shankle automotive engineering

15451-F Cabrito Rd. Van Nuys, California, 91406 (213) 988-5190

SHANKLETTER IV 1 October 1975

GENERAL

Good Luck

As the '75 Season draws to a close, we look forward to the CSPRRC at Atlanta and wish all of you who are going the best of luck there.

'75 Season Results

Our "Field Dyno" has produced a second place finish in the Southern Pacific Division for the year and that makes us happy. Chuck Pittenger accumulated his points with two firsts, three seconds and one third place finish in National races. Now it's on to Atlanta with Klaus Holthaus and Hernan Ojeda of North American Racing Werks hard at work on the LeGrand to get it ready for the run-offs, while we prepare some fresh engines. The LeGrand factory is incorporating some changes into the car as well, so things should be in good order for Atlanta. We have learned a lot from this year's campaign and thank Chuck, Klaus, Hernan and LeGrand race cars for their inspired performances.

Late Entry

Gordon Smiley has been added to the list of successful users of Shankle Power. Running out of the Midwest Division in his Fred Opert/Shankle Titan, he began his season on the 27th of July and ended on the 21st of September. Running in seven races during that period, he traveled to Ohio, Colorado, New Mexico, Texas and Missouri as well as his home state of Kansas. His season included two pole qualifying positions, three fastest laps, two first place finishes and two second place finishes. At most events, he was leading when plagued by various break-in problems with the car or unfortunate meetings with other competitors. Gordon will be going to the run-offs as the third place finisher in the Midwest Division.

Successful Season for Rick Koehler

For most of the season, Rick Koehler has been running various cars in the Midwestern Council races and doing very well. On September 7th, he capped-off his season by finishing second to Vince Muzzin in a pro race held at Brainard, Minnesota. This after qualifying first and setting the fastest lap during the race. Well done Rick.

PARTS INFORMATION

Prices

We have enclosed a revised price sheet with this mailing. Please discard the price list dated June 1, 1975.

Back Orders

Back orders seem to be a continual source of misunderstanding, so we would like to say a few things about them and the circumstances that cause them.

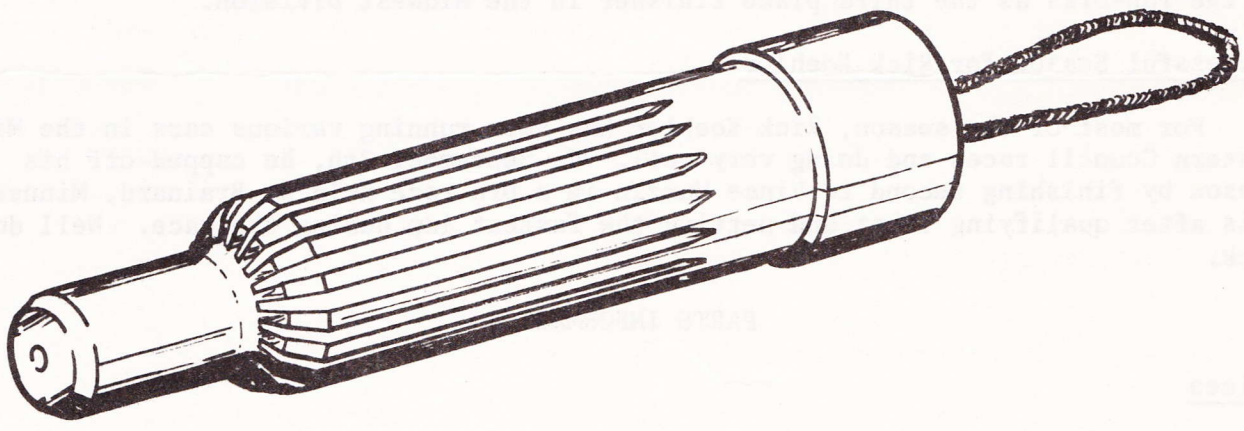
The items that are in the catalog are those that we carry in stock. If an item in the catalog is not available at all for some reason, then the symbol "n/a" will appear in the price list opposite that order number, as is the case with some of the carburetor parts. When we back order a part on your order with the symbol "b/o" in the price column of the invoice, all that means is that at the time we filled your order, the part was not in stock. Supply lines and supplier back orders, among other reasons, sometimes cause "holes" in our stock, which results in us having to back order our customers. When this happens, we ship the back ordered part or parts as soon as they are once again in stock. When we ship the back orders, the shipping charges and C.O.D. charges if any are handled as though it were a new order.

Our policy regarding back orders is to fill and ship them within thirty days without notification to the customer. If a back order is not filled within thirty days, then we will notify the customer before shipping to be sure that the part is still required by the customer.

