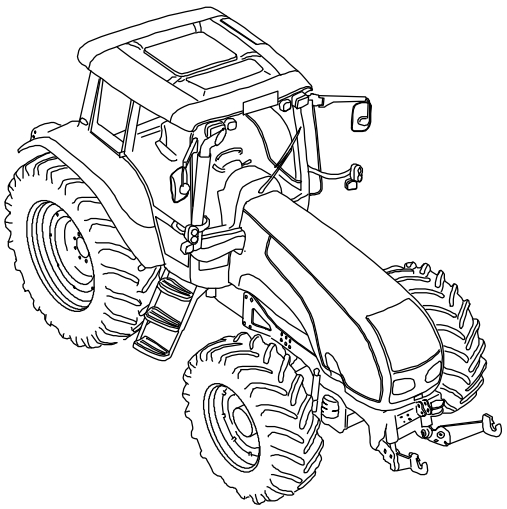
VALTRA

T121c–T171c
T121h–T191h
T151eLS–T191LS



Service Manual

Tractors

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Order no 39 235 211
ENGLISH

10. General

To the reader

The Service Manual is intended to be a practical reference source to be used in workshop. The repair instructions in the manual are based on methods which have been worked out in practice during normal workshop conditions and which are based on the use of special tools from the manufacturer when stated in the instructions. The manual also contains descriptions of the design and function of the components.

Detailed maintenance instructions can be found in Operator's Manual.

The Service Manual will be continually updated with new revised pages which should be inserted in the manual. Alterations and additions will first appear as service bulletins.

Only genuine Valtra spare parts should be used to ensure the best possible function of the machine. Certain operations should be carried out with the aid of special tools designed by Valtra.

Valtra Inc.
Tractor Service

Contents

General

T1 series tractor (c models)

