SAFETY NOTICE

The Bombardier snowmobile Shop manual supplement has been prepared in order to assist skilled mechanic's in the efficient repair and maintenance of Bombardier snowmobiles.

Safety features may be impaired if other than genuine Bombardier parts are installed.

Torque wrench tightening specifications must be strictly adhered by. Locking devices must be installed or replaced by new ones, where specified. If the efficiency of a locking device is impaired, it must be renewed.

Never run engine in a closed area. Exhaust fumes contain poisonous carbon monoxide.

Always wear protective clothing (helmet, goggles, boots etc...) when riding vehicle, even for brief periods.

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

◆ WARNING: Identifies and instruction which, if not followed, could cause personal injury.

▼ 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.

Litho'd in Canada

(1981 SUPPLEMENT)

INTRODUCTION

NOTE: This supplement manual relates to new features and information applicable to 1981 models and therefore not covered in the 1980 Bombardier Snowmobile Shop Manual. Information that applies to both 1980 and 1981 models is contained in the 1980 Bombardier Shop Manual and not repeated in the 1981 Supplement. It is necessary that both the 1981 Shop Manual Supplement and the 1980 Bombardier Snowmobile Shop Manual be used for complete reference on servicing the 1981 models.

ARRANGEMENT OF THE MANUAL

The manual is divided into 9 major sections:

01 Tools
02 Technical Data
03 Engine
04 Electrical
05 Transmission
06 Suspension
07 Steering and skis
08 Frame and hood
09 Warranty

Each section is composed of various sub-sections, and yet again, although not indicated in the table of content, each sub-section has one or more divisions.

ILLUSTRATIONS & PROCEDURES

An exploded view is conveniently located at the beginning of each section and is meant to assist the user in identifying parts and components.

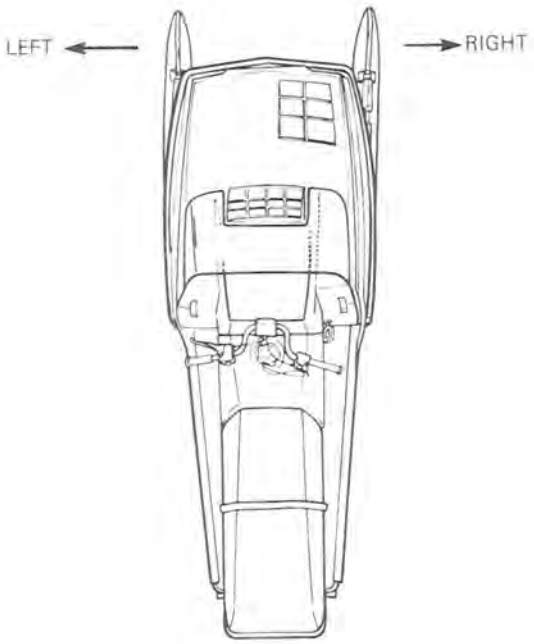
The illustrations show the typical construction of the different assemblies and, in all cases, may not reproduce the full detail or exact shape of the parts shown, however, they represent parts which have the same or a similar function.

When something special applies (such as adjustment,... etc.), the specific parts are circled and referred to in the text.

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 sub-section in which the procedure is contained.

A number of procedures throughout the book require the use of special tools. Where a special tool is indicated, refer to section 01. Before beginning 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).

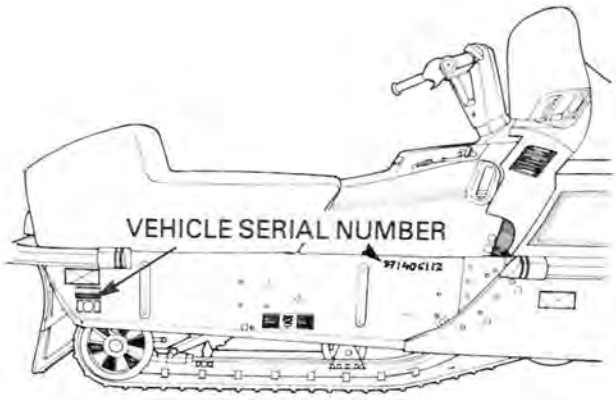


MODEL IDENTIFICATION

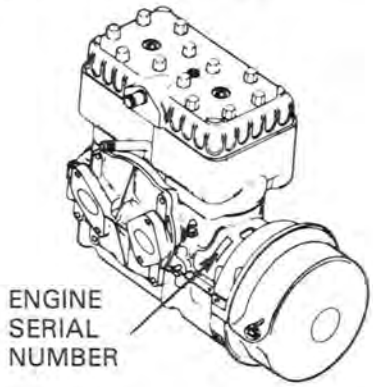
This shop manual covers the following Bombardier made 1981 snowmobiles:

Elan - Spirit
Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Nordik
Citation SS - Mirage Special
Everest 500/500E - Futura 500/500E
Everest L/C - Futura L/C
Blizzard 5500 - Grand Prix Special
Blizzard MX - Grand Prix MX
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Alpine 640
Elite

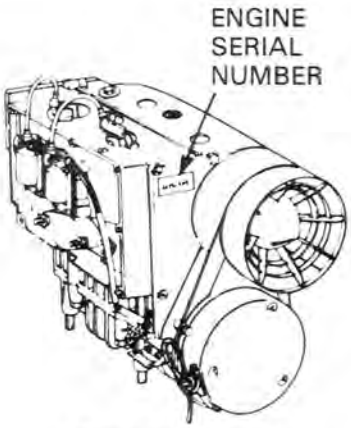
Furthermore, each vehicle has its particular vehicle serial number.



The engine also has a serial number.



Liquid cooled engines



Fan cooled engines

GENERAL

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

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

This manual is published by the

Technical Publications
Bombardier Limitée
Valcourt, Quebec, Canada

TABLE OF CONTENTS

TOOLS

For the following 1981 models:

Elan - Spirit
Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard MX - Grand Prix MX
Blizzard 5500 - Grand Prix Special
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite
Alpine 640 ER
Nordik

refer to the 1980 Bombardier Snowmobiles Shop Manual - section 01 (Tools)

For the following 1981 models:

Everest LC - Futura LC
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite

refer to this section for MAGNETO PULLER

For crankshaft fixation bolt, refer to this section.

For suspension "adjuster wrench" on Blizzard MX and Grand Prix MX, refer to this section.

– The NIPPONDENSO magneto on models:

Everest LC - Futura LC
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite

may be extracted using the following tool with four (4) Allen screw M6 x 25 (P/N 420 840 860).

Puller ring
(P/N 420 876 655)

– The crankshaft on models:

Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard MX - Grand Prix MX
Blizzard 5500 - Grand Prix Special
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite
Nordik

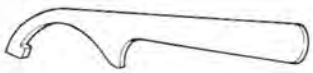
may be locked using the following tool:

Crankshaft locking tool
(P/N 420 876 640)

– The front and rear spring suspension on models:

Blizzard MX - Grand Prix MX

may be adjusted using the following tool:



Adjuster wrench
(P/N 529 003 800)

TECHNICAL DATA LIST

TOLERANCE AND WEAR LIMIT — 1981 ENGINES

ENGINE TYPE	CYLINDER BORE (NOMINAL) STD	CYLINDER BORE (NOMINAL) OVERSIZE	PISTON TO WALL CLEARANCE MIN. MAX.	MAXIMUM RING END CAP	CRANKSHAFT END PLAY MIN. MAX.
247	69.50 mm (2.7362")	N.A.	0.065-0.200 mm (.0026-.008")	0.20-1.0 mm (.008-.039")	0.20-0.40 mm (.008-.016")
277	72.00 mm (2.8346")	72.25 mm (2.8445")	0.070-0.200 mm (.003-.008")	0.20-1.0 mm (.008-.039")	0.20-0.40 mm (.008-.016")
354	59.50 mm (2.3425")	59.75 mm (2.3524")	0.080-0.180 mm (.0031-.007")	0.15-1.0 mm (.006-0.039")	N.A.
377	62.00 mm (2.4409")	62.25 mm (2.4508")	0.070-0.200 mm (.0028-.008")	0.20-1.0 mm (.008-0.039")	N.A.
454	67.50 mm (2.6575")	67.75 mm (2.6673")	0.10-0.20 mm (.004-.008")	0.20-1.0 mm (.008-.039")	N.A.
464	69.50 mm (2.7362")	69.75 mm (2.7461")	0.070-0.200 mm (.0028-.008")	0.20-1.0 mm (.008-.039")	N.A.
503	72.00 mm (2.8346")	72.25 mm (2.8445")	0.060-0.200 mm (.0024-.008")	0.20-1.0 mm (.008-.039")	N.A.
640	76.00 mm (2.9921")	76.50 mm (3.0118")	0.070-0.220 mm (.0028-.009")	0.25-0.40 mm (.010-0.16")	0.20-0.40 mm (.008-.016")

N.A.: not applicable

1981 IGNITION TIMING SPECIFICATIONS

ENGINE TYPE	IGNITION TYPE	DIRECT MEASUREMENT B.T.D.C. 	INDIRECT MEASUREMENT B.T.D.C. 	EDGE GAP 
247	Breaker point	3.98 mm ± 0.25 (.157" ± .010)	N.A.	5-8 mm (0.197-0.315")
277	Breaker point	N.A.	2.60 mm ± 0.25 (.102" ± .010)	8-12 mm (.315-.472")
354	CD	*2.52 mm ± 0.25 (0.099" ± 0.010)	N.A.	N.A.
377	Breaker point	2.07 mm ± 0.25 (.081" ± .010)	N.A.	8-12 mm (.315-.472")
454	CD	*2.52 mm ± 0.25 (0.099" ± .010)	N.A.	N.A.
464	CD	*2.52 mm ± 0.25 (0.099" ± .010)	N.A.	N.A.
503	Breaker point	2.07 mm ± 0.25 (.081" ± 0.10)	N.A.	8-12 mm (.315-.472")
640	Breaker point	N.A.	3.62 mm ± 0.25 (.143" ± .010)	5-8 mm (0.197-0.315")

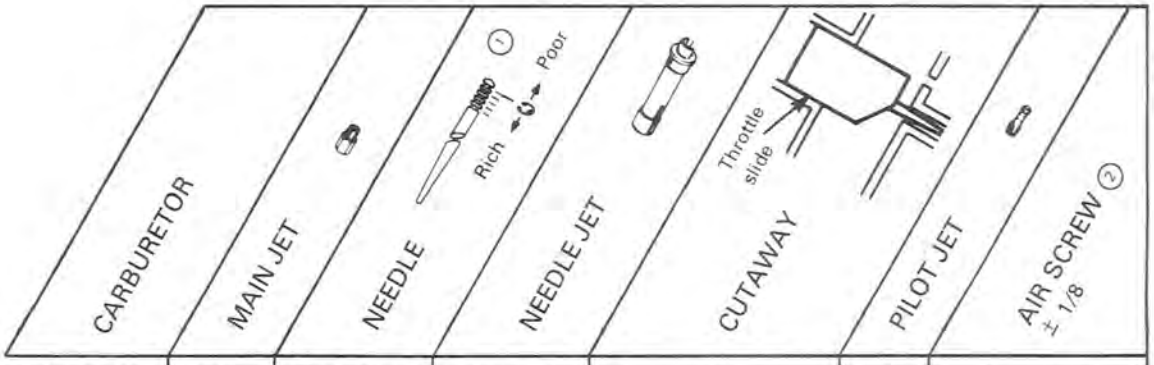
N.A.: not applicable
*: Stroboscopic timing at 6000 R.P.M. (engine cold).

CARBURETOR SPECIFICATIONS

MODEL	ENGINE TYPE	CARBURETOR TYPE Mikuni	LOW SPEED ADJ ± 1/8	IDLE SPEED R.P.M.
ELAN & SPIRIT	247	VM 28-242	1 1/2 turn	1100-1300
CITATION 3500 MIRAGE I	277	VM 34-255	1 1/2 turn	1100-1300
CITATION 4500/E MIRAGE II/E NORDIK	377	VM 34-256	1 1/2 turn	1800-2000
CITATION SS MIRAGE SPECIAL	377	2 x VM 34-257	1 1/2 turn	1800-2000
EVEREST 500/E FUTURA 500/E	503	VM 36-104	1 turn	1800-2000
EVEREST L/C FUTURA L/C	464	VM 34-227	1 1/2 turn	1800-2000
BLIZZARD 5500 GRAND PRIX SPECIAL	503	2 x VM 34-203	1 1/2 turn	1800-2000
BLIZZARD MX GRAND PRIX MX	503	2 x VM 34-203	1 1/2 turn	1800-2000
BLIZZARD 7500 SUPER SONIC	354	2 x VM 34-230	1 1/2 turn	1800-2000
BLIZZARD 9500 ULTRA SONIC	454	PTO: VM 36-88 MAG: VM 36-86	1 turn	1800-2000
ALPINE 640ER	640	VM 34-215	1 1/2 turn	1500-1800
ELITE	464	VM 34-258	1 turn	1800-2000

1981 MIKUNI CARBURETOR SPECIFICATIONS

CARBURETOR	MAIN JET	NEEDLE ①	NEEDLE JET	CUTAWAY	PILOT JET	AIR SCREW ② ± 1/8
VM 28-242	160	6DP1-3	182 O-8	2.0	30	1 1/2 turn
VM 34-257	160	6DH7-3	159 P-0	3.0	40	1 1/2 turn
VM 34-258	340	6EJ1-3	159 P-0	2.5	40	1 turn
VM 34-203	220	6DH2-3	159 P-4	3.0	35	1 1/2turn
VM 34-215	280	6F9-3	159 P-2	2.0	30	1 1/2 turn
VM 34-227	380	6EJ1-3	159 P-4	3.0	40	1 1/2 turn
VM 34-255	220	6DH4-3	159 P-2	3.0	30	1 1/2 turn
VM 34-256	260	6DH4-3	159 P-0	3.0	35	1 1/2 turn
VM 34-230	290	6DH4-3	159 P-4	3.5	40	1 1/2 turn
VM 36-104	310	6F9-3	159 P-8	3.0	40	1 turn
VM 36-86	330	6DH4-3	159 P-2	3.5	40	1 turn
VM 36-88	300	6DH4-3	159 P-2	3.5	40	1 turn



① Jet needle last digit indicates "E" clip position from top. EX.: 6DH2-3: 3rd slot from top.

② Turning clockwise will enrich the mixture and counterclockwise will lean it..

GENERATOR COIL, LIGHTING COIL, HIGH TENSION COIL RESISTANCE CHART

	ENGINE TYPE	GENERATOR COIL	LIGHTING COIL (large)	LIGHTING COIL (small)	HIGH TENSION COIL (PRIMARY)	HIGH TENSION COIL (SECONDARY)
BREAKER POINT IGNITION	247	3-3.7 ohms	0.38-0.58 ohm	1.85-2.35 ohms	1.65-2.05 ohms	4850-5850 ohms
	277		0.30-0.50 ohm	2.13-2.63 ohms		
	377	3.2-3.7 ohms				
	503					
	640					
ELECTRONIC IGNITION	354	L.S.: 125-235 ohms H.S.: 1.4-2.6 ohms	0.09-0.20 ohm	N.A.	0.23-0.43 ohm	2.45-4.55 K ohms
	454					
	464					

L.S.: "LOW SPEED" charging coil
H.S.: "HIGH SPEED" charging coil
N.A.: Not applicable
Components temperature must be around 20°C (68°F) when test is performed.

BOMBARDIER IGNITION TESTER DIAL POSITION FOR 1981 COMPONENTS

	ENGINE TYPE	GENERATOR COIL (charging)	LIGHTING COIL (large)	LIGHTING COIL (small)
BREAKER POINT IGNITION	247	HIGH 75	LOW 85*	LOW 85*
	277	HIGH 70		
	377	HIGH 80		
	503			
	640			
ELECTRONIC IGNITION	354	H.S.: LOW 80 L.S.: LOW 80	LOW 70	
	454			
	464			

*The two lighting coils (large one and small one) are connected in parallel and this parallel connection must be broken off for testing as each coil is to be checked individually.

H.S.: "HIGH SPEED" charging coil

L.S.: "LOW SPEED" charging coil

1981 BOSCH SPARK PLUG CHART

	ENGINE TYPE	SPARK PLUG NO.	SPARK PLUG GAP
ELAN & SPIRIT 250	247	M175 T1 (M7A)	0.50 mm (.020")
CITATION 3500, MIRAGE I CITATION 4500/E, MIRAGE II/E CITATION SS, MIRAGE SPECIAL NORDIK	277 377 377 377	W275 T2 (W3C)	0.40 mm (.016")
EVEREST 500/E, FUTURA 500/E FUTURA	503		0.40 mm (.016")
EVEREST L/C & FUTURA L/C	464		0.40 mm (.016")
BLIZZARD 5500/GP SPECIAL	503		0.40 mm (.016")
BLIZZARD MX/GRAND PRIX MX	503		0.40 mm (.016")
BLIZZARD 7500/SUPER SONIC	354	W300 T2 (W2C)	0.40 mm (.016")
BLIZZARD 9500/ULTRA SONIC	454		0.40 mm (.016")
ALPINE 640 ER	640	M240 T1 (M4A2)	0.50 mm (.020")
ELITE	464	W275 T2 (W3C)	0.40 mm (.016")

VEHICLE MODEL/DRIVE BELT NUMBER

	1981	WIDTH
ELAN & SPIRIT	570 0411 00	30 mm (1 3/16")
CITATION 3500 MIRAGE I CITATION 4500/E MIRAGE II/E CITATION SS MIRAGE SPECIAL	414 3945 00	
EVEREST 500/E FUTURA 500/E EVEREST L/C FUTURA L/C		
EVEREST FUTURA		
BLIZZARD 5500 GRAND PRIX SPECIAL		33 mm (1 5/16")
BLIZZARD MX GRAND PRIX MX		
BLIZZARD 7500 SUPER SONIC	414 3758 00	
BLIZZARD 9500 ULTRA SONIC		
ALPINE 640 ER		
ELITE		
NORDIK		

NOTE: For longer belt life, always reinstall the drive belt in the same direction of rotation.

1981 DRIVE PULLEY SPECIFICATIONS

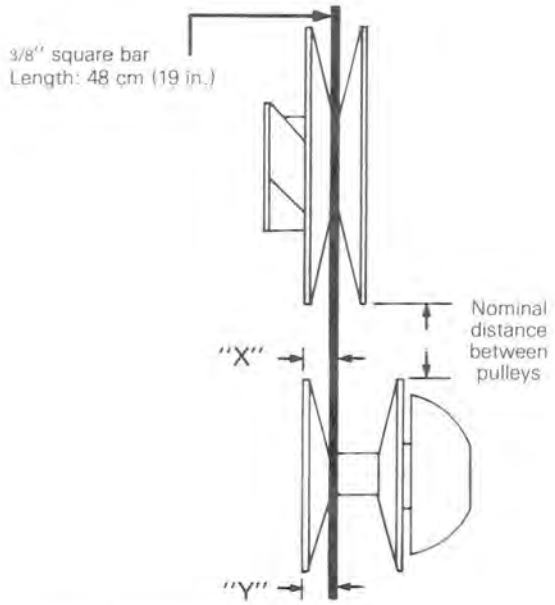
MODEL	TYPE	COUNTERWEIGHT IDENTIFICATION	ROLLER IDENTIFICATION mm (inch)	P/N SPRING COLOR LENGTH ± 1.5 mm (.060")	CLUTCH ENGAGEMENT R.P.M.	RETAINING BOLT TORQUE N•m (ft-lbs)
ELAN & SPIRIT	R.R.S.	E-4	Nylon 31.75 (1 1/4)	414 2580 Bronze 81.2 (3.20)	2000-2200	61 (45)
CITATION 3500 & MIRAGE I	R.R.S.	B-2-K-S	Fiber 31.75 (1 1/4)	414 4422 Black 104.7 (4.12)	3300-3600	85 (63)
CITATION 4500/E & MIRAGE II/E	R.R.S.	C-7-L-X	Fiber 31.75 (1 1/4)	414 4423 Yellow 88.9 (3.5)	3200-3500	85 (63)
CITATION SS & MIRAGE SPECIAL	R.S.S.	A-3-S-H	Fiber 29.4 (1.15)	414 1995 Yellow 110.4 (4.35)	3900-4200	85 (63)
EVEREST 500/E & FUTURA 500/E	R.S.S.	C-6-L-H	Fiber 29.4 (1.15)	414 2328 Gold 74.4 (2.93)	2900-3200	85 (63)
EVEREST LC & FUTURA LC	R.S.S.	C-7-L-H	Fiber 29.4 (1.15)	414 1967 Light blue 119.1 (4.69)	3400-3700	85 (63)
BLIZZARD MX BLIZZARD 5500 GRAND PRIX SPECIAL GRAND PRIX MX	R.S.S.	C-7-L-H	Fiber 29.4 (1.15)	414 1967 Light blue 119.1 (4.69)	3200-3500	85 (63)
BLIZZARD 7500 & SUPER SONIC	R.S.S.R.	A-3-S	Alu 15.75 (.62)	414 4471 White 76.9 (3.03)	4400-4700	85 (63)
BLIZZARD 9500 & ULTRA SONIC	R.S.S.R.	A-3-S	Alu 15.75 (.62)	414 4471 White 76.9 (3.03)	4400-4700	85 (63)
ELITE	R.S.S.	C-8	Fiber 29.4 (1.15)	414 1967 Light blue 119.1 (4.69)	3400-3700	85 (63)
ALPINE 640 ER	R.S.S.B.	C-8 double	Fiber 34.04 (1.34)	414 1966 Pink 122.2 (4.81)	2250-2400	118 (87)
NORDIK	R.R.S.	B-3-K-S-H	Fiber 31.75 (1 1/4)	414 4065 Orange 96.5 (3.80)	3200-3500	85 (63)

R.S.S.: Roller square shaft
R.R.S.: Roller round shaft
R.S.S.B.: Roller square shaft with bearing
R.S.S.R.: Roller square shaft 3 ramps

DRIVEN PULLEY SPRING TENSION

	kg ± 1 (lbs ± 2)
ELAN, SPIRIT	3.6 (8)
CITATION 3500, MIRAGE I CITATION 4500/E, MIRAGE II/E	3.6 (8)
CITATION SS, MIRAGE SPECIAL	5.9 (13)
EVEREST 500/E, FUTURA 500/E EVEREST LC, FUTURA LC	5.9 (13)
BLIZZARD 5500, GRAND PRIX SPECIAL BLIZZARD MX & GRAND PRIX MX	5.9 (13)
BLIZZARD 7500, SUPER SONIC	5.9 (13)
BLIZZARD 9500, ULTRA SONIC	5.9 (13)
ELITE	5.9 (13)
ALPINE 640 ER	5.9 (13)
NORDIK	5.4 (12)

1981 PULLEY ALIGNMENT



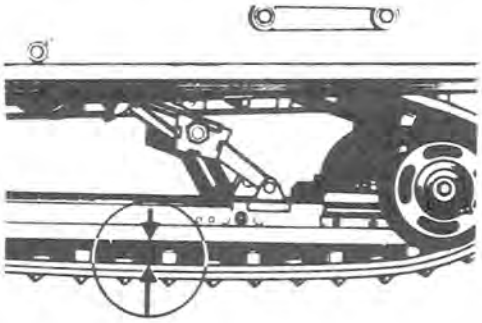
- Dimension "X" must never exceed dimension "Y".
- Dimension "Y" can exceed dimension "X" by 1.6 mm (1/16").

	DIMENSIONS X and Y (offset)	NOMINAL DISTANCE (between pulleys)
ELAN, SPIRIT	34 mm (1 11/32")	44 mm (1 3/4")
CITATION 3500, MIRAGE I CITATION 4500/E, MIRAGE II/E CITATION SS, MIRAGE SPECIAL NORDIK	34 mm (1 11/32")	fixed
EVEREST 500/E, FUTURA 500/E EVEREST LC, FUTURA LC	33 mm (1 5/16")	35 mm (1 3/8")
BLIZZARD 5500, GRAND PRIX SPECIAL	33 mm (1 5/16")	35 mm (1 3/8")
BLIZZARD MX, GRAND PRIX MX	33 mm (1 5/16")	35 mm (1 3/8")
BLIZZARD 7500, SUPER SONIC	33 mm (1 5/16")	35 mm (1 3/8")
BLIZZARD 9500, ULTRA SONIC	33 mm (1 5/16")	35 mm (1 3/8")
ALPINE	34 mm (1 11/32")	44 mm (1 3/4")
ELITE	34 mm (1 11/32")	42 mm (1 5/8")

1981 SPROCKET AND CHAIN SPECIFICATIONS

	SPROCKET UPPER/LOWER	CHAIN PITCH AND NUMBER OF LINKS
ELAN and SPIRIT 250	10/25	1/2" single, 62
CITATION 3500, MIRAGE I CITATION 4500/E, MIRAGE II/E	15/34 16/33	3/8" double 86 3/8" double 86
CITATION SS, MIRAGE SPECIAL	18/34	3/8" double 88
EVEREST 500/E, FUTURA 500/E	19/40	3/8" triple 68
EVEREST LC, FUTURA LC	17/34	3/8" triple 64
BLIZZARD 5500, GRAND PRIX SPECIAL	21/38	3/8" triple 68
BLIZZARD MX, GRAND PRIX MX	21/38	3/8" triple 68
BLIZZARD 7500, SUPER SONIC	17/38	3/8" triple 66
BLIZZARD 9500, ULTRA SONIC	19/40	3/8" triple 68
ALPINE 640 ER	17/38	3/8" triple 90
ELITE	17/34	3/8" triple 186
NORDIK	14/35	3/8" double 86

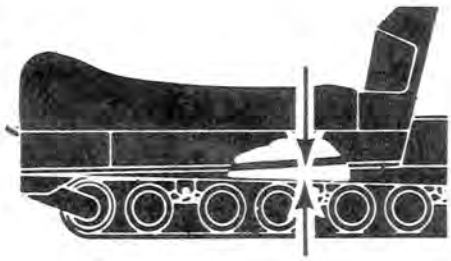
TRACK TENSION SPECIFICATIONS (SLIDE SUSPENSION)



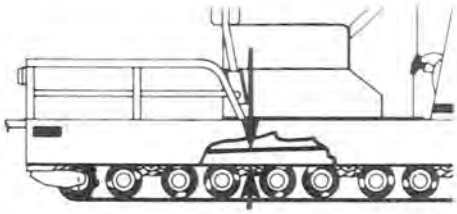
	1981
CITATION 3500, CITATION 4500/E MIRAGE I, MIRAGE II/E CITATION SS, MIRAGE SPECIAL NORDIK	13 mm (1/2")
EVEREST 500/E, EVEREST LC FUTURA 500/E, FUTURA LC	13 mm (1/2")
BLIZZARD 5500 GRAND PRIX SPECIAL	13 mm (1/2")
BLIZZARD MX GRAND PRIX MX	13 mm (1/2")
BLIZZARD 7500 SUPER SONIC	13 mm (1/2")
BLIZZARD 9500 ULTRA SONIC	13 mm (1/2")
ELITE	13 mm (1/2")

NOTE: For Blizzard MX & Grand Prix MX, 13 mm (1/2") gap should exist between slider shoe and bottom inside of track when pulling down on track with a force of 3 kg (6.5 lbs).

TRACK TENSION SPECIFICATIONS (BOGIE WHEEL SUSPENSION)



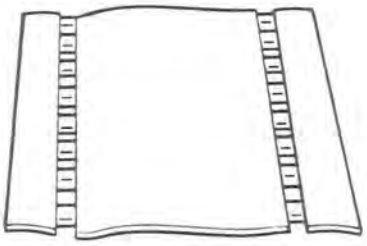
	1981
*ELAN and SPIRIT 250	35 mm (1 3/8")
*ALPINE 640 ER	57 mm (2 1/4")



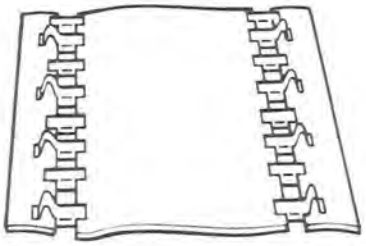
*Between top inside edge of track and center of second bogie wheel set retaining bolt (from rear).

1981 TRACK SPECIFICATIONS

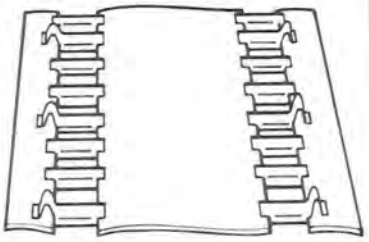
CLEAT AND GUIDE ARRANGEMENT



TYPE 1: Narrow insert.



TYPE 2: Narrow insert with shoulder



TYPE 3: Wide guide (large track hole)

MODEL	TYPE	TRACK PART NUMBER	WIDTH	LENGTH (interior)
ELAN	1	570 0096 00	38.1 cm (15")	289.6 cm (114")
SPIRIT	1	570 0085 00	38.1 cm (15")	289.6 cm (114")
CITATION 3500	2	570 0089 00	38.1 cm (15")	269.2 cm (106")
MIRAGE I	2	570 0090 00	38.1 cm (15")	269.2 cm (106")
CITATION 4500/E	2	570 0069 00	38.1 cm (15")	289.6 cm (114")
MIRAGE II/E	2	570 0068 00	38.1 cm (15")	289.6 cm (114")
CITATION SS	2	570 0091 00	38.1 cm (15")	269.2 cm (106")
MIRAGE SPECIAL	2	570 0092 00	38.1 cm (15")	269.2 cm (106")
EVEREST 500/E, EVEREST LC	3	570 0045 00	41.9 cm (16 1/2")	314.9 cm (124")
FUTURA 500/E, FUTURA LC	3	570 0060 00	41.9 cm (16 1/2")	314.9 cm (124")
BLIZZARD 5500, BLIZZARD MX	2	570 0094 00	38.1 cm (15")	289.6 cm (114")
GRAND PRIX SPECIAL, GRAND PRIX MX	2	570 0095 00	38.1 cm (15")	289.6 cm (114")
BLIZZARD 7500, BLIZZARD 9500	2	570 0094 00	38.1 cm (15")	289.6 cm (114")
SUPER SONIC, ULTRA SONIC	2	570 0095 00	38.1 cm (15")	289.6 cm (114")
NORDIK	2	570 2004 00	38.1 cm (15")	314.9 cm (124")
ALPINE 640 ER	1	570 0014 00	38.1 cm (15")	353 cm (139")
ELITE	3	570 0056 00	38.1 cm (15")	304.8 cm (120")

1981 STEERING SYSTEM TORQUE SPECIFICATIONS

	HANDLEBAR RETAINING BOLT(S) N•m (ft-lbs)	STEERING ARM TO SKI LEG N•m (ft-lbs)	TIE ROD END TO STEERING ARM N•m (ft-lbs)
ELAN, SPIRIT		27 (20)	25 (18)
CITATION 3500, MIRAGE I CITATION 4500/E, MIRAGE II/E CITATION SS, MIRAGE SPECIAL	26 (19)	42 (31)	25 (18)
EVEREST 500/E, FUTURA 500/E EVEREST LC, FUTURA LC	26 (19)	42 (31)	25 (18)
BLIZZARD 5500 GRAND PRIX SPECIAL	26 (19)	42 (31)	25 (18)
BLIZZARD MX GRAND PRIX MX	26 (19)	42 (31)	25 (18)
BLIZZARD 7500 SUPER SONIC	26 (19)	42 (31)	25 (18)
BLIZZARD 9500 ULTRA SONIC	26 (19)	42 (31)	25 (18)
ALPINE	42 (31)	42 (31)	*61 (45)
ELITE	42 (31)	42 (31)	25 (18)
NORDIK	26 (19)	42 (31)	25 (18)

*Ball bushing nut torque value.

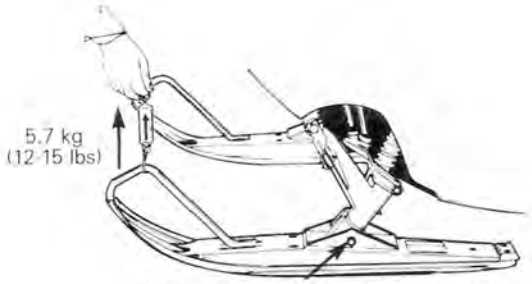
1981 SKI SYSTEM TORQUE SPECIFICATIONS

MODEL	SPRING LEAF/ LEAF COUPLER RETAINING BOLT N•m (ft-lbs)	RUNNER SHOE NUT N•m (ft-lbs)	*LEAF COUPLER TO SKI LEG N•m (ft-lbs)
ELAN & SPIRIT	50 (37)	7 (5)	61 (45)
CITATION 3500 & MIRAGE I CITATION 4500/E & MIRAGE II/E CITATION SS & MIRAGE SPECIAL NORDIK	54 (40)	22 (16)	61 (45)
EVEREST 500/E EVEREST LC		22 (16)	61 (45)
BLIZZARD 5500 & GRAND PRIX SPECIAL BLIZZARD 7500 & SUPER SONIC BLIZZARD 9500 & ULTRA SONIC		22 (16)	61 (45)
BLIZZARD MX & GRAND PRIX MX		22 (16)	①
ALPINE 640 ER	27 (20)	22 (16)	61 (45)
ELITE	27 (20)	22 (16)	

①BLIZZARD MX & GRAND PRIX MX:

Install the ski leg/coupler bolt and torque to obtain 5-7 kg (12-15 lbs) on the lift tube at the front of the ski.

NOTE: You must pull on the ski at an angle of 90° with the ski surface. (Front of vehicle "Off" the ground.)



Torque to have 5-7 kg (12-15 pounds) at the front of the ski with a scale

Torque the elastic stop nut on the ski leg coupler to 56-57 N•m (42-50 ft-lbs).

*Torque bolt, move ski by hand to check that it pivots easily on ski leg. Then tighten locking nut to specified torque.

GENERAL INFORMATION

INFORMATION \ MODEL	ELAN & SPIRIT	CITATION 3500 & MIRAGE I	CITATION 4500/E & MIRAGE II/E	CITATION SS & MIRAGE SPECIAL	NORDIK	BLIZZARD 5500 & GRAND PRIX SPECIAL	BLIZZARD MX & GRAND PRIX MX	BLIZZARD 7500 & SUPER SONIC	BLIZZARD 9500 & ULTRA SONIC	EVEREST 500/E & FUTURA 500/E	EVEREST LC & FUTURA LC	ALPINE 640 ER	ELITE
CHASSIS													
Overall length	225 cm (88 1/2")	249 cm (98")	263 cm (103 1/2")	249 cm (98")	274 cm (108")	265 cm (104")	265 cm (104")	265 cm (104")	265 cm (104")	276.8 cm (109")	276.8 cm (109")	288.3 cm (113 1/2")	271.8 cm (107")
Overall width	77.5 cm (30 1/2")	92.7 cm (36 1/2")	92.7 cm (36 1/2")	92.7 cm (36 1/2")	90.5 cm (35 5/8")	99 cm (39")	99 cm (39")	99 cm (39")	99 cm (39")	99 cm (39")	99 cm (39")	88.9 cm (35")	113 cm (44 1/2")
Overall height	106.7 cm (42")	100.3 cm (39 1/2")	100.3 cm (39 1/2")	100.3 cm (39 1/2")	130.8 cm (51 1/2")	101.6 cm (40")	108.9 cm (42 7/8")	101.6 cm (40")	101.6 cm (40")	106.7 cm (42")	106.7 cm (42")	124.5 cm (49")	139.7 cm (55")
Ski stance	64.8 cm (25 1/2")	82 cm (32 1/4")	82 cm (32 1/4")	82 cm (32 1/4")	76.2 cm (30")	85 cm (33 1/2")	86 cm (33 7/8")	85 cm (33 1/2")	85 cm (33 1/2")	85 cm (33 1/2")	85 cm (33 1/2")	N.A.	87.6 cm (34 1/2")
**Ski alignment	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	N.A.	3 mm (1/8")
Mass (weight)	129 kg (285 lbs)	158.2 kg (348 lbs)	168.1 kg (370 lbs)	164.5 kg (362 lbs)	178.7 kg (394 lbs)	209 kg (460 lbs)	218.6 kg (482 lb)	219.5 kg (484 lb)	219.5 kg (484 lb)	208.2 kg (459 lb)	229 kg (506 lb)	288.5 kg (636 lb)	365.2 kg (805 lb)
Ground pressure kPa (lb-in^2)	1.811 (.263)	2.62 (.381)	2.82 (.409)	2.85 (.414)	2.55 (.370)	2.65 (.384)	2.78 (.403)	2.79 (.405)	2.79 (.405)	2.34 (.340)	2.58 (.374)	2.03 (.294)	2.57 (.373)
BRAKE													
Brake type	①	②	②	②	②	②	②	②	②	②	②	②	②
Brake adjustment	A	B	B	B	B	C	C	C	C	C	C	C	C
Lining wear limit	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")	3 mm (1/8")
LIQUID CAPACITIES													
Rotary valve oil reservoir oz	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	20	20	N.A.	20	N.A.	20
Rotary valve oil reservoir ml								568	568		568		568
Injection oil reservoir oz	N.A.	90	90	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	80	80	N.A.	80
Injection oil reservoir L		2.55	2.55							2.27	2.27		2.27
Chaincase or gearbox	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	200 ml (7 oz)	455 ml (16 oz)	625 ml (22 oz)
Cooling system oz. IMP	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	148	148	N.A.	160	N.A.	220
Cooling system oz. U.S.								141.5	141.5		153		211
Cooling system L								4.20	4.20		4.54		6.25
Fuel tank gal. IMP	3	6.25	6.25	6.25	6.25	5.6	5.6	5.6	5.6	6.5	6.5	5	6.75
Fuel tank gal. U.S.	3.6	7.5	7.5	7.5	7.5	6.8	6.8	6.8	6.8	7.8	7.8	6	8.1
Fuel tank L	13.6	28.4	28.4	28.4	28.4	25.6	25.6	25.6	25.6	29.5	29.5	22.7	30.7

BRAKE TYPE: ① Drum brake
② Disk brake

BRAKE ADJUSTMENT:
A: Manual
B: 13 mm (1/2") minimum distance from handlebar grip when fully applied.
C: Self-adjusting

N.A.: Not applicable

*: For "electric" version, add 10.4 kg (22 lbs) to the specified "mass weight".

**: Ski alignment: "Toe-out"

SI* METRIC INFORMATION CHART

BASE UNITS		
DESCRIPTION	UNIT	SYMBOL
length	meter	m
mass	kilogram	kg
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 of a	0.01
milli	m	one thousandth of a	0.001

*THE INTERNATIONAL SYSTEM OF UNITS (SYSTEME INTERNATIONAL) ABREVIATES "SI" IN ALL LANGUAGES.

