

CATALOG

Low voltage generators for engines

Industrial application series

<https://new.abb.com/motors-generators/generators/generators-for-engines>



- ABB's low voltage generators are designed for diesel or gas generators sets, for continuous or standby operations. They can be used also for a wide range of different industrial applications.

—

We provide motors and generators, services and expertise to save energy and improve customers' processes over the total life cycle of our products, and beyond.

—

Low voltage industrial series generators

3 phases, 4 poles, 1500/1800 rpm
IEC frame size 450-500, 1565-3750 kVA

04 –05	General information
06 –07	Electrical features
08 –09	Mechanical features
10 –12	Technical data
13 –15	Outline drawing

General information

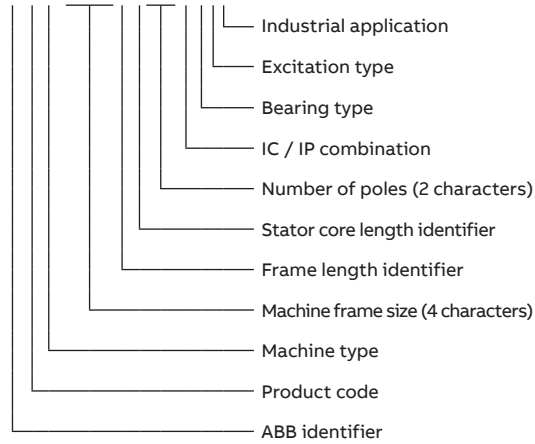
Our new range of low voltage generators is developed to better fit market demands and is available in IEC frame sizes 450 & 500. The generators are ideal for supplying continuous, standby or emergency power for residential buildings, commercial premises, hospitals, schools, telecommunication facility, industrial sites and mines.



Electrical features

Type definition

NMG 0450CC04 DBPI



Bearing type: A – Double bearing, B – Single bearing
Excitation type: S – Shunt, A – Auxiliary winding, P – PMG

Voltage regulator

The automatic voltage regulator (AVR) is manufactured according to ABB specifications to ensure stable operation. The standard AVRs are of analogue type and mounted inside the main terminal box. A digital voltage regulator is available as an option.

Overload capability

Permissible overload is 110% for one hour every twelve hours.

Excitation systems

- Brushless excitation, built-in AVR and self-excited (PMI)
- Shunt, auxiliary winding and PMG excitation systems
- Sustained short circuit current: >3 × In for 10 s (PMG, auxiliary winding)

Model / Excitation type	Shunt	Auxiliary winding	PMG
NMG 0450	N/A	●	●
NMG 0500	N/A	●	●

● Standard configuration
● Optional configuration
N/A Not available

Frequency

The generators can be operated at either 50 or 60 Hz.

Voltage and connections

- 50 Hz: 380~440 V(Y), 220-254(Δ)
- 60 Hz: 380~480 V(Y), 220-277(Δ)

Voltage can be changed by reconnection and adjustment using the voltage regulator.

Insulation

- Insulation class H.

All windings are impregnated with high quality polyester-imide resin using vacuum pressure. They can withstand all expected mechanical and electrical shocks and vibrations as well as chemical corrosion.

Voltage waveform

For frame sizes 0450, 2/3 winding pitch is used to eliminate the 3rd harmonic on the voltage waveform.

Derating

The new rating is calculated by:

- $S_n' = S_n \times \text{derating factor}$
- S_n' : new rating
- S_n : rating for standard operation conditions

Temperature rise derating factors are as follows:

- Class F rating = Class H rating × 0.91
- Class B rating = Class H rating × 0.80

Derating factors

Altitude	Ambient temperature					
	25 °C	40 °C	45 °C	50 °C	55 °C	60 °C
0 to 1000 m	1.04	1.00	0.97	0.94	0.91	0.88
1000 to 1500 m	1.01	0.97	0.94	0.91	0.88	0.85
1500 to 2000 m	0.98	0.94	0.91	0.88	0.86	0.83
2000 to 2500 m	0.95	0.91	0.88	0.86	0.83	0.80
2500 to 3000 m	0.91	0.87	0.84	0.82	0.79	0.77
> 3000 m	on request	on request	on request	on request	on request	on request

Lagging power factor	1	0.9	0.8	0.7	0.6
Derating factor	1	1	1	0.92	0.85



Mechanical features

Poles and frame sizes

- 4 poles

Available frame sizes are 450 and 500.

