

DRIVING TECHNIQUE

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Cross-country driving

Cross-country driving calls for greater judgement and caution on the part of the driver than travelling on level ground.

- Adapt the speed to suit the prevailing terrain conditions
- Avoid driving over tree stumps and rocks to prevent the tracks and track carriages from being subjected to shock loads
- Always choose the easiest route even if it means going a longer way round

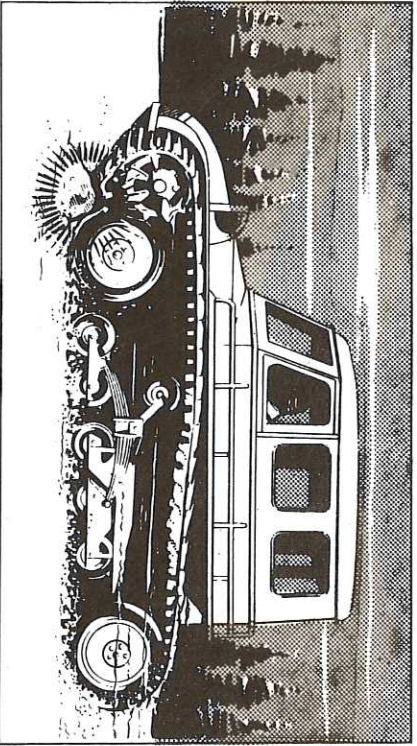


Fig. 7

Driving in mountainous country

When driving in mountainous or other hilly districts it should be remembered that the hill-climbing capacity of the vehicle is greatest on frozen and hard-packed snow. However, even in loose snow it can still negotiate slopes if the right driving technique is used.

Diagonal driving

If the tracks spin and bury themselves in when driving up a steep slope, a diagonal driving technique must be used.

- First reverse the vehicle while turning at the same time, and then choose a course which is less steep
 - A zig-zag pattern can often be adopted for diagonal hill-climbing. In order to gain as much altitude as possible when turning on to a new leg of the zig-zag course, steer straight uphill as far as possible. As soon as the tracks begin to slip, reverse the vehicle while turning to bring it on to the new course
- If when driving diagonally uphill in loose snow a course is selected which has too steep a gradient so that the lower track begins to spin and bury itself in, reverse the vehicle and choose a new course which is less steep. When driving diagonally uphill on frozen or hard-packed snow, take special care that the vehicle does not begin to side-slip down the slope.

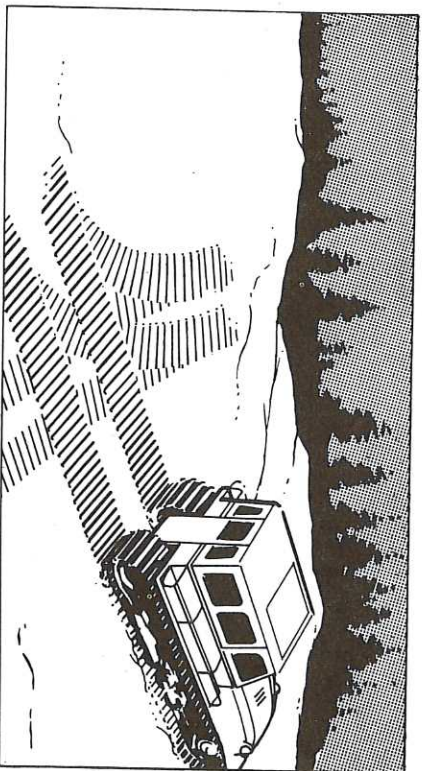
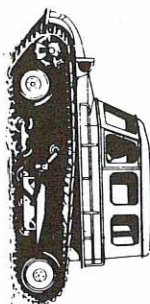


Fig. 8

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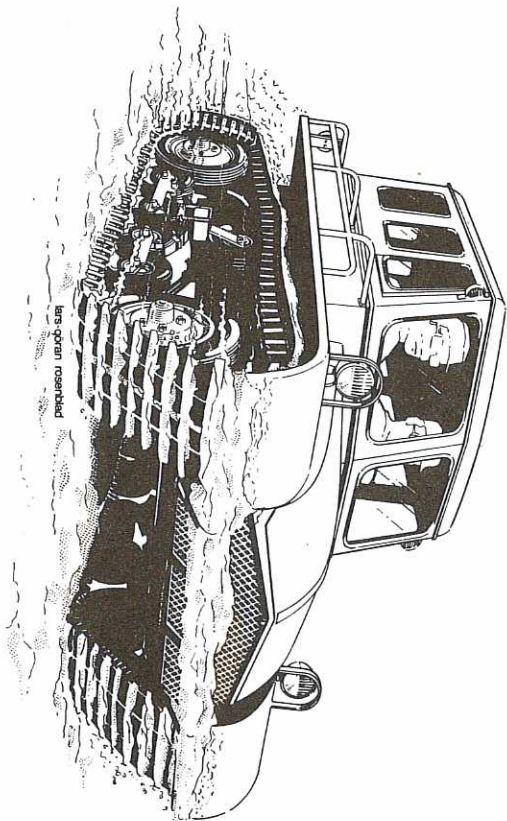
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INSTRUCTION BOOK



SNOW TRAC ST 4

Manufacturing serial number
Engine manufacturing serial number
The weasel supplied by
Address:
Telephone number



The SNOW TRAC is built for travel in roadless snow-covered terrain and is capable of carrying heavy loads in difficult conditions. The well-adapted ground pressure combined with low centre of gravity makes it very easy to control even on steep slopes.

