

MANUFACTURER'S AUTHORIZATION OF PERSONNEL

MANUFACTURER METALEX PRAHA
ADDRESS PRAGA 1, NA PORCI 6
CZECHOSLOVAKIA
PHONE NUMBER(S) 022 364

The following representatives of the company shown above under "manufacturer" are entitled to sign a declaration that involves the application for recognition of engines in the FIA World Cup and involves the responsibility of the company:

Name <u>MILAN ING. PETR ZALD</u>	Position <u>TECHNICAL IN CHARGE</u>
Name <u>PETER KRUMHOLZ</u>	Position <u>TECHNICAL</u>
Name <u>MILAN ING. JIŘÍ ŠMAYR</u>	Position <u>TECHNICAL</u>

(Indicate here whether all or a certain number of the individuals have to sign or whether only one signature is sufficient.)

It is understood that replacements to the above list of names will be notified to the FIA World Cup Central Office.

The company shown above under "manufacturer," should his engine be recognized, agrees to abide by the terms and conditions of engine recognition for the FIA World Cup for a minimum period of three years from the date of acceptance of and recognition of his engine. It is also understood that this agreement is automatically extended for one year each year unless the manufacturer notifies the FIA World Cup Central Office in writing of his intention to terminate his involvement prior to 31 October two years prior to the cessation of his involvement.

16. IX. 1966
Date

Mil
Signature and position of authorized representative

METALEX
podnik ÚV Svazarmu
111 21 Praha 1, Na porčí 6



ENGINE APPLICATION AND RECOGNITION FORM
STATEMENT OF QUANTITY OF PRODUCTION

MANUFACTURER METALEX PRAHA

ENGINE MODEL DESIGNATION VAZ 2106 MTV

A minimum of 300 [number] of the engines designated above and described on the accompanying recognition form have been produced or will be produced, such production beginning on 1. 6. 1983 [date] and ending on _____ [date].

Is the engine still in production? YES [yes/no]

If not, when did production cease? - [date]

Current price of engine, FOB factory (if engine is available in several forms, give prices of all forms)

_____	38.000 KčS
_____	_____
_____	_____
_____	_____

16. IX. 1986

Date _____

Signature and position of authorized representative _____

METALEX

po
111 21

DR:82-07-03



ENGINE APPLICATION AND RECOGNITION FORM

Form No. _____ Recognition valid from 01 MAI 1988 [date]

MANUFACTURER METALEX PRAHA

ENGINE MODEL DESIGNATION VAZ 2106 MTX

DESCRIPTION OF ENGINE

All data must be complete and specific. Dimensions must be given in the metric system in the units specified. Manufacturing tolerances are specified on the form and in the FISA Homologation Manual; should the tolerances exceed these limits, they must be supported by drawings or other documents.

Each question must be followed solely by technical information concerning the standard part or equipment and not by two or more possibilities (i.e., standard or optional part).

Note that the question numbers conform to the last two digits of those in Section 3 [Engine] of the standard FISA homologation form. In completing this form, the standard FISA Homologation Manual should be followed.

03 CYCLE (4-stroke, 2-stroke, diesel, etc.) 4 - STROKE

05 NUMBER AND LAYOUT OF CYLINDERS (V-4, inline 4, etc.) INLINE 4

06 COOLING SYSTEM (air or water) WATER

07 CYLINDER CAPACITY (π shall be taken as 3.1416, and these measurements shall be rounded off to the nearest 0.1 mm)

a. Capacity of each cylinder with original bore and stroke 392,1 cm³

b. Total cylinder capacity with original bore and stroke 1568,5 cm³

c. Total cylinder capacity based on maximum 1592,5 cm³
bore indicated in article 15 of this form

08 MINIMUM VOLUME OF COMBUSTION CHAMBER (valves closed, piston at TDC, rounded to nearest 0.1 cm³) 33,0 cm³

09 MINIMUM VOLUME OF COMBUSTION CHAMBER (valves closed, with spark plug, without head gasket, rounded to nearest 0.1 cm³) 33,0 cm³



- 10 MAXIMUM COMPRESSION RATIO: $R (R = [v + V]/v, \text{ where } v \text{ is the volume in \#08 and } V \text{ is the volume in \#07a})$ 13,1 :1
- 11 MINIMUM HEIGHT OF CYLINDER BLOCK 264 mm
- 12 CYLINDER BLOCK MATERIAL CAST IRON
- 13 CYLINDER LINERS
- a. Is engine originally fitted with liners? NO [yes or no]
- b. Material of liners _____
- c. Type of liners (wet or dry) -
- 14 BORE (original, rounded off to nearest 0.1 mm) 79,00 mm
- 15 MAXIMUM AUTHORIZED BORE (not to exceed that specified in section 14 by more than 0.6 mm, or result in a displacement larger than 1600 cm³, and rounded to nearest 0.1 mm) 79,60 mm
- 16 STROKE (rounded to nearest 0.1 mm) 80,00 mm
- 17 PISTON
- a. Material of piston LIGHT ALLOY
- b. Total number of rings per piston 3
- c. Minimum weight (with rings, piston pin, and piston clip, rounded to nearest gram) 400 grams
- d. Distance from axis of piston pin to top of piston (rounded to nearest 0.1 mm) 38,0 mm
- e. Distance between top of piston at TDC and top machined surface of cylinder block (rounded to nearest 0.1 mm. Positive if piston exceeds surface, otherwise negative) 0,0 mm
- f. Volume of cavity(s) in piston (rounded to nearest 0.1 cm³) 0,0 cm³
- 18 CONNECTING ROD
- a. Connecting rod material STEEL
- b. Type of big end DIVIDED
- c. Big end diameter (without shells, rounded to nearest 0.1 mm) 51,30 mm
- d. Length between centerlines of axes (to nearest 0.1 mm) 136,0 mm
- e. Minimum weight (to nearest gram, complete rod with big end cap, bolts, shells, etc.) 580 grams
- 19 CRANKSHAFT
- a. Type of construction DNE PIRCE
- b. Material CAST IRON



