



	Type	Section
Clio	X57 CHKM U 8 9	10
	057 A D E	10
RENAULT 19	X53 V Y 8	10
	053 A B C D F H	10
Laguna	X56 A C H N	10

This note cancels and replaces Technical Note 1890

10 SPECIAL FEATURES OF F3P, F3R AND F7R ENGINES

- Engine: F3P, F3R, F7R
 - Gearbox: XXX
- Basic manual : Mot. F (E)

This note covers the special features of F3P, F3R and F7R engines.

The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed".

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ENGINE ASSEMBLY Identification

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ENGINE	SUFFIX	VEHICLE TYPE	COMP. RATIO	BORE (mm)	STROKE (mm)	CAPACITY (cc)
F3P	704-705 706-707 708-760 706 710 714 724 758 765	X53 Y 053 A X57 C X57 U B56 A X57 H - K 057 E 053 B - F X53 V	9.7	82.7	83.5	1794
	682 682/700 712 755	053 C - D - H X53 B X57 9 X57 8 057 D - A	9.8	82.7	83.5	1794
F3R	722/723 724/725	B56 C - H - N B56 N	9.8	82.7	93	1998
F7R	700	C57 M	10	82.7	93	1998

Meaning of X and 0

X53 Y = B53 Y, C53 Y, L53 Y

Vehicle identification plate starting with a letter

057 E = 557 E, 357 E

Vehicle identification plate starting with a number

See Technical Note 2019

CYLINDER HEAD

The rocker arms are to be adjusted and the cylinder head bolts retightened when the engine is cold.

Method of for retightening cylinder head bolts (F3P engine)

New bolts: Coat threads and under the heads of the cylinder head bolts with engine oil.

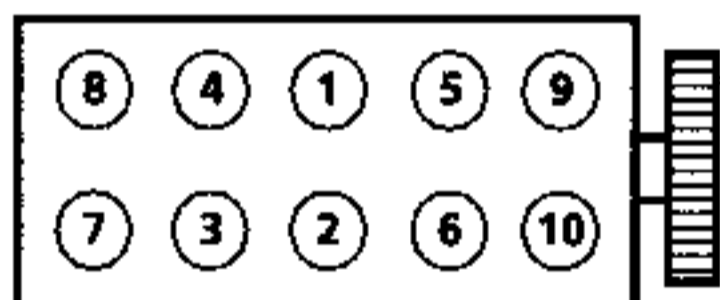
1. Bedding down the gasket :

Tighten all the bolts to 3 daN.m then 7 daN.m in the order shown below.

Wait at least 3 minutes to allow time to settle.

2. Tightening the cylinder head:

Loosen all the bolts until they are entirely free, and then tighten all the bolts to 2 daN.m and then retighten them through a further $123 \pm 2^\circ$.



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Method for retightening cylinder head bolts (F3R engine)

New bolts: Coat threads and under the heads of the cylinder head bolts with engine oil.

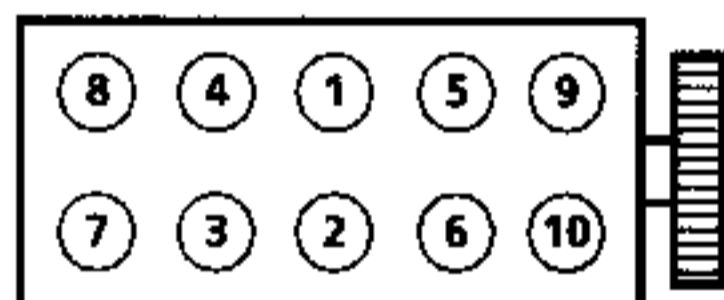
1. Bedding down the gasket:

Tighten all the bolts to 3 daN.m and then tighten through a further angle of $50^\circ \pm 4^\circ$.

Wait at least 3 minutes to allow time to settle.

2. Tightening the cylinder head:

Slacken off all the bolts through 180° , and then tighten them 2.5 daN.m and then retighten them through a further angle of $123^\circ \pm 7^\circ$.



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CYLINDER HEAD

Method for retightening cylinder head bolts (F7R engine)

New bolts: Coat threads and under the heads of the cylinder head bolts with engine oil.

1. Bedding down the gasket :

Tighten all the bolts to **3 daN.m** and then tighten through an angle of **50°** in the order shown below.

Wait at least **3 minutes** to allow time to settle.

2. Tightening the cylinder head :

Loosen all the bolts until they are entirely free, and then tighten all the bolts to **2 daN.m** and then retighten them through a further angle of **107°**.

3. Run the engine until the fan cuts in.

Slacken off the lower bolts of the support mountings (**A** and **B**) for the distributor.

4. Retightening cylinder head :

This operation is performed with the engine cold.

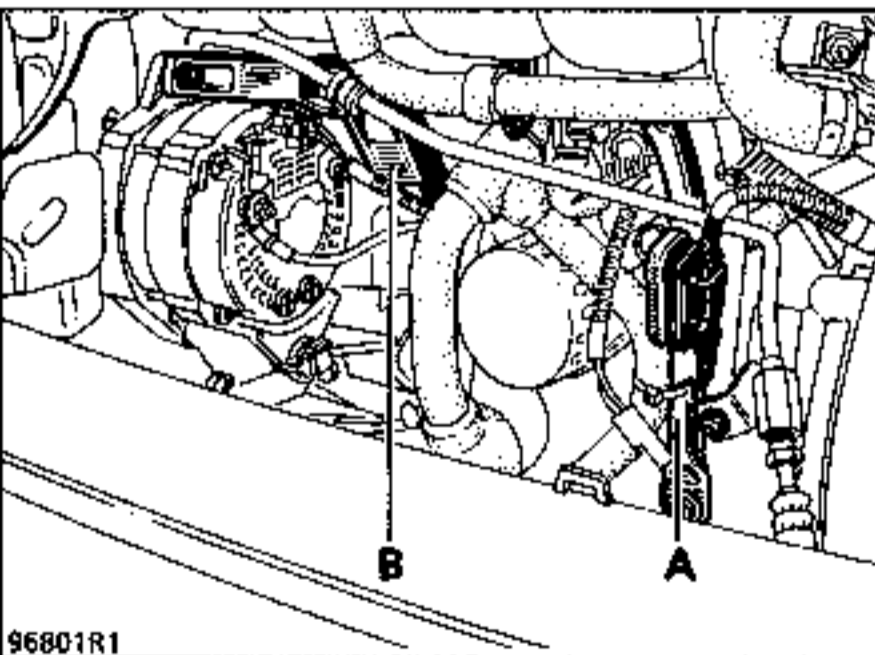
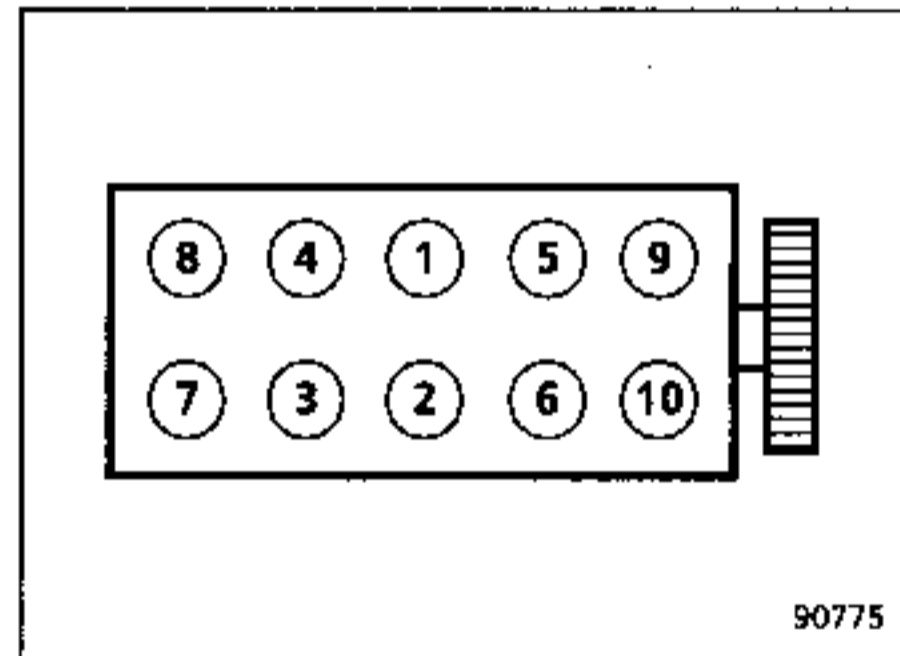
Loosen bolts **1 - 2** until they are entirely free.

