



PARTNER K650/K700 ACTIVE III

The Partner K650 Active III and K700 Active III, along with their predecessors, are the most well-established models in the Partner range. They both belong to the medium-size segment and they are ideal for all normal cutting jobs.

The Partner K650 Active III is designed for 300 mm (12) cutting discs, while the K700 Active III is intended for 350 mm (14) cutting discs.

The Partner K650 Active III and K700 Active III are the result of development spanning several model generations. Both machines share the same basic design, while several features place these two models in a class of their own:

- Highest power in this weight class.
- Ergonomic design to ensure that the machine is comfortable and simple to use, and at the same time safe in everyday operation.
- Operating reliability, long service life and minimum service requirements, all of which are crucial to good cutting economy.
- The unique filter system cleans the intake air efficiently utilising three different filtration principles, thus promoting long service intervals.
- The carburettors in the Active III are of an entirely new design. The SmartCarb™ carburettor maintains a constant blend of air and fuel irrespective of the condition of the air filters. As a result, the machine's performance is virtually unaffected by dirty filters. Unchanged power output between services and lower emissions are two of the benefits of the new carburettor.
- The starter is of an all-new design. The Dura Starter is sealed from dust and features grease lubrication. The pulley is spring-loaded and is thus not subject to vibration induced wear.
- The petrol tank has a window so the operator can always see exactly how much fuel is left.
- Partner offers a range of accessories for special cutting jobs, as well as cutting blades developed specifically for hand-held cutting.

Filter System

Cutting in stone and concrete generates tiny dust particles which must be prevented from entering the engine at all costs. The design of the air filter and its maintenance are the two most important factors governing the service life of the cutter. Designing a good air filter system is a matter of balancing effective filtering with long service intervals.

The development of more efficient filters has improved air-cleaning performance, but service intervals have by tradition still been inconveniently short in power cutters. Rental firms inherit the problems caused by customers who do not carry out the necessary service during the rental period, or are faced with the cost of travelling frequently to various work-sites to carry out the necessary service.

Dust consists of extremely fine particles, generally so small that one individual dust particle cannot easily be distinguished by the naked eye but which in larger quantities can be seen as a cloud of dust. When cutting stone or concrete, the dust created generally is of the most damaging kind of particles for an engine's sliding or rotating components. Together with oil, this dust forms a perfect grinding paste which quickly wears away pistons, piston rings, cylinder walls and engine bearings if it penetrates an engine.

We generally measure dust particles in μm ($1 \mu\text{m} = 0.001 \text{ mm}$), thousandths of a millimetre, and the particle sizes which are dealt with by the filter system generally measure between $50 \mu\text{m}$ and $5 \mu\text{m}$. (It takes roughly 2 minutes for a stone particle measuring $10 \mu\text{m}$ to fall 1 m in wind-still conditions.)

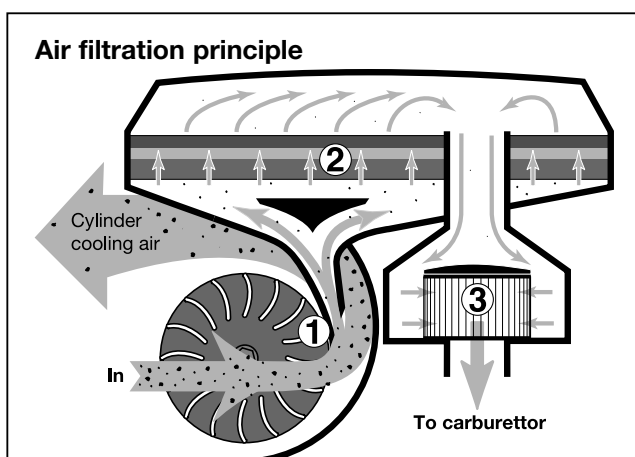
One physical characteristic which is vital to the function of the Partner Active Air Filtration system is the behaviour of dust particles in air currents depending on particle size.

A small particle is more easily affected by a current of air than a larger particle.

The reason for this is that small particles have a larger surface in relation to their mass. Therefore a small particle can be steered or guided more easily by a current of air while a larger particle succumbs to centrifugal force or the force of gravity.

Partner Active Air Filtration is a filter system which effectively cleans the air entering the engine in three separate stages, utilising three different cleaning principles.

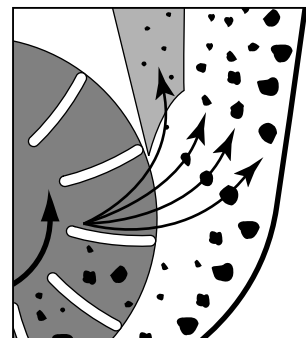
The most immediate practical benefit of Active Air Filtration is that the service intervals are far longer compared to previous systems.



1. **Centrifugal force** is the first stage in cleaning the intake air of the K650/K700 Active II. Centrifugal cleaning was previously only used on larger engines in dusty environments, for example for construction machines (cyclone air filter).

The fan vanes on the fly-wheel supply the cylinder with cool air at the same time as they act as the active part of the centrifugal filtering system for the engine's intake air.

The intake nozzle is fitted just beside the flywheel vanes. Under centrifugal force, the larger particles will not follow the curved current of air to blue nozzle but are instead thrown against the outside of the nozzle. Only very small dust particles will be able to follow the current of air leading into the blue intake. Tests show that more than 80% of all dust is siphoned off by the centrifugal cleaning process.

