

SOLO



Operator's Manual
SOLO 750

Characteristics

The SOLO-750 is an all-terrain vehicle with six-wheel drive. The three wheels of each side are interconnected by roller chains.

The *steering system* comprises of two steering handles and the steering transmission. Steering is effected by stopping or slowing down the wheels on either side of the vehicle by pulling the steering handle backward while the other steering handle remains in the standard drive position, thus keeping the wheels on the other side of the vehicle at normal traction.

The steering transmission features two complete planetary gear assemblies. Two each band brakes are activated by the two steering handles which arrest or free the planetary gears at will.

Each steering handle is spring-loaded and returns to its rest position, thereby activating one of the band brakes. The corresponding second band brake remains lifted. As the steering handle is pulled backward, the tightened brake is released and, with both brakes lifted, the three wheels controlled by that steering handle lose propulsion. — As the steering handle is being pulled to its extreme rear position, the second band brake is activated and effects complete braking and stopping of the wheels controlled by the handle.

The *power train* from the engine to the steering system is controlled by a Vario Drive torque converter which is driven by a V belt. The Vario Drive consists of a driving V pulley and a driven V pulley.

The driving V pulley on the crankshaft end represents a centrifugal clutch. As the engine revs up, the two separate halves of the pulley contract and thus tighten the V belt. While the engine is stopped or idling the V belt remains slack and cannot pull the power train.

The driven V pulley of the Vario Drive is part of the steering transmission. The two independent halves of this pulley are held together by traction springs. As the power train revs up, the pulley halves spread apart and thus alter the torque ratio in an unintermittent fashion, as the halves of the driving pulley contract at the same time.

The Vario Drive therefore permits starting and low-speed operation at a reduction ratio of 3.5:1 without any need of a special gear-shift arrangement. As speed increases, the reduction ratio changes unintermittently to direct 1:1 drive.

The *engine* is a forced-air-cooled two-cylinder two-cycle model made by SOLO. The fan blows the used cooling air to the outside of the vehicle. The electric starter battery is being charged by an on-board alternator. To ensure fuel flow under all circumstances, the float-type Bing 84-1/28/106 carburetor has been supplemented with a Bing 08080-103 fuel pump.

Low-pressure flotation *tires* make the SOLO-750 perform in any kind of terrain, at a pressure of 0.2 to max. 0.3 atm (2.85 psi to max. 4.25 psi). The extra-large area of ground contact provides excellent weight distribution to approx. 80–90 gr/cm² (approx. 18–20 oz./sq.in.).

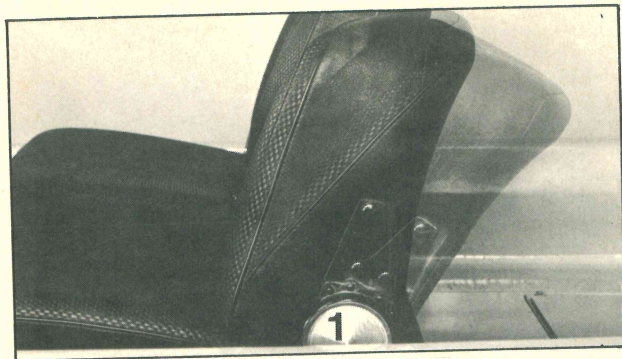
Before the First Start

Bear in mind that driving characteristics and steering functions of the SOLO-750 differ considerably from those of four-wheel vehicles with traditional steering systems. A little experience is required to operate and — especially — steer the SOLO-750 with complete reliance. So, please observe the following hints:

- Select a free, off-the-road area for your first driving trials. Do not experiment on a public thoroughfare.
- Do not enter private property without permission. (Ever.)
- To be entirely on the safe side, stay far away from trees, walls, buildings during your first driving tests.
- As your initial tests will involve some abrupt reactions, fast stopping, turning and starting, stay away from hard surfaces that could put excessive wear on your tires. The SOLO-750 likes soft ground best — pastures, lawns, sandy strips.
- Try difficult terrain, steep inclines, marshes etc. only after you have gained a certain mastery over your vehicle.
- The SOLO-750 is fully amphibious and can negotiate ponds, swamps, slow streams. Fast-flowing waterways are a different matter, as speed is relatively slow. Stay away from currents and any bodies of water requiring extended "sailing" without ground contact. And make sure your tires are mounted correctly for amphibious use: the arrow-shaped cleats must point to the rear when looking at the top of the tire.
- Invite passengers only after you have gained sufficient driving experience. They will like you — and the machine — for it.
- Check the tire pressure and the condition of your tires before each trip.
- Keep tools and other foreign matter away from the drive chains. Check this before each trip.
- With a certain amount of driving practice you may be ready for all-out operation in the rough outdoors. But always bear in mind the following:
 1. Before going on a steep downhill ride, approach the summit slowly and let the vehicle tip forward as all six wheels align themselves with the terrain. Then rev up. (Unless you want to try to loop the loop).
 2. On steep uphill or downhill manoeuvres, stopping is not recommended. (Remember, you have fast-acting disc brakes). Where required, take away throttle and use brakes smoothly and carefully.
 3. On hillsides of 35° or more inclination, stay away from areas with small mounds or gullies that could cause your vehicle to nose up under speed to throw it off balance.
 4. The SOLO-750 is street-legal in some areas, but make sure to observe local highway traffic laws. In any event, remember that yours is basically on off-road vehicle which may handle hard pavement. Your tires show less wear off the road, of course.

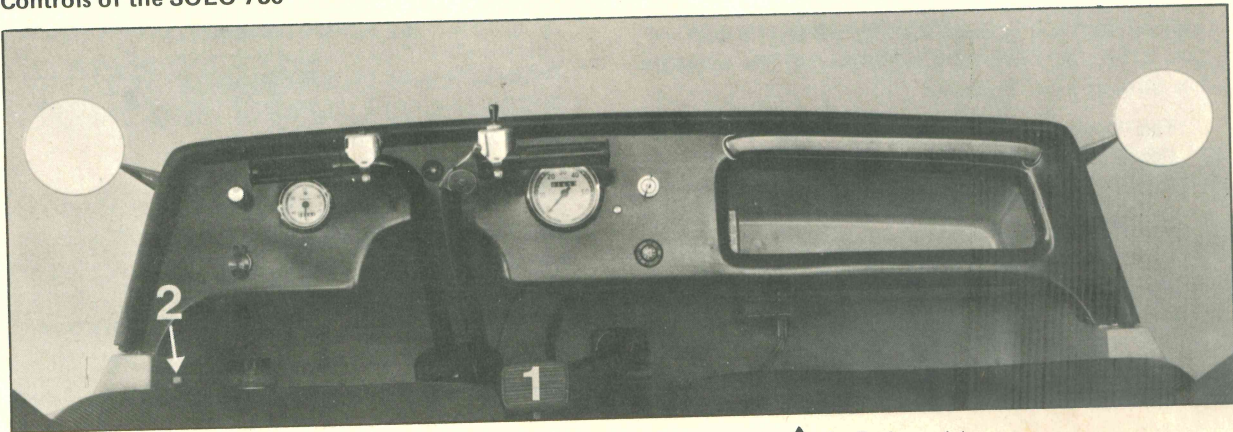
Driving Practice

Engine and power train of the SOLO-750 have been test driven at the factory. Nevertheless, full throttle should *not* be applied during the first few operating hours. Drive alternately at different speeds while keeping load at a minimum. After approx. three operating hours check the drive chains and re-tension as required (note page 6). Some adjustment of the steering handles and band brakes on the steering transmission may also be required (note page 7).

