



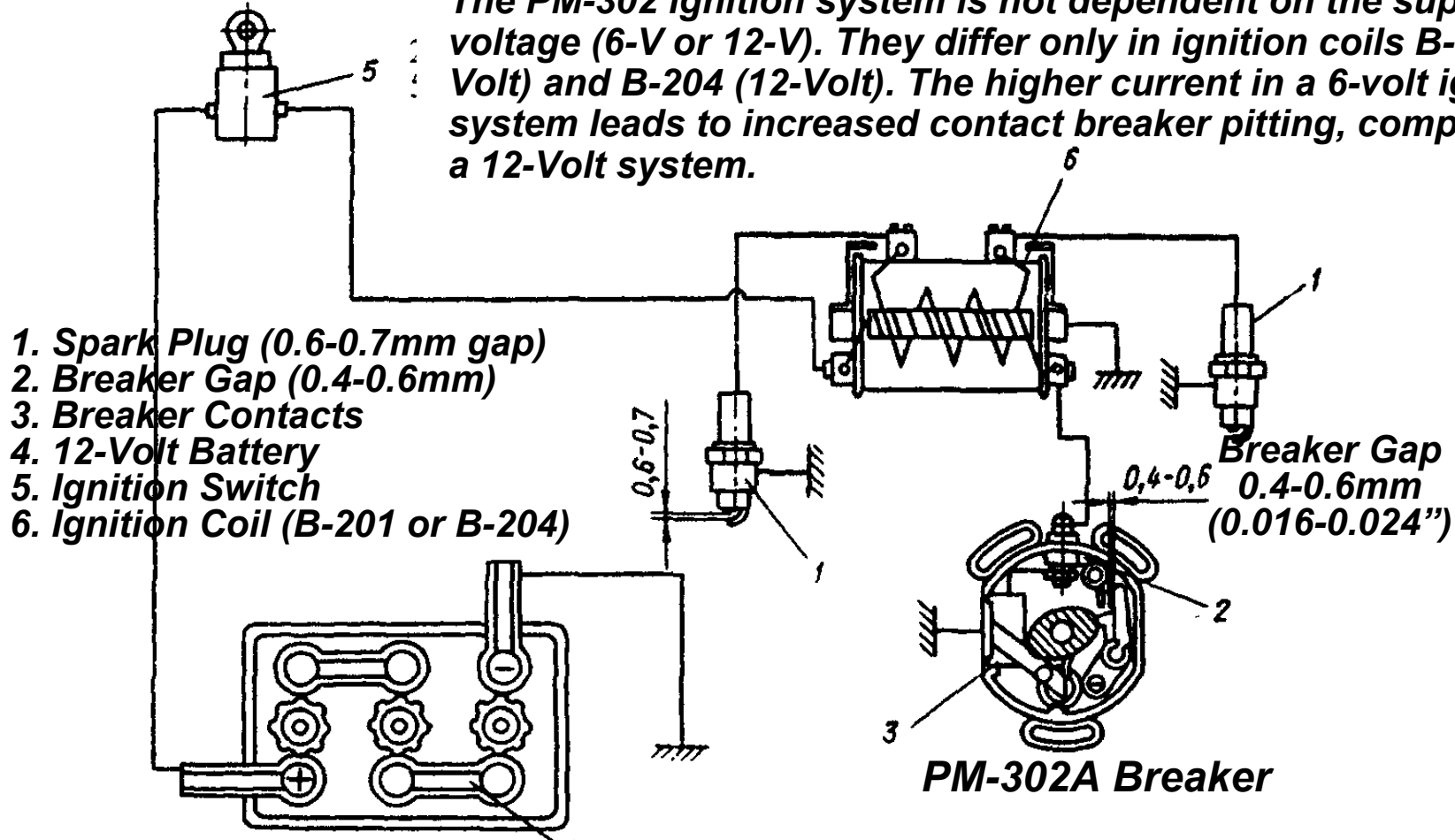
***Ignition Systems***  
***for***  
***Russian Motorcycles***  
***(Part III: PM-11/PM-302 Breaker)***



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# PM-11 / PM-302A Breaker System

The PM-302 ignition system is not dependent on the supply voltage (6-V or 12-V). They differ only in ignition coils B-201 (6-Volt) and B-204 (12-Volt). The higher current in a 6-volt ignition system leads to increased contact breaker pitting, compared with a 12-Volt system.



