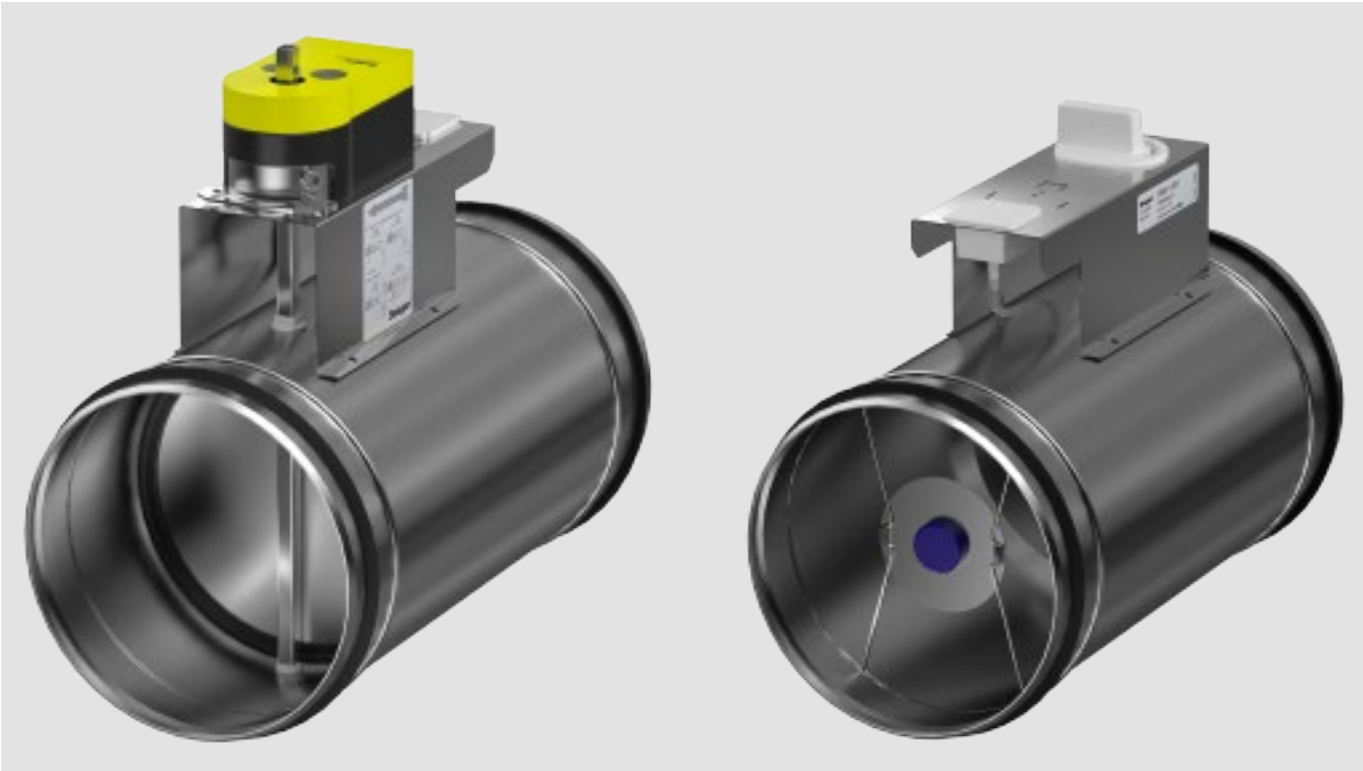
CRM

Controllable measurement unit, Ductwork Leakage Class 0 or 4



QUICK FACTS

- Type-approved method of measurement
- Pressure class A
- Ductwork leakage class 0 or 4
- Leakage factor for housing according to tightness class C
- One commissioning constant (K factor) per size
- Manual control (standard)
- With provision for motorised control
- Quick connection enables simple access for cleaning

Swegon

Technical Description

Design

Circular airflow measurement and commissioning damper. The CRM consists of a duct section with a damper and measuring device. The connections are fitted with rubber seal ring.

