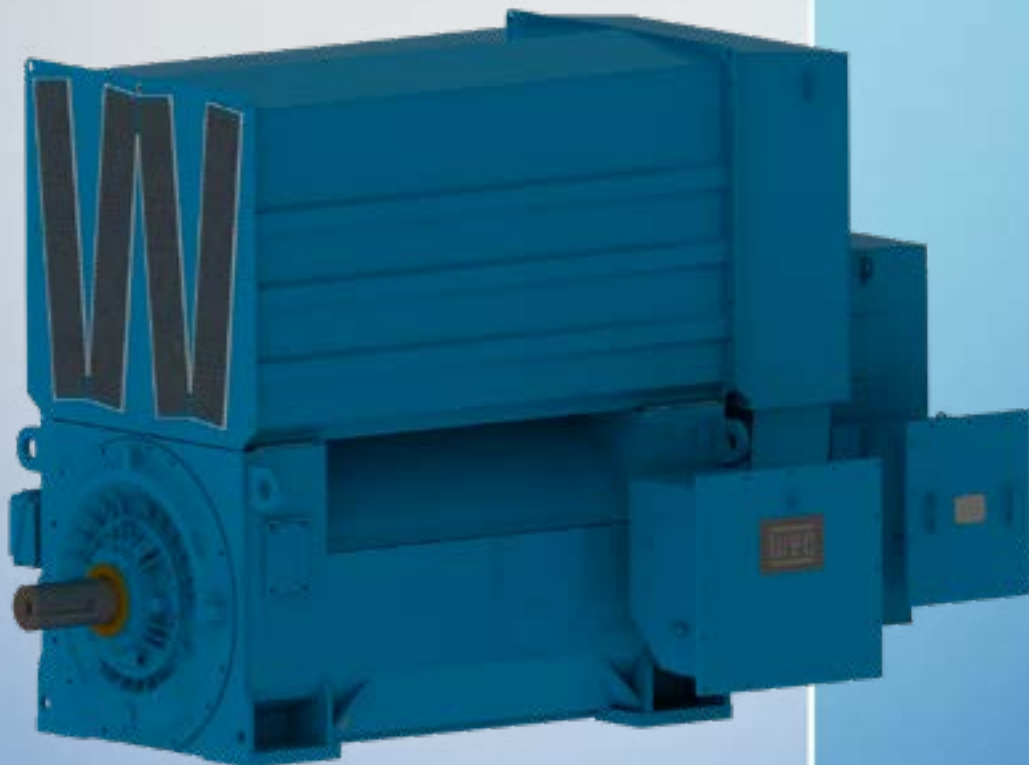


Industrial Motors  
Commercial & Appliance Motors  
Automation  
Digital & Systems  
**Energy**  
Transmission & Distribution  
Coatings

# WA60

## THREE PHASE INDUCTION SLIP-RING MOTOR

Technical Catalogue



Driving efficiency and sustainability



# WA60, MODULAR SLIP-RING MOTORS

## Availability for heavy load inertia applications

Slip-ring motors are an ideal solution for applications which require high starting torque and low starting current. They are especially suitable for heavy load inertia applications like the mining and cement segments or situations where network conditions are weak.

WEG's slip-ring motors minimize mechanical stress at starting, increasing the lifetime of your driven equipment. They provide maximized availability and high torque over the entire speed range.

Slip-ring motors are widely used in mills, crushers, fans, and conveyors in the mining, cement and metal industries. In addition, these motors offer a reliable solution for pumps in the water industry and safe area pumps, compressors and mixers in the petrochemical industry.

WA60 slip-ring motors inherit from M mining line that the design was specially developed with electromechanical characteristics which provide durability, long life operation, robustness and high efficiency. WA60 motors are available in shaft heights from 355 to 630 mm, with cooling methods and protection types of IC611/IP55 as standard.

WA60 motors have a welded steel frame. Slip ring unit can be supplied with permanent contact brushes namely fixed, or with brush lifting system controlled automatically. In both cases the slip rings are enclosed in a housing located at the NDE side and separated from the main motor frame. The mechanical sealing is equipped as standard for the housing.

