

Z Series Medium-Size DC Motors



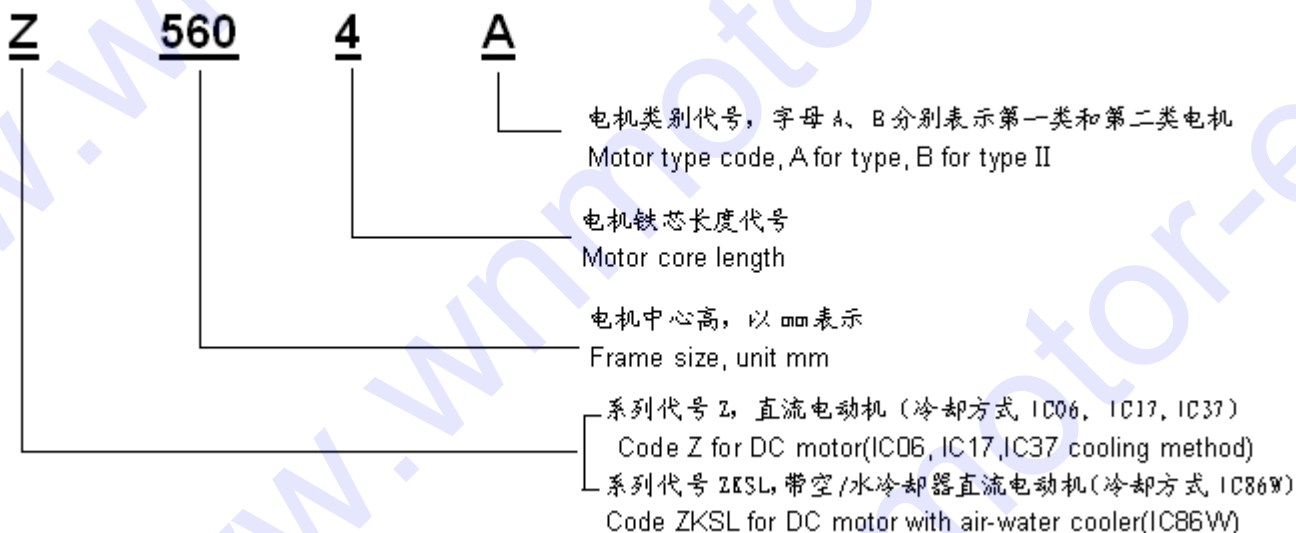
- Frame sizes: 500-710
 - Insulation class: F
 - Degree of protection: IP23, IP44
 - Voltage: 440V, 550V, 660V, 750V
- Rated output: 310-1600kW
Duty cycle: S1
Excitation mode: Separate excitation

Application: Widely used in variety machines for driving, like metal rolling mill, coiler, sugar compressor, cement kiln and extruding machine for rubber and plastic.

Features: This series motors are of polygonal structure, interior space of stator is well utilized. With laminated stator core, the motor can be powered by silicon-controlled rectifier supply and can withstand sharp changing in current(pulsing current). Exact orientation of the magnetic pole, the motors have excellent change-over performance. F insulation class and well-cooled by insulated material and Vacuum Pressure Impregnation.

Circumstance: Altitude not exceeds 1000m. Incoming cooling-air temperature shall be no higher than 40°C; incoming cooling-water temperature shall be no higher than 32°C; the motors adopt external excitation mode, the voltage is 220V, the motors' rating voltage are 440V, 550V, 660V, 750V(which to chose depends upon actual condition); forced excitation is allowed but its voltage shall be no higher than 500V. Exciting current can't be higher than its rated value when the motor is working.

Designation of Types



Structure introduction

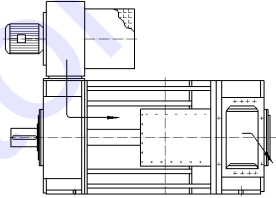
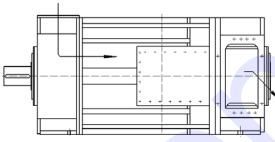
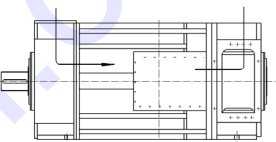
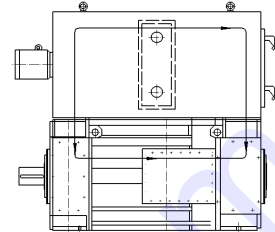
1. Cooling method and protection degree

a): Separately cooling device, GB/T1993 "Cooling Methods for Rotating Electrical Machine" defines 4 cooling methods IC06, IC17, IC37, IC86W, and the standard type is the one whose cooling air entrance is at the driving end (not change-over end)

b): GB/T4942.1 "Classification of Degree of Protection Provided by Enclosure of Rotating Electrical Machines (IP Code)" defines 2 protection class of IP23 and IP44. If clients are interested in other cooling method and protection grade, consult the producer firstly.

