Airplane Flight Manual

The Airplane must be operated in compliance with the LIMITATIONS prescribed herein.

MODEL CL–600–2B16 (Serial No. 5701 to 6049)	
21,863 kg / 48,200 lb MTOW	
FIRST ISSUED: Oct 05/06	REVISION 54: Dec 18/19

BOMBARDIER
CHALLENGER 605

Publication No. PSP 605–1

CL–605 AIRPLANE FLIGHT MANUAL

This manual applies to the Challenger 605. The Challenger 605 is a marketing designation that is applicable to the Model CL–600–2B16, Aircraft serial No. 5701 to 6049.

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BOMBARDIER

Page	Date
Title	Dec 18/19
00–01 –1	Jun 04/07
–2	Apr 16/07
–3	Jun 08/07
–4	Oct 31/07
–5	May 14/08
–6	Nov 07/08
–7	Nov 07/08
–8	Feb 17/09
–9	Oct 20/09
–10	Feb 01/10
–11	Feb 01/10
–12	Feb 01/10
–13	Jun 28/10
–14	Jun 28/10
–15	Jun 28/10
–16	Jun 28/10
–17	Sep 09/10
–18	Sep 09/10
–19	Sep 09/10
–20	Sep 09/10
–21	Mar 16/11
–22	Mar 16/11
–23	Jun 30/11
–24	Jan 18/12
–25	Jan 18/12
–26	Mar 16/12
–27	Jun 26/12
–28	Jul 08/13
–29	Sep 25/13
–30	Mar 31/14
–31	Mar 18/15
–32	Sep 03/15
–33	Nov 27/15
–34	Nov 27/15
–35	Nov 27/15
–36	Mar 11/16
–37	Jun 09/16
–38	Aug 30/16
–39	Aug 30/16
–40	Nov 28/16
–41	Mar 13/17
–42	Jun 16/17
–43	Dec 04/17
–44	Mar 01/18
–45	Aug 23/18
–46	Aug 23/18
–47	Nov 19/18
–48	Sep 17/19
–49	Dec 18/19
–50	Dec 18/19
00–02 –1	Dec 10/10
–2	Jul 08/13
–3	Jun 09/16
–4	Dec 18/19
–5	Dec 18/19
–6	Dec 18/19
00–03 –1	Dec 18/19
–2	Dec 18/19
–3	Dec 18/19
–4	Dec 18/19
–5	Dec 18/19
–6	Dec 18/19
–7	Dec 18/19
–8	Dec 18/19
–9	Dec 18/19
–10	Dec 18/19
01–00 –1	Nov 27/15
–2	Oct 05/06
01–01 –1	Nov 27/15
–2	Oct 05/06
–3	Aug 23/18
–4	Aug 23/18
–5	Oct 05/06
–6	Oct 05/06
–7	Oct 05/06
–8	Nov 27/15
–9	Oct 05/06
–10	Oct 05/06
–11	Nov 27/15
–12	Nov 27/15
–13	Nov 27/15
–14	Nov 27/15
–15	Nov 27/15
–16	Nov 27/15
–17	Nov 27/15
–18	Nov 27/15
–19	Mar 25/19
–20	Nov 27/15
02–00 –1	Dec 18/19
–2	Dec 04/17
–3	Aug 23/18
–4	Dec 18/19
02–01 –1	Nov 27/15
–2	Oct 05/06
02–02 –1	Oct 05/06
–2	Oct 05/06
02–03 –1	Jan 11/13
–2	Oct 05/06
02–04 –1	Oct 05/06
–2	Jan 11/13
–3	Jun 16/17
–4	Nov 28/16
–5	Nov 28/16
–6	Dec 18/19
–7	Dec 18/19
–8	Dec 18/19
02–05 –1	Oct 05/06
–2	Jul 08/13
–3	Aug 23/18
–4	Oct 05/06
–5	Oct 05/06
–6	Oct 31/07
–7	Jan 11/07
–8	Jan 11/07
–9	Oct 31/07
–10	Oct 31/07
–11	Nov 28/16
–12	Dec 04/17
–13	Dec 04/17
–14	Dec 04/17
–15	Dec 04/17
–16	Dec 04/17
–17	Dec 04/17
–18	Dec 04/17
–19	Dec 04/17
–20	Dec 04/17
02–06 –1	Mar 16/11
–2	Mar 16/11
–3	Mar 16/11
–4	Oct 05/06
02–07 –1	Oct 05/06
–2	Oct 05/06

Page	Date
02–08 –1	Aug 23/18
–2	Aug 23/18
–3	Aug 23/18
–4	Oct 05/06
02–09 –1	Aug 23/18
–2	Mar 25/19
–3	Dec 18/19
–4	Dec 18/19
–5	Dec 18/19
–6	Dec 18/19
–7	Dec 18/19
–8	Dec 18/19
–9	Dec 18/19
–10	Dec 18/19
–11	Dec 18/19
–12	Dec 18/19
–13	Dec 18/19
–14	Dec 18/19
03–00 –1	Mar 11/16
–2	Jul 08/13
–3	Dec 18/19
–4	Oct 05/06
03–01 –1	Nov 27/15
–2	Oct 05/06
03–02 –1	Mar 01/18
–2	Jun 28/10
03–03 –1	Jun 16/17
–2	Jun 16/17
–3	Mar 16/12
–4	Mar 16/12
–5	Jun 16/17
–6	Jun 16/17
–7	Jun 16/17
–8	Jun 16/17
–9	Jun 16/17
–10	Jun 16/17
–11	Jun 16/17
–12	Jun 16/17
–13	Mar 16/12
–14	Mar 16/12
–15	Nov 28/16
–16	Jun 16/17
–17	Jun 16/17
–18	Jun 16/17
–19	Jun 16/17
–20	Mar 11/16
–21	Mar 11/16
–22	Mar 11/16
–23	Mar 11/16
–24	Mar 11/16
–25	Mar 11/16
–26	Mar 11/16
03–04 –1	Sep 25/13
–2	Sep 25/13
–3	Sep 25/13
–4	Sep 25/13
–5	Sep 25/13
–6	Sep 25/13
–7	Sep 25/13
–8	Sep 25/13
03–05 –1	Sep 09/10
–2	Sep 09/10
–3	Jun 30/11
–4	Jun 30/11
–5	Jun 30/11
–6	Oct 05/06
03–06 –1	Oct 05/06
–2	Jun 04/07
–3	Aug 30/16
–4	Aug 30/16
03–07 –1	Jun 26/12
–2	Jun 26/12
–3	Jun 26/12
–4	Sep 09/10
03–08 –1	Jul 08/13
–2	Jul 08/13
–3	Jul 08/13
–4	Sep 03/15
03–09 –1	Jun 28/10
–2	Jun 28/10
–3	Sep 09/10
–4	Sep 09/10
–5	Jun 28/10
–6	Oct 05/06
–7	Sep 09/10
–8	Jun 28/10
03–10 –1	Jun 30/11
–2	Jun 30/11
03–11 –1	Jun 16/17
–2	Mar 01/18
–3	Jun 16/17
–4	Mar 01/18
03–12 –1	Aug 30/16
–2	Aug 30/16
–3	Aug 30/16
–4	Aug 30/16
–5	Aug 30/16
–6	Aug 30/16
–7	Oct 05/06
–8	Aug 30/16
–9	Aug 30/16
–10	Jan 11/13
–11	Mar 01/18
–12	Mar 01/18
03–13 –1	Oct 05/06
–2	Oct 05/06
03–14 –1	Jul 08/13
–2	Jul 08/13
–3	Jul 08/13
–4	Dec 04/17
–5	Jul 08/13
–6	Aug 30/16
–7	Aug 30/16
–8	Jul 08/13
03–15 –1	Aug 30/16
–2	Aug 30/16
–3	Aug 30/16
–4	Aug 30/16
–5	Aug 30/16
–6	Aug 30/16
–7	Aug 30/16
–8	Aug 30/16
–9	Aug 30/16
–10	Aug 30/16
–11	Aug 30/16
–12	Aug 30/16
03–16 –1	Dec 18/19
–2	Dec 18/19
–3	Dec 18/19

