

MAICO

Square Barrel



Service

Bulletins

MAICO

Notes

MAICO General Torque Specs

Following are general torque specifications for some common Maico engine parts.

- **Crankcase Screws (all)** 7 ft lbs
- **Crankshaft Nut** 144 ft lbs
- **Cylinder Head Nuts** 18 ft lbs
- **Cylinder Base Nuts** 15 – 18 ft lbs
- **Cylinder Base Studs** 15 ft lbs
- **Cylinder Head Studs** 18 ft lbs
- **Mainshaft Clutch Nut** 50 ft lbs (use Loctite)
- **Shifter Detent Bolts** 18 – 22 ft lbs

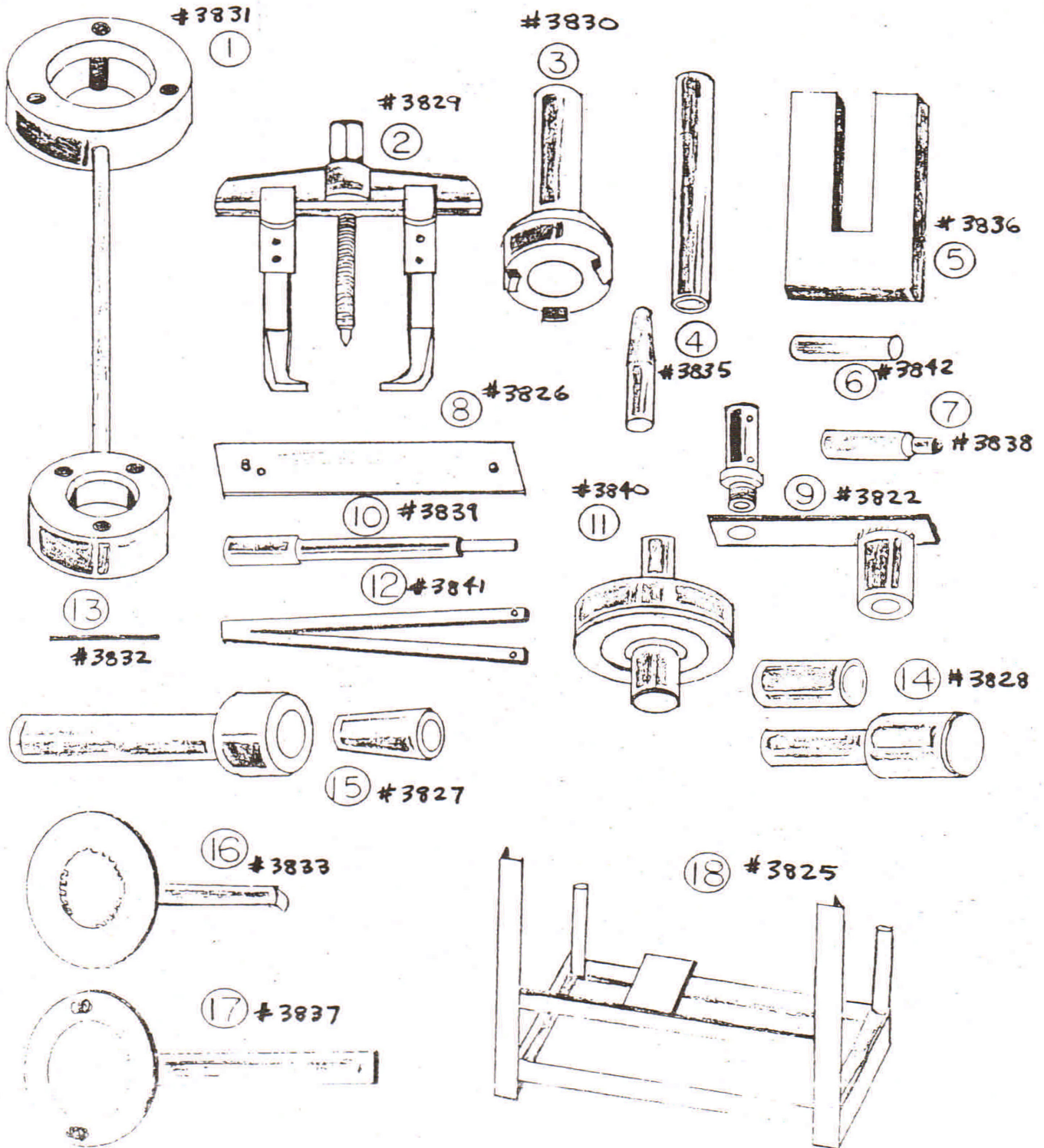
Note: Do NOT use Loctite on head or base nuts



