

## MOTOR INFORMATION GUIDE

### SHADED POLE MOTORS - Single Phase

For use in light-duty appliances because of low efficiency, power factor and starting torque. These motors are only suitable for direct drive fan and blower applications.

### PERMANENT-SPLIT CAPACITOR MOTORS - Single Phase

This type motor is similar to the shaded pole type but has higher efficiency and power factor. Starting torques are relatively low which limits application only for direct drive fan and blower applications.

### SPLIT-PHASE MOTORS - Single Phase

Split-phase motors have moderate starting torque with low starting current. They are used where starting load is moderate and where there is frequent starting with relatively long running periods. Reversible.

### CAPACITOR-START MOTORS - Single Phase

This type motor produces greater locked-rotor and accelerating torque per amp than the split phase type. With a higher starting torque than the split-phase type it can be used for driving compressors, pumps, air conditioning equipment and many other hard-to-start applications.

### POLYPHASE-SQUIRREL CAGE INDUCTION MOTORS- Three Phase

Polyphase motors have a high starting torque combined with high efficiency and power factor which makes them suitable for use on larger compressors and commercial air conditioning units. Do not require capacitors or starting relays. Reversible.

## DEFINITIONS FOR LISTING ON FOLLOWING MOTORS PAGES

**H.P.:** **Horsepower** - Power rating of the motor.

**FLA:** **Full Load Amps** - Amperage drawn by a motor when operating at rated load and voltage.

**NOTE:** RCD may use several motor suppliers for any given part number. Therefore FLA listed represents maximum rating that could be encountered under a given part number.

**ROT.** **Rotation** - Motors rotate in either a clockwise (CW) or counterclockwise (CCW) direction. Rotation listed is per NEMA, as viewed from the end of the motor opposite the shaft. In the case of double shaft motors, the rotation is viewed from the lead end of motor.

**S.F.:** **Service Factor** - A measure of the overload capacity designed into a motor. A 1.15 SF means the motor can deliver 15% more than a rated horsepower without injurious overheating. A 1.0 SF motor should not be overloaded beyond its rated horsepower.

**BRGS:** **Bearings** - May be either sleeve (SLV) or ball bearings as indicated.

**FRAME:** **An (R), (S) or (T)** may appear in this column adjacent to the NEMA frame designation and is defined as follows:

(R) - Resilient mounting rings included.

(S) - Motor is mounted on rigid base.

(T) - Motor is equipped with extended thru-bolts required for thru-bolt mounting.

**DIA:** **Diameter** of motor in inches.

### SHAFT DIMENSIONS:

First shaft length listed is at lead end of dual shaft motors.

**NOTE:** RCD may use several motor suppliers for any given part number. Therefore, shaft length(s) listed represent maximum length(s) available under a given part number.

### MOTOR DIMENSIONS:

- A. Overall length of motor including shaft(s).
- B. Diameter of mounting bold circle on motors supplied with mounting ears.
- C. Shaft height - center of shaft to base on motors supplied with mounting base.
- D. Diameter of mounting hole on motors supplied with mounting lugs.

# Motors - Information

Compressors, Chillers, Condensers

Motors

Electrical

Heating Components

Indoor Air Quality

Thermostats

Oils & Chemicals

Accessories, Supplies & Commodities

Tools & Instruments

Refrigeration

## TIPS TO IDENTIFY A MOTOR WITHOUT A NAMEPLATE

**Motor Diameter:** Measure diameter to confirm NEMA (National Electrical Manufacturers Association) frame size.

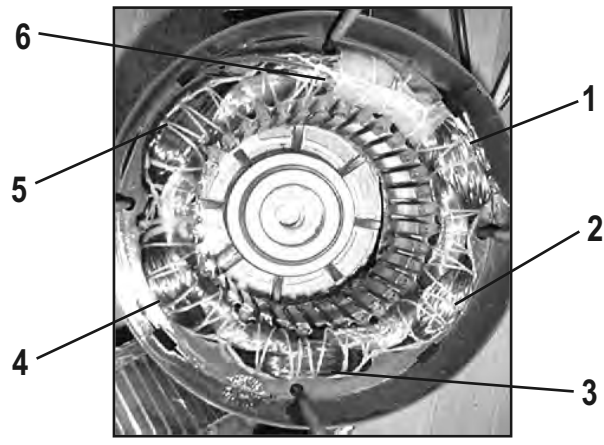
Frame size: 4.9"= 42, 5.6"= 48, 6.5"= 56

**Motor Type:** Shaded Pole (SP), Permanent Split Capacitor (PSC), Split Phase, Capacitor Start/Capacitor Run, Three Phase, and DC.

