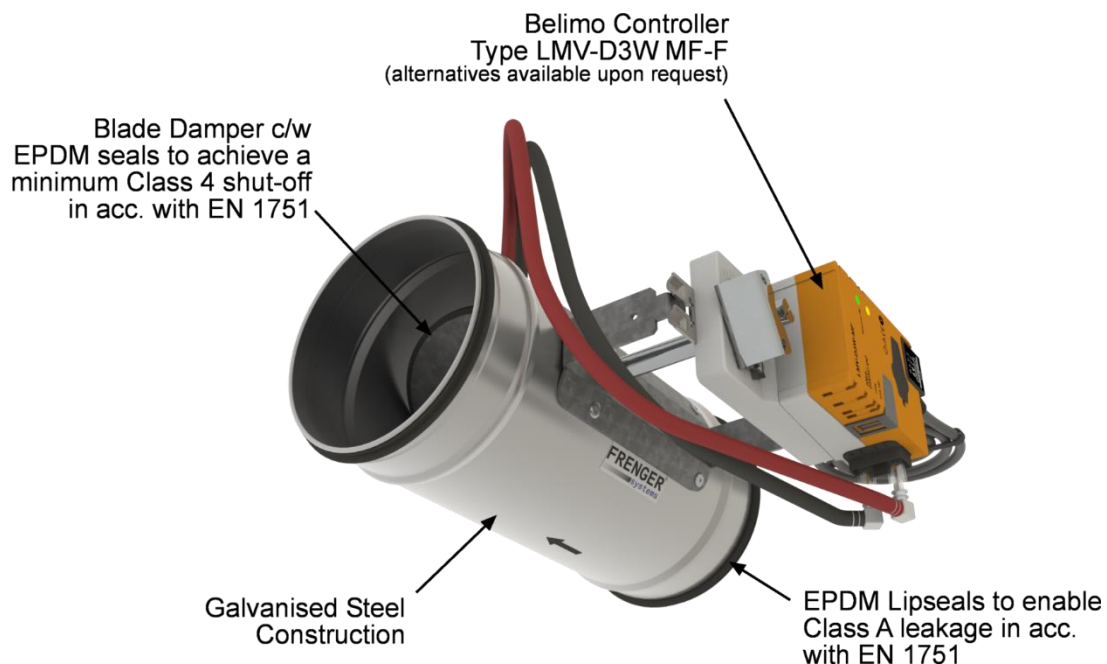


### Round Variable Air Volume Controller

The Variable Air Volume (VAV) Controller type RND is a round, compact blade type damper c/w integral differential pressure sensor and Belimo controller. The VAV controller type RND can provide constant and variable air flows, the controller measures the differential pressure within the damper blade zone when enables a stronger signal to be obtained due to increased air velocities at measurement point.

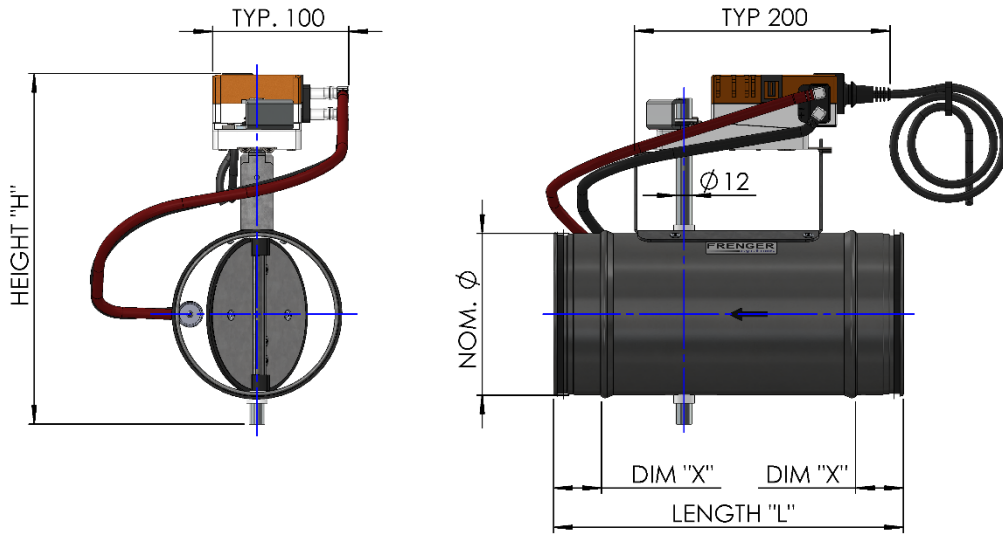
The VAV controller as standard uses dynamic differential pressure measurement which is the most cost-effective solution for use in clean dust free systems (e.g. Office buildings); however, for non-standard dusty environments the RND VAV controller is available with an optional diaphragm pressure transducer to enable static differential pressure control.