Like any other vehicle it needs regular servicing and careful maintenance in order to function satisfactorily and to keep running costs low.

We therefore urge you to read this booklet, as well as the special engine manual, and to follow the instructions and advice given. In return your SNOW TRAC will give you good service and much enjoyment for many winters to come.

AKTIV-FISCHER AB

INSTRUMENTS AND CONTROLS

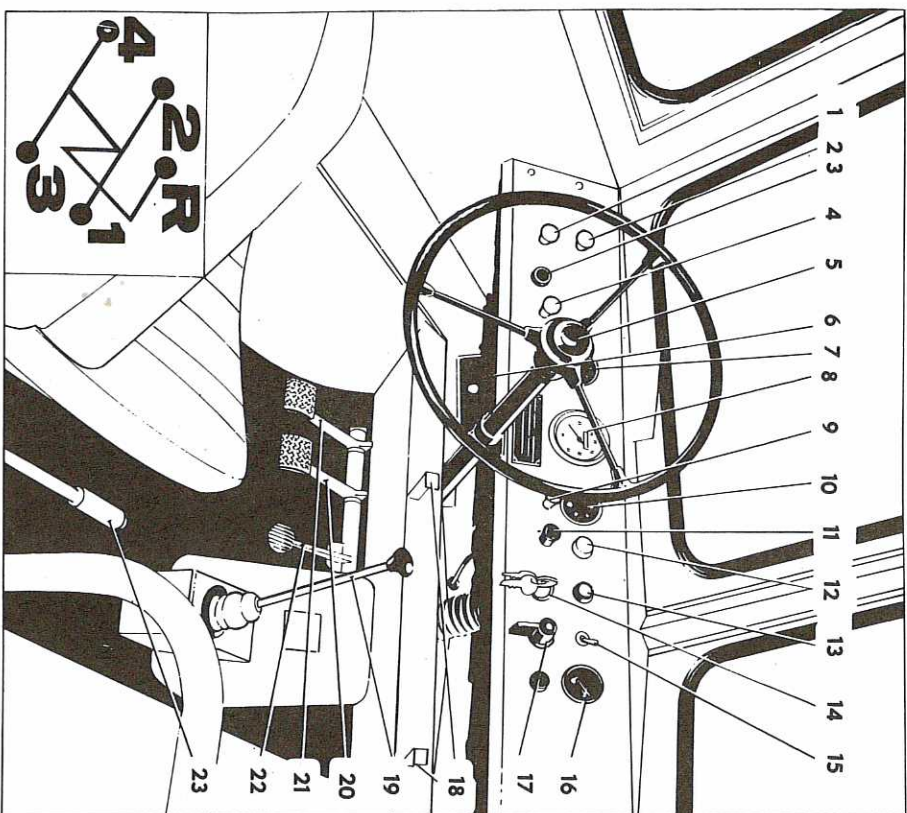


Fig. 1

1. Windscreen wipers

Two-speed

2. Petrol heater switch with indicator lamp

Extra equipment, see page 7

3. Starter button

4. Light switch

The parking lights are switched on by pulling out the switch to the first position and the headlights by pulling it fully out.

5. Horn

6. Fuse box

7. Fuel gauge

8. Speedometer

This indicates the speed in km. p. h.

9. Choke

10. Oil temperature gauge

The maximum permissible oil temperature when running is 120°. If the oil becomes hotter than this, stop the vehicle and let the engine run at idling speed until the temperature has gone back to normal.

11. Hand throttle control

12. Oil pressure warning lamp (GREEN)

If this lamp lights while running, stop the engine at once and check the oil level. If this is correct, there is a fault in the oil circulation system or in the electrical circuit to the warning lamp. If the lamp flashes when the engine is idling, this is of no significance as long as

it goes out when the engine speed is increased.

13. Charging control lamp (RED)

This lamp lights when the battery is being discharged.

14. Ignition switch

When the key is turned in the switch the ignition current is switched on, as well as current to the direction indicator flashers, measuring instruments, horn and brake lights.

15. Headlight dipper switch

16. Hour recorder

Extra equipment. This indicates the running time in hours.

17. Direction indicator switch with indicator lamp

The lamp flashes simultaneously with the direction indicator flashers. If any flasher is not functioning, the indicator lamp goes out.

18. Heater and defroster controls

See page 7

19. Gear lever

The gear positions are shown in the insert in fig. 1.

20. Brake pedal

21. Clutch pedal

22. Accelerator pedal

23. Hand brake

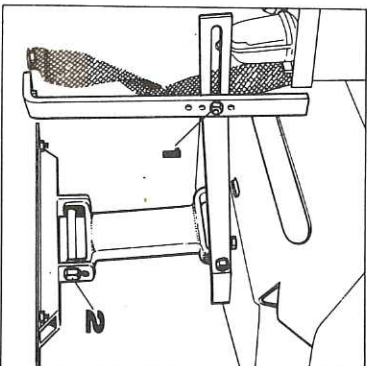


Fig. 2

Driving seat

The driving seat is adjustable both vertically and longitudinally, and the seat inclination can also be altered. The height of the seat is adjusted by moving the attaching screw 2 to one of the four holes in the frame. The longitudinal position is adjusted by loosening the screw 1 and moving the whole seat backwards or forwards. The seat inclination is altered by moving the bolt 1 to one of the four holes in the seat support leg.

