

Explosion protection valves

ESV 4-RS-M surface mounted

ESV 4 RS-M

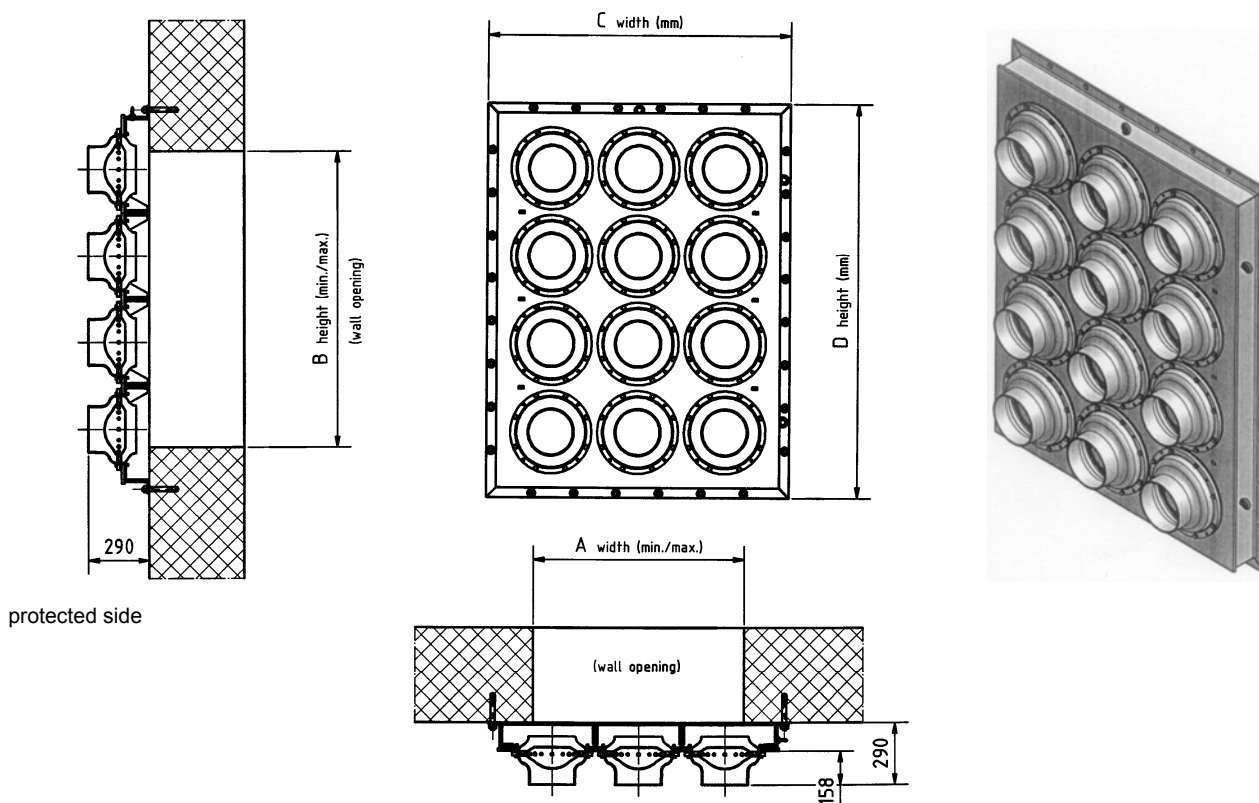
Attest Nr. LS T 08-903

The Lunor explosion protection valves ESV 4-RS are used in air inlet and outlet (tubes) or **for installation on the surface mounted support frame** of shelters and exposed constructions which have to be protected against explosions.

The surface mounted support frame with ESV 4-RS-M is designed to withstand a long duration blast load with 300 kPa (3 bar) reflected peak pressure.

The valve is type-tested and approved by the Laboratory Spiez and is designed according the manufacturer specifications in analogy to the technical requirements, TPH-04, for the production of anti-explosion valves. Approval no. ESV 4-RS, LS T 08-903 available upon request.

Valves can be installed in horizontally or vertically position.



