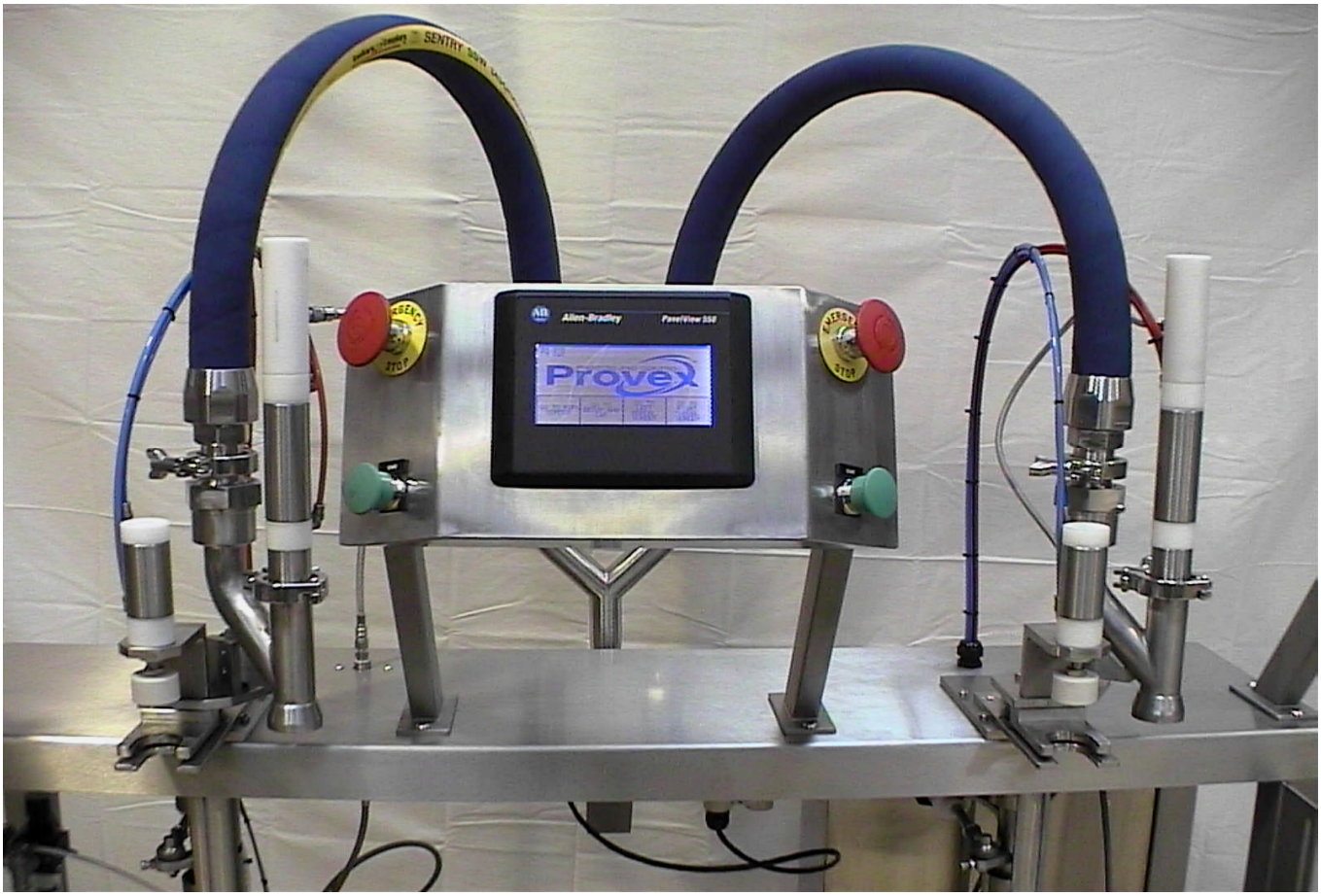

Installation and Operating Instructions For the PA820 Twin Head Filler

April 2007
Models PA820TV and PA820MV
New Fill Valve
Plus Options

14 Kimberly Road
Dandenong South
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PA820 – Twin Head Bag Filling System

Installation and Operating Instructions

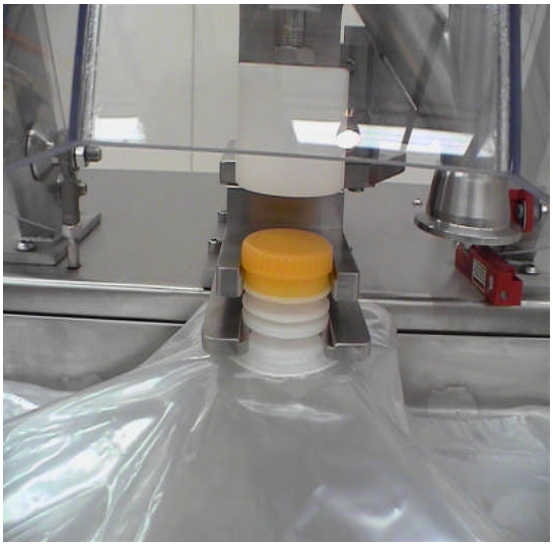
MAIN SERVICES REQUIRED

Floor Space Required- 1400W X 1500D X 1600 H.

Electrical Power
Supply- 200-240 V @ 50/60 Hz (Single Phase) 10 amps
(3 pin General Purpose Outlet)

Air
Compressed Air Supply - Min 600 kPa. Approx 10m3 /hr of clean dry air
(Connection via “1/4” BSP Female air fitting)

Product
Product Supply Rate - 10-220 liters per minute.
Maximum Fill Pressure 300 Kpa
(Connection via 1 Tri-clover hose tail)



By

PROCESS AND CONTROL Provex™

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PA820 – Twin Head Bag Filling System

INSTALLATION DETAILS

Each machine is supplied ready to operate but the following items will require your attention.

Basic Accessories

- 1 - Product hose 40mm - 1300mm long
- 2 – 40mm Tri-clover clamps
- 2 – Flow Meter adaptors
- 1 – 50mm Flow Meter Tri-clover clamp
- 2 – 40mm Tri-clover gaskets
- 2 - C.I.P. adaptor backflow valve with 25mm Tri clover end fittings

Basic Seals Kit

- 2 – Tri-clover seals
- 2 – Fill piston O ring seals
- 1 – Plunger O ring
- 3 – Swivel O rings
- 1 – Tube of valve lubricant
- 2 – Filler valve face seals

International Seal Kit

- 6 – Tri-clover Seals
- 3 – Fill Piston O ring seals
- 3 – Plunger O rings
- 6 – Swivel O rings
- 1 – Tube of Valve lubricant
- 6 – Filler valve face seals

1. Adjust machine feet so that machine is stable and level.

2. Assemble the product hose onto the fill head and the other end onto the top of the flow meter via the flow meter mounting bracket of the rear of the machine.

NB: This flow meter is directional type and must be mounted with the ARROW in the direction of flow.

