UNITED KINGDOM
CIVIL AVIATION AUTHORITY

FR22
Issue 6
March 2003
MD Helicopters Inc. (MDHI)
MD900 Explorer

TYPE CERTIFICATE DATA SHEET NO. FR22

This data sheet which is part of CAA Type Certificate No.FR22, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Civil Aviation Authority.

TYPE CERTIFICATE HOLDER:
MD Helicopters Inc (MDHI)
Building. M615/G048
4555 E McDowell Road
Mesa, AZ 85215-9797
USA

MANUFACTURER:
MD Helicopters Inc (MDHI)
Building. M615/G048
4555 E McDowell Road
Mesa, AZ 85215-9797
USA

AIRCRAFT TYPE/DESIGNATION: MD900 Explorer

VARIANT DESIGNATIONS: -

The CAA Type Certification has been granted on the basis of a recommendation from the Joint Aviation Authorities (JAA) following an investigation carried out in accordance with the JAA Joint Certification Procedures. Accordingly, the attached JAA Data Sheet No. JAA/27/96-001 Issue 7 dated 6 March 2003 has been accepted by the CAA for the MD900 Explorer.

- END -

JAA Data Sheet

JAA/27/96-001
Issue 7
6th March 2003

JOINT AVIATION AUTHORITIES
JAA DATA SHEET FOR NATIONAL TYPE CERTIFICATES
MDHS MD900 EXPLORER

This JAA Type Certificate Data Sheet can be used by each JAA Airworthiness Authority directly either as written or as the basis for use in compiling their own TCDS as appropriate. This prescribes the conditions and limitations under which the JAA Type Certification airworthiness requirements have been met.

Type Certificate Holder: MD Helicopters, Inc. (MDHI)
Bldg. M615
4555 E. McDowell Rd.
Mesa, AZ 85215-9734
USA

Phone: (480) 346-6231, datafax 6810

Type Certificate Ownership Record: McDonnell Douglas Helicopter Systems transferred ownership of FAA TC H19NM to MD Helicopters Inc. on 18 February 1999. Similarly this JAA TCDS JAA/27/96-001 reflects the change of ownership with effect from Issue 4, dated 2 March 1999.

1. MODEL MD-900 EXPLORER

Approved 25 June 1996
(See NOTES Section)

Engines

Two (2) Pratt and Whitney, PW206A or
Two (2) Pratt and Whitney, PW206E or
Two (2) Pratt and Whitney, PW207E.

Fuel

Type	Specification				
	USA	CANADA	UK	FRANCE	CHINA
Turbine Fuel					(RP-3)
JET A, A-1	ASTM D1655	CGSB3.23-M86	DERD 2453	AIR 3405D	GB6537-94
JP8	MIL-T-83133	"	"	"	

WIDE CUT JET B, JP4	ASTM D1655 MIL-T-5624	CGSD3.22-M86 "	DERD 2454 "	AIR 2407B "
High Flash JP5	MIL-T-5624	3.GP-24Ma	DERD 2452	AIR 3404C

Fuel Additives

Anti-icing additive required below 13°F (-10°C)
(Refer to Pratt & Whitney Canada Installation Manual Turboshaft Engine PW206A, PW206E or PW207E for approved fuel additives and specifications).

Engine Oil

Engine oil conforming to MIL-I-23699 are authorised for use. See Pratt and Whitney Canada Installation Manual Turboshaft Engine PW206A (latest revision), PW206E (latest revision) or PW207E (latest revision) for approved oil manufacturers.

Engine/Transmission Limits

Values of torque, measured gas temperatures (MGT) and gas generator speeds (NG) correspond to qualified aircraft operating limits.

PRATT and WHITNEY PW 206A (See Note 8)

All Engines Operating:

Take Off (5 Min)

Maximum Torque	(ft. lb.)	438	(100%)
Maximum MGT	(C)	863°	
Maximum N_G	(R.P.M.)	57,250	(98.7%)
Power Turbine Reference	(R.P.M.)	6,000	(100%)
Output Shaft Speed	(R.P.M.)	6,240	(104%)*

Maximum Continuous Power (MCP)

Maximum Torque	(ft. lb.)	438	(100%)
Maximum MGT	(C)	820°	
Maximum N_G	(R.P.M.)	57,250	(98.7%)
Power Turbine Reference	(R.P.M.)	6,000	(100%)
Output Shaft Speed	(R.P.M.)	6,240	(104%)*