<u>FIG. NO.</u>	<u>DESCRIPTION</u>	<u>PURPOSE</u>
1	Crankshaft sprocket holder	To hold the sprocket while loosening or tightening the nut.
2	Clutch puller	(Applied on small, large clutch.) To compress the clutch assembly.
3	Clutch lock washer punch	To lock the clutch lock washer without damage.
4	Retainer ring guide	To insert the transmission retainer ring without stretching the ring.
5	Connecting rod holder	To hold the connecting rod while loosening or tightening the magnet rotor bolt.
6	Connecting rod holding pin	
7	Piston pin guide spindle	To guide the piston pin through the top end bearing.
8	Shifting crank aligner	To align the shifting crank to match the holes of the tool.
9	Dial gauge holder	Timing dial indicator holder is used with or without the cylinder head. Also used to check the layshaft play.
10	Piston pin extractor	To remove the piston pin from the piston assembly.
11	Oil seal driver	To insert the oil seal, mag seal.
12	Fork cap wrench	To remove or tighten the fork caps. Also used as a Koni tool.
13	Magner rotor puller	To remove the magnet rotor.
14	'O' ring, Lock ring driver	To insert the 'O' ring and lock ring through the shifting crank.
15	Mag seal driver	To insert the mag seal without damaging the oil seal.
16	Clutch body holder	To tighten or loosen the mainshaft nut. (Clutch nut.)
17	Bosch rotor holder	To hold the Bosch magnet rotor while tightening or loosening the nut.
18	Engine stand	Universal engine stand for all models.



MAICO TOOL KIT



MAY 7, 1973 - SERVICE BULLETIN

INSPECTION AND ADJUSTMENT OF THE 250 AND 400 TRANSMISSION

- I. Clean and dry all parts thoroughly. Dirt, grit, and metal filings are the major cause of bearing failure and they also expedite wear to all moving parts.
- II. Inspection of gears and shafts is as follows
 - A. Check all parts for chips, wear, and friction burns. Replace any excessively chipped, worn, or burnt parts.
 - B. Check all sliding gears for proper engagement and free sliding. These gears should be checked very carefully in the groove where the fork rides, for burnt metal build-up. The gears should be replaced if there is any sign of this.
 - C. Check shift forks and fork spindle for free sliding, burning, wear or bending. Figure #1-D illustrates the proper manner for checking the shift forks for bending. In the position illustrated, minimum clearance, if any, should be visible.
 - D. Check shift cam and cam guide for friction, wear, and bending.
 - E. Check all bearings for friction and wear.
- III. The transmission should then be installed in the engine cases and all bearings and shafts inspected for free movement.
- IV. The layshaft must be checked for clearances after assembly in the engine cases. A dial indicator should be attached to the end of the layshaft. A .050" (approx.) wire with a hook on the end should be inserted into the hole B-Figure #2. Lifting on layshaft with third gear should show a clearance of between .007" to .009". Shims should be added or removed on the end of the layshaft until this clearance is obtained.
- V. The inspection of the transmission gears for proper engagement should now be done, with the cases lying left (clutch) side up. The procedure is as follows - Consult Figures #1 and #2.
 - A. Countershaft sprocket must be on the mainshaft and the sprocket nut must be tight before starting this inspection.
 - B. The shift cam should be turned to the neutral position with a screwdriver. The mainshaft should then be lifted to attain freeplay. Next, the shift forks should be inspected through hole C-Figure #2, and Figure #1, area #2, for minimum freeplay.
 - C. The cam should then be moved to the first gear position and the mainshaft lifted for freeplay. The hooked wire should then be inserted into hole B-Figure #2, and second gear layshaft lifted. The upper shift fork should then be checked for minimum freeplay.
 - D. The cam should then be moved to second gear position and the hooked wire inserted through hole A-Figure #2, then the third gear mainshaft lifted. When the mainshaft is lifted to allow freeplay, there will also be freeplay on the bottom fork.



