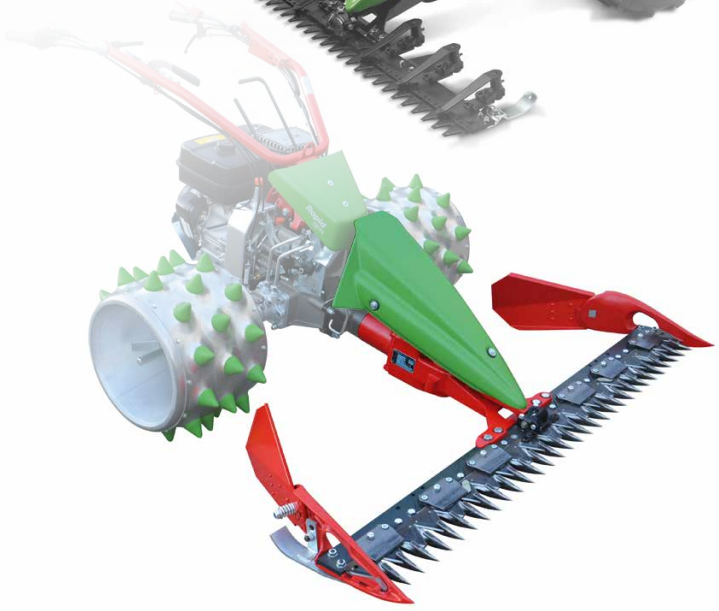
Rapid

Mowing technology

The perfect professional system for every application



Rapid Quality

Finger cutter bars – Attachment with a long history and tradition

Tradition and modernity

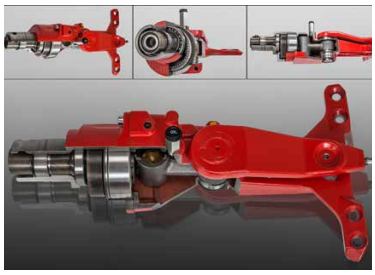
Cutter bars were invented in the middle of the 19th century. Rapid has always used this mowing system on the single-axle walk-behind tractors and mowing machines – at Rapid, the first motor mowers were built and marketed in series production from 1926 onwards. The proven system is still up-to-date, indeed more modern than ever!

The oscillating mowing technology with finger and fingerless cutter bar types has a low power requirement, and is still based on the original working principle. Further developments in the shape, materials and variants still make the system an interesting mowing technology today. This is particularly true in view of recent developments and discussions on biodiversity, species diversity and insect protection, and the system is viewed as offering many advantages by the general population and society.

AREAS OF APPLICATION OF THE VARIOUS TYPES OF FINGER CUTTER BAR

Typical features							
Types of finger cutter bar	**Middle cut**	**Diamant cut**	**Rubin cut**	**Normal cut**	**Landscaping cutter bar**	**Dual cutter bar**	**Broad gauge mower**
Finger spacing	2" / 50.8 mm	58 mm	58 mm	3" / 76.2 mm	–	–	–
Blade (blade width)	3" / 76.2 mm	58 mm	3" / 76.2 mm	3" / 76.2 mm	50.9 / 50.9 mm	70 / 70 mm	70 / 70 mm
Cut type	asymmetrical	symmetrical	asymmetrical	symmetrical	symmetrical	symmetrical	symmetrical
Features							
Very precise cut	***	**	***	*	*	**	**
Clog-free operation for areas that exhibit numerous molehills	*	**	**	***	***	***	***
Horizontal forage caused by a storm, hail, snow, etc.	*	**	**	***	**	**	**
Force distribution during cutting	***	*	***	*	*	***	**
Areas of application							
Thin, sparse crop	***	**	**	*	**	***	***
Thick, dense crop	*	**	***	***	**	**	***
Old or irregularly mown crops	*	**	**	***	***	**	***
Stony areas	***	**	**	*	**	*	*
Meadow types							
Mountain meadows	***	**	***	*	*	**	***
Pastures	*	**	**	***	*	**	***
Late harvested meadows	*	**	***	***	*	**	***
Public green areas, green areas at roadsides	*	*	*	*	***	**	**
Biodiversity areas, flower strips	*	**	**	**	***	***	***

Cutter heads – the connecting unit between the single-axle walk-behind tractor and the cutter bar



Cut-away model

Additional weight

Wedge to correct the tilt of the cutter bar

With the cutter head, the cutter bar attachment is connected to the single-axle walk-behind tractor. It serves as a drive unit for the knives. Various versions with regard to length, connection flange, mounting height, rotation speed and spreader hood enable optimum operation of various cutter bars on all Rapid single-axle walk-behind tractors.

