INSTALLING INSTRUCTIONS

jeremias® CHIMNEY SYSTEMS

Single wall flue system for Installation in shaft type EW-FU

Single wall flue system
for Installation in shaft type EW-FU

Certification 0036 CPR 9174 006 according to EN 1856-1

(For further information see Declaration of Performance of System EW-FU)

Product information

"Chimneys - Requirements for metal chimneys – Part 1:
System chimney products" DIN EN 1856-1:2009

Manufacturer´s identification:

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Product trade name: **EW-FU** (Single wall chimney system, installation in stack)

Certification office: TÜV SÜD Industrie Service GmbH

Name and position of the responsible person: **Stefan Engelhardt** CEO

Identification of accompanying documentation

0.1	**Metal chimney**	**EN 1856-1**	**T400**	**N1**	**D**	**V2-L50060**	**G50** **G75** **G100**	**80 - 300** **350 - 450** **500 - 600**	Single wall chimney system, sootfire resistant, installation in stacks / chimneys, which meet the requirements for fire protection. Locking band optional. Operation mode in negative pressure. Cross section in round or oval form.
0.2	**Metal chimney**	**EN 1856-1**	**T400**	**N1**	**W**	**V2-L50060**	**O50** **O75** **O100**	**80 - 300** **350 - 450** **500 - 600**	Single wall chimney system, moisture resistant, installation in stacks / chimneys, which meet the requirements for fire protection. Locking band optional. Operation mode in negative pressure. Cross section in round or oval form.
0.3	**Metal chimney**	**EN 1856-1**	**T600**	**N1**	**D**	**V2-L50060**	**G100** **G150** **G200**	**80 - 300** **350 - 450** **500 - 600**	Single wall chimney system, sootfire resistant, installation in stacks / chimneys, which meet the requirements for fire protection. Locking band optional. Operation mode in negative pressure. Cross section in round or oval form.
0.4	**Metal chimney**	**EN 1856-1**	**T600**	**N1**	**W**	**V2-L50060**	**O100** **O150** **O200**	**80 - 300** **350 - 450** **500 - 600**	Single wall chimney system, moisture resistant, installation in stacks / chimneys, which meet the requirements for fire protection. Locking band optional. Operation mode in negative pressure. Cross section in round or oval form.
0.5	**Metal chimney**	**EN 1856-1**	**T600**	**N1**	**D**	**V3-L50060**	**G70** **G105** **G140**	**80 - 300** **350 - 450** **500 - 600**	Single wall chimney system, **with 25mm insulation**, sootfire resistant. Installation in stacks / chimneys, which meet the requirements for fire protection. Locking band optional. Operation mode in negative pressure. Cross section in round or oval form.

Product description
Standard number
Temperature level
Pressure level
Condensate resistance (W: wet / D: dry)
Corrosion resistance
Flue liner material specification
Sootfire resistance (G: yes / O: no) and distance to combustible material (in mm)
Nominal diameter (Ø) (inner tube) in mm

Vers. 2014/01

Properties of a single wall metal chimney system

Pressure resistance:
Maximum load (see installing instructions)

Flow resistance:
Average roughness: 1.0 mm,
Zeta-values according to DIN EN 13384-1
(see installing instructions)

Thermal resistance in stack
Without insulation 0 m²K/W
With 25 mm insulation ≥0.26 m²K/W

Flexural strength:
Angular assembly:
Maximum length between two supports: 4 m at 90°

Freeze-thaw resistance: Yes

Cleaning:
The chimney system is only allowed to be cleaned with cleaning devices made of plastic or rust-resistant stainless steel.

