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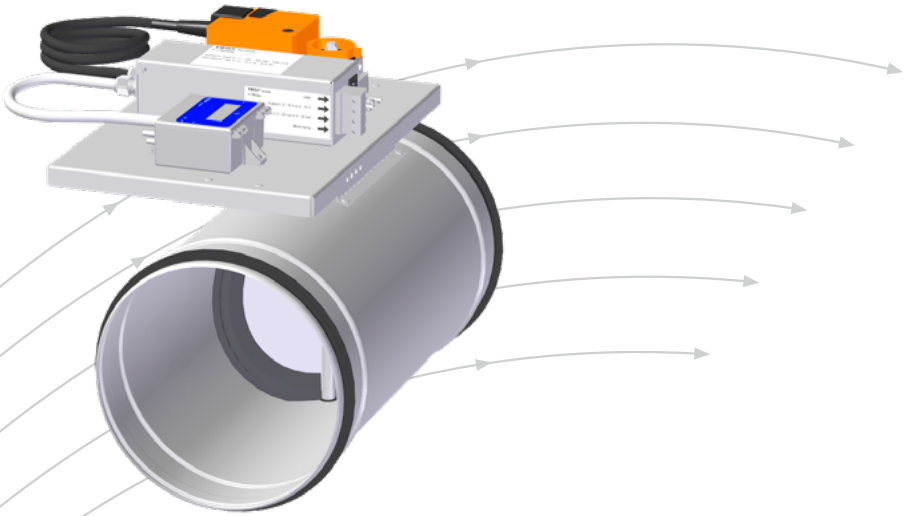
THS

Pressure control damper



- Complete unit
- Plug and play
- Sizes Ø100–Ø630
- Power supply 230 V
- Working range 0-2500 Pa

TROX® TECHNIK

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THS

APPLICATION

THS is a pressure control damper which aims at measuring the static pressure in one point in the duct network. When a change in duct pressure occurs, for example by opening or closing other dampers in the branch, the pressure controller will immediately compensate for this by adjusting the damper position until the desired pressure in the duct is reached. The THS unit is designed to provide comfort ventilation at temperature conditions of between 0°C and 50°C and a relative humidity between 10% and 95% without condensation.
The damper position of the THS damper can be read. It use a 0-10 V signal on the terminal block which is in the transformer box.

FUNCTION

The THS damper always adjusts itself so that the pressure in the duct is maintained and corresponds to the set point in the pressure controller. The THS unit consists of a regulating damper and a controller for measuring pressure. The static pressure is measured in the ductwork, and the pressure controller will regulate the damper positioin to maintain the desired duct pressure setpoint. THS has a control range from 0-2500 Pa. The desired pressure is set by entering the pressure regulator menu and entering the desired pressure range and pressure set point (see page 6 and table under section ”Commissioning”).
The product is ready for use by connecting the supplied
2 m 230 VAC power cable.

Measurement accuracy: 0.5 % MV ± 2,5 Pa
The measurement nipple and tubes must be placed at a point in the duct and at a distance from the damper blade itself, which results in stable pressure measurements (see page 6 and figures 3 and 4).

DESIGN

THS is a prefabricated unit where actuator, pressure controller, transformer and adjusting damper are assembled into one unit. Tubes and nipple are supplied separately for mounting on site. The THS product is location-friendly in terms of the required straight line, and can be placed in most parts of the duct system. It complies with leakage class 4 for damper blades in the closed position, and class C for leakage to the surroundings.

Class IP54 for regulator part.

For dim Ø100 – Ø315, Belimo LM24A-SR-F is used.
For dim Ø400-Ø630, Belimo SM-24A-SR is used.
The specifications of the controllers are given in Table 1.
Complete technical documentation can be downloaded from www.belimo.eu

MATERIALS AND SURFACE COATING

THS is made by galvanized steel, tubes, motor casing and housing on the pressure regulator are plastic. The connections on the THS are fitted with EPDM rubber gasket.

	LM24A-SR-F	SM-24A-SR
Operating voltage	AC 24 V 50/60 Hz, DC 24 V	AC 24 V 50/60 Hz, DC 24 V
Power consumption	1W	2W
Dim effect	2VA	4 VA

Table 1, technical specification, Belimo damper actuator

ORDER CODE, THS

THS - 160

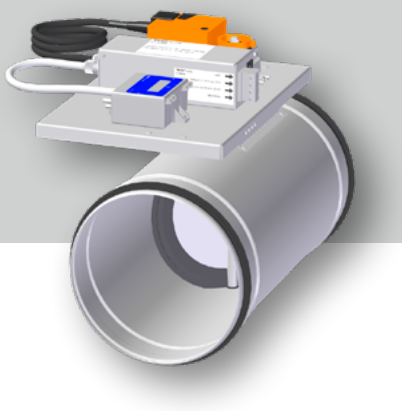
Product: ——————————

Dimension: Ø100 - Ø630 ——————————

Exampel:
THS-160

Explanation:
THS dimension Ø160.

