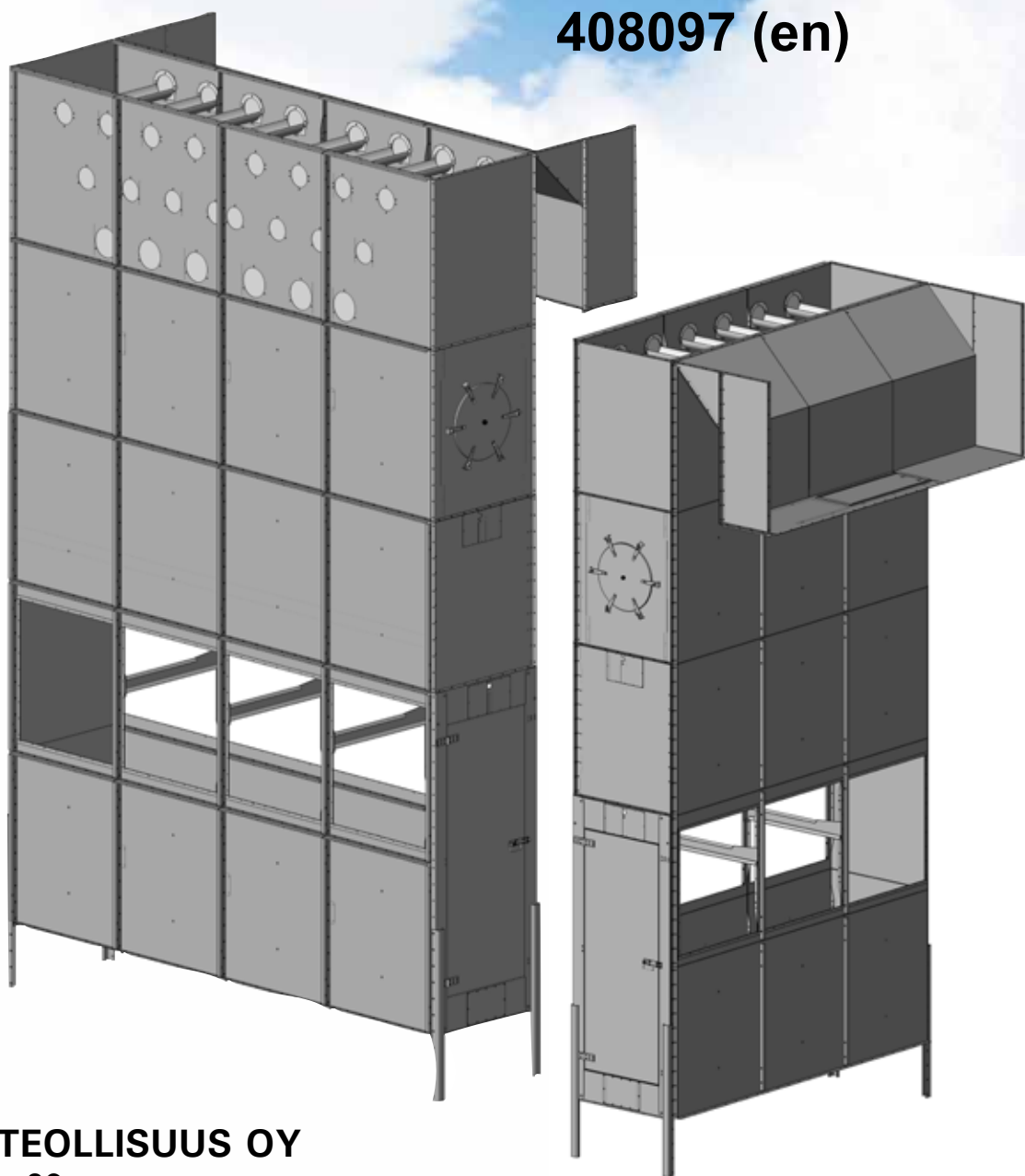




# Assembly and Operating Instructions

Channel Burner

408097 (en)



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10-2016

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## 1. General information

This book deals with installation and use of Antti Channel Burner modules. Channel Burners are available for two different gases; liquid gas and natural gas. The basic components of the two burners are similar. Check in the nameplate of the Channel Burner, that you have received correct type of burner. Refer to the nameplate delivered with the Channel Burner for detailed information about the burner module. Affix the sticker plate to a place, where it is easy to read, taking into account the heat generated by the burner to prevent the sticker from getting damaged. Always notify the seller and the service personnel of the information in the nameplate to ensure quick assistance in case of malfunction and when ordering spare parts.

The Channel Burner is exclusively intended for heating a grain dryer. The blower-unit makes the air flow through the Channel Burner and the dryer.

In accordance with the basic principle, the grain dryer is placed between the heater and the blower in a manner that the Channel Burner establishes one part of the dryer's air channel end. The air flows through the drying sections and exits from the outlet air channel end to the suction fan.

The Channel Burner is delivered in parts including the bowl burners with their components and the sheet metal parts for the Channel Burner module. Professional personnel needs to be assigned for final assembly of the Channel Burner module to perform connecting and checking the electric and gas connections.

## 2. Safety instructions and regulations

The assembly practice requires that exclusively persons with sufficient skills and valid authorization be assigned for the work.

The permissions required for the building work and connecting the gas appliances need to be applied, for example, from the gas supplier. Contact the local building authorities for additional information.

## 3. Selecting the installation location

The distance to the other buildings and location of the debris pipe in the dryer restrict selecting the installation location. The outlet air pipe must be located on the opposite side to the burner and access of any debris or dust into the suction net must be prevented.

**NOTE! DEBRIS IN THE SUCTION AIR OF THE HEATER CONSTITUTES A FIRE HAZARD!**



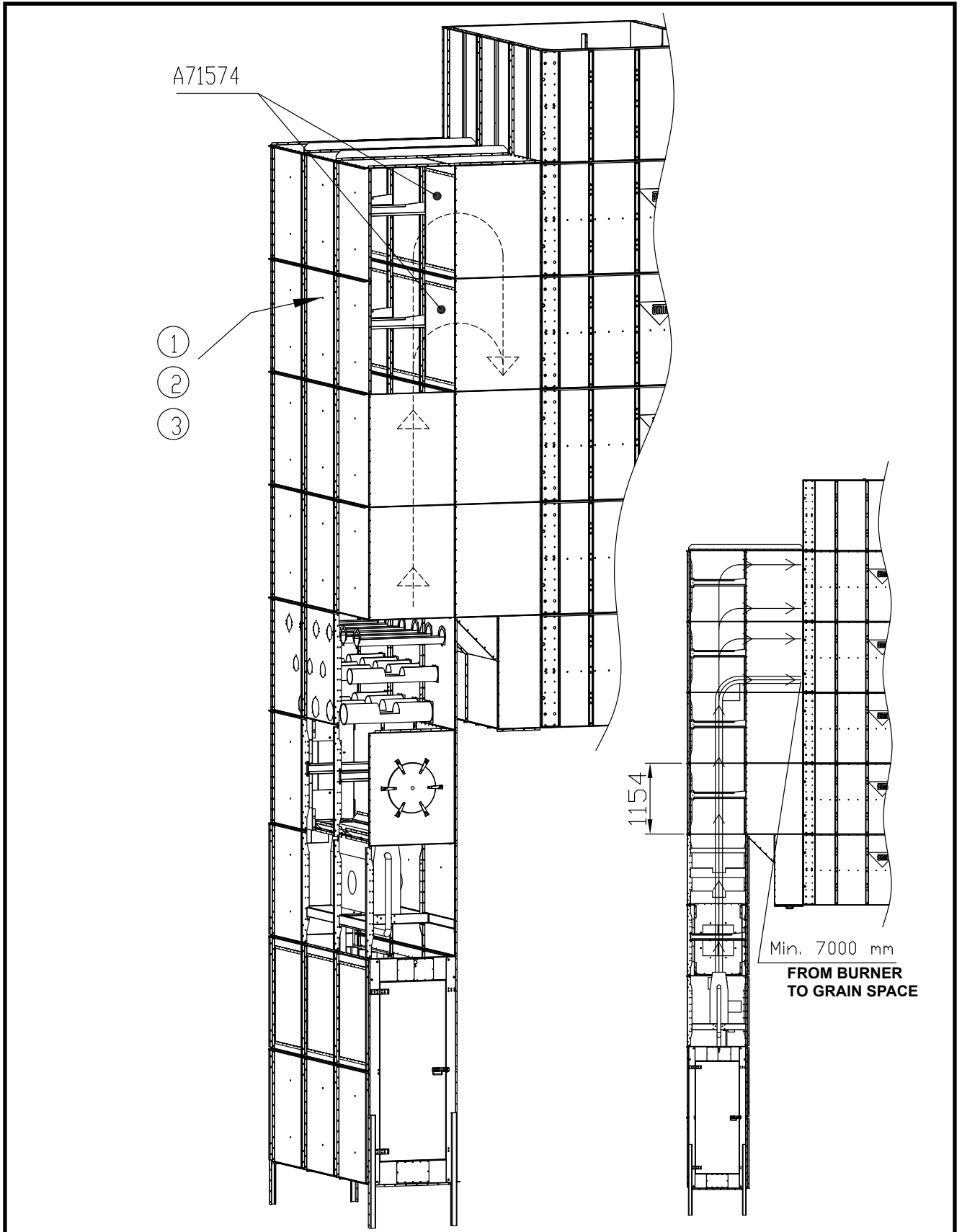
## Installing the temperature sensor, the pressure difference switch and the LTM-termostat

Install the sensors in the end-plate of the air channel end; the one below the spark net (A71574) (see picture on page 5). When installing the conductors and the hose, ensure that the temperature/sharp edges cannot damage the conductors and the pipe and chafe them over time.

Drill holes in the sheet metal of the air channel. Attach the sensor pipe for the pressure connector to the sheet metal using self-tapping screws. The differential pressure switch 1SW137800 must not be installed tight against the side of the channel to prevent it from getting damaged by the heat. Fasten the temperature sensor in place making sure its attachment will not loosen as a result of pressure variations.

