

# Curve

| CURVE | ADVANCE STARTS<br>[RPM CRANKSHAFT] | MAX.<br>ADVANCE<br>[RPM] | [DEGR.<br>CRANKSHAFT] | VAC. ADV.<br>STARTS<br>[MMHG] | MAX. VAC.<br>ADV.<br>[MMHG] | [DEGR.] | REPLACES                                   | REMARK                     |
|-------|------------------------------------|--------------------------|-----------------------|-------------------------------|-----------------------------|---------|--------------------------------------------|----------------------------|
| 0     | 800                                | 2600                     | 22                    | 100                           | 200                         | 12      | BOSCH 0 231 174 001 & 005 & 175 005        | Porsche 914                |
| 1     | 1000                               | 2700                     | 22                    | 100                           | 175                         | 7       | BOSCH 0 231 174 007 & 009                  | Porsche 914                |
| 2     | 1000                               | 2700                     | 22                    | 100                           | 200                         | 12      | BOSCH 0 231 174 011                        | Porsche 914                |
| 3     | 1000                               | 3400                     | 23                    | 100                           | 200                         | 10      | BOSCH 0 231 168 009 & 176 048              | Porsche 914                |
| 4     | 1000                               | 2700                     | 22                    | 100                           | 200                         | 12      | BOSCH 0 231 172 021                        | Porsche 914                |
| 5     | 800                                | 3100                     | 30                    | 100                           | 300                         | 10      | BOSCH 0 231 129 022<br>BOSCH 9 230 081 050 | Porsche 912<br>Porsche 914 |
| 6     | 800                                | 3100                     | 30                    | 100                           | 300                         | 10      | VE4BRS383 JV4BR9 VJ4BR18 VJR4BR18          | Porsche 356                |
| 7     | 800                                | 2600                     | 22                    | 100                           | 200                         | 12      | BOSCH 0 231 172 007                        | VW 411E/412E               |
| 8     | 1000                               | 4200                     | 22                    | 100                           | 200                         | 10      | BOSCH 0 231 172 009 & 011                  | VW1600E                    |
| 9     | 800                                | 2600                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 174 001 & 005 & 175 005        | Porsche 914                |
| A     | 1000                               | 2700                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 174 007 & 009                  | Porsche 914                |
| B     | 1000                               | 2700                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 174 011                        | Porsche 914                |
| C     | 1000                               | 3400                     | 23                    | -                             | -                           | 12,0*   | BOSCH 0 231 168 009 & 176 048              | Porsche 914                |
| D     | 1000                               | 2700                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 172 021                        | Porsche 914                |
| E     | 800                                | 2600                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 172 007                        | VW 411E/412E               |
| F     | 1000                               | 4200                     | 22                    | -                             | -                           | 10,0*   | BOSCH 0 231 172 009 & 011                  | VW1600E                    |

\* Vacuum  
retard

# Vacuum retard / negative vacuum installation and information

Some classic cars have a mechanical ignition distributor with vacuum retard. In these systems, the ignition timing is retarded at idle. The initial advance timing is only applied when the throttle is pressed, meaning the engine is under load.

In short: at idle, the engine fires close to top dead center (TDC). When the engine is under load, the initial advance timing is applied.

## How to set up a 123ignition with a negative vacuum curve?

1. Set the engine to top dead center (TDC) on cylinder 1 during the compression stroke.
2. Install the 123ignition according to the manual, but do not yet place the distributor cap.
3. Turn on the ignition. Rotate the distributor housing against the rotor's direction of rotation:
  - If the rotor turns clockwise (CW) when the engine runs, turn the housing counterclockwise (CCW).
  - If the rotor turns counterclockwise (CCW), turn the housing clockwise (CW).
4. Slowly and carefully rotate the housing until the green LED lights up, then stop precisely at that point. This point corresponds to 0 degrees for the 123ignition.
5. You have now set the 123ignition's 0-degree point to top dead center. The ignition will now fire at TDC during startup.
6. Secure the distributor, turn off the ignition, and connect the black wire to the coil.

## Why do some ignition distributors have vacuum retard?

Due to stricter environmental regulations, vehicles needed to produce fewer harmful emissions at idle. When an engine idles with advance, it can generate higher emissions of pollutants.

To counteract this, vacuum retard distributors were developed. These retard the ignition timing at idle, making the exhaust gases cleaner. However, ignition advance is still needed under (partial) load, so the retard function is only active when the engine is idling.

## How does vacuum retard / negative vacuum work in the 123ignition?

The 123ignition with a single vacuum port does not have a second connection for a vacuum retard hose. Instead, a special method is used:

- The 123ignition is set at top dead center (0 degrees).
- At idle, when vacuum is high, the programmed curve ensures that no advance is applied, meaning the engine fires near TDC.
- At partial or full load, the vacuum decreases, and the 123ignition adds a certain number of degrees of advance—the same amount as the original, initial advance timing.
- Centrifugal advance is then added on top of this initial advance timing.