

ski-doo®

1998



TUNDRA
R
TOURING
SLE

Shop Manual

Supplement

4 8 4 0 6 9 6 0 0



ski-doo®

**1998
Shop Manual
Supplement**

TUNDRA R
TOURING SLE

THIS SUPPLEMENT MUST BE USED IN CONJUNCTION WITH 1998 SHOP MANUAL VOLUME 1
(P/N 484 0680 00)



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SAFETY NOTICE

This supplement has been prepared as a guide to correctly service and repair 1998 Tundra R and Touring SLE snowmobiles. See model list on next page.

This edition was primarily published to be used by snowmobile mechanics who are already familiar with all service procedures relating to Bombardier made snowmobiles.

Please note that the instructions will apply only if proper hand tools and special service tools are used.

This supplement uses technical terms which may be slightly different from the ones used in parts catalog.

It is understood that this supplement may be translated into another language. In the event of any discrepancy, the english version shall prevail.

The content depicts parts and/or procedures applicable to the particular product at its time of manufacture. It does not include dealer modifications, whether authorized or not by Bombardier, after manufacturing the product.

In addition, the sole purpose of the illustrations throughout the supplement, is to assist identification of the general configuration of the parts. They are not to be interpreted as technical drawings or exact replicas of the parts.

The use of Bombardier parts is most strongly recommended when considering replacement of any component. Dealer and/or distributor assistance should be sought in case of doubt.

The engines and the corresponding components identified in this document should not be utilized on product(s) other than those mentioned in this document.

Torque wrench tightening specifications must be strictly adhered to. Locking devices (ex.: locking tab, elastic stop nut, etc.) must be installed or replaced with new ones, where specified. If the efficiency of a locking device is impaired, it must be renewed.

This manual emphasizes particular information denoted by the wording and symbols:

 WARNING
--

Identifies an instruction which, if not followed, could cause serious personal injury including possibility of death.
--

 CAUTION
--

Denotes an instruction which, if not followed, could severely damage vehicle components.

NOTE: Indicates supplementary information needed to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use. Always use common shop safety practice.

This information relates to the preparation and use of Bombardier snowmobiles and has been utilized safely and effectively by Bombardier Inc. However, Bombardier Inc. disclaims liability for all damages and/or injuries resulting from the improper use of the contents. We strongly recommend that any services be carried out and/or verified by a highly skilled professional mechanic. It is understood that certain modifications may render use of the vehicle illegal under existing federal, provincial and state regulations.

INTRODUCTION

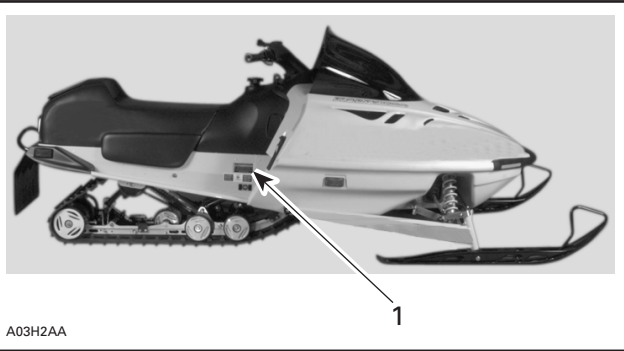
INTRODUCTION

This *Shop Manual Supplement* covers the following-
Bombardier made 1998 snowmobiles:

MODELS	MODEL NUMBER
TUNDRA* R.....	3268
TUNDRA* R (Europe)	3269
TOURING* SLE (Canada)	1229
TOURING* SLE (U.S.).....	1230
TOURING* SLE (Europe).....	1231

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Tundra R

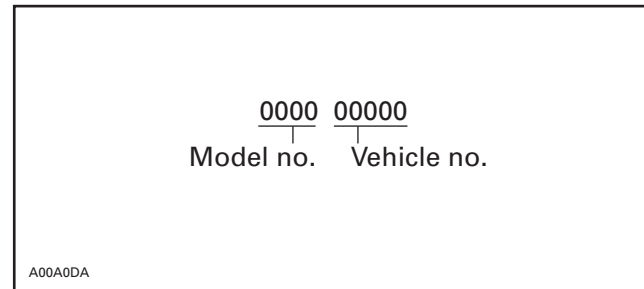


A03H2AA

TYPICAL

1. Vehicle serial number

Serial Number Meaning



A00A0DA

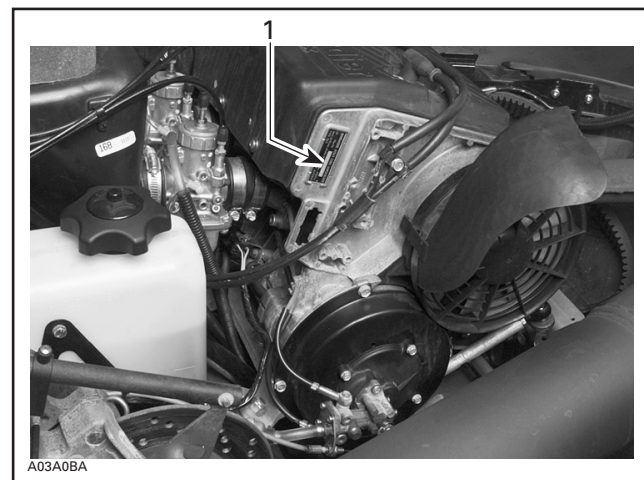
Touring SLE

This is a S-Series model.



ENGINE SERIAL NUMBER

Engine Serial Number Location



A03A0BA

TYPICAL — FAN-COOLED ENGINES

1. Engine serial number

LIST OF ABBREVIATIONS USED IN THIS MANUAL

A	ampere
amp	ampere
A•h	ampere-hour
AC	alternate current
BDC	bottom dead center
BTDC	before top dead center
°C	Celsius
CDI	capacitor discharge ignition
cm	centimeter
cm ²	square centimeter
cm ³	cubic centimeter
DC	direct current
DSA	direct shock action
°F	Fahrenheit
FC	fan cooled
fl. oz	fluid ounce
ft	foot
GRD	ground
H.A.C.	high altitude compensator
hal.	halogen
imp. oz	imperial ounce
in	inch
in ²	square inch
in ³	cubic inch
k	kilo (thousand)
kg	kilogram
km/h	kilometer per hour
kPa	Kilopascal
L	liter
lb	pound
lbf	pound (force)
lbf/in ²	pound per square inch
LH	left hand
m	meter
MAG	magneto
Max.	maximum

Min.	minimum
mL	milliliter
mm	millimeter
MPH	mile per hour
N	newton
N.A.	not applicable
no.	number
∞	continuity
O.L	overload (open circuit)
O.D.	outside diameter
OPT	optional
oz	ounce
P/N	part number
PSI	pound per square inch
PTO	power take off
R	rectangular
RAVE	rotax adjustable variable exhaust
RPM	revolution per minute
RRIM	reinforced reaction injection molding
Sp. Gr.	specific gravity
ST	semi-trapez
TDC	top dead center
TRA	total range adjustable
U.S. oz	ounce (United States)
V	volt
Vac	volt (alternative current)

INTRODUCTION

GENERAL INFORMATION

The information and component/system descriptions contained in this manual are correct at time of publication. Bombardier Inc. however, maintains a policy of continuous improvement of its products without imposing upon itself any obligation to install them on products previously manufactured.

Due to late changes, it may have some differences between the manufactured product and the description and/or specifications in this document.

Bombardier Inc. reserves the right at any time to discontinue or change specifications, designs, features, models or equipment without incurring obligation.

USEFUL PUBLICATIONS

Refer to *Parts Catalogs* to order the right parts.

PARTS CATALOG	
MODELS	P/N
Tundra R	480 1439 00
Touring SLE	480 1441 00

Use *Specification Booklet* to find rapidly the right specs.

1995-1998 *Specification Booklet* (P/N 484 0685 00).

ILLUSTRATIONS AND PROCEDURES

Illustrations and photos show the typical construction of the different assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts shown, however, they represent parts which have the same or a similar function.

▼ CAUTION

Most components of those vehicles are built with parts dimensioned in the metric system. Most fasteners are metric and must not be replaced by customary fasteners or vice-versa. Mismatched or incorrect fasteners could cause damage to the vehicle or possible personal injury.

As many of the procedures in this manual are interrelated, we suggest, that before undertaking any task, you read and thoroughly understand the entire section or subsection in which the procedure is contained.

A number of procedures throughout the book require the use of special tools. Before commencing any procedure, be sure that you have on hand all the tools required, or approved equivalents.

The use of RIGHT and LEFT indications in the text, always refers to driving position (when sitting on vehicle).



A03A0CA

TYPICAL

1. Left
2. Right

TIGHTENING TORQUES

Tighten fasteners to torque mentioned in exploded views and text. When they are not specified refer to following table. All torques apply to 8.8 grade fasteners. Bold face size (e.g. **M4**) indicates nominal value (mean value)..

N•m	FASTENER SIZE (8.8 grade)	Lbf•in
2	M4	18
3	M4	27
4	M5	35
8	M6	71
9	M6	80
10	M6	89
11	M6	97
12	M6	106

N•m	FASTENER SIZE (8.8)	Lbf•ft
21	M8	15
22	M8	16
23	M8	17
24	M8	18
25	M8	18
43	M10	32
44	M10	32
45	M10	33
46	M10	34
47	M10	35
48	M10	35
49	M10	36
50	M10	37
51	M10	38
52	M10	38
53	M10	39
76	M12	56
77	M12	57
78	M12	58
79	M12	58
80	M12	59
81	M12	60
82	M12	60
83	M12	61
84	M12	62
121	M14	89
122	M14	90
123	M14	91

N•m	FASTENER SIZE (8.8)	Lbf•ft
124	M14	91
125	M14	92
126	M14	93
127	M14	94
128	M14	94
129	M14	95
130	M14	96
131	M14	97
132	M14	97
133	M14	98
134	M14	99
135	M14	100
136	M14	100
137	M14	101
138	M14	102
139	M14	103
140	M14	103
141	M14	104
142	M14	105
143	M14	105
144	M14	106
145	M14	107
146	M14	108
147	M14	108
148	M14	109
149	M14	110
150	M14	111

SERVICE TOOLS

The following tools are new tools to properly service Ski-Doo snowmobile models specified on cover page. Mandatory and optional tools must be ordered separately. For the complete list of mandatory/optional tools and service products, refer to *1998 Shop Manual, volume 1*. The list of Service Products, both mandatory and optional, are not part of any kit and must all be ordered separately. If you need to replace or add to your tool inventory these items can be ordered through the regular parts channel.

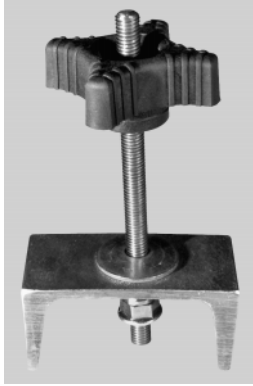
NOTE: The numbers outlined in black (example: **1**) are reference numbers to tools from other divisions (Sea-Doo Watercraft and/or Sea-Doo Jet Boats). Matching reference numbers indicate the same tool is being used even if the part numbers are different.

Section 01 SERVICE TOOLS AND SERVICE PRODUCTS

Subsection 01 (SERVICE TOOLS)

TRANSMISSION — MANDATORY SERVICE TOOLS

Spring compressor
(P/N 529 0353 00)



A05B034

APPLICATION

Tundra R.

Sliding pulley opening tool
(P/N 529 0342 00)



A05B044

APPLICATION

Tundra R.

Sliding pulley opening tool
(P/N 529 0355 01)



A03D2P4

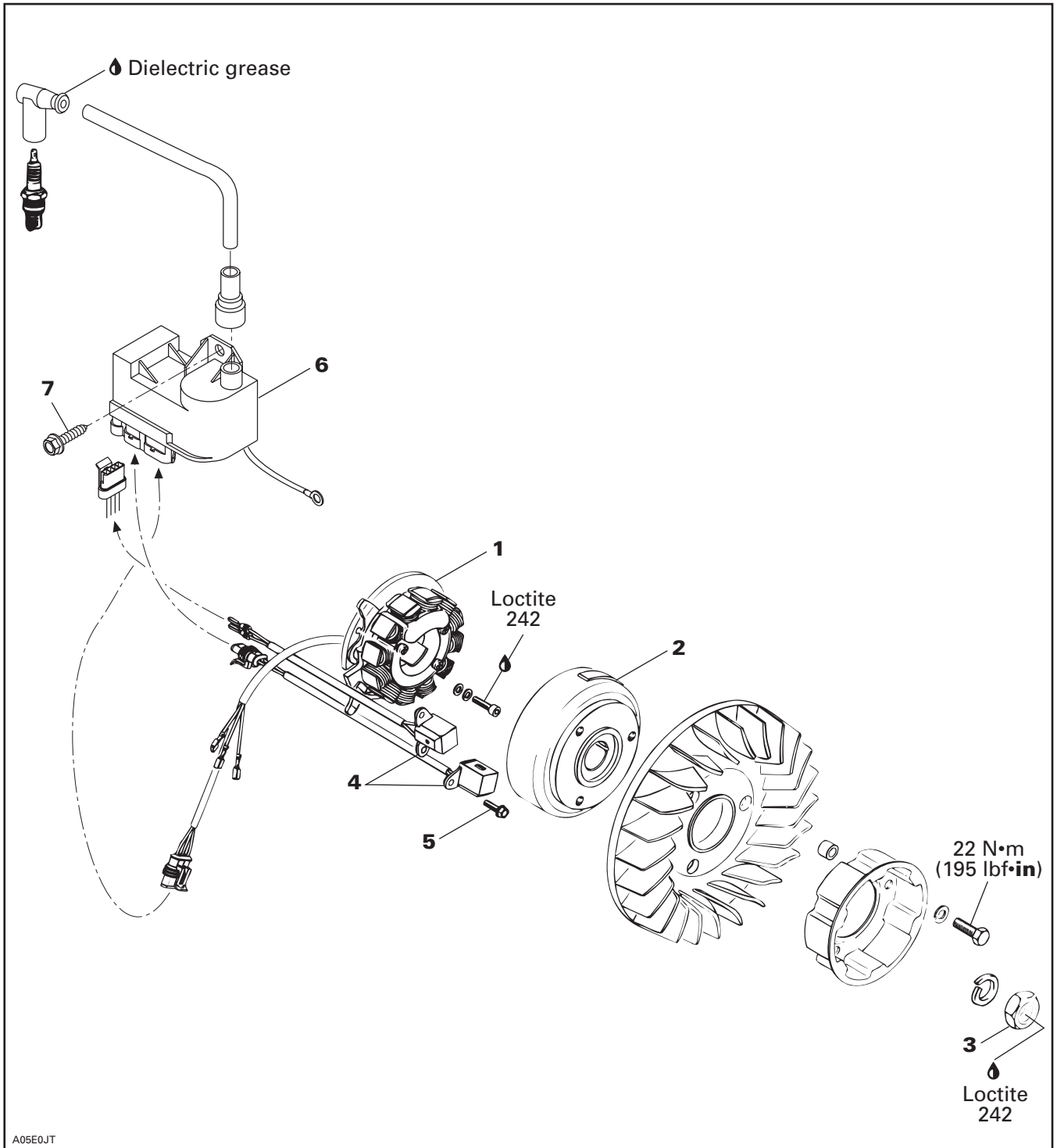
APPLICATION

Touring SLE.

CDI SYSTEM

DUCATI IGNITION SYSTEM

Tundra R

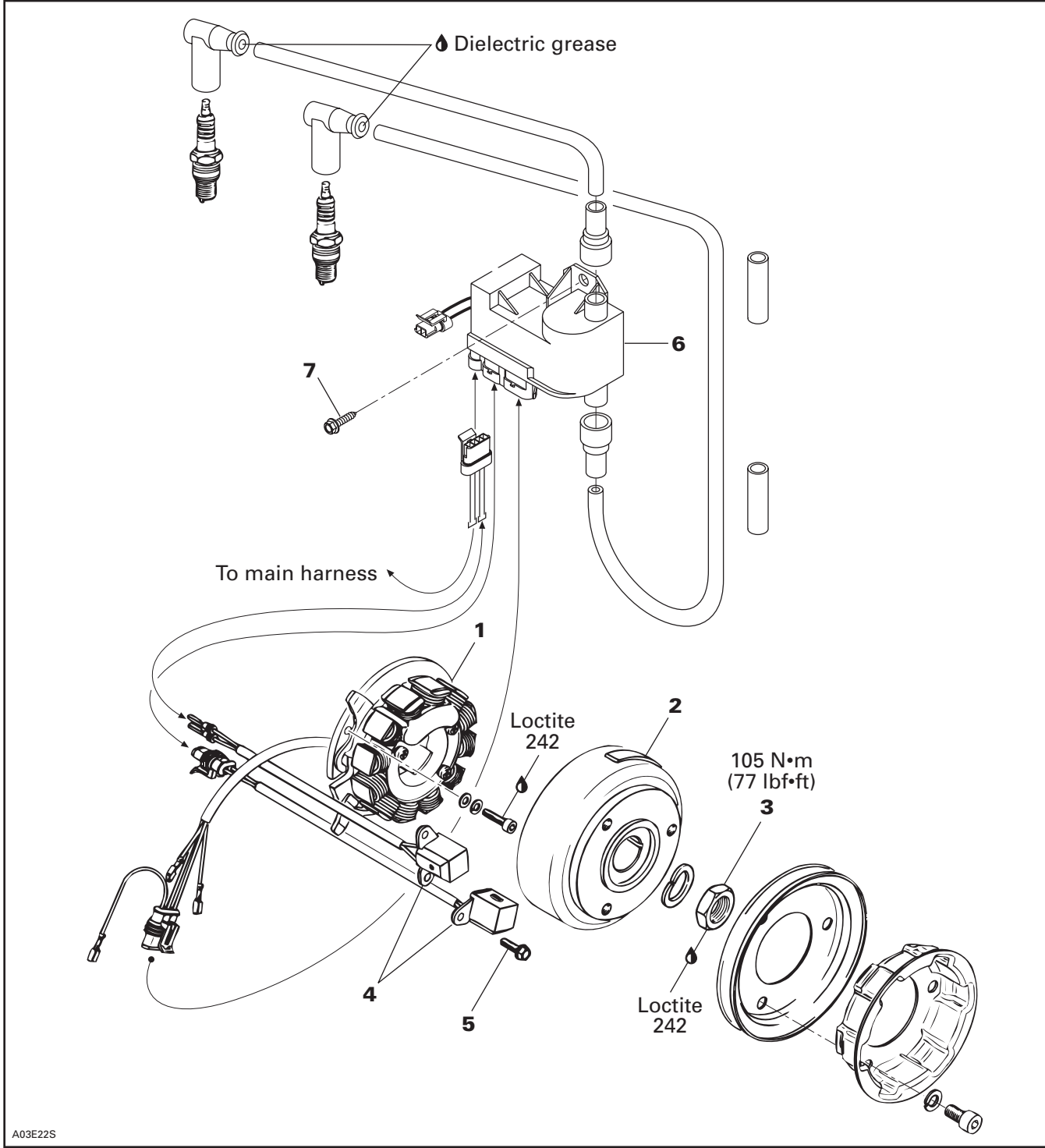


Section 04 ENGINE

Subsection 05 (CDI SYSTEM)

DUCATI IGNITION SYSTEM

Touring SLE



NOTE: The following procedures can be done without removing the engine from chassis.

