

Installation instructions

INTELLO® X PLUS

Application for insulation between rafters



1. Install membranes

Roll out the membrane and fasten it using galvanised staples that are at least 10 mm (3/8") wide by 8 mm (5/16") long at intervals of 10-15 cm (4" to 6") or, if blown-in insulation is to be installed, 5-10 cm (2" to 4"). Install the membrane leaving an additional 4 cm (1 5/8") overlap at adjacent building components so that an airtight bond can be applied here subsequently.



2. Fasten to stud wall frame members

Fastening of membranes to metal frame members on stud wall and ceiling structures using pro clima DUPLEX.



3. Overlap the membranes

Allow for an overlap of approx. 10 cm (4") between the membranes. The marking that is printed onto the membrane will serve as a guide here.



4. Clean the subsurface

Clean the subsurface (dry and free of dust, silicone and grease) before taping; carry out an adhesion test, if necessary.



5a. Tape the overlaps

Centre the TESCON VANA system adhesive tape on the overlap and gradually stick it in place, ensuring that there are no folds or tension.



5b. Rub the taped joint firmly

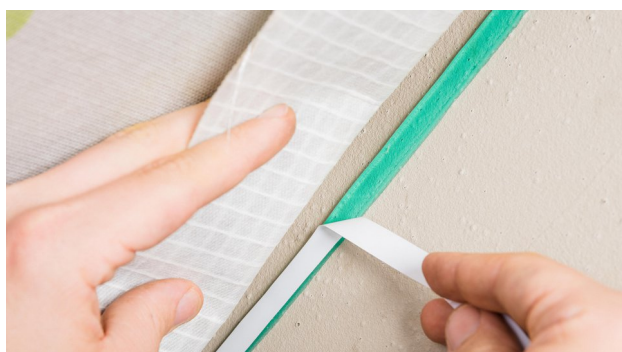
Rub the tape firmly using the pro clima PRESSFIX to secure the adhesive bond. Ensure that there is sufficient resistance pressure.



6. Sealing to smooth, non-mineral substrates

... (e.g. knee walls made of wood-based panels) should also be implemented using TESCO VANA system adhesive tape.

Centre the tape and gradually stick it in place, ensuring that there are no folds or tension. Rub the tape firmly using the pro clima PRESSFIX to secure the adhesive bond.



8a. Alternative: Sealing to mineral substrates

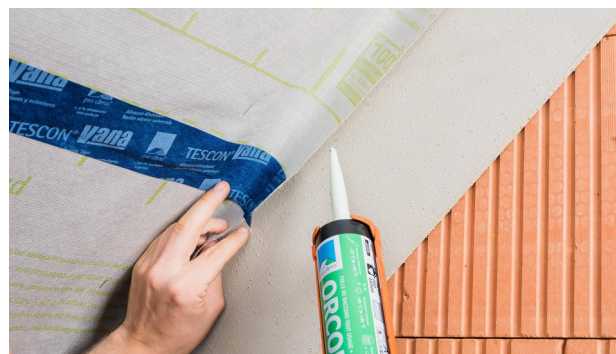
Position ORCON MULTIBOND on the subsurface, roll it out and gradually stick it to the subsurface. Gradually remove the release film.



9. Sealing to unplastered substrates

Guide the vapour control membrane into position. Leave slack for expansion so as to allow for relative motion between components. Remove all release films from CONTEGA SOLIDO SL or CONTEGA SOLIDO IQ. Centre the tape and gradually stick it in place. Rub the tape firmly using the pro clima PRESSFIX to secure the adhesive bond.

To achieve airtightness, plaster over the masonry and sealing tape.



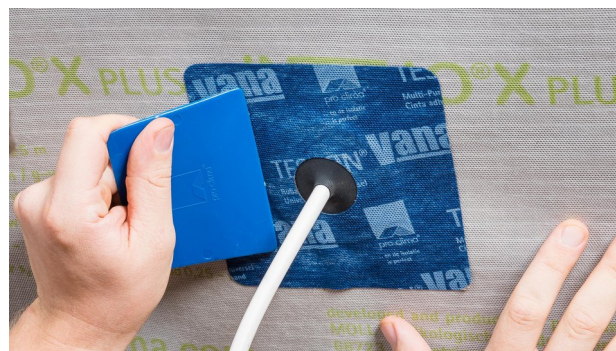
7. Sealing to rough or mineral substrates

Clean the subsurface. Apply a line of ORCON F adhesive sealant of at least $d = 5 \text{ mm}$ (3/16"), or more in the case of very rough substrates if necessary. Place INTELLIO X onto the adhesive bed, leaving slack to allow for expansion. Do not press the adhesive completely flat.