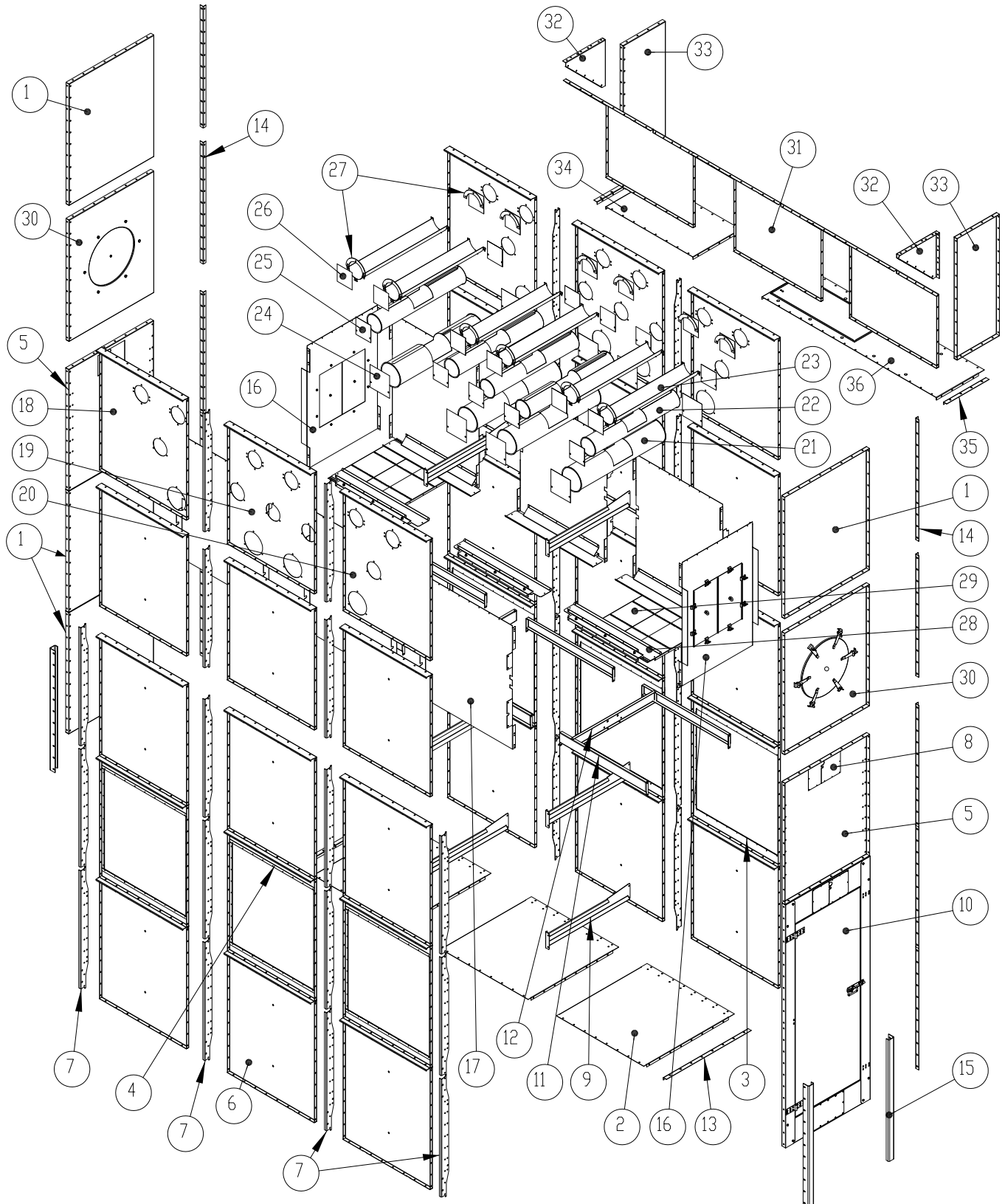
Connect the differential pressure switch to the longer tube of the pressure measuring joint. Point the shorter part of the joint towards the channel.

- ①. Differential pressure switch and measuring joint
- ②. Temperature sensor
- ③. LTM termostat



Installing the temperature sensor and the differential pressure sensor

## Spare parts picture A75799, 3W



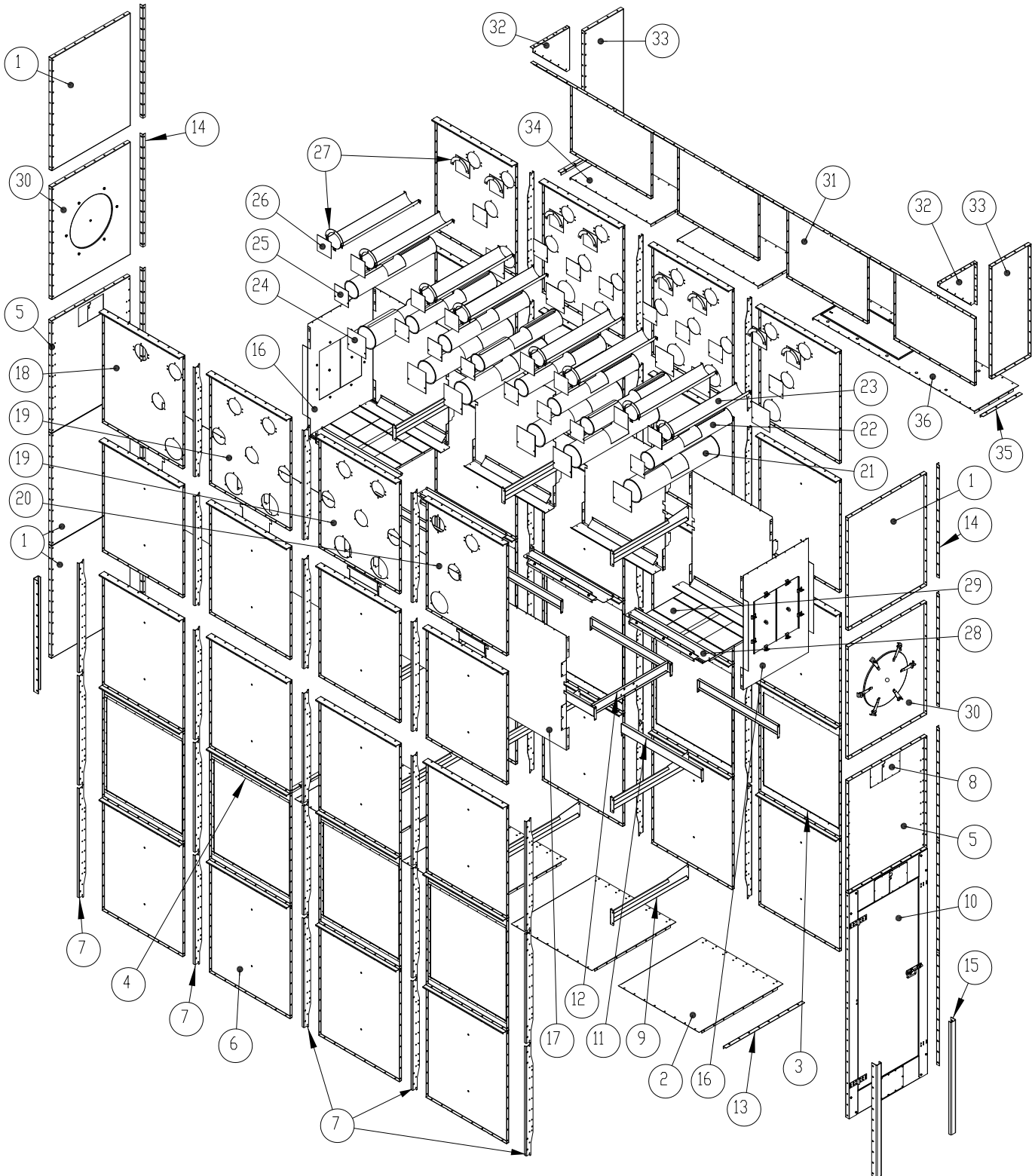


# Channel Burner

Parts	Denomination	Denomination	Drawing No.	Pcs.	Weight
1	A70640	AIR CHANNEL END WM06 1.0 SIDE-PLATE	A70640	4	14,18
2	A70642	AIR CHANNEL END WM06 1.0 SHUTTER-PLATE	A70642	3	11,63
3	A71576	AIR CHANNEL END WM06 SPARK NET 2MM LEFT	A71576	3	6,82
4	A71574	AIR CHANNEL END WM06 SPARK NET 2MM RIGHT	A71574	3	6,82
5	A71309	AIR CHANNEL END WM06 1.0 SIDE-PLATE BOWL B	A71309	2	13,5
6	A70563	TOP SECTION/AIR CH END END-PLATE	A70563	18	14,65
7	A70810	TOP SECTION WM06 VERTICAL SUPPORT PL 3	A70810	26	2,34
8	A71547	CHANNEL BURNER WM06 COVER PLATE FOR HOLE	A71547	4	0,53
9	A70678	AIR CHANNEL END WM06 1.0 SUPP STRAIGHT	A70678	6	3,1
10	A71301	CHANNEL BURNER WM06 DOOR ELEMENT	A71301	1	35,28
11	A71305	BOWL B WM06 SIDE-SUPPORT S=2	A71305	6	2,13
12	A71306	BOWL B WM06 1.0 BURNER SUPP S=2	A71306	2	2,11
13	A70570	AIR CHANNEL END WM06 1.0 CORNER-S	A70570	2	0,61
14	A70739	AIR CHANNEL END WM06 CORNER-S 1154 VERT	A70739	10	0,8
15	A71396	AIR CHANNEL END WM06 SUPP LEG FROM GROUND	A71396	4	4,84
16	A71374	AIR CH RADIATION COVER SIDE ASSEM 1,0 M16	A71374	2	13,32
17	A71375	AIR CH RADIATION COVER END WM06 1.0	A71375	6	13,92
18	A75734	DUCT BURNER END PLATE HOLES 1 M16	A75734	2	13,64
19	A75735	DUCT BURNER END PLATE HOLES 2 M16	A75735	2	12,85
20	A75736	DUCT BURNER END PLATE HOLES 3 M16	A75736	2	13,64
21	A75737	DUCT BURNER MIXER PIPE D200 M16	A75737	4	4,29
22	A75738	DUCT BURNER MIXER PIPE D150 M16	A75738	5	3,26
23	A75739	DUCT BURNER MIXER TROUGH D150 M16	A75739	6	1,75
24	A75741	DUCT BURNER MIXER PIPE MESH 215X215 D10x2	A75741	8	0,04
25	A75742	DUCT BURNER MIXER PIPE MESH 165X165 D10X2	A75742	10	0,02
26	A75762	DUCT BURNER MIXER PIPE MESH 165X165	A75762	12	0,02
27	A75740	DUCT BURNER MIXER MESH FASTENER D150 M16	A75740	12	0,2
28	A75744	DUCT BURNER LIMITER SIDE PLATE ASS M16	A75744	6	3,45
29	A75743	DUCT BURNER LIMITER PLATE END M16	A75743	6	2,2
30	A71386	SIDE PLATE MAN HOLE WM06 1.0	A71386	2	16,19
31	A75747	AIR CH DIAGONAL END PLATE 0,5-1,0 M16	A75747	3	16,43
32	A75748	AIR CHANNEL END DIAGONAL COVER TRIANGLE 0,5-1,0 M16	A75748	2	1,69
33	A70635	AIR CHANNEL END WM06 0.5 SIDE-PLATE	A70635	2	7,52
34	A70636	AIR CHANNEL END WM06 0.5 SHUTTER-PLATE	A70636	1	6,14
35	A70637	AIR CHANNEL END WM06 0.5 CORNER-S	A70637	2	0,3
36	A71577	HATCH TO COVER AIR CHANNEL (BLIND) 0,5 WM06	A71577	1	19,89
37	101810	BOLT 6K ZN 8X16 DIN933		1367	0,01
38	110540	NUT M8 DIN 934		1367	0
39	107720	SCREW SELF-TAP 6K 4,8X13 ZN		166	0
40	102195	BOLT 6K ZN 10X16 DIN933		38	0,01
41	110560	NUT M10 DIN 934		38	0,01
42	111540	WASHER ZN M8 DIN 125		57	0
43	300005	PRESSURE DIFFERENCE SWITCH 1BE100030 STIG WAHLSTRÖM		1	0,13
44	A70002	THERMOSTAT VAC LEAD-IN PAC		1	0,1
45	800050	THERMOSTAT LTM 314.1 362.21.2141.0150		1	0,88
46	408097	INSTRUCTION MANUAL DUCT BURNER M16		1	
47	800140	TEMPERATURE CONTROLLER FOR VD BURNERS		1	