For WA60 motors this catalog only shows the typical technical data of 6kV and 10kV at 50 Hz for 4, 6, and 8 pole motors. While the complete product scope covers motors with 60Hz, pole numbers up to 16, and voltage rating up to 13.8kV.

For more detailed technical data and configuration solutions on WA60 slip-ring motors, please contact WEG.



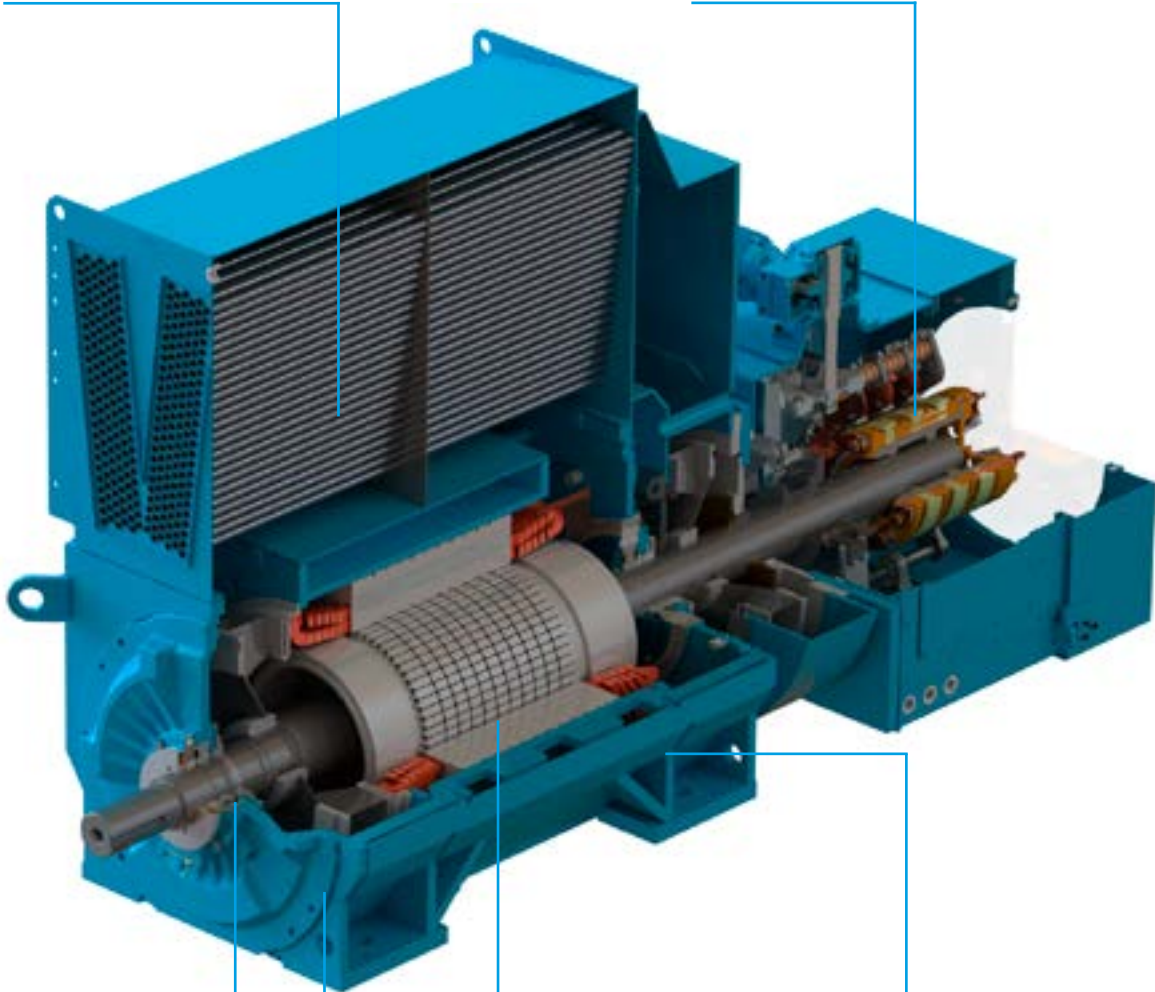
# COMPONENTS DESIGN

## Cooling System

- Optimized heat exchanger
- Increased air flow
- Low losses fans
- Easy assembly
- Increased mechanical strength