Dimension of Blast Valve ESV 4-RS-M surface mounted

<u>Valve type / code</u>		<u>Concrete wall opening</u>		<u>Overall Dimension of Valves with support frame</u>		Total weight of Installation Frame	Total weight of Installation Frame (incl. Valves)	<u>Remarks</u>
Type	Code	A width (min) / (max)	B height (min) / (max)	C width (mm)	D height (mm)	approx. kg	approx. kg	
ESV - 1 x 4	(1 x 1)	200 / 200	200 / 200	606	606	39	64	Assemblies could be installed either vertical or horizontal.
ESV - 2 x 4	(1 x 2)	200 / 200	400 / 600	606	1016	66	115	
ESV - 3 x 4	(1 x 3)	150 / 200	800 / 1000	606	1426	92	165	
ESV - 4 x 4	(1 x 4)	150 / 200	1200 / 1400	606	1836	119	216	
ESV - 5 x 4	(1 x 5)	150 / 200	1600 / 1800	606	2246	146	267	
ESV - 4 x 4	(2 x 2)	400 / 600	400 / 600	1016	1016	108	206	
ESV - 6 x 4	(2 x 3)	400 / 600	800 / 1000	1016	1426	151	297	
ESV - 8 x 4	(2 x 4)	400 / 600	1200 / 1400	1016	1836	193	388	
ESV - 10 x 4	(2 x 5)	400 / 600	1600 / 1800	1016	2246	236	479	
ESV - 9 x 4	(3 x 3)	800 / 1000	800 / 1000	1426	1426	209	428	
ESV - 12 x 4	(3 x 4)	800 / 1000	1200 / 1400	1426	1836	268	559	
ESV - 15 x 4	(3 x 5)	800 / 1000	1600 / 1800	1426	2246	326	691	

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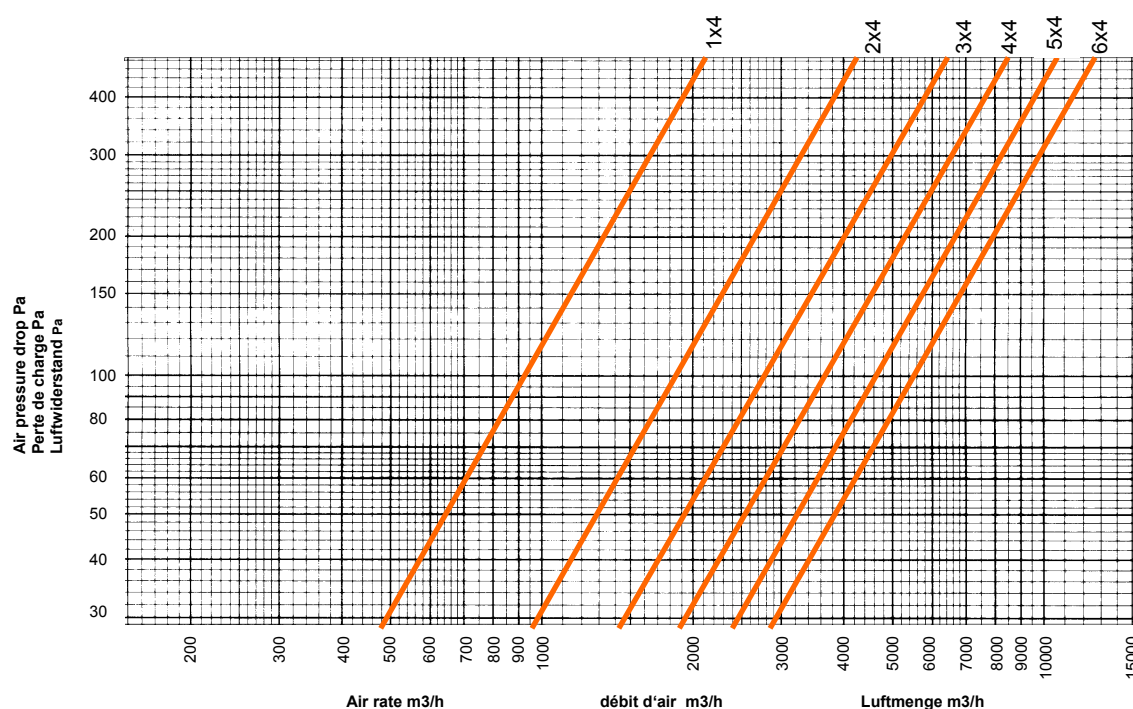
06.spec.105.1 a / 12.09 / SEA

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ESV 4-RS-M Diagram for directly reading off the required number of valves for predefined air volume and pressure drop.