Page	Date	Page	Date	Page	Date
–4	Dec 18/19	–3	Oct 05/06	–3	Nov 28/16
–5	Dec 18/19	–4	Oct 05/06	–4	Nov 28/16
–6	Dec 18/19	–5	Sep 09/10	–5	Nov 28/16
–7	Dec 18/19	–6	Jul 08/13	–6	Nov 28/16
–8	Dec 18/19	–7	Jul 08/13	–7	Nov 28/16
–9	Dec 18/19	–8	Jul 08/13	–8	Nov 28/16
–10	Dec 18/19			–9	Dec 18/19
–11	Dec 18/19	04–04 –1	Oct 05/06	–10	Dec 18/19
–12	Dec 18/19	–2	Jul 11/14	–11	Dec 18/19
		–3	Jul 11/14	–12	Nov 28/16
03–17 –1	Aug 30/16	–4	Oct 05/06		
–2	Aug 30/16			04–15 –1	Oct 05/06
		04–05 –1	Oct 05/06	–2	Dec 04/17
03–18 –1	Aug 30/16	–2	Oct 05/06	–3	Oct 20/09
–2	Aug 30/16			–4	Oct 20/09
		04–06 –1	Oct 05/06		
04–00 –1	Aug 23/18	–2	Oct 05/06	04–16 –1	Oct 01/14
–2	Aug 23/18			–2	Oct 05/06
–3	Aug 23/18	04–07 –1	Oct 05/06		
–4	Dec 18/19	–2	Oct 05/06	04–17 –1	Oct 31/07
–5	Aug 23/18			–2	Oct 05/06
–6	Aug 23/18	04–08 –1	Nov 27/15		
–7	Aug 23/18	–2	Oct 05/06	04–18 –1	Mar 19/07
–8	Jan 11/13			–2	Mar 19/07
		04–09 –1	Oct 05/06		
04–01 –1	Nov 27/15	–2	Jun 28/10	04–19 –1	Nov 07/08
–2	Oct 05/06			–2	Mar 01/18
		04–10 –1	Jul 08/13	–3	Mar 01/18
04–02 –1	Jun 09/16	–2	Jul 08/13	–4	Mar 01/18
–2	Jun 09/16	–3	Nov 07/08	–5	Mar 01/18
–3	Jun 09/16	–4	Nov 07/08	–6	Mar 01/18
–4	Jun 09/16			–7	Mar 01/18
–5	Jun 09/16	04–11 –1	Nov 27/15	–8	Mar 01/18
–6	Mar 16/11	–2	Nov 27/15		
–7	Jul 08/13	–3	Nov 27/15	04–20 –1	Mar 16/11
–8	Jul 08/13	–4	Nov 27/15	–2	Dec 04/17
–9	Jul 08/13			–3	Nov 28/16
–10	Nov 28/16	04–12 –1	Oct 05/06	–4	Nov 28/16
–11	Nov 28/16	–2	Mar 16/12	–5	Feb 17/09
–12	Nov 28/16	–3	Mar 16/12	–6	Mar 16/12
–13	Aug 23/18	–4	Mar 16/12	–7	Jul 08/13
–14	Aug 23/18	–5	Mar 16/12	–8	Jun 16/17
–15	Aug 23/18	–6	Jun 28/10	–9	Nov 28/16
–16	Aug 23/18			–10	Nov 28/16
–17	Aug 23/18	04–13 –1	Nov 07/08	–11	Jun 16/17
–18	Aug 23/18	–2	Nov 07/08	–12	Jun 16/17
				–13	Jun 16/17
04–03 –1	Oct 05/06	04–14 –1	Nov 28/16	–14	Aug 30/16
–2	Oct 05/06	–2	Nov 28/16		

Page	Date
04–21 –1	Oct 05/06
–2	Oct 05/06
05–00 –1	Aug 23/18
–2	Aug 23/18
–3	Jun 28/10
–4	Mar 18/15
–5	Aug 30/16
–6	Nov 28/16
–7	Mar 01/18
–8	Nov 19/18
05–01 –1	Nov 27/15
–2	Oct 05/06
05–02 –1	Sep 03/15
–2	Sep 03/15
–3	Sep 03/15
–4	Sep 03/15
–5	Sep 03/15
–6	Sep 03/15
–7	Sep 03/15
–8	Sep 03/15
–9	Sep 03/15
–10	Sep 03/15
–11	Sep 03/15
–12	Sep 03/15
–13	Sep 03/15
–14	Sep 03/15
–15	Nov 27/15
–16	Mar 11/16
05–03 –1	Mar 16/12
–2	Aug 23/18
–3	Aug 23/18
–4	Aug 23/18
–5	Aug 23/18
–6	Aug 23/18
–7	Aug 23/18
–8	Mar 16/12
05–04 –1	Jul 08/13
–2	Sep 03/15
–3	Sep 03/15
–4	Sep 03/15
–5	Sep 03/15
–6	Sep 03/15
–7	Sep 03/15
–8	Sep 03/15
05–05 –1	Mar 01/18
–2	Mar 01/18
–3	Mar 01/18
–4	Mar 01/18
–5	Mar 01/18
–6	Mar 01/18
–7	Jan 06/14
–8	Jan 06/14
05–06 –1	Jun 11/15
–2	Jun 11/15
–3	Aug 30/16
–4	Aug 30/16
–5	Nov 27/15
–6	Feb 01/10
05–07 –1	Jun 26/12
–2	Jun 26/12
–3	Jun 26/12
–4	Sep 20/11
05–08 –1	Sep 09/10
–2	Sep 09/10
–3	Sep 09/10
–4	Sep 09/10
–5	Sep 09/10
–6	Sep 09/10
–7	Sep 09/10
–8	Sep 09/10
05–09 –1	Jan 06/14
–2	Jan 06/14
–3	Jan 06/14
–4	Oct 31/07
–5	Oct 05/06
–6	Jan 06/14
–7	Oct 05/06
–8	Oct 31/07
–9	Jun 16/17
–10	Oct 31/07
05–10 –1	Sep 09/10
–2	Jun 28/10
05–11 –1	Oct 05/06
–2	Nov 28/16
–3	Nov 07/08
–4	Oct 05/06
–5	Nov 28/16
–6	Nov 28/16
–7	Nov 28/16
–8	Nov 07/08
–9	Nov 28/16
–10	Aug 30/16
–11	Nov 28/16
–12	Nov 28/16
–13	Aug 30/16
–14	Jun 28/10
–15	Nov 28/16
–16	Aug 30/16
–17	Aug 30/16
–18	Aug 30/16
05–12 –1	Mar 16/12
–2	Nov 07/08
–3	Jun 28/10
–4	Jun 28/10
–5	Oct 05/06
–6	Oct 05/06
–7	Jan 06/14
–8	Jun 28/10
–9	Mar 16/11
–10	Jun 28/10
–11	Mar 01/18
–12	Mar 01/18
–13	Mar 01/18
–14	Mar 01/18
–15	Mar 01/18
–16	Aug 30/16
–17	Aug 30/16
–18	Aug 30/16
–19	Aug 30/16
–20	Mar 16/11
–21	Mar 16/11
–22	Mar 31/14
–23	Mar 31/14
–24	Jun 28/10
–25	Mar 31/14
–26	Mar 16/11
–27	Jun 28/10
–28	Dec 04/17
–29	Dec 04/17
–30	Aug 30/16
–31	Aug 30/16
–32	Jun 28/10
05–13 –1	Aug 30/16
–2	Aug 30/16

