

# NESCO

## RAINWATER SYSTEMS ROOF SAFETY PRODUCTS LADDERS BALCONY DRAINAGE SYSTEMS RESCUE SOLUTIONS

Nesco is Finland's leading manufacturer of rainwater systems and roof safety products. Nesco was founded in 1981.

Nesco invests in continuous product development work and the development of flexible customer service.

The plant is focused on roofing equipment and emergency exit solutions. The production utilises the latest CAD/CAM technology, for example, in robot cells and sheet metal work. In a state-of-the-art paint shop, the products are painted in a shade that matches the colours of the building. The painting and pretreatments also guarantee the longest possible life cycle for the product in Nordic climatic conditions.

Modern manufacturing technology and high-quality production lines guarantee high-quality end products. Quality all the way to the end customer. Nesco's products exceed most European standards as shown by the product certificates issued.

[nesco.eu/en/](https://nesco.eu/en/)



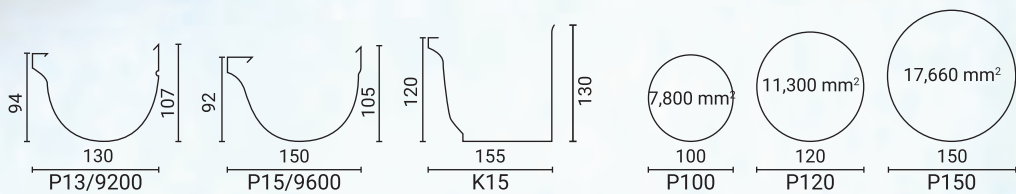


# NESCO RAINWATER SYSTEMS

The solutions of round and angular rainwater systems are suitable for both detached houses and apartment buildings, both new or old sites. Seamless gutters are profiled on the construction site to the length of the eaves, thus avoiding unnecessary leaking seams.

