

WORLD'S CHAMPION



OWNER'S MANUAL



Variant

WORLD'S CHAMPION



4 TIMES WROLD ROAD RACING CHAMPION
6 TIMES WROLD ROAD RACING RUNNERS-UP
25 TIMES SPANISH ROAD RACING CHAMPION
7 TIMES FRENCH INTERNATIONAL ROAD RACING CHAMPION
2 TIMES FRENCH NATIONAL ROAD RACING CHAMPION
4 TIMES SWISS ROAD RACING CHAMPION
4 TIMES MOROCCAN ROAD RACING CHAMPION
4 TIMES BELGIAN ROAD RACING CHAMPION
2 TIMES FRENCH SPORT CHAMPION
EUROPEAN CHAMPION IN MOUNTAIN CLASS
SPANISH MINIMUM CONSUMPTION CHAMPION
SPANISH CHAMPION IN MOUNTAIN CLASS
DUTCH ROAD RACING CHAMPION
CATALONIAN ROAD RACING CHAMPION
CATALONIAN CROSS COUNTRY CHAMPION
SWEDISH ROAD RACING CHAMPION
IRISH ROAD RACING CHAMPION
GUATEMALAN ROAD RACING CHAMPION
ITALIAN JUNIOR ROAD RACING CHAMPION
ITALIAN ROAD RACING CHAMPION
2 TIMES WINNER OF NATIONAL TROPHY OF 75 c.c. JUNIOR CROSS COUNTRY
3 TIMES WINNER OF JUNIOR R.F.M.E. CUP OF 75 c.c. CROSS COUNTRY
3 TIMES SPANISH 125 c.c. CROS COUNTRY CHAMPION
SPANISH 250 c.c. CROSS COUNTRY CHAMPION
2 TIMES WINNER OF JUNIOR R.F.M.E. CUP OF 80 c.c. CROSS COUNTRY
2 TIMES WINNER OF JUNIOR R.F.M.E. CUP OF 125 c.c. CROSS COUNTRY
WINNER OF JUNIOR R.F.M.E. CUP OF 250 c.c. CROSS COUNTRY
2 TIMES WINNER OF NATIONAL SENIOR 80 c.c. ROAD RACING TROPHY
WINNER OF JUNIOR R.F.M.E. CUP OF 75 c.c. ENDURO
WINNER OF NATIONAL SENIOR 250 c.c. CROSS COUNTRY TROPHY

WELCOME TO THE WORLD OF MOPEDS

Congratulations. You have selected the new, revolutionary DERBI-VARIANT with automatic drive.

DERBI has called upon its experience and success in world championship motorcycle and bicycle racing to build this versatile, sophisticated machine. One of the features you'll like is the ability of the DERBI-VARIANT to operate well on any pavement or over most other terrain.

In the Owner's Manual, we have outlined important details for the operation and care of your DERBI moped. So, for optimum performance and the greatest life span at minimum cost, we urge you to thoroughly read the Owner's Manual. If you have questions, please consult your dealer.

INDEX

Page

Identification Numbers	4
Specifications and Technical Data	5-6-7
Location of controls	8
Pedals	9
Controls: Ligts & Horn	10
Shutoff Switch	10
Thorttle	11
Front Brake	11
Choke control	11
Rear Brake & Compresion Release	12
Seat	13
Tool Kit	13
Fuel tank	13
Fuel	14
Fuel valve	14
Carburetor	15
Air Filter and Air Filter box	15
Exhaust System	16
Tire pressure	17
Spark Plug	17
Taillight	18
Headlight	18

Wiring Diagram	19
Maintenance and Lubrication Chart	20
Adjustments	21
General Nuts and bolts Maintenance	23
Break-in Instructions	24
Starting Instructions	25 - 26
Oil Changing	27
To use as a Bicycle	28
Reed valve intake	28
Correct Driving Procedures	29
Advice for Long Moped Life	29
Caring for Your Moped	30
Troubleshooting	30

Because we are constantly improving our Products NACIONAL MOTOR, S.A. reserves the right to introduce necessary modifications without notice.

IDENTIFICATIONS NUMBERS

The frame identification number is located in the intersection of the steering post with the handlebars.



Fig. 2

The engine identification number is located on the right side of the engine and at the top of the crankcase. (Fig 3)



Fig. 3

TECHNICAL DATA

Engine

Number of cylinders.....	One high capacity, hard chrome multitransfer cylinder. New technology.
Cycle	Two stroke
Bore × stroke.....	39.87 × 40 mm.
Displacement	49.939 c.c.
Compression ratio.....	10 / 1
Direction of rotation.....	Right (looking at magneto flywheel)

Carburetor

Type	Dell'Orto SHA 12-12 with automatic choke. Intake silencer with incorporated filter which is removable for easy cleaning.
------------	--

Clutch, primary transmission and ratio of gear variations

Totally automatic, centrifugal with surface area increased by + 50% and isolated from primary transmission. A new speed variator activated by 6 centrifugal masses, providing the greatest range of variation ratio of automatic mopeds in the world. Self-cooled by forced ventilation.

