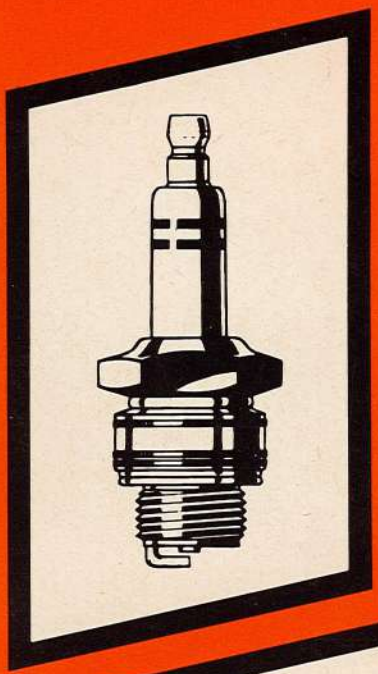
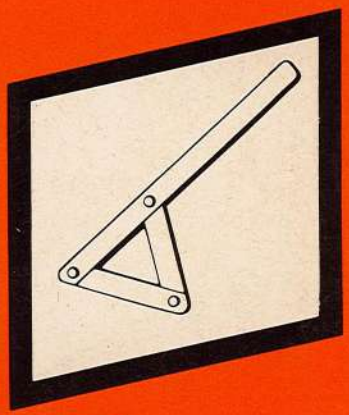
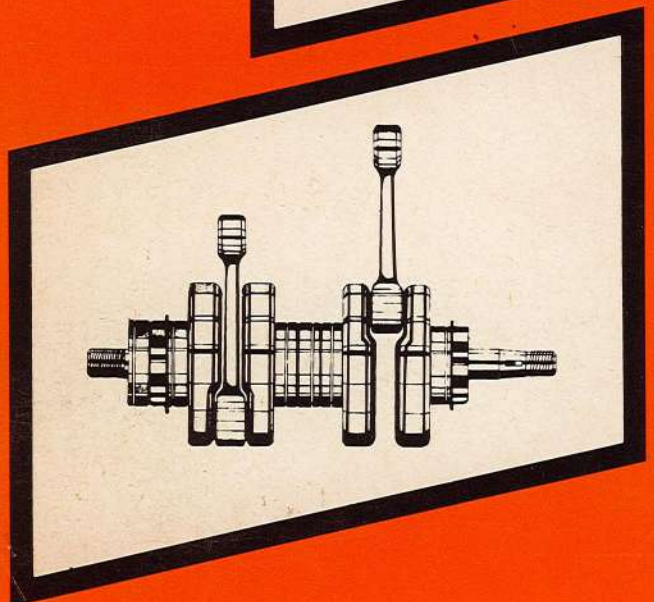
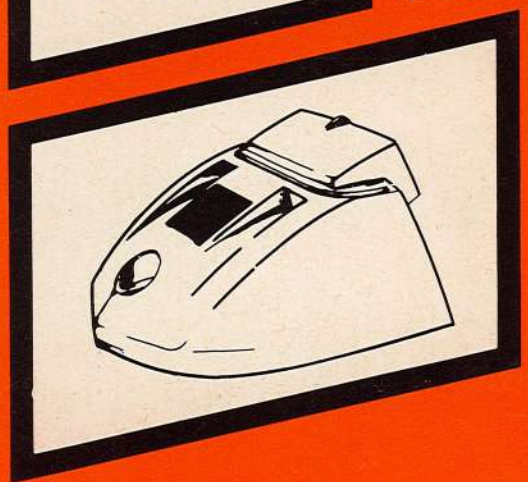
"73" Ski-Doo* Shop Manual (SUPPLEMENT)

1 Suspension
Transmission
Steering & Ski System
2 Engine
3 Electrical
4 Body & Frame
5 Special Tools









BOMBARDIER

Élan·Olympique·Nordic· Skandic·T'NT·Valmont·Alpine·

*Trademark Bombardier Limited

INTRODUCTION

FOREWORD

This manual has been prepared by the Technical Information Center of Bombardier Limited, (Ski-Doo Division), and is intended primarily for use by authorized Ski-Doo dealers.

As a supplement edition, this manual covers only procedures and information, relating to the 1973 series of Ski-Doo snowmobiles, which differ from those stated in the 1972 Ski-Doo Shop Manual.

If you are not totally familiar with the '72 Shop Manual procedure(s), we suggest that a copy of the '72 manual be obtained. Refer to the section(s) required, familiarize yourself with the content, then refer to the '73 supplement for indication of change. If this manual does not include a supplement section the system/component requires no further procedure(s) other than that stated in the '72 manual.

This manual is not designed to relate step by step removal, disassembly, assembly or installation procedures.

In many cases, the exploded view of the system/component is sufficient to perform the necessary procedure, however, text accompanying the illustration must be read and understood before commencing any practical application. Text contains important data necessary to perform the task.

ILLUSTRATIONS

The illustrations are conveniently located as close as possible to the written procedures and are meant to assist the user in identifying parts and components. In some cases, however, depending on model, they may not show the exact relation or arrangement of parts, as space within the manual does not permit. The figure shown is that which relates to the greatest number of models and servicing methods detailed.

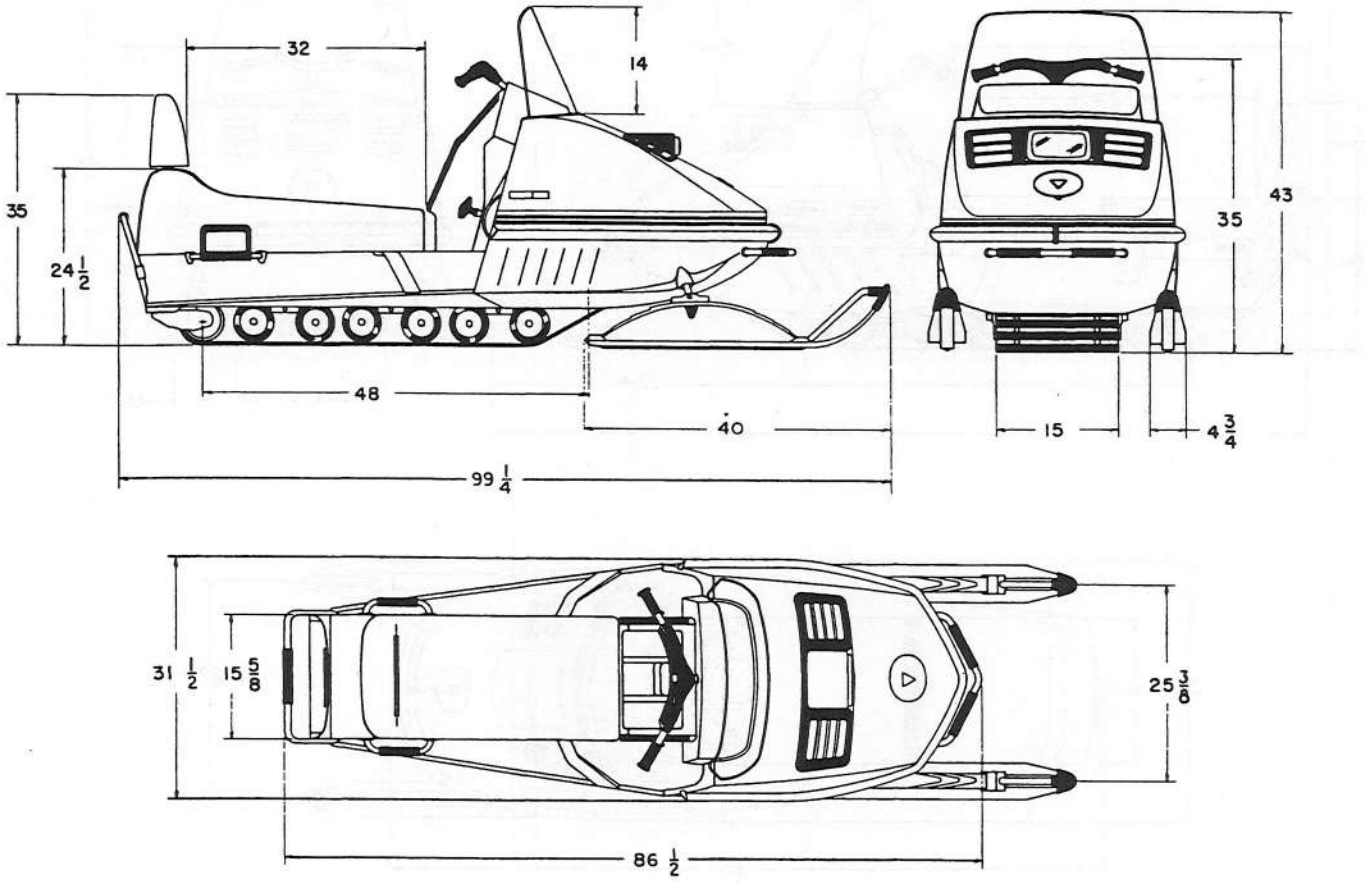
GENERAL

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

IMPORTANT – If vehicle is still under warranty, read warranty conditions and exclusions, at back of manual, carefully, before commencing any procedure. Unrestricted tampering can invalidate your warranty.

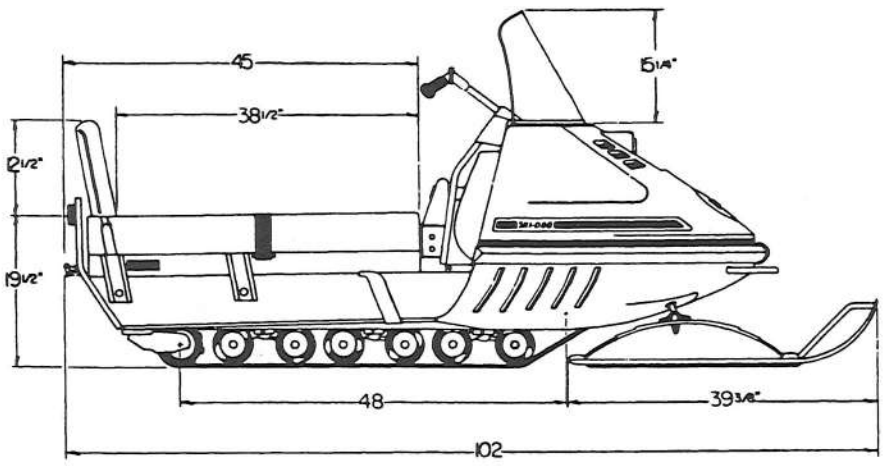
WARNING: Ski-Doo snowmobile dealers have undergone extensive training and consequently, are completely familiar with precautionary steps that must be observed while service a vehicle. Where necessary, this manual is interrupted with WARNINGS or CAUTIONS. It is imperative that they be followed closely. In case of doubt, always consult trained dealer staff.

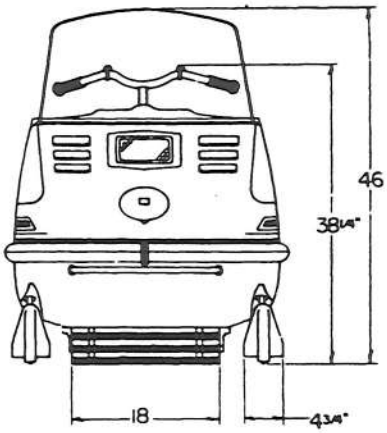
Spécifications OLYMPIQUE

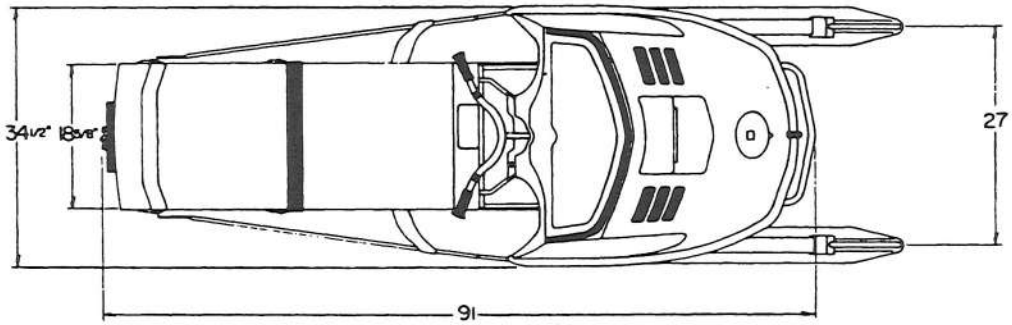


MODEL	OLYMPIQUE	300	335	340	340E	400	400E	440
ENGINE	No. of Cyl.	One	One	Two	Two	Two	Two	Two
	Bore	76mm	78mm	59.5mm	59.5mm	64.5mm	64.5mm	67.5mm
	Stroke	66mm	70mm	61mm	61mm	61mm	61mm	61mm
	Displacement	299cc	335cc	339cc	339cc	399cc	399cc	436.6cc
	Compression	7:1	9:1	9:1	9:1	10:1	10:1	10:1
	Carburetor	HR	HR	HR	HR	HR	HR	HR
	Starting	Manual	Manual	Manual	Electric	Manual	Electric	Manual
	Horse Power	15	20	23	23	27	27	28
CHASSIS	Overall Length	99 1/4"	99 1/4"	99 1/4"	99 1/4"	99 1/4"	99 1/4"	99 1/4"
	Overall Width	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"	31 1/2"
	Height	43"	43"	43"	43"	43"	43"	43"
	Height w/o Windshield	35"	35"	35"	35"	35"	35"	35"
	Weight (lbs)	338	338	360	400	360	400	373
	Bearing Area	1092 sq.in.	1092 sq.in.	1092 sq.in.	1092 sq.in.	1092 sq.in.	1092 sq.in.	1092 sq.in.
	Ground Pressure	.310 p.s.i.	.310 p.s.i.	.330 p.s.i.	.366 p.s.i.	.330 p.s.i.	.366 p.s.i.	.342 p.s.i.
POWER TRAIN	Track Width	15"	15"	15"	15"	15"	15"	15"
	Std. Gear Ratio	15/35	15/34	15/34	15/34	16/34	16/34	16/33
ELEC-TRICAL SYSTEM	Brake Light Coil	23W	23W	23W	23W	23W	23W	23W
	Lighting Coil	7t	75W	75W	75W	75W	75W	75W
	Headlamp (Watt)	60/60	60/60	60/60	35/35	60/60	35/35	60/60
	Tail/Stop Light	8/23W	8/23W	8/23W	8/23W	8/23W	8/23W	8/23W
	Spark Plug (Bosch)	M-175-T1	M-225-T1	W-260-T1	W-260-T1	W-280-M1	W-280-M1	M-225-T1
	Spark Plug Gap	.020"	.020"	.020"	.020"	.020"	.020"	.020"
	Breaker Points Gap	.014" - .018"	.014" - .018"	.014" - .018"	.014" - .018"	.014" - .018	.014" - .018"	.014" - .018"
	Voltage Regulator	No	No	Yes	No	Yes	No	Yes
FUEL	Capacity - Imp.	4.7 gals.	4.7 gals.	4.7 gals.	4.7 gals.	4.7 gals.	4.7 gals.	4.7 gals.
	- U.S.	6 gals.	6 gals.	6 gals.	6 gals.	6 gals.	6 gals.	6 gals.
	Gasoline	Regular	Regular	Regular	Regular	Premium	Premium	Regular
	Gas/Oil Ratio	40:1	40:1	40:1	40:1	40:1	40:1	40:1
BRAKE	Type	Drum	Drum	Drum	Drum	Drum	Drum	Drum

Specifications SKANDIC

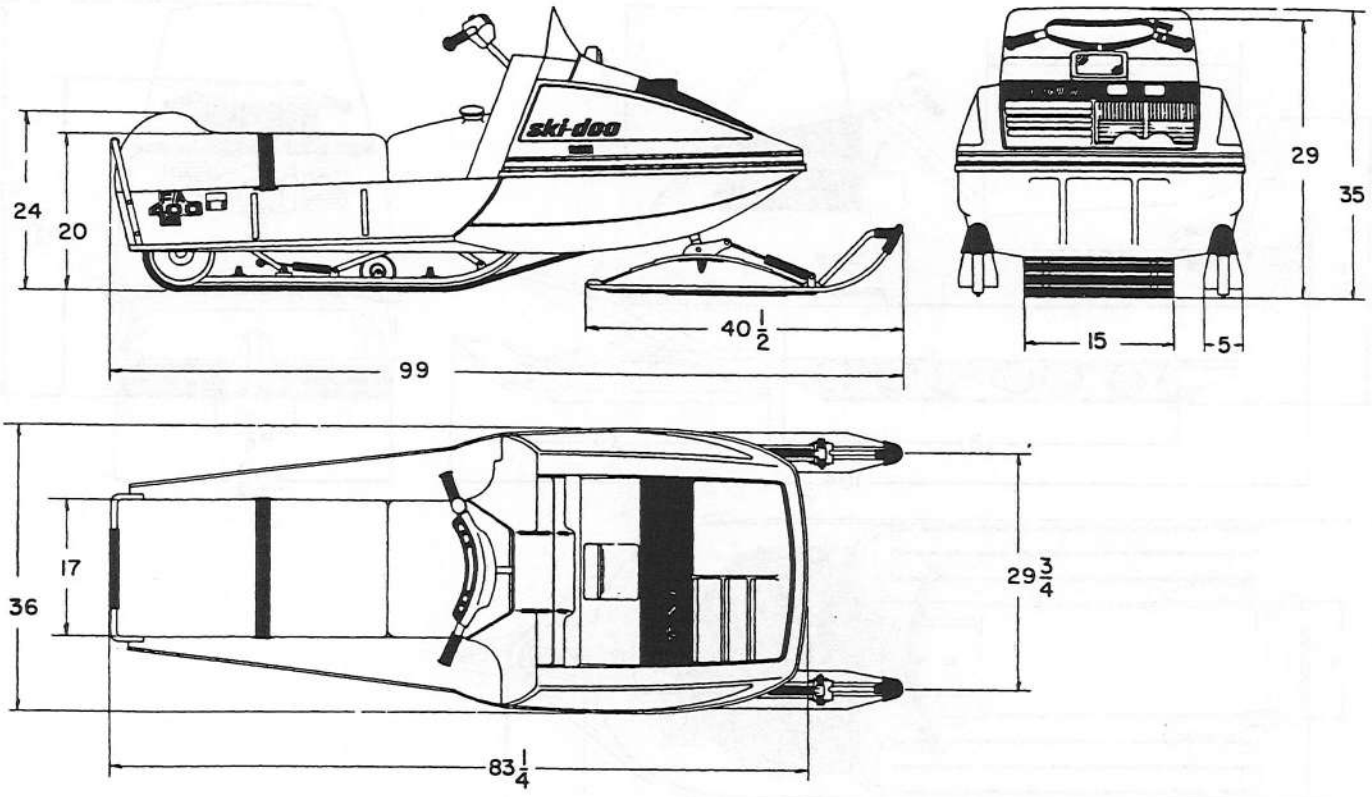






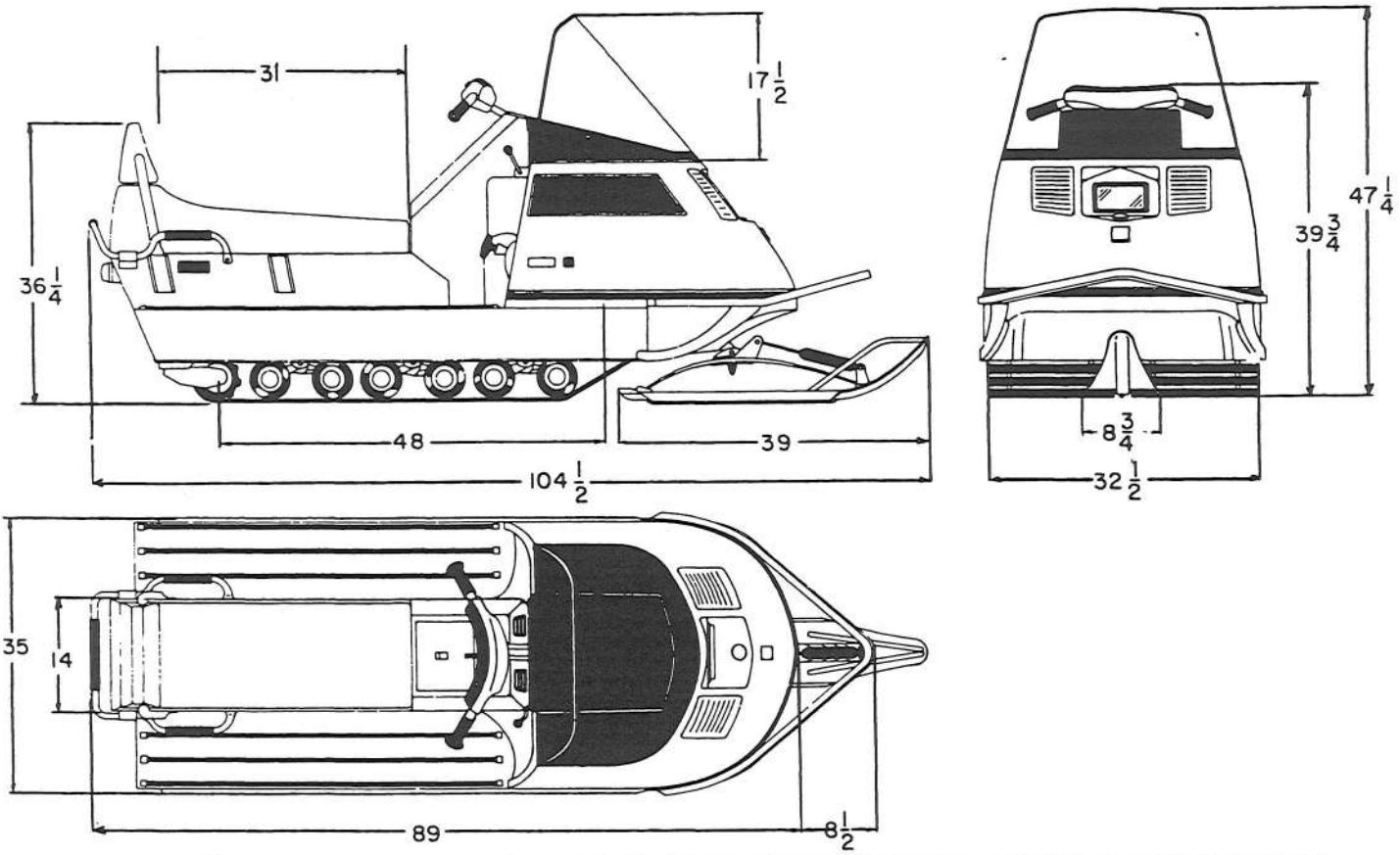
MODEL	SKANDIC	335
ENGINE	Number of Cylinders	One
	Bore	78mm
	Stroke	70mm
	Displacement	335cc
	Compression Ratio	9:1
	Carburetor (Tillotson)	HR
	Starting	Manual
	Horse Power	20
CHASSIS	Overall Length	102
	Overall Width	34 1/2"
	Height	46"
	Height w/o Windshield	38 1/4"
	Weight (lbs)	390
	Bearing Area	1242
	Ground Pressure (p.s.i.)	.314
POWER TRAIN	Track Width	18"
	Std. Gear Ratio	12/33
ELECTRICAL SYSTEM	Brake Light Coil Output	23W
	Lighting Coil Output	75W
	Headlamp (Watt)	60/60
	Tail/Stop Light	8/23W
	Spark Plug (Bosch)	M-225-T1
	Spark Plug Gap	.020"
	Breaker Points Gap	.014" .018"
FUEL	Tank Capacity — Imp.	5.1
	— U.S.	6.4
	Gasoline	Regular
	Gas/Oil Ratio	40:1
BRAKE	Type	Drum

Specifications T'NT F/A



MODEL	T'NT (Free Air)	340	400
ENGINE	Number of Cylinders	Two	Two
	Bore	59.5mm	64.5mm
	Stroke	61mm	61mm
	Displacement	339.2	398.6
	Compression Ratio	11:1	11:1
	Carburetor (Tillotson)	2 X HR	2 X HD
	Starting	Manual	Manual
CHASSIS	Overall Length	99"	99"
	Overall Width	36"	36"
	Height	35"	35"
	Height w/o Windshield	29"	29"
	Weight (lbs)	385 (approx.)	385 (approx.)
	Bearing Area	1092	1092
	Ground Pressure (p.s.i.)	.353	.353
POWER TRAIN	Track Width	15"	15"
	Driving Chain	3/8" pitch, triple	3/8" pitch, triple
ELECTRICAL SYSTEM	Brake Light Coil Output	23W	23W
	Lighting Coil Output	75W	75W
	Headlamp (Watt)	60/60	60/60
	Tail/Stop Light	8/23W	8/23W
	Spark Plug (Bosch)	W-280-M2	W-280-M2
	Spark Plug Gap	.020"	.020"
	Breaker Points Gap	.014" - .018"	Capacit. Disch Syst.
	Voltage Regulator	Yes	Yes
FUEL	Tank Capacity — Imp.	6 gals.	6 gals.
	— U.S.	7.2 gals.	7.2 gals.
	Gasoline	Premium	Premium
	Gas/Oil Ratio	40/1	40/1
BRAKE	Type	Hydraulic disc	Hydraulic disc

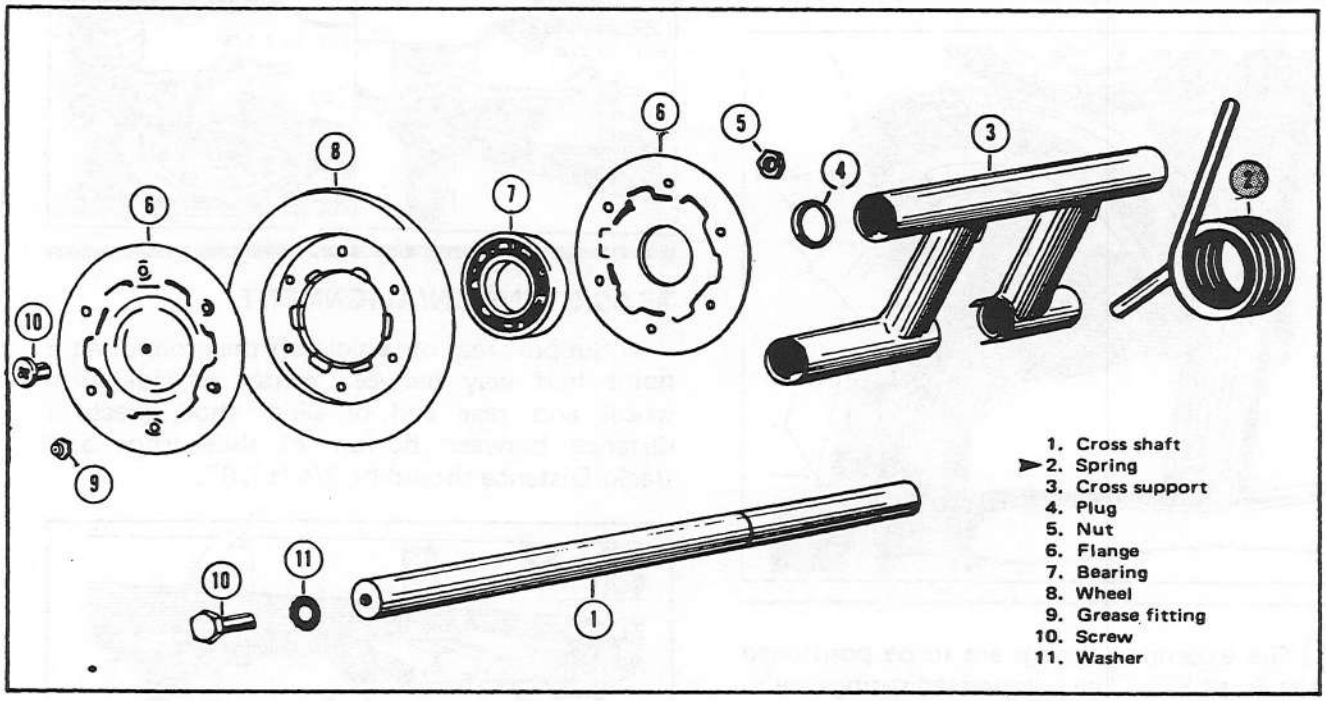
Specifications ALPINE/VALMONT



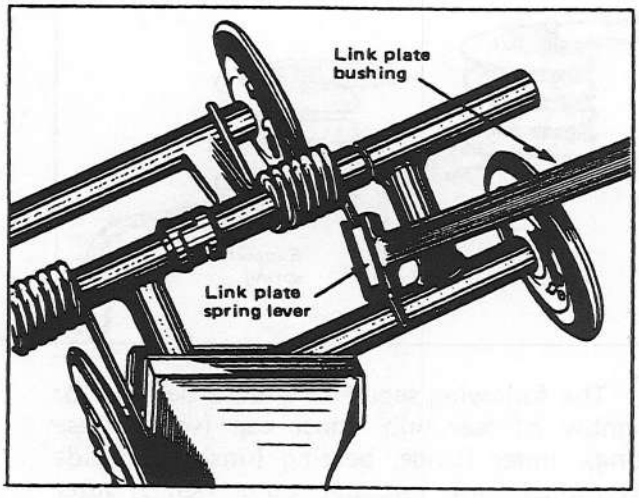
MODEL	VALMONT/ALPINE	440R Valmont	440ER Valmont	440R Alpine	440ER Alpine	640ER Alpine
ENGINE	No. of Cylinders	Two	Two	Two	Two	Two
	Bore	67.5mm	67.5mm	67.5mm	67.5mm	76mm
	Stroke	61mm	61mm	61mm	61mm	70mm
	Displacement	436.6cc	436.6cc	436.6cc	436.6cc	635.1cc
	Compression Ratio	10:1	10:1	10:1	10:1	9:1
	Carburetor (Tillotson)	HD	HD	HD	HD	HD
	Starting	Manual	Electric	Manual	Electric	Electric
	Horse Power	30	30	30	30	N/A
CHASSIS	Overall Length	103 1/2"	103 1/2"	113 1/2"	113 1/2"	113 1/2"
	Overall Width	35 1/2	35 1/2"	35 1/2"	35 1/2"	35 1/2"
	Height w/o Windshield	40"	40"	40"	40"	40"
	Weight (lbs)	506	540	548	584	610
	Bearing area	1756	1756	2160	2160	2160
	Ground Pressure p.s.i.)	.294	.308	.254	.270	.282
POWER TRAIN	Track Width	2 X 15"	2 X 15"	2 X 15"	2 X 15"	2 X 15"
	Std. Gear Ratio	17/46	17/46	17/46	17/46	17/38
ELECTRICAL SYSTEM	Brake Light Coil Output	23 Watts	23 Watts	23 Watts	23 Watts	
	Lighting Coil Output	75 Watts	75 Watts	75 Watts	75 Watts	120 Watts
	Headlamp (Watt)	60/60	35/35	60/60	35/35	60/60
	Tail/Stop Light (Watt)	8/23	8/23	8/23	8/23	8/23
	Spark Plug (Bosch)	,M-225-T-1	M-225-T-1	M-225-T-1	M-225-T-1	M-225-T-11
	Spark Plug Gap	.020"	.020"	.020"	.020"	.020"
	Breaker Points Gap	.014" - .018"	.014" - .018"	.014" - .018"	.014" - .018"	.014" - .018"
	Voltage Regulator	Yes	No	Yes	No	No
FUEL	Tank Capacity — Imp.	5 gals	5 gals	5 gals	5 gals	5 gals
	— U.S.	6.25 gals	6.25 gals	6.25 gals	6.25 gals	6.25 gals
	Gasoline	Regular	Regular	Regular	Regular	Regular
	Gas/Oil Ratio	40:1	40:1	40:1	40:1	40:1

Suspension

BOGIE WHEELS (Nordic) 1-1

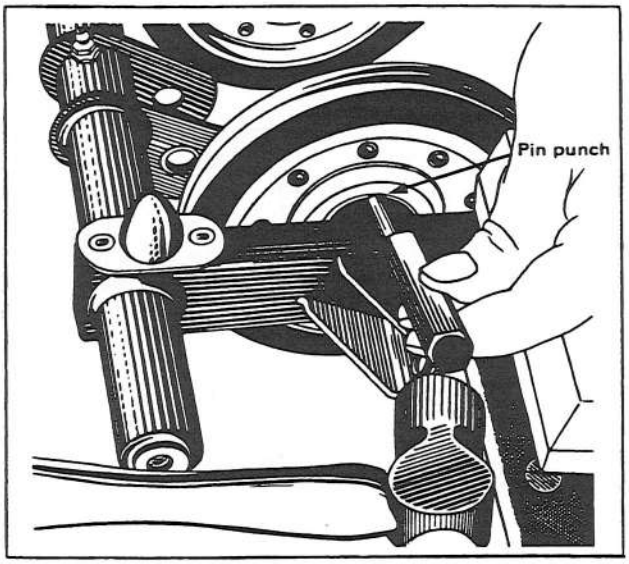


(2) To disengage bogie wheel springs, first place assembly in a vice. Position a link plate spring bushing on spring end then using a spring lever, pry the spring free. Similar method applies when repositioning the spring.

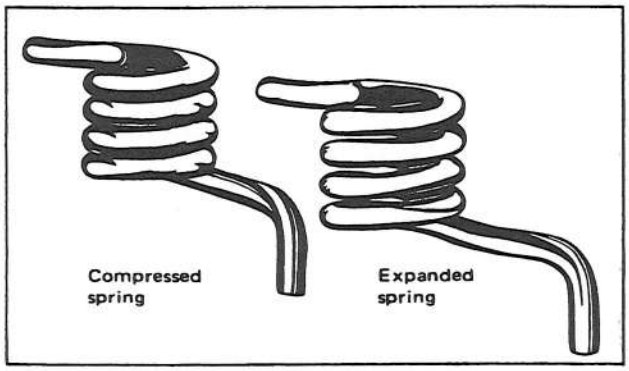


SLIDE SUSPENSION (T'NT & Oly. models)

(15) A 1/4 inch pin punch is required to remove the rear arm idler assembly. Position punch on inner race of bearing and tap assembly from its location.



