

Brushcutters

Cleaner emissions are high on the agenda for these entry and semi-professional models, reports **Sally Drury**

TESTED THIS WEEK

Stihl FS 87	39
Stihl FS 90	39
Efco DS3600	40
Efco Stark 25IC	40

THE REVIEW PANEL



Mike Guppy, head groundsman, Sparsholt College, Winchester



Daniel Davis, groundsman, Sparsholt College, Winchester



Justin Trotter, groundsman, Sparsholt College, Winchester

Over the past 18 months to two years

all the manufacturers of outdoor power products that use two-stroke engines have been working hard to meet the emissions targets. One of the first on the scene was the Stihl 4-MIX — an engine that combines the advantages of the two-stroke with those of four-stroke technology to deliver power, but with emissions levels well below those of the conventional two-stroke engine.

In this review we concentrate on new machines that have received the “engine makeover” treatment to find out whether you can expect power as well as cleaner emissions. But we also appreciate that many of you do not use brushcutters and trimmers all day, every day. Professional gardeners, estate workers and contractors with a garden round do not necessarily need high-powered, high-spec machines. In this review we look at entry models and semi-professional units from Stihl and Emak (Efco brand).

The test was carried out at Sparsholt College near Winchester, Hampshire. Initially, the grass was wet but conditions improved during the test.

Stihl FS 87 and FS 90

For this test, we selected the Stihl FS 87 and FS 90. They both have Stihl's famous 4-MIX engine with ElastoStart for stress-free starting. They are both 28.4cc, delivering 0.95kW of power. They have 0.53-litre fuel tanks and bike handles, weigh in at 5.8kg and are 1.8m long. And they both come with AutoCut line head and metal blade, full comfort harness and safety goggles. So what's the difference?

For starters, there's the price. The price difference may be less than £30, but as this has become a very competitive market Stihl recognises that for some users, £30 is a saving worth making and the FS 87 offers users a reasonably priced entry to 4-MIX technology.

And then there's the drive. The FS 87 has a flexible drive. It's like a speedo cable. The FS 90 has a solid drive.

But the biggest difference is the handlebars. Yes, they are both bike-type handles, but on the FS 87 they are bolted on. It's ideal for single-user operations — you adjust the handlebars and tighten four nuts. The FS 90, on the other hand, benefits from the quicker-adjusting tommy screw. It only takes a couple of turns by hand, making it ideal for multiple-user situations. It also means the handlebars can be twisted in line with the shaft for easier transport and storage.

Harnessed up and with all adjustments made, our testers put the units through their paces. We use the AutoCut nylon-line on both. Fitting a new line on the C-model bump feed is a breeze. There's no need to open the mowing head. Simply insert an end of a length of line into each of the two mounting holes and wind the line in until a loop is formed just above the head, then cut the loop and you're ready for business.

Both machines are stable for fuelling and they both start with a little choke and a gentle pull. But will our testers be able to tell them apart? The answer is “yes”.

“The solid drive gives more direct drive so when you come up against something a little tougher, the machine just takes it



Stihl FS 87: with a quiet engine, it's perfectly suited to the contractor with a garden round

SPECIFICATIONS

Model	FS 87	FS 90
Engine	4-MIX	4-MIX
Displacement	28.4cc	28.4cc
Power output	0.95kW	0.95kW
Handlebars	Bike*	Bike*
Weight	5.8kg	5.8kg
Fuel tank capacity	0.53 litres	0.53 litres
Length without cutting tool	1,800mm	1,800mm
Standard cutting tool	AutoCut + blade	AutoCut + blade
List price (ex VAT)	£319.15	£348.94

Contact Stihl on Freephone 0800 137574 quoting PRFSHW

*Loop-handled versions also available but with nylon-line head only.

in its stride,” observes Davis. “It's very nice for the operator — very comfortable and quiet. The power delivery is smooth. It's an ideal machine for tidying up after mowing operations or going through nettles and docks. And it's so much quieter than the two-stroke trimmers — it sounds a bit throaty but it's so much nicer than the two-stroke whine.”

