IRISH AGRÉMENT BOARD

BUILDING PRODUCT CERTIFICATION

CERTIFICATE No. 01/0121

Cl/SfB

(59) f5

SCHIEDEL CHIMNEY SYSTEMS, Kingscourt Road,
Carrickmacross, Co. Monaghan
Tel: 042 9661256 Fax: 042 9662494
E-mail office@schiedel.ie www. schiedel.ie

SCHIEDEL SWIFT CHIMNEY SYSTEMS

Revétment de cheminée en beton léger
Schornsteinauskleidung

The Irish Agrément Board is designated by Government to issue European Technical Approvals.

Irish Agrément Board Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2002.**

The Irish Agrément Board operates in association with the **National Standards Authority of Ireland (NSAI)** as the National Member of UEAtc.

PRODUCT DESCRIPTION

This Certificate relates to Schiedel Swift Chimney Systems, a prefabricated range of chimney systems for use in domestic accommodation (factory-made insulated chimney). The chimney systems are available in six options as described in Section 2.1. The concept of the Schiedel Swift Chimney systems involve a 3-layer construction. The first inner layer consists of a flue liner manufactured in accordance with IS EN 1457: 1999 *Chimneys, clay/ceramic flue liners. Requirements and test methods* surrounded by a second layer of flexible rock wool insulation of 91.5 kgm^{-3} designed to maintain the temperatures of the flue gases and allow them to pass freely up the chimney. The insulation also allows the clay flue liner to expand and contract without damage. The third layer is the lightweight concrete block made from a mix of leca sand and cement which encases the system and provides additional insulation. The picture shown above clearly illustrates the 3-layer construction.

USE:

The Schiedel Swift Chimney Systems are designed to offer fast and efficient erection on site and are suitable for all types of domestic heat appliances. They can accommodate both open fire and closed appliances using fuels up to 45 kw. The system is delivered by specified length to site on a series of pallets and contains all the materials necessary to construct a chimney from the base to chimney pot. A chimney system is installed on site by the main contactor under the guidance of Schiedel Chimney Systems. The systems are suitable for use in domestic prefabricated constructions such as Timber and Steel frame as well as traditional masonry construction. One fuel appliance only is to be used for each chimney system.
It is essential that all Schiedel Swift Chimney Systems are constructed in accordance with the requirements of this Certificate and the manufacturers instructions.

MARKETING:

The chimney stystems are marketed by:

Schiedel Chimney Systems,
Kingscourt Road, Carrickmacross
Co. Monaghan

DESIGN AND MANUFACTURE:

The chimney systems are designed and manufactured by:

Schiedel Chimney Systems,
Kingscourt Road, Carrickmacross
Co. Monaghan

PART 1 CERTIFICATION

1.1 ASSESSMENT
In the opinion of the Irish Agrément Board (IAB), the Schiedel Swift Chimney Systems if used in accordance with this certificate can meet the requirements of the Building Regulations 1997 to 2002 as indicated in Section 1.2 of this Certificate.

1.2 BUILDING REGULATIONS 1997 to 2002
REQUIREMENT:

Part D - Materials and Workmanship
D3 - The Schiedel Swift Chimney Systems as certified in this Irish Agrément Board Certificate, are comprised of proper materials fit for their intended use. (See Part 4 of this Certificate.)

Dl - The Schiedel Swift Chimney Systems used in accordance with this Irish Agrément Board Certificate, meet the requirements for workmanship.

Part A – Structure
A1 - Loading
The systems have adequate strength and stability and can satisfy the regulation provided they are correctly installed and supported and the maximum height restrictions are observed as shown in Table 3. (See Parts 2 and 3 of this Certificate.)

Part B – Fire Safety
B3 (1) - Internal fire spread (structure)
The Schiedel Swift Chimney Systems will retain its stability for a reasonable period in the event of fire.

B3 (2,3) - Internal fire spread (structure)
The Schiedel Swift Chimney Systems used in accordance with this Irish Agrément Board Certificate will inhibit the spread of fire and smoke within the building.

Part C – Site Preparation and Resistance to Ground Moisture
C4 - Resistance to Weather and Ground Moisture
The Schiedel Swift Chimney Systems are composed of durable materials and when built in accordance with this Irish Agrément Board Certificate using conventional flashing dpc methods will meet the requirements of this regulation. The chimneys must be protected from contact with the ground by a traditional Damp Proof System.

Part E – Sound
E1 – Airborne Sound (walls)
Party walls and Compartment walls incorporating the Schiedel Swift Chimney Systems are constructed to meet the airborne sound requirements of this regulation. (Ref. Fig. 3). As the chimney systems do not breach the walls that they are tied to, the sound insulation values of the walls are not reduced.

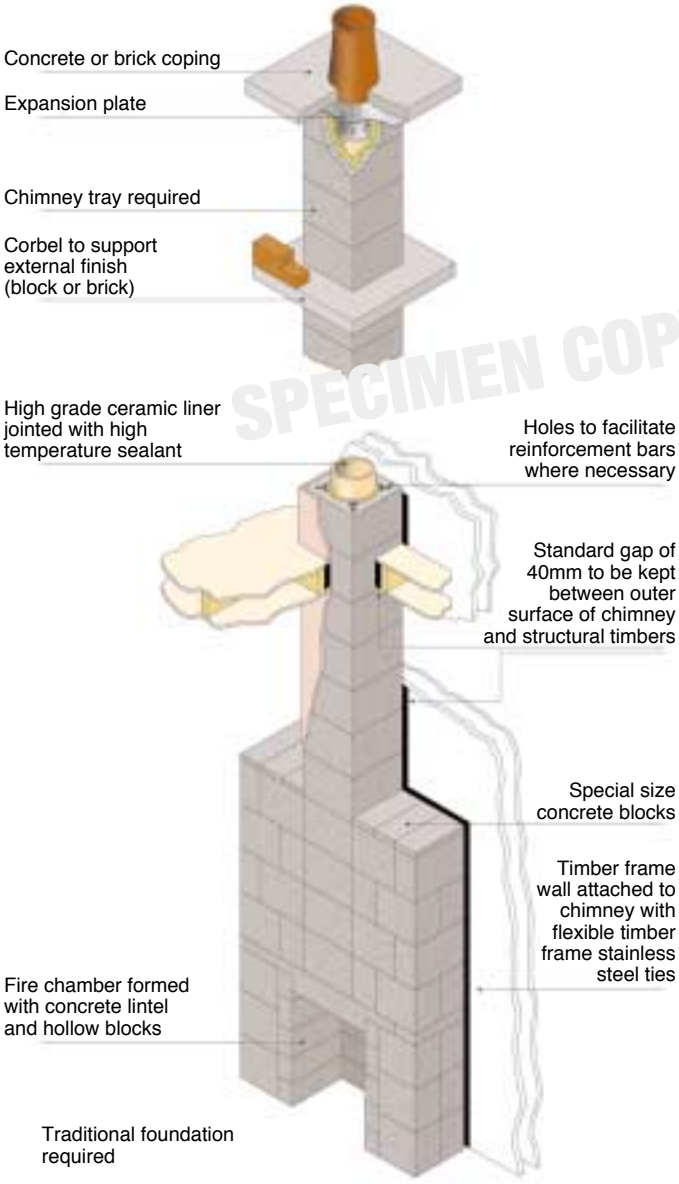
Part J – Heat Producing Appliances
J1- Air Supply
The Schiedel Swift Chimney Systems meet this requirement, however attention is drawn to the need to locate air ducts to obviate draughts within the room the chimney is located. The installation of the chimney system should comply with the conditions set out in Section 2.4 and Part 3 of this Certificate.

J2- Discharge of Products of Combustion
The Schiedel Swift Chimney System have adequate provision for the discharge of the products of combustion to the outside air, as the flues, flue pipes and chimney of the chimney system have been assessed as being of:
- Sufficient size.
- Contain openings only necessary for inspection, cleaning and efficient working of the appliance.
- Are lined with suitable materials.
- Are constructed at roof level so as to discharge in a safe manner.

Where chimney stacks are constructed at roof level so as to assist in the discharge of products of combustion, the heights of the chimney stack should be in accordance with Table 3 of this Certificate.

J3 - Protection of Building
When used in accordance with Part 4 of this Irish Agrément Board Certificate the Schiedel Swift Chimney Systems meet the requirements of this regulation.

Fig. 1. Schiedel Swift Open Fire Internal Chimney System for use in Timber Frame Construction



PART 2 TECHNICAL SPECIFICATION AND CONTROL DATA

2.1 PRODUCT DESCRIPTIONS

The Schiedel Swift Chimney Systems are factory-made insulated chimneys which are available in six options. Each chimney is delivered to site on pallets containing all the materials required to construct a chimney from base to chimney pot, apart from the fireback which is not provided with the system. The six Schiedel Swift Chimney Systems available are:

1. Open Fire Internal Chimney System
2. Back to Back (Party Wall) Chimney System.
3. Open Fire External Chimney System.
4. Central Heating Chimney System.
5. Combination System (Open Fire & Central Heating)
6. Chimney Incorporating Bends.