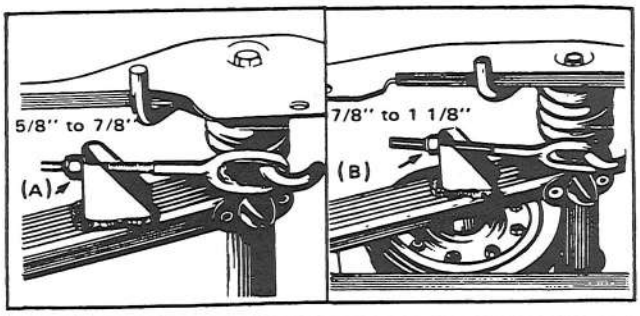
(19) The expanded springs are to be positioned on the front arm. The compressed springs are to be installed at the rear of the assembly.



(18) The following sequence should be used for assembly of rear hub: Inner cap (with grease fitting), inner flange, bearing (unshielded side facing inner cap), sprocket, outer flange, outer cap, sliding block, end plate, and guide.

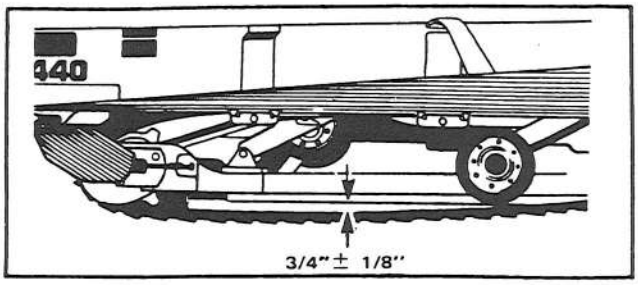
SUSPENSION ADJUSTMENT (ride)

With rear of vehicle off the ground, loosen the four (4) spring adjuster nuts until flush with the end of the adjusters. Tighten the front arm nuts (A) until a distance of 5/8" to 7/8" is obtained between the outer side of nuts and the adjuster ends. Tighten the rear arm nuts (B) until a distance of 7/8" to 1 1/8" is obtained between the outer side of the nuts and the adjuster ends. Adjust each arm nut equally. If the ride is too soft, the arm nuts can be tightened further to suite the riders preference.

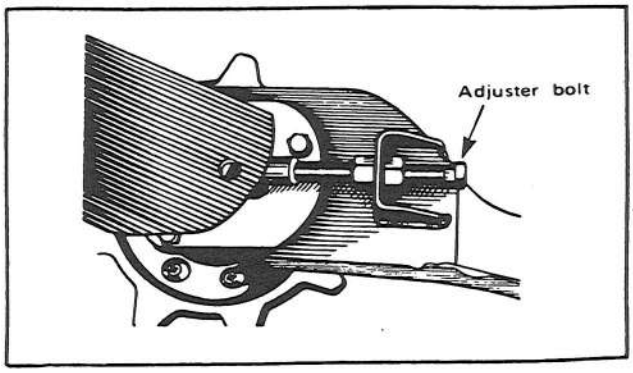


TRACK TENSION/ALIGNMENT

Support rear of vehicle off the ground. At a point half way between center of side idler wheel and rear end of slider shoe, measure distance between bottom of slider shoe and track. Distance should be 3/4"±1/8".



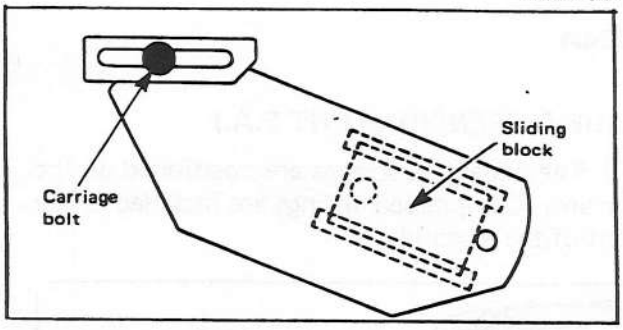
To adjust, release tensioner lock nuts then turn adjuster bolts clockwise to increase track tension, counter-clockwise to decrease. Adjust both sides equally. Start the engine and allow the track to turn **slowly** and check if distances between track edges and link plates are equal. If not, tighten adjuster bolt on side where track is closest to the link plate. Recheck alignment and firmly tighten tensioner lock nuts.

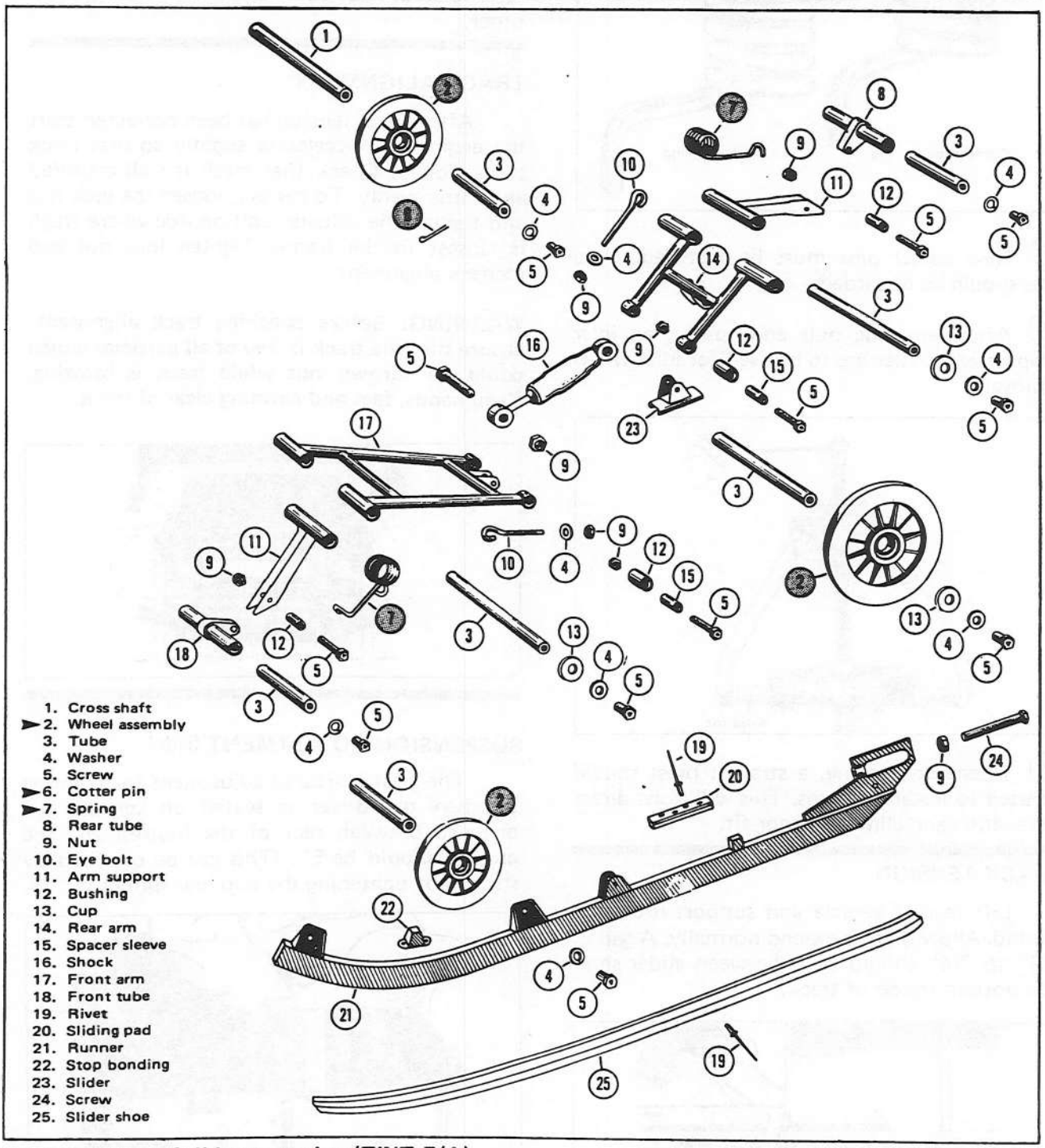


WARNING: Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, feet and clothing clear of track.

LINK PLATE ADJUSTMENT

Reposition vehicle on the ground and check if the sliding blocks of the rear hub are flush with edge of each hole in link plate. If not, loosen carriage bolt lock nuts and readjust.

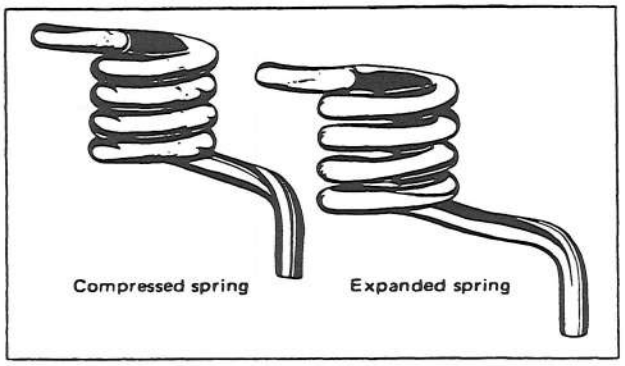




Exploded view of slide suspension (T'NT F/A)

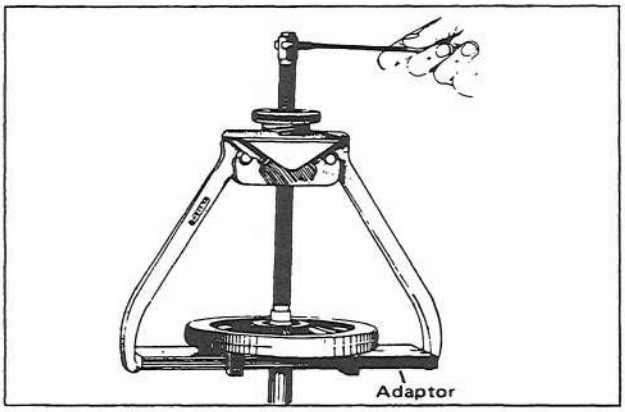
SLIDE SUSPENSION (T'NT F.A.)

(7) The expanded springs are positioned on the rear arm. Compressed springs are installed at the front of the assembly.



(6) New cotter pins must be installed. Used pins should be discarded.

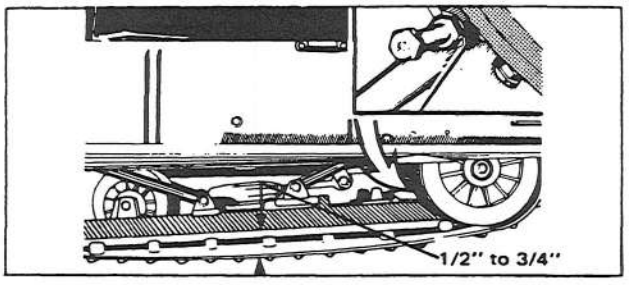
(2) After removing bolt and spacer, an idler adaptor and puller are to be used for idler wheel removal.



(2) Whenever possible, a straight press should be used to install bearings. This will assist direct installation and eliminate poor fit.

TRACK TENSION

Lift rear of vehicle and support it off the ground. Allow slide to extend normally. A gap of 1/2" to 3/4" should exist between slider shoe and bottom inside of track.



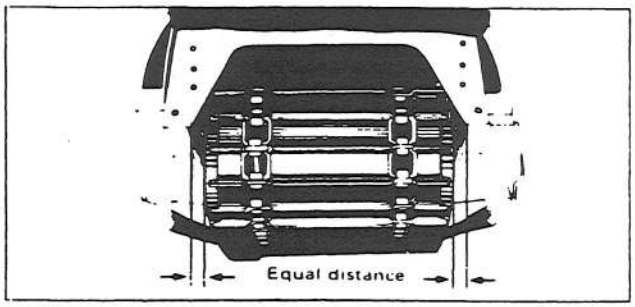
If track tension is too loose, the track will have a tendency to thump. If too tight, performance will be affected. Adjust to correct tension by loosening or tightening adjuster bolts located on inner side of rear idler wheels.

Note: Track tension and alignment are inter-related. Do not adjust one without the other.

TRACK ALIGNMENT

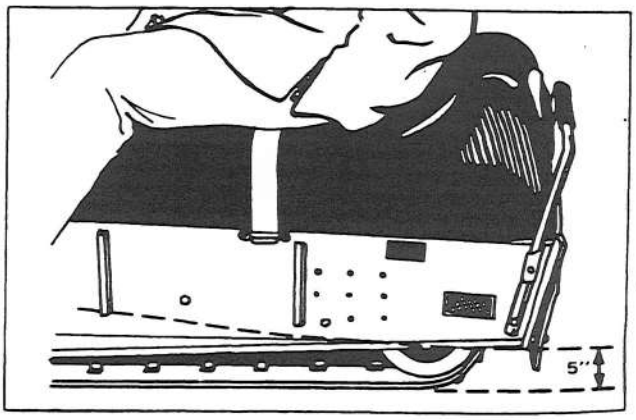
After track tension has been corrected start the engine and accelerate slightly so that track turns **slowly.** Check that track is well centered and turns evenly. To correct, loosen the lock nut and tighten the adjuster bolt on side where track is closest to the frame. Tighten lock nut and recheck alignment.

WARNING: Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, feet and clothing clear of track.



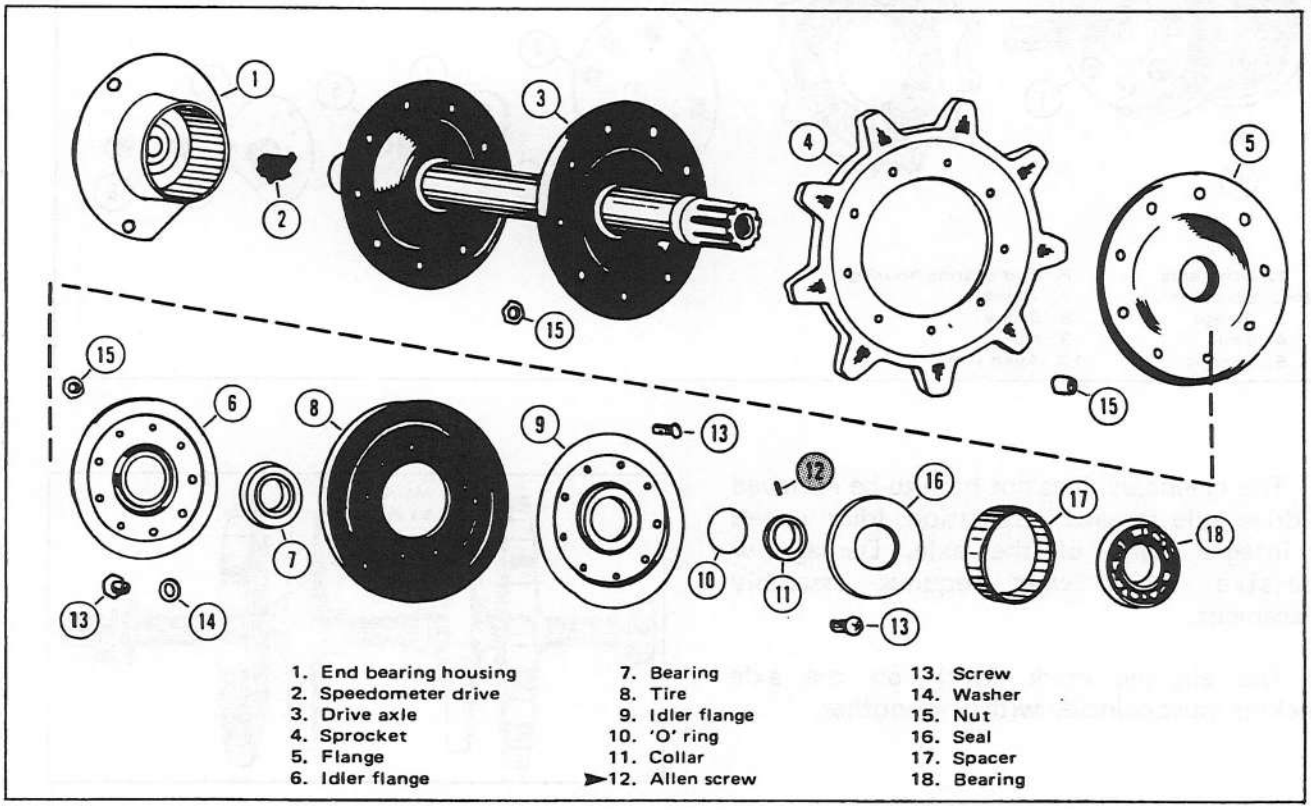
SUSPENSION ADJUSTMENT (ride)

The best all-round adjustment for comfort is when the driver is seated on vehicle; the distance between rear of the footrest and the ground should be 5". (This can be obtained by slacken or tightening the two rear springs.)



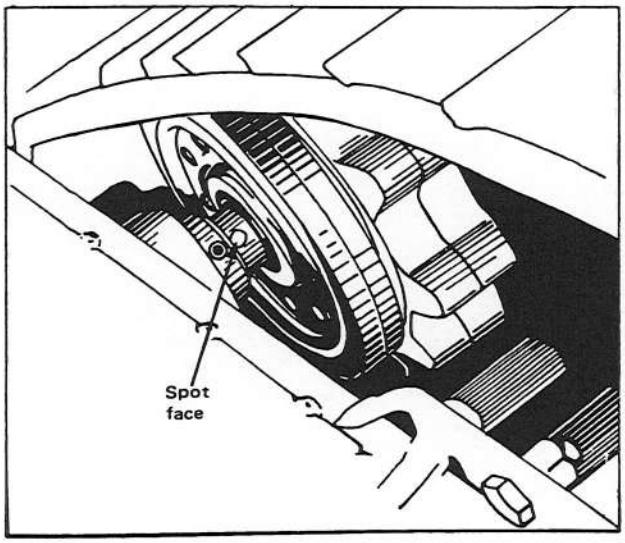
Suspension

DRIVE AXLE (T'NT models) 1-4

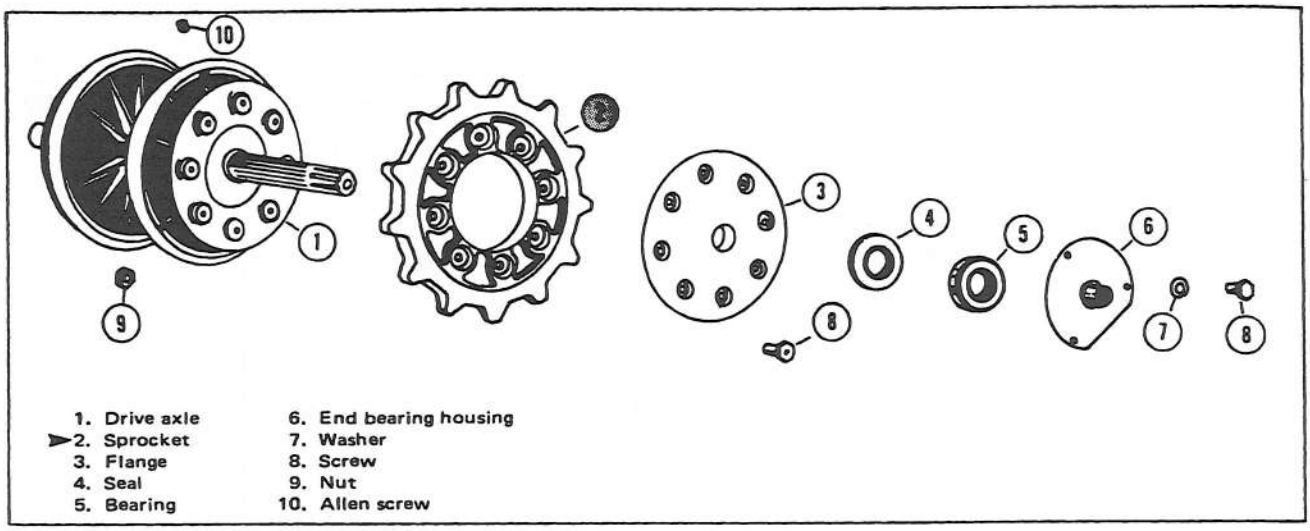


1. End bearing housing
2. Speedometer drive
3. Drive axle
4. Sprocket
5. Flange
6. Idler flange
7. Bearing
8. Tire
9. Idler flange
10. 'O' ring
11. Collar
12. Allen screw
13. Screw
14. Washer
15. Nut
16. Seal
17. Spacer
18. Bearing

(12) The locking collar allen screw must sit into the spot face of the axle. If spot face is absent, use a 15/64" dia. bit and drill to a depth of 5/64 inch. Spot face location is 5/16" from bearing idler.



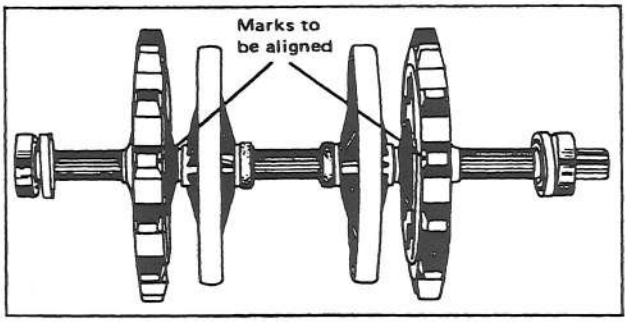
T'NT F/A models



1. Drive axle
2. Sprocket
3. Flange
4. Seal
5. Bearing
6. End bearing housing
7. Washer
8. Screw
9. Nut
10. Allen screw

The chaincase does not have to be removed for drive axle removal/installation. Idler wheels are integral parts of the axle. Damage or excessive wheel wear requires assembly replacement.

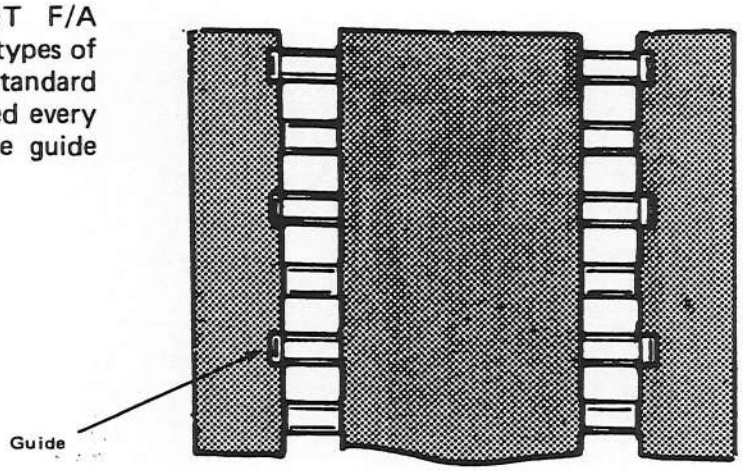
(2) The aligning mark (dot), on the axle sprockets must coincide with one another.



Suspension

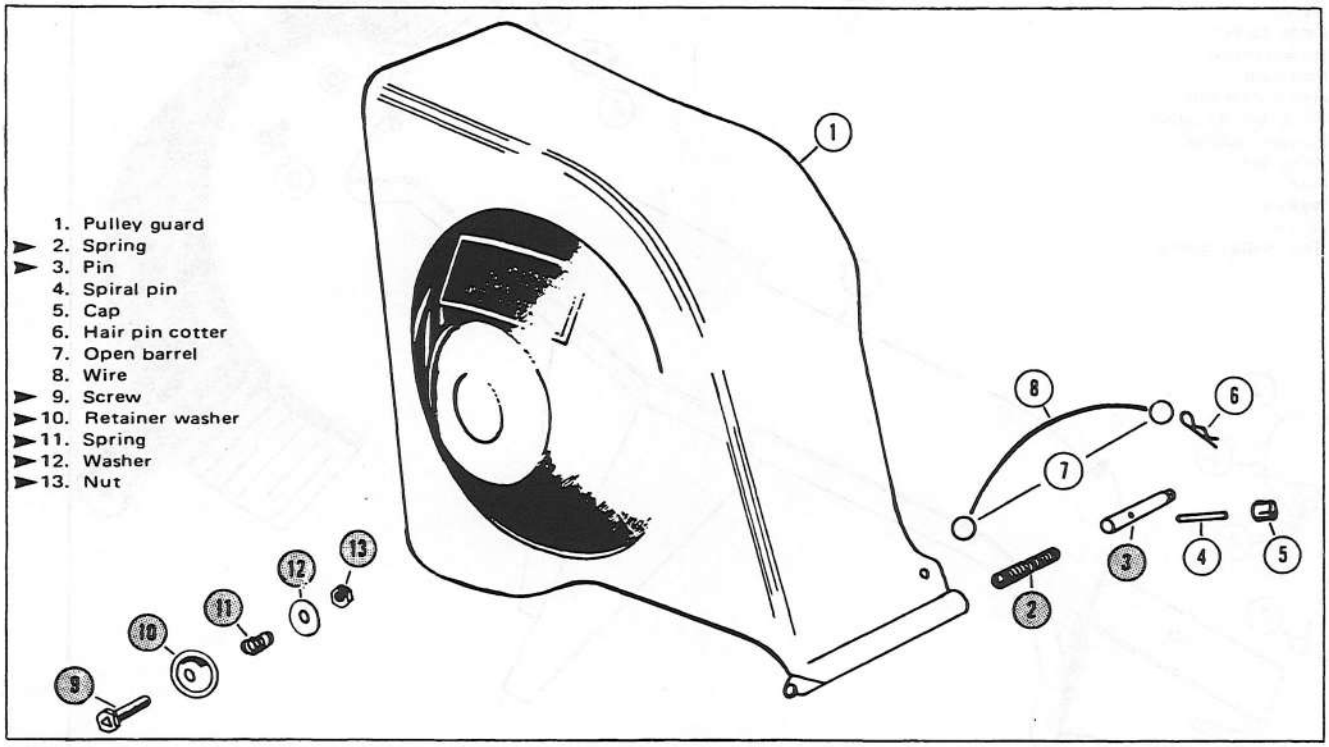
TRACK 1-5

Track insert installatior on T'NT F/A models differs from other models. Two types of inserts are used, a guide insert and a standard insert. The guide insert is to be installed every second notch. The high section of the guide insert must face exterior of vehicle.

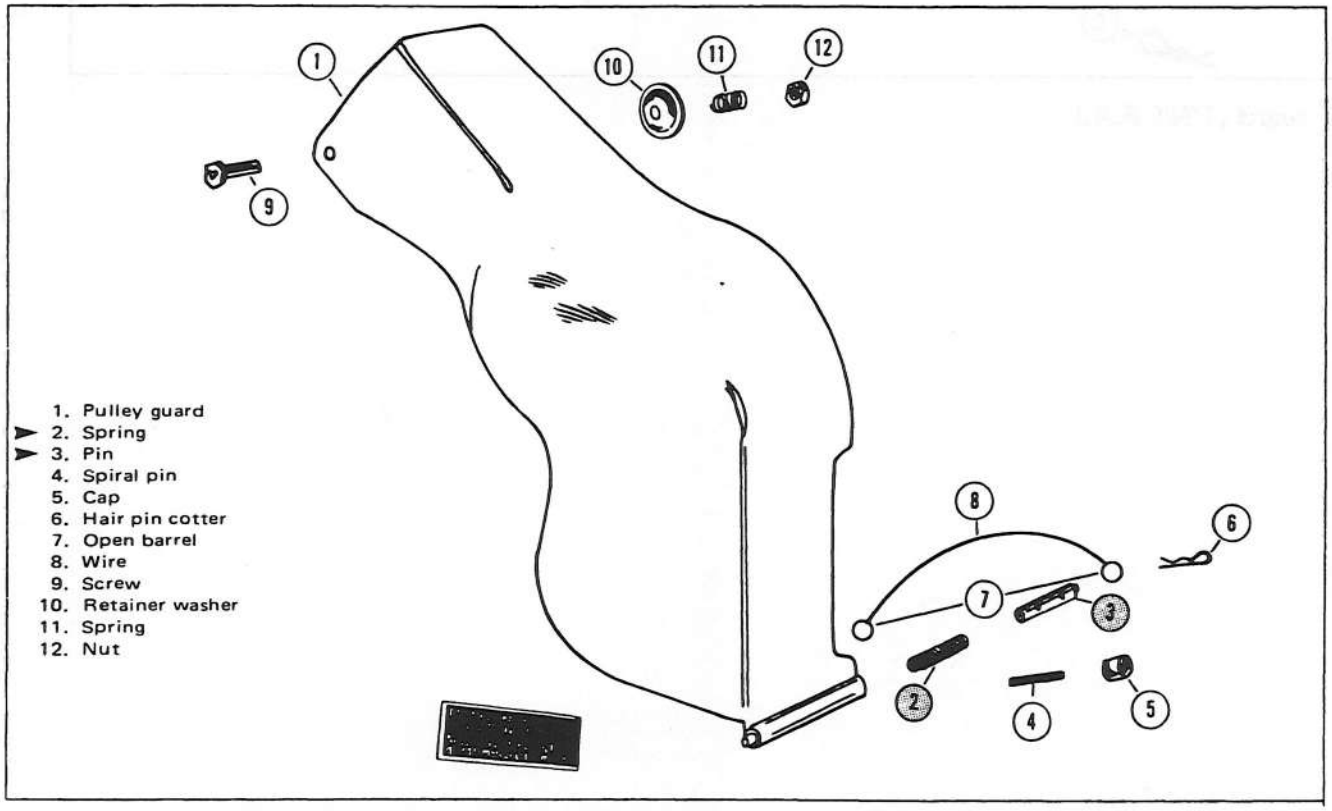


Transmission

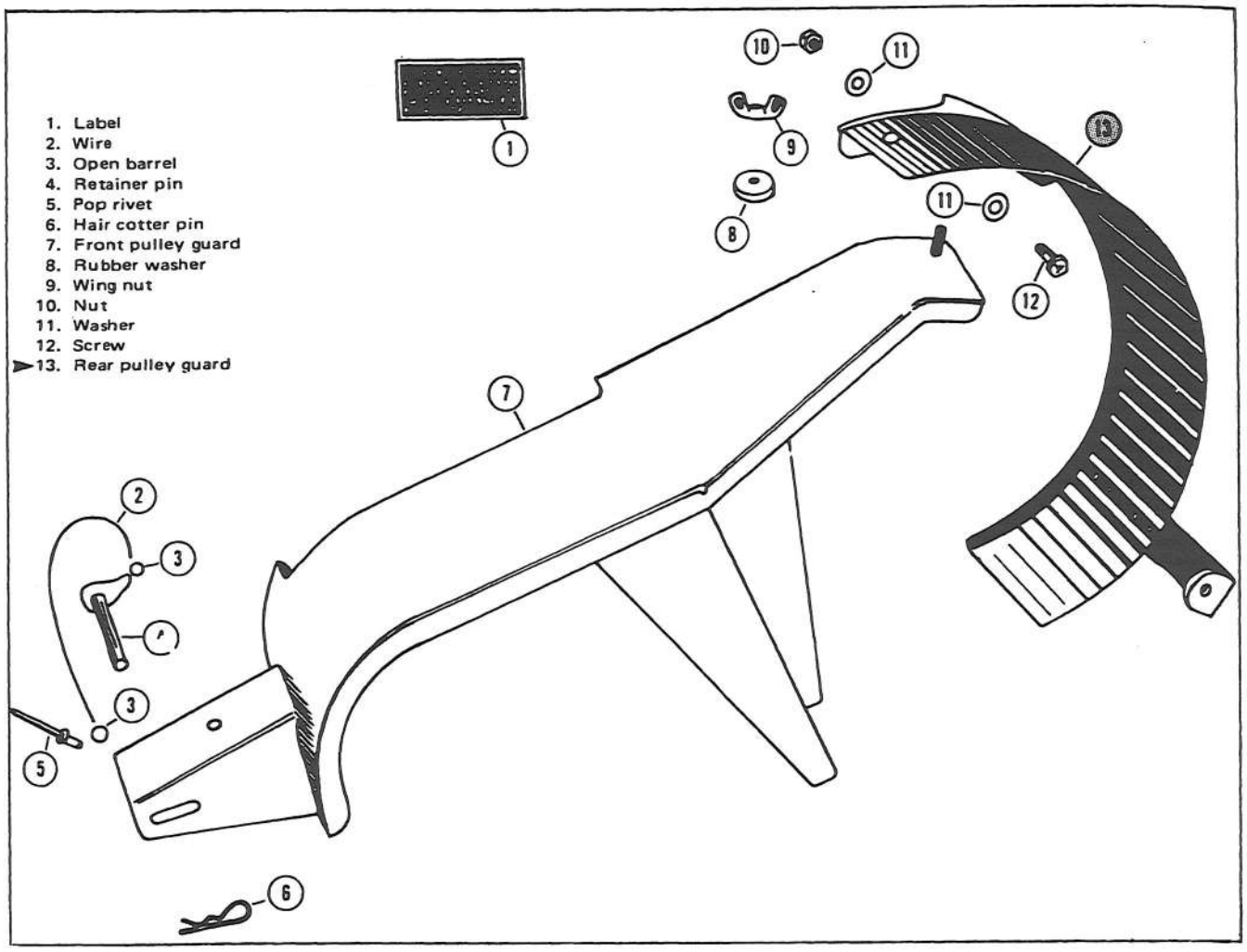
PULLEY GUARD 1-6



Pulley guard (Elan)



Pulley guard (All models except Elan and T'NT F/A)



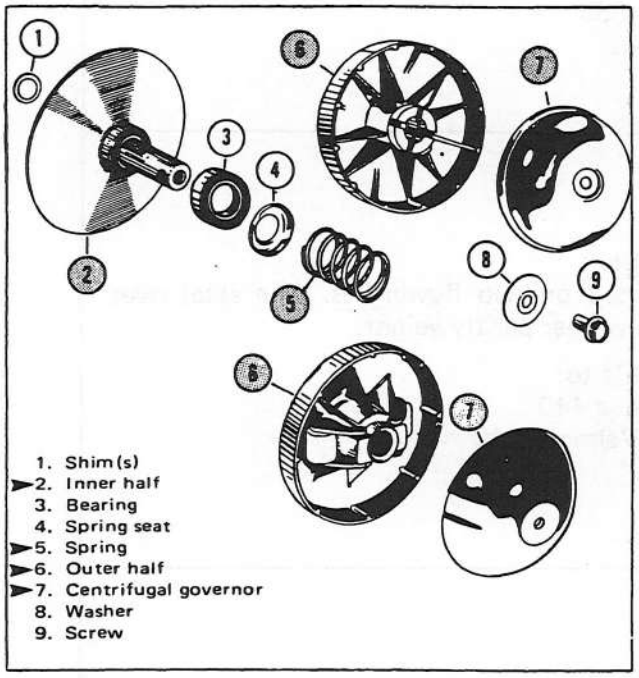
Pulley guard (T'NT F.A.)