Principle of operation

The cutter head uses sophisticated mechanisms to convert the rotating movement of the PTO shaft into the oscillating movement of the oscillating lever. The «back-and-forth» movement of the oscillating lever is transferred to the knife via the driving fork (cutting edge). A cutting system is created together with the knives or fingers on the bar (counter edge).

Spreader hood

The spreader hood divides the cut material and guides it past the cutter head at the sides. An oscillating motion is induced to reliably separate the cut material immediately after cutting and to deposit it regularly.

LM spreader hood option

Applications in landscape management (LM), in particular, do not involve mowing regular forage crops, but rather overgrown areas that can overload and damage spreader hoods. The LM spreader hood can be fitted in such cases and provides a remedy.

Rotation speed and reduction

The input speed at the cutter head (PTO shaft speed) determines the knife movements, and can only be changed within the PTO speed range. Various cutter heads are equipped with reduction gears to provide the correct knife movement despite the higher drive speeds caused by the carrier vehicle.

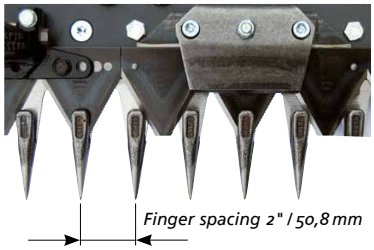
Stroke on the oscillating lever

The stroke describes the path of the knife or oscillating lever from the «left dead centre» to the «right dead centre». Traditionally, Rapid uses a long stroke of 94 mm for all finger bars. Cutter heads with smaller strokes are suitable for various cutter bars, which is why they are also included in the range.

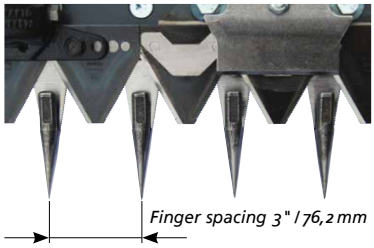
Additional weights option

Additional weights can help to achieve the desired weight ratios. They are mounted on the side and therefore do not affect the forage flow.

Finger cutter bars – **Middle cut sickle bar** and **Normal cut sickle bar** – The tried-and-tested classics



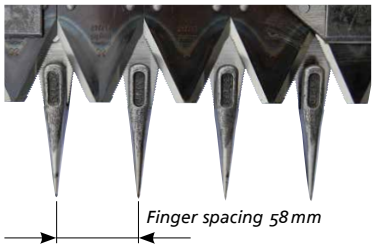
Middle cut sickle bar



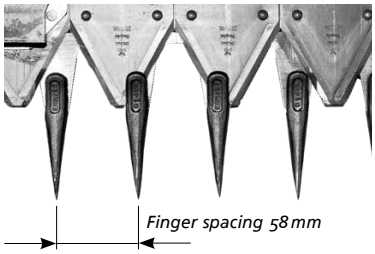
Normal cut sickle bar

	Middle cut sickle bar	Normal cut sickle bar
Structure and functional design	The finger spacing is 50.8 mm (2 inches), the blade width is 76.2 mm. This results in an asymmetric cut. The entire width is cut at different times.	The finger spacing is 76.2 mm (3 inches), the blade width is 76.2 mm. The result is a symmetrical cut, because the entire width is cut at the same time.
Features and areas of application	Middle cut sickle bars are most commonly mounted on Rapid machines. They are characterised by a cutting pattern with a highly pleasing appearance, due to the excellent guidance of the blades of grass. This system is particularly effective on natural meadows and mountain meadows. In the case of dense crops, the cuttings tend to become clogged on the middle cut sickle bar due to the small finger spacing. One advantage of the small finger spacing, on the other hand, is the reduced risk of blade damage caused by stones.	Normal cut sickle bars are less commonly mounted on Rapid devices. Although they have a less perfect cutting pattern, they do score highly for their excellent forage flow and low risk of blockages. The normal cut sickle bar is particularly impressive on pastures, ins over-mature green areas with late cutting times and in dense crops.
The keys to success	• Cutting pattern highly visually appealing • Asymmetrical cut for even power requirements	• Low risk of blockage • Symmetrical cut for good forage flow

Finger cutter bars – **Diamant cut sickle bar** and **rubin cut sickle bar** – the Rapid gemstones



