Workshop Service Manual

MT400D

MT455D, MT465D, MT475D, MT485D, MT495D

AGCO S.A. - Beauvais - France - RC B562 104 539

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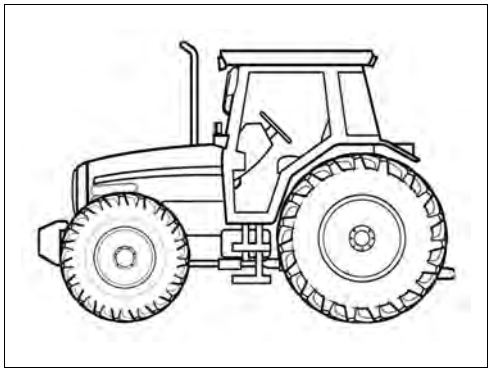
MT400D AutoPower IV
MT400D AutoPower VI
MT400D TechStar CVT
English

MT400D



1 - Introduction

1A10 - MT400D - General

1 Using the manual

General

The purpose of this manual is to assist Dealers and Agents in the installation, servicing and repair of Challenger equipment. It is important to follow the methods shown and to use special tools in order to perform the operations within the times stated in the repair time schedule.

Structure of the manual

Page numbering

This manual is divided into chapters and sections, each page containing the following information:

Example: 10A12.1

10	Chapter
A	Subset letter
1	Subset order number
2	Subset number
1	Page number within the section

The issue number is indicated at the bottom of the page.

Contents

For quick reference, each chapter starts with a table of contents, listing the various sections included in that chapter.

Meaning of reference numbers

(..)	Reference number for parts

Service tools

Where the use of a service tool is necessary to carry out an operation, the tool reference is mentioned with the relevant instruction.
Tool drawings for makeshift tools are given at the end of the relevant sections.

Repairs and parts replacement

During replacement operations, it is essential that only genuine Challenger parts are used.
If non-genuine Challenger parts are fitted, the tractor warranty may be invalidated and tractor safety may be compromised. All Challenger parts are guaranteed by the manufacturer. Challenger Dealers and Agents are required to supply only genuine service parts.
When carrying out repairs and fitting replacement parts and accessories, the following points are of particular importance:
- Legislation in certain countries prohibits the fitting of parts that do not comply with the tractor manufacturer's specifications
- Torque wrench setting figures given in the workshop manual must be strictly respected
- Locking devices must be fitted where specified. If the efficiency of a locking device is impaired during disassembly, it must be replaced.

2 General specifications

2.1 Model MT455D AutoPower IV

Engine	
Brand	AGCO Power
Type	49 AWI
Nominal power (ISO TR14396) at 2200 rpm	110 hp (81 kW)
Maximum power (ISO TR14396) at 2000 rpm	120 hp (88 kW)
Maximum torque (ISO TR14396)	575 Nm (424 lbf ft)
Idle speed, hand brake engaged and/or Power Direction lever in neutral (PTO disengaged)	750 rpm
Normal idle speed	850 rpm
Maximum speed	2260 rpm
Engine weight	430 kg (948 lb)
Number of cylinders	4
Engine displacement in litres	4.9
Piston travel	134 mm (5.3 in)
Piston diameter	108 mm (4.3 in)
Compression ratio	17.8
Injection pump brand	Bosch
Injection pump type	Common rail CP4.1
Firing order	1-2-4-3
Maximum pressure in the high-pressure system	1600 bar (23206 psi)
Injector brand	Bosch
Injector type	CRIN 3
Charge pump type	Manual
Fuel prefilter filtration capacity	10 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Low-pressure system pressure at maximum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Recommended oil:	API CJ4 / ACEA E9
Maximum operating tilt (precautions)	20° roll 25° pitch
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Oil/water heat exchanger
Oil pressure at minimum speed	1,5 bar (22 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	Turbocharger with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	16 (4 per cylinder)
Valve clearance value	0,35 mm (0.01 in) (inlet and exhaust)
Engine cooling system	Coolant
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)

Engine	
Liquid temperature from - to	-35 °C (-31 °F) to 106 °C (223 °F)
Air compressor brand for the brake system	Knorr Bremse
Type of compressor	Pistons
Pressure range:	6,5 bar (94 psi) to 8 bar (116 psi)
Type and brand of air conditioning compressor	SD7H15 - Sanden with axial pistons
Air conditioning compressor displacement (cm^3)	154.9
Refrigerant	R134a
Block preheater	110 or 220 volts
Fuel preheater	Not available
Urea preheater	Coolant (tank) Electric (supply module and urea lines)
Exhaust fumes recirculation system	DOC (diesel oxidation catalyst) + SCR systems (selective catalytic reduction)
DOC (diesel oxidation catalyst) system	DOC (diesel oxidation catalyst) with metal substrate (exhaust fumes oxidation catalyser)
SCR system (DEF injection)	SCR with 1 ceramic substrate in silencer (exhaust fumes treatment)
Safety system	NOx sensors at exhaust inlet and outlet
Device brand	Bosch Denox 2.2
Type of control	Engine controller EEM4
Tank strainer filtration capacity	70 µm
Main filter filtration capacity	20 µm
Filtration capacity of pump module inlet connector	100 µm
Urea solidification temperature	-11 °C (12 °F)
Oil vapour recirculation system	Closed system breather (CCV)
Belt: air conditioning compressor/left-hand alternator/air compressor (2 dimensions: with or without air compressor)	Poly V 6 rib belt
Belt: fan/right-hand alternator/air compressor (2 dimensions: a different fan pulley is used depending on the power)	Poly V 10 rib belt

Rear axle transmission	
Gearbox type	GBA25
Transmission type	AutoPower IV
Number of ratios	4
Number of ranges	4
Number of gears	16/16
Creeper gears	4/1
Number of gears with creeper gears	24/24
Super creeper gears	14, 1/1
Number of gears with super creeper gears	32/32
Maximum speed	40 km/h (25 mile/h)
Rear axle type	GPA22
Number of pinion/ring gear teeth	8/39
Rear axle ratio (crownwheel and pinion)	24.75
4WD ratio	0.830

Rear axle transmission	
Final drive type	Heavy Duty
Final drive reduction ratio	(53+13)/13
Maximum 4WD clutch torque	206 daNm (1519 lbf ft)
Number of 4WD discs	6
Main brake type	Disc
Number of discs	1 per side
Braking pressure	-
Parking brake type	Hand brake
Trailer brake type	Hydraulic and/or pneumatic with built-in antifreeze pump
Pneumatic trailer braking pressure	6,5 bar (94 psi) to 8 bar (116 psi)
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - roll (right/left)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - combined	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Transmission preheater	110 V and 220 V accessory kits
Total loaded weight supported by rear axle - 40 km/h (25 mile/h)	7600 kg (16755 lb)

Front axle	
Front axle brand	DANA
Axle type	Fixed or suspended
Supplier reference - fixed front axle	735/528
Supplier reference - suspended front axle	735/614
Rotational direction	Anti-clockwise
Fixed front axle weight	347 kg (765 lb)
Suspended front axle weight	587 kg (1294 lb)
Total loaded weight supported by front axle (maximum load on road)	6000 kg (13228 lb)
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105B)
Total ratio for fixed front axle	15.500
Total ratio for suspended front axle	15.500
Number of teeth on final drive	70/38
Ratio for fixed axle final drive	6
Ratio for suspended axle final drive	6
Number of fixed axle pinion/ring gear teeth	12/31
Number of suspended axle pinion/ring gear teeth	12/31
Differential type	Multidisc
Number of differential discs	12
Maximum steering angle	55°
Oscillation angle	± 9°
Type of oscillation stop	Mechanical
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in)