Transmission

DRIVE PULLEY 1-8

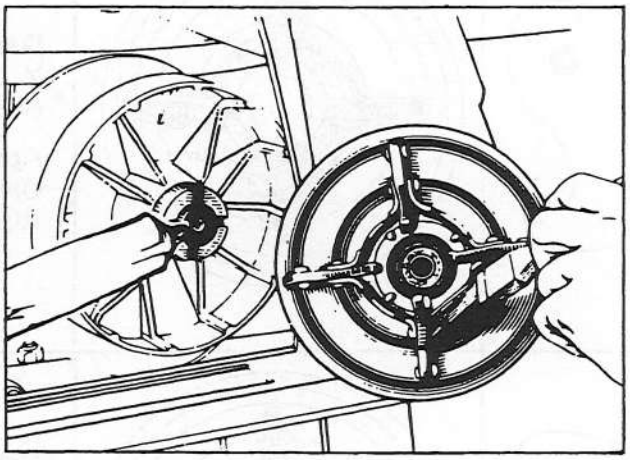
(All models except T'NT F/A)

(2) On 640 engines, make sure the lubrication hole in the shaft end is clear of all impurities.



(6) On Elan 250T models, rollers and roller levers are integral parts of the outer half pulley. If components are damaged or worn the complete outer half pulley must be replaced.

(6) On all models except Elan 250T, Alpine 640 and Nordic 640 models, pack low temperature grease into bolt hole of inner half pulley shaft. Apply a light coat of low temperature grease to the four pressure levers of governor.

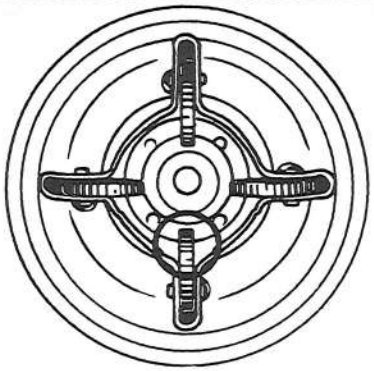


(5) 1973 springs are as follows:

Model	Spring Color	Rate per inch
Elan 250-250E	Black	40 lbs
Elan 250T	Blue	65 lbs
Elan 250SS	Brown	55 lbs
Olympique 300-340 340E-400-400E	Black	40 lbs
Olympique 440	Brown	55 lbs
Skandic 335	Black	40 lbs
Nordic 640ER	Black	40 lbs
T'NT 294	Green	85 lbs
T'NT 340-440	Brown	55 lbs
Alp/Val 440R-440ER	Brown	55 lbs
Alpine 640ER	Brown	55 lbs
T'NT F/A 340-400	Orange	50 lbs

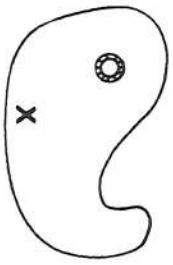
*Tolerance 3 in/lbs

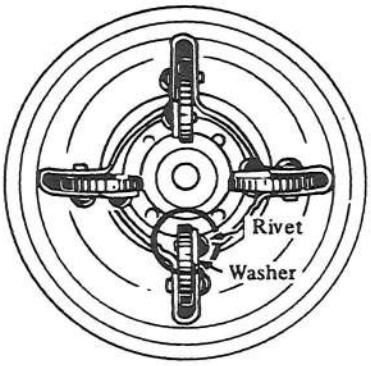
1973 CENTRIFUGAL GOVERNOR IDENTIFICATION



Description:
Four flyweights without hole.

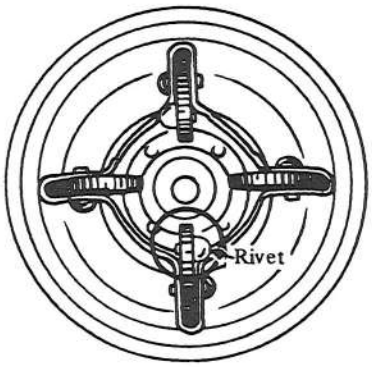
Applicable to:
Elan 250 and 250E
Olympique 300-335 (courtesy) 340-340E-400- and 400E.
Skandic 335
T'NT 340





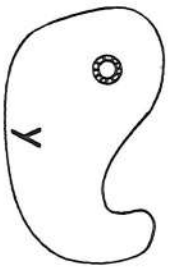
Description:
X Stamped on two flyweights. One steel rivet and one washer per flyweight.

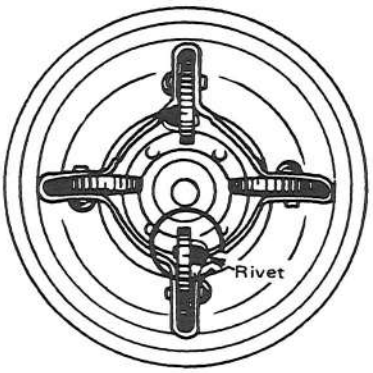
Applicable to:
Olympique 440
Alpine/Valmont 440



Description:
Y stamped on two flyweights. Two flyweights incorporating an aluminum rivet. (Whiter in appearance than the rivets attaching the fly-weights to the cup).

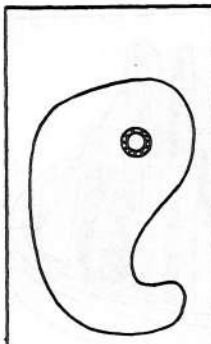
Applicable to:
T'NT 294

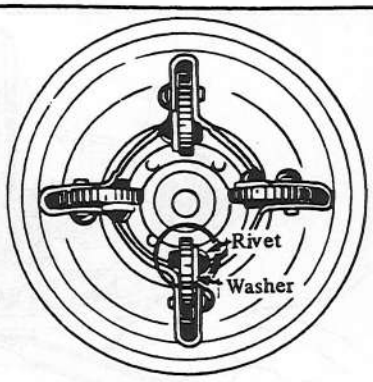




Description:
Y stamped on two flyweights. Two flyweights incorporating a steel rivet (same color as the rivets attaching flyweights to cup).

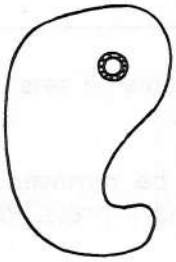
Applicable to:
T'NT 440

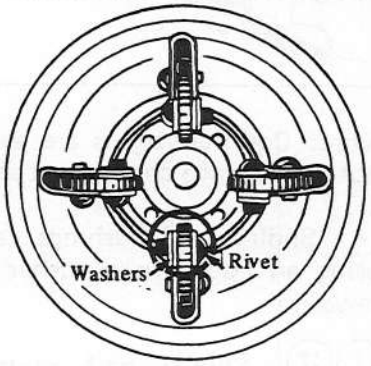




Description:
One washer and one rivet per flyweight.

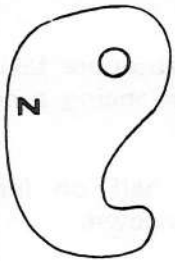
Applicable to:
Nordic 640ER

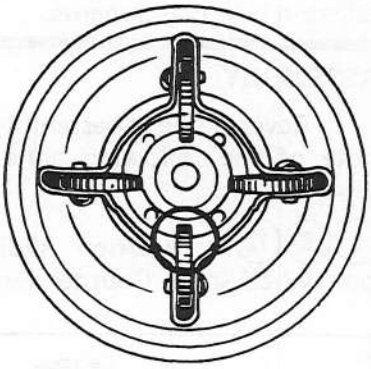




Description:
Three washers and one rivet per flyweight.

Applicable to:
Alpine 640ER

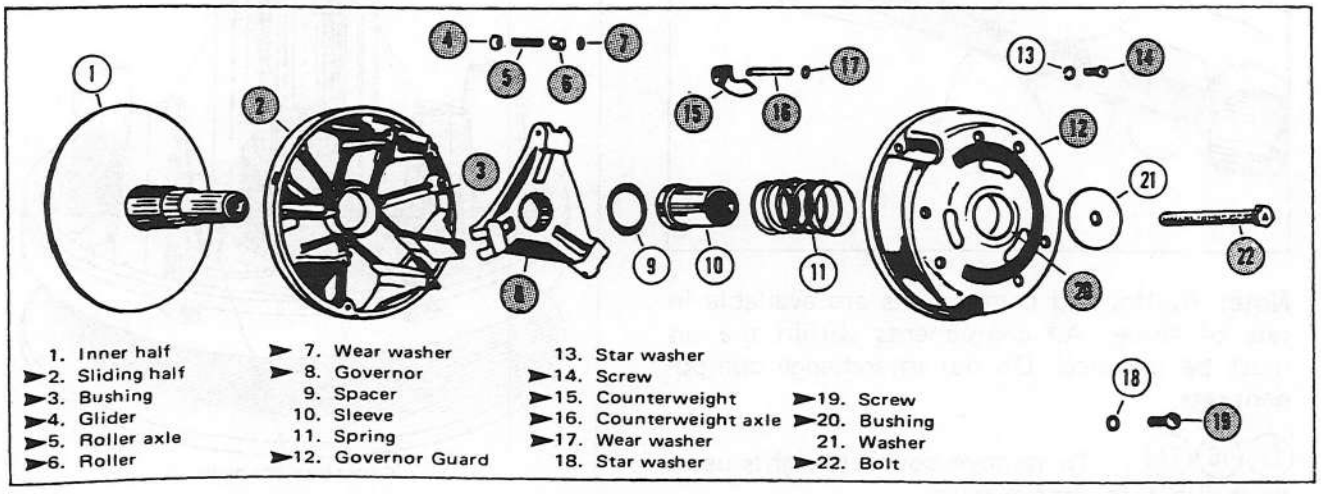




Description:
Four flyweights with holes. "Z" stamped on three flyweights.

Applicable to:
Elan 250SS

DRIVE PULLEY (T'NT F/A)



REMOVAL

To remove drive pulley it is first necessary to raise engine from frame. Support engine by inserting a piece of wood between engine mount and cross support of frame.

To remove drive assembly from crankshaft, use a "Snap-On" slide hammer no. CG250 8 and CG250 9 or equivalent.

DISASSEMBLY

It is important that screw and screw location are identified.

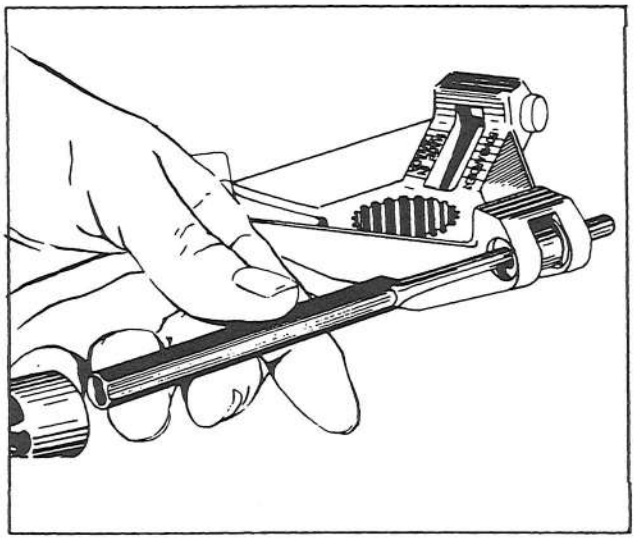
(14) Remove six small screws from guard.

(19) Remove three screws securing governor guard to sliding half.

WARNING: As spring pressure can throw components apart. Hold governor during screw removal.

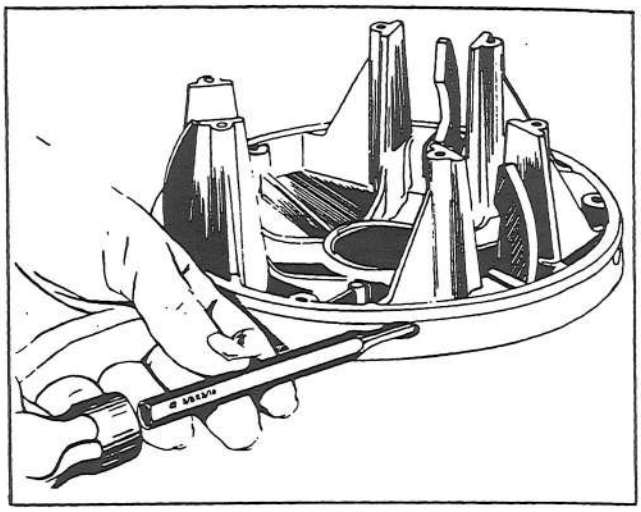
(20) If necessary, governor guard bushing can be pressed out using an appropriate pusher and a press. (Press inward).

(4)(5)(6)(7) Rollers can be removed by removing gliders with a pair of pliers then using a drive punch to remove axle. Worn gliders should be replaced when axle end is visible.



Note: Rollers and components are available in sets of three. All components within the set must be installed. Do not interchange component sets.

(15)(16)(17) To remove counterweights use a drive punch to remove axles.



Note: Counterweights are available in sets. Do not interchange component sets.

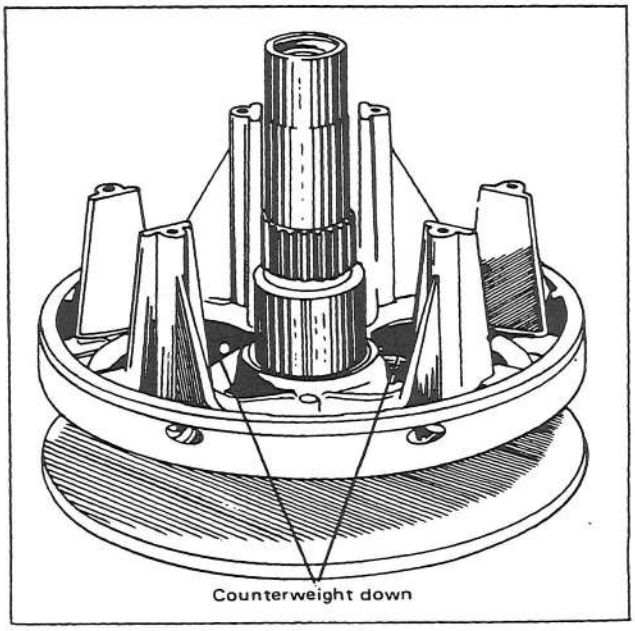
(3) Sliding half bushings can be removed by using an appropriate pusher and a press. (Press inward.)

(2)(12) Sliding half pulleys and governor guards are calibrated as matched sets. Do not interchange parts. Appropriate bushings are installed in new components.

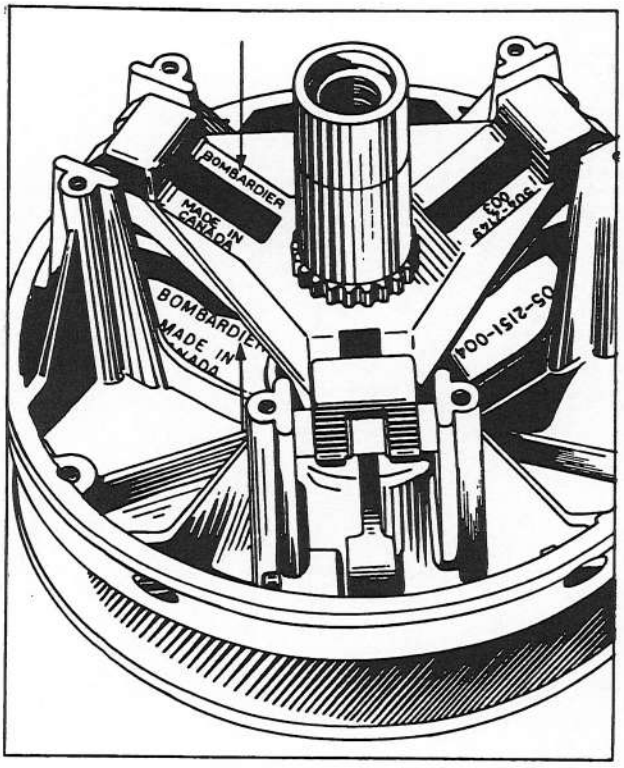
ASSEMBLY

Reverse the disassembly procedure taking note of the following pulley balancing procedures.

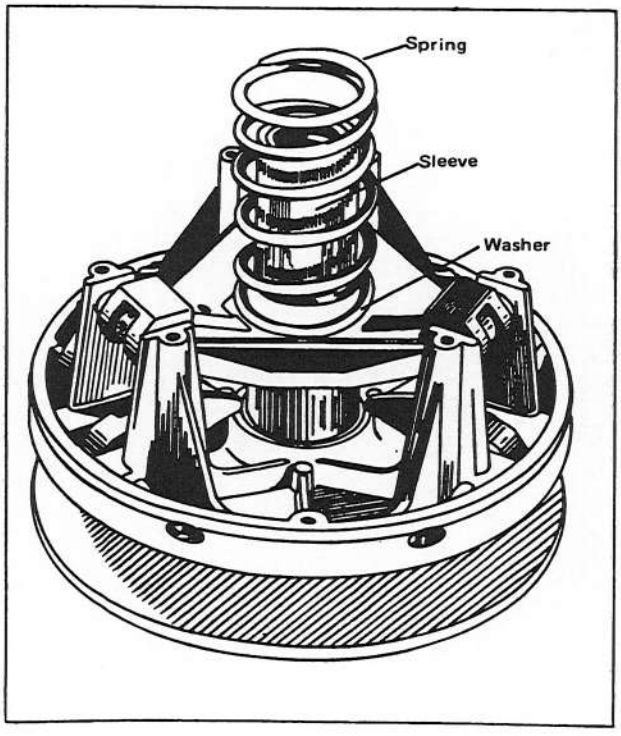
(2)(8)(12) Position sliding half on inner pulley half shaft. **Counterweights down.**



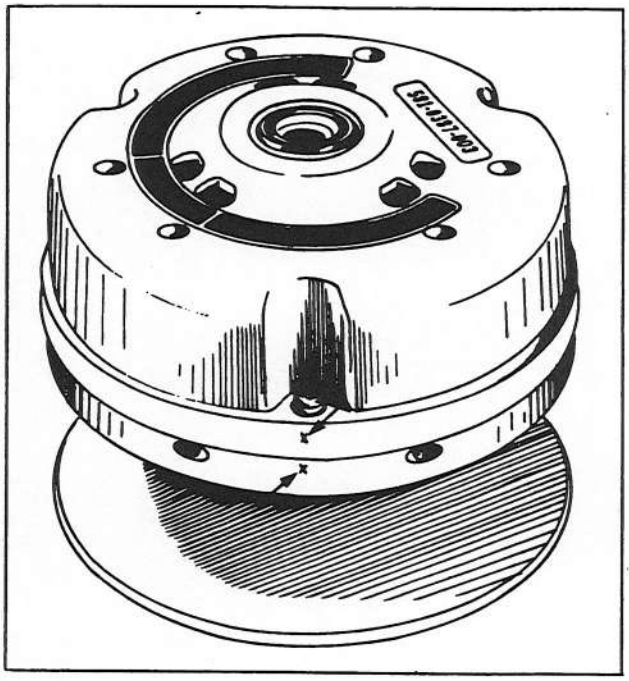
Position governor with the "Bombardier" mark facing up. Align governor mark with the "Bombardier" mark stamped on sliding half.



Install washer, sleeve and spring.



Install governor guard, aligning "X" marks on governor and sliding half.



(19) Apply Loctite TL242 on screws and tighten them to 50 to 65 in/lbs.

(14) Apply Loctite TL242 on screws and tighten them to 25 to 35 in/lbs.

INSTALLATION

(22) Torque bolt to 50 to 60 ft/lbs. Reposition engine.

Transmission

DRIVEN PULLEY 1-9

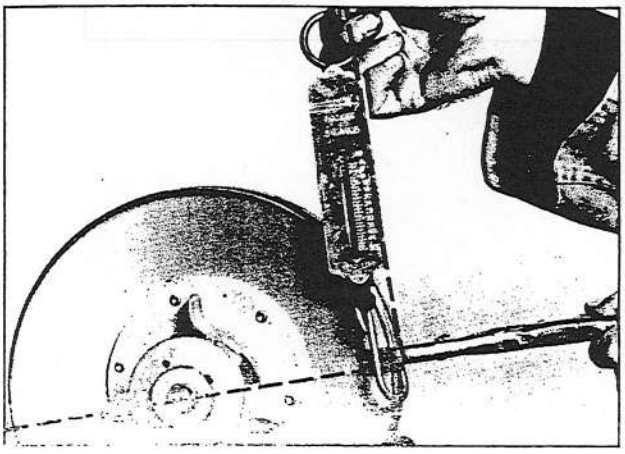
DRIVEN PULLEY (Spring Tension)

Elan 250	8
Elan 250T	8
Elan 250SS	8
Olympique 300	8
Olympique 335	8
Olympique 340	8
Olympique 400	8
Olympique 440	8
Nordic 640	9
Skandic 335	8
T'NT 294	11
T'NT 340	11
T'NT440	11
T'NT F/A 340	13
T'NT F/A 400	13
Val/Alp 440	18
Alpine 640	18

Note: Variance of 1 lb acceptable on all models.

To correct spring tension either relocate spring end in sliding pulley half, or gradually rotate outer cam until spring tension is correct.

Note: In order to measure driven pulley spring tension the pulley halves must be separated. To do this, insert a length of 1/8" dia. rod between the halves. Check tension using a fish scale positioned at 90° with pulley axle.



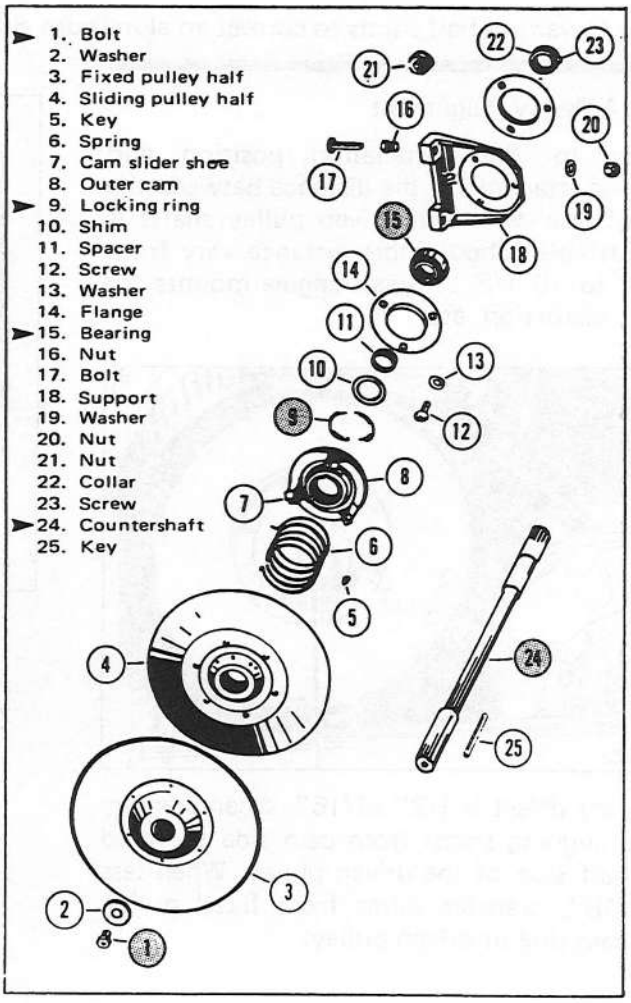
DRIVEN PULLEY (T'NT F/A)

(1) To remove driven pulley assembly, remove bolt, shims and pulley assembly.

(9) To remove circlip first press down on outer cam then using a screwdriver, remove circlip.

(15) If bearing needs to be changed, remove three bolts securing flanges. Remove outer flange. Unbolt and lift support from frame. Using puller, remove bearing.

(24) Countershaft can be removed by first removing upper sprocket of chaincase then sliding out shaft. Maximum deflection of shaft is .003 inch.



Transmission

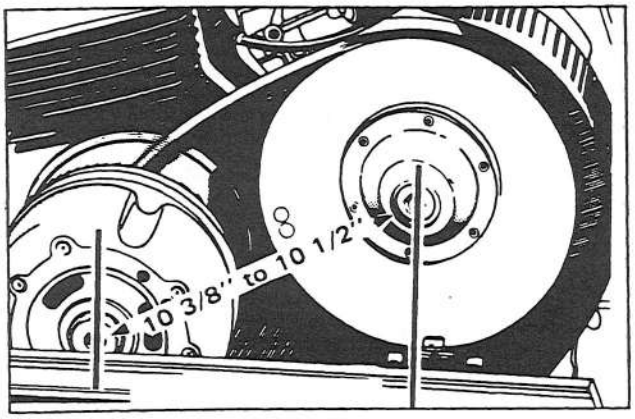
PULLEY ALIGNMENT 1-10-2

MODEL	OFFSET	DISTANCE
Elan 250	1/2"	1 7/8" + 0 - 1/16"
Elan 250E	1/2"	1 7/8" + 0 - 1/16"
Elan 250T	1/2"	1 7/8" + 0 - 1/16"
Elan 250SS	1/2"	1 3/4" + 0 - 1/16"
Olympique (all models)	1/2"	1 7/8" + 0 - 1/16"
Nordic 640ER	1/2"	1 7/8" + 0 - 1/16"
Skandic	1/2"	1 7/8" + 0 - 1/16"
T'NT 294	7/16"	1 5/8" + 0 - 1/16"
T'NT 340	7/16"	1 5/8" + 0 - 1/16"
T'NT 440	7/16"	1 5/8" + 0 - 1/16"
T'NT F/A 340	1/2" ± 1/16"	10 1/2" + 0 - 1/8"
T'NT F/A 400	1/2" ± 1/16"	10 1/2" + 0 - 1/8"
Alpine / Valmont	1/2"	1 7/8" +0 - 1/16"

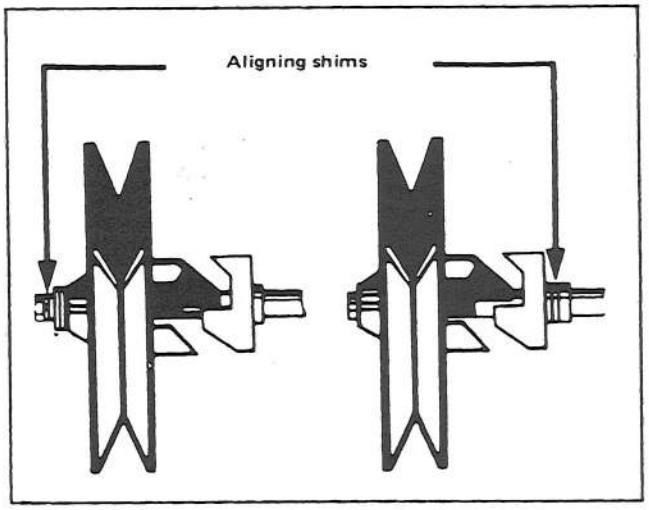
Caution: Never use half shims to correct an aluminum chaincase pulley alignment.

T'NT F/A Pulley Alignment

Due to the installation position and method of attachment, the distance between the center of the drive and driven pulley shafts is non adjustable. Should this distance vary from 10 3/8" to 10 1/2", inspect engine mounts for security, distortion, etc.



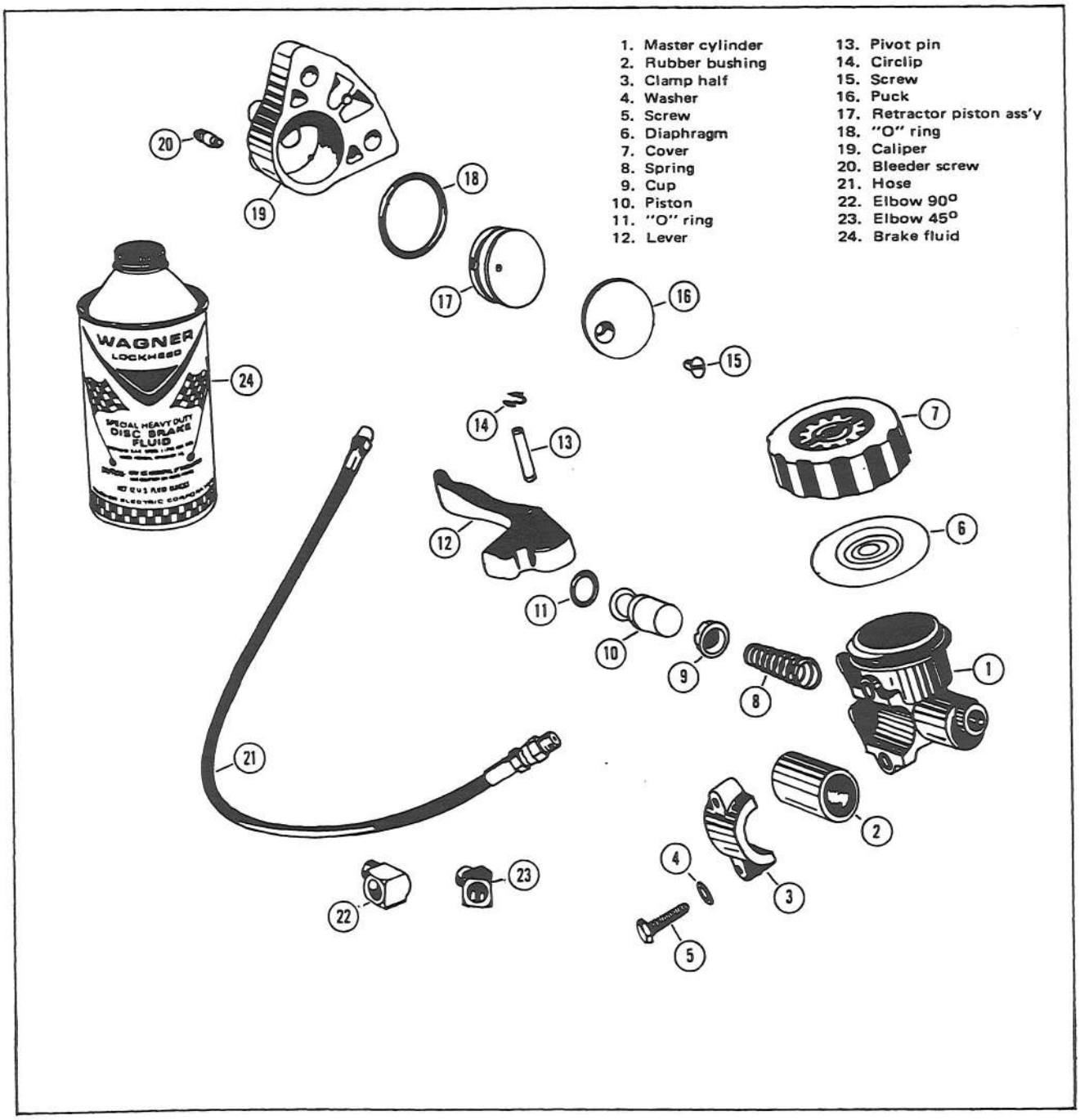
Pulley offset is 1/2" ±1/16". When greater, transfer aligning shims from cam side to fixed pulley half side of the driven pulley. When less than 7/16", transfer shims from fixed pulley half to cam side of driven pulley.



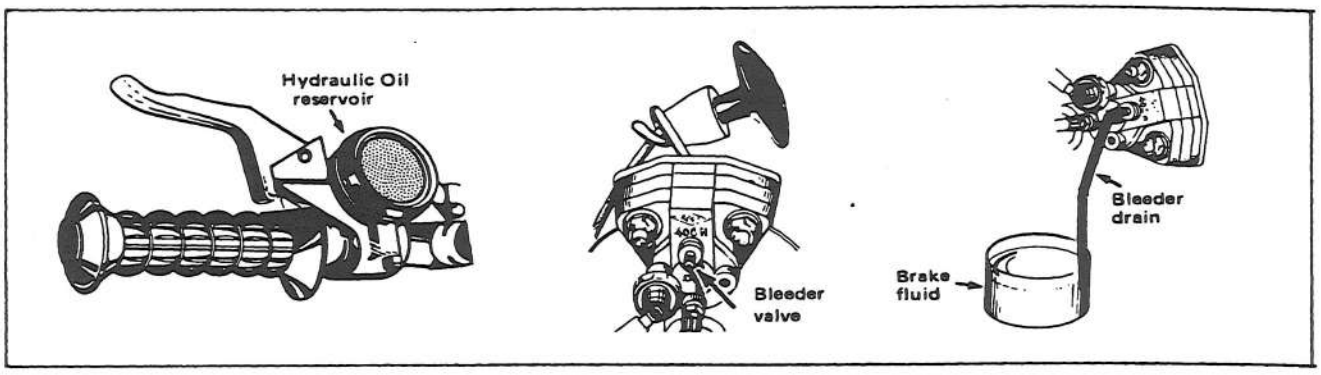
Transmission

BRAKE MECHANISM T'NT F/A 1-11 2

Note: After adjusting brake mechanism, make sure that brake light functions properly.



BLEEDING



Caution: Use only recommended hydraulic brake fluid. Never re-use brake fluid obtained by bleeding. To check fluid level, turn handlebar fully right and remove reservoir cover. (Reservoir must be horizontal). Fluid must reach top lip of reservoir.

WARNING: The entry of dirt or foreign particles into the brake fluid may constitute system flushing.

