Evolution of Russian Motorcycles

Ural (Урал) and Dnepr (Днепр)

Part I: Parade of Russian Sidecar Motorcycles

(See Also Part II: Engine Evolution, Part III: Alternator and Generator Evolution, Part IV: Ignition System Evolution, and Part V: Carburetor Evolution)

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Identifying Year and Model of Russian Motorcycle Sidecars

• Because the Vast Majority of Older M-, K- and MT- Models on the Market Have Been Rebuilt from Various Parts, It Is Difficult to Identify a Motorcycle by Cursory Inspection; i.e., Late Model Dneprs Are Often Retro-fitted with M-72 Fuel Tanks, Solo Saddle Seats, or Early Headlight/Ignition Shells; but Are Obvious Differences on Closer Inspection
• Many of the Photos on the Internet Give the Wrong Year of Manufacture
  – Many Times the Motorcycle May Be Listed Simply as a M-72
  – May Later State Actual Model; i.e. M-66, K-750, MB-750, etc
  – M-67.36 Often Listed as M-67, and MT-10.36 as MT-10
• Need to Examine:
  – General Evolution: See Russian Motorcycle Evolution, Parts I thru V
  – Engines: See Russian Motorcycle Engines, Parts I thru IV
  – Ignition Systems: See Russian Motorcycle Ignition Systems, Parts I thru VII
  – Generators/Alternators: See Ural and Dnepr Gen / Alt, Parts I thru V
  – Voltage Regulators: See Russian Motorcycle Volt Regulators, Parts I thru VI
  – Electric Starters: See Electric Starter, Parts I thru IV
  – Carburetors: See Russian Motorcycle Carburetors, Parts I thru XXI
  – Fuel Tanks, Side Cushions: See Russian Motorcycle Fuel Tanks, Parts I thru IV
  – Drive Trains, Locking and Non-Locking Differentials: See Drive Trains, Parts I thru VII
  – Turn Signals: See Russian Motorcycle Flasher Directional Lights
  – Electric Signal Horns: See Russian Motorcycle Horns, Parts I and II
  – Exhaust Mufflers: See Russian Motorcycle Mufflers, Parts I thru V
  – Steering Column Locks: See Russian Motorcycle Steering Locks
  – Brake Lights and Switches: See Russian Motorcycle Brake Lights and Switches
  – Neutral-Gear Sensors / Switches: See Neutral Indicating Switch
  – Oil-Pressure Sensor Switches: See Emergency Oil-Pressure Sensor Switch
  – Speedometer / Odometers: See Russian Motorcycle Speedometers, Part I and II
  – Swing-Arms: See Russian Plungers, Swing-Arms and Torsion Bars, Parts I thru V
  – Headlight Assemblies: See Russian Headlight Cavities, Parts I thru XII
  – Non-Headlight Light Assemblies: See Russian Non-Headlight Light Assemblies

It’s a heap of work to grind thru the amount of information on Russian motorcycles.
Identifying Year and Model of Sidecars (cont.)

- Specialty Sidecar Motorcycles
  - Police: See Russian Police Motorcycle, Parts I thru VII
  - Fire: See Russian Fire-Fighting Motorcycles

- Dates of Manufacture May Vary Between Motorcycle With or W/O Sidecar (SC)
  - Ural
    - M-63 (Ural-2) w/o SC: 1965, M-63 with SC: 1965-80 (Cont. as Police Version, M-63P)
  - Dnepr:
    - M-72 w/o SC: 1959, M-72 with SC: 1956-59
    - MT-10 w/o SC: 1973-82, MT-10 with SC: 1975-88 (includes MT-10.36)

- Basic Changes
  - Irbitskiy Mototsikletniy Zavod (Irbit, Russian Factory for IMZ-Ural)
    - Early Frames (thru M-62) Were One-Piece with Rear Plunger-Type Suspension
    - Later Frames (M-63 forward) Have Swing-Arm Outside the Rear Frame
    - Large Engine Timing Covers Span Full Vertical Height of Engine
    - Rocker (Valve) Covers Are Rounded, Oval-Shaped with Three Raised Lines
    - Early Wheel Hubs are “Bottlecap” Style Pressed Steel with Different Sized Spokes
  - Kievskiy Mototsikletniy Zavod (Kiev, Ukraine Factory for KMZ-Dnepr)
    - Frames (starting with K-750) Feature Swing-Arm Mounted inside the Frame
    - Small Engine Timing Covers Only Span Upper Half of Engine
    - Rocker Covers Are Rectangular-Shaped with Five Raised Lines
    - Wheel Hubs Are Round, Cast-Aluminum with Straight Spokes and No Indentions

Dates and model numbers can easily differ based on when the sidecar version went into production.
Ferreting Out Data on Old Russian Bikes

• It Takes a Bit of Courage to Post Information
• You Are Subject to “Helpful” Advice
  – It Helps If Offered in the Right Spirit
  – A Few Rules
    • Take Advise from the Old Farts
      – They’ve Been Around the Block a Few Times
    • Trust the Old Manuals and Schematics First
    • Trust the Illustrated Parts Diagrams Next
    • Trust the Component Dealers Labels Next
      – These Are Good for Commonality and Later Re-Fitting
    • Trust the Bikes Ads Last
      – Folks Have a Devil of a Time Figuring Out What Model or Year of Bike They Own
      – Folks Purchase Bikes That Have Been “Restored” Something Less than Original
  – Reasons for Differing Views
    • Ivan Took a Break for Some Refreshments
    • He Ran Out of One Particular Parts and Had a Few Old Parts Lying Around
    • Ivan Wanted to Get the Improved Parts into the Hands of the Customers
    • Replica Parts Made for Maximum Replacement
      – I Replaced an Electric Starter on My 2003 Patrol. The Replacement Starter Fit Like a Glove. Life was Good, until I Noticed that the Starter Was about an Inch Longer than the Original. The Starter Lever Couldn’t Move More than ¼ Range, Due to Slicing the Starter. No Problem for Their Major Customer (Russian Outboard Motors)
• Transliteration
  – “B” Is the Transliteration of the Russian “В”: К-750В = K-750V
  – “MB” Is the Transliteration of the Russian “МФ”: М-650 = CF-650
  – “MB” Is the Transliteration of the Russian “МВ”: М-750 = MV-750
  – “H” Is the Transliteration of the Russian “Н”: М-72H = M-72N

