

Russian Turn-Signals and Flasher Relays

(Реле-прерыватель указателей поворотов)



- ***History of Flashers/Blinkers (Turn-Signals) on Russian Motorcycles***
- ***Old, New and Newest Wiring Diagrams***
- ***Where is the Flasher Unit Located?***
- ***How They Work!***
- ***Why Doesn't It Work?***
- ***Electronic Flashers***
- ***Compatibility with LEDs***

(01/2011 eafranke@tampabay.rr.com)

Table I: IMZ (ИМЗ) - Ural (Урал) Model/Year vs. Electrical System (01/11)
(eafranke@tampabay.rr.com)

Model	Year	Engine Size	Voltage	Generator/ Alternator	Regulator	Ignition Coil	Breaker/ Distributor	Battery
M-72	1941-56	750cc	6-Volt	G-11, G-11A (1952)	PP-1, PP-31 (1950),	KM-01, B2B, IG-4085B (1950)	PM-05	3MT-7 or 3MT-14
M-72M	1956-61	750cc	6-Volt	G-11A (1952)	PP-31A	KM-01	PM-05	
M-72K	1954-60	750cc	6-Volt	*Magneto*	None	-	PM-05	None
M-61	1958-60	650cc	6-Volt	G-11A (1952)	PP-30, PP-31A (1956)	B11, KM-01	PM-05	3MT-12
M-62	1960-65	650cc	6-Volt	G-414 (1957)	PP-31	B2B	PM-05	3MT-6 (6A-hrs) or 3MT-12 (12A-hrs)
					PP-302, PP-302A	B201	PM-302	
M-63 (Ural-2)	1965-68	650cc	6-Volt	G-414 (1957)	PP-302 (1963), PP-302A	B2B	PM-11A	
						B201	PM-302	
M-66 (Ural-3)	1968-72	650cc	6-Volt	G-414 (1957)	PP-302 (1963), PP-302A	B201, B201A	PM-302	
M-67	1973-75	650cc	12-Volt	G-424 (1974)	PP-330	B204	PM-302, PM-302A	6MTS-9 (9A-hrs) or 2X 3MT-6 (2X 6A-hrs)
M-67.36	1976-95	650cc	12-Volt	G-424 (1974)	PP-330, 33.3702 (1992)	B204	PM-302, PM-302A	
8.103 and 8.107 Series “650”	1994-98	650cc	12-Volt	G-424 (1974)	PP-330, 33.3702 (1992)	B204	PM-302, PM-302A	6MTS-9 or 6CT-18-36A (18-to-36A-hrs)
						BC3 Contact-less Ignition System Type I (1994), II (1997), III (1998)		
8.103,8.103X, 8.123,8.123X 650 & 750 Series	1999- 2002	750cc	12-Volt	14.3771 (1999)	Internal to Alternator (YA212A11E)	Contact-less Ignition System Type IV (2002)		Varta YB18L
8.103,8.103X, 8.123,8.123X “750”Series	2003- present	750cc	12-Volt	Nippon Denso (2004)	Internal to Alternator	Type V (2004) Ducati (2006), Power Arc		6MTS-18, Interstate FAYTX-20HL

Notes:

1. M-64 (1961) and M-65 (1965) were prototypes.
2. Alternators progress in output voltage and power from Г-11 (G-11) generator of 6-Volts/45-Watts in 1941, Г-11A of 6 V/45 W in 1952, Г-414 6V/65 W in 1957, Г-424 of 12V/150W in 1974, 14.3771 of 12V/500W in 1998.5, to the present-day Nippon-Denso alternator of 12V/770W.
3. M-73 (1976) was an M-72 (750cc) with engageable sidcar 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.
6. 12-Volt ignition coil B2B (manual spark advance) paired with PM-05 distributor, B201/B201A (ignition coil for automatic spark advance) paired with PM-302/PM-302A. B2B and B201 coils for 6-Volts and B204 for 12-Volts.
7. PP-1, PP-30, PP-31 reverse-relay/voltage regulator for generator G-11/-11A systems were replaced with PP-302/-302A voltage regulator for G-414, and finally P-330 for the G-424 alternator.
8. 33.3702 Solid-State Voltage Regulator replaced the PP-330 in 1992.
9. Г-11 and Г-11A have positive lead connected to case (positive-ground).

Table II: KMZ (KM3) - Dnepr (Днепр) Model/Year vs. Electrical System (01/11)
(eafranke@tampabay.rr.com)

<i>Model</i>	<i>Year</i>	<i>Engine Size</i>	<i>Voltage</i>	<i>Generator/ Alternator</i>	<i>Regulator</i>	<i>Ignition Coil</i>	<i>Breaker/ Distributor</i>	<i>Battery</i>
<i>M-72</i>	<i>1952-56</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-11A (1952)</i>	<i>PP-31 (1950)</i>	<i>KM-01</i>	<i>PM-05</i>	<i>3MT-7 or 3MT-14</i>
<i>M-72N (H)</i>	<i>1956-59</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-11A (1952)</i>	<i>PP-31A (1956)</i>	<i>KM-01</i>	<i>PM-05</i>	
<i>K-750</i>	<i>1959-63</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-11A (1952)</i>	<i>PP-31A (1956)</i>	<i>B2B, IG4085</i>	<i>PM-05, PM-11A</i>	
	<i>1963-70</i>			<i>G-414 (1957)</i>	<i>PP-302 (1963)</i>	<i>B201</i>	<i>PM-302</i>	<i>3MT-12 or -14</i>
<i>K-750M (Military Model)</i>	<i>1963-77</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-302 (1963)</i>	<i>B2B</i>	<i>PM-05</i>	<i>3MT-6</i>
						<i>B201</i>	<i>PM-302</i>	
<i>MT-12</i>	<i>1977-82 2WD 1982-85 1WD</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-302 (1963), PP-302A</i>	<i>B2B</i>	<i>PM-05</i>	<i>3MT-12</i>
						<i>B201</i>	<i>PM-302</i>	
<i>MB-750 (Military MT-12)</i>	<i>1964-73</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-302 (1963)</i>	<i>B2B</i>	<i>PM-05</i>	<i>3MT-12</i>
						<i>B201</i>	<i>PM-301/PM-302</i>	
<i>MB-750M</i>	<i>1973-77</i>	<i>750cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-302 (1963), 33.3702 (1992)</i>	<i>B2B</i>	<i>PM-05</i>	
						<i>B201</i>	<i>PM-301</i>	
<i>K-650/MT-8</i>	<i>1967-70</i>	<i>650cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-31A</i>	<i>B2B</i>	<i>PM-05, PM-11A</i>	<i>3MT-12</i>
					<i>PP-302, PP-302A</i>	<i>B201</i>	<i>PM-302/PM-302A</i>	
<i>K-650/MT-9</i>	<i>1971-74</i>	<i>650cc</i>	<i>6-Volt</i>	<i>G-414 (1957)</i>	<i>PP-302 (1963)/ PM-302A</i>	<i>B2B</i>	<i>PM-05</i>	<i>3MT-6 or 3MT-12</i>
						<i>B201A</i>	<i>PM-302</i>	
<i>MB-650</i>	<i>1976-91</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-330</i>	<i>B204</i>	<i>PM-302A</i>	<i>6MTS-9 (9A-hrs) or 2X 3MT-6 (2X 6A-hrs)</i>
<i>MB-650M1</i>	<i>1985-late 90s</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-330</i>	<i>B204</i>	<i>PM-302A</i>	
<i>MT-10</i>	<i>1973-76</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-330</i>	<i>B204</i>	<i>PM-302/PM-302A</i>	
<i>MT-10-36</i>	<i>1976-88</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-330</i>	<i>B204</i>	<i>PM-302A</i>	
<i>MT-11 (Dnepr-11)</i>	<i>1980-late 90s</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-330, 33.3702 (1992)</i>	<i>B204</i>	<i>PM-302A</i>	
<i>MT-16 2WD (Dnepr-16)</i>	<i>1985-late 90s</i>	<i>650cc</i>	<i>12-Volt</i>	<i>G-424 (1974)</i>	<i>PP-30, PP-31, PP-330, 33.3702 (1992)</i>	<i>B201, B204</i>	<i>PM-302/302A</i>	

Notes:

1. MT-14 (1977) was a prototype.
2. MB-650 is military version of MT-16 and MW-750 is a military version of the MT-12
3. Alternators progress in output voltage and power from Г-11 (G-11) generator of 6-Volts/45-Watts in 1941, Г-11A of 6 V/45 W in 1952, Г-414 6V/65 W in 1957, Г-424 of 12V/150W in 1974, 14.3771 of 12V/500W in 1998.5, to the present-day Nippon-Denso alternator of 12V/770W.
4. MT-11 and MT-16 remained in production until 1991 when they were re-named the Dniro-11 (Dnepr-11) and Dniro-16 (Dnepr-16).
5. Model #'s: H = N, MW = MB = MV
6. 33.3702 Solid-State Voltage Regulator replaced the PP-330 in 1992.
7. Г-424 alternator (150 Watts) has external relay/regulator (PP-302 or PP-330). 14.3771(350 Watts) alternator has internal regulator.
8. 12-Volt ignition coil B2B (manual spark advance) paired with PM-05 distributor, B201/B201A (ignition coil for automatic spark advance) paired with PM-302/PM-302A. B2B and B201 coils for 6-Volts and B204 for 12-Volts.
9. Г-11 and Г-11A have positive lead connected to case (positive-ground). Late production of K-750 sed positive-ground Г-414 generator.
10. Since 1981, the KMZ factory began to produce spare parts and engines for previous models (K750M and MT) only with 12-volt equipment.

Table III: IMZ (ИМЗ) - Ural (Урал) Flasher vs. Model/Year vs. (01/11)
(eafranke@tampabay.rr.com)

Model	Year	Engine Size	Voltage	Flasher Unit	Signal Light
M-72	1941-56	750cc	6-Volt	No Turn Signals	N/A
M-72K	1954-60	750cc	6-Volt	No Turn Signals	N/A
M-72M	1956-60	750cc	6-Volt	No Turn Signals	N/A
M-72M	1956-61	750cc	6-Volt	No Turn Signals	N/A
M-61	Early 1958-60	650cc	6-Volt	No Turn Signals	N/A
	Later 1960-63			PC419	A6-15 (5318931)
M-62	Early 1962-63	650cc	6-Volt	No Turn Signals	N/A
	Later 1964-65			PC419	A6-15 (5318931)
M-63 (Ural-2)	1965-68	650cc	6-Volt	PC419	A6-15 (5318931)
M-66 (Ural-3)	1968-72	650cc	6-Volt	PC419	A6-15 (5318931)
M-67	1973-75	650cc	12-Volt	PC427	A12-21-3
M-67.36	1976-95	650cc	12-Volt	PC427	A12-21-3
8.103 and 8.107 Series "650"	1994-98	650cc	12-Volt	PC427 or 63P-18046 (Installed thru 2005)	A12-21-3
8.103,8.103X, 8.123,8.123X "650" & "750" Series	1999-2003	750cc	12-Volt	PC427 or 63P-18046 (Installed thru 2005)	A12-21-3
8.103,8.103X, 8.123,8.123X "750"Series	2004-present	750cc	12-Volt	63P-18046 (Installed thru 2005), 4422174(Installed from 2006, made in USA), 63P-18046-2007 (Installed from 2007, Electrix)	A12-21-3

Notes:

- 1.Flasher = Flasher Unit = Flasher Relay = Blinker = Blinker Relay
- 2.A12-21-3 is a 12-Volt, 21-Watt bulb. A6-15 is a 6-Volt, 15-Watt bulb.
- 3.RS-419 = PC-419 Transliteration

Based on available schematics and manuals, it appears that Ural introduced turn-signals to their sidecars around 1963.

Table IV: KMZ (KM3) - Dnepr (Днепр) Flasher vs. Model/Year vs. (01/11)
eafranke@tampabay.rr.com)

<i>Model</i>	<i>Year</i>	<i>Engine Size</i>	<i>Voltage</i>	<i>Flasher Unit</i>	<i>Signal Light</i>
<i>M-72</i>	<i>1952-56</i>	<i>750cc</i>	<i>6-Volt</i>	<i>No Turn Signals</i>	<i>N/A</i>
<i>M-72N (H)</i>	<i>1956-59</i>	<i>750cc</i>	<i>6-Volt</i>	<i>No Turn Signals</i>	<i>N/A</i>
<i>K-750</i>	<i>Early 1959-63</i>	<i>750cc</i>	<i>6-Volt</i>	<i>No Turn Signals</i>	<i>N/A</i>
	<i>Later 1963-70</i>			<i>PC419</i>	<i>A6-15</i>
<i>K-750M</i>	<i>1963-77</i>	<i>750cc</i>	<i>6-Volt</i>	<i>PC419</i>	<i>A6-15</i>
<i>MT-12 (Dnepr-12)</i>	<i>1977-85</i>	<i>750cc</i>	<i>6-Volt</i>	<i>PC419</i>	<i>A6-15</i>
<i>MB-750</i>	<i>1964-73</i>	<i>750cc</i>	<i>6-Volt</i>	<i>PC419</i>	<i>A6-15</i>
<i>MB-750M</i>	<i>1973-77</i>	<i>750cc</i>	<i>6-Volt</i>	<i>PC419</i>	<i>A6-15</i>
<i>K-650/MT-8</i>	<i>1967-71</i>	<i>650cc</i>	<i>6-Volt</i>	<i>PC-415, PC419</i>	<i>A6-15</i>
<i>K-650/MT-9</i>	<i>1971-74</i>	<i>650cc</i>	<i>6-Volt</i>	<i>PC415, PC419</i>	<i>A6-15</i>
<i>MB-650</i>	<i>1976-91</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MB-650M1</i>	<i>1985-late 90s</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MT-10</i>	<i>1973-76</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MT-10-36</i>	<i>1976-87</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MT-11 (Dnepr-11)</i>	<i>1980- late 90's</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MT-14</i>	<i>1977</i>	<i>750cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>
<i>MT-16 (Dnepr-16)</i>	<i>1985- late 90's</i>	<i>650cc</i>	<i>12-Volt</i>	<i>PC427 (3726010)</i>	<i>A12-21-3</i>