The damper has a lockable knob for manual adjustment and indicators for open and closed damper blade position are stamped in the damper's exterior surface.

Inside the damper, there is a measurement unit and a damper blade. The damper blade is available as a solid blade with rubber gasket (Ductwork leakage class 4), or as a perforated blade without rubber gasket (Ductwork leakage class 0). Ductwork leakage classification according to SS-EN1751 och VVS AMA 98. Tightness Classification according to EN 1751 and VVS AMA Pressure Class A with 1000 Pa as the highest pressure difference over damper blade in closed position. Tightness class C on the housing and tightness class 0 for closed damper.

When motorised control is selected, the damper knob shelf is replaced by a larger actuator support shelf. The motorised control requires an actuating torque according to the dimensions and weights table on page 7. Standard supporting shelves are 80 mm high to allow possible duct insulation.

Materials and finish

The entire damper is made of galvanized sheet steel.

Adaptation

The damper can be made of other materials, such as stainless or epoxy-coated sheet steel. Please contact your nearest sales representative for further information.

Accessories

Actuator:

Sauter ASM115SK005, ASM124SK002, 24 V AC, standard actuators depending on size.

Other actuators must be ordered, see actuator table page 7.

Wiring diagrams are available in current Installation - Commissioning - Maintenance Instructions available at the Swegon web page.

Knob:

CRTT-1 for manual control.

Quick connection:

FSR. Clamp with quick-acting lock.

Planning

CRM is equipped with components for a differential pressure method of measurement. In order to meet the specified methodic error, a straight duct length must be arranged upstream of the damper. See "Methodic Errors" and Figure 2. When planning for actuator-controlled forcing, the min. permissible air flow indicated in the diagram must be taken into account. The methodic error (according to table) is not applicable to the airflows that are less than the min. permitted flow.

Installation

Damper is Inserted into the connecting duct and fixed in position by pop rivets or by means of an FSR clamp. See Figure 1.

Commissioning

Connect hoses from a manometer to the measurement nipples. Turn and lock the damper blade at the desired setting angle For particulars of motorised control, we refer to the actuator supplier's instructions. K-factors are shown on the product's identification label. The K-factor can also be found in the relevant commissioning instructions at www.swegon.com.

Maintenance

Clean the damper whenever needed by means of a vacuum-cleaner or by wiping surfaces with a cloth.

Environment

The Declaration of Construction Materials is available from www.swegon.com.

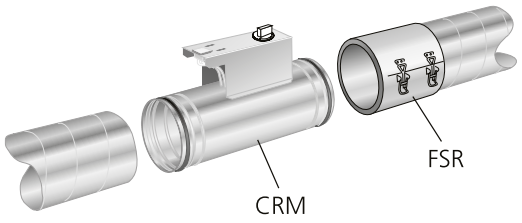


Figure 1. Installation.

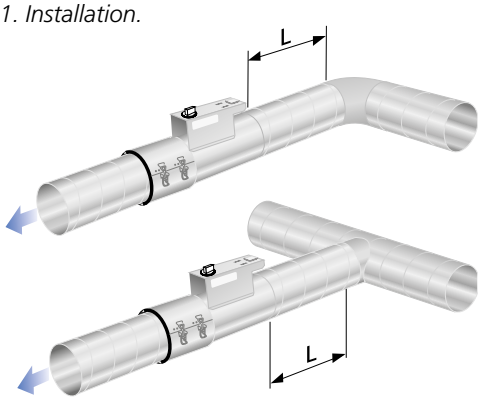


Figure 2.Straight duct length demands, see table below.

Methodic Errors

Type of obstruction upstream of the CRM	Length of straight duct (L) upstream of the CRM	
	For m_2= 5%	For m_2=10%
One 90° bend.	3 x Ød	2 x Ød
Two 90° bends in the same plane.	4 x Ød	2 x Ød
Two 90° bends in aligment at right angles to one another.	4 x Ød	2 x Ød
One 45° damper.	6 x Ød	3 x Ød
One T-piece.	4 x Ød	3 x Ød

m_2 = methodic error. Method for measurement of airflows in ventilation Installations.

