



APPLICATION Single-Phase Motors

Auxiliary Running Capacitors

Added capacitors must be connected across “Red” and “Black” control box terminals, in parallel with any existing running capacitors. The additional capacitor(s) should be mounted in an auxiliary box. The values of additional running capacitors most likely to reduce noise are given below. The tabulation gives the **max.** S.F. amps normally in each lead with the added capacitor.

Although motor amps decrease when auxiliary run capacitance is added, the load on the motor does not. If a motor is overloaded with normal capacitance, it still will be overloaded with auxiliary run capacitance, even though motor amps may be within nameplate values.

Table 15 Auxiliary Capacitor Sizing

MOTOR RATING		NORMAL RUNNING CAPACITOR(S)	AUXILIARY RUNNING CAPACITORS FOR NOISE REDUCTION			MAXIMUM AMPS WITH RUN CAP		
HP	VOLTS	MFD	MFD	MIN. VOLTS	FRANKLIN PART	YELLOW	BLACK	RED
1/2	115	0	60(1)	370	TWO 155327101	8.4	7.0	4.0
1/2	230	0	15(1)	370	ONE 155328101	4.2	3.5	2.0
3/4		0	20(1)	370	ONE 155328103	5.8	5.0	2.5
1		0	25(1)	370	ONE EA. 155328101 155328102	7.1	5.6	3.4
1.5		10	20	370	ONE 155328103	9.3	7.5	4.4
2		20	10	370	ONE 155328102	11.2	9.2	3.8
3		45	NONE	370		17.0	12.6	6.0
5		80	NONE	370		27.5	19.1	10.8
7.5		45	45	370	ONE EA. 155327101 155328101	37.0	32.0	11.3
10		70	30	370	ONE 155327101	49.0	42.0	13.0
15		135	NONE			75.0	62.5	16.9

- (1) Do not add running capacitors to 1/3 through 1 hp control boxes, which use solid state switches or QD relays. Adding capacitors will cause switch failure. If the control box is converted to use a voltage relay, the specified running capacitance can be added.

Buck-Boost Transformers

When the available power supply voltage is not within the proper range, a buck-boost transformer is often used to adjust voltage to match the motor. The most common usage on submersible motors is boosting a 208 volt supply to use a standard 230 volt single-phase submersible motor and control. While tables to give a

wide range of voltage boost or buck are published by transformer manufacturers, the following table shows Franklin’s recommendations. The table, based on boosting the voltage 10%, shows the minimum rated transformer kVA needed and the common standard transformer kVA.

Table 15A Buck-Boost Transformer Sizing

MOTOR HP	1/3	1/2	3/4	1	1.5	2	3	5	7.5	10	15
LOAD KVA	1.02	1.36	1.84	2.21	2.65	3.04	3.91	6.33	9.66	11.70	16.60
MINIMUM XFMR KVA	0.11	0.14	0.19	0.22	0.27	0.31	0.40	0.64	0.97	1.20	1.70
STANDARD XFMR KVA	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.75	1.00	1.50	2.00

Buck-Boost transformers are power transformers, not control transformers. They may also be used to lower voltage when the available power supply voltage is too high.