



ELECTRIC DRIVES
FOR EVERY DEMAND



W2BA and K33
enclosed self-ventilated motors for use
in closed-loop and power-optimized
drive systems

Enclosed self-ventilated motors for closed-loop and power-optimized drive systems

The new Regulation (EU) 2019/1781 for stipulating eco-design requirements for electric motors and speed governors, which comes into effect from 1st July 2021, for the first time provides the guidelines for controlled drive systems (electric motor and converter). To complement this, VEM has developed two new series of low voltage motors, which are specially optimised for converter operation.

These series are especially convincing because of the following features:

- ▶ their high dynamics,
- ▶ their high overload capacity,
- ▶ their large field weakening range,
- ▶ their extremely high torque density,
- ▶ their compact design,
- ▶ their flexible modular design principle,
- ▶ their speed-independent cooling,

and are a one-stop system solution.



Areas of application

The new motor series can be used in many industries, especially in applications that require high power density or small moments of inertia. Whereas, for example, high power density is required when replacing DC motors with controlled three-phase asynchronous motors, some drives require small moments of inertia due to their dynamics.

The areas of application include:



AC-Compact actuators

The AC-Compact actuators consist mainly of the AC-Compact asynchronous motors and the VEMoDrive frequency converters. The asynchronous motors of the AC-Compact series are specially designed for converter operation in order to achieve a compact design with high torque output for speed-controlled applications. The main feature of the AC-Compact motors is the angular stator laminated core, which takes over the functions of the enclosure and integrates the air-cooling system. This design enables a very compact and robust motor with high torque density and low moment of inertia. Due to the speed-independent cooling, the motors can be operated continuously with full torque at any speed.

Your benefits

AC-Compact actuators are designed for a wide range of applications. The motors of the AC-Compact series are optimally aligned to operate with the VEMoDrive frequency converters VSI 2.0. The main advantages of the AC-Compact actuators are:

- integrated drive system
- uniform and user-friendly operating concept
- numerous options meet your customer requirements
- type of protection depending on series from IP23 to IP54
- air and liquid cooling, primary cooling circuit always forced
- service-friendly module concept
- integrated EMC mains filter (industry)

**High dynamics
for challenging
applications**



Three-phase asynchronous motor for frequency converter operation (without enclosure), in the passage, internally-externally cooled IC06; protection class IP23

Type	AH	2p	P _n kW	U _n V	I _n A	f _n	Connection	n _n 1/min	M _n Nm	M _λ /M _n	cos φ	η %	J _{mot} kgm ²
K33A 250S4	250	4	135	500	190	26	Y	750	1,719	3.3	0.88	92.63	2.1
K33A 250M4	250	4	175	500	242	26	Y	750	2,228	3.1	0.90	92.81	2.6
K33A 250L4	250	4	225	500	310	26	Y	750	2,865	3.3	0.90	93.28	3.3
K33A 280S4	280	4	210	500	287	26	Y	750	2,673	3.6	0.90	93.99	4.2
K33A 280M4	280	4	250	500	333	26	Y	750	3,183	3.6	0.92	94.12	5.1
K33A 280L4	280	4	320	500	420	26	Y	750	4,074	3.2	0.94	94.01	6.4
K33A 315S4	315	4	290	500	391	25	Y	750	3,693	3.2	0.91	94.47	6.9
K33A 315M4	315	4	340	500	458	25	Y	750	4,329	3.4	0.90	94.81	8.2
K33A 315L4	315	4	420	500	569	25	Y	750	5,348	3.7	0.90	95.08	10.0
K33A 355S4	355	4	450	500	590	25	Y	750	5,729	4.1	0.92	95.57	15.9
K33A 355M4	355	4	500	500	669	25	Y	750	6,366	4.6	0.90	95.84	17.7
K33A 355L4	355	4	630	500	834	25	Y	750	8,021	4.5	0.91	95.91	21.3
K33A 400S4	400	4	620	500	817	25	D	750	7,895	4.2	0.91	96.19	25.9
K33A 400M4	400	4	720	500	944	25	Y	750	9,167	4.3	0.91	96.29	29.8
K33A 400L4	400	4	850	500	1,149	25	D	750	10,822	4.9	0.89	96.50	34.9

