

Ski-Doo

track should clear center bogie wheels by 1/4 to 1/2 inches. On 1967 and 1968 models and 1969 Model 5813, distance (A—Fig. 8) should measure 3/4-3 1/2 inches.

NOTE: When track tension has been adjusted, alignment **MUST** be checked as outlined in the special **TRACK SERVICE** Section of this manual.

OVERHAUL

SKIS AND STEERING. Skis, ski legs (spindles), bushings and steering arms are interchangeable from right

to left. Skis are equipped with renewable wear bars which must be installed with curved end to rear.

DRIVE TRAIN. On Model 5810 Power Sled, the drive chain is in the open and procedure for renewal is evident after shields are removed.

To remove the chain housing on Sno-Scout and Super Scout, first remove drive belt and disconnect brake cable at brake arm. Remove the securing U-Bolt and one bolt and nut from clamp strap, then swing the strap around out of the way. Remove the

housing and torque converter driven sheave as a unit, by using suitable pry bars to slide the housing from frame. After disconnecting the drive chain and removing the chain tightener bolt (5—Fig. 2), the driven sheave, bearing housing, shaft and drive sprocket can be removed from housing as an assembly. Driven sprocket must be brought to top of housing and pried out through upper side opening.

Refer to the special **SERVICE SECTIONS** elsewhere in this manual for track service information and procedures.



SKI-DOO

1962-1972

Model	Make	Engine		Carburetor		Sprocket Ratio	Chain Size	Clutch		Belt Number
		Model	Displ.	Make	Model			Make	Shaft Center	
1962										
Alpine.....	JLO	L152	148cc	Tillotson	HL233B	9:26		Own		
Alpine.....	Kohler	K141	16.2ci	Carter	N	9:26		Own		
Alpine.....	JLO	L197	198cc	Tillotson	HL233B	9:26		Own		
1963										
R-6.....	Rotax	165	163cc	Tillotsr	HL233B	9:26		Own		
R.....	Kohler	K141	16.2ci	Carter	N	9:26		Own		
R-8.....	Rotax	250	247cc	Tillotson	HL233B	9:26		Own		
RD-8.....	Rotax	250	247cc	Tillotson	HL233B	9:26		Own		
1964										
AR-6.....	Rotax	165	163cc	Tillotson	HL233B	9:26		Own		
BR-9.....	Rotax	250	247cc	Tillotson	HL233B	9:26		Own		
RD-9.....	Rotax	250	247cc	Tillotson	HL233B	12:39		Own		
1965										
Chalet.....	Rotax	165	163cc	Tillotson	HL233B	9:26		Own		
Olympique.....	Rotax	250	247cc	Tillotson	HL233B	9:26		Own		
Alpine.....	Rotax	250	247cc	Tillotson	HL233B	12:39		Own		
1966										
Olympique....	Rotax	250	247cc	Tillotson	HL233A	9:26		Own	1 7/8*	570-0409
Super Olym....	Rotax	250	247cc	Tillotson	HL209A- HL210A	9:26		Own	1 7/8*	570-0409
Alpine.....	Rotax	250	247cc	Tillotson	HL209A- HL210A	12:39		Own	1 7/8*	570-0409
1967										
Chalet.....	Rotax	165	163cc	Tillotson	HL233A	9:26		Own	3 1/4*	570-0410
Olympique.....	Rotax	250	247cc	Tillotson	HL233A	9:26		Own	1 7/8*	570-0409
Super Olym....	Rotax	300	299cc	Tillotson	HR7A	10:25		Own	1 7/8*	570 0409
Alpine.....	Rotax	300	299cc	Tillotson	HR7A	12:39		Own	1 7/8*	570-0409
Super Alpine..	Rotax	300	299cc	Tillotson	HD4A	13:39		Own	1 7/8*	570-0409
1968										
Olympique....	Rotax	250	247cc	Tillotson	HL233B	9:26		Own	1 7/8*	570-0411
Super Olym....	Rotax	300	299cc	Tillotson	HR7A	10:25		Own	1 7/8*	570-0411
Super 370....	Rotax	370	368cc	Tillotson	HD8A	11:25		Own	1 7/8*	570-0411
Alpine.....	Rotax	300	299cc	Tillotson	HR7A	12:39		Own	1 7/8*	570-0411
Super Alpine..	Rotax	370	368cc	Tillotson	HD8A	13:39		Own	1 7/8*	570-0411
1969										
Olym. 12/3....	Rotax	300	299cc	Tillotson	HR7A	10:25		Own	1 7/8*	570-0411
Olym. 12/3SS.	Rotax	292	292cc	Tillotson	HD21A	10:25		Own	1 7/8*	570-0411
Olympique 320	Rotax	320	318cc	Tillotson	HR17A	11:24		Own	1 7/8*	570-0411
Olym. 320SS..	Rotax	340	335cc	Tillotson	HD21A	11:25		Own	1 7/8*	570-0411
Olympique 370	Rotax	370	368cc	Tillotson	HD8A	16:34		Own	1 7/8*	570-0411