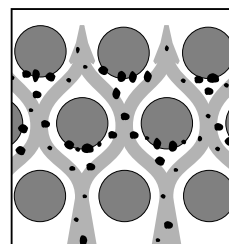
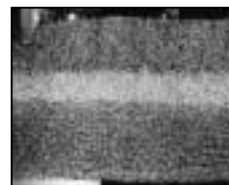
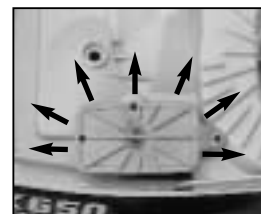


2. **The foam filter** is the next stage of separation in the filtration process. This filter covers the housing's entire surface, thus offering a filter surface of no less than 200 cm^2 . An air deflector guides and distributes the air across the entire filter surface, so the whole filter is more efficiently utilised at a regular rate.

The filter is soaked in oil and is made up of three layers, each intended for a different pore size.

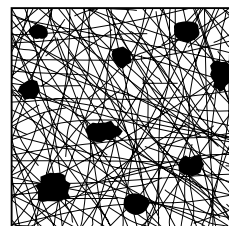
Inside the filter, the air flows through a structure pretty much like a labyrinth. Dust particles which strike against the filter sides do not bounce off but instead fasten to the sticky oily surface. A dry foam filter offers far less efficient cleaning performance than an oil-soaked filter.

An oiled foam filter is by far the most effective filter for cleaning of stone dust, since the entire filter volume is used as a "dust trap", not just the surface. The total dust-absorbing filter area is accordingly enormous. The foam filter absorbs about 95% of the total dust volume remaining after centrifugal filtering. It can be washed clean and must be oiled at each service.



3. **The paper filter** deals with the small amount of dust particles which, more by chance than anything else, may manage to slip through the foam filter. Only a tiny amount of extremely small dust particles will ever get as far as the paper filter. The filter's dense network of cellulose fibres traps all incoming particles.

The paper filter also serves as a protective barrier during filter services. The paper filter should be changed twice a year or more frequently when used in severe conditions.



Carburettor

SmartCarb™ – carburettor with integrated filter compensation

The new carburettor in the K650/K700 Active III compensates for pressure differentials between the outside air and the pressure inside the carburettor inlet after the air has passed through the filter system. This means that the machine always operates with the correct air/fuel mixture, virtually irrespective of how soiled the filters are.

This design results in:

- high and more uniform engine power
- better filter economy
- lower fuel consumption
- lower emissions

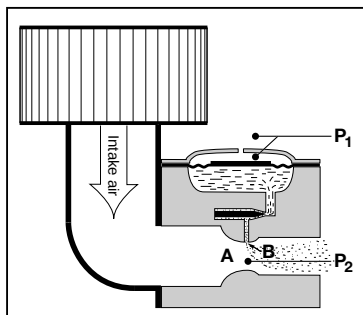


Carburettor operating principle

To understand the way in which the SmartCarb™ carburettor operates, we will first describe how a conventional carburettor works.

The carburettor's main job is to supply the right mixture of fuel and air to the engine. Every carburettor has a Venturi tube (A), in which the high speed jet (B) for petrol supply is fitted. When the engine sucks in air through the carburettor, the fuel is sucked down into the Venturi tube and mixed with the air.

A more detailed explanation is that *when the air flows through the Venturi tube, air velocity increases, thus causing pressure to drop in the Venturi* (the Bernoulli theorem). The pressure differential between the carburettor's fuel chamber (P_1) which operates under constant air pressure (atmospheric pressure), and the Venturi tube's negative pressure (P_2), causes the fuel to flow out through the jet.

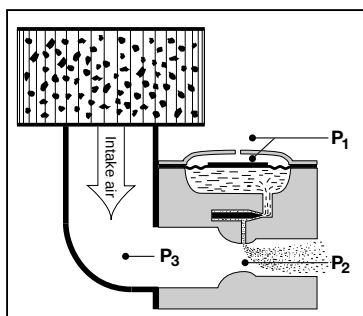


Dirty filters

One problem with the conventional carburettor is that the air/fuel ratio gradually changes as the filters become increasingly blocked with dirt.

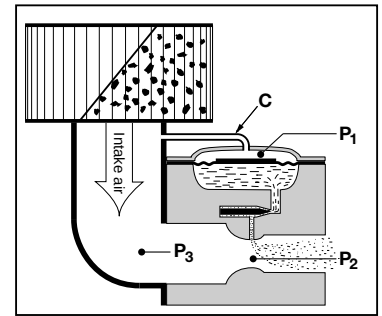
Dirty filters increase air resistance and promote a drop at (P_3) which is added to the pressure drop in the venturi (P_2), so that the pressure differential compared with the carburettor's fuel chamber (P_1) increases. As a result, the carburettor enriches the mixture, supplying more fuel in relation to air, which in turn impairs the engine's performance.

One way of compensating for dirty filters is naturally to reduce the amount of fuel being supplied by adjusting the high-speed needle in the carburettor.

