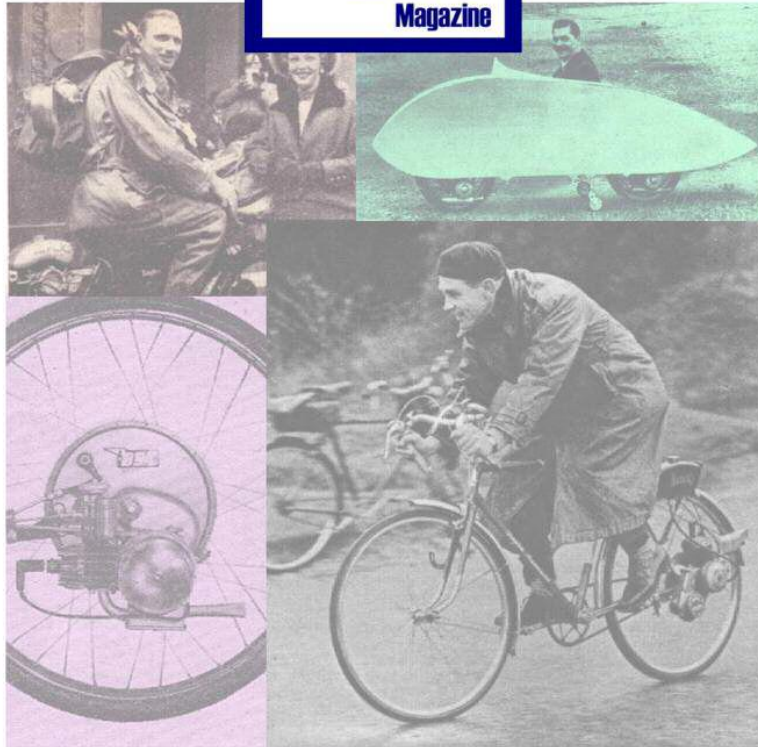
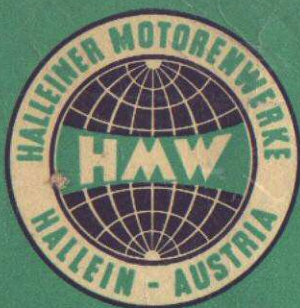


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**OPERATION AND  
MAINTENANCE HANDBOOK**

**HMW**

**ENGINE-GEAR UNIT FOR MOPEDS**

**MK 50 N**

1ST EDITION

MAY 1957



Spark Plug <sup>0.020</sup> 20 Thru. <sup>20 Thru.</sup>  
PAGE 7.

Engine Oil S.A.E 20  
0.4 Pints

	Petrol	oil
Running in	20 - 1	
	25	1

1 Pint Oil

2

1 1/4 Gallons Petrol.

Kick  
Start  
M.

1/4 Pint oil 1 Gallon.  
Pedal, NO ENGINE

Flywheel Magneto  
Ignition

6 V / 17 W.

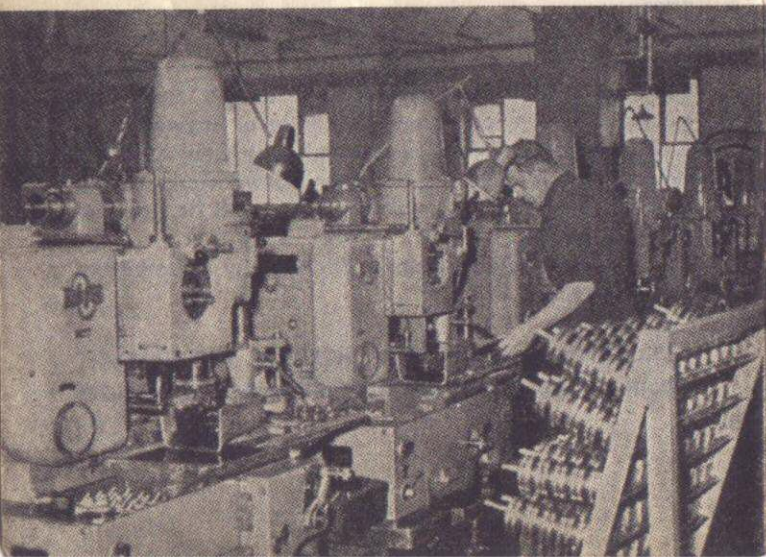




MACHINE SHOP

PRECISION MACHINING AT HALLEIN / WORKS

GEAR CUTTING



**HALLEINER MOTORENWERKE**  
HINTERBERGER, SCHREITL & CO.  
FORMERLY HALLEINER MOTORENWERK AG

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# **OPERATION AND MAINTENANCE HANDBOOK**

