HONDA 50

Shop Manual

HONDA 50

MODEL C100 · C102 · C110 · C111

FOREWORD

On the occasion of the debut of HONDA MODEL 110 & 111 as sister MODELS with 100 & 102 which gained good reputation around the world, this manual was compiled as a "overall service Handbook" for these models.

The main intension of this manual is to have you get foundamental idea for disassembly, inspection, maintenance and assembly operation.

An effort has been made to edit this manual avoiding fundamental principle and theory by explaining the actual mechanism and special emphasis has been placed in illustration and pictures to make it easy for the service man to understand, how to handle.

We heartily welcome your kind advice to revise or correct this manual to make it more complete one.

June 1, 1961

HONDA MOTOR CO., LTD.
EXPORT DEPARTMENT
No. 5–5, Yaesu-cho, Chuo-ku,
Tokyo, Japan

MAINTENANCE STANDARDS

For maintenance operation for HONDA 50, Maintenance Standards, specification and dimension are listed hereafter for reference.

EXPLANATION :

Maintenance Items Items to be inspected, service-wise.

Standard Value This indicates the manufacturer's standard size or the standard size after newly assembling or adjusting, and shows the size-limit of completed part in the permissible limit of adjustment.

Reparing Limit Unusable wear limit of parts requiring correction or replacement, function-wise.

Remarks Unmarked numbers are run unit and inch unit shown underneath, and others according to the unit indicated.

UNIT IN CHART :

Unmarked numbers are m/m unit and inch unit shown underneath, and others according to the unit indicated.

*	Model 100
**	Model 110
No mark	Common to all models.

CONTENTS

1. GENERAL PERFORMANCE

Maintenance Item		Standard	Repairing Limit	Remarks
Compression pressure		* 7.0 kg/cm²	4.5	Check with kick
		100 lb/in²	65	
		** 8.5 kg/cm²	6.0	
		121 lb/in²	85	
Fuel Consumption		90 km/ℓ	51	30 km/h (19 mile/h)
		255 mile/gal.	140	
Max. speed		* 70 km/h	50	The posture is leaning forward the upper half of body
		44 mile/h	31	
		** 85 km/h	57	
		53 mile/h	35	
Braking distance		5 m	10	25 km/h
		16.5 ft	33	(16 mile/h)

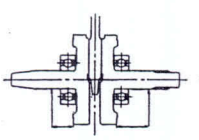
2. ENGINE

A. Cylinder, Cylinder Head

Maintenance Item		Standard	Repairing Limit	Remarks
Cylinder	Inner dia.	* 40.00–40.01	40.1	Attention for elleptin, taper size
		1.5748–1.5752	1.580	
		** 40.02–40.03	40.1	
		1.5756–1.5760	1.580	
	Max. out of round	0.01	0.05	
		0.0004	0.002	
	Taper	0.01	0.05	
		0.0004	0.002	
Oversize of cylinder	Jamping guage	0.25–0.26		Three category
		0.009		
Cylinder head-valve seat	Width	1.0	2.0	
		0.039	0.08	
	Angle	45°		
Compression ratio		* 8.3–8.5		
		** 9.3–9.5	8.9 or less over 9.8	
Cylinder head gasket surface	Flatness	0.03	0.05	
		0.0012	0.002	
Cylinder head gasket	Thickness	0.5–0.6		
		0.0197–0.0236		
Cylinder stud nut	Tightness	0.4–0.55 kg/m	0.4	
		2.9–4.0 ft lb	2.9	

B. Crank Shaft (Piston, Connecting Rod)

Maintenance Item		Standard	Repairing Limit	Remarks
Piston	Top diameter	* 39.63–39.68 1.5602–1.5632 ** 39.50–39.55 1.5551–1.5571		
	Max. diameter	* 39.98–40.0 1.5740–1.5748 ** 39.99–40.01 1.5744–1.5752	39.9 1.571 39.4 1.551	At the lower part of skirt perpendicular to piston pin axis
	Out of round	** –0.16 — –0.18		Minus dimension from max. Diameter along axial direction of piston pin axis at the lower part of skirt
Piston and cylinder	Min. clearance	0.01–0.03 0.0003–0.001	0.14 0.005	Selective insertion
Piston pin	Diameter	13.0–13.006 0.5118–0.5120	13.02 0.513	
Piston oversize	Jamping gauge	0.25 0.009		Tollerance etc. same as STD
Top, 2nd ring	Thickness	1.8–2.0 0.0709–0.0787		
	Width	1.480–1.495 0.0583–0.0589	1.4 0.055	
	Tension	0.45–0.75 kg 0.99–1.65 lb	0.3 0.66	Tangential tension
	End gap	0.1–0.3 0.003–0.01	1.0 0.039	Perpendicular gap as inserted in regular cylinder
Top, 2nd ring and ring groove	Gap	0.01–0.04 0.0003–0.0015	0.15 0.005	
Oil ring	Thickness	1.8–2.0 0.0709–0.0787		
	Width	2.480–2.495 0.0976–0.0982	2.4 0.0945	
	Tension	0.5–0.7 kg 1.10–1.54 lb	0.3 0.66	Tangential tension
	End gap	0.1–0.3 0.003–0.01	1.0 0.039	Perpendicular gap as inserted in regular cylinder
Oil ring and ring groove	Clearance	0.01–0.04 0.0003–0.001	0.15 0.005	
Piston ring oversize	Jamping gauge	0.25 0.009		Allowance etc. same as STD
Piston pin	Outside dia.	12.994–13.000 0.5116–0.5118	12.95 0.510	

Maintenance Item		Standard	Repairing Limit	Remarks
	Total length	31.9–32.1 1.2559–1.2638		
Piston and piston pin	Clearance	0.006 0.00024	0.05 0.002	
Connecting rod small end	Inner dia.	13.016–13.043 0.5124–0.5135	13.08	
Connecting rod small end and piston pin	Clearance	0.016–0.049 0.0006–0.0019	0.08 0.003	
Connecting rod small end	Swing		3.0 0.118	Max. amplitude to axial directions of small end pin
Connecting rod lower end	Axial clearance	0.1–0.35 0.003–0.013	0.6 0.023	
	Diagonal clearance	0–0.012 0–0.0005	0.05 0.002	7 grade of selective combination
Big end and small end of connecting rod	Amount of paralley		0.1 0.003	At 8 m/m (3.2 in) point from small end center
	Distortion		0.15 0.005	
Crank pin	Outside dia.	21.098–21.107 0.8306–0.8310	21.08 0.830	Perfect circle 0.003 less
R. L. crank shaft	Dia. of shaft	16.997–17.008 0.6692–0.6696	16.95 0.667	Out. dia. of bearing same dia. with R.L.
Crank shaft bearing	Axial clearance	0.005 0.0002	0.1 0.003	
	Radial clearance	0.014–0.016 0.00055–0.00063	0.05 0.002	
Crank shaft comp.	Max. swing	0.03 0.0012	0.25 0.01	 L–side 20 R–side 30 Arrow sign shows position of measurement

C. Cam, Timing and Valve

Maintenance Item		Standard	Repairing Limit	Remarks
Ex. In. valve guide	Inner dia.	5.505–5.515 0.2167–0.2171	5.58 0.220	
Ex. valve	Overall length	60.6–60.8 2.3858–2.3937		

Maintenance Item		Standard	Repairing Limit	Remarks
In. valve	Out. dia. of stem	5.435–5.445 0.2140–0.2144	5.40 0.2126	
	Thickness of head	0.7 0.0276	0.4 0.0157	
	Overall length	61.1–61.3 2.4055–2.4134		
Ex. In. valve	Out. dia. of stem	5.465–5.475 0.2152–0.2156	5.43 0.2138	
	Thickness of head	0.5 0.0197	0.2 0.008	
	Width	1.0 0.039	2.0 0.08	Check a dent at contacting surface and flowing through
Ex. valve stem and guide	Clearance	0.06–0.08 0.0024–0.0031	0.10 0.0039	
In. valve stem and guide	Clearance	0.03–0.05 0.0012–0.0020	0.10 0.0039	
Valve spring outer	Free length	* 27.0 1.063	25.6 1.008	
		** 28.4 1.118	27.8 1.095	
	Load	* 6.3–6.9 kg 13.89–15.21 lb	5.36 11.82	Height 23.5m/m (0.925 in)
		** 8.45–9.25 kg 18.63–20.40 lb	8.0 17.64	
	Decline	0.3	1.0	
Valve spring inner	Free length	* 27.8 1.0945	26.5 1.043	
		** 26.9 1.0591	26.0 1.047	
	Load	* 2.55–2.85 kg 5.62–6.28 lb	2.17 4.78	Height 22.5m/m (0.886 in)
		** 4.17–4.75 kg 9.19–10.08 lb	3.8 8.38	Height 21.5m/m (0.847 in)
	Decline	0.3	1.0	
Cam shaft	Shaft dia.	18.959–18.980 0.7464–0.7472	18.9 0.744	
		30.950–30.975 1.2185–1.2195	30.9 1.217	
	Bend of shaft		0.05 0.002	
	Height of cams	24.5 0.9646	24.3 0.957	Base circle 20ϕ
Cam shaft and journal metal	Clearance	0.041–0.062 0.0016–0.0024	0.15 0.0059	19ϕ Shaft part

Maintenance Item		Standard	Repairing Limit	Remarks
		0.025–0.075 0.00098–0.0030	0.15 0.0059	31ϕ Shaft part
Valve timing Ex.	Opening angle	*Before lower dead point 79° **Before lower dead point 22.5°		
	Closing angle	*After up dead point 47° **After up dead point 2.5°		At valve lift
Valve timing In.	Opening angle	*Before up dead point 56° **Before up dead point 7.5°		* 1m/m ** 1.14m/m
	Closing angle	*After lower dead point 86° **After lower dead point 12.5°		
Cam gear	Max. chord	29.251–29.268 1.1516–1.1523		No. of teeth 44
Timing gear	Max. chord	13.803–13.818 0.5434–0.5440		No. of teeth 22 Max. chord 3
	Buckrash with cam gear	0.05–0.08 0.002–0.0031	Less than 0.02 More than 0.12 Less than 0.0008 More than 0.0047	
	Inner dia.	16.993–17.011 0.6690–0.6697	17.02 0.670	
Push rod	Length In.	187.4 7.3779		
	Length Ex.	170.5 6.7126		
	Bend		0.6 0.024	
Valve lifter	Out. dia.	11.973–11.984 0.4714–0.4718	11.94 0.470	
	Clearance to case hole	0.016–0.038 0.0006–0.0015	0.08 0.003	
Rocker arm	Inlet dia. of axis	8.000–8.015 0.3150–0.3156	8.05 0.317	
Rocker arm pin	Outside dia.	7.978–7.987 0.3141–0.3144	7.95 0.313	

Maintenance Item		Standard	Repairing Limit	Remarks
Ex. In. valve adjustment	Clearance to rocker arm	0.013–0.037 0.0005–0.0015	0.08 0.003	
	Tappet clearance	0.01–0.03 0.00039–0.0012		Cool state

D. Clutch

Maintenance Item		Standard	Repairing Limit	Remarks
Clutch outer	Clearance to drive plate	0.025–0.089 0.0010–0.0035	0.2 0.008	
Clutch friction disc.	Thickness	* 2.7–2.8 0.1063–0.1102	2.3 0.091	
		** 3.5 0.1378	2.9 0.114	
	Strain	0.2 0.0079		
Clutch plate A	Thickness	* 1.6 0.0630		
	Strain	* 0.2 0.0079		
	Width of hook	15.7–15.8 0.6181–0.6220	15.5 0.2165	
Clutch plate B	Thickness	* 1.6 0.0630		
	Strain	* 0.2 0.0079		
	Width of hook	* 16.0–16.1 0.6299–0.6339	15.8 0.622	
	Thickness	* 1.2 0.0472		
	Strain	* 0.2 0.0079		
	Width of hook	* 1.58 0.0622	1.3 0.0512	
Clutch plate	Thickness	** 1.6 0.063		
	Strain	** 0.15 0.0059		
	Width of hook	** 15.7–15.8 0.6181–0.6220	15.5 0.610	
Drive gear	Inner dia.	20.000–20.021 0.7874–0.7882	20.15 0.793	
	Max. chord	13.960–13.980 0.5496–0.5504	13.92 0.548	No. of teeth 15 Max. chord No. 3

Maintenance Item		Standard	Repairing Limit	Remarks
Clutch center guide	Out. dia.	19.930–19.950 0.7846–0.7854	19.85 0.7815	
	Inner dia.	17.000–17.018 0.6693–0.6700	17.10 0.673	
	Length	* 21.5–21.6 0.8465–0.8504		
		** 19.1–19.2 0.7520–0.7559	18.95 0.766	
	Clearance to crank shaft	0.008–0.02 0.0003–0.0008		
	Clearance to drive gear	0.04–0.082 0.0016–0.0032		
Clutch spring	Free length	* 23.23 0.9146	22.07 0.869	
		** 25.2 0.9921	24.0 0.945	
	Load	* 3.04–3.24 kg 6.70–7.15 lb		Height 12.00m/m (0.472 in)
		** 5.17–5.71 kg 11.40–12.59 lb	4.6 10.14	Height 13.6m/m (0.535 in)
14m/m Lock nut	Tightening force	1.6–2.0 kgm 11.6–14.5 ft lb		

E. Transmission

Maintenance Item		Standard	Repairing Limit	Remarks
Lubricating oil	Capacity	0.6 ℓ		Check with oil gauge
Main shaft	Out. dia. at shaft bearing	13.966–13.984 0.5498–0.5506	13.9 0.547	
	Axial play	0.1–0.75 0.0039–0.0295	1.2 0.047	
	Clearance of main shaft to top gear	0.022–0.051 0.00087–0.0020	0.2 0.0079	
Counter shaft	Out. dia.	16.983–16.994 0.6686–0.6691	16.95 0.667	
	Clearance to low gear	0.022–0.051 0.00087–0.0020	0.2 0.0079	
Ball bearing of main shaft and counter shaft	Axial clearance	0.005 0.0002	0.1 0.0039	Check smooth rotation and noise
	Radial clearance	0.014–0.016 0.00055–0.00063	0.05 0.002	
Primary driven gear	Max. chord	39.785–39.811 1.5663–1.5674	39.68 1.562	No. of teeth 8

Maintenance Item		Standard	Repairing Limit	Remarks
Drive sprocket	Back rush to drive gear	0.041–0.087 0.0016–0.0034	0.20 0.0079	
	Swing of gear end surface	0.1 0.0039	1.0 0.039	
	Turing directional play to main shaft	0.48 0.0189	1.0 0.039	At the outermost point of teeth
	Pitch	12.7 0.5		No. of teeth 14
	Turing directional play to counter shaft	0.18 0.0071	0.5 0.0197	Measure at the end of teeth
Kick starter spindle	Insert hole outer dia. of R–crank case cover	11.766–11.784 0.4632–0.4639	11.65 0.459	
Kick starter ratchet pole	Graded		0.2 0.0079	

F. Magneto, Contact Breaker

Maintenance Item		Standard	Repairing Limit	Remarks
Contact point	Max. gap	0.3–0.4 0.0118–0.0157		
Ignition timing	Crank angle	Before upper dead point 35°	Shift more than 30°	Fixed advance angle
Magneto spark character	3 needle gap	6	5	500 rpm
		8	5	3000 rpm
Magneto charging character	Charging current	0.9 A	0.5	6000 rpm (Day)
		0.3 A	0.1	6000 rpm (Night)
Magneto lighing character	Lighting voltage	6 V	4	2500 rpm
		9 V	9	8000 rpm
Spark plug	Article No.	C7HW		
	Gap	0.6–0.7 0.0236–0.0276		

G. Kick Starter, R. Crank Case Cover

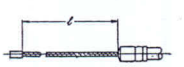
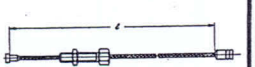
Maintenance Item		Standard	Repairing Limit	Remarks
Kick starter spindle and R. crank case cover hole	Clearance	0.066–0.111 0.0026–0.0044	0.25 0.0098	
Kick starter spring	Torque	270 kgmm 2 ft lb	200 1.4	

H. R. Crank Case and Change Gear

Maintenance Item		Standard	Repairing Limit	Remarks
Shift drum	Out. dia. at shaft bearing	41.950–41.975 1.6516–1.6526	41.9 1.650	
	Shaft out. dia.	11.966–11.984 0.4711–0.4718	11.9 0.469	
Shift drum and crank case hole	Clearance	0.025–0.075 0.00098–0.0030	0.15 0.0059	
Shift drum	Groove width	6.1–6.2 0.2402–0.2441	6.4 0.252	
Shift fork	In. dia. of hole	42.0–42.025 1.6535–1.6545	42.07 1.656	
	Thickness at end	4.86–4.94 0.1913–0.1945	4.5 0.177	
	Bend at end	0.3 0.0118	0.5 0.0197	
	Clearance to drum	0.025–0.075 0.00098–0.0030	0.15 0.0059	
6m/m Stud bolt	Tightness	3–5 ft lb		
8m/m Stud bolt	Tightness	10–13 ft lb		
R. L. crank case setting bolt	Tightness	0.4–0.6 kgm 2.9–4.3 ft lb		

3. FRAME

A. Steering Handle

Maintenance Item		Standard	Repairing Limit	Remarks
Throttle grip	Play	3–7 0.118–0.276		Grip outer surface dimension
Throttle wire difference between outer and inner	Length	* 82.0 3.23 ** 55.0 2.17		
Clutch wire ditto	Length	** 81.0 3.19		
Brake lever	Play	15–25 0.59–0.98		Measure at lever end
Clutch lever	Play	** 15–25 0.59–0.98		Measure at lever end

B. Front Cushion

Maintenance Item		Standard	Repairing Limit	Remarks
Front cushion under distance collar	Out. dia.	11.967–11.984 0.4711–0.4718	11.85 0.467	
Under distance collar and under bush	Clearance	0.036–0.090 0.0014–0.0035	0.2 0.008	
Pivot collar	Out. dia.	13.967–13.984 0.5499–0.5506	13.85 0.545	
Pivot collar and pivot bush	Clearance	0.036–0.090 0.0014–0.0035	0.2 0.008	
Front cushion	Stroke	36.0 1.417		
Front cushion damper	Damping force	* 10–15 kg 22.05–33.08 lb ** 20–25 kg 44.10–55.13 lb		Cushion speed 0.5m/s
	Oil capacity	9.5 c.c.		#60 Spindle oil
Front cushion spring	Free length	122.5 4.823	117 4.606	
	Tension	76–84 kg 167.58–185.22lb		Height 74.9m/m (2.749 in)

C. Front Fork, Steering, Tank

Maintenance Item		Standard	Repairing Limit	Remarks
Steering head stem hut	Tightness	6.5–7.0 kgm 47–51 ft lb		
Steering head	Angle	90°		Angle between trident & pipe
Caster		63°		
Trail		* 70 ** 75		
Fuel tank	Capacity	* 3.0 ℓ ** 6.0 ℓ		

D. Frame (Main)

Maintenance Item		Standard	Repairing Limit	Remarks
Steel ball	Out. dia.	3/16		21 each for upper and lower
Rear fork pivot bolt bush	Inlet dia.	10.1–10.2 0.3976–0.4016	10.4 0.409	

E. Saddle, Stand

Maintenance Item		Standard	Repairing Limit	Remarks
Main stand spring	Load	15 kg 33.075 lb		When fitted
Rear brake pivot pipe	Out. dia	16.70–16.78 0.6575–0.6606	16.2 0.638	
Rear brake pivot pipe and main stand	Clearance	0.12–0.4 0.0047–0.0157	1.0 0.039	

F. Rear Fork, Chain-Case

Maintenance Item		Standard	Repairing Limit	Remarks
Rear brake torque link big end	Hole	12.2–12.4 0.480–0.488	12.8 0.504	Rear fork side
Rear brake torque link small end	Hole	10.1–10.2 0.3976–0.4016	10.7 0.42	Torque bolt side
Drive chain	Amount of sag	10–20 0.39–0.79		

G. Rear Cushion

Maintenance Item		Standard	Repairing Limit	Remarks
Rear cushion	Stroke	* 63.8 2.5118 ** 62 2.4409		
Rear cushion spring	Free length	* 205.1 8.0748 ** 211 8.3092	193 7.598 206 8.110	
	Tension	* 48 kg 105.84 lb ** 46.2–51.0 kg 101.87–112.46lb		Height 165.1m/m (6.5 in) Height 171m/m (6.732 in)
	Deviation from right angle	4		

H. Front Wheel

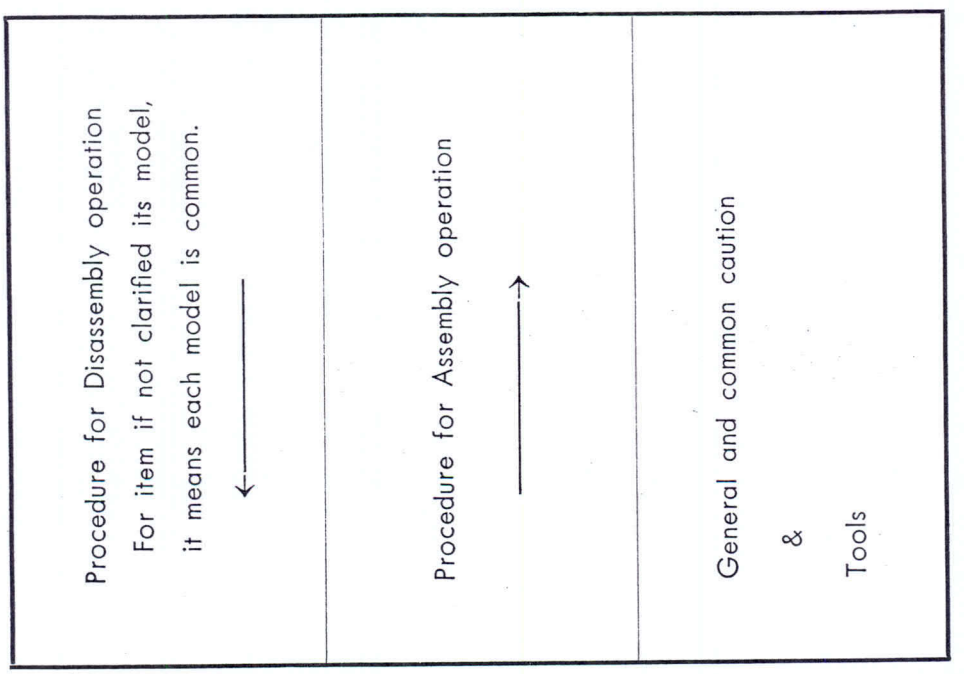
Maintenance Item		Standard	Repairing Limit	Remarks
Front wheel hub ball bearing	Axial play	0.005 0.0002	0.1 0.0039	
	Radial play	0.014–0.016 0.00055–0.00063	0.05 0.002	
Front brake panel spacer	Out. dia.	15.976–15.994 0.6290–0.6297	15.9 0.626	
	Free length	* 22.9–23.1 0.9016–0.9094		
		** 27.4–27.6 1.0787–1.0866		
Front brake panel bush and panel spacer	Clearance	0.006–0.051 0.0002–0.002	0.4 0.016	
Brake cam	Thickness	6.0 0.236		
Front brake shoe	Out. dia.	* 118.8–119.2 4.677–4.693		Cutter out dia.
		** 109.2–109.5 4.299–4.311		
Front brake lining	Thickness	3.5 0.138	2.5 0.098	
Brake drum	In. dia.	* 119.8–120.2 4.717–4.732	123 4.843	
		** 109.8–110.2 4.323–4.339	113 4.449	
Brake shoe spring	Free length	* 40 1.575	44 1.732	
		** 28.7 0.933	33 1.299	
Front axle	Out. dia.	9.95–10.0 0.392–0.394		
	Bend	0.2 0.0079	0.5 0.0197	Both ends support on " V " block, measure bend at center part
Front wheel rim	Lateral deflection	1.0 0.039	3.0 0.118	
Front tyre	Air pressure	1.5 kg/cm^2 22 lb/in^2	1.2 17	

I. Rear Wheel

Maintenance Item		Standard	Repairing Limit	Remarks
Final driven sprocket	Root diameter	154.1–154.6 6.0669–6.0866	152.6 6.00	
Rear wheel hub bearing	Axial play	0.005 0.0002	0.1 0.0039	#6301, #6003
	Radial play	0.014–0.016 0.00055–0.00063	0.05 0.002	#6301
Rear axle distance collar	Length	* 56.9–57.1 2.240–2.248 ** 54.9–55.1 2.161–2.169		
Rear wheel axle	Out. dia.	11.957–11.984 0.4708–0.4718		
	Bend	0.2 0.0079	0.5 0.0197	Both ends "V" block support measure at center part bend
Rear brake shoe	Out. dia.	* 118.8–119.2 4.677–4.693 ** 109.2–109.5 4.299–4.311		Cutter out dia.
Rear brake lining	Thickness	3.5 0.138	2.5 0.098	
Rear brake shoe spring	Free length	* 42 1.575 ** 28.7 0.933	44 1.732 33 1.299	
Rear brake cam	Thickness	6.0 0.236		
Rear brake pedal	Tread margin	20–30 0.787–1.181		
Rear wheel rim	Lateral deflecion	1.0 0.039	3.0 0.118	
Rear tyre	Air pressure	2.0 kg/cm^2 28 lb/in^2	1.5 21	

DISASSEMBLY AND ASSEMBLY

In this chapter, mainly Disassembly operation was explained, and for assembly special attention was only called for where needed, as both operation are similar.



