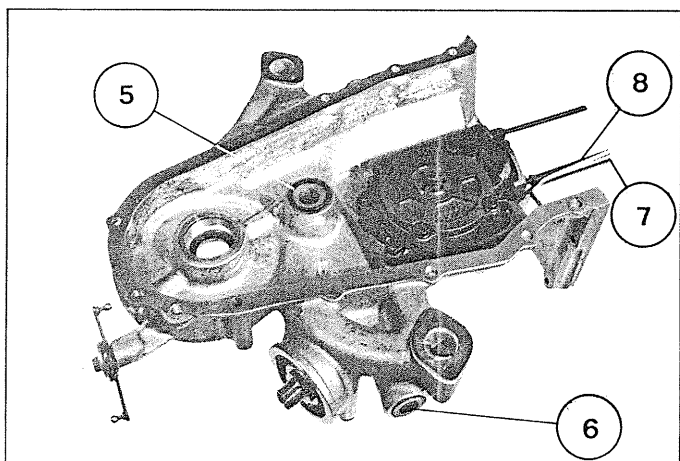


ASSEMBLY Contd.

PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

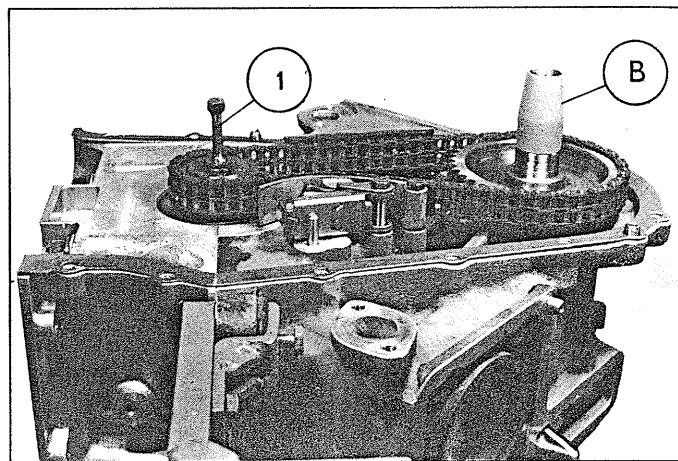
28 Contd.

- Fit the plug (6), tighten to 70 mAN (7 m.kg 51 ft/lbs)
- Fit the oil pump : take care in positioning the ring seal : 26-28 mAN (2.6-2.8 m.kg 19-20.3 ft/lbs)
- Fit the ring seal (5) in place.
- Hold the pipe (7) against the return pipe using a ring.

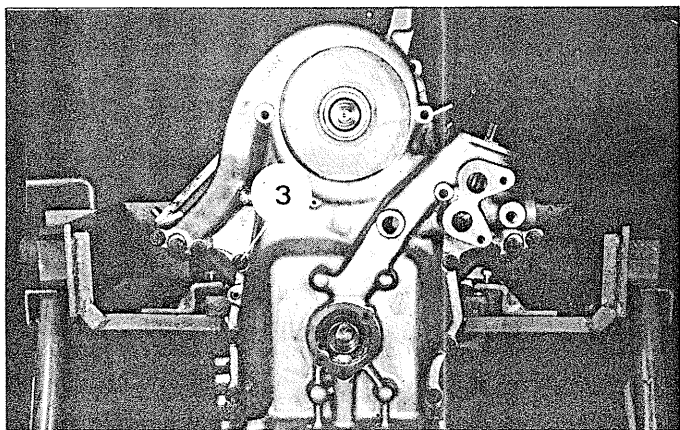
**29**

FITTING THE TIMING CASE

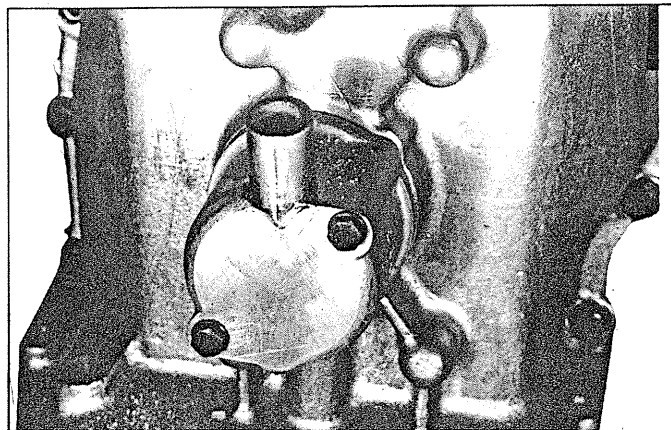
- Fit the cone (B) of the set 3064-T on the end of the intermediate shaft..
- Fit the pump drive shaft (1) (with a little grease)
- Fit the timing case. Turn the oil pump slightly to facilitate the engagement of the drive shaft.

**29** Contd.

- Tighten the bolts (3) to 21-23 mAN (2.1-2.3 m.kg 15.2 - 16.6 ft/lbs)

**30**

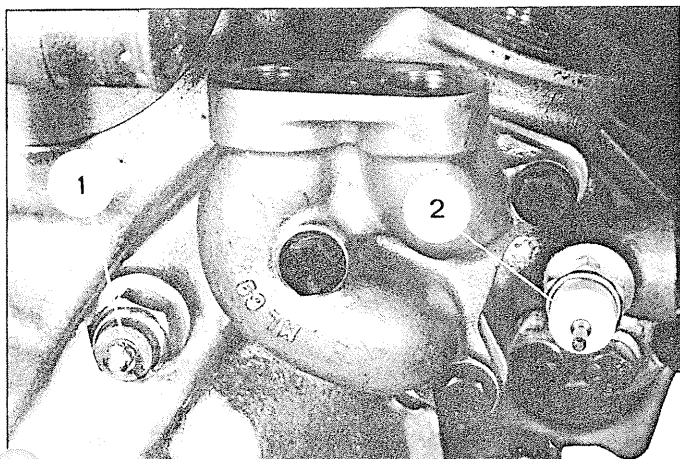
- Fit the breather (gasket)
- Tighten the bolts : 10 mAN (1 m.kg 7.2 ft/lbs).



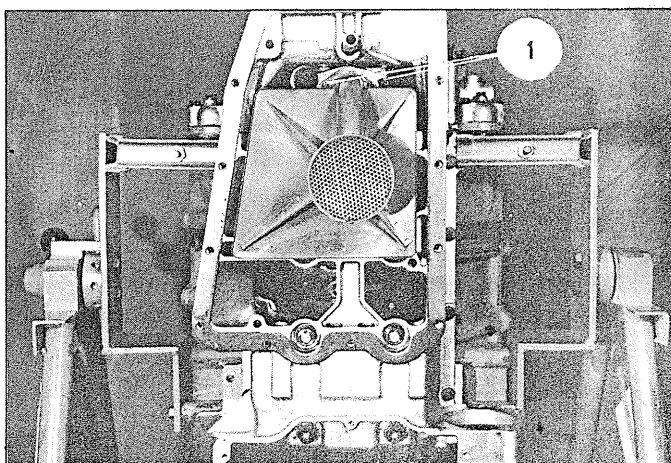
ASSEMBLY Contd.

31

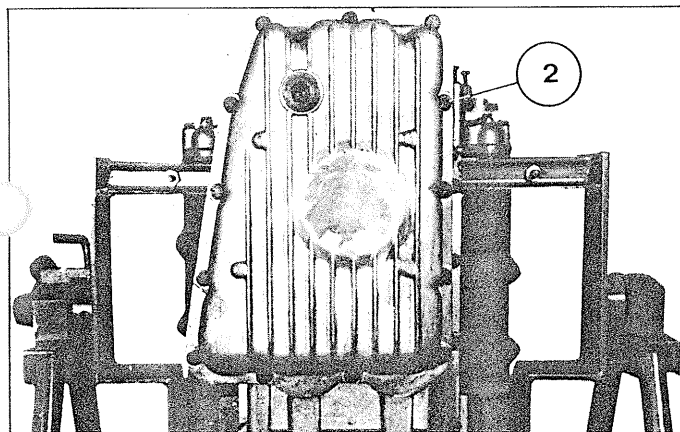
- Fit the housing connecting the oil cooler.
- Tighten the bolts : 20 mAN (2 m.kg 14.4 ft/lbs)
- Fit the oil temperature thermal switch (1) : 30-35 mAN (3-3.5 m.kg, 22-25 ft/lbs)
- Fit the oil pressure switch (2) : 30-35 mAN (3-3.5 m.kg 22-25 ft/lbs).