THS



DIMENSIONS AND WEIGHT

	Dim [mm]		
Dim.	D	L	a
100	99	400	70
125	124	400	70
160	159	400	70
200	199	400	70
250	249	600	110
315	314	600	110
400	399	600	110
500	499	705	175
630	629	835	240

Table 2, dimensions

	Weight [kg]
Dim.	
100	2,8
125	3,1
160	3,5
200	3,9
250	5,4
315	6,2
400	8,2
500	12,1
630	15,6

Table 3, weight

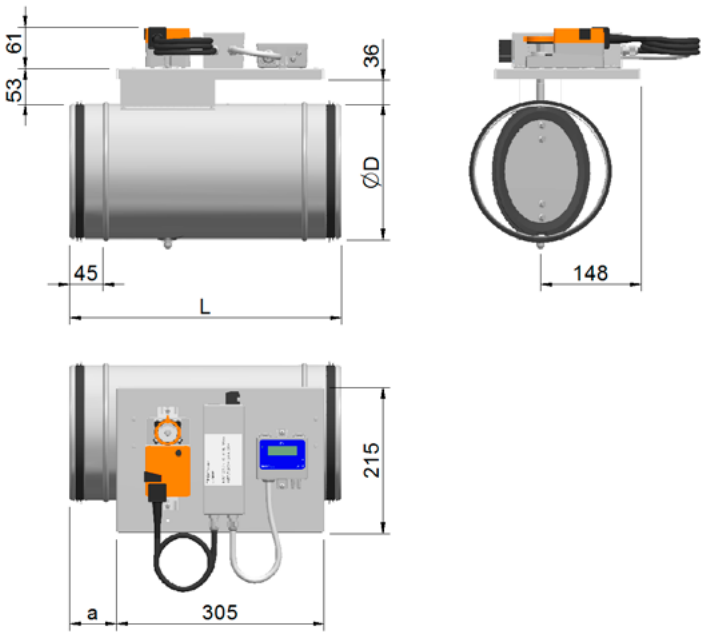


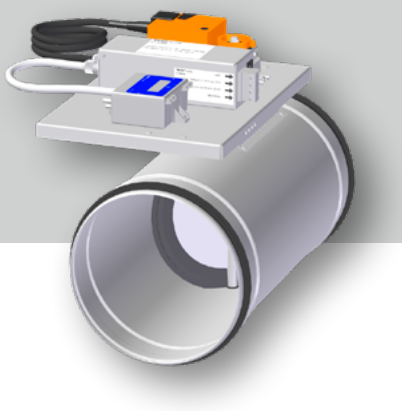
Fig. 1, dimensions THS

ACOUSTIC DATA

The diagrams provide a summary of the A-weighted sound power level from damper to duct, L_{WA}. Correction factors in the tables are used to calculate emitted sound power level at the respective frequencies, $L_W = L_{WA} + KO$. KO for two different damper settings is provided, the right pressure drop line is for totally open damper while the left pressure drop line indicates strongly choked damper. Since the damper can be used to completely close the duct for flow, dashed lines are added in the diagram indicating strong throttling of the damper. (observe the upper axis of the chart indicating the velocity of the duct at the selected operating point)

Example:
THS Ø250 (without silencer) with the desired airflow of 200 l/s and pressure drop 50 Pa.
According to diagram 5, L_{WA} = 46 dB(A). We aim to find emitted sound power level at 250 Hz. Corecction factors provided in table 4 page 5 for closed damper is 1 dB, and 0 dB for open damper. We can choose to add 1dB. Emitted sound power level at 250 Hz is then:
$L_W = L_{WA} + KO \Rightarrow 46 + 1 = 47$ dB
If the pressure drop is increased, for example, 100 Pa at the same airflow, the sound level will increase by ca. 6 dB.

