MANDÍK

MAN 168/24
Version 2026-11-06

RDM - multi-blade regulation damper

RDTM - multi-blade tight regulation damper

in design variants intended for use in potentially explosive atmospheres

Instructions for use



MANDÍK®

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CONTENT

I. GENERAL....3
Conditions of use....4
II. DESIGN....5
III. TECHNICAL DATA....8
Actuator torques....8
Assignment and setting of actuators SCHISCHEK ExMax-... and RedMax....9
IV. MATERIALS, SURFACE TREATMENT....12
V. QUALITY INSPECTION, TESTING BY THE MANUFACTU....12
VI. INSTALLATION, COMMISSIONING, OPERATION, MAINTENANCE, OPERATIONAL CHECKS....13
VII. DAMPER IDENTIFICATION....14

I. GENERAL

Those Instructions for use are valid for damper types RDM and RDTM **in design variants intended for use in in potentially explosive atmospheres** (named hereinafter also shortly as the “dampers”) according to ATEX directive 2014/34/EU and they complement the Technical specifications TPM 150/21, and TPM 151/21, respectively.

Technical specifications TPM 150/21 and TPM 151/21 are valid for those dampers to the extent that in case of a conflict between TPM 150/21 or TPM 151/21 and this document, this document shall prevail.

The document applies to both dampers without an actuator and dampers with an actuator (damper and actuator assemblies), when

- the dampers themselves are designed, classified, certified, manufactured and marked according to EN IEC 60079-0:2018 and EN ISO 80079-36:2016 standards by the manufacturer MANDÍK,
- any actuator is designed, classified, certified, manufactured and marked according to EN IEC 60079-0:2018, EN IEC 60079-1:2014, EN IEC 60079-11:2012, EN IEC 60079-11:2014 standards by the manufacturer SCHISCHEK and the resulting damper and actuator assembly is designed, classified, manufactured and marked by the manufacturer MANDÍK in accordance with the ATEX directive 2014/34/EU.

Information regarding actuators is taken from the manufacturer's technical documentation from the manufacturer's official website. In addition, the actuator manufacturer's technical documentation may contain additional information not listed here that may be important or useful under certain conditions.

Conditions of use

The dampers may be used under the following conditions

a) the dampers installed, commissioned, operated and maintained in accordance with those Instructions for use and in the case of dampers with a actuator also according to the operating instructions of the actuator manufacturer and

b) the damper orientation with blades either in horizontal, or vertical position and

c) mean air velocity in the duct of 12 m/s and the duct overpressure or underpressure of max. 1500 Pa, and

d) damper control pressure drop, difference of the static pressure in duct section before and after the damper maximally as shown in TPM 150/21 and TPM 151/21, and

e) environment protected against weather effects 3K5 according to EN 60721-3-3 mod. A2, without condensation, icing, ice formation and without water from sources other than rain, and

f) environment without abrasive, adhesive, electrically charged, chemically active and radioactive particles or droplets, without chemically active or radioactive gases. Under no circumstances should exothermic reactions or precipitation of condensate or the excretion of solid coatings or particles occur during normal operation, and corrosion, especially of the copper and brass components of the damper, may not occur. And further

g) ambient temperature according to the given equipment category, see point k), whereas

h) in the case of subsequent fitting of the damper with an actuator or other electrical elements, the temperature range is narrowed according to the temperature range of the electrical elements used, and

i) the duct flange to which the damper flange is mounted must be flat in order to avoid reducing the tightness of the duct and/or the risk of damage to the damper when closing. The damper must be attached to a flange on at least one side. This also applies to when actuator is being set. While

j) for dampers supplied with a preparation for an actuator, correct adjustment of the limit positions of the actuator is necessary to prevent mechanical damage to the damper, and further

k) dampers can be used in the relevant zone with an explosion hazard under conditions in accordance with the Ex equipment category specified in this point, when the condition for temperature Ta applies both to the outside of the damper and to the transported air.

