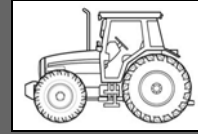


Chapter 1



Introduction

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1A10

8600 series tractors - General

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A. Using the manual

General

The purpose of this manual is to assist Dealers and Agents in the efficient installation, servicing and repair of Massey Ferguson equipment. If the procedures are carried out as detailed and specialised tools are used where appropriate, the operations should be completed 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 for parts and components

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

When parts have to be replaced, it is essential that only genuine Massey Ferguson parts are used.

The following points are of particular importance when carrying out repairs and fitting replacement parts and accessories. Tractor safety may be compromised if non-genuine parts are fitted.

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 adhered to. Locking devices must be fitted where specified. If the efficiency of a locking device is impaired during disassembly, it must be replaced.

The tractor warranty may be invalidated if non-genuine Massey Ferguson parts are fitted. All Massey Ferguson parts are guaranteed by the manufacturer. Massey Ferguson Dealers and Agents are required to supply genuine parts only.

Model 8650

Engine	
Brand	SISU
Type	84CTA
Nominal power (ISO TR14396) at 2200 rpm	240 hp
Maximum power (ISO TR14396) at 2000 rpm	270 hp
Maximum torque (ISO TR14396)	1185 Nm
Nominal PTO power (OECD) at 2200 rpm	205 hp
Maximum PTO power (OECD) at PTO 1000 rpm	225 hp
Idle speed	800 rpm
Maximum speed	2260 rpm
Engine weight	665 kg
Number of cylinders	6
Engine cubic capacity	8,4 l
Piston travel	145 mm
Piston diameter	111 mm
Compression ratio	16,7 bar ± 0,5 bar
Compression pressure	24 bar
Injection pump brand	Bosch
Injection pump type	CP 3.3
Firing order	1-5-3-6-2-4
Maximum pressure in the high-pressure system	1400 bar
Injector brand	Bosch
Injector type	CRIN 2/8 holes

Engine	
Charge pump type	Electric
Fuel prefilter filtration capacity	30 μ
Main fuel filter filtration capacity	5 μ
Low-pressure system pressure at minimum speed	0,75 bar
Low-pressure system pressure at maximum speed	0,75 bar
Recommended oil:	CI-4 (ACEA and API)
Maximum operating tilt (precautions)	-
Oil/fuel consumption	Maximum 0.1%
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler integrated into the engine (left side)
Oil pressure at minimum speed	1 bar
Oil pressure at maximum speed	2,5 bar at 5 bar depending on the temperature
Relief valve adjustment pressure	5 bar (spring pressure)
Air suction type	Turbocharged with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	24
Valve clearance value	0,35 mm (inlet and exhaust)
Engine cooling system	Water cooling
Fan type	Vistronic fan
Thermostat begins to open at	83 °C
Liquid temperature from - to	- 35 °C to 108 °C
Air compressor brand for the brake system	Knorr
Type of compressor	Piston
Pressure range:	6,5 bar to 8 bar
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available
Urea preheater	Urea system and cab heating in parallel
Gas recycling system	Internal EGR or SCR system
Internal EGR system	Additional intake cam
SCR system (AdBlue/DEF injection)	Exhaust outlet treatment system
Safety system	Quality sensor in the tank
Device brand	Bosch
Type of control	Bosch controller
Main filter filtration capacity	-
Secondary filter filtration capacity	-
Tertiary filter filtration capacity	-
Urea solidification temperature	- 11 °C
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 12 rib belt

Rear axle transmission	
Gearbox type	Continuous variation
Transmission type	ML 260
Number of ranges	2 ranges (hare and tortoise)
Maximum speed	40 km/h or 50 km/h
Number of creeper gears	No creeper gears
Rear axle type	HA 260

Rear axle transmission	
Number of pinion/ring gear teeth	12/43
Rear axle ratio (crownwheel and pinion)	32.967
4WD ratio	0.68
Final drive type	Epicyclic
Final drive reduction ratio	9.2 (123+15/15)
Maximum 4WD clutch torque	330 daNm
Number of 4WD discs	8 discs
Main brake type	10" oil-immersed disc
Number of discs	6 discs
Braking pressure	0 to 60 bar
Parking brake type	ParkLock (electrical/hydraulic)
Trailer brake type	Hydraulic and pneumatic
Pneumatic trailer braking pressure	6,5 bar to 8 bar
Hydraulic trailer braking pressure	0 to 150 bar
Maximum operating tilt	25° pitch (front/rear)
	25° roll (right/left)
	17° combined
Transmission preheater	110 volts/150 watt
Total loaded weight supported by rear axle	40 km/h : 12000 kg
	50 km/h : 10000 kg

Front axle	
Front axle brand	DANA
Axle type	Suspended or fixed
Supplier reference	Fixed: 770/504
	Suspended: 770/612
Rotational direction	Clockwise
Front axle weight	Fixed: 765 kg
	Suspended: 1066 kg
Total loaded weight supported by front axle	40 kph: 9000 kg
	50 kph: 7500 kg
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	16.862
Number of teeth on final drive	14 x 35 x 85
Final drive ratio	7.071
Number of pinion/ring gear teeth	13/31
Number of differential discs	15 discs
Maximum steering angle	55°
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	45 mm x 90 mm
Steering ram stroke	2 x 143,5 mm
Suspension type	Hydraulics
Suspension ram diameter	90 mm x 100 mm
Suspension ram stroke	100 mm
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	200 bar
Number of accumulators	2

Front axle	
Accumulator pressure	Left 1 l : 10 bar
	Right 1,4 l : 50 bar
Suspension sensor type	Angular potentiometer.
Steering sensor type	Angular potentiometer.
Brake type	Combined with the rear brake
Factor K	1.331

Electrohydraulic	
System type	Load Sensing
Flow rate	175 l/min
High-pressure pump type	Sauer Danfoss piston pump
High-pressure pump displacement	75 cm ³
High-pressure pump rotational speed	2200 rpm
High-pressure pump maximum flow rate	200 l/min
High-pressure pump maximum pressure	200 bar
Maximum quantity of oil to add for heavy implements	16 l
Maximum exportable oil quantity (without adding oil)	64 l
Maximum exportable oil quantity (adding oil)	74 l
Charge pump type	Gravity
Main relief valve adjustment pressure	200 bar ± 10 bar
Number of spool valves (maximum)	8
Number of front "push-pull" connectors	4 connectors i.e. 2 spool valves
Number of rear "push-pull" connectors	12 connectors i.e. 6 spool valves
Maximum flow rate per spool valve	100 l/min
Spool valve control type	Electric
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel or steering wheel + electrohydraulic spool valves
Orbitrol displacement	315 cm ³
Steering ram diameter	90 mm x 45 mm
Steering ram stroke	2 x 143,5 mm
Working pressure	175 bar ± 5 bar
Pressure relief valve adjustment pressure	175 bar ± 5 bar
Shock valve adjustment pressure	240 bar
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	105 mm
Rear linkage travel	788 mm or 860 mm
Maximum lifting capacity at ball joints (rear)	10000 kg
Operating pressure (rear)	180 bar
3-point linkage category (rear)	3 or 4
Front lift ram diameter	100 mm x 50 mm
Front linkage travel	216 mm ± 1,5 mm

Linkage	
Maximum lifting capacity at ball joints (front)	5000 kg
Operating pressure (front)	180 bar
3-point linkage category (front)	3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 or 540E/1000
Maximum permissible power 540/540E in 1 ³ / ₈ (6 and 21 splines)	100 hp
Maximum permissible power 540/540E in 1 ³ / ₄ (20 splines)	160 hp
Maximum permissible power 1000 in 1 ³ / ₈ (6 and 21 splines)	180 hp
Maximum permissible power 1000 in 1 ³ / ₄ (20 splines)	239 hp
Engine speed if PTO 540	2037 rpm
Engine speed if PTO 540 eco	1598 rpm
Engine speed if PTO 1000	2031 rpm
Rotational direction	Clockwise
Clutch type	Hydraulics
Number of clutch discs	8 discs
Control pressure	18 bar
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
Maximum permissible power	Clockwise: 147 hp
	Anti-clockwise: 221 hp
Maximum permissible torque	Clockwise: 1000 Nm
	Anti-clockwise: 1500 Nm
Rotational direction	2 directions of rotation
Engine speed if PTO 1000	2040 rpm
Ratio	2.04
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1 ³ / ₈

Electric	
Battery brand	TAB
Battery specifications (2 batteries)	12 V - 105 A/H
Maximum current at start-up (IEC standard)	1010 A
Starter type	12 V noseless
Starter power	4.2 kW
Alternator type	2 x 14 V/80 A (160 A) or 2 x 14 V/120 A (240 A)
Current available on ISOBUS connector	50 A

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTO 4	Transmission
4 AUTO 5 DC	Linkage/ParkLock/Suspended front axle/Armrest/Semi-active cab
PVG 32 valves	Electrohydraulic spool valves
Lights module	User interface for lights
Lighting controller	Lighting control

Electronics	
1 ECM Tier 3 SISU	Engine
1 Orbitrol Danfoss valve	Orbitrol for the Auto-Guide function
Data 4	Onboard computer
Automatic air conditioning module	Air conditioning
DCU	Denoxtronic module

Cab and fittings	
Type of cab suspension available	Passive
	Semi-active
Type of rear-view mirror control available	Manual or automatic
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm ³ /rev.
Refrigerant	R134a
Cab noise level	71 DBA
Roof type	Standard or with window

Model 8660

Engine	
Brand	SISU
Type	84CTA
Nominal power (ISO TR14396) at 2200 rpm	265 hp
Maximum power (ISO TR14396) at 2000 rpm	295 hp
Maximum torque (ISO TR14396)	1295 Nm
Nominal PTO power (OECD) at 2200 rpm	225 hp
Maximum PTO power (OECD) at PTO 1000 rpm	250 hp
Idle speed	800 rpm
Maximum speed	2260 rpm
Engine weight	665 kg
Number of cylinders	6
Engine cubic capacity	8,4 l
Piston travel	145 mm
Piston diameter	111 mm
Compression ratio	16,7 bar ± 0,5 bar
Compression pressure	24 bar
Injection pump brand	Bosch
Injection pump type	CP 3.3
Firing order	1-5-3-6-2-4
Maximum pressure in the high-pressure system	1400 bar
Injector brand	Bosch
Injector type	CRIN 2/8 holes
Charge pump type	Electric
Fuel prefilter filtration capacity	30 μ
Main fuel filter filtration capacity	5 μ
Low-pressure system pressure at minimum speed	0,75 bar
Low-pressure system pressure at maximum speed	0,75 bar
Recommended oil:	CI-4 (ACEA and API)
Maximum operating tilt (precautions)	-

Engine	
Oil/fuel consumption	Maximum 0.1%
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler integrated into the engine (left side)
Oil pressure at minimum speed	1 bar
Oil pressure at maximum speed	2,5 bar at 5 bar depending on the temperature
Relief valve adjustment pressure	5 bar (spring pressure)
Air suction type	Turbocharged with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	24
Valve clearance value	0,35 mm (inlet and exhaust)
Engine cooling system	Water cooling
Fan type	Vistronic fan
Thermostat begins to open at	83 °C
Liquid temperature from - to	- 35 °C to 108 °C
Air compressor brand for the brake system	Knorr
Type of compressor	Piston
Pressure range:	6,5 bar to 8 bar
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available
Urea preheater	Urea system and cab heating in parallel
Gas recycling system	Internal EGR or SCR system
Internal EGR system	Additional intake cam
SCR system (AdBlue/DEF injection)	Exhaust outlet treatment system
Safety system	Quality sensor in the tank
Device brand	Bosch
Type of control	Bosch controller
Main filter filtration capacity	-
Secondary filter filtration capacity	-
Tertiary filter filtration capacity	-
Urea solidification temperature	- 11 °C
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 12 rib belt

Rear axle transmission	
Gearbox type	Continuous variation
Transmission type	ML 260
Number of ranges	2 ranges (hare and tortoise)
Maximum speed	40 km/h or 50 km/h
Number of creeper gears	No creeper gears
Rear axle type	HA 260
Number of pinion/ring gear teeth	12/43
Rear axle ratio (crownwheel and pinion)	32.967
4WD ratio	0.68
Final drive type	Epicyclic
Final drive reduction ratio	9.2 (123+ 15/15)
Maximum 4WD clutch torque	330 daNm
Number of 4WD discs	8 discs

Rear axle transmission	
Main brake type	10° oil-immersed disc
Number of discs	6 discs
Braking pressure	0 to 60 bar
Parking brake type	ParkLock (electrical/hydraulic)
Trailer brake type	Hydraulic and pneumatic
Pneumatic trailer braking pressure	6,5 bar to 8 bar
Hydraulic trailer braking pressure	0 to 150 bar
Maximum operating tilt	25° pitch (front/rear)
	25° roll (right/left)
	17° combined
Transmission preheater	110 volts/150 watt
Total loaded weight supported by rear axle	40 kph: 12000 kg
	50 kph: 10000 kg

Front axle	
Front axle brand	DANA
Axle type	Suspended or fixed
Supplier reference	Fixed: 770/504
	Suspended: 770/612
Rotational direction	Clockwise
Front axle weight	Fixed: 765 kg
	Suspended: 1066 kg
Total loaded weight supported by front axle	40 kph: 9000 kg
	50 kph: 7500 kg
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	16.862
Number of teeth on final drive	14 x 35 x 85
Final drive ratio	7.071
Number of pinion/ring gear teeth	13/31
Number of differential discs	15 discs
Maximum steering angle	55°
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	45 mm x 90 mm
Steering ram stroke	2 x 143,5 mm
Suspension type	Hydraulics
Suspension ram diameter	90 mm x 100 mm
Suspension ram stroke	100 mm
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	200 bar
Number of accumulators	2
Accumulator pressure	Left 1 l: 10 bar
	Right 1,4 l: 50 bar
Suspension sensor type	Angular potentiometer.
Steering sensor type	Angular potentiometer.
Brake type	Combined with the rear brake
Factor K	1.331

Electrohydraulic	
System type	Load Sensing
Flow rate	175 l/min
High-pressure pump type	Sauer Danfoss piston pump
High-pressure pump displacement	75 cm ³
High-pressure pump rotational speed	2200 rpm
High-pressure pump maximum flow rate	200 l/min
High-pressure pump maximum pressure	200 bar
Maximum quantity of oil to add for heavy implements	16 l
Maximum exportable oil quantity (without adding oil)	64 l
Maximum exportable oil quantity (adding oil)	74 l
Charge pump type	Gravity
Main relief valve adjustment pressure	200 bar ± 10 bar
Number of spool valves (maximum)	8
Number of front "push-pull" connectors	4 connectors i.e. 2 spool valves
Number of rear "push-pull" connectors	12 connectors i.e. 6 spool valves
Maximum flow rate per spool valve	100 l/min
Spool valve control type	Electric
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel or steering wheel + electrohydraulic spool valves
Orbitrol displacement	315 cm ³
Steering ram diameter	90 mm x 45 mm
Steering ram stroke	2 x 143,5 mm
Working pressure	175 bar ± 5 bar
Pressure relief valve adjustment pressure	175 bar ± 5 bar
Shock valve adjustment pressure	240 bar
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	105 mm
Rear linkage travel	788 mm or 860 mm
Maximum lifting capacity at ball joints (rear)	10000 kg
Operating pressure (rear)	180 bar
3-point linkage category (rear)	3 or 4
Front lift ram diameter	100 mm x 50 mm
Front linkage travel	216 mm ± 1,5 mm
Maximum lifting capacity at ball joints (front)	5000 kg
Operating pressure (front)	180 bar
3-point linkage category (front)	3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 or 540E/1000
Maximum permissible power 540/540E in 1 ³ / ₈ (6 and 21 splines)	100 hp
Maximum permissible power 540/540E in 1 ³ / ₄ (20 splines)	160 hp
Maximum permissible power 1000 in 1 ³ / ₈ (6 and 21 splines)	180 hp
Maximum permissible power 1000 in 1 ³ / ₄ (20 splines)	262 hp

Rear power take-off (PTO)	
Engine speed if PTO 540	2037 rpm
Engine speed if PTO 540 eco	1598 rpm
Engine speed if PTO 1000	2031 rpm
Rotational direction	Clockwise
Clutch type	Hydraulics
Number of clutch discs	8 discs
Control pressure	18 bar
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
Maximum permissible power	Clockwise: 147 hp
	Anti-clockwise: 221 hp
Maximum permissible torque	Clockwise: 1000 Nm
	Anti-clockwise: 1500 Nm
Rotational direction	2 directions of rotation
Engine speed if PTO 1000	2040 rpm
Ratio	2.04
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1 ³ / ₈

Electric	
Battery brand	TAB
Battery specifications (2 batteries)	12 V - 105 A/H
Maximum current at start-up (IEC standard)	1010 A
Starter type	12 V noseless
Starter power	4.2 kW
Alternator type	2 x 14 V/80 A (160 A) or 2 x 14 V/120 A (240 A)
Current available on ISOBUS connector	50 A

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTO 4	Transmission
4 AUTO 5 DC	Linkage/ParkLock/Suspended front axle/Armrest/Semi-active cab
PVG 32 valves	Electrohydraulic spool valves
Lights module	User interface for lights
Lighting controller	Lighting control
1 ECM Tier 3 SISU	Engine
1 Orbitrol Danfoss valve	Orbitrol for the Auto-Guide function
Data 4	Onboard computer
Automatic air conditioning module	Air conditioning
DCU	Denoxtronic module

Cab and fittings	
Type of cab suspension available	Passive
	Semi-active
Type of rear-view mirror control available	Manual or automatic

Cab and fittings	
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm ³ /rev.
Refrigerant	R134a
Cab noise level	71 DBA
Roof type	Standard or with window

Model 8670

Engine	
Brand	SISU
Type	84CTA
Nominal power (ISO TR14396) at 2200 rpm	290 hp
Maximum power (ISO TR14396) at 2000 rpm	320 hp
Maximum torque (ISO TR14396)	1400 Nm
Nominal PTO power (OECD) at 2200 rpm	250 hp
Maximum PTO power (OECD) at PTO 1000 rpm	275 hp
Idle speed	800 rpm
Maximum speed	2260 rpm
Engine weight	665 kg
Number of cylinders	6
Engine cubic capacity	8,4 l
Piston travel	145 mm
Piston diameter	111 mm
Compression ratio	16,7 bar ± 0,5 bar
Compression pressure	24 bar
Injection pump brand	Bosch
Injection pump type	CP 3.3
Firing order	1-5-3-6-2-4
Maximum pressure in the high-pressure system	1400 bar
Injector brand	Bosch
Injector type	CRIN 2/8 holes
Charge pump type	Electric
Fuel prefilter filtration capacity	30 μ
Main fuel filter filtration capacity	5 μ
Low-pressure system pressure at minimum speed	0,75 bar
Low-pressure system pressure at maximum speed	0,75 bar
Recommended oil:	CI-4 (ACEA and API)
Maximum operating tilt (precautions)	-
Oil/fuel consumption	Maximum 0.1%
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler integrated into the engine (left side)
Oil pressure at minimum speed	1 bar
Oil pressure at maximum speed	2,5 bar at 5 bar depending on the temperature
Relief valve adjustment pressure	5 bar (spring pressure)
Air suction type	Turbocharged with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	24
Valve clearance value	0,35 mm (inlet and exhaust)

Engine	
Engine cooling system	Water cooling
Fan type	Vistronic fan
Thermostat begins to open at	83 °C
Liquid temperature from - to	- 35 °C to 108 °C
Air compressor brand for the brake system	Knorr
Type of compressor	Piston
Pressure range:	6,5 bar to 8 bar
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available
Urea preheater	Urea system and cab heating in parallel
Gas recycling system	Internal EGR or SCR system
Internal EGR system	Additional intake cam
SCR system (AdBlue/DEF injection)	Exhaust outlet treatment system
Safety system	Quality sensor in the tank
Device brand	Bosch
Type of control	Bosch controller
Main filter filtration capacity	-
Secondary filter filtration capacity	-
Tertiary filter filtration capacity	-
Urea solidification temperature	- 11 °C
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 12 rib belt

Rear axle transmission	
Gearbox type	Continuous variation
Transmission type	ML 260
Number of ranges	2 ranges (hare and tortoise)
Maximum speed	40 km/h or 50 km/h
Number of creeper gears	No creeper gears
Rear axle type	HA 260
Number of pinion/ring gear teeth	12/43
Rear axle ratio (crownwheel and pinion)	32.967
4WD ratio	0.68
Final drive type	Epicyclic
Final drive reduction ratio	9.2 (123+15/15)
Maximum 4WD clutch torque	330 daNm
Number of 4WD discs	8 discs
Main brake type	10" oil-immersed disc
Number of discs	6 discs
Braking pressure	0 to 60 bar
Parking brake type	ParkLock (electrical/hydraulic)
Trailer brake type	Hydraulic and pneumatic
Pneumatic trailer braking pressure	6,5 bar to 8 bar
Hydraulic trailer braking pressure	0 to 150 bar
Maximum operating tilt	25° pitch (front/rear)
	25° roll (right/left)
	17° combined

Rear axle transmission	
Transmission preheater	110 volts/150 watt
Total loaded weight supported by rear axle	40 kph: 12000 kg
	50 kph: 10000 kg

Front axle	
Front axle brand	DANA
Axle type	Suspended or fixed
Supplier reference	Fixed: 770/504
	Suspended: 770/612
Rotational direction	Clockwise
Front axle weight	Fixed: 765 kg
	Suspended: 1066 kg
Total loaded weight supported by front axle	40 kph: 9000 kg
	50 kph: 7500 kg
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	16.862
Number of teeth on final drive	14 x 35 x 85
Final drive ratio	7.071
Number of pinion/ring gear teeth	13/31
Number of differential discs	15 discs
Maximum steering angle	55°
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	45 mm x 90 mm
Steering ram stroke	2 x 143,5 mm
Suspension type	Hydraulics
Suspension ram diameter	90 mm x 100 mm
Suspension ram stroke	100 mm
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	200 bar
Number of accumulators	2
Accumulator pressure	Left 1 l : 10 bar
	Right 1,4 l : 50 bar
Suspension sensor type	Angular potentiometer.
Steering sensor type	Angular potentiometer.
Brake type	Combined with the rear brake
Factor K	1.331

Electrohydraulic	
System type	Load Sensing
Flow rate	175 l/min
High-pressure pump type	Sauer Danfoss piston pump
High-pressure pump displacement	75 cm ³
High-pressure pump rotational speed	2200 rpm
High-pressure pump maximum flow rate	200 l/min
High-pressure pump maximum pressure	200 bar
Maximum quantity of oil to add for heavy implements	16 l
Maximum exportable oil quantity (without adding oil)	64 l

Electrohydraulic	
Maximum exportable oil quantity (adding oil)	74 l
Charge pump type	Gravity
Main relief valve adjustment pressure	200 bar \pm 10 bar
Number of spool valves (maximum)	8
Number of front "push-pull" connectors	4 connectors i.e. 2 spool valves
Number of rear "push-pull" connectors	12 connectors i.e. 6 spool valves
Maximum flow rate per spool valve	100 l/min
Spool valve control type	Electric
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel or steering wheel + electrohydraulic spool valves
Orbitrol displacement	315 cm ³
Steering ram diameter	90 mm x 45 mm
Steering ram stroke	2 x 143,5 mm
Working pressure	175 bar \pm 5 bar
Pressure relief valve adjustment pressure	175 bar \pm 5 bar
Shock valve adjustment pressure	240 bar
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	105 mm
Rear linkage travel	788 mm or 860 mm
Maximum lifting capacity at ball joints (rear)	10000 kg
Operating pressure (rear)	180 bar
3-point linkage category (rear)	3 or 4
Front lift ram diameter	100 mm x 50 mm
Front linkage travel	216 mm \pm 1,5 mm
Maximum lifting capacity at ball joints (front)	5000 kg
Operating pressure (front)	180 bar
3-point linkage category (front)	3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 or 540E/1000
Maximum permissible power 540/540E in 1 ³ / ₈ (6 and 21 splines)	100 hp
Maximum permissible power 540/540E in 1 ³ / ₄ (20 splines)	160 hp
Maximum permissible power 1000 in 1 ³ / ₈ (6 and 21 splines)	180 hp
Maximum permissible power 1000 in 1 ³ / ₄ (20 splines)	283 hp
Engine speed if PTO 540	2037 rpm
Engine speed if PTO 540 eco	1598 rpm
Engine speed if PTO 1000	2031 rpm
Rotational direction	Clockwise
Clutch type	Hydraulics
Number of clutch discs	8 discs
Control pressure	18 bar
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
Maximum permissible power	Clockwise: 147 hp
	Anti-clockwise: 221 hp
Maximum permissible torque	Clockwise: 1000 Nm
	Anti-clockwise: 1500 Nm
Rotational direction	2 directions of rotation
Engine speed if PTO 1000	2040 rpm
Ratio	2.04
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1 ³ / ₈

Electric	
Battery brand	TAB
Battery specifications (2 batteries)	12 V - 105 A/H
Maximum current at start-up (IEC standard)	1010 A
Starter type	12 V noseless
Starter power	4.2 kW
Alternator type	2 x 14 V/80 A (160 A) or 2 x 14 V/120 A (240 A)
Current available on ISOBUS connector	50 A

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTO 4	Transmission
4 AUTO 5 DC	Linkage/ParkLock/Suspended front axle/Armrest/Semi-active cab
PVG 32 valves	Electrohydraulic spool valves
Lights module	User interface for lights
Lighting controller	Lighting control
1 ECM Tier 3 SISU	Engine
1 Orbitrol Danfoss valve	Orbitrol for the Auto-Guide function
Data 4	Onboard computer
Automatic air conditioning module	Air conditioning
DCU	Denoxtronic module

Cab and fittings	
Type of cab suspension available	Passive
	Semi-active
Type of rear-view mirror control available	Manual or automatic
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm ³ /rev.
Refrigerant	R134a
Cab noise level	71 DBA
Roof type	Standard or with window

Model 8680

Engine	
Brand	SISU
Type	84CTA
Nominal power (ISO TR14396) at 2200 rpm	320 hp
Maximum power (ISO TR14396) at 2000 rpm	350 hp
Maximum torque (ISO TR14396)	1492 Nm
Nominal PTO power (OECD) at 2200 rpm	275 hp
Maximum PTO power (OECD) at PTO 1000 rpm	300 hp
Idle speed	800 rpm
Maximum speed	2260 rpm
Engine weight	665 kg
Number of cylinders	6
Engine cubic capacity	8,4 l
Piston travel	145 mm
Piston diameter	111 mm
Compression ratio	16,7 bar ± 0,5 bar
Compression pressure	24 bar
Injection pump brand	Bosch
Injection pump type	CP 3.3
Firing order	1-5-3-6-2-4
Maximum pressure in the high-pressure system	1400 bar
Injector brand	Bosch
Injector type	CRIN 2/8 holes
Charge pump type	Electric
Fuel prefilter filtration capacity	30 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,75 bar
Low-pressure system pressure at maximum speed	0,75 bar
Recommended oil:	CI-4 (ACEA and API)
Maximum operating tilt (precautions)	-
Oil/fuel consumption	Maximum 0.1%
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler integrated into the engine (left side)
Oil pressure at minimum speed	1 bar
Oil pressure at maximum speed	2,5 bar at 5 bar depending on the temperature
Relief valve adjustment pressure	5 bar (spring pressure)
Air suction type	Turbocharged with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	24
Valve clearance value	0,35 mm (inlet and exhaust)
Engine cooling system	Water cooling
Fan type	Vistronic fan
Thermostat begins to open at	83 °C
Liquid temperature from - to	- 35 °C to 108 °C
Air compressor brand for the brake system	Knorr
Type of compressor	Piston
Pressure range:	6,5 bar to 8 bar
Block preheater	110 or 220 volts

Engine	
Fuel preheater	Accessory kit available
Urea preheater	Urea system and cab heating in parallel
Gas recycling system	Internal EGR or SCR system
Internal EGR system	Additional intake cam
SCR system (AdBlue/DEF injection)	Exhaust outlet treatment system
Safety system	Quality sensor in the tank
Device brand	Bosch
Type of control	Bosch controller
Main filter filtration capacity	-
Secondary filter filtration capacity	-
Tertiary filter filtration capacity	-
Urea solidification temperature	- 11 °C
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 12 rib belt

Rear axle transmission	
Gearbox type	Continuous variation
Transmission type	ML 260
Number of ranges	2 ranges (hare and tortoise)
Maximum speed	40 km/h or 50 km/h
Number of creeper gears	No creeper gears
Rear axle type	HA 260
Number of pinion/ring gear teeth	12/43
Rear axle ratio (crownwheel and pinion)	32.967
4WD ratio	0.68
Final drive type	Epicyclic
Final drive reduction ratio	9.2 (123+15/15)
Maximum 4WD clutch torque	330 daNm
Number of 4WD discs	8 discs
Main brake type	10" oil-immersed disc
Number of discs	6 discs
Braking pressure	0 to 60 bar
Parking brake type	ParkLock (electrical/hydraulic)
Trailer brake type	Hydraulic and pneumatic
Pneumatic trailer braking pressure	6,5 bar to 8 bar
Hydraulic trailer braking pressure	0 to 150 bar
Maximum operating tilt	25° pitch (front/rear)
	25° roll (right/left)
	17° combined
Transmission preheater	110 volts/150 watt
Total loaded weight supported by rear axle	40 kph: 12000 kg
	50 kph: 10000 kg

Front axle	
Front axle brand	DANA
Axle type	Suspended or fixed

Front axle	
Supplier reference	Fixed: 770/504
	Suspended: 770/612
Rotational direction	Clockwise
Front axle weight	Fixed: 765 kg
	Suspended: 1066 kg
Total loaded weight supported by front axle	40 kph: 9000 kg
	50 kph: 7500 kg
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	16.862
Number of teeth on final drive	14 x 35 x 85
Final drive ratio	7.071
Number of pinion/ring gear teeth	13/31
Number of differential discs	15 discs
Maximum steering angle	55°
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	45 mm x 90 mm
Steering ram stroke	2 x 143,5 mm
Suspension type	Hydraulics
Suspension ram diameter	90 mm x 100 mm
Suspension ram stroke	100 mm
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	200 bar
Number of accumulators	2
Accumulator pressure	Left 1 l : 10 bar
	Right 1,4 l : 50 bar
Suspension sensor type	Angular potentiometer.
Steering sensor type	Angular potentiometer.
Brake type	Combined with the rear brake
Factor K	1.331

Electrohydraulic	
System type	Load Sensing
Flow rate	175 l/min
High-pressure pump type	Sauer Danfoss piston pump
High-pressure pump displacement	75 cm ³
High-pressure pump rotational speed	2200 rpm
High-pressure pump maximum flow rate	200 l/min
High-pressure pump maximum pressure	200 bar
Maximum quantity of oil to add for heavy implements	16 l
Maximum exportable oil quantity (without adding oil)	64 l
Maximum exportable oil quantity (adding oil)	74 l
Charge pump type	Gravity
Main relief valve adjustment pressure	200 bar ± 10 bar
Number of spool valves (maximum)	8
Number of front "push-pull" connectors	4 connectors i.e. 2 spool valves
Number of rear "push-pull" connectors	12 connectors i.e. 6 spool valves

Electrohydraulic	
Maximum flow rate per spool valve	100 l/min
Spool valve control type	Electric
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel or steering wheel + electrohydraulic spool valves
Orbitrol displacement	315 cm ³
Steering ram diameter	90 mm x 45 mm
Steering ram stroke	2 x 143,5 mm
Working pressure	175 bar ± 5 bar
Pressure relief valve adjustment pressure	175 bar ± 5 bar
Shock valve adjustment pressure	240 bar
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	105 mm
Rear linkage travel	788 mm or 860 mm
Maximum lifting capacity at ball joints (rear)	10000 kg
Operating pressure (rear)	180 bar
3-point linkage category (rear)	3 or 4
Front lift ram diameter	100 mm x 50 mm
Front linkage travel	216 mm ± 1,5 mm
Maximum lifting capacity at ball joints (front)	5000 kg
Operating pressure (front)	180 bar
3-point linkage category (front)	3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 or 540E/1000
Maximum permissible power 540/540E in 1 ³ / ₈ (6 and 21 splines)	100 hp
Maximum permissible power 540/540E in 1 ³ / ₄ (20 splines)	160 hp
Maximum permissible power 1000 in 1 ³ / ₈ (6 and 21 splines)	180 hp
Maximum permissible power 1000 in 1 ³ / ₄ (20 splines)	300 hp
Engine speed if PTO 540	2037 rpm
Engine speed if PTO 540 eco	1598 rpm
Engine speed if PTO 1000	2031 rpm
Rotational direction	Clockwise
Clutch type	Hydraulics
Number of clutch discs	8 discs
Control pressure	18 bar
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
Maximum permissible power	Clockwise: 147 hp
	Anti-clockwise: 221 hp
Maximum permissible torque	Clockwise: 1000 Nm
	Anti-clockwise: 1500 Nm

Front power take-off	
Rotational direction	2 directions of rotation
Engine speed if PTO 1000	2040 rpm
Ratio	2.04
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1"3/8

Electric	
Battery brand	TAB
Battery specifications (2 batteries)	12 V - 105 A/H
Maximum current at start-up (IEC standard)	1010 A
Starter type	12 V noseless
Starter power	4.2 kW
Alternator type	2 x 14 V/80 A (160 A) or 2 x 14 V/120 A (240 A)
Current available on ISOBUS connector	50 A

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTO 4	Transmission
4 AUTO 5 DC	Linkage/ParkLock/Suspended front axle/Armrest/Semi-active cab
PVG 32 valves	Electrohydraulic spool valves
Lights module	User interface for lights
Lighting controller	Lighting control
1 ECM Tier 3 SISU	Engine
1 Orbitrol Danfoss valve	Orbitrol for the Auto-Guide function
Data 4	Onboard computer
Automatic air conditioning module	Air conditioning
DCU	Denoxtronic module

Cab and fittings	
Type of cab suspension available	Passive
	Semi-active
Type of rear-view mirror control available	Manual or automatic
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm ³ /rev.
Refrigerant	R134a
Cab noise level	71 DBA
Roof type	Standard or with window

Model 8690

Engine	
Brand	SISU
Type	84CTA
Nominal power (ISO TR14396) at 2200 rpm	340 hp
Maximum power (ISO TR14396) at 2000 rpm	370 hp
Maximum torque (ISO TR14396)	1540 Nm
Nominal PTO power (OECD) at 2200 rpm	290 hp

Engine	
Maximum PTO power (OECD) at PTO 1000 rpm	320 hp
Idle speed	800 rpm
Maximum speed	2260 rpm
Engine weight	665 kg
Number of cylinders	6
Engine cubic capacity	8,4 l
Piston travel	145 mm
Piston diameter	111 mm
Compression ratio	16,7 bar ± 0,5 bar
Compression pressure	24 bar
Injection pump brand	Bosch
Injection pump type	CP 3.3
Firing order	1-5-3-6-2-4
Maximum pressure in the high-pressure system	1400 bar
Injector brand	Bosch
Injector type	CRIN 2/8 holes
Charge pump type	Electric
Fuel prefilter filtration capacity	30 µ
Main fuel filter filtration capacity	5 µ
Low-pressure system pressure at minimum speed	0,75 bar
Low-pressure system pressure at maximum speed	0,75 bar
Recommended oil:	CI-4 (ACEA and API)
Maximum operating tilt (precautions)	-
Oil/fuel consumption	Maximum 0.1%
Lubrication system	Gear pump at the bottom of the timing
Oil cooling system	Cooler integrated into the engine (left side)
Oil pressure at minimum speed	1 bar
Oil pressure at maximum speed	2,5 bar at 5 bar depending on the temperature
Relief valve adjustment pressure	5 bar (spring pressure)
Air suction type	Turbocharged with air/air intercooler
Air preheating type	Grid heater with relay controlled by the ECU
Number of valves	24
Valve clearance value	0,35 mm (inlet and exhaust)
Engine cooling system	Water cooling
Fan type	Vistronic fan
Thermostat begins to open at	83 °C
Liquid temperature from - to	- 35 °C to 108 °C
Air compressor brand for the brake system	Knorr
Type of compressor	Piston
Pressure range:	6,5 bar to 8 bar
Block preheater	110 or 220 volts
Fuel preheater	Accessory kit available
Urea preheater	Urea system and cab heating in parallel
Gas recycling system	SCR system
SCR system (AdBlue/DEF injection)	Exhaust outlet treatment system
Safety system	Quality sensor in the tank
Device brand	Bosch
Type of control	Bosch controller

Engine	
Main filter filtration capacity	-
Secondary filter filtration capacity	-
Tertiary filter filtration capacity	-
Urea solidification temperature	- 11 °C
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 12 rib belt

Rear axle transmission	
Gearbox type	Continuous variation
Transmission type	ML 260
Number of ranges	2 ranges (hare and tortoise)
Maximum speed	40 km/h or 50 km/h
Number of creeper gears	No creeper gears
Rear axle type	HA 260
Number of pinion/ring gear teeth	12/43
Rear axle ratio (crownwheel and pinion)	32.967
4WD ratio	0.68
Final drive type	Epicyclic
Final drive reduction ratio	9.2 (123+15/15)
Maximum 4WD clutch torque	330 daNm
Number of 4WD discs	8 discs
Main brake type	10" oil-immersed disc
Number of discs	6 discs
Braking pressure	0 to 60 bar
Parking brake type	ParkLock (electrical/hydraulic)
Trailer brake type	Hydraulic and pneumatic
Pneumatic trailer braking pressure	6,5 bar to 8 bar
Hydraulic trailer braking pressure	0 to 150 bar
Maximum operating tilt	25° pitch (front/rear)
	25° roll (right/left)
	17° combined
Transmission preheater	110 volts/150 watt
Total loaded weight supported by rear axle	40 kph: 12000 kg
	50 kph: 10000 kg

Front axle	
Front axle brand	DANA
Axle type	Suspended or fixed
Supplier reference	Fixed: 770/504
	Suspended: 770/612
Rotational direction	Clockwise
Front axle weight	Fixed: 765 kg
	Suspended: 1066 kg
Total loaded weight supported by front axle	40 kph: 9000 kg
	50 km/h : 7500 kg
Recommended oil type (beam and final drive)	SAE 85 W 90 (API GL5)
Total ratio for front axle	16.862

Front axle	
Number of teeth on final drive	14 x 35 x 85
Final drive ratio	7.071
Number of pinion/ring gear teeth	13/31
Number of differential discs	15 discs
Maximum steering angle	55°
Oscillation angle	-
Type of oscillation stop	Mechanical
Steering ram diameter	45 mm x 90 mm
Steering ram stroke	2 x 143,5 mm
Suspension type	Hydraulics
Suspension ram diameter	90 mm x 100 mm
Suspension ram stroke	100 mm
Hydraulic control unit brand	Husco
Hydraulic control unit nominal pressure	200 bar
Number of accumulators	2
Accumulator pressure	Left 1 l : 10 bar
	Right 1,4 l : 50 bar
Suspension sensor type	Angular potentiometer.
Steering sensor type	Angular potentiometer.
Brake type	Combined with the rear brake
Factor K	1.331

Electrohydraulic	
System type	Load Sensing
Flow rate	175 l/min
High-pressure pump type	Sauer Danfoss piston pump
High-pressure pump displacement	75 cm ³
High-pressure pump rotational speed	2200 rpm
High-pressure pump maximum flow rate	200 l/min
High-pressure pump maximum pressure	200 bar
Maximum quantity of oil to add for heavy implements	16 l
Maximum exportable oil quantity (without adding oil)	64 l
Maximum exportable oil quantity (adding oil)	74 l
Charge pump type	Gravity
Main relief valve adjustment pressure	200 bar ± 10 bar
Number of spool valves (maximum)	8
Number of front "push-pull" connectors	4 connectors i.e. 2 spool valves
Number of rear "push-pull" connectors	12 connectors i.e. 6 spool valves
Maximum flow rate per spool valve	100 l/min
Spool valve control type	Electric
Recommended oil:	According to MF CMS M1145 specification

Steering	
Steering type	Hydrostatic
Type of control	Steering wheel or steering wheel + electrohydraulic spool valves
Orbitrol displacement	315 cm ³
Steering ram diameter	90 mm x 45 mm
Steering ram stroke	2 x 143,5 mm

Steering	
Working pressure	175 bar \pm 5 bar
Pressure relief valve adjustment pressure	175 bar \pm 5 bar
Shock valve adjustment pressure	240 bar
Oil recommended for steering	According to MF CMS M1145 specification

Linkage	
Rear lift ram diameter	105 mm
Rear linkage travel	788 mm or 860 mm
Maximum lifting capacity at ball joints (rear)	10000 kg
Operating pressure (rear)	180 bar
3-point linkage category (rear)	3 or 4
Front lift ram diameter	100 mm x 50 mm
Front linkage travel	216 mm \pm 1,5 mm
Maximum lifting capacity at ball joints (front)	5000 kg
Operating pressure (front)	180 bar
3-point linkage category (front)	3

Rear power take-off (PTO)	
Number of selections possible for rear PTO	540/1000 or 540E/1000
Maximum permissible power 540/540E in 1 ³ / ₈ (6 and 21 splines)	100 hp
Maximum permissible power 540/540E in 1 ³ / ₄ (20 splines)	160 hp
Maximum permissible power 1000 in 1 ³ / ₈ (6 and 21 splines)	180 hp
Maximum permissible power 1000 in 1 ³ / ₄ (20 splines)	300 hp
Engine speed if PTO 540	2037 rpm
Engine speed if PTO 540 eco	1598 rpm
Engine speed if PTO 1000	2031 rpm
Rotational direction	Clockwise
Clutch type	Hydraulics
Number of clutch discs	8 discs
Control pressure	18 bar
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
Maximum permissible power	Clockwise: 147 hp
	Anti-clockwise: 221 hp
Maximum permissible torque	Clockwise: 1000 Nm
	Anti-clockwise: 1500 Nm
Rotational direction	2 directions of rotation
Engine speed if PTO 1000	2040 rpm
Ratio	2.04
Clutch type	Hydraulics
Splined shaft type	6 and 21 in 1 ³ / ₈

Electric	
Battery brand	TAB
Battery specifications (2 batteries)	12 V - 105 A/H
Maximum current at start-up (IEC standard)	1010 A

Electric	
Starter type	12 V noseless
Starter power	4.2 kW
Alternator type	2 x 14 V/80 A (160 A) or 2 x 14 V/120 A (240 A)
Current available on ISOBUS connector	50 A

Electronics	
Function of each controller	
DCC3	Instrument panel
AUTO 4	Transmission
4 AUTO 5 DC	Linkage/ParkLock/Suspended front axle/Armrest/Semi-active cab
PVG 32 valves	Electrohydraulic spool valves
Lights module	User interface for lights
Lighting controller	Lighting control
1 ECM Tier 3 SISU	Engine
1 Orbitrol Danfoss valve	Orbitrol for the Auto-Guide function
Data 4	Onboard computer
Automatic air conditioning module	Air conditioning
DCU	Denoxtronic module

Cab and fittings	
Type of cab suspension available	Passive
	Semi-active
Type of rear-view mirror control available	Manual or automatic
Type of air conditioning control available	Manual or automatic
Type and brand of air conditioning compressor	SANDEN with axial pistons
Compressor displacement	154.9 cm ³ /rev.
Refrigerant	R134a
Cab noise level	71 DBA
Roof type	Standard or with window

C. Forward speeds

C.1 Forward speed for all models with transmission in modeDyna-VT

Tractor version 50 kph*

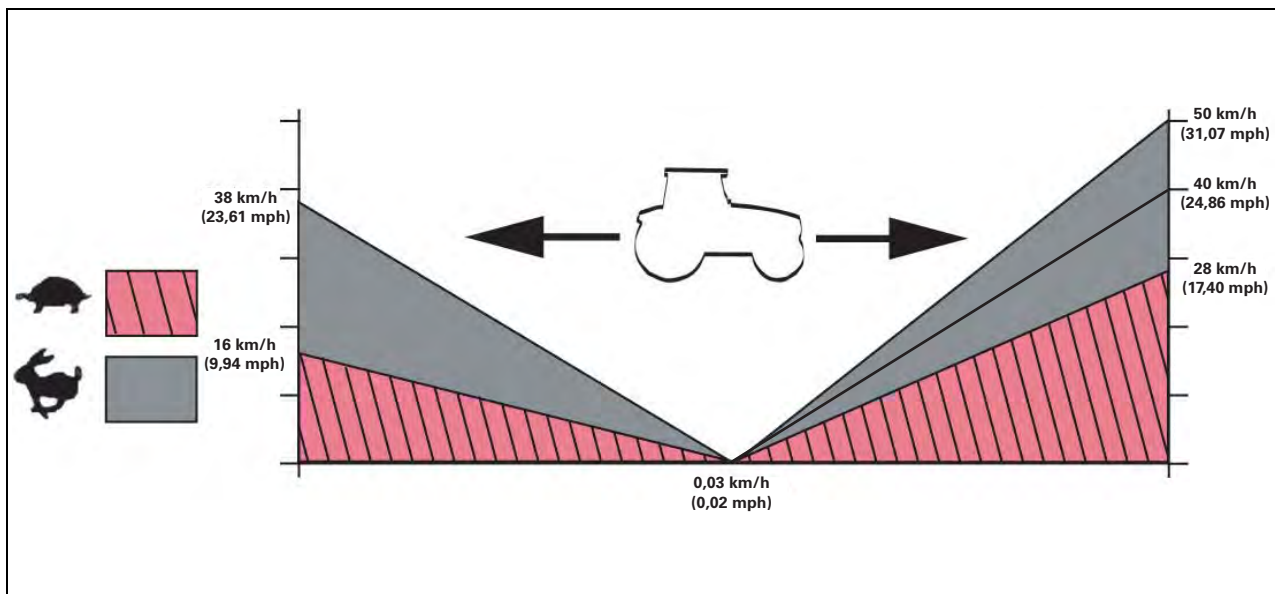
*depending on country legislation.

For the 40 km/h version, the speed is electronically controlled.

For the 40 km/h version, the tractor reaches maximum speed at 1600 rpm.

For the 50 km/h version, the tractor reaches maximum speed at 1900 rpm.