Safety belt

The safety belt should be adjusted so that it holds the driver firmly to the seat. The length of the belt is adjusted by moving the locking buckle on the free end of the belt. The lock is released by lifting the rear edge of the black locking buckle.

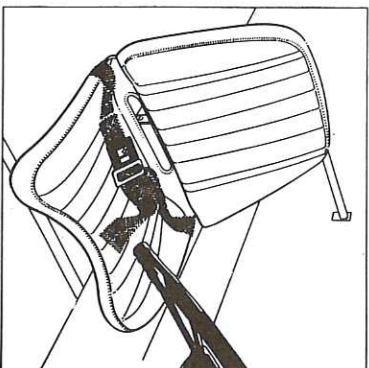


Fig. 3

Roof hatch

The roof hatch is opened by pressing the hatch support upwards. The hatch is locked in the open position by a spring-loaded ball. The roof hatch can be opened fully by releasing it from the front attachments and hinging it backwards.

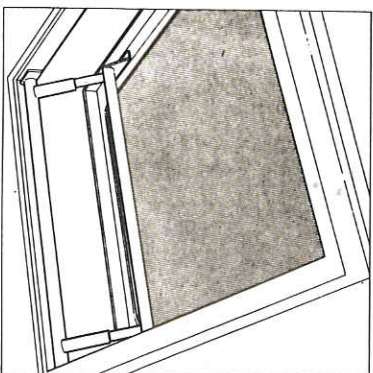


Fig. 4

Heater and defroster

Warm air from the cab and windscreens is obtained when both the controls are pulled outwards. By setting the controls to different positions warm air can be distributed in the cab as desired.

The adjusting nut for the variator belt tension is reached through the opening between the controls.

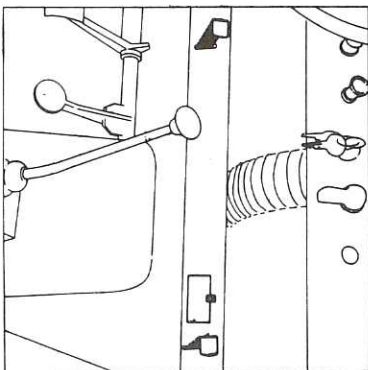


Fig. 5

Air heater unit

(Extra equipment)

The heater is started by pulling out the switch to position 2. This switches on an electric glow plug which ignites the fuel which runs in at the same time. Combustion starts and the heated air is blown into the cab. After about 45 seconds the heater reaches its full operating temperature. A thermostat cuts off the current to the glow plug at the same time that the control lamp on the switch lights to indicate that the unit is in full operation. When the switch is pushed in the fuel supply ceases and combustion is stopped. The fans continue to run in order to cool the heater. After 2 - 3 minutes when the temperature of the heater has fallen sufficiently, the current to the fan motor is cut off automatically and the control lamp on the switch goes out at the same time.

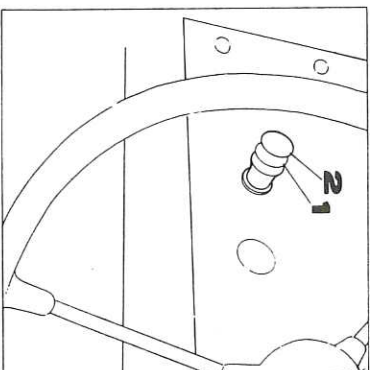


Fig. 6

N.B. On no account must the heater be switched on during the cooling period since the glow plug will not then be energized and the fuel flowing in will not be ignited. When the switch is in position 1, only the fans of the unit are in operation, whereby heated fresh air is blown into the cab.

STARTING AND DRIVING

Before driving

Check that:

- The oil level in the engine comes between the maximum and minimum marks on the dipstick
- There is sufficient fuel
- The brakes function properly

Starting the engine when cold

- Pull out the choke control fully
- Press down the clutch pedal
- Do not touch the accelerator pedal until the engine has started
- Switch on the ignition by turning the key
- Push in the starter button

If the engine does not start within 10 seconds, release the starter button and wait half a minute before making another attempt to start.

When the engine has started:

- Push in the choke control until the engine runs smoothly
- Operating temperature is reached most quickly by running the vehicle under moderate loading during the warming-up period
- Push in the choke successively until the engine runs smoothly with the choke pushed in fully

Starting the engine when warm

- Push down the accelerator pedal about halfway
- Switch on the ignition by turning the key
- Push in the starter button

If the engine does not start immediately when it is thoroughly warm, press down the accelerator pedal fully and make a fresh attempt to start.

Driving

The weasel can be started in any gear since it has low overall gear ratios. A suitable gear is chosen with regard to the snow and terrain conditions existing at the time. Make a habit of glancing at the instruments now and then. This will avoid any unnecessary engine breakdowns.

The engine oil temperature must not exceed 120°C (248°F) when running. If the oil becomes hotter than this, stop the weasel and let the engine idle until the temperature goes back to normal.

WARNING. On no account must the steering wheel be turned when the vehicle is not moving. If force is used to turn the steering wheel when the vehicle is stationary, this can cause breakage of the steering components.

After finishing driving

The engine is stopped by turning back the ignition key. When parking the vehicle for any length of time, for example, overnight, the crawler tracks should be cleaned free from snow and ice. This is particularly important when it is thawing. Fir twigs can be placed under the track to prevent them from freezing to the ground. The handbrake should not be used when parking for prolonged periods during the winter as there is a risk that it will freeze solid. At very low temperatures it is advisable to take the battery indoors during the night. At - 20°C (- 4°F), the battery capacity is only half of that at room temperature. A fully discharged battery freezes at about - 10°C (+ 14°F).