ENGINE TOLERANCE MEASUREMENTS

For service procedure of engine tolerance measurements, on all 1981 models, refer to the 1980 Bombardier Snowmobiles Shop Manual, section 03-01 (Engine Tolerance Measurements).

For specifications applicable to the 1981 models, refer to section 02 - sub-section 03-01 (Technical Data List) of this manual.

247 ENGINE TYPE

For all service information on the 1981 - 247 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (247 Engine type).

277 ENGINE TYPE

For service information on the 1981 - 277 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (277 engine type).

For service procedure on the following item:

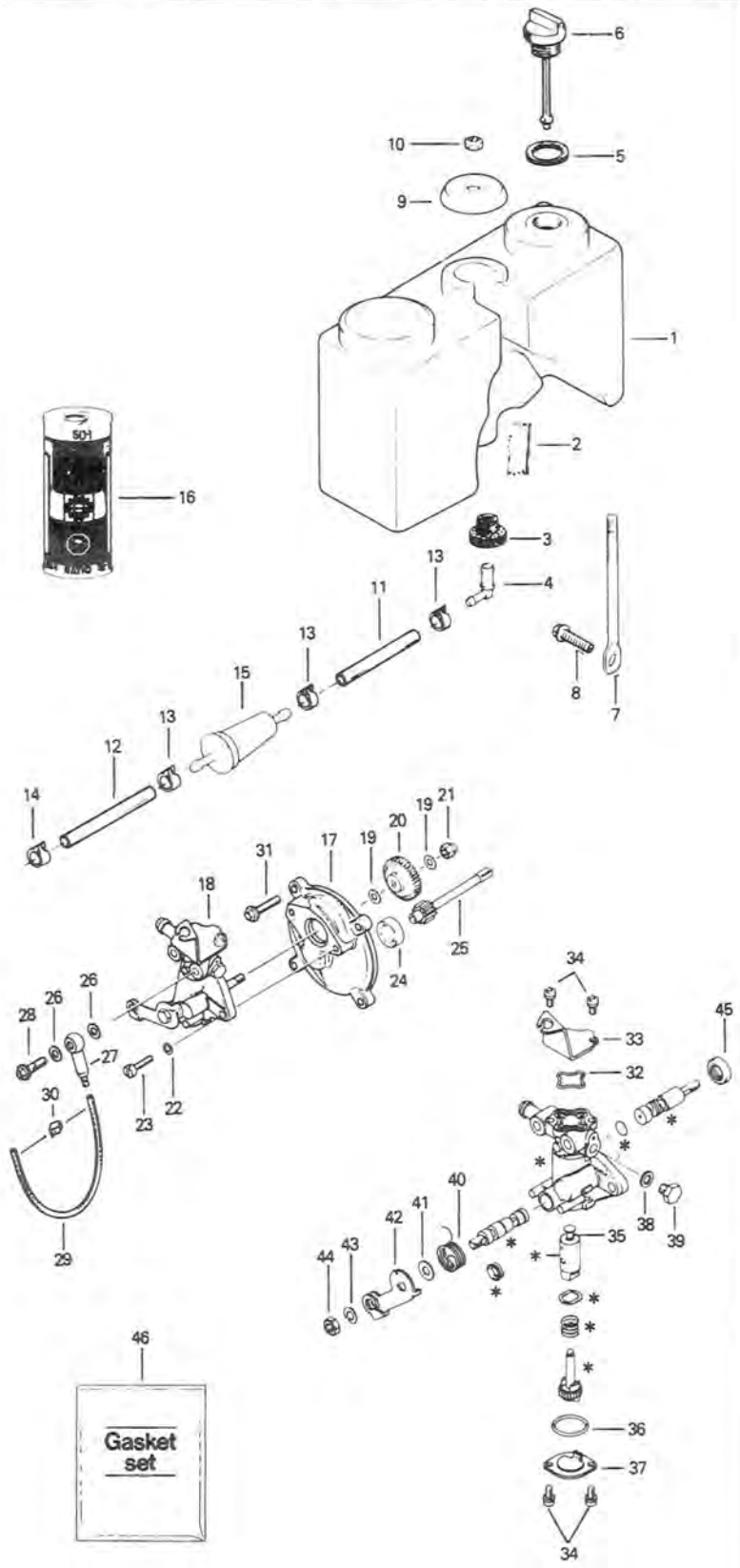
Oil injection pump

refer to this section.

OIL INJECTION PUMP

1. *Injection oil tank*
2. *Sealer*
3. *Grommet*
4. *Male connector*
5. *Gasket*
6. *Oil tank cap*
7. *Retainer rod*
8. *Hexagonal washer head taptite screw*
9. *Retaining washer*
10. *Hexagonal elastic stop nut*
11. *Oil line 1.5" (38 mm)*
12. *Oil line 5" (127 mm)*
13. *Spring clip*
14. *Spring clip*
15. *Filter*
16. *Oil*
17. *Oil pump mounting flange*
18. *Oil pump*
19. *Washer*
20. *Oil pump gear 27 Teeth*
21. *Lock nut*
22. *Lockwasher*
23. *Cylindrical Slotted Screw*
24. *Ball bearing*
25. *Gear 9 teeth*
26. *Oil banjo gasket*
27. *Banjo*
28. *Banjo bolt*
29. *Oil line 380 mm (15")*
30. *Clamp*
31. *Taptite screw*
32. *O-ring*
33. *Plate*
34. *Screw with lockwasher*
35. *Retainer*
36. *O-ring*
37. *Cam casing plate*
38. *Washer*
39. *Hexagonal head cap screw*
40. *Spring*
41. *Washer*
42. *Lever*
43. *Lockwasher 6*
44. *Hexagonal nut 6 mm*
45. *Seal*
46. *Gasket set*

* Not available



OIL INJECTION PUMP

CLEANING

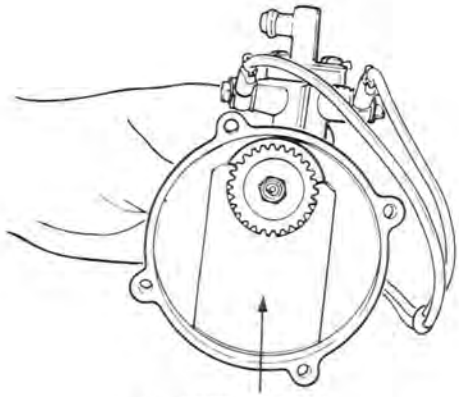
Clean all metal components in a non-ferrous metal cleaner.

DISASSEMBLY AND ASSEMBLY

NOTE: Some oil pump components are not available.

⑭⑳ At assembly, always check for clamp tightness.

⑳㉑ To remove retaining nut, lock gear in place using no. 420 876 690 tool.



No. 420 876 690 tool

At assembly, apply a light coat of grease on gear teeth.

⑰㉔ To remove bearing, heat ⑰ mounting flange to approximately 175°-200°C (350°-400°F) using a propane torch.

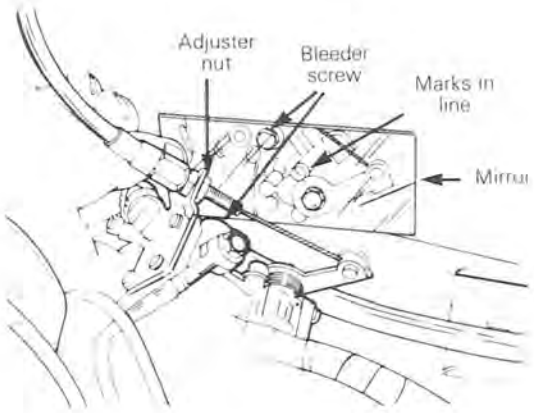
Then strike cover on hard flat surface and bearing will fall out.

WARNING: Always wear protective gloves, to avoid burns while manipulating cover.

To install bearing, use a press to push bearing in.

OIL INJECTION PUMP ADJUSTMENT

A) Prior to adjusting the pump, make sure all carburetor adjustments are completed.
Eliminate the throttle cable free play by pressing the throttle lever until a light resistance is felt, then hold in place. The aligning marks on the pump casting and on the lever must align. If not, loosen the adjuster nut and adjust accordingly.
Retighten the adjuster nut.



B) All oil lines should be full of oil. If required, bleed the main oil line (between tank and pump) by loosening the bleeder screw until all air has escaped from the line.

Make sure the tank is sufficiently filled.

Check the small oil lines (between pump and intake manifold). If required, fill the lines by running the engine at idle speed while holding the pump lever in fully open position.

354-454 ENGINE TYPES

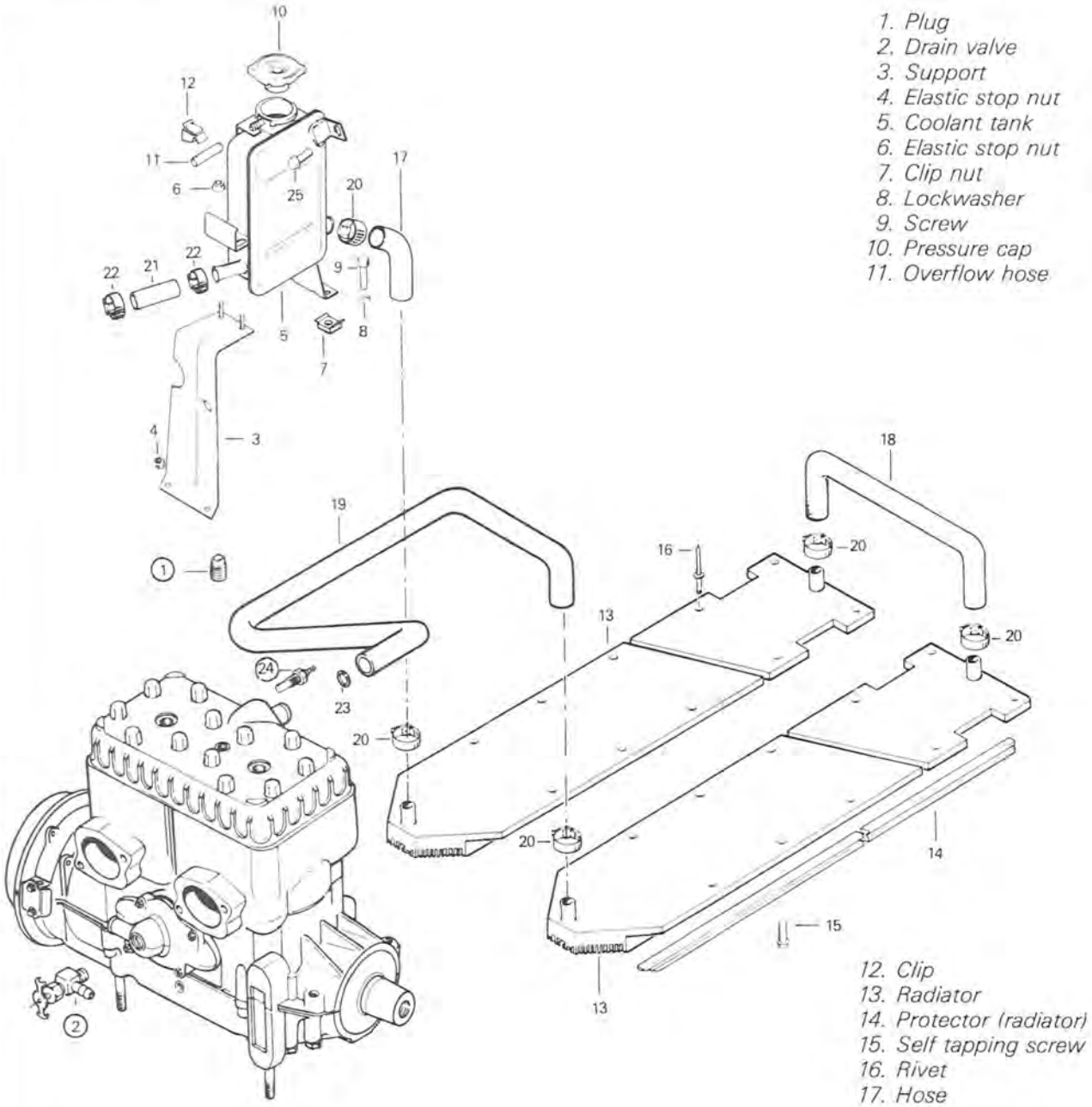
For service information on the 1981 - 354 and 454 engine types, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (354-454 engine types).

For service procedure on the following items

Cooling system
Magneto

refer to this section.

COOLING SYSTEM



1. *Plug*
2. *Drain valve*
3. *Support*
4. *Elastic stop nut*
5. *Coolant tank*
6. *Elastic stop nut*
7. *Clip nut*
8. *Lockwasher*
9. *Screw*
10. *Pressure cap*
11. *Overflow hose*
12. *Clip*
13. *Radiator*
14. *Protector (radiator)*
15. *Self tapping screw*
16. *Rivet*
17. *Hose*
18. *Hose*
19. *Outlet hose*
20. *Gear clamp*
21. *Hose*
22. *Gear clamp*
23. *Grommet*
24. *Sensor*
25. *Self tapping screw*

INSPECTION

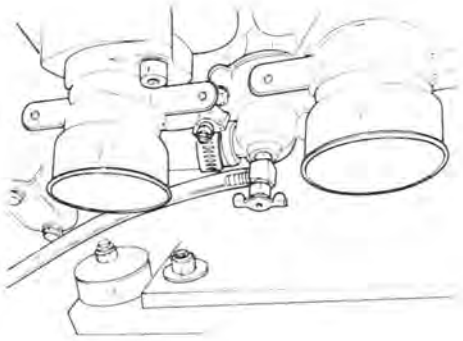
Check general condition of hoses and clamp tightness.

DRAINING SYSTEM

To drain the cooling system, remove the coolant tank cap.

◆ WARNING: Never drain or refill the cooling system when engine is hot.

Connect a drain hose to the drain valve at pump housing. Open valve and drain system.



○ NOTE: Open end of drain hose should be lower than engine base.

However, to completely drain the system, blow into the tank through the vent tube while blocking the tank filler neck with one hand to prevent air leakage.

DISASSEMBLY & ASSEMBLY

①② ㉔ Apply pipe thread sealant to avoid leaks.

⑩ See if the cap pressurizes the system. If not, install a new 13 lbs cap, do not exceed 13 lbs of pressure.

REFILLING THE SYSTEM

Capacity:

Approximately 5 liters
(1.1 Imp. gal.) (1.3 U.S. gal.)
55% antifreeze + 45% water

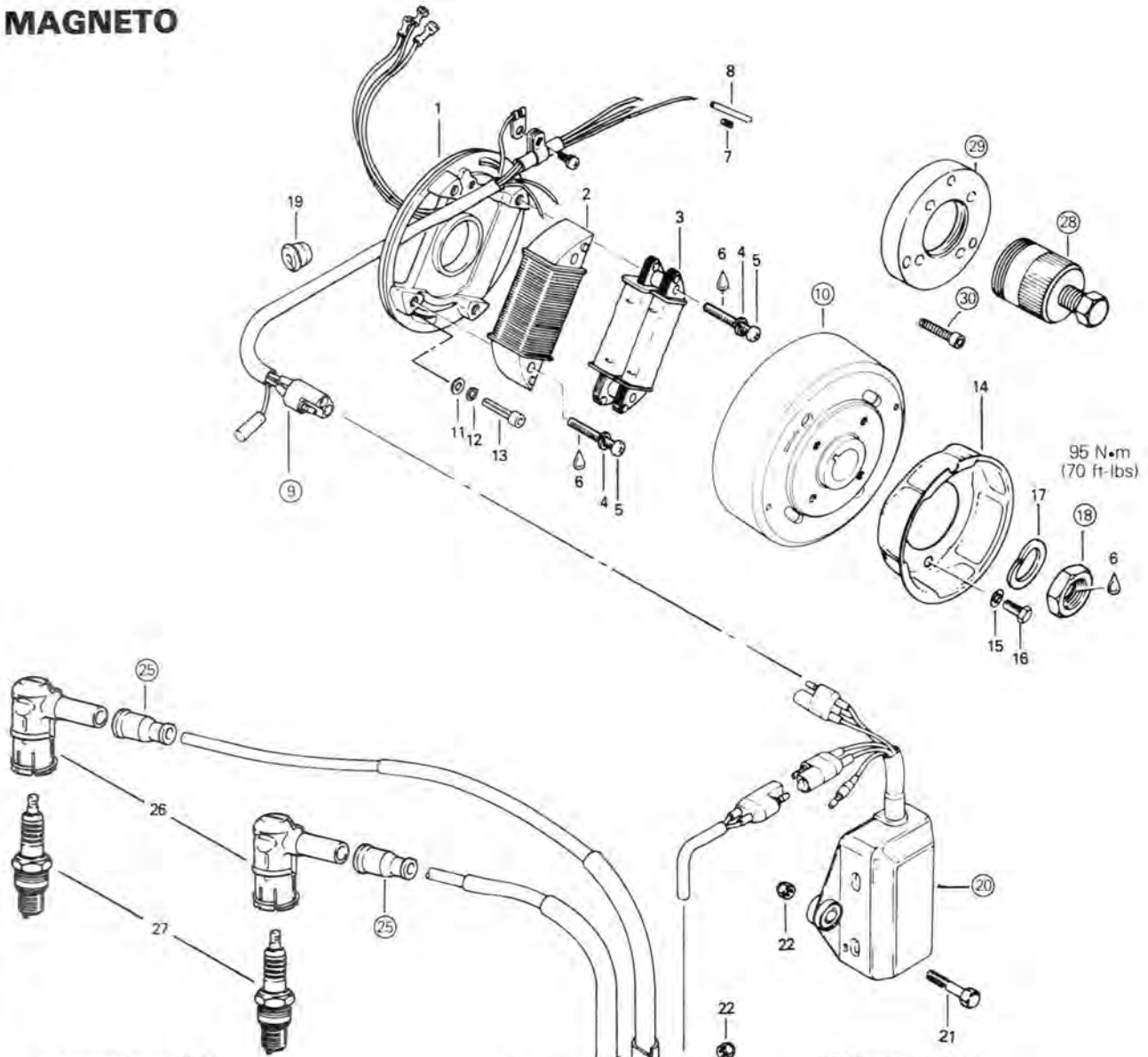
To refill the cooling system, unscrew plug on top of cylinder head.

Refill tank until the liquid comes out at the plug hole on the cylinder head.

○ NOTE: It is necessary to refill tank as soon as it becomes empty.

Screw plug on cylinder head and continue to pour the liquid in the coolant tank until the coolant level reaches 25 mm (1") below filler neck.

MAGNETO



1. Armature plate
2. Lighting coil
3. Generator coil assembly
4. Lockwasher
5. Screw
6. Loctite 242
7. Splice connector
8. Protector tube
9. Harness
10. Flywheel
11. Washer
12. Lockwasher
13. Allen screw
14. Starting pulley
15. Lockwasher
16. Screw
17. Lockwasher
18. Hexagonal nut
19. Cable grommet
20. C.D. box
21. Screw
22. Elastic stop nut
23. Ignition coil
24. Screw
25. Protection coil
26. Spark plug connector
27. Spark plug W300 T2 (W2C)
28. Puller P/N 420 876 065
29. Puller ring P/N 420 876 655
30. Allen screw M6 x 25
    P/N 420 840 860 - Quantity 4

CLEANING

Clean all components in a non-ferrous metal cleaner.

CAUTION: Clean armature and magneto using a clean cloth only.

DISASSEMBLY & ASSEMBLY

Before disassembling magneto, indexing marks should be made to facilitate reassembly.

⑩ ㉘ ㉙ ㉚ To remove flywheel, use puller. Tighten puller bolt while tapping on bolt head to release magneto from taper shaft.

⑩ At assembly, always clean crankshaft extension (taper) and flywheel taper then apply Loctite 242.

⑨ ⑳ ㉕ At reassembly coat all electric connections with dielectric or lithium grease to prevent corrosion or moisture from penetrating.

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

⑱ Clean threads, apply Loctite 242 and torque to 95 N•m (70 ft-lbs).

377 ENGINE TYPE

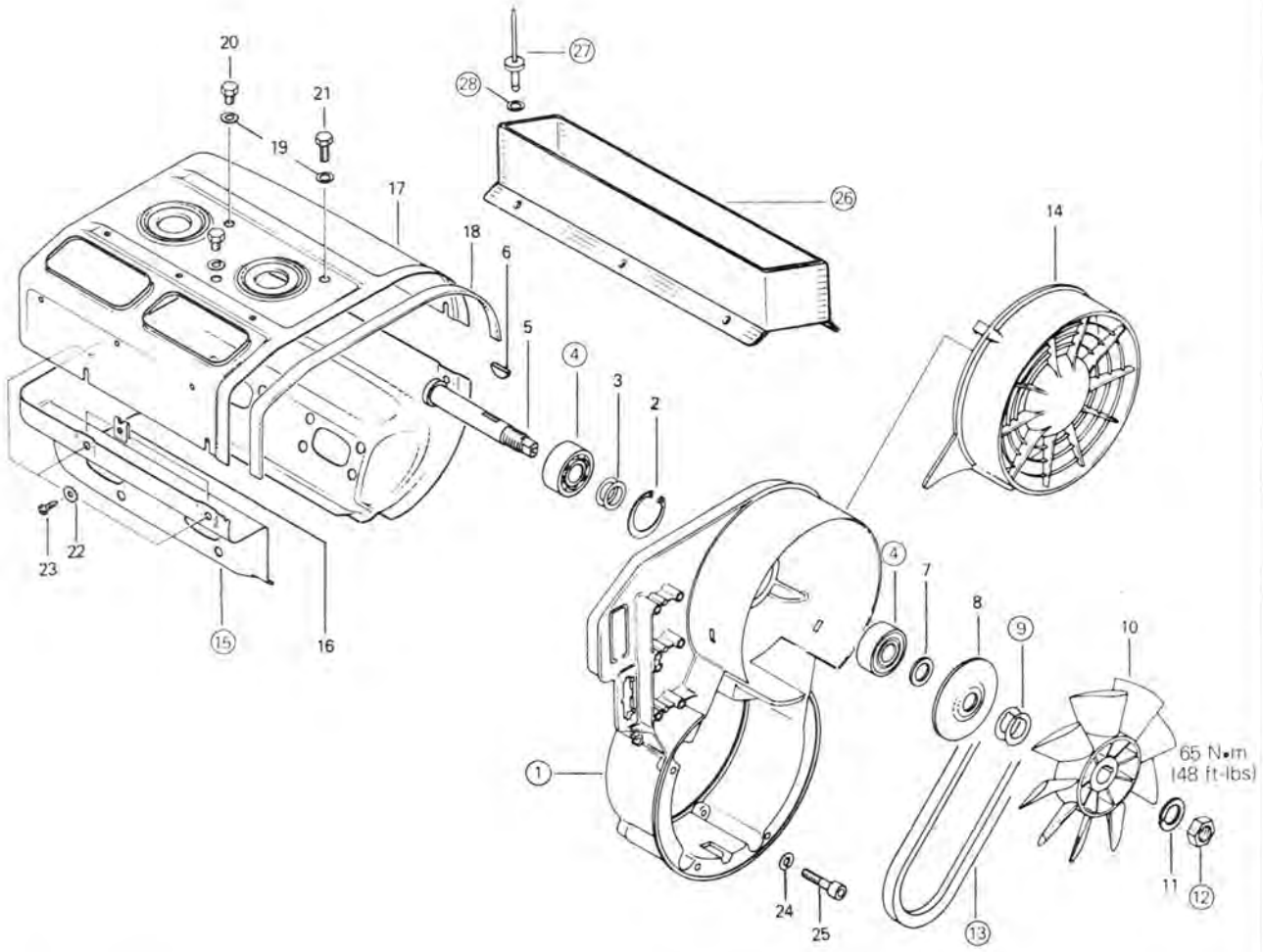
For service information on the 1981 - 377 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (377 engine type).

For service procedure on the following item

Cooling system

refer to this section.

COOLING SYSTEM



1. Fan housing
2. Circlip
3. Shim 1.0 mm
4. Ball bearing
5. Fan shaft
6. Woodruff key
7. Distance sleeve
8. Pulley half
9. Shim
10. Fan
11. Lockwasher
12. Hexagonal nut
13. Fan belt
14. Fan cover
15. Cylinder cowl
16. Speed nut
17. Cylinder head cowl
18. Cowl sealing strip
19. Lockwasher 8 mm
20. Hexagonal screw
21. Hexagonal screw
22. Washer
23. Screw
24. Lockwasher
25. Allen screw
26. Air duct
27. Rivet (closed end)
28. Washer

CLEANING

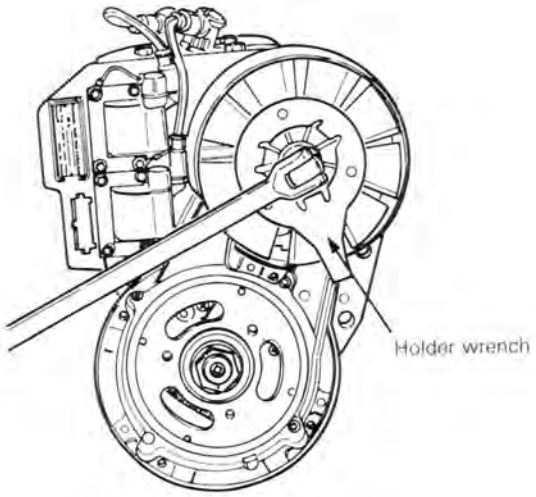
Clean all metal components in a non-ferrous metal cleaner.

DISASSEMBLY AND ASSEMBLY

①④It is first necessary to heat bearing housing to 65°C (150°F) to remove or install bearing.

⑨⑬Fan belt free-play must be 6 mm (1/4"). To adjust, install or remove shim(s) between pulley halves. Install excess shim(s) between fan and lockwasher.

⑫To remove or install fan pulley retaining nut, lock fan pulley with special holder wrench P/N 420 876 357. At assembly, torque nut to 65 N•m (48 ft-lbs).



⑮A gasket must be placed on both sides (inner and outer) of intake and exhaust holes.

㉖㉗㉘Air duct can be removed by drilling out rivets. At reassembly, use only closed end rivets to avoid rivet ends from falling into magneto.

464 ENGINE TYPE

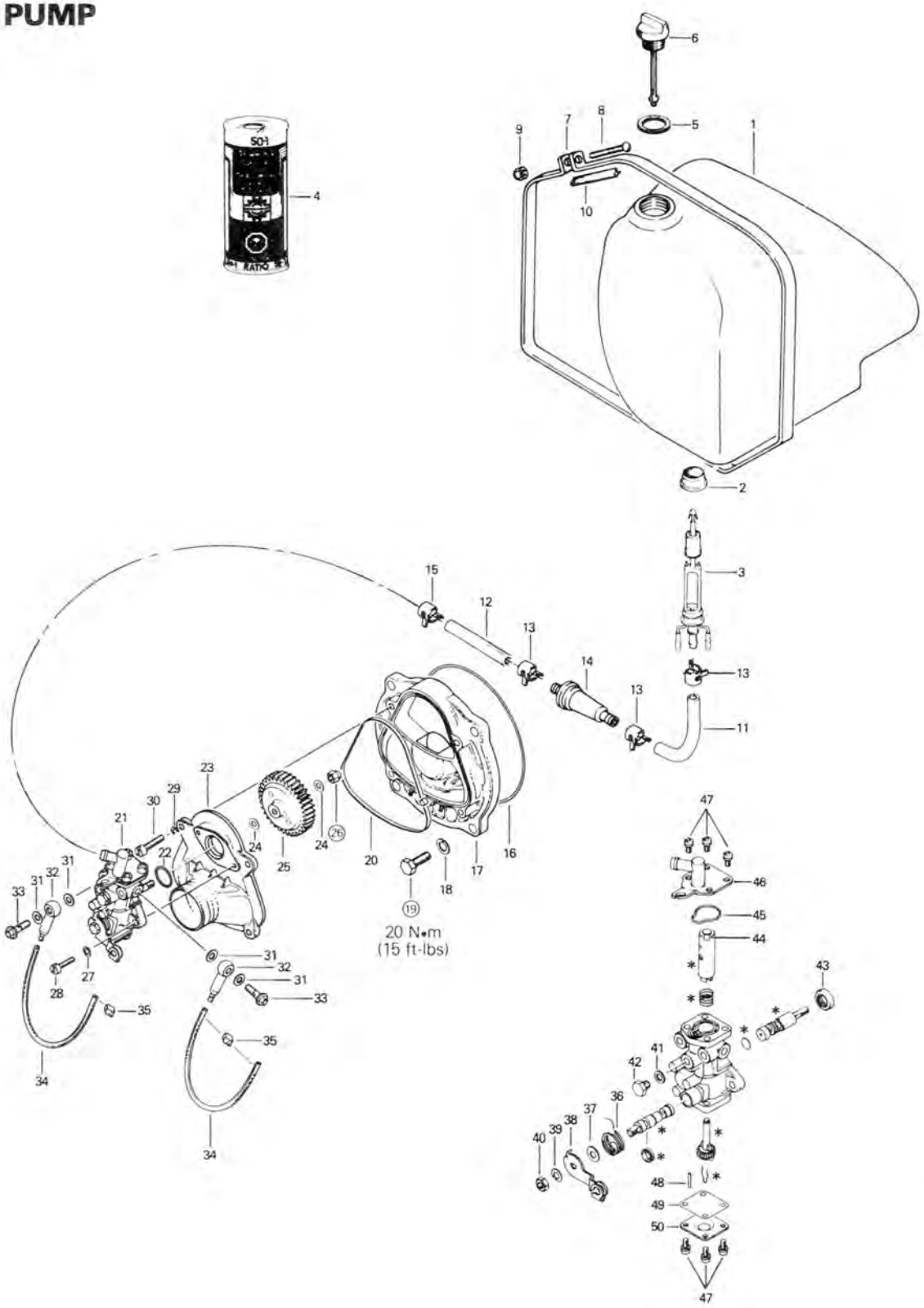
For service information on the 1981 - 464 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (464 engine type).

For service procedure on the following item

Oil pump
Magneto

refer to this section.

OIL PUMP



1. *Injection oil tank*
2. *Grommet*
3. *Oil level sensor*
4. *Oil*
5. *Gasket*
6. *Oil tank cap*
7. *Retainer strip*
8. *Screw*
9. *Elastic stop nut*
10. *Trim*
11. *Oil line 127 mm (5")*
12. *Oil line 60 mm (2 3/8")*
13. *Spring clip*
14. *Filter*
15. *Spring clip*
16. *O'ring*
17. *Rotary valve cover*
18. *Lockwasher*
19. *Screw*
20. *Rubber ring*
21. *Oil pump*
22. *O'ring*
23. *Intake cover*
24. *Washer*
25. *Oil pump gear*
26. *Lock nut*
27. *Lockwasher*
28. *Screw*
29. *Lockwasher*
30. *Screw*
31. *Gasket*
32. *Banjo*
33. *Screw*
34. *Oil line 170 mm (6 3/4")*
35. *Clamp*
36. *Spring*
37. *Washer*
38. *Lever*
39. *Lockwasher*
40. *Nut*
41. *Washer*
42. *Screw*
43. *Seal*
44. *Retainer*
45. *O'ring*
46. *Plate*
47. *Screw with lockwasher*
48. *Stop pin*
49. *Gasket*
50. *Cam casing plate*
51. *Gasket set*

NOTE: Parts in illustration marked with * are not available as spare parts.

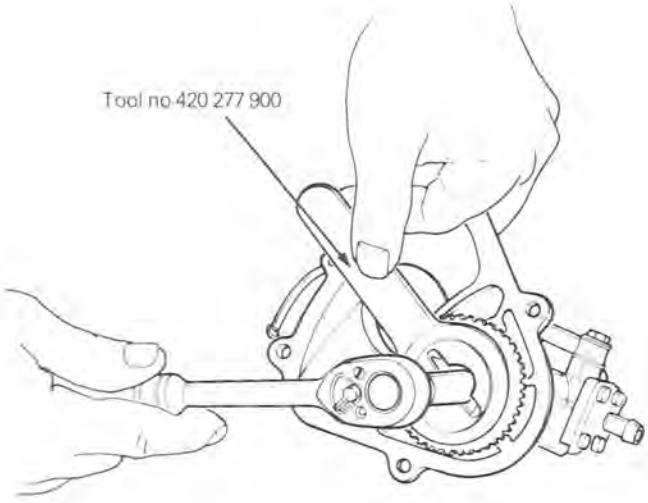
CLEANING

Discard all seals and O'rings. Clean all metal components in a non-ferrous metal cleaner.

DISASSEMBLY & ASSEMBLY

⑲ Torque to 20 N•m (15 ft-lbs).

㉕ ㉖ To remove retaining nut, lock gear using no. 420 277 900 tool.



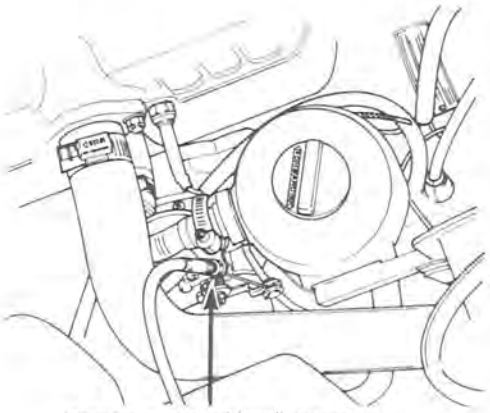
OIL PUMP ADJUSTMENT

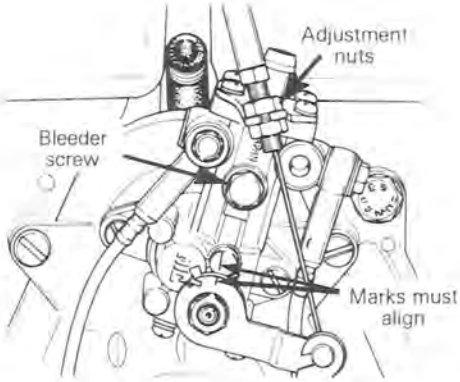
Always perform carburetor adjustment prior to oil injection pump adjustment.

To adjust:

Eliminate the throttle cable free-play by pressing the throttle lever until a light resistance is felt, then hold in place. The aligning marks on the pump casting and lever must align perfectly. If not, loosen the adjuster nut and adjust accordingly.

Tighten the adjuster nut.


Injection pump cable adjustment



CAUTION: Proper oil injection pump adjustment is very important. Any delay in the opening of the pump can result in serious engine damage.

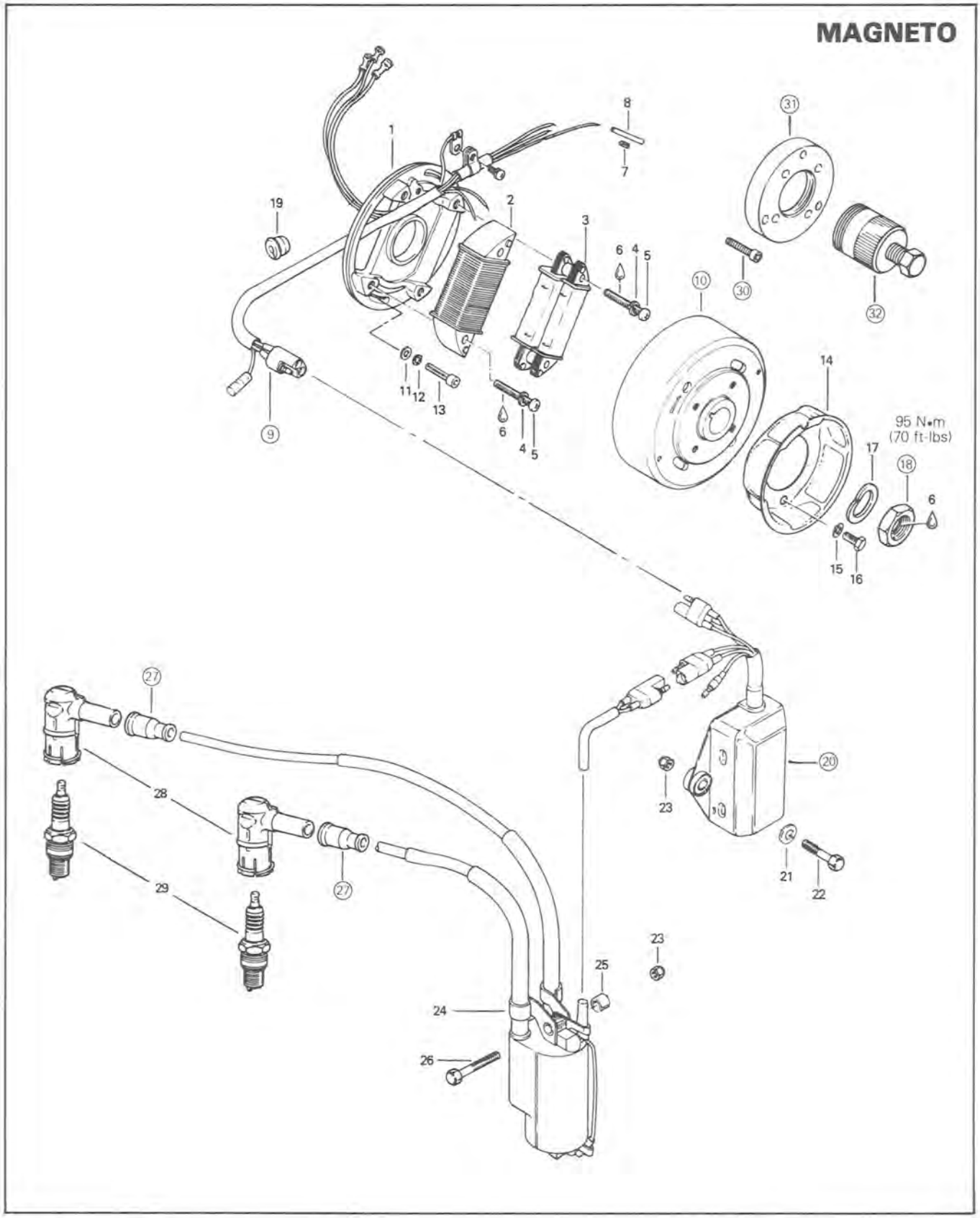
To bleed oil lines

All oil lines should be full of oil. To bleed the main oil line (between tank and pump), loosen the bleeder screw and let the air escape until oil starts to flow out.

Make sure tank has enough oil

To bleed the small injector oil lines, start the engine and let it run at idle speed. Move injection pump lever to fully open position until lines are full of oil.