1. Schiedel Swift Open Fire Internal Chimney System.

This is a single chimney system for use in timber and steel frame construction along with traditional masonry construction. All components to the chimney stack from floor to chimney pot are included in the chimney pack. The standard chimney breast is 1640mm wide but this can be reduced to 1220mm. The Schiedel Swift Open Fire Internal Chimney System can accommodate both open fire and closed appliances. The system is suitable for all types of fuels such as gas, oil, and solid fuel, which includes wood and peat. Figures 1 and 2 show the Schiedel Swift Open Fire Internal Chimney System installed in Timber Frame and Masonry construction respectively.

2. Schiedel Swift Back to Back (Party Wall) Chimney System.

This solution facilitates the construction of back to back chimneys on both sides of a party wall. The system is available in two options, one for timber and steel frame constructions and one for traditional masonry construction. The flues from each chimney can be combined into one chimneystack at roof level. Figure 3 shows the Back to Back Chimney System used in Timber Frame construction.

Table 1.
Nominal Characteristics of the Schiedel 3 Layer Insulated Chimney System

Component	Size (mm)	Weight (kg)	Crushing Strength
Chimney Block 200mm diameter Flue Liner	400x400x330	23 kg	11.3N/mm^2
200mm diameter Flue Liner	200x330	7.5 kg	120kN
Chimney Block 120mm diameter Flue Liner	320x320x330	16 kg	11.3 N/mm^2
120mm diameter Flue Liner	120x330	5.2 kg	120kN
Hollow Block	400x195x330	19 kg	7.8N/mm^2
Concrete Block	400x200x100	17 kg	7N/mm^2
Lintel (Ext)	830x200 (B) 830x350 (F)	55 kg 75 kg	28.4kN
Lintel (Int)	1220x200	60 kg	29.4kN
Coping	760x760	96 kg	
Picture Frame Coping	750x800x65	46kg	
Corbel	675x675	88 kg	30kN
Cut Corbel	675x540	62kg	16kN
Chimney Block Bend	210x110x400	12 kg	
Rockwool Insulation	36mm thick		

(B) back: (F) front:

Table 2. Ancillary Items

Fire lintels – expanded clay bound with refractory cement
Chimney corbels and copings – normal density concrete
Corrosion resistant steel expansion plate – Stainless Steel grade 316 - 0.5 mm thick
Damp proof trays – Code 5 lead
Clay flue terminals in blend of suitable clays with choice of colours
Refractory based putty cement for flue liners
Masonry ties – expanded metal wall tie or L shape stainless steel brackets
Timber frame tie – stainless steel flexible wall tie
Reinforcement kit for chimney stack – 8mm high yield steel, plastic stoppers

3. Schiedel Swift Open Fire External Chimney System.

This system provides for the building of the chimney on an external wall. The system fundamentally works on the same principles as the Schiedel Swift Open Fire Internal System. Figure 10 shows how the system is installed.

4. Schiedel Swift Central Heating System. (200 & 120mm diameter flues)

The central heating option is suitable for use with all central heating boilers and stoves. The system has the added benefits of providing back ventilation, which makes it suitable for use with condensing boilers. The back ventilation in the system provides optimum air conditions within the chimney. Figure 11 shows this system installed.

5. Schiedel Swift Combination System (Open Fire and Central Heating)

This system can be installed internally or externally. The system is a combination of the

central heating system and the open fire system. The combination system allows for the flues of an open fire and a central heating system to be combined in the one chimneystack. Figure 14 shows a combination system installed externally.

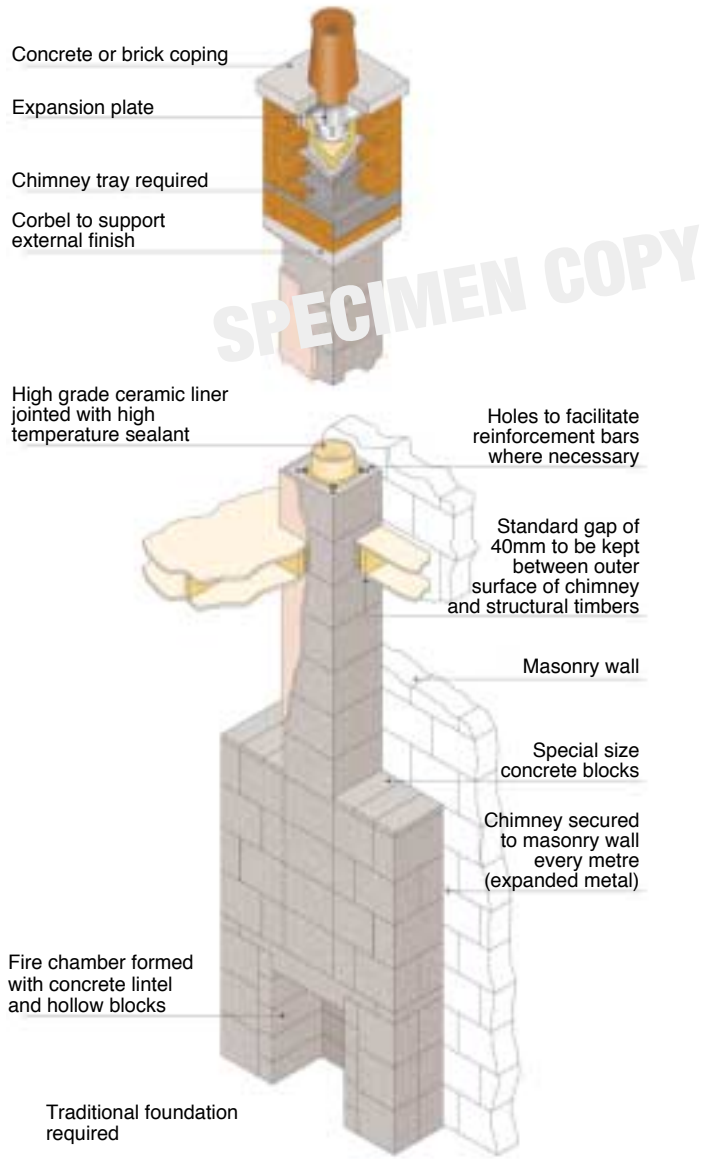
6. Schiedel Swift Chimney Incorporating Bends
The Schiedel Swift bend kits allow the chimney flue to be offset. There are two types of bend kits:

The Chimney Breast Bend Kit for use within the chimney breast. The standard offset is 200mm.
The Standard Bend Kit which can be used anywhere in the house and allows the chimney to be offset as much as necessary. Figs. 12 and 13 shows the two types of standard bend kit installed respectively.

2.1.1 Typical list of elements in a Schiedel Swift Chimney System
A typical chimney system is composed of the following elements:

- Inner refractory clay flue liners manufactured to IS EN 1457: 1999 *Chimneys, clay and ceramic flue liners. Requirements and test methods.*
- Clay pot

Fig. 2. Schiedel Swift Open Fire Internal Chimney System for use in Traditional Masonry Construction



- Rockwool Insulation 91.5 kgm^{-3}
- Outer lightweight concrete made from a mixture of leca, sand and cement
- Special ventilation outlets in outer chimney blocks for central heating installations
- Concrete corbels and capping
- Fire Lintel (lightweight concrete)
- Splitter Blocks (lightweight concrete)
- Lead DPC trays
- Stainless steel movement plate
- Stainless steel wall tie fixings
- High temperature ceramic sealent
- Reinforcement Kit (when deemed necessary)

2.1.2 Description of Schiedel chimney block
The lightweight precast chimney block units are interlocking and are available in two sizes having the flue dimensions (mm) given in Table 1. This table also gives a list of the nominal characteristics of the block, while Table 2 gives a list of the ancillary items with the chimney system.

2.2 MANUFACTURE OF CHIMNEY SYSTEM ELEMENTS

2.2.1 Clay Flue Liner
The inner clay liner is manufactured from a blend of suitable refractory clays, using normal heavy clay working machinery, i.e. grinding, blending, add water, de-airing and extruding. Then through a drying process and finally through a kiln and fired to a temperature of 1040°C. All flue liners are manufactured and tested to the requirements of IS EN 1457: 1999 *Chimneys. Clay and ceramic flue liners. Requirements and test methods.*

2.2.2 Lightweight Chimney Block
The outer casing or flue block is manufactured from lightweight concrete incorporating an expanded clay aggregate. A standard egg-laying process is used for manufacture of blocks.