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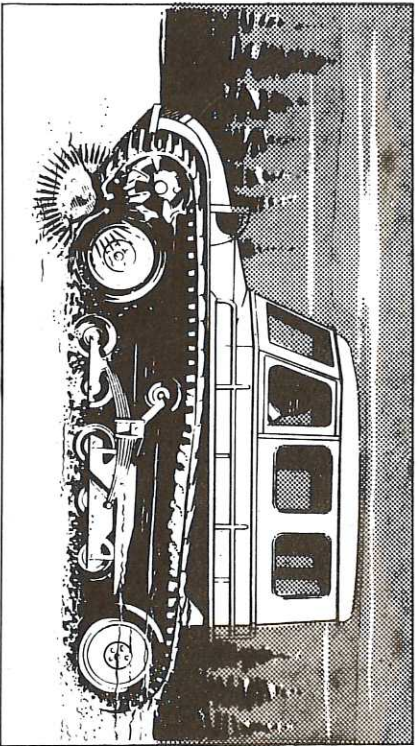


Fig. 7

Driving in mountainous country

When driving in mountainous or other hilly districts it should be remembered that the hill-climbing capacity of the vehicle is greatest on frozen and hard-packed snow. However, even in loose snow it can still negotiate slopes if the right driving technique is used.

Diagonal driving

If the tracks spin and bury themselves in when driving up a steep slope, a diagonal driving technique must be used.

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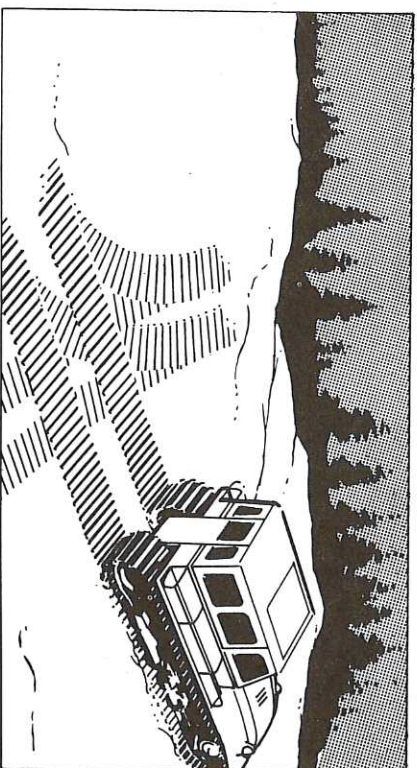


Fig. 8

TECHNICAL DESCRIPTION

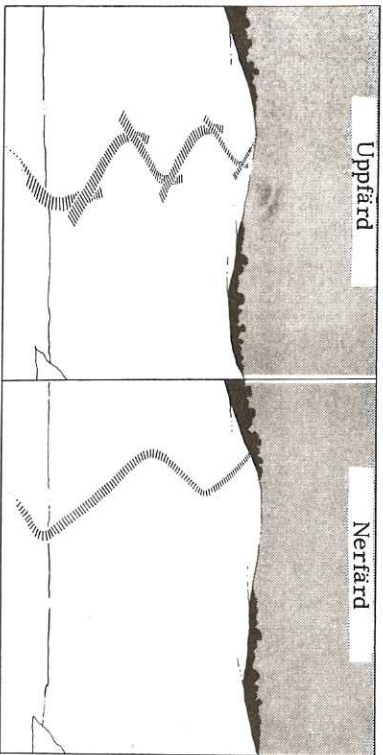


Fig. 9

Utilizing the terrain

Making zig-zag turns when driving up steep slopes is considerably facilitated by making use of the forward speed of the vehicle. The gradient of the slope will thus help the vehicle to turn while reversing. If it is necessary to drive repeatedly up a slope with loose snow which has a steeper gradient than the vehicle can manage, the following method can be adopted:

- Take a zig-zag course to the top. On the way down, take a shorter route with a steeper gradient
- On the next trip up, drive in the same tracks made on the way down. This will provide a much better grip for the crawler tracks, so that the vehicle will be able to climb to the top more quickly

At all times when driving the weasel, but especially in mountainous districts, remember to avoid jerky control movements and sudden acceleration.