8b. Stick the membrane / Rub the joint firmly

Apply the membrane onto the adhesive strip, leaving slack for expansion so as to allow for relative motion between components. Rub firmly to secure the adhesive bond using the pro clima PRESSFIX. Ensure that there is sufficient resistance pressure.



10a. Sealing around cables

Place a KAFLEX cable gasket over the cable and stick to the membrane. The cable gaskets are self-adhesive.

The range includes:

- KAFLEX mono (see picture)
- KAFLEX duo - for 2 cables
- KAFLEX multi - for up to 16 cables
- KAFLEX post - for retrofit installation



10b. Sealing around pipes

Place a ROFLEX pipe grommet over the pipe and stick to the membrane using TESCON VANA.

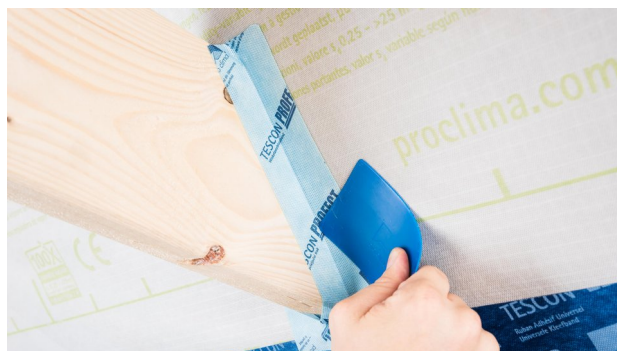
The range includes:

- ROFLEX 20 - e.g. for pipes, for Ø 15-30 mm (1/2" - 1 3/16")
- ROFLEX 20 multi - for up to 9 conduits
- ROFLEX 30 - 300 - for Ø 30-320 mm (1 3/16" - 12 1/2")



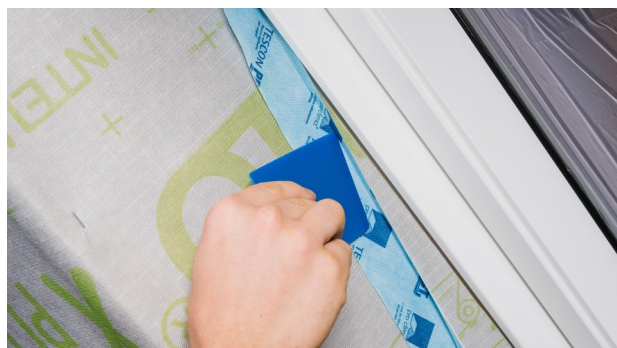
12. Skylights: Cut the membrane

Cut the membrane in such a way that it can be guided into the reveals around the skylight.



11. Corner sealing

Guide TESCON PROTECT pre-folded corner sealing tape into the corner while the release film is still in place and stick the first independent adhesive strip. Then remove the release film and stick the second independent adhesive strip.



13. Stick the membrane around the skylight

Guide TESCON PROTECT pre-folded corner sealing tape into the opening for the skylight while the release film is still in place and then stick the first independent adhesive strip. The pro clima PRESSFIX application tool is a helpful aid when carrying out this step.



14. Stick to the membrane

Then remove the release film and stick the second independent adhesive strip to the INTELLIO X membrane. Rub firmly using the pro clima PRESSFIX application tool to secure the adhesive bond.



15. Apply tape in an airtight manner around the entire reveal

Install membrane pieces to the top and bottom reveals and stick these in a step-by-step manner using TESCON VANA system adhesive tape, ensuring that there are no folds or tension (PRESSFIX).

16. Laths

Apply laths (e ≤ 50 cm; 1' 8") to support the weight of the insulation material.



17. Quality assurance

It is recommended that airtightness should be checked using a blower door test.