MAGNETO



1 to 10 magneto generator 12V 140W

1. *Armature plate*
2. *Generator coil assembly*
3. *Lighting coil*
4. *Lockwasher*
5. *Screw*
6. *Loctite 242*
7. *Splice connector*
8. *Protector tube*
9. *Harness*
10. *Flywheel*
11. *Washer*
12. *Lockwasher*
13. *Allen screw*
14. *Starting pulley*
15. *Lockwasher*
16. *Screw*
17. *Lockwasher*
18. *Nut*
19. *Grommet*
20. *C.D. box*
21. *Flat washer*
22. *Screw*
23. *Elastic stop nut*
24. *Ignition coil*
25. *Spacer*
26. *Screw*
27. *Protection cap*
28. *Spark plug protector*
29. *Spark plug W275 T2 (W3C)*
30. *Allen screw M6 x 25 P/N 420 840 860 quantity 4*
31. *Puller ring P/N 420 876 655*
32. *Puller ring P/N 420 876 065*

CLEANING

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

CAUTION: Clean armature and magneto using a clean cloth only.

DISASSEMBLY & ASSEMBLY

Before disassembling magneto, indexing marks should be made to facilitate reassembly.

⑩ ㉚ ㉛ ㉜ To remove flywheel, use puller. Tighten puller bolt while tapping on bolt head to release magneto from taper shaft.

⑩ At assembly, always clean crankshaft extension (taper) and flywheel taper then apply Loctite 242.

⑨ ⑳ ㉗ At reassembly, coat all electric connections with dielectric or lithium grease to prevent corrosion or moisture from penetrating.

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

⑱ Clean threads, apply Loctite 242 and torque to 95 N•m (70 ft-lbs).

503 ENGINE TYPE

For service information on the 1981 - 503 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (503 Engine type).

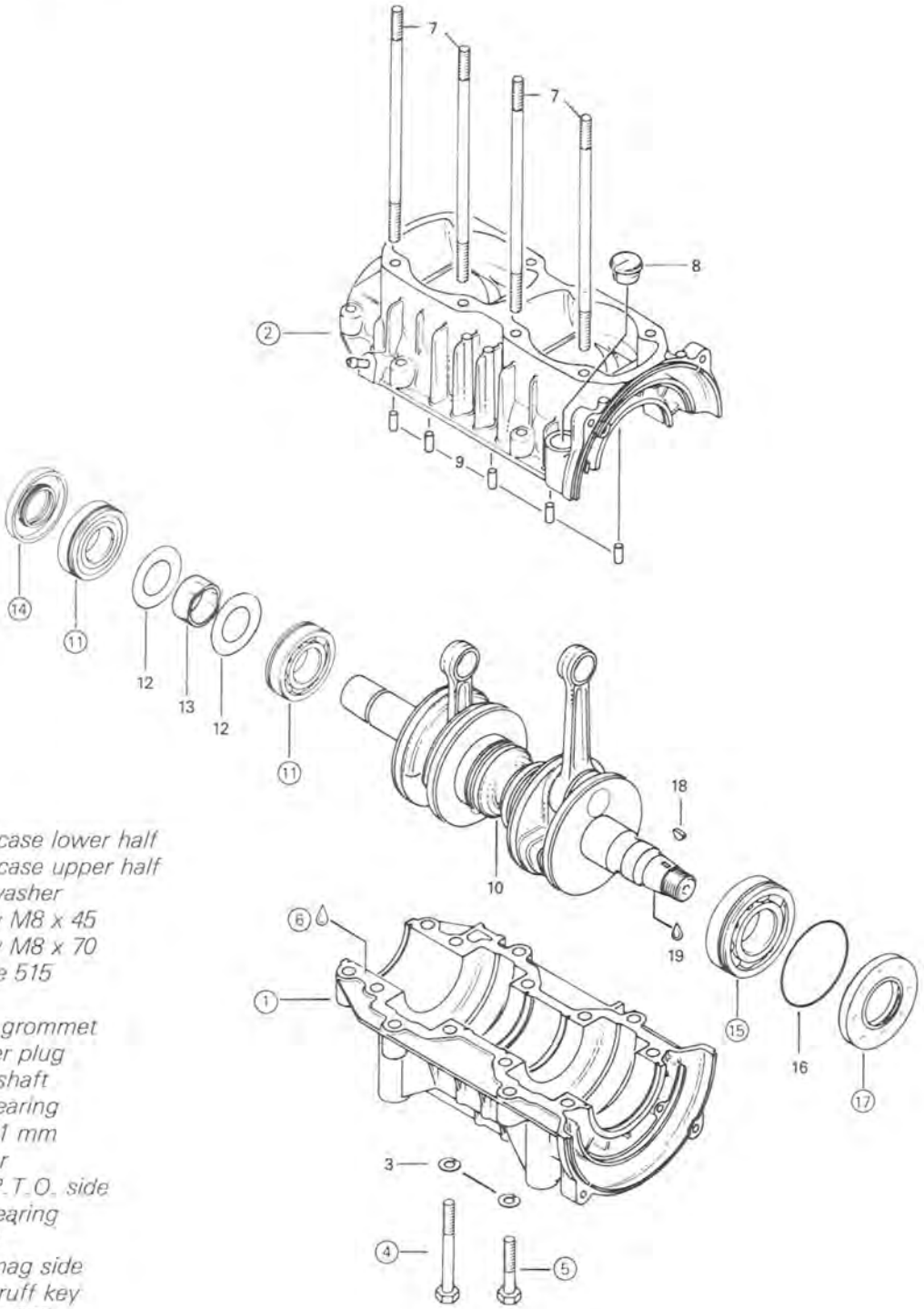
For service procedure on the following item.

Bottom end

refer to this section.

503 ENGINE TYPE

BOTTOM END



1. Crankcase lower half
2. Crankcase upper half
3. Lockwasher
4. Screw M8 x 45
5. Screw M8 x 70
6. Loctite 515
7. Stud
8. Cable grommet
9. Rubber plug
10. Crankshaft
11. Ball bearing
12. Shim 1 mm
13. Spacer
14. Seal P.T.O. side
15. Ball bearing
16. O'ring
17. Seal mag side
18. Woodruff key
19. Loctite 242

CLEANING

Discard all seals, gaskets and "O" rings.

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

Remove old sealant from crankcase mating surfaces with Bombardier sealant stripper.

CAUTION: Never use a sharp object to scrape away old sealant as score marks incurred are detrimental to crankcase sealing.

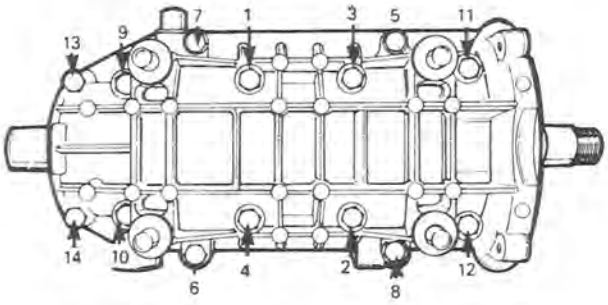
DISASSEMBLY AND ASSEMBLY

①②Crankcase halves are factory matched and therefore, are not interchangeable as single halves.

⑥Prior to joining of crankcase halves, apply "Loctite 515" (no. 413 7027) on mating surfaces.

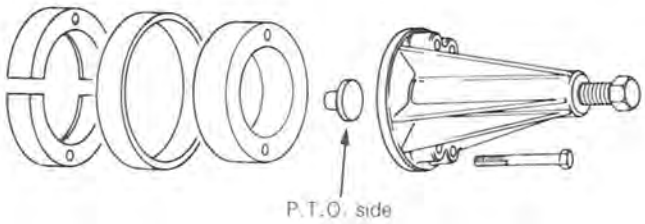
Position the crankcase halves together and tighten nuts (or bolts) by hand then install armature plate (tighten) on magneto side to correctly align the crankcase halves.

Torque nuts (or bolts) to 20 N•m (15 ft-lbs) following illustrated sequence.



④⑤Torque to 20 N•m (15 ft-lbs).

⑪⑮To remove ball bearings from crankshaft, use a special puller (see Tools, 01 page 4).

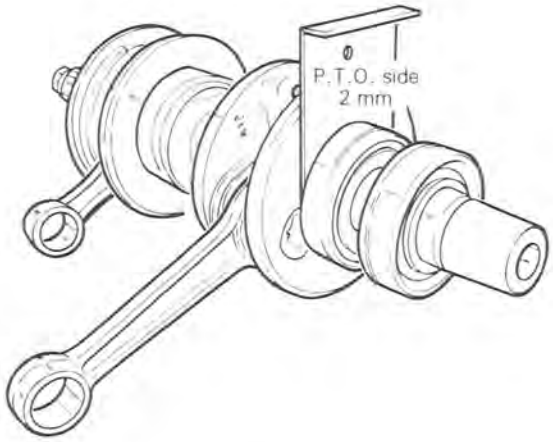


Prior to installation, place bearings into an oil container heated to 100°C (212°F).

This will expand bearings and ease installation. Install bearings with groove as per exploded view.

P.T.O. side (all engines)

At inner bearing installation, provide a free play of 2 mm (.080") for lubrication between bearing and crankshaft blade, using P/N 420 876 620 tool.



⑭⑰At assembly, apply a light coat of lithium grease on seal lip.

640 ENGINE TYPE

For all service information on the 1981 - 640 engine type, refer to the 1980 Bombardier Snowmobiles Shop Manual section 03-02 (640 Engine type).

IGNITION TIMING

For the following 1981 engine types:

247-277
377-503
640

refer to the 1980 Bombardier Snowmobiles Shop Manual (section 03-03).

For the following 1981 engine types:

354-454
464

refer to this section.

For timing specifications of all 1981 engine types, refer to this section.

1981 IGNITION TIMING SPECIFICATIONS

ENGINE TYPE	IGNITION TYPE	DIRECT MEASUREMENT B.T.D.C. 	INDIRECT MEASUREMENT B.T.D.C. 	EDGE GAP 
247	Breaker	3.98 mm ± 0.25 (.157" ± .010)	N.A.	5-8 mm (0.197-0.315")
277	Breaker	N.A.	2.60 mm ± 0.25 (.102" ± .010)	8-12 mm (.315-.472")
354	CD	*2.52 mm ± 0.25 (0.099" ± 0.010)	N.A.	N.A.
377	Breakers	2.07 mm ± 0.25 (.081" ± .010)	N.A.	8-12 mm (.315-.472")
454	CD	*2.52 mm ± 0.25 (0.099" ± .010)	N.A.	N.A.
464	CD	*2.52 mm ± 0.25 (0.099" ± .010)	N.A.	N.A.
503	Breakers	2.07 mm ± 0.25 (.081" ± 0.10)	N.A.	8-12 mm (.315-.472")
640	Breakers	N.A.	3.62 mm ± 0.25 (.143" ± .010)	5-8 mm (0.197-0.315")

N.A.: not applicable
* Stroboscopic timing at 6000 R.P.M. (engine cold).

C.D. IGNITION — (NIPPONDENSO)

354-454-464 Engine types

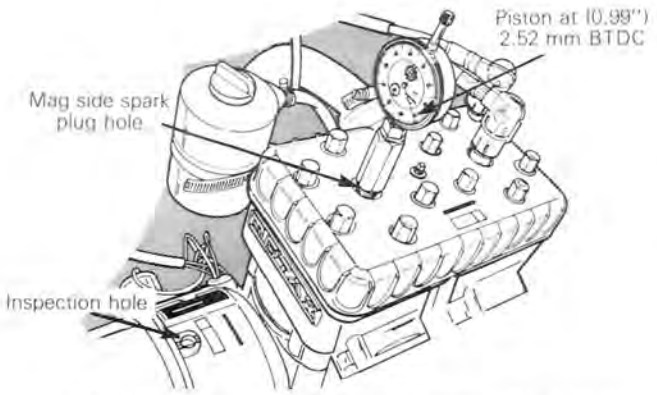
TIMING PROCEDURE

Timing mark verification

To check if timing marks on the flywheel are correct, use a dial gauge (top dead center gauge P/N 414 1047 00) as per the following method.

Remove spark plugs.

Remove inspection plug on magneto housing.

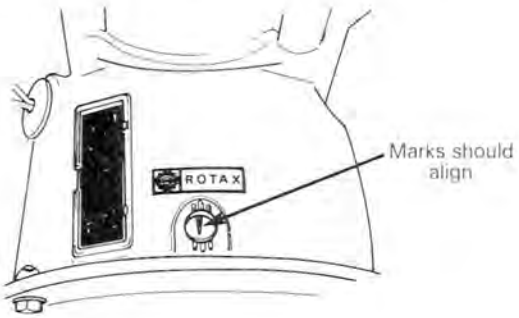


Install dial indicator in magneto side spark plug hole.

Bring magneto side piston to top dead center.

Back-off (rotate counter-clockwise) piston to 2.52 mm (0.99") before top dead center. Look through inspection hole and check if flywheel and magneto housing timing marks align. Marks should align when piston is within specified tolerances 2.52 mm ± 0.25 (0.99" ± 0.010") BTDC.

If the marks do not correspond to the specifications, scribe a new mark on the magneto housing.



TIMING

NOTE: Timing can be checked using a stroboscopic timing light (Electro Specialty 978, Snap-on MT 215 or equivalent). The ignition components are affected by temperature variation, therefore, timing must be checked when engine is cold.

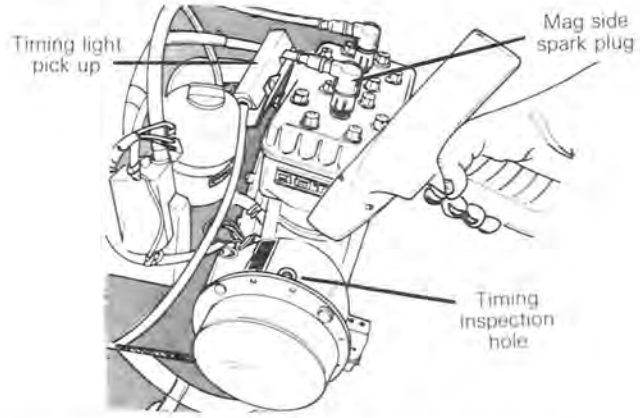
Remove the timing inspection plug on magneto housing.

Connect timing light pick-up to magneto side spark plug lead (on manual start models use a separate battery to supply timing light).

WARNING: Place ski tips against a wall, raise rear of vehicle on a stand so that track does not contact the ground. Make sure no one passes behind the vehicle while engine is running. Keep clear of track and other moving parts.

NOTE: Turn headlamp "on" when checking timing.

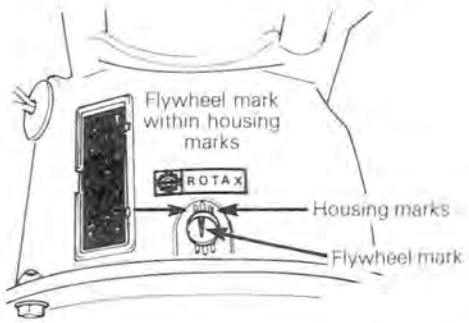
Start engine and point timing light straight into inspection hole.



Bring engine to 6000 R.P.M. for a brief instant.

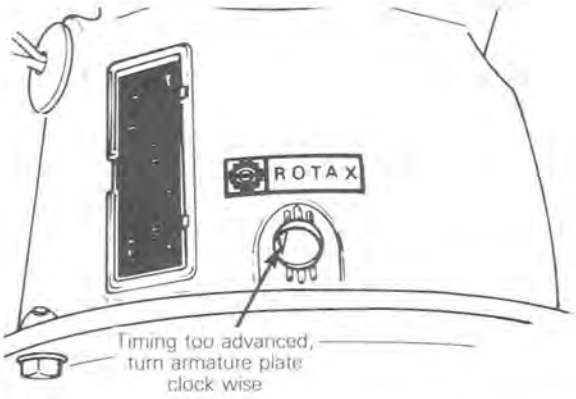
Check timing mark alignment. If flywheel mark aligns within housing marks, timing is correct.

Stop engine.



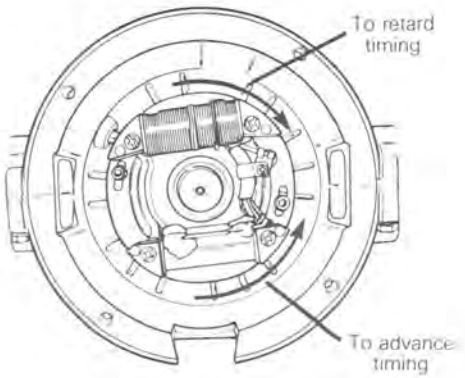
If flywheel mark did not align within magneto housing marks, armature plate must be adjusted.

Armature plate will have to be moved to advance or retard timing.



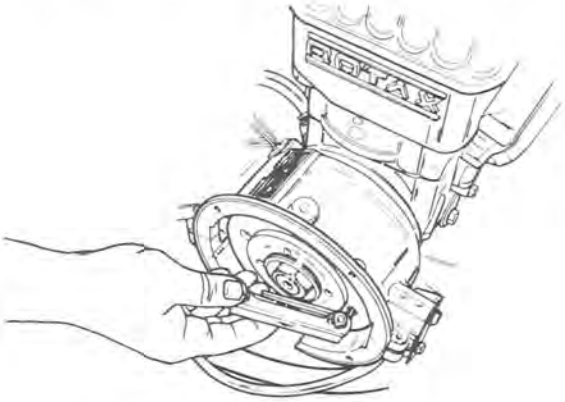
To adjust remove rewing starter assembly and starter pulley.

Using a 4 mm Allen key, loosen the two armature plate retaining screws and lightly move plate in appropriate direction. (Refer to the difference between timing marks to determine how much to move the armature plate).



Tighten the armature plate screws.

CAUTION: Make sure armature plate screws are well secured.



Reassemble starter pulley and assembly.

Recheck engine timing (make sure engine is cold).

Reinstall inspection plug.

MIKUNI FUEL PUMP

For the following 1981 models:

247 - Elan & Spirit
277 - Citation 3500 & Mirage I
377 - Citation 4500/E & Mirage II/E
377 - Citation SS & Mirage Special
377 - Nordik
354 - Blizzard 7500 & Super Sonic
454 - Blizzard 9500 & Ultra Sonic
464 - Everest 464 L/C & Futura L/C
503 - Everest 500/E & Futura 500/E
503 - Blizzard 5500 & Grand Prix Special
503 - Blizzard MX & Grand Prix MX
464 - Elite 464 L/C
640 - Alpine 640 ER

refer to the 1980 Bombardier Snowmobiles Shop Manual, section 03-04.

MIKUNI CARBURETOR

For the following 1981 models:

247 - Elan & Spirit
277 - Citation 3500 & Mirage I
377 - Citation 4500/E & Mirage II/E
377 - Citation SS & Mirage Special
377 - Nordik
354 - Blizzard 7500 & Super Sonic
454 - Blizzard 9500 & Ultra Sonic
503 - Blizzard 5500 & Grand Prix Special
503 - Blizzard MX & Grand Prix MX
464 - Everest L/C & Futura L/C
503 - Everest 500/E & Futura 500/E
464 - Elite 464 L/C
640 - Alpine 640 ER

refer to the 1980 Bombardier Snowmobiles Shop Manual, section 03-04 (Carburetor).

For the following:

1980 & 1981 Blizzard 7500 & Super Sonic
1980 & 1981 Blizzard 9500 & Ultra Sonic

refer to this section for the "carburetor adjustment".

For the following:

1980 & 1981 Elan & Spirit

refer to this section for "carburetor removal and installation".

CARBURETOR ADJUSTMENT

For: 1980 & 1981 Blizzard 7500 & Super Sonic
1980 & 1981 Blizzard 9500 & Ultra Sonic

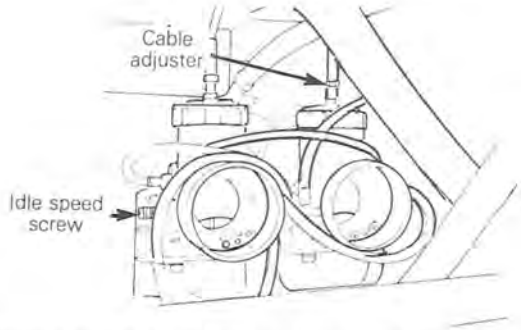
Proceed as follows:

For maximum performance, correct carburetor throttle slide adjustment is critical.

The following method should be used:

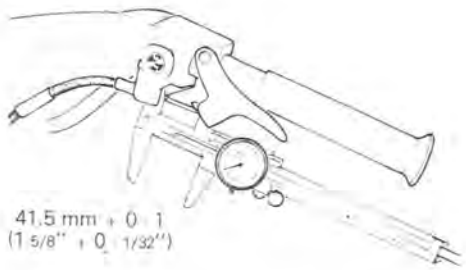
With engine turned off:

- Remove the air intake silencer.
- Back off the idle speed screws completely.



Turn the idle speed screw clockwise until it contacts the throttle slide then continue turning two (2) additional turns. Repeat on the other carburetor. This will ensure identical throttle slide idle setting.

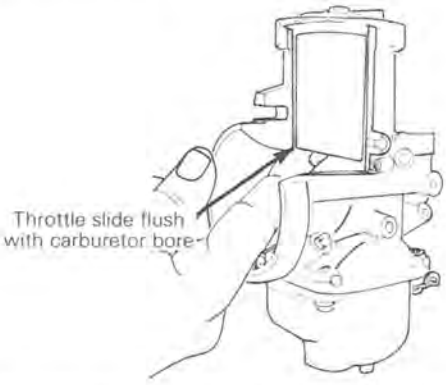
With the throttle cable adjuster jam nuts unlocked, press the throttle lever against the handle grip, until a distance of 41.5 mm + 0 - 1 (1 5/8" + 0 - 1/32") is obtained between lever and housing, and hold in this position.



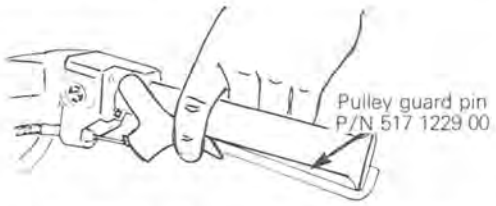
By turning the cable adjuster, adjust the carburetor slide cut away so that it is flush with the top of the carburetor bore.

Tighten the cable adjuster jam nut.

Repeat for the other carburetor.



If a precise measuring tool is unavailable, a pin P/N 517 1229 00 (pulley guard pin) can be used as illustrated. This will give the same gap of 41.5 mm required.



Once both carburetors are adjusted, check that with the throttle lever fully depressed, there is a free play of 1/16" between the cover and throttle slide. Readjust accordingly.

◆ **WARNING: This gap is very important. If the throttle slide rests against the carburetor cover at full throttle opening, this will create too much strain and may damage the throttle cable.**

Recheck carburetors synchronization.

Start the engine and allow it to warm then adjust the idle speed to 1800-2000 R.P.M. by turning both idle speed screws equally clockwise or counterclockwise.

CARBURETOR REMOVAL AND INSTALLATION

For 1980 & 1981 Elan & Spirit.

Removal

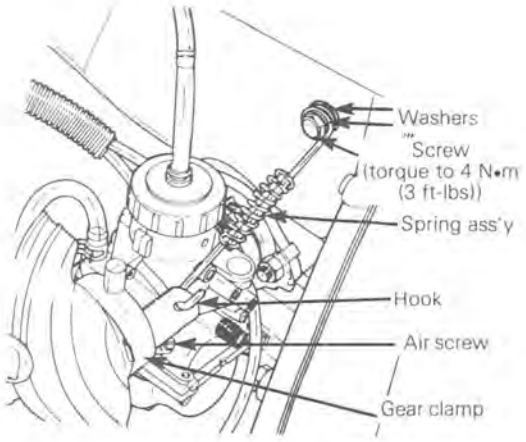
- Loosen the screw at engine, remove the spring assembly and the two (2) washers.
- Loosen gear clamp remove the hook from its mounting place.
- Remove the carburetor from engine.

Installation

- Inverse removal procedure.

CAUTION: Avoid obstructing air screw at installation.

(Refer to illustration)



CARBURETOR SPECIFICATIONS

SPECIFICATIONS / MODEL	ENGINE TYPE	CARBURETOR TYPE MIKUNI	AIR SCREW ± 1/8	IDLE ① SPEED (R.P.M.)	MAIN JET	NEEDLE ②	NEEDLE JET	CUT-AWAY	PILOT JET
Elan Spirit	247	VM 28-242	1 1/2	1100-1300	160	6DP1-3	182 O-8	2	30
Citation 3500 Mirage I	277	VM 34-255	1 1/2	1100-1300	220	6DH4-3	159 P-2	3	30
Citation 4500/E Mirage II/E Nordik	377	VM 34-256	1 1/2	1800-2000	260	6DH4-3	159 P-0	3	35
Citation SS Mirage Special	377	2 x VM 34-257	1 1/2	1800-2000	160	6DH7-3	159 P-0	3	40
Everest 500/E Futura 500/E	503	VM 36-104	1	1800-2000	310	6F9-3	159 P-8	3	40
Everest L/C Futura L/C	464	VM 34-227	1 1/2	1800-2000	380	6EJ1-3	159 P-4	3	40
Blizzard 5500 Grand Prix Spécial	503	2 x VM 34-203	1 1/2	1800-2000	220	6DH2-3	159 P-4	3	35
Blizzard MX Grand Prix Special MX	503	2 x VM 34-203	1 1/2	1800-2000	220	6DH2-3	159 P-4	3	35
Blizzard 7500 Super Sonic	354	2 x VM 34-230	1 1/2	1800-2000	290	6DH4-3	159 P-4	3.5	40
Blizzard 9500 Ultra Sonic	454	PTO: VM 34-88 MAG: VM 34-86	1	1800-2000	PTO: 300 MAG: 330	6DH4-3	159 P-2	3.5	40
Alpine 640 E/R	640	VM 34-215	1 1/2	1500-1800	280	6F9-3	159 P-2	2	30
Elite 464 L/C	464	VM 34-258	1	1800-2000	340	6EJ1-3	159 P-0	2.5	40

① Turning clockwise will enrich the mixture and counterclockwise will lean it.

② Jet needle last digit indicates "E" clip position from top.
Ex.: 6DH2-3: 3rd slot from top.

NOTE: For more information refer to the 1980 Bombardier Snowmobile Shop Manual.

Start the engine and allow it to warm then adjust the idle speed to 1800-2000 R.P.M. by turning both idle speed screws equally clockwise or counterclockwise.

CARBURETOR REMOVAL AND INSTALLATION

For 1980 & 1981 Elan & Spirit.

Removal

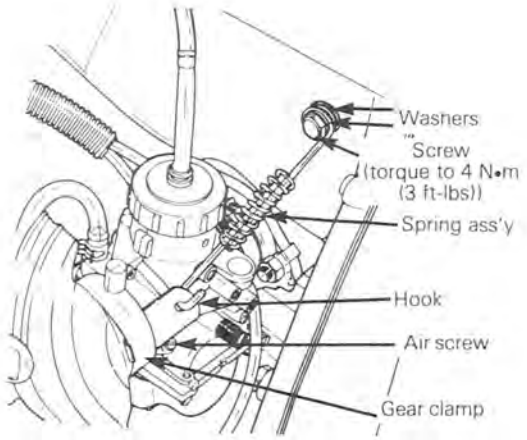
- Loosen the screw at engine, remove the spring assembly and the two (2) washers.
- Loosen gear clamp remove the hook from its mounting place.
- Remove the carburetor from engine.

Installation

- Inverse removal procedure.

CAUTION: Avoid obstructing air screw at installation.

(Refer to illustration)



CARBURETOR SPECIFICATIONS

SPECIFICATIONS / MODEL	ENGINE TYPE	CARBURETOR TYPE MIKUNI	AIR SCREW ± 1/8	IDLE ① SPEED (R.P.M.)	MAIN JET	NEEDLE ②	NEEDLE JET	CUT-AWAY	PILOT JET
Elan Spirit	247	VM 28-242	1 1/2	1100-1300	160	6DP1-3	182 O-8	2	30
Citation 3500 Mirage I	277	VM 34-255	1 1/2	1100-1300	220	6DH4-3	159 P-2	3	30
Citation 4500/E Mirage II/E Nordik	377	VM 34-256	1 1/2	1800-2000	260	6DH4-3	159 P-0	3	35
Citation SS Mirage Special	377	2 x VM 34-257	1 1/2	1800-2000	160	6DH7-3	159 P-0	3	40
Everest 500/E Futura 500/E	503	VM 36-104	1	1800-2000	310	6F9-3	159 P-8	3	40
Everest L/C Futura L/C	464	VM 34-227	1 1/2	1800-2000	380	6EJ1-3	159 P-4	3	40
Blizzard 5500 Grand Prix Spécial	503	2 x VM 34-203	1 1/2	1800-2000	220	6DH2-3	159 P-4	3	35
Blizzard MX Grand Prix Special MX	503	2 x VM 34-203	1 1/2	1800-2000	220	6DH2-3	159 P-4	3	35
Blizzard 7500 Super Sonic	354	2 x VM 34-230	1 1/2	1800-2000	290	6DH4-3	159 P-4	3.5	40
Blizzard 9500 Ultra Sonic	454	PTO: VM 34-88 MAG: VM 34-86	1	1800-2000	PTO: 300 MAG: 330	6DH4-3	159 P-2	3.5	40
Alpine 640 E/R	640	VM 34-215	1 1/2	1500-1800	280	6F9-3	159 P-2	2	30
Elite 464 L/C	464	VM 34-258	1	1800-2000	340	6EJ1-3	159 P-0	2.5	40

① Turning clockwise will enrich the mixture and counterclockwise will lean it.

② Jet needle last digit indicates "E" clip position from top.
Ex.: 6DH2-3: 3rd slot from top.

NOTE: For more information refer to the 1980 Bombardier Snowmobile Shop Manual.

AIR INTAKE AND FUEL TANK

For the following models:

Elan - Spirit
Citation - Mirage (all models)
Nordik (refer to Citation 4500)
Everest - Futura (all models)
Alpine

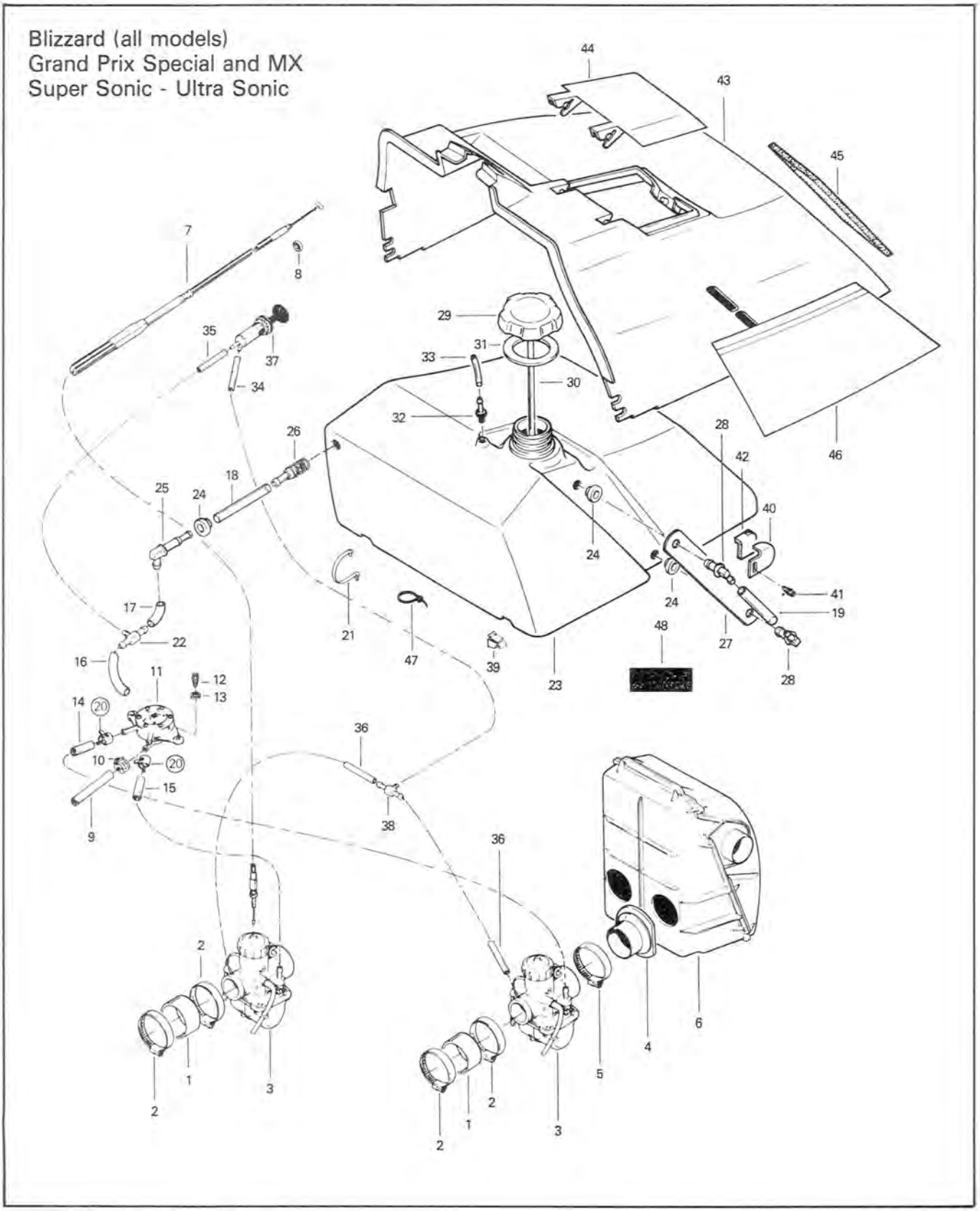
refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 03-05).

For the following 1981 models:

Blizzard 5500 - MX - Blizzard 7500 - Blizzard 9500
Grand Prix Special and MX
Super Sonic - Ultra Sonic
Elite (throttle cable replacement only)

refer to this section.

Blizzard (all models)
Grand Prix Special and MX
Super Sonic - Ultra Sonic



AIR INTAKE AND FUEL TANK

For the following models:

Elan - Spirit
Citation - Mirage (all models)
Nordik (refer to Citation 4500)
Everest - Futura (all models)
Alpine

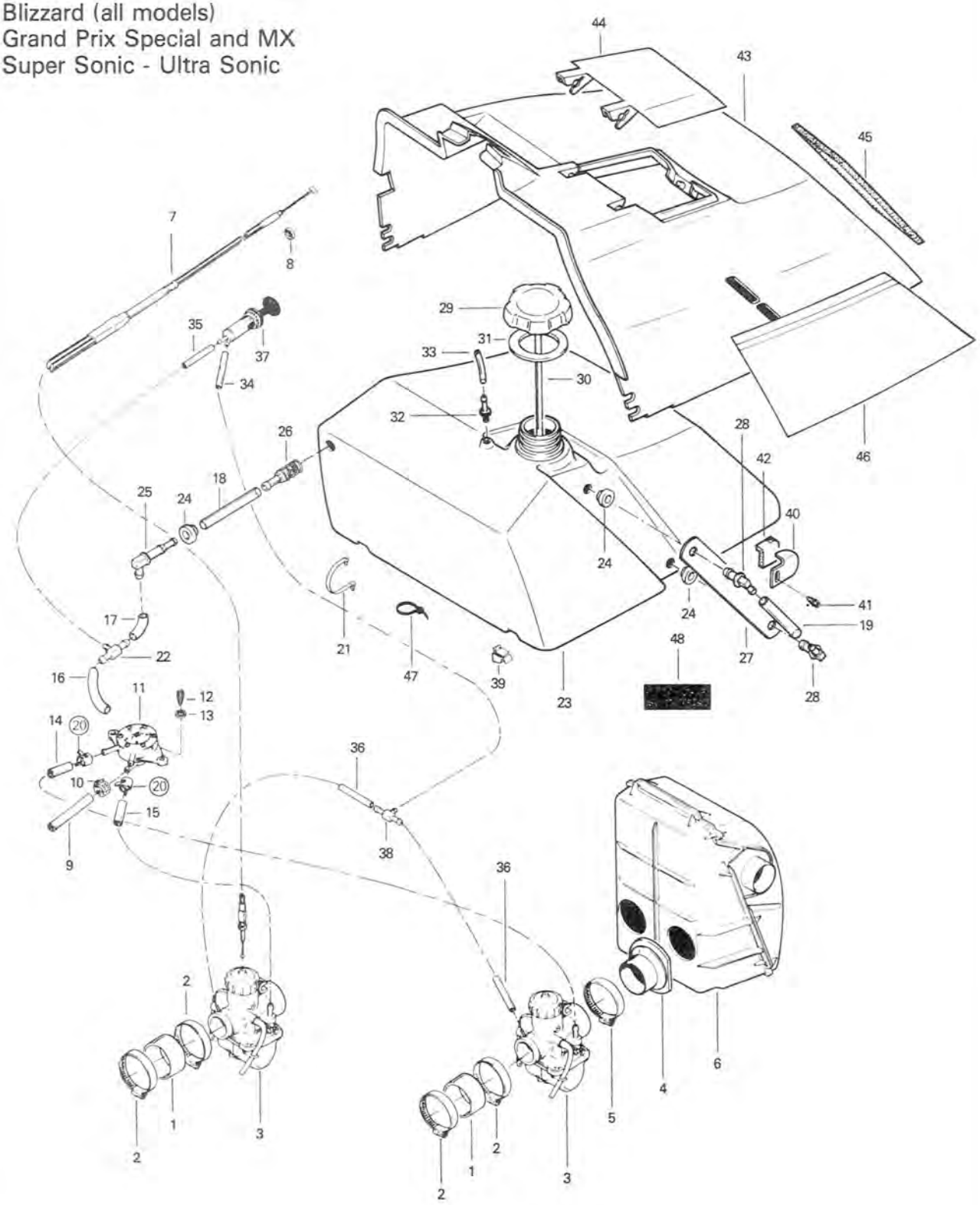
refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 03-05).

For the following 1981 models:

Blizzard 5500 - MX - Blizzard 7500 - Blizzard 9500
Grand Prix Special and MX
Super Sonic - Ultra Sonic
Elite (throttle cable replacement only)

refer to this section.

