

Application Guidance Notes: Technical Information from Cummins Generator Technologies

AGN 187 – Noise Levels

OVERVIEW

A growing number of businesses find that large, heavy-duty Generating Sets are critically important to their operations, whether for continuous, prime or standby power. Not surprisingly, large Generating Sets produce high levels of noise that often must be mitigated to meet local, state and federal regulations or directives. This usually involves key decisions about the optimal Generating Set location and installation, how to design noise control systems, and other factors.

NOISE LEVELS

In any power supply installation, the noise emitted from the Generating Set can be attenuated when enclosed in a canopy or enclosure with additional noise treatment or in an acoustic enclosure.

IEC 60034-9 stipulates the maximum A-weighted sound power level in dB (A) at no-load in the free field for different methods of cooling (IC code). The noise limits vary depending on the rotational speed (RPM) ranges and the alternator rated output power (kVA). The following noise limit table is extracted from IEC 60034-9.

Rated speed n_N min ⁻¹	$n_N \leq 960$			960 < $n_N \leq 1\ 320$			1 320 < $n_N \leq 1\ 900$			1 900 < $n_N \leq 2\ 360$			2 360 < $n_N \leq 3\ 150$			3 150 < $n_N \leq 3\ 750$		
Methods of cooling (simplified code)	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7	IC01 IC11 IC21	IC411 IC511 IC811	IC31 IC71W IC81W IC8A1W7
	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2	Note 1	Note 2	Note 2
Rated output P_N kW (or kVA)																		
$1 \leq P_N \leq 1,1$	73	73	–	76	76	–	77	78	–	79	81	–	81	84	–	82	88	–
$1,1 < P_N \leq 2,2$	74	74	–	78	78	–	81	82	–	83	85	–	85	88	–	86	91	–
$2,2 < P_N \leq 5,5$	77	78	–	81	82	–	85	86	–	86	90	–	89	93	–	93	95	–
$5,5 < P_N \leq 11$	81	82	–	85	85	–	88	90	–	90	93	–	93	97	–	97	98	–
$11 < P_N \leq 22$	84	86	–	88	88	–	91	94	–	93	97	–	96	100	–	97	100	–
$22 < P_N \leq 37$	87	90	–	91	91	–	94	98	–	96	100	–	99	102	–	101	102	–
$37 < P_N \leq 55$	90	93	–	94	94	–	97	100	–	98	102	–	101	104	–	103	104	–
$55 < P_N \leq 110$	93	96	–	97	98	–	100	103	–	101	104	–	103	106	–	105	106	–
$110 < P_N \leq 220$	97	99	–	100	102	–	103	106	–	103	107	–	105	109	–	107	110	–
$220 < P_N \leq 550$	99	102	98	103	105	100	106	108	102	106	109	102	107	111	102	110	113	105
$550 < P_N \leq 1\ 100$	101	105	100	106	108	103	108	111	104	108	111	104	109	112	104	111	116	106
$1\ 100 < P_N \leq 2\ 200$	103	107	102	108	110	105	109	113	105	109	113	105	110	113	105	112	118	107
$2\ 200 < P_N \leq 5\ 500$	105	109	104	110	112	106	110	115	106	111	115	107	112	115	107	114	120	109

NOTE 1 Typical enclosure classification IP22 or IP23.
NOTE 2 Typical enclosure classification IP44 or IP55.

Table 1: Maximum A-weighted sound power level at no-load (in dB)
Source of table: IEC 60034-9

The noise emissions of STAMFORD and AvK alternators were measured on acoustically isolated alternators and were measured in dB (A). The levels were measured with the alternators operating with no load applied and levels were measured 1 metre from the alternator, in accordance with ISO 3744.

Contact applications@cummins.com for noise level data.