**HMW  
ENGINE-GEAR UNIT FOR MOPEDS**

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1<sup>st</sup> EDITION  
MAY 1957

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OPERATION AND  
MAINTENANCE HANDBOOK

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HINTERBERGER, SCHREITL & CO.  
FORMERLY HALLEINER MOTORENWERK AG.  
HALLEIN AUSTRIA

HMW  
ENGINE-GEAR UNIT FOR MOPEDS  
MR 50 N

THE EDITION  
MAY 1957

Damages for which the supplying manufacturers make themselves responsible under this guarantee are limited to the free repair of or replacement of the parts handed back to them, carriage paid, which may have proved defective. The manufacturers undertake to make good in manner aforesaid any part covered by this guarantee which has proved defective due to faulty materials and/or workmanship. The supplying manufacturers do not undertake to refit or bear the cost of replacement or refitting such new parts.

2) For parts or accessories not manufactured by the supplying factory the warranty is limited to the terms of any guarantee which may be given by the manufacturers of such parts or accessories.

3) Any part found to be defective in material or workmanship must be sent to the manufacturers or their authorized representatives immediately carriage paid and must be accompanied by an intimation from the owner that he desires to have it repaired or exchanged free of charge under the guarantee, furnishing at the same time the number of the engine and/or frame and full particulars of purchase. Failing compliance with these conditions as well as with the operating instructions as to correct handling given by the manufacturers especially with a view to regular servicing this guarantee shall not be enforceable.

4) The bearer of this card has no title whatsoever to claim rescission of the contract of sale or reduction of price.

5) No damages may be claimed for direct or indirect disadvantages.

6) This guarantee does not apply to defects caused by wear and tear, wrong handling, misuse or neglect.

7) The guarantee becomes null and void if any part not made or supplied by the Halleiner Motorenwerke should be fitted or if the engine should be altered or modified by third parties.

8) The manufacturers do not undertake any responsibility for used items.

**TO SAFEGUARD HIS OWN INTEREST, THE OWNER  
SHOULD ALWAYS INSIST UPON GENUINE HMW PARTS**



cooling fins dirty

clean cooling fins of cylinder and cylinder head  
tighten

spark plug loose

### Excessive fuel consumption

#### Trouble

#### Remedy

fuel feed leaking

tighten petrol tap and fuel feed, replace seal if necessary, check petrol pipe

carburettor is leaking when engine is stationary

dismantle float, clean float needle and seat of it, check tightness of float, close petrol tap

engine four strokes

use smaller size jet, ride more carefully

### Clutch is slipping

Check whether clutch control lever on handlebar has at least 3 mm (0.118 in.) play, otherwise adjust set screw of clutch cable accordingly.

#### Trouble

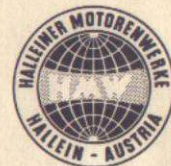
#### Remedy

clutch lining worn

replace, but have the relining done by a Service Agent anyway

## CONDITIONS OF GUARANTEE

1) The supplying manufacturers give to each original purchaser the warranty that all precautions which are usual and reasonable have been taken by them to secure excellence of materials and workmanship according to the prevailing standards of technics but this guarantee is to extend and to be in force for six months only from the date of delivery of the engine or vehicle to purchaser.



## Introduction

*We welcome you to the ever increasing number of H.M.W. owners.*

*To obtain the best from your machine we recommend you to read this handbook, and keep it always available for guidance. It is based upon experience gained by the design and manufacture of over 100,000 H.M.W. engines, and illustrates the way to obtain maximum efficiency by carrying out simple, but important maintenance.*

*Our engine is remarkably tough, and unlikely to give any trouble for many thousands of miles. However, should you experience any doubt about its performance we recommend you to consult your local Agent, who will be pleased to assist you.*

*We take this opportunity of wishing you good luck, and many miles of enjoyable and trouble free motoring.*





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It is the opportunity of winning you good luck and many miles of enjoyable and trouble free motoring.

