Product Data Sheet RER190-39/18/2TDP-231

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GREEN TECH

RER190-39/18/2TDP-231
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6.1 General 13

1 General

Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics

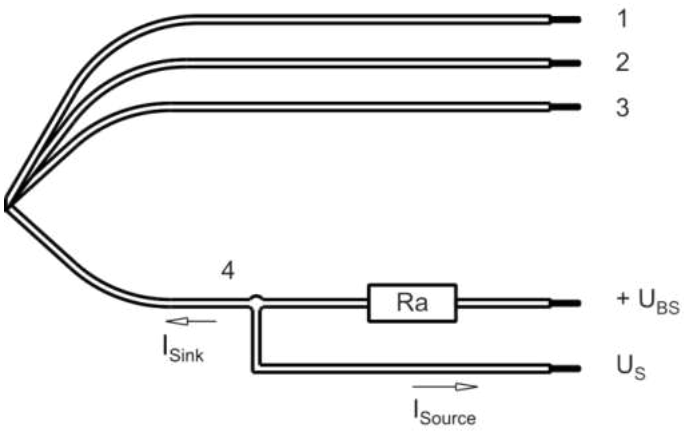
2.1 General

Depth	69 mm	
Diameter	190 mm	
Mass	0,870 kg	
Housing material		
Impeller material	Plastic	

2.2 Connections

Electrical connection	Plug	
Lead wire length Tolerance		
Wire size (AWG)	18	
Insulation diameter	2,85 mm	
Contact	See drawing	





Wire	Colour	Operation	plug connection
1	red	+ UB	Pin 2
2	blue	- GND	Pin 1
3	violet	PWM	Pin 4
4	white	Tacho	Pin 3

Lead wire 1 - 2: AWG18
Lead wire 3 - 4: AWG22 (Insulation diameter 1,35mm)

3 Operating Data

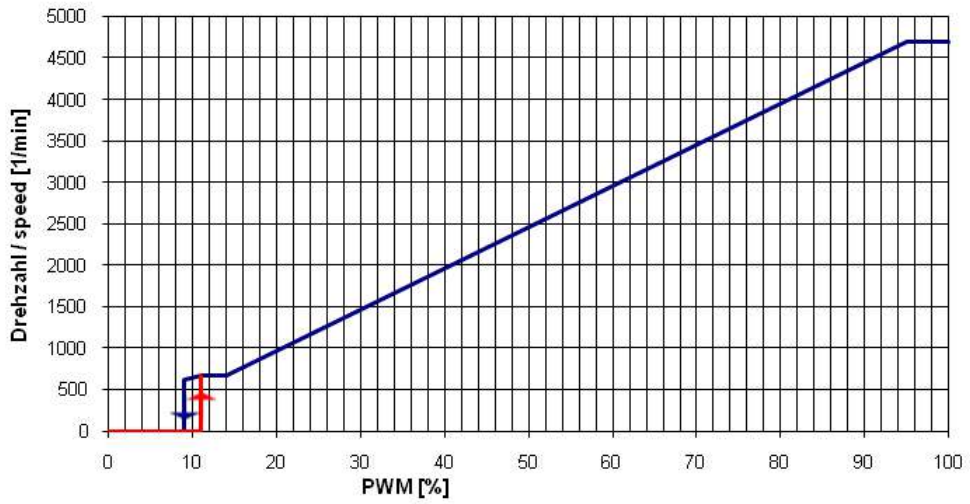
3.1 Operating Data - Electrical Interface - Input