Single wall flue system
for Installation in shaft type EW-FU

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1 SYSTEM OVERVIEW

Model 1:

Exhaust gas system for all conventional firing installations (oil, gas and solid fuel[1]) in negative pressure for dry operation mode. Possible fields of application: open fireplaces, tile stoves, ovens, oil- and gas boilers, pellet-boilers etc.
The diameter calculation according to EN 13384 must ensure, that the temperature of the interior wall at the chimney top in steady-state conditions remains above the water vapor dew point temperature of the exhaust gas.
The flue system is for negative pressure up to 40 Pa.
Classification acc. to EN 1856-1:
Exhaust gas system EN 1856-1 T400 – N1 – D – V2 – L50060 – Gxx*

Model 2:

Exhaust gas system for all oil and gas firing installations in negative pressure for dry or wet operation mode. Possible fields of application: oil- and gas boilers etc.
The proof that the temperature of the interior wall of the system's upper end is above the water vapour dew point temperature of the exhaust gas at a constant temperature can be abandoned.
The flue system is for negative pressure up to 40 Pa.
Classification acc. to EN 1856-1:
Exhaust gas system EN 1856-1 T400 – N1 – W – V2 – L50060 – Oxx*

Model 3:

Exhaust gas system for all conventional firing installations (oil, gas and solid fuel[1]) in negative pressure for dry operation mode. Possible fields of application: open fireplaces, tile stoves, ovens, oil- and gas boilers, pellet-boilers etc.
The diameter calculation according to EN 13384 must ensure, that the temperature of the interior wall at the chimney top in steady-state conditions remains above the water vapor dew point temperature of the exhaust gas.
The flue system is for negative pressure up to 40 Pa.
Classification acc. to EN 1856-1:
Exhaust gas system EN 1856-1 T600 – N1 – D – V2 – L50060 – Gxx*

Model 4:

Exhaust gas system for all oil and gas firing installations in negative pressure for dry or wet operation mode. Possible fields of application: oil- and gas boilers etc.
The proof that the temperature of the interior wall of the system's upper end is above the water vapor dew point temperature of the exhaust gas at a constant temperature can be abandoned.
The flue system is for negative pressure up to 40 Pa.
Classification acc. to EN 1856-1:
Exhaust gas system EN 1856-1 T600 – N1 – W – V2 – L50060 – Oxx*

Model 5:

Exhaust gas system for all conventional firing installations (oil, gas and solid fuel[1]) in negative pressure for dry operation mode. Possible fields of application: open fireplaces, tile stoves, ovens, oil- and gas boilers, pellet-boilers etc.
The diameter calculation according to EN 13384 must ensure, that the temperature of the interior wall at the chimney top in steady-state conditions remains above the water vapor dew point temperature of the exhaust gas.
The flue system is for negative pressure up to 40 Pa.
Classification acc. to EN 1856-1:
Exhaust gas system EN 1856-1 T600 – N1 – D – V3 – L50060 – Gxx*

Pease take care that in this application, the installation in the shaft is only allowed with min. 25 mm insulating layer!

xx*: The distance to combustible materials depends on the diameter, see Table 2.
[1] excluding anthracite coal from Ibbenbüren

2 MOUNTING AND REGULATIONS

The installing has to be performed professionally according to the mounting manual respectively according to the valid national regulations.

In Germany in particular DIN V 18160-1, as well as the applicable rules of regional building (LBauO), firing regulations (FeuVO), relevant DIN standards and all other building- and safety regulations.

The required cross section has to be determined according to DIN EN 13384 and has to be rechecked by the executing specialist firm.

Before the mounting the completion of the system has to be coordinated with the district chimney sweeper in charge!

3 MOUNTING HEIGHTS

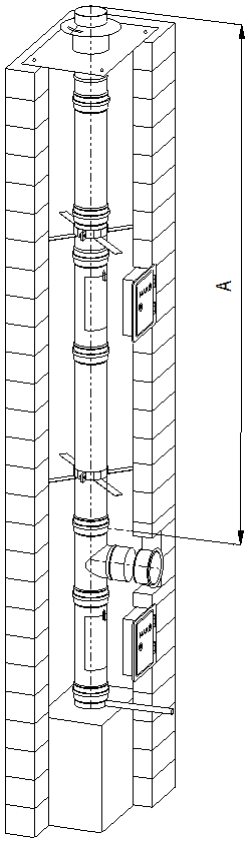


Figure 1: Mounting heights

Measure A			
Wall thickness of the inner tube in mm / Inside-Ø mm	0,6	0,8	1,0
80	92	109	134
100	85	102	121
115	79	97	111
120	77	96	107
130	74	92	101
140	70	89	94
150	66	86	87
160	63	82	81
180	55	76	67
200	48	69	54
250	38	56	46
300	27	42	37
350	25	39	34
400	23	35	31
450	21	32	28
500	19	29	25
550	17	25	22
600	15	22	19

Table 1: Mounting heights above pipe tee **(in m)**

4 SITE REQUIREMENTS

The exhaust gas line must be installed within into own longitudinally ventilated flue or channel.