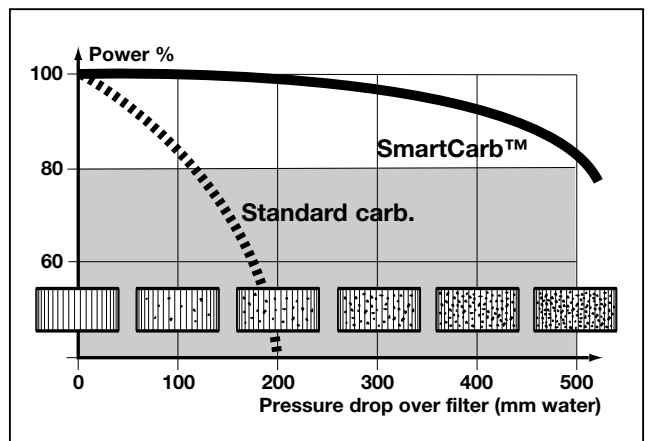


SmartCarb™

The SmartCarb™ filter-compensating carburettor has an air duct (C) which links the carburettor's fuel chamber directly to the filter chamber. The fuel chamber has no link to the air outside the machine.



This air duct ensures that the air pressure in the fuel chamber (P_1) and the filter chamber (P_3) remains equal at all times. Only the pressure drop created by the venturi tube (P_2) determines the amount of fuel which is to be mixed with the intake air. Therefore, irrespective of whether the filter system is clean or dirty, the relationship between air and fuel will remain constant at all times.



The above diagram (showing a laboratory test) demonstrates the considerable effect of SmartCarb™ on engine power. Air pressure is measured at the carburettor's inlet and the figure 0 is set for brand-new filters and with the engine running at normal speed. As the filters accumulate dirt, the pressure drops owing to the increased build-up of air resistance.

At a pressure drop of just 100 mm Vp, the standard carburettor provides such a rich fuel/air mixture that the filters must be replaced or the H-needle has to be adjusted. The SmartCarb™ carburettor offers excellent engine performance all the way to 500 mmVp.

With the standard carburettor, the engine loses power mainly because it is having to work with the wrong air/fuel ratio, while the power drop with the SmartCarb™ – which only becomes apparent once the filters are severely polluted – stems from the fact that the engine receives less air and fuel owing to the air resistance caused by the blocked filters.

In practical terms, the pressure drop in the diagram can be translated into corresponding operation times, where we can see that the SmartCarb™ engine offers many times the standard operating duration between filter service!

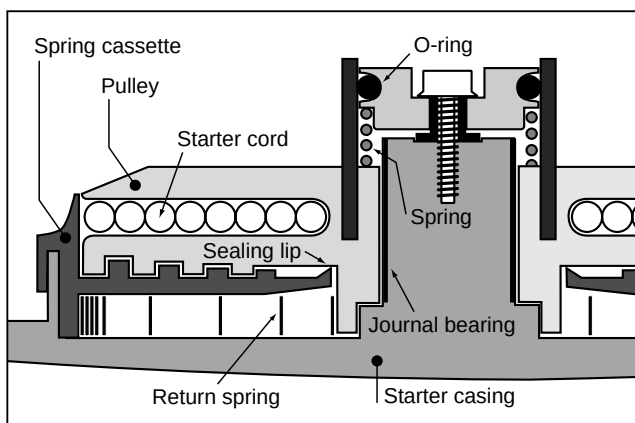
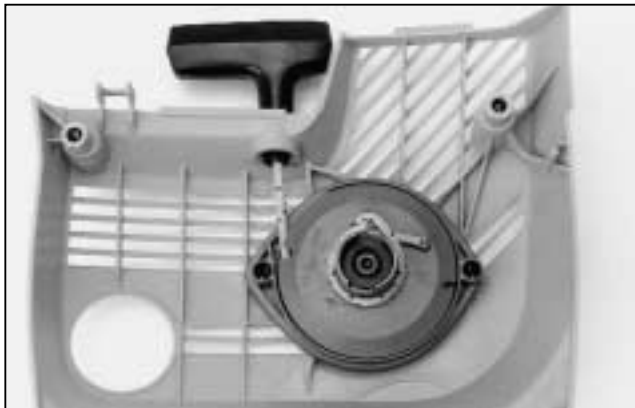
Long Service intervals

The effect of the filter's gradual dirt accumulation is very different with the SmartCarb™ compared to a conventional carburettor. Together with the efficient filter system, the SmartCarb™ drastically reduces service requirements and thus also running costs.

Starter unit

The Dura Starter is a new patent-pending starter unit designed specifically for the dusty operating conditions in which power cutters are used.

In conventional designs, the pulley is in constant motion caused by vibration, so it is impossible to seal. This allows stone dust to enter the starter unit. Vibration and dust work together to create an unintended but extremely effective grinding operation.



Dura Starter – new dust-excluding design

The principle of the new starter unit is that the pulley is protected from vibration-induced movement. This makes it possible to fit a series of seals to protect the grease lubricated return spring and journal bearing.

The spring above the pulley exerts a tensioning force against the centre screw and acts as a brake on vibration-induced movement. An O-ring above the spring prevents dust from penetrating into the pulley's bush. The spacer sleeve around the centre screw is the pulley's upper bearing point and the entire pulley is journaled in a slider bearing against the starter casing's bearing pin.

The space between the pulley and the spring cassette is shaped like a circular labyrinth, which prevents dust from moving towards the centre. The spring cassette is sealed against the centre with a spring-loaded sealing lip lying against the pulley, which prevents dust from reaching the greased bearing pin. The bottom of the spring cassette is thin-walled towards the centre and has a spring action in itself, ensuring that the sealing lip mates with the pulley at the appropriate contact pressure.