- 2 -

- E. The cam is moved next to third gear position and the mainshaft is again lifted. The wire is then inserted into hole B-Figure #2, and third gear layshaft is pushed down. The top fork should then have freeplay.
 - F. The cam is moved to the fourth gear position, the wire inserted into hole A-Figure #2, and third gear mainshaft is pushed down. The tower shift fork should have freeplay when the mainshaft is lifted.
- VI. The hooked ratchets should then be inspected for wear at both points C-Figure #3. Check area B to determine the correct hooked ratchet to be used with the coinciding notch in the left case. Area A-Figure #3. Two ratchets are available, but the ratchet can be built up with weld to the proper dimension (+1.5mm) as per Figure #3, area B.

Due to the differences in the throw of the gear change crank, between the radials and the square barrels, the gear change return spring must be bent so the crank is in the proper position in accordance with the modification to the hooked ratchet and the case Figure 3, areas A & B.

The proper position for the crank is arranged in conjunction with the side cover screw hole Figure 4-E.

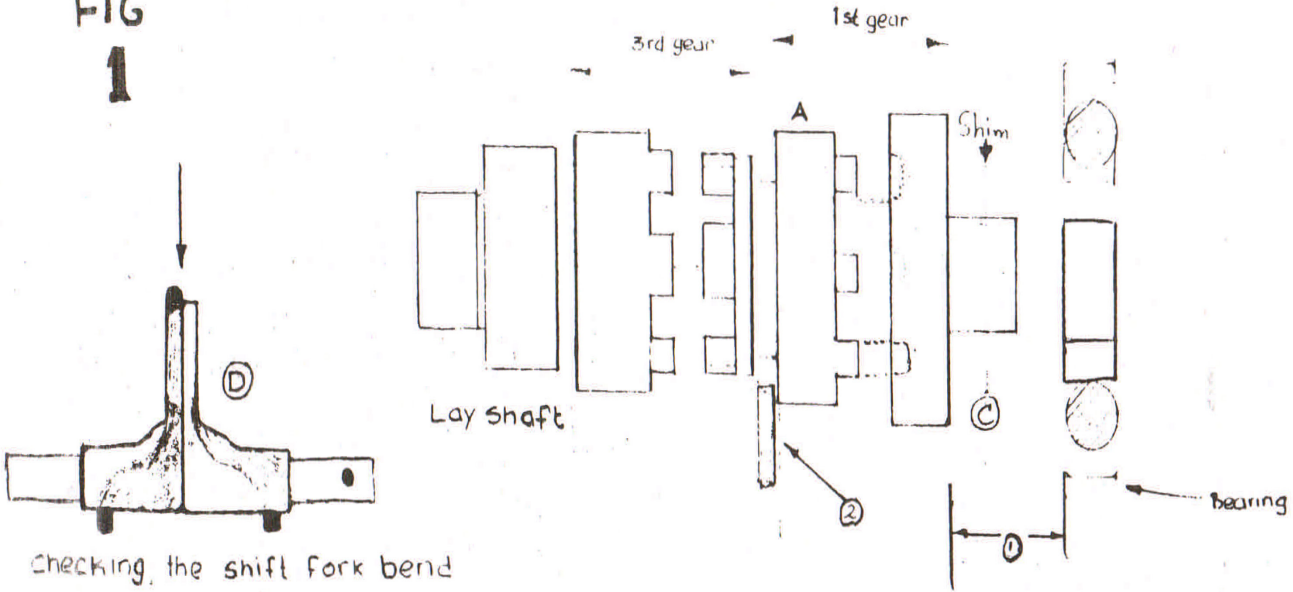
Illustration Figure 4-A depicts the related positions of the crank and engine case screw hole for 250 and 400 radials. Illustration Figure 4-C depicts the related positions for the 250, 360, and 400 square barrel.

