



GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT

TYPE CERTIFICATE

No. : 7-12/94-RD-TC-1

*This certificate, issued to National Aerospace Laboratories (NAL), Bangalore,
certifies that the aircraft*

HANSA-3

*the Technical Certificate and operating limitations for which are contained in
Technical Certificate No. 7-12/94-RD-1, dated the 1st February, 2000, is of
proper design, material, specification, construction and performance for safe
operation and meets the minimum standards, rules and regulations prescribed
by the Director General of Civil Aviation, under the FAR-23, amendment 23-42
using the requirements of JAR-VLA dated 26th April 1990, including
amendment VLA/92/1.*

This certificate is of indefinite duration unless cancelled, suspended or revoked.

Date: February 1, 2000

(B.K.JOSHI)

Deputy Director General of Civil Aviation
for Director General of Civil Aviation

Any unauthorised alteration of this certificate will invalidate it

**TECHNICAL CERTIFICATE FOR
HANSA-3
ALL-COMPOSITE TRAINING AIRCRAFT**

No.: 7-12/94-RD-1

A. FULL NAME AND ADDRESS OF OWNING ORGANISATION

- | | | |
|------------|---|---|
| 1. Name | : | Director
National Aerospace Laboratories |
| 2. Address | : | National Aerospace Laboratories
P.B.No.1779, Bangalore - 560 017 |

B. NAME OF CONSTRUCTOR

- | | | |
|---------|---|---|
| 3. Name | : | Director
National Aerospace Laboratories
P.B.No.1779, Bangalore - 560 017 |
|---------|---|---|

C. DESCRIPTION OF AIRCRAFT

- | | | |
|-----------------------------------|---|--|
| 4. Name | : | HANSA-3 Prototype III
(Reg. No. : VT-HNS) |
| 5. Type | : | Two-seater
Normal category
Trainer cum personal aircraft |
| 6. Constructor's Sr. No. & Model | : | No. 003 & HANSA-3 Prototype-III |
| 6.(a) Sl. Nos. Eligible | : | 003 and up. |
| 7. Place and date of construction | : | National Aerospace Laboratories
P.B.No.1779, Bangalore - 560 017
November 1999 |
| 8. Category | : | Normal category |

9. Certification Basis

:

a) **FAR-23 (Amendment 23-42)**

Paras 23.867, 23.954, 23.1309, 23.1321, 23.1351, 23.1357, 23.1381, 23.1383, 23.1385, 23.1387, 23.1389, 23.1395, 23.1401, 23.1431, 23.1525, 23.1555, and 23.1559.

b) **JAR-VLA (Amendment VLA/92/1)**

c) **CAR**

Section '2', Series 'O', part III and Series 'T', Part II. #

d) **ICAO Annex 16**

e) **DGCA letter**

No. 7-12/94 RD, dated: 09-08-1999

10. Maximum number of persons to be : Two
carried (Including crew)

. LEADING DIMENSIONS OF AIRCRAFT

11. Wing span : 10.47 m
12. Overall length : 7.658 m
13. Height (at fin level attitude) : 2.614 m

. POWER PLANT

14. Number of engines : One
15. Make : Bombardier Rotax 914 F3
16. Engine limits
(1) Max. continuous power : 100 BHP @ 5500 rpm
(Propeller rpm 2265)
Engine max. power : 115% @ 5800 rpm (5 min)
(Propeller rpm 2385)

CAR, Section '2', Series 'T', part II specifies the exemption of the requirement of heating of pitot tube.

- (2) Idle RPM : 1400 rpm (Propeller rpm 580)
 - (3) Manifold pressure : 38.4in Hg at 115% power (max. 5 min)
 - (4) Acceleration : Max. 5 secs. at -0.5g
-
- 17. Type certificate number : (i) Austro control, Austria :
Nr. TW10-ACG dated 15 May 1996
(ii) LBA, Germany :
Nr. 4592 dated 5 September 1996
(iii) FAA, USA : No. E00058NE
dated 4 December 1998
 - 18. Rating, full throttle at sea level pressure altitude : 100 BHP, Max. continuous @ 5500 RPM
(Propeller rpm 2265)
115 BHP @ 5800 rpm (Propeller rpm 2385) contingency power for max. 5 min.
 - 19. Fuel grade : AV Gas 100 LL
 - 20. Oil specification : Castrol Syntron, non-detergent, fully synthetic engine oil
 - 21. Coolant : SERVOKOOL
 - 22. Max. CHT : 135°C
Max. Oil Temp. : Max. 130°C
Min. 50°C
Max. Oil pressure : 7 bar
Permitted at engine start for short period : Min. oil pressure 1.5 bar
(Min. oil pr. 0.8 bar at high oil temp.)
Normal 1.5 to 5 bar