If you don't like back orders, then we suggest that you indicate "no back orders" at the time of your initial order, and we will simply ship what we have of your order and not hold any back orders for future shipment on that order. Please be aware, though, that most of our back orders are filled within a few days and excessive time is involved only on especially difficult parts to obtain. These we will notify you of at the time of your order if by phone.

Clutch Alignment Tool

We now are offering a clutch alignment tool for all clutches which use the common 7/8 - 20 spline. It is supplied under order number 1.120. The price is $5.00 each. This tool should prove to be a time saver.



Oversize Stem Uprated Valves

For so long now, we have been waiting for oversize stem valves for the Uprated engines. Now we have them. They are +0.003", just as for the Cortina engines. This will allow you to ream the guides where worn beyond tolerance, rather than install new guides which is rather costly by comparison. Perhaps best of all is that the price is the same as the standard stem valves. The oversize stem intake valve for the Uprated is supplied under order number 1.022.A, and the exhaust valve is supplied under order number 1.019.A.

TECH NOTES

Jetting Recommendations

In the Tune-Up Data section of the catalog, we have listed jetting recommendations for the early Cortina and Uprated Formula Ford engines. These recommendations have been determined by dynamometer and track tests for the air density conditions noted. In some cases the recommended jetting has not yielded maximum performance on the track, even though it has proved out on the dyno. An exact explanation for this is not known but is believed to be related to aerodynamics or air flow around the carburetor. Some revision of the jetting may be necessary to account for these effects. We suggest changing the fuel jets only to achieve the proper fuel mixture based on individual track tests. In most cases where a change has been required, the jetting determined by dyno tests has been on the lean side, and one or two sizes larger fuel jets have been beneficial.

The jetting recommendations are for use with the two Formula Ford carburetors as modified according to our specifications and used with or without Shankle air intakes and our air filters. In general, we modify both carbs so that all the major fuel circuits operate at wide open throttle as originally intended by Weber. Major fuel circuits are: fuel jet, emulsion tube, air correction jet system, accelerator pump circuit, power(high speed) enrichment circuit, economizer system (Uprated carb only).

We have tested several of the various ram air devices currently in use. Some require no jet changes, while others require radical changes in jets and emulsion tubes to achieve proper fuel mixture. At this time we are not able to provide jetting for the various ram air devices available.

Jet Changes to Compensate for Changes in Air Density

The following simplified procedure was developed by Shankle Automotive Engineering several years ago for trackside approximation of air density and jet corrections for variations in air density. The following must be established:

Proper jetting for known air density (AD)
Air temperature (can be approximated)
Track elevation (or barometric pressure)
Relative humidity (RH)

Temperature and relative humidity can be estimated for practical purposes. Elevation is a reasonable approximation of barometric pressure.

Dry air density can be determined using Figure 1. Draw a line through the air temperature and elevation or pressure points to the air density line and read the dry air density. Refer to Figure 2A to determine the humidity correction factor. Multiply the dry air density by the humidity correction factor to get the real air density.

Example:

Air temperature 85°F.
Track elevation 2500 ft.
(baro = 27.3 in. hg.)
Relative humidity 40%

then

Dry air density = 87.5%
RH corr. factor = .986

and then

87.5% x .986 = 86.3% real air density

If the optimum jetting was established at 92% AD, then the air density is down 6%, and the fuel flow should be reduced by 6%.

For the Uprated carb modified as described previously, a .05mm increase or decrease of both fuel jets (e.g., 140/155 increased to 145/160) yields about 3% change in fuel flow. For the early Cortina carb, a .05mm change of both fuel jets yields about a 6% change in fuel flow. The larger the number of the fuel jet, the greater the fuel flow.

The difference in the amount of fuel flow change for the same jet size change between the Uprated and Cortina carb is due to the influence of the economizer circuit in the Uprated carb. This circuit contributes a certain amount of fuel flow, irrespective of the jet size and thus reduces the proportionate amount of fuel supplied through the fuel jets.

In the example above, a 6% reduction in air density called for a 6% reduction in fuel flow. To continue the example, jets would be changed as follows:

Uprated carb	92% AD	86% AD
Primary fuel jet	1.40	1.30
Secondary fuel jet	1.55	1.45
Cortina carb		
Primary fuel jet	1.55	1.50
Secondary fuel jet	1.45	1.40

A Note on Air Density Meters

There are several air density meters on the market today. These units sense temperature and the pressure and do not compensate for humidity. These meters are satisfactory for determining changes in air density but are not accurate for determination of the actual air density.

Even though an air density meter may not be truly accurate, once you have established an at-track base line based on what you think is maximum engine performance, then the readings of the gauge can be used on a comparative basis at other races regardless of the actual accuracy of the gauge.