Page	Date	Page	Date	Page	Date
–3	Feb 01/10	–11	Dec 18/19	–25	Oct 05/06
–4	Feb 01/10	–12	Dec 18/19	–26	Oct 05/06
–5	Mar 16/12				
–6	Mar 16/12	05–17 –1	Oct 05/06	06–02 –1	Oct 05/06
–7	Aug 30/16	–2	Nov 27/15	–2	Oct 05/06
–8	Feb 01/10	–3	Nov 27/15	–3	Oct 05/06
–9	Feb 01/10	–4	Mar 01/18	–4	Oct 05/06
–10	Aug 30/16	–5	Mar 01/18	–5	Oct 05/06
–11	Aug 30/16	–6	Aug 30/16	–6	Oct 05/06
–12	Aug 30/16	–7	Mar 01/18	–7	Oct 05/06
–13	Aug 30/16	–8	Aug 30/16	–8	Oct 05/06
–14	Aug 30/16			–9	Oct 05/06
–15	Aug 30/16	05–18 –1	Oct 05/06	–10	Oct 05/06
–16	Aug 30/16	–2	Oct 05/06	–11	Oct 05/06
				–12	Oct 05/06
05–14 –1	Aug 30/16	05–19 –1	Nov 19/18	–13	Oct 05/06
–2	Aug 30/16	–2	Nov 19/18	–14	Oct 05/06
–3	Nov 28/16			–15	Oct 05/06
–4	Nov 28/16	06–00 –1	Oct 05/06	–16	Oct 05/06
–5	Feb 01/10	–2	Nov 27/15	–17	Oct 05/06
–6	Nov 28/16	–3	Nov 07/08	–18	Oct 05/06
–7	Nov 28/16	–4	Oct 05/06	–19	Oct 05/06
–8	Mar 16/11	–5	Nov 27/15	–20	Oct 05/06
–9	Nov 28/16	–6	Nov 27/15		
–10	Feb 01/10			06–03 –1	Sep 09/10
–11	Nov 28/16	06–01 –1	Nov 27/15	–2	Oct 05/06
–12	Nov 28/16	–2	Oct 05/06	–3	Oct 05/06
–13	Nov 28/16	–3	Oct 05/06	–4	Oct 05/06
–14	Nov 28/16	–4	Oct 05/06	–5	Oct 05/06
		–5	Oct 05/06	–6	Nov 27/15
05–15 –1	Aug 30/16	–6	Oct 05/06	–7	Oct 05/06
–2	Aug 30/16	–7	Oct 05/06	–8	Nov 27/15
–3	Aug 30/16	–8	Oct 05/06	–9	Nov 27/15
–4	Aug 30/16	–9	Oct 05/06	–10	Nov 27/15
–5	Mar 01/18	–10	Oct 05/06	–11	Nov 27/15
–6	Mar 01/18	–11	Oct 05/06	–12	Nov 27/15
–7	Aug 30/16	–12	Oct 05/06	–13	Nov 27/15
–8	Aug 30/16	–13	Oct 05/06	–14	Nov 27/15
		–14	Oct 05/06	–15	Nov 27/15
05–16 –1	Nov 07/08	–15	Oct 05/06	–16	Nov 27/15
–2	Nov 07/08	–16	Oct 05/06	–17	Nov 27/15
–3	Nov 07/08	–17	Oct 05/06	–18	Nov 27/15
–4	Mar 16/11	–18	Oct 05/06	–19	Nov 27/15
–5	Dec 18/19	–19	Oct 05/06	–20	Nov 27/15
–6	Nov 07/08	–20	Oct 05/06	–21	Nov 27/15
–7	Nov 07/08	–21	Oct 05/06	–22	Nov 27/15
–8	Dec 18/19	–22	Oct 05/06	–23	Nov 27/15
–9	Dec 18/19	–23	Oct 05/06	–24	Nov 27/15
–10	Dec 18/19	–24	Dec 04/17	–25	Nov 27/15

Page	Date	Page	Date	Page	Date
–26	Nov 27/15	–14	Oct 05/06	–6	Oct 05/06
–27	Nov 27/15	–15	Oct 05/06	–7	Oct 05/06
–28	Nov 27/15	–16	Oct 05/06	–8	Oct 05/06
–29	Nov 27/15	–17	Oct 05/06	–9	Oct 05/06
–30	Nov 27/15	–18	Oct 05/06	–10	Oct 05/06
–31	Mar 01/18			–11	Oct 05/06
–32	Nov 27/15	06–07 –1	Oct 05/06	–12	Oct 05/06
		–2	Oct 05/06	–13	Oct 05/06
06–04 –1	Oct 05/06	–3	Oct 05/06	–14	Oct 05/06
–2	Aug 23/18	–4	Oct 05/06	–15	Mar 25/19
–3	Oct 05/06	–5	Mar 19/07	–16	Oct 05/06
–4	Oct 05/06	–6	Mar 25/19	–17	Oct 05/06
–5	Oct 05/06	–7	Oct 05/06	–18	Oct 05/06
–6	Oct 05/06	–8	Oct 05/06	–19	Oct 05/06
–7	Oct 05/06	–9	Oct 05/06	–20	Oct 05/06
–8	Oct 05/06	–10	Oct 05/06	–21	Oct 05/06
–9	Oct 05/06			–22	Oct 05/06
–10	Oct 05/06	06–08 –1	Oct 05/06	–23	Oct 05/06
–11	Oct 05/06	–2	Oct 05/06	–24	Oct 05/06
–12	Oct 05/06	–3	Oct 05/06	–25	Oct 05/06
–13	Oct 05/06	–4	Oct 05/06	–26	Oct 05/06
–14	Oct 05/06	–5	Oct 05/06	–27	Oct 05/06
–15	Oct 05/06	–6	Oct 05/06	–28	Oct 05/06
–16	Oct 05/06			–29	Oct 05/06
–17	Oct 05/06	07–00–01 –1	Jun 09/16	–30	Oct 05/06
–18	Oct 05/06	–2	Nov 19/18	–31	Oct 05/06
				–32	Oct 05/06
06–05 –1	Oct 05/06	07–01–00 –1	Oct 05/06	–33	Oct 05/06
–2	Mar 25/19	–2	Oct 05/06	–34	Oct 05/06
–3	Oct 05/06			–35	Oct 05/06
–4	Oct 05/06	07–01–01 –1	Nov 27/15	–36	Oct 05/06
–5	Oct 05/06	–2	Oct 19/15	–37	Oct 05/06
–6	Oct 05/06			–38	Oct 05/06
–7	Oct 05/06	07–01A–00 –1	Oct 19/15	–39	Oct 05/06
–8	Oct 05/06	–2	Oct 19/15	–40	Oct 05/06
				–41	Oct 05/06
06–06 –1	Oct 05/06	07–01A–01 –1	Nov 27/15	–42	Oct 05/06
–2	Oct 05/06	–2	Oct 19/15	–43	Mar 25/19
–3	Oct 05/06			–44	Oct 05/06
–4	Oct 05/06	07–02–00 –1	Oct 05/06	–45	Oct 05/06
–5	Oct 05/06	–2	Oct 05/06	–46	Oct 05/06
–6	Oct 05/06	–3	Oct 05/06	–47	Oct 05/06
–7	Oct 05/06	–4	Oct 05/06	–48	Oct 05/06
–8	Oct 05/06				
–9	Oct 05/06	07–02–01 –1	Nov 19/18	07–03–00 –1	Aug 23/18
–10	Oct 05/06	–2	Mar 25/19	–2	Oct 05/06
–11	Oct 05/06	–3	Oct 05/06		
–12	Oct 05/06	–4	Oct 05/06	07–03–01 –1	Nov 27/15
–13	Oct 05/06	–5	Oct 05/06	–2	Oct 05/06

