Operating Instruction Manual For Micro Controller Based Vibratory Control System

Model : mps1 VIB-5 # RLY

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OPERATING INSTRUCTIONS OF VIBRATORY CONTROL SYSTEM

MODEL: mps1 VIB-5#RLY

CONTROL SYSTEM CONSISTS OF FOLLOWING:
(TYPICAL FOR 3 Nos. OF VIBRATORS)

A. 5 WAY MICRO CONTROLLER BASED RELAY TYPE - 1 No.
SEQUENTIAL TIMER CARD
MODEL: mps1-VIB-RLY, I/P & O/P:230 V AC
ON TIME: 10 to 90 Secs. (Adj.)
OFF TIME: 10 to 300 Secs. (+/-5%) (Adj.)
B. 1/4" BSP, ONE WAY DIAPHRAGM TYPE - 3 Nos.
(N/C) SOLENOID VALVE, COIL I/P: 230 V AC
MAKE: XCALIBUR
C. ¼" BSP FRL UNIT WITH PR. GAUGE - 1 No.
MAKE: SPAC
D. ¼" BSP ISOLATION VALVE - 1 No.
E. ¼" BSP AL. PNEUMATIC QUICK CONNECTIONS & `T' - 10 Nos.
F. DIA. OD.:8mm, ID:6mm PU TUBING 30Mtrs30 Mtrs.
(LOOSE in enclosure) EACH SOL. VALVE TO VIBRATOR-10mtrs.

G) PNEUMATIC VIBRATOR MODEL: EPLV-3 3 Nos

I. OPERATION OF TIMER TO CONTROL THE SEQUENTIAL OPERATION OF DIAPHRAM TYPE SOLENOID VALVES:

The sequential operation of the micro controller, controls the solenoid valve `ON' Time and `OFF' Time, which in turn allows the compressed air to be injected into the PNEUMATIC VIBRATOR. There is a time base (clock) which generates the clock pulses for the operation of the timer. These clock pulses are shaped and processed through micro controller circuitry to get required pulse for relay energisation. These relars in turn control the solenoid valves. the clock pulses are adjustable to get the required `ON' and `0FF' duration by potentiometer.

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1) SEQUENTIAL CONTROLLER:

I. POWER SUPPLY TO THE VIBRATOR PANEL:

CTS 2.5 TERMINALS 3 Nos.

1 - PHASE
2 - NEUTRAL
3 - EARTH

Refer the PCB wiring Diagram No. X'1287-01, Dt.08 -10 -2004 and G.A. drawing No. 1264-
02 Rev. 2 dt. 24-07-2004. at the end of this manual.

(The ident is printed on the PCB as well). The legends used in this are detailed below
(From Left To Right) :

3 WAY TERMINAL Strips: (ON PCB -**TB1)** (CONNECTION FROM LEFT TO RIGHT)

PH : Phase / Live connection of mains supply (230V AC)

N : Neutral / Cold connection of mains supply

COM : Solenoid common connection.

2 WAY TERMINAL STRIP (**TB2) – Model: MKDS**

PR-SW (P1):
D.P. SWITCH CONTACT (USE N/C CONTACT)
PR-SW (P2):

(IF PRESSURE SWITCH INTERLOCK IS NOT REQUIRED, THE TERMINALS P1, P2 MUST BE SHORTED.)

6 WAY TERMINAL STRIP: (**TB3)** (CONNECTION FROM LEFT TO RIGHT)
(Internally wired for 3 Nos. Sol. Valve)

1 : No Connection

2 : Output through relay for Sol. Valve No. 1

3 : Output through relay for Sol. Valve No. 2

4 : Output through relay for Sol. Valve No. 3

5 : Output through relay for Sol. Valve No. 4 (Spare)

6 : Output through relay for Sol. Valve No. 5 (Spare)

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W A R N I N G :

PHASE (LIVE) must be connected to Electrical Phase of the Power Supply . This should be observed strictly otherwise equipment will give shocks if any portion of the circuitry is touched by bare hands). `N' must be connected to Electrical `N' or Cold connection.