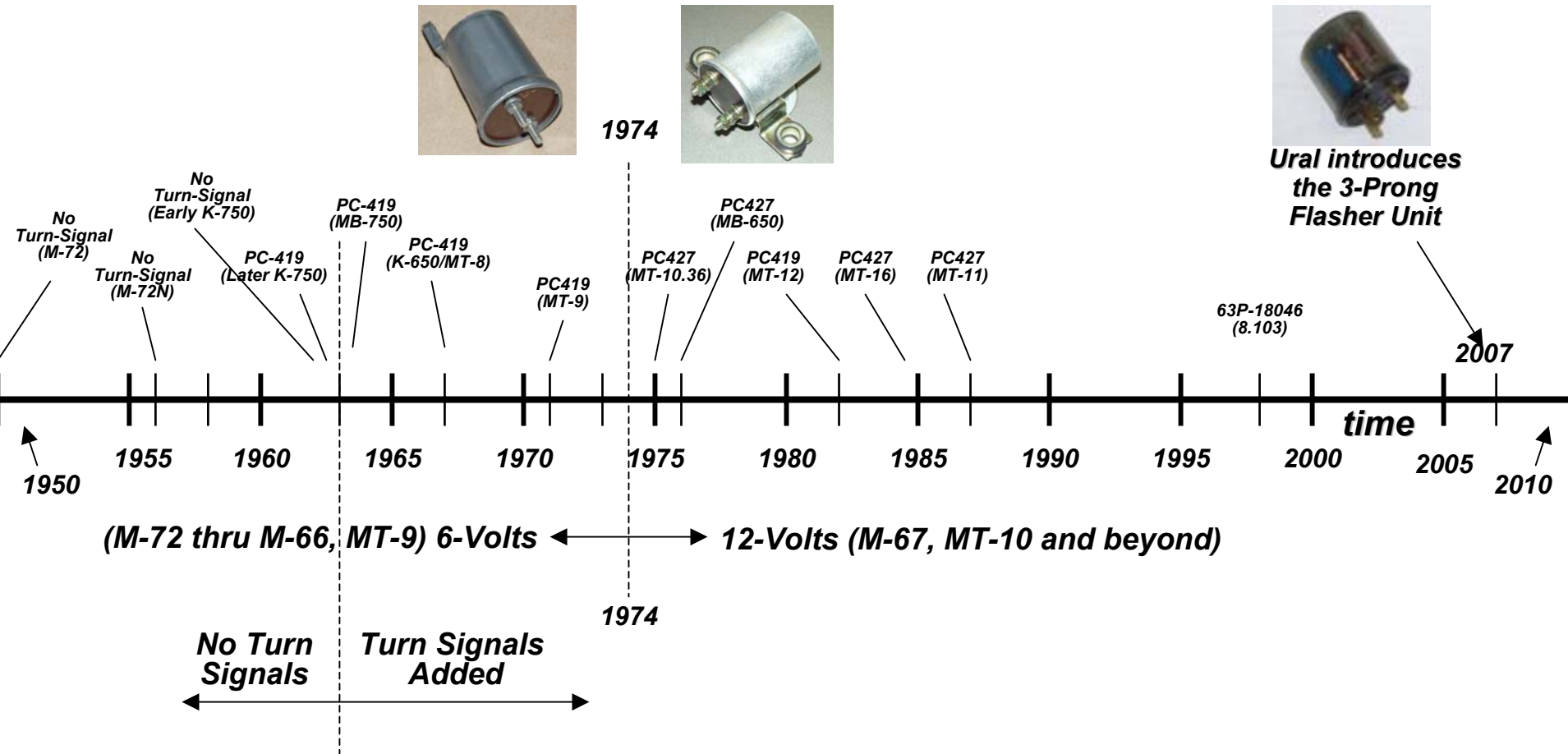
Notes:

- 1.Flasher = Flasher Unit = Flasher Relay = Blinker = Blinker Relay
- 2.A12-21-3 is a 12-Volt, 21-Watt bulb. A6-15 is a 6-Volt, 15-Watt bulb.
- 3.RS-419 = PC-419 Transliteration

Based on available schematics, it appears that Dnepr introduced turn-signals to their sidecars around 1963/4 (similar to Ural), based on records of their K-750 ('61/'62) with no-turn-signals.

Ural (Урал) - Dnepr (Днепр) Flasher Unit Time-Line (01/11)

(eafranke@tampabay.rr.com)



**It appears that turn signals were added to Russian heavy motorcycles
In the early 1960's, based on the schematics and manuals for
Ural's M-61, M-62, M-63 and Dnepr's K-750.**

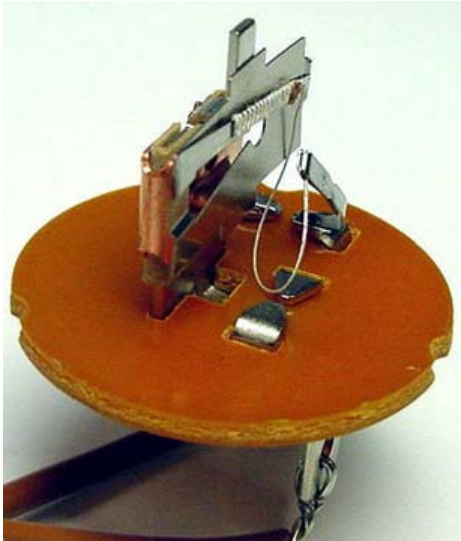
6-Volt Flasher Relays



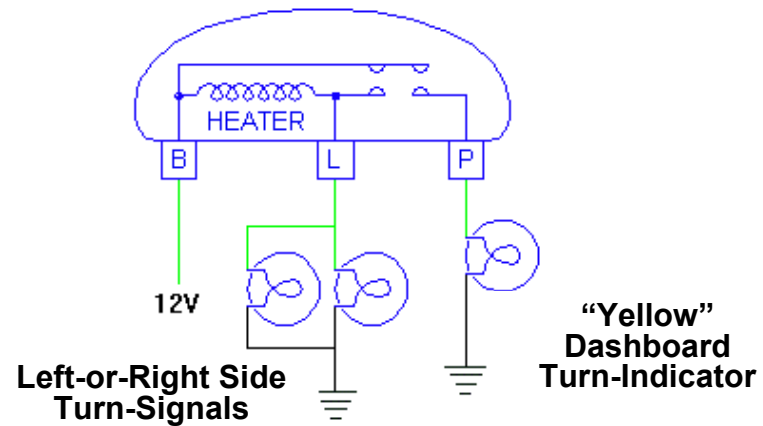
12-Volt Flasher Relays



Thermal Flasher Relay



***Inside Thermal Flasher
Showing Bi-metal Switch***



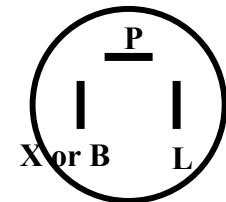
Electro-Mechanical (Electronic) Flasher Relay



Tridon 2-Prong Flasher EL12

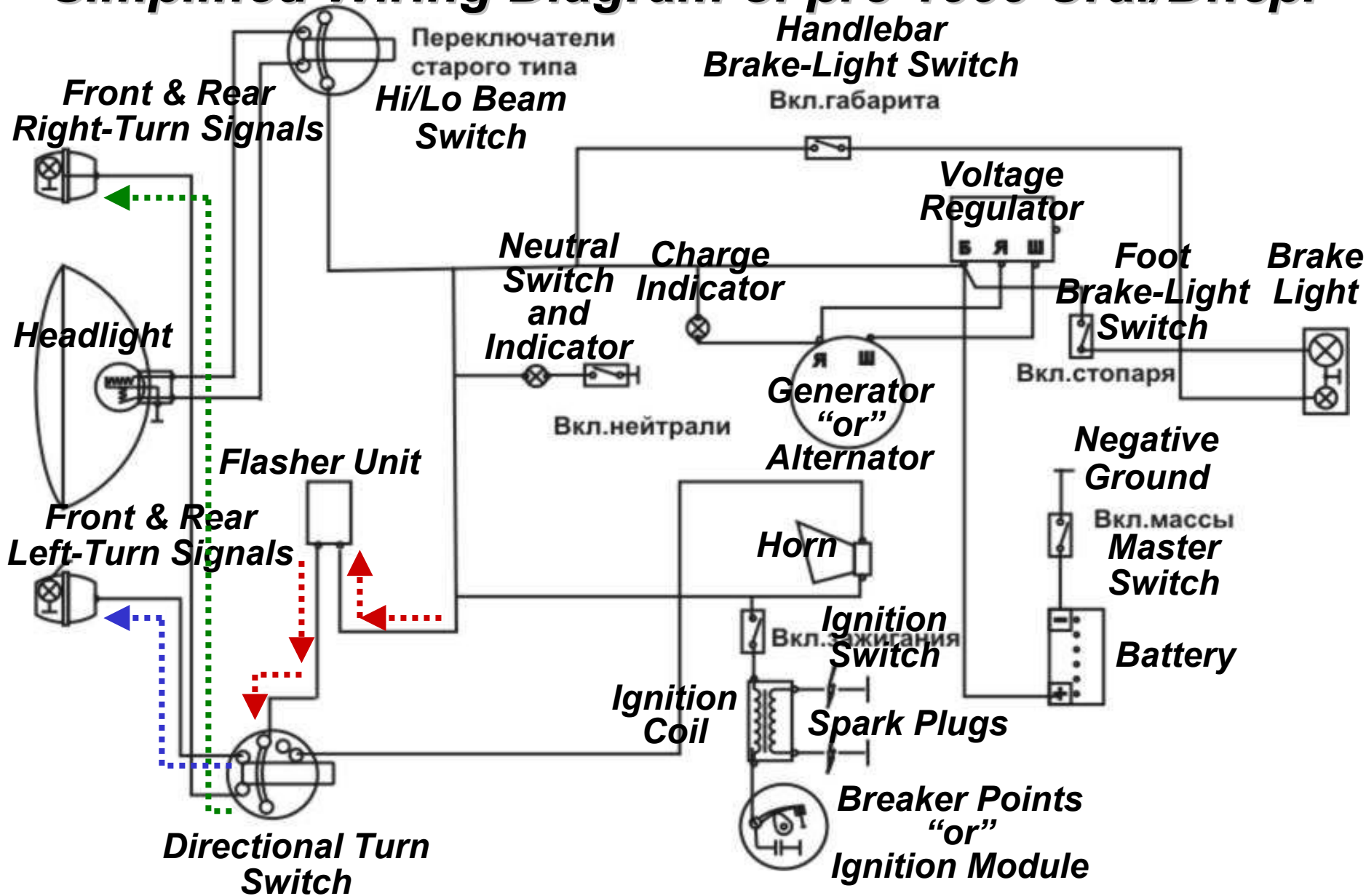


Tridon 3-Prong Flasher EL13



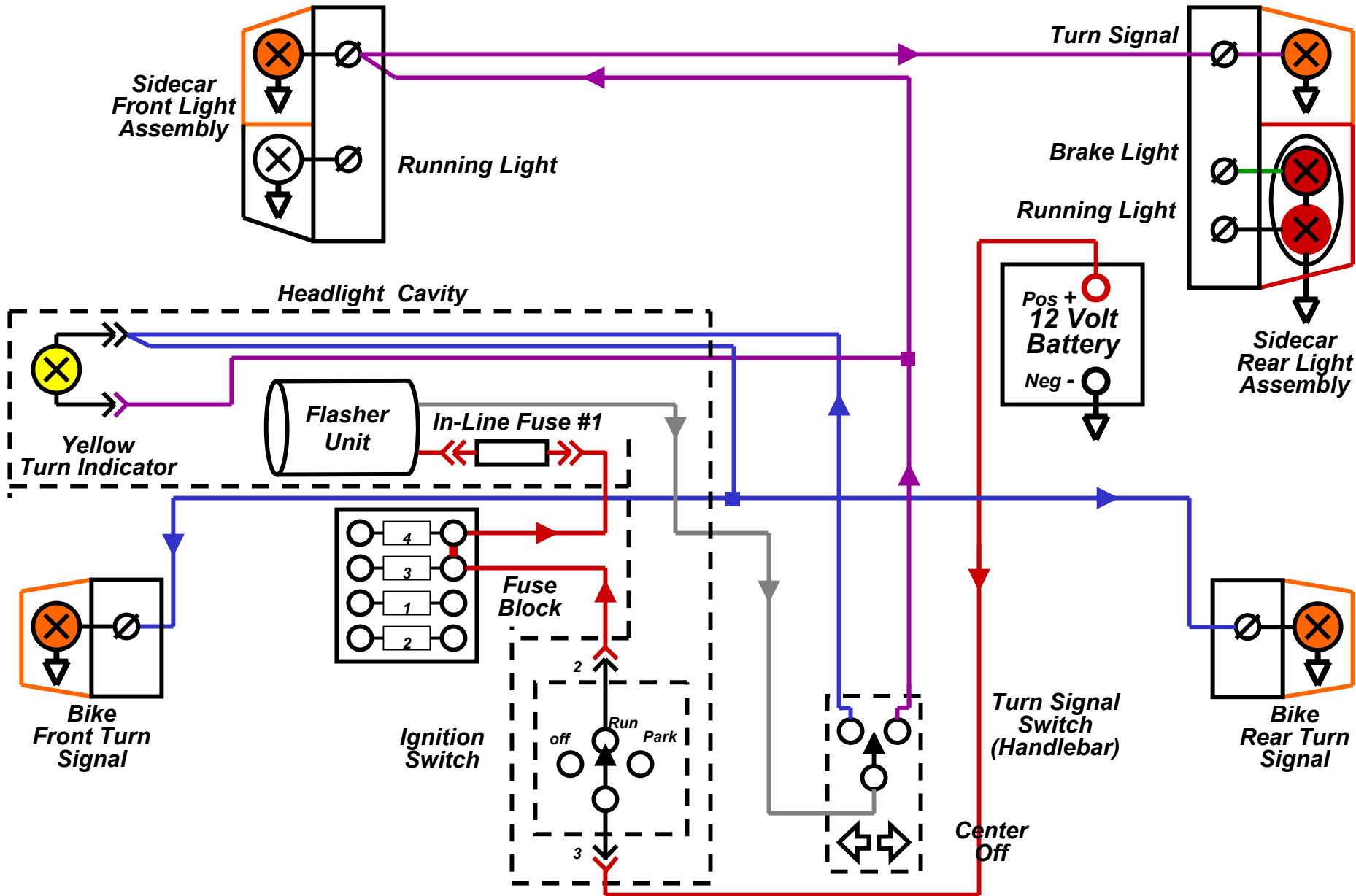
Base View

Simplified Wiring Diagram of pre-1999 Ural/Dnepr



The blinker circuit starts at the battery, flows thru the flasher unit, and is directed to the appropriate right-or-left signal-lights by the directional-turn switch.

Simplified Turn-Signal Circuitry(eafranke@tampabay.rr.com



Flasher Unit Location on 8.103 Urals

- ***Turn the handlebars all the way to the left and peek behind on the right (Hack) side, behind the headlight bucket, you should be able to reach behind the headlight, and pull the round flasher unit out.***

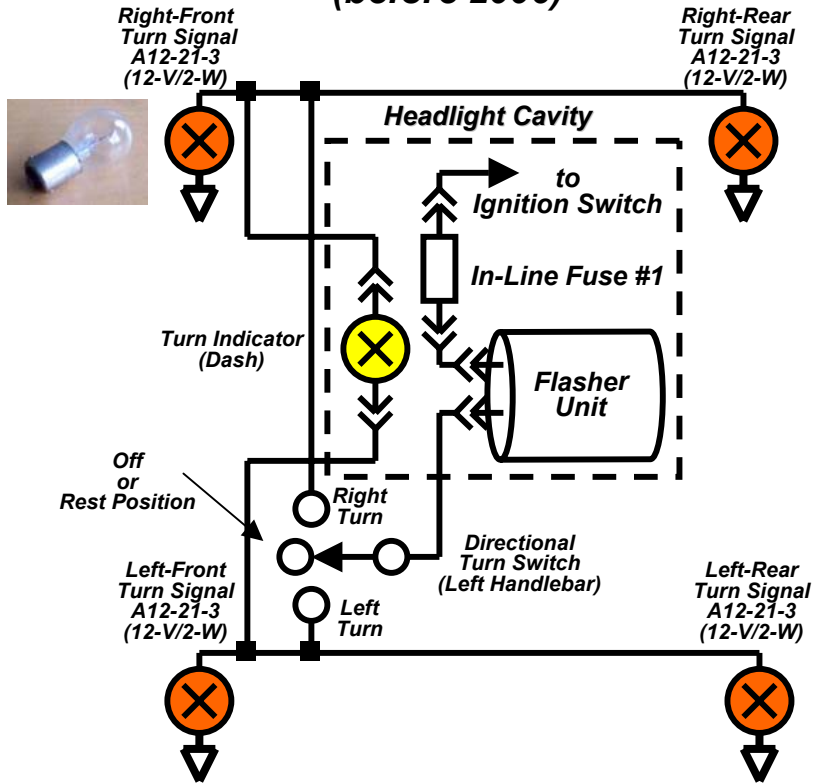


PC427 Flasher Unit

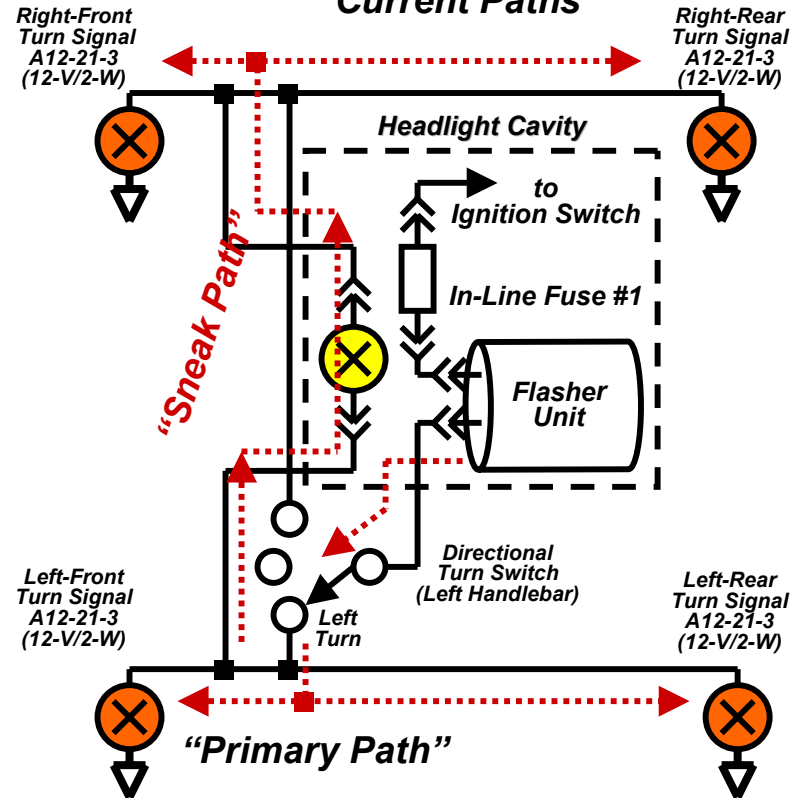
Flasher Unit on my 2003 Ural Patrol

Primary and Secondary (“sneak”) Paths for Current-Flow in Turn-Signal Circuit

Ural / Dnepr Flasher Circuit
(before 2006)



