



**INSTALLATION AND
MAINTENANCE
OF
HINGED FIRE DOORS**

There must be a maintenance program for all fire doors. It must include inspection periods for doors and accessories. Inspection period is dependent on the frequency of use of fire doors. The maintenance program must include verification of the function of fire doors. There must also be an updated service book so that following of maintenance program can be seen in inspections. The owner/holder of the equipment is responsible of maintaining the safety level of fire doors.

Saajos Oy offers maintenance contracts on yearly basis. For maintenance contracts please contact Saajos Oy Construction Sales / www.saajos.fi.

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www.saajos.fi

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SINGLE AND DOUBLE LEAF HINGED FIRE DOORS

This instruction is applicable for:

- El₂30, type approval No 14601-01
- El₂60, type approval No 14600-01
- El₂120, type approval No 14599-01
- El₂60 CE-marked fire-resistant external door, certificate 1336-CPR-0193
- Doors of equivalent structures

The door size is designed so that the opening is 20 mm wider and 10 mm higher than outer dimensions of frame. For example the frame of 9x21M sized door fits to opening of 900 x 2100mm. The door can be installed on opening of wall made of aerated concrete, concrete, brick or other stone material. The density of wall must be according to type approval.

Doors according to type approval No 14601-01 (fire class El₂30) may also be installed on opening of steel profile wall, see figure 1.

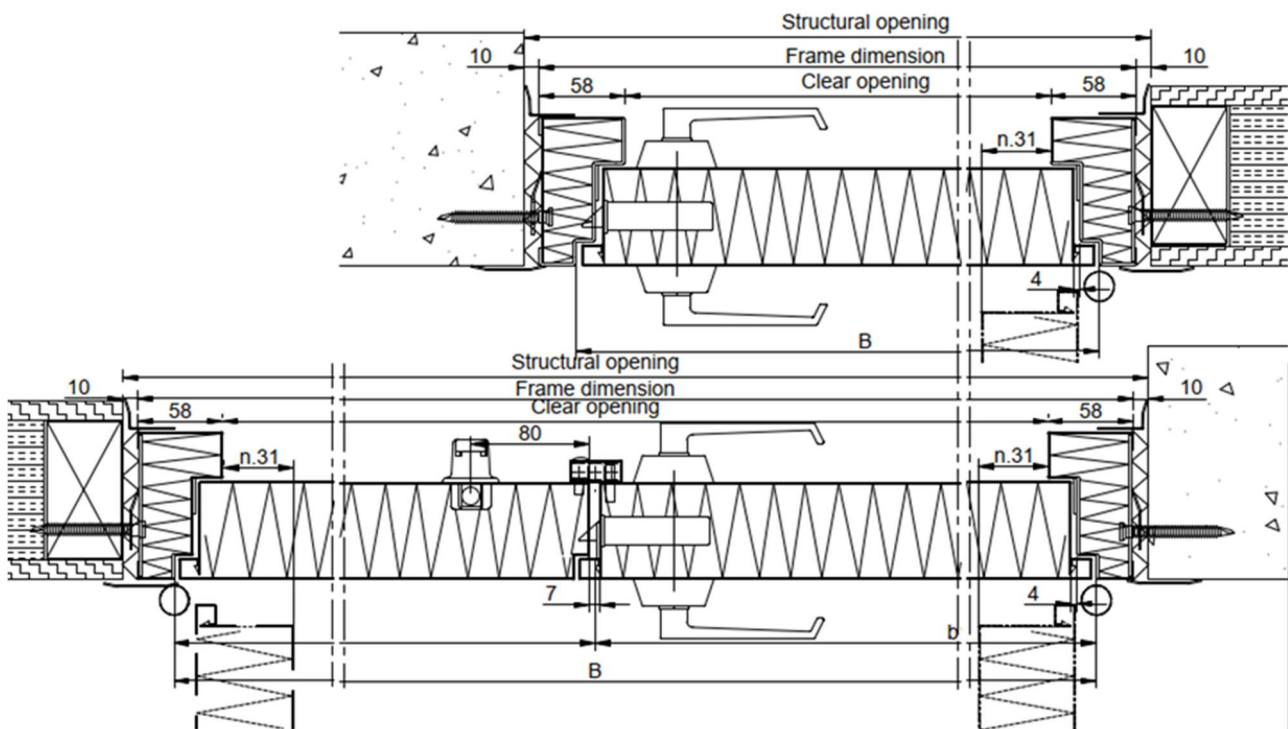


Figure 1. Wall constructions, EI₂30 doors

There are type approval plates on door leaf and frame near upper hinge. The fire rating of the door is marked there. Type approvals can be found on www.saajos.fi.