Damper design	Actuator manufacturer and type series	Category of equipment	Temperature of use	Allowed uses
Dampers with manual control	(not relevant)	II 2G Ex h IIC T6 Gb	–20° ≤ Ta ≤ +70°	zones 1 and 2
Dampers with preparation for actuator	(not relevant)	II 2G Ex h IIC T6 Gb	–20° ≤ Ta ≤ +70°	zones 1 and 2
Dampers with actuator	SCHISCHEK ExMax-…	II 2G Ex IIC T6 Gb	–20° ≤ Ta ≤ +40°	zones 1 and 2
		II 2G Ex IIC T5 Gb	–20° ≤ Ta ≤ +50°	
		II 2G Ex IIC T4 Gb	–20° ≤ Ta ≤ +60°	
	SCHISCHEK RedMax-…	II 3G Ex IIC T6 Gc	–20° ≤ Ta ≤ +40°	zone 2
		II 3G Ex IIC T5 Gc	–20° ≤ Ta ≤ +50°	
		II 3G Ex IIC T4 Gc	–20° ≤ Ta ≤ +60°	

l) Manually operated dampers may only be operated by hand with a smooth movement.

m) Dampers for fitting an actuator may only be used with actuators intended to be used in potentially explosive atmospheres of the Ex category corresponding to the Ex category of the damper, and

n) the angular velocity of the actuator shall not exceed 20°/s, or 3,33 rpm^{-1} and at the same time

o) the actuator torque shall not exceed the limit shown below.

p) For dampers with an actuator (assembly manufactured by the manufacturer), the prescribed parameters of the supply voltage and control voltage and voltage and current on the limit switches must be observed, and

q) the motor speed setting, spring mechanism speed and torque setting may only be changed so that the actuator setting is in accordance with this document and

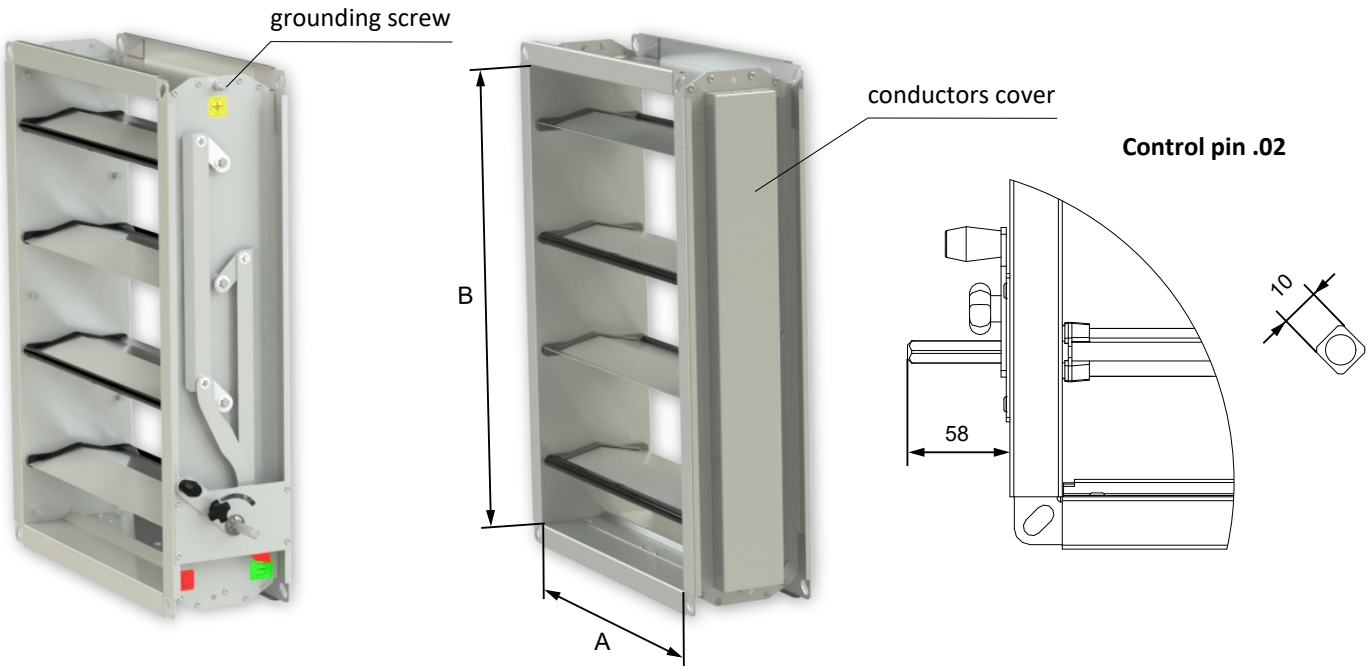
r) if the damper is electrically connected directly in areas with a risk of explosion, an Ex terminal block intended for the given zone must be used for the connection.

