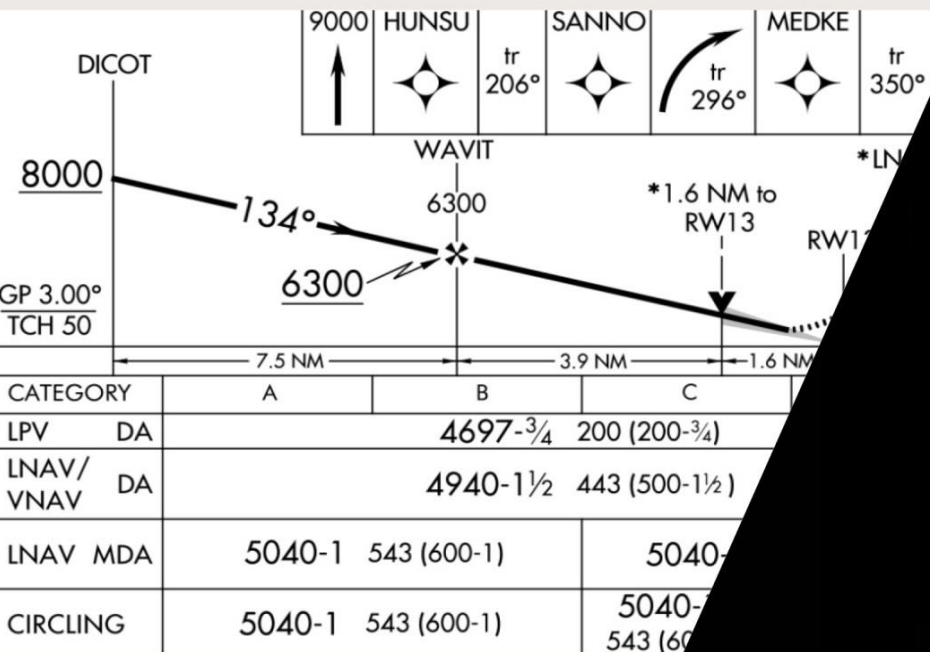


# Localizer Performance with Vertical Guidance (LPV)

## FMS upgrade for CRJ200/CL850



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ACT KTEB ARRIVAL 1/3
STARS APPROACHES
JAIKEZ RNW 06

LVZ3 ILS 06
ILS 19
V/D 06
----- WAAS LPV
ARR DATA>

<DEP/ARR IDX LEGS>
[ MSG ]
    