1. The sizes of approved doors can be found on type approvals.
2. Allowed glass types, sizes and safety distances can be found on type approvals. Doors are always delivered with glasses installed.
3. The floor surface shall be of A1_{fl} or A2_{fl-s1} material 100 mm on each side of closed door, if required in type approval.

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4. Allowed fittings are installed or openings for them are made on door. Other allowed fittings can be found on type approval.

The person who installs fire doors must read these instructions before starting the task and must have proper knowledge for installation work.

Nb! EI₂120 class door leaves ARE NOT ALLOWED TO BE LIFTED WITH SUCTION CAPS on the surface of door leaves. The additional insulation layer on the surface of EI₂120 class does not withstand this stress!

The most suitable time for installing the door is after floor concreting and wall smoothing is done, before painting of the wall surfaces.

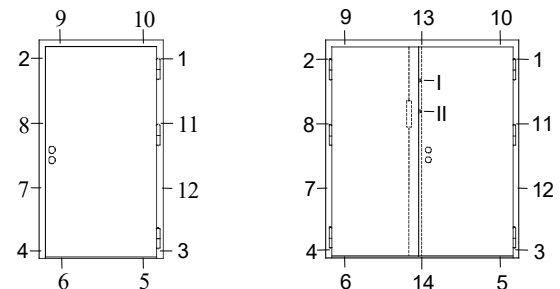
Nb! Installing of two-part frame:

1. The frame is attached together on the ground. The parts are pushed firmly together until they are entirely connected and the attachment points are fastened with screws (see figure 2).
2. The same thing is done for the threshold, if it is delivered in two parts (see figure 3).
3. Cross-measure is checked.
4. The frame is lifted up and installed according to normal instructions.

Adjust the frame fastening pieces to fit the opening in the wall and lift the frame with door up centering it into the opening horizontally. Notice the thickness of the floor coating. Hinge side of the frame must be leveled into wall surface to ensure the fitting of standard cover lists. Fasteners are chosen according to wall material. They must be CE –approved, minimum diameter of 6 mm. Alternatively, if there are pre-assembled attachment plates in the opening, the frame can also be fastened by welding.

Fasten anchor screws 1, 2 and 3 (the lowest screw on hinge side) (see figure), on double door also screw 4, and check that the gaps between door leaf and frame in the opening side are of the same width from top to bottom.

Check crosswise measure and that the door is vertical and fasten anchor screw 4 (single door). Test the functioning of the door and fasten anchor screws 5-12, in double doors anchor screws 5-14.



Test the functioning of the door and lock. In double doors check as well that the latch is working and the secure pins I and II are on their places.

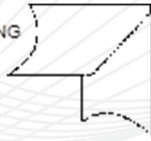
Nb! Installing of burglar resistant door:

The frame of the burglar resistant door must not give in to the wall in the event of a attempted burglary. Therefore, the vertical frames of the burglar resistant door must be supported at three points and the upper horizontal frame, depending of width, at 2-3 points against the wall at this stage of the installation. The support is provided by means of the rear supports on the sides of the frame, so that the M10 bolts in them are screwed firmly against the wall. Be careful not to tighten the frame too much in the installation opening, as there is a risk that the door leaf will catch on the frame.

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CUTTING AND INSTALLING
THE COVER LISTS



Test the functioning of the door and lock after supporting the burglar resistant door frames.

The gap between doorframe and opening in the wall must be insulated with non-combustible (A1 or A2-s1,d0) mineral wool with density of $\geq 30 \text{ kg/m}^3$ and covered with steel cover lists attached with steel rivets. It is possible to replace the cover lists with approved fire silicone.

Finally cover caps are installed. Check the lubrication of the hinges and the lock(s) and the adjustment of door closer.

THE FIRE SEALING OF DOOR

Fire doors are always delivered with the fire sealing installed. If the door is painted later, the fire sealing must be protected during painting. It is not allowed to remove the fire sealing. If fire sealing is damaged, please contact Saajos Oy.

REMOVING PLASTIC PROTECTING FILM FROM METAL SURFACE

A door covered with plastic protecting film, or the door including parts, which have plastic protecting film, must be stored in a warm and dry place protected from sunlight.

If the door is for external use or it is exposed to direct sunlight, the protecting film must be removed latest during the installation of the door. Do not remove the protecting film in too warm or too cold condition; this may leave remains of glue on the surface. Recommendable surface temperature is $0...+20^{\circ}\text{C}$. Note that the surface temperature is affected by wind and sunlight. The protecting film must be removed within two months from our ex works delivery.

