

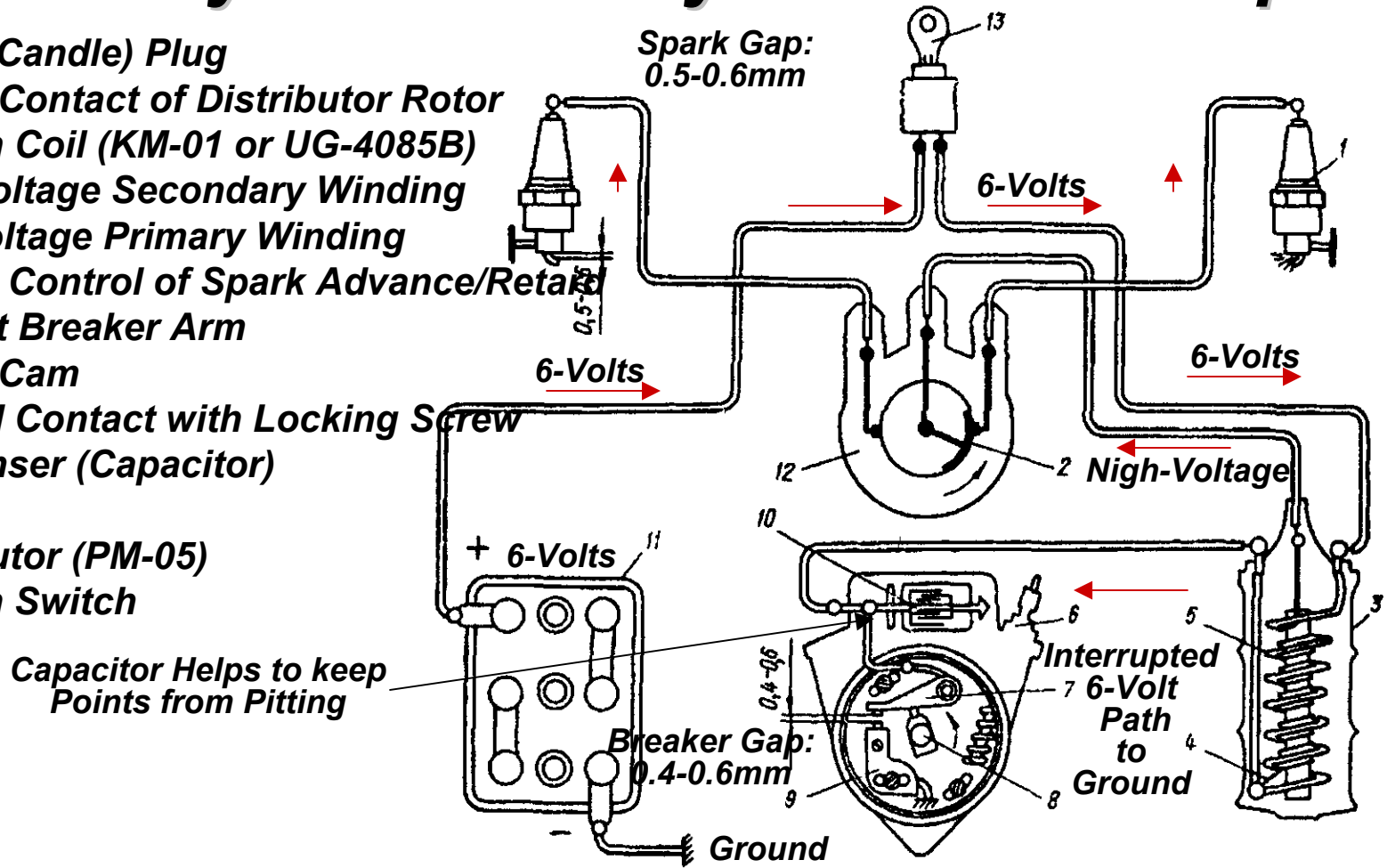


Ignition Systems
for
Russian Motorcycles
(Part II: PM-05 Breaker/Distributor)