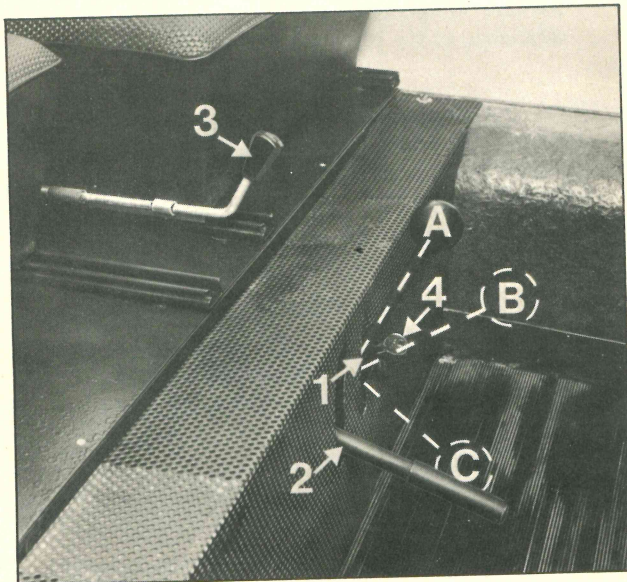


1 Backrest adjustment

Controls of the SOLO-750

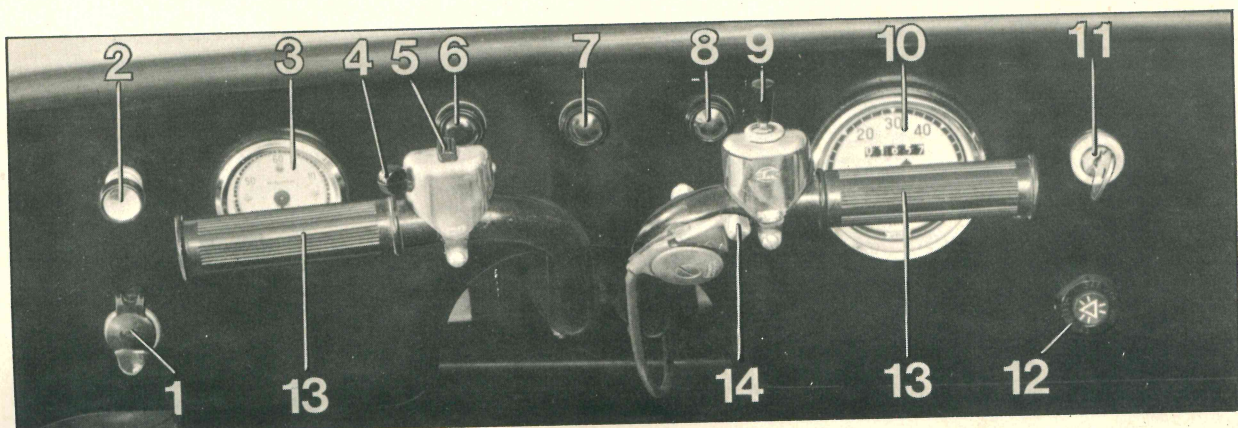


- ▲ 1 Brake pedal
- 2 Choke



- ◀ 1 Forward/Reverse control
(A = forward, B = neutral, C = reverse)
- 2 Parking brake
- 3 Seat locking lever
- 4 Ignition lock

- 1 12 V Outlet
- 2 Lights (parking and driving)
- 3 Engine hour counter
- 4 Full and low-beam switch
- 5 Horn
- 6 Full beam control light
- 7 Blinker control light
- 8 Battery control light
- 9 Blinker switch
- 10 Speedometer, odometer
- 11 Ignition
- 12 Emergency blinkers
- 13 Steering handles
- ▼ 14 Throttle



Fuelling

USE ONLY TWO-CYCLE MIXTURE! DO NOT USE PREMIUM GASOLINE. DO NOT FILL GASOLINE AND/OR OIL SEPARATELY INTO THE TANK. MIX FUEL IN A SEPARATE CONTAINER.

We recommend a mixture of max. 50:1 gasoline oil only when using a special two-cycle oil under strict observation of the manufacturer's mixing instructions.

If no two-cycle oil is available, use outboard motor oil or, failing this, substitute a good automotive oil of SAE 30–50 grade. In this event the amount of oil must be doubled, however, for a mixing ratio of 25:1.

Starting

For safety reasons, the SOLO-750 should be started only by the driver while sitting inside the vehicle. Before starting the engine, shift forward/reverse control to Neutral (Pos. 2).

Light switch and ignition are located on the dashboard. To start, turn the key clockwise. The ignition has three key positions —

- Pos. 1 = Off
- Pos. 2 = Ignition on
- Pos. 3 = Start

Let go of the key immediately as the engine starts. As in your automobile the key will automatically return to the No. 2 position.

To start a cold engine, close the choke by pushing the red control upward to obtain a richer mixture. Return choke to rest position as the engine warms up.

Forward/Reverse Control

While speed is controlled simply by the throttle (and the Vario Drive torque converter), manual shifting is required only to change from forward to reverse or to neutral.

The forward/reverse control is located to the right of the driver below seat level. It should be activated only when the vehicle is *at rest* and the engine is operating at low revolutions. To operate, pull both steering handles approx. 10 cm (4 in.) back with your left, then shift control to the desired direction or to neutral.

Driving and Stopping

After the start, shift forward/reverse control to forward (Pos. A). Add throttle on the right-hand steering handle to engage the power train. As the vehicle gains speed, steer in either direction by pulling either steering handle toward you.

Note:

For good steering control, add throttle when pulling either one of the steering handles. Move steering handles smoothly WITHOUT JERKING, to avoid premature wear and damage.

The throttle is spring-loaded and automatically returns to idling position. The driving brake is a disc brake which acts on both forward axles and thus, via the drive chains, on all six wheels. It is pedal-activated.

The SOLO-750 can be stopped also by early releasing of the throttle under simultaneous slight pulling of both steering handles.

Driving in Reverse

Shift to reverse gear only after the vehicle has stopped and the engine is idling (note "Forward/Reverse Control").

To drive in reverse, pull both steering handles firmly toward you and add throttle. To steer in reverse, slowly advance the steering handle on the side of the turn, and add throttle. At the end of the turn again pull both handles backward.

Note:

Do not let go of the handles when driving in reverse, as otherwise the brakes will be activated immediately. Move handles slowly.

Parking

All wheels are blocked when the gear shift control is in the reverse position. In this position the SOLO-750 cannot be started due to an additional anti-theft device which is activated only in reverse.