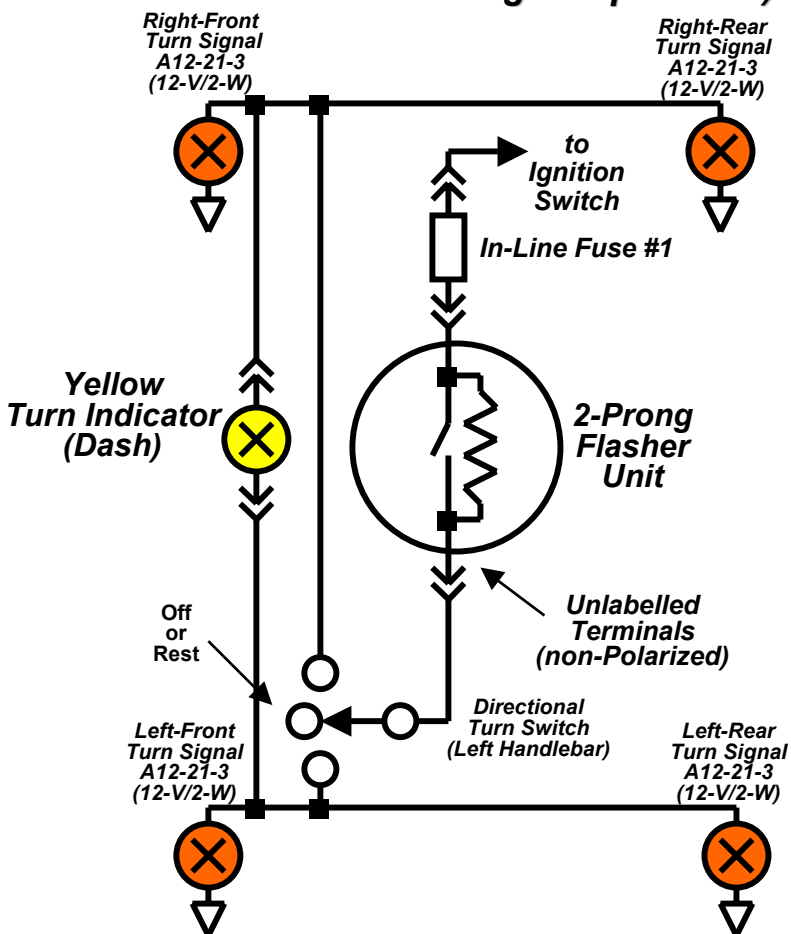
Primary and Secondary Current Paths



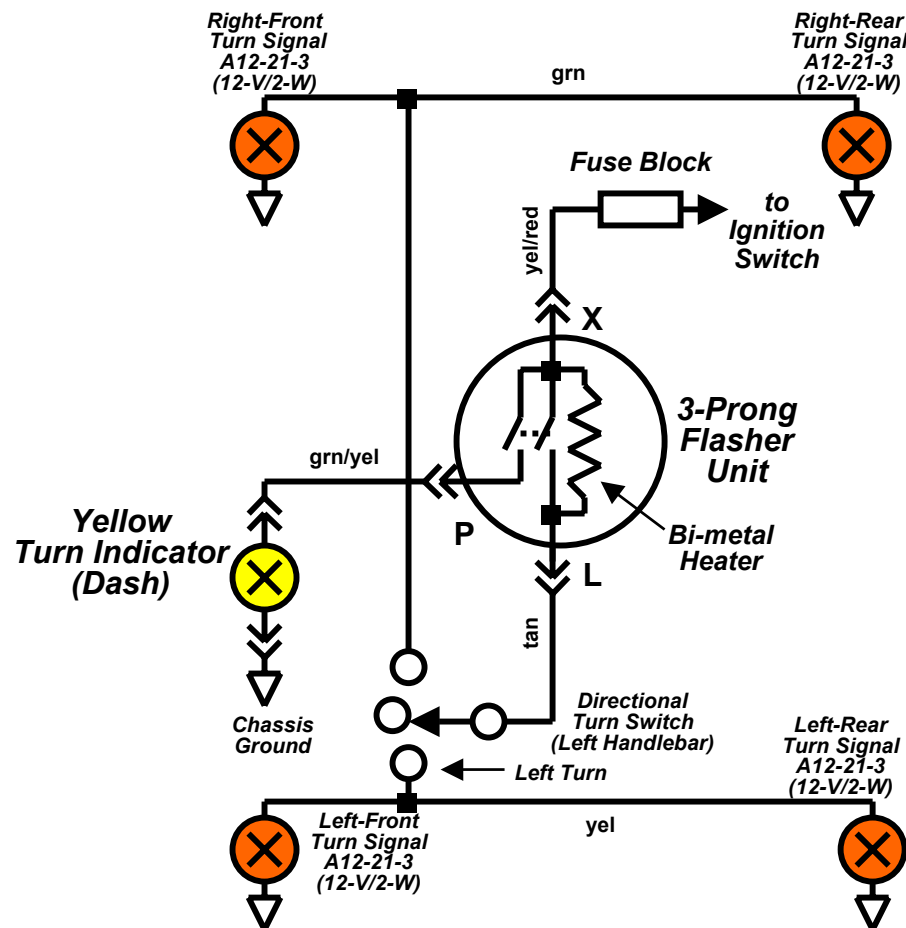
Signaling for a left-turn provides two electrical paths to ground. The primary path is thru the two left-turn lights. In addition a small-current “sneak path” exists thru the dashboard indicator lamp and the right-turn signal lights. The current in the “sneak path” is less than 10% of the primary path, thus only the left-turn lamps glow. However LEDs, which use much-less current, are another matter.

Old (2-prong) and New (3-prong) Turn-Signal Circuits

Old (2-prong) Turn-Signal Circuit (All Dnepr with Turn-Signals and All Ural with Turn-Signals pre-2006)



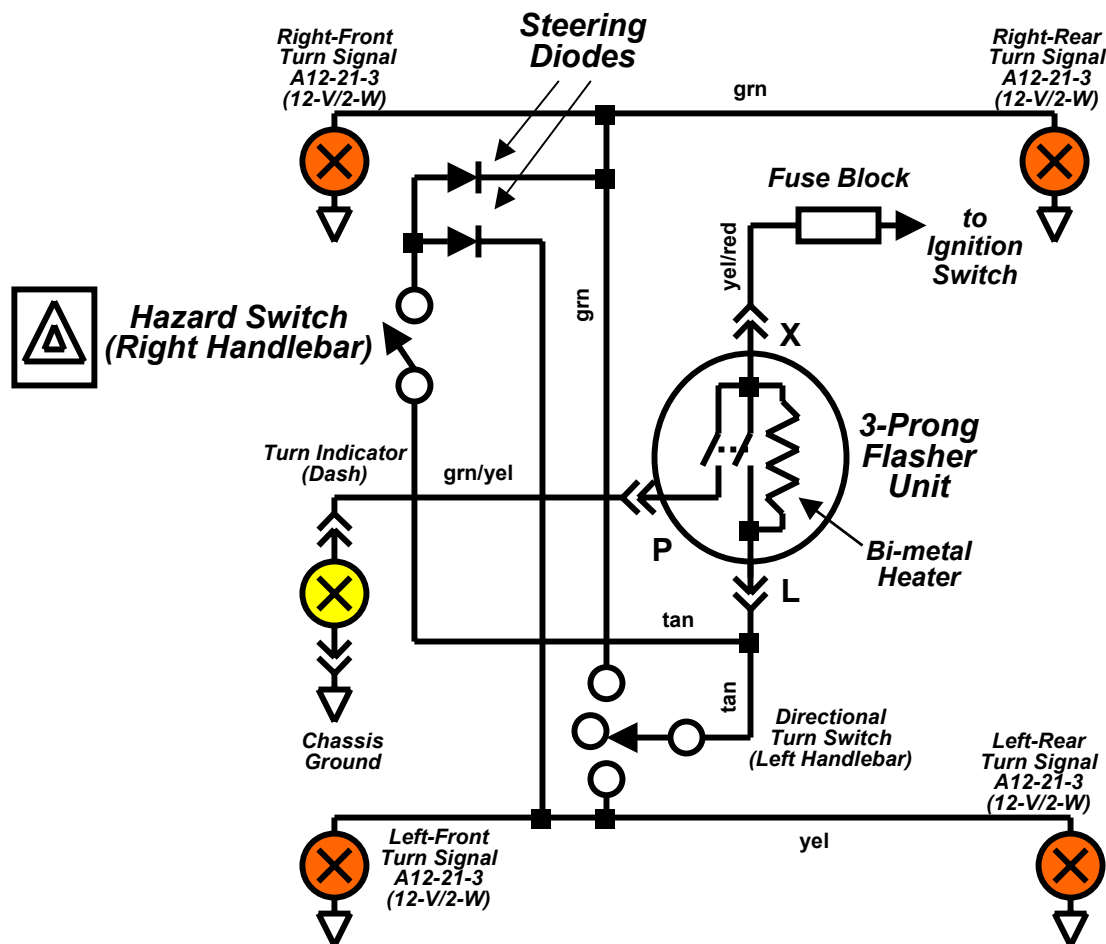
New (3-prong) Turn-Signal Circuit (Not Used on Dnepr, Used on Ural 2006+)



Ural changed to the three-pronged flasher unit in 2006, thus deleting the “sneak-path” thru the turn-indicator and allowing the use of LEDs.

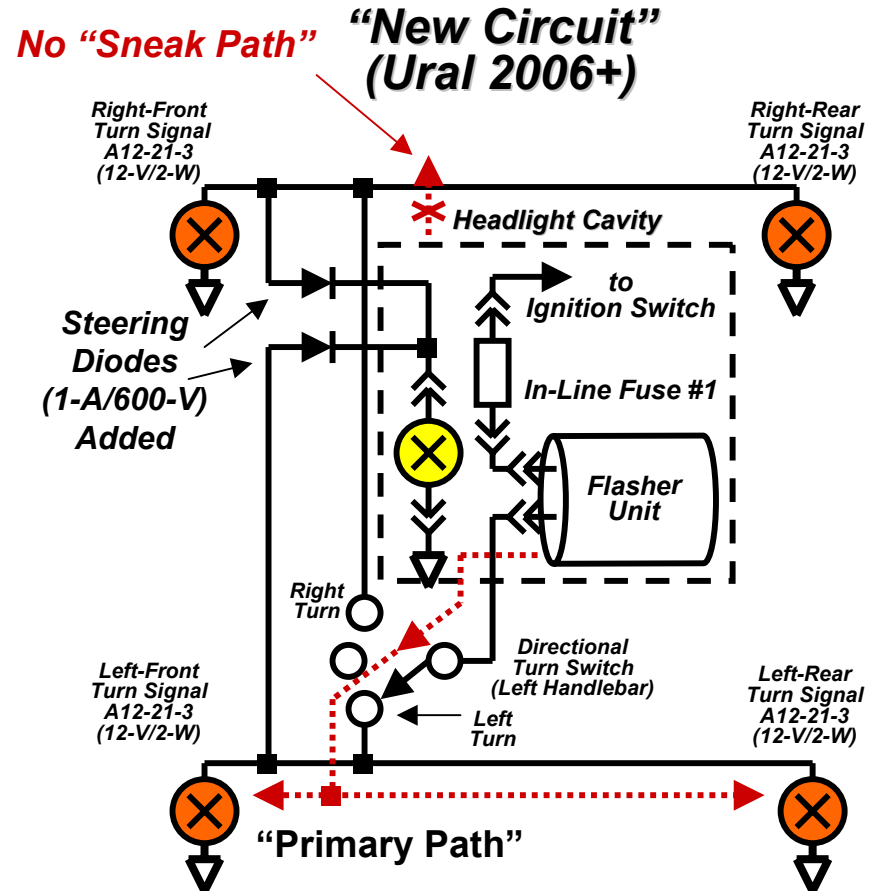
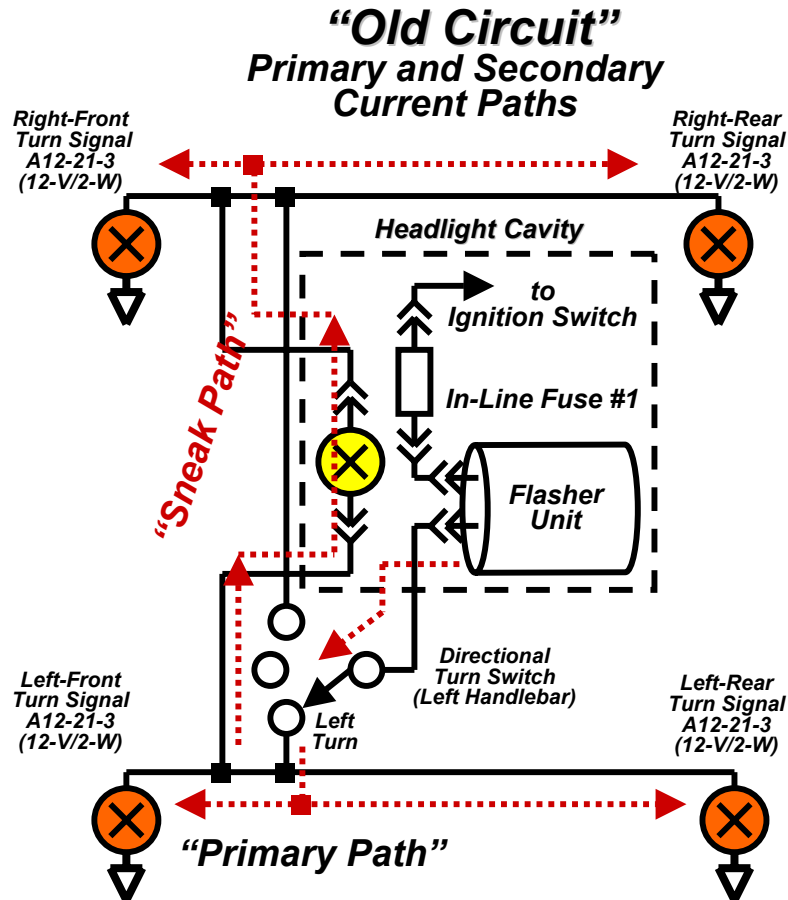
New (3-prong) Turn-Signal Circuit with Hazard Lights

(Ural 2006+)



“Steering Diodes” enable the flasher unit to energize both sets of turn signals, by isolating the turn circuitry from the hazard circuitry. This same concept can be used on the 2-prong flashers, as shown in the next slides.