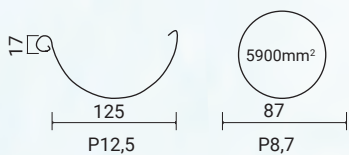


## Cross sections of gutters and downpipes and flow cross-sectional areas



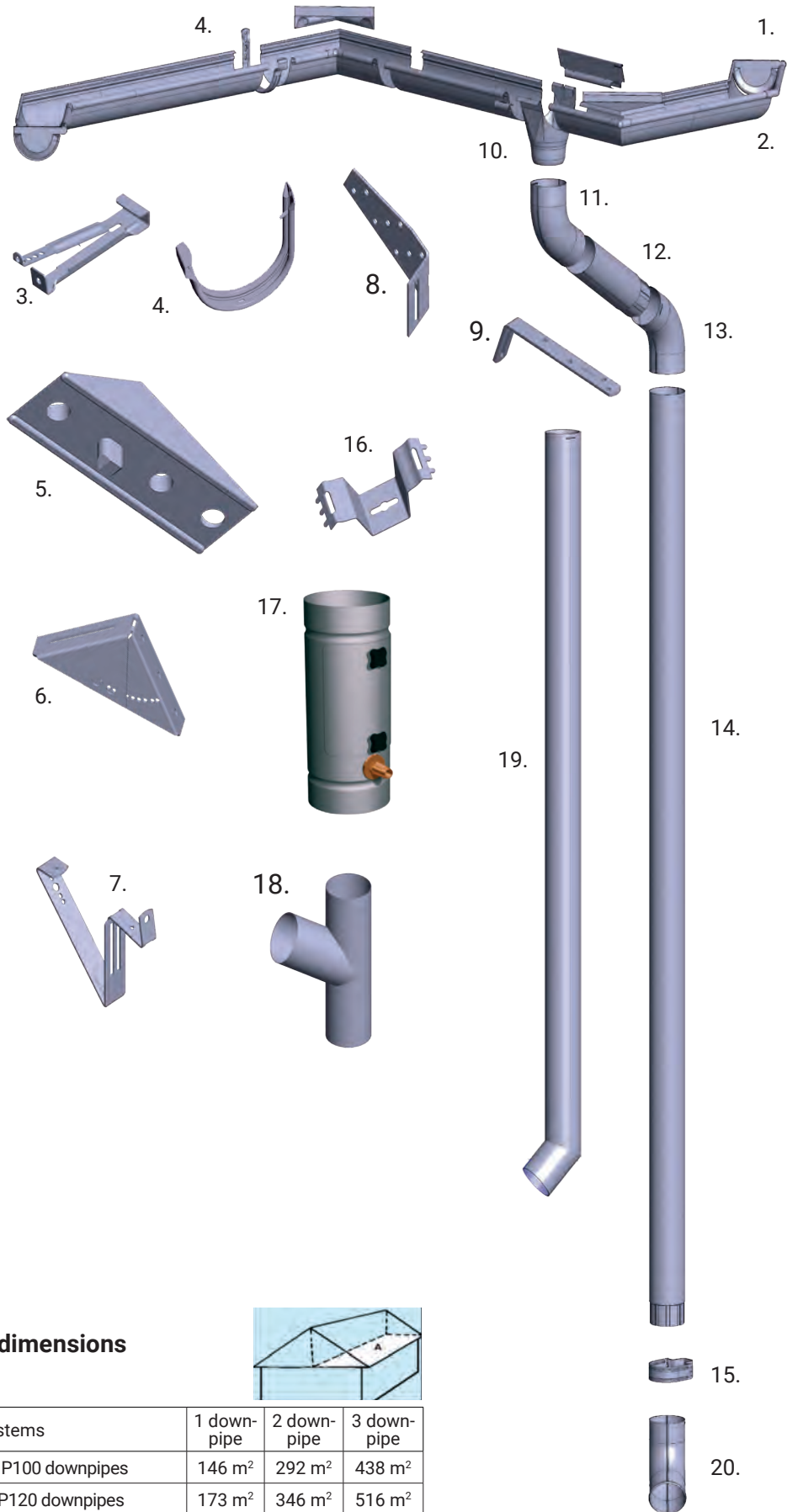
## Hardware store system P125

Also available so called hardware store system P125, which includes complete extensions and corner parts. Can be ordered as complete elements from the factory.



Rainwater system parts:

- 1. P13 Classic, P15 Classic or K15 seam-less gutter
- 2. P13 Classic, P15 Classic or K15 end cap
- 3. P13 Classic or K15 internal gutter bracket
- 4. P13A, P15A or K15A external gutter bracket
- 5. Rear support P13 Classic for external gutter bracket, when the headboard is skewed 1:4 ... 1:1.5.
- 6. Mansard roof rear support for external gutter brackets
- 7. Slope-profile roof rear support for external gutter brackets
- 8. Side support for outer bracket when no headboard; installation on the side of the truss
- 9. End section for external gutter bracket when installed on the truss
- 10. P13 Classic, P15 Classic or K15 drop outlet
- 11. P100, P120 or P150 Classic corrugated A angle
- 12. Middle pipe
- 13. Plain angle
- 14. Downpipe
- 15. Wall bracket collar
- 16. Wall bracket hanger
- 17. Water collector
- 18. Diverter pipe
- 19. P100, P120 or P150 kick-resistant downpipes, length 1.94 m straight or with a downspout. Can also be equipped with an inspection hatch.
- 20. P100, P120 or P150 Classic corrugated downspout.



Nesco slanting roof surface area and dimensions



Maximum horizontal area (A) for Nesco rainwater systems	1 down-pipe	2 down-pipe	3 down-pipe
P13 Classic/9200 or P15 Classic/9600 mm <sup>2</sup> gutter and P100 downpipes	146 m <sup>2</sup>	292 m <sup>2</sup>	438 m <sup>2</sup>
P13 Classic/9200 or P15 Classic/9600 mm <sup>2</sup> gutter and P120 downpipes	173 m <sup>2</sup>	346 m <sup>2</sup>	516 m <sup>2</sup>
K15 Classic/9200 or P15 Classic/9600 mm <sup>2</sup> gutter and P150 downpipes	224 m <sup>2</sup>	447 m <sup>2</sup>	672 m <sup>2</sup>

However, in order to obtain a sufficient pour (5 mm/metre) in the rainwater gutters, it is recommended that the longest distance between the downpipes (pour) is 15 metres. The table has been made on the basis of the RT Building Information File 85-11020, assuming that the downpipes are installed at regular intervals in relation to the surface area. For a gently sloping roof, the table can be read according to the actual (not horizontal) slanting surface area.