Cylinder/piston



The Partner K650 Active III and K700 Active III have a specially developed air-cooled two-stroke 71 cc engine which is lubricated with two-stroke oil mixed with petrol. The cylinder bore is nickel plated with silicon-carbide inclusions. The piston has two piston rings, and the small end is a needle roller bearing.

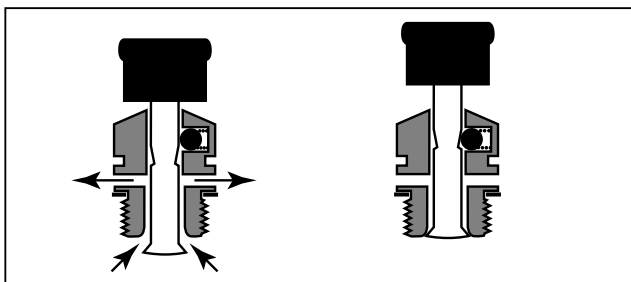
The cylinder and piston are manufactured in a way which ensures ideal dimensions during operation. The piston is profile-turned and the cylinder is honed for the temperature – and the accompanying material thermal expansion – which each part of the cylinder and piston experience during operation. For example, the piston, when seen from the side, has a somewhat barrel-shaped profile, while the view from above reveals a slightly asymmetrical oval shape.

The purpose of this design is to compensate for thermal expansion and to minimise friction losses. This production method is both complex and expensive.

Decompression valve

A high-compression 71 cc engine, as on the K650/K700 Active III, offers relatively high resistance at the starter cord. The decompression valve solves this problem in a simple and efficient way.

When starting the machine, the valve is first opened by pressing the button. When the operator pulls the starter cord, most of the compression pressure exits through the valve and the starter cord's movement is both gentle and even. As soon as combustion takes place in the cylinder, the valve is shut automatically by the combustion pressure and the engine operates normally. The 'Decompression Valve' is positioned in the top of the cylinder wall so that when the piston is at TDC, the decompression valve lines up between the two piston rings, therefore the upper piston ring shields the decompression valve from carbon.



Silencer

The silencer is of the single-chamber type and the exhaust gases are directed downwards. The shield between the cylinder and silencer cools the exhaust port.

Most of the sound from the machine comes from the escaping exhaust gases. The air filter system acts as an effective intake damper and goes a long way to reducing sound pressure since the intake air is not drawn from above the engine. Sound levels are measured according to the CE norm in two ways:

- Sound pressure, measured at the operator's ear.
- Sound level, the mean value of the acoustic power which the machine generates, measured at twelve points around the machine on a reflective flooring material (concrete). These measurements are taken at idling speed and maximum speed.

See the technical specifications on page 11.



Clutch

The clutch located between the engine and the cutter is of the centrifugal type. At idling speed, the clutch shoes are held against the centre by springs. This means that the cutter disc is at a standstill when the machine runs at idling speed. As the engine increases speed, the springs



can no longer hold the shoes in place, and the shoes are pushed against the clutch drum by centrifugal force. Engagement speed is about 3400 rpm. At normal operating speed, centrifugal force is so high that a sudden overload on the cutter disc will cause the belt to slip against the pulley.

Self-lubricating clutch bearing

The clutch bearing on the K650 and K700 Active III is lubricated automatically by the engine's two stroke oil mixture - a tried and tested Partner speciality. A duct in the crankshaft opens out at the clutch bearing. The pressure which is created in the crankcase by the downward motion of the piston is transferred to the clutch bearing keeping the bearing clear of incoming dust particles and supplying a small quantity of oil at the same time.

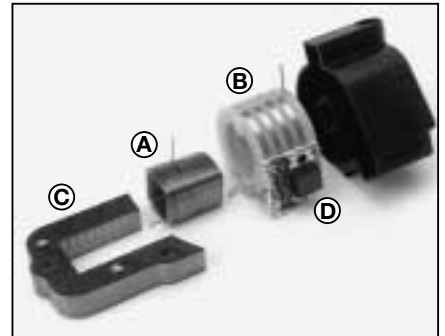


Ignition system

The ignition system is completely sealed and has no moving parts. It is insensitive to moisture and dirt. It is designed so that the ignition point never needs to be adjusted.

The Partner K650 and K700 Active III features a built-in governor in its electronic module, which limits engine speed to 9750 rpm.

The ignition system consists of the primary coil (A) and the secondary coil (B), both of which surround the iron core (C).



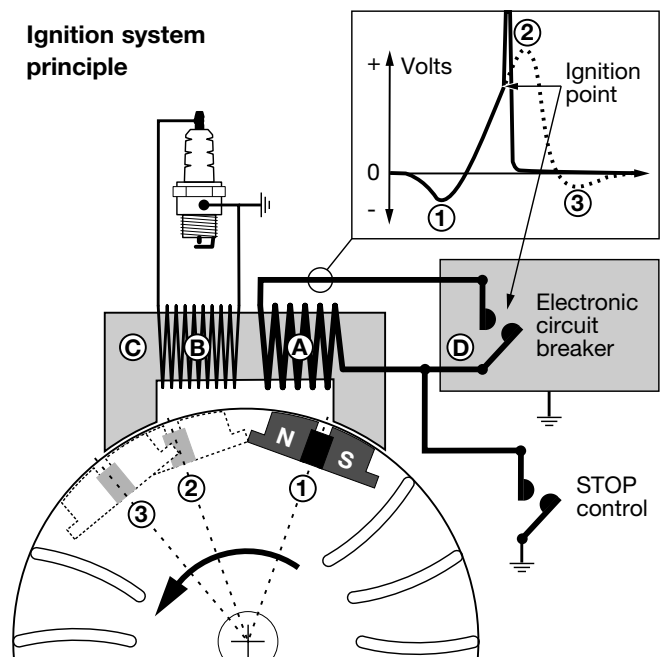
A transistorised electronic module (D) deals with the contact-breaking function.

