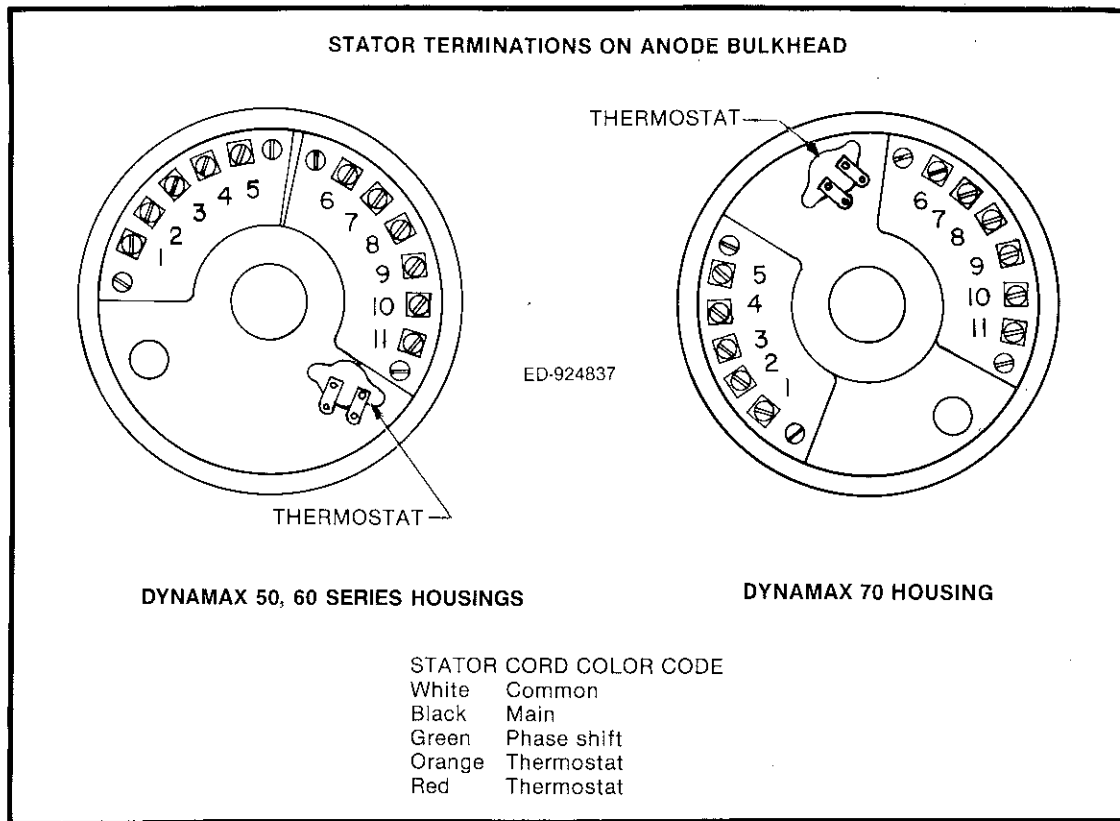


DYNAMAX STATOR
Universal Machlett Type



APPLICATION

This new improved stator design designated "U", provides for convenient winding reconnection to acquire various stator characteristics and is available in Dynamax 50, 60 and 70 Series tube housings to replace the following stators:

- R (Regular)
- Q (Low Impedance)
- E (Balanced Windings)

This universal stator:

- allows a single tube-housing to be used with a variety of motor controls with proper stator connections;
- optimizes anode acceleration.

It is important to ensure that the anodes of rotating anode x-ray tubes have reached the specified minimum rotational speed before the x-ray exposure is made. This determination should be made on each new installation or when a change of equipment has been made that may affect the rotational function. Individual tube inserts, stators, motor controls, and timing circuits may change with age and contribute to somewhat different rotational speeds. The starting power times, voltages and currents listed here are guidelines. It is strongly recommended that the x-ray tube anode speed be measured just prior to the instant of exposure on each tube installed. Gener-

ally, time to speed will be longer and maximum speed will be less by about 30 percent when the tube anode is at maximum heat storage. Minimum speeds are 3000 and 9000 RPM for 60 Hz and 180 Hz, respectively. Always consult individual motor control instructions for proper connections, adjustments and limitations. For further guidance see Machlett Application Data "Notes on Stators, Motor Controls and Compatibility", ST 3497.

CONSTRUCTION

The universal stator design uses multiple windings brought out to terminal blocks on the tube housing anode bulkhead. This provides for jumper reconnection of the windings for adaptation to different motor controls.

Minimized DC resistance of the windings improves time-to-speed in "hot" housings and improves reliability.