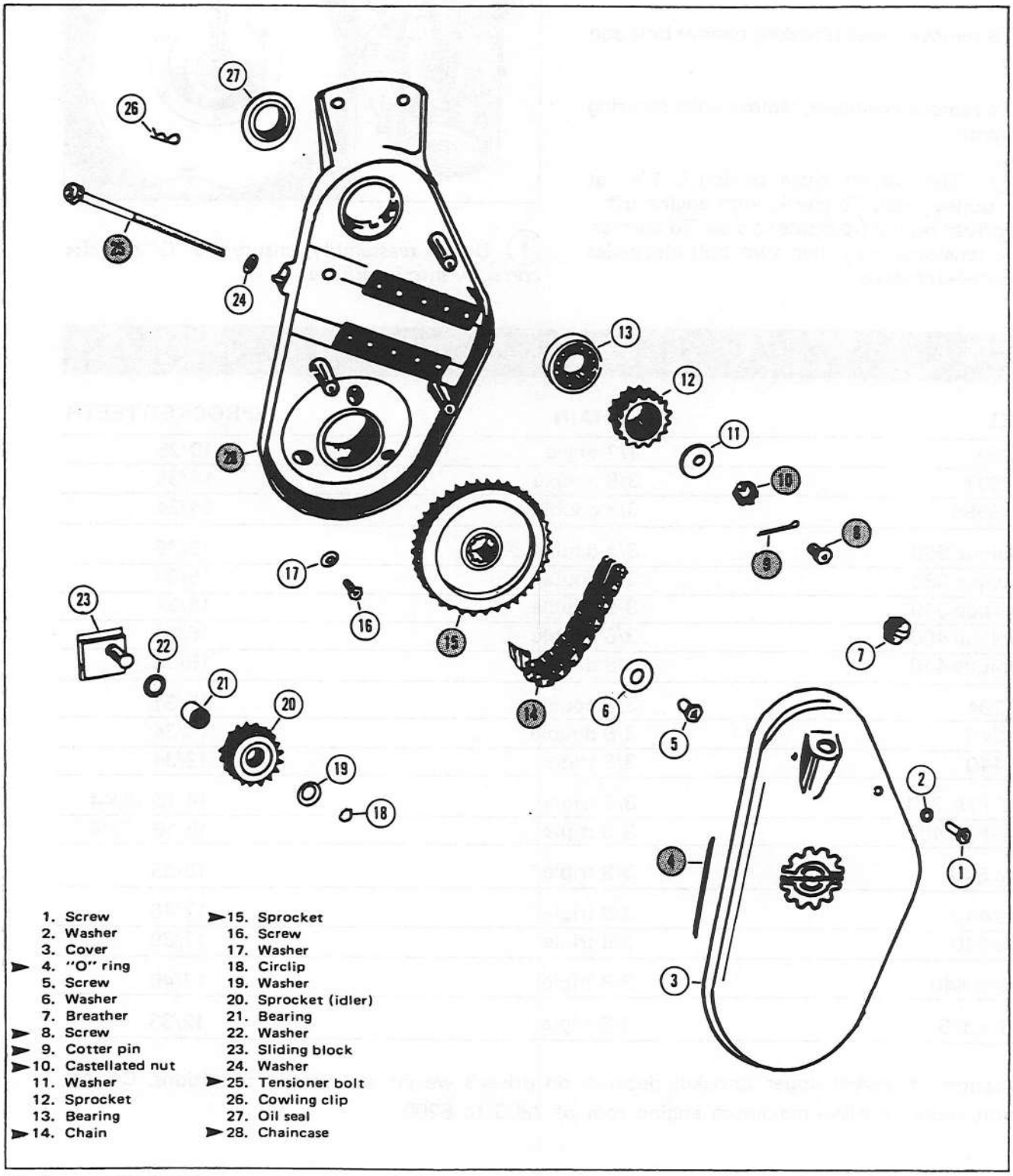
If the reservoir is low and/or air has entered the system creating a soft, spongy braking action, the following should be done: remove reservoir cover and "top up" fluid level.

Note: Retain this reservoir level throughout the following procedure.

Connect a bleeder drain to the valve and insert end of bleeder hose into a container of brake fluid. Repeatedly depress the brake lever in quick succession, (pumping), to obtain pressure. Once obtained, hold lever, open bleeder valve then quickly depress brake lever. Close bleeder valve and allow brake lever to return slowly. Continue pressing and releasing brake lever until the fluid injected into the container is air free. Disconnect bleeder hose, recheck brake fluid level and install reservoir cover.

Transmission

CHAINCASE 1-12



1. Screw
2. Washer
3. Cover
► 4. "O" ring
5. Screw
6. Washer
7. Breather
► 8. Screw
► 9. Cotter pin
►10. Castellated nut
11. Washer
12. Sprocket
13. Bearing
►14. Chain
►15. Sprocket
16. Screw
17. Washer
18. Circlip
19. Washer
20. Sprocket (idler)
21. Bearing
22. Washer
23. Sliding block
24. Washer
►25. Tensioner bolt
26. Cowling clip
27. Oil seal
►28. Chaincase

Chaincase T'NT F/A

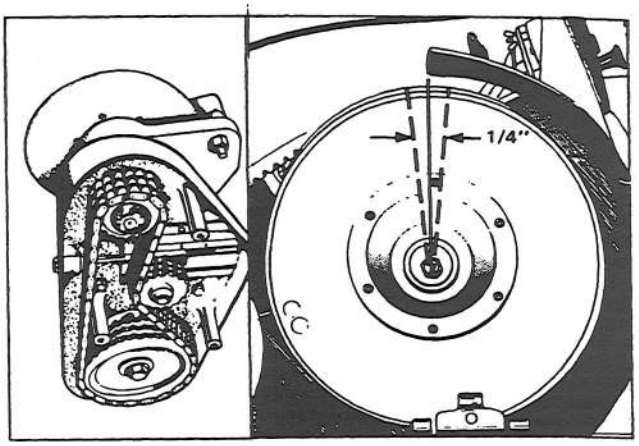
CHAINCASE (T'NT F/A)

(8)(9)(10) To remove upper sprocket on 400 models, remove bolt. On 340 models, remove cotter pin and castelleted nut.

(15) To remove lower sprocket, remove bolt and washer.

(28) To remove chaincase, remove bolts securing it to frame.

(25)(14) The correct chain tension is 1/4" at driven pulley level. To check, with engine **off** move driven pulley from side to side. To correct, unlock tensioner bolt then turn bolt clockwise or counter-clockwise.



(4) During reassembly, ensure the "O" ring sits correctly into its groove.

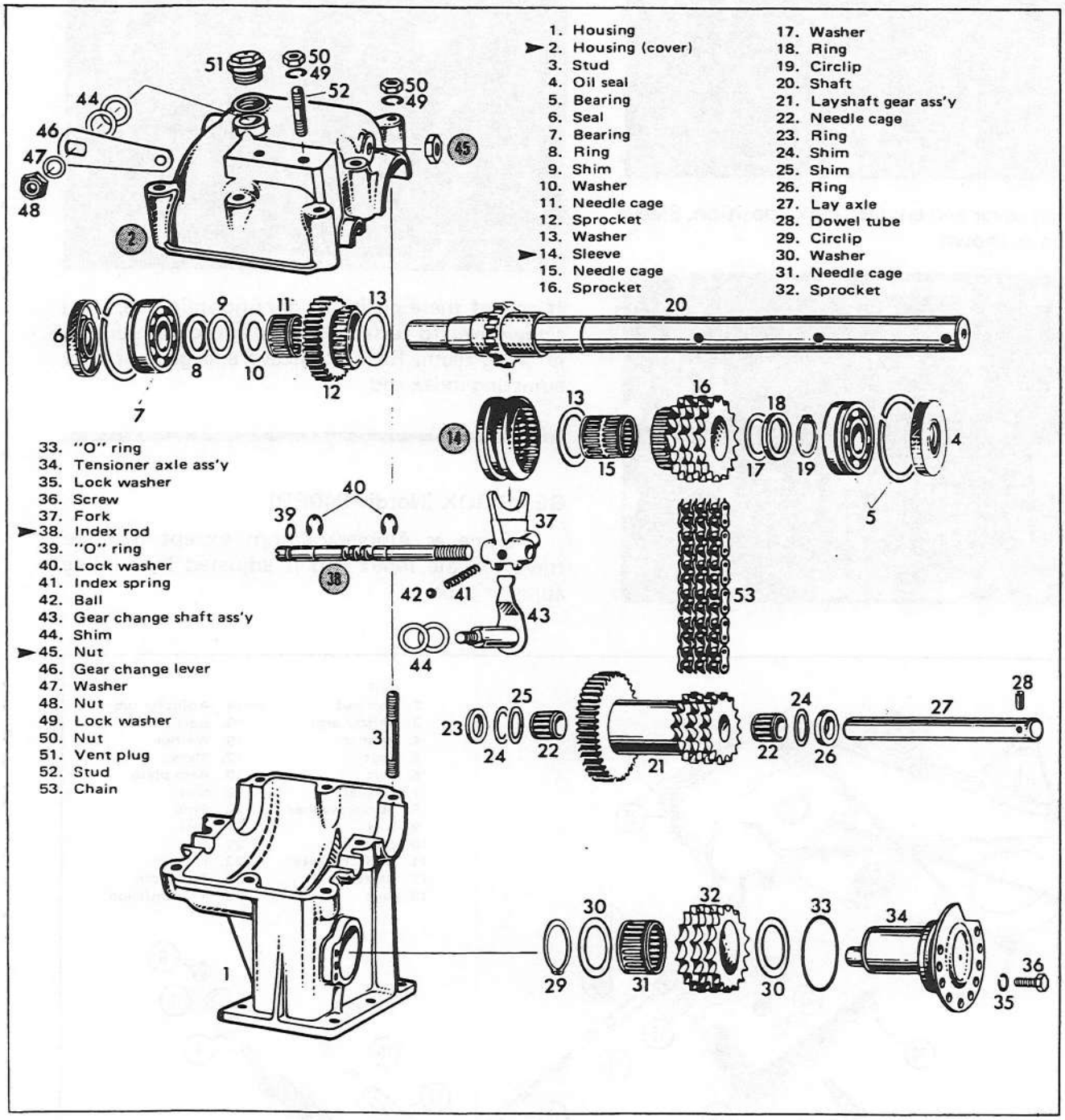
CHAINCASE

MODEL	CHAIN	SPROCKET TEETH
Elan 250	1/2 single	10/25
Elan 250T	3/8 double	14/35
Elan 250SS	3/8 double	14/34
Olympique 300	3/8 double	15/35
Olympique 335	3/8 double	15/34
Olympique 340	3/8 double	15/34
Olympique 400	3/8 double	16/34
Olympique 440	3/8 double	16/33
T'NT 294	3/8 double	15/34
T'NT 340	3/8 double	16/34
T'NT 440	3/8 triple	18/34
*T'NT F/A 340	3/8 triple	14-15-16/44
*T'NT F/A 400	3/8 triple	15-16-17/44
Nordic 640	3/8 triple	19/33
Alpine 440	3/8 triple	17/46
Alpine 640	3/8 triple	17/38
Valmont 440	3/8 triple	17/46
Skandic 335	3/8 triple	12/33

* Selection of correct upper sprocket depends on driver's weight and terrain conditions. Correct sprocket should achieve maximum engine rpm of 7800 to 8200.

Transmission

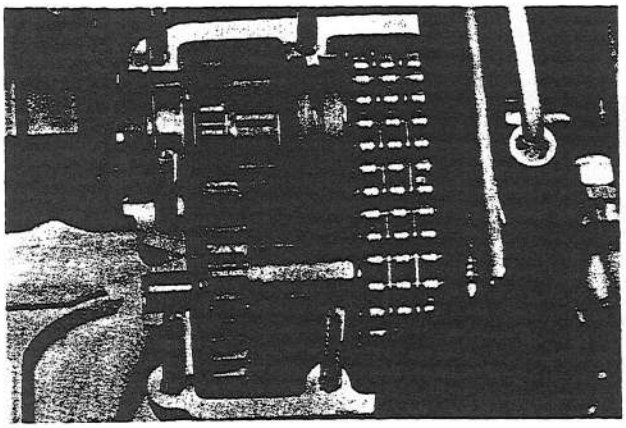
GEAR BOX (Alpine and Valmont) 1-13-1



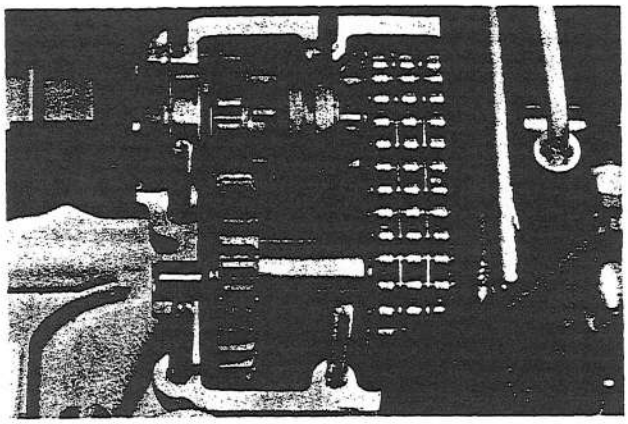
GEAR BOX (Alpine/Valmont)

To adjust gear box or correct engagement proceed as follows:

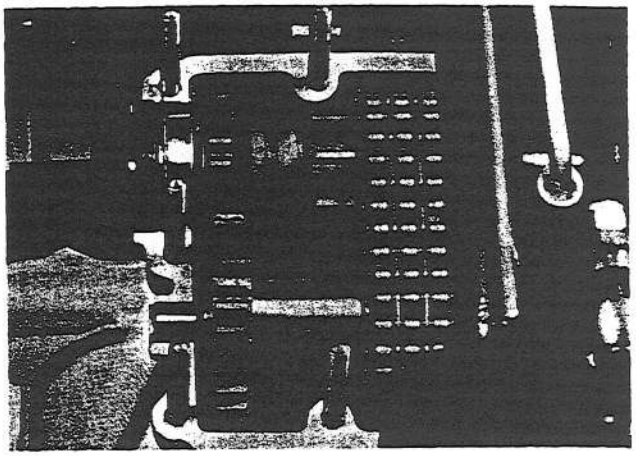
Remove cover ass'y. Slacken off nut. Temporarily reinstall cover and connect gear change rod to gear change lever. Engage "Forward" position. Remove cover and check if sleeve is positioned as shown.



Reinstall cover and engage "Park" position. Sleeve must be as shown.



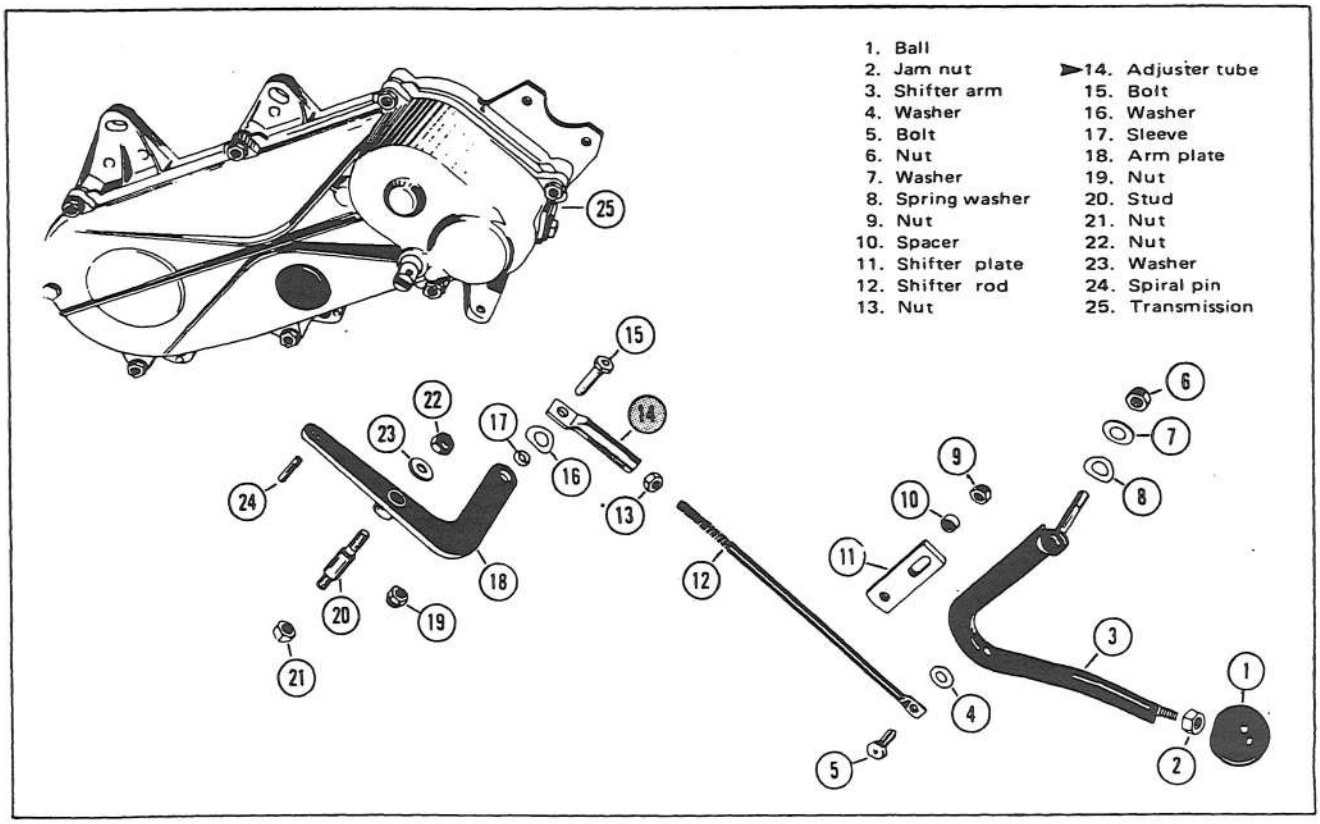
Reinstall cover and engage "Reverse" position. Sleeve must be as shown.



If any of these positions are unobtainable, use a screwdriver to turn index rod and obtain proper meshing teeth. Recheck sleeve engagement after adjusting index rod.

GEAR BOX (Nordic 640ER)

Same as Alpine/Valmont except that the travel of the index rod is adjusted by turning adjuster tube.



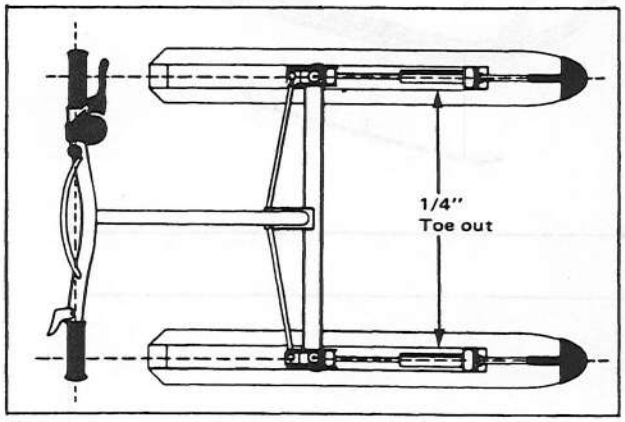
Steering & Ski System

SKI ALIGNMENT (T'NT F/A)

Skis should have a **toe out** of 1/4" when handlebar is horizontal.

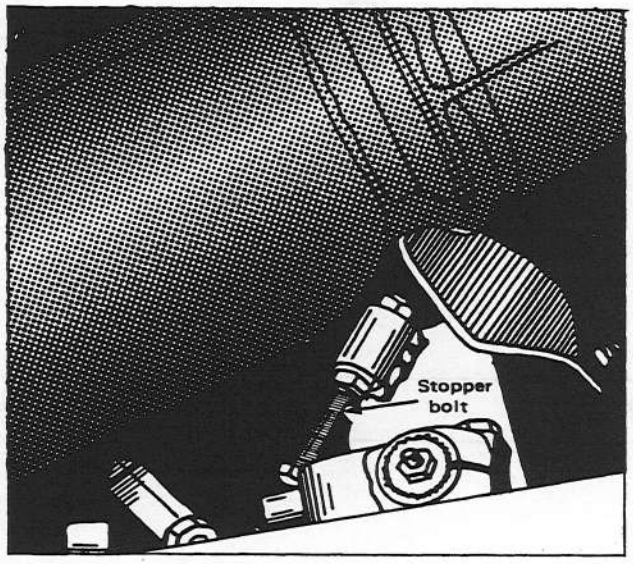
ADJUSTMENT

Using metal tape, measure the distance between each ski at front and back of skis. Loosen the turnbuckle locknuts, then manually turn one or both turnbuckles until skis are aligned. Once aligned, rotate each turnbuckle until an additional 1/8" is obtained on each side of the original measurement between skis.



STEERING TRAVEL (T'NT F/A)

Turn handlebar fully right until a gap of 1/8" exists between the lower nut of the left ball joint and the bottom plate. Adjust stopper bolt on right side of reinforcing cross member so that it touches right steering arm. Repeat procedure for left stopper.



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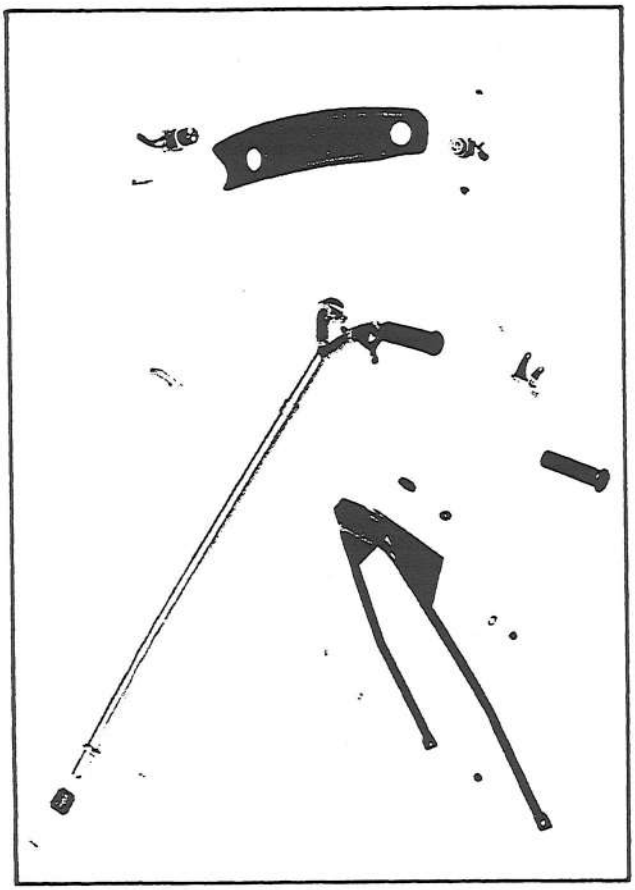
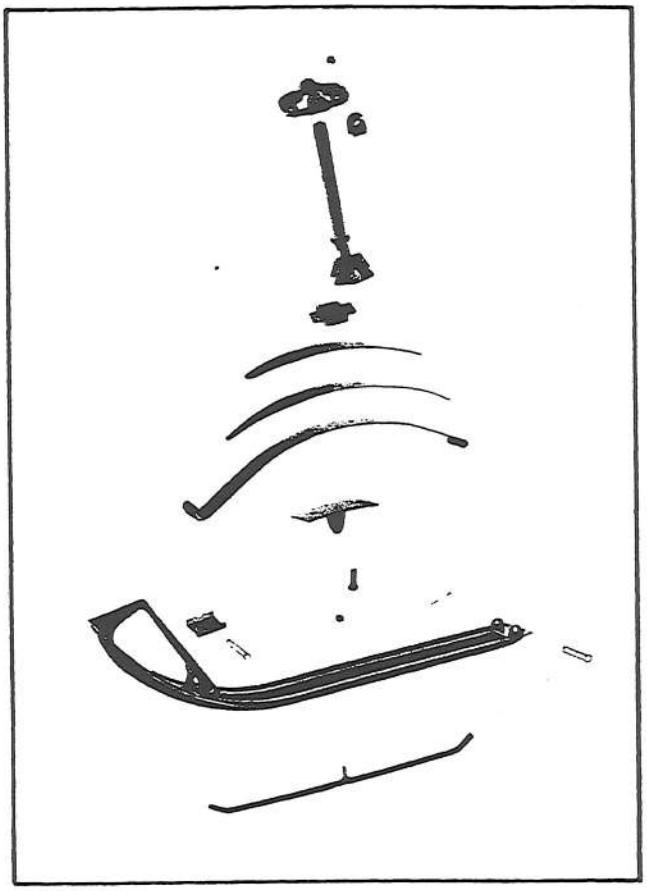
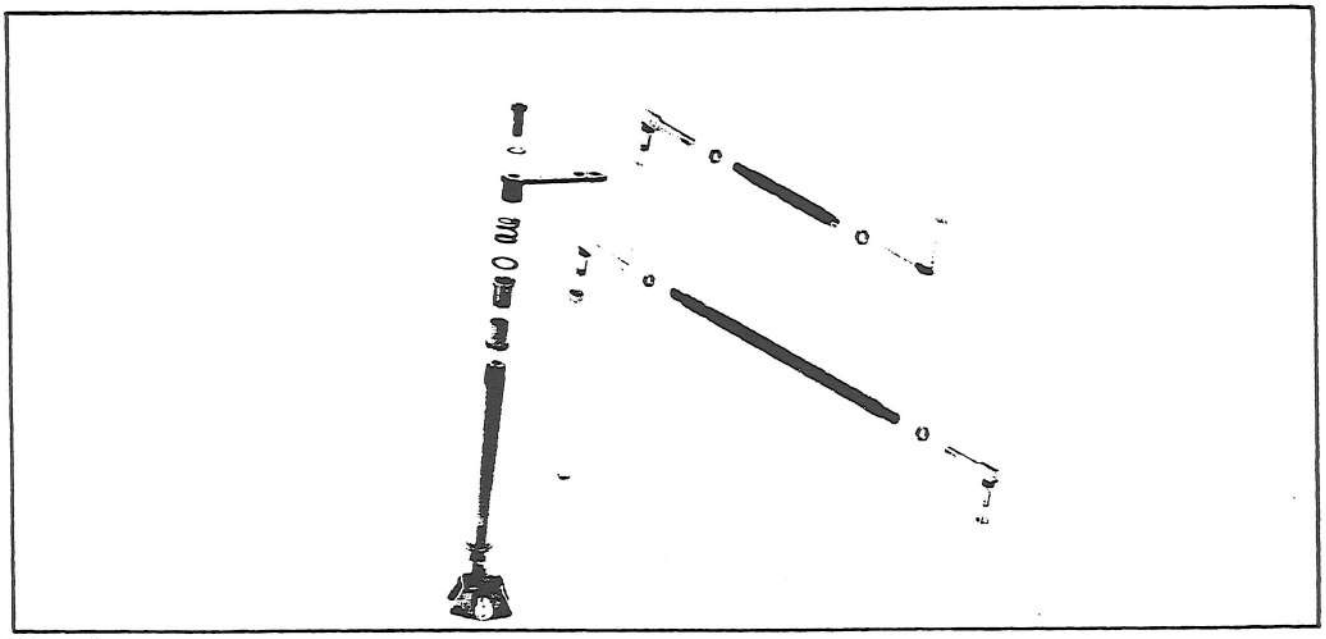


Steering

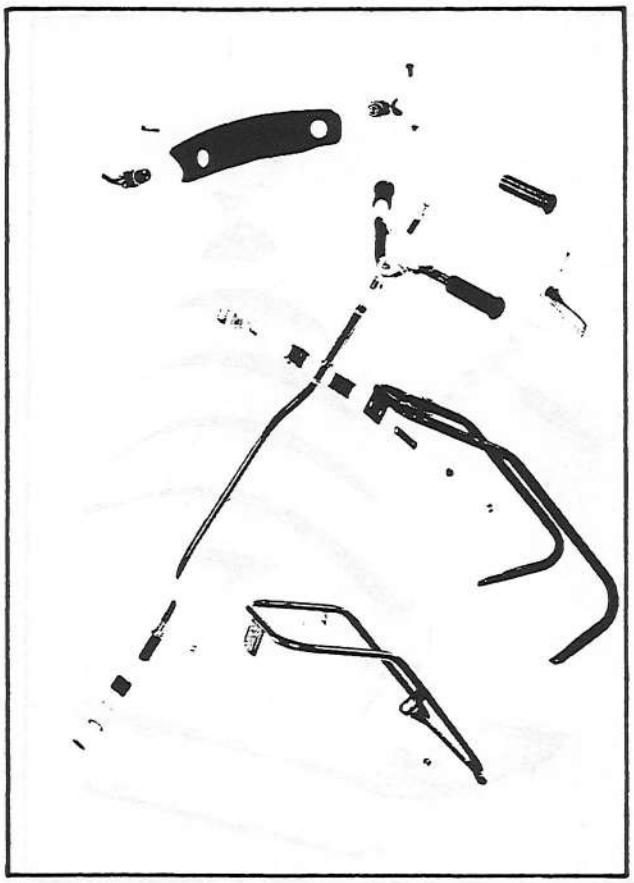


Ski

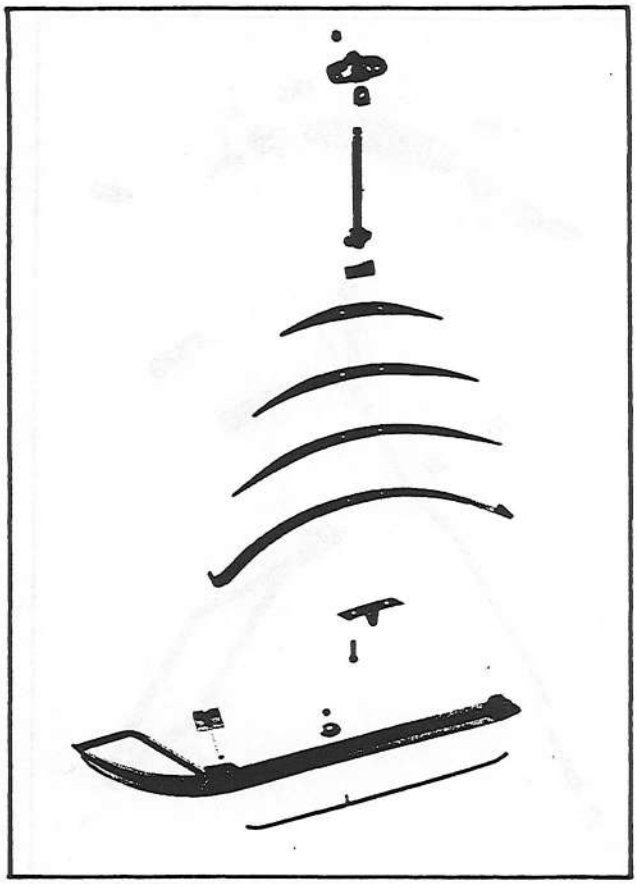


Tie rod

OLYMPIQUE



Steering



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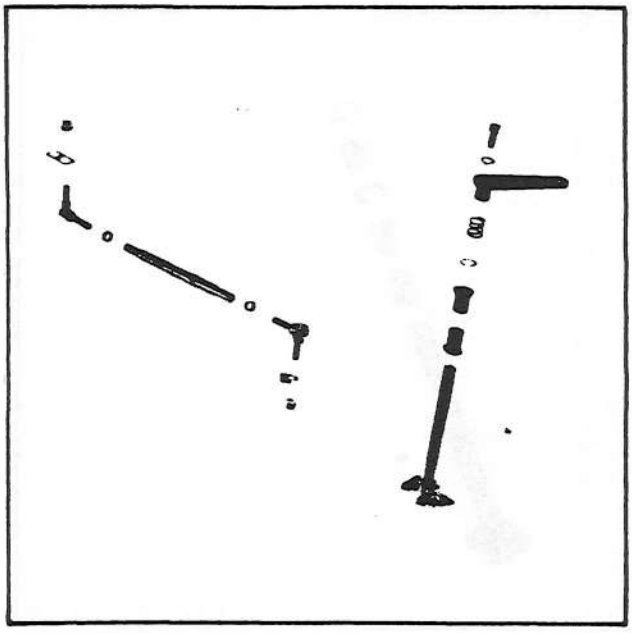
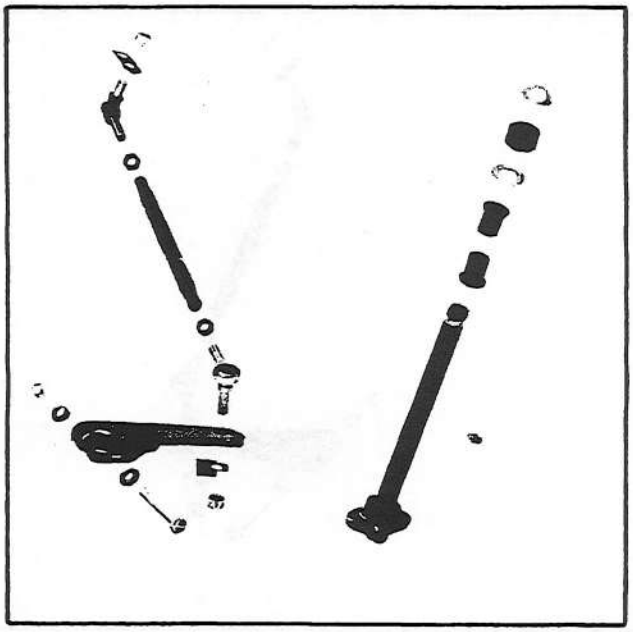
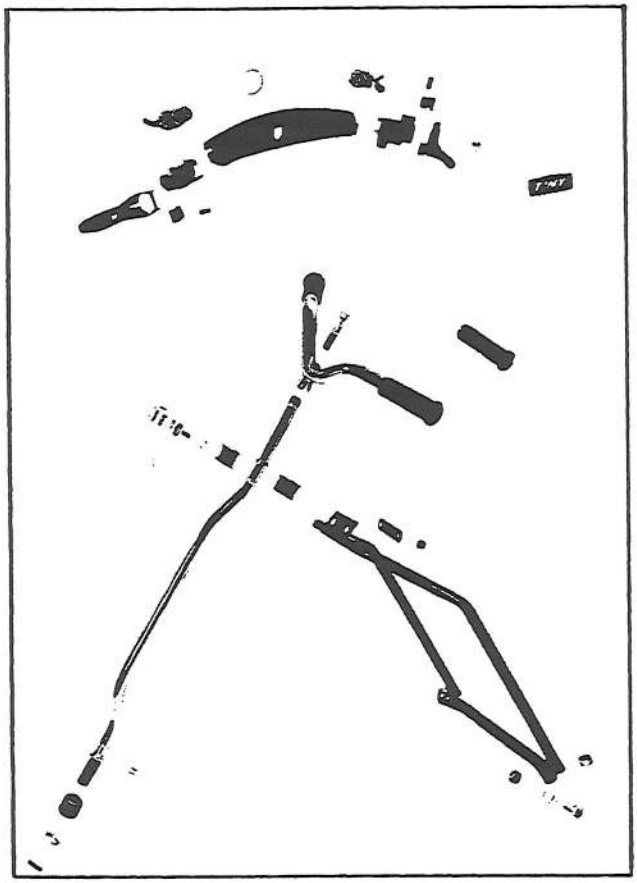