Diamant cut sickle bar



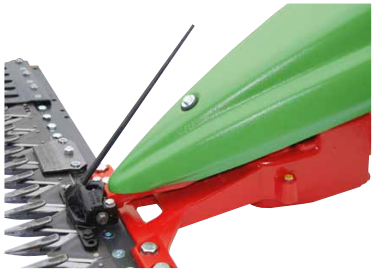
Rubin cut sickle bar

	Diamant cut sickle bar	Rubin cut sickle bar
Structure and functional design	The finger spacing and the blade width are 58 mm each. The result is a symmetrical cut, because the entire width is cut at the same time.	The finger spacing is 58 mm and the blade width is 76.2 mm. This results in an asymmetric cut. The entire width is cut at different times.
Features and areas of application	The Diamant cut sickle bar is an in-house development by Rapid, which combines the characteristics of the tried-and-tested classics. The Diamant cut sickle bar only impairs the cutting pattern to a limited extent, and offers a good forage flow.	The ruby cut sickle bar is an in-house development by Rapid, which combines the characteristics of the well-tried classics. The ruby cut sickle bar is characterised by a beautiful cutting pattern and good forage flow. It thus represents a perfect all-rounder bar for all applications.
The keys to success	• Low risk of blockage • Symmetrical cut for good forage flow	• Low risk of blockage • Cutting pattern highly visually appealing • Asymmetrical cut for even power requirements

Finger cutter bars – **Options**

«Clamp soles» are positioned under the cutter bar, close to the «cutting point», and are ideal even on cropped terrain.
The reliable clamping connection allows multiple units to be fitted over the entire width – regardless of hole patterns in the cutter bar back.
«Webs» in the shape guide the cutter bar on slopes when travelling along contour lines, rounded areas allow smooth movement and minimise the risk of contamination.

Cutting shoes



Grass separation rod

The position of the slip heel is behind the cutter bar; infinitely adjustable for stubble height 4 – 8 cm

The position of the clamp sole is below the cutter bar; not adjustable for stubble height of approx. 6 cm

Cutting height

The standard cutting height for a finger bar is about 4 cm stubble height. With the additional slip heel or a clamp sole, the cutting height can be adjusted. A larger cutting height brings with it several advantages. In addition to crop benefits (rapid regrowth, lower risk of drying out, etc.), there are procedural advantages for the subsequent work steps (lower forage contamination, less wear for machines, etc.). In addition, the composition and development of the crop is positively influenced. The ability to tackle extreme areas on slopes is improved, as crops are sustainably strengthened/established by higher cutting heights. If necessary, the «wedge» combination can be used to correct the changed angle of the bar to the ground again.

Grass separation rod

The grass separator rod is mounted on the driving fork at the interface between the cutter bar and the cutter head. It assists with the separation of cut material, the flow of material on the spreader hood and reduces the risk of blockages. The effect and suitability are highly dependent on the meadow, the composition of the grassland crop and other environmental influences.

Cutting shoes

The cutting shoes are used to lift the outer areas of cutter bar with side cutting mechanism even in cropped terrain. This ensures that the cutter bar does not dig in. This protects the cutter bar and the service life increases. The integrated blade guard reduces damage to the outer blades caused by collisions with stones. In addition, the tip of the cutting shoe indicates the current position of the cutter bar for the operator, and which makes it easier for the single-axle appliance to be guided. The combination with other options (e.g. additional weights) is not restricted by the hole patterns in the cutting shoe.

Additional weights

Various additional weights can be attached to the cutter bar for additional ballast. The larger support weight provides greater comfort for the operator, especially when moving uphill on extreme slopes.

Fingerless cutter bars – **ESM Landscaping cutter bar** – clog-free, efficient mowing in the municipal sector