**32**

- Check the soldering of the suction tube/filter assembly.
- Fit the suction tube/filter assembly. Tighten the bolts (1): 10 mAN (1 m.kg 7.2 ft/lbs).
- Fit the oil basin (gasket) : take care with the shutters of the anti-emulsion partitions.

**32** Contd.

Tighten the bolts (2) : 16-18 mAN
(1.6-1.8 m.kg 11.6-13 ft/lbs).

**33**

- Fit the intermediate shaft oil seal :
tube spanner : int. ϕ = 30 mm
ext. ϕ = 45 mm
length. ϕ = 100 mm

It should be level with the casing.

NOTE : To protect the lips of the gasket, wrap adhesive tape around the splines



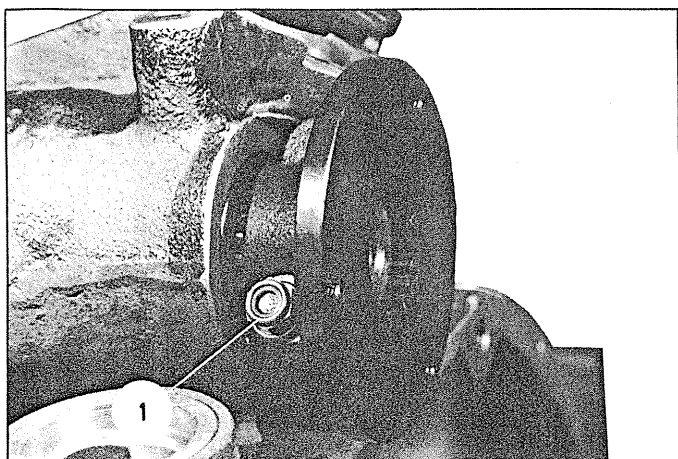
ASSEMBLY Contd.

PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

34

Fit the drive plate of the H.P. pump control shaft.

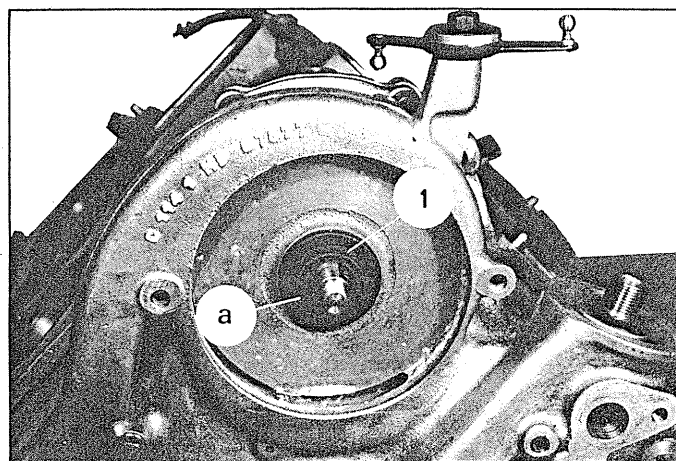
Fit the nut (1) but do not tighten.



35

FITTING THE WATER PUMP

- Fit the oil seal (1) on the housing.
- Coat the thrust face (a) of the gasket and its contact surface on the turbine with RCOL A.S.P or MOLYKOTE 557 grease



35 Contd.

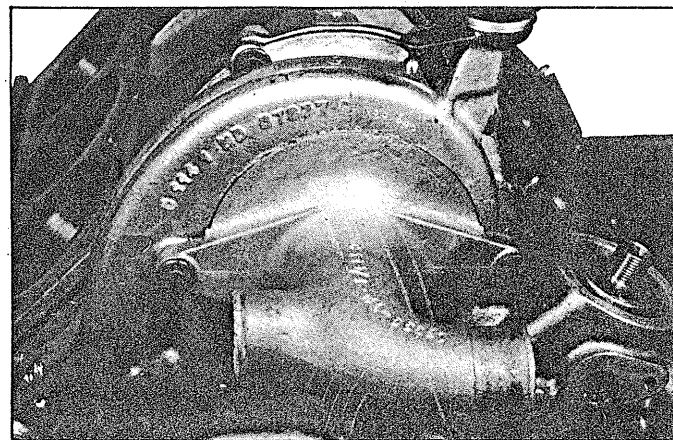
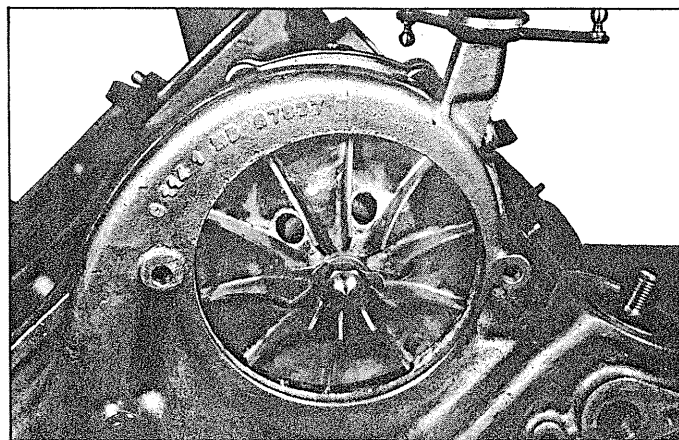
Fit :

- The key
- The turbine
- The washer, the stop washer.
- The nut (thread coated with ADEXOLIN 56 glue)

Tighten the nut : 30 mAN (3 m.kg, 22 ft/lbs).

Fold down the stop washer locking lugs.

- Fit the cover (with its ring seal).
- Tighten the bolts : 20 mAN (2 m.kg 14.4 ft/lbs).

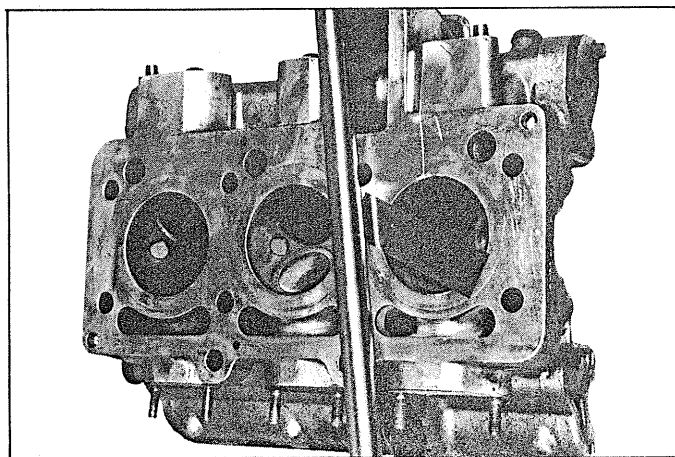
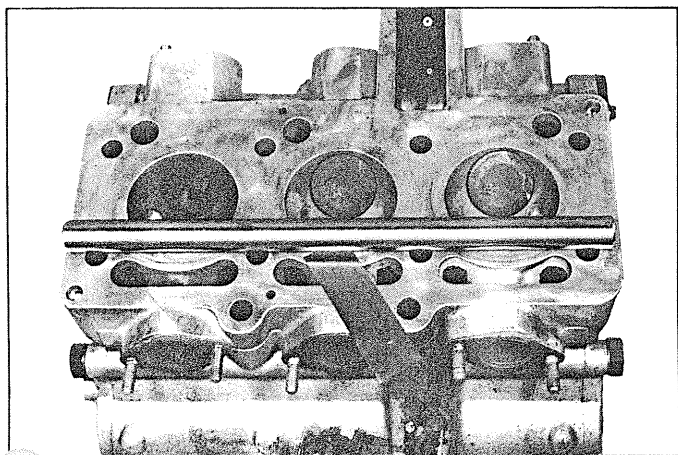


ASSEMBLY Contd.

36

CHECKING THE FLATNESS OF THE CYLINDER HEADS

- Check the flatness of the cylinder heads
Straight edge 1698-T and foil strips
Max out of flat = 0.05 mm.
- Minimum height after regrinding 110.2 mm.