II. DESIGN

The dampers are manufactured in these design variants intended to be used in potentially explosive atmospheres

Damper design variant – control type	Design variant ID code in the damper ordering code	
	For zones 1 and 2	For zone 2
manual (zone 1 and 2)	.02	–
for actuator mounting (zone 1 and 2)	.08	–
with actuator, 3-point control	.70	.80
with actuator, 3-point control, limit switches	.71	.81
with actuator, continuous regulation 0…10 V	.72	.82
with actuator, 3-point control, return spring safety position CLOSED	.73	.83
with actuator, 3-point control, return spring safety position OPEN	.73A	.83A
with actuator, 3-point control, return spring safety position CLOSED, limit switches	.74	.84
with actuator, 3-point control, return spring safety position OPEN, limit switches	.74A	.84A
with actuator, continuous regulation 0…10 V, return spring safety position CLOSED	.75	.85
with actuator, continuous regulation 0…10 V, return spring safety position OPEN	.75A	.85A

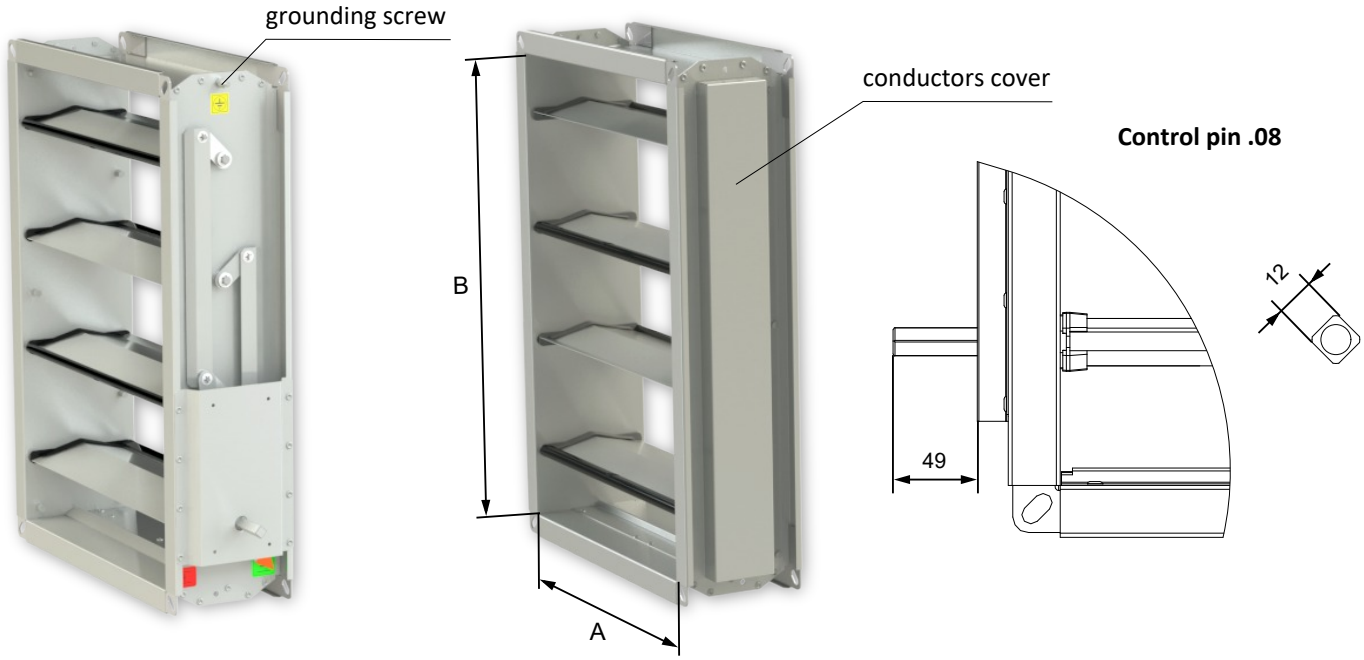
Design .02 - manual



- Each damper blade is connected to the damper body by a brass clip and a copper conductor. These wires are protected against accidental damage by a cover.
- The minimum space for an actuator is 250 mm (in the direction of the blade rotation axis), but some actuators may require more space.