c): Cooling method and protection grade information see below table:

Sheet 1

Method Of cooling	IC06 With built-on blower	IC17 Pipeline air inlet Free of outlet wind	IC37 The Pipeline inlet and outlet wind	IC86W With air-to-water Heat exchanger
Picture				
Insulation class	IP23 (prevent drop) Prevent solid particles Diam. above 12mm Prevent drops		IP44 (prevent spatter) Prevent solid particles Diam. above 1mm Prevent spatter	

d): Cooling air input, air pressure, cooling water input, and blower motor power see sheet 2 below:

Sheet 2

Frame	Built-on blower				Air-water cooler		
	Air input, M ³ /h	Air pressure Pa	Power kW	Weight kg	Water velocity M ³ /h	Power kW	Weight kg
H500	10000	1900	7.5	300	19	11	900
H560	16500	2250	15	400	22	18.5	1100
H710	50000	2300	15	600	40	22	1900

※ Blower motors are three phase、380VAC、50HZ.

2. Motor mounting type

GB/T997 "Symbols for Types of Construction and Mounting Arrangement of Rotating Electrical Machinery" defines 2 mounting types of IM1001 (horizontal motor, single cylindrical shaft extension) and IM1002 (horizontal motor with feet, double cylindrical shaft extension). If clients are interested in other installation type, consult the producer.

3. Standard position of the terminal box is at the right side of the motor from the view of DE. If the terminal box needs to be fixed at the left side of the motor, client shall specify in the contract.

4. Rolling bearing, and non-stop refuel device.

5. Available auxiliary devices (must specify in contract)

- a): Temperature sensor can be fixed at stator winding and bearing chamber on each end, and its out-leading cable need to be connected to terminal box.
- b): Speed measuring and protecting device consisting motor-testing devices, centrifugal switch, encoder etc can be fixed on the NDE side.
- c): Heater can be installed

6. Air/water cooler is usually fixed on the upper side of the motor. If the cooler is requested to be mounted at sides of the motor, client need to specify in the order or contract. Besides, clients is responsible for the auxiliary support of the cooler.

7. Cooler can be installed with LFAS, temperature controller and heater.

Motor Performance

1. Technical Data:

- a): Altitude not exceeds 1000m.
- b): Air temperature at inlet of cooling blower shall be no higher than 40℃; inlet water temperature shall be no higher than 32℃.
- c): Correct cooling method and protection grade should be chosen to keep the internal parts clean if the motor need to be installed in harsh environment. Consult the producer for detail information.
- d): Three phase bridge rectifier power supply, non-external flat wave reactor, direct-power generator are available.
- e): Conform to GB755 "Rotating electrical machines-Rating and performance", IEC60034-1 "Rotating electrical machines-Rating and performance" and JB/T9577 "Technical specification for Z series DC motor"

2. Rated voltage 440V、550V、660、750V. Consult the producer if the clients are interested in motor of other voltage.

3. The motor is separate-exciting type whose exciting voltage is 220V. Consult the producer for derived motor of other voltage. Forced exciting whose voltage no more than 500V is allowed, but the exciting current can't be higher than rated value during operation.