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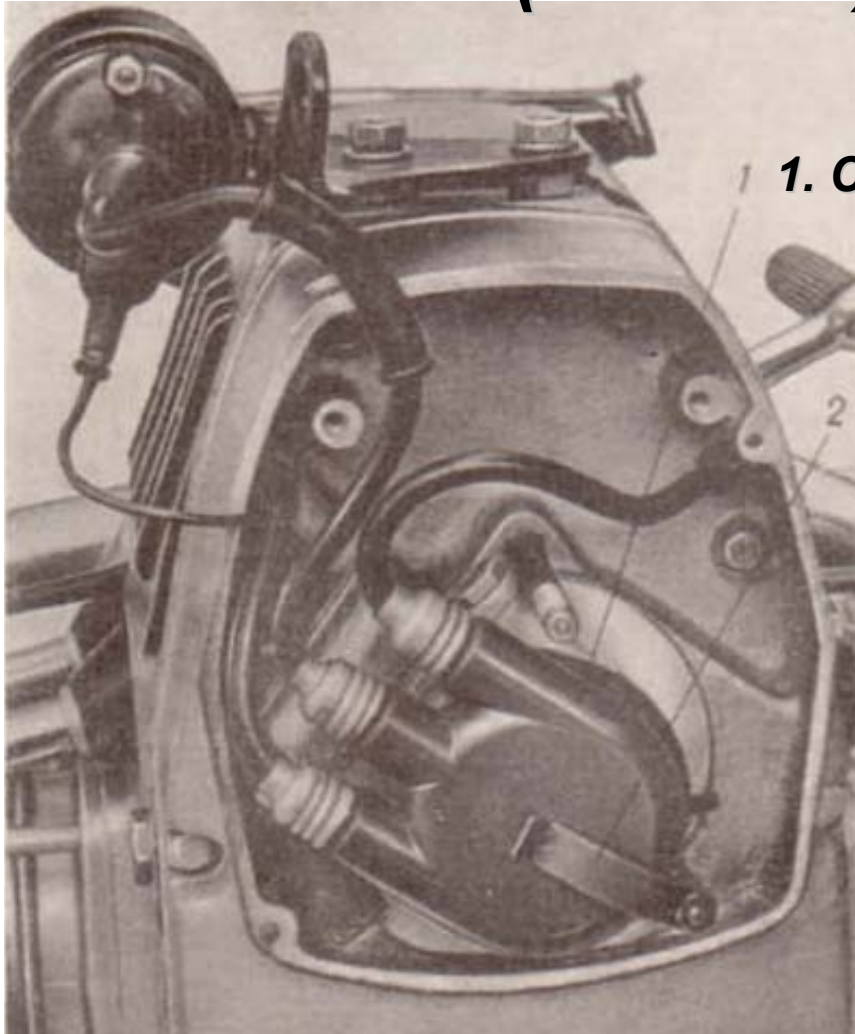
Ignition System of Early Urals and Dneprs

1. Spark (Candle) Plug
2. Center Contact of Distributor Rotor
3. Ignition Coil (KM-01 or UG-4085B)
4. High-Voltage Secondary Winding
5. Low-Voltage Primary Winding
6. Manual Control of Spark Advance/Retard
7. Contact Breaker Arm
8. Rotary Cam
9. Ground Contact with Locking Screw
10. Condenser (Capacitor)
11. Battery
12. Distributor (PM-05)
13. Ignition Switch



The basic ignition system is simple. The breaker points are normally closed, allowing the magnetic field to build in the ignition coil. When the cam shaft rises, opening the breaker points, the collapsing magnetic field induces a high-voltage in the secondary winding of the coil.