### Poor compression

#### Trouble

- spark plug loose
- cylinder head gasket or decompressor valve leaking
- piston rings gummed in or excessively worn

#### Remedy

- tighten
- replace cylinder head gasket, have valve cone newly ground in
- clean grooves of piston rings or replace rings if necessary

### Engine pinks

#### Trouble

- plug points bridged by carbon
- retarded spark
- carburettor leaking

#### Remedy

- clean
- have ignition timing corrected
- tighten carburettor or flange, replace flange washer if necessary

- faulty contact breaker or condenser

have replaced

### Engine overheating

#### Trouble

- not enough or unsuitable oil in petrol mixture
- retarded ignition

#### Remedy

- correct mixture to 25 to 1
- adjust to 3.5 to 4 mm (0.137 to 0.157 in.) before T. D. C. and to point gap 0.4 mm (0.016 in.)



too much oil in petrol mixture	drain fuel, correct petrol mixture is 25 to 1
spark plug not firing	clean or replace
ignition cable loose or damaged	adjust or insulate cable
contact breaker points require attention	clean, adjust point gap to 0,4 mm (0,016 in.)

### Engine four strokes

#### Trouble

#### Remedy

too much oil in petrol mixture	correct mixture to 25 to 1
mixture too rich	use smaller sized jet
spark plug oily or sooted up	clean or replace by spark plug with lower thermic value
slot of exhaust blocked	clean out

### Engine lacks power

#### Trouble

#### Remedy

jet blocked	clean out
obstruction in fuel feed	clean out petrol pipe, petrol tap filter, and tank
incorrect ignition timing	have ignition adjusted
engine and exhaust system sooted up	remove cylinder and clean out passages and exhaust system
air leaks	tighten carburettor, replace washer if necessary, examine and replace cylinder base joint washer if necessary, check washer at slots of transfer ports

## CONTENTS

	page
Summarised Data .....	7
Told in a Nutshell .....	9
engine .....	9
decompressor valve .....	9
clutch .....	9
carburettor .....	9
Ignition Assembly .....	10
spark plug .....	10
Pedal Gear .....	10
Controls .....	15
throttle twist grip .....	15
decompressor lever .....	15
gear shift twist grip and clutch lever .....	15
easy starting device .....	16
hand control lever on the crankcase .....	16
Maintenance .....	16
Lubrication .....	16
engine .....	16
gear box .....	16
felt oiling pad .....	17
Cleaning .....	17
cylinder and cylinder head .....	17
carburettor .....	17
spark plug .....	18
Running Adjustments .....	18
Fault Finding Chart .....	18
engine will not start .....	19
engine stops of own accord or runs erratically ..	19
engine four strokes .....	20



engine lacks power	20
poor compression	21
engine pinks	21
engine overheating	22
excessive fuel consumption	22
clutch is slipping	23
Conditions of Guarantee	23

## ILLUSTRATIONS

ill. 1 and 2: Air-Cooled Engine-Gear Unit for Mopeds Mark HMW 50 N	11
ill. 3: Engine-Gear Unit HMW 50 N with Carburettor Type T3-12 D	12
ill. 4: Power Transmission	12
ill. 5: Dismantled Crankcase	14
ill. 6: Maintenance Chart	14
ill. 7: Machine Shop	24
ill. 8: Gear Cutting	24

## Engine will not start

### Trouble

petrol tap not opened  
not enough fuel reaching  
carburettor  
tank empty  
fuel feed blocked  
jet blocked

carburettor loose or  
leaking  
spark plug oily or sooted  
up  
ignition cable loose or  
damaged  
spark too weak

## Engine stops of own accord or runs erratically

### Trouble

petrol tank drained  
petrol system blocked  
jet blocked  
petrol tank cap air vent  
blocked  
dirty air filter  
float needle does not fit  
tightly

### Remedy

turn tap to ON  
depress carburettor tickler  
to its fullest extent  
refill  
remove and clean out  
depress tickler repeatedly  
or unscrew jet and clean  
out by blowing through or  
by means of a bristle  
tighten carburettor,  
replace washer  
clean plug or fit new one  
adjust or insulate cable  
adjust electrode gap to  
0,5 mm (0,020 in.), have  
ignition assembly over-  
hauled

### Remedy

refill  
clean out  
clean out  
take off tank cap and  
blow through air vent  
clean out  
dismantle float, clean  
chamber, check seat of  
float needle



## Spark Plug

Carbon deposits are cleaned away from the spark plug by scraping off with a stiff brush. If the spark gap has become too wide it is adjusted by bending the outer electrode toward the central one until the correct gap of 0,5 mm (0,020 in.) is obtained. In this care has to be taken not to damage the insulator. In removing and replacing the plug never use force but rather replace the plug finger-tight prior to using the spanner.