**Speed:** RPM = 120 x Hz / # Poles

@ 60Hz # Poles	Full Load Speed				General Purpose
	Syn	SP	PSC		
2	3600	3000	-		3450
4	1800	1500	1625		1725
6	1200	1050	1075		1140
8	900	-	825		850

Count # of Poles



Horsepower & Stack Lengths:

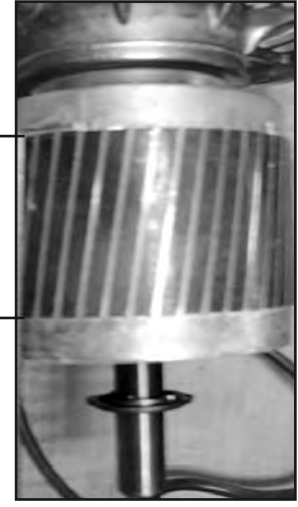
HP	Approx. Stack Length
1/4	1.25"
1/3	1.50"
1/2	2.25"
3/4	2.50"

HP	Approx. Stack Length
1/8	1.13"
1/6	1.25"
1/4	1.62"
1/3	2.25"

HP	Approx. Stack Length
1/4	1.25"
1/3	1.75"
1/2	2.50"
3/4	3.00"

HP	Approx. Stack Length
1/8	1.25"
1/6	1.38"
1/4	1.75"
1/3	2.50"

Measure Stack Height For HP



**Number Of Speeds:**

- Number Speeds = number of power leads minus 1.
- For SP - **Do not count** the ground (green) lead.
- For PSC - **Do not count** the ground (green) lead or the capacitor (brown) lead.

**Mechanical Features:**

- Mounting Definition - Base, Belly band, Lugs, Studs, Face mount, etc.
- Enclosure - ODP (Open Drip Proof), TE (Totally Enclosed), etc.
- Shaft - Number, Length, Diameter, Flat-Keyway, etc.
- Unique Features - Leads, Conduit Box, Bearings, Brake, Rotation Arrow, Capacitor Cover, Slings, etc.

**Rotation:**

- Most standard motors (except Single Phase and Threaded Shaft) are reversible from standstill by electrical re-connection.
- Three phase motors reversed by interchanging any two of the three power leads.

**Note:** Rotation of an unknown motor is often found by noting attached fan, blower or other device. Dirt accumulates on the side towards which the motor rotates.

**Voltage:** Common Voltage

	115	230	Dual	277	460	575
SP	X	X	-	X	-	-
PSC	X	X	-	X	X	-
Split Ph	X	X	-	-	-	-
Cap Start	X	X	115/230	-	-	-
3 Phase	-	X	230/460	-	X	X

Note: Voltage may be difficult to determine. **Ask the customer!**

## TIPS TO IDENTIFY A MOTOR WITHOUT A NAMEPLATE, CONTINUED

### Typical Color Schemes (Not a standard):

- White - Common lead (115 volt)
- Yellow or Purple - Common lead (230 volt)
- Black - High
- Blue - Medium
- Red - Low
- Brown - Capacitor leads (1 or 2)(PSC Only)
- When replacing PSC a good practice is to replace the capacitor, too.
- Replace based on horsepower not AMP rating.
- Do not replace manual overload with automatic overload motor.
- Motors with similar stator dimensions will have output (other features being equal). I.e. It takes a similar amount of iron and copper (D2L) for torque.

Some rules of thumb:

Generally if this is...

The original	This can be used as a replacement
Shaded Pole	Permanent Split Capacitor Ball Bearing
Sleeve Bearings	Sleeve Bearing Totally
Open or DP	Enclosed
1 Speed	1, 2 or 3 Speed
2 Speed	2 or 3 Speed
370 Volt Capacitor	370 or 460 Volt Capacitor

## MOTOR CROSS REFERENCE

MOTOR DESCRIPTION	MODEL TOTALINE	MODEL GE	MODEL EMERSON	MODEL AO SMITH	MODEL FASCO	MODEL MAGNETEK	MODEL MARATHON
<b>CONDENSER FAN, TOTALLY ENCLOSED, ALL POSITION MOUNTING</b>							
1/6 HP	P257-8727	3727	1859	FSE1016S	D917	184	X411
1/4 HP	P257-8728	3728	1860-E	FSE1026S	D909	176	X412
1/3 HP	P257-8729	3729	1861	FSE1036S	D908	175	X413
1/2 HP	P257-8730	3730	1862	FSE1056S	D907	187	X414
3/4 HP	P257-8731	3731	1868	FSE1076S	D933	779	X095
<b>DIRECT DRIVE BLOWER MOTORS, 115 VOLT</b>							
1/4 HP	P257-8583	3583	1863	DL1026	D721	0533	X000
1/3 HP	P257-8585	3585	1864	DL1036	D727	0532	X002
1/2 HP	P257-8587	3587	1865	DL1056	D701	0531	X004
3/4 HP	P257-8589	3589	8904	DL1076	D728	0678	X009
<b>DIRECT DRIVE BLOWER MOTORS, 208-230 VOLT</b>							
1/4 HP	P257-8584	3584	1971	D1026	D725	0530	X001
1/3 HP	P257-8586	3586	1972	D1036	D923	0529	X003
1/2 HP	P257-8588	3588	1973	D1056	D703	0528	X005
3/4 HP	P257-8590	3590	8905	D1076	D729	0679	X010
<b>BELT DRIVE FAN &amp; BLOWER MOTORS, 115 VOLT</b>							
1/4 HP	P267-9305	4701	8000	GF2024	-	933	B206
1/3 HP	P267-9308	4706	8100	GF2034	-	934	B207
1/2 HP	P267-9758	4708	8200	GF2054	-	935	B208

## WEBSITE CROSS REFERENCE

[www.AOSmithMotors.com](http://www.AOSmithMotors.com)

[www.EmersonMotors.com](http://www.EmersonMotors.com)

[www.Fasco.com](http://www.Fasco.com)

[www.Baldor.com](http://www.Baldor.com)

[www.LauParts.com](http://www.LauParts.com)