The fire safety requirements for the flues (L_A30/EI30 to L_A90/EI90) comply with the construction legislation (firing ordinance) of the respective federal state.

With the exception of the necessary cleaning and inspection openings, the flue must not have any additional opening other than in the installation room of the CHP.

(The position of the clean out opening has to be clarified with the concerned district chimney sweeper)

Several exhaust gas lines (liquid and gaseous fuels) can be installed in a flue if the national regulations and construction legislation allow this.

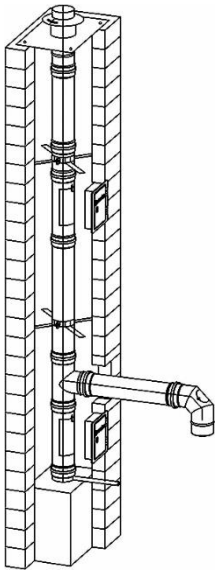


Figure 2:
System design
(negative pressure)

5 MINIMUM DISTANCE TO COMBUSTIBLE MATERIALS in the vertical part

When used as exhaust gas line (oil, gas) a minimum distance to combustible materials of 20 mm (T400) and 50 mm (T600), to a max. nominal diameter of inner tube up to 300 mm, is valid.
For bigger diameters the distances increase accordingly, see table 2.

For solid fuel fireplaces a minimum distance to combustible materials of 50 mm (T400) bzw. 100 mm (T600) to a max. nominal diameter of inner tube up to 300 mm applies. The abovementioned distance of 100 mm can be reduced to 70 mm by attaching insulating shells made of mineral wool (minimum thickness 25 mm).
For bigger diameters the distances increase accordingly, see table 3.

Note:
For wall ducts the local resp. national regulations apply, you can also use the Jeremias certificated wall-, ceiling-, roof penetration LUX-ECO & LUX-NOVA. These wall ducts are only approved in Germany, Austria and Switzerland.
Please also note the installing instructions of the above mentioned penetrations!

The distance to combustible materials refers to a ventilated installation over the entire length (see Figure 3)!

