

## Rods

Do not use any Rods w/o real ARP Bolts **Both the Scat rods I beam and H beam have real ARP bolts.** Cost between \$160 (I-beam and \$275 H-beam). ARP Rod Bolts are also available for the stock VW Rods. The stock rods are certainly up to the task of FST engine performance, however, by the time you lighten and balance them end to end you will have spent almost as much time/money as buying a set of Scat Rods. The Scat Rods come in very close to perfect balance. So they are closer to plug and play and have the ARP bolts installed. Lately we have also had great luck with the Lightning rods from CB Performance. Everything I've said about the Scats apply to the Lightning CB 1289. Use the stock length 5.4. Using longer ones give you a small theoretical HP benefit but adds a lot of machining costs and sometimes shims.

## Crankshafts

We have had good luck with the **Scat Cast Crank which is in the \$165 range.** Add the best Scat Volkstroker 101372-1. Another fine product is available at DPR Machine in the LA area. These are VW rebuilt welded counterweighted stock cranks. They charge \$195 and they have cherry picked parts for us. [www.dprmachine.com](http://www.dprmachine.com) <<http://www.dprmachine.com/>> Incidentally, I've asked the owner about the rebuilt stock rods he sells and he has discouraged their purchase. He is high on his VW stock 12 lb, 8 dowel balanced flywheels. Similar cranks are available from CB performance (CB 1110 or 1105) 1110 is stock welded 1105 is Chinese Forged and is cross drilled for better longevity.

## Piston Rings

Here you need to ask yourself what do you really want? Quality stock rings work and names like Deves are bargains. The 2mm Total Seal Gapless rings are available in two types and both are well priced and work well. The ultra thin rings are also almost double the cost of the Total Seals but are must less durable and smoke at low speeds but have a tad better dyno number. RGU Racing uses both types. Total Seal makes two Gapless 2m products: The **M-1876** has a gapless top ring for about \$225. The **S-1876** which have the gapless 2nd ring is about \$100 for the set and frankly make just about the same HP on the dyno. Brian Drew will sell you the top ring only if you want to pick and chose.

## Cylinder Studs

No matter what the advertisements say the only studs to get are the ultra expensive Race Ware studs. Once an engine breaks a stud the others are at risk. Therefore replace the entire set. I came across this on a VW drag forum where they were discussing VW drag turbos where the studs don't last a long time

Brand

Bug Pack CM            128000 PSI

VW Stock	134000 PSI
CB Milspec 1229	145000 PSI
Scat 10172 CM	190000 PSI
<b>Raceware 1004</b>	<b>199000 PSI</b>

FYI The Race Ware studs are triple the price of the second most expensive but all the other have broken, Race Ware is in Taylor MI and it's the ones RGU racing uses. SR has the best pricing incidentally.

RACEWARE Engineering L.L.C.  
12713 Universal Drive  
Taylor Michigan (USA) 48180

Raceware Engineering LLC telephone number is  
(734) 947-9499.

As an aside CB sells high quality Milspec 10mm studs which solve the problem. The issue is all the 8mm case savers need to be removed and replaced with 10mm case savers. The later are trivial in terms of cost but the machining isn't. You'll be money ahead with the Raceware product.

Engine bearings. Do not use the current Kolbenschmidt or Malhe bearing that are not steel backed. Use VW (or other brand) NOS bearings if you can get them. At a minimum use the Silverlight Bearings which are a steel backed bearing. Silverlight is an OEM supplier for VW Mexico Flywheels. The current crop of Chinese flywheels say they weigh 12.5 Lbs but many weigh over 14. We have had cast flywheels break so stick to the stock or forged aftermarket unit. Use a scale.

## **Pushrods.**

This is a real toss up. The stock aluminum pushrods have a real short lifetime and flex then break. We recommend that you consider these a one-season product. Chrome moly pushrods don't break but are heavy. There are a couple of brands of HP aluminum pushrods which have worked great such as Smith Brothers. They can be obtained at Aircooled.net but they require cutting on a lathe to your length (if you give aircooled your specs they will cut them before they ship to you). Ask your engine builder what he wants. If you don't want to do this download the Irish formula vee rules and cut them to the middle of the length range. Here is what their rules say.

*Pushrods Irish rules*

*281-282 mm length 11.06-11.1*

*Only a 1 mm spacer may be used under the rockers. .039*

## **Heads**

These is getting tougher to get cheaply. It used to be that the new Mexican or Brazilian 040 or 043 heads were the ones to use. Certainly the old ones were. The Auto Linea heads were ok too. Recently the newer heads have had problems. Bad castings and alloy, plus cheapo valve seats. The FFDA is working on other quality alternatives one of which is actually at the same price point as the others. The other is about \$20 each higher. These heads made by Mofoco in a new, for them, casting shop have given excellent FST racing service in the hands of Doug Seim. After a full season of service we recommend them. Currently another brands is being evaluated but lack the dyno testing of the **Mofoco**. The latest Chinese AA heads I'm told are excellent and the porting cost should be lower since the intake ports are bigger and better shaped.

## **Valve Adjuster Screws**

The general replacements from Brazil are just awful. They mushroom and snap off. The genuine Porsche units are the best. The Porsche ball foot one is dead reliable but is heavy. The 356 unit can still be obtained and look exactly like the VW unit. Both cost much more than you'd think. Sets range between \$60 and \$200. If you are a bargain hunter get VW junkyard parts and forage through a few sets these to get one decent complete set. We are trying to get a vendor to sell the even better priced **Kolb** product at a decent price.

## **Cases**

Brazil is no longer making cases which is why the price has shot up. They might resume if they sense demand but we don't know. The aluminum cases are legal for FST for use in our series now. I've heard they are better and more durable but are 15 lbs heavier. The SCCA GCR needs to change and the FFDA rules committee will submit a request to change this rule. Also the Italian Aluminum case made by Auto Linea has gotten good press from the street HP guys but it too is 15-20lbs heavier than the AS-41. Brian Dew is now selling a cast in China but machined in Brazil AS 41 case which he has had good luck with in his drag and off road motors. The FFDA has received one for testing and the external quality is far better than Brazil.

## **Brakes**

We had some bad luck with the Chinese brake pads that came standard with the calipers. They delaminated from the backing plate after only a few races so we wanted to investigate alternatives. We read about Jim Nash's negative experience with Ferado and Doug Seim's poor review of Carbotech mostly because of the long bedding process and poor release in the rain. This made us want to go out on our own and look for a replacement. We have found and tested something we like very much

The pads are Stop Tech Street Performance Pads. They are pre-scorched and come with a backing spacer applied to the pad (which we used). Part No. 309.00300. They have good clamping attributes and broke in quickly. I found them at [autopartswarehouse.com](http://autopartswarehouse.com) if I remember correctly they were around \$100 shipped for all four corners.

Thanks to Phil and Walt McSherry