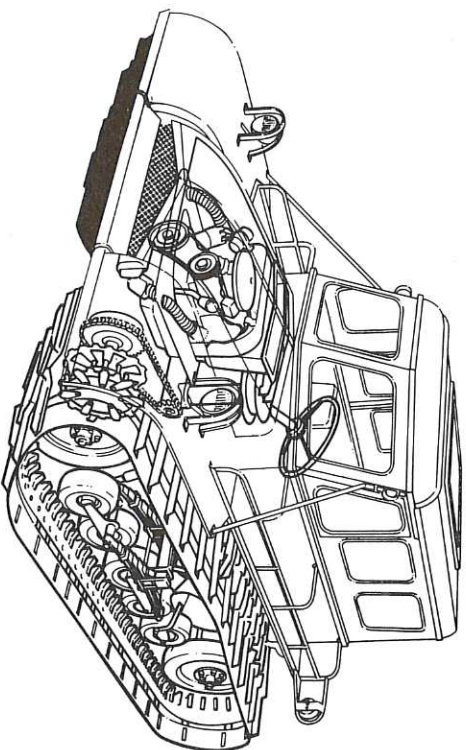


Fig. 10

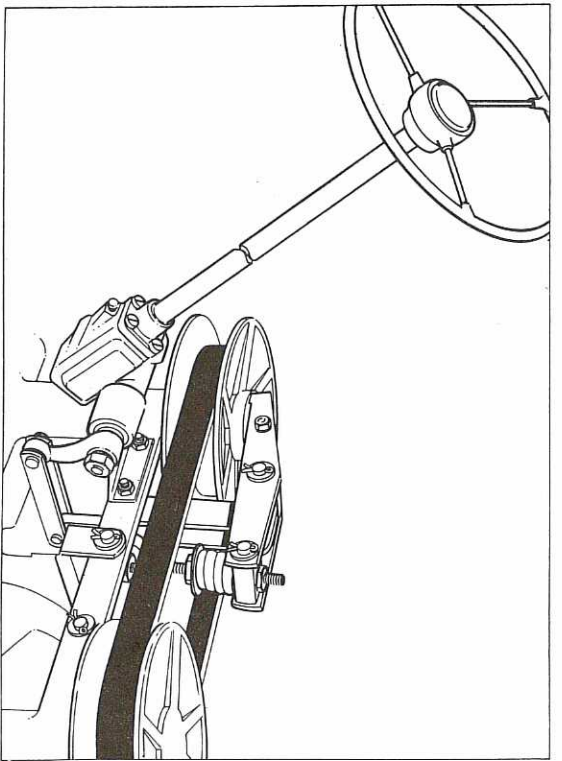
The weasel is intended for use in roadless snow-covered terrain. It can carry a load of 500 kg (1102 lb.) and can also tow as much again. There is plenty of room in the cab for six people in addition to the driver.

Chassis and body

The chassis consists of a welded frame made of cold-drawn steel tubing. The body is made of aluminium alloy and is mounted on the frame by three-point suspension.

Engine

The weasel is powered by a Type 126 Volkswagen engine. It is an air-cooled, four-cylinder opposed unit and is mounted at the front with the drive on the front axle.



Power transmission and steering

Fig.11

The weasel is equipped with a variator steering arrangement. The movements of the steering wheel act on a steering variator which distributes the engine output between the two crawler tracks in a continuously variable ratio. Both tracks are driven when making turns, but the variator distributes the engine output between them in proportion to the steering wheel movement. The variator works by means of a drive belt which runs between double V-belt pulleys, the flanges of which are adjustable for width. When the steering wheel is turned it acts on the variator pulleys in such a way that the flanges of one of them are pressed together while those of the other are moved apart a corresponding amount. The drive belt is thereby forced outwards towards the periphery of the pulley which is pressed together and at the same time forced inwards towards the shaft of the other pulley. This causes the drive shafts, and thereby also the crawler tracks, to run at different speeds so that the weasel turns.

Crawler tracks

The crawler tracks are made of rubber with interwoven rayon cord. The tracks are reinforced externally with spring steel cleats. These are shaped in such a way that they provide a good grip on the snow. The cleats also run in mesh with the driving

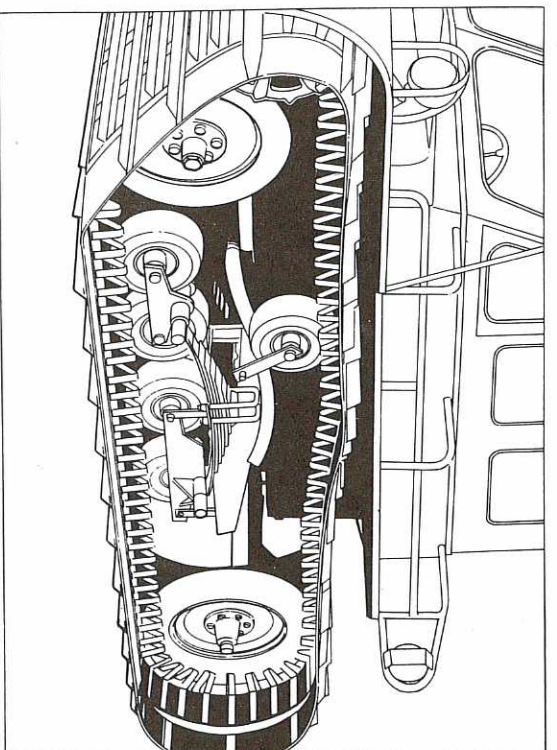


Fig.12

wheels to drive the tracks. On the inside of the tracks there is a guide ridge which runs against the flanges of the bogie wheels to guide the tracks laterally. The track tension is adjusted by moving the rear wheels.

Track carriers

The weight of the vehicle is transferred to the tracks by means of 12 pneumatic rubber wheels. The wheels are mounted on spring-loaded track carriers which are arranged in such a way that the best possible weight distribution is obtained. Each track has a fixed support wheel against which the upper part of the track rests.

Brakes

The vehicle is equipped with hydraulic drum brakes. The hand-brake is mechanical and acts on the front wheels.

Electrical system

The electrical system has a voltage of 12 V. The battery has a capacity of 85 Ah and the negative terminal is earthed. The electrical system includes circuits for charging, starting, lighting, brake lights, direction indicators, horn and windshield wipers. A flashing warning light is available as extra equipment.

MAINTENANCE INSTRUCTIONS

Engine

All adjustments and servicing work should be carried out in accordance with the instructions in the engine manual.