Tighten bolts **1 - 2** to **2.5 daN.m** and then tighten through a further angle of **107°**.

Carry out the same operation for bolts **3 - 4, 5 - 6, 7 - 8, 9 - 10**.

5. Fit a new rocker cover gasket.

6. Retighten bolts **A** and **B**.



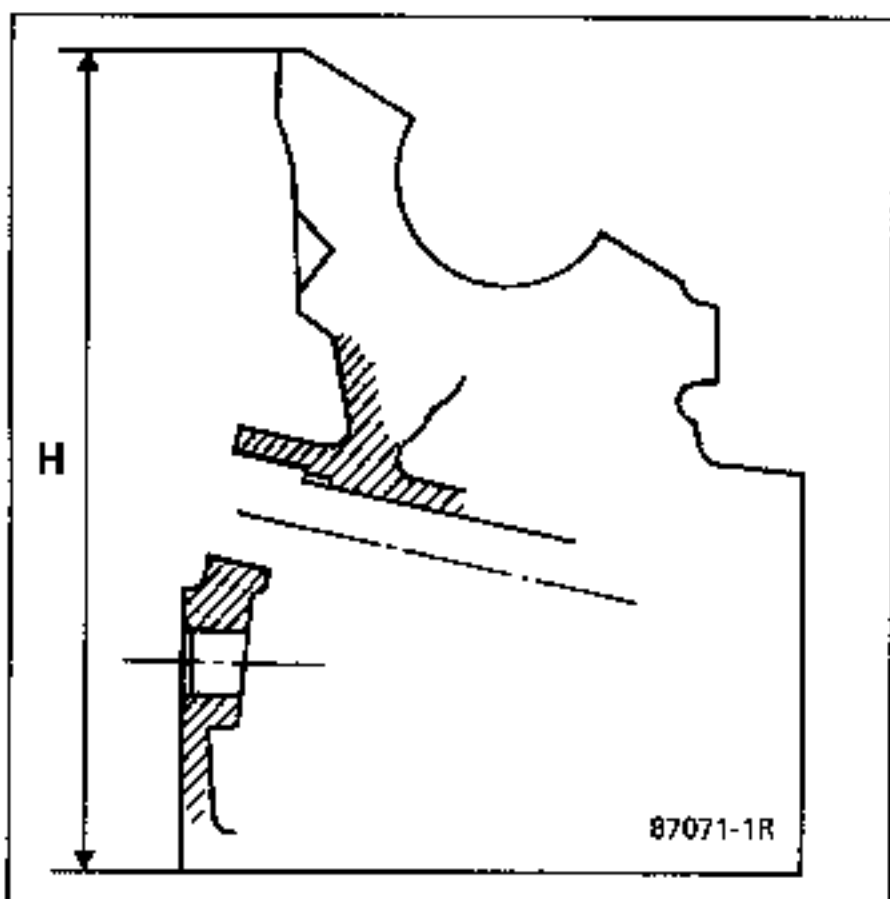
VALVE CLEARANCES WHEN COLD (mm)

Engine	Valve clearances	
F3P F3R	Inlet	0.20
	Exhaust	0.40
F7R	No adjustment of valve clearance	

HEIGHT OF CYLINDER HEAD

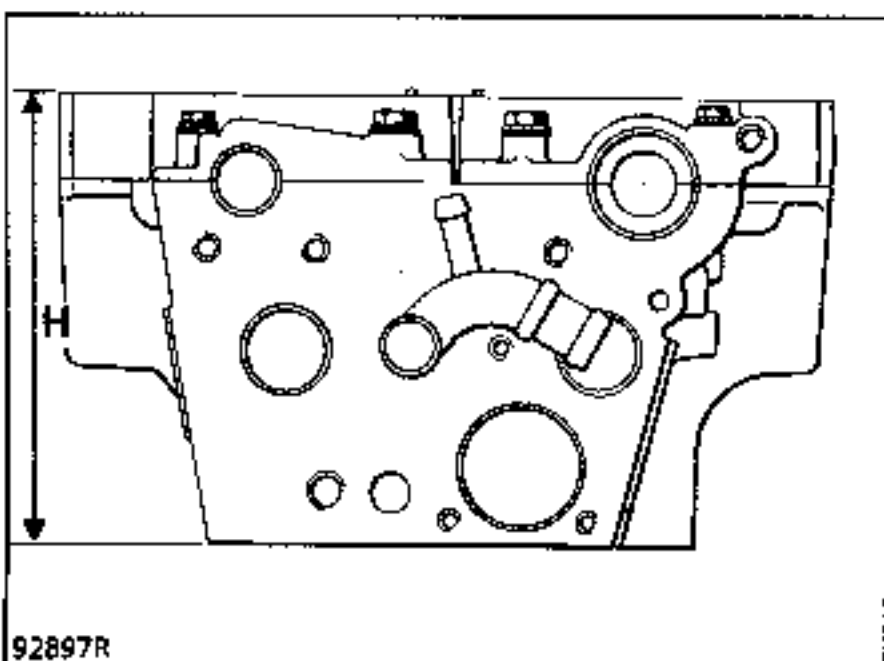
F3P - F3R Engines $H = 169.5 \pm 0.2$

The cylinder head cannot be refaced.



F7R engine $H = 169.45 \pm 0.10$

The cylinder head cannot be refaced.



