
CATALOG

Low voltage generators for engines

Industrial application series



- 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 400, 450 and 500, 810-3750 kVA

04 – 05	General information
06 – 07	Electrical features
08 – 09	Mechanical features
10 – 12	Technical data
13 – 17	Outline drawing

General information

Our range of low voltage generators is developed to better fit market demands and is available in IEC frame sizes 400, 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.

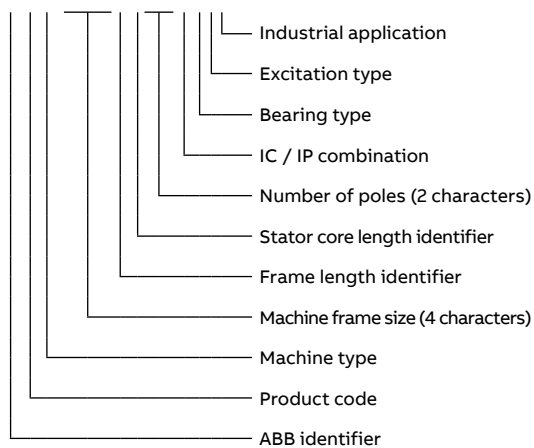




Electrical features

Type definition

NMG 0450CC04 DBPI



Bearing type: A – Double bearing, B – Single bearing

Excitation type: 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)
- Auxiliary winding and PMG excitation systems
- Sustained short circuit current: $>3 \times I_n$ for 10 s.



Model / Excitation type	Auxiliary winding	PMG
NMG 0400	●	●
NMG 0450	●	●
NMG 0500	●	●

● Standard configuration

● Optional configuration

Frequency

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

Voltage and connections

- 50 Hz: 380~415V(Y), 220-240(Δ)
- 60 Hz: 380~480V(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

The winding of the generator with frame number 0400-0450 is designed with a 2/3 pitch, eliminating the 3rd and 3rd harmonic content of the voltage.

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 \times 0.91
- Class B rating = Class H rating \times 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 400, 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 0400	▲	▲
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 NMG 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	kVA			kW			Efficiency (400 V) %
	380 V	400 V	415 V	380 V	400 V	415 V	
NMG 0400AA04 DBPI	810	850	850	648	680	680	94.19
NMG 0400BS04 DBPI	900	950	950	720	760	760	94.60
NMG 0400BB04 DBPI	950	1000	1000	760	800	800	94.74
NMG 0400CS04 DBPI	1100	1150	1150	880	920	920	94.92
NMG 0400CC04 DBPI	1190	1250	1250	952	1000	1000	95.07
NMG 0400DD04 DBPI	1430	1500	1500	1144	1200	1200	95.47
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	kVA						kW						Efficiency (480 V) %
	380 V	400 V	415 V	440 V	460 V	480 V	380 V	400 V	415 V	440 V	460 V	480 V	
NMG 0400AA04 DBPI	810	850	880	940	980	1020	648	680	704	752	784	816	94.52
NMG 0400BS04 DBPI	900	950	1000	1050	1100	1150	720	760	800	840	880	920	94.88
NMG 0400BB04 DBPI	950	1000	1040	1100	1150	1200	760	800	832	880	920	960	95.03
NMG 0400CS04 DBPI	1100	1150	1200	1265	1325	1400	880	920	960	1012	1060	1120	95.20
NMG 0400CC04 DBPI	1190	1250	1300	1375	1440	1500	952	1000	1040	1100	1152	1200	95.37
NMG 0400DD04 DBPI	1430	1530	1560	1650	1720	1800	1144	1224	1248	1320	1376	1440	95.74
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	kVA			kW		
	380 V	400 V	415 V	380 V	400 V	415 V
NMG 0400AA04 DBPI	890	935	935	712	748	748
NMG 0400BS04 DBPI	990	1045	1045	792	836	836
NMG 0400BB04 DBPI	1045	1100	1100	836	880	880
NMG 0400CS04 DBPI	1210	1265	1265	968	1012	1012
NMG 0400CC04 DBPI	1310	1375	1375	1048	1100	1100
NMG 0400DD04 DBPI	1575	1650	1650	1260	1320	1320
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	kVA						kW					
	380 V	400 V	415 V	440 V	460 V	480 V	380 V	400 V	415 V	440 V	460 V	480 V
NMG 0400AA04 DBPI	890	935	970	1035	1080	1120	712	748	776	828	864	896
NMG 0400BS04 DBPI	990	1045	1100	1155	1210	1265	792	836	880	924	968	1012
NMG 0400BB04 DBPI	1045	1100	1145	1210	1265	1320	836	880	916	968	1012	1056
NMG 0400CS04 DBPI	1210	1265	1320	1390	1460	1540	968	1012	1056	1112	1168	1232
NMG 0400CC04 DBPI	1310	1375	1430	1515	1585	1650	1048	1100	1144	1212	1268	1320
NMG 0400DD04 DBPI	1575	1685	1715	1815	1890	1980	1260	1348	1372	1452	1512	1584
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

