Efficiency NEMA 12-12

The Energy Independence and Security Act of 2007

NEMA MG 1 Table 12-12 Full-Load Efficiencies for 60 Hz NEMA Premium® Efficient Electric Motors Rated 600 Volts or less (Random Wound)

Motor Horsepower	Nominal Full-Load Efficiency					
	Open Motors			Enclosed Motors		
	2 Pole	4 Pole	6 Pole	2 Pole	4 Pole	6 Pole
1	77.0	85.5	82.5	77.0	85.5	82.5
1.5	84.0	86.5	86.5	84.0	86.5	87.5
2	85.5	86.5	87.5	85.5	86.5	88.5
3	85.5	89.5	88.5	86.5	89.5	89.5
5	86.5	89.5	89.5	88.5	89.5	89.5
7.5	88.5	91.0	90.2	89.5	91.7	91.0
10	89.5	91.7	91.7	90.2	91.7	91.0
15	90.2	93.0	91.7	91.0	92.4	91.7
20	91.0	93.0	92.4	91.0	93.0	91.7
25	91.7	93.6	93.0	91.7	93.6	93.0
30	91.7	94.1	93.6	91.7	93.6	93.0
40	92.4	94.1	94.1	92.4	94.1	94.1
50	93.0	94.5	94.1	93.0	94.5	94.1
60	93.6	95.0	94.5	93.6	95.0	94.5
75	93.6	95.0	94.5	93.6	95.4	94.5
100	93.6	95.4	95.0	94.1	95.4	95.0
125	94.1	95.4	95.0	95.0	95.4	95.0
150	94.1	95.8	95.4	95.0	95.8	95.8
200	95.0	95.8	95.4	95.4	96.2	95.8
250	95.0	95.8	95.4	95.8	96.2	95.8
300	95.4	95.8	95.4	95.8	96.2	95.8
350	95.4	95.8	95.4	95.8	96.2	95.8
400	95.8	95.8	95.8	95.8	96.2	95.8
450	95.8	96.2	96.2	95.8	96.2	95.8
500	95.8	96.2	96.2	95.8	96.2	95.8

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Efficiency NEMA 12-11

The Energy Independence and Security Act of 2007

NEMA MG 1 Table 12-11 Full-Load Efficiencies of Energy Efficient Motors

Motor Horsepower	Nominal Full-Load Efficiency							
	Open Motors				Enclosed Motors			
	2 Pole	4 Pole	6 Pole	8 Pole	2 Pole	4 Pole	6 Pole	8 Pole
1	-	82.5	80.0	74.0	75.5	82.5	80.0	74.0
1.5	82.5	84.0	84.0	75.5	82.5	84.0	85.5	77.0
2	84.0	84.0	85.5	85.5	84.0	84.0	86.5	82.5
3	84.0	86.5	86.5	86.5	85.5	87.5	87.5	84.0
5	85.5	87.5	87.5	87.5	87.5	87.5	87.5	85.5
7.5	87.5	88.5	88.5	88.5	88.5	89.5	89.5	85.5
10	88.5	89.5	90.2	89.5	89.5	89.5	89.5	88.5
15	89.5	91.0	90.2	89.5	90.2	91.0	90.2	88.5
20	90.2	91.0	91.0	90.2	90.2	91.0	90.2	89.5
25	91.0	91.7	91.7	90.2	91.0	92.4	91.7	89.5
30	91.0	92.4	92.4	91.0	91.0	92.4	91.7	91.0
40	91.7	93.0	93.0	91.0	91.7	93.0	93.0	91.0
50	92.4	93.0	93.0	91.7	92.4	93.0	93.0	91.7
60	93.0	93.6	93.6	92.4	93.0	93.6	93.6	91.7
75	93.0	94.1	93.6	93.6	93.0	94.1	93.6	93.0
100	93.0	94.1	94.1	93.6	93.6	94.5	94.1	93.0
125	93.6	94.5	94.1	93.6	94.5	94.5	94.1	93.6
150	93.6	95.0	94.5	93.6	94.5	95.0	95.0	93.6
200	94.5	95.0	94.5	93.6	95.0	95.0	95.0	94.1
250	94.5	95.4	95.4	94.5	95.4	95.0	95.0	94.5
300	95.0	95.4	95.4	-	95.4	95.4	95.0	-
350	95.0	95.4	95.4	-	95.4	95.4	95.0	-
400	95.4	95.4	-	-	95.4	95.4	-	-
450	95.8	95.8	-	-	95.4	95.4	-	-
500	95.8	95.8	-	-	95.4	95.8	-	-