There is only one helical gear reducer constantly engaged on needle bearings.

Lighting

Front Headlight.....	Modern desing with bifocal light 6V / 21W
Taillight.....	6V. 5W., stoplight 6V 10W.

Ignition

System	Magneto alternator off Motoplat 6V. 18W. with hight exterior tension Super-coil, with gapless core, cooled by the variator turbine.
Contact Gap	0.4 mm.
Advance	1.80 ÷ 2 mm.
Spark plug	Bosch W225 T1 / NGK 87 HS / Champion L-82
Contact point in inverse position which avoids ignition of the engine every time.	dirt from entering thereby providing instant igni-

Chassis

Frame.....	Modern design and industrial concept of a self- supporting automobile body.
Front suspension.....	Telescopic fork
Rear suspension	Swinging arm and telescopic shock absorbers.
Brakes	Internal expanding. Diameter 105 mm. Braking surface 9,162 mm. ² .
Front and rear tire	2 1/2 × 17" SLE 2 1/4 × 16" California

Dimensions

Overall length	1780 mm.
Distance between axles	1200 mm.
Maximum width	640 mm.
Seat height	780 mm.
Ground clearance	125 mm.
Weight	60 Kgs.
Fuel capacity	3.360 l.
Climbing ability without using pedals	28 %

Performance

1.5 HP Engine	25 MPH*
Maximum Speed	25 MPH, maintained on level terrain
Fuel Consumption	130 MPG, maintained on level terrain
2 HP Engine	30 MPH*
Maximum Speed	30 MPH, maintained on level terrain
Fuel Consumption	117 MPG, maintained on level terrain

*Depending on local laws, mopeds shipped will be maximum HP and MPH allowed for your area.

POSITION OF CONTROLS

- 1.— Front Brake Control
- 2.— Rear Brake Control
- 3.— Throttle
- 4.— Light Switch
- 5.— Horn
- 6.— Engine Shut-off Switch
- 7.— Compression release
- 8.— Choke Control
- 9.— Fuel Shut-off and reserve Control Valve
- 10.— Fuel Filler Cap
- 11.— Seat Latch
- 12.— Stand
- 13.— Shifter from Moped to Bicycle
- 14.— Pedals

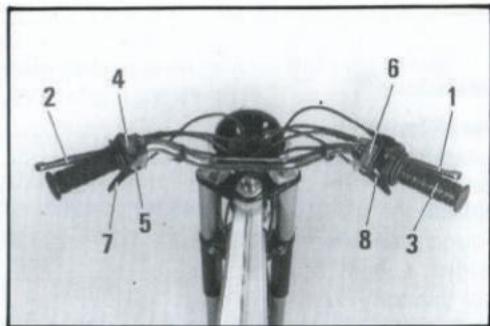


Fig. 4

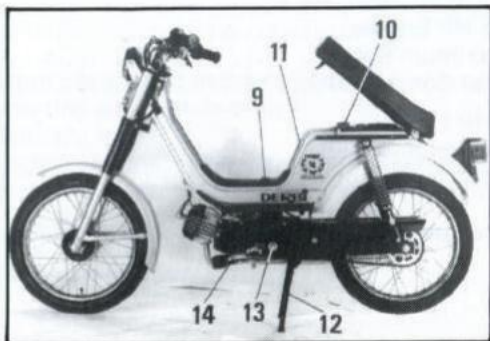


Fig. 5

PEDALS

The easy-operating manual push-button (1) (Fig. 6) on the left side of the engine, allows easy starting and instant conversion from moped to bicycle in accordance with international standards.

The moped pedals have three uses:

- 1) As a footrest when used as a moped;
- 2) As a starter for the engine, either on the stand or on the ground;
- 3) To transform the moped into a bicycle by disconnecting the push-button (more information on page 28).

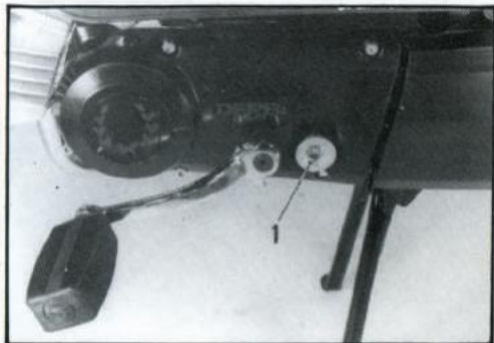


Fig. 6

LIGHT CONTROL

Easy access to two-way switch with left thumb. Position are either ON or OFF **(1)** (Fig 7).

HORN CONTROL

Located under light switch, this control is blue in color **(2)** (Fig. 7).

