Russian Police Motorcycles
Part VI: Sirens

(see also Parts I – VII)

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Types of Police Sirens

- Siren First Appeared in the USSR on the Ural M-100 Police Prototype
  - Siren Originally Released in a Failed Format
    - Originally Connected to Rear Wheel and operated from the tread
      - When Motorcycle Was Moving - Siren Worked
      - When Standing Still - Fell Silent
      - Often Failed Because of Clogged Dirt and Resulted in Constant Beeping
  - Later Decided to Place under Right Cylinder and Connect to Flywheel
    - Sound Excited from Flywheel Drive
    - Included Manual Drive Lever on Left Side of Steering Column, below Clutch Lever
    - Later Used a Pedal at the Right Steps
- Mechanical Siren (Original)
  - Powered by Shaft Which Runs Off the Flywheel, Not the Gear-Box
    - Cable-Operated Mechanism Pulls Siren onto the Flywheel and Spins It
  - Spring-Loaded to Retain Tension
    - Foot Pedal on Right Side to Activate Siren Release Foot and Siren Comes Off the Flywheel and Stops Screaming
- Electro-Mechanical or Motor Siren (Later Development)
  - Powered by Newer, Higher-Capacity 12-Volt Electrical Systems (Г-424 & Later)
  - No Need to Provide "Hole" in Engine to Power Rotating Shaft
- Electronic Siren (Modern)
  - Transistorized for Maximum Efficiency
  - Uses Dual-Function Speaker (P.A. / Siren)
- Check with Local Rules as to Motorcycle Horns When Getting Any Inspection Sticker, as You May Be Refused if the Inspector Says It Is Not Correct for a Motorcycle

The siren first appeared in the USSR on the Ural M-100 prototype model. (see part II)

Mechanical Siren

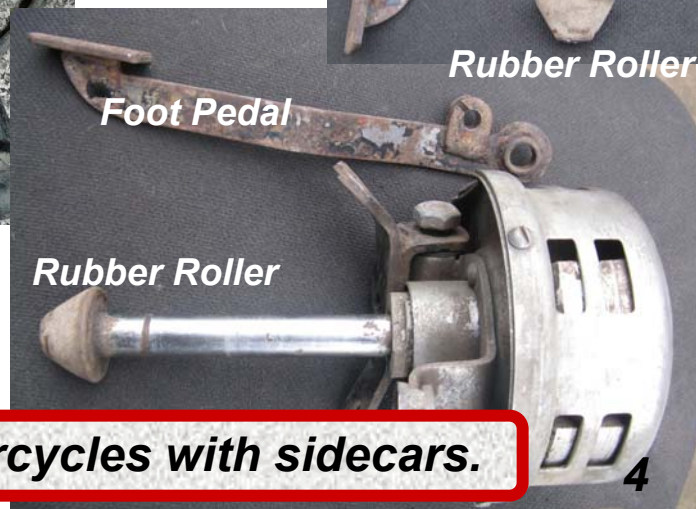
- Mechanical Siren Is a Fairly Simple Device
  - Consists of a Shaft which Turns a Fan called the “Rotor" or “Impeller“
  - Sound Generated by a Motor Driving a Shaft with Rotor or Impeller on One or Both Ends
- Around This Spinning Fan Is a Stationary Metal Drum Called the “Stator“ with Holes Cut on the Sides in Two Distinct Alternating Rows
  - Spinning Inside a Slotted Drum Rotor Is Segmented by Vanes that Periodically Cover and Uncover Holes in the Stator
- First Job of Rotor Is to Act as a Centrifugal Fan
  - Pulls Air into Siren Axially thru the Intake
  - Blows it out Radially thru the Holes in the Stator
- Second Job Is to Chop Incoming Air Stream into Impulsive Bursts
  - Each Time Rotor and Stator Holes Align, a Burst of Air Is Forced Thru
  - Frequency of These Bursts Is the Pitch of the Siren
  - Siren's Pitch Is a Function of Rotor Speed and Number of Holes in the Stator

Early police motorcycles used a siren powered off the engine.

