

# ***Natural Gas Services***

*The people who know about gas!*

## ***Proving & Environmental Control System***

Installation  
Commissioning &  
Operating Instructions



# ***P.E.C.S***

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# Operating Principles

The *PECS*System is a proving device, which checks the integrity of installation pipework before allowing operation of the main gas safety shut off valve

Upon initial start up *PECS* checks for any burner taps which may have been left open. Should the unit detect an open burner or leaking pipework *PECS* will 'Lockout', preventing operation of the gas system.

Unlike other systems, *PECS* then remains in a monitoring only state, checking for any leaking pipes or open burner taps but NOT energising the main safety shut off. In this way the operator can check the integrity of the pipework and burners at any time but open the main safety shut off ONLY when required. Following subsequent closure of the main safety shut off, there is no need to go through the proving process again before re-establishing gas supplies to outlets as *PECS* will continue to automatically monitor the system.

If any attempt is made to operate a burner without first operating the Main Gas control, *PECS* will go to 'Lockout', immediately shutting off all gas.

## Why choose *PECS*?

The beauty of the *PECS*System is simplicity; **every part** of the installation comprises '**industry standard**' components. In the unlikely event of failure, replacement parts can be obtained 'over the counter' at almost any electrical or heating spares outlet.

An example is our use of Dungs gas pressure switches; these are fitted as OEM on most package burners, air heaters and other industrial and commercial heating plant; their reliability and durability is legendary.

## The strength of the *PECS*System is its fail-safe features.

System integrity MUST be proved before appliances can be operated.

Key switch operation prevents unauthorised use.

Emergency Stop for immediate shut off of all gas

Manual reset essential in case of Lockout

NO over-ride facility..... Safety takes priority!

# Installation

The PECS control box should be wall mounted in a position that will allow ease of access to the operating controls and be in such a position that the indicator lamps can be viewed easily. Once a suitable location has been identified, hold the control box against the wall and mark the wall through the mounting holes. Drill the wall and secure the box using suitable fixings.

The pressure switch module should be secured in a similar manor to the control box and in a suitable position to allow for easy connection to the main gas solenoid. The inlet and outlet connection of the module should be connected to the upstream and downstream pressure points of the main gas solenoid in accordance with the attached piping diagram using 6mm soft temper copper tubing. If it is not practicable to energise the proving solenoid in order to perform a tightness test on the downstream installation pipe work, an air test may be used by utilising a downstream test point to pressurise the system. Wiring within the control box is numbered for simplicity and should be connected as per the attached diagram