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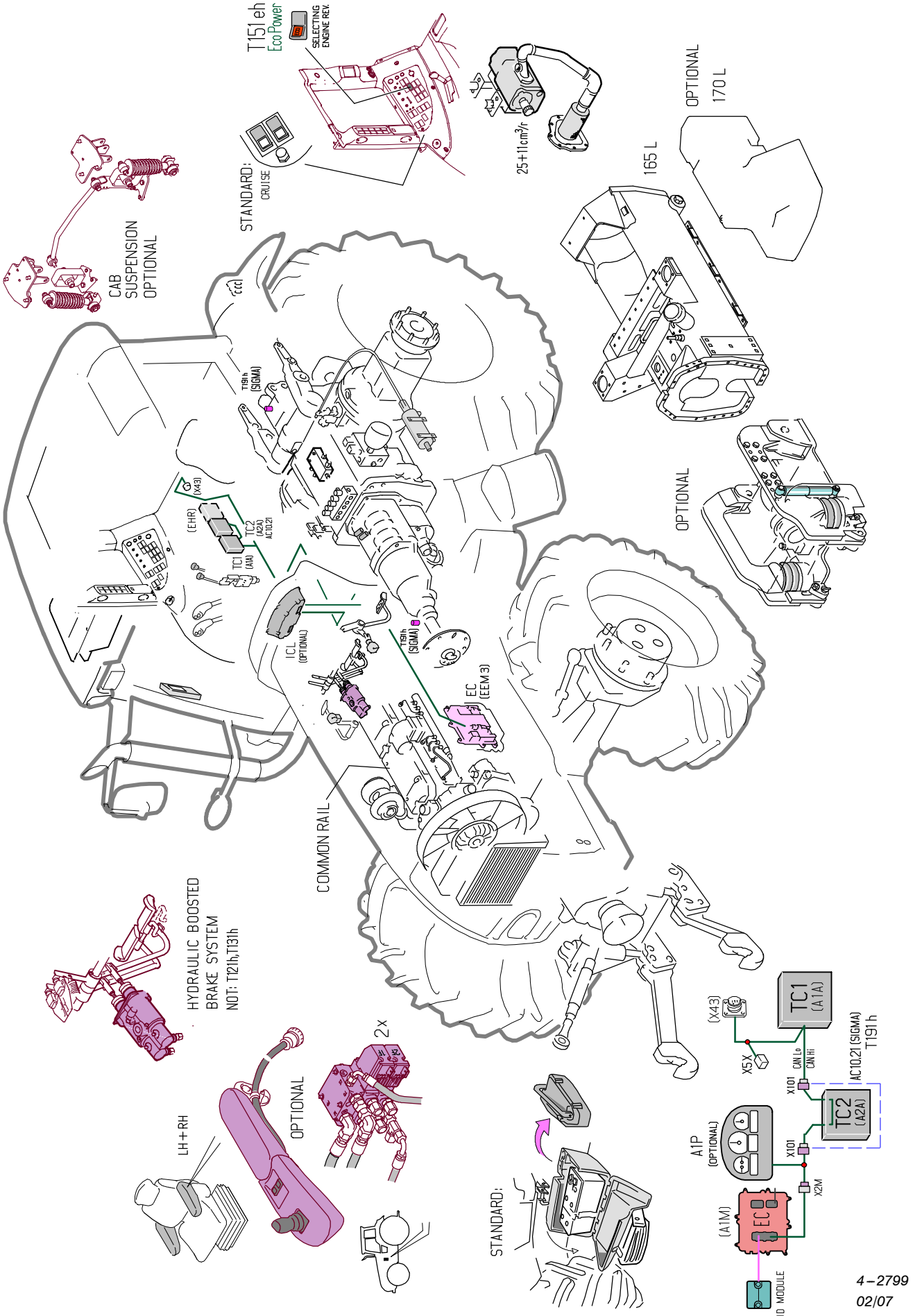
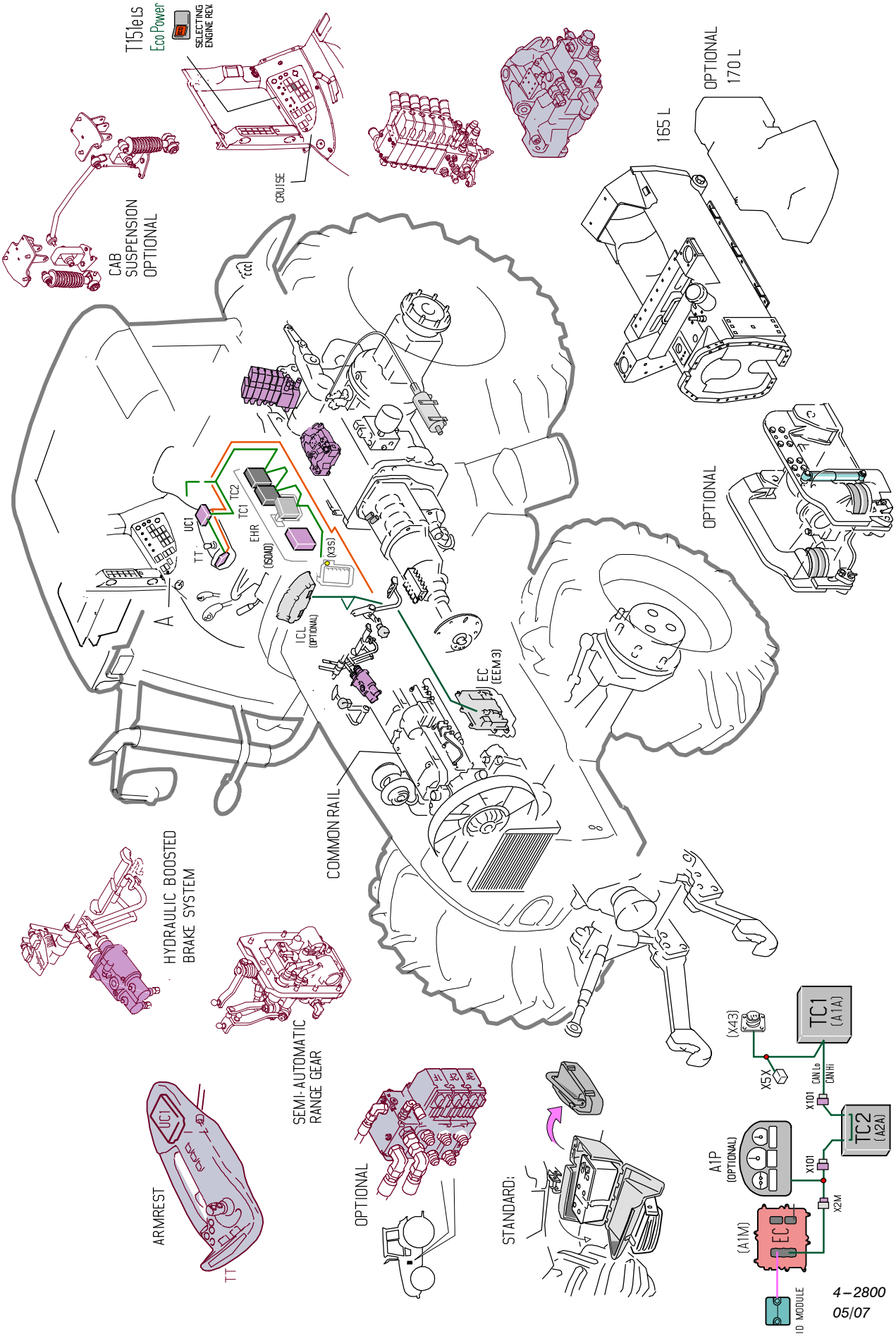
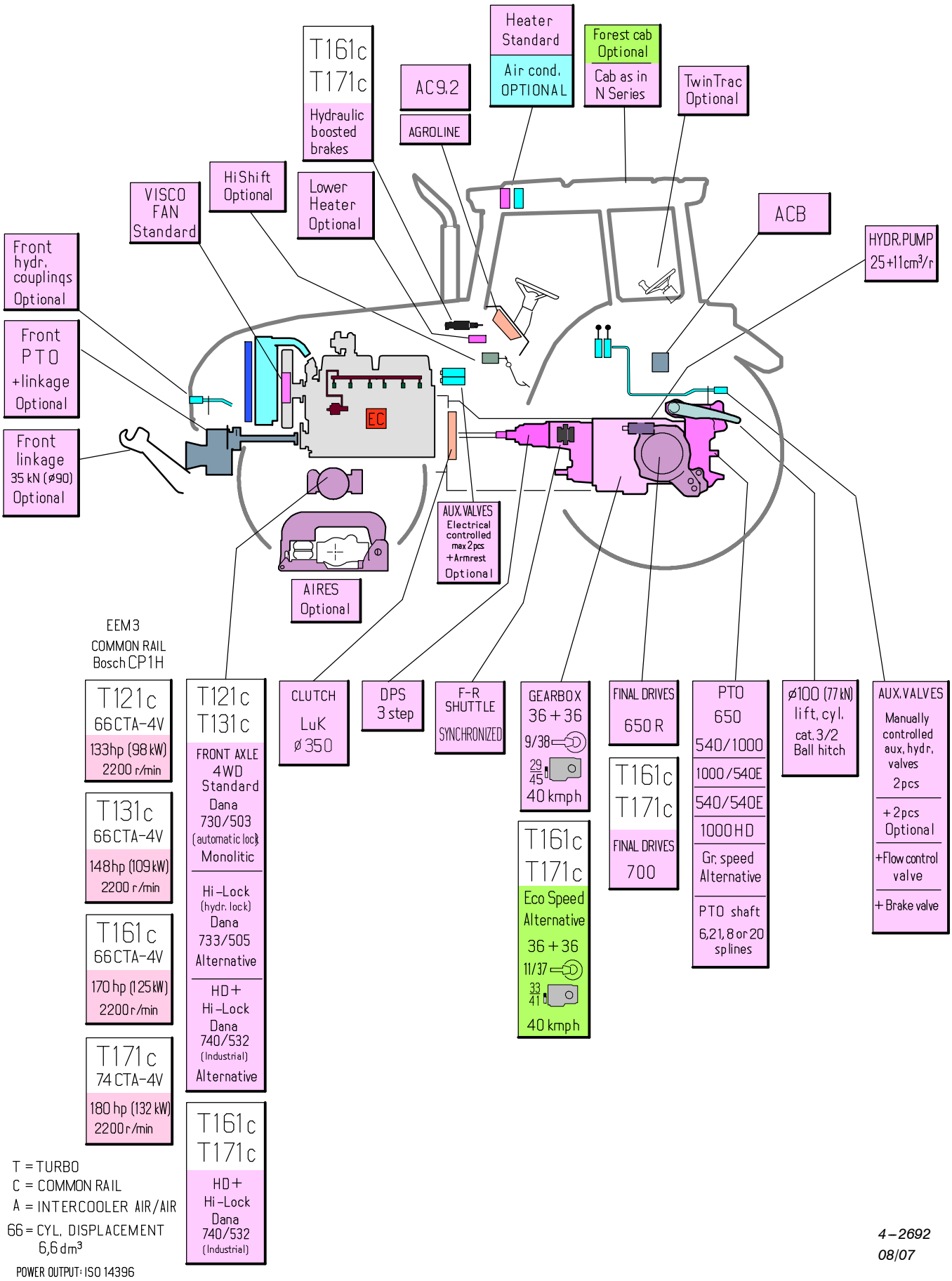
T1 series tractor (h models)