### Key Features

- High level of control accuracy: + - 5% at nom. velocities (10 m/s)  
+ - 15% at low velocities (1 m/s)
- Short installation length due to integral dynamic differential pressure sensor
- Lip Seal Gaskets to ensure low duct leakage in accordance with EN 1751 Class A.
- Operating temperature range 0 to 50°C at 5 to 95% RH in accordance with EN 60730-1
- Energy savings due to low minimum pressure loss.
- Optional insulating case to reduce sound and heat transfer (supplied loose for on-site fitting).
- Optional 0.9m nominal length silencer (type RND-SIL-900) for reduced noise levels.
- Optional static differential pressure sensor / controller for control of polluted and dusty air.

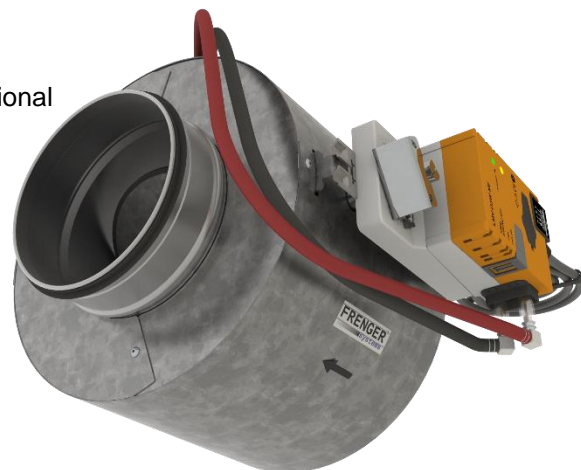
**Dimensioning**



Nominal Dia	Rec. Flow Range		Length "L"	Dim "X"	Standard Unit		With Insulation	
	Min.	Max.			Height "H"	Weight	Height "H"	Weight
(DN)	(l/s)	(l/s)	(mm)	(mm)	(mm)	(kg)	(mm)	(kg)
100	8	76	270	35	235	1.5	270	3.0
125	12	119	270	35	260	1.8	295	3.5
160	20	197	290	35	295	2.1	330	4.2
200	31	308	290	35	335	2.6	370	5.0
250	49	484	370	53	385	3.3	420	6.6
315	77	770	370	53	450	4.4	485	8.3
400	125	1245	460	71	535	6.1	570	11.8

Note: Min flow rate based on a velocity of 1.0 m/s and maximum flowrate based on a velocity of 10 m/s.