Dimension of Blast Valve ESV 4-RS-M surface mounted

Valve type / code		Air flow characteristic in m³ / h				
Type	Code	100 Pa	150 Pa	200 Pa	250 Pa	300 Pa
ESV - 1 x 4	(1 x 1)	930	1150	1340	1500	1650
ESV - 2 x 4	(1 x 2)	1860	2300	2680	3000	3300
ESV - 3 x 4	(1 x 3)	2790	3450	4020	4500	4950
ESV - 4 x 4	(1 x 4)	3720	4600	5360	6000	6600
ESV - 5 x 4	(1 x 5)	4650	5750	6700	7500	8250
ESV - 4 x 4	(2 x 2)	3720	4600	5360	6000	6600
ESV - 6 x 4	(2 x 3)	5580	6900	8040	9000	9900
ESV - 8 x 4	(2 x 4)	7440	9200	10720	12000	13200
ESV - 10 x 4	(2 x 5)	9300	11500	13400	15000	16500
ESV - 9 x 4	(3 x 3)	8370	10350	12060	13500	14850
ESV - 12 x 4	(3 x 4)	11160	13800	16080	18000	19800
ESV - 15 x 4	(3 x 5)	13950	17250	20100	22500	24750

Explosion protection valves

ESV 4-RS-M surface mounted
Spezifikation

ESV 4 RS-M

Attest Nr. LS T 08-903

Explosion protection valve ESV 4-RS-M on surface mounted support frame

made by : LUNOR G.Kull AG, CH-8041 Zürich

The valve is type-tested and approved by the Laboratory Spiez and is designed according the manufacturer specifications in analogy to the technical requirements, TPH-04, for the production of anti-explosion valves.

Valve casing in 2 parts, the wallside-casing weldet on the support frame and both are made of steel hot galvanized. The complete shutting device and the anchoring bolts are made of stainless steel.

Support frame made off hot galvanised steel.

Support frame Type / Code:	ESV - 1 x 4	(1 x 1) pcs
to ESV 4-RS-M	or →	ESV - 2 x 4	(1 x 2) pcs
	or →	ESV - 3 x 4	(1 x 3) pcs
	or →	ESV - 4 x 4	(1 x 4) pcs
	or →	ESV - 5 x 4	(1 x 5) pcs
	or →	ESV - 4 x 4	(2 x 2) pcs
	or →	ESV - 6 x 4	(2 x 3) pcs
	or →	ESV - 8 x 4	(2 x 4) pcs
	or →	ESV - 10 x 4	(2 x 5) pcs
	or →	ESV - 9 x 4	(3 x 3) pcs
	or →	ESV - 12 x 4	(3 x 4) pcs
	or →	ESV - 15 x 4	(3 x 5) pcs

Incl. dowel-set to support frame type / code:

Type of valve, size (The number of valves depends on the type of support frame)	ESV 4-RS-M pcs
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Attest Nr. ESV 4-RS	LS T 08-903
Air rate per valve m ³ / h
Pressure drop Pa

screw set per valve, consisting of: pcs
8 pcs. hex. head screws M10 x 60 (A2)	
8 pcs. washers Ø 10,5/20 x 2 (A2)	
8 pcs. subjects discs (outside serrated) M10/10,5 (A2)	
8 pcs. nuts M10 (A2)	



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Explosion protection valves

ESV 4-RS-M surface mounted
Mounting instructions

ESV 4 RS-M

Attest Nr. LS T 08-903

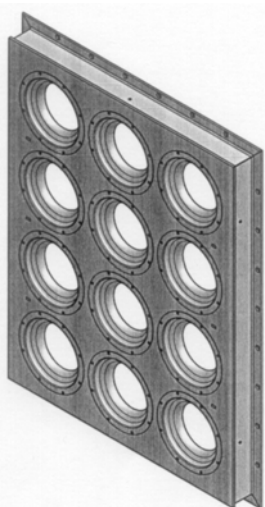
Installation details → Step 1 — assembly of the valves on the support frame

1. Mount the valves (ESV-4 RS-M, Pos. 2) with flanges (Pos. 3) on the support frame (Pos. 1), by using the screw sets (Pos. 4-7, 8 pcs. each valve).
2. Tighten screws and nuts with a dynamometric wrench, tightening torque 45 Nm