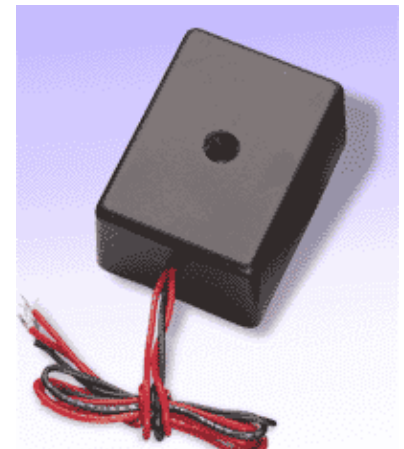
Primary and Secondary (“sneak”) Paths for Current-Flow in Turn-Signal Circuit



Ural’s new circuitry (2006+) allows the use of the incandescent lamps or upgrades to Light Emitting Diodes (LEDs), with the unbalanced dashboard indicator and the steering diodes.

Extra-Loud Electronic Turn-Signal Beeper

- ***Automatically Beeps with Turn-Signal Light Reminding You to Cancel Signal***
- ***J.C. Whitney (SKU Number: 1JA 014425) \$32***
 - ***Manufacturer: Amperite 12D1buz Turn-Signal Buzzer***
 - ***High-tone, Extra-loud Sound (approx. 86 dB)***
 - ***6- or 12-Volt systems***
 - ***1-1/2" x 2-1/2" x 1" thick Black-plastic Housing with Pressure-Sensitive Adhesive Backing***
 - ***Buzzer Box has three leads, One black lead to the Neg. side of the Battery and Two red leads to the Turn-Signal Circuits***
 - ***Mounts under Seat or inside Headlight Cavity***

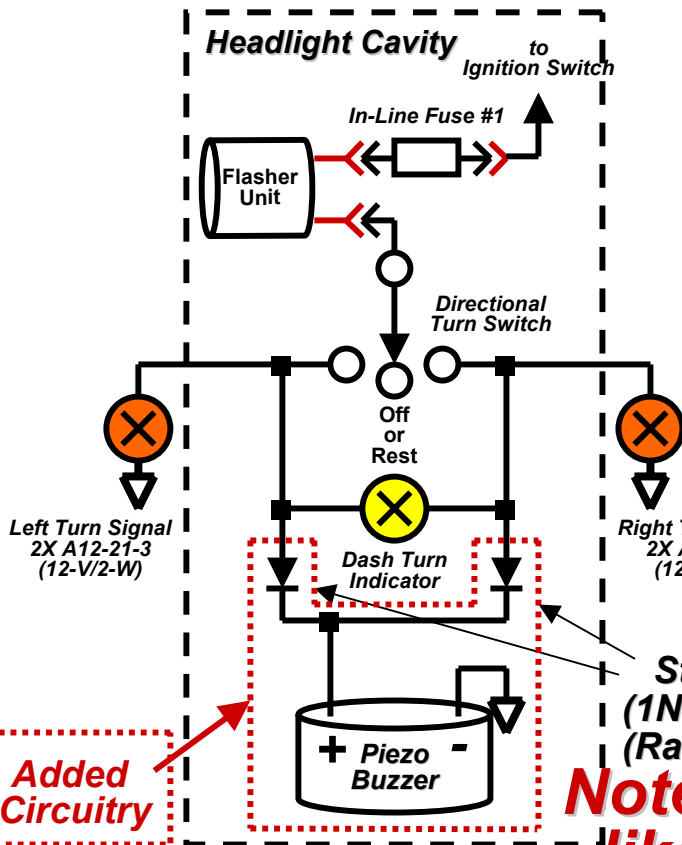


Several folks in the IMZ-Ural Discussion Archive tried the J.C. Whitney "Extra-Loud Electronic Turn-Signal Beeper" or simply built their own device (next slide). It's really simple.

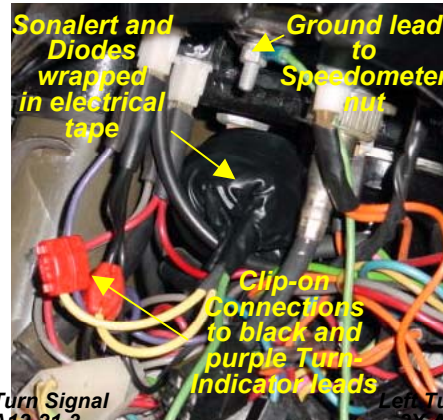
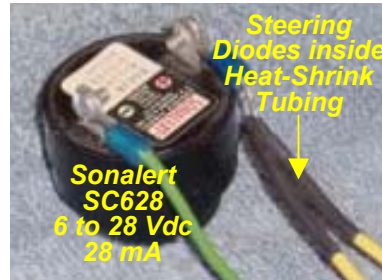
Addition of a "Piezo Buzzer" to Help Remember to Reset the Turn-Signal Switch

(IMZ-Ural Discussion Archive: Larry Mac was spoiled over the years by the audible turn-signal beeper on his BMW. He added a piezo-oscillator in parallel with his turn-indicator, as a reminder that his lights were still blinking, long after the turn.)

Circuit Using Standard 1156 or A12-21-3 Signal Lamps, with Steering Diode



Note: The Piezo Buzzer is Polarized. "+" to 12-Vdc



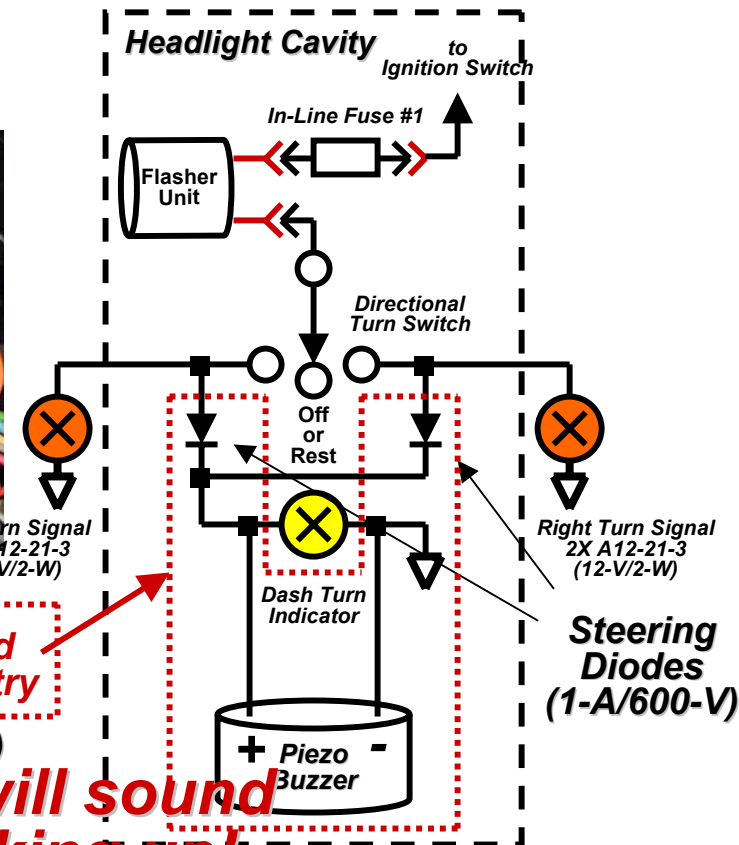
(View inside Headlight Cavity)

Steering Diodes (1N4005, 1-A/600-V)
(Radio Shack Part# 276-1104)

Added Circuitry

Note: Motorcycle will sound like a fork-lift backing up!

Circuit Using Standard 1156 or A12-21-3 "or" LED Signal Lamps, with Steering Diode



The Piezo-Buzzer can easily be wired in parallel with the dash indicator. The current is minimal when using the 1156 or A12-30-3 lamps. Steering diodes are placed before the dashboard indicator if LED's are used for signaling.

Table V: Radio Shack Piezo-Electric Buzzers

R-S Model	Type	Sound Level	DC Voltage	Current	List	Buzz Tone
273-074	PC-Board Piezo Buzzer	70 dBA	12-Vdc	7 mA @12Vdc	\$3.49	4,200 Hz
273-059	Piezo Buzzer	76 dBA	6-18-Vdc	10 mA max @ 12Vdc	\$3.49	2,800 Hz
273-68	Pulse Buzzer	80 dBA	4-28-Vdc	10 mA @12Vdc	\$9.49	2,900 Hz
273-060	Piezo Buzzer	85 dBA	4-28-Vdc	5 mA max @ 12Vdc	\$4.49	3,600 Hz
273-080	Piezo Pulse Buzzer	87 dBA	9-16-Vdc	150 mA @12Vdc	\$6.49	300 Hz
273-066	Piezo Pulse	90 dBA	3-28-Vdc	12 mA max @12Vdc	\$5.49	2,800 Hz
273-075	Panel Piezo Buzzer	95 dBA	12-Vdc	7 mA @ 12Vdc	\$7.49	3,200 Hz
273-070	Piezo 2-Tone Buzzer	100 dBA	6-16-Vdc	65 mA max @12Vdc	\$11.49	3,200 Hz
273-057	Piezo Buzzer	108 dBA	7-14-Vdc	150 mA max @12Vdc	\$10.49	2,400-3,700 Hz
273-079	Piezo Siren	102 dBA	6-14-Vdc	150 mA @12V	\$5.49	2,000-4,500 Hz

70 dBA



90 dBA



76 dBA



95 dBA



80 dBA



100 dBA



85 dBA



102 dBA



87 dBA



108 dBA



Radio shack has several electronic buzzers similar to the more-expensive Mallory Sonalert. You want something that will handle a supply-voltage of at least 15-Volts to give you some voltage-spike protection.

2002-2005 Ural Brakes/Turn Signals/Running Lights (ver. 2.0)

(IMZ-8.103717001-13, 2002-2005 Owner's Manuals) eaf Franke@tampabay.rr.com

Sidecar
Rear Light
Assembly

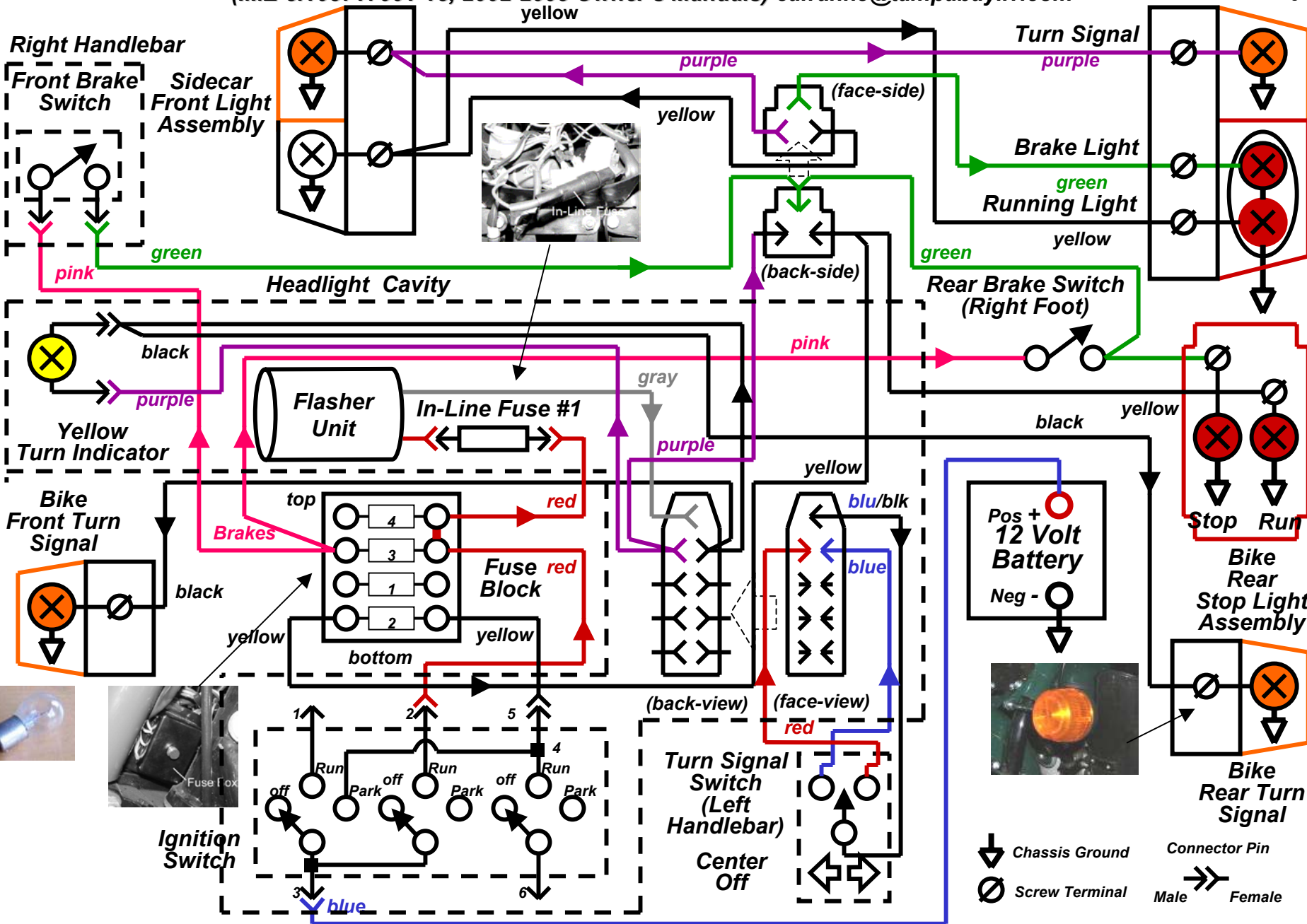


Table VI: State Requirements for Turn Signals on Motorcycles (+ district of Columbia and Puerto Rico)

(2009 American Motorcyclist Association (AMA), <http://www.ama-cycle.org/>)

AL	<i>Not Required</i>	KY	<i>Not Required</i>	ND	<i>Not Required</i>
AK	<i>Not Required</i>	LA	<i>Required</i>	OH	<i>Required after Jan '68</i>
AS	<i>Not Required</i>	ME	<i>Required after Jan '74</i>	OK	<i>Required after Jan '05</i>
AZ	<i>Not Required</i>	MH	<i>Not Required</i>	OR	<i>Required after Jan '73</i>
AR	<i>Not Required</i>	MD	<i>Not Required</i>	PA	<i>Not Required</i>
CA	<i>Required</i>	MA	<i>Required</i>	Puerto Rico	<i>Not Required</i>
CO	<i>Not Required</i>	MI	<i>Not Required</i>	RI	<i>Not Required</i>
CT	<i>Not Required</i>	MN	<i>Not Required</i>	SC	<i>Not Required</i>
DE	<i>Not Required</i>	MS	<i>Not Required</i>	SD	<i>Required</i>
Dist. of Columbia	<i>Not Required</i>	MO	<i>Not Required</i>	TN	<i>Not Required</i>
FL	<i>Not Required</i>	MT	<i>Not Required</i>	TX	<i>Required after Jan '60</i>
GA	<i>Required after Jan '72</i>	NE	<i>Not Required</i>	UT	<i>Not Required</i>
HI	<i>Not Required</i>	NV	<i>Required after Jan '73</i>	VT	<i>Required</i>
ID	<i>Not Required</i>	NH	<i>Required after Jan '73</i>	VA	<i>Not Required</i>
IL	<i>Not Required</i>	NJ	<i>Not Required</i>	WA	<i>Required if Original Mfgr.</i>
IN	<i>Required after Jan '56</i>	NM	<i>Required</i>	WV	<i>Required</i>
IA	<i>Not Required</i>	NY	<i>Required after Jan '85</i>	WI	<i>Required</i>
KS	<i>Required after Jan '73</i>	NC	<i>Not Required</i>	WY	<i>Not Required</i>