It takes a lot of courage and hard work to grind thru the amount of information available on Russian motorcycles.
Model Identification (www.uralmotorbikes.info/model_identification.htm)

- Side Valve (SV) Distinguished by Flat-Sided Cylinder Head with Two Pieces; Barrel and Cylinder Head
- Overhead Valve (OHV) Distinguished by Wider Engine with Three Pieces; Barrel, Cylinder Head and Rocker Cover

Ural OHV Engines Come in Two Sizes: 650cc and 750cc
- Earlier 650cc Engines Have Cast Iron Barrel Bolted Directly to Crankcase with Studs on Barrel to Mount the Aluminum Head, with Oval Rocker Cover with Push-Fit Down-Pipes
- Later 750cc Engines Have Aluminum Barrel Mounted to Aluminum Head with Shaped Rocker Cover with Push-Fit Down-Pipes Studs Pass-Thru Barrel and Head

Dnepr 650cc OHV Engines Have Aluminum Barrel Mounted to Aluminum Head with Rectangular Rocker Cover, with Mounting Studs Visible thru Barrel Fins
- Exhaust Has a Screw-On Mounting Fin Fitting

Apart from the external differences, Dneprs run shell bearings and Urals use roller bearings.
Ural (Урал) Sidecar Evolution

- **M-72 (750cc)**
  - 1941-1956

- **M-61 (650cc)**
  - 1957-1963

- **M-62 (650cc)**
  - 1961-1965

- **M-66 (650cc)**
  - 1968-1977

- **M-63 (650cc)**
  - 1963-1980

- **M-67 (650cc)**
  - 1972-1977

- **M-67.36 (650cc)**
  - 1973-1984

- **IMZ-8.103 (Ural 650)**
  - 1984-2002
Dnepr (Днепр) Motorcycle Sidecar Evolution

- **M-72 (750cc) 1949-1956**
- **K-750 (750cc) 1959-1964**
- **K-750M (750cc) 1963-1977**
- **K-650/MT-8 (650cc) 1967-1971**
- **K-750/MT-9 (650cc) 1971-1974**
- **MT-10 (650cc) 1975-1984**
- **MT-10.36 (650cc) 1984-1988**
- **MT-11 (650cc) 1985-1995**
- **MT-16 (650cc) 2WD 1985-1995**
- **MB-650 (650cc) 2WD 1971-1973**
- **MB-650M (650cc) 2WD 1973-1984**
- **MB-650M1 (650cc) 2WD 1985-1995**
- **MB-750 (750cc) 2WD 1964-1973**
- **MB-750M (750cc) 2WD 1973-1977**
- **MB-750N (H) (750cc) 1956-1959**
- **MT-12 (750cc) 1WD 1982-1985**
- **MT-12 (750cc) 2WD 1974-1982**
- **MT-12 (650cc) 2WD 1985-1995**
- **MT-12 (750cc) 1WD 1982-1985**
## Ural (Урал) and Dnepr (Днепр) Russian Heavy Motorcycles with Sidecars

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<th>Model</th>
<th>Year</th>
<th>Military / Civilian</th>
<th>Engine Size (cm² / inch²)</th>
<th>Engine (Horsepower / KiloWatt)</th>
<th>Front Fork</th>
<th>Rear Suspension</th>
<th>Carbs</th>
<th>Generator / Alternator</th>
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<td>K-302</td>
<td>Г-414, 6V</td>
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</table>

**Leading Link Fork:** a front suspension specifically for sidecar operation. The newer leading link (LL) is not generally suitable for solo use.

The basic sidecar design started with the M-72, a copy of the German R71. The swing-arm frame was introduced on the M-63 to improve performance over country roads.
Dnepr paralleled Ural’s sidecar development.

Mother of All Russian Sidecars: M-72 (750cc)

M-73 (Modified M-72) with an engagable sidecar drive and sidecar brake, but no production

Note: Doted Lines Used Only to Differentiate between Common Symbols
Sorting thru Ural / Dnepr Engine Types

• All Heavy-Class "Dnepr" and "Ural" Engines Have Same Structural Schemes
  – Two-Cylinder, Four-Stroke, Carburetor, Air-Cooled
  – Opposed Cylinders in Horizontal Plane (Boxer Engine)
    • Provides High Balancing for Crank-and-Rod Mechanism
    • Good Air-Cooling of Engine
• Ural / Dnepr Engines Separate into Seven Different Types
  – 1: M-72 / K-750 Side Valve (SV) Engine
    • Derivative of BMW R71
    • Original M-72 SV 750cc Engine
  – 2: K-750M SV Engine: Dnepr K-750, K-750M, MT-12, MB-750, MB-750M
    • Connecting Rods Mounted on Roller Bearings, Cast Iron Cylinders
    • Intake and Exhaust Valves Are Smaller in Diameter
    • Low-pressure Lubrication System with Full-Flow, Paper Oil Filter
    • Oil Pump Rotated by Camshaft
    • Gases from Crankcase Pushed Directly to the Atmosphere thru Breather
    • First Over-Head Valve (OHV) Design, 650cc Displacement, 32 Horsepower
    • First Introduced with K-650 / MT-8, Later Upgraded with MT9 Engine
    • Replaced Manual Breaker Distributor PM-05 with PM-302 Automatic Ignition
    • Cast Ductile Iron Crankshaft with Removable Connecting Rods and Replaceable Bearing Inserts
    • Forced Lubrication System with Centrifugal Oil Cleaner
• Engine Reliability, Durability and Repair
  – Replaced Roller Bearings Connecting Rod Journal Bearings (Bi-metallic Liners) and Use of Solid Cast Iron Crankshaft
  – Bimetallic Cylinder (Aluminum and Iron Sleeve) Substantially Reduced Wear Compared to Previous One-Piece, Cast-Iron Piston to Ensure Performance during Long Rides in Heavy Traffic
Sorting thru Ural / Dnepr Engine Types