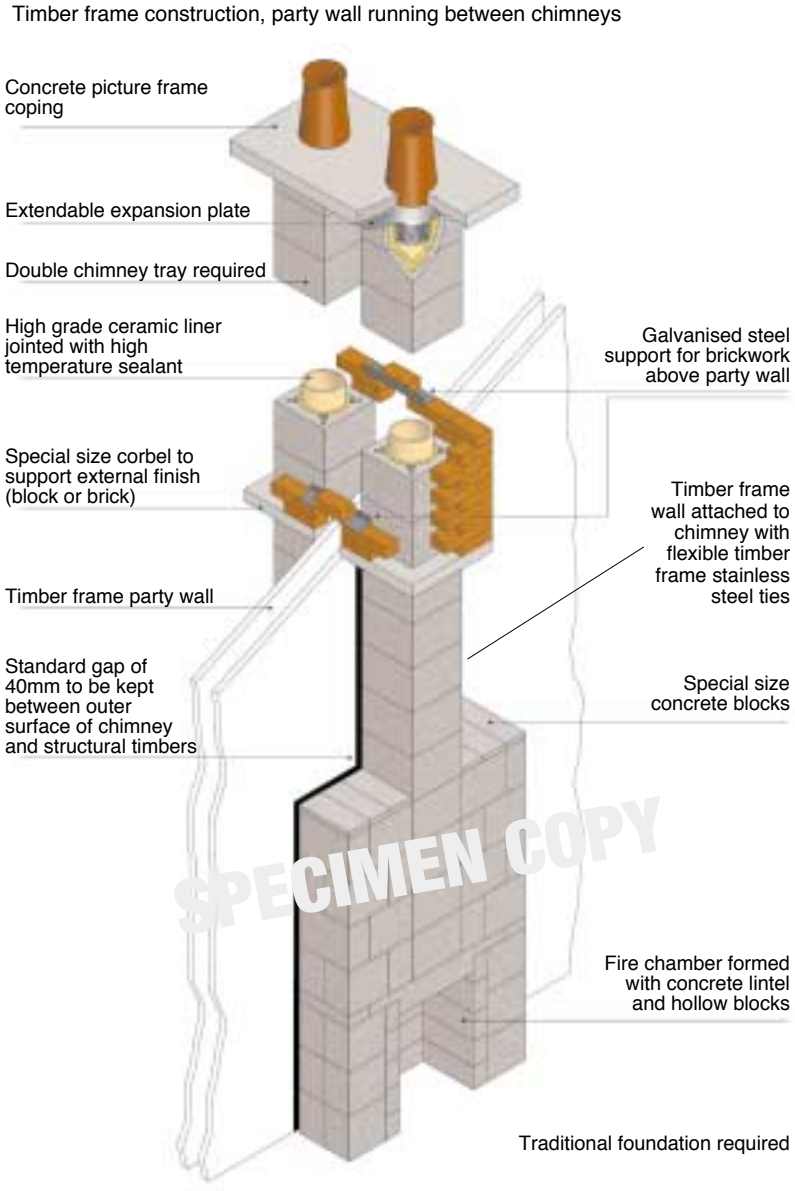
2.2.3 Rockwool flexible insulation of a density of 91.5 kgm^{-3} is specially made for the Schiedel Chimney System by Deutche Rockwool Mineralwool GmbH. The insulation is used to maintain the temperature of the flue gases and this inhibits the risk of condensation.

2.2.4 Fire lintels (lightweight concrete) are made from expanded clay particles, size blended and bound with refractory cement. The Fire lintels are manufactured to Schiedel Chimney System specifications by Sandymount Precast Concrete, Coalisland.

2.2.5 Chimney corbel and copings are manufactured from normal density mix. Other accessories e.g. expansion plates, inspection doors are manufactured to a British Standard or equivalent European Standard. The steel used in these products has been assessed as being suitably corrosion resistant for use in chimneys. The high temperature sealant used in the joints between liners is a proprietary product specially manufactured for the Schiedel Swift Chimney Systems. It is supplied in special disposable tubs.

2.2.6 Quality control
Quality control on manufactured items includes checks on weight, dimensions, crushing strength and density.

Fig. 3. Back to Back Chimney System



Schiedel Chimney Systems has a full in-house quality control system in operation.

2.3 DELIVERY AND STORAGE AND MARKING

A Schiedel Chimney System is ordered by chimney height. Each chimney system (pack) is delivered to site on a series of pallets and contains all the materials necessary to construct a chimney from the base to chimney pot. The pack for a standard chimney can be fitted on two pallets. Pallets should be stored on a firm level base until required. The pallets are shrink wrapped and are labelled with a cardboard wrapper, which shows the manufacturers name, flue size, chimney height, production batch number and the IAB identification mark incorporating the number of this Certificate and contains instructions on storage and installation.

When pallets are unwrapped, components should be carefully offloaded. They should be stored off the ground and under cover in such a manner that they are protected from accidental damage and adverse effects of weather.

The system has the advantage of being able to deliver a full chimney to a specific building on pallets. This method of delivery allows for easy storage on site and avoids unnecessary breakage of flue liners and pots as is common with traditional built chimneys on construction sites.

2.4 INSTALLATION PROCEDURE

2.4.1 General

Assembly of the Schiedel Chimney Systems is carried out in accordance with the requirements of this certificate and the manufacturers instructions. Installation on site is carried out by the main contractor. Installers of the system must be familiar with the system and at least one operative installing the system must have received some formal training on the principals of installing the system. Schiedel Chimney Systems offer a full technical back up service to operatives installing the system. Installation of the chimney does not present any undue difficulty either in terms of their accommodation within traditional or system-built dwellings or their compatibility with accepted operational sequences. The weights of the chimney components are such that mechanical handling equipment is not normally required (See Table 1). The Schiedel Swift Chimney System affords appreciable saving in construction time when compared with conventional masonry construction.

2.4.1.1 Foundation

The Schiedel Chimney Systems are constructed from lightweight concrete blocks and lintels. As these blocks are lighter than normal density blockwork a conventional concrete foundation is adequate.

2.4.1.2 Constructional Hearths.

A constructional hearth must be provided to all Schiedel Chimney Systems. The constructional hearth should be constructed in accordance with Technical Guidance Document Part J section 2.18 and 2.19 of the Building Regulations 1997 to 2002. The installation of the constructional hearth is the responsibility of the main contractor.

2.4.2 General installation criteria for the Schiedel Swift Chimney Systems

2.4.2.1 Installation of the Schiedel Swift Open Fire Internal (Timber/Steel Frame & Traditional Masonry) Chimney System

- First mark the fireplace location and ensure that the constructional hearth is adequate to build the Schiedel Swift Chimney System.
- Once fireplace location has been marked place a layer of damp proof coarse at its base.
- The fire chamber is first constructed by placing the hollow blocks on a bed of mortar, then place the specially sized concrete blocks next to this on a bed of mortar, and continue this process until the

pedestal is complete. Repeat this process for the other pedestal, and continue to build until the appropriate height.

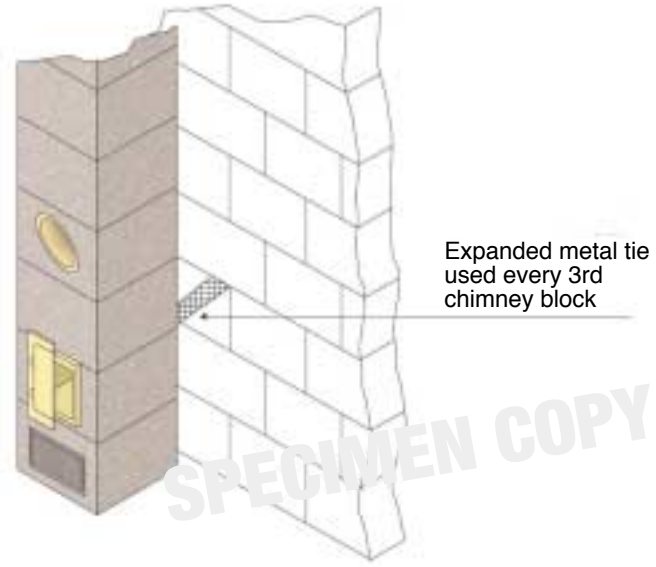
- Seal between the lintel and concrete blocks with mortar, once in place put the supplied high temperature sealant on the inner side of the lintel, place the other half of the lintel next to it.
- Seal between the lintels with mortar.
- Put a ring of the high temperature sealant around the flue arbiter in the lintel.
- Using the mortar shield supplied (ref. manufacturers instructions) make a bed of mortar on the lintel for the first chimney block (Fig. 4 shows mortar shield).
- The chimney breast is next constructed by placing the first chimney block on the bed of mortar.
- Then bend the insulation and place around the inside of the chimney block being careful to keep the slots of mineral wool to the inside.
- Clean the flue end with a sponge, put the sealant round the socket end and place the flue pipe into the chimney block.
- Once it is positioned wipe the sealant away from inside the flue.
- The Schiedel chimney blocks are tied to masonry walls using expanded metal as illustrated in Fig. 5 or alternatively with a stainless steel tie of similar cross section to a masonry wall tie. The Schiedel Chimney System is tied to timber frame walls using stainless steel timber frame wall ties. Ties should be used every third vertical hollow block and chimney block with a maximum spacing of 1 metre for both masonry and timber frame.
- Then place the hollow block on the bed of mortar beside the chimney block.
- When building the chimney blocks it is recommended that the mortar shield is used to prevent excess mortar falling into the chimney.
- Put expanded metal between the chimney block to prevent cracking.
- Continue building both the hollow and chimney blocks, up until the top of the chimney breast is reached (Ref. Fig. 1 & 2). Insulation is inserted into the chimney blocks which form the flue in the chimney breast.
- It is important to ensure that the sealant is put on the top of each flue rebate and the insides are wiped clean with a sponge.
- The opening is then enclosed by putting six specially sized concrete blocks over the hollow blocks at the top of the chimney breast.