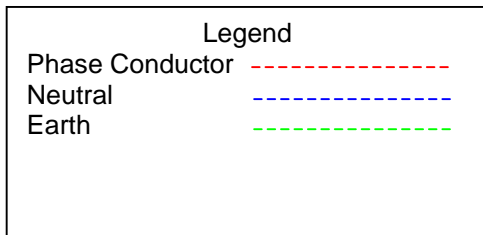
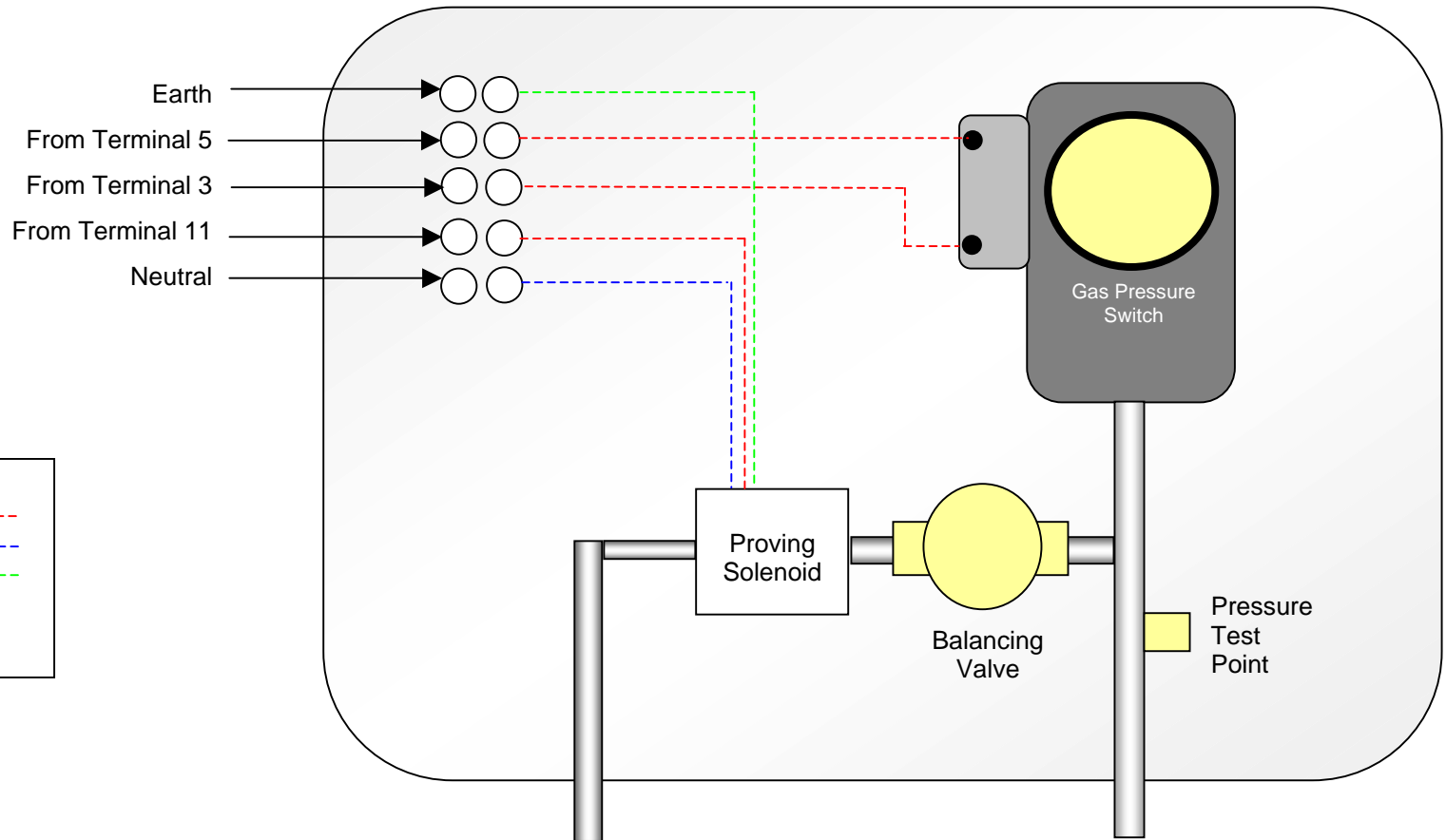
**N.B. Some flickering or faint glowing of the indicator LED's may be experienced under certain circumstances. This is no cause for alarm.**