TO BE NOTED WHEN INSTALLING AND USING THE DOOR

- Fire door must be self-closing and self-latching. The lock must be of such type where the bolt cannot be affixed inside the lock.
- In case the door locates on an exit route, the door must be equipped with such a lock that is not preventing the proper usage of the door in emergency. [Decree of the Ministry of the Environment on Fire safety of Buildings]
- Door closers are neither required on normally closed maintenance shutters nor on apartment house doors leading to floors.
- In case the active door leaf of double door is normally used, the door closer may be fastened only on active door leaf. Inactive door leaf must then be bolted to frame by latch.
- In case the door has to be open continuously the door closer must be such a type that automatically closes the door in case of emergency. [Decree of the Ministry of the Environment on Fire safety of Buildings]
- The door closer must be such a type, which only can be adjusted or removed by using tools. [Type approval]
- In connection with the door there may not be any level difference or threshold unless this is necessary on account of noise or humidity or other similar circumstances. In that case the threshold or level difference may not be higher than 20 mm and the threshold shall be designed so that it can be easily crossed with a wheelchair or walking frame with wheels. In connection with the door of an outside space of an individual dwelling the level difference outside the door

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may be more than 20 mm if the level difference can, with reasonable effort, be eliminated with equipment in the outdoor space. [Government Decree on Accessibility of Buildings]

- The door must be periodically inspected and maintained according to Saajos Oy's work instruction [LK85-910-004](#).

CONNECTING A TWO-PART FRAME

When connecting both, the top-frame and the threshold, the joints must always be connected at the same time so that the frame does not twist.

Connecting the frame

The frame adapter piece must first be attached on the other half of the frame before connecting the frame.

After connection, the connection point is screwed in at least four points, see figure 2.

Connecting the threshold

After connection, the connection point is screwed in at least one point, see figure 3.

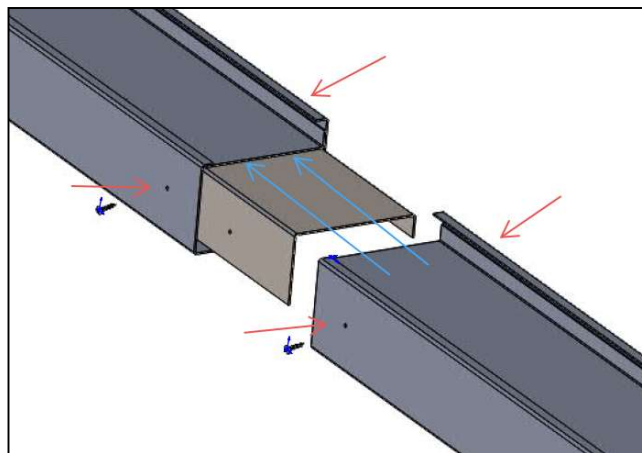


Figure 3. Connecting the frame. The adapter piece is delivered loose.

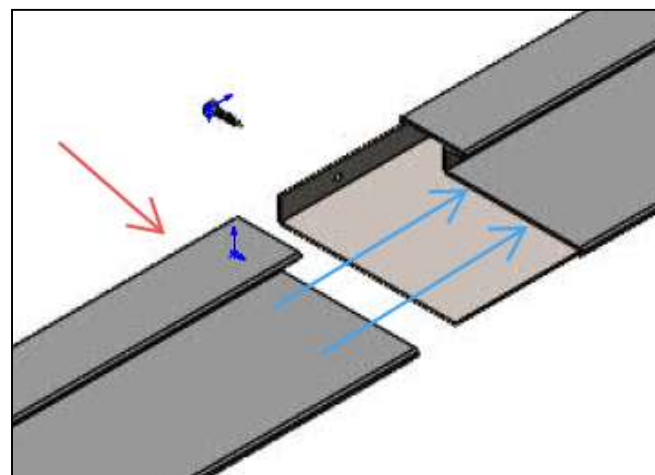


Figure 3. Connecting a threshold. The adapter piece is welded to the second half of the threshold.