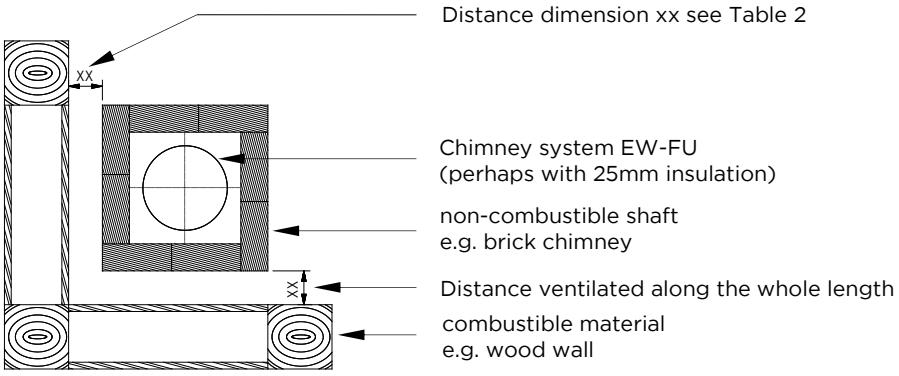


Figure 3

Model	Temperature level	Pressure level	Condensate resistance	Corrosion resistance and material thickness	Sootfire resistance and distance to combustible materials	Nominal diameter (Ø-inner tube)	Application
0.1	T400	N1	D	V2-L50060	G50 (= 50 mm) G75 (= 75 mm) G100 (=100 mm)	Ø80 - 300 Ø350 - 450 Ø500 - 600	Oil, gas and solid fuel firing installations for dry operation mode
0.2	T400	N1	W	V2-L50060	O50 (= 50 mm) O75 (= 75 mm) O100 (=100 mm)	Ø80 - 300 Ø350 - 450 Ø500 - 600	Oil & gas firing installations for wet and dry operation mode
0.3	T600	N1	D	V2-L50060	G100 (= 100 mm) G150 (= 150 mm) G200 (=200 mm)	Ø80 - 300 Ø350 - 450 Ø500 - 600	Oil, gas and solid fuel firing installations for dry operation mode
0.4	T600	N1	W	V2-L50060	O100 (= 100 mm) O150 (= 150 mm) O200 (=200 mm)	Ø80 - 300 Ø350 - 450 Ø500 - 600	Oil & gas firing installations for wet and dry operation mode
0.5	T600	N1	D	V3-L50060	G70 (= 70 mm)* G105 (= 105 mm)* G140 (=140 mm)*	Ø80 - 300 Ø350 - 450 Ø500 - 600	Oil, gas and solid fuel firing installations for dry operation mode
*with min. 25 mm mineral insulation							

Table 2: Distances to combustible materials

6 INSTALLATION OF THE VERTICAL PART OF FLUE SYSTEM

6.1 CONSTRUCTION OF PIPES

All components have to be installed in a way that the nozzle of the inner pipe is above or rather in flow direction of the exhaust gas.

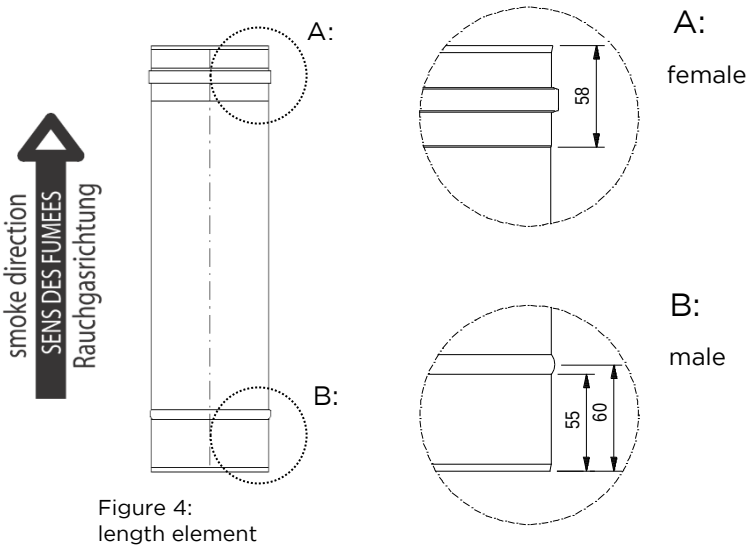


Figure 4:
length element

6.2 MOUNTING OF THE ELEMENTS

For the insertion of the condensate tray and fittings, it may be necessary to open the shaft at the relevant points.

To insert and align the inspection length with condensate tray at the bottom of the exhaust system.

Note:

The closed condensate tray should only be used if the exhaust system is operated exclusively dry and the entry of precipitation water should be limited by appropriate measures e.g. rain hood.

- Set the T-connection with installed mounting clamp; it may be necessary to place compensating pieces between the inspection length and the T-connection.

Note:

Straight pipe elements can be shortened as required.

The female must always be completely preserved.

The shortening of the elements may only be carried out with a tool which is suitable for the machining of stainless steel e.g. Angle grinder with cutting disc for stainless steel.

1. Apply for desired length

2. Cut through pipe parts

- Connect the length elements, with the female pointing upwards, to the exhaust system top and lower the length element with drainage loop.

  A rope or a similar thing is fastened to the lowering loop. This rope should be able to withstand the weight of the attached pipes.

  Note:

  A length element with lowering loop is always required if the elements (e.g. T-connections, inspection element, etc.) cannot be fixed otherwise.

  Mounting brackets are required every 3 m or every 1.5 m for inclined guideways and for every molded part (e.g. T-connection) to maintain the distance inside the shaft.

  For this, the latches are bent upwards to the required inside dimension of the shaft (maximum internal shaft dimension = Ø inner tube + 360 mm).

  Larger mounting clamps are available on request.