**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.**

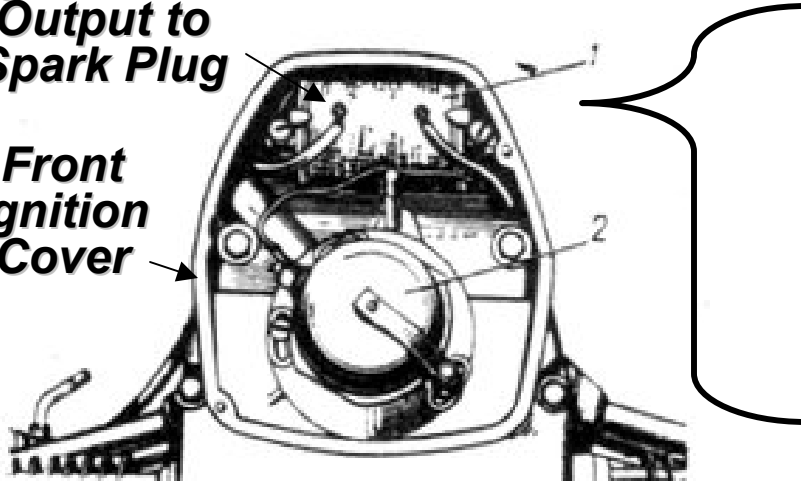


# Breaker PM-302 and Ignition Coil B-204

- Dnepr MT-10.36 / MT-11 / MT-16 and Ural M-62 / M-63 / M-66 / M-67

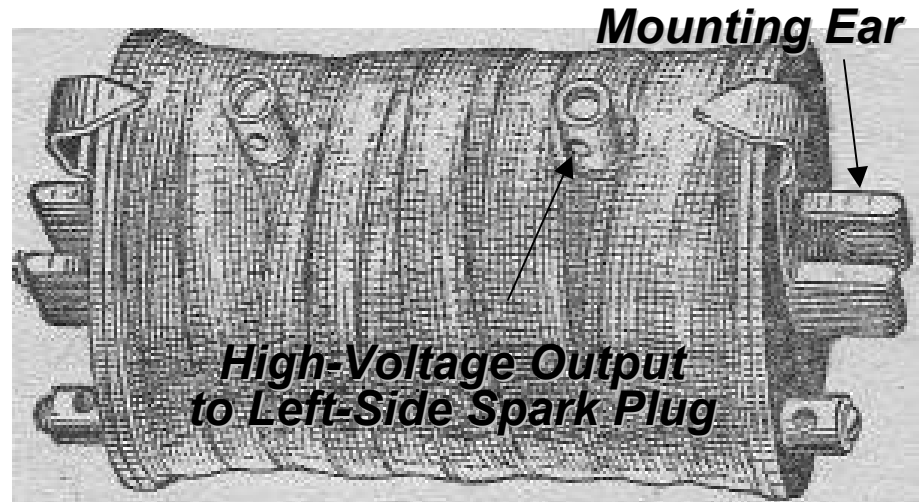
High-Tension  
Output to  
Spark Plug

Front  
Ignition  
Cover



1. B-204 Ignition Coil
2. PM-302A (ИМ-302А) Breaker Unit

Low-Voltage  
Primary Terminal



Mounting Ear

High-Voltage Output  
to Left-Side Spark Plug

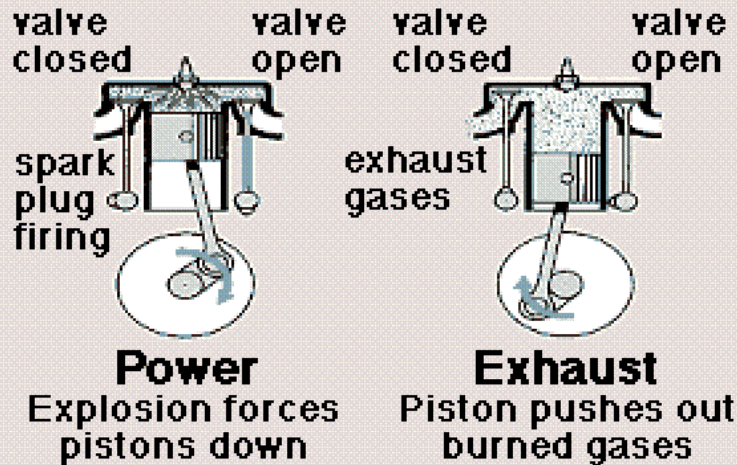
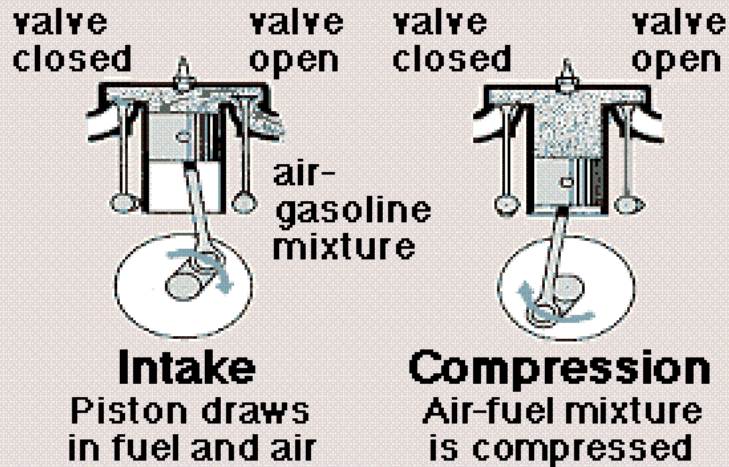


Safety Arc Gaps

The introduction of the PM-301/PM-302 breaker system eliminated any need for a distributor and provided automatic spark advance/retard. The centrifugal breaker points automatically adjusted to engine rpm's. The output of the ignition coil was connected directly to each of the spark plugs.

# ***PM-302 Allowed Elimination of the Distributor***

## **Four-Stroke Cycle**



***Four-stroke engines take two revolutions to reach the firing point.***

***Both plugs fire simultaneously on the left and right cylinders, one spark being formed when the compression stroke finishes in one cylinder and the other (needlessly) during the exhaust stroke.***



# **PM-302A (Центробежен регулатор за ПМ302) 12-Volt Breaker for Dnepr (MT-10.36/ MT-11/ MT-12/ MT-16) and Ural (M-62/ M-63/ M-66/ M-67/ M-67.36/ Tourist)**