37

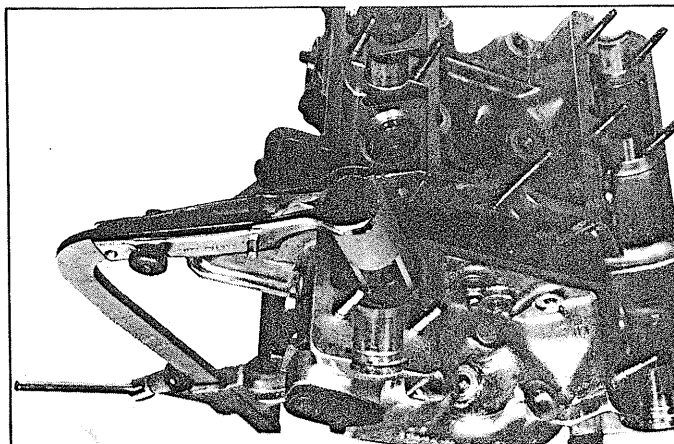
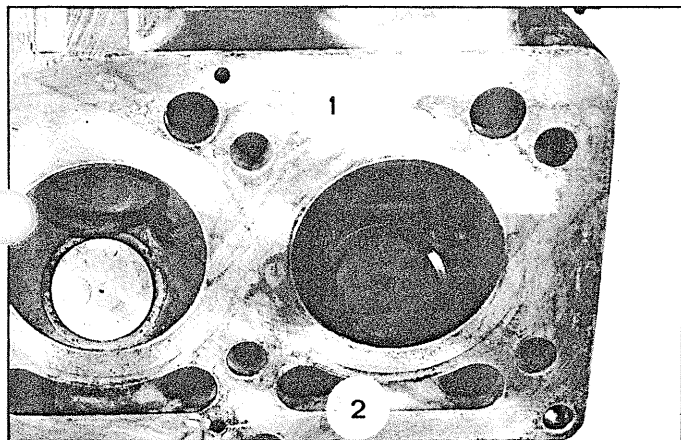
PREPARING THE CYLINDER HEADS

- Make sure that the ducts (1) and (2) and the jets for the camshaft lubricating oil are clean.

Fit :

- Valve stem oil seals (inlet only)
- The cups
- The springs

Universal compressor and tool D from set 3064-T.

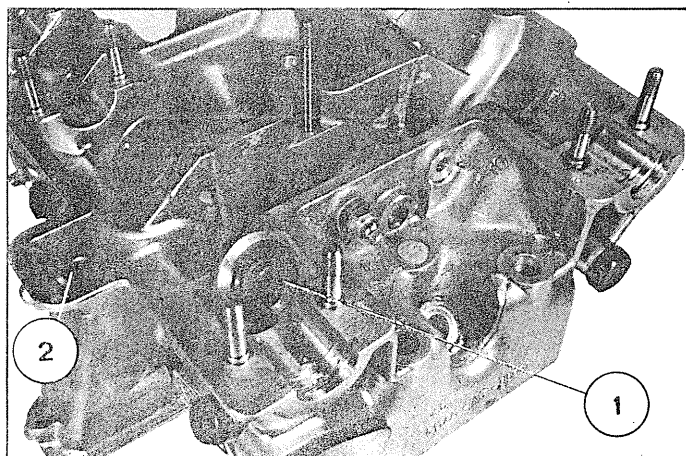


ASSEMBLY Contd.

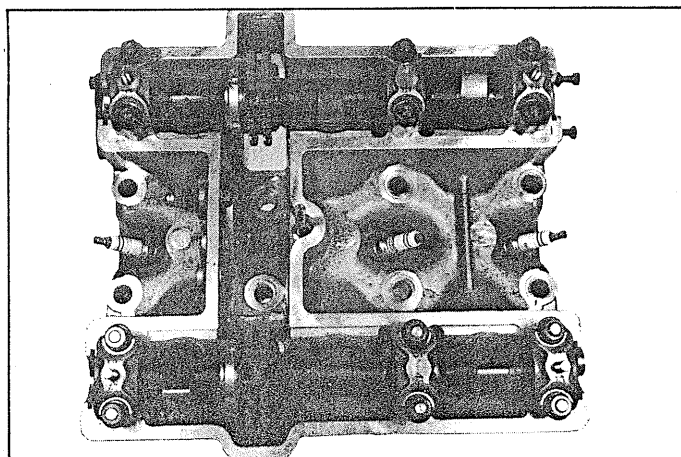
PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY
PREPARATION OF THE CYLINDER HEADS

37 Contd.

- Fit the free play limiter (2) (bolts fitted with LOCTITE GX 01 460 01 A).
- Fit the capsules (1) and the push rods found when dismantling, back in their respective places.



- Fit the camshaft : inlet, (V), exhaust (I₁)
- Fit the caps of the camshaft bearings (marked by Nos).
- Tighten the nuts : 26-28 mAN (2 6-2.8 m kg 18,8-20,3 ft/lbs).



37 Contd.

- Turn the camshafts (spanner D from set 3185-T)
- Check the clearance between cams and pushrods.

Clearance in practice

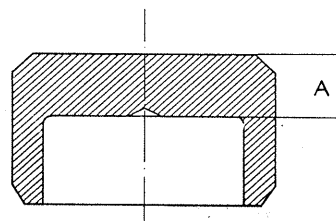
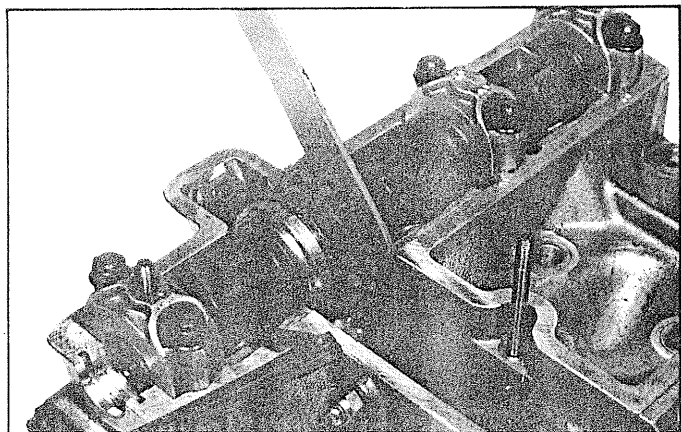
Inlet : 0.30-0.35 mm

Exhaust : 0.50-0.55 mm.

.012 .014
.020 .022

- Remove
- The camshafts
- The pushrods and the capsules.
- Measure the thickness A of each capsule
- From amongst the capsules sold by the replacement parts, choose those that will give the correct clearance.

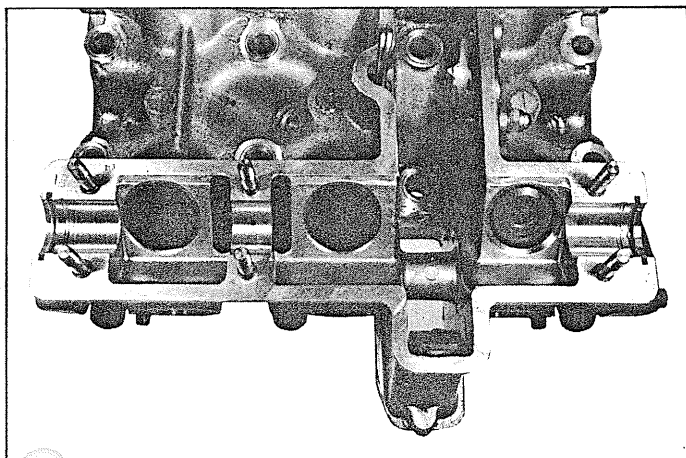
Thickness A = in steps of 0.025 mm



ASSEMBLY Contd.

37 Contd.

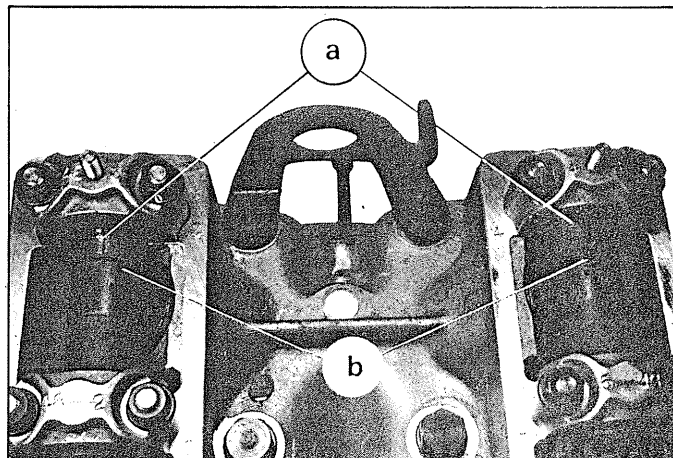
- Fit the capsules chosen in their respective places.
- Fit the pushrods.