## Liftable Slip-ring System

- Innovative design
- Extended brushes lifetime
- Low maintenance
- Low cleaning
- Integrated automatic lifing control system



## Bearings

- Ball bearings as standard
- Sleeve bearings as optional

## Electrical Core

- High quality lamination
- Energy efficient
- Increased power density ratio

## Frame

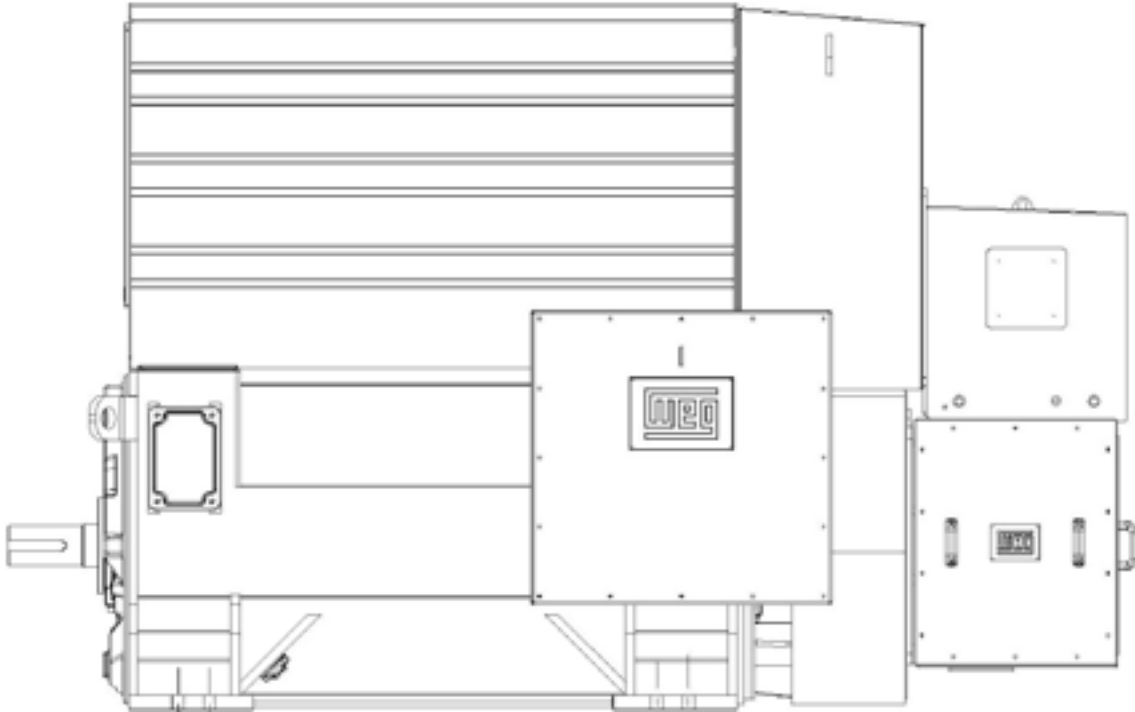
- Robust design
- Compact and lighter
- Smallest footprint area