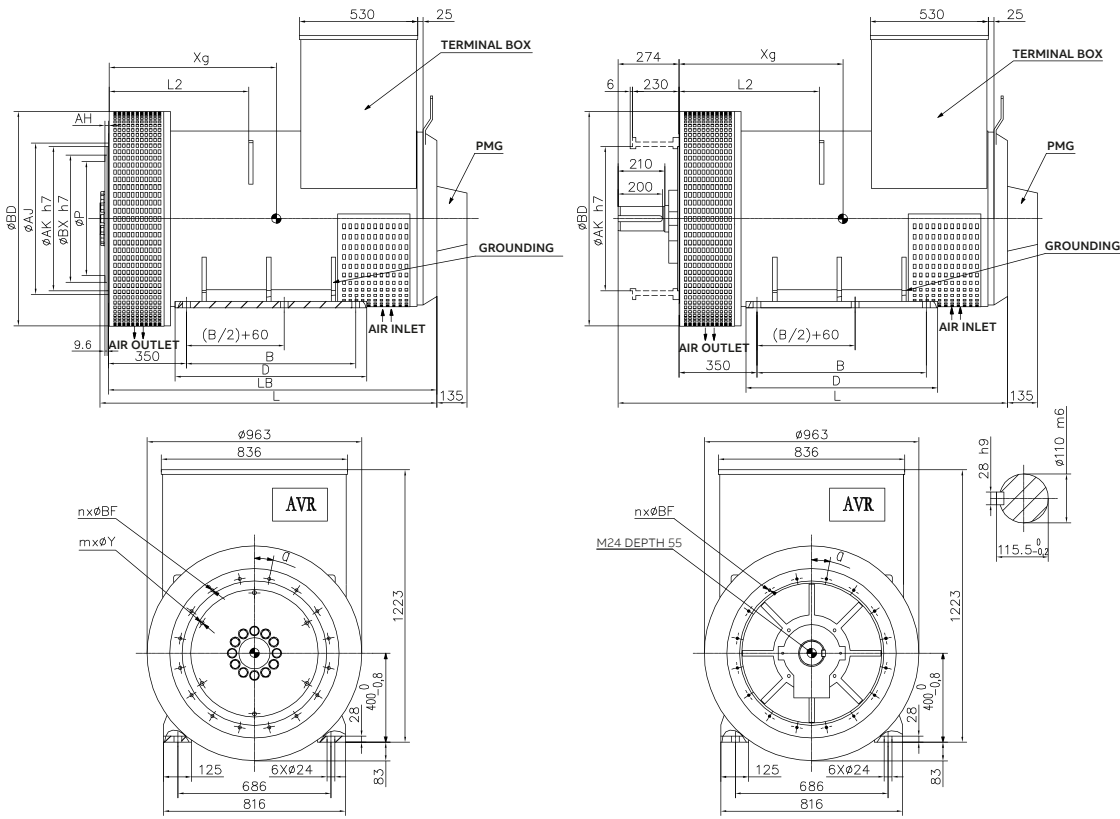
Standby, H class (150 K)
Ambient 40 °C, 50 Hz, p.f 0.8

