



European Aviation Safety Agency

EASA

**TYPE-CERTIFICATE
DATA SHEET**

No. TCDS IM.A.020

**for
LEARJET MODEL 45**

**Type Certificate Holder:
Learjet Inc.**

One Learjet Way
Wichita, KS 67209-2942
USA

For Models: Learjet Model 45

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Section: Designations

I. General

1. Type/ Model/ Variant:

Learjet Model 45 (Learjet 45) (see Note 10)
Learjet Model 45 (Learjet 40) (see Note 10)
Learjet Model 45 (Learjet 75) (see Note 10)
Learjet Model 45 (Learjet 70) (see Note 10)

2. Performance Class:

A

3. Certifying Authority:

FAA

4. Manufacturer:

Learjet Inc.

5. State of Origin Airworthiness Authority Certification Application Date

27 January 1992 Learjet Model 45 (Learjet 45) *
3 July 2001 Learjet Model 45 (Learjet 40) *
22 December 2010 Learjet Model 45 (Learjet 75) *
22 December 2010 Learjet Model 45 (Learjet 70) *
*See Note 11

6. EASA Validation Application Date

21 July 1992 Learjet Model 45 (Learjet 45) *
25 January 2002 Learjet Model 45 (Learjet 40) *
22 December 2010 Learjet Model 45 (Learjet 75) *
22 December 2010 Learjet Model 45 (Learjet 70) *
*See Note 11

7. State of Origin Airworthiness Authority Type Certification Date

22 September 1997 Learjet Model 45 (Learjet 45) *
11 July 2003 Learjet Model 45 (Learjet 40) *
13 November 2013 Learjet Model 45 (Learjet 75) *
13 November 2013 Learjet Model 45 (Learjet 70) *
* See Note 11

8. EASA Type Validation Date

8 July 1998 (JAA recommendation 22.June 1998)	Learjet Model 45 (Learjet 45) **
9 January 2004* * Date of first TC issuance within EU MS, by the Irish Aviation Authority	Learjet Model 45 (Learjet 40) **
01 September 2014	Learjet Model 45 (Learjet 75) **
01 September 2014 ** See Note 11	Learjet Model 45 (Learjet 70) **

II. Certification Basis

1. Reference Date for determining the applicable requirements

22 September 1997	Learjet Model 45 (Learjet 45) *
11 July 2003	Learjet Model 45 (Learjet 40) *
22 December 2010	Learjet Model 45 (Learjet 75) *
22 December 2010 * See Note 11	Learjet Model 45 (Learjet 70) *

2. State of Origin Airworthiness Authority Type Certification Data Sheet No.

FAA Type Certificate Data Sheet (TCDS) No. T00008WI.

3. State of Origin Airworthiness Authority Certification Basis

See FAA Type Certificate Data Sheet (TCDS) No. T00008WI.

4. EASA Airworthiness Requirements

Learjet Model 45 (Learjet 40/45)

JAR 25 Change 13 effective on 5 October 1989 including the following amendments:

Amendment (OP) 90/1	11 May 1990
Amendment (OP) 91/1	12 April 1991
Amendment (OP) 93/1	8 March 1993

JAR 1 Definitions Change 4 dated 1 June 1987 including Amendment (OP) 1/92/1/ dated 1 January 1992.

JAR AWO Change 1 dated 29 November 1985 including Amendment (OP) AWO/91/1 dated 28 November 1991

Learjet elected to comply with the following standards:

NPA 25C-213 Issue 1 dated 4 April 1992 - Discrete Source Damage Due to Rotor Burst.

INT/POL/25/9 Issue 1 dated 22 July 91 - Fuel Tank Crashworthiness (replaces draft NPA 25D-222).

NPA 25B-238 Draft Issue 2 dated 3rd March 1993 - Flap Gates.

NPA 25B, D, G-244 dated February 1993 - Accelerate - Stop Distances and Related Performance. Ref. Elect to Comply B6

INT/POL/25/6 Issue 1 dated 10 February 1992, Worn Brakes.

TGM/25/04 Issue 1 dated 1 October 1995, Performance Information for Takeoff on a Contaminated Runway. Ref. Elect to Comply B3

NPA 25B-215 Issue 1 dated 19 February 1996, Stall, Stall Warning Speeds and Manoeuvre Capability. Ref. Elect to Comply B4

NPA 25G-255 Issue 1 dated 28 August 1992 - Flight Manuals - General. Ref. MoC G1

Learjet Model 45 (Learjet 70/75)

EASA Mandatory Airworthiness Standards as defined in Appendix 1 to CRI A-001 "EASA Certification Basis" for G5000 Avionic upgrade.

Learjet elect to comply with the following standards:

For the Avionics upgrade as defined in Appendix 1 to CRI A-001 "EASA Certification Basis" for G5000 Avionic upgrade.

For the Incorporation of G5000 Flight data recorder, CPDLC/COM3 and Connex Weather– Learjet 70/75, Airborne Communications, Navigation and Surveillance (CS ACNS), initial issue, dated 17 Dec. 2013, is applied as defined in Note 12.