Variator

Variator belt tension

Check the tension of the variator drive belt occasionally. When correctly tensioned, it should be possible to press in the belt by thumb 20 mm (3/4") as shown in fig. 13.

The belt is tensioned by slackening the two nuts 1, fig. 14, an equal amount. The lower nut is slackened from inside the cab through an opening on the right-hand heater and defroster control, see fig. 5.

N.B. Do not adjust the nuts 2. These are properly adjusted when the variator is installed and their adjustment must not be altered when the belt is tensioned.

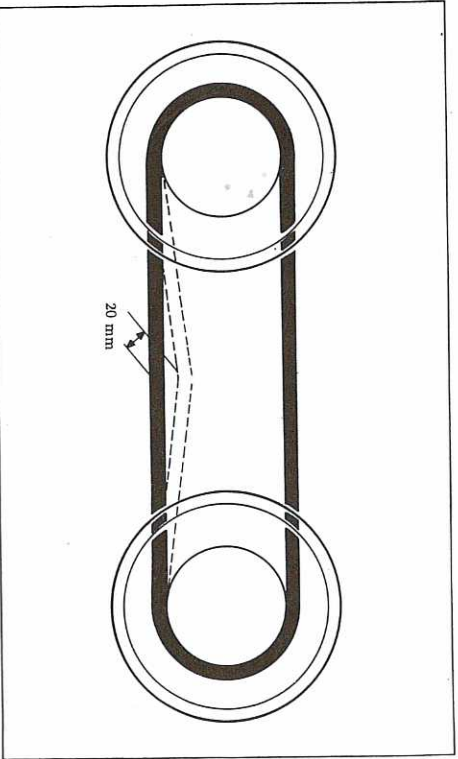


Fig. 13

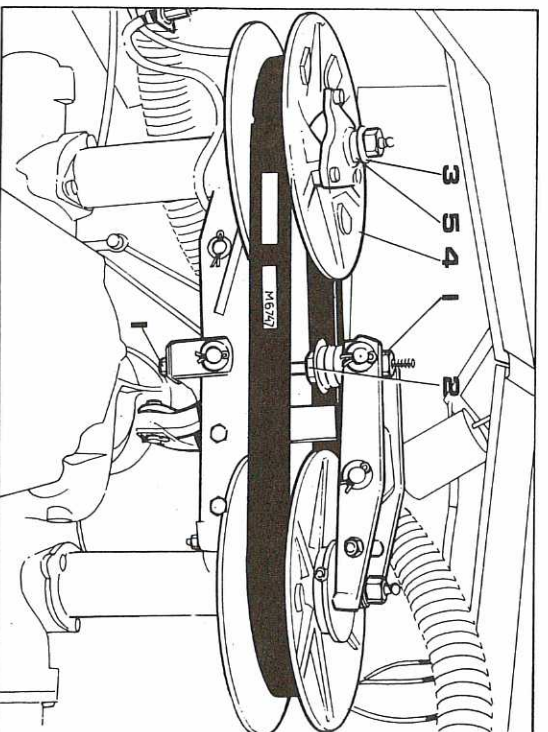


Fig. 14

Changing the variator belt

1. Unscrew the cooling air intake from the engine.
2. Bend down the tab washer 3, fig. 14, screw off the shaft nut on the right-hand steering shaft and pull off the upper half 4 of the variator pulley.
3. Remove the defective belt. Clean the variator pulleys if necessary.
4. Put on the new belt. Push the variator pulley 4 on the shaft. Put on the washer 5 and the tab washer 3. Screw on the shaft nut by hand.
5. Tighten the shaft nut while rotating the variator pulleys by hand or driving them round with the engine. If they are to be turned by hand, one driving chain must be taken off.
6. Check the belt tension and adjust if necessary.
7. Tighten the shaft nuts finally with a torque wrench to a torque of 23-26 kpm (166-188 lb. ft.), and lock with the washer 3.
8. Fit the cooling air intake.

Crawler tracks

Crawler track tension

Check the tension of the track once a week as follows:

1. Drive the weasel straight forward about 25 yards/metres on level ground so that the driving wheels pull evenly on both tracks.
2. The tension is checked on the upper part of the track between the front support wheel and rear drive wheel. Place a straight-edge or similar on top of the track between the points at which it is supported. The tension of the track is correct when it sags 4-5 cm (1 3/16"-1 9/16") as shown in the figure 15.
3. Tighten the tracks if necessary by moving the rear wheels with the nuts on the adjusting screws 1, fig. 15.
4. Drive the weasel another 10 yards/metres straight forward and check the tension again.

If after a long period of use the tightening mechanism no longer suffices to produce the required tension, the tracks must be shortened. To do this, remove the track jointing bolts, lap the track ends over each other one pitch more and then refasten the joint. Tension the tracks as described above.