Page	Date
–3	Oct 05/06
–4	Oct 05/06
–5	Oct 05/06
–6	Oct 05/06
–7	Oct 05/06
–8	Oct 05/06
–9	Oct 05/06
–10	Oct 05/06
–11	Aug 23/18
–12	Oct 05/06
07–04–00 –1	Oct 05/06
–2	Oct 05/06
07–04–01 –1	Nov 27/15
–2	Mar 01/18
–3	Oct 05/06
–4	Mar 11/16
–5	Feb 01/10
–6	Oct 05/06
–7	Oct 05/06
–8	Feb 17/09
–9	Oct 05/06
–10	Oct 05/06
–11	Oct 05/06
–12	Oct 05/06
07–04A–00 –1	Oct 05/06
–2	Oct 05/06
07–04A–01 –1	Nov 27/15
–2	Mar 01/18
–3	Oct 05/06
–4	Mar 11/16
–5	Feb 01/10
–6	Oct 05/06
–7	Feb 17/09
–8	Oct 05/06
–9	Oct 05/06
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–11	Oct 05/06
–12	Oct 05/06
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07–06–01 –1	Nov 27/15
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–2	Oct 05/06
07–07–01 –1	Nov 27/15
–2	Nov 27/15
07–08–00 –1	Nov 19/18
–2	Jan 18/12
07–08–01 –1	Nov 27/15
–2	Oct 19/15
–3	Oct 19/15
–4	Oct 05/06
–5	Oct 31/07
–6	Oct 31/07
–7	Oct 31/07
–8	Oct 31/07
–9	Oct 31/07
–10	Oct 31/07
–11	Oct 31/07
–12	Jan 18/12
–13	Oct 31/07
–14	Oct 31/07
–15	Oct 31/07
–16	Oct 31/07
–17	Oct 31/07
–18	Oct 31/07
–19	Oct 31/07
–20	Jan 18/12
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–22	Jan 18/12
–23	Jan 18/12
–24	Nov 19/18
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–2	Oct 05/06
07–09–01 –1	Nov 27/15
–2	Oct 05/06
–3	Oct 05/06
–4	Oct 05/06
07–11–00 –1	Nov 27/15
–2	Sep 25/13
07–11–01 –1	Nov 27/15
–2	Feb 17/09
–3	Dec 04/17
–4	Feb 17/09
07–12–00 –1	Nov 19/18
–2	Nov 19/18
07–12–01 –1	Dec 04/17
–2	Jun 16/17
–3	Dec 04/17
–4	Jun 16/17
–5	Feb 23/17
–6	Mar 25/19
–7	Jun 08/07
–8	Jun 08/07
–9	Jun 08/07
–10	Nov 19/18
–11	Nov 19/18
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07–13–00 –1	Nov 19/18
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07–13–01 –1	Mar 25/19
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–15	Sep 09/10
–16	Sep 09/10
–17	Sep 09/10
–18	Sep 09/10
–19	Sep 09/10
–20	Sep 09/10
–21	Sep 09/10

Page	Date	Page	Date	Page	Date
–22	Sep 09/10	–3	Jan 06/14	07–20–01 –1	Dec 04/17
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–36	Sep 09/10	–2	Nov 27/15	–2	Oct 05/06
–37	Sep 09/10				
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–39	Sep 09/10	–2	Nov 19/18	–2	Oct 05/06
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		07–19–00 –1	Nov 19/18		
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07–14–01 –1	Nov 27/15	–2	Nov 19/18	08–01–32 –1	Oct 05/06
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–3	Nov 27/15	–4	Nov 19/18		
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–6	Nov 27/15	–7	Nov 19/18		
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–11	Aug 23/18	–12	Nov 19/18		
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07–15–00 –1	Jan 18/12	–15	Nov 19/18	–3	Oct 05/06
–2	Jan 18/12	–16	Nov 19/18	–4	Oct 05/06
		–17	Nov 19/18		
07–15–01 –1	Jan 18/12	–18	Nov 19/18	08–01–53 –1	Oct 05/06
–2	Jan 18/12	–19	Nov 19/18	–2	Oct 05/06
		–20	Nov 19/18		
07–16–00 –1	Nov 27/15			08–01–55 –1	Oct 05/06
–2	Jan 06/14	07–20–00 –1	Nov 19/18	–2	Oct 05/06
		–2	Mar 13/17	–3	Oct 05/06
07–16–01 –1	Nov 27/15			–4	Oct 05/06
–2	Nov 27/15				

Page	Date	Page	Date	Page	Date
08–01–56 –1	Oct 05/06				
–2	Oct 05/06				
08–01–57 –1	Oct 05/06				
–2	Oct 05/06				
–3	Oct 05/06				
–4	Oct 05/06				
–5	Oct 05/06				
–6	Oct 05/06				

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CHAPTER 2 - LIMITATIONS

TABLE OF CONTENTS

Page

TABLE OF CONTENTS **02–00–1**

INTRODUCTION

General 02–01–1

Kinds of Airplane Operation 02–01–1

STRUCTURAL WEIGHT

Structural Weight Limitation 02–02–1

CENTRE OF GRAVITY

Centre of Gravity Limits (MTOW 48,200 LB) 02–03–1

OPERATING LIMITATIONS

Altitude and Temperature Operating Limit 02–04–1

Take-Off 02–04–2

Rotation Rate and Pitch Attitude 02–04–2

Pitch Trim 02–04–2

Take-Off Pitch Target 02–04–2

Cold Weather Operations 02–04–3

Operation in Icing Conditions 02–04–4

Cowl Anti-ice System 02–04–4

Wing Anti-ice System 02–04–5

I Super-Cooled Large Droplet Icing 02–04–7

Enhanced Take-Off Procedures and Winter Operations Training 02–04–7

Runway Slopes 02–04–7

Tailwind Conditions 02–04–7

Approaches 02–04–7

Minimum Flight Crew 02–04–7

I Maximum Occupants 02–04–8

Maximum Crosswind Component 02–04–8

POWER PLANT

Engines 02–05–1

Engine Indications 02–05–1

Page

POWER PLANT

Engine Operating Limits 02–05–2
Engine Operating Limits Table 02–05–2
Airplane Cold Soak 02–05–2
Oil Temperature 02–05–2
Oil Pressure 02–05–2
Continuous Engine Ignition 02–05–3
Autothrottle (ATS) 02–05–3
Automatic Performance Reserve (APR) 02–05–4
Starter Cranking Limits (Ground and Air) 02–05–4
Engine Start 02–05–4
Associated Conditions 02–05–4
Dry Motoring Cycle 02–05–4
Engine Relight 02–05–4
Fuel 02–05–6
Fuel Temperature 02–05–11
Fuel Grades 02–05–12
Fuel Additives 02–05–13
Anti-icing 02–05–13
Biocide 02–05–13
Anti-static 02–05–13
Corrosion inhibitor 02–05–14
Fuel Jettison 02–05–15
Fuel Transfer 02–05–15
Oil Grades 02–05–16
Oil Consumption 02–05–16
Oil Level 02–05–16
Oil Replenishment System 02–05–16
Auxiliary Power Unit 02–05–16
Type 02–05–16
Maximum RPM 02–05–16
Maximum EGT 02–05–16
Starting 02–05–17
APU Bleed Air 02–05–18
APU Generator 02–05–18

Page

POWER PLANT

APU Indications 02–05–18

OPERATING SPEEDS

Maximum Operating Speed and Mach Number 02–06–1
RVSM Maximum Operating Speed 02–06–2
Flaps Extended Speed 02–06–2
Maximum Landing Gear Operating Speed 02–06–2
Maximum Landing Gear Extended Speed 02–06–2
Tire Limit Speed 02–06–2
Turbulence Penetration Speed 02–06–2
Minimum Operating Limit Speed 02–06–2
Design Maneuvering Speed 02–06–3

MANEUVERING LOADS

Maneuvering Limit Load Factors 02–07–1
Side Slip Maneuvers 02–07–1

SYSTEMS LIMITATIONS

Air-Conditioning and Pressurization 02–08–1
Automatic Flight Control System 02–08–1
Bleed Air Systems 02–08–1
Electrical Systems 02–08–2
Permissible Loads on AC System 02–08–2
Permissible Loads on DC Systems 02–08–2
Circuit Breaker Reset (In Flight) 02–08–2
Flight Controls – Lift/Drag Devices 02–08–2
Flaps 02–08–2
Flight Spoilers 02–08–2
Stall Protection System 02–08–2
Thrust Reversers 02–08–3
Taxi and Landing Lights 02–08–3
Wheel Brake Cooling Limitations 02–08–3
Configuration Deviation List 02–08–3
Electrical/Avionics Equipment 02–08–3