3. Adjust the table top into place and tighten clamping Knobs. Test the height of the table by using a filled bag and checking the desired spout space at the top of the bag.

4. Connect air supply to the filter regulator port on the side of the machine please do not adjust the regulator as this is factory set and should not be altered.

5. Connect to a 240-volt supply. Check for the screen to illuminate, if not inspect the breaker inside the rear cabinet. Make sure the EMERGENCY STOP button is not latched in. Keep hands clear of the mechanism and turn the POWER switch to ON.

Please note: Even though the machine is fully cleaned before transport to you we advise that a full C.I.P be completed before any production commences.

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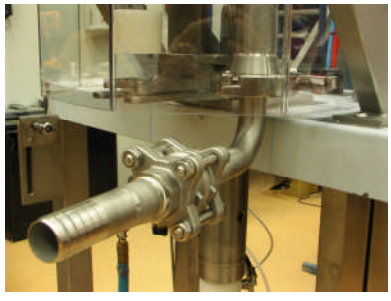
PA810 – Single Head Bag Filling System

C.I.P (CLEAN IN PLACE)

The product supply line should be cleaned and sanitized prior to introducing the product to the filler.

1. Ensure the machine is in the home position.
2. Press the GO TO SETUP & CIP on the Main screen to go to the SETUP screen then press the CIP button to go to the CIP Screen
3. Ensure that the vacuum pump is disconnected / removed and the lid to the vacuum tank is open to allow for complete flushing of the vacuum system.
4. Set/Confirm the 4 - CIP cycle times: Tip Open Time (0-99 seconds)
   Tip Closed Time (0-5 seconds)
5. Press BOTH START buttons on either side. The Heads will moves UP to the CIP position.
6. Press either E/STOP Button
7. Clamp both the CIP adaptors to the fill spout with the 2” Tri-Clover fitting supplied.
8. Release the E/STOP button
9. Push BOTH START buttons on each side to start the continuous Pulse cycle.
10. When the CIP process is complete push the E/STOP button
11. Remove the CIP adaptor and Tri-Clover fitting.
12. Release the E/STOP button
13. Push BOTH START buttons on each side to return the fill head to the home position.

C.I.P ADAPTOR



C.I.P ADAPTOR FITTED

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PA810 – Single Head Bag Filling System

MANUAL OPERATION:

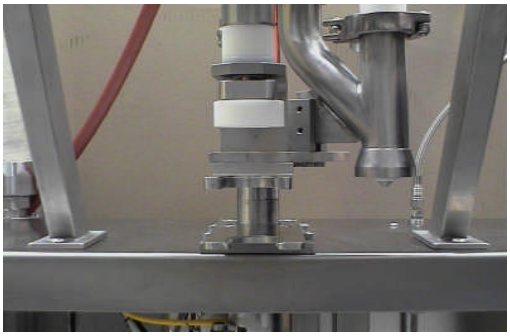
****** Warning in Manual mode Two hand operation is Disabled ******

Note: Once the manual screen is selected completion of an Automatic fill must be done manually.

1. Move to the either manual screen by pressing left Manual or right Manual on the main screen.

2. Then select the required movement by pressing buttons graphic sections buttons on the screen.

3. The Manual Fill Head rotation will only operate if the head is in the raised position.



PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System

Automatic Operation:

The product supply line should be cleaned and sanitized prior to introducing product to the filler.

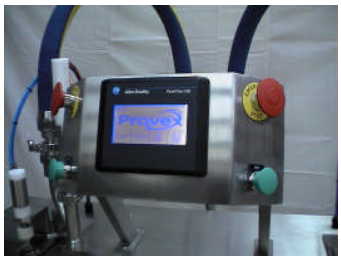
Auto Mode:

1. Ensure the filling head is in the home position.
2. Press the Run Screen on the Main screen to go to the Run screen.
3. Set the Target on either side amount required by pressing Target and save.
4. Ensure that the vacuum pump is ON and sufficient pressure (approx. 20-60kpa) has built up. (If this option is installed)
5. Place the spout of the bag into the bag fork.
6. Press both Start buttons.
7. On completion of the filling of the bag the filler will return to its home position.

Notes:

1. **If the Emergency Stop is pressed during filling the fill valve will close and will no longer complete to the target amount. Release the Emergency Stop button and press both Start buttons to return the head to its home position.**
2. **If during filling both Start buttons are pressed the fill cycle will stop and the head will return to its home position.**
3. **The first few bags may be partially filled with air that was in the product line.**

PROCESS AND CONTROL Provex™



PA820 – Twin Head Bag Filling System

SETUP SCREEN OPTIONS:

The filler is programmed to handle bags supplied with caps either fully on or in the dust cover position.

There are also two other options that are used in the AUTO mode are the Return Delay and the recap delay. These are changed also on the setup screen via the touch buttons.

Return delay .01 sec amounts 0 - .99 sec
Recap delay .01 sec amounts 0 - .99 sec
Go to Vacuum Screen
Dust Cap or Full on
To return to the main screen

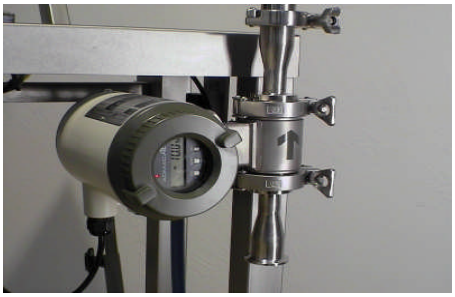
LEFT & RIGHT VACUUM SCREEN OPTIONS:

There are also two other options that are used in the AUTO mode are the Vacuum pre fill and the Vacuum post fill. These are changed also on the Vacuum screen via the < and > buttons.

Pre fill setting for Vacuum before filling of the bag
Post fill vacuum once the fill head has lifted to catch any drips
Vacuum Option if fitted can be switched off and on
To return to the main screen

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System



YOKOGAWA FLOW METER
(Option)

Magnetic Flow Meter Setting

The standard Magnetic Flow meter used by PROVEX is a Yokogawa AXF gives High Accuracy and Repeatability.

Settings: 1000 pulses per Litre Transistor signal
4-20mA = 0-3 Litre per second (Not Used)

Non Factory Setting
B02: set to .1
B03: set to Flow Span = 3.000
B04: set to Flow Unit = L
B05: set to Time Unit = /s
D01: set to Rate
F01: set Pulse to = UNIT/P
F02: set Pulse scale to = .001

TURBINE FLOW METER
(Option)

Turbine Flow Meter

The standard Turbine Flow meter used by PROVEX is a PROCESSAUTOMATIC Turbine Flow Meter type unit which also gives High Accuracy and Repeatability.

Settings: 1” turbine 220 pulses per Litre signal (approx)
Via a two pin Military plug Pre amplifier back to the PLC

No Factory Setting is required as it is a totaled sealed unit
When product is flowing Input 0 will flash to confirm turbine is working

Installation: The flow meter must be installed with the marked arrow in the matching direction of the flow.