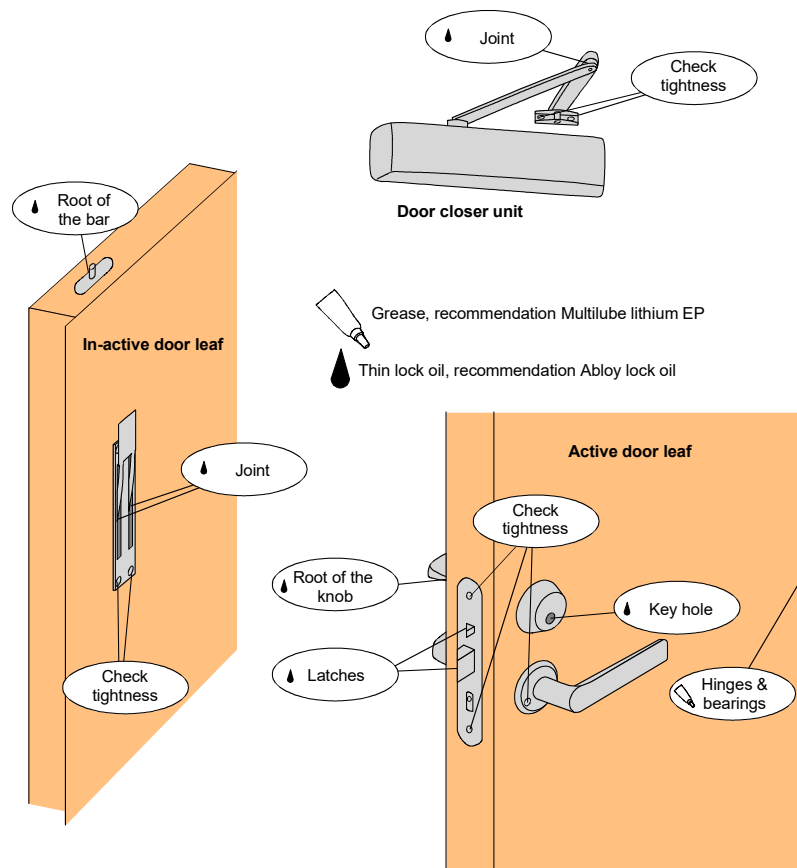
THE WAY YOU WANT

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The warranty is valid only if doors are maintained according to maintenance instruction.

The following maintenance actions to be done every half-year or, when the usage of the door is frequent or is exposed to more weather impacts, quarterly:

1. Check the fastening of the frame to surrounding structure and the clearance between frame and door leaf.
2. Tighten the fastening screws of handles, locks, hinges and all other possible accessories.
3. Test the function of all mechanical components such as locks, latches, indication switches, door closers, etc. by opening and closing the door several times. Clean and readjust if necessary.
4. Check the lubrication of the hinges. Re-lubricate if necessary.
5. Clean and lubricate the lock(s) and all moving parts as well as the 2-point latch of a double door. After lubricating, operate the lock and possible latch a couple of times in order to get the lubricant spread properly.
6. Clean and lubricate the joints of a possible door closer. Make sure that it has a strong enough latch function (end pull) and readjust if necessary.
7. Use non-poisonous lubricants, which have low enough solidifying point (like spray/lock/weapon oil).
8. Check that the latch bolts of the 2-point latch are engaged to the corresponding holes in the frame when the door is in closed position (double doors only).
9. Check the function of possible closing selector (double doors only).
10. Check the function of magnets and release switches (doors that are kept electrically open).



THE WAY YOU WANT

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Maintenance of powder painted door surfaces

Materials used

Hinged fire doors and other hinged doors have been manufactured of aluminium-zinc -coated or electro-zinc -coated steel sheets. Before painting on the steel sheet surfaces have been removed all greased.

Recommendations of periodical inspections of the painted door surfaces

We recommend annual inspections of the painted surfaces. If the door is located indoors and the environmental climate is low - C1 or C2 according to SFS-EN ISO 12944-2 - the interval of the inspections may be up to five years. If environmental climate is C3 or harsher, the inspection must be annual: scratches and dents must be fixed in order to maintain proper appearance. Inspection methods according to SFS-EN ISO 4628 are recommended.

Partial repainting

The painting system must match to the original painting system. The areas to be painted must be cleaned of dirt and dust by using suitable solvent and sandpaper if needed (grit 180). Strictly follow the safety and operational instructions of the paint manufacturer.

Complete repainting

The painting system must match to the original painting system. Door surfaces must be cleaned of dirt and dust by using suitable solvent and sandpaper if needed (grit 180). Mechanical damages and dents may be smoothed using suitable filler if the door unit is not fire rated. Strictly follow the safety and operational instructions of the paint manufacturer.

Cleaning of the steel doors

When needed, the surfaces of the doors may be cleaned with water and cleaning solution that is suitable for painted surfaces. Excessive water must be avoided.

Cleaning the doors with a pressure washer is forbidden.

On site paint specification for aluminium-zinc and electro/hot zinc coated steel
THE WAY YOU WANT

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SURFACE PREPARATION

Remove all grease and dirt from the surface using appropriate methods (SFS-EN ISO 12944-4).

