

WRX Enhancement - Intakes

Part 2 of the most complete WRX parts buyers guide - EVER!

By Michael Knowling

Last week we covered exhausts, and this issue it's time for more bolt-ons - this time on the intake side.

The Standard WRX Intake System...

On early Subaru WRXs (MY94 - 97), the air intake incorporated a cast right-angle bend into the compressor, a plastic resonant chamber (located between the turbo and the hot-wire airflow meter) and - of course - an airbox in the right guard. Certainly, of all complete WRX intakes, this one was the most restrictive. After October '96 the Rex's air intake was swapped for an all-new system. This used an under-the-manifold straight length of hose into the mouth of the turbocharger, and a curved hose section leading into a new design airbox (also situated on the inner right guard). Note that the WRX's 80mm airflow meter kept the same mounting flange right up until the November 1998 introduction of the big 90mm 'meter.

What's Available



Melbourne's **Air Power Systems** retail this cold air duct to take a big serve of nice an' dense air into your factory Subaru airbox. And - in addition to giving you a free-er flowing cool air intake - it's said that "through innovative design, the lower portion of the duct also acts as a brake cooler". The cold air duct is primarily designed for MY97-98 WRXs, though it will fit MY94 - 96 with some minor sheet metal modification.



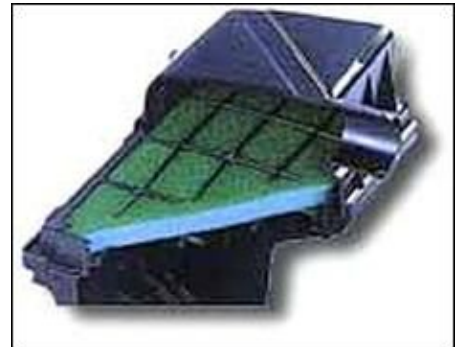
In addition to this product, APS also offers a pod-type cold air system. This set-up uses a "smooth bore cast aluminium cold air intake and a KNair filter to deliver a huge volume of cool air to the turbocharger". Unlike exposed under-bonnet filters, the APS system breathes cool air from the inner guard for maximum power and durability. The pod-type intake suits MY97 - 00 WRXs, STi 2-door Version 5 and STi 4-door Version 6. No cutting or drilling is required to install.

These can be bought directly through APS Melbourne or any of their agents.



Blitz - one of the major Japanese tuning companies - have available their pod-type SUS Power filter. Interestingly, this entire filter element is constructed from the same top quality T304 stainless steel as used in the Nur-Spec exhaust system. No cotton or foam is used at all - just a fine stainless steel mesh. By serving to straighten the incoming airflow, it this product is said to filter down to 20 microns and have substantially more flow than other filters. The Blitz SUS Power filter kit comes complete with the necessary pipework, brackets and adapters. Available to suit all WRX models.

Available through Race Logic in the UK.



Another big-name Japanese aftermarket division - **HKS** - offers their own panel and pod-style filters. The HKS Super Filter is a stock filter replacement that simply slides straight into the factory airbox. "An extremely cost-effective replacement for the restrictive paper filter" - though it's not recommended that it be washed time after time.



For a little more airflow again, HKS have their pod-type Super Power Flow Filter. "This filter is designed to dramatically reduce inlet restrictions posed by today's sealed factory airboxes". It features a replaceable dual-density foam filter element, a 6-point honeycomb frame and a large velocity stack. This funnel design is said to also create a "controlled vacuum to draw air from the outer edge of the filter". Suits all models.



The ultimate HKS air intake - however - is the newly-released Racing Suction Kit. Here, the WRX's standard rubber intake pipe is replaced by a gas-flowed metal substitute - which means there's less restriction further down the intake system. All pipework and mounting hardware is included in this particular kit - which is suited only to MY97-on.

Available from BR Developments (UK), WAR Motorsport (NZ) and BD4s.



