



AIR/OIL LUBRICATION FOR SPINDLE BEARINGS MINIMAL LUBRICATION PRINCIPLE

INSTRUCTION AND PRODUCT DATA SHEET

3135039
3135040

ENGLISH

1. DESCRIPTION:

An advanced air/oil spindle lubrication system designed specifically for use with machine tools. The system is divided into four major sub-assemblies i.e.:

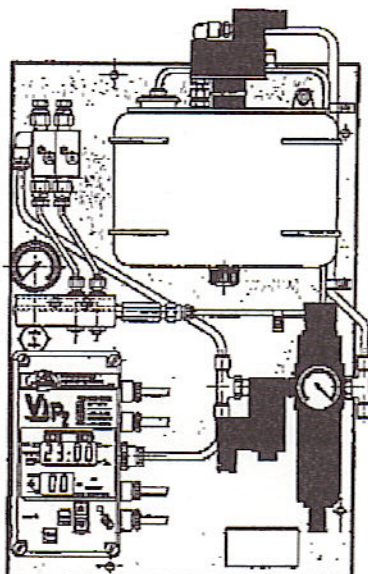
1. Pneumatic Pump.
2. Mixing Valve Assembly.
3. Air Filter and Regulator Assembly.
4. Electronic Controller Unit.

The Pump is used to activate the oil discharge valves, which feed a minute amount (7mm^3) of oil into the Mixing Valves. The oil is then mixed into the Air Stream to produce a mist.

The operation of all the components on the unit is controlled and monitored by the Microprocessor in the Controller Unit. This unit monitors that the Pump is achieving pressure and ensures that the Air Stream pressure is within a predefined band (settings 0 bar min. to 7.0 bar max. (in increments of 0.1 bar.).

Should the unit fail the Air Stream is cut off, the system halted and a 24V signal sent to the machines NC unit.

The system is supplied assembled on a heavy duty base plate. The Standard versions allow 2 lubrication outlets. Any number of points may be achieved in custom configurations.



2. SPECIFICATION:

2.1. Pneumatic Pump.

Ratio:	9:1
Driven air pressure:	6 to 8 bar (116 p.s.i.)
Air inlet:	1/8" BSP.
Reservoir capacity:	1,7 litres.
Reservoir material:	Moplen - RO ZB5015

2.2. Mixing Valve Assembly.

Operating pressure:	Max. 70 bar (1015 p.s.i.) Min. 18 bar (261 p.s.i.)
Discharge per outlet:	7mm^3 per cycle 7 to 40mm^3 available.
Max. delivery:	0,5 litres/min.
Lubricant mist:	1/8" BSP.

2.3. Air Filter and Regulator Assembly.

Air inlet:	1/4" BSP.
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Standard air flow settings:

0 bar min. to 7.0 bar max.
(in increments of 0.1 bar.).

Air solenoid voltage: 110v - 50/60 Hz.

2.4. Control Unit Assembly:

Power Consumption:	20 Watt
Operating Temperature:	-5C to +55C.

INPUT CONTACTS:

Power:	110/230V AC Single Phase
Oil Level:	Level switch normally open/ normally closed software selectable
Control Input:	12V Max. N.O. Pressure Switch. Micro/Reed Switch Proximity (NPN/PNP Autodetect)

Air Pressure Transducer:

Located internally and connected via 6mm push-in fitting.

Connect 6mm nylon tube to air mixing

chamber.

0.0 Bar Min - 7.0 Bar Max with increments of 0.1 Bar

OUTPUTS:

Pump/Drive Line:

110V/230V 5A 50/60 Hz.

Air Solenoid:

110V/230V 5A 50/60 Hz.

Alarm Output:

Voltage free contact, Max 250V, 1A software selectable normally open/ normally closed

ENCLOSURE:

External Dimensions:

180 x 195 x 57mm

Fixing Dimensions:

79 x 165 x (4 x M4 screws)

Protection Grade:

IP55 (note 6mm push-in fitting should be plugged if not used)

Mounting Point Dimensions: refer to figure 1.

