Roller Table

Industrial Motors

Commercial &
Appliance Motors

Automation

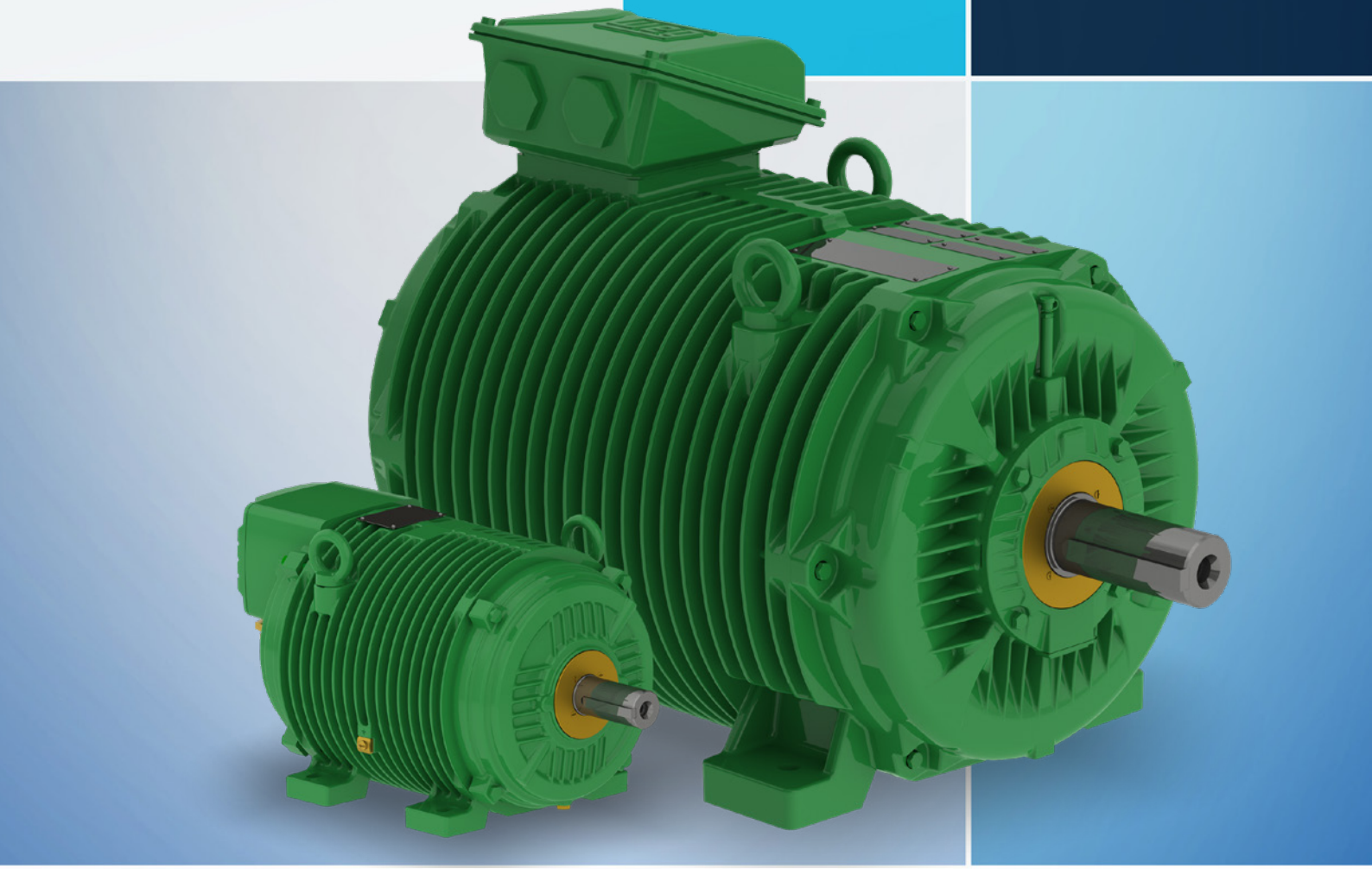
Digital &
Systems

Energy

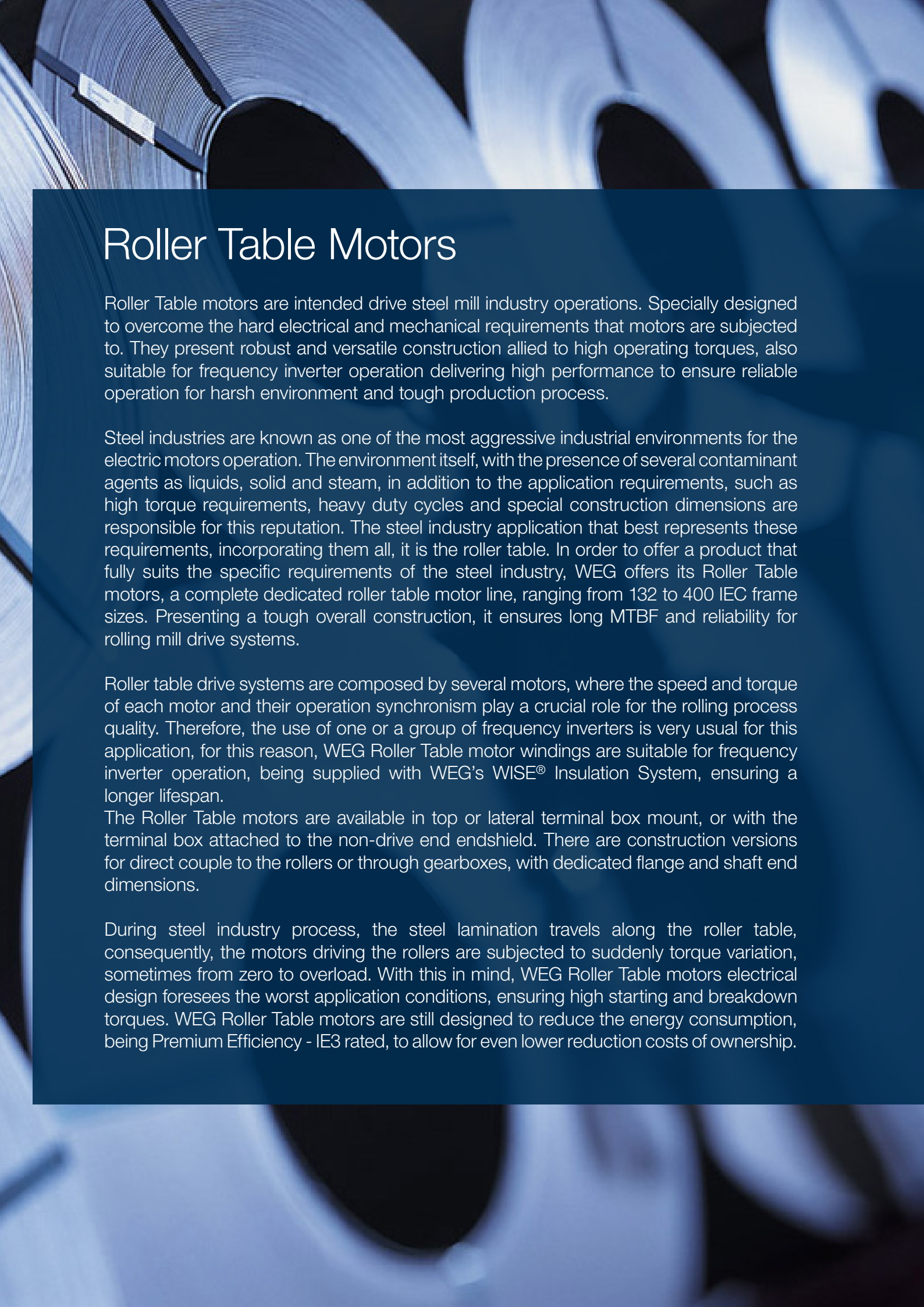
Transmission &
Distribution

Coatings

Three-Phase Electric Motor
Technical Catalogue
European Market



Driving efficiency and sustainability



Roller Table Motors

Roller Table motors are intended drive steel mill industry operations. Specially designed to overcome the hard electrical and mechanical requirements that motors are subjected to. They present robust and versatile construction allied to high operating torques, also suitable for frequency inverter operation delivering high performance to ensure reliable operation for harsh environment and tough production process.

Steel industries are known as one of the most aggressive industrial environments for the electric motors operation. The environment itself, with the presence of several contaminant agents as liquids, solid and steam, in addition to the application requirements, such as high torque requirements, heavy duty cycles and special construction dimensions are responsible for this reputation. The steel industry application that best represents these requirements, incorporating them all, it is the roller table. In order to offer a product that fully suits the specific requirements of the steel industry, WEG offers its Roller Table motors, a complete dedicated roller table motor line, ranging from 132 to 400 IEC frame sizes. Presenting a tough overall construction, it ensures long MTBF and reliability for rolling mill drive systems.

Roller table drive systems are composed by several motors, where the speed and torque of each motor and their operation synchronism play a crucial role for the rolling process quality. Therefore, the use of one or a group of frequency inverters is very usual for this application, for this reason, WEG Roller Table motor windings are suitable for frequency inverter operation, being supplied with WEG's WISE® Insulation System, ensuring a longer lifespan.
The Roller Table motors are available in top or lateral terminal box mount, or with the terminal box attached to the non-drive end endshield. There are construction versions for direct couple to the rollers or through gearboxes, with dedicated flange and shaft end dimensions.

During steel industry process, the steel lamination travels along the roller table, consequently, the motors driving the rollers are subjected to suddenly torque variation, sometimes from zero to overload. With this in mind, WEG Roller Table motors electrical design foresees the worst application conditions, ensuring high starting and breakdown torques. WEG Roller Table motors are still designed to reduce the energy consumption, being Premium Efficiency - IE3 rated, to allow for even lower reduction costs of ownership.