DMA Motorsport in Melbourne is selling a complete upgrade to suit the factory airbox. Using a KNpanel-style filter, the DMA kit also includes a custom fibreglass cold air duct. Said to provide "superior dust retention and optimal airflow", DMA claim that their intake gives a power increase of up to 9kW. Installation is straightforward and involves no drilling or cutting. Available to suit all Rexies.

Available only through DMA Motorsport.



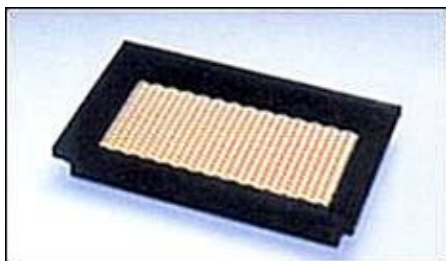
Perhaps almost fully superseded, the **A'PEXi Super Intake** delivers extreme airflow through the intake. Its dual funnel technology employs one at funnel at the top of the filter (to channel air down to the base), while the base funnel ensures a smooth transition into the mouth of the intake pipe. Both of these funnels are made from high quality polished SUS 304 stainless steel and the element is assured race quality. A'PEXi stockists such as BEL Performance (NSW) and G-Tech (Victoria) may still carry the Super Intake.



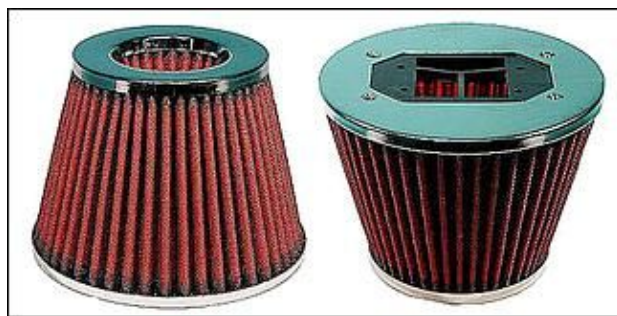
A'PEXi's latest release is the second evolution of their Super Intake - the Power Intake. This new model features the same dual funnel system as before - though it does boast an improved design. An injected resin funnel replaces the previous stainless item, and it brings with it higher-still efficiency. The element is also of a "dry type", which prevents oil potentially making its way onto airflow meter hot-wires. The Power Intake is said to flow 10% more than the Super Intake.



A'PEXi intakes - to suit all WRXs - are sold by Jap Trading, BGT and G-Tech (all Melbourne) and the [AutoSpeed Shop](#).



One of the simplest aftermarket modifications you can make to the Rexie's intake must be this - the **Redline** Ezi Flow panel filter. This drop-in replacement offers the benefits of a re-usable foam filter element, apparently improved dust retention and an affordable price. Listed as suiting VN-VS Commodores, you can also squeeze it into your early WRX's airbox too.

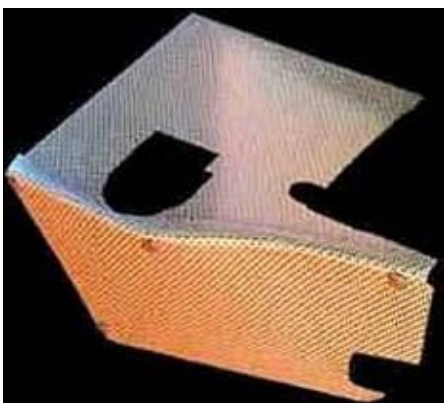


The **Simota** pod-type "Computer Style" air filter is another easy one to install. Unlike other pod-filters, this Simota unit features a cutout and bolt holes to mount the filter directly onto the airflow meter flange. As well as increasing airflow over the stock airbox, it also comes in a choice of three colours - blue, red and chrome. Note - suits MY97-98 only.

The Simota can be purchased through the [AutoSpeed Shop](#).