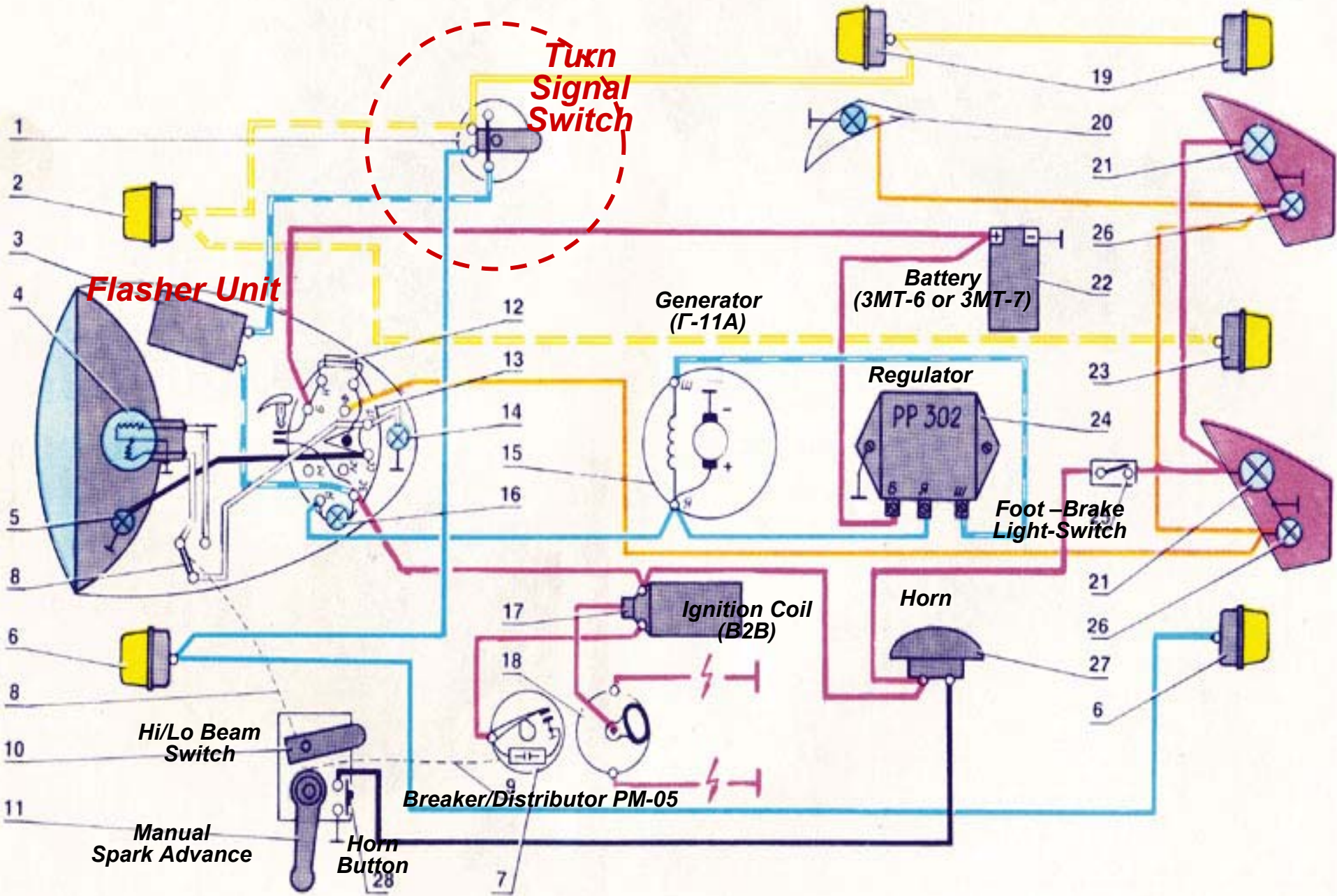
***Even though two-thirds of the States don't require turn-signals,
safe motorcycle riders maintain and use them as safety equipment.***



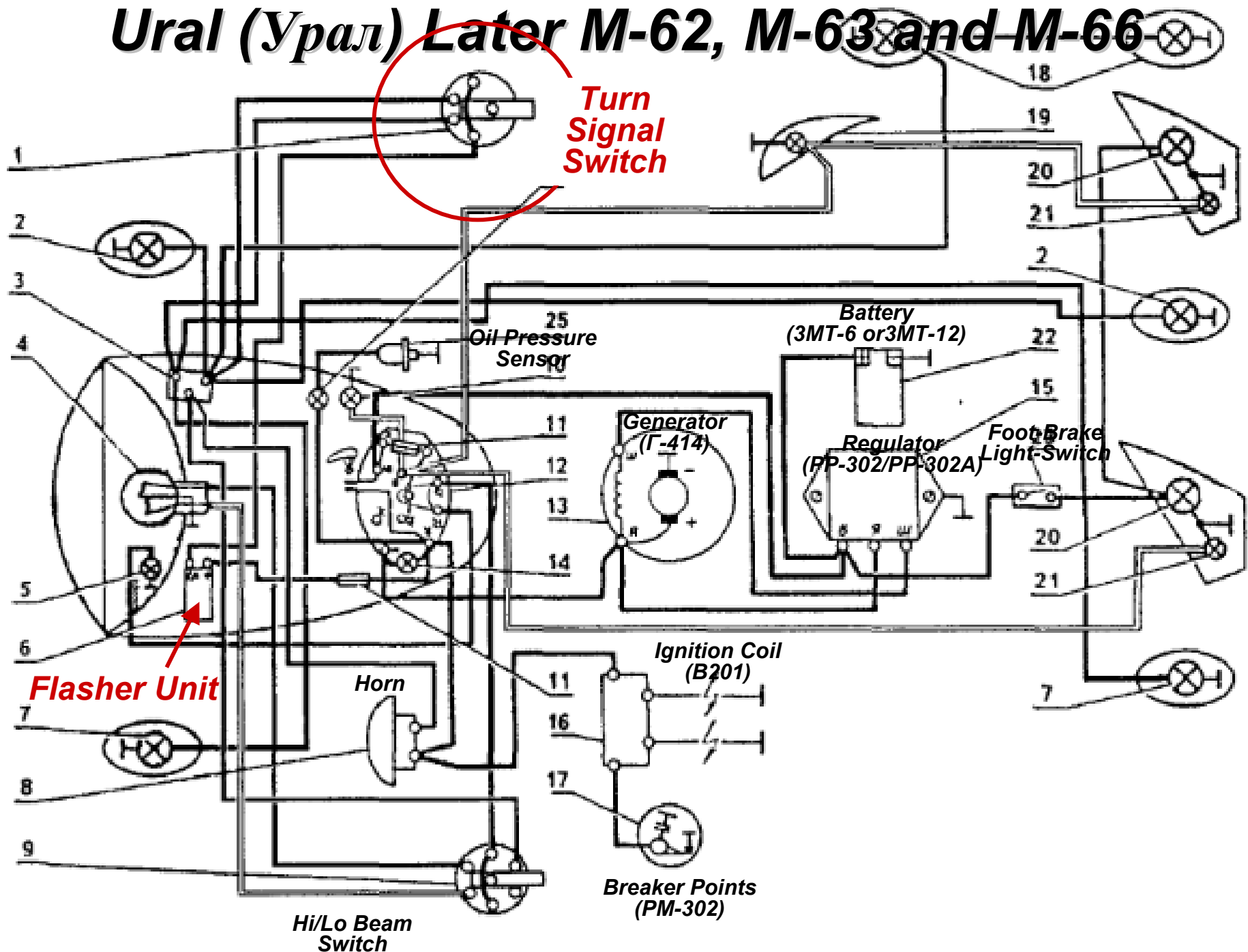
Schematics of Ural Sidecars

Ernie Franke
eafranke@tampabay.rr.com

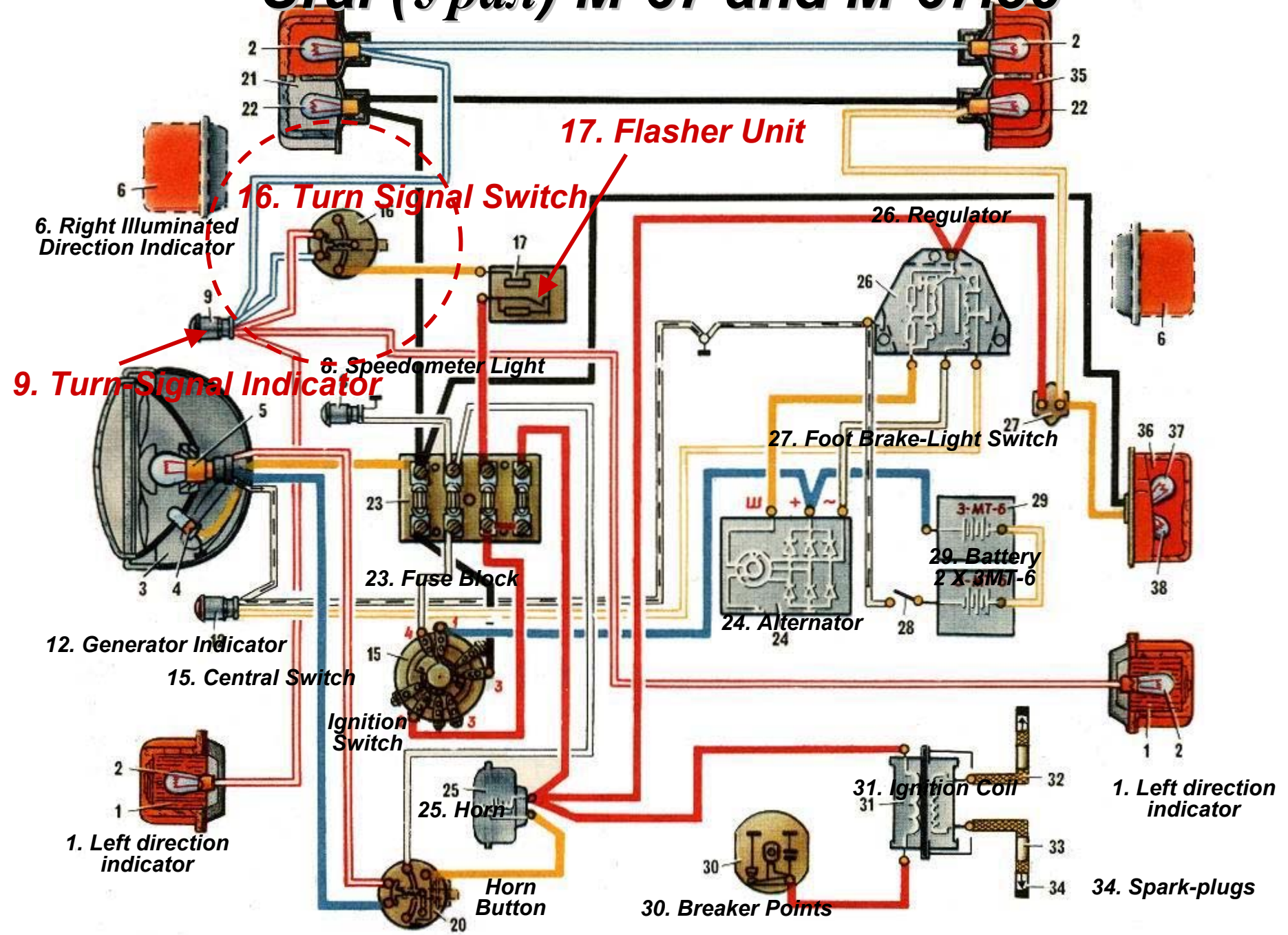
Ural (Урал) later M-61, later K-750, K-750M, MT-12, MT-16

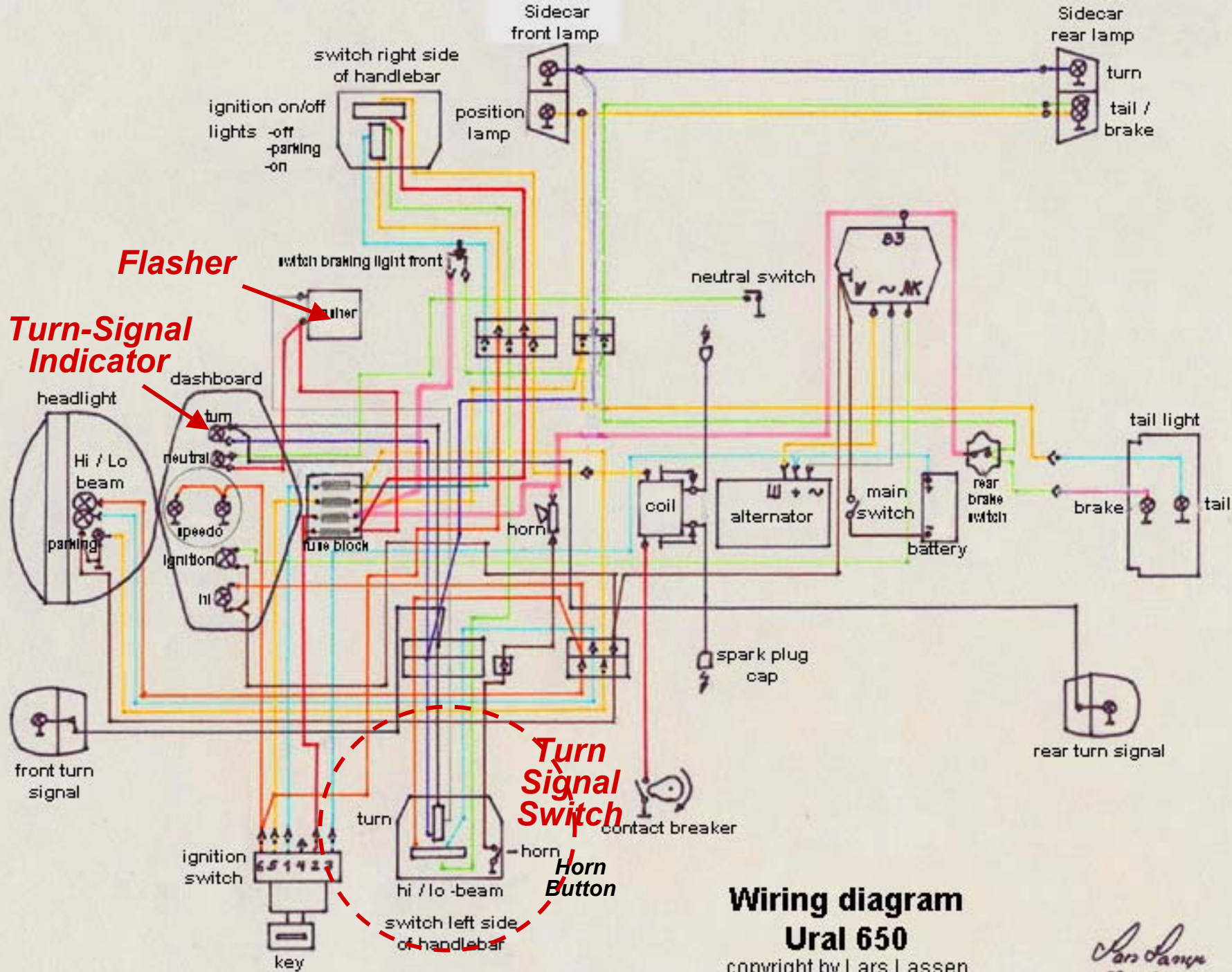


Ural (Урал) Later M-62, M-63 and M-66



Ural (Урал) M-67 and M-67.36





Wiring diagram

Ural 650

copyright by Lars Lassen

Lars Lassen
29.12.93

1995 Ural

15 September 2007

Carl Allison

Absolutely no guaranty that wire colors are correct.