Current is generated in the primary coil when the fly-wheel's permanent magnet passes the coil and produces the voltage sequence shown in the diagram below. (The dotted line shows the voltage which is generated if the current is not broken.)

The ignition point is determined by the electronic module which senses variations in voltage in the primary coil and cuts the current at the right level, at the same time as the piston is just below top dead centre. At the instant that the contact is broken, voltage in the primary coil rises from 5 V (volts) to about 200 V through a process of induction.

In the secondary coil, a high tension of about 20,000 volts is conveyed to the spark plug.

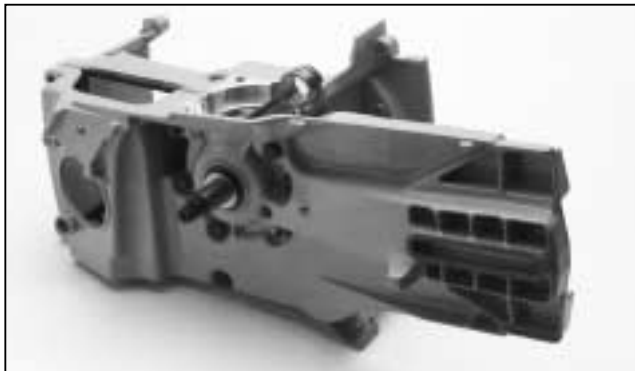
Ignition system principle



Machine body

The machine body is cast in magnesium alloy, a material renowned for its high strength and low weight. The block is split according to traditional construction methods into two crankcase halves.

Minimum weight combined with stringent demands on strength and durability are basic requirements for cutting machine bodies. The cutting machine is subjected to immense vibration in normal operation, so innumerable fatigue tests are carried out both in the laboratory and in field conditions to discover any faults or weaknesses in the casting. The machine body of the K650/K700 Active III is a tried and tested unit which builds further on the development experience gained from previous models.



Ergonomic design

The K650 and K700 Active III are noted for the clean, slim lines of their engine bodies – all so the operator can work as conveniently and ergonomically as possible.

In normal cutting operations, the machine is moved straight back and forth in the cutting groove, and the operator is close to the machine – in some jobs even maintaining direct bodily contact with the machine. Protruding parts on the machine body may easily force it off its intended cutting line if the machine comes into contact with the operator or an adjacent object. This is naturally a source of irritation and may even constitute a safety hazard.

So Partner power cutters owe their clean lines to functional requirements – with the added bonus of an attractive appearance.



Slim machine body

Both the K650 Active III and the K700 Active III feature a machine body with a particularly slim profile. This property is of utmost importance to operating comfort and for carrying the machine. A slim machine has its centre of gravity closer to the operator. Carrying an object at some distance away from the body is both uncomfortable and demanding.

Surface treatment

The machine body is powder-painted, which means that no solvents are used. Powder paint is sprayed onto the machine body, which is electrostatically charged, to produce a uniform coating which penetrates everywhere. The parts are then baked in an oven and the powder paint melts to form a thick surface layer which is durable and resistant to mechanical wear.

Crankcase bearing

The crankcase has sturdily dimensioned ball-bearings. These are lubricated by the two-stroke oil mixed in the fuel. The crankshaft's sealing rings can be replaced from outside the machine without the need to split the crankcases.

Crankshaft/connecting rod

The crankshaft and connecting rod are forged and case-hardened to ensure top strength and durability. The connecting rod has needle bearings on the crankshaft.



Fuel tank

A separate plastic tank is integrated into the machine body, thus minimising heat transfer from the crankcase. The fuel tank volume is 0.7 l and it is sufficient for about 40 minutes of operation.

The fuel tank has a window so the operator can keep an eye on the fuel level.

The fuel pick-up filter, always remains at the bottom of the tank so the Power Cutter can receive a supply of fuel irrespective of the angle of operation.

The filter design is new. It is made of sintered polyethylene plastic which filters out the smallest particles. Its high filtration efficiency reduces wear on the carburettor's moving parts. The filter surface is smooth and repels dirt. The filter-replacement interval has thus been increased several times over.



Refuelling

The Partner designers have chosen to position the fuel filler in line with the machine body so as to avoid protrusions which may get in the way during cutting operations.

In order to avoid spillage for environmental and safety reasons while refuelling, we recommend the type of fuel can which features an overfill valve.



Handle system

Ergonomics have top priority in the design of every Partner power cutter. In practical terms, this means the machine must be comfortable and safe to use. A well-built tool will not tire or burden its operator. More work gets done and the risk of injuries are minimised, both in the long and the short term.

The distance between the handles is important for overall ergonomics. A short gap means the operator must use greater force to advance and hold the machine on course. If the distance is too great, the machine is difficult to control.

The ideal distance as on the K650/K700 Active III corresponds closely to the shoulder width of the user.



Handle grips in line with the cutter disc

A design in which the line of grip on the front and rear handles is aligned with the cutter disc, gives the best conditions for safe and efficient cutting. The cutter disc is automatically pressed straight down into the cutting groove, and the cut is straight. Crooked cutting grooves waste power and impose extra wear on the cutter's frame and segment.