- When using the „Universal head cover with annular gap ventilation and storm collar“ (FU130Ø), the last length element of the vertical exhaust system must be shortened so that the length expansion is possible without any problems.
  Note:
- The last length element may only be shortened so far, that the neck of the chimney top cover can be inserted min. 60 mm into the element. The mouth of the exhaust system should be min. 40 mm above the storm collar.
  Note:
  The length expansion is about 1.5 mm per meter every 100°C exhaust gas temperature.

Attention:
To prevent damage of molded parts (T-connections, inspection length with box and elbows) by the thermal expansion, it is necessary that this is compensated in advance e.g. with an expansion joint with expansion compensation (FU33Ø)

- Note:
  The outside of the molded parts should additionally with a 10 mm thick release layer of non-flammable, flexible building materials e.g. mineral wool are sheathed, so that the length of the shaft remains guaranteed and damage is avoided.

6.3 CLEAN-OUT OPENING

The position of the cleaning and inspection openings must comply with DIN V 18160 Part 1 or other applicable regulations and should be discussed with the competent authorized district chimney sweeper during the planning phase.

The inspection openings must be accessible at all times and must not be blocked (e.g. by furniture)!

Components made of or with flammable building materials, as well as other combustible objects, must be at least 40 cm away from inspection openings in solid fuel chimneys. If a ventilated radiation protection (ventilation of at least 5 cm) made of non-combustible building materials e.g. a plate is attached, so the distance can be reduced to 20 cm. The radiation protection must not hinder the necessary cleaning work.

For inspection openings in the connecting flue pipes with liquid and gaseous fuels, up to an exhaust gas temperature of 400°C, a distance of 20 cm is sufficient to components made of or with combustible building materials, as well as combustible objects. For exhaust gas temperatures up to 600°C, the distances in chimneys must be observed.

Floors made of combustible building materials (e.g. laminate, carpet, etc.) in front of cleaning openings in chimneys must be protected by non-combustible building materials (e.g. metal sheet) during cleaning and inspection work. The plate must project at least 50 cm forward and laterally at least 20 cm over the opening, as far as the firing regulations of the countries stipulate otherwise.

6.4 INCLINED RUN OF THE EXHAUST GAS SYSTEM

If an inclined run is at 87° with respect to the vertical for the exhaust system e.g. a connecting line, it is necessary in a wet operation of the system to secure the element joints with clamping straps to prevent bending of the exhaust system and thus avoid the escape of condensate. In a dry operation and a inclined run up to 90° to the vertical e.g. as a connection line, securing of the element joints with clamping straps recommended to counteract a deflection.

Please consider that the clean-out openings have to be according to the national regulations (in Germany according to DIN V 18160-1).

After an inclined run the weight of the elements must be intercept with a base plate for intermediate support.

Please note that during high exhaust gas temperatures and / or great lengths, ahead of an inclined run appropriate actions have to be taken to compensate the thermal elongation e.g. with an intermediate support with expansion compensation.

The maximum distance between two wall, ceiling or floor fixtures must not exceed 4 m in the connection line!

Rotable angles must not be used for an inclined run of the vertical part of the exhaust system!

6.5 AIR INLET GRID FOR REAR VENTILATION (for wet operation mode)

If there is a wet mode of operation for the vertical part of the exhaust system, so the annular gap between the outer wall of the inner tube or any existing insulation and the shaft inner side is constantly ventilated. Requirements for this in Germany are according to DIN V 18160 Part 1. Other applicable national regulations or requirements must also be observed.

6.6 MOUNTING CHIMNEY TOP COVER

The design of the outlet of the exhaust system must be such that the discharge of the exhaust gases is guaranteed through the extended inner tube and the ventilation of the shaft between the outside of the inner tube (or insulation) and shaft inner wall.
The chimney top cover is plugged or riveted to the chimney head. Only materials that do not lead to unwanted corrosion of the stainless steel cover, such as stainless steel, may be used for this purpose e.g. stainless steel screws and rivets. The head cover must be permanently sealed against moisture ingress, e.g. with weather-resistant silicone.