Type	kVA			kW		
	380 V	400 V	415 V	380 V	400 V	415 V
NMG 0400AA04 DBPI	860	900	900	688	720	720
NMG 0400BS04 DBPI	955	1005	1005	764	804	804
NMG 0400BB04 DBPI	1005	1060	1060	804	848	848
NMG 0400CS04 DBPI	1165	1220	1220	932	976	976
NMG 0400CC04 DBPI	1260	1325	1325	1008	1060	1060
NMG 0400DD04 DBPI	1515	1590	1590	1212	1272	1272
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	kVA						kW					
	380 V	400 V	415 V	440 V	460 V	480 V	380 V	400 V	415 V	440 V	460 V	480 V
NMG 0400AA04 DBPI	860	900	935	995	1040	1080	688	720	748	796	832	864
NMG 0400BS04 DBPI	955	1005	1060	1115	1165	1220	764	804	848	892	932	976
NMG 0400BB04 DBPI	1005	1060	1100	1165	1220	1270	804	848	880	932	976	1016
NMG 0400CS04 DBPI	1165	1220	1270	1340	1405	1485	932	976	1016	1072	1124	1188
NMG 0400CC04 DBPI	1260	1325	1380	1460	1525	1590	1008	1060	1104	1168	1220	1272
NMG 0400DD04 DBPI	1515	1620	1655	1750	1825	1910	1212	1296	1324	1400	1460	1528
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 0400



Single bearing

Frame dimensions (mm)						
Type	B	D	LB	L	L2	Xg
NMG 0400AA04 DBPI	460	560	1184	1221	471	590
NMG 0400BS04 DBPI	520	620	1274	1311	541	650
NMG 0400BB04 DBPI	520	620	1274	1311	541	660
NMG 0400CS04 DBPI	600	700	1354	1391	581	690
NMG 0400CC04 DBPI	600	700	1354	1391	581	700
NMG 0400DD04 DBPI	760	860	1474	1511	621	770

Flange dimensions (mm)						
S.A.E	AK	AJ	BD	BF	n	a
0	647.7	679.5	963	14	16	11.25°
00	787.4	850.9	963	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 0400AA04 DBPI	2070	2294	1705x1180x1565
NMG 0400BS04 DBPI	2260	2484	1705x1180x1565
NMG 0400BB04 DBPI	2330	2554	1705x1180x1565
NMG 0400CS04 DBPI	2510	2751	1905x1180x1565
NMG 0400CC04 DBPI	2580	2821	1905x1180x1565
NMG 0400DD04 DBPI	2910	3151	1905x1180x1565