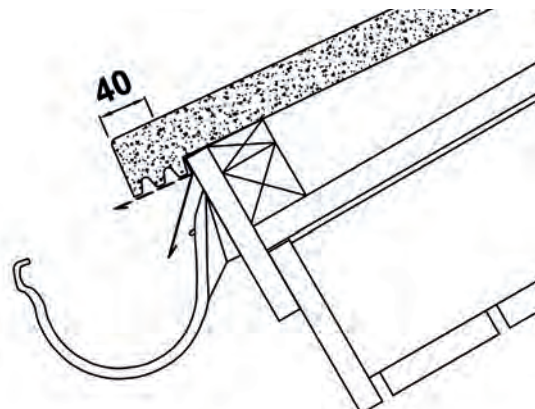
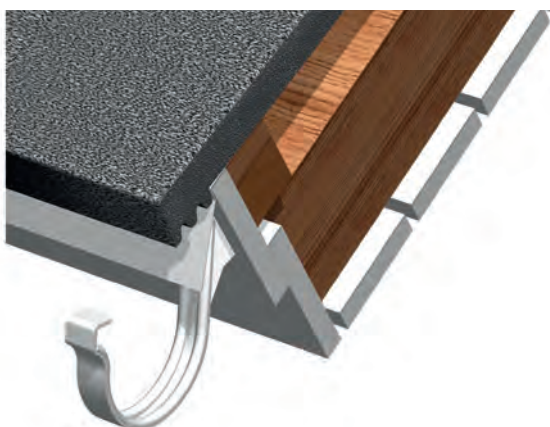
 RR20 White	 RR29 Red	 RR30 Light brown	 RR35 Blue
 RR21 Light grey	 RR36 Light green	 RR31 Brown	 RR24 Light yellow
 RR22 Grey	 RR37 Green	 RR32 Dark brown	 RR40 Silver
 RR23 Dark grey	 RR11 Forest green	 RR750 Brick red	 RR41 Dark silver
 RR33 Black	 RR34 Light blue		

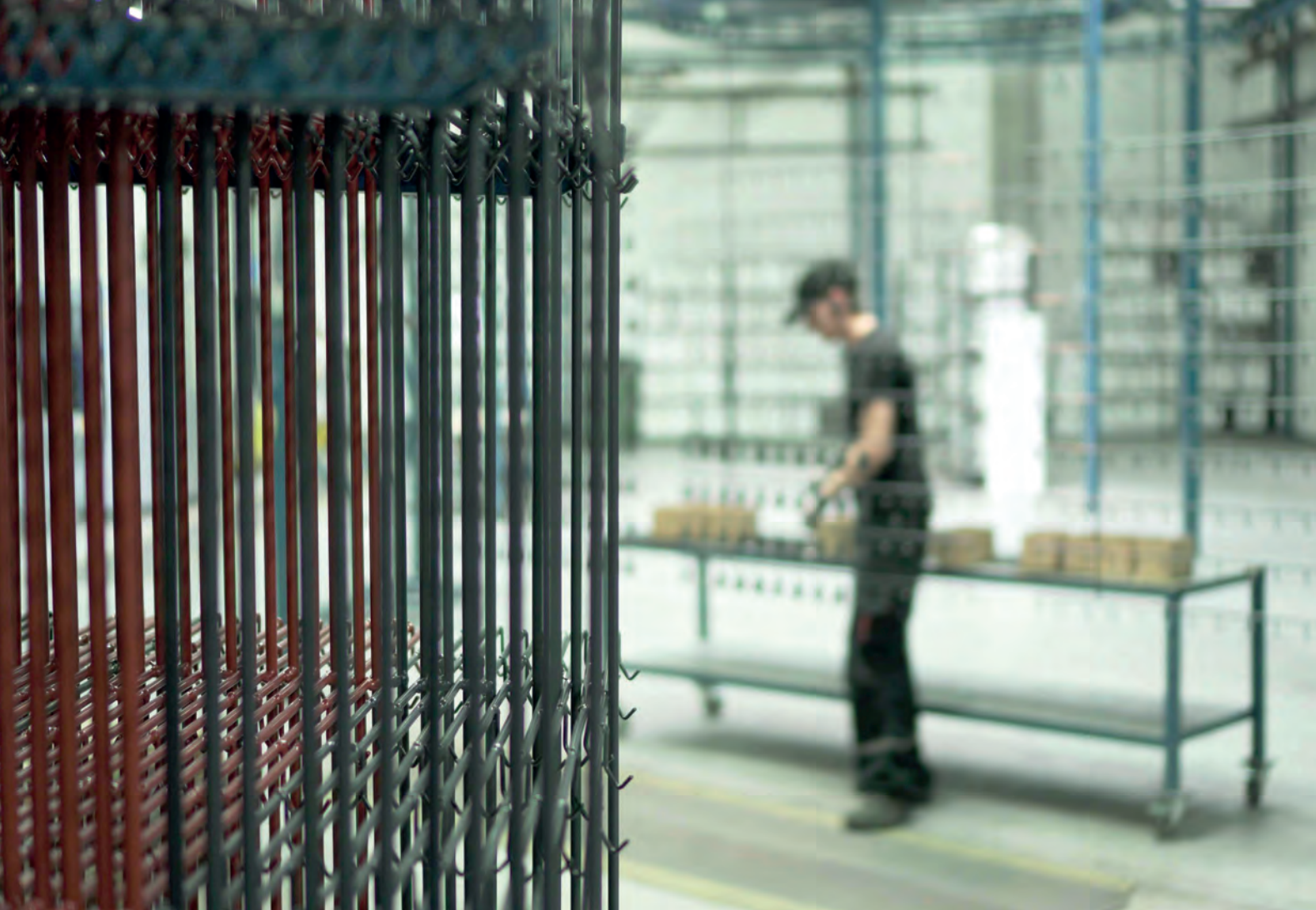
## Mounting and drop outlets of the Nesco rainwater gutter