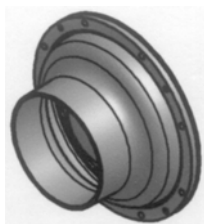
Screw set (for each valve), consisting of:

8 x hex. head screws	M 10x60	(Pos. 4)
8 x washer	Ø 10,5/20 x 2	(Pos. 5)
8 x subject discs (outside serrated)	M 10/10,5	(Pos. 6)
8 x nuts	M 10	(Pos. 7)

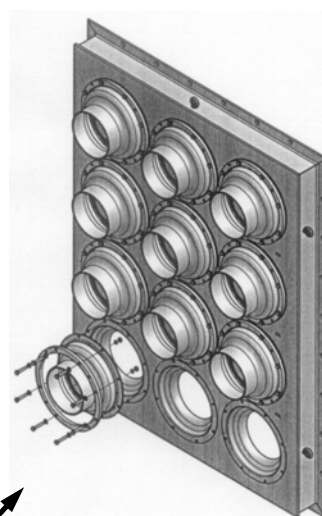
support frame (Pos. 1)



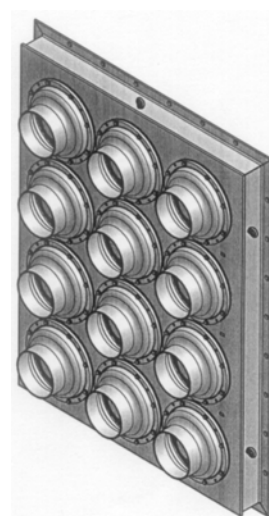
ESV 4-RS-M (Pos. 2)
with flange (Pos. 3)



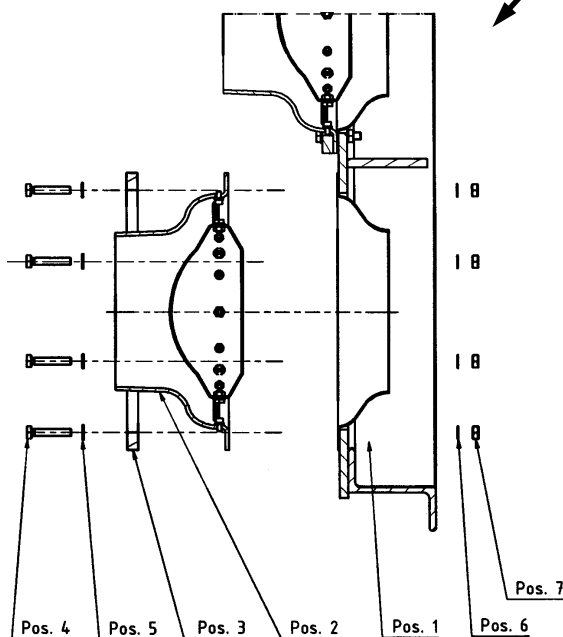
support frame showing
assembly of the valves



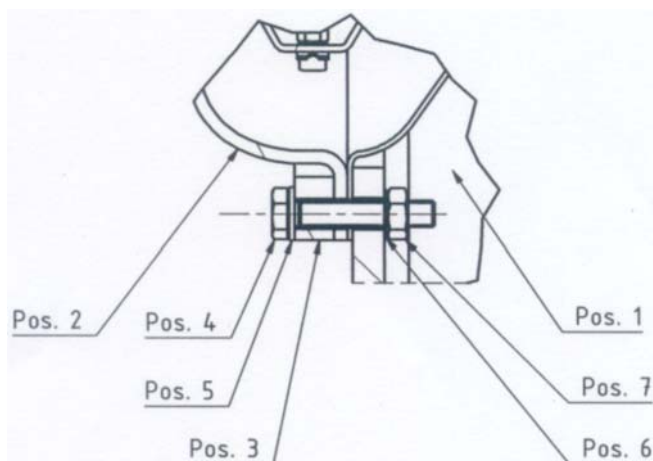
support frame completely



detail view (Pos. 1-7)
assembly of the valves



detail view (Pos. 1-7)
with mounted valve



Proviso for technical change

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Explosion protection valves

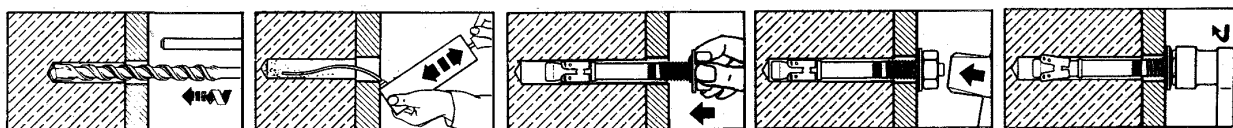
ESV 4-RS-M surface mounted
Mounting instructions