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System

EMERGENCY STOP

This function is designed to stop the filler and place the mechanism in the safe position at any stage of operation. Pushing the EMERGENCY STOP button will:

- Close the fill head

To reset press both start buttons at the machine will complete its operation.

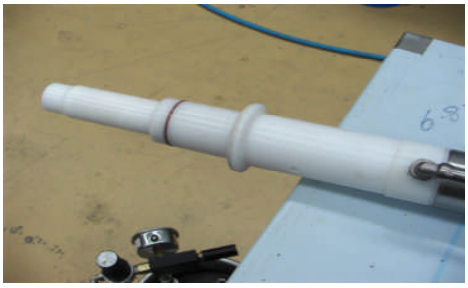
For safety reasons the mechanism will not swing horizontally or release the cap.

Note: To Release the EMERGENCY STOP, twist the button clockwise.

When the Emergency stop button is pressed it will display a message on the screen
This message will clear when the Emergency stop is released or CLEAR is pressed

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System



Maintenance Requirements

As per any process machine standard maintenance is required and upkeep is important to guarantee production reliability.

Daily Maintenance Requirements:

Make sure the machine has been cleaned and washed down properly making shore that product has not set to the machine and that C.I.P completed.
Check vacuum tank is clean and empty of fluid.
Check all Product line seals are in place and all clamps are tight.
Check that the face seal is OK and not damaged.
Clean and check both product seals in the fill stem are clean and not worn
Check that the Spout Plate, Capper Bracket and fill head are aligned.

Check that the Cap Detection Photo cell is working properly (if fitted).

Test Emergency Stop Button if working

Check for loose equipment or items that may have come loose.

Weekly Maintenance Requirements:

Remove and inspect all product line seals check if they are in good condition, Replace if required.

Check the fill head cylinder base seal to see if it is leaking unscrew and replace BOTH with spares supplied with filler (part 810-0143) look for product above the seal.

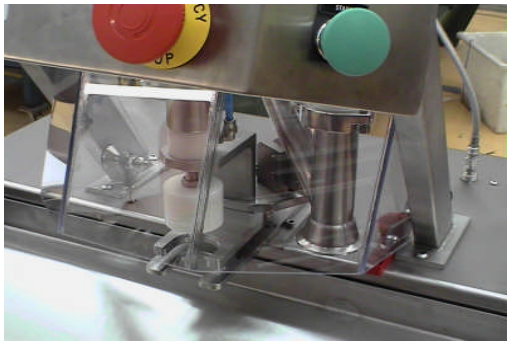
Check the rear cabinet door seal for leaks adjust lock.

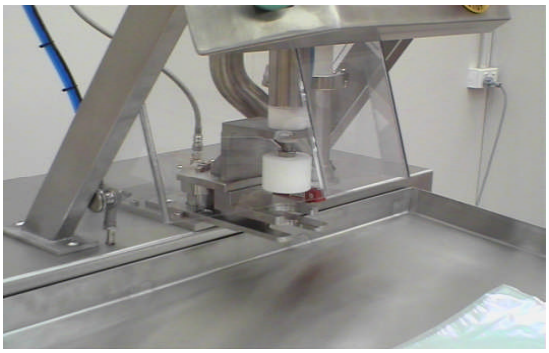
Test Emergency Stop Button if working.

Check Air Regulator for water (If full empty by pushing up the base and check Compressor).

Strip down the product valve and inspect by releasing the tri-clover fitting
Tighten fill plunger onto cylinder shaft if it has come loose, (hand tight)
Danger!!!! Check to make sure that the product pump is not still running And the air is shut off.

PA820 – Twin Head Bag Filling System





Options Section

Guarding

Automatic or Manual Splash Guard System

Due to the Danger of hot products one of the options on our filler is an automatic splash guard which rises out of the way to allow easier spout insertion to the filler fork.

The guard is controlled by the capper cylinder air circuit and is interlocked with a Guard master safety system which has final control over the fill valve.

If at any time during filling process the guard is lifted the fill valve will shut, until the guard is lowered to the safe position.

Hot fill table

At certain times during the filling process Spills can occur this can cause unwanted Products landing on the floor or the operators

We also offer a 10 liter hot fill table which in most cases will catch and funnel the product down a 1 ½ “ or 40mm tri clover fitting.

Mass Flow meter Option

If a Mass flow meter is installed on the filler, selection between the flow meters is not required.

Info to follow

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System

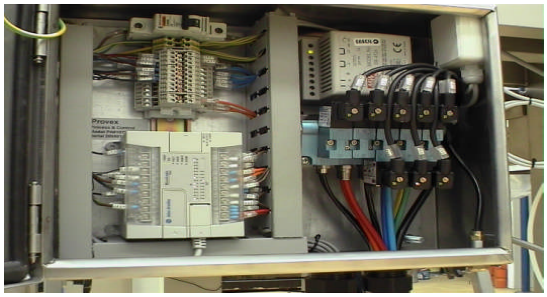
PARTS LIST FOR THE FILLING SECTION

ITEM No	NAME	PART NUMBER	QUANTITY
1	Lift Cylinder	820 - PC- 311.5 – DBMWQ	2
2	Lift Cylinder Proximity	820 - MRS-087-XBL-31	4
3	Shaft Body Case	820 – 0101	2
4	Main Shaft and Lock cap	820 – 0102	2
4a	Main Shaft Swivel Bush	820 – 0108	2
5	Shaft Sleeve	820 – 0103	2
6	Shaft Pivot Bar	820 – 0104	2
7	Shaft Pivot Bolt	820 – 0105	2
8	Shaft Pivot 7/16” rod end	820 – 0106	2
9	Shaft Pivot Lock Nut	820 – 0107	2
10	Shaft Pivot Cylinder	820 - PC - 171.5 – DXPBMW	2
11	Shaft Pivot Cylinder proximity	820- MRS – 087-XBL-17	4
12	Base Plate	820 – 0110	2
13	Base Plate Fixing Bolts	820 – 0111	8
14	Spout Plate*	820 – 0115*	2
15	Spout Plate Bolts	820 – 0116	8
16	Fill Head Bracket	820 – 0120	2
17	Fill Head Bracket Center Bolt	820 – 0121	2
18	Fill Head Bracket Pivot Bolts	820 – 0122	4
19	Capper Bracket	820 – 0130	2
20	Capper Cylinder	820 – PC – 171 – DXPBMW	2
21	Capper Spacer	820 – 0131	2
22	Capper Clamping Block	820 – 0132*	2
23	Capper Clamping Block nut	820 – 0133	2
24	Capper Fork Bracket *	820 – 0134*	2
25	Product Line Support Body	820 – 0140	2
26	Product Line Swivel O Ring Kit	820 – 0141	6
27B	Fill Cylinder Base	820 – 0142	2
28	Fill Cylinder	820 - CPC-0353-A-2.5	2
29B	Fill Cylinder Base O rings	820 – 0143	4
30	Fill Cylinder Tri clover & Seal	820 – 0144	4
31B	Fill Cylinder Plug	820 – 0145	2
32B	Fill Cylinder Plug O ring	820 – 0146	2
33	Fill Cylinder spout Face Seal	820 – 0147	2
34	Fill Cylinder Body	820 – 0148	2
35	Fill Cylinder Top Cap	820 – 0149	2
36	Fill Cylinder Base O ring	820 – 0150	2

