Civil Aviation Authority
United Kingdom

TYPE-CERTIFICATE DATA SHEET

UK.TC.A.00032

for

JS-MD Single

Type Certificate Holder
M&D Flugzeugbau GmbH & Co. KG
Streeker Straße 5 b
26446 Friedeburg
Germany

Model(s):	JS-MD 1C JS-MD 3 JS-MD 3 RES
Issue:	3
Date of issue:	10 January 2024

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Section 1 JS-MD 1C

I. General

1. Type / Variant or Model

Type	JS-MD Single
Model	JS-MD 1C

2. Airworthiness Category

Sailplane and powered Sailplane (self-sustaining)

CS-22 - Utility

3. Type Certificate Holder

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

4. Manufacturer

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

5. EASA Type Certification Application Date

7 May 2014

6. EASA Type Certification Date

1 June 2017

II. Certification Basis

7. Reference Date for determining the applicable requirements

7 May 2014

8. Airworthiness Requirements

Certification Specifications for Sailplanes and Powered Sailplanes (CS 22), Amendment 2 issued 5th of March 2009

9. Special Conditions

None

10. Exemptions

None

11. Deviations

None

12. Equivalent Safety Findings

None

13. Requirements elected to comply

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991

Guidelines concerning proof of compliance for the electrical system of powered sailplanes, issued September 1992

14. Environmental Standards

ICAO Annex 16 (see TCDSN UK.TC.A.00032 for details)

CS-34.1 Fuel Venting

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

According to MD01-DWL-00-001_R15 or later approved revisions

2. Description

The JS-MD 1C is an all composite, single-seat sailplane with conventional T-tail.

Or, with jet-engine installed, an all composite, powered, self-sustaining, single-seat sailplane with retractable jet-engine mounted behind the cockpit in the fuselage and conventional T-tail.

For both configurations the wing is split in center and either 18m or 21m span outer wing including winglets. The wing is equipped with flaperons over nearly all wing span and Schempp-Hirth type airbrakes on the upper wing surface.

The main landing gear is retractable, the tail wheel is fixed.

3. Equipment

Min. Equipment:

Airspeed indicator, 50 to 350 km/h (26 to 189 kts)

Altimeter

4-point symmetrical seat harness

Operating placards

Control surface gap seals (Mylar seals) on all control surfaces

Outside air temperature (when flying with water ballast)

Magnetic compass (when Jet Sustainer installed)

Turn and bank indicator or artificial horizon (when flying in clouds)

Variometer to indicate vertical speed (when flying in clouds)

4. Dimensions

Span:	18.00 m	21.00 m
Wing Area:	11.83 m^2	13.16 m^2
Length:	7.10 m	7.10 m
Height:	1.50 m	1.50 m

5. Engine (optional)

Model MD-TJ42

Type Certificate	EASA.E.099
Limitations	max power 97,000 RPM
Max Continuous Power	205 N at 80,000 RPM

6. Fuel Capacities (when Jet Sustainer installed)/Battery

Tank in the Fuselage	42 L
Tank in right wing	None
Tank in keft wing	None
Non-usable fuel	0.4 L

7. Launching Hooks

CG Hook Tost G88 TCDS 60.230/2

Nose Hook Tost E22 NTS 11.402/9

8. Weak Links

For winch launch	Max. 825 daN
For aerotow	Max. 935 daN

9. Load Factors

Max positive up to	203 km/h IAS (110 KIAS)	+5.3g
Max negative up to	203 km/h IAS (110 KIAS)	-2.65g
Max positive up to	270 km/h IAS (124 KIAS)	+4.0g
Max negative up to	270 km/h IAS (124 KIAS)	-1.5g
Max with airbrake extended positive up to	270 km/h IAS (124 KIAS)	+3.5g

10. Air Speeds

Never Exceed Speed V_{NE}	270 km/h (146 kts)
Manoeuvring Speed V_A	203 km/h (110 kts)

Maximum Permitted Speeds:

With flaps set at 1, 2 $V_{FE\ 1,\ 2}$	270 km/h (146 kts)
With flaps set at 3 $V_{FE\ 3}$	230 km/h (124 kts)
With flaps set at 4, 5 $V_{FE\ 4,\ 5}$	165 km/h (89 kts)
With flaps set at L $V_{FE\ L}$	160 km/h (86 kts)
In rough air V_{RA}	203 km/h (110 kts)
For winch launching (18m) V_W	150 km/h (81 kts)
For winch launching (21m) V_W	140 km/h (76 kts)
For aerotowing V_T	180 km/h (97 kts)
For gear operation V_{LO}	180 km/h (97 kts)
For engine operation V_{PO}	140 km/h (76 kts)
For engine extended V_{PE}	250 km/h (135kts)