- 19 c. Type of crankshaft (cast or stamped) CAST
 d. Number of main bearings 5
 e. Type of bearings SLIDING (PLAIN)
 f. Exterior diameter of bearings (to nearest 0.1 mm) 50,8 mm
 g. Material of bearing caps CAST IRON
 h. Minimum weight of bare crankshaft 9 000 grams
 i. Maximum exterior diameter of crank-pins (to nearest 0.1 mm) 47,8 mm

20 ENGINE FLYWHEEL

- a. Material of flywheel, exclusive of starter ring STEEL
 b. Minimum weight with starter ring and bearing 4 000 grams
 c. Minimum weight with starter ring and complete clutch 6 000 grams

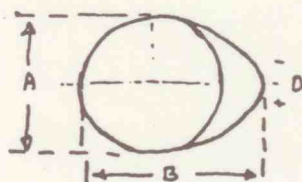
21 CYLINDER HEAD

- a. Number of heads 1
 b. Material of head LIGHT ALLOY
 c. Height of bare cylinder head 112,0 +0,5 -1,00 mm
 d. Position at which height is measured PERPENDICULAR TO THE SURFACE
 e. Angle between axis of inlet and exhaust valves 0 °

22 THICKNESS OF TIGHTENED CYLINDER HEAD GASKET 1,1 mm

25 CAM SHAFT

- a. Number of cam shafts 1
 b. Location in engine (lateral OHV, at top DOHC, etc.) OHC
 c. Cam drive system CHAIN
 d. Number of bearings per shaft 5
 e. Type and diameter of bearings (rounded to nearest 0.1 mm) SLIDING (45,9; 45,3; 43,4; 45,6; 45,0) mm
 f. Type of valve operation ROCKER
 g. Dimensions of standard cam shaft (rounded to nearest 0.1 mm)



	<u>A</u>	<u>B</u>
Inlet	<u>28,6</u> mm	<u>36,6</u> mm
Exhaust	<u>28,5</u> mm	<u>36,4</u> mm



26. VALVE TIMING (standard cam shaft)

- a. Theoretical timing clearance: Inlet 0,40 mm Exhaust 0,40 mm
- b. Valves open at (with theoretical timing clearance in 26a)
 Inlet 47 ° before/after TDC Exhaust 66 ° before/after BDC
- c. Valves close at (with theoretical timing clearance in 26a)
 Inlet 67 ° before/after BDC Exhaust 40 ° before/after TDC
- d. Cam lift (to nearest 0.1 mm, with cam dismantled, drawing article 25)

<u>Inlet</u>		<u>Exhaust</u>	
-150°	<u>0</u> mm	-150°	<u>0</u> mm
-135°	<u>0</u> mm	-135°	<u>0</u> mm
-120°	<u>0</u> mm	-120°	<u>0</u> mm
-105°	<u>0,1</u> mm	-105°	<u>0</u> mm
-90°	<u>0,2</u> mm	-90°	<u>0,1</u> mm
-75°	<u>1,6</u> mm	-75°	<u>1,0</u> mm
-60°	<u>3,6</u> mm	-60°	<u>3,0</u> mm
-45°	<u>5,5</u> mm	-45°	<u>5,0</u> mm
-30°	<u>6,9</u> mm	-30°	<u>6,5</u> mm
-15°	<u>7,9</u> mm	-15°	<u>7,5</u> mm
-10°	<u>8,0</u> mm	-10°	<u>7,7</u> mm
-5°	<u>8,1</u> mm	-5°	<u>7,9</u> mm
0°	<u>8,2</u> mm	0°	<u>8,0</u> mm
+5°	<u>8,2</u> mm	+5°	<u>7,9</u> mm
+10°	<u>8,1</u> mm	+10°	<u>7,8</u> mm
+15°	<u>7,9</u> mm	+15°	<u>7,5</u> mm
+30°	<u>6,7</u> mm	+30°	<u>6,3</u> mm
+45°	<u>4,7</u> mm	+45°	<u>4,3</u> mm
+60°	<u>2,9</u> mm	+60°	<u>1,3</u> mm
+75°	<u>0,2</u> mm	+75°	<u>0,1</u> mm
+90°	<u>0,1</u> mm	+90°	<u>0</u> mm
+105°	<u>0</u> mm	+105°	<u>0</u> mm
+120°	<u>0</u> mm	+120°	<u>0</u> mm
+135°	<u>0</u> mm	+135°	<u>0</u> mm
+150°	<u>0</u> mm	+150°	<u>0</u> mm



26 e. Valve lift (to nearest 0.1 mm, with theoretical timing clearance [26a])

<u>Inlet</u>	<u>Exhaust</u>
26b: <u>47</u> ° before/after TDC = 0.0 mm,	<u>66</u> ° before/after BDC = 0.0 mm
+ 20° = <u>1,3</u> mm	+ 20° = <u>1,0</u> mm
+ 40° = <u>3,5</u> mm	+ 40° = <u>3,0</u> mm
+ 60° = <u>5,8</u> mm	+ 60° = <u>5,3</u> mm
+ 80° = <u>7,8</u> mm	+ 80° = <u>7,4</u> mm
+100° = <u>9,5</u> mm	+100° = <u>9,1</u> mm
+120° = <u>10,6</u> mm	+120° = <u>10,3</u> mm
+140° = <u>11,4</u> mm	+140° = <u>11,0</u> mm
+160° = <u>11,6</u> mm	+160° = <u>11,2</u> mm
+180° = <u>11,2</u> mm	+180° = <u>10,6</u> mm
+200° = <u>10,0</u> mm	+200° = <u>9,2</u> mm
+220° = <u>8,2</u> mm	+220° = <u>7,3</u> mm
+240° = <u>5,5</u> mm	+240° = <u>4,6</u> mm
+260° = <u>2,6</u> mm	+260° = <u>1,9</u> mm
+280° = <u>0,6</u> mm	+280° = <u>0,3</u> mm
+300° = <u>0</u> mm	+300° = <u>0</u> mm
+320° = <u>0</u> mm	+320° = <u>0</u> mm
+340° = <u>0</u> mm	+340° = <u>0</u> mm
+360° = <u>0</u> mm	+360° = <u>0</u> mm
Maximum lift: Inlet <u>11,6</u> mm	Exhaust <u>11,2</u> mm

