

Precision Conversions launches freighter modification for 757-200s with winglets

Precision Conversions has obtained a STC to offer passenger-to-freighter conversions for 757-200s equipped with winglets. This is the only freighter modification available for 757s equipped with winglets, and makes more than 300 aircraft available for conversion.

Precision Conversions has obtained approval from the Federal Aviation Administration (FAA) for a supplemental type certificate (STC) to offer a passenger-to-freighter modification for 757-200s with winglets. 757-200s modified to freighter with a Precision Conversions programme are designated 757-200PCF.

Prior to this STC being issued, there was no passenger-to-freighter modification available for 757-200s with winglets. Precision Conversions is the only agency to offer a freighter modification for 757-200s with winglets.

The remaining pool of passenger-configured 757-200s totals about 715 aircraft. More than half of this number, about 382 aircraft, have not been equipped with winglets using the Aviation Partners Boeing (APB) modification. These aircraft without winglets can be modified to freighter by any of the passenger-to-freighter modifications available.

The other 333 aircraft, however, are equipped with winglets. The introduction of a freighter modification for these aircraft has opened a used market opportunity for these aircraft.

Many 757-200s have been equipped with winglets over the past decade with the dual purpose of reducing fuel burn and enhancing residual value. The addition of winglets, however, alters the aircraft structurally. This change to aircraft structure has meant that existing freighter modifications could not be used without performing a compatibility analysis and obtaining regulatory approval. Modification to freighter was not possible until Precision Conversions' STC became available.

■ Payload specifications

757-200s modified with the Precision Conversions programme have a range of maximum zero fuel weights (MZFWs) and operating empty weights (OEWs). The OEWs differ according to the engine type powering the aircraft. Aircraft

equipped with winglets have an OEW about 1,400lbs heavier than aircraft without winglets. APB, however, has issued a MZFW weight upgrade of about 1,300lbs to compensate for this. Freight-converted 757-200s consequently have a range of gross structural payloads.

Aircraft without winglets can be grouped into four categories, and aircraft with winglets can be grouped into another four.

Aircraft without winglets have gross structural payloads varying between 71,500lbs and 80,000lbs (*see table, page 76*).

The first category includes aircraft up to line number 210; an aircraft built in 1989. The MZFW of these non-winglet aircraft is a standard (Boeing) limit of 184,000lbs. Precision Conversions offers a 4,000lbs MZFW upgrade for these variants, which takes it to 188,000lbs.

Aircraft equipped with Rolls-Royce (RR) RB211-535 engines have a higher OEW of 116,500lbs, and so a gross structural payload of 71,500lbs (*see table, page 76*).

Aircraft equipped with Pratt & Whitney (PW) PW2000 engines have an OEW of 116,150lbs, and so a gross structural payload of 71,850lbs (*see table, page 76*).

The second category of aircraft are those that are higher than line number 210, and have the standard MZFW of 184,000lbs. Their OEWs are about 500lbs less than aircraft in the first category, and so are 116,000lbs with RR engines, and 115,650lbs with PW engines. Their gross structural payloads are consequently about 500lbs higher at 68,000lbs for RR-powered aircraft and 68,350lbs for PW-powered aircraft (*see table, page 76*).

The third category is for aircraft that are higher than line number 210. These have an increased MZFW through the use of an upgrade available from Boeing.

This raises the MZFW to 188,000lbs for RR-powered aircraft, and 186,000lbs for PW-powered aircraft. Gross structural

payload for these two variants is therefore 72,000lbs and 70,350lbs (*see table, page 76*).

The fourth category is for aircraft that are higher than line number 210. Not only have these first had their MZFW raised from the standard 184,000lbs to 188,000lbs or 186,000lbs using the Boeing upgrade, but they have had their MZFWs further raised by an upgrade available from Precision Conversions. This was developed by Precision Conversions in conjunction with Leth & Associates. It raises the MZFW by a further 8,000lbs to 196,000lbs for RR-powered aircraft, and to 194,000lbs for PW-powered aircraft (*see table, page 76*). These aircraft have a gross structural payload of 80,000lbs and 78,350lbs (*see table, page 76*).

■ Aircraft with winglets

The STC developed by Precision Conversions, and again in conjunction with Leth & Associates, to allow 757-200s to be modified to freighter was issued by the FAA in August 2012.

Leth & Associates has worked only on the 757-200PCF conversion programmes for 757-200s. The engineering consultancy has carried out the engineering work for loads, weight and balance, and aerodynamics for Precision Conversions' STCs.

Aircraft equipped with winglets have an OEW that is about 1,400lbs higher than that of aircraft without winglets. Despite this difference in weight there are no other differences in weight compared to aircraft without winglets.

Aircraft with winglets can therefore be grouped into the same four categories with respect to MZFW, OEW and gross structural payload (*see table, page 76*).

Gross structural payload for these four groups is therefore 66,100lbs to 78,600lbs (*see table, page 76*). Although these amounts are lower than the structural payloads of non-winglet aircraft, the APB modification to raise MZFW by 1,300lbs can offset this.