## RUNNING ADJUSTMENTS

It is advisable to check nuts and screw fittings for tightness frequently, especially the engine-frame fixing bolts, and those of the carburettor, spark plug, cylinder head, exhaust pipe, as well as oil filler screws and oil level plug, and to tighten them if necessary. Checking and servicing of the clutch assembly, gear box, carburettor, and ignition assembly should, however, whenever possible be entrusted to one of our Service Agents who have the necessary facilities to undertake such work, which may save you a lot of money, trouble, and time.


## FAULT FINDING CHART

In case of defects and troubles we recommend that you immediately seek the advice of your local Agent solely to whom repairs should be entrusted. For a preliminary check reference should be made to the fault finding chart given below by following the indicated sequence of testing.

## SUMMARISED DATA

Air-cooled high-efficiency single-cylinder two-stroke engine with reverse scavenging, single chain drive, incorporated pedal gear with starting and coasting mechanism  
(HMW world patent)

**Bore:** 38 mm  
**Stroke:** 44 mm  
**Cylinder Capacity:** 49,8 c. c.  
**Compression ratio:** 1 to 6.5

**PERFORMANCE:** 2,2 HP at 6.100 rpm (max.)  
**Performance per litre:** 44 HP  
**Maximum Torque:** 0,31 metres/kg (0,4285 ft./lb.) at 3.500 rpm  
**Fuel Consumption:** 380 gr/HP h  $\approx$  1,4 litres at 100 km (204 MPG) (Brit. gals.)  
**Ignition Advance:** 3,5 to 4 mm (0,137 in. to 0,157 in.)  
**Spark Plug:**  BOSCH W 225 T1 — for fast driving and to cope with long gradients  
BOSCH W 175 T1 — for running in period and continual slow driving  
**Spark Gap:** 0,5 mm (0,020 in.)  
**Flywheel Magneto Ignition:** 6 V/17 W providing lighting current also  
**Carburettor:** quality float carburettor with 12 mm (0,472 in.) transfer port, with intake silencer  
**Compression Release:** into exhaust  
**Lubrication:** petrol mixture 25 to 1  
**Gear Box:** two-speed box with two-plate cork-lined clutch running in oilbath



**Hill-Climbing Ability:** 1<sup>st</sup> gear 23% (may be increased considerably by additional pedalling)  
2<sup>nd</sup> gear 8%

**Weight:** 11,7 kg (25.8 lbs.)

**Power Transmission Engine-Gear:**

endless roller chain running in oilbath  
ratio 3,90

**Pinions:**

straight-serrated spur gear running in oilbath  
ratio: 1<sup>st</sup> gear 3,265  
2<sup>nd</sup> gear 1,845

**Power Transmission Pedal Drive to Rear Wheel**

in gear by straight-serrated spur gears running in oilbath.  
Drive of rear wheel from gear by means of a chain.

**Ratios and Speeds**

(with 2,2 HP at maximum)  
with pedal gear control lever in position I or II and with  
tyres size 23 × 2,25 in.:

**Lever in position I** (starting as with kickstarter)

starting ratio 1 to 28,3

**Lever in position II**

60 rpm at pedal drive with 1<sup>st</sup> gear engaged corresponds to 3,360 rpm at engine crankshaft at maximum torque

Reduction gear: 1<sup>st</sup> gear 1 to 1,98

2<sup>nd</sup> gear 1 to 1,98

**SPECIFICATIONS ARE SUBJECT TO ALTERATION  
WITHOUT NOTICE**

is being run in, drain and refill oil frequently and check oil level more often.

Previous to refilling run the engine for some minutes with 20 c. c. of oil of the same type. By this all mud and any particles of foreign matter will be removed. If the oil level is not coincident with the level plug, with engine in level position, top-up immediately. Be sure that the oil filler screws are tightly adjusted and do not interchange them.