2.4.2.2 Trimming at First Floor level

- Floor joists running parallel or perpendicular to a chimney stack must be trimmed around the stack.
- Where the chimney passes through the ceiling a gap should be left, this gap should be 40mm for structural timbers or 30mm for a concrete ceiling. The gap is then filled with mineral wool or a non-rigid, non-combustible material.
- To comply with the Building Regulations 1997 to 2002 the chimney must be constructed so that:
  (a) There is a minimum separation distance of 200mm between the flue and combustible material.
  (b) There is a minimum separation distance of 40mm between the outer surface of the chimney and any combustible material. Floorboards, skirting, dado, picture rail, mantleshelf or architrave do not need to be taken into account in condition (b).
- The chimney is then built as a single block up to the stack.

Fig. 4. Mortar Shield

Fig. 5. Expanded metal tie detail



2.4.2.3 Chimney Stack with Brick or Block Cladding.

For chimneys that require a brick or block cladding a corbel and chimney tray are provided with the system. Wall weeps are also required but are not provided with the system.

- The concrete corbel is placed on the Schiedel chimney block as shown in Fig. 6. This gives a stack of 675mm x 675mm or 3 bricks by 3 bricks. Lay the required number of brickwork courses to reach chimney tray level, generally two courses of brickwork is sufficient.
- Continue to build the chimney blocks on the corbel, inserting the DPC tray at the appropriate level.

- The lead chimney tray is then placed over the chimney block and let to rest on the bricks as shown in Fig. 6. The apron of the chimney tray should always be on the slope side of the chimney. The high upstand and cavity maintain the damp proofing of the inner chimney.
- Continue to build up the outer brickwork and inner chimney block on top of the chimney tray. Weep holes should be incorporated into the brick joints to ventilate and remove any trapped moisture.
- On the last chimney block make sure the last flue liner does not extend above the mark on the expansion plate.
- After cutting the last flue liner put the expansion plate on the chimney block. Now add mortar on top of the expansion plate and place the coping on top.
- Place the chimney pot into the coping to a depth of at least 75mm in good quality mortar and seal the space around the base. Use similar material to seal the gap inside between the pot and the expansion plate.
- Finally inside the chimney pot seal the space between the pot and expansion plate with mortar or other non-porous material.

Fig. 6. Stack Detail

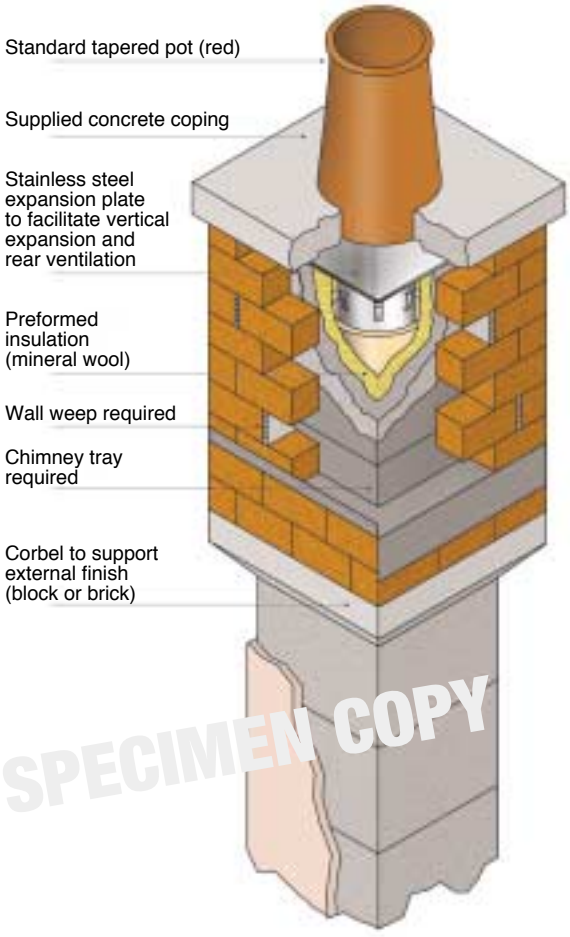
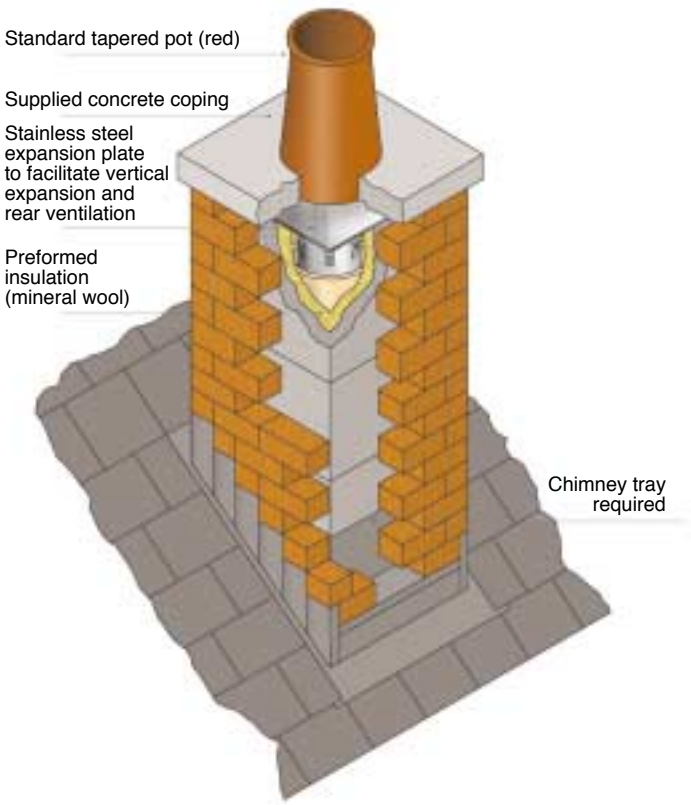


Fig. 7. Stack Protruding Through Roof



2.4.2.4 Height of Chimney Stacks:
Where it is required to clad the portion of an internal chimney above the roofline with brickwork, a corbel unit is incorporated in the construction just below the roofline. The opening in the roof must be suitably trimmed by timber fixed to the roof members.

- The height of a chimney stack to a Schiedel Chimney System should be in accordance with Table 3.
- Where a chimney stack is built off a corbel, the stack should not exceed 1.2m above the roof line unless it is reinforced (Ref. Table 3).
- For a Schiedel Chimney without a corbel, the chimney stack must always be reinforced (Ref. Table 3).
- The chimney stack in the Schiedel Chimney Systems meet the requirements in all areas of the Wind Zone map of the Technical Guidance Document Part A to the Building Regulations 1997 to 2002 when installed in accordance with this Certificate and the manufacturers guidance.

2.4.2.5 Installation of Reinforcement
The reinforcement bars must start below the lateral support. Start by inserting the plastic stoppers into the holes on the underside of the first block with bars. Screw the bars together and insert equal lengths into two opposite holes in the chimney block. The liquid grout should be poured around the bars to ensure stability. Table 3 describes where and when reinforcement is required.

Where the chimney block has a rendered finish i.e. where no corbel has been used, then reinforcement is always required. The chimney rendering and flashing is carried out as normal.

Table 3. Maximum Heights of Chimney Stacks

Schiedel Chimney Stack	No reinforcement	Reinforcement	Guidance from Schiedel
Chimney with corbel	≥1.2m	1.2m to 1.5m	1.5m<
Chimney plain	N/A	up to 1.5m	1.5m above

2.4.3.1 Installation of the Schiedel Swift Back to Back Chimney System (Party Wall).

The Schiedel Swift Back to Back Chimney System for use in party wall construction is available in two options. Option 1 is used in timber or steel frame after the plasterboard slabbing of the party wall and before the tile/slating of the roof. The chimneys are constructed on either side of the party wall and therefore do not break the party wall as shown in Fig. 3. The two chimneys remain independent of each other until they reach the top of the party wall then using galvanised steel lintels they join together to be come one externally above roof level. The lintels ensure that no vertical load is applied to the party wall. Special pre-cast cut corbels are used to support the brickwork masonry. A special cavity tray element is provided to prevent moisture from rain penetrating through the brickwork to the level of the corbel as shown in Figs. 8 and 9. The flashings are installed in a conventional manner. The height of the projection of the chimney above roof level should be in accordance with Table 3. The system is designed to bring two chimneys into one chimney stack with a brickwork or blockwork finish. The system meets the fire performance requirements of the Building Regulation 1997-2002 by providing the following: The system when installed, must show at least 40mm distance between combustible material and the surface of the chimney blocks in accordance with TGD Part J Clause 2.15 (b) of the Building Regulations 1997-2002. The 40mm space must be filled with compressed duct wrap insulation or similar non-combustible material.