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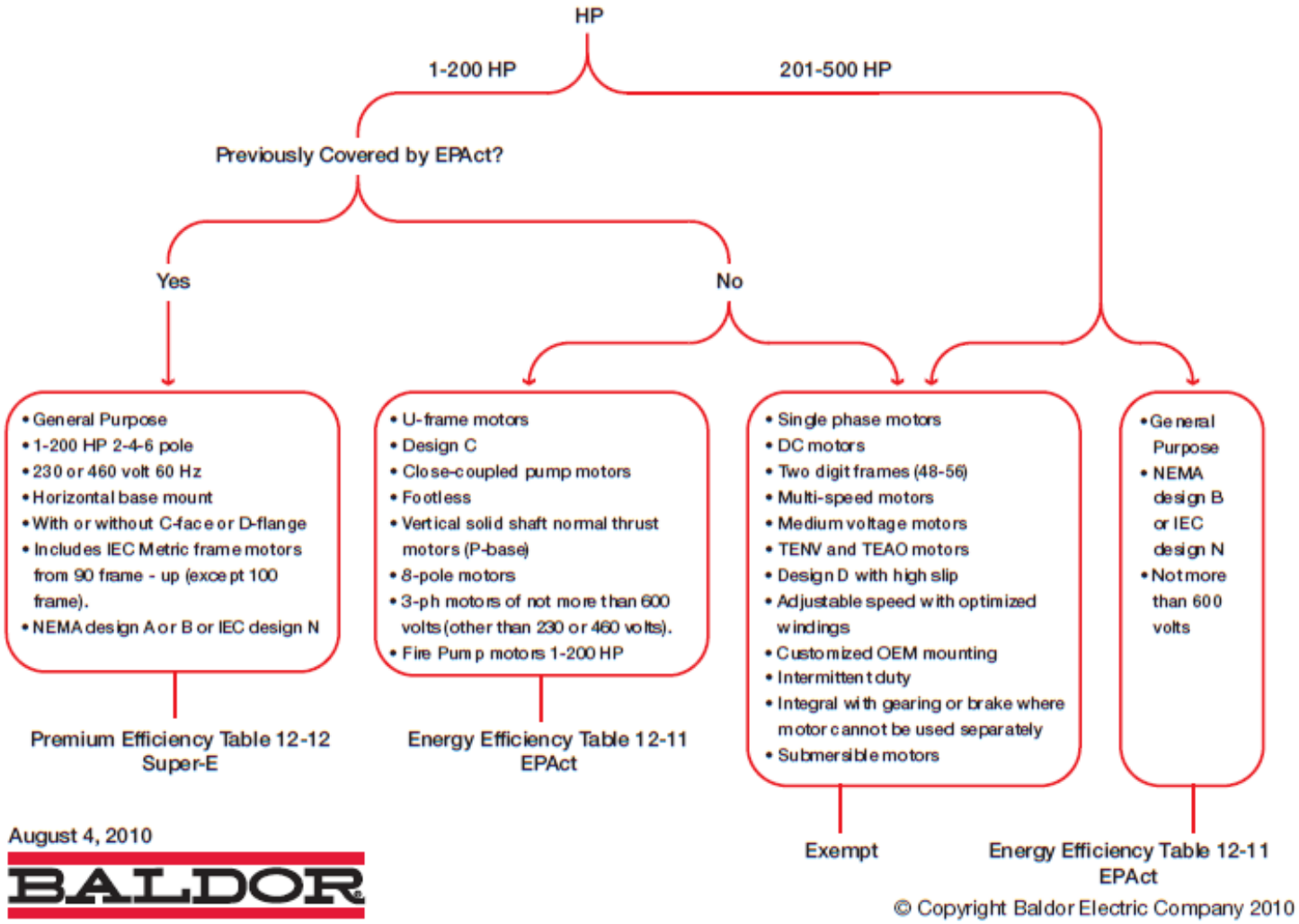
Efficiency NEMA Regulations

Energy Independence & Security Act of 2007

The below chart reflects US regulations, Canada is slightly different.



August 4, 2010

BALDOR

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Efficiency – Small Motor Rule

Small electric motors energy conservation standards and their effective dates.

(a) Each small electric motor manufactured (alone or as a component of another piece of non-covered equipment) after March 9, 2015, or in the case of a small electric motor which requires listing or certification by a nationally recognized safety testing laboratory, after March 9, 2017, shall have an average full load efficiency of not less than the following:

Motor horsepower/standard kilowatt equivalent	Average full load efficiency		
	Polyphase		
	Open motors (number of poles)		
	6	4	2
0.25/0.18	67.5	69.5	65.6
0.33/0.25	71.4	73.4	69.5
0.5/0.37	75.3	78.2	73.4
0.75/0.55	81.7	81.1	76.8
1/0.75	82.5	83.5	77.0
1.5/1.1	83.8	86.5	84.0
2/1.5	N/A	86.5	85.5
3/2.2	N/A	86.9	85.5