Technical features of the K33 series

- steel-welded design without enclosure (self-supporting laminated core)
- die-cast aluminium rotor body
- compact design with high power density (low space requirement, low weight)
- open design, air-cooled (IP23, IC06) Series K33A
- closed design, water-cooled with heat exchanger (IP55, IC86W) Series K33C
- power range 4 poles: 135 kW to 850 kW
- mains voltages:
 - 50 Hz: 400 V, 500 V, 690 V
 - 60 Hz: 460 V



- ▶ highly efficient
- ▶ can operate at permanent maximum output
- ▶ suitable for short time duty

Three-phase asynchronous motor for frequency converter operation in the passage, internally-externally cooled IC06; protection class IP23

Type	AH	2p	P _n kW	460U _n V	I _n A	f _n	Connection	n _n 1/min	M _n Nm	M _k /M _n	cos φ	η %	J _{mot} kgm ²
W2BA 225 M 4	225	4	140	480	219	60	D	1,765	757	3.2	0.86	93.90	0.7
W2BA 225 LX4	225	4	205	480	308	60	D	1,765	1,109	3.1	0.89	94.30	1.1
W2BA 225 LZ4	225	4	230	460	350	60	D	1,767	1,243	3.3	0.87	94.40	1.2
W2BA 280 MX4	280	4	230	460	336	60	Y	1,771	1,240	3.4	0.91	94.70	1.5
W2BA 280 LZ4	280	4	325	460	474	60	Y	1,773	1,751	3.7	0.91	95.00	2.1
W2BA 315 MY4	315	4	280	460		60		1,800	1,486				
W2BA 315 MX4	315	4	335	460	483	60	D	1,800	1,777	3.6	0.91	95.10	2.7
W2BA 315 L 4	315	4	375	460	535	60	D	1,776	2,016	3.5	0.92	95.20	3.0
W2BA 315 LX4	315	4	450	460	640	60	D	1,777	2,418	3.6	0.92	95.30	3.6
W2BA 355 MY6	255	6	315	460	495	45	D	882	3,410	3.2	0.86	93.60	6.5
W2BA 355 M 6	255	6	290	460	607	45	D	884	4,107	3.5	0.84	93.70	8.0
W2BA 355 MX6	255	6	465	460	714	45	D	882	5,033	3.3	0.87	94.10	9.5
W2BA 355 L 6	255	6	490	460	763	45	D	883	5,298	3.4	0.86	94.20	10.0
W2BA 355 LX6	255	6	530	460	827	45	D	884	5,729	3.5	0.86	94.20	11.1
W2BA 400 MX6	400	6	600	460	892	45	D	886	6,464	3.1	0.89	94.90	14.5
W2BA 400 L 6	400	6	685	460	1,041	45	D	888	7,369	3.4	0.87	95.20	16.3
W2BA 400 LX6	400	6	760	460	1,145	45	D	888	8,177	3.4	0.88	95.10	18.0
W2BA 400 LZ6	400	6	870	460	1,287	45	D	887	9,368	3.3	0.89	95.20	21.0

Technical features of the W2BA series

- steel-welded enclosure with proven grey cast iron components of the standard series
- die-cast aluminium rotor body
- compact design with high power density (low space requirement, low weight)
- open design, air-cooled (IP23, IC06)
- power range 4 poles: 140 kW to 450 kW / 6 poles: 315 kW to 870 kW
- mains voltages:
 - 50 Hz: 400 V, 500 V, 690 V
 - 60 Hz: 460 V, 480 V