The void between the top of the timber (or steel) frame and the underside of the chimney lintel must also be sealed with duct wrap insulation or similar non-combustible material.

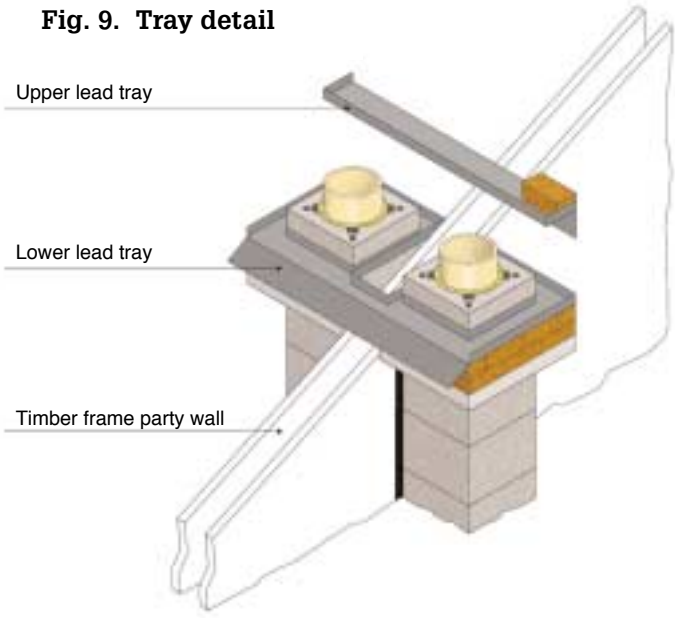
Option 2 is used in masonry construction. The corbel used in this form of construction is supported by the masonry party wall in a conventional manner.

2.4.4.1 Installation of Open Fire - External Chimney System

The External Chimney cladding at the base of the chimney must be at least 1.46m wide by 440mm deep on the outside gable wall. The brickwork may be reduced higher up by tumbling in. Fig. 10 shows two examples of Schiedel External Chimney Systems with a brickwork finish.

- The fire chamber should be built in a traditional manner and be a minimum of 600mm wide by 550mm deep.
- The fire chamber and inner and outer blocks are built on a suitable foundation. The sides of the fire chamber are formed with standard concrete blocks laid on their flat side and built to the appropriate height.
- Place the external lintel marked back in position on a bed of mortar.
- Seal between the lintel and the concrete blocks with mortar. Put the high temperature sealant on the inner side of the lintel.
- Now place the (larger) lintel marked front beside the back lintel on a bed of mortar.
- Seal between the lintels with mortar.
- Put a ring of the high temperature sealant around the flue opening in the lintel.
- Using the mortar shield supplied, (as shown in Fig. 4) make a bed of mortar on the lintel for the first chimney block.
- Place the first chimney block in position on the bed of mortar and ensure that it is flush with the inside of the cavity.
- Then bend the insulation and place around the inside of the chimney block making sure that the slots of mineral wool are on the inside. Clean the flue ends with a sponge. Put the sealant around the socket end and place the flue pipe into the chimney block, keeping the socket to the top. Once it is positioned wipe the sealant away from the inside of the flue.
- Place standard concrete blocks on a bed of mortar on either side of the chimney block.
- Cavity wall ties are now used to tie the chimney to the outside brick skin.
- Concrete blocks are now placed on top of the lintels forming the inside wall.

Fig. 9. Tray detail



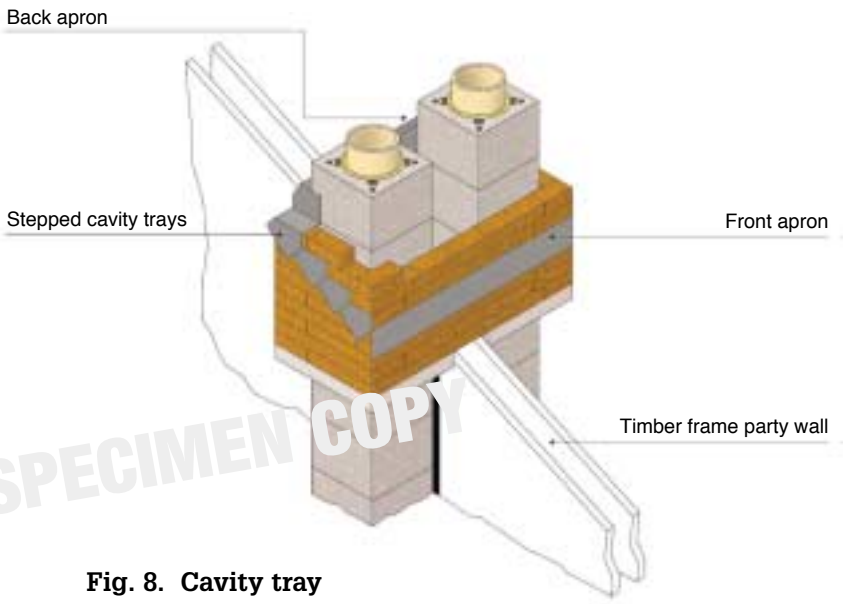
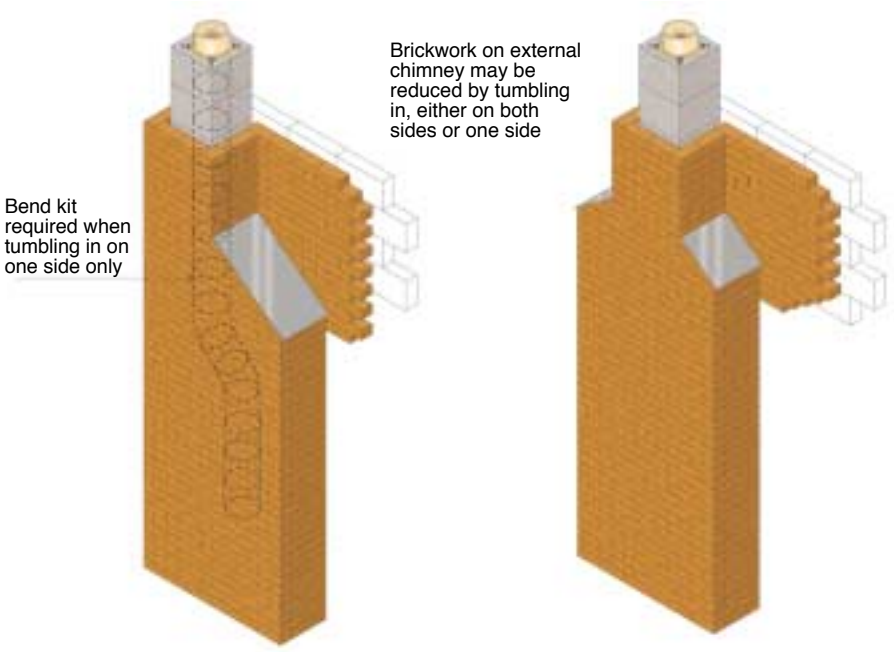