T1 series tractor (LS models)



Tc models, construction



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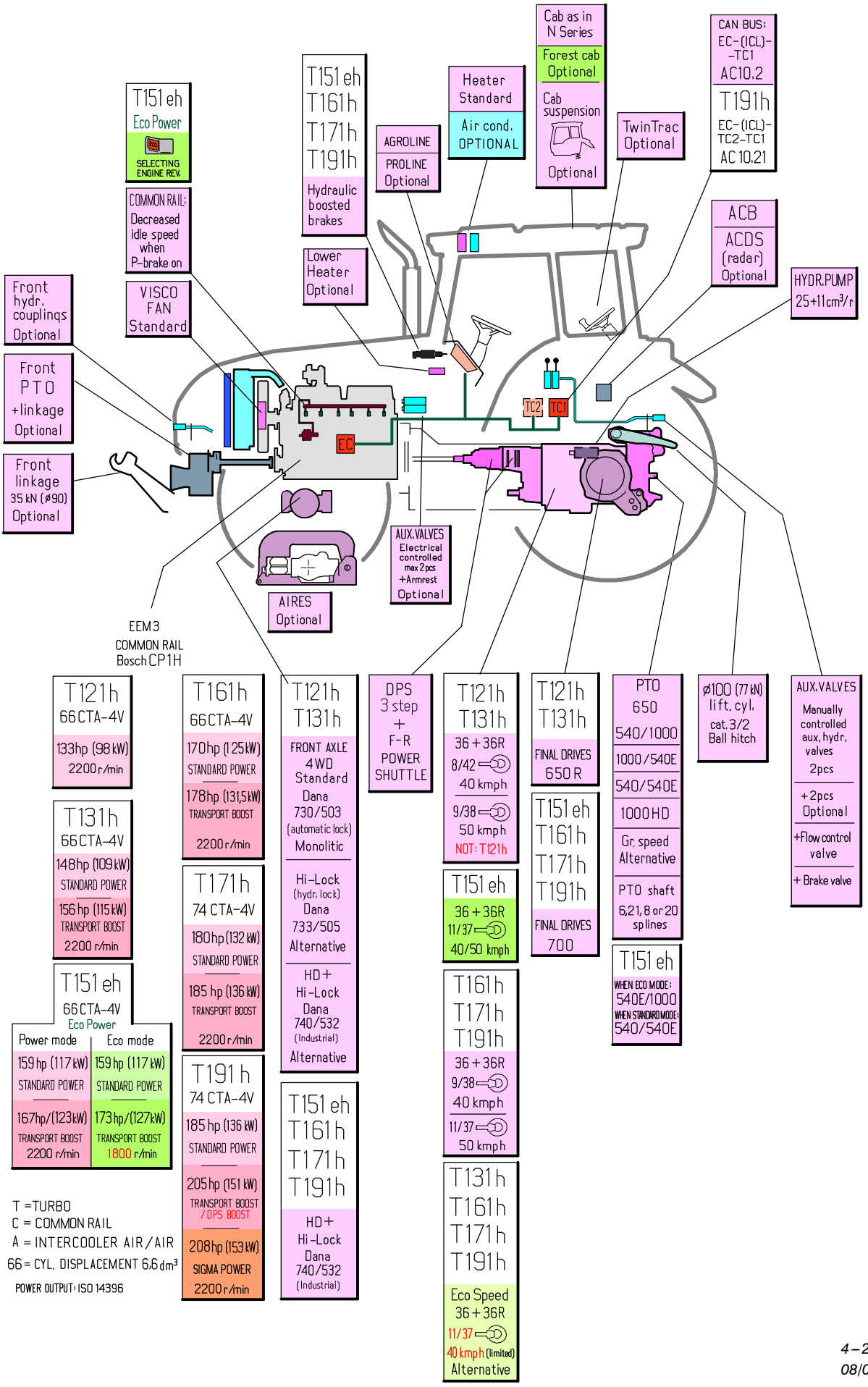
Th models, construction