**Felt Oiling Pad**

After every 250 hours of use the felt pad of the flywheel magneto must be soaked in molten high melting point grease.

**CLEANING**

**Cylinder and Cylinder Head**

The cooling fins are cleaned by means of a stiff brush and some paraffin.

**Carburettor**

The fine mesh filter gauze of the air filter should be periodically cleaned by dipping in petrol and should be allowed to soak in engine oil before being replaced.

After a considerable mileage has been completed the carburettor must be cleaned thoroughly. If the fuel has not been quite clean foreign matter will have gathered in the filter ring and also in the float chamber, which has to be removed. Clean out petrol pipe, float chamber, and jet by blowing through or if need be by means of a horsehair bristle. Never use a piece of wire as this will damage the fine bore of the jet. The various components of the carburettor are cleaned by washing them in petrol.



### Easy Starting Device

The injection pump is operated by the carburettor tickler (ill. 3/9).

### Hand Control Lever on the Crankcase

By means of the hand control lever which is fitted 1. h. at the crankcase the gear box may be connected or disconnected from the pedal drive (ill. 3/6).

## MAINTENANCE

### LUBRICATION

To ensure the best service and a long life from your engine careful attention should be paid to the maintenance and lubrication chart (see page 14) and to the use of the recommended types of oil.

### Engine

The engine is lubricated by the petroil system and no lubricant other than that introduced with the petrol is necessary. Fill up fuel tank with a mixture of one part of first class engine oil SAE 50 to 25 parts of petrol, the mixture to be made in a clean receptacle and well stirred before being put into tank. For the running in period a petroil mixture 20 to 1 is recommendable. Never fill up with unmixed petrol nor for that matter do we recommend fuel mixed with benzole.

### Gear Box

For lubrication of clutch, gear box, and pedal drive mechanism use 0,4 litres (0,7 pts.) engine oil SAE 20 (at all times of the year) which is to be filled in through the oil filler screw (red screw, ill. 3/7). As long as the engine

## TOLD IN A NUTSHELL

### Engine

The completely cowled stylish engine-gear unit which is rigidly attached to the frame at two points, contains also the clutch housing, and the clutch assembly.

The engine is precision built out of first class materials, with every component part conforming rigidly to pre-set up-to-date standards of highest quality and workmanship. Easy exchange of any component is ensured. Bearings are of the ball or needle type.

Mark HMW 50 N is the popular air-cooled type of HMW engines. Extensive cooling fins fitted alongside cylinder head and cylinder ensure effective cooling, and make it impossible for overheating of engine or seizure of piston to occur in normal usage.

### Decompressor Valve

The decompressor valve, which is cable operated by a control lever fitted to the handlebar, serves as an easy starting device on the one hand and on the other to stop the engine. It is fitted in the cylinder head. Compression release is into exhaust through a drilled passage in the cylinder head and cylinder. By this it is avoided that the cylinder head is fouled by seepage of oil.

### Clutch

It is to be noted that the two-plate clutch rides on the layshaft. Therefore no difficulties in gear changing because of over-revving may occur with HMW engines.

### Carburettor

The carburettor, with which the engine mark HMW 50 N is equipped features an air filter and an intake silencer.



For easy starting an injection pump operated by cable or, by simply depressing the cap, is fitted to the float chamber. Take care to operate the injection pump very slowly and to maintain pressure in the lower position.

### IGNITION ASSEMBLY

The 6 V/17 W flywheel magneto, being fitted to the crankshaft is easily accessible after the l. h. gearbox cover has been taken off. This assembly provides the high tension current necessary for a strong spark and supplies also sufficient lighting current.

### Spark Plug

For the running in period and for slow riding a spark plug with a thermic value of 175 is recommended. For fast driving and in climbing long gradients spark plugs with a thermic value of 225 or 240 are preferable.

### PEDAL GEAR

An ingenious device (HMW world patent) renders it possible to connect (lever in forward position "M") or disconnect (lever placed to the rear) the engine completely by simple movement of a control lever (ill. 3/6) fitted to the crankcase.

With the control lever engaged in position "M" you may start the engine by simply kicking down the pedal or you may aid the engine by pedalling when negotiating steep grades.

