Russian Headlight Assemblies
Part XXX: Headlight Cavity Evolution
(Also See Parts XXX-1 to -12)

Ernie Franke
eafranke@tampabay.rr.com
02 / 2018
Early Ignition Switch Is Central to Headlight Assembly

• Original Style Headlight Cavity Contains:
  – Hi/Lo-Beam Dimmer Switch
    • Activated from Handlebar Control Lever
  – Central Ignition Switch
    • Hub of All Activity and Wiring in Headlight Cavity
  – Generator “Charge” Light
  – Safety Fuse
  – Headlight Lamp
    • Dual Filament Lamp: High and Low Beam
  – Parking Lamp
  – Speedometer

• Common Original Design:
  – Ural: M-72, M-72K, M-72M, M-61, M-62, M-63, M-66
  – Dnepr: M-72, K-750, K-750M, MB-750, MB-750M, K-650/MT-8, MT-9, MT-10 and MT-12

• Derivation of Headlight Assembly
  – Ural M-72 Design Based on German BMW R-71

Early headlight cavities contained a speedometer, warning lights, and hi/lo headlight dimmer switching, but the center of interest was the central ignition switch.
Headlight Cavities for Russian Motorcycles

• Part XXX: Evolution
• Part XXX-1: Heritage from German R71
• Part XXX-2: Headlight Cavities for Ural / Dnepr M-72
• Part XXX-3: Headlight Cavities for Dnepr K-750 / K-750M
• Part XXX-4: Headlight Cavities for Ural M-61, M-62, M-63 & M-66
• Part XXX-5: Headlight Cavities for Dnepr K-650 / MT-8
• Part XXX-6: Headlight Cavities for Dnepr K-650 / MT-9
• Part XXX-7: Headlight Cavities for Dnepr MT-10 and MT-10.36
• Part XXX-8: Headlight Cavities for Dnepr MB-650 and MB-650M
• Part XXX-9: Headlight Cavities for Dnepr MT-12
• Part XXX-10: Headlight Cavities for Ural M-67 and MT-67.36
• Part XXX-11: Headlight Cavities for Dnepr MT-11 and MT-16
• Part XXX-12: Headlight Cavities for Modern Ural Motorcycles

We will take you through the evolution of the headlight cavity for Ural and Dnepr motorcycles in a twelve-part series.
German BMW R-71

The design of the Ural M-72 is based on the German BMW R-71.

Interestingly the German electrical system was 12-volts, negative ground. The Russians chose to replace the electrical components with 6-volt, positive ground devices.
German BMW R-71 (www.fallschirmjager.net)

Central Switch 512c
Fuse 518

“Charge” Alarm Light 519b
503

Hi/Lo Beam Dimmer Switch 478

Dual-Filament Hi/Lo Lamp
Parking Light

Handlebar Control Switch, showing Hi/Lo Beam Dimmer lever

“Charge” Alarm Light 5

Central Switch 519
Alarm

Fuse 503

Hi/Lo Beam Dimmer Switch
M-72 Headlight Assembly for an Old Soldier

- Central Switch
- Hole for the Safety Fuse
- Note: Post ’56 Models May Have an Optional Indicator Lamp Here

- Generator “Charge” Light
- Spark Advance Lever
- Speedometer
- Hi/Lo Beam Dimmer Lever
### Table: IMZ (ИМЗ) - Ural (Урал) Model/Year vs. Electrical System (09/11)

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Engine Size</th>
<th>Voltage</th>
<th>Generator/ Alternator</th>
<th>Regulator</th>
<th>Ignition Coil</th>
<th>Breaker/ Distributor</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>1941-55</td>
<td>750cc</td>
<td>6-Volt</td>
<td>G-11, G-11A (1952)</td>
<td>PP-1, PP-31 (1950)</td>
<td>KM-01, B2B, IG-4085B (1950)</td>
<td>PM-05</td>
<td>3MT-7 (7A-hr) or 3MT-14 (14A-hr)</td>
</tr>
<tr>
<td>M-72M</td>
<td>1952-58</td>
<td>750cc</td>
<td>6-Volt</td>
<td>G-11A (1952)</td>
<td>PP-31A</td>
<td>KM-01</td>
<td>PM-05</td>
<td>None</td>
</tr>
</tbody>
</table>