Control input	PWM

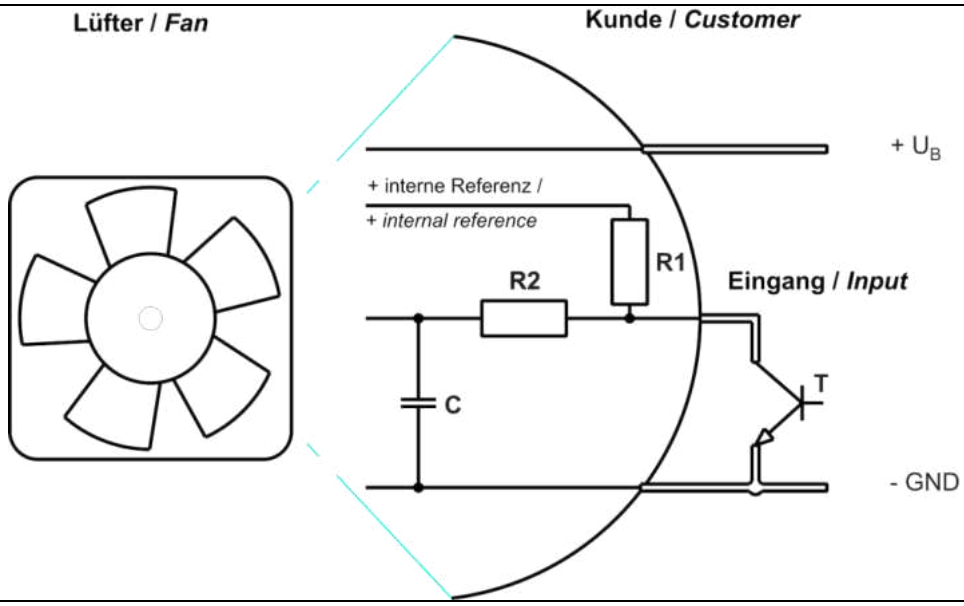
Features

PWM - Frequency		1 kHz - 10 kHz Typical: 2 kHz

Characteristics



Schematics



Transistor requirements:
Vce max.= <12 V; I sink max. = < 5 mA
Vce sat.= <0,15 V

Speed control:
By Puls width modulation (PWM) 0 ... 100%
Open collector in relation to signal-ground
f = 2kHz +-20%

Information to the curve:

0 % - 11% PWM:	0 1/min
11 % - 14% PWM:	670 1/min (corresponding to min. speed)
14 % - 95% PWM:	linear increasing curve
95 % - 100% PWM:	4.700 1/min (corresponding to max. speed)
11 % PWM: comming from 0% PWM)	670 1/min (Fan on,
9 % PWM: (Fan off, comming from 100% PWM)	620 1/min or 0 1/min

3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified).
In the intake and outlet area should not be any solid obstruction within 0,5 m.

Measurement setup:	Measured between two steel plates
Steel plate:	195 mm x 195 mm
Intake nozzle:	D: 125,5 mm; R: 10 mm
Distance between bottom and top plate:	80 mm
Overlapping impeller / nozzle:	2 mm

$\Delta p = 0$: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

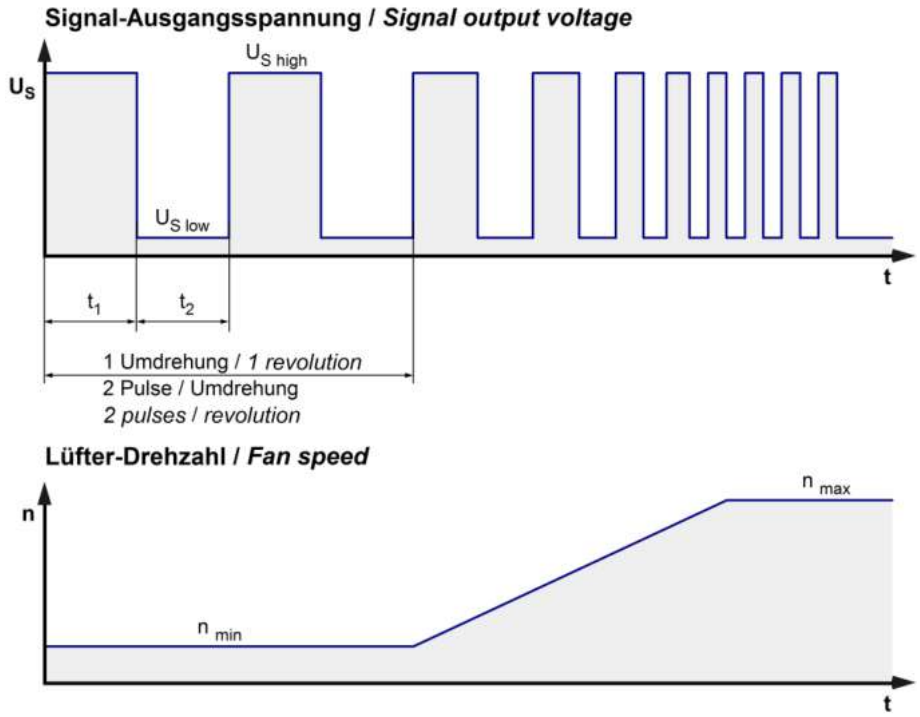
Name	Condition		
PWM 0001	PWM: 100 %;		