External gutter brackets (excl. K15) is made by profiling. The bracket is stronger than a flat iron bracket and its paint durability is better as there are no sharp corners. The external brackets are patented. For buildings without headboards, the external brackets can be attached directly on top of the truss with a so-called tail hook or on the side of the truss with a side support. The drop outlet is a connecting piece of the gutter and the downpipe. The expansion joints of the long gutters can be implemented inside the drop outlets. There are no visible seams and the expansion joints do not leak.

## Nesco drip rail

The need for maintenance and replacement of headboards can be reduced with an eaves-mounted drip rail. The folding drip rail shown in the figure can be installed when installing a roof or gutter. The screws on the gutter bracket can be attached to the headboard, as the drip rail is only turned inside the gutter when the gutter is in place. The drip rail should always be used on brick roofs. On sheet metal roofs, it is used if the headboards are vertical or if the building is located in a windy place.





Materials used in Nesco rainwater systems

Baked enamel aluminium

Nesco uses a special aluminium alloy that is virtually non-corrosive. The aluminium rainwater system is suitable for all types of applications and has excellent resistance to even heavy climatic stresses.

Nova/Nova coating

The sheet systems that are painted on both sides and galvanized withstand well any changes in weather. The raw material manufacturer grants a 15-year warranty for this material.

Galvanized rainwater systems

The systems have a material thickness of 0.6 mm and a zinc content of 350 g/m².

Balcony rainwater drainage systems

The wall thickness of aluminum, powder-coated rainwater downpipes is 1.3 mm.

Materials	Corrosion resistance	Colour fastness	Durability against dirt and stains	Material thickness (mm)	Meets SFS-EN 612 standard	Standard colours according to Ruukki's colour chart	Special colours according to Ruukki's colour chart	Types of gutters	Types of downpipes
Baked enamel aluminium	excellent	excellent	good	0.7	yes	RR20, 23, 32, 33		K15	P100, P120
Nova/Nova-coated galvanized steel	good	good	good	0.6	yes	RR20, 21, 22, 23, 29, 32, 33, 750	RR11, 40, 41	P13 Classic, P15 Classic, K15	P100, P120, P150
Nova-coated galvanized steel, coating only on one side	bad	good	good	0.6	no		RR24, 30, 31, 34, 35, 36, 37	P13 Classic, P15 Classic, K15	P100, P120, P150
Powder-coated aluminum	excellent	good	excellent	1.3	no	RR20, 21, 23	all RR colours		P73



# NESCO SNOW GUARDS

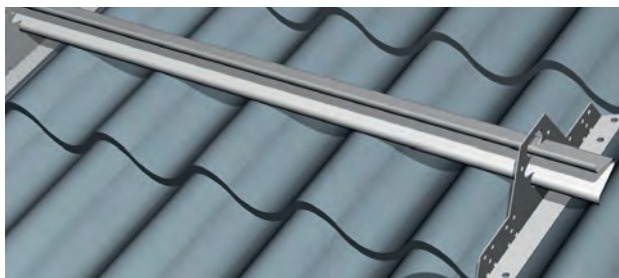
When the roof's slope exceeds 1:8, snow guards, canopies above the doors or plantings controlling the passage and suitable earthworks are used for protection. Snow guards must not be used as an anchor point for the safety line. The LP3 profile-designed snow guards or the 2-pipe OVA2 snow guards are suitable for low-rise buildings. For buildings with more than 2 storeys, the higher and more effective snow guard grid RLE Varma with a height of 180 mm is recom-

mended. RLE Varma stops snow and ice more effectively for all buildings.

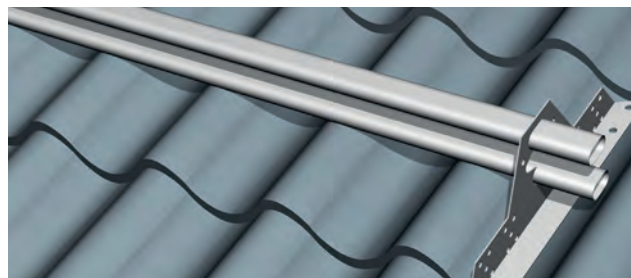
The sheet metal and felted roof bracket is suitable for roofings with a spacing of 400, 350 or 300 mm. Due to the heavy loads on snow guards, the recommended spacing on a sheet metal roof is 32 mm x 100 mm. Felted roofs should have solid boarding or plywood under the roofing. Snap-on fasteners are used on seamed roofs.