Blizzard (all models)
Grand Prix Special and MX
Super Sonic - Ultra Sonic



AIR INTAKE AND FUEL TANK

For the following models:

Elan - Spirit
Citation - Mirage (all models)
Nordik (refer to Citation 4500)
Everest - Futura (all models)
Alpine

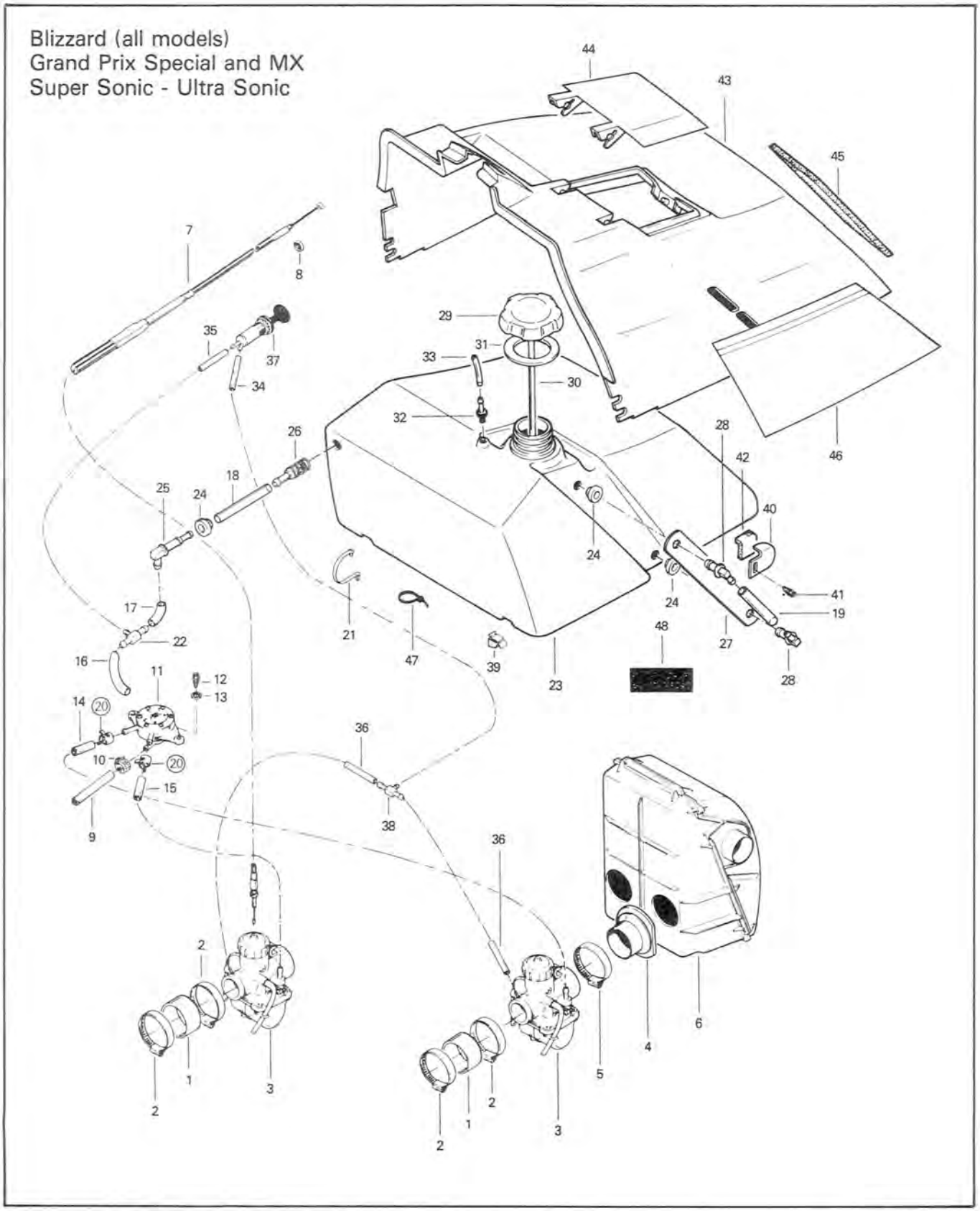
refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 03-05).

For the following 1981 models:

Blizzard 5500 - MX - Blizzard 7500 - Blizzard 9500
Grand Prix Special and MX
Super Sonic - Ultra Sonic
Elite (throttle cable replacement only)

refer to this section.

Blizzard (all models)
Grand Prix Special and MX
Super Sonic - Ultra Sonic



1. *Rubber flange*
2. *Clamp*
3. *Carburetor VM 34-203*
4. *Adaptor*
5. *Gear clamp*
6. *Air intake*
7. *Throttle cable & housing*
8. *Circlip*
9. *Impulse hose 14" (356 mm)*
10. *Clamp*
11. *Fuel pump*
12. *Hexagonal washer head self-tapping screw*
13. *Internal tooth lockwasher 1/4*
14. *Fuel line 21" (534 mm)*
15. *Fuel line 14" (356 mm)*
16. *Fuel line 13" (330 mm)*
17. *Fuel line 8" (204 mm)*
18. *Fuel line 20" (508 mm)*
19. *Fuel gauge 7.37" (187 mm)*
20. *Spring clip*
21. *Cable clip*
22. *Tee*
23. *Fuel tank*
24. *Grommet*
25. *Male connector*
26. *Fuel filter*
27. *Back plate*
28. *Male connector*
29-30 *Fuel tank cap*
30. *Cap holder*
31. *Gasket*
32. *Air vent fitting*
33. *Air vent tube 58" (1473 mm)*
34. *Primer tube 12.5" (318 mm)*
35. *Primer tube 26.5" (673 mm)*
36. *Primer tube 4.5" (115 mm)*
37. *Primer valve*
38. *Tee*
39. *Clip*
40. *Tank Retainer*
41. *Hexagonal washer head self tapping screw*
42. *Felt strip 1.75" x 2 (45 mm x 2)*
43. *Tank cover*
44. *Access Door*
45. *Foam*
46. *Decal set*
47. *Tie rap*
48. *Warning label*

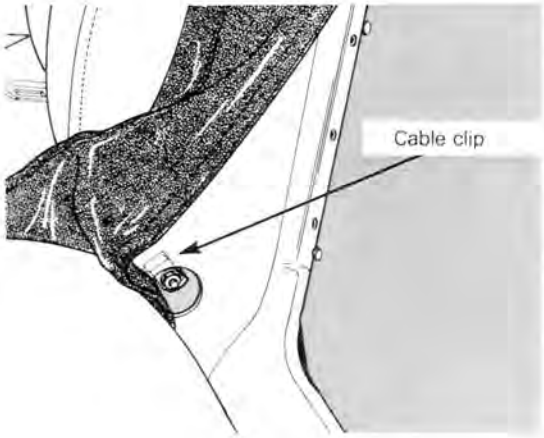
⑳ Always reinstall spring clip after any repair, to prevent fuel leaks.

ELITE

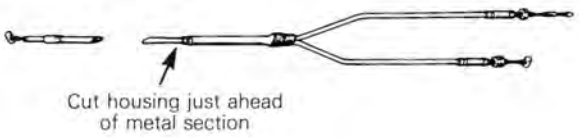
THROTTLE CABLE REPLACEMENT

REMOVAL & INSTALLATION

First remove cable clip located between seats (driver's side). To do so, remove driver seat backrest (2 wing nuts inside engine compartment), drill out rivet and fold back covering. Remove clip. If required, retaining screw can be held from opposite side by repeating procedure on passenger's side.



Cut-off throttle cable housing just ahead of the metal section (engine compartment), pull out cable as much as possible and cut it.



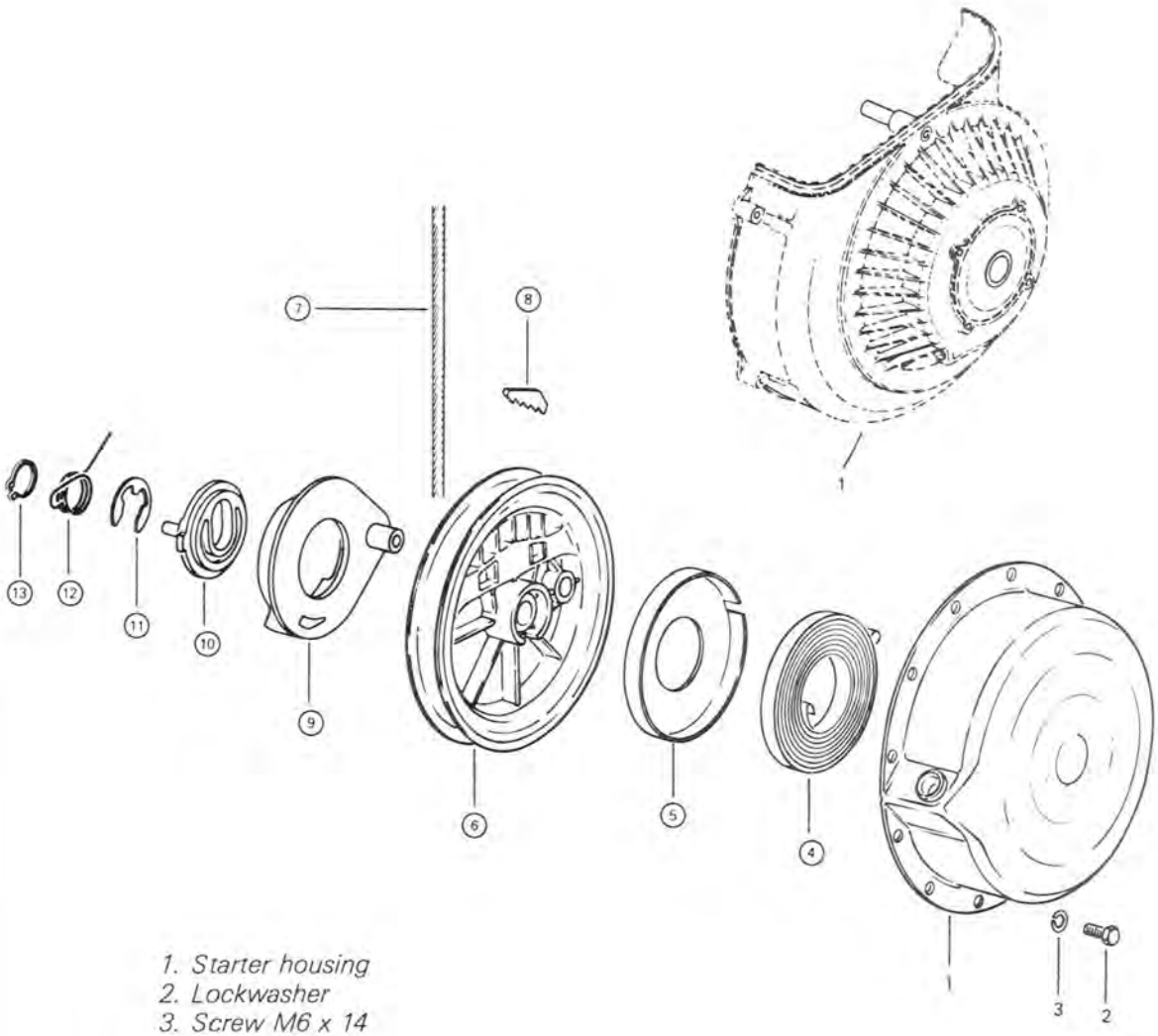
Attach new cable (throttle lever end) to old cable end previously cut and pull new cable through proper routing.

NOTE: Wrap tape around cable end to prevent interference.

Reinstall cable clip and seat backrest.

REWIND STARTER

(All models)



1. Starter housing
2. Lockwasher
3. Screw M6 x 14
4. Rewing spring
5. Spring guide
6. Rope sheave
7. Starter rope
8. Key
9. Pawl
10. Pawl lock
11. Circlip
12. Lock spring
13. Lock ring

REMOVAL

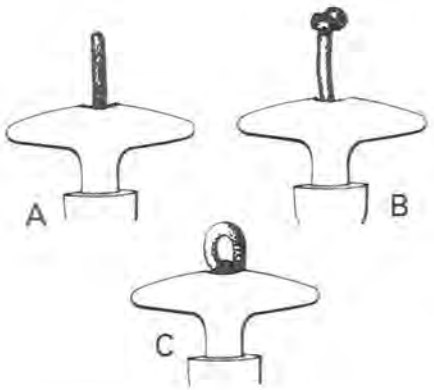
Remove bolts and washers securing rewind starter to engine, then remove rewind starter.

NOTE: On some models, the hood requires supporting before removing starter housing. The retaining cable is attached to one of the rewind starter attaching bolts.

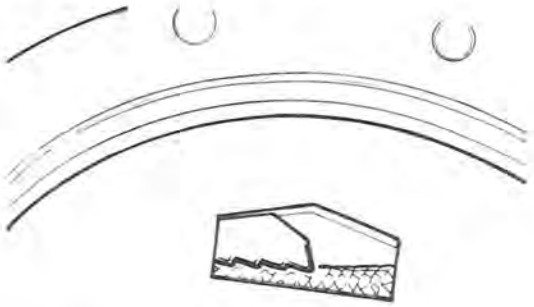
On oil injection models, remove oil injection pump from rewind starter cover.

DISASSEMBLY & ASSEMBLY

Prior to installing starter grip on new rope, it is first necessary to fuse the rope end with a lit match. Pass rope through starter grip, and tie a knot in the rope end. Fuse the knot with a lit match then turn the knot down and pull the starter grip over the knot.



⑥⑦⑧ To remove rope from rewind starter mechanism, first remove lock ring, lock spring, circlip, pawl lock and pawl. Fully extend rope and hold sheave in position. Using a pointed tool, disengage key and pull out rope.

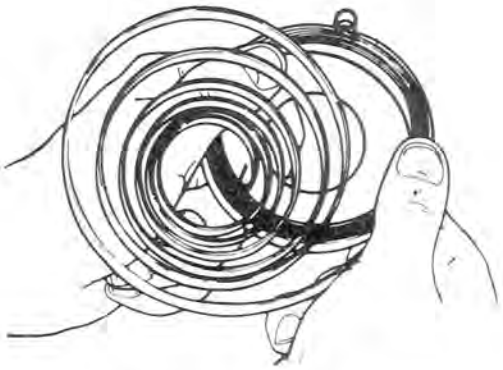


To install rope, proceed as follow:

- Rotate sheave counter-clockwise six (6) turns to achieve correct recoil tension. Hold in position.
- While holding sheave under tension, rotate sheave until the starter housing orifice and sheave orifice align.
- Insert rope through both orifices until rope is visible in the key clamp housing.
- Position the key clamp in its housing then push in to lock the rope.

④⑤ At assembly, position spring outer end into spring guide notch then wind the spring clockwise into guide.

WARNING: Since the spring is tightly wound inside the guide it may fly out when the guide is manipulated. Always handle with care.



Position spring assembly into starter housing as illustrated, then place rope sheave into starter housing making sure that the sheave hub notch engages in the spring hook.

⑨⑩⑪ Position pawl, pawl lock and circlip.

⑫⑬ Install lock spring and lubricate with molybdenum base grease.

⑬ Install lock ring.

INSTALLATION

On oil injection models, reinstall oil pump on rewind starter assembly.

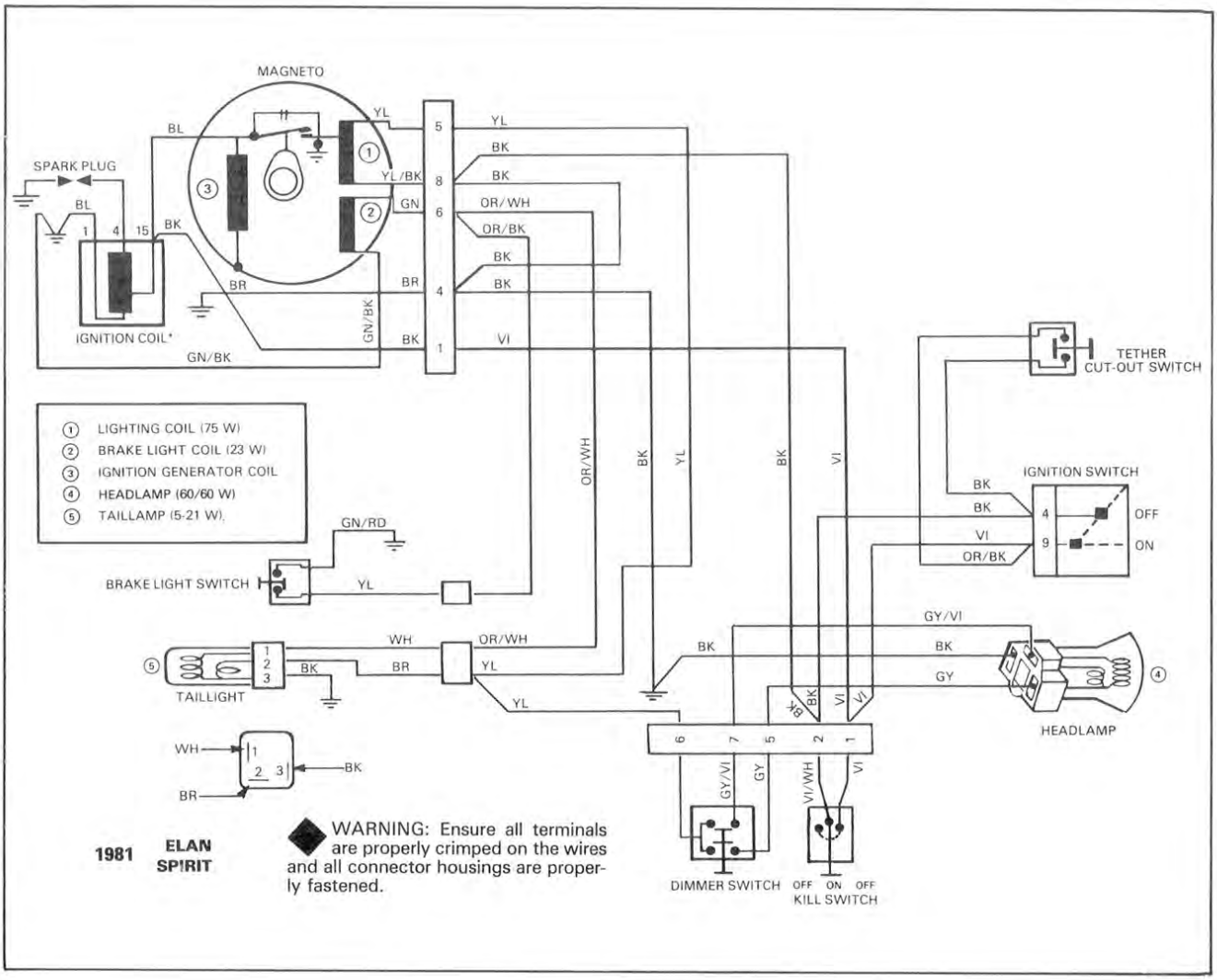
Reinstall rewind starter assembly on engine.

NOTE: If applicable, connect hood retaining cable to rewind starter retainer bolt.

WIRING DIAGRAMS

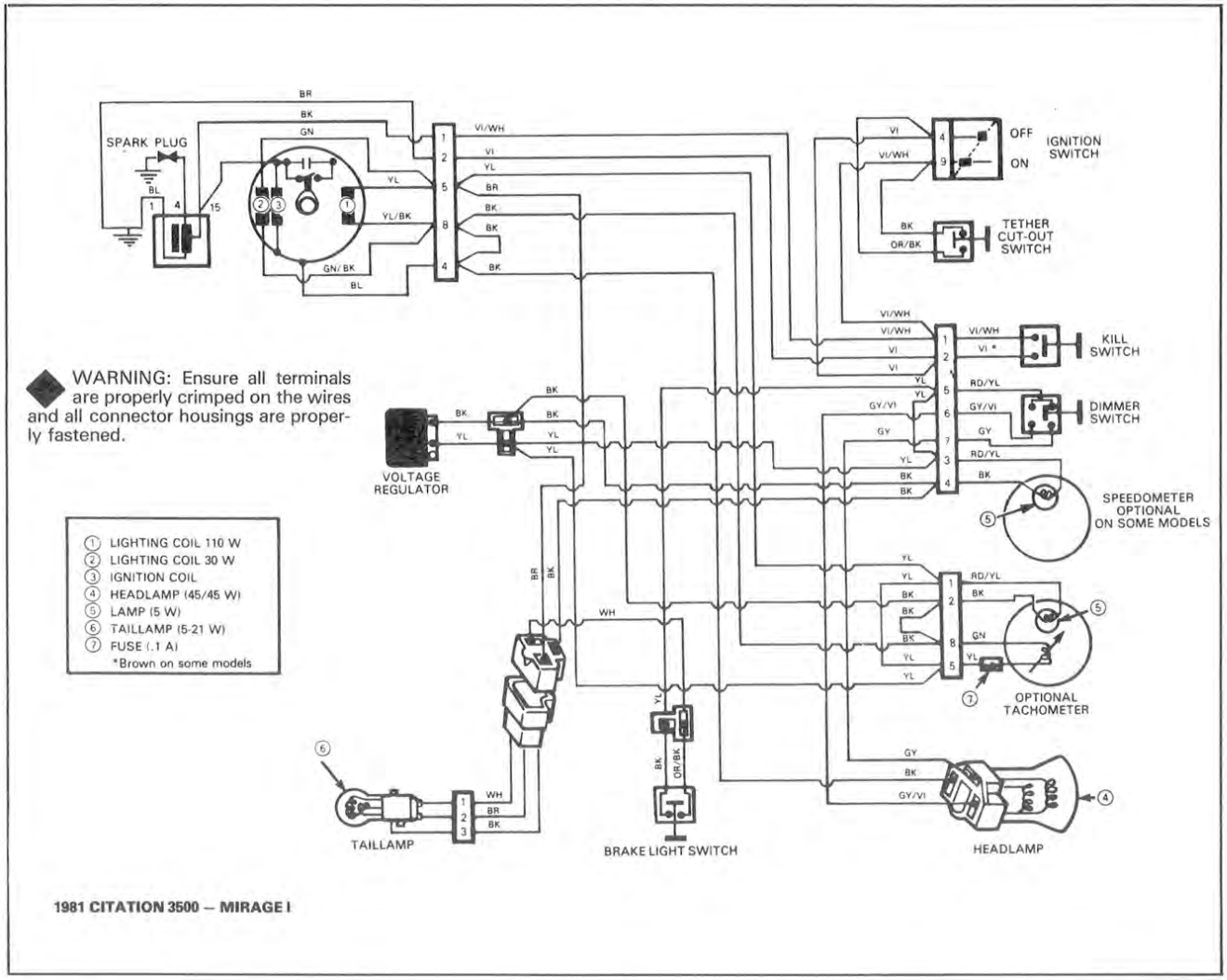
MODEL	HEADLAMP (watt)	TAILLIGHT (watt)	ELECTRICAL SYSTEM OUTPUT
Elan - Spirit	60/60	5/21	75/23
Citation 3500 - Mirage I	45/45	5/21	110/30
Citation 4500 - Mirage II	45/45	5/21	110/30
Citation 4500/E - Mirage II/E	45/45	5/21	110/30
Citation SS - Mirage Special	45/45	5/21	110/30
Everest 500 - Futura 500	45/45	5/21	110/30
Everest 500E - Futura 500E	45/45	5/21	110/30
Everest L/C - Futura L/C	45/45	5/21	110/30
Blizzard 5500 - Grand Prix Special	45/45	5/21	110/30
Blizzard MX - Grand Prix MX	45/45	5/21	110/30
Blizzard 7500 - Super Sonic	45/45	5/21	110/30
Blizzard 9500 - Ultra Sonic	45/45	5/21	110/30
Elite	45/45	5/21	420
Alpine 640 E/R	45/45	5/21	110/30
Nordik	60/60	5/21	110/30

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

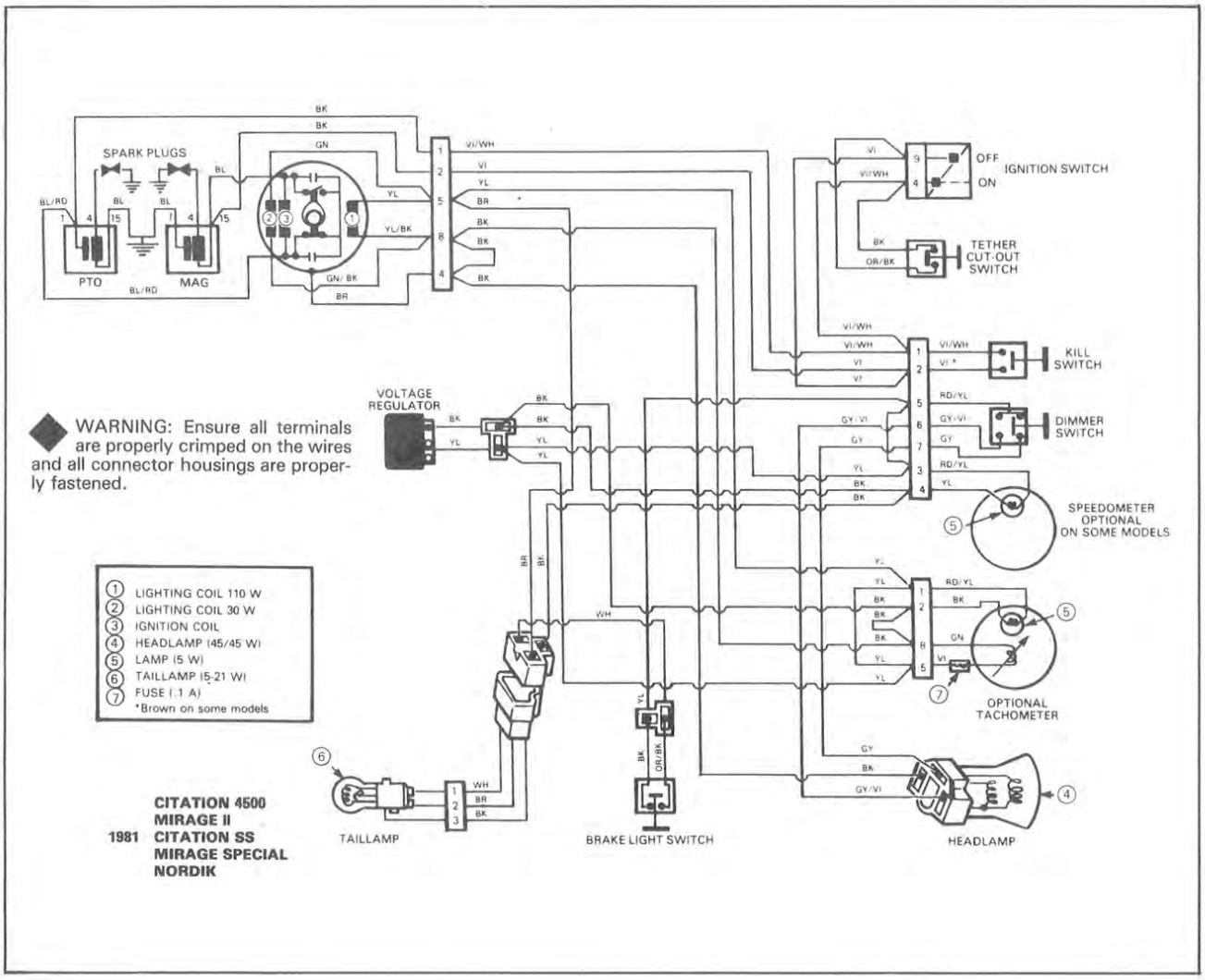


1981 ELAN SP!RIT

◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.



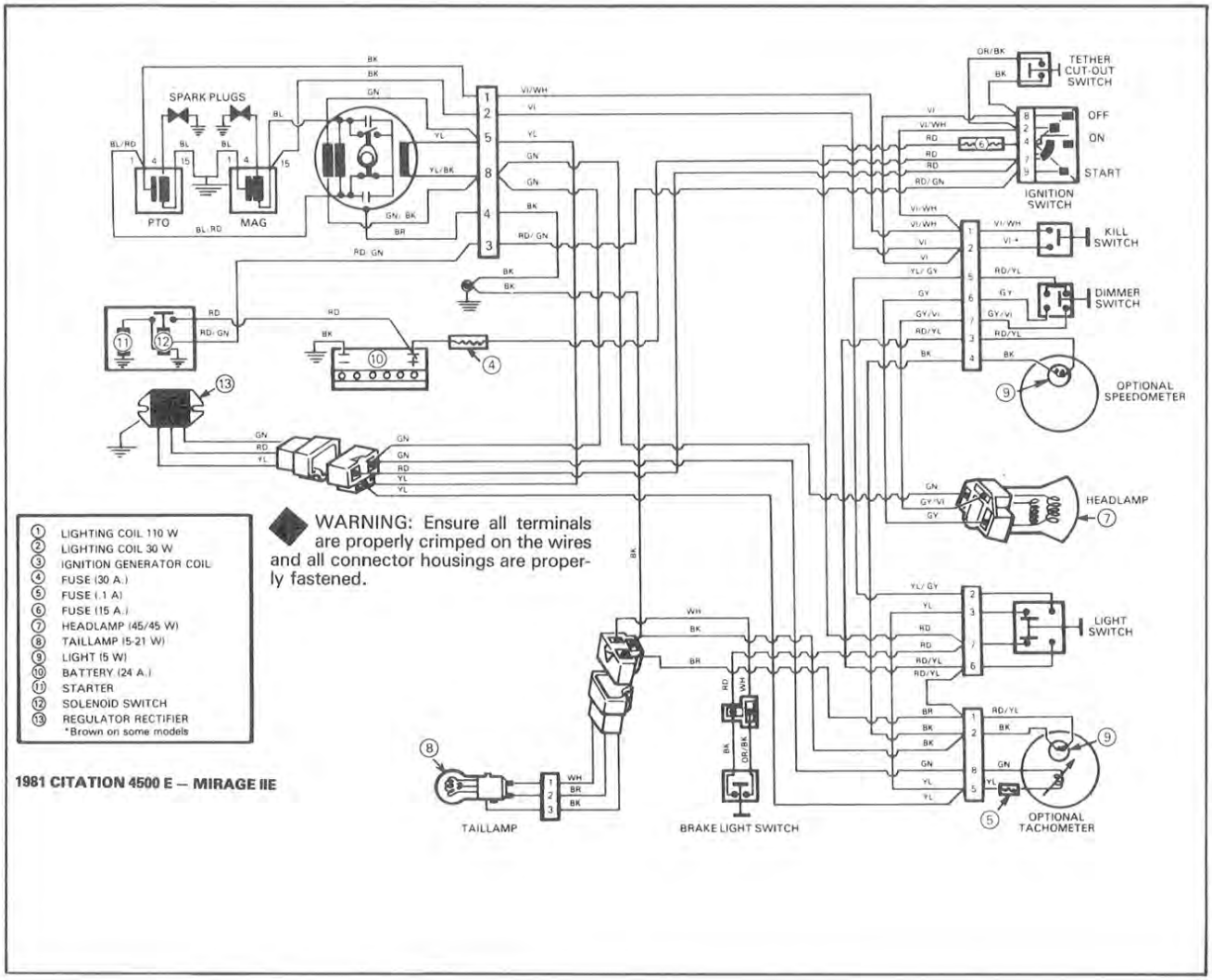
1981 CITATION 3500 – MIRAGE I



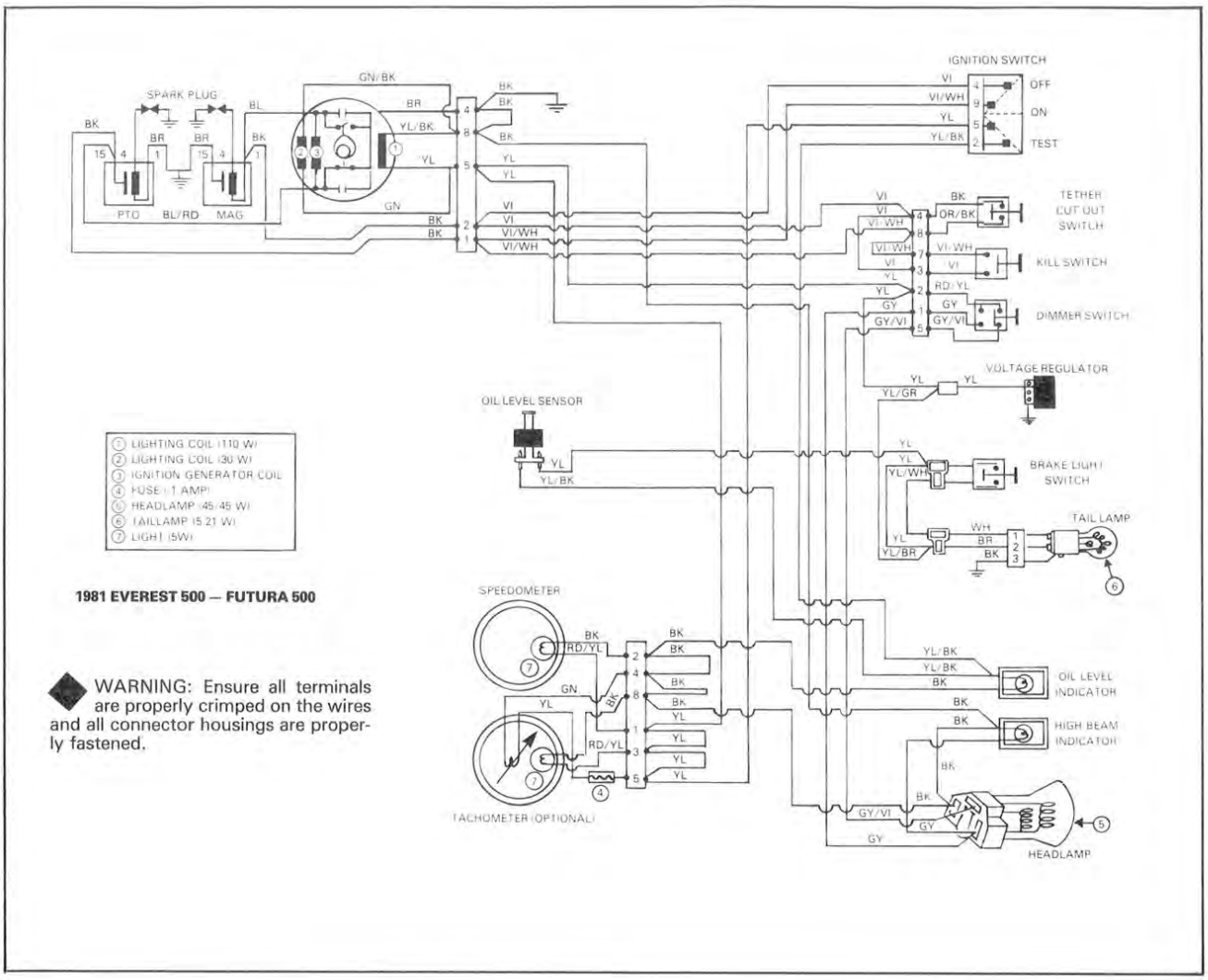
◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.

① LIGHTING COIL 110 W
② LIGHTING COIL 30 W
③ IGNITION COIL
④ HEADLAMP (45/45 W)
⑤ LAMP (5 W)
⑥ TAILLAMP (5-21 W)
⑦ FUSE (.1 A)
*Brown on some models

CITATION 4500
MIRAGE II
1981 CITATION SS
MIRAGE SPECIAL
NORDIK

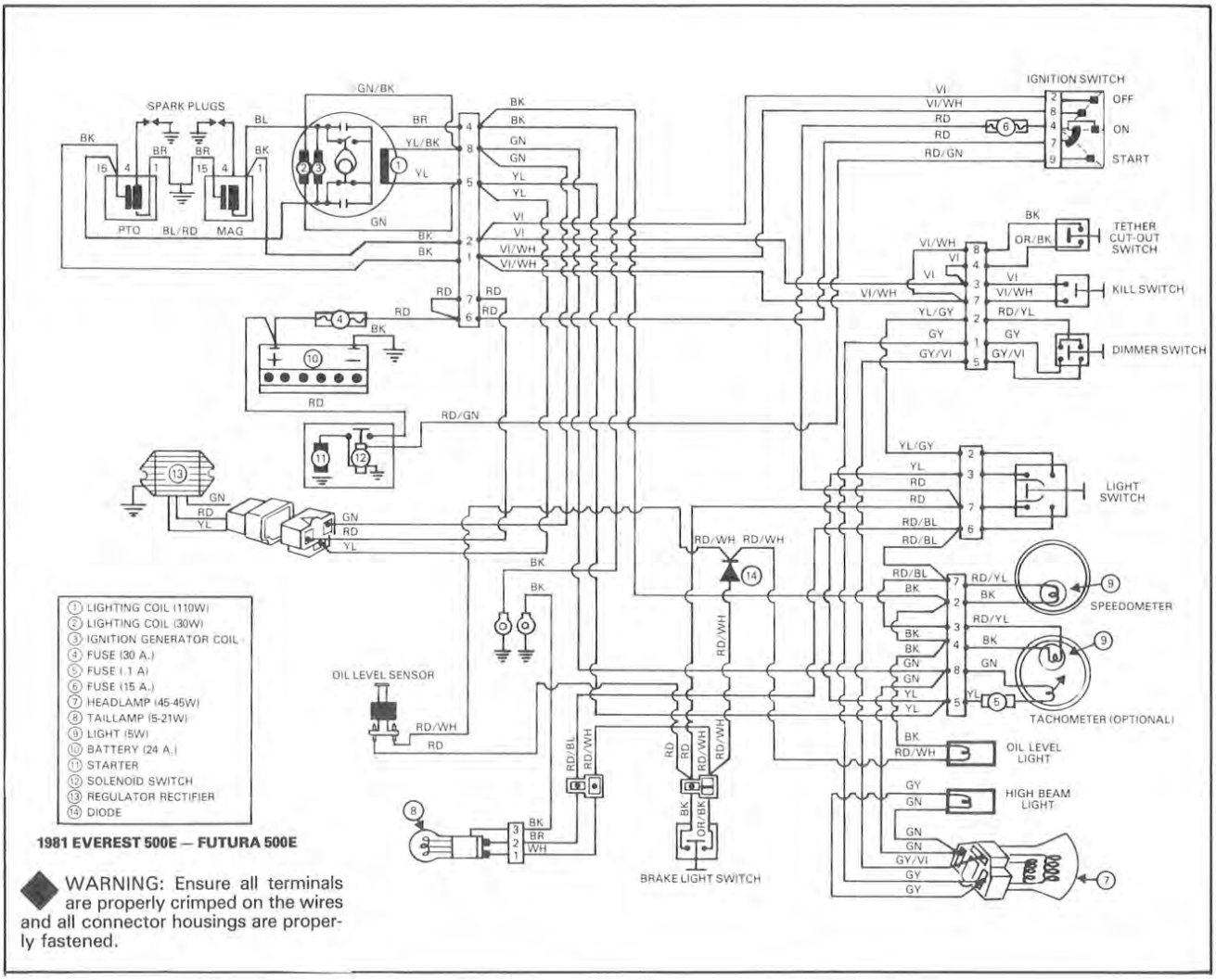


1981 CITATION 4500 E – MIRAGE IIE



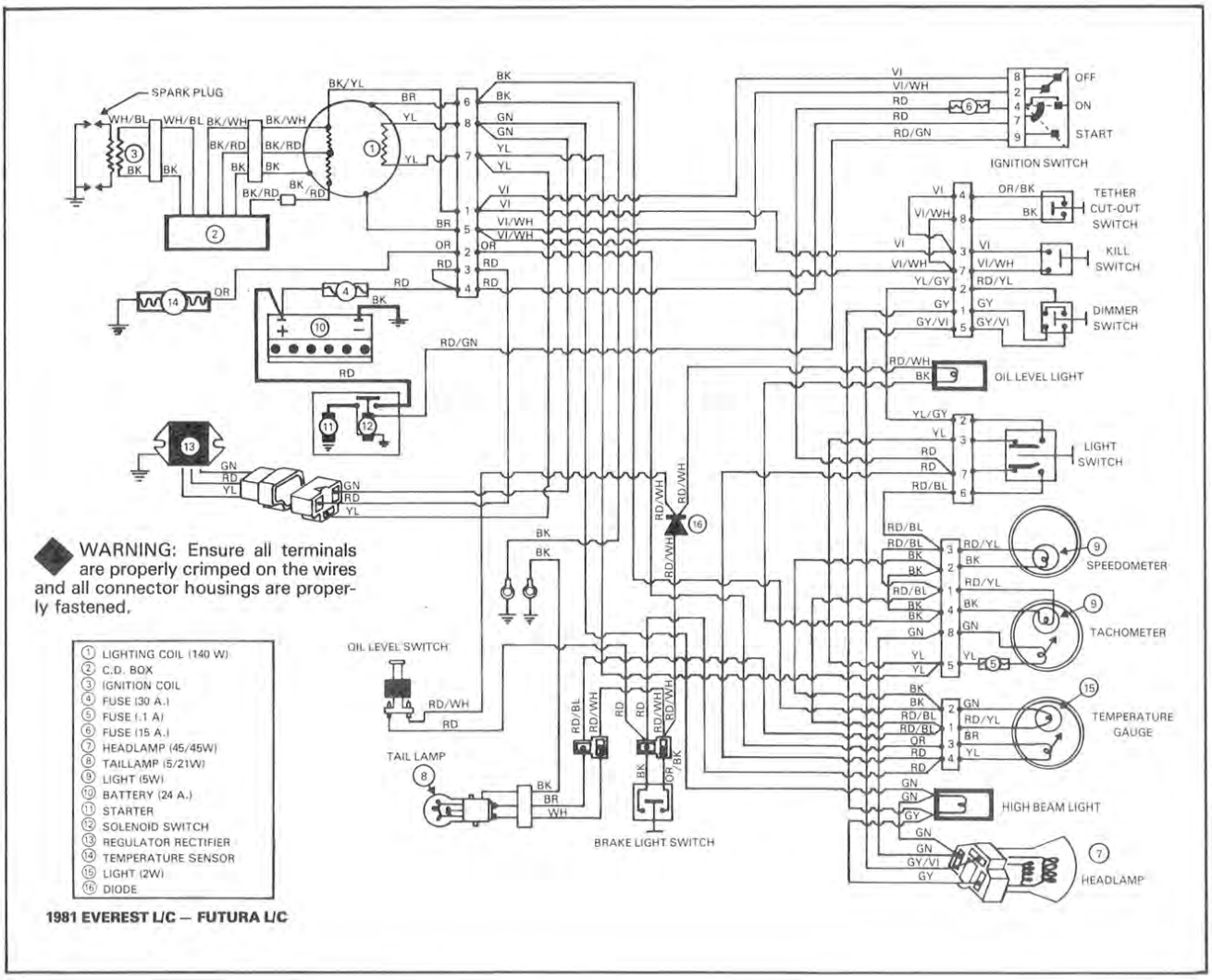
1981 EVEREST 500 — FUTURA 500

◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.



