

Tractor test: Claas Arion 430 CIS

## Packing a mighty punch

We head back into more general-purpose territory this month with a full-test assessment of the Claas Arion 430 CIS. Sourcing its 81kW/110hp (ECE R24) from a four-cylinder motor, the 430 CIS joins a growing band of higher tech but still mainstream 100hp+ tractors that have emerged over the past few years

**T**here's a generalisation made so often in the tractor industry that it has almost become a cliché – that livestock farmers only want a simple, no-frills tractor to just do a job, and no more.

As with most of the glibbest generalisations, however, there remain some glorious, welcome and very significant exceptions. For most definitely out there, and in increasing evidence, are those stockmen who are seeking a few more creature comforts to ease them through their daily chores, and it's into this category that the featured Claas Arion 400, in CIS spec, most definitely falls.

**Out on the market now for 12 months, the Arion 400 CIS is proving a popular filler for those buyers who require more sophistication than the simpler Axos line has to offer, but then need something physically smaller than the Arion 500, which we looked at in our October 2009 profi issue along with the slightly higher tech 600s. For the UK and Irish markets the Arion 420 CIS model is working out to be the bestseller within the range, yet there are also plenty of 430s out there – and it's this model that we focus on here. Key benefits over the standard tractor are a 15hp power boost, auto headland pto, four pto speeds, increased rear lift capacity, three double-acting spools, air-con, additional front work lights, swivel air seat, mudguard extensions and an optional Quad-ractiv auto-shifting transmission.**

Glancing through the spec sheet we see that Claas quotes horsepower to the more realistic ECE R24 standard. The Arion 430 CIS is quoted as delivering 81kW/110hp at rated

speed and a boosted maximum of 92kW/125hp, so that, or thereabouts, is what we were expecting to achieve on our test tractor. And we weren't disappointed: the test unit managed 81.5kW/109.2hp at the shaft when on the bench and, with the boost function engaged, this figure rose to 89.8kW/120.4hp, both of which are excellent figures.

**Significantly, CIS tractors gain a boost feature over the lesser spec Arion models.** This comes into play for pto demanding jobs, when travelling in gear C1 or above, when the viscous fan unit is working at full tilt and via the hydraulics when ElectroPilot is specified. Providing all this power is a Deere Power Systems 4.5-litre motor with two valves for each of the four cylinders and internal exhaust gas recirculation to meet Stage IIIA. On the test 430, torque rise was 37% and its constant power spanned 25%, while start-off torque was nearly 130%.

**On the ever important subject of fuel consumption, with power boost off we measured 269g/kWh at rated speed and 250g/kWh at maximum output; both are middle-of-the-road stats. With the boost engaged, these returns changed to 285g/kWh (at rated) and 298g/kWh (at max power).** The above figures are mirrored in the more realistic Powermix stats, which look at draft, pto and hydraulic work. Here the Arion 430 notched 309g/kWh, which is not too far off the average of 302g/kWh for all tractors that have been subjected to Powermix.







ARION

CLAAS  
430  
ARION

Krampe

Domest 400



		-20%	-10%	0	+10%	+20%
<b>Draft work: Average consumption 295g/kWh and 11.92l/ha</b>						
1 Heavy (100% load)	Plough					
	Cultivator					
2 Medium (60% load)	Plough					
	Cultivator					
<b>Pto work: Average consumption 306g/kWh and 4.36l/ha</b>						
3 Heavy (100% load)	Power harrow					
	Mower					
4 Medium (70% load)	Power harrow					
	Mower					
5 Light (40% load)	Power harrow					
	Mower					
<b>Mixed work: Average consumption 347g/kWh and 5.19l/ha</b>						
6	Manure spreader					
7	Baler					
8	Transport <sup>1)</sup>					



The 4.5-litre engine, delivers a reasonable performance at average fuel consumption.

**Powermix 309g/kWh**

The Powermix figure appears at the bottom to the left and is arrived at by averaging the seven individual tests, recorded on 36 different test runs. The table shows average results for the categories draft work, pto work and mixed work, measuring fuel consumption in grams per kilowatt hour and in litres per hectare. The yellow line marks the average of all results obtained from previous Powermix tests. The length of the bars indicates the degree to which tractor performance in this specific type of work was better than (green) or fell short of (red) the average result of all Powermix candidates to present. The average Powermix parameter, obtained from all tractors tested so far, currently stands at 302g/kWh.