Sizing

Sound power level

Diagrams for the various sizes show the total generated sound power (L_{wtot} dB), as a function of airflow and pressure drop across the damper. By correcting L_{Wtot} with the correction factors from the table for CRM 1, the sound power level for each octave band ($L_W = L_{wtot} + K_{ok}$)can be obtained.

Sound data

Table 2 – CRM 1

Sound power level
Correction factor, K_{ok}

Size	Mid-frequency (Octave band) Hz							
CRM 1	63	125	250	500	1000	2000	4000	8000
1-100	0	-1	-7	-12	-17	-24	-32	-40
1-125	1	-1	-8	-14	-19	-25	-33	-40
1-160	1	-1	-8	-13	-17	-23	-30	-39
1-200	2	-1	-7	-13	-16	-21	-29	-37
1-250	1	-2	-7	-14	-15	-19	-27	-39
1-315	2	-2	-4	-9	-16	-21	-29	-36
1-400	2	-2	-8	-12	-13	-20	-29	-35
1-500	1	-2	-7	-11	-13	-19	-28	-34
1-630	2	-2	-7	-10	-13	-20	-29	-33
Tol. ±	2	2	2	2	2	2	2	2

Table 3 – CRM 5

Sound power level
Correction factor, K_{ok}

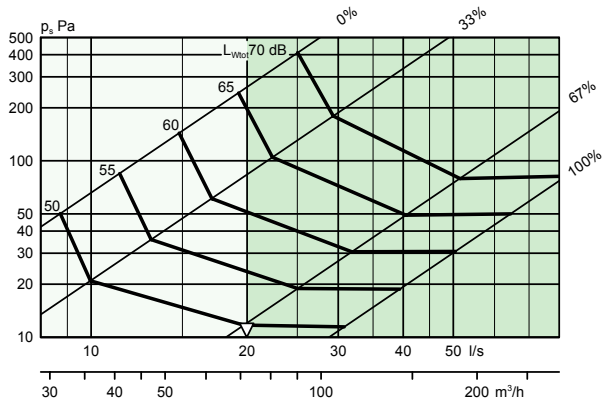
Size	Mid-frequency (Octave band) Hz							
CRM 5	63	125	250	500	1000	2000	4000	8000
5-100	-1	-4	-12	-15	-17	-26	-33	-40
5-125	-7	-3	-8	-13	-17	-25	-31	-39
5-160	-5	-2	-10	-17	-21	-25	-32	-43
5-200	-8	0	-12	-19	-21	-26	-33	-40
5-250	-4	-4	-9	-15	-19	-24	-33	-38
5-315	-4	-5	-11	-16	-20	-25	-33	-40
5-400	-3	-4	-11	-14	-17	-23	-33	-37
5-500	0	-4	-7	-14	-18	-24	-30	-39
5-630	0	-5	-7	-11	-15	-20	-27	-36
Tol. ±	2	2	2	2	2	2	2	2

Sizing diagram, CRM 1, Class 0

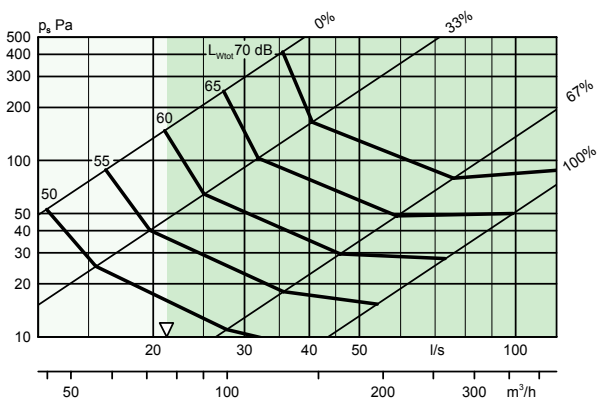
Velocity – Pressure drop – Sound level

- The diagrams should not be used for commissioning.
- The diagrams show pressure and flow lines at various damper settings.
- ∇ = Min. airflow required for obtaining sufficient commissioning pressure.