Tie rod 300-335

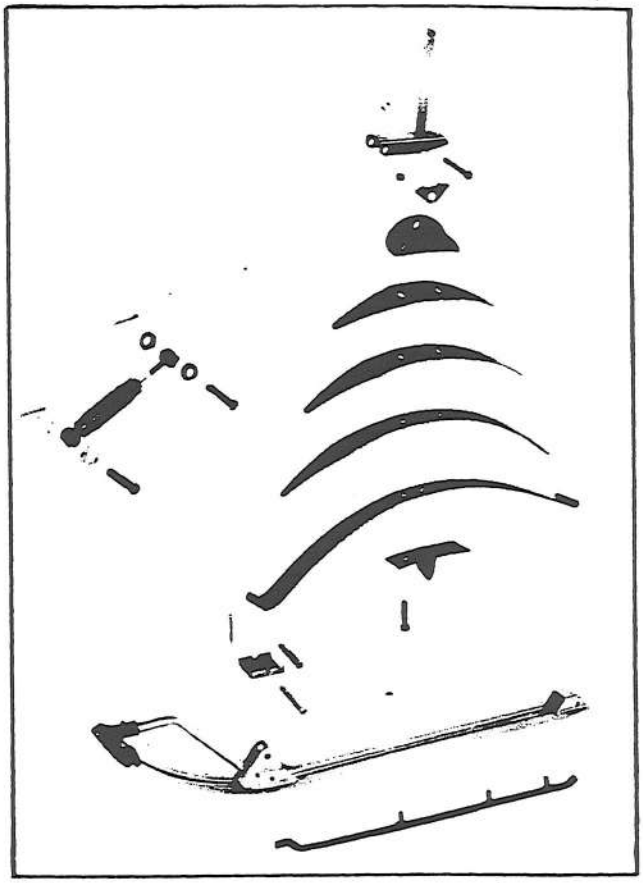


Tie rod 340-400-440

SKANDIC



Steering



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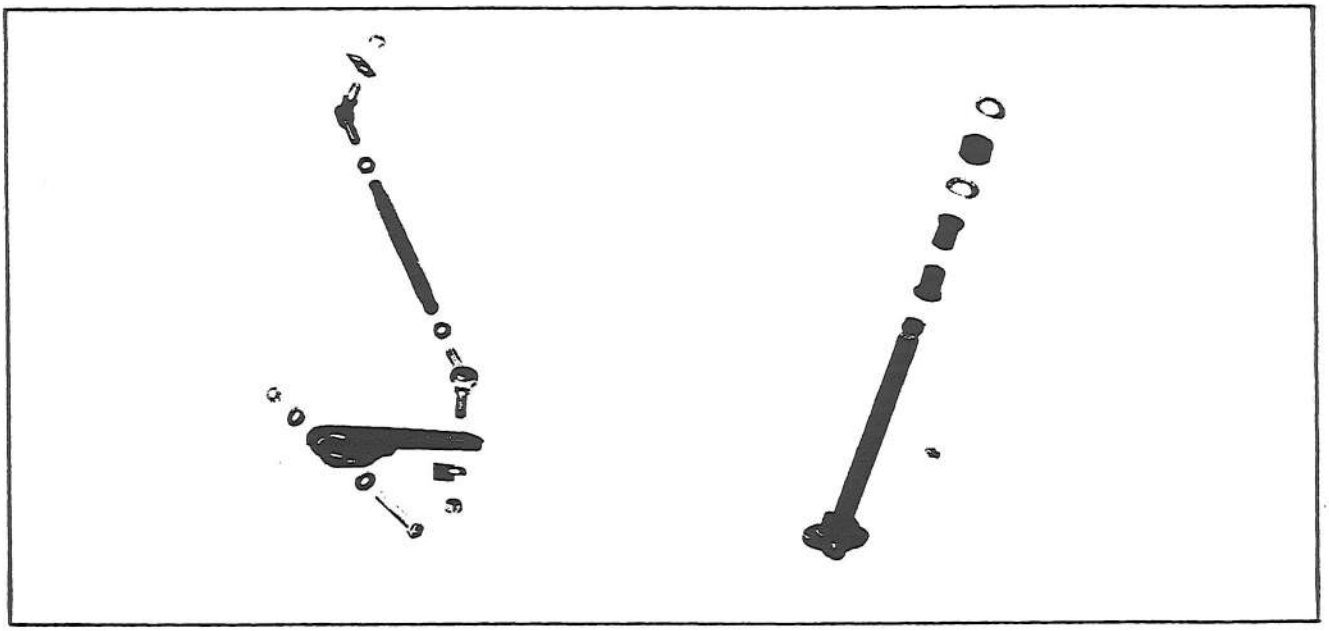
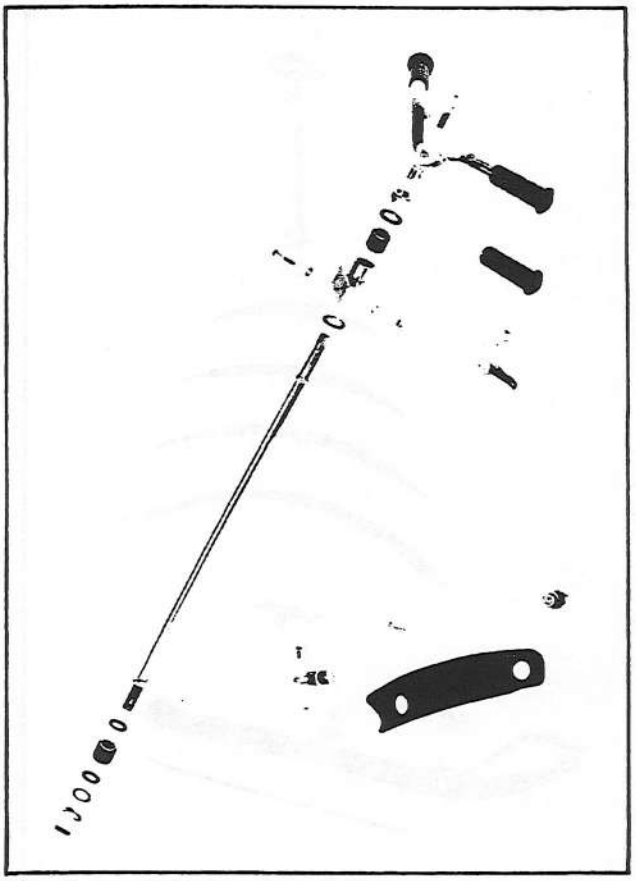


Tie rod

NORDIC



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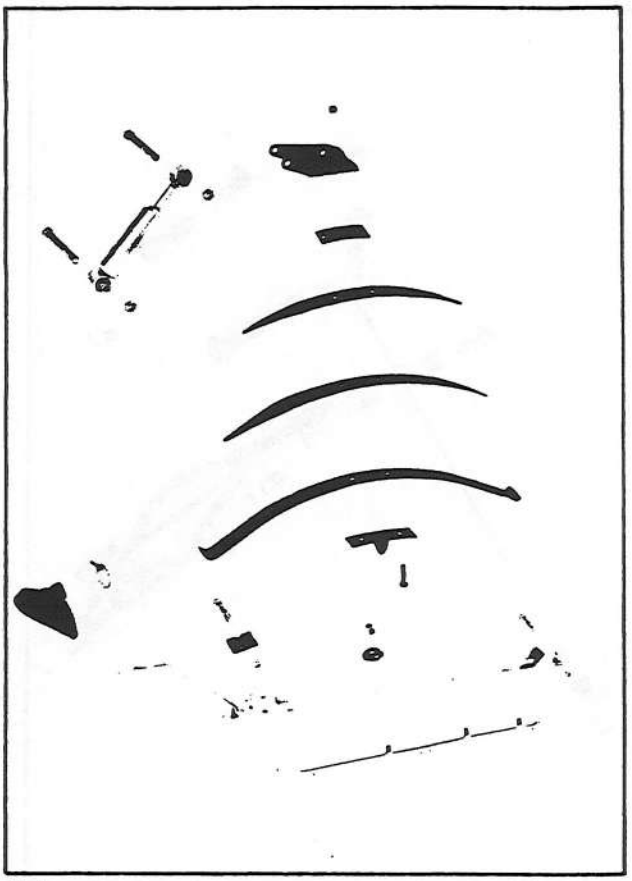

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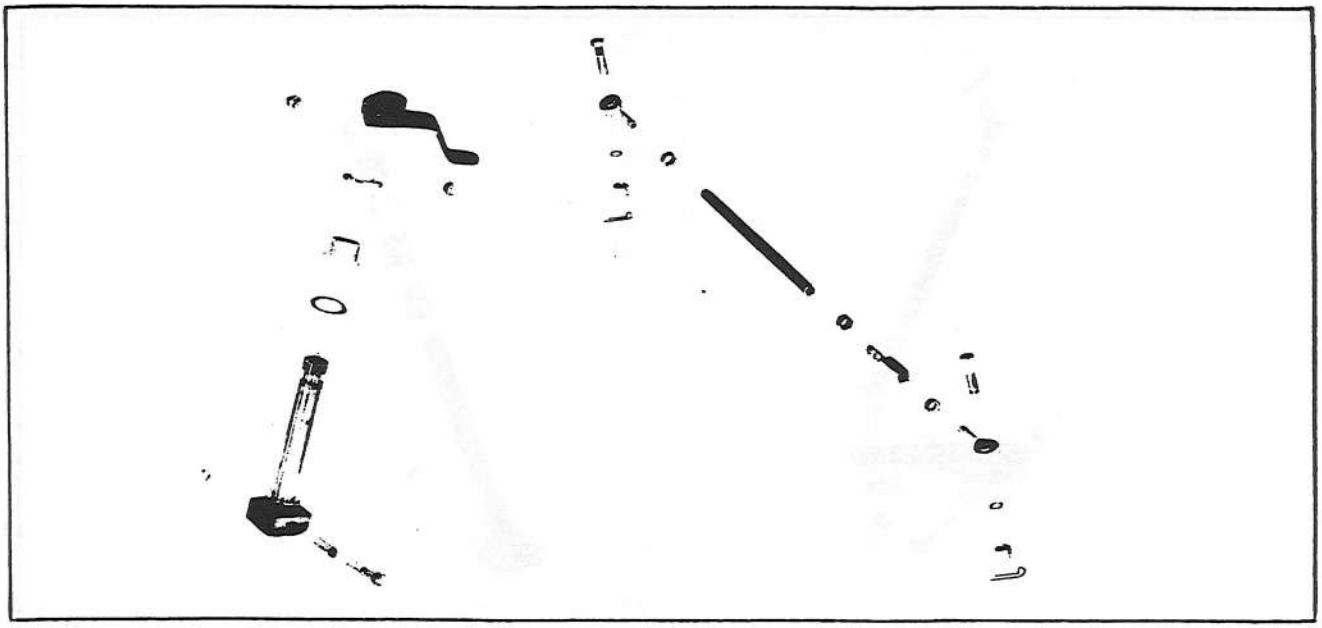
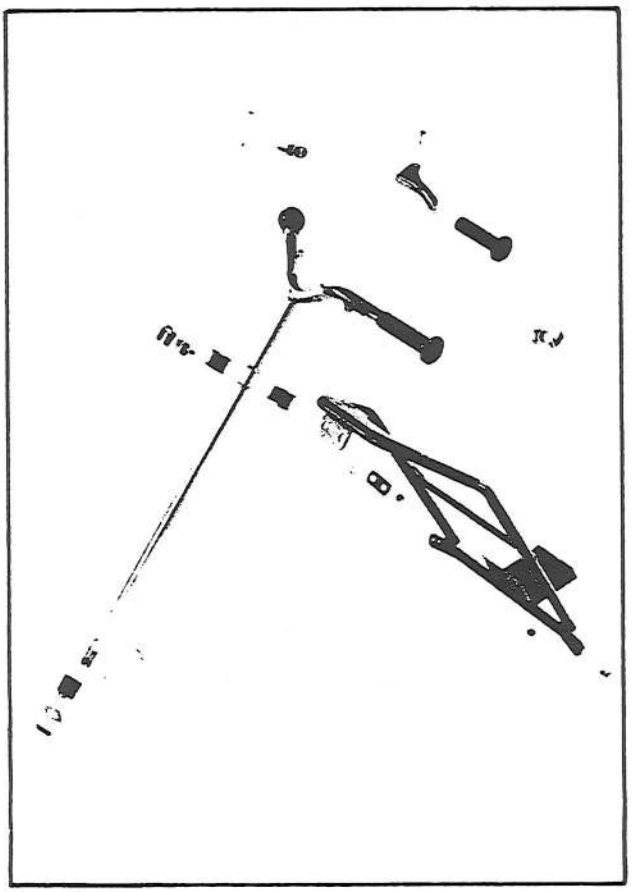
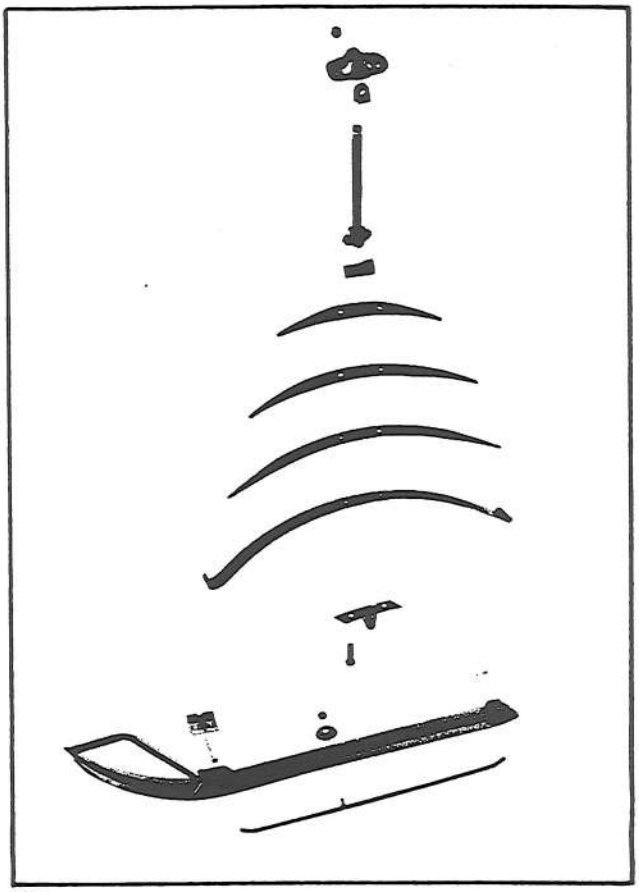


Tie rod

T'NT



Steering



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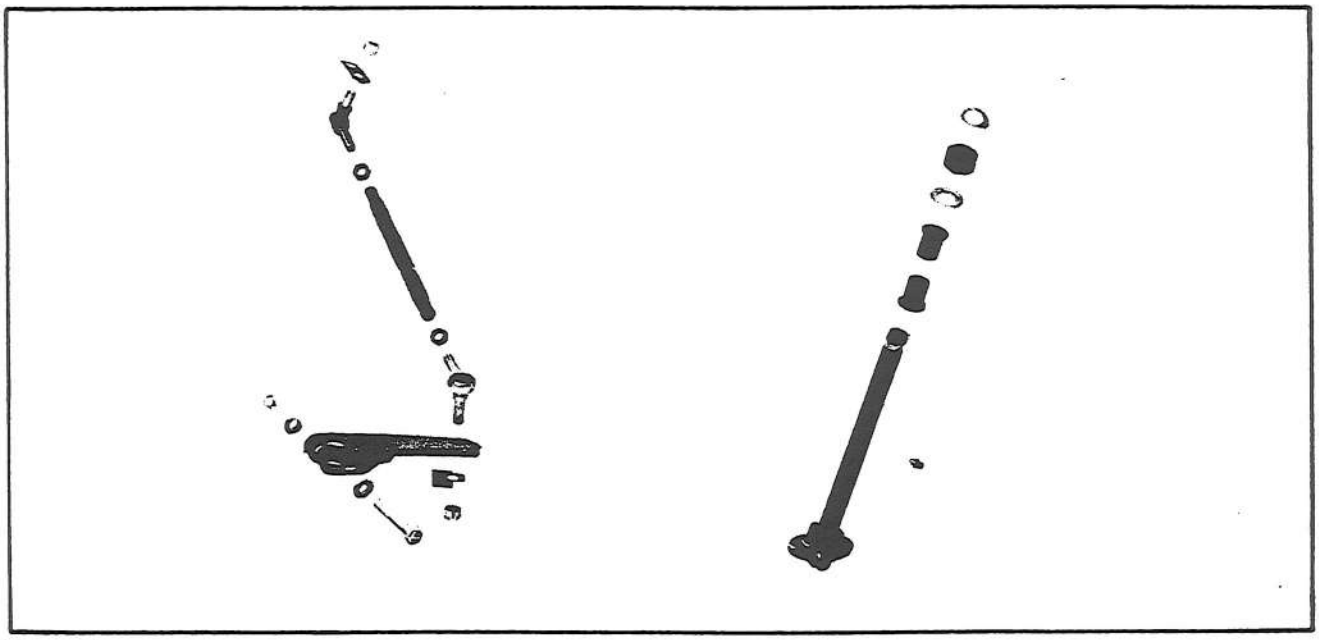
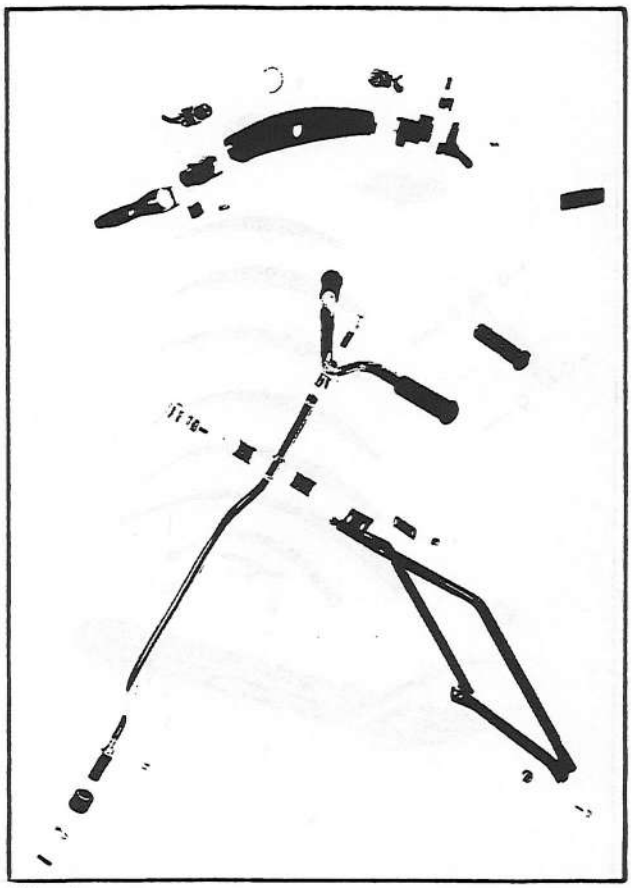
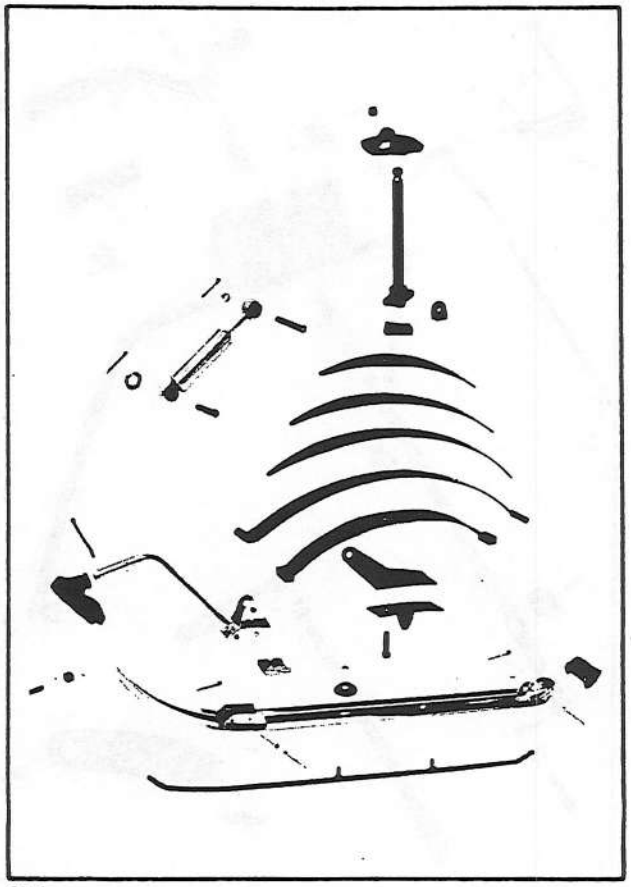


Tie rod

T'NT F/A



Steering



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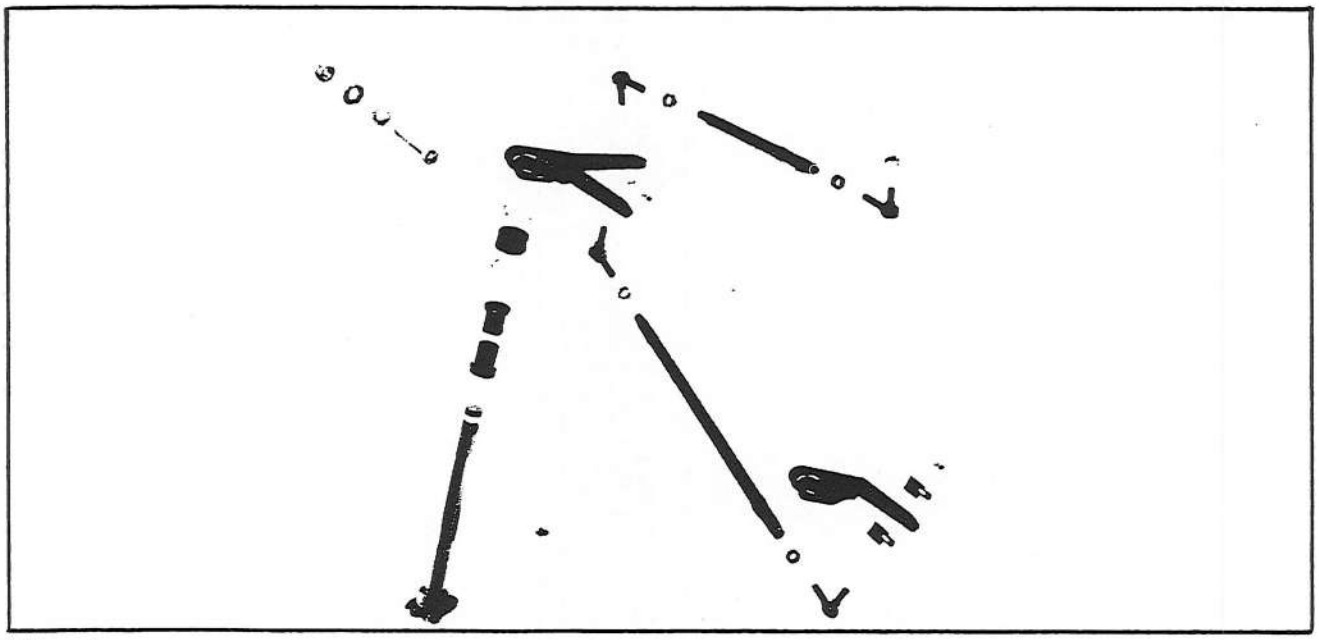
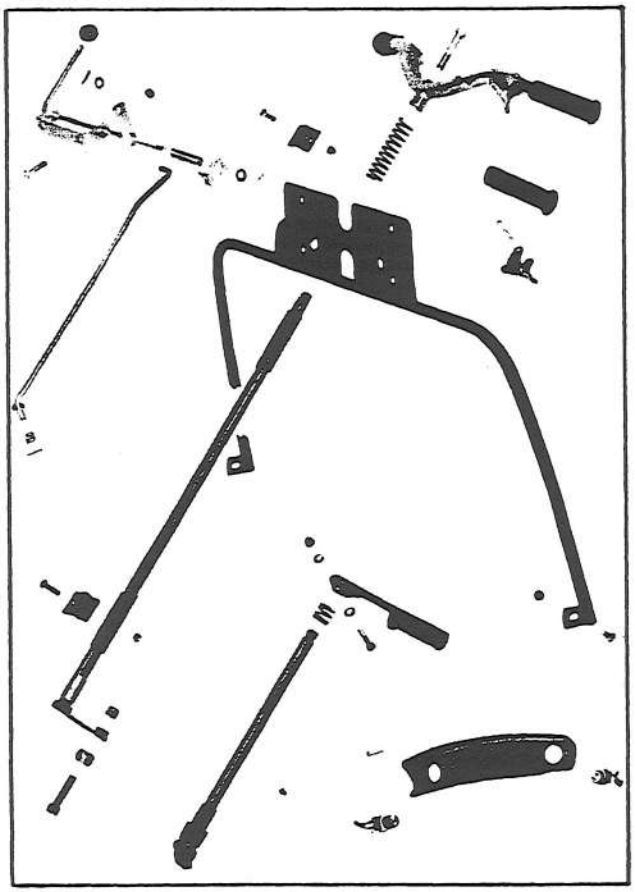
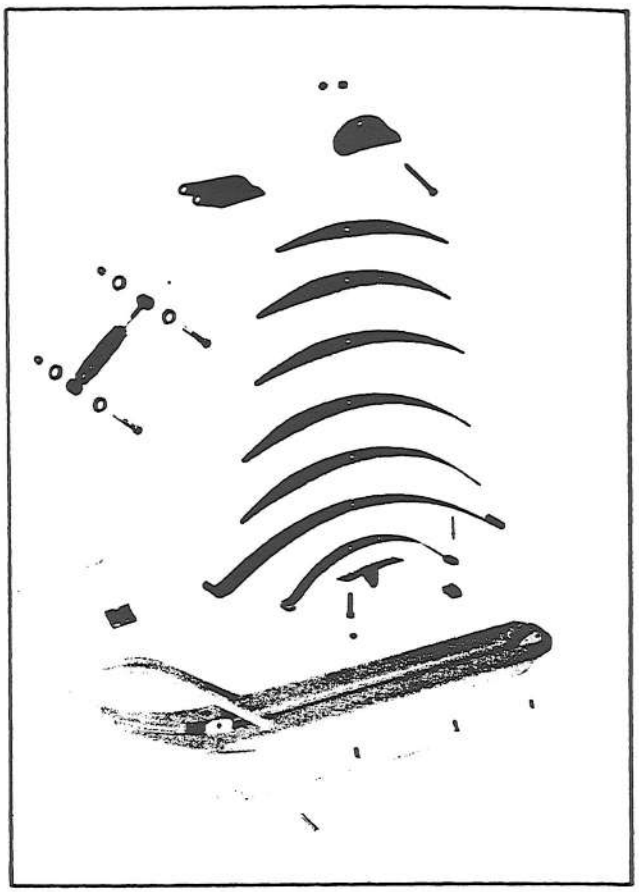


Tie rod

ALPINE & VALMONT



Steering



Ski

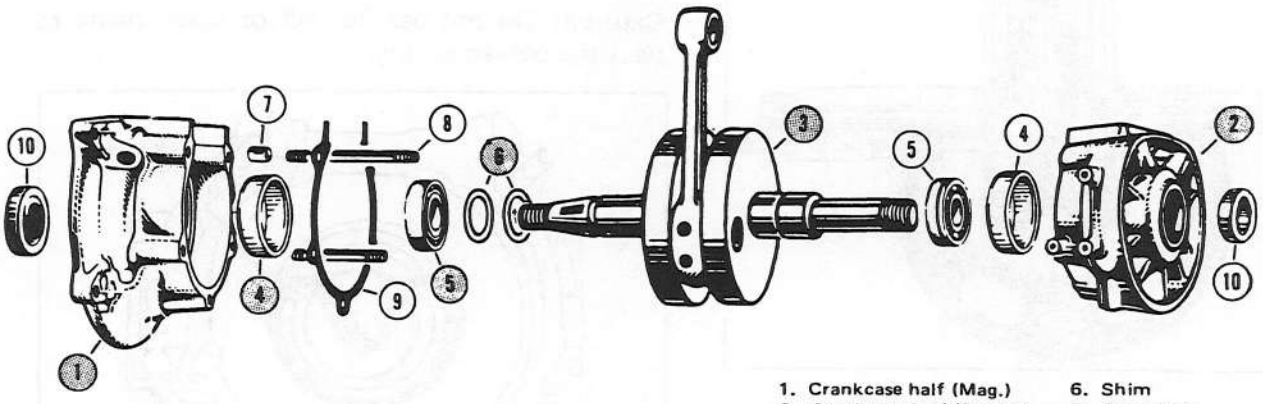
TORQUE SPECIFICATIONS (inch – pounds)

	ELAN	OLY 300-335	OLY 340-400-440 (Skandic)	NORDIC	T'NT	T'NT F/A	ALP/VAL
Handle Ass'y (Handlebar)		390-420	390-420	390-420	390-420	390-420	390-420
Leaf Spring Sub Ass'y	420-480	420-480	420-480	420-480	420-480	420-480	420-480
Runner Shoe	60-70	125-150	125-150	200-240	200-240	200-240	200-240
Steering Arm	500-680	500-680		650-700			
Steering Bracket (Upper Column)	60-75	60-75	60-75	60-75	60-75	60-75	250-300
Shock				390-420	390-420	390-420	390-420
Tie Rod End	225-265	225-265	225-265	225-265	225-265	225-265	225-265
Ski Coupler Bolt:	Tighten ski coupler nut. Move ski by hand to check that it pivotes easily on ski-leg.						

Table of Contents

Engine

SINGLE CYLINDER ENGINE 2-



On certain single cylinder engines, polyamid rings are installed in the crankcase bore. These rings prevent the bearings from turning in the crankcase.

Such engine have the following serial number range:

Above 215 5501 (247 type)
Above 236 6618 (247E type)
Above 243 0901* (302 type)

*Also include 215 6919 to 215 6922 inclusive and 215 6942 to 215 7000 inclusive.

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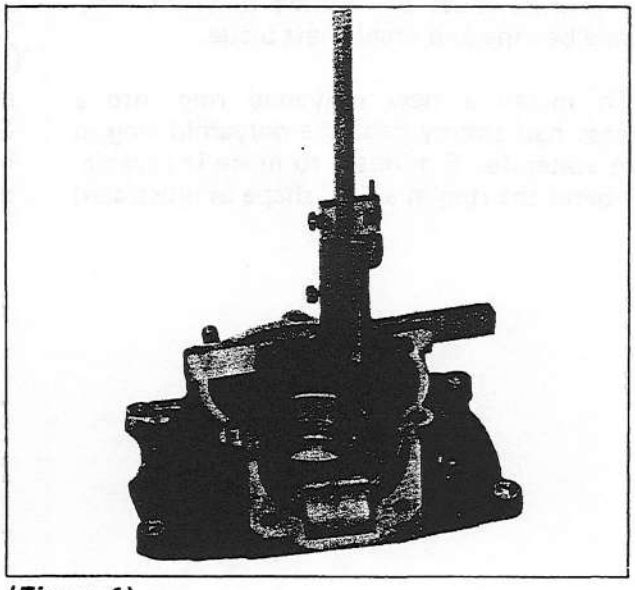
(1)(2) When dissassembling/assembling crankcase halves, do not heat the crankcase. If heat is necessary, temperature must not exceed 130 degrees F.

---

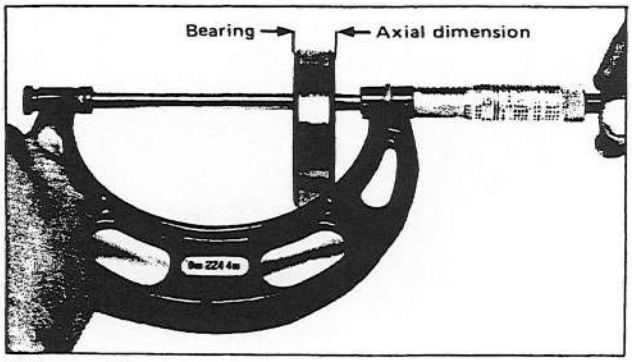
(3)(6) Crankshaft end play should be between .004" to .016". To determine necessary correction;

a) Measure crankcase. To do this first measure each half from mating surface to bottom of bearing seat. Add measurements of both halves then add .006" for gasket displacement. Equals A. *(Figure 1)*

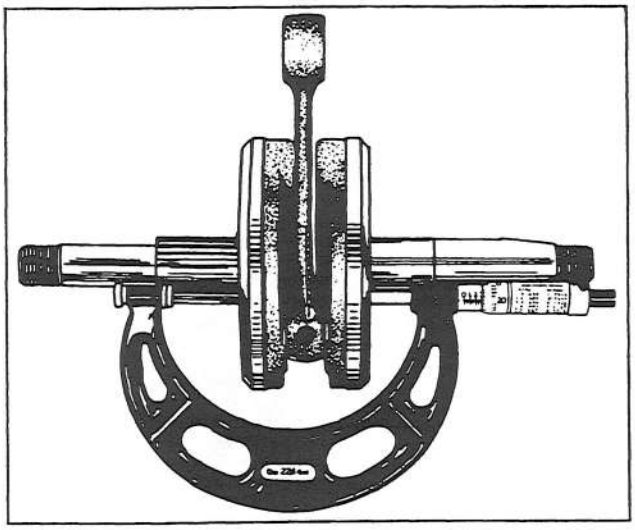
b) Measure thickness of each ball bearing. Measure distance between crankshaft blades. Add measurements. Total equals B. *(Figure 2)*



(Figure 1)



(Figure 2)

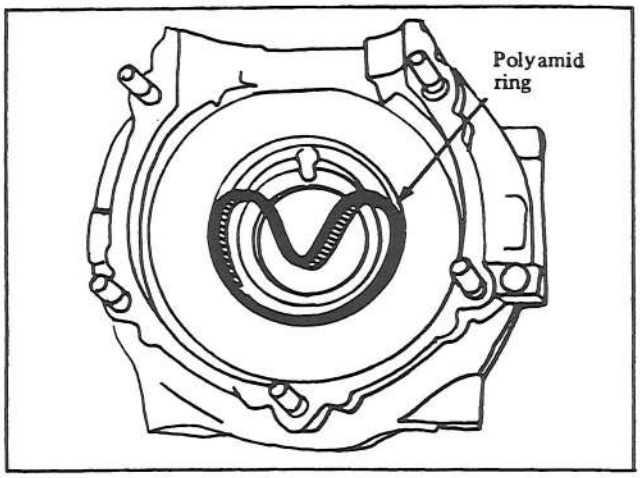


c) Subtract measurement A from measurement B minus tolerance of .004" to .016". Total balance is distance to be shimed.

Note: Shim(s) must be located between magneto side bearing and crankshaft blade.