The storm collar must be mounted approx. 3 cm (minimum ring gap width) above the outlet branch on the extended inner pipe to ensure the rear ventilation of the shaft and the length expansion of the inner pipe. The storm collar should be sealed accordingly.

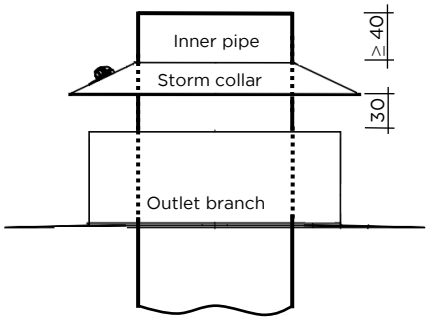


Figure 5: Attachment storm collar

6.7 END CAP

Caps, extensions and nozzles may only be installed on the exhaust system outlet when it is operated under reduced pressure or when it is ensured that it does not generate any impermissible overpressure in the exhaust system and that icing of the outlet is prevented in all operating states.
The operational and fire safety of the connected fireplaces and the exhaust system must not be impaired.
The aerodynamic resistance of caps, extensions and nozzles must be taken into account when calculating the cross section of the exhaust system (see DIN V 18160-1).

6.8 LIGHTNING PROTECTION

Lightning protection has to be performed according to the relevant technical regulations, see also information sheet No. 40 of the BDH „Lightning protection at exhaust system“.
Requirements result from DIN EN 62205-3 (VDE 0185-305-3) (Protection of structural works with persons), DIN VDE 0100-410 (Construction of low-voltage systems: protective measures; Protection against electric shock) and DIN VDE 0100-540 (Construction of low-voltage systems part 5-54: Selection and erection of electrical equipment – earth termination service and protective conductors) and other applicable regulations.

Execution has to be done by a specialized firm!

6.9 CLOSING OPERATIONS

All openings in the shaft outside the installation room (except for the air intake opening for the rear ventilation) must be in accordance with the building materials (non-combustible building materials) and the quality of the shaft e.g. in fireproof chimneys (LA90 quality) are closed.
Make sure that no residues of mortar lead to a reduction in the cross section in the shaft.
In addition, the condensate tray and the drain must be cleaned of any soiling.

7 CONDENSATE DRAIN

7.1 GENERAL NOTES

The discharge of condensation and rainwater to the sewage is to be provided by the customer (connect sewage connection point to the exhaust system)!
Especially when solid fuel burners are connected, the condensate drain should be cleaned regularly and the deposits must be cleared in order to ensure the discharge of rainwater and condensate.
In wet operation mode, it is recommended to provide the drainpipe of the condensate tray with a siphon, the inside diameter should be min. 18mm.

Note:
If there is no or slight accumulation of condensate and rainwater then dust can be removed from the condensate drain during cleaning work on the exhaust system.

It is advisable to take measures which prevent the freezing of outdoor condensate drain or siphon, in particular if regular condensation is expected.

7.2 CONDENSATE NEUTRALIZATION

Please observe the national as well as the local regulations.
If condensation neutralization is necessary then our neutralization units are available.

7.3 CONDENSATE RETURN TO THE HEAT GENERATOR

In case of a humid operation in the connection line, at least 3° slope (corresponds approx. 5 cm slope per meter) to the heat generator is to be laid. The resulting condensate can be dissipated via this, if this is suitable, otherwise measures must be taken to ensure to complete drainage of the condensate, e.g. by a condensation trap with siphon (FUxx111+Ø[1]).

For long connection lines, it is recommended that these are not insulated with combustible building material with low thermal conductivity e.g. with aluminium-clad mineral wool (note manufacturer's instructions), to largely avoid cooling of the flue gases.
If insulation is attached, then it is to be fixed so that cleaning and measuring openings are not covered or are easily accessible.