- **4: MT10-36 OHV Engine**: Dnepr MB-650M, MT-10.36 Motorcycles
  - Modified MT801: Increased Capability to 36 HP (26.5 kW)
  - Increased Intake Valve Diameter from 37 to 40 mm
  - New Camshaft Profile
  - Increased Compression Ratio from 7.0:1 to 7.5:1 (A-72 and A-76 Petrol)
  - Export Engine to Run on High-Octane A-93 with Compression Ratio of 8.5:1
  - Increased Max Performance to 5600 - 5800 rpm
  - Modified Form of Deepening a Valve at Bottom of Piston
  - Since November 1978, Produced Piston Sphere Radius Head 72.5m
  - Used on MT-10.36, MB-650M, and Some MT-16’s

- **5: MT10-32 OHV Engine**: Dnepr MT-11, MT-16 Motorcycles
  - Modified MT10-36 for Higher Torque at Lower Speeds, Lower Power: 32HP
  - Maximum Speed Lowered by 700 rpm
  - Modified Camshaft with New Profile

  - Significant Differences from MT10-32 Engine
  - One-Piece Crankshaft Construction and Removed Only by Means of Special Devices

- **7: Ural 750 cc OHV Engine**: Ural Patrol, Gear-Up
  - Use of Valve Covers, Cylinder Heads, Carburetors, Generators/Alternators and Ignition to Verify Engine Types

Identifying Russian engines comes in hardy for identifying models and years.
Starting with the M-72, a copy of the German R71, heavy Russian motorcycle production has steadily advanced under IMZ (Ural) and KMZ (Dnepr).
Russian Sidecar Motorcycle Engine Evolution

Dnepr dropped out of heavy Russian motorcycle production in 1992, after an outstanding program of military and civilian models.
## Ural (Урал) / Днепр (Днепр) Sidecar Motorcycle Engines

<table>
<thead>
<tr>
<th>Ural (Урал) Model</th>
<th>Production</th>
<th>Engine (ccm³)</th>
<th>HP / kW</th>
<th>RPM for Max HP</th>
<th>Compression Ratio</th>
<th>Torque (Nm)</th>
<th>RPM for Torque</th>
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<th>Compression Ratio</th>
<th>Torque (Nm)</th>
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<td>4600</td>
<td>5.5±0.2</td>
<td>39</td>
<td>2800-3500</td>
<td>M-72</td>
</tr>
<tr>
<td>K-750</td>
<td>1959-1964</td>
<td>746 SV</td>
<td>26 / 19</td>
<td>4600-4800</td>
<td>6.0±0.1/-0.3</td>
<td>42</td>
<td>2800-3500</td>
<td>K-750M</td>
</tr>
<tr>
<td>K-750M</td>
<td>1964-1970</td>
<td>746 SV</td>
<td>26 / 19</td>
<td>4600-4800</td>
<td>6.0±0.1/-0.3</td>
<td>42</td>
<td>2800-3500</td>
<td>K-750M</td>
</tr>
<tr>
<td>MB-750</td>
<td>1964-1973</td>
<td>746 SV</td>
<td>26 / 19</td>
<td>4600-4800</td>
<td>6.0±0.1/-0.3</td>
<td>42</td>
<td>2800-3500</td>
<td>K-750M</td>
</tr>
<tr>
<td>MB-750M</td>
<td>1973-1977</td>
<td>746 SV</td>
<td>26 / 19</td>
<td>4600-4800</td>
<td>6.0±0.1/-0.3</td>
<td>42</td>
<td>2800-3500</td>
<td>K-750M</td>
</tr>
<tr>
<td>MT-12 (Днепр-12)</td>
<td>1974-1985</td>
<td>746 SV</td>
<td>26 / 19</td>
<td>4600-4800</td>
<td>6.0±0.1/-0.3</td>
<td>42</td>
<td>2800-3500</td>
<td>K-750M</td>
</tr>
<tr>
<td>K-650/MT-8</td>
<td>1967-1971</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4800-5200</td>
<td>7.0±0.1/-0.2</td>
<td>42</td>
<td>4900-5200</td>
<td>MT801</td>
</tr>
<tr>
<td>K-650/MT-9</td>
<td>1971-1976</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4800-5200</td>
<td>7.0±0.1/-0.2</td>
<td>42</td>
<td>4900-5200</td>
<td>MT801</td>
</tr>
<tr>
<td>MT-10</td>
<td>1975-1984</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4800-5200</td>
<td>7.0±0.1/-0.2</td>
<td>42</td>
<td>4900-5200</td>
<td>MT801</td>
</tr>
<tr>
<td>MB-650</td>
<td>1971-1973</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4800-5200</td>
<td>7.0±0.1/-0.2</td>
<td>42</td>
<td>4900-5200</td>
<td>MT801</td>
</tr>
<tr>
<td>MT-10.36</td>
<td>1984-1988</td>
<td>649 OHV</td>
<td>36 / 27</td>
<td>5300-5800</td>
<td>7.5</td>
<td>47</td>
<td>4800-5300</td>
<td>MT10-36</td>
</tr>
<tr>
<td>MT-11 (Днепр-11)</td>
<td>1985-1995</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4500-5300</td>
<td>7.0</td>
<td>50</td>
<td>4000-4500</td>
<td>MT10-32</td>
</tr>
<tr>
<td>MT-16 (Днепр-16)</td>
<td>1985-1995</td>
<td>649 OHV</td>
<td>32 / 24</td>
<td>4500-5300</td>
<td>7.0</td>
<td>50</td>
<td>4000-4500</td>
<td>MT10-32</td>
</tr>
</tbody>
</table>
Differing Electrical Schematics on the Same Model