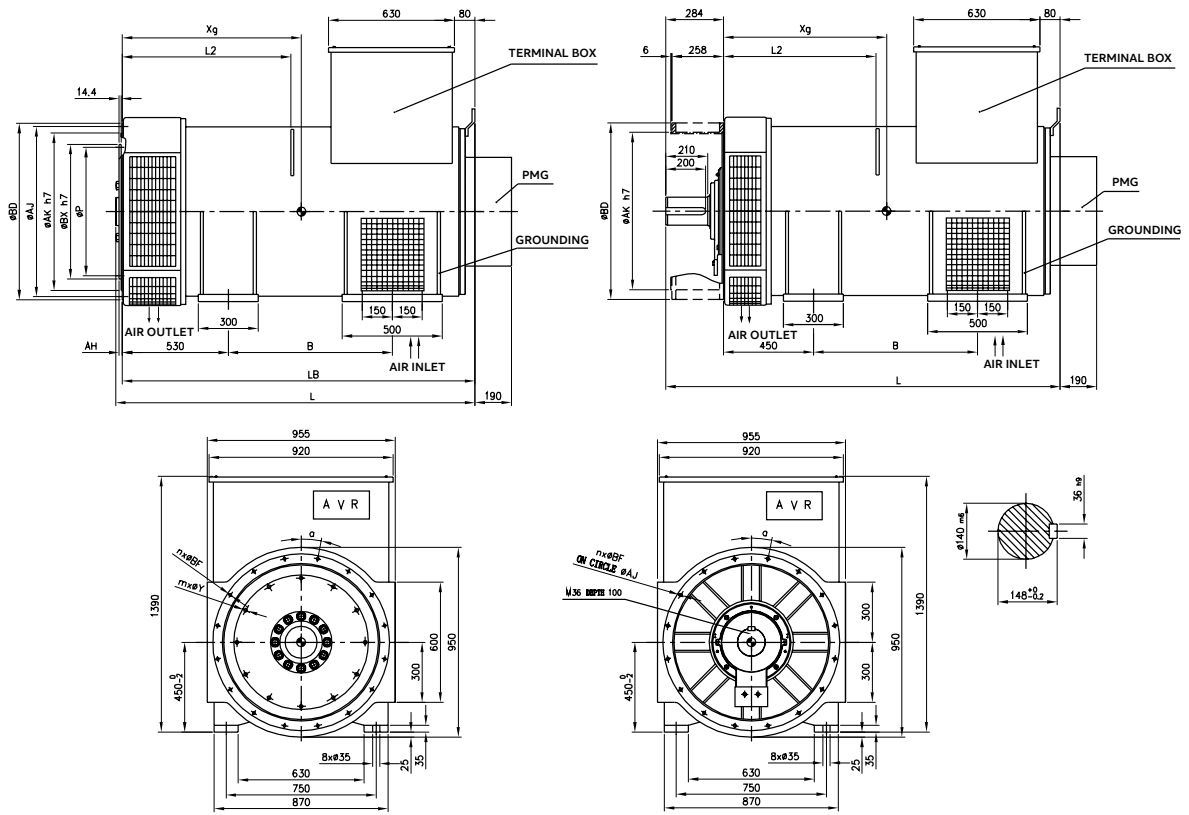
Double bearing

Frame dimensions (mm)						
Type	B	D	L	L2	Xg	
NMG 0400AA04 DAPI	460	560	1458	471	575	
NMG 0400BS04 DAPI	520	620	1548	541	635	
NMG 0400BB04 DAPI	520	620	1548	541	645	
NMG 0400CS04 DAPI	600	700	1628	581	675	
NMG 0400CC04 DAPI	600	700	1628	581	685	
NMG 0400DD04 DAPI	760	860	1748	621	750	

Flange dimensions (mm)						
S.A.E	AK	AJ	BD	BF	n	a
0	647.7	679.5	963	14	16	11.25°
00	787.4	850.9	963	14	16	11.25°

Transportation parameters			
Type	Net weight (kg)	Gross weight (kg)	Packing dimensions (mm)
NMG 0400AA04 DAPI	2130	2368	1860x1180x1565
NMG 0400BS04 DAPI	2320	2558	1860x1180x1565
NMG 0400BB04 DAPI	2390	2628	1860x1180x1565
NMG 0400CS04 DAPI	2640	2891	2060x1180x1565
NMG 0400CC04 DAPI	2670	2921	2060x1180x1565
NMG 0400DD04 DAPI	2960	3211	2060x1180x1565

