

WG20

Geared motors up to 18,000 Nm



Motors | Automation | Energy | Transmission & Distribution | Coatings



WEG Group - Transforming energy into solutions.

WEG is a leading global manufacturer and solutions provider of drive technology, energy production and distribution, and automation systems and switchgear construction. Founded in Brazil in 1961 by three entrepreneurs, WEG has grown to become one of the most important global manufacturers of electric motors. WEG has more than 33,000 employees around the world. The company's global presence is supported by branches in 36 countries, production facilities, and a network of authorised dealers on all five continents.

Your requirements - our expertise

As one of the leading global manufacturers and solutions providers of drive technology, WEG's aim was to expand its extensive range of products by gear units produced in its own facilities. Perfect coordination of products throughout the drive train has put WEG in a position to offer customers even more superior and efficient solutions.

Under the leadership of Watt Drive, the challenge was to develop a program which not only meets the current demands of the market, but also satisfied WEG's high quality requirements. The Group's own centre of excellence for geared motors in Austria, part of the WEG Group since 2011, can draw on more than 40 years of experience in development, production and sales of gear units and geared motors.

In order to satisfy the requirements of state-of-the-art geared motors the following market requirements were taken into account during the development phase:

Standard mounting dimensions

For users, the aim was to make the new range of geared motors as easy and effortless to use as possible. To ensure installation in an existing system or production line worked effortlessly without incurring unnecessary costs for conversions, the developers decided to adapt the

mounting dimensions of the new gear units to products already established on the market. The objective: worldwide, easy and cost-effective interchangeability.

Torque transmission

The gear units needed to be compact, efficient, robust and reliable. In order to achieve this goal a transmission had to be designed which allows large ratio ranges in a two-stage model while being able to integrate easily into the new design gear housing.

Efficiency

Energy efficiency has always been of paramount importance to WEG. The aim here was to live up to this demand when designing the new WG20 geared motors. This requires the perfect interaction of sophisticated technology and exclusive use of high quality components.

Worldwide use

To meet the requirements of global mechanical and plant engineering, it was vital that the new geared motors can be used worldwide, whilst maintaining a high level of flexibility for applications.

The solution is **WG20**.



WG20 - a new generation of geared motors

WG20 is the first geared motor range to be completely developed in-house at WEG. It comprises helical, parallel shaft and helical bevel gear units with torques between 50 and 18,000 Nm. Already the two-stage units excel with their large ratio range, as well as being exceptionally efficient thanks to the sophisticated design. The light aluminium housings of the gear units up to 600 Nm and the robust cast iron housings from 800 Nm provide a highly versatile and reliable product, with a wide range of possible applications.



Highly efficient

The gear units are two-stage designs featuring a large ratio range, which in turn makes them highly efficient. Furthermore, the products of the WG20 series demonstrate only extremely low power losses. On the one hand, this is achieved by low circumferential speeds in the input stage and, on the other hand, by reducing splashing losses due to optimised amounts of lubricant. These characteristics also have a positive effect on the gear lifetime. Under normal conditions of use, the geared motors up to 600 Nm are maintenance-free and lubricated for life.



In line with market requirements

For maximum user convenience, the housing of the new gearbox series has been designed in keeping with market requirements. The crucial mounting dimensions of the design correspond with the specifications already established on the market which allows for direct exchange. This means that WG20 geared motors are not only suitable for use in new applications, but can also be easily integrated into existing systems as a replacement or for optimisation purposes.





Optimised design

When designing the new gear unit range, the designers paid particular attention to develop a robust housing, opting for a light aluminium construction for the frame sizes up to 600 Nm. The die casting process used in production not only benefits from a smooth surface for demanding hygienic applications, but also features excellent heat conductivity. The housing design additionally enhances this property. The intelligently designed surface encourages heat dissipation from the internal gear parts, thereby aiding more efficient operation and a longer life.

The housings for frame sizes from 800 Nm are fabricated in MONOBLOC design and made of cast iron, making them especially sturdy and torsionally stiff.

Gear teeth geometry has also been refined. Calculations applying the finite element method have optimised gear teeth safety, especially in the tooth base area. High quality standards in the gear wheel production process not only ensure a sound and smooth operation, but also increased durability.

The overall compact design also affects the amount of lubricant used, helping to conserve resources when handling raw materials. Due to the arrangement of gearing units and optimised housing interior, only low levels of oil are necessary in the gear unit.

WEG has also achieved improvements on the input side. The end shields and terminal box of motors up to frame size 132 are now made of light aluminium which considerably reduces the weight of the geared motor. For frame sizes 160 up to 250 cast iron motors are used which are based on the latest W22 motor technology.