Page

NAVIGATION SYSTEMS LIMITATIONS

Flight Management System – FMS–6000 02–09–1
Flight Management System – FMS–6200 02–09–5
Navigation Receiver 02–09–10
Terrain Awareness and Warning System (TAWS) 02–09–10
Runway Awareness and Advisory System (RAAS) 02–09–10
Integrated Flight Information System (If installed) 02–09–11
Synthetic Vision System (SVS) 02–09–11
Datalink 02–09–12
Inertial Reference System (IRS) 02–09–13

LIST OF ILLUSTRATIONS

CENTRE OF GRAVITY

Figure 02–03–1 Centre of Gravity Limits (MTOW 48,200 lb) 02–03–1

OPERATING LIMITATIONS

Figure 02–04–1 Altitude and Temperature Operating Limits 02–04–1

POWER PLANT

Figure 02–05–1 Engine Air Start Envelope (In Flight) 02–05–5
Figure 02–05–2 Auxiliary Tank Quantity/Tail Tank Quantity – Relation Verses Centre of Gravity 02–05–7
Figure 02–05–3 Minimum Wing Tank Fuel Quantity for Take-Off 02–05–10
Figure 02–05–4 Manual Fuel Transfer – Auxiliary Tank Quantity vs Tail Tank Quantity 02–05–15
Figure 02–05–5 APU In-Flight Envelope 02–05–19

OPERATING SPEEDS

Figure 02–06–1 Maximum Operating Speed and Mach Number 02–06–1
Figure 02–06–2 Design Maneuvering Speeds 02–06–3

NAVIGATION SYSTEMS LIMITATIONS

Figure 02–09–1 Area of Magnetic Unreliability 02–09–4
Figure 02–09–2 Prohibited Areas of IRS Use – Northern Hemisphere 02–09–13
Figure 02–09–3 Prohibited Areas of IRS Use – Southern Hemisphere 02–09–14

1. FLIGHT MANAGEMENT SYSTEM - FMS-6000

The flight management system (FMS) must be operated in accordance with the latest edition of the following;

- Airplane Flight Manual, and
- Flight Management System FMS–6000 Pilot's Guide, part number 523–0807938–001117 or later applicable revision.

The FMS is approved for use only with the SCID 832–4117–094 (no SAR) or SCID 832–4117–095 (with SAR) software program versions or later applicable revisions.

FMS database information must be verified as being current. Waypoints must be checked for accuracy prior to use.

Use of pilot defined FMS approaches, in instrument meteorological conditions, is prohibited.

The FMS must not be used for navigation unless it is receiving suitable navigation information from the following sources;

- One VOR/DME, or
- Two DMEs, or
- One inertial reference system (IRS), or
- GPS.

Airplane operation must not be predicated upon performance data; ETE/ETA and fuel remaining.

FMS flight plans must be identical when conducting dual FMS approach operations.

Use of FMS instrument approaches past the Final Approach Fix is prohibited, unless APPR is annunciated on the PFD.

Use of FMS instrument approaches is prohibited, unless APPR is annunciated on the PFD.

Manual changes to altitudes in departure and missed approach procedures are prohibited.

Use of FMS temperature compensation (TEMP COMP) is prohibited.

The flight crew must verify any altitude/speed constraints on the last waypoint of any entered STAR procedure and/or the first waypoint of any entered approach procedure. The flight crew may correct any such altitude/speed constraint(s) as required to agree with current chart procedures.

1. FLIGHT MANAGEMENT SYSTEM - FMS-6000 (CONT'D)

CAUTION

Errors to VNAV defined paths may occur because of coding errors in the navigation data base and because of altimetry errors. The actual VNAV path may deviate significantly below the intended VNAV path in very cold temperatures, unless an approved temperature compensation function (if equipped) is used to correct for non-standard temperatures. Flight crew must coordinate use of temperature compensation with ATC prior to employing this function.

Database coding of VNAV altitudes for approach waypoints may result in VNAV paths continuing below Minimum Descent Altitude (MDA), Decision Altitude (DA), or Decision Height (DH), or ending at an altitude too high to continue a safe descent to landing. Baro VNAV paths (often called pseudo-glide paths) are not equivalent to an ILS glideslope.

Position along an approach must be verified prior to commencement of VNAV descent, as displayed by the FMS. The required visual reference must be obtained prior to commencing descent below published MDAs, DAs, or DHs.

Use of VFLC (FLC with VNAV) is prohibited during climb when the airspeed reference is displayed as Mach.

Use of VNAV vertical guidance is prohibited during QFE operation, when the altimeter is adjusted to show height above ground rather than sea level.

Use of VNAV vertical guidance for a V-MDA type approach between the final approach fix and the missed approach fix is prohibited.

The FMS, with inputs from GPS, may only be used for approach guidance if the reference coordinate data system for the instrument approach is WGS–84 or NAD–83.

It is prohibited to initiate a NAV RADIO SELF TEST from either the NAV radio tuning page on the FMS CDU or the MFD nav radio menu during flight.

The V_{ERC} data shown on the THRUST LIMIT page is advisory information only and must be cross checked with the AFM.

The FMS thrust setting data is the primary means of information, provided two air data computers and two flight management computers are available.

The FMS V speed data is the primary means of information, provided two active flight management computers are available.

AR Certified Airplanes

The FMS V speed data is advisory only.

The following performance database, part number 815–9079–001, must be verified to be current and valid.

1. FLIGHT MANAGEMENT SYSTEM - FMS-6000 (CONT'D)

The following V speed database, part number 815–9174–001, must be verified to be current and valid.

On FAA Certified Airplanes incorporating SB 605–34–007:

The following V speed database, part number 815–9082–001, must be verified to be current and valid.

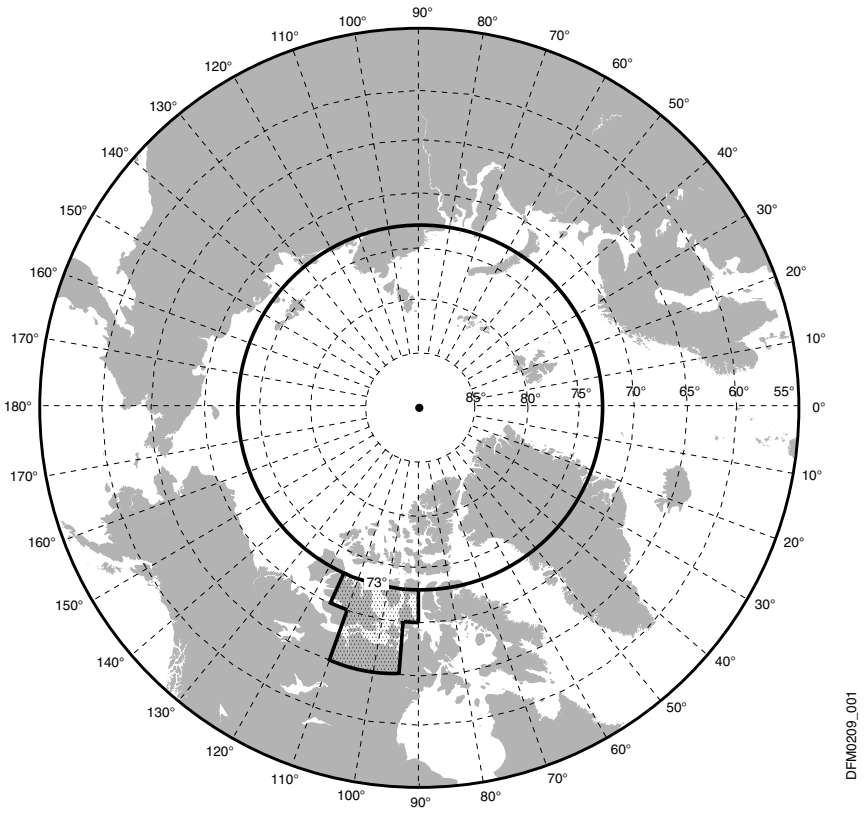
The FMS does not reduce available runway lengths for runways with displaced thresholds. When using FMS approach performance data for a runway with a displaced threshold, the pilot must manually enter the RWY LENGTH value with the actual available landing distance from a published chart.