Product Overview

Standard Features

- Efficiency level: Premium (IE3)
- Number of Poles: 4 up to 12
- Frequency: 50 Hz
- Voltage: 400 V
- Frames: 132M up to 400 L/A/B
- Color: RAL 6002 (Green)
- Shaft sealing: W3 Seal®
- Joint sealing: Permatex® + O´Ring
- WISE® Insulation System
- Insulation class H (class B temperature rise)
- Space Heaters
- Degree of protection: IPW66
- Mounting: B3 (up to 200) or B3T (from 225 up to 400)
- Painting plan 212P
- Internal epoxy coating (tropicalized)
- Closed sintered drain
- Terminal block
- Die cast FC-200 iron enclosure(1)
- Shaft Material: AISI 420
- AISI 4140 (from 315 up to 400)
- Double grounding (1 inside terminal box + 2 on the frame)
- Regreasing system for frames 225 up to 400
- Shielded bearings up to frame 200L
- Cooling system: IC410
- Grease Mobil Polyrex EM 103

Optional Available

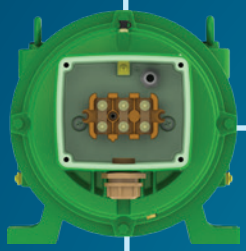
- Frequency: 60 Hz
- Voltage: other rated voltages as optional
- Frames 355 and 400 under request
- Insulation class H (class F temperature rise for VFD application)
- Mounting: B3T (up to 200) or B3L (from 225 up to 400)
- Grease system for frames 132 up to 200
- Encoder Leine & Linde 861
- Brake

(1) nodular die cast iron under request.
** Frames 355 to 400 and NEMA versions under request*

Components Design

Terminal Block

Terminal boxes are fitted with a polyester based resin BMC (Bulk Moulding Compound) reinforced with fiber glass, offering easy and safe connections.

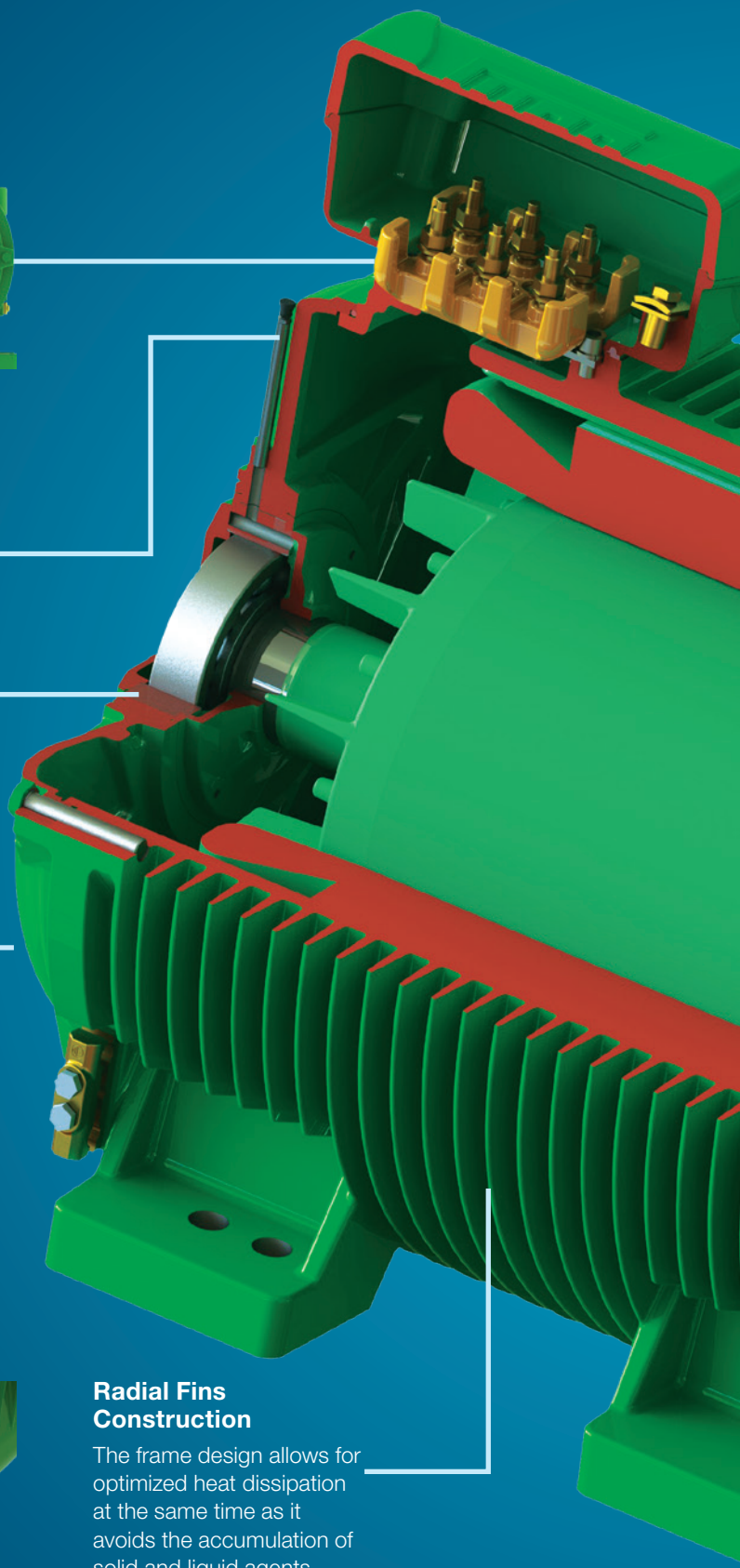


Design Flexibility

WEG Roller Table motors offer a very flexible construction design, meeting the requirements of new projects and also existing motors replacement with total reliability. The motors are available in several different configurations, including footless and flange-mount motors.