1981 EVEREST 500E — FUTURA 500E

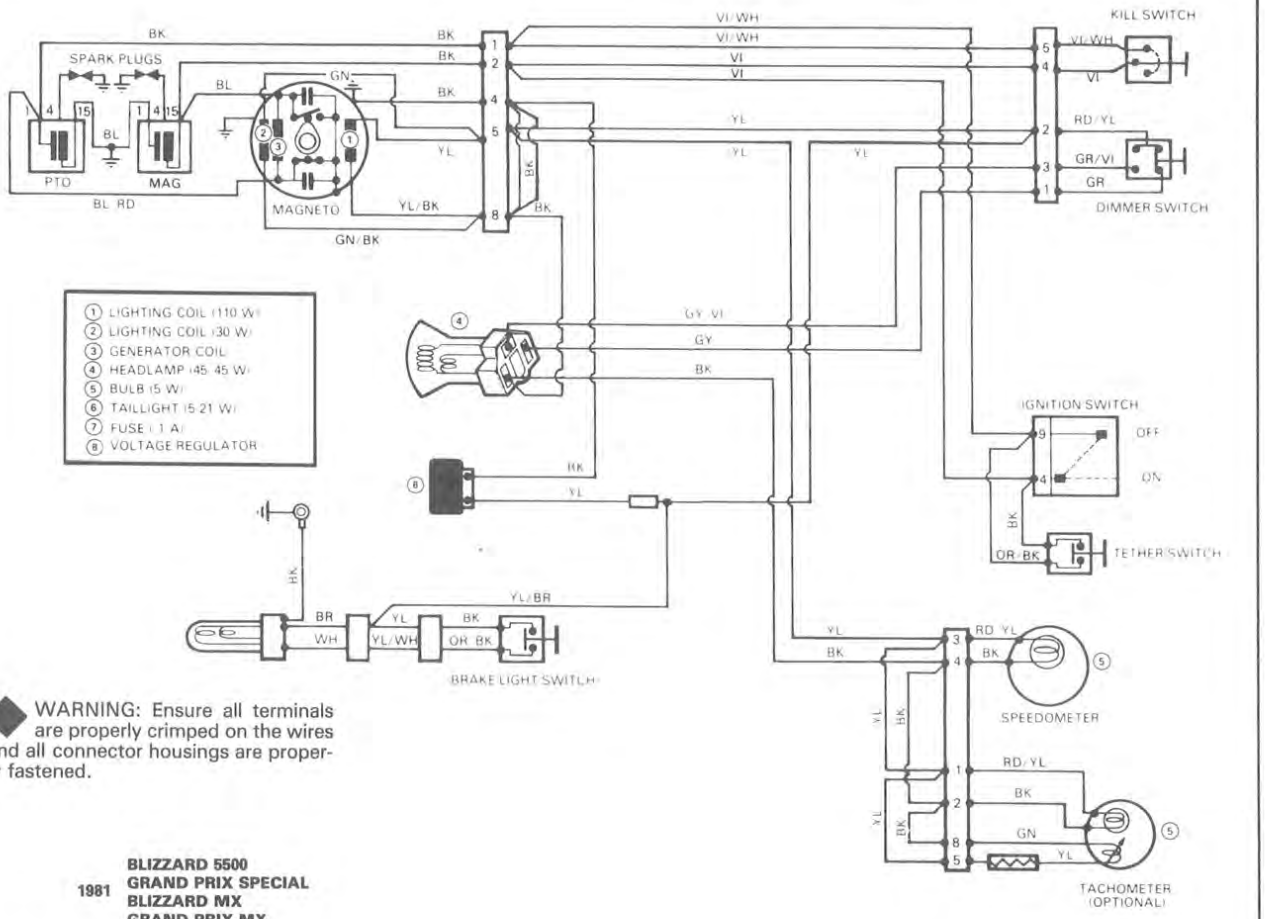
◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.



◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.

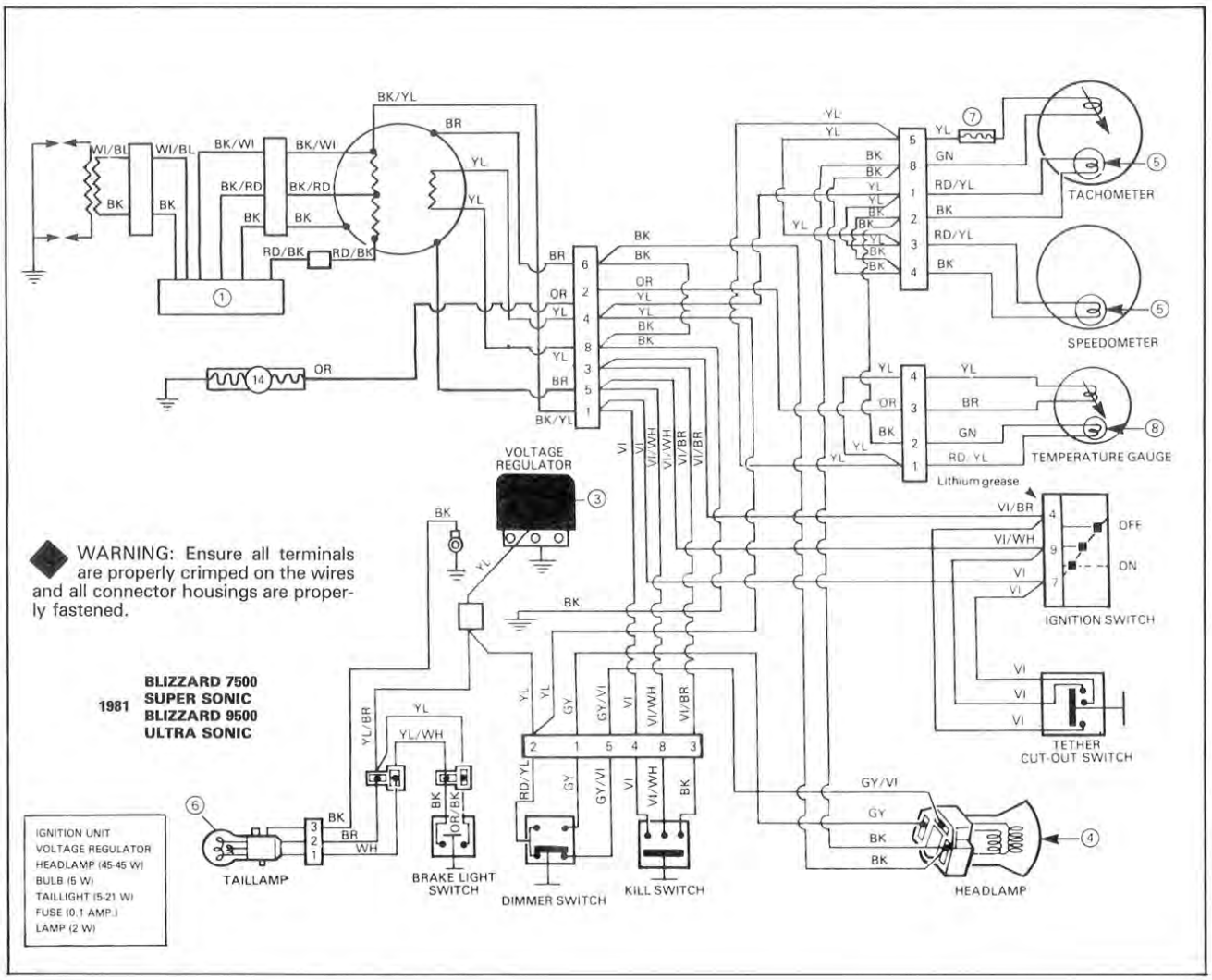
① LIGHTING COIL (140 W)
② C.D. BOX
③ IGNITION COIL
④ FUSE (30 A.)
⑤ FUSE (.1 A)
⑥ FUSE (15 A.)
⑦ HEADLAMP (45/45W)
⑧ TAILLAMP (5/21W)
⑨ LIGHT (5W)
⑩ BATTERY (24 A.)
⑪ STARTER
⑫ SOLENOID SWITCH
⑬ REGULATOR RECTIFIER
⑭ TEMPERATURE SENSOR
⑮ LIGHT (2W)
⑯ DIODE

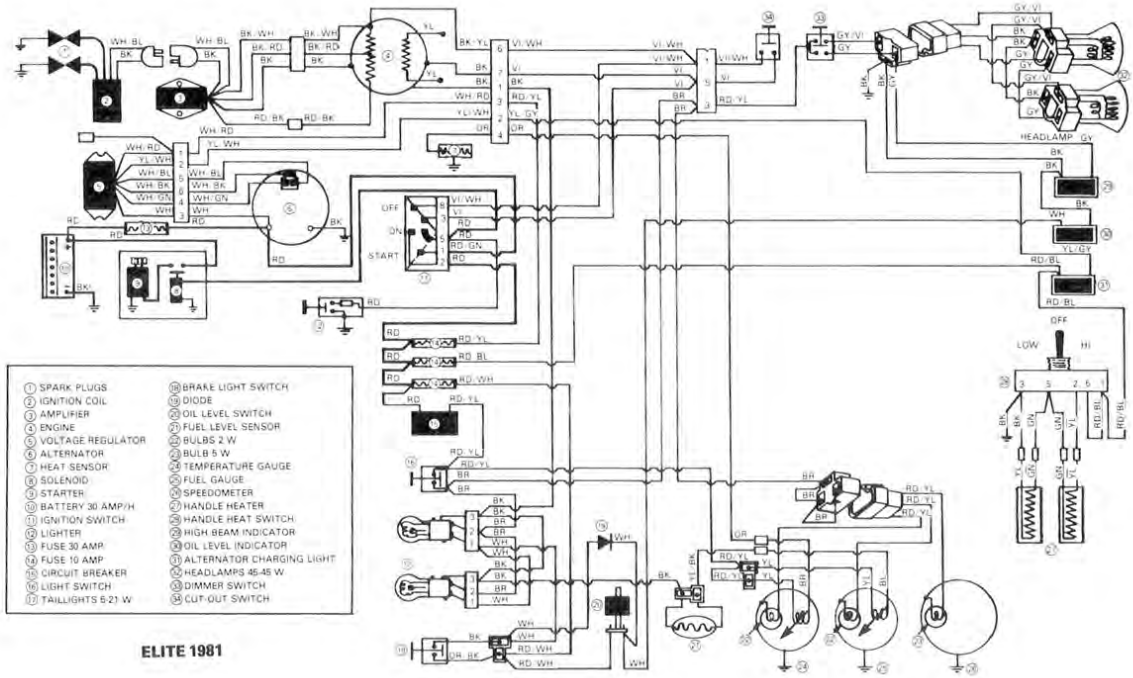
1981 EVEREST L/C — FUTURA L/C



◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.

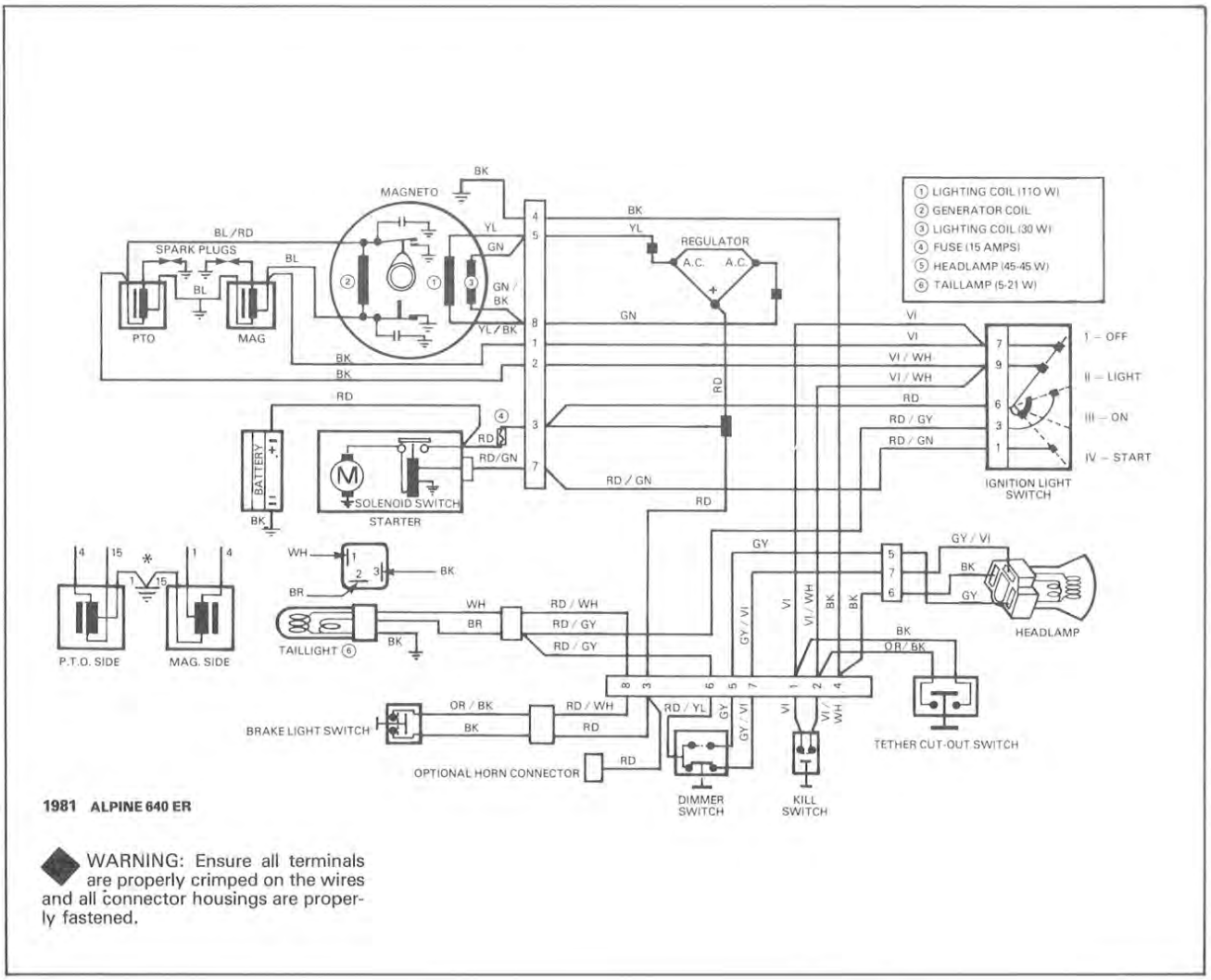
1981 BLIZZARD 5500
GRAND PRIX SPECIAL
BLIZZARD MX
GRAND PRIX MX





ELITE 1981

◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.



1981 ALPINE 640 ER

◆ WARNING: Ensure all terminals are properly crimped on the wires and all connector housings are properly fastened.

NIPPONDENSO ELECTRONIC IGNITION ENGINE

1981 engines equipped with Nippondenso are:

354 - Blizzard 7500 & Super Sonic
454 - Blizzard 9500 & Ultra Sonic
464 - Everest L/C & Futura L/C
464 - Elite

For 1981 breaker point engines such as:

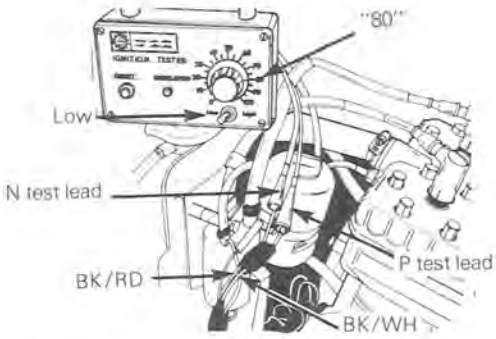
247 - Elan & Spirit
277 - Citation 3500 & Mirage I
377 - Citation 4500/E - Mirage II/E & Nordik
377 - Citation SS & Mirage Special
503 - Everest 500/E & Futura 500/E
503 - Blizzard 5500 & Grand Prix Special
503 - Blizzard MX & Grand Prix MX
640 - Alpine 640 E/R

Refer to the 1980 Bombardier Snowmobiles Shop Manual, section 04-02 (Electrical Charts).

Using Bombardier ignition tester, proceed as follows to check C.D.I. system.

A. HIGH SPEED CHARGING COIL

1. Disconnect wire connectors from C.D.I. electronic box harness at engine.
2. Connect tester P test lead to black/white wire and connect tester N test lead to black/red wire at the magneto harness.



3. Set tester switch and dial as follows:

ENGINE TYPE	SWITCH POSITION	DIAL
354, 454, 464	LOW	80

4. Turn ignition key to ON position, set cut-out switch and tether cut-out switch to OFF position then crank engine.

◆ **WARNING: To prevent powerfull electric shocks when engine is running, do not touch any components related to electronic ignition system (ignition coil, high tension wire, wire harness, etc...).**

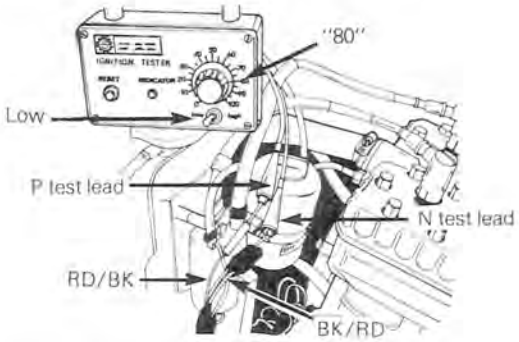
a) **Indicator lamp lights:** Coil output is up to specifications. Repeat at least three (3) times to verify reading and consistency.

b) **Indicator lamp does not light:** The problem is a faulty high speed charging coil.

◆ **WARNING: Do not touch tester P lead clip while cranking the engine. Also make sure that tester leads do not touch any metallic object.**

B. LOW SPEED CHARGING COIL

1. Disconnect wire connectors from C.D.I. electronic box harness to engine.
2. At the magneto harness, connect tester P test lead to red/black wire and connect tester N test lead to black/red wire.



3. Set tester switch and dial as follows:

ENGINE TYPE	SWITCH POSITION	DIAL
354, 454, 464	LOW	80

4. Turn ignition switch to ON position, set cut-out switch and tether cut-out switch to OFF position then crank engine.

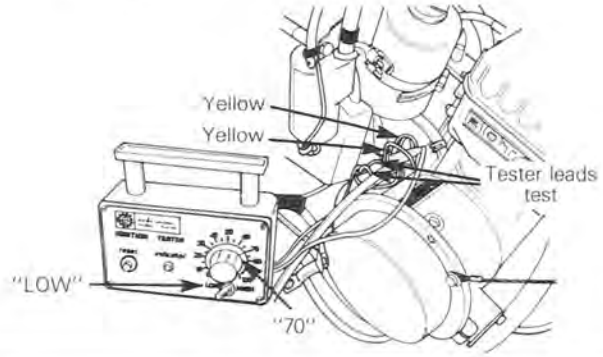
◆ **WARNING: To prevent powerfull electric shocks when engine is running, do not touch any electronic ignition components (ignition coil, high tension, wire, wire harness, etc...)**

a) **Indicator lamp lights:** Low speed charging coil is up to specifications. Repeat test at least three (3) times to verify reading and check for consistency.

b) **Indicator lamp does not light:** Low speed charging coil is faulty.

C. LIGHTING COIL

1. Disconnect wiring harness junction block at engine.
2. Connect tester P test lead to one of the two yellow wires and connect tester N test lead to the other yellow wire.



3. Set tester and dial as follows:

ENGINE TYPE	SWITCH POSITION	DIAL
354, 454, 464	LOW	70

4. Crank engine

a) **Indicator lamp lights:** Lighting coil output is up to specifications. Repeat test at least three (3) times to verify reading and consistency.

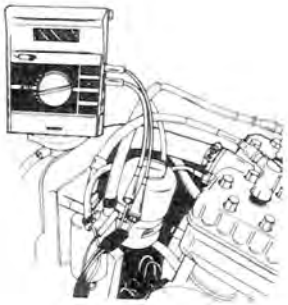
b) **Indicator lamp does not light:** Lighting coil is faulty.

D. C.D.I. PARTS INSPECTION PROCEDURE

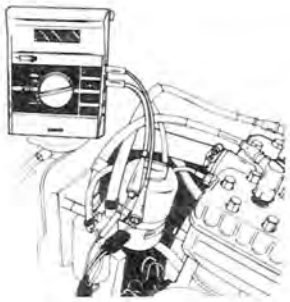
Disconnect the connectors of the C.D.I. electronic box, ignition coil and junction block at engine. Check the resistance or continuity between each terminals with an ohmmeter and refer to the following:

PART NAME		WIRE COLOR	RESISTANCE	BOMBARDIER IGNITION TESTER SETTING	REMARKS
MAGNETO	Low speed Charging coil	BK/WH with BK/RD (ill. 1*)	1.4 ~ 2.6 Ω	Low 80	If the reading is: 0 Ω - short circuit ∞ Ω - open circuit
	High speed Charging coil	RD/BK with BK/RD (ill. 2*)	125 ~ 235 Ω	Low 80	
	Lighting coil	YL with YL (ill. 3*)	0.09 ~ 0.2 Ω	Low 70	
IGNITION COIL	Primary	BK with WH/BL (ill. 4*)	0.23 ~ 0.43 Ω		
	Secondary winding	High tension wire with high tension wire (ill. 5*)	2.45 ~ 4.55 KΩ		
	Insulation	WH/BL with core (ill. 6*)	∞ Ω		
		WH/BL with high tension wire (ill. 7*)			

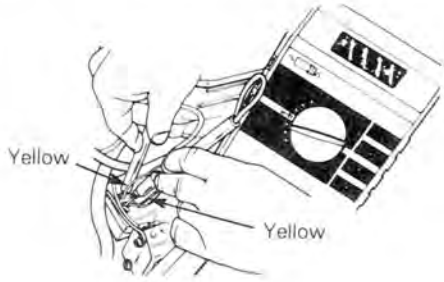
ILL. 1



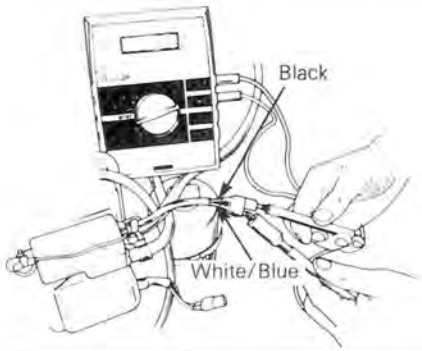
ILL. 2



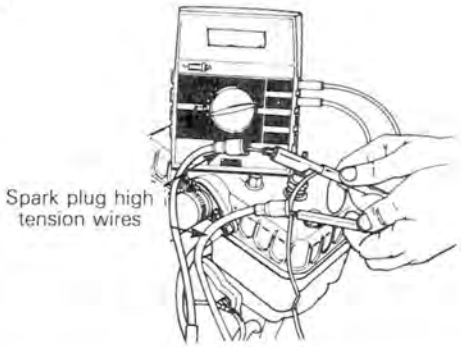
ILL. 3



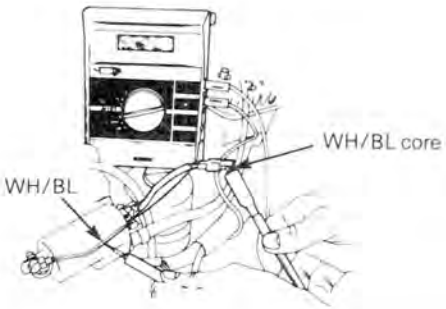
ILL. 4



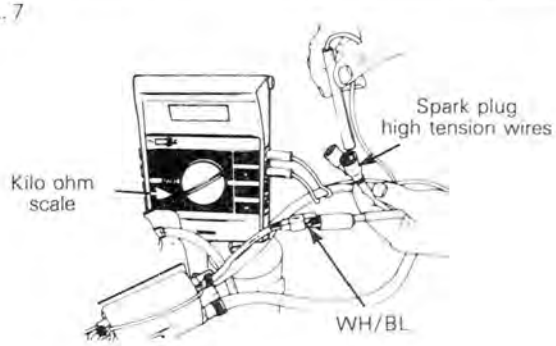
ILL. 5



ILL. 6

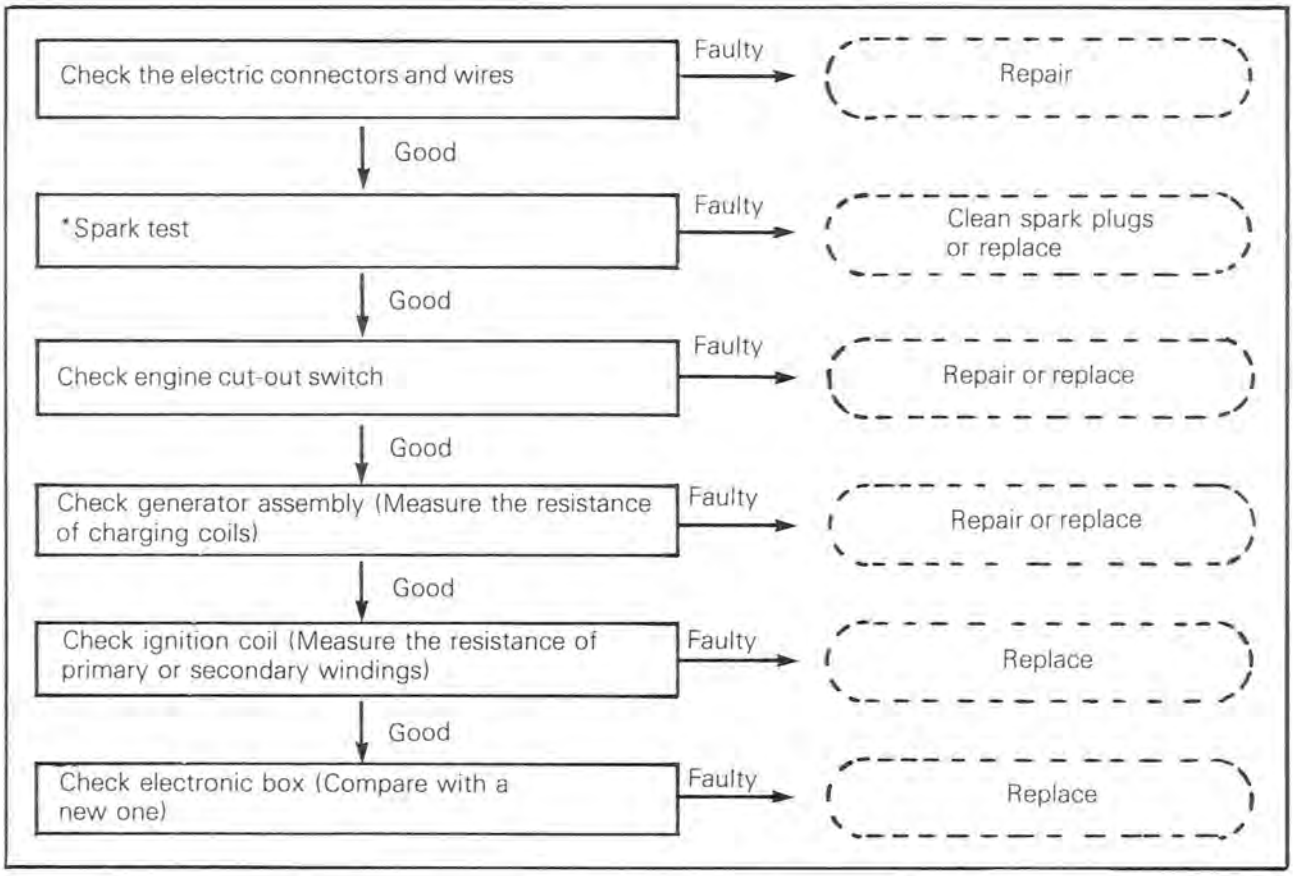


ILL. 7



IGNITION TROUBLE SHOOTING CHART

If engine trouble is considered to be caused by any defect in the C.D.I. system, check the system with the following steps.



***Spark test**

1) Disconnect spark plug wire, unscrew plug and remove from cylinder head. Reconnect wire and ground exposed plug on engine cowl, being careful to hold away from spark plug hole.
2) Rotate the engine, and if sparks take place, the C.D.I. system is considered to be in good condition.

ELECTRIC STARTER

For the following 1981 models:

Citation 4500/E - Mirage II/E
Everest 500/E - Futura 500/E
Everest L/C - Futura L/C
Elite
Alpine 640 E/R

Refer to the 1980 Bombardier Snowmobiles Shop Manual, section 04-03 (ELECTRIC STARTER).

BATTERY

For the following 1981 models:

Citation 4500/E - Mirage II/E
Everest 500/E - Futura 500/E
Everest L/C - Futura L/C
Elite
Alpine 640 E/R

Refer to the 1980 Bombardier Snowmobiles Shop Manual, section 04-04 (Battery).

For instructions on activation of a new battery, refer to this section.

INSTRUCTION FOR A NEW BATTERY

A new battery is factory fresh dry charged. For storage purposes, it is fitted with a temporary sealing tube. Do not remove sealing tube or loosen battery caps unless activation is desired. In case of accidental removal of caps or sealing tubes prematurely, battery should be given a full charge.

1. Remove sealing tube from vent elbow. Install overflow tube contained in the battery kit.

◆ **WARNING: Failure to remove sealing tube could result in an explosion.**

2. Remove caps and fill battery to the UPPER LEVEL line with electrolyte (specific gravity: 1.260 at 20°C (68°F)).
3. Allow battery to stand for 30 minutes MINIMUM so that electrolyte can soak through battery cells.
4. Adjust electrolyte level to UPPER LEVEL.
5. Charge battery at a charging rate of **2.0 amperes** for 10 to 20 hours.

▼ **CAUTION: If cell temperature rises higher than 50°C (122°F) discontinue charging temporarily or reduce the charging rate.**

6. After charging, get rid of gas bubble out of battery by vibrating it lightly by hand.
7. Readjust electrolyte level to UPPER LEVEL.
8. Reinstall caps to original position and wipe off any spillage on battery using baking soda powder and water mixture.

◆ **WARNING: Overflow tube must be free and open. A kinked or bent tube will restrict ventilation and create gas accumulation that could result in an explosion.**

ALTERNATOR & REGULATOR (ELITE)

For the following 1981 model:

Elite

Refer to the Bombardier Snowmobiles Shop Manual, section 04-05 (Alternator).

SPARK PLUG

For all 1981 models:

Refer to the 1980 Bombardier Snowmobiles Shop Manual - section 04-06 (Spark Plug) for the followings:

- Spark plug numbering system
- Heat range
- Fouling
- Spark plug analysis
- Spark plug installation

For all 1981 models:

Refer to the following "Spark plug chart".

VEHICLE	ENGINE TYPE	BOSCH* SPARK PLUG NUMBER
Elan & Spirit	247	M175 T1 (M7A)
Citation 3500 & Mirage I	277	W275 T2 (W3C)
Citation 4500/E & Mirage II/E	377	W275 T2 (W3C)
Nordik	377	W275 T2 (W3C)
Citation SS & Mirage Special	377	W275 T2 (W3C)
Everest 500/E & Futura 500/E	503	W275 T2 (W3C)
Everest L/C & Futura L/C	464	W275 T2 (W3C)
Blizzard 5500 & Grand Prix Special	503	W275 T2 (W3C)
Blizzard MX & Grand Prix MX	503	W275 T2 (W3C)
Blizzard 7500 & Super Sonic	354	W300 T2 (W2C)
Blizzard 9500 & Ultra Sonic	454	W300 T2 (W2C)
Alpine 640 E/R	640	M240 T1 (W4A2)
Elite	464	W275 T2 (W3C)

PULLEY GUARD

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual (Section 05-01).
(For the Nordik refer to the Citation 4500)

DRIVE BELT

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual (section 05-02).
(For the Nordik, refer to the Citation 4500).

DRIVE PULLEY

For the following 1981 models:

Spirit - Elan
Mirage Special - Citation SS
Nordik (refer to the Citation SS type drive pulley)
Futura LC - Everest LC
Futura 500/E - Everest 500/E
Grand Prix Special - Super Sonic, Ultra Sonic
Blizzard 5500, 7500, 9500
Grand Prix MX - Blizzard MX (refer to Grand Prix Special and Blizzard 5500)
Alpine - Elite

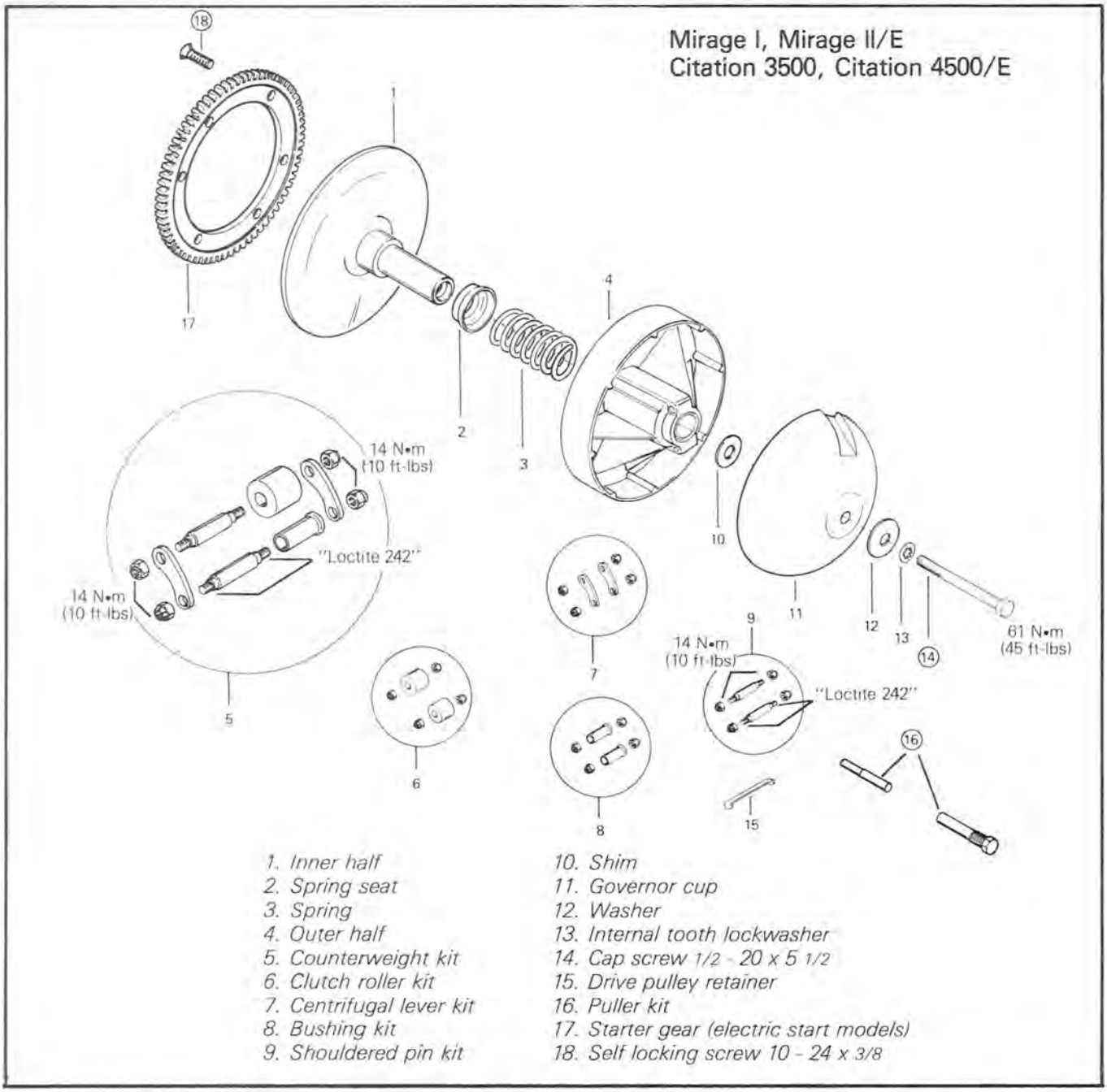
refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual.