PAYLOAD SPECIFICATIONS OF PRECISION CONVERSIONS' 757-200 PASSENGER-TO-FREIGHTER MODIFICATION

Aircraft type	757-200PCF RR/PW -no winglets	757-200PCF RR/PW -no winglets	757-200PCF RR/PW -no winglets	757-200PCF RR/PW -no winglets
Aircraft line number	Up to 210	From 211	From 211	From 211
MZFW lbs	188,000	184,000	188,000/186,000	196,000/194,000
OEW lbs	116,500/116,150	116,000/115,650	116,000/115,650	116,000/115,650
Gross structural payload lbs	71,500/71,850	68,000/68,350	72,000/70,350	80,000/78,350
Aircraft type	757-200PCF RR/PW -with winglets	757-200PCF RR/PW -with winglets	757-200PCF RR/PW -with winglets	757-200PCF RR/PW -with winglets
Aircraft line number	Up to 209	From 210	From 210	From 210
MZFW lbs	184,000	184,000	188,000/186,000	196,000*/194,000*
OEW lbs	117,900/117,550	117,400/117,050	117,400/117,050	117,400/117,050
Gross structural payload lbs	66,100/66,450	66,600/66,950	70,600/68,950	78,600*/76,950*

* Preliminary

757-200 fleet

The issue of this STC has increased the pool of aircraft that are available for freighter conversion by about 333 units. These 333 757-200s are equipped with winglets.

Passenger-configured aircraft without winglets total 382 units, with 313 of these active and the other 69 parked. Of the 313 active aircraft, 57 are below line number 210. This leaves 256 active aircraft above line number 210. This is split between 169 PW2000-powered aircraft and 87 RB211-powered aircraft.

The number of passenger-configured aircraft modified with winglets is 309. Only nine of these are older aircraft and prior to line number 210. The remaining 300 are higher than line number 210. These are split between 83 PW-2000 powered aircraft and 217 RB211-powered aircraft.

These 300 aircraft, which are higher than line number 210 and are equipped with winglets, and the other 256 aircraft higher than line number 210 but without winglets, are of the most interest to potential operators of 757-200 freighters.

Lessors and freight operators will want to select aircraft according to age, total flight hours and flight cycles (FC), and engine type. Brian McCarthy at Precision Conversions estimates that the upper limit for a conversion candidate is a total accumulated time of 30,000FC. There are also the aircraft's base maintenance issues to consider. There are additional structural inspections that come due as the asset matures throughout its useful remaining life as a freighter. McCarthy adds that the 757 is standing up to high utilizations, and that the

30,000FC target has more to do with return on the conversion cost. This is if the useful life after conversion is considered to be 20,000-25,000FC.

The aircraft that are higher than line number 210 can be sub-divided four ways. First by those with PW engines and those with RR engines. Each of these two groups can then be sub-divided between those with winglets, and those without winglets. The youngest aircraft in all four groups are seven to eight years old, and the oldest aircraft are up to 23 years old.

The first group of PW-powered aircraft that do not have winglets totals 169 units.

About 160 of the aircraft in this group have a total time of less than 30,000FC. All the aircraft with a higher total time are operated by Delta Airlines.

The main group of aircraft with fewer than 30,000FC are operated by Delta, United, Shanghai Airlines, Ethiopian Airlines, Uzbekistan Airways and a few other carriers.

The second group of PW-powered aircraft that have winglets totals 83 aircraft. This group is mainly operated by Delta, but also includes aircraft operated by United, UTAir and Finnair. About 69 have accumulated less than 30,000FC. This includes a large number of aircraft operated by Delta and United, as well as the other operators. Delta is the only operator of aircraft with more than 30,000FC.

The third group is RR-powered aircraft without winglets fitted. There are 87 in this group, and all have accumulated less than 30,000FC. These are aircraft operated by Air China, China Southern, Xiamen, Thomas Cook and small fleets operated by a few other

carriers.

The fourth group is RR-powered aircraft fitted with winglets. It totals 217 aircraft, and all have a total utilisation of less than 30,000FC. This group includes the fleets operated by American Airlines and USAirways, as well as the fleet previously operated by Continental Airlines and now operated by United. It also includes aircraft operated by Thomson Airways, Icelandair, Jet2 and small fleets operated by a few other carriers.

There are also up to about 90 parked aircraft that could also be considered for conversion.

There are about 16 parked aircraft, lower than line number 210 and without winglets. These have a high number of accumulated FC, and so overall are some of the least desirable aircraft available in the 757-200 fleet.

There are almost 50 parked aircraft higher than line number 210 and which do not have winglets. A small number are owned by FedEx, but there are about 12 PW2000-powered and about 20 RB211-powered aircraft available. The majority of these have accumulated less than 25,000EFC.

There are about 24 parked aircraft with winglets. Only four of these are PW2000-powered, and two have been operated by Delta Airlines.

Another 20 aircraft are equipped with RB211-525E4 engines, and about half of these are American Airlines aircraft. Additional examples are owned by lessors. [AC](#)

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