## Spare parts picture A75800, 4W





# Channel Burner

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7	A70810	TOP SECTION WM06 VERTICAL SUPPORT PL 3	A70810	36	2,34
8	A71547	CHANNEL BURNER WM06 COVER PLATE FOR HOLE	A71547	4	0,53
9	A70678	AIR CHANNEL END WM06 1.0 SUPP STRAIGHT	A70678	9	3,1
10	A71301	CHANNEL BURNER WM06 DOOR ELEMENT	A71301	1	35,28
11	A71305	BOWL B WM06 SIDE-SUPPORT S=2	A71305	8	2,13
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22	A75738	DUCT BURNER MIXER PIPE D150 M16	A75738	8	3,26
23	A75739	DUCT BURNER MIXER TROUGH D150 M16	A75739	8	1,75
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26	A75762	DUCT BURNER MIXER PIPE MESH 165X165	A75762	16	0,02
27	A75740	DUCT BURNER MIXER MESH FASTENER D150 M16	A75740	16	0,2
28	A75744	DUCT BURNER LIMITER SIDE PLATE ASS M16	A75744	8	3,45
29	A75743	DUCT BURNER LIMITER PLATE END M16	A75743	8	2,2
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36	A71577	HATCH TO COVER AIR CHANNEL (BLIND) 0,5 WM06	A71577	1	19,89
37	101810	BOLT 6K ZN 8X16 DIN933		1718	0,01
38	110540	NUT M8 DIN 934		1718	0
39	107720	SCREW SELF-TAP 6K 4,8X13 ZN		206	0
40	102195	BOLT 6K ZN 10X16 DIN933		50	0,01
41	110560	NUT M10 DIN 934		50	0,01
42	111540	WASHER ZN M8 DIN 125		88	0
43	300005	PRESSURE DIFFERENCE SWITCH 1BE100030 STIG WAHLSTRÖM		1	0,13
44	A70002	THERMOSTAT VAC LEAD-IN PAC		1	0,1
45	800050	THERMOSTAT LTM 314.1 362.21.2141.0150		1	0,88
46	408097	INSTRUCTION MANUAL DUCT BURNER M16		1	
47	800140	TEMPERATURE CONTROLLER FOR VD BURNERS		1	



## Burners

### Burner types

800171  
 DUCT BURNER NATURAL GAS  
 VD 120 GMB 1,6MW

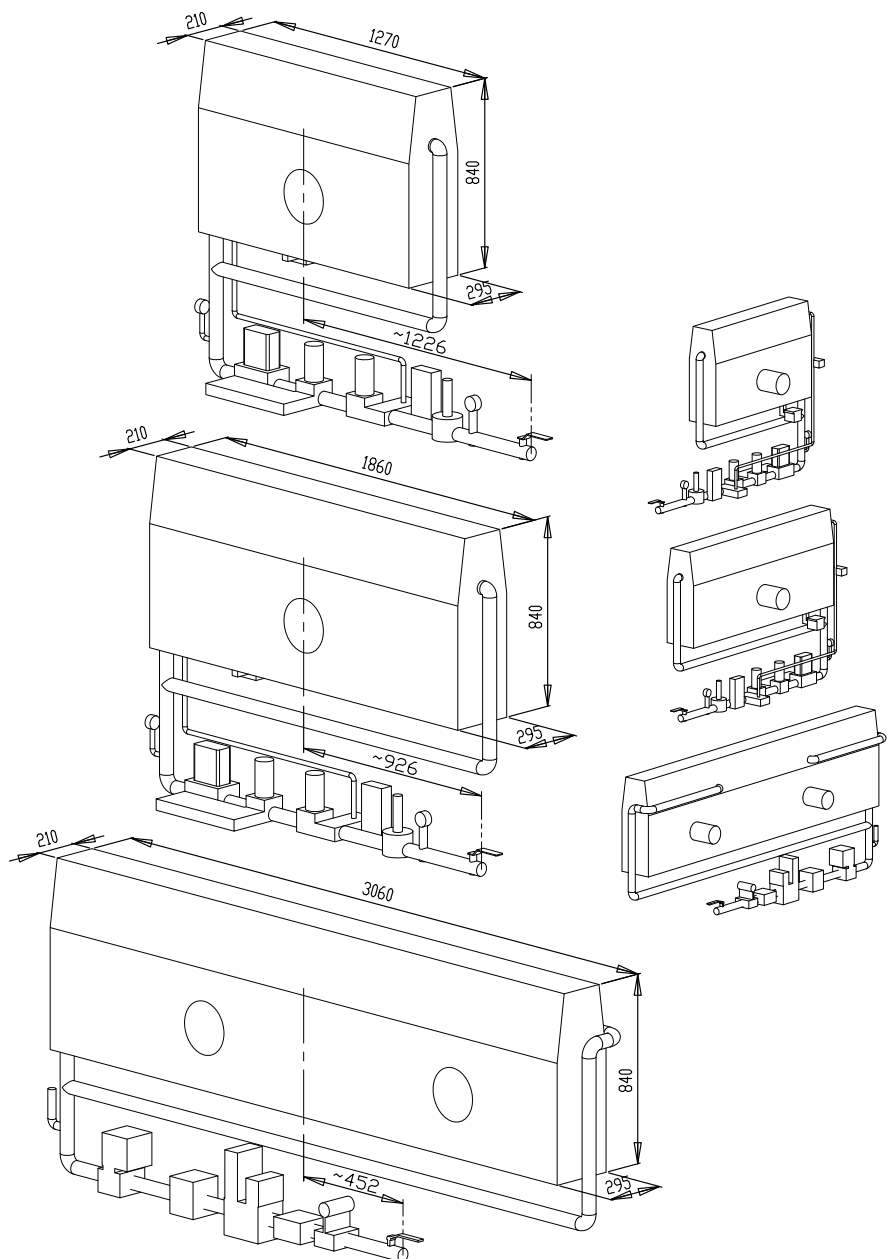
800181  
 DUCT BURNER LPG  
 VD 120 LMB 1,6MW

800172  
 DUCT BURNER NATURAL GAS  
 VD 180 GMB 2,4MW

800182  
 DUCT BURNER LPG  
 VD 180 LMB 2,4MW

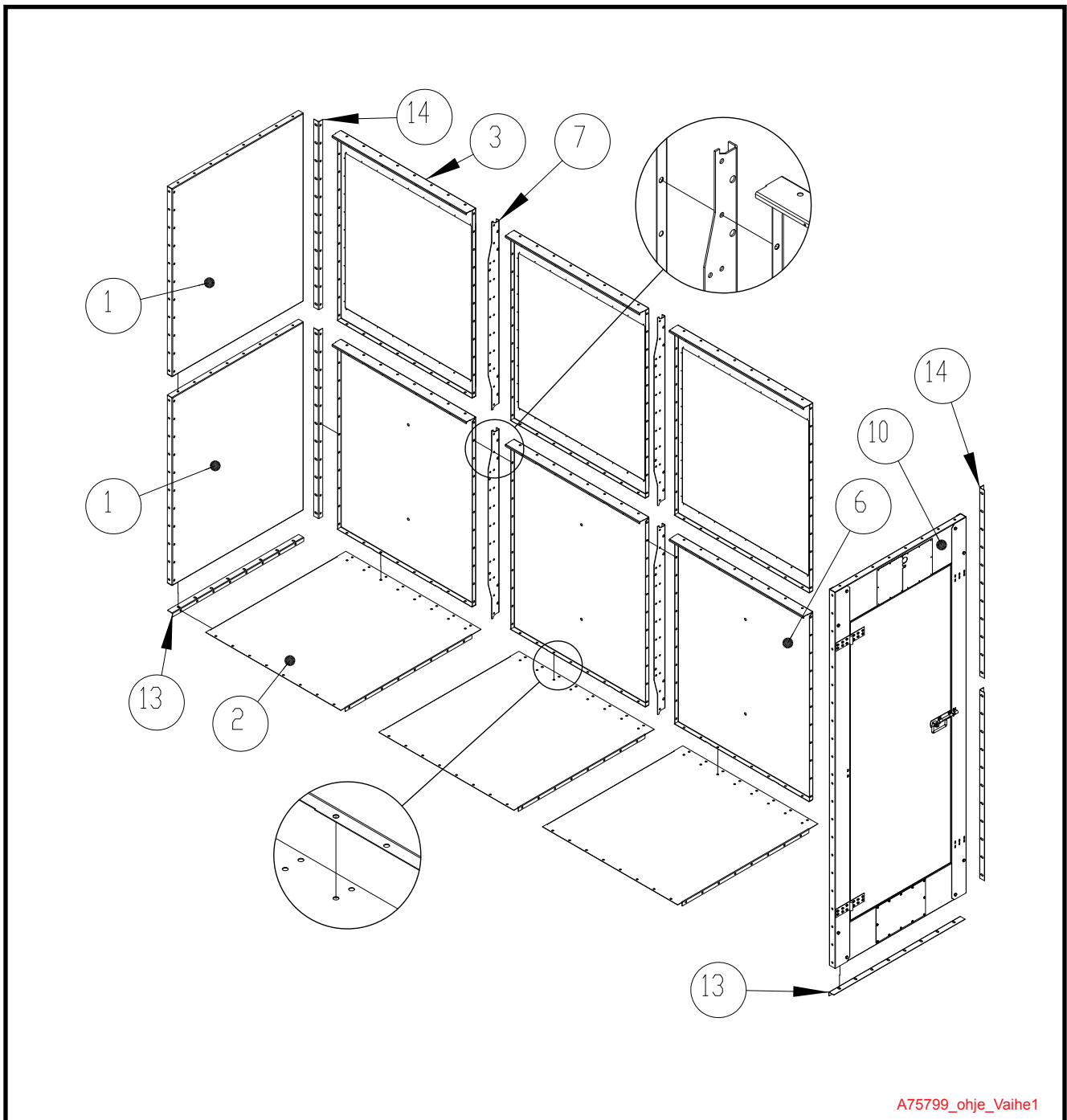
800174  
 DUCT BURNER NATURAL GAS  
 VD 300 GMB 4,1MW

800184  
 DUCT BURNER LPG  
 VD 300 LMB 4,1MW



## Assembling the channel burner modules

The next instructions deal with the assembly of the modules for the 3W dryer. The modules for the 4W dryer shall be assembled in the same manner. The numbering of the work stages refers to the reference numbers in the spare parts drawing.