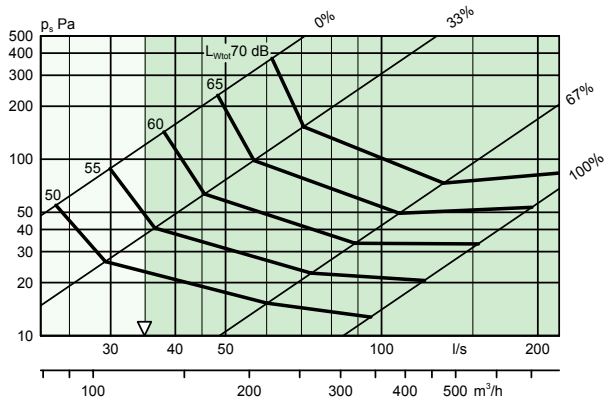
CRM 1-100



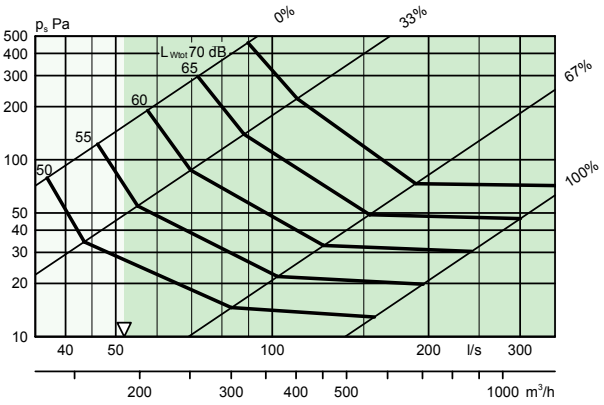
CRM 1-125



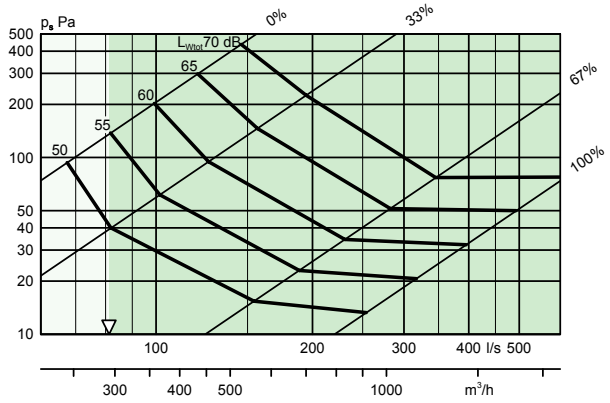
CRM 1-160



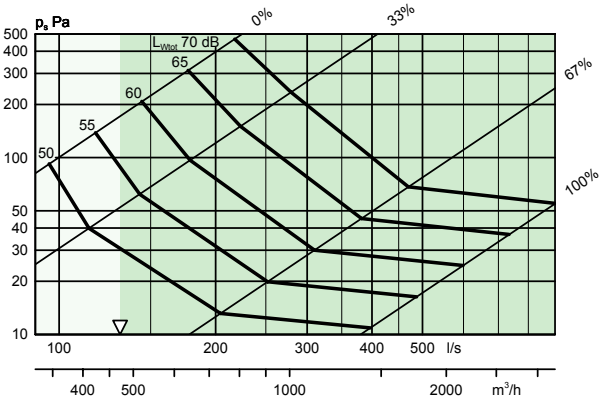
CRM 1-200



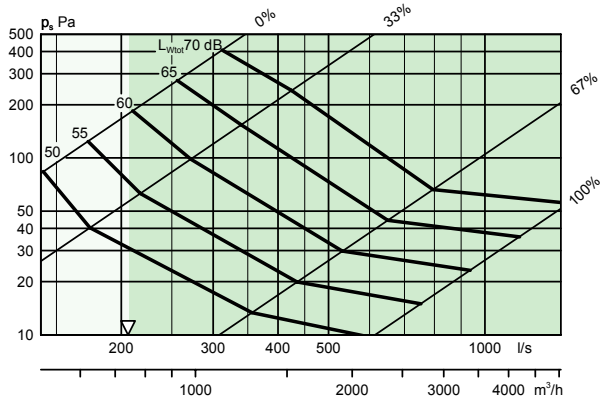
CRM 1-250



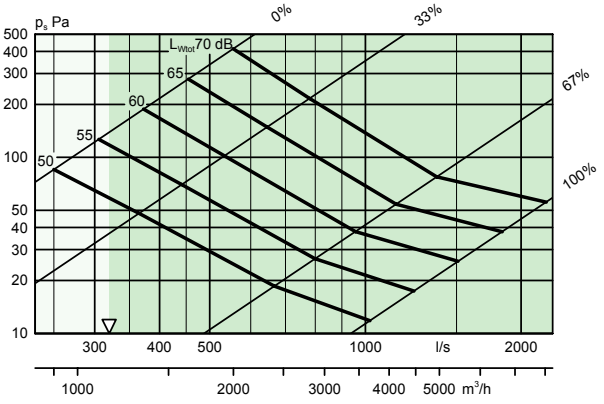
CRM 1-315



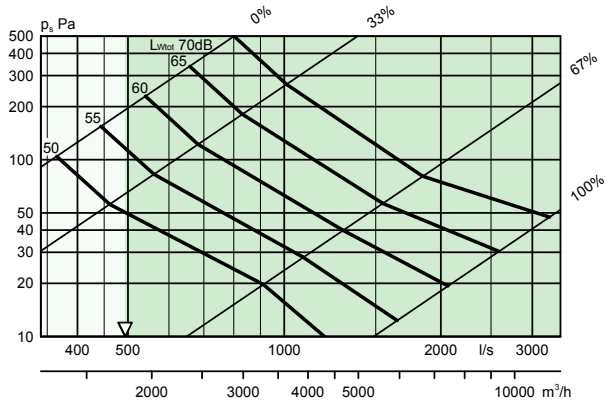
CRM 1-400