Design .08 - for fitting an actuator

- In the case of .08 design variant (preparation for an actuator), the size of the control pin for the Ex design varant is different from the ordinary version - the control pin has dimensions of 12 x 12 mm. If necessary, for example, Schischek also offers adapters from 12 x 12 to 16 x 16 size pins.



Design with actuator

- In the case of a damper with a SCHISCHEK actuator size M, an adapter from a 12 x 12 pin to a 16 x 16 mm pin is used.

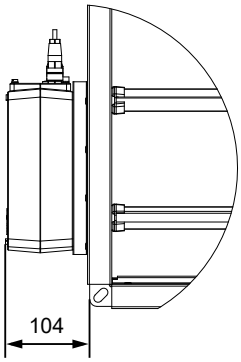
Actuator straight (safety position closed)



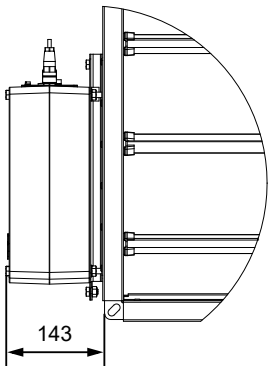
Actuator oblique (safety position open)



Actuator size [S]



Actuator size [M]



- Each damper blade is connected to the damper body by a brass clip and a copper conductor. These wires are protected against accidental damage by a cover.
- The minimum space for an actuator is 250 mm (in the direction of the blade rotation axis), but some actuators may require more space.

Grounding wire assembly

- The Damper is equipped with one grounding screw M6 x 35 mm on the control side.



III. TECHNICAL DATA

Actuator torques

Necessary … the highest permissible torques of actuators for RDM dampers

	A [mm]															
B [mm]	**200**	**250**	**300**	**315**	**400**	**500**	**600**	**630**	**800**	**1000**	**1200**	**1250**	**1400**	**1600**	**1800**	**2000**
200	2...5	2...5	2...5	2...5	2...5	2...5	2...5	2...5	4...10	4...10	4...10	–	–	–	–	–
250	2...5	2...5	2...5	2...5	2...5	2...5	4...10	4...10	4...10	4...10	4...10	–	–	–	–	–
300	2...5	2...5	2...5	2...5	2...5	4...10	4...10	4...10	4...10	4...10	4...10	–	–	–	–	–
315	2...5	2...5	2...5	2...5	4...10	4...10	4...10	4...10	4...10	4...10	4...10	–	–	–	–	–
400	4...10	4...10	4...10	4...10	4...10	4...10	4...10	4...10	4...10	4...10	10...15	–	–	–	–	–
500	4...10	4...10	4...10	4...10	4...10	4...10	4...10	4...10	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15
600	4...10	4...10	4...10	4...10	4...10	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15
630	4...10	4...10	4...10	4...10	4...10	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15
800	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15
1000	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30
1200	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30
1250	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30
1400	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	15...30
1600	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30
1800	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30
2000	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30	20...30	20...30

Necessary … the highest permissible torques of actuators for RDTM dampers

	A [mm]															
B [mm]	**200**	**250**	**300**	**315**	**400**	**500**	**600**	**630**	**800**	**1000**	**1200**	**1250**	**1400**	**1600**	**1800**	**2000**
to 200	4...10	4...10	4...10	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	–	–	–	–	–
250	4...10	4...10	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	–	–	–	–	–
300	4...10	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	–	–	–	–	–
315	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	–	–	–	–	–
400	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	–	–	–	–	–
500	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30
600	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	20...30
630	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	20...30
800	10...15	10...15	10...15	10...15	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30
1000	10...15	10...15	10...15	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30
1200	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50
1250	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50
1400	15...30	15...30	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50	30...50
1600	15...30	15...30	15...30	15...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50	30...50	30...50	30...50
1800	20...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50	30...50	30...50	30...50	30...50	30...50
2000	20...30	20...30	20...30	20...30	20...30	20...30	20...30	20...30	30...50	30...50	30...50	30...50	30...50	30...50	30...50	30...50

Assignment and setting of actuators SCHISCHEK ExMax-... and RedMax...