## End Shields

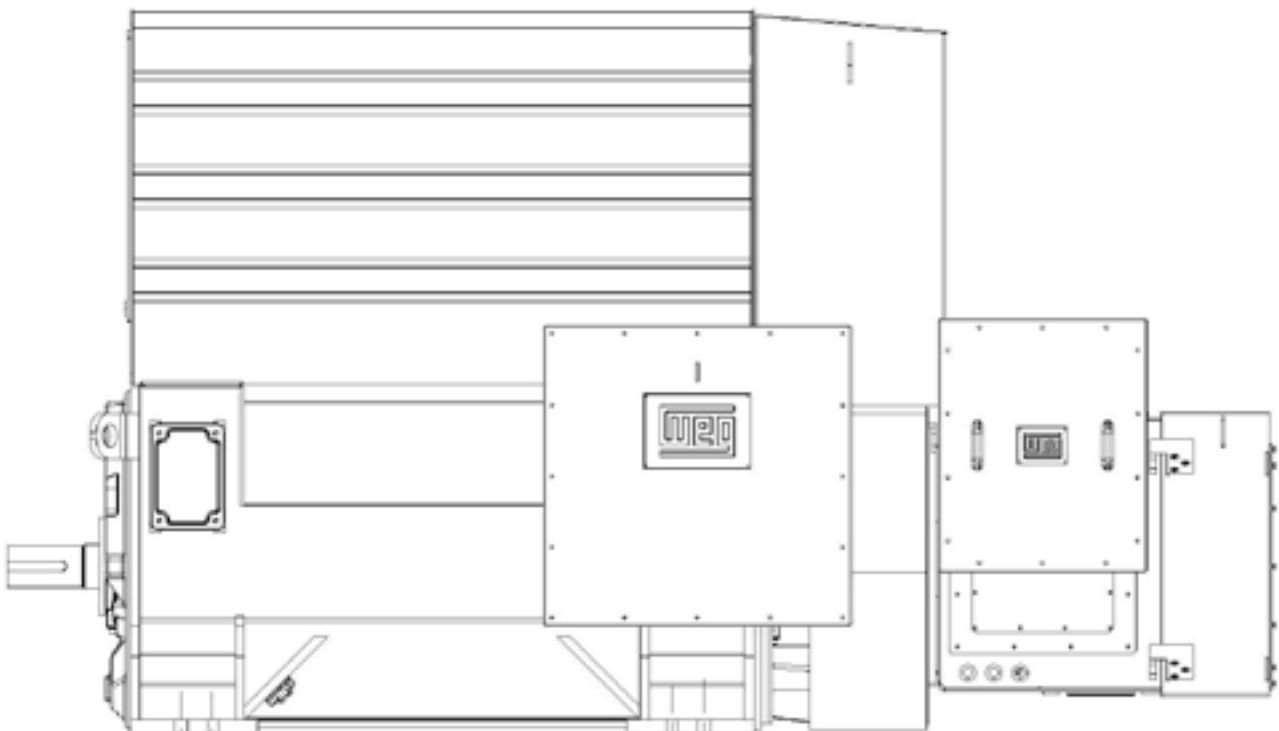
- High quality cast iron or steel plate
- Reinforced structure