Ural 650 (Урал)

Turn-Signal Indicator

Flasher

Neutral Switch

Foot-Brake Light-Switch

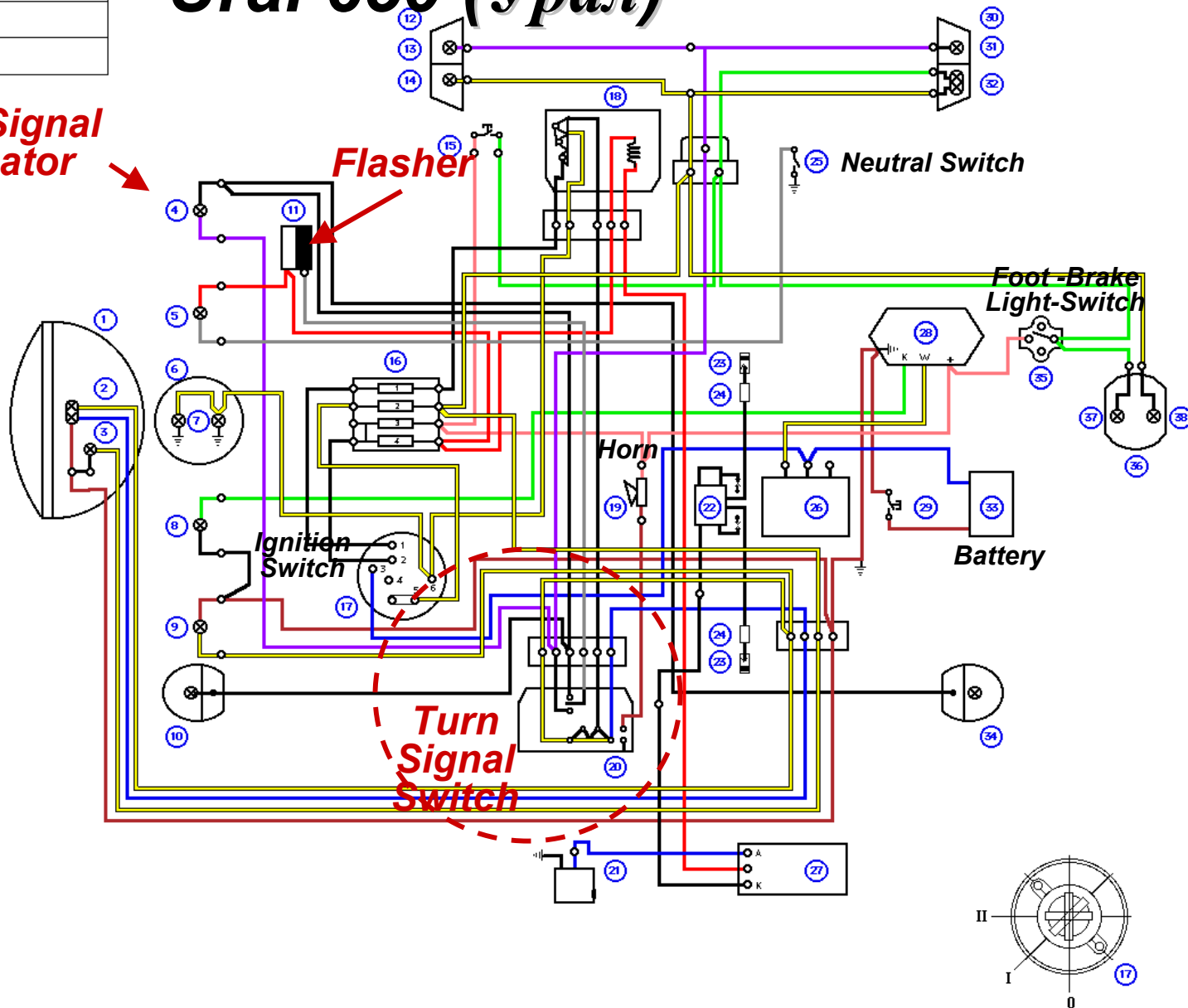
Ignition Switch

Horn

Battery

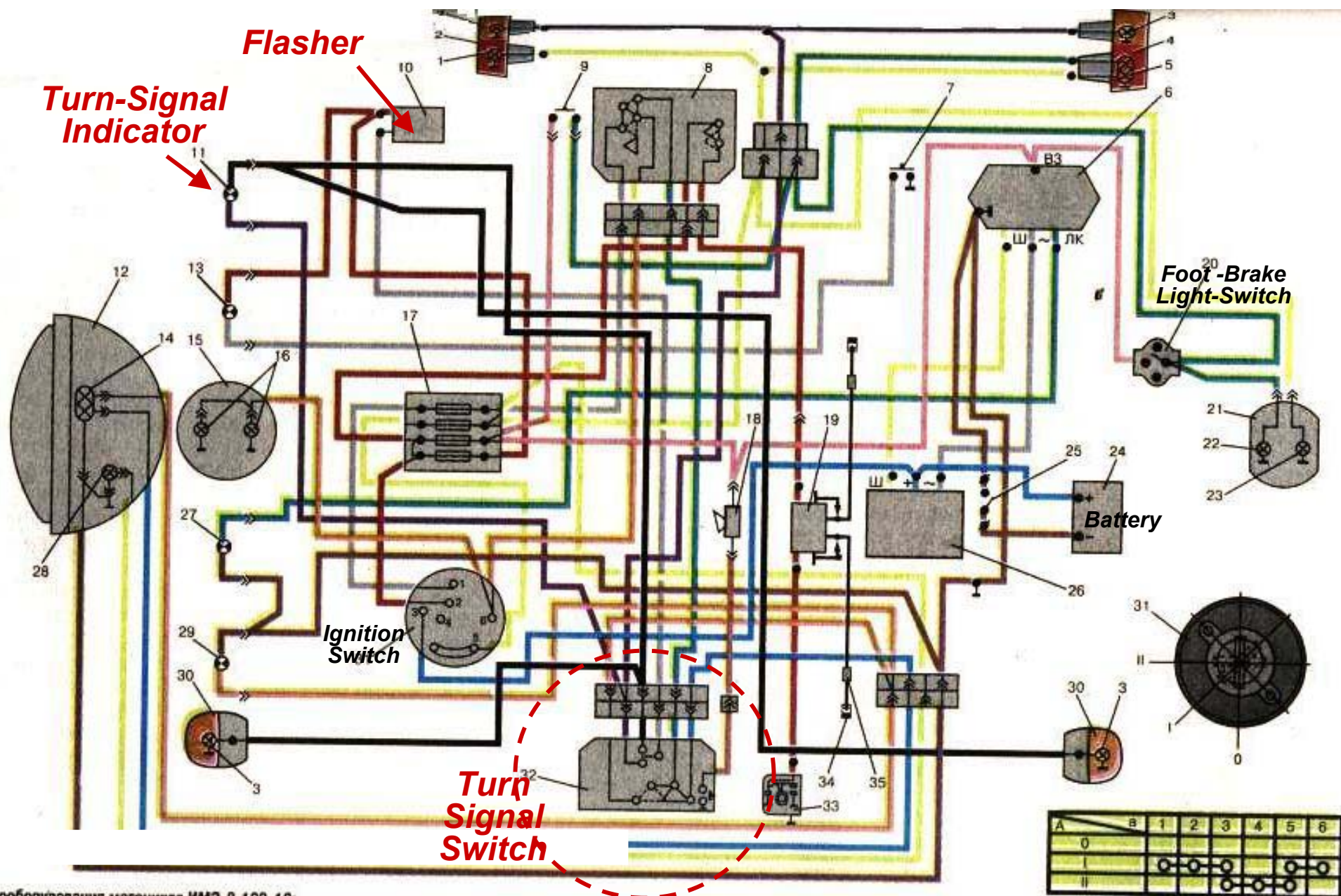
Turn Signal Switch

1. Motorcycle head lamp
2. High-low beam headlight bulb
3. Side and parking bulb in headlight
4. Turn indicator bulb
5. Neutral gear indicator bulb
6. Speedometer
7. Speedometer illumination bulb
8. Generator
9. Highbeam indicator lamp
10. Left turn indicator
11. Turn signal flasher
12. Sidecar front lamp
13. Sidecar side bulb
14. Traffic indicator bulb
15. Front brake light switch
16. Fuse plate
17. Ignition lock
18. "Day-night" switch with emergency "ignition out" switch
19. Horn
20. Light and turn indicator switch, horn button
21. Distributor
22. Induction coil
23. Spark plug
24. Spark plug cap
25. Neutral gear indicator switch
26. Generator
27. Ignition module
28. Voltage regulator
29. Earth disconnect switch
30. Sidecar rear lamp
31. Sidecar lamp
32. Sidecar side and brake bulb
33. Battery
34. Left rear turn signal
35. Foot brake signal switch
36. Motorcycle rear lamp
37. Brake light
38. Side bulb and number plate illumination bulb

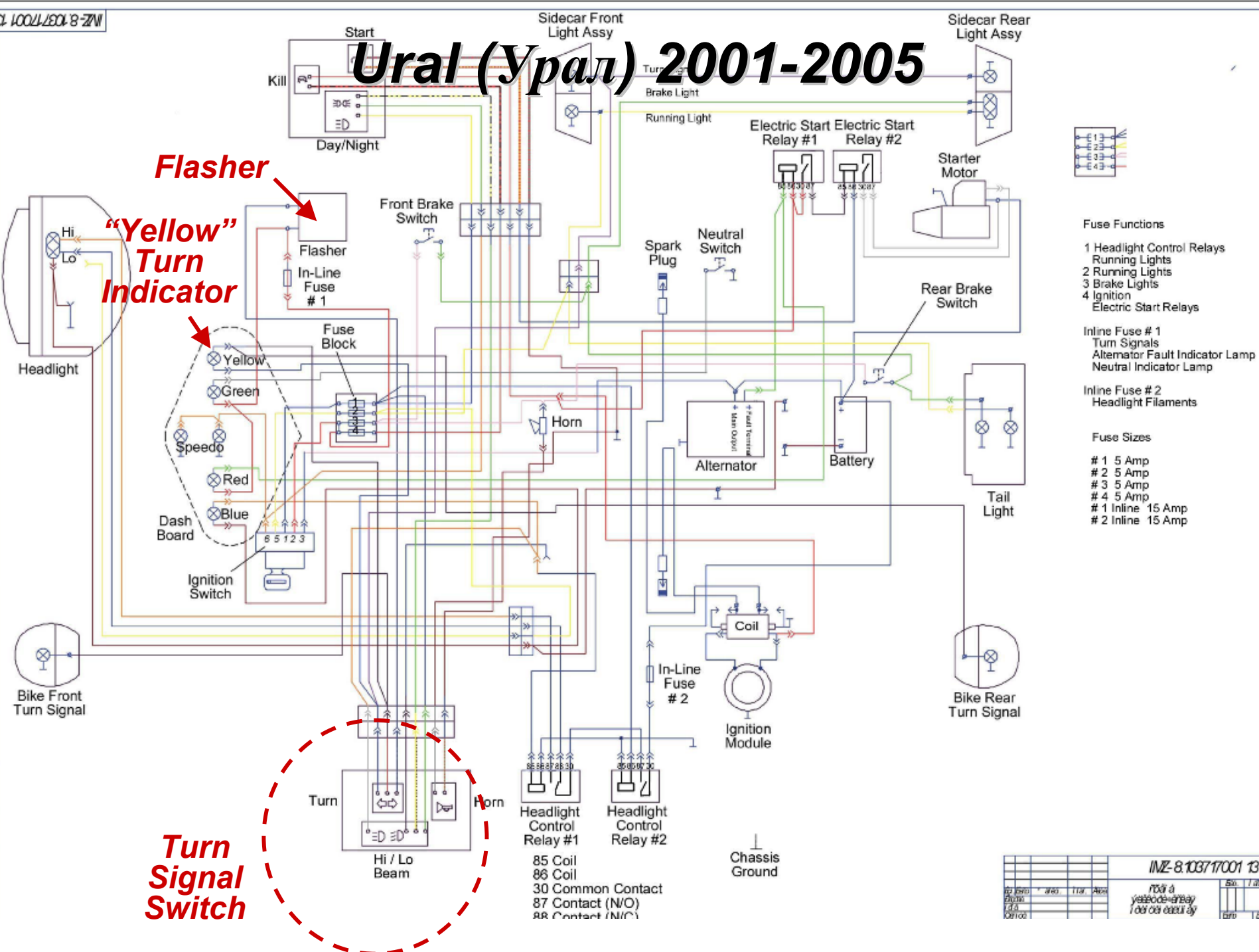


A	a	1	2	3	4	5	6
0							
I		○	○	○	○	○	○
II							

Ural (Урал) 1998 Deco Classic, Italia, Tourist, Sportsman, Solo, Utility (IMZ 8.103-10 or -40 (Deco or Tourist))