A wide differential thermostatic switch is included in the housing assembly to provide tube housing maximum temperature protection.

A 5-conductor (#16 AWG) shielded cord is provided for stator and thermostat connections. Connect shield to housing ground connection.

SPECIFICATION

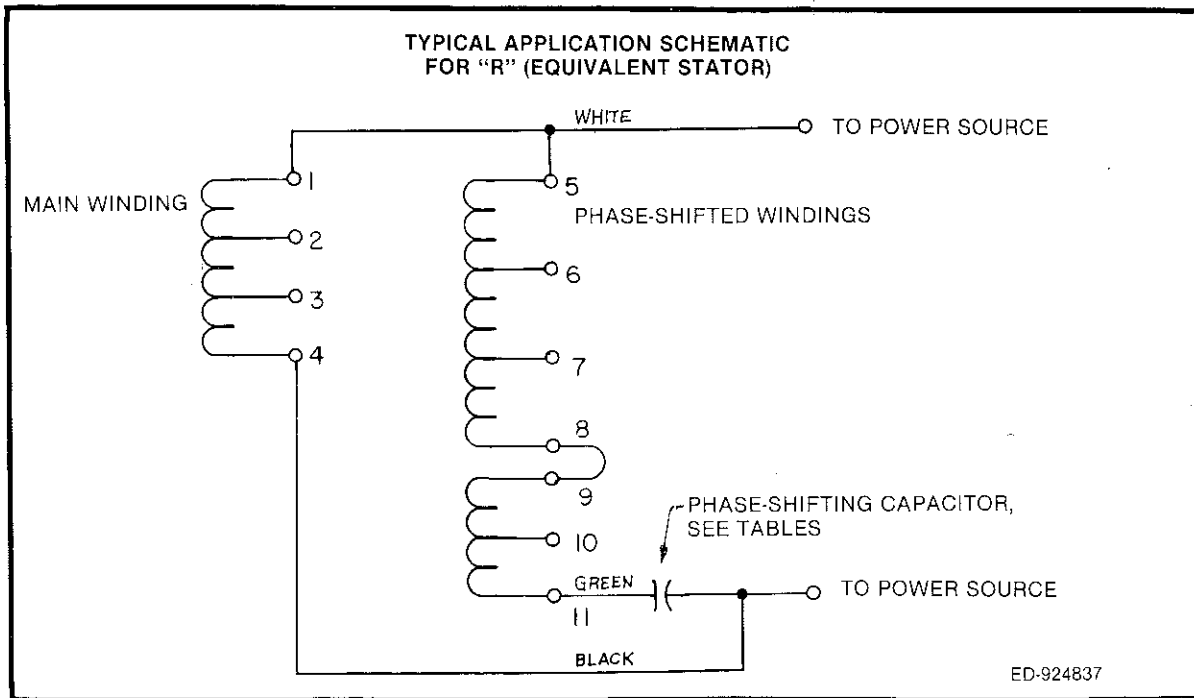
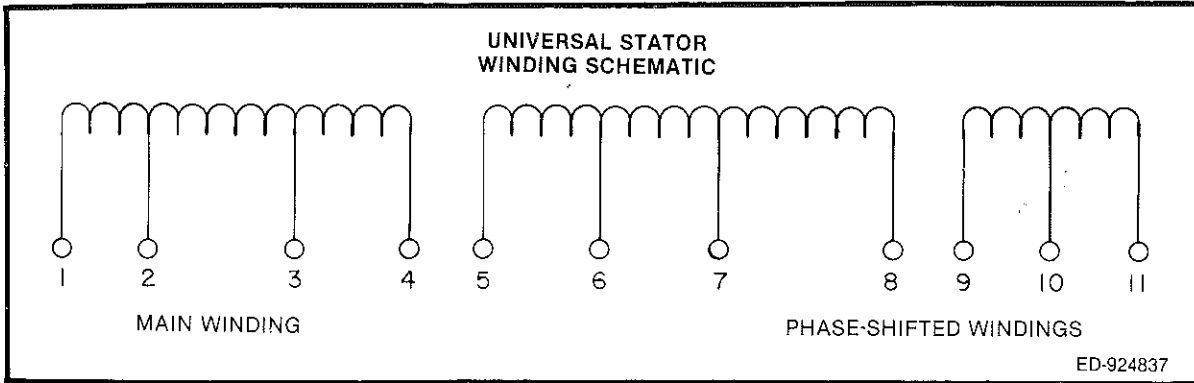
Thermostat data: See individual housing Product Data sheet.

Stator duty cycle:
Housings with 5" anode tubes without heat exchanger;

Maximum - 1 high speed start every 90 seconds.