When RWY LENGTH is manually entered, the FMS does not compute headwind/crosswind; these must be manually entered on the CDU.

1. FLIGHT MANAGEMENT SYSTEM - FMS-6000 (CONT'D)

Due to magnetic variation errors, the indicated FMS course may differ from the published course by more than 3 degrees in the following regions.

LATITUDE	LONGITUDE
N70 – N73	W115 – W90
N65 – N70	W110 – W95



Area of Magnetic Unreliability
Figure 02–09–1

In areas of magnetic unreliability, the following operations shall only be performed using true north bearings:

- PLACE BRG/DIST to pilot-defined waypoints
- PLACE BRG/PLACE BRG to pilot-defined waypoints
- Holding patterns at waypoint except at present position (PPOS)
- Intercept course (INTC CRS)
- Radial crossing fix

NOTE

At latitudes greater than 73°N and greater than 60°S, the FMS always uses true course values, and local magnetic variation has no effect.

2. FLIGHT MANAGEMENT SYSTEM - FMS-6200

On airplanes incorporating Service Bulletin 605–34–019:

The flight management system (FMS) must be operated in accordance with the latest revision of the following:

- Airplane Flight Manual, and
- Pro Line 21 Advanced Flight Management System Operators Guide (part number 523–0822377 at the latest applicable revision).

If a difference exists between the AFM and the Operators Guide, the AFM shall take precedence. The Pro Line 21 Advanced Flight Management System Operators Guide must be immediately available to the flight crew whenever navigation is predicated on the use of the FMS.

The FMS is approved for use with software version FMC HSCD 946–2720–110, or later applicable revision.

On airplanes NOT incorporating Service Bulletin 605–34–033:

The FMS is approved for use with software version FMC HSCD 946–2720–102, or later applicable revision.

The following performance database, part number 096–5752–101, must be verified to be current and valid.

On airplanes NOT incorporating Service Bulletin 605–34–033:

The following performance database, part number 096–5752–001, must be verified to be current and valid.

The following thrust and VERC database, part number 096–5753–101, must be verified to be current and valid.

On airplanes NOT incorporating Service Bulletin 605–34–033:

The following thrust database, part number 096–5753–001, must be verified to be current and valid.

The following V speed database must be verified to be current and valid:

	ALL REGISTRIES EXCEPT FAA	FAA REGISTRY
Airplanes incorporating Service Bulletin 605–34–033	part number 096–5750–101	part number 096–5751–101
Airplanes NOT incorporating Service Bulletin 605–34–033	part number 096–5750–002	part number 096–5751–002

AR Certified Airplanes:

The FMS V speed data is advisory only.

The FMS V speed data does not need to be verified with the AFM, provided both flight management computers are available.

2. FLIGHT MANAGEMENT SYSTEM - FMS-6200 (CONT'D)

The FMS V speed data is the primary means of information, provided two active flight management computers are available.

When FMS 3 is selected to 1 or 2 for take-off, manual V speed data (cyan) must be used for take-off.

On airplanes NOT incorporating Service Bulletin 605–34–033:

The AFM must be used for the V_{ERC} data. The use of the V_{ERC} data on the THRUST LIMIT page is prohibited.

On airplanes incorporating Service Bulletin 605–34–033:

The V_{ERC} data shown on the THRUST LIMIT page is advisory information only and must be cross checked with the AFM.

The FMS thrust setting data is the primary means of information, provided two air data computers and two flight management computers are available.

FMS database information must be verified as being current. Waypoints must be checked for accuracy prior to use.

It is prohibited to load pilot routes from the PILOT ROUTE LIST during flight.

It is prohibited to upload flight plans from ROUTE MENU (FPLN RECALL) during flight.

It is prohibited to select FPLN WIND UPDATE from the ROUTE MENU.

It is prohibited to tune a localizer on the TUNE page using the identifier only.

It is prohibited to initiate a NAV RADIO SELF TEST from either the NAV radio tuning page on the FMS CDU or the MFD nav radio menu during flight.

It is prohibited to use the FMS as a navigation source when it is not receiving suitable navigation information from the following:

- One GNSS; or
- Two DMEs; or
- One VOR / DME; or
- One IRS.

FMS navigation (FMS selected as NAV Source) and display of magnetic heading is prohibited in Canadian Northern Domestic Airspace and at the following locations:

- Latitudes greater than 82°N
- Latitudes greater than 73°N with a longitude between 80°W and 170°W
- Latitudes greater than 82°S
- Latitudes greater than 60°S with a longitude between 120°E and 160°E.

Refer to Inertial Reference System (IRS) for additional limitation regarding the usage of magnetic heading.

It is prohibited to load FMS procedures that are referenced to True Heading into the flightplan.

During periods of dead reckoning, indicated by the FMS DR annunciation, the FMS shall not be utilized as the primary source of navigation.

2. FLIGHT MANAGEMENT SYSTEM - FMS-6200 (CONT'D)

BRNAV and PRNAV operations with the following message are prohibited:

- IRS ONLY (on CDU)

When conducting RNP operations the pilot must verify the PFD CDI scale annunciation is appropriate for the RNP leg as follows:

- RNP APCH CDI Scale 0.3 nm
- BASIC RNP–1 CDI Scale 1.0 nm
- RNP–2 CDI Scale 2.0 nm
- RNP–4 CDI Scale 4.0 nm (selected by pilot)
- RNP–10 CDI Scale 4.0 nm (selected by pilot).

When conducting BASIC RNP–1 operations, the length of each individual flight plan leg or between the aircraft position and the TO waypoint must not exceed 200 NM.

When conducting RNP–2 operations, the length of each individual flight plan leg or between the aircraft position and the TO waypoint must not exceed 400 NM.

When conducting RNP–4 or RNP–10 operations, the length of each individual flight plan leg or between the aircraft position and the TO waypoint must not exceed 500 NM.

Pilot defined waypoints (e.g. along track offset) must not be used to create individual legs shorter than the limiting length.

When conducting non–AR RNP operations, pilots should maintain CDI lateral deviation less than ±1 dot deviation except brief deviation in excess of ±1 dot deviation during waypoint sequencing is permitted.

RNP operations with any of the following FMS messages annunciated, are prohibited:

- NO APPR (on PFD)
- UNABLE RNP (on PFD)

VERTICAL NAVIGATION

Vertical guidance deviation information is an aid to assist pilots to comply with altitude restrictions and plan descent profiles. When using vertical guidance the pilot must use the primary barometric altimeter to ensure compliance with altitude restrictions, particularly during instrument approach operations.

Use of VNAV vertical guidance is prohibited when the barometric altitude is corrected to the landing field elevation (QFE).

Use of VNAV vertical guidance is prohibited with a single ADC source when the 3rd FMS is reverted in.

It is prohibited to select MCRZ from the FMS VNAV CRUISE page.

Use of VFLC (FLC with VNAV) is prohibited during climb when the airspeed reference is displayed as Mach.

It is prohibited to select VNAV following a go-around during the missed approach procedure.

2. FLIGHT MANAGEMENT SYSTEM - FMS-6200 (CONT'D)

CAUTION

Errors to VNAV defined paths may occur because of coding errors in the navigation data base and because of altimetry errors. The actual VNAV path may deviate significantly below the intended VNAV path in very cold temperatures; the temperature compensation function is used to correct for nonstandard temperatures. Flight crew must coordinate use of temperature compensation with ATC prior to employing this function.