VALVE SPRINGS

F3P - F3R engines

Spring specifications	Engine Types	F3P 682 - 684 - 700 - 712 - 755 - 758 - 765
	F3P 704 - 705 - 706 - 707 - 708 - 710 - 714 - 724 - 760	F3R 722 - 723
Free length (mm)		47.66
Length (mm) under a load of:	31 daN	40.30
	70 daN	30.40
	76 daN	-
Coil bound (mm)		28.1
Wire diameter (mm)		4.20 ± 0.03
Inside diameter (mm)		21.60 ± 0.02

F7R 700 engine

Spring specifications	Spring	Spring (outside)
	Spring (outside)	Spring (outside)
Free length (mm)		37.4
Length (mm) under a load of:	10 daN	27.10
	19 daN	-
	20.8 daN	17.20
	48.6 daN	-
Coil bound (mm)		15.7
Wire diameter (mm)		2.40 ± 0.03
Inside diameter (mm)		16.35 ± 0.02

VALVES

Stem diameter (mm)

F3P - F3R engines	8
F7R engine	7

Seat angle (in °)

F3P - F3R engines	
Inlet	90°
Exhaust	90°

F7R engine	
Inlet	90°
Exhaust	90°

Head diameter (in mm)

F3P - F3R engines	
Inlet	40
Exhaust	32.5

F7R engine	
Inlet	32.2
Exhaust	28.5

NOTE : Neutralising the sodium in exhaust valves on the F7R engine.

The sodium in these valves must be neutralised before they are scrapped.

Procedure:

- The valves must be sawn in a dry place away from any water (do not use a wet grinder).
- Goggles must be worn to protect the eyes.
- Saw the valve stems at the valve neck.
- Prepare a container filled with water and place it outside (approximately 10 litres of water are needed for four valves).
- Immediately they have been sawn off, throw the cut valves into the container, taking care not to splash.
- Sodium reacts with water immediately it comes into contact with it; sodium carbonate is produced and hydrogen given off. The sodium is completely destroyed when no more hydrogen is released (no more bubbles in the water).
- Keep the container away from all sources of ignition and do not smoke during the reaction.
- Valves which have been treated in this way may be scrapped. Waterproof gloves must be worn whilst the valves are being recovered.
- Wash the container out with copious amounts of water.
- If the sodium or water comes into contact with the skin and/or eyes, rinse immediately with copious amounts of water for 15 minutes and seek medical help.

VALVE SEATS

Seat angle (α) (in °)

F3P - F3R engines	
Inlet	90°
Exhaust	90°

F7P engine	
Inlet	90°

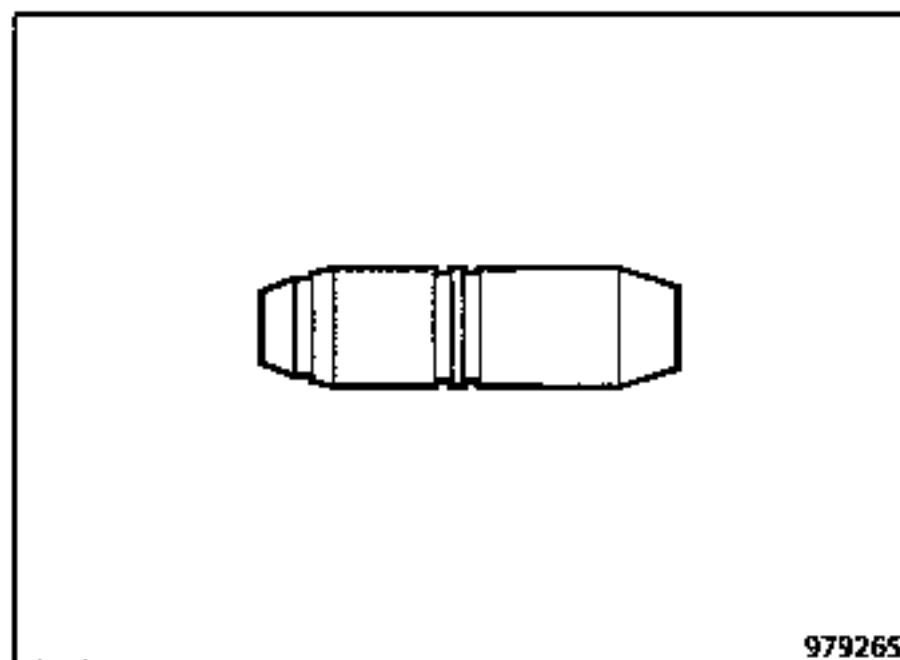
Width of seats (X) (in mm)

F3P - F3R engines :	1.7 ± 0,2
F7R engine :	
inlet	1.4
Exhaust	1.7

Outside diameter (D) (mm)

F3P - F3R engines :	
Inlet	41
Exhaust	33.6

F7R engine :	
Inlet	32.5
Exhaust	29.5



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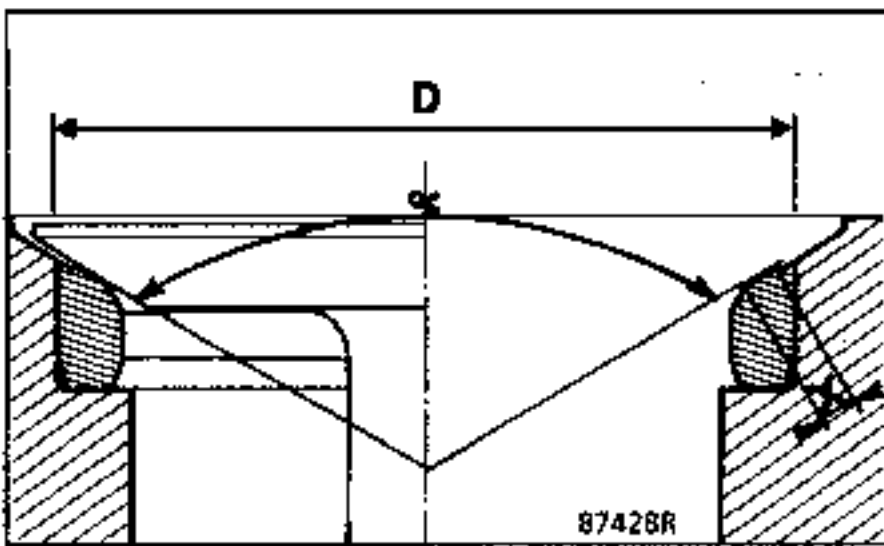
F7R engine :

Inside diameter (mm)	7
Outside diameter (mm) :	
Normal	12
Repair size	12.3

F3R - F3P engines :

Position of the guide with reference to the cylinder head gasket face (mm) **A = 43 ± 0,2**