5. Special Conditions

- SC LJ45/04 Operation to 51,000 ft. Ref. Special Condition A10
- SC LJ45/05 Unsymmetrical Loads on Winglets and Delta Fins Ref. Special Condition C2
- Avionics Upgrade – Learjet Model 45 (Learjet 70/75)
As defined in Appendix 1 to CRI A-001 "EASA Certification Basis".
- Interiors Upgrade - Learjet Model 45 (Learjet 70/75)
D-11 Side facing Seat
F-47 Lithium batteries
F-27 HIRF Protection (replacing Special Condition LJ45/01 of the original EASA Certification Basis in noted areas)
- Engine Upgrade – Learjet Model 45 (Learjet 70/75)
F-27 HIRF Protection (replacing Special Condition LJ45/01 of the original EASA Certification Basis in noted areas)
- Winglet Upgrade – Learjet Model 45 (Learjet 70/75)

F-27 HIRF Protection (replacing Special Condition LJ45/01 of the original EASA Certification Basis in noted areas)

- 40 Cubic Foot Oxygen Cylinder – Learjet Model 45 (Learjet 70/75)
F-27 HIRF Protection (replacing Special Condition LJ45/01 of the original EASA Certification Basis in noted areas)
- Aircell Swift Broadband with UCS – Learjet Model 45 (Learjet 70/75)
F-27 HIRF Protection (replacing Special Condition LJ45/01 of the original EASA Certification Basis in noted areas)
F-49 Network Security
- RVSM Group Approval – Learjet Model 45 (Learjet 70/75)
F-41 Flight Guidance Systems
F-43 Equipment, Systems and Installations
- Incorporation of G5000 Flight data recorder, CPDLC/COM3 and Connex Weather–
Learjet Model 45 (Learjet 70/75)
F-29 Flight Recorders and Datalink Recording
F-41 Flight Guidance Systems
F-43 Equipment, Systems and Installations
F-49 Network Security

6. Exemptions

- JAR 25.783(h) Entry Door, Ref. Exemption D3
- JAR-E890(b)(1)(i) Thrust Reverser Testing, Ref. Exemption E3

7. Deviations

- Interiors Upgrade Learjet Model 45 (Learjet 70/75)
 - D-10 Width of Aisle

8. Equivalent Safety Findings

- JAR 25.841(b)(6) Operation at Airport Elevations in Excess of 8,000 ft., Ref. ESF D2
- JAR 25.811(d)(1) &(d)2 Emergency Exit Signs, Ref. ESF D4
- JAR 25.1305(a)(4), (a)(6), (c)(3) & JAR 25.1549 Digital N2, Oil Pressure & Oil Temperature Indicators, Ref. ESF E2
- JAR 25.1305(d)(3) Vibration Indicators, Ref. ESF F-12
- JAR 25.813(e) Lavatory Door, Ref. ESF D5
- JAR 25.1385, 25.1387, 25.1389, 25.1391 & 25.1397 External LED Navigation Lights, Ref. Post-TC ESF F-20
- For Avionics Upgrade - Learjet Model 45 (Learjet 70/75)
As defined in Appendix 1 to CRI A-001 “EASA Certification Basis”
- Interiors Upgrade - Learjet Model 45 (Learjet 70/75)
JAR 25.813(e), ref ESF D-06 Lavatory Door

9. Environmental Protection Requirements

- Noise: ICAO Annex 16, Volume I, Third Edition.
- Fuel Venting: ICAO Annex 16, Volume II, Second Edition.

III. Technical Characteristics and Operational Limitations

1. Type Design Definition

Learjet Model 45 (Learjet 45)*

Learjet Model 45 (Learjet 75)*

Learjet Model 45 (Learjet 40)*

Learjet Model 45 (Learjet 70)*

*see Note 11

The definition of the JAA TC build standard is described in CRI A6, and is defined by the following Learjet Engineering Change Records (ECR's):

ECR	Title
4601	FAA Model 45 Type Design (Basic Aircraft)
4684	JAA Model 45 Type Design; Design Changes resulting from the JAA Certification basis and the Additional National Design Requirements for Type Certification.

Supplemented by ECR's for the following post FAA TC changes:

4889	Baggage Liner Installation
4890	Extended Baggage Liner Installation
6059	Short Baggage Compt. Instl (Shorts)
6130	Electric Foot Warmer Installation, Cockpit (LJ)
6131	Installation of Electric Foot Warmers (Shorts)
6348	HIRF required changes to M45 A/C Pitch Trim System
6444	No Locking Mechanism for A64P1 (Shorts)
6916	Partial Anti-Ice Systems Configuration Changes to Support Flight Into Known Icing
6926	Floor Register Installation, LH/RH-ECS (LJ)
6984	Alternate Nose Wheel Tyre
7042	Navigations Unit W/ADF Mod AG
7044	Baggage Bay Heat System (LJ)
7073	Repl of RCF Couplings in Anti-Ice Bleed Air System (SB)
7084	350 Degree Bond of Inlet & Perforated Skin Assy
7085	Instl of EG&G Coupling to Accommodate APU Instl (SB)
7112	Replacement of RCF Couplings in Anti-Ice System Wing Area (deHavilland)
7120	Relocation of Ice Detect Probe Installation (LJ)
7151	Alternator Cooling Improvement (LJ)
7153	Display Unit Red-Xing anomaly fix
8570	Fluid Fitting Anti-Spray Shielding
8575	Configuration Changes for Flight Into Known Icing (LJ)

In addition to the Type Design Definition for the Learjet Model 45 (Learjet 45) S/N 45-002-455 in Section 1.1 above, the

- Learjet Model 45 (Learjet 45)* is defined by Learjet Engineering Change Record ECR 4601.
- The Learjet Model 45 (Learjet 40)* is defined by Learjet Engineering Configuration Statement RAL-045-CP223.
- Learjet Model 45 (Learjet 75)* is defined by Learjet Engineering drawing 4500080801-XXXX. (XXXX represents the Serial Number for the airplane concerned).
- Learjet Model 45 (Learjet 70)* is defined by is defined by Learjet Engineering drawing 4500080801-XXXX. (XXXX represents the Serial Number for the airplane concerned).
- Model 45 S/N 45-368, S/N 45-446 when modified by ModSums 045T023813, 045T010268, 045T010241, 045T010242, 045T010267 are considered to be in the Learjet Model 45 (Learjet 75) configuration.
- Model 45 S/N 45-2129 when modified by ModSums 045T023813, 045T010268, 045T010241, 045T010242, 045T010267 is considered to be in the Learjet Model 45 (Learjet 70) configuration.