*** Note: These items Alter depending on the particular bags being filled Spout info required**

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System



PARTS LIST FOR THE CONTROL SECTION

ITEM No	NAME	PART NUMBER	QUANTITY
100	PLC	820 – 1762-L40BWA Ser C	1
101	Display Screen	820 – 2711-M518L1	1
102	Power Supply	820 – S-25-24	1
103	Heater	820 – SK3105	1 option
104	Screen Cable	820 – 1761-CBL-HM02 C	1
105	Circuit Breaker	820 – LAN45MCB106	1
106	Single type terminal	820 – WK 4/U	1
107	Dual Terminal	820 – WKN 2.5 E/U	3
108	Single solenoid Valve	820 – 45A-LCD-DDAJ-1KJ	2
109	Double solenoid Valve	820 – 45A-NCD-DDAJ-1KJ	6
110	Manifold end Plate kit	820 – M-45008-01P	1
111	24Vdc plug and lead	820 – E392N3001ACH	14
112	Rear control box	820 – AE1024	1
113	Flow Meter (Yokogawa)	820 – AE202HM #	1
114	Air regulator	820 – CFDR10-2-S/S	1
115	Gauge	820 – 24142-16-0	1

PA820 – Twin Head Bag Filling System

PARTS LIST FOR THE FRAME

ITEM No	NAME	PART NUMBER	QUANTITY
200	Main Frame Body	820 – 01502	1
201	Display Screen Enclosure	820 – 01512	1
202	Display Enclosure Brackets	820 – 01522	2
203	Machine Feet (option 1)	820 – 0160-50	4
204	Machine Casters (option 2)	820 – 0161-100	4
205	Product hose Type 1	820 – 0170	2
206	Product hose Type 2 (oil)	820 – 0171	2

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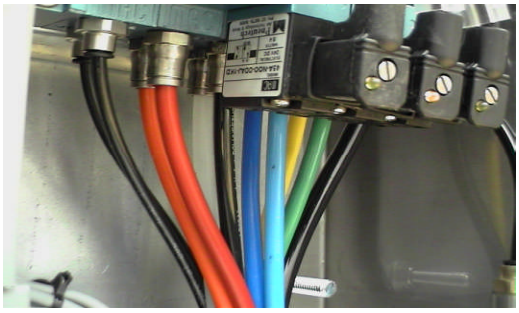
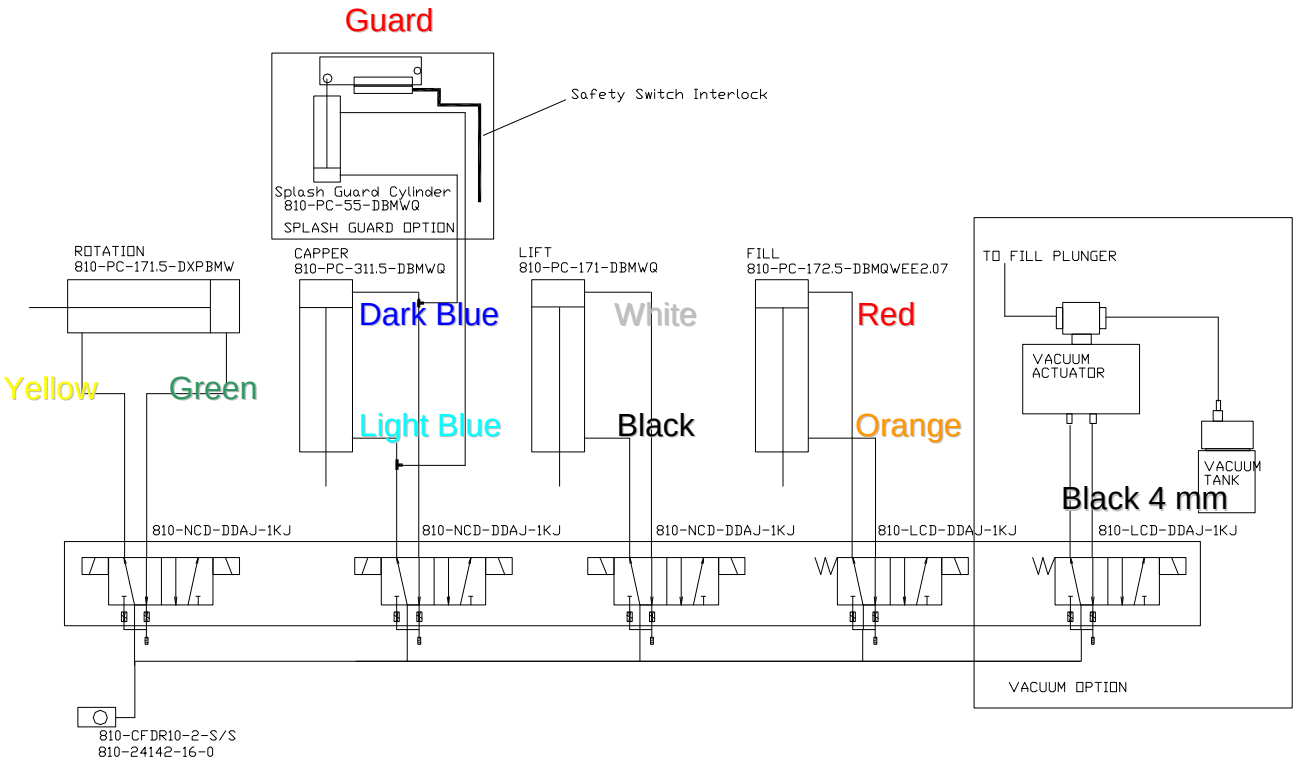
PA820 – Twin Head Bag Filling System



Air Manifold and hose layout

Pneumatic Control System



Twin System one for each side

Air Requirements for the filling system:

Min 600 kPa. 10m3/hr of dry clean air.

Connection by ¼” BSP female port.

PROCESS AND CONTROL Provex™

PA820 – Twin Head Bag Filling System

Vacuum Control System

(Optional System)

This Option allows the operator to select the required pre fill and post fill vacuum time on the PA810 filler

Do not use Vacuum System on thick products or liquids that contain particulates.

To setup complete the following instructions:

1 - Check the vacuum tank is empty (open lid and inspect inside) if fluid present Flush out.

2 - Shut the drain valve at the base of the tank (If fitted).

3 - Connect an air supply the Regulator on the Vacuum tank this must be separate supply other than the filler.

