

TABLE 1. CLASSIFICATION OF MOTORS

CURRENT	TYPE	SPEED CHARACTERISTICS	STARTING TORQUE	STARTING CURRENT	HP RANGE	TYPE OF APPLICATION SEE FOOTNOTES
<i>Constant Speed Drives</i>						
DIRECT	1. Shunt	Constant	Medium	Medium	All	(a) Fans and (c) Centrifugal Pumps
	2. Compound	Constant or Variable	High	Medium	All	(b) (c) (e) Reciprocating Pumps and frequent or hand starting
	3. Series	Variable	High	Medium	Small	(d) Fans direct connected
POLY-PHASE	4. Squirrel Cage General Purpose	Constant	Medium	High 6-8 Times	All	(a) Fans and (c) Centrifugal Pumps
	5. Squirrel Cage Medium Torque	Constant	Medium	Medium 5-6 Times	Medium Small	(a) Fans and Centrifugal Pumps
	6. Squirrel Cage High Torque	Constant	High	Medium 5-6 Times	Medium Small	(b) Reciprocating Pumps (e) and Compressors started loaded
	7. Slip Ring Wound Rotor	Constant	High	Low 1-3 Times	All	(a) and Hoists (b) Reciprocating Pumps (c) and Frequent (e) or Hand Starting
	8. Synchronous High Speed	Constant	Medium	Medium 5-7 Times	Medium Large	(a) Fans and Centrifugal Pumps
SINGLE PHASE	9. Synchronous Low Speed	Constant	Low	Low 3-4 Times	Medium Large	(a) Reciprocating Compressors Starting Unloaded
	10. Repulsion Induction	Constant	High	Medium	Medium Small	(a) Fans (b) Pumps and Compressors
	11. Capacitor	Constant	Low	Medium All	Small and Fractional	(d) Fans—direct
	12. Capacitor	Constant	Medium	6-8 Times		(a) Fans—belt
	13. Capacitor	Constant	High			(b) Compressors and Pumps

TABLE 1. CLASSIFICATION OF MOTORS—(Continued)

CURRENT	TYPE	SPEED CHARACTERISTICS	STARTING TORQUE	STARTING CURRENT	HP RANGE	TYPE OF APPLICATION SEE FOOTNOTES
<i>Adjustable Speed Drives</i>						
DIRECT	14. Shunt Field Adjustment	Constant	Medium	Medium	All	(a) Fans and (e) Centrifugal Pumps
	15. Shunt Armature Resistor	Variable	Medium	Medium	All	(a) Fans and (e) Centrifugal Pumps
POLY-PHASE	16. Squirrel Cage Regrouped Poles	Constant Multi-speed	Medium or High	High	All	(a) Fans and (b) Pumps
	17. Slip Ring Secondary Resistance	Variable	High	Low	All	(a) Fans and (b) Centrifugal Pumps
SINGLE PHASE	18. Capacitor Transformer Adjustment	Variable	Low	Low	Fractional	(d) Fans

^aApplications:
^a. Drives having medium or low starting torque and inertia (WR^2) 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 WR^2) requires a higher starting and accelerating torque.
^d. Fans direct connected.
^e. Stoker drives.

SPECIAL APPLICATIONS

A few applications of motors may require special constructions such as splash proof, explosion proof, fully enclosed, and self-ventilated to meet hazardous or special duty conditions. These requirements are frequently encountered in certain industrial applications, in which cases it is necessary to select the motors from the viewpoint of service conditions, as well as the required operating characteristics to meet the demands of the machines being driven.

The general classification of motors used for heating, ventilation and air conditioning is shown in Table 1.

CONTROL EQUIPMENT FOR MOTORS

In selecting control for alternating and direct current motors it is necessary to determine whether the installation is to be operated by manual or automatic control. The available controls and the function of each group of apparatus may be outlined as follows:

1. Manual Control:

a. To establish current.

- (1) Snap switch.
- (2) Knife switch.
- (3) Manually operated contactor.
- (4) Drum switch.