(4) To install a new polyamid ring into a crankcase half simply heat the polyamid ring in boiling water for 5 minutes to make it plyable. Then, bend the ring in a "V" shape as illustrated and push it into the crankcase. Make sure the beveled edge faces down. Immediately seat the ring against the crankcase walls to prevent distortion.

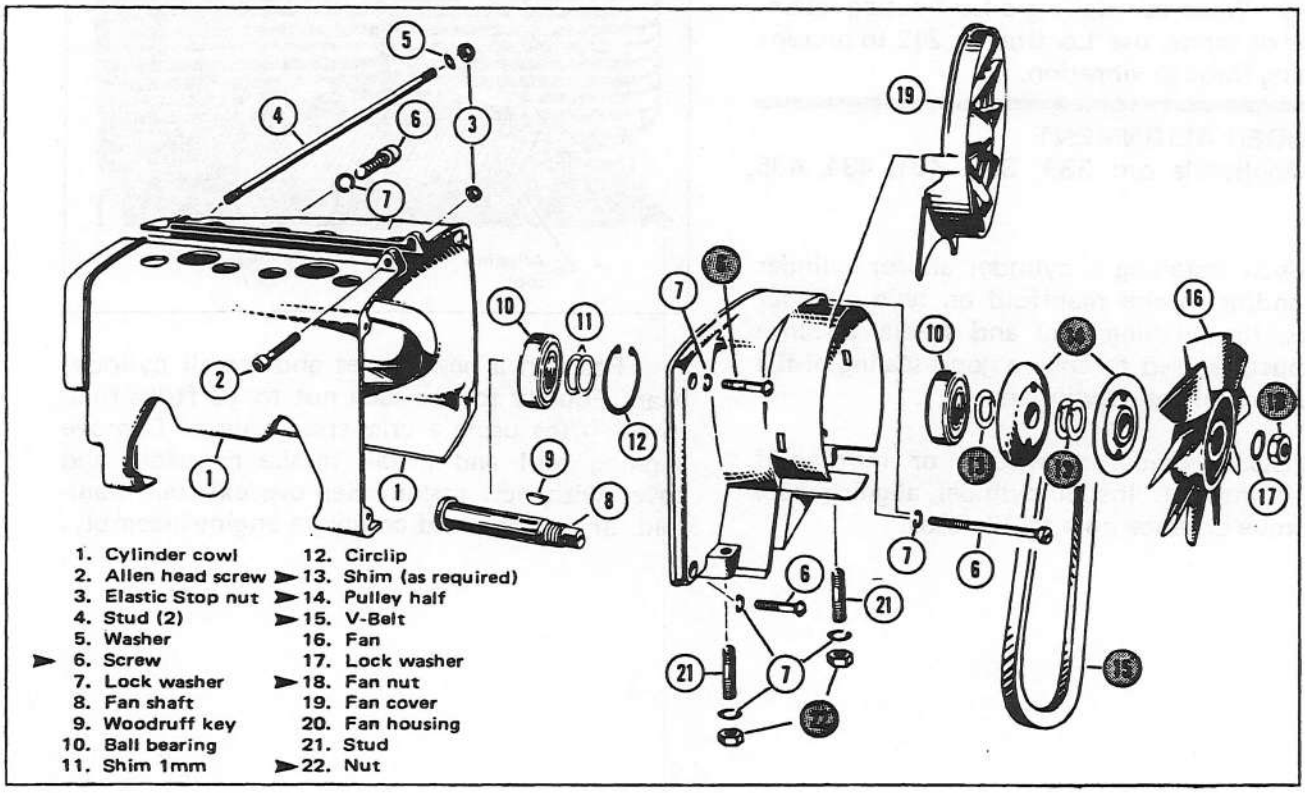
Caution: Do not use hot oil or open flame to heat the polyamid ring.



(5) Before installation, crankshaft bearings should be pre-heated in oil to 180°-190°F. Make sure these bearings are cool before installing crankshaft into crankcase. Do not heat crankcase halves.

Engine

TWIN CYLINDER ENGINE 2-



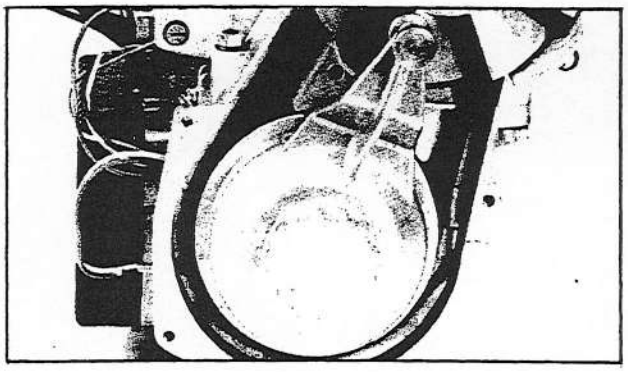
1. Cylinder cowl
2. Allen head screw
3. Elastic Stop nut
4. Stud (2)
5. Washer
6. ► Screw
7. Lock washer
8. Fan shaft
9. Woodruff key
10. Ball bearing
11. Shim 1mm
12. Circlip
13. ► Shim (as required)
14. ► Pulley half
15. ► V-Belt
16. Fan
17. Lock washer
18. ► Fan nut
19. Fan cover
20. Fan housing
21. Stud
22. ► Nut

V-BELT ALIGNMENT

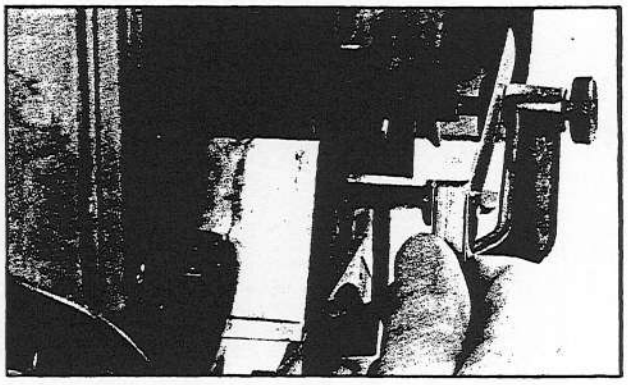
(13)(14)(15) For reliable V-belt operation, the two V-belt pulley must lie within .020" on either side of the pulley center line.

Before checking alignment obtain a V-belt free-play of 1/4".

Insert bent feeler rod of the tool between fan blades and pulley halves. Position tool hub and tighten onto magneto housing.



Turn knurled knob to center feeler rod between pulley halves. Insert a .040" feeler gauge between tool arm and knurled knobs. If gauge fits between both sides of the arm the setting lies within tolerance.



If on one side the clearance is smaller than .040", shim(s) must be added or removed between bearing and inner pulley half to bring both gaps within tolerance of .060"±.020". Excess shim(s) should be stored between outer pulley half and fan.

(18) When tightening fan nut use special holder to lock fan in position. Make sure that V-belt does not get squeeze between pulley halves.

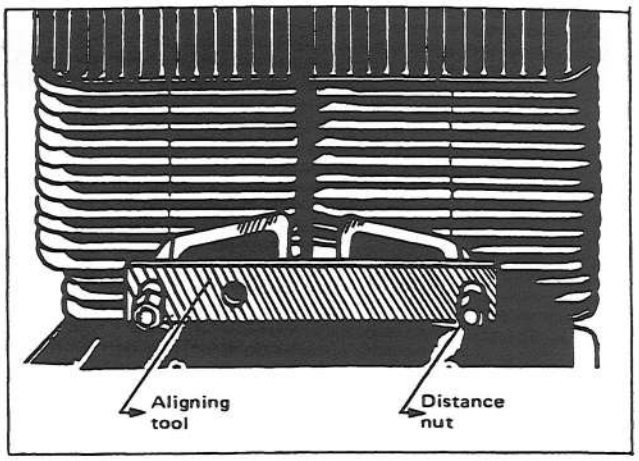
(6)(22) When reinstalling a fan housing retaining nut or screw, use Loctite TL 242 to prevent loosening through vibration.

CYLINDER ALIGNMENT

Applicable on: 338, 343, 401, 434, 435, 640.

When installing a cylinder and/or cylinder head and/or intake manifold on twin cylinder engines, the aligning tool and special distance nuts must be used to ensure good sealing of the intake manifold and cylinders.

Install exhaust manifold, or muffler if latter is integral. Install cylinder aligning tool and torque distance nuts to 17 ft/lbs.



Position a new gasket and install cylinder head. Equally torque each nut to 10 ft/lbs then to 16 ft/lbs using a criss-cross patern. Remove aligning tool and install intake manifold and cover with new gasket. Remove exhaust manifold, or muffler, and complete engine assembly.

Engine

ENGINE TIMING 2-6

ONE CYLINDER

Engine Type: 247, 302 and 337. Refer to 1973 timing chart for specifications.

TWO CYLINDER

Engine Type: 338, 343, 401, 434, 435 and 640. Refer to 1973 timing chart for specifications.

Engine Type: 248, 249, 294 and 346. Refer to 1973 timing chart for specifications.

On these engines the advance mechanism is eliminated, therefore, timing and edge gap adjustments are greatly simplified. It is not necessary to hold a centrifugal weight through the magneto plate.

Engine Type: 396

On this particular model, a capacitor discharge (C.D.) ignition system is installed. Unlike conventional systems, plug firing is initiated by an electrical pulse induced in a magnetic pick-up coil. The pulse is released when a metal projection on the flywheel hub rotates past the pick-up.

Equipment required:

An approved stroboscopic timing light with a capacitor or inductor pick-up.

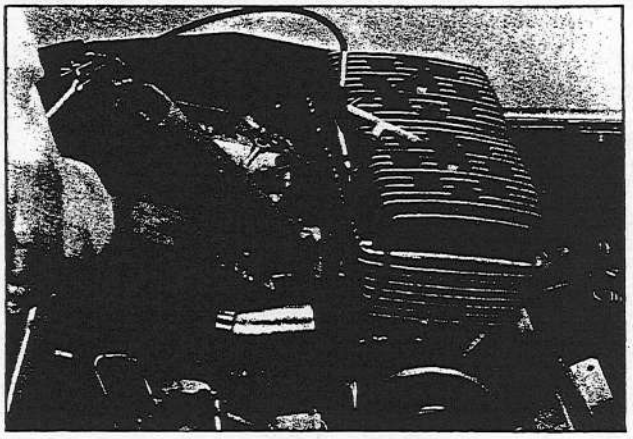
Approved timing lights.

Brand	Model #	Power Requirement*
Sun	PTL 45	6/12 volts D.C.
Snap-On Tools	MT215B	6/12 volts D.C.
Bosch	EFAW 169 A	6/12 volts D.C.

*Since the vehicles electrical system cannot supply the required lamp voltage an external power source is required.

PROCEDURE

Place skis tips against a wall. Use a support incorporating a protective guard to block vehicle off the ground. (Approx. 6" between track and floor). Remove rubber plug from upper crankcase half. Connect an operating timing light to magneto side spark plug wire.

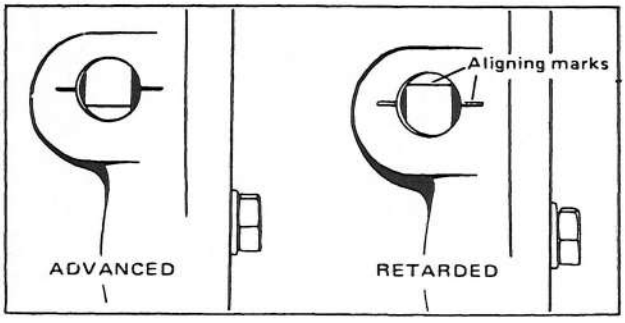


WARNING: Ensure that no one will pass behind the vehicle, even momentarily, while timing engine. Also, make sure that pulley guard is in position and that track is clear of tools, clothes, etc.

Start engine. The magneto ring/crankcase timing marks should coincide when full advance is obtained. Full advance is at 5,000 RPM.

Caution: Running the engine unnecessarily will cause premature slider shoe wear.

If the timing marks do not coincide, remove rewind starter and starting pulley. Slacken off the two Allen head capscrews securing the armature plate. Rotate plate clockwise if timing is advanced, counterclockwise if timing is retarded.



Once timing is correct on Mag. side, release throttle, **apply the brake** and turn **off** the ignition. Connect timing light to P.T.O. side spark plug wire. Start engine and check if P.T.O. timing coincides with Mag. side timing.

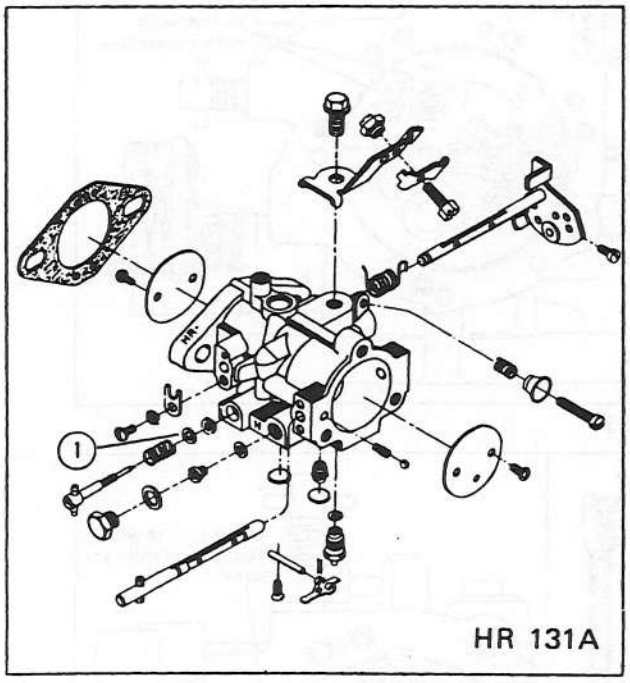
If timing does not coincide, install a T.D.C. gauge into P.T.O. spark plug hole. Scribe true marks on magneto ring. (.060" BTDC and .080" BTDC). Repeat for other cylinder. Position armature plate so that both cylinders fire within tolerance of .060" to .080".

1973 TIMING SPECIFICATION CHART

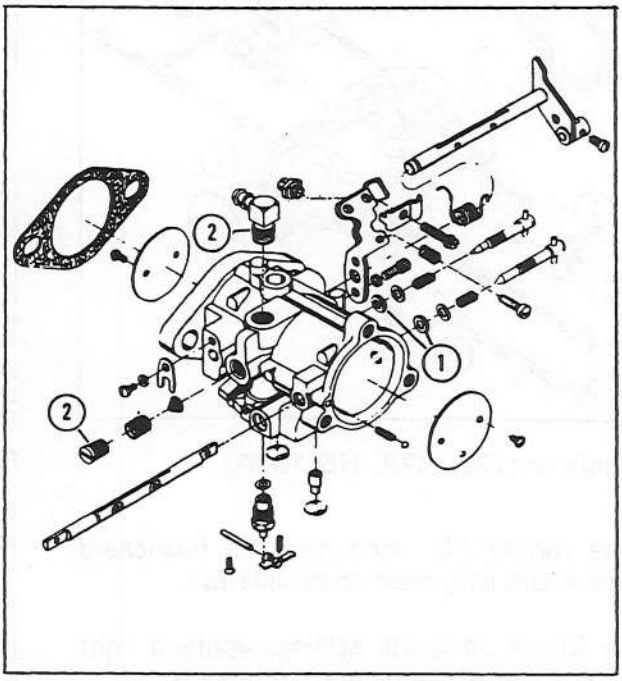
Engine type	Direct Timing (Advanced) inches B.T.D.C.	Indirect Timing (Advanced) inches B.T.D.C.	Edge Gap (Advanced) inches
247	.147" - .167"	—	.200" - .320"
248	.077" - .097"	.079" - .100"	.270" - .430"
249	.077" - .097"	.079" - .100"	.270" - .430"
294	.084" - .104"	.087" - .110"	.270" - .430"
302	.147" - .167"	.212" - .244"	.200" - .320"
337	.157" - .177"	.226" - .248"	.200" - .320"
338	.111" - .131"	.131" - .154"	.200" - .320"
343	.111" - .131"	.131" - .154"	.200" - .320"
346	.109" - .129"	—	.310" - .470"
396	.060" - .080"	—	—
401	.111" - .131"	.135" - .159"	.200" - .320"
434	.111" - .131"	.118" - .144"	.200" - .320"
435	.111" - .131"	.119" - .141"	.200" - .320"
640	.146" - .166"	.155" - .172"	.200" - .320"

Engine

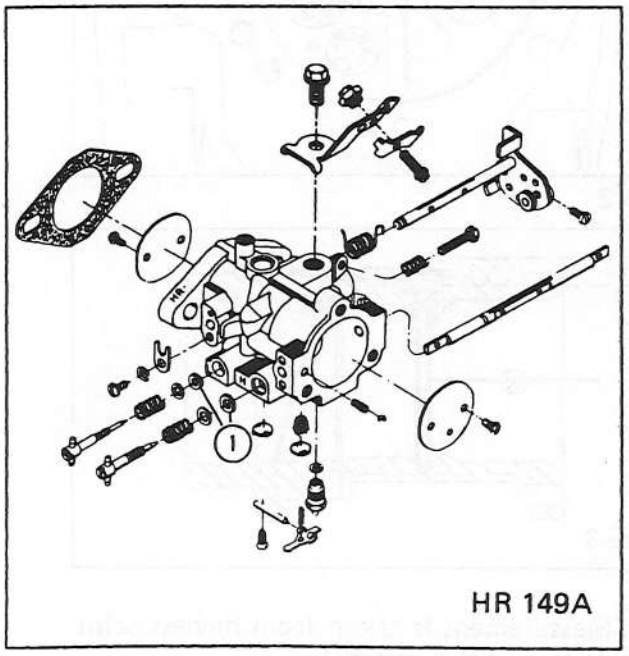
CARBURETOR 2-7



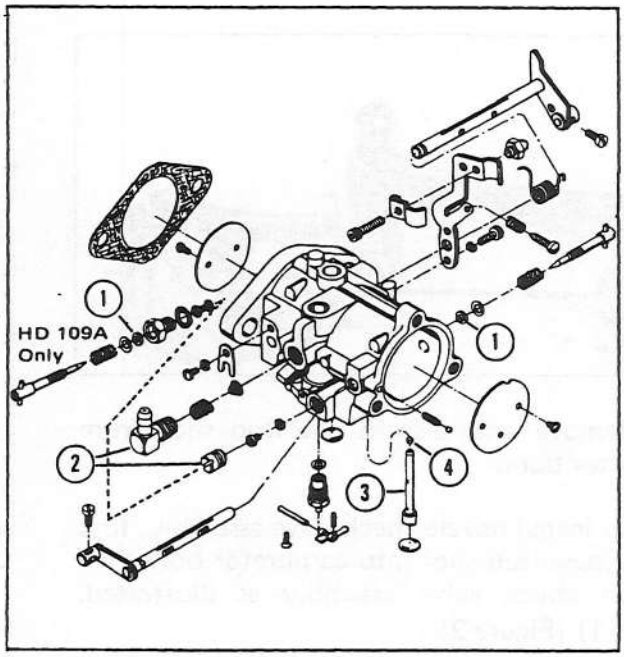
Applicable on: HR 131A, HR 133A, HR 134A, HR 135A, HR 136A, HR 137A, HR 143A.



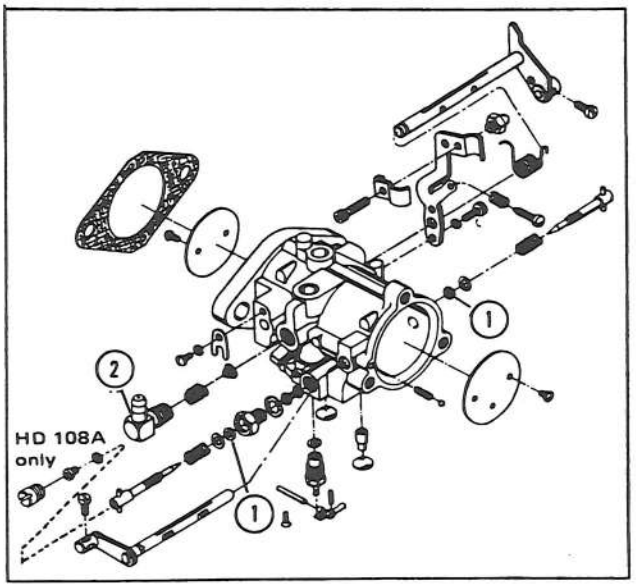
Applicable on: HD 123A



Applicable on: HR 74A, HR 75A, HR 76A, HR 132A, HR 149A.



Applicable on: HD 109A, HD 110A, HD 124A.

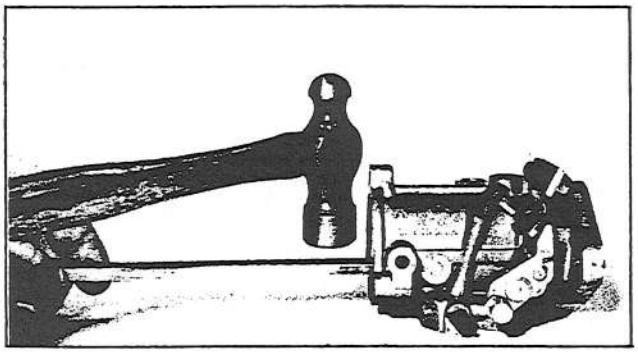


Applicable on: HD 107A, HD 108A.

(1) The rubber "O" ring must be lubricated with petroleum jelly prior to installation.

(2) To insure adequate sealing, apply a light coat of pipe thread compound on threads.

(3)(4) To remove the nozzle check valve assembly from carburetor bore use the illustrated special tool.



Remove and discard the lead shot from carburetor bore.

To install nozzle check valve assembly, first place a new lead shot into carburetor bore then position check valve assembly as illustrated. (Figure 1) (Figure 2)

Drive the check valve assembly into carburetor. (Refer to depth specifications). (Figure 3)

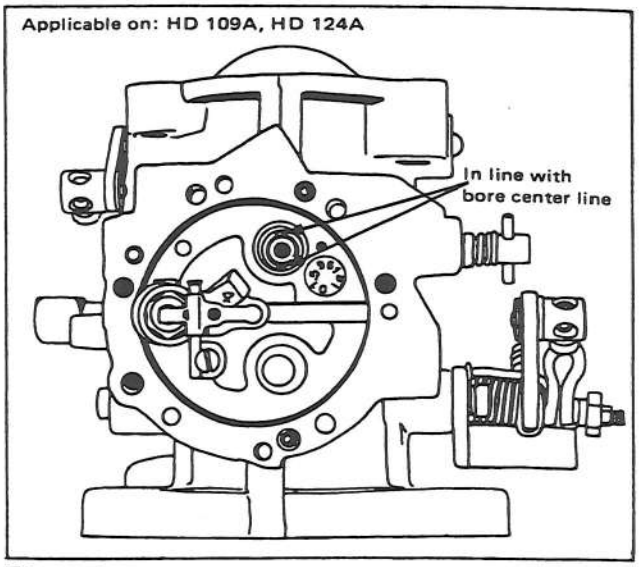


Figure 1

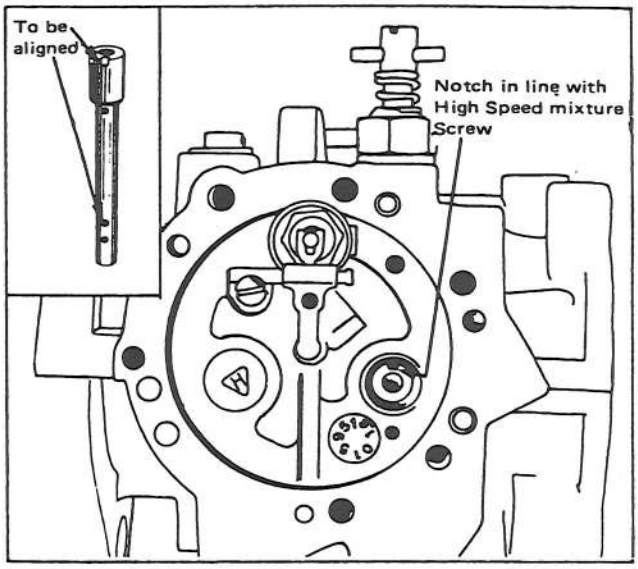


Figure 2

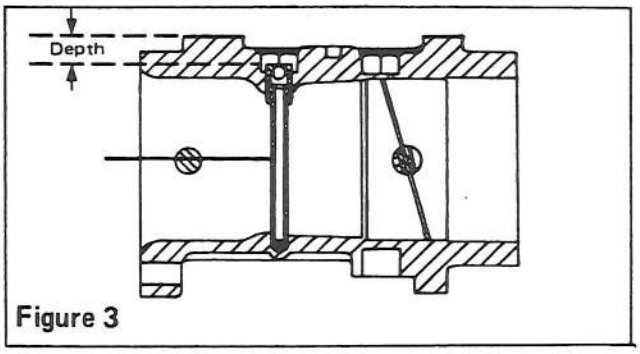


Figure 3

Note: Measurement is taken from highest point of nozzle check valve assembly.

Model	Depth
HD 109A	.313"
HD 110A	.281"
HD 124A	.313"

CARBURETOR SPECIFICATION CHART

MODEL	ENGINE TYPE	CARBURETOR	MAIN FUEL JET DIA. INCH	LOW SPEED ADJ +1/8 - 0 turn	HIGH SPEED ADJ +1/8 - 0 turn	FUEL GRADE
Elan 250*	247	HR 73A	.042"	3/4	fixed	Reg.
Elan 250	247	HR 133A	.042"	3/4	fixed	Reg.
Elan 250T	248	HR 136A	.042"	3/4	fixed	Prem.
Elan 250SS	249	2x HR 143A	.041"	3/4	fixed	Prem.
Olympique 300*	302	HR 74A	–	3/4	1	Reg.
Olympique 300	302	HR 132A	–	3/4	1	Reg.
Olympique 335	337	HR 75A	–	7/8	1 1/16	Reg.
Olympique 340	338	HR 131A	.050"	3/4	fixed	Reg.
Olympique 400*	401	HR 76A	–	1	1 1/16	Reg.
Olympique 400	401	HR 134A	.052"	3/4	fixed	Prem.
Olympique 440	434	HR 135A	.045"	7/8	fixed	Reg.
Skandic 335	337	HR 75A	–	7/8	1 1/16	Reg.
T'NT 294	294	2x HR 137A	.045"	3/4	fixed	Prem.
T'NT 340	343	HD 107A	.081"	7/8	1	Prem.
T'NT 440	435	HD 109A	.120"	1	1	Prem.
T'NT F/A 340	346	2x HR 149A	–	1	1 1/8	Prem.
T'NT F/A 400	396	2x HD 123A	–	1	5/8	Prem.
Nordic 640	640	HD 110A	.060"	7/8	fixed	Reg.
Alpine 440	434	HD 108A	.053"	7/8	fixed	Reg.
Alpine 640	640	HD 124A	.073"	3/4	fixed	Reg.
Valmont 440	434	HD 108A	.053"	7/8	fixed	Reg.

*Early production

Engine

CLEANING & INSPECTION 2-8

ENGINE TECHNICAL DATA

NOMINAL DIMENSION OF CYLINDER BORE

ENGINE TYPE	STANDARD		1st OVERSIZE	
		inches		inches
247	69.0	2.7165"	69.5	2.7362"
248	54.0-	2.1260"	54.5	2.1457"
249	54.0	2.1260"	54.5	2.1457"
294	57.0	2.2441"	57.5	2.2638"
*302	76.0	2.9921"	76.5	3.0118"
337	78.0	3.0709"	78.5	3.0906"
338	59.5	2.3425"	60.0	2.3622"
343	59.5	2.3425"	60.0	2.3622"
346	59.5	2.3425"	59.75	2.3524"
396	64.5	2.5394"	64.75	2.5493"
401	64.5	2.5394"	65.0	2.5591"
434	67.5	2.6575"	68.0	2.6772"
435	67.5	2.6575"	68.0	2.6772"
640	76.0	2.9921"	76.5	3.0118"

*A second oversize is available at 77.0mm – 3.0315"

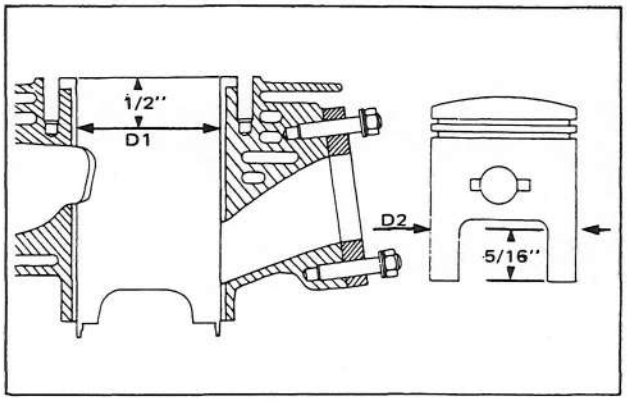
CYLINDER TAPER

CYLINDER OUT OF ROUND

CYLINDER WEAR

Same as 1972.

PISTON TO CYLINDER WALL CLEARANCE



Measurement of piston (D2) taken from cylinder (D1) is piston to cylinder wall clearance.

Engine Type	Fitted Tolerance
247	.0030" - .0040"
302, 338, 343, 401, 434	.0035" - .0045"
248, 249, 294	.0025" - .0035"
346, 435	.0045" - .0055"
396, 640	.0040" - .0050"

Note: If D2 is more than .010" below nominal dimension, piston has exceeded maximum wear and should be replaced. If D1 is more than .004" above nominal dimension, cylinder should be rebored.

RING END GAP

CONNECTING ROD AXIAL PLAY

Same as 1972.

CRANKSHAFT DEFLECTION

Same as 1972.

CRANKSHAFT END-PLAY

Engine Type	End-Play
247, 248, 249, 294, 302, 337, 338, 343, 401, 640,	.004" to .016"
434, 435	No shims required; crankshaft is held on P.T.O. side by bearing.
346, 396	No shims required; crankshaft is held in center by groove rings.

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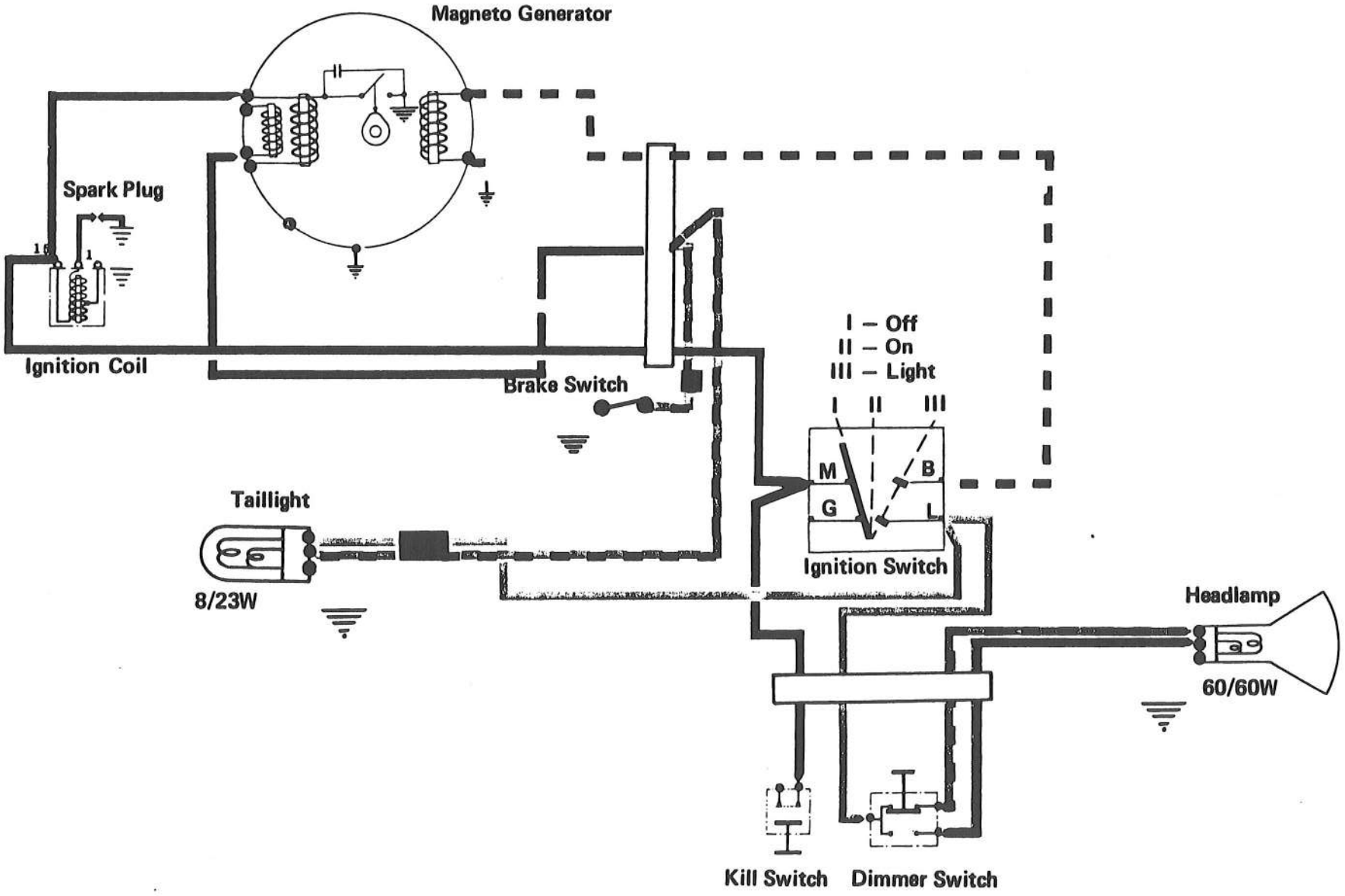
Electrical.