CRM 1-500



CRM 1-630

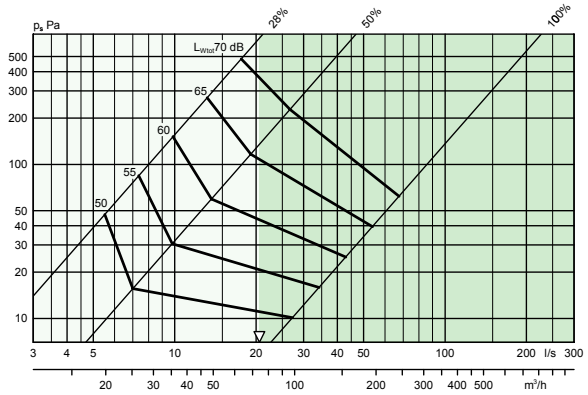


Sizing diagram, CRM 5, Class 4

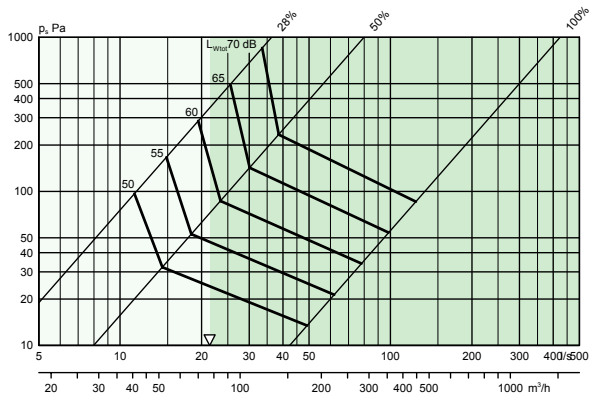
Velocity – Pressure drop – Sound level

- The diagrams should not be used for commissioning.
- The diagrams show pressure and flow lines at various damper settings.
- ∇ = Min. airflow required for obtaining sufficient commissioning pressure.