Early Ural Police Mechanical Sirens

- *Ural “Police" Version Motorcycle*
- *Friction-Drive Rubber Roller Pressed to Flywheel thru Slot in Clutch Housing*
- *Separate Foot and Mount with Spring and Cable*
- *No Electrics or Electronics!*

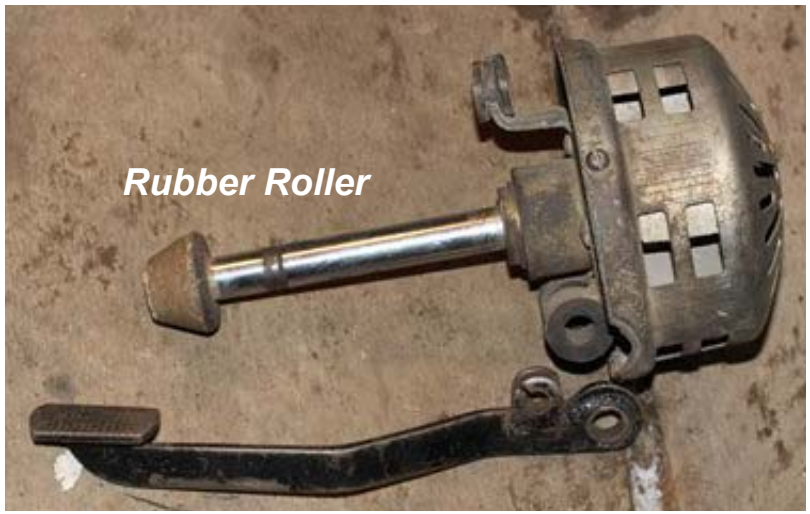
Spring-Loaded Activator



The first sirens appeared on Ural motorcycles with sidecars.

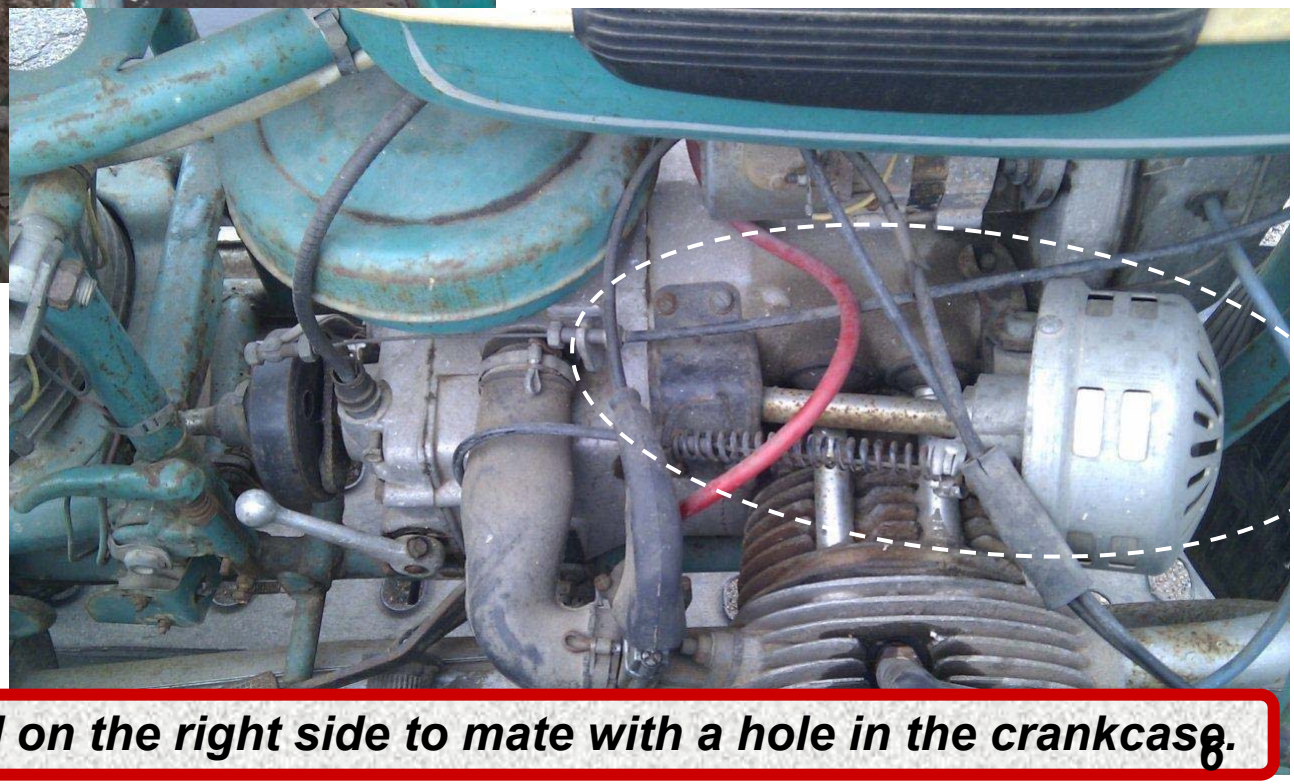
Ural Police Mechanical Sirens (cont.)