* See Note 11

2. Description

The Learjet Model 45 is a twin, aft mounted, turbo-fan aeroplane with a low swept-wing (with winglets) and T-tail.

3. Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) and defined in the Type Design Definition, (see above) must be installed in the aeroplane for certification.

4. Dimensions

Learjet Model 45 (Learjet 45)			Learjet Model 45 (Learjet 40)		
Span	14.58 m	(47 ft. 10 in.)	Span	14.58 m	(47 ft. 10 in.)
Length	17.77 m	(58 ft. 4 in.)	Length	17.18 m	(56 ft. 5 in.)
Height	4.39 m	(14 ft. 5 in.)	Height	4.39 m	(14 ft. 5 in.)
Wing Area	28.95 m ²		Wing Area	28.95 m ²	
Learjet Model 45 (Learjet 75)			Learjet Model 45 (Learjet 70)		
Span	15.56 m	(51 ft. .5 in.)	Span	15.56 m	(51 ft. .5 in.)
Length	17.77 m	(58 ft. 4 in.)	Length	17.18 m	(56 ft. 5 in.)
Height	4.39 m	(14 ft. 5 in.)	Height	4.39 m	(14 ft. 5 in.)
Wing Area	28.95 m ²		Wing Area	28.95 m ²	

5. Engines

Learjet Model 45 (Learjet 45)

Two Honeywell (AlliedSignal Engines) TFE731-20R or TFE731-20AR or TFE731-20BR-1B turbofan engines, TC E1NM. Eligible part numbers are listed below. Each engine is controlled by a single power lever and by Digital Electronic Engine Control (DEEC) software. Left and right engines must utilize common DEEC part numbers. Engine installation configuration is defined by Learjet Engineering Change Record (ECR) or ModSum as noted below.

Engine Configuration Designation	Model TFE731-()-1B	Engine P/N	DEEC P/N	ECR/Modsum	Engine Configurations* Interchangeable with
A	20R	3060020-8	2118882-1004	4601	A
B	20R	3060020-9	2118882-1004	8711	B
C	20R	3060020-10	2118882-1005	7266	C, J
D	20R	3060020-10	**2118882-1006	7821	D, K
E	20R	3060020-11	#2118882-1007	8778	E, F, G, H, L, M, N, P
F	20R	3060020-12	2118882-1007	***	E, F, G, H, L, M, N, P
G	20R	3060020-13	2118882-1008	****	E, F, G, H, L, M, N, P
H	20R	3060020-14	2118882-1008	****	E, F, G, H, L, M, N, P
Engine Configuration Designation	Model TFE731-()-1B	Engine P/N	DEEC P/N	ECR/Modsum	Engine Configurations* Interchangeable with
J	20AR	3060082-2	2118882-1005	7323	C, J
K	20AR	3060082-2	**2118882-1006	7821	D, K
L	20AR	3060082-3	2118882-1007	8756	E, F, G, H, L, M, N, P
M	20AR	3060082-4	2118882-1007	7944	E, F, G, H, L, M, N, P
N	20AR	3060082-6	2118882-1008	045T020412	E, F, G, H, L, M, N, P
P	20AR	3060082-7	2118882-1008	****	E, F, G, H, L, M, N, P
R	20BR	3060084-1	2118882-1008	7772	R, S
S	20BR	3060084-2	2118882-1008	7772	R, S

- * Listed Engine configurations in each row may be installed single or pairs.
- ** Installed by Service Bulletin SB 45-76-2 only for activation of Thrust Reversers to maximum reverse.
- *** Installed by Honeywell Engine and Systems Service Bulletin SB TFE 731-72-5149 to install Engine Fan Bypass Duct of Composite Material on fielded airplanes. Requires prior or concurrent incorporation of ECR 8778.
- **** Installed by Honeywell Engine and Systems Service Bulletin SB TFE 731-72-5120. Requires prior or concurrent incorporation of ECR 8778 or ECR 7599.
- # Installed by Service Bulletin SB 45-22-4 to incorporate Honeywell Avionics Phase III and -1007 DEEC on fielded airplanes.

Learjet Model 45 (Learjet 40)

Two Honeywell (AlliedSignal Engines) TFE731-20AR or TFE731-20BR-1B turbofan engines, TC E1NM. Eligible part numbers are listed below. Each engine is controlled by a single power lever and by Digital Electronic Engine Control (DEEC) software. Left and right engines must utilize common DEEC part numbers. Engine installation configuration is defined by Learjet Engineering Change Record (ECR) or ModSum as noted below.

Engine Configuration Designation	Model TFE731-()-1B	Engine P/N	DEEC P/N	ECR/Modsum	Engine Configurations* Interchangeable with
L	20AR	3060082-3	2118882-1007	8756	L, M, N, P
M	20AR	3060082-4	2118882-1007	7944	L, M, N, P
N	20AR	3060082-6	2118882-1008	045T020412	L, M, N, P
P	20AR	3060082-7	2118882-1008	****	L, M, N, P
R	20BR	3060084-1	2118882-1008	8266	R
S	20BR	3060084-2	2118882-1008	8266	S

* Listed Engine configurations in each row may be installed single or pairs.

**** Installed by Honeywell Engine and Systems Service Bulletin SB TFE 731-72-5120. Requires prior or concurrent incorporation of ECR 8778 or ECR 7599.

Learjet Model 45 (Learjet 75)

Two Honeywell (Honeywell International Inc.) TFE731-40BR-1B turbofan engines, TC E1NM. Eligible part numbers are listed below. Each engine is controlled by a single power lever and by Digital Electronic Engine Control (DEEC) software. Left and right engines must utilize common DEEC part numbers. Engine installation configuration is defined by the Learjet ModSum and as noted below.