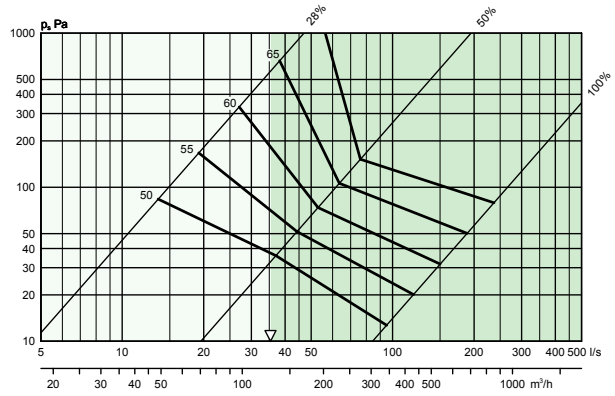
CRM 5-100



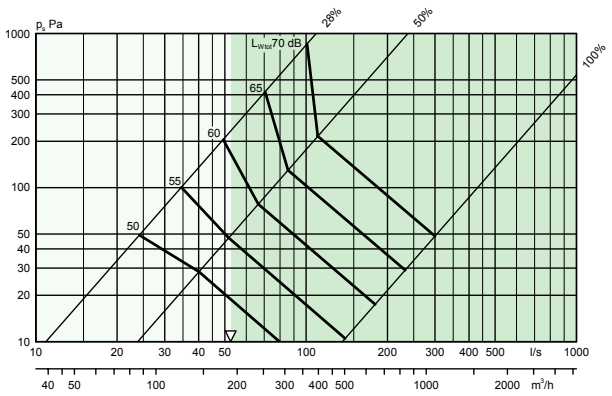
CRM 5-125



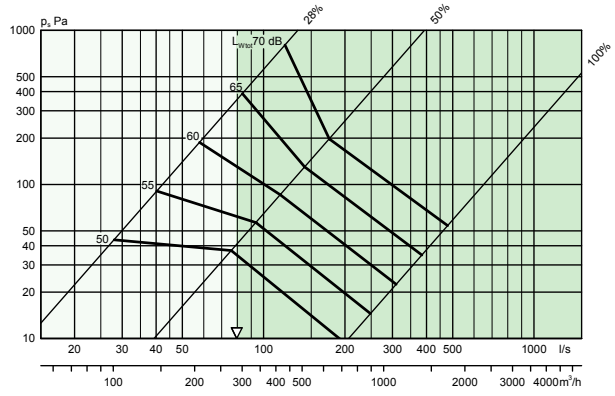
CRM 5-160



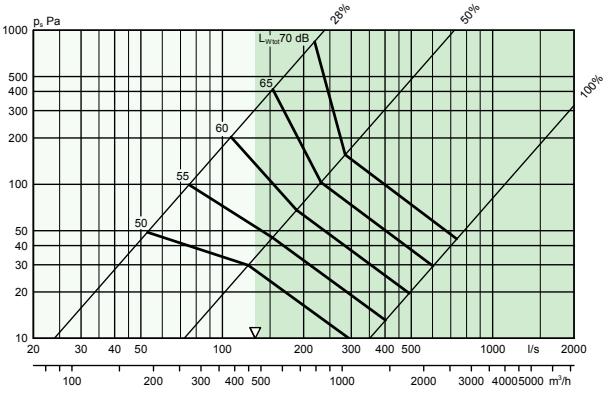
CRM 5-200



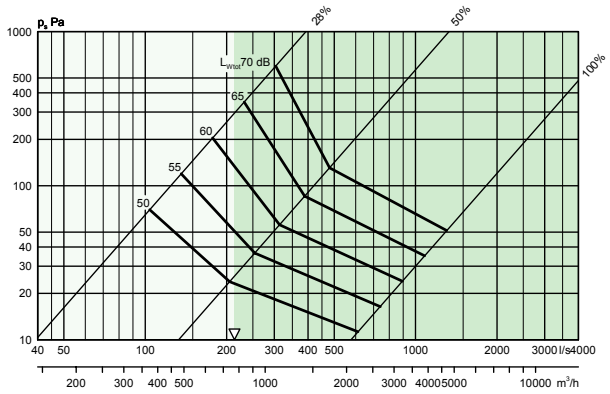
CRM 5-250



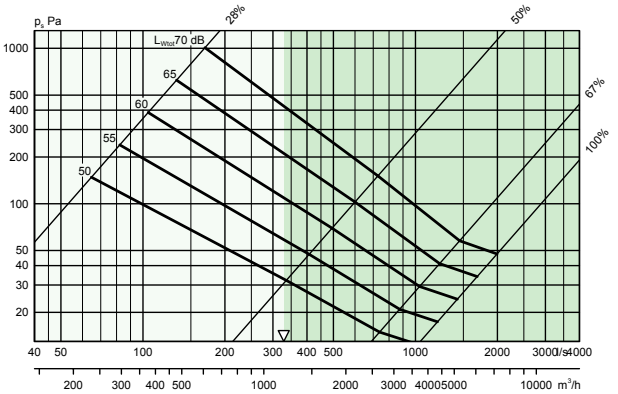
CRM 5-315



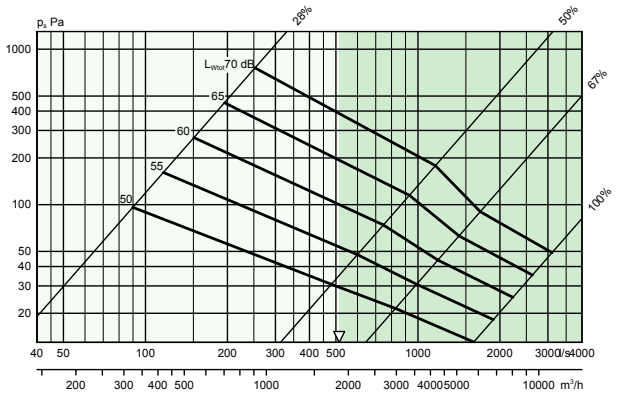
CRM 5-400



CRM 5-500



CRM 5-630



Dimensions and weights

Size ØD (mm)	Dimensions (mm) A	B	H	Weight (Kg)	Torque*) (Nm) CRM 1	CRM 5