# MOUNTING ARRANGEMENTS

## Standard mounting arrangements for WA60 fixed slip-ring motors



## Standard mounting arrangements for WA60 liftable slip-ring motors



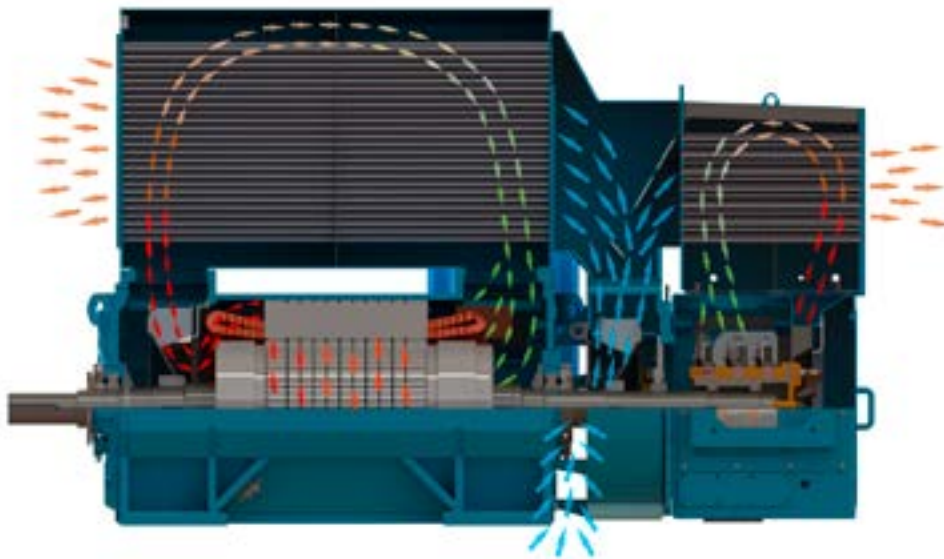
# COOLING AND PROTECTION DEGREE

Standard combinations for WA60 motors are IC611/IP55.

Other cooling methods (IC616, IC81W, etc.) are available on request.

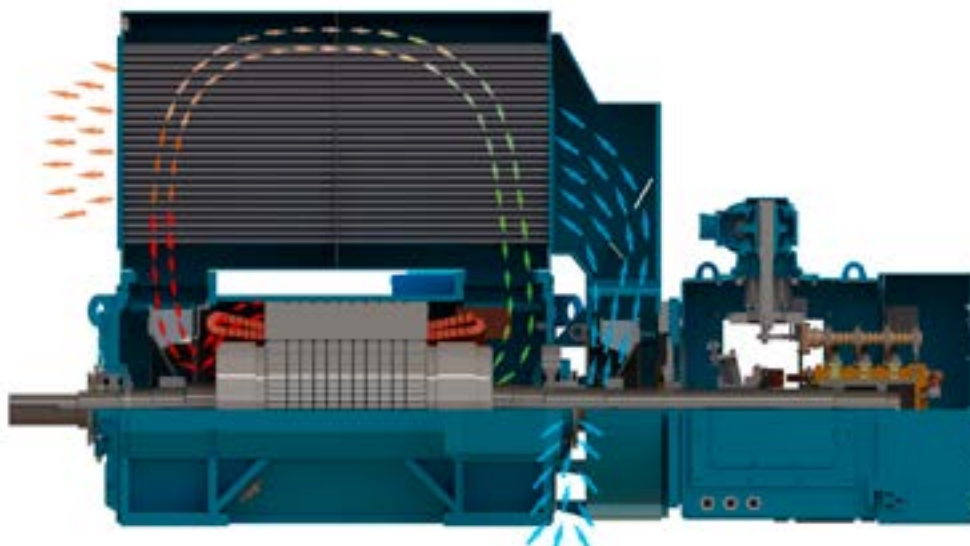
## Fixed slip-ring motor

This design has an air-to-air heat exchanger mounted on the motor, which is fully enclosed, another air to air heat exchanger is assembled on the slip-ring housing. Shaft mounted fans are fitted both inside motor frame and inside slip ring protection box, and to supply the inside cooling circuits for motor and slip ring respectively. And the outside cooling circuits are driven by one external fan. The motor is protected against dust and splashing water from any direction.



## Liftable slip-ring motor

This design has an automatic controlled liftable slip-ring system, the brushes are kept clear of the slip-ring after the motor start-up, so there is no need for heat emission in the slip-ring housing. The cooling for the motor is the same as the normal design of W60 line motors in WEG, which can share the same standard components. The motor is also protected against dust and splashing water from any direction.