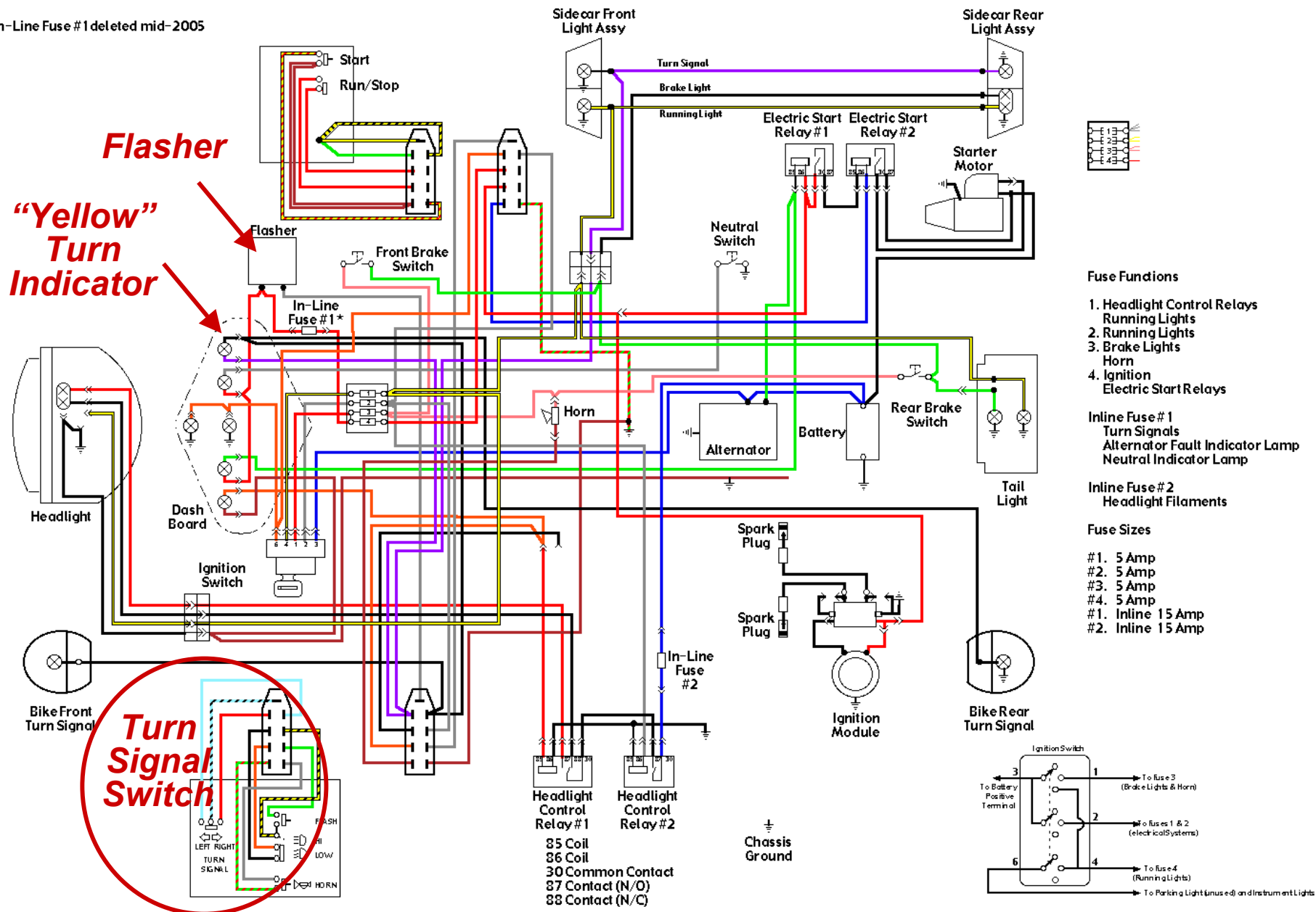


Ural (Урал) 2001-2005



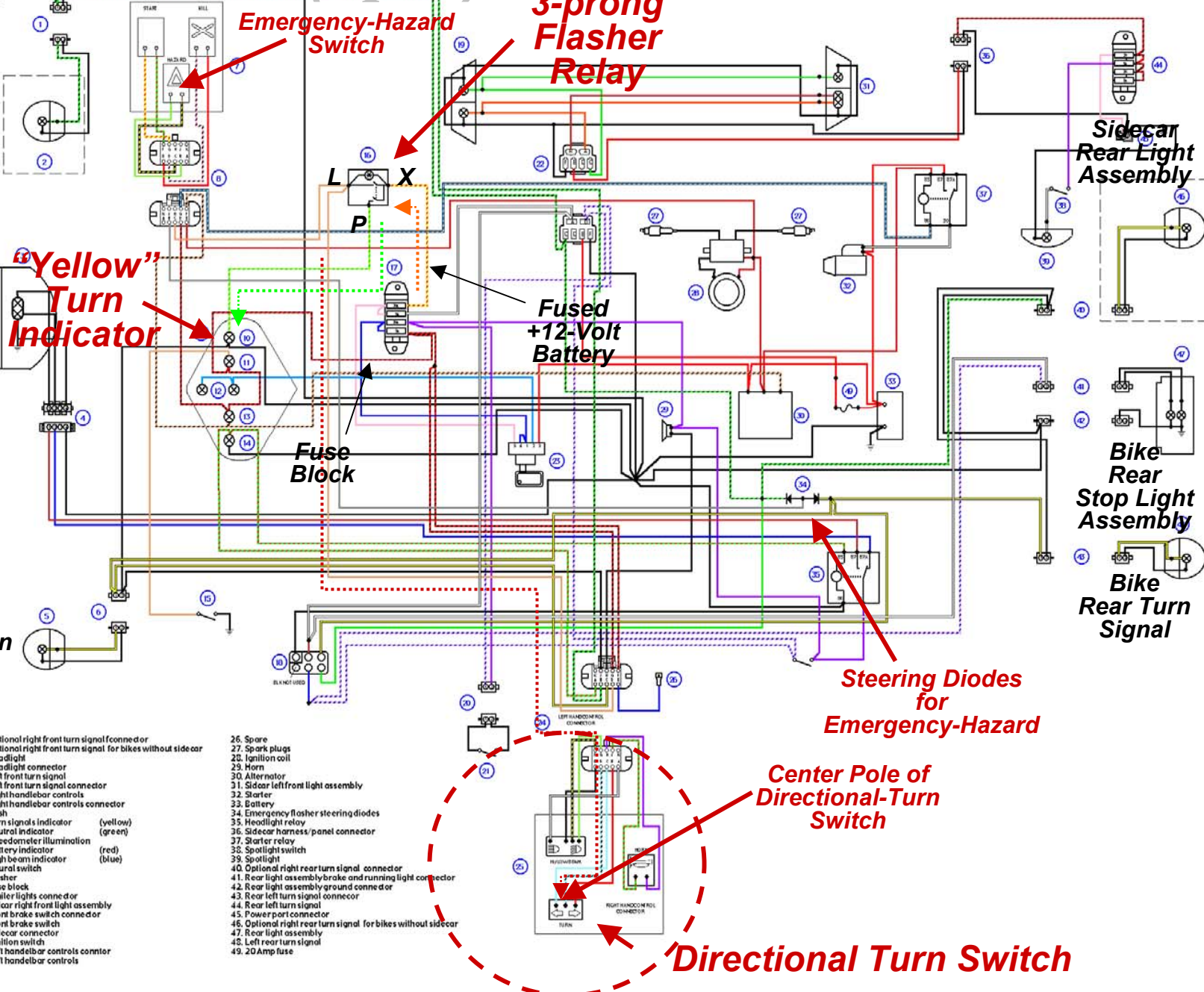
Ural (Урал) 2005 Patrol

*In-Line Fuse #1 deleted mid-2005



Ural (Урал) 2006 Patrol

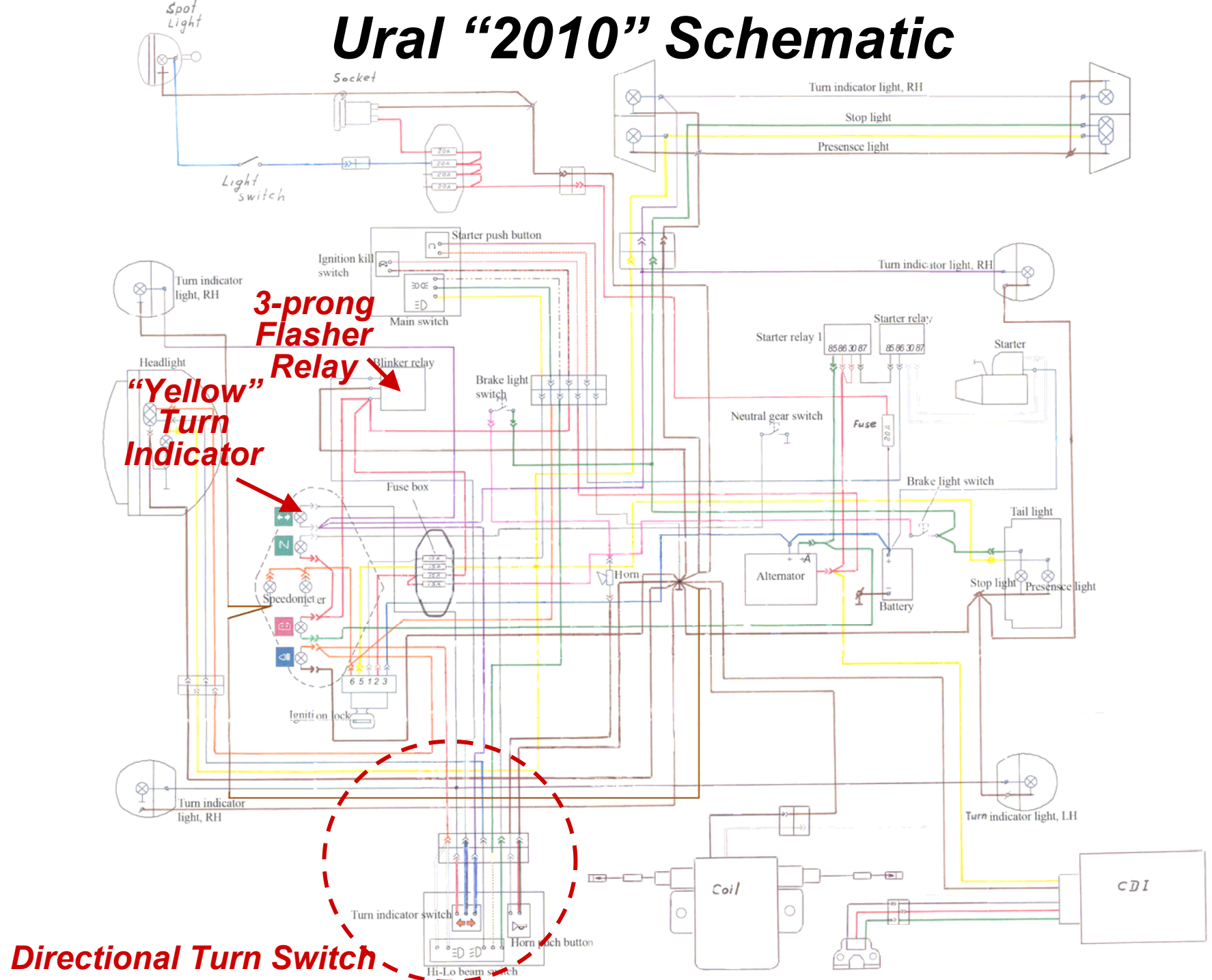
Sidecar
Front Light
Assembly



1. Optional right front turn signal connector
2. Optional right front turn signal for bikes without sidecar
3. Headlight
4. Headlight connector
5. Left front turn signal
6. Left front turn signal connector
7. Right handlebar controls
8. Right handlebar controls connector
9. Dash
10. Turn signals indicator (yellow)
11. Neutral indicator (green)
12. Speedometer illumination (red)
13. Battery indicator (blue)
14. High beam indicator (blue)
15. Neutral switch
16. Flasher
17. Fuse block
18. Trailer lights connector
19. Sidecar right front light assembly
20. Front brake switch connector
21. Front brake switch
22. Sidecar connector
23. Ignition switch
24. Left handlebar controls connector
25. Left handlebar controls

26. Spare
27. Spark plugs
28. Ignition coil
29. Horn
30. Alternator
31. Sidecar left front light assembly
32. Starter
33. Battery
34. Emergency flasher steering diodes
35. Headlight relay
36. Sidecar harness/panel connector
37. Starter relay
38. Spotlight switch
39. Spotlight
40. Optional right rear turn signal connector
41. Rear light assembly brake and running light connector
42. Rear light assembly ground connector
43. Rear left turn signal connector
44. Rear left turn signal
45. Power port connector
46. Optional right rear turn signal for bikes without sidecar
47. Rear light assembly
48. Left rear turn signal
49. 20 Amp fuse