Police Siren
List Price: 2,500 rubles
(autobuy.ru)



The siren has a swivel mount to allow compression engagement of the rubber roller onto the clutch plate.

Mechanical Siren Installation



The siren was mounted on the right side to mate with a hole in the crankcase.

The Electro-Mechanical Siren or Motor-Siren

- An Electro-Mechanical Siren Is a Fairly Simple Device
  - Consists of an Electric Motor which Turns a Fan called the “Rotor" or “Impeller“
  - Sound Generated by a Motor Driving a Shaft with Rotor or Impeller on One or Both Ends
- Around This Spinning Fan Is a Stationary Metal Drum Called the “Stator“ with Holes Cut on the Sides in Two Distinct Alternating Rows
  - Spinning Inside a Slotted Drum Rotor Is Segmented by Vanes that Periodically Cover and Uncover Holes in the Stator
- First Job of Rotor Is to Act as a Centrifugal Fan
  - Pulls Air into Siren Axially thru the Intake
  - Blows it out Radially thru Holes in the Stator
- Second Job Is to Chop Incoming Air Stream into Impulsive Bursts
  - Each Time Rotor and Stator Holes Align, a Burst of Air Is Forced thru
  - Frequency of These Bursts Is the Pitch of the Siren
- At the Top of the Siren Is a Large Cone
  - Movement of the Fan Starts Sucking Air in thru Air Intake Cone
  - Air Enters the Drum with the Fan, Then Expelled Out the Sides thru Small Holes in the Drum
  - Blades Draw Air In at the End and Force It Out thru the Slots in the Housing in Rapid Pulses, as the Plates on the Blade Ends Interrupts that Flow to Produce the Sound
- Alternating Tones Come from Alternating Rows of Holes on the Drum
  - Stator with Holes Cut Out on the Sides in Two Distinct Alternating Rows
  - Only One Fan for Single-Toned Siren
  - Dual-Toned Siren Has Either One Fan on Each End or Two Fans in a Stack on One End, with One Fan Having a Few More Blades than the Other

Once the generator was converted to the Г-424 alternator, there was enough power to supply the extra lights and siren.

Electro-Mechanical Siren: Le 1992 Dnepr de Mimo

(dnepr.ural.free.fr)

Ural's IMZ-8.903 Patrol was a very popular motorcycle with the police.

Vociferous Sirens (www.ural-zentrale.de)

- Sounds Like an American Police Siren
- Iron Cover with 7.5 cm Diameter
- Voltage: 6-Volt or 12-Volt
- Part #: S3414-12 for 12-V Version
- Part #: S3414-6 for 6-V Version
- List Price: €15.50

- Large 12-Volt Siren Big Powerful Siren
- Grey Metal Casing with Bracket
- Length: 15 cm
- List Price: €35
- Part #: S3414-G

The electro-mechanical siren became popular after the introduction of the alternator, which increased the capability of the electrical system.