**Notes:**
1. M-64 (1961) and M-65 (1965) were prototypes.
3. M-73 (1976) was an M-72 (750cc) with engageable sidecar wheel.
4. M-75 (1943) was experimental model with 500cc engine (6-Volt) on M-72 frame. M-76 (1947) was experimental (820cc).
5. Г-424 alternator (150 Watts) has external relay/regulator (PP-302 or PP-330). 14.3771 and Nippon Denso alternators have internal regulators.
## Table I: IMZ (ИМЗ) - Ural (Урал) Headlight Cavity (09/11)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Headlight Asmbly (Фара)</th>
<th>Speedometer</th>
<th>Headlight</th>
<th>Parking Light</th>
<th>Switch Key</th>
<th>Cavity Fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>6-Volt</td>
<td>72184, ФГ-6</td>
<td>72174, СП-8-Б</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-72M</td>
<td>6-Volt</td>
<td>72184, ФГ-6</td>
<td>72174, СП-8-Б</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-72K</td>
<td>6-Volt</td>
<td>72184, ФГ-6</td>
<td>72174, СП-8-Б</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-61</td>
<td>6-Volt</td>
<td>3711100, ФГ-116</td>
<td>6217004, СП-102</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-63 (Ural-2)</td>
<td>6-Volt</td>
<td>3711100, ФГ-116</td>
<td>6217004, СП-102</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-66 (Ural-3)</td>
<td>6-Volt</td>
<td>3711100, ФГ-116</td>
<td>6217004, СП-102</td>
<td>72176-Б, A6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>15 Amp</td>
</tr>
<tr>
<td>M-67</td>
<td>12-Volt</td>
<td>8.101-18004-10 ФГ-137</td>
<td>6217004, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>BK-857</td>
<td>-</td>
</tr>
<tr>
<td>M-67.36</td>
<td>12-Volt</td>
<td>8.101-18004-10 ФГ-137</td>
<td>6217004, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>BK-857</td>
<td>-</td>
</tr>
<tr>
<td>8.103 and 8.107 Series “650”</td>
<td>12-Volt</td>
<td>8.101-18004-10 ФГ-137</td>
<td>IMZ-8.1037-17004</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>IMZ-8.103-18050, 141.370400</td>
<td>-</td>
</tr>
<tr>
<td>8.103,8.103X, 8.123,8.123X 650 &amp; 750 Series</td>
<td>12-Volt</td>
<td>ФГ137-3711010-02</td>
<td>IMZ-8.1037-17004</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>IMZ-8.103-18050, 141.370400</td>
<td>-</td>
</tr>
<tr>
<td>8.103,8.103X, 8.123,8.123X “750”Series</td>
<td>12-Volt</td>
<td>ФГ137-3711010-02</td>
<td>IMZ-8.1037-17004</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>IMZ-8.103-18050, 141.370400</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table II: KMZ (КМЗ) - Dnepr (Днепр) Model/Year vs. Electrical System (09/11)

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Engine Size</th>
<th>Voltage</th>
<th>Generator/Alternator</th>
<th>Regulator</th>
<th>Ignition Coil</th>
<th>Breaker/Distributor</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>1952-56</td>
<td>750cc</td>
<td>6-Volt</td>
<td>G-11A (1952)</td>
<td>PP-31 (1950)</td>
<td>KM-01, B-2B</td>
<td>PM-05</td>
<td>3MT-7 (7A-hr)</td>
</tr>
<tr>
<td>M-72N (H)</td>
<td>1957-59</td>
<td>750cc</td>
<td>6-Volt</td>
<td>G-11A (1952)</td>
<td>PP-31A (1956)</td>
<td>KM-01</td>
<td>PM-05</td>
<td>3MT-14 (14A-hr)</td>
</tr>
</tbody>
</table>