The crank return spring in Figure 4-B, must apply pressure to both sides of the positioning stub (Figures #4, areas D-1 and D-2) and no clearance should be present.

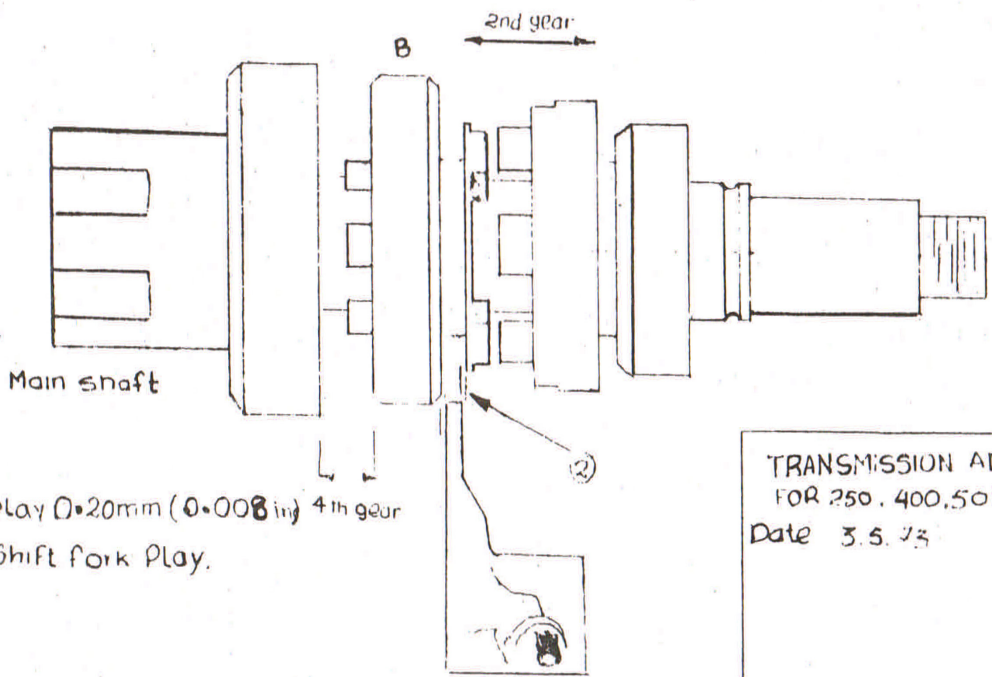
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FIG
1



Checking the shift fork bend



- ① Lay shaft play $D = 20\text{mm}$ (0.008 in) 4th gear
- ② Check the Shift fork Play.