Database coding of VNAV altitudes for approach waypoints may result in VNAV paths continuing below Minimum Descent Altitude (MDA), Decision Altitude (DA), or Decision Height (DH), or ending at an altitude too high to continue a safe descent to landing. VNAV paths (often called pseudo glide paths) are not equivalent to an ILS glideslope.

Position along an approach must be verified prior to commencement of VNAV descent as displayed by the FMS. The required visual reference must be obtained prior to commencing descent below published MDAs, DAs, or DHs.

PERFORMANCE

The FMS will automatically display the displaced thresholds of runways provided that they are identified in the loaded active cycle FMS navigation database. If RUNWAY LENGTH is manually entered then the FMS will not compute headwind/crosswind; these must be manually entered.

Airplane operation must not be predicated upon performance data; ETE/ETA and fuel remaining.

FMS range, fuel management information and ETE/ETA is advisory only.

TEMPERATURE COMPENSATION

When changing the destination to ALTN airport by selecting direct-to a waypoint in the route to the ALTN airport, if Temp Comp is ON and an OAT value has been entered for the original DEST, the same OAT value will be retained for the new DEST (ALTN). Crew must verify the correctness of OAT after changing destination.

APPROACH

Instrument approaches must be accomplished only in accordance with instrument approach procedures that are contained in the FMS database.

NOTE

Vectored ILS approaches are exempt from this limitation as they do not require nor do they rely on FMS guidance. ILS back course approaches also are exempt if they are vectored.

The flight crew must verify any altitude/speed constraints on the last waypoint of any entered STAR procedure and/or the first waypoint of any entered approach procedure. The flight crew may correct any such altitude/speed constraint(s) as required to agree with current chart procedures.

2. FLIGHT MANAGEMENT SYSTEM - FMS-6200 (CONT'D)

It is prohibited to conduct LPV approach operations with FMS2 as pilot navigation source and FMS1 as copilot navigation source.

Use of pilot defined FMS approaches, in instrument meteorological conditions, is prohibited.

Use of FMS instrument approaches is prohibited unless RNP APPR or LPV APPR is annunciated on the PFD.

RNP operations down to LPV minimum when any of the following messages are present, are prohibited:

- Red boxed “VNV” flag (vertical deviation scale on PFD)
- NO APPR (on PFD)
- EFIS MISCOMPARE (CAS message)
- EFIS COMP INOP (CAS message)
- LPV NOT AVAIL (on CDU)

RNP operations down to LPV minimum must not be commenced or continued unless all required airborne equipment are operating satisfactorily.

The required airborne equipment are:

- Dual PFD
- Two GNSS sensors must be available to commence an approach and one GNSS sensor is required to continue an approach.
- Dual FMC

Use of VNAV vertical guidance for V-MDA type approach between the final approach fix and the missed approach fix is prohibited.

FMS as a primary navigation source beyond the FAF is prohibited for ILS, LOC and LOCBC approaches.

FMS as a supplementary navigation source beyond the FAF is permitted when APPR or REF APPR is annunciated on the PFD if the navigation aid referenced in the approach procedure is displayed and monitored by the flight crew during the approach.

NOTE

For the FMS approaches for which GNSS is not authorized as a primary navigation source (i.e. GNSS does not appear in the approach title), APPR will be annunciated on the PFD if the GNSS sensors are deselected; otherwise, REF APPR will be annunciated.

The FMS with inputs from GNSS may only be used for approach guidance if the reference coordinate data system for the instrument approach is WGS84 or NAD83.

GNSS sensors must be deselected when on approach in airspace not referenced to WGS84 or NAD83.

APPROVAL STATUS

The approvals listed in the OPERATIONAL CAPABILITIES do not constitute operational approval. Some operations require additional crew qualification, communication and surveillance equipage in order to obtain operational approval from regulatory authorities.

3. NAVIGATION RECEIVER

It is prohibited to conduct ILS approach operations with LOC2 as pilot navigation source and LOC1 as copilot navigation source.

On airplanes incorporating Service Bulletin 605–34–019:

It is prohibited to navigate using VOR or LOC as Nav source when displaying true heading mode.

4. TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

Navigation must not be predicated upon the use of the terrain awareness display.

TAWS TERRAIN OFF must be selected when using QFE operations, and GPS is not available.

5. RUNWAY AWARENESS AND ADVISORY SYSTEM (RAAS)

RAAS advisories are not intended for navigation purposes.

Pilots should not deviate from ATC clearances or otherwise correct aircraft position based solely on RAAS advisories.

Pilots may not use RAAS advisories as a replacement for NOTAM or ATIS information.

RAAS Short and Insufficient Runway functions do not take into account aircraft performance factors such as aircraft weight, wind, runway conditions, slope, air temperature and altitude of airport. The runway length settings for these functions were determined from a review of takeoff and landing performance and are considered to be acceptable guidelines for RAAS purposes. This information is intended to enhance the flight crew awareness by identifying that the runway length available may be marginal for the current conditions.

Data on newly constructed runways, changes to length of existing runways, or the rare change of runway identifier may not necessarily be included in the RAAS runway database.

RAAS does not have knowledge of where painted hold lines are located at airports. In some cases, the RAAS approaching runway advisory may be issued after an aircraft has crossed a hold line.

The RAAS system is a situational awareness tool to the flight crew and should not be used as the primary source of determining field position, runway length, field performance, etc. The absence of RAAS aural and/or visual messages such as "short runway" or "long landing" does not guarantee that the aircraft can be safely operated from or onto the runway.

Altimeter Monitor–Below Transition Altitude function, is not available at airports defined as QFE in the EGPWS database.

6. INTEGRATED FLIGHT INFORMATION SYSTEM (IF INSTALLED)

Adequate back-up documentation for IFIS must be immediately available to the flight crew.

IFIS functions must not be used unless the related databases (i.e., charts, airspace, airways, geographic, political, graphical weather) incorporate the current update cycle.

The IFIS does not include enroute charts.

The aircraft symbol on the electronic charts is advisory and is presented for increased situational awareness. It is not to be used for navigation.

The aircraft symbol displayed on airport diagram charts during ground operations is advisory and is presented for increased situational awareness. It is not to be used for precision maneuvering on the ground.

The display of geo-political boundaries, airspace and airways on the MFD (enhanced map overlays) is for enhanced situational awareness only, and use for navigation is prohibited.

All weather products satellite linked to the aircraft are advisory.

On airplanes incorporating Service Bulletin 605–34–019:

It is not possible to display landscape formatted approach charts in split view.

7. SYNTHETIC VISION SYSTEM (SVS)

TAWS alerts must take priority over the image depicted on SVS.

Use of the SVS for airplane navigation is prohibited.

Use of the SVS is prohibited when the barometric altitude is corrected to the landing field elevation (QFE).

When conducting an approach in airspace not referenced to WGS–84 or NAD–83, the SVS shall be deselected prior to passing the FAF.

When conducting an approach to a runway not entered in the FMS flight plan, the SVS shall be deselected, prior to passing the FAF.

The SVS Airport/Runway database must incorporate the current update cycle. If not, the SVS shall be deselected prior to take-off and prior to passing the FAF.

The SVS does not render a video image above latitude 85N and below latitude 85S. The SVS shall be deselected prior reaching these latitudes.

The SVS is intended as a situational awareness enhancement feature and shall not be the sole source of reference by the pilot for any of the following:

- Continuation of an approach, landing or takeoff below the minima published for that approach.
- Execution of an approach, landing or takeoff in low visibility conditions.
- As a replacement for natural vision where there are specific visual requirements to be achieved.
- As a replacement for the basic attitude, flight guidance or navigation displays and information.
- The performance of any specific flight related task.
- The flight crew making any judgment, decision or action that is solely based on the synthetic vision display.
- The application of any operational credit.

8. DATALINK

The datalink is approved for the transmission and receipt of messages that will not create an unsafe condition if the message is improperly received. An unsafe condition may exist if:

- The message, or part of the message, is delayed or not received,
- The message is delivered to the wrong recipient, or
- The message content is corrupted.