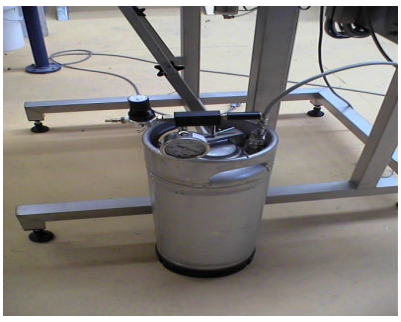
4 - Connect the suction line from the filler to the Vacuum tank.

5 - Adjust the air regulator on the vacuum tank to give the desired vacuum level check Vacuum Gauge on the top of the tank -20 to -60 Kpa.

6 – From the Main screen press setup button and move to the Setup screen then press F2 again to move to the Vacuum screen this will give you the full vacuum options.

Vacuum Off / On
Vacuum Pre fill time 0 – 5 sec 1/100th of a sec increment
Vacuum Post fill time 0 – 9.9 sec 1/100th of a sec increment
Main Screen

7 – Once the settings are complete they will remain until altered again.



If Vacuum is selected on filler built after April 6, 2005 a new pulse System will operate keeping the tip clear of product for 10 minutes after the last bag is filled. The vacuum valve will pulse to clear the Spout every 5 sec for 1 second to suck up residual drips.
This will not affect your vacuum settings but work in conjunction with Them.

Vacuum Kit

PROCESS AND CONTROL Provex™

PA820 – Single Head Bag Filling System

PARTS LIST FOR THE VACUUM SYSTEM

ITEM No	NAME	PART NUMBER	QUANTITY
300	Vacuum Tank 18 Litres	820 – 0300	1
301	Vacuum Pump and Regulator	820 – 0301	1
302	Vacuum Actuator	820 – 0302	2
303	Long 900mm Vacuum Hose Kit	820 – 0303	3
305	Vacuum Airline Kit	820 – 0305	2
306	Single solenoid Valve	820 – 45A-LCD-DDAJ-1KJ	2

PARTS LIST FOR THE SPLASH GUARD

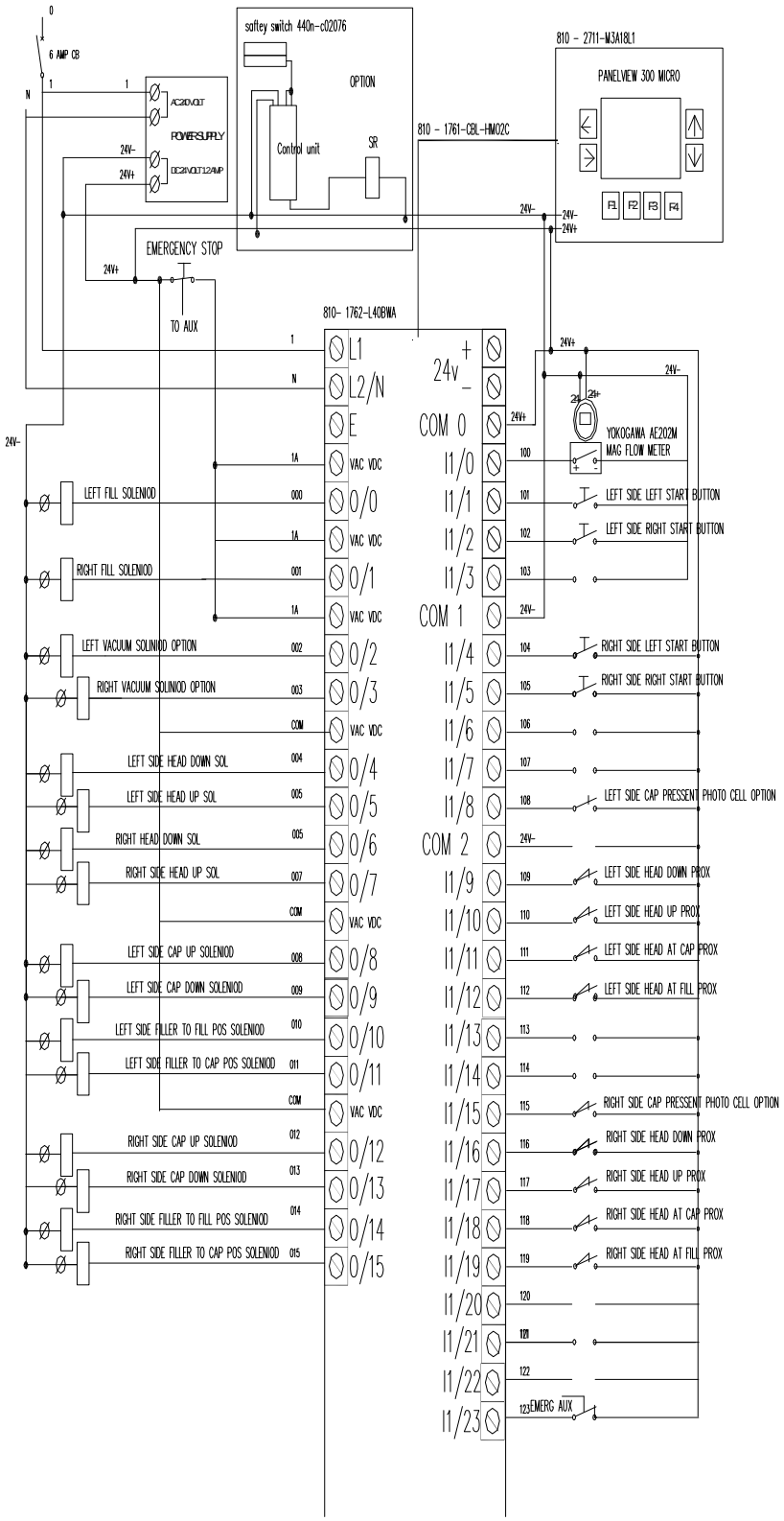
ITEM No	NAME	PART NUMBER	QUANTITY
400	Lexon Clear Guard	820 – 0400	2
401	Guard lift Cylinder and base	820 – PC- 55 - DBMWQ	1 option
402	Cylinder rod end	820 – 0402	1 option
403	Safety Switch and relay Kit	820 – 440N-C02076	1 option
404			
405			
406			

PARTS LIST FOR THE HOT FILL TABLE

ITEM No	NAME	PART NUMBER	QUANTITY
500	700 X 700 Bounded table	820 – 0500	1
501	Strainer trough guard	820 – 0501	1