• Within the Same Model (such as within a M-72 or within a MT-12), There Can Be Several Different Schematics for the Same Model (Early/Later), depending on:
  – Ignition System on Dnepr K-750 or on MT-12, Ural M-62 or on M-63
    • Manual Spark Advance on Early Version: PM-05/PM-11
    • Automatic Spark Advance on Later Versions: PM-302
  – Alternator Upgrade on a Ural “650” or “750” Series
    • Hitachi 18-Amp (‘98)
    • Russian Hand-Grenade (14.3771) 35-Amp (’98-1/2)
    • Nippon Denso 55-Amp (’04)
  – Voltage Regulator
    • Mechanical-to-Later Mechanical on Dnepr MT-12, MT-16 or on Ural M-62
      – PP-31/PP-31A (’50/’56)
      – PP-302/PP-302A (’63)
    • Mechanical-to-Solid-State on Dnepr MB-750M, MT-11, MT-16 or on Ural MT-63, 8.103 “650” Series
      – PP-330 (’63) Mechanical
      – 33.3702 (’92) Solid-State
  – Brake Lights
    • No Brake Lights on Early Russian Bikes
      - Original M-72’s and early K-750’s
    • Rear Foot-Pedal Brake-Switch
      - Started in Late 1950’s with M-72M’s and later K-750’s
  – Directional Turn Signals
    • Early M-61, M-62: No Directional Signals
    • Later M-61, M-62: Directional Signals and PC419 Flasher Unit
  – Ignition Coil Upgrade
    • Improved Model on a Ural M-72: From KM-01 to B2B (B2Б)
### IMZ (ИМЗ) - Ural (Урал) Model/Year vs. Electrical System

<table>
<thead>
<tr>
<th>Model</th>
<th>Year</th>
<th>Engine Size</th>
<th>Voltage</th>
<th>Generator/Alternative</th>
<th>Regulator</th>
<th>Ignition Coil</th>
<th>Breaker/Distributor</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>1941-56</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>1956-60</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>
<tr>
<td>M-72K</td>
<td>1954-60</td>
<td>750cc</td>
<td>6-Volt</td>
<td><em>Magneto</em></td>
<td>None</td>
<td></td>
<td>PM-05</td>
<td>None</td>
</tr>
<tr>
<td>M-61</td>
<td>1957-63</td>
<td>650cc</td>
<td>6-Volt</td>
<td>G-11A (1952)</td>
<td>PP-30, PP-31A (1956)</td>
<td>B11, 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. G-424 alternator (150 Watts) has external relay/regulator (PP-302 or PP-330). 14.3771 and Nippon Denso alternators have internal regulators.
**Model (KМЗ) - Dnепr (Днепр) Model/Year vs. Electrical System**

<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>1949-56</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>1956-59</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>
<tr>
<td></td>
<td>1963-64</td>
<td></td>
<td></td>
<td>G-414 (1957)</td>
<td>PP-302 (1963)</td>
<td>B2B (1963), B201</td>
<td>PM-05</td>
<td>3MT-12 or -14</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.

---

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<table>
<thead>
<tr>
<th>Generator/Alternator</th>
<th>Type</th>
<th>Vintage</th>
<th>Nominal Voltage</th>
<th>Current</th>
<th>Nominal Power</th>
<th>Motorcycles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Г-11 (G-11) (P/N: 72181)</td>
<td>DC Generator</td>
<td>1941-1951</td>
<td>6-Volt (7-Volt)</td>
<td>7-Amp</td>
<td>45-Watts</td>
<td>Ural(IMZ): M-72</td>
</tr>
<tr>
<td>Г-11А (G-11A) (P/N: 72181-A)</td>
<td>DC Generator</td>
<td>1952-1957</td>
<td>6-Volt (7-Volt)</td>
<td>7-Amp</td>
<td>45-Watts</td>
<td>Dnepr (KMZ): M-72, M-72M, M-61</td>
</tr>
</tbody>
</table>

**Notes:**
1. Nomenclature: The Cyrillic letter “Г” transliterates (Russian-to-Latin) to “G” or “L” or “T.” Thus we see Г-414 or G-414 or L-414 or T-414, all for the same part.
2. Cannot use Г-424 Alternator with discharged battery or without battery.
3. MB-750 = MW-750, MB-750M = MB-750M
4. The frame (case) of the Г-11/Г-11А generator is positive (positive-ground).
5. Г-414 Generator: P/N: 750181 6-Volt (negative ground), whereas P/N: 750181-A (positive-ground) for fitting Г-11А’s into early K-750’s.
Alternators have progressed in output voltage and power, from the Г-11 (G-11) generator of 6-Volts/45-Watts in 1941, the Г-11A in 1952, the Г-414 of 6-Volts/65-Watt in 1957, the Г-424 of 12-Volts/150-Watts in 1974, the 14.3771 of 12-Volts/500-Watts in 1998.5, to the present-day Nippon-Denso alternator of 12-Volts/770-Watts.
Recent Ural Starter/Generator/Alternator Time-line

- **Engine Size**
  - 650 cc
  - 750 cc Engine

- **Start Relays (RY-115)**
  - One Relay
  - Two Relays

- **Ignition Type**
  - Type I
  - Type II
  - Type III Ignition
  - Type IV (Type IV with electronics moved into airstream)
  - Type V

- **Voltage Regulator**
  - 33.3720200 Solid-State
  - Regulator Internal to Alternator

- **Gen/Alt**
  - Kick-Start Only
  - 14 Amp Russian Γ-424 Alternator (150 W)
  - Electric-Start (E-Start) Option & Retrofit introduced by CSMI
  - Factory Electric-Start (E-Start) Offered (Starter/Alternator at Timing Gear)

- **Year**
  - 1994
  - 1995
  - 1996
  - 1997
  - 1998
  - 1999
  - 2000
  - 2001
  - 2002
  - 2003
  - 2004
  - 2005
  - 2006
  - 2007

- **Voltage Regulator**
  - Internal to Alternator

- **Wattage = 14 Volts X Amps**
  - Roughly

- **Alternator**
  - 18 Amp Hitachi Starter/Generator (300 W)
  - 35 Amp Russian Alternator: 14.3771 (Hand Grenade) (500 W, black-plastic rear cap)
  - 55 Amp Nippon Denso Alternator (770 W, metal rear cap)

- **New Transmission Case**
  - (Flywheel Starter Added, New Wiring Harness) (IMZ-8.1037-18016-12)