FRONT PANEL DISPLAY & LEDS:

Time/Option Display: 4 Digit Display

Air Pressure Display: 2 Digit Display.

Alarm:

Indicates fault in the system. Following an alarm, the alarm code is displayed on the main display. Other LEDs may be active to help identify nature of fault.

Level:

Lit when a low level in tank condition occurs.

Pump ON:

Indicates that the pump is running

Air Low:

Indicates the air low setting

2.5 General.

Dimensions (base plate):

Height; 450 mm.

Width; 300 mm.

3. INSTALLATION / OPERATION:

3.1. Commissioning Procedure:

Fill the Pump Reservoir with recommended lubricant.

Ensure that the mixing valve screws are closed. This stops the air flow.

Open the bleed screw at the end of the meter valve manifold.

Once all the air has finished escaping from the bleed screw, tighten the bleed screw.

3.1.2. SETTING THE CONTROLLERS OPERATING PARAMETERS

The settings are altered using the front panel menu (see page 3.). To access press the MODE Key for ten seconds. The following are the parameters in the Menu

3.1.3. PRIMING FUNCTIONS / PRIME PHASE 1

By holding The UP key for 10 seconds during normal operation the controller will enter Priming Stage 1.

The duration of this priming phase is 10 minutes (remaining time is displayed on the main display) and the pump is cycled 1 second ON, 1 second OFF, to charge the oil injectors and eliminate air for the hydraulic oil circuit.

During this phase the air solenoid (if connected) will remain in a closed position.

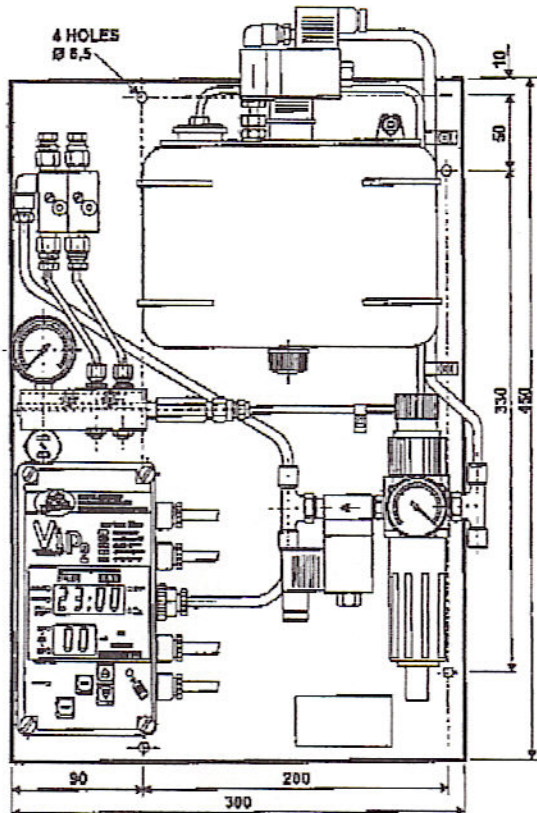


Fig 1.

Open the mixing valve screws to introduce air into the system.

Seal mixing valve screw heads with wax (optional).

After terminating this phase, the controller will enter **PRIME PHASE 2**

3.3 PRIMING FUNCTIONS / PRIME PHASE 2

This phase is initiated following Phase 1 OR by holding the **DOWN** Key for 10 Seconds.

The Pump is cycled as in **PRIME PHASE 1** for 5 minutes (remaining time is displayed on the main display).

During this phase the air solenoid (if connected) will be energised thereby allowing air flow.

After terminating this phase, the controller will revert to Normal Operating Mode.

3.4 NORMAL OPERATING MODE.

Normal operation will commence after power-up of the control starting with a lubrication cycle. During Normal Operating Mode the controller will control and monitor lubrication cycle at regular intervals as determined by the menu parameters (see sec 3.1)

The LEDs show the status of the Inputs/Outputs of the controller.