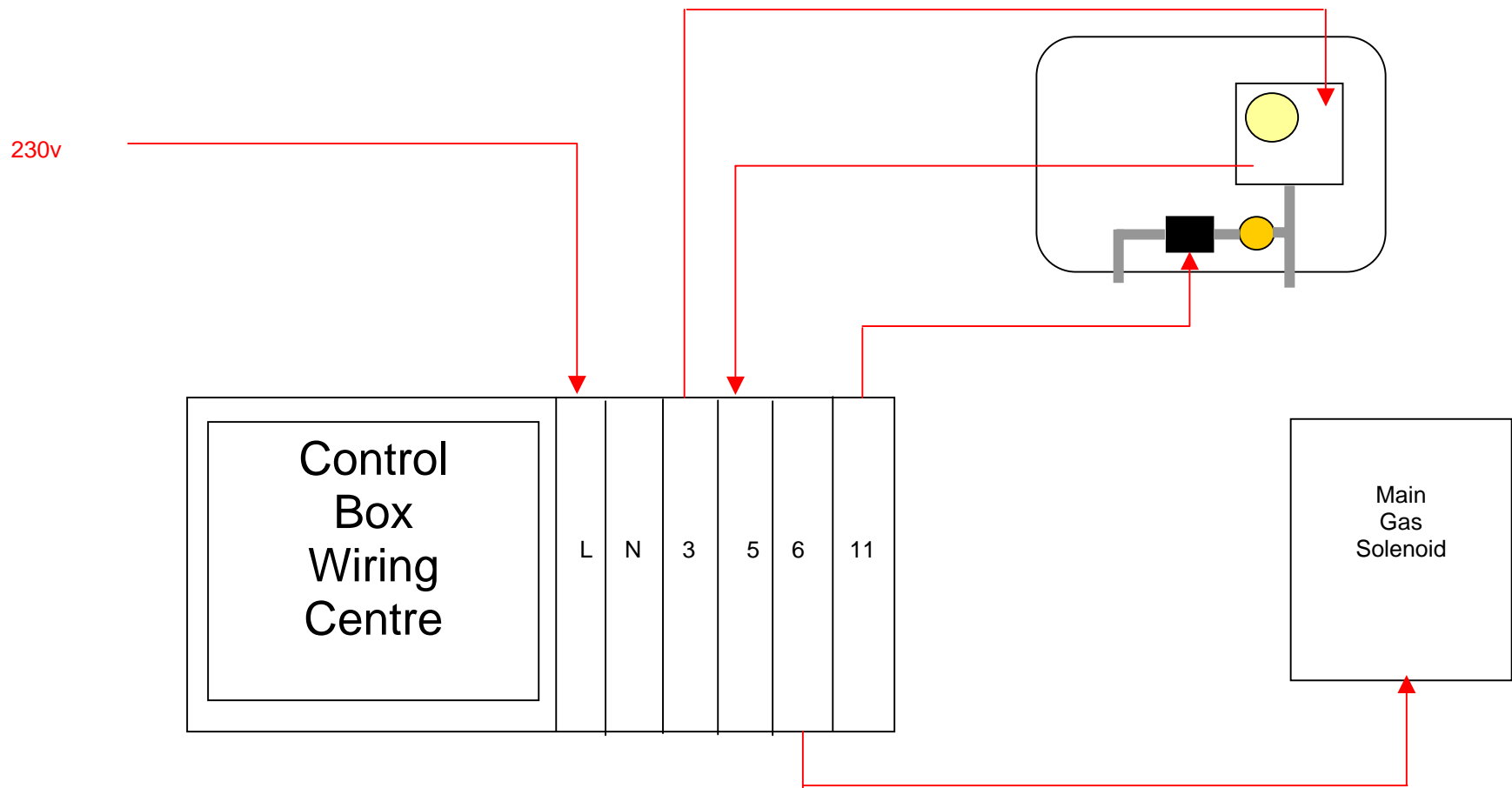
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Further information may be obtained by contacting Natural Gas Services.

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It is essential that the internal wiring is connected according to the diagram below  
Please note that the Gas Pressure Switch is Double Insulated and therefore requires no earth  
Conductor





Individual Neutral & Earth cables have been omitted for clarity

# Wiring

Remove the cover from the control box. Inside, on the right of the unit you will find the electrical connector block.  
All neutral conductors will use the terminals labelled 'N'  
All Earth conductors will use the terminal coloured Green & Yellow

All other conductors are wired as follows.

## Mains Cable

Phase	Fuse Holder F1
Neutral	See Above
Earth	See Above

## Gas Pressure Switch

(Common)	Terminal 5
Normally Open	Terminal 3

## Proving Solenoid

Live	Terminal 11
Neutral	See Above
Earth	See Above

## Main Gas Safety Shut Off

Live	Terminal 6
Neutral	See Above
Earth	See Above

As individual electrical contractors will choose to use their preferred type of cable for the connection of the various components, we have left the choice of this to the individual contractor. However it is essential to remember to use cable of sufficient capacity for the equipment installed. Also remember that ALL components will require earthing.