Continuous variation mode		
	Forward	Reverse
Slow speed range (Tortoise)	0,03 km/h to 28 km/h	0,03 km/h to 16 km/h
High speed range (Hare)	0.03 kph to 40 kph or 50 kph depending on version	0,03 km/h to 38 km/h



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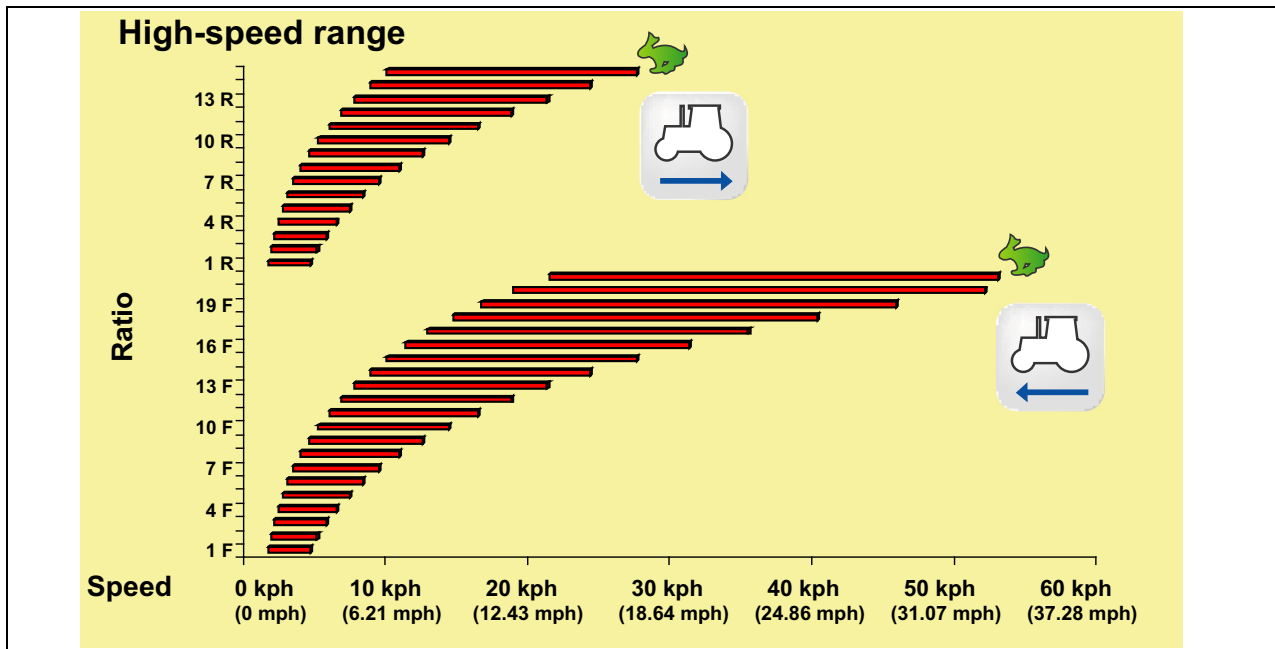
Fig. 1

C.2 Forward speed for all models with transmission in Stepshift mode

Forward travel	High speed range (Hare)			Slow speed range (Tortoise)			Creep range (Snail)		
	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm
1 F	1.7 kph	4.0 kph	4.6 kph	0.8 kph	1.8 kph	2.1 kph	0.1 kph	0.2 kph	0.2 kph
2 F	1.9 kph	4.4 kph	5.1 kph	0.9 kph	2.2 kph	2.5 kph	0.2 kph	0.4 kph	0.5 kph
3 F	2.1 kph	5.0 kph	5.8 kph	1.1 kph	2.6 kph	3.0 kph	0.3 kph	0.6 kph	0.7 kph
4 F	2.4 kph	5.6 kph	6.5 kph	1.3 kph	3.0 kph	3.5 kph	0.3 kph	0.8 kph	0.9 kph
5 F	2.7 kph	6.4 kph	7.4 kph	1.4 kph	3.4 kph	3.9 kph	0.4 kph	1.0 kph	1.2 kph
6 F	3.0 kph	7.2 kph	8.3 kph	1.6 kph	3.8 kph	4.4 kph	0.5 kph	1.2 kph	1.4 kph
7 F	3.5 kph	8.2 kph	9.5 kph	1.8 kph	4.2 kph	4.9 kph	0.6 kph	1.4 kph	1.6 kph
8 F	4.0 kph	9.4 kph	10.9 kph	2.0 kph	4.8 kph	5.6 kph	0.7 kph	1.6 kph	1.9 kph
9 F	4.5 kph	10.8 kph	12.5 kph	2.3 kph	5.4 kph	6.3 kph	0.8 kph	1.8 kph	2.1 kph
10 F	5.2 kph	12.4 kph	14.4 kph	2.6 kph	6.2 kph	7.2 kph	0.8 kph	2.0 kph	2.3 kph
11 F	6.0 kph	14.2 kph	16.4 kph	2.9 kph	7.0 kph	8.1 kph	0.9 kph	2.2 kph	2.5 kph
12 F	6.8 kph	16.2 kph	18.8 kph	3.4 kph	8.0 kph	9.3 kph	1.0 kph	2.4 kph	2.8 kph
13 F	7.7 kph	18.4 kph	21.3 kph	3.9 kph	9.2 kph	10.7 kph	1.2 kph	2.8 kph	3.2 kph

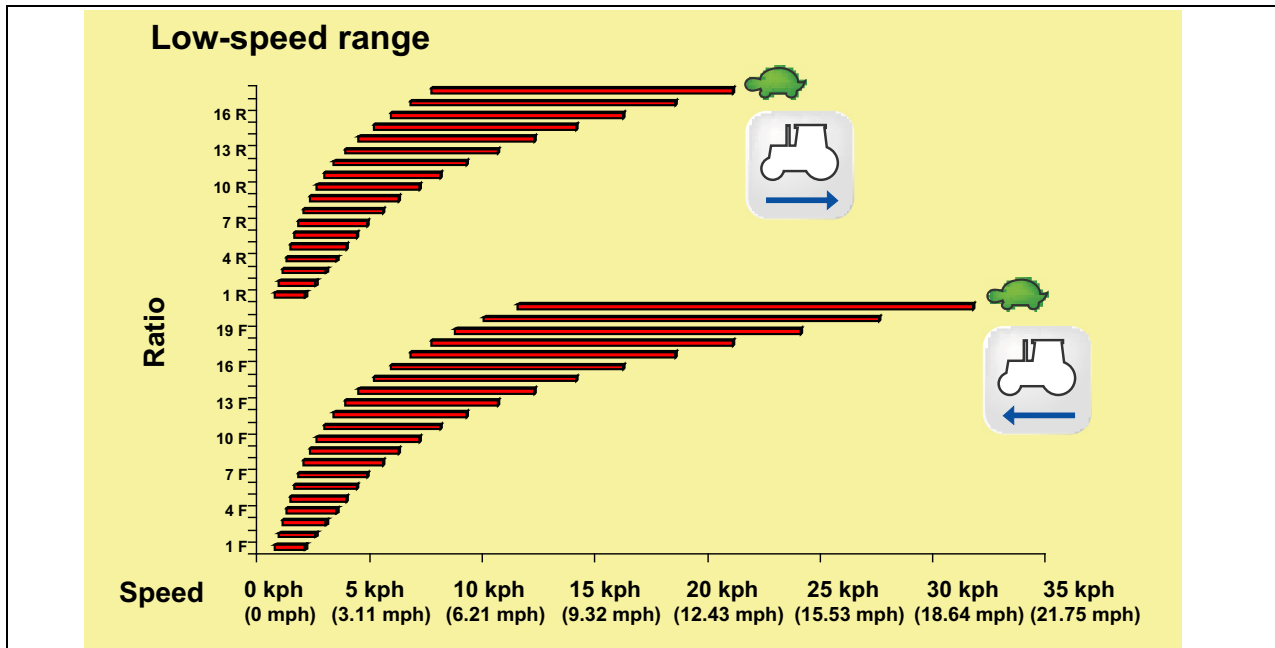
Forward travel	High speed range (Hare)			Slow speed range (Tortoise)			Creeper range (Snail)		
	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm
14 F	8.8 kph	21.0 kph	24.3 kph	4.5 kph	10.6 kph	12.3 kph	1.4 kph	3.4 kph	3.9 kph
15 F	10.0 kph	23.8 kph	27.6 kph	5.1 kph	12.2 kph	14.1 kph	1.7 kph	4.0 kph	4.6 kph
16 F	11.4 kph	27.0 kph	31.3 kph	5.9 kph	14.0 kph	16.2 kph	2.0 kph	4.8 kph	5.6 kph
17 F	12.9 kph	30.6 kph	35.4 kph	6.7 kph	16.0 kph	18.5 kph	2.4 kph	5.6 kph	6.5 kph
18 F	14.7 kph	34.8 kph	40.3 kph	7.7 kph	18.2 kph	21.1 kph	2.7 kph	6.4 kph	7.4 kph
19 F	16.7 kph	39.6 kph	45.9 kph	8.8 kph	20.8 kph	24.1 kph	3.0 kph	7.2 kph	8.3 kph
20 F	18.9 kph	45.0 kph	52.1 kph	10.0 kph	23.8 kph	27.6 kph	3.5 kph	8.4 kph	9.7 kph
21 F	21.5 kph	51.0 kph	53.0 kph	11.5 kph	27.4 kph	31.7 kph	4.2 kph	10.0 kph	11.6 kph

Reverse travel	High speed range (Hare)			Slow speed range (Tortoise)			Creeper range (Snail)		
	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm	800 rpm	1900 rpm	2200 rpm
1 R	1.7 kph	4.0 kph	4.6 kph	0.8 kph	1.8 kph	2.1 kph	0.1 kph	0.2 kph	0.2 kph
2 R	1.9 kph	4.4 kph	5.1 kph	0.9 kph	2.2 kph	2.5 kph	0.2 kph	0.4 kph	0.5 kph
3 R	2.1 kph	5.0 kph	5.8 kph	1.1 kph	2.6 kph	3.0 kph	0.3 kph	0.6 kph	0.7 kph
4 R	2.4 kph	5.6 kph	6.5 kph	1.3 kph	3.0 kph	3.5 kph	0.3 kph	0.8 kph	0.9 kph
5 R	2.7 kph	6.4 kph	7.4 kph	1.4 kph	3.4 kph	3.9 kph	0.4 kph	1.0 kph	1.2 kph
6 R	3.0 kph	7.2 kph	8.3 kph	1.6 kph	3.8 kph	4.4 kph	0.5 kph	1.2 kph	1.4 kph
7 R	3.5 kph	8.2 kph	9.5 kph	1.8 kph	4.2 kph	4.9 kph	0.6 kph	1.4 kph	1.6 kph
8 R	4.0 kph	9.4 kph	10.9 kph	2.0 kph	4.8 kph	5.6 kph	0.7 kph	1.6 kph	1.9 kph
9 R	4.5 kph	10.8 kph	12.5 kph	2.3 kph	5.4 kph	6.3 kph	0.8 kph	1.8 kph	2.1 kph
10 R	5.2 kph	12.4 kph	14.4 kph	2.6 kph	6.2 kph	7.2 kph	0.8 kph	2.0 kph	2.3 kph
11 R	6.0 kph	14.2 kph	16.4 kph	2.9 kph	7.0 kph	8.1 kph	0.9 kph	2.2 kph	2.5 kph
12 R	6.8 kph	16.2 kph	18.8 kph	3.4 kph	8.0 kph	9.3 kph	1.0 kph	2.4 kph	2.8 kph
13 R	7.7 kph	18.4 kph	21.3 kph	3.9 kph	9.2 kph	10.7 kph	1.2 kph	2.8 kph	3.2 kph
14 R	8.8 kph	21.0 kph	24.3 kph	4.5 kph	10.6 kph	12.3 kph	1.4 kph	3.4 kph	3.9 kph
15 R	10.0 kph	23.8 kph	27.6 kph	5.1 kph	12.2 kph	14.1 kph	1.7 kph	4.0 kph	4.6 kph
16 R				5.9 kph	14.0 kph	16.2 kph	2.0 kph	4.8 kph	5.6 kph
17 R				6.7 kph	16.0 kph	18.5 kph	2.4 kph	5.6 kph	6.5 kph
18 R				7.7 kph	18.2 kph	21.1 kph	2.7 kph	6.4 kph	7.4 kph
19 R							3.0 kph	7.2 kph	8.3 kph
20 R							3.5 kph	8.4 kph	9.7 kph
21 R							4.2 kph	10.0 kph	11.6 kph



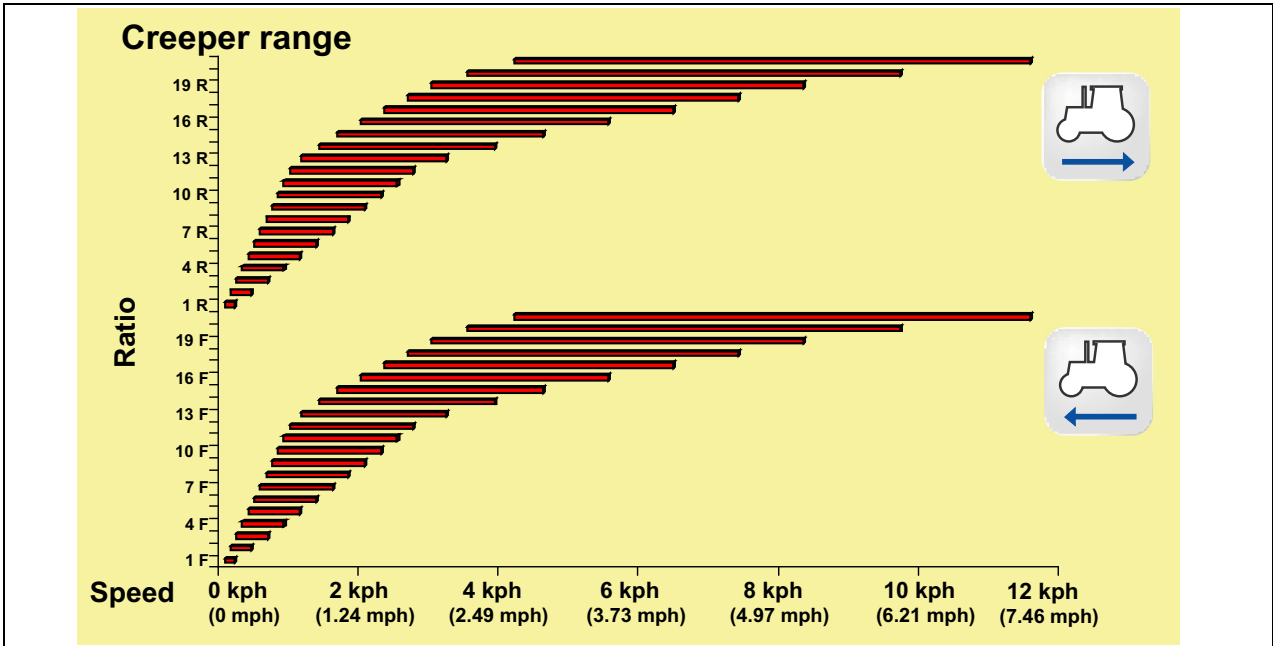
1004784

Fig. 2



1004787

Fig. 3

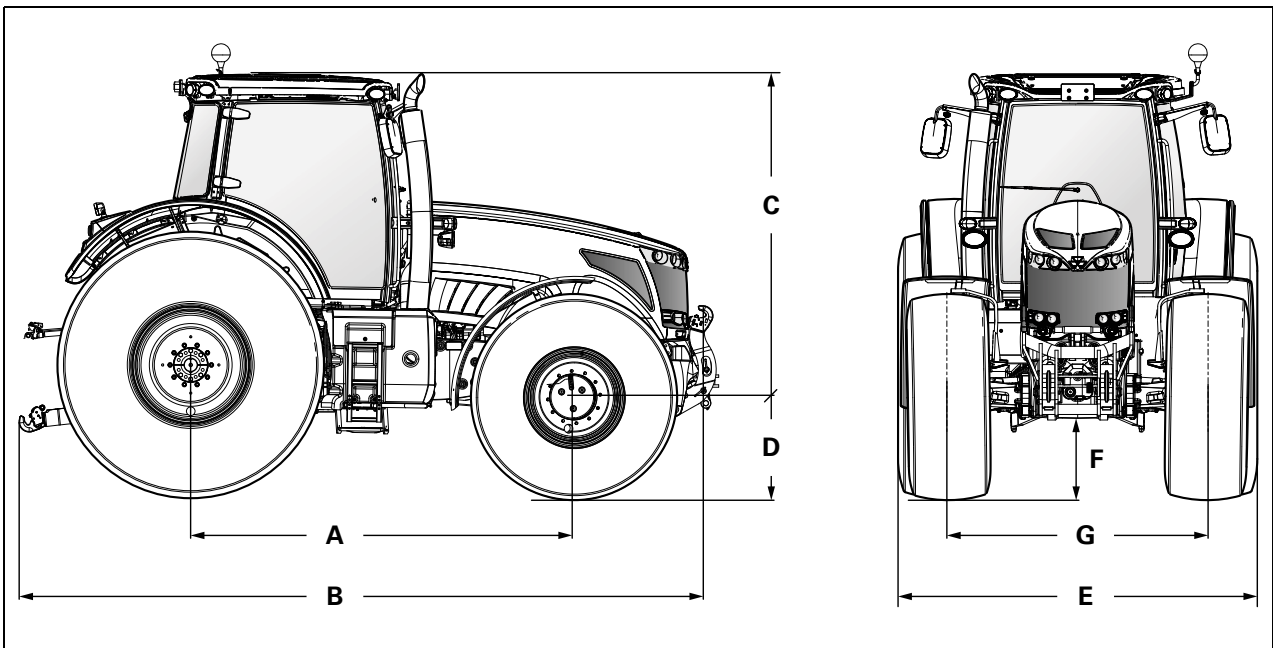


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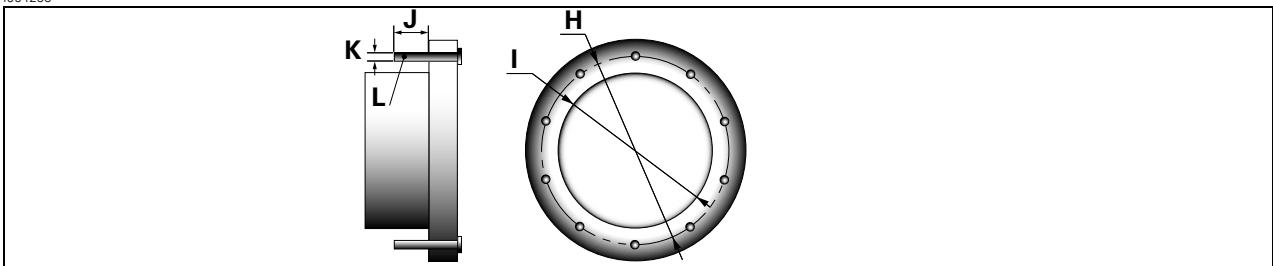
Fig. 4

D. Dimensions

D.1 Dimensions and weights



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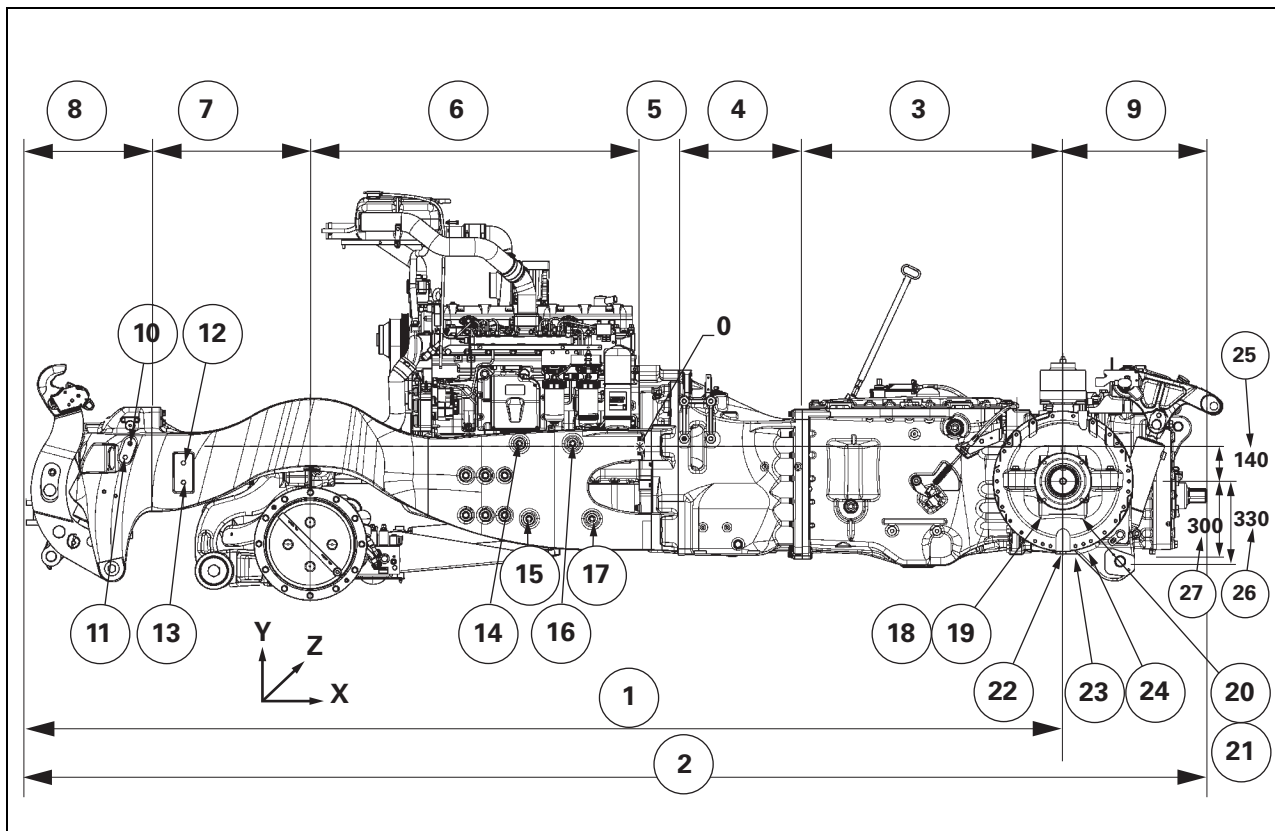
1004317

Fig. 5

Specifications		8650	8660	8670	8680	8690
A	Wheel track	3105 mm	3105 mm	3105 mm	3105 mm	3105 mm
B	External length with front linkage	4868 mm				
	External length without front linkage	4745 mm				
C	Height to roof	2357 mm				
	Height to roof with TopDock	2377 mm				
D	Height to ground	Rear 1025 mm with 710/85R38 tyres Rear 800 mm with 620/75R30 tyres				
E	Maximum external width	2550 mm				
F	Ground clearance	472 mm				
Weight at no load (with full tank, without additional weights)		10300 kg to 11500 kg				

Specifications		Rear axle HA 260	Front axle DANA 770
G	Distance between flanges	Short shaft: mm Long shaft: mm	1892 mm
H	Centre-to-centre distance between studs	335 mm	370,8 mm
I	Centring diameter	280,8 mm	425 mm
J	Stud length	Rim with steel disc 41 mm Rim with cast iron disc 66 mm	47 mm
K	Stud diameter	M22	M22x1.5
L	Number of studs (per side)	10	12

D.2 Attachment points: all models with front linkage 5 T



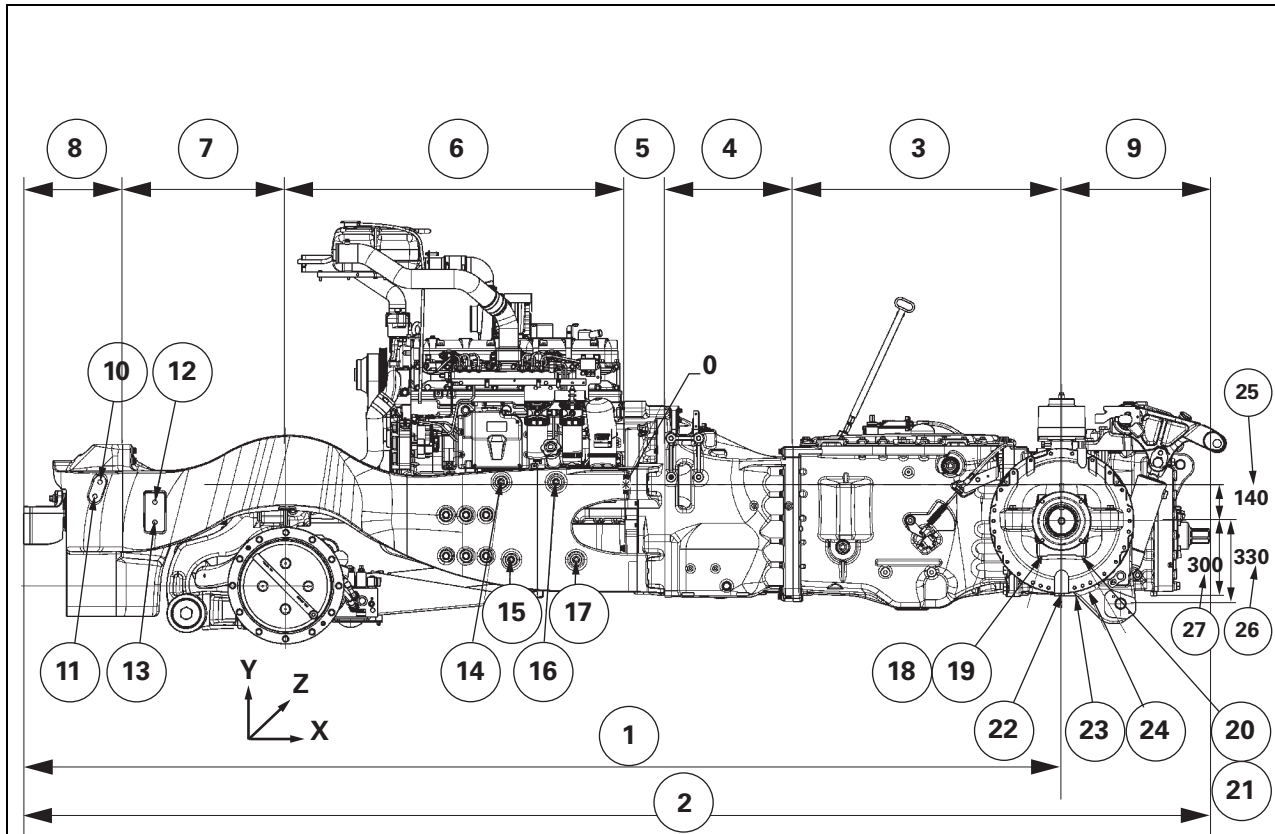
1003764

Fig. 6

NOTE: Values x, y and z represent reference point 0 of the tractor.

Reference		X	Y	Z
1-		3105.1 mm		
2	4868.6 mm			
3	975 mm			
4	512 mm			
5	161.3 mm			
6	1356.8 mm			
7	652.2 mm			
8	518 mm			
9	592.5 mm			
10	M20	-2099 mm	+/-410 mm	15 mm
11	M20	-2119 mm	+/-410 mm	-41.5 mm
12	M20	-1879 mm	+/-225 mm	-64.9 mm
13	M20	-1879 mm	+/-225 mm	-144.9 mm
14	M20 tapered alignment screw	-494 mm	+/-294 mm	15 mm
15	M20 tapered alignment screw	-454 mm	+/-284 mm	-294.9 mm
16	M20 tapered alignment screw	-274 mm	+/-294 mm	15 mm
17	M20 tapered alignment screw	-194 mm	+/-284 mm	-294.9 mm
18	M20	1670.3 mm	+/-740 mm	-280 mm
19	M20	1670.3 mm	+/-645 mm	-280 mm
20	M20	1826.3 mm	+/-740 mm	-280 mm
21	M20	1826.3 mm	+/-645 mm	-280 mm
22	M20	1783.3 mm	+/-100 mm	-437.5 mm
23	M20	1804 mm	+/-100 mm	-440 mm
24	M20	1858.3 mm	+/-100 mm	-437.5 mm
25	140 mm			
26	330 mm			
27	300 mm			

D.3 Attachment points: all models without front linkage



1003763

Fig. 7

NOTE: Values x, y and z represent reference point 0 of the tractor.

Reference		X	Y	Z
1-	3105.1 mm			
2	4744.8 mm			
3	975 mm			
4	512 mm			
5	161.3 mm			
6	1356.8 mm			
7	652.2 mm			
8	395 mm			
9	592.5 mm			
10	M20	-2099 mm	+/-410 mm	15 mm
11	M20	-2119 mm	+/-410 mm	-41.5 mm
12	M20	-1879 mm	+/-225 mm	-64.9 mm
13	M20	-1879 mm	+/-225 mm	-144.9 mm
14	M20 tapered alignment screw	-494 mm	+/-294 mm	15 mm
15	M20 tapered alignment screw	-454 mm	+/-284 mm	-294.9 mm
16	M20 tapered alignment screw	-274 mm	+/-294 mm	15 mm
17	M20 tapered alignment screw	-194 mm	+/-284 mm	-294.9 mm
18	M20	1670.3 mm	+/-740 mm	-280 mm
19	M20	1670.3 mm	+/-645 mm	-280 mm
20	M20	1826.3 mm	+/-740 mm	-280 mm

Reference		X	Y	Z
21	M20	1826.3 mm	+/-645 mm	-280 mm
22	M20	1783.3 mm	+/-100 mm	-437.5 mm
23	M20	1804 mm	+/-100 mm	-440 mm
24	M20	1858.3 mm	+/-100 mm	-437.5 mm
1-	140 mm			
26	330 mm			
27	300 mm			

E. Capacities

E.1 Capacities

Type	Model	Capacity
Fuel tank	EGR	460 l
Fuel tank	E3 engine with AdBlue/DEF technology	360 l
Additional tank	All	230 l
Urea reservoir	E3 engine with AdBlue/DEF technology	30 l
Cooling system	All	34 l
Engine sump	All	21 l
Auxiliary hydraulics	All	110 l
Transmission/rear axle	All	85 l
Rear final drive (each)	All	14 l
Linkage cover plate	All	0,5 l
Fixed front axle beam	770/504	15 l
Fixed front axle final drive (each)	770/504	7 l
Suspended front axle beam	770/612	14,5 l
Suspended front axle final drive (each)	770/612	7 l
Clutch fluid	All	0,6 l
Refrigerant fluid R134A	All	1200 g
Windscreen washer bottle	All	4,5 l

E.2 Accumulator pressure and volume

Type	Volume	Pressure
Front axle left accumulator	1 l (of which 200 ml is oil)	10 bar
Front axle right accumulator	1,4 l	50 bar
ParkLock accumulator	0,75 l	108 bar
Main braking accumulator	0,75 l	44 bar
Passive suspended cab accumulator (the pressure cannot be modified)	0,075 l (of which 0,025 l is oil)	30 bar
Semi-active suspended cab accumulator (the pressure cannot be modified)	0,075 l	38 bar
Transmission accumulator (the pressure cannot be modified)	0,3 l	10 bar

F. Conversion table

Length		
in mm	x 0.0394	in
in	x 25.400	mm
m	x 3.2808	ft
ft	x 0.3048	m
km	x 0.3214	mile
mile	x 1.6093	km

Surface area		
mm ²	x 0.0016	in ²
in ²	x 645.16	mm ²
m ²	x 10.7639	ft ²
ft ²	x 0.0929	m ²
ha	x 2.4711	acre
acre	x 0.4047	ha

Volume		
cm ³	x 0.06102	in ³
in ³	x 16.387	cm ³
m ³	x 35.315	ft ³
ft ³	x 0.0283	m ³

Capacity		
ml	x 0.0338	fl oz (US)
fl oz (US)	x 29.5735	ml
ml	x 0.0352	fl oz (UK)
fl oz (UK)	x 28.4131	ml
l	x 0.2200	gal (UK)
gal (UK)	x 4.5460	l
l	x 0.264	gal (US)
gal (US)	x 3.7853	l
gal (UK)	x 1.2010	gal (US)
gal (US)	x 0.8330	gal (UK)

Power		
hp	x 0.9863	bhp (UK)
bhp (UK)	x 1.0139	hp
kW	x 1.3410	bhp (UK)
bhp (UK)	x 0.7457	kW
kW	x 1.36	hp
hp	x 0.736	kW

Torque		
Nm	x 0.7375	lbf ft
lbf ft	x 1.356	Nm
daNm	x 7.3756	lbf ft
lbf ft	x 0.736	daNm

Pressure		
bar	x 14.504	lbf/in ² (PSI)
lbf/in ² (PSI)	x 0.0690	bar

Flow rate		
l/min	x 0.264	gal/min (US)
l/min	x 0.22	gal/min (UK)
l/hr	x 0.264	gal/hr (US)
l/hr	x 0.22	gal/hr (UK)
l/ha	x 0.107	gal/acre (US)
l/ha	x 0.089	gal/acre (UK)
gal/min (US)	x 3.7853	l/min
gal/min (UK)	x 4.5460	l/min
gal/hr (US)	x 3.7853	l/hr
gal/hr (UK)	x 4.5460	l/hr
gal/acre (US)	x 9.354	l/ha
gal/acre (UK)	x 11.232	l/ha

FWD SPEED		
kph	x 0.6214	mile/hr (mph)
mile/hr (mph)	x 1.6093	kph

Weight		
g	x 0.03527	oz
oz	x 28.3495	g
kg	x 2.2046	lb
lb	x 0.4536	kg
kg	x 0.00098	UK ton
UK ton	x 1016.1	kg
t	x 0.9842	UK ton
UK ton	x 1.016	t
t	x 1.1023	US ton
US ton	x 0.9072	t

Temperature		
°C	°C x 1.8 + 32	°F
°F	(°F - 32)/1.8	°C

G. Retaining compounds and sealing products

The Loctite compounds mentioned in this manual are referred to by their industrial name.

For repair purposes, use their commercial names or the corresponding Massey Ferguson references listed in the table below.

These products are available in the Massey Ferguson network or may be ordered from the following address:

Henkel Loctite France S.A.
10, avenue Eugène Gazeau
BP 40090
60304 Senlis Cedex, France

Loctite product type	Operation
221	Standard threadlock
241	
242	Medium threadlock
270	Strong threadlock
496	Glue (for metals)
510	Standard sealant
518	Sealant for flat surfaces and paper seals
542	Thread sealant
549	Oil-resistant surface sealant
573	Surface sealant (engine, gearbox)
574	
577	Threaded union sealant (prevents loosening and leakages caused by vibrations)
603	Retainer for cylindrical assemblies (bearings, rings etc.)
638	Strong retainer for cylindrical assemblies (bearings, rings etc.)
648	Strong retainer for cylindrical assemblies (resistant to high temperatures)
706	Degreasing cleaner
5206	Metallic surface sealant (gearbox housing, engine sump)
5910	± Flexible surface sealant
5922	Sealant paste for ± flexible unions (sensor attachments etc.)
7100	Leakage detector for pneumatic systems

NOTE: Use the product "Form A gasket 2" when sealing between plastic material and cast iron or steel.

Application method for Loctite products

- Remove all traces of previous sealants and corrosion
 - by mechanical means: brush or cloth
 - by chemical means: "DECAPLOC 88" (Leave the product to take effect then scrape off and wipe clean)
- Degrease parts using dry solvent: if possible, use super dry solvent LOCTITE 706.
- Allow the solvents to evaporate
- Apply the recommended type of LOCTITE product to the parts:
 - for blind tapped holes, apply a quantity of the product to the last threads at the bottom of the hole.

- for cylindrical fittings, apply the product on the two mating faces using a clean brush.
- for mating faces, apply a bead to one of the two faces, circling the holes, and then tighten as quickly as possible.

NOTE:

- *Do not use too much of the compound, in order to avoid locking adjacent parts.*
- *Do not attempt to retighten after 5 minutes of curing, in order to avoid breaking the film of compound.*
- *If the ambient temperature is lower than +10°C, and to ensure quicker setting of LOCTITE products (except SILICOMET), use LOCTITE T 747 activator after phase 2 on at least one of the two parts. Excess product outside the joint will not harden (anaerobic products — curing takes place only when there is no oxygen).*

Grease

When grease is used in components in contact with transmission oil, use grease that is miscible with oil to avoid blocking the hydraulic filters.

Use "Amber Technical" grease supplied by WITCO, 76320 Saint-Pierre des Elfes, France.


1A11


8600 series tractors - Error codes


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A. Indicator light panel


	Front PTO engaged indicator light
Activating condition(s)	
- Indicator light permanently on = front PTO engaged	


	Suspended front axle engaged indicator light
Activating condition(s)	
- Indicator light permanently on = front axle suspension active	
- Indicator light flashing = front axle suspension error	
Cause(s)	Solution(s)
Front axle overloaded	Remove load from the front axle.
Calibration in progress or failed	Continue calibration or redo calibration.
Error in one of the components	Connect the EDT diagnostic tool to find out what the error is.


	4WD front axle engaged indicator light
Activating condition(s)	
- Indicator light permanently on = 4WD front axle engaged	
- Indicator light flashing = 4WD front axle error	
Cause(s)	Solution(s)
Error in one of the components	Connect the EDT diagnostic tool to find out what the error is.


	High-pressure transmission oil filter blockage indicator light
Activating condition(s)	
- Indicator light permanently on = filter blocked, if transmission oil temperature is above 49 °C	
Cause(s)	Solution(s)
Filter blocked	Change the filter element.
Transmission oil polluted	Check the quality of the oil.
High-pressure transmission oil filter blockage switch faulty (error code T4150)	Check the blockage switch.


 Differential lock indicator light	
Activating condition(s) <ul style="list-style-type: none"> - Indicator light permanently on = differential lock engaged - Indicator light flashing slowly = differential lock in automatic mode - Indicator light flashing quickly = differential lock error 	
Cause(s)	Solution(s)
Error in one of the components	Connect the EDT diagnostic tool to find out what the error is.


 Rear PTO engaged indicator light	
Activating condition(s) <ul style="list-style-type: none"> - Indicator light flashing slowly = rear PTO pre-engaged - Indicator light permanently on = rear PTO engaged - Indicator light flashing quickly = rear PTO error 	
Cause(s)	Solution(s)
Error in one of the components	Connect the EDT diagnostic tool to find out what the error is.


 Pressure light for brakes (ParkLock) and pneumatic brakes	
Activating condition(s) <ul style="list-style-type: none"> - Indicator light permanently on = pressure in pneumatic or hydraulic brake system too low 	
Cause(s)	Solution(s)
Pressure in pneumatic brake system lower than 4 bar	Check the condition of the couplers connecting the air with the implement, the implement braking system and the pneumatic braking system.
Pressure in ParkLock brake system lower than 70 bar, the ParkLock will not disengage.	Check the hydraulic brake system, and disengage the ParkLock mechanically in order to move the tractor.
Braking pressure sensor faulty	Check the braking pressure sensor.


 Engine oil pressure indicator light	
Activating condition(s) <ul style="list-style-type: none"> - Indicator light flashing slowly = engine oil pressure low - warning - Indicator light permanently on = insufficient engine oil pressure (< 1 bar) - STOP warning - Indicator light flashing with general failure warning light = engine error 	
Cause(s)	Solution(s)
Oil level too low	Stop the engine and check the oil level.
Problem in the lubrication system	Check the lubricating pressure with a pressure gauge (from 2,5 bar to 5 bar).
Engine error code	Connect the EDT diagnostic tool to find out what the error is.


Service indicator light	
	
Activating condition(s)	
- Indicator light permanently on = service due	
Cause(s)	Solution(s)
Service due	Drain the system. To switch off this indicator light, press down the OK and display selector keys of the Dot Matrix keyboard for 6 seconds. The service schedule counter is set back to 400 hours. Alternatively, use the EDT diagnostic tool.


General failure warning light	
	
Activating condition(s)	
- Indicator light flashing with engine oil pressure indicator light = engine error - stop the engine	
- Indicator light permanently on = major error - stop the tractor	
Cause(s)	Solution(s)
Engine error	Connect the EDT diagnostic tool to find out what the error is.
Major error	Connect the EDT diagnostic tool to find out what the error is.


Auxiliary hydraulic oil pressure indicator light	
	
Activating condition(s)	
- Indicator light flashing = auxiliary hydraulic oil level below 51 %	
- Indicator light permanently on = auxiliary hydraulic oil pressure lower than 25 bar or oil level below 33%	
Cause(s)	Solution(s)
Oil level too low	Check the auxiliary hydraulic oil level.
Hydraulic system components faulty	Check the tractor auxiliary hydraulic system.


Transmission oil pressure indicator light	
	
Activating condition(s)	
- Indicator light flashing = transmission oil pressure greater than 510 bar	
- Indicator light flashing = transmission oil pressure lower than 6 bar	
Cause(s)	Solution(s)
Transmission oil level too low	Check the transmission oil level.
Incorrect use of the transmission	Check the transmission is in Tortoise range for field work.
Transmission module faulty	Carry out a complete diagnostics check of the transmission pressures.


 Alternator charge light	
<p>Activating condition(s)</p> <ul style="list-style-type: none"> - Indicator light flashing = one of the two alternators is no longer working - Indicator light permanently on = neither alternator is working any longer 	
Cause(s)	Solution(s)
Connection problems in the load circuit	Check the connections in the alternator load circuit back to the battery.
Belt slack or damaged	Check the condition and tension of the belts.
Battery faulty	Check the condition of the batteries.
Alternator faulty	Check the condition of the alternators.


 Auxiliary hydraulic oil temperature indicator light	
<p>Activating condition(s)</p> <ul style="list-style-type: none"> - Indicator light permanently on = temperature above 95°C - stop the engine - Indicator light flashing = temperature sensor disconnected or short-circuited 	
Cause(s)	Solution(s)
Radiators blocked	Clean the radiators.
Unusual use of the tractor auxiliary hydraulics	Check operation and connections with the implement.
Sensor disconnected or short-circuited	Check the connections and condition of the temperature sensor.

 Auxiliary hydraulic oil filter blockage indicator light	
<p>Activating condition(s)</p> <ul style="list-style-type: none"> - Indicator light permanently on = filter blocked and auxiliary hydraulic oil temperature above 30 °C 	
Cause(s)	Solution(s)
Filter blocked	Change the filter element.
Auxiliary hydraulic oil polluted	Check the quality of the oil.
Faulty auxiliary hydraulic oil filter blockage sensor	Check the auxiliary hydraulic oil filter blockage sensor.

 Transmission oil temperature indicator light	
<p>Activating condition(s)</p> <ul style="list-style-type: none"> - Indicator light permanently on = temperature above 95 °C - stop the engine 	
Cause(s)	Solution(s)
Incorrect use of the transmission	Use the transmission in Tortoise range for field work.
Radiators blocked	Clean the radiators.
Faulty transmission oil temperature sensor	Check the transmission oil temperature sensor.










	Parking brake indicator light
Activating condition(s)	
- Indicator light permanently on = parking brake engaged	

	Grid Heater indicator light
Activating condition(s)	
- Indicator light permanently on = Grid Heater activated: Preheating when the ignition key is in the preheating position, then post-heating for 40 seconds after the engine has started.	

	Engine air filter blockage indicator light
Activating condition(s)	
- Indicator light permanently on = engine air filter blocked	
Cause(s)	Solution(s)
Air filter blocked	Clean the air filter.
Air filter blockage switch faulty	Check the air filter blockage switch.

B. Error codes

B.1 Reading error codes

ERROR CODES DISPLAYED ON THE INSTRUMENT PANEL				
	DISPLAY with Dash Control Center		DISPLAY without Dash Control Center	
Instrument panel		+	Letter D (Dashboard)	Letter D (Dashboard)
Engine		+	Letter E (Engine)	Letter E (Engine)
SCR system	no icon		Letter U (Urea)	Letter U (Urea)
Transmission/4WD/PTO		+	Letter T (Transmission)	Letter T (Transmission)
Lights module		+	Letter L (Light)	Letter L (Light)
ParkLock		+	Letter P (ParkLock)	Letter P (ParkLock)
Front axle		+	Letters FA (Front Axle)	Letters FA (Front Axle)
Linkage		+	Letters R (Linkage)	Letter R (Linkage)
Electrohydraulic		+	Letters H (Hydraulics)	Letter H (Hydraulics)
Cab		+	Letters C (Cab)	Letter C (Cab)
Auto-Guide		+	Letters A (Auto-Guide)	Letter A (Auto-Guide)
Control Arm		+	Letters AR (ARmrest)	Letter AR (ARmrest)

OTHER DISPLAYS	
Automatic air conditioning	Displayed on the air conditioning module.