Front axle	
Steering ram stroke	2 x 129 mm (5.1 in)
Suspension type	Hydraulics
Suspension ram diameter	65 mm (2.6 in) x 60 mm (2.4 in)
Suspension ram stroke	97 mm (3.8 in)
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	190 bar (2756 psi)
Number of accumulators	2
Accumulator pressure	Left 0,5 l (0.1 gal (US)) = 10 bar (145 psi) Right 0,75 l (0.2 gal (US)) = 50 bar (725 psi)
Suspension sensor type	Elobau angular potentiometer
Steering sensor type	Elen angular potentiometer
Brake type	Combined with the rear brake
Factor K	1.325

Electrohydraulic	
System type	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) Open Centre
Flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
High-pressure pump type	Bosch-Rexroth gear pump(s)
High-pressure pump displacement	19 cm3 (57 l/min (15.1 gal/min (US)) Open Centre) 19 cm3 + 14 cm3 (100 l/min (26.4 gal/min (US)) Open Centre)
High-pressure pump rotational speed	3042 rpm - 2200 rpm engine speed
High-pressure pump maximum flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
High-pressure pump maximum pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	10 l (2.6 gal (US))
Maximum exportable oil quantity (without adding oil)	32 l (8.5 gal (US))
Maximum exportable oil quantity (adding oil)	42 l (11.1 gal (US))
Charge pump type	Suction
Main relief valve adjustment pressure	195 bar (2828 psi) ± 5 bar (73 psi)
Number of spool valves (maximum)	4
Number of front "push-pull" connectors (maximum)	2
Number of rear "push-pull" connectors (maximum)	8
Maximum flow rate per spool valve	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
Spool valve control type	Mechanical
Recommended oil:	According to MF CMS M 1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Steering unit displacement	160 cm3

Steering	
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in) 72 mm (2.8 in) x 38 mm (1.5 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Working pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Pressure relief valve adjustment pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Shock valve adjustment pressure	225 bar (3263 psi) - 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	75 mm (3.0 in)
Rear linkage travel	263,5 mm (10.4 in)
Maximum lifting capacity at ball joints (rear)	CAT 2 = 6000 kg (13228 lb) CAT 3 = 6100 kg (13448 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	CAT 2 or CAT 3
Front lift ram diameter	80 mm (3.2 in)
Front linkage travel	684 mm (26.9 in)
Maximum lifting capacity at ball joints (front)	4392 kg (9683 lb)
Operating pressure (front)	190 bar (2756 psi)
3-point linkage category (front)	CAT 2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 540/540E/1000/1000E
Maximum permissible power 540/540E in 1"3/8 (6 and 21 splines)	540 = 100 kW 540E = 55 kW
Maximum permissible power 540/540E in 1"3/4 (20 splines)	540 = 110 kW 540E = 55 kW
Maximum permissible power 1000/1000E in 1"3/8 (6 and 21 splines)	1000 = 100 kW 1000E = 55 kW
Maximum permissible power 1000/1000E in 1"3/4 (20 splines)	1000 = 127 kW 1000E = 55 kW
Engine speed if PTO 540	1980 rpm
Engine speed if PTO 540E	1532 rpm
Engine speed if PTO 1000	2030 rpm
Engine speed if PTO 1000E	1572 rpm
Rotational direction	Clockwise
Clutch type	Multidisc hydraulic
Number of clutch discs	5
Control pressure	21 bar (305 psi)
Splined shaft type	6 or 21 in 1"3/8 or 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Maximum permissible power - clockwise	136 kW
Maximum permissible power - anti-clockwise	150 kW
Maximum permissible torque - clockwise	955 Nm (704 lbf ft)

Front power take-off	
Maximum permissible torque - anti-clockwise	1054 Nm (777 lbf ft)
Rotational direction	2 directions of rotation: Clockwise or anti-clockwise
Engine speed if PTO 1000	1920 rpm
Ratio	1.92
Clutch type	Multidisc hydraulic
Splined shaft type	6 or 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications (1 battery)	12 V 105 A/H
Maximum current at start-up (IEC standard)	420 A
Starter type	12 V
Starter power	3.2 KW
Alternator type	1 x 175 A or 2 x 120 A
Current available on ISOBUS connector	50 A
Hazard warning light unit	HELLA
Interior light, left-hand door	2 x 5 W
Roof light	-
Type of bulb for side light indicators on hand rail	12 V 21 W / 12 V 10 W
Type of bulb for brake lights, side lights on fenders	12 V 21 W / 12 V 5 W
Type of bulb for main beams on lighting bar at front of bonnet	H4 - 12 V 60/55 W
Type of bulb for dipped beam lights and side lights on lighting bar at front of bonnet	H7 - 12 V 55 W + T4 - 12 V 4 W
Type of bulb for main beams on hand rail	H4 - 12 V 60/55 W
Type of bulb for main beams on hand rail, low position	H3 - 12 V 55 W
Type of bulb for work lights on hand rail	H3 - 12 V 55 W
Type of bulb for work lights on roof	H3 - 12 V 55 W
Type of bulb for work lights on step	-
Type of bulb for number plate lights on roof	H3 - 12 V 55 W
Type of bulb for reversing lights	12 V 21 W
Type of bulb for rotary beacon	H1 - 12 V 55 W

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTOTRONIC 5 DC	3 Autotronic 5 DC: – 1 for linkage – 1 for transmission – 1 TECU (without VIN code) suspended front axle
Lights module	Linkage/rear electrohydraulic power take-off/user lights interface
EEM4 (ECM Tier 4 AGCO Power)	Engine

Electronics	
NOx ECU	2 NOx ECU: converters of NOx sensor signals to EEM4 via CAN
TopDock aerial	optional
TMC Display	No
Air conditioning module	Manual
CAN switches key pad	– Rear linkage – Rear electrohydraulic PTO
LIN switches key pad	Controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension
AM50 unit	AgCommand™

Cab and fittings	
Type of cab suspension available	Fixed Mechanical, 2 points at rear
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 cm3/rev.
Refrigerant	R134a
Noise level in cab with doors closed	71 DBA
Roof type	Standard

2.2 Model MT465D AutoPower IV

Engine	
Brand	AGCO Power
Type	49 AWI
Nominal power (ISO TR14396) at 2200 rpm	120 hp (88 kW)
Maximum power (ISO TR14396) at 2000 rpm	130 hp (96 kW)
Maximum torque (ISO TR14396)	618 Nm (456 lbf ft)
Idle speed, hand brake engaged and/or Power Direction lever in neutral (PTO disengaged)	750 rpm
Normal idle speed	850 rpm
Maximum speed	2260 rpm
Engine weight	430 kg (948 lb)
Number of cylinders	4
Engine displacement in litres	4.9
Piston travel	134 mm (5.3 in)
Piston diameter	108 mm (4.3 in)
Compression ratio	17.8
Injection pump brand	Bosch
Injection pump type	Common rail CP4.1
Firing order	1-2-4-3
Maximum pressure in the high-pressure system	1600 bar (23206 psi)
Injector brand	Bosch
Injector type	CRIN 3
Charge pump type	Manual
Fuel prefilter filtration capacity	10 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Low-pressure system pressure at maximum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Recommended oil:	API CJ4 / ACEA E9
Maximum operating tilt (precautions)	20° roll 25° pitch
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Oil/water heat exchanger
Oil pressure at minimum speed	1,5 bar (22 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	Turbocharger with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	16 (4 per cylinder)
Valve clearance value	0,35 mm (0.01 in) (inlet and exhaust)
Engine cooling system	Coolant
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 106 °C (223 °F)
Air compressor brand for the brake system	Knorr Bremse