For the following 1981 models

Mirage I - Citation 3500
Mirage II - Citation 4500/E

refer to this section.

ROUND SHAFT (TAPER) TYPE



1. *Inner half*
2. *Spring seat*
3. *Spring*
4. *Outer half*
5. *Counterweight kit*
6. *Clutch roller kit*
7. *Centrifugal lever kit*
8. *Bushing kit*
9. *Shouldered pin kit*
10. *Shim*
11. *Governor cup*
12. *Washer*
13. *Internal tooth lockwasher*
14. *Cap screw 1/2 - 20 x 5 1/2*
15. *Drive pulley retainer*
16. *Puller kit*
17. *Starter gear (electric start models)*
18. *Self locking screw 10 - 24 x 3/8*

◆ WARNING: Drive pulley repairs that include any disassembly or assembly procedures must be performed by an authorized Bombardier dealer, or other such qualified person. Sub-component installation and assembly tolerances require strict adherence to procedures detailed.

▼ CAUTION: Mirage and Citation models are equipped with drive pulleys of METRIC dimensions.

REMOVAL

With engine cold, disconnect the 2 muffler springs and the 3 exhaust pipe springs. Remove muffler.

Lock the crankshaft by using one of the following method:

Insert the crankshaft locking tool P/N 420 876 640 into the impulse hole of the engine. Slowly rotate the crankshaft until it locks into position.

▼ CAUTION: Do not use any type of pin other than the tool P/N 420 876 640 supplied with the tool kit.

OR:

Remove spark plug(s) then bring P.T.O. piston at T.D.C. position.

Rotate drive pulley 45° **clockwise** then insert enough starter rope into cylinder to fill it completely.

◆ WARNING: Spring pressure can force assembly apart; therefore, it is imperative that the governor cup be held firmly during governor retaining bolt removal.

If it is necessary to remove fixed half, use drive pulley puller ⑯ no. 529-0028 and 529-0030.

▼ CAUTION: This pulley has metric threads. Do not use standard thread puller.

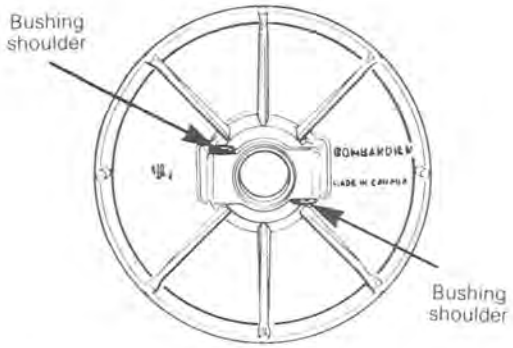
Remove starter rope blocking piston, then reblock piston after having turned 45° **counter-clockwise** from T.D.C. position; or install crankshaft locking tool.

Install puller in pulley shaft then tighten, at the same time knock slightly on puller head to disengage pulley from engine crankshaft.

DISASSEMBLY & ASSEMBLY

⑭ At assembly, torque bolt to 61 N•m (45 ft-lbs?.

⑤ Shouldered pin bushings must be installed in sliding half as per illustration.



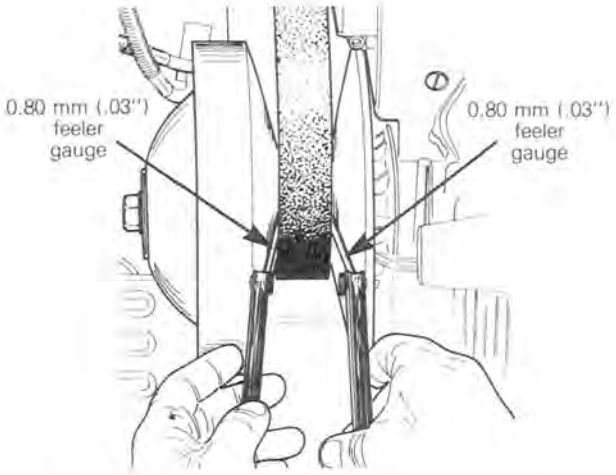
⑱ Apply "Loctite 242" on threads.

⑤ ⑨ Apply "Loctite 242" on threads and torque to 14 N•m (10 ft-lbs).

▼ CAUTION: Do not disassemble counterweights unless replacement is necessary.

◆ WARNING: Shim(s) ⑩ is(are) used to obtain a neutral fonction of the drive pulley when engine is idling. Proceed as follows when retaining bolt is torqued:

With a **new** drive belt installed, you should be able to insert a minimum of 0.80 mm (.030") thick feeler gauge on each side of the drive belt simultaneously when pushing drive belt to sit on bearing.



Shim ⑩ located between governor cup and drive pulley shaft will help you to obtain correct adjustment. Use not more then two (2) shims.

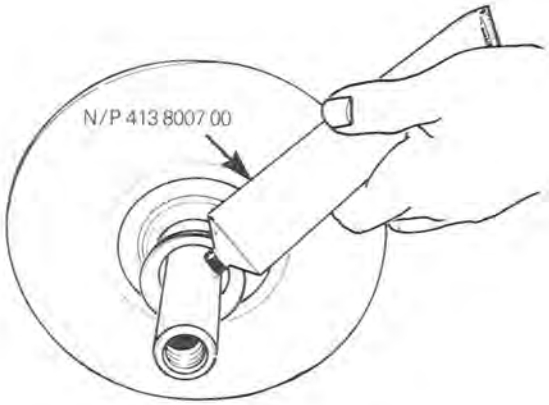
CLEANING

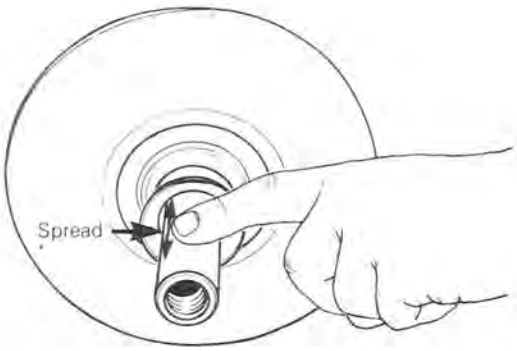
Clean pulley faces and shaft with fine steel wool and dry cloth. Clean sliding half bushing with clean dry cloth.

INSTALLATION

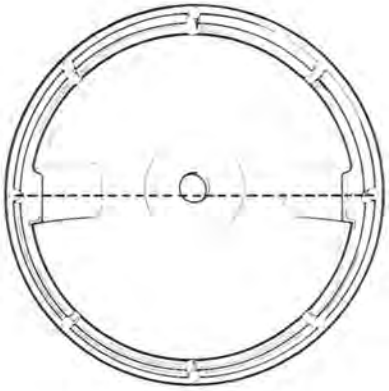
Lock crankshaft in position as explained in removal procedure. Make sure crankshaft is rotated 45° counterclockwise from T.D.C. position and that cylinder is completely filled with a starter rope.

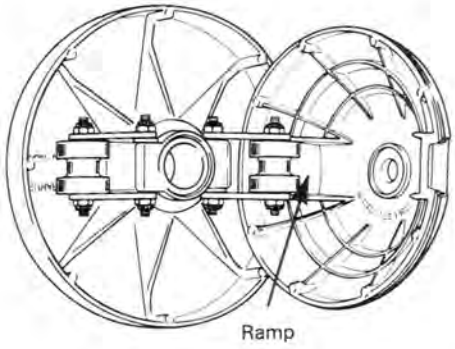
Lubricate **lightly** pulley shaft with clutch lube P/N 413 8007 00.





Install governor cup correctly as per illustration making sure that the rollers are sliding on their ramp.





⑭ Position retaining bolt then torque to 61 N•m (45 ft-lbs).

DRIVEN PULLEY

For the following 1981 models:

Élan - Spirit
Alpine - Élite

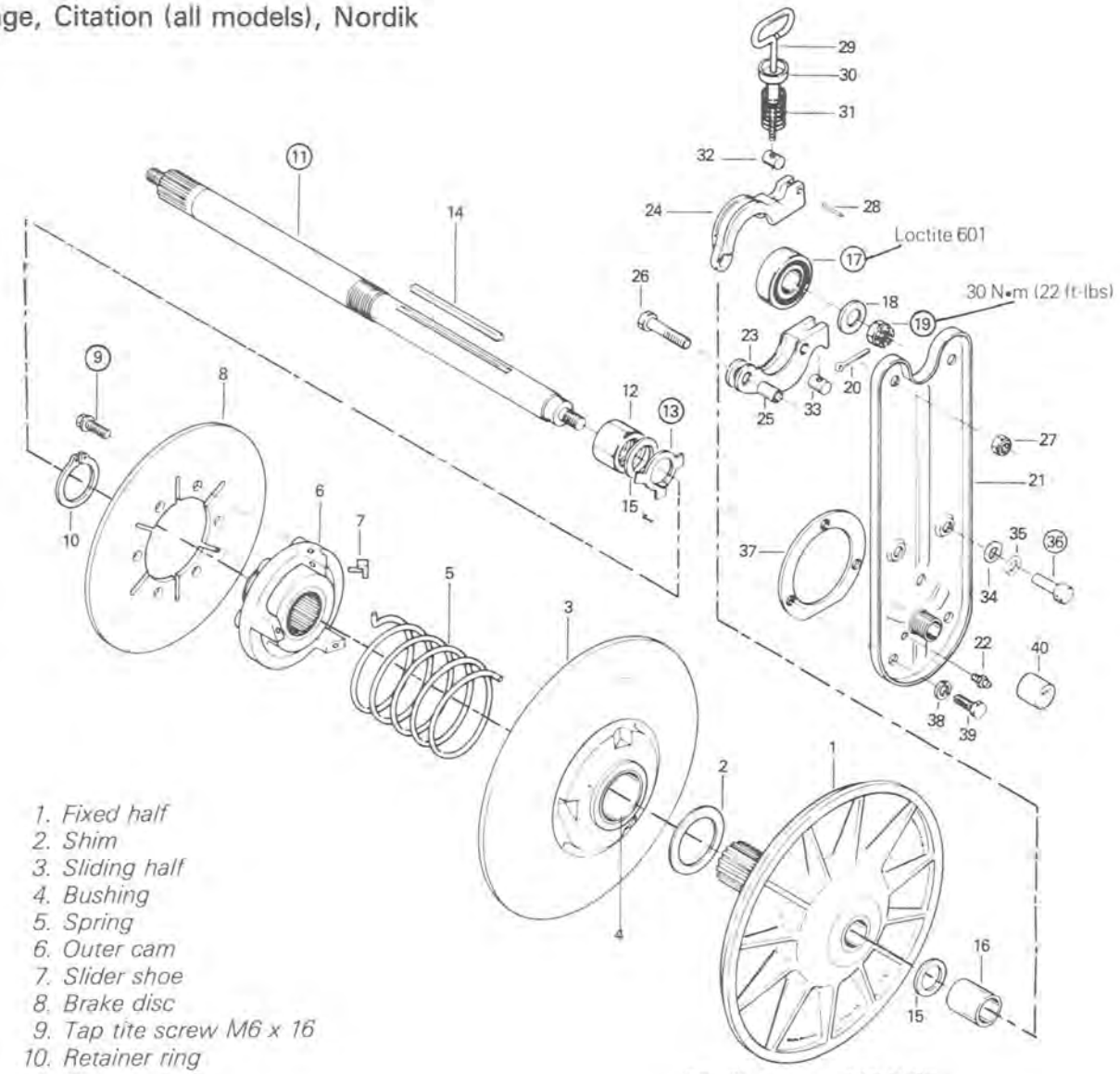
refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual.

For the following 1981 models:

Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Nordik
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard 5500 - Grand Prix Special
Blizzard MX - Grand Prix MX
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic

refer to this section.

Mirage, Citation (all models), Nordik



1. Fixed half
2. Shim
3. Sliding half
4. Bushing
5. Spring
6. Outer cam
7. Slider shoe
8. Brake disc
9. Tap tite screw M6 x 16
10. Retainer ring
11. Countershaft
12. Adjuster nut
13. Lock tab
14. Key
15. Shim
16. Spacer tube
17. Bearing
18. Flat washer 17/32" x 1 1/16"
19. Slotted nut 14 mm
20. Cotter pin
21. Support
22. Grease fitting
23. Bearing housing
24. Bearing housing
25. Bushing
26. Cap screw M8 X 35
27. Stop nut 8 mm
28. Roll pin
29. Eye bolt
30. Bushing
31. Spring
32. Barrel
33. Barrel
34. Flat washer 8.4 x 25 1.6 mm
35. Lockwasher 8 mm
36. Cap screw M8 x 1.25 x 16
37. Retainer ring
38. Lockwasher 6 mm
39. Cap screw M6 x 16
40. Plug

DRIVEN PULLEY REMOVAL:

Remove the following items:

- pulley guard and drive belt
- ㊱ ㊴ Support screws and drive axle housing screws
- ㉑ Tilt support forward.

Remove the driven pulley assembly from the countershaft.

- remove the driven pulley assembly from the countershaft

DISASSEMBLY AND ASSEMBLY

◆ **WARNING: The driven pulley cam is spring loaded. Hold in place when removing the circlip.**

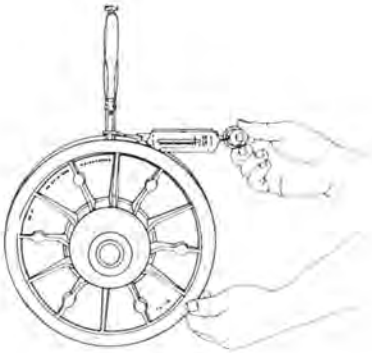
Check sliding half bushing wear, replace bushing if wear is excessive.

To replace bushing, push out using a press.

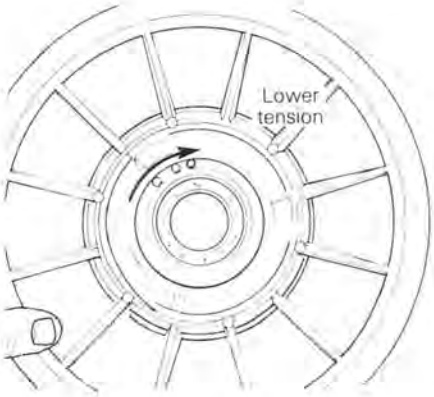
Install new bushing using same procedure.

Check tension using a fish scale positioned at 90° with the pulley axle.

Tension: Nordik: 5 1/2 kg ± 1 (12 lbs ± 2)
All other Citation and Mirage models: 3.6 kg ± 1 (8 lbs ± 2)



To correct spring tension displace spring end accordingly.



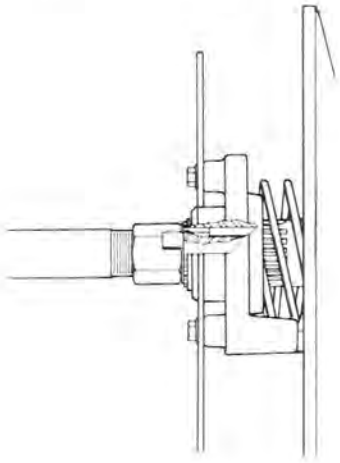
INSTALLATION

⑨ Torque to 9 N•m (6 ft-lbs).

⑪ Always apply anti-seize compound (Loctite anti-seize lubricant P/N 413 7010 00) on unpainted surface of countershaft.

⑲ Torque to 30 N•m (22 ft-lbs).

⑬ Make sure the small tab of the lock tab is well inserted in the driven pulley keyway.

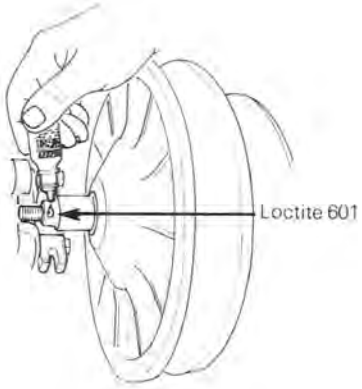


Reassemble driven pulley to countershaft and install by inversing the removal procedure.

Check pulley alignment.

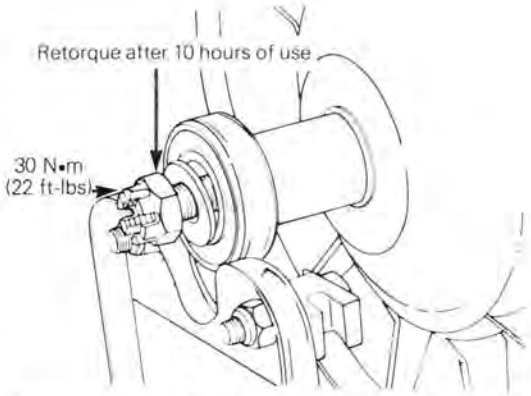
Only after alignment is completed, apply Loctite 601 (P/N 413 7031 00) on bearing seat.

Make sure shaft surface is free of dirt and grease.

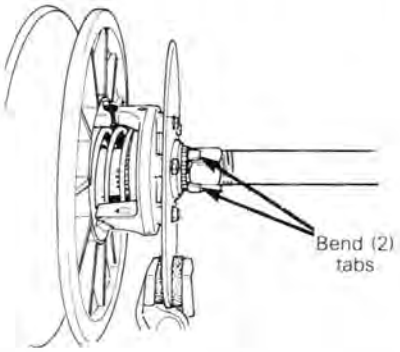


Install bearing, washer and nut.

⑲ Torque to 30 N•m (22 ft-lbs).

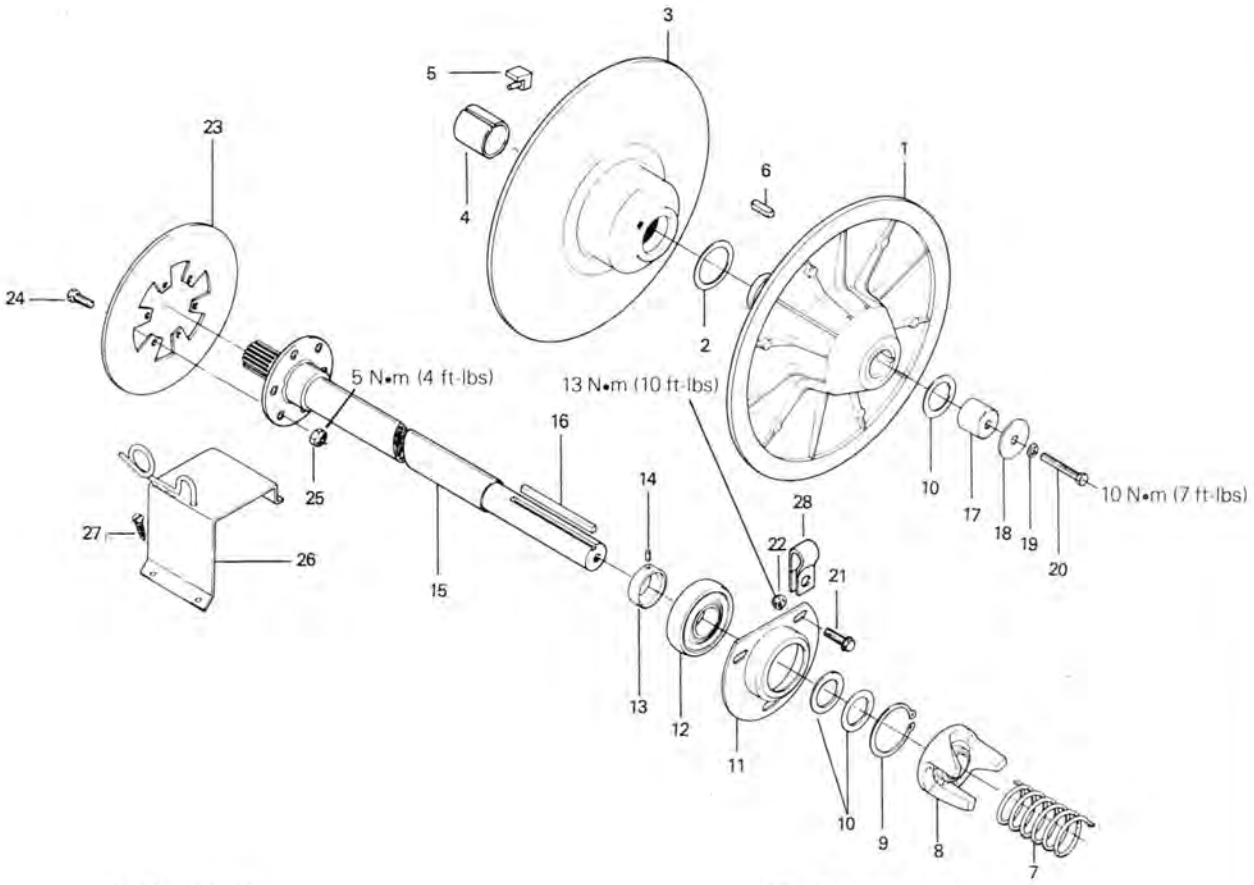


Always bend two (2) tabs on the adjuster nut so as to properly lock the nut (right side of driven pulley).



CAUTION: Make sure the lock tab is secured in the driven pulley keyway.

Everest, Futura (all models)
Grand Prix Special & Grand Prix MX
Blizzard (all models)
Super Sonic, Ultra Sonic

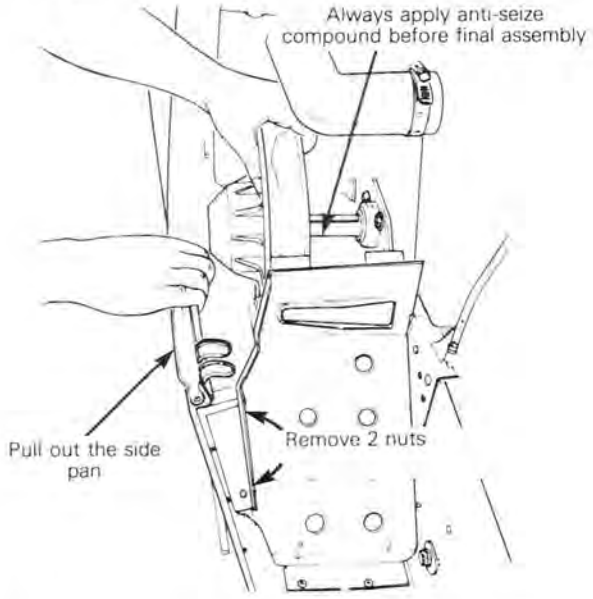


1. *Fixed half*
2. *Shim*
3. *Sliding half*
4. *Bushing*
5. *Slider shoe*
6. *Key*
7. *Spring*
8. *Cam*
9. *Snap ring*
10. *Shim*
11. *Bearing flange*
12. *Bearing*
13. *Collar*
14. *Socket set screw 1/4 - 20 x 1/4*
15. *Countershaft*
16. *Key*
17. *Extension*
18. *Washer*
19. *Lockwasher 1/4*
20. *Screw 1/4 - 20 X 1 3/4*
21. *Screw 5/16 - 18 x 5/8*
22. *Elastic stop nut 5/16 - 18*
23. *Disc*
24. *Screw 10-32 x 3/4*
25. *Elastic stop nut 10-32*
26. *Protector*
27. *Metal screw 8 x 1/2*
28. *Clip*

DRIVEN PULLEY REMOVAL

Remove the following items:

- Upper elastic stop nut retaining the front side pan bracket.
- Two rear side pan retaining nuts.
- Belt guard and drive belt.



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

Pull out the side pan and remove pulley assembly.

DISASSEMBLY AND ASSEMBLY

◆ WARNING: The driven pulley cam is spring loaded. Hold in place when removing the circlip.

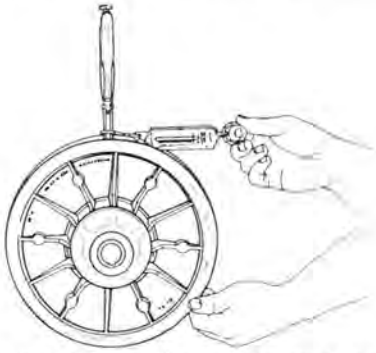
Check sliding half bushing wear, replace bushing if wear is excessive.

To replace bushing, push out using a press.

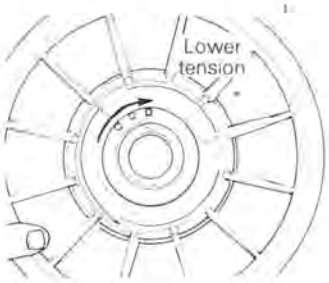
Install new bushing using same procedure.

Check tension using a fish scale positioned at 90° with the pulley axle.

Refer to section 02, 05-04 for tension specification.



To adjust spring tension, displace spring end accordingly.

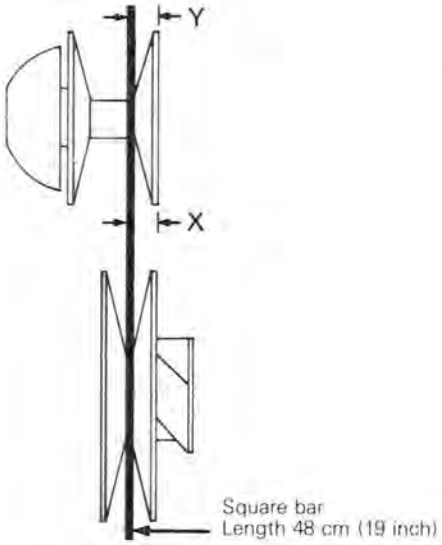


Reassemble by reversing removal procedure.

PULLEY ALIGNMENT

Remove pulley guard and drive belt. Check tightness of engine mount nuts.

OFFSET ADJUSTMENT



- Dimension "X" must never exceed dimension "Y".
- Dimension "Y" can exceed dimension "X" by 1.6 mm (1/16").

Offset:

34 mm (1 11/32")

Elan - Spirit
Citation - Mirage (all models)
Nordik
Elite - Alpine

33 mm (1 9/32")

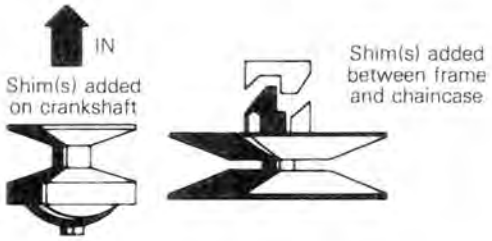
Everest - Futura (all models)
Blizzard (all models)
Grand Prix - Super Sonic
Ultra Sonic

Elan, Spirit, Alpine

If drive pulley is too far in, remove drive pulley and add shim(s) on crankshaft.

CAUTION: Never use more than 5 shims on crankshaft.

If drive pulley is too far out, Alpine model excluded, add shim(s) between frame and chaincase.



On Alpine model, check tightness of gearbox attaching bolts. If necessary, remove shim(s) from crankshaft. The engine can also be slid on either side by slackening the engine bracket from the support, for better adjustment.

WARNING: Always torque drive pulley bolt within specifications. (See Technical Data).

Citation, Mirage (all models) Nordik

If the driven pulley is too far in or out, it can be corrected by sliding it toward appropriate side.

To adjust:

- Loosen the bearing retainer nut (remove cotter pin).
- Open the adjuster nut tab lock.
- Turn adjuster nut so as to move the pulley to proper alignment location (adjuster nut can be turned both ways). Make sure pulley alignment is checked with the adjuster nut resting against the driven pulley ass'y.
- If required, remove the bearing, bushing etc.
- Remove or add shims so that the bearing remains centered in the bearing cage. (Shims are 0.8 mm (.032") thick each P/N 504 1057 00).

CHAINCASE

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual (section 05-07).
(For the Nordik refer to the Citation 4500)

SHIFTER MECHANISM

For the following 1981 models:

Alpine (model 3326)
Elite

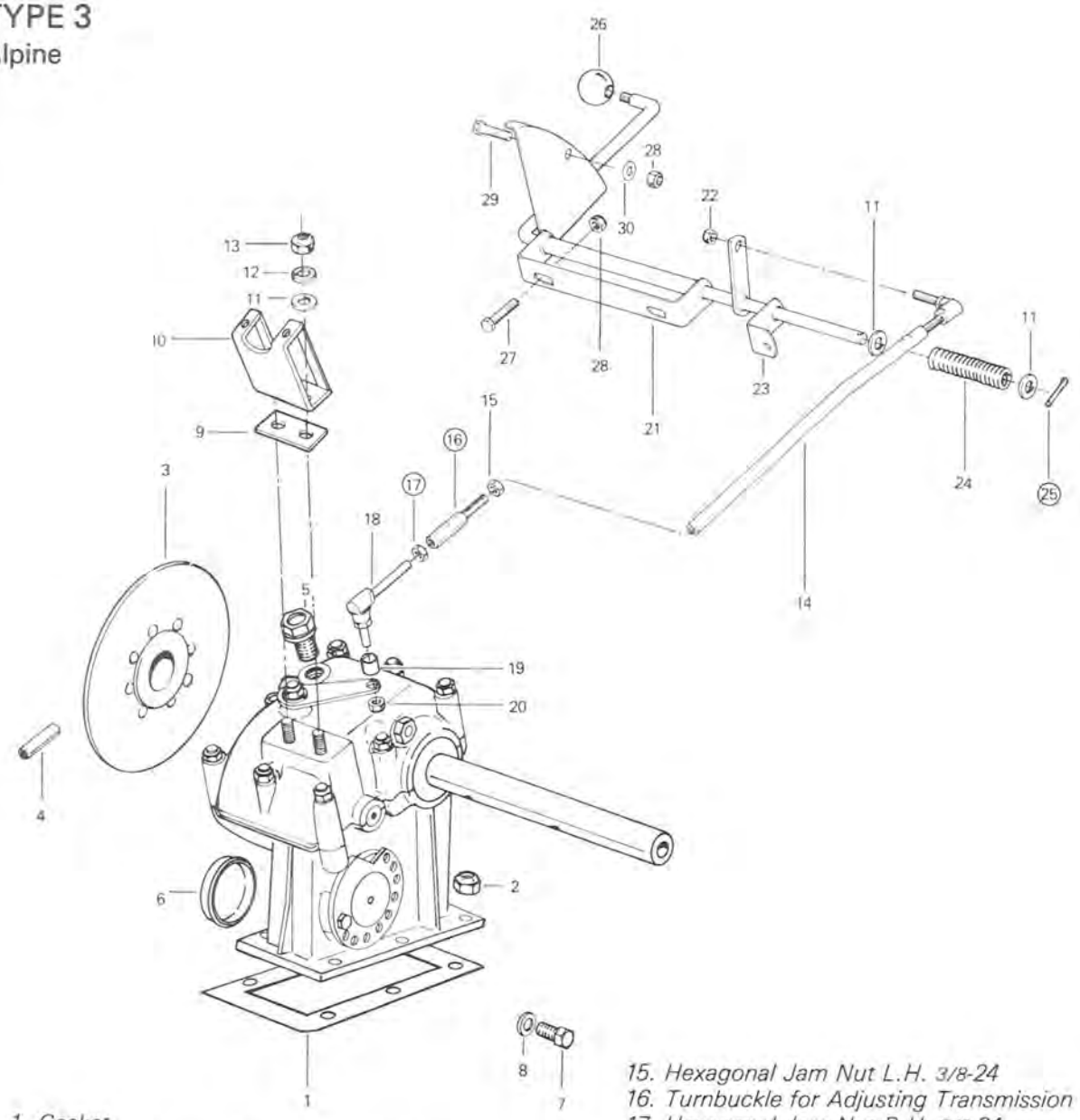
refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual.

For the following 1981 model:

Alpine (model no. 3327)

refer to this section

TYPE 3
Alpine



1. Gasket
2. Hexagonal Elastic Stop Nut 5/16-24
3. Disk
4. Spirol Pin
5. Breather Plug
6. Rubber Cover
7. Hexagonal Drain Screw 5/16-18 x 1/2
8. Flat Washer 1/32 x 11/16 x .090
9. Spacer
10. Steering Bracket
11. Flat Washer 13/32 x 13/16 x .060
12. Lockwasher 10 mm
13. Hexagonal Nut 10 mm
14. Transmission Rod
15. Hexagonal Jam Nut L.H. 3/8-24
16. Turnbuckle for Adjusting Transmission Rod (14)
17. Hexagonal Jam Nut R.H. 3/8-24
18. Tie Rod End R.H.
19. Spacer
20. Hexagonal Elastic Stop Nut 3/8-24
21. Transmission Lever
22. Hexagonal Elastic Stop Nut 3/8-24
23. Bracket
24. Spring
25. Cotter pin
26. Ball
27. Hexagonal Head Cap Screw 1/4-20 x 1 1/4
28. Hexagonal Elastic Stop Nut 1/4-20
29. Hexagonal Head Cap Screw 1/4-20 x 3/4
30. Flat Washer 9/32 x 5/8 x .060

DISASSEMBLY & ASSEMBLY

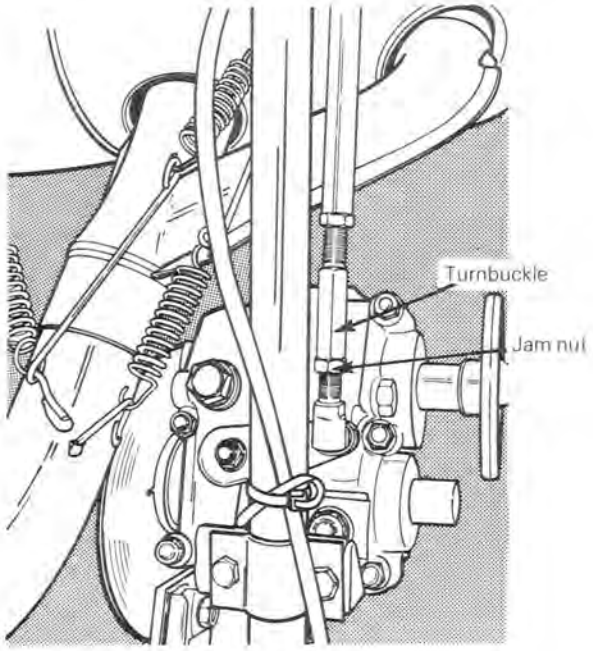
㉕When assembling, always reinstall new cotter pin.

SHIFTER ADJUSTMENT

With gearbox lever properly engaged in gear, adjust so that shifter lever fits correctly in corresponding gear groove.

To adjust, loosen ⑰ jam nut and adjust ⑯ turnbuckle as required.

Retighten ⑰ jam nut.



GEARBOX

For the following 1981 models:

Alpine (model no. 3326)
Élite

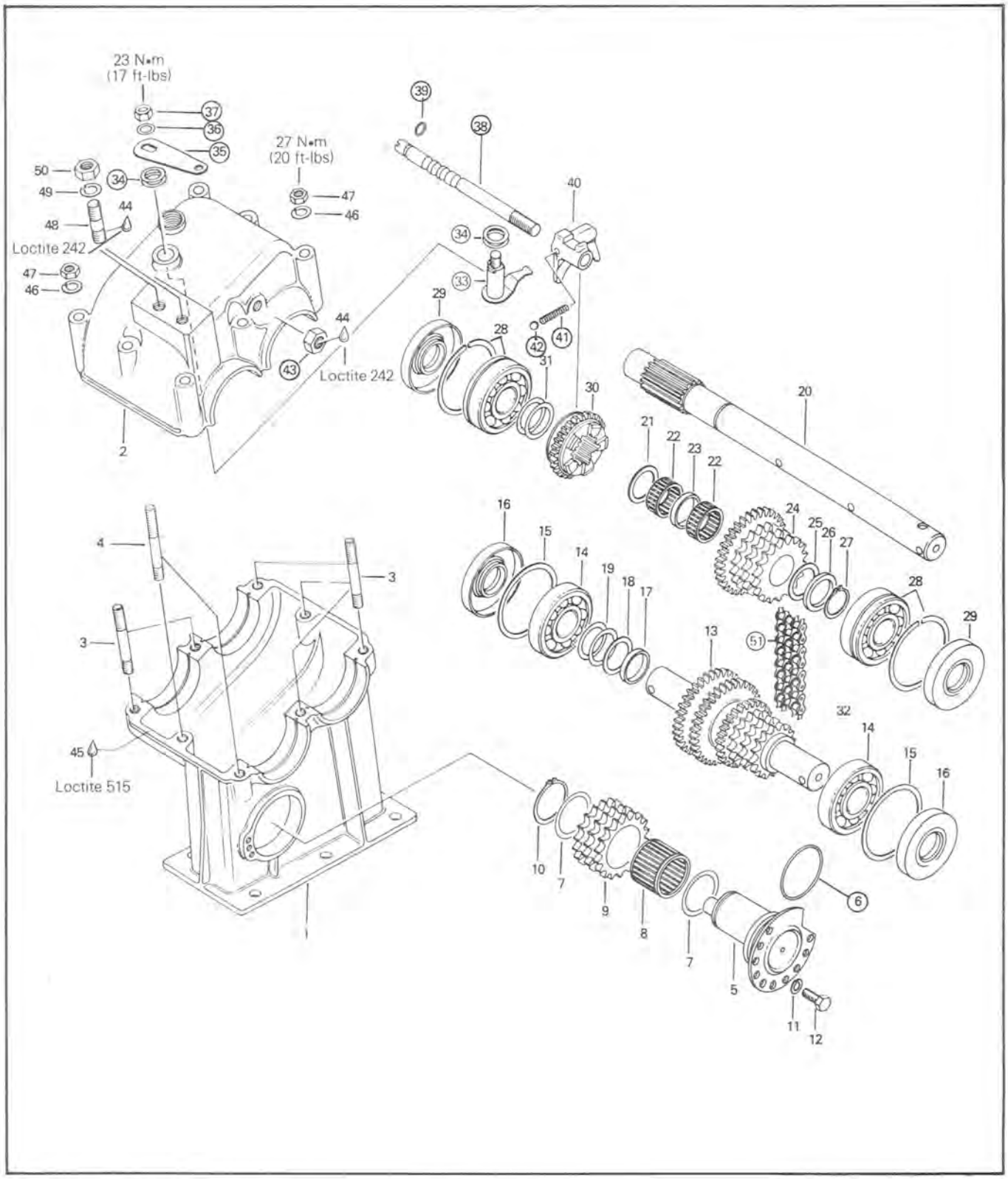
refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual.