THS



CALCULATION DIAGRAMS

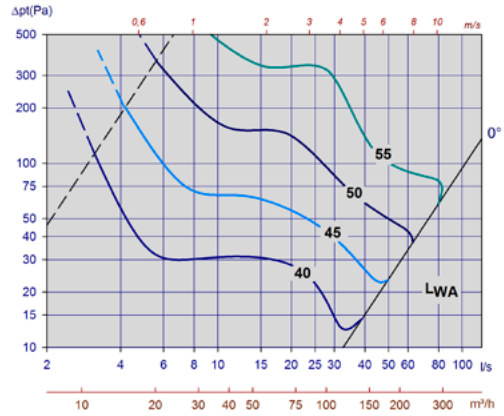


Diagram 1, THS Ø100

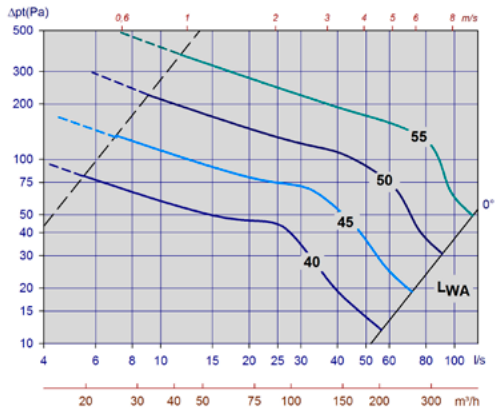


Diagram 2, THS Ø125

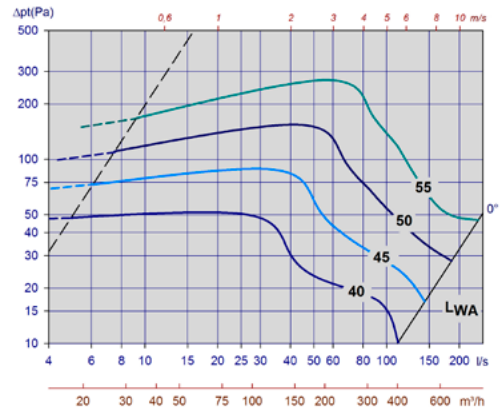


Diagram 3, THS Ø160

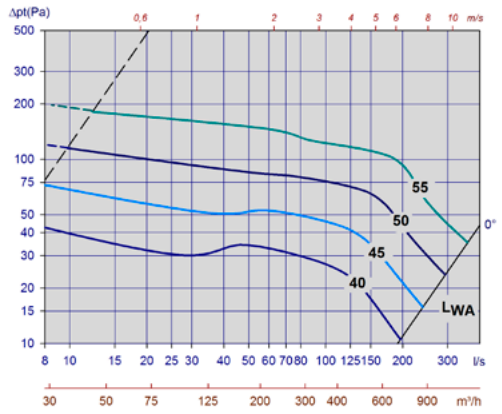


Diagram 4, THS Ø200

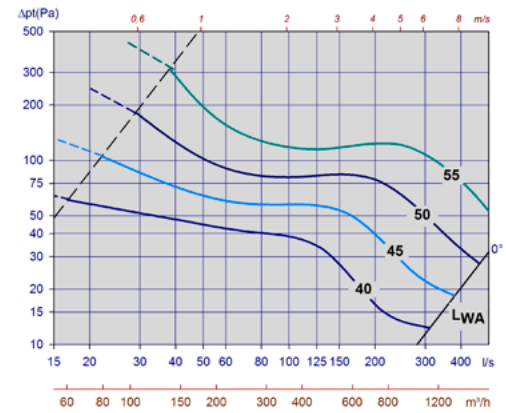


Diagram 5, THS Ø250

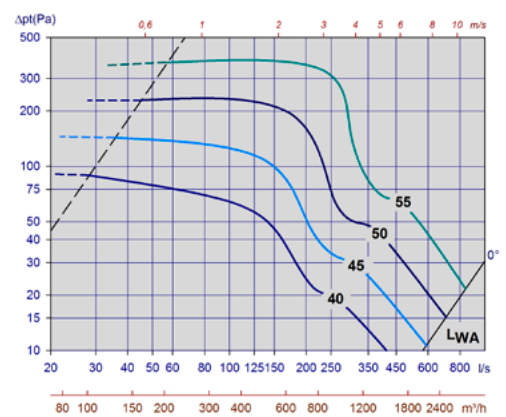
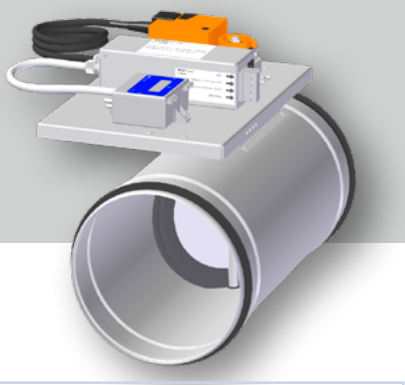