Ural "2010" Schematic

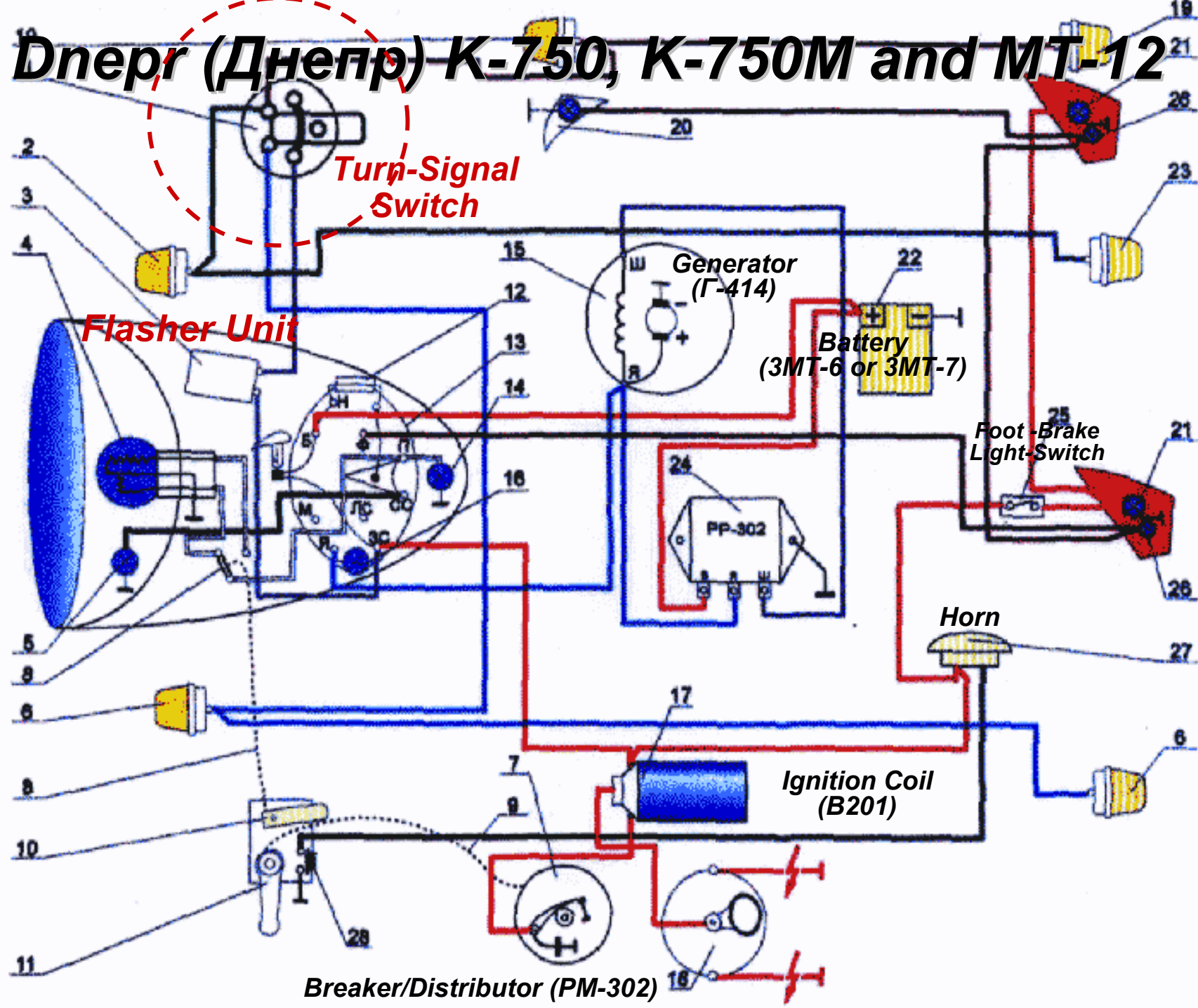




Schematics of Dnepr Sidecars

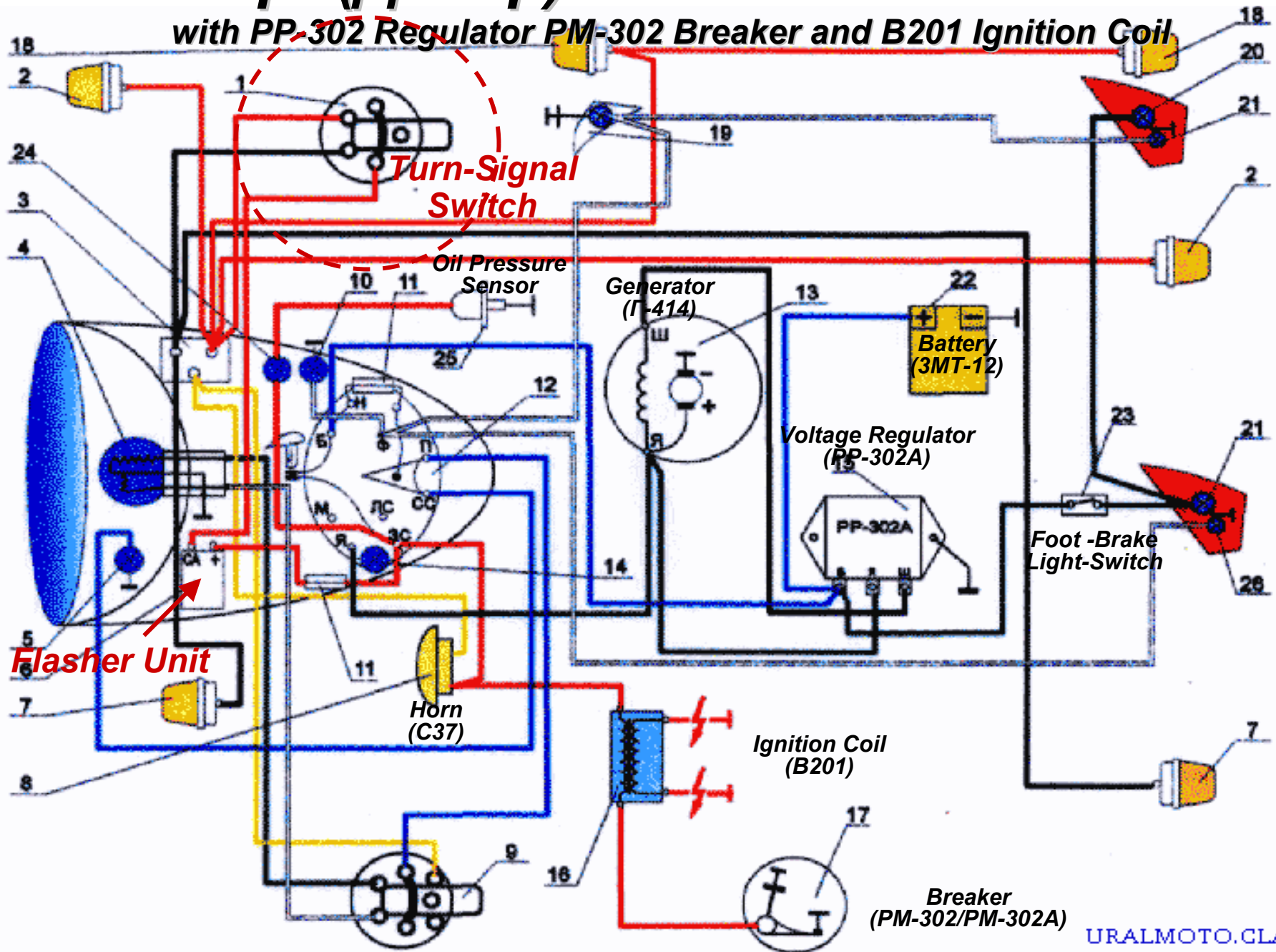
Ernie Franke
eafranke@tampabay.rr.com

Днепр (Днепр) K-750, K-750M and MT-12



Dnepr (Днепр) Later K-650 and MT-9

with PP-302 Regulator PM-302 Breaker and B201 Ignition Coil



Днепр (Днепр) MT-10

Flasher Unit

Turn-Signal Indicator

Turn-Signal Switch

Hi/Lo Beam Switch

Ignition Coil (B204)

Breaker (PM-302/PM-302A)

Neutral Switch

Voltage Regulator (PP-330)

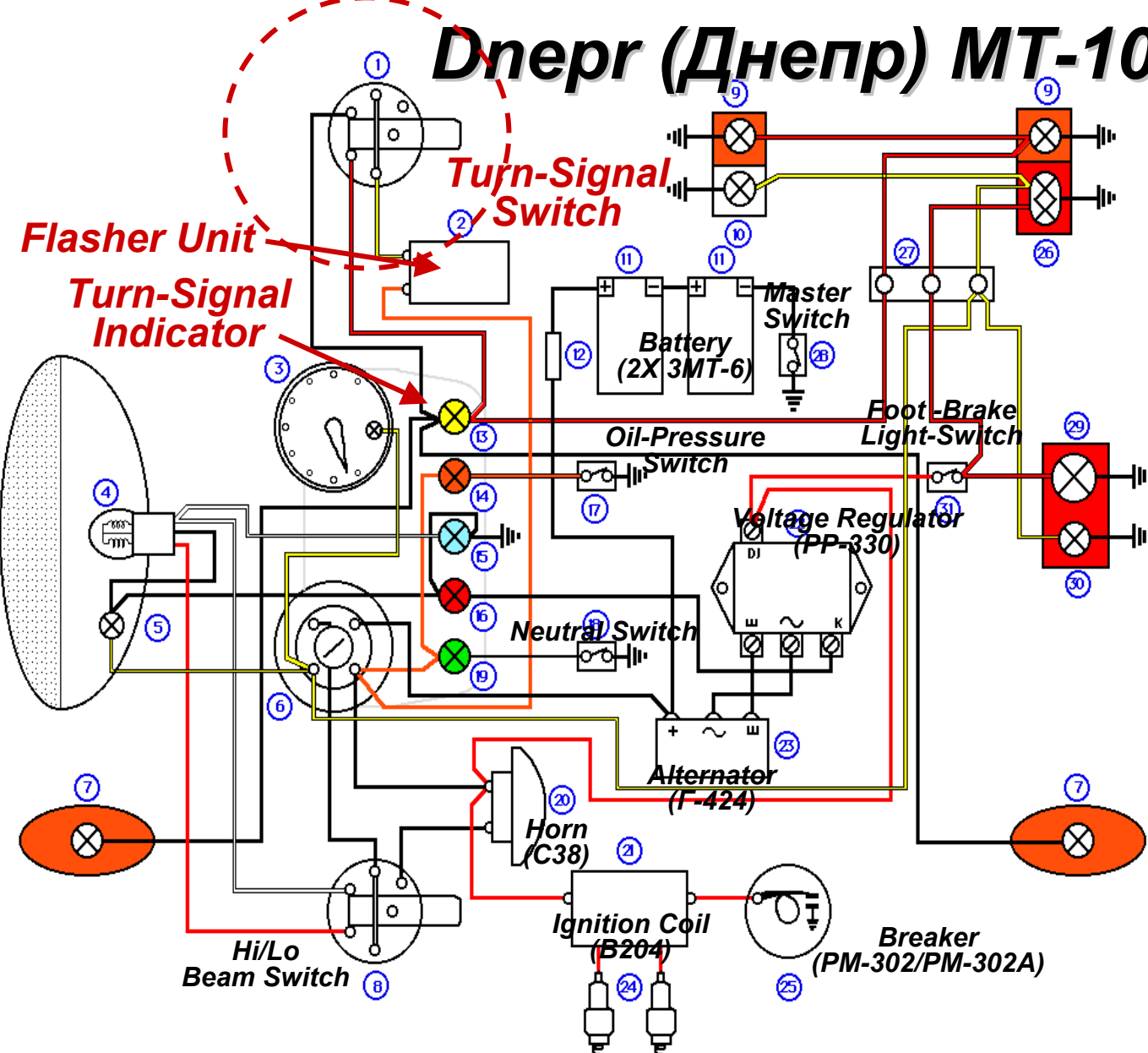
Alternator (F-424)

Oil-Pressure Switch

Foot-Brake Light-Switch

Master Switch

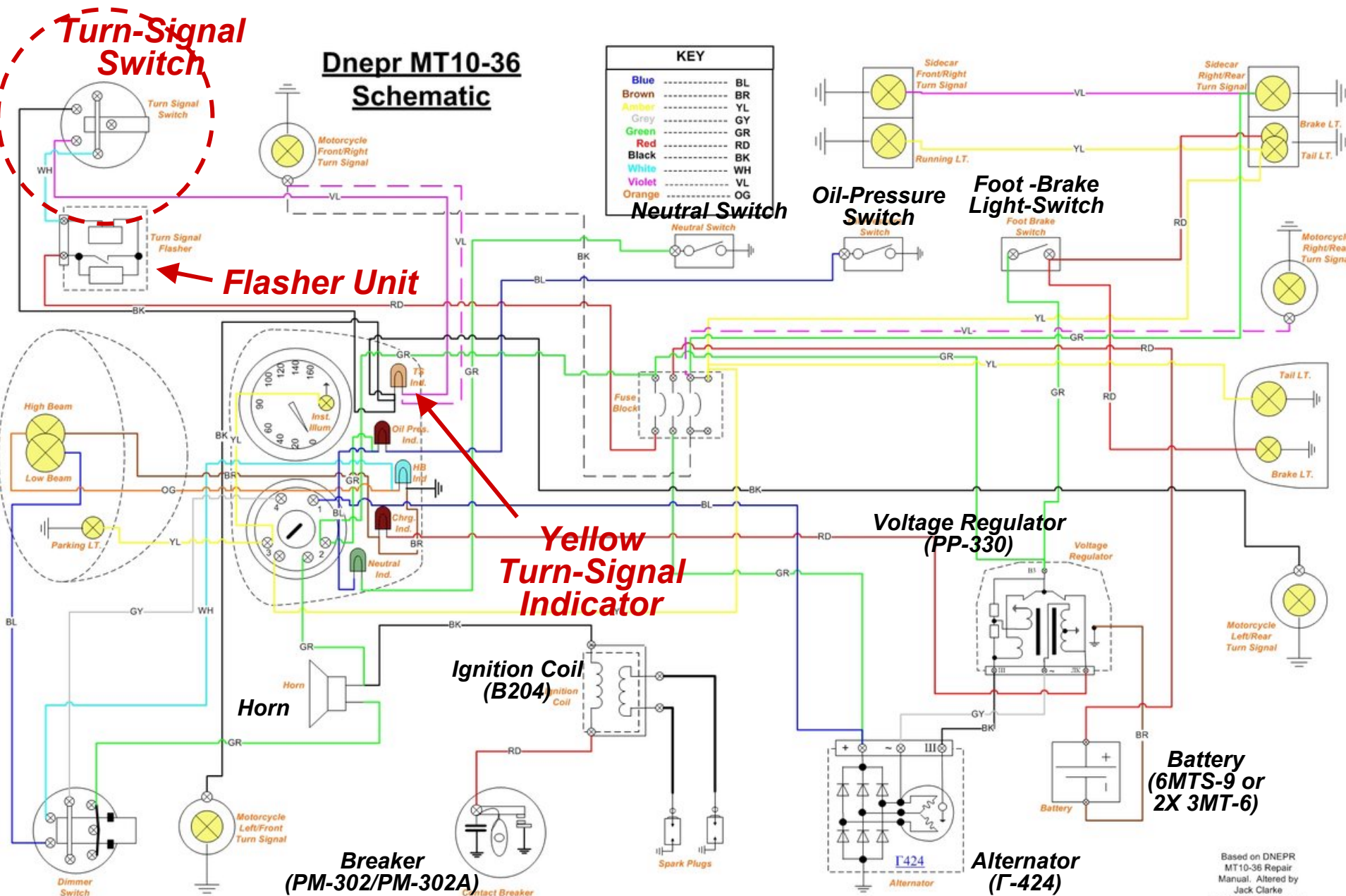
Battery (2X 3MT-6)



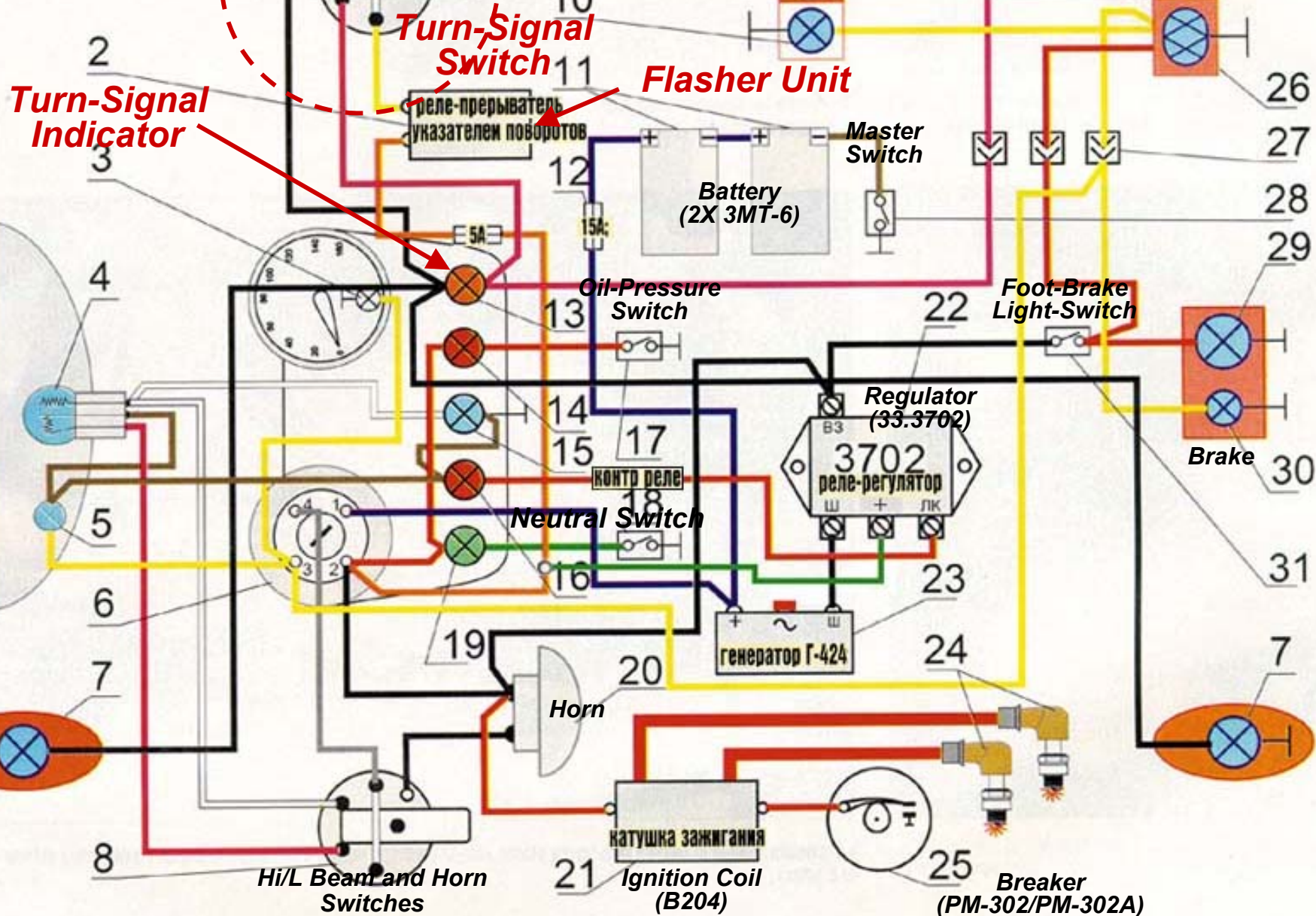
1. Turn Signal Switch
2. Turn Signal Flasher
3. Instrument Illumination
4. Headlight
5. Parking light
6. Ignition Switch
7. Front Left Turn Signal - Bike
8. High Beam Switch
9. Right Turn Signal - Sidecar
10. Front Right Turn Signal - Bike
11. Battery
12. Fuse
13. Turn Signal Indicator
14. Oil Pressure Indicator
15. High Beam Indicator
16. Charge Indicator
17. Oil Pressure Switch
18. Neutral Switch
19. Neutral Indicator
20. Horn
21. Coil
22. Voltage Regulator
23. Generator
24. Sparkplugs
25. Points/Contact Breaker
26. Rear Right Turn Signal - Bike
27. Wire Connector
28. Ground
29. Brake Light
30. Tail Light

1974 Dniepr MT-10

Днепр (Днепр) MT-10.36



Днепр (Днепр) MT-10 and MT-10.36



Днепр (Днепр) МТ-12

Turn-Signal
Indicator

Oil-Pressure
Switch

Turn-Signal
Switch

Flasher Unit

Foot-Brake
Light-Switch

сигнал торможения ВК854; 27 — фара
поворотник П-45; 29 — катушка зажигания

Dnepr (Днепр) Early MT-11 and MT-16

with PP-330 Regulator, later replaced with 33.3072 (solid-state)