CONTENTS

— NOTE —

To disassemble any parts of engine, you should do it after dismounting engine, except for the operation as A, B or C item where parts could be taken out without dismounting engine to proceed the operation as related in the corresponding item.

Parts which require disassembly are listed below.

Item	Model 100–102	Model 110–111	Operation procedure
			Refer to
A. Cylinder	Front cover		Fig. 2–1
	Carburetter	Inlet pipe	Fig. 2–2
	Dust guard		Fig. 2–3
	Exhaust pipe	Exhaust pipe	Fig. 2–6
B. L. Cover	Front cover		Fig. 2–1
	Step bar	Step bar	Fig. 2–8
	Gear change pedal	Gear change pedal	Fig. 2–12
	L. Cover	L. cover	Fig. 2–13
C. R. Cover	Front cover		Fig. 2–1
	Step bar	Step bar	Fig. 2–8
	Exhaust pipe, Muffler	Exhaust pipe, Muffler (Ex. 110)	Fig. 2–6 · 7
	Kick starter arm (Ex. 102)	Kick starter arm	Fig. 2–5
		Clutch wire (Ex. 111)	Fig. 2–4

1. ENGINE : Mounting & Dismounting

Disassembly Operation	Assembly Operation	Precaution Tools
1. Model 100·102 Front cover		10m/m Socket wrench 17m/m Socket wrench
2. Model 100·102 Carburetter setting nut **Model 110·111** Inlet pipe setting bolt	Tighten bolt nut to leak gas. Tightening torque 0.65kgm (60 in. lb.)	When dismounting carburetter be shut fuel cock. 10m/m Spanner
3. Model 100·102 Dust guard		10m/m Spanner
4. Model 110 Clutch wire		Cross head driver (#3) 10m/m Spanner

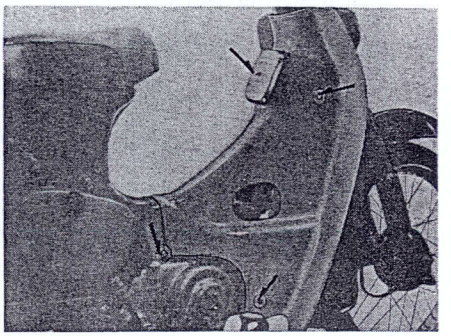


Fig. 2-1

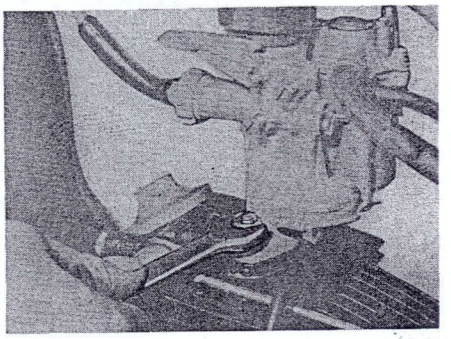


Fig. 2-2

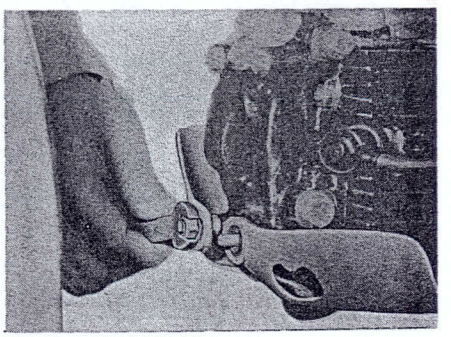


Fig. 2-3

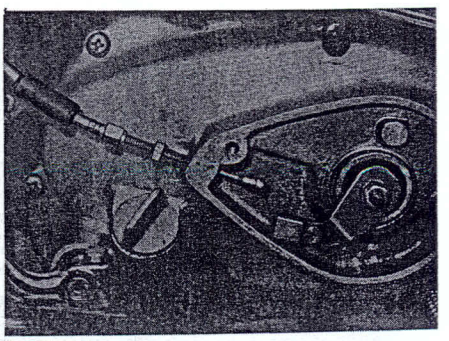


Fig. 2-4

	Disassembly Operation	Assemply Operatoin	Precaution Tools

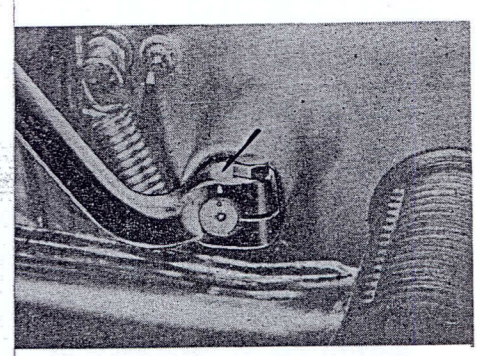


Fig. 2–5

5.

Kick starter arm — To insert the serration fit the mark punched.

10m/m Spanner

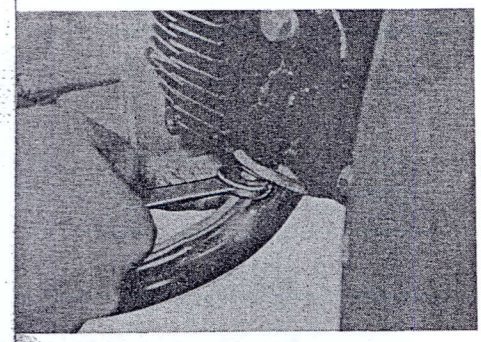


Fig. 2–6

6.

Exhaust pipe joint nut — Tighten bolt not to leak exhaust gas.

10m/m Spanner

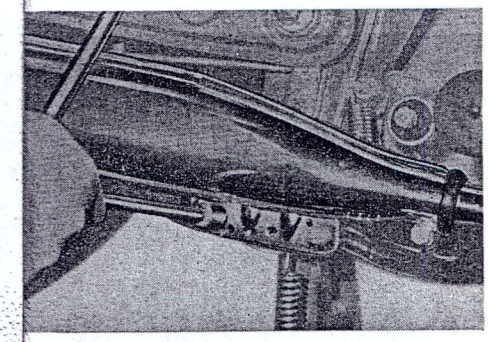


Fig. 2–7

7.

Muffler

10m/m Socket wrench

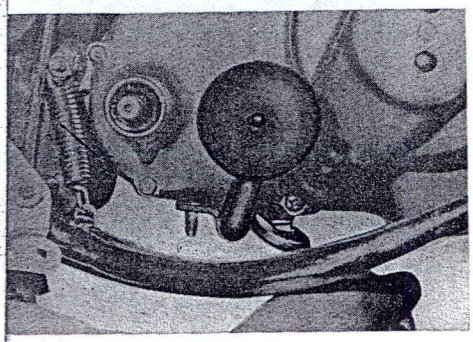


Fig. 2–8

8.

Step bar — Tightening Torque. 2.7 kgm (18 ft lb)

14m/m Spanner

Disassembly Operation	Assembly Operation	Precaution Tools

9.

Brake pedal spring

Driver (cross or fore head)

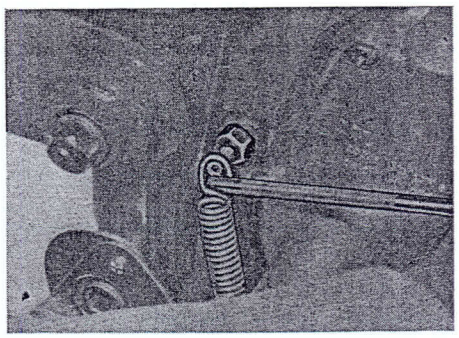


Fig. 2-9

10.

Wiring joint

Model 100

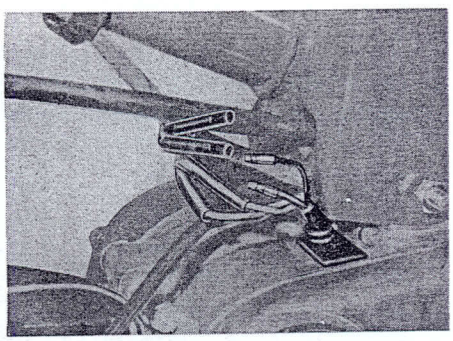


Fig. 2-10

Model 110·111

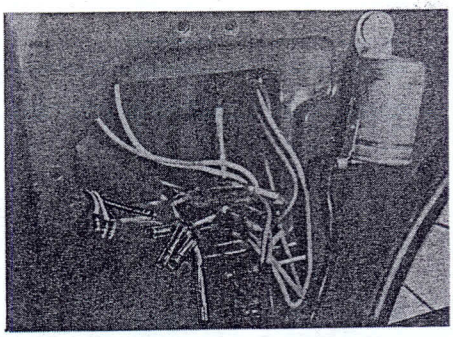


Fig. 2-11

11. **Model 102**

Wiring with Seren. a.
High tension terminal b.
Starting model cable c.

Cross head driver (#2)
10m/m Spanner

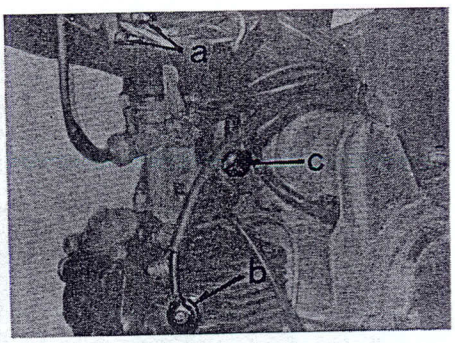


Fig. 2-12

	Disassembly Operation	Assembly Operation	Precaution Tools

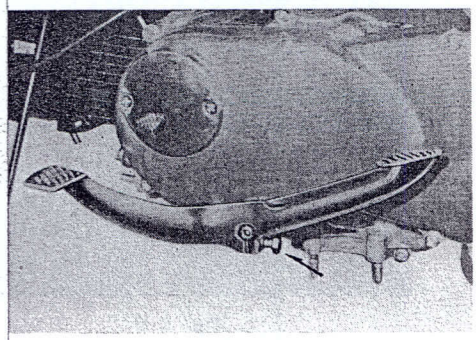


Fig. 2–13

12.

Gear change pedal — Fixing angle. seration inclination foreward from horizontal.

10m/m Spanner

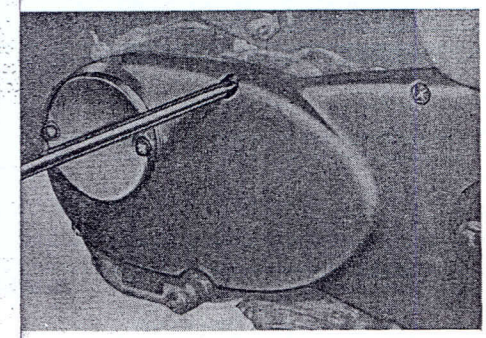


Fig. 2–14

13.

L. crank case cover
Model 102
L. crank case rear cover

Be sure not to slide screw head.

Cross head driver (#3)

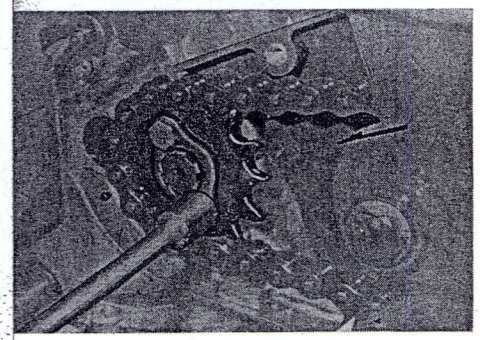


Fig. 2–15

14.

Drive sprocket
Drive sprocket cover ↑

10m/m Socket wrench

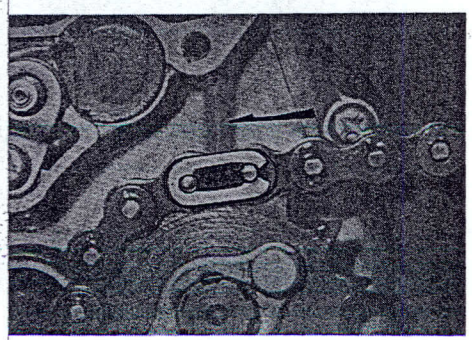


Fig. 2–16

To connect drive chain, be sure split part of joint clip to locate on the other side of rotational direction. (arrow marked)

Pliers

Disassembly Operation	Assembly Operation	Precaution Tools
15. Nut, rear engine under bolt **a** Nut, rear engine support bolt A **b**	Tightening Torque 1.5～2.0 kgm (10～15 ft lb) **Model 102** Earth cable is fitted by nut and rear engine support bolt A.	14m/m Socket wrench

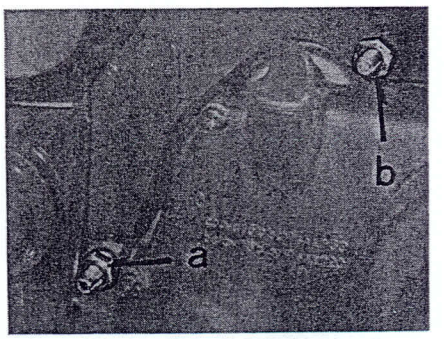


Fig. 2–17

16. Rear engine under bolt Rear engine support bolt A		Remove quietly supporting engine.

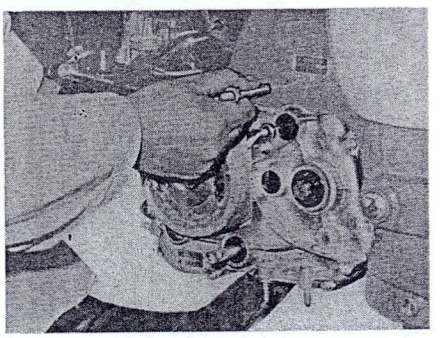


Fig. 2–18

2. ENGINE : Disassembly & Assembly

	Disassembly Operation	Assembly Operation	Precaution Tools

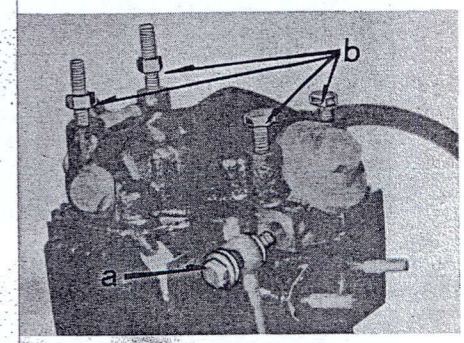


Fig. 2-19

A. Cyiinder

1.

Oil joint bolt A **a**

Cylinder head cover bolt **b**

Tightening Torque

0.7 kgm (5 ft lb)

10m/m Socket wrench

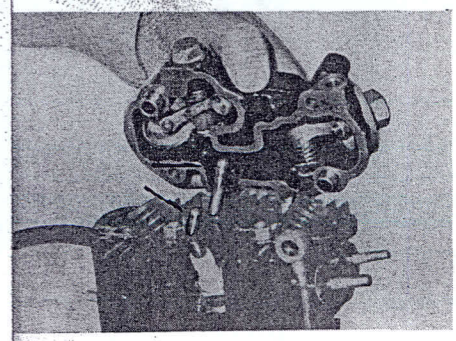


Fig. 2-20

2.

Cylinder head cover ass'y

To fix cylinder head cover, confirm the push rod ball end fits properly to Rocker arm.

Push rod ↑

Long Push rod to be used on the right side facing foreward.

10m/m Socket wrench

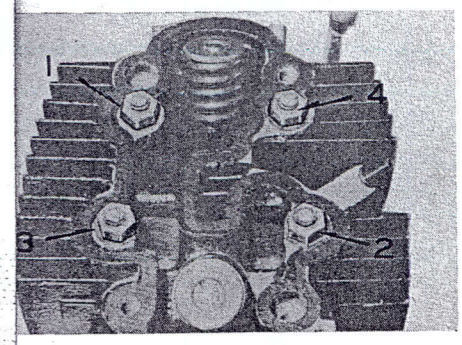


Fig. 2-21

3.

Cylinder head setting nut

To fit cylinder head, 4 nuts should be tightened successively referring to Figure B watching compression leak.

10m/m Socket wrench

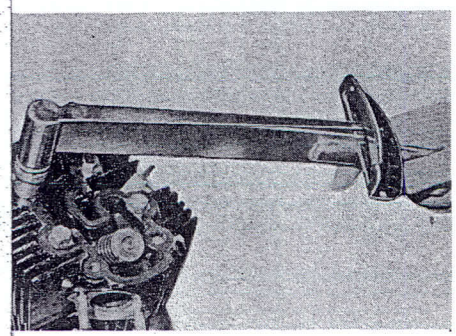


Fig. 2-22

Tightening Torque

Measure with

Torque wrench

Tightening Torque

0.8 kgm (5.9 ft lb)

Disassembly Operation	Assembly Operation	Precaution Tools

4.

Cylinder head ass'y

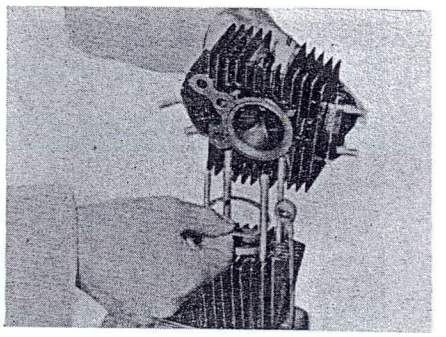


Fig. 2–23

In case of assembly, be cautious about oil leakage (rubber packing a., "O" ring b., and compression leakage (not to bite the cylinder head gasket).

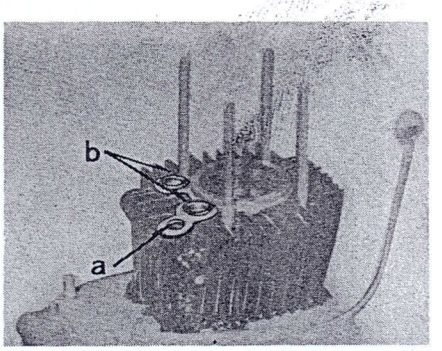


Fig. 2–24

5.

Cylinder

In inserting piston into cylinder be sure to avoid cutaway of piston ring not on the thrust direction of pistion and insert in 3 parts as top, second and oil.

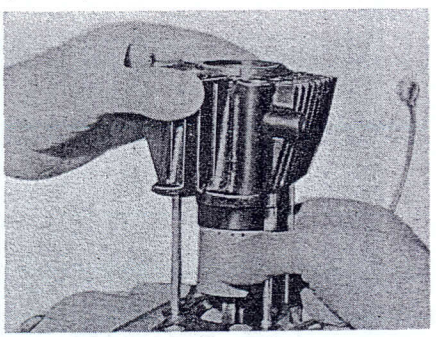


Fig. 2–25

6.

Piston

Take special attention not to drop piston pin clip into case.

Thin nose pliers

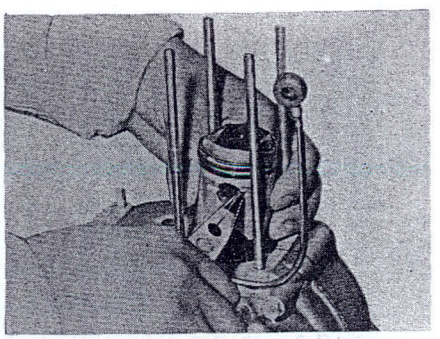


Fig. 2–26

	Disassembly Operation	Assembly Operation	Precaution Tools

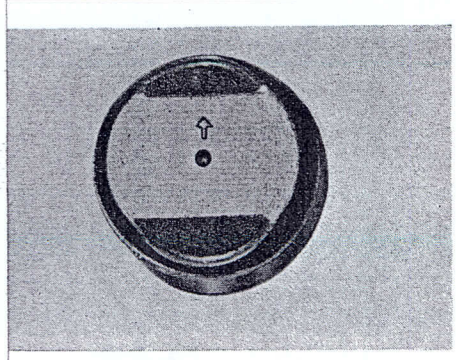


Fig. 2–27

In assemblying piston, arrow mark on the top surface of piston should point along foreward.

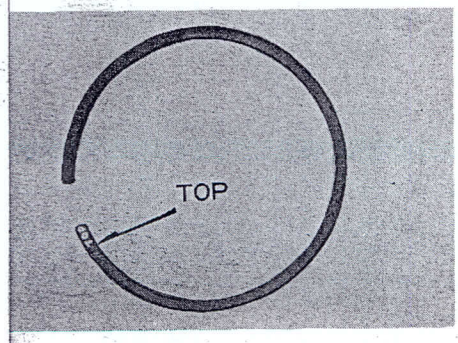


Fig. 2–28

To fit piston ring on piston, Ring mark (arrow) should point upward.

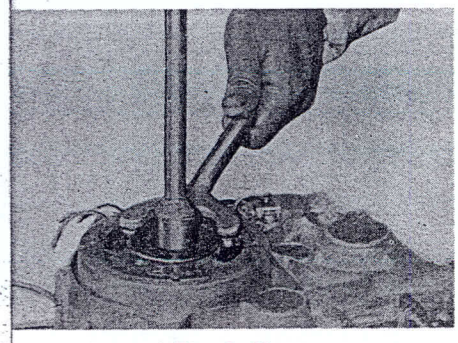


Fig. 2–29

B. L. Cover

Model 100·110·111

1.