B.2 Instrument panel error codes

No.		Component(s) concerned	Cause(s)
D	121		Alternator regulator voltage too high (filtered battery signal)
D	122		Alternator regulator voltage too low (filtered battery signal)
D	127	X197 - Diesel fuel gauge	Electrical signal too high
D	128		Electrical signal too low
D	129		Battery voltage too high (non-filtered battery signal)
D	130		Battery voltage too low (non-filtered battery signal)
D	133	X71 - Throttle pedal sensor	Electrical signal too high
D	134		Electrical signal too low
D	135	X56 - Power Control lever X71 - Throttle pedal sensor	Electrical signal too high - C.N.
D	136		Electrical signal too low - C.N.
D	137	X106 - Transmission lever in armrest	Electrical signal too high
D	138		Electrical signal too low
D	139	X68 - Clutch pedal sensor	Electrical signal too high
D	140		Electrical signal too low
D	141	X25 - Engine speed sensor	Engine speed signal not at maximum level
D	142	X68 - Clutch pedal sensor	Short circuit to + 12 V AC
D	143		Short circuit to + 12 V AC - C.N.
D	144	X56 - Power Control lever	Electrical signal too high
D	145		Electrical signal too low
D	146		Electrical signal too high
D	147		Electrical signal too low
D	148	X55 - Instrument panel	Attempt to program with engine running
D	149		CAN network deactivated (CAN bus off)
D	150		CAN messages lost
D	151		Tractor speed too high
D	152	X55 - Instrument panel	Hourmeter error for engine maintenance
D	153		Parameter table error
D	154		CAN communications from Autotronic 4 to DCC3 - C.N. Special failed
D	155	X55 - Instrument panel	Incorrect tractor code selected
D	156	X68 - Clutch pedal sensor	TOC stuck open
D	157	X25 - Engine speed sensor	No electrical signal
D	158	X106 - Transmission lever in armrest	Incorrect calibration of armrest lever
D	159	X56 - Power Control lever	Neutral switch error in neutral - C.N. position
D	160		Neutral switch error outside neutral - C.N. position
D	164		CAN communications from EEM to DCC3 failed
D	170	X122 - Hand throttle	
D	183	X235 - Front axle steering sensor (WAS sensor)	Electrical signal too high
D	184		Electrical signal too low
D	185	X57 - DOT Matrix keyboard	Electrical signal too high
D	186		Electrical signal too low
D	189	X55 - Instrument panel	9.5 V output - electrical signal too high
D	190		9.5 V output - electrical signal too low
D	191	X168 - Pneumatic brake system pressure sensor	Electrical signal too high
D	192		Electrical signal too low

No.		Component(s) concerned	Cause(s)
D	193	X144 - Variable steering setting potentiometer (fast steering)	Electrical signal too high
D	194		Electrical signal too low
D	195	X55 - Instrument panel	Electrical signal too high
D	196		Electrical signal too low
D	197	X1 - Auxiliary hydraulic oil temperature sensor	Electrical signal too high
D	198		Electrical signal too low

B.3 Engine error codes

No.	FMI	Components concerned	Causes	
E	91	4	Throttle sensor	Throttle sensor 1 LOW fault (IDLE)
E	91	3	Throttle sensor	Throttle sensor 1 HIGH fault (IDLE)
E	94	31	Fuel filter pressure sensor	Oil filter pressure LOW (with old sensor)
E	94	4	Fuel filter pressure sensor	LOW fuel filter pressure sensor fault
E	94	3	Fuel filter pressure sensor	HIGH fuel filter pressure sensor fault
E	94	2	Fuel filter pressure sensor	Fuel filter pressure NO SIGNAL
E	94	16	Fuel filter pressure sensor	Fuel filter pressure ABOVE NORMAL
E	94	18	Fuel filter pressure sensor	Fuel filter pressure BELOW NORMAL
E	97	31		Water in fuel
E	100	16	Oil pressure sensor	Oil pressure ABOVE NORMAL (9.5 bar/30°C)
E	100	2	Oil pressure sensor	Oil pressure NO SIGNAL
E	100	31	Oil pressure sensor	Oil pressure sensor fault
E	100	4	Oil pressure sensor	LOW oil pressure sensor fault
E	100	3	Oil pressure sensor	HIGH oil pressure sensor fault
E	100	18	Oil pressure sensor	Oil pressure LOW
E	100	1-	Oil pressure sensor	Oil pressure LOW, ALARM
E	102	4	Boost pressure sensor	LOW boost pressure sensor fault
E	102	3	Boost pressure sensor	HIGH boost pressure sensor fault
E	102	18	Boost pressure sensor	Boost pressure LOW
E	102	16	Boost pressure sensor	Boost pressure ABOVE NORMAL
E	102	2	Boost pressure sensor	Boost pressure NO SIGNAL
E	102	31	Boost pressure sensor	Inlet manifold pressure drop too HIGH at start-up
E	105	4	Inlet manifold temperature sensor	LOW inlet manifold temperature sensor fault
E	105	3	Inlet manifold temperature sensor	HIGH inlet manifold temperature sensor fault
E	105	16	Inlet manifold temperature sensor	Inlet manifold temperature ABOVE NORMAL (>90°C)
E	105	2	Inlet manifold temperature sensor	Inlet manifold temperature sensor NO SIGNAL
E	107	18	Air filter pressure sensor	Air filter pressure BELOW NORMAL
E	107	31	Air filter pressure sensor	Air filter pressure sensor fault
E	110	2	Coolant temperature sensor	Coolant temperature NO SIGNAL
E	110	4	Coolant temperature sensor	LOW coolant temperature sensor fault
E	110	3	Coolant temperature sensor	HIGH coolant temperature sensor fault
E	110	16	Coolant temperature sensor	Coolant temperature HIGH
E	110	0	Coolant temperature sensor	Coolant temperature HIGH, ALARM
E	157	4	Rail pressure sensor	LOW rail pressure sensor fault

No.		FMI	Components concerned	Causes
E	157	3	Rail pressure sensor	HIGH rail pressure sensor fault
E	157	16	Rail pressure sensor	Rail pressure ABOVE NORMAL
E	157	2	Rail pressure sensor	Rail pressure NO SIGNAL
E	157	1-	Rail pressure sensor	Rail pressure LOW
E	157	0	Rail pressure sensor	Rail pressure HIGH
E	168	1-	Battery voltage	Battery voltage VERY LOW (<6.5 V)
E	168	0	Battery voltage	Battery voltage VERY HIGH (>36.0 V)
E	168	2	Battery voltage	Battery voltage NO SIGNAL
E	168	18	Battery voltage	Battery voltage BELOW NORMAL (<7.8 V)
E	168	16	Battery voltage	Battery voltage ABOVE NORMAL
E	174	4	Fuel temperature sensor	LOW fuel temperature sensor fault
E	174	3	Fuel temperature sensor	HIGH fuel temperature sensor fault
E	174	16	Fuel temperature sensor	Fuel temperature ABOVE NORMAL
E	174	2	Fuel temperature sensor	Fuel temperature NO SIGNAL
E	175	4	Engine oil temperature sensor	LOW engine oil temperature sensor fault
E	175	3	Engine oil temperature sensor	HIGH engine oil temperature sensor fault
E	175	16	Engine oil temperature sensor	Engine oil temperature HIGH
E	175	2	Engine oil temperature sensor	Engine oil temperature sensor NO SIGNAL
E	190	16	Engine speed signal	Engine speed signal ABOVE NORMAL
E	626	4		Inlet air heater control, voltage below normal
E	626	3		Inlet air heater control, voltage above normal
E	629	10	EEPROM	EEPROM error
E	898	4	Requested speed	Requested speed out of LOW range (<500 rpm)
E	898	3	Requested speed	Requested speed out of HIGH range (>3000 rpm)
E	1136	16	ECU temperature sensor	ECU temperature ABOVE NORMAL >115°C
E	1136	4	ECU temperature sensor	ECU LOW temperature sensor fault
E	1136	3	ECU temperature sensor	ECU HIGH temperature sensor fault
E	1136	2	ECU temperature sensor	ECU temperature NO SIGNAL
E	1378	16		Engine oil drain: delayed for too long
E	9006	31	Vehicle CAN	Vehicle CAN off
E	9008	31	CAN ID module	CAN ID module off (ECU to ID)
E	9010	4	Ambient pressure sensor	LOW ambient pressure sensor fault
E	9010	3	Ambient pressure sensor	HIGH ambient pressure sensor fault
E	9010	16	Ambient pressure sensor	Ambient pressure ABOVE NORMAL
E	9010	2	Ambient pressure sensor	Ambient pressure NO SIGNAL
E	9021	4	5 V DC supply	5 V DC supply 1 LOW fault
E	9021	3	5 V DC supply	5 V DC supply 1 HIGH fault
E	9022	4	5 V DC supply	5 V DC supply 2 LOW fault
E	9022	3	5 V DC supply	5 V DC supply 2 HIGH fault
E	9023	4	5 V DC supply	5 V DC supply 3 LOW fault
E	9023	3	5 V DC supply	5 V DC supply 3 HIGH fault
E	9024	18	Supply of sensor detecting water in the fuel	Supply voltage of sensor detecting water in fuel BELOW NORMAL
E	9024	16	Supply of sensor detecting water in the fuel	Supply voltage of sensor detecting water in fuel ABOVE NORMAL

No.		FMI	Components concerned	Causes
E	9025	31	Self-test cut-off paths	Self-test cut-off paths, monitoring
E	9026	3	Self-test cut-off paths	Self-test cut-off paths, HIGH processor voltage check
E	9027	4	Self-test cut-off paths	Self-test cut-off paths, LOW processor voltage check
E	9030	6	Main relay, short circuit to EARTH	Short circuit to EARTH, ECU main relay1
E	9030	3	Main relay, short circuit to BAT+	Short circuit to BAT+, ECU main relay1
E	9031	6	Main relay, short circuit to EARTH	Short circuit to EARTH, ECU main relay2
E	9031	3	Main relay, short circuit to BAT+	Short circuit to BAT+, ECU main relay2
E	9032	6	Main relay, short circuit to EARTH	Short circuit to EARTH, ECU main relay3
E	9032	3	Main relay, short circuit to BAT+	Short circuit to BAT+, ECU main relay3
E	9033	31	Main relay	ECU cut-off does not work
E	9034	31	Main relay	ECU cut-off did not work last time
E	9035	31		Normal recovery
E	9036	31		Total restart after 3 recoveries in 2 seconds
E	9070	31	Crankshaft speed sensor	Crankshaft speed signal from the TPU
E	9071	31	Crankshaft speed sensor	Crankshaft speed signal, too many pulses
E	9072	31	Crankshaft speed sensor	Crankshaft speed sensor, reverse connected
E	9080	31	Cam speed sensor	APS cam speed signal
E	9081	31	Cam speed sensor	TPS cam speed signal
E	9082	31	Cam speed sensor	Cam speed sensor, reverse connected
E	9083	31	Cam speed sensor	No cam speed signal detected
E	9090	31	Engine speed signal	Engine speed signal evaluation error
E	9100	31		Protection upgrade fault
E	9107	31		Invalid ECU source address selection
E	9131	6	Solenoid valve 1	Solenoid valve 1, short circuit to EARTH (bank off)
E	9131	3	Solenoid valve 1	Solenoid valve 1, short circuit between cables (bank off)
E	9131	5	Solenoid valve 1	Solenoid valve 1, OPEN CIRCUIT
E	9131	31	Solenoid valve 1	Solenoid valve 1, fast decay error (bank off)
E	9131	11	Solenoid valve 1	Solenoid valve 1, current level error (bank off)
E	9132	6	Solenoid valve 2	Solenoid valve 2, short circuit to EARTH (bank off)
E	9132	3	Solenoid valve 2	Solenoid valve 2, short circuit between cables (bank off)
E	9132	5	Solenoid valve 2	Solenoid valve 2, OPEN CIRCUIT
E	9132	31	Solenoid valve 2	Solenoid valve 2, fast decay error (bank off)
E	9132	11	Solenoid valve 2	Solenoid valve 2, current level error (bank off)
E	9133	6	Solenoid valve 3	Solenoid valve 3, short circuit to EARTH (bank off)
E	9133	3	Solenoid valve 3	Solenoid valve 3, short circuit between cables (bank off)
E	9133	5	Solenoid valve 3	Solenoid valve 3, OPEN CIRCUIT
E	9133	31	Solenoid valve 3	Solenoid valve 3, fast decay error (bank off)

No.		FMI	Components concerned	Causes
E	9133	11	Solenoid valve 3	Solenoid valve 3, current level error (bank off)
E	9134	6	Solenoid valve 4	Solenoid valve 4, short circuit to EARTH (bank off)
E	9134	3	Solenoid valve 4	Solenoid valve 4, short circuit between cables (bank off)
E	9134	5	Solenoid valve 4	Solenoid valve 4, OPEN CIRCUIT
E	9134	31	Solenoid valve 4	Solenoid valve 4, fast decay error (bank off)
E	9134	11	Solenoid valve 4	Solenoid valve 4, current level error (bank off)
E	9135	6	Solenoid valve 5	Solenoid valve 5, short circuit to EARTH (bank off)
E	9135	3	Solenoid valve 5	Solenoid valve 5, short circuit between cables (bank off)
E	9135	5	Solenoid valve 5	Solenoid valve 5, OPEN CIRCUIT
E	9135	31	Solenoid valve 5	Solenoid valve 5, fast decay error (bank off)
E	9135	11	Solenoid valve 5	Solenoid valve 5, current level error (bank off)
E	9136	6	Solenoid valve 6	Solenoid valve 6, short circuit to EARTH (bank off)
E	9136	3	Solenoid valve 6	Solenoid valve 6, short circuit between cables (bank off)
E	9136	5	Solenoid valve 6	Solenoid valve 6, OPEN CIRCUIT
E	9136	31	Solenoid valve 6	Solenoid valve 6, fast decay error (bank off)
E	9136	11	Solenoid valve 6	Solenoid valve 6, current level error (bank off)
E	9150	16	Rail pressure sensor	Rail pressure, negative deviation
E	9150	18	Rail pressure sensor	Rail pressure, positive deviation
E	9150	5	Rail pressure sensor	Rail pressure, leakage detected during idle
E	9150	8	Rail pressure sensor	Rail pressure, leakage detected through quantity balance
E	9150	31	Rail pressure sensor	Rail pressure, leakage detected during overrun
E	9151	31	Pressure regulating valve	PRV recognised as OPEN
E	9151	7	Pressure regulating valve	PRV is sticking
E	9152	31	Fuel filter pressure sensor	Fuel filter pressure, fluctuating
E	9153	31	Fuel filter pressure sensor	Fuel filter pressure sensor, loose contact
E	9170	6	Lift pump control	Lift pump control (ECU), short circuit to earth
E	9170	5	Lift pump control	Lift pump control (ECU), open circuit
E	9171	6	Preheater control	Preheater control, short circuit to earth
E	9171	5	Preheater control	Preheater control, open circuit
E	9172	6	Starter relay control	Start relay control, short circuit to earth (lower side)
E	9172	3	Starter relay control	Start relay control, short circuit to BAT+ (lower side)
E	9172	5	Starter relay control	Start relay control, open circuit (lower side)
E	9172	31	Starter relay control	Start relay control, excessive temperature (lower side)
E	9173	6	Starter relay control	Start relay control, short circuit to earth (upper side)

No.		FMI	Components concerned	Causes
E	9173	3	Starter relay control	Start relay control, short circuit to BAT+ (upper side)
E	9174	6	MPROP control	MPROP control, short circuit to earth
E	9174	3	MPROP control	MPROP control, short circuit to BAT+
E	9174	5	MPROP control	MPROP control, open circuit
E	9174	31	MPROP control	MPROP control, excessive temperature
E	9230	31	Diagnostic ID module	Engine specification mismatch
E	9231	31	Diagnostic ID module	Engine serial number mismatch
E	9233	31	Diagnostic ID module	ID module not present
E	9234	31	Diagnostic ID module	ID not compatible with current ECU
E	9235	31	Diagnostic ID module	ID module memory fault
E	9235	3	Diagnostic ID module	ID module, supply voltage HIGH (>32.0 V)
E	9235	4	Diagnostic ID module	ID module memory fault
E	9235	16	Diagnostic ID module	ID temperature, temperature HIGH (>95°C)
E	9236	31	Diagnostic ID module	ID module additional memory defect
E	9237	31	Diagnostic ID module	ID module, monitoring reset
E	9238	31	Diagnostic ID module	ID module, brownout reset
E	9239	31	Diagnostic ID module	Engine specification missing
E	9240	31	Diagnostic ID module	Engine serial number missing
E	9241	31	Diagnostic ID module	ID module not present, bypass active
E	9242	31	Diagnostic ID module	Generated bypass time expired
E	9243	31	Diagnostic ID module	Maximum ECU bypass time expired
E	9244	31	Diagnostic ID module	ID module recovery
E	9303	31		Speed regulator UI fault
E	9304	31		Vehicle speed missing
E	9305	31		Incorrect digital input configuration
E	9306	31		PTO input error
E	9310	31		Fault with external digital input 1
E	9311	31		Fault with external digital input 2
E	9312	31		Torque control input
E	9317	31		DCU not present

B.4 SCR system error codes

No.		FMI	Cause(s)
U	168	0	Battery voltage monitoring: Voltage higher than normal
U	168	1-	Battery voltage monitoring: Voltage lower than normal
U	168	3	Battery voltage monitoring: Voltage too high
U	168	4	Battery voltage monitoring: Voltage too low
U	441	0	Catalyst downstream temperature sensor: Temperature too high
U	441	1-	Catalyst downstream temperature sensor: Temperature too low
U	441	2	Catalyst temp. downstream sensor plaus. Error: Static Plausibility
U	441	3	Catalyst downstream temperature sensor: Shortcut to Battery+
U	441	4	Catalyst downstream temperature sensor: Shortcut to Ground
U	441	11	Downstream catalyst temperature - physical error: Catalyst Temperature not OK

No.		FMI	Cause(s)
U	441	16	Catalyst temp. downstream sensor plaus. error: Dynamic plausibility, upper threshold
U	441	18	Catalyst temp. downstream sensor plaus. Error: Dynamic plausibility, lower threshold
U	442	0	Catalyst upstream temperature sensor: Temperature too high
U	442	1-	Catalyst upstream temperature sensor: Temperature too low
U	442	2	Catalyst temp. upstream sensor plaus. error: Static Plausibility
U	442	3	Catalyst upstream temperature sensor: Shortcut to Battery+
U	442	4	Catalyst upstream temperature sensor: Shortcut to Ground
U	442	16	Catalyst temp. upstream sensor plaus. error: Dynamic plausibility, upper threshold
U	442	18	Catalyst temp. upstream sensor plaus. error: Dynamic plausibility, lower threshold
U	697	3	Back flow line heater power stage error: Shortcut to Battery+
U	697	5	Back flow line heater power stage error: Open load
U	697	6	Back flow line heater power stage error: Shortcut to Ground
U	698	3	Cooling line heater power stage error: Shortcut to Battery+
U	698	5	Cooling line heater power stage error: Open load
U	698	6	Cooling line heater power stage error: Shortcut to Ground
U	699	3	Inlet line heater power stage error: Shortcut to Battery+
U	699	5	Inlet line heater power stage error: Open load
U	699	6	Inlet line heater power stage error: Shortcut to Ground
U	700	3	Pressure line heater power stage error: Shortcut to Battery+
U	700	5	Pressure line heater power stage error: Open load
U	700	6	Pressure line heater power stage error: Shortcut to Ground
U	1079	3	Sensor Supply Voltage 1 monitoring: Shortcut to Battery+
U	1079	4	Sensor Supply Voltage 1 monitoring: Shortcut to Ground
U	1080	3	Sensor Supply Voltage 2 monitoring: Shortcut to Battery+
U	1080	4	Sensor Supply Voltage 2 monitoring: Shortcut to Ground
U	1387	0	Urea pressure monitoring: Pressure too high
U	1387	1-	Urea pressure monitoring: Pressure too low
U	1387	2	Urea pressure sensor plausibility error: Dynamic plausibility
U	1388	3	Urea pressure sensor: Shortcut to Battery+
U	1388	4	Urea pressure sensor: Shortcut to Ground
U	1388	11	Urea pressure sensor: Supply voltage above upper or below lower limit
U	1485	3	Main relay error: No shut off of main relay
U	1485	6	Main relay error: Shut off too soon
U	1677	0	Modular Heater State Machine Error: Inlet line frozen error
U	1677	1-	Modular Heater State Machine Error: Pressure line frozen error
U	1677	2	Modular Heater State Machine Error: Pressure build - up error
U	1677	3	Modular Heater State Machine Error: Back flow line frozen error
U	1761	2	Urea Tank Level Sensor error: Range error of tank level
U	1761	3	Urea Tank Level Sensor error: Signal above upper limit
U	1761	4	Urea Tank Level Sensor error: Signal below lower limit
U	1761	5	Urea tank error: Open circuit in level sensor
U	1761	6	Urea tank error: Level sensor shortcut to GND
U	1761	9	Urea Tank Level Sensor error: Message overridden
U	1761	11	Urea tank error: Tank empty

No.		FMI	Cause(s)
U	1761	14	Urea Tank Level Sensor error: Supply Signal above upper or below lower limit
U	1761	17	Urea tank error: Tank level low
U	1761	18	Urea tank error: Tank level VERY low
U	1761	19	Urea Tank Level Sensor error: Time out
U	2854	2	CAN Rx Frame: Range error, barometric pressure or ambient air temp
U	2854	9	CAN Rx Frame: Message overridden
U	2854	19	CAN Rx Frame: Time out
U	2855	2	CAN Rx Frame: Range error of NOx/O2 concentration or status
U	2855	9	CAN Rx Frame: Message overridden
U	2855	19	CAN Rx Frame: Time out
U	2856	2	CAN Rx Frame: Range error of NOx/O2 concentration or status
U	2856	9	CAN Rx Frame: Message overridden
U	2856	19	CAN Rx Frame: Time out
U	2857	2	CAN Bus Off: CAN Bus 2
U	2857	19	CAN Bus Off: CAN Bus 1
U	2858	2	CAN Frame Error: Long Term Error Active or Error Suppression signal is out of range
U	2859	2	Message: Range error of UreaQ/Heating or Dosing Status/PTO/Exh. gas mass or temp.
U	2859	9	CAN Frame Error: Message overridden
U	2859	19	CAN Frame Error: Time out
U	2860	2	CAN Frame Error: Range error of Exhaust Mass flow or Dew Point ErrorCode
U	2860	9	CAN Frame Error: Message overridden
U	2860	19	CAN Frame Error: Time out
U	2861	2	CAN Frame Error: Range error of EGR Valve Control signal
U	2861	9	CAN Frame Error: Message overridden
U	2861	19	CAN Frame Error: Time out
U	2862	2	CAN Frame Error: Message overridden
U	2862	19	CAN Frame Error: Time out
U	2863	2	CAN Frame Error: Range error of Engine speed
U	2863	9	CAN Frame Error: Message overridden
U	2863	11	CAN Frame Error: Range error of Driver demand % engine torque
U	2863	13	CAN Frame Error: Range error of Engine torque
U	2863	19	CAN Frame Error: Time out
U	2864	2	CAN Frame Error: Range error of Engine inlet air mass flow rate
U	2864	9	CAN Frame Error: Message overridden
U	2864	19	CAN Frame Error: Time out
U	2865	2	CAN Frame Error: Range error of Actual Retarder Percent Torque
U	2865	9	CAN Frame Error: Message overridden
U	2865	19	CAN Frame Error: Time out
U	2866	2	CAN Frame Error: Range error of Coolant or Engine oil temperature signal
U	2866	9	CAN Frame Error: Message overridden
U	2866	19	CAN Frame Error: Time out
U	2867	2	CAN Frame Error: Range error of Boost pressure or Intake Manifold 1 Temp.

No.		FMI	Cause(s)
U	2867	9	CAN Frame Error: Message overridden
U	2867	19	CAN Frame Error: Time out
U	2868	2	CAN Frame Error: Range error of external desired NOx emissions
U	2868	9	CAN Frame Error: Message overridden
U	2868	19	CAN Frame Error: Time out
U	2869	2	CAN Frame Error: Range error of Fuel injection quantity
U	2869	9	CAN Frame Error: Message overridden
U	2869	10	CAN Frame Error: Range error of Urea tank level
U	2869	11	CAN Frame Error: Range error of Urea tank temperature
U	2869	12	CAN Frame Error: Range error of NOx concentration from NOx sensor 2
U	2869	13	CAN Frame Error: Range error of NOx Status byte from NOx sensor 2
U	2869	19	CAN Frame Error: Time out
U	2870	2	CAN Frame Error: Range error of Vehicle speed
U	2870	9	CAN Frame Error: Message overridden
U	2870	19	CAN Frame Error: Time out
U	2871	2	CAN Frame Time Date Error: Range error
U	2871	9	CAN Frame Time Date Error: Message overridden
U	2871	19	CAN Frame Time Date Error: Time out
U	2872	8	DCU or Heater ON error: Time out - Timer 16 elapsed
U	2872	9	DCU or Heater ON error: Time out - Timer elapsed
U	2872	10	DCU or Heater ON error: Time out - Timer elapsed
U	3031	0	Urea Tank Temperature Sensor error: Signal Above Error
U	3031	1-	Urea Tank Temperature Sensor error: Signal Above Error
U	3031	2	Urea Tank Temperature Sensor error: J1939 error of Urea tank temp. signal
U	3031	3	Urea Tank Temperature Sensor error: Signal High Error
U	3031	4	Urea Tank Temperature Sensor error: Signal Low Error
U	3031	9	Urea Tank Temperature Sensor error: Message overridden error
U	3031	11	Plausibility check of urea tank temperature sensor: Signal not plausible
U	3031	19	Urea Tank Temperature Sensor error: Time out error
U	520201	0	Monitoring of Supply Module temperature: Temperature too high
U	520201	1-	Monitoring of Supply Module temperature: Temperature too low
U	520201	3	Monitoring of Supply Module temperature: Shortcut to Battery+
U	520201	4	Monitoring of Supply Module temperature: Shortcut to Ground
U	520220	9	EEPROM error: EEPROM communication error
U	520221	15	Frozen cycles counter error: Counter threshold exceeded
U	520221	16	Frozen cycles counter error: Counter2 threshold exceeded
U	520222	11	Emergency Shut Off: Over temperature detected (>85 °C)
U	520224	7	Tank Heater Valve Error: Detection of valve blocked open
U	520225	11	Urea Consumption Error: Urea consumption not plausible
U	520226	11	Urea Dosing Error: Dosing interrupted
U	520227	11	Urea Quality Error: Insufficient urea quality
U	520228	11	NOx emission control error: NOx threshold exceeded
U	520229	11	Urea Level Monitoring: Tank empty

No.		FMI	Cause(s)
U	520234	3	Diagnostic lamp power stage error: Shortcut to Battery+
U	520234	5	Diagnostic lamp power stage error: Open load
U	520234	6	Diagnostic lamp power stage error: Shortcut to Ground
U	520236	3	Filter outlet connector heater power stage error: Shortcut to Battery+
U	520236	5	Filter outlet connector heater power stage error: Open load
U	520236	6	Filter outlet connector heater power stage error: Shortcut to Ground
U	520237	3	Pressure compensation heater error: Shortcut to Battery+
U	520237	5	Pressure compensation heater error: Open load
U	520237	6	Pressure compensation heater error: Shortcut to Ground
U	520238	3	Filterbox module heater power stage error: Shortcut to Battery+
U	520238	5	Filterbox module heater power stage error: Open load
U	520238	6	Filterbox module heater power stage error: Shortcut to Ground
U	520239	3	Pump module heater power stage error: Shortcut to Battery+
U	520239	5	Pump module heater power stage error: Open load
U	520239	6	Pump module heater power stage error: Shortcut to Ground
U	520241	3	Urea dosing valve power stage error: Shortcut to Battery+
U	520241	5	Urea dosing valve power stage error: Open load
U	520241	6	Urea dosing valve power stage error: Shortcut to Ground
U	520241	7	Plausibility check of Urea Dosing Valve Stuck: UDV stuck closed
U	520241	14	Plausibility check of valve position stuck: Valve position unknown
U	520241	8	Plausibility check of Urea Dosing Valve Stuck: UDV stuck open
U	520242	3	Urea tank heater power stage error: Shortcut to Battery+
U	520242	5	Urea tank heater power stage error: Open load
U	520242	6	Urea tank heater power stage error: Shortcut to Ground
U	520243	2	Urea level plausibility error: Signal not plausible
U	520244	5	Pump speed evaluation error: Pump motor unplugged
U	520244	7	Pump speed evaluation error: Pump Motor Blocked
U	520244	8	Pump speed evaluation error: Over Speed condition
U	520244	12	Pump speed evaluation error: Pump Speed Sensor defective
U	520246	2	Plausibility check of urea tank temperature sensor: Signal not plausible
U	520248	3	Coolant control valve power stage error: Shortcut to Battery+
U	520248	5	Coolant control valve power stage error: Open load
U	520249	3	Reverting valve power stage error: Shortcut to Battery+
U	520249	5	Reverting valve power stage error: Open load
U	520249	6	Reverting valve power stage error: Shortcut to Ground
U	520250	6	Coolant control valve power stage error: Shortcut to Ground
U	520253	7	Detection of blocked pressure line: Blockage detected in state 1
U	520254	7	Detection of blocked backflow line: Block detected
U	520257	11	Static urea leakage test: Leakage detected
U	520260	7	Urea pressure buildup: Pressure buildup failed
U	520261	7	Urea pressure buildup: Error path bit 3 active
U	520262	2	Temperature plausibility during commissioning: Too cold during urea commissioning
U	520264	2	Urea pressure plausibility check: Urea pressure not plausible
U	520265	2	Urea box temperature - physical error: Box temperature too high or too low

No.		FMI	Cause(s)
U	520266	7	Vent Valve Error: CCV State machine, error path bit 3 active
U	520268	7	Reverting valve monitoring: Valve defect detected
U	520269	7	Vent Valve Error: Urea pressure not reduced
U	520273	3	Analog feedback signal for Main Relay 1: Shortcut to Battery+
U	520273	5	Analog feedback signal for Main Relay 1: Open circuit
U	520274	3	Analog feedback signal for Main Relay 2: Shortcut to Battery+
U	520274	4	Analog feedback signal for Main Relay 2: Shortcut to Ground
U	520274	5	Analog feedback signal for Main Relay 2: Open circuit
U	520275	3	Analog feedback signal for Main Relay 3: Shortcut to Battery+
U	520275	4	Analog feedback signal for Main Relay 3: Shortcut to Ground
U	520275	5	Analog feedback signal for Main Relay 3: Open circuit
U	520276	3	Monitoring of Supply Voltage: Shortcut to Battery+
U	520276	4	Monitoring of Supply Voltage: Shortcut to Ground
U	520277	3	Battery voltage monitoring: Voltage too high
U	520277	4	Battery voltage monitoring: Voltage too low
U	520296	11	Dosing Strategy Monitoring Module NOx conversion efficiency: Threshold 1 error
U	520297	11	Dosing Strategy Monitoring Module NOx conversion efficiency: Threshold 2 error
U	520298	2	Evaluation of Atmospheric Pressure: Range error of Barometric pressure
U	520299	2	Terminal 15 circuit defect: Ignition switch plausibility error
U	520301	2	NOx sensor concentration signal error: Plausibility check
U	520301	3	NOx sensor concentration signal error: Short circuit
U	520301	5	NOx sensor concentration signal error: Open wire
U	520301	11	NOx sensor concentration signal error: Other NOx errors
U	520301	17	NOx sensor concentration signal error: Sensor supply not in range
U	520302	2	NOx heater signal from NOx sensor: Plausibility check
U	520302	3	NOx heater signal from NOx sensor: Short circuit
U	520302	5	NOx heater signal from NOx sensor: Open wire
U	520302	11	NOx heater signal from NOx sensor: Other NOx errors
U	520308	2	NOx sensor plausibility error: Signal not plausible
U	520309	7	Start Up Cycle Counter for Pressure Drop during Dosing: Max. limit of counter exceeded
U	520310	2	Urea box temperature - physical error: Urea Temperature too high or too low

B.5 Transmission error codes

No.	Components concerned	Causes
T 4105	X34 - Transmission oil high pressure sensor 2	Signal error - 8.5 V supply error
T 4107	X9 - Transmission oil high pressure sensor 1	Signal error - 8.5 V supply error
T 4108	X17 - Hare/Tortoise range position sensor	Signal error - 8.5 V supply error
T 4121		Signal error
T 4127	X10 - Collecting shaft speed sensor	Signal error
T 4128	X18 - Transmission control module	Signal error
T 412A	X8 - Bevel gear theoretical speed sensor	Signal error
T 412B	X123 - Hare/Tortoise range shift switch	Signal error
T 4131	X10 - Collecting shaft speed sensor	Direction of rotation signal error

No.		Components concerned	Causes
T	4142		Rotation speed signal error
T	4144	X25 - Engine speed sensor	Signal error
T	4145	X8 - Bevel gear theoretical speed sensor	Signal error
T	4150	X20 - Transmission filter blockage switch	Filter blocked
T	4153	X19 - Transmission hydraulic oil temperature sensor	Transmission oil temperature higher than 110°C
T	4156	X20 - Transmission filter blockage switch	Signal error
T	4158	Transmission slip monitor	The transmission output speed indicates over 30% slippage compared to the value given
T	4159	Engagement of limp home mode	Manual engagement of limp home mode without reason
			Limp home mode error
T	4161	X14 - Tortoise range solenoid valve	Control error when shifting from Hare to Tortoise mode
T	4162	X13 - Hare range solenoid valve	Control error when shifting from Tortoise to Hare mode
T	4163	X11 - Solenoid valve limiting speed to 30 kph	Control error
T	4164	X12 - Coupler function solenoid valve	PWM control error
T	4172	X20 - Transmission filter blockage switch	Signal error
T	4173	X19 - Transmission hydraulic oil temperature sensor	Signal error
T	4182	X8 - Bevel gear theoretical speed sensor	Inconsistent speeds
		X10 - Collecting shaft speed sensor	
T	4183	X8 - Bevel gear theoretical speed sensor	Inconsistent direction of rotation.
		X10 - Collecting shaft speed sensor	
T	4185	X25 - Engine speed sensor	Inconsistent speed
T	4186	X9 - Transmission oil high pressure sensor 1	Inconsistent values
		X34 - Transmission oil high pressure sensor 2	
T	4189	X19 - Transmission hydraulic oil temperature sensor	Inconsistent value
T	4192	X67 - Right-hand brake pedal sensor	Data transfer interrupted
T	4193	X66 - Left-hand brake pedal sensor	Data transfer interrupted
T	41A0	X18 - Transmission control module	Control of control module interrupted
T	41A1	X18 - Transmission control module	The angle of rotation is limited, but not by the speed limiting solenoid valve
T	41A2	X18 - Transmission control module	The CAN network control is interrupted
		X174 - Autotronic 4 transmission controller	
T	41A3	X18 - Transmission control module	Increment sensor signal (internal actual position sensor) interrupted or illogical
T	41A4	X18 - Transmission control module	Autotronic 4 signal interrupted or illogical
T	41A5	X18 - Transmission control module	Reference output (Position "0") not found at start-up
T	41A6	X18 - Transmission control module	Reference point signal interrupted during operation
T	41B0	CAN network	Initialisation error
T	41B1	X174 - Autotronic 4 transmission controller	Illogical range shift
T	41B2	X174 - Autotronic 4 transmission controller	Faulty programming
T	41B3	X174 - Autotronic 4 transmission controller	Faulty programming
T	41B4	X174 - Autotronic 4 transmission controller	Faulty programming
T	41B5	X174 - Autotronic 4 transmission controller	Faulty programming
T	41C1	X174 - Autotronic 4 transmission controller	The engine has stalled due to transmission overload
T	41CF	X174 - Autotronic 4 transmission controller	Internal error (RAM/EEPROM)
T	41E0	X174 - Autotronic 4 transmission controller	Coupler function reference curve incorrectly interpreted, faulty programming
		X12 - Coupler function solenoid valve	Signal error

No.		Components concerned	Causes
T	41E1	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E2	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E3	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E4	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E5	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E6	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E7	X174 - Autotronic 4 transmission controller	Faulty programming
T	41E9	X174 - Autotronic 4 transmission controller	Faulty programming
T	41EA	X174 - Autotronic 4 transmission controller	Faulty programming
T	41EB	X17 - Hare/Tortoise range position sensor	Calibration error or sensor value out of tolerance ranges
T	41EE	X174 - Autotronic 4 transmission controller	Faulty programming
T	41EF	X174 - Autotronic 4 transmission controller	Faulty programming
T	41FF	X174 - Autotronic 4 transmission controller	Internal error (RAM/EEPROM)

B.6 4WD/Differential lock error codes

No.		Components concerned	Causes
T	5131	X137 - 4WD switch	Incorrect manual engagement signal
T	5132		Incorrect automatic engagement signal
T	5133	X5 - 4WD solenoid valve	Control error
T	5151	X136 - Differential lock switch	Signal error
T	5153	X6 - Differential lock solenoid valve	Control error
T	5154	X66 - Left-hand brake pedal sensor	Signal error
T	5555	X67 - Right-hand brake pedal sensor	Signal error

B.7 PTO error codes

No.		Components concerned	Causes
T	6101	X128 - Rear PTO ON/OFF switch	Signal error
T	6103	X94 - PTO ON/OFF switch on left-hand fender	Signal error
T	6104	X7 - Rear PTO solenoid valve	Control error
T	6105	X15 - PTO clutch speed sensor	Signal error
T	6110	X16 - PTO shaft speed sensor	Signal error
T	6111	X118 - Automatic PTO switch	Signal error
T	6113	X16 - PTO shaft speed sensor	Overspeed
T	6115	X145 - PTO/linkage console	Signal error
T	6116	X145 - PTO/linkage console	Signal error
T	6117	X145 - PTO/linkage console	Signal error
T	6118	X145 - PTO/linkage console	Signal error
T	611A	X3 - 540 rpm PTO speed solenoid valve	Control error
T	611B	X3 - 540 rpm PTO speed solenoid valve	Control error
T	611C	X4 - 1000 rpm PTO speed solenoid valve	Control error
T	6141	X128 - Rear PTO ON/OFF switch	Pressed down for over 30 seconds, mechanical or electrical error on switch
T	6143	X94 - PTO ON/OFF switch on left-hand fender	Pressed down for over 30 seconds, mechanical or electrical error on switch

No.		Components concerned	Causes
T	6145	X15 - PTO clutch speed sensor	NEUTRAL speed selection, PTO not activated, X15 displays a speed, the clutch disc does not separate, PTO brake does not engage selected speed, PTO clutch 100% engaged, over 20% difference between PTO clutch speed and engine speed. PTO clutch disc slips: clutch slippage. PTO clutch speed is lower than output shaft speed, X15 sensor supply voltage error.
T	6150	X16 - PTO shaft speed sensor	The PTO shaft speed is higher than 1300 rpm, signal error (X16 or X15). The selected speed is lower than the PTO output shaft speed, X16 sensor supply voltage error, speed solenoid valve (X4, X3) locked in "de-activated" position.
T	6155	X145 - PTO/linkage console	Pressed down for over 30 seconds, mechanical or electrical error on switch
T	6156	X145 - PTO/linkage console	Pressed down for over 30 seconds, mechanical or electrical error on switch
T	6157	X145 - PTO/linkage console	Pressed down for over 30 seconds, mechanical or electrical error on switch
T	6158	X145 - PTO/linkage console	Pressed down for over 30 seconds, mechanical or electrical error on switch
T	6160	X15 - PTO clutch speed sensor	Difference of at least 12% between the output shaft speed and PTO clutch speed, speed solenoid valve (X4, X3) incorrectly connected or seized up. Mechanical fault with speed selection. Signal error to sensors (X15, X16)
		X16 - PTO shaft speed sensor	
T	61A1	X128 - Rear PTO ON/OFF switch	Communication error
T	61B0	X128 - Rear PTO ON/OFF switch	Initialisation error
T	61B5	X145 - PTO/linkage console	Communication error
T	61B6	X145 - PTO/linkage console	Communication error
T	61B7	X145 - PTO/linkage console	Communication error
T	61B8	X145 - PTO/linkage console	Communication error
T	61E0	X174 - Autotronic 4 transmission controller	Faulty programming
T	61E1	X174 - Autotronic 4 transmission controller	Faulty programming

B.8 Lights error codes

No.		Components concerned	Causes
L	6	X149 - Headlights module (black connector)	One or more bulb(s) missing
		X305 - Headlights module (grey connector)	
L	7	X149 - Headlights module (black connector)	No connection with the keypad
		X305 - Headlights module (grey connector)	
L	8	X149 - Headlights module (black connector)	EEPROM checksum
		X305 - Headlights module (grey connector)	
L	9	X149 - Headlights module (black connector)	CAN connection problem
		X305 - Headlights module (grey connector)	

B.9 ParkLock error codes

No.		Components concerned	Causes
P	131	X38 - Trailer braking proportional solenoid valve	Open circuit
P	132		Short circuit to earth (-)
P	133		Short circuit to +12 V

No.		Components concerned	Causes
P	141	X39 - Trailer braking safety solenoid valve	Open circuit
P	142		Short circuit to earth (-)
P	143		Short circuit to +12 V
P	151	X37 - ParkLock pressure reversing solenoid valve	Open circuit
P	152		Short circuit to earth (-)
P	153		Short circuit to +12 V
P	171	X135 - Braking pressure sensor	Signal error
P	172	X35 - ParkLock hydraulic system pressure sensor	Signal error
P	173	X21 - ParkLock brake pressure sensor	Signal error

B.10 Suspended front axle error codes

No.		Components concerned	Causes
FA	211	X178 - ParkLock/suspended front axle/passive suspended cab Autotronic 5	Calibration fault
FA	221	X166 - Suspended front axle position sensor	Sensor value too high
FA	222		Sensor value too low
FA	224		Calibration too low
FA	225		Calibration too high
FA	231	X154 - Suspended front axle lifting solenoid valve	Open circuit
FA	232		Short circuit to +12 V
FA	233		Short circuit to earth (-)
FA	234	X159 - Suspended front axle lowering solenoid valve	Open circuit
FA	235		Short circuit to +12 V
FA	236		Short circuit to earth (-)
FA	237	X161 - Solenoid valve 1 for suspended front axle suspension	Open circuit
FA	238		Short circuit to +12 V
FA	239		Short circuit to earth (-)
FA	241	X139 - Suspended front axle switch	Short circuit

B.11 Linkage error codes

No.		Components concerned	Causes
R	11	X27 - Rear linkage lifting solenoid valve	Open circuit
		X28 - Rear linkage lowering solenoid valve	
R	12	X27 - Rear linkage lifting solenoid valve	Short circuit
R	13	X28 - Rear linkage lowering solenoid valve	Short circuit
R	14	X174 - Autotronic 4 transmission controller	No CAN unlocking signal
R	15	X87 - Linkage lifting/lowering switch on right-hand fender	Incorrect signal
		X97 - Linkage lifting/lowering switch on left-hand fender	
R	16	X177 - Autotronic 5 Linkage	Battery voltage <11 V or >16 V
R	17		Checksum error
R	18	X119 - Rear linkage lifting/lowering switch	Incorrect signal
R	19	X177 - Autotronic 5 Linkage	Parameter loss
R	22	X30 - Rear linkage position sensor	Incorrect signal
R	23	X121 - Rear linkage height/depth adjustment thumb wheel	Incorrect signal
R	24	X145 - PTO/linkage console	Incorrect signal

No.		Components concerned	Causes
R	31	X32 - Rear linkage left-hand draft sensor	Incorrect signal
R	32	X31 - Rear linkage right-hand draft sensor	Incorrect signal
R	33	Front linkage suspension sensor	Signal incorrect or incorrect calibration
R	34	X145 - PTO/linkage console	Incorrect signal
R	35	X145 - PTO/linkage console	Incorrect signal
R	36	X145 - PTO/linkage console	Incorrect signal
R	41	X32 - Rear linkage left-hand draft sensor	Saturation
R	42	X31 - Rear linkage right-hand draft sensor	Saturation

B.12 Suspended cab error codes

No.		Components concerned	Causes
C	21	X261 - Front right-hand unit for suspended cab	Open circuit
C	22		Short circuit to +12 V
C	23		Short circuit to earth (-)
C	24	X262 - Front left-hand unit for suspended cab	Open circuit
C	25		Short circuit to +12 V
C	26		Short circuit to earth (-)
C	27	X50 - Suspended cab front lowering solenoid valve	Open circuit
C	28		Short circuit to +12 V
C	29		Short circuit to earth (-)
C	30	X49 - Suspended cab rear lowering solenoid valve	Open circuit
C	31		Short circuit to +12 V
C	32		Short circuit to earth (-)
C	33	X48 - Rear left-hand unit for suspended cab	Open circuit
C	34		Short circuit to +12 V
C	35		Short circuit to earth (-)
C	36	X47 - Rear right-hand unit for suspended cab	Open circuit
C	37		Short circuit to +12 V
C	38		Short circuit to earth (-)
C	39	X54 - Suspended cab lifting solenoid valve	Open circuit
C	40		Short circuit to +12 V
C	41		Short circuit to earth (-)
C	42	X48 - Rear left-hand position sensor	Range error
C	43	X262 - Front left-hand position sensor	Range error
C	44	X47 - Rear right-hand position sensor	Range error
C	45	X261 - Front right-hand position sensor	Range error

B.13 Armrest error codes

No.		Components concerned	Causes
AR	01	X104 - Armrest Autotronic 5	10 V output fault
AR	02	X104 - Armrest Autotronic 5	VIN Error - Vehicle electronic identification incorrect
AR	11	X307 - FingerTIP 1	Short circuit 0 V
AR	12		Short circuit to 12 V
AR	21	X308 - FingerTIP 2	Short circuit 0 V
AR	22		Short circuit to 12 V
AR	31	X108 - FingerTIP 3	Short circuit 0 V
AR	32		Short circuit to 12 V

No.		Components concerned	Causes
AR	41	X109 - FingerTIP 4	Short circuit 0 V
AR	42		Short circuit to 12 V
AR	51	X110 - FingerTIP 5	Short circuit 0 V
AR	52		Short circuit to 12 V
AR	61	X130 - FingerTIP 6 front linkage function	Short circuit 0 V
AR	62		Short circuit to 12 V
AR	71	X122 - Hand throttle	Short circuit 0 V
AR	72		Short circuit to 12 V
AR	81	X121 - Rear linkage height/depth adjustment thumb wheel	Short circuit 0 V
AR	82		Short circuit to 12 V
AR	91	X106 - Transmission lever in armrest	Short circuit 0 V
AR	92		Short circuit to 12 V

B.14 Air conditioning error codes

No.	Component(s) concerned	Cause(s)	Consequence(s)
1-	Mixed air temperature sensor 1 fault	Sensor open	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
2	Mixed air temperature sensor 1 fault	Sensor short-circuited	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
3	Mixed air temperature sensor 2 fault	Sensor open	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
4	Mixed air temperature sensor 2 fault	Sensor short-circuited	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
5	Ambient temperature sensor fault	Sensor open	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
6	Ambient temperature sensor fault	Sensor short-circuited	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
7	External air temperature sensor fault	Sensor open	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
8	External air temperature sensor fault	Sensor short-circuited	The water valve opening is controlled manually.
			The air conditioning is controlled manually.
9	Evaporator temperature sensor fault	Sensor open	The air conditioning is turned off and cooling is not possible.
10	Evaporator temperature sensor fault	Sensor short-circuited	The air conditioning is turned off and cooling is not possible.

No.	Component(s) concerned	Cause(s)	Consequence(s)
11	Solar sensor failure	The signal from the solar sensor is outside its limits or is giving an impossible value.	The system takes a default value of 300 W/m ² .
14	Recirculation actuator no. 1 input error	The signal from the potentiometer of recirculation actuator no. 1 is outside its operating range.	The recirculation actuator (no. 1 and 2) is automatically set to the "external air" position.
15	Potentiometer recirculation actuator (no. 1 & 2) reference error	The potentiometer reference is short circuited to the earth.	The recirculation actuator (no. 1 and 2) is automatically set to the "external air" position.
16	Input error from selected temperature potentiometer	The signal is outside its operating range.	The system switches to automatic mode at a temperature selected by default (21°C).
17	Input error from fan speed potentiometer	The signal is outside its operating range.	The system controls the fan speed automatically.
18	Ambient temperature sensor fan fault	The fan does not turn.	
19	Stepper motor output error (water valve)	The stepper motor does not operate correctly.	
20	Recirculation actuator motor (no. 1 and 2) output error	The recirculation actuator does not operate correctly.	The recirculation actuator motor output (no. 1 and 2) is deactivated.
21	Air conditioning relay output error	The relay does not operate correctly.	
22	Water pump relay output error	The relay does not operate correctly.	
23	Fan relay output error	The relay does not operate correctly.	
24	Engine speed error	The CAN message is not valid.	The system considers the last value received within 2 seconds.
			If no CAN message is received during this time, the system takes a default value of 1500 rpm.
25	Vehicle speed error	The CAN message is not valid.	If no CAN message is received, the system considers the last value received within 2 seconds (20 consecutive messages).
26	Engine water temperature error	The CAN message is not valid.	The system considers the last value received within 10 seconds.
			If no CAN message is received during this time, the system takes a default value of 90°C.
27	Fan speed controller no. 1 output error	The signal is outside its operating range.	
28	Failure due to undervoltage	The supply signal is lower than the minimum value.	The control unit operates in degraded mode.
29	Failure due to overvoltage	The supply signal is higher than the maximum value.	The control unit is deactivated.
30	Fan speed controller no. 2 output error	The signal is outside its operating range.	
31	Fan speed controller no. 1 return error	The signal is outside its operating range.	
32	Fan speed controller no. 2 return error	The signal is outside its operating range.	
33	Recirculation actuator no. 2 input error	The signal from the potentiometer of recirculation actuator no. 2 is outside its operating range.	The recirculation actuator (no. 1 and 2) is automatically set to the "external air" position.

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A. Electrical diagrams




A.1 Fuse box description

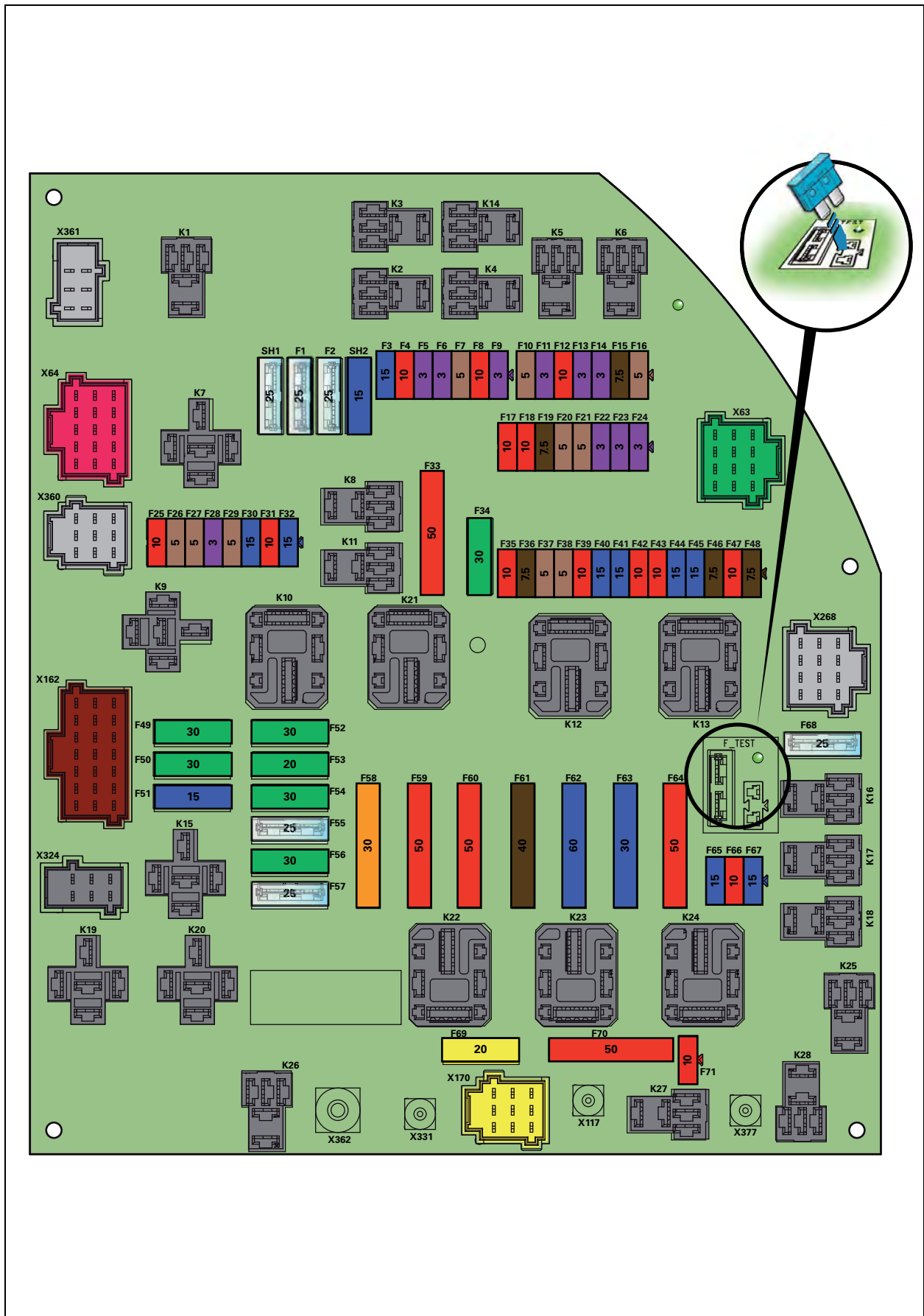
The fuse box elements are identified according to their function:

F Fuse
SH Shunt (shunts are fuses)
K Relay
X Connector

The fuses used are of different powers and sizes:

Amperage	Size	Colour
3	normal	
5	min.	
7.5	min.	
10	min.	
10	normal	
15	min.	
15	normal	
20	normal	
25	normal	
30	normal	
40	max.	