A hand brake (parking brake; the handle is located next to the forward/reverse control) secures the vehicle when parking on inclines.

Amphibious Operation

Stay away from fast-flowing waterways. Always be certain that the arrowhead-shaped cleats of your tires point backward when viewed from the top, as this provides the desired paddle wheel effect (see cover illustration).

Use only 1/4 throttle when afloat. Steer as you would on terra firma. But you can improve on the steering effect by shifting your weight into the direction of the turn. Amphibious operation does not affect the efficiency of the driving brake.

Maintenance

(note also the Maintenance Schedule on pages 11 and 12).

Tires

Normal tire pressure is 0.2 atm (2.85 psi). When load is added to the rear cargo area, increase pressure of the two rear tires to 0.3 atm (4.27 psi).

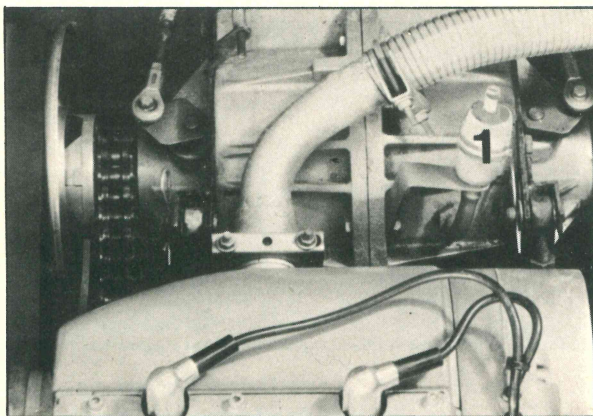
Check tire pressure if you notice a tendency of veering off course on straightaway drives. Even a small difference in tire pressure can cause this effect.

Tire Repairs

SOLO-750 tires can be repaired with usual repair kits designed for tubeless tires. In emergencies where a punctured or damaged tire cannot be repaired immediately, move the affected wheel to the center axle and take a safe smooth course for home. (Note also that the difference in tire pressure will likely affect your steering). The damaged wheel should be repaired as quickly as possible before major damage ensues.

Steering Transmission and Oil Change

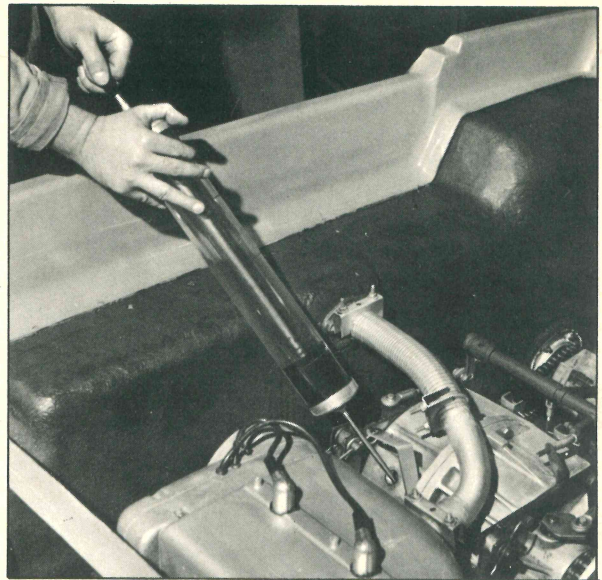
Check the steering transmission oil level every 25 operating hours. As the vehicle rests on level ground, the oil level must be flush with the drain check plug hole. — The check screw (14 mm wrench) on the lower left, and the filler screw with the vent barrel at the upper right, are located on the engine side of the transmission.



1 Transmission oil filler screw

Fill transmission with automatic transmission oil. One litre (approx. 1 qt.) is required. — We recommend the following brands:

Dexron	— Automatic Transmission Oil
BP	— Automatic Transmission Oil
Esso/Exxon	— ATF 55
Shell	— Donax T-6
Mobil	— ATF 200
Castrol	— TQ



Change transmission oil according to Maintenance Schedule. Extract oil with hand pump.

Battery Care

Keep battery plates fully covered with electrolyte. Add distilled water as required. Do not add electrolyte/acid.

Storage

Do not store the SOLO-750 on its own tires for any length of time. Use blocks to take the weight off the tires. Remove any moisture from the interior, to prevent corrosion, especially on the driving brake. If stored outside, cover well against precipitation.

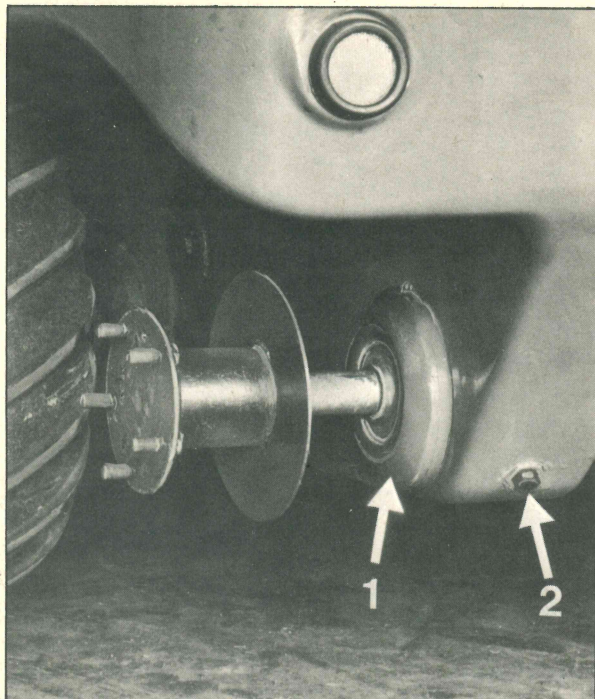
Note:

Two drain plugs at the stern of the vehicle permit draining of moisture from the well. Use SW-17 wrench.