TRANSMISSION ADJUSTMENT
FOR 250, 400, 501.
Date 3.5.73

FIG
2

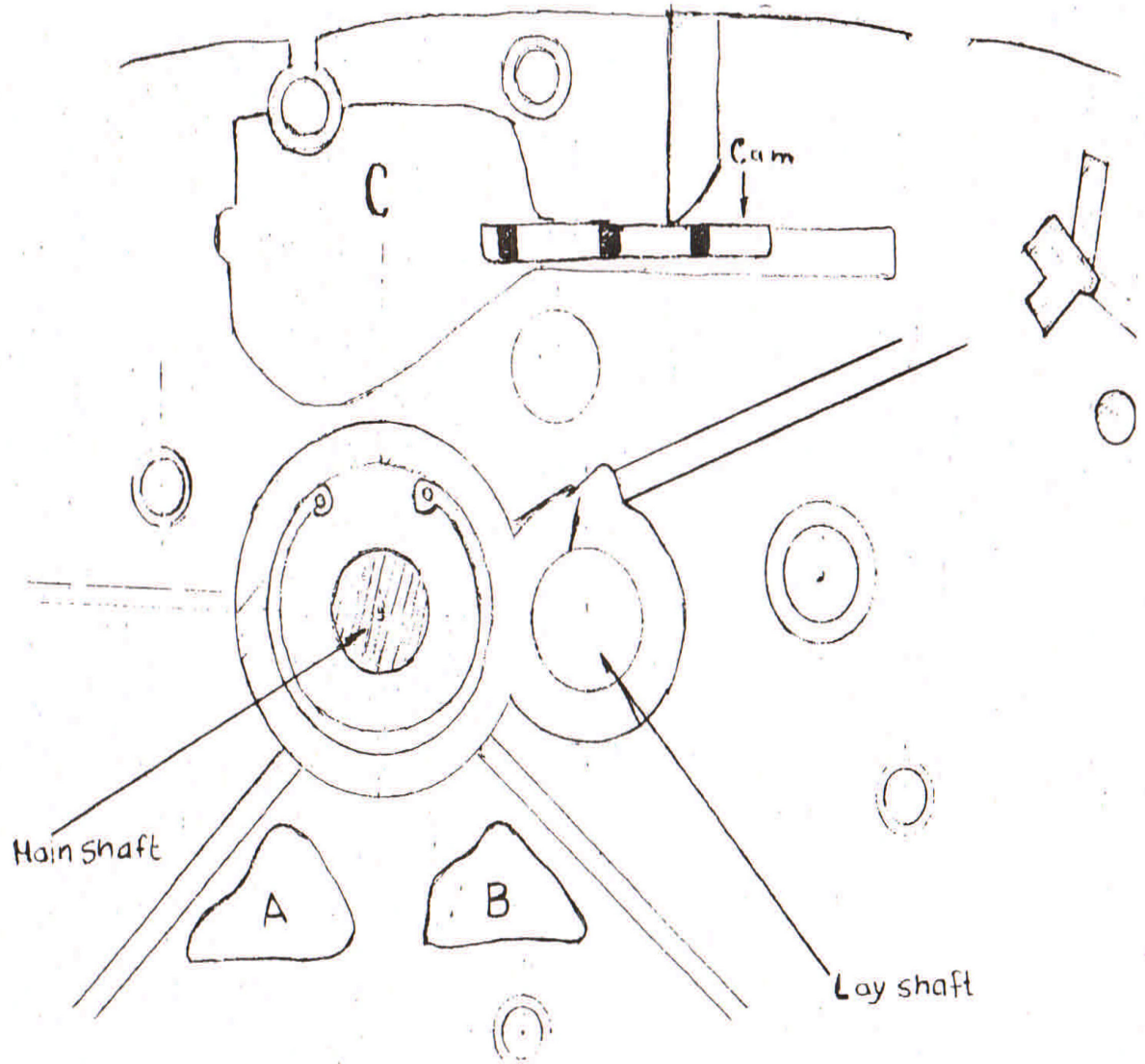
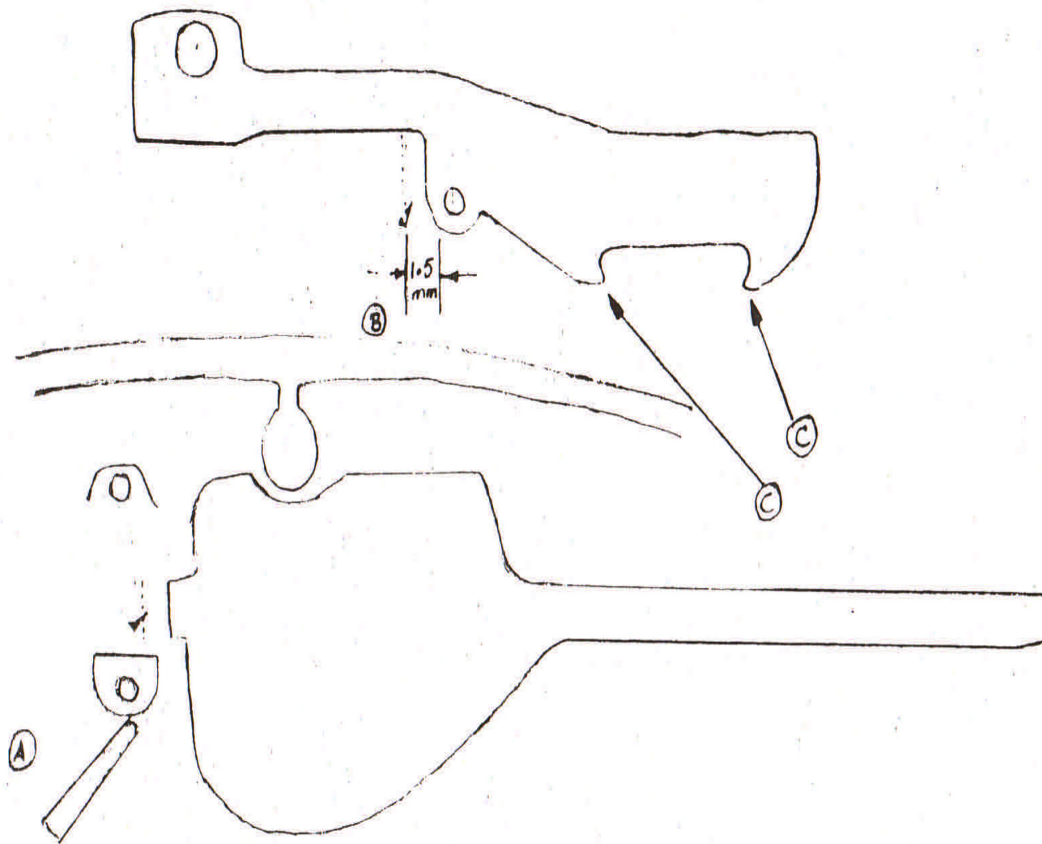