Horizontal cutting is more difficult compared to the more common vertical cutting.

In vertical cutting, most of the machine's weight is exerted on the object being cut and the feed pressure is applied on the front handle. In horizontal cutting, however, the operator has to support the machine. The front handle's forward-positioned grip in the horizontal position shifts the weight to the rear handle, thus creating better balance. The operator can easily and comfortably provide feed pressure with his body against the air filter housing, with the support of the handle arch.



Vibration suppression

In prolonged use, vibrating handles cause injuries to the blood vessels in the hands (TVD, often termed "white fingers"). In brief use, vibration results in impaired sensitivity and muscle strength in the hands which, apart from the discomfort, also heightens the risk of accidents.

Suppressing vibration in the handle system is something of a designer's balancing act. A firm handle system would, in theory, provide perfect contact and control of the machine, if we disregard the harmful effects of vibration. Maximum vibration suppression, on the other hand, would permit considerable movement between handle and machine which would result in poor control over the machine during cutting.

A good vibration suppression system thus always aims to strike a balance between minimum vibration and maximum control.

The K650/K700 Active III have damper elements placed as far apart from each other as possible, one at each end of the handle arch and one in the middle. This optimises the machine's geometry. The entire handle system is built as a single unit, so the operator is subjected to minimum vibration under all working conditions.



The damper elements are made of rubber, or a combination of rubber and metal springs. In the event of overloading, movement is limited by the dampers' construction, which prevents the handle from separating from the machine body if a rubber damper should break. The safety pin in the rear handle, for instance, fills this function.



Safe starting position

The rear handle on Partner power cutters is designed to accommodate a large boot, ideal for locking the machine in a safe starting position.



Controls

The basic principle behind the controls needed while the machine is running is that the operator should not need to release his grip on the handle. Therefore, all the controls are gathered together on the rear handle – for both safe and comfortable operation.

The size and the shape of the controls make them easy to operate with thick gloves on – gloves should always be used for cutting operations.

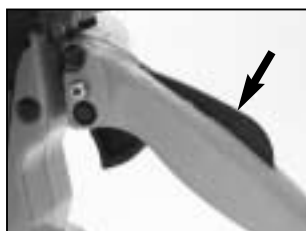
Throttle control

The throttle control has been thoroughly tested. The spring-loaded counter-balance, its stroke, design and precise positioning are all optimised for best “finger-tip comfort”.



Throttle trigger lockout

The throttle control is blocked in the idling position – a safety device to prevent accidental acceleration. The throttle trigger lockout, on the upper face of the handle, is released when the driver grasps the handle.



Starting throttle catch

The throttle control can be locked in a partially open setting which ensures the correct throttle opening for starting, with either a cold or warm engine. As soon as the throttle control is pressed, the catch is released.



Choke

On the K650/K700 Active III, the choke control is pulled outwards, a more easily noticeable indication that the choke is engaged. The choke control does not act on the throttle shutter; instead, the partial-throttle setting is governed by the starting throttle catch during start-up.



Stop control

The stop control cuts the ignition sequence when pushed down.



Cutting unit

Belt drive

The cutter unit on the K650/K700 Active III, as on most other Partner cutters, features one drive belt leading from a pulley on the crankshaft to the pulley on the spindle shaft. This design has the multiple advantages of simplicity, reliability and low weight.

It is also important from the safety viewpoint. If the cutter blade comes to a sudden stop, the drive belt will slip and allow the engine to come to a halt more slowly. The cutter arm is split to permit convenient belt replacement and adjustment of belt tension.

Semi-automatic belt tensioning

Opinions as to what is the “correct” belt tension vary from one operator to another. Partner’s semi-automatic belt tensioning system solves this problem – a standardised spring provides the correct tensioning force.

– In precisely controlled experiments in the laboratory, Partner has computed the optimum belt tension which gives the belt maximum service life allied to perfect application pressure before it slips against the pulley.



Adjustment of belt tension

Belt tension must sometimes be adjusted owing to stretching and wear of the belt. This is done quickly in three stages:

1. Undo the two screws which secure the cutter arm.
2. Turn the adjustment screw so that the square-headed nut which lies against the spring matches the reference mark on the housing. (The spring now has the correct compression rate and the belt has the correct tension.)
3. Tighten the two screws as per stage 1.

Drive belt

The drive belt in a power cutter is subjected to severe and uneven loads and sometimes also to immense load peaks. The drive belt also operates on a relatively small-diameter pulleys, particularly the crankshaft pulley, which imposes particular demands on the belt. The belt’s design is crucial to its strength and durability and to ensuring the correct degree of friction against the pulleys.

To the naked eye, the original-specification belts designed for Partner power cutters may look like any other drive belt, but they are specially designed for their specific function. The belt-tensioning rating, which is determined by the adjustment spring, is tested using genuine Partner belts.

Reversible cutter arm

The cutter arm can be reversed. This makes it possible to cut close to a wall or at floor height with the blade guard as the only limiting factor, in other words about 20 mm from the cutter disc. Naturally, some of the machine's ergonomic benefits are lost when the cutter arm is reversed, but the ability to carry out certain operations may in fact depend on this feature.



Blade guard

The blade guard is by far the machine's most important safety feature. The normal task of the blade guard is to direct cutting dust away from the operator, but it must also stand up to the effects of a malfunctioning blade. The blade guard is made of steel plate, with its thickness doubled at the periphery.