# Commissioning

- 1 Inform staff that commissioning is taking place and observe ALL safety procedures
- 2 Set the Gas Pressure switch to 15mb for Natural Gas (25mb for LPG)
- 3 Ensure that the gas supply to the PECS protected area is on.
- 4 Ensure that the control box Emergency Stop is pressed IN
- 5 Open the control box
- 6 On the timer T1 set the white dial to 6-60 minutes (Photograph)
- 7 On the timer T1 set the blue dial to 10 (Photograph) (Sets the initial 'Proving' time at 60 minutes)
- 8 Replace the control box cover
- 9 Ensure that there is current to the control box
- 10 Turn both switches fully anticlockwise
- 11 Twist and release the Emergency Stop



- 12 Attach a manometer to pressure module test point
- 13 Fully close the proving solenoid balancing valve
- 14 Turn the Off/start control clockwise ('Test' LED illuminated)
- 15 Slowly open the balancing valve until the gas pressure begins to rise. Valve may need to be opened more if pressure stops rising.
- 16 Wait until the 'Proved' LED illuminates (This should take at least 30 seconds for most systems)
- 17 Turn the 'Off/Start' anticlockwise and de-pressurise the system
- 18 Turn the 'Off/Start' control clockwise ('Test' LED illuminated)  
*\*Note the time taken to illuminate the 'Proved' LED, this is the 'charge time'*
- 19 Press in the Emergency Stop and then depressurise the system
- 20 Open the control Box lid and set the timer to the **Charge Time + 20%**
- 21 Replace the Control Box lid and release the Emergency Stop
- 22 Open the smallest burner tap or pilot on the system
- 23 Turn the 'Off/Start' control clockwise ('Test' LED illuminated)
- 24 Monitor the 'proving' time using a stop watch
- 25 If the system does not go to 'Lockout' at expiry of timer, reduce the charge time and go back to 23
- 26 Once the system has 'Locked Out', turn both controls anticlockwise, depressurise the system and close all taps
- 27 Turn the 'Off/Start' control clockwise ('Test' LED illuminated)
- 28 Monitor the 'proving' time using a stop watch
- 29 Wait for the 'Proved' LED to illuminate then operate 'Main Gas' control clockwise
- 30 Operate burner taps and ensure correct gas working pressure
- 31 With burner taps still open, turn 'Main Gas' control anticlockwise – Ensure system goes to 'Lockout'

*Congratulations, your PECSsystem is now operational*

# User Instructions

With the Emergency Stop in the system is inoperative

## To Operate the *PECS*ystem

	Action	Panel Indication
1	Twist & release the Emergency Stop to 'power up' the control box	All Lamps Out
2	Turn the key (Off/Start) switch clockwise to start the 'proving' process. <i>(Wait until the 'Proved' indicator illuminates before proceeding)</i>	'Test' Indicator On 'Lockout' Indicator On
	<i>Note – The 'Test' Indicator will go out a few seconds after the 'Proved' Indicator Illuminates The 'Main Gas' switch may be operated as soon as the 'Proved' indicator illuminates</i>	
4	Turn the Main Gas switch clockwise to open the Main Gas Safety Valve and allow gas to appliances	'Proved' Indicator On

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The 'Proving' period will end when the 'Test' indicator goes out. If the 'Lockout' indicator remains on after this time, this will indicate that there is an open gas tap or other gas leak. Check all taps and try again. If any gas tap is opened without the 'Main Gas' switch being turned to the 'On' position, the Control Box will go to 'Lockout' and the system will have to be 'Proved' again

**If the system goes to Lockout after 3 consecutive attempts, press the Emergency Stop and contact Natural Gas Services immediately**

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With the 'Main Gas' Indicator illuminated, gas can flow freely from all open outlets!

Under ALL other conditions, ANY open or PARTIALLY open tap will result in System Lockout.

In case of difficulty or for technical advice please contact:

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