**Notes:**
1. MT-14 (1977) was a prototype.
2. MB-650 is military version of MT-16 and MB-750 is a military version of the MT-12.
4. MT-11 and MT-16 remained in production until 1991 when they were re-named the Dnipro-11 (Dnepr-11) and Dnipro-16 (Dnepr-16).
5. Model #’s: H = N, MW = MB = MV
7. Г-424 alternator (150 Watts) has external relay/regulator (PP-302 or PP-330). 14.3771(350 Watts) alternator has internal regulator.
### Table II: KMZ (КМЗ) - Dnepr (Днепр) Headlight Cavity (09/11)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Headlight Cavity (Фара)</th>
<th>Speedometer</th>
<th>Headlight</th>
<th>Parking Light</th>
<th>Switch Key</th>
<th>Cavity Fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>6-Volt</td>
<td>72184-2, ФГ-6</td>
<td>72174, СП-8Б</td>
<td>72176-Б, А6-32+32</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>M-72N (H)</td>
<td>6-Volt</td>
<td>72184-2, ФГ-6</td>
<td>72174, СП-8Б</td>
<td>72176-Б, А6-32+32</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>K-750</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6А</td>
<td>72174-A, СП-8Б</td>
<td>85017-Б, А6-32+32</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>K-750M</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6А</td>
<td>850174, СП-8Б</td>
<td>85017-Б, А6-32+32</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MT-12 (Dnepr-12)</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6А</td>
<td>850174, СП-8Б</td>
<td>65018901</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MB-750</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6A</td>
<td>850174, СП-8Б</td>
<td>65018901</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MB-750M</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6A</td>
<td>850174, СП-8Б</td>
<td>65018901</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>ВК-857</td>
</tr>
<tr>
<td>K-650/MT-8</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6A</td>
<td>850174, СП-8Б</td>
<td>85017-Б, А6-32+32</td>
<td>72177-Б, А6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MB-650</td>
<td>12-Volt</td>
<td>3711100, ФГ-116 or 3711010-Б1, ФГ-137</td>
<td>3802010, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MT-10</td>
<td>12-Volt</td>
<td>3711100, ФГ-116 or 3711010-Б1, ФГ-137</td>
<td>3802010, СП-102</td>
<td>A12-45+40, A12-50+40</td>
<td>A12-4, A12-1.5</td>
<td>7218478-A or ВК-857</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MT-10.36</td>
<td>12-Volt</td>
<td>3711100, ФГ-116 or 3711010-Б1, ФГ-137</td>
<td>3802010, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>7218478-A or ВК-857</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MT-11 (Dnepr-11)</td>
<td>12-Volt</td>
<td>3711010-Б1, ФГ-137Б</td>
<td>3802010, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MT-16 (Dnepr-16)</td>
<td>12-Volt</td>
<td>3711010-Б1, ФГ-137Б</td>
<td>3802010, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</td>
<td>Мр-20, 15-A</td>
</tr>
</tbody>
</table>

### Notes:
1. **MT-12** is civilian version of the **MB-750**
2. Master **Switch is Not in Headlight Cavity for MT-9, MT-67, MT-67.36, MT-11 and MT-16**
ΦΓ-6 Headlight Assembly for M-72 (1942)

Central Switch

Dual Filament (Hi/Lo) Headlight Lamp

Parking Lamp

Fuse

Central Switch

Generator “Alarm” Light

Hi/Lo Beam Dimmer Switch

Speedometer / Odometer

Speedometer Cable

Hi/Lo Beam Control Cable Grommet

Note: Original M-72’s Have Buckets That Aren’t Drilled Out for the “Deco” Switch Cover, just Have the Key Slot Sticking Out.
Central ignition switch supplies 6-Volts to the bike/sidecar lamps and either the hi/lo beam lamp or the parking light. The ignition switch also supplies energy to the generator field coil, ignition coil and voltage regulator.
Components for M-72/K-750/MB-750

Headlight Cavity (www.oldtimergarage.eu)

Fuse Holder
Part #: 000.772
List Price: €12.10

Dual-Beam Headlamp, 6V, 32/21W
Ural/Dnepr Part #: 72176-Б
Part #: 001.551
List Price: €7.06

Headlamp Rubber Gasket M-72/K-750/MB-750
Part #: 001.912
List Price: €2.02

Headlamp Bulb Connector
Part #: 000.848
List Price: €4.54

Parking Light Bulb Holder
Ural/Dnepr Part #: 72177-Б
Par#: 000.768
List Price: €5.04
Components for M-72/K-750/MB-750 Headlight Cavity (moto-boxer.com)

- **Generator “Charge” Warning Bulb**
  - Part#: 6V 0.25A.
  - List Price: 7.08€

- **15-Amp Fuse**
  - List Price: 1.00€

- **Hi/Lo Dimmer Switch for Headlight**
  - List Price: 40.12€

- **Headlamp Casing**
  - List price: 40.12€

- **Dual-Filament Headlamp, 6V**
  - Part #: A6V 32+21W
  - List Price: 4.72€
Dimmer (high/low beam) switching is designed to work via a Bowden cable with a mechanical "switch" that is mounted inside the headlamp cavity. The control switch also contains a spark advance / retard control for the PM-05 breaker points, and a push-button switch for the signal horn.