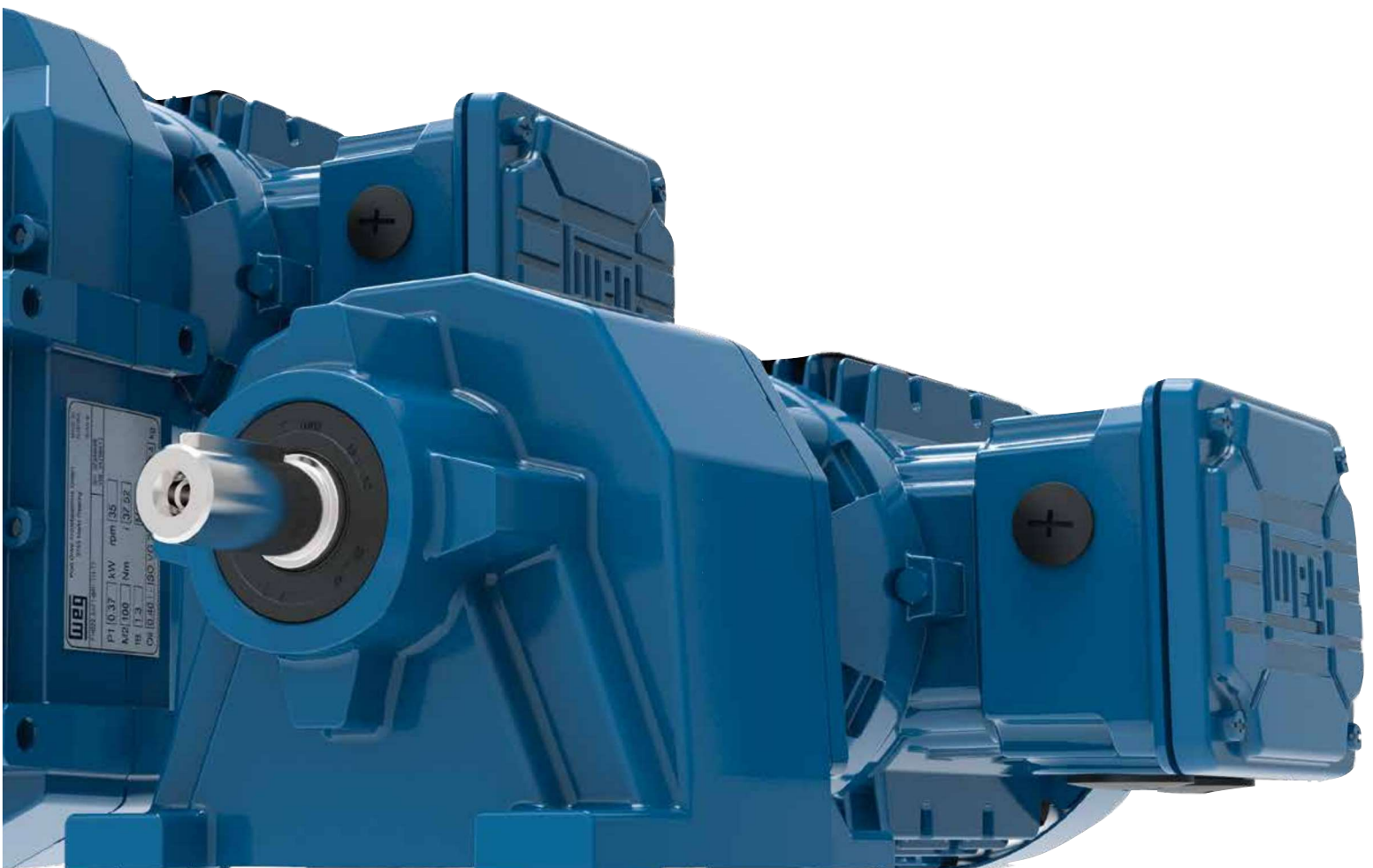
Furthermore, the terminal box dimensions have been changed for ease of access.