A75799\_ohje\_Vaihe1

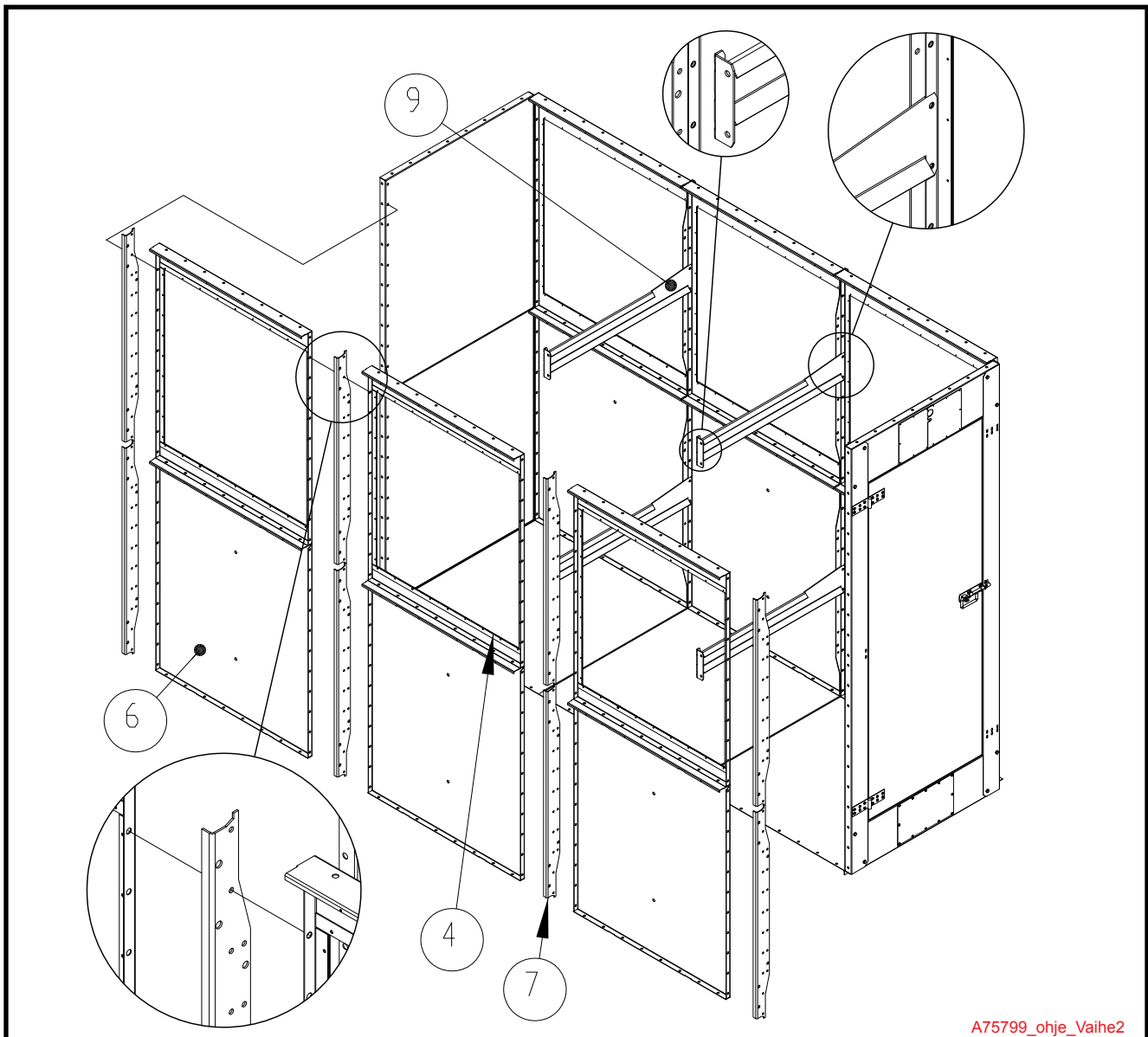


## 1. Stage

We recommend carrying out the assembly on an even plane. This ensures the straightness of the ready-assembled air channel end. Use M8x16 bolts for the assembly.

- 2        Join up the shutter-plates using nuts and bolts (M18 x 16, 8 pcs./joint), and check that the side is straight and no denting occurs. Tighten the bolts.
  
- 13       Attach the corner-strip by its round holes to the upper surface of the shutter-plate at the same level, and tighten the bolts.
  
- 6        Fasten the end-plates against the shutter-plate, starting from the middle. Fix the end-plate to the inner holes of the shutter-plate, leaving the outer holes unused (see picture 1). Install the vertical support (part 7) between the end-plates; place the midmost vertical support exactly at the centre-seam of the shutter-plate. Do not tighten the bolts.

Put only a few bolts in the corners of the module's lower edge to make the installation of the legs easier. Install last the support legs for the module.

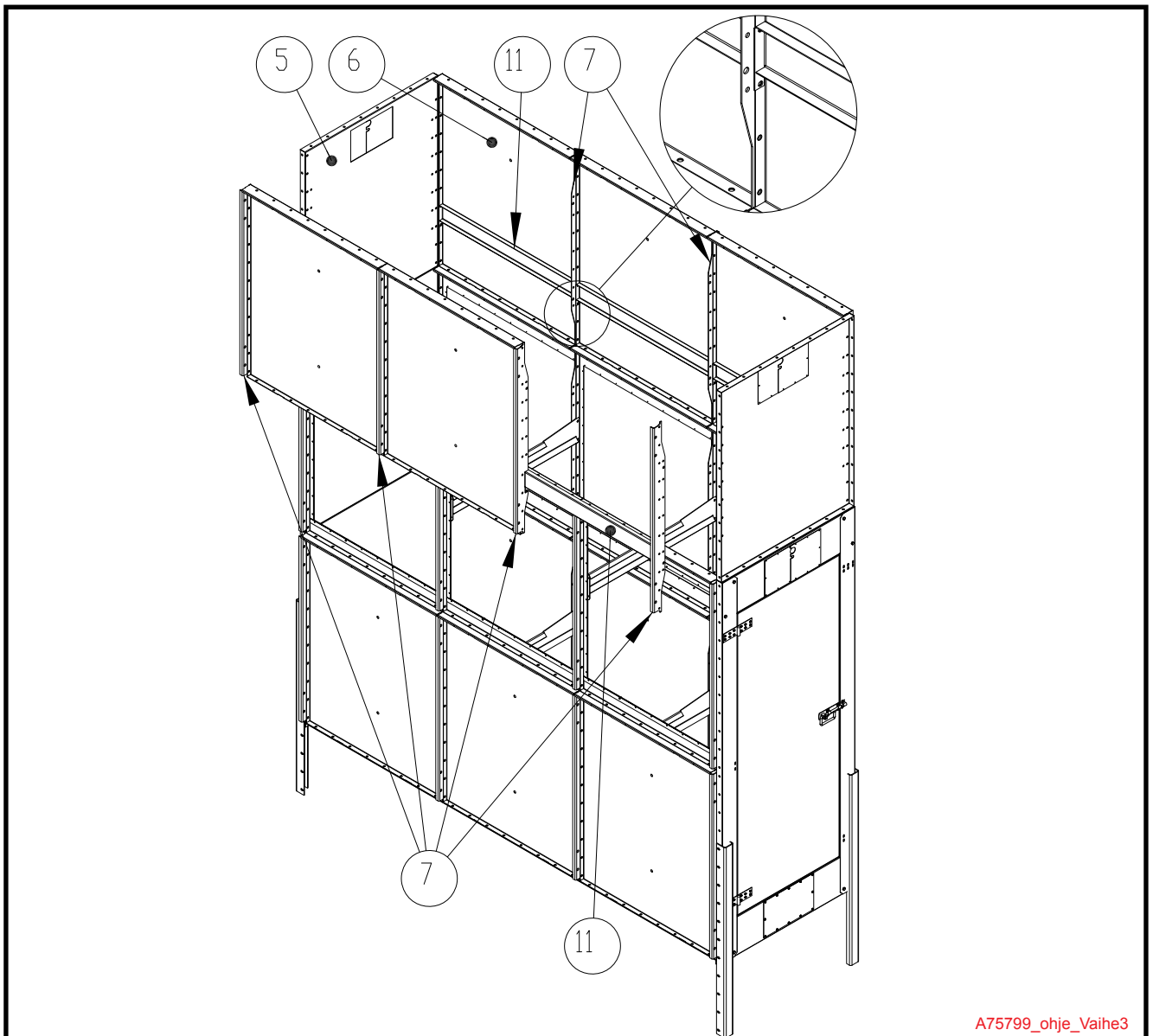


A75799\_ohje\_Vaihe2

## 2. Stage

NOTE! Provide also the edges with vertical supports (see picture).

- 6 Place the midmost end-plate exactly in the correct position with respect to the shutter-plate. Do not tighten the bolts.
- 9 Bend the support ninety degrees or cut it off along the dotted line at its end (see picture). If the edges of the end-plate (part 6) are pointing inward towards the channel, fix the support to the holes in the edge of the end-plate/spark net; the holes in the broad part of the vertical support remain unused (see picture).

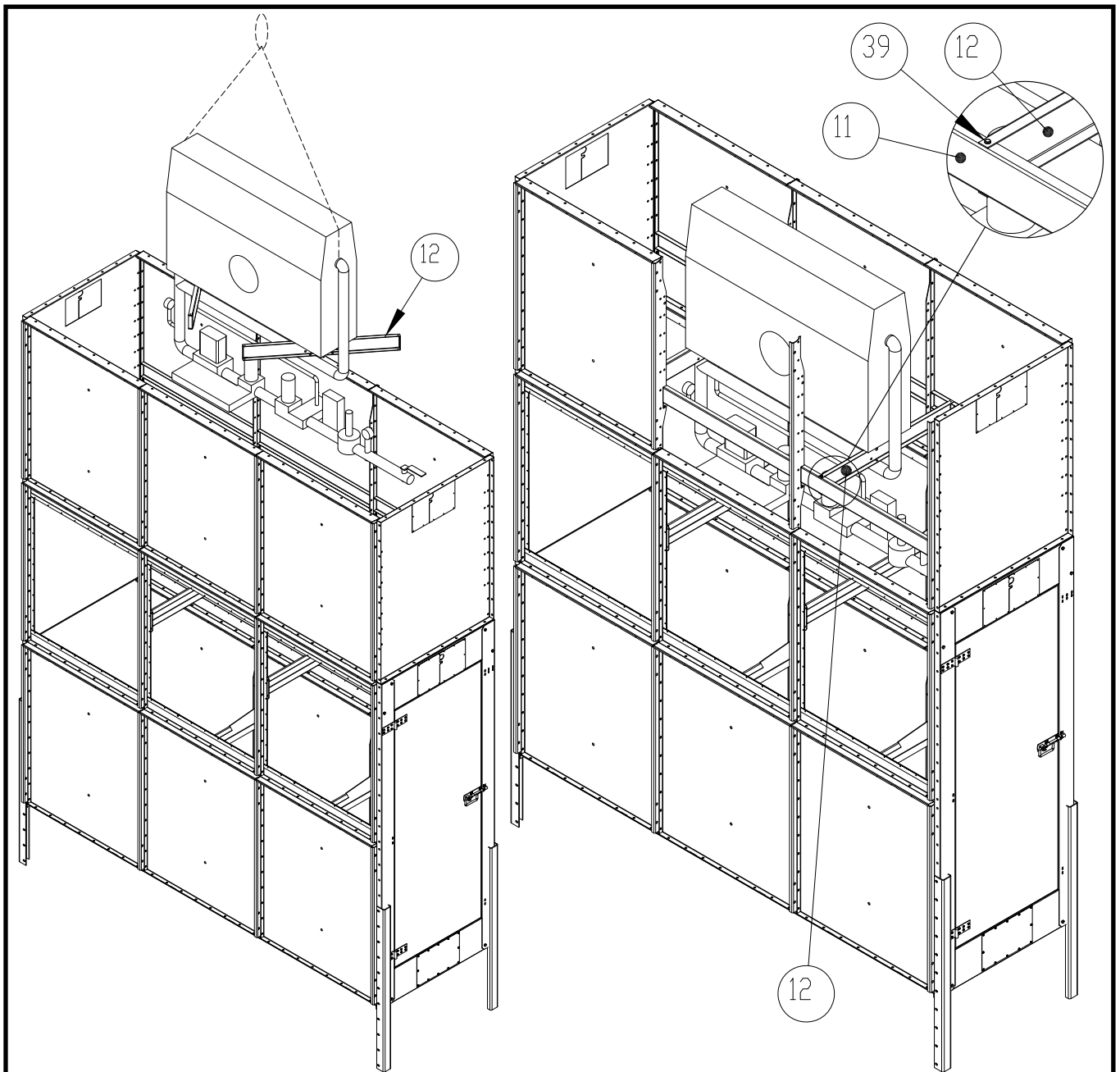


A75799\_ohje\_Vaihe3

### 3. Stage

NOTE! Provide also the edges with vertical supports (see picture).