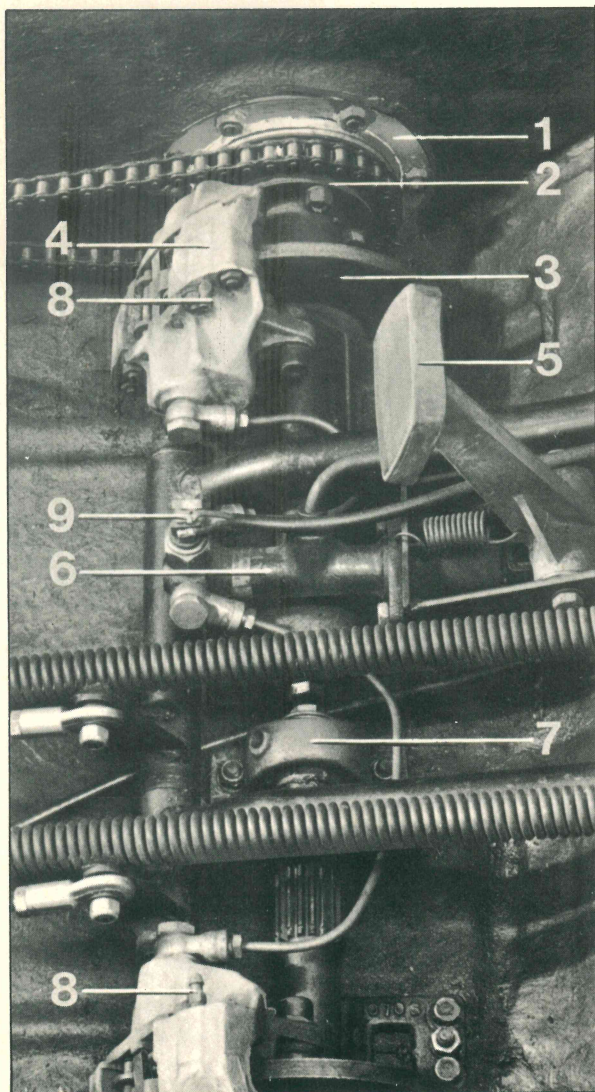
1 Drain plug

Lubrication



- 1 Outer axle bearing seal
- 2 Drain plug

The axle bearings are filled with a lifetime grease packing. During axle repairs use only non-water-soluble greases. Change axle bearings by working from inside out.



Drive Chains

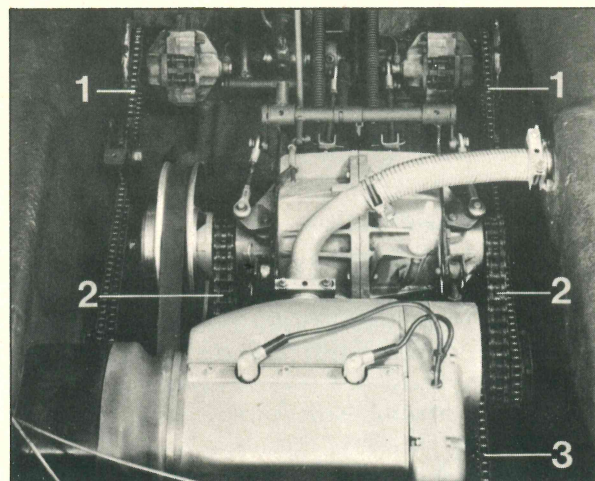
Keep a constant check on the wheel-to-wheel chain tension. The two front and two rear chains can be re-tensioned on the chain tighteners (19 mm O.E. wrench), as required. The two primary chains (between steering transmission and center axles) can be tightened by shifting the transmission. To do so, loosen SW-19 lock nuts on the (LH/RH-thread) adjusting nuts. Tighten chains right and left on the adjusting nuts.

Caution:

Do not tighten chains excessively. This would cause premature wear on chains, wheel bearings and transmission, as forward/reverse shifting will be made very difficult.

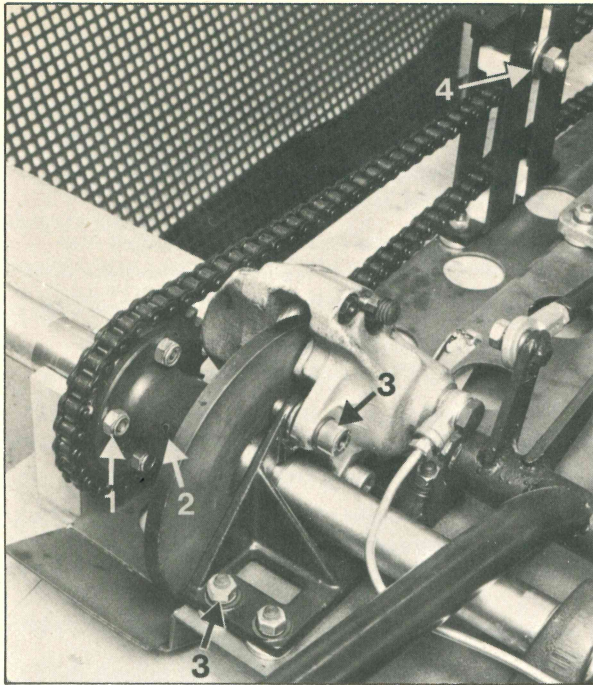
V Belt Tension

(note Item 12 of the Maintenance Schedule)



- 1 Front drive chains
- 2 Primary drive chains
- 3 Rear drive chains

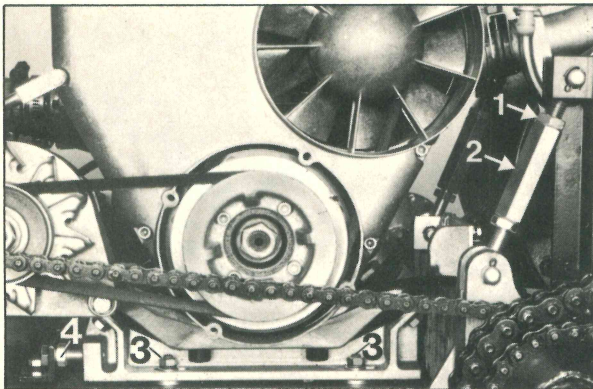
- 1 Inner flange for outer axle bearing
- 2 Sprocket
- 3 Brake disc
- 4 Brake caliper
- 5 Foot brake
- 6 Brake cylinder
- 7 Inner axle bearing
- 8 Brake vent nipple
- 9 Braking light switch



- 1 Sprocket set screws
- 2 Tension pin
- 3 Caliper mounting screws
- 4 Chain tightener

Steering

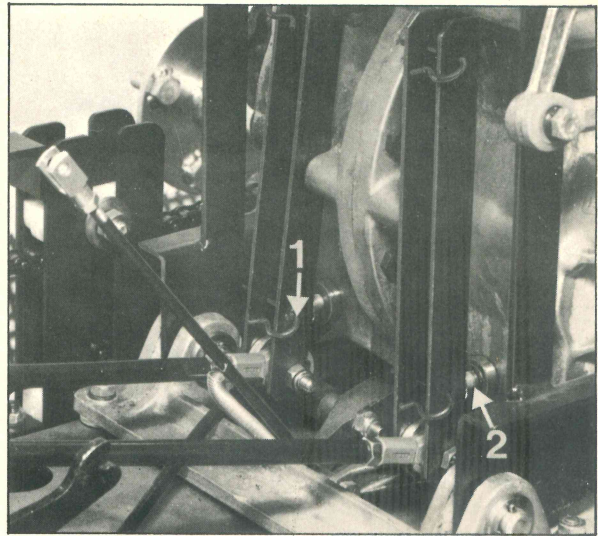
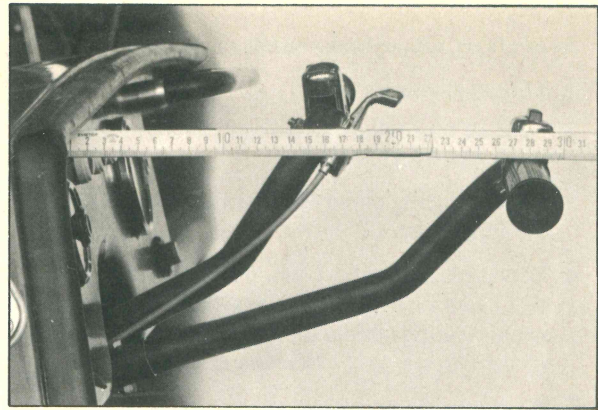
The steering handle position inside the dashboard recess may be adjusted on the linkage between steering handle and steering transmission. Remove bottom plate by pulling the two SW-13 set screws and four Csk screws below the rubber mat. Shift to forward drive and lift bottom plate by tilting.