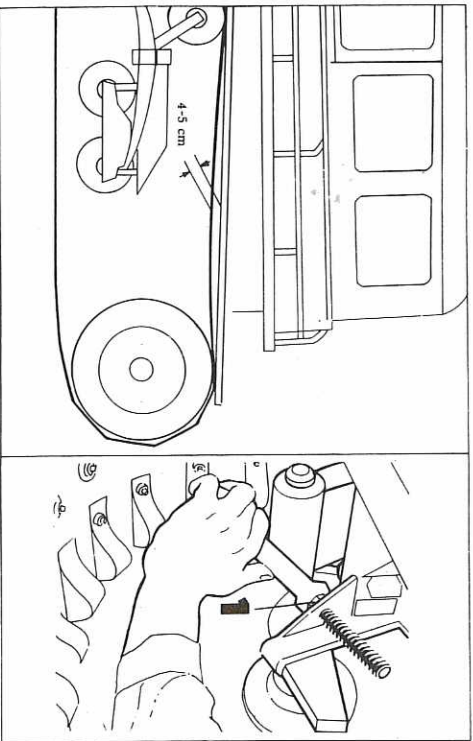


Fig. 15

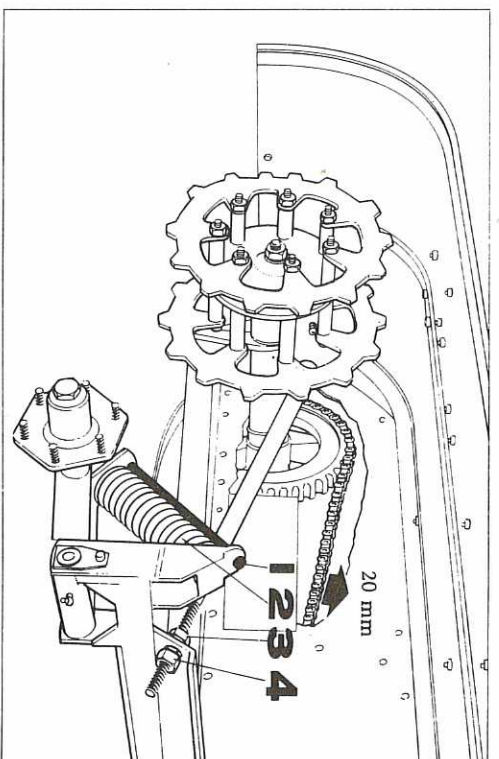


Fig. 16

Dismounting of crawler tracks

1. Mount the black tightening bolt 1, which is placed in the tool box, in the holes over the spring 2 behind the front wheel, fig. 16.
2. Slacken the chain tension with the nut 3 and the locking nut 4.
3. Slacken the crawler track tension with the nut 1, fig. 15.
4. Dismount the rear wheel and remove the crawler tracks.

Driving chains

Driving chain tension

Check the tension of the drive chains now and then, and after every 50 hours running. If the chains are insufficiently tensioned this can result in jerky running, particularly when travelling downhill. The chain tension should be checked on the slack part of the chain. The upper part of one of the chains can be tightened while that of the other chain is slack. This depends on the direction in which the vehicle has been turned immediately before stopping. When correctly tensioned, it should be possible to lift the middle of the chain about 2 cm (3/4"). The chains are tensioned with the nuts 3, fig. 16, on the either side of the vehicle body. Note that the vehicle should be driven straight forward at least 10 metres (33 ft.) on level ground before the chain tension is adjusted.

PERIODIC MAINTENANCE

Every day

Before driving

Check that:

- The oil level in the engine comes between the maximum and minimum marks on the dipstick
- There is sufficient fuel
- The brakes function properly

After every 50 hours running

Change the engine oil.

Lubricate all points as shown in the Lubrication chart.

Check that:

- The variator belt is correctly tensioned
- The drive chains are correctly tensioned
- The crawler tracks are correctly tensioned
- The pressure in the front tyres is 5 kp/cm² (71 lb/sq.in.) and in the other tyres 4 kp/cm² (57 lb/sq.in.)
- Both the fan belts are correctly tensioned. It should be possible to press down the belts with the thumb about 1-2 cm (7/16") at a point halfway between the belt pulleys
- The battery acid reaches 10 mm (3/8") above the cell plates. Top up with distilled water if necessary. After topping up, let the engine run for a while to allow the water to mix properly so that freezing is avoided

Service the engine as described in the engine manual.

End-of-season maintenance

1. Thoroughly clean the weasel both internally and externally. Examine the vehicle and make a note of any parts which need replacing. Order the parts at once or in good time before the next season.

2. Check:

- Crawler tracks for damage
 - Adjustment of track carriers
 - Bogie spring clamps
 - Rim bolts
 - Nuts for idler wheel bolts
 - Shock absorber bolts
 - Gearbox stay bolts
 - Gearbox attaching bolts
 - Engine mounting bolts
 - Variator frame bolts
 - Variator pulley bolts
 - Bolted joints on engine and exhaust system
 - Body bolts
3. Protect the engine against rust as described in the engine manual.
4. Change the oil in the gearbox. Drain the oil as soon as possible after running while it is still warm and flows easily.
5. Touch up the paintwork where necessary.
6. Carry out all-round lubrication in accordance with the lubricating chart.
7. Block up the vehicle and release the tension on the crawler tracks.

ELECTRICAL EQUIPMENT

Fuses

The fuses are placed in a fusebox under the instrument panel to the left of the steering wheel jacket tube.

If a fuse "blows", first find out the reason and correct the fault before fitting a new fuse.

Never use fuses with a rating higher than 8 A - this can result in danger of fire!