- Fit the camshafts

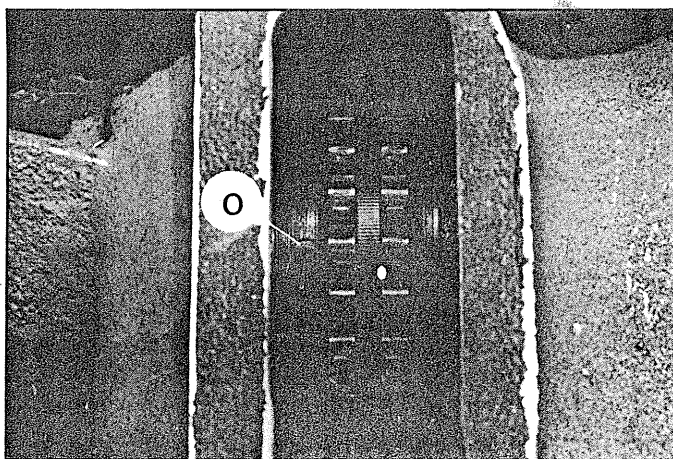
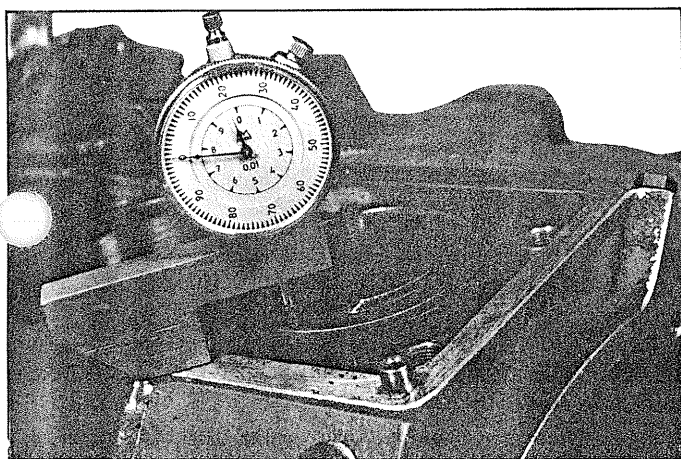
Tighten the bearing caps : 26-28 mAN
(2.6-2.8 m.kg, 18.8-20.3 ft/lbs)

- Turn the camshafts until the marks "a" and "b" are in line.



38

- Bring cylinder No. 1 to TDC
Mark "O" on intermediate shaft, visible in timing chain passage (straight edge support 1754-T and gauge 2437-T).
- Put the timing chain in position on the intermediate shaft (using wire) : the upper end of the chain should stand proud of the housing by approx. 200 mm.

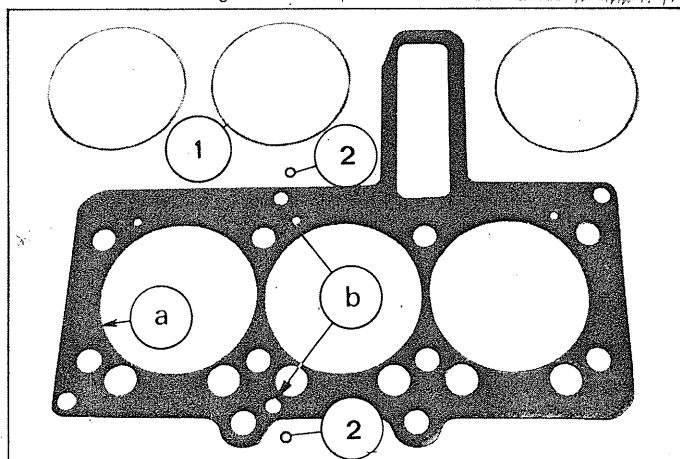


ASSEMBLY Contd.

PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

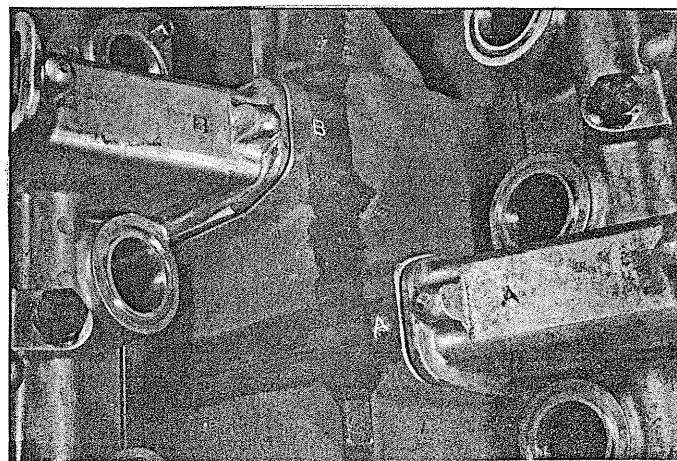
39

- Brass rings : (set of three) must not be pitted, scratched or cracked.
- (REINZ) gasket : there must be no burring at « a » and no hairline fractures.
- Fit the brass rings (1), slightly greased, on the barrels. Centre them.
 - Place the REINZ gasket in position (correct any possible overlap).
 - Fit the ring seals (2) in the holes « b ». *Primaire 300 TO hold in position*



FITTING R.H. CYLINDER HEAD

- Fit the cylinder head on the block. Bring the two marks A and B into line.



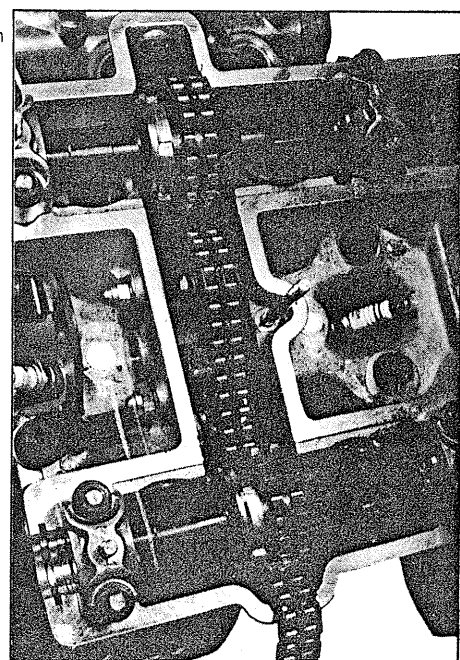
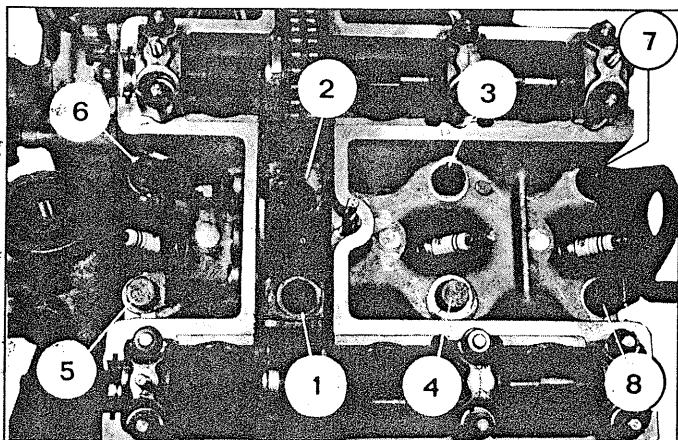
39 Contd.

FITTING R.H. CYLINDER HEAD

- Fit the cylinder head bolts in place (do not forget the lifting lugs).
 - Tighten the bolts in the tightening sequence.
- 1st tightening : 50 mAN (5 m.kg 36 ft/lbs)
- 2nd tightening : 110 mAN (11 m.kg 79 ft/lbs)

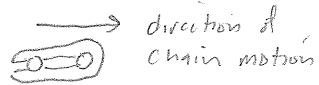
- Fit the chain tensioner (ring seal on tensioner and copper washers under blind nuts). *(Align)*

- Pass the chain under the pinion of the exhaust camshaft.



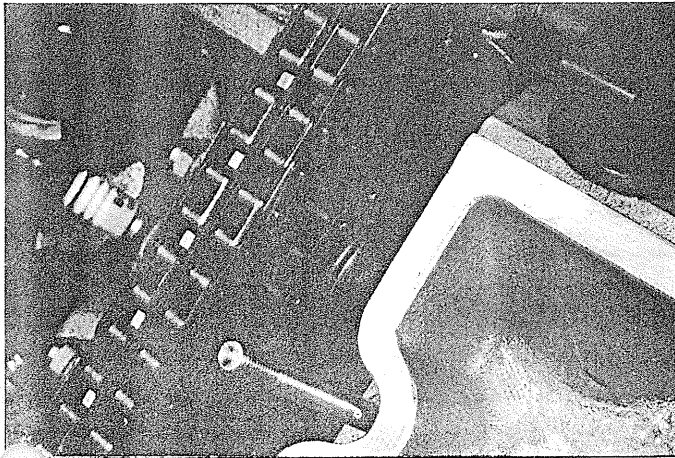
ASSEMBLY Contd.