Less noise

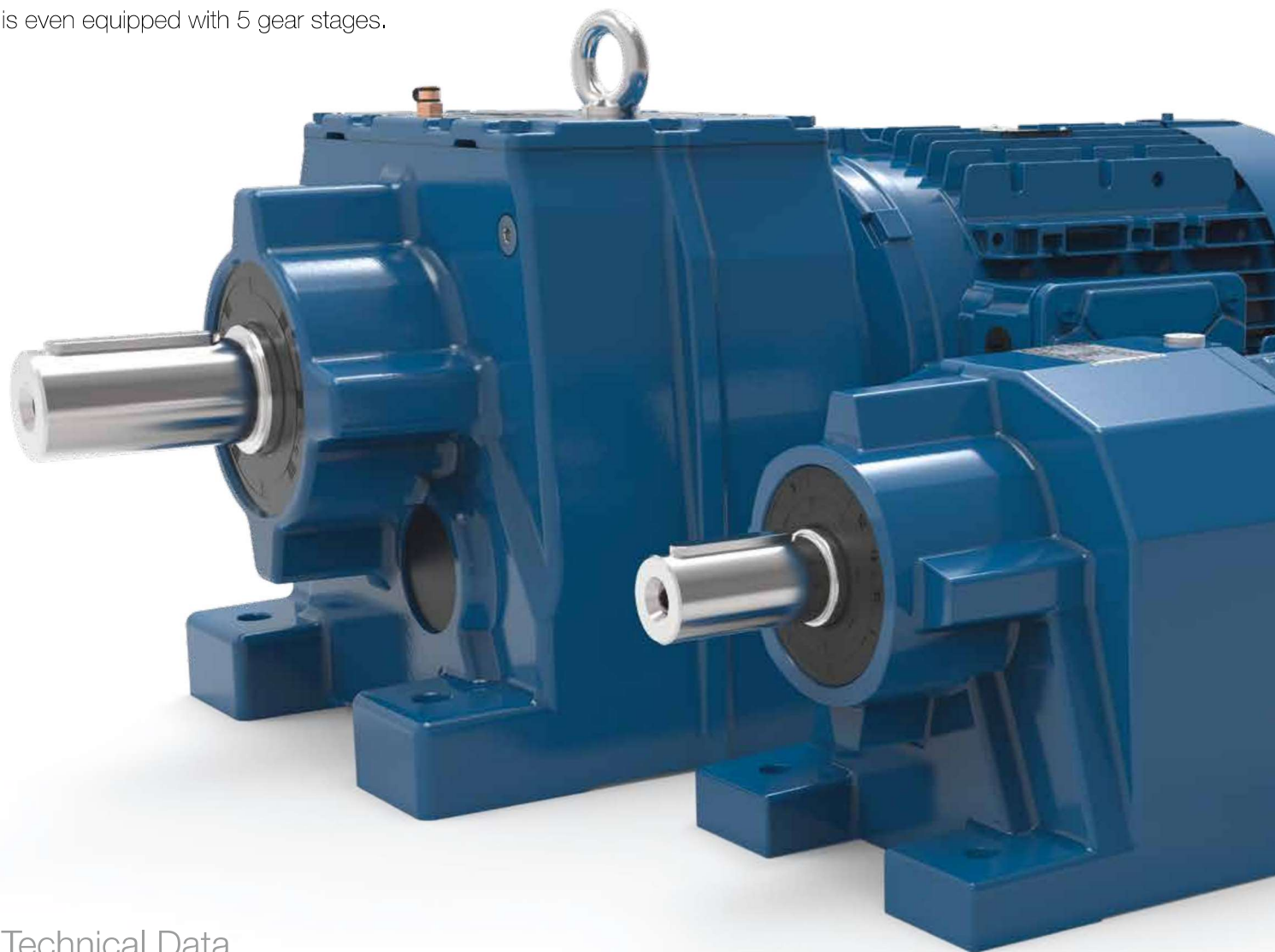
The WG20 series gear units are characterised by their smooth, quiet operation.

High quality components, which originate almost exclusively from in-house production, engage perfectly to provide the basis for guaranteed low noise operation. Even the flexible gear wheel construction helps reduce noise emission. The small motor pinion allows for lower circumferential speeds in the first stage and reduced noise emissions.



Helical geared motors C

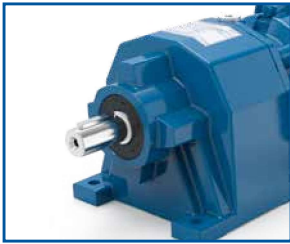
The helical gear units come in twelve housing sizes for nominal torques from 50 to 18,000 Nm and are available in both foot and flange designs. While the two smaller gear units (C00 and C01) are able to perform to their full potential with just two stages, the larger sizes C03 to C08 are available in both two or three stages for applications in higher torque ranges. From C09 there is an additional fourth stage, while the C16 is even equipped with 5 gear stages.



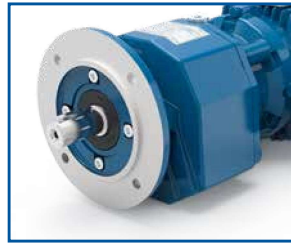
Technical Data

		C00	C01	C03	C05	C06	C07	C08	C09	
Nominal torque	[Nm]	50	85	200	400	600	820	1550	3000	
Number of stages		2-stage	2-stage	2-/3-stage	2-/3-stage	2-/3-stage	2-/3-stage	2-/3-stage	2-/3-/4-stage	
Ratio range		2.44 - 47.44	3.09 - 66.5	3.34 - 286.32	3.69 - 328.43	3.73 - 375.71	5.30 - 351.33	5.12 - 368.94	4.22 - 3282.02	
Speed range at 1400 rpm 50Hz	[rpm]	29 - 573	21 - 453	4 - 419	4 - 366	3 - 376	4 - 264	4 - 274	0.4 - 332	
Power range 50Hz	[kW]	0.12 - 0.75	0.12 - 1.5	0.12 - 3	0.12 - 7.5	0.12 - 9.2	0.12 - 15	0.12 - 22	0.12 - 30	
Output shaft	[mm]	20 x 40	20 x 40	25 x 50	30 x 60 35 x 70	35 x 70	40 x 80	50 x 100	60 x 120	
Output flange IEC	[mm]	120/140/160	120/140/160	120/140/ 160/200	160/200/250	200/250	250/300	300/350	350/450	
Housing material		Aluminium					Cast iron			

