

CHILLED OUT

Armed with some temperature probes, we fit and test a CO₂ intercooler spray to see how it copes with a big boost RS Turbo.

Words: Nick Thomas Photos: Gazza Hawkins



The Car

To give an idea of what the kit could do in the real world, we got hold of an S2 RS Turbo to see how the CRYO₂ kit cooled the charge temps. The car has been sensibly modified with low compression pistons, T34 turbo, Kent CVH34 cam, Ahmed Bayjoo Stage 1.5 chip, GRS front-mount twin-pass intercooler and 21psi of boost. The car also has a Nitrous Oxide System fitted with a progressive controller but we left it switched off for this test.

As regular readers will know, here at PF we like to keep bang up to date with all the new products that are on the market for Ford's finest, and when a trick new product comes our way we strap it to a suitable car and run test after test to get the real figures of what the product is capable of. This month is no different, so when we heard about the Design Engineering CO₂ intercooler spray and a claim of increasing intercooler efficiency by more than 50%, we just had to get hold of one and find out what it could do ■

The Test

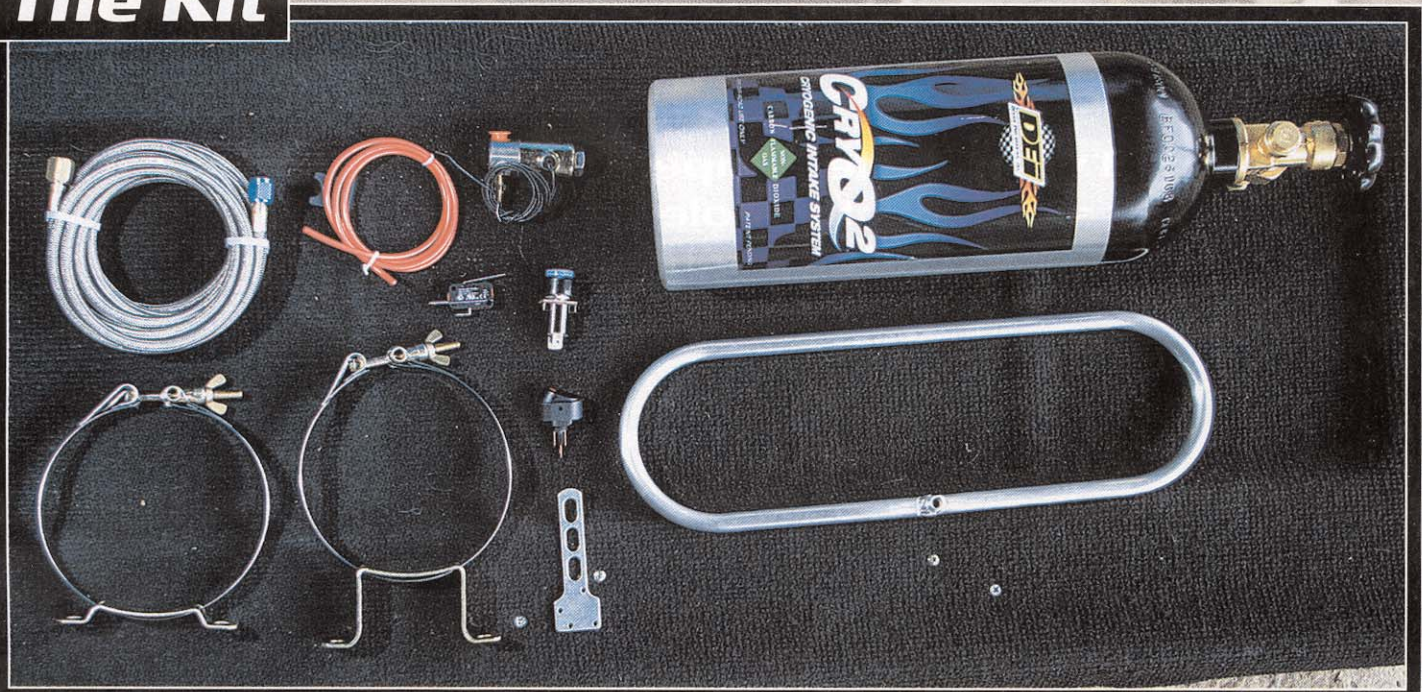
As it's the middle of winter, air temps aren't a major problem at the moment. However, during the summer charge temps on modified cars can get well into 50°C and above, which is the point when the engine will start to lose power.

When running the test car on the road, even at full boost after numerous runs up and down a test track, the charge temperature didn't go above 30°C. This was partly due to a low ambient temp and also the huge GRS intercooler fitted to the car.