Types of actuators manufactured by SCHISCHEK

Damper design (assemblies)	Actuator type	Actuator size	Torque	Return spring	Limit switches	Continuous regulation 0...10 V
.70	ExMax-5.10	S	5/10 Nm	no	no	no
	ExMax-15.30	S	15/30 Nm	no	no	no
	ExMax-50.75	M	50/75 Nm	no	no	no
.71	ExMax-5.10-S	S	5/10 Nm	no	yes	no
	ExMax-15.30-S	S	15/30 Nm	no	yes	no
.72	ExMax-5.10-Y	S	5/10 Nm	no	no	yes
	ExMax-15.30-Y	S	15/30 Nm	no	no	yes
	ExMax-50.75-Y	M	50/75 Nm	no	no	yes
.73 .73A	ExMax-5.10-F	S	5/10 Nm	yes	no	no
	ExMax-15-F	S	15 Nm	yes	no	no
	ExMax-30-F	M	30 Nm	yes	no	no
	ExMax-50-F	M	50 Nm	yes	no	no
.74 .74A	ExMax-5.10-SF	S	5/10 Nm	yes	yes	no
	ExMax-15-SF	S	15 Nm	yes	yes	no
	ExMax-30-SF	M	30 Nm	yes	yes	no
	ExMax-50-SF	M	50 Nm	yes	yes	no
.75 .75A	ExMax-5.10-YF	S	5/10 Nm	yes	no	yes
	ExMax-15-YF	S	15 Nm	yes	no	yes
	ExMax-30-YF	M	30 Nm	yes	no	yes
	ExMax-50-YF	M	50 Nm	yes	no	yes
.80	RedMax-5.10	S	5/10 Nm	no	no	no
	RedMax-15.30	S	15/30 Nm	no	no	no
	RedMax-50.75	M	50/75 Nm	no	no	no
.81	RedMax-5.10-S	S	5/10 Nm	no	yes	no
	RedMax-15.30-S	S	15/30 Nm	no	yes	no
.82	RedMax-5.10-Y	S	5/10 Nm	no	no	yes
	RedMax-15.30-Y	S	15/30 Nm	no	no	yes
	RedMax-50.75-Y	M	50/75 Nm	no	no	yes
.83 .83A	RedMax-5.10-F	S	5/10 Nm	yes	no	no
	RedMax-15-F	S	15 Nm	yes	no	no
	RedMax-30-F	M	30 Nm	yes	no	no
	RedMax-50-F	M	50 Nm	yes	no	no
.84 .84A	RedMax-5.10-SF	S	5/10 Nm	yes	yes	no
	RedMax-15-SF	S	15 Nm	yes	yes	no
	RedMax-30-SF	M	30 Nm	yes	yes	no
	RedMax-50-SF	M	50 Nm	yes	yes	no
.85 .85A	RedMax-5.10-YF	S	5/10 Nm	yes	no	yes
	RedMax-15-YF	S	15 Nm	yes	no	yes
	RedMax-30-YF	M	30 Nm	yes	no	yes
	RedMax-50-YF	M	50 Nm	yes	no	yes

Possible types and prescribed settings of actuators for dampers of types RDM and RDTM equipped with actuators