Relubrication System

The motors can be fitted with positive pressure relubrication system, composed by grease nipple and automatic grease relief valve, allowing the motor drive end and non-drive end relubrication with the motor in operation.



Non-Ventilated Construction

Provides lower maintenance indices due to its reduced number of components, improving mechanical stifness and resulting in smaller machine length.

Closed sintered drain

This patented drain solution allows the enclosure air exchange, granting the internal pressure balance with the environment, at the same time avoiding the ingress of dust and water inside the motor.

Radial Fins Construction

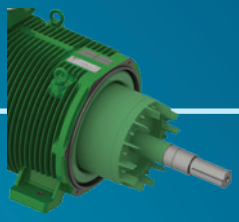
The frame design allows for optimized heat dissipation at the same time as it avoids the accumulation of solid and liquid agents, thus providing easy cleaning procedures.

Painting Plan

The Painting Plan applied to Roller Table motors provides them high chemical and mechanical resistance, being the most indicated coating to indoor or outdoor aggressive environments. It exceeds the C5 (I and M) performance criteria. Indicated on the ISO 12944-2 Standard Meeting 10000 hours neutral salt-spray resistance as per ISO 7253 Standard.

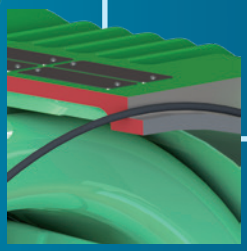
Internal Epoxy Coating

Also known as Tropicalization, the internal epoxy coating is applied to the entire motor interior, including rotor, frame, endshields, terminal box and coil heads. Its main purpose is to increase the motor resistance against the direct exposure to acid steam, alkalis, solvents and salty environments, due to the exchange of air with the ambient.



WISE® (WEG Insulation System Evolution)

The WISE® is a system composed of: class H insulation wire (200 °C), enhanced insulation materials and a solvent-free resin. This system allows the motor to operate driven by VFD, ensuring protection against the voltage spikes from the PWM waveform that can have harmful effects on the motor windings, leading to the premature insulation system failure.

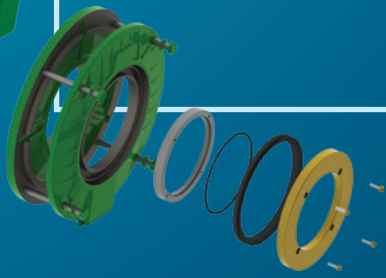


Additional Seal

The Roller Table motors are fitted with a special sealing system for the endshields fittings. This system is composed by extended fitting surfaces, an O'Ring component and Permatex® resin to provide the maximum protection against the ingress of any contaminant agent (solid, liquid or gas) throughout the enclosure assembly clearances.

Stainless Steel Shaft

It is suitable to withstand the usual application environments, commonly exposed to chemical agents. Besides that ensures necessary robustness to the lamination condition.

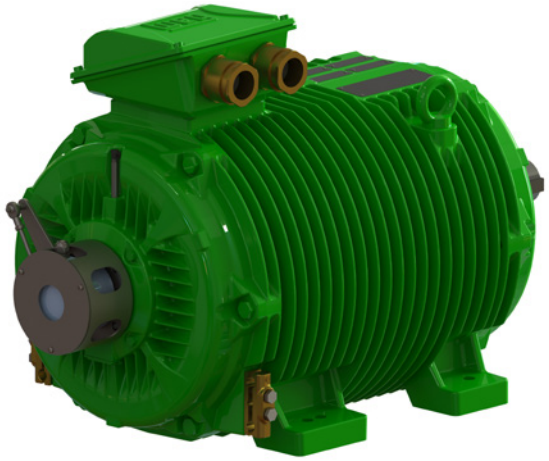


W3 Seal® Sealing System

The exclusive W3 Seal® sealing system is composed by three components: V'Ring, O'Ring and Taconite Labyrinth, that protect the motor against the ingress of solid and liquid contaminant agents throught the bearings.

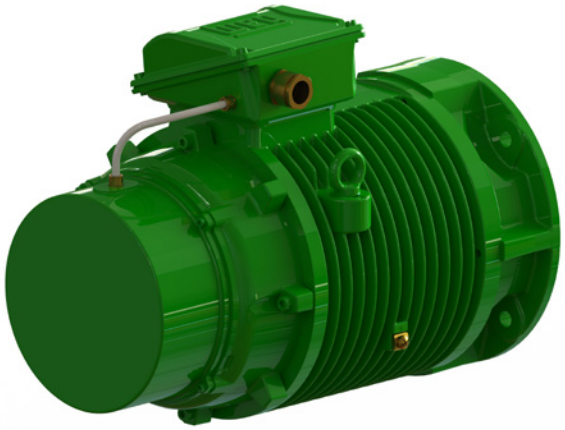
Encoders Available

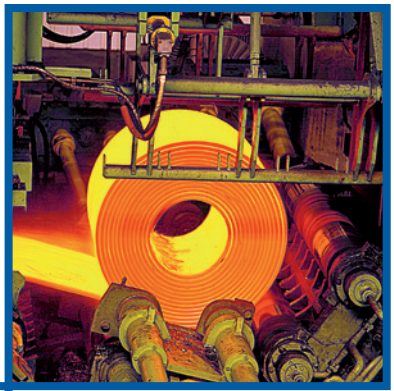
The use of Variable Frequency Drives is recognized to be one of the major driving forces for energy efficiency because it can adjust motor output to best suit load requirements. Together with encoders, they also provide precise positioning. As both, variable speed and precision are demanded characteristics for the roller table application; WEG motors can be supplied with encoders Leine & Linde XH861 hollow shaft 1024PPR under request. These encoders are suitable for harsh conditions present at steel industries. Other encoder models can be supplied in order to fully adapt the motors to the customer particular specifications.



