

Enginetech Inc
Tech Assistance 800-410-3664 ext. 340 or 237

TECHNICAL BULLETIN	
	July 2002 TB 1998
Mfg:	FORD
Model:	ESCORT
Liter:	2.0L
V I N:	P
Year:	97-05

Valve Seat Breakage On
1997-2001 Ford 2.0L VIN P Engines

The AERA Technical Committee offers the following information regarding valve seat breakage on 1997-2001 Ford 2.0L VIN P engines. Previously, AERA published Technical Bulletin TB-1939 concerning this topic. The content of this publication is provided in addition to information in that bulletin.

Repeat engine failure has been reported shortly after first engine start on engines that had failed due to valve seat breakage. In these instances the original failure had been in the number one cylinder at the intake seat location. Subsequent engine failures in these instances has been traced back to debris that remained in either the intake or exhaust manifold. The debris found that re-entered the combustion chamber included particles of valve seat, piston/ring material from the original failure.

When a valve job is to be performed, it may be common procedure for the technician to just pull the intake and exhaust manifolds back to provide just enough room to get the cylinder head off of the engine. Doing so does not allow ample ability to clean either manifold. When a valve seat comes out of its counter-bore it shatters into many pieces from impact. Those pieces from the valve seat may enter the intake and/or exhaust manifolds as the result of normal air turbulence. The cylinder head for this engine originally uses PM (powder metal technology) valve seats with an approximate depth of .286" (7.264 MM). When these seats shatter, many pieces result.

For the reasons stated above, it is imperative that both manifolds be removed from the engine compartment and all debris removed. Failure to clean out the intake and exhaust manifolds could cause a repeat engine failure.

One aftermarket PM valve seat manufacturer has found using different seat

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materials; processes and designs that have resulted in improved seat insert retention in the cylinder head for this engine. An additional tempering process has been implemented, which eliminates the embrittleness commonly found in PM valve seats. These seats also have additional seat depth and a reduced leading edge chamfer. Those features provide increased seat to cylinder head contact area for better heat transfer. Inadequate heat transfer may have had a part in the original seat coming out of its counter-bore in the original failure.

Once new seat inserts have been installed, they should be machined according to the machining angles the Ford Motor Company has supplied below. Doing so will offer optimum engine performance for this engine. Machine the valve seat a 45° with a .069-.091" (1.75-2.32 mm) width and a maximum seat run-out of .0025" (.064 mm).

The AERA Technical Committee

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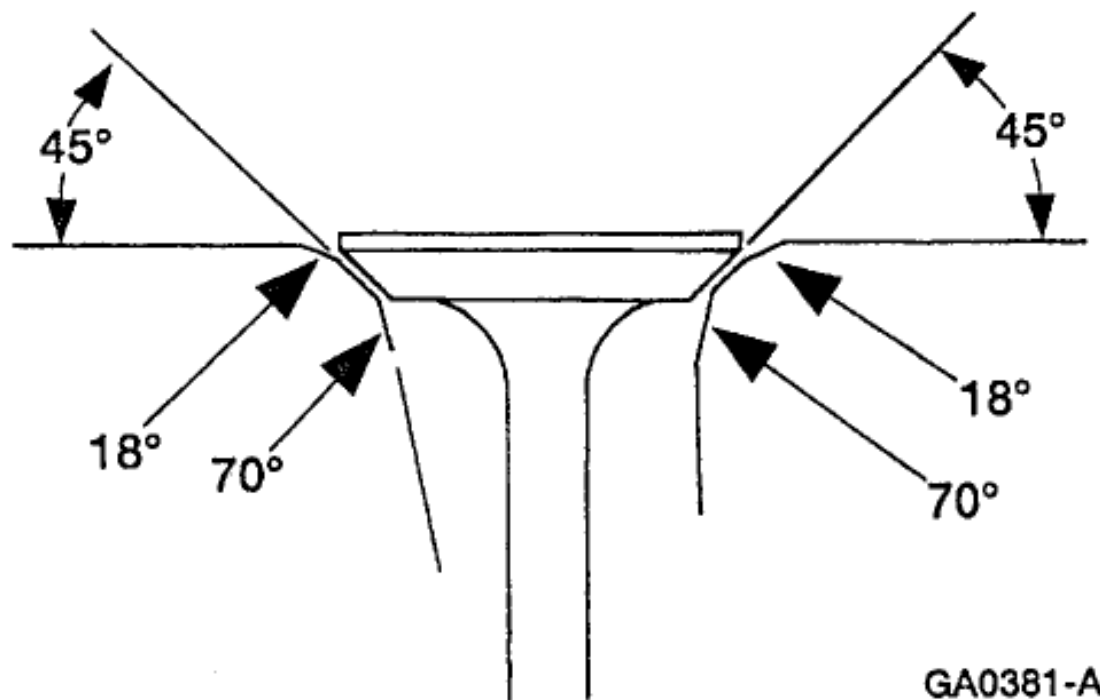