Engine	
Type of compressor	Pistons
Pressure range:	6,5 bar (94 psi) to 8 bar (116 psi)
Type and brand of air conditioning compressor	SD7H15 - Sanden with axial pistons
Air conditioning compressor displacement (cm^3)	154.9
Refrigerant	R134a
Block preheater	110 or 220 volts
Fuel preheater	Not available
Urea preheater	Coolant (tank) Electric (supply module and urea lines)
Exhaust fumes recirculation system	DOC (diesel oxidation catalyst) + SCR systems (selective catalytic reduction)
DOC (diesel oxidation catalyst) system	DOC (diesel oxidation catalyst) with metal substrate (exhaust fumes oxidation catalyser)
SCR system (DEF injection)	SCR with 1 ceramic substrate in silencer (exhaust fumes treatment)
Safety system	NOx sensors at exhaust inlet and outlet
Device brand	Bosch Denox 2.2
Type of control	Engine controller EEM4
Tank strainer filtration capacity	70 µm
Main filter filtration capacity	20 µm
Filtration capacity of pump module inlet connector	100 µm
Urea solidification temperature	-11 °C (12 °F)
Oil vapour recirculation system	Closed system breather (CCV)
Belt: air conditioning compressor/left-hand alternator/air compressor (2 dimensions: with or without air compressor)	Poly V 6 rib belt
Belt: fan/right-hand alternator/air compressor (2 dimensions: a different fan pulley is used depending on the power)	Poly V 10 rib belt

Rear axle transmission	
Gearbox type	GBA25
Transmission type	AutoPower IV
Number of ratios	4
Number of ranges	4
Number of gears	16/16
Creeper gears	4/1
Number of gears with creeper gears	24/24
Super creeper gears	14, 1/1
Number of gears with super creeper gears	32/32
Maximum speed	40 km/h (25 mile/h)
Rear axle type	GPA22+
Number of pinion/ring gear teeth	8/39
Rear axle ratio (crownwheel and pinion)	24.75
4WD ratio	0.830
Final drive type	Heavy Duty +
Final drive reduction ratio	(53+13)/13

Rear axle transmission	
Maximum 4WD clutch torque	206 daNm (1519 lbf ft)
Number of 4WD discs	6
Main brake type	Disc
Number of discs	1 per side
Braking pressure	-
Parking brake type	Hand brake
Trailer brake type	Hydraulic and/or pneumatic with built-in antifreeze pump
Pneumatic trailer braking pressure	6,5 bar (94 psi) to 8 bar (116 psi)
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - roll (right/left)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - combined	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Transmission preheater	110 V and 220 V accessory kits
Total loaded weight supported by rear axle - 40 km/h (25 mile/h)	7600 kg (16755 lb)

Front axle	
Front axle brand	DANA
Axle type	Fixed or suspended
Supplier reference - fixed front axle	735/528
Supplier reference - suspended front axle	735/614
Rotational direction	Anti-clockwise
Fixed front axle weight	347 kg (765 lb)
Suspended front axle weight	587 kg (1294 lb)
Total loaded weight supported by front axle (maximum load on road)	6000 kg (13228 lb)
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105B)
Total ratio for fixed front axle	15.500
Total ratio for suspended front axle	15.500
Number of teeth on final drive	70/38
Ratio for fixed axle final drive	6
Ratio for suspended axle final drive	6
Number of fixed axle pinion/ring gear teeth	12/31
Number of suspended axle pinion/ring gear teeth	12/31
Differential type	Multidisc
Number of differential discs	12
Maximum steering angle	55°
Oscillation angle	± 9°
Type of oscillation stop	Mechanical
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Suspension type	Hydraulics

Front axle	
Suspension ram diameter	65 mm (2.6 in) x 60 mm (2.4 in)
Suspension ram stroke	97 mm (3.8 in)
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	190 bar (2756 psi)
Number of accumulators	2
Accumulator pressure	Left 0,5 l (0.1 gal (US)) = 10 bar (145 psi) Right 0,75 l (0.2 gal (US)) = 50 bar (725 psi)
Suspension sensor type	Elobau angular potentiometer
Steering sensor type	Elen angular potentiometer
Brake type	Combined with the rear brake
Factor K	1.325

Electrohydraulic	
System type	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) Open Centre
Flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
High-pressure pump type	Bosch-Rexroth gear pump(s)
High-pressure pump displacement	19 cm3 (57 l/min (15.1 gal/min (US)) Open Centre) 19 cm3 + 14 cm3 (100 l/min (26.4 gal/min (US)) Open Centre)
High-pressure pump rotational speed	3042 rpm - 2200 rpm engine speed
High-pressure pump maximum flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
High-pressure pump maximum pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	10 l (2.6 gal (US))
Maximum exportable oil quantity (without adding oil)	32 l (8.5 gal (US))
Maximum exportable oil quantity (adding oil)	42 l (11.1 gal (US))
Charge pump type	Suction
Main relief valve adjustment pressure	195 bar (2828 psi) ± 5 bar (73 psi)
Number of spool valves (maximum)	4
Number of front "push-pull" connectors (maximum)	2
Number of rear "push-pull" connectors (maximum)	8
Maximum flow rate per spool valve	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US))
Spool valve control type	Mechanical
Recommended oil:	According to MF CMS M 1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Steering unit displacement	160 cm3
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in) 72 mm (2.8 in) x 38 mm (1.5 in)
Steering ram stroke	2 x 129 mm (5.1 in)

Steering	
Working pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Pressure relief valve adjustment pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Shock valve adjustment pressure	225 bar (3263 psi) - 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	75 mm (3.0 in)
Rear linkage travel	263,5 mm (10.4 in)
Maximum lifting capacity at ball joints (rear)	CAT 2 = 6000 kg (13228 lb) CAT 3 = 6100 kg (13448 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	CAT 2 or CAT 3
Front lift ram diameter	80 mm (3.2 in)
Front linkage travel	684 mm (26.9 in)
Maximum lifting capacity at ball joints (front)	4392 kg (9683 lb)
Operating pressure (front)	190 bar (2756 psi)
3-point linkage category (front)	CAT 2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 540/540E/1000/1000E
Maximum permissible power 540/540E in 1"3/8 (6 and 21 splines)	540 = 100 kW 540E = 55 kW
Maximum permissible power 540/540E in 1"3/4 (20 splines)	540 = 110 kW 540E = 55 kW
Maximum permissible power 1000/1000E in 1"3/8 (6 and 21 splines)	1000 = 100 kW 1000E = 55 kW
Maximum permissible power 1000/1000E in 1"3/4 (20 splines)	1000 = 127 kW 1000E = 55 kW
Engine speed if PTO 540	1980 rpm
Engine speed if PTO 540E	1532 rpm
Engine speed if PTO 1000	2030 rpm
Engine speed if PTO 1000E	1572 rpm
Rotational direction	Clockwise
Clutch type	Multidisc hydraulic
Number of clutch discs	5
Control pressure	21 bar (305 psi)
Splined shaft type	6 or 21 in 1"3/8 or 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Maximum permissible power - clockwise	136 kW
Maximum permissible power - anti-clockwise	150 kW
Maximum permissible torque - clockwise	955 Nm (704 lbf ft)
Maximum permissible torque - anti-clockwise	1054 Nm (777 lbf ft)
Rotational direction	2 directions of rotation: Clockwise or anti-clockwise
Engine speed if PTO 1000	1920 rpm