- 1 Lock nut for steering transmission adjustment
- 2 Adjusting nut for steering transmission
- 3 Engine bracket mounting screws
- 4 Engine bracket adjusting screws

Wear on the brake bands may cause slack (normal: 170–180 mm = 6 1/2"–7") to increase on the steering handle movements, as may be noticed from a poor braking effect despite pulling the steering handle as far back as it will go.

Re-adjust on the four screws which protrude from the steering transmission. Upon loosening the clamp springs these screws may be turned clockwise (in the direction of the transmission), and usually not more than 2–3 turns will be enough to remedy the situation. But observe the special adjusting instructions for the steering transmission.

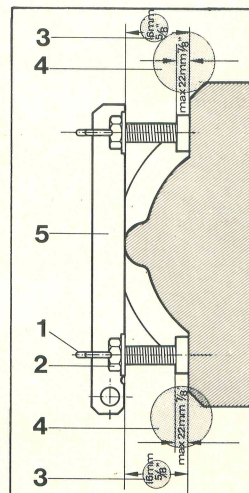


- 1 Clamp spring
- 2 Band brake adjusting screw

Adjusting the Steering Transmission

Steering of the SOLO-750 is effected by braking either side of the vehicle (and stopping by braking both sides) via the Vario Drive torque converter. The brake bands are subject to normal wear and tear.

The brake bands may be somewhat adjusted to compensate natural wear. But this re-adjustment will be required only after the (tightly fastened) brake lever movement exceeds 16 mm (5/8"), measured from the lever to the housing surface. An additional adjustment may be made as required until the plunger, while fully tightened, protrudes from the housing surface by 22 mm (7/8"). At that time the brake band should be replaced.



- 1 Clamp spring
- 2 Band brake adjusting screw
- 3 Correct clearance in rest position
- 4 Plunger clearance when steering handle is fully pulled back
- 5 Brake lever

As required, adjust brake bands as follows:

1. Loosen clamp springs.
2. Turn all four adjusting springs simultaneously, clockwise 2–3 turns.
3. Each adjusting screw must be turned as much as the three others.
4. Replace brake bands when the plunger clearance of 22 mm (7/8") has been reached. Take measure while steering handle is fully pulled, from the edge of the plunger to the housing surface.
5. Re-mount clamp springs.

Transmission Maintenance

Take good care of your steering transmission for trouble-free driving:

1. Check oil level every 25 operating hours. Keep the oil level flush with the lower drain plug hole.
2. Approx 1 l (1 qt.) automatic transmission oil is required.

Note:

Warranty is voided if you use oils not recommended by the manufacturer.

3. For maximum performance and service life, the transmission oil should be changed after every 50 operating hours.

Troubleshooting

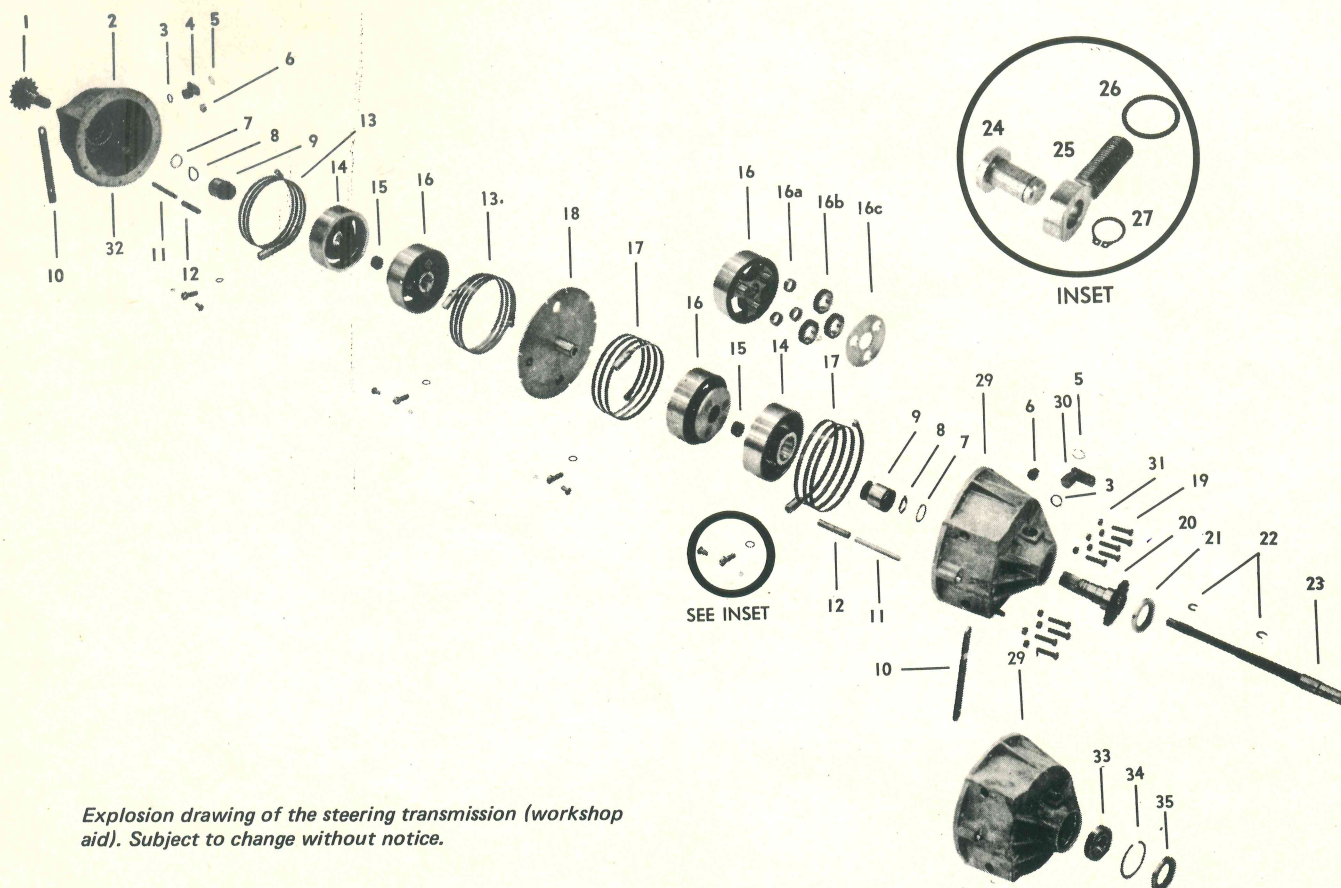
1. See your SOLO dealer if the transmission oil level is far below standard on any regular 25-hour check.