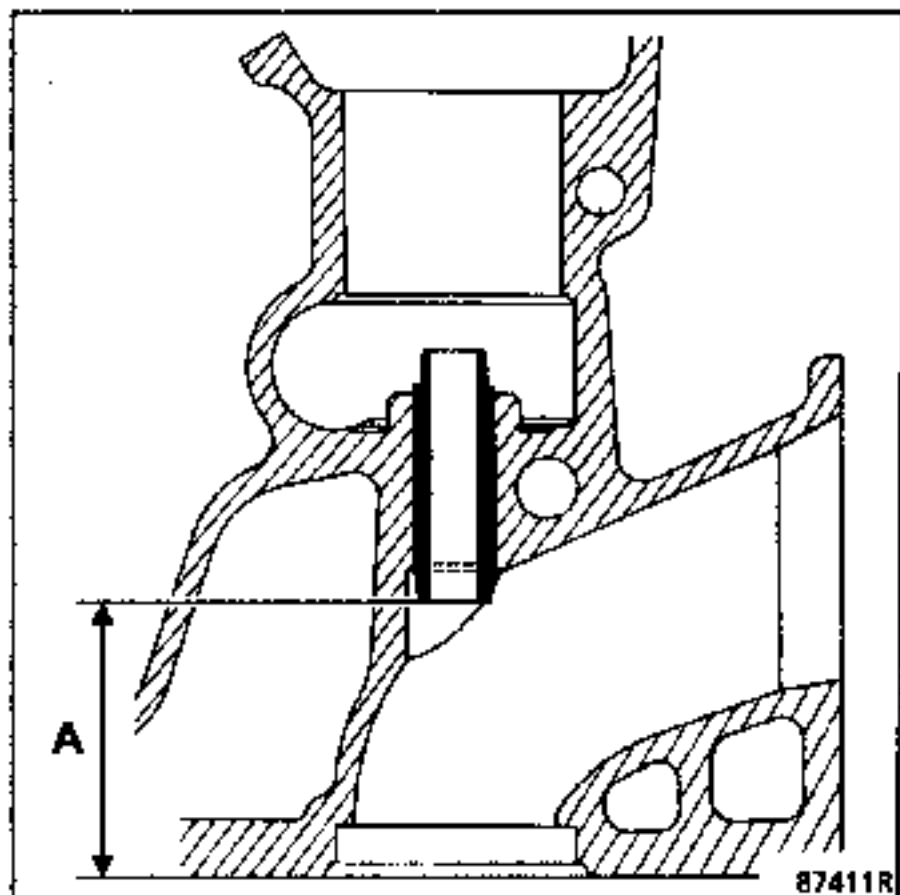
The inlet and exhaust guides are fitted with valve stem seals.



VALVE GUIDES

F3P - F3R engines :

Inside diameter (mm)	8
Outside diameter (mm) :	
Normal	13
Repair size (2 grooves)	13.25



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F7R engine

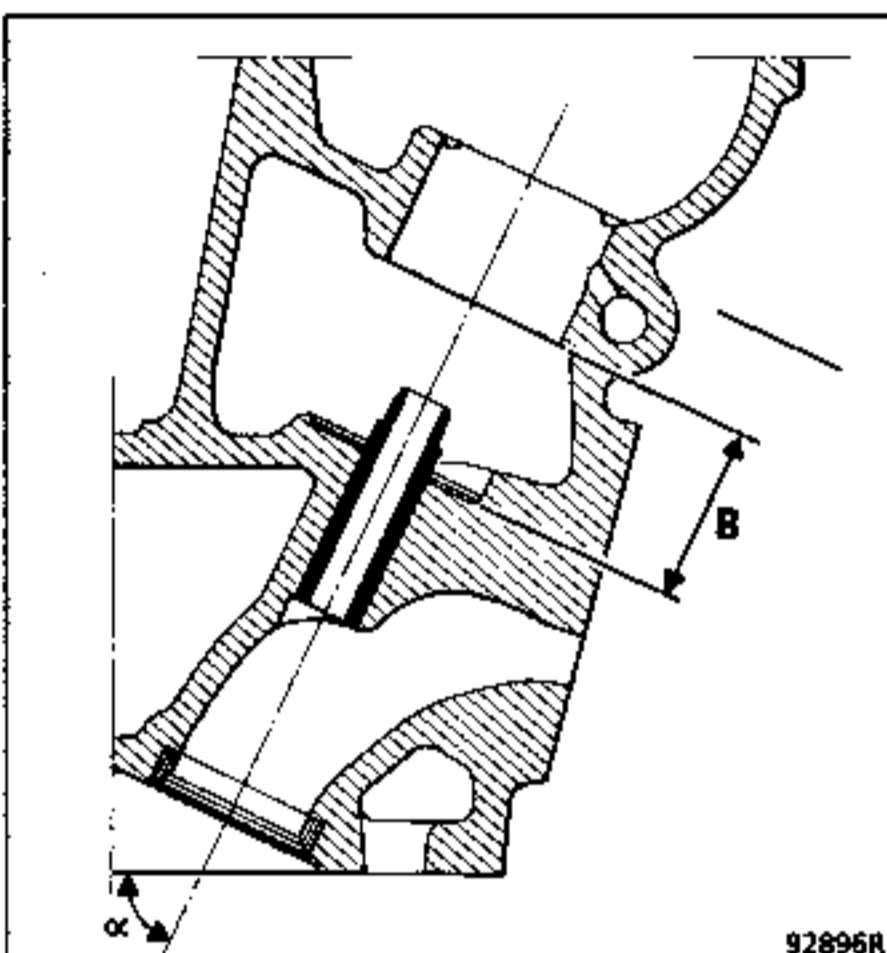
Position of inlet and exhaust guide

Dimension B :

Inlet	13.9 ± 0.2
Exhaust	14.3 ± 0.2

Angle :

α	
Inlet	$65^{\circ} 30'$
Exhaust	$64^{\circ} 30'$



CAMSHAFT

F3P - F3R engine :

The engine is fitted with an overhead camshaft driven by a toothed belt. The cams on the camshaft operate the valves through tappets. The valve clearances are adjusted by replacing the pads in the tappet heads.

Number of bearings	5
Side clearance (mm)	0.04 to 0.082
End float (mm), (checked at the central bearing)	0.048 to 0.133

F7R engine :

The engine is fitted with an overhead camshaft driven by a toothed belt.

The camshafts operate the valves through hydraulic tappets. Valve clearance cannot be adjusted.

Engine	* BTDC	* ABDC	* BBDC	* ATDC
F3P 682 - 700 - 712 - 758	5	43	52	1
F3P 706 - 707 - 714 - 724 - 760 - 765	3	43	46	- 1
F3P 704 - 705 - 708	- 3	49	40	5
F3P 755	4	40	40	4
F3P 710	- 5	49	40	5
F3R 722 - 723	5	43	52	1
F7R 700	1	50	46	3

* Cannot be checked

With a theoretical valve clearance of (in mm) :

Inlet	0.40
Exhaust	0.50

These theoretical valve clearances are only valid when checking the timing diagram and have nothing to do with the actual operating valve clearances.

INTERMEDIATE SHAFT ON ALL TYPES

Side clearance (mm) 0.04 to 0.110

End float (mm) 0.07 to 0.15

The intermediate shaft is mounted on two bushes:

- Inner bush Inside dia. (mm) 39.5
- Outer bush Outside dia. (mm) 40.5

Tappets	F7R	F3P - F3R
Outside diameter (mm)	33 - 0.02 - 0.04	35 - 0.01 - 0.04

CRANKSHAFT, ALL TYPES

Number of bearings 5

Side clearance (mm) 0.036 to 0.071

End float (mm) 0.07 to 0.23

Thickness of thrust washers (mm)
2.30 - 2.35 - 2.40 - 2.45 - 2.50

Roll-hardened main journals

Nominal diameter (mm) 54.795

Repair diameter (mm) 54.545

Grinding tolerance (mm) ± 0.01

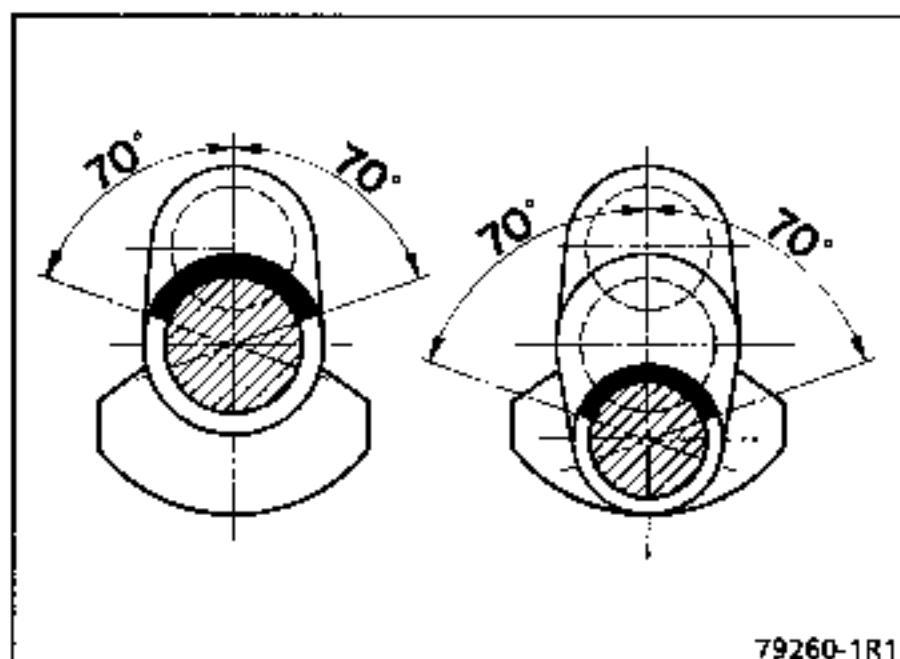
Roll-hardened crankpins

Nominal diameter (mm) 48

Repair diameter (mm) 47.75

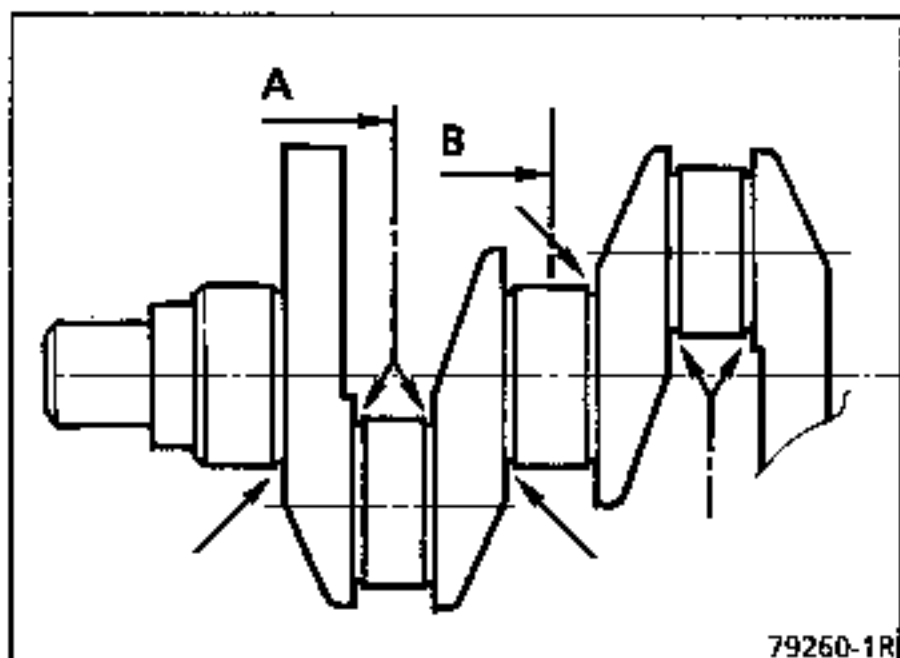
Grinding tolerance (mm) + 0.02
+ 0

If the crankpins or journals are reground, the roll-hardening must remain intact over 140° in the areas shown by the arrows.



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These areas are as defined in sections (A) and (B) which have been taken as an example.



79260-1R1

CONNECTING RODS, ALL TYPES

Connecting rods side play (mm) 0.22 to 0.40

PISTONS

Gudgeon pin fit:

F3P engines except 682 - 684 - 700 - 712 - 758

Interference fit in the connecting rod, running fit in the piston.

**Engines F3P 682 - 684 - 700 - 712 - 758.
F3R 722 - 723
F7R 700**

Running fit in both connecting rod and piston.

Correct way round :

With the arrow pointing towards the flywheel.

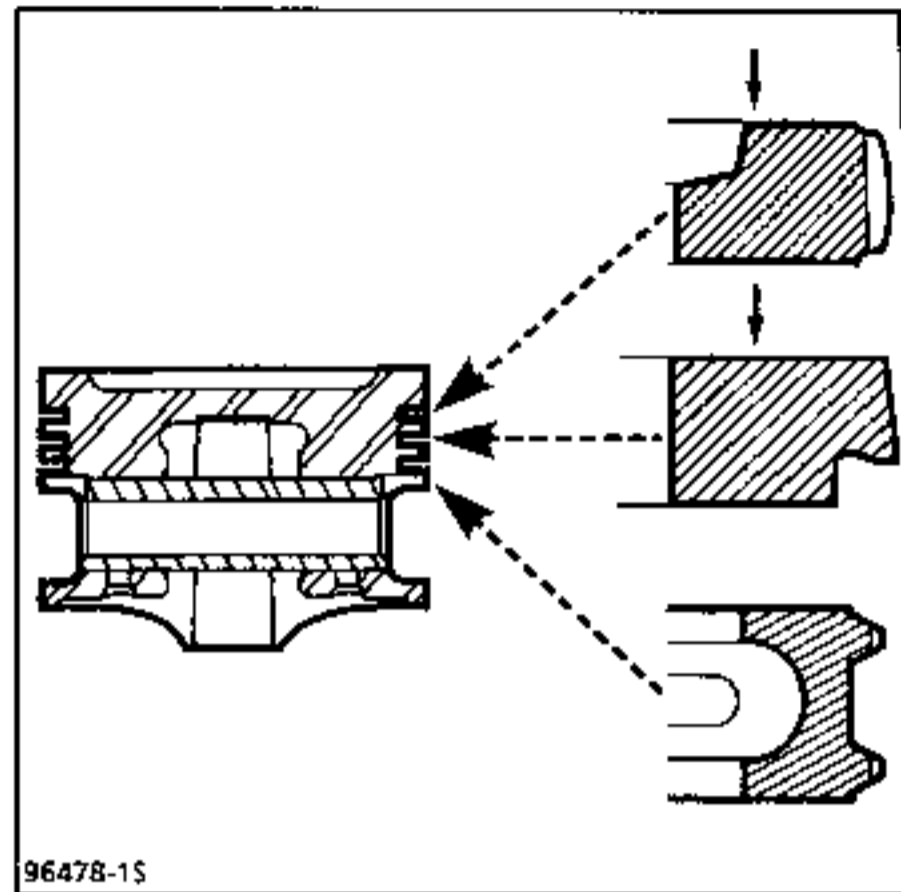
Special case of pistons sold individually :

The Parts Department will supply pistons individually but one must check, on the cylinder block, the class of piston fitted to obtain the correct match.