Flywheel setting nut — Tightening Torque 2.7–3.0 kgm (19–22 ft lb)

Flywheel holder
17m/m Socket wrench

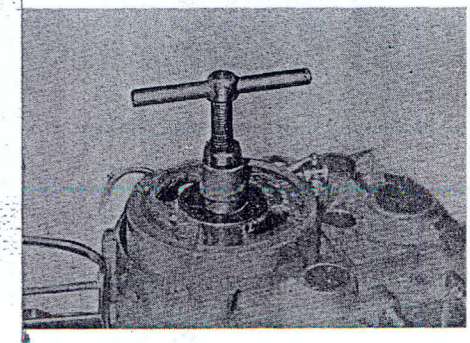


Fig. 2–30

2.

Flywheel — Be careful not to give shock to crankshaft and flywheel.

Flywheel puller

Disassembly Operation	Assembly Operation	Precaution Tools

3.

Starter ass'y — Screws be tightened evenly.

Cross head driver (#3)

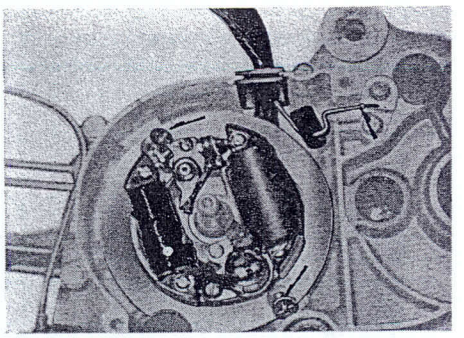


Fig. 2-31

Model 102

1.

Primary chord

Cross head driver (#2)

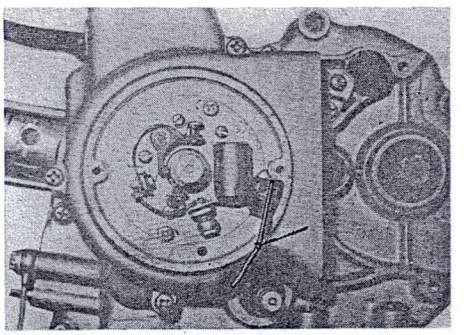


Fig. 2-32

2.

L. crank case cover

Cross head driver (#3)

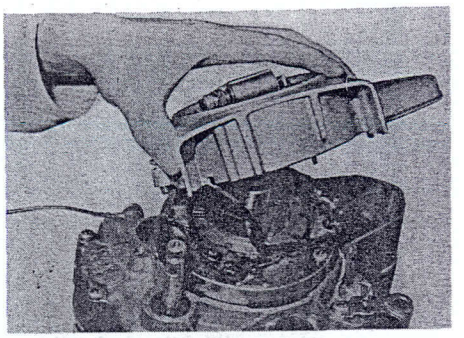


Fig. 2-33

3.

A.C. Dynamo starter ass'y — In assemblying starter, be careful not to bite elective wire system.

Cross head driver (#3)

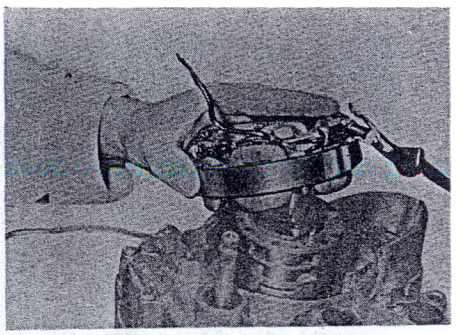


Fig. 2-34

	Disassembly Operation	Assembly Operation	Precaution Tools

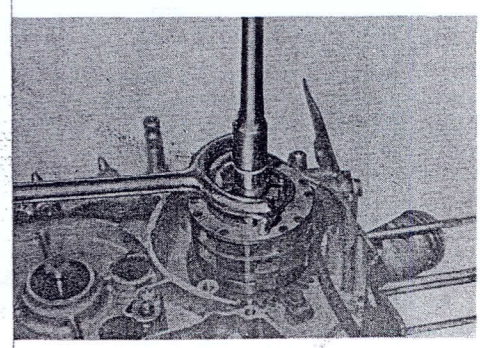


Fig. 2-35

4.

A.C. Dynamo rotor setting bolt

14m/m Socket wrench
Dynamo holder

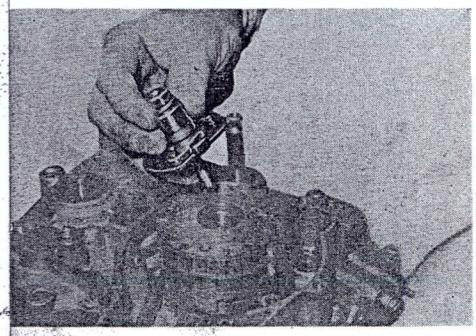


Fig. 2-36

5.

Spark advancer

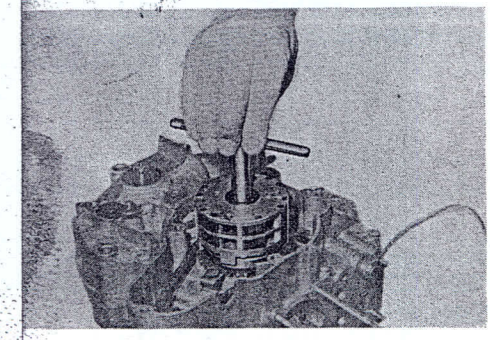


Fig. 2-37

6.

A.C. Dynamo rotor

Dynamo rotor puller

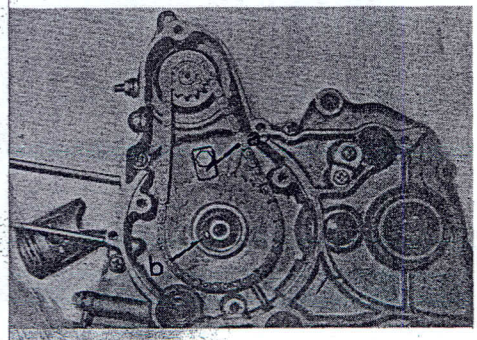


Fig. 2-38

7.

Starting sprocket set plate **a**
Woodruff key **b**

Fit woodruff key securely.

10m/m Socket wrench
Fore head driver

Disassembly Operation	Assembly Operation	Precaution Tools

8.

Starting motor

10m/m Socket wrench

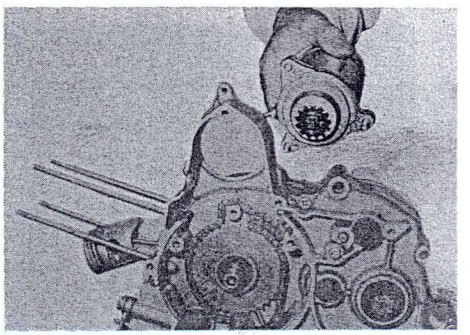


Fig. 2–39

9.

Starting sprocket

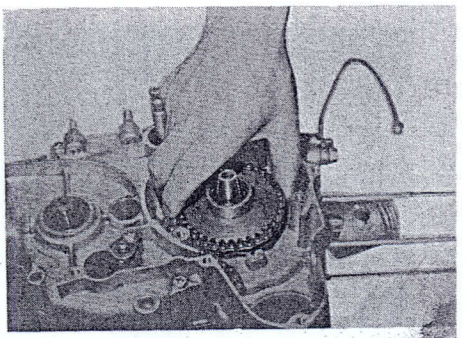


Fig. 2–40

C. R. Cover

1.

R. crank case cover Tight cover evenly.

Cross head driver (#3)

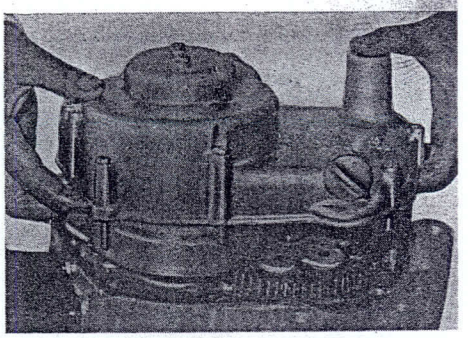


Fig. 2–41

2.

Washer
Clutch lever
Spring
Oil guide
Ball bearing
Bearing shell

Model 110

Oil guide
Ball bearing
Bearing shell

Model 100·102·111

As clutoh lever fixing is serration system, be careful to locate it along AA'-line as shown in the Figure.

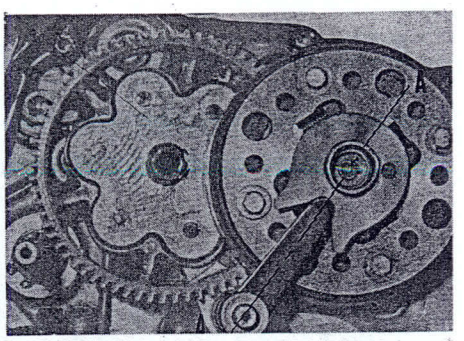
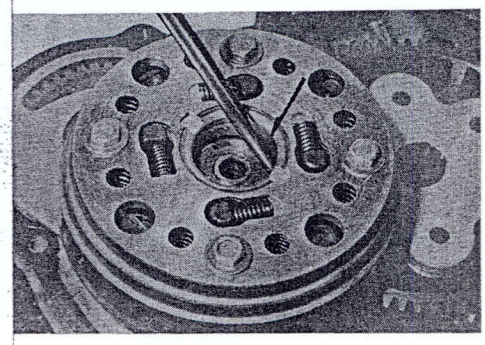
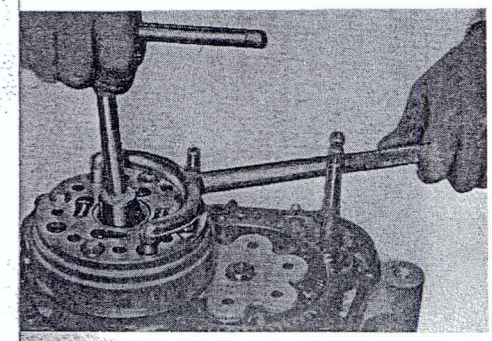
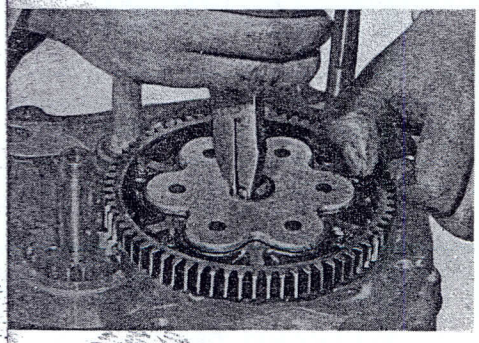
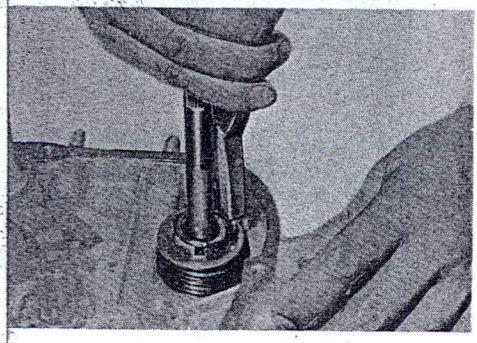


Fig. 2–42

	Disassembly Operation	Assembly Operation	Precaution Tools
 Fig. 2–43	3. Lock washer	Turn the end of torque after tightening the Locknut perfectly, if not the torque and nut coincides each other lock it turning to the tightening direction without loosening nut.	Fore head driver
 Fig. 2–44	4. Clutch ass'y	In assemblying, sliding parts of clutch center and drive gear should be oiled thoroughly.	Clutch outer holder 14m/m Lock nut pin spanner
 Fig. 2–45	5. Primary driven gear		Set ring pliers
 Fig. 2–46	6. Kick starter spring		Set ring pliers Fore head driver

Disassembly Operation	Assembly Operation	Precaution Tools
7. Shift drum stopper	Tightening torgue 0.7 kgm (5 ft lb)	10m/m Socket wrench

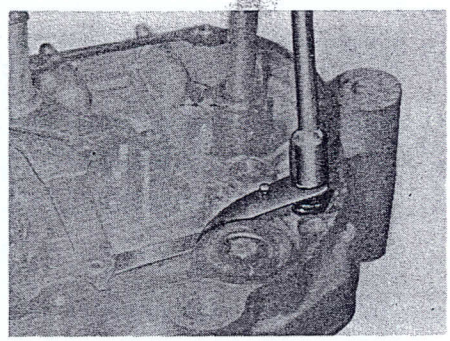


Fig. 2–47

8. Gear shift spindle ass'y	Check position of gear shift arm claw be even distribution on both sides to the pin of gear shift drum.	On disassembly, oil drains out thru hole of gear shift spindle, arrange oil pan.

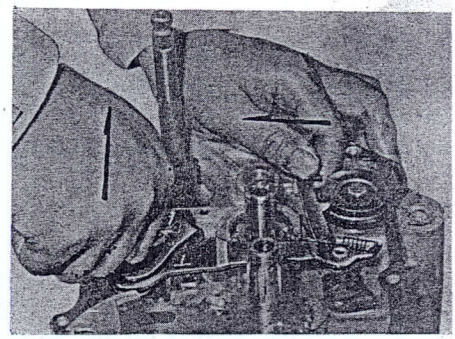


Fig. 2–48

On assemblying gear shift spindle check the movement of 3 points (**a** mark) and no sign of shift return spring pin **b**.

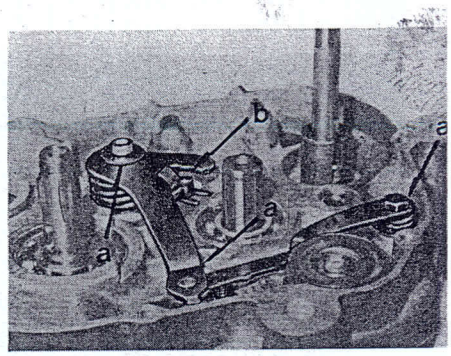


Fig. 2–49

9. Oil strainer Cam gear, Cam shaft	Cam gear setting bolt Tightening torque 1.8～2.1 kgm (13～15 ft lb)	

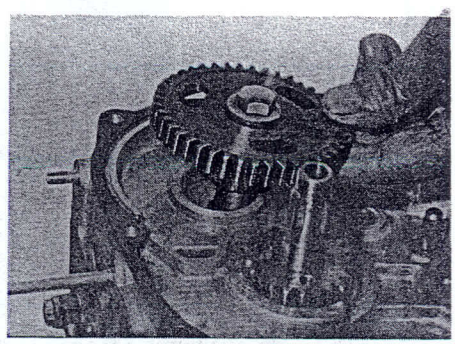


Fig. 2–50

	Disassembly Operation	Assembly Operation	Precaution Tools

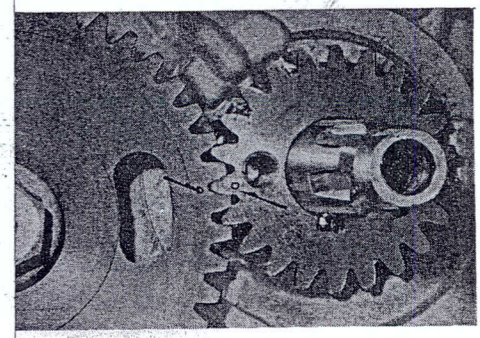


Fig. 2–51

To combine cam, timing gear, be sure to face to face each mark.

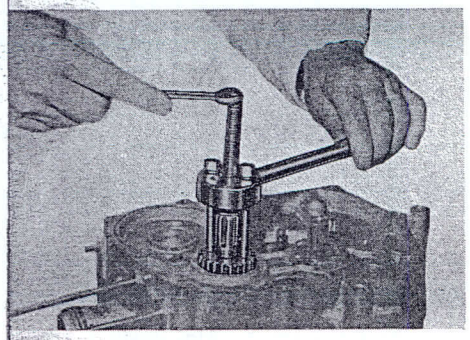


Fig. 2–52

10. Timing gear

Disassembly of R. L. Case, is possible without taking off timing gear.

Timing gear puller
10m/m Socket wrench

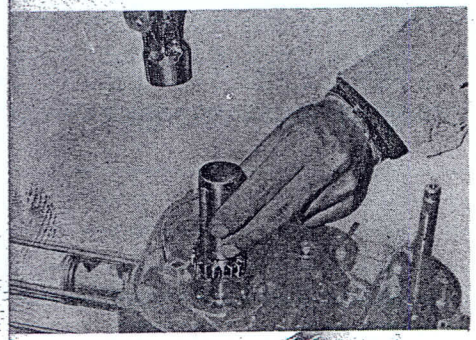


Fig. 2–53

Knock in timing gear.

Timing gear driver
Hammer

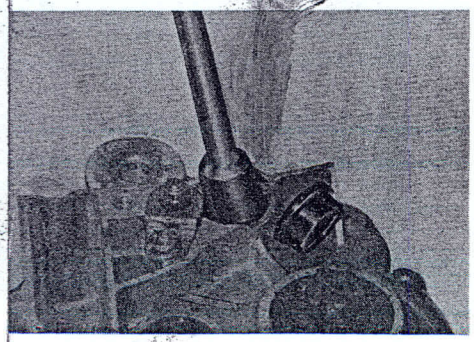


Fig. 2–54

D. Crank Case

1. Gear shift drum setting bolt

10m/m Socket wrench

Disassembly Operation	Assembly Operation	Precaution Tools

2.

Crank case setting screw & bolt

Tighten evenly.

Cross head driver (#3)

10m/m Socket wrench

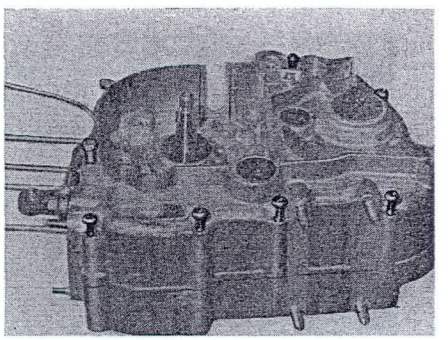


Fig. 2–55

3.

R crank case

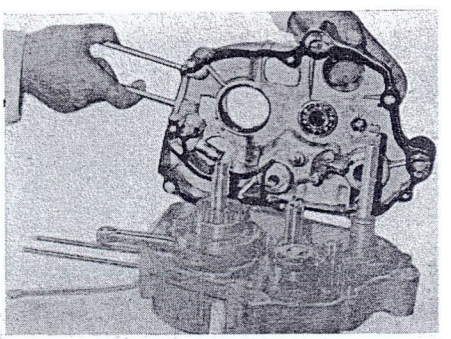


Fig. 2–56

Check smooth rotation

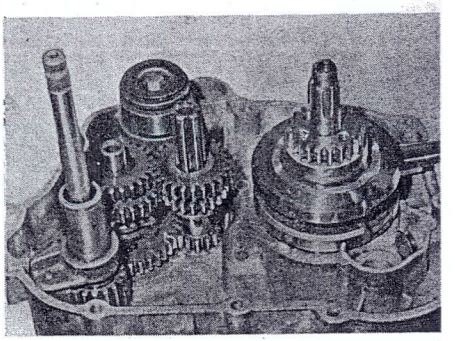


Fig. 2–57

Kick starter spindle to be set in crank case at **a**. **b**. location.

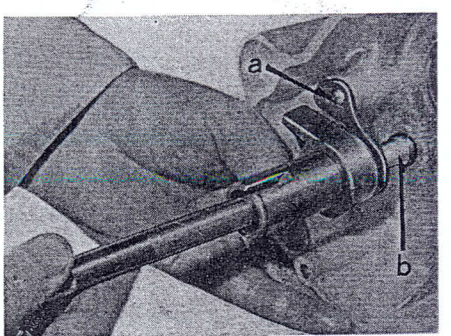


Fig. 2–58

	Disassembly Operation	Assembly Operation	Precaution Tools

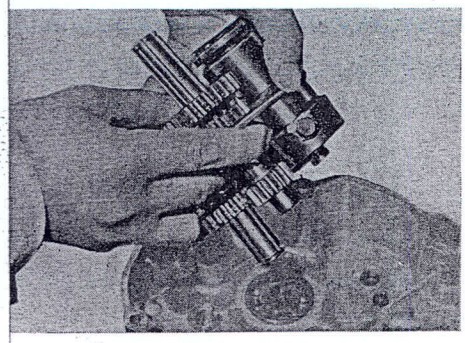


Fig. 2–59

Way of setting to crank case.

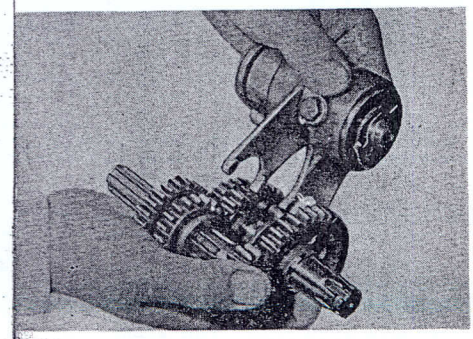


Fig. 2–60

Way of setting of gear shift drum.

3. ENGINE : Minor Overhaul and Assembly

Overhaul Operation	Assembly Operation	Precaution Tools

A. Cylinder

1. Valve

Valve lifter

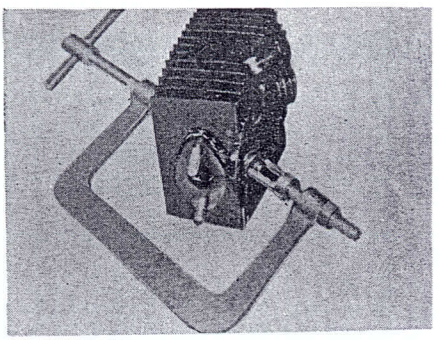


Fig. 2–61

Rubbing of valve

Valve seat cutter

Cutter holder

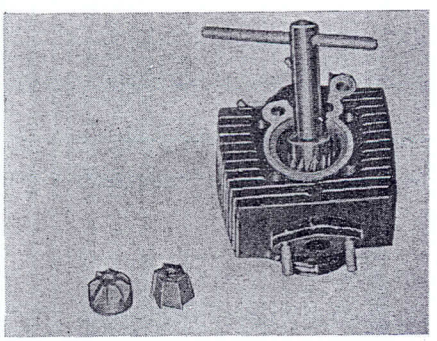


Fig. 2–62

B. R. Cover

1. Clutch

Model 100·102·111

Under fixing state of clutch, check the drive gear rotates smoothly when turned to the arrow direction and adheres when turned to the opposite direction.

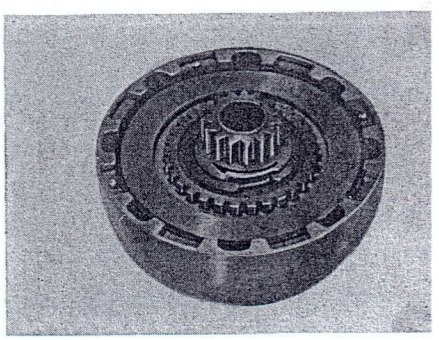


Fig. 2–63

Model 110

To assemble clutch, prepare tools shown in the picture.