Customization in accordance with individual requirements

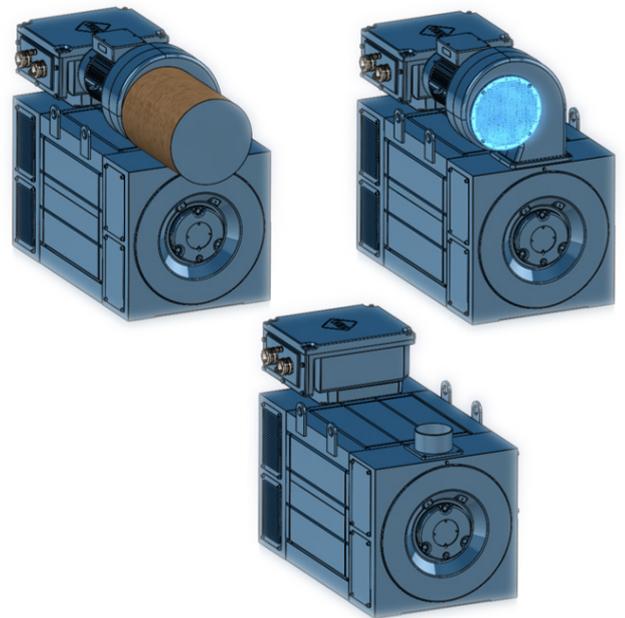
Ventilation

The standard ventilation of the motor series is as follows:

- low pressure radial fan
- structure on N-S top
- air flows through stator corners plus rotor holes
- air outlet on D-S free

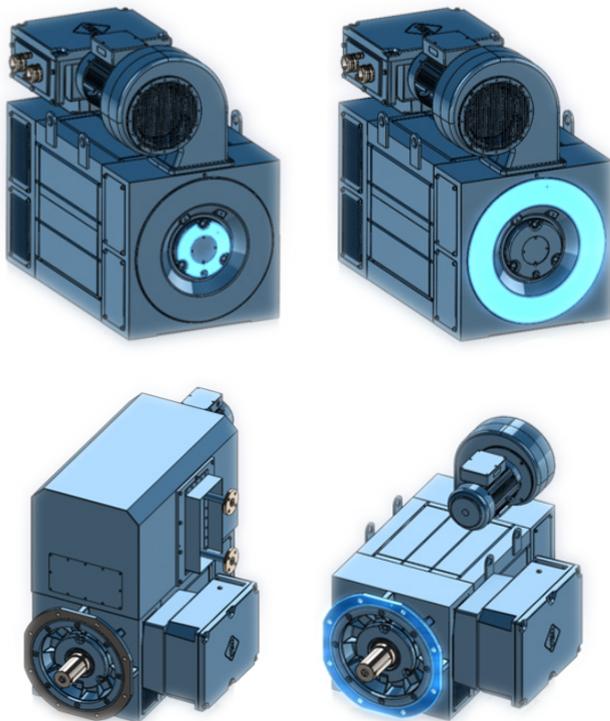
However, these can be individually adapted to your requirements and offer following possibilities:

- the mounting of filter technology
- pipe connection technology, so that the cooling air can be specifically routed, cleaned and used further
- an increase in performance owing to several radial fans



Attachment options

- braking
 - safety brake (elevator, winder)
 - holding brake
 - working brake
- motor feedback systems
 - depending on regulatory needs
 - SIL standards can be integrated (IEC 61508)
 - existing systems VEM can be used because they are adaptable to bearing caps
- standstill heaters
- heat exchanger (K33C)
- gearbox
- automatic re-lubrication systems
- extension with a second shaft end N-S



Good reasons for VEM

- Made in Germany
- own design engineers develop tailored solutions
- high proportion of flexible in-house manufacturing, e.g. press shop, core assembly and winding shop
- fast response times
- worldwide service availability
- durable and robust under extreme conditions
- environment-friendly and energy-efficient
- low life-cycle costs





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