Bearings

The generator can be provided in single bearing or double bearing configurations.

Standard bearing configurations

Model	Non-Drive end	Drive end
NMG 0450	▲	▲
NMG 0500	▲	▲

- ▲ Sealed rolling bearing
- ▲ Re-greasable rolling bearing



Direction of rotation

All the generators operate in clockwise direction as viewed from the drive end. Anticlockwise operation is available on request.

Enclosure

The Standard enclosure is IP23, Other enclosures are available on request (ask factory for the detailed configurations).

Overspeed

The maximum overspeed is 2250 rpm (1.25 times the 60 Hz rated speed).

Mounting

For IM2105 a single bearing, SAE flange, coupling disc and feet down.

For IM1001 (IMB34) double bearings, SAE flange, one horizontal shaft extension and feet down.

For AMG 0500, IM1101 (IMB20) or IM2401(IMB25) double bearings, SAE flange, one horizontal shaft extension and raised feet.

Balancing

All rotors are dynamically balanced according to ISO 1940 G2.5. Two bearing rotors are balanced with a half key.

Terminal box

The generators have a large terminal box which allows easy access to connection bars or to the AVR. Current transformers and other optional modules can be installed inside the box.

Main optional features

- Anti-condensation heater
- PT100 for bearing
- PT100 for stator windings
- Current transformer for parallel operation
- Digital voltage regulator
- PMG
- EMC
- Potential transformer (Loose supply)
- Cable gland
- Adaptor flange

Other options are available on request.

Technical data

Continuous, H class (125 K)
Ambient 40 °C, 50 Hz, p.f 0.8

Type			1 phase			1 phase	Efficiency (400 V) %
	380 V	400 V	415 V kVA	380 V	400 V	415 V kW	
NMG 0450AA04 DBPI	1565	1650	1650	1252	1320	1320	95.22
NMG 0450BB04 DBPI	1780	1875	1875	1424	1500	1500	95.44
NMG 0450CC04 DBPI	1990	2100	2100	1592	1680	1680	95.76
NMG 0450DD04 DBPI	2135	2250	2250	1708	1800	1800	95.76
NMG 0500AA04 DAPI	2200	2315	2315	1760	1852	1852	95.84
NMG 0500BB04 DAPI	2420	2550	2500	1936	2040	2000	95.93
NMG 0500CC04 DAPI	2610	2750	2750	2088	2200	2200	96.24
NMG 0500DD04 DAPI	2970	3125	3125	2376	2500	2500	96.27

Continuous, H class (125 K)
Ambient 40 °C, 60 Hz, p.f 0.8

Type													Efficiency (480 V) %
	380 V	400 V	415 V	440 V	460 V	480 V kVA	380 V	400 V	415 V	440 V	460 V	480 V kW	
NMG 0450AA04 DBPI	1565	1650	1710	1815	1900	1980	1252	1320	1368	1452	1520	1584	95.54
NMG 0450BB04 DBPI	1780	1875	1945	2060	2155	2250	1424	1500	1556	1648	1724	1800	95.79
NMG 0450CC04 DBPI	1990	2100	2180	2310	2415	2520	1592	1680	1744	1848	1932	2016	96.02
NMG 0450DD04 DBPI	2135	2250	2335	2475	2590	2700	1708	1800	1868	1980	2072	2160	96.04
NMG 0500AA04 DAPI	2200	2315	2400	2545	2660	2775	1760	1852	1920	2036	2128	2220	96.11
NMG 0500BB04 DAPI	2420	2550	2645	2805	2930	3060	1936	2040	2116	2244	2344	2448	96.19
NMG 0500CC04 DAPI	2610	2750	2850	3025	3160	3300	2088	2200	2280	2420	2528	2640	96.39
NMG 0500DD04 DAPI	2970	3125	3240	3440	3590	3750	2376	2500	2592	2752	2872	3000	96.48

