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USER MANUAL
PDCI-MDV PROGRAMMABLE CDI IGNITION AND PV CONTROLLER

Limit values:

- minimum revs	200 RPM
- maximum revs	20000 RPM
- minimum supply voltage	7 Volts
- maximum supply voltage	18 Volts
- stand-by current draw	0.06 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	>35mJ

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
- single isolated input (pickup)
- single independent ignition coil outputs
- advance/retard whole ignition curve
- store and load function for two ignition curves
- external switch for changing ignition curve while riding
- TPS input for 2T oil pump (Throttle Position Sensor)
- 2T oil pump output (operates correctly only with TPS)
- 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)
- programmable power valve actuation
- store and load function for 5 PV curves
- programmable PV deviation
- programmable max close and max open positions
- self PV test on power-up

- PV error detecting (position sensor failure, servo motor failure)
- fast processing for high accuracy - delays from 1us
- 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.

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

Set Ign. - set ignition parameters submenu
Set PV - set PV parameters submenu
Exit

2.1. SET IGNITION PARAMETERS SUBMENU

Load Ign. Curve - load (select) ignition curve (from #1 to #2)
Save Ign. Curve - save new ignition curve (from #1 to #2)
Set Ignition Curve - ignition map parameters submenu
Oil Pump Correction - increase/decrease amount of 2T oil
Advance - advance/retard whole ignition curve
Gear Shift Light - shift light
Shift Kill Time - quick shift settings
Rev Limit - rev limit
Static Angle - static angle (stator position)
Compensation - signal delay compensation (from pickup to spark plug)
Power Jet - power jet
TPS close [0%] - calibrating TPS close position
TPS open [100%] - calibrating TPS open position
Remote SW - activating/deactivating external switch for selecting ignition curve
Pickup Mode - pickup trigger mode
Exit

2.2. SET PV PARAMETERS SUBMENU

Load PV Curve - load (select) PV curve (from #1 to #5)
Save PV Curve - save new PV curve (from #1 to #5)
Set PV Curve - PV curve parameters submenu
Deviation +- - deviation of PV position
Close Position - max close PV position
Open Position - max open PV position
PV Test - PV position test
Power-up Test - enable, or disable test cycle at power-up
Initial Position - PV position at start-up
Exit

3. LOAD IGN. CURVE

Enter ***Set Ign.*** menu and move to ***Load Ign. Curve*** 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. CURVE

Enter ***Set Ign.*** menu and move to ***Save Ign. Curve*** with pressing [+] or [-] and then press [enter] .
Now you can select number to which you want to save your ignition map, with pressing [+] or [-] and then press [enter] .

