HCL
CLAMPING SOLUTIONS

Electro Pneumatic Tool

CONTROL SYSTEM – TECHNICAL LEAFLET

PART NUMBER: **PTTD 576**

Declaration of Conformity

Name of manufacturer:	HCL Fasteners Ltd
Address of manufacturer:	First Avenue Westfield Industrial Estate Radstock, Bath, BA3 4BS, UK
Telephone:	+44 1761 417714
Email	sales@hcl-clamping.co.uk

I hereby declare that the following machinery complies with all the Essential Health and Safety Requirements of the Machinery Directive 89/392/EEC as amended.

Machinery description:	Electro/Pneumatic Control System PTTD 576
Serial Number:	
Control System Options:	☐ Time Delay ☐ Pressure Control ☐ Position Sensor ☐ Dry Cycle Sensor ☐ 24v Cycle signal output

Transposed Harmonised European Standards used:

EN 292 pts 1&2:1991	Safety of Machinery-Basic concepts, general principles for design
EN 349 : 1993	Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
BS EN 792-10	Hand Held non-electric power tools – Safety requirements – Part 14: Compression power tools

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Introduction

Developed exclusively for the range of Herbie Clip pneumatic tools, the Pneumatic Control time delay system gives a new level of air pressure control.

Features

In the drive to eliminate error from production lines the control system has three main features.

Time Delay
Maintains consistent tightening time

Pressure Control
Maintains consistent tightening force

Position Control
Checks the tightened position

Other features include:

Speed Control
Prevents the tool tightening too quickly, but releases quickly.

Dual Inputs
Tool can be operated by a switch on the tool or an auxiliary device such as a foot switch.

High Pressure
Designed for use up to 10 bar (1MPa/145psi)

Air Regulation
Accurate control of tightening force

External Signal Output
A voltage output can be supplied to the production line if so desired to record tightening results

The tool can be tailored to suit individual customers needs and can be supplied with any combination of the main features

The unit is virtually maintenance free and HCL Fasteners provide full backup and servicing support.

Time Delay Control

This feature allows the operator to control the tool tightening time to the nearest 0.1 seconds. This ensures that the operator cannot take the tool off the clip too early and fail to fully tighten the clip.

Setting the Time Delay

Turn the system on — the page opposite will appear on the controller display.

The principle behind adjusting the time delay is as follows:

1. Stop the program
2. Make the time adjustment
3. Re-run the program

1. Stop The Program:

Press [OK] and [ESC] simultaneously
Select [Stop]
Press [OK] twice

2. Make The Time Adjustment:

Press [<] Key
Select [ProgEdit] by using the [▼] [▲] keys
Press [OK]
Scroll through program to find Function Block 002 using the [◄] [►] keys (002 will flash) – Press [OK]
Select [Setup FB] using the [▼] key – Press [OK]
Select [OneShot] – Press [OK]
Use [+] or [–] keys to adjust set value
Press [OK]
Press [ESC] repeatedly to find [Exit] – Press [OK]

3. Re-Run The Program:

Select [Run] using the [▲] key
Press [OK] twice

Pressure Control

The pressure supplied to the tool controls the force applied to the clip upon tightening.

If this pressure is inconsistent, as a direct consequence the force applied to the clip upon tightening will vary.

The electronic control provides consistency of force by allowing a pressure to be set with a tolerance that is controlled.

If the tolerances are exceeded, the tool will be disabled. An alarm will be displayed and the pressure will need to be corrected before the tool can be reused.

Setting the Pressure Control

The instructions below explain how to set up the pressure control.

1. To determine what pressure you need for an application you need to be able to change the pressure from 1 to 6 bar. In this setting up stage the tolerances should be set as follows:

   Lower Tolerance (P1) < 1 Bar
   Upper Tolerance (P2) > 6 Bar

   This will give plenty of pressure adjustment for setting up.
2. Connect all air/electrical connections
3. Turn the control knob of the regulator anticlockwise until the pressure indicated is below 1 bar (0.1 Mpa). The pressure switch readings are in Mpa and the pressure gauge scales are in Bar and psi.
4. Using the tool to tighten the Herbie Clip in the application, gradually increase the pressure until the clip is sufficiently tight. Testing may be necessary to confirm this. This is then your ideal working pressure.
5. You now need to set un upper and lower tolerance. We recommend tolerances of +/- 5%
6. To set the Lower Tolerance, press the Set button on the pressure switch once.

   P1 and the set value will flicker alternately.

   Press the ▼ ▲ buttons to change the set value and press the Set button after each digit.

   When the desired value has been reached press the Set button continually until the display flickers between P1 and the set value.
7. To set the Upper tolerance, press the Set button until P2 appears. Adjust following the same procedure as Point 6. To get back to the set pressure. Press continuously the Set button until the display flickers between P1 and the set value. Then release and repress the Set button until the actual pressure is displayed.

Example of tolerance P2

Pressure in tolerance

Pressure out of tolerance – Lamp illuminates

Position Control

The position control function allows the tool to signal if a particular position is reached by the piston on the pneumatic tool.

If the position is not reached it will be disabled and an alarm will be displayed.

To use again the reset button must be pressed.

