	F215	14	215	180	250	15	4	1B
			F265	14	265	230	300	15	4	1B
LAK 4132A/B/C	38	80	F265	17	265	230	300	15	4	1B
			F300	17	300	250	350	19	5	1B
LAK 4132D	42	110	F265	17	265	230	300	15	4	1B
			F300	17	300	250	350	19	5	1B
LAK 4160A/B/C/D	48	110	F350	20	350	300	400	19	5	1B
LAK 4180AA/BA	55	110	F350	17	350	300	400	19	5	1B
			F400	17	400	350	450	19	5	2B
LAK 4180CA	60	140	F350	17	350	300	400	19	5	1B
			F400	17	400	350	450	19	5	2B
LAK 4180DA/EA	70	140	F350	17	350	300	400	19	5	1B
			F400	17	400	350	450	19	5	2B
LAK 4180FA	70	140	F500	20	500	450	550	19	5	2

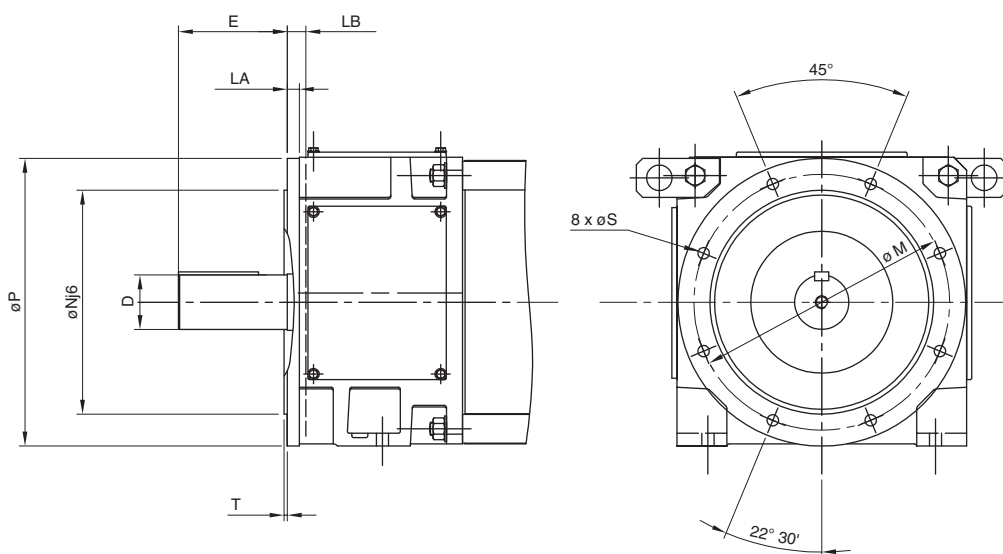
Other dimensions on request.

Dimensions are not binding.

VIEW: 1



VIEW: 2



Dimensions in mm

Type	Shaft diameter D	Shaft length E	Flange size	LA	LB	M	Nj6	P	S	T	View
LAK 4200	75	140	F350	19	30	350	300	400	18	5	1
LAK 4225	85	170	F400	19	32	400	350	450	18	5	2
LAK 4250	95	170	F400	22	36	400	350	450	18	5	2
LAK 4280	100	210	F500	23	42	500	450	550	18	5	2

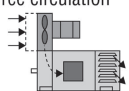
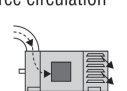

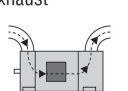
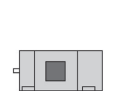
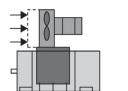
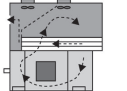
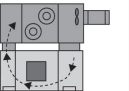
Other dimensions on request.







Dimensions are not binding.

# Ordering

To ..... Fax +33 1 34 70 21 79  
 From ..... Ref. Number .....  
 Cust. name ..... Applic. type: .....  
 ..... Unit(s) DC motors/Generators .....

## Cooling:

IC 06 <input type="checkbox"/> Motor mounted fan and free circulation 	IC 17 <input type="checkbox"/> Ducted air supply and free circulation 	IC 01 <input type="checkbox"/> Self ventilated motor with shaft mounted fan and free circulation 	IC 37 <input type="checkbox"/> Ducted air supply and exhaust 	IC 410 <input type="checkbox"/> Totally enclosed 	IC 416 <input type="checkbox"/> Totally enclosed fan cooled 	IC 666 <input type="checkbox"/> Air/Air cooler 	IC 86 W <input type="checkbox"/> Air/Water cooler 
<b>Enclosure IP 23</b>				<b>Enclosure IP 54/55</b>			

Operating range	Min. operating speed	Base speed	Max. field-weakening speed	Mounting arrangement	As viewed from D-end fill in below					
					right	left	above	below	D-end	N-end
Speed										
Power										
Torque										
Armature voltage										
Armature current										
Field voltage										
Catalogue number: .....				Mounting arrangement						
Position number: .....				Cooler						