Queensland company - **BPM** - has an upgrade-able intake kit for the MY97-onward WRX. Most people start off with the BPM Larger Inlet Pipe with KNFilter - "the easiest way of getting adequate amounts of air to the engine". The KNfilter's construction features with a woven cotton fabric sandwiched between two layers of wire mesh. A unique alloy adapter is matched to the airflow meter and there is a larger silicone inlet pipe (which runs from the airflow meter to the compressor inlet), which is supposed to generate another 9kW at the wheels on 15 psi boost. Standard breather hoses and all other fittings fit straight into it.



The ultimate item to go with the Larger Inlet Pipe and KN is the BPM carbon fibre airbox. This isolates the KN filter from all the under bonnet heat that would otherwise get sucked up and rob you of power. Additional cold air ducting is recommended as the final step.

All available through BPM in Brisbane.

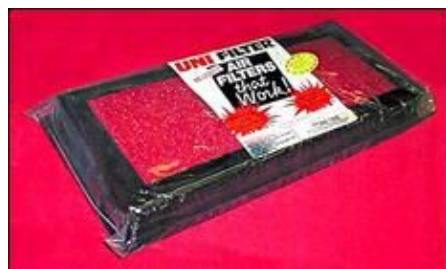


AVO - Advanced Vehicle Operations - offer several air intake products to suit all WRXs. The first is an Air Cleaner Kit, which gives you a KNpod-type filter together with all of the essential adapters and clamps. With a KN filter hung under the bonnet, the next logical step is to install the AVO carbon fibre airbox. This rally-spec looking bit of gear covers the side and top of the air filter area to ensure that the under-bonnet heat is kept well out of the intake. The intake pipe between the AFM and turbocharger can also be opened up with AVO's Inlet Hose. Claimed to offer up to 30% more flow, this silicone hose (which won't absorb radiant heat) is easy to mount, accommodates all standard Subaru fittings and comes in either red or blue.

AVO is located in Melbourne.



MRT are major suppliers of UniFilter products. MRT have two different intakes to upgrade the WRX - a Group N panel kit and a Rampod. Both elements are made from the same foam that can be simply washed in soapy water together with low-cost oil (which works out to around \$2 per clean). Rampod/MRT kits come with all mounts, clamps and adapters to let you bolt the filter directly onto the airflow meter flange. The MRT kit also allows you to fit the biggest filter possible, thanks to their shortening of the standard intake pipe. One big advantage of the Rampod is its "volume chamber" that is said to store air for when the throttle is snapped open. Three sizes of Rampod are available to suit all airflow WRX meters.



If you're not keen on having an exposed pod filter, you can always opt for a drop-in replacement element for the standard airbox. MRT have a complete upgrade kit for the WRX - called a Group N kit. This includes the UniFilter panel filter, inner guard Torque kit (cold air duct) and inlet expansion pipe (to replace resonant chamber on early models). The biggest benefit of this set-up is a lower intake air temperature than a Rampod.

Bolt-on kits sold by Middleton Rally Team.



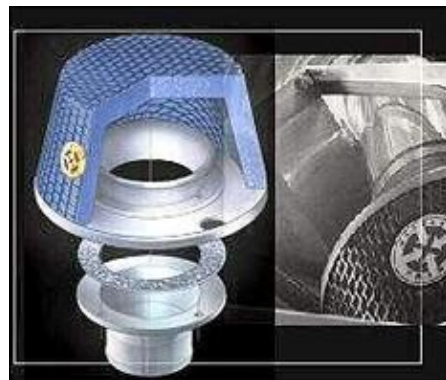
Ever noticed that early (MY94 - 97) WRXs are equipped with a plastic resonant chamber located between the airflow meter and the compressor inlet? This plastic box primarily serves to give a smooth idle quality - but it's also the cause of a minor airflow restriction. **Possum Bourne Motorsport** sell this replacement pipe to slide straight into the place of that darn resonant chamber.

PBM are in NZ.