Next he tries the FS 87. “By comparison this one seems to be lacking in power delivery — that's the the flexi-drive. I can also feel a bit of vibration — again, that will be the flexi-drive,” he says. With a £30 saving, this model seems more suited to the contractor with a garden round. And we would like to think the client would appreciate the quiet tone of the engine. ►

Efco DS3600 and Stark 25IC



Efco DS3600 : this model operates smoothly and boasts reduced noise levels and emissions

If you thought Efco machines were just for domestic use, then think again. We try two machines and Davis finds one he wants to keep. It's a four-stroke. "It goes really well — and it's so quiet."

He's right. We don't even notice that he has fired up the DS3600 until he asks: "Is it running properly? It sounds a bit asthmatic." A few revs on the engine and Davis starts to mow the grass in the orchard. And what a performer this turns out to be. This machine has grunt. There may be a very slight delay in pick-up, but it's perfectly acceptable. The machine, with its four-stroke engine, also weighs a little more than some of its two-stroke competition but Davis doesn't mind.

"I can put up with the little extra weight because the machine has power — I'm getting the job done faster," he says. He is clearly enjoying the work — and also the lack of smelly emissions.

This "Burn Right" brushcutter from Efco is accompanied by some quite remarkable statistics. In comparison with conventional two-stroke units, unburned hydrocarbons from the DS3600 are reduced by 85 per cent. Nitrous oxides are reduced by 65 per cent. That's got to be

good for the environment and the operator. But there's good news for the purse too. Savings of up to 50 per cent have been recorded on fuel consumption.

What's more, the use of a four-stroke engine means there's no need to mix up a batch of two-stroke — but you have to keep an eye on the oil level. The separate lubrication system means the engine can be positioned at any angle and it carries on running. In fact, the DS3600 can be fitted with a hedgetrimmer head to increase its versatility. The other advantage of four-stroke is, of course, reduced vibration, which Davis confirms: "I can't feel any vibration at all."

The only thing Davis would change is the harness. The clip holds the brushcutter tightly and, like Davis, you may find yourself taking your gloves off to operate it. You may want to try one of the other harnesses offered by the company — perhaps the quick-release harness.

Stark 25IC

In complete contrast, the Stark 25IC is considered to be entry-level for semi-professional or light users. It's a half-crank machine, so it's nylon-line only,

