

# 777F payload specifications

The possible launch of the 777F will be welcome news to long-haul freight carriers. Traffic growth is rebounding after four years of stagnant volumes, and the supply of MD-11s left for potential conversion to freighter is less than 40. Analysis of the 777F's payload & range specifications illustrates how it compares to the 747-400SF & other large types.

The small number of MD-11s left for potential conversion to freighter means freight carriers with high capacity requirements will have to choose between the 747 and DC-10-30. These aircraft have a gap of about 90,000lbs between their gross structural payloads. The fact that Boeing has authority to offer the 777 freighter to potential customers will bring relief to some carriers.

The 777F is based on the 777-200LR passenger aircraft, with the same fuselage dimensions and maximum take-off weight (MTOW) of 766,000lbs, and fuel capacity of 47,890 US Gallons. It will also be powered by the GE90-110B1. The 777F is expected to have a gross structural payload of 222,000lbs, and the ability to carry this 5,200nm.

The key to a requirement for the 777F is its payload capacity in relation to the 747-400SF, MD-11F and DC-10-30F. The first 747-400s are now being converted to freighter, while few freight carriers will now be able to acquire an MD-11. The DC-10-30F is the only other choice, but its range capability makes it suitable only for north-south operations, and it cannot carry an economic payload in the transatlantic or trans-Pacific markets. The 777F will provide this for

airlines that need an aircraft with a smaller capacity than the 747 and a long-range capability.

The 747-400SF has a gross structural payload of 253,000lbs and the DC-10-30F has a gross structural payload of 158,000lbs. The MD-11 lies between the two with a structural payload of 190,000lbs, and can carry it about 3,800nm. The absence of this from freight airlines' options for capacity will open the gap for the 777F with a capacity of 222,000lbs.

A more detailed examination of the 777F's freight characteristics shows how it sits between the 747-400SF and MD-11F.

The 747-400SF will have a gross structural payload of 253,000lbs. The aircraft will use 96-inch wide by 125-inch long by 118-inch tall AMD containers on its maindeck. It can accommodate 30 of these containers, each of which has an internal volume of 692 cubic feet, thereby giving the aircraft a total maindeck capacity of 21,083 cubic feet (*see table, this page*).

The lower deck can hold 32 LD-1 belly containers. These each have a capacity of 175 cubic feet, giving the lower deck a capacity of 5,600 cubic feet.

The two decks combined give the

aircraft a total volume of 24,250 cubic feet and the combined tare weight of all containers is about 27,000lbs.

The 747-400SF thus has a net structural payload in the region of 225,000lbs.

The MD-11F can accommodate 26 similar containers, although they have a height of 97 inches compared to the 118-inch height of the 747's maindeck containers. The MD-11's smaller maindeck containers have an internal volume of 594 cubic feet, taking maindeck volume to about 15,500 cubic feet. Each container has a tare weight of about 600lbs.

The aircraft can accommodate 32 LD-3 belly containers in its lower deck. These each have an internal volume of 146 cubic feet and tare weight of 215lbs. This gives the lower deck a total freight volume of 4,672 cubic feet.

The MD-11F has a total freight volume of 20,116 cubic feet (*see table, this page*). Total container tare weight is about 27,400lbs, taking net structural payload down to 162,600lbs.

The 777F's net structural payload is about 35,000lbs higher than the MD-11F's and about 30,000lbs less than the 747-400SF's.

The 777F will use the same 96 X 125 X 118 inch containers on its maindeck as the 747-400SF. The aircraft will be able to accommodate 27 of these, taking maindeck containerised volume to 18,684 cubic feet. Tare weight for maindeck containers is about 16,000lbs.

The 777F will have the same lower deck capacity as the MD-11F, making it able to carry 32 LD-3s.

Overall, the 777F will have a total containerised volume of 23,356 cubic feet and container tare weight of 22,945lbs. This will take net structural payload down to 197,000lbs (*see table, this page*).

Besides a higher freight capacity than the MD-11, the 777F will have the advantage of a 5,200nm range capability. This will allow it to carry a full payload between Tokyo and various points in the US. Not only will the 777F provide airlines with a substitute to the MD-11, it will also provide them with them an alternative to the 747-400SF for long-haul operations. **AC**

**PAYLOAD SPECIFICATIONS OF 747-400SF, 777F & MD-11F**

Aircraft type	747-400SF	777F	MD-11F
Gross structural payload lbs	253,000	222,000	190,000
Range	4,300	5,200	3,800
Maindeck containers:	30 X 96/125/118	27 X 96/125/118	26 X 96/125/97
Maindeck volume-cu ft:	21,083	18,684	15,500
Lowerdeck containers:	32 X LD-1	32 LD-3	32 X LD-3
Lowerdeck volume-cu ft	5,600	4,672	4,672
Total volume-cu ft	24,250	23,356	20,116
Container tare weight-lbs	27,000	22,945	27,400
Net structural payload-lbs	225,000	197,000	162,600