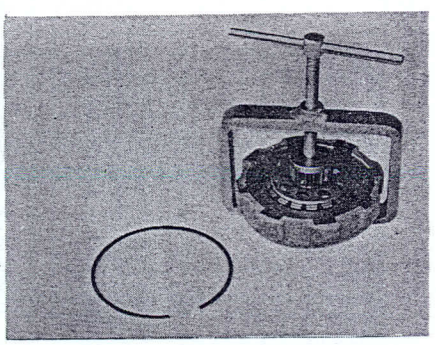


Fig. 2–64

	Overhaul Operation	Assembly Operation	Precaution Tools

C. Crank Case

1.

Transmission gear — In setting be cautious for front and back surface of gear.

In case of rotational direction is fixed by spline be cautious in setting for fittness with spline groove, and in case of axial direction is fixed, be cautious for spline washer. — Ring center

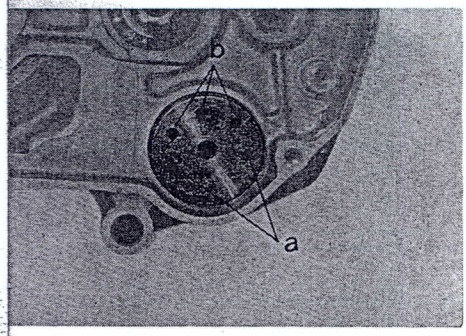


Fig. 2-65

2.

Gear shift drum pin — **a** part – short pin, **b** part – long pin are needed in fixing.

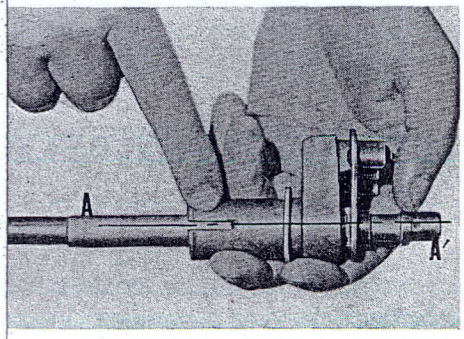


Fig. 2-66

3.

Kick starter spindle — Serration fitting with kick starter rachet. Check oil hole of spindle be located on the same line with rachet gap.

4. FRAME: Overhaul & Assembly

Disassembly Operation	Assembly Operation	Precaution Tools

A. Handle

1. Throttle cable

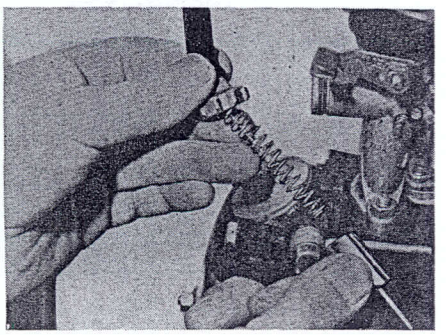


Fig. 2-67

2. Front brake cable

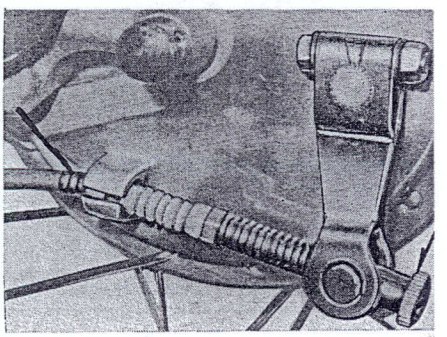


Fig. 2-68

3. Model 100·102
   Speedometer cable

Pliers

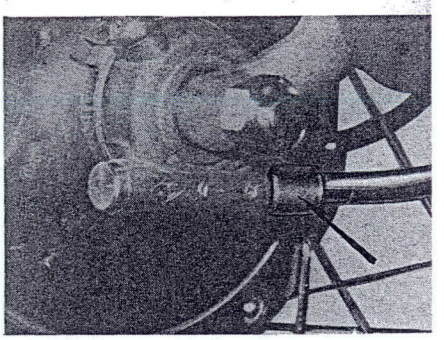


Fig. 2-69

4. Model 110
   Clutch wire

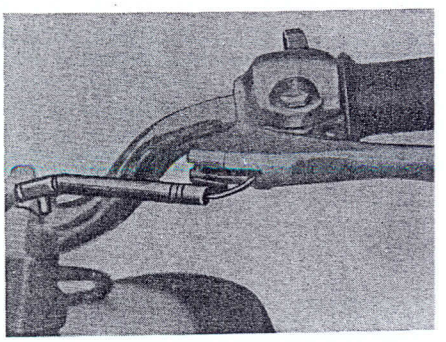


Fig. 2-70

	Disassembly Operation	Assembly Operation	Precaution Tools

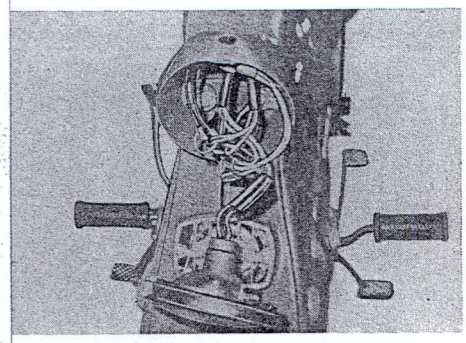


Fig. 2–71

5.

Joint of wiring

Cross head driver (#2)

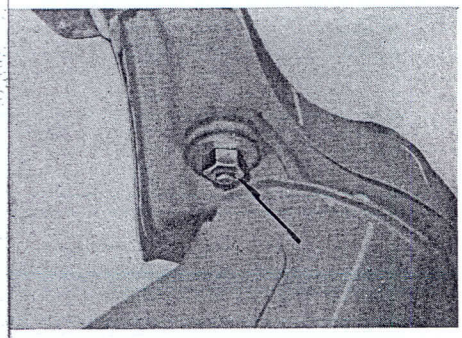


Fig. 2–72

6. **Model 100•102**

Handle setting nut

Model 110•111

Handle setting bolt

Tightening Torque

3.0 kgm (20 ft lb)

Model 100•102

14m/m Spanner

Model 110•111

10m/m Socket wrench

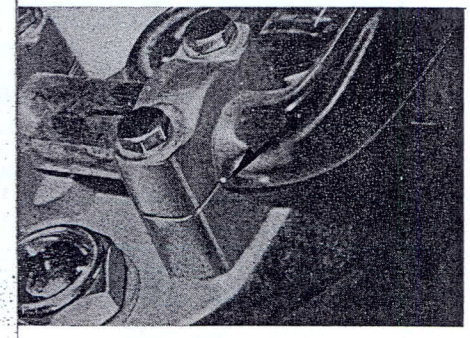


Fig. 2–73

Model 110•111

To fit Handle, punch mark on the pipe should be located on the border between upper holder and under holder.

Model 110•111

As Hand setting bolt, longer bolt facing driver in driving should be used posture.

Set and clip wire and cable securely.

Disassembly Operation	Assembly Operation	Precaution Tools

B. Front Fork

1. Model 110·111

Front brake torque link — Tightening Torque 3.0 kgm (20 ft lb)

14 m/m Socket wrench

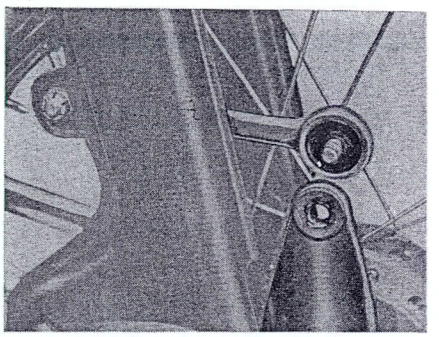


Fig. 2–74

2.

Front wheel axle nut — Tightening Torque 3.5–4.5 kgm (25–35 ft lb)

17 m/m Socket wrench

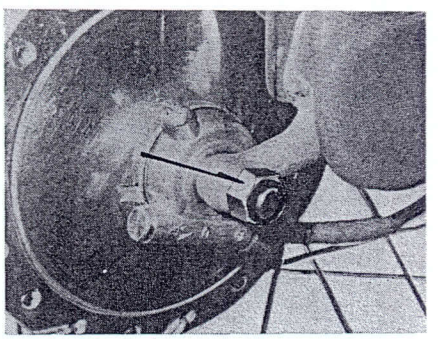


Fig. 2–75

3.

Front wheel — Before fitting, grease on ball bearing perfectly, and also inside panel slightly. — Be careful for Bearing in the wheel hub not to get dirt on the ground.

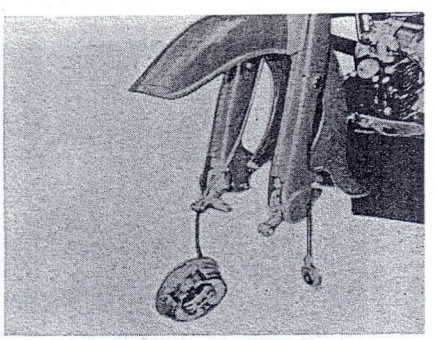


Fig. 2–76

4.

Steering handle ass'y — Refer. A. — Refer. A.

	Disassembly Operation	Assembly Operation	Precaution Tools

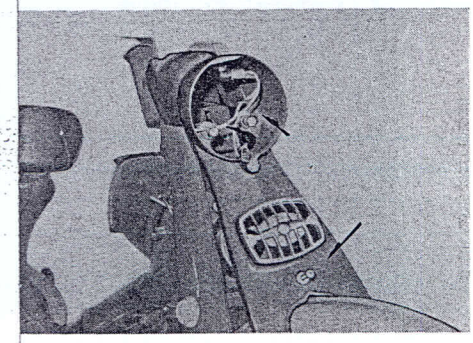


Fig. 2-77

5.

Head light case

10㎜ Socket wrench
Cross head driver (#3)

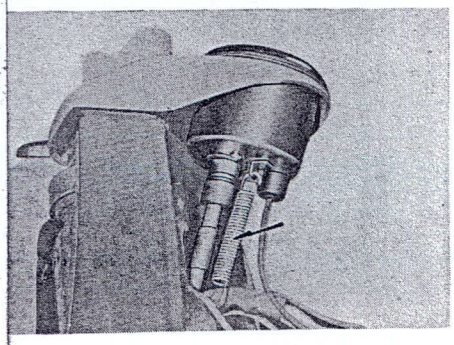


Fig. 2-78

6. **Model 110·111**

Speedometer

After inserting each cable, set by spring.

Pliers

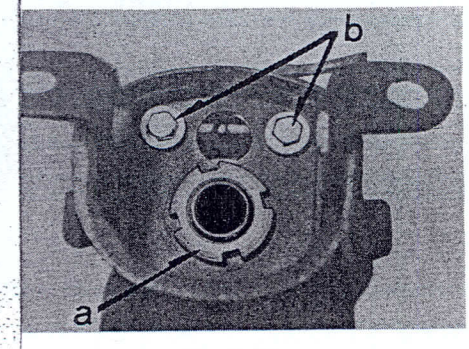
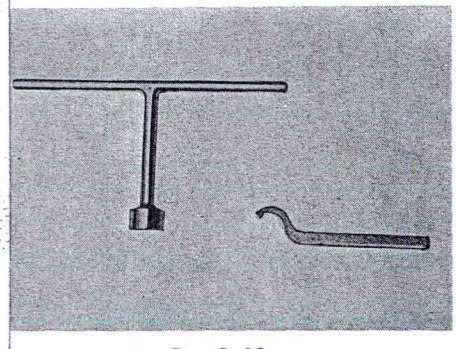


Fig. 2-79

7.

<u>Model 100·102</u>

Steering head stem nut **a**



To loosen stem nut, it is early done by tightening top thread a little by pin spanner.

Disassembly Operation	Assembly Operation	Preca..tion Tools

Model 110·111

Steering heat stem nut

29m/m Socket wrench

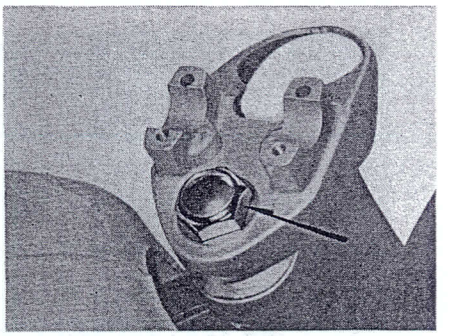


Fig. 2–81

Fork top bridge plate setting bolt

14m/m Socket wrench

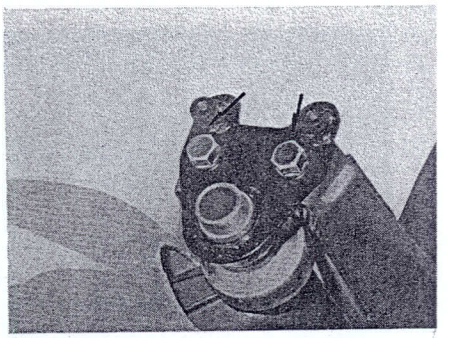


Fig. 2–82

8.

Steering head top thread

Steering top cone rase

On tightening, be careful not to have play on handle, and also not to be heavy.

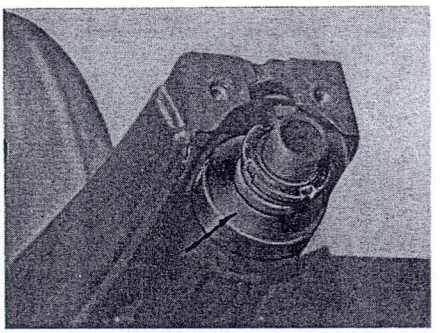


Fig. 2–83

Wipe out dirty grease and fill up new grease.

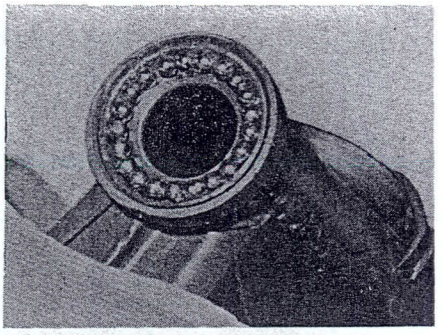


Fig. 2–84

	Disassembly Operation	Assembly Operation	Precaution Tools

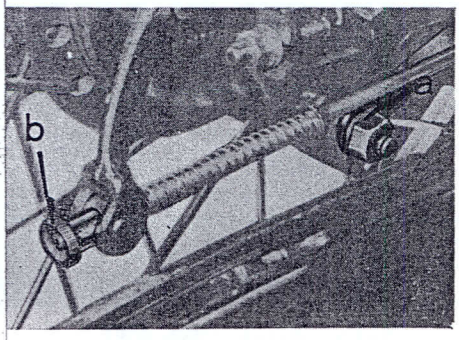


Fig. 2–85

C. Rear Fork

1.

Rear brake torque link **a** Rear brake rod **b**	Don't forget ratch clip after tightening nut of Torque link bolt.	14 m/m Spanner

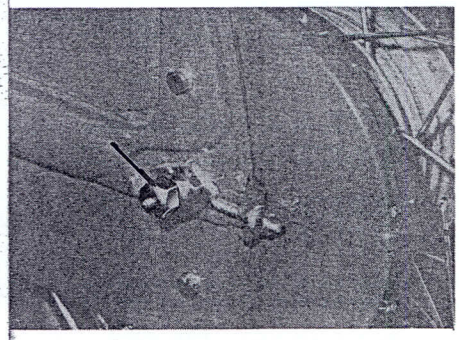


Fig. 2–86

2.

Axle nut	Set torque link on panel before nut is tightened. Axle nut Tightening Torque 3.5–4.5 kgm (25–35 ft lb)	Wheel can be taken out without taking off Rear axle sleeve nut. 17 m/m Socket wrench

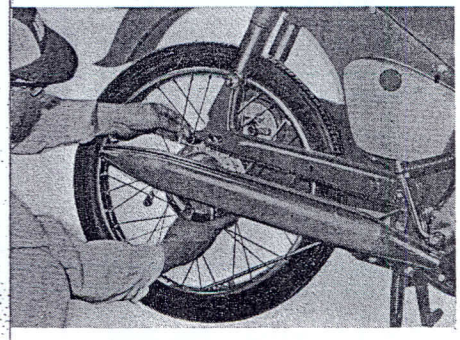
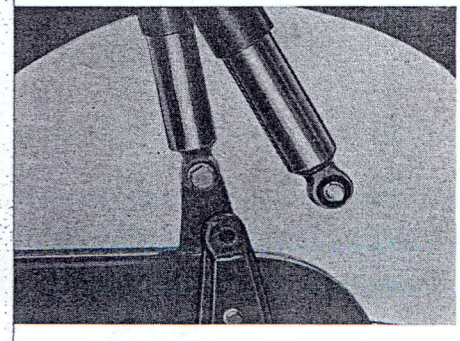


Fig. 2–87

3.

Rear wheel	After greasing on Ball Bearing, and inside panel slightly, fix it putting with oil seal and O-ring.	



F g. 2–88

4.

L. Rear cushion	Tightening Torque 4.5 kgm (30 ft lb)	17 m/m Socket wrench 17 m/m Spanner

Disassembly Operation	Assembly Operation	Precaution Tools
5. Drive chain case		10m/m Socket wrench

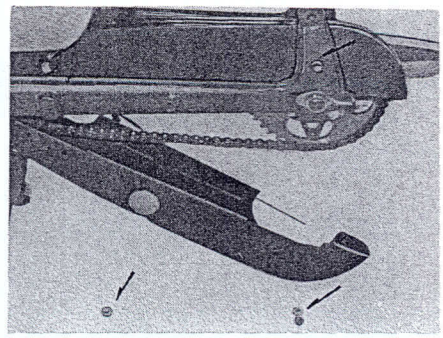


Fig. 2-89

6. Finish driven flange ass'y	Rear axle sleeve nut Tightening Torque 6.0–6.3 kgm (40–50 ft lb)	23m/m Spanner

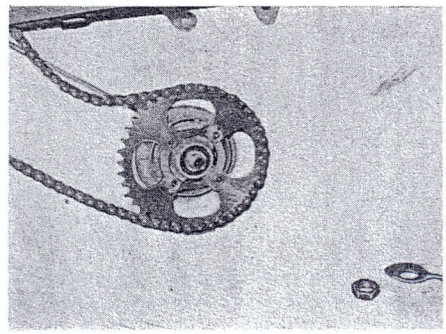


Fig. 2-90

7. R. Rear cushion	Refer. C-4	Refer. C-4

8. Rear axle nut	Tightening Torque 4.5 kgm (30 ft lb)	17m/m Socket wrench
Rear fork pivot bolt	Tightening Torque 6.0 kgm (40 ft lb)	

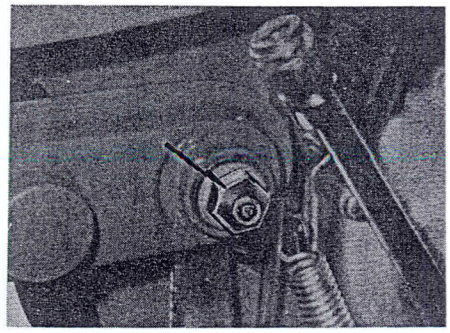


Fig. 2-91

	Disassembly Operation	Assembly Operation	Precaution Tools

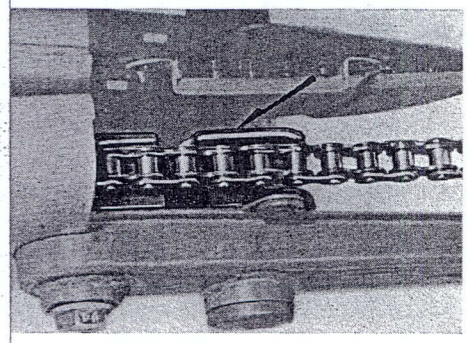


Fig. 2-92

Drive chain case packing should be fitted securely.

5. FRAME : Minor Overhaul & Assembly

Disassembly Operation	Assembly Operation	Precaution Tools
A. Handle		
1. Model 100·102		
Speedometer		Pliers 9m/m Spanner

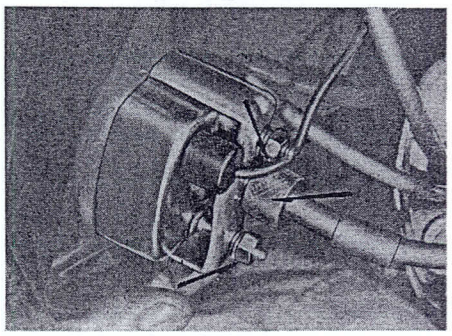


Fig. 2-93

2.		
Throttle wire	Before assembly put grease on throttle cable hinge and in throttle grip pipe. Before assembly feed oil thoroughly wire and cable to move lightly.	Cross head driver (#2)

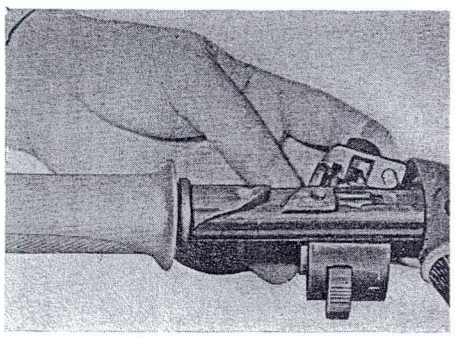


Fig. 2-94

B. Front Fork		
1.		
Front fender	Tightening Torque 3.0 kgm (20 ft lb)	14m/m Spanner

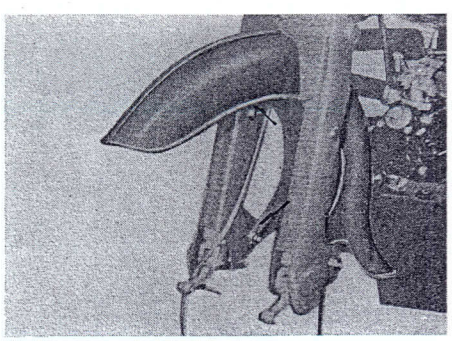


Fig. 2-95

2.		
Front cushion, Front arm ass'y	In assemblying don't forget to grease.	Installing or removal is same spot as No. 1. 14m/m Spanner

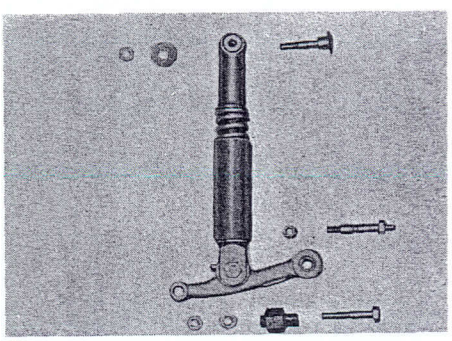


Fig. 2-96

	Disassembly Operation	Assembly Operation	Precaution Tools

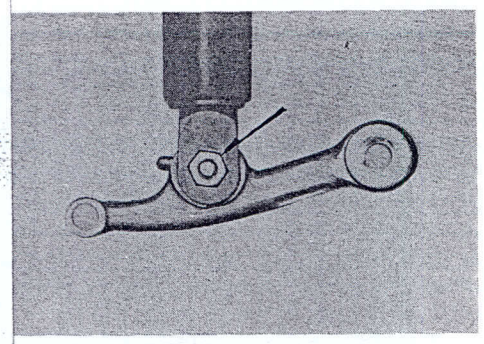


Fig. 2–97

3.

Front arm

Be cautious there are R. L.

