

Tested:

Mk2 ST ECU Upgrades

We put JW Racing, Superchips, Pumaspeed and Revo maps to the test on our Focus ST project car.

Words and pics: Cubby

There are a large number of engine maps available for the Focus ST but which of these would best suit you and your particular needs? We have decided to test the latest offerings available from a selection of tuners. We did actually ask eight manufacturers to participate in the tests and the following are the ones that took us up on the offer.

We decided to test the maps on our ST, which has been modified to a moderate level so the results should give us a good reflection of what to expect if you have also made these basic bolt-on upgrades.

Installing the maps on the car is a simple process taking no longer than 30 minutes. The first time the handset-based maps are installed it takes a bit longer as the car's stock map is downloaded on to the handset so it can be restored at any point. We installed all the maps with the car strapped down on the rollers in the same position, which helps to reduce any

inconsistencies in final figures.

When we tested each map, we ran the car up three times, taking the final power figure from the third run which also helped us to ensure that each result was consistent. The ambient temperatures weren't too high and all tests were carried out on the same day, so before and after figures are directly comparable.

The tests were carried out at Performance HQ in Dalgety Bay on its Mainline Dynolog Dynamometer, with experienced operator Russ Paton on hand to help us evaluate the readings of each map. Power figures are given at the wheel, and Ross estimated that the loss from the fly from the wheel in the case of our ST to be roughly 75bhp and 70lb ft of torque.

Car tested:

Current Engine Spec: Blueflame; downpipe, 200 cell cat, cat-back, Pro Alloy ST/RS intercooler, Auto Specialists CAIS



JWR Stage 3 (handset)

Cost: From £531.95 inc VAT
Contact: j-w-racing.co.uk,
0845 123 2829



Measurement	Result
Ambient temp stock (°C)	15.0
Ambient temp (°C)	15.29
HP before @ wheels	216
HP after @ wheels/flywheel	238.9/313.9
HP increase @ wheels	22.9
Torque before (lb ft)	225
Torque after @ wheels/flywheel (lb ft)	329 / 399
Torque increase	104
Boost before (psi)	10
Boost after (psi)	19.08
Intake temp stock (start run)	21
Intake temp stock (end run)	30
Intake temp JWR (start run)	15
Intake temp JWR (end run)	24

Up until 3000rpm the JWR map produces the most power and torque; it starts off very strong. It also has the highest peak torque figure of 329lb ft at the wheels. Boost pressure is 19psi, which is similar to all the other maps. After 4500rpm the power and torque starts to drop off, not by a huge amount but with strong low end torque early shifting will keep you in that low torque range.



Superchips Stage 3+ (handset)

Cost: £441 inc VAT
Contact: superchips.co.uk,
 0280 816781



Measurement	Result
Ambient temp stock (°C)	15
Ambient temp (°C)	17
HP before @ wheels	216
HP after @ wheels/flywheel	240.7/315.7
HP Increase @ wheels	24.7
Torque before (lb ft)	225
Torque after @ wheels/flywheel (lb ft)	329.3/399.3
Torque increase	104.3
Boost before (psi)	10
Boost after (psi)	19.89
Intake temp stock (start run)	21
Intake temp stock (end run)	30
Intake temp Superchips (start run)	14
Intake temp Superchips (end run)	21

The Superchips map does exactly what it claims and a little bit more. We see a 24.7bhp increase in power and an additional 104.3lb ft of torque at the flywheel. This map has very similar characteristics to the JWR Stage 3. There is a lot of early torque and power, which starts to drop off after 4500rpm. Boost pressure is 19.89, which is the highest of all the maps tested.

Pumaspeed Ultimate 310 (handset)

Cost: £399.50 inc VAT
Contact: <http://pumaspeed.co.uk>,
 01924 360 260



Measurement	Result
Ambient temp stock (°C)	15
Ambient temp (°C)	15
HP before @ wheels	216
HP after @ wheels/flywheel	245.7/320.7
HP Increase @ wheels	29.7
Torque before (lb ft)	225
Torque after @ wheels/flywheel (lb ft)	322.2/392.2
Torque increase	97.2
Boost before (psi)	10
Boost after (psi)	18.48
Intake temp stock (start run)	21
Intake temp stock (end run)	30
Intake temp Pumaspeed (start run)	15
Intake temp Pumaspeed (end run)	21

This is Pumaspeed's Stage 3 equivalent map, the Ultimate 310. It is specifically designed to be smooth and progressive and that's exactly what we found. The power and torque don't start off as strong at the JWR or Superchips and the peak torque figure is slightly down against both but the power delivery is very smooth. The power and torque don't drop off until 5500rpm in comparison to the Revo and Ultimate 412 giving us nice smooth curves. The power increase of 29.7bhp at the wheels is very impressive. Boost pressure is again around the 19psi mark.