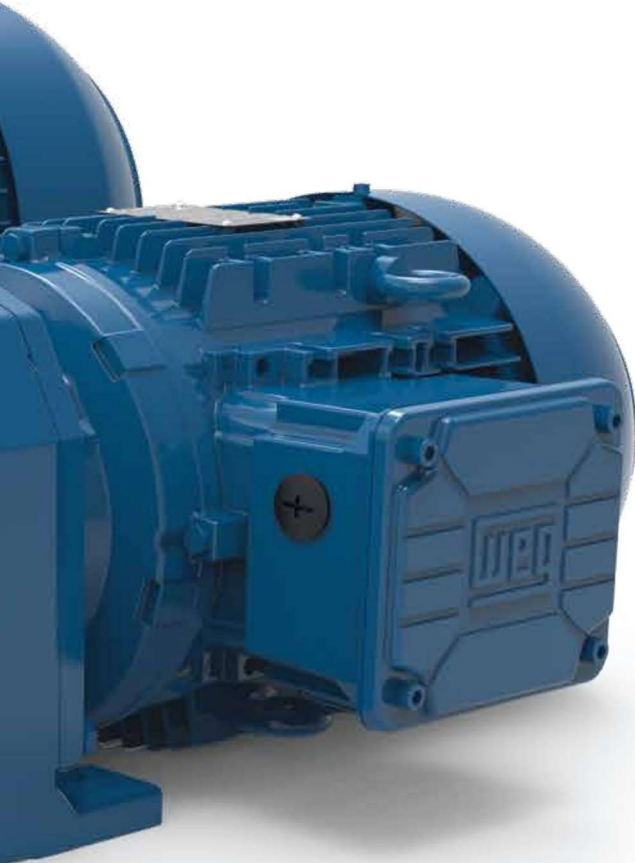
Design versions



Foot

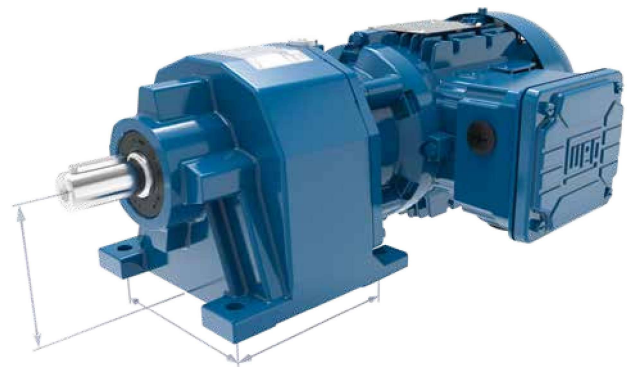


Flange



Standard mounting dimensions

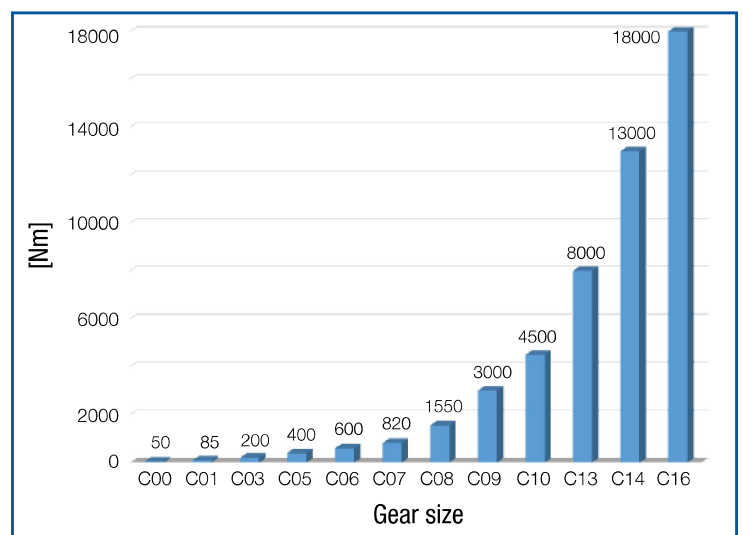
Taking the most significant standard mounting dimensions available into account, the design allows for easy integration of WG20 geared motors into almost any existing systems.



Typical areas of application

Machines for timber processing companies, presses, conveyor belts, rotary tables, pumps, packaging machines, bakery equipment, lifts, looms, screw conveyors and screw compressors.

C10	C13	C14	C16
4500	8000	13000	18000
2-/3-/4-stage	2-/3-/4-stage	2-/3-/4-stage	2-/3-/4-/5-stage
4.19 - 2636.78	4.00 - 1891.77	5.17 - 2162.84	5.96 - 22405.25
0.5 - 334	0.7 - 350	0.7 - 271	0.1 - 235
0.12 - 37	0.12 - 55	0.12 - 55	0.12 - 75
70 x 140	90 x 170	110 x 210	120 x 210
350/450	450/550	450/550	550/660
Cast iron			



Parallel shaft geared motors F

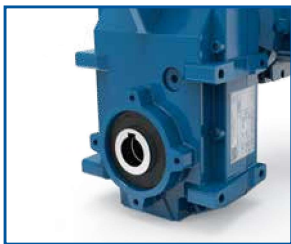
Thanks to their structural design, parallel shaft gear units are particularly suitable for conveyor technology applications. All 11 sizes can be fitted with either a hollow shaft, output shaft, mounting flange or shrink disc. The ratio range of gear unit sizes F04 to F07 can be extended by a third, from F08 by a fourth and with size F15 even with a fifth gear stage.