2. Re-adjust steering handle position if too much slack develops.
3. Immediately stop the vehicle and see your SOLO dealer in the event of a sudden excessive slack in the steering handle position. **DO NOT USE VEHICLE IN THIS CONDITION.**
4. If only one of the steering handles shows malfunction, check all brake handles and brake band adjustments. Failing this, see your SOLO dealer.
5. If the transmission fails to shift, remove the linkage and check each brake lever individually.
6. If neither side of the steering transmission works (no steering possible), check the belt of the Vario Drive torque converter.
7. If your vehicle veers from a straight course, check tire pressure and cleats before looking for transmission trouble.

Electric System

The electric system of the SOLO-750 follows the strict regulations of the West German Highway Traffic Admission Act.

The fuse box is located in the right-hand glove compartment; it holds three 8-amp fuses and one 16-amp fuse. Two further fuses are located on the remote-control dual relay switch (16A each) below the cowl above the foot well cover. The wiring diagram is shown on the back cover.



Explosion drawing of the steering transmission (workshop aid). Subject to change without notice.

Specifications SOLO 750

Dimensions

L x W x H	213 x 140 x 103 cm 84" x 55" x 40 1/2"
Weight empty	410 kg = 902 lbs.
Max. Weight, loaded	600 kg = 1.302 lbs.
Surface pressure	80–90 gr/cm ² = 18–20 oz./sq.in.
Tires	21 x 11–8 or 21 x 12–8

Performance

Max. Road Speed	48 kmh = 30 mph
Max. Speed afloat	5 kmh = 3 mph
Hillclimbing	to 100 % = 45°
Towing	to 300 kg = 660 lbs.

Engine

Type	SOLO-2-cylinder 2-cycle
Cooling	axial-fan forced-air
Bore	70 mm = 2 3/4"
Stroke	56 mm = 2.2"
Displacement	428 cc. = 26.1 cu. in.
Power	20 hp/DIN (approx. 25 hp/SAE) at 5.500 rpm
Torque	3 mkg at 3.000 rpm
Fuel Mixture	50:1 with special two-cycle oil 25:1 with SAE 30-50 oil
Fuel Consumption	4–5 litre/h = 1–1.3 U.S.qt/h

Carburetor

Type	Bing 84-1/28/106
------	------------------

Fuel Pump

Type	Bing 08080-103, controlled by crankcase vacuum
------	---

Fuel Tank

Type	Welded steel with two outlets
Capacity	24 litres = 6.3 U.S. gals.

Steering Transmission

Type	Automatic dual planetary-gear, with integrated band brakes
------	---

Lubrication

Type	Automatic transmission oil (see Manual page 5)
Capacity	1 litre = 1 quart

Torque Converter

Type	Variomatic, V-belt-operated with clutch function
Pulley ratios	from 3.5:1 to direct drive

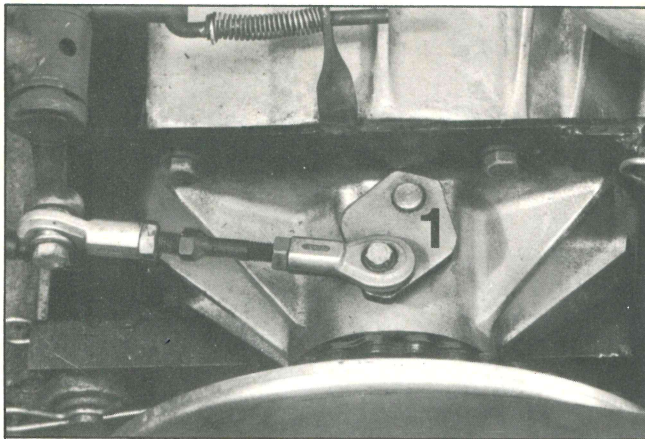
V-Belt

Type	30 x 13 x 1180 La., 25° sides
------	-------------------------------

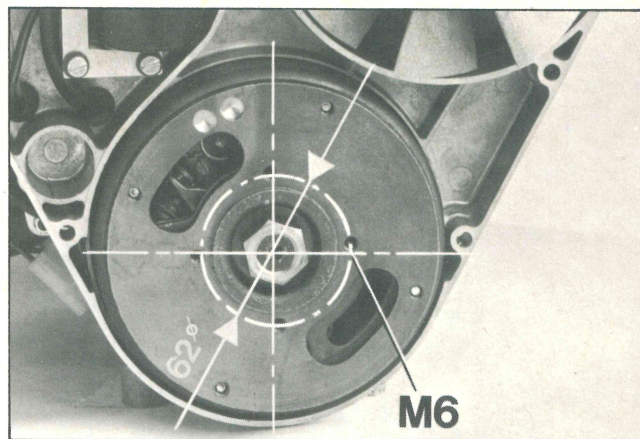
Electrical System

Voltage	12 V
Battery	63 Ah—50 Ah
Starter	Bosch 0 001 160 003
Starter relay switch	Bosch 0 331 005 002
Alternator	Bosch 0 120 300 519
Regulator	Bosch 0 190 601 009
Ignition switch	Merit 32 73 00
Spark Plug	BOSCH W 240 T1
Small relay switch	Bosch 0 332 204 125
Blinker control	Hella
Emergency blinkers	4 DB 001 887-05
Multiple outlet	8 JA 001 926-00
Blinker switch	Merit 55 00 00
Low beam switch	Merit 55 12 00
Remote control dual relay switch	Hella 4 RA 001 849-01
Headlights	Hella 1 S3 001 440-00
Headlight bulbs	B 12/35/35 (headlights) HL-124 (parking lights)
Blinkers	Hella 2 BA 001 239-00
Blinker bulbs	R12 18
Tail/Braking lights	Hella 2 SD 001 240-12
Tail light bulbs	S 1218/5, R12 18
License plate lights	Hella 2 KA 001 389-00
License plate bulbs	L 125
Control lights	Hella 2 AA 001 200-451 blue Hella 2 AA 001 200-131 red Hella 2 AA 001 200-141 green
Control light bulbs	H 122
Speedometer	VDO K 120 00/120/147
Speedometer bulb	J 122
Engine hour meter	VDO K 331 809/007/055
Horn	Hella 3 AL 001 781-01
Tail reflectors	Hella 8 RA 001 015-03
El. outlet	Hella 8 JB 001 946-02
Light switch	Merit 320 400
Fuse box	Merit 13 61 00
Fuses	Fuse 1 = 8 A Fuse 2 = 16 A Fuse 3 = 8 A Fuse 4 = 8 A

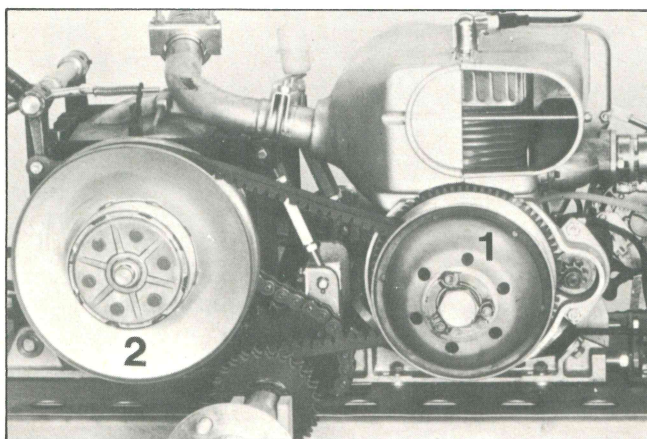
Illustrations to Maintenance Schedule (overleaf)