[1] For „xx" in the article code please mention the desired wall thickness

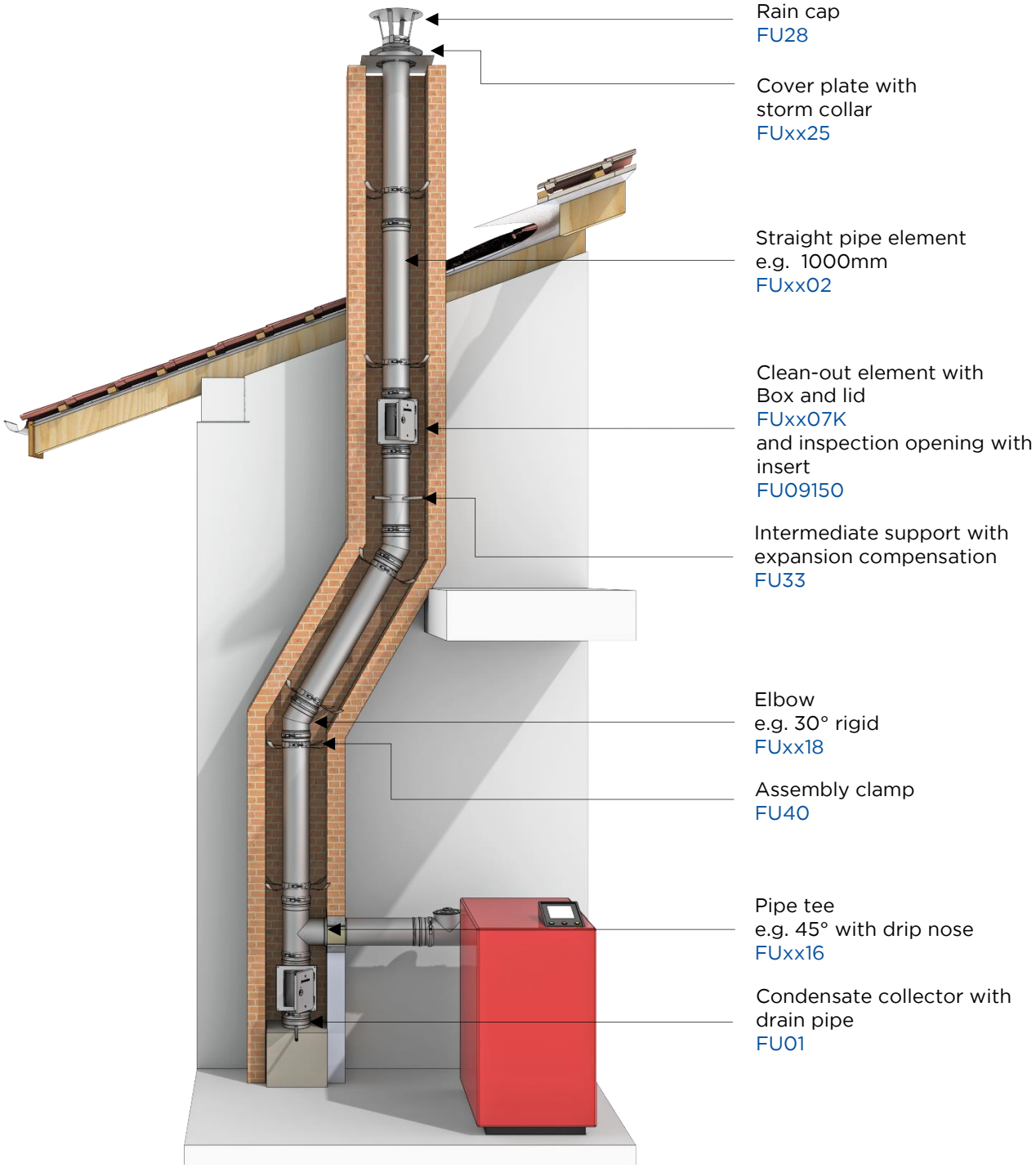
7.4 CONDENSATION GUIDE AT THE BOTTOM

Condensate and rainwater from the vertical part of the exhaust system flows into the base plate with condensate drain via the inner wall and from there into the condensate discharge or in the neutralization unit, which can be drained via the house drain.

Note:
The closed condensate tray should only be used if the exhaust system is operated exclusively in dry operating mode and the entry of rain water is limited by appropriate measures e.g. rain cap.

If the exhaust system is intended for wet operation the closing cap must be removed from the condensate drain in order to ensure complete drainage of accumulated condensate and rainwater.
If this is not removed, an escape of the accumulated moisture via the plug connection of the condensate tray would not be possible and thus a moisture penetration of the shaft cannot be excluded.