CLEANING

Clean all metal components in a non-ferrous metal cleaner.

▼ CAUTION

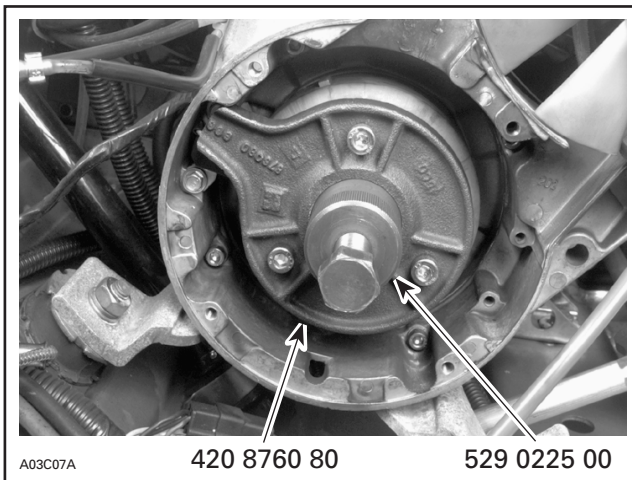
Clean armature and magneto using only a clean cloth.

DISASSEMBLY

To gain access to magneto assembly, remove the following parts as needed on different engines:

- tuned pipe and muffler
- oil injection pump mounting plate from rewind starter
- rewind starter
- starting and V-belt pulleys

NOTE: Before disassembling armature plate, indexing marks should be scribed to facilitate reassembly.



To remove magneto flywheel retaining nut **no. 3**, install puller ring (P/N 420 8760 80) and M8 x 20 screws.

- Remove magneto flywheel nut, using a 30 mm socket machined to 40 mm (1.580 in) outside diameter by 16 mm (5/8 in) long.

NOTE: To correctly remove a threadlocked fastener it is first necessary to tap on the fastener to break threadlocker bond. This will eliminate the possibility of thread breakage.

To remove magneto flywheel **no. 2**, install the magneto puller (P/N 529 0225 00).

- Tighten puller bolt and at the same time, tap on bolt head using a hammer to release magneto flywheel from its taper.

REPAIR

To replace generator coil **no. 1**:

- Heat the armature plate to 93°C (200°F) around the screw holes to break the threadlocker bond.

To replace MPEM module **no. 6**:

- Disconnect spark plug cable(s).
- Disconnect ground cable (Tundra R)
- Disconnect all 3 connectors from MPEM module.
- Remove retaining screws **no. 7**.
- Replace trigger coil.

To replace trigger coil **no. 4**:

- Disconnect trigger coil wires (WH/YL) and (BL/YL).
- Remove grommet from crankcase where trigger coil wire exits magneto housing.
- Remove retaining screws **no. 5**.
- Remove trigger coil and carefully pull wire.
- Install new trigger coil and other parts removed.

Adjustment

Whenever the trigger coil or the magneto flywheel is removed or replaced, the air-gap between the trigger coil and the flywheel protrusion must be checked and adjusted. The purpose of this adjustment is to obtain the minimum clearance between these parts — without touching at any RPM — so that the trigger coil produces its proper electrical output. Ignition timing must also be checked.

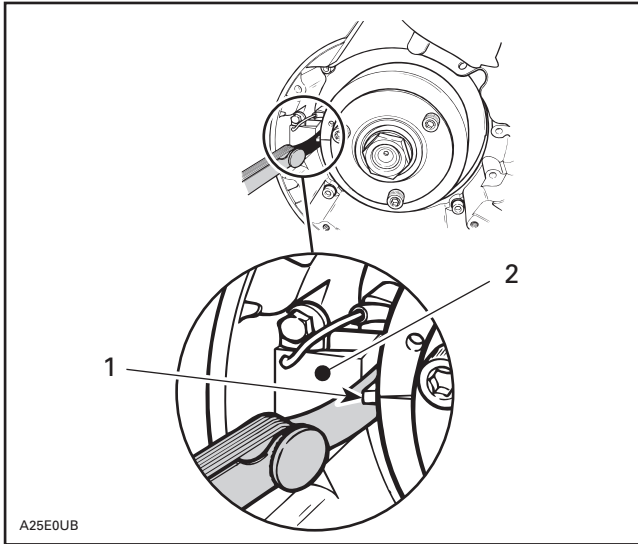
Proceed as follows:

1. Rotate flywheel so that one protrusion aligns with trigger coil.
2. Using a feeler gauge of 0.40 mm (.016 in) to 1.1 mm (.043 in) thick, check air-gap between center pole of trigger coil and flywheel protrusion.
3. If necessary, adjust by loosening retaining screws and moving trigger coil toward or away of protrusion.

Section 04 ENGINE

Subsection 05 (CDI SYSTEM)

4. Retighten screws and recheck air-gap.



TYPICAL — ADJUSTING TRIGGER COIL AIR-GAP

1. Flywheel protrusion
2. Trigger coil

To replace armature:

- Disconnect the 2-wire connector 4-04 (BLACK and RED wires).
- Disconnect the 3-wire connector 4-01 (BLACK, YELLOW/BLACK and YELLOW wires).
- Remove grommet from crankcase where magneto harness exits magneto housing.
- Remove armature plate retaining screws.
- Remove armature plate with armature and carefully pull wires.
- Install new parts and other parts removed.

ASSEMBLY

Clean crankshaft extension (taper).

Apply Loctite 242 (blue) on taper.

Position Woodruff key, flywheel and lock washer on crankshaft.

Clean nut threads and apply Loctite 242 (blue) before tightening nut to 105 N•m (77 lbf•ft).

At reassembly coat all electric connections with silicone dielectric grease (P/N 413 7017 00) to prevent corrosion or moisture penetration.



CAUTION

Do not use silicone "sealant", this product will corrode contacts.

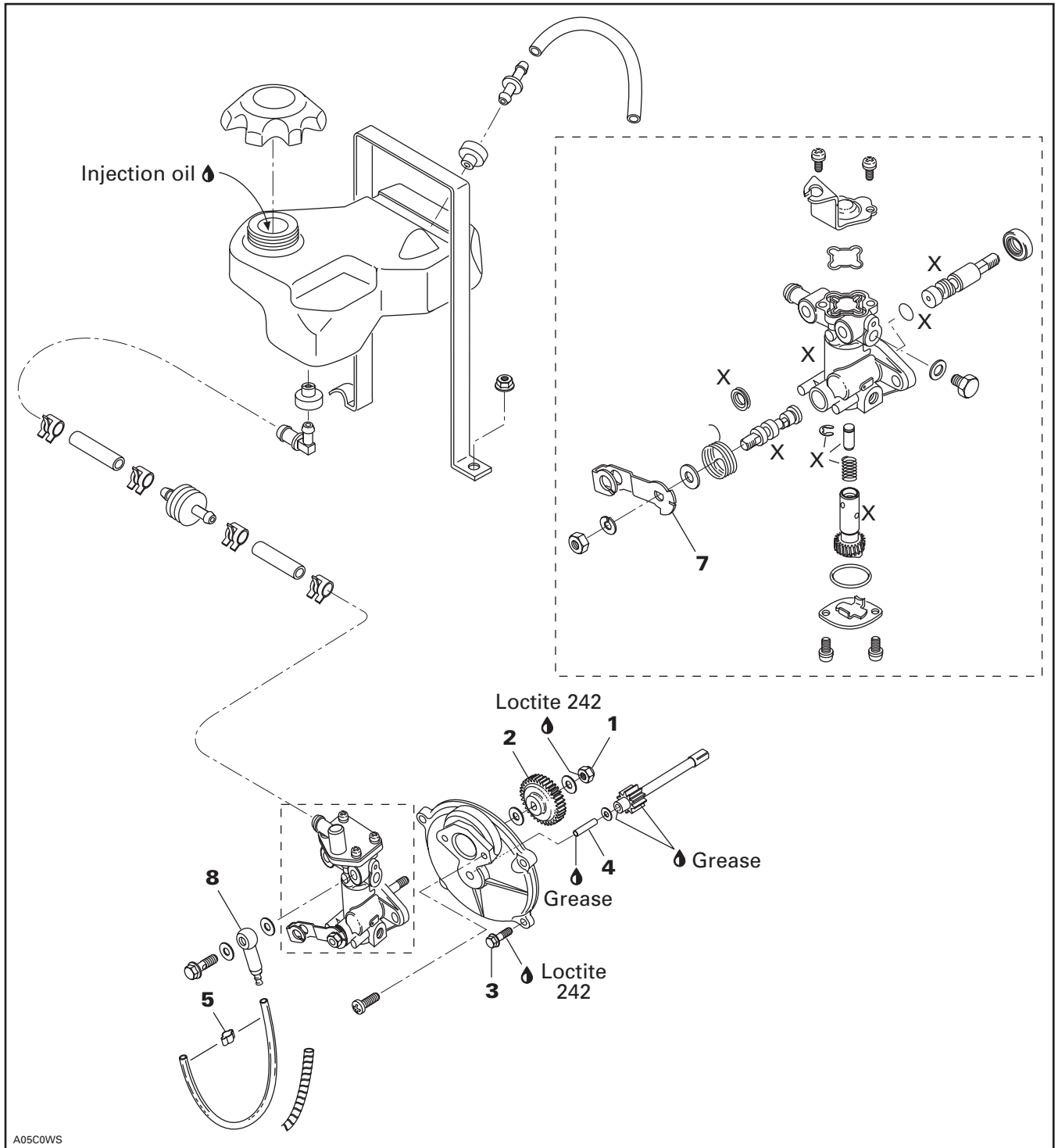
Ignition Timing

Check as described in IGNITION TIMING 06-03, from 1998 Shop Manual, volume 1.

OIL INJECTION SYSTEM

OIL INJECTION PUMP

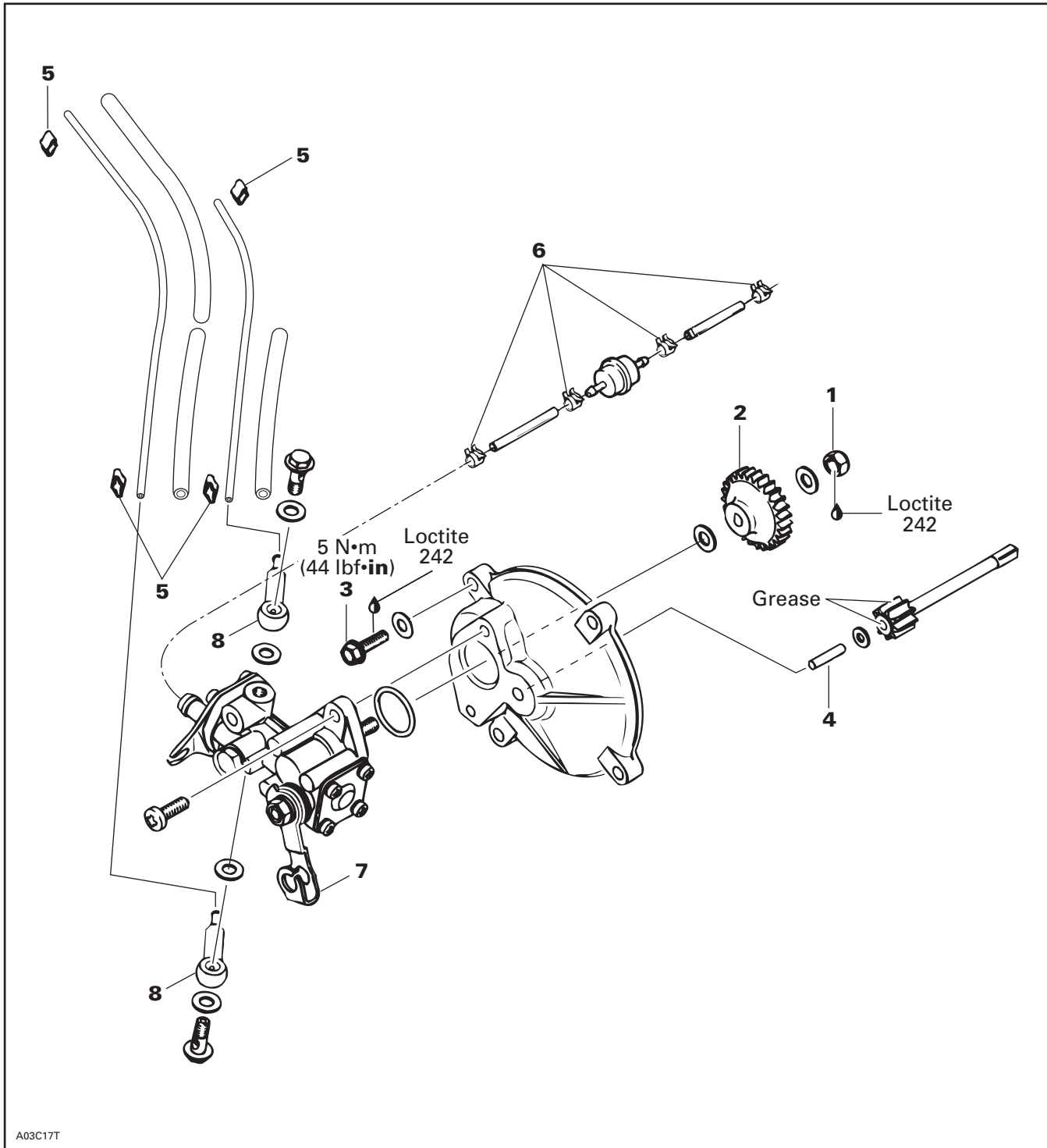
Tundra R



Section 04 ENGINE

Subsection 06 (OIL INJECTION SYSTEM)

Touring SLE



DISASSEMBLY/ASSEMBLY, ADJUSTMENT and CHECKING OPERATION procedures remain the same.

Refer to *1998 Shop Manual, volume 1*.

OIL PUMP IDENTIFICATION

Different engines need different pumps. See identification on pump lever no. 7.

 CAUTION
Always mount proper pump on engine.

ENGINE TYPE	OIL PUMP IDENTIFICATION
277 (Tundra)	132 J*
503 (Touring SLE)	E5*

* 132 J and E5 oil pumps do not supply any oil at idle. They are called zero oil delivery at idle.

DRIVE BELT

1998 APPLICATION CHART

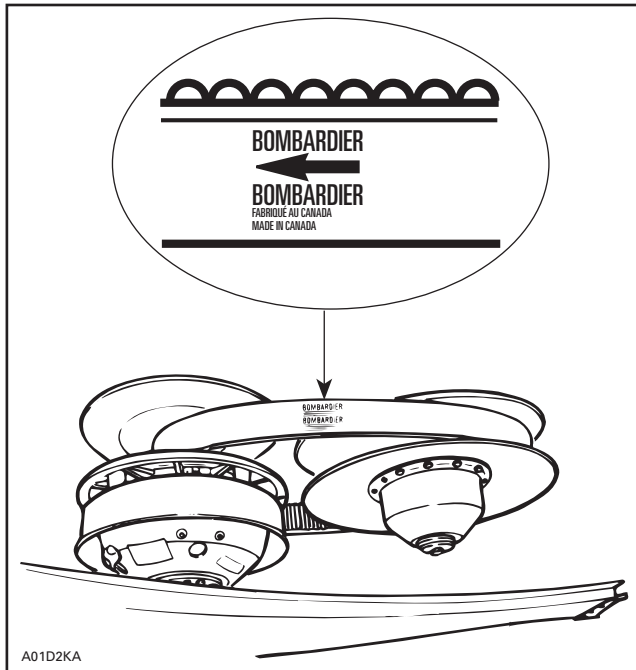
MODEL	PART NUMBER	WIDTH (NEW) ± 0.25 mm (.010 in)	MINIMUM WIDTH (WEAR LIMIT)
Tundra R	414 827 600	33.3 mm (1-5/16 in)	30 mm (1-3/16 in)
Touring SLE	415 060 600	34.7 mm (1-23/64 in)	32.3 mm (1-17/64 in)

CLEANING

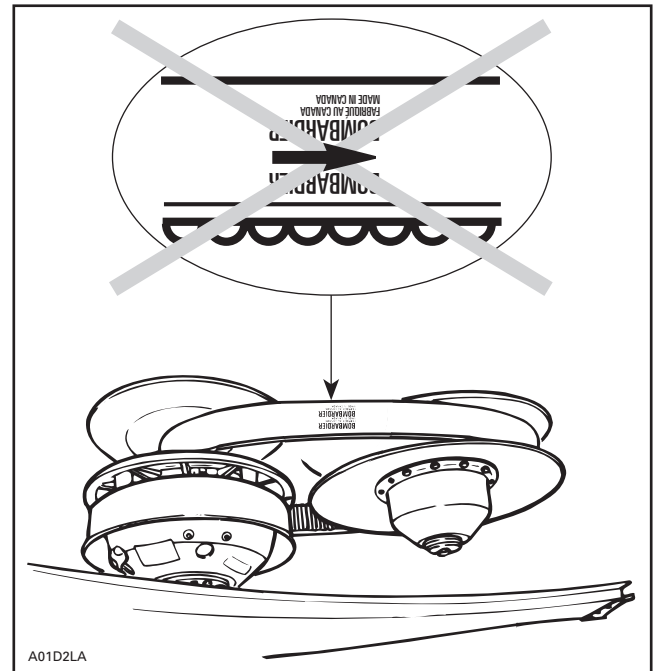
Use Bombardier Cleaner (P/N 293 1100 01) to remove rubber residue from drive belt.

ROTATION DIRECTION

The maximum drive belt life span is obtained when the drive belt is installed as shown. This will ensure that correct direction of rotation is respected.



CORRECT



INCORRECT

NOTE: For used drive belt, mark and reinstall in the same position.

Section 05 TRANSMISSION

Subsection 02 (DRIVE BELT)

DRIVE BELT DEFLECTION MEASUREMENT

NOTE: The drive belt deflection measurement must be performed each time a new drive belt is installed.

NOTE: To obtain an accurate drive belt deflection measurement, it is suggested to allow a break-in period of 50 km (30 mi).

Before checking the belt deflection, ensure vehicle has the proper belt (Refer to the application chart).