4. Short duration overload capacity

Type I (A): DC motor for general industrial purpose

Type II (B): DC motor for metal rolling mill

- a): Type I (A) motor: Short duration (1 min) overload capacity see table 3

Sheet 3

Basic Speed %	Rating Current %	
	Occasionally Use	Frequently Use
100	200	175
200	160	150
≥300	140	125

- b): Type II (B) motor: Short duration (1 min) overload capacity see table 4

Sheet 4

Basic Speed %	Rating Current %	
	Occasionally Use	Frequently Use
100	200 (180*)	175 (160*)
200	200 (180*)	160
≥300	175 (160*)	140

* When the basic speed ≥650r/min, take the value in () as reference.

c): Occasionally-used overload capacity refers to the performance when the motor operated with continuous rated load within 1 min, which takes place rarely or when emergency occurs, and the instantaneous breaking device of circuit breaker is suggested to set to the occasionally-used short-tie overload capacity mode; frequently-used overload capacity, parts of the normal operation cycle, refers to the performance when the motor subject to the repetitive rated load.

d): Type II (B) DC motor can bear the following continuous load:

In rated voltage and rated speed the motor can work with 115% rated output power load. Under this circumstance, the motor's performance may differ from the one under rating condition due to its high temperature rise.

In rated voltage and rated speed, the motor can work with 125% rated output power load for 2 hours after that the motor operates continuously with rated load for a while. Under this circumstance, the motor's performance may differ from the one under rating condition due to its high temperature rise.

e): Type II (B) DC motor, when operating by rating speed, the motor allows to operate with 2.5 times its rated

load for short time no longer than 15s(Consult manufacture and when they permit)

5. Current changing rate

The maximum current changing rate (di / dt) the motor can bear is 250 times of rated current.

6.Vibration and noise

a):Vibration shall meet the standard of GB10068 "Mechanical vibration of certain machines with shaft heights 56mm and higher- Measurement, evaluation and limits of vibration severity "

b):Noise shall meet the standard of GB10069.3 "Measurement of airborne noise emitted by rotating electrical machinery and the noise limits "

7. Technical data (output, voltage, efficiency at rated speed) refers to the rated value, including its exciting loss.

Motor selection

1. Type I (A) DC motor for general industrial purpose

Motor size, voltage, speed, cooling method see the technical data sheet below.

2. Type II (B) DC motor for metal rolling mill

The rated output power is 20% lower than that of Type I , contact the producer for detail information.

3. For the information of derived motor contact the producer.

Order Description

1. Specify the motor type, power, voltage, rotation speed, exciting voltage, cooling method, shaft quantity, terminal box position etc.

2. Specify the auxiliary device type, specification, quantity etc.

3. When the motor operates in humid topics, make mark of "TH" behind general purpose motor type

4. Provided the clients were interested in the motor of other specification with respect to technical parameter contact the producer directly.

Performance Data

Z500-2A Cooling method: IC06、IC17、IC37

ZKSL500-2A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POWER	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
580	610				1300	830	6.8	92.5	40	5800
500		530			1200	835		91.1		
425			440		1100	850		90.4		
340				350	1000	865		88.1		
690	720				1300	980		93.6		
600		630			1200	970		93.0		
500			505		1100	980		92.0		
405				410	1000	1010		90.4		
740		810			1400	1190		94.0		
620			650		1300	1210		93.0		
510				510	1200	1250		91.0		

Z500-3A Cooling method: IC06、IC17、IC37

ZKSL500-3A Cooling method: IC86W

Rating POWER	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
530	490				1200	765	7.2	91.0	45	6300
460		415			1100	760		90.3		
390			335		1000	790		89.1		
310				260	700	805		86.4		
620	550				1300	890		92.1		
570		490			1200	935		91.5		
480			415		1100	960		90.3		
370				315	900	945		87.8		
720		670			1300	1160		93.0		
630			580		1200	1225		92.1		
530				460	1100	1300		91.5		

Z500-4A Cooling method: IC06、IC17、IC37

ZKSL500-4A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
540	385				1000	785	8.5	91.0	55	7200
470		335			900	790		89.1		
400			270		800	815		88.0		
329				220	700	860		85.8		
640	460				1100	920		91.7		

Performance Data

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
560		400			1000	920	8.5	91.0	55	7200
490			333		1000	975		89.4		
380				260	700	960		88.0		
710		510			1200	1145		93.0		
650			430		1000	1280		91.0		
515				345	900	1290		90.0		

Z560-2A Cooling method: IC06、IC17、IC37

ZKSL560-2A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
720	600				1200	1035	7.0	91.8	150	7000
550			430		1200	1100		89.7		
440				340	1000	1115		87.9		
830	720				1300	1180		93.1		
760		630			1200	1235		92.3		
650			520		1200	1280		91.3		
530				410	1200	1320		90.1		
890		760			1250	1435		93.2		
770			640		1200	1500		92.5		
630				510	1200	1555		91.1		
935			820		1200	1810		93.2		
780				650	1200	1900		92.0		