*Rim clearance, measured as shown at (B—Fig. 9).

Model	Make	Engine		Carburetor		Sprocket Ratio	Chain Size	Clutch		Belt Number
		Model	Displ.	Make	Model			Make	Shaft Center	
1969 Cont.										
Nordic 371	Rotax	371	368cc	Tillotson	HR16A	16:34		Own	1 7/8"	570-0411
Alpine 370	Rotax	370	368cc	Tillotson	HD8A	13:39		Own	1 7/8"	570-0411
Alpine 640	Rotax	640	635cc	Tillotson	HD21A	13:29		Own	1 7/8"	570-0414
T'NT 399	Rotax	399	399cc	Tillotson	HD21A	16:34		Own	1 7/8"	570-0411
T'NT 669	Rotax	669	669cc	Tillotson	HD21A	20:34		Own	1 7/8"	570-0414
1970										
Olym. 12/3	Rotax	300	299cc	Tillotson	HR37A	10:25		Own	1 7/8"	570-0411
Olympique 335	Rotax	335	335cc	Tillotson	HR17C	11:25		Own	1 7/8"	570-0411
Olympique 399	Rotax	401	399cc	Tillotson	HR16B	16:34		Own	1 7/8"	570-0411
Nordic 399	Rotax	401	399cc	Tillotson	HR40A	16:34		Own	1 7/8"	570-0411
Nordic 640	Rotax	640	635cc	Tillotson	HD20A	20:34		Own	1 7/8"	570-0414
Skandic 335	Rotax	335	335cc	Tillotson	HR69A	12:33		Own	1 7/8"	570-0411
T'NT 292	Rotax	292	292cc	Tillotson	HD22A	16:34		Own	1 7/8"	570-0411
T'NT 340	Rotax	340	335cc	Tillotson	HD22A	16:34		Own	1 7/8"	570-0411
T'NT 399	Rotax	400	399cc	Tillotson	HD21A	16:34		Own	1 7/8"	570-0411
T'NT 640	Rotax	641	635cc	Tillotson	HD20A	20:34		Own	1 7/8"	570-0414
Alpine 399R	Rotax	401	399cc	Tillotson	HR16B	13:39		Own	Fixed	570-0411
Alpine 399ER	Rotax	401	399cc	Tillotson	HR16B	13:39		Own	Fixed	570-0411
Invader 640ER	Rotax	640	635cc	Tillotson	HD20A	13:25		Own	Fixed	570-0414
1971										
Elan 250	Rotax	247	247cc	Tillotson	HR73A	10:25		Own	1 7/8"	570-0411
Olympique 300	Rotax	302	299cc	Tillotson	HR74A	15:35		Own	1 7/8"	570-0411
Olympique 335	Rotax	337	335cc	Tillotson	HR75A	15:34		Own	1 7/8"	570-0411
Olympique 399	Rotax	401	399cc	Tillotson	HR76A	16:34		Own	1 7/8"	570-0411
Nordic 399	Rotax	401	399cc	Tillotson	HR40A	16:34		Own	1 7/8"	570-0411
Nordic 640E	Rotax	640	635cc	Tillotson	HD20B	20:34		Own	1 7/8"	570-0414
Alpine 399R	Rotax	401	399cc	Tillotson	HR16B	13:39		Own	Fixed	570-0411
Alpine 540ER	Rotax	640	635cc	Tillotson	HD20B	13:29		Own	Fixed	570-0414
Valmont 399R	Rotax	401	399cc	Tillotson	HR40A	13:39		Own	Fixed	570-0411
Valmont 640ER	Rotax	640	635cc	Tillotson	HD66A	13:29		Own	Fixed	570-0414
T'NT 292	Rotax	292	292cc	Tillotson	HD22B	15:34		Own	1 7/8"	570-0411
T'NT 340	Rotax	342	335cc	Tillotson	HD22B	16:34		Own	1 7/8"	570-0411
T'NT 440	Rotax	435	437cc	Tillotson	HD73A	16:34		Own	1 7/8"	570-0411
T'NT 640	Rotax	641	635cc	Tillotson	HD20B	20:34		Own	1 7/8"	570-0414
T'NT 775	Rotax	775	771cc	Tillotson	HD20B	22:34		Own	1 7/8"	570-0414
Skandic	Rotax	337	335cc	Tillotson	HR69A	12:33		Own	1 7/8"	570-0411
1972										
Elan 250	Rotax	247	247cc	Tillotson	HR73A	10:25		Own	1 7/8"	570-0411
Olympique 300	Rotax	302	299cc	Tillotson	HR74A	15:35		Own	1 7/8"	570-0411
Olympique 335	Rotax	337	335cc	Tillotson	HR75A	15:34		Own	1 7/8"	570-0411
Olympique 399	Rotax	401	399cc	Tillotson	HR76A	16:34		Own	1 7/8"	570-0411
Skandic 335	Rotax	337	335	Tillotson	HR	12:33		Own	1 7/8"	570-0411
Nordic 440	Rotax	434	437cc	Tillotson	HD	16:34		Own	1 7/8"	570-0411
Nordic 640ER	Rotax	640	635cc	Tillotson	HD	20:34		Own	1 7/8"	570-0414
T'NT 292	Rotax	292	292cc	Tillotson	HD	15:34		Own	1 7/8"	570-0411
T'NT 340	Rotax	343	339cc	Tillotson	HD	16:34		Own	1 7/8"	570-0411
T'NT 400	Rotax	398	399cc	Tillotson	HD104A	18:34		Own	1 7/8"	570-0411
T'NT 440	Rotax	435	437cc	Tillotson	HD	18:34		Own	1 7/8"	570-0411
T'NT 640	Rotax	641	635cc	Tillotson	HD	20:34		Own	1 7/8"	570-0414
T'NT 775	Rotax	775	771cc	Tillotson	HD	22:34		Own	1 7/8"	570-0414
Valmont 440R	Rotax	434	437cc	Tillotson	HD	13:39		Own	Fixed	570-0414
Valmont 440ER	Rotax	434	437cc	Tillotson	HD	13:39		Own	Fixed	570-0414
Alpine 640ER	Rotax	640	635cc	Tillotson	HD	13:29		Own	Fixed	570-0414