27 INLET

- c. Number of valves per cylinder 1
- d. Maximum valve head diameter (to nearest 0.1 mm) 39,6 mm
- e. Valve stem diameter (to nearest 0.1 mm) 8 mm
- f. Total length of valve (to nearest 0.1 mm) 113,5 mm
- g. Type of valve springs HELICAL COIL
- h. Number of springs per valve 2
- i. Characteristics: under a load of 35 kg, max. spring length = 38 mm
under a load of 10,5 kg, max. spring length = 24,5 mm
- j. External diameter of springs 31,2 ; 22,4 mm
- k. Number of coils and length of each spring 6 ; 38,0 ; 7 ; 34,5 mm
- l. Diameter of spring wire (to nearest 0.1 mm) 3,8 ; 2,7 mm
- m. Maximum free length of springs 54 ; 42 mm



28 EXHAUST

- d. Number of exhaust valves per cylinder 1
- e. Maximum valve head diameter (to nearest 0.1 mm) 34,5 mm
- f. Valve stem diameter (to nearest 0.1 mm) 8 mm
- g. Total length of valve (to nearest 0.1 mm) 114 mm
- h. Type of valve spring HELICAL COIL
- i. Number of springs per valve 2
- k. Characteristics: under a load of 35 kg, max. spring length = 38 mm
 under a load of 61 kg, max. spring length = 26 mm
 under a load of 10,5 kg, max. spring length = 34,5 mm
 under a load of 24 kg, max. spring length = 22,5 mm
- l. External diameter of springs 31,2; 22,4 mm
- m. Number of coils and length of each spring 6; 38,0 7; 34,5 mm
- n. Diameter of spring wire (to nearest 0.1 mm) 3,8; 2,7 mm
- o. Maximum free length of spring 54; 42 mm

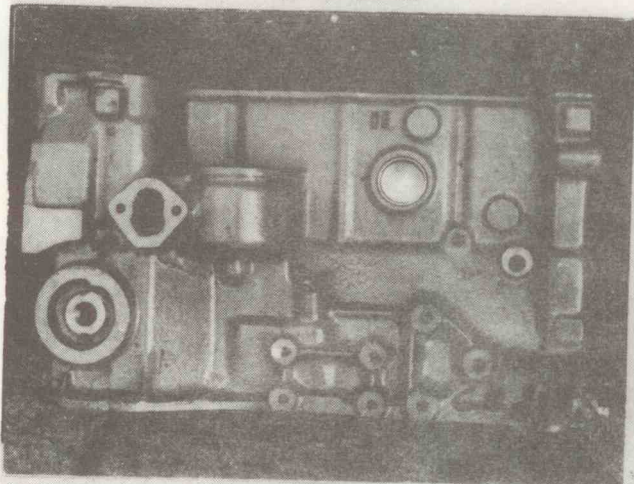
- 51 MATERIAL OF PISTON PIN STEEL
- 52 FLYWHEEL DIAMETER 277,5 mm
- 53 DIAMETER OF CLUTCH DISC 200 mm
- 54 NUMBER OF MAIN BEARING CAP BOLTS (per cap) 2
- 55 SPARK PLUG
 - a. Thread size M 14 x 1,25 mm
 - b. Reach 7/8" in. 19 mm