The alarm LED should NOT be lit.

The main display will indicate time remaining until next lubrication cycle if in pause mode or cycle time during the lubrication cycle.

The Digital Pressure Display displays the current air pressure of the system.

No user intervention is required during normal operation.

3.5 ALARM CONDITION.

During an alarm condition the Alarm LED will light and an Alarm Code will be displayed on the Main (4-digit) Display. See the Diagnostic Table for a description of possible alarm states.

The Pump and air solenoid (if connected) will be deactivated when the controller enters any alarm condition.

Following an alarm condition, the **RESET** button should be pressed after the fault has been cleared so the controller may return to normal operation.

During Mode setting the Alarm Relay will be set active to avoid the machine operating with the lubrication system not operating.

3.6 ELECTRICAL CONNECTIONS AND CIRCUIT DETAILS:

The controller can be wired on the terminal strip as shown in Fig. 2, or pre-wired with an Amp connector (Fig. 3.) and connections for a typical Dropsa Air/Oil Lubrication System.

Following the relevant wiring diagrams.

4. TEST PROCEDURES:

The controller will self-diagnose on power-on and will display any errors on the 4-digit display. No testing is required or may be carried out by the user.

The Commissioning Procedure should be followed to ensure that the system is working correctly.

5. ORDERING INFORMATION:

Ordering is by description and part number i.e.

Advanced Spindle Lubrication System.

Part No. 3135039 1.5 to 2.5 bar* - 20 minutes.

Part No. 3135040 3.5 to 4.5 bar* - 10 minutes.

* These settings are adjustable.

All are supplied complete with Controller Unit.

6. SPARES

Refer to Fig 4, and Table 1.

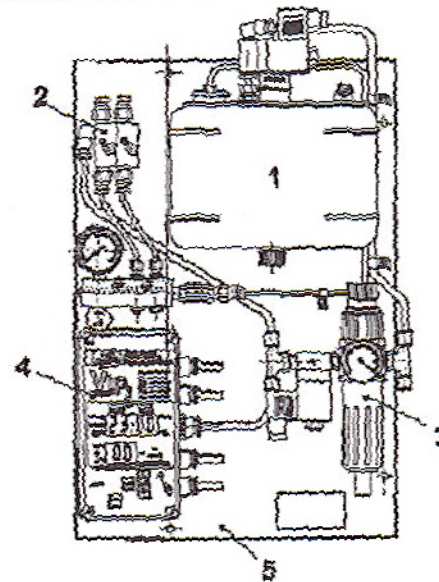


Fig 4. Electric cables omitted for clarity

Table 1.

Item No.	Description	Part No.
1	Pneumatic Pump	3103088
2	Mixing Valve Assembly	3132307
3	Air Filter/Regulator	*****
4	Control Panel Assembly	1699093
5	Base Plate	3042292



"VIP 2" ADVANCED LUBRICATION CONTROLLER with Integrated Air Pressure Sensor.

1639093

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1. DESCRIPTION:

The VIP2 Lubrication Controller has been designed as an extension to the standard VIP controller and offers features of the standard unit and several new options including the ability to monitor the air pressure in small Air/Oil system using an integrated pressure transducer. The connection to the pressure transducer is obtained simply by connected a 6mm nylon tube to the push-in fitting on the side of the panel. The addition of an separate output allows the control of a solenoid to shut-off the airflow in an alarm condition.

The controller also has a priming function for aid the air-purge and priming of a small air/oil system.

On applications that do not require an air pressure reading, the option can be disabled in the set-up menu and the controller can be used for other systems.

2. SPECIFICATION:

Power Consumption:
20 Watt

Operating Temperature:
-5C to +55C.