Rim clearance, measured as shown at (B—Fig. 9).

LUBRICATION

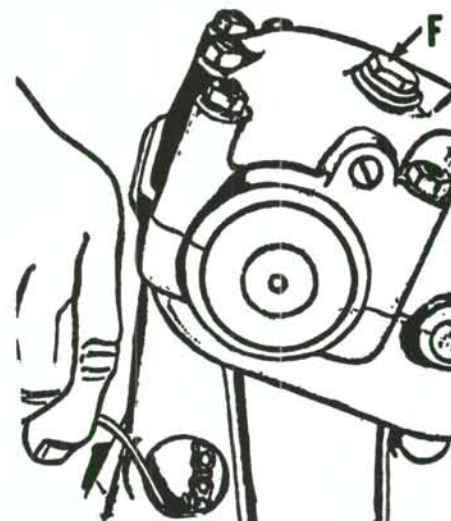
The vehicle manufacturer recommends the use of "SKI-DOO" two-cycle engine oil at the ratio of 20:1.

The drive chain runs in an enclosed chain housing which contains oil to a level approximately even with lower sprocket hub. SAE 80 Hypoid gear lubricant or "SKI-DOO" chain case oil are recommended as the lubricant. Single track models are equipped with a level plug (10—Fig. 7). On Alpine and Invader models, insert a wire through top inspection opening as shown in Fig. 1 and maintain oil level 3 to 4 inches from bottom of case.