A Bowden cable is a type of flexible cable used to transmit mechanical force by the movement of an inner cable (most commonly of steel) relative to a hollow outer cable housing.
High/low beam switching is designed to work via a Bowden cable with a mechanical "switch" that is mounted inside the headlamp cavity.
Hi/Lo Dimmer Beam Control Cable and Grommet
(moto-boxer.com)

List Price: 7.08€

List price: 5.31€
M-72, K-750, MB-750, MT-9 and MT-12 Handlebar Control

1. Advance/Retard Lever
2. Horn Signal Button
3. Hi/Lo Beam Lever

Переключатель Света П45 (Control Switch P-45)

1. Clutch Lever
2. Lever
3. Line Coupling
4. Cable Sheath
5. Rubber Shell Grips
6. Handlebar
7. Button Signal to Horn
8. Ignition Advance Lever
9. Hi/Lo Beam Lever
10. Horn Signal Lead
11. Wedge-Shaped Biscuit
12. Screw biscuit
Headlight Bulb-Holder (moto-boxer.com)

List Price: 10€
Ignition Lock for 6-Volt Motorcycles (moto-boxer.com)

List Price: 55 to 60€
Central Switch of K-750M, MB-750, K-650, MT-9 and MB-750M

- MT-9 and MB-650: Light switch Π-25A (P-25A)
- Central Switch
  - Mounted Inside Headlamp with Three Screws
  - Hole for Ignition Key Switch Is Closed with Slider to Protect against Moisture
- Next to Switch in Headlight Cavity
  - Generator Warning Light
  - Central 15-Amp Fuse

1. Base
2. Housing
3. Ignition Key
4. Movable Contact
5. Wire terminal
Master Switch M-72, K-750, MB-750
(www.oldtimergarage.eu)

- Old Timer Garage Part Number: 000.845
- List Price: €45

Generator “Charge” Indicator Lamp Holder

Ignition Switch Key for K750/MB750
Old Timer Garage Part #: 000.712
List Price €11.50
Ural#: 7218478-A

Fuse
M-72 Master Switch
(www.oldtimergarage.eu)

Part #: 000.976
List Price: €80

Generator “Charge” Light
Ignition On/Off Contacts (tip-of-key activated)

Fuse

Generator “Charge” Light
Ignition On/Off Contacts

Fuse

FG116- 3711400
Ignition lock, key not included
(All keys are identical)
List Price: 55€ new
(www.henriksson.ee)
Master Switch with Key
(M-72, K-750, MB-750, MT-12)
**Master Switch Diagram** (www.oldtimergarage.eu)

- **Parking Lamp**
  - Head amp, position bulb 55 (black)
- **Ignition coil 15 (green)**
  - Next horn & stoplight
- **Load control lamp**
- **Power +6V 30/51 (red)**
- **Ignition On/Off Contacts**
- **Speedometer lamp (purple) and Tail Lights**
  - Terminal (58)
- **Я Terminal on Generator 61 (white)**
- **Fuse 8A**
- **Rear lamp, position bulb (grey)**
- **Light switch 56 (white)**
- **to Hi/Lo**
Dnepr M-72 / K-750 3-Position Headlight Cavity Switch

Фары ФГ-6

Ignition Switch Key M-72
(www.oldtimergarage.eu)
• Part Number: 000.789
• List Price: €14
Ural: M-72 and Dnepr: M-72, K-750, MT-9, MT-10
Master Switch Schematic (IggyMo on Dneprheads)

1. To Ignition, Horn, Brakelights
2. N/C
3. To Hi/Low Headlight
4. Taillights
5. Positive from Regulator
6. Guages/Speed/o/daytime running
7. (-) post of Gen (Not necessary)
Speedometer / Odometer (СПИДОМЕТР / ТАХОМЕТР) СП-8 for M-72, K-750, K-750M, MB-750, MB-750M, MT-8 and MT-12

Part #: 002.505
List Price: €68.56
(www.oldtimergarage.eu)

List Price: €49
(www.ebay.de)
Speedometer СП-102 for M-72, К-750М, MB-750, MT-9, MB-650, MT-10, MT-10.36, MT-11 and MT-16

Speedometer СП-102:
1. Scale
2. Arrow Pointer
3. Odometer
4. Connecting Sleeve of Flexible Shaft
5. Stud Mount
6. Housing
7. Glass Scale
8. Rim Body
9. and 10. О-rings

List Price: €100
(moto-boxer.com)

List Price: €52
(moto-boxer.com)

List Price: €58
(www.ural-hamburg.de)

List Price: €45
(www.oldtimergarage.eu)

Part #: 000.671
List Price: €58
(www.ural-hamburg.de)