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

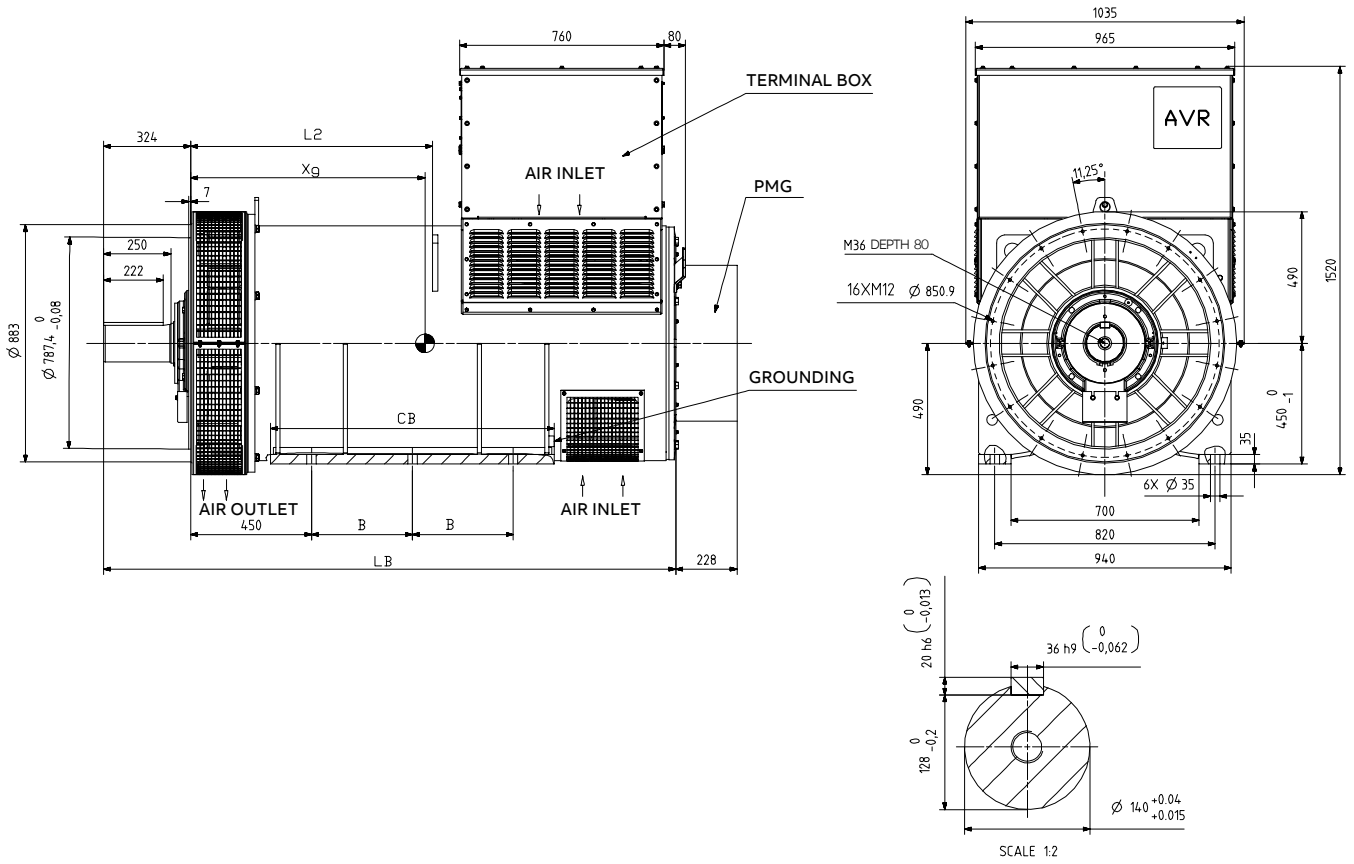
—
Double bearing

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

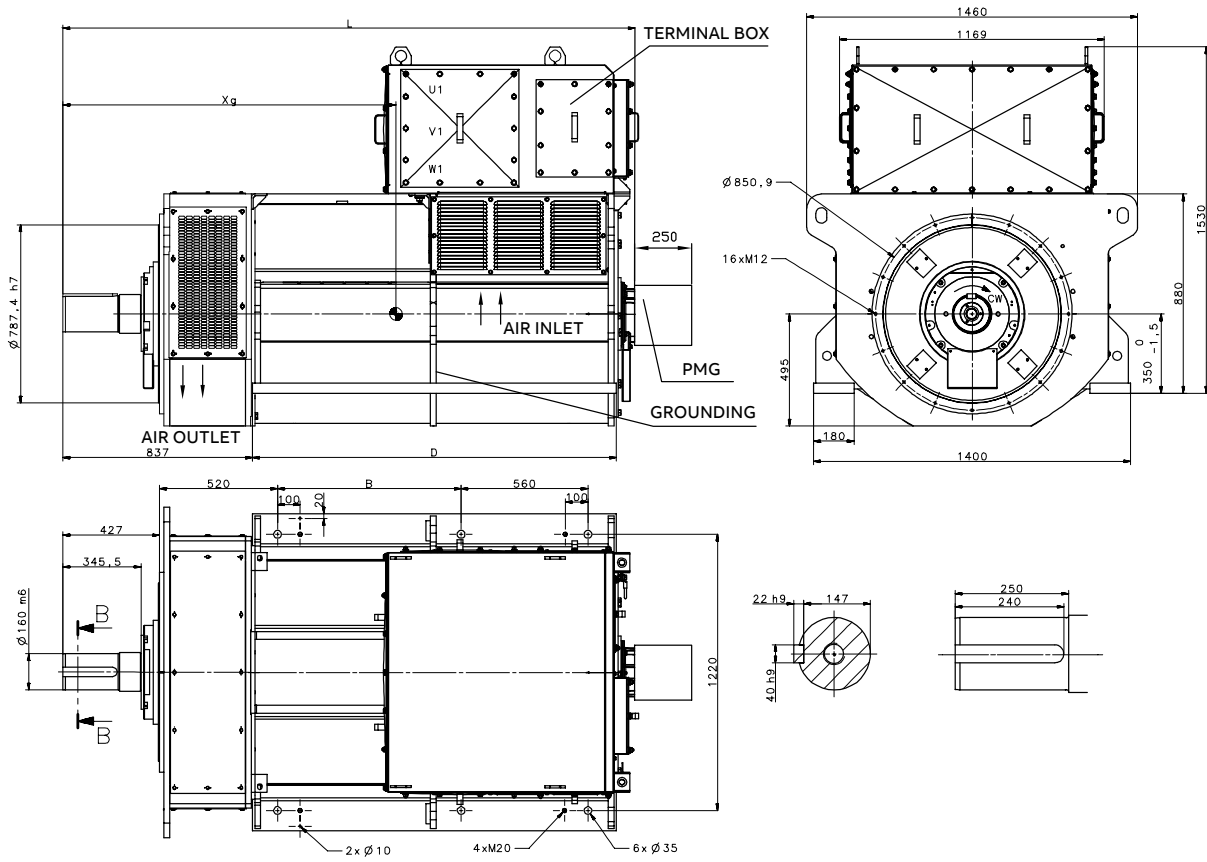
Frame dimensions (mm)

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 and generators with a complete portfolio of services



IEC motors

- Low voltage motors
- High voltage induction and synchronous motors
- Marine motors
- Motors for explosive atmospheres
- Motors for food and beverage
- Motors for variable speed drives
- Permanent magnet motors
- Synchronous reluctance motors
- Traction motors

NEMA motors

- Low voltage motors
- High voltage induction and synchronous motors
- Marine motors
- Motors for explosive atmospheres
- Motors for variable speed drives
- Permanent magnet motors
- Servomotors
- Washdown motors

Generators

- Generators for wind turbines
- Generators for diesel and gas engine power plants
- Generators for steam and gas turbine power plants
- Generators for marine applications
- Generators for industrial applications
- Generators for traction applications

Synchronous condensers

Life cycle services



—
[https://new.abb.com/motors-generators/
generators/generators-for-engines](https://new.abb.com/motors-generators/generators/generators-for-engines)