For the following 1981 model:

Alpine (model 3327)

refer to this section

GEARBOX, 2 SPEED FORWARD



1-4 Housing Assembly
3. Stud M8 x 52
4. Stud M8 x 56
5. Tensioner Axle Assembly
6. O-Ring
7. Washer 25.3 x 33.5 x 1.5
8. Needle Cage
9. Tensioner Sprocket 18 Teeth
10. Circlip
11. Lockwasher 6 mm
12. Hexagonal Screw M6 x 14
13. Layshaft Assembly
14. Ball Bearing 6005
15. Washer 50/40/1.5
16. Seal
17. Distance Sleeve 25.2/29/4.5
18. Shim 25.5/34/1
19. Shim 25.5/34/0.2
Shim 25.5/34/0.3
Shim 25.5/34/0.5
20. Drive Shaft
21. Washer 25.3/33.5/1.5
22. Needle cage
23. Distance Sleeve 25.2/29/4.5
24. Shift Sprocket 19 Teeth
25. Shim 25.5/34/1
26. Distance Ring 3 mm
27. Circlip
28. Ball Bearing 6205
29. Seal
30. Shift Sprocket 22 Teeth
31. Shim 25.5/34/0.2
Shim 25.5/34/0.3
Shim 25.5/34/0.5
32. Triplex Roller Chain, 90 Links
33. Gear Change Shaft Assembly
34. Shim 14.3/20/0.3
Shim 14.3/20/0.5
Shim 14.3/20/0.2
Shim 14.3/20/1
35. Gear Change Lever
36. Washer 8.4 mm
37. Lock Nut M8
38. Index Rod
39. O-Ring
40. Gear Change Fork
41. Index Spring
42. Ball 1/4"
43. Hexagonal Nut M10
44. Loctite 242 (Blue, Medium Strength)
45. Loctite 515
46. Lockwasher 8
47. Hexagonal Nut M8
48. Stud M10 x 3
49. Lockwasher 10 mm
50. Hexagonal Nut M10
51. Chain

REMOVAL

Remove hood, pulley guard, drive belt and exhaust manifold from vehicle.

Remove brake assembly and shifter mechanism.

Remove steering lower bracket from the gearbox.

Slacken upper bracket.

Release chain tension using tensioner.

Release track tension by unlocking link plate springs. Insert a pry bar between structural members of center bogie wheel sets and pry sets upward to reverse installation position. Reverse front then rear bogie wheel sets. Remove rear axles.

Remove oil seals from end bearing housings and center frame (to drain the oil).

Remove end bearing housings. (Pry out housings with two (2) screwdrivers inserted between housing and frame).

Release drive axle sprocket teeth from track notches while at the same time, pulling the drive axle towards end bearing side of frame. (This action will disengage the axle splines from the lower sprocket of the gearbox).

Allow drive axles to remain within the tracks.

Remove gearbox and gasket from frame.

INSPECTION

Check general condition of chain linkage. Visually inspect drive chain for cracked, damaged or missing link rollers. Inspect security of riveted heads of link pins.

Visually inspect oil seals for cuts or damage.

Inspect sprockets and gears for damage, worn teeth, or spline distortion.

Inspect general condition of bearings (pitted or missing roller bearings, freedom of movement and radial free-play).

Inspect drive shaft for deflection, worn or twisted splines.

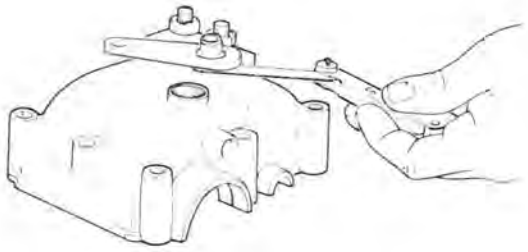
ASSEMBLY AND DISASSEMBLY

⑥ When assembling, always position a new "O" ring into appropriate groove of tensioner axle.

㊴ When assembling gearbox, always position a new "O" ring on index rod.

㊶ ㊷ The gear change fork incorporates a spring loaded ball. Ensure that spring and ball do not fly out during removal of index rod.

㉝ ㉞ **Gear change shaft free-play:**

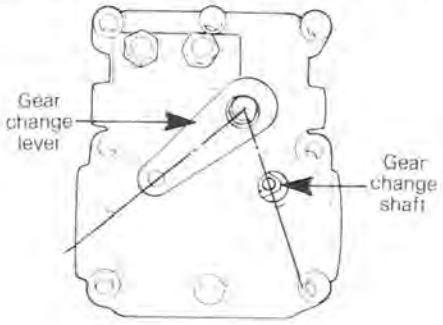


Install gear change shaft on upper housing then on outside of housing, position shim ㉞ gear change lever ㉟ washer ㊱ and nut ㊲. Torque to 23 N•m (17 ft-lbs).

Using a feeler gauge, check that free-play of gear change shaft is within tolerance of 0.15-0.30 mm (.006 to .012"). If free-play is not within tolerance, adjust using shims ㉞.

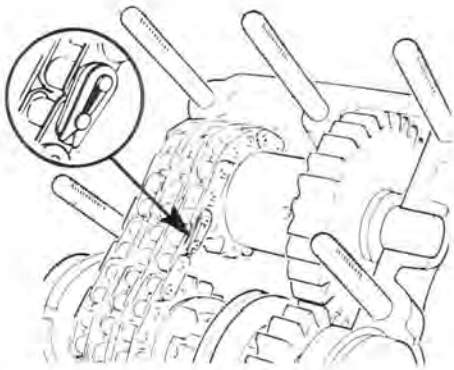
Install gear change lever ㉟ as per following illustration.

Install washer ㊱ and nut ㊲. Torque to 23 N•m (17 ft-lbs).



Drive chain

㊶ Chain locking clip must be installed as per following illustration, with its closed end towards the rotary motion direction when in "Forward" position.



INSTALLATION

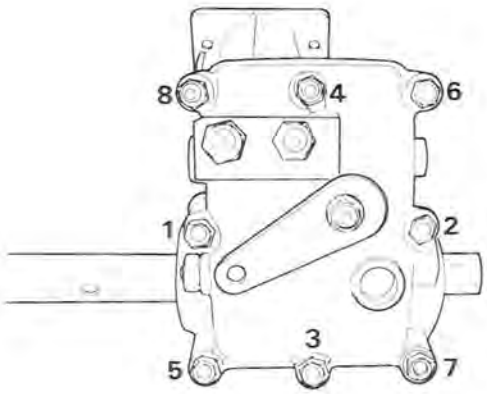
Before installing gearbox on vehicle, check and adjust gear change lever. Shift sprocket must align correctly with corresponding gear when lever is well engaged.

If required, use a screwdriver to turn index rod ㊳ and obtain proper meshing of teeth. Recheck shift sprocket engagement after adjusting index rod.

Lock index rod using a nut ㊸ with Loctite 242 on threads.

Position gear change fork in gearbox cover so that it aligns with slot of sleeve in gearbox housing.

Install gearbox cover using Loctite 515. Torque nuts in the following sequence to 27 N•m (20 ft-lbs).



Position gasket on frame studs.

Place lower sprocket in drive chain.

Secure gearbox to frame. Torque nuts to 22 N•m (16 ft-lbs).

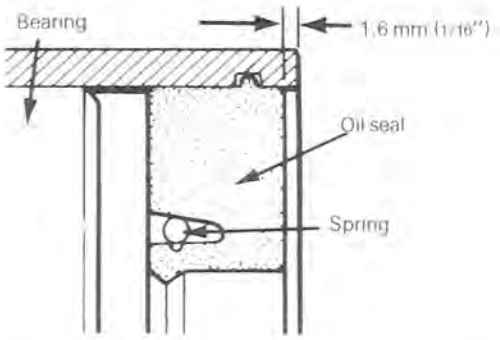
CAUTION: Check condition of drive axle oil seals; replace if necessary.

From the left side of vehicle, place the drive axle within the track. Push the end bearing side of axle through the orifice in left side of frame, then push the splined end of axle into gearbox lower sprocket. Install opposite drive axle.

Press each end bearing housing into frame and over axle bearing. Secure housings to frame.

Install oil seals.

NOTE: A gap of approximately 1.6 mm (1/16") should exist between the end of bearing housing and oil seal.



Install rear axle and bogie wheel sets to their original position.

Connect shifter mechanism to gearbox lever (35) and adjust by turning the transmission rod turnbuckle as required.

Rotate the tensioner axle (5) to obtain 6 mm (1/4") maximum drive chain free-play.

Fill gearbox with 450 ml (16 Imp. ounces) of Bombardier chaincase oil.

Install exhaust manifold, drive belt and brake assembly. Proceed with pulley alignment.

Proceed with track tension and alignment.

Install pulley guard and hood.

DRIVE CHAIN

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobile Shop Manual (section 05-09).

BOGIE WHEELS

For the following 1981 models:

Elan - Spirit
Alpine

refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual.

SLIDE SUSPENSION

For the following 1981 models:

Citation - Mirage (all models)
Nordik (refer to Citation 4500)
Everest - Futura (all models)
Blizzard 5500, 7500, 9500
Grand Prix Special
Super Sonic, Ultra Sonic
Elite

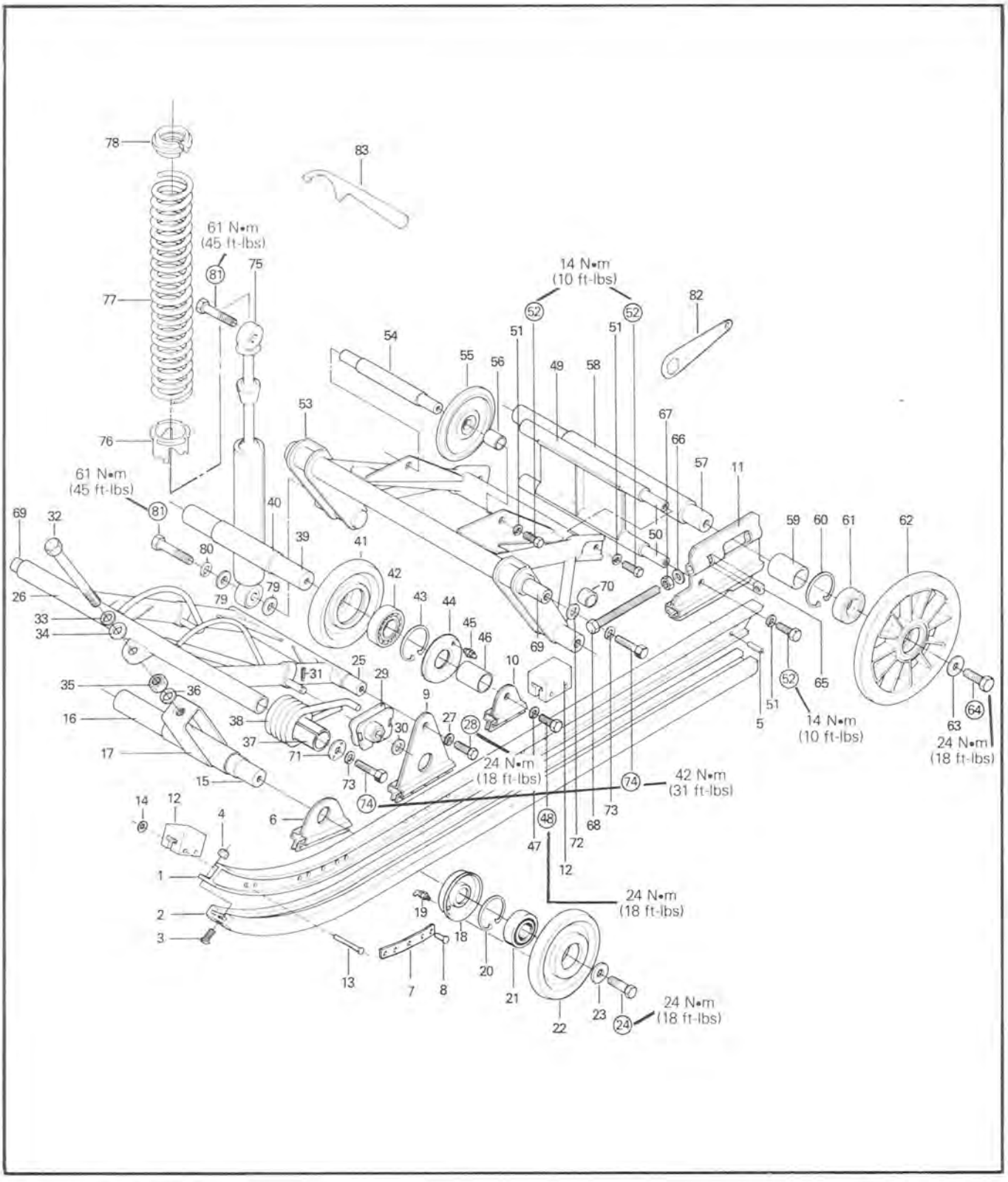
refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual.

For the following 1981 models:

Blizzard MX
Grand Prix MX

refer to this section.

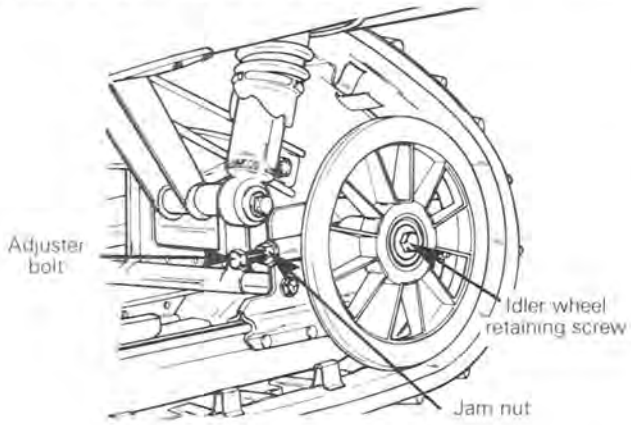
MX SUSPENSION



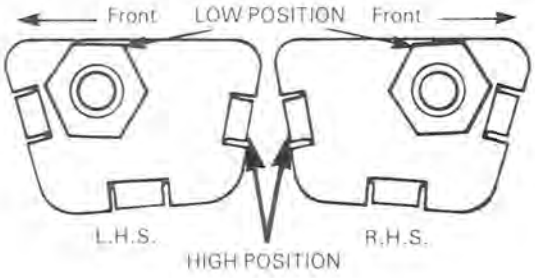
1. Runner
2. Slider shoe
3. Round Slotted Head Machine Screw
4. Hexagonal Elastic Stop Nut 10-24
5. Spirol pin
6. Front wheel bracket
7. Reinforcement strip
8. Rivet
9. Front arm support
10. Wheel support
11. R.H. adjustment plate
    L.H. adjustment plate
12. Rubber stopper
13. Pin
14. Push nut
15. Cross shaft
16. Spacer tube
17. Stopper bracket
18. Cap
19. Grease fitting
20. Circlip
21. Ball bearing
22. Idler
23. Washer
24. Hexagonal head cap screw
25. Cross shaft
26. Front arm
27. Lockwasher 3/8"
28. Hexagonal head cap screw
29. R.H. adjustment cam
    L.H. adjustment cam
30. Flat washer
31. Cotter pin
32. Stopper bolt
33. Flat washer
34. Damper
35. Hexagonal jam nut
36. Lockwasher
37. Bushing
38. R.H. spring (black)
    L.H. spring (black)
39. Wheel axle
40. Spacer tube
41. Idler
42. Ball bearing
43. Circlip
44. Cap
45. Grease fitting
46. Spacer tube
47. Lockwasher
48. Hexagonal head cap screw
49. Pivot arm
50. Pivot shaft
51. Lockwasher
52. Hexagonal head cap screw
53. Rear arm
54. Idler shaft
55. Idler
56. Spacer
57. Rear axle
58. Spacer tube
59. Spacer tube
60. Circlip
61. Ball bearing
62. Idler
63. Washer
64. Hexagonal Head cap screw
65. Square nut
66. Flat washer
67. Hexagonal nut
68. Hexagonal adjustment screw
69. Cross shaft
70. Bushing
71. Washer
72. Flat washer
73. Lock Washer
74. Hexagonal head cap screw
75. Shock absorber
76. Adjuster ring
77. Spring, 100 lbs
78. Spring collar
79. Flat washer
80. Lockwasher
81. Hexagonal head cap screw
82. Hexagonal wrench (adjustment cam)
83. Adjustment wrench (shock spring)

REMOVAL

Release track tension by loosening adjuster bolts located on inner side of rear idler wheels.



Position the adjustment cams at the lowest elevation.



Remove the two lower shock absorber screws.

Remove the four bolts securing suspension to frame.

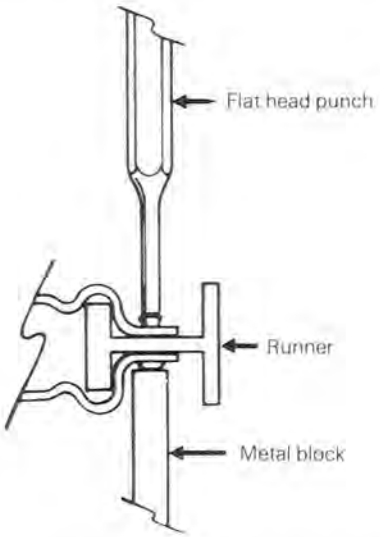
Remove suspension.

DISASSEMBLY & ASSEMBLY

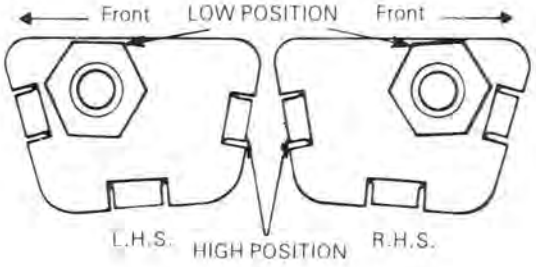
②③④⑤ To replace a worn slider shoe, remove the screw and spirol pin. Slide the shoe rearwards out of the runner.

⑧To remove the rivets securing the adjustment plate on the front arm supports, cut off the rivet heads using a cold chisel.

At assembly, position the rivet head on a suitable metal bloc and hold the assembly firmly in place. With a flat head punch and hammer secure the rivet in place.



㉙At assembly, adjustment cam must be installed that hexagonal projection on cam is located toward front of vehicle.



INSTALLATION

Lift the rear of vehicle off the ground.

Place suspension within the track and align front arm of suspension with front holes of frame and secure using bolts and washers (74). Torque to 42 N•m (31 ft-lbs).

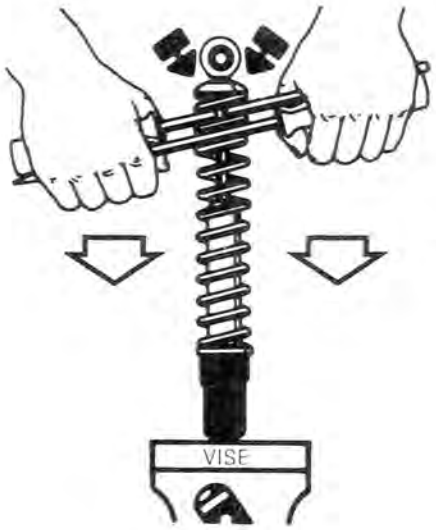
Raise the rear section of the suspension and track into the tunnel and align rear arm with rear holes in frame. Secure to frame using bolts and washers (74). Torque to 42 N•m (31 ft-lbs).

(81) (75) (53) Secure shock absorbers to rear arm, torque bolt to 61 N•m (45 ft-lbs).

SHOCK ABSORBER SPRINGS REPLACEMENT

To replace a shock spring proceed as follows:

Clamp the shock absorber lower mount in a vise and press the spring down with a pair of screwdrivers as illustrated, remove the spring collar and the spring.



Install the new spring.

SHOCK ABSORBER SERVICING

The shocks may be checked by partially creating the operating position. To do this, secure the proper shock end in a vise using the shock eye as a clamping point.

CAUTION: Do not clamp directly on shock body.

Compress and extend each shock by hand at various speeds and compare the resistance of one shock to the other.

NOTE: Obtain a known good shock for comparison purposes and keep in mind that the rebound resistance (extending the shock) is normally stronger than the compression resistance.

Pay attention to the following conditions that will denote a defective shock:

- A skip or a hang back when reversing stroke at mid travel.
- Seizing or binding condition except at extreme end of either stroke.
- Oil leakage.
- A gurgling noise, after completing one full compression and extension stroke.

Optional parts installation

Lift the rear of the vehicle until the track is "off" the ground.

Remove the shock covers.

Remove the shock assemblies.

Remove the springs from the shocks.

Install optional springs (P/N 503 0646 00) on the shocks.

Remove the slide suspension from the vehicle.

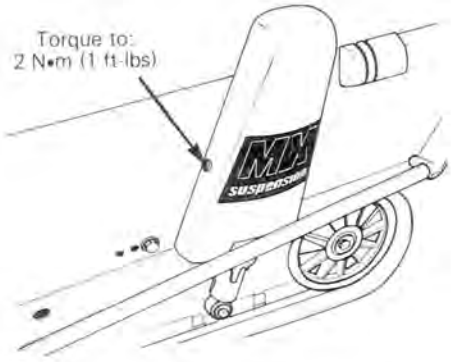
Remove the slide suspension springs.

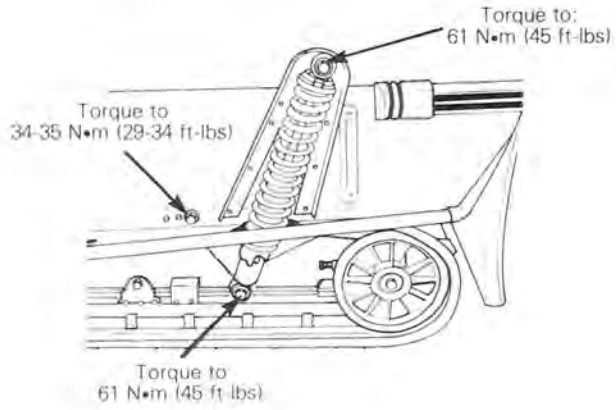
Install the optional springs (P/N R.H.: 414 4448 00 - L.H.: 414 4449 00) on the front arm.

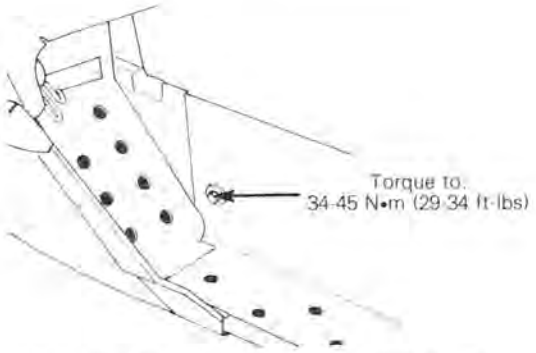
Install the slide suspension and torque the front and rear arm retainer bolts to 34-45 N•m (29-34 ft-lbs) - refer to illustration.

Install the two (2) shock assemblies on vehicle, torque the retainer bolts to 61 N•m (45 ft-lbs) - refer to illustration.

Install the shock covers and torque the retainer screws to 2 N•m (1 ft-lbs) - refer to illustration.

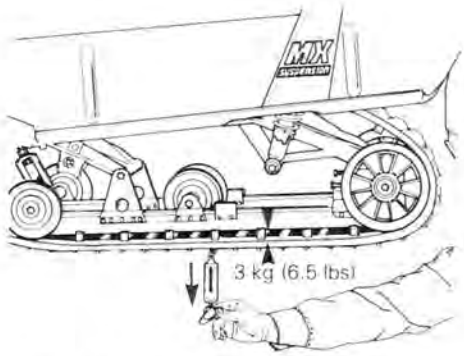






TRACK TENSION ADJUSTMENT

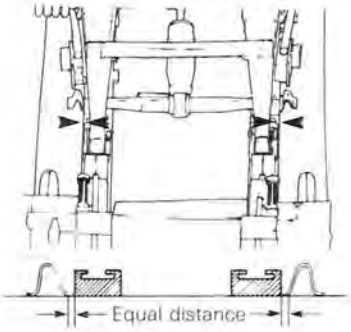
Lift rear of vehicle and support it off the ground. Allow the track to extend normally. Adjust the gap between track and slider shoe between 10 mm to 13 mm (3/8"-1/2") when pulling down on the track with a force of 3 kg (6.5 lbs).



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.

The distance between the edges of the track guides and the slider shoes should be equal on both sides.

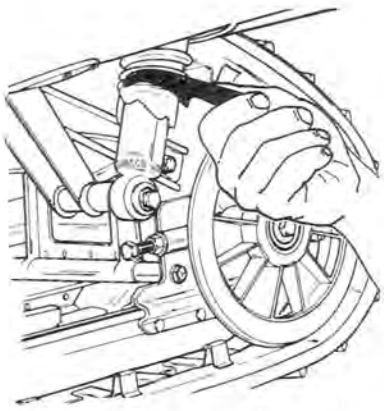


◆ WARNING: Before checking track alignment, ensure that the track is free of all particles which could be thrown out while track is rotating. Keep hands, feet, tools and clothing clear of track.

REAR SUSPENSION ADJUSTMENT

SHOCK SPRING ADJUSTMENT

The rear suspension may be adjusted by turning the shock absorber cam collars with the adjustment key.

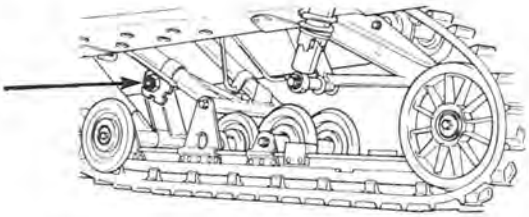


1st Position: For rider weight of 0 to 68 kg (0 to 150 lbs).
2nd Position: For rider weight of 68 to 82 kg (150 to 180 lbs).
3rd Position: For rider weight of 82 kg (180 lbs) and higher.

FRONT SUSPENSION SPRING ADJUSTMENT

The suspension can be tuned to the rider's specific requirement using the front adjuster blocks.

CAUTION: Always turn the left side adjuster block clockwise, the right side adjuster block counter-clockwise. Left and right adjuster blocks must always be set at the same position.

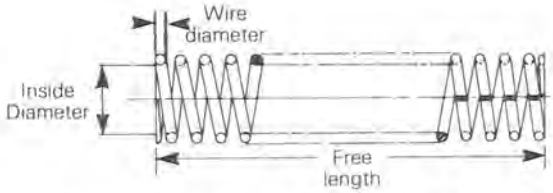


NOTE: It is possible to use "OPTIONAL" shock (P/N 503 0646 00) on rear shock absorbers with the "OPTIONAL" slide suspension springs.

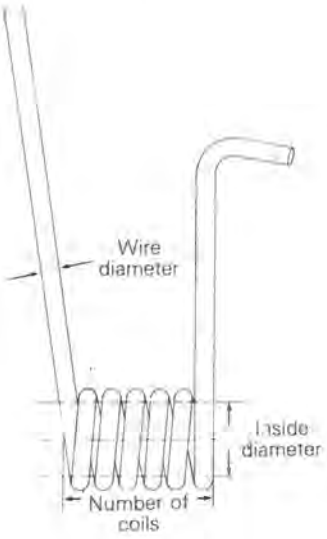
Right side: P/N 414 4448 00
Left side: P/N 414 4449 00

SUSPENSION SPRING IDENTIFICATION

SHOCK SPRINGS

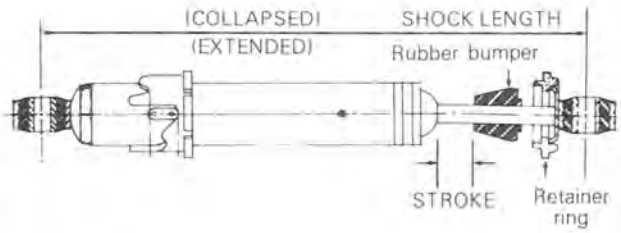


SLIDE SUSPENSION SPRINGS



SHOCK SPECIFICATIONS

	FRONT SHOCK (without spring)	REAR SHOCK (without spring)
Part number	414 4421 00	414 4251 00
Stroke	13.20 cm (5.200")	13.20 cm (5.200")
Length ① collapsed*	23.78 cm (9.360")	23.78 cm (9.360")
Length extended*	36.98 ± 0.3 cm (14.560 ± 0.125")	36.98 ± 0.3 cm (14.560 ± 0.125")
Color code	White dot	Yellow dot



CAUTION: The front and rear shocks have different valving calibration and therefore must not be interchanged. Ensure that the shocks are properly positioned. Refer to the color code: white dot front, yellow dot rear.

①The collapsed length at bumper contact is:

26.87 cm (10.58")

and at retainer contact is:

24.18 cm (9.52")

*The collapsed and extended lengths are always measured center to center of shock eyes.

REAR SUSPENSION TUNING

The rear suspension may be tuned to the rider's specific requirement using the optional following parts:

Shock springs - P/N 503 0646 00

Slide suspension springs - R.H.: P/N 414 4448 00
L.H.: P/N 414 4449 00

CAUTION: Optional parts are calibrated to operate together. Failure to follow this recommendation may affect handling of the vehicle.

SPRINGS SPECIFICATIONS

	SHOCK SPRINGS ①				SLIDE SUSPENSION SPRINGS ②			
	FRONT (STANDARD)	REAR (STANDARD)	FRONT (OPTIONAL)	REAR (OPTIONAL)	RIGHT SIDE (STANDARD)	LEFT SIDE (STANDARD)	RIGHT SIDE (OPTIONAL)	LEFT SIDE (OPTIONAL)
Part number	503 0644 00	503 0643 00	N.A.	503 0646 00	414 4246 00	414 4247 00	414 4448 00	414 4449 00
Number of coils	17.7	17	N.A.	19.3	5.5	5.5	5.5	5.5
Free length	27.94 ± .30 cm (11.00 ± 0.12")	27.94 ± .30 cm (11.00 ± 0.12")	N.A.	27.94 ± .30 cm (11.00 ± 0.12")	②	②	②	②
Spring rate	13.1 ± 0.7 kN/m (75 ± 4 lbs-in)	17.5 ± 0.7 kN/m (100 ± 4 lbs-in)	N.A.	15.3 ± 0.7 kN/m (87.5 ± 4 lbs-in)	N.A.	N.A.	N.A.	N.A.
Inside diameter	$38.35^{+0.76}_{-0.00}$ mm ($1.51^{+.030"}_{-0}$)	$38.35^{+0.76}_{-0.00}$ mm ($1.51^{+.030"}_{-.000}$)	N.A.	$38.35^{+0.76}_{-0.00}$ mm ($1.51^{+.030"}_{-.000}$)	34.8 mm	34.8 mm	34.8 mm	34.8 mm
Wire diameter	6.65 ± .05 mm (0.262 ± .002")	7.14 ± .05 mm (0.281 ± .002")	N.A.	7.14 ± .05 mm (0.281 ± .002")	9.52 mm (0.375)	9.52 mm (0.375)	10.31 mm (0.406)	10.31 mm (0.406)
Compressed length	11.53 cm (4.54")	11.91 cm (4.69")	N.A.	13.51 cm (5.32")	N.A.	N.A.	N.A.	N.A.
Color code	Red-White	Red-Yellow	N.A.	Red-Blue	Black painted	Black painted	White painted	White painted

① Refer to "Shock Springs" illustration
② Refer to "Slide Suspension Springs" illustration
N.A.: Not applicable

REAR AXLE

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 06-03).

DRIVE AXLE

For all 1981 models:

refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 06-04).
(For the Nordik refer to the Citation 4500 and for the Blizzard MX and Grand Prix MX refer to the Blizzard 5500 and Grand Prix Special).

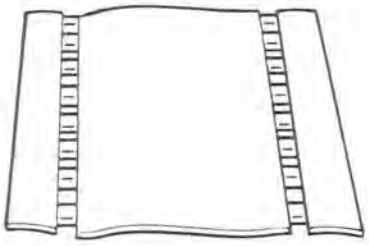
TRACK

For all 1981 models, refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual (section 06-05).

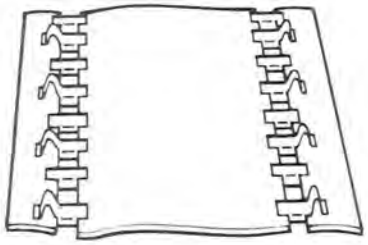
For track type application, refer to this section.

1981 TRACK SPECIFICATIONS

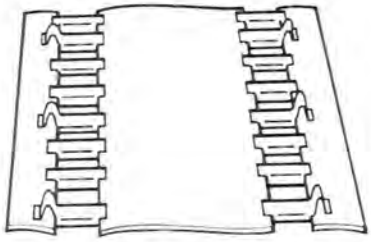
CLEAT AND GUIDE ARRANGEMENT



TYPE 1: Narrow insert.



TYPE 2: Narrow insert with shoulder



TYPE 3: Wide guide (large track hole).

MODEL	TYPE	TRACK PART NUMBER	WIDTH	LENGTH (interior)
ELAN	1	570 0096 00	38.1 cm (15")	289.6 cm (114")
SPIRIT	1	570 0085 00	38.1 cm (15")	289.6 cm (114")
CITATION 3500	2	570 0089 00	38.1 cm (15")	269.2 cm (106")
MIRAGE I	2	570 0090 00	38.1 cm (15")	269.2 cm (106")
CITATION 4500/E	2	570 0069 00	38.1 cm (15")	289.6 cm (114")
MIRAGE II/E	2	570 0068 00	38.1 cm (15")	289.6 cm (114")
CITATION SS	2	570 0091 00	38.1 cm (15")	269.2 cm (106")
MIRAGE SPECIAL	2	570 0092 00	38.1 cm (15")	269.2 cm (106")
EVEREST 500/E, EVEREST LC	3	570 0045 00	41.9 cm (16 1/2")	314.9 cm (124")
FUTURA 500/E, FUTURA LC	3	570 0060 00	41.9 cm (16 1/2")	314.9 cm (124")
BLIZZARD 5500, BLIZZARD MX	2	570 0094 00	38.1 cm (15")	289.6 cm (114")
GRAND PRIX SPECIAL, GRAND PRIX MX	2	570 0095 00	38.1 cm (15")	289.6 cm (114")
BLIZZARD 7500, BLIZZARD 9500	2	570 0094 00	38.1 cm (15")	289.6 cm (114")
SUPER SONIC, ULTRA SONIC	2	570 0095 00	38.1 cm (15")	289.6 cm (114")
NORDIK	2	570 2004 00	38.1 cm (15")	314.9 cm (124")
ALPINE 640 ER	1	570 0014 00	38.1 cm (15")	353 cm (139")
ELITE	3	570 0056 00	38.1 cm (15")	304.8 cm (120")

STEERING SYSTEM

For the following 1981 models:

Elan - Spirit
Blizzard 5500, 7500, 9500
Grand Prix Special, Super Sonic
Ultra Sonic

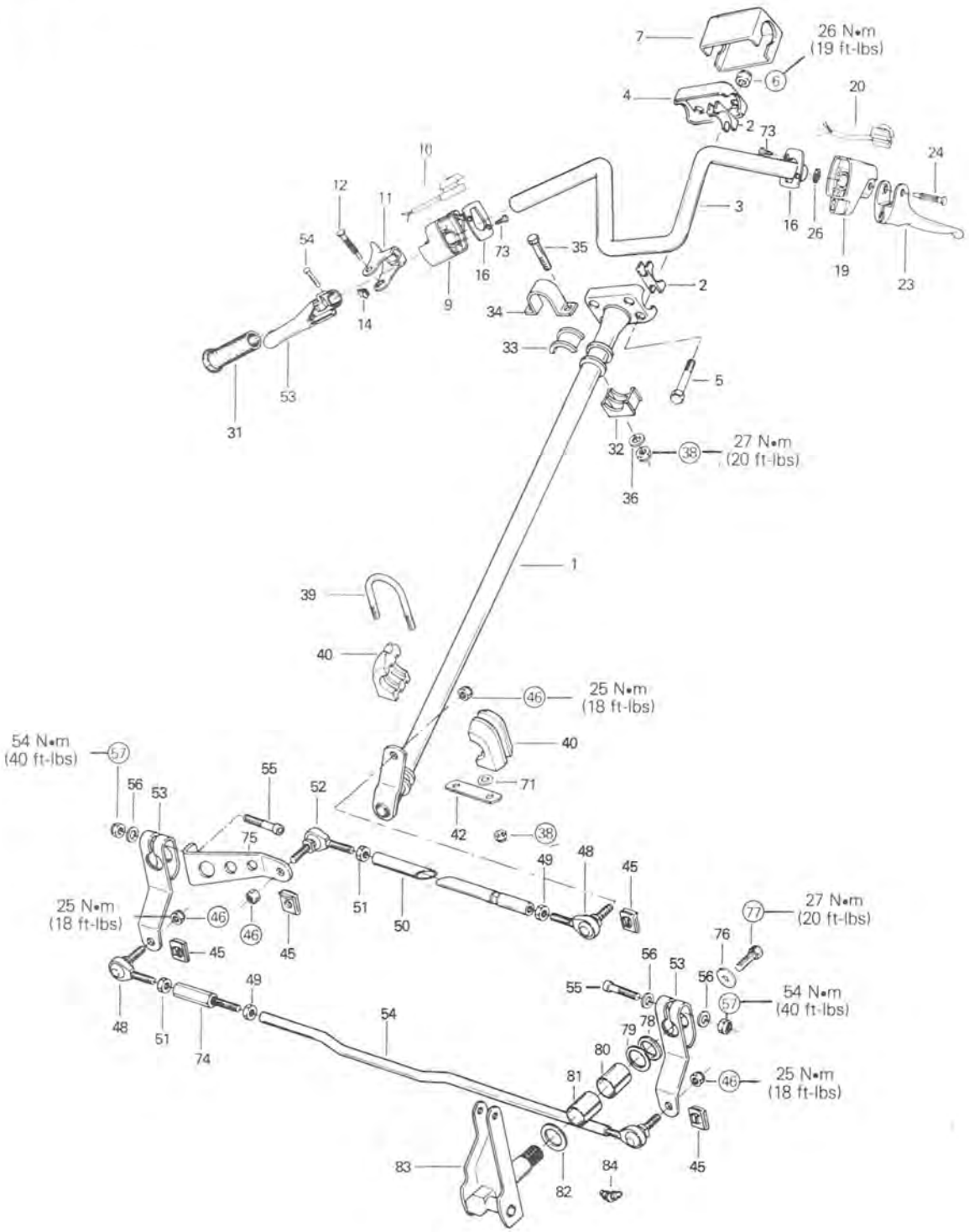
refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual.