```

*LPV will provide pilots unprecedented access to runways and airports that have not deployed an ILS approach.*

**Note:**

*To ensure RNP 4 capability for Oceanic MNPS (Minimum Navigation Performance Standard), this update is required prior to or in conjunction with The FANS 1A update.*

Whether it is as a back up to ILS approach, a replacement for the aging ILS system, or adding lateral and vertical guidance to an airport without ILS, LPV approaches have changed aviation forever. FMS 4.2 with LPV is an essential upgrade for your Pro Line 4 equipped CRJ200/CL850. LPV approaches add flexibility to land at more destinations more often, with lower LPV Decision Altitudes on RNAV approaches. LPV minimums as low as 200 feet with 1/2 mile of visibility are now published on RNAV (GPS) approach charts and the flight deck operation is very similar to Category I ILS approaches.

Localizer Performance with Vertical Guidance (LPV) takes advantage of the Satellite-Based Augmentation Systems (SBAS). Wide Area Augmentation System (WAAS) is the United States implementation of SBAS, which also provides signal coverage and operational benefits in Canada. WAAS uses a combination of satellites and ground stations to dramatically improve the GPS performance as measured by accuracy, availability, and integrity. This increased performance enables vertical navigation using GPS.

LPV further enhances operational flexibility and simplicity by enabling consistent approach procedures that are never subject to cold temperature limitations. Cold temperature limitations are commonly published on traditional RNAV approaches and must be observed by all aircraft using barometric VNAV for the approach. Vertical navigation when flying LPV approaches is satellite-derived and therefore not affected by the outside air temperature.

There are currently over 3,600 LPV approaches published at almost 1,800 airports in the US. The FAA is adding more LPV approaches each year with the potential number of approaches reaching 4,000 runways. Additionally, Nav Canada has created over 170 LPV approaches with plans to add more over the next several months.



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## KEY BENEFITS OF ROCKWELL COLLINS' LPV FMS VERSION 4.2 UPDATE

- > Land more places, more often
  - o Access to LPV minimums on RNAV approaches
  - o Decision altitudes as low as 200 feet
  - o Visibility minimums as low as 1/2 mile
- > Enhanced peace of mind through new vertically-guided approaches to airports and runways not equipped with ILS approach systems
  - o Satellite-based vertical guidance supports highly repeatable, stabilized approaches
  - o Flight deck operations for LPV are very similar to those for ILS approaches
  - o Consistent approach procedures throughout the year- LPV approaches are not subject to cold temperature limitations
- > Additional FMS benefits
  - o RNP 4, 2 & 1
  - o RF legs
  - o X,Y,Z approaches
  - o True North navigation and approaches
  - o TAWS mode 5 monitoring
  - o Expanded memory that supports a world wide database
  - o Reduced database loading time
  - o Integrated RAIM prediction

## TERMS AND CONDITIONS

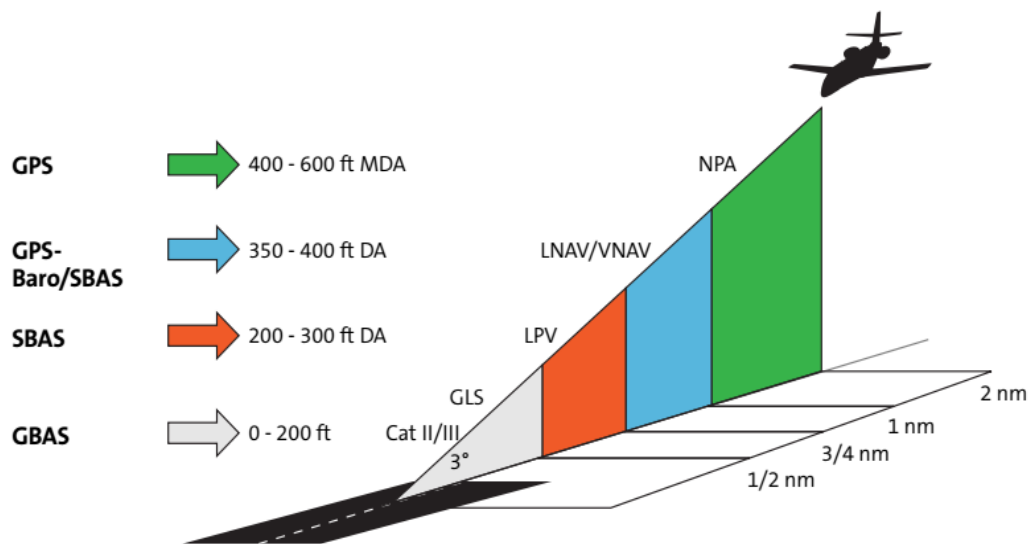
Unless otherwise noted, this program is valid for orders placed between March 1, 2017 and December 31, 2017, with delivery requested by April 1, 2018. Warranty period is two years for new equipment. Standard warranty does not apply to software.

Service Bulletin purchases should be made through your Rockwell Collins Service Center. Units submitted for modification outside of original product warranty must be in a serviceable condition. If the unit submitted is unserviceable, additional repair costs may be charged. Modified units will carry a 12 month warranty. Prerequisites required to reach the baseline will be quoted separately at the then current time and material rates.

For more information please contact your Rockwell Collins Regional Sales Manager.

## REQUIREMENTS

The aircraft must have the Rockwell Collins Enhanced DBU-5000/5010E or PCD-3000, WAAS capable GPS-4000S and TSO c190 antennas to enable LPV. See Marketing Bulletins M BRS-110091.08M on DBU-5000/5010E and BRS-110109.06M on GPS-4000S for part numbers and pricing. Aircraft equipped with AHC-85E units are not eligible for this upgrade at this time.



CRJ200/CL850 LPV UPGRADE <sup>1,2,3,4</sup>

1) The following items must be purchased for LPV Upgrade through Customer Account Administration. See section 3 below for additional requirements.