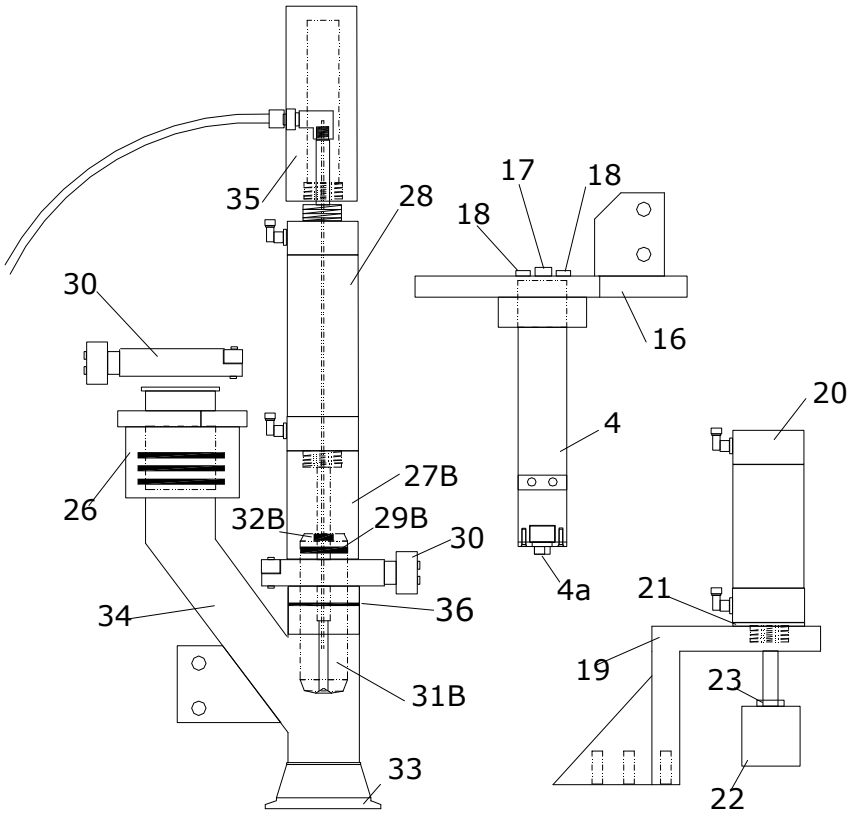
Parts List for Provex Approved Check Scale 0-150 Kg

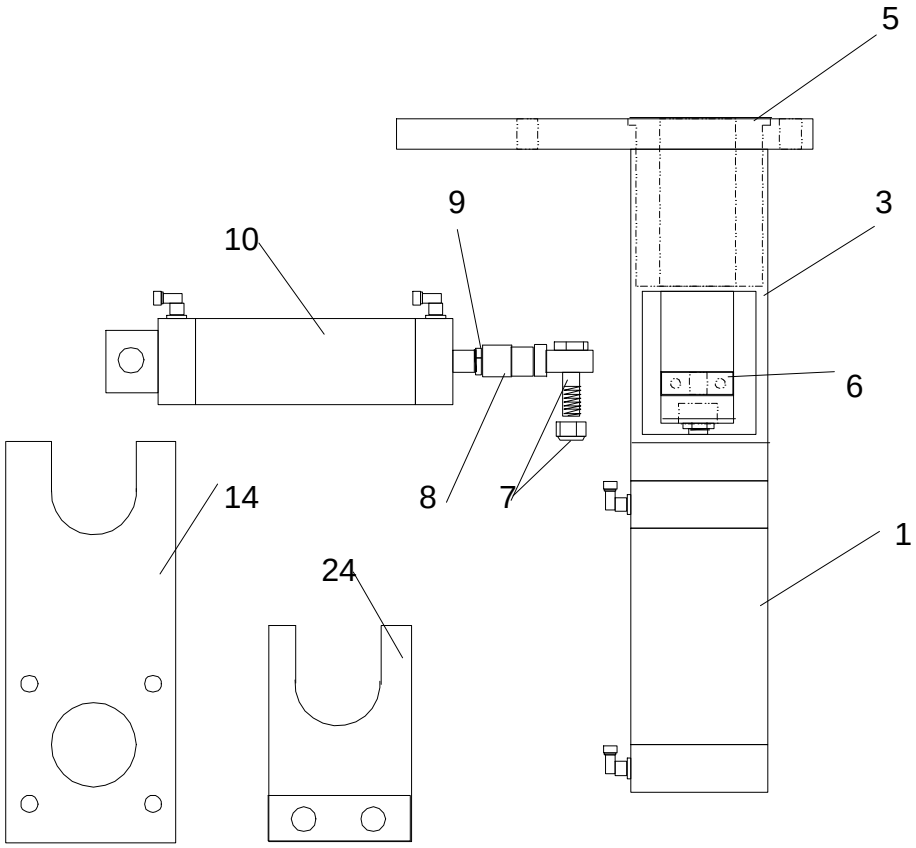
ITEM No	NAME	PART NUMBER	QUANTITY
W60	60 Kg weights and measures bench Scale	PA800 – W60	1



Provex PA820M control circuit

Provex Parts Drawings





Certificate of Compliance

EMC Technologies Report No: M030527
Issue Date: 29th August 2003

Test Sample:	Provex Liquid Filler Single Head
Model Number:	PA810MV
Serial Number:	20020620
Manufacturer:	Automation Technical Services
Tested for:	Provex Pty Ltd
Address:	Factory 1, 29-39 Kirkham Road West Keysborough, Vic. 3173
Phone:	(03) 9701 6226
Fax:	(03) 9701 6223
Contact:	John Andrew
Email:	john@provex.com.au
Test Standards:	**EN61000-6-4: 1997** *Electromagnetic Compatibility (EMC) – Part 6: Generic standards – Section 4: Emission standard for industrial environments* **AS/NZS4251.2: 1999** *Electromagnetic Compatibility (EMC) Generic emission standard Part 2: Industrial environments*
Result of Test:	**The Test Sample complied with the above Standards. Refer to Report M030527 for full details**
Test Dates:	4th and 9th July, 2003

Test Officers:

Joseph Ho **Chieu Huynh**

Authorised Signature:

EMC Technologies Pty Ltd

Issued by EMC Technologies Pty. Ltd., 57 Assembly Drive, Tullamarine, VIC, 3043, Australia.
Phone : +61 3 9335 3333 Fax: +61 3 9338 9260 www.emctech.com.au

EMI Tests on the Provex Liquid Filler Single Head, in accordance with EN61000-6-4 and AS/NZS4251.2

1.0 INTRODUCTION

Electromagnetic Interference (EMI) tests were performed on the Provex Liquid Filler Single Head, Model PA810MV, in accordance with the emission requirements of EN61000-6-4 and AS/NZS4251.2. The details of the Equipment Under Test (EUT) and the test results are provided.

The test sample was provided by the Client. All results herein apply only to the test sample.

1.1 Summary

Conducted EMI	EN55011/ AS/NZS2064	Complied with Group 1 Class A limits by margin of 6.9dB
Radiated EMI	EN55011/ AS/NZS2064	Complied with Group 1 Class A limits by margin of 4.8dB

2.0 GENERAL INFORMATION

(Information supplied by the Client)

Test Sample:	Provex Liquid Filler Single Head
Model Name:	PA810MV
Serial Number:	20020620
Manufacturer:	Automation Technical Services
Microprocessor:	PLC
Voltage:	240V AC, 50Hz

2.1 Description

The EUT is a bag in box liquid filler.