- **New Engine Design**
  - (Alternator on top / Flywheel Starter placed on bottom)

- **1994**
  - Ural imported to U.S. by CSMI (Classic Motorcycles and Sidecars, Inc.)
Russian Ignition Systems

• Breaker/Distributors
  – Contact Systems
    • PM-05: Manual Spark Advance / Retard
    • PM-11/PM-302 Breakers: Automatic Spark Advance
  – Contact-Less (Electronic) Systems
    • Type I - to - Type V Ignition Systems
    • Ducati Ignition System
    • Power Arc Ignition System

– Ignition Coils Associated with Breaker / Distributor Systems
  • KM-01 Coil ➔ PM-05 Breaker / Distributor
  • IG-4048 Coil ➔ PM-05 Breaker / Distributor
  • B11 Coil ➔ PM-05 Breaker / Distributor
  • B2B (B2Б) Coil ➔ PM-05 Breaker / Distributor
  • B201 Coil ➔ PM-11 or PM-302 Breaker
  • B204 Coil ➔ PM-302/302A Breaker

– Setting the Timing
  • Static Timing
  • Dynamic (Timing Light) Timing

Within each ignition system, each breaker/distributor is associated (paired) with a distinctive, corresponding ignition coil.
6-Volt Electrical Systems

Motorcycle

Ural: M-72, M-72M, M-61
Dnepr: M-72, M-72N

Generator

Г-11/11А: 45 W
(1941/1952)

Ural: M-62, M-63, M-66
Dnepr: K-750, K-750M, MB-750,
MB-750M, K-650,
MT-9, MT-12

Regulator

PP-1 (1941)

Ignition Coil

IG-4085B (1950)
and B11

Breaker/Distributor

PM-05 (1954)
(with manual
spark advance)

PM-11A
or
PM-301/PM-302/PM-302A
(with automatic spark
advance)

B201/B201A

PP-302/302A
(1963/197X)

PP-30

PP-31/PP-31A
(1950/1956)

KIM-01

Г-414: 65 W
(1957)
12-Volt Electrical Systems

Motorcycle

- Ural: M-67, M-67.36, IMZ 8.103 Series
- Dnepr: None
- Ural: IMZ 8.103 Series (2004-present)
- Dnepr: None

Alternator


Regulator

- (Relay-Regulator)
- 33.3702 (1992)
- Internal to Alternator (JYA212A11E)

Breaker - Ignition Coil

- Type I
- Type III
- Type IV
- Type V
- Raceway Services
  - Power Arc

Contact-less

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## IMZ (ИМЗ) - Ural (Урал) Headlight Cavity

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Headlight Asmby (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, ΦГ-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, ΦГ-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, ΦГ-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, ΦГ-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, ΦГ-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, ΦГ-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 ΦГ-137</td>
<td>6217004, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>ВК-857</td>
<td>-</td>
</tr>
<tr>
<td>M-67.36</td>
<td>12-Volt</td>
<td>8.101-18004-10 ΦГ-137</td>
<td>6217004, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>ВК-857</td>
<td>-</td>
</tr>
<tr>
<td>8.103 and 8.107 Series “650”</td>
<td>12-Volt</td>
<td>8.101-18004-10 ΦГ-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>ΦГ137-3711010-02</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>ΦГ137-3711010-02</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>Model</td>
<td>Voltage</td>
<td>Headlight Cavity (Фара)</td>
<td>Speedometer</td>
<td>Headlight</td>
<td>Parking Light</td>
<td>Switch Key</td>
<td>Cavity Fuse</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
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<td>-------------</td>
<td>----------------</td>
<td>---------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<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, A6-2</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, A6-2</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-А, СП-8Б</td>
<td>85017-Б, А6-32+32</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>K-750М</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, A6-2</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, A6-2</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-6А</td>
<td>850174, СП-8Б</td>
<td>65018901</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>MB-750М</td>
<td>6-Volt</td>
<td>650184-Б, ФГ-6А</td>
<td>850174, СП-8Б</td>
<td>65018901</td>
<td>72177-Б, A6-2</td>
<td>7218478-A</td>
<td>Мр-20, 15-A</td>
</tr>
<tr>
<td>K-650/MT-8</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, A6-2</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>80210, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</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>80210, СП-102</td>
<td>A12-45+40, A12-50+40</td>
<td>A12-4, A12-1.5</td>
<td>7218478-A or BK-857</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>80210, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>7218478-A or BK-857</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>80210, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</td>
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<tr>
<td>MT-16 (Dnepr-16)</td>
<td>12-Volt</td>
<td>3711010-Б1, ФГ-137Б</td>
<td>3802010, СП-102</td>
<td>80210, СП-102</td>
<td>A12-45+40</td>
<td>A12-4</td>
<td>141.3704</td>
</tr>
</tbody>
</table>

Notes:
1. MT-12 is civilian version of the MB-750
KMZ’s (Dnepr factory) first production 2WD was the MB-750 (1964), with a rear drive modeled on the WW-II BMW R75. The first production Ural 2WD post-war was the short-lived Sportsman in the mid-1990's, to be followed by the non-diff Patrol and Gear-Up.
## Ural (Урал) / Днепр (Днепр) Drive Train and Rear Suspension

