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program version: 00.170909

USER MANUAL

PDCI-23 PROGRAMMABLE CDI IGNITION

TECHNICAL DATA

Limit values:

- minimum revs	200 RPM
- maximum revs	20000 RPM
- minimum supply voltage	7 Volts
- recommended power supply voltage	12÷15 Volts
- maximum supply voltage	17 Volts
- stand-by current draw	< 0.09 Amp
- current draw at 1300 RPM	< 0.3 Amp
- current draw at 12000 RPM	< 1.7 Amp
- maximum continuous current for shift light and power jet output	1 Amp
- peak current for shift light and power jet output	5 Amp
- constant spark energy from idle to 13000 RPM	>50mJ

Circuit is protected against reverse supply voltage (wrong connection).

Features:

- fast power-up (also starts only with condenser)
- full power starting spark energy already at 7Volts power supply
- two isolated input (pickups)
- two independent ignition coil outputs
- individual advance/retard of each output
- store and load function for two ignition maps
- external switch for changing ignition map while riding
- shift light output
- power jet output
- quick shift (shift kill)
- soft rev limit (three stage rev limit)
- tachometer output
- easy and fast programming on the field, via hand held programmer
- programming while machine running - you can immediately see effects
- each curve can be set in 4 to 12 curve points
- signal delay compensation
- instant monitoring of rev's and angle, via LCD(hand held programmer)
- timing calculation for every 1 RPM change (1000, 1002, .. , 9805, 9806, ...)

Very important!

Resistor spark plugs must be used, because they produce less electromagnetic disturbances.

Danger of electric shock!

Avoid connecting PDCI to 12V power supply, before connecting it to ignition coil. High voltage is generated and touching free wires can cause electric shock, or damage the unit.

Very important!

PDCI is protected against static discharge, but too high static charge can damage PDCI.

Be careful when using programmer on the dyno, because static charge can build up on the bike and static discharge can damage PDCI unit, or programmer. Make ground connection between dyno and bike frame to prevent static discharge.

1. HOW TO ENTER MENU

PDCI must be connected to power supply. Connect **programmer** to **PDCI** and wait few seconds for activation of **programmer** and then press **[enter]**. With pressing **[+]** or **[-]** you can move through menu and with pressing **[enter]** you can choose.

You can exit menu with choosing **Exit**.

2. MENU ORGANISATION

<i>Load Ign. Map</i>	- load (select) ignition map (from #1 to #2)
<i>Save Ign. Map</i>	- save new ignition map (from #1 to #2)
<i>Set Ignition Map</i>	- ignition map parameters submenu
<i>Advance</i>	- advance/retard whole ignition map on both ignition coil outputs
<i>Advance 1</i>	- advance/retard ignition coil output 1
<i>Advance 2</i>	- advance/retard ignition coil output 2
<i>Gear Shift Light</i>	- shift light
<i>Quick Shift</i>	- quick shift settings
<i>Rev Limit</i>	- rev limit
<i>Static Angle</i>	- static angle (stator position)
<i>Compensation</i>	- signal delay compensation (from pickup to spark plug)
<i>Power Jet 1</i>	- power jet 1
<i>Ign. Map SW</i>	- activating/deactivating external switch for selecting ignition map
<i>Pulses Per Rev</i>	- number pulses per revolution from pickup
<i>Exit</i>	

3. LOAD IGN. MAP

Enter **Set Ign.** menu and move to **Load Ign. Map** with pressing **[+]** or **[-]** and then press **[enter]**. Now you can select number of saved ignition map, with pressing **[+]** or **[-]** and then press **[enter]**.

4. SAVE IGN. MAP

Enter *Set Ign.* menu and move to *Save Ign. Map* with pressing or and then press .
Now you can select number to which you want to save your ignition map, with pressing or and then press .

5. SET IGNITION MAP

Enter *Set Ign.* menu and move to *Set Ignition Map* with pressing or and then press .
...you entered submenu for setting ignition map.