Crew action-based messages, such as pre-departure clearance, oceanic clearance, digital automatic terminal information service, weight and balance, take-off data (speeds, trim settings, runway distances) are prohibited, unless the approved operational procedures are used to verify that the message is received by the intended recipient, that the message is valid, and that the content is not corrupted.

All weather products data linked to the aircraft are advisory.

On airplanes incorporating Service Bulletin 605–23–007:

ATN B1 CPDLC installation is limited to providing a supplementary means of communication; voice shall remain the primary means of communication. Use of ATN B1 CPDLC should be avoided during periods of high pilot workload and critical phases of flight where pilot–ATC communications are time critical. This AFM entry does not, by itself, constitute an operational approval where such an approval is required.

On EASA registered airplanes:

ATN B1 CPDLC shall only be used for routine datalink exchanges during en-route operations in upper airspace.

On airplanes incorporating Service Bulletin 605–23–008:

FANS 1/A+ datalink system must be operated in accordance with ATN and FANS Interlocked CPDLC Applications Operators Guide (part number 523–0822435 at the latest applicable revision).

The crew must ensure that the FMS is updated with the proposed flight plan and its associated constraints and procedures when receiving a route clearance via CPDLC.

Before executing any flight plan modification received via CPDLC, the crew must ensure that the entire content of the flight plan has been inserted.

Use of FANS INSERT MOD is prohibited within 5NM of sequencing a waypoint.

It is prohibited to use the WX DEV TO from the FANS ROUTE REQ 1/2 page.

It is prohibited to use the DIVERT TO from the EMERGENCY MSG 1/2 page using the FANS REQUEST page.

Inmarsat L band satellite communication systems (SwiftBroadBand, Swift64 and Classical) interfere with Iridium systems. If both Inmarsat L band and Iridium systems are installed and the Iridium is capable of providing cockpit datalink services (including FANS 1/A+, and CDU datalink), then the Inmarsat L band system must be depowered and considered inoperative for the entire flight where cockpit datalink services are intended to be used.

9. INERTIAL REFERENCE SYSTEM (IRS)

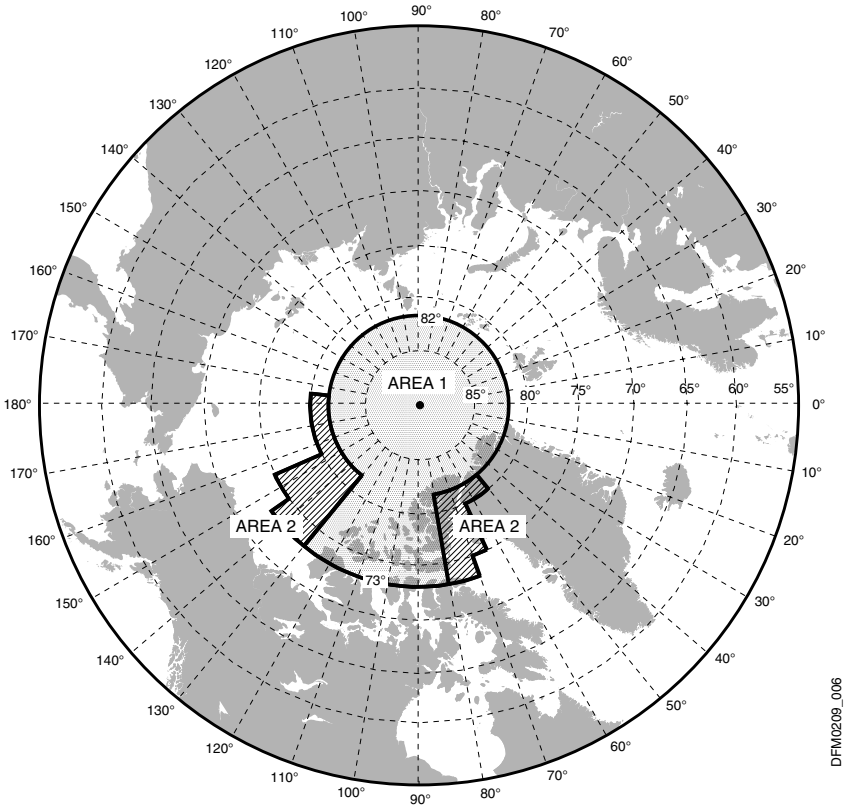
On airplanes 5701 to 5978:

Magnetic north operation is prohibited in the following regions:

- Latitudes greater than 82°N and latitudes greater than 73.125°N for longitudes between 80°W and 130°W (refer to AREA 1 of Figure 02–09–2).
- Latitudes greater than 82°S and latitudes greater than 60°S for longitudes between 120°E and 160°E (refer to Figure 02–09–3).

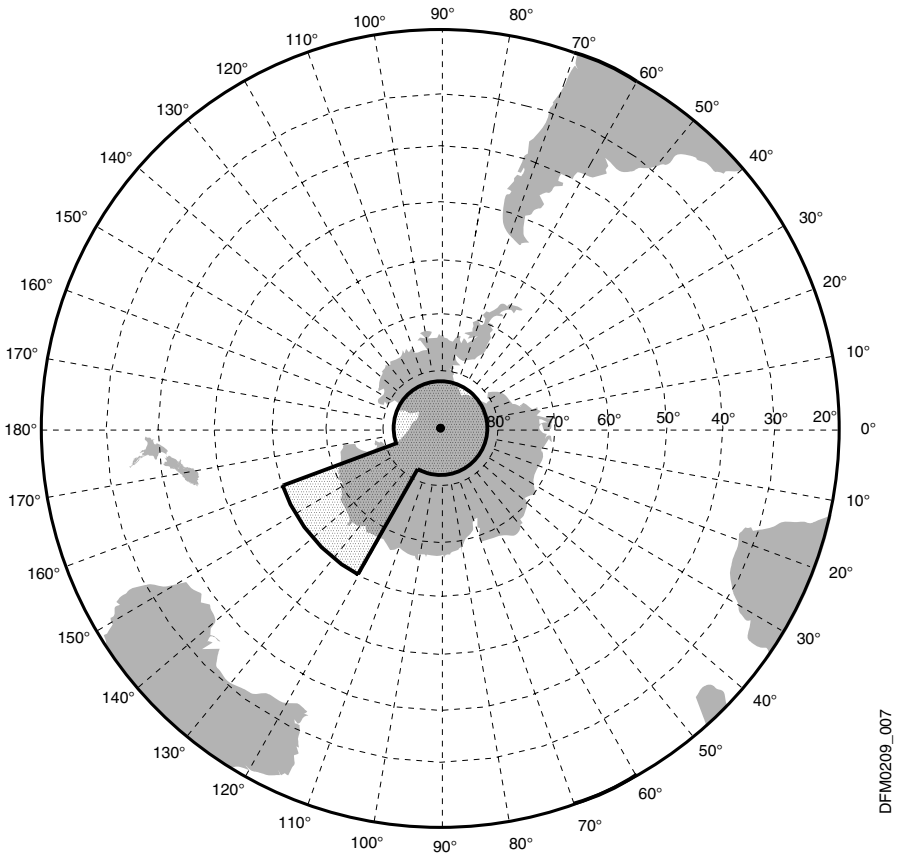
The use of magnetic heading is prohibited when flying in the following regions as errors may exceed 10 degrees (refer to AREA 2 of Figure 02–09–2).

LATITUDE	LONGITUDE
N80 – N82	W180 – W130 W80 – W50 E175 – E180
N75 – N80	W155 – W130 W80 – W65
N73 – N75	W145 – W130 W80 – W70



Prohibited Areas of IRS Use – Northern Hemisphere
Figure 02–09–2

9. INERTIAL REFERENCE SYSTEM (IRS) (CONT'D)



Prohibited Areas of IRS Use – Southern Hemisphere
Figure 02–09–3