The ski-legs (spindles) are equipped with grease fittings at upper end. Lubricate weekly with "SKI-DOO" Grease or an equivalent low-temperature grease.



Fig. 1—On late Alpine/Invader Models with Forward-Neutral-Reverse Transmission, lubricant level can be measured with a stiff wire working through inspection hole on left side of case as shown. Fill with Ski-Doo Oil through filler plug (F) to a level of 3-4 inches from bottom of case.



Bogie wheels are equipped with grease fittings. Lubricate weekly, or oftener under adverse conditions or continuous usage, with "SKI-DOO" grease or equivalent. Late models have grease fittings at each end of track idler axle. Lubricate sparingly when bogie wheels are greased.

Lubricate steering linkage and handle bar bushing twice monthly (low temperature grease).

Each week during use season, remove drive belt spread driven sheave and apply a light coating of low temperature grease to shaft. Slide moving pulley back and forth to distribute the grease and wipe off any excess. Each month remove drive pulley centrifugal unit and apply a light coat of low temperature grease to flyweights. On 1971 and later pulley, pack shaft area with grease working through retaining bolt hole. Lubricant is metered to sliding area during operation. On all models use care not to get grease

on belt or allow buildup which will be thrown on belt during operation.

ADJUSTMENT

STEERING SKIS. To adjust the steering linkage on early models, remove hood and loosen locknuts on each end of tie rod, then turn center tube until distance between skis measures the same front and rear. To adjust handle bar, disconnect drag link at either end.

Late models (Except Elan) use two drag links which should be equally adjusted.

DRIVE CHAIN. The roller drive chain should have approximately $\frac{1}{4}$ -inch of deflection. Direct measurement is not possible on early models with chain case not equipped with inspection cover. The need for adjustment can be determined by carefully rocking the driven pulley and noting the free movement, or backlash.

All 1971 and later models except Alpine and Valmont have an automatic chain tightener and adjustment is not required.

Recommended procedure for all models requiring adjustment is to make 3 checks, turning driven pulley one complete turn between checks. Deflection should not exceed $\frac{1}{4}$ -inch at any time.

Adjustment on early models is by

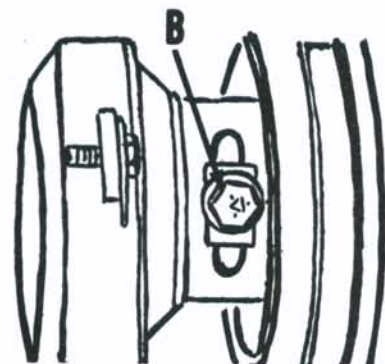


Fig. 2—To adjust chain tension on single track models, loosen adjusting bolt (B) and push down to tighten (or up to loosen) chain. Early Alpine models have two similar tensioners.

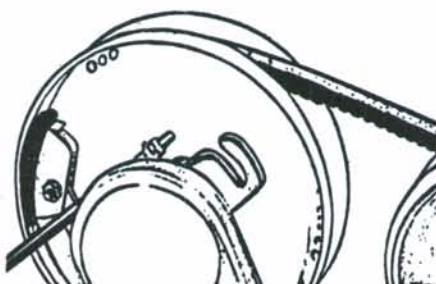


Fig. 4—Some late models have a brake drum built into fixed face of driven sheave as shown.

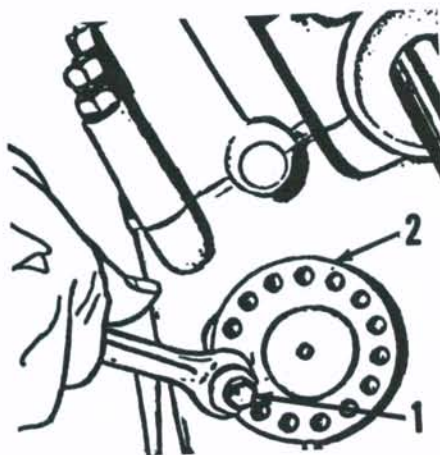


Fig. 3—Chain tensioner (2) on late Alpine/Invader/Valmont models with Forward-Neutral-Reverse transmission is located on right side of chain housing and adjustment can be made after removing adjusting bolt (1).

