

Judson Research & Mfg. Co. History

by Rocco C Antonelli, John E Moxon, and W. Haddon Judson jnr.



Above: W. Haddon Judson (1914-1988)
many thanks to Kirstin (Judson) Heckt his granddaughter

Since 1880 the Judson Family have been involved in some form of mechanical and electrical engineering. It's a story of enterprise and innovation, from farming machinery through to electronics for the defence and automotive industries. Of course stationed along the route was the Judson Supercharger, a product that was a natural spin-off from a small interest in producing custom-made racing superchargers.

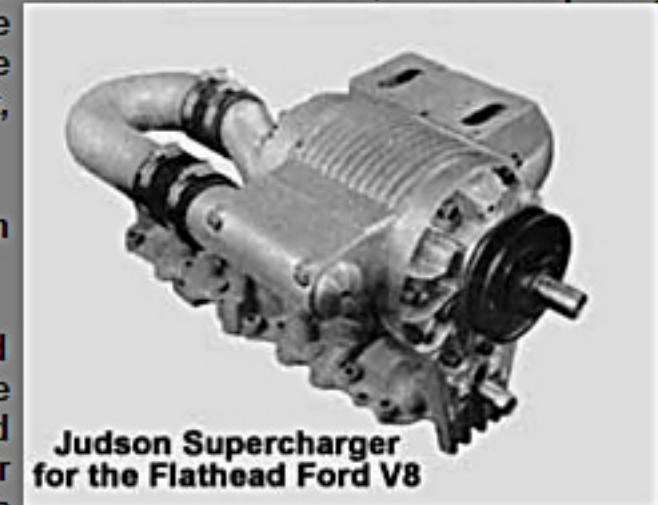
The Early Years.

The supercharger manufacturing unit was part of *Judson Bros.* of Colleeville PA,- who made farming machinery- this company was absorbed into what was to become the parent company, *Judson Research & Mfg. Co.* of Conshohocken PA. in the early 1950s.

Production superchargers were developed shortly after this amalgamation, starting with a sliding vane supercharger for the Flathead Ford V8, followed quickly by a supercharger for the for the popular British MG TD sports car. Production continued for a few years at a modest rate but the breakthrough came in 1956. A version was produced for Volkswagen's air-cooled flat four engine and with the explosion in popularity of the Beetle in the U.S., production was moved to a new facility at 541 E. Hector Street, Conshohocken, to cope with the increased demand.

W. Haddon Judson (1914-1988) was the prime mover in the development of the company and in the technical innovation of the supercharger aided by his brother Charles A Judson.

New models were added steadily over the next five years until the full range included superchargers for MG TD, TF and MGA, Renault Dauphine, Triumph TR3 and 4, Mercedes 190SL, Volvo, Austin-Healey Sprite, the Corvair and of course two versions for Volkswagens. The two VW types were a natural progression. The first was for the 30/36hp engine and the second for the 34/40hp unit introduced in August 1960. For the Karmann Ghia the kit included an aluminium air scoop for the deck lid but in all other respects the two Judsons fitted across the range until the advent of the 1500cc engine in 1967.



Judson Supercharger
for the Flathead Ford V8

From the outset it didn't take long for Volkswagen owners to look for ways to breathe new life into their underpowered Beetles. As a consequence business for the *Judson Research & Mfg. Co.* and in particular sales for their VW *Judson Supercharger* flourished. Despite the sliding vane supercharger's origins as a bespoke unit for motor sport, the Judson company wisely targeted the average motorist in its advertising campaigns. It's easy to understand, the mass market was the average guy. Certainly with the Volkswagen, which was an economy model, it was important not to price the supercharger kit out of their reach.

Advertising.

The advertising firm that handled the Judson account was the "*Williams and Avery Advertising Co.*" in fact this was simply William Haddon Judson and Charles Avery Judson...they kept everything "in house."

Early advertising was strictly factual without fancy flourishes; pictures were straight engine shots and text just emphasised the power gains that could be got by fitting a Judson Supercharger. The adverts offered "Free literature and data" by writing to the company in Conshohocken. From 1953 onwards "*Road & Track*" magazine was one of the main advertising outlets with a more noticeable presence when the magazine conducted a road test on the latest Judson model. Reviews of the Judson models started in November 1953 when the Judson for the Flathead Ford was reviewed in the magazine "*Speed Age*" followed a year later with the "*Road & Track*" review for the Judson MG-TF model.