39 Contd.



- Fit the spring link

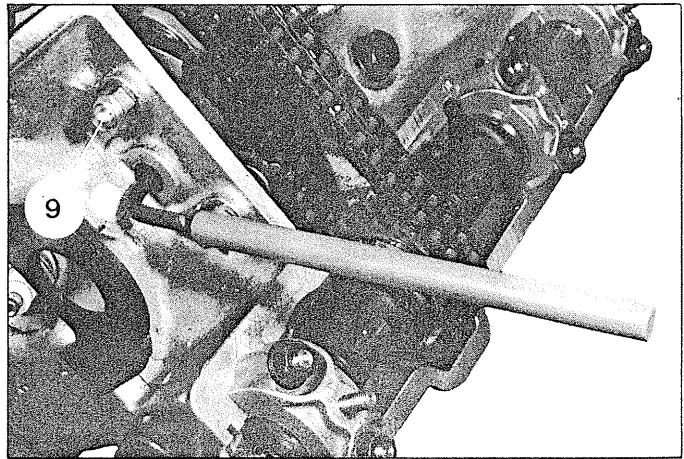
- a) Thick spacer in middle of chain
- b) The clip on the side of the hexagonal camshaft adjusting nut
- c) Open end of clip towards rear (direction of chain rotation).



Tension the timing chain

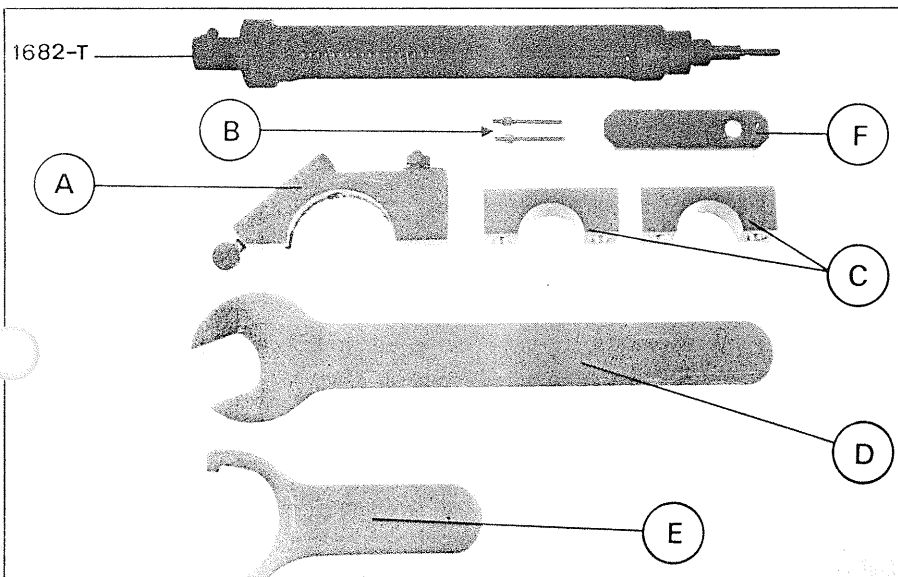
20 mAN (2 m.kg 14.4 ft/lbs) i. e. 10 kg (22 lbs) on spring balance (Allen key 6 mm, extension MR 630-13/5 and spring balance).

Tighten the nuts (9) to 20 mAN (2 m.kg 14.4 ft/lbs).



39 Contd.

TOOLS REQUIRED FOR CHECKING AND ADJUSTING THE TIMING (SET 3185-T)



1682-T: Gauge support

A: Gauge support

B: Two gauge pins

C: False bearings (*use strip of leather*)

D: Spanner for turning camshafts

E: Spanner for camshaft nuts

F: Retaining plate for support A.

ASSEMBLY Contd.

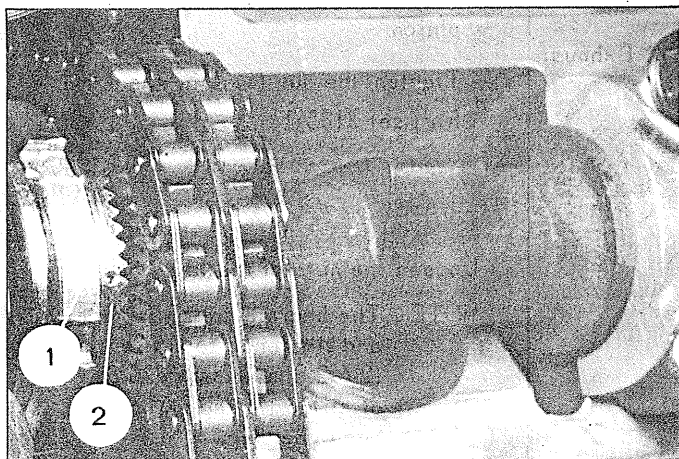
PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

40

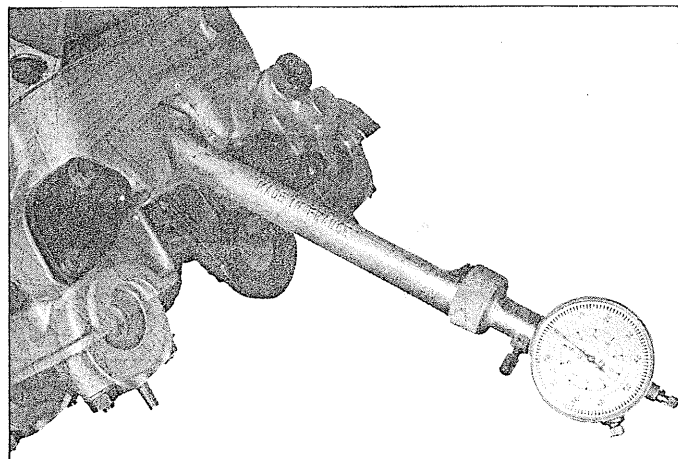
TIMING ADJUSTMENT (R.H. CYLINDER HEAD)

DISENGAGING CAMSHAFTS

- Loosen the nut (1) (pin spanner E of set 3185-T)
- Free toothed ring (2)

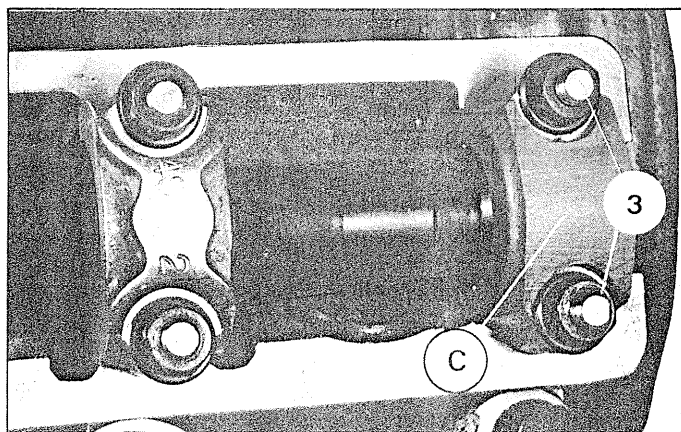


- Find top dead centre (TDC) of cylinder 1
(gauge support 1682-T
gauge 2437-T)

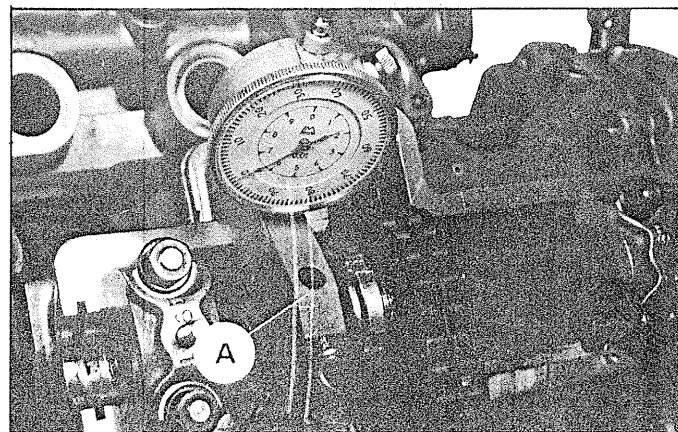


40 Contd.

- Replace the front bearings of the two crankshafts with the false bearings C of the set 3185-T.
- Do not tighten the nuts (3).



- Put the gauge support A from set 3185-T, and gauge 2437-T in position, with the pin pressing on the inlet pushrod of cylinder 1. Fix it in position using plate F from the set 3185-T
- Bring the needle of the gauge to 0.