8 EXAMPLE



For „xx“ in the article code, please add the desired wall thickness e.g. 06 = 0,6 mm; 10 = 1,0 mm

Figure 6: Example EW-FU

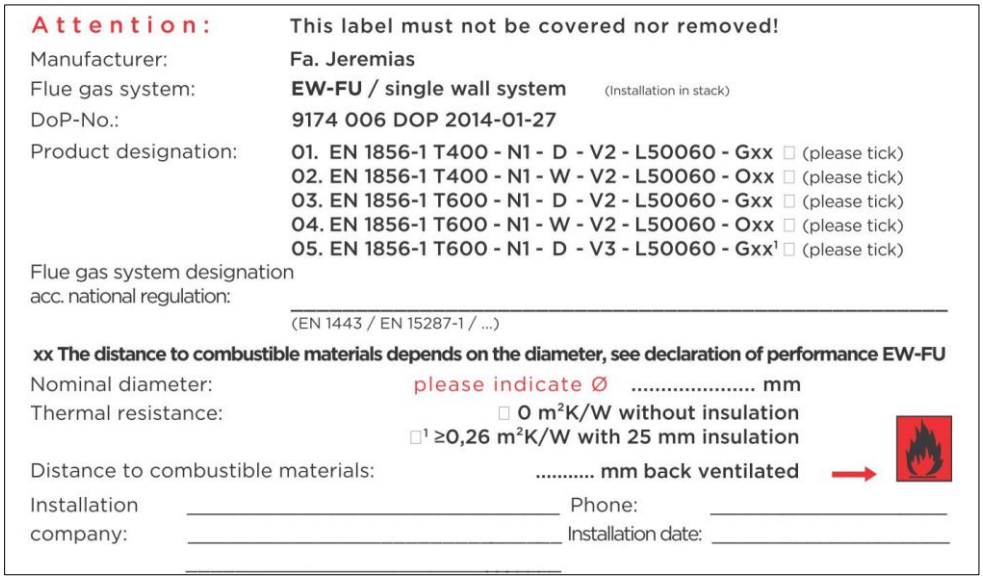
9 FINAL NOTES

The exhaust gas system EW-FU was developed and tested for gas leaks, corrosion resistance and secure installation. Therefore, only original parts of the system Jeremias EW-FU must be used. In addition the manufacturer's specifications and installation instructions have to be met.
Technical changes are reserved!

10 LABELING AFTER INSTALLATION

The installed exhaust gas system has to be fitted depending on the application with the following label. The corresponding classification is to be ticked or completed according to the application.
The labeling of the connecting line is not required, for this the declaration of performance as proof of usability is sufficient.

In the login area of our homepage www.jeremias.de you will find a detailed instruction for completing the label.



Attention: This label must not be covered nor removed!
Manufacturer: Fa. Jeremias
Flue gas system: EW-FU / single wall system (Installation in stack)
DoP-No.: 9174 006 DOP 2014-01-27
Product designation:
01. EN 1856-1 T400 - N1 - D - V2 - L50060 - Gxx ☐ (please tick)
02. EN 1856-1 T400 - N1 - W - V2 - L50060 - Oxx ☐ (please tick)
03. EN 1856-1 T600 - N1 - D - V2 - L50060 - Gxx ☐ (please tick)
04. EN 1856-1 T600 - N1 - W - V2 - L50060 - Oxx ☐ (please tick)
05. EN 1856-1 T600 - N1 - D - V3 - L50060 - Gxx[1] ☐ (please tick)
Flue gas system designation acc. national regulation: _____ (EN 1443 / EN 15287-1 / ...)
xx The distance to combustible materials depends on the diameter, see declaration of performance EW-FU
Nominal diameter: please indicate Ø ..... mm
Thermal resistance: ☐ 0 m²K/W without insulation
☐[1] ≥0,26 m²K/W with 25 mm insulation
Distance to combustible materials: ..... mm back ventilated
Installation company: _____ Phone: _____ Installation date: _____

Figure 7: system label EW-FU

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