With the introduction of the VW model in early 1956 the promotional material for Judson Superchargers became more model specific, with the VW Judson getting a brochure and a promotional postcard sent out to those responding to magazine adverts. The VW Karmann Ghia, Volkswagen's new "sporting image," had it's own Judson brochure even though the kit only differed from the normal VW kit, with the addition of an alloy decklid scoop.

A new addition to the newsstands at this time, afforded the Judson Company with another avenue of exposure; the magazine "*Foreign Car Guide*". In the first issue of Fall 1956 the magazine ran an article outlining supercharger options for the VW. The article, although mentioning most of the Judson's small supercharger rivals, featured the Judson heavily in its text and with a page of pictures giving pictorial instructions of the Judson installation. A review of the VW model appeared in the September 1957 issue of "*Road & Track*"; the positive review also giving sales a useful boost.

From the VW model's early exposure in issue number one of "*Foreign Car Guide*," the Judson Company took the back page of every issue of the magazine until December 1966. It's in the company's back page advertising for "*Foreign Car Guide*" that you'll notice a more "look at me style" with a stylised graphic of a speeding Beetle, a space-age rocket advertising 50% more power and how to turn your Beetle into a "Super Beetle."

In the "*Foreign Car Guide*" the company had found the ideal billboard for its best selling supercharger as, with the popularity of the VW Beetle, the magazine's content began to be dominated by the German import.



Sales

Right from the start of the VW model the company claimed in it's advertising, "thousands of happy owners". Well yes, eventually they did sell thousands of the VW model but those early claims, in the 1956 brochures were something of an exaggeration.

At this stage the company were offering their kits, direct from the factory, through specialist agents and official VW dealerships. As an example, Judson's West Coast stockist Bill Correy was also a representative for Pepco Superchargers and a regular feature contributor to "*Road & Track*" magazine. I would expect he had no small part in getting the Judson reviewed in the September '57 issue. The VW Kit at this time retailed for \$149.50.

The fact that Judson were selling their supercharger kits for the VW through *VW of America's* official dealership network is a little surprising, given VWs open hostility to any tinkering with their flat 4 engine. It is also surprising that it wasn't until 1960, that *VWoA* decided to put their foot down; threatening any official VW dealership with the loss of their franchise if they continued selling accessories not sanctioned as official VW accessories. *VWoA* also reminded dealerships, that fitting a Judson Supercharger to a VW would immediately invalidate their warranty.

The closing of these sales outlets led to the production of a Judson "Personal Memo" mail-shot to prospective owners who had already asked for product details. In it Charles Judson explains why local VW dealers were no longer stocking the Judson Supercharger. More importantly to the buyer, the memo announced the company was passing on the dealer discount, reducing the price of the VW kit from \$144.00 to a very attractive, \$100.00 when buying a supercharger direct from Judson's Conshohocken workshop.

1964-1976

We are fortunate to have, in the writing of this "history" the assistance of Rocco Antonelli to paint a picture of the Judson Research & Mfg Co. during these last 12 years of supercharger production.

Rocco joined the company in 1964 as an 18 year old after what Rocco recalls as rather an intimidating interview. Both Haddon and Charles Judson conducted the "grilling," putting Rocco through his paces to see if he would stand his ground.

"Can you hold a thousandth," probed Haddon brusquely.

"If your machines are up to it, I can hold a tenth of that," was Rocco's reply.

Haddon turned to Charles and said, "Let's see if he's as good as he says he is."

"Boy...you start on Monday."

Rocco was to be part of a close-knit team in a precision engineering environment...if you couldn't "cut it" you would be out. William Haddon Judson was a "hands on" owner who ran a tight ship. Rocco slotted right into the operation, which saw him gain the trust of the demanding owner to such an extent that he found himself in charge of the Supercharger Division inside of two years! It was a relationship of mutual respect.