Diagram 6 THS Ø315

THS



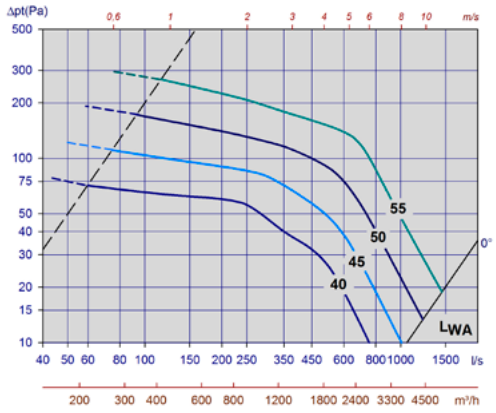


Diagram 7, THS Ø400

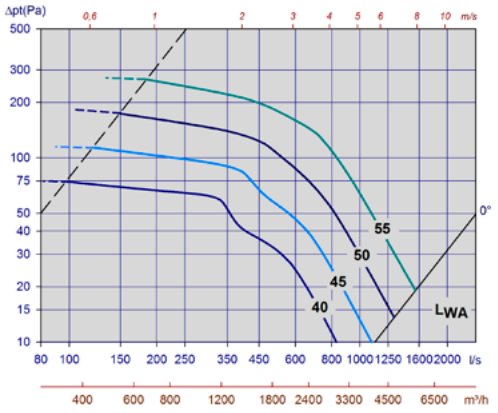


Diagram 8, THS Ø500

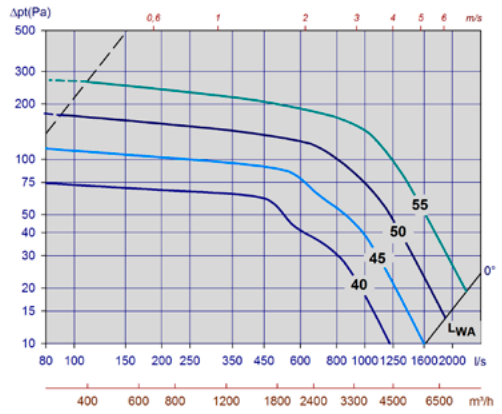


Diagram 9, THS Ø630

Correction factor [KO], THS

	KO [dB]															
THS	Left pressure drop line (s)								Right pressure drop line (å)							
Dim	63	125	250	500	1K	2K	4K	8K	63	125	250	500	1K	2K	4K	8K
100	17	0	-2	-2	-5	-13	-20	-24	18	10	2	-3	-12	-20	-27	-27
125	13	-1	-7	-4	-3	-12	-15	-19	19	8	2	-4	-8	-17	-19	-19
160	17	0	-1	0	-7	-20	-2	-18	17	8	0	-6	-5	-12	-15	-17
200	12	3	-1	0	-8	-19	-26	-25	16	9	2	-5	-7	-13	-20	-21
250	17	3	0	0	-9	-18	-18	-16	16	7	1	-4	-6	-12	-16	-14
315	12	0	-1	-1	-6	-12	-14	-14	14	6	-2	-5	-6	-8	-15	-14
400	12	5	1	-3	-7	-12	-13	-12	12	4	-3	-2	-6	-9	-16	-17
500	11	4	1	-3	-6	-11	-12	-12	11	3	-4	-2	-5	-8	-16	-16
630	9	3	0	-3	-6	-11	-12	-12	9	3	0	-3	-6	-11	-12	-12

Table 4

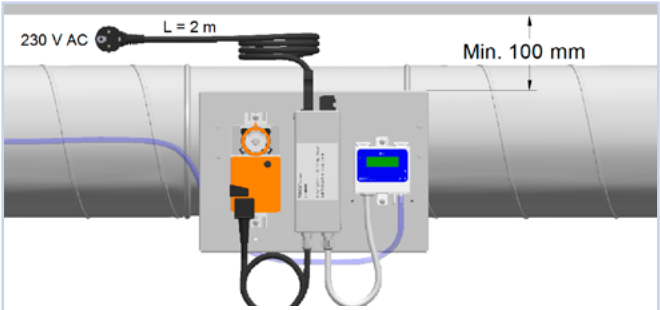
THS

INSTALLATION

For noise reasons, there should be at least ØD x 2 straight duct in front of the THS, shown in Figure 3. It is recommended to install THS with location and service distance as shown in Figure 2.

The pressure gauge nipple and tube are placed at a distance from THS dampers which provide stable measurements, shown in Figure 3.