Front power take-off	
Ratio	1.92
Clutch type	Multidisc hydraulic
Splined shaft type	6 or 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications (1 battery)	12 V 105 A/H
Maximum current at start-up (IEC standard)	420 A
Starter type	12 V
Starter power	3.2 KW
Alternator type	1 x 175 A or 2 x 120 A
Current available on ISOBUS connector	50 A
Hazard warning light unit	HELLA
Interior light, left-hand door	2 x 5 W
Roof light	-
Type of bulb for side light indicators on hand rail	12 V 21 W / 12 V 10 W
Type of bulb for brake lights, side lights on fenders	12 V 21 W / 12 V 5 W
Type of bulb for main beams on lighting bar at front of bonnet	H4 - 12 V 60/55 W
Type of bulb for dipped beam lights and side lights on lighting bar at front of bonnet	H7 - 12 V 55 W + T4 - 12 V 4 W
Type of bulb for main beams on hand rail	H4 - 12 V 60/55 W
Type of bulb for main beams on hand rail, low position	H3 - 12 V 55 W
Type of bulb for work lights on hand rail	H3 - 12 V 55 W
Type of bulb for work lights on roof	H3 - 12 V 55 W
Type of bulb for work lights on step	-
Type of bulb for number plate lights on roof	H3 - 12 V 55 W
Type of bulb for reversing lights	12 V 21 W
Type of bulb for rotary beacon	H1 - 12 V 55 W

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTOTRONIC 5 DC	3 Autotronic 5 DC: – 1 for linkage – 1 for transmission – 1 TECU (without VIN code) suspended front axle
Lights module	Linkage/rear electrohydraulic power take-off/user lights interface
EEM4 (ECM Tier 4 AGCO Power)	Engine
NOx ECU	2 NOx ECU: converters of NOx sensor signals to EEM4 via CAN
TopDock aerial	optional
TMC Display	No

Electronics	
Air conditioning module	Manual
CAN switches key pad	– Rear linkage – Rear electrohydraulic PTO
LIN switches key pad	Controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension
AM50 unit	AgCommand™

Cab and fittings	
Type of cab suspension available	Fixed Mechanical, 2 points at rear
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 cm3/rev.
Refrigerant	R134a
Noise level in cab with doors closed	71 DBA
Roof type	Standard

2.3 Model MT465D AutoPower VI

Engine	
Brand	AGCO Power
Type	49 AWI
Nominal power (ISO TR14396) at 2200 rpm	115 hp (85 kW)
Maximum power (ISO TR14396) at 2000 rpm	125 hp (92 kW)
Maximum torque (ISO TR14396)	648 Nm (478 lbf ft)
Idle speed, hand brake engaged and/or Power Direction lever in neutral (PTO disengaged)	750 rpm
Normal idle speed	850 rpm
Maximum speed	2260 rpm
Engine weight	430 kg (948 lb)
Number of cylinders	4
Engine displacement in litres	4.9
Piston travel	134 mm (5.3 in)
Piston diameter	108 mm (4.3 in)
Compression ratio	17.8
Injection pump brand	Bosch
Injection pump type	Common rail CP4.1
Firing order	1-2-4-3
Maximum pressure in the high-pressure system	1600 bar (23206 psi)
Injector brand	Bosch
Injector type	CRIN 3
Charge pump type	Manual
Fuel prefilter filtration capacity	10 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Low-pressure system pressure at maximum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Recommended oil:	API CJ4 / ACEA E9
Maximum operating tilt (precautions)	20° roll 25° pitch
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Oil/water heat exchanger
Oil pressure at minimum speed	1,5 bar (22 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	Turbocharger with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	16 (4 per cylinder)
Valve clearance value	0,35 mm (0.01 in) (inlet and exhaust)
Engine cooling system	Coolant
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 106 °C (223 °F)
Air compressor brand for the brake system	Knorr Bremse

Engine	
Type of compressor	Pistons
Pressure range:	6,5 bar (94 psi) to 8 bar (116 psi)
Type and brand of air conditioning compressor	SD7H15 - Sanden with axial pistons
Air conditioning compressor displacement (cm^3)	154.9
Refrigerant	R134a
Block preheater	110 or 220 volts
Fuel preheater	Not available
Urea preheater	Coolant (tank) Electric (supply module and urea lines)
Exhaust fumes recirculation system	DOC (diesel oxidation catalyst) + SCR systems (selective catalytic reduction)
DOC (diesel oxidation catalyst) system	DOC (diesel oxidation catalyst) with metal substrate (exhaust fumes oxidation catalyser)
SCR system (DEF injection)	SCR with 1 ceramic substrate in silencer (exhaust fumes treatment)
Safety system	NOx sensors at exhaust inlet and outlet
Device brand	Bosch Denox 2.2
Type of control	Engine controller EEM4
Tank strainer filtration capacity	70 µm
Main filter filtration capacity	20 µm
Filtration capacity of pump module inlet connector	100 µm
Urea solidification temperature	-11 °C (12 °F)
Oil vapour recirculation system	Closed system breather (CCV)
Belt: air conditioning compressor/left-hand alternator/air compressor (2 dimensions: with or without air compressor)	Poly V 6 rib belt
Belt: fan/right-hand alternator/air compressor (2 dimensions: a different fan pulley is used depending on the power)	Poly V 10 rib belt

Rear axle transmission	
Gearbox type	GBA25
Transmission type	AutoPower VI
Number of ratios	6
Number of ranges	4
Number of gears	24/24
Creeper gears	4/1
Number of gears with creeper gears	36/36
Super creeper gears	14, 1/1
Number of gears with super creeper gears	48/48
Maximum speed	40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1
Rear axle type	GPA22+
Number of pinion/ring gear teeth	8/39
Rear axle ratio (crownwheel and pinion)	27.161
4WD ratio	0.830
Final drive type	Heavy Duty +
Final drive reduction ratio	(53+13)/13

Rear axle transmission	
Maximum 4WD clutch torque	206 daNm (1519 lbf ft)
Number of 4WD discs	6
Main brake type	Disc
Number of discs	1 per side
Braking pressure	-
Parking brake type	Hand brake
Trailer brake type	Hydraulic and/or pneumatic with built-in antifreeze pump
Pneumatic trailer braking pressure	6,5 bar (94 psi) to 8 bar (116 psi)
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - roll (right/left)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - combined	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Transmission preheater	110 V and 220 V accessory kits
Total loaded weight supported by rear axle - 40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1	7600 kg (16755 lb)

1. depending on the market or legislation

Front axle	
Front axle brand	DANA
Axle type	Fixed or suspended
Supplier reference - fixed front axle	735/528
Supplier reference - suspended front axle	735/614
Rotational direction	Anti-clockwise
Fixed front axle weight	347 kg (765 lb)
Suspended front axle weight	587 kg (1294 lb)
Total loaded weight supported by front axle (maximum load on road)	6000 kg (13228 lb)
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105B)
Total ratio for fixed front axle	15.500
Total ratio for suspended front axle	15.500
Number of teeth on final drive	70/38
Ratio for fixed axle final drive	6
Ratio for suspended axle final drive	6
Number of fixed axle pinion/ring gear teeth	12/31
Number of suspended axle pinion/ring gear teeth	12/31
Differential type	Multidisc
Number of differential discs	12
Maximum steering angle	55°
Oscillation angle	± 9°
Type of oscillation stop	Mechanical
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Suspension type	Hydraulics