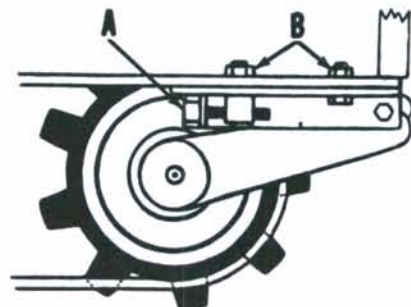


Fig. 5—To adjust track tension, loosen the two clamp bolts (B) and turn adjusting screw (A). Both sides must be adjusted alike. Refer to text.

means of the bolt in eccentric bearing housing between driven pulley and upper end of chain case as shown in Fig. 2. Alpine models before 1969 have two eccentric housings as shown in Fig. 8. To adjust the chain, back off the locknut and push down on jam bolt until it stops with moderate pressure applied; then push up approximately $\frac{1}{8}$ -inch and tighten the locknut. On Alpine models both bolts (S) must be moved at the same time and same amount.

On 1969-1971 Alpine, Invader and Valmont Series with forward-neutral-reverse transmission, chain adjustment is by means of eccentric tensioner (2—Fig. 3) located on left side of gear box. To adjust the chain, remove locking cap screw (1) and turn tensioner while checking deflection through inspection hole on opposite side of case.

BRAKE. Chalet, Olympique and Super 370 Models before 1969 and some later machines were equipped with a shoe type brake which uses the fixed face of driven sheave as a friction surface. On many late models the brake shoe rides in a drum built into rim of driven sheave as shown in Fig. 4.

All Alpine and Invader Models use H-H Caliper Type Disc Brake which may be adjusted and serviced as outlined in BRAKE paragraph of TRACK DRIVE Section elsewhere in this manual.

Wear adjustment of shoe-type brake is made at brake cable anchor. Adjustment is correct when brake is fully applied with end of lever $\frac{1}{4}$ -inch from handle bar grip.

TRACK. To adjust track tension, raise rear of vehicle until track is clear of ground. Apply down pressure at center of track and measure the distance from track to center bogie

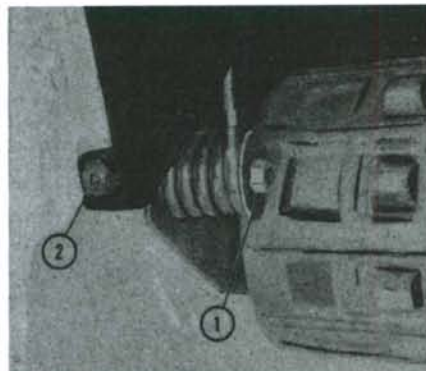


Fig. 6—On 1969-1970 Models Tensioner Clamp Bolt is located in center of suspension spring as shown at (1). Adjusting screw (2) is at rear as shown.

wheels. Distance should be 2½-3 inches and equal on both sides of track (Both sides of BOTH tracks on Alpine and Invader Models).

To adjust track tension on early models, refer to Fig. 5. Loosen clamp bolts (B) and turn adjusting screw (A), making the same adjustment on both sides of single track models or at all four adjusting points on Alpine.

On late models loosen locknuts (1—Fig. 6) in center of suspension springs, then tighten adjusting screws (2) an equal amount. (Four tensioners on Alpine and Invader Models).

NOTE: When track tension has been adjusted, alignment **MUST** be checked as outlined in TRACK SERVICE section of this manual.

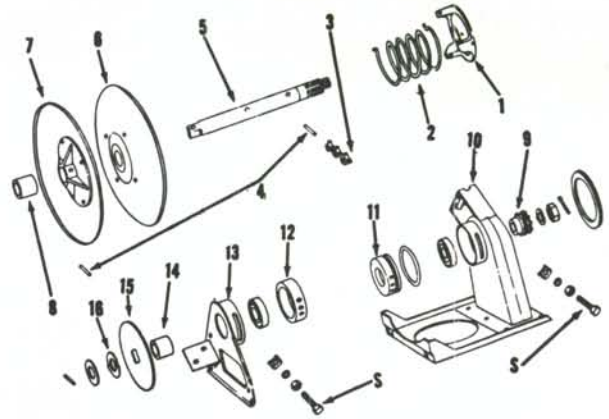
OVERHAUL

SKIS. Skis, ski legs (spindles), springs and steering arms are interchangeable for right or left side of vehicle. Tie rod ends have right hand and left hand threads and are not interchangeable. Skis are equipped with wear bars which are retained by a nut on center stud. Wear bars can be installed either end forward.