Vin Macaro of **BGT** is proud to offer this intake kit to upgrade the airbox on all MY97-on WRXs. Sucking air from the car's under-pan airflow, BGT have kept the intake air temps low while also providing increased flow into the airbox. A water escape is also incorporated into the duct to lessen the likelihood of water entering the intake. BGT also offer the choice of a KNor A'PEXi panel-type air filter to fit right in.

BGT can be found in Melbourne.



Japanese brand – **GRACER** – has the Airinx air filter to delivered minimal airflow restriction together with claimed improved filtration. The Airinx features a solid wire mesh for the shell and a lightweight ABS inner funnel. A urethane foam filter element is used to protect your turbo and engine. Can be bought for any model WRX.

GRACER filters available through Evolution R in Melbourne.

Note: If you are a manufacturer of high performance intake systems for the WRX - and you're not listed here - we'd be delighted to add your products to the guide, free of charge. Contact Michael at michael@autospeed.com

Contacts:

APS (Vic)
+61 3 9720 9170

www.airpowersystems.com.au

MRT (NSW)
+61 2 9809 2110

<http://www.mrtrally.com.au/>

BGT (Vic)
+61 3 9874 8866
www.bgtperformance.com.au

G-Tech (Vic)
+61 3 9813 0722
www.gtech.com.au

ScoobyMania (UK)
<http://www.scoobymania.co.uk/>

AVO (Vic)
+61 3 9584 4499
<http://www.avoturbo.com/>

BPM (QLD)
+61 7 3272 8885
www.bpmsports.com/wrx.htm

BR Developments (UK)
www.brdevelopments.com

WAR Motorsport (NZ)
www.warmotorsport.com

DMA Motorsport (Vic)
+61 3 9545 0338
<http://www.dmamotorsport.com.au/>

Jap Trading (Vic)
+61 3 9879 7799
www.jap-trading.com.au

Race Logic (UK)
www.racelogic.co.uk

BEL Performance (NSW)
0412 262 888

www.belpformance.com.au

Possum Bourne Motorsport (NZ)

<http://www.possumbourne.co.nz/>

BD4s (NSW)

+61 2 9879 3322

www.bd4s.com.au

Power Engineering (UK)

www.powerengineering.com.uk

Evolution R (VIC)

+61 3 9543 6255

www.evo-r.com

Big Breaths

A new intake system can improve power and responsiveness in two ways. Firstly, any pressure drop (ie restriction) on the intake to the turbo will make a dramatic change to the power developed. Go up by one psi on exhaust back-pressure and the difference will be marginal, but **drop** by one psi on intake pressure and the power plummets. So any restriction at all on the intake should be avoided. Secondly, and just as importantly for a turbo car like the Rex, the intake air should be kept as cool as possible. This is so for two reasons - there's more oxygen in colder air (ie it is denser) and this allows the development of more power, and colder intake air reduces the likelihood of detonation, allowing the ECU to run more advanced timing - again aiding power.

When selecting a new intake system, here are some factors to look for:

- **Cold Air**

The intake system should be totally sealed from the underbonnet area, so that all air that is breathed (even when the car is stationary) comes directly from the atmosphere without any pre-heating.

- **Low Flow Restriction**

Most airfilter media - foam, oiled cotton, paper - flow very well. It's usually the way that the air is directed into the filter and then channelled out of the filter that causes the most flow restriction. So look for sweet and gentle curves either side of the filter, rather than getting too excited by the filter itself.

- **Excellent Filtering**

The best flow of all will come if you get rid of the element and replace it with chicken wire! You don't do that because you want good filtering - in fact good filtering **must** be a high priority. Unfortunately almost no aftermarket manufacturers release filtration effectiveness information, so be conservative in this regard. If the manufacturer claims that their filter element has half (or a quarter, etc) of the restriction of the standard element, you need to consider whether the filtering effectiveness is also half...

Julian Edgar

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