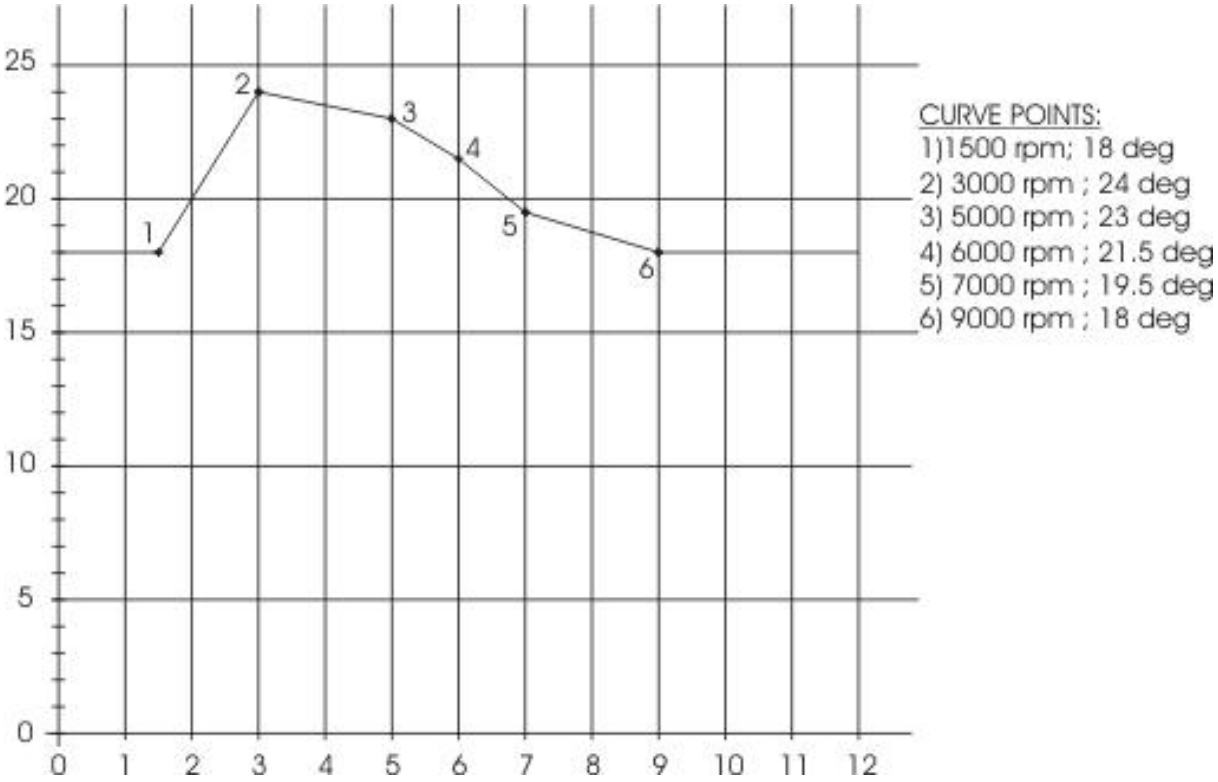
5. SET IGNITION CURVE

Enter ***Set Ign.*** menu and move to ***Set Ignition Curve*** with pressing [+] or [-] and then press [enter].
...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 [enter] .
Now you can select number of ignition points, with pressing [+] or [-] and then press [enter] .

5.2. Change PARAMETERS OF IGNITION CURVE POINT

Move to point you want to change, with pressing [+] or [-] and then press [enter] .
Now you can change rev point with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .
Now you can change advance angle with pressing [+] or [-] (in 0.1deg steps) and then press [enter] .

6. OIL PUMP CORRECTION

With this setting is possible to increase, or decrease quantity of pumped 2T oil at different rev range. Correction is relative change value in %, to the originally programmed map.

Submenu organisation:

Low rpm Oil - relative correction to the original setting at low rpm
Mid rpm Oil - relative correction to the original setting at mid rpm
High rpm Oil - relative correction to the original setting at high rpm
Exit - exit submenu

7. ADVANCE

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

Enter menu and move to ***Advance***, with pressing [+] or [-] and then press [enter] .
Now you can set advance with pressing [+] or [-] (in 0.1deg steps) and then press [enter] .

8. GEAR SHIFT LIGHT

Enter ***Set Ign.*** menu and move to ***Gear Shift Light*** with pressing [+] or [-] and then press [enter] .
Now you can change rev point with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

9. SHIFT KILL TIME

Enter ***Shift Kill Time*** menu 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. 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] .

11. 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] .

12. 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 [enter] .
Now you can change compensation delay with pressing [+] or [-] and then press [enter] .

13. POWER JET

Enter ***Set Ign.*** menu and move to ***Power Jet*** with pressing [+] or [-] and then press [enter] .
...you entered submenu for setting ***Power Jet*** parameters.

Submenu organisation:

Power Jet ON RPM	- revs for activating power jet
Power Jet OFF RPM	- revs for deactivating power jet
Power Jet ON TPS	- throttle position for activating power jet
Power Jet OFF TPS	- throttle position for deactivating power jet
Exit	- exit submenu

Example:
Power jet ON (RPM) = 8000rpm
Power jet OFF (RPM) = 10000rpm
Power jet ON (TPS) = 70%TPS
power jet OFF (TPS) = 90%TPS

Power jet is switched on when revs are between 8000-10000rpm and throttle position is between 70-90%, otherwise power jet is switched off.

13.1. POWER JET ON RPM

Enter ***Set Ign.*** menu and move to ***Power Jet ON RPM*** with pressing [+] or [-] and then press [enter] .
Now you can change ***Power Jet ON RPM*** with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

13.2. POWER JET OFF RPM

Enter ***Set Ign.*** menu and move to ***Power Jet OFF RPM*** with pressing [+] or [-] and then press [enter] .
Now you can change ***Power Jet OFF RPM*** with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .

13.3. POWER JET ON TPS

Enter ***Set Ign.*** menu and move to ***Power Jet ON TPS*** with pressing [+] or [-] and then press [enter].
Now you can change TPS position with pressing [+] or [-] (in 1%TPS steps) and then press [enter] .

13.4. POWER JET OFF TPS

Enter ***Set Ign.*** menu and move to ***Power Jet OFF TPS*** with pressing [+] or [-] and then press [enter] .
Now you can change TPS position with pressing [+] or [-] (in 1%TPS steps) and then press [enter] .