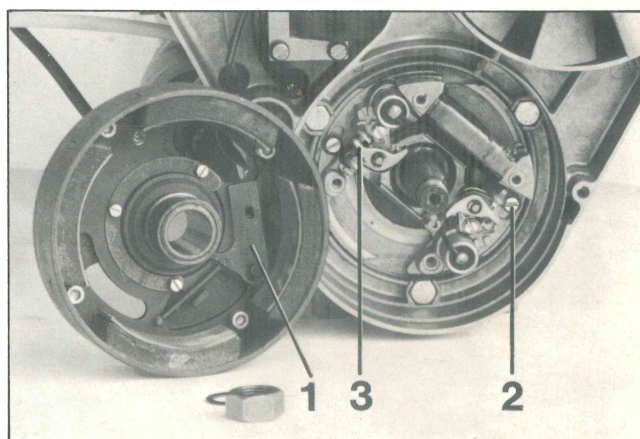
1 Shifting eccentric



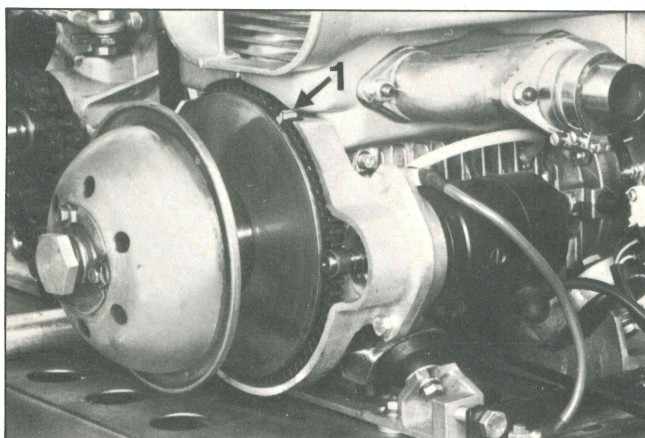
Flywheel magneto, showing puller dimensions



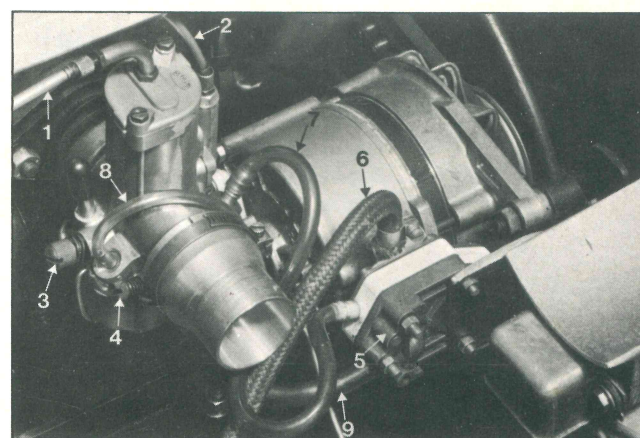
1 Engine vario pulley
2 Transmission vario pulley



1 Ignition timing lever
2 Armature mounting screw
3 Breaker gap 4 mm = .16"

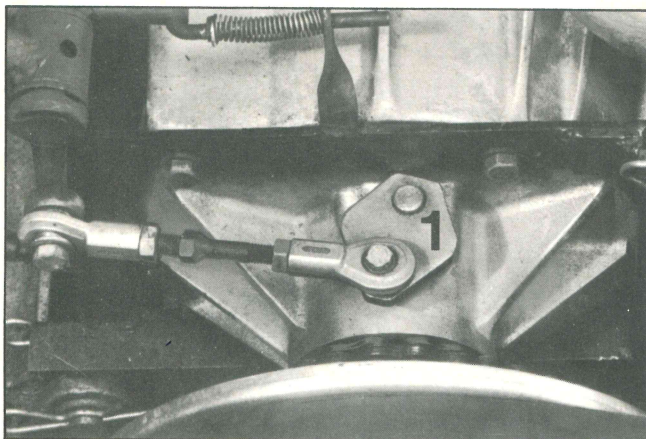


1 Ignition marker

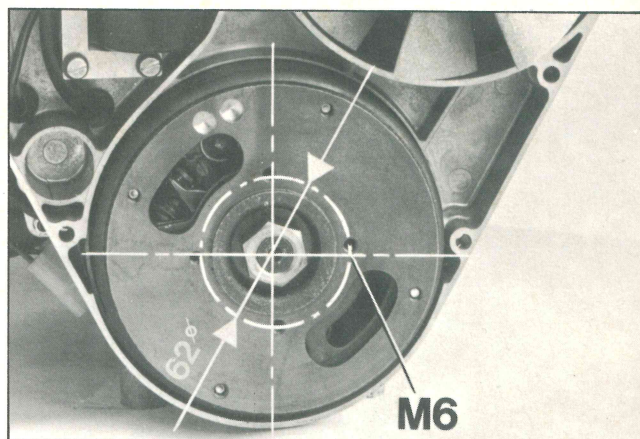


1 Throttle cable
2 Choke cable
3 Idle set screw
4 Air regulating screw
5 Fuel pump
6 Fuel line (tank-fuel pump)
7 Fuel line (fuel pump-carburetor)
8 Fuel overflow line
9 Impulse line

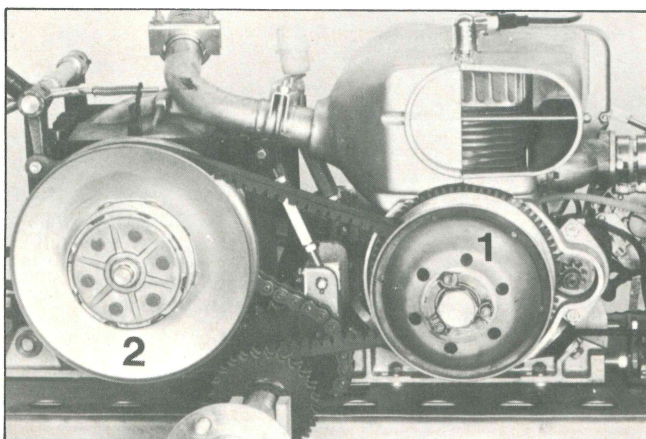
Illustrations to Maintenance Schedule (overleaf)