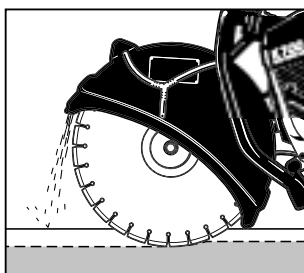
Self-adjusting blade guard

The blade guard is of a new design. Instead of fixed settings, it features a friction lock which automatically adjusts the position of the



guard to suit current operating settings.

Generally, the rear edge of the blade guard should rest on the object being cut. The effect of this is that the particles follow the path created by the guard and are ejected ahead at relatively low speed.



Wet cutting

The blade guard is equipped with Partner's wet cutting kit. The wet cutting nozzles are fitted on either side of the guard and distribute water evenly to both sides of the cutter blade.

Wet cutting virtually eliminates cutting dust and the blade is cooled at the same time, which in turn prolongs the blade's service life.

The operator can adjust the waterflow, during cutting, with the valve fitted on the front handle.

For cutting in locations without access to a water tap, water supply can be arranged using a Partner pressure tank.



Simple blade replacement

The blade guard has a generous cut-out to aid blade replacement.

This opening also gives the operator a clear view of the working surface during cutting.



Rotation-inhibited flange washers

Both the inner and the outer flange washers are locked in place against the spindle shaft so they cannot rotate. The dual connecting flanges lock the blade in place securely, even if the lock-screw is only tightened moderately. This design also prevents undesirable self-tightening. As usual, the lock screw has a right hand thread and features a permanent washer.



Replaceable blade bushing

Partner power cutters can be equipped with centre bushings to suit various standards. Replaceable centre bushings are available for diameters of 20.0 mm, 22.2 mm, 25.4 mm (1) and 30.5 mm. The Partner K650/K700 Active III are supplied as standard with different centre bushings to suit the market on which they are sold.



Cutter blades

Specification plate

All Partner power cutters are equipped with a plate on the blade guard which details all the important specifications needed for choosing cutter blades.

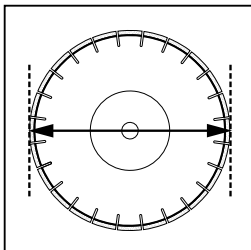
The dimensions which the operator needs to know are the following:



Blade diameter

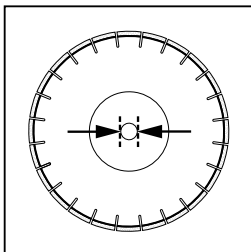
Blade diameter is specified in either mm or inches.

The Partner K650 Active III is designed to be used with cutter blades of 300 mm outer diameter, corresponding to 12", while the Partner K700 Active III is used with cutter blades measuring up to 350 mm outer diameter (14").



Centre diameter

The cutter blade's fitting holes must exactly match the bushing diameter on the spindle shaft. Various standards are available depending on the countries in which the machines are sold. The most common standards are 20.0, 22.2, 25.4 (1") and 30.5 mm. Bushings for Partner Power Cutters are available for these diameters and can be replaced.



Speed

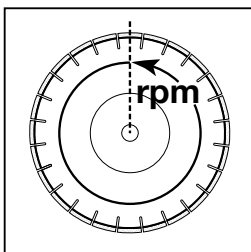
All cutter blades are marked with a speed which is usually measured in revs per minute (rpm) and which indicates the rotating speed which should not be exceeded. The blade's maximum speed is determined by the blade manufacturer.

The Power Cutters plate also indicates a speed which is determined by the machine manufacturer and which is termed the "nominal speed".

The nominal speed is the speed which is stated on the machine plate and which determines which marking the blade must have in order to be used with the machine. The cutter blade should be marked with the same or higher speed than that specified on the machine plate.

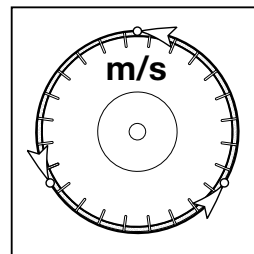
The maximum speed of the machine is a rating which does not affect the machine operator, so it is not specified on the machine but it is used, for instance, as a control parameter at the service workshops. The maximum speed is the highest permitted speed which the spindle shaft is allowed to achieve with an unloaded blade and the engine running at full throttle.

According to the European norm, the maximum speed may not exceed the nominal speed specified on the machine by more than 10%. For example, a machine with the nominal speed of 5,100 rpm should never exceed a max. speed of $5,100 \times 1.1 = 5,610$ rpm.



Peripheral speed

Peripheral speed is measured in metres per second and is directly proportional to engine speed. By definition, peripheral speed is the speed at which a given point on the blade's circumference travels through the air. It is also the speed which a given diamond segment, for instance, has in relation to its point of contact during cutting. Another way of looking at the term "peripheral speed" is to imagine a cutting machine as a moving vehicle with the cutter blade as the driven wheel. A speed of 5,100 rpm with a 300 mm cutter blade would give the following speed:



Blade circumference: $0.3 \text{ m} \times \pi = 0.94 \text{ m}$

Blade speed: $5,100 \text{ rpm} = 85 \text{ r/s}$

Circumference $\times$ speed = peripheral speed

Peripheral speed = $0.94 \text{ m} \times 85 \text{ r/s} = 80 \text{ m/s}$

Computed into a "vehicle-type situation" this gives a speed of about 290 km/h!