2.2 Operating Conditions

The test filler was set to auto run mode.

2.3 Modifications

No modifications were performed.

3.0 RESULTS

3.1 EN61000-6-4 Requirements

Clause 1	Scope	Noted
Clause 2	Normative references	Noted
Clause 3	Objective	Noted
Clause 4	Definitions	Noted
Clause 5	Industrial locations	Noted
Clause 6	Conditions during measurement	Noted, all tests and equipment are in accordance with the requirements of this standard.
Clause 7	Documentation for the purchaser/ user	Noted
Clause 8	Applicability	Noted
Clause 9	Emission limits	Complied, tested to the requirements of Table 1. Testing was performed in accordance with EN55011 (CISPR11).

3.2 EN55011 Requirements

Clause 1	General	Noted
Clause 2	Definitions	Noted
Clause 3	Frequencies designed for ISM use	Noted
Clause 4	Classification of ISM equipment	Group 1 Class A
Clause 5	Limits of electromagnetic disturbances	
Clause 5.1	Limits of terminal disturbance voltage	Tested to limits of Table 2A
Clause 5.2	Limits of electromagnetic radiation disturbance	Tested to limits of Table 3, at a measuring distance of 10 meters.
Clause 5.2.3	Frequency Band 1 GHz to 18 GHz	Not required by EN61000-6-4
Clause 5.3	Provisions for protection of specific safety services	Noted
Clause 6	General measurement requirements	Noted, all tests and equipment are in accordance with the requirements of this standard.
Clause 7	Special provisions for test site measurements (9 kHz to 1 GHz)	Noted
Clause 8	Radiation measurements: 1 to 18 GHz	Noted
Clause 9	Measurement “in situ”	Not applicable
Clause 10	Safety precautions	Noted
Clause 11	Assessment of conformity of equipment	Complies for sample size of one (1) unit

3.3 AS/NZS 2064 Requirements

Clause 1	Scope and Object	Noted
Clause 2	Definitions	Noted
Clause 3	Frequencies designed for ISM use	Noted
Clause 4	Classification of ISM equipment	Group 1 Class A
Clause 5	Limits of electromagnetic disturbances	
Clause 5.1	Limits of terminal disturbance voltage	Tested to limits of Table IIA
Clause 5.2	Limits of electromagnetic radiation disturbance	Tested to limits of Table III, at a measuring distance of 10 meters.
Clause 5.2.3	Frequency Band 1 GHz to 18 GHz	Not required by AS/NZS4251.2
Clause 5.3	Provisions for protection of specific safety services	Noted
Clause 6	Assessment of conformity of equipment	Complies for sample size of one (1) unit
Clause 7	General measurement requirements	Noted, all tests and equipment are in accordance with the requirements of this standard.
Clause 8	Special provisions for test site measurements (9 kHz to 1 GHz)	Noted
Clause 9	Radiation measurements: 1 to 18 GHz	Noted
Clause 10	Measurement "in situ"	Not applicable
Clause 11	Safety precautions	Noted

3.4 Conducted EMI Results

Frequency MHz	Line	Measured QP Level dBµV	QP Limit dBµV	ΔQP ±dB	Measured AV Level dBµV	AV Limit dBµV	ΔAV ±dB
13.91	Neutral	66.1	73.0	-6.9	48.8	60.0	-11.2

The worst case conducted EMI occurred at 13.91 MHz and complied with the Group 1 Class A quasi peak and average limits by margins of 6.9 dB and 11.2 dB respectively. The measurement uncertainty for conducted emissions was ±2.0 dB.
Refer to Appendix B, graphs 1 & 2.

3.5 Radiated EMI Results

Frequency MHz	Polarisation	Measured QP Level dBµV/m	QP LIMIT dBµV/m	ΔQP ±dB
208.01	Vertical	35.2	40.0	-4.8
159.07	Vertical	33.7	40.0	-6.3

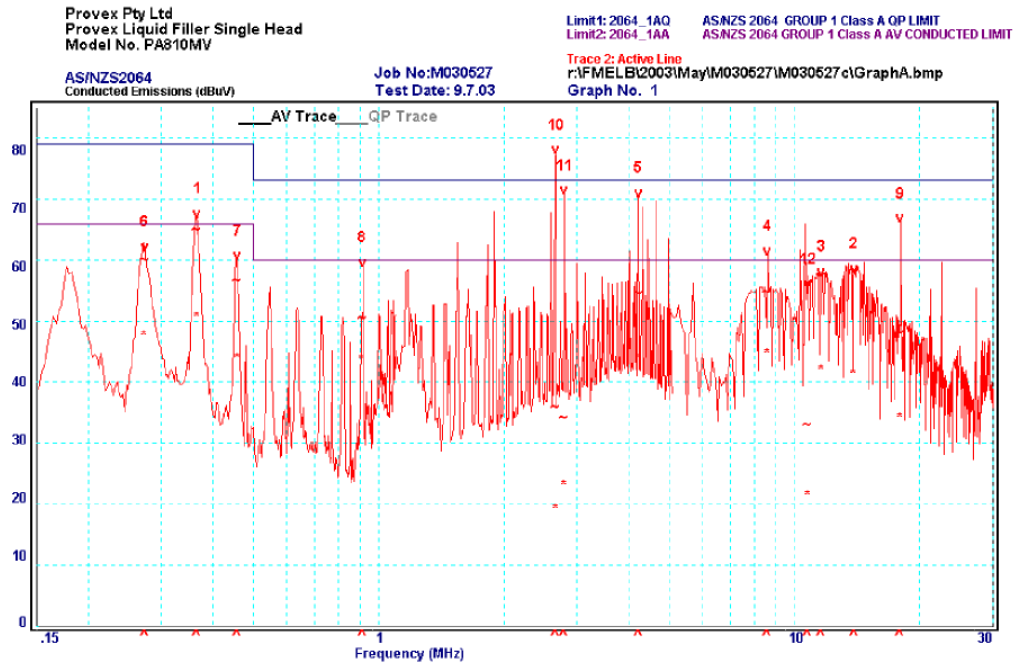
The worst case radiated EMI occurred at 208.01 MHz and complied with the Group 1 Class A quasi peak limit by a margin of 4.8 dB. The measurement uncertainty for radiated emissions was ±3.7 dB. Refer to Appendix B, graphs 3 & 4.

4.0 CONCLUSION

The Provex Liquid Filler Single Head, Model PA810MV, tested on behalf of Provex Pty Ltd, complied with emission requirements of EN61000-6-4 and AS/NZS4251.2.