PM-05 Breaker (Contact) / Distributor

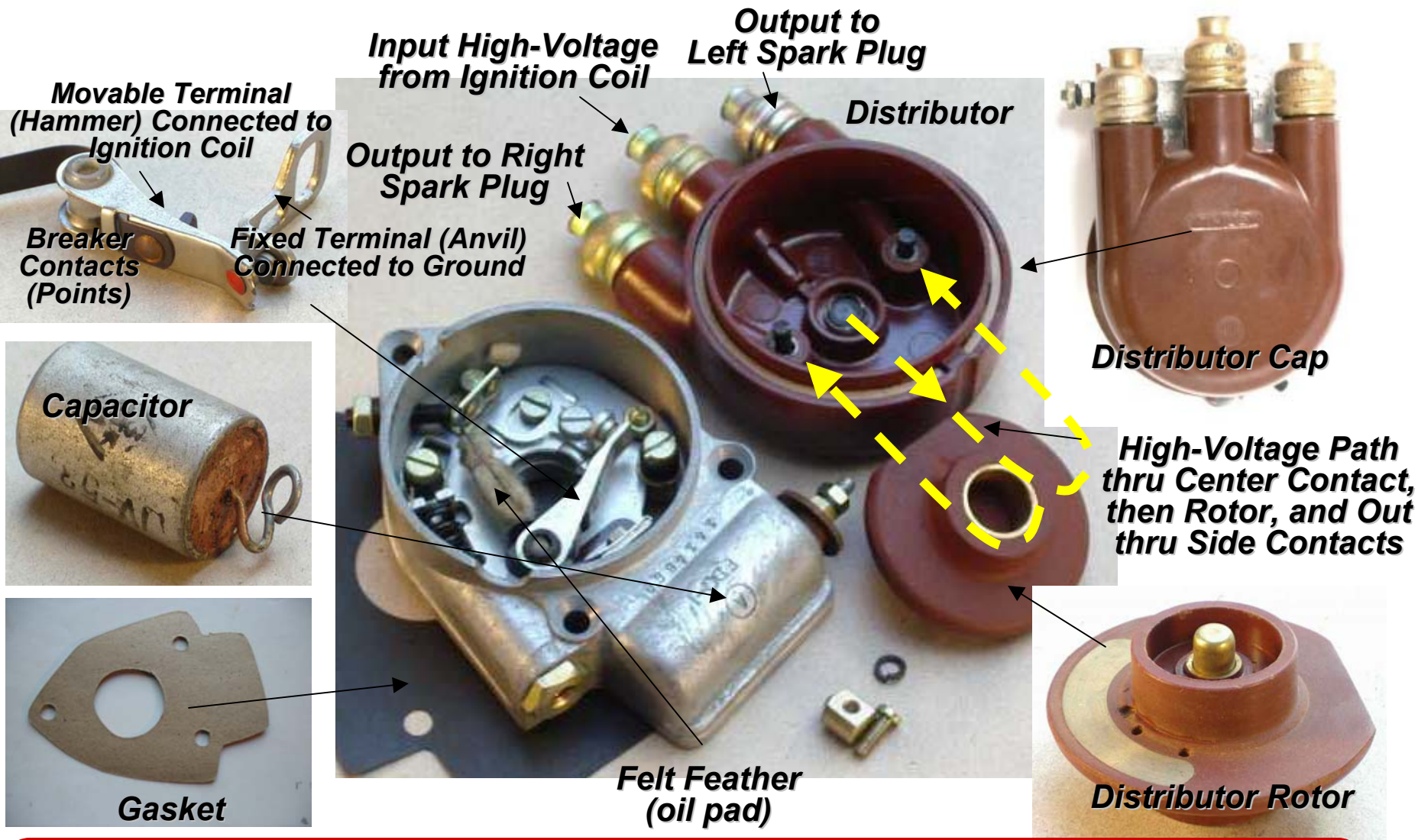


1. Circuit Breaker/Distributor

2. Attachment Spring

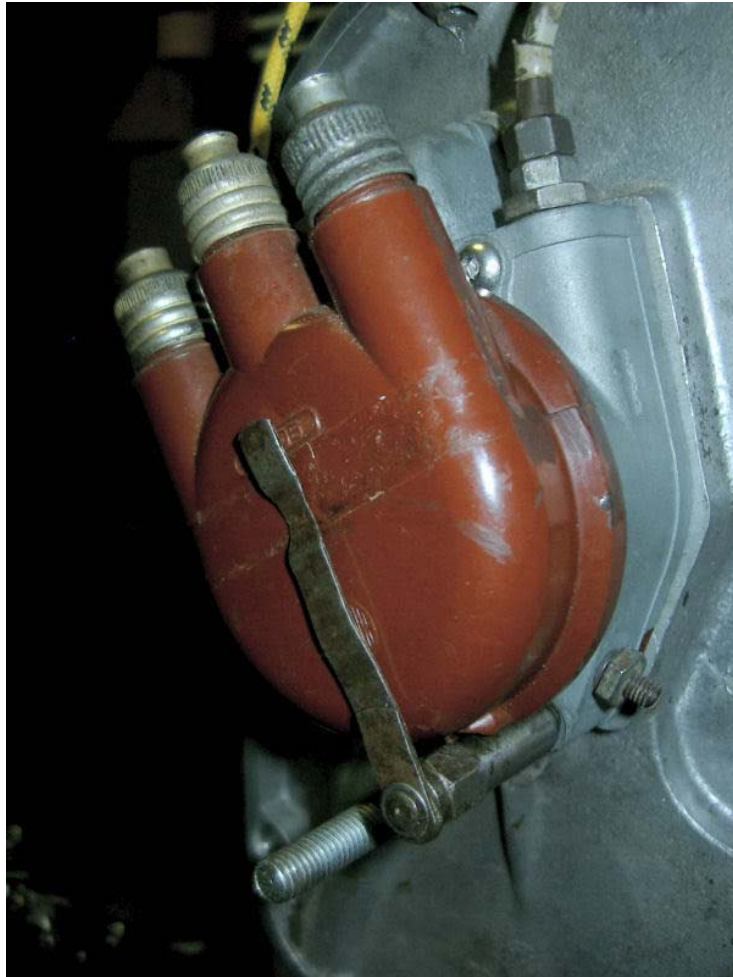
The PM-05 breaker/distributor was introduced on Ural's M-72. The distributor cap was fastened by a special spring. High-voltage travels from the middle contact to the spark plugs (candles).

Breaker/Distributor PM05 Breakdown



PM05 Breaker/Distributor was used on early versions of Dnepr's K-650, K-750, MT-12, MB-750 and M-72.

PM-05 Distributor Cap (®Catweazle)



