

MACH SCHNELL!

High-performance accessories for your Volkswagen

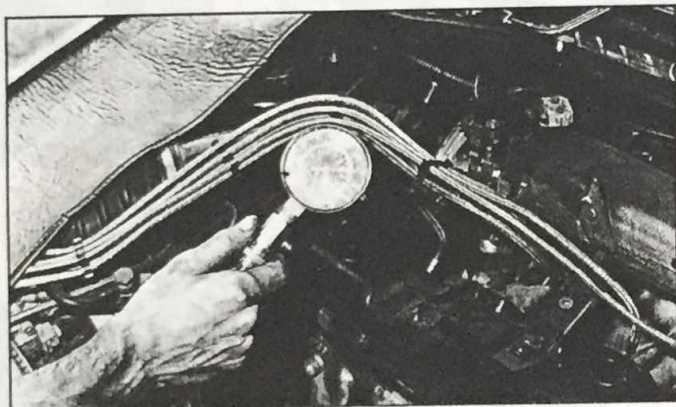
BY RANDALL JACHMANN

There are numerous ways to increase the performance of your water-cooled Volkswagen; anything from big, two-liter bottom ends to supercharging. Reliability, performance and fuel economy all come to mind when deciding which is the right direction for your Bavarian hatchback, while staying within the compliance of emission laws.

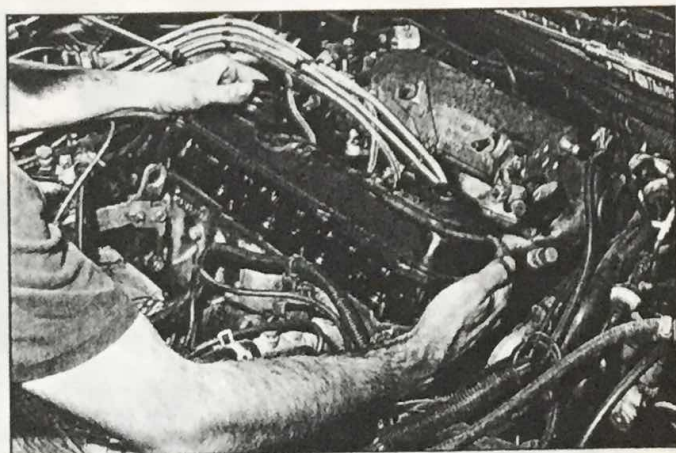
Euro Sport Auto Accessories in Anaheim, California specializes in water-cooled VWs, particularly Golfs and GTIs. After a brief discussion with Raffi Kazanjian, the owner and week-end SCCA racer, it was clear that they use what they sell. Raffi

put together a program that would address all of the aforementioned issues. It features an Extrude Hone head, a Neuspeed camshaft, and Euro Sport's own exhaust system.

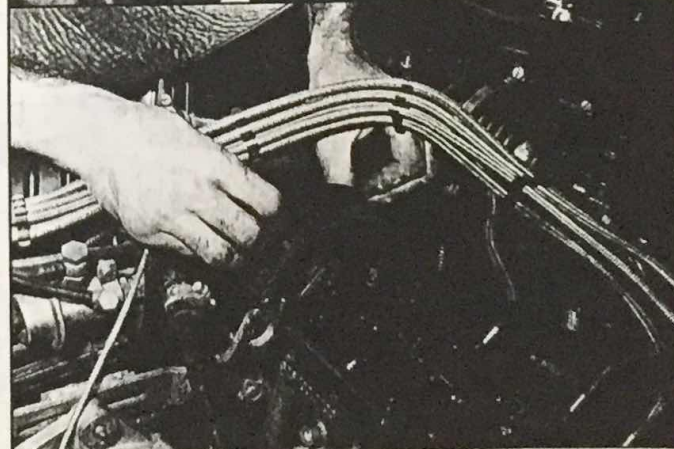
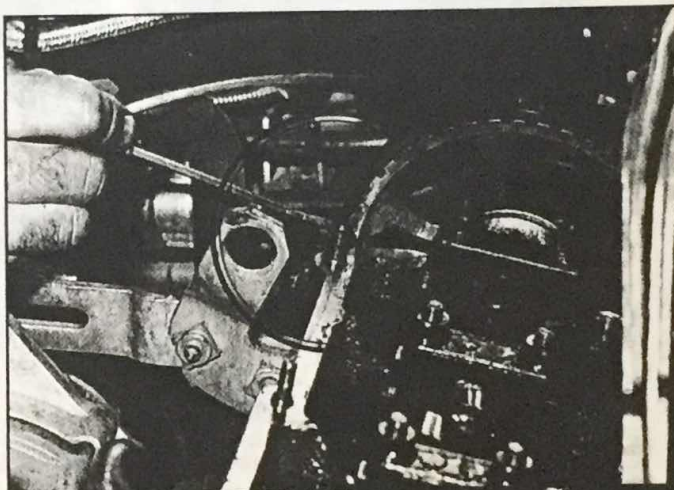
Euro Sport does its own porting, but for this exercise everyone opted to try out Extrude Hone's silly putty process. Extrude Hone states its process will increase the airflow by 30 percent over a stock head. By enlarging the ports, reshaping the intake tracks and/or port-matching the intake and exhaust manifolds (an operation Extrude Hone highly recommends), airflow can be increased and the engine's powerband can be tuned to a desired rpm range. Extrude