**Used with Ignition coil  
B-201A 6-Volt) or B-204 (12-Volt)**



**Breaker Points**

**Weight Pins**

**Cover**



**Carrier**



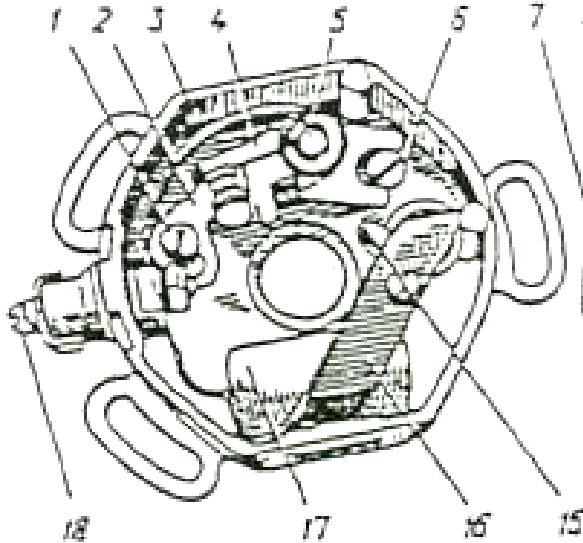
**Centrifugal Advance**



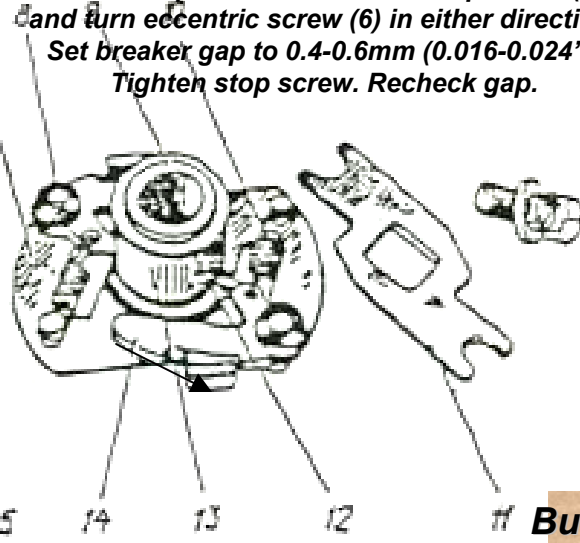
**The PM-302 ushered in the era of automatic spark advance with the introduction of the centrifugal advance/retard, consisting of breaker points, condenser, advance weights and springs, and earned the nick-name "the mixing bowl of doom."**

# PM-302A Breaker with Automatic Spark Advance

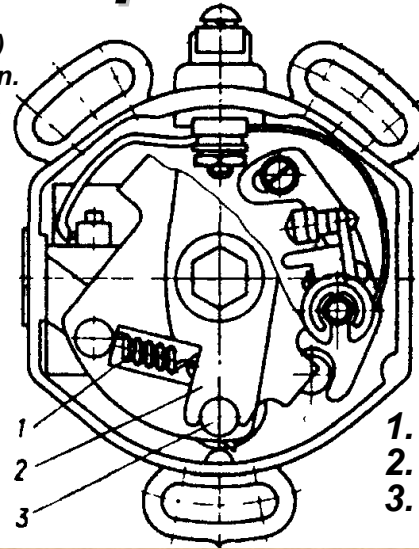
To Adjust Gap: Undo screw fastening the automatic spark timer. Slacken stop screw (1) and turn eccentric screw (6) in either direction. Set breaker gap to 0.4-0.6mm (0.016-0.024"). Tighten stop screw. Recheck gap.



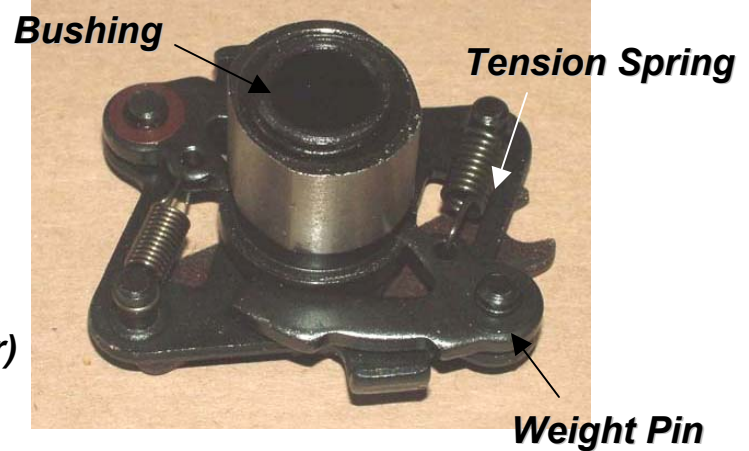
- 1. Stop Screw
- 2. Contact Leg
- 3. Breaker Body
- 4. Breaker's Lever
- 5. Lever Pin
- 6. Eccentric
- 7. Automatic Spark Timer
- 8. Weight Pin
- 9. Bushing