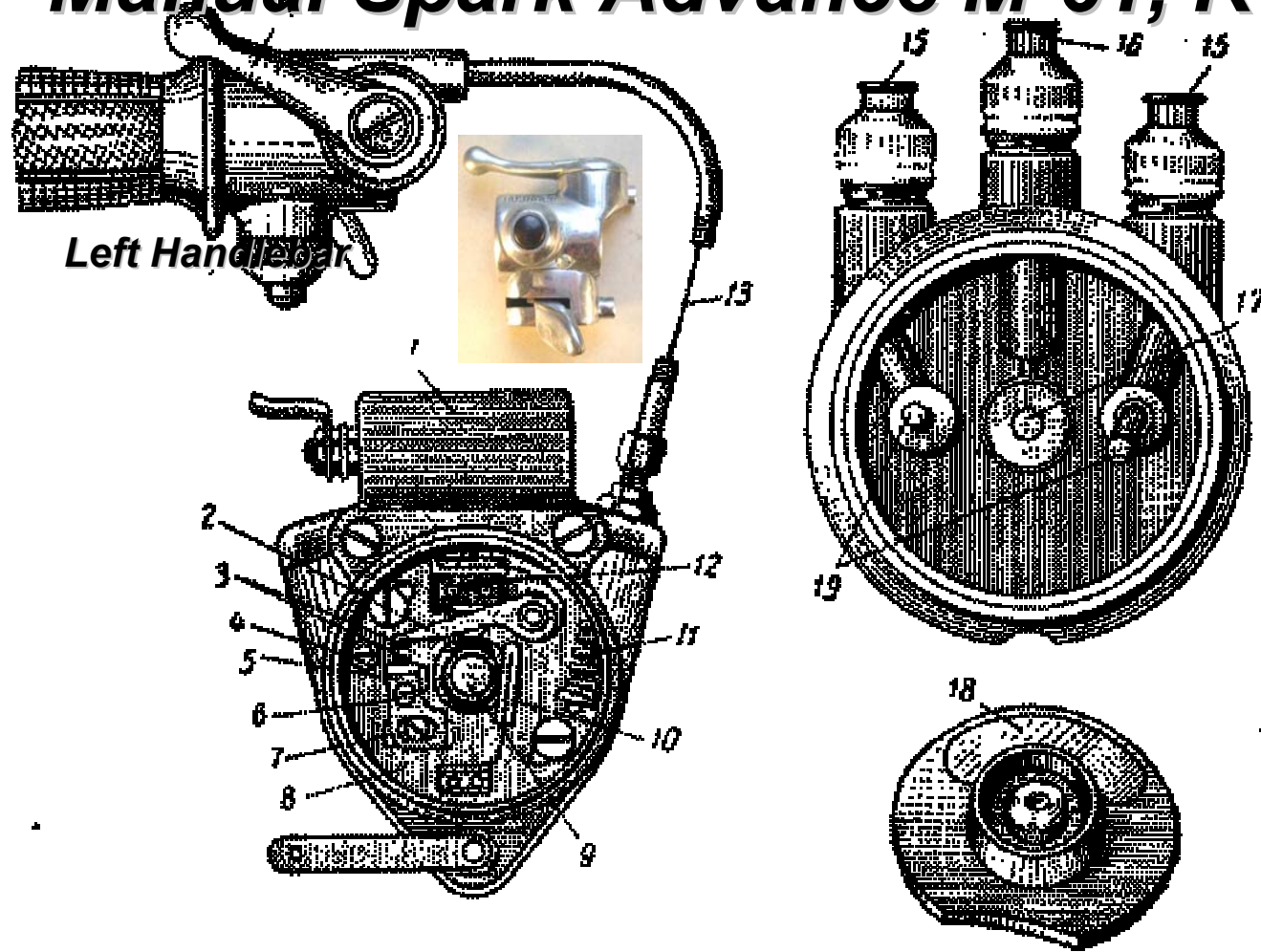
Older Type Cap



Newer Type Cap

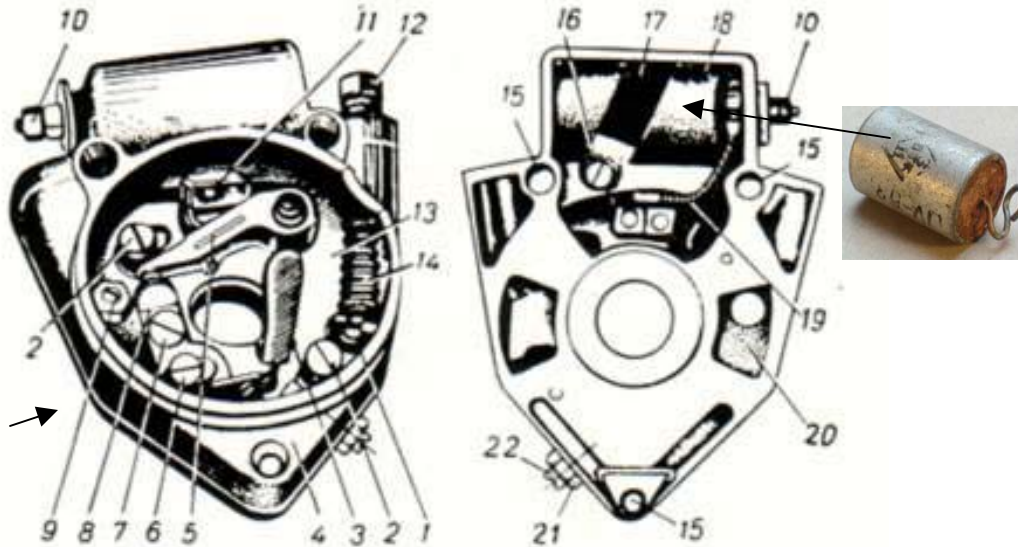
***The clamping spring may be of a different length,
depending on the year of the bike.***