Model	Displacement (cc)	Handle	Shaft	Weight (kg)	Price from (ex VAT)	Supplier
Pro 3491	34	B	S		£254	Barrus
Pro 4391	43	B	S		£271	Barrus
Active 2.6	26	L	S	5.85	£295	Charterhouse
Active 3.5	35	L/B	S	6.05	£365	Charterhouse
Active 4.5	45	B	S	7.25	£475	Charterhouse
Active 5.5	55	B	S	7.65	£539	Charterhouse
Active Viper	34	L	S	4.7	£285	Charterhouse
Zesty Z260-L	26	L	S	5.8	£169	Charterhouse
Zesty Z330-U	33	B	S	6.7	£203	Charterhouse
VS256S-TJ27	26.3	L	S	5.9	£219	Danarm
VS256W-TJ27	26.3	B	S	5.4	£229	Danarm
AS300S(W)-TH34	33.3	L/B	S	6.5	£309	Danarm
VF350K-TH34	33.3	B	S	7.4	£359	Danarm
AS450-TH43	43.2	B	S	8.2	£359	Danarm
VF500K-TH48	48.6	B	S	8.4	£429	Danarm
VS256S(W)-TU26	25.6	L/B	S	5.4	£219	Danarm
VS400W-TL43	42.1	B	S	7.4	£359	Danarm
GT-2150SI	21.2	L	C	4.9	£209	Echo
SRM-230SL	21.2	L	S	5.6	£209	Echo
SRM-250SL/SIU	23.6	L/B	S	5.6	£299	Echo
SRM-330ESL/ESU	30.5	L/B	S	7.3	£389	Echo
SRM-360SLU	34	B	S	8	£419	Echo
SRM-4000U	42.7	B	S	10	£449	Echo
SRM-5000U	51.7	B	S	10	£469	Echo
Stark 25TR	25.4	L	C	4.5	£106	Emak UK
Stark 25IC/25	25.4	L/B	S	6.2	£153	Emak UK
Efco 8250IC/8250	25.4	L/B	S	4.6	£251	Emak UK
Efco 8300	30.5	B	S	6.5	£319	Emak UK
Efco 8400	37.7	B	S	6.5	£365	Emak UK
Efco 8550 Boss	52.5	B	S	8.5	£493	Emak UK
Solo 105L	25	L	C	4.3	£169	FGM Claymore
Solo 106L/R/BR	25	L/B	S	4.6	£211	FGM Claymore
Solo 129-L/B	29	L/B	S	5	£288	FGM Claymore
Solo 134	34	B	S	7.3	£382	FGM Claymore
Solo 142	40.7	B	S	8.3	£450	FGM Claymore
Solo 154	54.2	B	S	8.3	£475	FGM Claymore
BCL2250C-RS	22.5	L	C/S	4.4	£169	Hayter
BC250H-RS	25.4	B	S	5.4	£322	Hayter
BC420H-RS	41.5	B	S	7.8	£424	Hayter
UNS425LE	25	L	C	4.72	£220	Honda UK
UMK425LE/UE	25	L/B	S	5.2	£280	Honda UK
UMK435LE/UE	35	L/B	S	6.4	£348	Honda UK
125C	28	L	C	4.4	£145	Husqvarna
125L/R	28	L	S	4.8	£187	Husqvarna
323RJ/R	25	L/B	S	4.2	£263	Husqvarna
325RJx/Rx	25	L	S	4.5	£280	Husqvarna
235R	36	B	S	7.3	£323	Husqvarna
335Rx	35	B	S	6.3	£382	Husqvarna
240R	40	B	S	8.6	£480	Husqvarna
343R/Rx	45	B	S	8.2	£525	Husqvarna
250R	49	B	S	9.2	£670	Husqvarna
125LDx	28	L	S	4.9	£195	Husqvarna
323LD/LDx	25	L	S	4.3	£272	Husqvarna
345Fx	43	B	S	7.8	£650	Husqvarna
252Rx	51	B	S	8.9	£700	Husqvarna
265Rx	65	B	S	10.8	£800	Husqvarna
KBL23A	22.5	L	S	4.2	£295	Kawasaki

Model	Displacement (cc)	Handle	Shaft	Weight (kg)	Price from (ex VAT)	Supplier
KBL27A/KBH27A	26.3	L/B	S	4.8	£325	Kawasaki
KBL34A/KBH34A	33.3	L/B	S	6.7	£390	Kawasaki
KBH43A	43.2	B	S	7.9	£420	Kawasaki
KBL48A	48.6	B	S	7.9	£435	Kawasaki
RBC3101	30.5	B	S	5.5	£370	Makita UK
RBC420E/421L	40.2	B	S	7.3	£473	Makita UK
DBC4510	45	B	S	7.9	£638	Makita UK
RST210	21	L	C	3.8	£195	Makita UK
RBC2110	21	L	S	3.6	£240	Makita UK
RBC2510/BCX2510	24.5	L	S	4.1	£308	Makita UK
BCX3400	33.5	B	S	7.4	£390	Makita UK
Sarp VS250H	22	L	S	8	£365	Midland
Sarp VS270HC/S/T	26	L/B	S	10	£441	Midland
Sarp VS3410T	34	B	S	8	£297	Midland
Sarp VS4310T/400T	43	B	S	7	£390	Midland
Sarp VS500T	48	B	S	10	£416	Midland
Shind F220	21.1	L	C		£170	PLM Power
Shind T220/C220	21.1	L/B	S		£191	PLM Power
Shind T230/C230	22.5	L/B	S		£216	PLM Power
Shind T2510/C2510	24.5	L/B	S		£280	PLM Power
Shind T300	27.2	L	S		£272	PLM Power
Shind T3410X/C3410X	34	L/B	S		£293	PLM Power
Shind B450	41.5	B	S	7.8	£382	PLM Power
FS38	27.2	L	C	4.1	£118	Stihl
FS45	27.2	L	C	4.1	£135	Stihl
FS45C-E	27.2	L	C	4.3	£160	Stihl
FS55R	27.2	L/B	S	4.3	£217	Stihl
FS55RC-E/C-E	27.2	L/B	S	5	£238	Stihl
FS80R/FS80	25.4	L/B	S	5	£336	Stihl
FS85R/FS85	25.4	L/B	S	5	£365	Stihl
FS87R/FS87	28.4	L/B	S	5.6	£306	Stihl
FS90R/FS90	28.4	L/B	S	5.5	£336	Stihl
FS100R/FS100	31.4	L/B	S	5.4	£395	Stihl
FS130R/FS130	36.3	L/B	S	5.7	£465	Stihl
FS310	36.3	B	S	7.2	£550	Stihl
FS400K	40.2	B	S	8.1	£590	Stihl
FS400/FS400L	40.2	B	S	8	£590	Stihl
FS450/FS450K	44.3	B	S	8.1	£610	Stihl
FS480/FS450K	48.7	B	S	8.1	£690	Stihl
FS500 mowing	51.7	B	S	10	£840	Stihl
FS500 clearing	51.7	B	S	10	£840	Stihl
FS550 mowing	56.5	B	S	10	£900	Stihl
FS550 clearing	56.5	B	S	10	£900	Stihl
Camon C25	25	L	S	5.6	£275	Tracmaster
Camon C35	35	B	S	7.5	£335	Tracmaster