Submenu organisation:

Nr. of Points	- number of ignition curve points (from 4 to 12)
1)	- first ignition curve point
2)	- second ignition curve point
...	...
...	...
Exit	- exit submenu

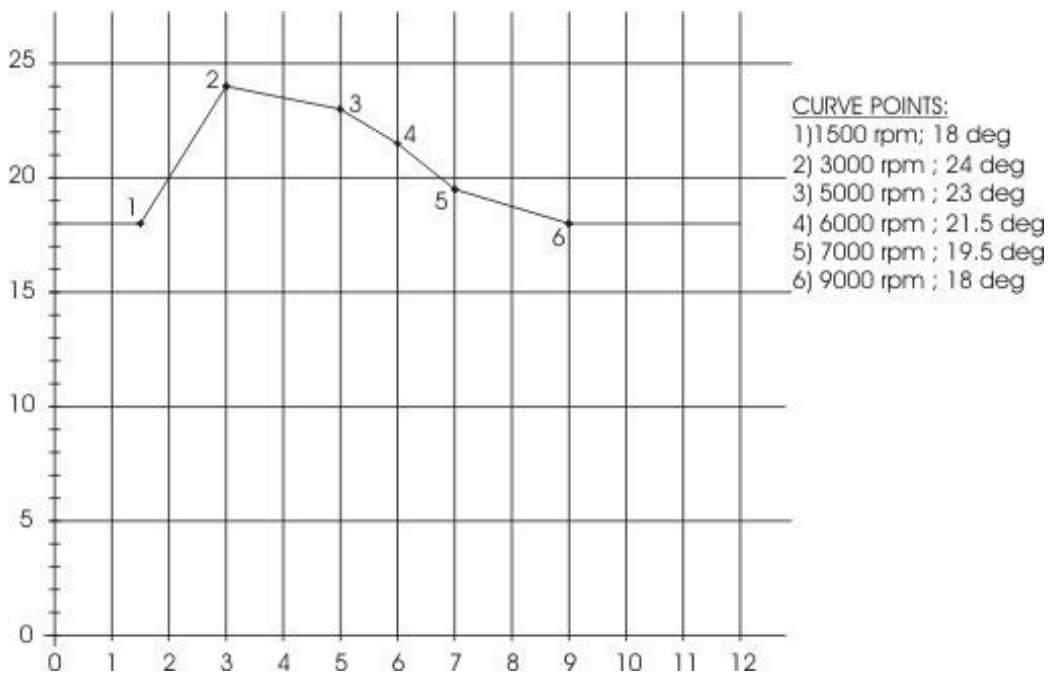
Important!

To avoid wrong processing, don't make unreasonable curve course.

Every time you make any changes to ignition curve, it is automatically saved to number #0.

Later you can save it to any other number #1 or #2.

Curve Example with six curve points:



5.1. Change NUMBER OF IGNITION CURVE POINTS

Move to *Nr. of Points* with pressing or and then press .

Now you can select number of ignition points, with pressing or and then press .

5.2. Change PARAMETERS OF IGNITION CURVE POINT

Move to point you want to change, with pressing or and then press .

Now you can change rev point with pressing or (in 100 rpm steps) and then press .

Now you can change advance angle with pressing or (in 0.1deg steps) and then press .

6. ADVANCE

With this setting is possible to advance, or retard whole ignition map on both ignition coil outputs. When setting is positive, then ignition map is advanced and when setting is negative, than ignition map is retarded. Ignition map is unchanged, with setting **0.0deg**.

Enter menu and move to *Advance*, with pressing or and then press .

Now you can set advance with pressing or (in 0.1deg steps) and then press .

7. ADVANCE 1

With this setting is possible to advance, or retard ignition map only on ignition coil output 1. When setting is positive, then ignition map is advanced and when setting is negative than, ignition map is retarded. Ignition map is unchanged, with setting **0.0deg**.

Enter menu and move to *Advance*, with pressing or and then press .

Now you can set advance with pressing or (in 0.1deg steps) and then press .

8. ADVANCE 2

With this setting is possible to advance, or retard ignition map only on ignition coil output 2. When setting is positive then, ignition map is advanced and when setting is negative than, ignition map is retarded. Ignition map is unchanged, with setting **0.0deg**.

Enter menu and move to *Advance*, with pressing or and then press .

Now you can set advance with pressing or (in 0.1deg steps) and then press .

9. GEAR SHIFT LIGHT

Enter *Set Ign.* menu and move to *Gear Shift Light* with pressing or and then press .

Now you can change rev point with pressing or (in 100 rpm steps) and then press .

10. QUICK SHIFT

Enter **Set Ign.** menu and move to **Quick Shift** with pressing **+** or **-** and then press **enter**.
...you entered submenu for quick shift settings.

Submenu organisation:

Shift Kill Time - basic kill time

Smart Shift - activating/deactivating automatic kill time for different revs

Exit - exit submenu

10.1. SHIFT KILL TIME

Enter **Quick Shift** menu and move to **Shift Kill Time** with pressing **+** or **-** and then press **enter**.