Manual Spark Advance M-61, K-750 and M-72

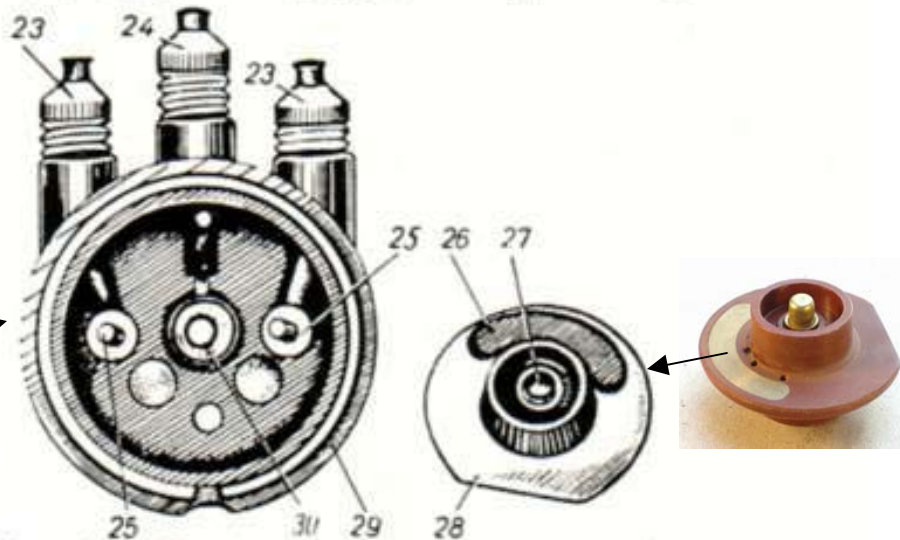


The PM-05 breaker/ distributor, with manual ignition advance, consists of a body with a cap, breaker points riding on a cam, and two screws to allow rotation around an angle, which can be set for timing. The movable contact can be moved to regulate the gap, with the help of the eccentric adjusting screw.

PM-05 Manual Advance/Retard Distributor



Rotary Disk



1. Stop
2. Screw
3. Oil Felt Pad
4. Body
5. Lever
6. Screw
7. Locking Screw
8. Interrupter Plate Contact
9. Eccentric
10. Insulated Terminal
11. Contact Bracket
12. Adjusting Stop
13. Rotary Disk
14. Spring
15. Screw Hole
16. Screw
17. Plate
18. Capacitor (Condenser)
19. Capacitor Wire
20. Cut-out in Body
21. Adjusting Screw Lock-Nut
22. Adjusting Screw
- 23./24. Wire Conduits
25. Carbon Contact
26. Contact Plate
27. Cap with Spring
28. Rotor
29. Cover with Contacts
30. Central Contact

The PM05 is controlled by the ignition lever on the left handlebar, while the later PM-302 centrifugal regulator, provided an automatic change of ignition timing depending on engine speed.

Why Advance/Retard Ignition Timing?

- ***"Timing Advance" refers to the number of degrees Before Top Dead Center (BTDC) that the spark will ignite the air-fuel mixture in the combustion chamber during the compression stroke.***
- ***Retarded timing can be defined as changing the timing so that fuel ignition happens later than the manufacturer's specified time.***
- ***Timing advance is required because it takes time to burn the air-fuel mixture. Igniting the mixture before the piston reaches top dead center (TDC) will allow the mixture to fully burn soon after the piston reaches TDC.***
- ***As the engine speed increases, the time available to burn the mixture decreases, but the burning itself proceeds at the same speed. It needs to be started increasingly earlier to complete (advanced) in time.***
- ***In a classic ignition system with breaker points, the basic timing can be set statically using a test light or dynamically using a timing light.***