Partner cutter blades are made for peripheral speeds of 100 m/s. A European colour code prescribes a green colour for a maximum peripheral speed of 100 m/s, while a red colour indicates max. 80 m/s.

BLADE TYPES

Hand-held power cutters require cutting blades which are approved for use in hand-held machines – it is not permissible to fit them with blades intended for fixed-position bench-mounted machines, for example.

The speed marking must match or be higher than the figure on the machine's specification plate. Partner cutting blades are naturally intended for Hand-held cutting.

– **The diamond blade** is the blade which is becoming increasingly common for cutting concrete, stone and similar materials. The general advantage of the diamond-tipped blade is that it retains its cutting depth virtually throughout its life so cutting efficiency remains high. Used correctly, it offers excellent blade economy.

Partner diamond blades are available in several variants and are selected to suit the material to be cut. Put simply, the difference lies in the hardness of the metal which bonds the diamonds together. Diamond blades are available for both dry and wet cutting.

– **The asphalt blade** is a special variant of the diamond blade, generally equipped with a drop or hammer segment to minimize wear on the blade element.

– **Abrasive blades**, which used to be the norm for cutting all materials, are now used primarily for cutting metals. Partner abrasive blades are available for steel and concrete, the concrete blade is also very suitable for cutting softer steel types such as reinforcing rods and structural steel.

– **Partner Rescue** is a special blade with a TCT hard-metal cutter. It may only be used by specially trained personnel in emergency rescue situations.

Technical specifications

PARTNER K650 / K700 Active III

Engine

Air-cooled, 2-stroke	71 cc
Power	3.5 kW
Bore/stroke	50 mm/36 mm
Compression ratio	10:1
Idling speed	2,500 rpm
Max. speed, unloaded	9,750 rpm $\pm$ 250

Fuel

Petrol, min. 90 octane unleaded (green pump)	
Oil mixture with Partner-oil	2% (1:50)
Tank volume	0.7 l
Full tank under normal operation lasts approx.	40 min.

Carburettor

Tillotson SmartCarb™ with built-in filter compensation.

Air filter

Three filtration principles:
 1. Active centrifugal cleaning
 2. Oil-impregnated 3-layer foam filter
 3. Dry filter, folded paper insert

Ignition system

Transistorised ignition system, Electrolux type
 Spark plugs Champion, RCJ7Y or NGK, BPMR7A
 Electrode gap 0.5 mm

Clutch

Centrifugal clutch with 3 clutch shoes
 Engagement speed min. 3,100 rpm
 Automatic lubrication of clutch bearing

Transmission

Belt type V-belt
 Ratio 2:1

Cutting equipment

K650 Active III:
 Cutting blade diam. 300 mm (12)
 Nominal speed, blade spindle 5,100 rpm
 Cutting depth 100 mm

K700 Active III:
 Cutting blade diam. 350 mm (14)
 Nominal speed, blade spindle 5,400 rpm
 Cutting depth 125 mm

Noise emissions (see note 1)

Sound power level, measured 115 dB(A)
 Sound power level, guaranteed L_{WA} 116 dB(A)

Sound levels (see note 2)

Equivalent sound pressure level 100 dB(A)

Note 1: Noise emissions in the environment measured as soundpower (L_{WA}) in conformity with EC directive 2000/14/EC.

Note 2: Equivalent sound pressure level at the user's ear. Calculated as the time-weighted energy total for sound pressure levels under various working conditions with the following time distribution: 1/2 idling and 1/2 max speed. Measured according to EN 1454, dB(A) speed.

Note 3: Handle vibrations measured according to EN 1454.

Vibration levels (see note 3)

<u>K650 Active III:</u>	
Idling, front/rear handles	6.8/7.9 m/s ²
Full throttle, front/rear handles	6.1/10.1 m/s ²
<u>K700 Active III:</u>	
Idling, front/rear handles	4.9/6.6 m/s ²
Full throttle, front/rear handles	4.9/8.8 m/s ²

Weight

Without cutter blade, empty fuel tank	
K650 Active III	8.9 kg (19.6 lb)
K700 Active III	9.3 kg (20.5 lb)

Dimensions

<u>K650 Active III:</u>	
Length, without fitted cutting blade	625 mm
Max. with	220 mm
Max. height	370 mm
<u>K700 Active III:</u>	
Length, without fitted cutting blade	625 mm
Max. with	220 mm
Max. height	415 mm



The CE marking indicates that the manufacturer guarantees that the machine meets all the requirements of the EU directives, that is to say those safety standards which must be met in order for the machine to be sold within the EES block.

Spare parts

In the design of the Partner K650 Active III and K700 Active III, as with every other Partner machines, we take into consideration the potential for updating older machines with newly developed components.

This policy makes it easier for our service workshops to offer high service preparedness with generous stocks of parts, even for older Partner machines. Stock-keeping costs drop since fewer parts variants are required.

The table below lists a few examples, highlighting those Active III components which are suitable for installation in older machines.

	Active III	Active II	Active
Crankcase		●	●
Crankshaft	●	●	●
Cylinder/piston	●	●	●
Carburettor	●	●	●
Air filter	●	●	●
Ignition system	●	●	●
Flywheel, complete	●	●	●
Starter unit	●	●	●
Blade guard		●	●
Drive belt/pulley		●	●
Silencer	●	●	●
Vibration damper		●	●
Engine kit, complete		●	●

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