With heat exchanger;
For all other size anodes;

1 high speed start every 60 seconds.
2 starts per minute.



Universal Stator Operating Parameters
When Connected as Shown in Diagrams

60 Hz, 3000 rpm (Minimum)

Starting Power	Configuration						
	"R" (Equivalent) (1a)	"Q" (1b)	"E" (2a) (2b)		"P" NA	"R" (4)	"Q" (4)
Volts rms Black-White*	240	220	240	192	NA	240(5)	200(5)
Amperes rms White lead	8.6	18.0	8.6	6.6		6.5(6)	14.2(6)
Black lead	8.0	18.7	7.9	5.6		5.5	11.7
Green lead	4.6	7.0	6.2	3.8		4.5	9.4
(1) Seconds to Start							
3" (300 kHU)	1.0	0.8	0.8	1.0		—	—
4" (300, 400 kHU)	1.5	1.0	1.0	1.4		—	—
5" (450 kHU)	3.3	2.4	2.4	3.5		2.0	1.3
5" (750 kHU)	5.0	3.6				3.0	2.0
Heat Input during Start HU/sec.	2500	4400	2700	1200		1700	3100
Duty	Int.	Int.	Int.	Int.		—	—
Running Power							
Volts rms Black-White	55	35	55	90	NA	40(5)	30(5)
Amperes rms White lead	1.7	2.4	7.7	2.3		1.1(6)	2.1(6)
Black lead	1.6	2.7	1.6	0.9		0.9	1.6
Green lead	0.9	0.9	1.4	1.3		0.8	1.4
Heat Input during Run HU/sec.	100	95	112	74		50	60
Duty	Int.	Int.	Int.	Int.		Int.	Int.
Capacitor (Phase-Shifting)	30 μ F	60 μ F	45 μ F	—		—	—

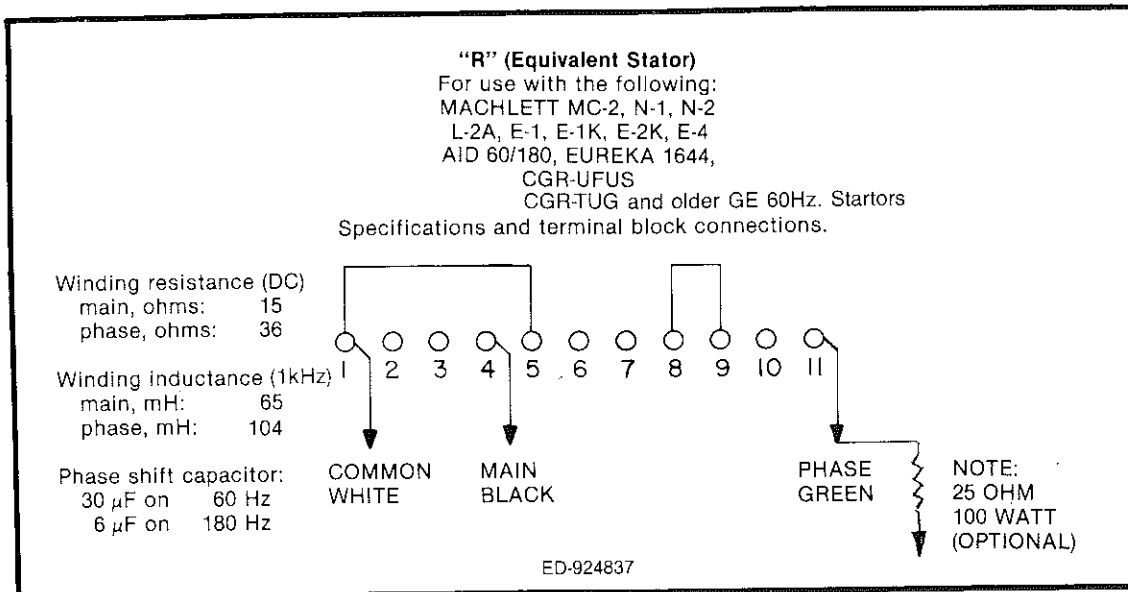
Universal Stator Operating Parameters
When Connected as Shown in Diagrams

