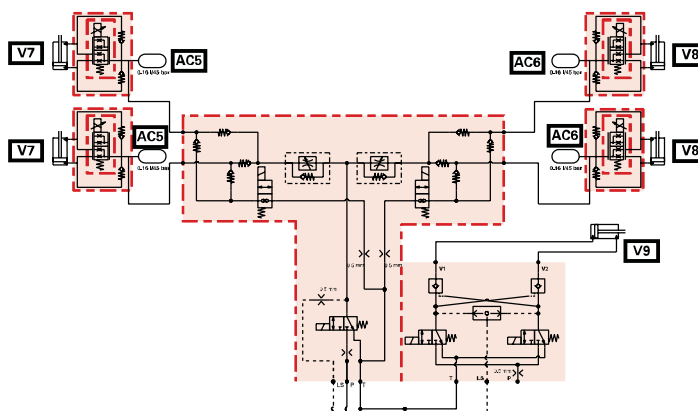
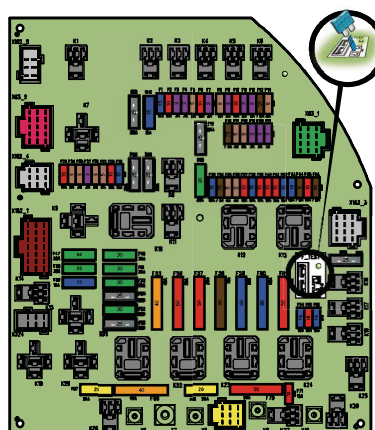


# Workshop Service Manual

## Technician Service Book -

### 5400 series tractors

Electrical and hydraulics diagrams



# **Technician Service Book - 5400 series tractors**

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## 1 - General

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## A - General specifications

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# 1 Model 5420

Engine	
Brand	Perkins
Type	1104D 44T
Maximum power hp (kW) (ISO TR14396) at 2000 rpm	82 (60.3)
Maximum torque (ISO TR14396)	346 Nm (255 lbf ft)
Maximum PTO power hp (kW) (OECD) at PTO 1000 rpm	66 (49)
Idle speed	950 rpm
Maximum speed	2260 rpm
Engine weight	303 kg (668 lb)
Number of cylinders	4
Engine cubic capacity	4,4 l (1.2 gal (US))
Piston travel	127 mm (5.0 in)
Piston diameter	105 mm (4.1 in)
Compression ratio	-
Compression pressure	-
Injection pump brand	Delphi
Injection pump type	DP 310
Firing order	1-3-4-2
Fuel prefilter filtration capacity	20 µ
Main fuel filter filtration capacity	10 µ
Recommended oil:	CI-4 (ACEA and API)
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler incorporated into the engine
Oil pressure at minimum speed	1 bar (15 psi)
Oil pressure at maximum speed	2,5 bar (36 psi) at 5 bar (73 psi) depending on the temperature
Relief valve adjustment pressure	5 bar (73 psi) (spring pressure)
Air suction type	Turbocharged
Air preheating type	Glow plugs
Number of valves	8
Inlet valve clearance value	0.20 mm (0.8 in)
Exhaust valve clearance value	0.45 mm (1.8 in)
Engine cooling system	Water cooling
Fan type	Viscostatic
Thermostat begins to open at	82 °C (180 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 108 °C (226 °F)
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available

Rear axle transmission	
Gearbox type	GBA50
Transmission type	Dyna-4
Number of gears	16 gears

Rear axle transmission	
Maximum speed	40 km/h (25 mile/h)
Number of creeper gears	14:1
Rear axle type	GPA50
Final drive type	Epicyclic
Main brake type	Multidisc ball ramp
Parking brake type	Hand brake on main brakes
Trailer brake type	Hydraulics
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	25°
Maximum operating tilt - roll (right/left)	22°
Maximum operating tilt - combined	22°
Transmission preheater	110 volts/150 watt

Front axle	
Front axle brand	DANA
Axle type	Fixed
Supplier reference - fixed front axle	725/154
Supplier reference - suspended front axle	-
Rotational direction	Clockwise
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105)
Total ratio for front axle	12.462
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	36 mm (1.4 in) x 65 mm (2.6 in)
Steering ram stroke	2 x 105 mm (4.1 in)
Factor K	1.397