SHUTOFF SWITCH

This gray-colored switch turns off the engine. **(3)** (Fig. 8)

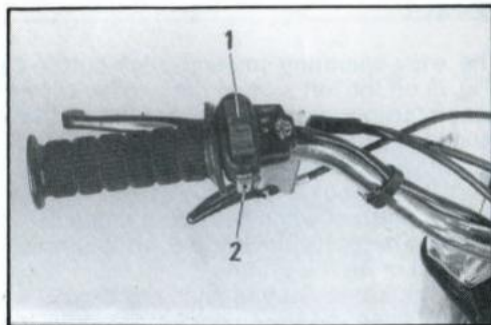


Fig. 7

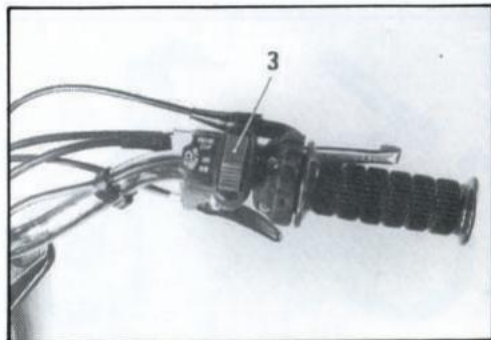


Fig. 8

THROTTLE CONTROL

The throttle is located in the right handgrip of the handlebar. **(1)** (Fig 9). To increase power, twist towards the rider. To decrease power, twist away from rider.

FRONT BRAKE CONTROL

Situated on the right side of the handlebar. **(2)** (Fig. 9). Apply front brake carefully and smoothly, otherwise the moped might tilt forward or overturn. Always avoid sudden stops when using the front brake only. Apply gradually, according to road and weather conditions.

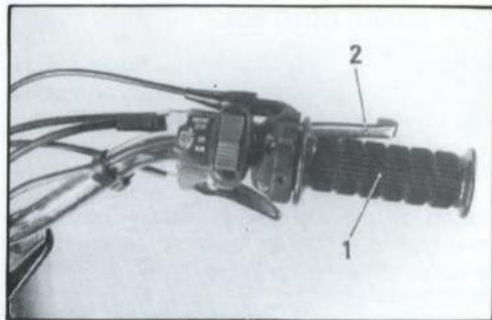


Fig. 9

CHOKE CONTROL

Placed on the right hand side of the handlebar **(3)** (Fig. 10). The purpose of this control is to aid starting. Use it only when the engine is cold.

Once the engine is functioning, after several seconds, release the choke control lever so that it returns to its normal position (air open).

If the engine stalls as the control has not been used for long enough, the operation must be repeated until the engine functions throttled down. This only takes a few seconds.

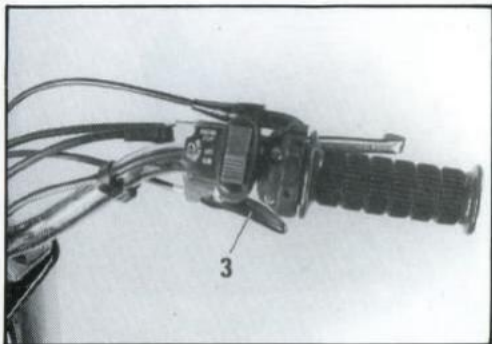


Fig. 10

REAR BRAKE CONTROL

Situated on the left side of the handlebar, (1) (Fig. 11). This brake control should be used first when reducing speed or stopping.

COMPRESSION RELEASE

Placed on the left hand side of the handlebar (2) (Fig. 11), it is used to activate the decompressor which aids engine starting using pedals.

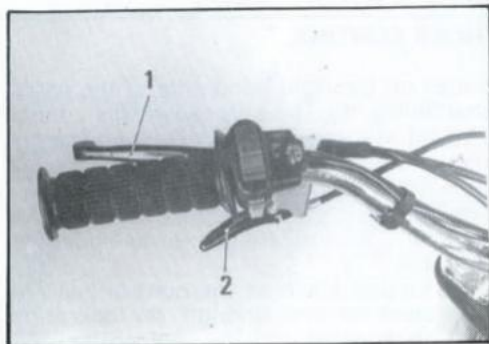


Fig. 11

SEAT

The fuel tank cap and the toolkit are placed under the seat. In order to reach these elements, open the lock located in the front of the seat.

TOOL KIT

The tool kit provided when purchasing the moped is situated under the seat.

FUEL TANK

The fuel tank is located inside the frame and is not visible from the outside. The cap is accessible under the seat. It has a capacity of 3.360 litres with a reserve of 0.800 litres.



