

ES2001 Avon 1533/1534 to 1535 upgrade

Rejuvenate older Avons to increase power and improve efficiency

energy



Engineered solution purpose

This engineered solution improves the power and efficiency of mature Avon gas generators.

Applicability

Avon 1533 and Avon 1534 gas generators driving RT48, RT48S or RT56 power turbines. For packages employing power turbines other than these Rolls-Royce designs, an engineering study is recommended.

Technical description

The Mk. 1535 is the current production standard of the Avon. Older units can be converted to this standard by upgrading the hot end components to achieve an increase in power and an improved heat rate. To realise the full increase in power, an analysis of the complete power train and package will be required.

Benefits

The expected increase in power for a 1533 when converting to 1535 specification is 20%. For a 1534, the expected increase is 10%.

For further details please see table showing power comparison of different models in the chart on page 2.

Experience

Over 260 Mk. 1535 gas generators have been sold, accruing in excess of 11 million operational hours.



Fact sheet

Scope of work

The following main components are replaced:

Mk. 1533 to Mk. 1535

Turbine rotor blades and nozzle guide vanes

Combustion system

Fifteenth stage seal assembly

Controls modification

When converting from 1533 to 1535 new flame tubes are also required.

Mk. 1534 to Mk. 1535

HP/IP turbine nozzle guide vanes

Fifteenth stage seal assembly

Controls modification

To realise the full power increase, it may be necessary to modify or upgrade the power turbine. [ES4001]

Bill of materials

Mk. 1533 to Mk. 1535

HP/IP/LP nozzle guide vanes

HP/IP turbine blades

Intake snout

Triple dish combustors

Fifteenth stage seal assembly

Miscellaneous items (bolts, washers etc.)

Controls modification

Mk. 1534 to Mk. 1535

HP/IP nozzle guide vanes

HP turbine blades

Intake snout

Triple dish combustors

Miscellaneous items (bolts, washers etc.)

Fifteenth stage seal assembly

Controls modification

Undertaken

At overhaul

Bundling opportunities

Avon closed loop VIGV control

Avon swirler burner kit [ES2003]

RT48 to RT48S upgrade, where applicable [ES4001]

Complete package refurbishment [ES6001]

Fuel treatment system [ES6005]

Controls upgrade [ES6006]



Nominal performance - Mechanical drive applications

Serial No.	Package	Gas Generator	Power Turbine (PT)	Power BHP	PT Speed (rated) rpm
1	Coberra 2348	Avon Mk 1533	RT48	16,100	5,000
2	Coberra 2448	Avon Mk 1534	RT48	18,200	5,200
3	Coberra 2548	Avon Mk 1535-121	RT48	19,500	5,200
4	Coberra 2648	Avon Mk 1535-161	RT48S	20,360	5,500
1	Coberra 2356	Avon Mk 1533	RT56	17,050	4,950
2	Coberra 2556	Avon Mk 1535-121	RT56	20,500	4,950
3	Coberra 2656	Avon Mk 1535-170	RT56	21,000	4,950

Imperial units - ISO conditions, base load application, no losses, gaseous fuel.



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