## Remarks

STANDARD MODEL	SPECIAL DESIGN
If data not given, following values will be assumed: - Altitude, max 1000 m above sea level - Located indoors - Ambient temperature • 40 •C - Ambient air dust-free, chemically neutral - Air humidity 5 to 20 g/m <sup>3</sup> - IEC Standard - Insulation class H, utilization F - Duty type S1 - Overload per Catalog LAK 4000 - Supplied from fully controlled 3-phase bridge - Enclosure IP 23 - Frame type IM 1001 - Standard colour and finish - Anti-corrosion coating - 1 shaft extension, standard - Deep-groove ball bearings - Normal seal - Balancing class "N" - Rotation: both directions - Separate excitation	Please specify variations from standard <input type="checkbox"/> Outdoors <input type="checkbox"/> not protected <input type="checkbox"/> with cover <input type="checkbox"/> NEMA Standard <input type="checkbox"/> CSA Standard <input type="checkbox"/> Utilization H, B <input type="checkbox"/> Duty type S..... / ..... % ED <input type="checkbox"/> IP 54 <input type="checkbox"/> IP 55 <input type="checkbox"/> IM 1011 (V5) <input type="checkbox"/> IM 1031 (V6) <input type="checkbox"/> IM 1051 (B6) <input type="checkbox"/> IM 1061 (B7) <input type="checkbox"/> IM 2001 (B35) <input type="checkbox"/> IM 2011 (V15) <input type="checkbox"/> IM 2031 (V36) Flange dimension F..... (dim. M) <input type="checkbox"/> Special colour per RAL <input type="checkbox"/> Anti-corrosive protection paint <input type="checkbox"/> Special shaft    D..... L..... <input type="checkbox"/> Second shaft extension dimensions    D..... L..... <input type="checkbox"/> Rollerbearing on drive end <input type="checkbox"/> Shaft seal on drive end <input type="checkbox"/> Balancing class "R" <input type="checkbox"/> Balancing class "S" <input type="checkbox"/> Clockwise <input type="checkbox"/> Anticlockwise    (seen from D.E.) <input type="checkbox"/> Excitation series wound <input type="checkbox"/> Stabilisation winding <input type="checkbox"/> Tropicalisation

ACCESSORIES	Delivery week
<input type="checkbox"/> Mounted fan 380 Vac / 50 Hz <input type="checkbox"/> Filter for fan <input type="checkbox"/> Air pressure switch <input type="checkbox"/> Air / air heat exch. blower 380 V..... / ..... 50 Hz or V..... / ..... Hz <input type="checkbox"/> Air / water heat exchanger <input type="checkbox"/> Without tachometer <input type="checkbox"/> With tachometer, type <input type="checkbox"/> REO 444 N1 <input type="checkbox"/> REO 444 L1 <input type="checkbox"/> REO 444 R1 <input type="checkbox"/> REO 444 R2 <input type="checkbox"/> TDP 0.2 T4 <input type="checkbox"/> + FSL <input type="checkbox"/> REO 588 <input type="checkbox"/> GTR 9.16 (Hollow shaft) <input type="checkbox"/> ..... <input type="checkbox"/> With coupling type <input type="checkbox"/> BOWEX <input type="checkbox"/> ROTEX <input type="checkbox"/> THOMAS <input type="checkbox"/> Mtg. of pulse generator <input type="checkbox"/> Litton <input type="checkbox"/> Leine Linde <input type="checkbox"/> Hubner with pulse number per rotg.: <input type="checkbox"/> 1024 <input type="checkbox"/> 2048 <input type="checkbox"/> ..... <input type="checkbox"/> Mtg. of brake type MAYR size: <input type="checkbox"/> 6 (26Nm) <input type="checkbox"/> 7 (50Nm) <input type="checkbox"/> 8 (100Nm) <input type="checkbox"/> 9 (200Nm) <input type="checkbox"/> 10 (400Nm) <input type="checkbox"/> 11 (800Nm) or type: <input type="checkbox"/> .....Nm Brake DC voltage <input type="checkbox"/> 24 V <input type="checkbox"/> 96 V <input type="checkbox"/> 170 V <input type="checkbox"/> 190 V <input type="checkbox"/> .....V <input type="checkbox"/> Brake terminal box <input type="checkbox"/> Rectifier.....    Vac Brake enclosure IP 55 <input type="checkbox"/> Hand release <input type="checkbox"/> Heating element <input type="checkbox"/> 110 V <input type="checkbox"/> 220 V <input type="checkbox"/> .....V <input type="checkbox"/> Thermistor <input type="checkbox"/> Bimetallic sensor <input type="checkbox"/> PT 100 (Resistor-thermometer) <input type="checkbox"/> Transparent inspection cover <input type="checkbox"/> Earth brush <input type="checkbox"/> Loctite screw blocking <input type="checkbox"/> SPM	<input type="checkbox"/> EX WORKS <input type="checkbox"/> DDU <input type="checkbox"/> FOB <input type="checkbox"/> C I F <input type="checkbox"/> LORRY <input type="checkbox"/> AIR <input type="checkbox"/> SEA Delivery address: ..... ..... ..... Marking: ..... Motor unit price: ..... Accessories prices: ..... ..... Total: ..... - multiplier/discount ..... Net unit price: ..... When <input type="checkbox"/> → with extra price    When <input type="checkbox"/> → without extra price