- 11 Fix the side-support with its smooth surface against the end-plate, and the claws pointing downward (see picture). Fix it to the third and fourth holes from the top.  
Check that the assembly is rectangular and the end-plates are parallel to each other. Tighten all bolts.
- 15 Fix the ground supports as required by the height position of the dryer. If necessary, shorten the legs.
- 8 + 39 Fix the cover plates using self-tapping screws.

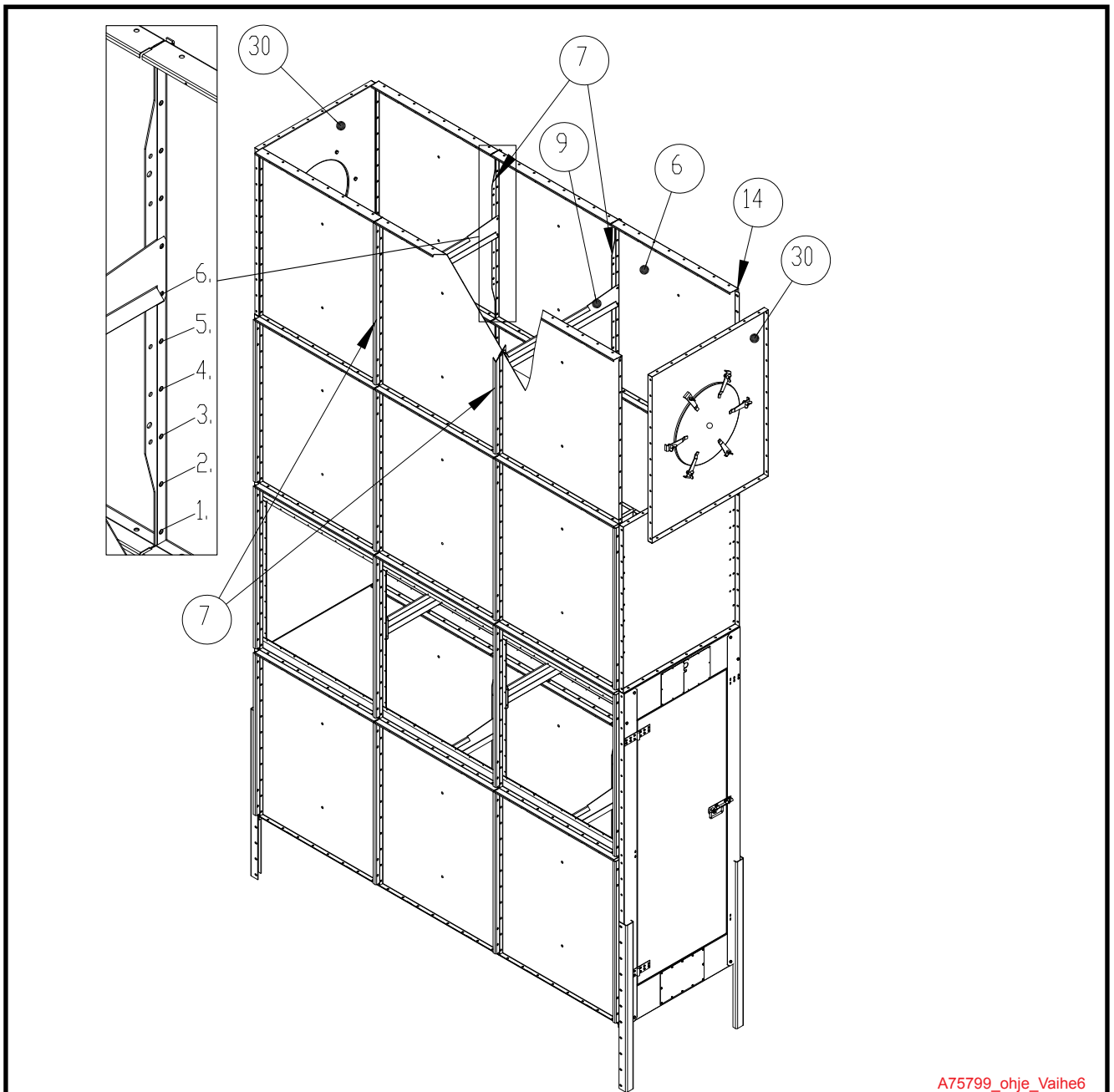


A75799\_ohje\_Vaihe4 ja A75799\_ohje\_Vaihe5

#### 4. Stage

Lift the burner in place inside the channel.

- 12 Thread in the burner support between the burner and the gas pipes in between the side-supports with the smooth surfaces facing each other. Place the burner at the centre-line of the channel. Fix the burner supports on the upper and lower sides using self-tapping screws (39). Fix the burner to the supports using M8x16 screws.

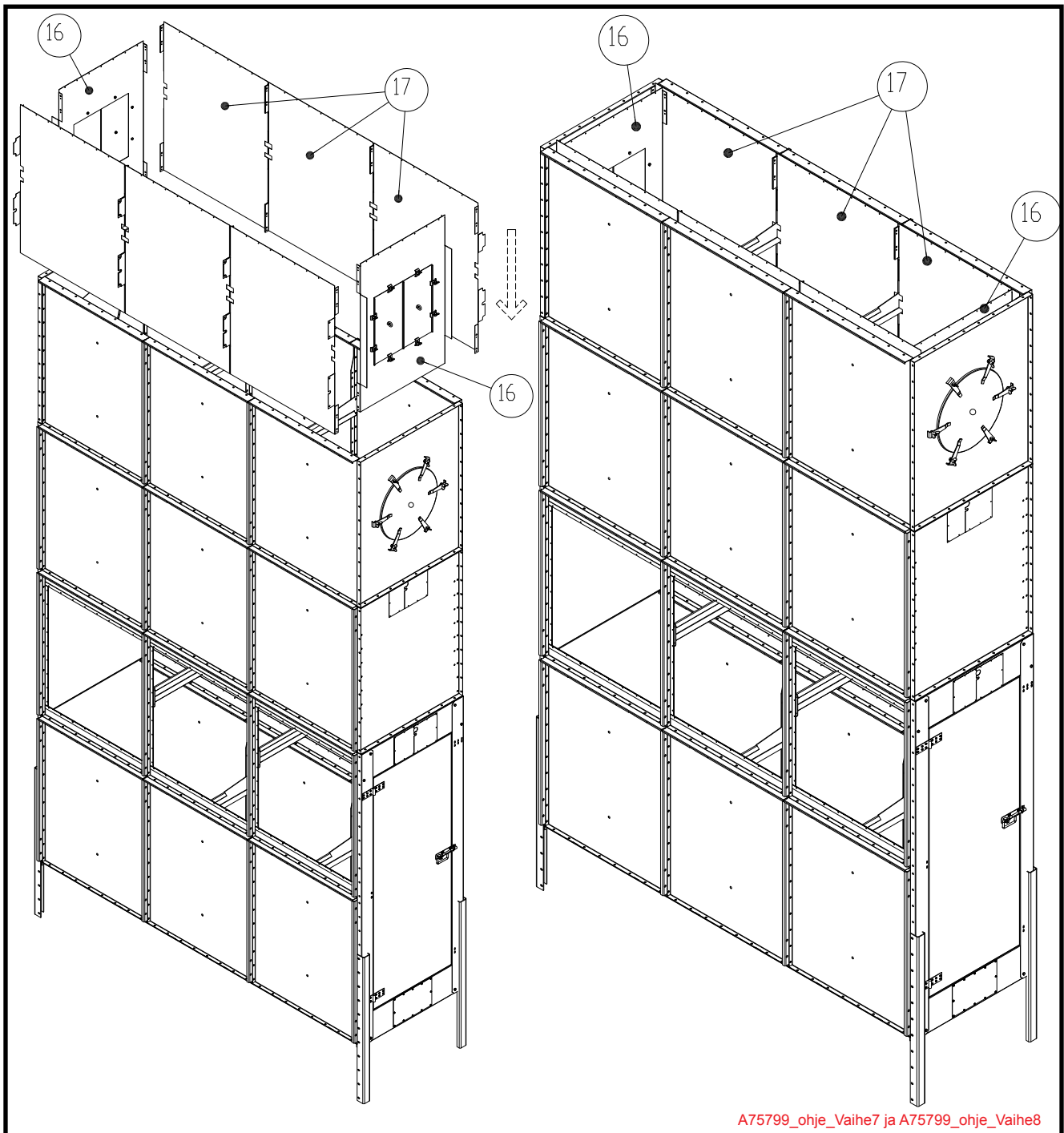


A75799\_ohje\_Vaihe6

## 5. Stage

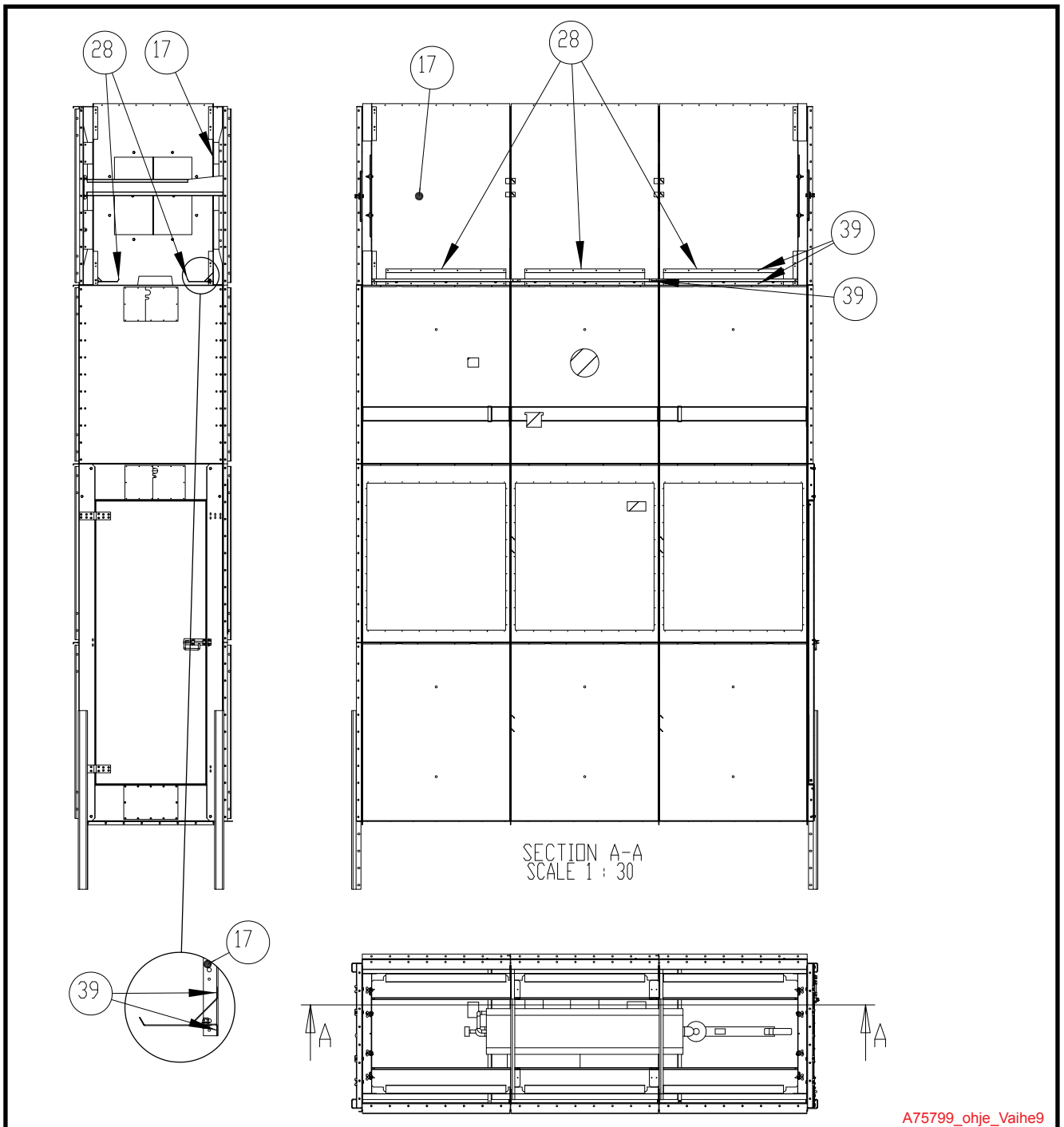
Installing the parts of the fourth row. No vertical supports (7) in the corners. Place the midmost end-plate exactly in the correct position with respect to the lower plate.