11. Approved Operations Capability

VFR-Day Utility Category

Cloud flying (with 18 m wing span configuration and without water ballast only)

Aerobatic manoeuvres according to Flight Manual (with 18 m wing span configuration and without water ballast only)

12. Launch Methods

Aerotow

Winch launch

13. Maximum Masses

Wing span	**18 m**	**21 m**
Max. Mass:	600 kg	720 kg
Max. T/O Mass Aero-tow:	600 kg	720 kg
Max. T/O Mass Winch launch:	600 kg	600 kg
Cloud flying (no water ballast):	482 kg	Not approved
Non-lifting parts:	350 kg	325 kg

14. Centre of Gravity Range

Wing span	**18 m**	**21 m**
Forward limit	244 mm	269 mm
Aft limit	375 mm	375 mm

15. Datum

The datum is defined as the wing leading edge at the wing root rib.

16. Levelling Means

Attitude for weighing is defined with the aft fuselage boom forward of the fin positioned at gradient of 1000:25

17. Control Surface Deflections

See JS-MD 1C Aircraft Maintenance Manual

18. Minimum Flight Crew

1

19. Lifetime Limitations

See JS-MD 1C Aircraft Maintenance Manual and

JS-MD 1C Jet Sustainer Maintenance Manual Supplement

IV. Operating and Service Instructions

1. Flight Manual

JS-MD 1C AIRCRAFT FLIGHT MANUAL, dated 15.05.2017 or later EASA approved revision

JS-MD 1C Jet Sustainer Flight Manual Supplement, dated 16.05.2017 or later EASA approved revision (when Jet Sustainer installed)

2. Maintenance Manual

JS-MD 1C Aircraft Maintenance Manual, dated 17.05.2017 or later EASA approved revision

JS-MD 1C Jet Sustainer Maintenance Manual Supplement, dated 17.05.2017 or later EASA accepted revision (when Jet Sustainer installed)

3. Structural Repair Manual

JS-MD Aircraft Repair Manual, dated 10.02.2017 or later revision

4. Operating Manual and Maintenance Manual for Engine

MD-TJ42 Operating and Maintenance Manual, 18.05.2016 or later EASA approved revision

5. Operating Manual for the Launching Hooks

Manual for the TOST Release latest revision

V. Notes

1. Manufacturing is confined to industrial production.

2. All parts exposed to sun radiation –except the areas for markings and registration –must have a white colour surface.

Section 2 JS-MD 3

I. General

1. Type / Variant or Model

Type	JS-MD Single
Model	JS-MD 3
Sales Name	JS-3

2. Airworthiness Category

Sailplane and powered Sailplane (self-sustaining)

CS-22 - Utility

3. Type Certificate Holder

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

4. Manufacturer

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

5. Certification Application Date

28 October 2016

6. Type Certification Date

18 July 2019

II. Certification Basis

1. Reference Date for determining the applicable requirements

28 October 2016

2. Airworthiness Requirements

Certification Specifications for Sailplanes and Powered Sailplanes (CS 22), Amendment 2 issued 5th of March 2009

3. Special Conditions

None

4. Exemptions

None

5. Deviations

None

6. Equivalent Safety Findings

None

7. Requirements elected to comply

Standards for Structural Substantiation of Sailplane and

Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991

Guidelines for the Analysis of the Electrical System for Powered Sailplanes, issued September 1992

8. Environmental Standards

ICAO Annex 16 (see TCDSN UK.TC.A.00032 for details)

CS-34.1 Fuel Venting

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

According to MD10-DWL-00-001-R02 or later approved revisions.

2. Description

The JS-MD 3 is an all composite, single-seat sailplane with conventional T-tail.

Or, with jet-engine installed, an all composite, powered, self-sustaining, single-seat sailplane with retractable jet-engine mounted behind the cockpit in the fuselage and conventional T-tail.

For both configurations the wing is split in center and either 15m or 18m span outer wing including winglets. The wing is equipped with flaperons over nearly all wing span and Schempp-Hirth type airbrakes on the upper wing surface.

The main landing gear is retractable, the tail wheel is fixed.