Application for external roof insulation



1. Install the membrane

Roll out the membrane and fasten it using galvanised staples that are at least 10 mm (3/8") wide by 8 mm (5/16") long at intervals of 10-15 cm (4"-6") in the overlap area in a manner that protects against moisture entry. If exposure to the elements is planned, staples installed in open areas of the membrane should be taped over.

Install the membrane leaving an additional 4 cm (1 5/8") overlap at adjacent building components so that an airtight bond can be applied here subsequently.



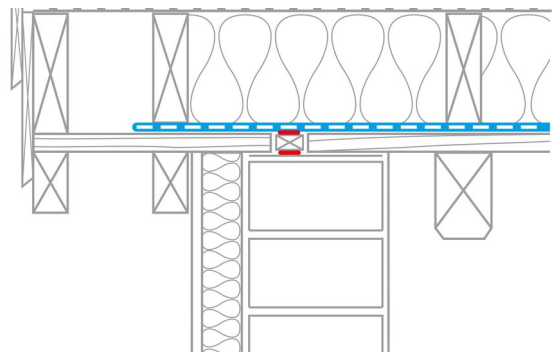
2. Overlap the membranes

Allow for an overlap of approx. 10 cm (4") between the membranes and ensure that the upper membrane lies over the lower membrane in the finished overlap to create a waterproof arrangement. The marking that is printed onto the membrane will serve as a guide here.



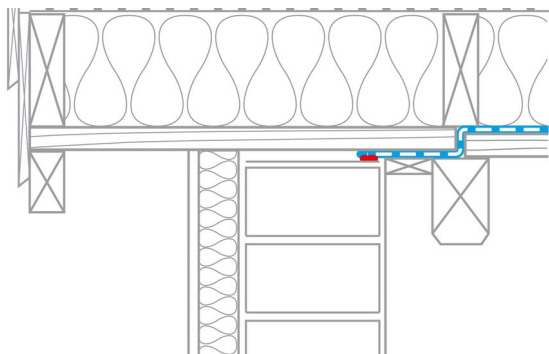
3. Tape the overlap

Clean the subsurface (dry and free of dust, silicone and grease) before taping; carry out an adhesion test, if necessary. Centre the TESCO VANA system adhesive tape on the overlap and gradually stick it in place, ensuring that there are no folds or tension. Rub firmly using the pro clima PRESSFIX application tool to secure the adhesive bond.



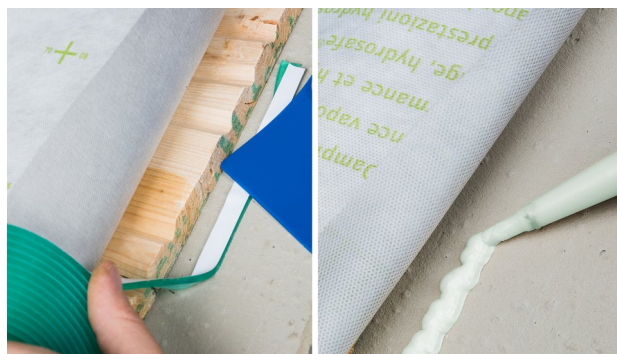
4. Joint at bargeboard

Interruption of the wood sheathing at the top of the wall cap, which has a layer of mortar applied to it. A roof lath is adhesively bonded to the wall cap with ORCON F along its entire length. Sealing of the membrane to the roof lath using ORCON F.



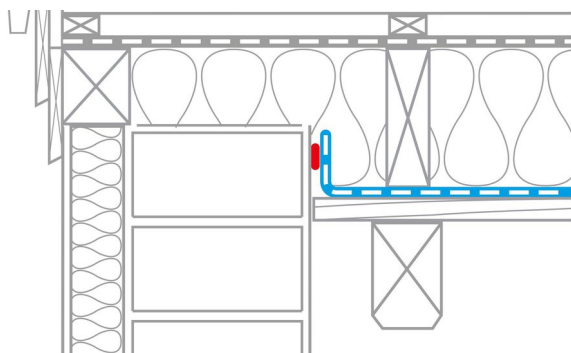
5. Joint at bargeboard, alternative 1

Butt joint between wood sheathing and last rafter. The membrane passes through the butt joint and onto the inside of the wood sheathing and is stuck to the top of the wall cap using ORCON F.