14m/m Socket wrench

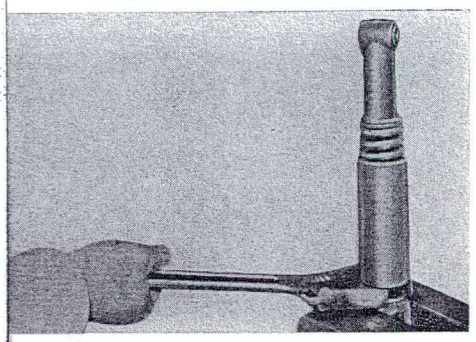


Fig. 2–98

4.

Front cushion

Part should be replaced as unit if found defect or deformation on Damper rod of Damper or oil leak.

Adjust angle wrench

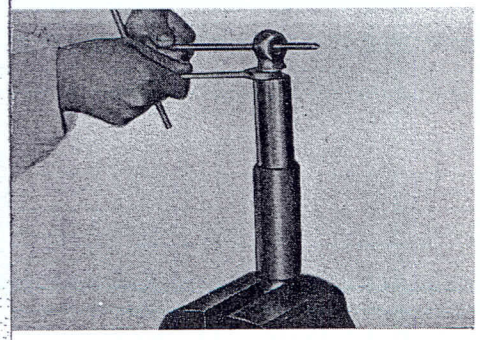


Fig. 2–99

C. Rear Fork

1.

Rear cushion

Part should be replaced as unit if found defect or deformation on Damper rod also any grease or oil leak from rod part.

Model 100·102

19m/m Spanner

Model 110·111

21m/m Spanner

CONSTRUCTION

CONTENTS

1. LUBRICATING SYSTEM

A. Kinds of lubricating method

There are several methods to lubricate engine. The first one is called spraying method by which oil sprayed simply by spoon attached on the big end of connecting rod, the next is called pressure method by which oil is feeded by pressure to crank shaft and Cylinder head etc., and the third one is pressure spray method combined above two methods. As for pressure feed pump of Lubricating Oil, plunger pump or gear pump are generally used. On the other hand we classify them Dry Sump method and wet method, the former having outside oil tank with feeding, and returning pumps and the latter having crank case as oil pump.

B. Lubricating system adopted by HONDA-50

We adopt wet sump method by connecting rod and mission gear and at cylindar head semi-compulsory lubrication is done thru spiral groove on the camshaft bearing part. Lubricating system is divided to 3 parts.

Cylindr, piston

Lubricating oil is feeded by cam gear rotation thru bottom of right cover to oil strainer complete, then to crank case sump, at where oil is scooped and sprayed to cylinder, piston and crank shaft by oil splasher extended from the big end of connecting rod. (Fig. 3-1)

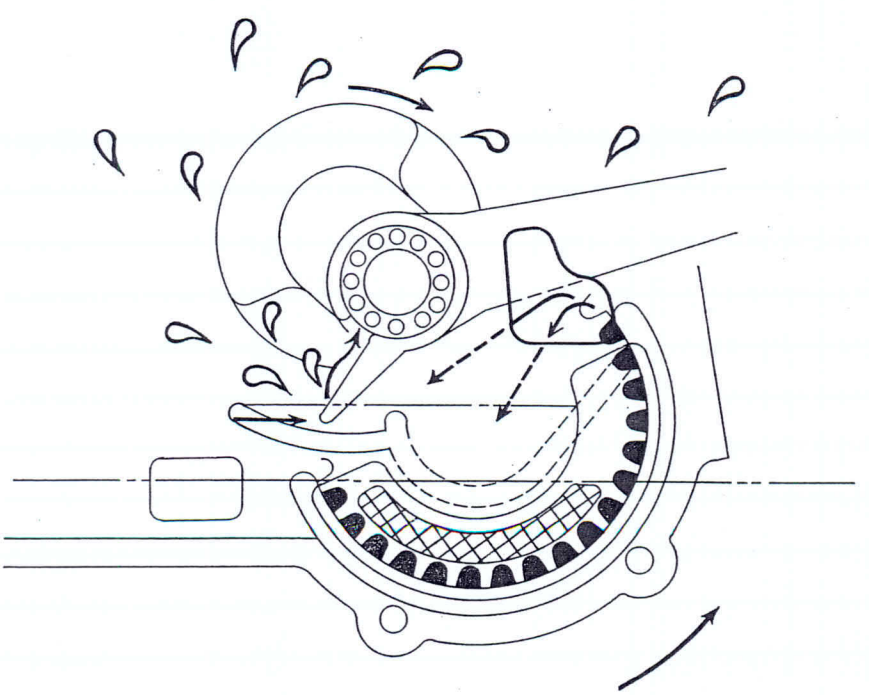


Fig. 3 - 1.

Cylinder head

Lubricating oil feeded by spiral groove on the bearing surface of cam shaft thru oil pipe up to upper part of cylinder head cover, to lubricate rocker arm etc and return thru returning hole in Cylinder Head down to crank case sump. (Fig. 3-2)

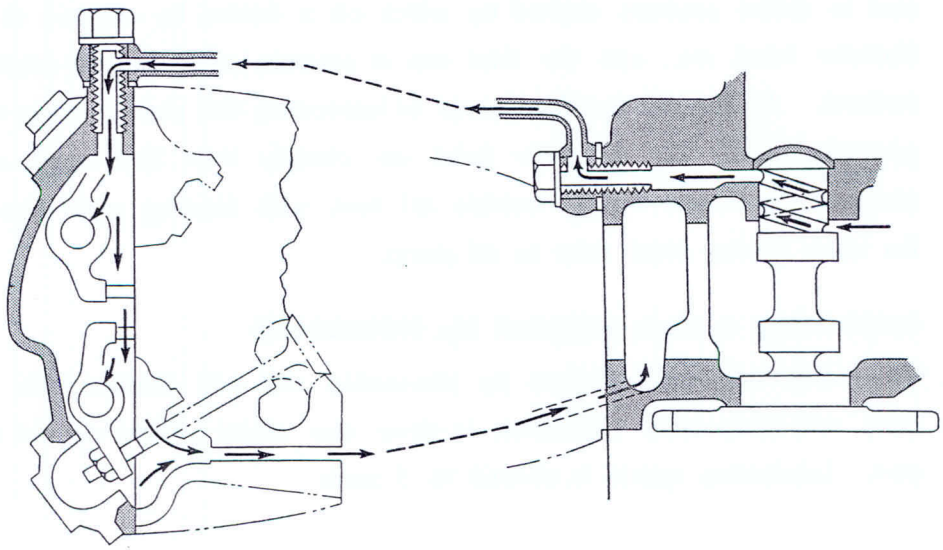


Fig. 3-2.

Transmission

Each gear and lower part of clutch are immersed in oil and lubricated by spray on rotation.

MEMO

2. CAM. VALVE MECHANISM

Inlet and Exhaust valve inclined each other opporedly in the dome shaped combustion chamber is operated by Rocker arm thru cam gear, valve lifter and push rod. This fundamental mechanism of 4 cycle engine can endure high speed rotation by smooth operation and ample lubrication.

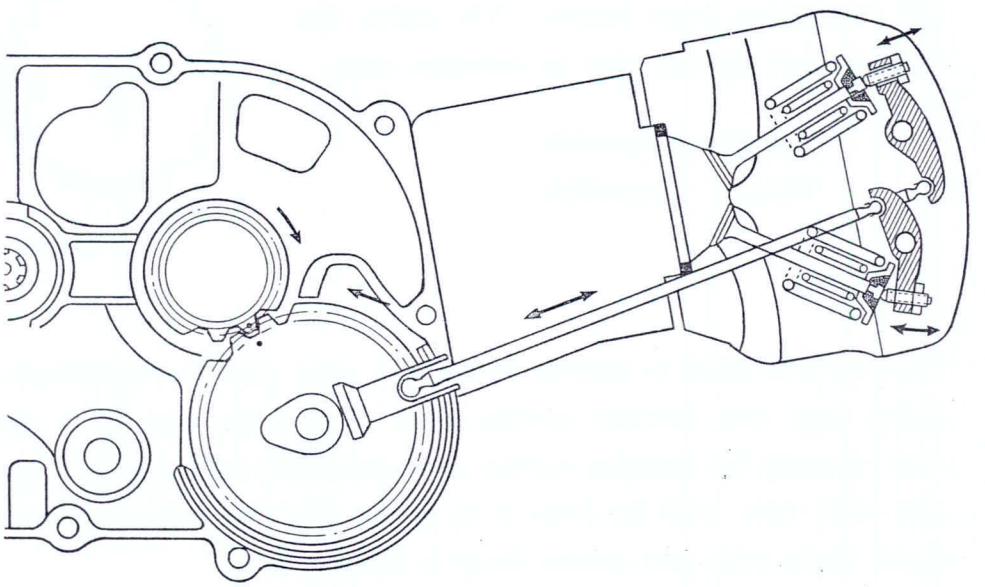


Fig. 3-3.

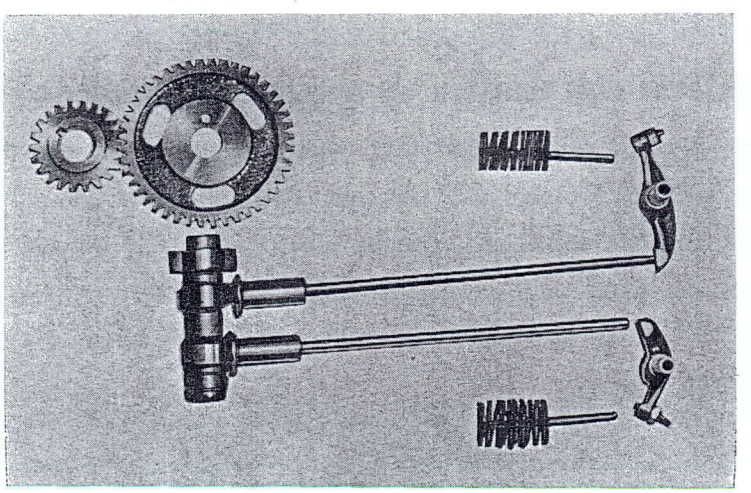


Fig. 3-4.

To mate timing gear and cam gear, punch marks on each gear should be face to face to adjust valve timing.

3. TRANSMISSION

A. Operation and kinds of transmission

Transmission to transmit power is the media to convey torque by meshing gears of different teeth each other. In case of combination of small gear (teeth A) of driving side (as Fig. 3–5) and larger gear (teeth B) of driven side, the driven side rotation decreases with transmitting large torque. We define this ratio of each teeth of gear as reduction ratio.

Reduction ratio = A/B
Torque ratio = B/A.

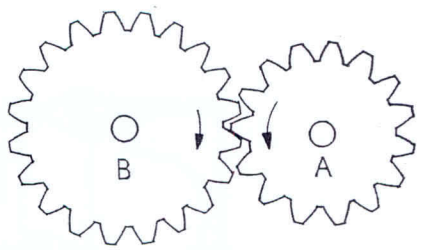


Fig.3- 5.

There are two kinds in meshing transmission gear used for autobicycle, i.e, selective sliding type and constant meshing type. The former type is to change reduction ratio properly by changing meshing gear each other by sliding shift gear operated by gear shift fork. And the latter is to do by operating arbitary gear thru a kind of clutch where each gear rotates freely in meshing.

B. Construction and function of Transmission of Honda 50.

Advance 3 steps of constant mesh type was adopted so to develop climbing and acceleration performance fully corresponding to engine power. 5 sets of mission gear gear set on main shaft and counter shaft are fixed to the rotational direction by spline or are fixed to the axial direction by set-ring. For the former type need pre-caution for mating with spline groove, and for the latter be sure to fit thrust washer and smooth running.

FUNCTION OF TRANSMISSION

Low

Main Shaft → Low gear → Transmission gear shiftter → Counter shaft.

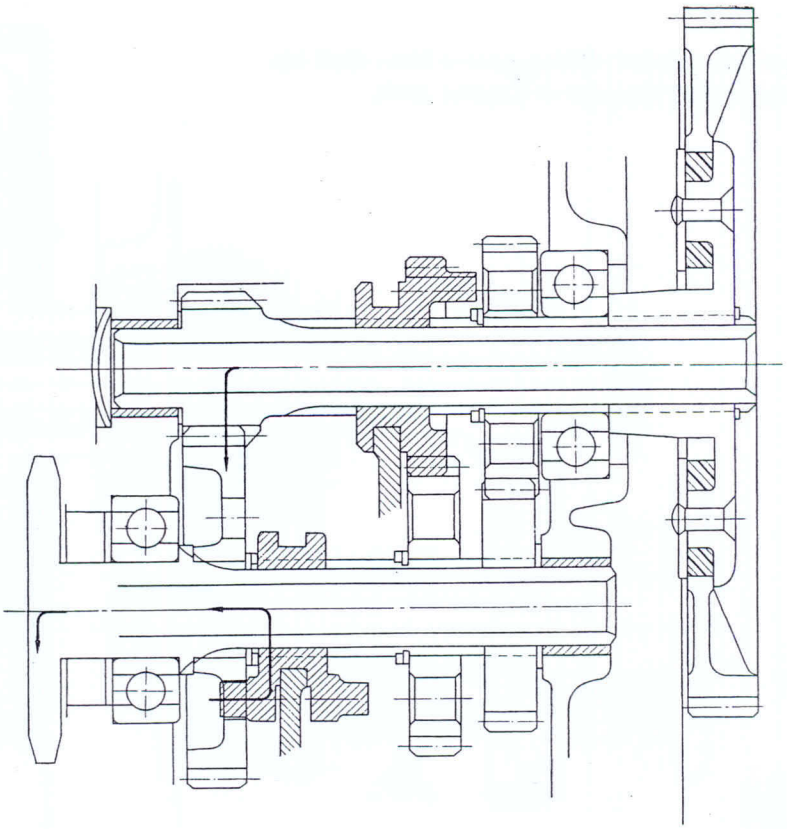


Fig. 3- 6.

Second

Main Shaft→Transmission shifting gear→Second gear→ Transmisssion gear shifter→Couater shaft.

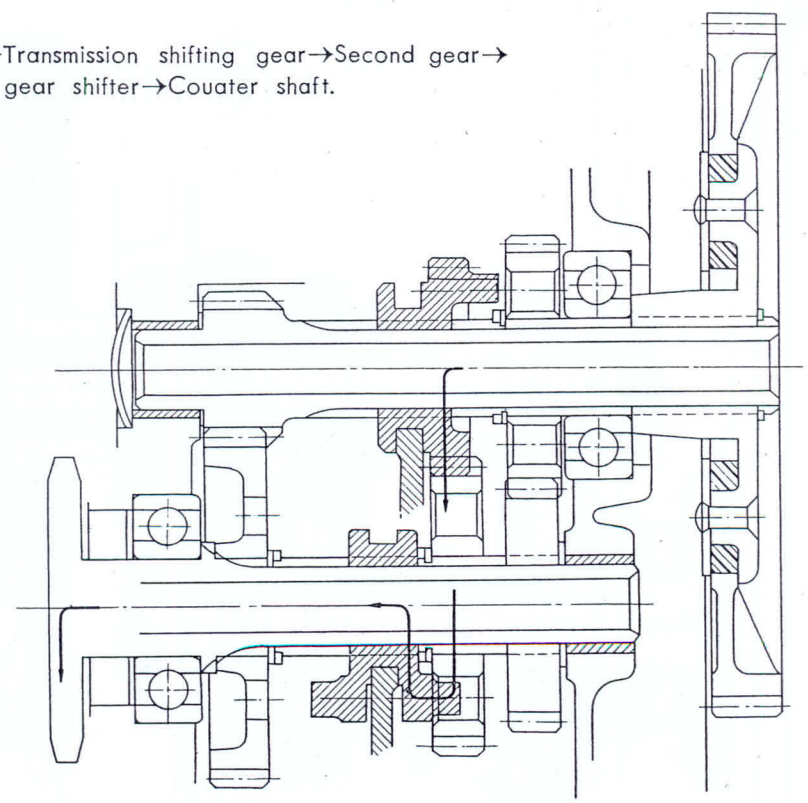


Fig. 3 - 7.

Top

Main shaft→ Transmission shifting gear→ Main shaft top gear→ Counter shaft top gear→ Counter shaft.

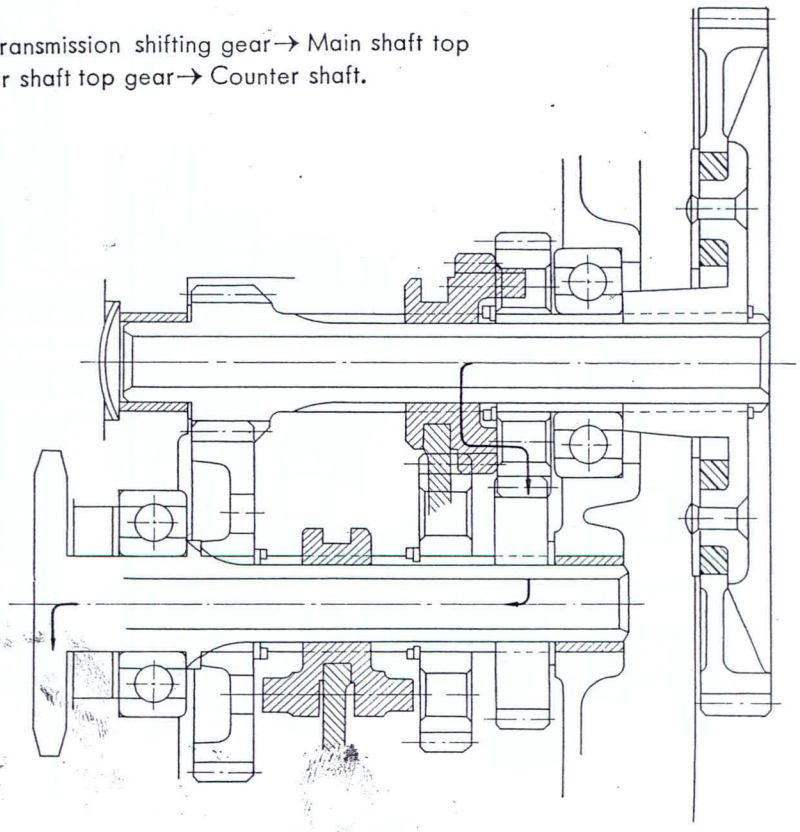


Fig. 3 – 8.

Neutral

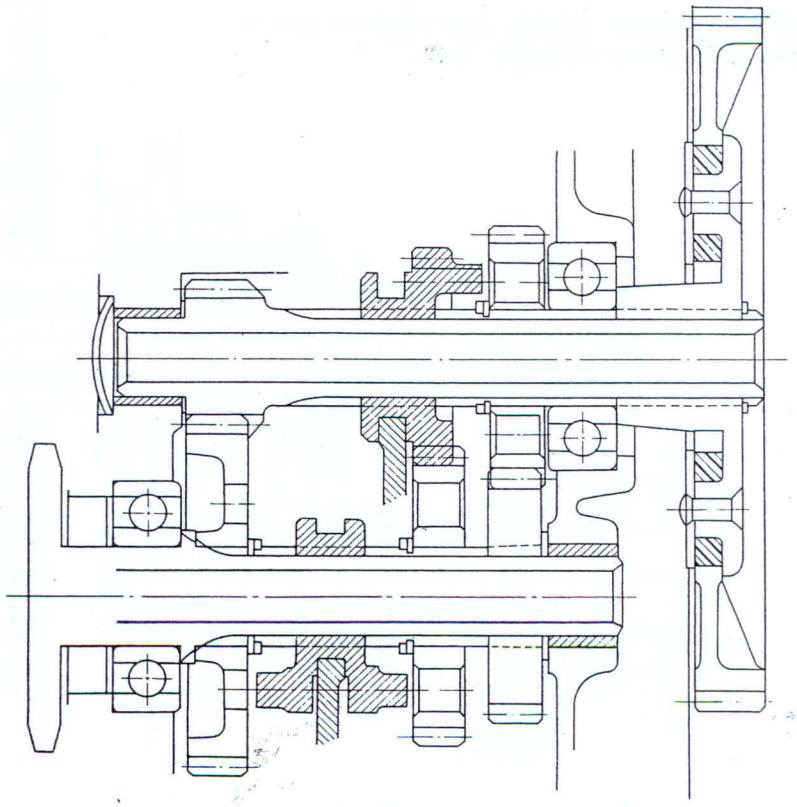


Fig. 3 – 9.

4. CLUTCH

A. Kinds of Clutch

Clutch is located between engine unit and transmission gear to change speed, also to cut or connect power at any time as starting. Therefore it is important feature to have smooth cutting or smooth connection in the course of changing without slipping. There are several type of clutch as cove clutch, centrifugal clutch, single plate clutch, multi-plates clutch, and they are classified as wet system or dry system according to its use of oil filled inside or not.

B. Construction and function of clutch of Model 100, 102, 111.

This is a centrifugal type automatic clutch, the clutch can be disengaged and engaged by operation of the change pedal. This is also connected to the transmission for shifting gears.

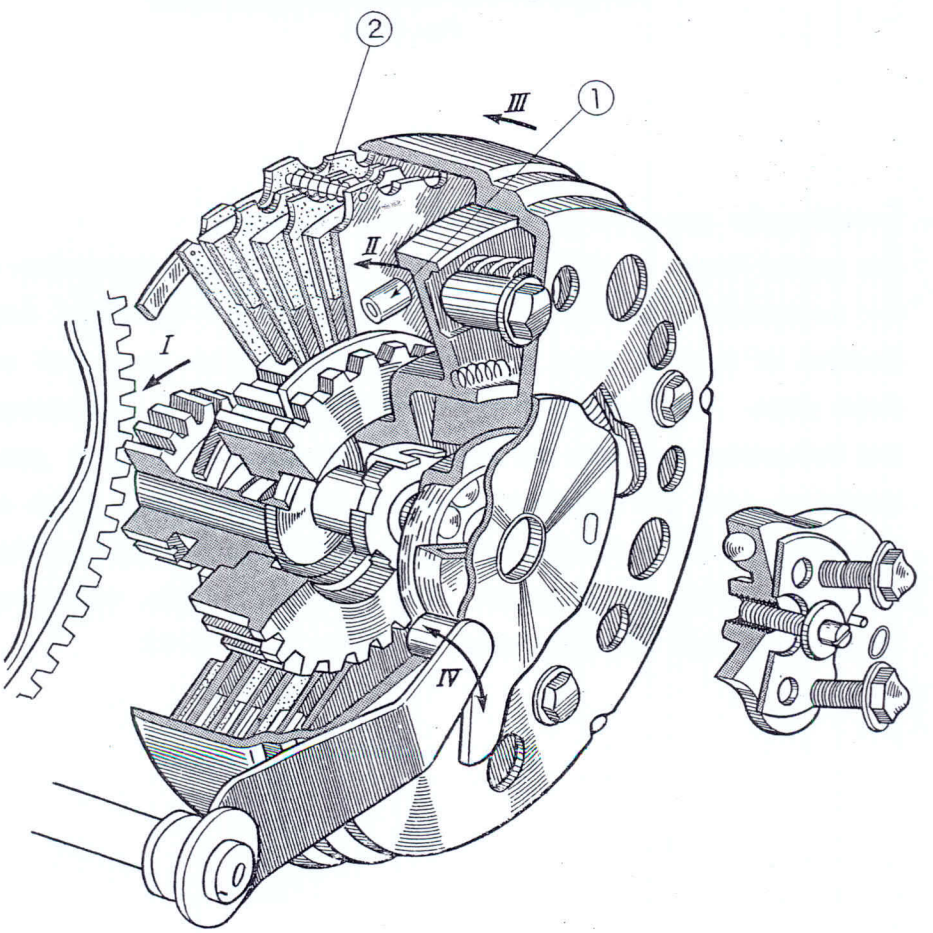


Fig. 3-10.