Key: B bike handlebars C curved shaft L loop handle S straight shaft

CONTACTS

Barrus 01869 363636 customerservices@barrus.co.uk; **Charterhouse Richmond** 01428 661222 info@charterhouserichmond.com; **Danarm Machinery** 01453 835577 info@danarm.com; **Echo Power Tools** 0870 405 5654 sales@echo-tools.com; **Emak UK** 01543 687660 info@emak.co.uk; **FGM Claymore** 01789 490177 info@fgmclaymore.co.uk; **Hayter** 01279 723444 sales@hayter.co.uk; **Honda UK** 0845 200 8000; **Husqvarna Outdoor Products** 01453 820300 info.husqvarna@husqvarna.co.uk; **Kawasaki Products** 01628 856600 customerservices@kawasaki.co.uk; **Makita UK** 01908 211678 sales@makita.co.uk; **Midland Power Machinery Distributors** 01905 763027 sales@midlandpower.co.uk; **PLM Power Products** 01884 251188 sales@plmpower.co.uk; **Stihl** 0800 137574 postmaster@stihl.co.uk; **Tracmaster** 01444 247689 info@tracmaster.co.uk

SPECIFICATIONS

Model	DS3600 4T	Stark 251C
Engine	Honda 4-stroke	Emak 2-stroke
Displacement	35.8cc	25.4cc
Power output	1.15kW	0.8kW
Handlebars	Bike	Loop
Weight	7kg	5.6kg
Fuel tank capacity	0.65 litres	0.75 litres
Standard cutting tool	Nylon line + blade	Nylon line
List price (ex VAT)	£301.25	£153.18
Contact	Emak on 01543 687660	



Stark 251C: comfortable to handle, this brushcutter offers remarkable value for money

but it does have a clutch. It's available in three versions: curved shaft with flexi-drive, straight shaft with bike handlebars or straight shaft with loop handle. Trotter puts the 251C loop-handled model through its paces.

"It's a nice little machine and very manoeuvrable," he confirms. "Very easy to use, robust, nice comfy handles and it is well balanced. It has chewed through the vegetation no problem — but look at this." He points to the cover over the air filter and presses a catch. The cover

drops open. "It's so easy to get to the air filter," he says. "The spark plug is also readily accessible, but there's nothing sticking out that might be broken off."

Vibrations have been kept low on this model by using self-lubricating bushings on the transmission shaft and ensuring the engine and grips are separate. A primer helps with starting. But just look at the price — £153.18 — how do they do it? We reckon for the occasional user this machine represents remarkable value for money. ■

Technology to keep green spaces tidy

Manufacturers have spent the past few decades developing technology and today's models are lightweight, safe and versatile. **Maureen Keepin** reports

Brushcutters have been deftly trimming around trees and lamp posts, skirting along walls and fences and tackling overgrown vegetation ever since they first appeared more than 30 years ago.