Brake Equipped Versions

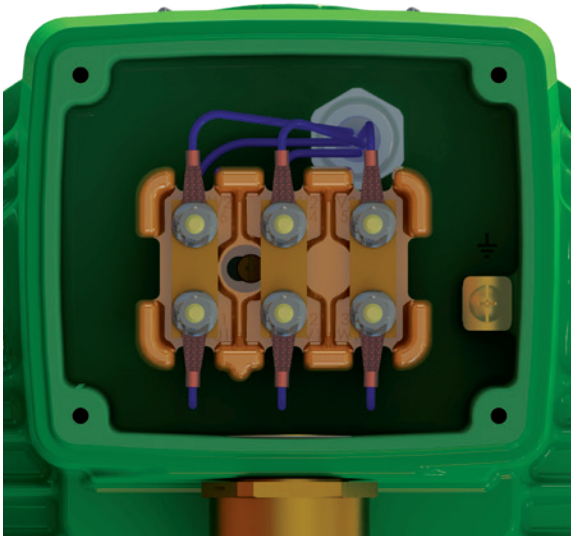
The current industrial scenario demands for high productivity levels and assured safety for the operations. For this reason, the utilization of electromagnetic brake systems is increasing today in electric motors driven applications, avoiding the waste of time and allowing the control of any unexpected situation. WEG Roller Table motors are available in brake equipped versions, specially designed for each application characteristics. The brake enclosure ensures the same Degree of Protection of the motor, which is translated into reliability and a longer lifespan.





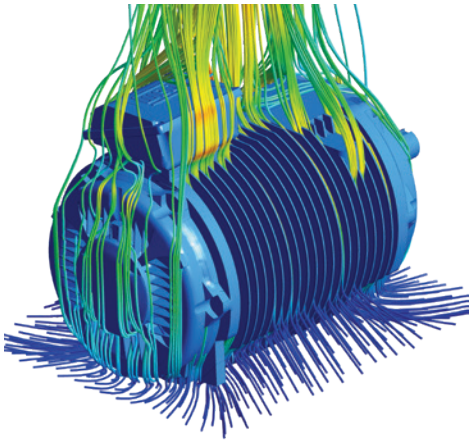
Sealed Construction

The motor sealing system is taken very seriously at WEG Roller Table motors due to the common environment characteristics that they are designed for. The cover fittings are equipped with O'Rings that, in addition to the sealing resin, ensure the protection against the ingress of any liquid or solid contaminant agents. Motors with the terminal box mounted on the non-drive endshield have their sealing system composed by a cable gland, offering a greater protection.



High Technology Product

One of the main functions of an electric motor frame is to provide mechanical protection to the winding. It also provides the interface for installation through feet or flange. The motor frame plays a crucial role in its thermal performance because it is responsible for transferring the heat generated inside the motor out to the frame surface. Although WEG Roller Table motors are non-ventilated machines, the design of their fins foresee the heat exchange and make easy the water and dust slip, present in roller table applications. Balanced heat dissipation versus mechanical stiffness ratio is present, ensuring optimized thermal performance and resistance against the common high vibrations levels and eventual mechanical shocks.



Electrical Data - 50 Hz

Frame size	Poles									
	4		6		8		10		12	
	N.m	kW	N.m	kW	N.m	kW	N.m	kW	N.m	kW
132	**20**	**3**	**26**	**2.6**	20	1.5	25	1.5	22	1.1
	26	**4**	**29**	**3**	29	2.2	-	-	-	-
	33	**5**	**36**	**3.7**	-	-	-	-	-	-
160	44	6.8	**49**	**5**	48	3.7	40	2.4	44	2.2
	60	9.2	**70**	**7.1**	65	5	62	3.7	60	3
180	71	11	**83**	**8.6**	**88**	**6.8**	**82**	**5**	**79**	**4**
	88	13.5	**98**	**10**	**112**	**8.6**	**99**	**6**	**99**	**5**
200	97	15	**121**	**12.5**	**130**	**10**	**122**	**7.5**	**117**	**6**
	119	18.5	**146**	**15**	**143**	**11**	**138**	**8.5**	**133**	**6.8**
225	142	22	165	17	**175**	**13.5**	**178**	**11**	**179**	**9.2**
	161	25	184	19	**195**	**15**	**202**	**12.5**	**195**	**10**
250	193	30	241	25	**260**	**20**	**259**	**16**	**263**	**13.5**
	238	37	299	31	**338**	**26**	**324**	**20**	**331**	**17**
280	322	50	386	40	**436**	**34**	**453**	**28**	**425**	**22**
	417	65	531	55	**577**	**45**	**599**	**37**	**598**	**31**
315	519	81	676	70	**744**	**58**	**723**	**45**	**772**	**40**
	641	100	869	90	**962**	**75**	**964**	**60**	**965**	**50**
355*	737	115	960	100	**1154**	**90**	**1124**	**70**	**1158**	**60**
	846	132	1056	110	**1283**	**100**	**1365**	**85**	**1351**	**70**
400*	1020	160	1344	140	**1697**	**132**	**1609**	**100**	**1736**	**90**
	1177	200	1678	175	**2050**	**160**	**2119**	**132**	**2119**	**110**
	1658	260	2120	220	**2560**	**200**	**2570**	**160**	**2551**	**132**
	-	-	-	-	-	-	**2972**	**185**	-	-