The clutch assembly can be broken down into 3 sections described below.

1. Clutch center & drive gear

These serve to hold clutch stationary when ushingkick starter and when engine-braking, and has screw-spline type operation in order to disengage clutch when engine is revolving at low speed (when centrifugal force is small).

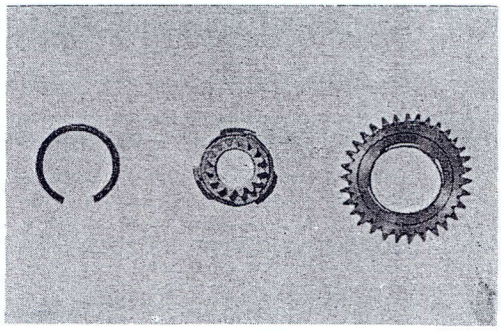
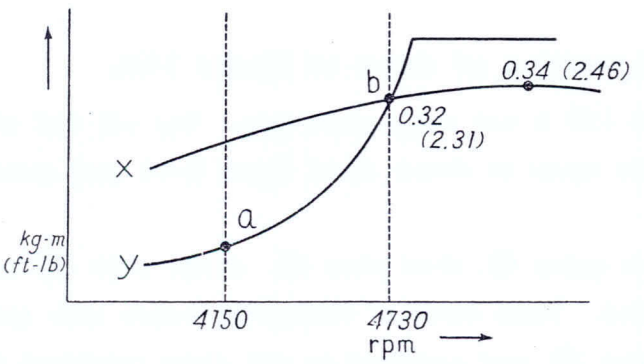


Fig. 3-11.

2. Centrifugally operated parts & clutch free spring

The special feature of this clutch is that when it rotates faster than a certain speed, the mechanism. The 8 × 10 roller pushed out by centrifugal force, move in the direction of arrow II along the tapered face of drive plate and press against the clutch plate. This centrifugal force action is stronger than the spring of clutch springs and furthermore the faster the revolution the stronger this force gets. Something is needed to resist this centrifugal force in order to disengage clutch at low speed revolutions, as this centrifugal force operates as soon as the crankshaft rotates. The clutch spring does this operation. The operation diagram, concerning to the engine r.p.m. torque and centrifugal clutch is shown in Fig. 3-12.



X—Torqve curue
Y—Clutch operation curve
a—Clutch starts to engage
b—Clutch engaging point.

Fig. 3-12.

3. Clutch outer & drive plate

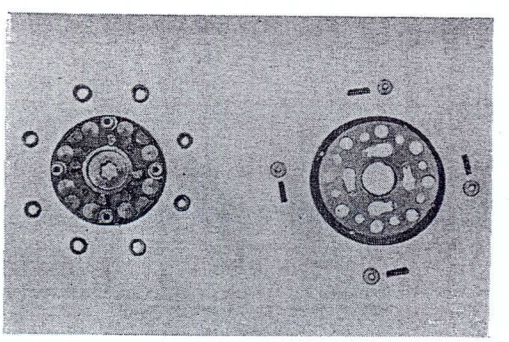


Fig. 3-13.

The drive plate fixed to the crankshaft is the main component of the clutch assembly. The clutch arm, which is attached to the drive plate through the clutch spring by four 5×8 hex. head bolts, is connected to the shift arm which operates by the change pedal when pushed in the direction of arrow III in Fig. 3-10. This disengages the clutch, regardless of the relations described in previous paragraph A and B. In this case the clutch lever can be moved up or down in the direction of arrow IV, and the changing of transmission gears is therefore done by always disengaging the clutch, without causing under strain during operation.

C. Construction and function of clutch of Model 110.

The clutch of Model 110 is wet single plate type. You will find clutch-outer ① by opening R-cranck case cover as shown detail Figure 3–14 and cross sectional Figure 3–15.

In clutch-outer, clutch spring ②, drive plate ③, clutch plate ④ and clutch friction desk ⑤ are assembled. Teeth inside of friction desk mesh with spline cut on outer periphery of drive gear ⑥, and combined as unit along rotational direction with drive gear which is mounted on crank shaft through clutch center guide ⑦, and can rotate freely.

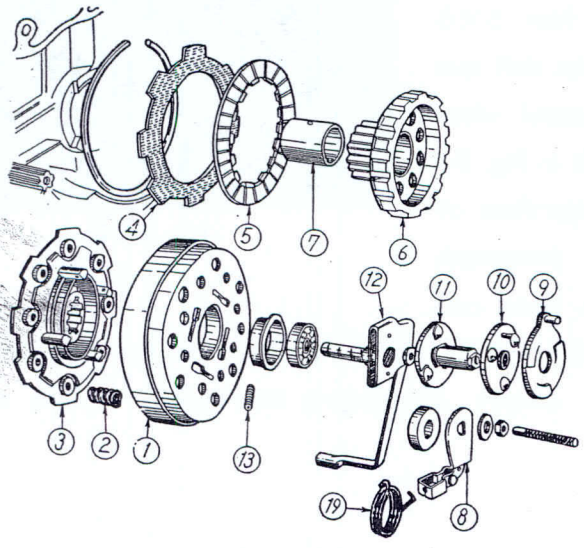


Fig. 3-14.

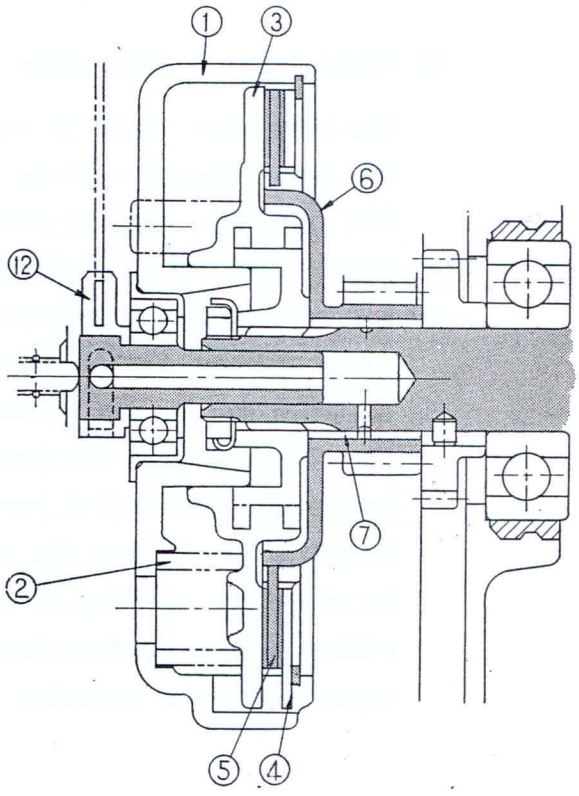


Fig. 3-15.

On the other hand, groove inside of drive plate mesh with spline cut on crank shaft end, and combined as a unit tighten to crank shaft by 14mm locknut. As Teeth an outer side of drive plate & clutch plate, mesh with teeth inside of clutch outer, clutch outer, drive-plate and clutch plate rotate as a unit with crank shaft. If clutch is not disengaged, ③, ⑤, ④ are combined as one unit due to mutual friction by clutch spring.

Accordingly rotational force of crank shaft is transmitted to drive gear. As drive gear mesh with driven gear, power is transmitted to Transmission.

When handle clutch lever, lever ⑧ turn to the right through clutch wire, and clutch lifter ⑪ moves inside by action of clutch cam plate ⑨ and clutch ball retainer ⑩, acordingly as clutch outer pressed through oil-through-complete ⑫, function clutch spring become functionless. So that drive plate clutch plate and friction desk become free respectively. Therefore rotational motion of drive plate and clutch plate is not transmitted to friction desk and drive gear remains stationary not transmitting power. Here clutch damper spring ⑬ is fitted laterally for the purpose of prevention from knocking sound due to play of rotational direction between drive plate and clutch outer and also from wear of gear teeth.

Oil sprayed by gear and clutch outer is sumped in clutch oil through and poured into crank shaft thru the end to lubricate drive gear and crank shaft.

MEMO

5. SHIFT MECHANISM

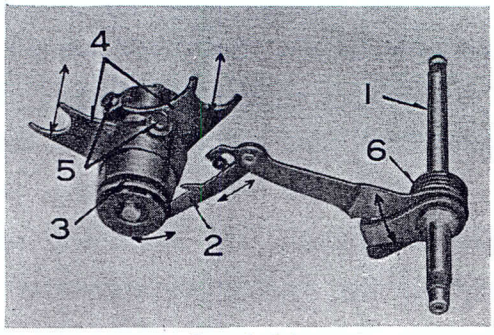


Fig. 3-16.

Pushing down change pedal (Fig. 3-16), gear shift spindle ① is rotated. Then gear shift arm ② turn drum at the end of claw by pressing down drum pin fitted on gear shift drum ③. As shift fork ④ is fitted on shift drum and the end of shift fork guide pin ⑤ fixed on shift fork meshed with central 2 grooves on drum; shift fork moves to and fro along the groove by drum rotation to let shifter and shifting gear move. Here gear shift return spring ⑥ serves change pedal to restore original position and prepare the next operation.

Shift mechanism of Model 100, 101, 111.

By pushing down change pedal, engaging & disengaging of clutch and changing of mission gear can be operated at the same time. By amount of 10° operation of change pedal ① engaging & disengaging of clutch is done and by 9°15′ changing of mission is operated as shown in Fig. 3-17.

Clutch lever ② is operated with change pedal to rotate cam plate ③ and disengaging and engaging of clutch is done firstly by lift on plate and cam.

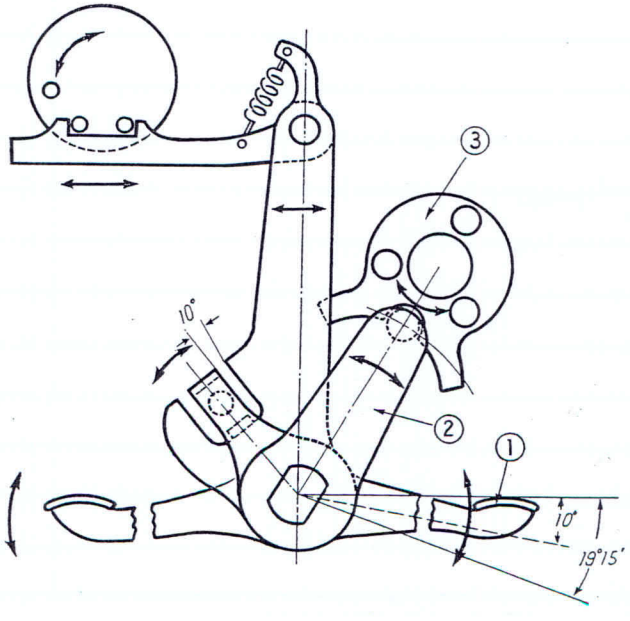
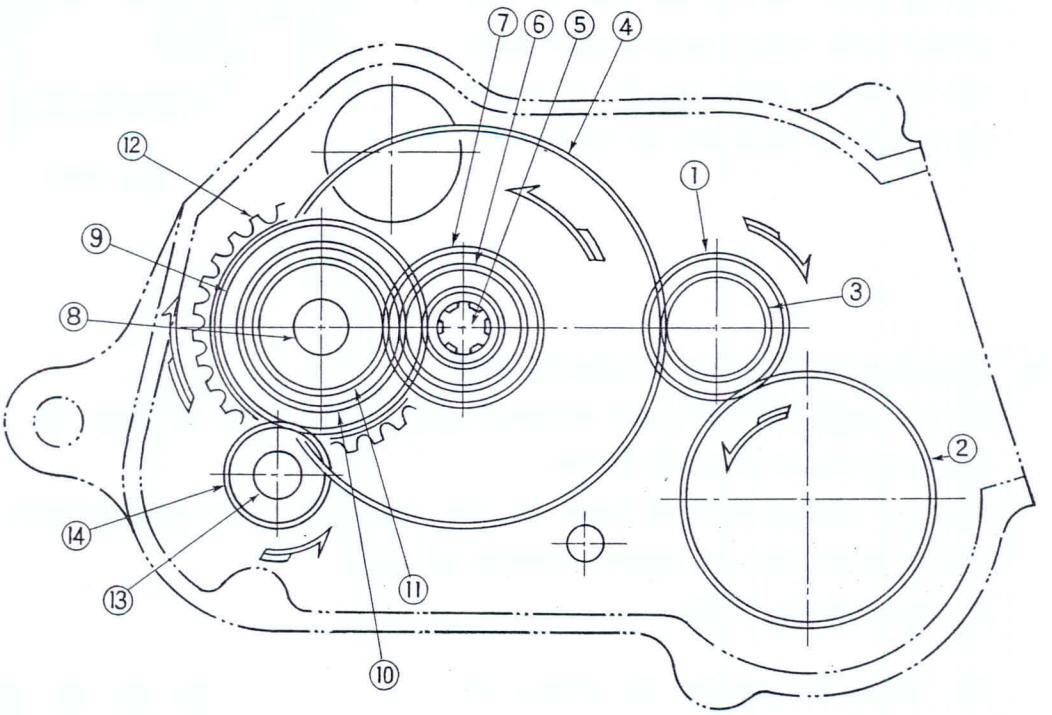


Fig. 3-17

6. TRANSMISSION MECHANISM OF KICK STARTER AND GEAR

This type meshing kick starter pinion into low gear makes kick starting easy and light and can by utilizing the transmission gear causes very little trouble.

Fig. 3–18 shows the gear train from crank shaft and the rotational direction and shaft position.



① Timing gear
② Cam gear
③ Drive gear
④ Primary Driven gear
⑤ Main shaft
⑥ Shifting gear
⑦ Main Shaft top gear
⑧ Counter shaft
⑨ Low gear
⑩ Second gear
⑪ Counter shaft top gear
⑫ Drive sprocket
⑬ Kick starter spindle
⑭ Kick starter pinion.

Fig. 3–18.

7. AUXILIARY EQUIPMENT

A. Breeger

The path of breezer opens inside of drive sprocket thru center hole passing 2 holes of 1.5ϕ inside Transmission main shaft and back pressure is released thru 3ϕ gas hole. As this 3ϕ hole is connected with center part of main shaft, oil inside the shaft can be separated by centrifugal force due to rotation.

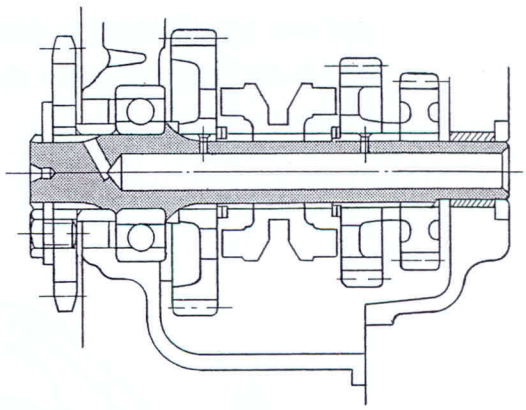


Fig. 3-19.

B. Starting mechanism of Model 102.

For the model 102, it is not equipped with kick-starter but is driven by over running clutch by action of starter motor.

The over running clutch is fitted on the crank shaft and can transmit rotation of starting motor but not transmit rotation of crank.

As shown in Fig. 3-20.

(1) When the sprocket ① rotates to the direction of arrow the roller ② bites on crank shaft ③ and crank shaft is driven.

(2) When the crank shaft rotates faster than sprocket, rollers are pushed outside by centrifugal force, pressing roller spring ⑤ due to taper inside groove of clutch outer ④ and become stationary with no connection to crank shaft.

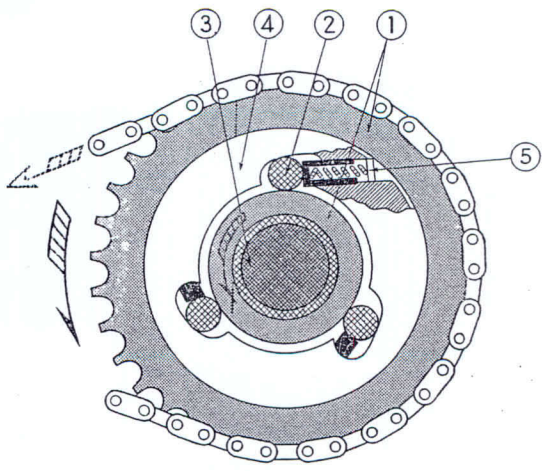


Fig. 3-20.

8. CARBURETER

A. Carburetor of Model 100, 102.

This is a down type carburetor, which draws down towards the horizontal type cylinder and the venturi is of unique elliptical shape, increasing stability at low speed and high speed performance.

The carburetor is installed onto the cylinder intake through the carburetor insulator, with packing and a "O" ring between the insulator and carburetor, which prevents intake air leakage.

The air travels at speed of about 15 m. per second through carburetor at 5,000 rpm and as this is delicately constructed to insure proper air-fuel mixtures, special care is required in handling.

1. Throttle openning adjustment

Fig. 3–21 illustrates crank revolutions and carburetor operating parts in proportion to the throttle opening, against venturi, which is most important in developing fuel-air mixture. Adjust the operating part, according to rpm when revolution is not smooth.

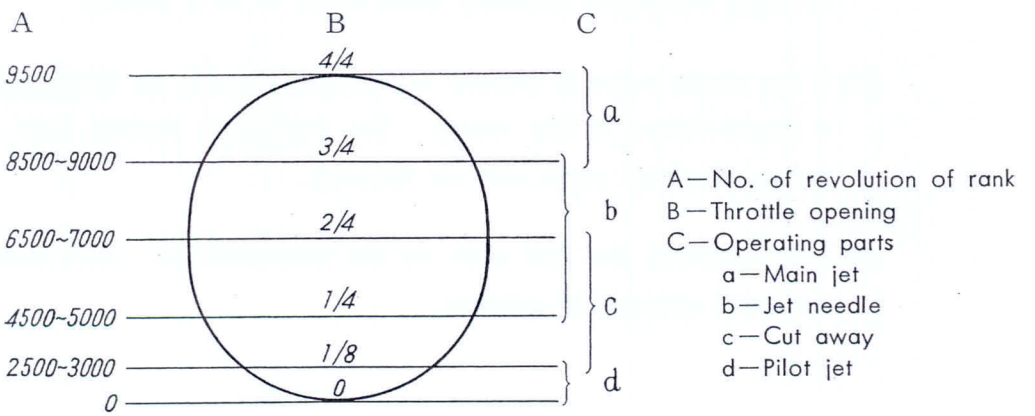


Fig. 3-21.

2. Idle speed adjustment

Fig. 3–23 illustrates the necessary function to stabilize idling (up to 2000 rpm). This is adjusted by the air screw ① and throttle stop screw ② shown in Fig. 3–22.

Idling revolution is 800～1000 rpm

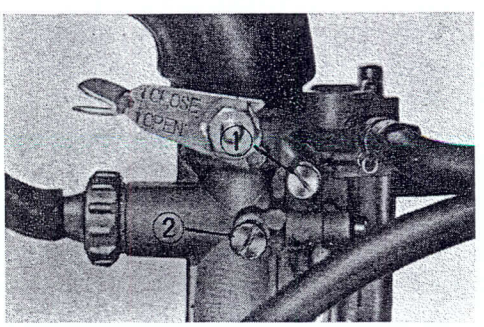


Fig. 3-22.

	Turn to the right	Turn to the left
①	Mixturewill be richer	will be weaken
②	Revolutionwill be higher	will be lower

3. Accelerating adjustment (Fig. 3–23 (1)).

Engine trouble during acceleration is caused more in the ignition and valve system and it is wrong to attribute this only to the carburetor. When the trouble is in the carbureter, adjust this by throttle valve cutaway ③ and jet needle ④ and needle jet ⑤.

4. High speed adjustment (Fig. 3–23 (1)).

Almost all the trouble at high speed is caused by the main jet ⑥. Check ignition and valve systems first before adjusting, as in the case of acceleration.

5. Others (Fig. 3–23 (1) (2))

(1) On the bottom ⑦ of float chamber, there deposit a chemical compound of 4-ethyl lead which contained in gasoline and foreign ingredients. If these are not removed it causes failure due to stopping gasoline feed. Therefore it is favorable to clean carburetor assembly once within 6 to 8 months.

(2) If the slottle valve is weared or the pilot jet ⑧, air bleed opening ⑨ in chocked it causes failure in idle runing. For carburetor trouble (not only the case of failure of idling) clean with air blowing.

(3) This carburetor has fuel cock on the float chamber. Also clean the filter in the cock and passage of gasoline.

Notes:—As Carburetor is like human respiratory organs it works very sensible. And just like human catches cold Engine occurs blowing-back or failure in suction at carbureter. In handling carbureter special attention is needed and advisable to consult with experience servicemen.

Air route
Fuel route

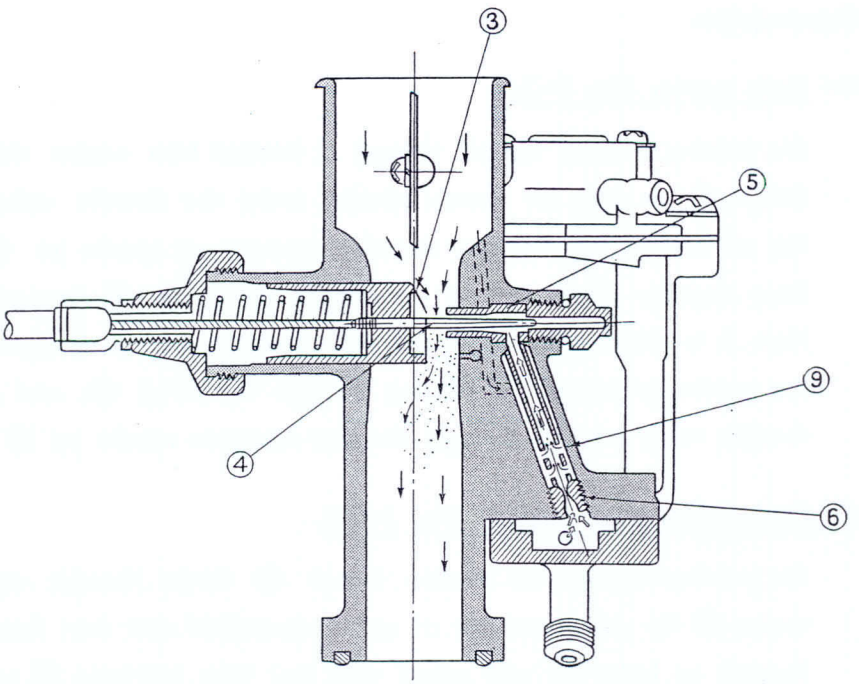


Fig. 3-23 (1).