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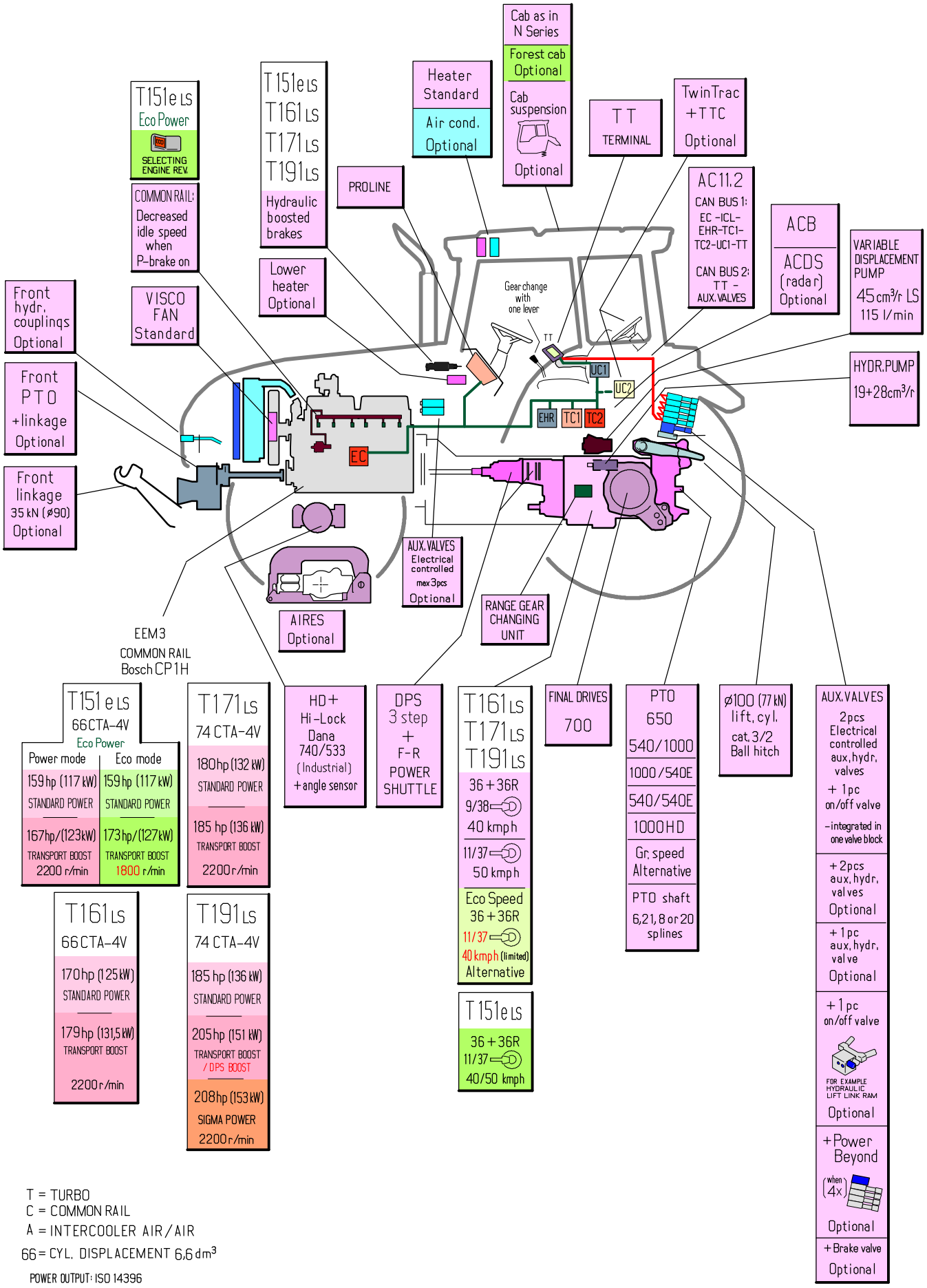
TLS models, construction



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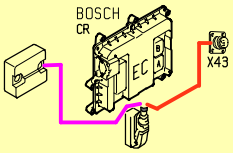
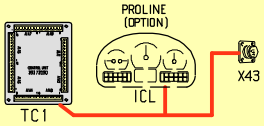
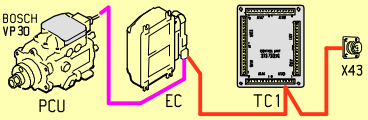
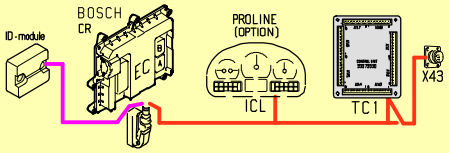
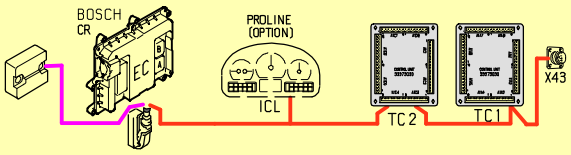
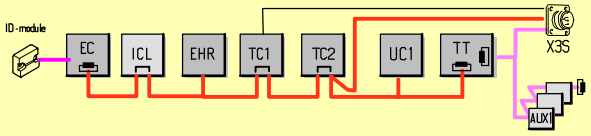
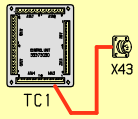
Autocontrol systems

MODEL	AC SYSTEM	CONTROL UNITS	CAN ID
N91c (N101c,N111c)	~~AC9,0~~	—	—
N101c CR T121c, T131c T161c, T171c	AC9,2		EC=0
N91h (N101h,N111h)	~~AC10,0~~		TC1=3
(N111eh)	~~AC10,1~~		TC1=3 EC=0
N101h CR N111eh CR N121h, N141h T121h, T131h, T151eh T161h, T171h	AC10,2		TC1=3 EC=0 ICL=23
T191h	AC10,21		EC = 0 ICL = 23 TC1 = 3 TC2 = 4
N121LS, N141LS T151eLS, T161LS T171LS, T191LS	AC11,2		EC = 0 ICL = 23 EHR = 35 TC1 = 3 TC2 = 4 UC1 = 5 TT = 40 AUX1 = 129 AUX2 = 130 AUX3 = 131 AUX4 = 132 AUX5 = 133 AUX1F = 135 AUX2F = 136 AUX3F = 137
N82h,N92h	AC13,0		TC1=3