CONDUCTED EMI

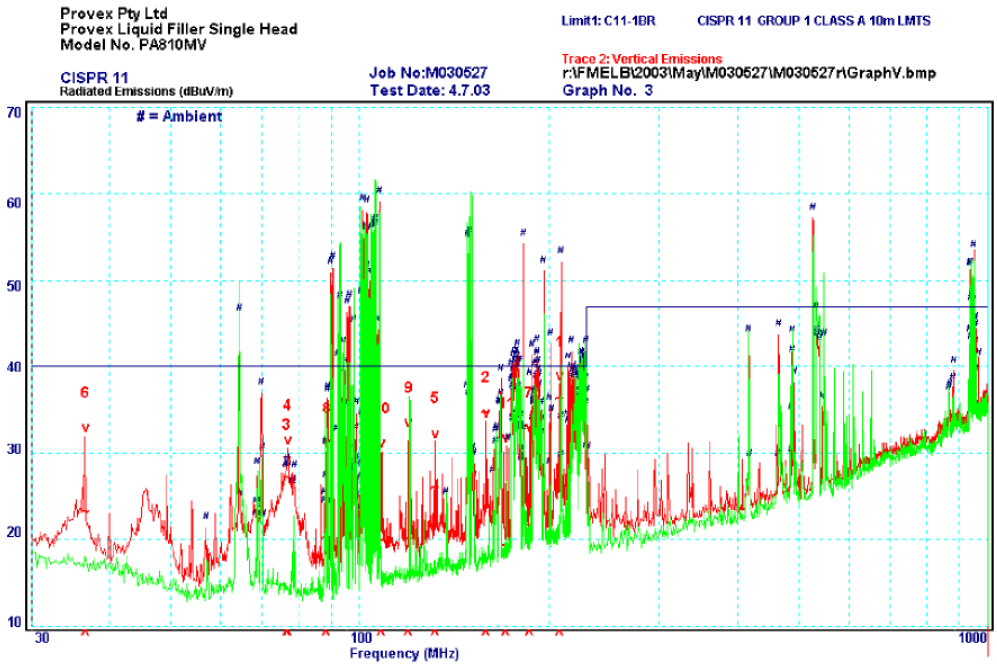
Graph 1: Active Line, 0.15 MHz - 30 MHz



Peak	Frequency MHz	Line	QP Measured dBµV	QP Limit dBµV	ΔQP ±dB	Average Measured dBµV	AV Limit dBµV	ΔAV ±dB
1	0.366	Active	64.5	79.0	-14.5	50.0	66.0	-16.0
2	13.91	Active	57.8	73.0	-15.2	40.5	60.0	-19.5
3	11.62	Active	57.2	73.0	-15.8	41.1	60.0	-18.9
4	8.604	Active	54.3	73.0	-18.7	44.0	60.0	-16.0
5	4.211	Active	54.1	73.0	-18.9	43.3	60.0	-16.7
6	0.274	Active	59.5	79.0	-19.5	47.0	66.0	-19.0
7	0.458	Active	56.2	79.0	-22.8	43.2	66.0	-22.8
8	0.914	Active	50.0	73.0	-23.0	43.1	60.0	-16.9
9	17.94	Active	47.6	73.0	-25.4	33.3	60.0	-26.7
10	2.664	Active	35.2	73.0	-37.8	18.5	60.0	-41.5
11	2.792	Active	33.6	73.0	-39.4	22.4	60.0	-37.6
12	10.76	Active	32.3	73.0	-40.7	20.6	60.0	-39.4

RADIATED EMI

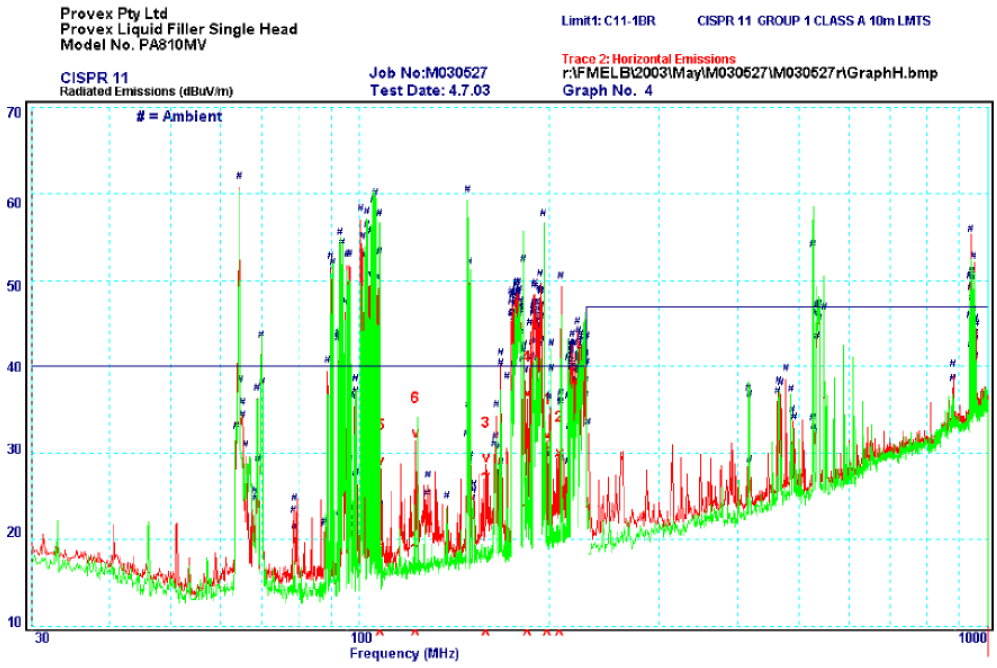
Graph 3: Vertical Polarisation, 30 MHz - 1000 MHz



Peak	Frequency MHz	Polarisation	Measured QP Level dBµV/m	QP Limit dBµV/m	ΔQP ±dB
1	208.01	Vertical	35.2	40.0	-4.8
2	159.07	Vertical	33.7	40.0	-6.3
3	76.60	Vertical	27.6	40.0	-12.4
4	76.92	Vertical	26.1	40.0	-13.9
5	132.06	Vertical	25.0	40.0	-15.0
6	36.64	Vertical	22.2	40.0	-17.8
7	186.31	Vertical	20.6	40.0	-19.4
8	88.71	Vertical	19.2	40.0	-20.8
9	119.64	Vertical	19.1	40.0	-20.9
10	108.51	Vertical	19.0	40.0	-21.0
11	171.33	Vertical	18.2	40.0	-21.8

RADIATED EMI

Graph 4: Horizontal Polarisation 30 MHz - 1000 MHz



Peak	Frequency MHz	Polarisation	Measured QP Level dBµV/m	QP Limit dBµV/m	ΔQP ±dB
1	199.08	Horizontal	29.6	40.0	-10.4
2	208.02	Horizontal	28.7	40.0	-11.3
3	159.08	Horizontal	26.5	40.0	-13.5
4	184.93	Horizontal	22.9	40.0	-17.1
5	108.08	Horizontal	18.5	40.0	-21.5
6	122.83	Horizontal	18.3	40.0	-21.7