Landscaping cutter bar

Landscaping cutter bars in use

Area of use

	ESM Landscaping cutter bar
Structure and functional design	The fingerless cutter bar consists of a moving knife with a blade width of 50.9 mm and a stationary knife, also with a 50.9 mm blade width. The moving knife is guided by drive levers, which are preloaded on the knife. The knife is driven by the oscillating lever of the cutter head via the screwed-on driving fork. Due to the blade widths, a symmetrical cut results, in which the entire width is cut at the same time.
Features and areas of application	Landscaping cutter bars are, as the name suggests, mainly used for landscaping municipal green areas (meadows, embankments, roadsides, etc.). Although the cut is less accurate, there is a very low risk of blockage. This cutter bar also works on overgrown green areas, with foreign objects in the crop or in the case of semi-rotted residues after mowing in the previous year, with a low risk of damage.
The keys to success	• Low risk of blockage • Insensitive to cutting material residues or semi-rotted organic matter • Insensitive to foreign bodies in the crop • The system is easy-to-maintain thanks to swiftly removable knife
Biodiversity	In principle, a greater species diversity is recorded in areas that receive little fertiliser compared to heavily fertilised soils. Oscillating mowing technology – in particular fingerless cutter bars – is gaining in importance due to the increasing awareness of biodiversity and a trend toward regulations and programmes that call for mowing and then removing the cut material, rather than mulching, even in municipal green areas.

Cutter bar vs. brush cutter: *Compared to a brush cutter, using a landscaping cutter bar on the single-axle walk-behind tractor offers advantages in terms of efficiency, fuel requirements, environmental emissions, reducing harm to small animals, the danger area and the influence on the operator.*

Knife change

With the help of a special spanner, the knife can be removed quickly and easily by lifting and swivelling the drive levers and a replacement knife can be inserted.

Working widths

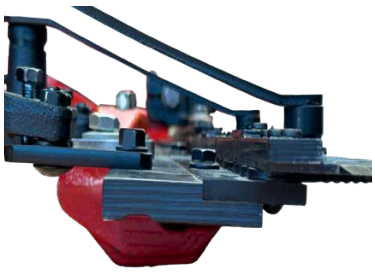
The working widths of landscaping cutter bars range from 102 cm to 203 cm.

Special wrench for removing the blades from the ESM landscaping cutter bar

Landscaping cutter bar (ESM) – **Options**

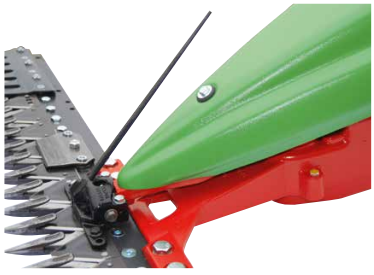
Slip heel, infinitely adjustable up to approx. 8 cm

Skid weights



Clamp sole

Edge protection



Grass separation rod

Cutting height

The cutting height is also an issue that is gaining importance in applications with the landscaping cutter bar outside grassland management. In addition to the longer service life, the focus is certainly on the composition of the crops, especially on increasingly popular and mandatory flower strips, flower meadows, biodiversity areas, etc. With the optional slip heel, the cutting height can be adjusted continuously up to 8 cm. A higher cut favours crop diversity. On these open spaces, the cutting pattern usually plays a similarly minor role as does the question of a clean pick-up and contamination of the cut material.

Grass separation rod

The grass separator rod is mounted on the driving fork at the interface between the cutter bar and the cutter head. It assists with the separation of cut material, the flow of material on the spreader hood and reduces the risk of blockages. The effect and suitability are highly dependent on the meadow, the composition of the grassland crop and other environmental influences.

Skid weights

On the one hand, the skid weights offer more comfort for the operator by increasing the support weight on the cutter bar. On the other hand, the cutter bar is guided at a higher level. The skid weights have the characteristics of a non-adjustable slip heel.

Edge protection

The edge protection is mounted on the existing hole pattern and prevents damage to the outer blades. The special contour minimises the risk of cut material piling up.

Fingerless cutter bars – **Dual cutter bar (ESM)** – versatile application for clog-free mowing

Dual cutter bar

Drive levers for upper and lower knives

	Dual cutter bar
Structure and functional design	The fingerless dual cutter bar is based on the «Busatis» system, or the «DM-Bidux model» from ESM. It consists of a moving upper knife and a moving lower knife, each with a blade width of 70 mm. The lower knife is inserted into the drive levers that guide the knife. Drive levers that guide the knife are preloaded on the top knife. The knives are driven by the cutter head oscillating levers. The same blade widths on the top and bottom knives result in a symmetrical cut, as the entire width is cut at the same time.
Features and areas of application	Although dual cutter bars are used in agriculture, they are mostly employed in the municipal sector. In particular, using them on public green area requires a low risk of blockage, with less focus on the exact cutting pattern.
The keys to success	• Low risk of blockage • Insensitive to cutting material residues or semi-rotted organic matter

Working widths

The working widths of dual cutter bars range from 132 cm to 204 cm.