The days before their emergence, when councils and landscape contractors either cut back by hand or used the Allen scythe to snap through the undergrowth, are a distant memory.

In the same way that Budding created a mower based on a machine used in the carpet industry, so the brushcutter developed from a Japanese machine used for cutting rice.

Initially, brushcutters were only supplied with metal blades, but it's amazing what can be achieved using a drink can and a length of fishing line, attached to a drill. This crude prototype led to the development of the nylon-line brushcutter in the US by Weed Eater — which described it as "a big brute of a machine".

Crossing the pond in 1973, Allen Power Equipment introduced nylon heads — an innovation that spread to Japanese machines in 1976. Brushcutters subsequently became an even more versatile tool, and the market developed further with the introduction of a model powered by a backpack-type engine.

A highly manoeuvrable wheeled machine followed, with the cutting head positioned out in front of two bicycle-type wheels, and in 1996 Etesia introduced the first Attila ride-on version.

A dramatic rise in sales during the 1980s — resulted in the majority of machinery manufacturers supplying brushcutters, leading to the creation of a highly competitive market.

According to figures issued by the Agricultural Engineers Association (AEA), 197,000 brushcutters were sold in 2005/06 — a period-on-period increase of 4.8 per cent.



Versatile: brushcutters developed rapidly over the past 30 years and are now essential kit

The majority of these machines — nearly 96,000 — were in the 20-25cc range, with 73,000 in the 25-30cc bracket.

Handheld machines may look the same as their forebears, but that is where the similarity ends. More user-friendly, today's machines allow for longer periods of use, thanks to lower hand/arm vibration levels, a marked reduction in noise levels, two-stroke engines that no longer puff out smoke and easier starting capability.

Furthermore, despite incorporating many extra features, brushcutters are

now much lighter. By far the most popular professional type of brushcutter is the handheld version, powered by a two-stroke engine and fitted with a U-handle on a metal drive shaft, which leads down to a nylon head.

Landscape consultant Ric Counce says: "Four-stroke engines are making a comeback. They used to be unsuitable for working on gradients but huge improvements have been made. This engine is deemed more environmentally acceptable, with less oil and carbon emitted as exhaust — a point we should all be aware of."

For greater operator comfort, single-shoulder slings have been replaced by full harnesses, allowing a much greater degree of control. The double shoulder straps, padded waist, back protection and thigh pad ensure comfort during longer periods of operation.

Vital for operational safety, personal protective equipment (PPE) has also seen dramatic improvements. Crucial minimum requirements include safety boots, heavy-gauge trousers, gloves and eye and ear protection — either ear defenders and goggles or a safety helmet with built-in visor and ear protection.

Correct training on brushcutter use is crucial. The North West Horticultural Training Group, runs Lantra-approved one- and two-day training and assessment courses, covering safe use, PPE, best practice, site inspection, hazard identification, refuelling and environmental considerations. Colleges, including Essex-based Writtle, offer National Proficiency Tests Council (NPTC) training courses.

That brushcutters have continued to evolve is due in part to the introduction of new directives. Emissions legislation is changing and should fuel further growth in the market. National sales manager Clive Pentecost of Countax, distributor of Echo brushcutters, says: "The brushcutter market is not likely to get much larger but it will certainly not shrink."

Looking to the future, it is likely that the two-stroke engines fitted to brushcutters will get ever cleaner with reduced vibrations, allowing operators to work safely for longer periods.