Fig. 12



Fig. 13

FUEL

- DERBI engines are two-stroke. The mobile parts of the driving unit are lubricated using a mixture of 2% ratio of gasoline and MOTUL oil, type 300 2T, or MOTOLUBE 2T which avoids the combustion chamber, exhaust system and ports from becoming dirt and thereby keeping the rings free and improving the performance of the spark plug.
- Never mix gasoline and oil inside the fuel tank.
- Never use alcohol or benzoil in the mixture.
- Do not use up all the fuel in the tank. When the reserve has to be used, try and fill up as soon as possible.

FUEL VALVE

The fuel control valve is located in the center of the frame (1)(Fig. 14). It has three positions:

- 1) Closed (OFF) when the lever is forward (center);
- 2) Open (ON) when the lever is turned to the left;
- 3) Reserve (FUEL RES) when the lever is turned to the right.



Fig. 14

CARBURETOR

Located inside the chassis, above the engine. For access, position petcock at slot then remove plastic cover by squeezing sides near petcock and lift as pictured (Fig. 15).

AIR FILTER AND AIR FILTER BOX

Located inside the chassis (Fig. 17). To reach the filter, remove the plastic cover from the frame (above). Then remove the carburetor, which leaves the filter box exposed. Pull the filter box out gently. Remove the filter assembly from the rear of the filter box for cleaning (Fig. 16). Wash entire assembly and filter with the same gas-oil mixture used for fuel, dry well and reinstall.



Fig. 15

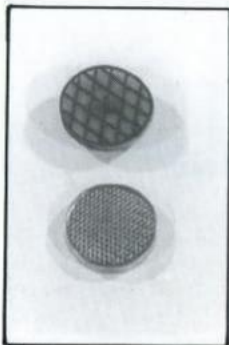


Fig. 16

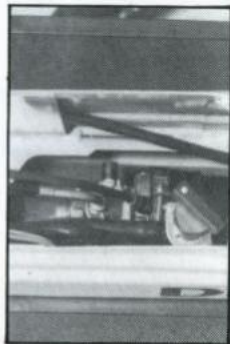


Fig. 17

EXHAUST SYSTEM

The muffler has an internal silencer that is removable. Due to the accumulation of carbon in the coils, the silencer must be cleaned every six months.

To clean:

- 1) Loosen screw with a 10 mm. socket wrench (Fig. 18).
- 2) Using a hook (Fig. 19), pull out the silencer;
- 3) Clean using a stiff wire brush or similar tool and replace.

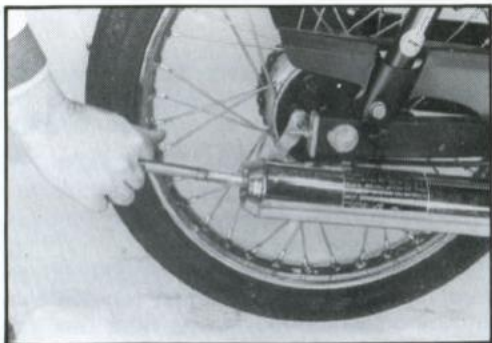


Fig. 18

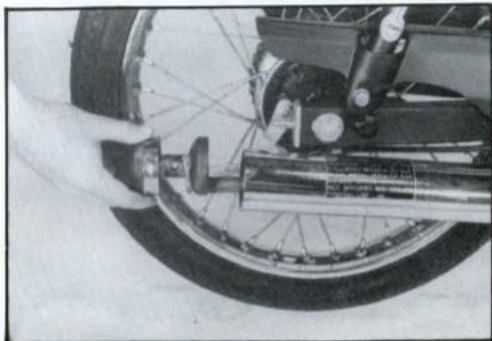


Fig. 19

TIRE PRESSURE

Check tire pressure frequently and maintain the proper pressure at all times. See the accompanying chart.

TIRE PRESSURE CHART

For Normal Loads	
Front	Rear
1.75 kg/cm ² (25 psi)	2.10 kg/cm ² (30 psi)
When Carrying More Than 50 Kgs. (110 lbs)	
2.10 kg/cm ² (30 psi)	2.5 kg/cm ² (36 psi)

SPARK PLUGS

Periodically remove the spark plug clean the electrodes and check their condition. The electrode gap should be 0.5 mm. (.020 in) (Fig. 20).

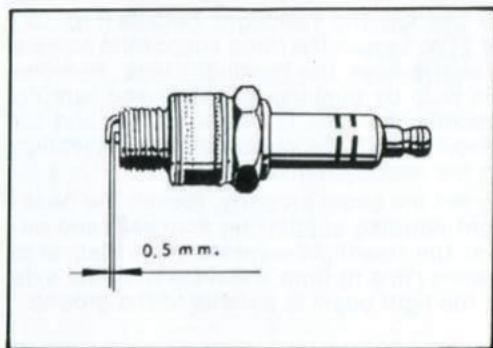


Fig. 20

TAILLIGHT

To change the stoplight bulb (2) 6V 10W (Fig. 21) and the running light bulb (3) 6V 5W, loosen the two supporting screws (1) and remove the taillamp lens. Remove the bulbs by pushing in gently and turning counter-clockwise.