Z560-3A Cooling method: IC06、IC17、IC37

ZKSL560-3A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
730	480				1200	1040	8.5	92.6	175	7500
650		420			1200	1070		89.8		
540			345		1000	1085		89.2		
435				270	800	1110		87.5		
870	590				1200	1240		92.7		
770		510			1200	1255		92.0		
660			420		1200	1305		90.9		
530				330	1000	1325		89.6		
890		610			1250	1430		93.5		
760			510		1200	1485		92.1		
620				400	1200	1535		90.6		
960			660		1200	1860		93.0		
790				520	1200	1930		92.1		

Performance Data

Z560-4A Cooling method: IC06、IC17、IC37

ZKSL560-4A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
700	380				1100	1020	9.0	90.3	205	8000
635		335			1000	1055		90.0		
530			275		700	1070		88.6		
415				215	700	1075		86.0		
835	470				1200	1240		92.6		
800		410			1100	1305		91.9		
650			340		1000	1290		90.4		
515				265	900	1300		89.0		
900		480			1250	1470		91.9		
745			395		1200	1455		92.0		
590				310	1100	1465		90.2		
950			525		1200	1845		92.8		
770				415	1100	1890		91.6		

Z560-5A Cooling method: IC06、IC17、IC37

ZKSL560-5A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
700	310				900	1020	10	90.7	245	9000
640		270			800	1070		89.6		
520			220		700	1060		87.7		
870	370				1000	1250		92.0		
770		325			900	1255		91.6		
640			270		700	1270		90.3		
500				210	700	1280		87.4		
900		380			1000	1460		92.4		
750			315		1000	1470		91.6		
590				250	700	1470		89.8		
900			380		1000	1750		92.5		
720				300	900	1780		90.8		

Z710-1A Cooling method: IC06、IC17、IC37

ZKSL710-1A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
1100	530				1100	1560	8.0	93.4	320	10200
970		460			1000	1570		92.9		
800			380		900	1570		91.8		

Performance Data

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
640				310	900	1580	8.0	91.0	320	10200
1500	710				1200	2120		93.9		
1300		600			1100	2090		93.7		
1100			500		1000	2130		93.3		
850				400	800	2080		92.1		
1600		770			1100	2560		94.3		
1350			640		1100	2600		93.9		
1050				500	1000	2550		92.9		

Z710-2A Cooling method: IC06、IC17、IC37

ZKSL710-2A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
1150	400				1000	1640	9.0	92.8	420	11500
1000		345			900	1620		92.7		
820			295		800	1610		91.7		
650				220	600	1615		90.3		
1500	510				1100	2120		93.8		
1350		445			1000	2180		93.2		
1100			370		900	2140		92.7		
870				295	700	2150		91.1		
1600		560			1100	2550		94.6		
1350			460		1000	2600		93.8		
1050				360	900	2550		92.8		

Z710-3A Cooling method: IC06、IC17、IC37

ZKSL710-3A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
1100	300				900	1570	10	92.6	510	13000
970		265			700	1580		92.1		
800			220		600	1580		91.0		
630				170	500	1580		89.3		
1500	390				900	2130		93.3		
1350		345			800	2180		93.2		
1100			285		600	2150		92.2		
850				230	500	2170		90.2		
1600		430			900	2560		94.1		
1300			350		800	2520		93.1		
1050				285	600	2570		92.0		