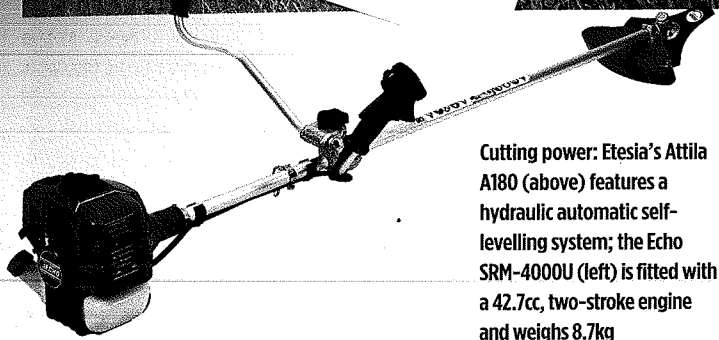
"The first thing local authorities ask is, 'What are your HAVs [hand/arm vibrations] ratings?', and they now want it confirmed in writing," says Pentecost. "Some companies claimed lower vibrations than were being produced and this caused problems within the industry."

"Previously, it was: 'What price is that?' Price is now a secondary issue, but once they know your machine compares then it gets competitive."

Within the market, each model of brushcutter is developing in its own distinct way. For handhelds, dramatic improvements include low-vibration systems — still the focus of attention for research and development ►

The Product Pages Special Report

revolutionary ride-on brushcutters. For greater operator comfort, single-shoulder slings have been replaced by double-shoulder slings, allowing a much greater range of movement and back protection during operation.



Cutting power: Etesia's Attila A180 (above) features a hydraulic automatic self-levelling system; the Echo SRM-4000U (left) is fitted with a 42.7cc, two-stroke engine and weighs 8.7kg

COUNCIL CLEARING

An increase in leisure time has led the public to expect higher standards of maintenance within parks, gardens and open spaces, putting more pressure on councils.

Brushcutters consequently became an invaluable tool, with blades being used for scrub work and to clear undergrowth, bracken and brambles, while nylon line has been used to trim grassy banks and areas around trees and fences.

Brushcutters usually range from 20-50cc — most councils use a machine powered by a 30-40cc engine and costing £300 to £500.

At the parks operations of Bournemouth Borough Council, which comes under leisure services, a staff of 100 tends 842ha of green space. This includes gardens, trees and public open spaces as well as sports surfaces, a variety of schools and Queens Park Golf Course.

Southern area operations manager

Robert Potter says: "It was when we had to undertake a significant amount of undergrowth clearance in our woodlands that we started to use handheld brushcutters. They are certainly the most effective tool for this."

All operators hold the NPTC maintenance and use of brushcutters certificate. Around 20 staff are qualified. For large areas, the council finds it more beneficial to use tractors with flails. Brushcutters are used on banks, but sites must first be risk-assessed.

Potter says: "We used to chop the undergrowth back with hedgetrimmers or by hand. The cut material then had to be cleared because we were left with large, unsightly strands."

"Working down into the growth with the brushcutter, the material is chopped up and we are left with just a small pile of risings. This is a tremendous benefit as, generally, there is no clearing-up operation."

by most manufacturers.

With exposure levels above 5m/s² prohibited, the new generation of handheld brushcutters aims to achieve levels of around 2.4m/s². Low emissions have also been a prime consideration for manufacturers such as Echo.

"Emission levels recommended in forthcoming legislation are already met by Echo machines. This follows extensive development in the US. We

supply Echo's latest brushcutter, fitted with a really clean two-stroke engine," says Pentecost.

Latest Echo models include the SRM-350ESU with a vibration figure of 2.1m/s² and the SRM-4000U, fitted with a 42.7cc, two-stroke engine and weighing only 8.7kg.

Suitable for tackling larger areas of scrub, the DR is a wheeled nylon-line brushcutter, distributed by Rochford

Garden Machinery. The machine, manufactured in the US, has a 15cm cutting width and is powered by a Briggs & Stratton engine. Safety features include a brake/clutch system that prevents the head from rotating until the controls are engaged.

Puncture-proof wheels and padded handlebars aid operator comfort when working on rough or undulating ground.

In September, loG Saltex will see Ete-

sia launch a new ride-on brushcutter to their stable. Etesia UK general manager Les Malin says: "Some jobs were previously carried out by half a dozen people working with handheld units. By using a ride-on this task can be achieved more cost-effectively in fewer working hours."

Etesia's rugged Attila A180 all-terrain mower has a hydraulic automatic self-levelling system, making it safe to operate on slopes up to 27°. ■



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