Fig. 21

HEADLIGHT

To change the headlight bulb (5) (Fig. 22) 6V 21W, loosen the three supporting screws (4) and remove the headlight lens. Remove the bulb by pushing in gently and turning towards the left. To replace lens, line up groove (6) with the corresponding projection on the headlight housing (7)

To set the beam properly, loosen the headlight housing supporting screws (8) and adjust the headlight assembly so that, at 5 meters (16.4 ft) from a vertical wall, the axis of the light beam is parallel to the ground.

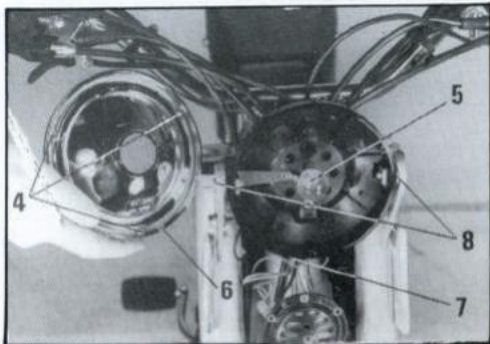
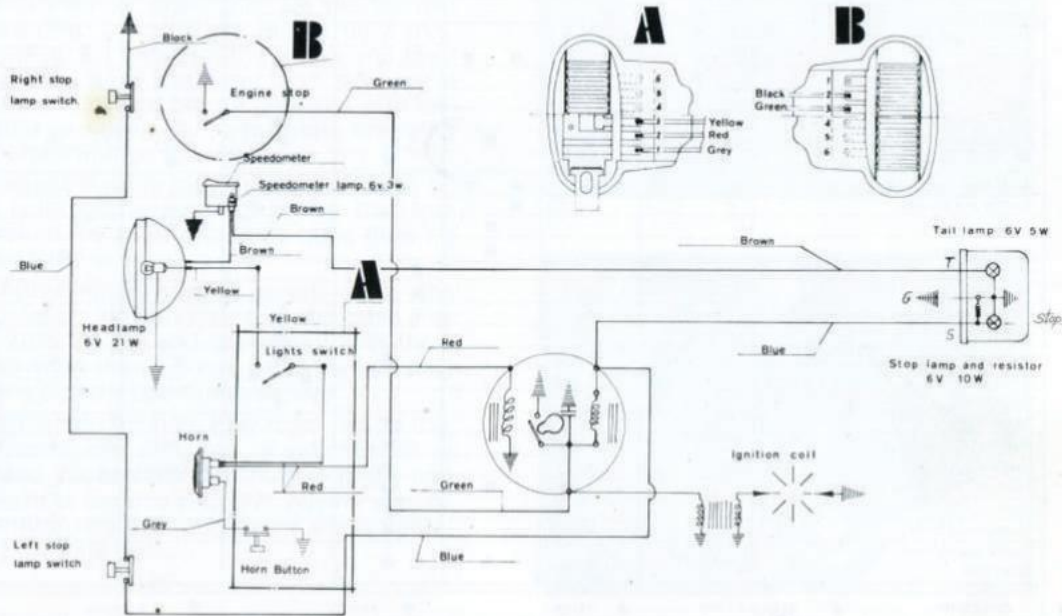


Fig. 22

WIRING DIAGRAM

DERBI Variant



MAINTENANCE AND LUBRICATING CHART

DERBI Variant

(A) MOTUL TOP CUP GREASE

(B) MOTUL 2100 4T

(C) MOTUL MOTYL CHAIN

	Before Each trip	First 300 Miles	First 900 Miles	Each 1800 Miles	Each 3600 Miles	Each 6000 Miles	Type of Lubrication
Tire Pressure	■						
Fuel level	■						
Cables	■		■ ●				A
Suspension Check	■						
Lights	■						
Brake Check	■				▲		
Crankcase oil		◆	■		◆		B
Transmission Belt		■		■		◆	
Spark Plug			▲ ☼	▲	◆		
Muffler and Silencer			■ ☼		■ ☼		
Tighten nuts, etc.			■			■	
Check spokes			■				
Air Filter				■ ☼			
Carburetor				▲ ☼			
Cylinder Head, Piston					☼		
Check Timing					■		
Front Fork				■	◆		A
Wheel bearings					■ ●		A
Brake Shoes					☼		
Pedals				●			
Steering				●			A
Ignition		▲		■		◆ Contact	
Front and Rear Brake Levers			●	●			C
Chain				●			C
Speedometer Drive		●		●			A
Needle bearing drive pulley unit			●	●			A

CHECK-UP ■ REGULATING ▲ LUBE ● PARTS ◆ CLEANING ☼

ADJUSTMENTS

After the break-in period, retighten the nuts on the cylinder head 1.5 Kg-m (10.85 ft Lbs) and the exhaust 0.8 Kg-m (5.8 ft Lbs).