CHAIN CASE. On single track models, the chain case serves as the support for driven sheave at upper end and left hand bearing for track drive shaft at lower end. To remove the chain case, first block up rear of vehicle and completely loosen track. Remove hood and torque converter drive belt. On early models, loosen drive chain tension. On 1971 models with self-adjusting drive chain, a tension releaser tool is available from the manufacturer, and is necessary for chain case overhaul. Remove the two

Fig. 8 — Exploded view of driven sheave and associated parts used on early Alpine Models.

- S. Adjusting screws
- 1. Outer cam
- 2. Spring
- 3. Cam shoes
- 4. Spring pin
- 5. Shaft
- 6. Moveable face
- 7. Fixed face
- 8. Spacer
- 9. Drive sprocket
- 10. Chain case
- 11. Eccentric
- 12. Eccentric
- 13. Bracket
- 14. Spacer
- 15. Brake disc
- 16. Wave washer



clamps (11 & 12—Fig. 7) and support rod (3) which hold the chain case to vehicle frame. Work the drive axle seal from lower end of chain case, work the axle from splined lower sprocket and lift off the chain case and driven sheave as an assembly. Be careful not to lose the shims (5) if shims are present. These shims, together with spacer shims located behind torque converter drive sheave, are used for drive belt alignment when vehicle is assembled.

Standard sprocket ratios for most models is given in tables at beginning of this section.

Drive chain (8), upper sprocket (7) or driven sheave can be removed after removing inspection cover (13). Remove the shaft nut and jam bolt (2), then withdraw driven sheave and eccentric bearing housing (1) as an assembly. Driven sprocket (9) can be withdrawn from inspection cover opening after removing upper shaft and sheave assembly. Assemble by reversing the disassembly procedure. Tighten nut (14) to provide a very

slight pre-load to shaft bearing.

When reinstalling the chain case, be sure drive axle oil seal is in good condition or a new one installed. Reposition the chain case and install clamps loosely. Reinstall support rod then insert the removed shims (5) in the same position from which they were removed and tighten clamp nuts snugly. Drive sheaves should be properly aligned as shown in Fig. 9. Offset (A) should be ½-inch on all models except 1970 TNT 340, on which an offset of ⅜-inch is recommended. The vehicle manufacturer provides an "Adjusting Bar" (straight-edge), Part

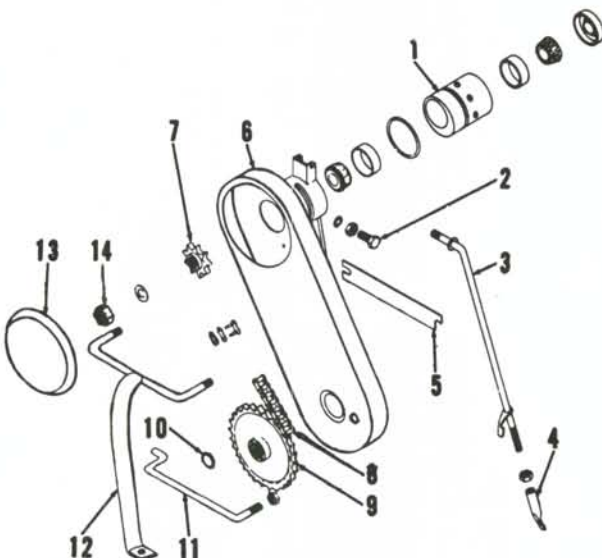


Fig. 7—Exploded view of drive chain housing, supports and associated parts used on early models.