One Engine Inoperative (OEI):
2 ½ Minute
OEI Power

Maximum Torque	(ft. lb.)	569	(130%)
Maximum MGT	(C)	902°	
Maximum N_G	(R.P.M.)	58,600	(101%)
Power Turbine Reference	(R.P.M.)	6,000	(100%)
Output Shaft Speed	(R.P.M.)	6,240	(104%)*

Continuous
OEI Power

Maximum Torque	(ft. lb.)	438	(100%)
Maximum MGT	(C)	863°	
Maximum N_G	(R.P.M.)	57,250	(98.7%)
Power Turbine Reference	(R.P.M.)	6,000	(100%)
Output Shaft Speed	(R.P.M.)	6,240	(104%)*

*Normal Operation at 104% N_P/N_R is limited to flight at 47 KIAS or less. Continuous Operation at 104% N_P/N_R is limited to flight at 100 KIAS or less.

PRATT and WHITNEY PW 206E (See Note 8)

All Engines Operating:

Take Off (5 Min)

Maximum Torque	(ft. lb.)	482	(110%)
Maximum MGT	(C)	863°	
Maximum N_G	(R.P.M.)	57,250	(98.7%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

Maximum Continuous
Power (MCP)

Maximum Torque	(ft. lb.)	438	(100%)
Maximum MGT	(C)	820°	
Maximum N_G	(R.P.M.)	56,500	(97.4%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

One Engine Inoperative (OEI):
2 ½ Minute
OEI Power

Maximum Torque	(ft. lb.)	569	(130%)
Maximum MGT	(C)	930°	
Maximum N_G	(R.P.M.)	59,400	(102.4%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

Continuous
OEI Power

Maximum Torque	(ft. lb.)	544	(124%)
Maximum MGT	(C)	885°	
Maximum NG	(R.P.M.)	58,250	(100.4%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

PRATT and WHITNEY PW 207E (See Note 8)

All Engines Operating:

Take Off (5 Min)

Maximum Torque	(ft. lb.)	482	(110%)
Maximum MGT	(C)	900°	
Maximum N_G	(R.P.M.)	57,900	(99.8%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

Maximum Continuous
Power (MCP)

Maximum Torque	(ft. lb.)	438	(100%)
Maximum MGT	(C)	850°	
Maximum N_G	(R.P.M.)	56,400	(97.2%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

One Engine Inoperative (OEI):
2 ½ Minute
OEI Power

Maximum Torque	(ft. lb.)	591	(135%)
Maximum MGT	(C)	970°	
Maximum N_G	(R.P.M.)	59,750	(103.0%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

Continuous
OEI Power

Maximum Torque	(ft. lb.)	544	(124%)
Maximum MGT	(C)	900°	
Maximum NG	(R.P.M.)	57,900	(99.8%)
Power Turbine Reference (Output Shaft Speed)	(R.P.M.)	6,000	(100%)

902 Configuration (Normal Category Helicopter) Approved 24 August 1998

(The 902 Configuration is an enhanced model MD900 approved for Category A Operations)

With the following hardware changes:

1. Modification of the fuel system
2. Increase engine and transmission power levels
3. With resulting IIDS configuration change
4. NOTAR fan tip seal
5. NACA-duct engine inlets
6. Modified mechanical engine controls
7. Engines - two (2) Pratt and Whitney, PW206E or PW207E.

Note: These hardware changes are also available for retrofit to earlier model MD900s.

Following parameters apply to all MD900 Serial Numbers

Rotor Limits

Power Off	**Power On**
Maximum 424 r.p.m.	Maximum 396 r.p.m.**
(Tach reading 108%)	(Tach reading 101%)
Minimum 345 r.p.m.	Minimum 388 r.p.m.
(Tach reading 88%)	(Tach reading 99%)

** Serial number 900-00051 and prior, 408 rpm (tachometer reading 104%) when operating at 100 KIAS or less.

Rotor Torque Limits

Torque - 12,393 ft. lb. at 392 r.p.m. (100%).

Hydraulic Fluid

Hydraulic fluids conforming to Mil-H-83282 are authorised for use.

Airspeed Limits IAS

Vne (Never Exceed) (power on) 150 knots, Sea Level to 5,500 feet density altitude. Decrease Vne by 4 knots per 1,000 feet DA above 5,500 feet.

Vne (power off)100 knots Sea Level to 5,500 feet density altitude. Decrease Vne by 4 knots per 1,000 feet DA above 5,500 feet.

N.B. See RFM for decrease of Vne (power on) due to cold temperatures.

Maximum Mass (Weight)

Maximum Internal Mass (Weight)	2835 kg.	6,250 lb.

Outside Air Temp. Limits

-36°C to +52°C	(- 32.8° F to +125.6° F)
(OAT at Sea Level)	See RFM for variation at altitude.