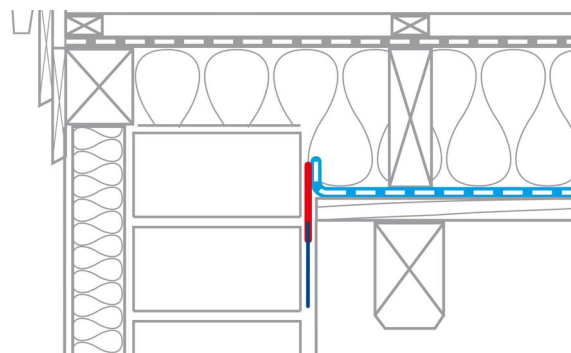
Example: Joint at wall cap

Sealing to the continuous smooth plaster finish on the wall cap can be carried out using the ORCON MULTIBOND adhesive sealant (applied from a roll) or in liquid form using ORCON F (or, alternatively, ORCON CLASSIC). Any loose material on the subsurface should be removed beforehand.



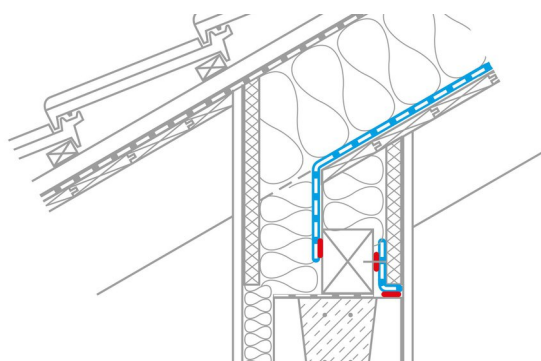
6. Joint at bargeboard, alternative 2

In the case of a plastered gable wall, bond the pro clima membrane to the plaster using ORCON F.



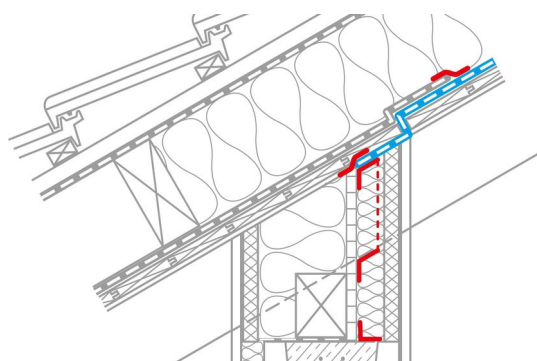
7. Joint at bargeboard, alternative 3

If there is no layer of plaster, affix CONTEGA PV to the wall using adhesive sealant and bond the membrane to the adhesive strip. At least 1 cm (3/8") width of the fleece must be embedded into the middle of the layer of plaster.



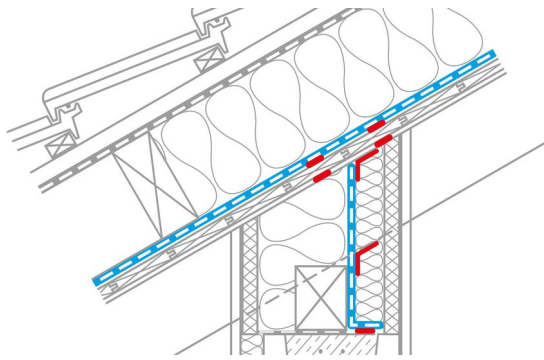
8. Eave joint with exposed rafters without rafter tails

Stick the membrane to the wallplate in an airtight manner using ORCON F. Seal the joint between the wallplate and the ring beam in an airtight manner using a strip of vapour control membrane (e.g. INTELLO connex) and ORCON F.



9. Eave joint with exposed rafters with rafter tails

Install an upright positioning board made of wood-based panel on the inside between the rafters and bond it to the ring beam and the rafters using TESCON PROTECT. If necessary, apply ORCON F underneath the tape in the case of rough concrete. Interrupt the sheathing above this positioning board and tape the membrane to this board.



10a. Eave joint with exposed rafters with rafter tails, alternative

Install a strip of vapour control membrane, e.g. INTELLO conneX, on the inside between the rafters and bond it to the ring beam and the rafters using TESCON PROTECT. If necessary, apply ORCON F underneath the tape in the case of rough concrete. Above the vapour control strip, create seals between the sheathing and both the rafters and the membrane using double strips of adhesive.