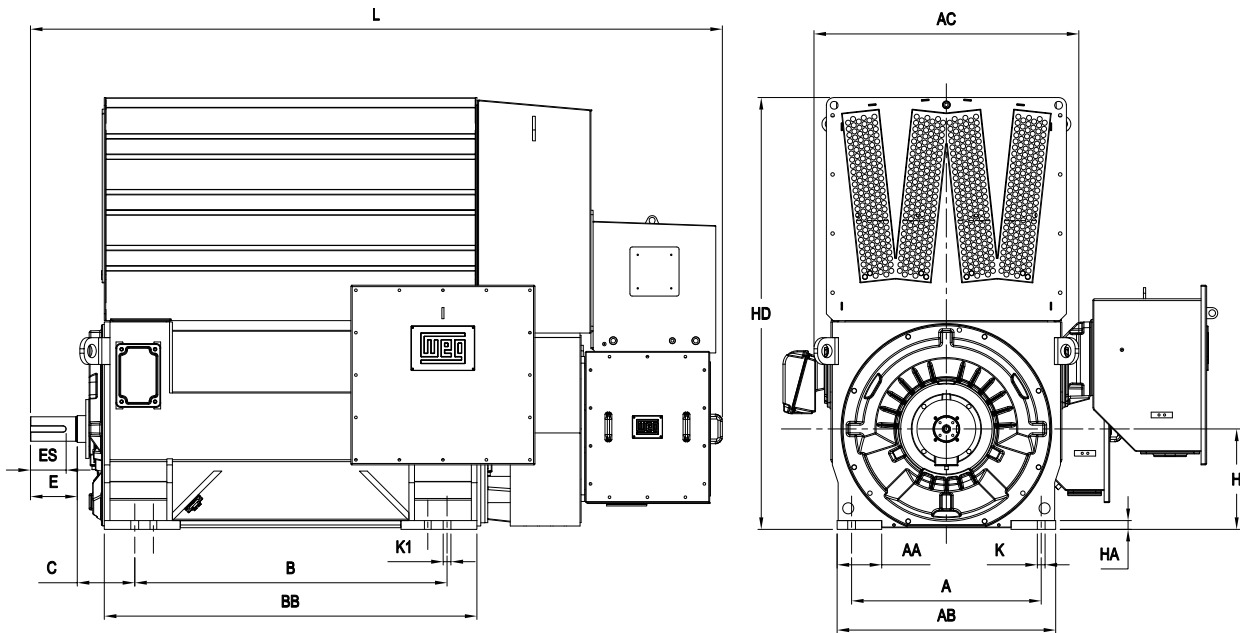






# MECHANICAL DATA

## Fixed slip-ring, IC611/IP55



Frame	Poles	Dimensions (mm)												
		A	B	K	C	AB	BB	L	H	HD	HA	AA	K1	AC
355	4/6/8	610	1000	35	254	771	1308	2630	355	1570	39.5	172	35	1036
400	4/6/8	686	1250	35	280	866	1508	2935	400	1795	39.5	170	35	1073
450	4/6/8	850	1400	35	250	980	1670	3100	450	1940	39.5	200	35	1187
500	4/6/8	900	1600	42	260	1080	1835	3320	500	2295	39.5	245	42	1287
560	4/6/8	1060	1800	42	365	1300	2170	3925	560	2460	53	280	42	1600
630	4/6/8	1250	2000	42	510	1450	2400	4235	630	2740	32.5	280	42	1808