Best torque / frame size ratio

** Frames 355 and 400 under request*

Variable Frequency Drive Application

Considerations Regarding Voltage Spikes and the Insulation System

The stator windings of Roller Table motors are wound with class H insulation and are suitable for either DOL starting or variable speed drive. They incorporate the WEG exclusive insulation system - WISE® (WEG Insulation System Evolution) - which ensures superior electrical insulation characteristics.

Supportability of Random Wound Motors Insulation System

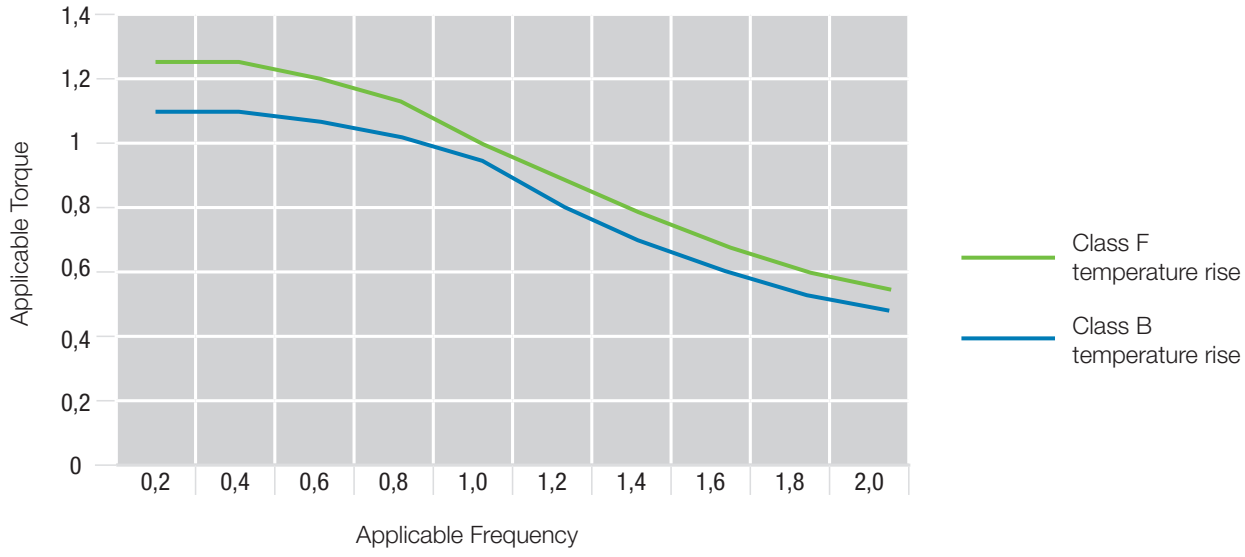
Motor rated voltage	Voltage Spikes	*dV/dt* *	*Rise time**	Time between pulses
	at motor terminals (phase-phase)	at motor terminals (phase-phase)		
V_{rated} < 460 V	≤ 1600 V	≤ 5200 V/µs	≥ 0.1 µs	≥ 6 µs
460 V ≤ V_{rated} < 575 V	≤ 2000 V	≤ 6500 V/µs		
575 V ≤ V_{rated} ≤ 690 V	≤ 2400 V	≤ 7800 V/µs		

** dV/dt and Rise time definition according to Nema Std. MG1 - Part 30.*

Notes: *1 - In order to protect the motor insulation system, the maximum recommended switching frequency is 5 kHz.*
2 - If one or more of the above conditions is not attended, a filter (load reactor or dV/dt filter) must be installed in the output of the VSD.
3 - General purpose motors with rated voltage greater than 575 V, which at the time of purchase did not have any indication of operation with VSD, are able to withstand the electrical limits set in the table above for rated voltage up to 575 V. If such conditions are not fully satisfied, output filters must be used.
4 - General purpose motors of the dual voltage type, for example 380/660 V, which at the time of purchase did not have any indication of operation with VSD, are able to be driven by a VSD in the higher voltage only if the limits set in the table above for rated voltage up to 460 V are fully attended in the application. Otherwise, a load reactor or a dV/dt filter must be installed in the VSD output.

Service Duty and VFD Derating Factors

Roller tables are designed to operate with variable speed demand constant torque even when running at low speeds.
For this reason, WEG Roller Table Motors can be driven by frequency inverter, offering constant torque (or slightly above) in speeds lower than rated or with constant power in speeds above rated*.