Now you can change kill time with pressing **+** or **-** (in 10 ms steps) and then press **enter**.

10.2. SMART SHIFT

Smart shift function automatically adjusts kill time for different revs. Shift kill time must be always set, as basic kill time.

Enter **Quick Shift** menu and move to **Smart Shift** with pressing **+** or **-** and then press **enter**.

Now you can enable, or disable function with pressing **+** or **-** and then press **enter**.

11. REV LIMIT

Enter **Set Ign.** menu and move to **Rev Limit** with pressing **+** or **-** and then press **enter**.

Now you can change rev limit with pressing **+** or **-** (in 100 rpm steps) and then press **enter**.

12. STATIC ANGLE

Enter **Set Ign.** menu and move to **Static Angle** with pressing **+** or **-** and then press **enter**.

Now you can set static angle with pressing **+** or **-** (in 0.1deg steps) and then press **enter**.

More information's about static angle you can find in section 17.

13. COMPENSATION

It is compensation of signal delay from pickup to spark plugs. You can check this delay with stroboscope lamp. Without this compensation, ignition advance angle decreasing with rising revs.

This compensation helps that advance angles in ignition curve are real (more accurate).

How to check, if compensation is correct:

First you must set flat ignition curve. Then measure with stroboscope lamp, if mark at flywheel moving when changing revs. If mark moving then you must change compensation delay.

Change Compensation:

Enter menu and move to **Compensation** with pressing or and then press .
Now you can change compensation delay with pressing or and then press .

14. POWER JET 1

Enter **Set Ign.** menu and move to **Power Jet 1** with pressing or and then press .
...you entered submenu for setting **Power Jet 1** parameters.

Submenu organisation:

Power Jet 1 ON RPM

- revs for activating power jet 1

Power Jet 1 OFF RPM

- revs for deactivating power jet 1

Exit

- exit submenu

Example:

Power jet 1 ON (RPM) = 8000rpm

Power jet 1 OFF (RPM) = 10000rpm

Power jet is switched on when revs are between 8000-10000rpm, otherwise power jet is switched off.

14.1. POWER JET 1 ON RPM

Enter **Set Ign.** menu and move to **Power Jet 1 ON RPM** with pressing or and then press .

Now you can change **Power Jet 1 ON RPM** with pressing or (in 100 rpm steps) and then press .

14.2. POWER JET 1 OFF RPM

Enter **Set Ign.** menu and move to **Power Jet 1 OFF RPM** with pressing or and then press .

Now you can change **Power Jet 1 OFF RPM** with pressing or (in 100 rpm steps) and then press .

15. IGN. MAP SW

Enabling, or disabling ignition map switch, for changing ignition maps while riding.

Enter **Set Ign.** menu and move to **Ign. Map SW** with pressing or and then press .

Now you can enable or disable external switch with pressing or and then press .

16. PULSES PER REV

It is number of pulses per rev from pickup coil and is important for correct rev reading. Setting is 2 for all twins with wasted spark ignition system.

Enter **Set Ign.** menu and move to **Pulses Per Rev** with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.
Now you can change nr. of pulses per rev with pressing $\boxed{+}$ or $\boxed{-}$ and then press $\boxed{\text{enter}}$.

17. MECHANICAL SETTINGS (Static Angle)

Static Angle is ignition advance angle, set with stator (generator).

Measure this angle with dial gauge. This measured **Static Angle** is your maximum advance angle you can set with **PDCI**.

Calculating mm to deg or vice versa:

α = ignition advance in degrees

T = ignition advance in mm

R = engine stroke divided by 2 in mm

L = conrod length in mm

$P = R + L - T$

$$\alpha = \cos^{-1} \left(\frac{P^2 + R^2 - L^2}{2 \cdot P \cdot R} \right)$$

$$T = L + R \cdot (1 - \cos \alpha) - \sqrt{L^2 - (R \cdot \sin \alpha)^2}$$

18. MONITORING

Connect **programmer** to **PDCI** and wait few seconds for activation of **programmer**. First information displayed on the **programmer** is software version.

With **programmer** you can watch revs, calculated advance ignition angle, TPS position...depends on setting in the menu.

Information!

You can connect or disconnect **PDCI** unit from **programmer** any time you want, without any harm. It is not important, if motor running or not and if power supply is connected or not.

Important!

Do not use too much force when connecting or disconnecting **programmer** unit!