Pumaspeed Ultimate 412 with RS injectors (handset)

Cost map/injectors: £399.50 inc VAT/£342 inc VAT
Contact: <http://pumaspeed.co.uk>, 01924 360 260



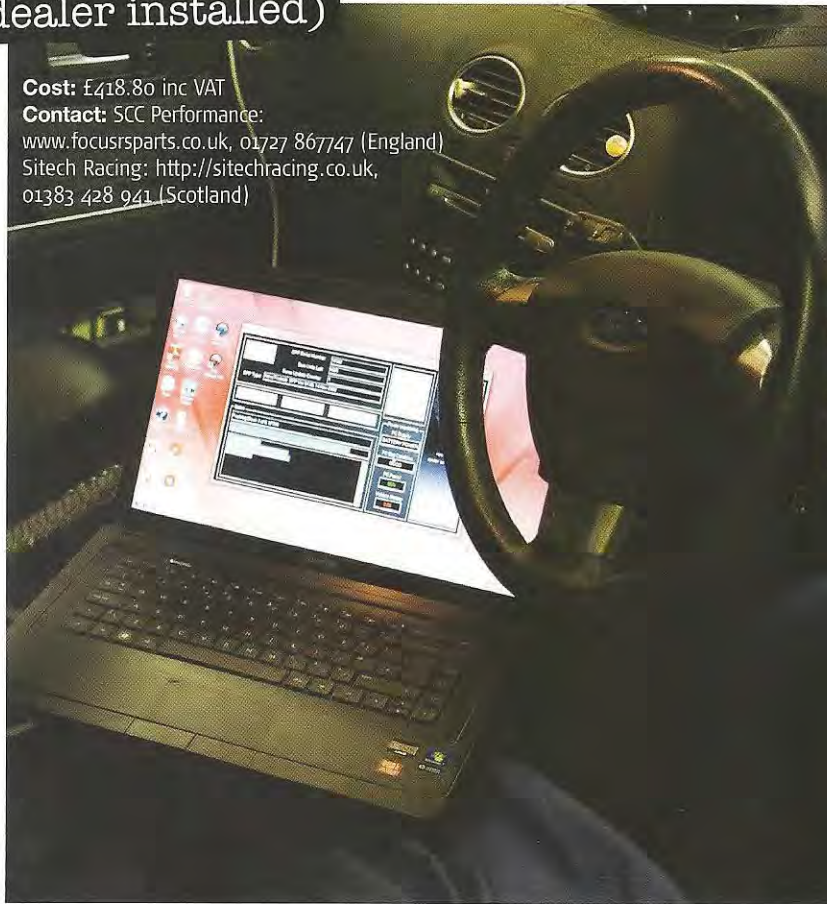
Measurement	Result
Ambient temp stock (°C)	15
Ambient Temp (°C)	14
HP before	216
HP after	246.2
HP increase @ wheels	30.3
Torque before (lb ft)	225
Torque after (lb ft)	321.5
Torque increase	96.5
Boost before (psi)	10
Boost after (psi)	18.53
Intake temp Stock (start run)	21
Intake temp Stock (end run)	30
Intake temp Pumaspeed (start run)	15
Intake temp Pumaspeed (end run)	23

This is Pumaspeed's map that suits hybrid turbos and Mk2 RS 412cc injectors. Our car isn't fitted with a hybrid turbo but we did fit the injectors. To get at these we needed to remove the inlet plenum and CAIS so fitting takes an additional 30-45 minutes depending on your familiarity with the ST's engine bay. Even although we don't have a bigger turbo we still see increases against the Ultimate 310. Again the map is smooth and progressive and almost mirrors its 310 younger brother in both torque and power. Looking at the graph we can see slightly more power and torque up until 5250rpm and then those 412 injectors make the difference. At around 6000rpm we see a gain of 30bhp against the 310 and over 40bhp over the JWR and Superchips.



Revo Stage 2 (dealer installed)

Cost: £418.80 inc VAT
Contact: SCC Performance:
www.focusrparts.co.uk, 01727 867747 (England)
 Sitech Racing: <http://sitechracing.co.uk>,
 01383 428 941 (Scotland)



Measurement	Result
Ambient temp stock (°C)	15
Ambient temp (°C)	15.3
HP before	216
HP after	249.2
HP increase @ wheels	33.2
Torque before (lb ft)	225
Torque after (lb ft)	320.5
Torque increase	95.5
Boost before (psi)	10
Boost after (psi)	18.84
Intake temp stock (start run)	21
Intake temp stock (end run)	30
Intake temp Revo (start run)	17
Intake temp Revo (end run)	25

The Revo map is slightly different from the others in that it doesn't come on a handset, you have to take this to a local dealer who's contact details we have noted above. The Revo has characteristics of all of the maps we have tested, lots of lowdown power and torque, very smooth power delivery and the highest peak power figure showing a 33.2bhp increase. It just pips the Pumaspeed Ultimate 412 at the post with a bump in the power curve at 5200rpm. Like the Ultimate 412 it holds the figures later in the rev range. Here we have the best of both worlds.



The results

All the maps we've tested have their individual strengths and hopefully the data we have presented will help you decide which map would suit your particular needs. Perhaps you're looking for lots of torque to use on a track day or smooth power delivery for quarter-mile runs or even the peak figures for rolling road days.

Thanks

Simon at Sitech Racing,
 Rob at SCC, Tony from
 Pumaspeed, Superchips,
 Jason at JWR and Russ
 and Mic from
 Performance HQ for all
 their time and effort:
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