Profile-designed snow guard LP3



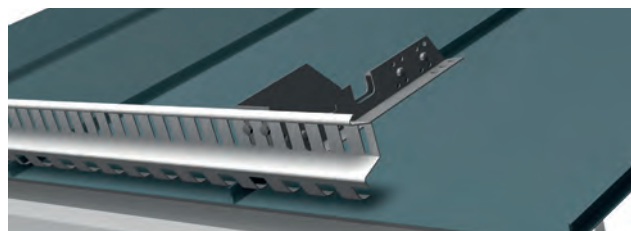
Pipe-designed snow guard OVA-2

## Nesco snow guard grid height $h = 180 \text{ mm}$ or $120 \text{ mm}$

RLE Varma is a snow guard grid that can be installed as close to the roof surface as possible thanks to the groove at the bottom. The RLE Varma snow guard grids are best suited for machine-locked and snap-lock standing-seam roofs. RLE Varma's bracket system is designed to be installed as close as possible to the lower eaves.



Snow guard grid Varma 180

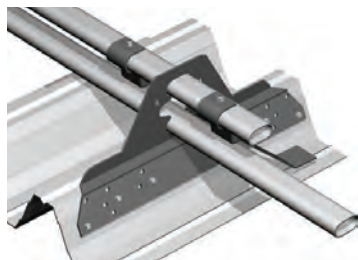


Snow guard grid Varma 120

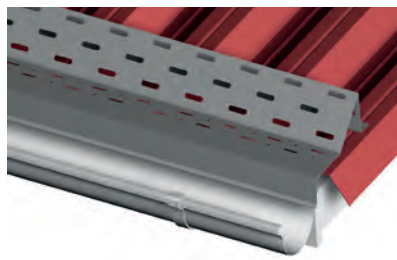
## Other Nesco snow guards

When using a two-pipe or profile-design snow guard with an LP3 machine-locked or snap-lock standing-seam roofs, ice floes sliding between the roofing and the snow guard often cause hazards. The problem can be sorted by installing a snow guard grid on top of the pipes or profile.

For load-bearing profiles, a snow guard can be installed directly on the side of the profile. Snow may slide along the grooves of the load-bearing profiles, unless the grooves are supported by groove barriers.



Snow guard bracket



Groove barrier for slope-profiled sheet metal roofs.



Additional snow grid, length 960 mm.

It is recommended to install a snow guard along the entire length of the eaves. For example, if a snow guard is installed only at the entrance, the force of the snow off the eaves can break the snow guard and the roofing. When installing short snow guards, the guards should be placed close to each other. If necessary, snow guards are placed in two or more rows.

Maximum length above the snow guard (m)						
Roof slope angle (°) and slope ratio	Distance between snow guard brackets (m)					
Snow load on the roof 1,8 kN/m² (2,6 kN/m²)						
	0.5 m	0.6 m	0.75 m	0.9 m	1.0 m	1.2 m
<15° , (1:3.7)	21.4 (15.0)	17.9 (12.5)	14.3 (9.9)	12.0 (8.3)	10.7 (7.4)	9.0 (6.2)
15...22° , 1:3.7...1:2.5	11.4 (8.0)	9.5 (6.6)	7.6 (5.3)	6.3 (4.4)	5.7 (4.0)	4.8 (3.3)
22...27° , 1:2.5...1:2	8.4 (5.8)	7.0 (4.8)	5.6 (3.9)	4.7 (3.3)	4.2 (2.9)	3.5 (2.4)
27...37° , 1:2...1:1.3	7.4 (5.2)	6.2 (4.3)	4.9 (3.4)	4.1 (2.8)	3.7 (2.6)	3.1 (2.1)
37...45° , 1:1.3...1:1	9.0 (6.2)	7.5 (5.2)	5.9 (4.1)	5.0 (3.5)	4.5 (3.1)	3.7 (2.6)

# NESCO ROOF LADDERS, STEPS AND BRIDGES

CE-marked roof access routes in strength class LK 2 must be inspected annually by an inspector authorised by the manufacturer. The aforementioned requirement requires that the products pass the demanding dynamic and static tests in accordance with the SFS-EN standards. Vesivek roof safety products have been tested according to these requirements. As proof of compliance, the products are CE-marked and have the right to use the FI mark no 3394.