- 9 Fix the supports to the sixth and seventh holes from the bottom (halfway up the module).



## 6. Stage

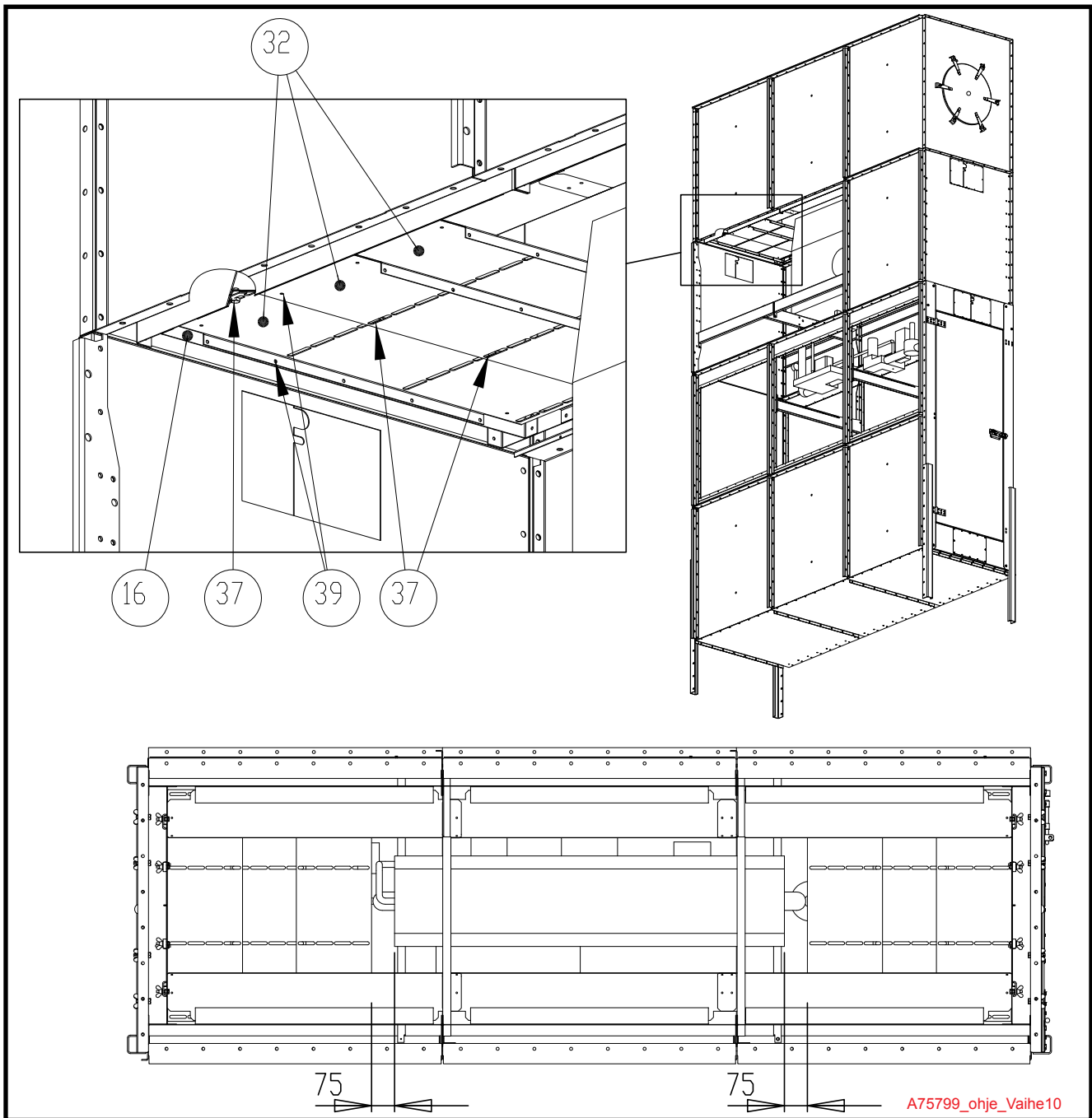
Install the radiation shields in the fourth row. Refer to the manual AIR CHANNEL ENDS 1.0 for more detailed instructions about installation of the radiation shields.



## 7. Stage

Installing the air restrictor plates at the burner.

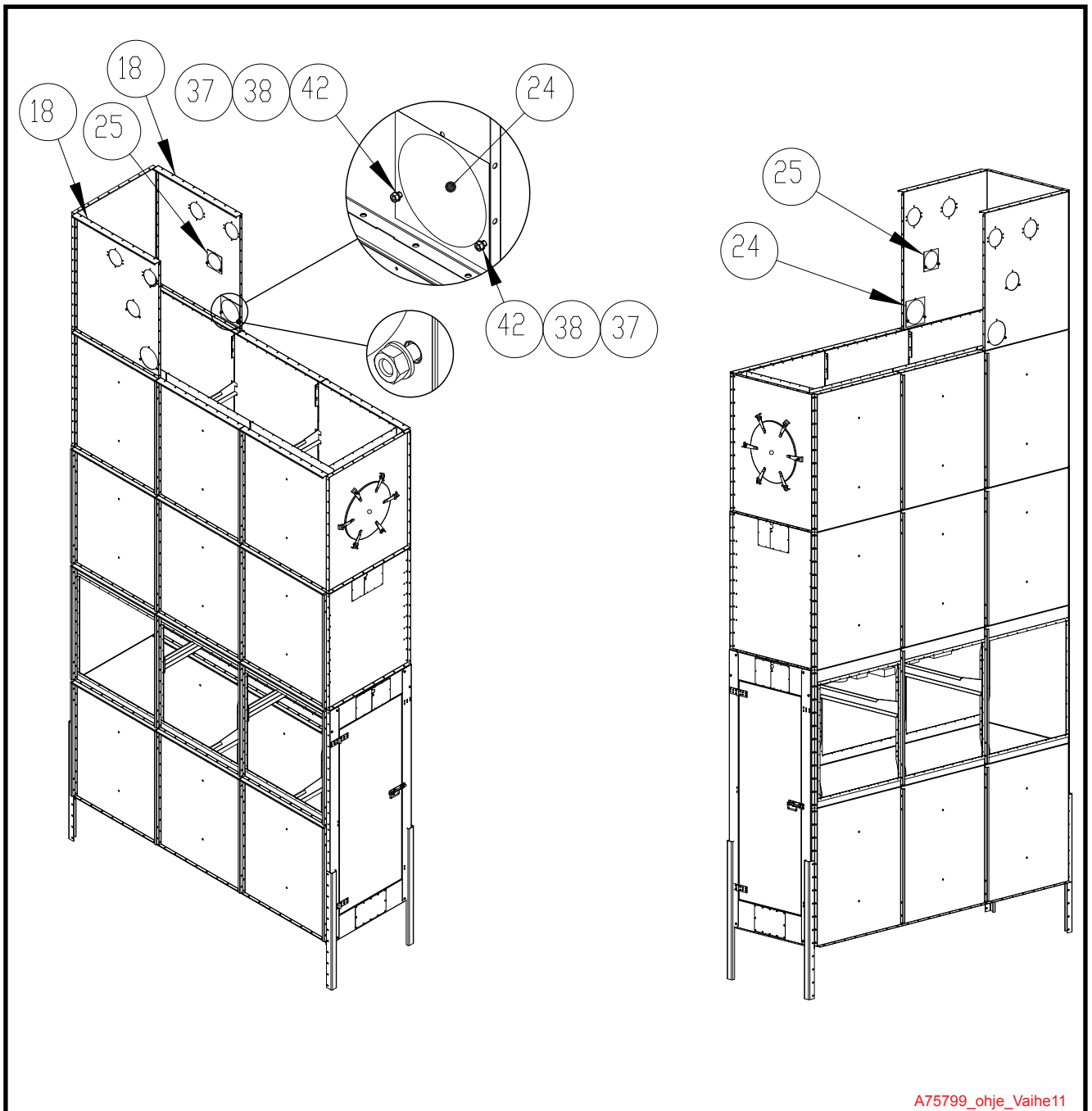
- 28 Position the lower edges of the air restrictor plate and the radiation shield at the same level. Install first the outer plates, with their ends against the radiation shields. Fasten them using self-tapping screws (39)



## 8. Stage

Installing the air restrictor plates at the end of the burner.

- 32 Position the lower edges of the air restrictor plate and the radiation shield at the same level. Fasten them using self-tapping screws (39) Place a restrictor plate at a distance of 75 mm from the burner. Attach its ends to the screws of the restrictor plates at the side adding some self-tapping screws. Finally, install the rest of the restrictor plates. Join up the plates at the centre using M8x16 bolts (37).