100	305	45	70	0.8	<3	<3
125	356	45	70	1.0	<3	<3
160	356	45	75	1.3	<3	<3
200	372	45	75	1.6	<3	4
250	452	45	75	2.1	<4	5
315	538	45	75	3.0	<4	6
400	582	57	80	5.0	<4	8
500	660	57	80	9.0	<8	12
630	735	57	80	13.0	<8	15

*) The torque moment in the table refers to the force that must be applied in order to fully close the damper.

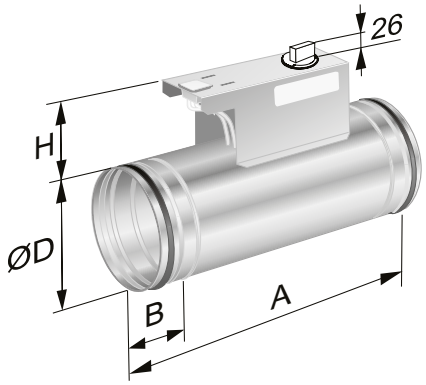


Figure 3. Dimensions (mm), CRM without actuator.

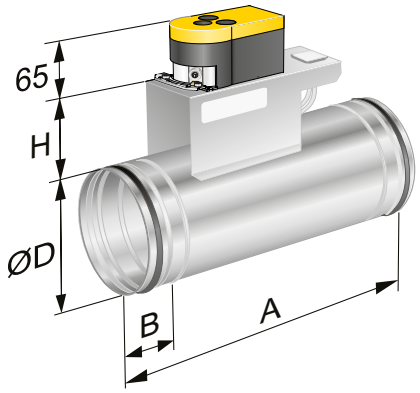


Figure 4. Dimensions (mm), CRM with actuator.