Front axle	
Suspension ram diameter	65 mm (2.6 in) x 60 mm (2.4 in)
Suspension ram stroke	97 mm (3.8 in)
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	190 bar (2756 psi)
Number of accumulators	2
Accumulator pressure	Left 0,5 l (0.1 gal (US)) = 10 bar (145 psi) Right 0,75 l (0.2 gal (US)) = 50 bar (725 psi)
Suspension sensor type	Elobau angular potentiometer
Steering sensor type	Elen angular potentiometer
Brake type	Combined with the rear brake
Factor K	1.325

Electrohydraulic	
System type	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) Open Centre 110 l/min (29.1 gal/min (US)) Load Sensing Closed Centre
Flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
High-pressure pump type	Bosch-Rexroth gear pump(s) (Open Centre) Bosch-Rexroth variable displacement pump (Closed Centre Load Sensing)
High-pressure pump displacement	19 cm3 (57 l/min (15.1 gal/min (US)) Open Centre) 19 cm3 + 14 cm3 (100 l/min (26.4 gal/min (US)) Open Centre) 45 cm3 (Closed Centre Load Sensing)
High-pressure pump rotational speed	3116 rpm - 2200 rpm engine speed
High-pressure pump maximum flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
High-pressure pump maximum pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	10 l (2.6 gal (US))
Maximum exportable oil quantity (without adding oil)	32 l (8.5 gal (US))
Maximum exportable oil quantity (adding oil)	42 l (11.1 gal (US))
Charge pump type	Suction (Open Centre) 71 cm3 gear pump (110 l/min (29.1 gal/min (US)) Closed Centre Load Sensing)
Main relief valve adjustment pressure	195 bar (2828 psi) ± 5 bar (73 psi) (Open Centre) 200 bar (2901 psi) ± 5 bar (73 psi) (Closed Centre Load Sensing)
Number of spool valves (maximum)	4
Number of front "push-pull" connectors (maximum)	4
Number of rear "push-pull" connectors (maximum)	8

Electrohydraulic	
Maximum flow rate per spool valve	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
Spool valve control type	Mechanical Electrohydraulic
Recommended oil:	According to MF CMS M 1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Steering unit displacement	160 cm3
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in) 72 mm (2.8 in) x 38 mm (1.5 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Working pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Pressure relief valve adjustment pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Shock valve adjustment pressure	225 bar (3263 psi) - 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	75 mm (3.0 in)
Rear linkage travel	263,5 mm (10.4 in)
Maximum lifting capacity at ball joints (rear)	CAT 2 = 6000 kg (13228 lb) CAT 3 = 6100 kg (13448 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	CAT 2 or CAT 3
Front lift ram diameter	80 mm (3.2 in)
Front linkage travel	684 mm (26.9 in)
Maximum lifting capacity at ball joints (front)	4392 kg (9683 lb)
Operating pressure (front)	190 bar (2756 psi)
3-point linkage category (front)	CAT 2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 540/540E/1000/1000E
Maximum permissible power 540/540E in 1"3/8 (6 and 21 splines)	540 = 100 kW 540E = 55 kW
Maximum permissible power 540/540E in 1"3/4 (20 splines)	540 = 110 kW 540E = 55 kW
Maximum permissible power 1000/1000E in 1"3/8 (6 and 21 splines)	1000 = 100 kW 1000E = 55 kW
Maximum permissible power 1000/1000E in 1"3/4 (20 splines)	1000 = 127 kW 1000E = 55 kW
Engine speed if PTO 540	1980 rpm
Engine speed if PTO 540E	1532 rpm
Engine speed if PTO 1000	2030 rpm
Engine speed if PTO 1000E	1572 rpm

Rear power take-off (PTO)	
Rotational direction	Clockwise
Clutch type	Multidisc hydraulic
Number of clutch discs	5
Control pressure	21 bar (305 psi)
Splined shaft type	6 or 21 in 1"3/8 or 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Maximum permissible power - clockwise	136 kW
Maximum permissible power - anti-clockwise	150 kW
Maximum permissible torque - clockwise	955 Nm (704 lbf ft)
Maximum permissible torque - anti-clockwise	1054 Nm (777 lbf ft)
Rotational direction	2 directions of rotation: Clockwise or anti-clockwise
Engine speed if PTO 1000	1920 rpm
Ratio	1.92
Clutch type	Multidisc hydraulic
Splined shaft type	6 or 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications (1 battery)	12 V 105 A/H
Maximum current at start-up (IEC standard)	420 A
Starter type	12 V
Starter power	3.2 KW
Alternator type	1 x 175 A or 2 x 120 A
Current available on ISOBUS connector	50 A
Hazard warning light unit	HELLA
Interior light, left-hand door	2 x 5 W
Roof light	-
Type of bulb for side light indicators on hand rail	12 V 21 W / 12 V 10 W
Type of bulb for brake lights, side lights on fenders	12 V 21 W / 12 V 5 W
Type of bulb for main beams on lighting bar at front of bonnet	H4 - 12 V 60/55 W
Type of bulb for dipped beam lights and side lights on lighting bar at front of bonnet	H7 - 12 V 55 W + T4 - 12 V 4 W
Type of bulb for main beams on hand rail	H4 - 12 V 60/55 W
Type of bulb for main beams on hand rail, low position	H3 - 12 V 55 W
Type of bulb for work lights on hand rail	H3 - 12 V 55 W
Type of bulb for work lights on roof	H3 - 12 V 55 W
Type of bulb for work lights on step	-
Type of bulb for number plate lights on roof	H3 - 12 V 55 W
Type of bulb for reversing lights	12 V 21 W
Type of bulb for rotary beacon	H1 - 12 V 55 W

Electronics	
Function of each controller	
DCC3	Instrument panel
CAN levers and armrest	On tractors with multifunction armrest, controls for: – transmission (ranges, reverse shuttle, SV1/SV2, PTO) – linkage – hydraulic – One Touch – Engine memory A – ...
AUTOTRONIC 5 DC	On tractors with multifunction armrest, 4 Autotronic 5 DC: – 1 for linkage/auxiliary hydraulic spool valves – 2 for transmission – 1 TECU for VIN code/suspended front axle/suspended cab On tractors without multifunction armrest, 4 Autotronic 5 DC: – 1 for linkage – 2 for transmission – 1 TECU (without VIN code) suspended front axle
SB23 valves	On tractors with multifunction armrest: – Electrohydraulic spool valves
Lights module	On tractors with multifunction armrest: – User interface for lights On tractors without multifunction armrest: – Linkage/rear electrohydraulic power take-off/user lights interface
EEM4 (ECM Tier 4 AGCO Power)	Engine
NOx ECU	2 NOx ECU: converters of NOx sensor signals to EEM4 via CAN
Danfoss Orbitrol valve	Orbitrol for the Auto-Guide™ function (option)
TopDock aerial	Satellite signal receiver for the Auto-Guide™ function (option)
TMC Display	On tractors with multifunction armrest: – Onboard computer
Air conditioning module	– Manual – Automatic

Electronics	
CAN switches key pad	On tractors with multifunction armrest, controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension – cab suspension – Auto-Guide™ – TopDock aerial – Tru Trak quick steering – headlights on hand rail
LIN switches key pad	On tractors without multifunction armrest, controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension
AM50 unit	AgCommand™

Cab and fittings	
Type of cab suspension available	Fixed Mechanical, 2 points at rear Hydraulic semi-active, 2 points at rear (OptiRide Plus)
Type of rear-view mirror control available	Manual or electric
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm3/rev.
Refrigerant	R134a
Noise level in cab with doors closed	71 DBA
Roof type	Standard