<sup>1)</sup>The transport cycle is not available yet. Our Claas Arion 430 CIS produced higher-than-average Powermix fuel results in most applications - but not by much. The overall Powermix result is 309g/kWh, which is 2.4% higher than the average result calculated from all previous Powermix tests.

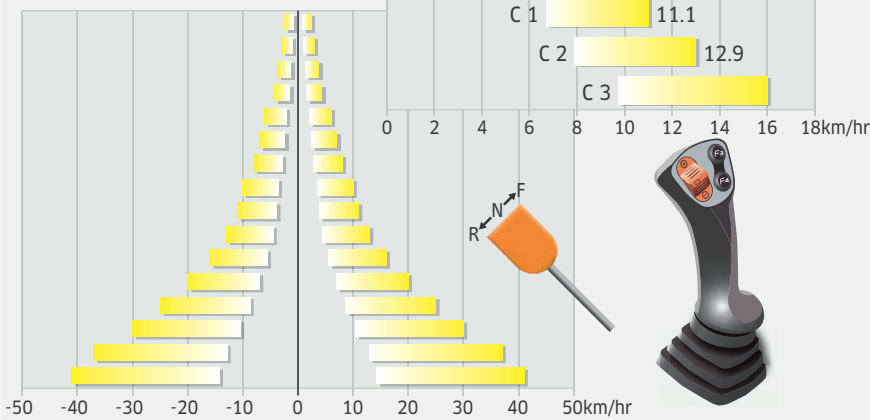
On down the Arion driveline, the Quadrishift transmission has a top speed of 40km/hr, accessed via four ranges and four semi-powershift steps that deliver a total of 16 gears in both travel directions. Seven of these speeds fall in the critical 4-12km/hr field working band - not an overwhelming choice, but then those seven speeds are, at least, spread uniformly across their ranges. Indeed - and contrary to what we anticipated - this seemingly modest number of in-field ratios was actually not a problem, largely down to the Arion's excellent shifting, all done at the press of a button on the hand throttle. There are no gear levers to manoeuvre into place on this tractor.

At the front of the multifunction armrest and falling easily to hand resides the ElectroPilot joystick controller, which not only looks after a front-end loader and powershift transmission changes but also provides two electrohydraulic proportional valves. Both of these valves have time- and flow control if you stump up the extra £1,750 for the optional ElectroPilot pack. Worth the cash? We reckon it's almost a 'must' if your 430 is destined for loader work, because ElectroPilot includes the extra-flow 98l/min hydraulics and means there's no need for an additional loader control lever. In short, it makes a big difference to loader work. But ElectroPilot isn't perfect. As usual we can still find room for improvement and, on this occasion, we've a couple of suggestions. First up, even though it's already possible to progress through the powershift steps using buttons on the joystick, it would be even better if direction changes were to join these functions. Then the operator's left hand would never have to leave the Arion's steering wheel.

Claas Arion 430 CIS: Four ranges and four powershift steps with powershuttle and auto shifting add up to 16F/16R speeds. Seven of these speeds are spread uniformly across the main working band.

**7 speeds in the 4-12km/hr range**

**16 forward and 16 reverse gears**



Our second suggestion is more of a request – to ask Claas whether it's possible to further tweak the auto shifting system; in fact, as it turns out it's more to do with the transmission than ElectroPilot. Why the need for change? While the ability to alter shuttle responsiveness and the specific speed that activates auto shifting is undoubtedly excellent, the fact that you don't have to re-activate these parameters each time that the gearbox is used manually can spring the odd surprise. For example, when carting a heavy load our tractor would occasionally shift up through its steps in a shorter and more abrupt manner than we'd anticipated.

The CIS version of the Arion 400 comes with four pto speeds: 540/540E/1,000/1,000E. As previously mentioned our test steed was equipped with the ElectroPilot option, providing time- and flow settings for the two electric spools. Disappointingly, though, this package was mated with the lower spec 60 litres/min gear pump that was only able to supply 56.5l/min – below average – and the same sub-average note applies to the tested hydraulic output of 14.1kW. Which makes it all the more gratifying that, in the UK, the

*Standard 75mm assister rams on the CIS boast plenty of muscle to hoist heavy kit. Hydraulic output is satisfactory. Photos ST.*