Amperage	Size	Colour
50	max.	
60	max.	
70	max.	



1006388

Fig. 1

Num.	Amp	Size	Protected function
F1	25 A	STD	Windscreen wiper control unit
F2	25 A	STD	Main beams
F3	15 A	Min.	Dipped lights on grille
F4	10 A	Min.	Implement connector on right-hand pillar without Isobus
F5	3 A	Min.	Start switch + ACC ⁽¹⁾
F6	3 A	Min.	K19 relay control circuit
F7	5 A	Min.	Lighting module + APC ⁽²⁾
F8	10 A	Min.	Air conditioning compressor
F9	3 A	Min.	K21 relay control circuit
F10	5 A	Min.	instrument panel + APC ⁽²⁾
F11	3 A	Min.	Brake switch
F12	10 A	Min.	instrument panel + APC ⁽²⁾
F13	3 A	Min.	Not used
F14	3 A	Min.	Limp home mode switch
F15	7.5 A	Min.	Horn
F16	5 A	Min.	Fuse board earth
F17	10 A	Min.	Front connector + ACC ⁽¹⁾
F18	25 A	Min.	Not used
F19	7.5 A	Min.	Autotronic 5 linkage, Autotronic 4 and diagnostic connectors + APC ⁽²⁾
F20	5 A	Min.	Auto-Guide + APC ⁽²⁾
F21	5 A	Min.	Autotronic 4 + APC ⁽²⁾
F22	3 A	Min.	K13 relay control circuit
F23	3 A	Min.	K12 relay control circuit
F24	3 A	Min.	Alternator + APC ⁽²⁾
F25	10 A	Min.	Backlighting for console, cigarette lighter, lighting module, front right-hand and rear left-hand side lights
F26	5 A	Min.	Starter solenoid
F27	5 A	Min.	Electric battery isolator + APC ⁽²⁾
F28	3 A	Min.	K10 relay control circuit
F29	5 A	Min.	Lighting module + BAT ⁽³⁾
F30	15 A	Min.	Electric battery isolator + BAT ⁽³⁾
F31	10 A	Min.	Radio + BAT ⁽³⁾
F32	15 A	Min.	Rear windscreen wiper switch, rear windscreen wiper motor, extreme cold weather pump + BAT ⁽³⁾
F33	50 A	Max.	Fuse board + APC ⁽²⁾
F34	30 A	STD	Engine controller + BAT ⁽³⁾
F35	10 A	Min.	Fuse board + ACC ⁽¹⁾
F36	7.5 A	Min.	Autotronic 5 linkage and Autotronic 5 suspended front axle/Park-Lock + BAT ⁽³⁾
F37	5 A	Min.	Auto-Guide + BAT ⁽³⁾
F38	5 A	Min.	instrument panel + BAT ⁽³⁾
F39	10 A	Min.	Transmission actuator + BAT ⁽³⁾
F40	15 A	Min.	Linkage + BAT ⁽³⁾
F41	15 A	Min.	Cab suspension, Control Arm, ParkLock, Datatronic CCD + BAT ⁽³⁾
F42	10 A	Min.	Throttle pedal shuttle, PTO stop on fenders, ignition key, clutch pedal + BAT ⁽³⁾
F43	10 A	Min.	Electrohydraulic spool valves + BAT ⁽³⁾
F44	15 A	Min.	Fuel preheater + BAT ⁽³⁾

Num.	Amp	Size	Protected function
F45	15 A	Min.	Heating to feet + BAT ⁽³⁾
F46	7.5 A	Min.	Electric rear-view mirrors + BAT ⁽³⁾
F47	10 A	Min.	Pneumatic seat + BAT ⁽³⁾
F48	7.5 A	Min.	Backlighting for the instrument panel, left-hand front and right-hand rear side lights
F49	30 A	STD	Cigarette lighter, roof light, radio + BAT ⁽³⁾
F50	30 A	STD	Trailer connector + BAT ⁽³⁾
F51	15 A	STD	Dipped lights and side lights + BAT ⁽³⁾
F52	30 A	STD	Right-hand pillar power socket + BAT ⁽³⁾
F53	30 A	STD	+ BAT ⁽³⁾ to the lighting module for work lights in grille
F54	30 A	STD	Front right-hand fender power socket + BAT ⁽³⁾
F55	25 A	STD	Not used
F56	30 A	STD	Engine controller + BAT ⁽³⁾
F57	25 A	STD	Front linkage power socket + BAT ⁽³⁾
F58	40 A	Max.	+ BAT ⁽³⁾ to the lighting module for the indicator lights and brake lights
F59	50 A	Max.	Autotronic 4 + BAT ⁽³⁾
F60	50 A	Max.	Ventilation and additional ventilation + BAT ⁽³⁾
F61	70 A	Max.	+ BAT ⁽³⁾ to the lighting module for the front/rear/step/hand rail work lights and reversing light
F62	60 A	Max.	Isobus connector + BAT ⁽³⁾
F63	60 A	Max.	+ BAT ⁽³⁾ to the lighting module for the work lights in the roof
F64	50 A	Max.	Not used
F65	15 A	Min.	Fuel lift pump + BAT ⁽³⁾
F66	10 A	Min.	Power socket + APC ⁽²⁾
F67	15 A	Min.	Auxiliary spool valves, FingerTIP and joystick + BAT ⁽³⁾
F68	25 A	STD	Not used
F69	20 A	STD	Additional ventilation + BAT ⁽³⁾
F70	50 A	Max.	Isobus connector + BAT ⁽³⁾
F71	10 A	Min.	Isobus connector + BAT ⁽³⁾
SH1	25 A	STD	K1 relay control circuit
SH2	15 A	STD	K2 relay control circuit
K1			Main beam relay (hand rail and grille)
K2			Dipped lights relay (hand rail and grille)
K3			Air conditioning compressor relay
K4			Tractor accessories + ACC ⁽¹⁾ relay
K5			Electrohydraulic spool valve relay
K6			Dyna-VT coupler solenoid valve and limp home mode switch relay
K7			Front windscreen wiper relay (motor and control unit)
K8			Main beams relay
K9			Right-hand pillar power socket relay
K10			Windscreen wiper control unit, radio, extreme cold weather pump and rear windscreen wiper (motor and switch) relay
K11			Dipped lights control unit relay
K12			Throttle pedal shuttle, PTO stop on fenders, ignition key, clutch pedal relay
K13			Heating to feet, fuel preheater, pneumatic seat, electric rear-view mirrors relay
K14			Battery isolator + ACC ⁽¹⁾ relay
K15			Not used

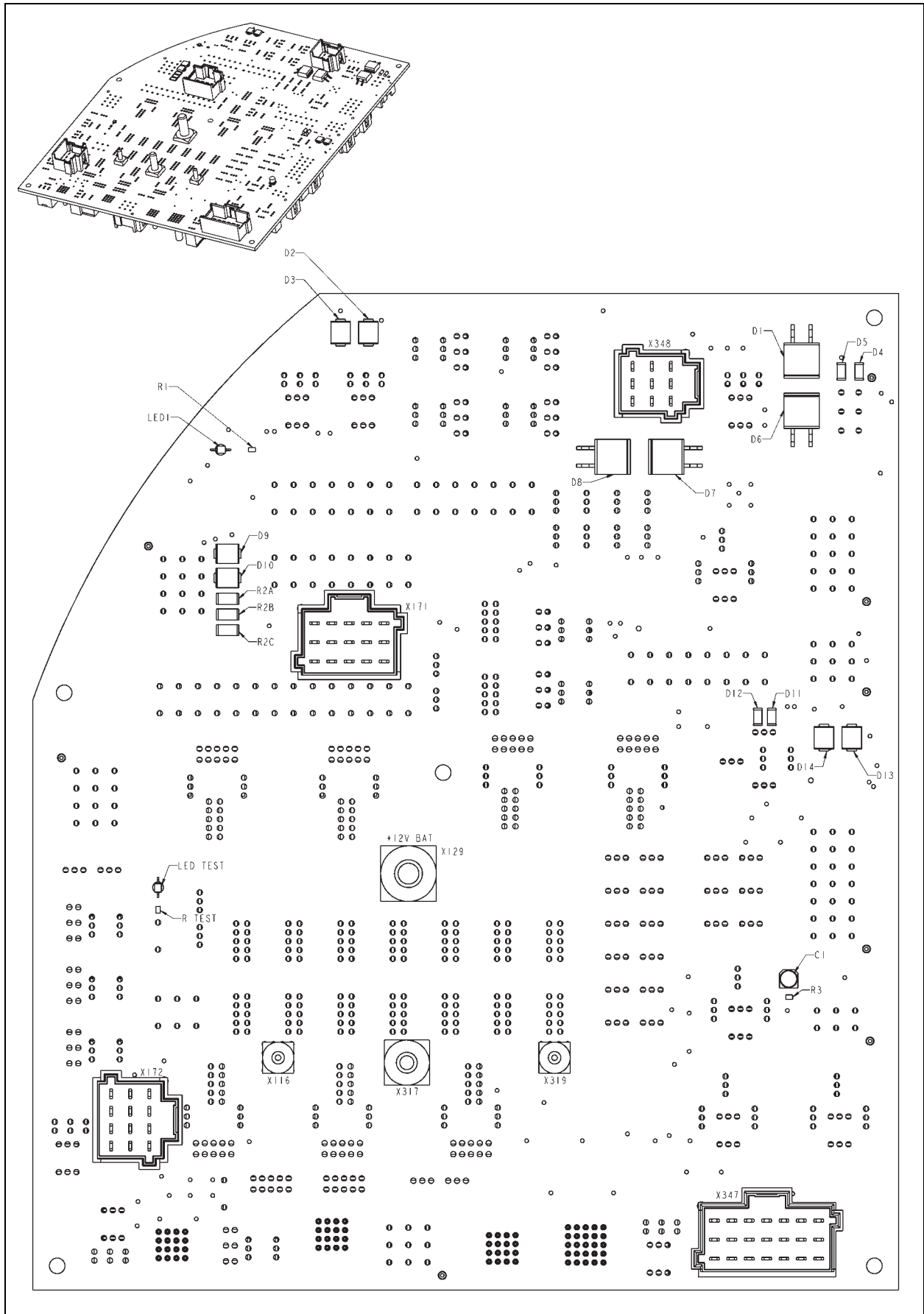
Num.	Amp	Size	Protected function
K16			Not used
K17			Relay for the 4th spool valve function of the joystick
K18			Relay for the 3rd spool valve function of the joystick
K19			Engine controller relay
K20			Engine controller relay
K21			Fuse board + APC ⁽²⁾ relay
K22			Ventilation and additional ventilation relay
K23			Isobus connector relay
K24			Not used
K25			Fuel lift pump relay
K26			Not used
K27			Not used
K28			Power socket + APC ⁽²⁾ relay

(1) + ACC = + 12 V accessories

(2) + APC = + 12 V ignition on

(3) + BAT = + 12 V batteries

Rear view of fuse box



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Fig. 2

A.2 Identification of electrical connectors and harnesses

Identification of electrical connectors

- X1** - Auxiliary hydraulic oil temperature sensor
- X2** - Auxiliary hydraulic oil filter blockage switch
- X3** - 540 rpm PTO speed solenoid valve
- X4** - 1000 rpm PTO speed solenoid valve
- X5** - 4WD solenoid valve
- X6** - Differential lock solenoid valve
- X7** - Rear PTO solenoid valve
- X8** - Bevel gear theoretical speed sensor
- X9** - Transmission oil high pressure sensor 1
- X10** - Collecting shaft speed sensor
- X11** - Solenoid valve limiting speed to 30 kph
- X12** - Coupler function solenoid valve
- X13** - Hare range solenoid valve
- X14** - Tortoise range solenoid valve
- X15** - PTO clutch speed sensor
- X16** - PTO shaft speed sensor
- X17** - Hare/Tortoise range position sensor
- X18** - Transmission control module
- X19** - Transmission hydraulic oil temperature sensor
- X20** - Transmission filter blockage switch
- X21** - ParkLock brake pressure sensor
- X22** - Radar
- X23** - Steering pressure sensor
- X24** - Auxiliary hydraulic oil gauge
- X25** - Engine speed sensor
- X26** - Pneumatic brake solenoid valve
- X27** - Rear linkage lifting solenoid valve
- X28** - Rear linkage lowering solenoid valve
- X29** - Dual Control socket connector
- X30** - Rear linkage position sensor
- X31** - Rear linkage right-hand draft sensor
- X32** - Rear linkage left-hand draft sensor
- X33** - Transmission harness CAN junction
- X34** - Transmission oil high pressure sensor 2
- X35** - ParkLock hydraulic system pressure sensor
- X36** - LS signal breaker solenoid valve
- X37** - ParkLock pressure reversing solenoid valve
- X38** - Trailer braking proportional solenoid valve
- X39** - Trailer braking safety solenoid valve
- X40** - Front linkage single/double acting function solenoid valve
- X41** - Divider solenoid valve 1
- X42** - Divider solenoid valve 2
- X43** - Auto-hitch lifting solenoid valve
- X44** - Auto-hitch lowering solenoid valve
- X45** - Bleed for pneumatic suspended cab front and rear systems
- X46** - Rear left-hand ram position sensor for cab suspension
- X47** - Rear right-hand unit for suspended cab
- X48** - Rear left-hand unit for suspended cab
- X49** - Suspended cab rear lowering solenoid valve
- X50** - Suspended cab front lowering solenoid valve
- X51** - Transmission harness earth (chassis)
- X52** - Engine harness/transmission harness junction

- X53** - Cab transmission harness/transmission harness junction
- X54** - Suspended cab lifting solenoid valve
- X55** - Instrument panel
- X56** - Power Control lever
- X57** - DOT Matrix keyboard
- X58** - Windscreen wiper and indicator control unit
- X59** - DOT Matrix keyboard connection on instrument panel
- X60** - Engine harness/instrument panel harness junction
- X61** - Cab transmission harness/engine harness junction
- X62** - Instrument panel harness/cab transmission harness junction
- X63** - Instrument panel harness connection on fuse box
- X64** - Instrument panel harness connection on fuse box
- X65** - Front windscreen wiper motor
- X66** - Left-hand brake pedal sensor
- X67** - Right-hand brake pedal sensor
- X68** - Clutch pedal sensor
- X69** - Cab interior temperature sensor
- X70** - Solar radiation sensor
- X71** - Throttle pedal sensor
- X72** - ParkLock switch on Power Control lever
- X73** - Buzzer Control
- X74** - Buzzer Supply (+12 V APC)
- X75** - Pillar harness/right-hand fender harness junction
- X76** - Rear right-hand indicator
- X77** - Rear right-hand side light and stop light
- X78** - Work light on rear right-hand fender
- X79** --
- X80** --
- X81** --
- X82** --
- X83** --
- X84** --
- X85** --
- X86** --
- X87** - Linkage lifting/lowering switch on right-hand fender
- X88** - Rear right-hand NA indicator extension
- X89** - Earth (chassis)
- X90** - Pillar harness/left-hand fender harness junction
- X91** - Rear left-hand indicator
- X92** - Rear left-hand side light and stop light
- X93** - Work light on rear left-hand fender
- X94** - PTO ON/OFF switch on left-hand fender
- X95** - PTO Stop switch on left-hand fender
- X96** - Hydraulic spool valve switch on left-hand fender
- X97** - Linkage lifting/lowering switch on left-hand fender
- X98** - Rear left-hand NA indicator extension
- X99** - PTO and linkage console harness/cab transmission harness junction
- X100** - Instrument panel harness earth (chassis)
- X101** - Instrument panel harness/electric rear-view mirror harness junction
- X102** - Right-hand fender lighting harness/trailer connector harness junction
- X103** - Armrest harness/cab transmission harness junction
- X104** - Armrest Autotronic 5
- X105** - Datatronic CCD
- X106** - Transmission lever in armrest

- X107** - Headland mode switch (headland function)
- X108** - FingerTIP 3
- X109** - FingerTIP 4
- X110** - FingerTIP 5
- X111** - DTM dynamic transmission mode switch
- X112** - Joystick
- X113** - Armrest 6-button keyboard
- X114** - Supply on fuse box for 3rd spool valve
- X115** - Supply on fuse box for 4th spool valve
- X116** - +12 V battery supply (for lighting module)
- X117** - Isobus +12 V battery power socket
- X118** - Automatic PTO switch
- X119** - Rear linkage lifting/lowering switch
- X120** - Datatronic CCD navigation keyboard
- X121** - Rear linkage height/depth adjustment thumb wheel
- X122** - Hand throttle
- X123** - Hare/Tortoise range shift switch
- X124** - Pedal/lever mode switch
- X125** - SV1 speed setting potentiometer
- X126** - SV2 speed setting potentiometer
- X127** - Front PTO ON/OFF switch
- X128** - Rear PTO ON/OFF switch
- X129** - Fuse box +12 V battery connection
- X130** - FingerTIP 6 front linkage function
- X131** - Front linkage suspension solenoid valve
- X132** - Instrument panel harness/armrest harness junction
- X133** - Console harness/cab transmission harness junction
- X134** - Console harness/pillar harness junction
- X135** - Braking pressure sensor
- X136** - Differential lock switch
- X137** - 4WD switch
- X138** - Hazard warning lights indicator light and switch
- X139** - Suspended front axle switch
- X140** - Suspended front axle setting potentiometer
- X141** - Suspended cab switch
- X142** - Suspended cab setting potentiometer
- X143** - Variable steering switch (fast steering)
- X144** - Variable steering setting potentiometer (fast steering)
- X145** - PTO/linkage console
- X146** - Rear linkage suspension switch
- X147** - Roof harness/pillar harness junction
- X148** - Roof harness/pillar harness junction
- X149** - Headlights module (black connector)
- X150** - Pillar harness/cab power socket harness junction
- X151** - Pillar harness/cab power socket harness junction
- X152** - Start switch
- X153** - Non-Isobus implement connector
- X154** - Suspended front axle lifting solenoid valve
- X155** - Cigarette lighter socket (power)
- X156** - Cigarette lighter socket (backlighting)
- X157** - Left-hand side +12 V socket (power)
- X158** - Left-hand side +12 V socket (backlighting)
- X159** - Suspended front axle lowering solenoid valve
- X160** - Console harness earth (chassis)
- X161** - Solenoid valve 1 for suspended front axle suspension
- X162** - Pillar harness connection on fuse box

- X163** - Solenoid valve 2 for suspended front axle suspension
- X164** - Pillar harness/cab transmission harness junction
- X165** - Automatic air conditioning harness/pillar harness junction
- X166** - Suspended front axle position sensor
- X167** - +12 V APC fuse box connection
- X168** - Pneumatic brake system pressure sensor
- X169** - Power socket control switch (in cab)
- X170** - Pillar harness connection on fuse box
- X171** - Cab transmission harness connection on fuse box
- X172** - Cab transmission harness connection on fuse box
- X173** - Cab transmission harness earth
- X174** - Autotronic 4 transmission controller
- X175** - Emergency control switch
- X176** - Earth (Autotronic 4 transmission controller)
- X177** - Autotronic 5 Linkage
- X178** - ParkLock/suspended front axle/passive suspended cab Autotronic 5
- X179** - Main lighting, sidelight/dipped light activation switch
- X180** - Front windscreen washer pump
- X181** - Front linkage single acting / double acting function switch
- X182** - Linkage external lifting switch
- X183** - Diagnostics connector (tractor-Isobus CAN)
- X184** - Diagnostics connector (engine-valve CAN)
- X185** - Sisu EEM unit
- X186** - Starter
- X187** - Engine start relay
- X188** - Engine identification module (ID module)
- X189** - Fuel lift pump
- X190** - Vistronic fan
- X191** - Diesel fuel preheater
- X192** - B + alternator 1
- X193** - B + alternator 2
- X194** - D + alternator 1
- X195** - D + alternator 2
- X196** - In line fuse (225 A)
- X197** - Diesel fuel gauge
- X198** - Pneumatic trailer brake sensor
- X199** - Work light on left-hand step
- X200** - Work light on right-hand step
- X201** - Engine harness earth
- X202** - Front accessory connection socket harness/front function harness junction
- X203** - Engine harness/front headlights harness junction
- X204** - Cooling unit harness/engine harness junction
- X205** - Front axle harness/engine harness junction
- X206** - Sensor detecting water in the diesel fuel
- X207** - Pneumatic seat adjustment control
- X208** - Front linkage suspension switch LED
- X209** - Rear linkage external lowering switch
- X210** - Orbitrol steering sensor (SASA sensor)
- X211** - Rear Dual Control connector
- X212** - Instrument panel harness/armrest harness junction
- X213** - Power socket for additional heating
- X214** - Armrest harness/cab transmission harness junction

- X215** - Trailer connector (right-hand side light and number plate lights)
- X216** - Reversing light
- X217** - Isobus CAN connector
- X218** - External Isobus tool connector
- X219** - Cab Isobus harness/external Isobus harness junction
- X220** - Trailer connector (left-hand side light)
- X221** - Trailer connector (right-hand indicator)
- X222** - Trailer connector (left-hand indicator)
- X223** - Trailer connector (brake lights)
- X224** - Trailer connector (earth)
- X225** - Trailer connector (reversing light)
- X226** - Trailer connector harness earth
- X227** - Console harness/cab transmission harness junction
- X228** - Front linkage single/double-acting function LED
- X229** - 120 Ohm CAN 1 resistor (cab transmission harness)
- X230** - 120 Ohm CAN 2 resistor (cab transmission harness)
- X231** - 120 Ohm CAN 3 resistor (cab transmission harness)
- X232** - 120 Ohm CAN 4 resistor (cab transmission harness)
- X233** - Cab transmission harness/Isobus harness junction
- X234** - 120 Ohm CAN ATC resistor
- X235** - Front axle steering sensor (WAS sensor)
- X236** - Electrohydraulic Orbitrol (grey connector)
- X237** - Electrohydraulic Orbitrol (black connector)
- X238** - Connector 1 for valve harness
- X239** - Connector 2 for valve harness
- X240** - 120 Ohm resistor for electrohydraulic spool valves
- X241** - Sisu engine preheating supply (Grid Heater)
- X242** - Exhaust temperature sensor
- X243** - AdBlue/DEF reservoir (urea) level gauge and temperature sensor
- X244** - CAN SCR harness
- X245** - +12 V APC supply for SCR
- X246** - Auto-Guide external harness/engine harness junction
- X247** - Roof harness/electric rear-view mirror harness junction
- X248** - Right and left-hand electric rear-view mirror adjustment switch
- X249** - External rear-view mirror defroster switch
- X250** - Power socket in cab
- X251** - In line fuse (225 A)
- X252** - Automatic air conditioning condenser
- X253** - Air filter vacuum sensor
- X254** - Horn (earth)
- X255** - Horn
- X256** - Roof harness/hand rail harness junction
- X257** - Side light and indicator on hand rail (right and left)
- X258** - Main beam on hand rail (right and left)
- X259** - Hand rail upper work light
- X260** - Hand rail upper work light
- X261** - Front right-hand unit for suspended cab
- X262** - Front left-hand unit for suspended cab
- X263** - Floating stop relay control (US front-end loader)

- X264** - Front linkage suspension switch
- X265** - Rear linkage suspension switch indicator light
- X266** - Rear linkage diagnostic and lifting/lowering LEDs
- X267** - Switch for left-hand side heater
- X268** - Pillar harness connection on fuse box
- X269** - Cab suspension harness/cab transmission harness junction
- X270** - Front accessories connection socket (rotary beacon)
- X271** - Front accessories connection socket (+12 V battery)
- X272** - Front accessories connection socket (+12 V APC)
- X273** - Front accessories connection socket (main beam light)
- X274** - Front accessories connection socket (main beam light)
- X275** - Front accessories connection socket (work light)
- X276** - Earth for front accessory connection socket harness
- X277** - Front linkage lifting/lowering external control
- X278** - Front linkage lifting switch (external)
- X279** - Dual Control or TIC position sensor
- X280** - Front linkage rams pressure sensor
- X281** - Solenoid valve for front PTO
- X282** - Roof harness/cab Auto-Guide harness junction
- X283** - TopDock
- X284** - Headlights module keyboard
- X285** - Ad Blue (urea) metering valve
- X286** - Ad Blue (urea) injection valve
- X287** - Ad Blue (urea) reservoir preheating valve
- X288** - 12/24 V converter for SCR system
- X289** - SCR management module
- X290** - Front accessory connection socket harness/front function harness junction
- X291** - Front accessory connection socket harness/front function harness junction
- X292** - Front windscreen washer pump
- X293** - 540 rpm PTO switch
- X294** - 540 eco rpm PTO switch
- X295** - 1000 rpm PTO switch
- X296** - USB connector
- X297** - PTO/linkage console backlighting
- X298** - Headland mode switch (headland function)
- X299** - Linkage lowering speed potentiometer
- X300** - -
- X301** - PTO stop switch on left-hand fender
- X302** - Switch for pre-selected engine speed A
- X303** - Switch for pre-selected engine speed B
- X304** - Instrument panel harness/armrest harness junction
- X305** - Headlights module (grey connector)
- X306** - Switch for pre-selected engine speed A/B
- X307** - FingerTIP 1
- X308** - FingerTIP 2
- X309** - SV1/SV2 speed regulator switch
- X310** - Divider 1 indicator light and solenoid valve (earth)
- X311** - Divider 2 indicator light and solenoid valve (+12 V)
- X312** - SV1/SV2 speed setting potentiometer in armrest
- X313** - Pedal/lever transmission control mode switch and DTM switch
- X314** - Hydraulics switch 1, road/field mode

- X315** - Hydraulics switch 2, road/field mode
- X316** - Headland mode switch (headland function)
- X317** - + battery supply for headlights module
- X318** - Automatic air conditioning compressor
- X319** - + battery supply for headlights module
- X320** - + battery supply on headlights module
- X321** - + battery supply on headlights module
- X322** - + battery supply on headlights module
- X323** - + battery supply on headlights module
- X324** - +12 V APC fuse box connector (battery isolator switch)
- X325** - Pillar harness / non-Isobus implement connector harness junction
- X326** - Pillar harness / non-Isobus implement connector harness junction
- X327** - Battery earth (chassis)
- X328** - Battery isolator switch earth terminal
- X329** - Battery isolator switch earth terminal
- X330** - Battery negative terminal contact (battery isolator switch)
- X331** - Pillar harness connection on fuse box
- X332** - + battery (start switch)
- X333** - Engine harness earth (chassis)
- X334** - Battery isolator switch earth terminal
- X335** - Battery isolator switch earth terminal
- X336** - Battery isolator switch
- X337** - Pneumatic brake ParkLock solenoid valve
- X338** - Earth (battery isolator switch)
- X339** - Pneumatic trailer braking solenoid valve
- X340** - + terminal on battery for fuse box
- X341** - Starter supply
- X342** - Positive battery terminal
- X343** - RS232 diagnostics connector for Auto-Guide
- X344** - Isobus connector in cab
- X345** - Supply for additional terminal (mitron unit)
- X346** - Auto-Guide switch
- X347** - Cab transmission harness connection on fuse box
- X348** - Cab transmission harness connection on fuse box
- X349** - -
- X350** - Front right-hand grille work light
- X351** - Front right-hand grille work light
- X352** - Front right-hand grille work light
- X353** - Front left-hand grille work light
- X354** - Front left-hand grille work light
- X355** - Front left-hand grille work light
- X356** - Right-hand main beam and dipped light
- X357** - Left-hand main beam and dipped light
- X358** - Outside temperature sensor
- X359** - Cab suspension harness/cab transmission harness junction
- X360** - Pillar harness connection on fuse box
- X361** - Pillar harness connection on fuse box
- X362** - Fuse box (+12 V battery)
- X363** - Auto-hitch (Dromone) switch
- X364** - 120 Ohm resistor for Auto-Guide/Isobus CAN network
- X365** - Hand rail lower work light
- X366** - Pneumatic brake harness / transmission harness junction
- X367** - Switch 1 on joystick
- X368** - Switch 2 on joystick

- X369** - Engine speed + switch
- X370** - Engine speed - switch
- X371** - Engine speed stop switch
- X372** - Orbitrol safety solenoid valve
- X373** - Left-hand 12 V socket (cab) (power)
- X374** - Left-hand 12 V socket (cab) (backlighting)
- X375** - Instrument panel harness/cab transmission harness junction
- X376** - Fuse box (reserve for + APC)
- X377** - Fuse box (supply for cab suspension compressor)
- X378** - FNRP lever and button
- X379** - Front left-hand work light on roof
- X380** - Front right-hand work light on roof
- X381** - Front left-hand work light on roof
- X382** - Front right-hand work light on roof
- X383** - Front left-hand roof indicator
- X384** - Front right-hand roof indicator
- X385** - Rear left-hand work light on roof
- X386** - Rear right-hand work light on roof
- X387** - Rear left-hand work light on roof
- X388** - Rear right-hand work light on roof
- X389** - Rear left-hand work lights
- X390** - Rear right-hand work lights
- X391** - Rear left-hand roof indicator
- X392** - Rear right-hand roof indicator
- X393** - Earth
- X394** - Radio aerial connector
- X395** - Radio supply
- X396** - Radio speaker connector
- X397** - Front left-hand speaker
- X398** - Front right-hand speaker
- X399** - Rear left-hand speaker (+ supply)
- X400** - Rear right-hand speaker (+ supply)
- X401** - Rear left-hand speaker (- supply)
- X402** - Rear right-hand speaker (- supply)
- X403** - Rear windscreen wiper motor
- X404** - Door switch
- X405** - Interior light (earth)
- X406** - Interior light (control)
- X407** - Interior light (+12 V battery supply)
- X408** - Right-hand console light
- X409** - Left-hand rotary beacon
- X410** - Right-hand rotary beacon
- X411** - Rear windscreen wiper switch
- X412** - Radio aerial
- X413** - Earth (aerial)
- X414** - Left-hand number plate light
- X415** - Right-hand number plate light
- X416** - Radio supply
- X417** - Radio speaker connector
- X418** - Earth
- X419** - Earth
- X420** - Rotary beacon harness earth (chassis)
- X421** - Earth
- X422** - Roof harness earth (chassis)
- X423** - Left-hand side fan ON/OFF switch
- X424** - Fan speed control knob
- X425** - Air conditioning switch
- X426** - Air conditioning indicator light
- X427** - Manual air conditioning module
- X428** - Electronic thermostat for heating

- X429** - Speed 1relay for fan
- X430** - Speed 2relay for fan
- X431** - Speed 3relay for fan
- X432** - Speed 4relay for fan
- X433** - Left-hand heating resistor
- X434** - Right-hand fan
- X435** - Left-hand fan
- X436** - Left-hand side fan switch
- X437** - Relay for left-hand side fan
- X438** - Earth (automatic air conditioning)
- X439** - Air conditioning control module (blue connector)
- X440** - Air conditioning control module (yellow connector)
- X441** - Heating temperature sensor
- X442** - TT2 sensor
- X443** - Evaporator temperature sensor
- X444** - Right-hand fan adapter module (signal)
- X445** - Left-hand fan adapter module
- X446** - Right-hand fan adapter module (supply)
- X447** - Left-hand fan adapter module (supply)
- X448** - Separation harness for automatic air conditioning
- X449** - Motor for left-hand heating shutter
- X450** - Motor for right-hand heating shutter
- X451** - Motor for heating mixer shutter
- X452** - Relay for heater pump
- X453** - Heater accelerator pump
- X454** - Earth (roof)
- X455** - Roof harness earth
- X456** - Solar panel
- X457** - Earth (Auto-Guide)
- X458** - Cab transmission harness/pillar harness junction
- X459** - Linkage lifting switch on fender
- X460** - Linkage lowering switch on fender
- X461** - Pillar harness/TECU harness junction
- X462** - Supply indicator light for power socket on pillar
- X463** - Earth (Isobus)
- X464** - Pillar harness/armrest harness junction
- X465** - Battery positive terminal contact
- X466** - Active suspended cab Autotronic 5
- X467** - Right-hand electric rear-view mirror
- X468** - Left-hand electric rear-view mirror
- X469** - Additional fan connection
- X470** - Operator presence in seat switch
- X471** - Suspended cab harness connection

Identification of harnesses

- FAI200** - Engine harness
- FAI201** - Front headlights harness
- FAI202** - Suspended front axle harness
- FAI203** - Transmission harness
- FAI204** - Cab/platform linkage external harness
- FAI205** - Electrohydraulic valves harness
- FAI206** - Transmission harness — PTO
- FAI207** - Front Dual Control harness
- FAI208** - Linkage with Dual Control and TIC harness
- FAI209** - Instrument panel harness
- FAI210** - Cab transmission harness
- FAI211** - Cab linkage harness
- FAI212** - Lighting harness
- FAI213** - Cab interior lighting harness
- FAI214** - Armrest harness

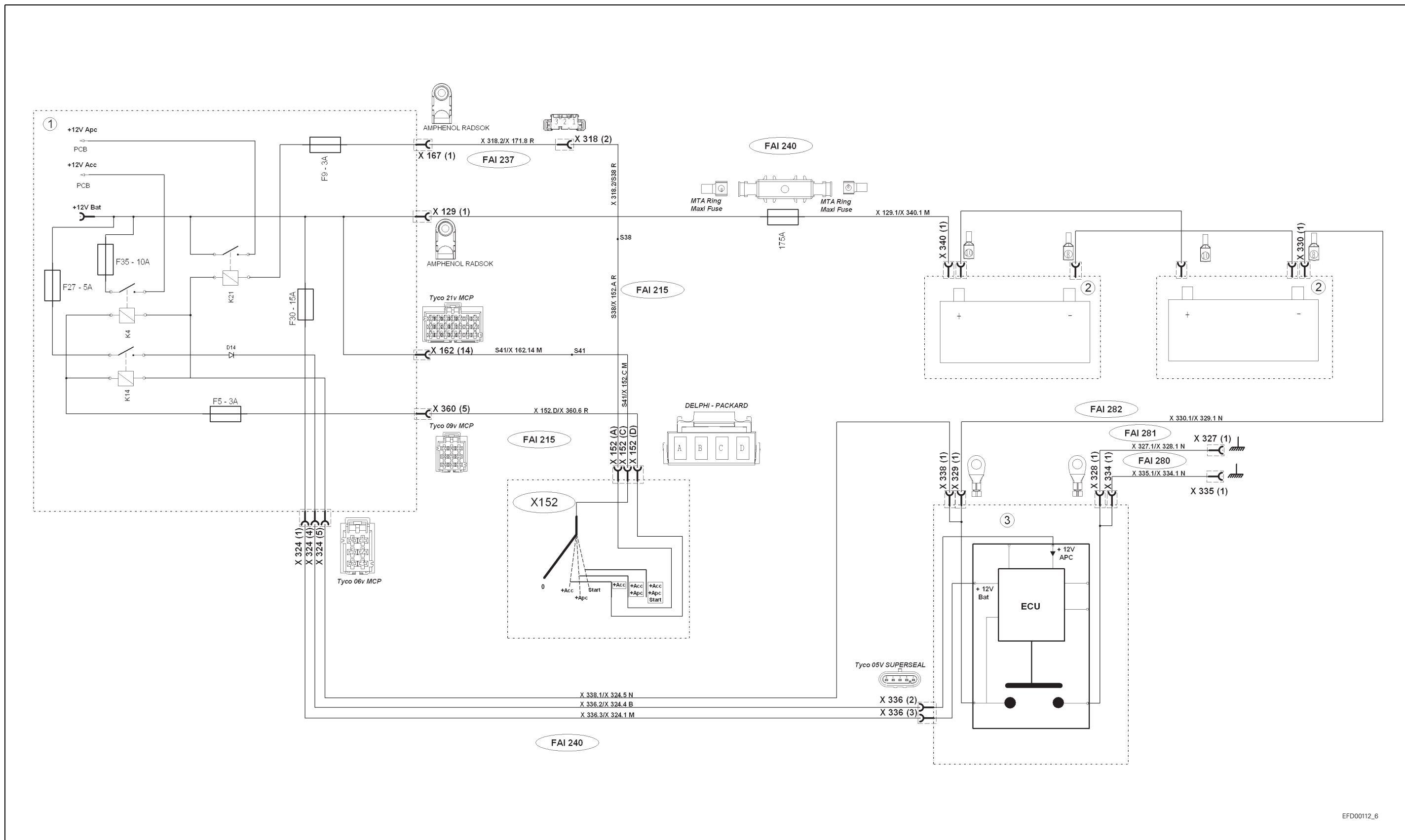
- FAI215** - Pillar harness
- FAI216** - Diagnostics connector harness
- FAI217** - Datatronic 3 harness
- FAI218** - Fieldstar harness
- FAI219** - Cab interior power socket harness
- FAI220** - BOC harness — safety switch
- FAI221** - Automatic air conditioning harness — instrument panel
- FAI222** - Autotronic 5 ParkLock/suspended front axle harness
- FAI223** - Roof harness
- FAI224** - Hand rail lighting harness
- FAI225** - Electric rear-view mirror harness
- FAI226** - Roof/external harness
- FAI227** - Automatic air conditioning harness - roof
- FAI228** - Number plate lighting harness
- FAI229** - Xenon light adapter harness
- FAI230** - GSPTO harness
- FAI231** - Transmission harness — ParkLock
- FAI232** - Radio harness
- FAI235** - Front accessory connection socket harness
- FAI236** - Start-up harness
- FAI237** - +12 APC fuse box harness
- FAI238** - +12 APC instrument panel harness
- FAI239** - Permanent +12 V supply harness
- FAI240** - +12 V permanent fuse box harness
- FAI241** - Automatic air conditioning adapter harness
- FAI242** - Main beams on hand rail adapter harness
- FAI243** - Circuit breaker harness
- FAI244** - Linkage external controls extension harness
- FAI245** - Left-hand linkage external controls harness
- FAI246** - Right-hand linkage external controls harness
- FAI247** - PTO shunt harness
- FAI248** - Linkage external controls harness
- FAI249** - Suspended front axle harness
- FAI250** - Engine harness
- FAI251** - Parking brake harness
- FAI252** - +12 V battery harness
- FAI253** - Hand rail harness
- FAI254** - Windscreen wiper harness
- FAI255** - Windscreen wiper harness
- FAI256** - High-visibility roof heating harness
- FAI257** - High-visibility roof heating harness
- FAI258** - Roof earth harness
- FAI260** - Cooling unit harness
- FAI261** - Isobus harness
- FAI262** - Auto-Guide engine harness
- FAI263** - Auto-Guide cab adapter harness
- FAI265** - Pneumatic brake harness
- FAI267** - Console harness
- FAI268** - Front function harness
- FAI271** - Cab electric rear-view mirror harness
- FAI272** - Active suspended cab harness
- FAI273** - Front linkage harness
- FAI274** - Rear right-hand lighting harness
- FAI275** - Trailer connector harness
- FAI276** - Rear left-hand lighting harness
- FAI280** - Negative battery harness
- FAI281** - Negative battery harness
- FAI282** - Negative battery harness
- FAI283** - TopDock harness

FAIxxx - Non-Isobus tool connector harness

FAIxxx - Non-Isobus implement connector controller harness

FAIxxx - Additional fan harness

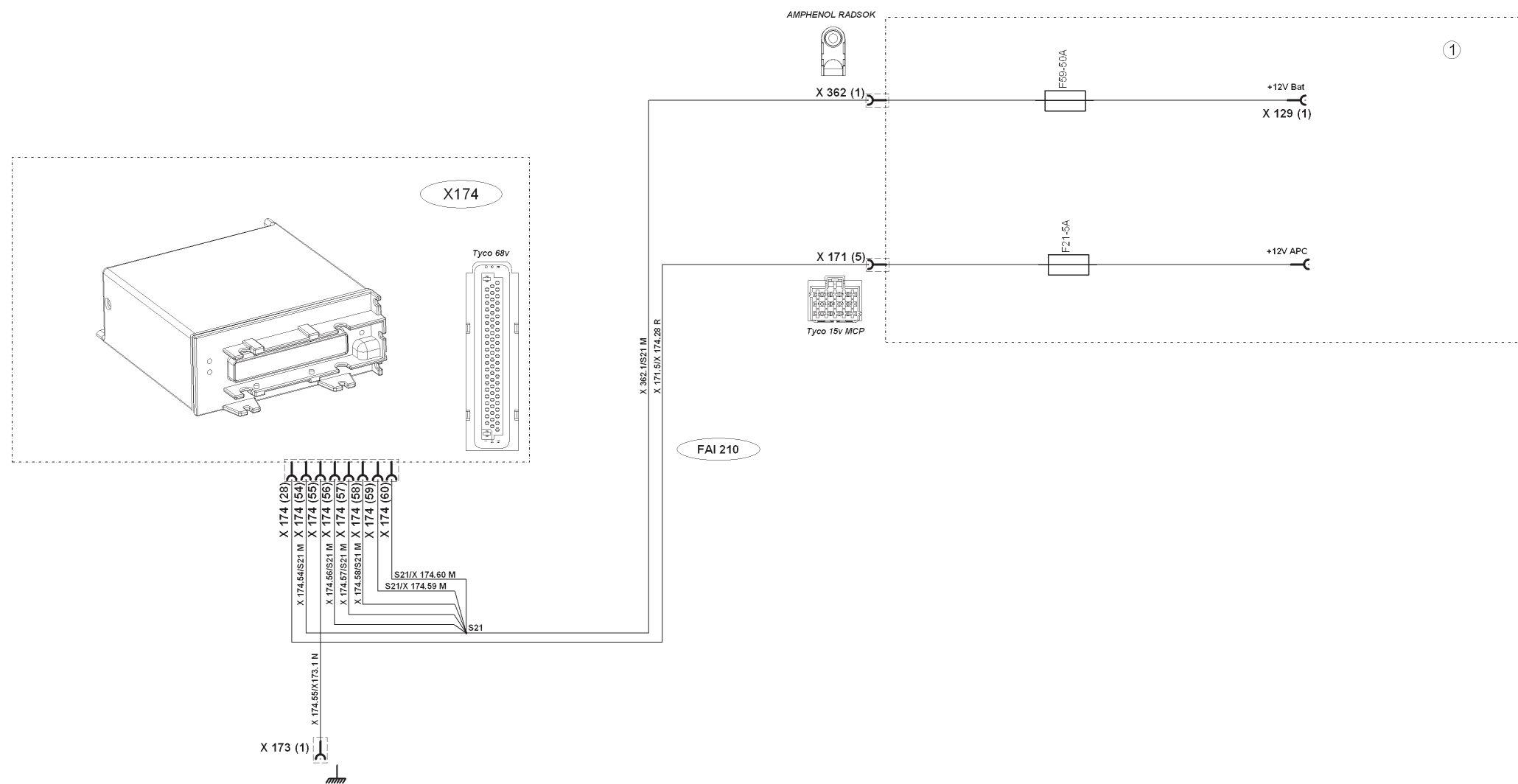
A.3 Fuse box supply with circuit breaker



EFD00112_6

Fig. 3

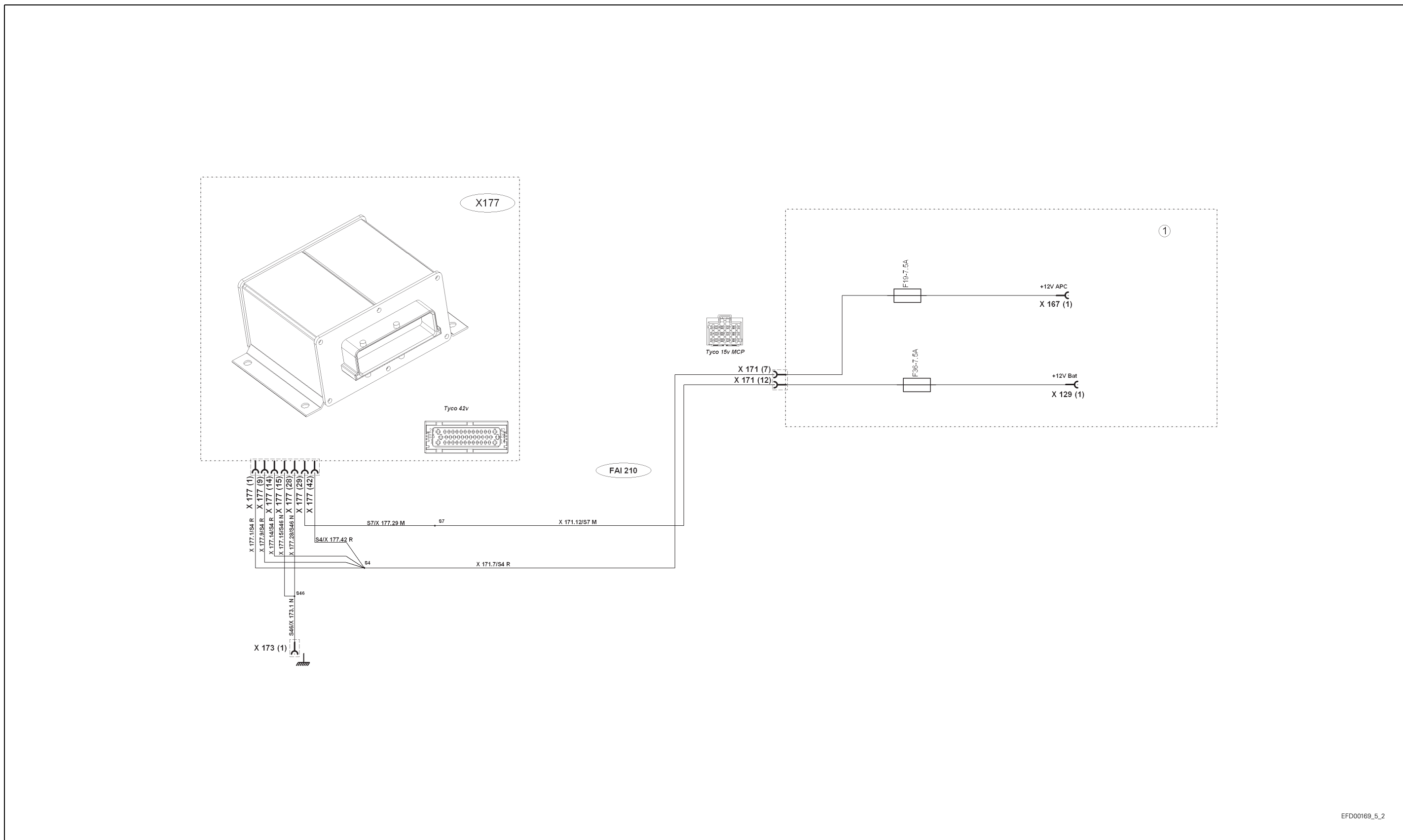
A.4 Autotronic 4 electrical power supply