Fig. 8. Cavity tray

Fig. 10. Brickwork for External Chimney System

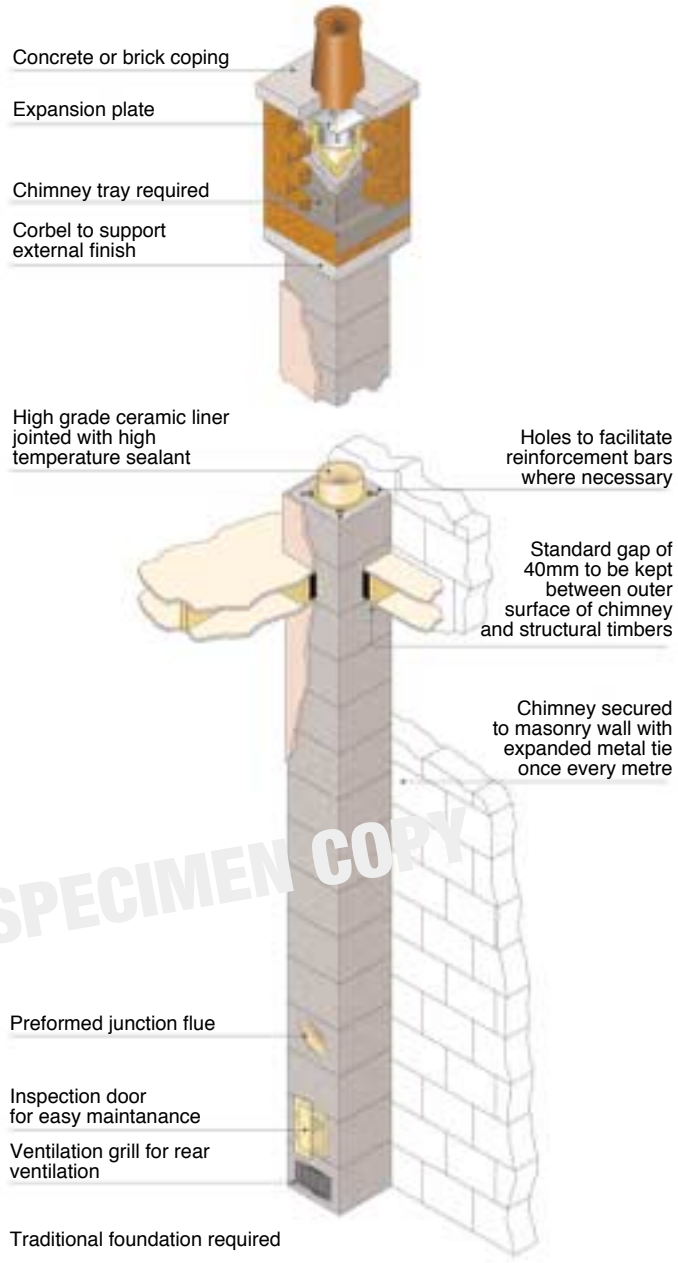


- Continue to build chimney block and concrete block up to roof level.
- When the top of the cavity is reached the brickwork is increased from 2 to 3.5 bricks in the chimneystack while maintaining the cavity throughout the stack. The chimney tray is then installed in the traditional manner.

2.4.5.1 Installation of Schiedel Swift Central Heating System

- First mark out a location for the chimney and build a suitable constructional hearth to the same level as the finished floor.
- Place a layer of damp proof coarse on the constructional hearth.
- Apply a bed of mortar to this base.
- Place and level the base stone on a bed of mortar.
- Place the first pre-cut chimney block with ventilation opening on the mortar.
- Bend the insulation and insert into the block keeping the slots of the mineral wool into the inside.
- Cut the insulation flush with the top of the block.
- Using the mortar shield apply a bed of mortar to the block.
- Place the pre-cut inspection door block on top of the bed of mortar.
- Bend the insulation around the inside of the chimney block again keeping the slots of the mineral wool to the insides.
- Once fitted cut the insulation along the ventilation channel taking care to keep the joints of the insulation out of the ventilation channel.
- Clean the ends of the flue liner with a sponge before putting the supplied high temperature sealant provided around the bottom rebate.
- Then place the flue liner into the chimney block making sure that the socket end is at the top.
- Place the standard chimney block on the bed of mortar, bend and insert the insulation.
- The junction flue can now be installed.
- Place the next pre-cut chimney block on a bed of mortar, bend the insulation around the inside of the chimney block and once fitted cut the insulation along the ventilation channel.
- Clean the ends of the junction flue with a sponge before putting the supplied high temperature sealant around the socket end then place the flue into the chimney block making sure the socket end of the rebate is at the top.
- Then place the next chimney block on top followed by the insulation and the flue.

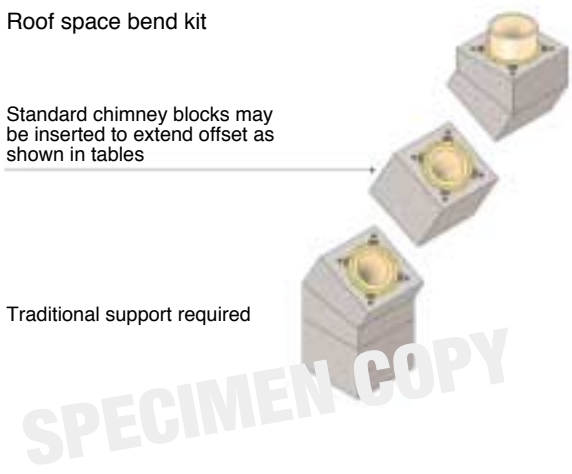
Fig. 11. Central Heating System



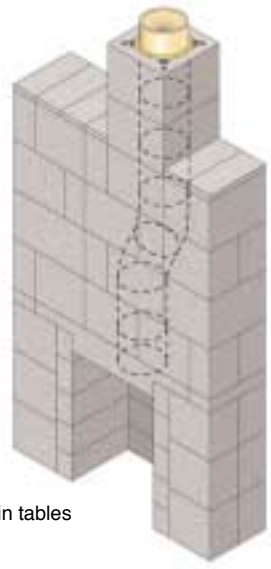
- Once the flue liner is in position wipe away any excess sealant from the inside of the flue.
- Continue building chimney up to corbel using standard chimney blocks, insulation and ceramic flue liners.
- Follow guideline for trimming at floor level and building chimneystack as previously described under section 2.4.2.2. to section 2.4.2.5.
- It is recommended using expanded metal on every third chimney block during construction.
- Depending on the diameter of the junction pipe the insulation can be cut with the saw provided in the accessory pack.
- Once fitted push the clips into the insert insulation and place into the opening.
- The inspection door is to be fixed to the chimney block with the nails provided. Once secured place the ceramic inspection insert into the opening.
- Finally place the ventilation grill into the opening of first chimney block, and the installation is completed.
- The space between the clay junction pipe and the metal appliance should then be sealed with a ceramic rope or other non-combustible material.

Fig. 11 shows a typical Schiedel Swift Central Heating System from floor to chimney stack.

Fig. 12. Bend kits

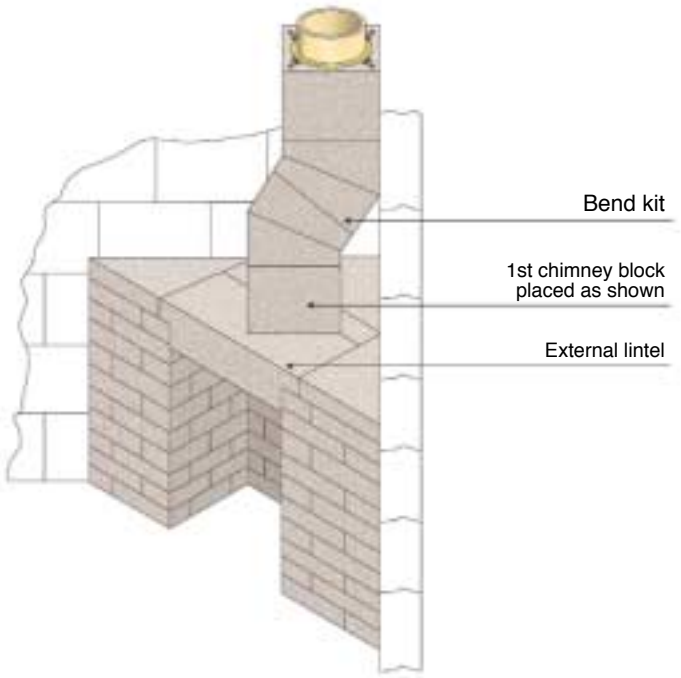


Chimney breast bend kit



Note: Offsets shown in tables

Fig. 13. Corner chimney



2.4.6.1 Bends and Chimneys

The Schiedel Chimney System offers two options for bends in chimneys (Breast Bend Kit and Standard Bend Kit), however the latter is more generally used. The Chimney Breast Bend kit shown in Fig. 12 and corner chimney incorporating a bend kit shown in Fig 13 are examples of the standard bend kits available. Chimneys should be vertical where possible but where bends are unavoidable the angle of the bend should be no greater than 45° to the vertical for oil-burning appliances and 30° to the vertical for solid fuel appliances. There should be no more than two bends in the length of the chimney.

When a Schiedel Swift Chimney System is completely installed it should be allowed to cure for a minimum of four to five days before the appliance is used.

2.4.6.2 Bend Kit Installation

The Schiedel Swift Bend Kit is delivered to site on a pallet. The Bend Kit blocks are stacked on the pallet in the same order as they should look once built. It is recommended to study this arrangement before installing a chimney bend kit.

- Start by placing the first chimney bend block on top of the standard chimney block.
- Place the two cut hollow blocks next to the chimney bend block for support.
- Now place the angled edge of the second chimney bend block; face down on top of the first.
- Insert the first insulated ceramic bend into the two chimney bend blocks using the high temperature sealant supplied.
- Now place the straight edge of the third chimney bend block on top.
- Build up the hollow block on the far side of the breast to support the final bend block. Position the final bend block angled edge down to return the kit to the horizontal.

- Continue building the standard hollow blocks on the other side of the breast, and then place the two triangular hollow block of cuts.

The last half, hollow block is now placed on top giving an offset of 200mm in the chimneybreast

2.4.7.1 Plastering of Chimneys

Chimneys exposed externally throughout their length must be either clad in brickwork or rendered blockwork. The internally exposed faces of the Schiedel Chimney Blocks can be plastered on the exposed faces or boxed in with plasterboard and skim coated.

