

Motor-driven units have the same electrical ratings as their corresponding manually-operated types. The motor-drive is a compact integral unit mounted on top of the assembly. On screened models, the motor-drive assembly is enclosed and is provided with knockouts for cable or conduit connections. The permanent magnet SLO-SYN Synchronous Motor operates on 120 volt, 50/60 hertz single phase lines. Because synchronous motors are frequency sensitive they operate slightly slower at 50 hertz.

For full range travel from zero to maximum output voltage, standard motor-driven models are available in speeds of 5, 15, 30 and 60 seconds at 60 hertz or 6, 18, 36 and 72 seconds at 50 hertz. A smooth, quiet planetary gear unit is used for reduction from the motor to the POWERSTAT Variable Transformer shaft. Limit switch control at the lower and upper limits of travel prevents overtravel. The limit switches may be adjusted if desired. The motor circuit diagram is shown in Figure A.

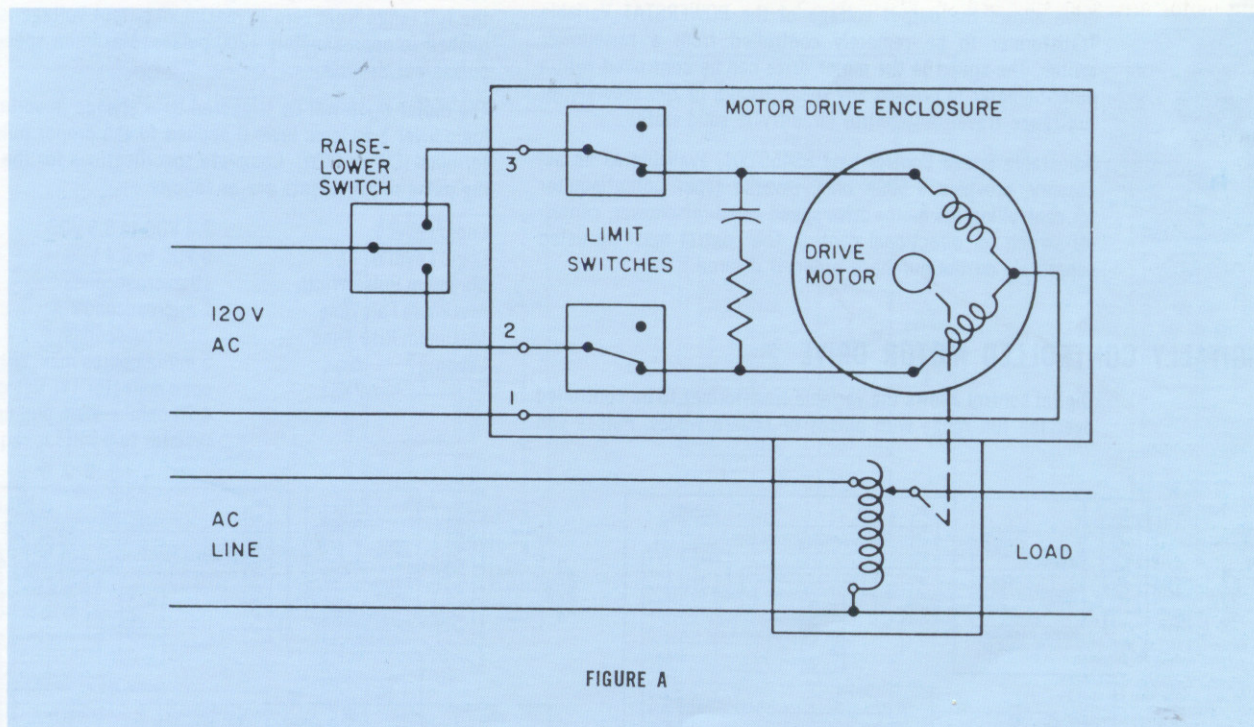


FIGURE A

## RAISE-LOWER SWITCH

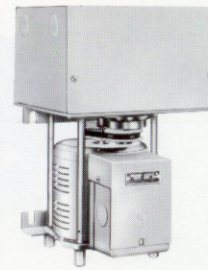
The standard method of controlling a motor-driven POWERSTAT Variable Transformer is with a momentary contact raise-lower switch of either the lever-action or the pushbutton type. A lever-action switch, catalog number 14096-000, is recommended for this use. The switch is supplied with an indicator plate and mounts in a stand-

ard 2 inch (50.8mm) deep switchbox. Any standard switchplate can be used.

Ordinarily, one switch is used to operate each POWERSTAT Variable Transformer as shown in Figure A. If desired, additional switches can be provided to permit control from any of several locations. Master control of two or more motor-driven units is also possible using relays or multiple-pole switches.