- 1. Eccentric housing
- 2. Lock bolt
- 3. Support rod
- 4. Socket
- 5. Shim
- 6. Chain case
- 7. Drive sprocket
- 8. Drive chain
- 9. Driven sprocket
- 10. Inspection plug
- 11. Clamp
- 12. Support bracket
- 13. Inspection cover

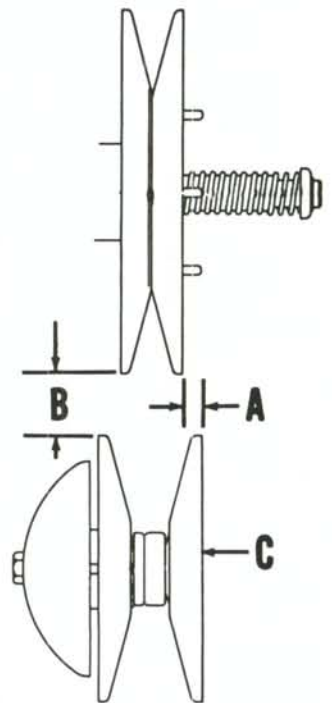


Fig. 9—Schematic view of torque converter showing points of adjustment. Offset (A) is ½-inch on all models except 1970 TNT 340, which should be ⅜-inch. Rim clearance (B) should be ¾ inches for 1967 Chalet and 1 ⅛ inches for other models.

- A. Offset
- B. Rim clearance
- C. Adjusting shims

No. SK-1623, which can be used for measuring the offset. Adjust by varying the shim pack (5—Fig. 7) or by removing the drive pulley and adding spacer shims at point shown at (C—Fig. 9). Distance (B) between sheave rims should be $3\frac{1}{4}$ -inches on Chalet Model or $1\frac{1}{8}$ -inches on Olympique, Super Olympique and Alpine Models. Distance (B) can be varied by shortening or lengthening support rod (3—Fig. 3).

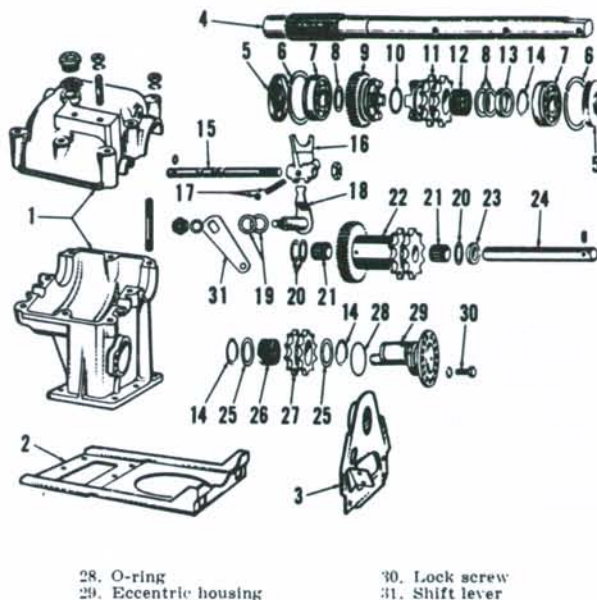
On Alpine models, the chain case (10—Fig. 4) serves as support for driven sheave. The lower half of chain case is built into vehicle frame.

To remove the chain case, loosen both tracks to reduce drive chain tension. Remove belt guard, brake disc and left support bracket (13), then remove drive belt. Remove inspection cover and unhook drive chain; then unbolt and remove chain case.

DRIVE. Refer to the appropriate service section elsewhere in this manual for overhaul information on torque converter and associated parts. The vehicle manufacturer recommends the following method to block the piston and keep crankshaft from turning when removing

Fig. 10 — Exploded view of Forward-Neutral-Reverse Transmission used on Invader/Alpine/Valmont models so equipped.

1. Housing
2. Bottom plate
3. Support
4. Drive shaft
5. Oil seal
6. Snap ring
7. Bearing
8. Shim (0.5mm)
9. Sliding gear
10. Washer
11. Sprocket
12. Needle bearing
13. Spacer
14. Snap ring
15. Shift rail
16. Shift fork
17. Detent
18. Shift shaft
19. Shims
20. Shims
21. Needle bearing
22. Countershaft gear
23. Spacer
24. Countershaft
25. Washer
26. Needle bearing
27. Idler sprocket



28. O-ring
29. Eccentric housing
30. Lock screw
31. Shift lever

the drive pulley. With spark plug removed from single cylinder engines or pto side spark plug removed from twin, slowly turn crankshaft in normal direction until exhaust port is closed and compression begins. Feed a spare starter rope or similar clean rope into spark

plug hole, then turn piston up against rope until crankshaft stops. First remove the centrifugal governor bolt and withdraw governor, moving flange and spring, then insert a punch in cross hole in pulley shaft and turn in normal direction of engine rotation.

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