Dual cutter bar (ESM) – **Options**

Skid weights and slip heels, infinitely adjustable up to approx. 8 cm

Skid shoe, non-adjustable, stubble height approx. 6 cm

DMB separating bar

Cutting height

The cutting height is also an issue that is gaining importance in applications with the dual cutter bar. In addition to the longer service life, the focus is certainly on the composition of the crops, especially on increasingly popular and mandatory flower strips, flower meadows, biodiversity areas, etc. in municipal use. With the optional slip heel, the cutting height can be adjusted continuously up to 8 cm. A higher cut favours crop diversity. The double knives are also used in grassland management where the larger cutting heights are in demand.

ESM skid shoes

The skid shoes guide the cutter bar at a higher level, the skid shoes have the characteristics of a non-adjustable slip heel. They can be mounted on the cutter bar back between or under the guide arms. In addition, the rounded construction of the slip heel offers advantages when mowing out and back, and prevents getting stuck on the terrain or cut material piling up.

Edge protection

The edge protection is mounted on the existing hole pattern and prevents damage to the outer blades. The special contour minimises the risk of cut material piling up.

Skid weights

On the one hand, the skid weights offer more comfort for the operator by increasing the support weight on the cutter bar. On the other hand, the cutter bar is guided at a higher level, the skid weights have the characteristics of a non-adjustable slip heel.

DMB separating bar

The DMB separating bar (dual cutter bar) is mounted on the driving fork of the upper knife at the interface between the cutter bar and the cutter head. It assists with the separation of cut material, the flow of material on the spreader hood and reduces the risk of blockages.

The effect and suitability are highly dependent on the meadow, the composition of the grassland crop and other environmental influences.

Portal mowing units – **Broad gauge mower**

Clogging-free mowing thanks to dual cutter bar (ESM) and optimum deposition of the cut material thanks to the side drive

Broad gauge mower, Bidux system

Drive situation

	Broad gauge mower
Structure and functional design	The portal mowing units differ in their structure from the cutter bars with cutter head (centre drive). The cutter bar is installed in a portal frame and is driven by laterally arranged oscillating levers (side drive). The fingerless cutter bar is based on the «Busatis» system, or the «DM-Bidux model» from ESM. It consists of a moving upper knife and a moving lower knife, each with a blade width of 70 mm. The lower knife is inserted into the drive levers that guide the knife. Drive levers that guide the knife are preloaded on the top knife. The same blade widths on the top and bottom knives result in a symmetrical cut, with the entire width being cut at the same time.
Features and areas of application	Comfortable travelling is possible, even on uneven surfaces, since there is little risk of clogging even when moving over areas that have already been mown. Short drying times thanks to the favourable and regular deposition of the cuttings over a wide-area across the entire width of the mowing unit due to the slim side drives. Low forage contamination due to deposition over a wide area and favourable conditions for subsequent work steps.
The keys to success	• High area capacity • No clogging, even when running over already mown surfaces • Optimum, unhindered and wide cut deposition of the cut material over the entire width • Shorter drying times

Working widths

The working widths of the broad gauge mower range from 160 cm to 260 cm.

Broad gauge mower – **Options**

Skid shoe, non-adjustable, stubble height approx. 6 cm

Additional weights

Transport rollers

Cutting height

The cutting height is also an issue that is gaining importance in applications with the dual cutter bar. In addition to the longer service life, the focus is certainly on the composition of the crops, especially on increasingly demanded and mandatory flower strips, flower meadows, biodiversity areas, etc. in municipal use. The cutting height can be increased with the optional skid shoe. A higher cut favours crop diversity. The double knives are also used in grassland management where the larger cutting heights are also in demand.

ESM skid shoes

The skid shoes cause the cutter bar to be guided at a higher lever. The skid shoes have the characteristics of a non-adjustable slip heel and can be mounted on the cutter bar back between or under the guide arms. In addition, the rounded construction of the slip heel offers advantages when mowing out and back, and prevents getting stuck on the terrain or cut material piling up.

Additional weights

Additional weights can be attached to the broad gauge mower frame for additional ballasting of the portal mowing unit. The larger support weight provides greater comfort for the operator, especially when moving uphill on extreme slopes.

Transport rollers

With the easily connectable transport rollers, the attached broad gauge mower can be moved and manoeuvred effectively on a paved surface without the need for great effort to be expended, or the risk of damage.