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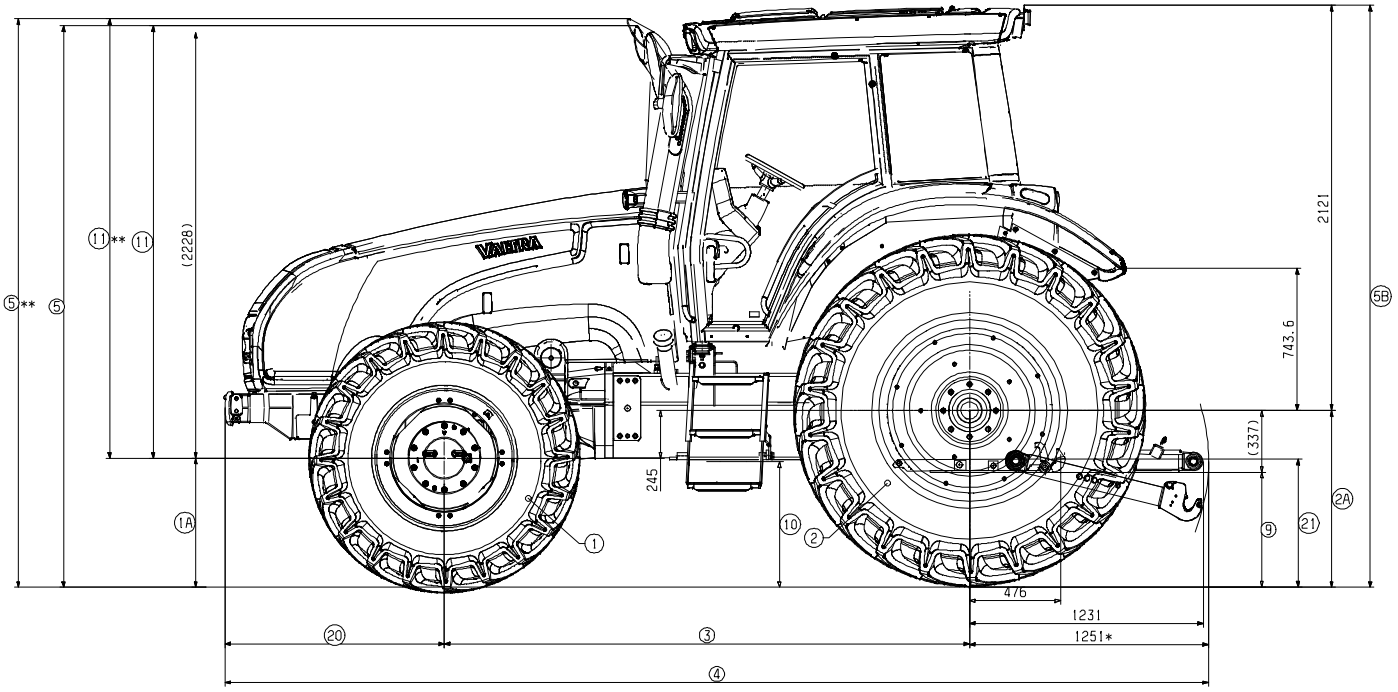
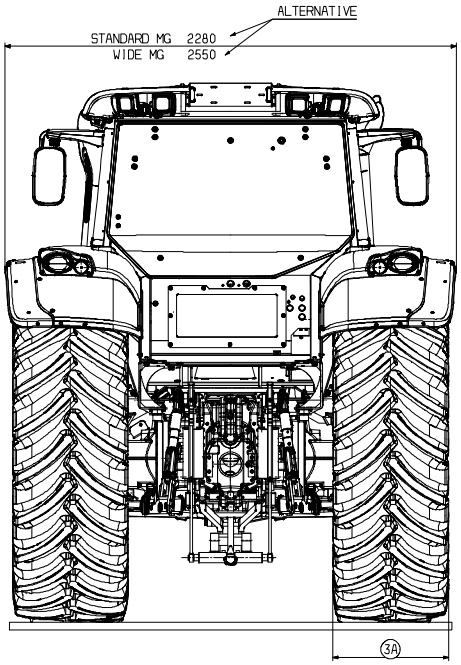
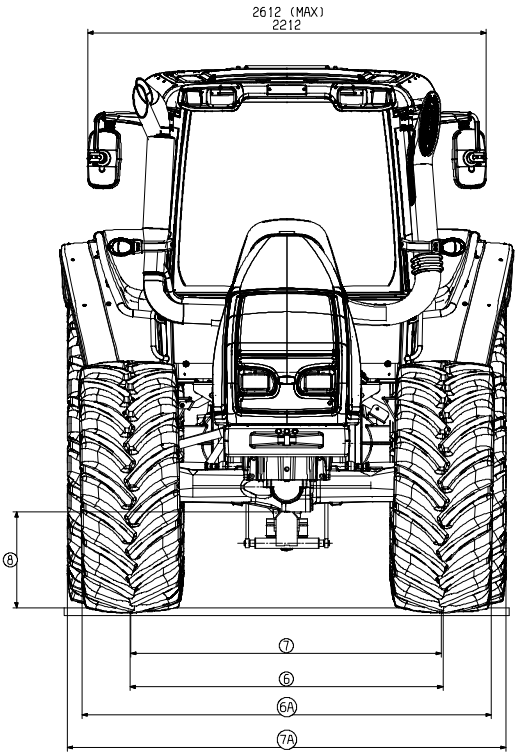
T1 series, dimensions







	1	1A	2	2A	3	4	5	5B	9	10	11	20	21
MODEL	FRONT WHEELS		REAR WHEELS		WHEEL BASE	MAX. LENGTH	HEIGHT	HEIGHT OF CAB	CLEARANCE R.	GR. CLEARENCE MID.			
T121	16.9R28	675	20.8R38	875	2748	5128/5148*	2900	2996	550	617	2225	1149	632
T131	16.9R28	675	20.8R38	875	2748	5128/5148*	2900	2996	550	617	2225	1149	632
T151	460/85R30	725	20.8R42	925	2748	5128/5148*	2900	3046	600	667	2175	1149	682
T161	460/85R30	725	20.8R42	925	2748	5128/5148*	2900	3046	600	667	2175	1149	682
T171	460/85R30	725	20.8R42	925	2748	5128/5148*	3003	3046	600	667	2278	1149	682
T191	460/85R30	725	20.8R42	925	2748	5128/5148*	3003	3046	600	667	2278	1149	682