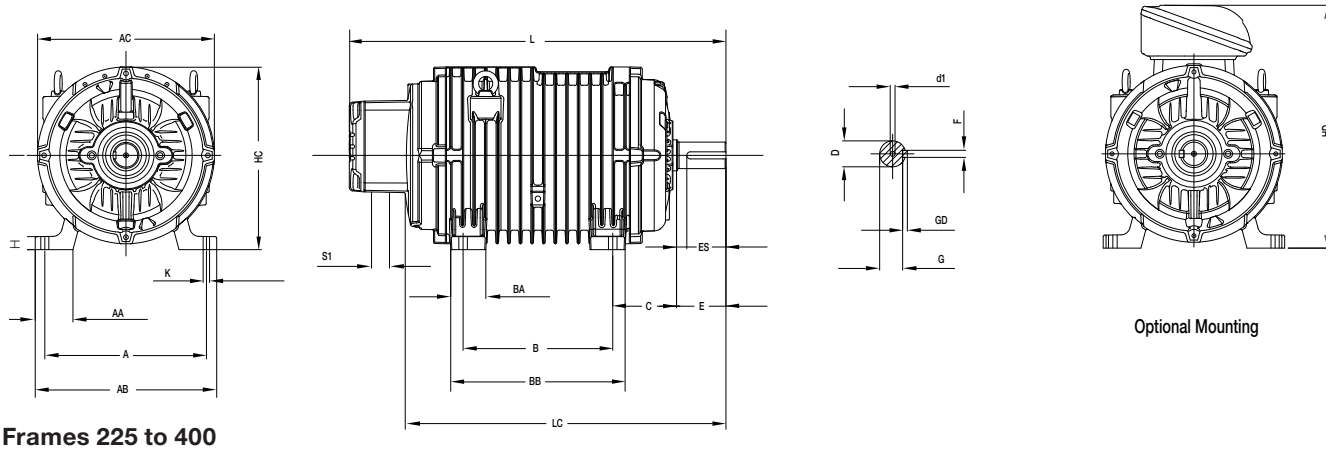


**For the operation of motors in frame sizes 280S/M and above in speeds higher than 1.5 times the rated frequency please contact WEG.*

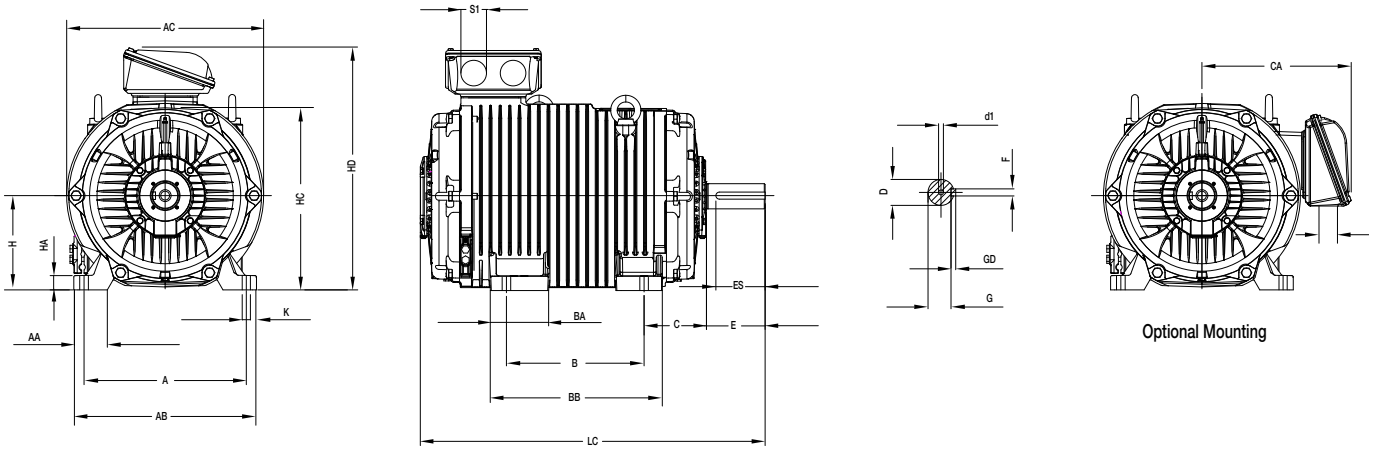
Mechanical Data

Foot Mounted Motors

Frames 132 to 200



Frames 225 to 400

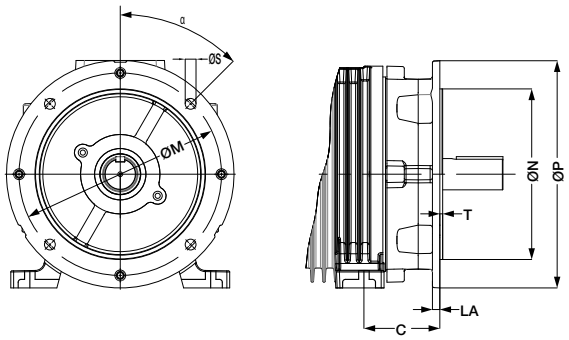


Frame	A	AA	AB	AC	B	BA	BB	C	CA	Shaft					
										D	E	ES	F	G	GD
132M	216	51	248	265	178	60	222	89	-	38k6	80	63	10	33	8
160L	254	64	308	300	254		296	108		42k6	110	80	12	37	
180M	279	80	350	343	241	79	295	121		48k6			14	42.5	9
180L					279	75	332								
200L	318	81	385	380	305	85	371	133		55m6			16	49	10
225S/M	356	80	436	476	286/311	124	412	149	387	60m6	140	125	18	53	11
250S/M	406	100	506		311/349	138	449	168		65m6					
280S/M	457		557	595	368/419	151	517	190	457	75m6			20	67.5	12
315S/M	508	120	628	650	406/457	152	558	216	515	80m6	170	160	22	76	14
355M/L*	610	140	750	740	560/630	200	760	254	550	100m6	210	200	28	90	16
400L/A/B*	686	218	840	800	710/800/900	280	1070	280	650	110m6				100	