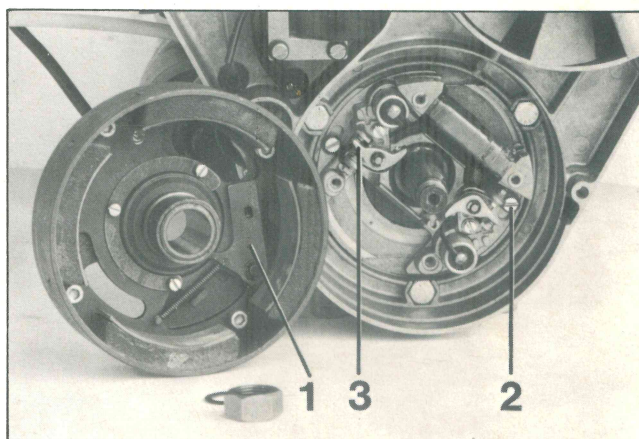
1 Shifting eccentric



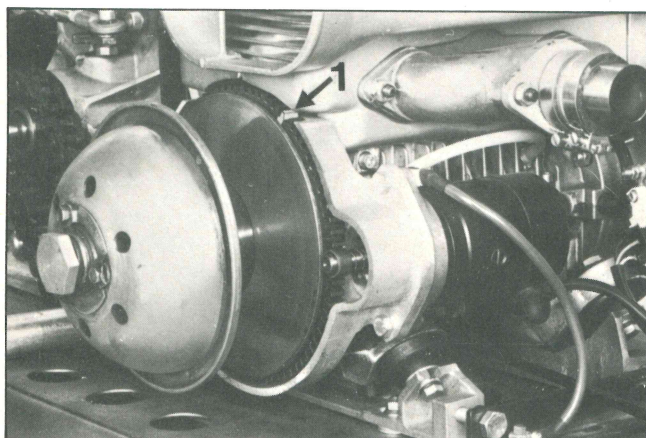
Flywheel magneto, showing puller dimensions



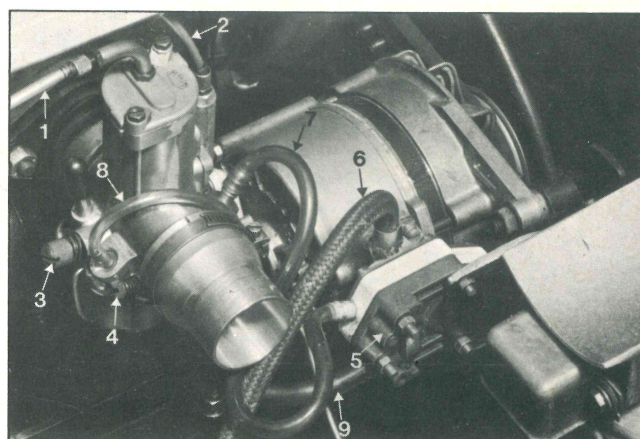
1 Engine vario pulley
2 Transmission vario pulley



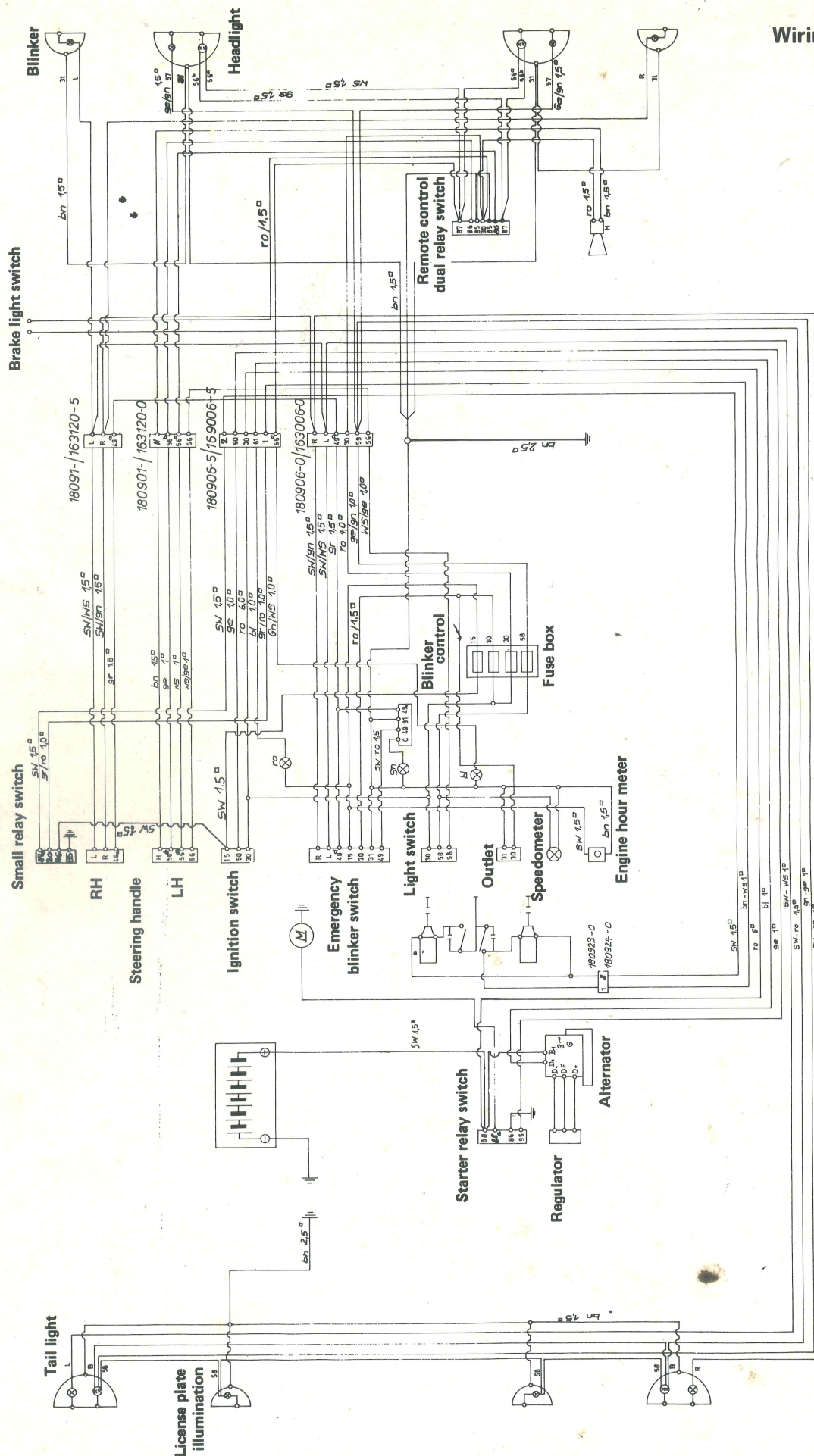
1 Ignition timing lever
2 Armature mounting screw
3 Breaker gap 4 mm = .16"



1 Ignition marker



1 Throttle cable
2 Choke cable
3 Idle set screw
4 Air regulating screw
5 Fuel pump
6 Fuel line (tank-fuel pump)
7 Fuel line (fuel pump-carburetor)
8 Fuel overflow line
9 Impulse line



SOLO Kleinmotoren GmbH

Box 20
7032 Sindelfingen 6,
West Germany
Tel. (07031) 320 40
Cables Solomotor, Telex 7 265 840