	6	6A	7	7A	8	3A
MODEL	TRACK W. FRONT TYRE. MIN/MAX	MIN/MAX	TRACK W. REAR TYRE. MIN/MAX	MIN/MAX	CLEARANCE FR.	
T121	16.9R28, 1740/2035	2169/2464	20.8R38, 1710/2010	2238/2538	545	528
T131	16.9R28, 1740/2035	2169/2464	20.8R38, 1710/2010	2238/2538	545	528
T151	460/85R30, 1730/2025	2185/2480	20.8R42, 1710/2010	2238/2538	595	528
T161	460/85R30, 1730/2025	2185/2480	20.8R42, 1710/2010	2238/2538	595	528
T171	460/85R30, 1730/2025	2185/2480	20.8R42, 1710/2010	2238/2538	595	528
T191	460/85R30, 1730/2025	2185/2480	20.8R42, 1710/2010	2238/2538	595	528

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Dimensions (mm)	T121c	T131c	T161c	T171c
With front tyres	16.9R28	16.9R28	460/85R30	460/85R30
With rear tyres	20.8R38	20.8R38	20.8R42	20.8R42
Length	5148	5148	5148	5148
Width	2338	2338	2338	2338
Height to the roof	2996	2996	3046	3046
Height to the exhaust pipe	2900	2900	2900	3003
Wheel base	2748	2748	2748	2748
Ground clearance (front axle)	545/505[1)]	545/505[1)]	595/555[1)]	595/555[1)]
Ground clearance (rear axle)	550	550	600	600

Dimensions (mm)	T121h	T131h	T151eh	T161h	T171h	T191h
With front tyres	16.9R28	16.9R28	460/85R30	460/85R30	460/85R30	460/85R30
With rear tyres	20.8R38	20.8R38	20.8R42	20.8R42	20.8R42	20.8R42
Length	5148	5148	5148	5148	5148	5148
Width	2338	2338	2338	2338	2338	2338
Height to the roof	2996	2996	3046	3046	3046	3046
Height to the exhaust pipe	2900	2900	2900	2900	3003	3003
Wheel base	2748	2748	2748	2748	2748	2748
Ground clearance (front axle)	545/505[1)]	545/505[1)]	595/555[1)]	6595/555[1)]	595/555[1)]	595/555[1)]
Ground clearance (rear axle)	550	550	600	600	600	600

Dimensions (mm)	T151eLS	T161LS	T171LS	T191LS
With front tyres	460/85R30	460/85R30	460/85R30	460/85R30
With rear tyres	20.8R42	20.8R42	20.8R42	20.8R42
Length	5148	5148	5148	5148
Width	2338	2338	2338	2338
Height to the roof	3046	3046	3046	3046
Height to the exhaust pipe	2900	2900	3003	3003
Wheel base	2748	2748	2748	2748
Ground clearance (front axle)	595/555[1)]	595/555[1)]	595/555[1)]	595/555[1)]
Ground clearance (rear axle)	600	600	600	600

[1)] With front axle suspension.
Dimension from the rear axle mid point to the cab roof part is 2113 mm.

Weights

Weights kg	T121c, T121h	T131c, T131h
With tyres	16.9R28, 20.8R38	16.9R28, 20.8R38
Total weight (with full fuel tank and without ballast weights)	5530[1)]	5530[1)]
Front axle weight (%)	2480[1)] (45)	2480[1)] (45)
Rear axle weight (%)	3050 (55)	3050 (55)

Weights kg	T151eh	T161c, T161h	T171c, T171h	T191h
With tyres	540/65R30, 650/65R42	540/65R30, 650/65R42	540/65R30, 650/65R42	540/65R30, 650/65R42
Total weight (with full fuel tank and without ballast weights)	5970	5970	5970	5990
Front axle weight (%)	2720 (45)	2720 (45)	2720 (45)	2740 (46)
Rear axle weight (%)	3250 (55)	3250 (55)	3250 (55)	3250 (54)

[1)] With industrial front axle 140 kg heavier, standard on models T161c–T171c, T151eh–T191h.

Weights kg	T151LS	T161LS	T171LS	T191LS
With tyres	540/65R30, 650/65R42	540/65R30, 650/65R42	540/65R30, 650/65R42	650/65R42, 540/65R30
Total weight (with full fuel tank and without ballast weights)	5970	5970	5970	5990
Front axle weight (%)	2720 (45)	2720 (45)	2720 (45)	2740 (46)
Rear axle weight (%)	3250 (55)	3250 (55)	3250 (55)	3250 (54)

Maximum permissible front-- and rear axle loadings

Regardless of any limitations due to the tyres, with standard track widths max. speed.

Tractor			T121c–T131c, T121h–T131h	T161c–T171c, T151eh–T191h T151eLS–T191LS
Front 4WD	max 40 km/h		4000	
	max 8 km/h		5500	
	industrial front axle	max 40 km/h	5000	5500
	industrial front axle	max 8 km/h	6200	6200
Rear, max 40 km/h			8000	9000
Total weight, max 40 km/h			9000	11000

Track widths

Rear	Track width
460/85R38, 18.4R38	1612, 1714, 1808, 1910, 2012
520/70R38, 520/85R38, 20.8R38, 480/80R42	1714, 1808, 1910, 2012
540/65R38	1714, 1808, 1910
580/70R38, 600/65R38	1808, 1910
650/60R38, 650/75R38, 620/70R42, 650/65R42, 710/70R38	1811
20.8R42	1714, 1808
270/95R48	1500, 1522, 1600, 1622, 1900, 1922, 2000, 2022
680/75R32	1810
520/85R38, 540/80R38 IND ,20.8R38, 20.8–38 FOR, 650/75R38, 650/65R42 IND	1676 ,1850
600/65R38 FOR, 650/65R38, 650/65R38 FOR, 650/75R38, 650/65R42 IND	1850
18.4R38, 18.4–38 FOR, 480/80R38 IND	1650, 1876
600/65–34 FOR	1900