ElectroPilot comes with a twin-pump 98-litre set-up as standard. The benefit here is that the operator is able to combine the flow of these pumps for faster loader cycle times and, if you order the tractor loader ready from the factory with ElectroPilot, then the timer function is permanently deactivated to improve safety. The two electric spools are complemented by two mechanically governed spools, of which only one will have a float position. One of the spools on our test tractor was

so stiff to operate that the cable snapped – hopefully this is a one-off, Claas UK adding that it hasn't come across any particular problems in this area. On the multi-function controller there are two unassigned function keys that, for example, you can set up to look after the third and fourth valves. At the rear of the tractor, our 430's linkage was supplied with the UK standard 75mm diameter twin assister rams. Lift capacity was a healthy 4.6t, and this proved more than enough to hoist a mounted mower or

## Further details from our field test

This is not a summary of overall assessments but a list of positive and less positive details.

### Positive +

- + Toolbox resides in a convenient position on the nearside
- + Large rear-view mirror with strong holder



plus +

*Pto and linkage controls put in welcome appearances on both mudguards.*



plus +

*Keeping it cool, UK-spec CIS tractors supply their operators with chilled sustenance.*

- + Glass hatch opens wide; sunblind is flimsy and looks vulnerable
- + Self-cancelling turn indicator



plus +

*The Arion's instructor seat is upholstered and comfy.*

### Negative -

- All tyre valves are awkwardly located on the inside of the rims



minus -

*The pto preselect levers live low down next to the driver's seat.*

- Large steering wheel obstructs vision and access
- Lidded storage space for paperwork is missing



minus -

*Top link adjustment is not the easiest, while the hydraulic coupler decals/stickers look as though they might not last the course.*



minus -

*Air conditioning system comes as standard, but the fan only has three speeds.*



a five-furrow reversible. Control-wise, Claas sticks with the familiar TCE 15T electronic set-up, which is simple enough to master even though we still can't understand why it isn't possible to override the depth control ring beneath the position control dial. Rear linkage negatives include a limited lift range of just 65cm, and our testers weren't too keen on the CBM-sourced top link with its chunky handle and difficult-to-couple hook ends.

Climbing up into the six-post cabin, there are no major niggles and, when under load, noise levels measured 73dB(A). Transmission and hydraulic functions can be set using the Claas Information System (CIS), which also includes an area meter and fuel consumption meter. Only comment here, given the importance of the data, is that it would be better to present it on a larger display. Also of cab note is that there's an isolation switch for the armrest controls, so, should the operator need to, he can use the offside door without worrying about engaging something when clambering in and out of the cab. Our final accommodation/control suggestion would be for Claas to provide some visual confirmation on the digital display that a spool valve is in float, as currently it's tricky to know whether it's activated or not using the button. Ride comfort is reasonable despite the lack of front axle and cab suspension.

On more general Arion attributes, the 430's turning circle measured 11.5m - that's OK - though the 440/65 R28 front wheels were set to a 2m track width for this result. Gross vehicle weight rating is a good 8,800kg and

our test candidate scaled a kerb figure of 5,500kg across the scales. Taking one from the other results in a payload of 3,300kg - above average for this size of tractor. Service intervals are 500 hours for the 15 litres of engine oil and 1,000 hours for the combined 63 litres of hydraulic and transmission fluid, which is all fairly standard stuff. The 175-litre capacity fuel tank, in

contrast, is smaller than we'd expect and will almost certainly need a refill after ten hours of hard graft.

In terms of its price, the Arion 430 lists at £60,620 in base spec, with the CIS version carrying a £3,930 premium. ElectroPilot costs a further £2,510, a figure that includes the uprated hydraulic pump. Our test Arion



The Arion cab is roomy, pleasingly quiet at 73dB(A) and has a sealed front window. There's also a fully functional offside door.

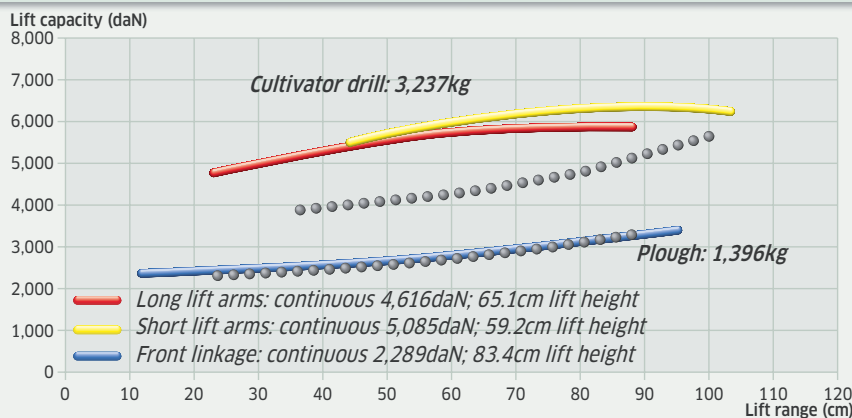


Optional ElectroPilot joystick on the armrest operates two spool valves and the powershift splits, while the controls on the hand throttle lever also shift through transmission ranges.