11a. Sealing around cables

Place a KAFLEX cable grommet over the cable and stick to the membrane. The cable grommets are self-adhesive.

The range includes:

- KAFLEX mono (see photo)
- KAFLEX duo - for 2 cables
- KAFLEX multi - for up to 16 cables
- KAFLEX post - for retrofit installation



10b. Sheet joint in corners with support

The TESCON FIX mounting bracket strip is stuck to the subsurface using one of the two independent strips of adhesive tape that are fitted to it. The vapour control sheet is put in place and then stuck to the second independent strip of adhesive tape in an airtight manner (working from the inside). The (exterior) bracket strip provides resistance pressure when pressing with the PRESSFIX tool.

Airtight sealing to the upper side of the rafter is carried out simply by using a length of TESCON VANA.



11b. Sealing around pipes

Place a ROFLEX pipe grommet over the pipe and stick to the membrane using TESCON VANA.

The range includes:

- ROFLEX 20 - e.g. for pipes, for \varnothing 15-30 mm (1/2" - 1 3/16")
- ROFLEX 20 multi - for up to 9 conduits
- ROFLEX 30 - 300 - for \varnothing 30-320 mm (1 3/16" - 12 1/2")



12. Quality assurance

If all joints have been implemented in an airtight manner, the thermal insulation structure will be reliable and permanent. Testing of the airtightness with a BlowerDoor test is recommended for quality assurance purposes.

Roof refurbishment from the outside



1. Fill the space between rafters

Completely fill the existing space between the rafters with insulation material. If the existing insulation can be easily compressed, select the next highest thickness for the new insulation layer and use this to compress the existing insulation. Existing and new insulation should only use rock or mineral wool.



2. Roll out and staple the membrane

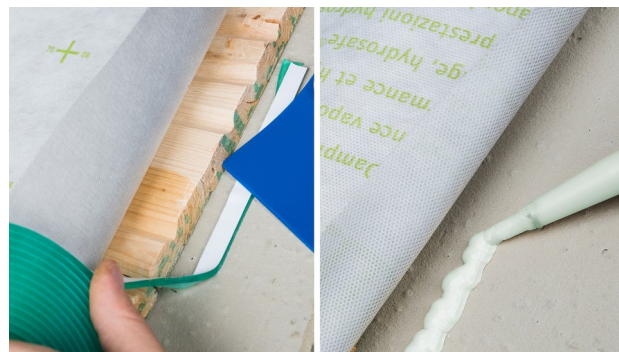
Install INTELLO X flat over the rafters and insulation, and fasten it using galvanised staples that are at least 10 mm (3/8") wide by 8 mm (5/16") long in the overlap area in a manner that protects against moisture entry. If exposure to the elements is planned, staples installed in open areas of the membrane, at intervals of 10-15 cm (4"-6") along the rafters, should be taped over.

Install the membrane leaving an additional 4 cm (1 5/8") overlap at adjacent building components so that an airtight bond can be applied here subsequently.



3. Tape the overlap

Clean the subsurface (dry and free of dust, silicone and grease) and carry out an adhesion test, if necessary. Centre the TESCON VANA system adhesive tape on the overlap and gradually stick it in place, ensuring that there are no folds or tension. Rub firmly using the pro clima PRESSFIX application tool to secure the adhesive bond. Ensure that there is sufficient resistance pressure.



4. Joint at bargeboard

Firstly, apply a smooth plaster finish to rough wall caps. Clean the subsurface. Apply a line of ORCON F adhesive sealant of at least d = 5 mm (3/16") (more in the case of rough subsurfaces, if necessary). Apply the membrane, leaving slack to allow for expansion, and do not press the adhesive completely flat so as to allow for relative motion between components. Alternatively, ORCON MULTIBOND can be used for sealing.



5a. Joints at rafters

Cut the membrane as necessary and guide it around the rafters.



5b. Joints at rafters

Bond the membrane to the top and sides of the rafters and to the ring beam using ORCON F.



5c. Joints at rafters

Stick the membrane cut and joint underneath the rafters using TESCO VANA system adhesive tape. Apply a line of ORCON F adhesive between the rafters and TESCO VANA.