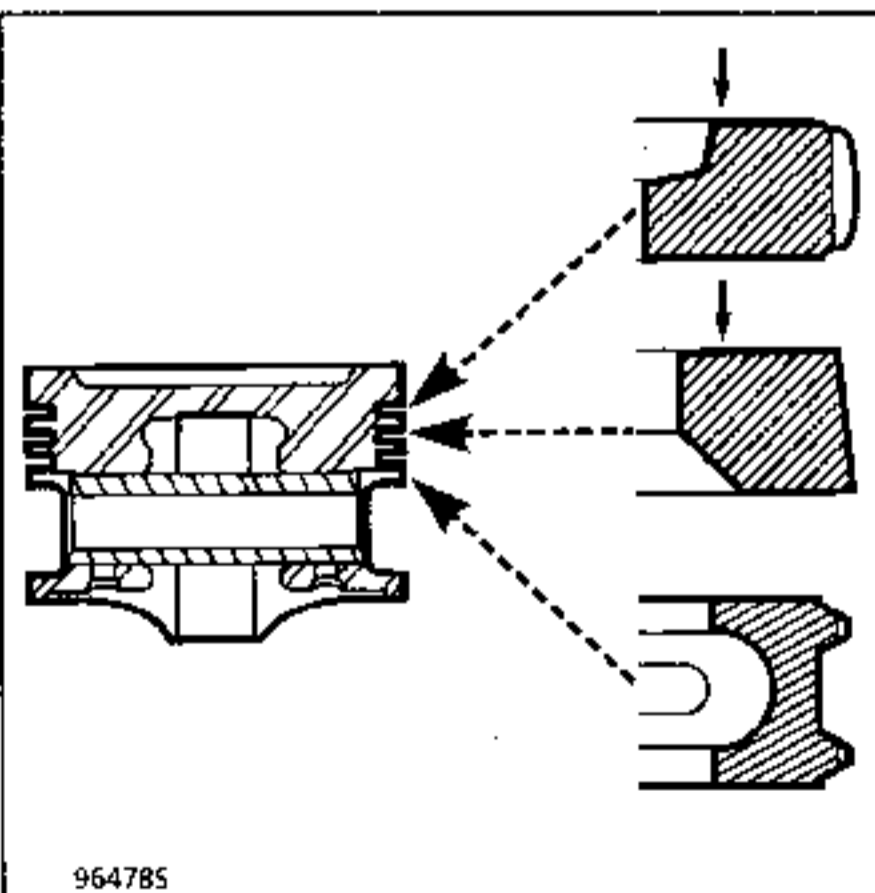
Piston rings

Thickness (in mm)	F3P - F3R	F7R
Firing ring	1.5	1.2
Compression ring	1.75	1.5
Scraper ring	3	2.5