With the control lever engaged in backward position and the gear shift lever in neutral position (0), the vehicle may be pedalled like an ordinary bicycle without parts of engine or gear being moved (e. g. if petrol is running short).

The working of the drive in both cases is shown in ill. 4.

## CONTROLS

### Throttle Twist Grip

If turned in clockwise direction (travel of cable 12 mm [0.472 in.] at the least) more fuel reaches the engine. By turning it counterclockwise the engine is throttled. With the throttle twist grip completely closed the engine should run slowly and evenly (idling position): If engine threatens to die

- shorten throttle cable by means of the adjusting screw until warmed-up engine is running evenly (with carburettor type T 1-12 SA)
- screw in idle gear adjusting screw on throttle slide case until engine is running evenly (with carburettor type T 3-12 D)

The twist grip control commands the carburettor by cable adjustable by means of set screws.

### Decompressor Lever

The decompressor valve in cylinder head is operated remotely by a control lever on the handlebar and is used in starting or stopping the engine.

### Gear Shift Twist Grip and Clutch Lever

The gear shift twist grip has three positions:

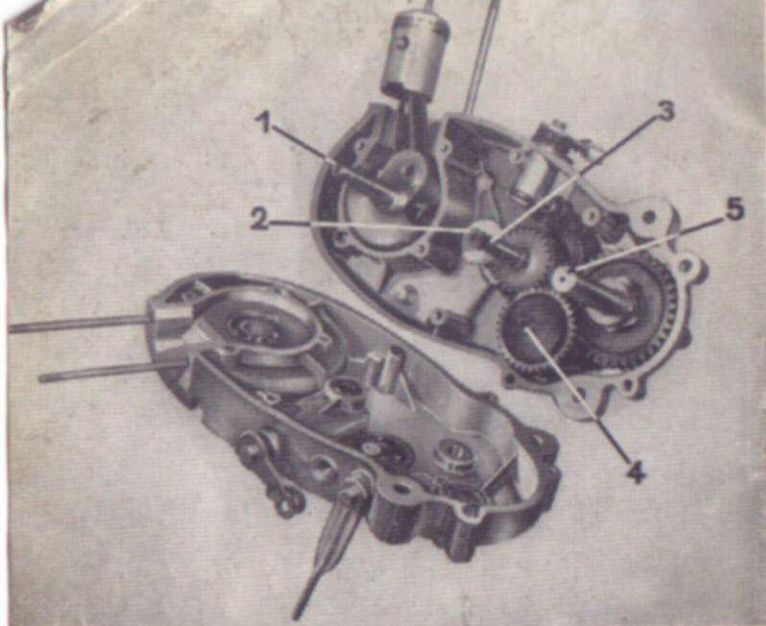
1st gear in driving direction + 2nd gear vice versa + in between neutral position (0).

The gear shift twist grip engages in the three positions. It is combined with the clutch lever.

A cable connects the gear shift twist grip with the outer gear shift lever on the engine-gear unit. The cable may be shortened or extended by means of the adjusting screw.

The clutch lever on the handlebar operates the clutch lever at the crankcase by cable control. Also this cable may be adjusted by a set screw.