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Bulletin Diagram: EXHAUST VALVE MACHINING ANGLES - CYLINDER HEAD



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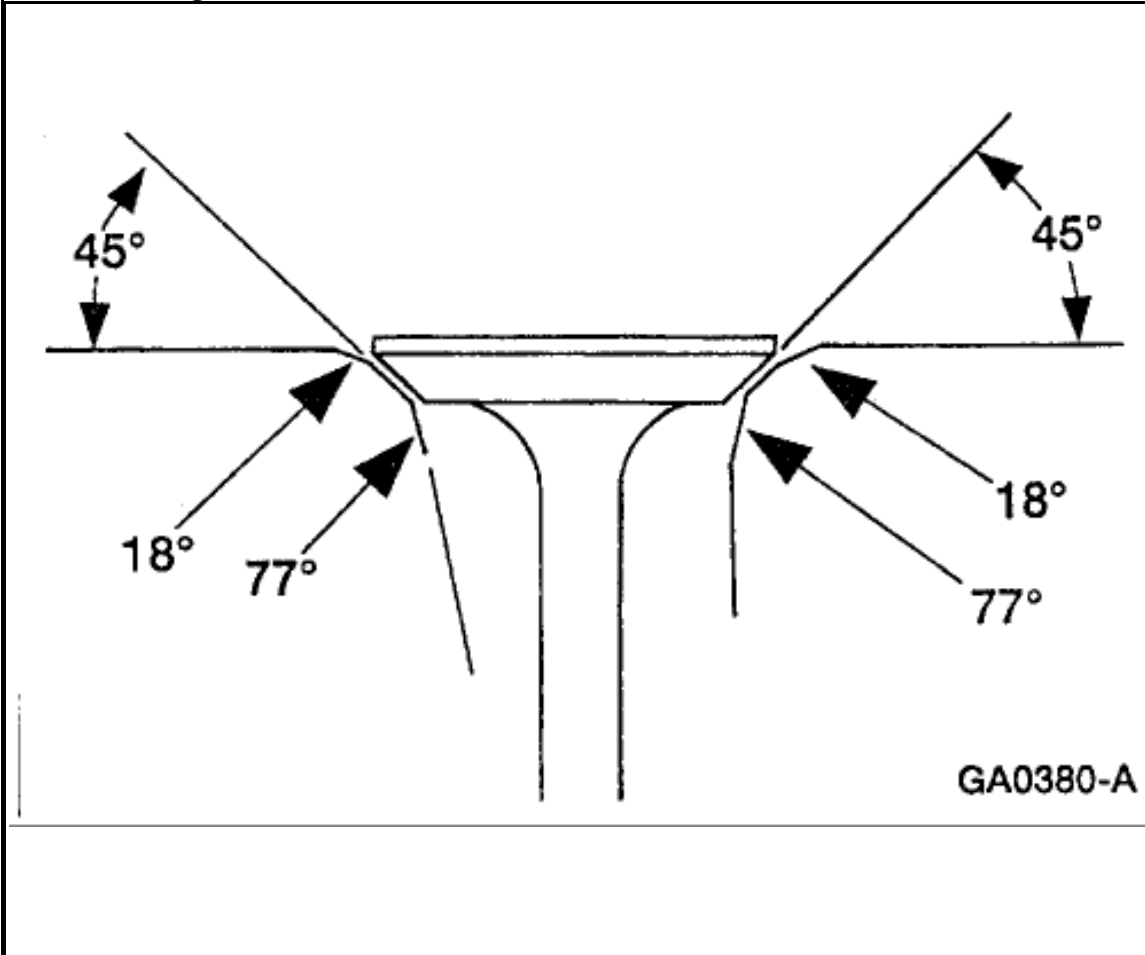


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Bulletin Diagram: INTAKE VALVE MACHINING ANGLES - CYLINDER HEAD



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