# T-T Electric

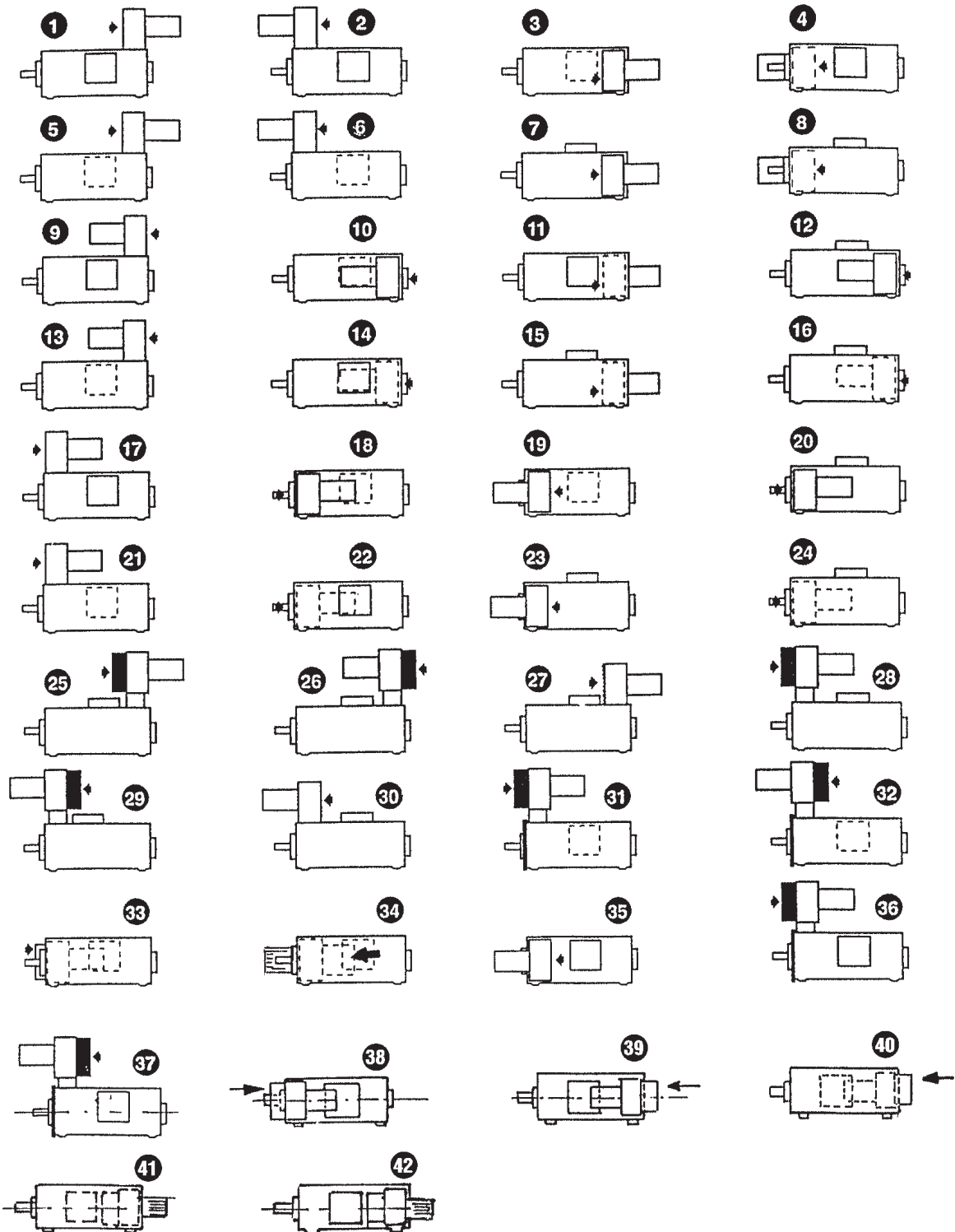
# Ordering

## Fan blower

The fan blower can be mounted on top or on either side, at the drive end or at the non-drive end. The location does not affect the output of the motor (except when specified in the tables). The fan can be delivered with a

slotted cover, a filter or a flange for an air-duct. On request a pressure switch can be installed on the fan blower and the terminal box can be arranged in 42 different mounting combinations.

Pos 25-42: Additional price for blower and terminal box mounted on same side for LAK 4112-4180.



Founded over 100 years ago, T-T Electric is a world-class supplier of top-quality industrial electric motors and drives. Pioneers in the industry, we are an experienced and established manufacturer of a comprehensive and cost-effective range of highly reliable drive products. They are used around the world in the toughest of application environments and in all industrial segments.

Driven by customer demand, T-T Electric is continually researching product excellence and manufacturing

process perfection. The flexible product design ensures easy adaptations to customer requirements. This, combined with unequalled short delivery times, make T-T Electric a reference within industry. Our extensive support services include diagnostics and maintenance on site as well as full overhaul in our own repair facilities.

T-T Electric is committed to a working partnership with our customers. For mutual benefit, we focus on complete and innovative solutions together.



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