

A Hobby Turners Review of two Airfed Respirators

Note: Note: This review was carried out in 2008, specs may have changed.

I have used the original Trend Airshield since early 2005, whilst satisfied with the effectiveness of filtering, deficiencies in design and robustness have disappointed. Main complaints being that you have to disturb the filter assembly seals to change the batteries; battery charging is down to operator timing, the open crown design makes a good collection point for dust and debris in your hair and the visor tip up is next to unworkable. So this experience is my basis for comparison.

Weight is one of the first caveats raised by people considering these types of units; I have no problem using the original Trend myself (870 gram). These two units address these reservations in differing ways, the PowerCap IP uses a waist mounted battery pack, and the Trend a rear mounted helmet position.

Vital statistics:

PowerCap IP	570 gram
Battery pack	310 gram (8hr) charge OFF helmet (or still connected)*
Filters*	En12941:1998 TH 1 P (SL) (£14)
Eye impact	EN166:1995 1 3 B (repl. O/lays ~£12.50 (10))
Humidity up to	75%
Noise	not quoted but appears comparable with Trend

* Guide notes say no more than 16hrs charge for 8hr bat. Charger is intelligent unit with LED indication when fully charged.

Trend Airshield pro.	920 gram	(1115 gram total in use)
Battery pack	195 gram (8hr)	charge in helmet, additional charging dock available.#
Filters*	En12941:1999 TH 2 P	(£20)
Eye impact	EN166:2002 1 3 B	(repl. O/lays ~£17.50 (10))
Humidity up to	95%	
Noise	70db.	

Guide notes say 14 hrs charge for 8 hr battery, no indication of charge state.

Notes:

I have resorted to putting batteries on timers to reduce cell risk; even this is not as easy as it sounds as one shot timer units that won't go through the whole cycle repeatedly every 24 hrs. if you forget to unplug are hard to locate.

***Filters:** **EN 12941:1998** Powered filtering device with helmet / hood
TH - turbo hood **1, 2 or 3** - inward leakage class (10%, 2% or 0.2%)
P - for use against particles + **S** or **SL** - use against solids only or solids and liquids.

See: <http://www.hse.gov.uk/foi/internalops/fod/om/2009/03app4.pdf>

OM 2009/03 Appendix 4:

– European Standards and Markings for Respiratory Protection

Out of the Box:

The **PowerCap IP** instruction leaflet details were clear if somewhat brief and adjustment for fit limited to one simple Velcro tab. There are No spares listings.

The **Trend Pro** unit comes with a very comprehensive manual and COSHH record sheet, adjustment for fit of both crown and head band are available, the latter via a convenient ratchet knob. A Spares/Pt.No. listing is included.

Both units' battery packs need a 24 hr initial charge before use. The PowerCap has a semi intelligent charger. A spare battery pack would seem prudent for either unit if a dead mask from low battery is to be avoided.

Initial Fit and First thoughts:

The **PowerCap** is light on the neck muscles with a good field of view, although some practice is needed to clear spectacles whilst fitting and removal due to small volume of visor. Tightening of fit is as basic as a baseball cap and there is no facility for visor lifting. Care is needed in routing the battery lead to reduce snagging risk. Surprisingly there is no visor overlay to cater for splash contamination supplied with the unit.

Trend first impressions are that it is heavy, this enforces careful adjustment of crown and head band to achieve a comfortable fit, this mask has visor lifting, a little juggling is required during fit and friction settings to get this to work but works well although the little pull down tab is obtrusive and I think most people will cut it off rather than having to poke it out of the way. The unit has visor overlays for splash protection and is generally well engineered; its filtration level is of a significantly higher standard than the PowerCap.

The apparent noise levels produced by the two units are very similar and on a par with Old Trend unit.

Both units overcome one gripe about the original Trend in that they cover the hair, an additional enhancement would be if they came with a neck curtain for those of us who are into spinning bits of wood on a lathe.

Observations/Conclusions:

PowerCap IP,

I like the light head weight.