The data at 50% PWM are no FK features and need not be tested.

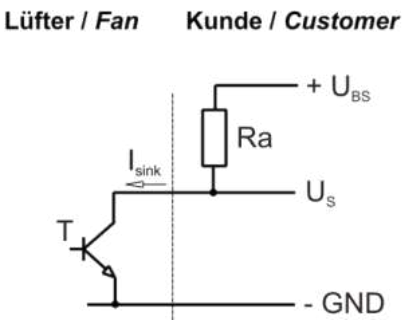
Features	Condition	Symbol	Values		
Voltage range		U	36 V		60,0 V
Nominal voltage		U_N		48,0 V	
Power consumption Tolerance	$\Delta p = 0$ PWM 0010	P	115,0 W +- 10,0 %	187 W +- 10,0 %	186,0 W +- 10,0 %
Current consumption Tolerance	$\Delta p = 0$ PWM0010	I	3.200 mA +- 10,0 %	3.900 mA +- 10,0 %	3.100 mA +- 10,0 %
Speed Tolerance	$\Delta p = 0$ PWM 0010	n	3.980 1/min +- 10,0 %	4.700 1/min +- 5,0 %	4.700 1/min +- 5,0 %

3.3 Operating Data - Electrical Interface - Output

Tacho type	/2 (open collector)



$$Ra = \frac{U_{BS} - U_{S\,low}}{I_{sink}}$$

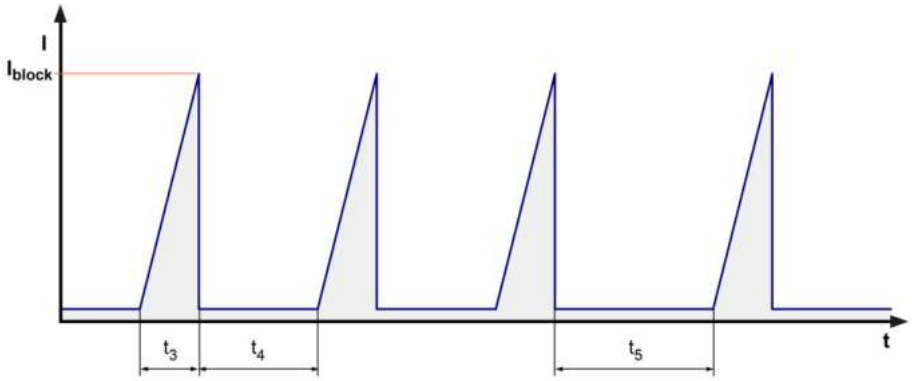


Features	Note	Values
Tacho operating voltage (UBS)		<= 60,0 V
Tacho signal Low	I sink: 2 mA	<= 0,4 V
Tacho signal High	I source: 0 mA	<= 60,0 V
Maximum sink current		<= 20 mA
External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	(2 x n) / 60	157 Hz
Tacho isolated from motor	No	
Slew rate		=> 0,5 V/us

Please note:
At zero speed the tacho signal is at a static HIGH. It will be also HIGH when the fan is still spinning, but the speed control signal is set to zero speed already.
The tacho signal is only activated after the start-up is completed.