** Frames 355 and 400 under request*

Frame	H	HA	HC	HD	K	L	LC	S1	d1	Bearings	
										D.E.	N.D.E.
132M	132	20	265	344	12	499	430	M20x1.5	M12	6308-ZZ	6207-ZZ
160L	160	22	310	415	14.5	642	574		M16	6309-ZZ	6209-ZZ
180M	180	28	351	455		684	568			6311-ZZ	6211-ZZ
180L						722	628				
200L	200	30	390	500	18.5	775	676	M32x1.5	M20	6312-ZZ	6212-ZZ
225S/M	225	34	455	607		-	810	M40x1.5		6314-C3	
250S/M	250	42	480	632	24						
280S/M	280		580	732			955	M50x1.5		6316-C3	6316-C3
315S/M	315	52	640	825	28		1051			6319-C3	
355M/L	355	50	703	900			1291	M63X1.5	M24	6322-C3	6319-C3
400L/A/B	400		800	1045	36		1755			6324-C3	6322-C3

Flange Mounted Motors



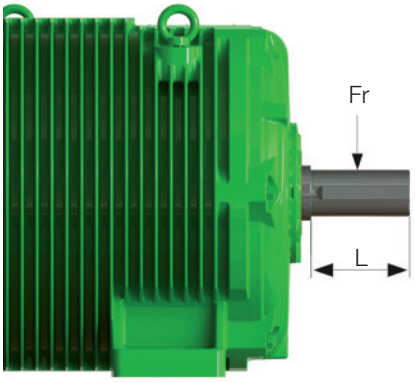
Frame	"FF" Flange dimensions (1)									Number of holes
	Flange	C	LA	M	N	P	T	S	α	
132M	FF-265	89	12	265	230	300	4	15	45°	4
160L	FF-300	108	18	300	250	350	5	19		
180M/L		121	16							
200L	FF-350	133	18	350	300	400				
225S/M	FF-400	149		400	350	450			22°30'	8
250S/M	FF-500	168		500	450	550				
280S/M		190								
315S/M	FF-600	216	22	600	550	660		24		
355M/L*	FF-740	254		740	680	800				
400L/A/B*	FF-940	280	35	940	880	1000		28		

(1) Flange with frame without foot only for 132 to 250. For 280 to 400 only with frame with foot.
** Frames 355 and 400 under request*

Radial Loads

Maximum Permissible Radial Thrust - 50 Hz - Fr in (kN)

For standard version, the shaft of Roller Table motors is manufactured with stainless steel AISI 420, for frames 132M to 280S/M. The shaft material will change to AISI 4140 steel in frame sizes 315S/M to 400L/A/B.
Roller Table motors are supplied with ball bearings as standard for frame sizes 132 to 400. Roller bearings on drive end are available under request. The nominal bearing life L10h is 20,000 or 40,000 hours in conformance with maximum radial loads as described in tables below. The bearing life calculation follows the standard ISO 281:1990 and the characteristics are according the worldwide recognized bearing supplier.



20,000 Hours

Maximum permissible radial thrust - 50 Hz - Fr in (kN) - 20,000 hours						
Frame	4 poles		6 poles		8 poles	
	L	L/2	L	L/2	L	L/2
132	2.3	2.5	2.5	2.8	2.9	3.2
160	3.1	3.5	3.7	4.1	3.9	4.5
180	3.9	4.3	4.5	5.0	5.0	5.5
200	4.6	5.1	5.2	5.7	5.6	6.2
225S/M	6.2	6.8	7.1	7.8	7.6	8.5
250S/M	5.8	6.3	6.5	7.2	7.1	7.8
280S/M	6.4	7.0	6.8	7.4	7.4	8.0
315S/M	7.3	7.9	7.8	8.5	8.3	9.0
355M/L	9.3	10.2	9.9	10.8	10.3	11.3
400L/A/B	7.8	8.3	9.2	9.8	11.7	12.6

40,000 Hours

Maximum permissible radial thrust - 50 Hz - Fr in (kN) - 40,000 hours						
Frame	4 poles		6 poles		8 poles	
	L	L/2	L	L/2	L	L/2
132	1.8	1.9	1.9	2.1	2.2	2.5
160	2.3	2.6	2.8	3.2	3.1	3.5
180	3.0	3.3	3.5	3.9	3.8	4.2
200	3.5	3.8	3.9	4.3	4.2	4.7
225S/M	4.7	5.2	5.4	5.9	5.9	6.5
250S/M	4.3	4.7	4.9	5.3	5.3	5.8
280S/M	4.7	5.1	4.8	5.2	5.1	5.6
315S/M	5.2	5.6	5.4	5.9	5.6	6.1
355M/L	6.6	7.2	6.9	7.5	7.0	7.6
400L/A/B	4.9	5.2	5.9	6.3	8.2	8.9

Maximum permissible radial thrusts for ball bearings.

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