Designation in the tables below	Allowed actuator types	Allowed torque settings	Forbidden torque settings	Allowed engine speed settings	Forbidden engine speed settings	Allowed spring speed settings (if the actuator is equipped with one)	Forbidden spring speed settings	Allowed switch positions	Forbidden switch positions
5	ExMax-5.10... [S] RedMax-5.10... [S]	5 Nm	10 Nm	15/30/60/120 s	3 s	10 s	3 s	01, 02, 03, 04	00, 05, 06, 07, 08, 09
5-10	ExMax-5.10... [S] RedMax-5.10... [S]	5/10 Nm	–	15/30/60/120 s	3 s	10 s	3 s	01, 02, 03, 04, 06, 07, 08, 09	00, 05
10-15	ExMax-5.10... [S] RedMax-5.10... [S]	10 Nm	5 Nm	15/30/60/120 s	3 s	10 s	3 s	06, 07, 08, 09	00, 01, 02, 03, 04, 05
	ExMax-15.30... [S] RedMax-15.30... [S]	15 Nm	30 Nm					01, 02, 03, 04	00, 05, 06, 07, 08, 09
	ExMax-15... [S] RedMax-15... [S]		–					01, 02, 03, 04, 06, 07, 08, 09	00, 05
15-30	ExMax-15.30... [S] RedMax-15.30... [S]	15/30 Nm	–	15/30/60/120 s	3 s	10 s	3 s	01, 02, 03, 04, 06, 07, 08, 09	00, 05
	ExMax-15... [S] RedMax-15... [S]	15 Nm							
	ExMax-30-YF [M] RedMax-30-YF [M]	30 Nm		40/60/90/120/150 s	–	20 s	–		
30	ExMax-15.30... [S] RedMax-15.30... [S]	30 Nm	15 Nm	15/30/60/120 s	3 s	10 s	3 s	06, 07, 08, 09	00, 01, 02, 03, 04, 05
	ExMax-30-YF [M] RedMax-30-YF [M]		–	40/60/90/120/150 s	–	20 s	–	00, 01, 02, 03, 04, 05, 06, 07, 08, 09	–
30-50	ExMax-15.30... [S] RedMax-15.30... [S]	30 Nm	15 Nm	15/30/60/120 s	3 s	10 s	3 s	06, 07, 08, 09	00, 01, 02, 03, 04, 05
	ExMax-30-YF [M] RedMax-30-YF [M]		–	40/60/90/120/150 s	–	20 s	–	00, 01, 02, 03, 04, 06, 07, 08, 09	–
	ExMax-50.75... [M] RedMax-50.75... [M]	50 Nm	75 Nm	40/60/90/120/150 s				00, 01, 02, 03, 04	05, 06, 07, 08, 09
	ExMax-50... [M] RedMax-50... [M]		–					00, 01, 02, 03, 04, 05, 06, 07, 08, 09	–

- Blue - default setting
- [S], [M] - actuator size

Assignment of SCHISCHEK actuator torque to RDM damper sizes

	A [mm]															
B [mm]	**200**	**250**	**300**	**315**	**400**	**500**	**600**	**630**	**800**	**1000**	**1200**	**1250**	**1400**	**1600**	**1800**	**2000**
200	5	5	5	5	5	5	5	5	5-10	5-10	5-10	–	–	–	–	–
250	5	5	5	5	5	5	5-10	5-10	5-10	5-10	5-10	–	–	–	–	–
300	5	5	5	5	5	5-10	5-10	5-10	5-10	5-10	5-10	–	–	–	–	–
315	5	5	5	5	5-10	5-10	5-10	5-10	5-10	5-10	5-10	–	–	–	–	–
400	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	10-15	–	–	–	–	–
500	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15
600	5-10	5-10	5-10	5-10	5-10	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
630	5-10	5-10	5-10	5-10	5-10	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
800	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
1000	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30
1200	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30
1250	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30
1400	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	15-30
1600	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	30	30	30
1800	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30
2000	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30	30	30

Assignment of SCHISCHEK actuator torque to RDTM damper sizes

	A [mm]															
B [mm]	**200**	**250**	**300**	**315**	**400**	**500**	**600**	**630**	**800**	**1000**	**1200**	**1250**	**1400**	**1600**	**1800**	**2000**
to 200	5-10	5-10	5-10	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	–	–	–	–	–
250	5-10	5-10	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	–	–	–	–	–
300	5-10	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	–	–	–	–	–
315	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	–	–	–	–	–
400	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	–	–	–	–	–
500	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30
600	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	30
630	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	30
800	10-15	10-15	10-15	10-15	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30
1000	10-15	10-15	10-15	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30
1200	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30	30	30	30-50
1250	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30	30	30	30-50
1400	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	30	30	30	30	30	30	30-50	30-50
1600	15-30	15-30	15-30	15-30	30	30	30	30	30	30	30	30	30-50	30-50	30-50	30-50
1800	30	30	30	30	30	30	30	30	30	30	30-50	30-50	30-50	30-50	30-50	30-50
2000	30	30	30	30	30	30	30	30	30-50	30-50	30-50	30-50	30-50	30-50	30-50	30-50