Adjust pulley distance and alignment. Refer to PULLEY DISTANCE AND ALIGNMENT 05-05.

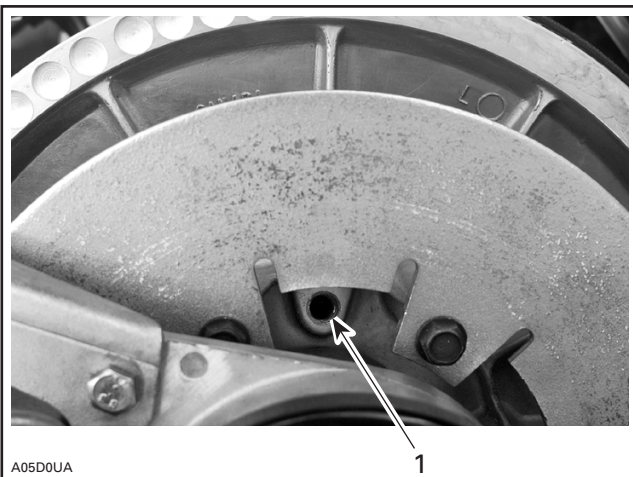
To obtain maximum vehicle performance, the belt tension must be adjusted according to specifications shown in the accompanying chart.

MODEL	DEFLECTION mm (in)	FORCE kg (lb)
Tundra R	32 ± 5 (1-1/4 ± 13/64)	6.8 (15)
Touring SLE	32 ± 5 (1-1/4 ± 13/64)	11.3 (25)

DRIVE BELT REMOVAL

Tundra R

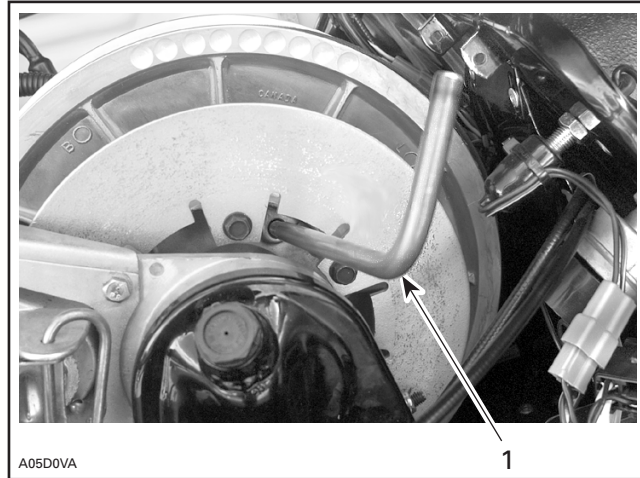
Rotate driven pulley so that embossment is accessible, as shown in the next photo.



1. Embossment accessible

Use sliding pulley opening tool (P/N 529 034 200) and tighten tool until drive belt is loosened enough so it can be removed. See next photo.

NOTE: Sliding pulley opening tool for Tundra R is included in snowmobile tool kit but is also available separately.

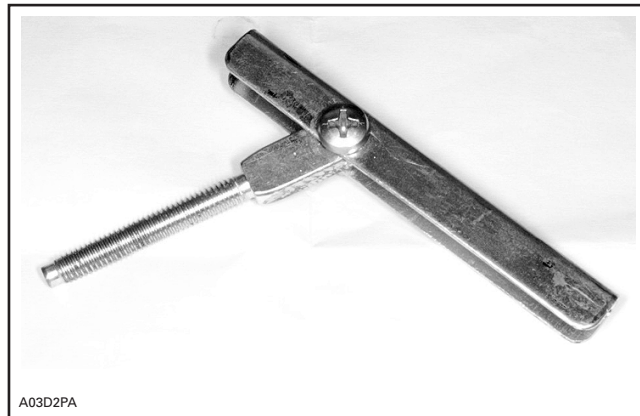


1. Sliding pulley opening tool (P/N 529 034 200)

Touring SLE

Use sliding pulley opening tool (P/N 529 035 501), as shown in the next photo.

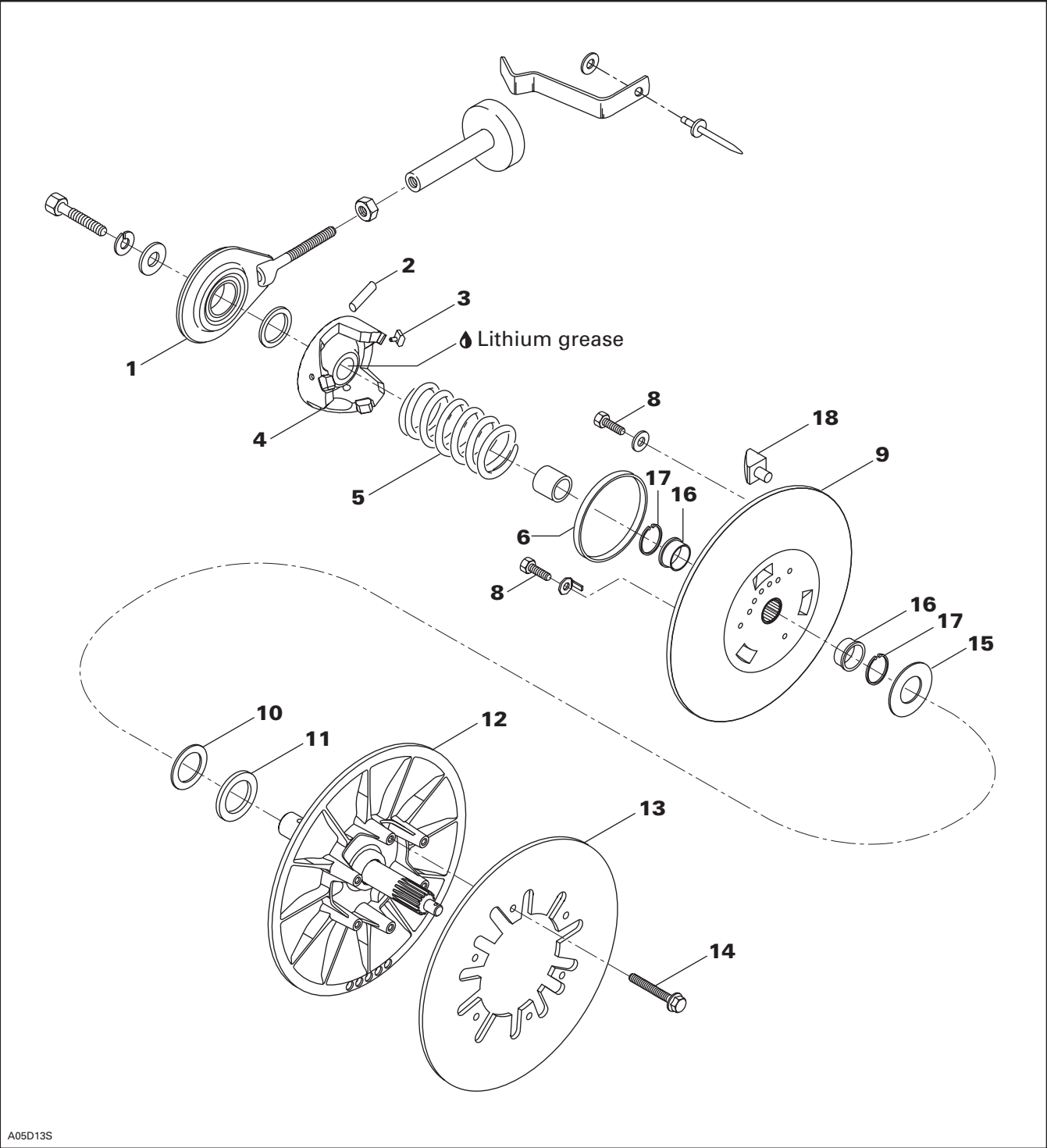
NOTE: Sliding pulley opening tool for Touring SLE is included in snowmobile tool kit but is also available separately.



SLIDING PULLEY OPENING TOOL (P/N 529 035 501)

DRIVEN PULLEY

Tundra R



A05D13S

Section 05 TRANSMISSION

Subsection 04 (DRIVEN PULLEY)

REMOVAL AND DISASSEMBLY

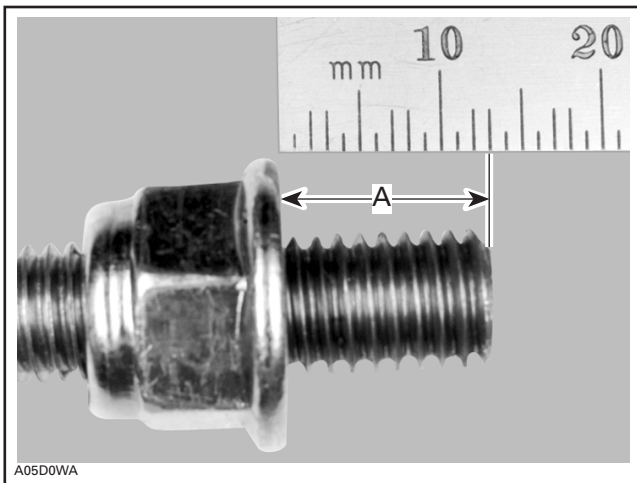
Remain the same. Refer to *1998 Shop Manual, volume 1*.

DISASSEMBLY

Driven Pulley

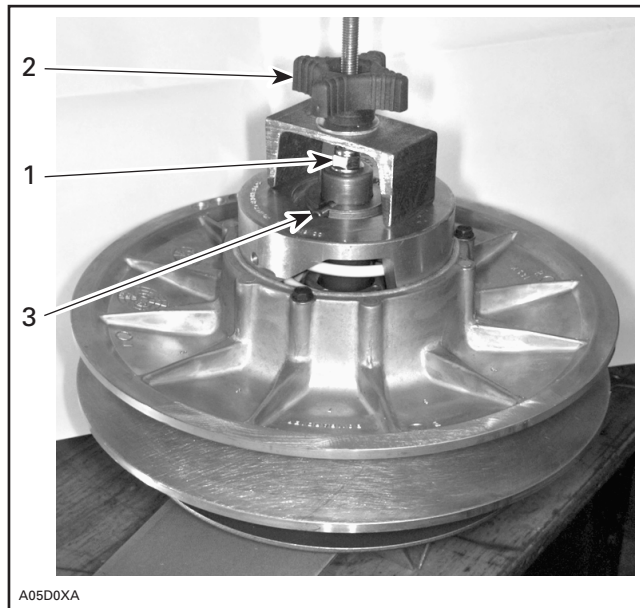
To disassemble driven pulley, special tool (P/N 529 035 300) must be used. See following procedure.

Position stop nut 13 mm (1/2 in) from threaded rod end, as shown in the next photo.



A. 13 mm (1/2 in)

Install tool (P/N 529 035 300) and tighten stop nut. Tighten tool knob to compress spring then remove roll pin.

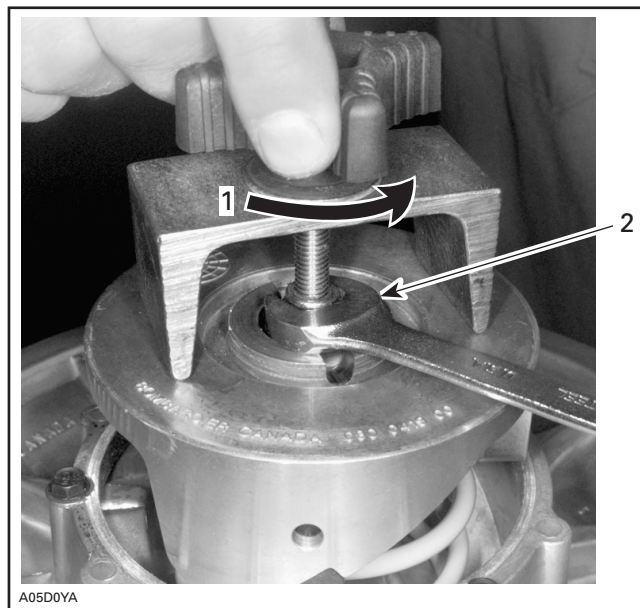


1. Tighten stop nut
2. Tighten knob to compress spring
3. Remove roll pin

Once roll pin has been removed, loosen knob until spring pressure is completely released.

◆ WARNING

To avoid injuries always hold stop nut with a key when loosening knob, as shown in the next photo.



1. When loosening knob
2. Hold stop nut with a key

6,9,16,17, Sliding Half Bushing and Bushing

SMALL BUSHINGS

To remove a worn bushing **no. 16**, use a screwdriver and pull out circlip **no. 17**.



A05D0ZA

REMOVE CIRCLIP

Reverse pulley half **no. 9** then remove bushing using a screwdriver or a punch, as shown in the next photo.

▼ CAUTION

Small bushings may be damage at removal. Always replace with new ones.



A05D10A

LARGE BUSHING

Remove 3 screws with washers and pry sliding half bushing **no. 6** out.

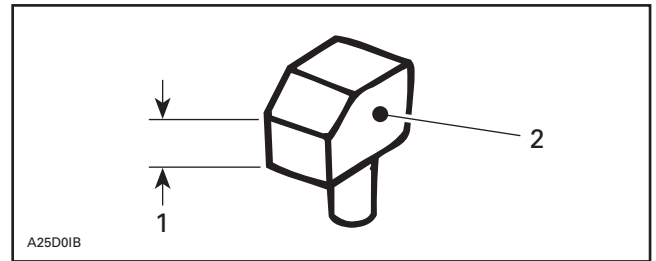
INSPECTION

3, 18, Slider Shoe

Black slider shoe = forward

Red slider shoe = reverse

Check cam slider shoes for wear. Replace when inside edge of cam slider shoe slope is worn to 1 mm (.039 in) or less.



1. Measure length of slider shoe slope
2. Sliding pulley side

ASSEMBLY

Assembly procedures remain the same as described in *1998 Shop Manual, volume 1*, except for the following:

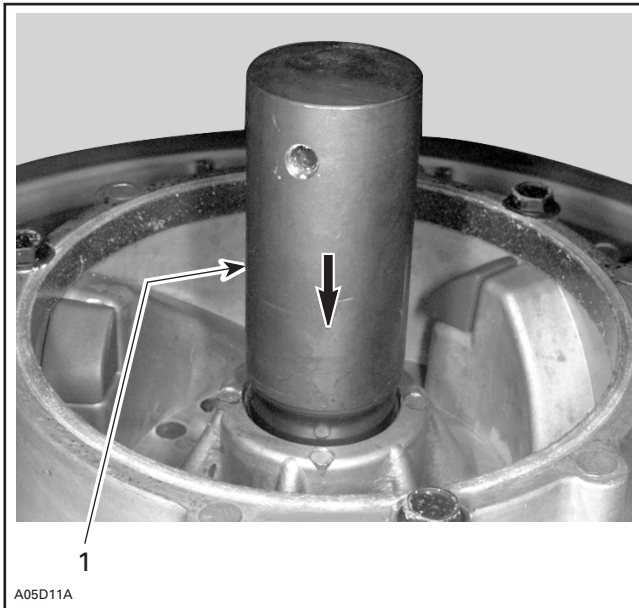
16, Bushing

Clean mounting surfaces with Loctite Safety Solvent. Using a press and pusher (P/N 420 8765 12), install bushing as shown in the next photo.

▼ CAUTION

To avoid bushings damage, use extreme caution when inserting new bushings.

Section 05 TRANSMISSION
Subsection 04 (DRIVEN PULLEY)

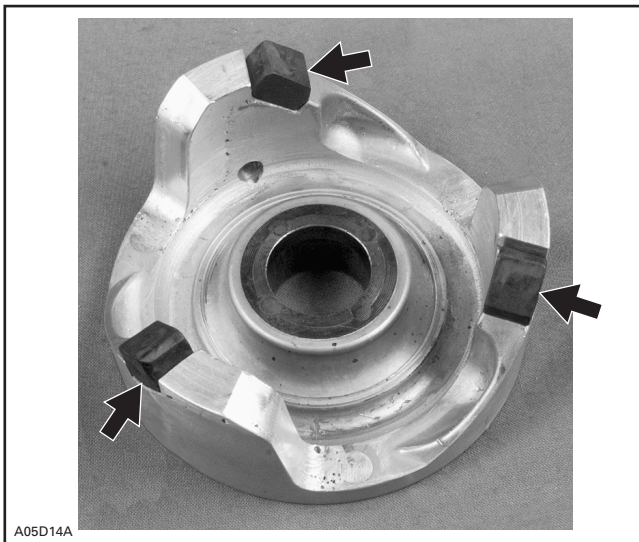


1. Pusher (P/N 420 8765 12)

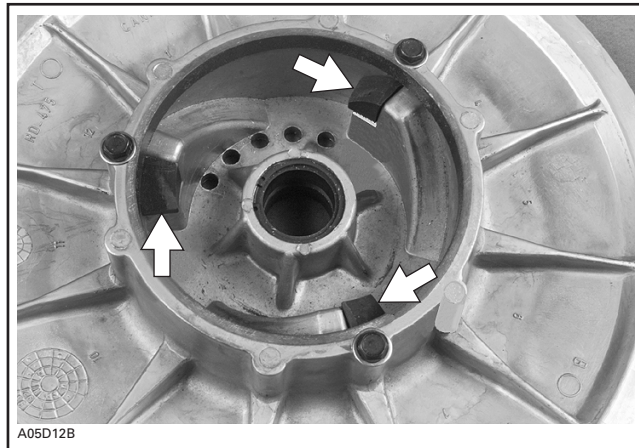
3,18, Slider Shoe

When replacing slider shoes, always install a new set (3 shoes) to maintain equal pressure on the cam.

Install slider shoes as per following photo. Red slider shoes are being used for reverse and black ones for forward.