EFD00169_5_1

Fig. 4

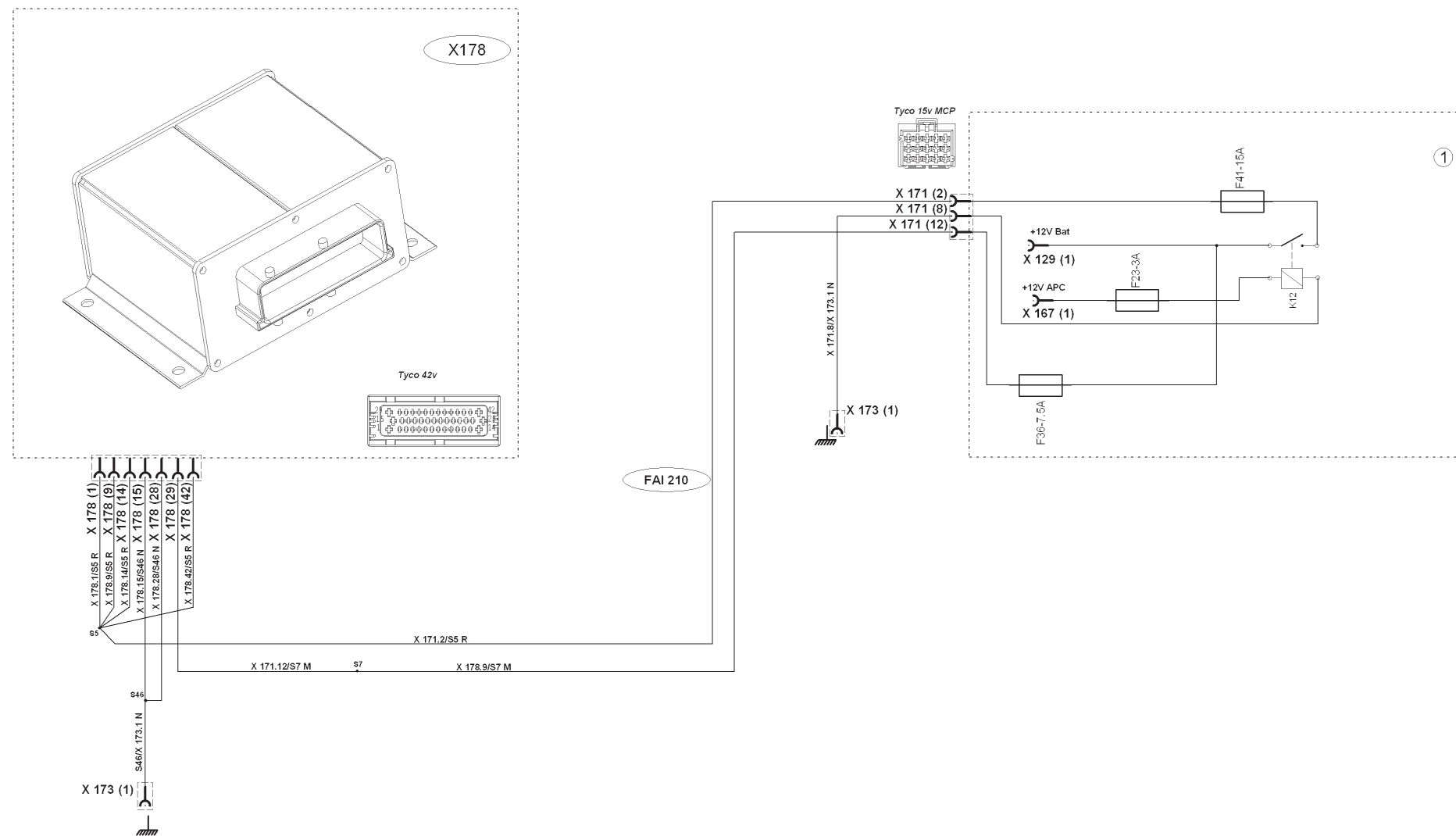
A.5 Autotronic 5 linkage electrical power supply



EFD00169_5_2

Fig. 5

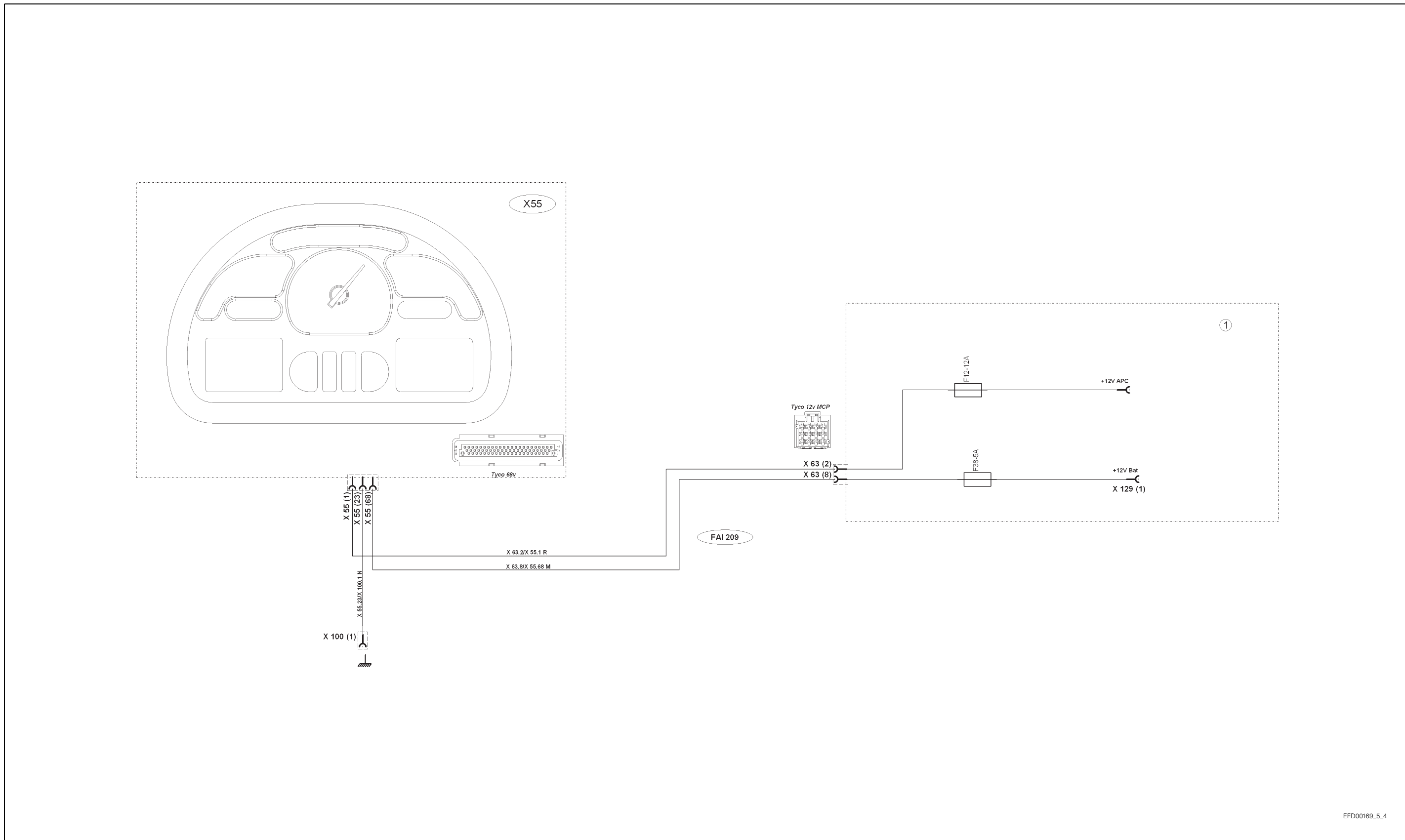
A.6 Autotronic 5 ParkLock/suspended front axle electrical power supply



EFD00169_5_3

Fig. 6

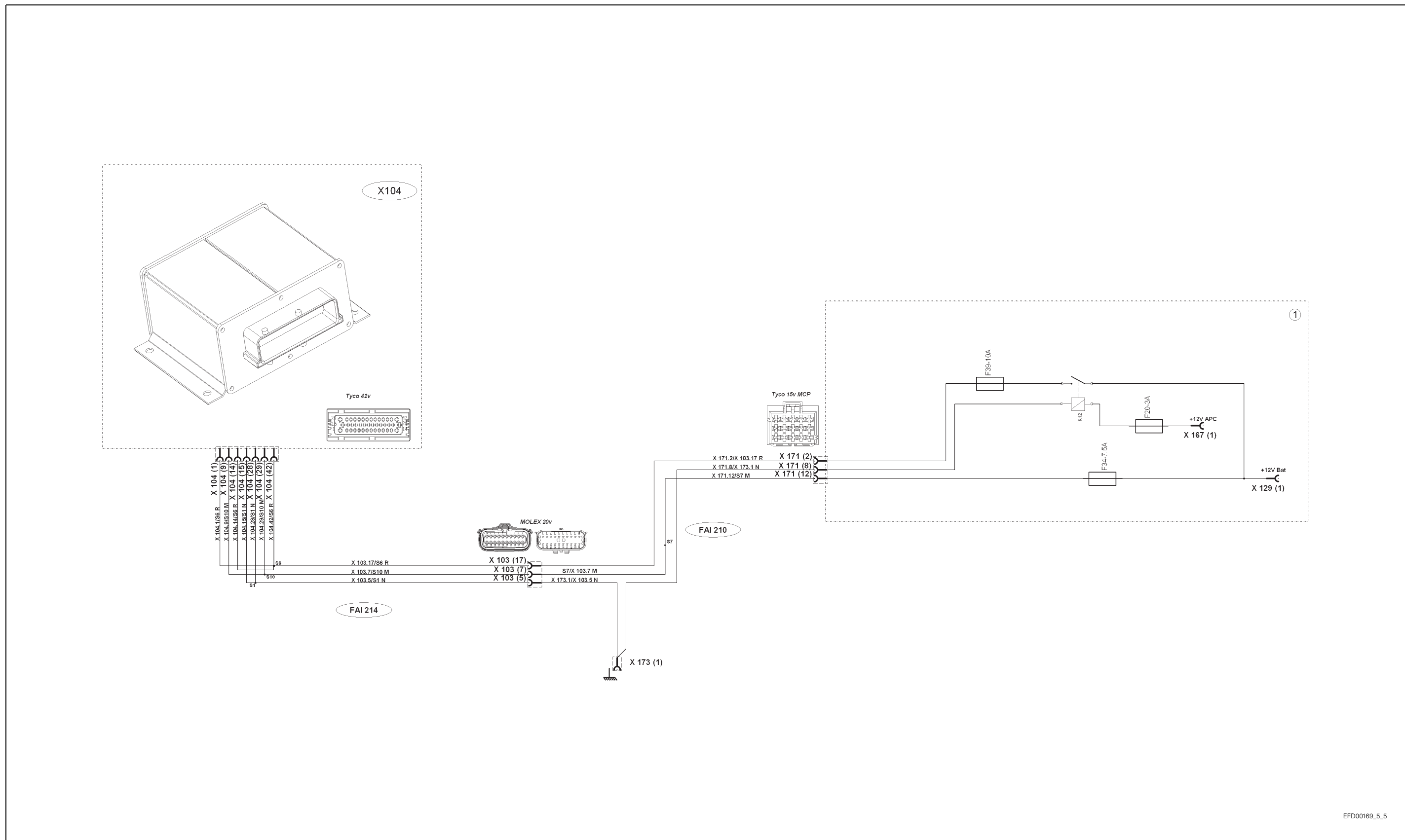
A.7 DCC3 instrument panel electrical power supply



EFD00169_5_4

Fig. 7

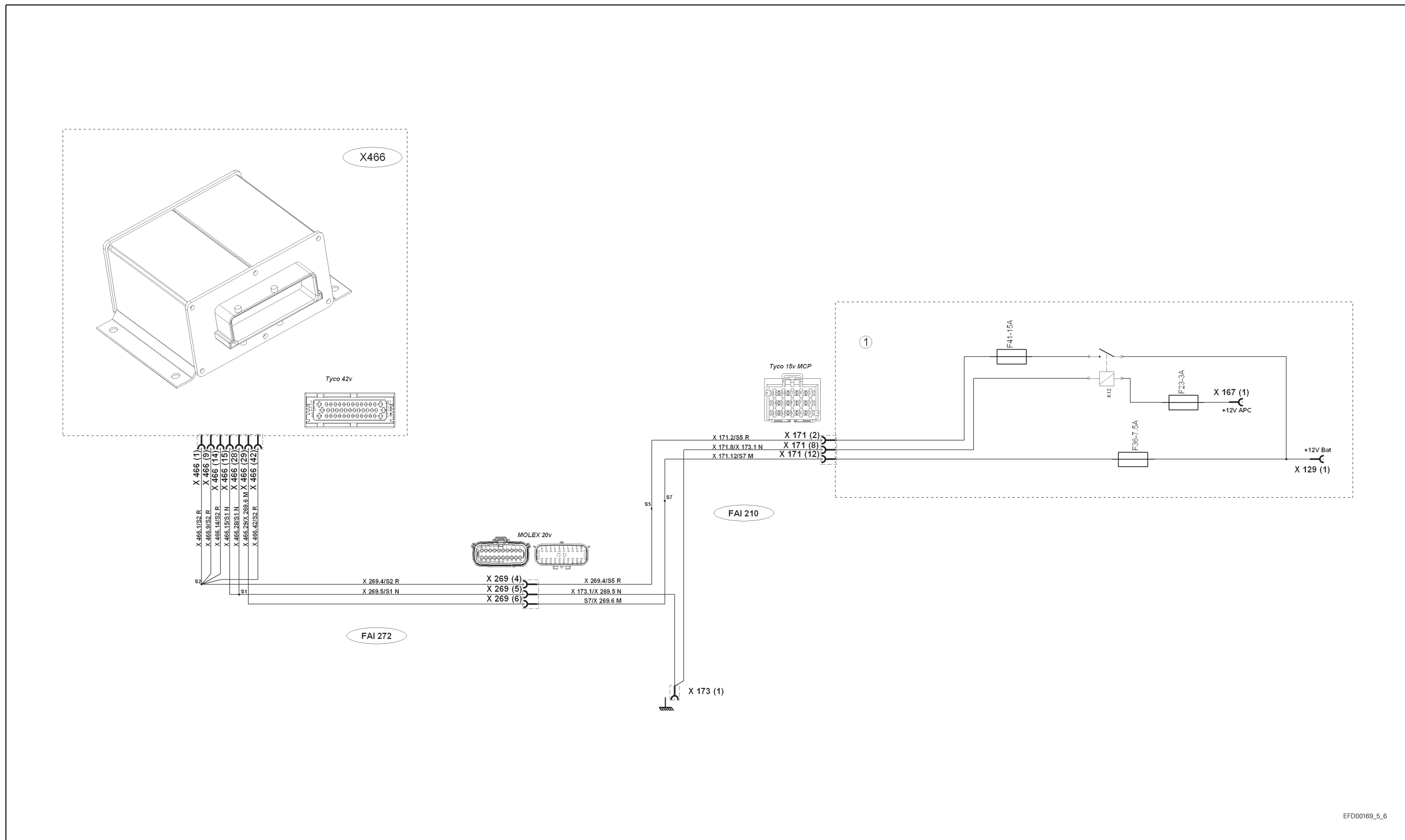
A.8 Autotronic 5 armrest electrical power supply



EFD00169_5_5

Fig. 8

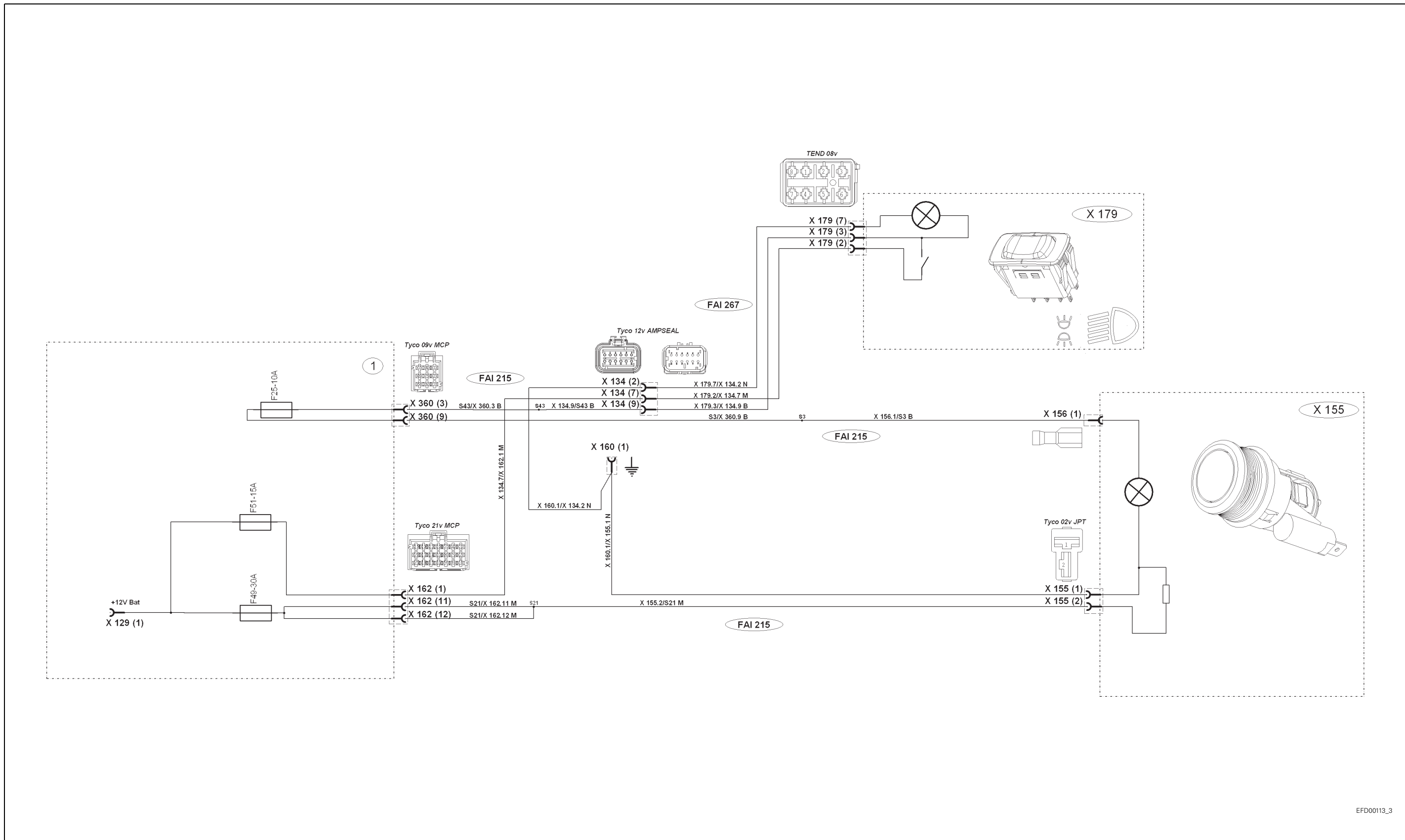
A.9 Autotronic 5 active suspended cab electrical power supply



EFD00169_5_6

Fig. 9

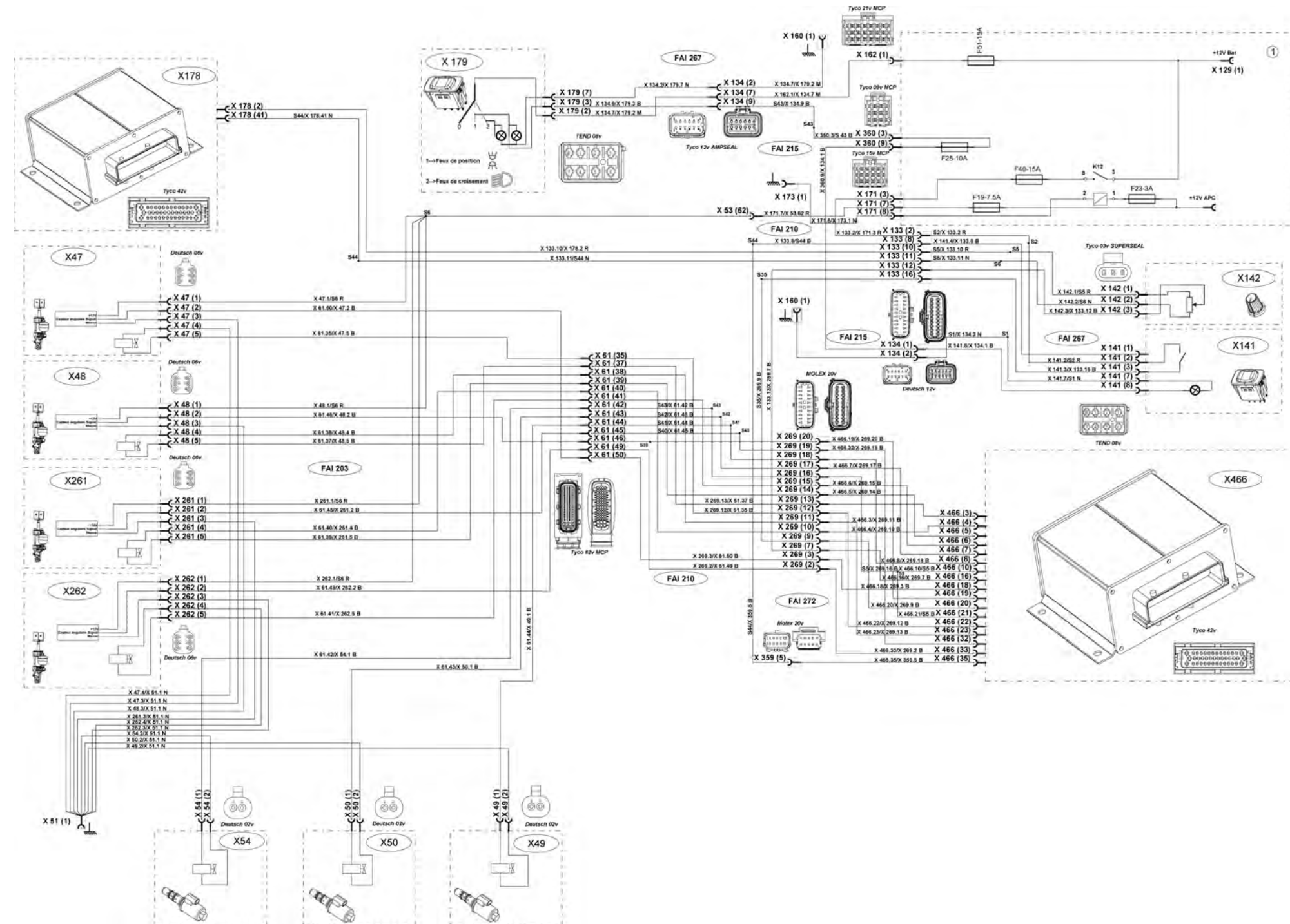
A.10 Cigarette lighter socket



EFD00113_3

Fig. 10

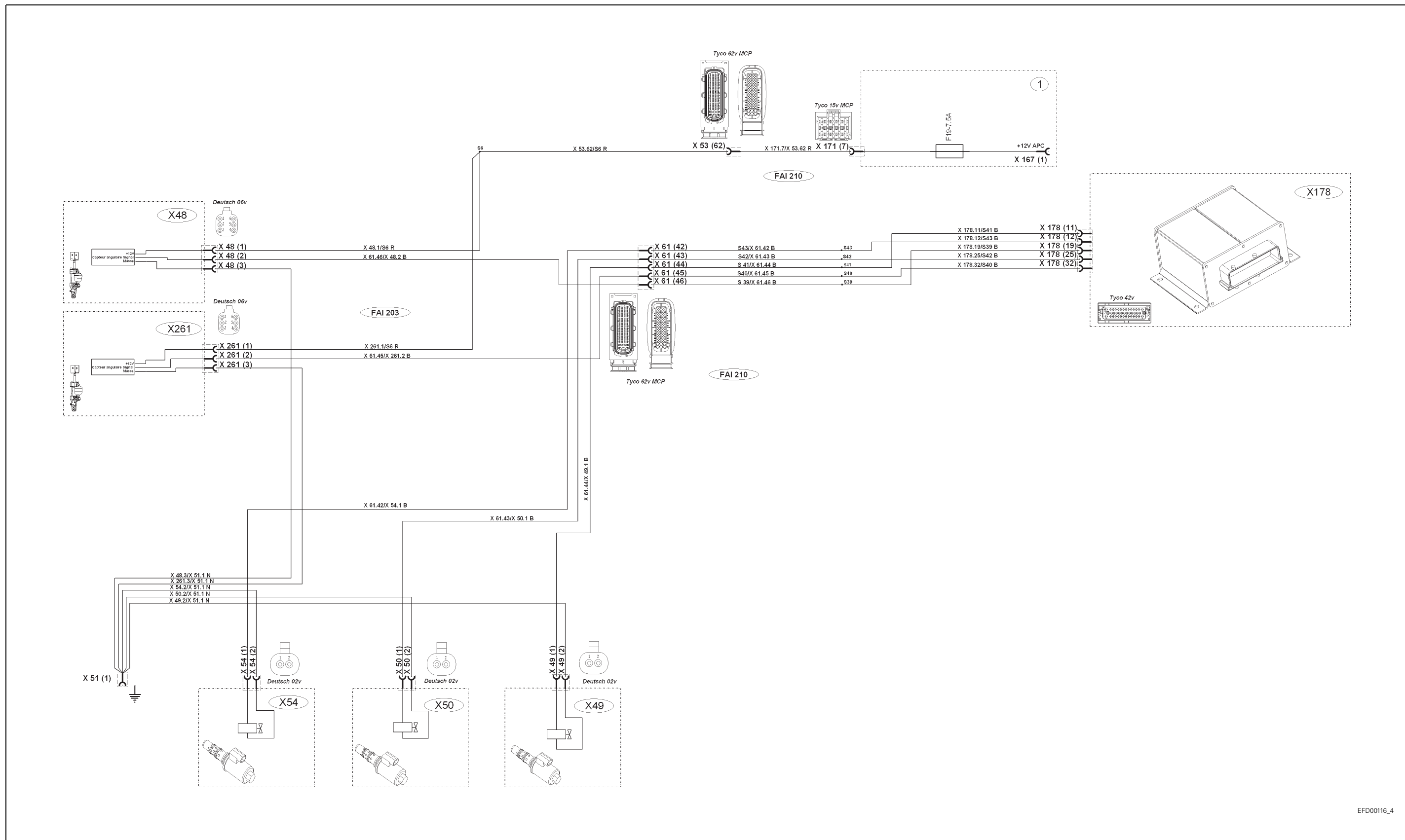
A.11 Hydraulic active suspended cab



EFD00116_3

Fig. 11

A.12 Hydraulic passive suspended cab



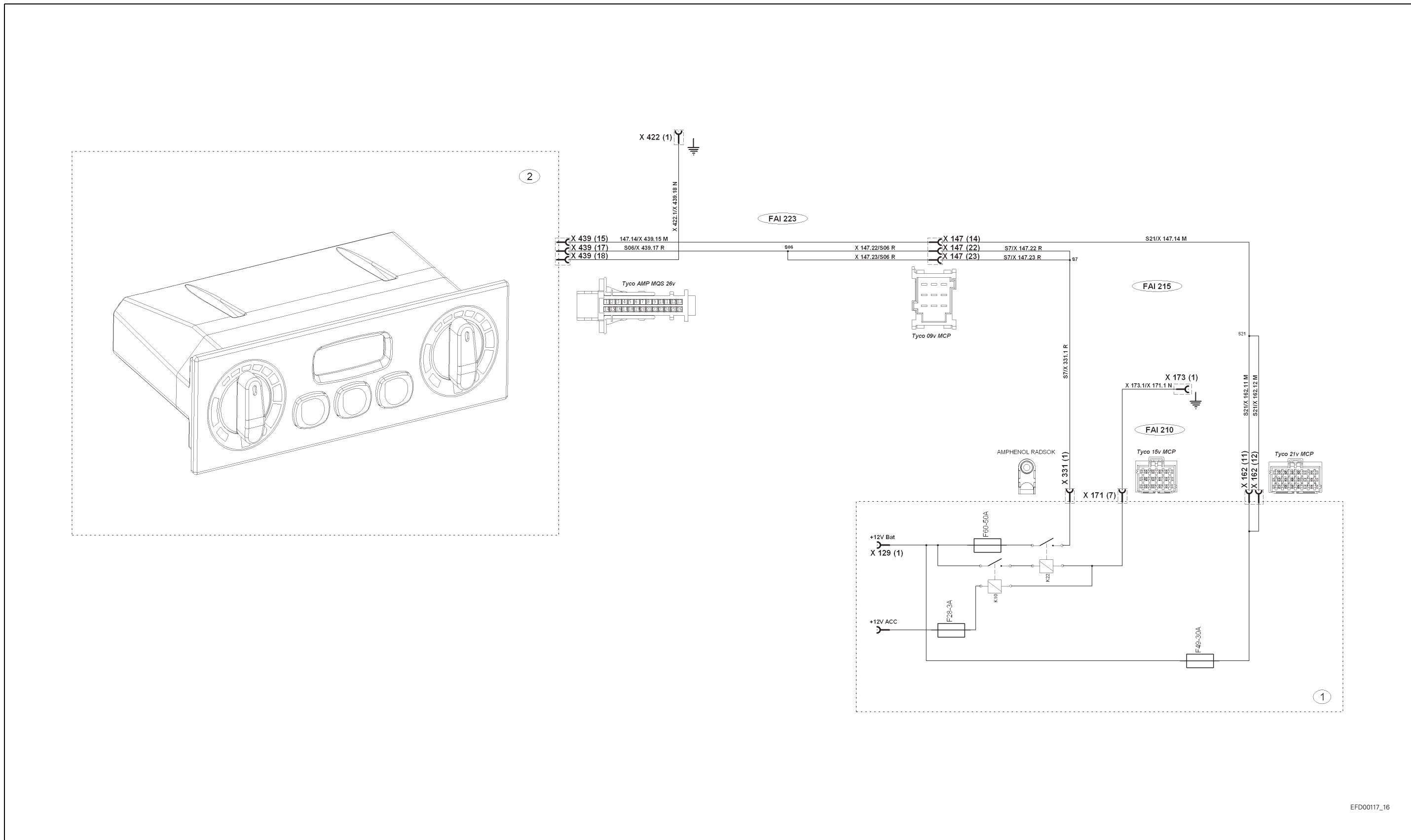
EFD00116_4

Fig. 12

A.13 Pneumatic active suspended cab

Fig. 13

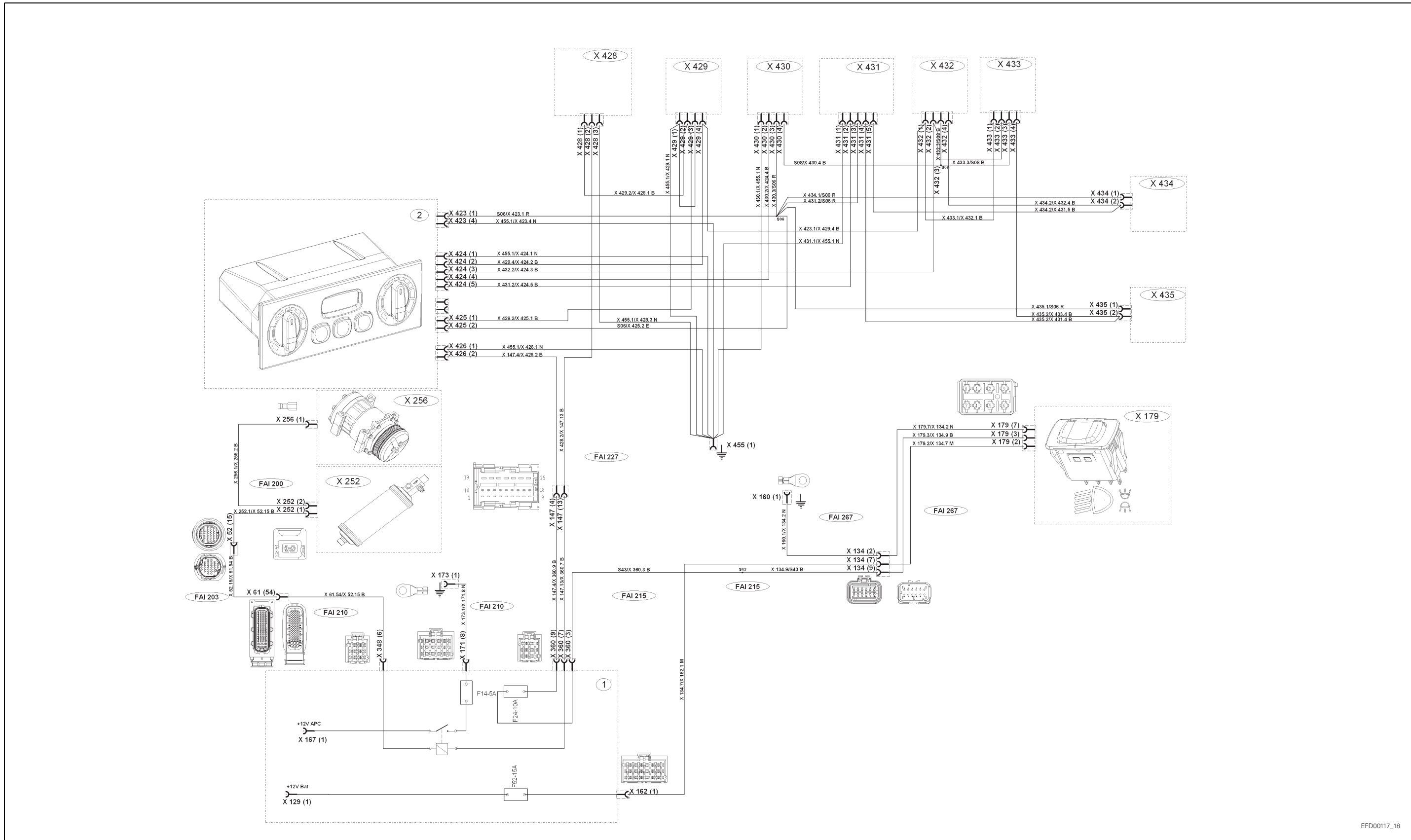
A.14 Automatic air-conditioning unit electrical power supply