IV. MATERIALS, SURFACE TREATMENT

Standard materials

- Damper body and damper blades from DX51+Z275 carbon steel, damper is supplied without additional surface treatment.
- Blade end-capes are made of PA6 plastic with glass fibers UV stabilized with suppressed flammability V0 according to UL94.
- Lead-free carbon steel blade pins with plastic plain bearings, DX51+Z275 carbon steel mechanical linkages and levers.
- The control pin is all metal from carbon steel with a zinc coating.
- The blade end-capes are equipped with a closed-pore EPDM foam seal with a sliding layer of PA6.
- Interconnecting wires and clips are made of copper and brass, respectively.
- RDTM damper blades are equipped along their length with an EPDM seal secured by steel clips.
- In the case of actuator dampers, the actuator cover is made of aluminium alloy, painted.

Premium materials

- According to the customer's request, dampers made of stainless steel material can be supplied, which includes everything metal that is on the damper, except for connecting (grounding) wires and clips, which are made of copper or brass, respectivelly.

  Specifications of stainless steel design:

  - Class A2 – Food-grade stainless steel (AISI 304 – EN 1.4301)
  - Class A4 – Chemistry-grade stainless steel (AISI 316, 316L – EN 1.4401, EN 1.4404)
    - The control pin is always made of AISI 316L stainless steel.

  In the case of dampers with actuator, the actuator cover can be made in case of special customer requirement:

  - made of aluminum alloy painted with seawater-resistant paint with nickel-plated brass cable glands (actuator …-CTS or -CTM), or
  - made of AISI 316 stainless steel with nickel-plated brass cable glands (actuator …-VAS or …-VAM).

  Additional information

  - Some types of connecting materials and parts are available in only one type of stainless steel, this type will be used in all stainless steel designs. The position arrow is always made of stainless steel AISI 316L.
  - The position arrow is made of stainless steel AISI 316L.
  - Under no circumstances can the damper be supplied in a painted version.

V. QUALITY INSPECTION, TESTING BY THE MANUFACTU.

- The dimensions are checked with common measuring devices according to the standard of non-tolerated dimensions used in HVAC.
- Interoperation checks of parts and main dimensions are carried out according to the manufacturing documentation.

  The final control includes:

  - control of damper opening and closing, and
  - checking the electrical connection of each damper blade with the damper body using an electrical detection device.
- The damper assembly with the actuator is connected to voltage, the extreme working positions are defined and the operation of the damper and the function of the limit switches (if included) are tested.

VI. INSTALLATION, COMMISSIONING, OPERATION, MAINTENANCE, OPERATIONAL CHECKS

The installation consists of:

- installation of the damper in the air duct
- grounding and conductive connection with the neighbour duct pieces
- eventually, installation of the actuator (not part of the damper)
- or for the electrical connection of the actuator (in the case of a damper with an actuator).

- All effective safety standards and directives must be observed during damper assembly.
- **The dampers must be earthed with an M6 earthing screw, using a nut and a spring washer** (these parts are included in the delivery of the damper).
- According to EN 332000-4-41,-4-47 and -5-54, flange connections must be conductively connected during the installation to protect against dangerous contact. For the conductive connection, 2 pcs of spring washers in galvanized design are used, which are placed under the head of one screw and under the screwed-on nut.
- Before putting the dampers into operation, it is necessary to perform a visual check of the correct installation of the damper and a check of the interconnection of all metal components.

In the case of subsequent mounting of the damper with an actuator, it is necessary:

- verify that the speed and torque of the actuator are in accordance with this document
- adjust the limit positions of the actuator and
- check that the actuator cannot be released from the holder and that the damper control pin cannot slip.

In the case of a damper with manual control, it is necessary to check the smooth operation of the damper.