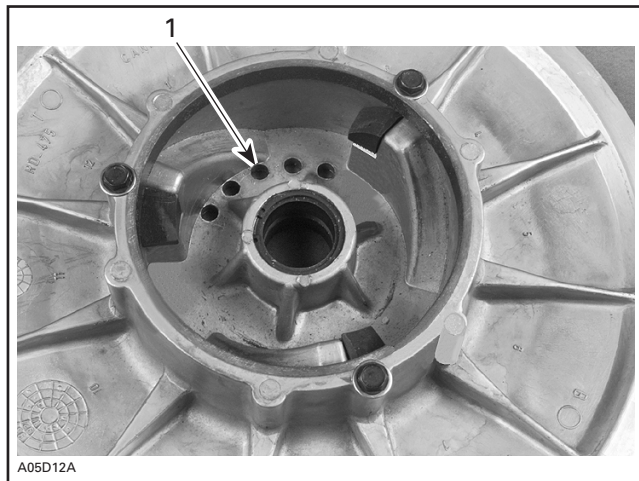
BLACK SLIDER SHOES ON CAM



RED SLIDER SHOES ON PULLEY HALF

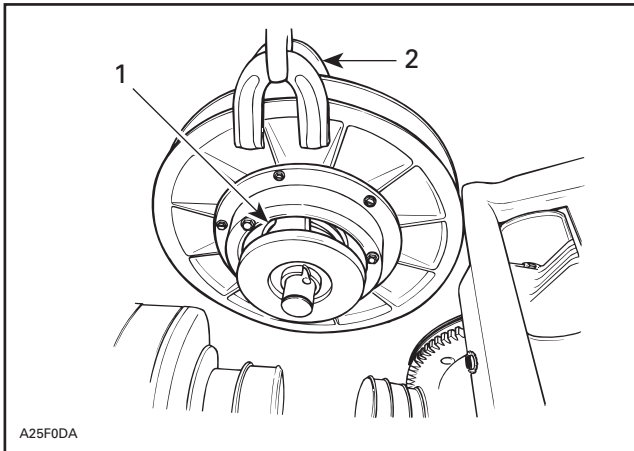
2,4,5, Roller Pin, Outer Cam and Spring

Hold sliding half with welding clamps. Insert spring in adjusting hole 3 into sliding half, as illustrated.



1. Adjusting hole 3

Insert other spring end in outer cam. Push cam all the way in then install roll pin coated with anti-seize lubricant (P/N 413 7010 00).



TYPICAL

1. Outer cam
2. Welding clamp

INSTALLATION

Installation procedure remain the same. Refer to *1998 Shop Manual, volume 1*.

Pulley Alignment and Drive Belt Deflection

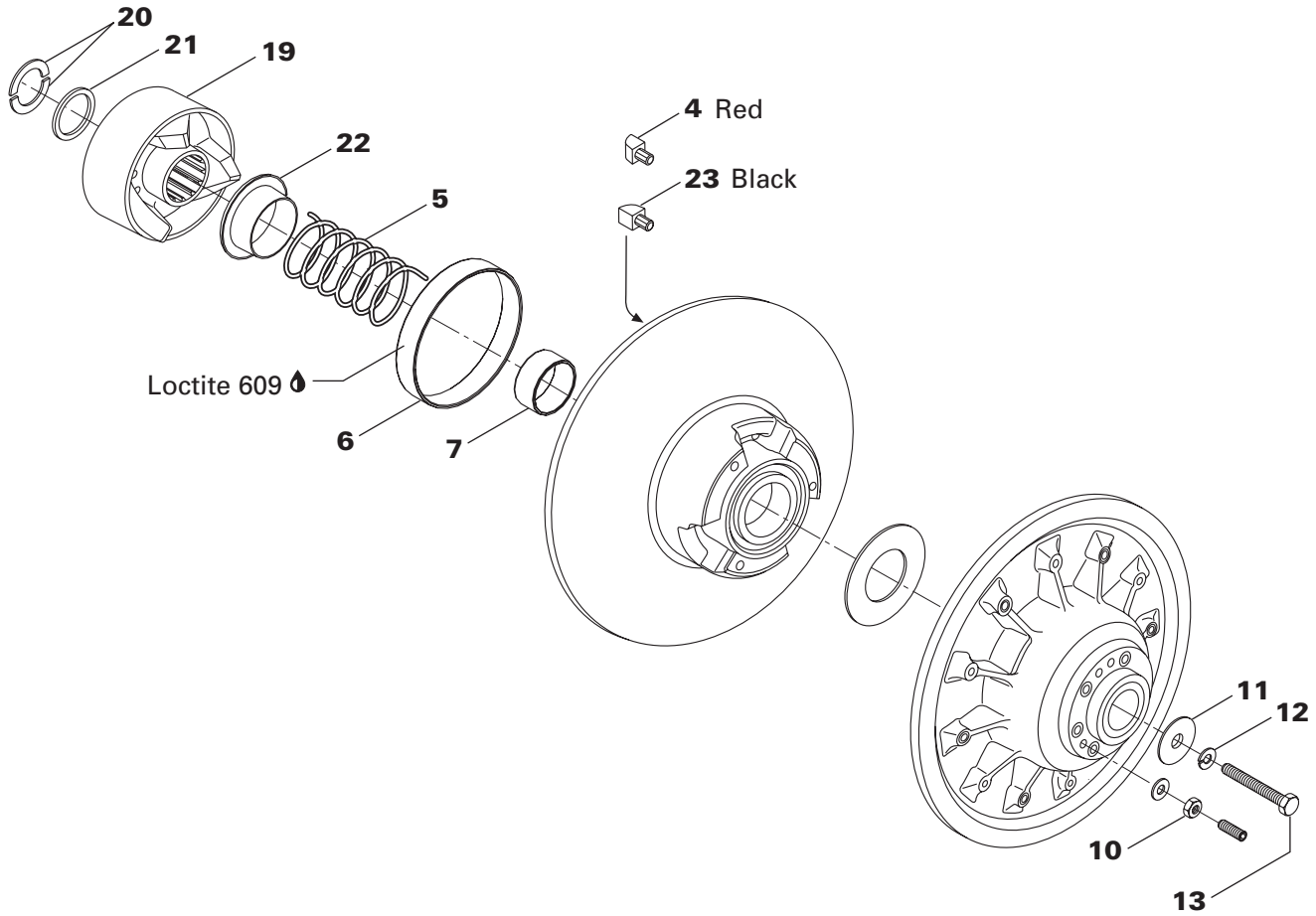
Refer to PULLEY DISTANCE AND ALIGNMENT 05-05 and DRIVE BELT 05-02 to perform adjustments.

▼ CAUTION

Drive belt and pulley adjustments must always be checked whenever pulleys have been removed, replaced or disassembled.

Section 05 TRANSMISSION
Subsection 04 (DRIVEN PULLEY)

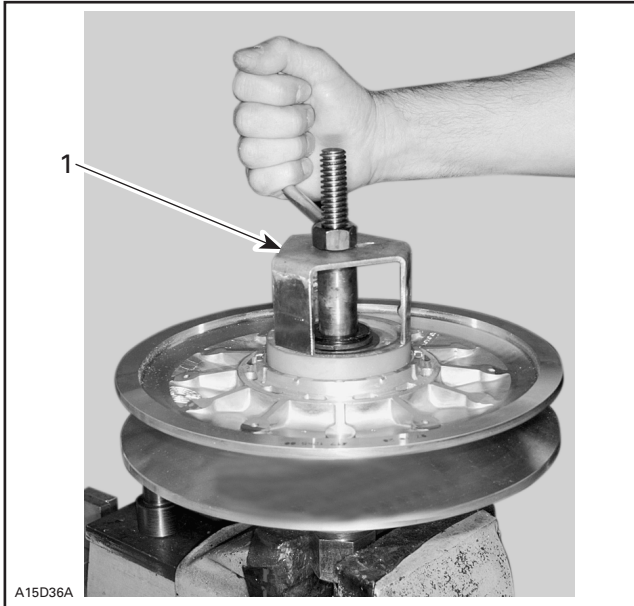
Touring SLE



A03D2RS

DISASSEMBLY

Use spring compressor (P/N 529 0355 24).



TYPICAL

1. Spring compressor (P/N 529 0355 24)

Remove half keys no. 20 and spacer no. 21 to disassemble the outer cam and the 2 pulley halves.

◆ WARNING

Driven pulley cam is spring loaded, use above mentioned tool.

INSPECTION

Replace bushing(s) if worn more than specified.

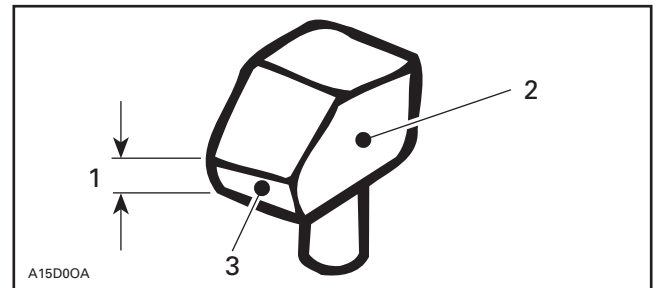
DRIVEN PULLEY BUSHING WEAR LIMIT mm (in)	
Small bushing	38.30 (1.508)
Large bushing	108.2 (4.260)

4, 23, Slider Shoe

Black slider shoe = forward

Red slider shoe = reverse

Check cam slider shoes for wear. Replace when inside edge of cam slider shoe slope base is worn to 1 mm (.039 in) or less.



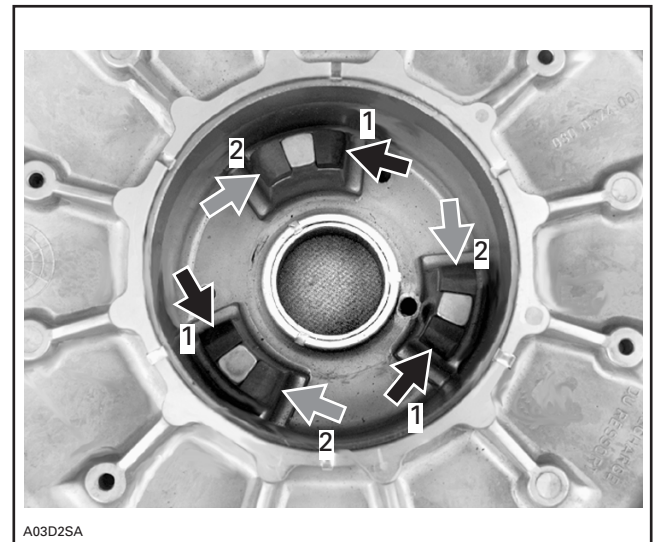
1. Measure thickness of slope base here
2. Sliding pulley side
3. Slope base

ASSEMBLY

4,23, Cam Slider Shoe

When replacing slider shoes, always install a new set (3 shoes) to maintain equal pressure on the cam.

Install slider shoes as per following photo. Red slider shoes are being used for reverse and black ones for forward.



1. BLACK slider shoe
2. RED slider shoe

Assemble driven pulley components by reversing the disassembly procedure.

Section 05 TRANSMISSION

Subsection 04 (DRIVEN PULLEY)

5,19,22, Spring, Outer Cam and Guard

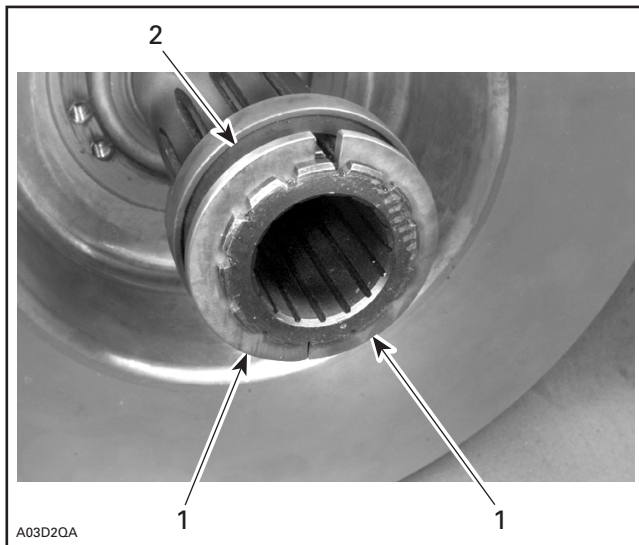
Position guard no. 22 in outer cam no. 19 then insert spring in adjusting hole 3 (mid-hole) into outer cam.

Compress outer cam using spring compressor (P/N 529 0355 24).

Install spacer no. 21 then secure outer cam with half keys no. 20, as shown in the next photo.

▼ CAUTION

Ensure that half keys are properly inserted into shaft groove and that spacer recess is facing half keys.



1. Half keys inserted into shaft groove
2. Spacer recess facing half keys

INSTALLATION

14,15, Countershaft and Anti-seize Lubricant

▼ CAUTION

Always apply anti-seize lubricant (P/N 413 7010 00) on the countershaft before final pulley installation.

Should installation procedure be required, refer to BRAKE 05-06 then look for **Brake Disc and Countershaft Bearing Adjustment** in *1998 Shop Manual, volume 1*.

Reinstall the pulley on the countershaft by reversing the removal procedure.

13, Pulley Retaining Screw

Torque to 25 N•m (18 lbf•ft).

ADJUSTMENT

Refer to PULLEY DISTANCE AND ALIGNMENT 05-05 to adjust pulley distance. Adjust drive belt height between pulley halves to obtain specified belt deflection.

Pulley Alignment and Drive Belt Deflection

Refer to PULLEY DISTANCE AND ALIGNMENT 05-05 and DRIVE BELT 05-02 from *1998 Shop Manual, volume 1* to perform adjustments.

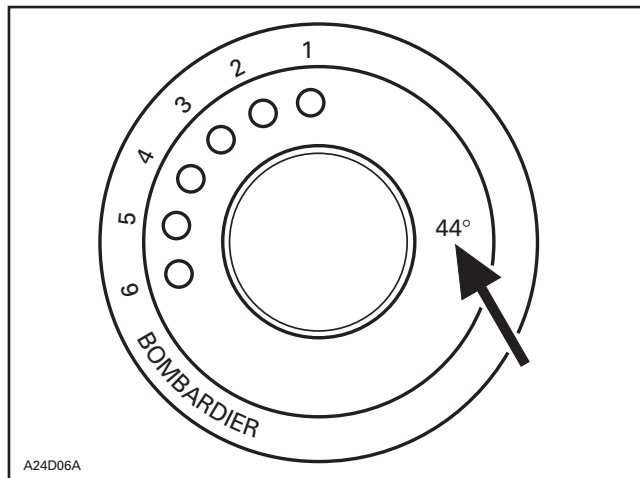
▼ CAUTION

Drive belt and pulley adjustments must always be checked whenever pulleys have been removed, replaced or disassembled.

3, Outer Cam

Make sure to install proper cam. Refer to TECHNICAL DATA.

Cam angle is identified on cam.



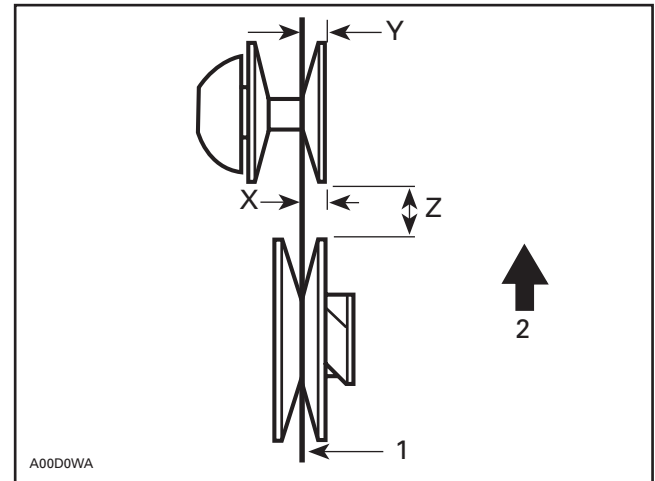
PULLEY DISTANCE AND ALIGNMENT

GENERAL

The pulley distance we will refer to in this section, is the space separating the drive and driven pulley outside diameters (Z measurement).

This basic distance is provided as an assembly guide and indicates the dimensions between which satisfactory belt deflection will be obtained.

Both pulley distance adjustment and pulley alignment must be carried out to ensure the highest efficiency of the transmission system. Furthermore, optimum drive belt operation and minimal wear will be obtained only with proper pulley alignment.



1. Straight bar
2. Front of vehicle

CAUTION
Before checking pulley adjustment, the rear suspension must be mounted on the vehicle.

WARNING
Failure to correctly perform pulley alignment may cause the vehicle to creep forward at idle.

Refer to below chart for proper alignment template.

NOTE: When pulley distance and alignment are adjusted to specifications, refer to DRIVE BELT 05-02 from *1998 Shop Manual, volume 1* to adjust drive belt deflection.

All Pulley Alignment Specifications Refer to:

- X = Distance between straight bar and drive pulley fixed half edge, measured between pulleys.
- Y = Distance between straight bar and drive pulley fixed half edge, measured at the end of straight bar.
- Z = Distance between outside diameter of pulleys.

CAUTION
This section deals mainly with adjustment procedures. For complete assembly requirements, refer to the proper ENGINE or TRANSMISSION installation section.

Section 05 TRANSMISSIONSubsection 05 (PULLEY DISTANCE AND ALIGNMENT)

PULLEY ALIGNMENT AND DISTANCE SPECIFICATIONS CHART

MODEL	PULLEY DISTANCE	OFFSET		ALIGNMENT TEMPLATE
	Z	X	Y-X	①
	+ 0, - 1 mm (+ 0, - .040 in)	± 0.50 mm (.020 in)		P/N
Tundra R	37.0 (1.460)	36.0 (1.420)	0 to 1.5 mm (0 to .060 in)	529 0283 00
Touring SLE	16.5 (.650)	35.0 (1.380)	1.0 to 2.0 mm (.040 to .080 in)	529 0268 00

① Alignment templates have been made according to pulley alignment nominal values. However, they do not take into account allowed tolerances for alignment specifications. They are used as GO/NO GO gauges for quick alignment and pulley distance check and as templates to reach alignment nominal values.

WIRING DIAGRAMS

MODEL	WIRING DIAGRAM PAGE	HEADLIGHT (watt)	TAILLIGHT (watt)	ELECTRICAL SYSTEM OUTPUT (watt)
Tundra R	Annex 1	60/55 hal.	8/27	240
Touring SLE	Annex 2	60/55 hal.	8/27	240

hal. = halogen

CHART CODES

Wiring Color Code

The first color of a wire is the main color, second color is the stripe.

Example: YL/BK is a YELLOW wire with a BLACK stripe.

COLOR CODE	
BK - BLACK	GN - GREEN
WH - WHITE	GY - GREY
RD - RED	VI - VIOLET
BL - BLUE	OR - ORANGE
YL - YELLOW	BR - BROWN

Section 06 ELECTRICAL

Subsection 02 (WIRING DIAGRAMS)

Following table shows wire colors related to electrical circuits.

WIRE COLORS	ELECTRICAL CIRCUIT	ADDITIONAL INFORMATION
BLACK/YELLOW	ENGINE SHUT OFF – Key switch – Tether cord switch – Emergency switch	Must be grounded to stop engine.
BLACK (small)	Ground for shut off	
BLACK (big)	Ground for starter (-)	
YELLOW YELLOW/BLACK	12 volts (AC)	If shorted, magneto stops producing electricity.
RED	12 volts (DC) (+) For starter motor	
RED/GREEN	12 volts (DC) (+) For starter solenoid	
RED/BLUE	12 volts (DC) (+) Rectifier output	
GREY	12 volts (AC) High beam	Current returns by YELLOW/BLACK wire connected to headlamp.
GREY/VIOLET	12 volts (AC) Low beam	
WHITE	12 volts (AC) Brake light	Current returns by YELLOW/BLACK wire connected to taillight.
WHITE/RED	12 volts (AC) Low oil level	Current returns by YELLOW/BLACK wire connected to oil level sensor.
BLUE	12 volts (AC) Fuel level indicator	Current returns by YELLOW wire connected to fuel level sensor.
ORANGE	12 volts (AC) Heated grips (max.)	Current returns by YELLOW/BLACK wire connected to heating elements.
ORANGE/VIOLET	12 volts (AC) Heated grips (min.)	
BROWN	12 volts (AC) Heated throttle lever (max.)	
BROWN/YELLOW	12 volts (AC) Heated throttle lever (min.)	