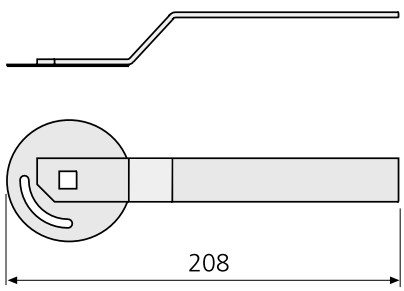


Figure 5. Dimensions (mm), CRTT-1 knob.

Actuator tables

- Actuators: Sauter 24 V AC, ASM115SK005 and ASM124SK002 are standard and kept in stock.
- All other actuators are order items.

2 or 3-point regulation – 24 V AC

Variant	Size	Torque	Designation Sauter	Belimo
CRM 1	100-315	5 Nm	ASM115SK005	LM24A
	400-630	10 Nm	ASM115SK005	NM24A
CRM 5	100-250	5 Nm	ASM115SK005	LM24A
	315-400	10 Nm	ASM115SK005	NM24A
	500-630	15 Nm	ASM124SK002	SM24A

2 or 3-point regulation – 230 V AC

Variant	Size	Torque	Designation Sauter	Belimo
CRM 1	100-315	5 Nm	ASM115K003	LM230A
	400-630	10 Nm	ASM115K003	NM230A
CRM 5	100-250	5 Nm	ASM115K003	LM230A
	315-400	10 Nm	ASM115K003	NM230A
	500-630	15 Nm	–	SM230A

0-10 V stepless/modulating regulation – 24 V AC

Variant	Size	Torque	Designation Sauter	Belimo
CRM 1	100-315	5 Nm	ASM115SK005	LM24A-SR
	400-630	10 Nm	ASM115SK005	NM24A-SR
CRM 5	100-250	5 Nm	ASM115SK005	LM24A-SR
	315-400	10 Nm	ASM115SK005	NM24A-SR
	500-630	15 Nm	ASM124SK002	SM24A-SR

Electrical data

Actuators – Supply voltage 24 V AC

Make / Model	Ambient temp.	Power Consumption
Sauter AS115SK005	-20...+55°C	8.7 VA
Sauter ASM124SK002	-20...+55°C	4.4 VA
Belimo LM24A / -SR	-30...+55°C	2.0 VA
Belimo NM24A / -SR	-30...+55°C	3.5 VA
Belimo SM24A / -SR	-30...+55°C	4.0 VA

Actuators – Supply voltage 230 V AC

Make / Model	Ambient temp.	Power Consumption
Sauter ASM115K003	-20...+55°C	4.0 VA
Belimo LM230A	-30...+55°C	4.0 VA
Belimo NM230A	-30...+55°C	6.0 VA
Belimo SM230A	-30...+55°C	6.5 VA

Ordering key

Product

Commissioning damper	CRM	c	-a	-bbb	-c
Version					
Variant: 1 = Perforated damper blade, Class 0 5 = Solid damper blade, Class 4					
Sizes CRM 1: 100, 125, 160, 200, 250, 315, 400, 500, 630 Sizes CRM 5: 100, 125, 160, 200, 250, 315, 400, 500, 630					
Control version: 1 = Manual damper setting knob (stocked for CRM-1) 2 = Mounted actuator (incl standard actuator, CRM-1, -5) 4 = Prepared with actuator shelf and shaft end (CRM-1, -5, stocked for CRM-5)					

Accessories

If a non-standard actuator is to be fitted, the actuator designation must be specified in plain text.

N.B: The actuator type varies with the size of damper. See actuator selection table, page 7.

Knob	CRTT-1

Quick connection	FSR	c	-aaa
Version:			
Size: Nominal duct size			

Specification example

Swegon's type CRM circular measurement and commissioning damper with the following functions:

- Ductwork leakage class 0 or 4
- Damper blade with rubber seal
- Fixed measurement tappings
- Lockable damper knob with damper blade position indicator
- Non-fouling design

Size:	CRMc a - bbb -c	xx items