6. Joint at wall cap

Firstly, apply a smooth plaster finish to rough wall caps. Clean the subsurface. Apply a line of ORCON F adhesive sealant of at least $d = 5 \text{ mm}$ (3/16") to the wall cap (more in the case of rough subsurfaces, if necessary). Apply the membrane, leaving slack to allow for expansion, and do not press the adhesive completely flat so as to allow for relative motion between components.



8. Sealing around cables

Place a KAFLEX cable grommet over the cable and stick to the membrane. The cable grommets are self-adhesive.

The range includes:

- KAFLEX mono (see photo)
- KAFLEX duo - for 2 cables
- KAFLEX multi - up to 16 cables
- KAFLEX post - for retrofit installation



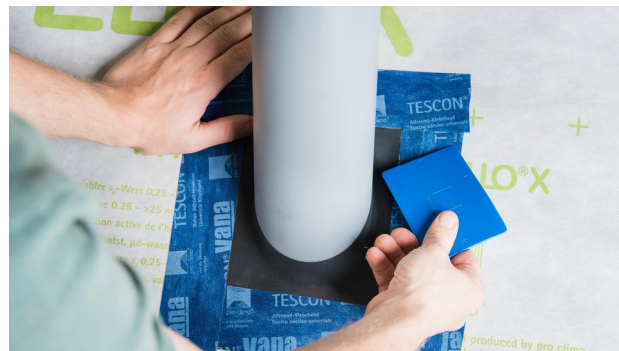
5d. Joints at rafters

Tape the corners using TESCO VANA. If necessary, pre-treat reconditioned wood or knee walls using TESCO PRIMER RP or TESCO SPRIMER.



7. Insulate the fascia surface

Fill the space between the rafters with insulation material on the fascia surface.



9. Sealing around pipes

Place a ROFLEX pipe grommet over the pipe and stick to the membrane using TESCO VANA.

The range includes:

- ROFLEX 20 - e.g. for pipes, for $\varnothing 15\text{--}30 \text{ mm}$ (1/2" - 1 3/16")
- ROFLEX 20 multi - for up to 9 conduits
- ROFLEX 30 - 300 - for $\varnothing 30\text{--}320 \text{ mm}$ (1 3/16" - 12 1/2")



10. Insulation cover

In the case of refurbishment from the outside and installation between two layers of insulation, the choice of insulation materials for the two layers is limited to mineral or rock wool. Please contact Technical Support [<https://proclima.tech-support-germany>] at pro clima in Germany for assistance with calculating the possible insulation thicknesses.



11. Install a roofing underlay membrane

The final step is to install a roofing underlay (s_d value ≤ 0.10 m; g value ≤ 0.50 MN-s/g; vapour permeance ≥ 32.8 perms), e.g. pro clima SOLITEX MENTO 3000.

General conditions

pro clima INTELLO X PLUS should be installed with the printed side facing the installer. The membrane is to be installed horizontally (parallel to the eave) in a taut manner.

Airtight seals can only be achieved on vapour control membranes that have been fitted with no folds or creases. Ventilate regularly and systematically to prevent build-up of excessive humidity (e.g. during the construction phase). Occasional, intermittent ventilation is not sufficient to remove large quantities of moisture due to construction work from a building; use a dryer if necessary.

To avoid condensation formation, the thermal insulation should be installed immediately after the airtight installation of INTELLO X PLUS. This particularly applies when working in winter.

Fastening

Overlap the membranes by at least 10 cm (4"). Use fastening staples that are at least 10 mm (3/8") wide by 8 mm (5/16") long to attach the membranes. The membranes can only be fastened in a protected manner in the overlap area. The maximum distance between fasteners is 10 to 15 cm (4"-6"); in the case of blown-in insulation: 5 to 10 cm (2" to 4"). Fasteners may not be applied in areas where water runs off in a collected manner (e.g. in roof valleys).

If exposure to the elements is planned, it is recommended to provide additional mechanical support for the membranes (e.g. with counter battens). TESCON NAIDOCK mono adheres to counter battens, seals nail holes and improves the level of rain protection.

The information provided here is based on practical experience and the current state of knowledge. We reserve the right to make changes to the recommended designs and processing or to make alterations due to technical developments and associated improvements in the quality of our products. We would be happy to inform you of the current technical state of the art at the time you use our products.

Further information about installation and design details is available in the pro clima planning documentation. If you have any questions, please contact [pro clima Technical Support](<https://proclima.com/service/technical-support>).

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