Roof safety products are made of hot-dip galvanized steel. The amount of zinc is 350 g/m<sup>2</sup>. The products are

usually delivered powder-coated in Rautaruukki's colour chart colours. Standard colours are white RR20, light grey RR21, grey RR22, dark grey RR23, dark brown RR32, black RR33, brick red RR29 and clay brick red RR750. Other RR colours on request. The painting is powder-coated and the stability of the paint is ensured by a 6-step pretreatment of the surfaces. In terms of corrosion resistance, painting and bottom galvanizing correspond to 50 µm dip galvanizing.





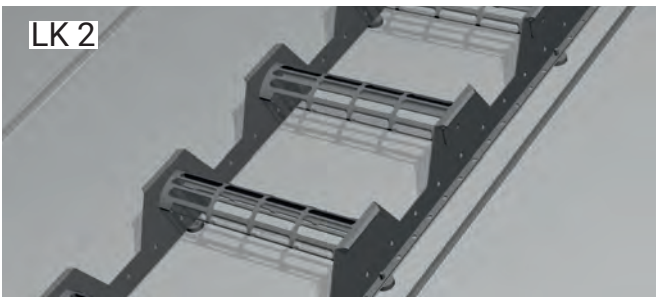
In buildings higher than 9 metres, products approved in accordance with strength class LK 2 are required, as roof safety products are used to attach personal protective equipment.

Entries to be marked in design plans		
Product	Buildings higher than 9 metres	Others
Roof walkways	SFS-EN 516 Strength class LK 2	SFS-EN 516 Strength class LK 1 or LK 2
Roof steps and ladders	SFS-EN 12951 Strength class LK 2	SFS-EN 12951 Class 1 or 2 approval

Roof ladder



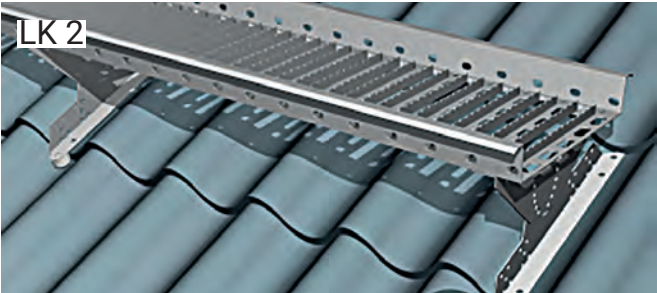
Roof step



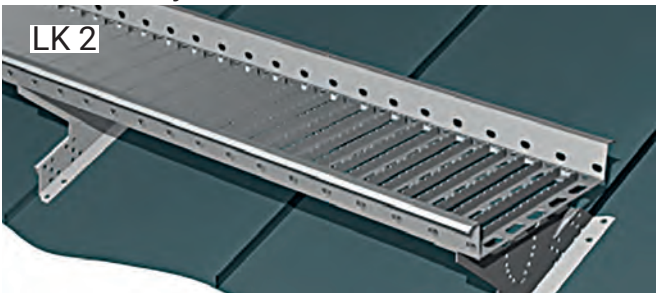
All roof ladders use an adjustable foot that can be adjusted in the same direction as the guide bar so that the ladder always rests on the roof batten. With machine-locked or snap-lock standing-seam roofs, the ladder is attached by pressing to the seams without breaking the roofing. With brick roofs, the ladder is attached to a separate support with a size of 50 x 100 mm and strength class C24.

Nesco recommends a ladder whenever the slope of the roof is 1:2.5 or less. The snow permeability of the ladder is more than 50%. On sloping roofs, you can safely walk along the roof ladder in an upright position, unlike on rung ladders.

Roof walkway P-T350 or H-T350



Roof walkway T350



Nesco roof walkways can act as a safety line anchorage point (strength class LK 2). The surface of the roof walkway is roughened and allows snow and water to pass through efficiently as more than 50% of the surface area of the walkway has holes. On a brick roof, the roof walkway is attached to a separate support with a size of 48 x 98 mm and strength class C24.

Horizontal rails and cables

The horizontal rail, which can be attached to the roof walkway, has a horizontal carriage to which a safety line can be attached. The roof walkways of buildings with more than 2 storeys must have a horizontal rail if the slope of the roof is more than 1:1.5. However, moving on roofs with a slope of 1:4 or more can be dangerous, in which case it is advisable to connect the rail. When the height of the building exceeds 9 metres, the roof walkway must comply with the strength class C2.



Horizontal rail on a roof walkway







## Nesco service ladders and accessories

External access to the roof is arranged using service ladders or person lifts.