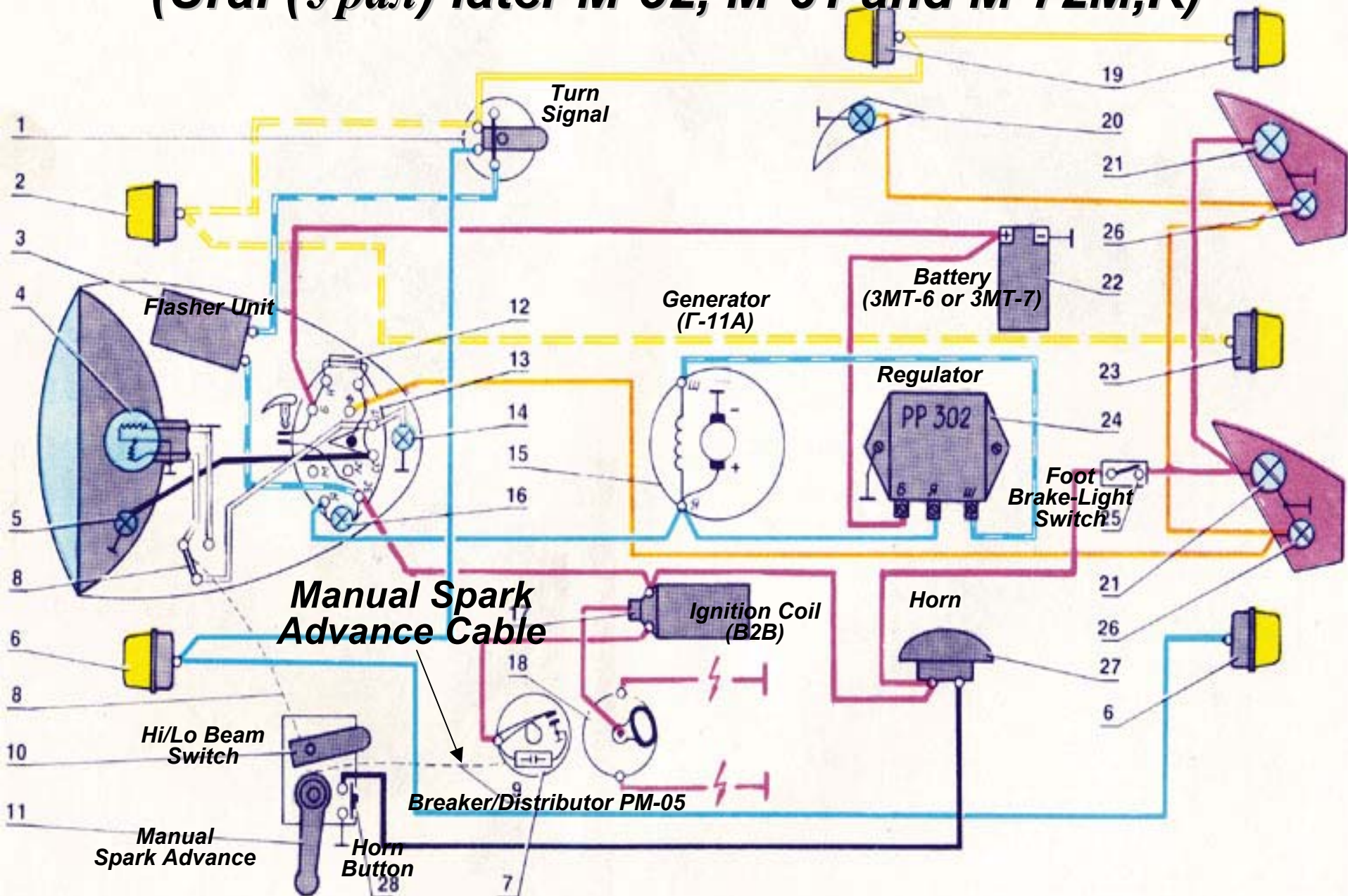
Ignition timing is the process of setting the time when a spark will occur during the compression stroke relative to piston position and crankshaft angular velocity.

Use of Handlebar Timing Lever (CossackPower (b-Cozz))

- ***On the Open Road: Full Advance***
- ***Going Up a Steep Hill: Retard a Bit***
- ***Show-Off (slow thumpy idle when stopped): Full or Almost Retard***
- ***If Bike Stalls (like a kill switch) when Pulled to Full Retard:***
 - ***Probably Due to Cable Stretch***
 - ***Retarding Too Far***
- ***Never Ride on Full Retard***
- ***When Spark Advance Is Increased (point when the ignition spark occurs, BTDC of the compression stroke) we Get More Power, but Also More Heat***
- ***There is a point after which we get lots more heat and very little extra power. (STOP before we get to this point!)***
- ***With Engine at Normal Operating Temperature and Idling, Advance Timing Slowly (Engine Will Speed Up)***
- ***Move Timing Back and Forth, Advancing and Retarding to Get Highest Engine Idling Speed***
- ***Back It Off (retard) a Bit***
 - ***Engine Speed Slows Down Just a Little (Still idling, don't touch the throttle)***
- ***Take Short Ride to Make Sure Engine Does Not "Ping" under Load***
- ***Check Color of Spark Plugs to Make Sure Not Running Too Hot***

The manual control of spark advance is controlled by a handlebar lever connected to a PM-05 breaker/distributor.

Application of PM-05 Breaker/Distributor (Ural (Урал) later M-52, M-61 and M-72M,K)



Application of PM-05 Breaker/Distributor (Dnepr (Днепр) K-750, K-750M and MT-12)