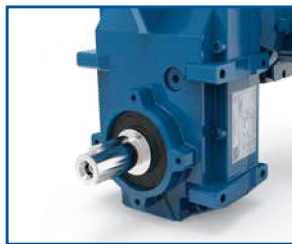
Technical Data

		F02	F03	F04	F05	F06	F07	F08	F09
Nominal torque	[Nm]	130	220	400	600	820	1500	3000	4500
Number of stages		2-stage	2-stage	2-/3-stage	2-/3-stage	2-/3-stage	2-/3-stage	2-/3-/4-stage	2-/3-/4-stage
Ratio range		3.93 - 97.85	3.85 - 70.17	4.26 - 422.98	4.98 - 487.67	4.41 - 412.64	4.29 - 385.37	4.09 - 3836.13	4.16 - 3086.96
Speed range at 1400 rpm 50Hz	[rpm]	14 - 356	20 - 364	3 - 328	3 - 281	3 - 317	4 - 327	0.4 - 327	0.5 - 337
Power range 50Hz	[kW]	0.12 - 1.5	0.12 - 3	0.12 - 3	0.12 - 9.2	0.12 - 15	0.12 - 15	0.12 - 22	0.12 - 37
Output shaft/ Ø hollow shaft	[mm]	25 x 50 / 25	25 x 50 / 30	30 x 60 / 35	35 x 70 / 40	40 x 80 / 40	50 x 100 / 50	60 x 120 / 60	70 x 140 / 70
Output flange IEC	[mm]	160	160	200	250	250	300	350	450
Housing material		Aluminium				Cast iron			

Design versions



Hollow shaft



Output shaft



Flange

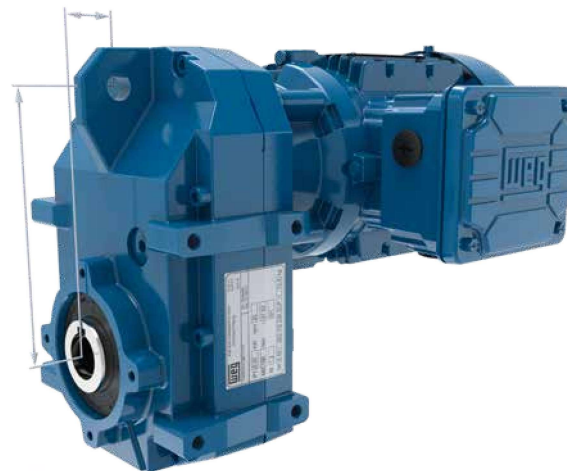


Shrink disc



Standard mounting dimensions

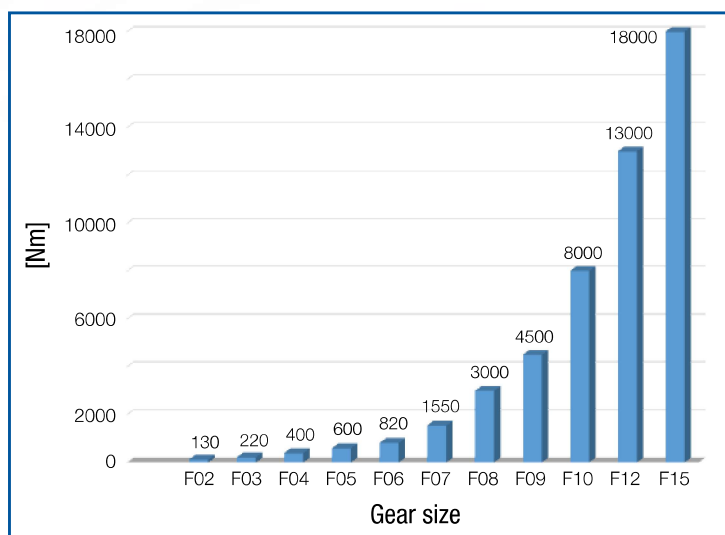
Taking the most significant standard mounting dimensions on the market into account, the design allows for the easy integration of WG20 geared motors into almost any existing systems.