<table>
<thead>
<tr>
<th>Ural (Урал) Model</th>
<th>Production</th>
<th>Engine</th>
<th>Type</th>
<th>Drive Train</th>
<th>Rear Suspension</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>1941-1956</td>
<td>750cc SV</td>
<td>M72</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
</tr>
<tr>
<td>M-72K</td>
<td>1954-1960</td>
<td>750cc SV</td>
<td>M72</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
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<tr>
<td>M-72M</td>
<td>1956-1960</td>
<td>750cc SV</td>
<td>M72</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
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<tr>
<td>M-61</td>
<td>1957-1961</td>
<td>650cc OHV</td>
<td>Ural 650</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
</tr>
<tr>
<td>M-62 (Ural-1)</td>
<td>1961-1965</td>
<td>650cc OHV</td>
<td>Ural 650</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
</tr>
<tr>
<td>M-63 (Ural-2)</td>
<td>1965-1980</td>
<td>650cc OHV</td>
<td>Ural 650</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>M-66 (Ural-3)</td>
<td>1968-1975</td>
<td>650cc OHV</td>
<td>Ural 650</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>M-67 (8.101)</td>
<td>1972-1977</td>
<td>650cc OHV</td>
<td>Ural 650</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>M-67.36</td>
<td>1973-1984</td>
<td>650cc OHV</td>
<td>M67-36</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>“750” Series</td>
<td>2003-Present</td>
<td>750cc OHV</td>
<td>Ural 750</td>
<td>Full-Time 1WD with Engageable 2WD (No Diff)</td>
<td>Swing Arm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dнепр (Днепр) Model</th>
<th>Production</th>
<th>Engine</th>
<th>Type</th>
<th>Drive Chain</th>
<th>Rear Suspension</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-72</td>
<td>1949-1956</td>
<td>750cc SV</td>
<td>M72</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
</tr>
<tr>
<td>M-72N (H)</td>
<td>1956-1959</td>
<td>750cc SV</td>
<td>M72</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Plunger</td>
</tr>
<tr>
<td>K-750</td>
<td>1959-1964</td>
<td>750cc SV</td>
<td>K-750M</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>K-750M</td>
<td>1964-1970</td>
<td>750cc SV</td>
<td>K-750M</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MT-12 (Dnepr-12)</td>
<td>1974-1985</td>
<td>750cc SV</td>
<td>K-750M</td>
<td>Full-Time 2WD with Non-Locking Differential</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MB-750</td>
<td>1964-1973</td>
<td>750cc SV</td>
<td>K-750M</td>
<td>Full-Time 2WD with Locking (Engageable) Diff</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MB-750M</td>
<td>1973-1977</td>
<td>750cc SV</td>
<td>K-750M</td>
<td>Full-Time 2WD with Locking (Engageable) Diff</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>K-650/MT-8</td>
<td>1967-1971</td>
<td>650cc OHV</td>
<td>MT801</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>K-650/MT-9</td>
<td>1971-1976</td>
<td>650cc OHV</td>
<td>MT801</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MB-650</td>
<td>1971-1973</td>
<td>650cc OHV</td>
<td>MT801</td>
<td>Full-Time 2WD with Non-Locking Differential</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MB-650M</td>
<td>1973-1984</td>
<td>650cc OHV</td>
<td>MT801</td>
<td>Full-Time 2WD with Non-Locking Differential</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MT-10</td>
<td>1975-1984</td>
<td>650cc OHV</td>
<td>MT801</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MT-10.36</td>
<td>1984-1988</td>
<td>650cc OHV</td>
<td>MT-10-36</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MT-11 (Dnepr-11)</td>
<td>1985-1995</td>
<td>650cc OHV</td>
<td>MT-10-32</td>
<td>Full-Time, Straight Final Drive (1WD)</td>
<td>Swing Arm</td>
</tr>
<tr>
<td>MT-16 (Dnepr-16)</td>
<td>1985-1995</td>
<td>650cc OHV</td>
<td>MT-10-36</td>
<td>Full-Time 2WD with Non-Locking Differential</td>
<td>Swing Arm</td>
</tr>
</tbody>
</table>
The only changes to the R71 were a 22 liter fuel tank (instead of the original 14 liter), grab rails and a Wehrmacht (German Army) sidecar.
IMZ / Ural M-72: 1941-1956

Part IB will highlight M-72 differences.
The M-72 is based on the German BMW R-71 (left) and was upgraded to the M-72M in 1956.
IMZ / Ural M-72M: 1956-1960

- Previous Model: M-72
- Most Plentiful M-72's Built
- "M" Models Were Civilian Variants, Not Military
- Improvements:
  - Engine
    - Replaced Front Bearing Camshaft (Ball Bearings Instead of Sleeves)
    - Camshaft Replaced
  - Strengthened Frame
  - Transmission Gearbox: Main Gear Reducer Changed
  - Wheels
    - Stamped "Lacy" Crown on Brake Drum to More Securely Hold the Spokes
    - Aluminum Wheel Hubs
  - High-Mount Front Fender
    - Raised and Attached to Sprung Part of Front Fork to Avoid Wheel-Lock from Sticky Mud
    - Rear Fender Support Loop from Bottom of the Plunger
  - New Sidecar
    - Replaced by M-61
The military M-72M retained the M-72 gas tank. Notice the bottle-cap spokes.
IMZ / Ural M-61: 1957-1963

- Previous Model: M-72M
- Transitional Model with Suspension of M-72 and New Engine (650 cm³)
- Increased Stroke of Front Fork and Rear Suspension
  - Modern Telescopic Forks
  - Taller Rear Plunger
- Handlebar Lever: Changed from BMW-Style
- KMZ/Dnepr K-750 Style Knee Pads with Concentric Ovals
- Replaced by M-62
The M-61 was almost unchanged from the earlier flathead/sidevalve M-72M, except for a 650cc overhead valve boxer OHV engine.

- **Previous Model:** M-61
- **Basically an:** M-61
- **Increased Engine Power (650cc) by 2 Hp**
- **Main Differences:**
  - Redesigned Frame and Modified Rear Plungers
  - Front Fenders: Full-Length Side Plates
  - Rubber Cushion Blocks under Seats Replace Earlier Springs
  - Rear Saddle Assembly Mounted Directly onto Fender
  - New Gearbox
  - Upgraded Ignition System
    - Introduced Automatic Ignition Timing
  - Increased Suspension Travel
  - Changed Cam Profile Camshaft to Reduce Wear
- **Maximum Speed:** 95 km/h
- **Replaced by:** M-63

Ural re-designed the frame and modified the rear plungers from the M-61.