Before any top end work is done, Raffi checks the compression on the bottom end. Generally the bottom stays strong for over 150,000 miles. The compression should be around 145-190 psi. There should not be more than a 44 psi difference between cylinders.



Raffi removes the valve cover. If you're not sure, refer to your VW service manual for a complete disassembly guide.



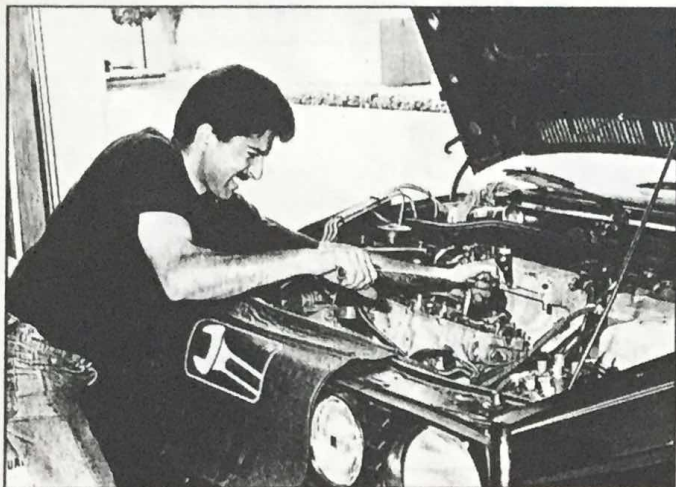
There are three marks that need to line up for top dead center. One is on the distributor, another is the TDC on the flywheel and the last is shown here on the camshaft gear (top photo, circled). Before pulling the engine apart make sure it's on top dead center!

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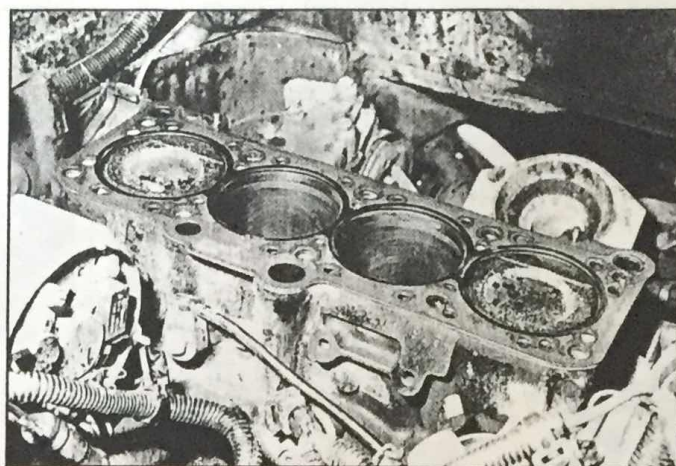
Hone uses a process that forces an abrasive putty mixed with various grades of silicon carbon that shapes, removes and polishes aluminum or cast walls to precise dimensions. This task is all controlled by a computer-aided hydraulic machine that forces the medium back and forth, in and out, eating, smoothing and polishing as it goes.