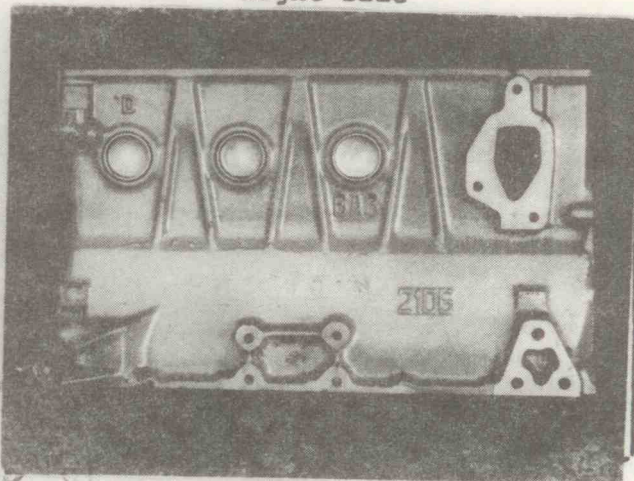
PHOTOGRAPHS

A. BARE CYLINDER BLOCK

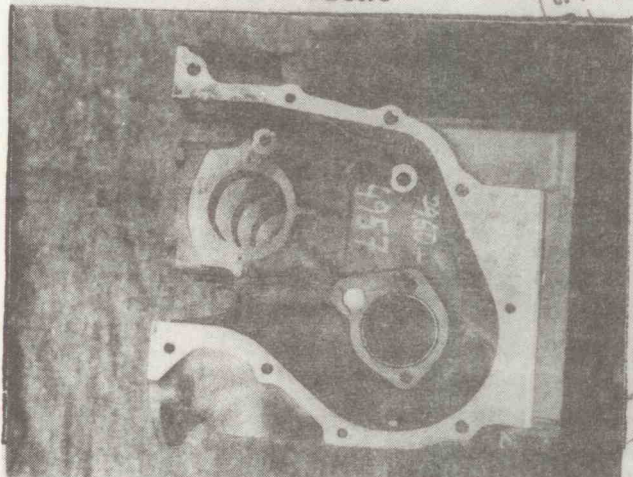
Left side



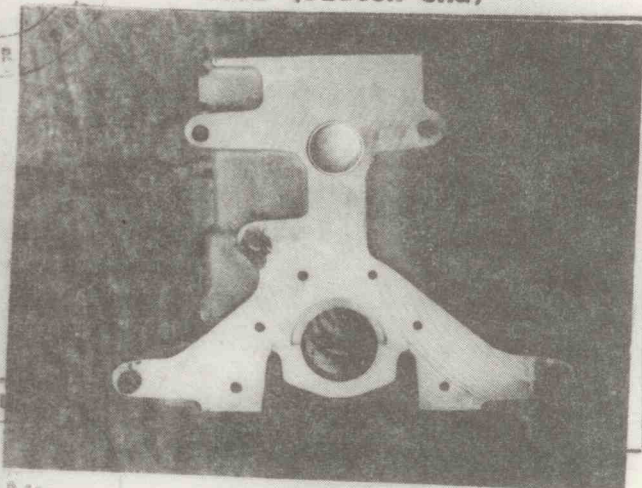
Right side



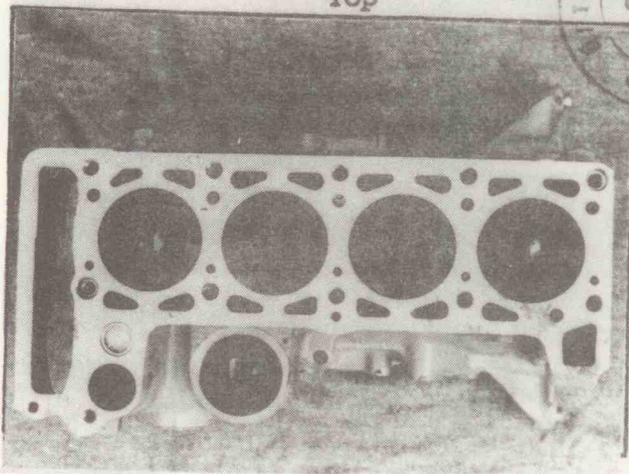
Front



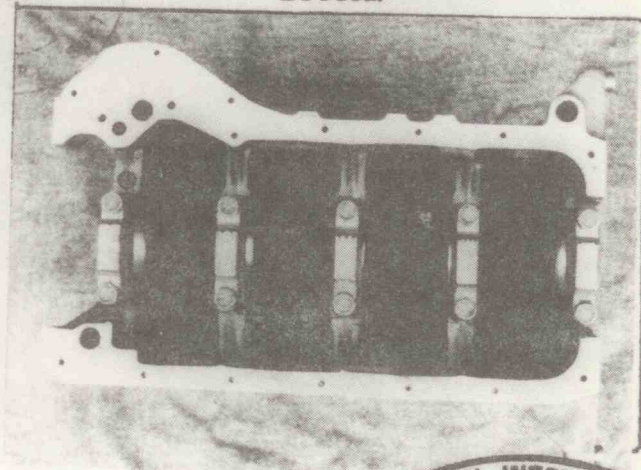
Rear (clutch end)



Top



Bottom



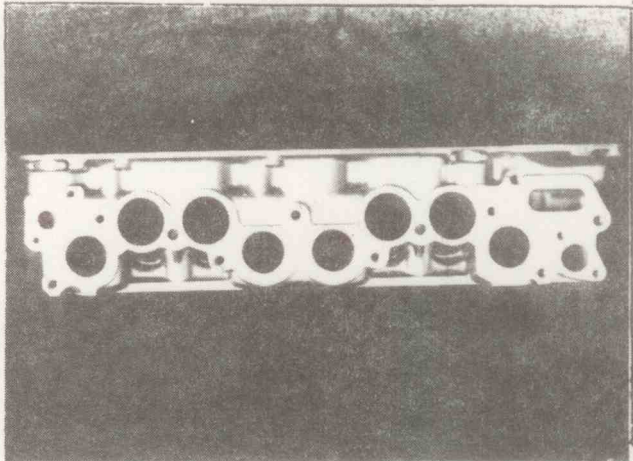
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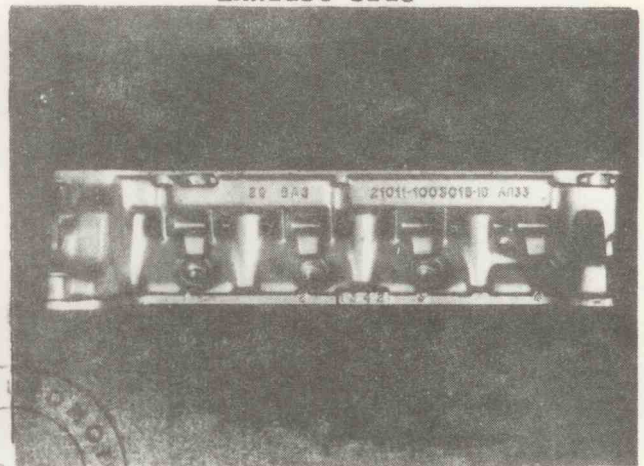
PHOTOGRAPHS