Technical data

Standby, H class (163 K)
Ambient 27 °C, 50 Hz, p.f 0.8

Type			1 phase			1 phase
	380 V	400 V	415 V kVA	380 V	400 V	415 V kW
NMG 0450AA04 DBPI	1720	1815	1815	1376	1452	1452
NMG 0450BB04 DBPI	1960	2065	2065	1568	1652	1652
NMG 0450CC04 DBPI	2190	2310	2310	1752	1848	1848
NMG 0450DD04 DBPI	2350	2475	2475	1880	1980	1980
NMG 0500AA04 DAPI	2420	2545	2545	1936	2036	2036
NMG 0500BB04 DAPI	2660	2805	2750	2128	2244	2200
NMG 0500CC04 DAPI	2870	3025	3025	2296	2420	2420
NMG 0500DD04 DAPI	3265	3440	3440	2612	2752	2752

Standby, H class (163 K)
Ambient 27 °C, 60 Hz, p.f 0.8

Type												
	380 V	400 V	415 V	440 V	460 V	480 V kVA	380 V	400 V	415 V	440 V	460 V	480 V kW
NMG 0450AA04 DBPI	1720	1815	1880	1995	2090	2180	1376	1452	1504	1596	1672	1744
NMG 0450BB04 DBPI	1960	2065	2140	2265	2370	2475	1568	1652	1712	1812	1896	1980
NMG 0450CC04 DBPI	2190	2310	2400	2540	2655	2770	1752	1848	1920	2032	2124	2216
NMG 0450DD04 DBPI	2350	2475	2570	2725	2850	2970	1880	1980	2056	2180	2280	2376
NMG 0500AA04 DAPI	2420	2545	2640	2800	2925	3055	1936	2036	2112	2240	2340	2444
NMG 0500BB04 DAPI	2660	2805	2910	3085	3225	3365	2128	2244	2328	2468	2580	2692
NMG 0500CC04 DAPI	2870	3025	3135	3330	3475	3630	2296	2420	2508	2664	2780	2904
NMG 0500DD04 DAPI	3265	3440	3565	3785	3950	4125	2612	2752	2852	3028	3160	3300