3. Equipment

Min. Equipment:

Airspeed indicator, 50 to 300 km/h (26 to 162 kts)

Altimeter

4-point symmetrical seat harness

Operating placards

Control surface gap seals (Mylar seals) on all control surfaces

Outside air temperature (when flying with water ballast)

Magnetic compass (when Jet Sustainer installed)

Jet Display Unit (when Jet Sustainer installed)

Turn and bank indicator or artificial horizon (when flying in clouds)

Variometer to indicate vertical speed (when flying in clouds

4. Dimensions

Span:	15.00 m	18.00 m
Wing Area:	8.75 m^2	9.95 m^2
Length:	6.86 m	6.86 m
Height:	1.35 m	1.35 m

5. Engine (optional)

Model	MD-TJ42
Type Certificate	EASA.E.099
Limitations	max power 97,000 RPM
Max Continuous Power	205 N at 80,000 RPM

6. Fuel Capacities (when Jet Sustainer installed)

Tank in the Fuselage	22.2 L
Tank in right wing	None
Tank in keft wing	None
Non-usable fuel	0.33 L

7. Launching Hooks

CG Hook Tost G88 TCDS 60.230/2

Nose Hook Tost E22 NTS 11.402/9

8. Weak Links

For winch launch	Max. 750 daN
For aerotow	Max. 600 daN

9. Load Factors

Max positive up to	207 km/h IAS (112 KIAS)	+5.3g
Max negative up to	207 km/h IAS (112 KIAS)	-2.65g
Max positive up to	280 km/h IAS (151 KIAS)	+4.0g
Max negative up to	280 km/h IAS (151 KIAS)	-1.5g
Max with airbrake extended positive up to	280 km/h IAS (151 KIAS)	+3.5g

10. Air Speeds

Never Exceed Speed V_{NE}	280 km/h (151 kts)
Manoeuvring Speed V_A	207 km/h (112 kts)

Maximum Permitted Speeds:

With flaps set at 1, 2 $V_{FE\ 1,\ 2}$	280 km/h (151 kts)
With flaps set at 3 $V_{FE\ 3}$	230 km/h (124 kts)
With flaps set at 4, 5 $V_{FE\ 4,\ 5}$	165 km/h (89 kts)
With flaps set at L $V_{FE\ L}$	160 km/h (86 kts)
In rough air V_{RA}	207 km/h (112 kts)
For winch launching (15m) V_W	150 km/h (81 kts)
For winch launching (18m) V_W	150 km/h (81 kts)
For aerotowing V_T	180 km/h (97 kts)
For gear operation V_{LO}	180 km/h (97kts)
For engine operation V_{PO}	140 km/h (76 kts)
For engine extended V_{PE}	250 km/h (135 kts)

11. Approved Operations Capability

VFR-Day only

Cloud flying according to Flight Manual (with 15 m and 18 m wing span configuration without water ballast only)

Aerobatic manoeuvres according to Flight Manual (with 15 m and 18 m wing span configuration without water ballast only)

12. Launch Methods

Aerotow

Winch launch

13. Maximum Masses

Wing span	**15 m**	**18 m**
Max. Mass	525 kg	600 kg
Max. T/O Mass Aero-tow	525 kg	600 kg
Max. T/O Mass Winch launch	525 kg	600 kg
Cloud flying (no water ballast)	418 kg	418 kg
Aerobatics (no water ballast)	418 kg	418 kg
Non-lifting parts	320 kg	313 kg

14. Centre of Gravity Range

Wing span	**15 m**	**18 m**
Forward limit	270 mm	270 mm
Aft limit	390 mm	398 mm

15. Datum

The datum is defined as the wing leading edge at the wing root rib.

16. Levelling Means

Attitude for weighing is defined with the aft fuselage boom forward of the fin positioned at gradient of 1000:18

17. Control Surface Deflections

See JS-MD 3 Aircraft Maintenance Manual

18. Minimum Flight Crew

1

19. Lifetime Limitations

See JS-MD 3 Aircraft Maintenance Manual and

JS-MD 3 Jet Sustainer Maintenance Manual Supplement

IV. Operating and Service Instructions

1. Flight Manual

JS-MD 3 AIRCRAFT FLIGHT MANUAL, dated 24.04.2019 or later EASA approved revision

JS-MD 3 Jet Sustainer Flight Manual Supplement, dated 08.02.2019 or later EASA accepted revision (when Jet Sustainer installed)

2. Maintenance Manual

JS-MD 3 Aircraft Maintenance Manual, dated 31.05.2019 or later EASA accepted revision

JS-MD 3 Jet Sustainer Maintenance Manual Supplement, dated 14.03.2019 or later EASA accepted revision (when Jet Sustainer installed)

3. Structural Repair Manual

JS-MD Aircraft Repair Manual, dated 12.06.2019 or later issue

4. Operating Manual and Maintenance Manual for Engine

MD-TJ42 Operating and Maintenance Manual, 19.11.2018 or later EASA approved revision

5. Operating Manual for the Launching Hooks

TOST Operating Manual - Europa G 88 Safety Releases_Issued February 1989_ revision 4_March 2001 or latest available revision

TOST Operating Manual - Tow Release E22_Issued

October 2002_revision 1_May 2003 or Latest available revision

V. Notes

1. Manufacturing is confined to industrial production.

2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface.