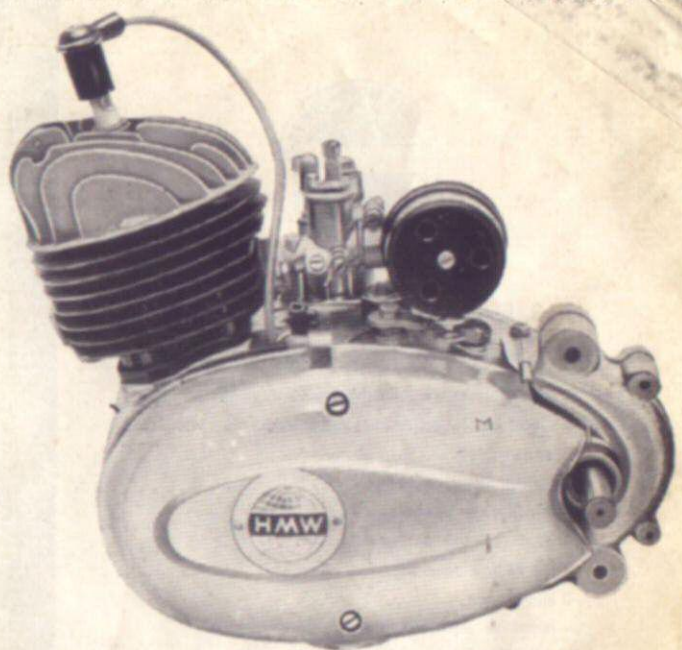


- 1 crankshaft
- 2 layshaft
- 3 spline shaft
- 4 lay gear
- 5 pedal spindle

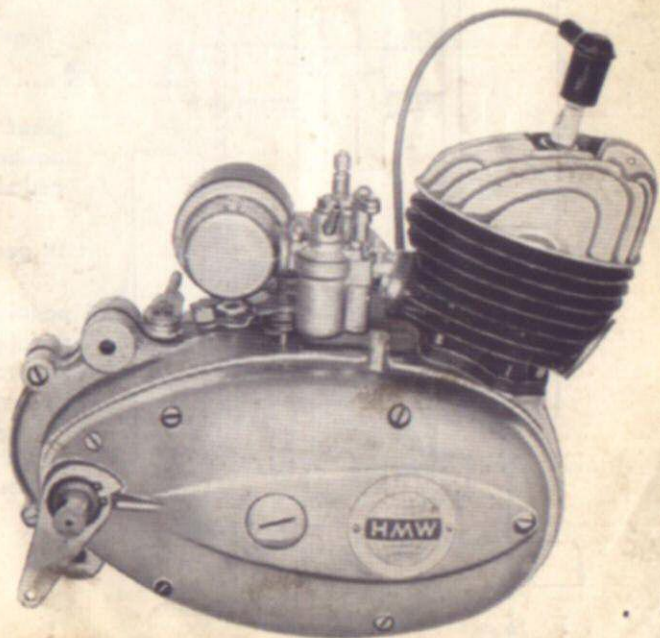
ill. 5 DISMANTLED CRANKCASE

**MAINTENANCE CHART**

	500	1000	2000	3000	4000	5000	etc.
	300	600	1200	1800	2400	3000	etc.
	after kilometres						
	miles						
1 general overhaul	x	x	x		x		
2 drain and replace by fresh oil	x	x		x			x
3 inspect oil level	x		x		x		
4 check tightness of nuts e. g. engine-frame fixing bolts, carburettor, spark plug, cylinder head, exhaust pipe, oil filler screw and oil level plug, tighten if necessary	x	x	x	x	x	x	x
5 check ignition system and contact breaker, have them adjusted, check spark plug, grease felt pad	x	x		x			x
6 clean spark plug, correct spark gap			whenever necessary				
7 have cylinder head and piston cleaned (decarbonized)			x		x		
8 clean air filter, lubricate filter gauze			(x)	x	(x)	x	(x)
	according to proportion of dust in air						
9 clean carburettor			whenever necessary				