Performance Data

Z710-4A Cooling method: IC06、IC17、IC37

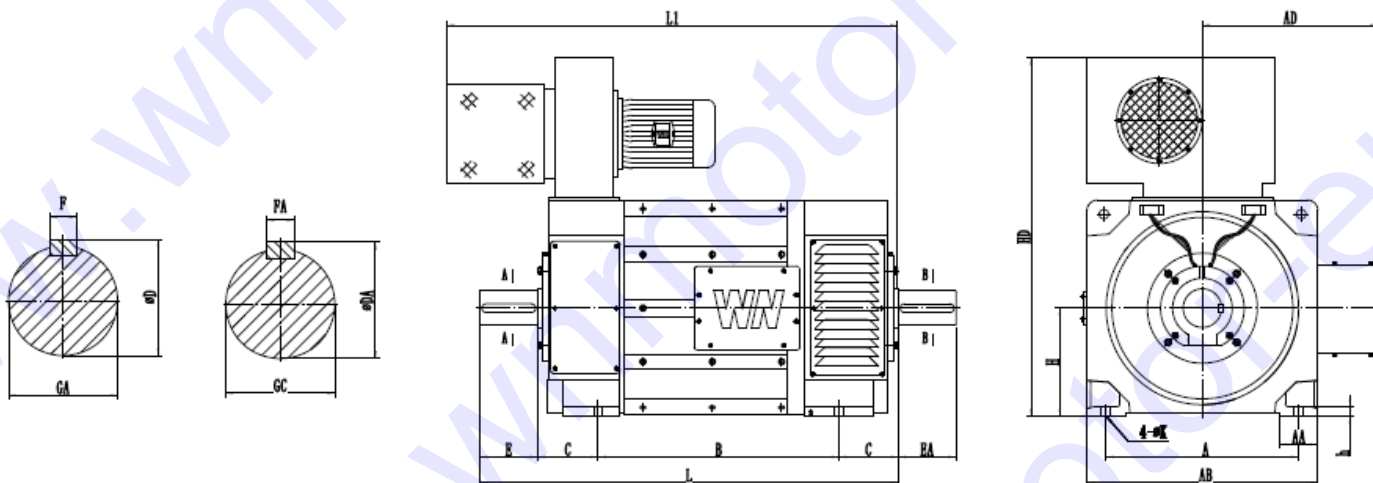
ZKSL710-4A Cooling method: IC86W

Rating POW	Un Speed (r/min)				Max Speed	Current	Field POW	Eff.	Inertia	Weight
kW	750V	660V	550V	440V	r/min	A	kW	%	Kg ² .m	kg
1100	225				500	1580	13	91.8	630	15000
970		200			500	1590		91.3		
800			160		400	1600		89.6		
630				125	400	1600		87.9		
1500	300				900	2140		93.0		
1300		265			700	2120		92.1		
1100			210		500	2190		90.3		
850				165	400	2150		88.6		
1600		320			800	2580		93.3		
1300			265		600	2530		92.6		
1050				210	500	2600		90.8		

