

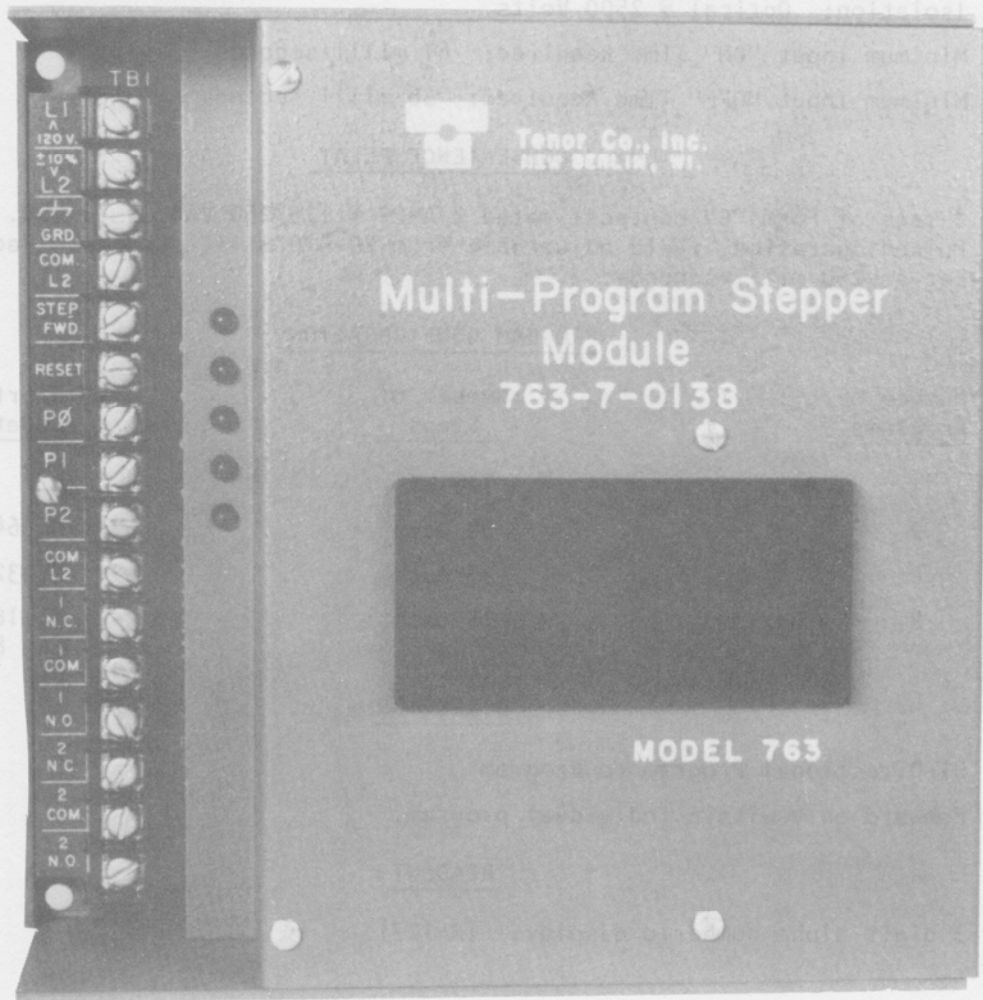
SECTION 6

MULTI-PROGRAM STEPPER

763-7-0138

INPUTS

Maximum Voltage: 120 Volts AC or DC ± 10%
Impedance: 10,000 OHMS



6.0 MULTI-PROGRAM STEPPER ELECTRICAL SPECIFICATIONS MODEL 763-7-0138

GENERAL

Main Power: 120 VAC \pm 10% 50/60 Hz

Fusing: Must be fused externally with 3/4 AMP slow blow fuse.

Operating temperature range: 0^o - 60^o C.

Maximum Combination of Input/Output Modules: Six

INPUTS

Maximum Voltage: 120 Volts AC or DC \pm 10%

Impedance: 10,000 OHMS

Isolation: Optical @ 2500 Volts

Minimum Input "ON" Time Required: 61 milli-seconds

Minimum Input "OFF" Time Required: 58 milli-seconds

CONVENIENCE RELAY

2 sets of Form "C" contacts rated 2 AMPS @ 125/250 VAC or 30 VDC.

Pulsed operation, field adjustable from 20-410 milli-seconds. Factory set at 250 milli-seconds.

PROGRAM CONFIGURATION

<u>Number of Programs</u>	<u>Number of Steps</u>	<u>Starting Location</u>
1	128	H
2	64 each	H, 64
4	32 each	H, 32, 64, 96
8	16 each	H, 16, 32, 48, 64, 80, 96, 112

DIRECTION

Bi-Directional Program to Program

Forward only within individual program.