INPUT CONTACTS:

Power:
110/230V AC Single Phase

Oil Level:
Level switch normally open/normally closed software selectable

Control Input:
12V Max.
N.O. Pressure Switch.
Micro/Reed Switch
Proximity (NP/NPN Autodetect)

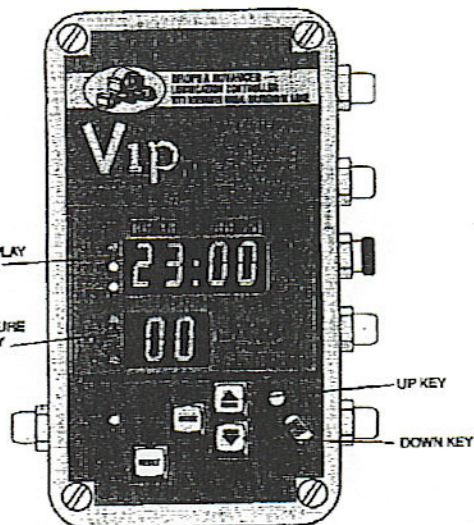
Air Pressure Transducer:
Located internally and connected via 6mm push-in fitting.
Connect 6mm nylon tube to air mixing chamber.
0.0 Bar Min - 7.0 Bar Max with increments of 0.1 Bar

OUTPUTS:

Pump/Drive Line:
110V/230V 5A 50/60 Hz.

Air Solenoid:
110V/230V 5A 50/60 Hz.

Alarm Output:
Voltage free contact, Max 250V, 1A software selectable normally open/normally closed



ENCLOSURE:

External Dimensions:
180 x 135 x 57mm

Fixing Dimensions:
79 x 165 x (4 x M4 screws)

Protection Grade:
IP55 (note 6mm push-in fitting should be plugged if not used)

FRONT PANEL DISPLAY & LEDS:

Time/Option Display: 4 Digit Display

Air Pressure Display: 2 Digit Display.

Alarm:

Indicates fault in the system. Following an alarm, the alarm code is displayed on the main display. Other LEDs may be active to help identify nature of fault.

Level:

Lit when a low level in tank condition occurs.

Pump ON:

Indicates that the pump is running

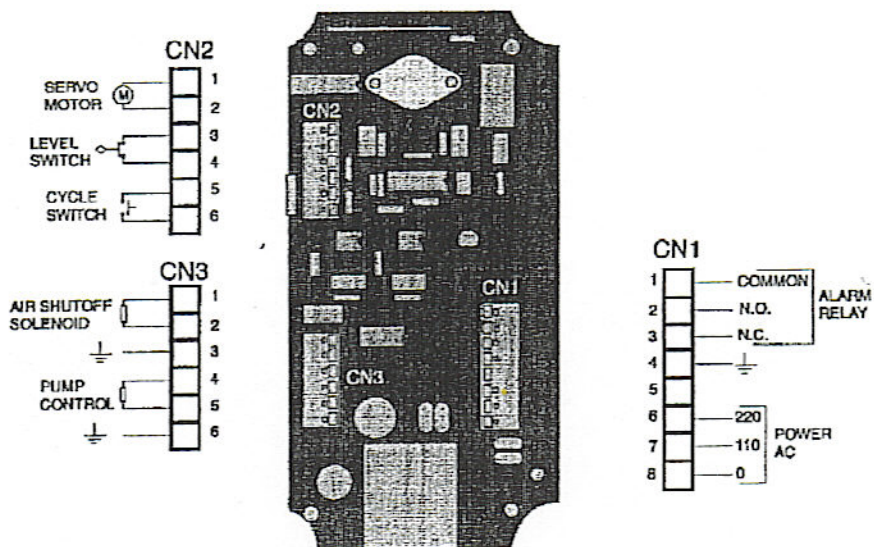
Air Low:

Indicates the air low setting

FRONT PANEL MENU

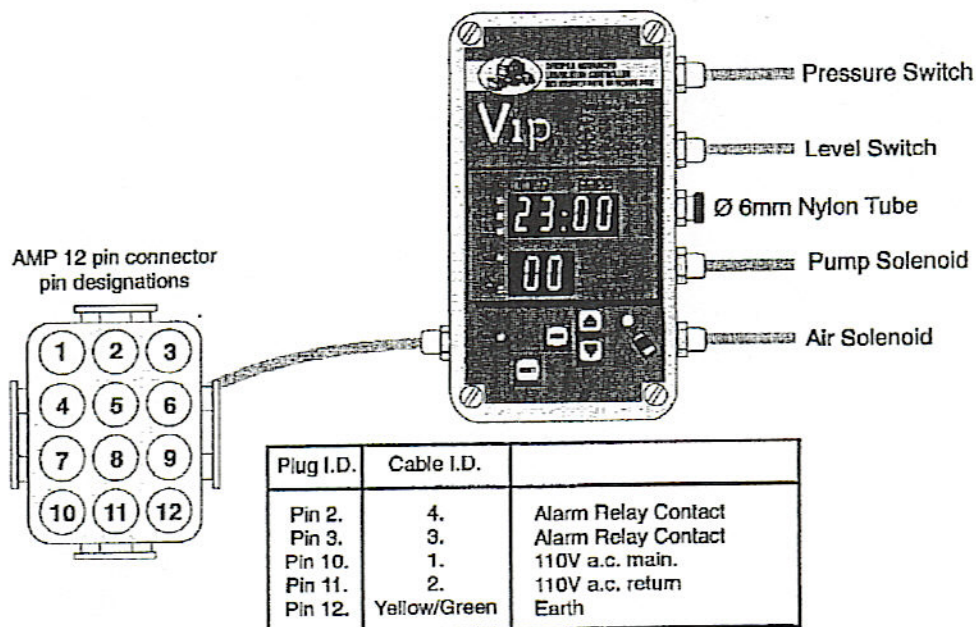
Parameter	Screen Display	Description	Keys used for setting
Pump Cycle Time		This parameter is used for (maximum) duration of lubrication cycle.	
Pause Time/ Lubrication Interval		Indicates the lubrication Interval between lubrication cycles in hours and minutes.	
Air High		Used to set the maximum air pressure.	
		Disable air monitoring functions	
Air Low		Use to set the minimum air pressure allowed	
Nominal Air Pressure		If using automatic loopback air pressure regulation, This value determines at what air pressure the controller will attempt regulation.	
Level Switch N.O/N.C Selection		Level switch operates in a normally open state	
		Level switch operates in a normally closed state	
Lubrication Cycle Operating Mode		TIMER : Timer function only. No monitoring is performed.	
		PS1 : Injector System Single Line(1). The Pressure switch is monitored to ensure that pressure is high at the end of the lubrication cycle and pressure is low prior to start of the lubrication cycle.	
		PS2: Injector System Single Line (2). Operates as above except that the lubrication cycle is terminated one second after oil pressure is achieved.	
		SEP: Progressive divider mode. The controller monitors that within the specified pump on time the cycling input cycles 2n times (where n= number set in Parameter 2).	
Lubrication cycles selector for Progressive Systems.	 n=0-99	Sets the number of progressive cycles when operating In SEP Mode (see parameter 1 set to 3)	
Air Servo Motor Regulator		Function disabled.	
		Enabled. The controller will pilot a servo motor to regulate the air pressure to the nominal air pressure setting.	
Servomotor Fault Delay	 s=0-90	Specifies the time delay (ss) in seconds before a servomotor fault condition occurs (disabled if parameter 3 is set to 0)	
Alarm Contact		NO : Alarm Relay operates in a Normally Open State (Closed in alarm condition)	
		NC : Alarm relay operates in a normally closed state (Opens in alarm condition)	

Note: The Key is used to move on to next parameter



Terminal Block wiring diagram Part No. XXXXXX

Fig 1.



Connection for version with cable Part No. 1639093

Fig 2.