ELECTRICAL CHARTS 3-2

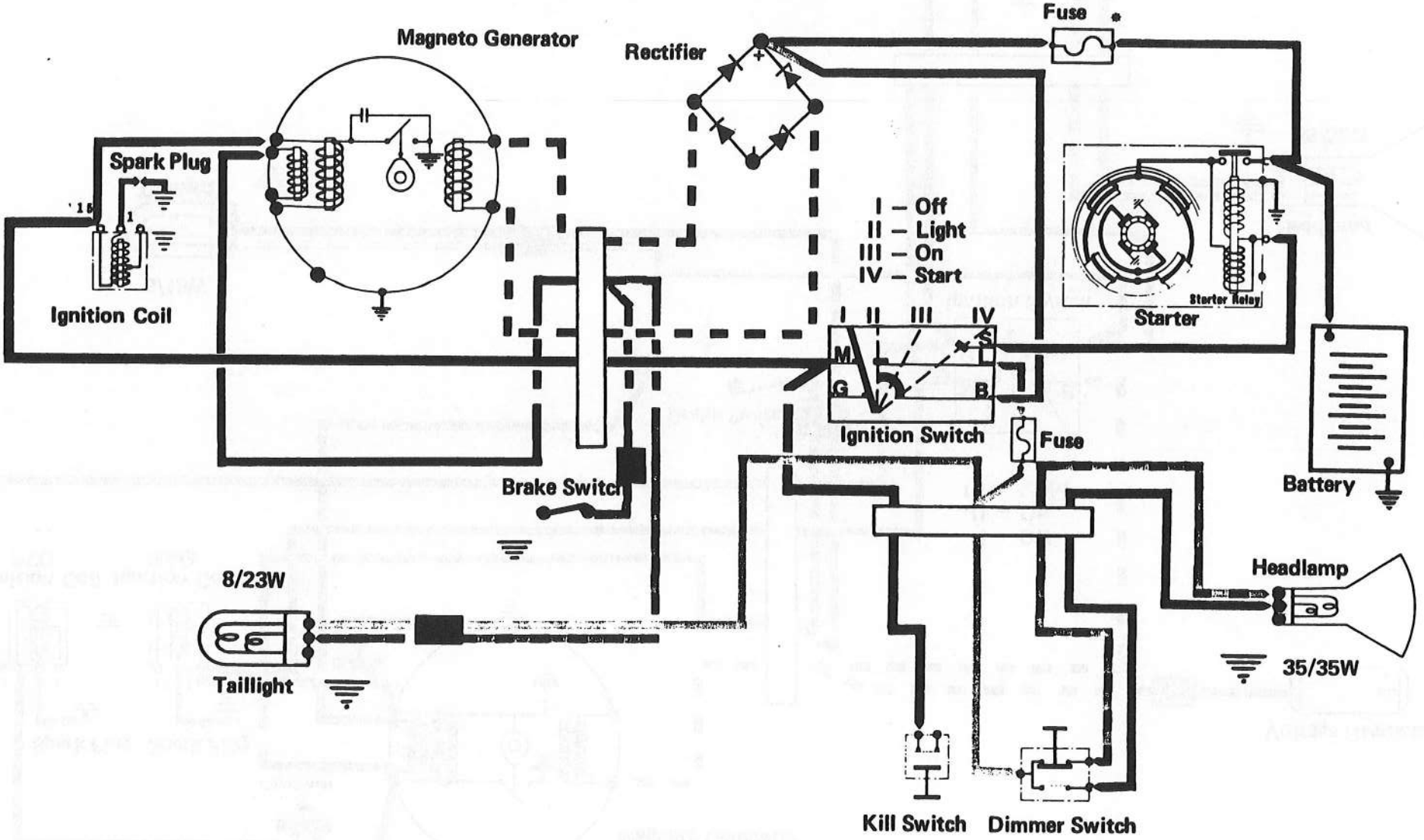
MAGNETO AND BULB SPECIFICATION CHART

VEHICLE	MAG. OUT WATT	HEADLAMP WATT	TAIL/STOP LIGHT WATT
Elan 250	75/23	60/60	8/23
Elan 250E	75/23	35/35	8/23
Elan 250T	55/18	35/35	5/18
Elan 250SS	55/18	35/35	5/18
Olympique 300	75/23	60/60	8/23
Olympique 335	75/23	60/60	8/23
Olympique 340	75/23	60/60	8/23
Olympique 340E	75/23	35/35	8/23
Olympique 400	75/23	60/60	8/23
Olympique 400E	75/23	35/35	8/23
Olympique 440	75/23	60/60	8/23
T'NT 294	55/18	35/35	5/18
T'NT F/A 340	75/23	60/60	8/23
T'NT F/A 400	75/23	60/60	8/23
T'NT 340 F/A	75/23	60/60	8/23
T'NT 400 F/A	75/23	60/60	8/23
Nordic 640ER	120	60/60	8/23
Valmont 440R	75/23	60/60	8/23
Valmont 440ER	75/23	35/35	8/23
Alpine 440R	75/23	60/60	8/23
Alpine 440ER	75/23	35/35	8/23
Alpine 640ER	120	60/60	8/23
Skandic 335	75/23	60/60	8/23

Élan 250 Skandic 335
Olympique 300-335

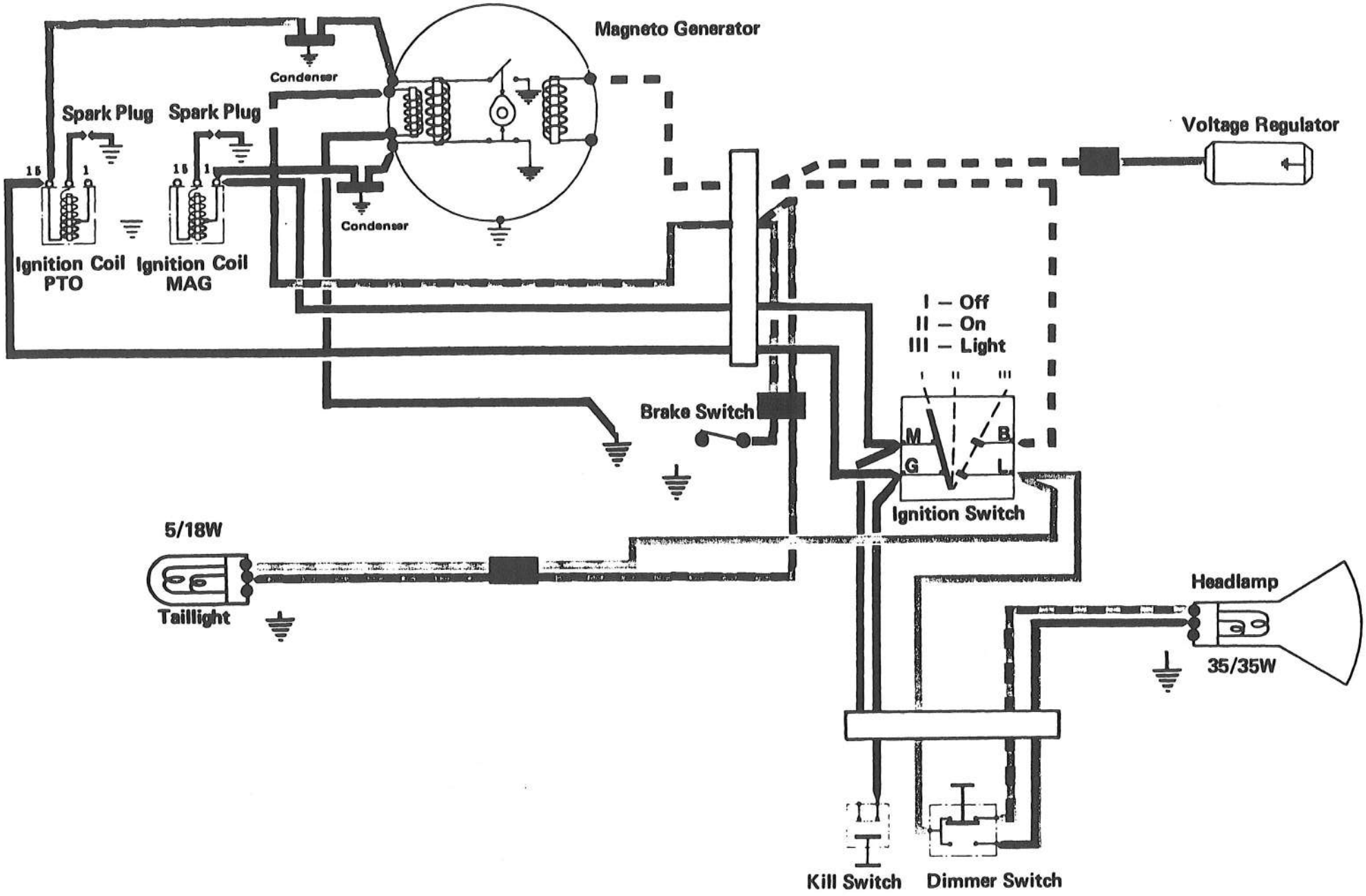


Élan 250 E

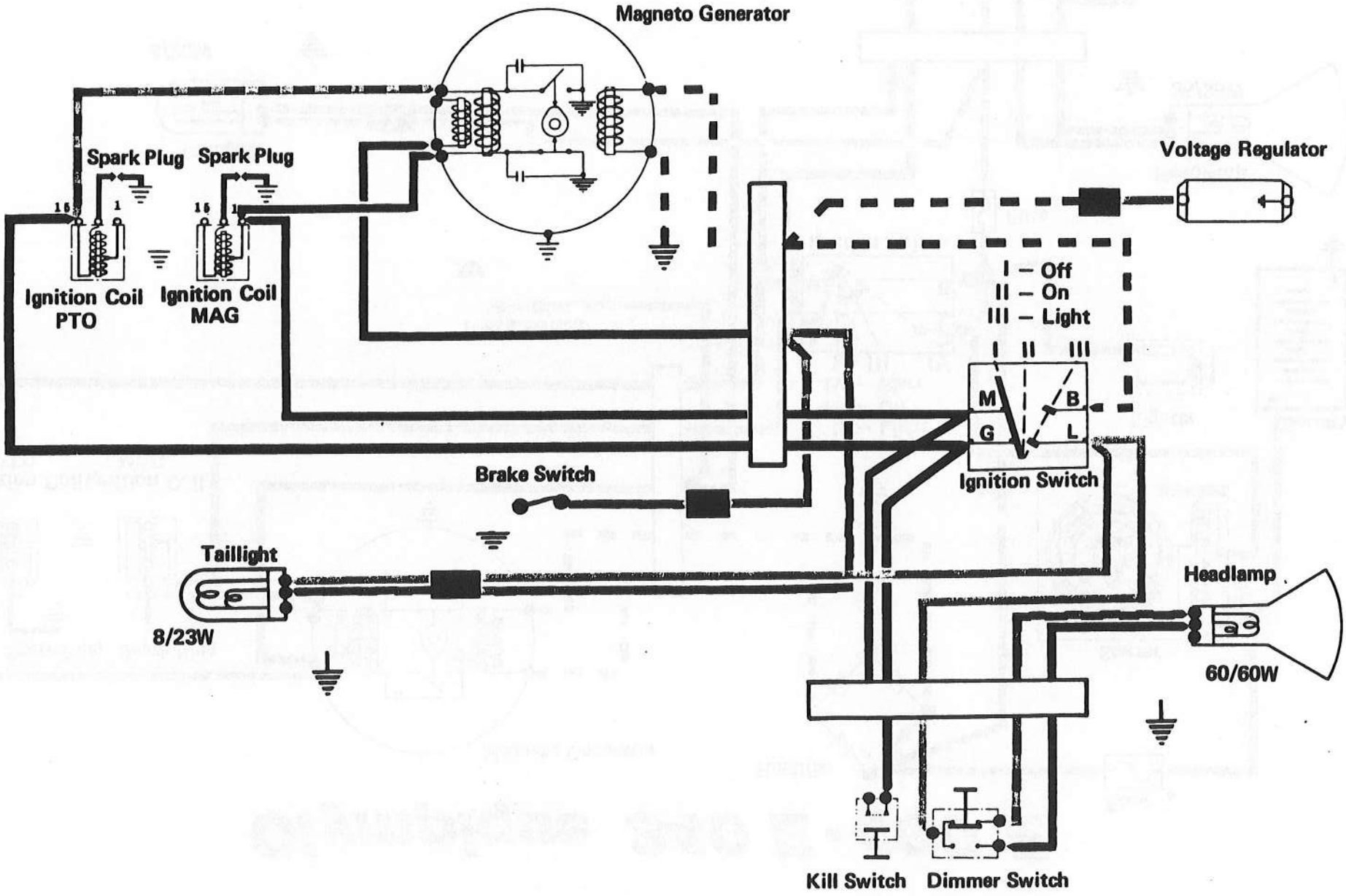


*Early production only

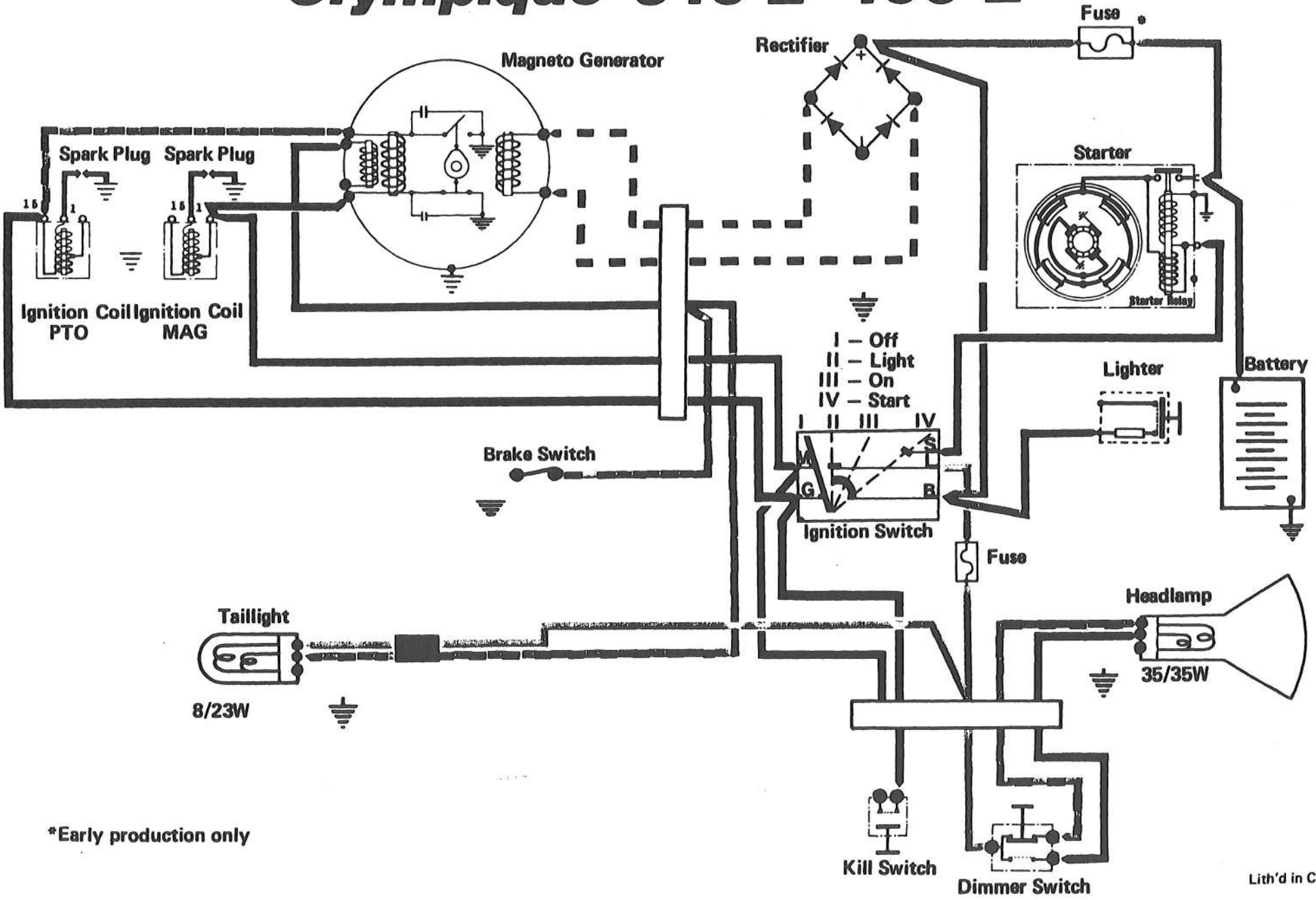
Élan 250T-250 SS



Olympique 340-400-440



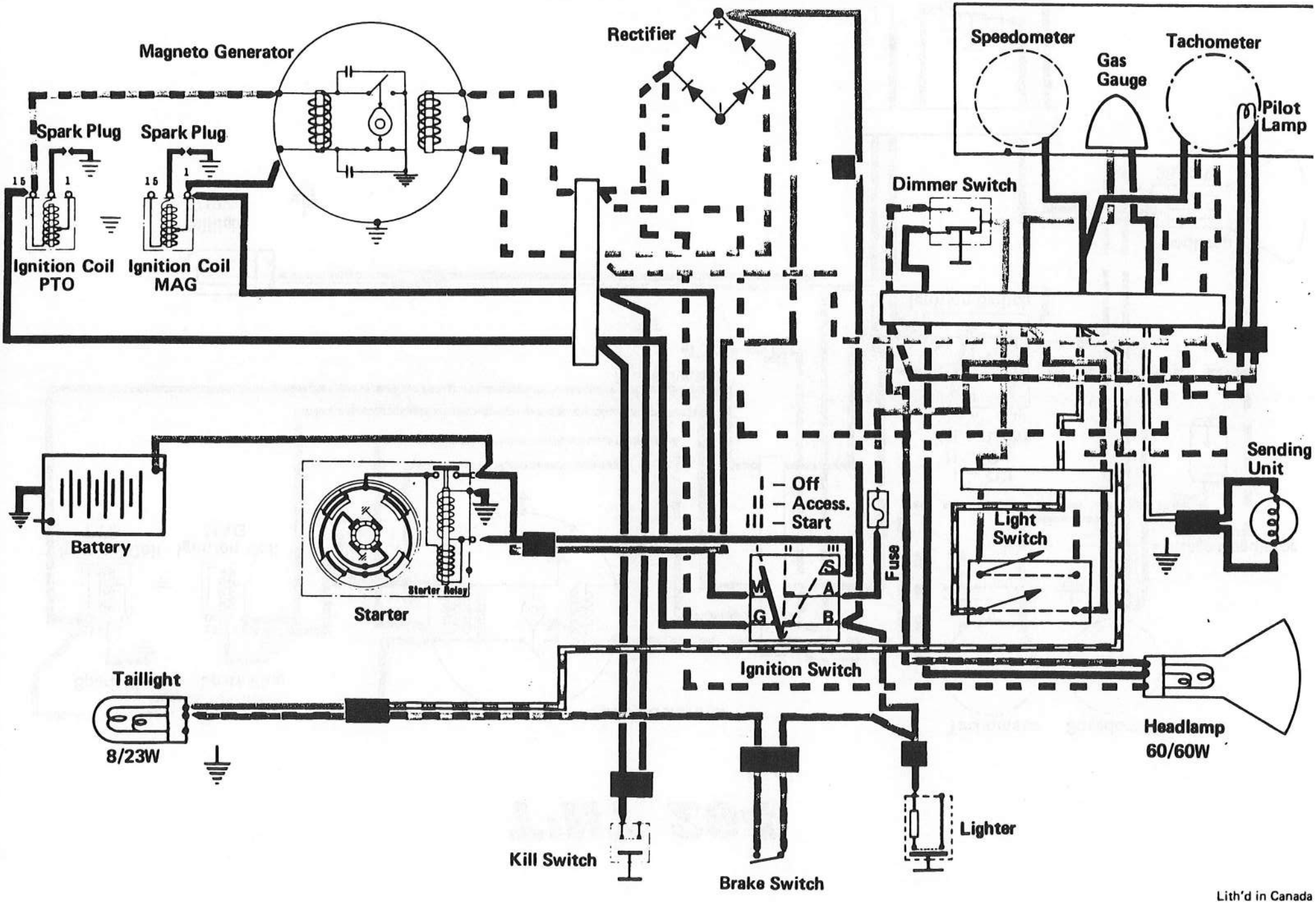
Olympique 340 E-400 E



*Early production only

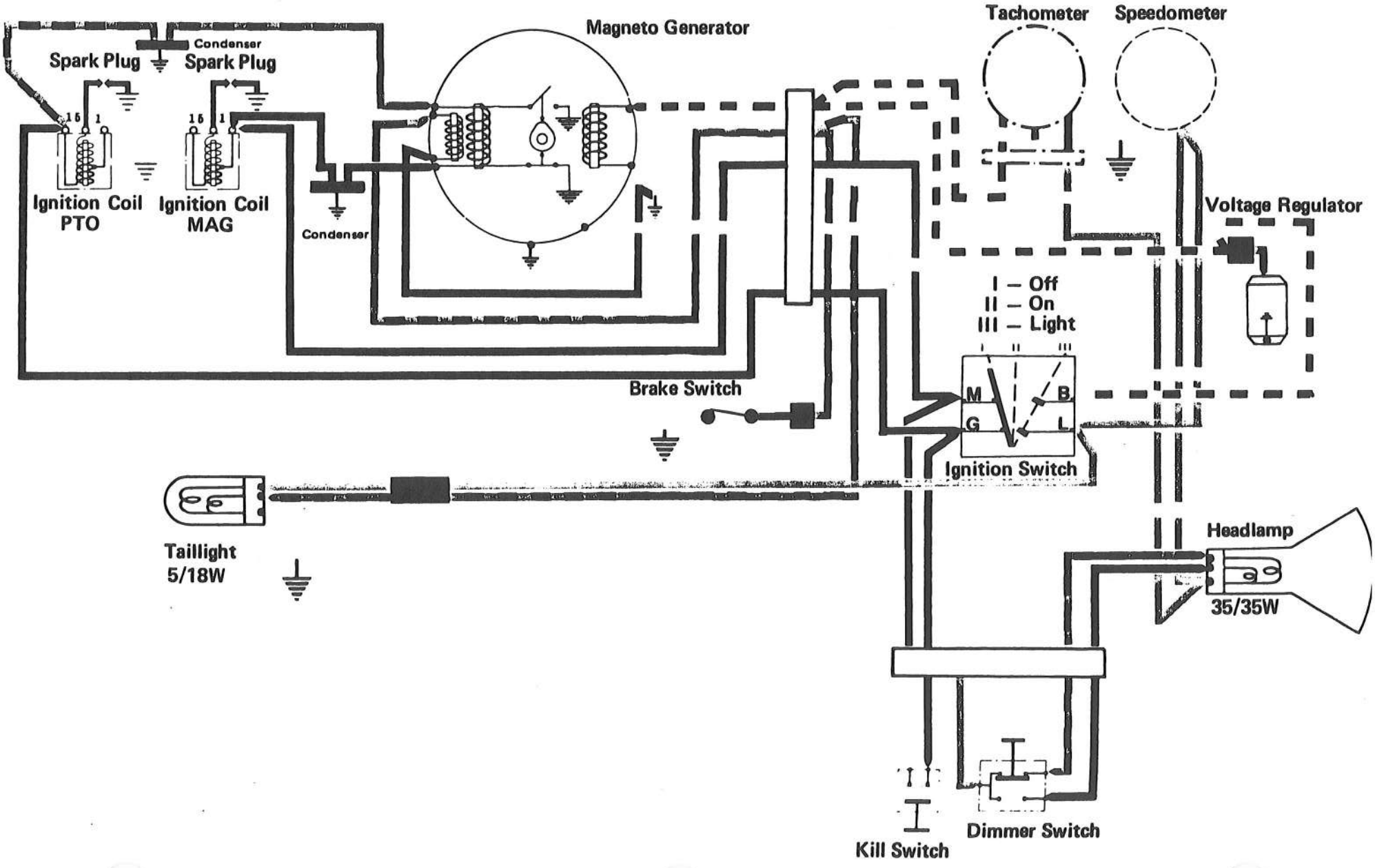
Lith'd in Canad

Nordic 640 ER

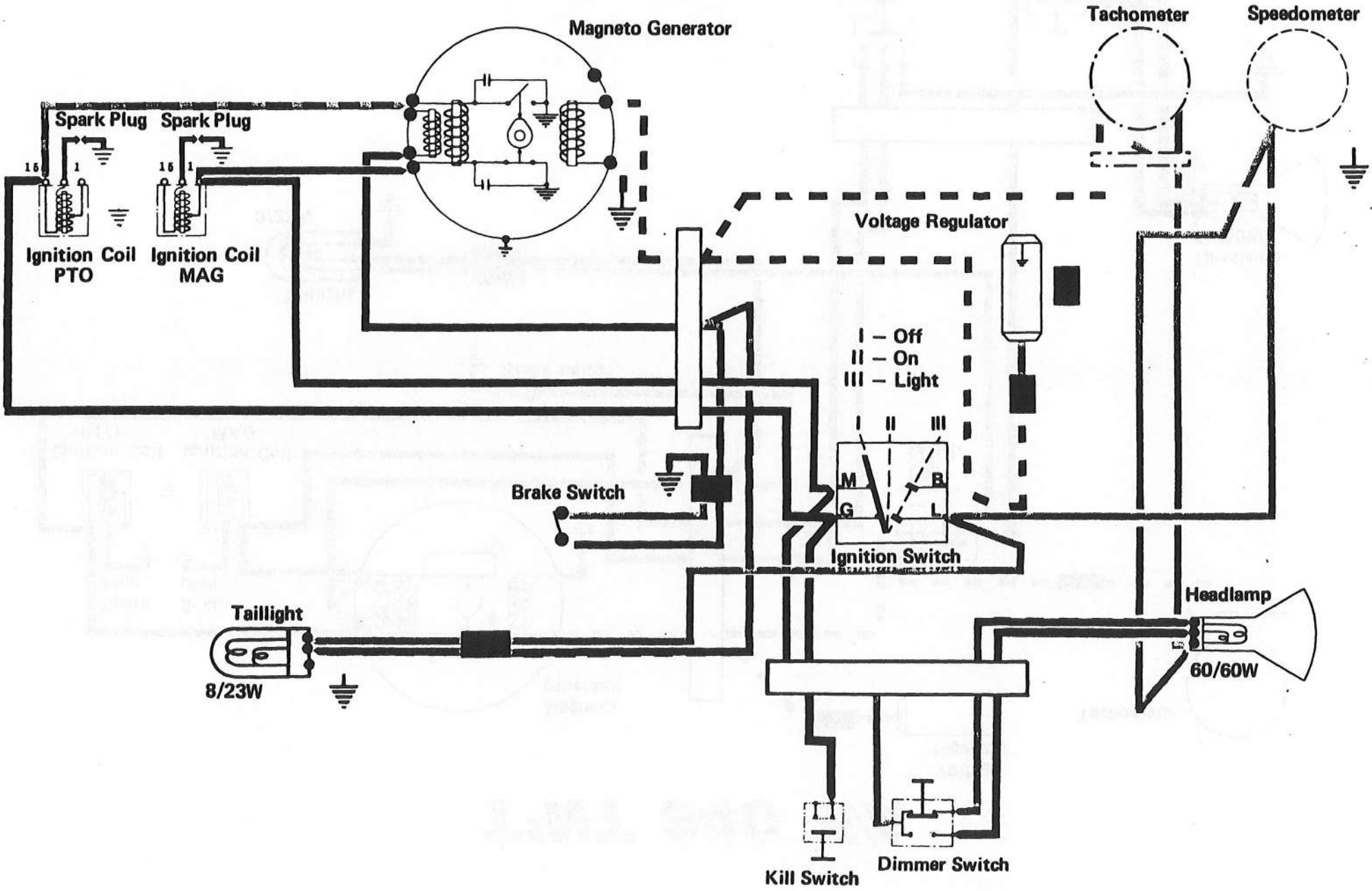


Lith'd in Canada

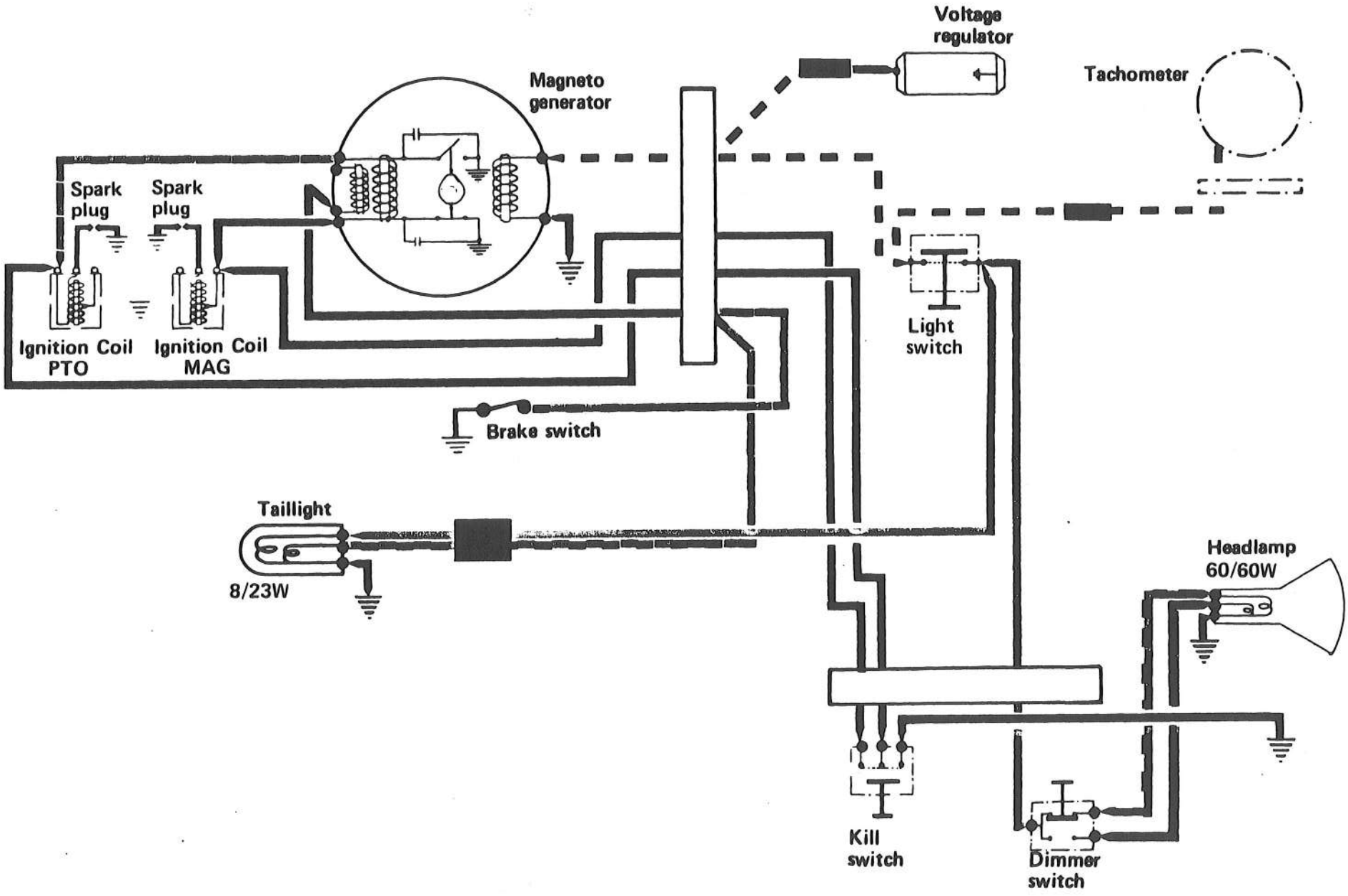
T'NT 294


Condenser
Spark Plug
Spark Plug
Magneto Generator
Tachometer
Speedometer
Ignition Coil PTO
Ignition Coil MAG
Condenser
Voltage Regulator
I – Off
II – On
III – Light
Brake Switch
M
B
G
L
Ignition Switch
Taillight 5/18W
Headlamp
35/35W
Kill Switch
Dimmer Switch

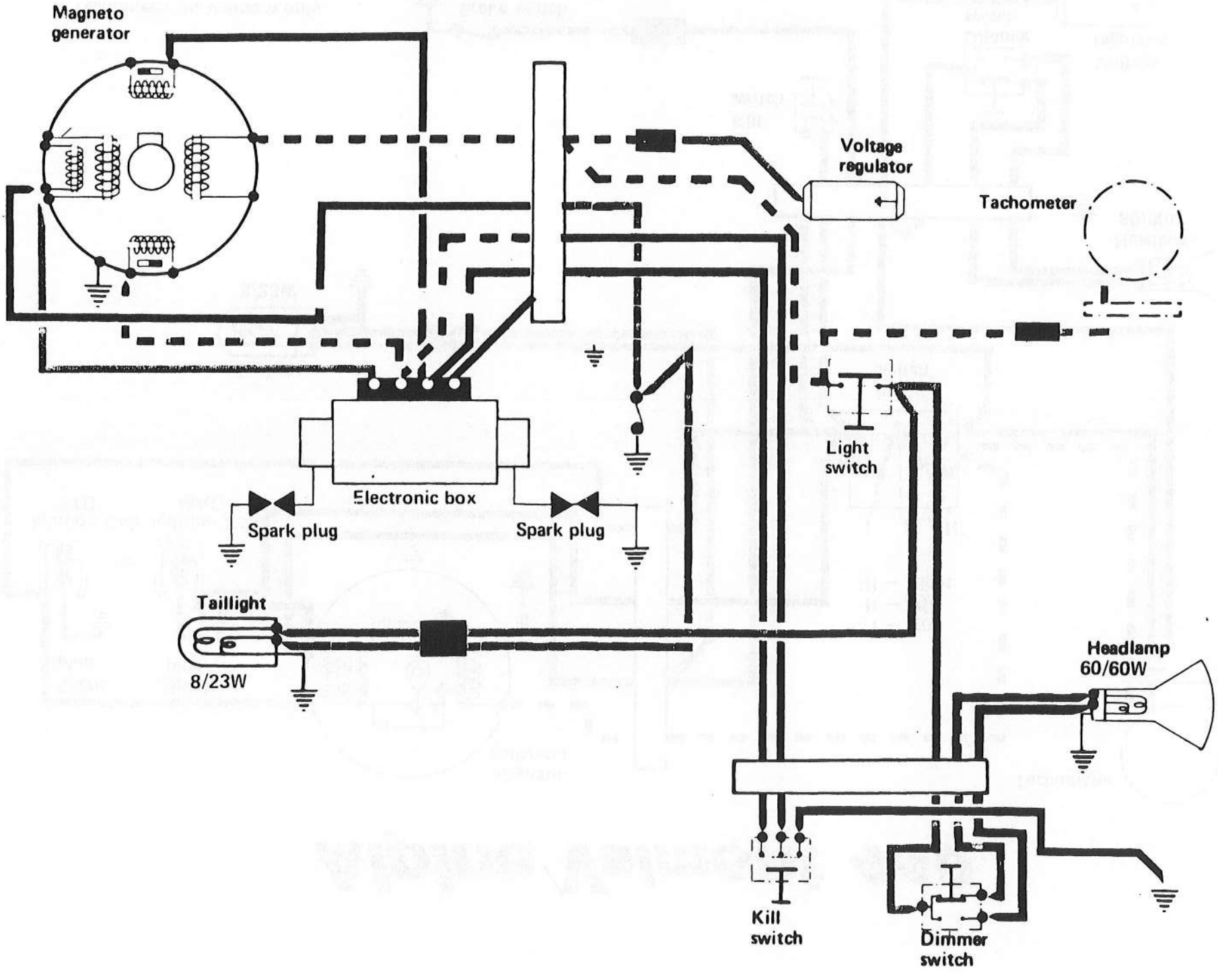
T'NT 340-440


Magneto Generator
Tachometer
Speedometer
Spark Plug
Spark Plug
15
1
15
1
Ignition Coil
PTO
Ignition Coil
MAG
Voltage Regulator
I – Off
II – On
III – Light
I
II
III
M
B
G
L
Brake Switch
Ignition Switch
Taillight
8/23W
Headlamp
60/60W
Kill Switch
Dimmer Switch