To give us an idea of what the kit could do with higher temperatures, we took the car along to Engine Advantages and strapped it on the rollers. This would hopefully replicate the high temps experienced during the summer due to lack of airflow.

I'COOLER SPRAY TEST

The Kit



The kit comes complete with a 5lb bottle, spray bar, solenoid, hose and all the necessary switches, wiring and connections.

For more details contact Design Engineering's UK distributor Nimbus Motorsport on 01377 236170.

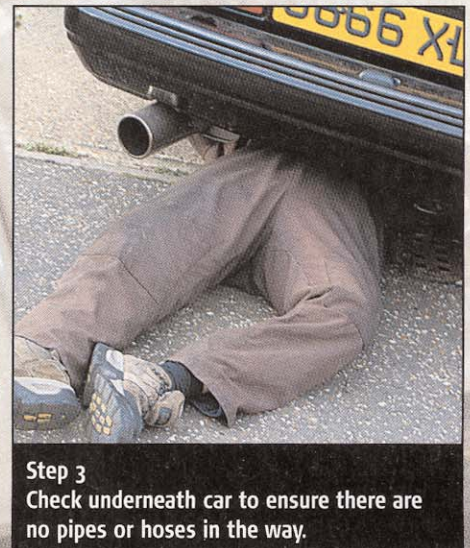
Mounting Bottle



Step 1
Position bottle in boot.



Step 2
Mark position for holes to be drilled.



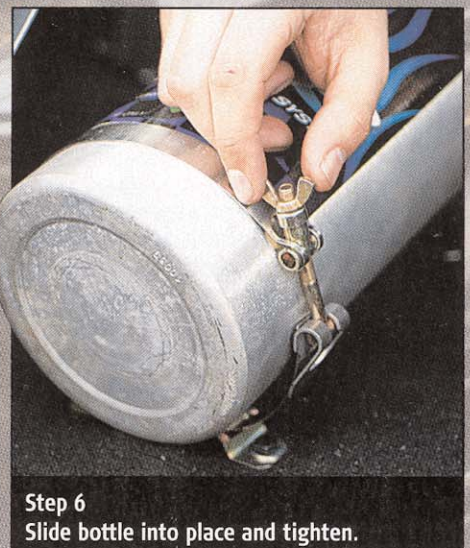
Step 3
Check underneath car to ensure there are no pipes or hoses in the way.



Step 4
Drill holes.

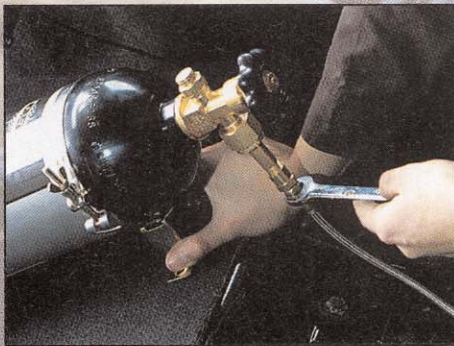


Step 5
Use nuts and bolts to secure bottle brackets.



Step 6
Slide bottle into place and tighten.

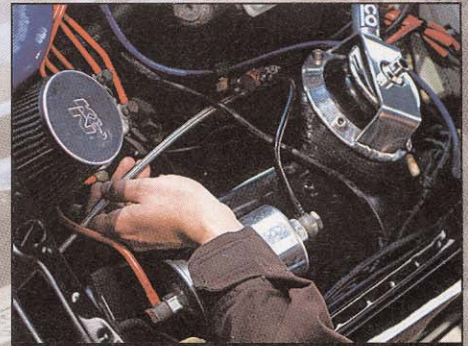
Fitting Hose



Step 1
Connect hose to bottle. Remove interior trim and lift carpet.



Step 2
Run hose under carpet. Drill hole in bulkhead.



Step 3
Feed hose through hole and route to intercooler ready to be fitted to spray bar.

Mounting Spray Bar



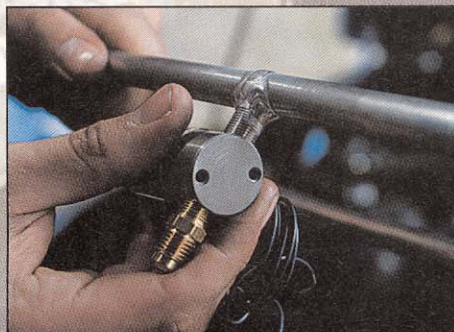
Step 1
Undo and remove front bumper.



Step 2
Remove intercooler.



Step 3
Position spray bar and fit clips.



Step 4
Screw solenoid on to spray bar.



Step 5
Refit intercooler.



Step 6
Connect hose to solenoid.