Front	Track width
14.9R28, 380/85R28	1440, 1530, 1645, 1735, 1840, 1930, 2045, 2135
420/70R28, 420/85R28, 16.9R28, 440/65R28, 480/65R28, 480/70R28	1440, 1530, 1645, 1735, 1840, 1930, 2045
520/60R28	1435, 1530, 1640, 1735, 1835, 1930
540/65R28	1440, 1530, 1645, 1735, 1840, 1930
230/95R36	1504, 1580, 1602, 1702, 1880, 1980, 2002, 2102
14.9R28, 420/85R28, 16.9R28, 400/80R28 IND, 440/80R28 IND,14.9–28 FOR, 500/65R28 FOR	1745, 1840
Industrial front axle	**Track width**
14.9R28, 420/70R28	1530, 1626, 1732, 1830, 1928, 2026, 2130
16.9R28, 420/85R28, 480/65R28, 480/70R28	1530, 1626, 1732, 1830, 1928, 2026
540/65R28	1530, 1626, 1732, 1830, 1928
520/60R28	1535, 1630, 1740, 1835, 1935, 2030
600/60R28	1535, 1630, 1740, 1835, 1935
460/85R30	1540, 1630, 1745, 1835, 1940, 2030
230/95R36	1500, 1544, 1812, 1856, 1898, 1942, 2210, 2254
14.9R28, 400/80R28 IND, 14.9–28 FOR, 540/70R30 FOR	1875,1900
16.9R28, 540/65R28, 540/65R28 FOR, 440/80R28, 440/80R28 IND, 16.9–28 FOR, 500/65R28 FOR	1865,1890
500/60–26,5 FOR	1895, 1885

Measured between middle of tyres.

With air suspension front axle track widths are 40 mm narrower.

The standard track widths are underlined. **When track widths are adjusted or larger tyres fitted, the turning angles have to be checked/adjusted with max turning angle of front axle on both sides. When adjusting the rear axle track widths, check that the wheels rotate freely. Check also when using chains that the distance from the cab to the tyres does not go below 80 mm. Check further that the distance from parking lights to the outer sides of the tyres does not exceed 400 mm.**

IMPORTANT: The maximum allowed width of the tractor is 2550 mm.

Fixed rims

At the rear, the distance between the mudguards is 1090 mm.

When using the narrow track widths for the rear axle, check that the lower links do not touch the tyres. When required lock the side regulators.

IMPORTANT: According to EU–directive the smallest allowed distance between the tyre and the cab is 50 mm.

General information about T1 series tractors

	T121c	T131c	T161c	T171c
Engine type	66 CTA–4V	66 CTA–4V	66 CTA–4V	66 CTA–4V
Engine power (kW/hp/rpm)	98/133/2200	109/148/2200	125/170/2200	132/180/2200
Compression pressure (MPa)	16,5:1	16,5:1	16,5:1	16,5:1
Oil pressure, normal (kPa)	250–400	250–400	250–400	250–400
Oil pressure, min. (kPa)	100	100	100	100
Engine speed, idle (rpm)	850	850	850	850
Engine max. speed (rpm)	2400	2400	2400	2400
Battery voltage (V)	12	12	12	12
Battery capacity (Ah)	174	174	174	174
PTO output at 1000 rpm (kW/engine rpm)	77/2000	88/2000	103/2000	110/2000
Ratio, front axle/rear axle, 40km/h)	1,323	1,323	1,33	1,33
Ratio, front axle/rear axle, 50km/h)	1,329	1,329	1,323	1,323
Max. working pressure (steering, MPa)	14	14	14	14
Low pressure circuit max. pressure (MPa)	1,8	1,8	1,8	1,8
Low pressure circuit pump capacity at max. engine speed (l/min.)	30	30	30	30
High pressure circuit max. pressure (MPa)	19,6	19,6	19,6	19,6
Shock valve opening pressure of pump (MPa)	23	23	23	23
High pressure circuit pump capacity at max. engine speed (l/min.)	73 [1]	73 [1]	73 [1]	73 [1]
Hydraulic linkage max. lifting force (kN)	77 [2]	77 [2]	77 [2]	77 [2]

[1)] Double pump **25**+**11** cm^3/r , i=1,32, 2200 r/min engine revs with free flow pressure

[2)] Lifting cylinder Ø 100mm

	T121h	T131h	T151eh	ECO
Engine type	66 CTA – 4V	66 CTA – 4V	66 CTA – 4V	
Engine power (kW/hp/rpm)	98/133/2200	109/148/2200	123/167/2200 [1] 117/159/2200	127/173/1800 [1] 117/159/1800
Compression pressure (MPa)	16,5:1	16,5:1	16,5:1	
Oil pressure, normal (kPa)	250 – 400	250 – 400	250 – 400	
Oil pressure, min. (kPa)	100	100	100	
Engine speed, idle (rpm)	850 650 [2]	850 650 [2]	850 650 [2]	
Engine max. speed (rpm)	2400	2400	2400	2000
Battery voltage (V)	12	12	12	
Capacity (Ah)	174	174	174	
PTO output at 1000 rpm (kW/engine rpm)	77/2000	88/2000 94/2000 [2]	95/2000 102/2000 [2]	95,3/1750 104,3/1750 [2]
Ratio, front axle/rear axle, 40km/h)	1,323	1,323	1,33	
Ratio, front axle/rear axle, 50km/h)	1,329	1,329	1,323	
Max. working pressure (steering, MPa)	14	14	14	
Low pressure circuit max. pressure (MPa)	1,8	1,8	1,8	
Low pressure circuit pump capacity at max. engine speed (l/min.)	30	30	30	
High pressure circuit max. pressure (MPa)	19,6	19,6	19,6	
Shock valve opening pressure of pump (MPa)	23	23	23	
High pressure circuit pump capacity at max. engine speed (l/min.)	73 [3]	73 [3]	73 [3]	60 [4]
Hydraulic linkage max. lifting force (kN)	77 [5]	77 [5]	77 [5]	

1) Higher transport boost power area, when the main gear is H2 or higher and PS boost area, when quick–shift is 2 or 3. The transport boost and PS boost power areas are equal.

