

NEMA STANDARD SERIES

NEMA DESIGN D

NEMA STANDARD THREE-PHASE INDUCTION MOTOR, DESIGN D, FOR OIL WELL PUMPS

High starting torque, high slip induction motor to NEMA MG 1 Design D, for oil well pumps and other loads needing a soft start.



3-150 _{HP}
RATED OUTPUT

213T-449T
NEMA FRAME

≅ 5 %
SLIP

IP54/55
DEGREE OF
PROTECTION

SERIES

NEMA-D

REVISION

A01

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DESCRIPTION

NEMA standard high starting torque, high slip three-phase induction motors of Design D are built with class F insulation and a service factor of 1.0 or 1.15. Slip is 5 % or more and starting torque is high.

The series is particularly suited to filling and oil well pumps and to other machines that need high starting torque and soft starting characteristics. Motors can be built to a customer's particular requirement.

TECHNICAL SPECIFICATION

Altitude	Not exceeding 3,300 ft (1,000 m)
Ambient temperature	-15 °C to +40 °C (5 °F to 104 °F)
Duty type	Continuous
Mounting arrangements	T (foot), TC (C-face), TD (D-flange)

STANDARDS

NEMA MG 1	Design D, three-phase induction motor
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MODEL DESIGNATION

Frames follow the NEMA T-frame series of **NEMA MG 1**. A shaft-type suffix distinguishes the standard shaft from the short shaft, and a mounting suffix gives the mounting arrangement.

NDY	10	12	256T
TYPE CODE	OUTPUT	POLES	FRAME
Nameplate TYPE field BJHE for this series	Rated output in HP	Pole number code	NEMA T-frame number

NDY10-12-256T = a 10 HP, frame 256T Design D motor. The same machine is supplied to Worldwide Electric as **IOW10-12-256T**; the nameplate TYPE field reads BJHE.

READING A DESIGNATION

Motors are fixed at the non-drive end. Frame 250T and above are supplied with grease inlet and outlet fittings.

TYPICAL APPLICATIONS

- Oil well pumps
- Filling pumps
- Loads needing high starting torque
- Loads needing a soft start

NOTES

SERVICE FACTOR
1.0 and 1.15.

VOLTAGE
230/460/796 V at 60 Hz.

RATED DATA

Values are for 60 Hz operation. Where the rated voltage is not 460 V or 575 V, full-load current is inversely proportional to the current shown for that voltage.

SYNCHRONOUS SPEED 1200 R/MIN

FRAME	HP	RATED OUTPUT kW	SPEED r/min	CURRENT AT 230/460/796 V A	POWER FACTOR cos φ	EFFICIENCY %	LOCKED-ROTOR TORQUE	MAXIMUM TORQUE %
213T	3	2.2	1110	9.4-4.7-2.71	0.76	79.0	47.4-23.7-13.7	300
215T	5	3.7	1105	15-7.51-4.34	0.76	82.0	70.8-35.4-20.4	300
254T	7.5	5.5	1135	20.6-10.3-5.95	0.79	86.5	105-52.5-30.3	280
256T	10	7.5	1135	27.2-13.6-7.9	0.79	87.0	139-69.3-40	310
284T	15	11	1135	38-19-11	0.85	87.0	206-103-59.5	275
286T	20	15	1130	50.4-25.2-14.5	0.85	87.5	270-135.2-78.1	275
324T	25	18.5	1135	60.8-30.4-17.6	0.87	88.5	360-180-103.9	310
326T	30	22	1135	74.7-37.3-21.5	0.85	88.5	450-225-129.9	350
365T	40	30	1130	96.7-48.4-27.9	0.87	89.0	574-287-165.7	290
404T	50	37	1130	122-61.2-35.3	0.87	88.0	722-361-208.4	330
405T	60	45	1130	147-73.4-42.4	0.87	88.0	872-436-251.7	340
444T	75	55	1130	178-89.2-51.5	0.90	87.5	1074-537-310	280
445T	100	75	1130	238-119-68.7	0.90	87.5	1370-685-395.5	290
447T	125	90	1135	285-142.5-82.3	0.88	90.0	1906-953-550.2	280
449T	150	110	1135	352-176-101.6	0.87	90.0	2100-1050-606.2	280

