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TYPE-CERTIFICATE DATA SHEET

NO. EASA.A.616

for JS-MD Single

Type Certificate Holder

M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b 26446 Friedeburg Germany

For models: JS-MD 1C

JS-MD 3 JS-MD 3 RES



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SECTION A: JS-MD 1C

A.I General

1. Type/ Model/ Variant

1.1 Type: JS-MD Single1.2 Model: JS-MD 1C

2. Airworthiness Category Sailplane and powered Sailplane (self-sustaining)

CS-22 - Utility

3. Manufacturer M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b 26446 Friedeburg

Germany

4. EASA Type Certification Application Date 07.05.2014
5. EASA Type Certification Date 01.06.2017

A.II EASA Certification Basis

1. Reference Date for determining the applicable requirements 07.05.2014

2. Airworthiness Requirements Certification Specifications for Sailplanes and Powered

Sailplanes (CS 22), Amendment 2 issued 5th of March 2009

3. 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

4. Special Conditions None5. Exemptions None6. Equivalent Safety Findings None

7. Environmental Protection ICAO Annex 16 (details refer to TCDSN EASA.A.616)

CS-34.1 Fuel Venting

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A.III Technical Characteristics and Operational Limitations

1. Type Design Definition Description

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

2. Equipment

Min. Equipment:

Airspeed indicator, 50 to 350 km/h

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 compace (when let Sustainer installed)

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)

3. Dimensions

Span	18,00 m	21,00 m
Wing area	11,83 m²	13,16 m ²
Length	7,10 m	7,10 m
Height	1,50 m	1,50 m

4. Engine (optional)

4.1	Model	MD-TJ42
4.2	Type Certificate	EASA.E.099

4.3 Limitations max power 97,000 RPM4.4 Maximum Continuous Power 205 N at 80,000 RPM

5. Fuel capacities (when Jet Sustainer installed)/Battery

5.1	Tank in the fuselage	42 I
5.2	Tank in right wing	None
5.3	Tank in left wing	None
5.4	Non-usable fuel	0.4 l



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Launch Procedures Aerotow Winch launch

7.	Launching Hooks	CG Hook Nose Hook	Tost G88 TCD: Tost E22 NTS	-		
8.	Weak Links	for winch launch for aerotow		825 daN 935 daN		
9.	Load Factors	Max positive up to Max negative up to Max positive up to Max negative up to Max with airbrake exte	nded positive (2 2 2	03 Km/h IAS 03 Km/h IAS 70 Km/h IAS 70 Km/h IAS 70 Km/h IAS	+5,3 -2,65 +4,0 -1,5 +3,5
10.	Indicated Air Speeds	Never Exceed Speed Manoeuvring Speed Maximum permitted sp - with flaps set 1 & 2 - with flaps set 3 - with flaps set 4&5 - with flaps set L - in rough air - for Winch launching (- for Winch launching (- for aerotowing - for gear operation	V _{FE} V _{FE} V _{FE} V _{RA} 18m) V _W 21m) V _W V _T V _{LO}	270 Km/h 203 km/h 270 km/h 230 km/h 165 km/h 160 km/h 150 km/h 140 km/h 180 km/h		
	- for engine operation	V _{PO} 140 Km	/h			

- for engine extended V_{PE} 250 Km/h

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.	Maximum Masses	Wing span	18 m	21 m
		0 - 1	_	

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

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13. Centre of Gravity Range Wing span 18 m 21 m

Fwd 244 mm 269 mm Aft 375 mm 375 mm

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

15. Levelling Means Attitude for weighing is defined with the aft fuselage boom forward

of the fin positioned at gradient of 1000:25

16. Control Surface Deflections see JS-MD 1C Aircraft Maintenance Manual

17. Minimum Flight Crew 1

18. Lifetime limitations see JS-MD 1C Aircraft Maintenance Manual and

JS-MD 1C Jet Sustainer Maintenance Manual Supplement

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A.IV Operating and Service Instructions

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

revision

JS-MD 1C Jet Sustainer Maintenance Manual Supplement, dated

17.05.2017 or later 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

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A.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.