The end result is a ported and polished surface attained in a matter of hours, versus the many hours spent behind a porting tool. There is no guesswork here; each application is flow tested on a Superflow 600 to a 30% increase in airflow.

Neuspeed's 268 hydraulic sport camshaft specs have a duration of .268 and a .438 lift. Raffi chose this cam for a



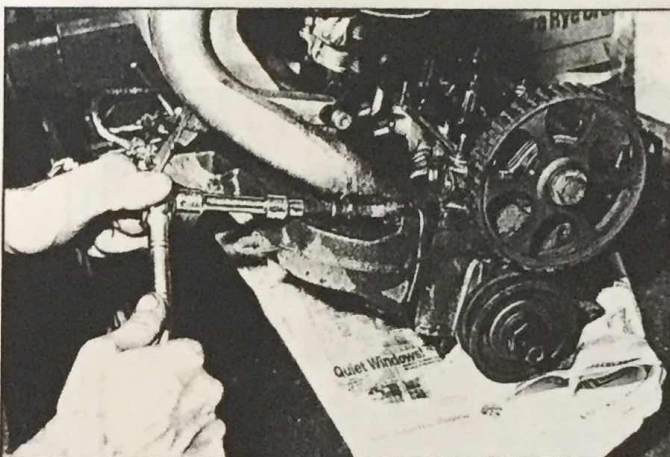
Raffi uses a breaker bar to loosen the head bolts. Once loose you can use a smaller ratchet



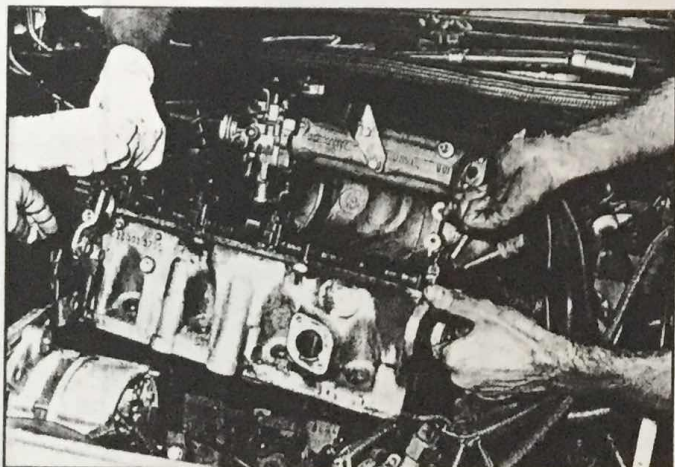
The surface of the block is thoroughly cleaned and the new head gasket is set into place.



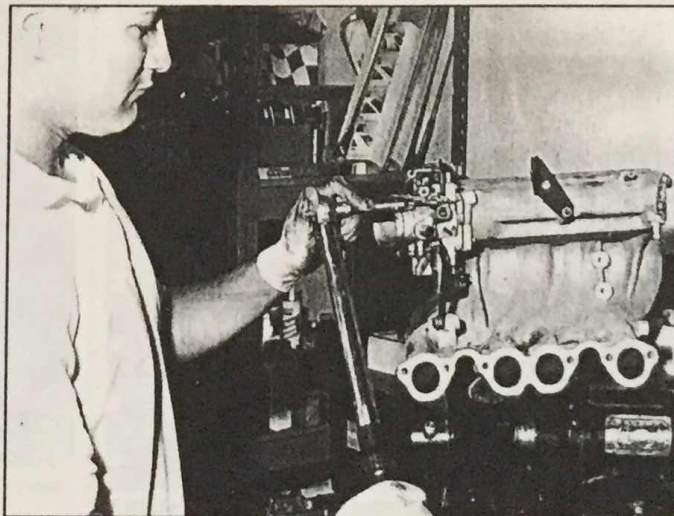
The injectors can be pulled now. There is a special removal tool for this procedure. In most cases it's wise to replace the O-rings around the injectors at this time.



John, one of Euro Sport's technicians, loosens the intake and exhaust manifolds from the cylinder head.



Removing the cylinder head is a two-man job. Always have someone there to help.



The throttle body also gets disassembled, and is remounted on the Extrude Hone intake manifold.