The service ladders must be durable, permanently installed and placed safely and appropriately. The recommended height of the lowest spool is 1000...1200 mm. Vesivek service ladders meet the requirements of the Decree of the Ministry of the Environment on Safety of use of buildings. NESCO recommends installing service ladders preferably at the end of the building. Ladders attached on the side eaves are always exposed to snow loads. The snow load on the side ladder must be reduced with snow guards.

### Ladder rails

In residential buildings, the service ladders include a rail system. In the groove of the rail there is a rope-and-pulley system, to which the person climbing the ladder is attached with a harness. The anti-slip devices at the bottom of the system prevent any possible fall. The system is always equipped with a flexible fall stopper.

Ladder accessories help prevent unwanted use of the ladder and save space in tight spaces. Climbing barriers designed to prevent climbing are recommended for use in public places and areas where small children move around. If necessary, the climbing barrier can be locked to prevent unauthorised climbing on the ladder. The climbing barrier can also be made double-sided.

A sliding ladder can be used to prevent small children from climbing the ladder and allows the ladder to be installed in a place with a lot of passage. The sliding ladder can also be locked, making unauthorised use difficult.

A safety cage can be used to secure climbing the ladder, no separate harness is required.



Climbing barrier



Sliding ladders



Safety cage of the service ladder



The side ladder is mounted perpendicular, outwards from the wall





### Nesco fire pipe (dry riser)

The dry riser pipes can be attached either directly to the wall or to the service ladder using additional support parts. The bottom and top of the pipe must be adequately supported. The lowest legs of the ladder are attached to the plinth. The length of the dry riser pipes is dimensioned according to the building.

The maximum the length is 6,000 mm. Pipes longer than this are made with connecting joints, which enable a solution that facilitates the installation and transport of the pipe. Shut-off valves speed up and increase the efficiency of the fire brigade in the event of a fire.

- Hose connectors compatible with fire department water hoses at the top and bottom.
- The pipes are made of  $\varnothing$  88 mm stainless steel





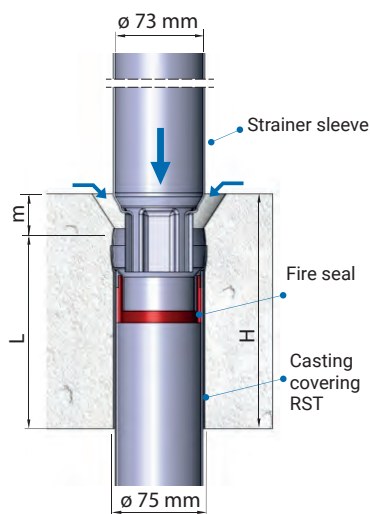
# BALCONY FIRE-SEALED RAINWATER DRAINAGE SYSTEM

A balcony drain made of stainless steel is installed on the balcony tile in connection with the casting. In a  $\varnothing$  73 mm system, there is always a fire seal inside the drain sealing the drain in the event of a fire. For other sizes, a fire seal is available separately. Water is directed downwards from the upper balconies along the aluminium or stainless steel piping. Available pipe sizes in aluminium are  $\varnothing$  50 mm,  $\varnothing$  73 mm,  $\varnothing$  100 mm and stainless steel  $\varnothing$  50 mm,  $\varnothing$  75 mm,  $\varnothing$  100 mm. The pipes are stiff, so no wall mounts are required. The water from the upper balcony is not diverted to the lower balcony thanks to the screen system. However, the water from the lower balcony is directed to the same piping through openings in the strainer sleeve.

Fire seal		
Stainless steel pipes	no need for a separate fire seal	EI90 min
Aluminium pipes 73 mm	with a Nesco fire seal	EI60 min
Aluminium pipes, other sizes	RPD drain + fire seal	EI30 min

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Aluminium pipes 73 mm	with a Nesco fire seal	EI60 min
Aluminium pipes, other sizes	RPD drain + fire seal	EI30 min





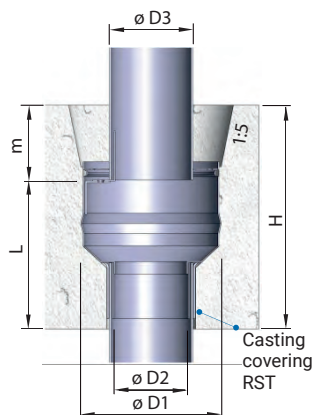
VESIVEK BALCONY DRAIN WITH A FIRE SEAL	Tile thickness H	Drain length L	Splash block m	Water groove max length pouring 1:100
VEK-82/ 73/ 150	220	150	70	- 5000
VEK-82/ 73/ 150	230	150	80	- 6000
VEK-82/ 73/ 150	240	150	90	- 7000
VEK-82/ 73/ 170	250	170	80	- 7000
VEK-82/ 73/ 170	260	170	90	- 7000
VEK-82/ 73/ 200	270-	200	70	- 7000

Product code

**VEK-RST 82 / 73 / EI60 / 150 mm**

If the length of the water groove exceeds 7,000 mm, two drains are recommended for a tile.