Wiring and Switch

The system is wired up similar to a nitrous system, using an arming switch, a purge switch and a full throttle switch.

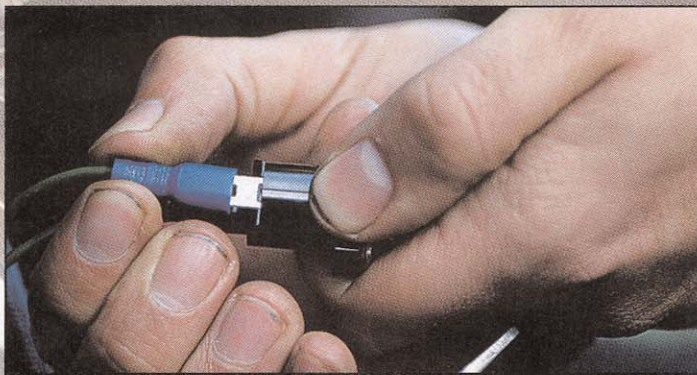


Step 1
Connect wires to solenoid and run into car.



Step 2
Connect wire to ignition live and run to switch location.

I'COOLER SPRAY TEST



Step 3
Connect wires to switch.

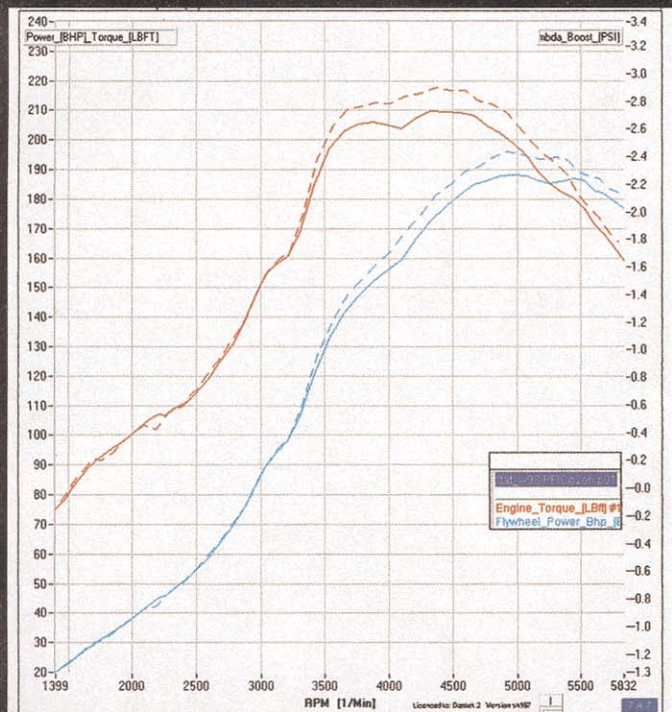
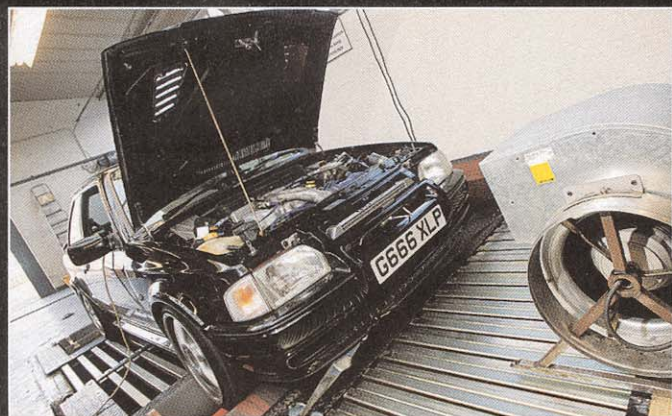


Step 4
Drill holes and fit switches.

Results

WITHOUT CRYO₂
37.4°C 188bhp

WITH CRYO₂
30.2°C 196bhp



Conclusion

With the kit fitted, we ran the car up on the rollers to see how it coped, with some interesting results. The charge temp on the first three runs started quite low but by the third run had reached 37.4°C, which gives an idea of how efficient the intercooler is already. The next run was carried out with the spray activated and dropped the temperature back down to 30.2°C. It's not a massive drop given the low starting temp but it shows the kit works. Paul Hills of Engine Advantages also stated that if the kit had been fitted to a standard RS Turbo intercooler with high boost running through it, we would have seen a much bigger difference. As for the power gain from using the spray, we saw a difference of 8bhp, which gives you an idea of how much power you can lose if the charge temperatures reach a high level. So, overall, a well-thought-out kit, that does cool the charge air and also looks the part poking out of the front bumper. We intend to test the car again in the middle of summer and as always, we'll let you know how it gets on.



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