Engine Cold Start Limit

-36°C (-32.8°F)

Fluid Capacity

		Litres	Imp. Gals	US Gals
Fuel	Usable	553.4	121.7	146.2
	Unusable	10.6	2.3	2.8
	Total	564.0	124.0	149.0
Main Transmission Oil	Total	9.46	2.08	2.5
Hydraulic Fluid	System 1 Total	0.95	0.21	0.25
	System 2 Total	1.14	0.25	0.30
	Rotor Brake Total	0.11	0.025	0.03
Engine Oil (per engine)	Total	5.12	1.12	1.34

Rotor Blade & Control Movement

For rigging information, refer to the appropriate Model MD-900 Series Maintenance Manual.

Serial Numbers Eligible

MD900 S/N 900-00008, 900-00010 to 900-00051

MD900 (902 Configuration) S/N 900-00052 and subsequent

Production Basis

Production Certificate No. 410NM was utilised up to and including 18th February 1999 (serial number 900-00065).

Effective from 18th February 1999 the Type Certificate (TC) No. H19NM was transferred to MD Helicopters Inc. (MDHI). The new TC holder, MDHI, has licensed back the rights of the TC to McDonnell Douglas Helicopter Company (MDHC) who will continue to build the MD900 helicopter under a new Production Certificate No. 714NM.

Effective from 19th February 1999 serial number helicopters 900-00066 and subsequent will be built under PC 714NM.

On 5th November 1999 MD Helicopters, Inc. received Production Certificate PC 715NM under which it was authorized to manufacture the MD900 helicopter. Effective 5th November 1999 serial number helicopters 900-00068 and subsequent are built under PC 715NM.

Required Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the helicopter for certification. In addition, the following items of equipment are required:

(1) Flight Manual as listed in Approved Publications.

Approved Publications

Approved Flight Manuals with latest JAA accepted FAA approved revision.

i) CSP-900RFM206A-1 MD900 with PW206A engine
ii) CSP-900RFM206E-1 MD900 with PW206E engine
iii) CSP-902RFM206E-1 MD900 (902 Configuration with PW206E Engine) Category A Operations
iv) CSP-902RFM207E-1 MD900 (902 Configuration with PW207E Engine) Category A Operations

Airworthiness Limitation Section (ALS) Section 04-00-00 of the Model MD-900 Maintenance Manual (CSP-900RMM-2).

Data Relevant to all Models

EXCEPT AS INDICATED.

C G Limits

See RFM listed in Approved Publications (Nominal limits are Fuselage Station 196 to 206, Butt Line ± 2.0).

Datum

Station 0 (datum is located 547.2 cm [215.425 inches] forward of the levelling target rivet or 506.1 cm [199.250 inches] forward of the main rotor centre line).

Levelling Means

Plumb line from aft inside top of left cabin door frame, F.S. 215.43.

Minimum Crew

1 (pilot)

Maximum Occupants

8 (includes crew)

Maximum Baggage

226.8 kg (500 lbs) ... Aft Cabin Baggage Bay.

Maximum Operating Altitude

20,000 feet density altitude.

Aircraft Type Designator (FAA & ICAO)

HU90.

Basis of Certification

Date of application for JAA validation 26 December 1994.

Date of application for FAA type certificate 25 April 1990.

Date used by JAA for determining applicable requirement 6 September 1993*.

Date used by FAA for determining applicable requirement 19 April 1994*.

*Although the JAA date precedes the FAA date there is no difference in the standard of requirements. The discrepancy arose as a result of the FAA extending MDHS' date of application on the condition that a latter applicability date would apply.

i) JAA Airworthiness Standards

JAR 27 at Issue 1 dated 6 September 1993 with no NPA.

Multiengine Large Rotorcraft Category A Engine Isolation requirements of JAR 29, Issue 1, as applied to JAR 27.79(b)(2), 27.141(b)(1) and 27.143(b)(1) using the limited time period concept as defined in AC 27-1, change 3, Para. 780.

CRI A-01 Addendum 1, dated 22 January 1998. Exemption against JAR 27.1(a) Certification weight limit now raised to 7000 lbs (3175 kg).

For serial numbers 900-00052 and subsequent (the 902 Configuration) , as above plus: -

a) Category “A” JAR 27 Appendix C.

b) Equivalent safety finding for compliance with JAR 29.1181(a) and 29.1191(a)(1) for the designated fire zone regions and firewalls.

Special Conditions

a) Applicable up to serial numbers 900-00008, 900-00010 to 900-00051

CRI E-01 Engine Protection from Foreign Object Ingestion 17 June 1996

CRI F-02 HIRF 17 June 1996

b) Applicable to serial numbers 900-00052 and subsequent (the 902 Configuration).