2) Parking brake is on

3) Double pump **25**+**11** cm^3/r , i=1,32, 2200 r/min engine revs with free flow pressure

4) Double pump **25**+**11** cm^3/r , i=1,32, 1800 r/min engine revs with free flow pressure

5) Lifting cylinder Ø 100mm

	T161h	T171h	T191h
Engine type	66 CTA – 4V	74 CTA – 4V	74 CTA – 4V
Engine power (kW/hp/rpm)	131,5/179/2200 [2] 125/170/2200	138/185/2200 [2] 132/180/2200	153/208/2200 [3] 151/205/2200 [2] 136/185/2200
Compression pressure (MPa)	16,5:1	17,5:1	17,5:1
Oil pressure, normal (kPa)	250 – 400	250 – 400	250 – 400
Oil pressure, min. (kPa)	100	100	100
Engine speed, idle (rpm)	850 650 [4]	850 650 [4]	850 650 [4]
Engine max. speed (rpm)	2400	2400	2400
Battery voltage (V)	12	12	12
Capacity (Ah)	174	174	174
PTO output at 1000 rpm (kW/engine rpm)	103/2000 110/2000 [2]	110/2000 117/2000 [2]	114/2000 130/2000 [3] 130/2000 [4]
Ratio, front axle/rear axle, 40km/h)	1,33	1,33	1,33
Ratio, front axle/rear axle, 50km/h)	1,323	1,323	1,323
Max. working pressure (steering, MPa)	14	14	14
Low pressure circuit max. pressure (MPa)	1,8	1,8	1,8
Low pressure circuit pump capacity at max. engine speed (l/min.)	30	30	30
High pressure circuit max. pressure (MPa)	19,6	19,6	19,6
Shock valve opening pressure of pump (MPa)	23	23	23
High pressure circuit pump capacity at max. engine speed (l/min.)	73 [5]	73 [5]	73 [5]
Hydraulic linkage max. lifting force (kN)	77 [6]	77 [6]	77 [6]

[1]) Transport boost power area, when the main gear is H2 or higher

[2]) Transport boost power area, when the main gear is H2 or higher and PS boost area, when quick – shift is 2 or 3. The transport boost and PS boost power areas are equal.

[3]) Sigma power area, the largest output/torque area, when the power transferred through the power – take – off is large enough.

The symbol  is illuminated in the instrument panel.

[4]) Parking brake is on

[5]) Double pump **25**+**11** cm^3/r , i=1,32, 2200 r/min engine revs with free flow pressure

[6]) Lifting cylinder Ø 100mm

	T151eLS	ECO	T161LS	T171LS	T191LS
Engine type	66 CTA – 4V		66 CTA – 4V	74 CTA – 4V	74 CTA – 4V
Engine power (kW/hp/rpm)	123/167/2200 [2] 117/159/2200	127/173/1800 [2] 117/159/1800	131,5/179/2200 [2] 125/170/2200	138/185/2200 [2] 132/180/2200	153/208/2200 [3] 151/205/2200 [2] 136/185/2200
Compression pressure (MPa)	16,5:1		16,5:1	17,5:1	17,5:1
Oil pressure, normal (kPa)	250 – 400		250 – 400	250 – 400	250 – 400
Oil pressure, min. (kPa)	100		100	100	100
Engine speed, idle (rpm)	850 650 [4]		850 650 [4]	850 650 [4]	850 650 [4]
Engine max. speed (rpm)	2400	2000	2400	2400	2400
Battery voltage (V)	12		12	12	12
Capacity (Ah)	174		174	174	174
PTO output at 1000 rpm (kW/engine rpm)	95/2000 102/2000 [2]	95,3/1750 104,3/1750 [2]	103/2000 110/2000 [2]	110/2000 117/2000 [2]	114/2000 130/2000 [3] 130/2000 [4]
Ratio, front axle/rear axle, 40km/h)	1,323		1,33	1,33	1,33
Ratio, front axle/rear axle, 50km/h)	1,323		1,323	1,323	1,323
Max. working pressure (steering, MPa)	14		14	14	14
Low pressure circuit max. pressure (MPa)	1,8		1,8	1,8	1,8
Low pressure circuit pump capacity at max. engine speed (l/min.)	55	45	55	55	55
High pressure circuit max. pressure (MPa)	20,5		20,5	20,5	20,5
Shock valve opening pressure (MPa)	25		25	25	25
High pressure circuit pump capacity at max. engine speed (l/min.)	115 [5]	94 [6]	115 [5]	115 [5]	115 [5]
Hydraulic linkage max. lifting force (kN)	81 [7]		81 [7]	81 [7]	81 [7]

1) Transport boost power area, when the main gear is H2 or higher

2) Transport boost power area, when the main gear is H2 or higher and PS boost area, when quick – shift is 2 or 3. The transport boost and PS boost power areas are equal.

3) Sigma power area, the largest output/torque area, when the power transferred through the power – take – off is large enough.
The symbol Σ is illuminated in the instrument panel.

4) Parking brake is on

5) Variable displacement pump, 2200 r/min engine revs, load sensing system

6) Variable displacement pump, 1800 r/min engine revs, load sensing system

7) Lifting cylinder Ø 100mm

	T121c–T131c, T121h–T131h	T161c, T151eh–T161h, T151eLS–T161LS	T171c, T171h, T171LS	T191h, T191LS
Capacities				
Engine (l)	6,6	6,6	7,4	7,4
Cooling system (l)	29	30	30	31
Air conditioning (kg)	1,6	1,6	1,6	1,6
Transmission (l)	55–65	55–65	55–65	55–65
Fillings (l)				
Differential	8	8	8	8
Hub reduction gears, agricultural front axle	2x1	–	–	–
Hub reduction gears, industrial front axle	2x1,5	2x1,5	2x1,5	2x1,5
Fuel tank	165	165	165	165
Extra fuel tank	170	170	170	170
Filters service (change) intervals (h)				
Oil filter	500	500	500	500
Pressure filters	500	500	500	500
Return oil filter	500	500	500	500
Fuel filter	1000	1000	1000	1000
Air filter	1000	1000	1000	1000
Safety filter	1000	1000	1000	1000
Prefilter	1000	1000	1000	1000
Recirculation filter	1000	1000	1000	1000
Transmission housing breather	1000	1000	1000	1000

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