

7.20 CYLINDER HEAD ASSEMBLY

Insert gaskets **B** on the block floor and put heads **A** into position.

Use the dedicated tool **C** to ensure correct assembly of heads **A** and gasket **B** (Tab. 11.1 ref S).

After inserting the heads, mount the intake manifold without gasket and loosely tighten the nuts, this is necessary in order to align the heads correctly.

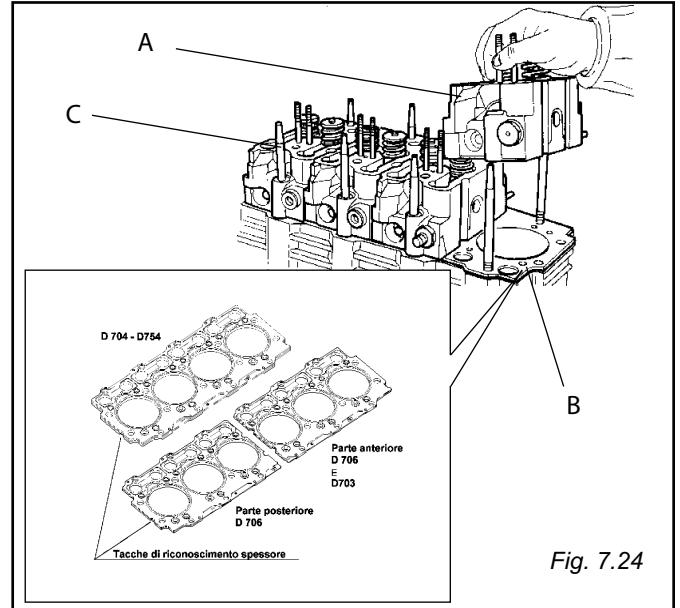
Remove plugs **C** one at a time and replace them with the relative fixing screws.

IF THE SAME HEAD SCREWS ARE TO BE REUSED:
Lubricate all the screws (thread and underside of head bolt) with molycote such as GRAPID PLUS.

Mount the side posts and then the terminals, aligning them correctly.

Now go ahead and tighten the heads as instructed in the specifications below.

Remove the intake manifold and replace it together with the exhaust manifold with the relative gaskets.



TO TIGHTEN THE SCREWS USE THE SPECIAL TOOLS (TAB. 11.1 Ref. N-O-P-Q)

1 Use the torque wrench to tighten the central screws as follows value **30 Nm (3 Kgm)**

Engine 3 cyl. 3-2-1-4-6-7-8-5

Engine 4 cyl. 3-2-1-4-5-8-9-10-7-6

Engine 6 cyl. 11-12-13-14-10-9-8-4-3-2-1-5-6-7

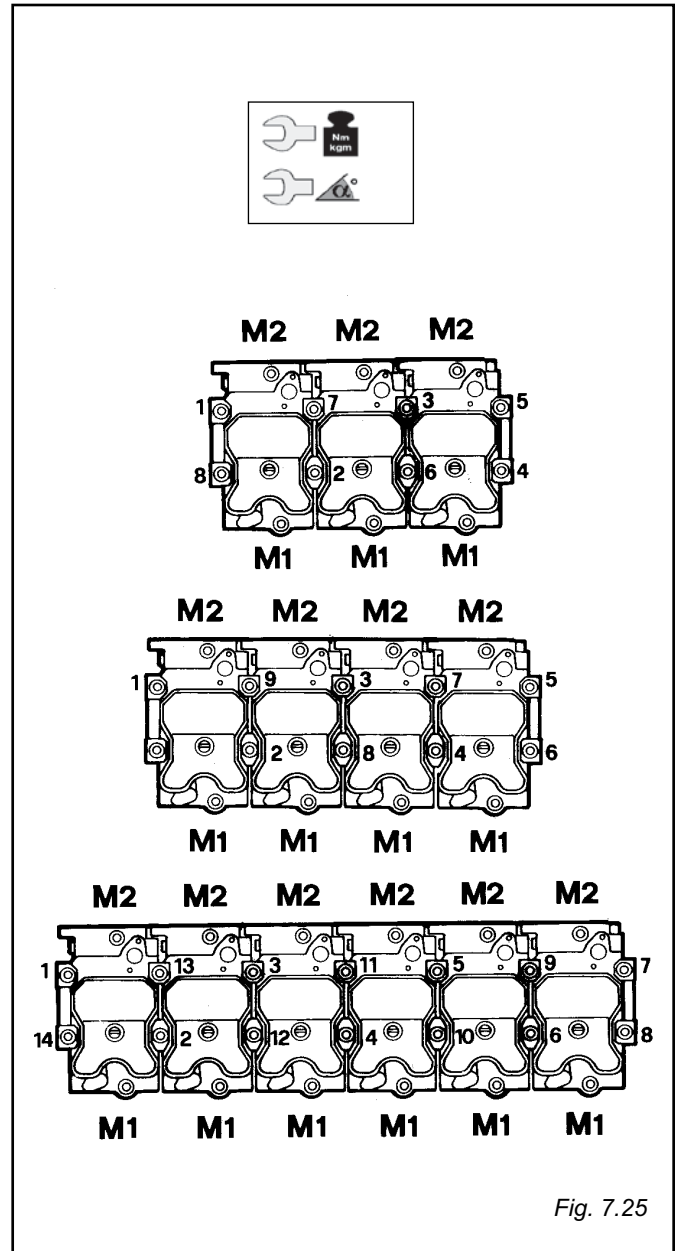
2 Use the special tool (Table 11.1 ref. Q) with angular value indication and tighten the central screws as follows value **65°**