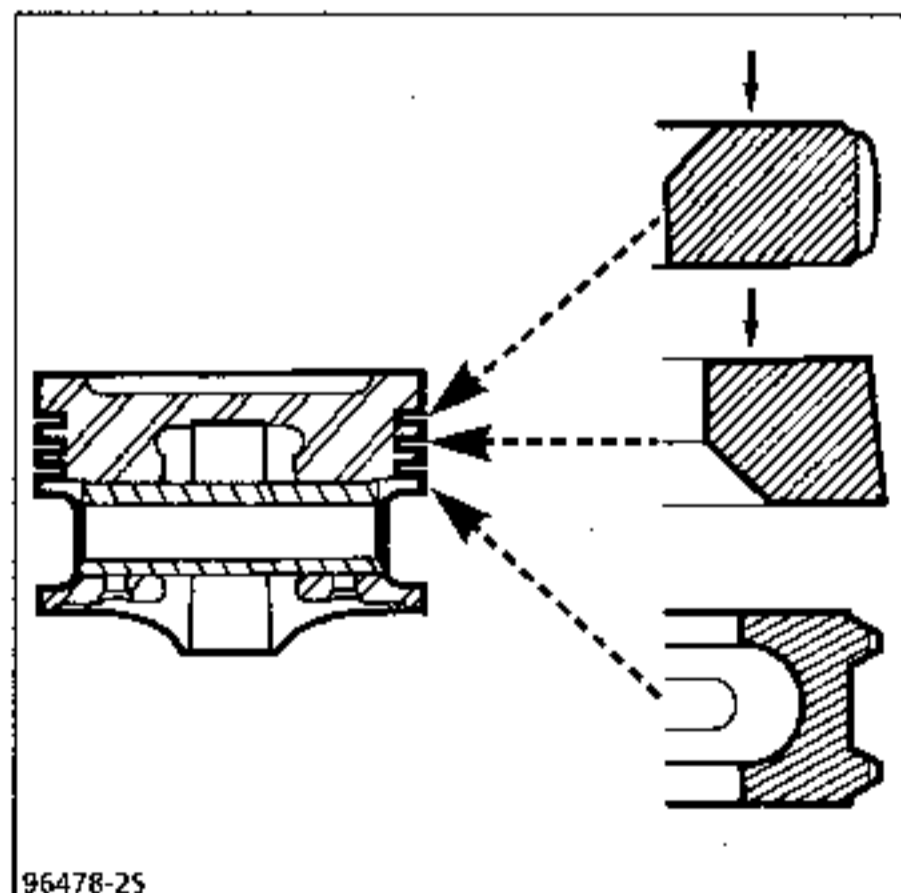
Piston rings on F3R engines



Piston rings on F3P engines



Piston rings on F7R engines



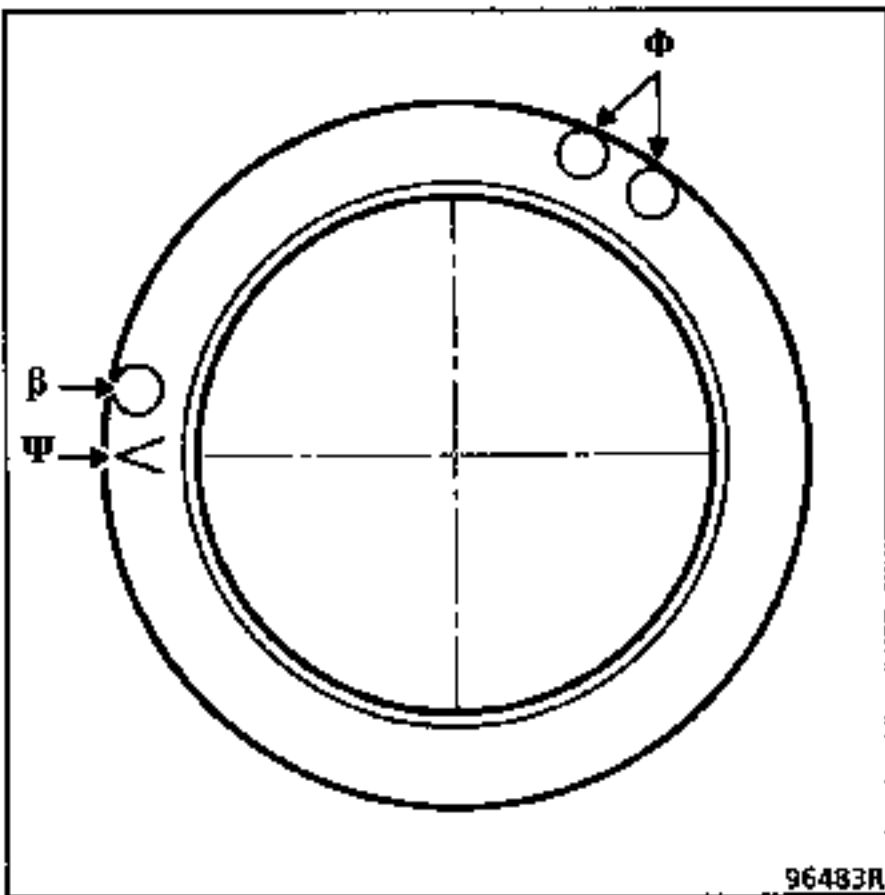
PISTON

F3P - F3R engines

β Diameter class reference

ψ Correct direction for fitting piston

Φ Supplier's reference



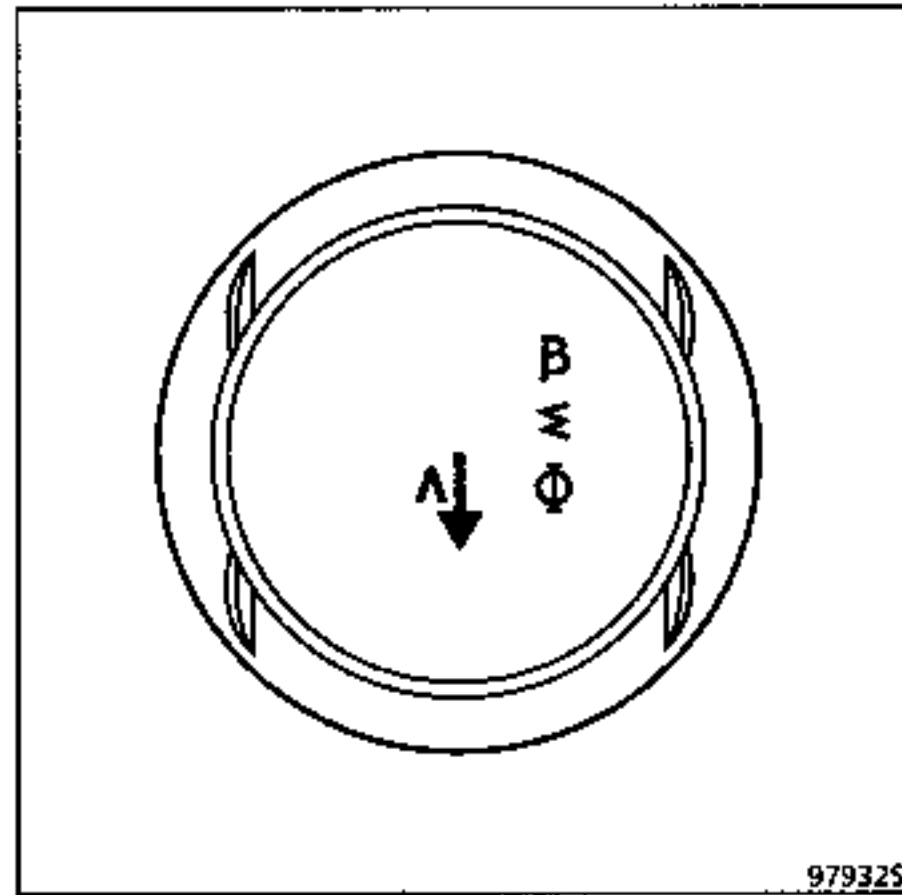
F7R engine

β Diameter class reference

ψ Correct direction for fitting piston

Φ Supplier's reference (*)

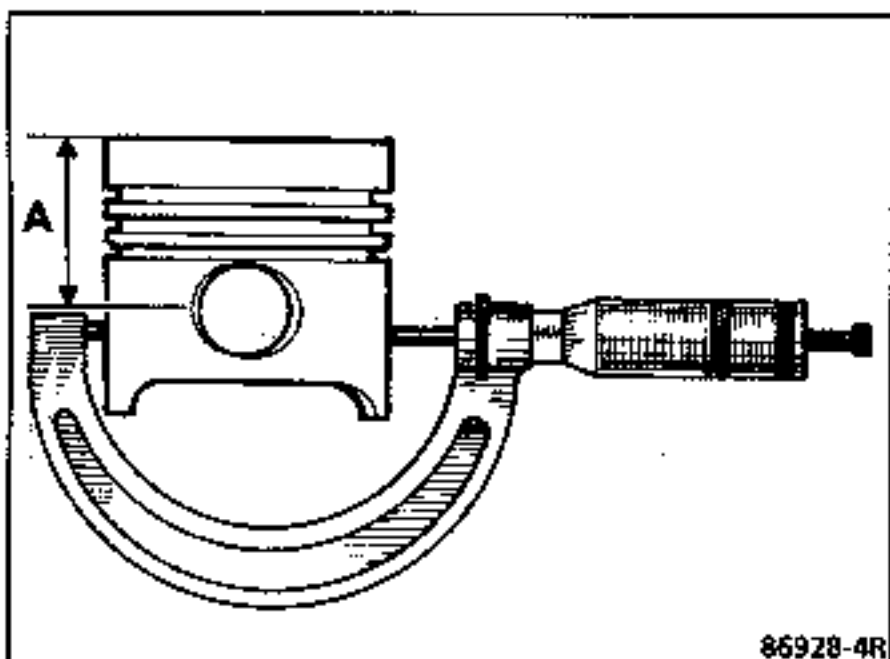
Σ Supplier's reference (*)



* Not used as in After Sales

MEASURING THE PISTON

The diameter of the piston is measured at dimension A.



F3P 682 - 684 - 700 - 712 - 755 - 758 - 765 engines.
Dimension A : 50.8 mm (SMP piston).

F3P 704 - 705 - 706 - 707 - 708 - 710 - 714 - 724 - 760 engines.
Dimension A : 49 mm (SMP piston).

F3R 722 - 723 engines.
Dimension A : 51 mm (SMP piston).

F7R engine
Dimension A : 43 mm (AE France piston).

IMPORTANT : It is forbidden to fit two different makes of piston to the same engine, the weight difference being too great. In all cases, take care to order the piston (or pistons) which correspond to the diameters of the cylinder block liners.