ESV 4 RS-M

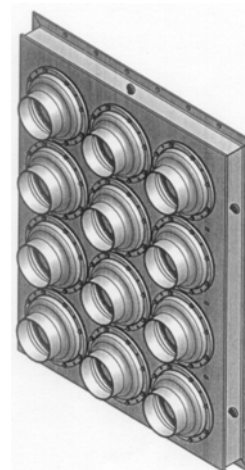
Attest Nr. LS T 08-903

Installation details → step 2 - Mounting of the completed support frame

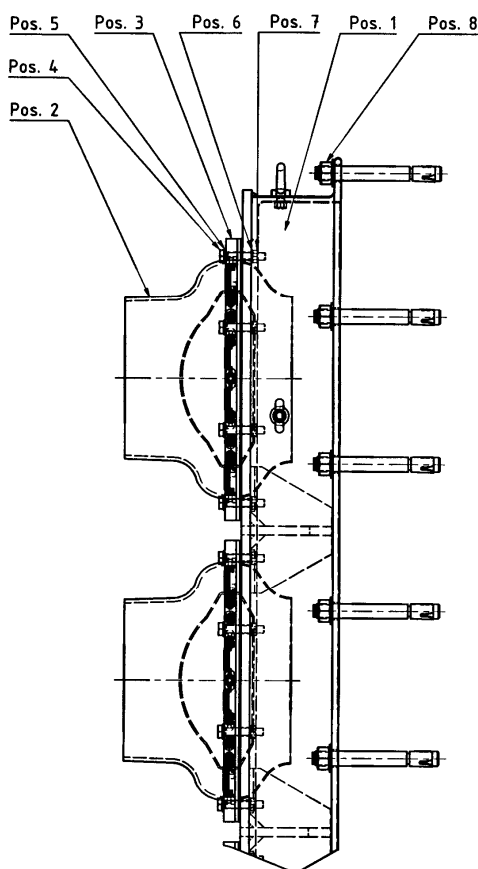
1. Place the valve support frame (Pos. 1) on the wall centered to the wall opening and mark first approx. 2-4 holes for the dowels.
2. Drill the first 2-4 holes according to the dowel suppliers instructions.
Recommended dowel type: Hilti HST. For dimension of dowels -> see in the matrix below.
3. Clean and blow out the first drilled dowel-holes.
4. Stick the dowels (Pos. 8) into the first four predrilled holes.
5. Place the valve support frame (Pos. 1) onto the bolts and pre-fix it with nuts.
6. Then drill the other boreholes according to the fix-holes on the support frame.
7. Clean and blow out the rest of the dowel-holes and stick the dowels (Pos. 8) in the holes.
6. Fix it with nuts. Then tighten all dowels (Pos. 8) with a dynamometric wrench, torque as in table.



support frame completely



detail view (Pos. 1-6)



Proviso for technical change

Details of fixation

Valve type	Dowel type: Hilti HST		Borhole diameter mm	Borhole depth mm	Tightening torque Nm
	Diameter	Quantity			
ESV - 1 x 4 (1R)	M 16x140/25	8	16	120	110
ESV - 2 x 4 (1R)	M 16x140/25	12	16	120	110
ESV - 3 x 4 (1R)	M 16x140/25	16	16	120	110
ESV - 4 x 4 (1R)	M 16x140/25	20	16	120	110
ESV - 5 x 4 (1R)	M 16x140/25	24	16	120	110
ESV - 4 x 4 (2R)	M 16x140/25	16	16	120	110
ESV - 6 x 4 (2R)	M 16x140/25	20	16	120	110
ESV - 8 x 4 (2R)	M 16x140/25	24	16	120	110
ESV - 10 x 4 (2R)	M 16x140/25	28	16	120	110
ESV - 9 x 4 (3R)	M 20x170/30	24	20	140	240
ESV - 12 x 4 (3R)	M 20x170/30	28	20	140	240
ESV - 15 x 4 (3R)	M 20x170/30	32	20	140	240

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