2.4 Model MT475D AutoPower VI

Engine	
Brand	AGCO Power
Type	49 AWI
Nominal power (ISO TR14396) at 2200 rpm	130 hp (96 kW)
Maximum power (ISO TR14396) at 2000 rpm	140 hp (103 kW)
Maximum torque (ISO TR14396)	691 Nm (510 lbf ft)
Idle speed, hand brake engaged and/or Power Direction lever in neutral (PTO disengaged)	750 rpm
Normal idle speed	850 rpm
Maximum speed	2260 rpm
Engine weight	430 kg (948 lb)
Number of cylinders	4
Engine displacement in litres	4.9
Piston travel	134 mm (5.3 in)
Piston diameter	108 mm (4.3 in)
Compression ratio	17.8
Injection pump brand	Bosch
Injection pump type	Common rail CP4.1
Firing order	1-2-4-3
Maximum pressure in the high-pressure system	1600 bar (23206 psi)
Injector brand	Bosch
Injector type	CRIN 3
Charge pump type	Manual
Fuel prefilter filtration capacity	10 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Low-pressure system pressure at maximum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Recommended oil:	API CJ4 / ACEA E9
Maximum operating tilt (precautions)	20° roll 25° pitch
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Oil/water heat exchanger
Oil pressure at minimum speed	1,5 bar (22 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	Turbocharger with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	16 (4 per cylinder)
Valve clearance value	0,35 mm (0.01 in) (inlet and exhaust)
Engine cooling system	Coolant
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 106 °C (223 °F)
Air compressor brand for the brake system	Knorr Bremse

Engine	
Type of compressor	Pistons
Pressure range:	6,5 bar (94 psi) to 8 bar (116 psi)
Type and brand of air conditioning compressor	SD7H15 - Sanden with axial pistons
Air conditioning compressor displacement (cm^3)	154.9
Refrigerant	R134a
Block preheater	110 or 220 volts
Fuel preheater	Not available
Urea preheater	Coolant (tank) Electric (supply module and urea lines)
Exhaust fumes recirculation system	DOC (diesel oxidation catalyst) + SCR systems (selective catalytic reduction)
DOC (diesel oxidation catalyst) system	DOC (diesel oxidation catalyst) with metal substrate (exhaust fumes oxidation catalyser)
SCR system (DEF injection)	SCR with 1 ceramic substrate in silencer (exhaust fumes treatment)
Safety system	NOx sensors at exhaust inlet and outlet
Device brand	Bosch Denox 2.2
Type of control	Engine controller EEM4
Tank strainer filtration capacity	70 µm
Main filter filtration capacity	20 µm
Filtration capacity of pump module inlet connector	100 µm
Urea solidification temperature	-11 °C (12 °F)
Oil vapour recirculation system	Closed system breather (CCV)
Belt: air conditioning compressor/left-hand alternator/air compressor (2 dimensions: with or without air compressor)	Poly V 6 rib belt
Belt: fan/right-hand alternator/air compressor (2 dimensions: a different fan pulley is used depending on the power)	Poly V 10 rib belt

Rear axle transmission	
Gearbox type	GBA25
Transmission type	AutoPower VI
Number of ratios	6
Number of ranges	4
Number of gears	24/24
Creeper gears	4/1
Number of gears with creeper gears	36/36
Super creeper gears	14, 1/1
Number of gears with super creeper gears	48/48
Maximum speed	40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1
Rear axle type	GPA22+
Number of pinion/ring gear teeth	8/39
Rear axle ratio (crownwheel and pinion)	27.161
4WD ratio	0.830
Final drive type	Heavy Duty +
Final drive reduction ratio	(53+13)/13

Rear axle transmission	
Maximum 4WD clutch torque	206 daNm (1519 lbf ft)
Number of 4WD discs	6
Main brake type	Disc
Number of discs	1 per side
Braking pressure	-
Parking brake type	Hand brake
Trailer brake type	Hydraulic and/or pneumatic with built-in antifreeze pump
Pneumatic trailer braking pressure	6,5 bar (94 psi) to 8 bar (116 psi)
Hydraulic trailer braking pressure	0 to 150 bar (2176 psi)
Maximum operating tilt - pitch (front/rear)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - roll (right/left)	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Maximum operating tilt - combined	15° (> 15 km/h (9 mile/h)) 22° (< or = 15 km/h (9 mile/h))
Transmission preheater	110 V and 220 V accessory kits
Total loaded weight supported by rear axle - 40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1	7600 kg (16755 lb)

1. depending on the market or legislation

Front axle	
Front axle brand	DANA
Axle type	Fixed or suspended
Supplier reference - fixed front axle	735/528
Supplier reference - suspended front axle	735/614
Rotational direction	Anti-clockwise
Fixed front axle weight	347 kg (765 lb)
Suspended front axle weight	587 kg (1294 lb)
Total loaded weight supported by front axle (maximum load on road)	6000 kg (13228 lb)
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105B)
Total ratio for fixed front axle	15.500
Total ratio for suspended front axle	15.500
Number of teeth on final drive	70/38
Ratio for fixed axle final drive	6
Ratio for suspended axle final drive	6
Number of fixed axle pinion/ring gear teeth	12/31
Number of suspended axle pinion/ring gear teeth	12/31
Differential type	Multidisc
Number of differential discs	12
Maximum steering angle	55°
Oscillation angle	± 9°
Type of oscillation stop	Mechanical
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Suspension type	Hydraulics

Front axle	
Suspension ram diameter	65 mm (2.6 in) x 60 mm (2.4 in)
Suspension ram stroke	97 mm (3.8 in)
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	190 bar (2756 psi)
Number of accumulators	2
Accumulator pressure	Left 0,5 l (0.1 gal (US)) = 10 bar (145 psi) Right 0,75 l (0.2 gal (US)) = 50 bar (725 psi)
Suspension sensor type	Elobau angular potentiometer
Steering sensor type	Elen angular potentiometer
Brake type	Combined with the rear brake
Factor K	1.325

Electrohydraulic	
System type	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) Open Centre 110 l/min (29.1 gal/min (US)) Load Sensing Closed Centre
Flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
High-pressure pump type	Bosch-Rexroth gear pump(s) (Open Centre) Bosch-Rexroth variable displacement pump (Closed Centre Load Sensing)
High-pressure pump displacement	19 cm3 (57 l/min (15.1 gal/min (US)) Open Centre) 19 cm3 + 14 cm3 (100 l/min (26.4 gal/min (US)) Open Centre) 45 cm3 (Closed Centre Load Sensing)
High-pressure pump rotational speed	3116 rpm - 2200 rpm engine speed
High-pressure pump maximum flow rate	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
High-pressure pump maximum pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	10 l (2.6 gal (US))
Maximum exportable oil quantity (without adding oil)	32 l (8.5 gal (US))
Maximum exportable oil quantity (adding oil)	42 l (11.1 gal (US))
Charge pump type	Suction (Open Centre) 71 cm3 gear pump (110 l/min (29.1 gal/min (US)) Closed Centre Load Sensing)
Main relief valve adjustment pressure	195 bar (2828 psi) ± 5 bar (73 psi) (Open Centre) 200 bar (2901 psi) ± 5 bar (73 psi) (Closed Centre Load Sensing)
Number of spool valves (maximum)	4
Number of front "push-pull" connectors (maximum)	4
Number of rear "push-pull" connectors (maximum)	8