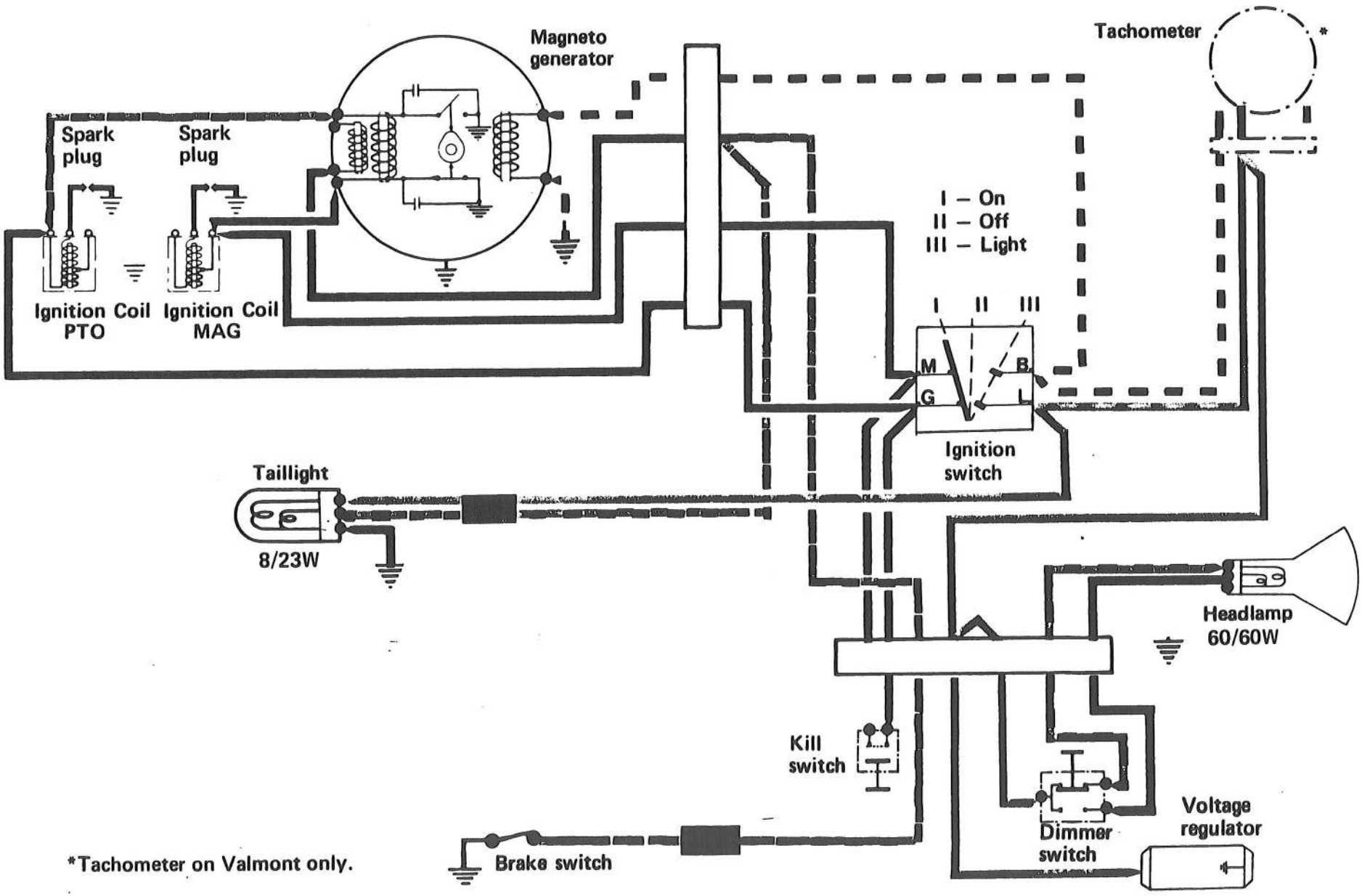
T'NT 340 F/A


Voltage regulator
Tachometer
Magneto generator
Spark plug
Spark plug
Ignition Coil PTO
Ignition Coil MAG
Light switch
Brake switch
Taillight
8/23W
Headlamp 60/60W
Kill switch
Dimmer switch

T'NT 400 F/A

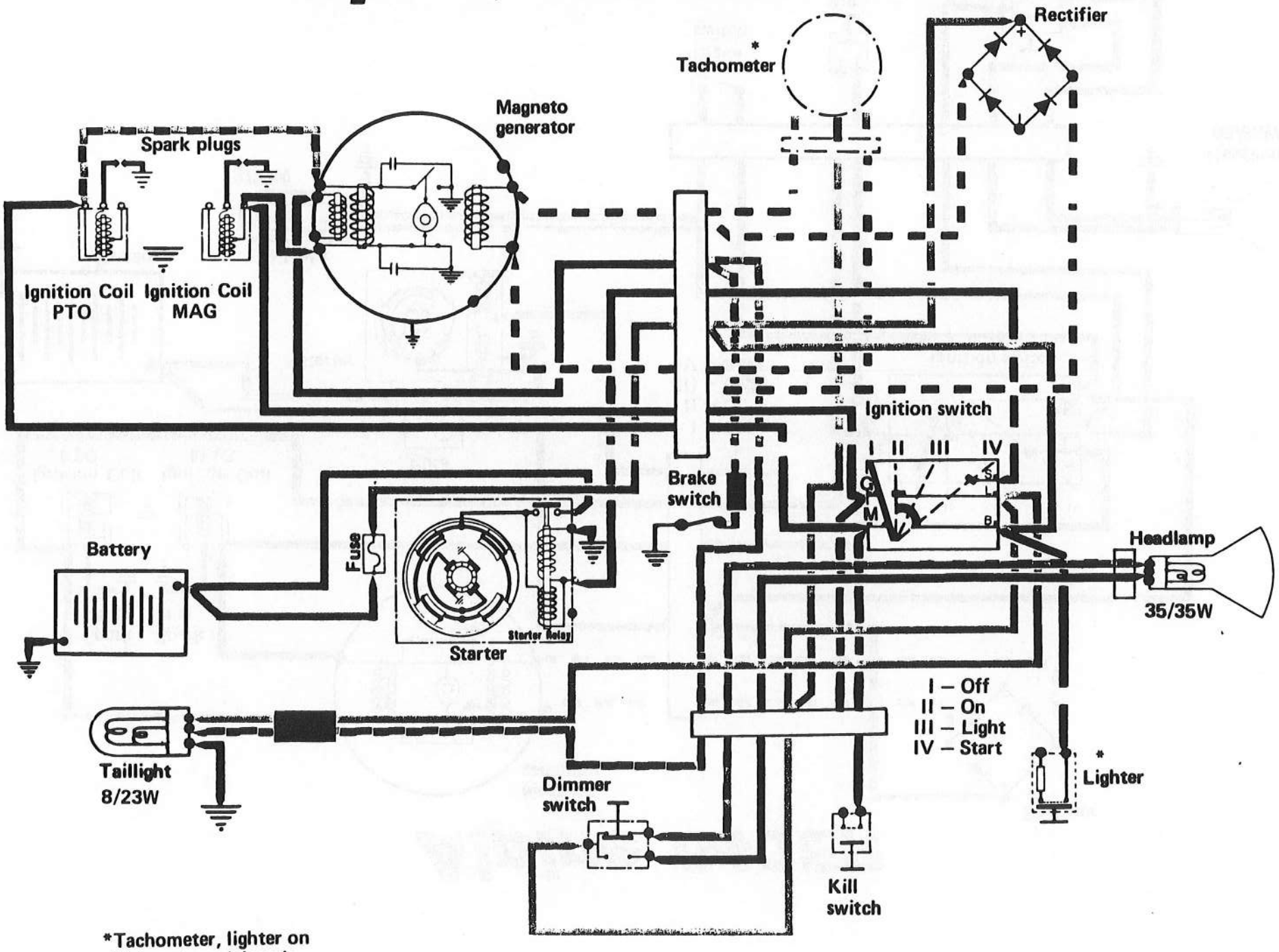

Magneto generator
Voltage regulator
Tachometer
Light switch
Electronic box
Spark plug
Spark plug
Taillight
8/23W
Headlamp 60/60W
Kill switch
Dimmer switch

Alpine/Valmont 440



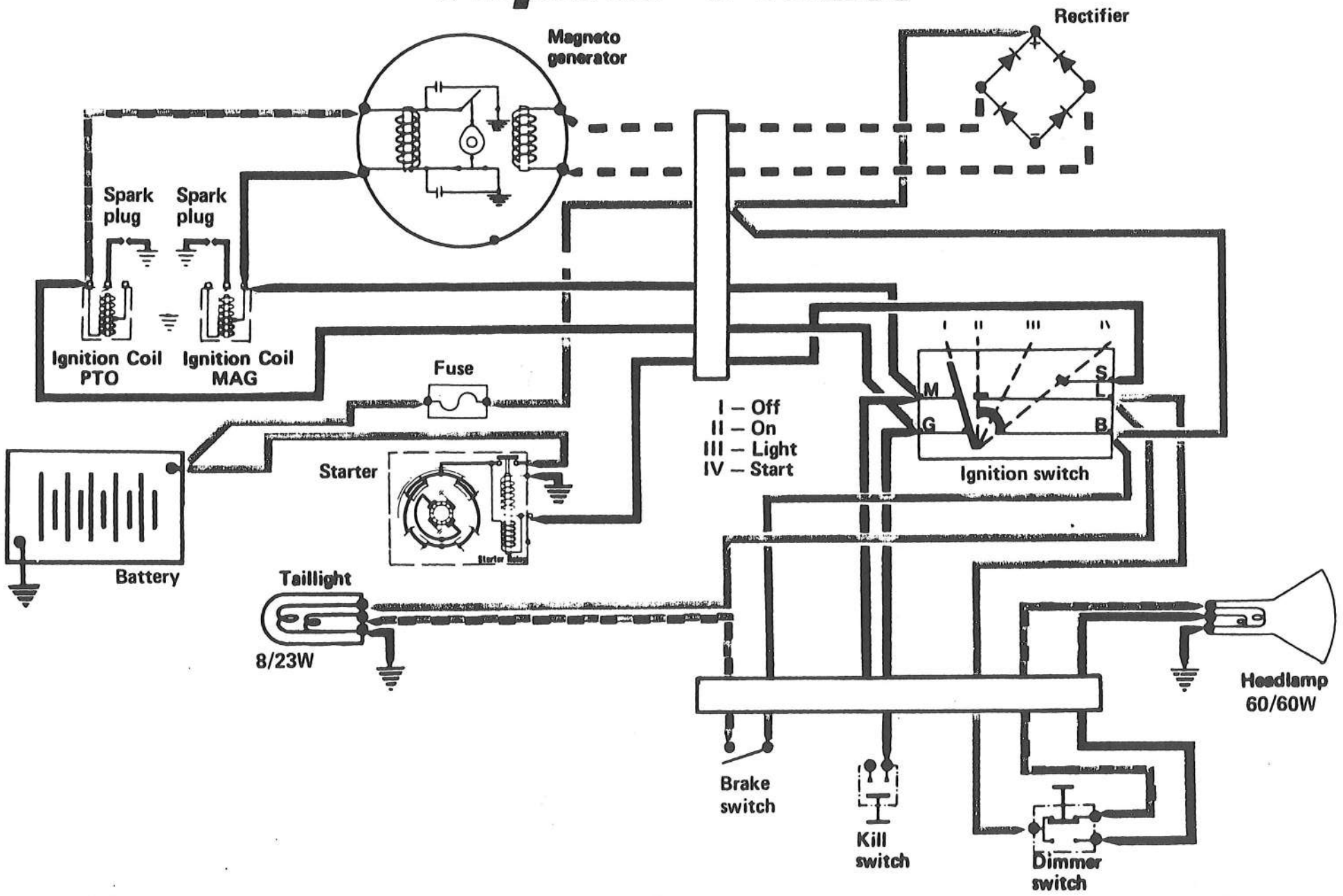
*Tachometer on Valmont only.

Alpine/Valmont 440ER



*Tachometer, lighter on
Valmont models only

Alpine 640ER



Electrical

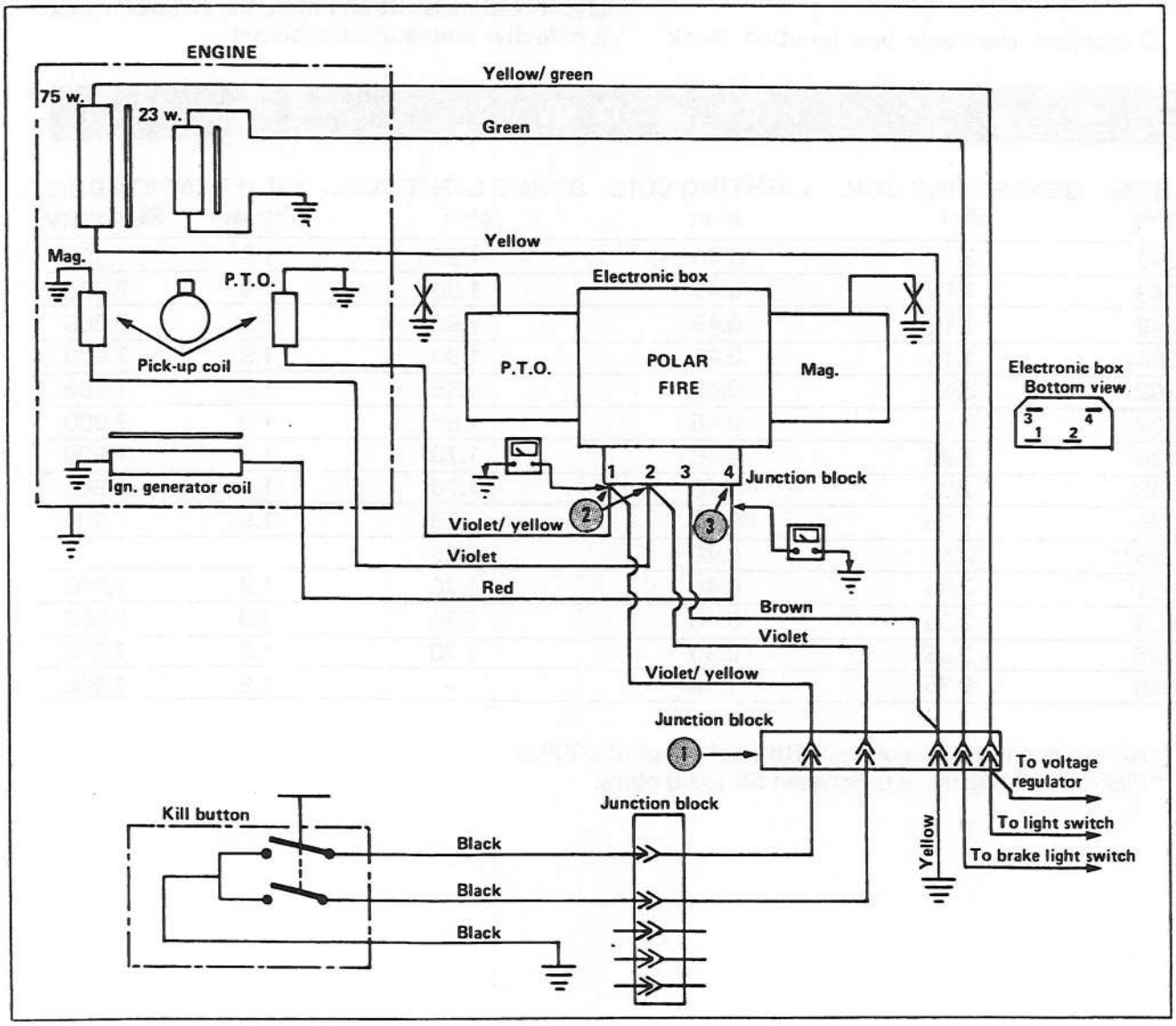
SPARK PLUGS 3-3

SPECIFICATION CHART

VEHICLE	MODEL	HIGH SPEED	LOW SPEED
Elan	250 - 250E	M175T1	M145T1
Elan	250T	W240T1	W225T1
Elan	250SS	W260T1	W260T1
Olympique	300	M175T1	M145T1
Olympique	335	M225T1	M175T1
Olympique	340 - 340E	W260T1	W225T1
Olympique	400 - 400E	W280M1	W240T1
Olympique	440	M225T1	M175T1
T'NT	294	W260T1	W240T1
T'NT	340	W280M1	W260T1
T'NT	440	M280T31	M280T31
T'NT F/A	340	W280M2	W280M2
T'NT F/A	400	W280M2	W280M2
Nordic	640ER	M225T1	M175T1
Valmont	440R - 440ER	M225T1	M175T1
Alpine	440R - 440ER	M225T1	M225T1
Alpine	640ER	M225T1	M225T1
Skandic	335	M225T1	M175T1
Elite	440	M225T1	M175T1

Electrical

C.D. IGNITION (Trouble-Shooting) 3-



T'NT 400 F/A

SYMPTOM: Firing on one cylinder only.

Before checking circuit, make sure high tension wires and spark plugs are in working order.

#1: Check kill button operation by disconnecting junction block (1) and by starting engine. If both cylinders are firing replace defective kill button, if not, proceed with following test.

#2: **Disconnect** electronic box junction block and check each trigger coil by connecting an ohmmeter between ground and point (2). Reading must be between 55 to 60 ohms. If not, armature plate assembly should be replaced.

If reading is within limits, the electronic box is defective and must be replaced.

Note: While performing this test make sure kill button is in release upper position.

SYMPTOM: Not firing on either side.

Check kill button and pick-up coils as described in preceeding test. If trouble persists, continue with the following test.

Disconnect electronic box junction block and connect an ohmmeter between ground and point (3). Reading must be between 325 and 365 ohms. If not, replace armature plate assembly. If reading is within limits, the electronic box is defective and must be replaced.

ELECTRICAL RESISTANCE CHART*

ENGINE TYPE	GENERATING COIL ohm	LIGHTING COIL ohm	BRAKE LIGHT COIL ohm	HIGH TENSION COIL Primary	HIGH TENSION COIL Secondary
247	3.4	0.45	1.85	1.9	7,900
248	1.15	0.45	1.90	1.9	7,900
249	1.15	0.45	1.90	1.9	7,900
294	1.15	0.45	1.90	1.9	7,900
302	3.4	0.45	1.85	1.9	7,900
337	3.4	0.45	1.85	1.9	7,900
338	2.35	0.40	1.70	1.9	7,900
343	2.35	0.40	1.70	1.9	7,900
346	2.35	0.40	1.70	1.9	7,900
396**	345	0.40	0.86		
401	2.35	0.40	1.70	1.9	7,900
434	2.35	0.40	1.70	1.9	7,900
435	2.35	0.40	1.70	1.9	7,900
640	2.35	1.14	–	1.9	7,900

*All values given are in ohms, with a tolerance of ± 20%

**Pick-up coil resistance is between 55 to 60 ohms.

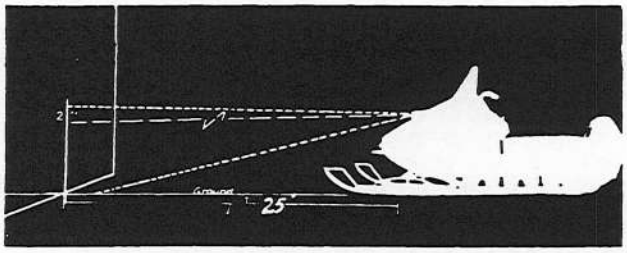
Table of Contents

Body & Frame

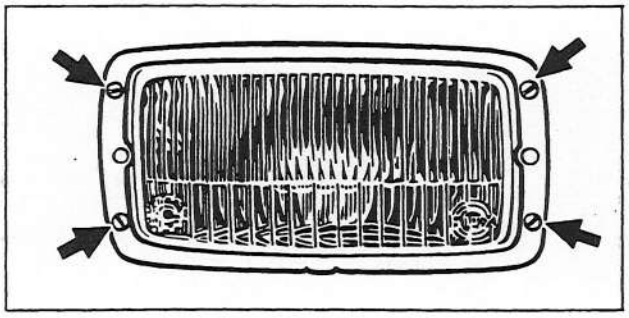
GENERAL 4-

BEAM AIMING

To check headlamp beam, position vehicle twenty-five (25) feet from a wall or screen, on a flat surface. Turn Hi beam ON. Aiming is correct when beam center is two (2) inches below horizontal beam line.

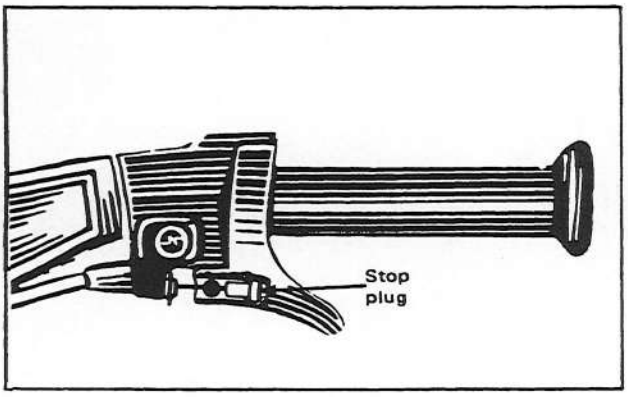


To adjust all models except Nordic, remove chrome ring and adjust beam aiming by tightening or slackening the four (4) adjusting screws.



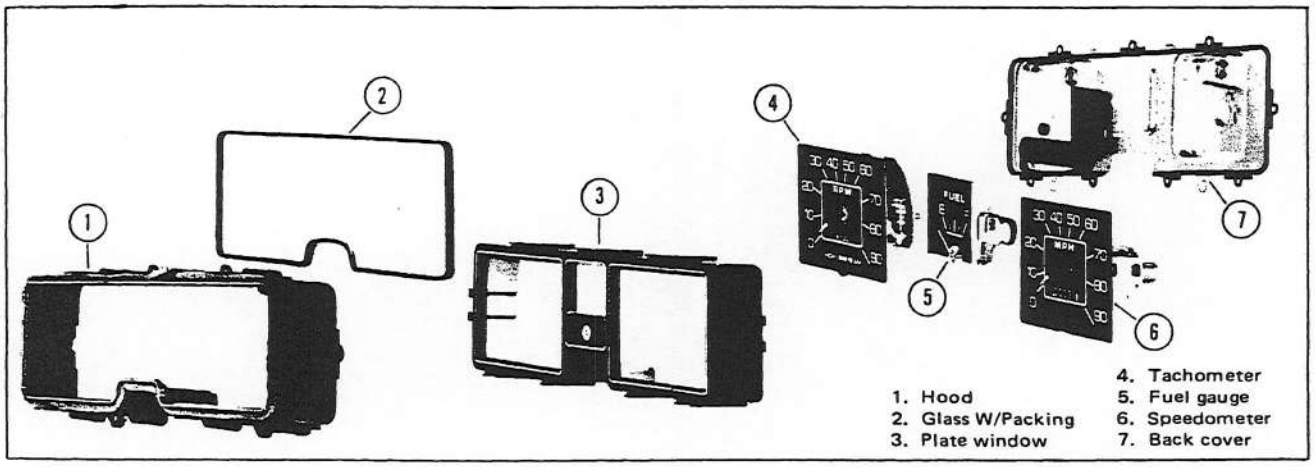
BRAKE AND THROTTLE LEVERS (T'NT – Nordic)

To remove either the brake or throttle lever, first disengage cable from throttle shaft or brake cam lever. Remove stop plug from throttle lever.



Disengage cable from handlebar lever housing. To remove grips, place your thumb over the end hole of one grip to make it airtight. Compressed air introduced into the end hole of other grip will blow back from the airtight end causing the opposing grip to be forced off. Blocking the handlebar tube with your hand will assist similar removal of remaining grip. Finally, remove screw securing handle. Remove handle ass'y.

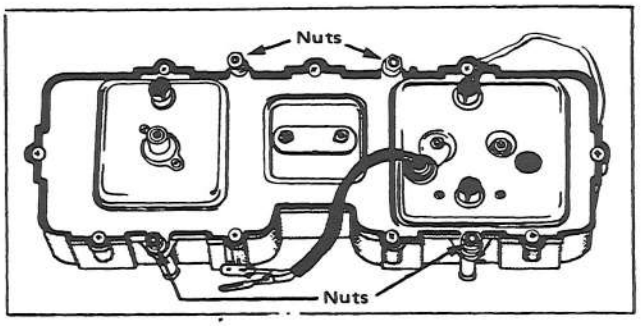
NORDIC DASHPANEL



1. Hood
2. Glass W/Packing
3. Plate window
4. Tachometer
5. Fuel gauge
6. Speedometer
7. Back cover

Primarily, disconnect electrical connections and speedometer cable. To remove Nordic dashpanel, remove the four (4) nuts and spacers securing dash to console. (Lower fasteners must be held for removal, to do this, however, the dashpanel decal must first be removed). Remove dash, two (2) long spacers and two (2) hooks.

When installing dash make sure new gaskets are used. The back cover must be sealed with windshield sealant. Install dash and new decal.



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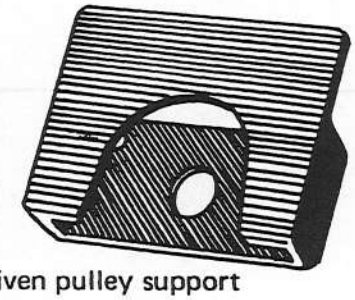
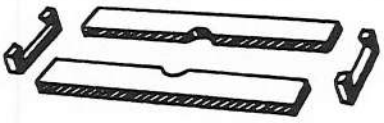
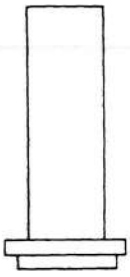
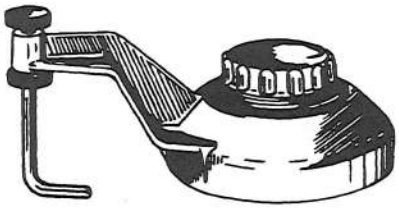
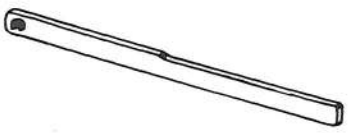
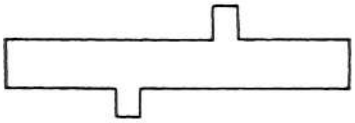
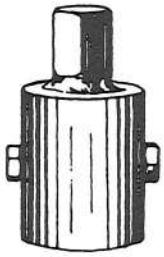
Special Tools

ITEM	APPLICABLE TO:
 Chain tension releaser tool.	All models except Alpine, Valmont, T'NT F.A. and Nordic.
 Driven pulley support adaptor	T'NT and Elan SS models.
 Driven pulley adaptor. Idler wheel adaptor.	Alpine and Valmont. T'NT F.A.
 Drive pulley bushing pusher.	T'NT F.A.

ITEM	APPLICABLE TO:
 Fan belt pulley aligning tool.	Elan 248 - 249, T'NT 294.
 Nozzle check valve remover.	HD109A – 110A – 124A
 Nozzle check valve depth gauge	HD109A – 110A – 124A
 Drive pulley adaptor.	All models.
 Pulley offset aligning tool.	All models.

1973 SKI-DOO WARRANTY

Bombardier Limited (Bombardier) as manufacturer, warrants every 1973 Ski-Doo snowmobile, Ski-Boose or Carry-Boose tow sled, SOLD AS A NEW VEHICLE, BY AN AUTHORIZED SKI-DOO DEALER, to be free from defects in material, and workmanship under normal use and service, for a period of ninety (90) days subject to the following coverage period:

1. Beginning no sooner than from the date of delivery to the first retail buyer, for a period of ninety (90) consecutive days.

2. Since snow is required for snowmobiling; all deliveries **prior to December 15th, 1972,** shall be covered under this warranty from **December 15th, 1972 to March 15th, 1973.**

3. All units delivered on or after **January 2nd, 1973,** but prior to **March 31st, 1973,** shall have a warranty carry-over into the next season, starting on **December 15th, 1973,** for the unused portion of the ninety (90) day warranty.

CONDITIONS

1. That maintenance be performed, at the owner's expense, as set down in the applicable owner's manual. Any failure which occurs as a result of inadequate maintenance† or improper use shall not be assumed by this warranty.

2. Any damages to any part of the above-mentioned vehicles and their components caused through improper use or maintenance or by any part installed which is not a genuine Ski-Doo replacement part, or not installed by an authorized Ski-Doo dealer, voids any future warranty coverage to the affected parts.

3. This warranty does not apply to any defect which results from:

i) misuse or accident;
ii) Installation of repair parts other than genuine Bombardier replacement parts or;
iii) Repairs by any person other than an authorized Ski-Doo snowmobile dealer;
iv) Lack of preventative maintenance;
v) Alterations or modifications other than those approved in writing by Bombardier.

4. Proof of ownership and warranty registration must be submitted to the service dealer by means of the Ski-Doo Service Card.

† **Guidelines for proper use and maintenance are detailed in each owner's manual.**

EXCLUSIONS

- **Maintenance Items and Services are considered non-warrantable and necessary to proper functioning of the vehicle, and without limiting the foregoing the following parts and services are excluded:**

- **Variable speed drive belt, windshield, filters, ignition breaker points and condensers, spark plugs, light bulbs and protective lenses, brake linings, ski runner shoes, slider shoes on variable speed pulleys, all fasteners, labels, soft trim and appearance items, lubricants and paints, and all tune-ups or adjustments required.**

WARRANTY ON GENUINE ACCESSORIES AND REPLACEMENT PARTS

BOMBARDIER LIMITED ("Bombardier") warrants to the original retail purchaser that any of the following genuine Bombardier accessories: tachometer, speedometer, front bumper, rear bumper and side handles and/or genuine Bombardier replacement parts which are normally covered under the new product warranty, sold as new by an authorized Ski-Doo dealer, will be free from defects in material and workmanship under normal use and service for a period of 90 consecutive days from the date of original retail purchase or from the date of the first snowfall, if purchase took place before, in which case the date of the first snowfall shall be deemed to be no later than the 15th of December 1972.

ANY OF THE SAID REPLACEMENT PARTS REPLACED UNDER THE ORIGINAL SKI-DOO WARRANTY SHALL NOT BE COVERED UNDER THE PRESENT WARRANTY.

Bombardier's obligation under this warranty is strictly limited to the repair or replacement at its option, of any part or parts thereof which shall, within the specified warranty period, be returned to an authorized Ski-Doo dealer at such dealer's place of business with the original Bill of Sale and which examination shall disclose to the satisfaction of Bombardier to have been thus defective, BEING CLEARLY ESTABLISHED THAT THE PRESENT WARRANTY APPLIES ONLY TO SAID ACCESSORIES AND/OR REPLACEMENT PARTS WHICH HAVE BEEN SOLD AND INSTALLED, WHEN THE CASE MAY BE, BY AN AUTHORIZED SKI-DOO DEALER. The repair or replacement of defective parts under this warranty will be made by such dealer without charge for parts for the above-mentioned accessories and replacement parts, if made at such dealer's place of business.

THIS WARRANTY DOES NOT APPLY to any accessories and/or replacement part which:

a) have been subjected to any misuse, alteration, modification, or accident;
b) have been repaired with parts other than genuine Bombardier replacement parts, or;
c) have been repaired by any person other than authorized Ski-Doo dealer.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESSED OR IMPLIED WARRANTIES OF BOMBARDIER, ITS DISTRIBUTORS AND THE SELLING DEALER, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, NEITHER BOMBARDIER, ITS DISTRIBUTORS NOR THE SELLING DEALER SHALL BE RESPONSIBLE, UNDER ANY CIRCUMSTANCES, FOR ANY LOSS OR DAMAGE INCURRED AS A RESULT OF HIDDEN DEFECTS, ACCIDENTS, MISUSES OR OTHER FAULTS.

NEITHER THE DISTRIBUTOR, THE SELLING DEALER NOR ANY OTHER PERSON HAS BEEN AUTHORIZED TO MAKE ANY AFFIRMATION, REPRESENTATION, OR WARRANTY OTHER THAN THOSE CONTAINED IN THIS WARRANTY, AND, IF MADE, SUCH AFFIRMATION, REPRESENTATION OR WARRANTY SHALL NOT BE ENFORCEABLE AGAINST BOMBARDIER OR ANY OTHER PERSON.

BOMBARDIER LIMITED,
February 2nd, 1972.

- **Any part damaged through lack of lubrication unless it is proven to be attributable to a manufacturing defect.**

- **Blizzard models or any of the vehicles referred to in this text which may have been used for racing or professional competition.**

- **Any damages resulting from an accident unless such damages are proven to result from a manufacturing defect.**

- **Any losses incurred to the vehicle owner other than the parts and labour required to repair the warrantable defect.**

This warranty is expressly in lieu of all other expressed or implied warranties of Bombardier, its distributors and the selling dealer, including any implied warranty of merchantability or fitness for any particular purpose. Neither Bombardier, its distributors nor the selling dealer shall be responsible, under any circumstances, for any loss or damage as a result of hidden defects, accidents, misuses or other faults.

Neither the distributor, the selling dealer nor any other person has been authorized to make any affirmation, representation or warranty other than those contained in this warranty and if made, such affirmation, representation or warranty shall not be enforceable against Bombardier or any other person.

BOMBARDIER LIMITED
February 2nd, 1972.

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