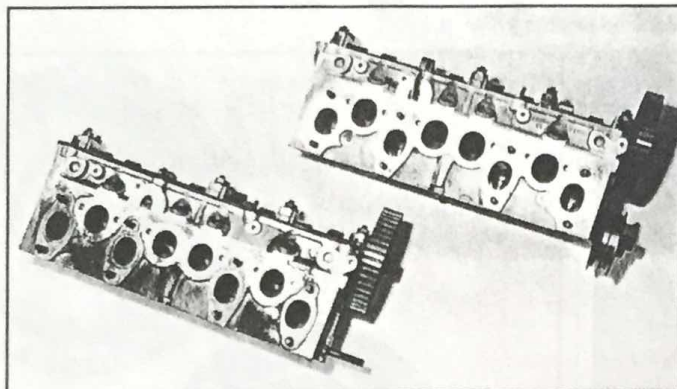
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number of reasons. First, Neuspeed's cam pulls hard from the mid-range to the top end. It's the perfect mate for the specs on the head and exhaust system. Also, Neuspeed uses brand new blank chilled cast iron billets made in Germany.

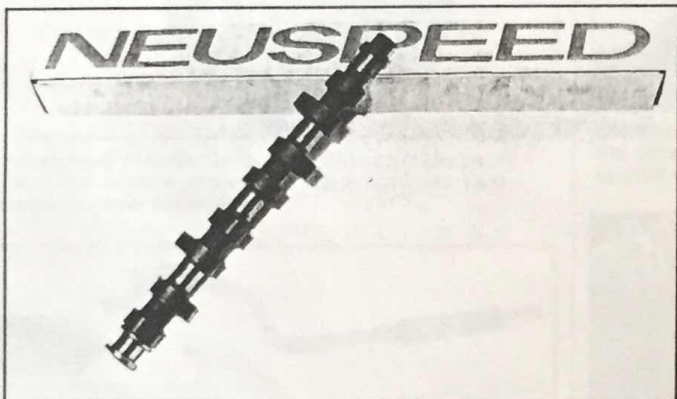
So what's the big deal? Strength is at its optimum, which

in layman's terms equals a strong camshaft that won't wear out due to inferior metal. This has been a major problem for aftermarket cam manufacturers in the past. Neuspeed grinds the camshaft for U.S. driving conditions, not for the German Autobahn.

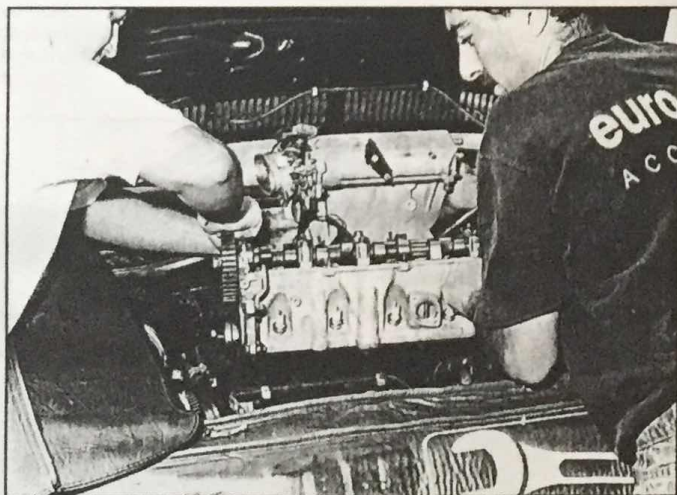
Euro Sport's High-Performance exhaust system came



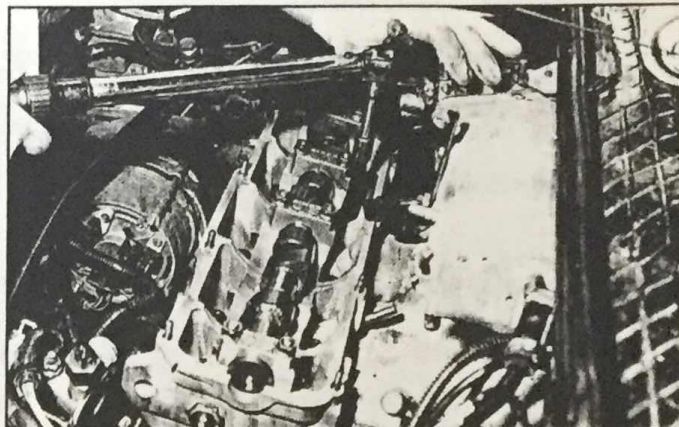
The cylinder head on the top has been Extrude Honed, the ports are all even and increase the airflow by 30%.