Vortex Octane Plus - Test Results

We have made several comparative dyno tests using regular high test pump fuel (Super Shell) and the same fuel with Vortex Octane Plus mised 80 to 1. We have experienced no problems with the pump fuel. There have been no indications of pre-ignition or detonation with compression ratios up to 11:1 on various types of engines tested. Therefore, we did not take a known "bad gas" and try to make it good with this additive. Vortex states in their literature that at 80:1 (1.25%) mixture the pump octane is raised 3.7 octane numbers. The dyno tests indicate no harmful effects and a small increase in power of about ½ horsepower in the 5900-6600 RPM range. We have used the Vortex at the track the last few races with no problems.

Based on the information supplied by Vortex and our tests, we conclude that this additive is satisfactory for increasing the octane number of pump fuels and track use.

UPRATED PARTS SALE:

These prices will be in effect on orders received by 31 December, 1975. They are special NET prices for parts in stock.

CYLINDER HEAD (1.045)	$129.00
INTAKE MANIFOLD (1.036)	$33.00
CARBURETOR (1.082)	$125.00
PISTON (1.002)	$15.00
INTAKE VALVE, STD. STEM (1.022)	$2.40
INTAKE VALVE, +0.003" STEM (1.022.A)	$2.40
EXHAUST VALVE, STD. STEM (1.019)	$4.70
EXHAUST VALVE, +0.003" STEM (1.019.A)	$4.70

shankle automotive engineering

15451-F Cabrito Rd. Van Nuys, California, 91406 (213) 988-5190

shankle automotive engineering
15451-F CABRITO RD. VAN NUYS, CA. 91406 (213) 988-5190