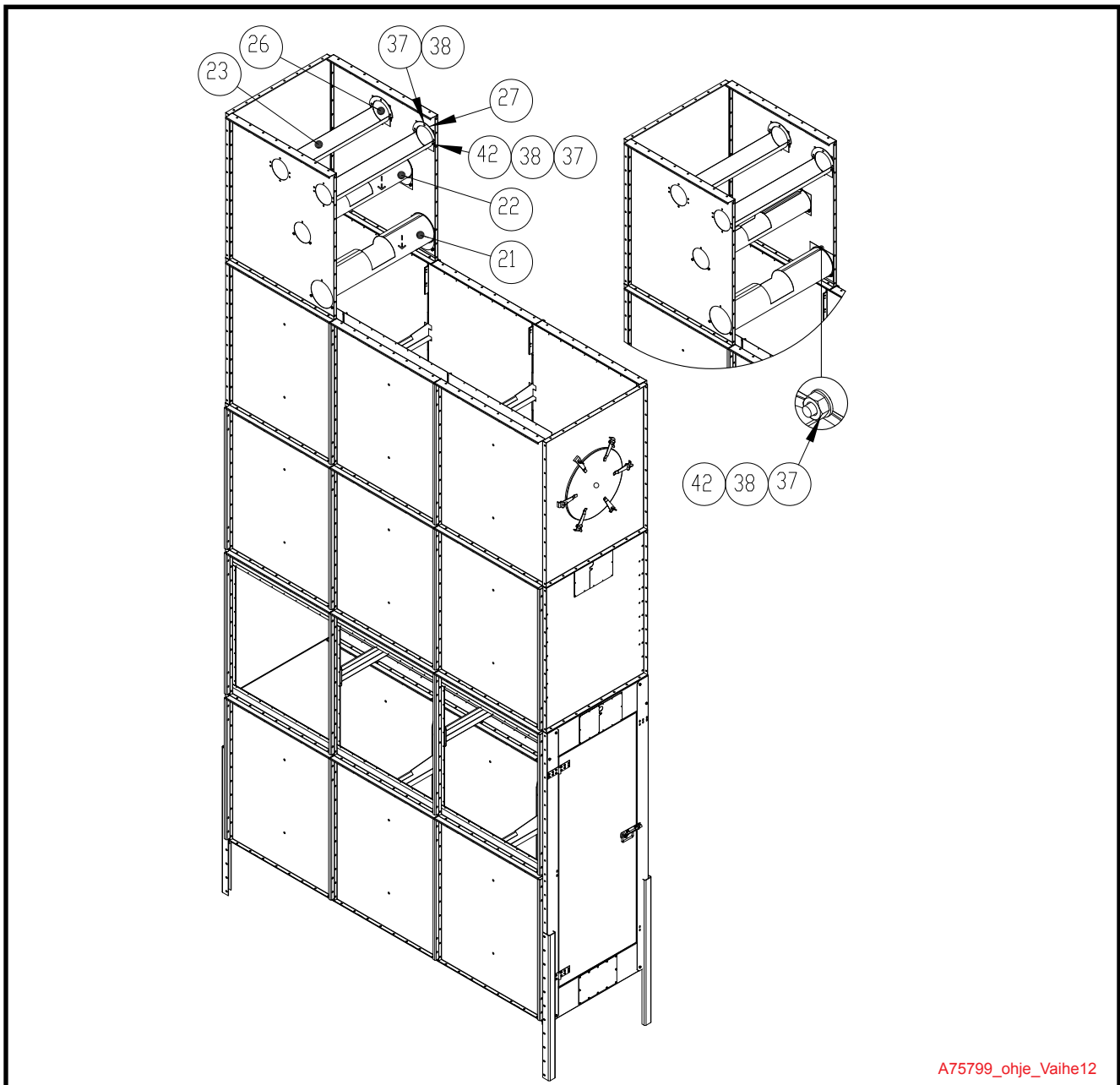


A75799\_ohje\_Vaihe11

## 9. Stage

Installing the pipe nets for the mixer pipes.

- 24, 25 Install the nets inside the channel. Place the washers and nuts of the two bolts on the inside at the lower edge. Turn the nut level with the bolt, and tighten it in connection with installation of the pipes.

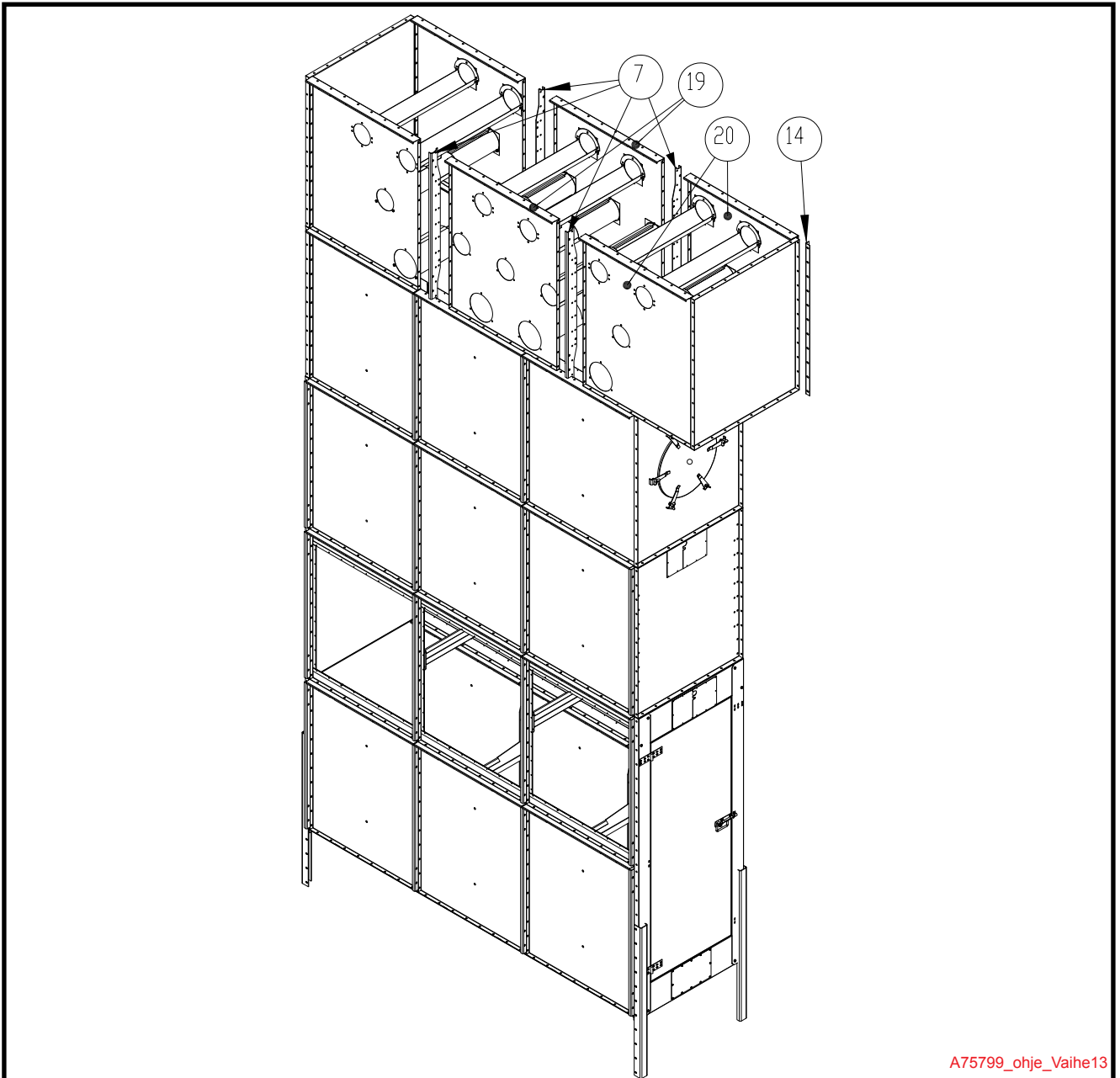


A75799\_ohje\_Vaihe12

## 10. Stage

Installing the mixer pipes

- 21 Start the installation by putting first the lowermost pipes in place. Place the pipes between the plates and the nets, and press them against the lower bolts. Insert a bolt on the upper side of the pipe, and tighten all the bolts at the end of the pipe.
- 22 Continue by installing the pipe in the middle row in the same manner as the lowest pipe.
- 23,26 When installing the uppermost trough, place an unperforated pipe net between the end of the trough and the end-plate of the air channel. Use the net fastener (27) for the upper part. Fasten the trough using M8x16 bolts, and placing the washers on the inside. Tighten the bolts at the ends of all pipes.

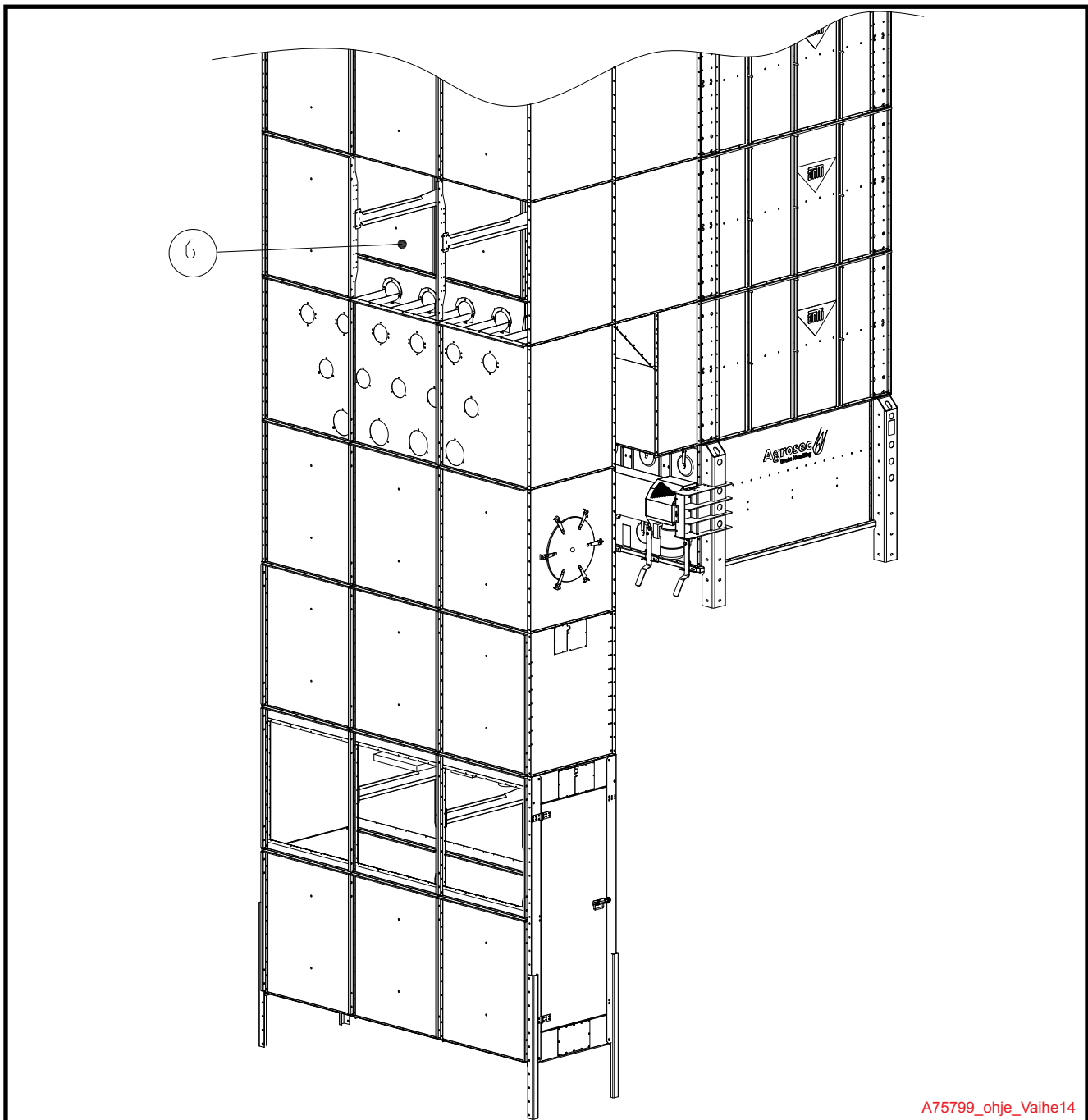


A75799\_ohje\_Vaihe13

## 11. Stage

Installing the mixer pipes; putting the next modules in place.