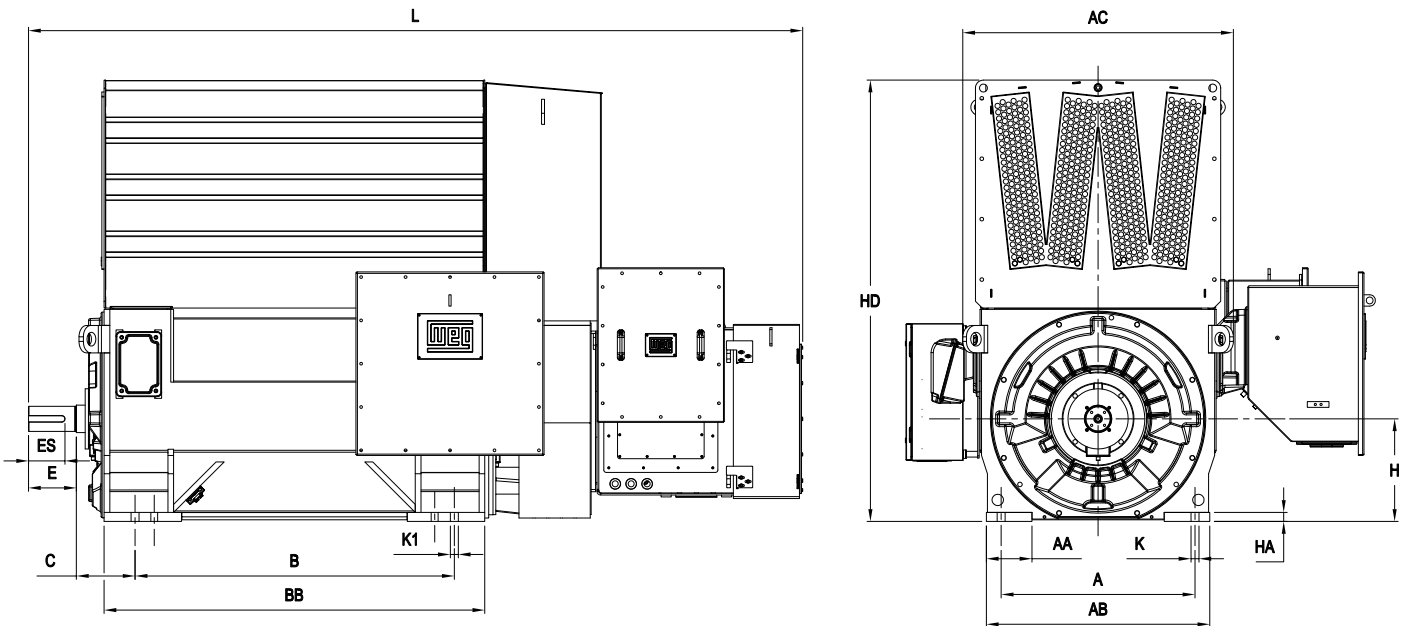
Frame	Poles	Shaft Dimensions (mm)							Bearings		
		E	ES	D	G	GD	F	D1	DE	NDE	
355	4/6/8	210	170	110	100	16	28	M24x3.0	6224	6228	
400	4/6/8	250	200	130	119	18	32	M24x3.0	6228	6228	
450	4/6/8	210	160	110	100	16	28	M24x3.0	6324	6328	
500	4/6/8	250	200	140	128	20	36	M30x3.5	6330	6332	
560	4/6/8	300	240	170	157	22	40	M36x4.0	NU1036+6036	NU1032	
630	4/6/8	300	240	170	157	22	40	M36x4.0	NU1036+6036	NU232	

Note:  
 Preliminary dimensions of standard configuration in the list.  
 Optional solutions e.g.  $\geq 10$  poles, NEMA oversize main terminal box, sleeve bearings, etc. on request.  
 Accurate dimension drawing will be given on customized solution at the quotation stage.



# MECHANICAL DATA

## Liftable slip-ring, IC611/IP55



Frame	Poles	Dimensions (mm)												
		A	B	K	C	AB	BB	L	H	HD	HA	AA	K1	AC
355	4/6/8	610	1000	35	254	771	1308	2950	355	1570	39.5	172	35	1036
400	4/6/8	686	1250	35	280	866	1508	3255	400	1795	39.5	170	35	1073
450	4/6/8	850	1400	35	250	980	1670	3400	450	1940	39.5	200	35	1187
500	4/6/8	900	1600	42	260	1080	1835	3615	500	2295	39.5	245	42	1287
560	4/6/8	1060	1800	42	365	1300	2170	4110	560	2460	53	280	42	1600
630	4/6/8	1250	2000	42	510	1450	2400	4450	630	2740	32.5	280	42	1808

Frame	Poles	Shaft Dimensions (mm)							Bearings	
		E	ES	D	G	GD	F	D1	DE	NDE
355	4/6/8	210	170	110	100	16	28	M24x3.0	6224	6228
400	4/6/8	250	200	130	119	18	32	M24x3.0	6228	6228
450	4/6/8	210	160	110	100	16	28	M24x3.0	6324	6328
500	4/6/8	250	200	140	128	20	36	M30x3.5	6330	6332
560	4/6/8	300	240	170	157	22	40	M36x4.0	NU1036+6036	NU1032
630	4/6/8	300	240	170	157	22	40	M36x4.0	NU1036+6036	NU232


Note:  
 Preliminary dimensions of standard configuration in the list.  
 Optional solutions e.g. ≥10 poles, NEMA oversize main terminal box, sleeve bearings, etc. on request.  
 Accurate dimension drawing will be given on customized solution at the quotation stage.