EFD00117_16

Fig. 14

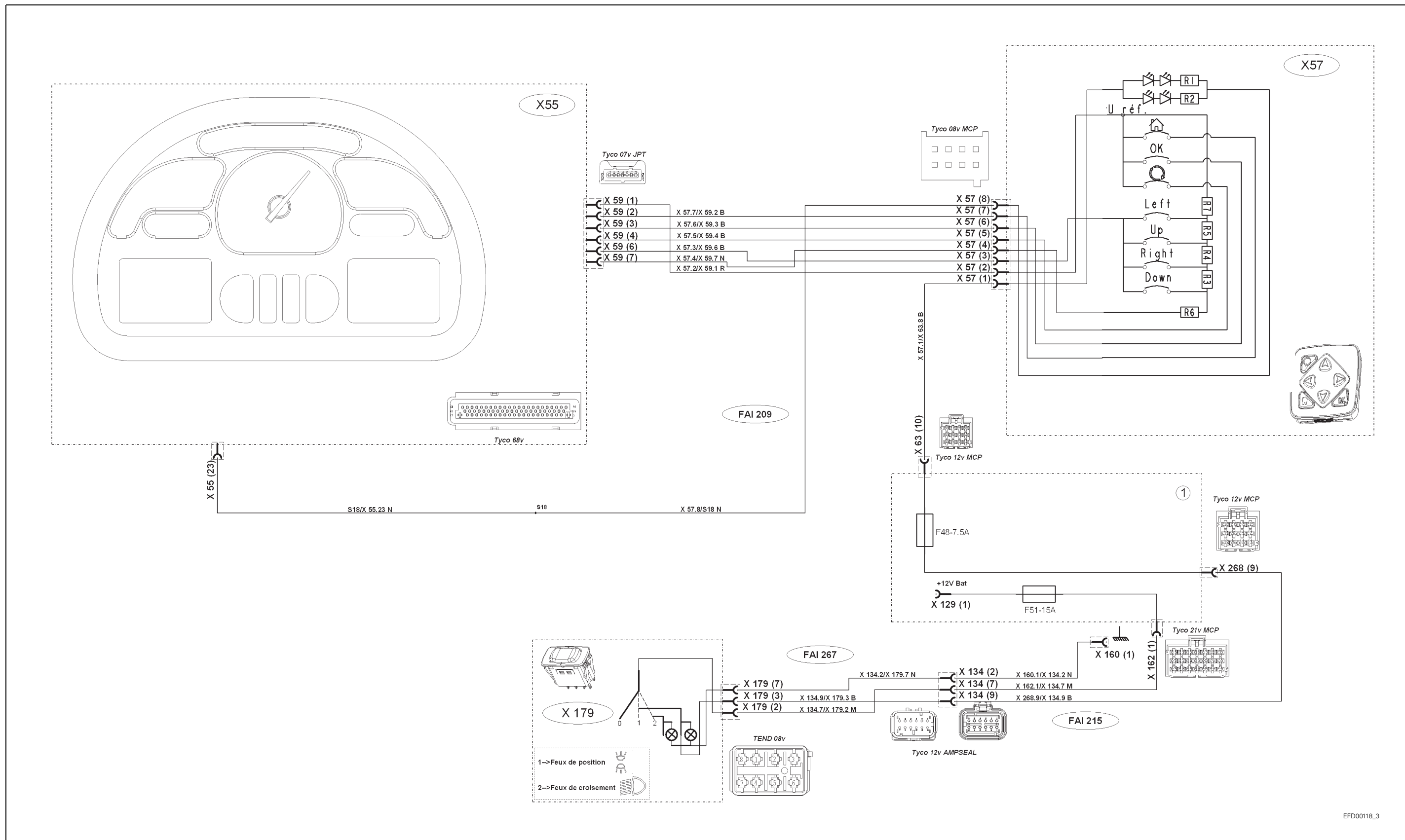
A.16 Manual air conditioning



EFD00117_18

Fig. 16

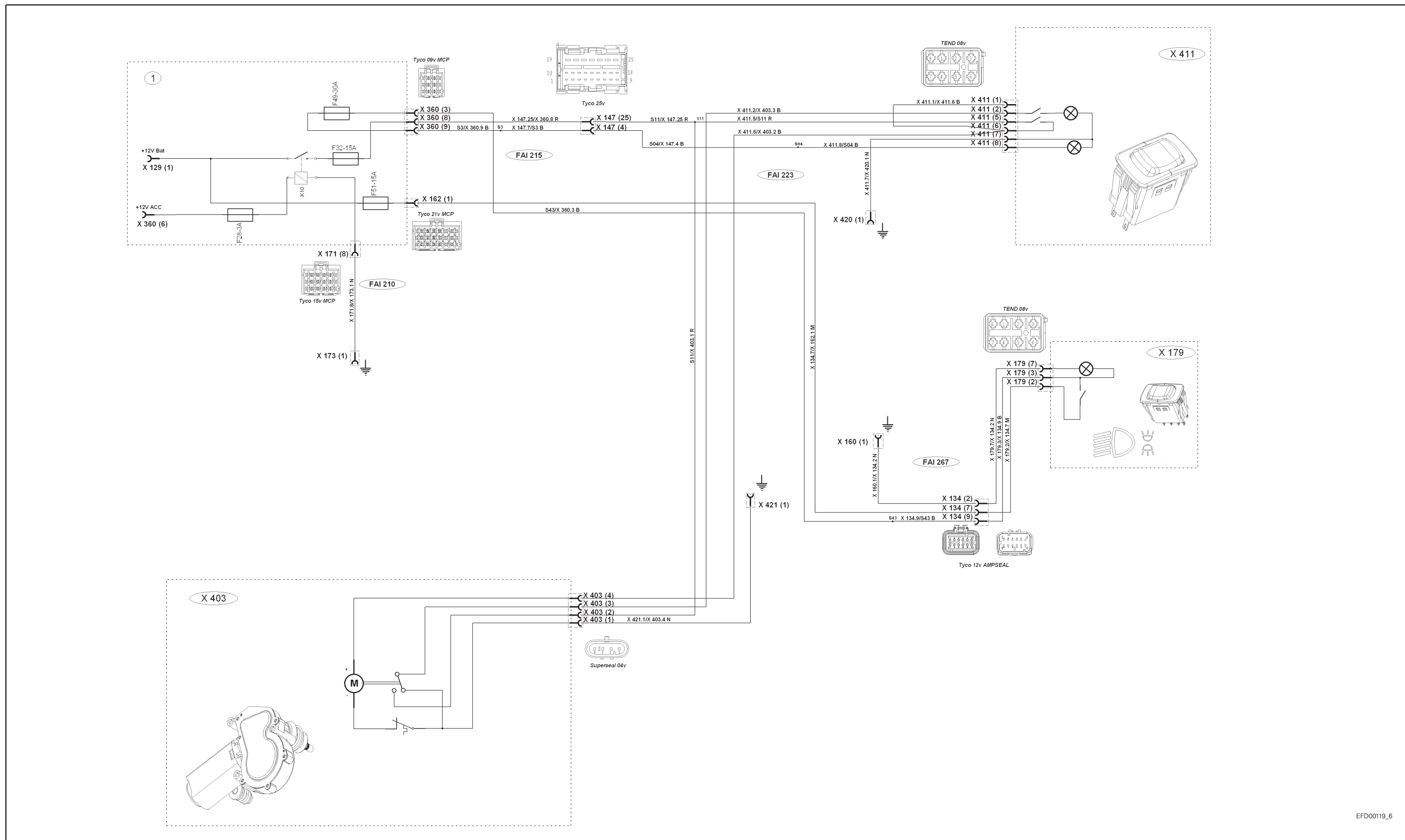
A.17DOT MATRIX keyboard



EFD00118_3

Fig. 17

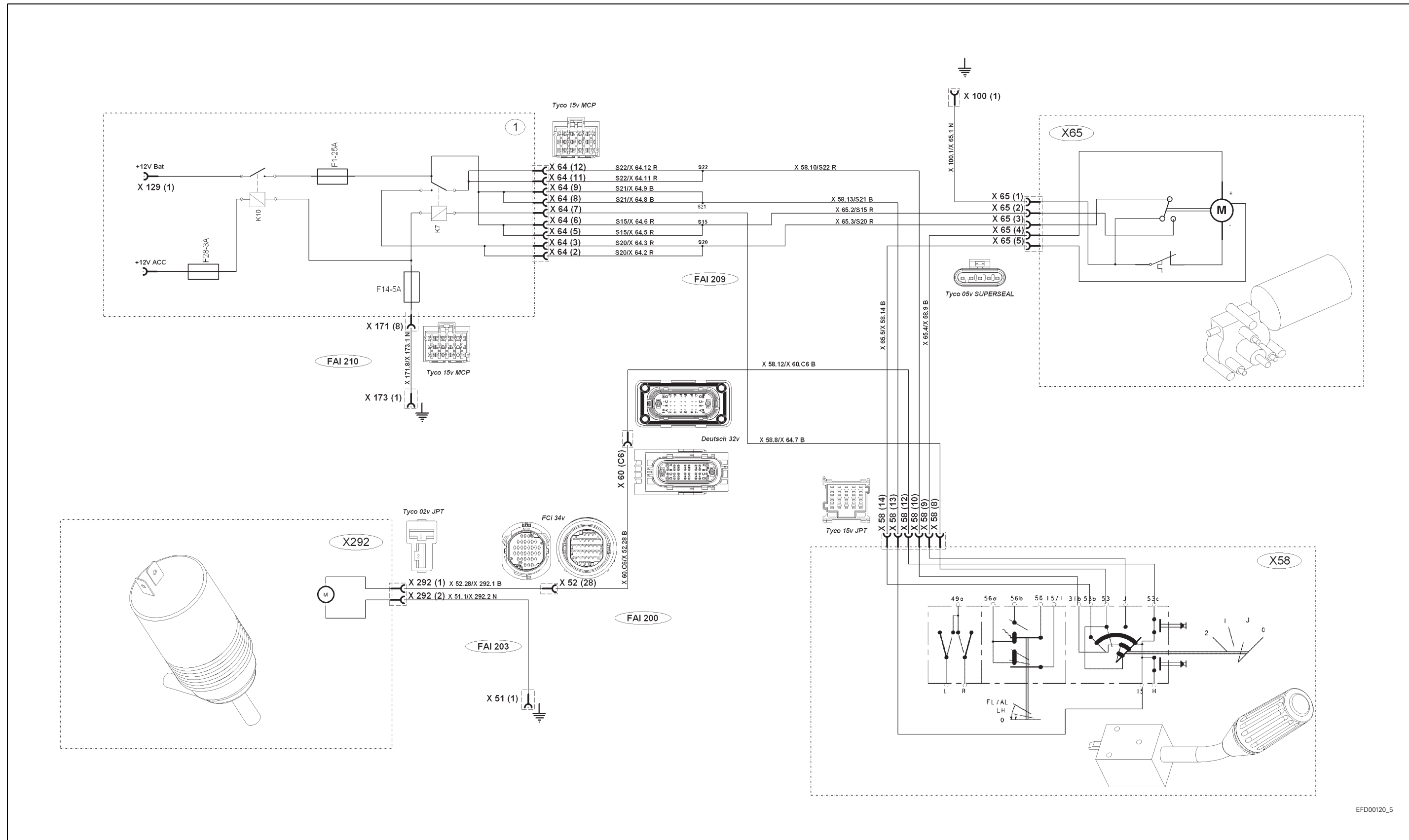
A.18 Rear windscreen wiper



EFD00119_6

Fig. 18

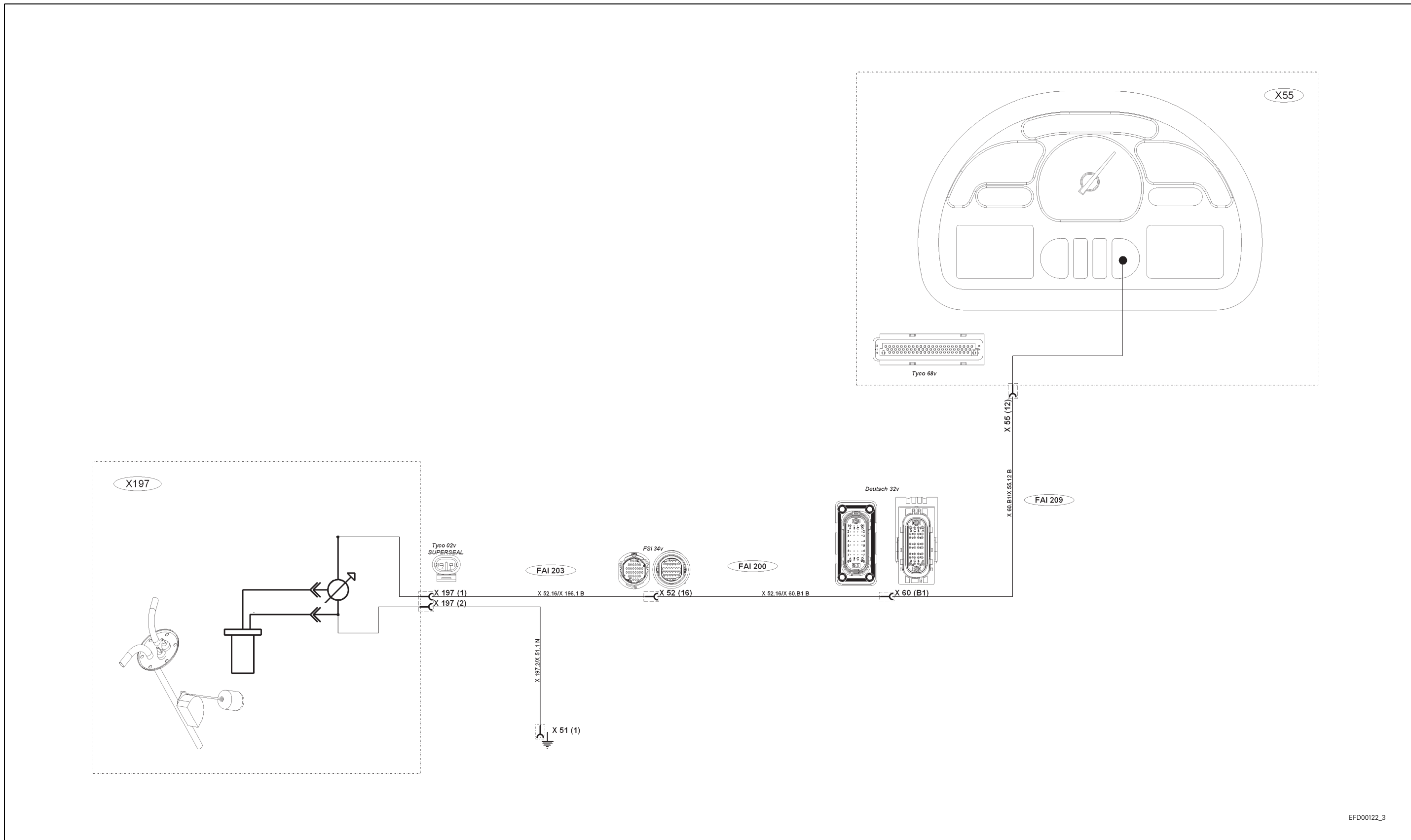
A.19 Front windscreen wiper



EFD00120_5

Fig. 19

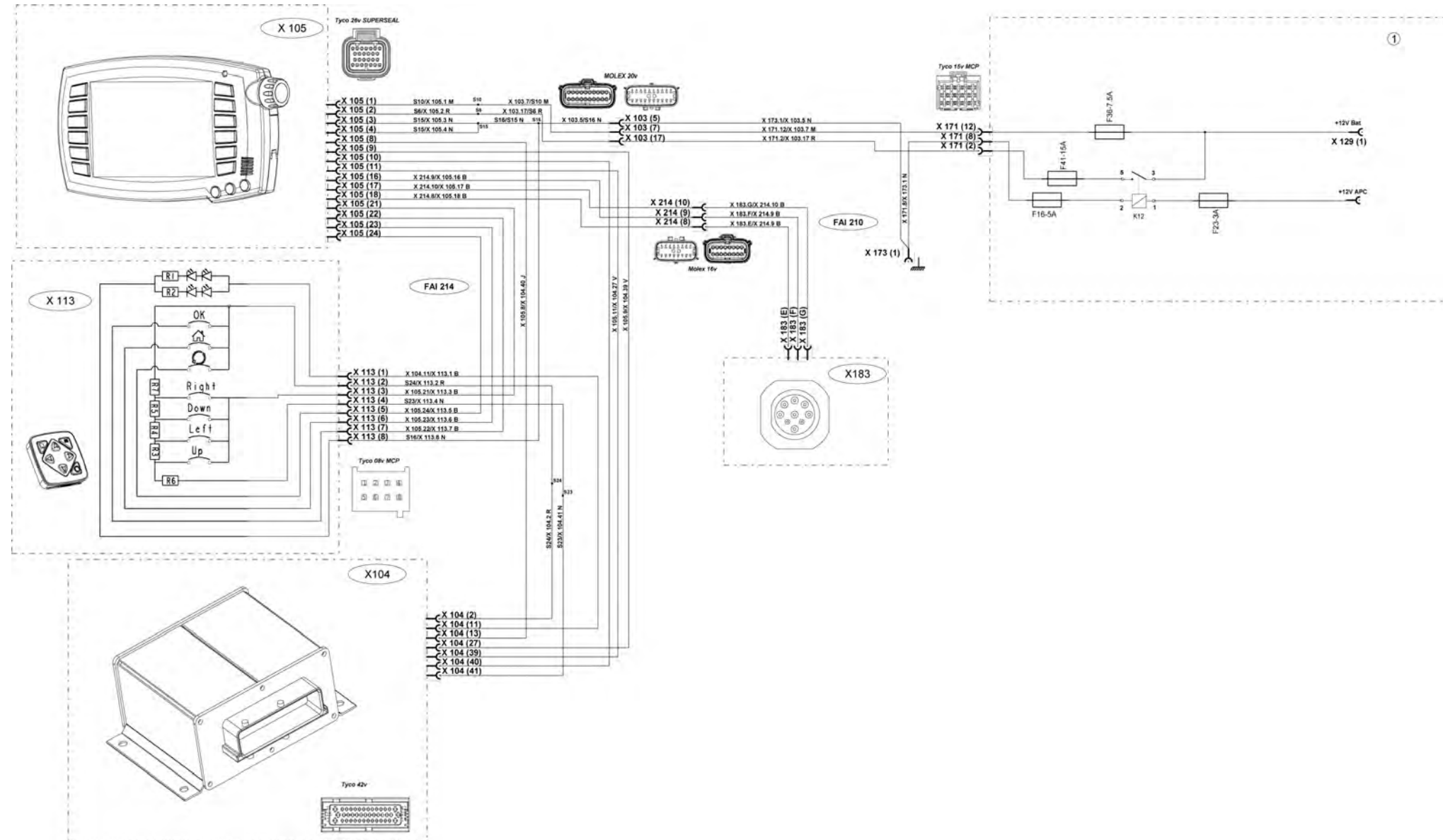
A.20 Diesel fuel gauge



EFD00122_3

Fig. 20

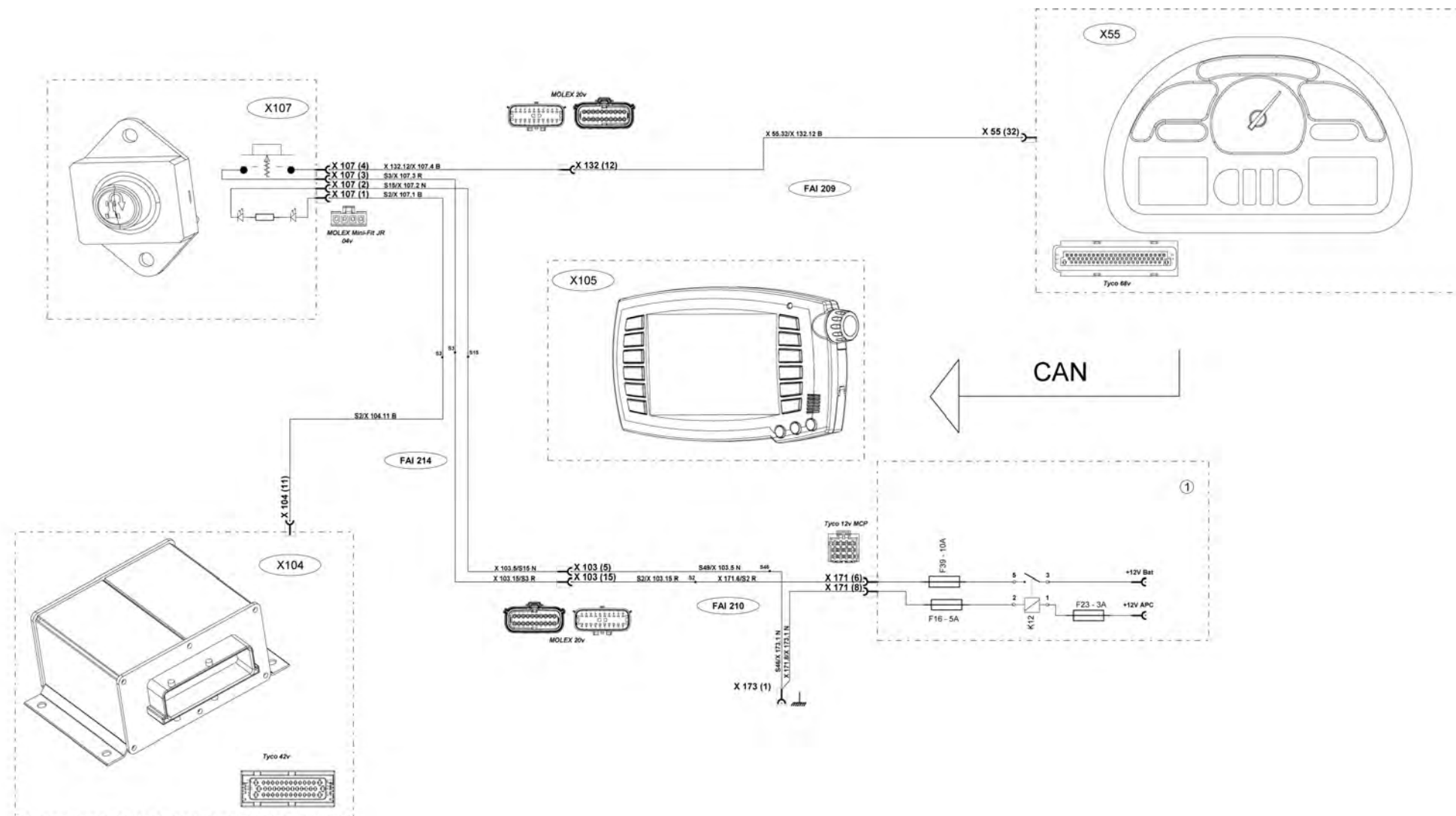
A.21 Datatronic 4 electrical power supply



EFD00123_11

Fig. 21

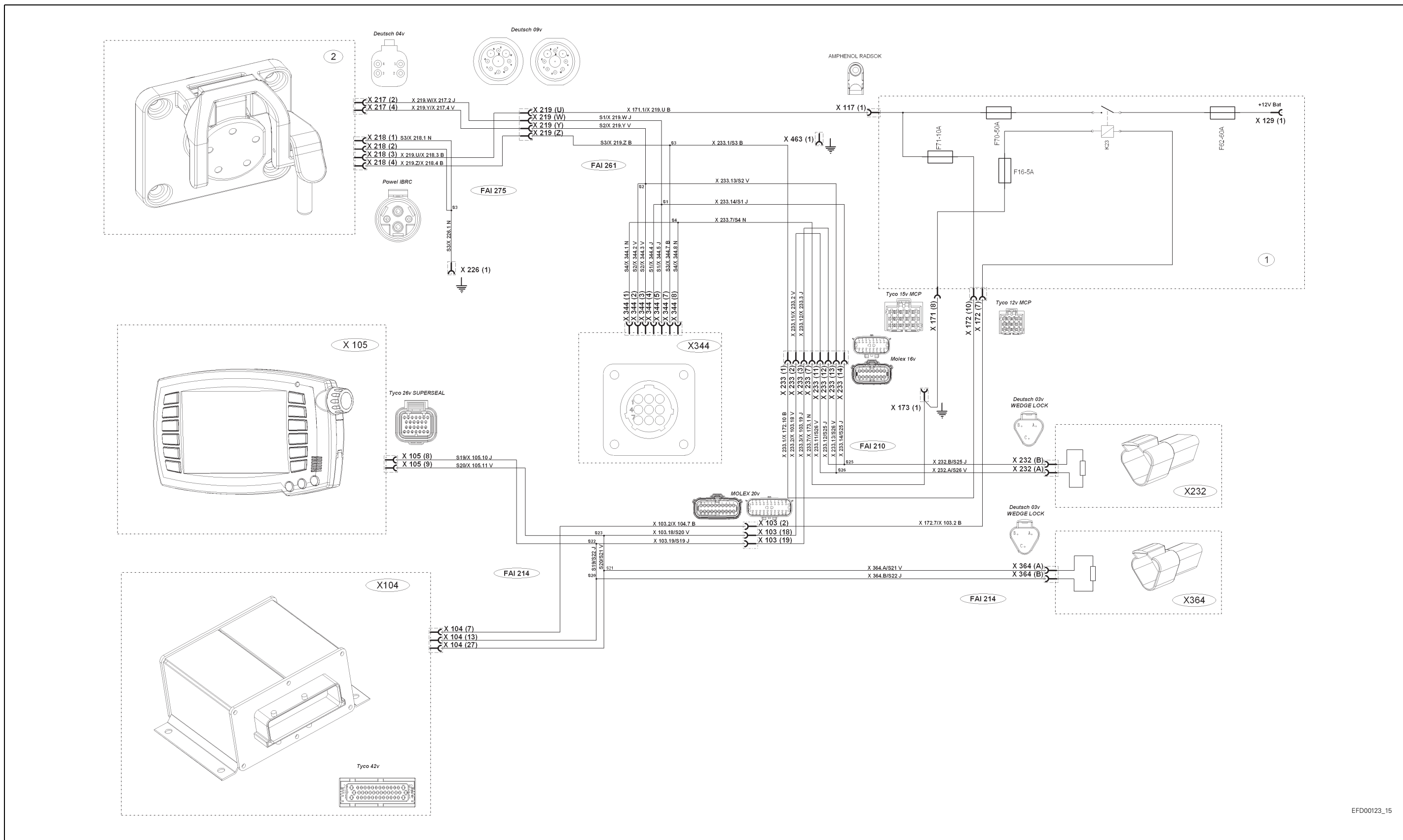
A.22 Headland mode (Headland function)



EFD00123_13

Fig. 22

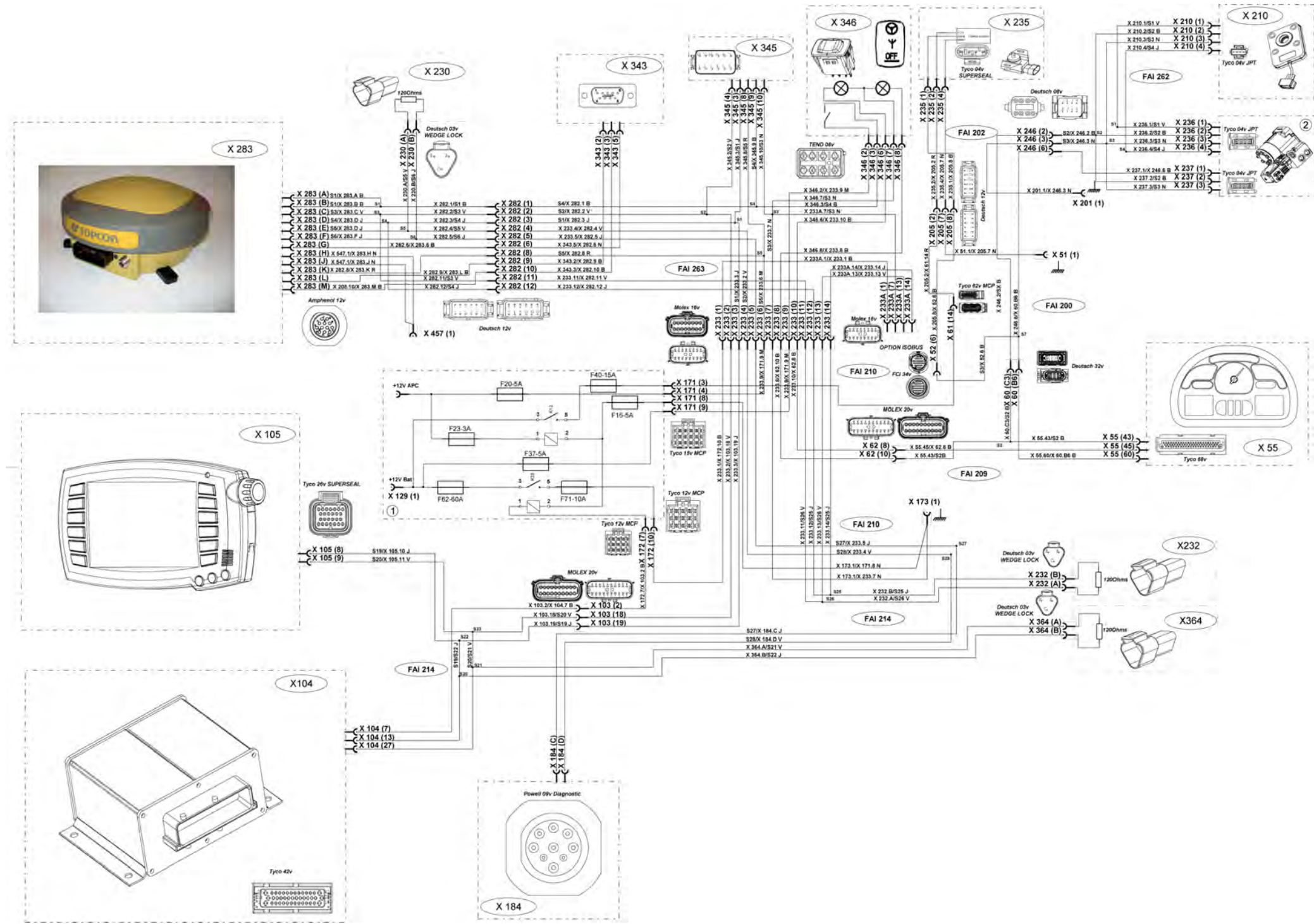
A.23Isobus



EFD00123_15

Fig. 23

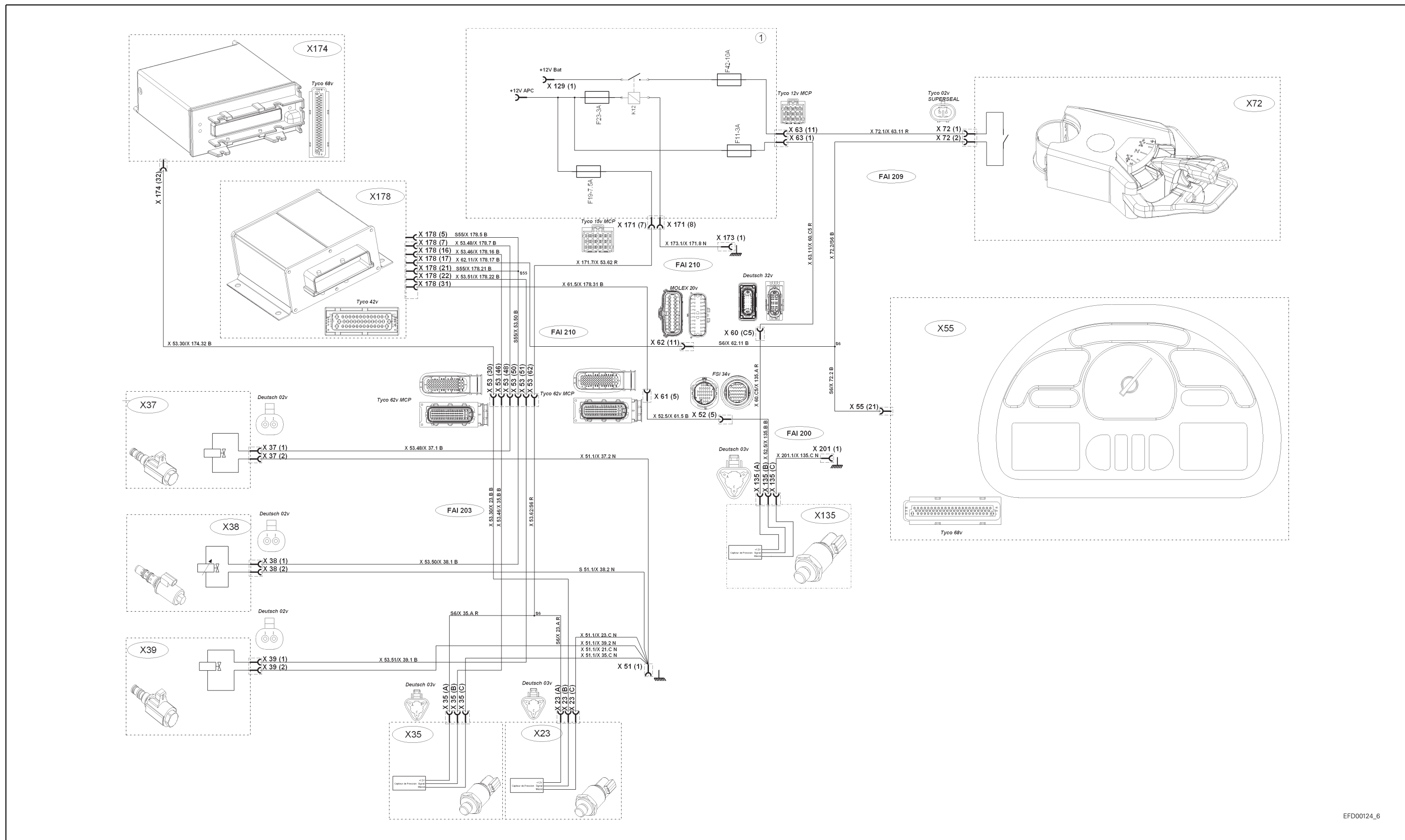
A.24Auto-Guide



EFD00123_16

Fig. 24

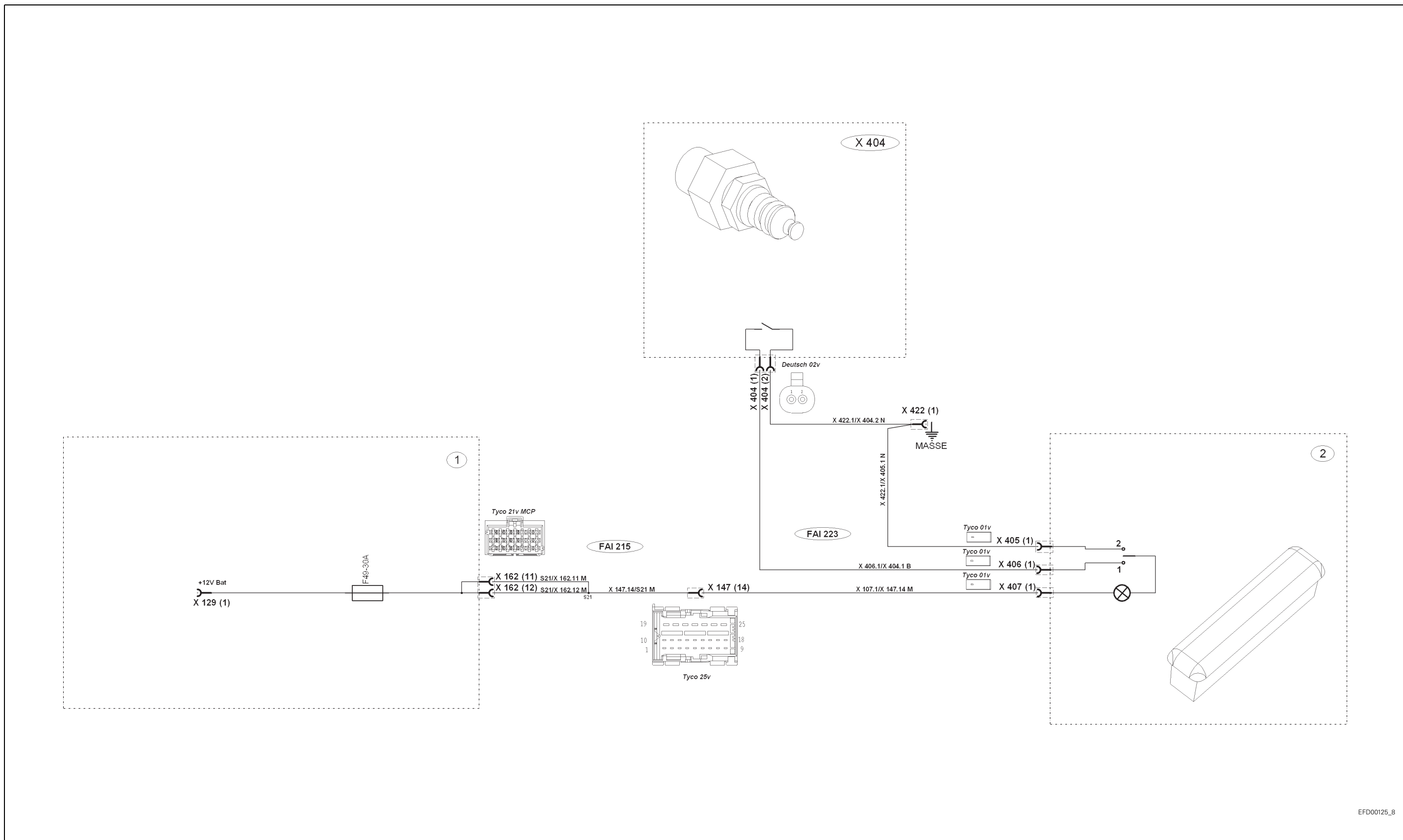
A.25ParkLock



EFD00124_6

Fig. 25

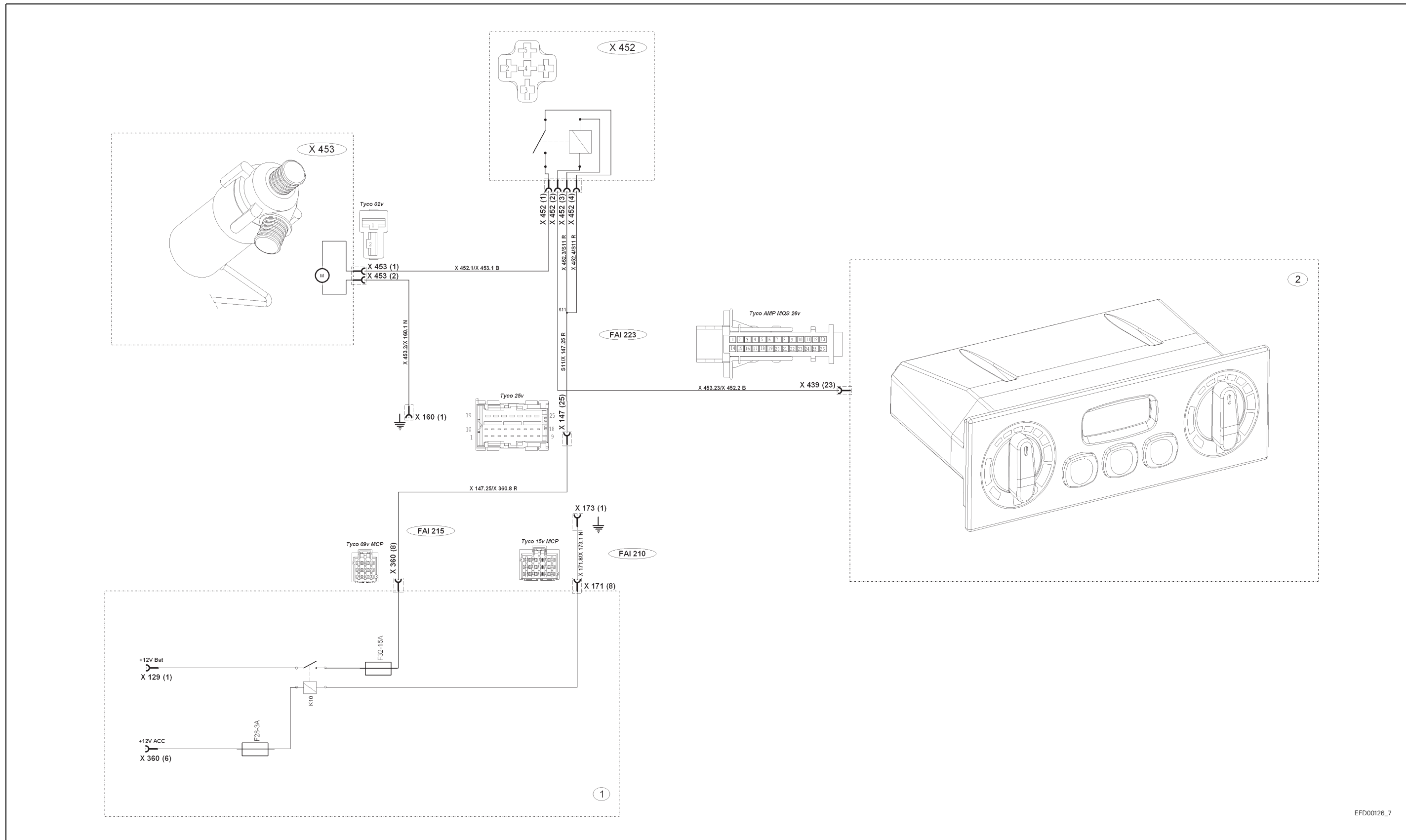
A.26 Door switch



EFD00125_8

Fig. 26

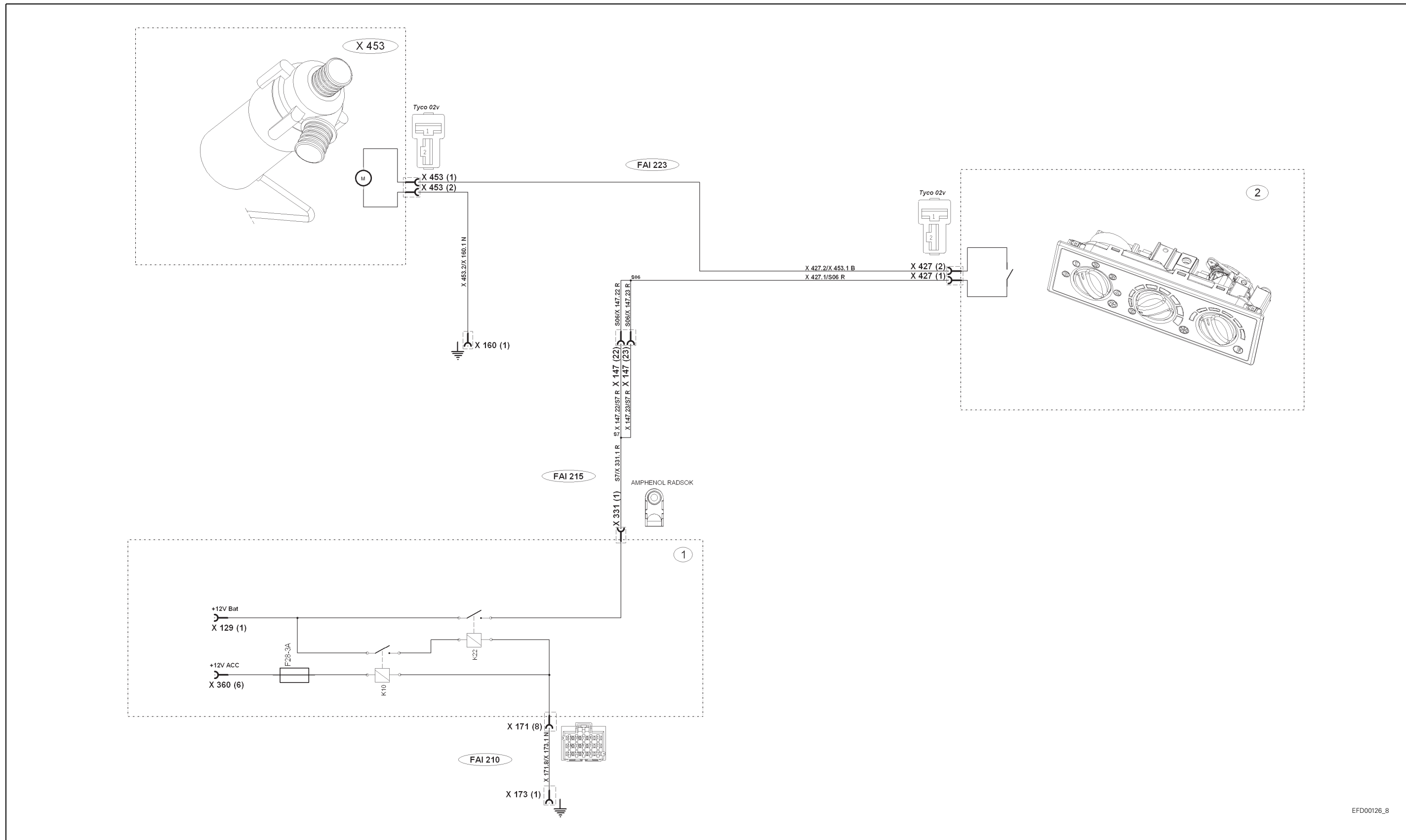
A.27 Heater pump with automatic air conditioning



EFD00126_7

Fig. 27

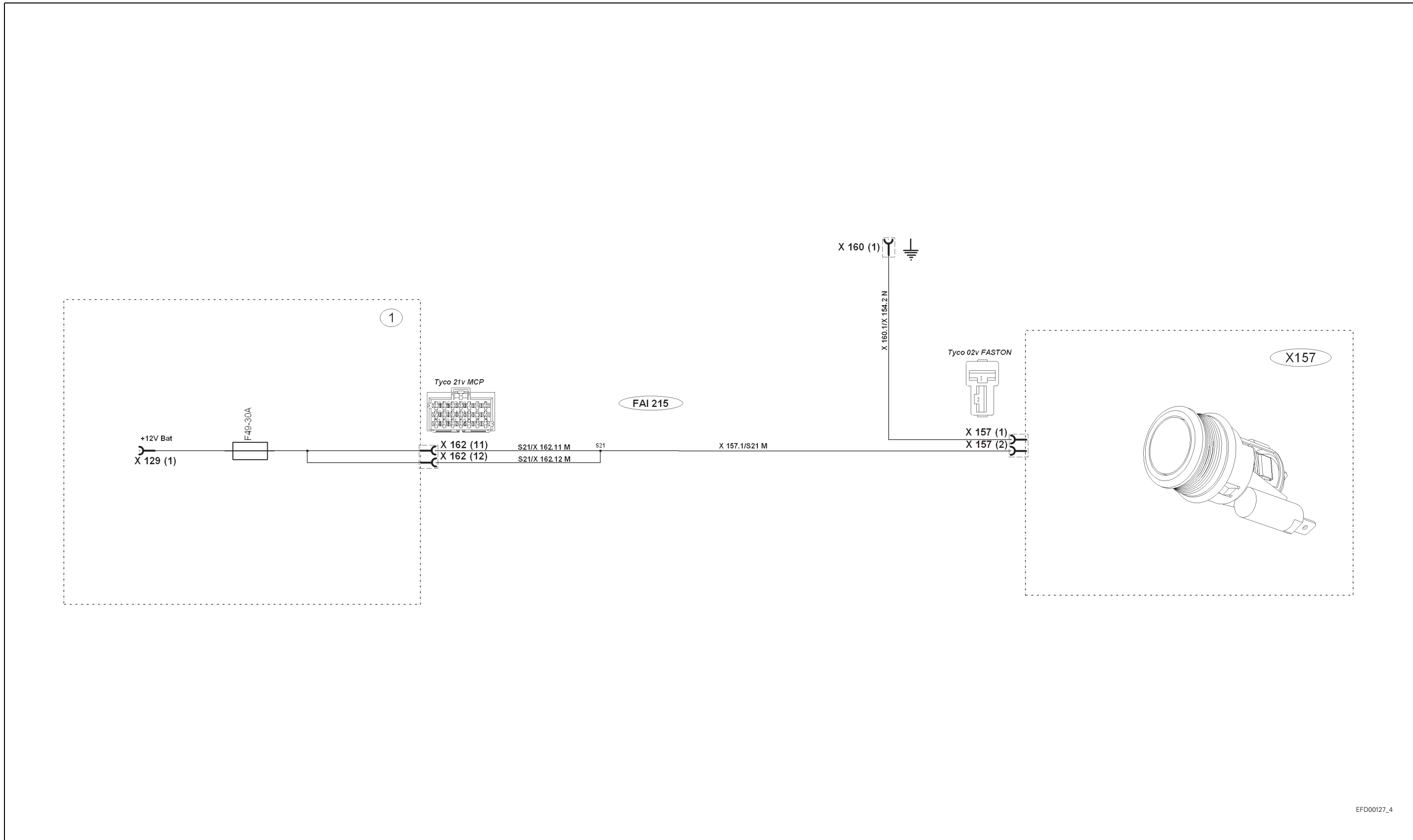
A.28 Heater pump with manual air conditioning



EFD00126_8

Fig. 28

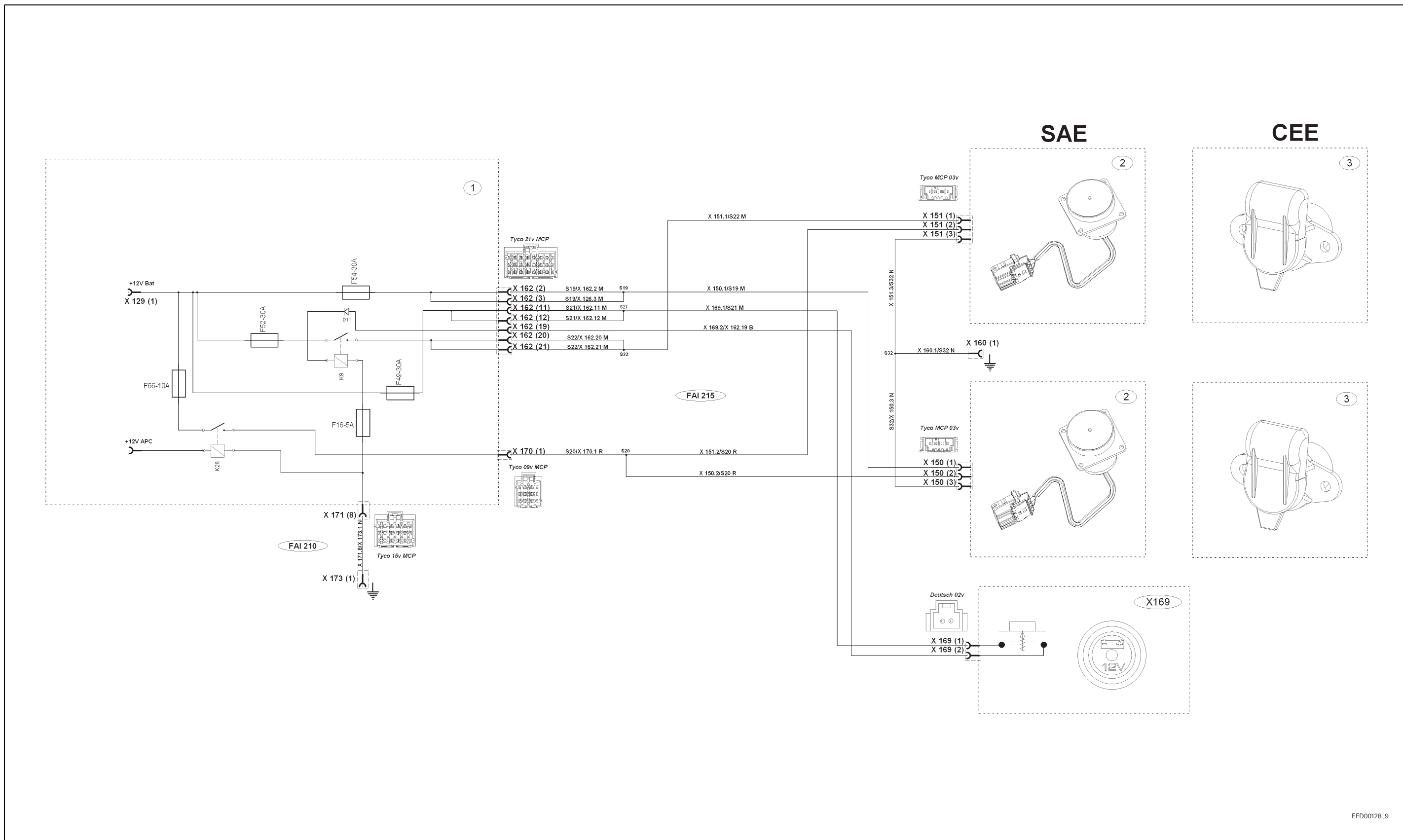
A.29 Left-hand +12 V socket



EFD00127_4

Fig. 29

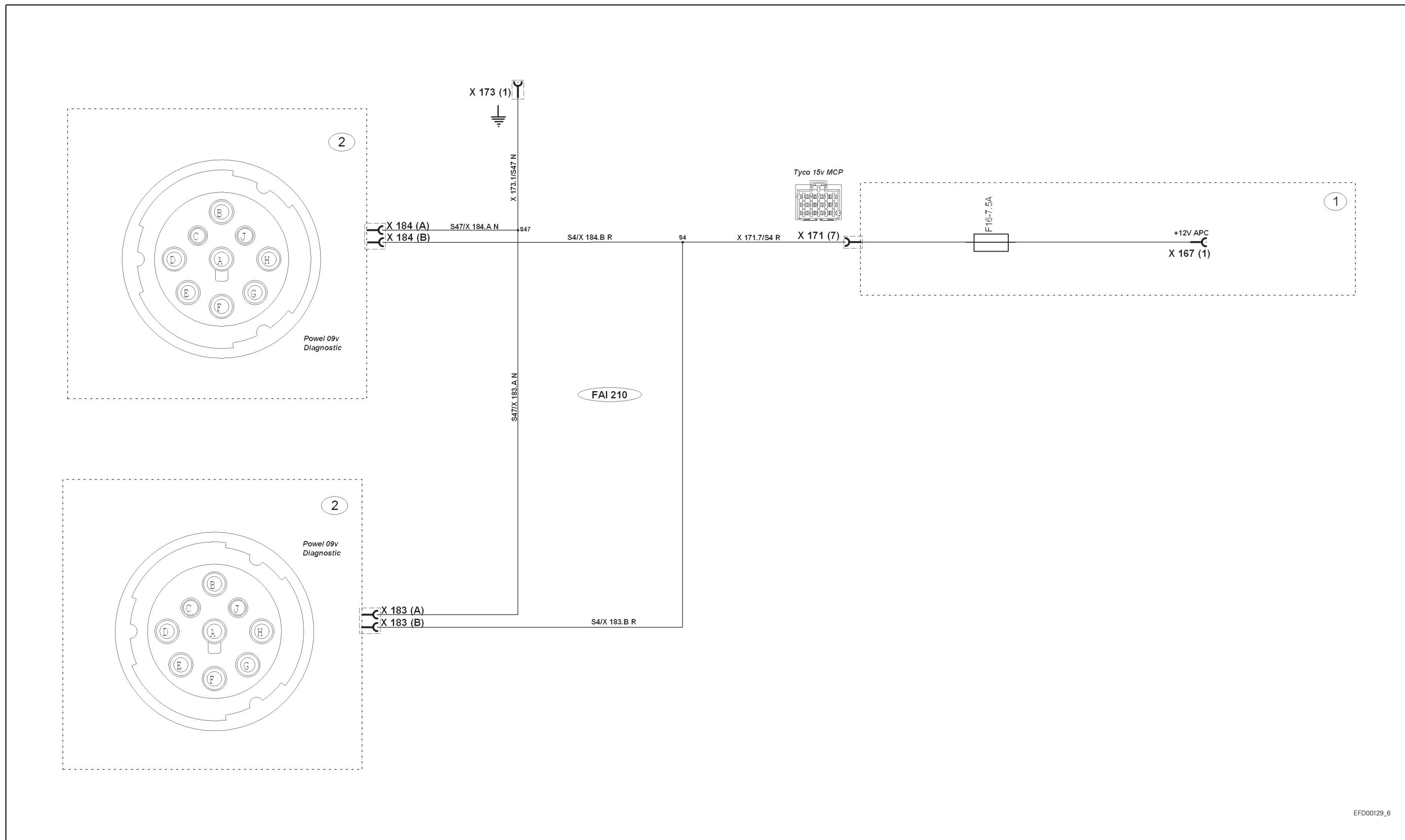
A.30Cab power socket



EFD00128_9

Fig. 30

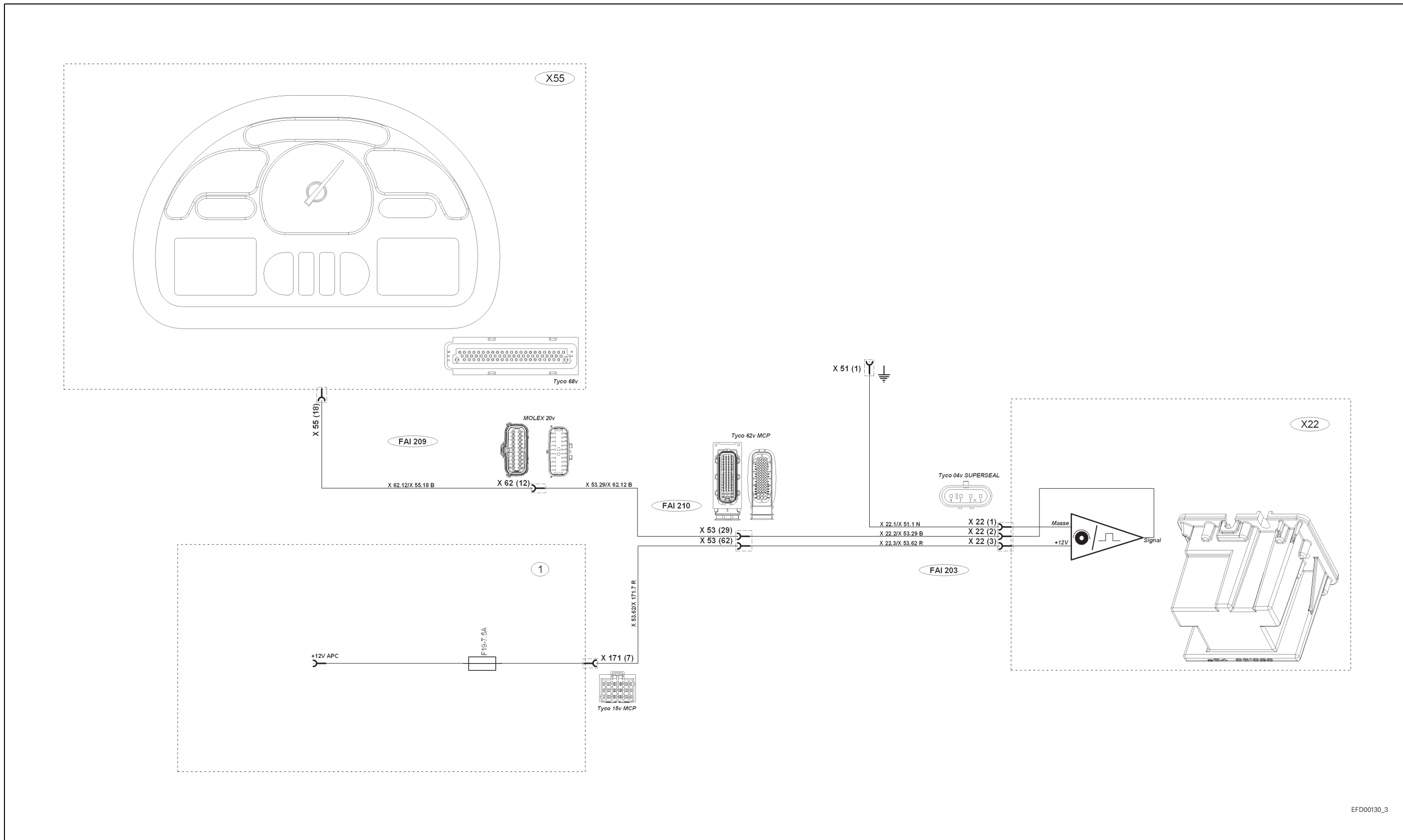
A.31 Diagnostics connector electrical power supply