Connector Location

Connectors on wiring diagrams carry the letter C followed by a number. Use this code with wiring diagram legend to find connector location on vehicle.

UNPLUGGING CONNECTORS

Always unplug connectors by pulling on housing not on wire.



TYPICAL

TAB AND RECEPTACLE CONNECTORS REMOVAL

MPEM Waterproof Connector Housing Female Connector Housing

To remove:



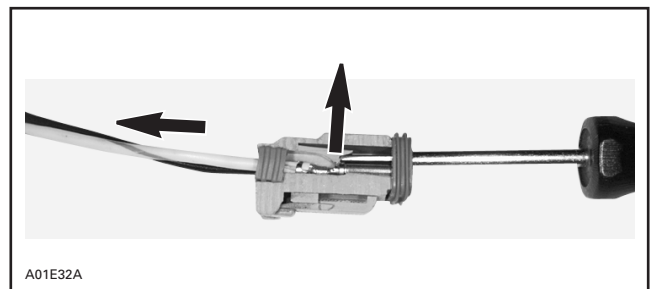
LIFT BOTH TABS THEN REMOVE CONNECTOR CAP



USE SPECIAL TOOL SNAP-ON 3ASAA



INSERT TOOL INTO TAB RECEPTACLE



PRY TAB TO FREE CONNECTOR THEN PULL WIRE OUT OF HOUSING

ACCESSORIES INSTALLATION

On all electric start models: The direct current (DC) utilizes the snowmobile frame as ground "wire" while all alternating current (AC) consumers (lights, heated grips, fuel gauge, etc.) utilize a separate ground wire.

Never interconnect AC and DC grounds as an AC voltage drop will result. When installing accessories on any snowmobile, connect their wires directly to the YELLOW and YELLOW/BLACK lighting coil wires.

Section 06 ELECTRICAL

Subsection 02 (WIRING DIAGRAMS)

Even if **manual start models** have an AC ground to the chassis (on voltage regulator), all accessories utilize a ground wire isolated from chassis. When an electric starter kit is installed, the voltage regulator and its ground wire are replaced by a voltage rectifier/regulator unit permitting a completely isolated AC circuit.



WARNING

Never secure electrical wires/cables with fuel lines. Keep wires away from any rotating, moving, heating, vibrating or sharp edge. Use proper fastening devices as required.

TESTING PROCEDURE

GENERAL

Two types of ignition systems are found on ROTAX engines covered by the *1998 Shop Manual, volume 1*; both are Capacitor Discharge Ignition (CDI) systems.

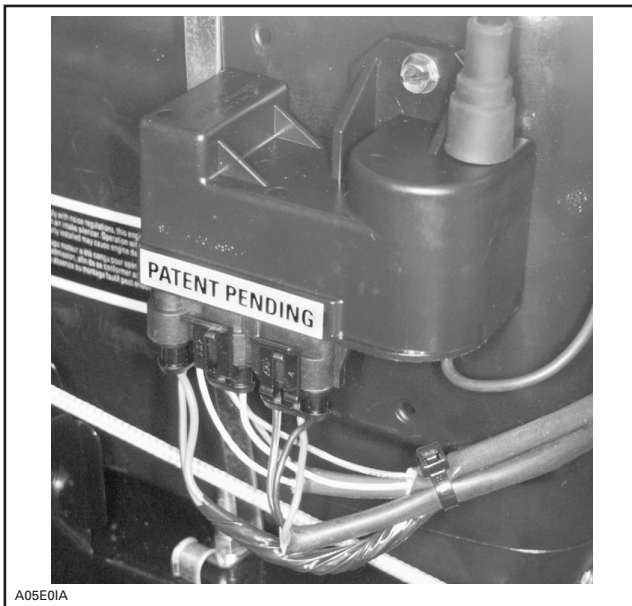
Tundra R and Touring SLE are using the same Ducati CDI system. Refer to section 04-05 ENGINE (CDI SYSTEM) of this supplement.

The following chart gives the engine types with their implemented system.

ENGINE TYPE	IGNITION SYSTEM	CHARGING SYSTEM OUTPUT
277 (Tundra R)	DUCATI (ADC)	240
503 (Touring SLE)	DUCATI (ADC)	240

MPEM (MULTI-PURPOSE ELECTRONIC MODULE)

Both Tundra R and Touring SLE MPEM module include reverse and ignition systems. See next photo.



TYPICAL

ELECTRONIC REVERSE IGNITION SYSTEM

MPEM module is programmed to recognize a signal sent by the switch located on snowmobile console.

When switch is activated, MPEM module cuts off ignition and engine rev drops at approximately 700 RPM for 277 engine (Tundra R) and 450 RPM for 503 engine (Touring SLE).

MPEM fires a spark at a great advance creating a thrust which reverses engine rotation.

Second trigger coil located on crankcase takes over to produce spark in reverse rotation.

SAFETY DEVICE

A safety device is incorporated to MPEM module preventing it from reading any signal coming from reverse switch at following engine revs.

Tundra R

Below 800 RPM and above 3500 RPM = No reverse signal.

Touring SLE

Below 1000 RPM and above 3500 RPM = No reverse signal.

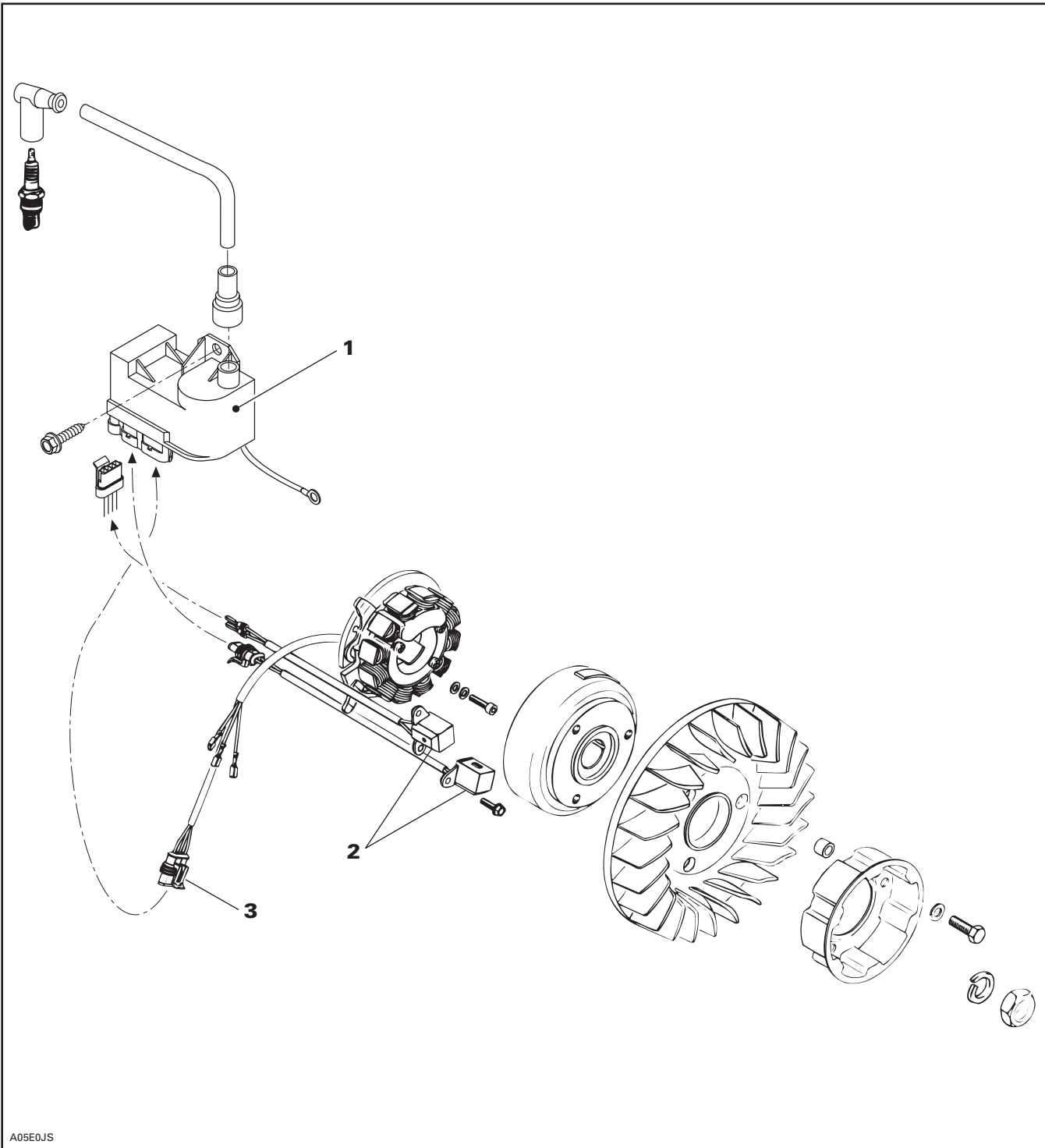
DUCATI

The DUCATI CDI system has ignition module/ignition coil which are included in snowmobile MPEM mounted on air silencer.

MPEM module is connected to the ignition generator coils via a 3-wire connector (BLACK and RED wires).

Section 06 ELECTRICAL

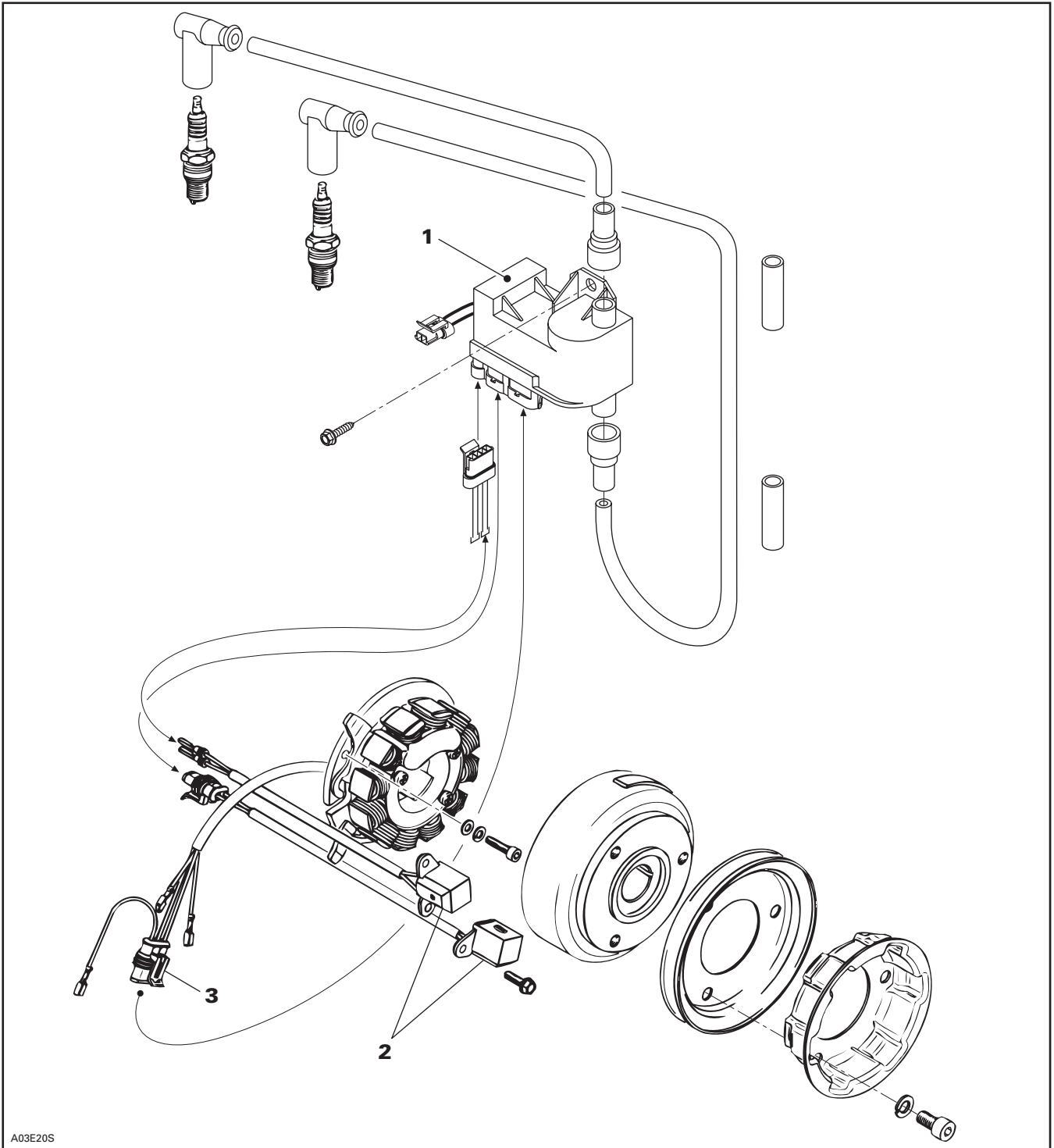
Subsection 07 (TESTING PROCEDURE)



TUNDRA R

1. MPME module
2. Trigger coil
3. 3-wire connector

Section 06 ELECTRICAL
Subsection 07 (TESTING PROCEDURE)



A03E20S

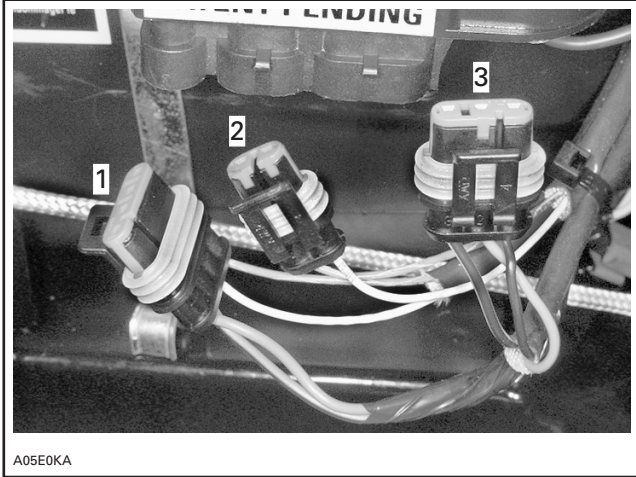
- TOURING SLE**
- 1. MPPEM module
 - 2. Trigger coil
 - 3. 3-wire connector

Section 06 ELECTRICAL

Subsection 07 (TESTING PROCEDURE)

DUCATI CDI SYSTEM TESTING

Tundra R and Touring SLE



MPME MODULE

1. Reverse switch, reverse indicator and trigger coil
2. Trigger coil
3. Generator output and cut-off switches

IGNITION SYSTEM TESTING SEQUENCE

In case of ignition problems, check the following in the prescribed order until the problem can be solved.

1. Sparking/spark plug condition.
2. Electrical connectors.
3. Ignition switches, tether cord cap and emergency switch.
4. Ignition coil output.
5. Trigger coil output.
6. High voltage coil output.

NOTE: Refer to IGNITION SYSTEM TESTING at the end of this section for complete detailed testing procedure.

LIGHTING SYSTEM TESTING SEQUENCE

1. Electrical connectors.
2. Magneto output (lighting generator coil).

NOTE: Refer to LIGHTING SYSTEM TESTING at the end of this section for complete detailed testing procedure.

Testing Conditions

Voltage measurements are always taken upon starting the vehicle. Readings taken when the engine is running will be higher than indicated range. Part temperature must be approximately 20°C (room temperature), otherwise readings could be distorted.

Analysis of Readings

Voltage Readings

When testing the different magneto components, it is important to take into consideration that readings vary according to the force applied onto the manual starter. It is therefore important to employ enough force upon each trial.

The reading must be 3 times within or above the range indicated in the corresponding table. If the reading is too low, the part is considered to be defective and it must be replaced.

Resistance Readings

Place multimeter selector switch to Ω in order to measure resistance. Readings must be within the indicated range. Otherwise, the part is considered to be defective and must be replaced.

▼ CAUTION

When taking measurements, it is useless to try to start the vehicle since readings would then be distorted.

Intermittent Ignition Problems

It is difficult to make a diagnostic in the case of intermittent ignition problems. Thus, problems occurring only when the engine operating temperature is normal must be checked in similar conditions.

In most cases when problems are caused by temperature or vibrations, these can only be solved by replacing parts. Most problems cannot be detected when the engine is stopped.

Multiple Problems

As a matter of fact, more than one component can be defective. As a result, if the problem remains although a part was replaced, start over the whole verification from the beginning in order to identify the other defective component.

BUZZER TESTING

Using jumper wires, connect battery positive post to buzzer positive tab.

Connect battery negative post to buzzer negative tab. See next photo.

▼ CAUTION

To avoid buzzer damage, ensure that polarity is respected.



12 VOLT BATTERY PLUGGED TO BUZZER

MPEM CONNECTORS

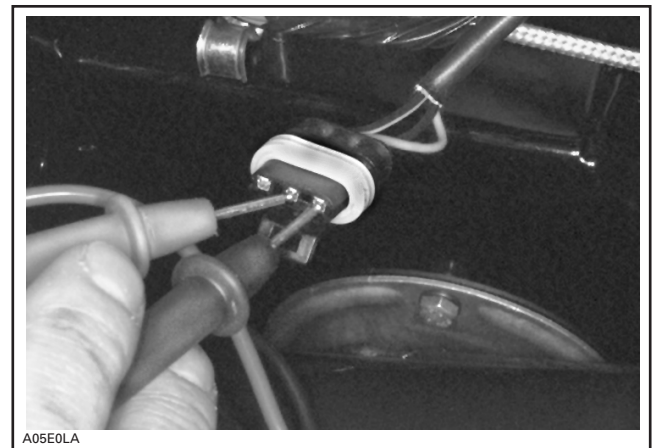
To ease electrical readings on MPEM module connectors, connector cap must be removed.

Hold connector in hands then lift both tabs to remove connector cap. See next photo.



LIFT TABS TO REMOVE CAP

Insert multimeter probes into connector, as shown in the next photo.



