

HEATING VENTILATING AIR CONDITIONING GUIDE 1944

TABLE 1. CLASSIFICATION OF MOTORS

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CURRENT	TYPE	SPEED CHARAC- TERISTICS	FULL VOLTAGE		HP RANGE	TYPE OF APPLICATION SEE FOOTNOTE*
			STARTING TORQUE	STARTING CURRENT		

Constant Speed Drives

DIRECT	1. Shunt	Constant	Normal	Normal	All	(a) Fans and centrifugal pumps and centrifugal compressors
	2. Compound	Constant or Variable	High	Normal	All	(b) (c) (e) Reciprocating pumps and frequent or hand starting
	3. Series	Variable	High	Normal	Small	(d) Fans direct connected
POLY-PHASE	4. Squirrel-Cage General Purpose Normal Torque	Constant	Normal 0.8-1.5 times	High 6-8 times	All	(a) Fans and centrifugal pumps and centrifugal compressors
	5. Squirrel-Cage Normal Torque	Constant	Normal 0.8-1.5 times	Normal 5-6 times	Medium Small	(a) Fans and centrifugal pumps and centrifugal compressors
	6. Squirrel-Cage High Torque	Constant	High 2-2.6 times	Normal 5-6 times	Medium Small	(b) Reciprocating pumps and compressors started loaded
	7. Wound Rotor	Constant or Variable	High 1-2.5 times	Low 1-3 times with secondary control	All	(a) Hoists reciprocating pumps and compressors (c) and frequent (e) or hand start
	8. Synchronous High Speed	Constant	Normal 0.75-1.75 times	Normal 5-7 times	Medium Large	(a) Fans and centrifugal pumps and centrifugal compressors
	9. Synchronous Low Speed	Constant	Low 0.3-0.4 times	Low 3-4 times	Medium Large	(a) Reciprocating compressors starting unloaded
SINGLE PHASE	10. Capacitor	Constant	High	Normal	Small	(b) Pumps and compressors
	11. Capacitor Fan	Constant	Normal	Normal	Small	(a) Fans, centrifugal pumps

- *Applications:
a. Drives having medium or low starting torque and inertia (WR²) such as fans and centrifugal pumps or reciprocating pumps and compressors started unloaded.
b. Drives having high starting torques, such as reciprocating pumps and compressors started loaded.
c. Similar to (a) except where frequent or hand starting (large WR²) requires a higher starting and accelerating torque.
d. Fans direct connected.
e. Stoker drives.

CHAPTER 36. MOTORS AND MOTOR CONTROLS

TABLE 1. CLASSIFICATION OF MOTORS—(Concluded)

CURRENT	TYPE	SPEED CHARACTERISTICS	FULL VOLTAGE		HP RANGE	TYPE OF APPLICATION SEE FOOTNOTE*
			STARTING TORQUE	STARTING CURRENT		
SINGLE PHASE	12. Capacitor Start Induction Run	Constant	High	Normal	Small Fractional	(a) Fans pumps and compressors
	13. Repulsion Induction	Constant	High	Normal	Medium Small	(a) Fans pumps and compressors
	14. Split Phase	Constant and Adjustable	Normal	Normal	Fractional	(a) Fans pumps and compressors (d) fans—direct
<i>Adjustable Speed Drives</i>						
DIRECT	15. Shunt Field Adjustment	Constant	Normal	Normal	All	(a) Fans and centrifugal pumps
	16. Shunt Armature Resistor	Variable	Normal	Normal	All	(a) Fans and centrifugal pumps
	17. Variable Voltage Control	Variable	Normal	Normal	All	(d) Fans and centrifugal pumps
POLY-PHASE	18. Squirrel-Cage High Slip, Transformer Adjustment	Variable	Normal	Normal	Medium Small	(a) Fans
	19. Squirrel-Cage Separate Winding or Regrouped Poles	Constant Multi-Speed	Normal or High	Normal or Low	All	(a) Fans pumps and compressors
	20. Wound Rotor, External Secondary Resistance	Variable	High	Low	All	(a) Fans centrifugal pumps and compressors
	21. Repulsion	Variable	High	Normal	Low and Fractional	(a) Fans—centrifugal pumps (b) compressors
SINGLE PHASE	22. Capacitor Low Torque Tapped Winding	Variable Two Speed	Low	Normal	Fractional	(d) Fans, direct
	23. Capacitor Low Torque Transformer Adjustment	Variable	Low	Low	Fractional	(d) Fans
	24. Split Phase Regrouped Poles	Constant	Normal	Normal	Fractional	(d) Fans