# ADJUSTABLE SPEED/ DIGITAL CONTROL



TYPE DM217CT

DM Series Adjustable Speed/Digitally Controlled Motor Drives are available on all POWERSTAT Variable Transformers in the 1kVA (116C-216C), 2kVA (126-226), 3kVA (136B-236B) and 4kVA (146-246) Series and on 5kVA (1156D-1256D) series units up to 6-deck. The drives operate from 120 volt, 50, 60 or 400 hertz lines and permit the output voltage of the variable transformers to be controlled over the full range of zero to maximum output voltage. Models for 240 volt service are also available and are identified with a letter X in the type number. For example, DM136BTX-2. Terminal blocks and knockouts are provided for making the external control and power connections. Motor drive enclosures on all 1kVA, 2kVA and 3kVA units are one inch higher than on equivalent standard motor-driven models while those on 5kVA units are two inches higher. Height of the motor drive enclosure on 4kVA models does not change.

Connections for the controls require low-voltage wiring only. Depending on the model ordered, the DM Series motor drive operates on either 120 volt or 240 volt, single-phase service at frequencies of 50, 60 or 400 hertz. Limit switches at the upper and lower limits of variable transformer travel prevent overtravel.

When ordering POWERSTAT Variable Transformers with Adjustable Speed/Digitally Controlled motor drives, prefix the manual type number with the letters "DM". For example: type DM136B-3. Types are available in cataloged 120, 208, 240, 480 and 575 volt, single and three-phase assemblies.

## ADJUSTABLE SPEED MOTOR DRIVE



When used as an adjustable speed motor drive, a DM Series drive allows the output voltage of the POWERSTAT Variable Transformer to be remotely controlled from a raise-lower switch. The speed of the motor drive can be controlled with a potentiometer to provide any speed from 5 to 200 seconds for full range travel. All control circuitry is solid-state.

Adjustable Speed Control type 65455-001, available as an accessory, provides a 500K ohm, reverse taper potentiometer for controlling the motor drive speed and a raise-lower, center-off switch for directional control. The control must be listed separately on the purchase order, if desired.

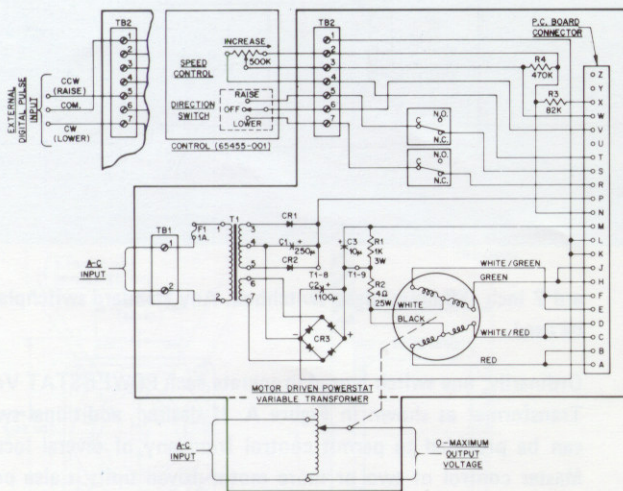
## DIGITALLY CONTROLLED MOTOR DRIVE

Digital control allows the variable transformer to be controlled over the full range with pulses or square waves. Pulses can

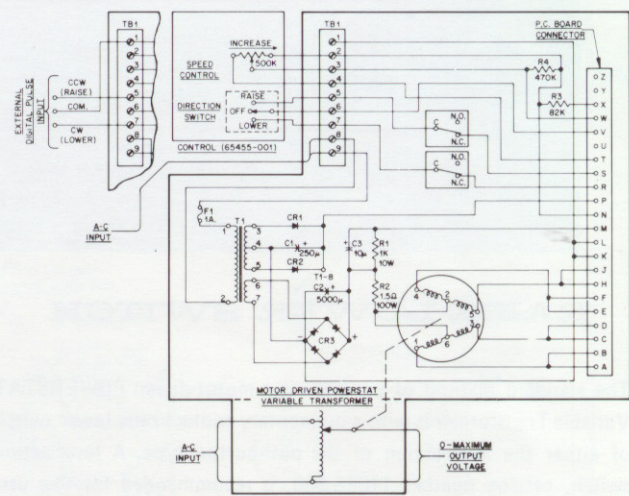
be programmed to increase or decrease the output voltage proportionally with a resolution ranging from approximately 0.5 volt to 2 volts, depending on model selected. Control over the full range from zero to maximum output voltage is accomplished in approximately 1200 pulses. Maximum speed is 250 pulses per second.

The motor drive will be triggered by a change in voltage from logic level 1 to logic level 0 applied to the proper pulse input terminal (CW or CCW). Complete specifications for the triggering pulse requirements are as follows.

Logic Level 1	2.4 VDC to 5.5 VDC
Logic Level 0	0 VDC to 0.4 VDC
Minimum Pulse Width	10 microseconds
Maximum Fall Time	1 microsecond
Maximum Rise Time	10 microseconds
Loading	5 milliamperes max. With an open collector TTL device, a 4.7K ohm $\pm$ 10% pull-up resistor to 5 volts is required.



CONNECTION DIAGRAM  
1 THRU 4 KVA POWERSTAT VARIABLE TRANSFORMERS  
WITH DM SERIES MOTOR DRIVE



CONNECTION DIAGRAM  
5 KVA POWERSTAT VARIABLE TRANSFORMERS  
WITH DM SERIES MOTOR DRIVE