



A Talon-ted New Product

From the RotorWay Stable

Jonathan Bull

investigates the latest new kit update from the RotorWay Helicopter Manufacturing Company

Photographs by David Bull

At last the Rotorway A600 Talon is CAA approved to fly in the UK and no areas have needed any upgrade or alteration to gain this acceptance. Autumn 2016 was a very busy time in our workshop and I have only managed to fly for three hours in our A600 G-TALN but even in this short time it has been a super model to fly and is probably the best helicopter Rotorway have made.

Now, everybody knows that the A600 is not a completely new model but an upgrade of the great 162F, there are many areas of improvement but a lot of the 162F parts are used because of their proven reliability in use over many years. The tail belt drive has gone, replaced by a shaft drive, this I am sure came about because of the rather too public opinion of those who did not understand the original drive and were unaware of its lightness and reliability, if adjusted and maintained as per the Rotorway manual's maintenance requirements. Nevertheless, the new tail shaft drive is well made and should help to boost sales to those who were sceptical of the tail belt drive.

If there is one area I like the most, it is the new cog belt final drive which replaces the chain drive. The old drive was very strong and reliable but on a few models

the oil bath would leak a little and, as with all drive belts, just below it was an area where you did not want to find oil. The cog belt has a spring loaded tensioner and taking away the chain and oil bath makes for a lighter, cleaner and easier-to-work-on helicopter, it also sounds like a turbine as the rotor system slows down after landing.

The A600 has an electric clutch, which makes life a little easier than using the hand clutch (and stops pilots getting bruises in the elbow region!) However, the upgrade does not stop there. The pulley for the clutch now acts on the outside of the main belts, thus, as it engages it gives the belts a much larger contact area with the pulleys. A roof mounted switch engages the clutch motor and is left constantly in the on position; the same switch is used to disengage the clutch by holding it in the rear position for seven seconds. The main sprag clutch is still built-in to the secondary drive unit. A new type main belt is used for the outside pulley. A thorough improvement.

The landing gear has been widened and its height increased and this makes the helicopter look much more purposeful and, since the main shaft is now almost upright, take offs and landings should be easier. The skid tubes are much longer at the front, are built from larger



John Jackson QHI explains the finer points of Talon flying



A glass cockpit is standard on all Talon kits. This is MGL Enigma

tubing and have metal inserts at the front of both tubes to help strengthen this area in a run-on landing. The rear legs are also of thicker walled material.

A glass cockpit is standard on all Talon kits, ours has the MGL Enigma but future kits will have the upgraded MGL Discovery Lite, the only thing it does not do is make you a cup of coffee! There is both visual and audio warning of things such as low rpm or low oil pressure etc. and the display can view several different screens, all are easily set up by the user. This is a great piece of kit that will take me several hours of practice to fully appreciate.

Our A600 has the optional governor fitted, Rotorway have stopped production of this unit at the moment but we are sure they will produce a new improved model soon. Of course, this governor does not make the Rotorway any more powerful and all pilots will still have to be aware of its limitations but, as far as I am concerned it transformed flying this aircraft. With a switch on the cyclic it maintains the rpm at 100% very accurately and you can feel the collective throttle grip moving

slightly in your hand. The pilot still has full control over the rpm and the governor can be overridden at any time using the standard collective grip. Another great addition that I hope Rotorway will bring back into production soon, as we have several orders for this upgrade.

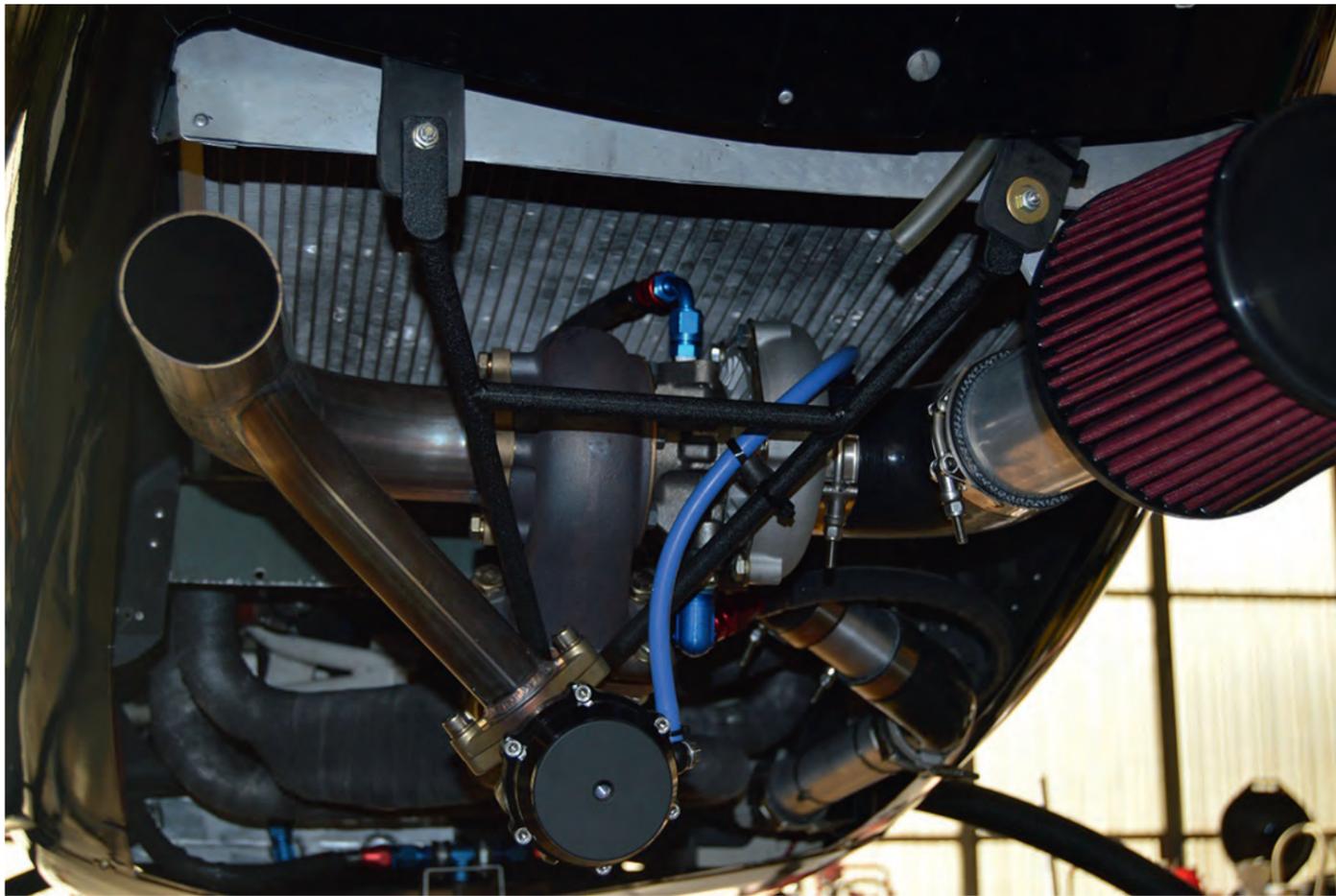
Other upgrades to the A600 include leather seats, an electric water pump with extra wiring to enable you to prime the cooling system after any hose replacement without the engine running and a lighter battery now located in the aircraft's nose.