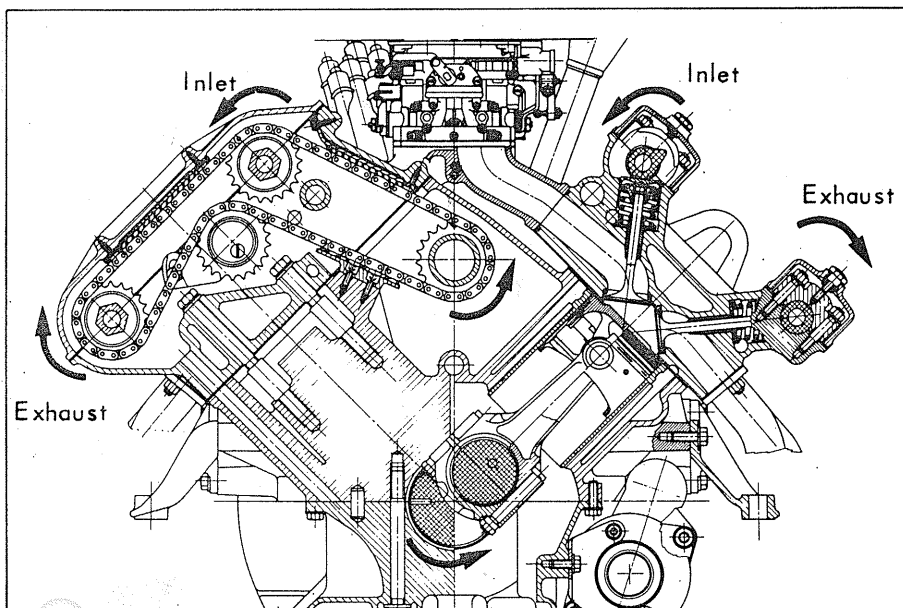


ASSEMBLY Contd.

40 Contd.

INLET

- Push in the pushrod by 1 mm, turn the camshaft in the rotation direction of the engine (spanner D from set 3185-T)
- Tighten the false bearing C of set 3185-T.



- Find, by turning the toothed ring (2), the point at which it engages at the same time in the splines of the camshaft and fully in the teeth of the pinion.
- Tighten the nut (1) (pin spanner E from set 3185-T).

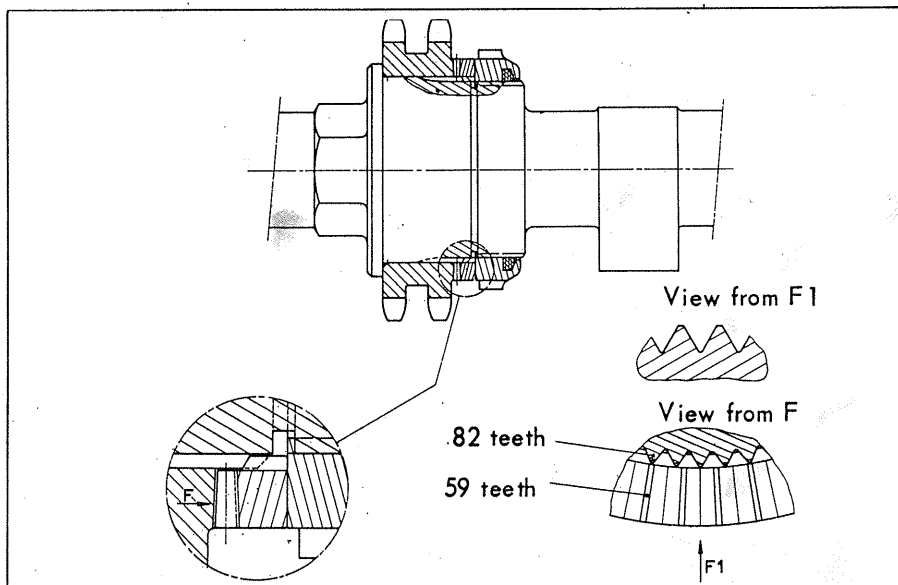
Loosen the nuts of the false bearings.

NOTE : The bearing caps will be fitted and tightened to 26-28 mAN (2.6-2.8 m.kg 18.8-20.3 ft/lbs) after the timing adjustment has been checked.

40 Contd.

EXHAUST

- Fit the support A (fixed by plate F), the pin touching the exhaust pushrod of cylinder 1.
- Bring the needle of the gauge to 0
- Push in the pushrod by 1.3 mm : turn the camshaft in the opposite direction to that of the engine rotation.
- Tighten the false bearing C from set 3185-T.
- Find, by turning the toothed ring (2), the point where this engages correctly.
- Tighten the nut (1) (pin spanner E from set 3185-T).



ASSEMBLY Contd.

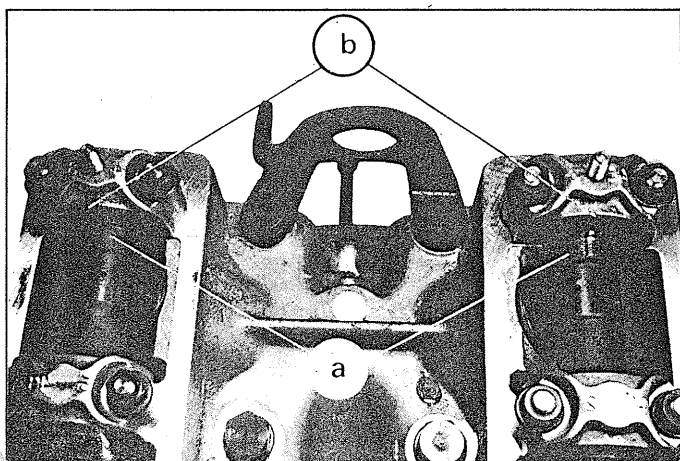
PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

41

CHECKING TIMING ADJUSTMENT (R.H. CYLINDER HEAD)

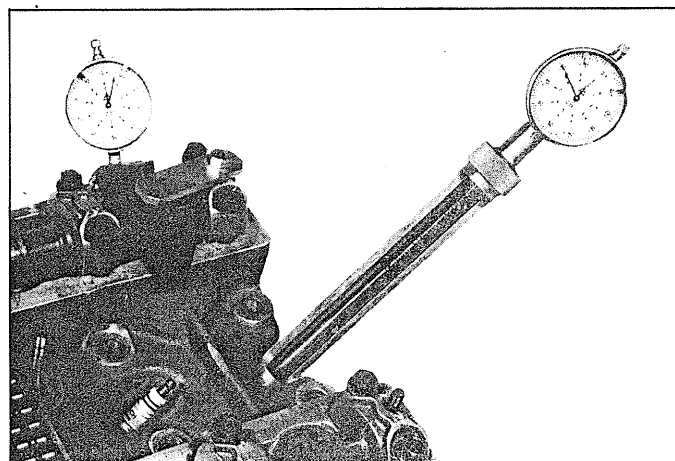
USING MARKINGS

- With cylinder 1 at TDC and the valves in the "rocking" position, the long marks "a" on the camshafts must be in line with the marks "b" of the bearing caps.



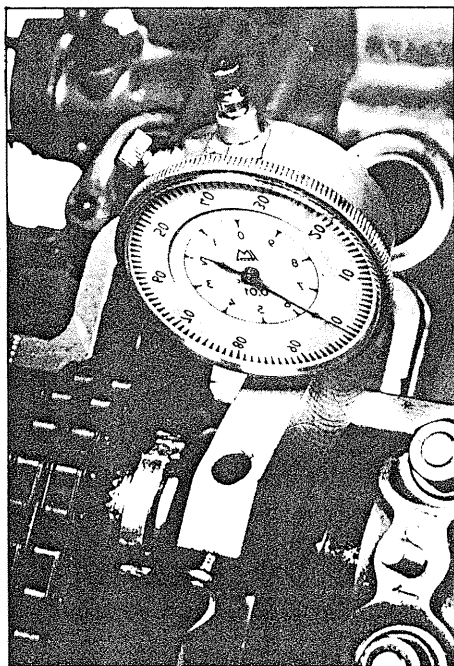
USING GAUGES

- Turn the engine in the opposite direction
- Bring the inlet cam of cylinder No.1 to the position where the valve begins to open (however the pushrod must be able to rotate).
- Fit support A of set 3185-T in position
- Bring the needle to "O" (pin-pressing on pushrod)
- Bring cylinder 1 to TDC. The gauge of support A should show a travel of 1 mm.



41 Contd.

- Fit support A in position on the exhaust pushrod of cylinder 1.
- Bring the needle to "O".
- Turn the engine until the valve is on its seat
- The gauge should show a travel of 1.3 mm.