The semi intelligent charger is a step up in the convenience stakes.

I don't like the lack of air circulation around the scalp.

I think the lack of visor overlay omission in the basic package is a bit mean, especially on a unit marketed as having splash tolerant filters.

Spectacle wearers will need some practice if dislodging of spectacles is to be avoided when fitting or removing helmet.

The air flow gauge on this unit only just reached the green band with fully charged battery and new filters.

The unit is rather utilitarian in construction considering its price; leaflet quotes 2 year life expectancy of major components & 6 month guarantee!

The power lead annoyingly is routed out of the front side of the unit and first reaction was to tape it to the rear out of site and snagging range with a piece of Velcro. If like me you normally wear a smock whilst turning then you have a couple of options regarding the battery pack, either clip it to your belt and don the visor before your smock or use a smock pocket assuming you have one to hold the battery.

I tried the latter but the battery weight is enough to cause a nuisance whilst banging around so went for the belt/inside smock option, this of course means that the battery pack in-line connect has to be used if you wish to remove the helmet without taking off your smock.

If you need a lightweight face mask that can be worn all day and not troubled by a hot workshop then I think this mask works fine for normal woodworking tasks, I would have reservations about its suitability for tasks involving very fine dust such as emptying dust extractors or MDF due to its limited face seal and weaker air flow. Low battery is only apparent when fresh air diminishes or dust infiltrates the mask.

The nice plastic box supplied for storage when not in use does little to keep it clean as both the cap and face seal fabrics rapidly collect dust and particles which end up in the bottom of the box.

Trend Airshield Pro, This unit exudes quality straight from the box, it is however a very heavy unit, I am by no means weak necked but I think it would take some perseverance to build up most peoples neck muscles to accommodate all day use, I have experimented with removing the battery to see if a belt mounted version would help in this matter, there is a marginal improvement but I think the top heavy design of the shell is more relevant than the total weight. Personally I think the battery/fan unit needs to be nearer the nape of the neck. As a Turner I have the option to stand erect most of the time whilst using the unit which limits neck strain but bench work or equipment maintenance requiring dust protection could be a little taxing.

Apart from the weight issue I cannot fault the unit for fit and function, it is easy to fit and remove with ample clearance for spectacles, the face and head seals are good and of a dust/woodchip shedding smooth material. There appears to be sufficient air movement within the scalp area to aid comfort and enough spillage air to indicate that there is little chance of reverse dust ingress to the face area. The pre use Air Flow test maxed out the little ball gauge. The audio warning for low battery goes off long before any noticeable drop in airflow occurs; I guess this is in order to satisfy the TH2 inward leak rating.

I personally have an aversion to any protective gear that is likely to encourage removal due to discomfort, the danger being the temptation to remove it for relief whilst the ambient shop air is still dangerous, both of these units gave me cause for concern in this respect albeit for totally differing reasons, neither am I convinced about the safety implications of a dust filtering mask that can be hinged from the face for the same reasons, but of course this is totally dependant on the local ambient fine dust risk.

When it comes to replacing my existing Old Style Trend mask, even after having had the luxury of comparing these masks side by side I find it difficult to choose, in my opinion the day of the ideal dust/debris mask is still somewhat distant.

There are times when I would not wish to have anything other than the **Trend Pro** for its filter security (lathe sanding, MDF dust, extractor servicing) but for general shop use, sawing, machine maintenance etc. the **Power Cap IP** certainly has a major advantage in its low weight.

I guess if I **have** to choose One of the above it will come down to the **Trend Pro** despite the weight penalty, the temptation would be to devise a home made belt battery pack to take the battery and switch unit to relieve some of the weight, had the **PowerCap IP** been priced somewhat more in keeping with its construction I would certainly have one of each for the added convenience when dust conditions are a little less demanding.

Edit: HSE Ref. Updated.

Personal decision made on Dust Mask for use when turning:
<http://www.ukworkshop.co.uk/forums/viewtopic.php?t=30384>