Typical areas of application

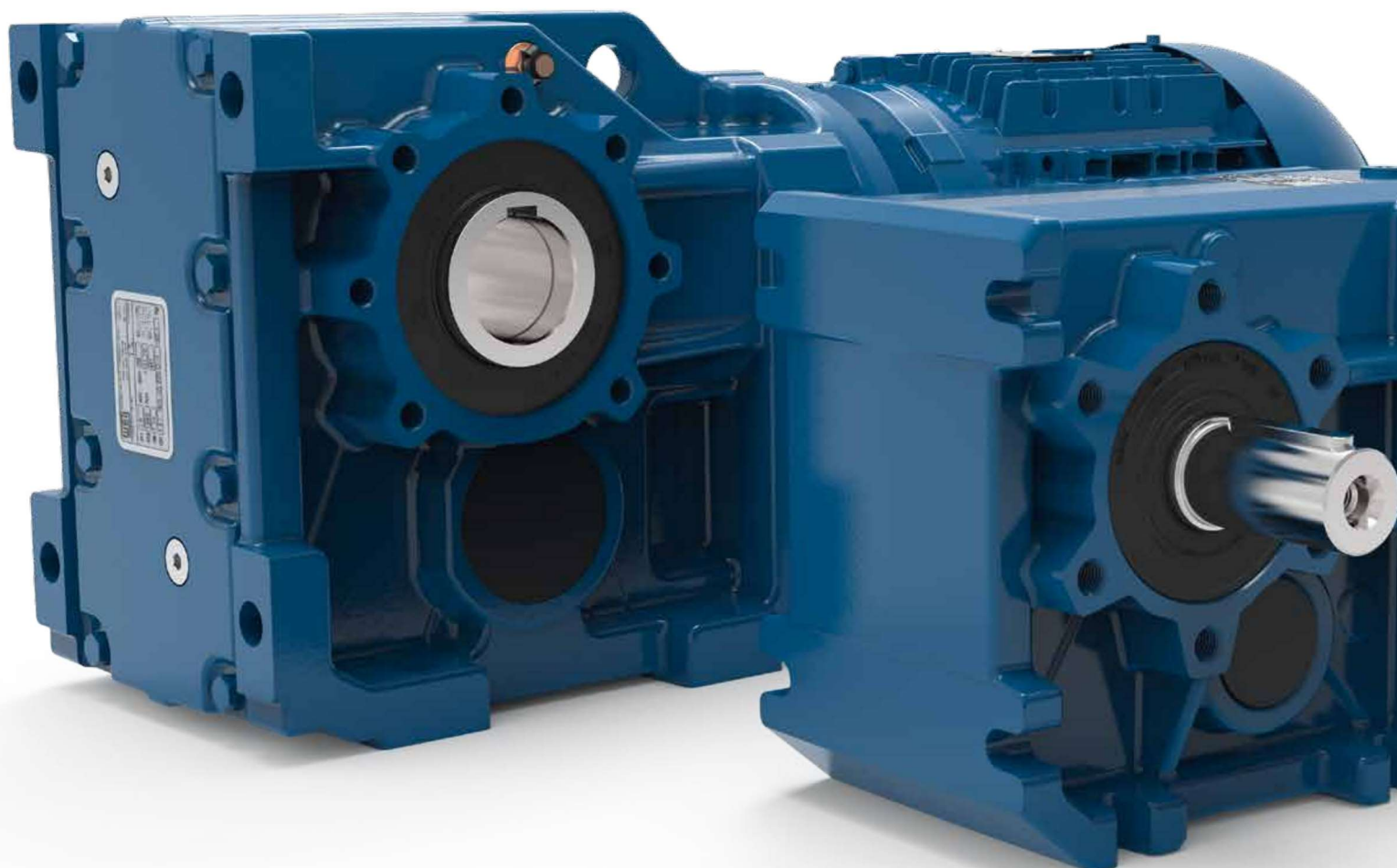
Machines for waste disposal and recycling, roller conveyors and laminating machines, machinery for timber processing companies, agitators, mixing equipment, stacking equipment, separators, screw conveyors, travel drives for cranes, welding equipment and surface aerators.

F10	F12	F15
8000	13000	18000
2-/3-/4-stage	2-/3-/4-stage	2-/3-/4-/5-stage
4.38 - 2276.77	4.64 - 2307.03	5.84 - 24805.81
0.6 - 320	0.6 - 302	0.1 - 240
0.12 - 55	0.12 - 55	0.12 - 75
90 x 170 / 90	110 x 210 / 100	120 x 210 / 120
450	550	660
Cast iron		



Helical bevel geared motors K

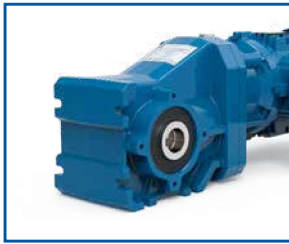
Helical bevel gear units are suitable for a multitude of applications. The two-stage basic design is extended by a third gear stage upward of 200 Nm, a fourth upward of 3000 Nm and a fifth at 18000 Nm. K gear units can also be equipped with a hollow shaft, output shaft, shrink disc, torque arm and mounting flange.



Technical Data

		K02	K03	K04	K05	K06	K07	K08	K09
Nominal torque	[Nm]	110	200	400	600	820	1550	3000	4500
Number of stages		2-stage	3-stage	3-stage	3-stage	3-stage	3-stage	3-/4-stage	3-/4-stage
Ratio range		3.82 - 68.88	4.17 - 217.88	4.87 - 277.79	4.27 - 245.7	4.94 - 198	7.91 - 256.14	7.45 - 2205.52	6.94 - 1810.95
Speed range at 1400 rpm 50Hz	[rpm]	20 - 367	6 - 336	5 - 287	5 - 328	7 - 283	6 - 177	0.6 - 188	0.8 - 202
Power range 50Hz	[kW]	0.12 - 1.5	0.12 - 3	0.12 - 4	0.12 - 9.2	0.12 - 9.2	0.12 - 15	0.12 - 22	0.12 - 37
Output shaft/ Ø hollow shaft	[mm]	20 x 40 25 x 50 / 25	25 x 50 / 30	30 x 60 / 35	35 x 70 / 40	40 x 80 / 40	50 x 100 / 50	60 x 120 / 60	70 x 140 / 70
Output flange IEC	[mm]	160	160	200	250	250	300	350	450
Housing material		Aluminium				Cast iron			