READOUT

3 digit alpha numeric display. (H-127)

6.1 MULTI-PROGRAM STEPPER MODULE I/O FUNCTIONS

<u>TERMINAL NUMBER</u>	<u>DESCRIPTION</u>
1 - L1	Power required for System 120 Volts AC \pm 10%
2 - L2	120 Volt Neutral.
3 - GND	Customer connected to earth ground of 120 Volt AC power source.
4 - COM L2	Customer connected to 120 Volt AC power source neutral.
5 - STEP FWD	Applying 120 Volts AC (L1) will cause the Module to advance one step. The voltage must be removed and reapplied in order to initiate the next step.
6 - RESET	Applying 120 VAC (L1) will reset the Module to the starting location of the selected program. All outputs are held off during reset.
7 - P \emptyset	120 Volt AC (L1) input selects program in conjunction with P1 and P2.
8 - P1	120 Volt (L1) AC input selects program in conjunction with P \emptyset and P2.
9 - P2	120 (L1) Volt AC input selects program in conjunction with P \emptyset and P1.
10 - COM L2	Customer connected to 120 Volt AC power source neutral.
11 - 1 NC	Convenience relay contact 1 - Normally Closed
12 - 1 COM	Convenience relay contact 1 - Common
13 - 1 NO	Convenience relay contact 1 - Normally Open
14 - 2 NC	Convenience relay contact 2 - Normally Closed.
15 - 2 COM	Convenience relay contact 2 - Common
16 - 2 NO	Convenience relay contact 2 - Normally Open

All terminals will accept 2 #12 AWG wires.

NOTE: The program select inputs P \emptyset -P2 must be set-up and stable for at least 60ms before and remain stable for at least 2 ms after the leading edge of a step or reset input. Minimum input ON time for all inputs is 61 ms. Minimum input OFF time required for all inputs before reapplication of input pulse is 58 ms.

6.2 MULTI-PROGRAM STEPPER MODULE OPERATING INSTRUCTIONS

GENERAL INFORMATION

The 763 Multi-Program Stepper is similar to the PSC-763 Solid State Stepper in that the basic concept is identical. However, the Multi-Program Stepper provides the ability to store and select multiple programs.

On any given step, predetermined functions of output modules are initiated, then either a verification or timing signal is sent back to the Multi-Program Stepper causing it to advance to the next step or jump to a selected program. It can be determined from the above statements that the 763 Multi-Program Stepper acts as the Central Processing Unit for the PSC System. Therefore, the only connections required in the field are the appropriate terminal wires determined by the application and the Ribbon Cable which carries instructions to the output Modules and synchronizes all the associated Digital Readouts.

PROGRAM CONFIGURATION

The Multi-Program Stepper may be configured to provide 1 program of 128 steps, 2 programs of 64 steps each, 4 programs of 32 steps each or 8 programs of 16 steps each. The Multi-Program Stepper will continuously cycle through all the steps of the selected program. When the Multi-Program Stepper is in the last step of the selected program, the next step command will cause the Multi-Program Stepper to return to the starting position of the selected program. If all of the steps of the selected program are not used, additional step inputs or a reset command must be supplied to take the Multi-Program Stepper back to the starting position of the program.

The program configuration is selected by using the 4 switch DIP package shown in Figure 1.26. Only the first 3 switches are used. These switches must be set-up before power is applied to the Multi-Program Stepper. If switches are changed while the Multi-Program Stepper is running, erroneous operation may result. See the following table for program configuration selection.

PROGRAM CONFIGURATION TABLE

SW1 1 - 2 - 3	Program Select Terminal	Program Length	Starting Location	No. of Programs
Off-Off-Off	None	128	H	1
On-Off-Off	P2	64	H, 64	2
On-On-Off	P2, P1	32	H, 32, 64, 96	4
On-On-On	P2, P1, P0	16	H, 16, 32, 48 64, 80, 96, 112	8

PROGRAM SELECTION TABLE

11-12	011
12-31	011
32-47	011
48-63	011
64-79	011
80-95	011
96-111	011
112-127	011