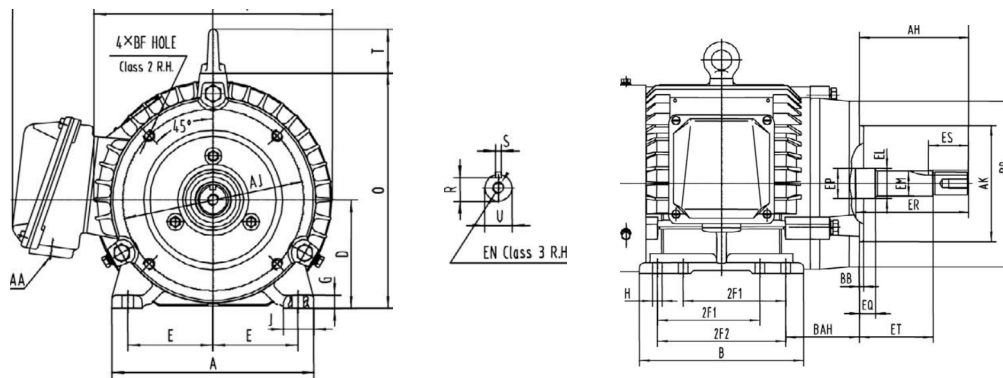
SYNCHRONOUS SPEED 900 R/MIN

FRAME	HP	RATED OUTPUT kW	SPEED r/min	CURRENT AT 230/460/796 V A	POWER FACTOR COS ϕ	EFFICIENCY %	MAXIMUM TORQUE %
215T	3	2.2	855	9.8-4.9-2.83	0.70	81.0	310
254T	5	3.7	855	15.8-7.9-4.6	0.71	83.0	310
256T	7.5	5.5	855	22-11-6.4	0.74	85.0	285
284T	10	7.5	855	30-15-8.7	0.72	87.0	275
286T	15	11	855	45.8-22.9-13.2	0.74	85.0	275
324T	20	15	855	59.6-29.8-17.2	0.74	85.0	275
365T	30	22	855	80-40-23.1	0.79	89.0	275
404T	40	30	855	113-56.5-32.6	0.75	89.0	275
405T	50	37	855	142-71-41	0.75	88.0	275
445T	75	55	855	219-109.6-63.3	0.72	89.0	275
447T	100	75	855	280-140-80.8	0.75	89.0	275

MOUNTING ARRANGEMENTS

The series is supplied in the following arrangements to IEC 60034-7. Letters on the drawings are the dimension symbols used in the outline and mounting dimension schedule.

T FOOT MOUNTING, NEMA T-FRAME



ABOUT THESE DRAWINGS

The drawings show a representative frame for each arrangement and are not to scale. Dimensions for a specific frame size are given in the outline and mounting dimension schedule.

OUTLINE AND MOUNTING DIMENSIONS

Principal dimensions are given below. The complete dimension schedule, including tolerances and flange details, is issued on request.

PRINCIPAL OUTLINE AND MOUNTING DIMENSIONS (INCH)

FRAME	MAX A	MAX B	C	D	E	2F	G	H	J	N-W	O	P	R	S	U	T	AA	AB	BA
213T	10.5	7.5	18.8	5.25	4.25	5.5	0.71	0.41	2.36	3.38	10.6	10.4	1.201	0.312	1.375	1.73	1	8.63	3.5
254T	12.5	10.8	23.29	6.25	5	8.25	0.79	0.53	2.76	4	12.9	12.6	1.416	0.375	1.625	2.05	1-1/4	11.2	4.25
284T	14	12.5	26.6	7	5.5	9.5	0.87	0.53	2.76	4.62	14.3	14	1.591	0.5	1.875	2.05	1-1/2	12	4.75
324T	16	14	29.8	8	6.25	10.5	0.99	0.66	2.76	5.25	16	15.7	1.845	0.5	2.125	2.44	2	13.4	5.25
365T	18	16.2	33.8	9	7	12.25	1.1	0.66	2.95	5.88	18.2	17.7	2.021	0.625	2.375	2.44	3	15.7	5.88
404T/405T	20	16.2/17.8	36.81/38.35	10	8	12.25/13.75	1.18	0.81	3.15	7.25	21.1	21.5	2.45	0.75	2.875	2.83	3	18.31	6.62
444T/445T/447T	22	18.5~24	42.52~48.03	11	9	14.5~25	1.38~1.58	0.81	3.35	8.5	23/23.5/24	—	2.88	0.875	3.375	3.46/4.25	3	19.5~20	7.5

COLUMNS NOT REPRODUCED

The brochure does not print “Connection” as values grouped over bands of ratings rather than per type. Those figures are available on request and are omitted here rather than shown against the wrong rating.

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