TEST USING MULTIMETER PROBES

Section 06 ELECTRICAL

Subsection 07 (TESTING PROCEDURE)

IGNITION SYSTEM TESTING (Tundra R 240 W, 98)								
PART	TEST TO BE PERFORMED	WIRE COLOR	MULTIMETER PROBE CONNECTION	RESISTANCE Ω		VOLTAGE V		NOTE
				VALUE (OHMS)	MULTIMETER SCALE	VALUE (VOLTS)	MULTIMETER SCALE	
Stop switch	Running insulation	BK BK/YL	4-01C-M 4-01D-M	0.L	00.0 $M\Omega$	—	—	No stop switch must be operational.
	Continuity in running position	BK BK/YL	4-01C-M 4-01D-M	00.0 - 00.5	00.0 Ω	—	—	Only one stop switch must be operational. Test them one after the other.
Ignition generator coil	Output	RD BK	4-04-2-F 4-04-1-F	4,5 - 6,5	00.0 Ω	7.0 - 15.0	00.0 ^{VAC}	
	Ground continuity	BK engine	4-04-1-F engine	00.0 - 00.5	00.0 Ω	—	—	The term "engine" refers to the engine metal parts connected to the magneto housing.
Trigger coil	Front	WH/YL BL/YL	4-03-1-F 4-03-2-F	160 -180	00.0 Ω	.100 - .300	.000 ^{VAC}	
	Rear	WH/YL BL/YL	4-02-3-F 4-02-4-F	160 -180	00.0 Ω	.100 - .300	.000 ^{VAC}	
Ignition module and high voltage coil	Secondary winding resistance with caps	Spark plug cap engine	In spark plug cap and on the engine	4.90K - 7.10K	0.00 $k\Omega$	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">▼ CAUTION</p> <p style="text-align: center;">Do not measure high voltage coil output voltage.</p> </div>		
	Secondary winding resistance without caps	BK engine	Inside spark plug cable and on the engine	0.90K - 1.10K	0.00 $k\Omega$	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">▼ CAUTION</p> <p style="text-align: center;">Do not measure high voltage coil output voltage.</p> </div>		
	Secondary winding voltage	BK engine	On spark plug cable housing and on the engine	—	—	.150 - .350	.000 ^{VAC}	The measurement must be taken on the spark plug cable (without the spark plug).
Spark plug cap	Cap resistance	—	Spark plug side and cable side	4.0K - 6.0K	00.0 $k\Omega$	—	—	—

NOTE: Stop switches include the ignition switch, the tether cord switch and the emergency cut-out switch.

It is important to take note that voltage measurements must be taken while starting the vehicle using the manual starter.

Voltages obtained upon starting are proportional to the force applied onto the manual starter. A low voltage is therefore normal under a low cranking force.

Perform testing in the prescribed order and replace any parts not performing according to specifications.

It is important to resume all tests when replacing a component.

If not specified, the probe connecting sequence is not important.

Section 06 ELECTRICAL
Subsection 07 (TESTING PROCEDURE)

LIGHTING SYSTEM TESTING (Tundra R 240 W, 98)								
PART	TEST TO BE PERFORMED	WIRE COLOR	MULTIMETER PROBE CONNECTION	RESISTANCE Ω		VOLTAGE V		NOTE
				VALUE (OHMS)	MULTIMETER SCALE	VALUE (VOLTS)	MULTIMETER SCALE	
Lighting generator coil	Power	YL YL/BK	4-01B-F 4-01A-F	00.0 - 00.6	00.0 Ω	3.0 - 7.0	00.0 ^{VAC}	—
	Insulation	YL engine	4-01(A,B)-F engine	0.L	00.0 $M\Omega$	—	—	The term "engine" refers to the engine metal parts connected to the magneto housing.
	Ground continuity	BK engine	4-01C-F engine	00.0 - 00.5	00.0 Ω	—	—	

NOTE: It is important to take note that voltage measurements must be taken while starting the vehicle using the manual starter.

Voltages obtained upon starting are proportional to the force applied onto the manual starter. A low voltage is therefore normal under a low cranking force.

Perform testing in the prescribed order and replace any parts not performing according to specifications.

It is important to resume all tests when replacing a component.

If not specified, the probe connecting sequence is not important.

Section 06 ELECTRICAL

Subsection 07 (TESTING PROCEDURE)

IGNITION SYSTEM TESTING (Touring SLE 240 W, 98)								
PART	TEST TO BE PERFORMED	WIRE COLOR	MULTIMETER PROBE CONNECTION	RESISTANCE Ω		VOLTAGE V		NOTE
				VALUE (OHMS)	MULTIMETER SCALE	VALUE (VOLTS)	MULTIMETER SCALE	
Stop switch	Running insulation	BK BK/YL	2-01C-M 2-01D-M	0.L	00.0 $M\Omega$	—	—	No stop switch must be operational.
	Continuity in running position	BK BK/YL	2-01C-M 2-01D-M	00.0 - 00.5	00.0 Ω	—	—	Only one stop switch must be operational. Test them one after the other.
Ignition generator coil	Output	RD BK	2-04-2-F 2-04-1-F	4,5 - 6,5	00.0 Ω	7,0 - 15,0	00.0 ^{VAC}	
	Ground continuity	BK engine	2-04-1-F engine	00.0 - 00.5	00.0 Ω	—	—	The term "engine" refers to the engine metal parts connected to the magneto housing.
Front trigger coil	Resistance and output	WH/YL BL/YL	2-03-1-F 2-03-2-F	160 - 180	00.0 Ω	.150 - .350	.000 ^{VAC}	—
Rear trigger coil	Resistance and output	WH/YL BL/YL	2-02-3-F 2-02-4-F	160 - 180	00.0 Ω	.150 - .350	.000 ^{VAC}	—
Ignition module and high voltage coil	Secondary winding resistance with caps	Spark plug cap Spark plug cap	In spark plug cap	8.90K - 13.1K	00.0 $K\Omega$	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="text-align: center;">▼ CAUTION</p> <p style="text-align: center;">Do not measure high voltage coil output voltage.</p> </div>		
	Secondary winding resistance without caps	BK BK	Inside spark plug cable	0.90K - 1.10K	00.0 $K\Omega$	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="text-align: center;">▼ CAUTION</p> <p style="text-align: center;">Do not measure high voltage coil output voltage.</p> </div>		
	Secondary winding voltage	BK engine	On spark plug cable housing and on the engine	—	—	.100 - .250	0.00 ^{VAC}	The measurement must be taken on the spark plug cable (without the spark plug).
Spark plug cap	Cap resistance	—	Spark plug side and cable side	4.0K - 6.0K	00.0 $K\Omega$	—	—	—

NOTE: Stop switches include the ignition switch, the tether cord switch and the emergency cut-out switch.

It is important to take note that voltage measurements must be taken while starting the vehicle using the manual starter.

Voltages obtained upon starting are proportional to the force applied onto the manual starter. A low voltage is therefore normal under a low cranking force.

Perform testing in the prescribed order and replace any parts not performing according to specifications.

It is important to resume all tests when replacing a component.

If not specified, the probe connecting sequence is not important.

Section 06 ELECTRICAL
Subsection 07 (TESTING PROCEDURE)

LIGHTING SYSTEM TESTING (Touring SLE 240 W, 98)								
PART	TEST TO BE PERFORMED	WIRE COLOR	MULTIMETER PROBE CONNECTION	RESISTANCE Ω		VOLTAGE V		NOTE
				VALUE (OHMS)	MULTIMETER SCALE	VALUE (VOLTS)	MULTIMETER SCALE	
Lighting generator coil	Power	YL YL/BK	2-01B-F 2-01A-F	00.0 - 00.6	00.0 Ω	3.0 - 7.0	00.0 ^{VAC}	—
	Insulation	YL engine	2-01(A,B)-F engine	0.L	00.0 $M\Omega$	—	—	The term "engine" refers to the engine metal parts connected to the magneto housing.
	Ground continuity	BK engine	2-01C-F engine	00.0 - 00.5	00.0 Ω	—	—	

NOTE: It is important to take note that voltage measurements must be taken while starting the vehicle using the manual starter.

Voltages obtained upon starting are proportional to the force applied onto the manual starter. A low voltage is therefore normal under a low cranking force.

Perform testing in the prescribed order and replace any parts not performing according to specifications.

It is important to resume all tests when replacing a component.

If not specified, the probe connecting sequence is not important.

Section 06 ELECTRICAL

Subsection 07 (TESTING PROCEDURE)

VOLTAGE REGULATOR INSPECTION

A faulty voltage regulator is often responsible for frequent burned bulbs.

▼ CAUTION

Never run an engine with a faulty or inoperative voltage regulator. This could damage the DUCATI CDI module.

TESTING PROCEDURE

The regulator ground must be checked to ensure the circuit is complete. If necessary, connect a good ground wire from the regulator to the engine.

Voltmeter Test

NOTE: Use a voltmeter able to read alternating current (AC). For accurate reading, use a RMS voltmeter.

Connect a wire of the voltmeter to YELLOW/BLACK wire.

Connect the other wire of the voltmeter to YELLOW wire.

Lift the rear of vehicle and support with a mechanical stand.

Start the engine at an idle without opening the throttle.

◆ WARNING

Ensure the track is free of particles which might be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure no one is standing in close proximity to the vehicle.

Slowly open the throttle and accelerate the engine to increase the RPM.

If the meter reads over 15 volts, the regulator is defective and must be replaced.

▼ CAUTION

Do not increase the RPM so the voltage exceeds 15 V as the bulb(s) will burn.

NOTE: Whatever the voltmeter type used (peak voltage or RMS) the voltage must not exceed 15 V (a defective regulator will allow voltage to exceed 15 V as engine RPM is increased).

INSPECTION OF HEATING ELEMENTS

All measurements must be performed at 21°C (70°F).

Throttle Lever Heating Element

Resistance Measurement

HIGH INTENSITY	YELLOW/BLACK wire BROWN wire	1.96 to 3.64 ohms
LOW INTENSITY	YELLOW/BLACK wire BROWN/YELLOW wire	8.05 to 14.95 ohms

Current Measurement

HIGH INTENSITY	BROWN wire	0.23 Amp. minimum
LOW INTENSITY	BROWN/YELLOW wire	0.13 Amp. minimum

Handlebar Grip Heating Element

HIGH INTENSITY	YELLOW/BLACK wire ORANGE wire	8.73 to 10.67 ohms
LOW INTENSITY	YELLOW/BLACK wire ORANGE/VIOLET wire	17.7 to 20.7 ohms

TECHNICAL DATA

SI* METRIC INFORMATION GUIDE

BASE UNITS			
DESCRIPTION	UNIT	SYMBOL	
length	meter	m	
mass	kilogram	kg	
force	newton	N	
liquid	liter	L	
temperature	Celsius	°C	
pressure	kilopascal	kPa	
torque	newton•meter	N•m	
speed	kilometer per hour	km/h	

PREFIXES			
PREFIX	SYMBOL	MEANING	VALUE
kilo	k	one thousand	1 000
centi	c	one hundredth	0.01
milli	m	one thousandth	0.001
micro	μ	one millionth	0.000001

CONVERSION FACTORS			
TO CONVERT	TO †	MULTIPLY BY	
in	mm	25.4	
in	cm	2.54	
in ²	cm ²	6.45	
in ³	cm ³	16.39	
ft	m	0.3	
oz	g	28.35	
lb	kg	0.45	
lbf	N	4.4	
lbf•in	N•m	0.11	
lbf•ft	N•m	1.36	
lbf•ft	lbf•in	12	
PSI (lbf/in ²)	kPa	6.89	
imp. oz	U.S. oz	0.96	
imp. oz	mL	28.41	
imp. gal	U.S. gal	1.2	
imp. gal	L	4.55	
U.S. oz	mL	29.57	
U.S. gal	L	3.79	
MPH	km/h	1.61	
Fahrenheit	Celsius	(°F - 32) ÷ 1.8	
Celsius	Fahrenheit	(°C × 1.8) + 32	







* The international system of units abbreviates SI in all languages.

† To obtain the inverse sequence, divide by the given factor. To convert "mm" to "in", divide by 25.4.

NOTE: Conversion factors are rounded off to 2 decimals for easier use.






Section 10 TECHNICAL DATA

Subsection 02 (ENGINES)

		VEHICLE MODEL	TUNDRA R	TOURING SLE	
		ENGINE TYPE	277	503	
	Number of Cylinders		1	2	
	Bore	mm (in)	72.00 (2.835)	72.00 (2.835)	
	Stroke	mm (in)	66.00 (2.598)	61.00 (2.402)	
	Displacement	cm ³ (in ³)	268.70 (16.40)	496.70 (30.31)	
	Compression Ratio (corrected)		6.70	6.20	
	Maximum Power Engine Speed ①	± 100 RPM	6900	7000	
	Piston Ring Type	1 st /2 nd	ST/R	ST/R	
	Ring End Gap	(new)	mm (in)	0.2 (.008)	0.2 (.008)
		(wear limit)	mm (in)	1.0 (.039)	1.0 (.039)
	Ring/Piston Groove Clearance	(new)	mm (in)	0.04 (.0016)	0.04 (.0016)
		(wear limit)	mm (in)	0.2 (.008)	0.2 (.008)
	Piston/Cylinder Wall Clearance	(new)	mm (in)	0.090 (.0031)	0.090 (.0035)
		(wear limit)	mm (in)	0.2 (.008)	0.2 (.008)
	Connecting Rod Big End Axial Play	(new)	mm (in)	0.20 (.0079)	0.2 (.0079)
		(wear limit)	mm (in)	1.0 (.0394)	1.0 (.0394)
Maximum Crankshaft End-play ②	mm (in)	0.3 (.0118)	0.3 (.0118)		
Maximum Crankshaft Deflection Measured at Center	mm (in)	0.08 (.0031)	0.08 (.0031)		
Rotary Valve Timing ③	Opening Closing	N.A.	N.A.		
	Magneto Generator Output		W	240 ⑧	
	Ignition Type		CDI	CDI	
	Spark Plug Make and Type		NGK BR9ES	NGK BR9ES	
	Spark Plug Gap	mm (in)	0.45 (.018)	0.45 (.018)	
	Ignition Timing BTDC ④	mm (in)	3.04 (.120)	2.76 (.108)	
	Trigger Coil ⑤		140 – 180	140 – 180	
	Generating Coil ⑤	Ω	5.1 – 6.2	5.1 – 6.2	
	Lighting Coil ⑤	Ω	0.17 – 0.21	0.17 – 0.21	
High Tension Coil ⑤		Primary	Ω	N.A.	
	Secondary	kΩ	0.9 – 1.1	0.9 – 1.1	
	Carburetor Type		PTO/MAG	VM 34-508	
	Main Jet		PTO/MAG	190	
	Needle Jet		0-8 (159)	180/170	
	Pilot Jet		40	P-0 (159)	
	Needle Identification – Clip Position		6DH4-2	6DH2-3	
	Slide Cut-away		2.5	2.5	
	Float Adjustment	± 1 mm (± .040in)	23.9 (.94)	23.9 (.94)	
	Air Screw Adjustment	± 1/16 turn	1	1-7/8	
	Idle Speed RPM	± 200 RPM	1200	1650	
	Gas Type/Pump Octane Number		Unleaded/87	Unleaded/87	
Gas/Oil Ratio		Injection	Injection		
	Type		Radial Fan	Axial Fan	
	Axial Fan Belt Adjustment	Deflection	mm (in)	N.A.	
		Force ⑥	kg (lbf)	N.A.	
	Thermostat Opening Temperature		°C (°F)	N.A.	
	Radiator Cap Opening Pressure		kPa (PSI)	N.A.	
	ENGINE COLD N·m (lbf·ft)	Drive Pulley Retaining Screw ⑦		95 (70)	
		Exhaust Manifold Nuts or Bolts		25 (18)	
		Magneto Ring Nut		90 (66)	
		Crankcase Nuts or Screws		M6 M8	
		Crankcase/Engine Support Nuts or Screws		21 (15)	
		Cylinder Head Nuts		26 (19)	
		Crankcase/Cylinder Nuts or Screws		N.A.	
		Axial Fan Shaft Nut		N.A.	