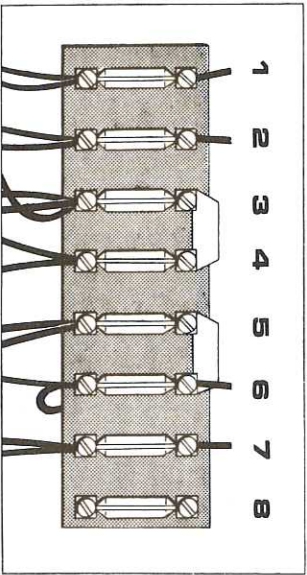


Fig. 17

Fuse

- | | |
|---|------------------------------------|
| 1 | Dipped-beam headlights |
| 2 | Full-beam headlights |
| 3 | Parking lights, number plate lamp |
| 4 | Rear lamps, instruments lights |
| 5 | Ignition coil |
| 6 | Horn |
| 7 | Windscreen wipers, interior lights |
| 8 | Spare |

Circuits protected

Bulbs

Head lamps	Holder:	BA 20d	12V - 45/40 W
Stop lights	"	BA 15s	12V - 18 W
Rear lights	"	BA 15s	12V - 5 W

TECHNICAL DATA

ENGINE

Make	Volkswagen 126 A
Type	4-cylinder, 4-stroke boxer engine
Cooling	Blower-cooled, controlled by a thermostat
Rating	53 hp SAE at 4000 rpm
Cylinder volume	1584 cm ³
Cylinder diameter	85.5 mm (3.336")
Stroke length	69 mm (2.717")
Compression ratio	7,7:1
CLUTCH	Single dry-plate type
Make	Fichtel & Sachs
Type	KM 200
GEARBOX	All synchronised
Gear ratios	4 forwards gears, 1 reverse
	1st gear 3.80
	2nd " 2.06
	3rd " 1.32
	4th " 0.89
	Reverse 3.88
DIFFERENTIAL	Built in the gearbox and variator controlled
Ratios	4.125
SPROCKET WHEEL DRIVE	Chain drive with roller chain
Ratios	25.4 x 17
	Standard 3.17
	Extra 3.45 and 2.53

TYRES

Carrier wheels	Size	4.00-4" ²	6-ply
	Air pressure	4 kp/cm ²	(57 lb/sq.in.)
Front wheels	Size	600-100 mm	6-ply
	Air pressure	5 kp/cm ²	(71 lb/sq.in.)
Rear wheels	Size	600-100 mm	6-ply
	Air pressure	4 kp/cm ²	(57 lb/sq.in.)

Travelling speeds

		Speed in mph	
Gear	Standard reduction	High reduction	Low reduction
1st	1 - 3 1/4	1 - 4	1 - 3
2nd	2 - 5 1/2	2 - 7	1 1/2 - 5
3rd	2 1/2 - 10	3 - 12 1/2	2 - 9
4th	4 1/2 - 15	5 - 19	4 - 14

Measurements, Weight, etc.

Dimensions	Length	3640 mm (11' 11 5/16")
	Width	1900 " (6' 2 13/16")
	Ground clearance	300 " (11 13/16")
	Height	1850 " ()
Weight	Service weight, approx.	1250 kg ()
Performance	Load capacity	500 kg (1102 lb.)
	Track ground pressure (with driver	50 g/cm ² ()
	Tow capacity	500 kg (1102 lb.)
	Load-carrying area	2, 6 m ² (28 sq.ft.)

EXTRA EQUIPMENT

Flashing warning light	Recommended when driving in places where there is a risk of colliding with skiers
Air heater unit	See page 7
Engine speed limiter	Prevents the engine from running at an excessive speed
Hour recorder	Registers the number of running hours
Spare parts kit	Contents: Spare part and tool kit Variator belt Head lamp bulb Oil pressure warning lamp bulb Fuse 25 A Hub nut Idler wheel, complete with hub bolt 1 metre jointing track 5+5 track grippers 5 screw U6S 5/8"x38 5 screw U6S 5/16"x32 5 screw U6S 5/16"x25 5 lubricator 1/8", 400 5 lubricator, 1/8", straight

LUBRICATION CHART

After 50 hour's running

Pos. No.		Lubrication points	
		Left	Right
1	Steering shaft upper bearing	1	1
	Thrust bearing bracket	1	1
	Variator pulleys	1	1
2	Variator, adjustment arms, links	12	
3	Link arm	1	
4	Bogie spring	1	1
5	Rear wheel suspension	1	1
6	Brake wire	1	1
7	Steering box		1
8	Driving chains	1	1
9	Front axle bearing housing	1	1
	Front wheel suspension	1	1
10	Track carriers and idler wheel	6	6

Once a year

11	Engine control	3	
12	Clean and oil air filter	1	
13	Rear wheel hub	1	1
	Front wheel hub	1	1
14	Engine hood and door hinges	5	
15	Pedal shaft	3	
	Gear box	1	

Symbols

Grease gun with Aero-Shell Grease No. 14,
 Texaco Grease 5542 B, BP Grease LS 1
 Oil can with SAE 20 engine oil
 Grease gun with gear oil SAE 80
 Brush dipped in engine oil SAE 20

LUBRICANTS

Engine

Summer

SAE 30, API specification:
 "For service MS"

Winter

SAE 10 W, API specification:
 "For service MS"

Gearbox

SAE 80 gear oil

Steering box

SAE 80 gear oil

Air cleaner

SAE 10 W engine oil

Hydraulic brakes

BLUE quality brake fluid

Points lubricated
 with grease gun

Ball bearing grease
 Aero-Shell Grease No. 14,
 Texaco Grease 5542 B,
 BP Grease LS 1

Points lubricated
 with an oil can

SAE 20 engine oil

Fuel and
 oil volumes

Fuel tank	40	1
Engine	2, 8	1
Gearbox	4, 5	1
Steering box	0, 3	1
Brake system	0, 3	1