Technical data

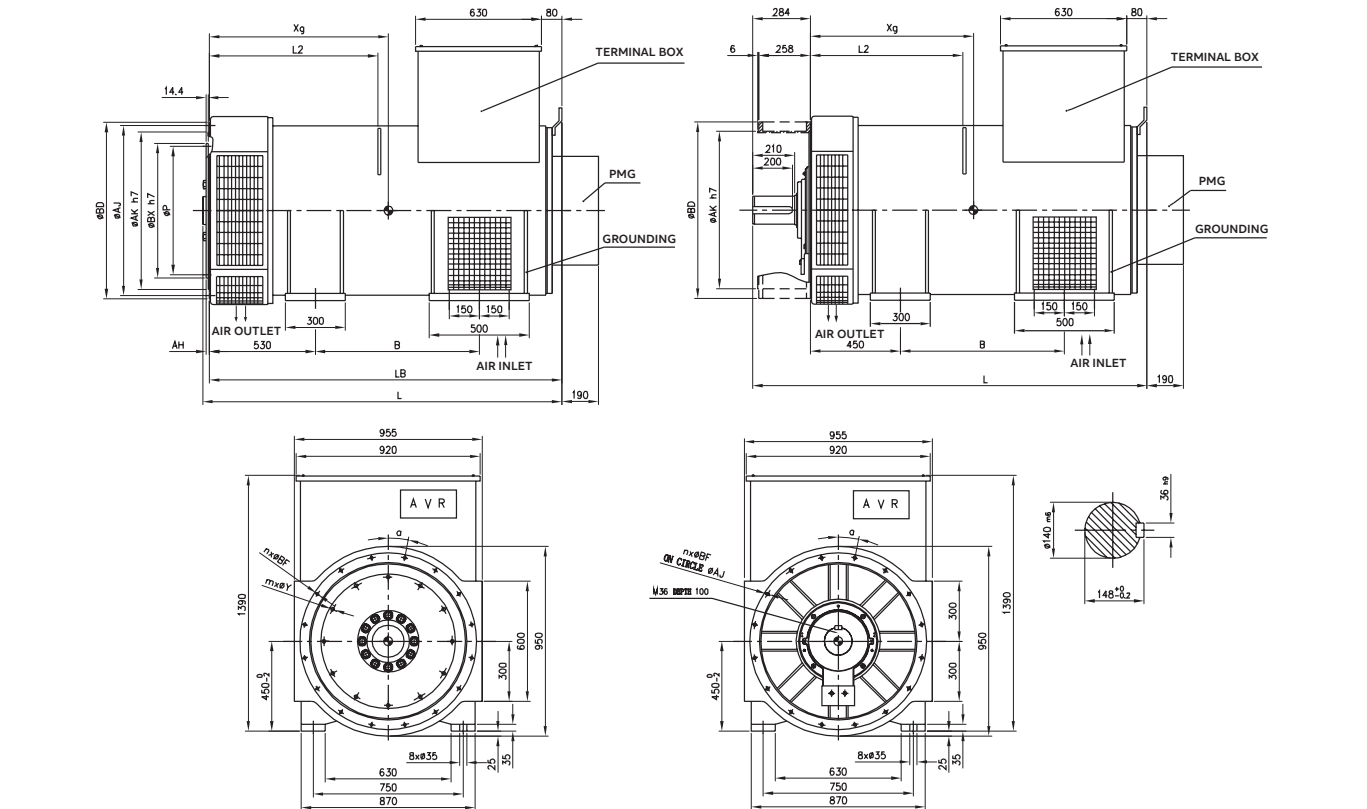
Standby, H class (150 K)
Ambient 40 °C, 50 Hz, p.f 0.8

Type	1 phase			1 phase		
	380 V	400 V	415 V kVA	380 V	400 V	415 V kW
NMG 0450AA04 DBPI	1630	1715	1715	1304	1372	1372
NMG 0450BB04 DBPI	1850	1950	1950	1480	1560	1560
NMG 0450CC04 DBPI	2070	2185	2185	1656	1748	1748
NMG 0450DD04 DBPI	2220	2340	2340	1776	1872	1872
NMG 0500AA04 DAPI	2310	2430	2430	1848	1944	1944
NMG 0500BB04 DAPI	2540	2680	2625	2032	2144	2100
NMG 0500CC04 DAPI	2740	2890	2890	2192	2312	2312
NMG 0500DD04 DAPI	3120	3280	3280	2496	2624	2624

Standby, H class (150 K)
Ambient 40 °C, 60 Hz, p.f 0.8

Type	1 phase						1 phase					
	380 V	400 V	415 V	440 V	460 V	480 V kVA	380 V	400 V	415 V	440 V	460 V	480 V kW
NMG 0450AA04 DBPI	1630	1715	1780	1890	1975	2060	1304	1372	1424	1512	1580	1648
NMG 0450BB04 DBPI	1850	1950	2025	2140	2240	2340	1480	1560	1620	1712	1792	1872
NMG 0450CC04 DBPI	2070	2185	2265	2400	2510	2620	1656	1748	1812	1920	2008	2096
NMG 0450DD04 DBPI	2220	2340	2430	2575	2695	2810	1776	1872	1944	2060	2156	2248
NMG 0500AA04 DAPI	2310	2430	2520	2670	2795	2915	1848	1944	2016	2136	2236	2332
NMG 0500BB04 DAPI	2540	2680	2775	2945	3075	3215	2032	2144	2220	2356	2460	2572
NMG 0500CC04 DAPI	2740	2890	2995	3175	3320	3465	2192	2312	2396	2540	2656	2772
NMG 0500DD04 DAPI	3120	3280	3400	3610	3770	3940	2496	2624	2720	2888	3016	3152