14. Set TPS close [0%]

For correct operation, TPS close position must be calibrated!
Enter ***Set Ign.*** menu and move to ***TPS close [0%]*** with pressing [+] or [-] and then press [enter].
Leave throttle at close position and confirm calibrating with pressing [enter] , or exit calibration with pressing [-]. Displayed number should be between 0 and 500.

15. Set TPS open [100%]

For correct operation, TPS open position must be calibrated!
Enter ***Set Ign.*** menu and move to ***TPS open [100%]*** with pressing [+] or [-] and then press [enter].
Move throttle to maximum open position and confirm calibrating with pressing [enter] , or exit calibration with pressing [-]. Displayed number should be between 500 and 1010.

16. REMOTE 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 [enter] .
Now you can enable or disable external switch with pressing [+] or [-] and then press [enter] .

17. PICKUP MODE

Default value is 1...do not change this setting!

18. LOAD PV CURVE

Enter ***Set PV*** menu and move to ***Load PV Curve*** with pressing [+] or [-] and then press [enter].
Now you can select number of PV curve with pressing [+] or [-] and then press [enter] .

19. SAVE PV CURVE

Enter ***Set PV*** menu and move to ***Save PV Curve*** with pressing [+] or [-] and then press [enter].
Now you can select number to save your PV curve, with pressing [+] or [-] and then press [enter].

20. Set PV Curve

Enter ***Set PV*** menu and move to ***Set PV Curve*** with pressing [+] or [-] and then press [enter] .
...you entered submenu for setting PV curve.

Submenu organisation:

Nr. of Points	- number of PV curve points (from 2 to 8)
1)	- first valve position point
2)	- second valve position point
...	...
...	...
Exit	- exit submenu

Important!
To avoid wrong processing, don't make unreasonable curve course.
Every time you make any changes to PV curve, it is automatically saved to number #0. Later you can save it to any other number from #1 to #5.

20.1. Change Number of Curve Points

Move to ***Nr. of Points*** with pressing [+] or [-] and then press [enter] .
Now you can select number of curve points, with pressing [+] or [-] and then press [enter] .

20.2. Change Parameters of PV Curve Points

Move to point you want to change, with pressing [+] or [-] and then press [enter] .
Now you can change rev point with pressing [+] or [-] (in 100 rpm steps) and then press [enter] .
Now you can change PV position from 0% to 100%, with pressing [+] or [-] (in 1% steps) and then press [enter] .

21. Set Deviation

Enter ***Set PV*** menu and move to ***Deviation*** with pressing [+] or [-] and then press [enter] .
Now you can change deviation from 2% to 20% with pressing [+] or [-] (in 1% steps) and then press [enter] .
Deviation means how accurate valve is moved to calculated position. If deviation is too low then servo motor won't be stabile – it will always search for calculated position in small movements. Default setting is +-5% and should meet in most cases.

22. CLOSE POSITION

Max close position must be calibrated after installation. Max close position is when curve is set to 0%. Close position can be moved to any desired position.

Enter ***Set PV*** menu and move to ***Close Position*** with pressing [+] or [-] and then press [enter] .
Now you can set close position with pressing [+] or [-] and then press [enter] .

23. OPEN POSITION

Max open position must be calibrated after installation. Max open position is when curve is set to 100%. Open position can be moved to any desired position.

Enter ***Set PV*** menu and move to ***Open Position*** with pressing [+] or [-] and then press [enter] .
Now you can set open position with pressing [+] or [-] and then press [enter] .
Max open position is when curve is set to 100%. This open position can be moved to any desired position.

24. PV Test

PV test can be used for testing or measuring valve position. Valve can be moved to any position from 0% to 100%, without engine running.

Enter ***Set PV*** menu and move to ***PV Test*** with pressing [+] or [-] and then press [enter] .
Now you can set valve position with pressing [+] or [-] and then press [enter] .

25. POWER-UP Test

Enabling or disabling test cycle of PV servo at power-up.

Enter ***Set PV*** menu and move to ***Power-up Test*** with pressing [+] or [-] and then press [enter] .
Now you can enable or disable power-up test with pressing [+] or [-] and then press [enter] .

26. INITIAL POSITION

It is initial position of PV servo at power-up. Default value is close.

27. MONITORING

Connect **programmer** to **PDCI** and wait few seconds for activation of **programmer.** Fist 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!

28. ERROR REPORTS

PVerr 1 – position sensor error or servo motor disconnected
PVerr 2 – servo motor error (short connection)