Electrohydraulic	
System type	Open centre
Flow rate	56 l/min (14.8 gal/min (US)) or 98 l/min (25.9 gal/min (US))
High-pressure pump type	Gear pump(s)
Maximum pump pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	25 l (6.6 gal (US))
Maximum exportable oil quantity (without adding oil)	24 l (6.3 gal (US))
Maximum exportable oil quantity (adding oil)	49 l (12.9 gal (US))
Number of spool valves (maximum)	4
Spool valve control type	Cable
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
2-wheel drive Orbitrol displacement	80 cm <sup>3</sup> (4.88 in <sup>3</sup> )
4-wheel drive Orbitrol displacement	125 cm <sup>3</sup> (7.63 in <sup>3</sup> )
Steering ram diameter	36 mm (1.4 in) x 65 mm (2.6 in)
Steering ram stroke	2 x 105 mm (4.1 in)
Working pressure	175 bar (2538 psi) ± 5 bar (73 psi)
Pressure relief valve adjustment pressure	175 bar (2538 psi) ± 5 bar (73 psi)
Shock valve adjustment pressure	225 bar (3263 psi) to 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Rear linkage	
Lift ram diameter	75 mm (3.0 in)
Maximum lifting capacity at ball joints	3330 kg (7341 lb)
Working pressure	180 bar (2611 psi)
3-point linkage category	2

Front linkage	
Lift ram diameter	80 mm (3.2 in) / 40 mm (1.6 in)
Maximum lifting capacity at ball joints	2118 kg (4669 lb)
Working pressure	190 bar (2756 psi)
3-point linkage category	2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	2 speeds (540/540ECO) or 3 speeds (540/540ECO/1000)
Rotational direction	Clockwise
Clutch type	Hydraulics
Control pressure	20 bar (290 psi)
Splined shaft type	Flanged shaft

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Rotational direction	Anti-clockwise
Clutch type	Hydraulics
Splined shaft type	6 on 1" 3/8 Ø

Electric	
Battery brand	TAB
Battery specifications	12 V - 105 A/H
Starter type	12 V noseless
Alternator type	14 V/80 A or 14 V/120 A

Electronics	
Function of each controller	
AUTO 5	Transmission
AUTO 5	Cab
AUTO 5	Linkage

Cab and fittings	
Type of cab suspension available	Fixed Suspended
Type of rear-view mirror control available	Manual
Type of air conditioning control available	Manual
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm <sup>3</sup> /rev.
Refrigerant	R134a
Cab noise level	75 dBA
Roof type	Standard, flat or with window

## 2 Model 5425

Engine	
Brand	Perkins
Type	1104D 44T
Maximum power (ISO TR14396) at 2000 rpm	85 hp
Maximum torque (ISO TR14396)	360 Nm (266 lbf ft)
Maximum PTO power (OECD) at PTO 1000 rpm	73 hp
Idle speed	800 rpm
Maximum speed	2350 rpm
Engine weight	303 kg (668 lb)
Number of cylinders	4
Engine cubic capacity	4,4 l (1.2 gal (US))
Piston travel	127 mm (5.0 in)
Piston diameter	105 mm (4.1 in)
Compression ratio	-
Compression pressure	-
Injection pump brand	Delphi
Injection pump type	DP 310
Firing order	1-3-4-2
Fuel prefilter filtration capacity	20 µ
Main fuel filter filtration capacity	10 µ
Recommended oil:	CI-4 (ACEA and API)
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler incorporated into the engine
Oil pressure at minimum speed	1 bar (15 psi)
Oil pressure at maximum speed	2,5 bar (36 psi) at 5 bar (73 psi) depending on the temperature
Relief valve adjustment pressure	5 bar (73 psi) (spring pressure)
Air suction type	Turbocharged
Air preheating type	Glow plugs
Number of valves	8
Inlet valve clearance value	0.20 mm (0.8 in)
Exhaust valve clearance value	0.45 mm (1.8 in)
Engine cooling system	Water cooling
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 108 °C (226 °F)
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available

Rear axle transmission	
Gearbox type	GBA25
Transmission type	Dyna-4
Number of gears	16 gears
Maximum speed	40 km/h (25 mile/h) or 50 km/h (31 mile/h)

Rear axle transmission	
Number of creeper gears	4:1 or 14:1
Rear axle type	GPA20
Number of pinion/ring gear teeth	8/43
Rear axle ratio	25.339
Final drive type	Epicyclic
Final drive reduction ratio	4.714
Main brake type	Oil-immersed discs
Parking brake type	Disc brake, cable-controlled
Trailer brake type	– For tractors with North American specifications – Hydraulics
Trailer brake type	– For tractors with European specifications -- Hydraulic or pneumatic
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	25°
Maximum operating tilt - roll (right/left)	25°
Maximum operating tilt - combined	17°
Transmission preheater	110 volts/150 watt

Front axle	
Front axle brand	DANA
Axle type	Fixed
Supplier reference - fixed front axle	720/520
Supplier reference - suspended front axle	-
Rotational direction	Clockwise
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	18.975
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	32 mm (1.3 in) x 57 mm (2.2 in)
Steering ram stroke	2 x 119 mm (4.7 in)
Factor K	1.335