Outline drawing NMG 0450



Single bearing

Frame dimensions (mm)					
Type	B	LB	L	L2	Xg
NMG 0450AA04 DBPI	720	1645	1680	793	805
NMG 0450BB04 DBPI	820	1745	1780	843	855
NMG 0450CC04 DBPI	975	1900	1935	918	935
NMG 0450DD04 DBPI	975	1900	1935	918	945

Flange dimensions (mm)						
S.A.E	AK	AJ	BD	BF	n	a
0	647.7	679.5	711	14	16	11.25°
00	787.4	850.9	883	14	16	11.25°

Flex disc dimensions (mm)					
S.A.E	BX	P	AH	Y	m
18	571.5	542.9	15.7	18	6
21	673.1	641.3	0	18	12

Transportation parameters			
Type	Net weight (kg)	Gross weight (kg)	Packing dimensions (mm)
NMG 0450AA04 DBPI	3520	3740	2130x1050x1700
NMG 0450BB04 DBPI	3810	4040	2230x1050x1700
NMG 0450CC04 DBPI	4365	4610	2385x1050x1700
NMG 0450DD04 DBPI	4380	4625	2385x1050x1700

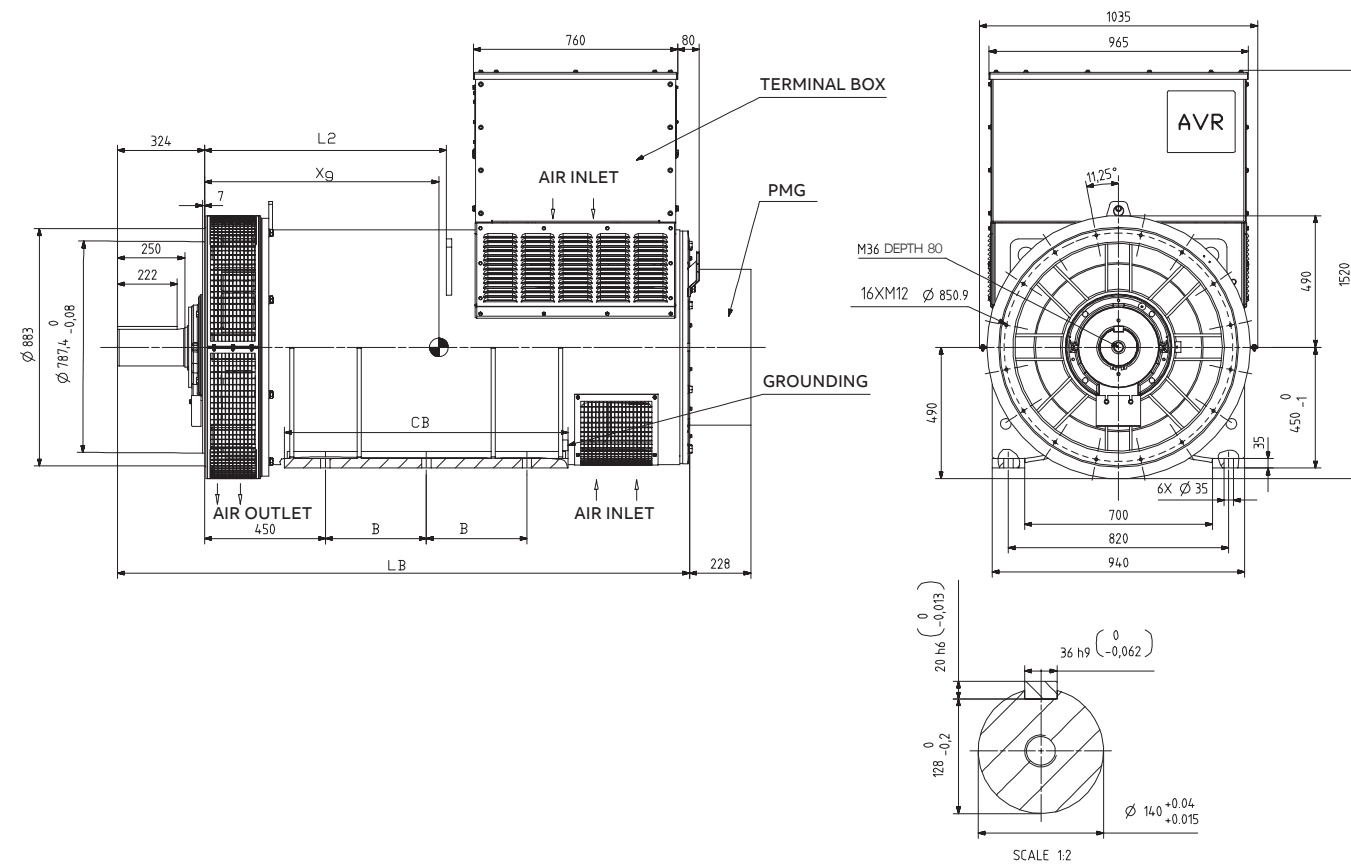
Double bearing

Frame dimensions (mm)				
Type	B	L	L2	Xg
NMG 0450AA04 DAPI	720	1850	713	725
NMG 0450BB04 DAPI	820	1950	763	776
NMG 0450CC04 DAPI	975	2105	838	865
NMG 0450DD04 DAPI	975	2105	838	878

Flange dimensions (mm)						
S.A.E	AK	AJ	BD	BF	n	a
0	647.7	679.5	711	14	16	11.25°
00	787.4	850.9	883	14	16	11.25°

Transportation parameters			
Type	Net weight (kg)	Gross weight (kg)	Packing dimensions (mm)
NMG 0450AA04 DAPI	3550	3790	2300x1050x1700
NMG 0450BB04 DAPI	3840	4090	2400x1050x1700
NMG 0450CC04 DAPI	4395	4660	2555x1050x1700
NMG 0450DD04 DAPI	4410	4675	2555x1050x1700