B. BARE CYLINDER HEAD (spark plugs and valves removed)

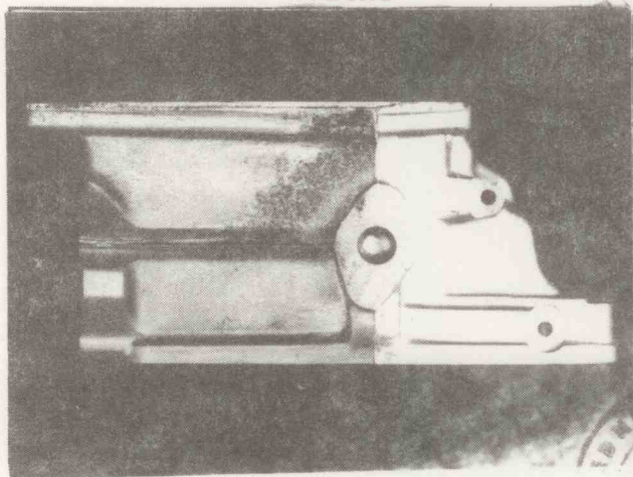
Intake side



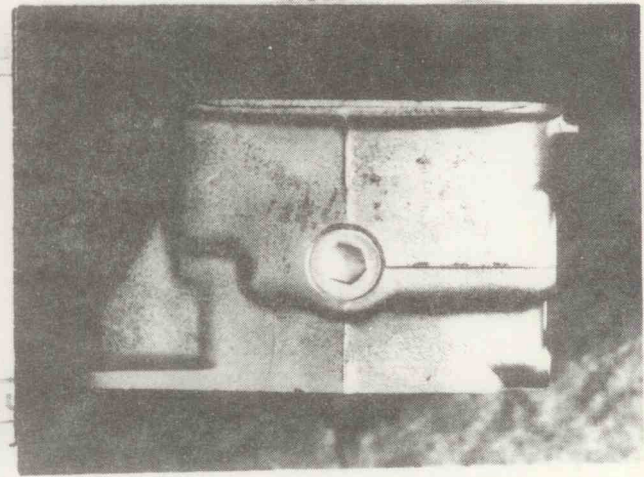
Exhaust side



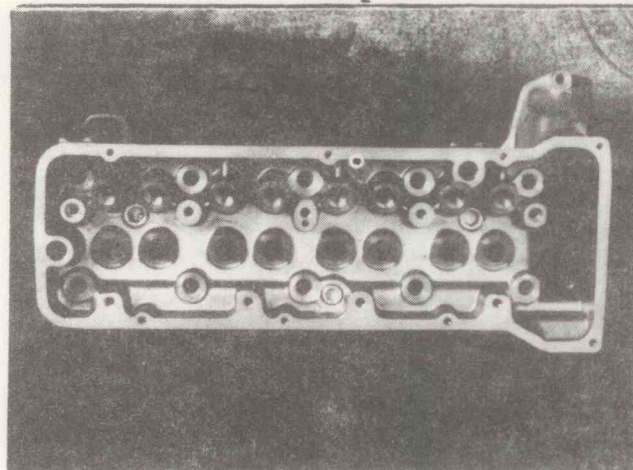
Front



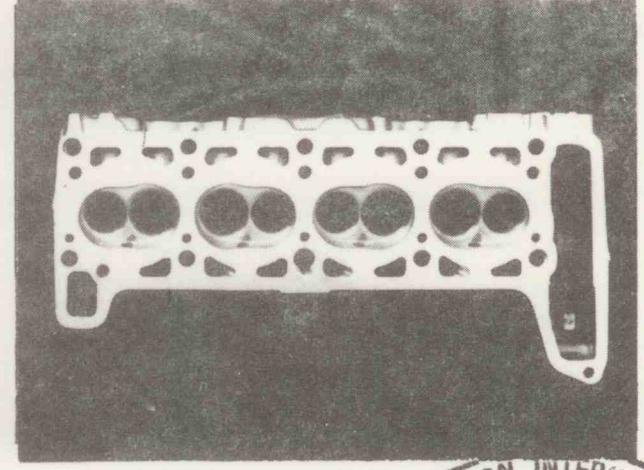
Rear



Top



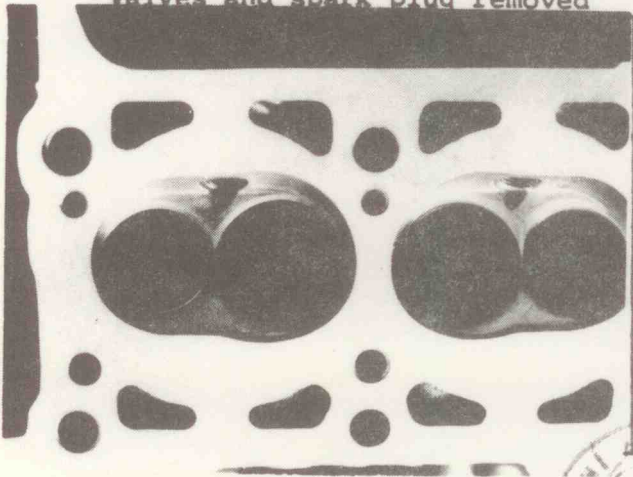
Bottom



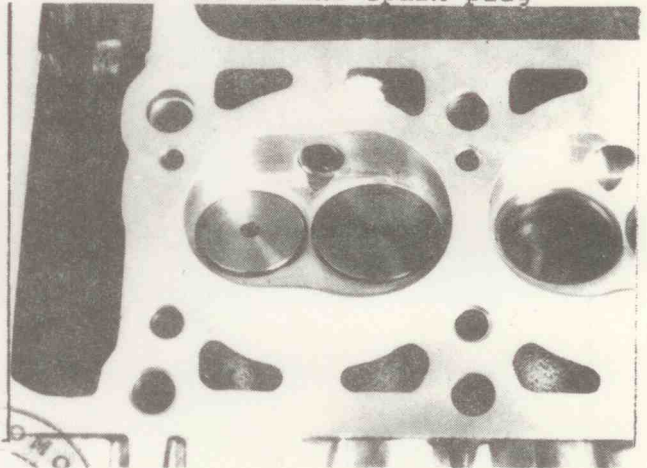
PHOTOGRAPHS

C. SINGLE COMBUSTION CHAMBER