Motor Sirens from China (Yueqing Leapet Electric Co., Ltd.)

Model	MS-190	MS-290A	MS-290B	MS-390	MS-395	MS-490	MS-590	MS-690	MS-790
Size (LXWXH mm)	82X75X83	160X103X135	160X103X135	215X132X145	234X130X171	145X125X165	283X125X186	300X225X240	330X225X265
Horn Diameter	75 mm	128 mm	128 mm	132 mm	113 mm	115 mm	152 mm	200 mm	250 mm
Loudness	114 dB	116 dB	120 dB	125 dB	125 dB	150 dB	160 dB	170 dB	180 dB
12-V DC Current	6.0-Amp	5.8-Amp	5.8-Amp	12.4-Amp	-	-	-	-	-
24-V DC Current	2.5-Amp	2.1-Amp	2.1-Amp	6.8-Amp	-	-	-	-	-
110-V AC Current	0.9-Amp	1.6-Amp	1.6-Amp	1.5-Amp	1.5-Amp	3.4-Amp	3.6-Amp	4.0-Amp	4.1-Amp
230-V AC Current	0.43-Amp	0.8-Amp	0.8-Amp	1.0-Amp	1.0-Amp	1.6-Amp	1.8-Amp	2.0-Amp	2.2-Amp

AC Models Require a 12Vdc-to-115/230Vac (50/60 Hz Inverter)
24-Volt DC Models Require a 12Volt -to- 24Volt Converter

MS-190 mini Motor Siren

MS-290A Motor Siren

MS-290B Motor Siren

MS-390 Motor Siren

MS-395 Motor Siren

MS-490 Motor Siren

MS-590 Motor Siren

MS-690 Motor Siren

MS-790 Motor Siren

Motorcycle Ural "Solo-Classic DPS“

- *"Solo DPS" Is a Modification of IMZ-8.1239 "Solo“ with an Electronic Siren*
  - *–Additionally Equipped with: Windscreens, Guards, Alarms, Signal Lights and a Siren (сиреной)*

Ural’s IMZ-8.123 Solo DPS was a very popular motorcycle with the police.

Just a Few Examples of Modern Electronic Motorcycle Sirens

ALPHA12S 100-Watt and SA350M 6-1/2" Speaker
List Price: $178.88
Five Tones Available: Wail, Yelp, Piercer or Hi/Low and Air Horn.
Self-Contained 12-Volt Siren.
Control siren tone through horn ring or separate switches.
Requires 100-Watt Speaker
(www.whelen.com)

SA-361 Defender Siren 100-Watt
Control: 3-3/4" x 1/4" x 1 3/4"
Amplifier: 5-1/2" x 1-13/16" x 4-11/16"
Requires 100-Watt Speaker
(www.carson-mfg.com)

SS651 Star Signal Vehicle Products
Remote Undercover Siren
Dimensions: 4.5" L x 4.88" W x 2.5" H
Designed to run one 100 watt Speaker
Amp Box Easily Mounted in the Saddlebags
Wail and Yelp Modes with Air Horn & Phaser Override
List Price: $175
(www.fleetsafety.com)

Federal Signal U750M Motorcycle Siren
100W/200W Capability and Public Address
Manual, Air Horn, Wail, Yelp, Alarm, and "Choice" (Futura, Hi-Lo, Hetro)
List Price: $359.50
(www.lonestarpse.com)

MH-883 Motorcycle_Siren
ABS Housing in Black or Yellow
Voltage: 12-Volt
Current: 250mA
(1/4 Amp)Sound evel SPL: 120 dB
(www.oursbiz.com)

SVP Star SS651MT 100 Watt Remote Motorcycle Siren
Designed to Operate One 100-Watt Speaker
List Price: $134.95
(www.lonestarpse.com)

Today, electronic sirens are less expensive and easier to maintain.