### Global Presence

With more than 39.000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **WA60 three-phase induction slip-ring motor** is the right choice for your application and business, assuring safety, efficiency and reliability.

 **Availability** is to have a global support network

 **Partnership** is to create solutions that suits your needs

 **Competitive edge** is to unite technology and inovation





# SERVICE



From our wide Services portfolio, stands out the list of interventions on products from WEG activity areas: Electric Motors, Energy and Automation, being the most common:

## Inspection, Tests and Technical Analyses

From all the inspections, tests and technical analyses we have capacity to offer, we emphasize the following:

- Production and expedition of spare parts to all over the world;
- Application diagnosis on site or in our factory;
- Technical advise on best, reliable and efficient solutions on energy saving.



	Products		Procedure	
	Automation	Motor	Internal	External
General Repair and overhaul	X	X	X	X
Product repair that may include the replacement of the components by original parts	X	X	X	X
Commissioning and start up	X	X		X
Repair of electrical machines (Ex and Safety)		X	X	X
Inspection and/or replacement of sleeve bearing or bearings		X	X	X
Repair of the sleeve bearings shell		X	X	X
High, Medium and Low Voltage rewinding		X	X	
Stator or rotor core replacement		X	X	
Brushes and brushes holder replacement		X	X	X
Shaft complete replacement or repair of shafts with grinding finishing of complete rotor		X	X	
Dynamic balancing of rotor (Maximum speed 1600 rpm 20T)		X	X	
Field dynamic balancing		X		X
Centring service		X		X
Painting (standard and special plan)		X	X	X
Inspection, tests and technical analysis	X	X	X	X
Energy Efficiency Study	X	X		X
Training of product maintenance	X	X		X

## Automation

- Analysis of application improvements and technical assessment to the client, helping on the choice of the most appropriate equipment, targeting the application/optimizing installation efficiency
- Manufacturing, Installation, Modification, Start-Up and Maintenance of Electrical Panels
- Support on the settings parametrization of Variable Speed Drives and Soft Starters
- Commissioning and Start-Up of applications with Variable Speed Drives
- WEG Products Training



## Electric Motors

- Commissioning and Start-Up of applications with electric motors
- Alignment applications with electric motors
- Vibration analysis and failures diagnosis
- Dimensional check of Electric Motors and Components/Spare Parts
- Electric Motors maintenance
- Electric Motors Mechanical and Electrical refurbishment:
  - Replacement of bearings / sleeve bearings
  - Recovery of sleeve bearings
  - Rewinding of Electric Motors (stator/rotor) - in Low, Medium and High Voltage (up to 11kV)
  - Recover / Refurbishment / replacement of spare parts
  - Replacement of rotor shafts
  - Repair and replacement of accessories, temperature sensors and anti-condensation heaters and other auxiliaries
- Balancing in factory up to 1600 rpm (20T, Ø Max. 4640 mm)
- Dynamic balancing on site
- Electric Motors modification to new operating conditions (IP protection, cooling system, auxiliaries mounting form, terminal boxes, external loads, etc)
- Painting and finishing recovery
- Customer training on electric motors
- Repair electric machines (Ex and Safety)
- Energy analysis and efficiency of electric motors



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The scope of WEG Group solutions is not limited to the products and solutions presented in this catalogue.

**To know our portfolio,  
Please consult us.**

**For WEG's worldwide  
operations visit our website**



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Wechat Public Account



WEG Website

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The values shown are subject to change without prior notice.  
The information contained is reference values.