Section 10 TECHNICAL DATA

Subsection 03 (VEHICLES)

	VEHICLE MODEL	TUNDRA R	TOURING SLE	
	ENGINE TYPE	277	503	
	Chain Drive Ratio	14/25	21/44	
	Chain	Pitch in	1/2	3/8
		Type/Links Qty/Plates Qty	Single/62	Silent/72/11
	Drive Pulley	Type of Drive Pulley	Bombardier Lite	TRAC
		Ramp Identification	N.A.	291 ①
		Calibration Screw Position or Calibration Part ②	N.A.	3
		Spring Color Code	Turquoise	Red/Yellow
		Spring Length ± 1.5 mm (± .060 in)	85.3 (3.36)	87.9 (3.46)
		Clutch Engagement ± 200 RPM	3100	2900
	Driven Pulley Spring Preload ± 0.7 kg (± 1.5 lb)	0.00	0.00	
	Cam Angle degree	37.8°	47° - 44°	
	Pulley Distance Z (+0, - 1) mm ((+0, - 1/32) in)	37 (1-29/64)	16.5 (21/32)	
	Offset	X ± 0.4 mm (± 1/64 in)	36 (1-27/64)	35.0 (1-3/8)
		Y - X MIN. MAX.	- 0 (- 0) + 1.5 (+ .059)	+ 1 (+ .039) + 2 (+ .079)
	Drive Belt Part Number (P/N)		414 8276 00	415 0606 00
	Drive Belt Width (new) ③ mm (in)		33.3 (1-5/16)	34.7 (1-3/8)
	Drive Belt Adjustment	Deflection ± 5 mm (± 13/64 in)	32 (1-1/4)	32 (1-1/4)
		Force ④ kg (lbf)	6.8 (15)	11.3 (25)
	Track	Width cm (in)	38.1 (15)	38.1 (15)
		Length cm (in)	354 (139)	345.5 (136)
Profile Height mm (in)		—	18.4 (.724)	
Adjustment		Deflection mm (in)	35 - 40 (1-3/8 - 1-9/16)	35 - 40 (1-3/8 - 1-9/16)
		Force ⑤ kg (lbf)	7.3 (16)	7.3 (16)
Suspension Type	Track	Torque Reaction Slide	SC-10 Touring	
	Ski	Telescopic Strut	DSA	
	Length cm (in)	284.5 (112)	294 (115.7)	
	Width cm (in)	95.3 (37.5)	120.7 (47.5)	
	Height cm (in)	114 (44.9)	122 (48.0)	
	Ski Stance cm (in)	81.3 (32.0)	106.7 (42)	
	Mass (dry) kg (lb)	171 (377)	224 (493)	
	Ground Contact Area cm ² (in ²)	7864 (1219)	7227 (1120)	
	Ground Contact Pressure kPa (PSI)	2.13 (.309)	3.04 (.441)	
	Frame Material	Steel	Aluminum	
	Bottom Pan Material	Polyethylene High Density	Impact Copolymer	
	Hood Material	Polyethylene High Density	RRIM Polyurethane	
	Battery V (A•h)	N.A.	12 (22)	
	Headlight W	H4 60/55	H4 60/55	
	Taillight and Stoplight W	8/27	8/27	
	Tachometer and Speedometer Bulb W	N.A.	2 x 3	
	Fuel and Temperature Gauge Bulb W	N.A.	N.A.	
	Fuse	Starter Solenoid A	N.A.	N.A.
		Tachometer A	N.A.	N.A.
	Fuel Tank L (U.S. gal)	26 (6.9)	40 (10.6)	
	Chaincase Gearbox mL (U.S. oz)	250 (8.5)	250 (8.5)	
	Cooling System L (U.S. oz)	N.A.	N.A.	
	Injection Oil Reservoir L (U.S. oz)	1.9 (64)	2.55 (86)	

ENGINE TECHNICAL DATA LEGEND

BTDC: Before Top Dead Center
CDI: Capacitor Discharge Ignition
K: Kilo (x 1000)
MAG: Magneto Side
N.A.: Not Applicable
PT: Power Take Off Side
R: Rectangular
ST: Semi-trapez

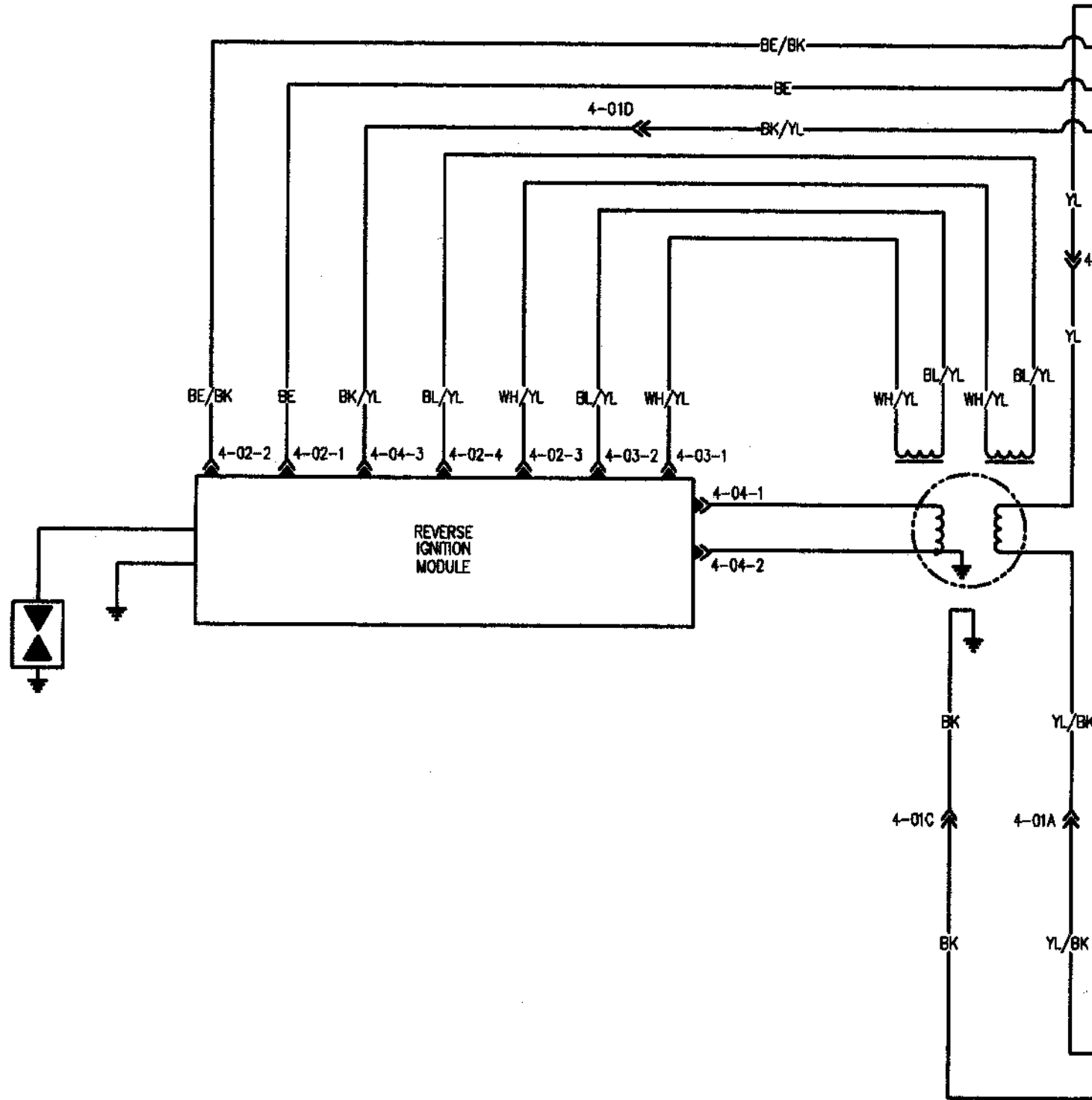
- ① The maximum horsepower RPM is applicable on the vehicle. It may be different under certain circumstances and BOMBARDIER INC. reserves the right to modify it without obligation.
- ② Crankshaft end-play is adjustable on Tundra R only. Touring SLE specification is given for verification purposes only.
- ③ Rotary valve to crankcase clearance: 0.27 – 0.48 mm (.011 – .019 in).
- ④ At 4000 RPM (engine cold) with headlamp turned on.
- ⑤ All resistance measurements must be performed with parts at room temperature (approx. 20°C (68°F)). Temperature greatly affects resistance measurements.
- ⑥ Force applied midway between pulleys to obtain specified deflection.
- ⑦ Drive pulley retaining screw: torque to 90 to 100 N•m (66 to 74 lbf•ft), install drive belt, accelerate the vehicle at low speed (maximum 30 km/h (20 MPH)) and apply the brake; repeat 5 times. Recheck the torque of 90 to 100 N•m (66 to 74 lbf•ft).
- ⑧ At 5000 RPM.
- ⑨ At 6000 RPM.

VEHICLE TECHNICAL DATA LEGEND

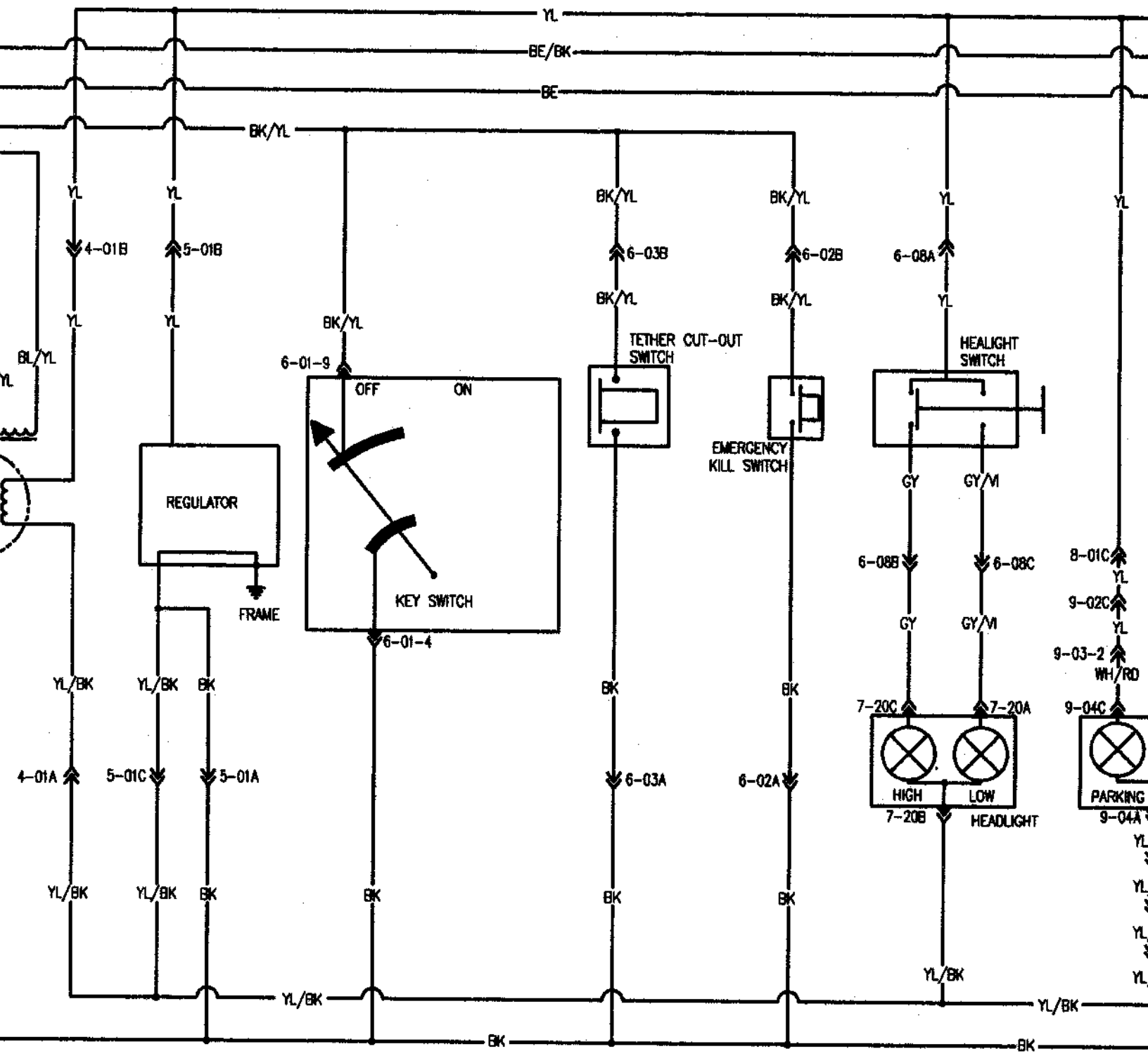
DSA: Direct Shock Action
RRIM: Reinforced Reaction Injection Molding
TRA: Total Range Adjustable drive pulley
N.A.: Not Applicable

- ① Lever with roller pin (P/N 417 0043 09) (Hollow).
- ② For Bombardier Lite drive pulleys:
1157 = Block, red push type 38 g (P/N 417 1157 00)
1181 = Block, black screw type 39.6 g (P/N 417 1181 00)
1143 = Block, red screw type 41.8 g (P/N 417 1143 00)
W = Washer 1.8 g (P/N 417 1158 00)
C = Cap 1.65 g (P/N 417 1145 00)
S3.4 = Weight, screw type 3.4 g (P/N 417 1144 00)
S21 = Weight, screw type 21 g (P/N 417 1204 00)
- ③ Minimum allowable width may not be less than 3.0 mm (1/8 in) of new drive belt.
- ④ Force applied midway between pulleys to obtain specified deflection.
- ⑤ Force or downward pull applied to track to obtain specified tension deflection.