Engine Configuration Designation	Model TFE731-() -1B	Engine P/N	DEEC P/N	ModSum	Engine Configurations Interchangeable with
T	40BR	3062075-1	2118882-8001	045T010267	T

Learjet Model 45 (Learjet 70)

Two Honeywell (Honeywell International Inc.) TFE731-40BR turbofan engines, TC E1NM. Eligible part numbers are listed below. Each engine is controlled by a single power lever and by Digital Electronic Engine Control (DEEC) software. Left and right engines must utilize common DEEC part numbers. Engine installation configuration is defined by the Learjet ModSum and as noted below:

Engine Configuration Designation	Model TFE731-() -1B	Engine P/N	DEEC P/N	ModSum	Engine Configurations Interchangeable with
T	40BR	3062075-1	2118882-8001	045T010267	T

Engine Limits

Static thrust, standard day, sea level:

Learjet Model 45 (Learjet 45)			Learjet Model 45 (Learjet 40)		
APR (5 min) *	16.24 kN	(3650 lb.)	APR (5 min) *	16.24 kN	3650 lbs.
Takeoff (5 min) *	15.57 kN	(3500 lb.)	Takeoff (5 min) *	15.57 kN	3500 lbs.
Max. Continuous	14.01 kN	(3150 lb.)	Max. Continuous	14.01 kN	3150 lbs.
Learjet Model 45 (Learjet 75)			Learjet Model 45 (Learjet 70)		
APR (5 min) *	17.12 kN	(3850 lb.)	APR (5 min) *	17.12 kN	3850 lbs.
Takeoff (5 min) **	17.12 kN	(3850 lb.)	Takeoff (5 min) **	17.12 kN	3850 lbs.
Max. Continuous	14.01 kN	(3150 lb.)	Max. Continuous	14.01 kN	3150 lbs.

*5 Minutes total at Takeoff or above – All Engines Operating

**10 Minutes total at Takeoff or above – One Engine Inoperative

Maximum permissible engine rotor operating speed:

Learjet Model 45 (Learjet 45)		Learjet Model 45 (Learjet 40)	
N ₁ (Fan) steady state	100% N ₁ = 21,000 RPM	N ₁ (Fan) steady state	100% N ₁ = 21,000 RPM
N ₂ (Gas gen.) steady state	100% N ₂ = 31,173 RPM	N ₂ (Gas gen.) steady state	100% N ₂ = 31,173 RPM
N ₂ (Gas gen.) APR	101% N ₂ = 31,485 RPM	N ₂ (Gas gen.) APR	101% N ₂ = 31,485 RPM
N ₁ (Fan)	100.5% N ₁ = 21,105 RPM*	N ₁ (Fan)	100.5% N ₁ = 21,105 RPM*
N ₂ (Gas gen.)	102.5% N ₂ = 31,957 RPM*	N ₂ (Gas gen.)	102.5% N ₂ = 31,957 RPM*
N ₁ (Fan) transient (10 sec.)	103.0% N ₁ = 21,630 RPM	N ₁ (Fan) transient (10 sec.)	103.0% N ₁ = 21,630 RPM
N ₂ (Gas gen.) transient (10 sec.)	104.0% N ₂ = 32,430 RPM	N ₂ (Gas gen.) transient (10 sec.)	104.0% N ₂ = 32,430 RPM
Learjet Model 45 (Learjet 75)		Learjet Model 45 (Learjet 70)	
N ₁ (Fan) steady state	100.1% N ₁ = 21,021 RPM	N ₁ (Fan) steady state	100.1% N ₁ = 21,021 RPM
N ₂ (Gas gen.) steady state	100% N ₂ = 31,485 RPM	N ₂ (Gas gen.) steady state	100% N ₂ = 31,485 RPM
N ₂ (Gas gen.) APR	101% N ₂ = 31,800 RPM	N ₂ (Gas gen.) APR	101% N ₂ = 31,800 RPM
N ₁ (Fan)	100.5% N ₁ = 21,105 RPM*	N ₁ (Fan)	100.5% N ₁ = 21,105 RPM*
N ₂ (Gas gen.)	102.5% N ₂ = 32,277 RPM*	N ₂ (Gas gen.)	102.5% N ₂ = 32,277 RPM*
N ₁ (Fan) transient (10 sec.)	103.0% N ₁ = 21,630 RPM	N ₁ (Fan) transient (10 sec.)	103.0% N ₁ = 21,630 RPM
N ₂ (Gas gen.) transient (10 sec.)	103.0% N ₂ = 32,430 RPM	N ₂ (Gas gen.) transient (10 sec.)	103.0% N ₂ = 32,430 RPM

* Reduce power to bring within steady state limits

Maximum permissible interstage turbine gas temperatures:

Learjet Model 45 (Learjet 45)				
Engine Model (Part Number)	<u>TFE731-20R-1B</u> (P/N:3060020-8 and -9)	<u>TFE731-20R-1B</u> (P/N: 3060020-10) <u>TFE731-20AR-1B</u> (P/N: 3060082-2)	<u>TFE731-20R-1B</u> (P/N: 3060020-11) (P/N: 3060020-12) (P/N: 3060020-13) (P/N: 3060020-14) <u>TFE731-20AR-1B</u> (P/N: 3060082-3) (P/N: 3060082-4) (P/N: 3060082-6) (P/N: 3060082-7)	<u>TFE731-20BR-1B</u> (P/N: 3060084-1) (P/N: 3060084-2)
Takeoff (5 min.)	941°C	941°C	963°C (A/I ON)	991°C
APR (5 min.)	963°C	963°C	941°C (A/I OFF)	1013°C
Max. continuous	916°C	941°C (A/I ON)	963°C	991°C
Maximum Cruise	900°C	916°C (A/I OFF)	941°C (A/I ON)	991°C
Starting:		900°C	916°C (A/I OFF)	974°C
Starter assisted	941°C	941°C	900°C	991°C
Windmill	941°C	941°C	941°C	991°C