The position can be adjusted by sliding a switch on the pneumatic tool itself.

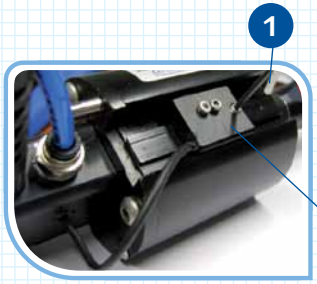
Setting the Position Control Up

The instructions below explain how to set up the position control works.

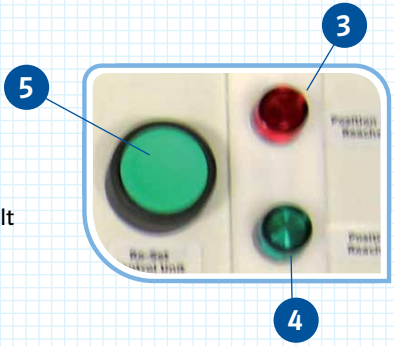
1. Adjust the tool and control unit to give the correct tightness for the application.
2. Set the time delay to a long time e.g. 20 seconds – This will allow enough time for the position switch to be adjusted.
3. Loosen the grub screw using a 2mm Allen key.
4. Slide the position switch towards the tool head until the green light on the control unit just comes on.
5. Press the Re-Set button when the Red light stays on. The tool will not work unless this is pressed once the tolerance has been exceeded
6. Test run the tool a number of times and adjust position until the green light lights up consistently.

Explanation of Position Control Features:

Example shows Piston type Electro Pneumatic tool with position control.



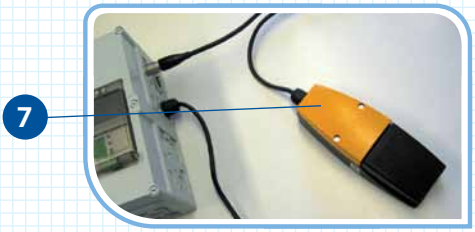
1. 2mm Allen Key – Used for clamping position switch.
2. Position Switch – Slides down dove tail to set position.

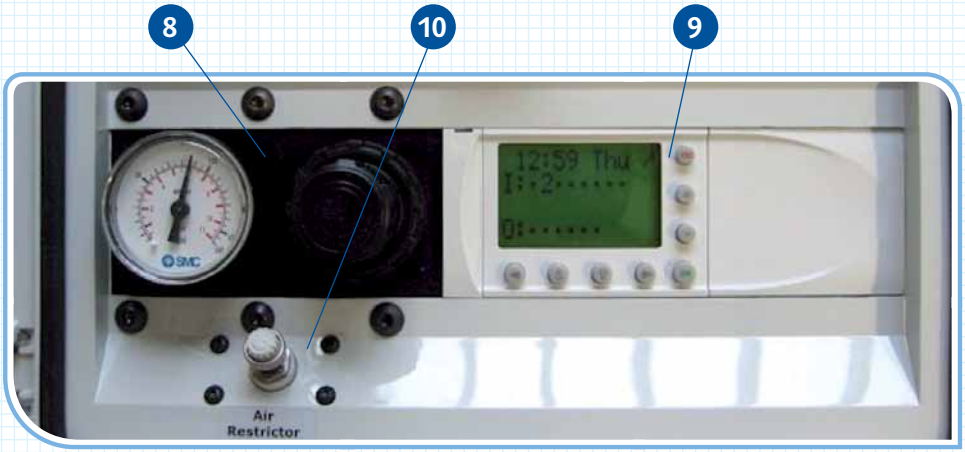


3. Red light lights up when position Is not reached.
4. Green light lights up when position is reached.
5. Re-Set button is used to reset the control unit after a fault is displayed e.g. position not reached or pressure out of tolerance.

Explanation of Features:

1. Air Out – To tool
2. Air In – From air source
3. Tool signal input – From tool
4. Power supply input – 110-230 Vac
5. Auxiliary switch input (Optional)
6. Cycle Indication Output (Optional) Output delivers a signal so that the operation cycles can be monitored. This is particularly useful for "No Faults Forward" Production line control
7. Auxiliary Control (Optional) – foot switch shown
8. Air pressure control – determines the tightening force
9. Digital programmable control centre – Controls the time delay setting
10. The air restrictor controls the speed at which the tool tightens the Herbie Clip. Speed can be reduced by turning clockwise or increased by turning anti-clockwise





Working Parameters and Tolerances

Temperature:

Storage	-30 – +70 deg C. No condensation
Operating	0 – +50 deg C

Humidity:

35% - 85% RH

Electrical Supply

Input voltage range	100 – 240Vac
Input frequency	47 – 63Hz
Line regulation	+/- 0.5% max
Load regulation	+/- 0.5% max
Ripple & noise	50mV pk-pk max

UK Sales Tel: +44 (0)1761 417714 Fax: +44 (0)1761 417710 Email: sales@hcl-clamping.co.uk URL: www.hcl-clamping.co.uk
US Sales Tel: 281 717 1145 Fax: 281 717 1146 Email: sales@hcl-clamping.com URL: www.hclfasteners.com