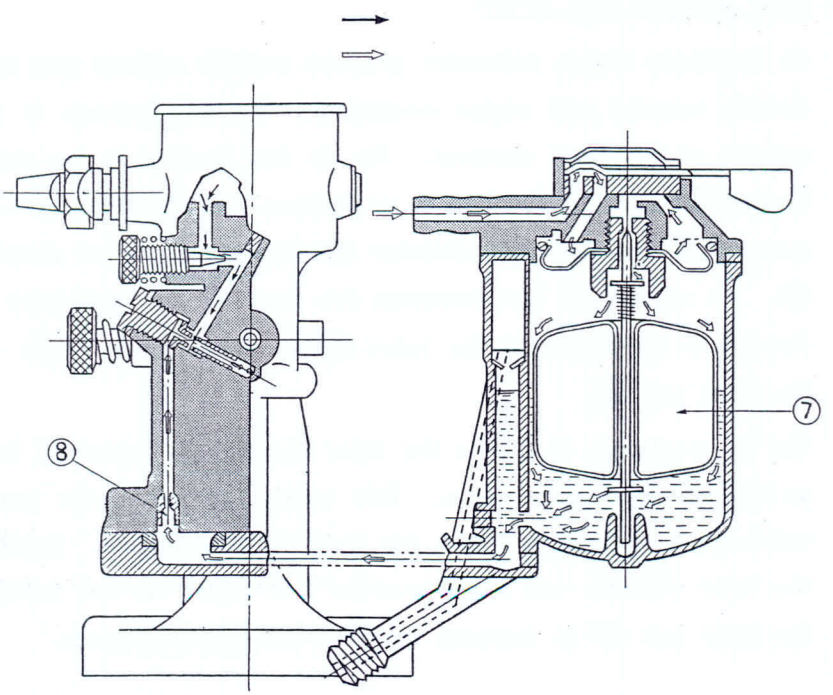


Fig. 3-23 (2).

B. Carburetor of Model 110, 110.

1. Construction

(1) Main system (Fig. 3–24).

Air passing through the air cleaner is inhaled into engine side from the suction throat ① as main air stream passing under the throttle valve ⑥ and ⑧. By this air stream there occurs negative pressure at needle jet ④, and fuel in the float chamber ② is sent to the needle, jet holder ③ through the main jet ⑩. Here it is mixed with air (bleed air), which comes in through the holes ⑦ around the needle jet holder ③ passing through the air-jet ⑤, and pours out under the throttle valve passing through the gap between needle jet ④ and jet needle ⑦.

(2) Slow-system (Pilot system) (Fig. 3–24).

Air passing through the suction throat ① flows through outer side ⑫ of air screw ⑪ by which volume of air is controlled and then flows into slow jet ⑬ through its holes ⑭ and mixed with fuel from fuel-hole ⑮ underside of slow jet ⑬, this rich mixture spray out at the base of throttle valve and again mixed with main air stream from the suction throat 1 to charge into the engine.

(3) Float chamber (Fig. 3–24).

As explained above caburetor produce suitable mixture gas corresponding to each throttle opening and engine revolution. For this purpose it is required to keep surface of fuel level constant. To do this function is the duty of float chamber. Explanation for this function is as follows. Fuel feeded from tank passes through passage ⑯, to the float chamber ② through the valve sheet ⑰ and the valve ⑱. As amount of fuel increases the float ⑲ get buoyancy to stop more fuel flowing in by action of the valve ⑱ at valve sheet which was pushed up by the float arm ⑳.

On the contrary, if fuel in the float chamber is consumed the float comes down as the fuel level goes down. This causes to open the gap between valve & valve sheet to feed fuel into the float chamber again. Repeating this operation the float chamber can keep constant fuel level. In this valve a spring is set at the float arm ⑳ to increase vibration resisting charactor.

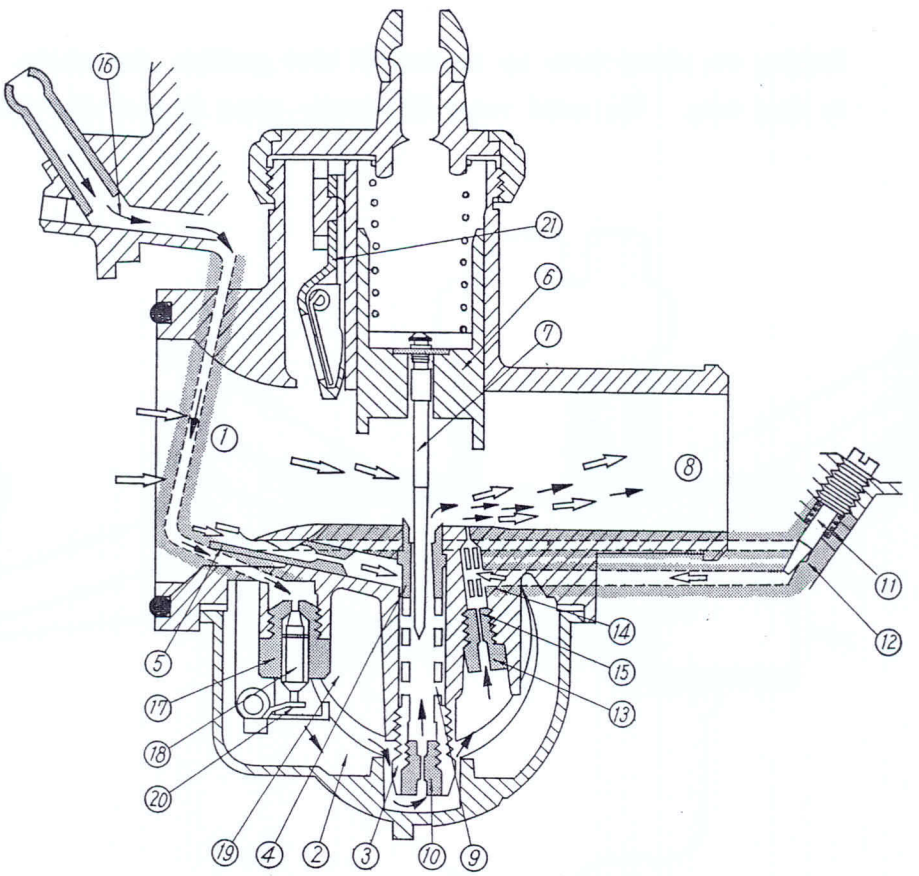


Fig. 3-24.

(4) Choke (Fig. 3-25).

When engine is in coal state or starting in cold season, rich mixture of gas is needed temporarily. For this purpose we use the choke. We experience engine stop right after starting or over suction by the conventional type of choke. But this choke has not such trouble and can get adequate rich mixture according to the throttle opening during choking, and makes it possible to warm up engine without intricate handling, and upon finishing warming-up put the choke full open simply.

Pushing the choke lever up to the full shut position the choke ② comes down to shut fully. The relief valve ③ usually stays to shut the window ⑤ by the

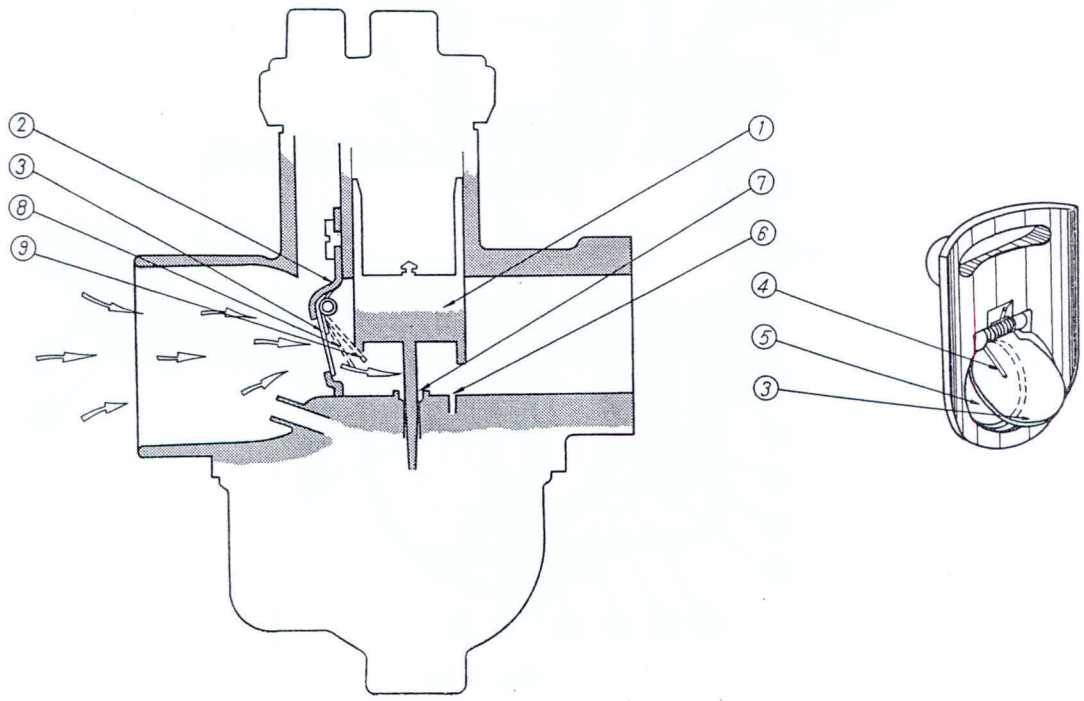


Fig. 3-25.

spring ④. When the throttle valve ① is opened about 1/4, and kicked, fuel sprays out from the pilot outlet ⑥ and the needle jet ⑦ due to suction negative pressure, and at the same time the relief valve ③ is opened (dotted part ⑧) properly to negative pressure to allow air flow in through the window ⑤ to give most adequate mixture for starting. After the engine started, suction negative pressure increases, accordingly the relief valve ③ will open widely to feed adequate mixture to the cool engine. And the relief valve ③ opening will vary correspondingly with the throttle valve ① opening. (dotted part ⑨).

2. Function of each part.

(1) Main jet (Fig. 3-24 ⑩)

Main object of the main jet is to adjust to give adequate mixture rate of flowing quantity of fuel while throttle is fully opened (running at top speed), and not only at the fully opening, but this will affect mixture rate to some extent at around 1/2 opening.

(2) Air jet (Fig. 3–24 ⑤)

To prevent to be richer mixture at higer revolution (Throttle wide open) or to be weaker mixture at slow revolution, air is feed into the needle jet holder. The function of the air jet is to control amount of this air. At constant throttle opening, the more the air jet the less different of flow between higher revolution and lower revolution will be and absolute amount of flow decreases.

(3) Needle jet (Fig. 3–24 ④)

At throttle fully opened and at medium speed the needle jet once more works to control fuel after controlled by the main jet. Its adjustment is done at the same time with the jet needle which will be explained in the following item. Its orifice diameter is specially manufactured precisely.

(4) Jet needle (Fig. 3–24 ⑦)

The function of the jet needle is to control mixture ratio at the medium throttle opening (mainly 1/4～1/2 opening) cooperating with the needle jet explaind above. The jet needle having a long taper part is fitted in floating state on the center hole of the throttle valve, and the taper end is inserted in the needle jet. Therefore it moves up and down according to the throttle valve, and due to tapering amount of flow of fuel is controlled to get adequate amount of flow, ie, adequate mixture ratio.

These are 4 grades of groove to clip on it (from upward 1st grade, 2nd grade, . . . 4 grade). As position of clipping is lowered from 1st down to 4th, the mixture will be richer.

(5) Throttle valve (Fig. 3–24 ⑥)

The throttle valve controls amount of air suctioned by engine ie, engine, revolution and horse power.

On the other hand its important function is to control mixture. There is a cutaway on the air suction side of the throttle valve. By changing the size of this cutaway (cutaway No.) negative pressure on the needle jet can be varied to change amount of flowing fuel accordingly mixture ratio can be changed. But this range of function is between idling opening and around 1/4 opening and not effective above 1/2 opening.

(6) Slow jet (Fig. 3–24 ⑬)

The slow jet controls flowing amount of fuel at idling state and lower opening of the throttle mixture is made by air coming through the orifice of the air bleed to make it mist state.

(7) Air screw (Fig 3–4 ⑪)

The air screw controls air amount flowing in the slow system. It controls air to be mixed with fuel which passed through the slow jet to get adequate mixture and it pours from the end of the slow jet.

3. Adjustment

Carbureter has to serve to develop fully the engine performance. For this purpose it is needed to adjust to get most adequate mixture ratio for all stages of engine from idling to maximum revolution, aad have to keep this state all the time.

To satisfy this purpose, special attention is paid to increase accuracy of all parts of carbureter and also friction resting character. These 4 parts of jet needle, needle jet, throttle valve and float valve are moving parts and are manufactured to endure for use of long run without performance change by using special material to resist friction, and by fine machining and surface treatment. Adjustment and fitting of each part of carbureter is dome by us and carbureter maker thru strict performance test. So it is advisable not to change them without sufficient cause.

But in case of newly adjustment, engine repair or of replacing with new part due to friction attention is required as related below.

(1) Be sure each part of engine duely under adjustment.

(2) Check air leakage from fixing part of carbureter.

(3) If found any wear in adjusting part due to friction, replace with new part.

4. Top speed adjustment

Adjustment of mixture gas for the stage of throttle between full open to 1/2 open is done by the main jet. To judge rich or weak of mixture is done by the procedure shown below.

(1) While running with throttle valve fully opened, if speed increases by shutting the choke a little, as this is effect of weakness of mixture, you need to replace with next larger size of the main jet and check again.

(2) On the contrary if speed decreases by shutting choke, this main jet is fittable or too large the size. Judgement for this case can be done as follows.

(a) Fittable: If you take small main jet speed decreases, and increases by closing the choke, it means the original main jet is fittable than the small one.

(b) Too large: Replacing smaller main jet consecutively to reach the condition like (a) case.

5. Intermediate speed adjustment

From the throttle opening 1/8 to 1/2, the mixture is regulated by the height of throttle cuttingaway and jet needle. But individual intermediate speed control is dangerous as the cuttingaway will also affect for the state under throttle opening 1/8.

Fuel consumption becomes more economical when jet needle is lowered as much as intermediate speed accerelation be not worser.

(1) Jet needle

(a) While runing at intermediate speed if unusual black smoke comes out in exhaust, it means too rich and you must take one step lower of jet needle.

(b) While accerelating or running, if you feel engine braking, raise one step upper of jet needle.

(2) Cutaway of throttle valve

The more punched mark number, the weaker the mixture and vise versa.

6. Idle speed adjustment

From the throttle opening 1/8 to idling, the mixture is regulated by the air screw and throttle valve cutaway.

(1) Air screw

The mixture is regulated by air screw while in Idling. Turning to the right mixture becomes richer and to the left becomes weaker. For adjustment of air screw not only idling case, but you have to warn also uneven revolution due to rich or weak mixture while throttle is opened slightly from idling.

(2) Cutaway of throttle valve:

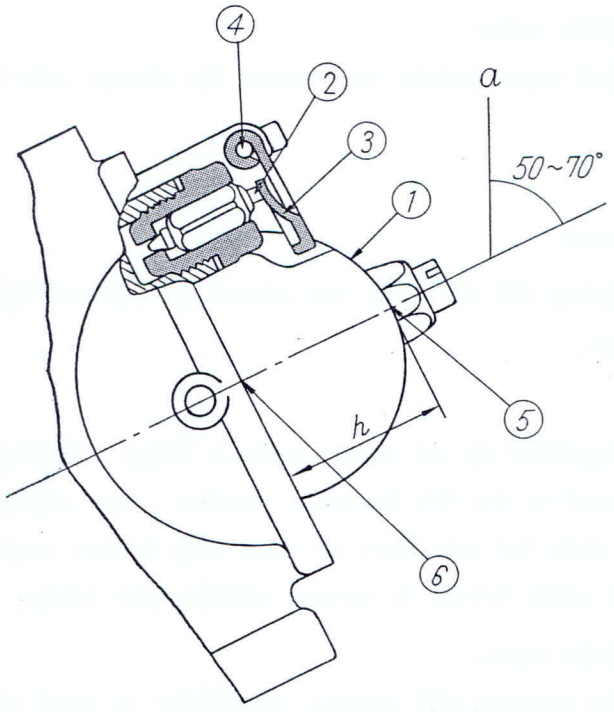
At about, throttle opening 1/8, mixture regulation is hard sometimes. In such case take higher no. of cutaway if mixture is richer and vise versa and adjust air screw again.

7. Adjustment of Float position

(1) Placing the carburetor up side down, this is not correct float position of regular fuel level as the spring in the float valve is shrinked due to thrust from float value end at the floud arm by floot weight.

(2) Then tilt carburetor so as the float pin ④ stay upper and the float ① lower position and hold position right before the float arm ③ leaves from the float valve end ② as shown in Fig. 3–26. (leaving point is about 70° from upside down position favorable margin is 50°～70°; within this margin the end of float valve ② does not shrink)

(3) Measure the height difference h between lower end of carburetor ⑤ and carburetor body ⑥. There is no trouble about performance if the accuracy of float position stays within 0.5mm up and down. If deviated from this amount adjust the float arm part ③ to bend with special attention. (719.5mm)



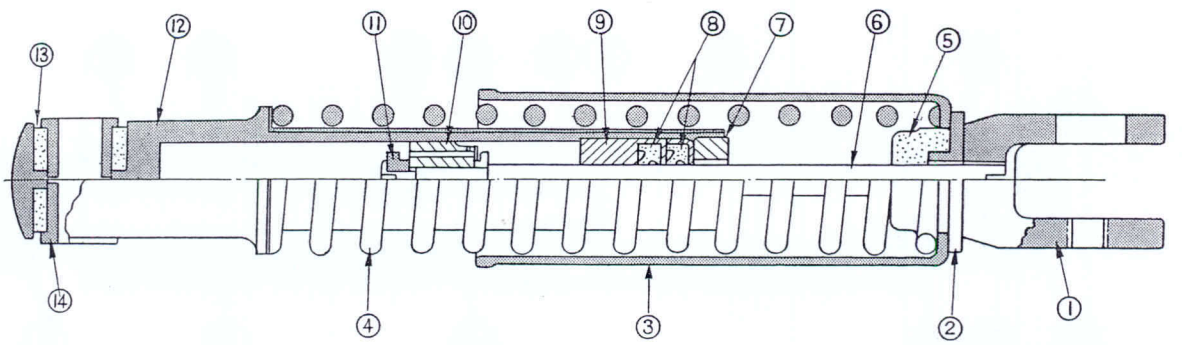
a—Perpendicular line

Fig. 3–26.

MEMO

9. FRONT CUSHION

The shock absorber of the front wheel consists of oil pressure damper and coil spring around it, and spring is protected by spring case of polyethylene. In the front cushion damper 23 cc of spindle oil #60 is contained, and it works damping action to vibration by action ofdamper piston with valve. Surface of piston rod is chrome-plated machined smooth and fitted with double lipped oil seal to prevent oil leak.



① Bottom metal
② Bottom lock nut
③ Spring case
④ Front cushion spring
⑤ Stopper rubber
⑥ Damper rod
⑦ Front damper fitting nut (punch after tightening)
⑧ Front damper oil seal
⑨ Damper rod guide
⑩ Damper piston
⑪ Damper piston nut
⑫ Upper metal complete
⑬ Rubber bush
⑭ Upper color

Fig. 3-27.

MEMO

10. REAR CUSHION

At intermediate position connecting the rear fork and chassis it acts as cushion. The cushion is covered with metal bottom case and Heizex upper case.

A. Rear cushion of Model 110, 102.

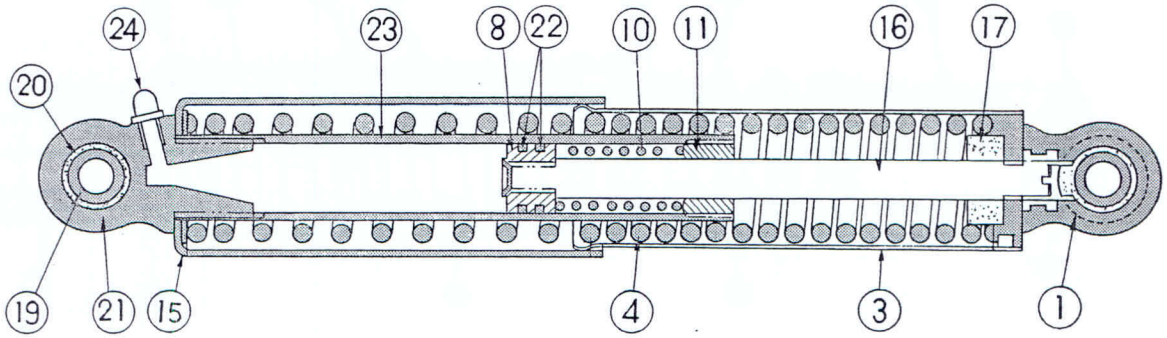


Fig. 3-28.

B. Rear cushion of Model 110, 111.

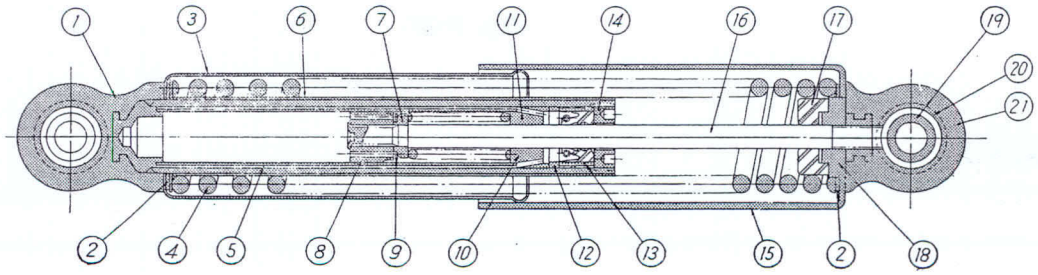
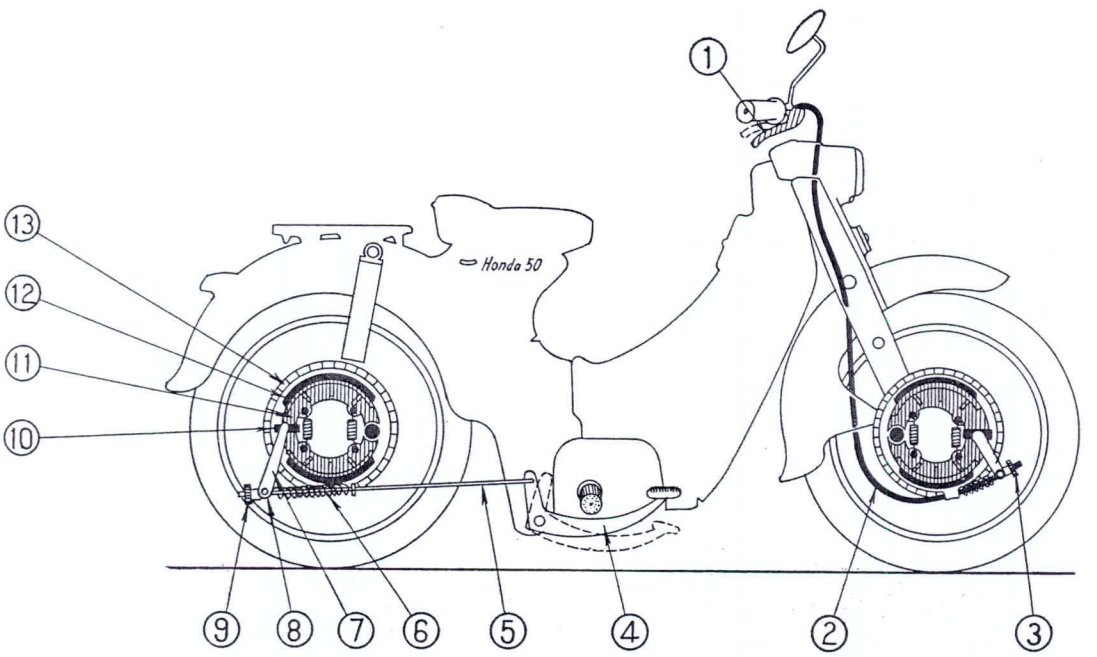


Fig. 3-29.