II. SETTING THE ON TIME AND OFF TIME DURATION :

`ON' TIME SETTING KNOB (Red / Grey Colour Knob) DURATION SETTABLE :

10 Secs. To 90 Secs.

`OFF' TIME SETTING KNOB (Blue / Black Colour Knob) DURATION SETTING :

10 Secs. To 300 Secs.

III. SELECTING NUMBER OF WAYS REQUIRED :

This is done by setting the flying lead of the programming system to the required No. of channel required at the output i.e. for 3 way output reset lead (Yellow / Red / Blue) to 3th Pin and for 5 Way to 5th Pin and so on.

IV. ON DEMAND PULSING (REMOTE ON/OFF CONTROL) :

P1, P2 Terminals (TB 2) on sequential controller stops functioning when contact at P1, P2 opens. Sequence continues from point where it had stopped when contact Recloses. This can be utilized for low-level interlock so as to stop Vibratory control when there is low Level in the hopper

V. FUNCTION INDICATOR OPERATIONS :

Function Indicator LEDs are very useful version of this sequence controller. They indicate both status and functioning of the sequence controlling relays as well as solenoid valves.

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VI. FAULT FINDING AND REMEDIES :

SR. NO.	FAULT	CAUSE	CORRECTION / ACTION
1.	Power switch ON but LED(Mains) and controller not working.	1. Check 1 Amp. fuse. 2. Loose mains connections.	1. Replace fuse if faulty. 2. Do firm connections.
2.	1 Amp. fuse F1 blows off frequently.	Short circuit in solenoid or solenoid line	Clear any short circuit or replace faulty solenoid coil by new one.
3.	Solenoids not firing	Faulty solenoid i.e. open coil	Replace sol. valve
4.	**Mains LED glows but Timer not working**	**Check P1 P2 (TB2) connection**	**TB2 must be shorted if pr. Sw. is not used.**

2. PNEUMATIC VIBRATOR CONTORL SYSTEM

Compressed air connection is given to the connector as `AIR IN' (¼" BSP suitable for Pneumatic tube OD dia. 8mm & ID 6 mm). This air should 4-6 bar pressure compressed air (not instrument air). There is ¼" BSP isolation valve fitted inside the enclosure. This is provided to ON/OFF the air supply. (useful for maintenance/ trouble shooting) Isolation valve outlet is connected to inlet of FIRL unit, Filter, regulators and lubricates the air. Adjust the air pressure by rotating the knob on the FIRL unit (Lift the knob and rotate antilock wise for high air flow and clockwise for low air flow). The outlet or adjusted pressure could be seen on indicator fitted on the FRL unit. The range of pressure indicator is 0-10 bar normally. Pour suitable oil (SAE140) in the lubricator bowl up to indicated level. This is very essential for the long life working of EPLV series Pneumatic vibrator. Since **Pneumatic Vibrator contains moving piston, this lubrication is required for smooth operation**.
Outlet of FIRL unit is connected to solenoid valve inlets (connected internally parallel) i.e. air supply is available to all inlet ports of solenoid valves.
On connecting electrical supply from timer will decide to allow the air pass through the particular solenoid one by one as the timer gives output sequentially. Adjust the ON/OFF time for vibrator by the Knob provided on the timer card. This wiring is done internally. At site outlet of all solenoids should be connected to vibrator air inlet individually by Polyurethane Tube (dia. 8x6mm) as required length (supplied 10 Mtrs. length per vibrator.)

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Ø WARNING !!!

1) Ensure that the air inlet given to Pn. Vibrator mounted on hopper/ container**. Air in should be connected to the upper port of vibrator**. **Lower port is for EXHAUST with silencer**.

2) Do not remove the silencer fitted on the vibrator. If this port kept open (without Silencer) dust around the vibrator will enter inside the vibrator, which will make it. Inoperative.

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