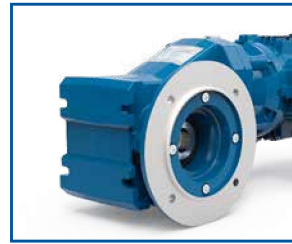
Design versions



Hollow shaft



Output shaft



Flange

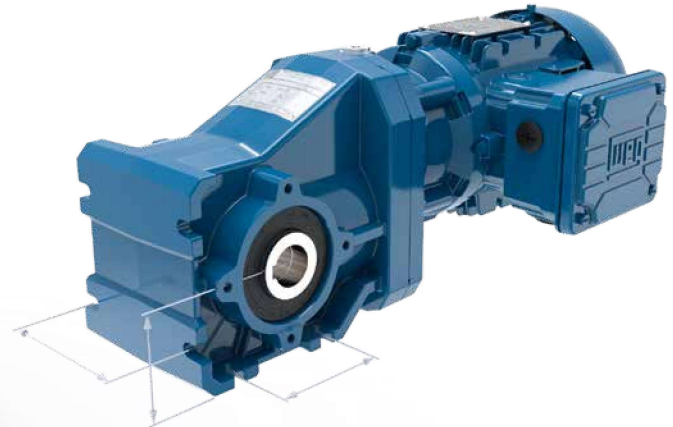


Shrink disc and torque arm



Standard mounting dimensions

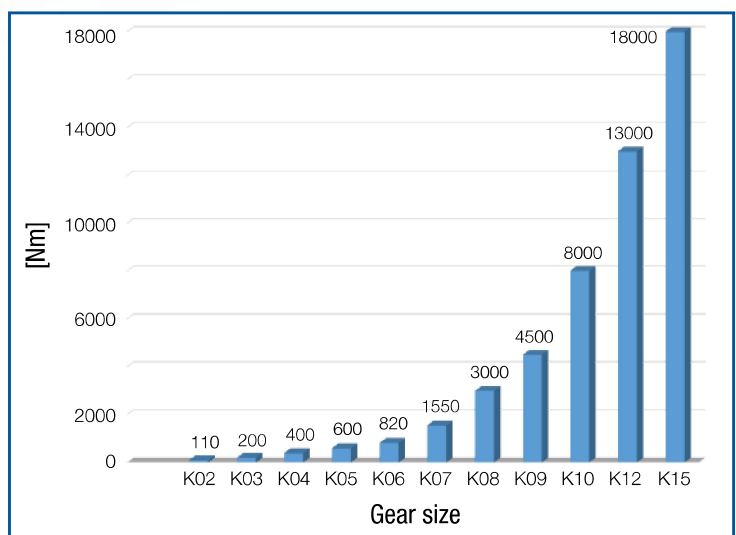
Taking the most significant standard mounting dimensions on the market into account, the design allows for easy integration of WG20 geared motors into almost any existing systems.



Typical areas of application

Roller tables and laminating machines, agitators, winches, lifts, heavy duty conveyors for bulky goods, shredders, conveyor belts, baggage handling systems, scenery lifts for stage machinery, bulk material and unit conveyors, and concrete mixing plants.

K10	K12	K15
8000	13000	18000
3-/4-stage	3-/4-stage	3-/4-/5-stage
6.64 - 1301.54	6.60 - 1579.81	8.61 - 14005.40
1.1 - 211	0.9 - 212	0.1 - 163
0.12 - 55	0.12 - 55	0.12 - 75
90 x 170 / 90	110 x 210 / 100	120 x 210 / 120
450	550	660
Cast iron		



Aluminium modular integral motor

The latest generation of WEG aluminium motors up to frame size 132 excels due to the user-friendly design to efficiency class IE3 and the reliable quality in various industrial sectors. The optimised design of the end shields and aluminium terminal box also results in a crucial reduction in weight. Thanks to the special wide-range winding and nine-bolt terminal block, flexible use of the EUSAS motor is guaranteed anywhere in the world.

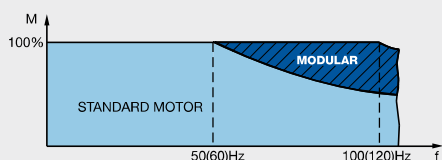
Technical Data (standard)

	Multi-Voltage	EUSAS
Power output	0.12 - 0.55 kW	0.75 - 9.2 kW
IEC frame sizes	63 - 80	80 - 132
Number of poles	4 and 6	
Efficiency class	IE3	
Voltages	50 Hz: 230/400 V 60 Hz: 265/460 V	50 Hz: 230/400 V, 115/200 V 60 Hz: 265/460 V, 132/230 V
		50 Hz: 400/690 V, 200/346 V 60 Hz: 460 V, 230/400 V
Terminal board	6 bolts, 6 connection slots	9 bolts, 12 connection slots
Inverter operation	up to 87 Hz	up to 100/120 Hz
Thermal class	F	
Protection class	IP55	
Housing material	Aluminium	
Thermal protection	Bi-metal switch and thermistor protection PTC	
Certificates	CE, UL/CSA, EAC, CCC	CE, UL/CSA, EAC

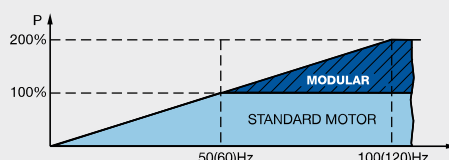


EUSAS: 100 Hz characteristic - double the power

EUSAS modular motors from 0.75 to 75 kW are perfect for operation with electronic speed control. The 87/100/120 Hz voltage/frequency characteristic allows them to be operated in frequency inverter mode even without special windings. This allows the nominal output to be doubled without losing torque.