Neuspeed's 268 hydraulic camshaft is used and installed on the new head. Raffi follows the VW service manual and torques the camshaft in sequence 15 lbs.



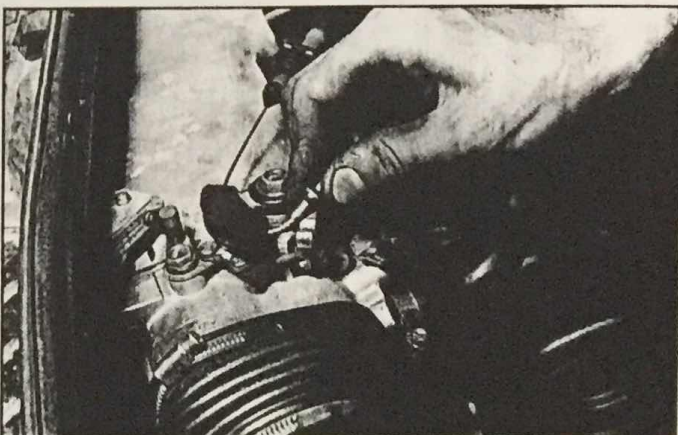
Raffi and John lift and guide the new cylinder head into place. It's easy to damage the head gasket, so be careful.



Once in place the cylinder is torqued down to spec. The VW service manual displays a distinctive torque sequence: The first pass is set at 29 lbs., the next at 43 lbs., and the last at 2-1/2 degree turns. Check your service manual.



This photo demonstrates the way the C-clamps are installed on the exhaust manifold to the down-pipe connection. There is a special tool for this procedure.

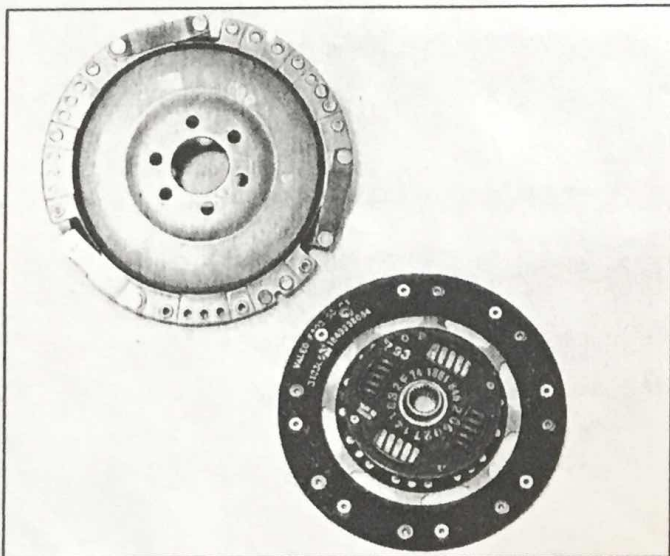


Raffi sets up the throttle cable on the linkage on the throttle body.

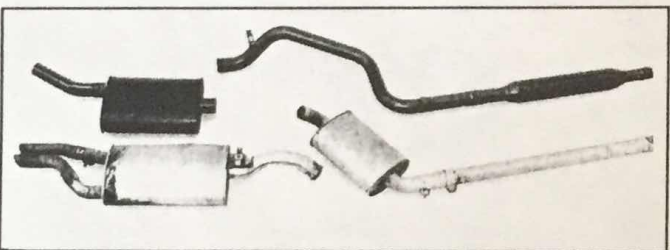
next. On a stock engine you can expect an increase of 6-horsepower; on a modified motor you might get a couple more. The system is manufactured out of 2-1/2-inch, 14-gauge aluminized steel. Raffi used Walker Dyno Max aluminized Super Turbo Muffler. Dyno charts show Euro Sport's system pulls hard from 4000-6000 rpm, thus staying in line

with the head and camshaft package. On the next few pages we'll run through a couple of the procedures of installing a cylinder head, camshaft, and a cat-back exhaust system.