① Bottom metal	⑨ Rear damper valve	⑰ Stopper rubber
② 22mm washer	⑩ Rebound stopper spring	⑱ Upper locknut
③ Bottom case	⑪ Rear damper rod guide	⑲ Rubber bush cover
④ Spring	⑫ Rear damper colar	⑳ Rubber bush
⑤ Rear damper inner pipe	⑬ Oil seal	㉑ Upper metal
⑥ Spring guide	⑭ Rear damper nut	㉒ Rubber ring
⑦ Rear damper valve stop	⑮ Upper case	㉓ Main pipe
⑧ 〃 piston	⑯ Rear damper rod	㉔ Grease nipple

11. BRAKE SYSTEM

Reliability and endurance is the supreme condition required for Brake system. For this purpose, it is so to designed to increase friction coefficient between brake drum and its lining and made it easy to discipate friction heat. For front brake right hand wire system is adopted and for rear brake, right leg rod system thru inside expansion shoe is adopted.



① Lever
② Front brake wire
③ 〃 adjust nut
④ Brake pedal
⑤ Rear brake rod
⑥ 〃 spring
⑦ Rear brake arm
⑧ Rear brake arm joint
⑨ Rear brake adjust nut
⑩ Brake cam
⑪ Brake shoe
⑫ Brake lining
⑬ Brake drum

Fig. 3-30.

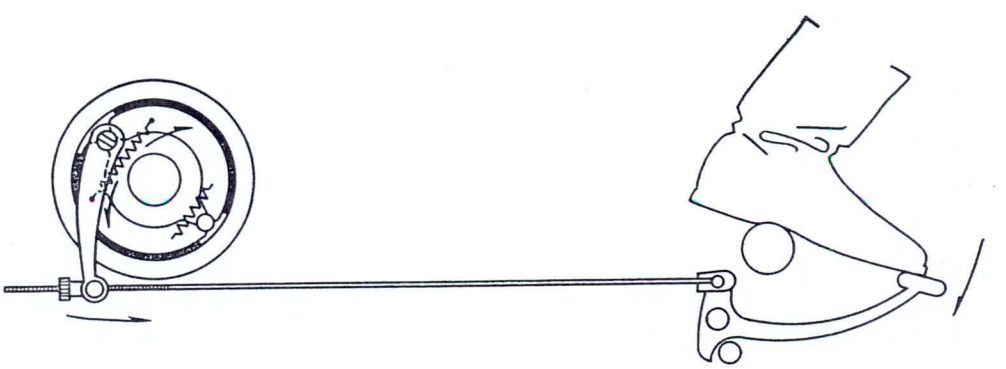


Fig. 3-31.

ELECTRICAL EQUIPMENT

CONTENTS

1. CHARGING SYSTEM

A. Model 100, 110, 111.

Alternating current generated by magneto goes to head lamp, tail lamp and meter lamp and a part of this flows to charge battery. Alternating current is rectified to half wave current by selenium rectifier before going to battery.

1. Changing Coil

Low tension coil separated into coil for lamps and for charging. For night driving this generates atlernate current (6～8V) direct to the head lamp, tail lamp and meter lamp to light these and the charging coil generates alternate current day and night to charge battery.

Test for charging coil

To judge quality of the charging coil (Fig. 4–1) connect the ammeter (reading about 2A) in series at the fuse connecter (red line) and after starting engine measure corresponding current to each crank revolution.

The standard charging volume corresponding to each revolution is shown in the following chart. Comparing with this standard if there is excess or short of 20～30%, replace the coil.

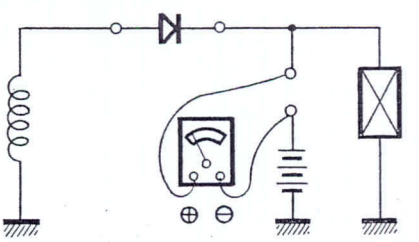


Fig. 4–1

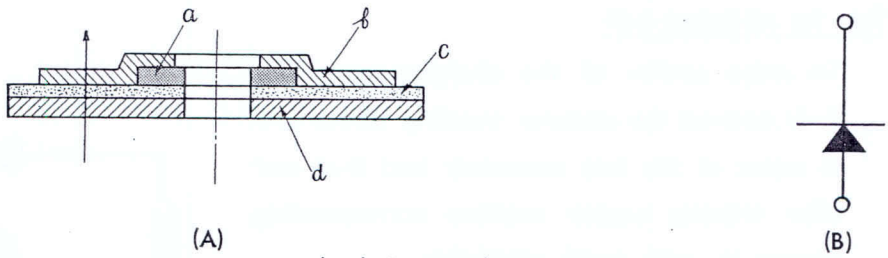
Crank rpm		1,500	3,000	6,000	8,000
Daytime	Charging current (A)	0	0.2	1.0	1.5
Night time	Charging current (A)	0	0.2	0.4	0.5
	Lamp voltage (V)	4.5	6.5	8.0	8.5

Note : Be careful to center iron coil with stater base, as with high tension coil, when installing.

2. Selenium Rectifier

This rectifier works to charge battery rectifying alternating current generated to one direction current, and consist of Aluminum plate or nickel plated steel plate on which alloy of refined highly pure selen and rare element is painted or vacuum spattered and after heat treatment under adequate pressure and then alloy electrode sprayed on the surface.

Here on the boundary surface between selen and alloy electrode there raises special layer to act electric action as shown in Fig. 4–2 (A) and it conduct current easily from base plate to alloy electrode through selen, but not almost to reverse direction. Therefore putting this mechanism on the alternate circuit, direction of current is rectified to one direction.

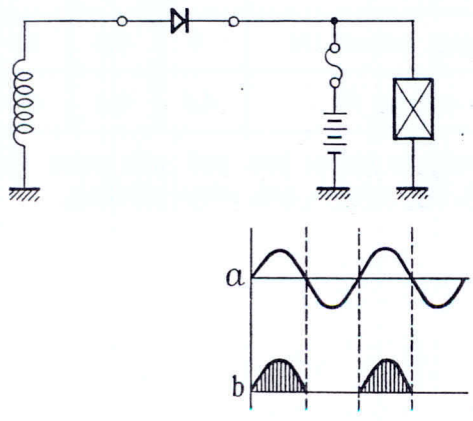


(A) (B)

a — Insulating membrane
b — Electric pole
c — Selenium
d — Base plate of nickel plated or aluminum.

Fig. 4- 2.

By removing the battery at daytime or running long distance at high speed without a fuse will cause reverse flow current towards selenium rectifier causing it to lose its rectifing efficiency and if this is continued for a prolonged period the rectifier will get hot and may break. Be sure to check that fuse is not blown out and is properly installed. If battery discharges too often, check not only the coil, but also discoloring of rectifier and for short of terminals. After replacing parts, securely tightens terminals.



a — Induction voltage of generating coil
b — Rectified current by selenium rectifier.

Fig. 4- 3.

B. Model 102

Alternate current is generated by rotation of alternate current dynamo which is connected with crank shaft when engine is revolued. Putting the selenium rectifier between battery and alternate current dynamo, AC is rectified to DC to charge battery. The circuit of charging is shown in Fig. 4–4.

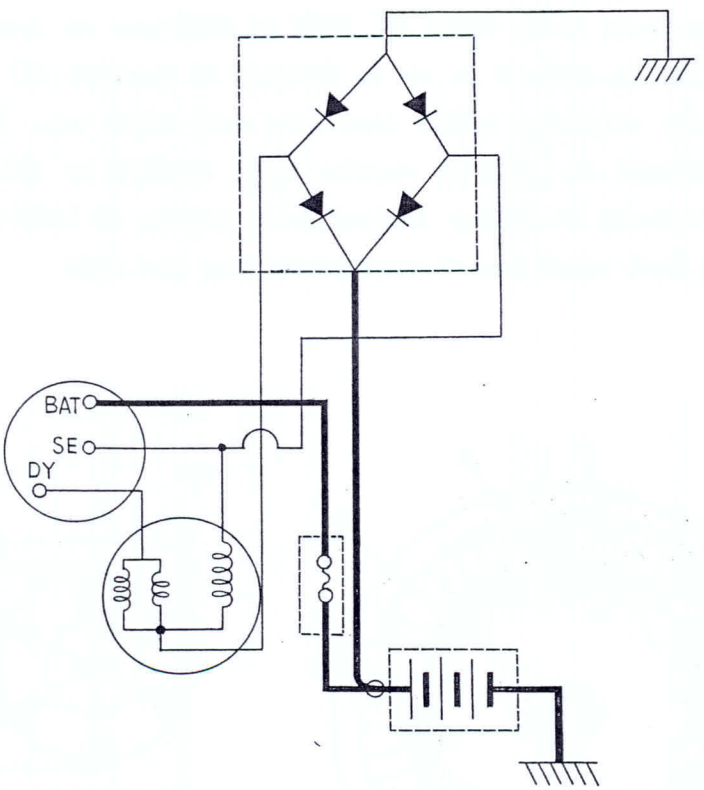
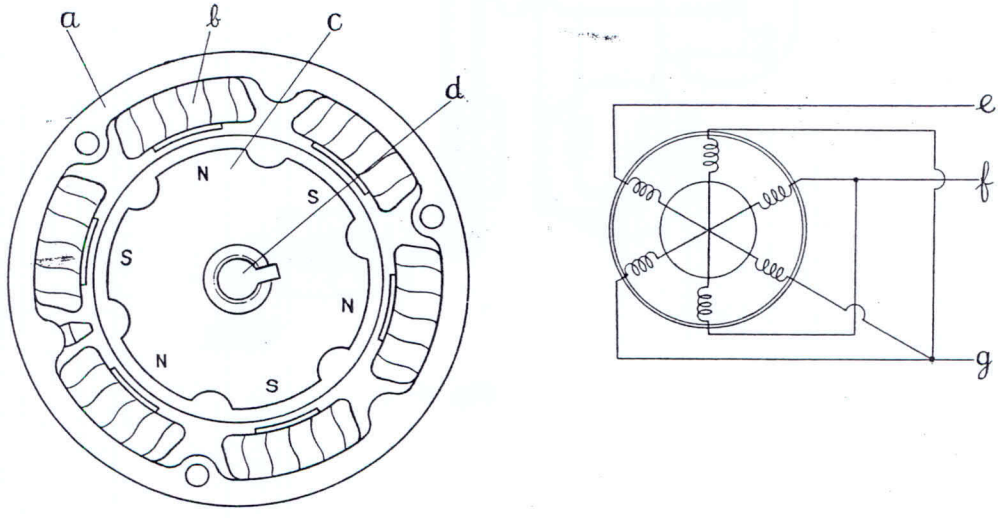


Fig. 4– 4.

1. Dynamo

Alternate current dynamo is of the type safe from any trouble, and can change power by switching combination switch. Point of difference of Model 100 from flywheel is that magnet is revolved inside the coil instead of magneto placed on outerside of coil to generate current. That means magnets are formed as one unit having 6 extended electrode as shown in Fig. 4–5 (A) and wiring is shown. (B).

On the other hand for the stater, the magnetic circuit is made of iron core having corresponding pole with that of magnetic steel pole. One coil for each pole, totally 6 poles is wound to make circuit and terminals are drawn as shown in Fig. 4–5 (B). Magnetic steel which is fixd directly on the crank shaft rotates at high speed while running, and generates Alternating current in the coil as the direction and strength of magnetic flux in the stater iron core varies 3 times in one revolution. Electric power generated from the dynamo can supply all electric equipment amply for Model 102, but as the head lamp is not lighted usually on daytime, it is required to control generating power to be about AC 30W at 5000 rpm to avoid overcharging on the Battery. During night, it is so to designed to generate AC 90W at 5000 rpm using all coils by combining yellow lead wire and white one. This current charges on battery through the selenium rectifier being rectified to DC. In cheking current by inserting ammeter at Battery terminal (+), starting at 1500～2000 rpm. 1.5～3A at 5000 rpm (both crank rev.) is standard for day and night.



(A)

a—stater (iron core and coil)
b—coil
c—rotar (magnetic steel)
d—crank shaft

(B)

e—yellow (generl use)
f—white (available for night use)
g—brown (common line)

Fig. 4- 5.

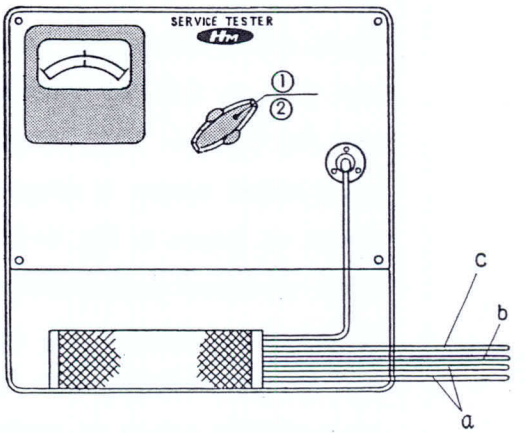
AC Dynamo Power Checking (Fig. 4–6)

Preparation for tester :

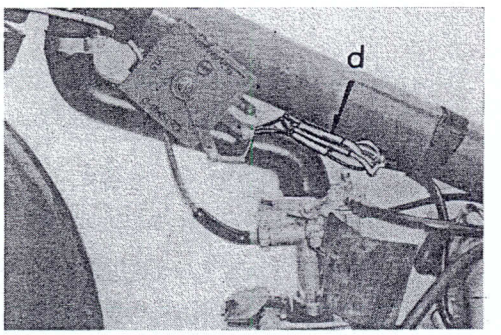
(1) Connect the Dynamo with load resistance for dynamo power by cable.

(2) Connect lead wire of brown (a), red (b) and white (c) of load resistance with the lead wire from the Dynamo. (Take out short piece in resistance box of the tester)

Dynamo lead		Test lead
yellow	——	red
white	——	white
brown	——	brown



(A)



(B)

Fig. 4– 6.

Measurement :

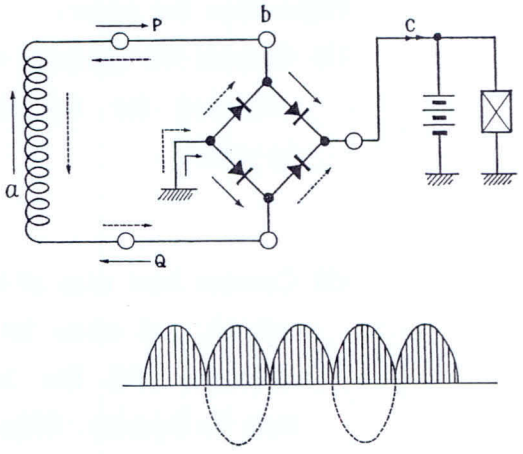
(at 2000 rpm crank rev.)

1) at Dynamo ① position of Tester Knob ; OK, if the needle of Tester indicates 3.6V or more for the NIPPON DENSO MADE.

2) at ② position, OK if indicated 7V or more for the same.

2. Selenium Rectifier

There are 3 systems for wiring to convert A.C. to D.C. by selenium Rectifier, and for Model 102, single phase-all wave circuit system is adopted. In this circuit as shown in Fig. 4–7, initial half cycle of current generated from coilflows to the arrow direction (P), and the next half to the direction (O), and this is most efficient system to apply as charging current always flows to the same direction.



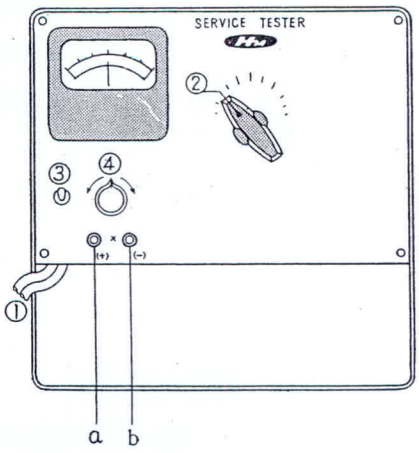
a—A. C.Voltage
b—all wave rectified
c—D.C.

Fig. 4– 7.

Measurement of Selenium Rectifier (Fig. 4–8)

Preparation of Tester :

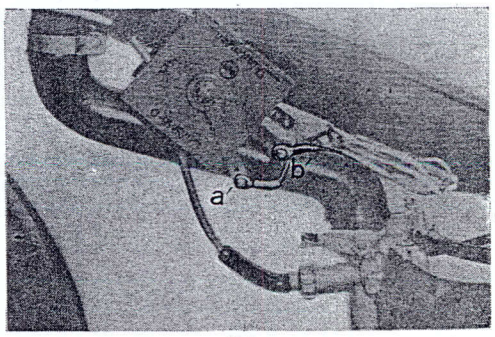
(1) Connect battery ①
(2) Turn switch ② to resistance side
(3) Put source of electricity on ③
(4) Let the end of testlead of × terminal short.
(5) Put meter needle on O by adjusting knob ④



(A)

Measurement :

(1) can measure positive resistance by attaching the lead wire (Red) + (a) of X-terminal to the selen + (red mark a'), and the lead (black) — (b) to brown mark b' of selen terminal — favorable resistance 10～40Ω.
(2) negative resistance can be measured by attaching reversely lead (black) (red) of X-terminal. Resistance be 1,000Ω or more.
(3) Check with disconnecting selenium wire.



(B)

Fig. 4– 8.

2. BATTERY

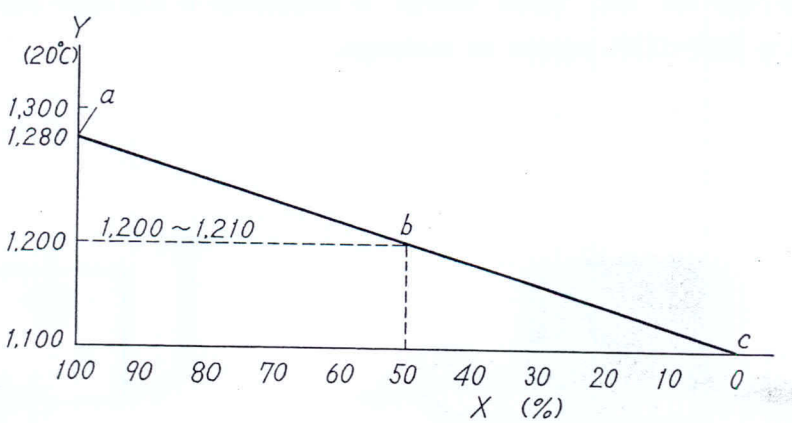
A. Model 100, 110, 111.

Horn, directional signal lamp, neutral lamp and others are run by the direct current flowing from the battery. The battery used MBCI-6, G1H, MBCI-6A type are which have three cells, whose plates are connected in series. Capacity is 6V-2Ah, and have discharge capacity of 10 hours at 0.2A. This is connected from selenium rectifier through Fuse (red lead line), and black, terminal is grounded to frame through main switch.

DISPECTION & MAINTENANCE

1. **Inspection for fluid level**
   * fluid level should be between upper level and lower level.
   * To supply fluid take off three caps to fill distilled water up to the upper level. Never supply dilute sulphuric acid except the case when the fluid in the cell was spilt over.
   * After supplying fluid tighten up the cap securely.

2. **Inspection of specific gravity** (This should be checked on delivery or periodically)
   * The condition of electric volume of the battery can be checked by measuring specific gravity (but not be checked by voltage only.) (Fig. 4-9)



X—Electric Volume in battery (%)
Y—Specific gravity of electrolyte (20°C)
a—charging state
b—half charging state
c—fully discharged

Fig. 4- 9.

This value is that for standard 20°C, and needs corrections for temperature difference by the following formula.

sp. gravity at 20°C = (sp. gr at t°C) + 0.0007 (t° − 20°)

If 40 ~ 50° discharged, charging is needed.

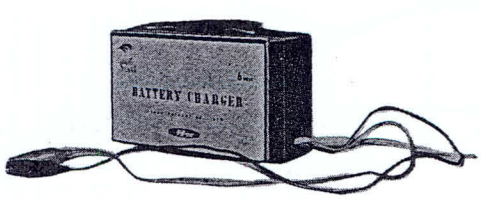
An example of a simple hydrometer is shown in Fig. 4–10. This meter serves to check the specific gravity by floating red and white balls.

Fig. 4-40

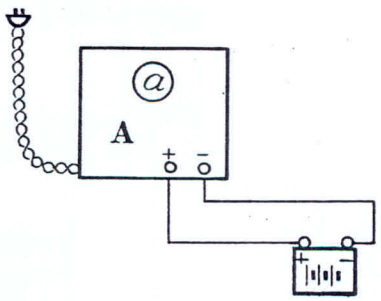
	①	②	③
●	float	sink	sink
○	float	float	sink
Rate of charging	100%	50%	0%

3. Charging

There are small battery chargers, which makes charging easy and sure. Fig. 4–11 (A) shows one and usually these are for charging one battery, but some can charge two or more batteries at one time. Connect as shown in same fig. (b) and plug into 100V onlet and let set. when charge is completed a red light shows. It takes 10 hours with a 0.2 ~ 0.3A current to recharge.



(A)



(B)

Fig. 4-11.

B. Model 102.

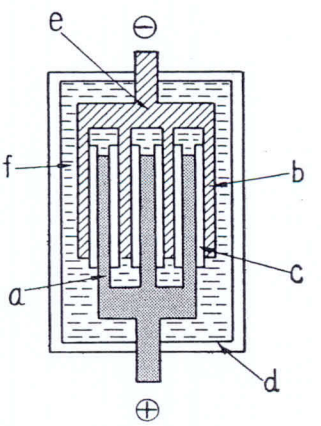
For Model 102, volume was raised from 6V–2Ah up to 6V–11Ah, as it is needed to revolve the starting motor. Construction is same lead cell as for automobile use.

(Note) To make it easy to understand, it is shown on the plan view, and actually both electrodes are extended straight outside of cap of fluid inlet which was shown horizontally.

Anode plate : Within lattices of lead alloy, lead peroxide is filled up, and made it easy electrolite fluid to penetrate freely into plate through porous lattice. 8-plates from one anode group.

Cathode plate : Sponge form lead is filled within lattices of lead alloy and 9 plates from one cathode group.

Separater : To avoid shorting between anode plate and cathode plate, there is inserted separater made of porous ebonite plate or plastic processed pulp plate.



a—Anode plate
b—Cathode
c—Separator
d—Cell
e—Pole
f—Dilute sulphuric acid

Fig. 4-12.

Glass mat : Between the separator and anode plate, glass mat made of glass fiber is inserted to avoid falling off anodic material.

Others : Each group is packed in Battery case (electric cell) and 3 pieces are connected to terminal in parallel to make 6V. On the upper part of case the black cap is fitted and on its base plug (filler cap) is fitted.

MEMO