Are there problems with measuring stable static pressure directly in the duct network? This can be solved by inserting a plug in the duct where the measuring nipple and tube are installed, see figure 4. Only a small hole in the duct is needed where the plug is placed, max Ø50 mm.



NB! In order to maintain the density class, the pressure regulator should always be positioned so that the pressure tube inlet faces down vertically. If the damper is mounted vertically, only the pressure regulator is turned 90 degrees.

Fig. 2, Installation

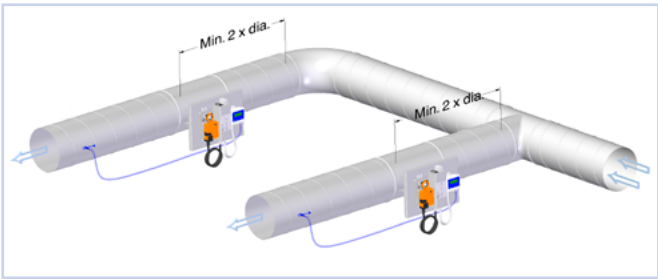
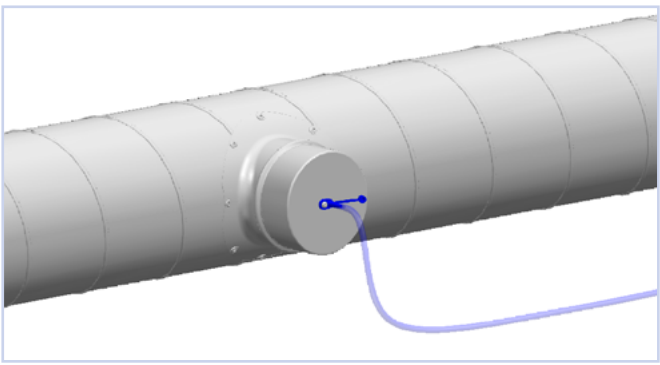


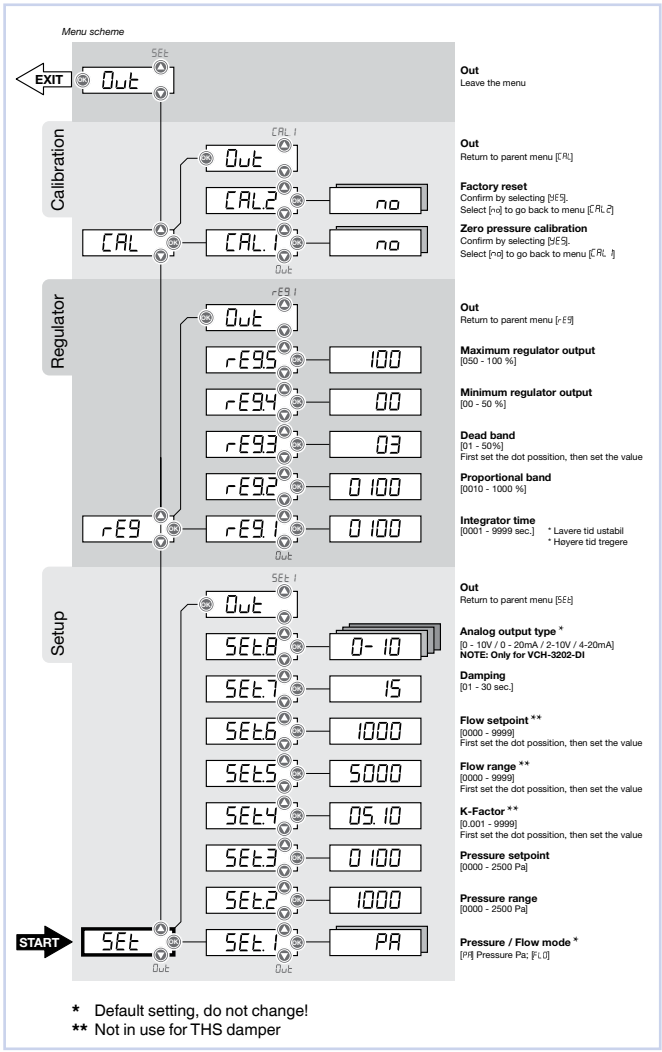
Fig. 3, mounting in duct network



Figur 4, measuring nipple in branch duct.

THS is developed and manufactured by:

COMMISSIONING



Complete data sheet for pressure regulator TX-VCH can be found at www.trox.no

MAINTENANCE

No specific maintenance requirements.

MILJØ

Enquiries regarding product declaration can be directed to our sales team, or information can be found at our website: www.trox.no

The company reserves the right to make amendments without prior notice.

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