Electrohydraulic	
Maximum flow rate per spool valve	57 l/min (15.1 gal/min (US)) or 100 l/min (26.4 gal/min (US)) (Open Centre) 110 l/min (29.1 gal/min (US)) (Closed Centre Load Sensing)
Spool valve control type	Mechanical Electrohydraulic
Recommended oil:	According to MF CMS M 1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Steering unit displacement	160 cm3
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in) 72 mm (2.8 in) x 38 mm (1.5 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Working pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Pressure relief valve adjustment pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Shock valve adjustment pressure	225 bar (3263 psi) - 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	75 mm (3.0 in)
Rear linkage travel	263,5 mm (10.4 in)
Maximum lifting capacity at ball joints (rear)	CAT 2 = 6000 kg (13228 lb) CAT 3 = 6100 kg (13448 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	CAT 2 or CAT 3
Front lift ram diameter	80 mm (3.2 in)
Front linkage travel	684 mm (26.9 in)
Maximum lifting capacity at ball joints (front)	4392 kg (9683 lb)
Operating pressure (front)	190 bar (2756 psi)
3-point linkage category (front)	CAT 2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 540/540E/1000/1000E
Maximum permissible power 540/540E in 1"3/8 (6 and 21 splines)	540 = 100 kW 540E = 55 kW
Maximum permissible power 540/540E in 1"3/4 (20 splines)	540 = 110 kW 540E = 55 kW
Maximum permissible power 1000/1000E in 1"3/8 (6 and 21 splines)	1000 = 100 kW 1000E = 55 kW
Maximum permissible power 1000/1000E in 1"3/4 (20 splines)	1000 = 127 kW 1000E = 55 kW
Engine speed if PTO 540	1980 rpm
Engine speed if PTO 540E	1532 rpm
Engine speed if PTO 1000	2030 rpm
Engine speed if PTO 1000E	1572 rpm

Rear power take-off (PTO)	
Rotational direction	Clockwise
Clutch type	Multidisc hydraulic
Number of clutch discs	5
Control pressure	21 bar (305 psi)
Splined shaft type	6 or 21 in 1"3/8 or 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Maximum permissible power - clockwise	136 kW
Maximum permissible power - anti-clockwise	150 kW
Maximum permissible torque - clockwise	955 Nm (704 lbf ft)
Maximum permissible torque - anti-clockwise	1054 Nm (777 lbf ft)
Rotational direction	2 directions of rotation: Clockwise or anti-clockwise
Engine speed if PTO 1000	1920 rpm
Ratio	1.92
Clutch type	Multidisc hydraulic
Splined shaft type	6 or 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications (1 battery)	12 V 105 A/H
Maximum current at start-up (IEC standard)	420 A
Starter type	12 V
Starter power	3.2 KW
Alternator type	1 x 175 A or 2 x 120 A
Current available on ISOBUS connector	50 A
Hazard warning light unit	HELLA
Interior light, left-hand door	2 x 5 W
Roof light	-
Type of bulb for side light indicators on hand rail	12 V 21 W / 12 V 10 W
Type of bulb for brake lights, side lights on fenders	12 V 21 W / 12 V 5 W
Type of bulb for main beams on lighting bar at front of bonnet	H4 - 12 V 60/55 W
Type of bulb for dipped beam lights and side lights on lighting bar at front of bonnet	H7 - 12 V 55 W + T4 - 12 V 4 W
Type of bulb for main beams on hand rail	H4 - 12 V 60/55 W
Type of bulb for main beams on hand rail, low position	H3 - 12 V 55 W
Type of bulb for work lights on hand rail	H3 - 12 V 55 W
Type of bulb for work lights on roof	H3 - 12 V 55 W
Type of bulb for work lights on step	-
Type of bulb for number plate lights on roof	H3 - 12 V 55 W
Type of bulb for reversing lights	12 V 21 W
Type of bulb for rotary beacon	H1 - 12 V 55 W

Electronics	
Function of each controller	
DCC3	Instrument panel
CAN levers and armrest	On tractors with multifunction armrest, controls for: – transmission (ranges, reverse shuttle, SV1/SV2, PTO) – linkage – hydraulic – One Touch – Engine memory A – ...
AUTOTRONIC 5 DC	On tractors with multifunction armrest, 4 Autotronic 5 DC: – 1 for linkage/auxiliary hydraulic spool valves – 2 for transmission – 1 TECU for VIN code/suspended front axle/suspended cab On tractors without multifunction armrest, 4 Autotronic 5 DC: – 1 for linkage – 2 for transmission – 1 TECU (without VIN code) suspended front axle
SB23 valves	On tractors with multifunction armrest: – Electrohydraulic spool valves
Lights module	On tractors with multifunction armrest: – User interface for lights On tractors without multifunction armrest: – Linkage/rear electrohydraulic power take-off/user lights interface
EEM4 (ECM Tier 4 AGCO Power)	Engine
NOx ECU	2 NOx ECU: converters of NOx sensor signals to EEM4 via CAN
Danfoss Orbitrol valve	Orbitrol for the Auto-Guide™ function (option)
TopDock aerial	Satellite signal receiver for the Auto-Guide™ function (option)
TMC Display	On tractors with multifunction armrest: – Onboard computer
Air conditioning module	– Manual – Automatic

Electronics	
CAN switches key pad	On tractors with multifunction armrest, controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension – cab suspension – Auto-Guide™ – TopDock aerial – Tru Trak quick steering – headlights on hand rail
LIN switches key pad	On tractors without multifunction armrest, controls for: – main lighting – 4WD front axle, manual and automatic – manual and automatic differential lock – front axle suspension
AM50 unit	AgCommand™

Cab and fittings	
Type of cab suspension available	Fixed Mechanical, 2 points at rear Hydraulic semi-active, 2 points at rear (OptiRide Plus)
Type of rear-view mirror control available	Manual or electric
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm3/rev.
Refrigerant	R134a
Noise level in cab with doors closed	71 DBA
Roof type	Standard

2.5 Model MT475D TechStar CVT

Engine	
Brand	AGCO Power
Type	49 AWI
Nominal power (ISO TR14396) at 2200 rpm	130 hp (96 kW)
Maximum power (ISO TR14396) at 2000 rpm	140 hp (103 kW)
Maximum torque (ISO TR14396)	645 Nm (476 lbf ft)
Idle speed, hand brake engaged and/or Power Direction lever in neutral (PTO disengaged)	750 rpm
Normal idle speed	850 rpm
Maximum speed	2260 rpm
Engine weight	430 kg (948 lb)
Number of cylinders	4
Engine displacement in litres	4.9
Piston travel	134 mm (5.3 in)
Piston diameter	108 mm (4.3 in)
Compression ratio	17.8
Injection pump brand	Bosch
Injection pump type	Common rail CP4.1
Firing order	1-2-4-3
Maximum pressure in the high-pressure system	1600 bar (23206 psi)
Injector brand	Bosch
Injector type	CRIN 3
Charge pump type	Manual
Fuel prefilter filtration capacity	10 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Low-pressure system pressure at maximum speed	0,5 bar (7 psi) - 8,5 bar (123 psi)
Recommended oil:	API CJ4 / ACEA E9
Maximum operating tilt (precautions)	20° roll 25° pitch
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Oil/water heat exchanger
Oil pressure at minimum speed	1,5 bar (22 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	Turbocharger with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	16 (4 per cylinder)
Valve clearance value	0,35 mm (0.01 in) (inlet and exhaust)
Engine cooling system	Coolant
Fan type	Viscostatic
Thermostat begins to open at	83 °C (181 °F)
Liquid temperature from - to	-35 °C (-31 °F) to 106 °C (223 °F)
Air compressor brand for the brake system	Knorr Bremse