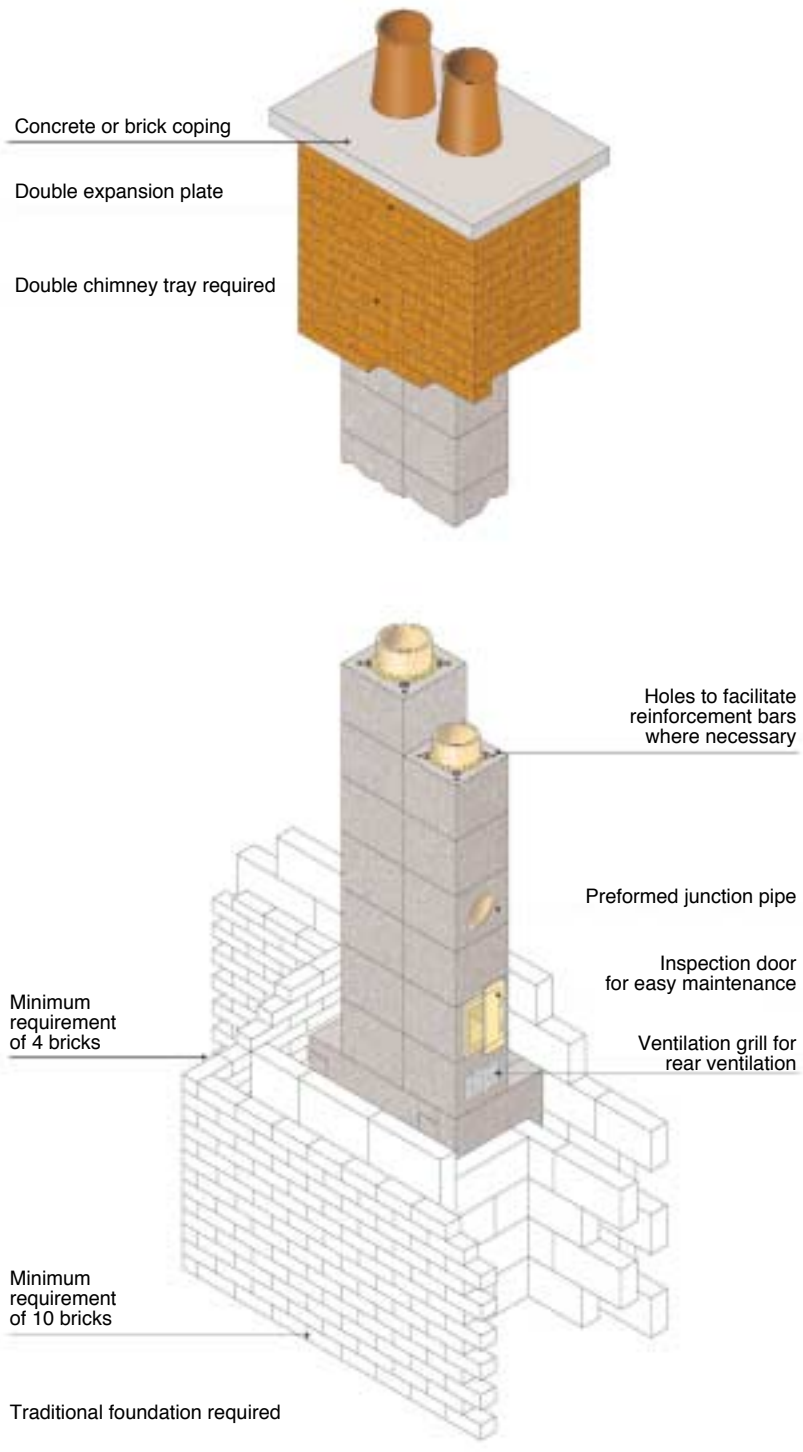
The chimney breast to all chimney systems must be dry lined or plastered. The plasterboard sheets used in the dry lining are fixed to the chimney breast using dabs of drywall adhesive at not greater than 600mm centres. For the chimney breast design required, there is also the option of studding out to the sides and slabbing as can be done for a traditional chimney. A 50mm wide dry wall adhesive ribbon must be applied along all edges of the dry lining, e.g. around openings. Fire stopping at the junction of ceiling and chimney is achieved by using a continuous fillet of dry wall adhesive. Where the chimney faces of a Schiedel System are left exposed in an uninhabited attic, it is not necessary to plaster the surfaces, however it is preferable if all exposed chimney blockwork is rendered.

2.4.8.1 Inspection of Installed Installation

Once a Schiedel Chimney System has been installed the following should be inspected:

- All joints in block work have been checked.
- All fire stops and spacers are properly located and secured in accordance with this Certificate and the manufacturers installation instructions.
- The fitting of terminal and roof flashing above the corbel should be inspected before scaffolding is removed.

Fig. 14. Combination System



PART 3 DESIGN DATA

3 GENERAL

3.1 Schiedel chimneys, when installed in accordance with this Certificate, will perform in a safe and satisfactory manner when used internally or externally in domestic housing or commercial/industrial buildings. The chimney systems can be used in conjunction with gas, oil or solid fuel burning appliances, as described in section 4 of this Certificate. The term 'solid fuel' relates to those fuels listed in Appendix A of BS 1846: Part 1: 1994 *Glossary of terms relating to solid fuel burning equipment - Domestic appliances*.

3.2 DESIGN REQUIREMENTS

3.2.1 The Schiedel Swift Chimney Systems, with the exception of the Schiedel Swift Central Heating System, with a 120mm diameter flue, are designed to be suitable for open fire and closed heating appliances that might be installed during the lifetime of the dwelling. The size and formation of fire openings must be in accordance with BS 1251: 1987 *Specification for open fireplace components* and BS 8303: 1986 *Code of Practice, Installation of domestic heating and cooking appliances burning solid mineral fuels*. Appliances must allow access to the chimney for cleaning.

3.2.2 The design of the chimney must be in accordance with normal good practice. For example, the chimney must be terminated so as to prevent discharge gases from re-entering the building, or entering any other adjacent building. The structure to which the chimney system is attached must be in accordance with the relevant Code of Practice. **Only one appliance or open fire per chimney is to be used.**

3.2.3 The Schiedel block units comply with the general recommendations for materials for flue block chimneys contained in BS 6461: Part 1: 1984 *Installation of chimneys and flues for domestic appliances burning solid fuel (including wood and peat) - Code of practice for masonry chimneys and flue pipes*.

3.2.4 Completed chimneys should be left to cure for 4 to 5 days before the appliance is used.

3.3 FOUNDATION

3.3.1 Where a chimney is built up from foundation level, it must be supported on a concrete foundation designed in accordance with normal good practice. This foundation must reach a frost-free depth, i.e. approximately one metre below ground level if the chimney is external or approximately 400 mm below floor level if the chimney is internal.

3.4 CONNECTION TO STRUCTURE

3.4.1 The chimney units should not be bonded into the building structure, but external chimneys must be tied to the structure at not more than three unit intervals and at the point of departure from the roof line, using the specified stainless steel ties, (See Fig. 10). Consideration must be given to the effects on the adjacent structure of the loads imposed by the chimney fixings. Internal chimneys may be tied to the structure using the specified stainless steel tie or conventional galvanized steel wall ties at three unit intervals; alternatively, the necessary support may be provided during and after construction by the intermediate floors or by the timber trimming at roof level.

3.5 FLOOR DETAIL

3.5.1 Where the chimney system passes through concrete floors, a sliding joint must be made using mineral wool or similar non-combustible material. Bonding between the chimneys and the floor or structure must be avoided. A minimum clearance of 38 mm must be maintained between the outer surface of the chimney block and timber structural members such as joists and rafters. After the units have been positioned, the gap must be filled with mineral wool having a minimum density of 25-30 kgm^{-2}.

3.6 CAVITY WALLS

3.6.1 When an external chimney is erected the design and installation of the flue connection to the appliance must be in accordance with BS 6461: Part 1: 1984 *Installation of chimneys and flues for domestic appliances burning solid fuel (including wood and peat) - Code of practice for masonry chimneys and flue pipes*. Particular care must be taken to comply with the weather details for the connection flue where it passes through the cavity wall.

3.7 AIR SUPPLY

3.7.1 Heat producing appliances are required to be provided with an adequate supply of air for combustion of fuel and for efficient operation of the chimney or flue. For this reason a Schiedel Swift Chimney System must be located where the chimney has adequate air supply (ventilation). The chimney system can be used with Solid Fuel, Oil and Gas burning appliances. The following are the ventilation requirements for the respected fuels.

(i) Air Supply for Solid Fuel Burning Appliance with output rating not more than 45 kW.
The ventilation requirements must comply with Table 1 Section 2 of Technical Guidance Document Part J of the Building Regulations 1997 to 2002.

(ii) Air Supply for Individually Fuelled (Non-Fan Assisted) Gas Burning Appliances with Rated Input up to 60 kW and for Gas Burning Cooking Appliances.
The performance requirements for air supply should comply with clause 3.4 & 3.5 of Technical Guidance Document Part J of the Building Regulations 1997 to 2002.