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	P-CH FET I_F <= 5 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.800 mA	
Clock signal at locked rotor	t_3 / t_4 Typical: 4,6 s / 10,0 s	



Locked rotor signal t5:

After 4 failed start-ups there is an extended timeout of 40,0s.

3.5 Data According ErP Directive

Installation / Efficency category	A / static
Speed control	integrated
Specific ratio	1,00717
Target overall efficiency 2015	44,6 %
Overall efficiency	55,5 %
Efficiency grade	62
Power input	219,3 W
Speed	4.700 1/min

All values measured in optimum energy efficiency point.

Productiondatecode is printed on the fan label.

3.6 Aerodynamics

Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; In the intake and outlet area should not be any solid obstruction within 0,5 m. The information is only valid under the specified test conditions and may be changed by the installation conditions. If there are deviations from the standard test conditions, the characteristic values must be checked under the installed conditions.

Measurement setup:	Measured between two steel plates
Steel plate:	195 mm x 195 mm
Intake nozzle:	D: 125,5 mm; R: 10 mm
Distance between bottom and top plate:	80 mm
Overlapping impeller / nozzle:	2 mm

a.) Operation condition:

4.700 1/min at free air flow	PWM 100 %;		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	1.000,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	1.120 Pa	

Fan performance curve measured in customer housing.

at free air flow	
at free air flow	


Flow Rate [CFM]
0
100
200
300
400
500
600
700
1200
1000
800
600
400
200
0
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
Static Pressure Δ pf [Pa]
Static Pressure Δ pf [in H2O]
0
200
400
600
800
1000
1200
Flow Rate [m³/h]



3.7 Sound Data

Measurement conditions:	Sound pressure level: 1 Meter distance between microphone and the air intake. Sound power level: Acc. to DIN 45635 part 38 (ISO 10302) Measured in a semianchoic chamber with a background noise level of Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

at free air flow	
at free air flow	
at free air flow	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-30 °C	
Max. permitted ambient temperature TU max.	70 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

Note:
The fan is a customized development therefore use of the fan is only allowed in connection with Light Radio Fan Tray (3JR50010ABAAHCZZA ; customer drawing)

4.2 Climatic Requirements

Humidity requirements	humid heat, constant; according to DIN EN 60068-2-78, 14 days	
Water exposure	None	
Dust requirements	None	
Salt fog requirements	None	

*) Permittet application area:
The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

Pollution degree 1 (according DIN EN 60664-1)
There is either no pollution or it occurs only dry, non-conductive pollution. The pollution has no negative impact.

Please require severity levels and specification parameters from the responsible development departments

5 Safety

5.1 Electrical Safety

Dielectric strength DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700) A.) Type test Measuring conditions: After 48h of storage at 95% R.H. and 25°C. No arcing or breakdown is allowed! All connections together to ground. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Min. 500 VAC / 1 Sec.	
Isolation resistance Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min.	RI > 10 MOhm	
clearance / creepage distance	1,0 mm / 1,5 mm	
Protection class	III	