PAINT SYSTEMS (AS AN EXAMPLE)

Corrosivity category C2, low

Alternative 1: Paint system TA13-AK80/2-Pe, PPG Tikkurila

TEMAPRIME EE primer	1 x	40 µm
TEMALAC FD 50 top coat (semi-gloss) (alkyd paint)	<u>1 x</u>	<u>40 µm</u>
Tot.		80 µm

Alternative 2: Paint system AY80/2-Pe, PPG Tikkurila

FONTECRYL AP primer	1 x	40 µm
FONTECRYL SC 50 top coat (semi-gloss) (waterborne acrylic paint)	<u>1 x</u>	<u>40 µm</u>
Tot.		80 µm

Corrosivity category C3, medium

Alternative 1: Paint system TA13-AK160/2-Pe, PPG Tikkurila

TEMAPRIME EE primer	1 x	80 µm
TEMALAC FD 50 top coat (semi-gloss) (alkyd paint)	<u>1 x</u>	<u>80 µm</u>
Tot.		160 µm

Alternative 2: Paint system AY160/2-Pe, PPG Tikkurila

FONTECRYL AP primer	1 x	40 µm
FONTECRYL SC 50 top coat (waterborne acrylic paint)	<u>1 x</u>	<u>120 µm</u>
Tot.		160 µm

Alternative 3: Paint system TP20-EPPUR120/2-Pe, PPG Tikkurila

TEMACOAT GPL-S PRIMER epoxy based primer	1 x	80 µm
TEMADUR 50 polyurethane top coat (semi-gloss) (epoxy polyurethane paint)	<u>1 x</u>	<u>40 µm</u>
Tot.		120 µm

Paint system TP20-EPPUR120/2-Pe: TEMACOAT GPL-S PRIMER epoxy based primer 1 x 80 µm + TEMADUR 50 polyurethane top coat 1 x 40 µm = Tot. 120 µm, has been used for repair painting on powder-coated surfaces. If you only need to change the color and the polyester powder painted surface is intact, you can paint over it directly with Temadur 50 after the surface cleaning and light roughening.

As a general guideline to partial repainting: The gloss level of semi-gloss powder coat (approx. 60-80) is best matched by gloss wet paint.

Alternatively corresponding paints from other manufacturers can be used, see e.g. www.teknos.fi or www.nor-maali.fi.

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Table 1. Atmospheric-corrosivity categories and examples of typical environments (SFS-EN ISO 12944-2).

Corrosivity category	Examples of typical environments in a temperate climate (informative only)	
	Exterior	Interior
C1 very low	--	Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels.
C2 low	Atmospheres with low level of pollution. Mostly rural areas.	Unheated buildings where condensation may occur, e.g. depots, sport halls.
C3 medium	Urban and industrial atmospheres, moderate sulphur dioxide pollution. Coastal areas with low salinity.	Production rooms with high humidity and some air pollution, e.g. food-processing plants, laundries, breweries, dairies.
C4 high	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal ship- and boatyards.
C5-I very high (industrial)	Industrial areas with high humidity and aggressive atmosphere.	Buildings or areas with almost permanent condensation and with high pollution.
C5-M very high (marine)	Coastal and offshore areas with high salinity.	Buildings or areas with almost permanent condensation and with high pollution.

THE WAY YOU WANT

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Waste caused by installation, maintenance and removal of a door unit must be processed in the following procedures in Finland. In other countries according to local regulations and legislation.

Installation of a door unit:

- Clean plastic covers of the packages may be delivered to plastic recycling, while particularly dirty plastic covers must be delivered to the dump or energy waste station, e.g. L&T, NG Nordic, Stena Recycling Oy, Envor Group
- Steel strips of the packages may be delivered to metal recycling.
- Wooden parts of the packages may be burned or delivered to waste stations.
- Liquid paints and oil waste must be delivered to appropriate hazardous waste station or directly to NG Nordic

Maintenance of a door unit:

- Liquid paints and oil waste must be delivered to appropriate hazardous waste station or directly to NG Nordic

Disposal of the door unit:

- Metal parts may be delivered to metal recycling. Following is a short list of examples:
 - Metal stations at dumps
 - Kuusakoski Oy
 - Stena Recycling Oy
 - Lassila & Tikanoja Oyj
 - Romukeskus Oy

Kuusakoski Oy accepts door leaves and frames with the insulation. Insulation may also be delivered to the dump.

- Window glass is not suitable for normal glass recycling because of different composition. Bigger amounts of window glass waste is accepted by (for example):
 - Envor Group Oy
 - Uusioaines Oy
- Machines and other accessories attached on the door constructions must be disposed according to the instructions given by their manufacturers.

Additional information of the companies can be found for example from address www.finder.fi.