(iii) Oil Burning Appliances with a Rated Output up to 45 kW.
The ventilation requirements should comply with clause 4.1 of Technical Guidance Document Part J of the Building Regulations 1997 to 2002.

PART 4 TECHNICAL INVESTIGATIONS

4.1 DOMESTIC APPLIANCES

4.1.1 Schiedel Swift Chimney Systems are suitable for use with Solid Fuel, Oil and Gas burning appliances. Before installing a chimney system, the following guidance should be given on the respected fuel-burning appliance.

4.1.2 Solid Fuel Burning Appliance

Guidance should be either sought from Schiedel Chimney Systems or a chartered heating engineer experienced in the use of solid fuel appliances, to ensure that the correct size of flue is selected in each case.

4.1.3 Oil Burning Appliance

Advice on the correct size of chimney flue should be provided by the appliance manufacturer or registered boiler installer.

4.1.4 Gas Burning Appliance

Guidance for the installation of gas burning appliances is available from An Bórd Gais.

Sizes for the Schiedel Swift chimneys suitable for use with open fires and appliances for domestic use are shown in Table 4.

4.2 STRENGTH AND STABILITY

4.2.1 The chimney components are sufficiently strong to withstand normal site handling and accidental impacts associated with normal conditions of use. Stability of the externally or internally installed chimney is adequate with the lateral restraint provided by the interlocking units. In addition further restraint is provided for external chimneys by the stainless steel ties used every meter. For internal chimneys expanded metal ties are used for additional restraint. Where the chimney stack projects above the roof it will remain stable under the action of normal wind forces provided the stack heights do not exceed the limits given in Table 3. Where the chimney stack is brick-clad, this cladding must be supported on the appropriate corbel supplied by Schiedel Chimney Systems. If brick cladding is required from foundation level it can be considered self-supporting.

When the Schiedel Swift Chimney Systems are correctly installed in a properly designed chimney, they will not collapse or cause danger to a building's occupants in the event of an accidental chimney fire caused by soot burnout or gaseous explosions of the kind which may occur through malfunctioning of the heating appliance.

4.3 HEIGHT OF CHIMNEYS

4.3.1 The maximum permissible chimney height above the roofline should comply with Table 3 of this Certificate.

In addition to Table 3 the height of the Chimney Stack above the roofline for a particular installation must be in accordance with the Building Regulations 1997 to 2002.

4.4 PROXIMITY OF BUILDING AGAINST FIRE AND HEAT

4.4.1 The requirement of Part J3 of the Building Regulations 1997 to 2002, can be met by ensuring that hearths, fireplaces, chimneys and flue pipes are:

- Of sufficient size. (Ref Table 4)
- Constructed of suitable materials. (Ref Part 2 & 3 of this Certificate)
- Suitable isolated from any adjacent combustible material. (Ref 4.4.2 of this certificate)

4.4.2 Isolation from Combustable Material

Arrangements for spacing and packing between the chimney and any structural timber have been assessed as being adequate to prevent excessive drying out of the timber or the occurrence of any fire hazard. The spacing must be maintained throughout the chimney height but the requirement does not apply to skirting boards or floorboards; direct contact between these and the face of the chimney is permissible.

Fig 1, 2 and 3 illustrate examples of how a standard gap of 40mm is kept between outer surface of chimney and structural timbers.

It is generally unnecessary to box in the chimney, except to maintain the specified 38mm clearance between the chimney and any loose combustible material, e.g. in an airing cupboard or insulated roof space.

4.5 DURABILITY

4.5.1 The materials used in Schiedel chimneys are durable in terms of their resistance both to natural weathering and flue conditions. Provided the chimney is correctly used, e.g. the chimney size is matched to the type and rating of the heating appliance, and the appliance is maintained in good working order and not misused, the chimneys will have a minimum life of 60 years.

4.6 INSPECTION, CLEANING AND MAINTENANCE

4.6.1 The Schiedel Swift Chimney Systems are designed to allow access for inspection, cleaning and maintenance. The chimney can be swept throughout its length without difficulty or without causing damage to any part of the chimney once proper sweeping equipment is used. On the Schiedel Open Fire System cleaning is achieved by passing the brush head from the firebox to the flue through the appliance, therefore no separate access to the chimney is required. The Schiedel Swift Central Heating System comes with an inspection door and preformed inspection pipe to allow for easy cleaning and maintenance.

The frequency of chimney sweeping will depend on many factors, i.e. type of fuel and quantity used and method of operation of appliance. The interval of inspection and cleaning will be determined by user experience but under no circumstances should this be less frequent that once a year.

4.7 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING

(a) Tests by the Ceram Building Technology were examined to determine:
- Effect of thermal shock at 1000°C.
- Adequacy of thermal insulation.
- Effect of sweeping leakage rate before and after thermal tests.

4.8 OTHER INVESTIGATIONS

(i) An examination was made of existing data to determine:
– relevance of Ceram Building Technology test results to Irish usage
– structural stability
– durability

(ii) A computer analysis was carried out to investigate the thermal behaviour of the chimney.

(iii) Visits were carried out to existing sites in Germany to assess practicability of installation and performance in use.

(iv) Reports of visits to the factory were examined and an assessment made of the adequacy of quality control procedures. Details were obtained of the quality and composition of the materials used.

(v) A re-examination was made of the data and investigations on which the previous German certification was based. The conclusions drawn from that data remain valid.

(vi) Visits to sites in progress in Ireland were carried out to assess the practicability of installation.

(vii) Regular factory inspections have been carried out to ensure that quality is being maintained.

(viii) No failure of the product in use has been reported to the IAB.

(ix) On site smoke test has been carried out.

Table 4. Schiedel Chimney Sizes Recommended for Various Types of Appliances

Type of Fuel	Type of appliance	Rated output	Schiedel Chimney	Remarks
Solid	Open fire Roomheater	45kW	200mm diameter pipe	Coal or smokeless fuel Smokeless fuel Coal Coal or smokeless fuel
	Independent boiler	45kW	200mm diameter pipe	Smokeless fuel Coal Smokeless fuel Coal Coal or smokeless fuel
Oil	Closed room heater Central heating boiler Warm air convector Water heater	20kW for 120mm of flue and 45kW for 200mm of flue	120mm or 200mm diameter pipe	The flue size will be specified by the appliance manufacturer
Gas	Fire Central heating boiler Warm air convector Water heater	20kW for 120mm of flue and 60kW for 200mm of flue	120mm or 200mm diameter pipe	The flue size will be specified by the appliance manufacturer

(1) These are minimum sizes. The actual size must be smaller than the outlet diameter of the appliance.

(2) Larger sized chimneys can be used above oil and gas applications, provided they are lined with the appropriate and correctly sized flue liner.

PART 5 CONDITIONS

5.1 CONDITIONS OF CERTIFICATION

The National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the system and the quality of the materials used in its manufacture and certifies the system to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this certificate and in accordance with the manufacturer's instructions and usual trade practice. This certificate shall remain valid so long as:

(a) the specification of the product is unchanged;

(b) the Building Regulations, 1997 to 2002 and any other regulation or standard applicable to the product/process/system, its use or installation remain unchanged;

(c) the product continues to be assessed for the quality of its manufacture and marking by NSAI;

(d) no new information becomes available, which in the opinion of the NSAI would preclude the granting of the certificate;

(e) the system continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.

5.2 The IAB mark and certification number may only be used on or in relation to the system in respect of which a valid certificate exists. If the certificate becomes invalid, the certificate holder must not use the IAB mark and certification number and must remove them from products already marked.

5.3 In granting this certificate, the NSAI makes no representation as to:

(a) the presence or absence of patent rights subsisting in the product/process/system; or

(b) the legal right of the certificate holder to market, install or maintain the product/process/system; or

(c) whether individual products have been manufactured or installed by the certificate holder in accordance with the descriptions and specifications set out in this certificate.

5.4 This certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this certificate relating to the safe use of the certified product or process are preconditions to the validity of the certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act, 1989 or of any other current or future statute or current or future common law duty of care owed by the manufacturer or by the certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage, including personal injury, arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this certificate to any Act of the Oireachtas, regulation made thereunder, statutory instrument, code of practice, national standards, manufacturer's instructions or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this certification.

THE IRISH AGRÉMENT BOARD

This Certificate No. 01/0121 is accordingly granted by the NSAI to Ulster Fireclays Ltd.on behalf of The Irish Agrément Board.

Date of Issue: April 2001

Signed: _____

Chief Executive, NSAI

Readers may check that the status of this Certificate has not changed by contacting the Irish Agrément Board, NSAI, Glasnevin, Dublin 9. Ireland.

Telephone: (01) 807 3800.
Telefax: (01) 807 3842.
www.nsai.ie

Irish Agrément Board
NSAI
Glasnevin
Dublin 9
Ireland

Telephone: (01) 807 3800
Telefax: (01) 807 3842
www.nsai.ie