The two Judson brothers were the driving force of the *Judson Research & Mfg. Co.* but almost direct opposites in character:

William Haddon Judson was the innovator and inventor, the very reason the company was a success. He had a tough exterior, didn't suffer fools gladly and would let you know exactly what he thought. Not for him the confines of the office, "Had" set his personal lathe at the head of the machine-shop and got his hands dirty along with the rest of his team. You would rarely see Haddon out of his white lab-coat. Haddon drove a silver Mercedes 190 with beautiful red leather upholstery, it was his pride and joy...supercharged of course. Although Haddon never took the academic route to engineering proficiency he was made an honorary member of the "Society of Automobile Engineers" (SAE). He was proud to display the citation on a plaque in the hallway that linked the offices to the workshop.

Charles Avery Judson was the administrator and PR man. Charles spent his day in the office, dealt with finances, advertising and customer relations. Charles was a very elegant man, always dressed immaculately in tailored suits and bow-tie. Although it was Haddon who was the engineer, it was Charles who drove the fast cars...most of them supercharged too.

Staffing.

One might consider a company that produced a variety of original engineering and electronic products from its facility in Conshohocken to be quite a large concern, with a staff of between 30 and 50 people...not so. The *Judson Research & Mfg. Co.* was at no stage manned by more than 10 members of staff. Having said that, many of that number would have the capability to "multi-task" across engineering and electronic projects and, as the company name suggests, research into new products.

We'll let Rocco recount the main Judson staffing during the time he was recruited...

W. Haddon Judson had three children; two sons, W. Haddon Judson jnr and Gregory Judson and a daughter, Patricia. Although the two sons worked with their father, Haddon jnr. spent a large part of the 1960s in the US Navy and sadly Greg died suddenly in his early 20s. The the early death of Greg was a tragic blow to the family and understandably hit his father badly for quite some time afterwards.

Charles A Judson had one son, Christopher.

The two Judson brothers insisted on a tight discipline in the workplace...no talking, except at break time...*"and put the cigarette down, I'm paying you for two hands, not one!"* However it didn't stop Haddon from flipping me with the occasional cigar as he returned from his lunch break. I kept it to smoke in my own time of course.

Neven Tyson was a supervisor who ran a turret lathe which was centrally located so he could see the whole shop. "Nev" was a war hero and I can't say enough of how nice a man he was. He was one of the few survivors of the WWII Bouganville campaign, in the South Pacific. His recollections of that campaign were the stuff of nightmares; it forever gave him a deep respect for life, and his fellow workers. I learned valuable life lessons, as well as gained a friend in Nev.

Stanley Pruskowski, shop foreman, who loved to work overtime and did a dance he called *"The Overtime Samba"* whenever Saturday working was posted.

Rich Baker, who ran the electronics department and the owner of a "nasty" white Corvair. Rich and I worked that car over until it screamed!

And of course myself, **Rocco Antonelli**. That pretty much rounds up the people who worked there for any period of time. There were others who came and went in the meantime but just a core workforce of six people made up *Judson Research & Mfg. Co.* for a large part of my time at the Conshohocken PA. facility.

Editorial note: Rocco was considered by Haddon Judson to be the best lathe worker he had ever worked with and when the company closed the supercharger operation in 1976, gave Rocco glowing job references, and introductions which helped further his later career.

The Judson Workshops.

At the time of writing no period pictures of the Judson facility at Hector Street, Conshohocken has been found but as the workshops still stand, I have adapted a recent "Google Earth" picture with Rocco's assistance, to show the workshop and offices as it would have appeared in the mid 1960s.

Previously there had also been a plant in Bridgeport, Pa where Judson made barrage rockets and their containers for the various Navies during the Korean war. This was the gap between the Collegeville and Conshohocken facilities. The original Conshohocken plant started further west on Hector street than the picture of the workshop shown here. This original plant is long gone and has now been replaced by an apartment complex.

In the mid 1950s the supercharger operation was relocated to 541 E. Hector Street, Conshohocken (pictured right) and it was from here most of the Judson Superchargers were made and despatched. Later, the modern day Judson Company was restarted by W. Haddon Judson Snr. and W. Haddon Judson Jnr. in an old tubing mill on Washington Ave. in Conshohocken. The same tubing mill that was started by W. Haddon Judson Snr's father, originally making .30 and .50 calibre machine gun barrels for the military during World War Two.