Rapid

Cutter bars

Overview of types and compatibility

WALK-BEHIND TRACTOR MODEL	REX	MONDO M091	MONDO M141	KIPOS M141	URI E041	SWISS	MONTA M141	MONTA S141	MONTA M161	MONTA S161	MONTA M231	MONTA S231	VAREA M141	VAREA S141	VAREA M161	VAREA S161	VAREA M231	VAREA S231	ORBITO
Attachment name																			
Middle cut sickle bar 130 cm, Finger spacing 2" / 50,8 mm *1	•	•	•	-	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Middle cut sickle bar 145 cm, Finger spacing 2" / 50,8 mm *1	•	•	•	-	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Middle cut sickle bar 160 cm, Finger spacing 2" / 50,8 mm *1	•	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Middle cut sickle bar 190 cm, Finger spacing 2" / 50,8 mm *1	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-
Middle cut sickle bar 220 cm, Finger spacing 2" / 50,8 mm *1	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Middle cut sickle bar 250 cm, Finger spacing 2" / 50,8 mm *2	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Middle cut sickle bar 280 cm, Finger spacing 2" / 50,8 mm *2	-	-	-	-	-	-	-	-	•	•	•	•	-	-	•	•	•	•	•
Middle cut sickle bar 310 cm, Finger spacing 2" / 50,8 mm *2	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	-	•	•	•
Normal cut sickle bar 130 cm, Finger spacing 3" / 76,2 mm *1	•	-	-	-	-	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Normal cut sickle bar 145 cm, Finger spacing 3" / 76,2 mm *1	•	-	-	-	-	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Normal cut sickle bar 160 cm, Finger spacing 3" / 76,2 mm *1	•	-	-	-	-	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Normal cut sickle bar 190 cm, Finger spacing 3" / 76,2 mm *1	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-
Normal cut sickle bar 220 cm, Finger spacing 3" / 76,2 mm *1	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Normal cut sickle bar 250 cm, Finger spacing 3" / 76,2 mm *2	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Normal cut sickle bar 280 cm, Finger spacing 3" / 76,2 mm *2	-	-	-	-	-	-	-	-	•	•	•	•	-	-	•	•	•	•	•
Normal cut sickle bar 310 cm, Finger spacing 3" / 76,2 mm *2	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	-	•	•	•
Diamant cut sickle bars of various widths *3																			
Ruby cut sickle bars 174, 197, 244 cm *3																			
Rubin cut sickle bar 160 cm, Finger spacing 58 mm *2	•	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-
Rubin cut sickle bar 190 cm, Finger spacing 58 mm *1	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-
Rubin cut sickle bar 220 cm, Finger spacing 58 mm *2	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Rubin cut sickle bar 250 cm, Finger spacing 58 mm *2	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Rubin cut sickle bar 280 cm, Finger spacing 58 mm *2	-	-	-	-	-	-	-	-	•	•	•	•	-	-	•	•	•	•	•
Rubin cut sickle bar 310 cm, Finger spacing 58 mm *2	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-	-	•	•	•
Landscaping cutter bar 102 cm, no fingers, no clogging	•	•	•	-	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-
Landscaping cutter bar 122 cm, no fingers, no clogging	•	•	•	-	•	•	•	•	•	•	•	•	-	-	-	-	•	•	-
Landscaping cutter bar 142 cm, no fingers, no clogging	•	•	•	•	•	•	•	•	•	•	•	•	-	-	-	-	•	•	-
Landscaping cutter bar 162 cm, no fingers, no clogging	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Landscaping cutter bar 203 cm, no fingers, no clogging	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Dual cutter bars 132 cm, Bidux system, incl. skid weights	-	•	•	-	•	•	•	•	•	•	•	•	-	-	-	-	-	-	-
Dual cutter bars 146 cm, Bidux system, incl. skid weights	-	•	•	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	-
Dual cutter bars 181 cm, Bidux system, incl. skid weights	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Dual cutter bars 204 cm, Bidux system, incl. skid weights	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	-
Broad gauge mower 160 cm, Bidux system	-	-	-	-	-	-	•	•	•	•	•	•	-	-	-	-	-	-	-
Broad gauge mower 200 cm, Bidux system	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Broad gauge mower 230 cm, Bidux system	-	-	-	-	-	-	-	-	•	•	•	•	-	-	•	•	•	•	•
Broad gauge mower 260 cm, Bidux system	-	-	-	-	-	-	-	-	•	•	•	•	-	-	-	-	•	•	•

*1 with outer shoe or side cutting mechanism *2 with side cutting mechanism