In the case of a damper with a actuator, it is necessary to connect the actuator electrically and test the operation of the damper. **If the electrical connection of the damper is located in an area with a risk of explosion, it is necessary to use an Ex terminal block corresponding to the given zone.** For actuators with return spring **the electrical connection must correspond to the permitted spring closing time.**

During operability checks, it is necessary to check the mutual conductive connection of all metal components, including all damper blades with the damper body (casing) of the damper.The grounding of each individual damper blade needs to be checked using an electrical measuring or detection device:

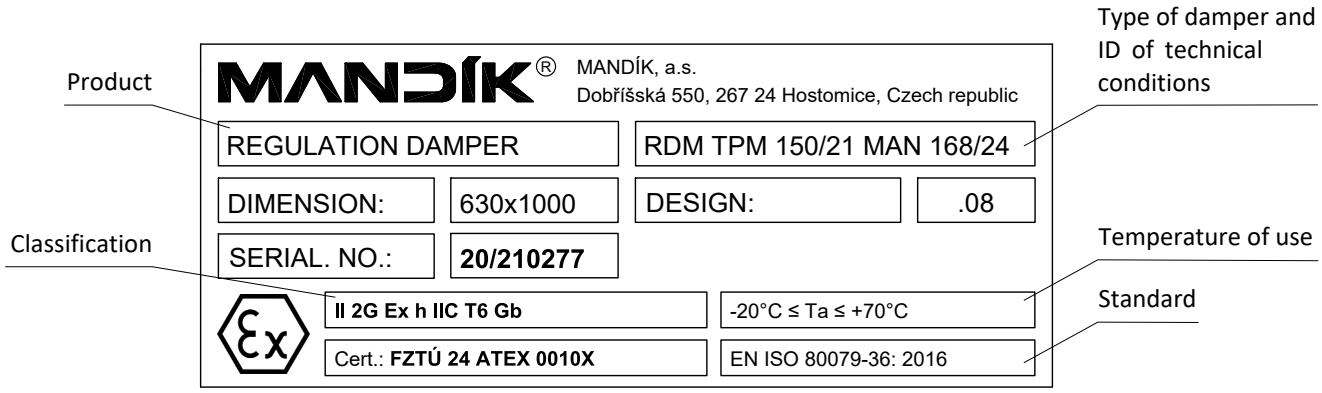
- during commissioning
- as part of every inspection, maintenance, as well as every possible repair or other intervention on the damper
- at the latest after 1 year from commissioning
- if no blade grounding defect is found after 1 year from commissioning, then periodically at least every 5 years thereafter, otherwise annually.

In order to possibly tighten the screws of the connecting cables of the damper blades, it is permissible to remove and then reattach the wire cover.

VII. DAMPER IDENTIFICATION

The dampers are equipped with a durable identification label. It contains the following information:

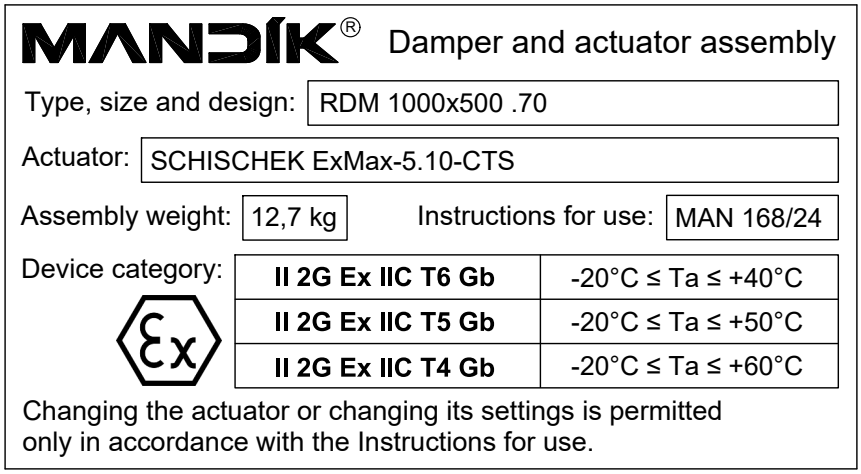
- manufacturer's logo
- name and addresse of the manufacturer
- product type and design variant
- size and weight
- serial number and year of manufacture
- number of the technical specifications
- number of the instructions for use
- Ex device category
- Ex certificate number
- sign Ex.



In the case of a damper equipped with an actuator, the assembly is additionally marked with an assembly label containing:

- manufacturer's logo
- statement that it is a damper and actuator assembly
- type, size and design number of the assembly (the name of the assembly type is identical to the name of the damper type)
- manufacturer and type of actuator
- weight of assembly
- information that changing the actuator settings is only permitted in accordance with MAN 168/24
- Ex category device (assemblies)
- sign Ex..

- This assembly label is located near the damper identification label (example)



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