Electrohydraulic	
System type	Open centre
Flow rate	56 l/min (14.8 gal/min (US)) or 98 l/min (25.9 gal/min (US))
High-pressure pump type	Gear pump(s)
Maximum pump pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	-
Maximum exportable oil quantity (without adding oil)	40 l (10.6 gal (US))
Maximum exportable oil quantity (adding oil)	-
Number of spool valves (maximum)	4
Spool valve control type	Cable
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Orbitrol displacement	100 cm <sup>3</sup> (6.10 in <sup>3</sup> )
Steering ram diameter	32 mm (1.3 in) x 57 mm (2.2 in)
Steering ram stroke	2 x 119 mm (4.7 in)
Working pressure	175 bar (2538 psi) ± 5 bar (73 psi)
Pressure relief valve adjustment pressure	175 bar (2538 psi) ± 5 bar (73 psi)
Shock valve adjustment pressure	240 bar (3481 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	66 mm (2.6 in) or 75 mm (3.0 in)
Maximum lifting capacity at ball joints (rear)	4724 kg (10415 lb) or 5903 kg (13014 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	2 or 3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/540ECO/1000
Rotational direction	Clockwise
Clutch type	Hydraulics
Control pressure	20 bar (290 psi)
Splined shaft type	6 and 21 in 1"3/8 and 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Rotational direction	2 directions of rotation
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications	12 V - 105 A/H
Starter type	12 V noseless
Alternator type	14 V/80 A or 14 V/120 A

Electronics	
Function of each controller	
AUTO 5	Transmission
AUTO 5	Linkage



Cab and fittings	
Type of cab suspension available	Fixed Suspended
Type of rear-view mirror control available	Manual
Type of air conditioning control available	Manual
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm <sup>3</sup> /rev.
Refrigerant	R134a
Cab noise level	79 DBA
Roof type	Standard or with window

### 3 Model 5430

Engine	
Brand	Perkins
Type	1104D 44TA
Maximum power hp (kW) (ISO TR14396) at 2000 rpm	92 (67.7)
Maximum torque (ISO TR14396)	379 Nm (280 lbf ft)
Maximum PTO power hp (kW) (OECD) at PTO 1000 rpm	76 (56)
Idle speed	950 rpm
Maximum speed	2260 rpm
Engine weight	303 kg (668 lb)
Number of cylinders	4
Engine cubic capacity	4,4 l (1.2 gal (US))
Piston travel	127 mm (5.0 in)
Piston diameter	105 mm (4.1 in)
Compression ratio	-
Compression pressure	-
Injection pump brand	Delphi
Injection pump type	DP 310
Firing order	1-3-4-2
Fuel prefilter filtration capacity	20 µ
Main fuel filter filtration capacity	10 µ
Recommended oil:	CI-4 (ACEA and API)
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler incorporated into the engine
Oil pressure at minimum speed	1 bar (15 psi)
Oil pressure at maximum speed	2,5 bar (36 psi) at 5 bar (73 psi) depending on the temperature
Relief valve adjustment pressure	5 bar (73 psi) (spring pressure)
Air suction type	Turbocharged
Air preheating type	Glow plugs
Number of valves	8
Inlet valve clearance value	0.20 mm (0.8 in)
Exhaust valve clearance value	0.45 mm (1.8 in)
Engine cooling system	Water cooling
Fan type	Viscostatic
Thermostat begins to open at	82 °C (180 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 108 °C (226 °F)
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available

Rear axle transmission	
Gearbox type	GBA50
Transmission type	Dyna-4
Number of gears	16 gears

Rear axle transmission	
Maximum speed	40 km/h (25 mile/h)
Number of creeper gears	14:1
Rear axle type	GPA50
Final drive type	Epicyclic
Main brake type	Multidisc ball ramp
Parking brake type	Hand brake on main brakes
Trailer brake type	Hydraulics
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	25°
Maximum operating tilt - roll (right/left)	22°
Maximum operating tilt - combined	22°
Transmission preheater	110 volts/150 watt

Front axle	
Front axle brand	DANA
Axle type	Fixed
Supplier reference - fixed front axle	725/155
Supplier reference - suspended front axle	-
Rotational direction	Clockwise
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105)
Total ratio for front axle	14.57
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	36 mm (1.4 in) x 65 mm (2.6 in)
Steering ram stroke	2 x 105 mm (4.1 in)
Factor K	1.377

Electrohydraulic	
System type	Open centre
Flow rate	56 l/min (14.8 gal/min (US)) or 98 l/min (25.9 gal/min (US))
High-pressure pump type	Gear pump(s)
Maximum pump pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	25 l (6.6 gal (US))
Maximum exportable oil quantity (without adding oil)	24 l (6.6 gal (US))
Maximum exportable oil quantity (adding oil)	49 l (6.6 gal (US))
Number of spool valves (maximum)	4
Spool valve control type	Cable
Recommended oil:	According to MF CMS M1145 specification

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