Valves and spark plug removed

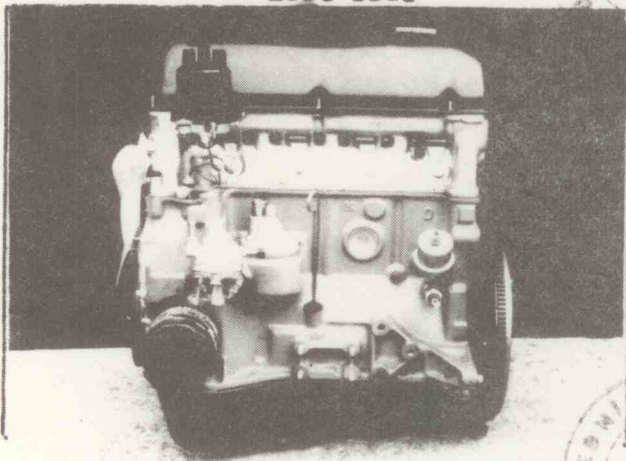


With valves and spark plug

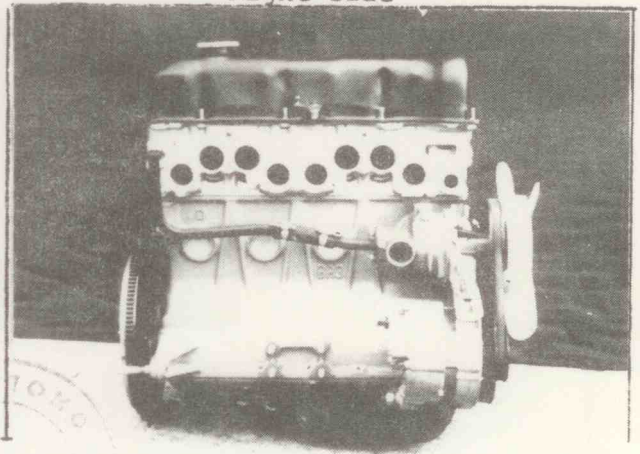


D. ASSEMBLED ENGINE (without intake and exhaust systems and less transmission)

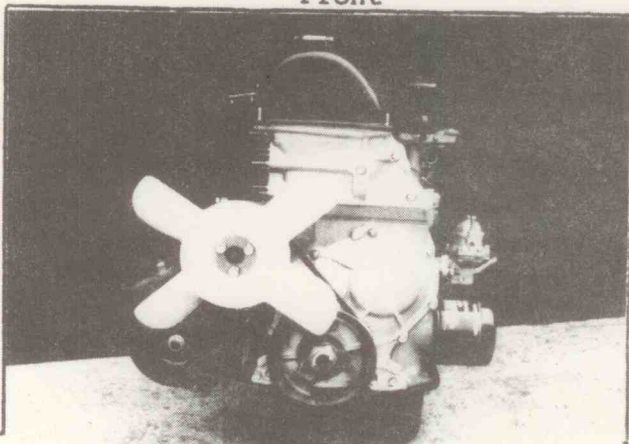
Left side



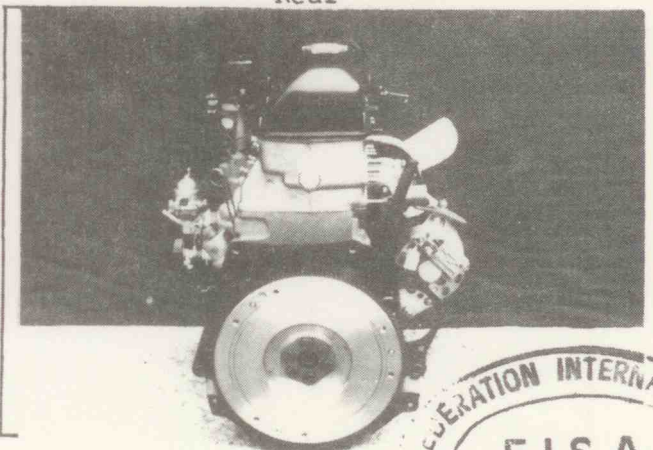
Right side



Front



Rear

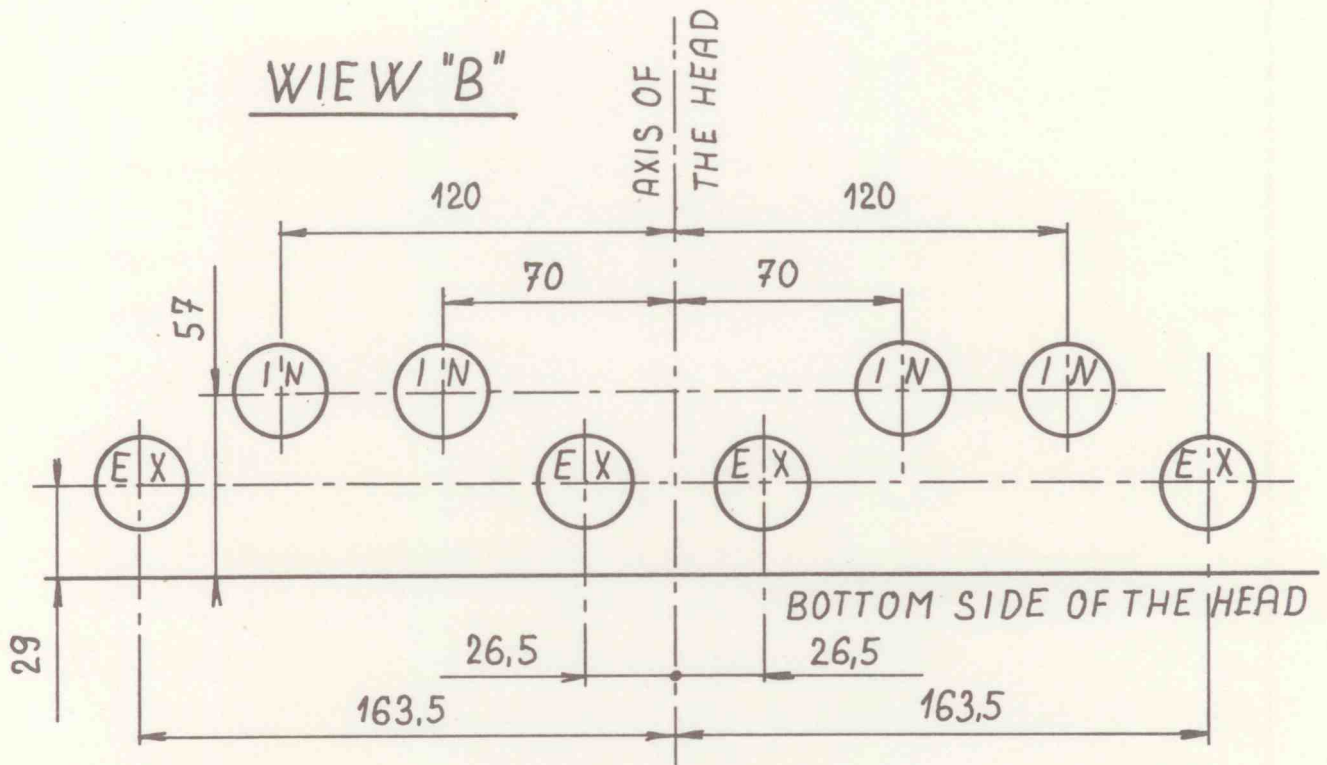