- 7, 19      The nuts shall be installed inside the channel. The washers and nuts of the two bolts at the lower edge shall be placed on the inside. Turn the nut level with the bolt, and tighten it in connection with installation of the pipes.
- 21, 22, 23      The mixer pipes shall be installed from the bottom to the top, in the same manner as in the previous stage.  
The other parts of the row shall be installed in the same manner. Finally, check that all the bolts have been tightened.



## 12. Stage

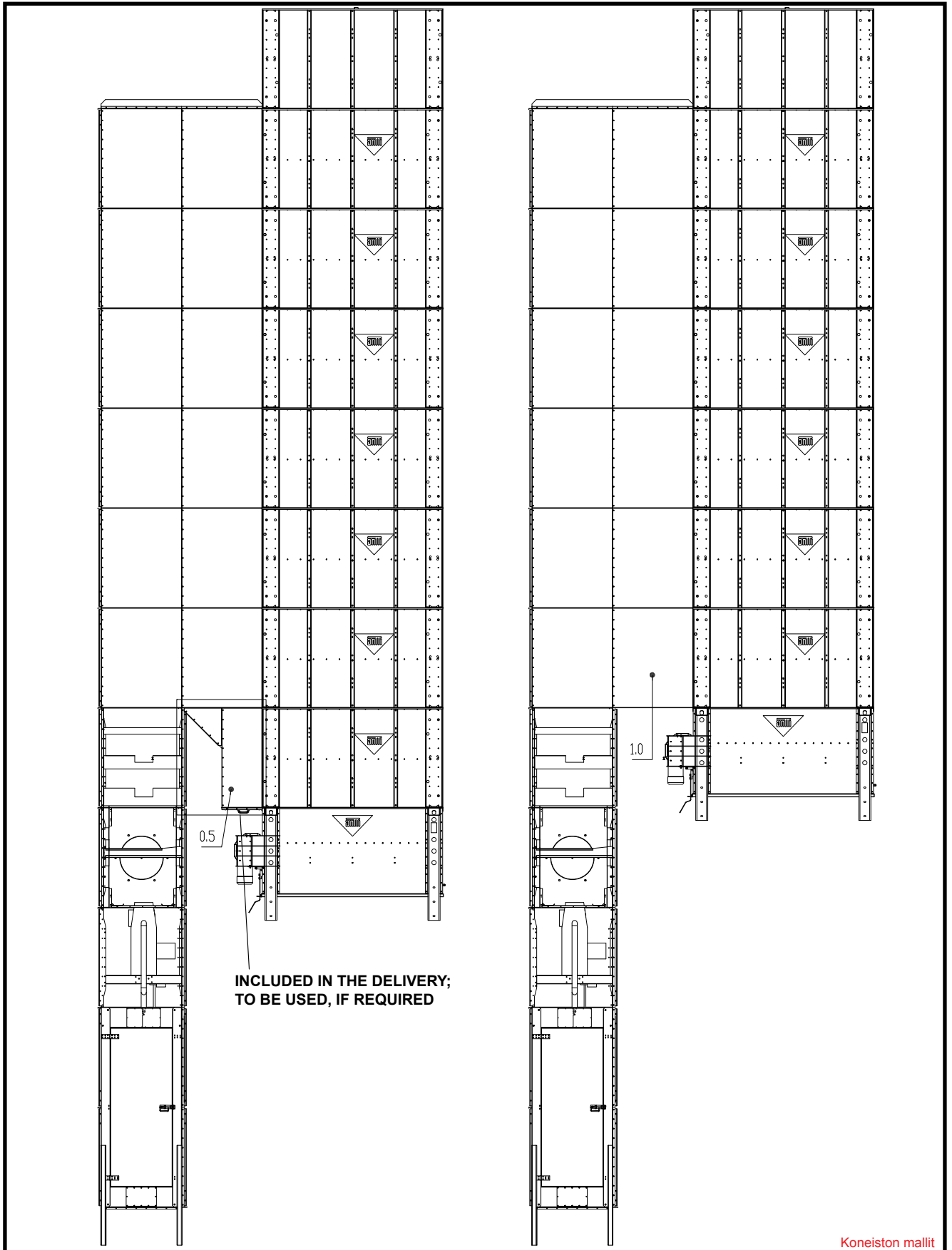
Installing the standard air channel after the mixer pipes of the channel burner.

The air channel extension for the channel burner is assembled from standard module parts. Refer to the manual AIR CHANNEL ENDS 1.0 for more detailed instructions about the assembly.

The structure of the air channel's lower part depends on the height position of the dryer machinery's base. Various optional machinery set-ups are shown in the next picture. If the base is located lower, the parts of the air channel 0.5 will be required.



# Channel Burner

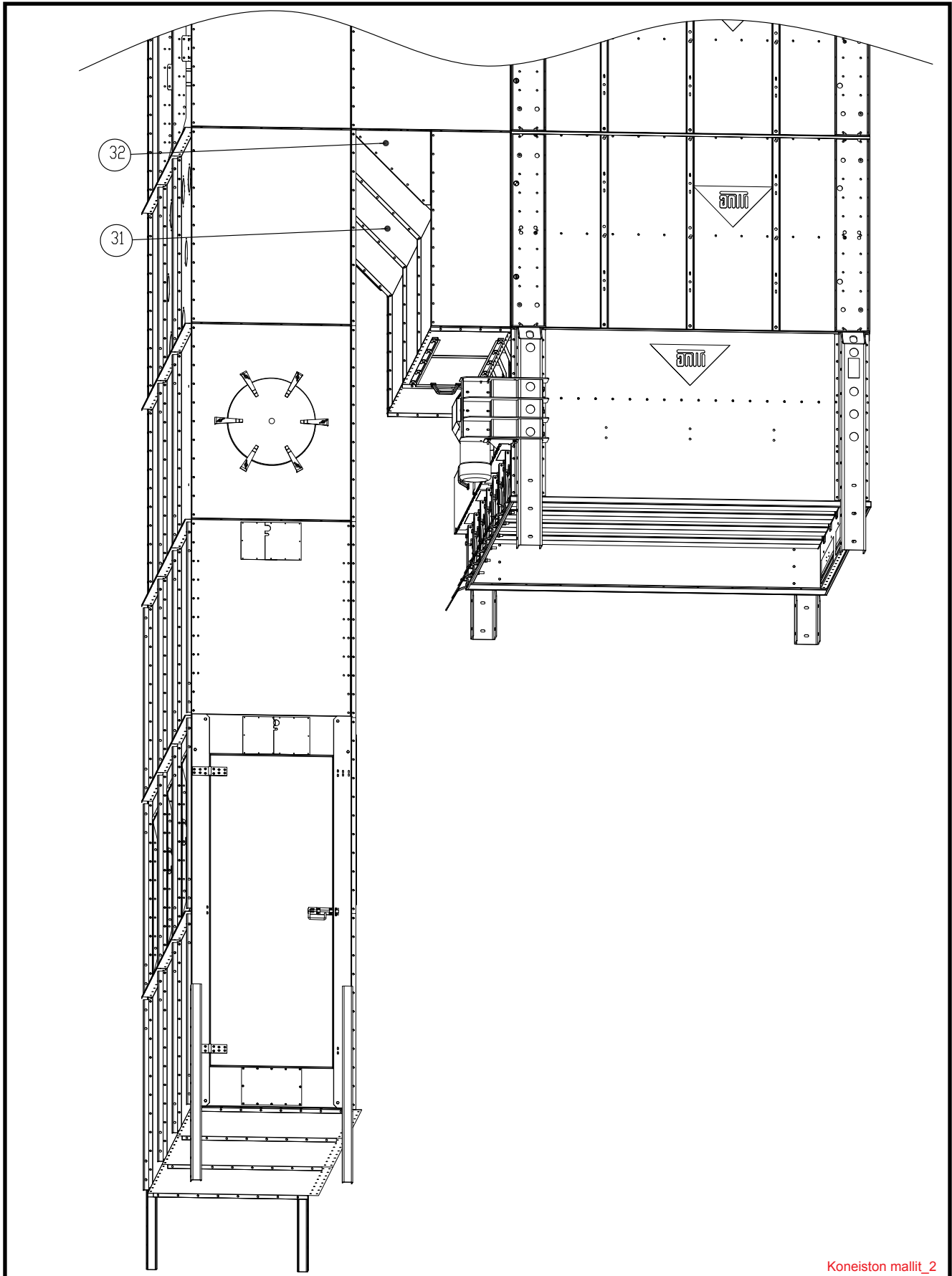


Various machinery types

Koneiston mallit



# Channel Burner



Koneiston mallit\_2



## To be observed before start-up

- The start-up controls and the test run shall be performed by an electrician and a gas system fitter.
- Foreign objects are not allowed near the Channel Burner module.
- The suction air nets are clean and, for example, the wind has not brought debris, such as dry plants, into the opening for the heater's suction net.

## Operating instructions

The channel burner is controlled from the control centre of the dryer. Depending on the configuration, the drying temperature is set from the control centre of either the dryer or the burner.

Signal lights, which alert of possible malfunctions, are located in the control centre included in the burner delivery.

The malfunctions are reset from the control centre of the burner.

## Service

### Service during the operation

Check and clean daily the suction nets as well as the nets of the mixing pipes and the spark net in the air channel. Even if the operation of the Channel Burner was controlled from the electric sensor of the dryer, it is advisable to go and have a look and listen the burner a few times a day to ensure its normal operation.



## Annual service

Check the gas piping for tightness and the tightness of the burner bracket bolts. Check the gas holes in the burner for debris or clogging. Clean and open them, if necessary.

Observe that the gas burner unit must be inspected in accordance with the national legislation!

Clean the cooling ribs and air impellers of the electric motors. If the cooling ribs get dirty or the blower starts to vibrate because of dust gathered on the impeller, the cleanup must be repeated even during the operating season

Using a flashlight, check before the start of the drying season that there are no foreign objects inside the heater, such as mouse nests, which might constitute a fire hazard.

## Guarantee

The guarantee period for the Antti-heaters is one (1) operating season. The guarantee covers defects in material and workmanship. For the Electric Motors and Channel Burners, the separate guarantee terms, issued by the respective manufacturers, apply.

A prerequisite for validity of the guarantee is that the instructions issued by the manufacturer and the valid regulations have been followed during installation, use and service of the Dryer Heater.

All matters related to the guarantee must be agreed upon before any measures are taken.



## EU Declaration of Conformity

**ANTTI-TEOLLISUUS OY**  
Koskentie 89  
25340 KANUNKI  
Tel.: +358 2 7744700  
Fax: +358 2 7744777

declares that

### **ANTTI CHANNEL BURNER**

conforms with the provisions of the following directives:

- Machine Directive 2006/42/EY
- Low Voltage Directive 2006/95/EY
- Electro-Magnetic Compatibility Directive (EMC) 2004/108/EY

**Kuusjoki 05.05.2008**

**Kalle Isotalo**  
Managing director