42

FITTING L.H. CYLINDER HEAD

- Bring piston of cylinder 6 to TDC (no mark "O" on shaft).
- Fit the timing chain on the intermediate shaft.
- Fit the brass rings and the cylinder head gasket in place.
- Fit the cylinder head and tighten to correct torque.
- Fit the chain tensioner and the chain
- Fit the spring link.
- Tension the timing chain.

ASSEMBLY Contd.

43

TIMING ADJUSTMENT (L. H. CYLINDER HEAD)

- Disengage the camshafts.
- Find TDC on cylinder 6
- Replace the bearing caps with the false bearings
- Fit gauge support A on the exhaust pushrod
- Bring the needle to "0"

Inlet : Push in the pushrod by 1 mm (direction of engine rotation)

- Tighten the false bearing
- Find the correct engagement point of the toothed ring.
- Tighten the nut

Exhaust : Fit support A in position on the exhaust pushrod

- Bring the needle to "0"
- Push in the pushrod by 1.3 mm (opposite direction to that of engine rotation)
- Tighten the false bearing
- Find the correct engagement point of the toothed ring.
- Tighten the nut.

44

CHECKING THE TIMING ADJUSTMENT (L.H. CYLINDER HEAD)

USING MARKS

- With the cylinder 6 at TDC and valves in "rocking" position, the short marks on the camshafts should be in line with the marks on the bearing caps.

USING GAUGES

Use the same procedure as that used when checking the timing adjustment of the R.H. cylinder head.

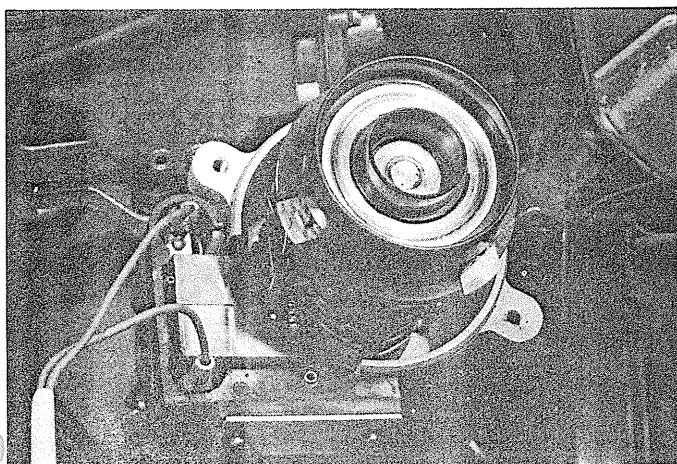
ASSEMBLY Contd

PARTICULAR POINTS ON DISMANTLING AND ASSEMBLY

45

STATIC DISTRIBUTOR ADJUSTMENT

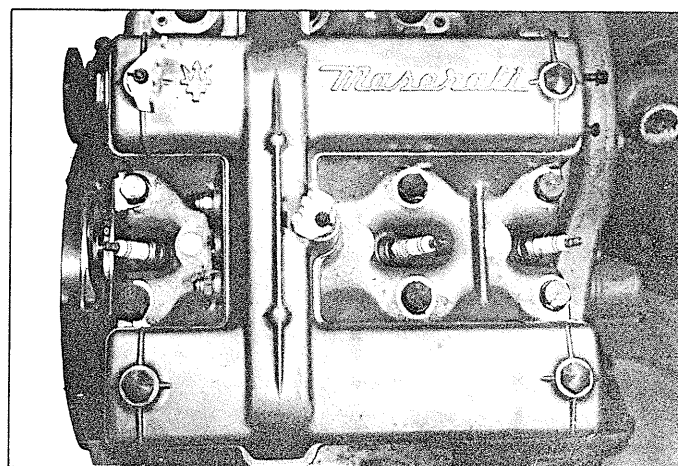
- Bring cylinder 1 to TDC on the compression stroke
- Fit the distributor (cover removed)
 - 1) the bracket for the condensers approximately along central axis of engine
 - 2) the two dogs in the position shown below (see photo)



46

CYLINDER HEAD COVERS

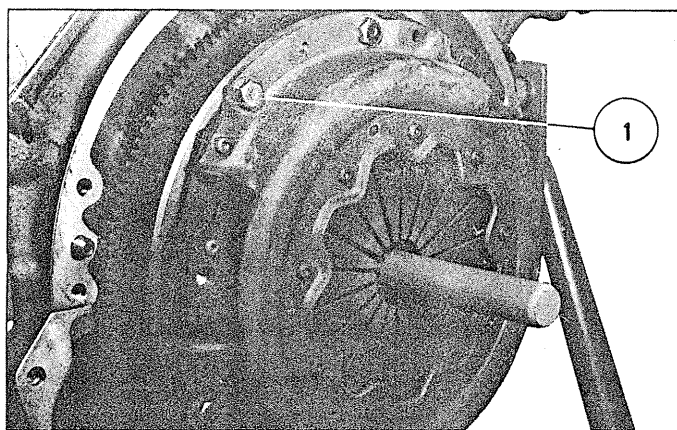
- Fit the cylinder head covers
- Tighten the nuts to 10 - 12 mAN
(1-1.2 m.kg 7.2 - 8.7 ft/lbs)
- Fit the sparking plug wire brackets



47

CLUTCH

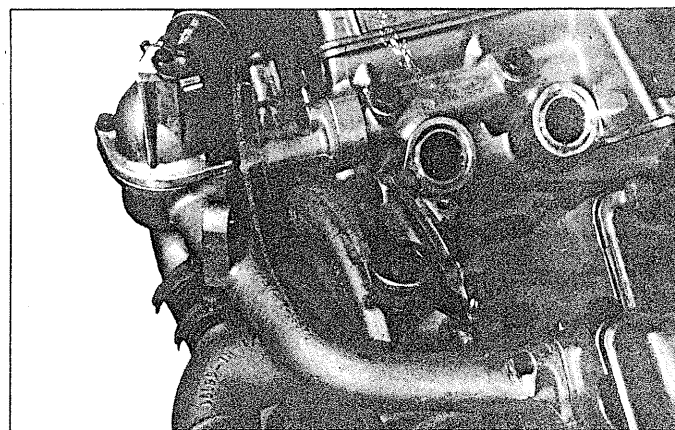
- Fit the clutch disc and mechanism
(Centrer 3106-T or used control shaft).
- Tighten the securing bolts (1)
36-40 mAN (3.6 - 4 m.kg 26 - 29 ft/lbs)



48

WATER MANIFOLD

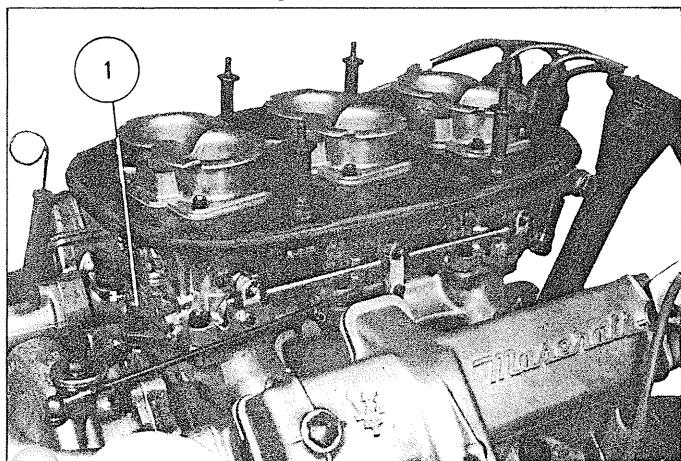
- Fit the water manifold.
- Remove the thermostatic regulator, check it
Starts to open : 75° - 76° C (167° - 169° F)
Opening : 7.5mm minimum at 85° C (185° F)
- Fit the thermostatic regulator



ASSEMBLY Contd.