Section 3 JS-MD 3 RES

I. General

1. Type / Variant or Model

Type	JS-MD Single
Model	JS-MD 3 RES
Sales Name	JS-3 RES

2. Airworthiness Category

Sailplane and powered Sailplane

CS-22 - Utility

3. Type Certificate Holder

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

4. Manufacturer

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b

26446 Friedeburg

Germany

5. Certification Application Date

29 September 2020

6. Type Certification Date

18 August 2021

II. Certification Basis

1. Reference Date for determining the applicable requirements

29 September 2020

2. Airworthiness Requirements

Certification Specifications for Sailplanes and Powered Sailplanes (CS 22), Amendment 2 issued 5th of March 2009 and additional requirements as per EASA CRI A-01

3. Special Conditions

SC-22.2014-01 Issue 2 Special Condition applicable to Powered Sailplanes equipped with Electric Propulsion Units

4. Exemptions

None

5. Deviations

None

6. Equivalent Safety Findings

CS 22.335 (f)

7. Requirements elected to comply

Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fibre Reinforced Plastics, issued July 1991

Guidelines for the Analysis of the Electrical System for Powered Sailplanes, issued September 1992

8. Environmental Standards

Noise: ICAO Annex 16, Chapter 10 (see TCDSN UK.TC.A.00032 for details)

III. Technical Characteristic and Operating Limitations

1. Type Design Definition

According to MD11-DWL-00-001-R02 or later approved revisions

2. Description

The JS-MD 3 RES is an all composite, single-seat sailplane with conventional T-tail.

The wing is split in centre and either 15m or 18m span outer wing including winglets. The wing is equipped with flaperons over nearly all wingspan and Schempp-Hirth type airbrakes on the upper wing surface.

The JS-MD 3 RES is based on the JS-MD 3 with modified rear fuselage to enable the fitment of larger doors for an electric motor and batteries for self-launch.

The horizontal tailplane and elevator area were increased to enhance stability and control surface effect compared to the JS-MD 3.

The main landing gear is retractable, the tail wheel is fixed or retractable.

3. Equipment

Min. Equipment:

Airspeed indicator, 50 to 300 km/h (26 to 162 kts)

Altimeter

Display and Control Unit (DCU)

RES Master Switch Guard

Rear View Mirror

Supplemental (independent) fire warning system

4-point symmetrical seat harness

Operating placards or Placard booklet

Control surface gap seals (Mylar seals) on all control surfaces

Outside air temperature (when flying with water ballast)

4. Dimensions

Span:	15.00 m	18.00 m

Wing Area:	8.75 m^2	9.95 m^2
Length:	6.94 m	6.94 m
Height:	1.22 m	1.22 m

5. Engine

Solo Electric Propulsion System 8000/400 consisting of Motor Emrax 208 HV, SOLO econtrol, BM384 Li-Ion battery system and Power Electronics Emectric and Power cables.

6. Engine Limits

Maximum Take-off Power	40 kW
Maximum RPM	4350 RPM

7. Propellers

Technoflug KS-1C-120-R-065-S

CAA Type Certificate Data Sheet UK.TC.P.00100

8. Launching Hooks

CG Hook Tost G88 TCDS 60.230/2

Nose Hook Tost E22 NTS 11.402/9

9. Weak Links

For winch launch	Max. 750 daN
For aerotow	Max. 600 daN

10. Load Factors

Max positive up to	207 km/h IAS (112 KIAS)	+5.3g
Max negative up to	207 km/h IAS (112 KIAS)	-2.65g
Max positive up to	240 km/h IAS (130 KIAS)	+4.0g
Max negative up to	240 km/h IAS (130 KIAS)	-1.5g
Max with airbrake extended positive up to	240 km/h IAS (130 KIAS)	+3.5g

11. Air Speeds

Never Exceed Speed V_{NE}	270 km/h (145 kts)
Manoeuvring Speed V_A	195 km/h (105 kts)

Maximum Permitted Speeds:

With flaps set at 1, 2 $V_{FE\ 1,\ 2}$	270 km/h (145 kts)
With flaps set at 3 $V_{FE\ 3}$	230 km/h (124.1 kts)
With flaps set at 4, 5 $V_{FE\ 4,\ 5}$	165 km/h (89 kts)
With flaps set at L $V_{FE\ L}$	160 km/h (86.3 kts)
In rough air V_{RA}	195 km/h (105 kts)
For winch launching (15m) V_W	150 km/h (80.9 kts)
For winch launching (18m) V_W	150 km/h (80.9 kts)
For aerotowing V_T	180 km/h (97.1 kts)
For assisted aerotowing V_T	150 km/h (80.9 kts)
For gear operation V_{LO}	180 km/h (97.1 kts)

With engine extended V_{PE}	150 km/h (80.9 kts)
For engine operation V_{max}	150 km/h (80.9 kts)

12. Maximum Operating Altitude

7000m AMSL

13. Approved Operations Capability

VFR-Day only

Cloud flying permitted according to specifications in flight manual with restricted mass, without water ballast and with engine pylon retracted

Aerobatic manoeuvres permitted according to specifications in manual with restricted mass and without water ballast

14. Launch Methods

Aerotow (including Sustainer Assisted Aerotow)

Winch launch

Self-launch

15. Maximum Masses

Wing span	**15 m**	**18 m**
Max. Mass	525 kg	600 kg
Max. T/O Mass Aero-tow	525 kg	600 kg
Max. T/O Mass Winch launch	525 kg	600 kg
Max. T/O Mass (2 HV batteries)	525 kg	575 kg
Cloud flying (no water ballast)	418 kg	418 kg
Aerobatics (no water ballast)	418 kg	418 kg
Non-lifting parts	340 kg	340 kg

16. Centre of Gravity Range

Wing span	**15 m**	**18 m**
Forward limit	270 mm	270 mm
Aft limit	390 mm	398 mm

17. Datum

The datum is defined as the wing leading edge at the wing root rib.

18. Levelling Means

Attitude for weighing is defined with the aft fuselage boom forward of the fin positioned at gradient of 1000:18

19. Control Surface Deflections

See JS-MD 3 RES Aircraft Maintenance Manual

20. Minimum Flight Crew

1

21. Lifetime Limitations

See JS-MD 3 RES Aircraft Maintenance Manual

IV. Operating and Service Instructions

1. Flight Manual

JS-MD 3 RES AIRCRAFT FLIGHT MANUAL, dated 14.03.2023 or later EASA approved revision

2. Flight Manual Supplement

JS-MD 3 RES AIRCRAFT FLIGHT MANUAL SUPPLEMENT, dated 24.032023 or later approved revisions

3. Maintenance Manual

JS-MD 3 RES Aircraft Maintenance Manual, dated 23.05.2022 or later EASA accepted revision

4. Maintenance Manual Supplement

JS-MD 3 RES Aircraft Maintenance Manual Supplement, dated 23.05.2022 or later revisions

5. Structural Repair Manual

JS-MD Aircraft Repair Manual, dated 10.05.2022 or later issue

6. Operating Manual for the Launching Hooks

TOST Operating Manual - Europa G 88 Safety Releases_Issued February 1989_ revision 4_March 2001 or latest available revision

TOST Operating Manual - Tow Release E22_Issued

October 2002_revision 1_May 2003 or Latest available revision

V. Notes

1. Manufacturing is confined to industrial production.

2. All parts exposed to sun radiation – except the areas for markings and registration – must have a white colour surface.

Section 4 Administration

I. Acronyms and Abbreviations

Acronym / Abbreviation	Definition
CS	Certification Specification
CAA	Civil Aviation Authority
CRI	Certification Review Item
DCU	Display and Control Unit
EASA	European Union Aviation Safety Agency
g	Load Factor
HV	High Voltage
kg	Kilogram
Km/h	Kilometres per hour
Kts	knots
kW	Kilowatt
L	Litre
LBA	Luftfahrt-Bundesamt
m	metre
mm	Millimetre
MTOW	Maximum Take Off Weight
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TCH	Type Certificate Holder
VFR	Visual Flight Rules

II. Type Certificate Holder Record

TCH Record	Period
M&D Flugzeugbau GmbH & Co. KG Streeker Straße 5 b 26446 Friedeburg Germany	Present. No changes.

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
1	26 Apr 2022	This certificate supersedes EASA.A.616 in the UK. All technical data as per EASA.A.616 Issue 5.	Issue 1 26 Apr 2022
2	24 Apr 2023	Correction of JS-MD 3 Certification basis and editorial corrections.	
3	10 Jan 2023	Addition of installed RES system with batteries. Deviation DEV-B22.335-01 and engine/battery restriction removed, plus corrections.	

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