AIR-COOLED ENGINE-GEAR UNIT FOR MOPED MARK 50 N

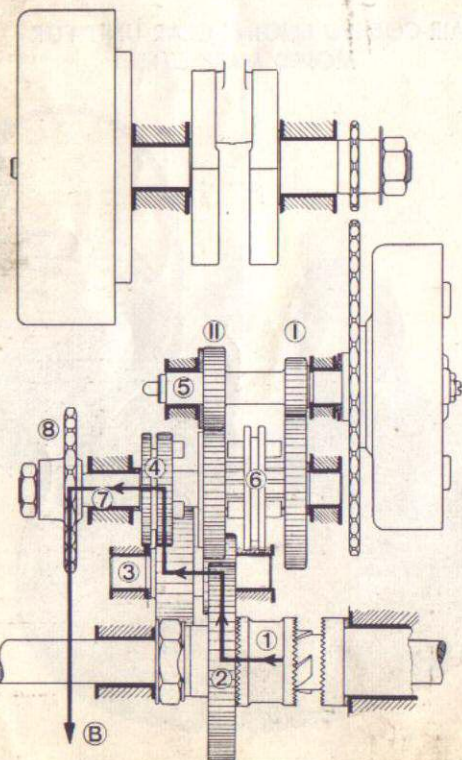
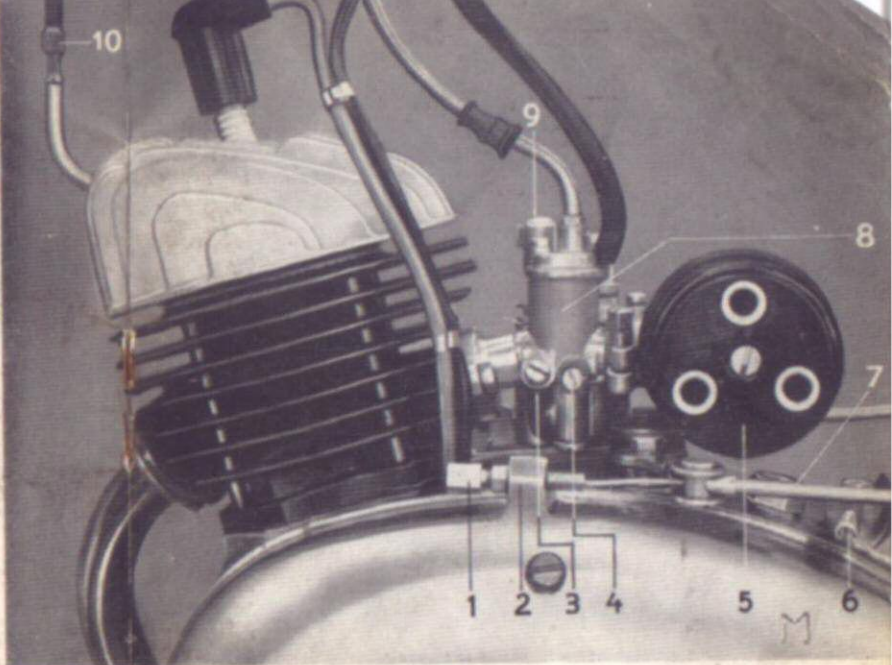






### III. 3 ENGINE-GEAR UNIT HMW 50 N with carburettor type T3-12 D

- 1 adjusting screw, clutch operating cable
- 2 clutch cable adjusting screw boss
- 3 seat of jet
- 4 idling adjuster screw
- 5 air filter — intake silencer
- 6 control lever of pedal gear
- 7 oil filler screw cap
- 8 slide case
- 9 head of injection pump
- 10 adjusting screw, decompressor cable



### III. 4 POWER TRANSMISSION

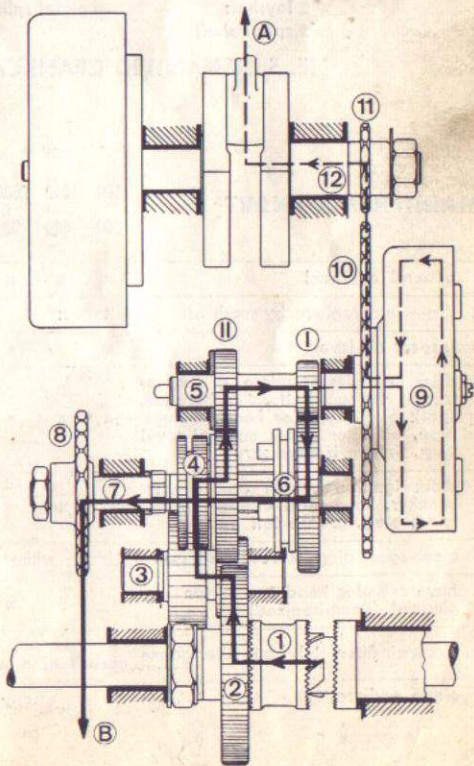
hand control lever in backward position (for cycling)

hand control lever in forward position "M" (for starting and pedalling with engine running)

I 1st gear pinion II 2nd gear pinion

- 1 pedal spindle
- 2 pedal pinion
- 3 lay gear
- 4 jaw pinion
- 5 layshaft
- 6 gear shift sleeve (without gear shift fork)
- 7 spline shaft
- 8 sprocket
- 9 clutch
- 10 engine-sprocket
- 11 gear-sprocket
- 12 crankshaft

A clutch-engine  
B to rear wheel chain sprocket





F D H  
558 C  
H M W  
5000

The

Symbol  
1965

Cream & Red



of Efficiency



and Quality

31. 5. 1966

WAH/FFA - 5 m

A. Reiber's Nachf., Wien 7

1830. 05. 57

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SALZBURG HALLEIN AUSTRIA