RND Damper with optional Insulating Case



### Materials of Construction

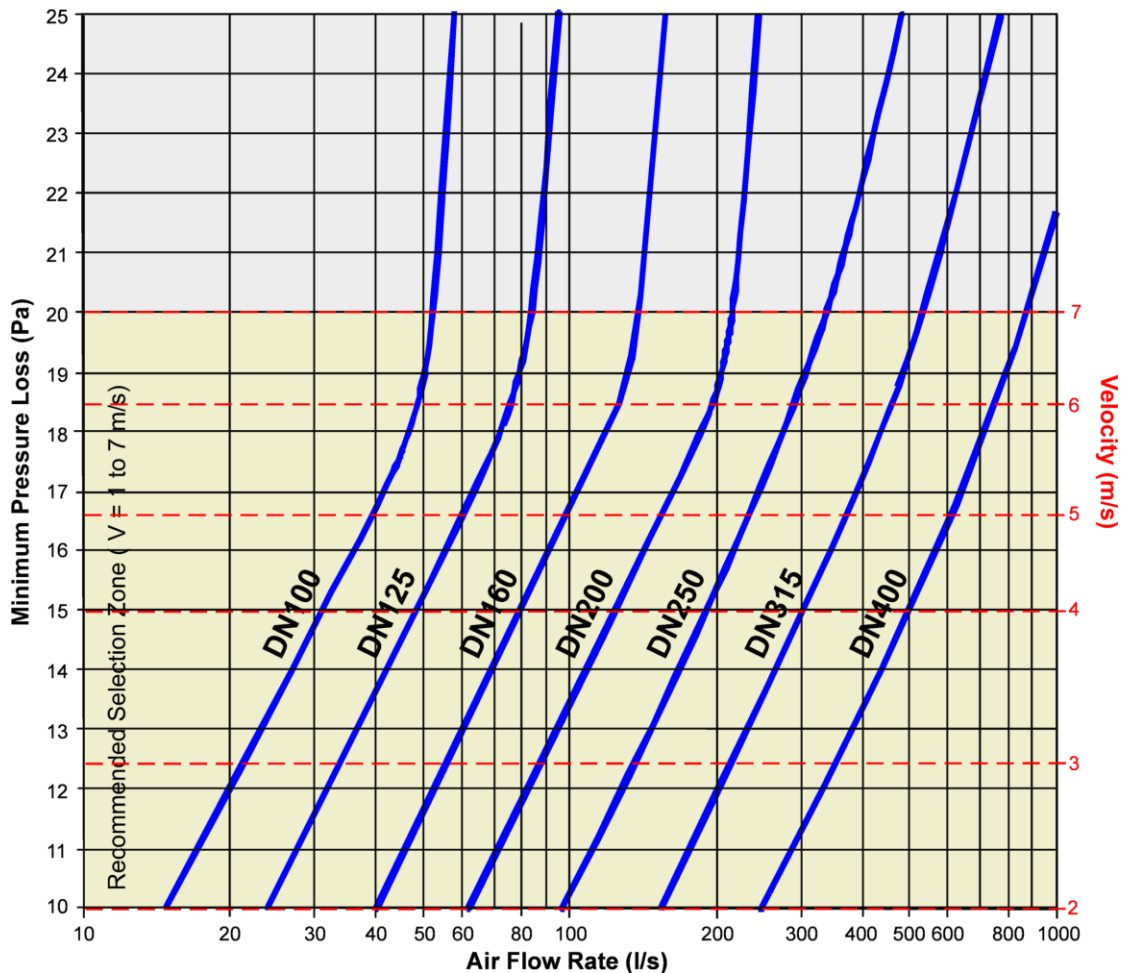
The VAV Controller body is manufactured from several different materials:

- Main Body, damper, measuring probes and axle – Galvanised Steel.
- Sealings – EPDM.
- Damper bearings – POM Plastic.

As standard all materials are supplied “self-finish”, however alternative materials and coatings can be produced as special-order items; please contact Frenger with your requirements to check availability.

### Minimum Pressure Loss

The minimum pressure loss at various flowrates can be determined using the following chart:



To ensure best practice selection, for controllability and noise we recommend that the VAV type RND selection should ensure a design velocity of between 1.0 and 7.0 m/s at the design flow rate.

### Sound Pressure Levels (LpA)

The VAV Controller type airborne sound pressure levels at total static pressure differences of 100Pa and 200Pa can be seen in the following table:

Nom. Size (mm)	Flow rate (l/s)	Without Silencer		With 0.9m long Silencer Type RND-SIL-900	
		LpA (dB{A}) ΔP = 100Pa	LpA (dB{A}) ΔP = 200Pa	LpA (dB{A}) ΔP = 100Pa	LpA (dB{A}) ΔP = 200Pa
DN100	8	37	41	<15	<15
	30	37	46	<15	<15
	53	42	49	16	20
	76	46	52	20	26
DN125	12	35	43	<15	<15
	48	38	49	<15	<15
	83	45	52	17	22
	119	49	54	24	30
DN160	20	37	46	<15	22
	79	41	48	20	27
	137	48	53	26	32
	196	51	56	31	37
DN200	31	34	44	<15	21
	123	39	44	21	26
	216	44	49	27	31
	308	51	52	34	37
DN250	48	36	46	21	27
	193	38	44	26	32
	338	46	50	30	36
	483	49	55	36	42
DN315	77	38	45	25	31
	308	37	45	28	35
	539	43	48	32	39
DN400	124	39	46	30	44
	498	36	44	30	40
	871	41	47	34	41

### Optional Silencer RND-SIL-900

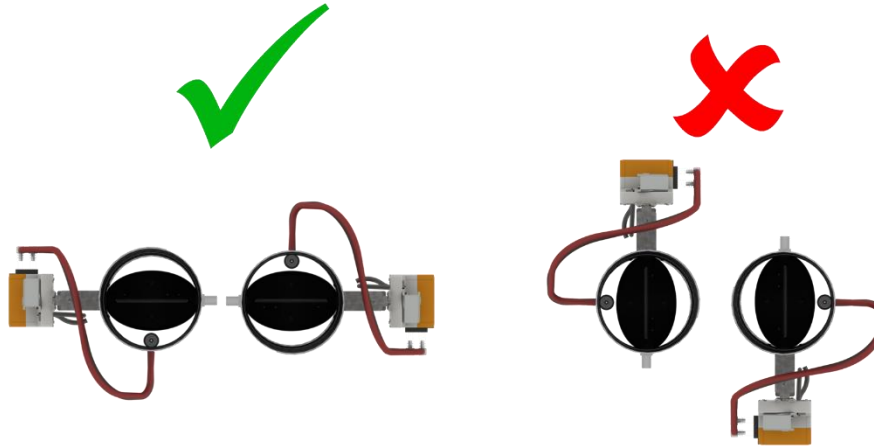
The optional silencer used to reduce airborne sound pressure levels (see the above table) has overall dimensions of  $\varnothing = (\text{VAV RND Nom. Size} + 100\text{mm})$ , overall length = 900mm.

The silencer is manufactured with a galvanised steel outer casing, perforated inner casing c/w 50mm thick non-combustible sound absorbing material and is suitable for a maximum operating temperature of 100°C.

The silencer is supplied with twin lip seals to provide leak free connection to air ducts.

**Installation**

The VAV Controller type RND should be installed with the damper axis in the horizontal plane only, as per the diagram below:

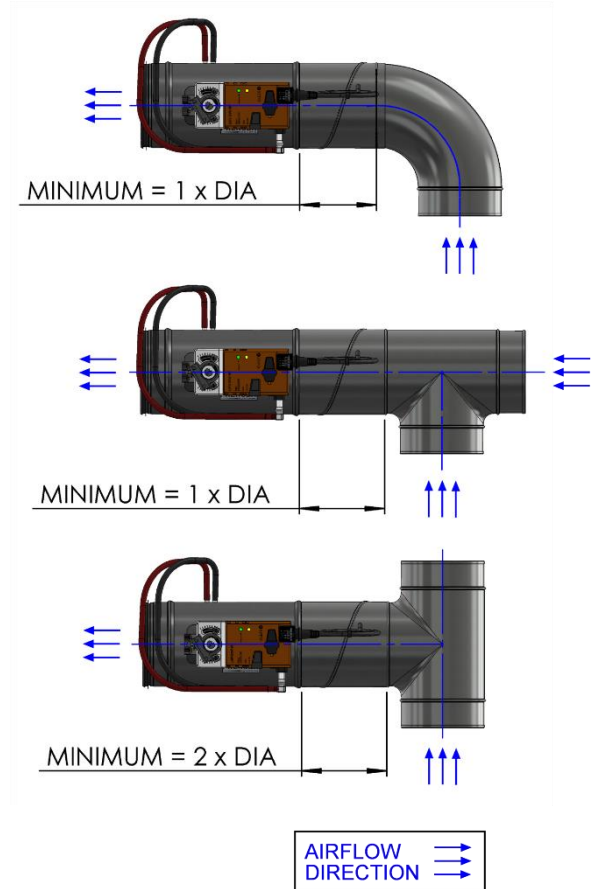


To achieve adequate accuracy of the airflow measurement the VAV controller requires a straight minimum distance on the inlet side of between 1 and 3 times the nominal diameter.

