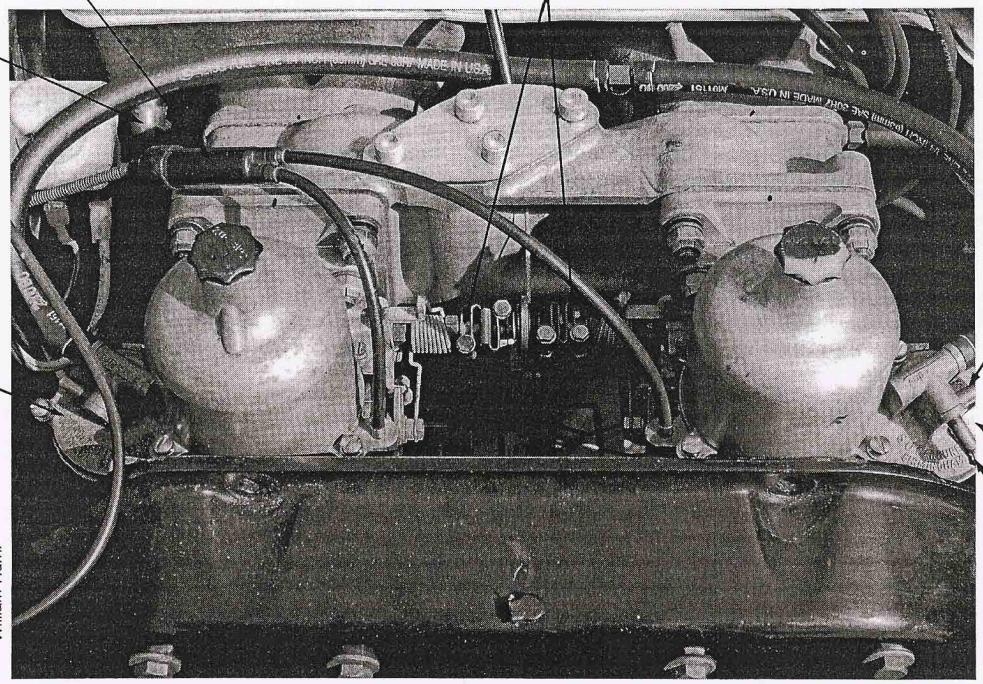

The complete installation. Note the vacant bolt holes in the air box, which are not used with the SU carburetors. One of the carburetors has a second fuel port in the top of the float bowl for sequential fuel delivery. In this application, a T delivery system was more convenient and this extra port was soldered shut. A Delta Mark 10 CD electronic ignition system is below the linkage and framed by the carburetors, the air box and the intake manifold.

turi, snug up the locking nut for the jet holder. If the jet is centered properly, the piston can be raised to fully open the venturi and, when released, it will fall freely and land with a "clunk" as it fully closes the venturi. If this does not happen, repeat the above procedure until successful.

Set the idle adjustment screw so that the butterfly is slightly open and lower the main jet until it is approximately $^1/_8$" below the top of the jet holder. The float levels are adjusted by adding or removing thin spacer washers between the needle valve and the top of the float bowl. When correctly set, a $^5/_{16}$-in. drill should just pass between the float and the top of the float bowl when that assembly is held inverted. Install the carburetors and connect the fuel lines, choke linkages and throttle cables. Temporarily lock the two carburetors together with the flexible linkage. Adjustment will be facilitated if the air box is not installed at this time.

Next, try to get the car running! Adjustment of the throttle stop screws and/or the main jet may be required for this to happen. Let the engine warm up. Loosen the throttle linkage so that the two carburetors can be adjusted independantly by their respective throttle stop screws. The two carburetors can now be adjusted to draw the same amount of air by using a Unisyn or an SU balance indicating tool, which can be purchased as part of an SU carburetor adjustment tool kit. Juggle between balance and idle adjustment until the carburetors are balanced and idle is about 1000 rpm. On the side of each carburetor is a pin that, when pushed up, raises the piston about $^1/_8$". This is used to adjust the main jet. When the main jet height is properly adjusted, the engine rpm will rise slightly and then settle back to where it was before the pin was lifted. If engine rpm drops, a lean mixture is indicated, and the jet should be lowered by turning one flat on the hexagonal jet adjusting nut and repeating the test. If the rpm rises and remains elevated, then the mixture is too rich and the jet should be raised one flat. When the carburetors are adjusted properly, add ATF to the dampers and replace the damper pistons. A quick turn around the block should assure that everything is in order.

Of course, having the proper needle is critical to proper mixture strength across the full range of throttle opening. The vertical adjustment of the jet simply allows the tuner to select the desired mixture at idle or at any other chosen throttle opening. The mixture at all other degrees of throttle opening is then determined by the initial setting of the jet and the needle profile. Fortunately, a gasoline-fueled internal combustion engine will operate over a wide range of fuel/air ratios — typically, from 1:12 to 1:16. Maximum power is attained at approximately 1:12 and maximum fuel efficiency at approximately 1:16. An automobile manufacturer would have access to a dynomometer on which the carburetor needle profile could be empirically defined with precision across its entire length. Experimentation with needles available for other applications, using such criteria as spark plug color reading and subjective driver evaluation, can result in a close approximation to the ideal. This was the method I used to select the needles for my Elan application.

To check for correct operation, first clean the spark plugs with a plug sand blaster. The car should then be taken out on the highway and driven at 55 mph for about 10 miles. Pull off to the side of the road and remove one spark plug supplied by each carburetor. They should be grey-brown if the mixture is correct under moderate load. For high-load driving, the spark plug should be more toward grey; for city driving and moderate load, the color should be more toward brown. In addition, if the throttle response is crisp and no flat spots are found through the throttle range, the job is complete.

Was it worth it? You bet!

— William Hurni

Postscript: The spring in the carburetor suction chamber is designed to impede the upward movement of the throttle slide due to the pressure difference between the suction chamber and the atmosphere. The spring should function in a given application so that it will allow the throttle slide to fully open as full load is placed on the engine at high rpm.

While there is a large selection of needles for these carburetors, there are only a few springs from which to choose. The AUD331 carburetors used in my application came with a red spring, so this seemed like a logical place to start.

To check the functioning of the spring, a motorcycle rear view mirror was mounted in the engine

(See SU CARBS, page 10)

CARB NEEDLE TABLE FOR LOTUS TC ENGINE

Normal	Rich
0A8	0A7
.1000	.1000
.0970	.0960
.0940	.0930
.0913	.0902
.0888	.0872
.0860	.0834
.0835	.0814
.0808	.0786
.0782	.0757
.0755	.0727
.0730	.0700
.0702	.0670
.0675	.0640
.0650	.0610

NOTE: Shown is the SU carb metering needle diameter in inches along the length of the needle.

TABLE 2