Outline drawing NMG 0500 A-B



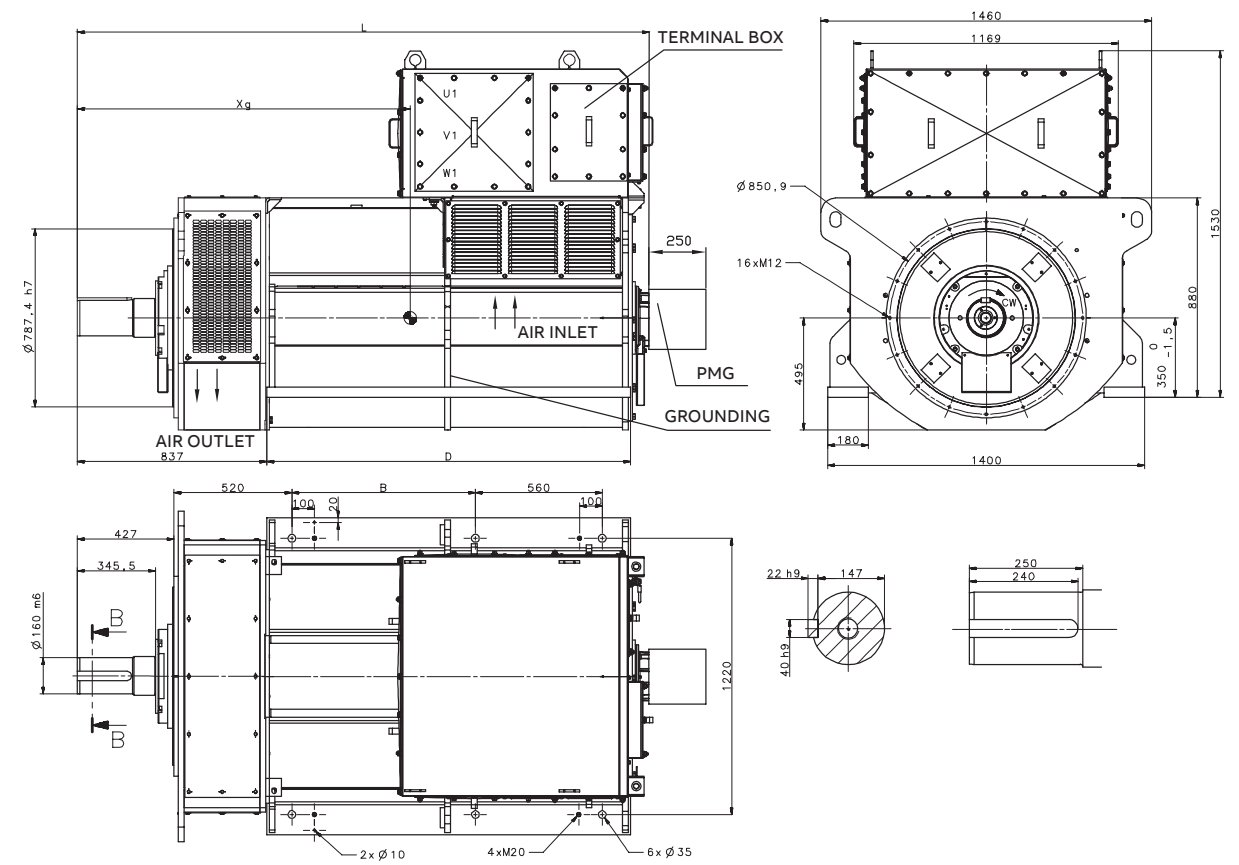
Double bearing

Frame dimensions (mm)					
Type	B	CB	L2	LB	Xg
NMG 0500AA04 DAPI	325	956	810	2030	800
NMG 0500BB04 DAPI	375	1056	900	2130	850

Transportation parameters

Type	Net weight (kg)	Gross weight (kg)	Packing dimensions (mm)
NMG 0500AA04 DAPI	4800	5400	2500×1150×1920
NMG 0500BB04 DAPI	5100	5700	2600×1150×1920

Outline drawing NMG 0500 C-D



Double bearing

Frame dimensions (mm)					
Type	L	B	D	Xg	XL
NMG 0500CC04 DAPI	2535	810	1605	1361	212
NMG 0500DD04 DAPI	2585	860	1655	1401	245

Transportation parameters

Type	Net weight (kg)	Gross weight (kg)	Packing dimensions (mm)
NMG 0500CC04 DAPI	6600	7260	3000x1560x2060
NMG 0500DD04 DAPI	7050	7730	3050x1560x2060

Total offer of motors, generators and mechanical power transmission products with a complete portfolio of services



ABB is the leading manufacturer of low, medium and high voltage motors and generators, mechanical power transmission products with an offering of a complete portfolio of services. Our in-depth knowledge of virtually every type of industrial processing ensures we always specify the best solution for your needs.

Low and high voltage IEC induction motors

- Process performance motors
- General performance motors
- High voltage cast iron motors
- Induction modular motors
- Slip-ring modular motors
- Synchronous reluctance motors

Low and medium voltage NEMA motors

- Steel frame open drip proof (ODP) motors
- Weather protected, water cooled, fan ventilated motors
- Cast iron frame (TEFC) motors
- Air to air cooled (TEAAC) motors

Motors and generators for explosive atmospheres

- IEC and NEMA motors and generators, for all protection types

Synchronous motors

Synchronous generators

- Synchronous generators for engines
- Synchronous generators for steam and gas turbines

Wind power generators

Generators for small hydro

Other motors and generators

- Brake motors
- DC motors and generators
- Gear motors
- Marine motors and generators
- Single phase motors
- Motors for high ambient temperatures
- Permanent magnet motors and generators

- High speed motors
- Smoke extraction motors
- Wash down motors
- Water cooled motors
- Generator sets
- Roller table motors
- Servo motors
- Traction motors

Life cycle services

- Installation and commissioning
- Service contracts
- Preventive maintenance
- Spare parts
- Diagnosis
- Repair and refurbishment
- Site survey and overhaul
- Replacement motors and generators
- Technical support and consulting
- Trainings

Mechanical power transmission components, bearings, gears

Additional information

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.