Adjust the front brake (Fig. 23) and the rear brake (Fig. 24) so there is (1/8 in) 3 mm. play (Fig. 25) between the levers and their supports. Both the front and rear brake drums (Fi. 23 and 24) are provided with inspection windows(1), to facilitate checking the brake linings for wear.

To adjust throttle play, turn adjustment on the twist grip assy. (Fig. 28) so that free travel on the twist grip is no more than 1.5 mm. (1/16 in).

Compression release is regulated by the adjuster on the bottom-end of the cable (Fig. 29). Turn the nut and counternut until there is no more than 1.5 mm. (1/16 in) free play on the compression release lever.

Check chain tension. Play must not be more than 1 cm. (3/8 ins.). If adjustment is needed, loosen the axle nuts (Fig. 26) and adjust the tension (Fig. 27), paying special attention to wheel alignment when tightening the axle nuts.

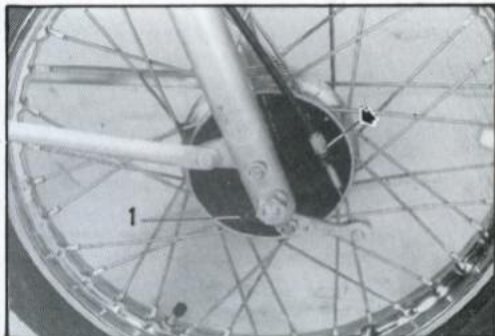


Fig. 23

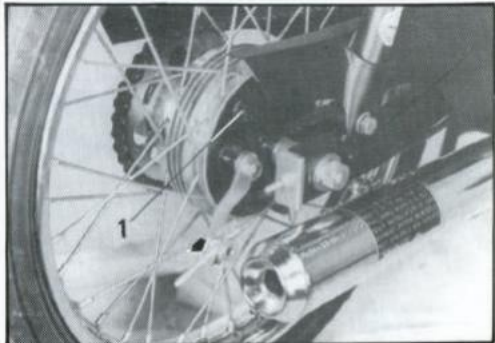


Fig. 24



Fig. 25



Fig. 26

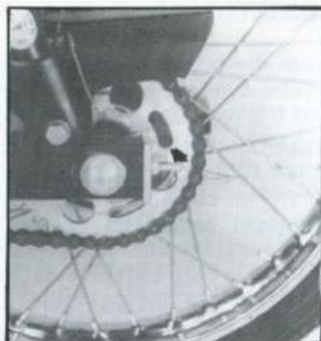


Fig. 27

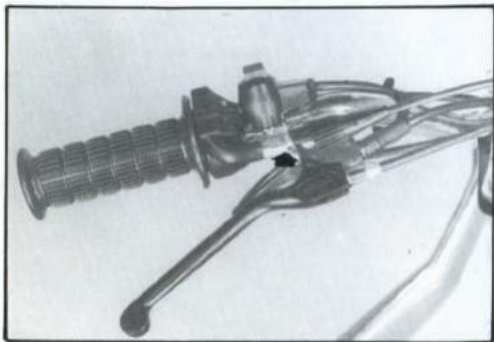


Fig. 28

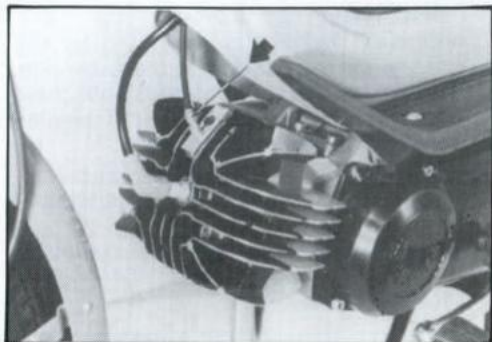


Fig. 29

GENERAL NUTS AND BOLTS MAINTENANCE

After the first two weeks, tighten all nuts and bolts. Every six months thereafter, it is necessary to check and tighten all nuts and bolts as a precautionary measure. (Fig. 30).