'98 TUNDRA R



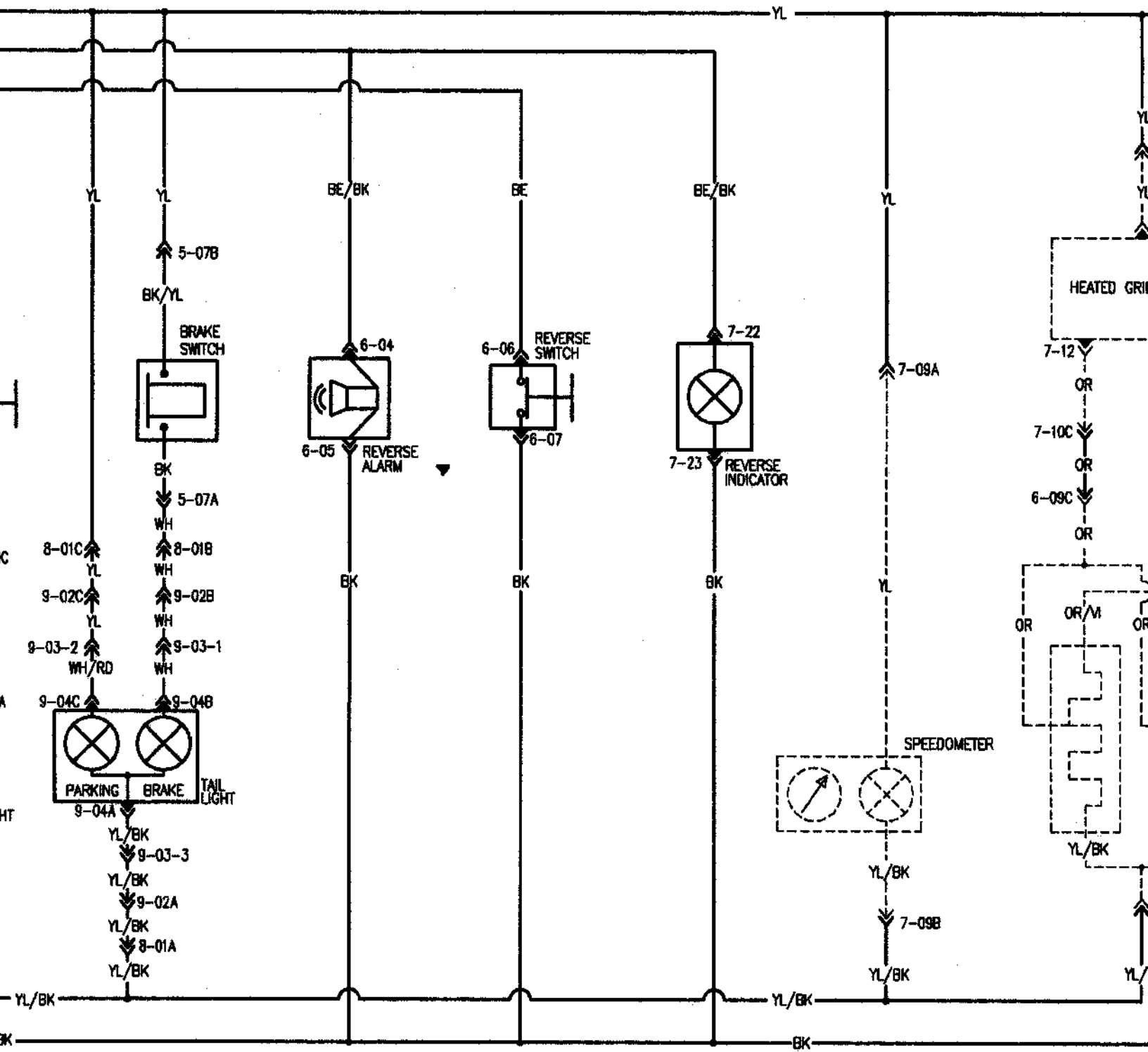
REVERSE & IGNITION SYSTEM POWER



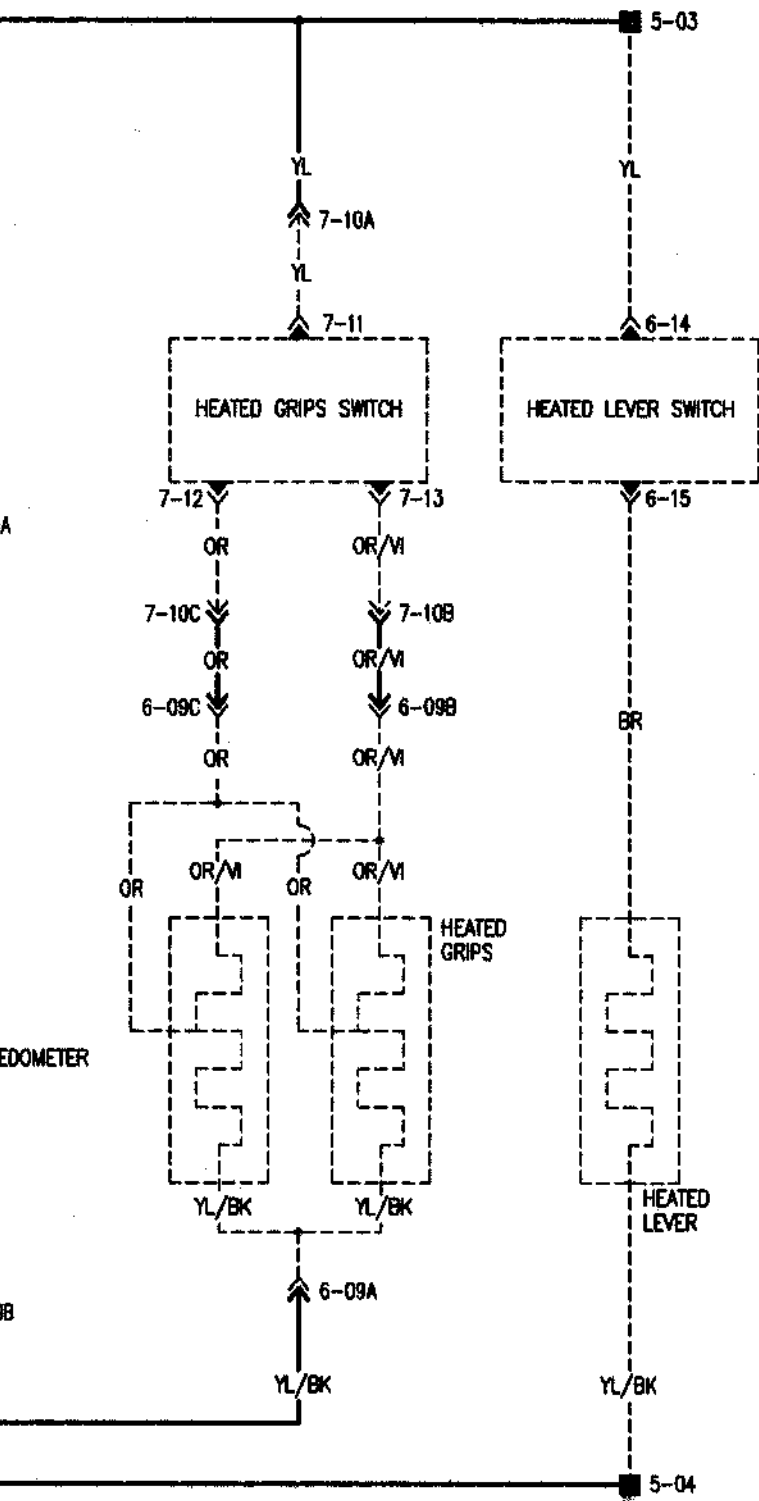
POWER SUPPLY SYSTEM

IGNITION SWITCHES

LIGHTING



LIGHTING ——— INSTRUMENTS ——— HEATED GRIDS

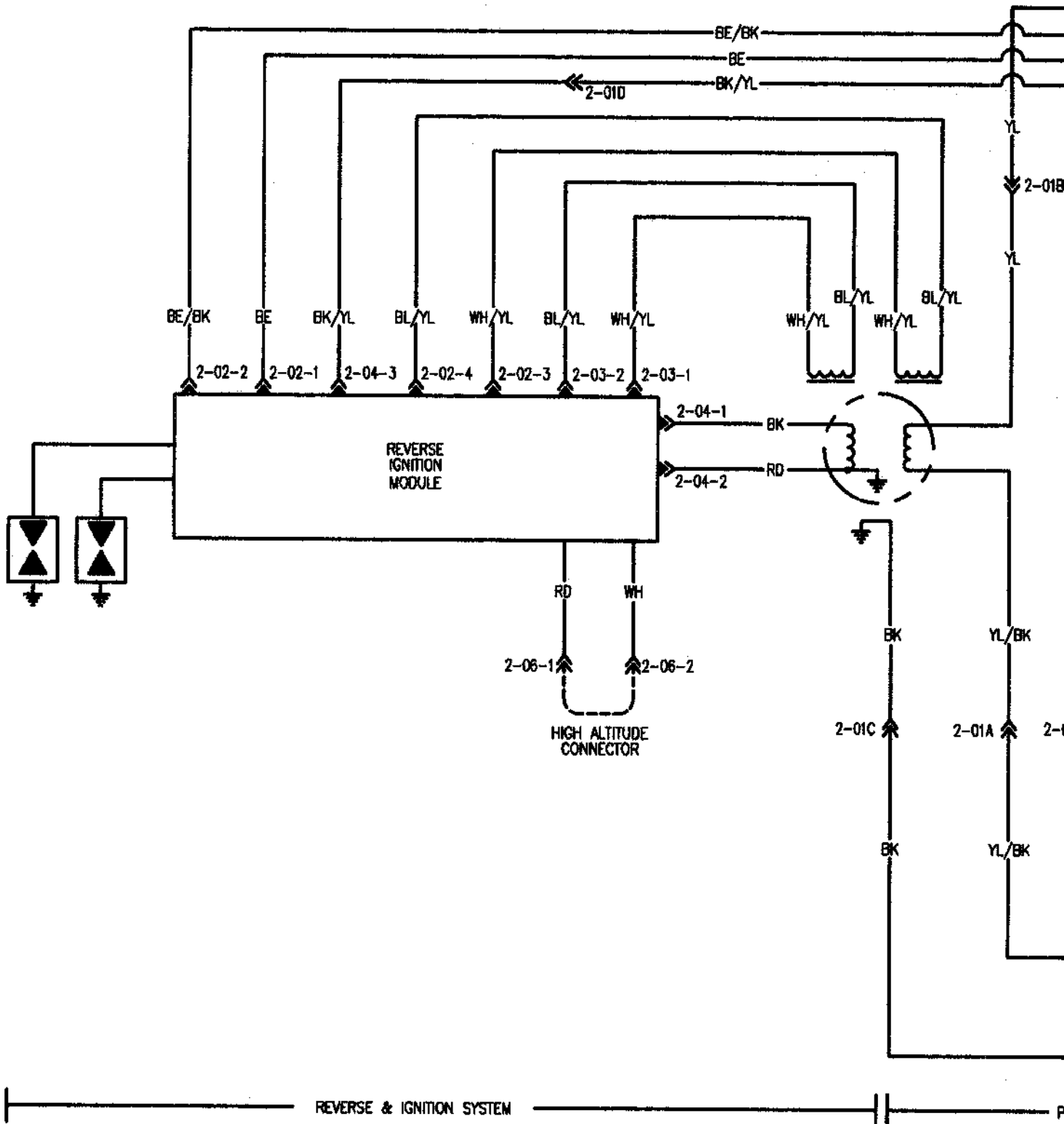


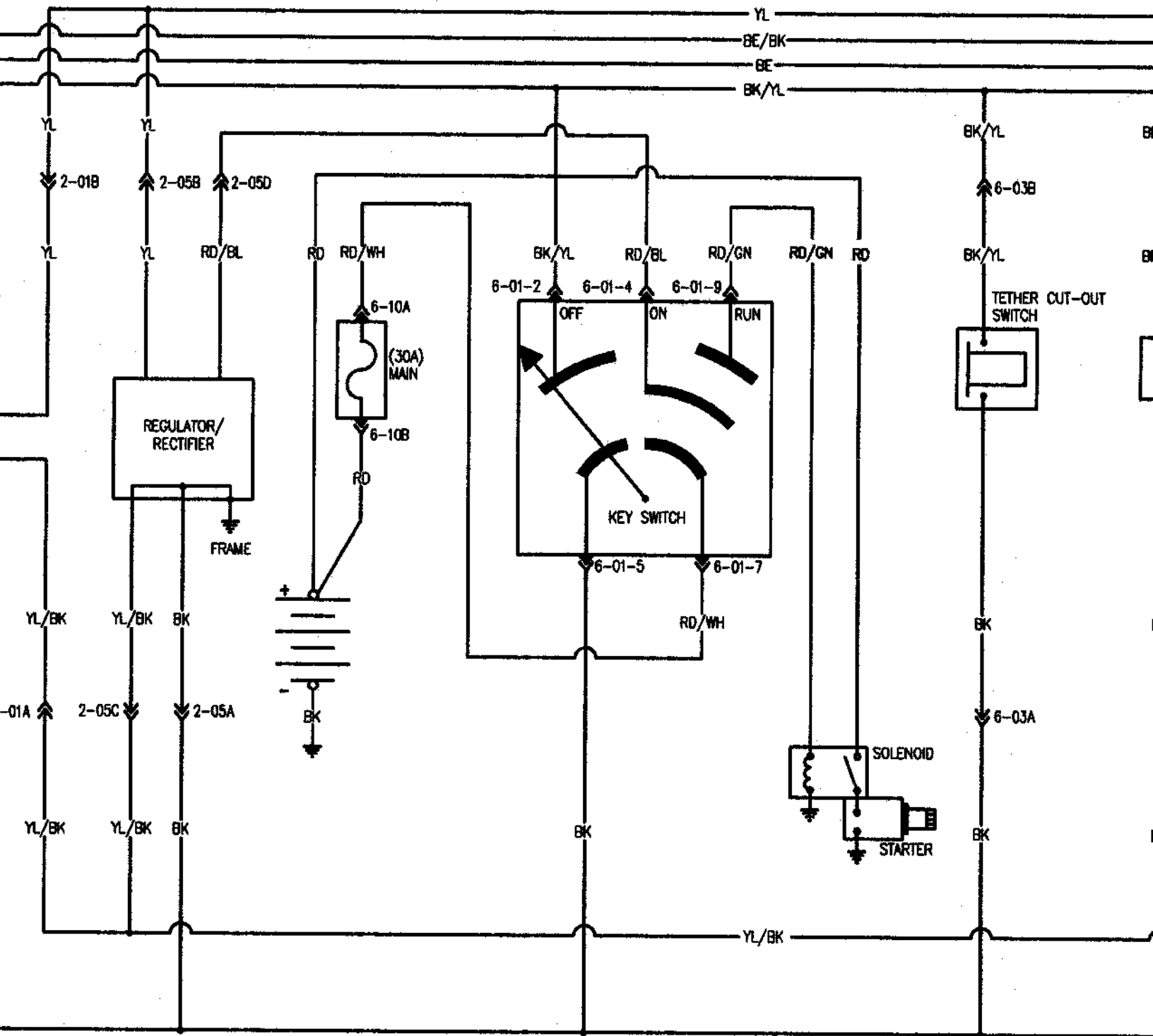
EDOMETER

JB



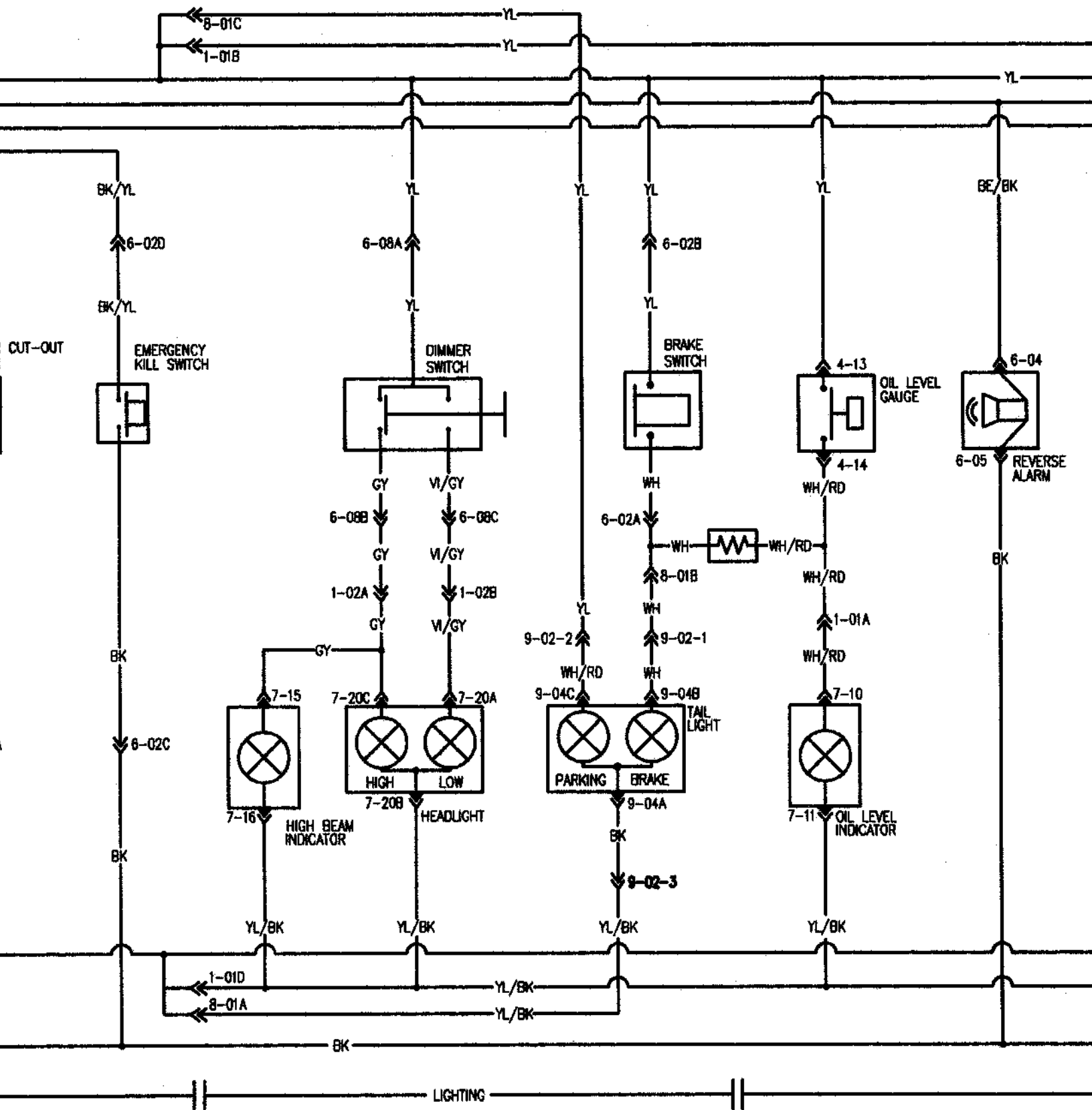
'98 TOURING SLE

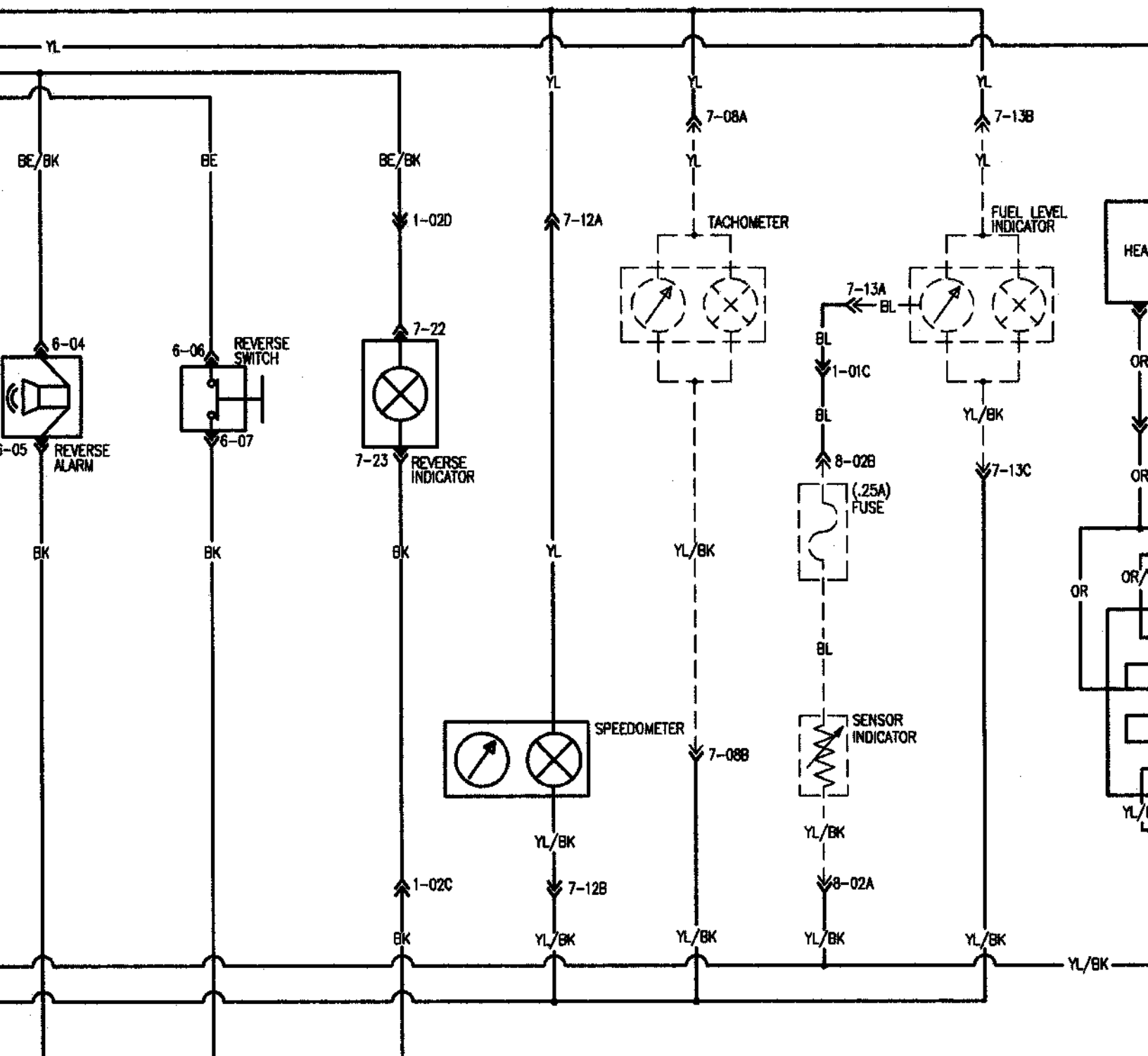




POWER SUPPLY SYSTEM

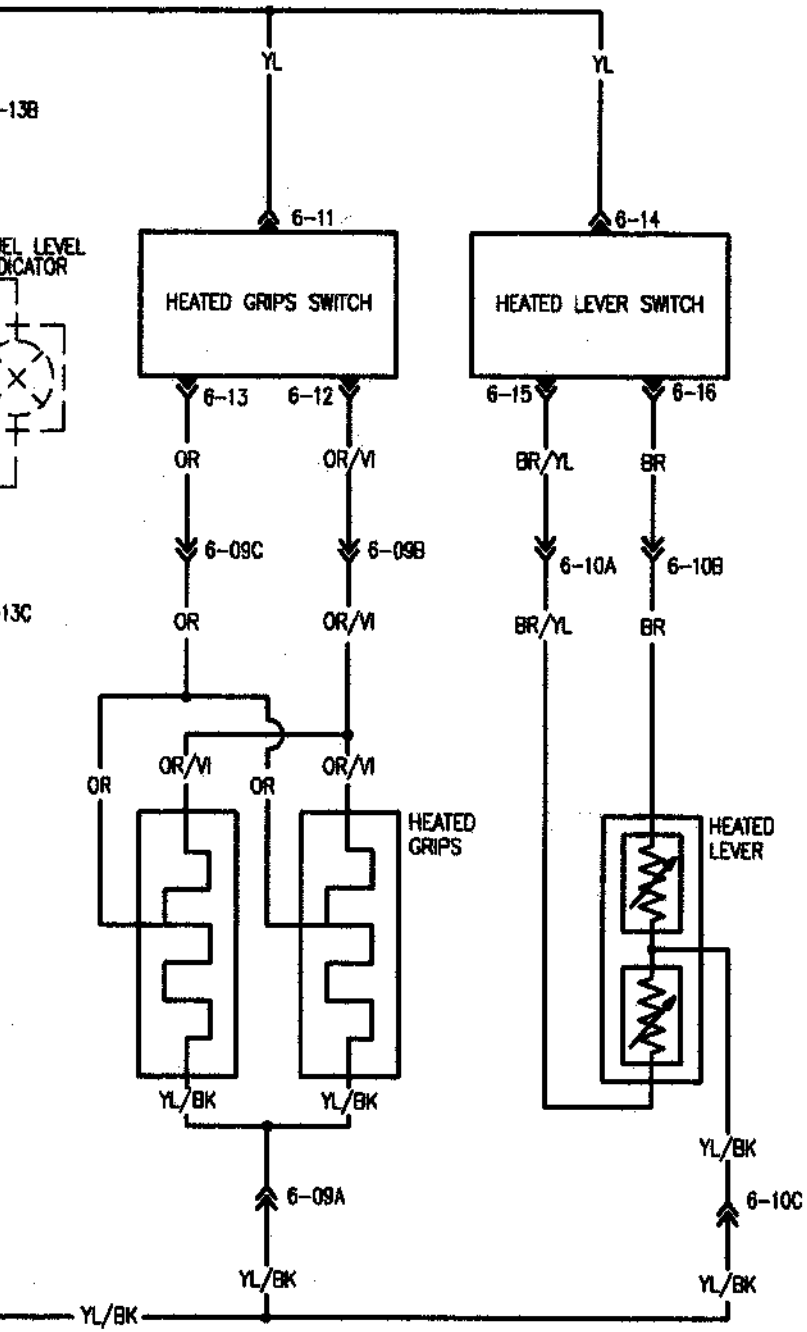
STARTER & IGNITION SWITCHES





INSTRUMENTS





13B

REL LEVEL INDICATOR

13C

HEATING ELEMENTS



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