The dash presents a vast array of information, but the display at the bottom could do with being larger. The dial/button on the right allows the operator to scroll through settings.

### Claas Arion 430 CIS: Lift power and lift requirement



Claas Arion 430 CIS: The red curve shows the recorded lift capacity (90% of maximum lift) as continuous lift power on the link ends, whereas the yellow curve illustrates lift capacity with the lift arms shortened - more than 400daN of extra lift capacity, 6cm smaller lift range. Lifting power is sufficient for most situations that a 110hp tractor is likely to encounter.

was also supplied with £2,370 air brakes, £2,855 front linkage and £2,060 front pto. Loader brackets add another £2,860, while the loader boom prices range from £4,820 to £5,700 depending on spec.

**Summary:** Claas says that the Arion 400 is already proving a hit for them in the UK, and it's easy enough to see why. With features such as the optional ElectroPilot and the tractor's overall compact dimensions, it's an ideal host for a front-end loader. There's also a decent level of technology, though, importantly, not so much as to scare off those users who just want a workhorse they can 'jump on and drive'. There's nothing too intimidating about the Arion 400 - which isn't something that can be said of all 100-120hp mid-rangers. MN, HW

# Claas Arion 430 CIS



Width | 227cm

Length | 509cm (with front linkage)

Height | 283cm (exhaust stack)

## Technical data

**Engine** | 81kW/110hp (ECE R24) at 2,200rpm; max of 92kW/125hp (boosted); water-cooled four-cylinder engine (Stage IIIA) DPS 4045HRT 83 with common-rail, turbocharger and intercooling; 4,525cm<sup>3</sup> cubic capacity; 175-litre fuel tank

**Transmission** | 16F/16R speeds, four ranges, four powershift steps with auto functions, powershuttle; 40km/hr

**Brakes** | Disc brakes at rear including brake servo, hydraulic engagement, 4WD engagement on front axle; mechanical hand brake; optional air brake system

**Electrics** | 12V, 157amps battery, 120amps alternator, 3kW/4hp starter power

**Linkage** | Cat III, ELC with draft link control and shock absorption system, optional front linkage and front pto

**Hydraulics** | 98-litre/min gear pump (60-litre/min option), 195 bar; max of four mechanical spools, or two mechanical and two electric time- and flow-controlled spools; available oil for external use by trailed and mounted implements is 25 litres

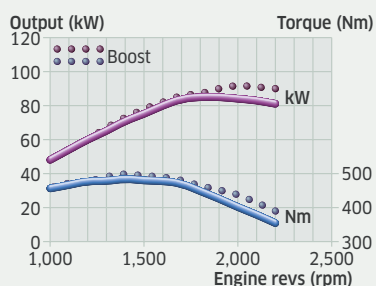
**Pto** | 540/540E/1,000/1,000E; 1 3/8in, six or 21 splines, electrohydraulic engagement

**Axles and running gear** | Planetary-drive axle, multi-plate diff lock, electrohydraulic engagement on all four wheels, 440/65 R28 and 540/65 R38 test tyres

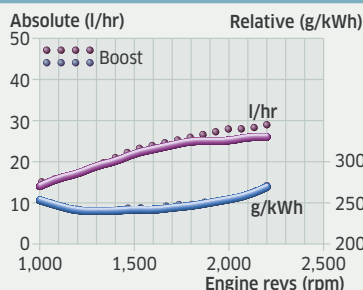
**Service and maintenance** | 10 litres of engine oil (500-hour change intervals), 63 litres of transmission/hydraulic oil (1,000 hours), 15.5-litre cooling system

**Price** | £64,550 CIS specification (excl. VAT); £2,855 option price for front linkage, £2,066 front pto, £2,370 air brake system

## Output and Torque



## Fuel Consumption



## Results from the test station

### Pto output (unboosted/boosted)

Max (1,900rpm/2,000rpm) 84.7/91.6kW  
At rated speed 81.5/89.8kW

### Fuel consumption

Specific at max draft output 250/254g/kWh  
Specific at rated speed 269/271g/kWh  
Maximum at rated speed 25.2/27.7l/hr