Dimensions

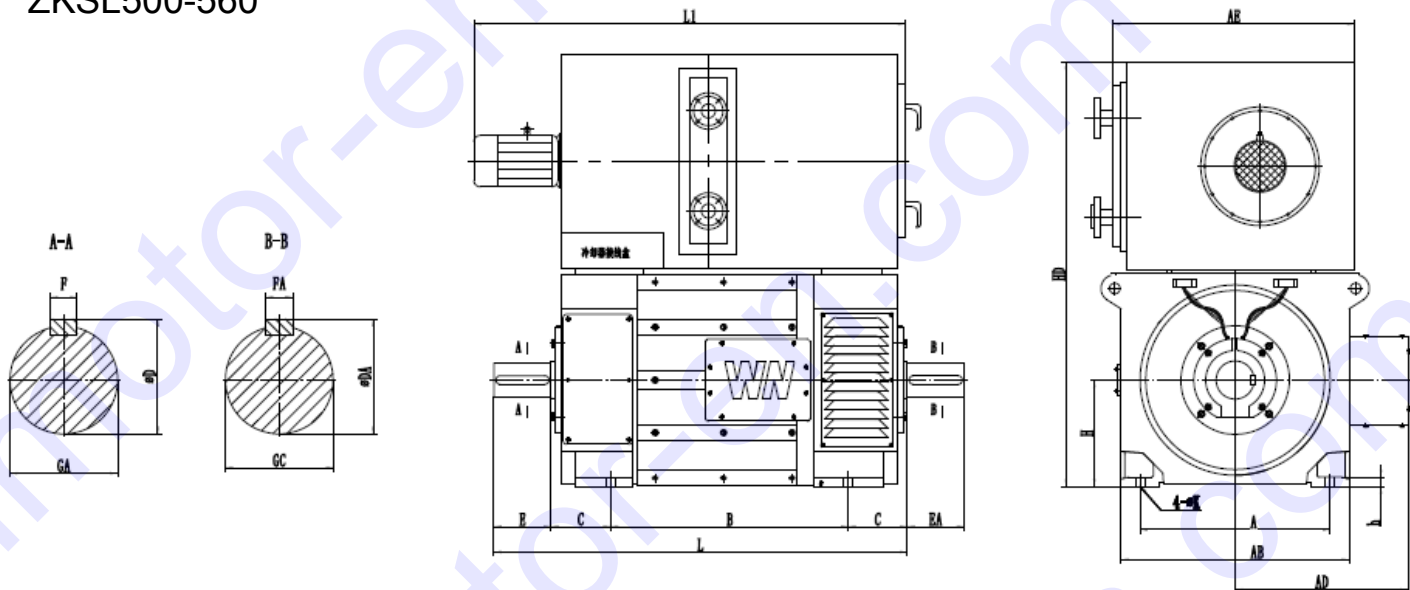
mm

Z500-560



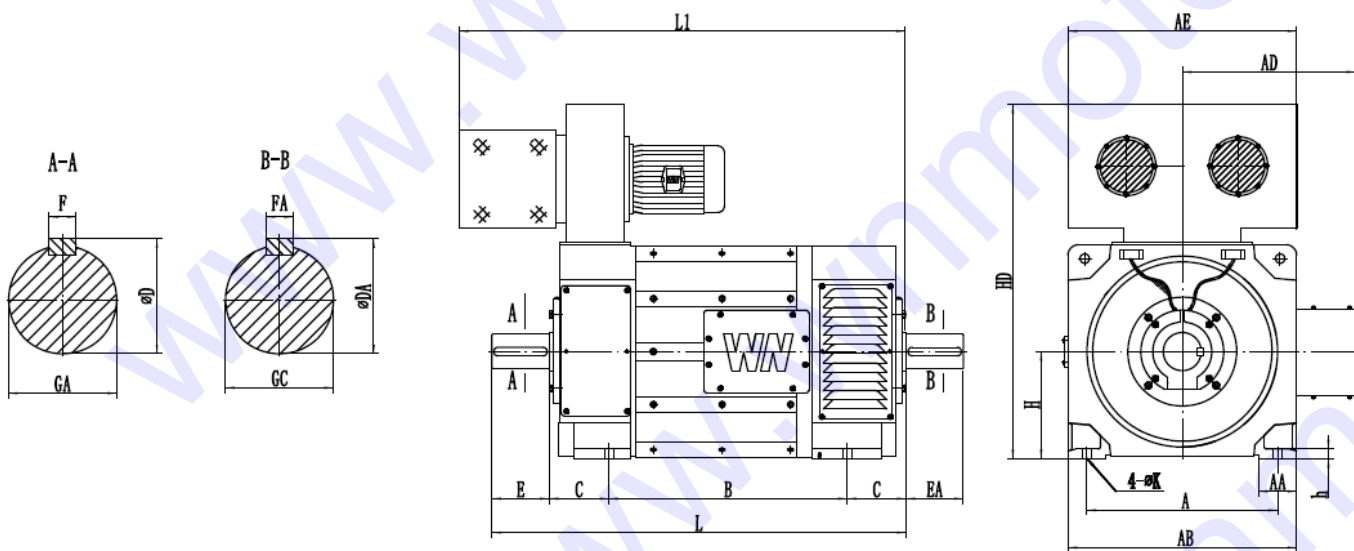
Type	Mounting dimensions													Outline dimension						
	A	B	C	D	E	F	GA	DA	EA	FA	GC	H	K	AB	AD	L	L1	HD	AE	h
Z500-1	900	1000	280	160	300	40	169	160	300	40	169	500	42	1090	900	2030	2130	1900	160	45
Z500-2		1120														2150	2250			
Z500-3		1250														2300	2400			
Z500-4		1400														2450	2550			
Z560-1	1000	1000	315	180	300	45	190	180	300	45	190	560	48	1200	1100	1930	2030	2250	190	50
Z560-2		1120														2050	2150			
Z560-3		1250														2200	2300			
Z560-4		1400														2350	2450			
Z560-5		1600														2550	2650			