- Previous Model: M-62
- Main Differences:
  - First Ural to Use a Rear Swing-Arm Suspension
    - Rear Wheel Swing-Arm Suspension with Hydraulic Shock Absorbers
    - Unlike KMZ/Dnepr Motorcycles, Swing-Arm on Outside of Frame
    - Shortened Front Fenders and Added Side Plates
    - Increased Volume Fuel Tank from 19 liters to 20 liters
    - New Exhaust System: More Environmentally-Friendly
      - Significantly Increased Clearance
    - Various Cosmetic Changes Including Rubber Tank Band and Mud Flaps
- Maximum Speed: 95 km/h
- Replaced by M-66
The M-63 includes cosmetic changes, including the rubber tank-band.

• Replaced M-63
• First Ural to Use Paper Oil Filter Cartridge, Otherwise Almost Exact Copy from M-63
• Only External Changes: Motorcycle-Mounted Directional Signals
• Significant Internal Changes:
  – Engine Power Increased to 32 hp
  – Increased Durability of Engine
  • Full-Flow Oil Filter
  • New Design of Crankshaft
  – Sidecar Affixed with Rubber Springs and Cushions Instead of Previous Leaf Springs
  – Telescopic Fork and Pendulum Rear Suspension
• Maximum Speed: 95 km/h
• Replaced by M-67
The M-66 continued the banded fuel tank.

- Replaced M-66
- Main Difference: Transition to 12-Volt Electric Equipment
- Redesigned Headlamp/Ignition Switch with Separate Speedometer
- High Reliability: Able to Serve More than 40 thousand km
- More Serviceable: Changes Made and Shifted Strut Mounts
- Interchangeability of Parts with Dnepr MT-10
- Engine Remained Unchanged from M-67 (645cc)
- Redesigned Motorcycle Frame
- Exhaust System: 2-into-1 Exhaust
- Maximum Speed: 105 km/h
- Replaced by Model M-67.36
Ural’s M-67 was developed from the M-66, and was imported into the UK in relatively large numbers.

• Replaced M-67
• Most popular model of motorcycle "Ural". 
• Produced in Two Versions;
  – Two Wheel Drive (2WD) for Rugged Places 
  – Also Produced Without 2WD
• Late M-67 (as Well as Ural 8-103.10)
  – Increased Engine Power from 32 Hp (23.5 kW) to 36 Hp (26.5 kW)
  – Changed Cylinder Head 
  – Changed Diameter of Valve and Rocker Arm 
  – Changed Carburetors 
    • Use K-301G Larger Diameter Diffuser 
• Addition of Reverse Gear in Gearbox
• Maximum Speed: 105 km/h
• Replaced by IMZ-8.103-30

In 1976, the engine was increased from 32 to 36 hp, and the motorcycle was named the Ural M-67.36.
In 1976, the engine was increased from 32 to 36 hp, and the motorcycle was named the Ural M-67.36.
The IMZ-8.XXX (800 series) served as Ural’s basic machine, carried on into the modern 650 solo and sidecar models with various cosmetic and design options.

• Previous Model: M-67.36
• Improvements from Previous Model
  – Improved Rear Suspension
  – Exhaust System with One Muffler (Silencer)
• Engine Power: 32 Hp
• Maximum Speed: 105 km/h
• Replaced by IMZ-8.103-10

Single Exhaust Muffler System

- Previous Model: IMZ-8.103-30
- Transmission with Reverse
- Telescopic Front Fork
- Next Model: IMZ-8.103-40 “Tourist”
IMZ / Ural IMZ-8.103-40 “Tourist” (650cc)

• Previous Model: IMZ-8.103-10
• First Experimental-Industrial Batch, Released in 1990
• Designed to Travel on Bad Roads, with Increased Load
• Main Difference Noticeable at First Glance: Leading Link Front Fork
The IMZ-8.XXX serves as Ural’s basic machine for the 21st century, with the 750 cc engine.
The first production Ural 2WD was the short-lived Sportsman in the mid-1990's, followed by the non-diff Patrol and Gear-Up, available today with a 750cc engine.
Ural “Limited Edition” Sidecars with Full-Time 1WD and Engageable 2WD

Modern Urals employ an engageable, non-differential, only for off-road driving.
In 1949 the GMZ plant at Gorkiy (Nizhniy Novogorod) was transferred to the KMZ factory in Kiev to manufacture the M-72 for the Soviet Armed forces. The KMZ / Dnepr M-72 was virtually identical to the IMZ / Ural M-72.
KMZ / Dnepr M-72N (M-72H): 1956-1959

- Previous Model: M-72
- Short Leading Link Front Fork
- Improvements to Engine
  - Front Bearing Camshaft (Use of Ball Bearings Instead of Sleeves)
  - Changed Shape of Cylinder Head ribs and Increased Compression Ratio
- Improvements to Chassis
  - Strengthened Frame
  - Changed Transmission Gearbox
  - Reinforced wheel
    - Coke-Bottle for More Reliable Fastening of Spokes
    - Raised Front Fender and Attached to Sprung Part of Front Fork to Avoid Wheel Lock from Sticky Mud
- New Sidecar with Spring (not torsion) Suspension, Wheels and Hydraulic Shock Absorber
- Replaced by K-750

In 1956 the M-72 was given a minor redesign and issued as the M-72N.
KMZ / Dnepr M-72N (M-72H): 1956-1959

“H” is the transliteration of the Russian “N”

The M-72N also retained the same 7210171-Б fuel tank.

- Previous Model: M-72
- Short-Throw, Leading-Link Front Fork
  - Only Used for First Couple of Years before Change to Modern Telescopics
- Full-Width Aluminum Hubs Used to the End of the KMZ Line
- Engine Equipped with New Cylinder Heads
  - Changed Shape of Ribs and Increased Compression Ratio
- Brake Cable Enters Top of Hub on K-750's vs. thru the Bottom (where it could be damaged by bottoming out) on M-72H's
- Upgraded suspension
  - Replaced Plunger Framed M72-N with Swing-Arm Framed K-750
  - Rear Swing-Arm on Inside of Frame, Unlike Later Ural Swing-Arm Located on Outside
  - Better Cope with Roads and Terrain Throughout the USSR
- Improved Engine Cooling System

Leading-link front fork is the equivalent of power steering for a sidecar.

