



## NEMA Motor Shaft Diameters

### PA NOTE

NEMA has developed standards over the years for shaft diameters based on motor frame sizes. When doing a Design Flexibility Analysis, use these shaft diameters to help exclude unacceptable drive combinations. Refer to Table 1 for Open Motors or Table 2 for Totally Enclosed Fan Cooled Motors (TEFC) to find a frame size based on motor HP. Use Table 3 to find the shaft diameter for that motor. These shaft diameters are based on the 1964 NEMA Rerating. Use Tables 4-6 for 1953 NEMA Rerating (U Frames). Note that NEMA has calculated the maximum pull a motor can handle to prevent premature motor bearing failure. This pull is translated back to a minimum allowable pulley or sprocket diameter. These NEMA minimum allowable diameters are referenced in the various design catalogs and also should be used when designing a synchronous belt drive.

Table 1

1964 NEMA RERATING (T FRAMES)  
 THREE PHASE FRAME SIZES OPEN MOTORS-GENERAL PURPOSE

HP	900 rpm	1200 rpm	1800 rpm	3600 rpm
1	182T	145T	143T	----
1.5	184T	182T	145T	143T
2	213T	184T	145T	145T
3	215T	213T	182T	145T
5	254T	215T	184T	182T
7.5	256T	254T	213T	184T
10	284T	256T	215T	213T
15	286T	284T	254T	215T
20	324T	286T	256T	254T
25	326T	324T	284T	256T
40	365T	364T	324T	286T
50	404T	365T	326T	324TS
60	405T	404T	364TS	326TS
75	444T	405T	365TS	364TS
100	445T	444T	404TS	365TS
100	445T	444T	405TS	405TS
125	----	445T	405TS	404TS
125	----	445T	444TS	444TS
150	----	----	444TS	405TS
150	----	----	445TS	445TS
200	----	----	445TS	444TS
200	----	----	445TS	444TS
250	----	----	-----	445TS
250	----	----	-----	445TS



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The Gates Rubber Company  
Denver, Colorado USA

TABLE 2		TABLE 3	
Frame	Shaft Dia.	Frame	Shaft Dia.
143T	0.875	326T	2.125
143T	0.875	326T	2.125
145T	0.875	326TS	1.875
145T	0.875	326TS	1.875
182T	1.125	364T	2.375
182T	1.125	364T	2.375
184T	1.125	364TS	1.875
184T	1.125	364TS	1.875
213T	1.375	365T	2.375
213T	1.375	365T	2.375
215T	1.375	365TS	1.875
215T	1.375	365TS	1.875
254T	1.625	404T	2.875
254T	1.625	404T	2.875
256T	1.625	404TS	2.125
284T	1.875	405T	2.875
284T	1.625	405TS	2.125
286T	1.875	444T	3.375
324T	2.125	445T	3.375
325TS	1.875	445TS	2.375