For the following 1981 models:

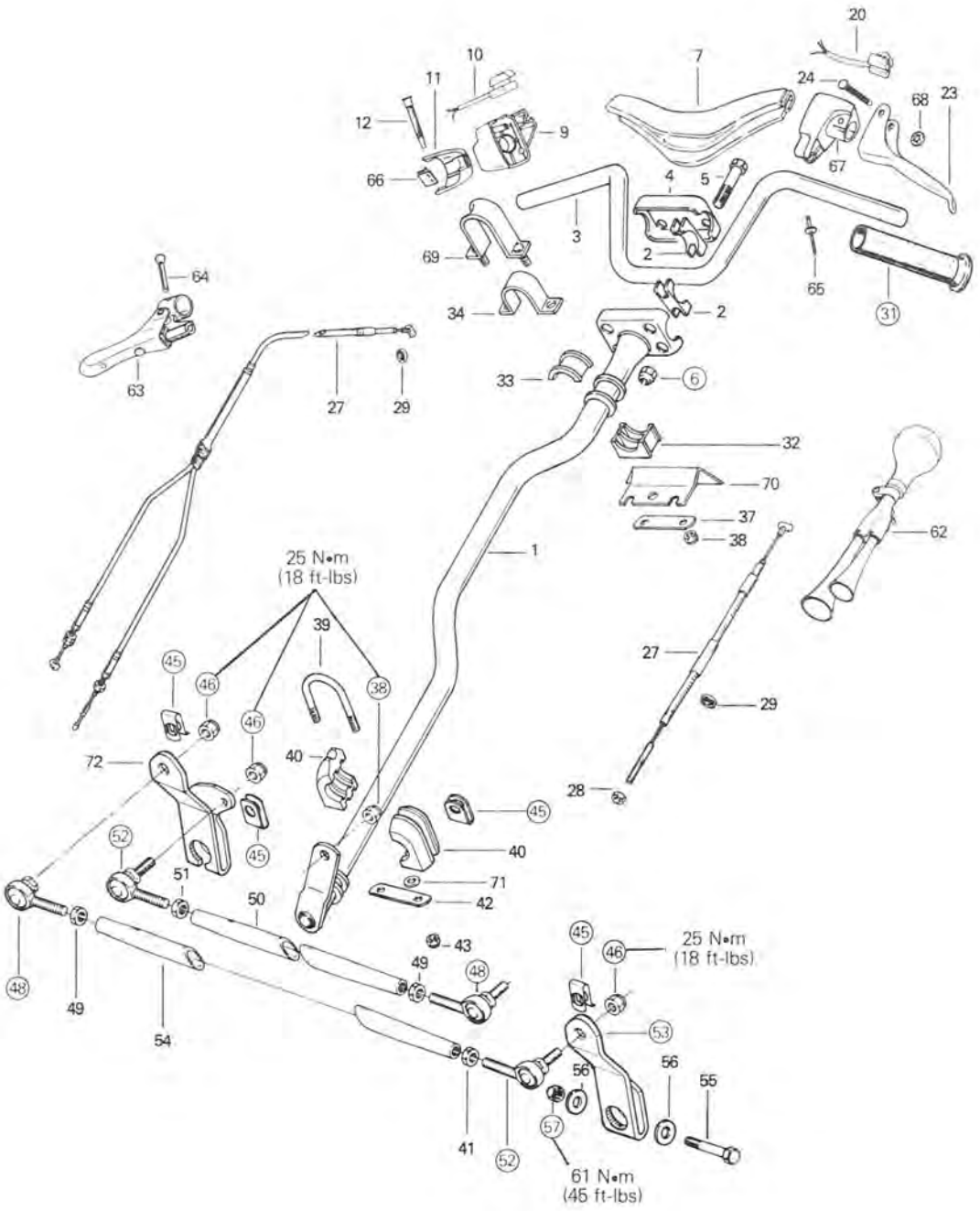
Citation - Mirage (all models)
Nordik (refer to Citation 4500)
Everest - Futura (all models)
Blizzard MX
Grand Prix MX

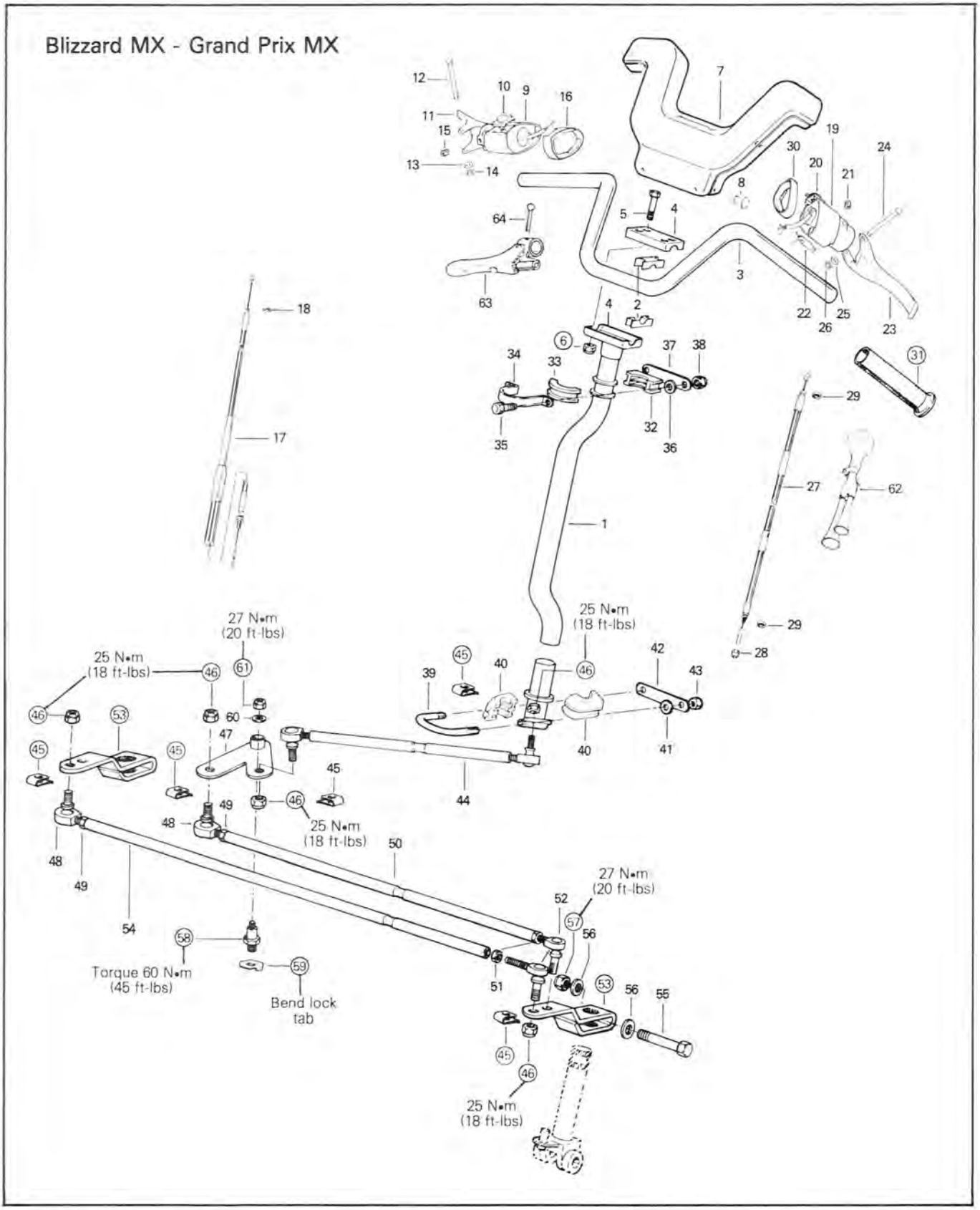
refer to this section

Citation, Mirage (all models)
Nordik



Everest 500/E - Futura 500/E
Everest LC — Futura LC





1. Main tube
2. Steering support
3. Handle tube
4. Steering clamp
5. Hexagonal head cap screw
6. Hexagonal elastic stop nut
7. Steering padding or cover
8. Dart
9. Throttle handle housing
10. Cut-out switch
11. Throttle handle
12. Pin
13. Washer
14. Circlip or retainer
15. Set screw
16. Cover
17. Throttle cable & housing
18. Circlip
19. Brake handle housing
20. Dimmer switch
21. Set screw
22. Brake light switch
23. Brake handle
24. Pin
25. Washer
26. Circlip or push nut
27. Brake cable & housing
28. Hexagonal elastic stop nut
29. Circlip
30. Brake (cover)
31. Grip
32. Lower bushing
33. Upper bushing
34. Retainer bracket
35. Hexagonal head cap screw
36. Flat washer
37. Lock tab
38. Hexagonal elastic stop nut
39. "U" clamp
40. Bushing
41. Flat washer
42. Lock tab
43. Hexagonal elastic stop nut
44. Tie rod
45. Lock tab
46. Hexagonal elastic stop nut
47. Pivot arm
48. Ball joint L.H. thread
49. Hexagonal jam nut (L.H. thread)
50. Tie rod
51. Hexagonal jam nut (R.H. thread)
52. Ball joint R.H. thread
53. Steering arm
54. Tie rod
55. Hexagonal head cap screw
56. Flat washer
57. Hexagonal elastic stop nut
58. Pivot (stud)
59. Lock tab
60. Washer
61. Hexagonal elastic stop nut
62. Horn (Europe only)
63. Parking handle (Europe only)
64. Rivet (Europe only)
65. Rivet
66. Retainer
67. Brake handle housing
68. Push nut
69. Retainer bracket with screws
70. Noise plate
71. Flat washer
72. Arm plate
73. Screw
74. Turnbuckle
75. Steering arm extension
76. Flat washer
77. Cap screw
78. Spring washer
79. Washer
80. Bushing
81. Bushing
82. Washer
83. Ski leg
84. Grease fitting

INSPECTION

Check skis and runner shoes for excessive wear, replace if necessary.

Make sure steering arm and ski leg splines interlock.

Check general condition of steering system.

Check general condition of steering system components for wear and replace if necessary.

DISASSEMBLY & ASSEMBLY

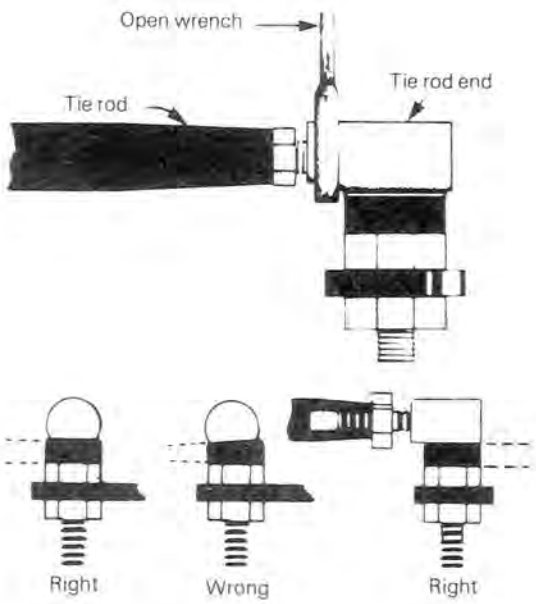
㉓ Grips can be removed and installed without any damage by injecting compressed air into the handlebar.

Another way to install grips consists in soaking them in soapy water (detergent for dishes) and in pushing them onto the handlebar with a soft hammer.

㊱㊷ Inspect ball joint ends for wear or looseness, if excessive, replace.

NOTE: Screw the longest threaded end of ball joint into the tie rod, ensure that half of the total number of threads are inserted into the tie rod.

The cut-off section of the tie rod end must run parallel with the horizontal line of the steering arm when assembled on vehicle. The tie rod end should be restrained when tightening tie rod end lock nut.



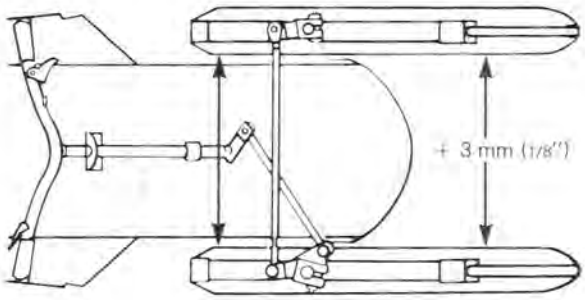
㊺ When assembling components, always position new lock tabs.

㊸ The steering arm angles should be equal on both sides when skis are parallel with vehicle.

㊻ Tighten ball joint nuts to specified torque and bend lock tabs over nuts.

㊼ Tighten steering arm nuts to specified torque and bend lock tabs over nuts.

STEERING ADJUSTMENT (SKIS)



Skis should have a toe out of 3 mm (1/8"). To check, measure distance between each ski at front and rear of skis. The front distance should be 3 mm (1/8") more than the rear when the handlebar is horizontal. If adjustment is required:

Loosen the jam nuts locking the longer tie rod in place. Turn tie rod manually until alignment is correct. Tighten jam nuts firmly.

IMPORTANT: Close front of skis manually to take all slack from steering mechanism

Check that handlebar is horizontal. To correct, loosen shorter tie rod jam nuts.

Turn tie rod manually until handlebar is horizontal.

Tighten jam nuts firmly.

SKI SYSTEM

For the following 1981 models:

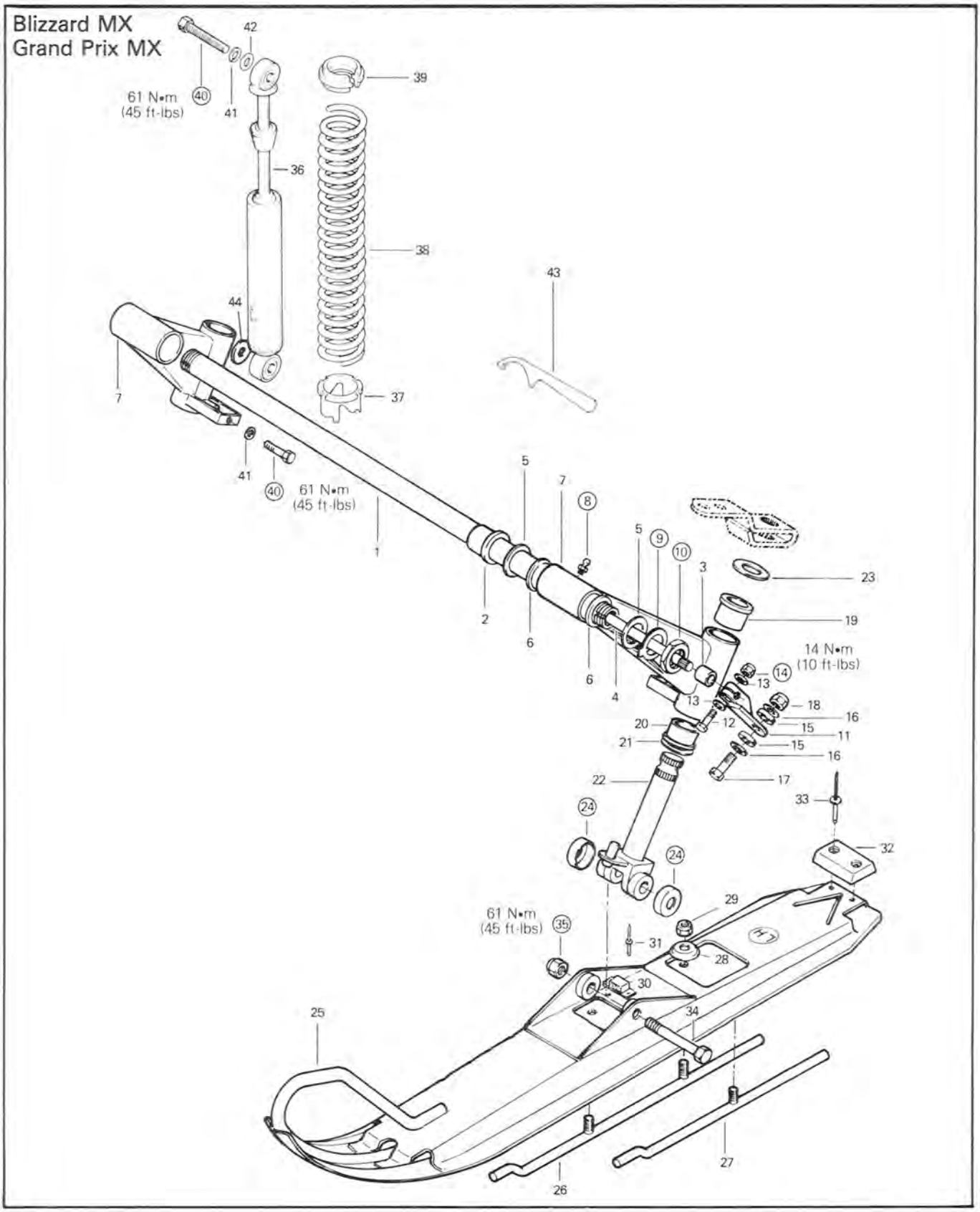
Spirit - Elan
Mirage - Citation (all models)
Nordik (refer to Citation 4500)
Futura - Everest (all models)
Grand Prix Special
Blizzard 5500, 7500, 9500
Super Sonic - Ultra Sonic
Alpine
Elite

refer to the equivalent models in the 1980 Bombardier Snowmobiles Shop Manual.

For the following 1981 models:

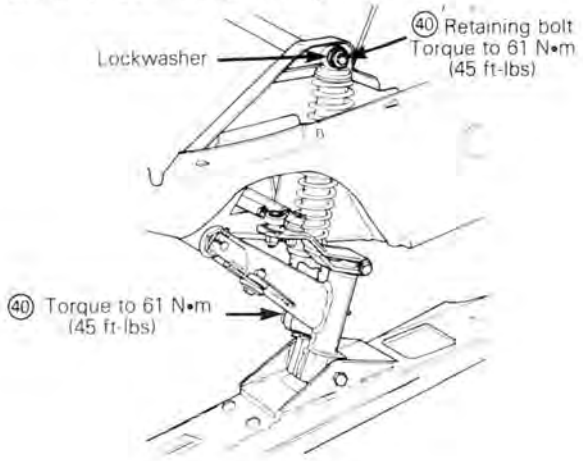
Grand Prix MX
Blizzard MX

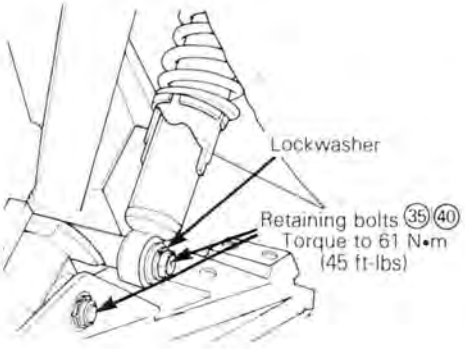
refer to this section.

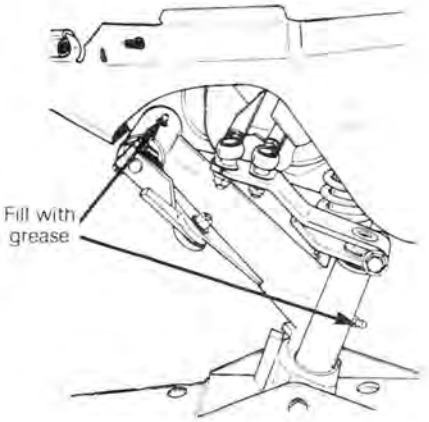


1. *Tube*
2. *Bushing*
3. *Bushing*
4. *Stabilizer bar*
5. *Shim*
6. *Bushing*
7. *R.H. swing arm*
7. *L.H. Swing arm*
8. *Grease fitting*
9. *Lock tab*
10. *Nut*
11. *R.H. stabilizer arm*
11. *L.H. stabilizer arm*
12. *Hexagonal head cap screw*
13. *Flat washer*
14. *Hexagonal elastic stop nut*
15. *Rubber washer*
16. *Flat washer*
17. *Hexagonal head cap screw*
18. *Hexagonal elastic stop nut*
19. *Bushing*
20. *Bushing*
21. *Brass washer*
22. *Ski leg*
23. *Shim*
24. *Friction cup*
25. *R.H. ski*
25. *L.H. ski*
26. *Inner runner shoe*
27. *Outer runner shoe*
28. *Cup*
29. *Hexagonal eslock nut*
30. *Stop bonding*
31. *Rivet*
32. *Protector*
33. *Rivet*
34. *Hexagonal head cap screw*
35. *Hexagonal elastic stop nut*
36. *Damper*
37. *Adjuster ring*
38. *Spring 75 lbs*
39. *Spring collar*
40. *Hexagonal head cap screw*
41. *Lockwasher 3/8*
42. *Flat washer 13/32 x 7/8*
43. *Adjuster wrench*
44. *Flat washer*

⑧ Fill grease fittings with grease.







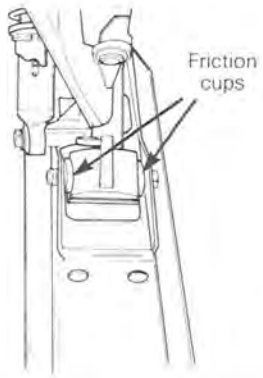
⑩ Torque stabilizer bar nut to 35 N•m (26 ft-lbs), unscrew and torque to 1 N•m (10 in-lbs).

WARNING: Do not exceed 1 N•m (10 in-lbs) on final tightening of nut.

⑨ Bend lock tab over nut.

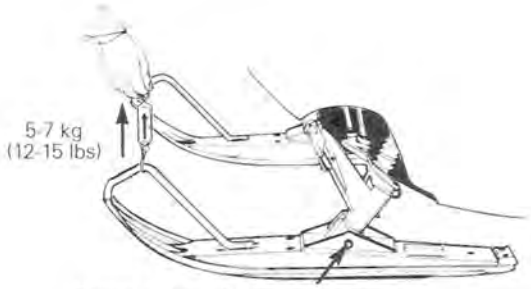
SKI INSTALLATION

㉔ Position the skis with a friction cup on each side of the ski.



– Install the ski leg/coupler bolt and torque to obtain 5-7 kg (12-15 lbs) on the lift tube at the front of the ski.

NOTE: You must pull on the ski at an angle of 90° with the ski surface. (Front of vehicle "Off" the ground.)



Torque to have 5-7 kg (12-15 pounds) at the front of the ski with a scale

㉟ Torque the elastic stop nut on the ski leg coupler to 56-57 N•m (42-50 ft-lbs).

– Set the ski adjustment to obtain a toe out of 3 mm (1/8").

HOOD

For the following 1981 models:

Elan - Spirit
Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard 5500 - Grand Prix Special
Blizzard MX - Grand Prix MX
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Nordik
Elite
Alpine 640 ER

refer to the 1980 Bombardier Snowmobiles Shop Manual, section 08-01 (Hood).

For 1981 Blizzard MX and Grand Prix MX, refer to 1980 Blizzard 5500 and Grand Prix Special and for 1981 Nordik, refer to 1980 Citation 4500.

FRAME

For the following 1981 models:

Elan - Spirit
Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard 5500 - Grand Prix Special
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite

Alpine 640 ER

refer to the 1980 Bombardier Snowmobiles Shop Manual, section 08-02 (Frame).

For the following 1981 models:

Blizzard MX - Grand Prix MX

refer to this section.

For Nordik model, refer to 1981 Citation 4500.

For "SEAT CLEANING" refer to this section.

FRAME

For the following 1981 models:

Elan - Spirit
Citation 3500 - Mirage I
Citation 4500/E - Mirage II/E
Citation SS - Mirage Special
Everest 500/E - Futura 500/E
Everest LC - Futura LC
Blizzard 5500 - Grand Prix Special
Blizzard 7500 - Super Sonic
Blizzard 9500 - Ultra Sonic
Elite
Alpine 640 ER

refer to the 1980 Bombardier Snowmobiles Shop Manual, section 08-02 (Frame).

For the following 1981 models:

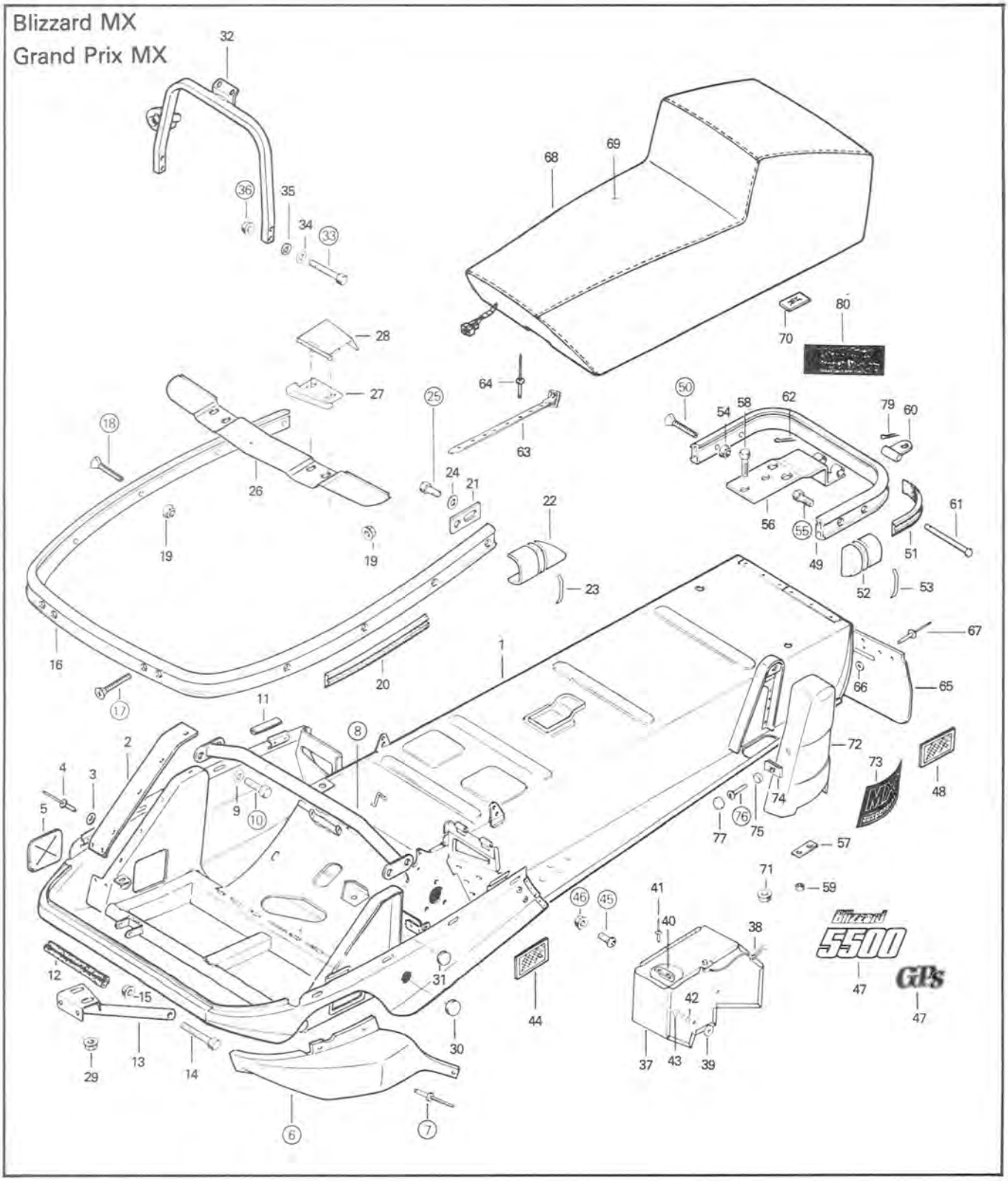
Blizzard MX - Grand Prix MX

refer to this section.

For Nordik model, refer to 1981 Citation 4500.

For "SEAT CLEANING" refer to this section.

FRAME



1. *Frame*
2. *Rubber guard (2)*
3. *Flat washer (4)*
4. *Rivet (18)*
5. *Rubber shield (tie rod) (2)*
6. *R.H. cap & L.H. cap*
7. *Rivet (12)*
8. *Cross bar*
9. *Lockwasher (4)*
10. *Hexagonal cap screw (4)*
11. *Hood seat*
12. *Hood seal*
13. *Bumper support RH & LH*
14. *Hexagonal cap screw (2)*
15. *Hexagonal elastic stop nut (2)*
16. *Front bumper*
17. *Flat head machine screw (10)*
18. *Flat head machine screw (2)*
19. *Hexagonal elastic stop nut (14)*
20. *Vinyl trim*
21. *Stiffening plate (2)*
22. *Front bumper cap RH & LH*
23. *Stripe*
24. *Flat washer (2)*
25. *Hexagonal head taptite screw (2)*
26. *Front bumper filler*
27. *Hinge trim RH & LH*
28. *Hinge RH & LH*
29. *Hexagonal elastic stop nut (4)*
30. *Cap*
31. *Plug*
32. *Upper column*
33. *Hexagonal cap screw (4)*
34. *Flat washer (4)*
35. *Spacer (4)*
36. *Hexagonal elastic stop nut (4)*
37. *Tool box*
38. *Hair pin*
39. *Rubber spacer (3)*
40. *Spark plug bracket*
41. *Rivet (2)*
42. *Flat washer*
43. *Rivet (3)*
44. *Reflector (2)*
45. *Machine screw (4)*
46. *Hexagonal elastic stop nut (4)*
47. *5500 or G.P.S. decal*
48. *Reflector (2)*
49. *Rear bumper*
50. *Machine screw (4)*
51. *Vinyl trim*
52. *Rear bumper cap (2)*
53. *Stripe*
54. *Hexagonal elastic stop nut (2)*
55. *Hexagonal head taptite screw (2)*
56. *Hitch bracket - (optional)*
57. *Retainer plate*
58. *Hexagonal cap screw (2)*
59. *Hexagonal elastic stop nut (2)*
60. *Hitch plate - (Europe)*
61. *Pin*
62. *Cotter pin*
63. *Ski tie down (Europe)*
64. *Rivet (1)*
65. *Snow guard*
66. *Flat washer (4)*
67. *Rivet (4)*
68. *Seat*
69. *Seat cover*
70. *Speed nut (4)*
71. *Hexagonal elastic stop nut (2)*
72. *RH & LH shock cover*
73. *MX decal set (LH & RH)*
74. *Speed nut (4)*
75. *Cap retainer (4)*
76. *Machine screw (4)*
77. *Snap cap (4)*
78. *Flat washer (4) - (Europe)*
79. *Hair pin (Europe)*
80. *Towing instruction label*

FRAME SERVICING: (Blizzard MX & Grand Prix MX)

⑥⑦At assembly, ensure to match properly side pan caps with side pans.

⑧⑩At assembly, torque to 15 N•m (10 ft-lbs).

⑰⑱At assembly, torque to 3 n•m (2 ft-lbs).

㉕㊺At assembly, torque to 3 N•m (2 ft-lbs).

㉝㊱At assembly, torque to 4 N•m (3 ft-lbs).

㊺㊻At assembly, torque to 4 N•m (3 ft-lbs).

㊿At assembly, torque to 3 N•m (2 ft-lbs).

㊻At assembly, torque to 2 N•m (1 ft-lbs).

SEAT CLEANING

For all 1981 models, it is recommend to clean the seat with a solution of **soft soap/warm water** and a soft cloth.

CAUTION: Avoid use of harsh detergent such as strong soaps, degreasing solvents, abrasive cleaners, paint thinners, etc...they may cause damage to the seat cover.

WARRANTY

LIMITED WARRANTY 1981 SKI-DOO® SNOWMOBILES

1 - PERIOD

BOMBARDIER® LIMITÉE as manufacturer, warrants FROM THE DATE OF FIRST CONSUMER SALES, every 1981 SKI-DOO® snowmobile, sold as NEW AND UNUSED, by an authorized SKI-DOO dealer, for periods of:

- 12 consecutive months for ELAN® , CITATION*, NORDIK*, EVEREST® , ELITE® , ALPINE® models.
- 90 consecutive days for BLIZZARD® 5500, MX, 7500 and 9500 models subject to the following:

1. If delivery is made after the 31st day of March of a given year and before the 1st day of December of the same year, the above 90 day warranty will start on December 1st.
2. If delivery is made on/or after the 2nd day of January of a given year but before the 31st day of March of the same year, all the unused portion of the 90 day period will be carried over to the next winter and start again on the 1st day of December of the same year.

2 - WHAT BOMBARDIER WILL DO

BOMBARDIER will repair and/or replace, at its option, components defective in material and/or workmanship (under normal use and service,) with a genuine BOMBARDIER component without charge for parts or labour, at any authorized SKI-DOO dealer during said warranty period.

3 - CONDITION TO HAVE WARRANTY WORK PERFORMED

Present to the servicing dealer, the hard copy of the BOMBARDIER Customer Registration card received by the customer from the selling dealer at time of purchase.

4 - WARRANTY TRANSFER

This warranty is transferable to subsequent owner(s) for remainder of warranty period from original date of sale.

5 - EXCLUSIONS - ARE NOT WARRANTED

- Normal wear on all items such as, but not limited to:
  - drive belts
  - slider shoes
  - spark plugs
  - breaker points
  - runners on skis
- A sulphated battery.
- Replacement parts and/or accessories which are not genuine BOMBARDIER parts and/or accessories.
- Damage resulting from installation of parts other than genuine BOMBARDIER parts.
- Damage caused by failure to provide proper maintenance as detailed in the Operator Manual. The labour, parts and lubricants costs of all maintenance services, including tune-ups and adjustments will be charged to the owner.
- Vehicles used for racing purposes.
- All optional accessories installed on the vehicle. (The normal warranty policy for parts and accessories, if any, applies).
- Damage resulting from accident, fire or other casualty, misuse, abuse or neglect.
- Damage resulting from modification to the snowmobile not approved in writing by BOMBARDIER.
- Losses incurred by the snowmobile owner other than parts and labour, such as, but not limited to, transportation, towing, telephone calls, taxis, or any other incidental or consequential damages.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

6 - EXPRESSED OR IMPLIED WARRANTIES

This warranty gives you specific rights, and you may also have other legal rights which may vary from state to state, or province to province. Where applicable this warranty is expressly in lieu of all other expressed or implied warranties of BOMBARDIER, its distributors and the selling dealer, including any warranty of merchantability of fitness for any particular purpose; otherwise the implied warranty is limited to the duration of this warranty. However, some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply.

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 LIMITÉE reserves the right to modify its warranty policy at any time, being understood that such modification will not alter the warranty conditions applicable to vehicles sold while the above warranty is in effect.

7 - CONSUMER ASSISTANCE

If a servicing problem or other difficulty occurs, we suggest the following:

1. Try to resolve the problem at the dealership with the Service Manager or Owner.
2. If this fails, contact your area distributor listed in the Operator Manual.
3. Then if your grievance still remains unsolved, you may write to us:

Bombardier Limitée
Customer Relations
Recreational Products
Valcourt, Quebec, Canada, J0E 2L0

January 1980
Bombardier Limitée
Valcourt, Quebec, Canada, J0E 2L0

® *Trademarks of Bombardier Limitée

Copy of this text is available from your dealer on request.

LIMITED WARRANTY 1981 MOTO-SKI® SNOWMOBILES

1 - PERIOD

BOMBARDIER® LIMITÉE as manufacturer, warrants FROM THE DATE OF FIRST CONSUMER SALES, every 1981 MOTO-SKI® snowmobile, sold as NEW AND UNUSED, by an authorized MOTO-SKI dealer, for periods of:

- 12 consecutive months for SPIRIT*, MIRAGE*, FUTURA® models.
- 90 consecutive days for GRAND PRIX* SPECIAL, MX, SUPER SONIC*, ULTRA SONIC*, models subject to the following:

1. If delivery is made after the 31st day of March of a given year and before the 1st day of December of the same year, the above 90 day warranty will start on December 1st.
2. If delivery is made on/or after the 2nd day of January of a given year but before the 31st day of March of the same year, all the unused portion of the 90 day period will be carried over to the next winter and start again on the 1st day of December of the same year.

2 - WHAT BOMBARDIER WILL DO

BOMBARDIER will repair and/or replace, at its option, components defective in material and/or workmanship (under normal use and service,) with a genuine BOMBARDIER component without charge for parts or labour, at any authorized MOTO-SKI dealer during said warranty period.

3 - CONDITION TO HAVE WARRANTY WORK PERFORMED

Present to the servicing dealer, the hard copy of the BOMBARDIER Customer Registration card received by the customer from the selling dealer at time of purchase.

4 - WARRANTY TRANSFER

This warranty is transferable to subsequent owner(s) for remainder of warranty period from original date of sale.

5 - EXCLUSIONS - ARE NOT WARRANTED

- Normal wear on all items such as, but not limited to:
  - drive belts
  - slider shoes
  - spark plugs
  - breaker points
  - runners on skis
- A sulphated battery.
- Replacement parts and/or accessories which are not genuine BOMBARDIER parts and/or accessories.
- Damage resulting from installation of parts other than genuine BOMBARDIER parts.
- Damage caused by failure to provide proper maintenance as detailed in the Operator Manual. The labour, parts and lubricants costs of all maintenance services, including tune-ups and adjustments will be charged to the owner.
- Vehicles used for racing purposes.
- All optional accessories installed on the vehicle. (The normal warranty policy for parts and accessories, if any, applies).
- Damage resulting from accident, fire or other casualty, misuse, abuse or neglect.
- Damage resulting from modification to the snowmobile not approved in writing by BOMBARDIER.
- Losses incurred by the snowmobile owner other than parts and labour, such as, but not limited to, transportation, towing, telephone calls, taxis, or any other incidental or consequential damages.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

6 - EXPRESSED OR IMPLIED WARRANTIES

This warranty gives you specific rights, and you may also have other legal rights which may vary from state to state, or province to province. Where applicable this warranty is expressly in lieu of all other expressed or implied warranties of BOMBARDIER, its distributors and the selling dealer, including any warranty of merchantability of fitness for any particular purpose; otherwise the implied warranty is limited to the duration of this warranty. However, some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply.

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 LIMITÉE reserves the right to modify its warranty policy at any time, being understood that such modification will not alter the warranty conditions applicable to vehicles sold while the above warranty is in effect.

7 - CONSUMER ASSISTANCE

If a servicing problem or other difficulty occurs, we suggest the following:

1. Try to resolve the problem at the dealership with the Service Manager or Owner.
2. If this fails, contact your area distributor listed in the Operator Manual.
3. Then if your grievance still remains unsolved, you may write to us:

   Bombardier Limitée
   Customer Relations
   Recreational Products
   Valcourt, Quebec, Canada, J0E 2L0

January 1980
Bombardier Limitée
Valcourt, Quebec, Canada, J0E 2L0

Copy of this text is available from your dealer on request.