Learjet Model 45 (Learjet 40)		
Engine Model (Part Number)	<u>TFE731-20AR-1B</u> (P/N: 3060082-3) (P/N: 3060082-4) (P/N: 3060082-6) (P/N: 3060082-7)	<u>TFE731-20BR-1B</u> (P/N:3060084-1) (P/N:3060084-2)
Takeoff (5 min.)	963°C (A/I ON)	991°C
APR (5 min.)	941°C (A/I OFF)	1013°C
Max. continuous	963°C	
Maximum Cruise	941°C (A/I ON)	991°C
Starting:	916°C (A/I OFF)	
Starter assisted	900°C	974°C
Windmill	941°C	991°C

Learjet Model 45 (Learjet 75)	
Engine Model (Part Number)	<u>TFE731-40BR-1B</u> (P/N: 3062075-1)
Takeoff (5 min.)	1000°C
APR (5 min.)	1022°C
Max. continuous	991°C
Maximum Cruise	974°C
Starting:	
Starter assisted	991°C
Windmill	991°C

Learjet Model 45 (Learjet 70)	
Engine Model (Part Number)	<u>TFE731-40BR-1B</u> (P/N: 3062075-1)
Takeoff (5 min.)	1000°C
APR (5 min.)	1022°C
Max. continuous	991°C
Maximum Cruise	974°C
Starting:	
Starter assisted	991°C
Windmill	991°C

6. Auxiliary Power Unit

Learjet Model 45 (Learjet 45) Honeywell Engines and Systems RE100[LJ] APU (formerly AlliedSignal) APU Limits: The APU is limited to ground operations only, up to field pressure altitudes of 10,000 ft., and must be shut down prior to take-off. See AFM for additional limits.	Learjet Model 45 (Learjet 40) Not Applicable
Learjet Model 45 (Learjet 75) Honeywell Engines and Systems RE100[LJ] APU (formerly AlliedSignal) APU Limits: The APU is limited to ground operations only, up to field pressure altitudes of 10,000 ft., and must be shut down prior to take-off. See AFM for additional limits.	Learjet Model 45 (Learjet 70) Not Applicable

7. Propellers

Not Applicable

8. Fluids (Fuel, Oil, Additives, Hydraulics)

For Approved Fluids see FM-126 (EASA) for Learjet Model 45; FM-132 (EASA) for Learjet Model 45 (Learjet 40); FM-134 (EASA) for Learjet Model 45 (Learjet 75); FM-135 (EASA) for Learjet Model 45 (Learjet 70).

9. Fluid Capacities

Fuel Capacity:

Learjet Model 45 (Learjet 45)		Learjet Model 45 (Learjet 40)		Learjet Model 45 (Learjet 40) (extended range)	
Usable	3424.6l (904.8 U. S. gal.)	Usable	3035.9l (802 U.S. gal.)	Usable	3425.8l (905 U.S.gal.)
Weight	2750 kg. (6,062 lb.)	Weight	2438 kg. (5375 lb.)	Weight	2750 kg. (6062 lb.)
Arm	460 in.	Arm	458 in.	Arm	460 in.
Learjet Model 45 (Learjet 75)		Learjet Model 45 (Learjet 70)			
Usable	3424.6l (904.8 U. S. gal.)	Usable	3425.8l (905 U.S. gal.)		
Weight	2750 kg. (6,062 lb.)	Weight	2750 kg. (6062 lb.)		
Arm	460 in.	Arm	460 in.		

See Note 2 for data on unusable fuel.

Oil Capacity (gal.):

Two engine mounted tanks:
Total 3.8 (1.9 U. S. gal. each) (tank plus fuel system) Arm 519 in.

See Note 2 for data on unusable oil.

10. Airspeed Limits

V_{MO} (Maximum Operating) 330 KIAS Sea Level to 25,000 ft.
 M_{MO} (Maximum Operating) .785 Mach indicated at 25,000 ft. to
.81 Mach indicated at 37,000 ft.
.81 Mach indicated above 37,000 ft.

Learjet Model 45 (Learjet 45)			Learjet Model 45 (Learjet 40)		
V_A (Sea Level)	149 KIAS	5670 kg. (12,500 lb.)	V_A (Sea Level)	149 KIAS	5670 kg. (12,500 lb.)
	178 KIAS	7711 kg. (17,000 lb.)		178 KIAS	7711 kg. (17,000 lb.)
	192 KIAS	8709 kg. (19,200 lb.)		192 KIAS	8709 kg. (19,200 lb.)
	200 KIAS	9299 kg. (20,500 lb.)		199 KIAS	9231 kg. (20,350 lb.)
	206 KIAS	9752 kg. (21,500 lb.)		203 KIAS	9525 kg. (21,000 lb.)
Learjet Model 45 (Learjet 75)			Learjet Model 45 (Learjet 70)		
V_A (Sea Level)	149 KIAS	5670 kg. (12,500 lb.)	V_A (Sea Level)	149 KIAS	5670 kg. (12,500 lb.)
	178 KIAS	7711 kg. (17,000 lb.)		178 KIAS	7711 kg. (17,000 lb.)
	192 KIAS	8709 kg. (19,200 lb.)		192 KIAS	8709 kg. (19,200 lb.)
	200 KIAS	9299 kg. (20,500 lb.)		200 KIAS	9299 kg. (20,500 lb.)
	206 KIAS	9752 kg. (21,500 lb.)		206 KIAS	9752 kg. (21,500 lb.)

See AFM for V_A variations with weight, altitude, aircraft serial numbers, and modifications.