ZKSL500-560



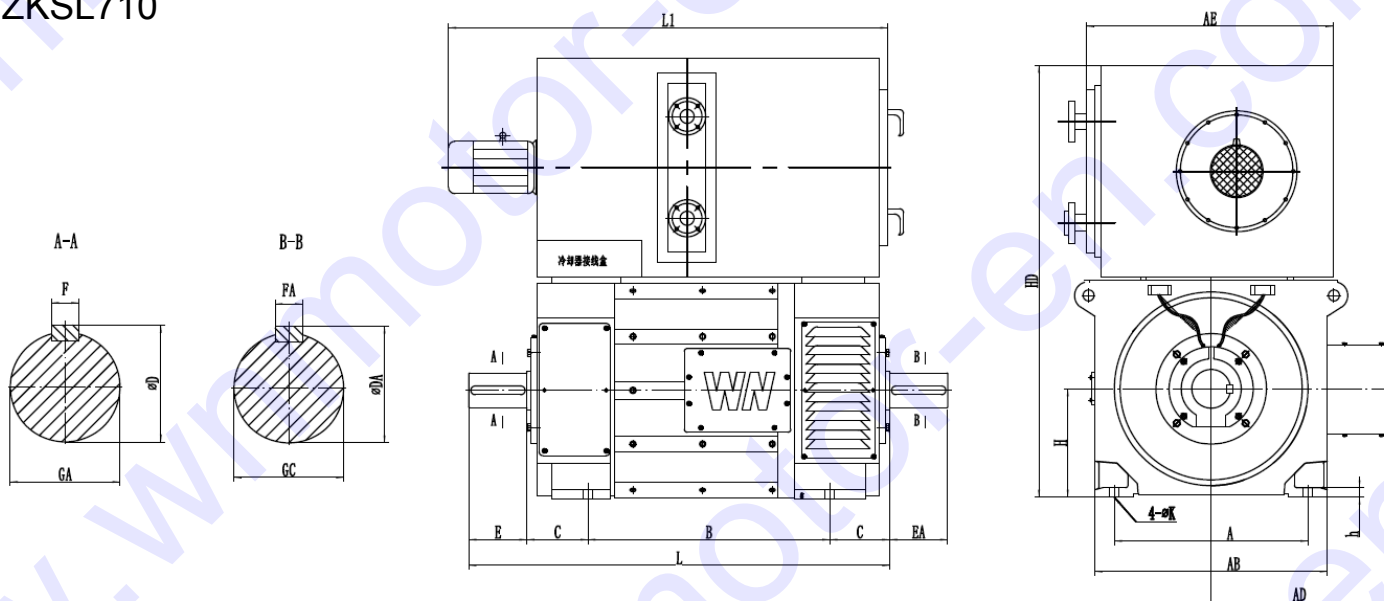
Type	Mounting dimensions													Outline dimension						
	A	B	C	D	E	F	GA	DA	EA	FA	GC	H	K	AB	AD	L	L1	HD	AE	h
ZKSL500-1	900	1000	280	160	300	40	169	160	300	40	169	500	42	1090	900	2030	2530	2200	1100	45
ZKSL500-2		1120														2150	2650			
ZKSL500-3		1250														2300	2800			
ZKSL500-4		1400														2450	2950			
ZKSL560-1	1000	1000	315	180	300	45	190	180	300	45	190	560	48	1200	1100	1930	2480	2400	1200	50
ZKSL560-2		1120														2050	2600			
ZKSL560-3		1250														2200	2750			
ZKSL560-4		1400														2350	2900			
ZKSL560-5		1600														2550	3100			

Z710



Type	Mounting dimensions													Outline dimension							
	A	B	C	D	E	F	GA	DA	EA	FA	GC	H	K	AB	AD	L	L1	HD	AA	AE	h
Z710-1	1400	1120	355	250	410	56	262	250	410	56	262	710	56	1540	1100	2250	2370	2400	200	1550	40
Z710-2		1250														2380	2480				
Z710-3		1400														2530	2630				
Z710-4		1600														2730	2830				

ZKSL710



Type	Mounting dimensions													Outline dimension							
	A	B	C	D	E	F	GA	DA	EA	FA	GC	H	K	AB	AD	L	L1	HD	AA	AE	h
ZKSL710-1	1400	1120	355	250	410	56	262	250	410	56	262	710	56	1540	1100	2250	2370	2900	200	1600	40
ZKSL710-2		1250														2380	2500				
ZKSL710-3		1400														2530	2650				
ZKSL710-4		1600														2730	2850				

Note: Dimensions here are indicative only. Actual product may differ.