As a note, Southern Helicopters has minor mods to enable some of the A600 upgrades to be fitted to other Rotorway models. These include the cog belt system, the electric clutch and the higher landing gear, none are cheap but are well made.

Jonathan and David Bull own Southern Helicopter Ltd which distributes the RotorWay series, gives advice and practical help in the building of the machines and does the ongoing maintenance when necessary.

To Turbo-Charge or Not?

Jonathan Bull, engineer, looks at the testing done by the RotorWay Company



Rotorway now offer a turbo charged engine option for the A600 Talon. It is available on new kits or as an upgrade kit for existing Talons.

Rotorway has flown many hours on the factory Talon fitted with the turbo engine and has also experimented with another engine on their *dyno* and both have operated flawlessly. Oil and exhaust gas temperatures are lower than the standard engine, this is due mainly to finer tuning of the ECU's and the addition of an oil cooler with larger feed lines.

The oil gallery feed hole for the middle main bearing is larger to increase oil flow in that area. Rotorway have invested in new equipment to make the valves and seats better and now use a new exhaust valve that is 2mm bigger to increase exhaust flow. All this is designed with the

intention of creating an increase in performance and reliability.

With the added power of at least 20 hp and data from the dyno testing Rotorway have made a modification to main drive pulley, to increase its size to lower engine operating speed to 3900 rpm. There are many benefits of lower engine rpm from lower fuel consumption to less maintenance and longer engine life. This pulley is standard on all turbo engines.

Southern Helicopters ltd is seeking CAA approval to use this new engine in the UK.

An Instructor's Perspective

John Jackson (JJ) QHI and longtime owner of a RotorWay model gives his opinion of the Talon



Firstly, I noted how easily the engine started with the electric clutch and cog belt, compared to the previous versions. I was immediately aware that the cog belt sounds different from and feels more refined than the chain. When the aircraft is shutdown, and idling to a stop, the sound is not dissimilar to a turbine running down - which has got to be a good thing!

Moreover, I really liked the electric clutch, and found it much easier to use than the manual, push-in clutch.

Secondly, the Enigma EFIS (Electronic Flight Instrument System) is very nice and very easy to read with lots of helpful information available. It's got a really useful 'Attention Getter' function that flashes up a caption in the centre of the screen when it recognises an engine or system fault - very 21st century and very welcome. However, on the down side, the cancel button for the caption is on the display itself so can't easily be cancelled when hovering - a remote cancel button on the cyclic would be a real bonus, as would a remote selector for changing info pages.

The biggest, and most pleasant surprise was the governor. What a revelation! It worked like a dream and kept the RRPM firmly where it was selected. Rapid collective and pedal inputs were able to momentarily cause RRPM droop/rise but the governor quickly gathered them back to where they were set. However, the cyclic mounted

RRPM selector switch was very coarse. A quick flick up or down to raise or lower RRPM caused about a 2% adjustment. Not a big deal but I was a bit surprised it wasn't more progressive. In practice, I think the RRPM should be set to the top of the green for take-off, landing and hover work and adjusted to 100% for flight. I guess maybe 98% if Max fuel economy is required. My final thought about the governor: when flying spirited pirouettes the governor did a far better job of controlling the revs than I could when trying it manually - bugger!

The tail rotor response was identical to the belt driven system.

The take-off and landing were much easier due to different rigging angle of the skids - it sits very close to the hover attitude when on the ground. The higher skids did not present any problems with hover height judgement; but being a short-arse, it felt like I was climbing into a high-skid Hughes 500.

If I was going to upgrade anything on an Exec I'd do them in this order of priority: - a) Fit a governor, b) fit a cog belt, c) fit the Enigma EFIS, d) fit the new skid gear.

My other thoughts are: how refined the cog belt is compared to the chain drive, meaning less noise and vibration in the cruise. However, apart from a feeling of greater quality, you're not getting much more than you do in a standard Exec for a lot more cash!