180 Hz, 9000 rpm (Minimum)

Starting Power	Configuration						
	"R" (Equivalent) (1a)	"Q" (1b)	"E" (2a) (2b)		"P" (3)	"R" (4)	"Q" (4)
Volts rms Black-White*	400	340	425	600	600	450(5)	350(5)
Amperes rms White lead	5.8	13.6	4.6	10.3	12.4	4.7(6)	10.0(6)
Black lead	4.5	11.5	4.5	7.4	6.9	3.8	8.4
Green lead	5.8	12.2	6.6	7.3	8.8	3.6	7.3
(1) Seconds to Start							
3" (300 kHU)	1.0	1.0	1.2	1.2	1.2	—	—
4" (300, 400 kHU)	1.5	1.0	1.5	1.8	1.8	—	—
5" (450 kHU)	4.0	3.3	4.3	4.2	4.2	4.0	2.7
5" (750 kHU)	6.0	5.0				6.0	4.0
Heat Input during Start HU/sec.	2300	4500	1900	2990	2800	960	1750
Duty	Int.	Int.	Int.	Int.	Int.	Int.	Int.
Running Power							
Volts rms Black-White	100	60	80	145	140	8.0(5)	60(5)
Amperes rms White lead	1.6	3.0	1.6	2.3	2.4	0.8(6)	1.5(6)
Black lead	1.1	1.4	1.6	0.9	0.85	0.7	1.4
Green lead	1.6	2.9	1.3	0.8	1.6	0.6	1.1
Heat Input during Run HU/sec.	165	197	113	40	74	30	40
Duty	Int.	Int.	Int.	Int.	Int.	Int.	Int.
Capacitor (Phase-Shifting)	6 μ F	15 μ F	7.5 μ F	—	—	—	—

*For voltages other than those listed, the time to speed can be estimated proportionally but actual time and speed should always be measured.

- NOTES: (1) Time delay required for housing at maximum operating temperature.
 (1a), (1b) When used with motor controls having a sine wave output.
 (2a) When used with G.E. 4kW Starters
 (2b) When used with PHILIPS Modular Generators or Medio Generators with high-speed starters only.
 (3) When used with PHILIPS XF-7000 Starter, 180 Hz only.
 (4) When used with AID HD 300 VRS motor control, (Square wave output).
 (5) Fluke Model 8800A DVM used for voltage measurements.
 (6) True RMS meter used for current measurements.
 (7) Acceleration from 60 Hz to 180 Hz rotation reduces above starting times by about 30 percent.



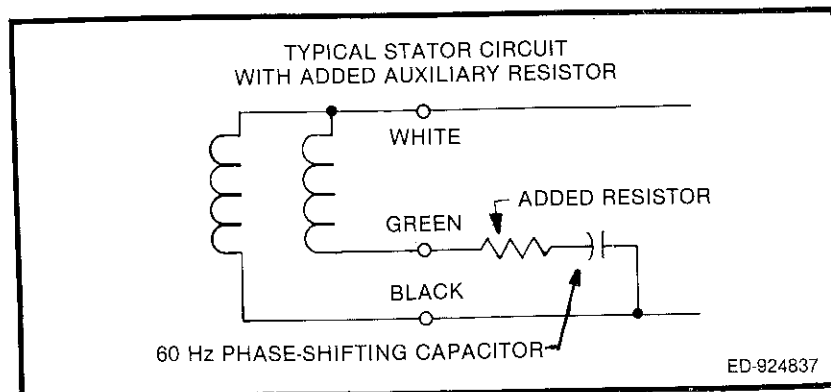
NOTE

Use of the Universal Stator Connected for an "R" (Equivalent Stator) on 60-Hz Motor Controls:

The increased efficiency of the Machlett Universal Stator is attributed to a significant reduction in the DC resistance of its windings. When used with certain 60-Hz motor controls, the phase-shifted voltage is increased beyond the nominal rating of some phase-shifting capacitors. E-1, E-1K, E-2K, N-1 and N-2 motor controls are generally equipped with a 25-30 μ F, 220/250 VAC phase-shifting capacitor which is Sprague type AB-2202 or CDE type ETW-25-250. The 25-ohm, 100-watt wire-wound resistor supplied with the x-ray tube unit should be wired in series with the phase-shifting capacitor. The resistor may be mounted in the x-ray generator console or on the motor control unit.

Some motor controls, such as the MC-2, HS1 and E-4, are equipped with oil-filled phase-shifting capacitors of a higher voltage rating and do not require use of the resistor.

The 250 volt phase-shifting capacitor, Machlett part number P-15692, is obsolete. A replacement capacitor, Sprague type 325P25X9370N36P4G with mounting hardware, may be ordered; Machlett part number P-754751. This capacitor is a 25 μ F, 370 VAC oil-filled unit and is *not* physically interchangeable.



SPECIFICATION

Thermostat data: See individual housing Product Data sheet.

Stator duty cycle:
Housings with 5" anode tubes without heat exchanger;

Maximum - 1 high speed start every 90 seconds.

With heat exchanger;
For all other size anodes;

1 high speed start every 60 seconds.
2 starts per minute.