The exact minimum length depends upon the supply ductwork arrangement, note short radius bends and branches can introduce increased turbulent airflow resulting in requiring an increased straight upstream distance.

The images to the right detail typical minimum straight distances

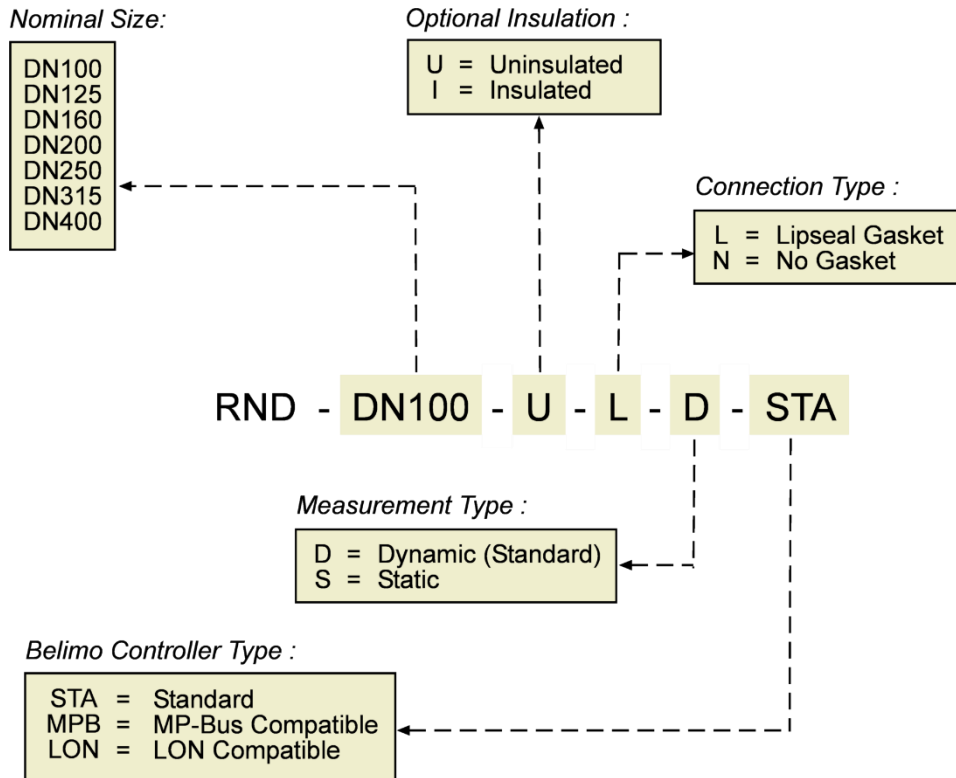
The VAV controller has no minimum straight distance requirements on the outlet side.



**Product Order Codes**

As standard the VAV Controller Type RND is supplied for a 0 to 10V control signal using Belimo actuators; should you have any specific requirements for alternative actuators or control methods please contact Frenger to confirm availability.

The VAV Controller type RND is available in numerous versions, the standard versions and order codes can be found as follows:



At time of order please specify the required minimum and maximum flowrates ( $V_{min}$ ,  $V_{max}$ ) to enable factory setting; failure to provide the specification at time of order will result in units being delivered based on  $V_{min} = 0$ ,  $V_{max} =$  See Table page 2.

The following is a typical ordering example of a VAV controller type RND and silencer

An ordering example for a typical VAV controller, c/w insulation and silencer can be seen below:

**RND - DN125 - I - L - D - STA + RND-SIL-900,  $V_{min} = 15$  l/s,  $V_{max} = 60$  l/s.**

If any further information is required on the application of VAV controllers please contact [sales@frenger.co.uk](mailto:sales@frenger.co.uk).