Cylinder Head Evolution

| M-72 | K-750 | K-750M |
K-750 motorcycle was developed from the M-72N as a more comfortable, powerful and reliable ride.
The K-750 was the 1960's replacement of the M-72, as the primary Soviet military motorcycle.
KMZ / Dnepr K-750M: 1965-1977

• Most Plentiful of the K-750's
• Changed to Modern Telescopic Forks
• Conventional Clutch/Brake Handlebar Levers
• Solid Rear Fender
• Frame Extended to Accommodate Dneprmatic Gearbox on the 2WD MB-750's
  – No K-750 Left the KMZ Factory with This Gearbox Installed, But Many Soviet Bikes Were Later Retro-Fitted with Either Early Version (with Air Filter Mount Cast into Gearbox), or Later Version (with Plastic Canister Mount)
• Next Model:

The front fork arm was replaced by a telescopic fork with a large travel and a double shock absorber
The K-750M was built for the military, with the 7210171-Б fuel tank.
In 1964 KMZ introduced a military model, the MB-750 with a differential two-wheel drive (2WD) to the sidecar wheel.
Notice the BMW-type brake / clutch levers, present on early K-750s.

• Rarity
• Military Version of Civilian MT-12
• Side-Valve (SV) Engine
• Early 2WD MB-750M's Built on Older Style Frames with Toolbox Fuel Tanks
• Full-Time 2WD (note the lack of a lever), Locking Differential

Notice the non-aerodynamic fuel tank, similar to the MT-12.
The MB-650 was built for the military with a non-aerodynamic fuel tank.
The MB-650 was modified for civilian use and became the MB-650M, and later the MB-650M1 and the MB-650M2.

- Used Dnepr 11 (MT10.32) Engine
- MB-650M2 Used MT10.36 Engine
- Military Version of the MT-16
- 2WD but with Differential Lock
- Next Model: KMZ Factory Closed
• Typically Referred Only as K-650
• Basically a K-750 with New 650cc OHV engine
  – Overhead Valves, Crank, Lubrication System
  – Unlike Earlier SV Engines with Roller Bearing Crankshafts, Engine Used Sleeve Bearing Crankshaft
  – Aluminum Cylinders with Cast Iron Liners
• Due to Changes, Motorcycle Was Labeled MT-8
• Replaced by MT-9 (K-650/ MT-9)

In 1967, celebrating the 50th Anniversary of the October Socialist Revolution, KMZ released their first OHV engine in the Dnepr K-650.
The K-650 / MT-8 used Dnepr’s first overhead valve (OHV) engine.

- Previous Model K-650/ MT-8
- Very Little Difference Between K-650 and MT-9
- Improved Transmission:
  - 4-speed Gearbox with Reverse
  - Automatic Declutching Mechanism Incorporated into Driver’s Foot Pedal
- Added Direction Indicators and High Luminous Efficiency Lights
- Front Fender Has No Side Panels
- Max Speed: 100 km/h
- Replaced by MT-10
There was very little difference between the K-650 (MT-8) and the MT-9, except the MT-9 usually had a 4-speed "Dneprglide" with automatic declutching and reverse gearbox.
KMZ / Dnepr MT-10: 1975-1984

- Previous Model: MT-9
- First Soviet Motorcycle to Feature 12-Volt Electrics
- Solid Padded Seat
- New, Increased-Size of “Squat” Fuel Tank with Capacity from 19 liters to 21 liters
- MT801 Engine
  - Increase of Compression Increased Power to 36 Hp
- Max Speed: 105 km/h
- Replaced by Early Release of Model MT-10.36
Dnepr’s MT-10 also used the “squat” fuel tank.

- Modification of Model MT-10
- Increased Compression Ratio (7.5) and New Carburetor (K-301D)
  - Increased Power to 36 Hp
- Maximum Speed: 105 km/h
- Replaced by MT-11
Dnepr’s MT-10.36 continued the “squat” fuel tank.
KMZ / Dnepr MT-12: 1974-1985

• Previous Model: K-750
• First Dnepr to Be Called "Dnepr"
• Frame Structure and Appearance of the MT-10
• Developed from the K-750 with Same Telescopic Forks as 650cc Ural and Dnepr Models, with Swing-Arm Rear Suspension
• 2WD Model Built on Newer Frame with Older Side-Valve (SV) Engine.
  – K-750M Engine, Old Side-Vale (SV) Design
  – Sidecar Wheel Drive thru Split Torque Differential
  • Based on WW-II BMW R75 System
  – Civilian Model with Non-Diff (Differential) Lock
  – Military Version Was the MB-750 with Diff (Differential) Lock

The MT-12, the first to be called a “Dnepr”, was developed from the K-750.
Dnepr MT-12 (ДНЕПР-12)
The MT-12 was the civilian model and the military version was the MB-750.
KMZ / Dnepr MT-11: 1985-1995

- Previous Model: MT-10.36
- Designation for MT-11: CMH-8.155
- MT10-32 Engine (650cc): 32 Hp, Modernized, Increased Power at Low Revs
- Most Popular Model from Kiev Factory
- Probably the Only Civilian-Use Model
- Brake on Sidecar Wheel
- Improved Oil Pump and Camshaft
- Upgraded Components: Carburetors, Pistons, Piston Rings, Sidecar, Air Filter with Paper Filter Element, Silencers (Mufflers)
- MT-11 is 1WD, MT-16 is 2WD (Driven Sidecar Wheel), Otherwise Identical
  - MT-11 Sidecar Wheel Has More Lead, as Sidecar Frames Are Different
- Next Model: KMZ Factory Closed

The MT10-32 engine was used in Dnepr’s MT-11 and MT-16.
The MT-11 was the successor of the MT-10.36, with the same squarish fuel tank.
KMZ / Dnepr MT-16: 1986-1995

- Previous Model: MT-10.36
- Designation for MT-16: CMH-8.922
- MT10-32 or MT10-36 Engine (650cc)
- Redesigned with Sidecar, Tachometer and 18” Wheels
- Next Model: KMZ Factory Closed

Dnepr’s MT-16 also had the same squarish fuel tank.
**KMZ / Dnepr MT-16: 1986-1995**

Dnepr’s MT-16 2WD (two-wheel drive).