- 10. Spring
- 11. Carrier
- 12. Locking Ring
- 13. Cam
- 14. Weight
- 15. Lubrication Wick
- 16. Capacitor Holder
- 17. Condenser (Capacitor)
- 18. Terminal



- 1. Spring
- 2. Carrier
- 3. Weight Pin



**Spark-advance is determined by the relationship between rotary speed (centrifugal force) and the tension spring. The correct placement of the two-piece advance unit's top plate is a rectangular opening at each side of the mounting bolt.**



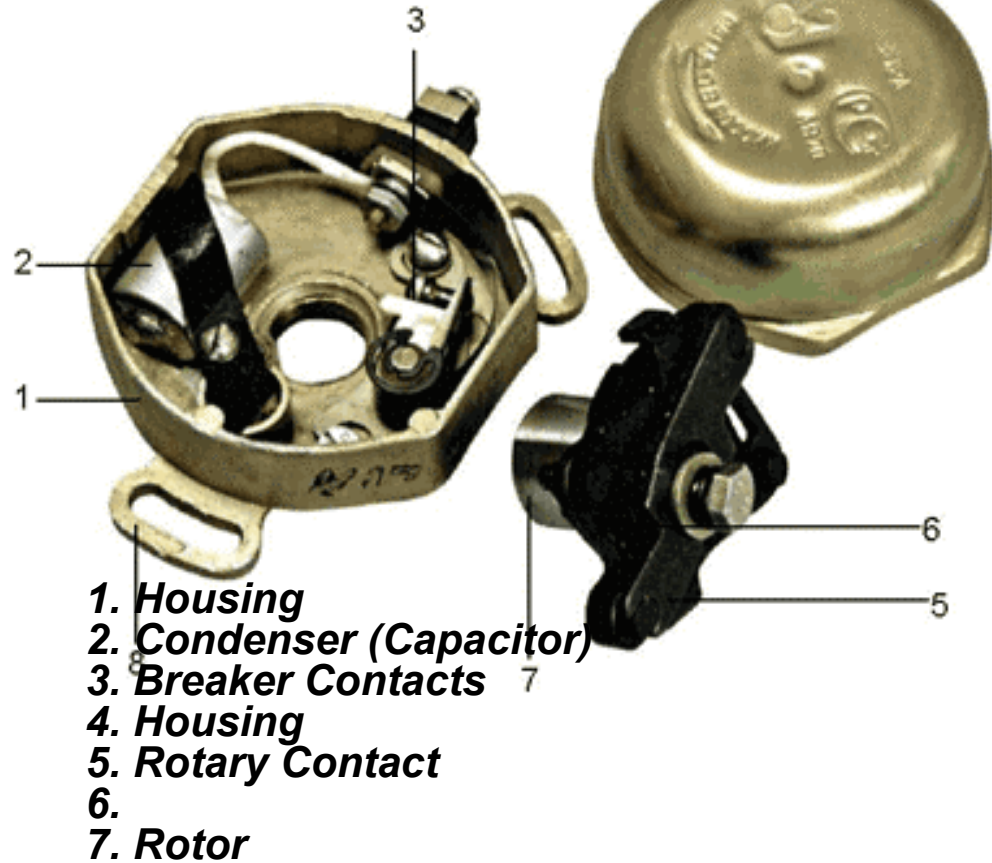
