

Suggested Fan Motor Efficiency Grades for ships based on ISO 12759

Motor*	Fan Diameter*			Speed*	IE2 Motor eff.**			Fan Motor Efficiency Grades***				Fan total efficiency****		
	kW	Min	Max		Avg.	Pole	Min	Max	Standard	FMEG 50	FMEG 58	FMEG 68	FMEG 75	FMEG 68
0,125	140	224	180		2	60%	60%	60%	38%	46%	56%	63%	93%	105%
0,25	200	315	250		2	66%	66%	66%	40%	48%	58%	65%	88%	98%
0,5	280	450	280		2	70%	70%	70%	42%	50%	60%	67%	85%	95%
0,75	315	630	355		2	80%	80%	80%	43%	51%	61%	68%	76%	85%
1,1	400	900	400		2	81%	81%	81%	44%	52%	62%	69%	76%	85%
2,2	450	1000	450		2	83%	84%	83%	46%	54%	64%	71%	77%	85%
5,5	500	1250	710		2	87%	88%	87%	48%	56%	66%	73%	76%	84%
7,5	560	1600	800		4	88%	89%	89%	49%	57%	67%	74%	75%	83%
11	710	1600	900		4	89%	90%	90%	50%	58%	68%	75%	76%	83%
22	900	1800	1120		4	91%	92%	92%	51%	59%	69%	76%	74%	82%
55	1000	2000	1400		4	93%	94%	94%	51%	59%	69%	76%	74%	81%
75	1250	2240	1600		6	94%	94%	94%	51%	59%	69%	76%	74%	81%
110	1400	2500	1800		6	94%	95%	94%	52%	60%	70%	77%	74%	82%
225	1600	2800	2000		6	95%	95%	95%	52%	60%	70%	77%	74%	81%
500	1800	3150	2500		8	95%	95%	95%	53%	61%	71%	78%	75%	82%

Comments:

* The motor sizes/ fan sizes and fan speeds are based on best practice selection of fans

**IEC 60034 has set minimum efficiency for motors. Currently class IE2 is relevant. In 2017 IEC 3 grades must be used.

***FMEG 50 is the minimum optimal efficiency chosen by the EU for all axial fans under the EU directive 327-2011 starting 1.1.2013. FMEG 58 is coming in force 1.1.2015.

**** The total pressure fan optimal peak efficiency can then be calculated. In **red** the typical **engine room fan** sizes and in **green** the **cargo hold** and **auxiliary fans**.

Suggested wording in fan specifications.

Engine room fans must comply with an ISO 12759 Fan Motor Efficiency Grade (FMEG) **75**. **Cargo hold and auxiliary fans** should comply with FMEG **68**.

The working point efficiency should not be less than 90% of the optimal peak efficiency. This needs to be verified by measurements according to ISO 5801 with tolerances according to ISO 13348 class 3, certified by third party.

Fans with motor power of less than 0,75 kW are excluded.

Fans for special purposes, e.g. explosion proof fans, swing out type fans etc. can have 3 % less total efficiency.