V_B (Speed for maximum gust intensity) 250 KIAS

V_{FE} (Flaps extended)
Flaps 8° 250 KIAS
Flaps 20° 200 KIAS
Ldg. Position - Full Flaps (40°) 150 KIAS

Learjet Model 45 (Learjet 45)	Learjet Model 45 (Learjet 40)
V _{MCA} (Minimum control speed) Air	V _{MCA} (Minimum control speed) Air
Flaps 8° 103 KIAS	Flaps 8° 103 KIAS
Flaps 20° 100 KIAS	Flaps 20° 100 KIAS
Learjet Model 45 (Learjet 75)	Learjet Model 45 (Learjet 70)
V _{MCA} (Minimum control speed) Air	V _{MCA} (Minimum control speed) Air
Flaps 8° 107 KIAS	Flaps 8° 107 KIAS
Flaps 20° 107 KIAS	Flaps 20° 107 KIAS

Learjet Model 45 (Learjet 45)	Learjet Model 45 (Learjet 40)
V _{MCG} (Minimum control speed) Ground	V _{MCG} (Minimum control speed) Ground
Rudder Boost On, 103 KIAS	Rudder Boost On, 103 KIAS
APR On	APR On
(Minimum control speed) Ground	(Minimum control speed) Ground
Rudder Boost On, 100 KIAS	Rudder Boost On, 100 KIAS
APR Off	APR Off
Learjet Model 45 (Learjet 75)	Learjet Model 45 (Learjet 70)
V _{MCG} (Minimum control speed) Ground	V _{MCG} (Minimum control speed) Ground
Rudder Boost On, 105 KIAS	Rudder Boost On, 105 KIAS
APR On	APR On
(Minimum control speed) Ground	(Minimum control speed) Ground
Rudder Boost On, 105 KIAS	Rudder Boost On, 105 KIAS
APR Off	APR Off

Learjet Model 45 (Learjet 45)	Learjet Model 45 (Learjet 40)
V _{MCL} (Minimum control speed) Landing	V _{MCL} (Minimum control speed) Landing
Flaps 20° 105 KIAS	Flaps 20° 105 KIAS
Flaps 40° 97 KIAS	Flaps 40° 97 KIAS
Learjet Model 45 (Learjet 75)	Learjet Model 45 (Learjet 70)
V _{MCL} (Minimum control speed) Landing	V _{MCL} (Minimum control speed) Landing
Flaps 8° 110 KIAS	Flaps 8° 110 KIAS
Flaps 40° 102 KIAS	Flaps 40° 102 KIAS

V_{LO} (Landing gear operating) 200 KIAS

V_{LE} (Landing gear extended) 260 KIAS

Maximum tyre ground speeds:

Nose Gear Tyre 210 MPH
Main Gear Tyre 190 MPH

11. Flight Envelope

See approved Airplane Flight Manual,

12. Operating Limitations

Approved Operations

Eligible for the following kinds of operations when the appropriate equipment and instruments required by the operating requirements are installed, approved and in operable condition:

- VFR (Visual)
- IFR (Instrument)
- Day
- Night
- Icing

Learjet have elected not to comply with JAR Part 25 provisions for:

- 25.801 Ditching

Other Limitations

- Maximum Operating Altitude: 51,000 ft.

13. Maximum Certified Masses

	Learjet Model 45 (Learjet 45)	Learjet Model 45 (Learjet 45) Modified by SB 45-11-4	Learjet Model 45 (Learjet 45) Modified by SB 45-11-5
Taxi and ramp	9412 kg. (20,750 lb.)	9865 kg. (21,750 lbs.)	9412 kg. (20,750 lb.)
Takeoff	9299 kg. (20,500 lb.)	9752 kg. (21,500 lbs.)	9299 kg. (20,500 lb.)
Landing	8709 kg. (19,200 lb.)	8709 kg. (19,200 lbs.)	8709 kg. (19,200 lb.)
Zero fuel	7257 kg. (16,000 lb.)	7257 kg. (16,000 lbs.)	7484 kg. (16,500 lb.)

	Learjet Model 45 (Learjet 40) Not Modified by SB 40-11-1	Learjet Model 45 (Learjet 40) Modified by SB 40-11-1
Taxi and ramp	9344 kg. (20,600 lb.)	9639 kg. (21,250 lb.)
Takeoff	9231 kg. (20,350 lb.)	9525 kg. (21,000 lb.)
Landing	8709 kg. (19,200 lb.)	8709 kg. (19,200 lb.)
Zero fuel	7257 kg. (16,000 lb.)	7257 kg. (16,000 lb.)

	Learjet Model 45 (Learjet 75) not Modified by SB 75-11-01	Learjet Model 45 (Learjet 75) Modified by SB 75-11-01	Learjet Model 45 (Learjet 70)
Taxi and ramp	9865 kg. (21,750 lb.)	9865 kg. (21,750 lb.)	9865 kg. (21,750 lbs.)
Takeoff	9752 kg. (21,500 lb.)	9752 kg. (21,500 lb.)	9752 kg. (21,500 lbs.)
Landing	8709 kg. (19,200 lb.)	8709 kg. (19,200 lb.)	8709 kg. (19,200 lbs.)
Zero fuel	7257 kg. (16,000 lb.)	7484 kg. (16,500 lb.)	7257 kg. (16,000 lbs.)

See AFM, maximum weights vary with serial numbers and modifications.

14. Centre of Gravity Range

See approved Aircraft Flight Manual

15. Datum

Learjet Model 45 (Learjet 45)	Learjet Model 45 (Learjet 40)	Learjet Model 45 (Learjet 75)	Learjet Model 45 (Learjet 70)
FS - 75.05 (75.05 inches in front of nose)	99.56 (99.56 inches in front of nose)	FS - 75.05 (75.05 inches in front of nose)	99.56 (99.56 inches in front of nose)

16. Mean Aerodynamic Chord (MAC)

87.215 inches (L.E. of MAC at FS 413.77)

17. Levelling Means

Lateral and longitudinal levelling marks are provided at FS 613.768. See Maintenance Manual or LES 1427 for levelling instructions.