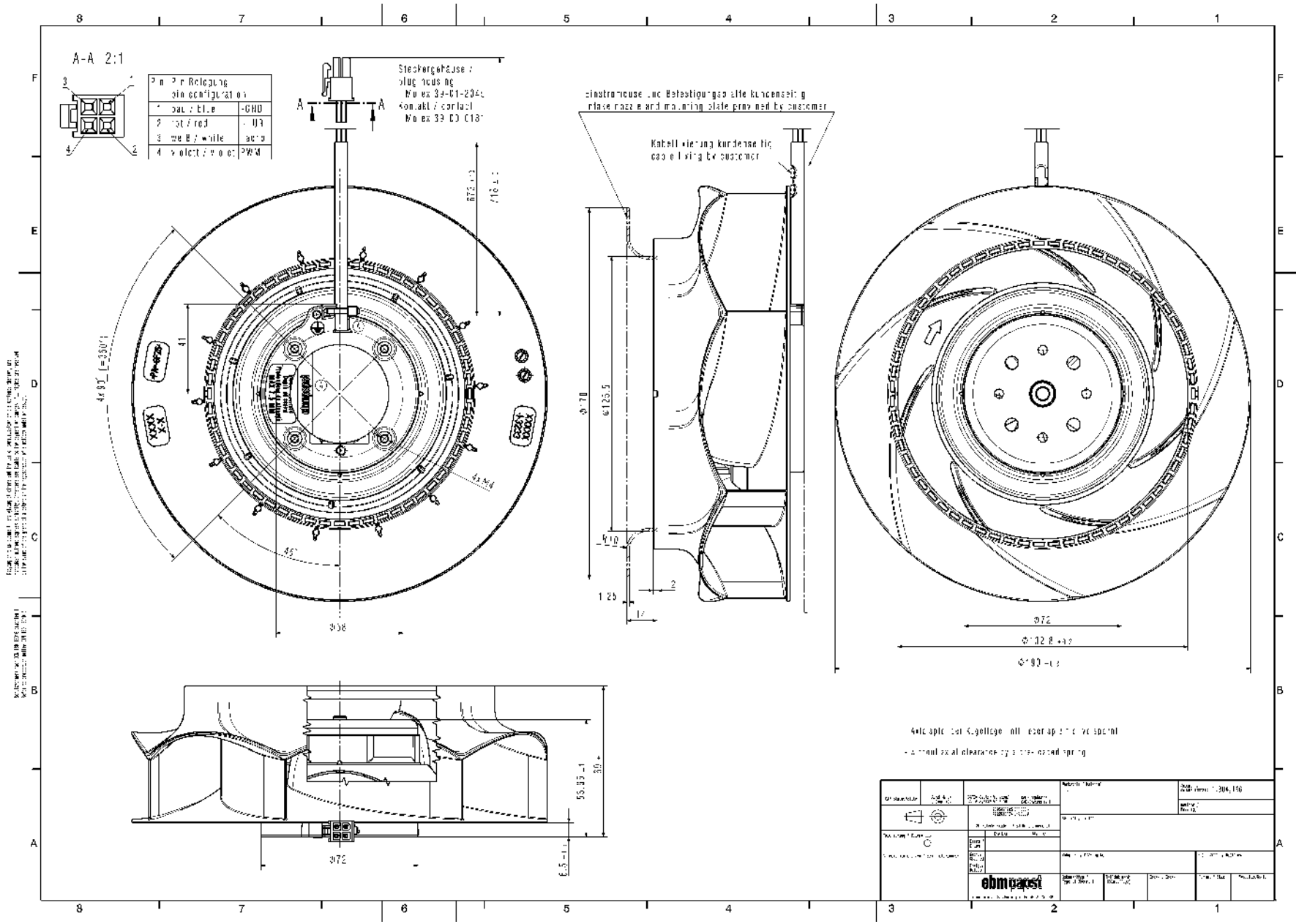
5.2 Approval Tests

CE	EC Declaration of Conformity	No
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Yes / GB 12350 Safety Requirements for small Power Motors

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	62.500 h	
Life expectancy L10 at TU max.	32.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	105.000 h	


A-A 2:1
Steckergehäuse / plug housing
Kabeleinführung kundenseitig / cable routing by customer
Kabelbefestigungsplatte vom Kunden beizustellen / cable fixing plate provided by customer
4x Ø3,5 (=360°)
45°
908
972
Ø 128,8 +0,2
Ø 93 -0,5
Ø 70
Ø 125,5
4,10
1,25
2
1
55,85 -0,1
50 +1
6,5 -0,1
4x M4
41
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