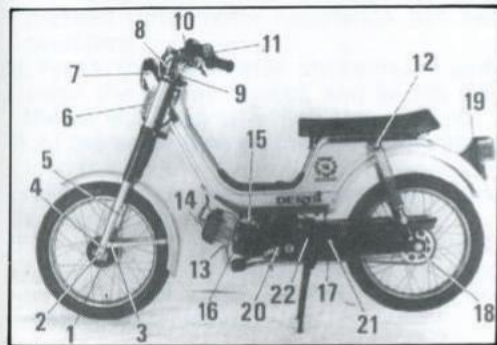


Fig. 30

1. Brake lever nuts
2. Axle nuts
3. Fender brace bolts
4. Fork spring attaching screws
5. Fender bolts
6. Horn bracket bolts
7. Headlight bracket bolts
8. Handlebar bolts
9. Steering head bolt (tension)
10. Lever bolts
11. Throttle housing bolts
12. Shock absorber attachment bolts and nuts
13. Exhaust pipe nuts
14. Cylinder head nuts
15. Engine mount bolts
16. Housing cover screws
17. Silencer bracket bolts
18. Rear sprocket bolts
19. Taillight nut
20. Pedal key nuts
21. Chain cover bolts
22. Swing-arm bolts

BREAK-IN INSTRUCTIONS

- The life and performance of your moped will largely depend on the treatment received during break-in.
- During this period, the mobile parts which make up the whole of its mechanisms, even down and adapt themselves to each other until they fit together perfectly.
- Better break-in is not accomplished by driving slower, but by driving smoothly and carefully.
- The crankcase oil must be changed after the first 300 miles. Use MOTUL 2100 4T oil, quantity 150 cms³. Also after the first 300 miles a service and tune-up should be done by your nearest DERBI dealer. This is very important.
- Break-in for 600 miles with a mixture of 3% gasoline with MOTUL oil type 300 2T or MOTOLUBE 2T, without using the throttle to a maximum, but at 3/4 throttle.

- This moped leaves the factory with a slightly richer carburation, in order to maintain all the engine mechanisms lubricated during the first 600 miles, which could mean having to change the spark plug owing to greasing. Change it and bear in mind that this is only a slight inconvenience and beneficial to your moped.
- If, after the first 600 miles, you see that carburation is not suitable, take it into a DERBI dealer for them to look over it.

INSTRUCTIONS FOR STARTING

You can choose between the following methods to start your moped:

Starting moped on stand:

1. Place moped on stand so that the rear wheel does not touch the ground.
2. Press the start-up and engine shut-off control situated on the right hand side of the handlebar. (Fig. 8 page 10).
3. Open the gasoline valve.
4. Turn the throttle 1/4 turn maximum.
5. Press with your right hand index finger the compressor release lever, keeping it pressed until motor resistance has been overcome.
6. Press the carburetor choke lever, only when the engine is cold, and in this way the air is closed off which aids starting.
7. At the same time as the above operation, turn the pedals. Once the compressor release lever has been released, the engine will gradually start.
8. In very cold weather, once the engine is started, keep it going without accelerating to the full for a few seconds, until the engine has warmed-up.

9. Once the engine is functioning and without accelerating, remove the stand. Accelerate gradually so that driving your moped is pure pleasure.

IMPORTANT: When the stand is used, never accelerate to the full, as when the rear wheel touches the ground, the moped will shoot off at full speed (remember that it is a centrifugal variator and full throttle is equivalent to a long gear and full speed).

Starting using pedals:

1. Remove the stand so that both wheels are on the ground.
2. Press the starting control and engine shut-off situated on the right hand side of the handlebar (Fig. 6, page 10).
3. Open the gasoline valve.
4. Turn the throttle 1/4 turn maximum.
5. Press the compressor release lever with your right hand index finger, keeping it pressed until motor resistance has been overcome.
6. Press the carburetor choke control lever, only when the engine is cold, and in this way air is closed off, which aids starting.
7. Pedal for a few yards, disengage the compression release lever and gradually accelerate. The engine will immediately start.

Other Starting Methods

Owing to the automatic clamp clutch system, the moped can be started in the following ways, bearing in mind the above mentioned conditions:

- By carefully pushing the moped.
- By using one of the pedals as it were a conventional kick start lever.

DRAINING, FILLING AND CHECKING OIL LEVEL

To carry out filling and checking oil level operations you must remove the left hand pedal crank, the connecting bicycle button and the left hand crankcase cover.

Oil draining: Loosen the oil draining screw under the right-hand crankcase **(1)** (Fig. 31).

Oil filling: Loosen the oil filling screw **(2)** (Fig. 32) and fill the oil (150 c.c. of MOTUL 2100 4T).

Oil level: Loosen the oil level screw **(3)** (Fig. 32). The oil should flow out through the opening, if not, replace oil level until it comes out through the opening.