CRI E-01 Addendum 1 Engine Protection from Foreign Object Ingestion 20 May 1998

CRI F-02 Addendum 2 HIRF 20 May 1998

ii) Environmental Standards

a) Effective from 11 July 1996 to 21 January 1998 inclusive.

ICAO Annex 16 Volume 1 Chapter 11.

b) Since the gross weight of the helicopter has been increased beyond 6000 lbs (2721 kg), then with effect from 22 January 1998 the above has been superseded by the following:

ICAO Annex 16 Volume 1 Chapter 8.

iii) Additional National Requirements

Additional National requirements are contained in the CRIs listed below

A-02	ANRs for Type Certification	Basic
A-02 Add 1	ANRs for Type Certification	IFR Upgrade
A-02 Add 2	ANRs for Type Certification	902 Configuration
A-03	ANRs for Environmental Standards.	Basic
A-03 Add 1	ANRs for Environmental Standards.	Gross Weight Inc
A-03 Add 3	ANRs for Environmental Standards.	902 Configuration
A-04	ANRs for Certificate of Airworthiness Issue	Basic
A-04 Add 1	ANRs for Certificate of Airworthiness Issue	IFR Upgrade
A-04 Add 2	ANRs for Certificate of Airworthiness Issue	902 Configuration
A-05	ANRs for Operational Approval	Basic
A-05 Add 1	ANRs for Operational Approval	IFR Upgrade
A-05 Add 2	ANRs for Operational Approval	902 Configuration

Notes

Note (1) A current Weight and Balance (MDHS's Basic Weight and Balance Record) listing the helicopter certificated empty (basic) weight and loading instructions including a List of Equipment (MDHS's MD-900 Required/Optional Equipment List is provided as a separate document) must be provided for each helicopter at the time the helicopter's original airworthiness certification is issued. This Basic Weight and Balance Record shall be kept current as the configuration, affecting the helicopter's weight and balance, is changed. The MDHS Basic Weights Checklist for Model MD-900 contains needed reference data for the Weight and Balance Record. A copy of the current MDHS Basic Weight and Balance Record shall be kept in the helicopter. The certificated basic weight and corresponding

centre of gravity locations includes all transmission, hydraulic and engine oil/fluids as well as trapped/unusable fuel.

Note (2) All required pilot related decals and placards displayed in the JAA accepted FAA approved Rotorcraft Flight Manual must be displayed in full view of the pilot.

Note (3) The retirement times of certain parts and Parts inspection requirements are listed in Airworthiness Limitations Section (ALS), Section 04-00-00, of the Model MD-900 Maintenance Manual (CSP-900RMM-2). These values of retirement of service lives and inspection cannot be increased without FAA approval, and JAA validation.

Note (4) Electronic engine control (EEC) and software installed must be FAA approved. Part number initially certified for this aircraft are:

PW206A

EEC P/N	Software P/N
3116655-04	M0900.FLP
3116655-06	M1000.FLP
3116655-08	M1300.FLP
3116655-12	M1700.FLP

PW206E

EEC P/N	Software P/N
3043845-01	8021310.FLP
3043845-02	8021314.FLP

PW207E

EEC P/N	Software P/N
3053929-01	11020306.FLP
3055498-01	11020501.FLP

Note (5) Radio/Navigation and operational equipment is subject to specific approval by individual JAA Authorities.

Note (6) There are no Additional National Design Requirements for Type Certification.

Note (7) A Gross Weight Increase to 6250 lbs (2835 kg) was approved on the 22 January 1998.

Note (8) Installation of the Pratt & Whitney PW206E engines requires a FAA approved compatible Integrated Instrument Display System (IIDS). Following are the initially certified IIDS parts numbers:

PW206A: IIDS P/N 900A3720002-107 or 900A3720002-111

PW206E: IIDS P/N 900A3720002-109

PW207E: IIDS P/N 900A3720002-113

Note (9) As of September 1, 1998, the following note apply's to all modifications. The MD900 rotorcaft employs electronic engine controls, commonly named Full Authority Digital Engine Controls (FADEC) and is recognised to be more susceptible to Electromagnetic Interference (EMI) than rotorcraft that have only manual (non-electronic) controls. (EMI may be the result of radiated or conducted interference.) For this reason modifications that add or change systems that have the potential for EMI, must either be qualified to a JAA acceptable standard or tested at the time of installation for interference to the FADEC. This type of testing must employ the particular FADEC's diagnostic techniques and external diagnostic techniques. The test procedure must be FAA or JAA approved.

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