Type Number	Notes	Existing Part Number	New Part Number	QTY
OCM-4100	3	822-1463-201/210	822-1463-228	2
or				
OCM-4100	3	822-1463-212	822-1463-231	2
or				
OCM-4100	3	822-1463-209/214	822-1463-230	2
or				
OCM-4100	3	822-1463-216	822-1463-233	2
or				
OCM-4100	3	822-1463-200	822-1463-227	2
CRJ100/200 LPV STC	5,7	Place order using STC #ST01514WI-D		1
LPV Training	4	Computer Based LPV Training (CBT) for Pilots		1

2) The following items must be upgraded or exchanged, select 2A or 2B.

**CAUTION:** Service Bulletin and Exchange for the EFD-4076 are dependent on Rockwell Collins receipt of serviceable units. If the EFD-4076 fails to pass any of the return to service tests, repairs will be extra. Dependent on condition of received LRU, these repairs could be significant.

2A) Service Bulletin for LPV Upgrade - for EFD, IOC & FMC (must purchase new OCM)

Type Number	Notes	Existing Part Number	New Part Number	QTY
IOC-4000		622-9814-008/009/010	622-9814-012	507, 508, 510, 511 4
FMC-4200	6,8	822-0783- 011/014/015/016/017/018/022	822-0783-040	510, 514, 517, 536, 543 2
or				
FMC-4200	6,8	822-0783-025	822-0783- 039(SAR)	536, 543 2
EFD-4076		622-9810- 012/014/016/018/030	622-9810-032	508, 510 6

2B) Exchange for LPV Upgrade - for EFD, IOC & FMC (must purchase new OCM)

IOC-4000		622-9814-008/009/010	622-9814-012	N/A	4
FMC-4200	6,8	822-0783-011/014/ 015/016/017/018/022	822-0783-040	N/A	2
or					
FMC-4200	6,8	822-0783-025	822-0783- 039(SAR)	N/A	2
EFD-4076		622-9810- 012/014/016/018/030	622-9810-032	508, 510	6

## REQUIRED EQUIPMENT FOR LPV UPGRADE CONTINUED

### REQUIRED EQUIPMENT FOR LPV UPGRADE

3) The following equipment must be purchased, if not currently installed on the aircraft.

- GPS-4000S<sup>1</sup> (see Marketing Bulletin BRS-110109.06M) and WAAS capable TSO c190 antennas
- Enhanced DBU-5000/5010E<sup>2</sup> (see Marketing Bulletin BRS-110091.08M) or PCD-3000.
- Aircraft must be equipped with Dual Inertial Reference System (IRS)

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## NOTES

1. Aircraft must have the Rockwell Collins GPS-4000S and WAAS capable TSO c190 antennas installed to enable LPV. See Marketing Bulletin BRS-110109.06M GPS-4000S for part numbers and pricing. The installation of the GPS-4000S using Approved Model List (AML) STC, #ST01433WI-D, is available from Rockwell Collins.
2. Aircraft must have the Rockwell Collins Enhanced DBU-5000/5010E or PCD-3000 installed to load FMS Nav Databases. See Marketing Bulletin BRS-110091.08M DBU-5000/5010E for part numbers and pricing. The installation of the DBU-5000/5010E using Approved Model List (AML) STC, #ST01431WI-D, is available from Rockwell Collins.
3. Caution: Deviation from existing OCM part number to new OCM part number, as listed, will introduce operational problems and deviate from the Rockwell Collins STC.
4. Two sessions of on-line computer based pilot LPV training are available free of charge. Please contact the training registrar at 319-295-4672 or email [trainingregistrar@rockwellcollins.com](mailto:trainingregistrar@rockwellcollins.com). On-line LPV sales and installation training is also available. Please contact your Rockwell Collins Regional Sales Manager for more information.
5. After placing your order for the STC through Customer Account Administration, Customer Account Administration will coordinate delivery of the Rockwell Collins STC data package.
6. If aircraft is equipped with a dual FMS, add an additional FMC-4200 unit program price to the Shipset Subtotal for either the Service Bulletin or Exchange Program solution.
7. FAA STC #SA01514WI-D is Transport Canada (TC) Approved - SA09-29 for use on Canadian registered aircraft.
8. Type 8 FMS Nav Data Base is required for LPV. Customers' FMS Nav Data Base account must be updated to Type 8 Data Base. Please contact FMS Nav Data Base Subscriptions at 319-295-5000 to update your account.

## How can we help?

Please call Rockwell Collins Customer Support at +1.319.295.5000.

## Building trust every day.

Rockwell Collins delivers innovative aviation and high-integrity solutions to commercial and government customers worldwide. Backed by a global network of service and support, we stand committed to putting technology and practical innovation to work for you whenever and wherever you need us. In this way, working together, we build trust. Every day.

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