18. Minimum Flight Crew

2

19. Minimum Cabin Crew

(in accordance with the emergency evacuation test)

0

20. Maximum Seating Capacity

9 (See Note 1)

Emergency Exits:	No.	Type	Size
R/H	1	III	.508 x .914 metres (20 x 36 in.)
L/H	1	III	.762 x .914 metres (30 x 36 in.)

21. Baggage/ Cargo Compartment

Class	Volume	Max. Allowable Load
D	1.45 m ³ (51.2 ft ³)	226.8 kg. (500 lb.)

22. Wheels and Tyres

Tyre	Size (in.)
Single (Dual Chine) Nose Wheel and Tyre	18 x 4.4 - 10 ply
Dual Main Wheels and Tyres (L/H & R/H)	22 x 5.75 - 12 ply

23. ETOPS

Not Applicable

IV. Operating and Service Instructions

1. Airplane Flight Manual (AFM)

Airplane Flight Manual, Document No.
FM-126 (EASA) for Learjet Model 45 (Learjet 45);
FM-132 (EASA) for Learjet Model 45 (Learjet 40);
FM-134 (EASA) for Learjet Model 45 (Learjet 75);
FM-135 (EASA) for Learjet Model 45 (Learjet 70).

2. Instructions for Continued Airworthiness and Airworthiness Limitations

Maintenance Manual, Document No.
MM-104 and JAA Supplement MM-104-JAA for Learjet Model 45;
MM-105 and EASA Supplement MM-105-EASA for Learjet Model 45 (Learjet 40);
MM-106 for Learjet Model 45 (Learjet 70); MM-107 for Learjet Model 45 (Learjet 75).

3. Weight and Balance Manual (WBM)

Not Applicable – Included in the Flight Manuals

4. Operational Suitability Data – OSD

Minimum Master Equipment List (MMEL) – OSD Learjet Model 45 (Learjet 70/75)

Flight Crew – EASA Operational Suitability Data (OSD), revision 2, dated 6th October 2014

V. Notes

Note 1: Customized Cabin Interior and Seating Configurations must be approved.

Note 2: The current weight and balance report, loading instructions (when necessary), and a list of equipment included in the certificated empty weight must be provided for each aeroplane at the time of original airworthiness certification.

The certified empty weight and corresponding centre of gravity location must include:

	<u>Weight</u>		<u>Arm</u>
Hydraulic Fluid	9.75 kg.	(21.5 lb.)	473 in.
Unusable Fuel	42.23 kg.	(93.1 lb.)	427 in.
Trapped Fuel	6.35 kg.	(14.0 lb.)	425 in.
Engine Trapped Oil	1.82 kg.	(4.0 lb.)	520 in.
Engine Drainable Oil	4.85 kg.	(10.7 lb.)	520 in.

Note 3: EASA Approved Airplane Flight Manual: The aeroplane must be operated according to the appropriate Approved Airplane Flight Manual. Required

placards are included in the Maintenance Manual, part number MM-104 for the Learjet Model 45, MM-105 for the Learjet Model 45 (Learjet 40), MM-106 for the Learjet Model 45 (Learjet 70) and MM-107 for the Learjet Model 45 (Learjet 75) (latest approved revision), Chapter 11, Placards and Markings.

- Note 4: JAA/EASA Approved Airworthiness limitations for mandatory compliance retirement life or inspection are included in the Maintenance Manual (Instructions for Continued Airworthiness), Chapter 4, and in JAA Supplement MM-104–JAA for the Learjet Model 45 and EASA Supplement MM-105-EASA for the Learjet Model 45 (Learjet 40), MM-106-EASA for the Learjet Model 45 (Learjet 70) and MM-107-EASA for the Learjet Model 45 (Learjet 75).
- Note 5: Certification Maintenance Requirements (CMR) are found in Maintenance Manual MM-104, Chapter 4, for the Learjet Model 45 and Maintenance Manual MM-105, Chapter 4, for the Learjet Model 45 (Learjet 40). Engineering approval of the CMR is documented in Learjet Report 45-D1503.
- Certification Maintenance Requirements (CMR) are found in Maintenance Manual MM-106, Chapter 4, for the Learjet Model 45 (Learjet 75) and Maintenance Manual MM-107, Chapter 4, for the Learjet Model 45 (Learjet 70). Engineering approval of the CMR is documented in Learjet Reports 45-D1503 and 45-D2194.
- Note 6: Moment Arm values are quoted in inches and have not been converted to Metric, as the Aircraft Datum is derived from inches.
- Note 7: The approved minimum aisle width below 25 inches from the floor is (9.0) inches in accordance with 14 CFR 25.815. Approval of the minimum aisle width is documented in Learjet Report ER-221 (Rev B) - page 31, Section 6-10. The approved Type Design aisle width above 25 inches includes an intrusion due to the padding on the seat-backs as defined by Learjet Dwg. No. 4525203000, "Upholstery Assy, Passenger Seat", for aircraft 45-002 through 45-231. For aircraft 45-232 through 45-367 and 45-369 through 45-445 and 45-447 through 45-455 and 45-2001 through 45-2128, refer to Learjet Dwg No. M6613100. For floorplan 45-7 (LJ40 Configuration) refer to Learjet Engineering Report 45-D2005 approved under Modsum 045T022329. For floorplan FP45-3B refer to Learjet Engineering Report 45-D2215 approved under Modsum 045T023617. For floorplan 45-5A refer to Learjet Engineering report 45-D-2253 approved under Modsum 045T023630. Any modifications to the interior that changes the seats, aisle width, or layout shall be approved by EASA
- Note 8: High Altitude Operation Special Conditions were found acceptable with a fuselage opening of 1.9 sq. in. Any installations such as antenna, additional window or doors, changes to the environmental control system, etc. shall not exceed this opening size unless approved by EASA. Engineering Approval is documented in Learjet Report 45-D1185, Paragraph 3.16, for the Learjet 45/75 (Model 45 S/N 45-002 through 45-2000) or Learjet Report 45-D1184, Appendix G, for the Learjet 40/70 (Model 45 S/N 45-2001 through 45-4000).
- Note 9: The Learjet 45, Learjet Model 45 (Learjet 40), Learjet Model 45 (Learjet 70) and Learjet Model 45 (Learjet 75) have been shown to meet the airworthiness requirements for operations in Reduced Vertical Separation Minimum (RVSM)