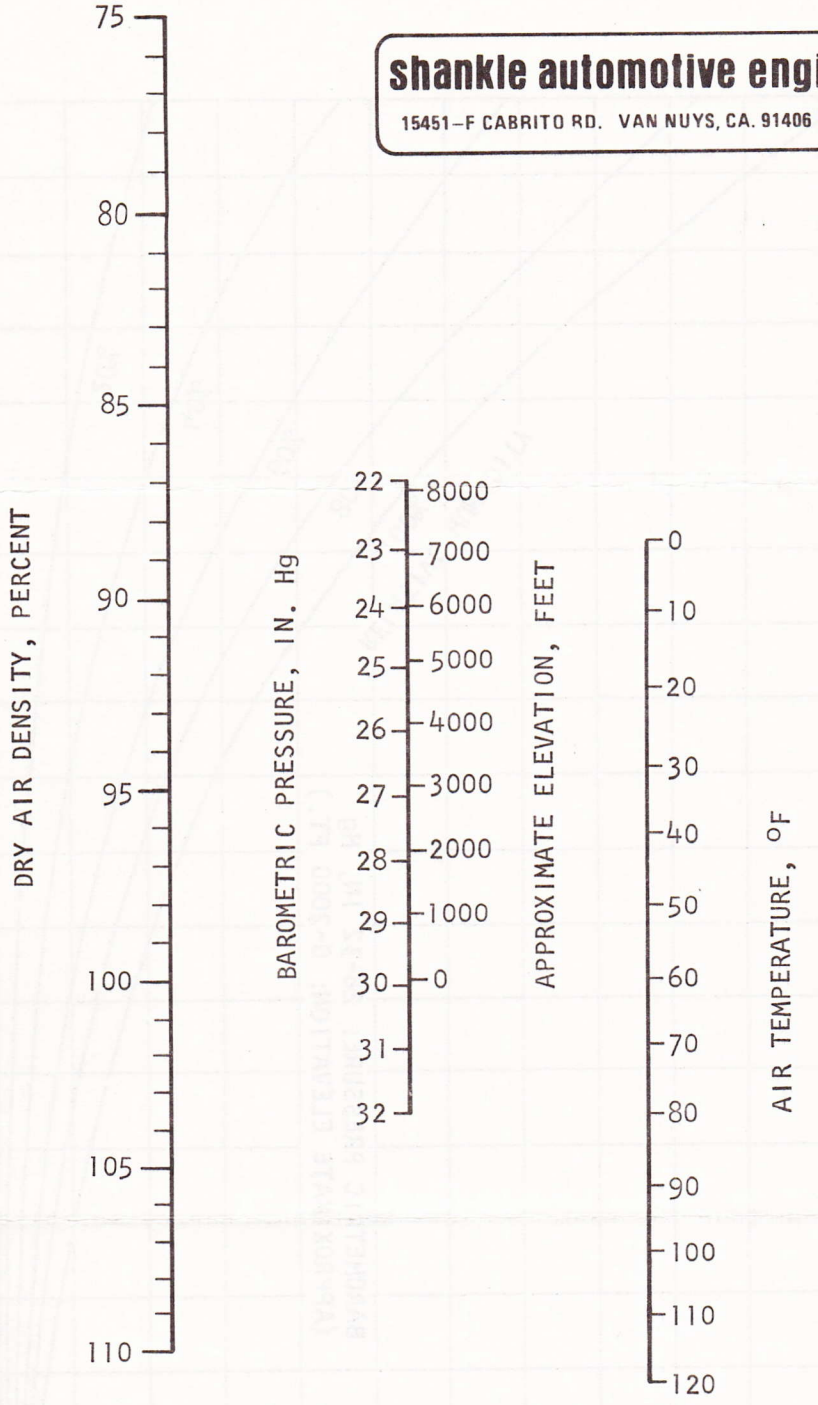


Fig. 1

Nomograph for Determining Dry Air Density

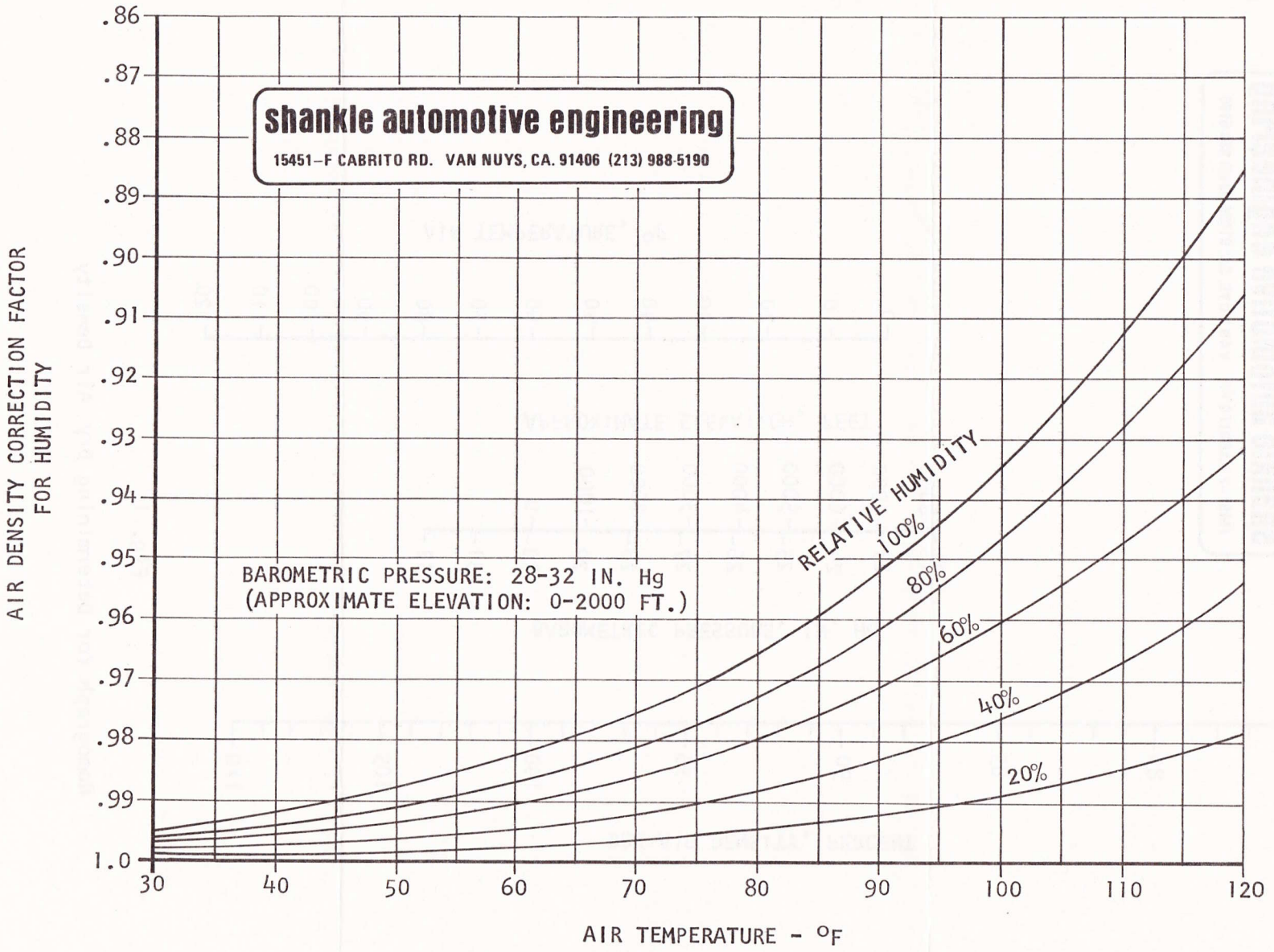


Fig. 2a
Graph for Determining Humidity Correction Factor for Barometric Pressure 28-32 In. Hg, Elevation 0-2000 Ft.