F. PROPELLER AND PROPELLER LIMITS

- 23. Type : Hoffmann make
HO-V 352F() 170 FQ+3
Max. propeller RPM never exceed
2700 RPM

G. WEIGHTS

- 24. Max. total weight authorised : 750 Kg
- 25. Empty weight : 550 Kg (typical)

H. FUEL AND OIL CAPACITY

- | | | |
|-------------------|---|-------------|
| 26. Fuel capacity | : | 91.5 litres |
| 27. Unusable fuel | : | 6.5 litres |
| 28. Oil capacity | : | 3.0 litres |

I. CONTROL SURFACE MOVEMENT

- | | | |
|-----------------------|---|---|
| 29. Rudder | : | 30° left, 30° right; $\pm 2^\circ$ |
| 30. Elevator | : | 30° up, 25° down; $\pm 2^\circ$ |
| 31. Aileron | : | 20° up, 20° down; $\pm 2^\circ$ |
| 32. Elevator trim tab | : | 22° up, 33° down; $\pm 2^\circ$ |
| 33. Wing flaps | : | 20° for landing $\pm 1^\circ$
20° for take-off $\pm 1^\circ$ |

J. CG RANGE

- | | | |
|--------------------------|---|-----------------------------------|
| 34. Permissible CG range | | |
| i) Forward limit | : | 21.94 % of MAC aft of wing MAC LE |
| ii) Aft. limit | : | 27.47 % of MAC aft of wing MAC LE |

- | | | |
|---------------------------|---|--|
| K. LEVELLING MEANS | : | With levelling board located through pins at FS 800 and FS 1400 longitudinally, and at bulkhead at FS 2100 laterally |
|---------------------------|---|--|

- | | | |
|--------------------|---|---------------------------------|
| L. WING MAC | : | 1211 mm; Leading edge at FS 789 |
|--------------------|---|---------------------------------|

- | | | |
|-----------------------------------|---|-------------|
| M. MAX. OPERATING ALTITUDE | : | 10,000 feet |
|-----------------------------------|---|-------------|

- | | | |
|----------------------------------|---|---|
| N. OPERATING TEMP. LIMITS | : | Refer Environmental Envelope contained in DGCA approved Aircraft Flight Manual. |
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O. PERMISSIBLE MANOEUVRES

- | | | |
|------------------------------------|---|-------------------------|
| 35. Manoeuvre | : | Recommended entry speed |
| a) Lazy eights | : | 100 KIAS |
| b) Chandelles (except whip stalls) | : | 110 KIAS |

- c) Stalls : 65 KIAS (clean), 60 KIAS (20° flap)
- d) Steep turns : 90 KIAS
(upto bank angle 60°)

P. AIRSPEED LIMITATIONS

- 36 Power-off
 - a) Stalling speed, flaps retracted : 49 KIAS
 - b) Stalling speed, flaps 20° : 47 KIAS
- 37. Never exceed speed : 120 KIAS
- 38. Manoeuvring speed : 86 KIAS **
- 39. Max. structural cruising speed : 96 KIAS
- 40. Max. speed with flaps
deflected at 20° : 72 KIAS

Q. ADDITIONAL CONDITIONS : As per Appendix 1

R. REMARKS

Type-Certificate is issued to HANSA-3 aircraft based on the compliance demonstrated by NAL with FAR-23 requirements using JAR-VLA, scrutiny of aerodynamic load, structural analysis and static strength test reports, ground and flight handling characteristics and performance of the prototype aircraft as established through flight tests.

S. VALIDITY OF CERTIFICATE : This certificate is of indefinite duration unless cancelled, suspended or revoked.

Date : February 1, 2000



(N.S.Munday)
Director (R&D)

for Director General of Civil Aviation

** Abrupt control movements above this speed are prohibited.

APPENDIX - 1

ADDITIONAL CONDITIONS AND OPERATING LIMITATIONS

1. Max. negative load factor : 0.5g for a max. of 5sec. limited as per operator's manual for ROTAX 914F3 engine
2. All aerobatic manoeuvres including intentional spins are prohibited.
3. Flights in gusty weather, inside cloud and under known and anticipated icing conditions are prohibited.
4. Notes and warnings as given in Aircraft Flight Manual must be adhered to.
5. Any other conditions and limitations imposed by the DGCA considering the safety aspects must be adhered to.