EFD00129_6

Fig. 31

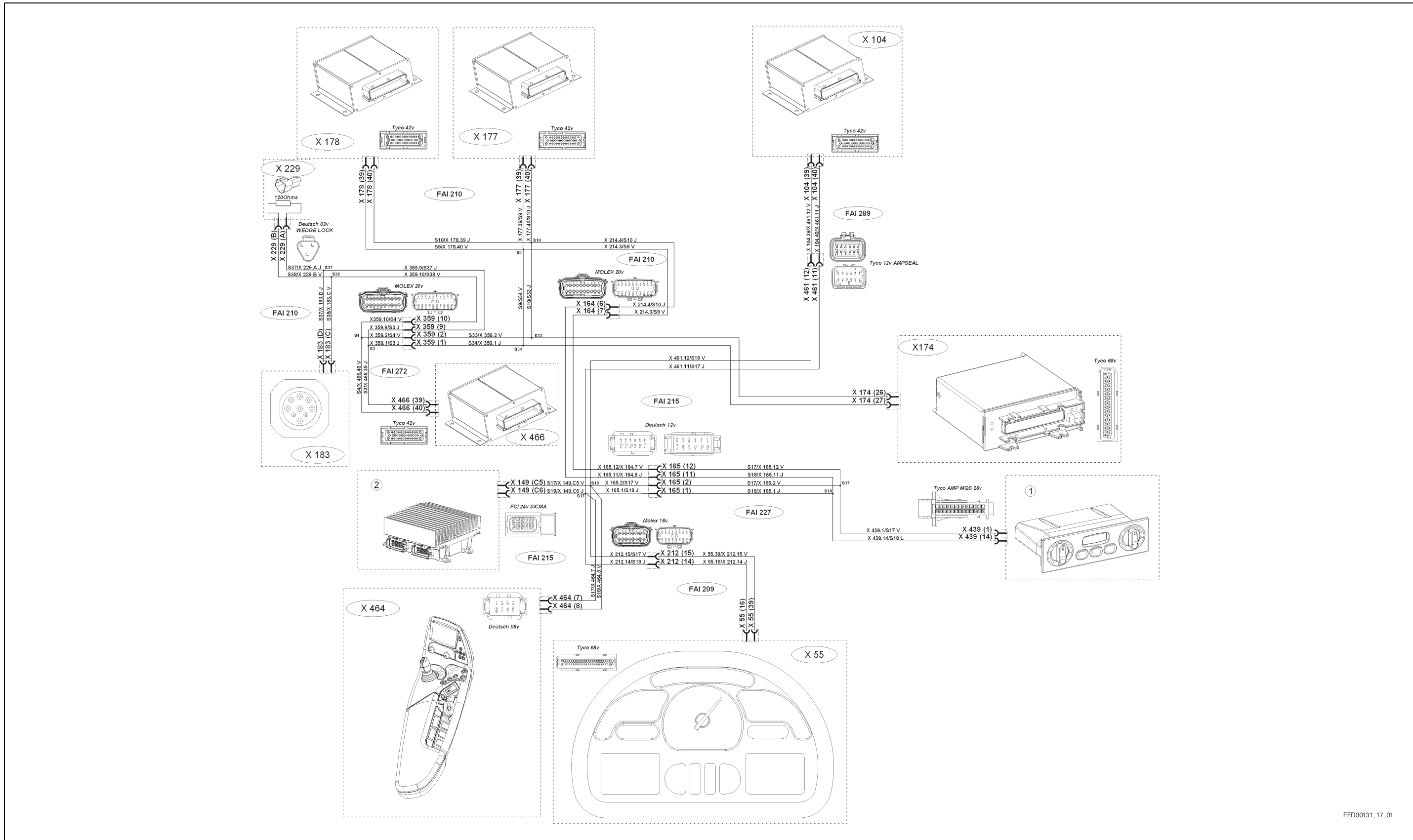
A.32Radar



EFD00130_3

Fig. 32

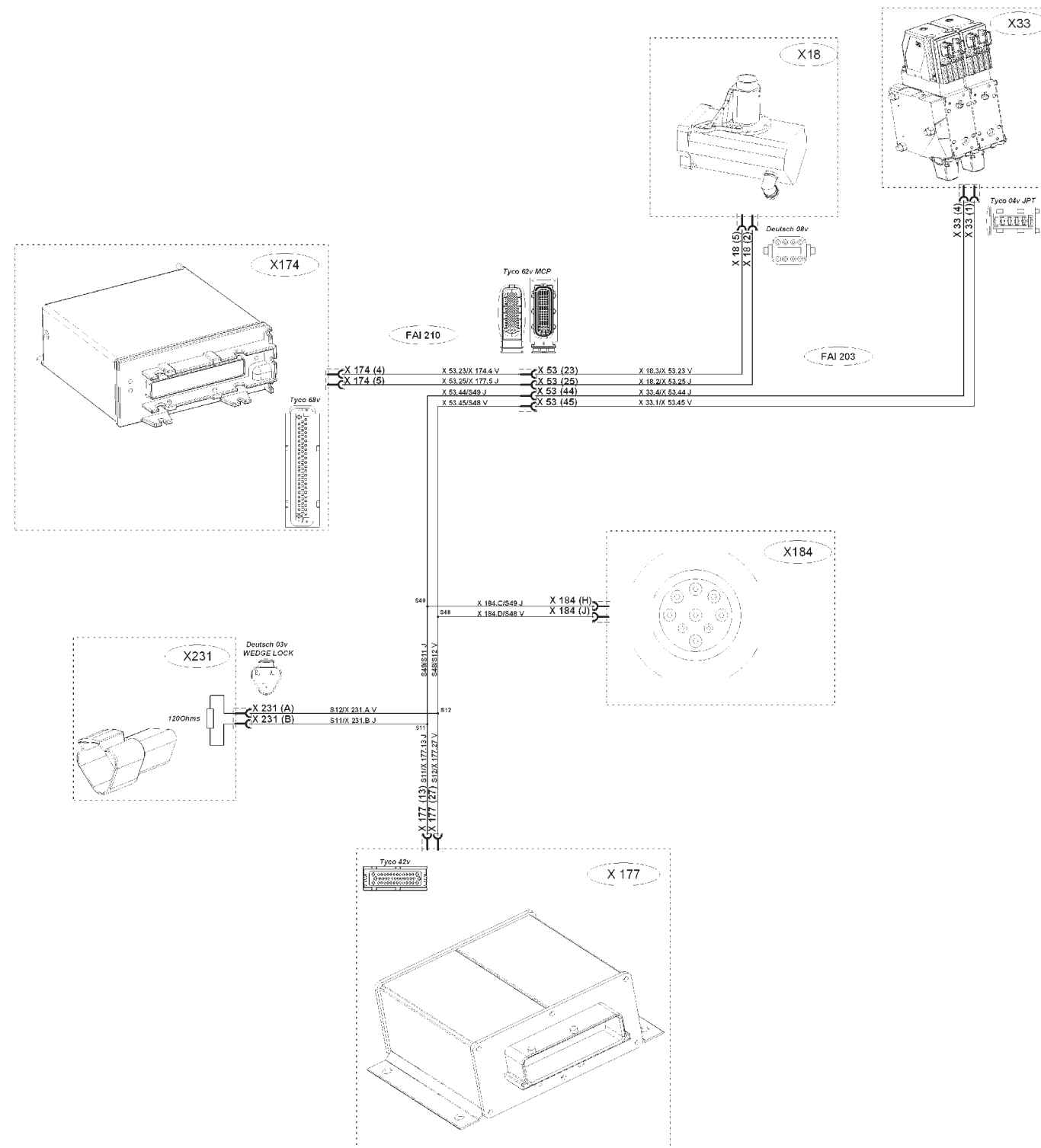
A.33 Tractor CAN network



EFD00131_17_01

Fig. 33

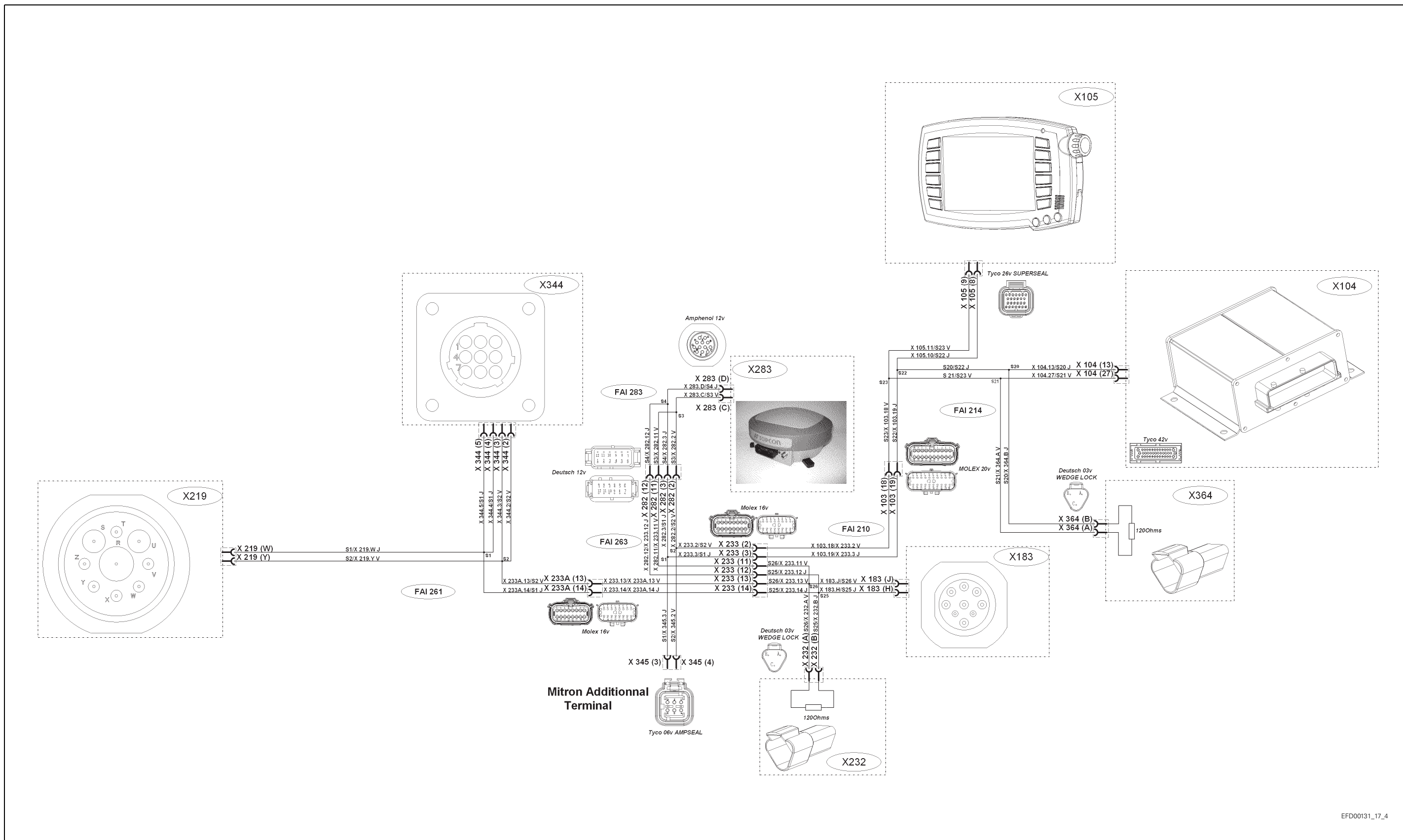
A.35 Linkage CAN network



EFD00131_17_3

Fig. 35

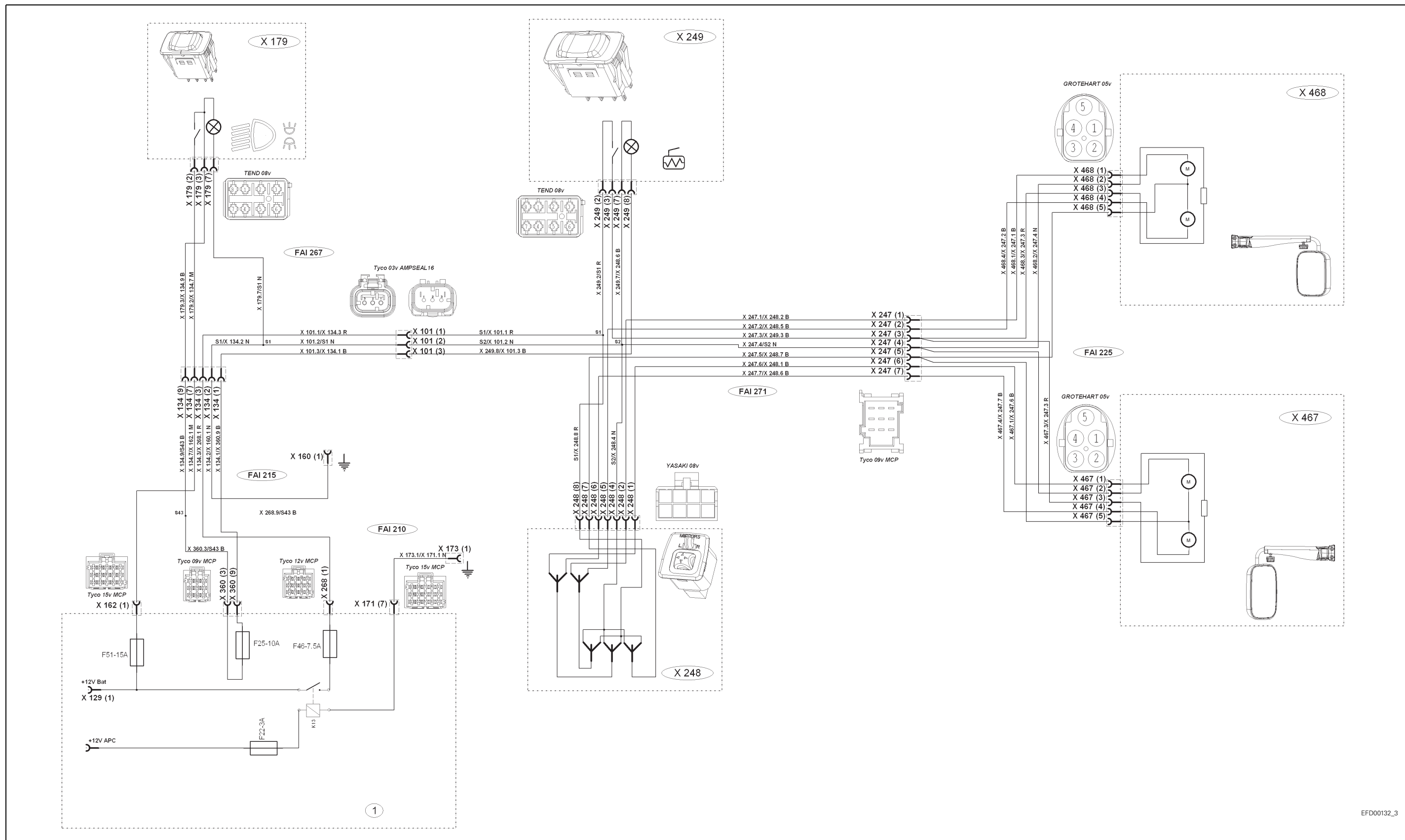
A.36Isobus CAN network



EFD00131_17_4

Fig. 36

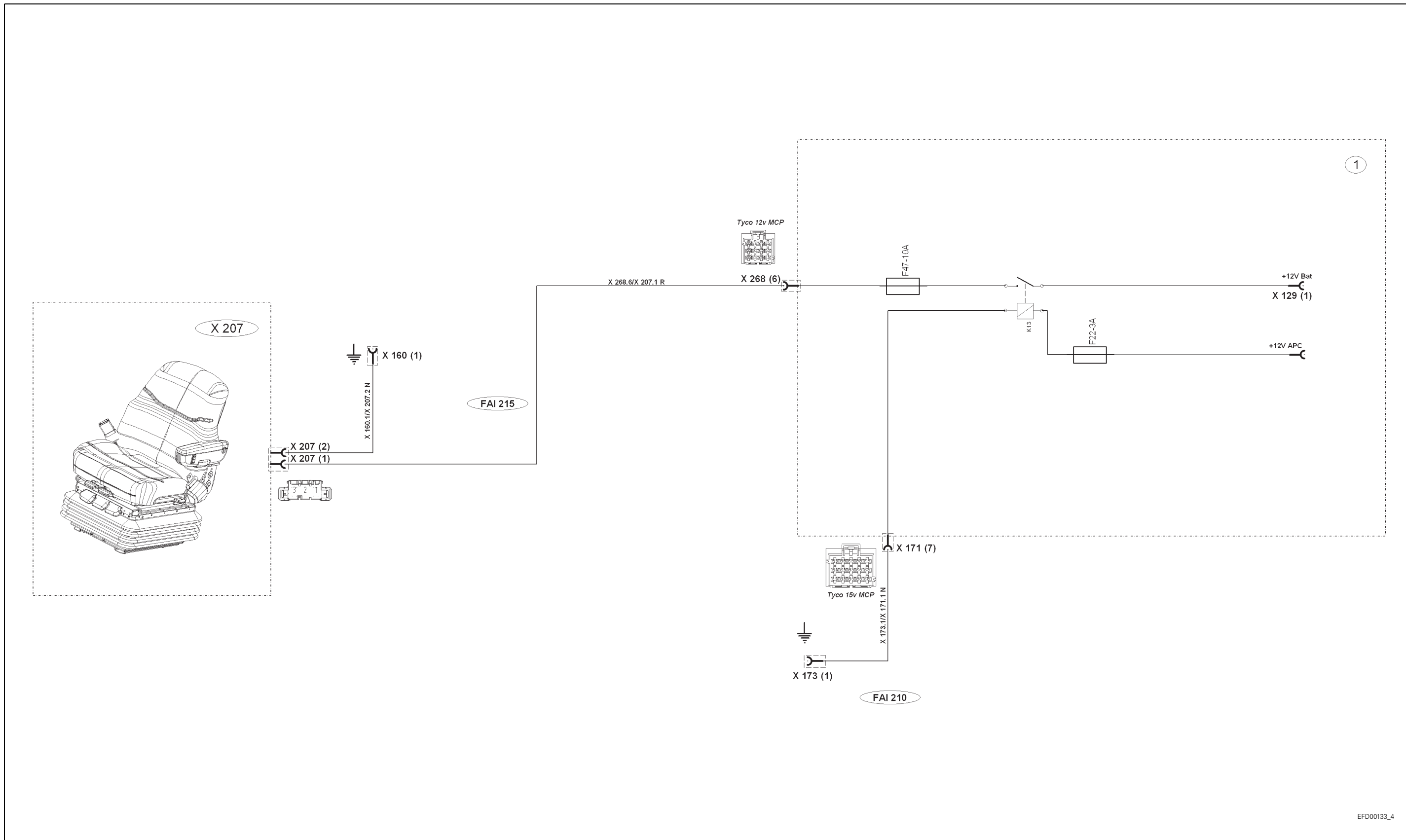
A.37 Electric rear-view mirrors



EFD00132_3

Fig. 37

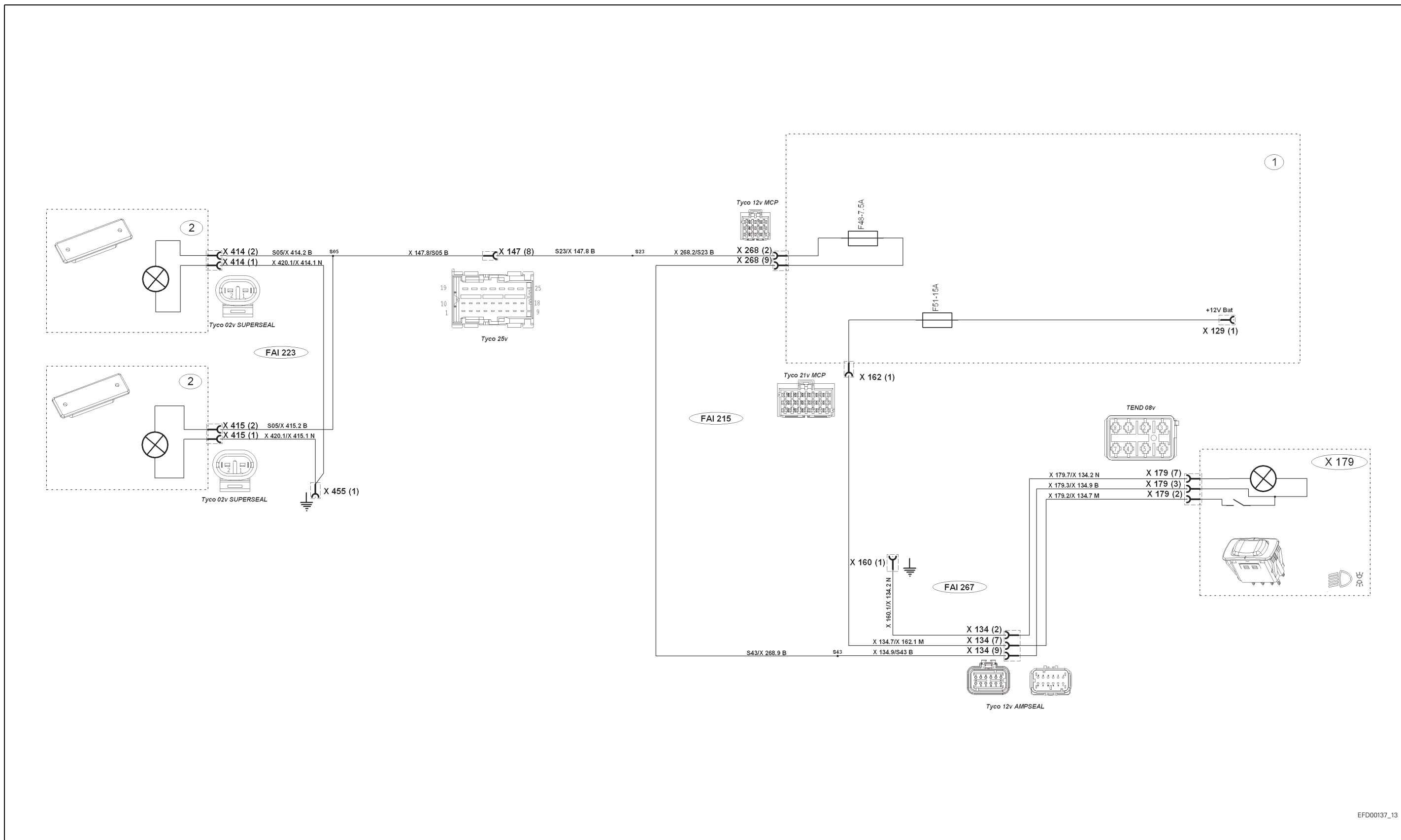
A.38 Pneumatic seat adjustment control



EFD00133_4

Fig. 38

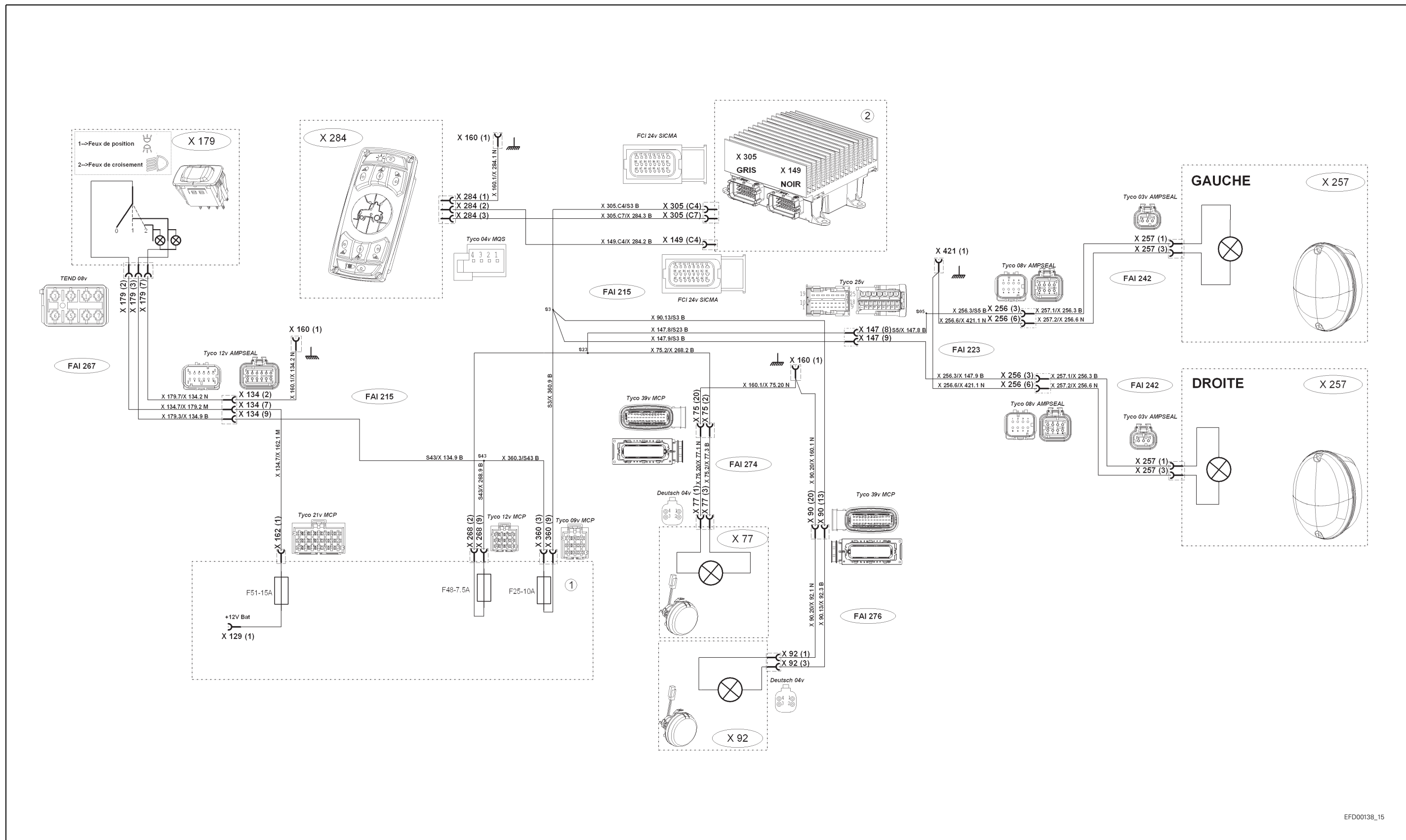
A.39 Number plate lighting



EFD00137_13

Fig. 39

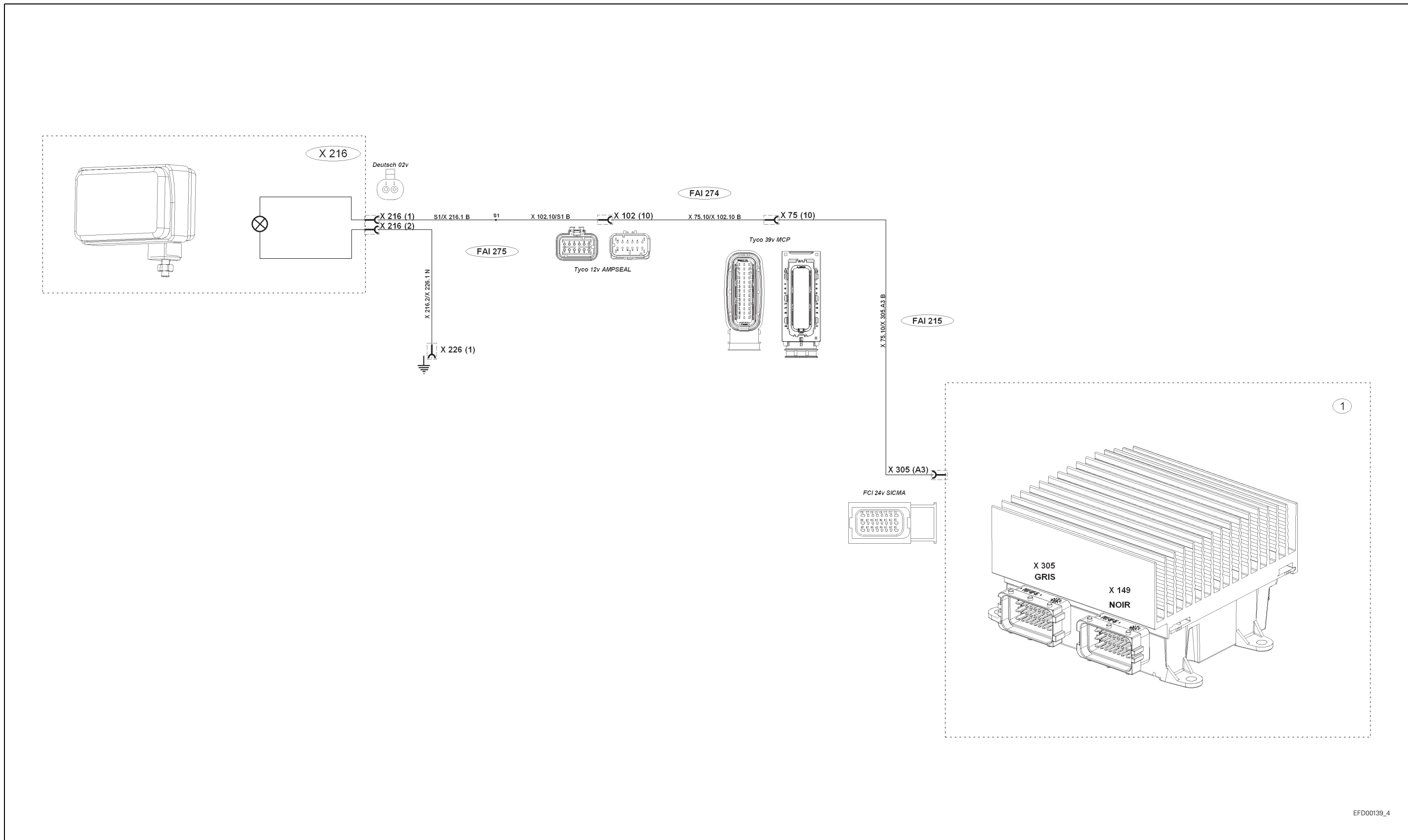
A.40 Side lights



EFD00138_15

Fig. 40

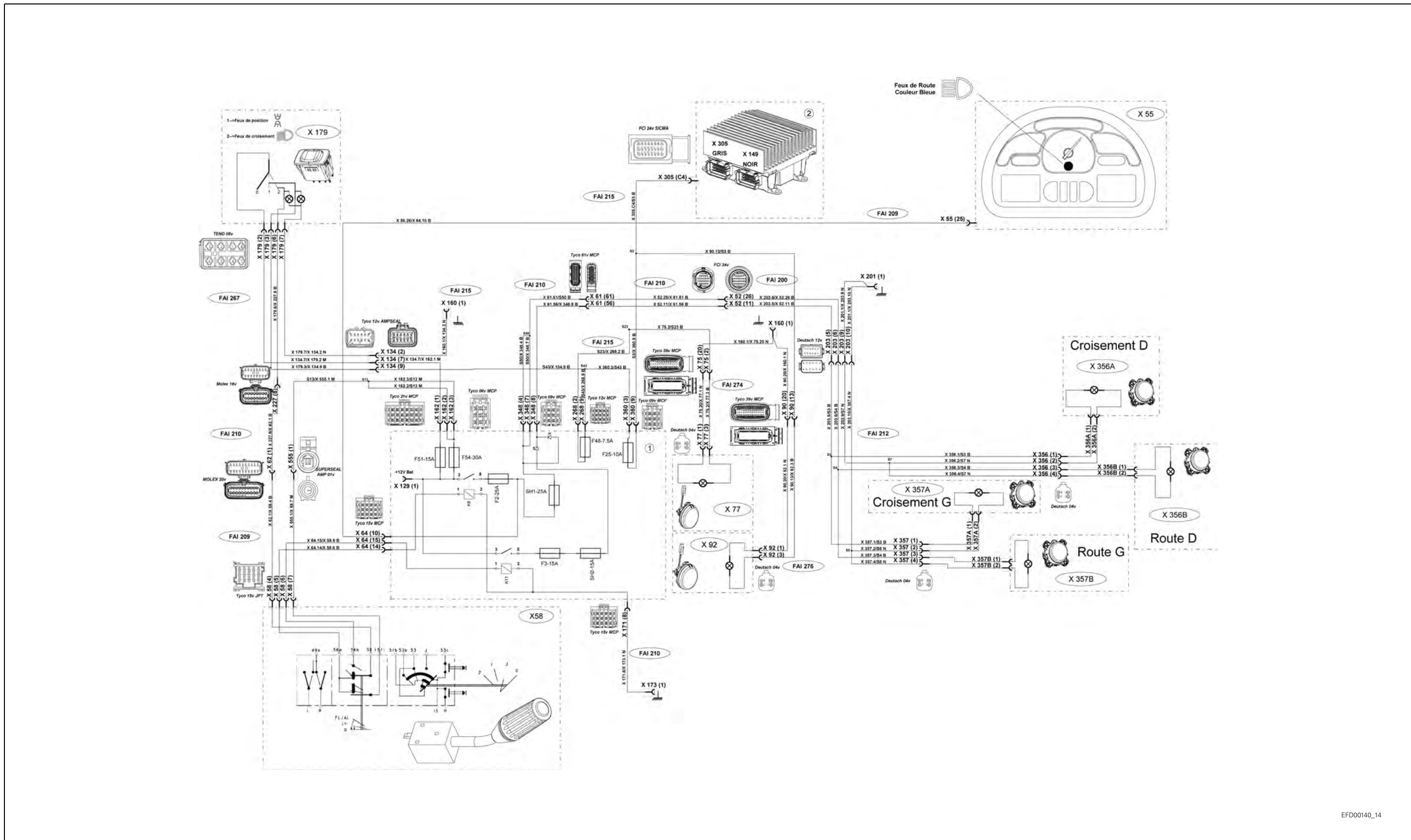
A.41 Reversing light



EFD00139_4

Fig. 41

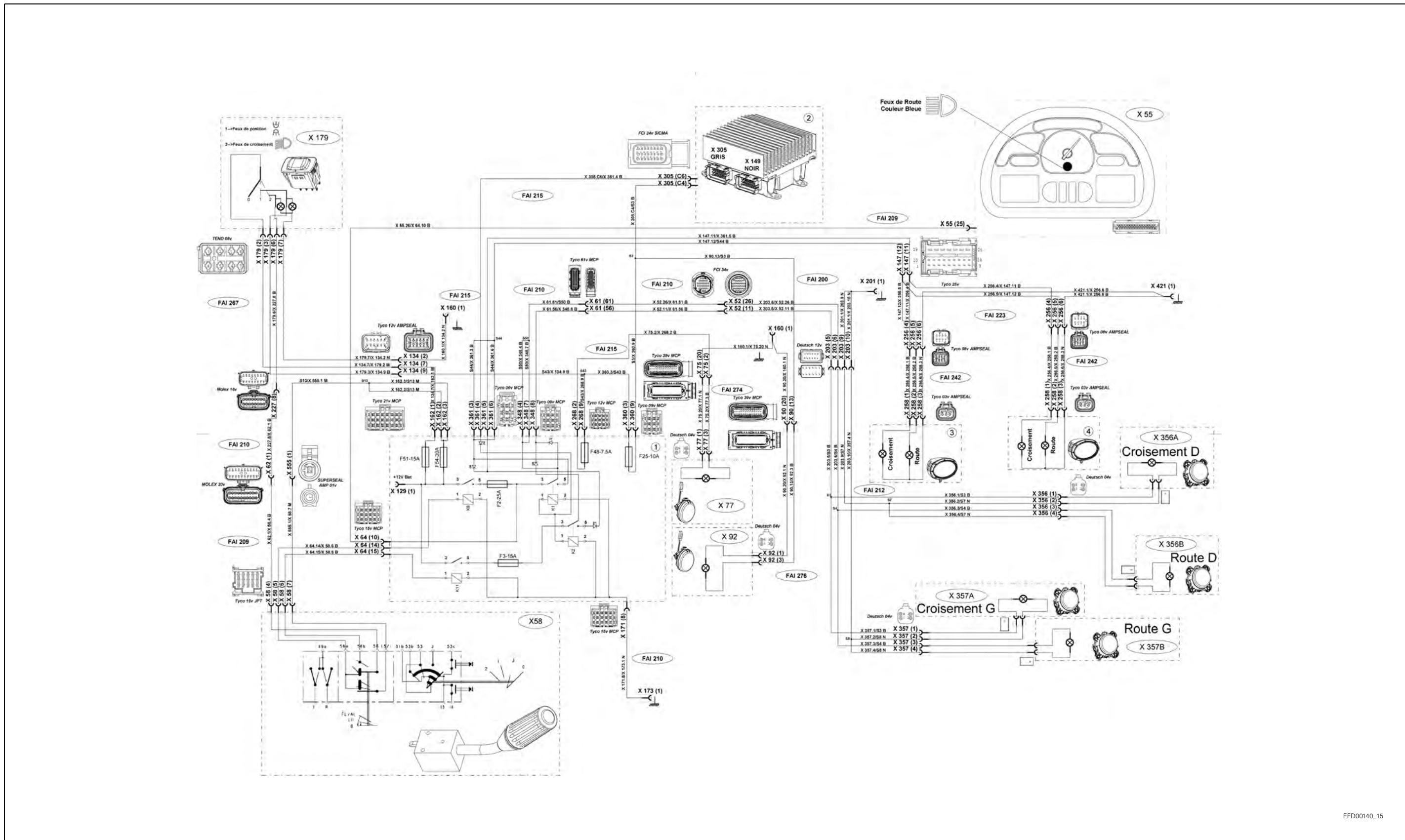
A.42 Main beams and dipped lights on grille



EFD00140_14

Fig. 42

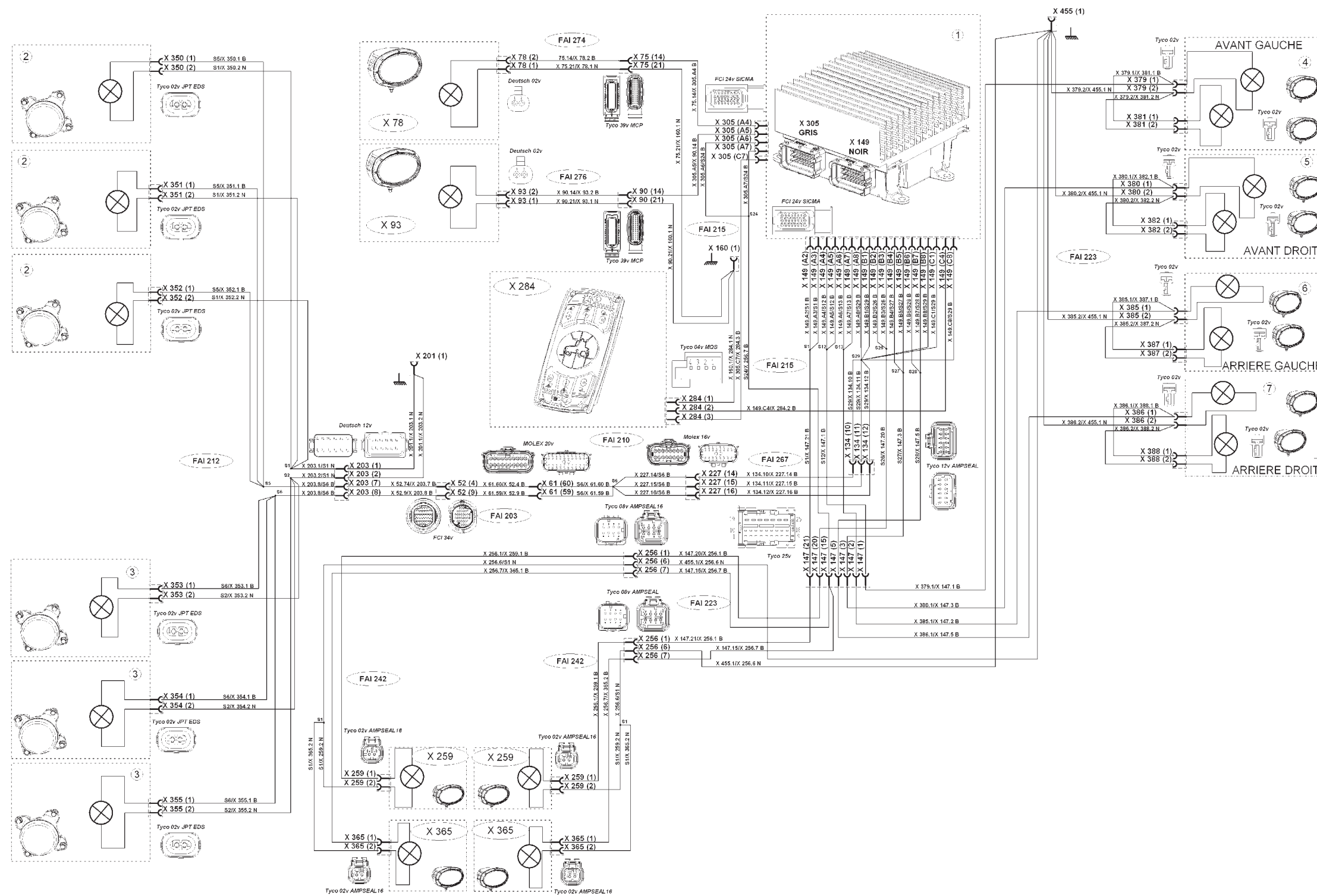
A.43 Main beams and dipped lights on grille and hand rail



EFD00140_15

Fig. 43

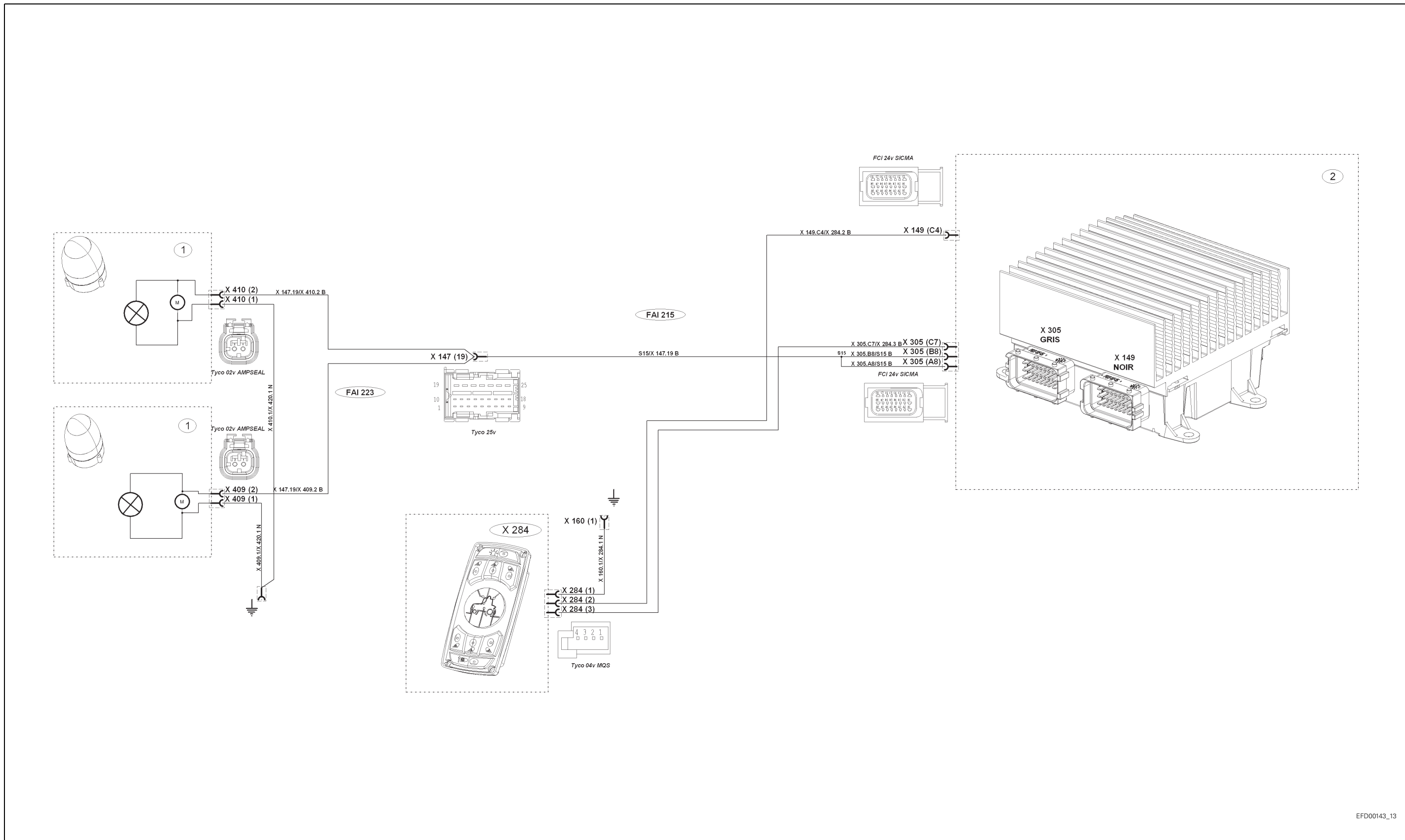
A.44 Work lights



EFD00141_51

Fig. 44

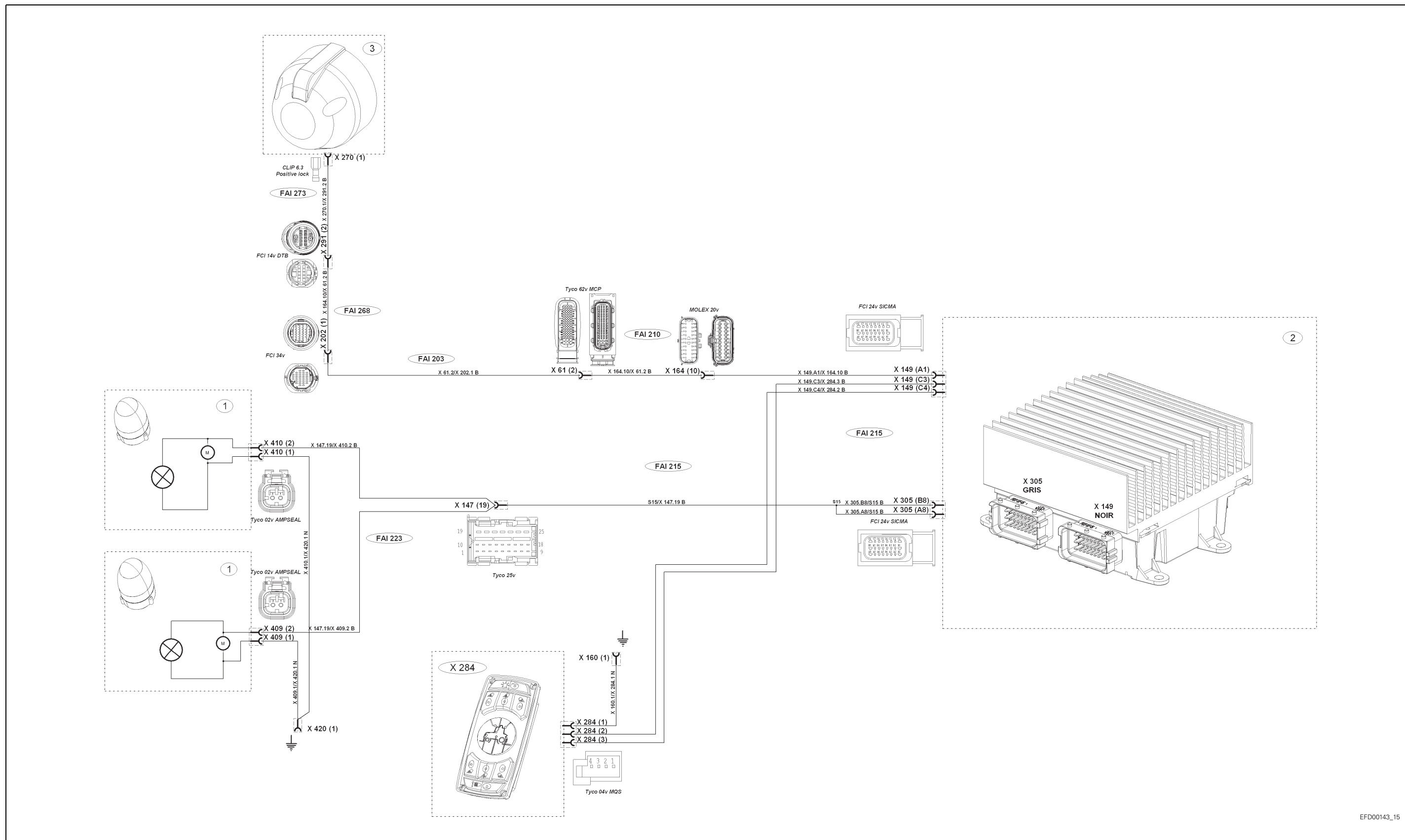
A.46 Rotary beacons



EFD00143_13

Fig. 46

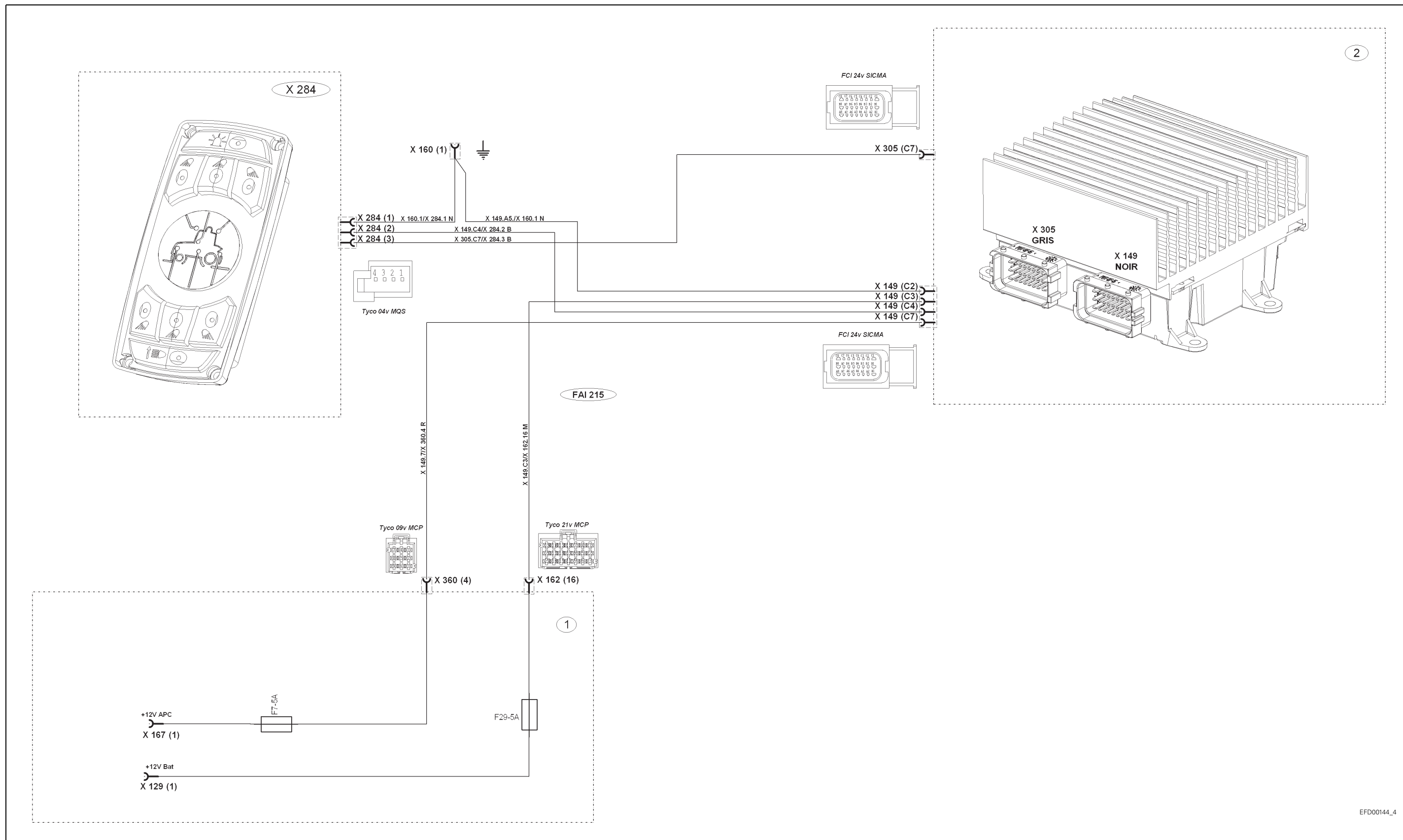
A.47 Rotary beacons and front accessory connection socket