FITTING PISTON PINS USING TOOL Mot. 574-20

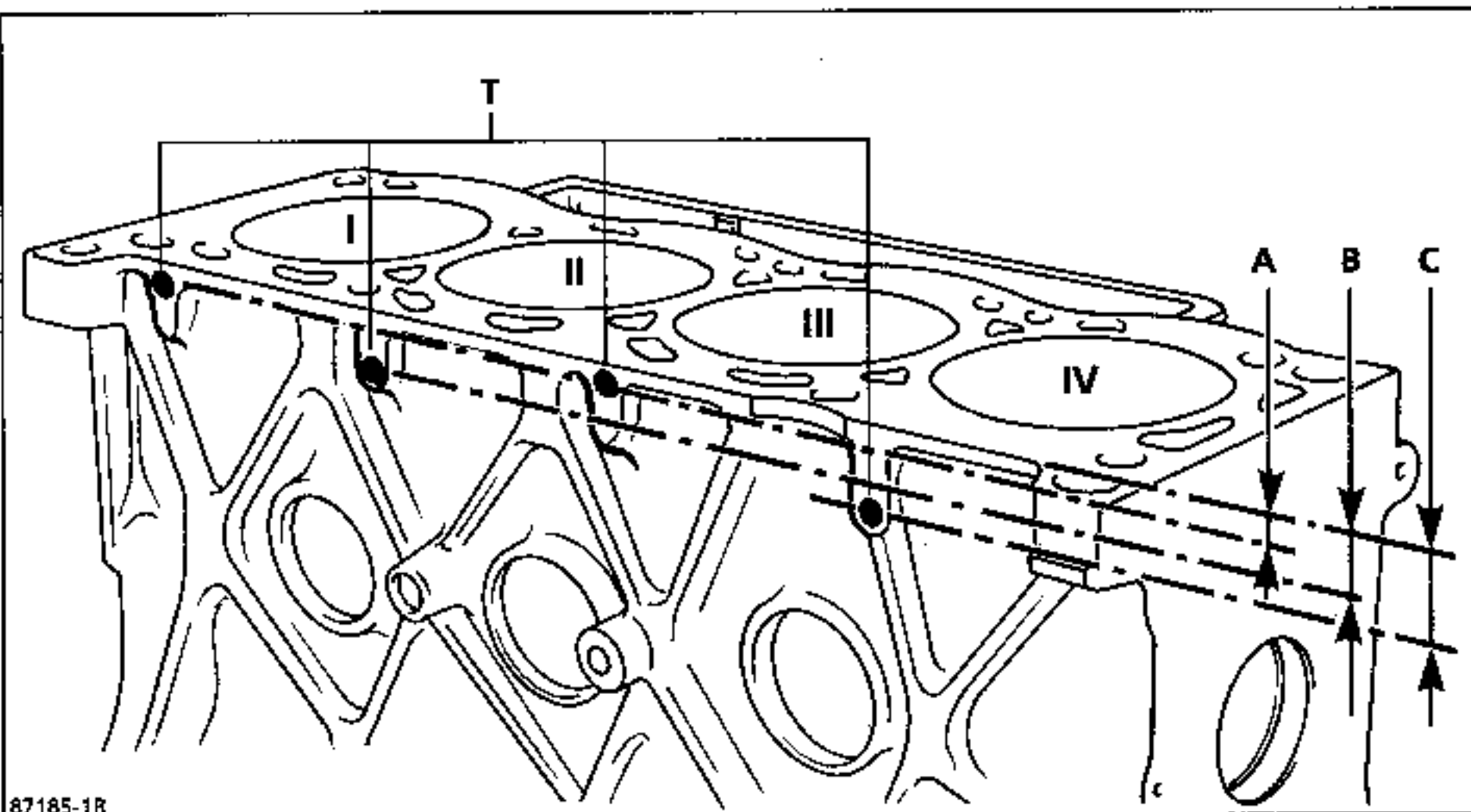
Engine	Pin	Centring tool	Thrust bush
F3P except 682 - 684 - 700 - 712 - 755 - 758 - 765	A9	C6	B15 + V15
F3P 682 - 684 - 700 - 712 - 755 - 758 - 765 F3R F7R	Fit by hand		

CYLINDER LINER DIAMETER CLASSES

ATTENTION : It is essential to maintain the correct matching between the piston diameters and the cylinder liners. To do this:

1. The diameter of the holes "T" drilled in the side of the cylinder block show the original nominal diameter of the liner:
T = 5 dia. nominal 81 mm dia. or 82 mm dia. or 82.7 mm dia. (origin 1).
T = 7 dia. nominal 81.25 mm dia. or 82.25 mm dia. or 82.95 mm dia. (origin 2).
2. Any one engine will only have a set of pistons of origin 1 or origin 2. (There is to be no intermixing of origin 1 and origin 2.)
3. The position of the holes (T), with reference to the cylinder block gasket face, identifies, within this nominal diameter, the liner tolerance class and, as a consequence, the corresponding piston diameters (see matching chart below).

POSITION OF HOLE (T)



87185-1R

4. On any given engine, the following may be fitted:
origin 1 pistons A or 1, B or 2, C or 3
origin 2 pistons U or 4, V or 5, W or 6

Example : If the diameter of "T" = 5 mm, see drawings
piston reference A or 1 in liners I and III
piston reference B or 2 in liner II
piston reference C or 3 in liner IV

ENGINE ASSEMBLY Specifications

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CHART FOR MATCHING PISTONS AND LINERS

F3P engine

Reference	Position of hole T	Piston diameter class (reference β on diagram)	Bore diameter (mm)	SMP piston diameter in mm, piston measured 49 mm from piston crown (dimension A)
T = 5 dia. (origin 1)	A = 6 mm	A or 1	82.70 to 82.71	82.665 to 82.675
	B = 12 mm	B or 2	82.71 to 82.72	82.675 to 82.685
	C = 18 mm	C or 3	82.72 to 82.73	82.685 to 82.695
				Piston - liner clearance 0.035 to 0.065

F3P 682 - 684 - 700 - 712 - 755 - 758 - 765 engines

Reference	Position of hole T	Piston diameter class (reference β on diagram)	Bore diameter (mm)	SMP piston diameter in mm, piston measured 50.8 mm from piston crown (dimension A)
T = 5 dia. (origin 1)	A = 6 mm	A or 1	82.70 to 82.71	82.665 to 82.675
	B = 12 mm	B or 2	82.71 to 82.72	82.675 to 82.685
	C = 18 mm	C or 3	82.72 to 82.73	82.685 to 82.695
T = 7 dia. (origin 2)	A = 6 mm	U or 4	82.95 to 82.96	82.915 to 82.925
	B = 12 mm	V or 5	82.96 to 82.97	82.925 to 82.935
	C = 18 mm	W or 6	82.97 to 82.98	82.935 to 82.945
				Piston - liner clearance 0.035 to 0.065

ENGINE ASSEMBLY Specifications

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F3R engine

Reference	Position of hole T	Piston diameter class (reference β on diagram)	Bore diameter (mm)	SMP piston diameter in mm, piston measured 51 mm from piston crown (dimension A)
T = 5 dia. (origin 1)	A = 18 mm	A or 1	82.70 to 82.71	82.665 to 82.675
	B = 24 mm	B or 2	82.71 to 82.72	82.675 to 82.685
	C = 30 mm	C or 3	82.72 to 82.73	82.685 to 82.695
				Piston - liner clearance 0.035 to 0.065

F7R engine

Reference	Position of hole T	Piston diameter class (reference β on diagram)	Bore diameter (mm)	AE FRANCE piston diameter in mm, piston measured 43 mm from piston crown (dimension A)
T = 5 dia. (origin 1)	A = 18 mm	V or 1	82.70 to 82.71	82.655 to 82.665
	B = 24 mm	B or 2	82.71 to 82.72	82.665 to 82.675
	C = 30 mm	R or 3	82.72 to 82.73	82.675 to 82.685
				Piston - liner clearance 0.035 to 0.055