Engine 3 cyl. from **1** to **8**

Engine 4 cyl. from **1** to **10**

Engine 6 cyl. from **1** to **14**

3 Repeat the operation **2** following the same way



4 Use the torque wrench and tighten the external screws **M1** as **30 Nm (3 Kgm)**

5 Using the relevant torquing tool with angular value indication and torque the external screws **M1** as **85°**

6 Use the torque wrench and tighten the external screws **M2** as **30 Nm (3 Kgm)**

7 Using the relevant torquing tool with angular value indication and torque the external screws **M2** as **85°**



— AFTER THE CYLINDER HEADS HAVE BEEN CORRECTLY ASSEMBLED AND TORQUED, RUN THE ENGINE AT SPEED FOR 20 MINUTES UP TO REACH NORMAL WORKING TEMPERATURE 80°-90°C AND THEN SWITCH OFF IT.

8 **RETIGHTEN AFTER RUNNING:**



— WARNING: PERFORM THIS OPERATION WITH ENGINE COLD (< 40°C)

9 Central screws: loosen one screw at a time, releasing it completely, then tighten with **30 Nm (3 Kgm)** torque plus rotation of **120°**

10 Side screws (**M1** and **M2**) do not require re-tightening, use a dynamometrical wrench set at **90 Nm (9kgm)** for checking, if necessary.

11 Re-tightening during the life of the motor should be carried out after **150 ÷ 200 hours** or **20,000 Km.**



**ATTENTION:
THIS OPERATION IS ONLY FOR MOTORS WITH SINGLE HEAD GASKETS (NOT FOR ENTIRE GASKET)**

12 Central screws in sequence from
Engine 3 cyl. from 1 to 8
Engine 4 cyl. from 1 to 10
Engine 6 cyl. from 1 to 14
rotate by **15°**

13 Side screws (**M1** and **M2**) rotate by **15°**, first **M1** screws and then **M2** screws.

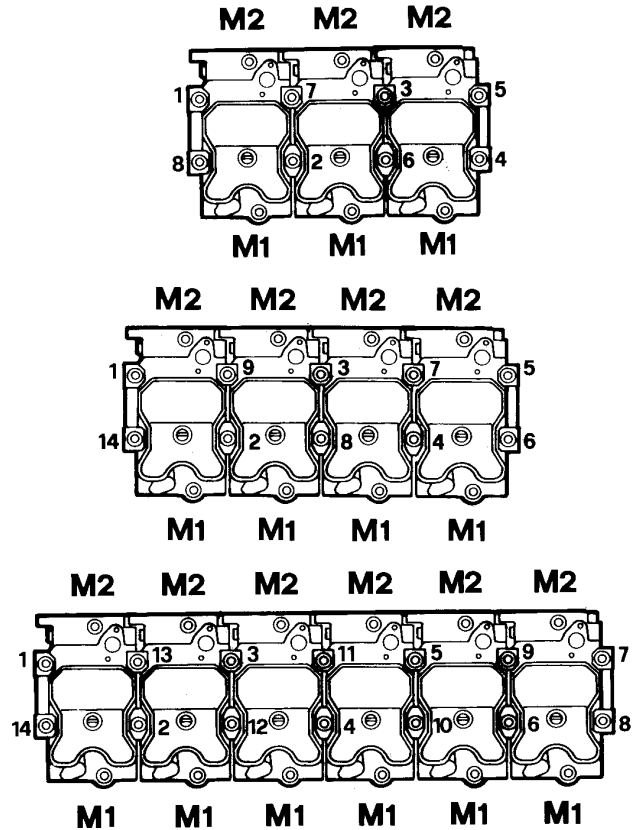
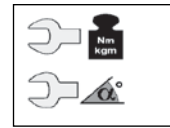


Fig. 7.26