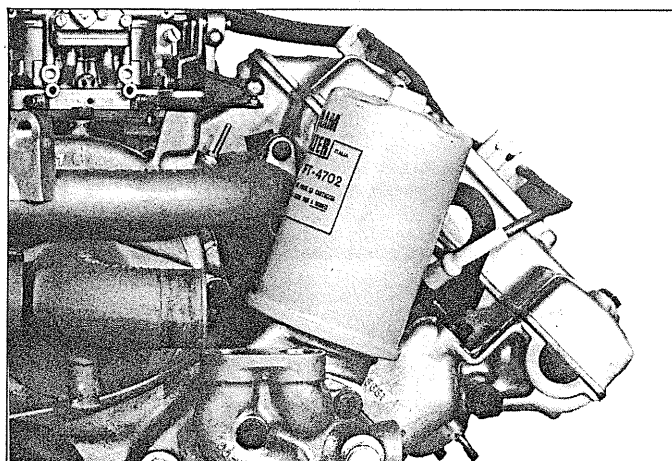
49

- Fit the inlet pipe/carburettors assembly, tighten the bolt (1) : 5 mAN (0.5 m.kg 3.6 ft/lbs)
- Connect the accelerator control
- Fit the oil filler pipe, tighten the bolt : 20 mAN (2 m.kg 14.4 ft/lbs)



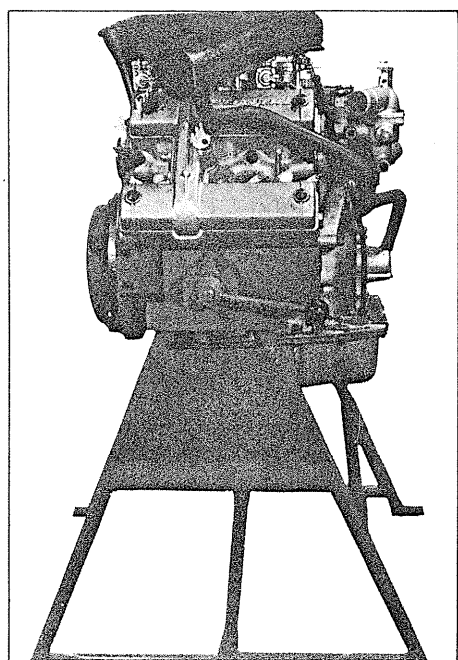
50

- Fit the oil filter (gasket oiled)
- Hand tighten it.



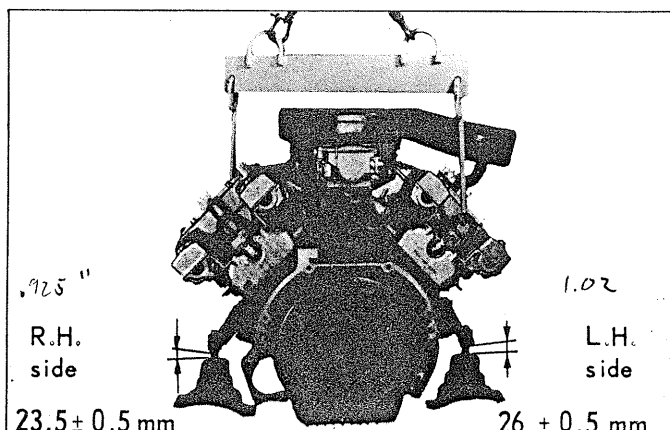
51

- Remove the engine from the support : Sling 2517-T



52

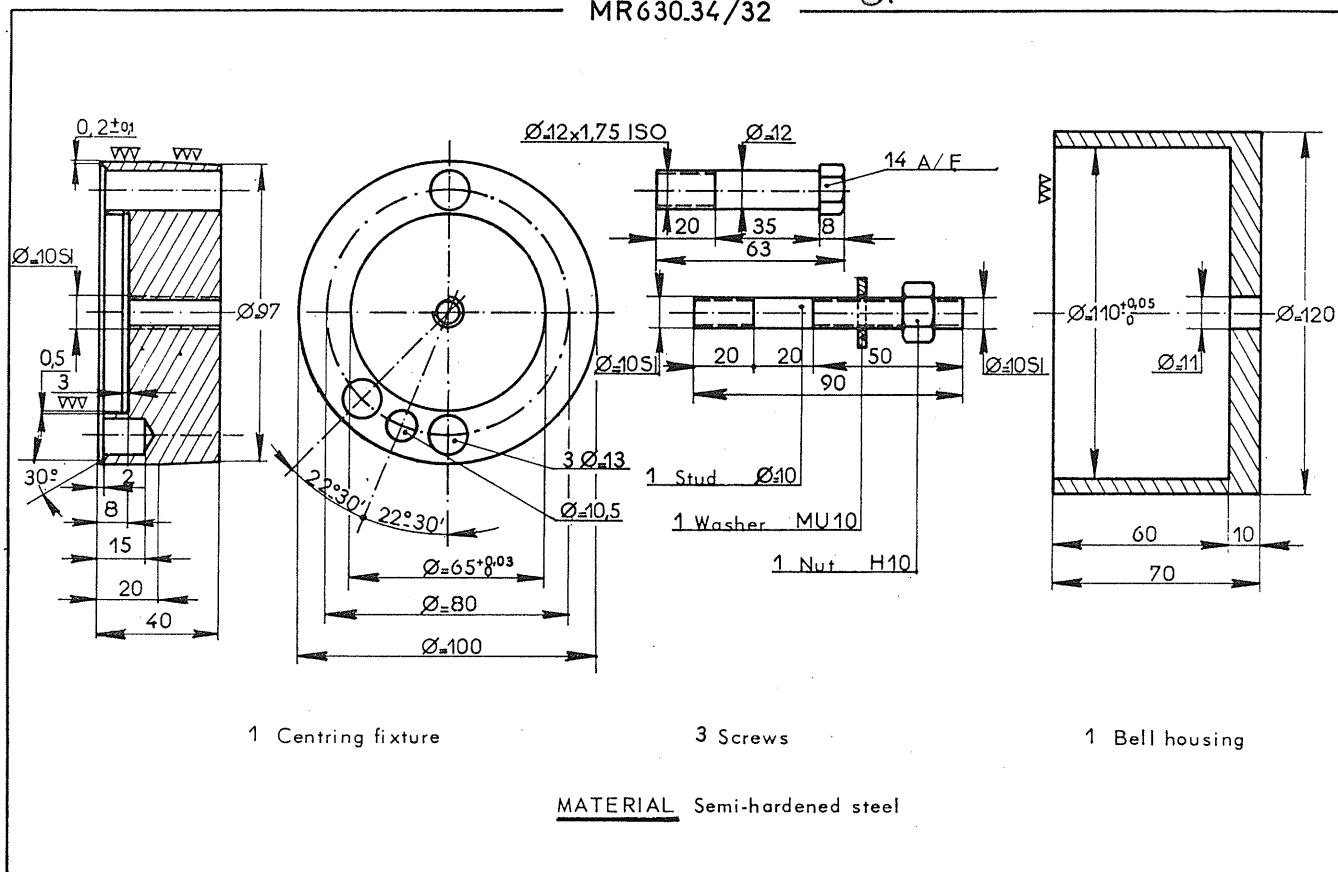
- Fit the starter motor (spanner 3061-T)
- Fit the engine supports and the rubber blocks
- Adjust them (measurement taken between bottom of steel support and the top of the rubber block).
- Tighten the engine support bolts 40 mAN (4 m.kg 29 ft/lbs)



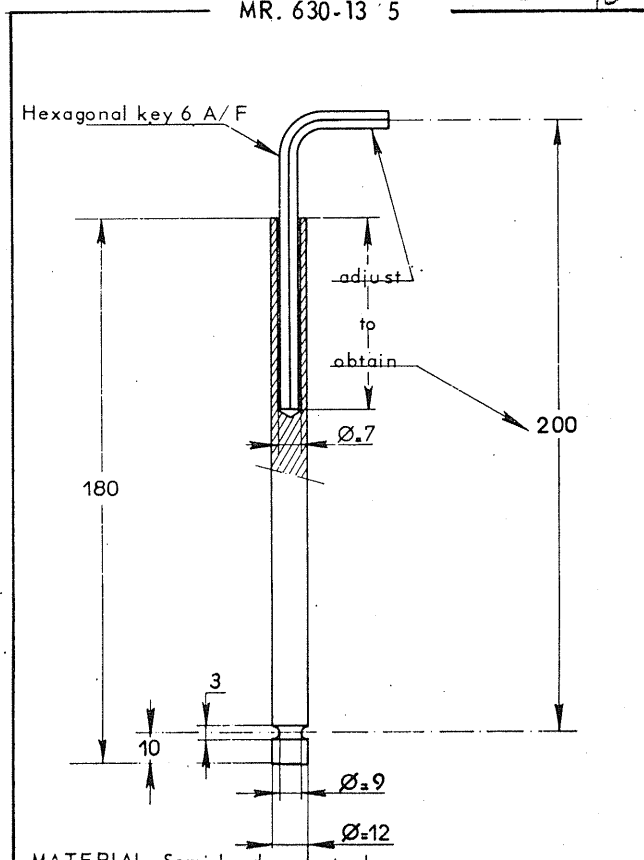
SPECIFICATIONS OF TOOLS NOT ON SALE

MR630.34/32

OIL SEAL FITTING TOOL



MR. 630-13 5

TIMING
CHAIN
TENSION

MR 630_14/49

OIL FILTER KEY