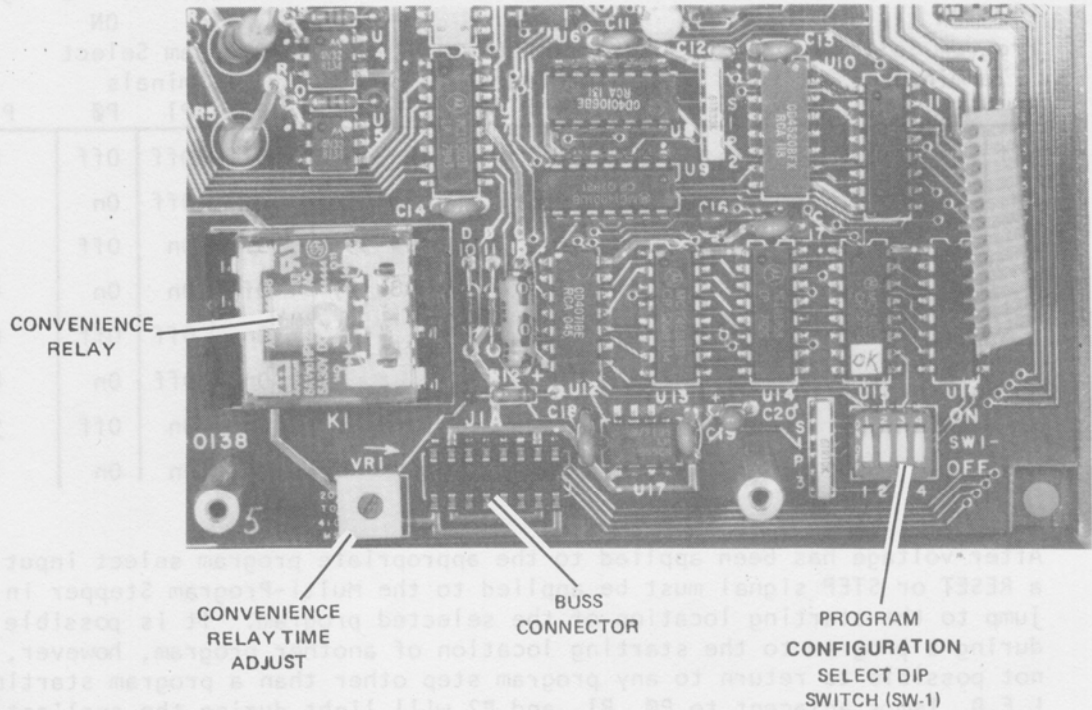


Figure 1.26

PROGRAM SELECTION

The proper program is selected using the program select input terminals, P0, P1 and P2, on the Multi-Program Stepper. With 120 Volts applied to the appropriate terminal or terminals, a specific program is selected. This application of voltage is NOT momentary, but must remain at the appropriate terminal or terminals for the entire time to be spent in that selected program. See the following table for proper program selection.

PROGRAM SELECTION TABLE

SW1 - 1 ON Program Select Terminals				SW1 - 1 - 2 ON Program Select Terminals				SW1 - 1 - 2 - 3 ON Program Select Terminals			
P2	P1	P0	Program	P2	P1	P0	Program	P2	P1	P0	Program
Off			H-63	Off	Off		H-31	Off	Off	Off	H-15
On			64-127	Off	On		32-63	Off	Off	On	16-31
				On	Off		64-95	Off	On	Off	32-47
				On	On		96-127	Off	On	On	48-63
								On	Off	Off	64-79
								On	Off	On	80-95
								On	On	Off	96-111
								On	On	On	112-127

After voltage has been applied to the appropriate program select input terminals, a RESET or STEP signal must be applied to the Multi-Program Stepper in order to jump to the starting location of the selected program. It is possible to jump during a program to the starting location of another program, however, it is not possible to return to any program step other than a program starting location. L.E.D. lamps adjacent to P0, P1, and P2 will light during the application of an input voltage.

CONVENIENCE RELAY

The operation time is controlled by the potentiometer shown in Figure 1.26. This time is factory set for 250 milli-seconds. It can be decreased by turning this control counterclockwise and increased by turning this control clockwise.

CONTINUOUS STEPPING

Continuous stepping may be achieved by wiring a normally closed convenience contact through a Triac output to the single step forward input from L1. The step rate is determined by delays through the stepper circuitry (including input ON time) and the duration of the convenience contact output pulse. The relay ON time determines the step rate and must be greater than the input circuit OFF time requirement.

6.3 POWER FAILURE

In event of a power failure, the stepper will reset to the first step location of the selected program. Upon return of main power, the stepper will begin to initiate the first program step of the selected program.

6.4 MAINTENANCE

Solid state control devices require a minimum of maintenance. A good preventive maintenance program should include the following:

1. Keep inside of enclosure free of dust and contaminants. (Do NOT steam or hose clean).
2. Keep enclosure doors closed except when servicing.
3. Do not store loose or unnecessary articles in the enclosure.

WARNING: Keep personnel clear of machinery and equipment that can be hazardous if activated by the control system during maintenance or troubleshooting. Use generally accepted safe practices for electrical equipment maintenance.

4. Check terminal block connections, plugs and sockets periodically for tightness. This is especially important after any troubleshooting.
5. Do not insert or remove modules, module covers, IC's or fuses while power is on.

6.5 RECOMMENDED SPARE PARTS

<u>Description</u>	<u>Tenor Part Number</u>
Readout PCB Assembly	724-6-0139
Relay	700-3-1804

SPARE PARTS ORDERING INFORMATION

Each module contains two identification plates:

1. Catalog Name/Number Plate
2. Serial Number Plate

Name/number plates generally are located on module covers. Serial number plates generally are located on sides (outside) of bases.

To aid in furnishing the proper spare parts, please show both numbers.

EXAMPLE: Parts for Multi-Program Module 763-7-0138

Serial Number - 763-1234-S-1580
1 Each Relay - Part Number 700-3-1804

All Prices: F.O.B. New Berlin, Wisconsin

Terms: As Arranged

Minimum Billing: \$50.00

Factory: Tenor Company, Inc.
17020 West Rogers Drive
New Berlin, Wisconsin 53151

(414) 782-3800

Prices and all terms and conditions of sale are subject to change without notice. Prices are net and do not include any applicable State, Federal or Excise Taxes which are payable by purchaser.

All orders are subject to acceptance by Tenor Company at its home office.