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SECTION B: JS-MD 3

B.I General

1. Type/ Model/ Variant

1.1 Type: JS-MD Single1.2 Model: JS-MD 31.3 Sales Name: JS-3

2. Airworthiness Category Sailplane and powered Sailplane (self-sustaining)

CS-22 - Utility

3. Manufacturer M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b 26446 Friedeburg

Germany

4. EASA Type Certification Application Date 28.10.2016
5. EASA Type Certification Date 18.07.2019

B.II EASA Certification Basis

1. Reference Date for determining the applicable requirements 28.10.2016

2. Airworthiness Requirements Certification Specifications for Sailplanes and Powered

Sailplanes (CS 22), Amendment 2 issued 5th of March 2009

3. 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

4. Special Conditions None5. Exemptions None6. Equivalent Safety Findings None

7. Environmental Protection ICAO Annex 16 (details refer to TCDSN EASA.A.616)

CS-34.1 Fuel Venting

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B.III Technical Characteristics and Operational Limitations

1. Type Design Definition Description

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

2. Equipment

Min. Equipment:

Airspeed indicator, 50 to 300 km/h

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 direction indication (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)

_	- ·	
3.	I)ıme	nsions
J.	DITTIC	11310113

Span	15,00 m	18,00 m
Wing area	8,75 m ²	9,95 m²
Length	6,86 m	6,86 m
Height	1,35 m	1,35 m

4. Engine (optional)

4.1	Model	MD-TJ42
4.2	Type Certificate	EASA.E.099

4.3 Limitations max power 97,000 RPM4.4 Maximum Continuous Power 205 N at 80,000 RPM

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5. Fuel capacities (when Jet Sustainer installed)

5.1	Tank in the fuselage	22,2 l
5.2	Tank in right wing	None
5.3	Tank in left wing	None
5.4	Non-usable fuel	0,33 l

6. Launch Procedures Aerotow

Winch launch

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 +5,3

Max negative up to 207 Km/h IAS -2,65 Max positive up to 280 Km/h IAS +4,0 Max negative up to 280 Km/h IAS -1,5 Max with airbrake extended positive up to 280 Km/h IAS +3,5

10. Indicated Air Speeds Never Exceed Speed V_{NE} 280 km/h

Manoeuvring Speed V_A 207 km/h

Maximum permitted speeds

- with flaps set 1 & 2 280 km/h V_{FE} - with flaps set 3 V_{FF} 230 km/h - with flaps set 4&5 V_{FE} 165 km/h - with flaps set L V_{FF} 160 km/h - in rough air 207 km/h V_{RA} - for Winch launching (15m) V_W 150 km/h - for Winch launching (18m) 150 km/h V_W - for aerotowing V_T 180 km/h - for gear operation 180 km/h V_{LO}

- for engine operation

- for engine extended

V_{PO} 140 km/hV_{PE} 250 km/h

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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.	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

13. Centre of Gravity Range Wing span 15 m 18 m

Fwd 270 mm 270 mm Aft 390 mm 398 mm

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

15. Levelling Means Attitude for weighing is defined with the aft fuselage boom forward

of the fin positioned at gradient of 1000:18

16. Control Surface Deflections see JS-MD 3 Aircraft Maintenance Manual

17. Minimum Flight Crew 1

18. Lifetime limitations see JS-MD 3 Aircraft Maintenance Manual and

JS-MD 3 Jet Sustainer Maintenance Manual Supplement

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B.IV Operating and Service Instructions

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 approved revision (when Jet Sustainer installed)

2. Maintenance Manual JS-MD 3 Aircraft Maintenance Manual, dated 31.05.2019 or later

revision

JS-MD 3 Jet Sustainer Maintenance Manual Supplement, dated 14.03.2019 or later 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

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B.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.

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SECTION C: JS-MD 3 RES

C.I General

1. Type/ Model/ Variant

1.1 Type: JS-MD Single1.2 Model: JS-MD 3 RES1.3 Sales Name: JS-3 RES

2. Airworthiness Category Sailplane and powered Sailplane

CS-22 - Utility

3. Manufacturer M&D Flugzeugbau GmbH & Co. KG

Streeker Straße 5 b 26446 Friedeburg

Germany

4. EASA Type Certification Application Date 03.12.2021
5. EASA Type Certification Date 18.08.2021

C.II EASA Certification Basis

1. Reference Date for determining the applicable requirements 29.09.2020

2. Airworthiness Requirements Certification Specifications for Sailplanes and Powered

Sailplanes (CS 22), Amendment 2 issued 5th of March 2009

3. 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

4. Special Conditions SC-22.2014-01 Issue 2 Special Condition applicable to

Powered Sailplanes equipped with Electric Propulsion Units

5. Deviation None6. Exemptions None

7. Equivalent Safety Findings CS 22.335 (f)

8. Environmental Protection ICAO Annex 16, Chapter 10 Aircraft Noise

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C.III Technical Characteristics and Operational 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 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 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

Altimeter

Display and Control Unit (DCU)

RES master switch guard

Rear view mirror

Supplemental (independent) fire warning system

Magnetic direction indicator

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

Engine Solo Electric Propulsion System 80400 consisting of Motor Emrax
 208 HV, SOLO econtrol, BM384 Li-Ion battery system, and Power Electronics Emectric and Power cables