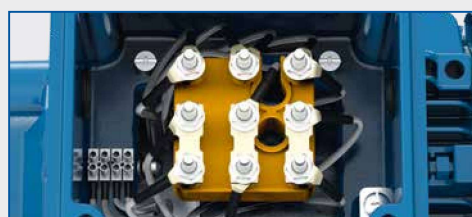
Rated (nominal) torque to double rated (nominal) speed



Double rated (nominal) power at twice the rated (nominal) speed

Just switch over and use worldwide

The special wide-range winding of the motor enables selection of up to four different voltage levels (star, delta, double star, and double delta) by means of twelve connection slots on the 9-bolt terminal block. This allows modular motors to be used with almost any mains voltage and frequencies worldwide. Furthermore, the terminal box dimensions have been changed for ease of access.



Cast iron modular integral motor

The newly developed integral motors in frame sizes 160 to 250 are members of the latest generation of the W22 motor family. Due to their innovative design, these motors guarantee maximum value to the user and perform with highest efficiency and reliability. The three-phase motors with power output of 11 to 75 kW are available up to energy efficiency class IE4, they can be mains operated and are certified for use in all important markets worldwide.

Technical Data (standard)

	EUSAS
Power output	11 - 75 kW
IEC frame sizes	160 - 250
Number of poles	4
Efficiency class	IE3, IE4
Voltages	50 Hz: 400/690 V, 200/346 V 60 Hz: 460 V, 230/400 V
Terminal board	9 bolts, 12 connection slots
Inverter operation	up to 100/120 Hz
Thermal class	F
Protection class	IP55
Housing material	Cast iron
Thermal protection	Thermistor protection PTC
Certificates	CE, UL/CSA, EAC



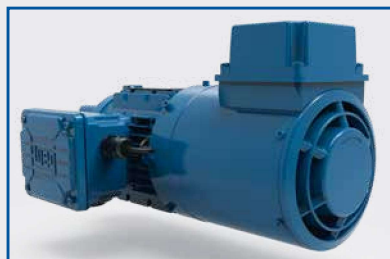
Motor modules for aluminium and cast iron motors

The particular advantage of the modular motor range is the facility to add system kits to the standard model, allowing a multitude of useful modules to be adapted to the customer's requirements.

Available motor modules include single and double brake systems, ventilation systems, extended terminal box systems, encoder systems (inside and outside the fan cover), back stops, protection caps, and hand wheel.



Spring loaded brake



Forced ventilation



Incremental encoder (forced ventilation)





www.cat4cad.com

Easy product selection

The “cat4CAD®” product configuration tool makes it easy to interactively select products. Comprehensive wizards, user-friendly navigation and many other extra features allow quick configuration of the required drive.

Advantages

- Extensive product library
- Fast configuration of motors and geared motors
- Creation of project files with comprehensive technical documentation
- Easy modification of generated product data by means of the project file
- Quick request times

Features

- The entire menu is available in many languages.
- To-scale 2D/3D drawings and PDF and DXF dimension sheet drawings of the previously selected drive.
- The 2D/3D data can be exported for use in standard CAD programs.
- Comprehensive technical data sheets of the configured gear unit and motor at the click of a button.
- The project file allows complete management of previously selected drives on one screen.
At the click of a button one can save or print this project file, create PDF and DXF dimension drawings, and send enquiries directly to our sales team.

See the online version at www.cat4cad.com

Download the offline version at www.wattdrive.com



Advantages for you



A geared motor **for the whole world**

- Standard mounting dimensions
- Can be switched to different voltages around the world
- Certifications for international markets



Sophisticated design **for more efficiency**

- Wide speed range
- High efficiency
- Low noise levels
- Optimised oil fill quantity
- Maintenance-free and lubricated for life up to 600 Nm
- High quality components and equipment
- Motors to efficiency class IE4



Comprehensive equipment **for more flexibility**

- Can be extended by different motor modules
- Temperature monitoring without added costs
- Protection degree IP55 for the standard design
- Switchover to 100/120 Hz characteristic in frequency inverter operation



The optimal programme **for lower costs**

- Reduction in operating costs for plant operators
- Standard mounting dimensions enable easy interchangeability without system conversion
- Low maintenance costs
- Flexibility and savings for purchasing, technology and warehousing



One company **for more service**

- Complete drive applications from WEG
- Global WEG branches and sales partners
- Short delivery times
- Innovative product configuration tool

For our worldwide
operations visit our websites



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