Engine	
Type of compressor	Pistons
Pressure range:	6,5 bar (94 psi) to 8 bar (116 psi)
Type and brand of air conditioning compressor	SD7H15 - Sanden with axial pistons
Air conditioning compressor displacement (cm^3)	154.9
Refrigerant	R134a
Block preheater	110 or 220 volts
Fuel preheater	Not available
Urea preheater	Coolant (tank) Electric (supply module and urea lines)
Exhaust fumes recirculation system	DOC (diesel oxidation catalyst) + SCR systems (selective catalytic reduction)
DOC (diesel oxidation catalyst) system	DOC (diesel oxidation catalyst) with metal substrate (exhaust fumes oxidation catalyser)
SCR system (DEF injection)	SCR with 1 ceramic substrate in silencer (exhaust fumes treatment)
Safety system	NOx sensors at exhaust inlet and outlet
Device brand	Bosch Denox 2.2
Type of control	Engine controller EEM4
Tank strainer filtration capacity	70 µm
Main filter filtration capacity	20 µm
Filtration capacity of pump module inlet connector	100 µm
Urea solidification temperature	-11 °C (12 °F)
Oil vapour recirculation system	Closed system breather (CCV)
Belt: air conditioning compressor/left-hand alternator/air compressor (2 dimensions: with or without air compressor)	Poly V 6 rib belt
Belt: fan/right-hand alternator/air compressor (2 dimensions: a different fan pulley is used depending on the power)	Poly V 10 rib belt

Rear axle transmission	
Gearbox type	ML130
Transmission type	Continuous variation
Number of ratios	-
Number of ranges	2 ranges: high speed range (Hare) and low speed range (Tortoise)
Number of gears	-
Creeper gears	-
Number of gears with creeper gears	-
Super creeper gears	-
Number of gears with super creeper gears	-
Maximum speed	40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1
Rear axle type	HA130
Number of pinion/ring gear teeth	11/46
Rear axle ratio (crownwheel and pinion)	34.291
4WD ratio	0.536
Final drive type	HA130

Rear axle transmission	
Final drive reduction ratio	(108+15)/15
Maximum 4WD clutch torque	300 daNm (2213 lbf ft)
Number of 4WD discs	7
Main brake type	Disc
Number of discs	5 per side + 5 in universal joint brake
Braking pressure	-
Parking brake type	Hand brake
Trailer brake type	Hydraulic and/or pneumatic with built-in antifreeze pump
Pneumatic trailer braking pressure	6,5 bar (94 psi) to 8 bar (116 psi)
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 V and 240 V accessory kits
Total loaded weight supported by rear axle - 40 km/h (25 mile/h) or 50 km/h (31 mile/h)(1	9000 kg (19841 lb)

1. depending on the market or legislation

Front axle	
Front axle brand	DANA
Axle type	Fixed or suspended
Supplier reference - fixed front axle	735/529
Supplier reference - suspended front axle	735/615
Rotational direction	Anti-clockwise
Fixed front axle weight	347 kg (765 lb)
Suspended front axle weight	587 kg (1294 lb)
Total loaded weight supported by front axle (maximum load on road)	6000 kg (13228 lb)
Recommended oil type (beam and final drive)	SAE85W90 (API GL4-MIL L-2105B)
Total ratio for fixed front axle	15.500
Total ratio for suspended front axle	15.500
Number of teeth on final drive	70/38
Ratio for fixed axle final drive	6
Ratio for suspended axle final drive	6
Number of fixed axle pinion/ring gear teeth	12/31
Number of suspended axle pinion/ring gear teeth	12/31
Differential type	Multidisc
Number of differential discs	12
Maximum steering angle	55°
Oscillation angle	± 9°
Type of oscillation stop	Mechanical
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Suspension type	Hydraulics
Suspension ram diameter	65 mm (2.6 in) x 60 mm (2.4 in)

Front axle	
Suspension ram stroke	97 mm (3.8 in)
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	190 bar (2756 psi)
Number of accumulators	2
Accumulator pressure	Left 0,5 l (0.1 gal (US)) = 10 bar (145 psi) Right 0,75 l (0.2 gal (US)) = 50 bar (725 psi)
Suspension sensor type	Elobau angular potentiometer
Steering sensor type	Elen angular potentiometer
Brake type	Combined with the rear brake
Factor K	1.325

Electrohydraulic	
System type	Closed Centre Load Sensing (CCLS) 110 l/min (29.1 gal/min (US))
Flow rate	110 l/min (29.1 gal/min (US))
High-pressure pump type	Bosch Rexroth variable displacement pump
High-pressure pump displacement	63 cm3
High-pressure pump rotational speed	2560 rpm - 2200 rpm engine speed
High-pressure pump maximum flow rate	110 l/min (30.9 gal/min (US))
High-pressure pump maximum pressure	200 bar (2901 psi)
Maximum quantity of oil to add for heavy implements	10 l (2.6 gal (US))
Maximum exportable oil quantity (without adding oil)	40 l (10.6 gal (US))
Maximum exportable oil quantity (adding oil)	40 l (10.6 gal (US))
Charge pump type	Suction
Main relief valve adjustment pressure	200 bar (2901 psi) ± 5 bar (73 psi)
Number of spool valves (maximum)	4
Number of front "push-pull" connectors (maximum)	4
Number of rear "push-pull" connectors (maximum)	8
Maximum flow rate per spool valve	110 l/min (29.1 gal/min (US))
Spool valve control type	Electrohydraulic
Recommended oil:	According to MF CMS M 1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel
Steering unit displacement	160 cm3
Steering ram diameter	68 mm (2.7 in) x 32 mm (1.3 in) 72 mm (2.8 in) x 38 mm (1.5 in)
Steering ram stroke	2 x 129 mm (5.1 in)
Working pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Pressure relief valve adjustment pressure	170 bar (2466 psi) - 175 bar (2538 psi)
Shock valve adjustment pressure	225 bar (3263 psi) - 245 bar (3553 psi)
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	90 mm (3.5 in) and 100 mm (3.9 in)
Rear linkage travel	247 mm (9.7 in)
Maximum lifting capacity at ball joints (rear)	8600 kg (18960 lb)
Operating pressure (rear)	180 bar (2611 psi)
3-point linkage category (rear)	CAT 3
Front lift ram diameter	80 mm (3.2 in)
Front linkage travel	684 mm (26.9 in)
Maximum lifting capacity at ball joints (front)	4392 kg (9683 lb)
Operating pressure (front)	190 bar (2756 psi)
3-point linkage category (front)	CAT 2

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/540E/1000
Maximum permissible power 540/540E in 1"3/8 (6 and 21 splines)	100 kW
Maximum permissible power 540/540E in 1"3/4 (20 splines)	145 kW
Maximum permissible power 1000 in 1"3/8 (6 and 21 splines)	145 kW
Maximum permissible power 1000 in 1"3/4 (20 splines)	145 kW
Engine speed if PTO 540	1932 rpm
Engine speed if PTO 540E	1487 rpm
Engine speed if PTO 1000	1903 rpm
Engine speed if PTO 1000E	-
Rotational direction	Clockwise
Clutch type	Multidisc hydraulic
Number of clutch discs	6
Control pressure	18 bar (261 psi)
Splined shaft type	6 or 21 in 1"3/8 or 20 in 1"3/4

Front power take-off	
Number of selections possible for front PTO	1000 rpm
Maximum permissible power - clockwise	136 kW
Maximum permissible power - anti-clockwise	150 kW
Maximum permissible torque - clockwise	955 Nm (704 lbf ft)
Maximum permissible torque - anti-clockwise	1054 Nm (777 lbf ft)
Rotational direction	2 directions of rotation: Clockwise or anti-clockwise
Engine speed if PTO 1000	1920 rpm
Ratio	1.92
Clutch type	Multidisc hydraulic
Splined shaft type	6 or 21 in 1"3/8