### Torque

Max 485/499Nm (1,400rpm)  
Torque rise 37%/28%  
Engine speed drop 36%/36%  
Start-off torque 129%/117%

### Transmission

No. of gears in 4-12km/hr range 7

### Rear lift capacities (90% max oil pressure)

Bottom/middle/top 4,410/5,247/5,427daN  
Lift height under load 65.1cm (23-88.1cm)

### Front lift capacities (90% max oil pressure)

Bottom/middle/top 2,187/2,502/3,141daN  
Lift height under load 83.4cm (11.8-95.2cm)

### Hydraulic output

Operating pressure 186 bar  
Max flow 56.5l/min  
Max output 15.1kW (54.5l/min, 166 bar)

### Drawbar power

Max (2,000rpm) 81.9kW (285g/kWh)  
At rated speed 81.5kW (298g/kWh)

### Noise level (Under load at driver's ear)

Cab closed/open 72.7/80.6dB(A)

### Braking

Max mean deceleration 4.8m/s<sup>2</sup>  
Pedal force 60daN

### Turning circle

4WD disengaged/engaged 11.35/11.55m

### Test weight

Front axle 2,400kg  
Rear axle 3,100kg  
Unladen weight 5,500kg  
GVWR (40km/hr version) 8,800kg  
Payload 3,300kg  
Power-weight ratio 68kg/kW  
Wheelbase 256cm  
Track width front/rear 200/185cm  
Ground clearance 44.0cm

## Fuel economy at typical performance (with boost)

Working areas	Out-put	Speed	g/kWh	l/hr
Standard speed pto 540rpm	100%	1,980	254	27.7
Economy pto 540E	100%	1,530	245	22.7
Standard speed pto 1,000rpm	100%	2,000	254	27.7
Economy pto 1,000E	100%	1,550	243	23.0
Engine in top speed range	80%	max.	322	27.5
High output	80%	90%	283	24.2
Transport work	40%	90%	326	14.0
Low output, 1/2 speed	40%	60%	277	11.9
High output, 1/2 speed	60%	60%	253	16.3

## The test results

### Engine

Performance characteristics 2.9  
Fuel economy 3.1  
Pto output/drawbar power 1.2

Reasonable power curve; fuel consumption level is slightly above average for this hp bracket. Excellent drawbar power and pto output, courtesy of the extra boost.

### Transmission

Gearbox ratios/functions 2.3  
Shifting 1.7  
Clutch, throttle 2.9  
Pto 1.8

Only seven gears in the 4-12km/hr range isn't overly generous, although those ratios are uniformly spaced. Four-step powershift transmission with automatic shifting; hand throttle lever has no scale and no memory function; and there are four standard pto speeds.

### Axles and running gear

Steering 2.9  
Four-wheel drive and differential lock 1.5  
Hand/foot brake 1.9  
Front axle/cab suspension not available  
Weight and payload 1.8

Turning circle is no better than average; 28in tyres; steering wheel is relatively large. There's no suspension system available for the front axle and cab, but the brakes are excellent and the payload is high.

### Linkage/hydraulics

Lift power/lift range 2.5  
Control systems 1.9  
Hydraulic output<sup>1)</sup> 4.0  
Spool valves 1.5  
Hydraulic couplers 2.5

Excellent lift capacities, modest lift range.

<sup>1)</sup> The 60-litre pump system's output is below average, but then the 98-litre version is part of the Electropilot package in the UK/Ireland.

### Cab

Space and comfort 1.5  
Visibility 1.9  
Heating/ventilation 2.5  
Noise level 1.3  
Electric system 2.0  
Build quality 2.0  
Maintenance 2.0

Above-average space and visibility; fan could do with more than three speeds. Noise level under load is a quiet 73dB(A).

### Ability

	Basic standards	Average standards	High standards	Field work	Grassland work	Transport work	Loader work
Basic standards							
Average standards							
High standards							
Field work							
Grassland work							
Transport work							
Loader work							

### Price

Low High  
£42,000 to £45,000

Typical farmer buying price after discount excl VAT for base specification Claas Arion 430 CIS (40km/hr)

### Grading system

very good, good, average,

below average, poor

The individual marks are extracts from our assessments and do not necessarily result in a mathematically conclusive overall mark