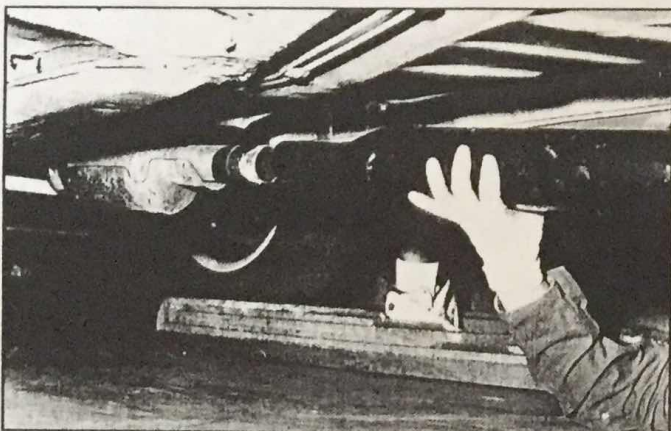
A test for the future will be to dyno-test the Euro Sport package as a whole. Keep your eyes peeled in *EuroSport Car* for up and coming tech on water-cooled Volkswagens. **ESC**



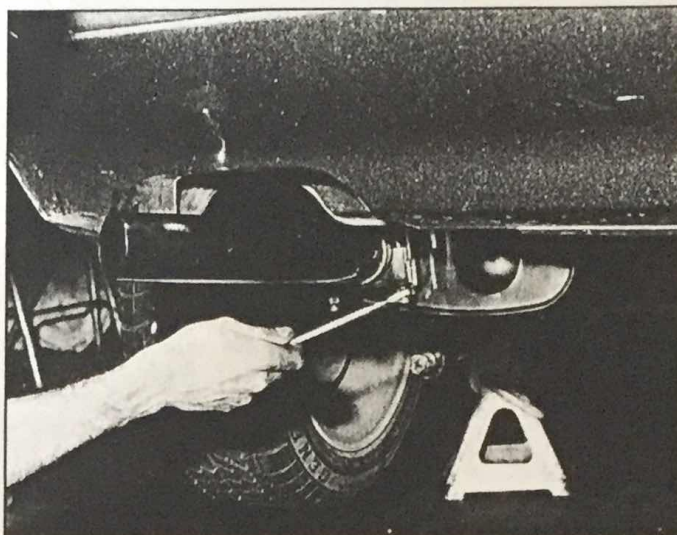
With the added increase in horsepower, Euro Sport installed Sach's sport clutch pack. The addition of the sport clutch will make a big difference, especially under extreme load.



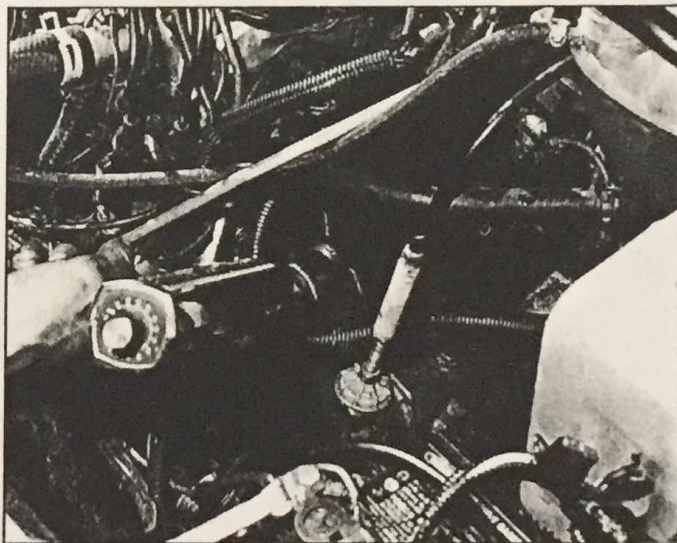
On top is Euro Sport's high-performance system, guaranteed to add at least six horsepower to a stock engine. On a modified motor, the cat-back 2-1/2-inch aluminized system will increase the breathing over a stock system.



After removing the stock exhaust the new center section is slid into place.



The whole exhaust system can be installed within a half hour once the old exhaust has been removed. Here John tightens up the tailpipe clamp.



Since this was a whole package, we waited until the end to time the car, as seen in this photo. Any of these modifications are available separately or as a whole.

Sources:

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