Motor horsepower/standard kilowatt equivalent	Average full load efficiency		
	Capacitor-start capacitor-run and capacitor-start induction-run		
	Open motors (number of poles)		
	6	4	2
0.25/0.18	62.2	68.5	66.6
0.33/0.25	66.6	72.4	70.5
0.5/0.37	76.2	76.2	72.4
0.75/0.55	80.2	81.8	76.2
1/0.75	81.1	82.6	80.4
1.5/1.1	N/A	83.8	81.5
2/1.5	N/A	84.5	82.9
3/2.2	N/A	N/A	84.1

Efficiency – Small Motor Rule

SMALL ELECTRIC MOTOR RULE COVERAGE DETAILS 10/28/14	
Covered Product – Column A	**Excluded Product – Column B**
For Use in the United States including motor driven product imported into the United States	Exported from the United States for use in product outside of the United States
NEMA General Purpose per MG 1-1987 Includes: Base mounted with or without C-face per NEMA MG1-11.34(1987) or MG1-4.4.4 (2011) or IEC equivalent. Resilient Mounting Base	Definite or Special Purpose Motors Examples: Motors designed for a specific application or purpose, Air Over, Thrust Bearing, Submersible, Immersible, Component Sets, Partials (3/4), Integral and Non-Integral Brake, Liquid Cooled, Inverter-Only, Encapsulated, Double Shafts, NEMA MG1-18 Definite Purpose applications such as Jet Pump, Sump Pump, Oil Burner, Gas Dispensing Pump, Home Laundry, Carbonator Pump, etc. NEMA Part 18 Motors including motors for Belted or Shaft-Mounted Fans and Blowers specifically including 4-pole ratings 1/3, 1/2, 3/4, and 1 horsepower with automatic reset thermal overload protector (ATO)
Open Drip Proof enclosure	Totally Enclosed or Air-over
NEMA Two-Digit Frame Numbers 42, 48, and 56, including equivalent IEC frame numbers 63, 71, & 80	All other frame numbers
Foot-Mounted with Single Straight-Shaft Extension having standard dimensions as given in MG1-11.31 (1987) - now 4.4.1 (2011) or IEC equivalent; Also motors with a standard diameter shaft 50% to 200% of NEMA "V" dimension with flat or keyway.	Non-standard shaft diameter or extensions which fall outside the guidelines in Column A. Foot-Mounted with Single or double Straight-Shaft Extension having non-standard length or diameter; motors with single tapered or double straight/tapered extensions
Foot or Footless with Type C Face or D-flange -Mounting having standard dimensions as given in MG1-11.34 (1987) - now 4.4.4 (2011) or IEC equivalent.	Foot or Footless with Type C Face-Mounting having non-standard dimensions; Customer defined mounting
Alternating Current	Direct Current
Single Speed (e.g. 60, 60/50Hz)	50 Hz only; Two-Speed, Multispeed and Adjustable Speed
115 and 230 Volt Single Phase voltages and 115, 200, 230, 460 and 575 Volt Polyphase voltages. Dual-and Broad-Voltage Motors (e.g. 115/208-230V) Note: DOE left the determination of the voltage level for determining compliance with the efficiency standard to the discretion of the small electric motor manufacturer	Voltages other than Column A and above 600V
2, 4 and 6 Pole	8 Pole or greater
¼ to 3 HP (0.18 to 2.2 kW) per Tables I.1 and I.2 below	Outputs outside scope of Tables I.1 and I.2
Intermediate Horsepower's within scope shall be rounded up or down to the next closest HP (kW) rating	
Polyphase, CSIR (Capacitor Start Induction Run), CSCR (Capacitor Start/Capacitor Run)	PSC (Permanent Split Capacitor), Split Phase, Shaded Pole, ECM (Electronically Controlled Motor), PMAC (Permanent Magnet AC Motor), Switched Reluctance, etc.
Continuous Duty (S1-IEC Equivalent)	Intermittent, Short-Time (S2-S10 IEC Duties)
NEMA Service Factor up to and including MG 1-12.47 (1987) – now 12.51 (2011)	Non-standard Service Factors greater than NEMA MG 1-12.47 (1987) – now 12.51 (2011)
Dual-and Broad-Voltage Motors (e.g. 115/208-230V) Note: DOE left the determination of the voltage level for determining compliance with the efficiency standard to the discretion of the small electric motor manufacturer	No exclusion
Small Electric Motors included as components of non-covered equipment	Small Electric Motors included in equipment that are covered by other energy efficiency regulations
Small electric motors with thermal protection that has not been evaluated by a nationally recognized safety test laboratory shall comply on March 9, 2015. Small electric motors included in nationally recognized safety testing laboratory listings or certifications are granted an additional 2 years effective date – March 9, 2017. (Examples: "Thermally Protected", "Impedance Protected")	N exclusion
All insulation Classes A and above	No exclusion