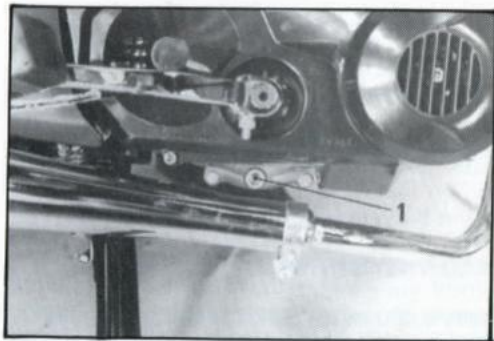


Fig. 31

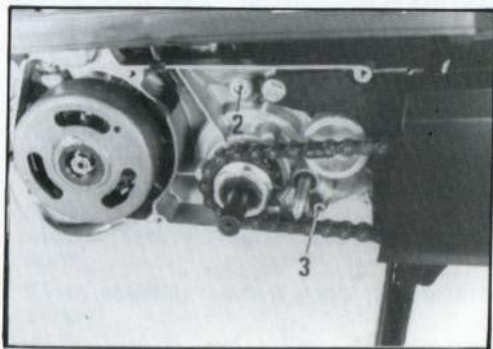


Fig. 32

USE AS A BICYCLE

In order to pedal, pull the button (4) (Fig. 33). If it is stiff, turn the wheel forward a little. Engine position: proceed in the opposite way.

IMPORTANT: These operations should take place with the engine off. Do not increase engine revolutions with the pedal control in the bicycle position.

REED VALVE INTAKE.

Every 6.000 miles check leaf adjustment as they must be well joined and connected to the inlet valve support. Once leaf adjustment has been checked, check for possible wear against the inlet valves support. There are not likely to be any holes as wear is minimum, but it is important to check this anomaly as it could affect engine consumption and power.

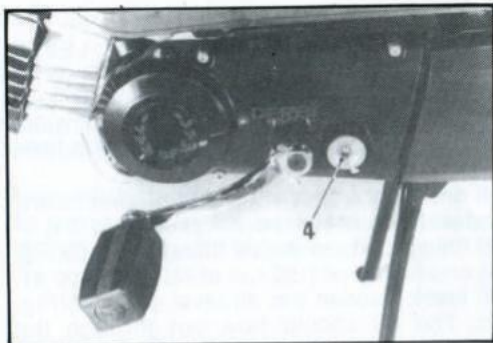


Fig. 33

CORRECT DRIVING PROCEDURES

Good driving means getting the most performance from your moped. Above all, never force it beyond safe limits. Here are some suggestions to follow:

- * Do not accelerate rapidly.
- * Remember, you are driving a moped with a centrifugal clutch, and it is always in gear.
- * When climbing a hill, even with the throttle wide open, the centrifugal variator will select the proper transmission ratio automatically.
- * When going downhill, give it gas occasionally to keep the engine lubricated.

ADVICE FOR LONG MOPED LIFE.

- * Do not run the engine at full throttle for long periods of time.
- * On level terrain, always keep the engine at 3/4 throttle. This will save fuel and lengthen engine life.
When braking, turn off the throttle.
- * Brake gently, depending on the surface. Always use the rear brake first, then front brake. Using the front brake only could result in a forward pitch that could unseat the driver -this is true with all two-wheeled vehicles. On wet or rough pavement, or when off the road, remember it takes longer to stop- again, use the rear brake first.
- * Don't go fast on curves. Reduce speed at the beginning of the curve instead of halfway through it. As you begin to exit the curve, start applying the throttle slowly and your moped will respond properly.
Always take a smooth line through the curve.
- * When starting, always apply the throttle slowly.

CARING FOR YOUR MOPED

General maintenance of your moped is not difficult, if you follow the direction in this manual. By maintaining your moped as required, performance will be better. To keep up the moped's appearance, polish the chrome and painted parts with a good grade of allpurpose polish. The plastic and painted parts should **never** be cleaned with gasoline or any petroleum product. To wash, use a sponge and clean water, then dry with a good chamois. If you get caught in the rain with your moped, immediately dry, clean and lubricate all cables.

TROUBLESHOOTING

If you have taken good care of your moped, chances are you will never have problems on the road. However, should the moped stop suddenly and you are unable to restart, check the following:

Fuel Flow

- * You may be out of gas. Switch the fuel valve to "Reserve".
- * Fuel level in the reserve tank may be too low, so fill up the tank.
- * The fuel line might be higher at some point than the fuel exit from the gas tank. Rearrange it.

- * The fuel line could be clogged. Switch the fuel valve to "Reserve". Pull the fuel line from the carburetor. If gasoline leaks out, close the fuel valve and reinsert the fuel line to the carburetor. (CAUTION: Do not let the fuel drip on the engine).
- * Clean the fuel filter at the carburetor intake.

Spark Plug

- * Remove the spark plug with the wrench provided in the tool kit.
- * If the spark plug is dirty, remove the deposits between the electrodes with a knife or paper clip. Reinstal the spark plug and restart the moped.
- * If the spark plug is greasy, replace it (always carry a spare in your tool kit). Restart the moped and see your DERBI dealer for repairs and routine maintenance.

NOTE: If none of the troubleshooting methods listed here will restart your moped, take it to your DERBI dealer for necessary repairs.

INSIST ON GENUINE

WORLD'S CHAMPION



REPLACEMENT PARTS

YOUR GUARANTEE OF QUALITY