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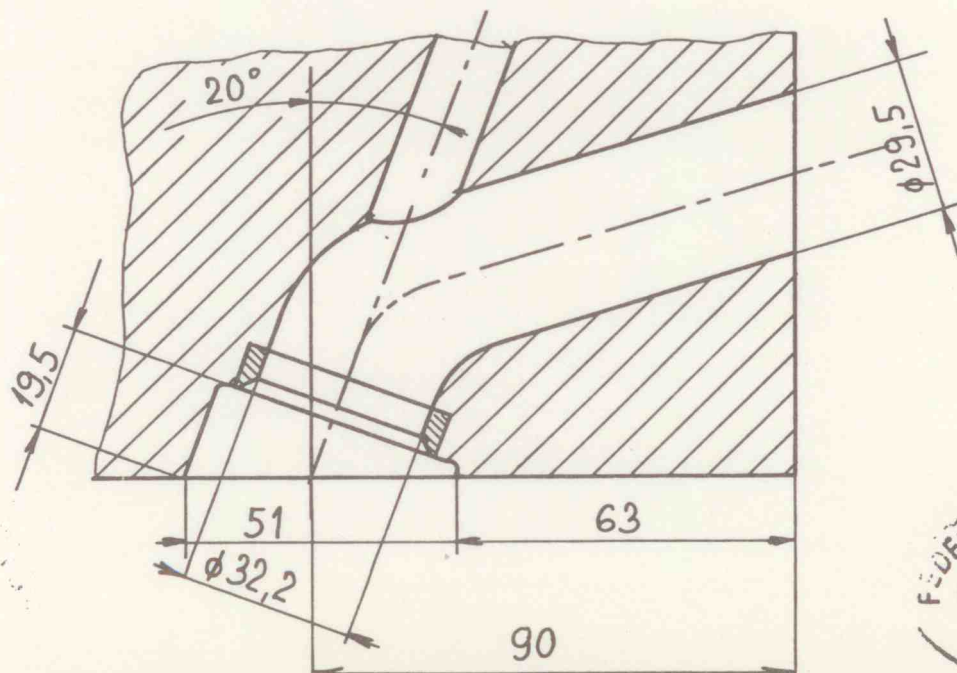
DRAWINGS

Note: All drawings must be engineering grade with dimensions specified. Dimensions of intake and exhaust ports must be for ports in an unmachined, as-cast state. Location of sections must be identified.

A. CYLINDER HEAD INLET ORIFICES AND PORTS (manifold face to block face)

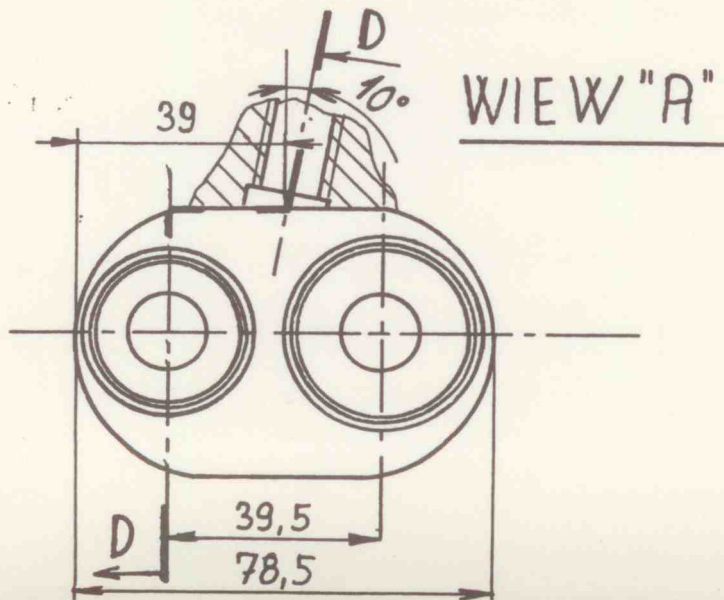
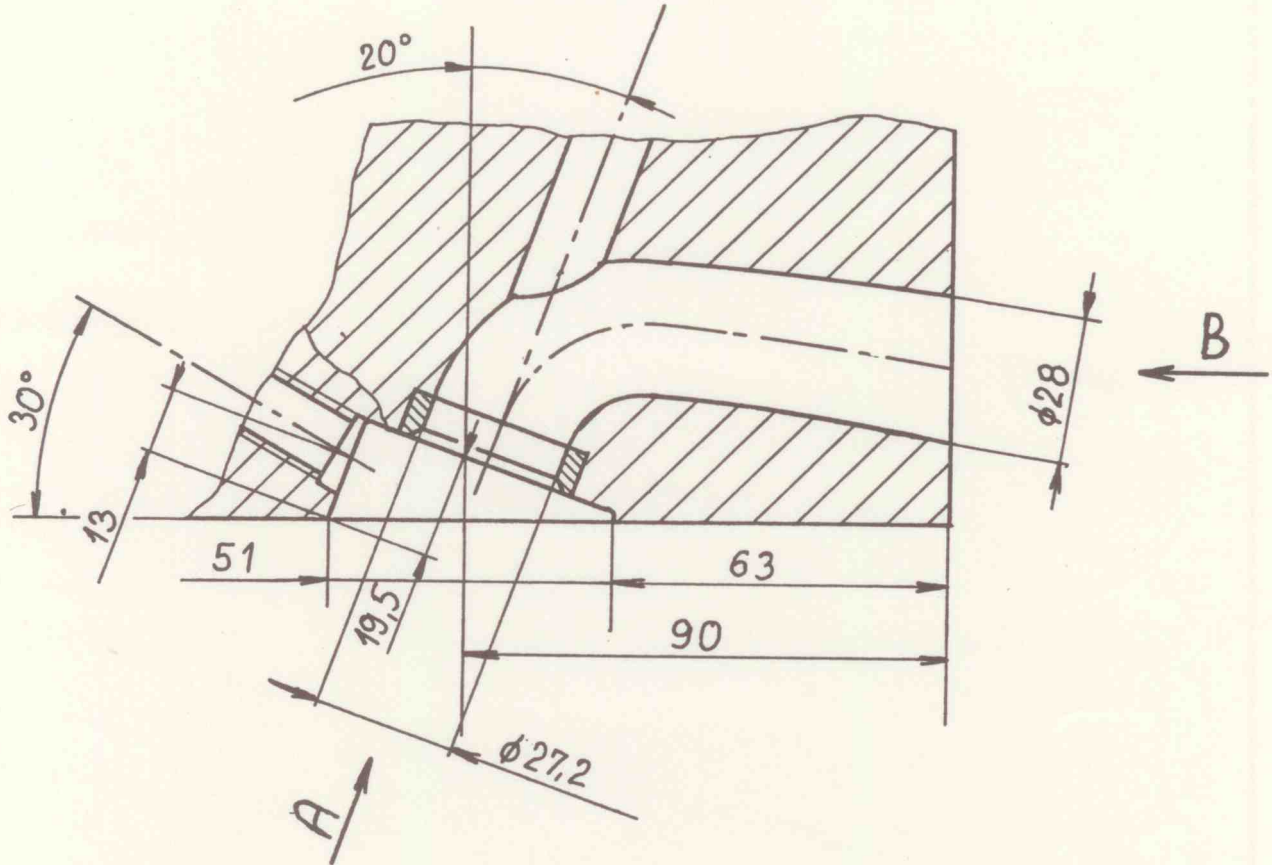