# PM-302-01 12-Volt Breaker



**Centrifugal Advance**

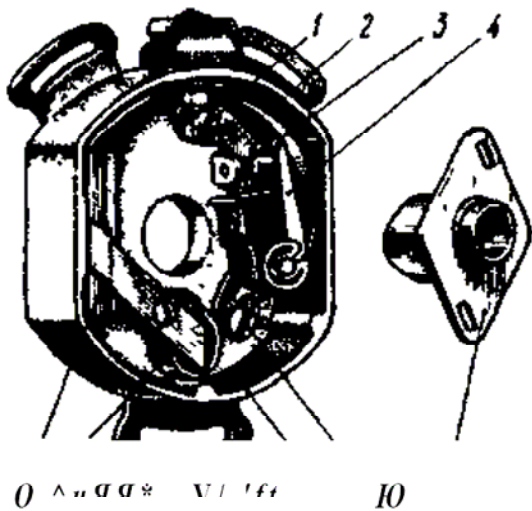


**12-Volt Breaker Points**

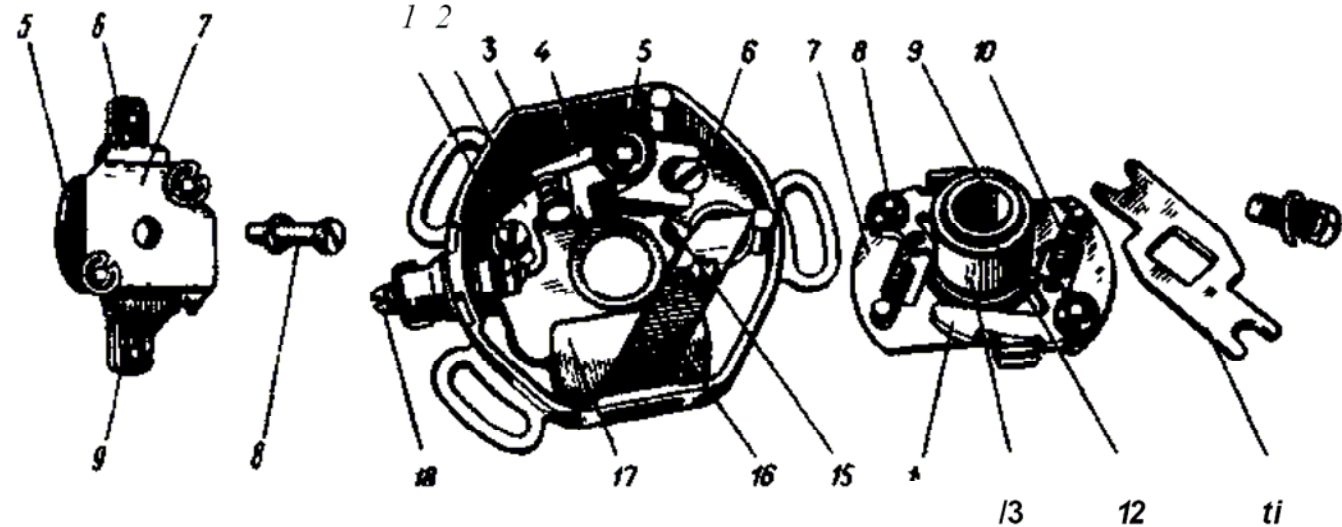


**Automatic ignition advance PM-302 Breaker consists of a body with a lid, cam with a centrifugal regulator, breaker contacts, capacitor and a felt pad to lubricate the cam. The breaker is attached to the crankcase with three screws and can be rotated at an angle, through which you can set the desired time of ignition timing. The breaker gap is set using the eccentric adjusting screw.**