Drain length  
Fire-retardant compartmentation  
Balcony piping size  
Outer diameter of the drain  
Drain model



RPM BALCONY DRAIN	D1	D2	D3	Tile thickness H	Drain length L	Splash block m	Water groove length
RPM-102/ 50/ 140	102	46	50	200	140	60	- 5000
RPM-102/ 50/ 170	102	46	50	210	140	70	- 6000
RPM-122/ 73/ 140	122	69	73	220	140	80	- 7000
RPM-122/ 73/ 170	122	69	73	230	170	60	- 5000
RPM-145/ 98/ 140	145	93	100	240	170	70	- 6000
RPM-145/ 98/ 170	145	93	100	250	170	80	- 7000

Product code

**RPM 122 / 73 / 140 mm**

Sizes deviating from the standard lengths are manufactured in accordance with the requirements of the structures.

Drain length  
Balcony piping size  
Outer diameter of the drain  
Drain model

## BALCONY PIPING ACCESSORIES, PARTSI

- Partsi balcony racks are attached to the balcony pipe.
- The products are attached around the pipe with a pipe shoe.
- No tools are required for mounting.
- Compatible with  $\varnothing$  73/75 and  $\varnothing$  98/100 mm balcony piping.
- Frame material  $\varnothing$  10 mm round steel.
- Powder-coating RAL 9006 silver gray.

### Clothes racks

Clothes racks can thus be easily installed in the drainage pipe of balconies, eliminating the need for wall mounting. Clothes can be hung on a rack to air or dry on hangers. By installing several racks around the pipe, an efficient clothes-drying rack can be obtained with separate racks that can be easily moved.





# NESCO SPECIAL SOLUTIONS



## Safety systems and solutions

Nesco's product range also includes safety cable systems.



## Maintenance platforms

Nesco's maintenance platforms enable safe access and work even in demanding places on sloping roofs. Wide maintenance platforms enable, for example, maintenance of an air-conditioning or elevator machine room and the transport of goods. Nesco technical support helps design service platforms and bollards.



## Chimney sweeping platform

With a chimney sweeping platform attached to the chimney, even large chimneys can be safely swept even in tricky and difficult places. The chimney sweeping platform support system is designed so that no holes need to be made in the chimney. The structure of the chimney also remains undamaged.



# NESCO RESCUE SOLUTIONS



## Hatch ladder

A hatch ladder is recommended for use in all buildings over 4 storeys that require an external emergency exit. In apartment buildings, emergency exits are arranged to apartments that cannot be rescued by ladders of the fire brigade.

The size of the hatch ladder opening in the balcony tile is 620 mm x 620 mm  $\pm$  3 mm and the rectangular tolerance is 2 mm/m. The edges of the hatch are straight. The trigger mechanism is sealed to prevent improper use. The Nesco hatch ladder can be delivered with or without a fire seal. (EI60)



## Launchable escape ladder

Launchable escape ladder opens by pulling the launching pin. The ladder opens all the way down from the pin. The lengths of the frames are 2.7 m, 3.0 m, 3.3 m, 3.6 m and 4.2 m. Several frames can be installed in succession. When closed, the ladder measures 76 mm x 38 mm. The ladder is made of powder-coated aluminium. The ladder cannot be opened from below.



**For lateral movement** (e.g. passage with a ladder between two windows), a suitable handrail or similar suitable support is installed on the wall.

## Nesco French balcony railing

The Nesco French balcony railing is an easy and carefree solution to prevent falling from doors leading to a balcony without a platform. The French balcony railing and brackets are made of hot-dip galvanized steel, which is powder-coated and thus withstands corrosion stresses well, even if the conditions are demanding. The French balcony railing is a standard for 900 mm wide and narrower balcony doors, other dimensions available on request.







## Delivery and service promise to You:

### Equality promise

We only have one kind of customer — those who are important. We welcome all customers with open arms and serve them to the best of our ability regardless of the company size or other factors.

### Service promise

Tell us what you want, and we'll tell you what you need. Our background helps us understand the requirements of each project and offer the best solutions. We also ask questions and are good listeners. When you place an order, our sales assistant will assess whether the order contains all the required products. This saves you time and trouble when you have all the necessary items at the site.

### Delivery promise

You get what you need, and always on time. We pick your order carefully and check it twice before delivery. We always keep certain items in storage so that they can be delivered quickly. We take pride in sending our deliveries punctually, on schedule.

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