SECTION C - C



B. CYLINDER HEAD EXHAUST ORIFICES AND PORTS (manifold face to block face)

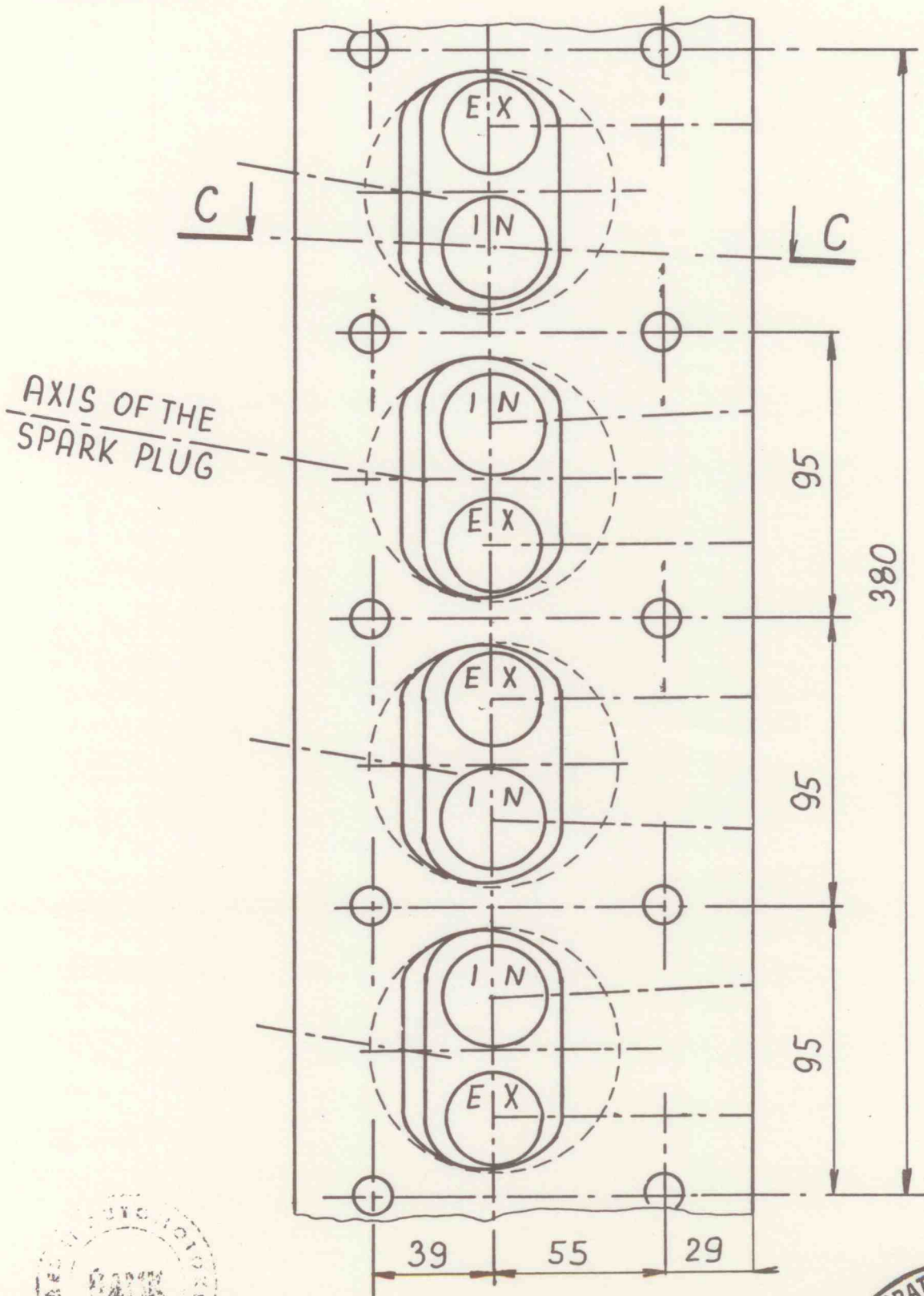
SECTION D-D



DRAWINGS

C. CYLINDER HEAD (showing all machined surfaces, valve centerlines [and distances between], and spark plug location and orientation. Use several drawings, if required.)

REAR SIDE



FRONT SIDE