EASA Engine Type Certificate Data Sheet No. EASA.E.237

4.1 Engine Limits Maximum Take-off Power 40 kW



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		Maximum RPM	1		4350 R	PM	
c	Dranellars	Tochnoflug VS	1C 120 B 065 S				
6.	Propellers		1C-120-R-065-S		D 445		
		EASA Type Cen	tificate Data She	et easa	P.115		
7.	Launch Procedures	Aerotow includ	ling Sustainer As	ssisted A	erotow		
		Winch launch					
		Self-launch					
8.	Launching Hooks	CG Hook	Tost G88 TCDS	60.230/	2		
		Nose Hook	Tost E22 NTS 1	1.402/9			
9.	Weak Links	for winch laund	ch	max. 7!	50 daN		
		for aerotow		max. 60	00 daN		
10.	Load Factors	Max positive u	p to			207 km/h IAS	+5,3
		Max negative ι	ıp to			207 km/h IAS	-2,65
		Max positive u				240 km/h IAS	+4,0
		Max negative u	ιρ to ake extended po	ocitivo III	n to	240 km/h IAS 240 km/h IAS	-1,5 +3,5
		IVIAX WILII AII DI	ake extended po	ositive u	μιο	240 KIII/II IA3	+3,3
11.	Indicated Air Speeds	Never Exceed S	Speed	V_{NE}	270 km	n/h	
		Manoeuvring S	peed	V_A	195 km	n/h	
		Maximum perr	nitted speeds				
		- with flaps set	1 & 2	V_{FE}	270 km	n/h	
		- with flaps set	3	V_{FE}	230 km	n/h	
		- with flaps set	4&5	V_{FE}	165 km	n/h	
		- with flaps set	L	V_{FE}	160 km	n/h	
		- in rough air		V_{RA}	195 km	n/h	
		- for Winch lau	nching (15m)	V_{W}	150 km	n/h	
		- for Winch lau	nching (18m)	V_{W}	150 km	n/h	
		- for aerotowin	g	V_{T}	180 km	n/h	
		- for assisted a	erotowing	V_{T}	150 km	n/h	
		- for gear opera	ation	V_{LO}	180 km	n/h	
		- with engine e	xtended	V_{PE}	150 km	n/h	
		- for engine op	eration	V_{max}	150 km	n/h	

12. Maximum Operating Altitudes 7000 m AMSL

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13. Approved Operations Capability VFR-Day only

> Cloud flying permitted according to specifications in Flight manual with restricted mass and without water ballast, and

engine pylon retracted

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

14. 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 (with 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

15.	Centre of Gravity Range	Wing span	15 m	18 m
		Fwd	270 mm	270 mm
		Aft	390 mm	398 mm

- 16. Datum The datum is defined as the wing leading edge at the wing root rib
- 17. Levelling Means Attitude for weighing is defined with the aft fuselage boom forward of the fin positioned at gradient of 1000:18
- 18. Control Surface Deflections see JS-MD 3 RES Aircraft Maintenance Manual
- 19. Minimum Flight Crew 1
- 20. Lifetime limitations see JS-MD 3 RES Aircraft Maintenance Manual

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C.IV Operating and Service Instructions

Flight Manual JS-MD 3 RES AIRCRAFT FLIGHT MANUAL, dated 14.03.2023 or

later EASA approved revisions

Flight Manual Supplement JS-MD 3 RES AIRCRAFT FLIGHT MANUAL SUPPLEMENT, dated

24.03.2023 or later approved revisions

3. Maintenance Manual JS-MD 3 RES Aircraft Maintenance Manual, dated 23.05.2022

or later revisios

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

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C.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.



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SECTION D: <u>ADMINISTRATIVE SECTION</u>

D.I Acronyms & Abbreviations

EASA European Union Aviation Safety Agency

IAS Indicated Air Speed MTOM Maximum Take-off Mass

TC Type Certificate

TCDS Type Certificate Data Sheet

TCDSN Type Certificate Date Sheet for Noise

T/O Take-off

VFR Visual Flight Rules

D.II Type Certificate Holder Record

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

D.III Change Record

Issue	Date	Changes	TC Issue No. & Date
Issue 01	01 June 2017	Initial Issue	Initial Issue, 01 June 2017
Issue 02	27 October 2017	Clarification as pure Sailplane and powered sailplane (self-sustaining)	
Issue 03	07 February 2019	Correction of Type Design Definition, Launch Procedures added, Aerobatic manoeuvres added	
Issue 04	18 July 2019	Addition of Model JS-MD3	18 July 2019
Issue 05	11 August 2021	Addition of Model JS-MD3 RES, Editorial Changes for JS-MD 3	18 August 2021
Issue 06	06 July 2023	Addition of installed RES system. Deviation DEV-B22.335-01 and Battery restriction removed.	