# PM-11 and PM-302A Breakers



**PM-11**



**PM-302A**

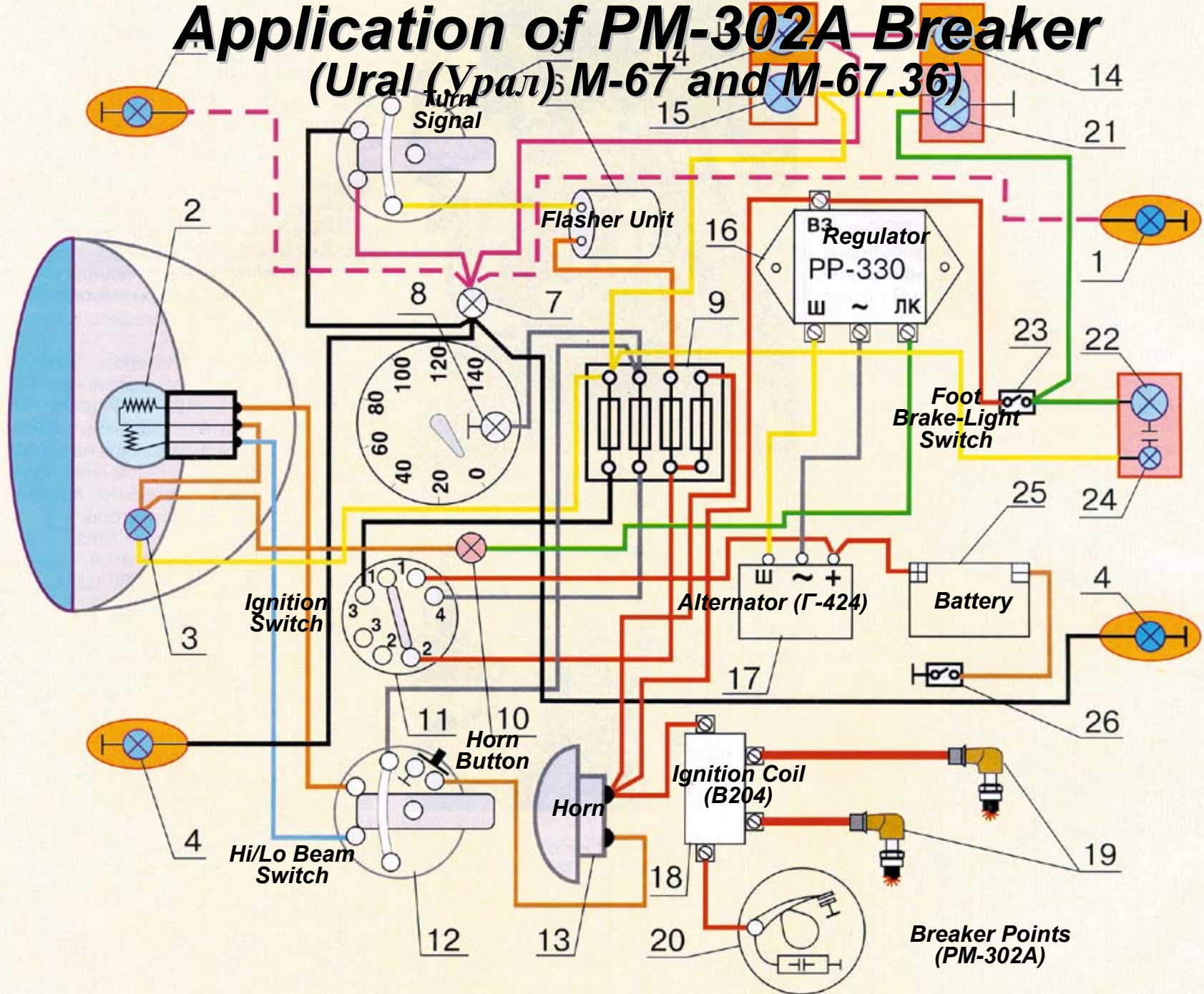
*There are two styles of cam and flyweights. The one piece unit, less desirable due to soft pins that tend to wear out. The two piece unit better quality, but tricky as the top plate has to be put on correctly. When done correctly there are two square opens created, if done wrong the opens created are angular and the flyweights will not fling out and advance the timing.*

**The PM-11 was the predecessor to the more-popular PM-302/PM-302A. The weights and springs are attached to the points cam. As the cam spins on its shaft, centrifugal force causes weights to move and turn the cam on its shaft, advancing the timing of the spark, thus giving the combustion process more time to occur as the rpm increase. Full advance is usually reached around 3,000 rpm.**



# Application of PM-302A Breaker

## (Ural (Урал) M-67 and M-67.36)





# Application of PM-302A Breaker (Dnepr (Днепр) MT-10 and MT-10.36)