FIG
3

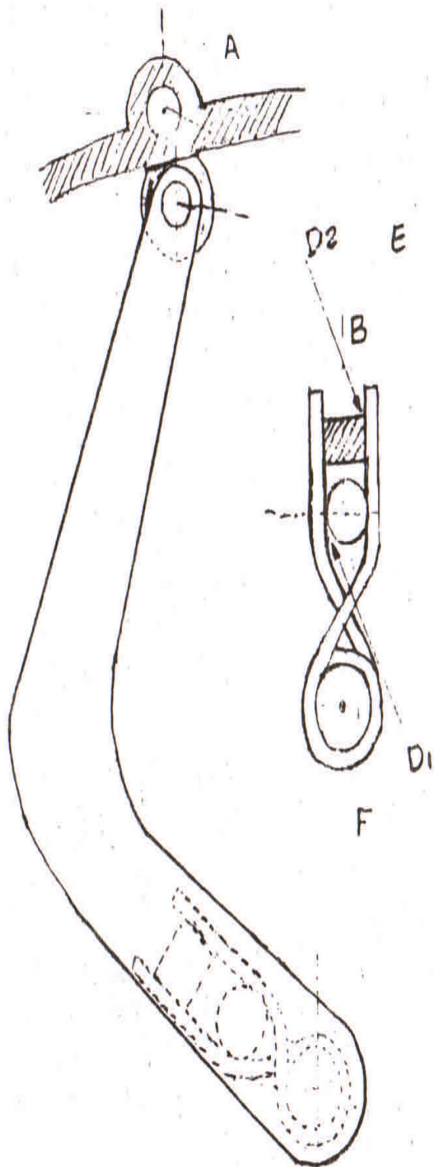


112 min
4.13 inch
standard

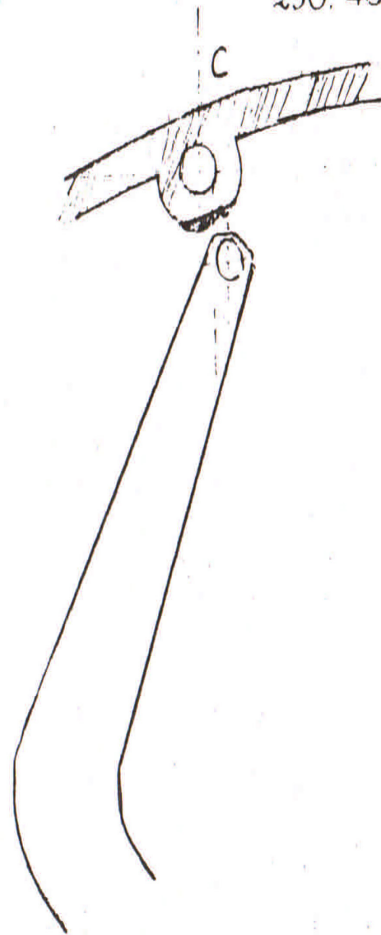
Hooked Ratchet
400 Radial
Date 3 5, 73

FIG 4

250, 400. Radial



250, 400 Square Barrel



Gear Change Crank

Date 3-5-73

243-100	18" Akront Rim
243-102	21" Akront Rim
243-104	Nylon Jersey
243-106	Nylon Mesh Jersey
243-108	T-Shirt
243-110	Jacket
243-112	Engine Repair Stand
243-114	Transmission Snap Ring Tool
243-116	Rotor Pulling Tool
243-118	Swing Arm Repair Kit
243-120	Koni Shocks
243-122	Spark Arrester, Silencer 1.259"
243-124	Silencer 1.259"
243-126	Silencer 1.000"
243-128	R/S Performance Pipe 400cc (silenced)
243-130	R/S Performance Pipe 250cc (silenced)
243-132	Torque Pipe 400cc (silenced)
243-134	Carb Bell
243-136	Internal Air Box Collar
243-138	K & N Filter
243-140	Filtron Filter
243-142	Filtron Adapter Kit
243-144	Special Air Boot

243-146	Quick Throttle Assy.
243-148	Quick Throttle Cable 36 Bing
243-150	M/X Pegs
243-152	Heavy Duty Rear Spoke Set
243-154	Maico Banner
243-156	Plastic Replica Front Fender
243-158	Plastic Replica Rear Fender
243-160	Plastic Replica Air Box
243-162	Plastic 3 gallon Tank
243-164	Factory Replica Tank
243-166	Small Factory Replica Tank
243-168	34mm Mikuni Spigot Mount
243-170	34mm Mikuni Flange Mount
243-172	36mm Mikuni Spigot Mount
243-174	40mm Mikuni Spigot Mount
243-176	40mm Manifold
243-178	Tank Emblem
243-180	Tank Transfer (White)
243-182	Air Box Decal
243-184	M-C 250 Tank Sticker
243-186	M-C 400 Tank Sticker
243-188	M-C 501 Tank Sticker
243-190	Shop Manual

243-192	350 x 18 Metzler Knobby
243-194	400 x 18 Metzler Knobby
243-196	450 x 18 Metzler Knobby
243-198	300 x 21 Metzler Knobby
243-200	25ft. Roll 428 Diamond Chain
243-202	25ft. Roll 520 Diamond Chain
243-204	25ft. Roll 530 Diamond Chain
243-206	Pre-Cut 520 Diamond Chain
243-208	Number Plates (set of three)
243-210	Tank Transfer (Red)
243-212	HRL Clutch Lubricant (case only)