airspace between 29,000 and 41,000 feet. No Service Bulletin is associated with this requirement. All serial numbers are eligible. Airworthiness approval is documented in FAA approved ECR 7539 (for Learjet Model 45 and Learjet Model 45 (Learjet 70) or ModSum 045T023846 (for Learjet Model 45 (Learjet 70) and Learjet Model 45 (Learjet 75) and Learjet Compliance Report 45-D1665, RVSM Compliance and Data Analysis, M45.

Note 10: The certification designation is Learjet Model 45 (ref. FAA TC T00008WI). References throughout the data sheet to

- Learjet Model 45 (Learjet 45)
- Learjet Model 45 (Learjet 40)
- Learjet Model 45 (Learjet 75)
- Learjet Model 45 (Learjet 70)

should be considered a commercial designations, which identifies a specific configuration of the Learjet Model 45 aircraft.

The Commercial designation Learjet 70/75 is including the following additional EASA approvals:

- Avionics Upgrade – Learjet 70/75 (EASA approval 10050348)
- Interiors Upgrade – Learjet 70/75 (EASA approval 10050349)
- Engine Upgrade – Learjet 70/75 (EASA Approval 10050350)
- Winglet Upgrade – Learjet 70/75 (EASA Approval 10050351)
- 40 Cubic Foot Oxygen Cylinder – Learjet 70/75 (EASA Approval 10050352)
- Aircell Swift Broadband with UCS – Learjet 70/75 (EASA Approval 10050354)
- Learjet 45 RVSM Group Approval – Learjet 70/75 (EASA Approval 10050355) Model 45 Incorporation of G5000 Flight data recorder, CPDLC/COM3 and Connex Weather– Learjet 70/75 (EASA Approval 10050356)

Note 11: The Learjet Model 45 (Learjet 45) represents the serial numbers 45-002 thru 45-455.

The Learjet Model 45 (Learjet 40) represents the serial numbers 45-2001 thru 45-2133.

The Learjet Model 45 (Learjet 75) represents the serial numbers 45-456 through 45-2000.

The Learjet Model 45 (Learjet 70) represents the serial numbers 45-2134 through 45-4000.

Note 12: EASA Certification Basis: In addition the following regulations at the Initial Issue, dated 17 December 2013 for CPDLC apply:

CS ACNS.B.VCS.010	CS ACNS.B.VCS.020	CS ACNS.B.VCS.025
CS ACNS.B.VCS.030	CS ACNS.B.VCS.040	CS ACNS.B.DLS.B1.005
CS ACNS.B.DLS.B1.010	CS ACNS.B.DLS.B1.020	CS ACNS.B.DLS.B1.025
CS ACNS.B.DLS.B1.030	CS ACNS.DLS.B1.035	CS ACNS.B.DLS.B1.040
CS ACNS.B.DLS.B1.050	CS ACNS.B.DLS.B1.055	CS ACNS.DLS.B1.060
CS ACNS.B.DLS.B1.070	CS ACNS.B.DLS.B1.075	CS ACNS.B.DLS.B1.080
CS ACNS.B.DLS.B1.085	CS ACNS.B.DLS.B1.090	CS ACNS.B.DLS.B1.095
CS ACNS.B.DLS.B1.100	CS ACNS.B.DLS.B1.105	CS ACNS.B.DLS.B1.110
CS ACNS.B.DLS.B1.115	CS ACNS.B.DLS.B1.120	CS ACNS.B.DLS.B1.125

SECTION: ADMINISTRATIVE

I Acronyms and Abbreviations

APU:	Auxiliary Power Unit
APR:	Automatic Performance Reserve
AWO:	All Weather Operation
CRI:	Certification Review Item
CS:	Certification Specification
EASA:	European Aviation Safety Agency
ESF:	Equivalent Safety Finding
FAA:	Federal Aviation Administration
ICAO:	International Civil Aviation Organization
JAR:	Joint Aviation Requirement
MMEL:	Master Minimum Equipment List
MEL:	Minimum Equipment List
NPA:	Notice of Proposed Amendment
OSD:	Operational Suitability Data
INT/POL:	JAA Interim Policy
RVSM:	Reduced Vertical Separation Minima
SB:	Service Bulletin
SC:	Special Condition
S/N:	Serial Number
TCDS:	Type Certificate Data Sheet
TCDSN:	Type Certificate Data Sheet for Noise

II. Type Certificate Holder Record

Not applicable

III. Change Record

Issue	Date	Changes	TC issue
Issue 12	12 September 2014	Introducing Commercial Designation Learjet 70/75 and updated template.	N/A
Issue 13	20 October 2014	Introducing OSD Flight Crew	N/A
Issue 14	09 December 2015	Updated format	N/A
Issue 15	15 September 2016	Paragraph: Maximum permissible engine rotor operating speed. N ₁ (Fan) steady state for LJ75/70 updated	N/A

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