So what was it like inside the E. Hector Street facility? Rocco has kindly drawn a pen-picture of the set-up and lay-out of the workshop.

Rocco continues:

The Judson building from the front was a single story, twelve-car garage, an imitation stone fascia with a large picture window, a 2 cars deep single lane driveway nestled between two old private homes. From the back, a large garage with one shipping dock, one receiving dock and one employee entrance door. Although a nice looking place and spotless on the inside, you would never believe any type of machining ever took place in this shop. It looked more like a show place for old machinery.

Now to the shop lay-out, I only hope I can describe the shop well enough that you can visualize it. It was, as machine shops go, Outstanding! "Had" insisted on sparkling clean machinery. We had to brush and wipe down, then blow down every machine used, then run fresh lithium grease through the bearings, until the grease was clean. Repeat in the morning if machine was to be used. In 10 years or so, we had to replace one bearing in one drill press!

The back of the building had 3 doors, two over head, one small centre door for employees entry. Castings were made at the Emmaus Foundry Co, in Emmaus, Pa. (this company was also owned by W. Haddon Judson). Castings were delivered by truck and stacked on the concrete floor to help season them (a debatable issue).

As you walked in the employee entrance, on the right side of the shop, in an assembly line order:

STEP 1

A turning lathe...this was a converted turning lathe which used an air expansion mandrel to hold the casting in place while two carbide tool bits cut the O.D. (outer dimension) of the supercharger housing. When finished with the O.D. another pair of tool bits cut the length of the housing. This lathe was highly modified by "Had" to cut specifically the housing O.D. and the housing length. You could not use this machine for any other purpose. As is good practice, all sharp edges were knocked down with a hand file. O.D. and length sizes were critical.

STEP 2

The O.D. dimension was used to indicate the boring head in step number 2 which aligned the center of the housing to the centerline of the housing O.D.. Length and O.D. finished, the housings were then passed to a pair of I.D. ruff and finish boring machines which were modified to hold the housings by their outer-head dimensions. The lathes sat parallel. The first lathe was to rough cut and to bring the I.D. of the housing square to centerline to the O.D. of the housing. The second lathe was to finish cut, in preparation for cylinder honing.

STEP 3

Then on to a multi-head drill where all the mounting holes drilled at the same time.

STEP 4

A single tapping head was used to cut the threads.

STEP 5

Next a milling machine. Milling the mounting surfaces for the carburettor and intake. Carburettor mounting holes were drilled and spot-faced. Intake holes were drilled and tapped. Intake studs were installed manually with Locktight.

STEP 6

The housings were mounted and honed in a Sunnen auto honing machine. A cross-hatch hone was applied until the bore showed no more machine signs. Housings were then blown free of dust and chips and brought to the paint booth to be sprayed.

STEP 7

The final step for the housing was the painting booth where the housings were spray painted using "Had's" secret formula.

In about 30 to 40 minutes, a finished housing. On the right hand side of the shop were two milling and slotting machines to slot the rotors, shaft and vane slots. On the left side, two beautifully made milling machines for cutting aluminum manifolds, both vintage; one German made, one Italian made. I would have liked to have them, I mean they were beautiful.

Next in line a row of single head drills and multi-head tapping machines. Next "Nev's" turret lathe, then two engine lathes, then "Had's" magnificent British made white enamel collet chuck. I wish that was mine also, then the band saw. Next to that, the Infra-red laboratory.

Now the far left aisle of the shop. First the table disk sander, a large paint booth, a degreasing tank, a Sunnen10 honing machine, another degreaser tank. Next, the welding station and finally Had's work bench.

Nev did most of the rotor work, as well as the end plates, I did the rest including balancing on the Gishault. Rotors were tuned and faced off by Nev as well as slotting and threading. Most of this was done on Nevs turret lathe, slotting was done on a modified milling /grinding indexing table; we shared this job. As sales dropped off later in the early '70s, Nev and I took over the entire procedure. Vanes were hand cut with a hand fed router. A radius and a slotting head (made by Haddon) were all that was needed. Close and careful inspection was the rule.

Haddon designed, built and organized the steps and the machinery. Everything worked just right !