EFD00143_15

Fig. 47

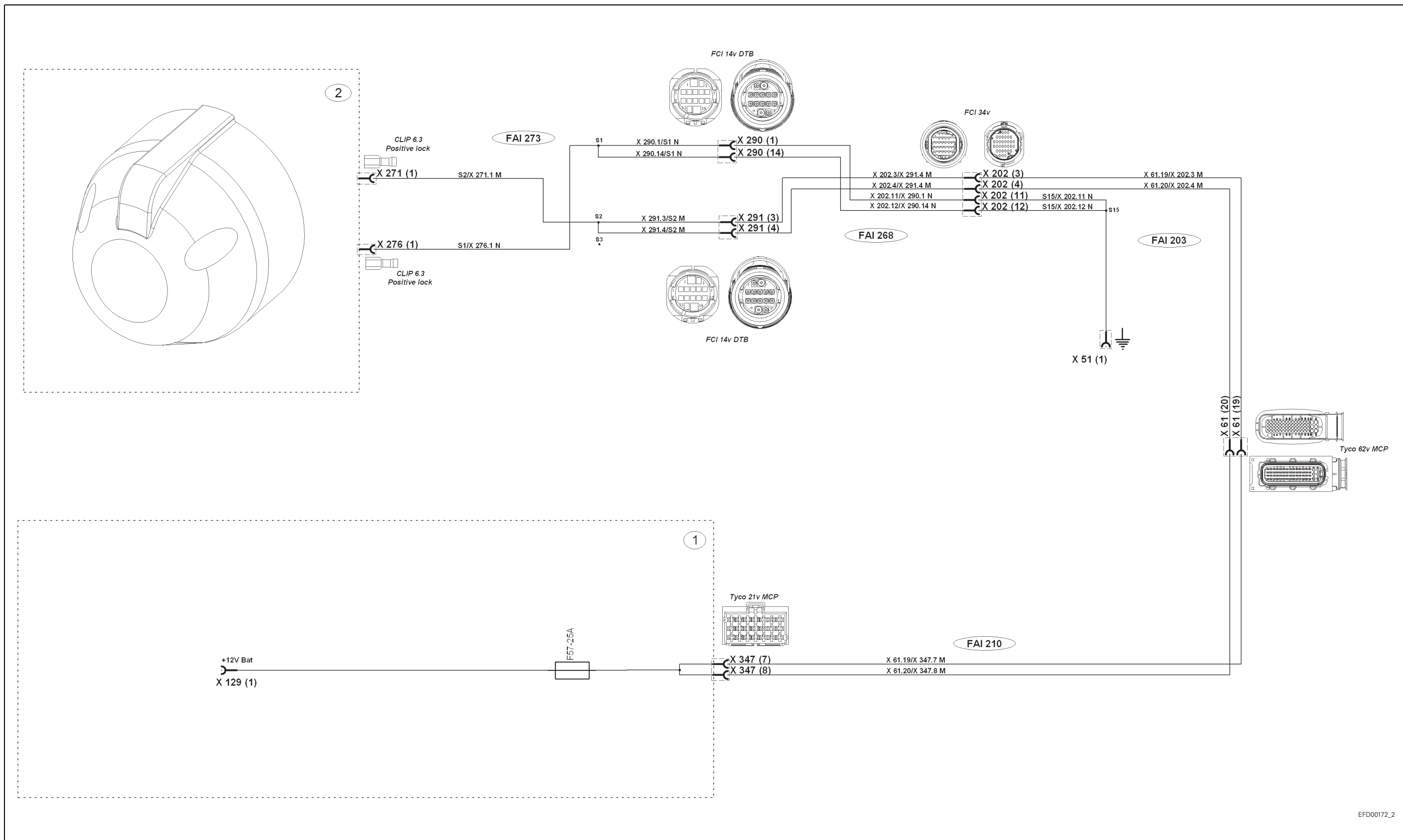
A.48 Headlights module electrical power supply



EFD00144_4

Fig. 48

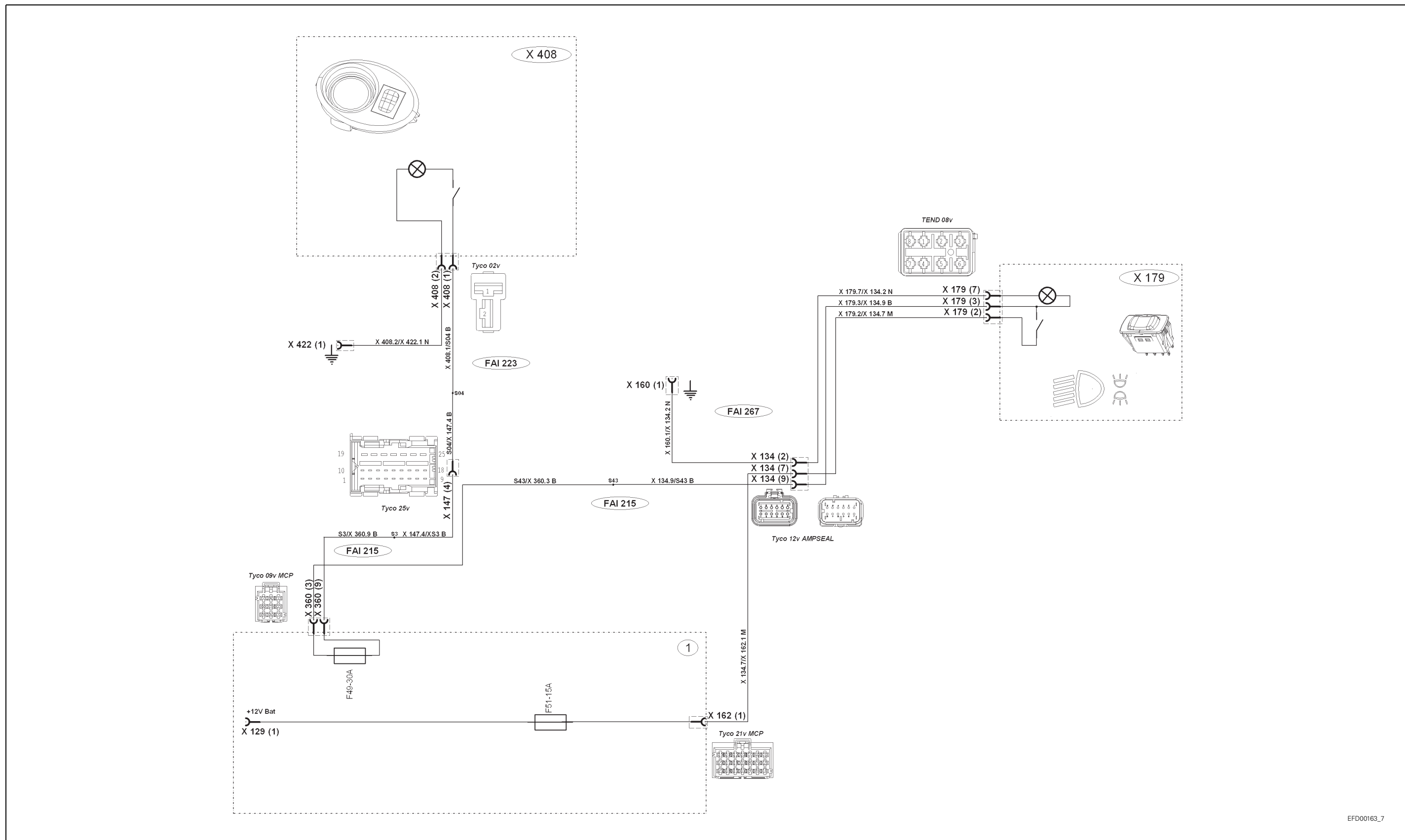
A.49 Front accessory connection socket



EFD00172_2

Fig. 49

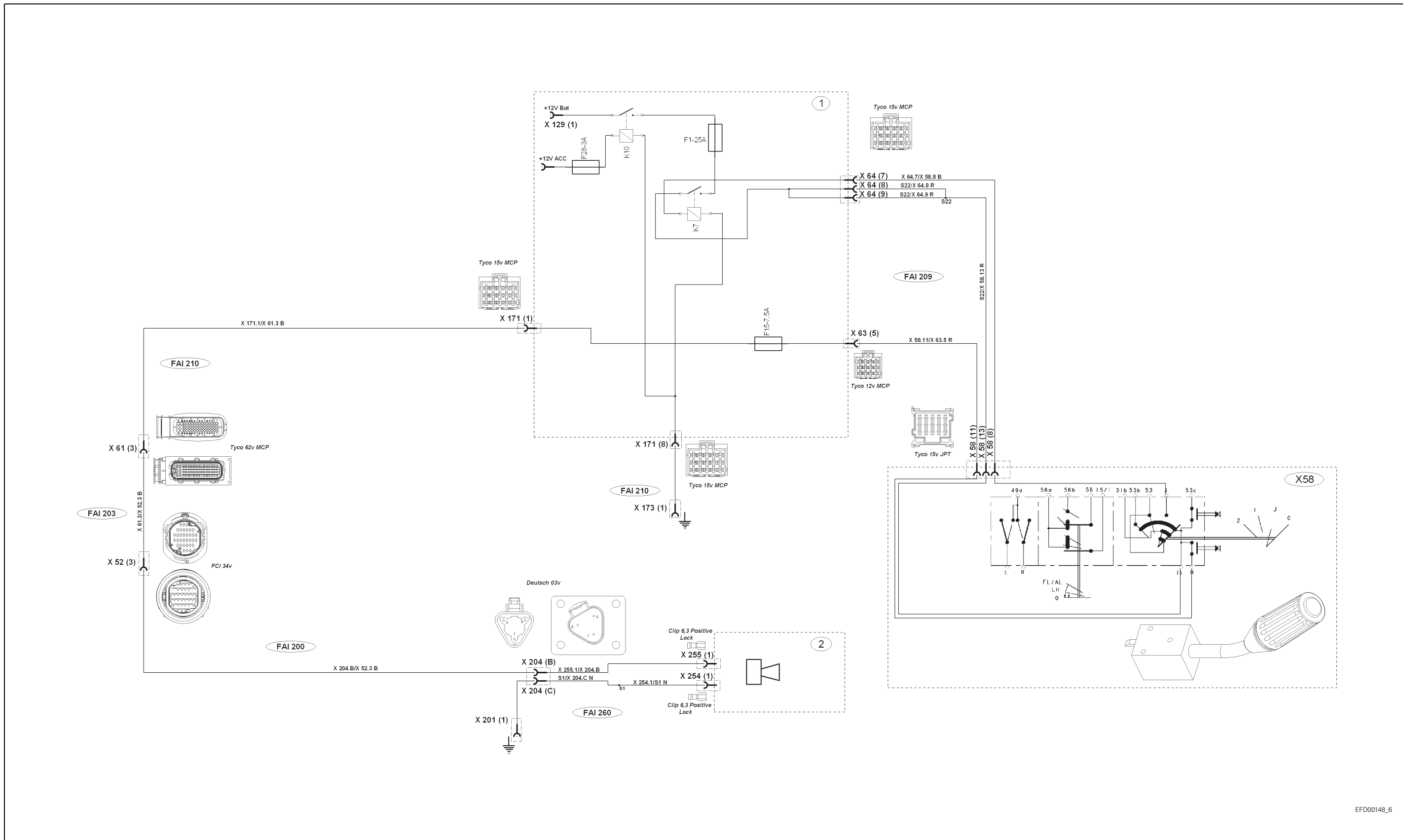
A.50 Console lighting.



EFD00163_7

Fig. 50

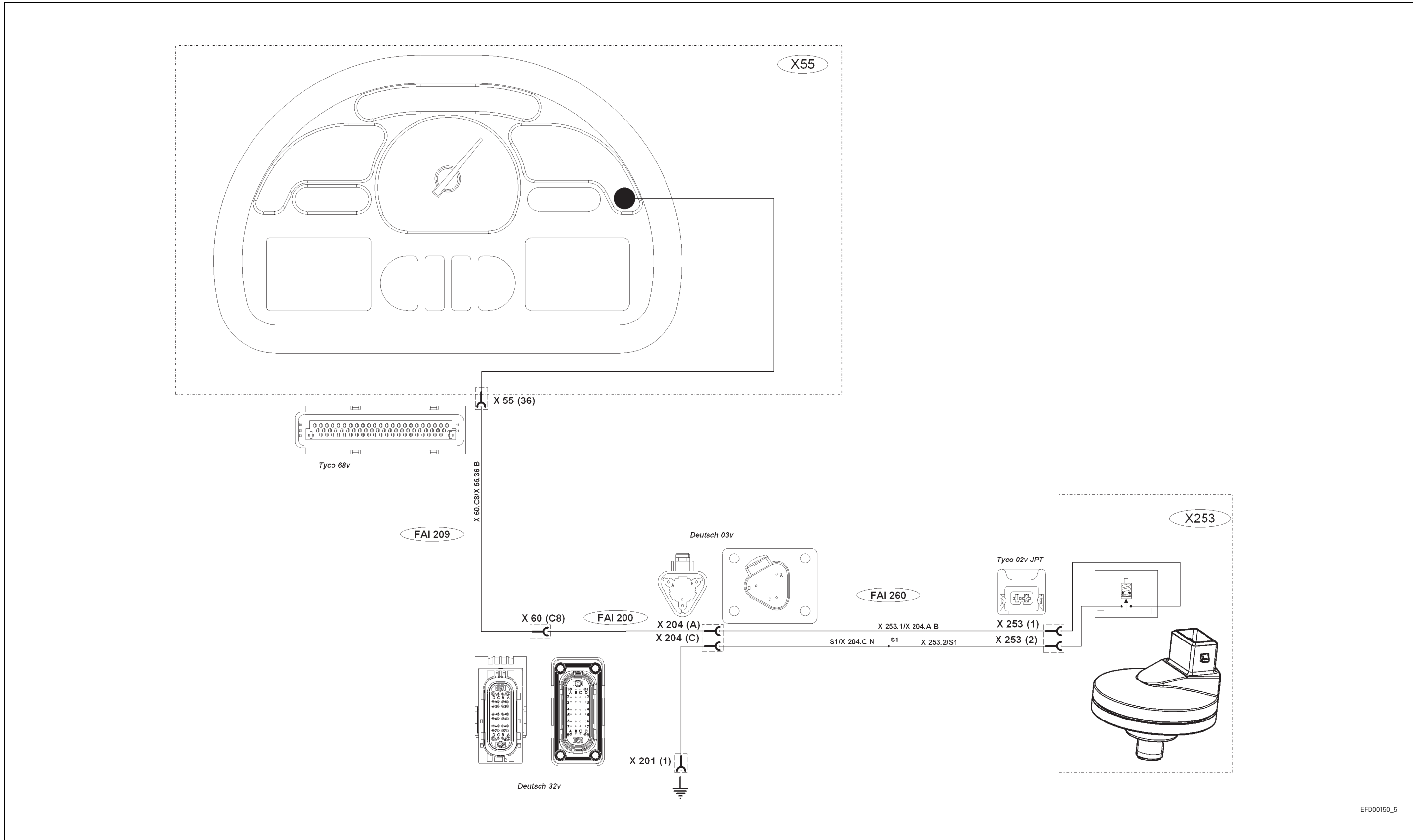
A.51Horn



EFD00148_6

Fig. 51

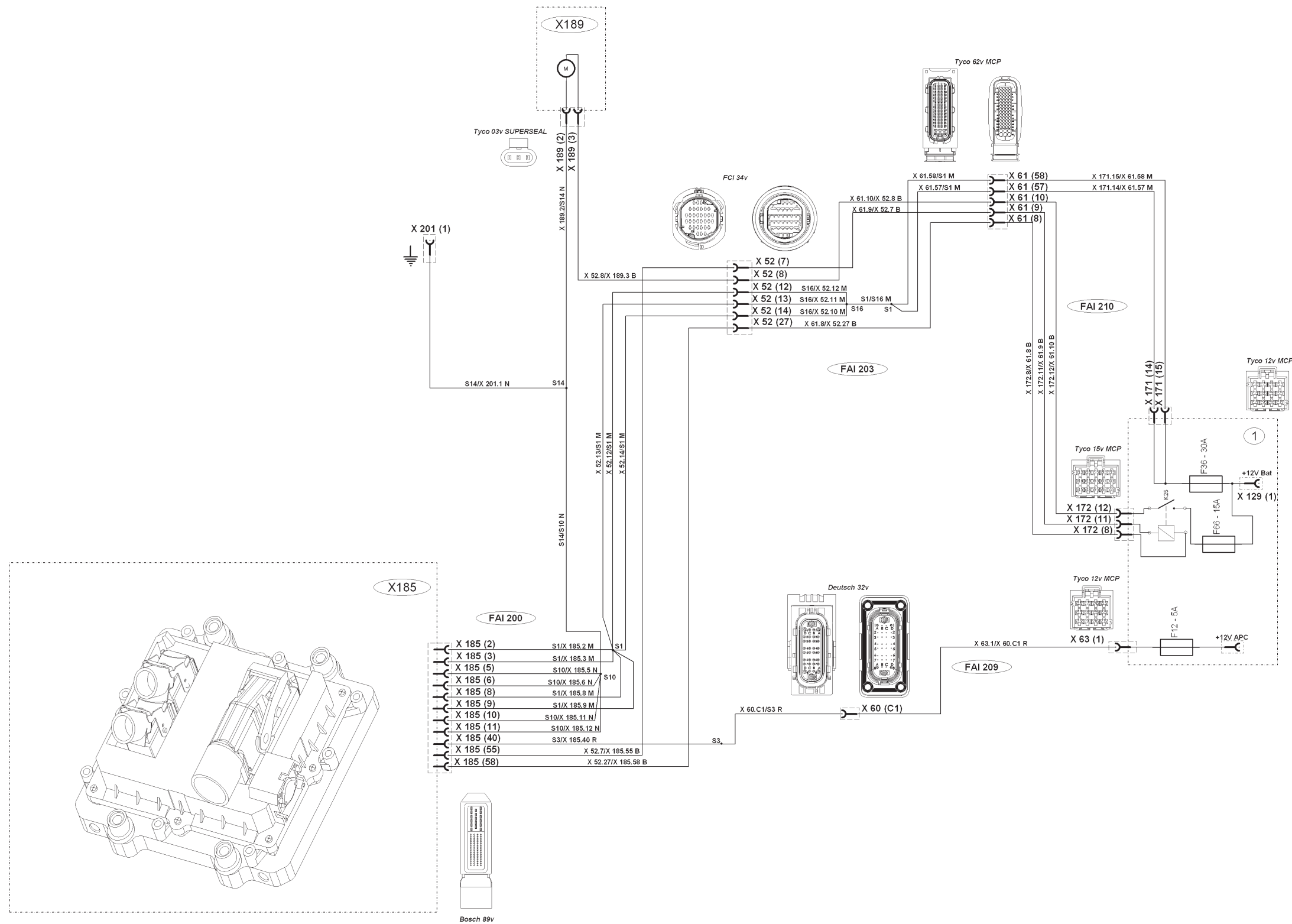
A.53 Air filter vacuum sensor



EFD00150_5

Fig. 53

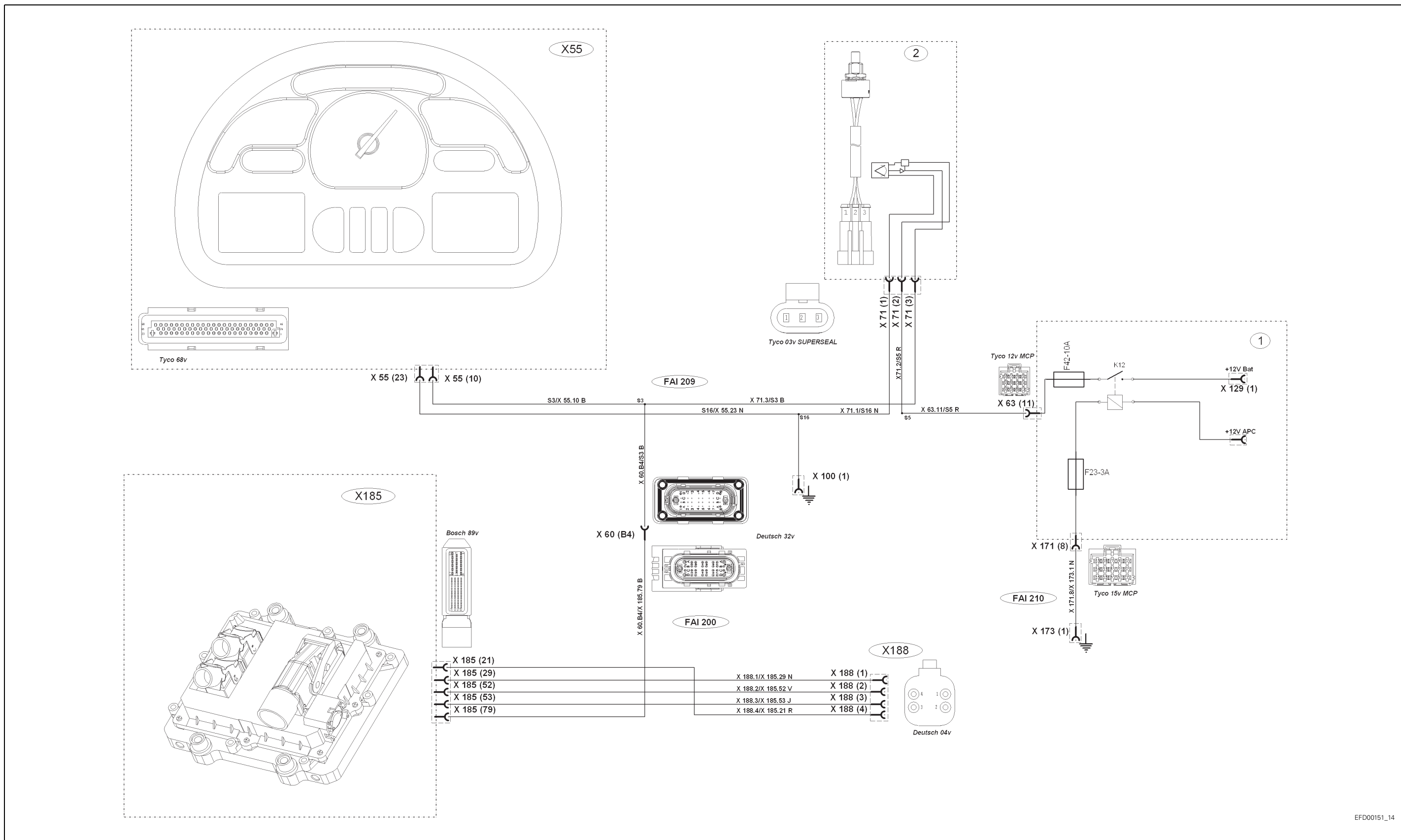
A.54Sisu EEM electronic unit electrical power supply



EFD00151_13

Fig. 54

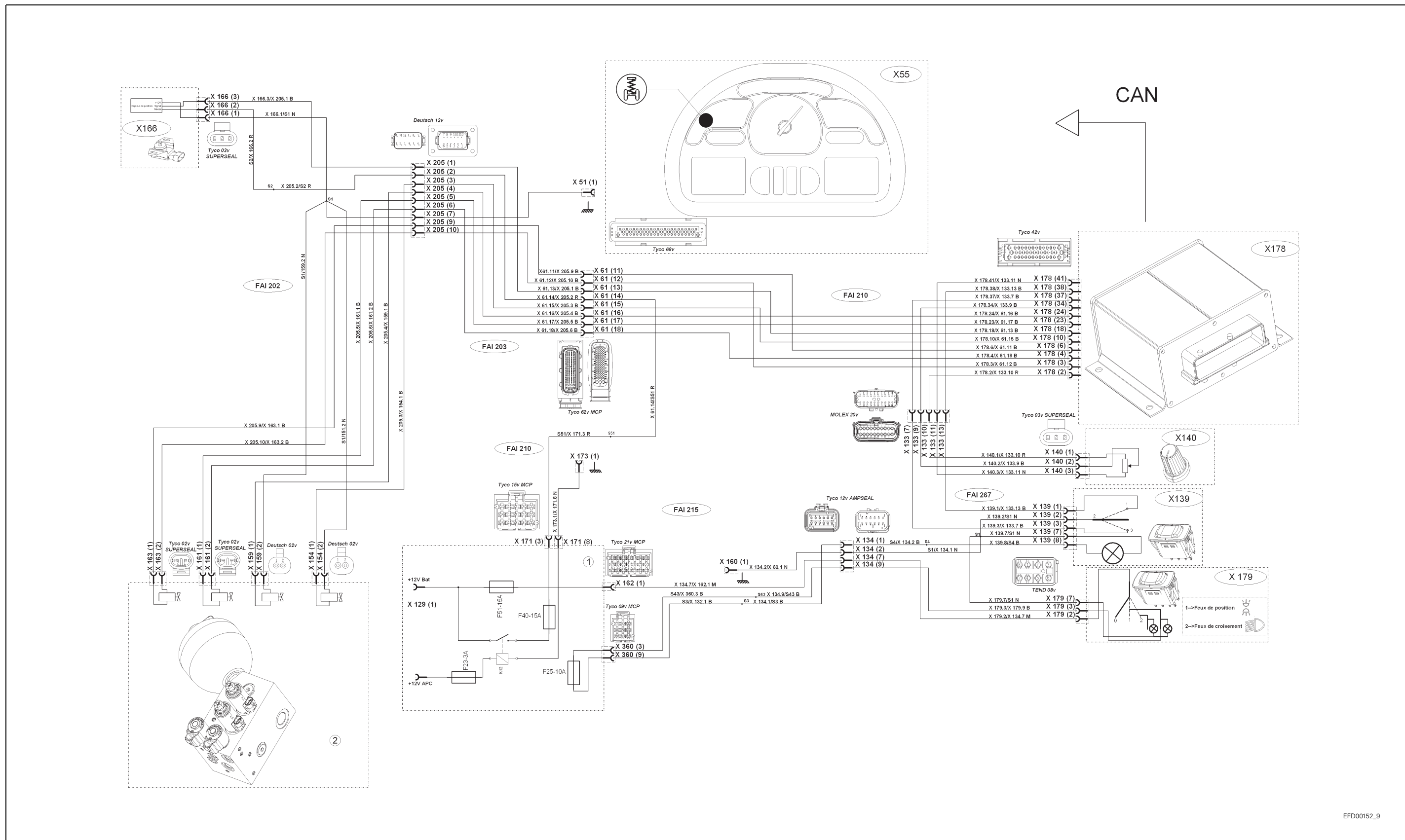
A.55Sisu engine electronic injection



EFD00151_14

Fig. 55

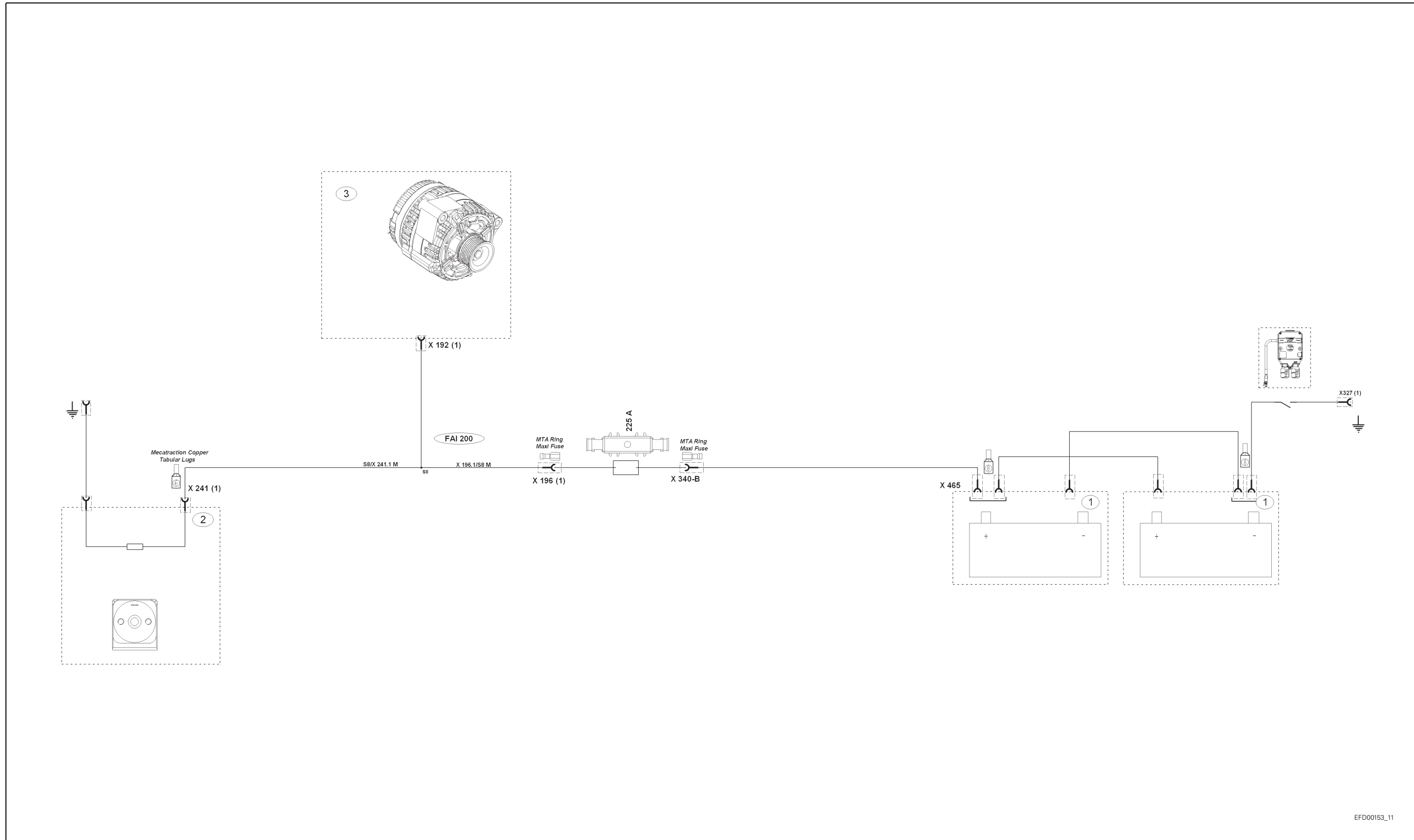
A.56DANA suspended front axle



EFD00152_9

Fig. 56

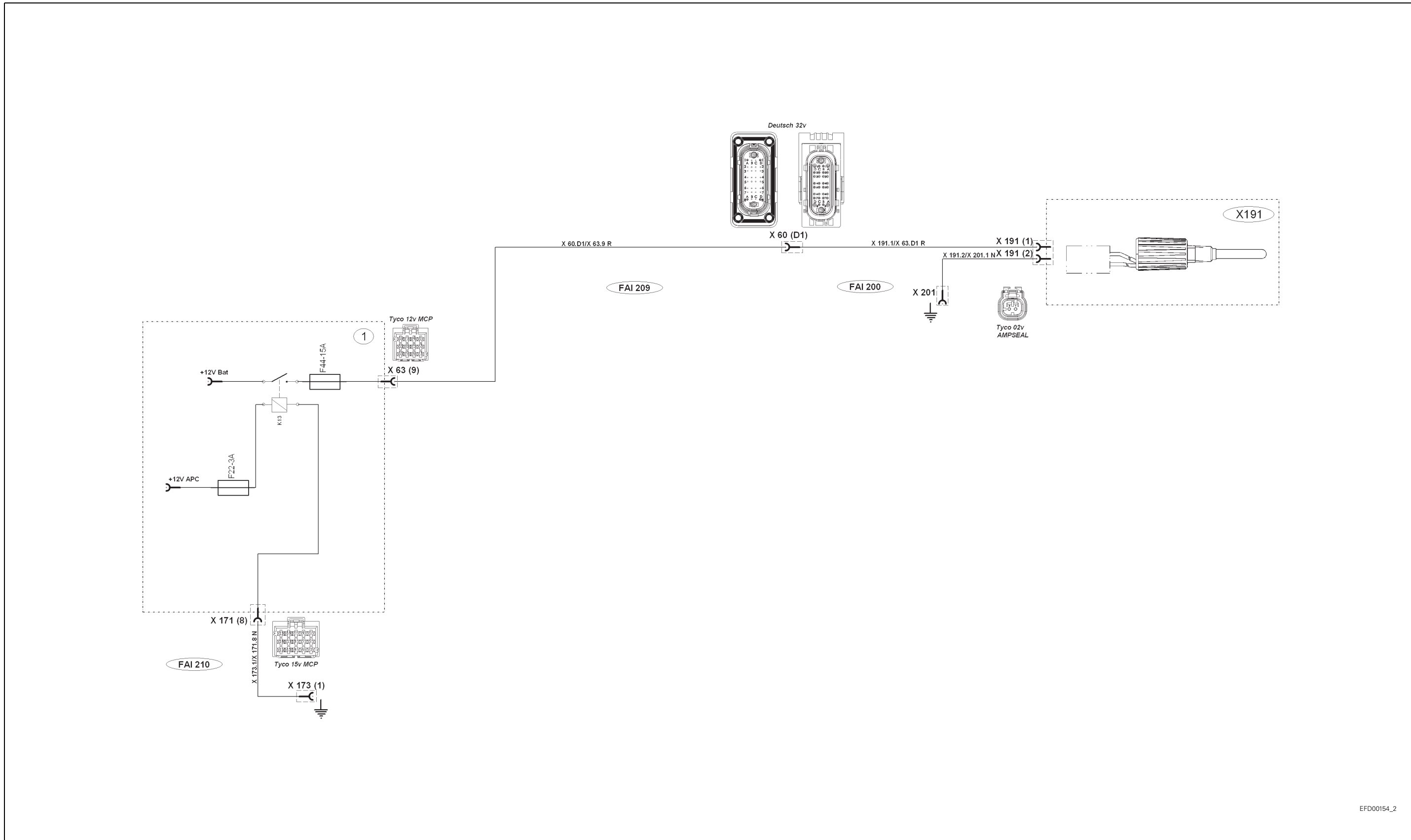
A.57Sisu engine preheating (Grid Heater)



EFD00153_11

Fig. 57

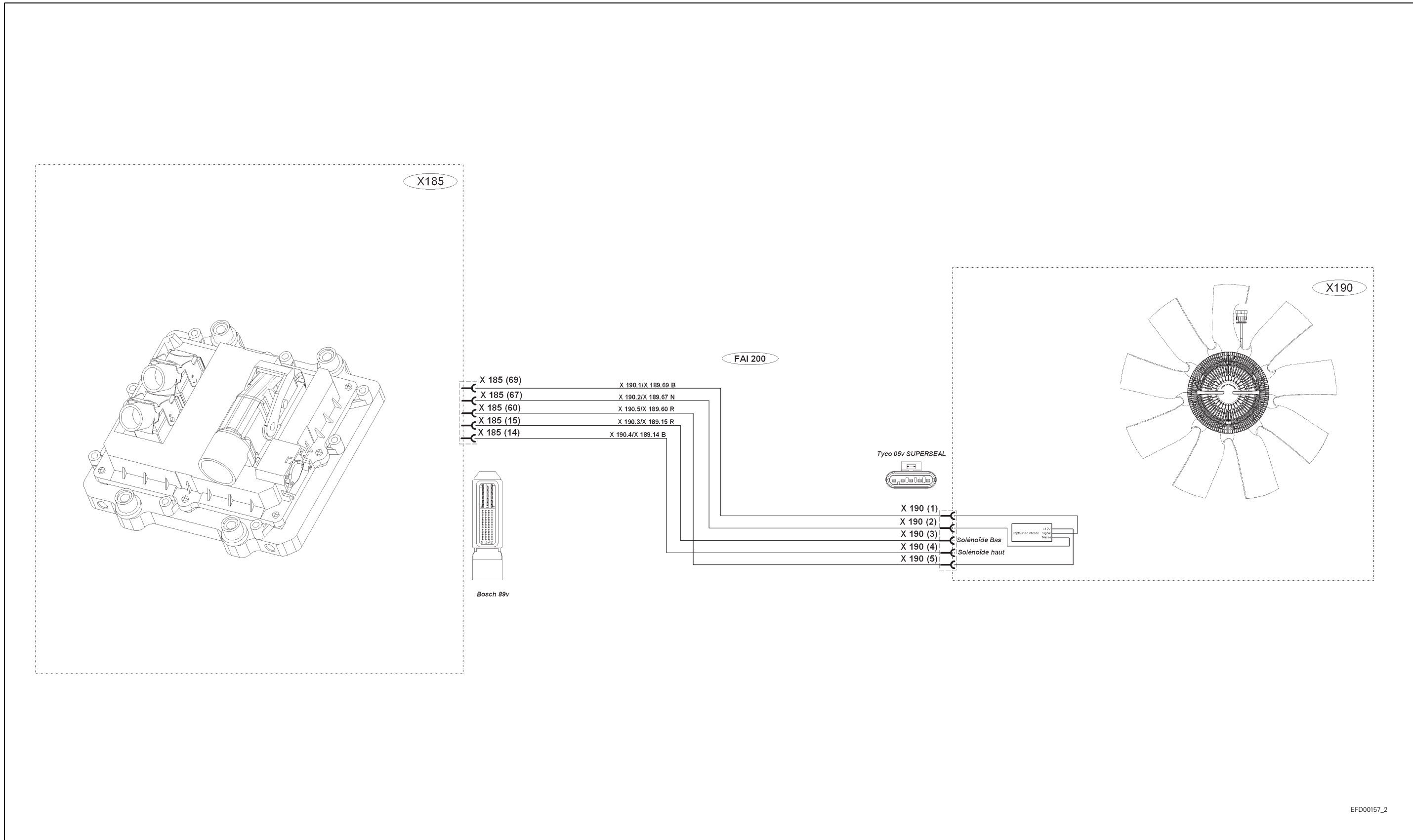
A.58 Fuel preheater



EFD00154_2

Fig. 58

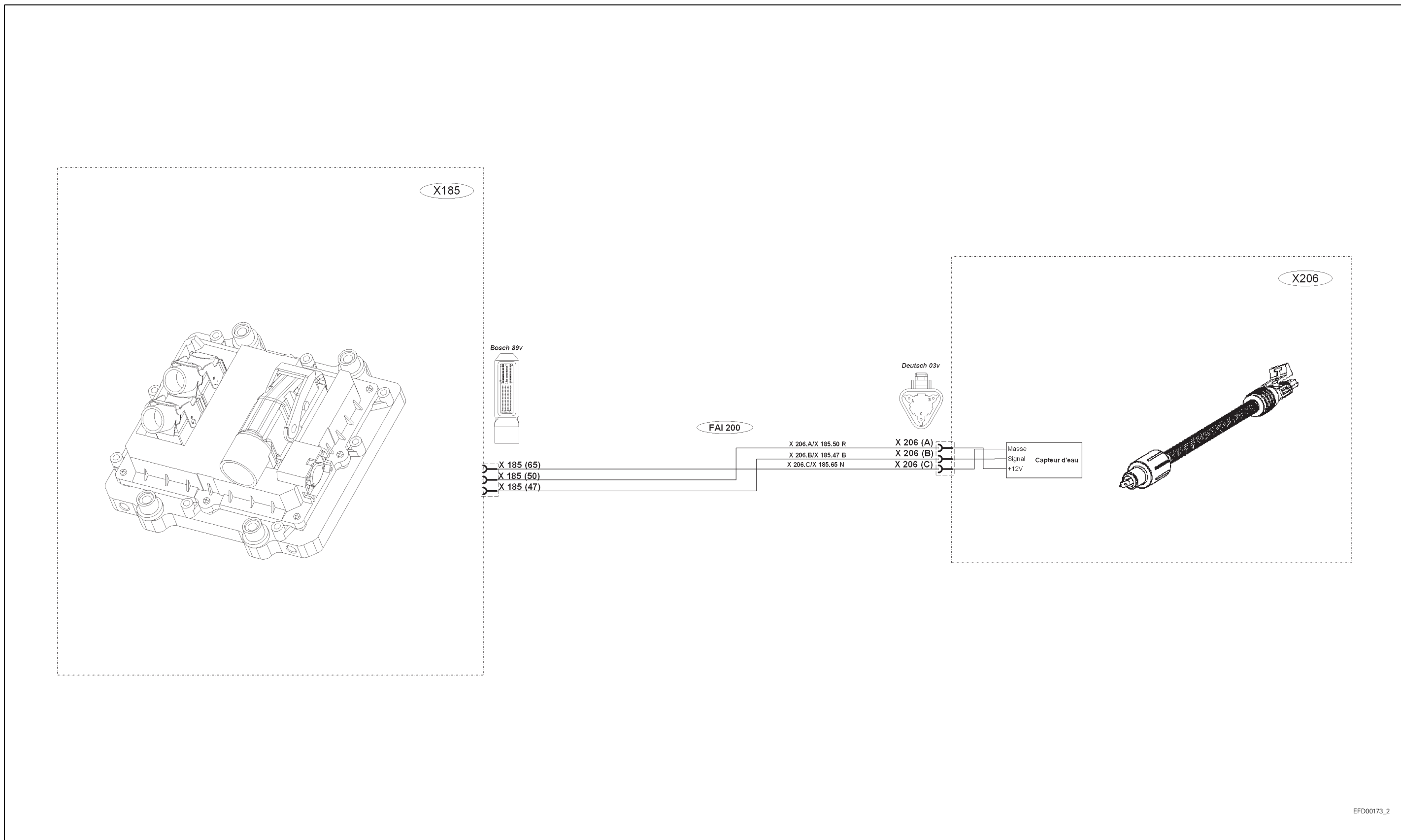
A.59Vistronic fan



EFD00157_2

Fig. 59

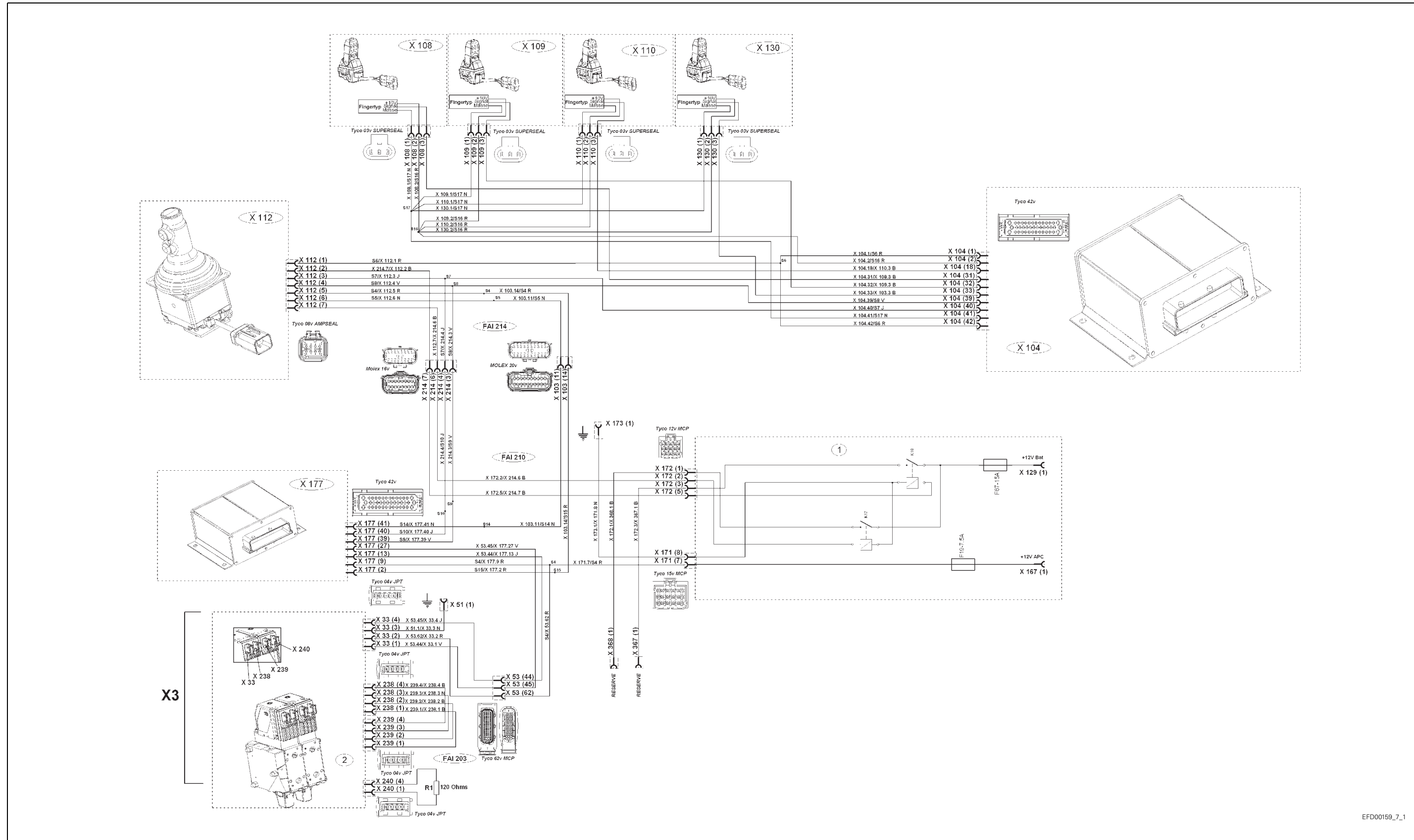
A.60 Sensor detecting water in the diesel fuel



EFD00173_2

Fig. 60

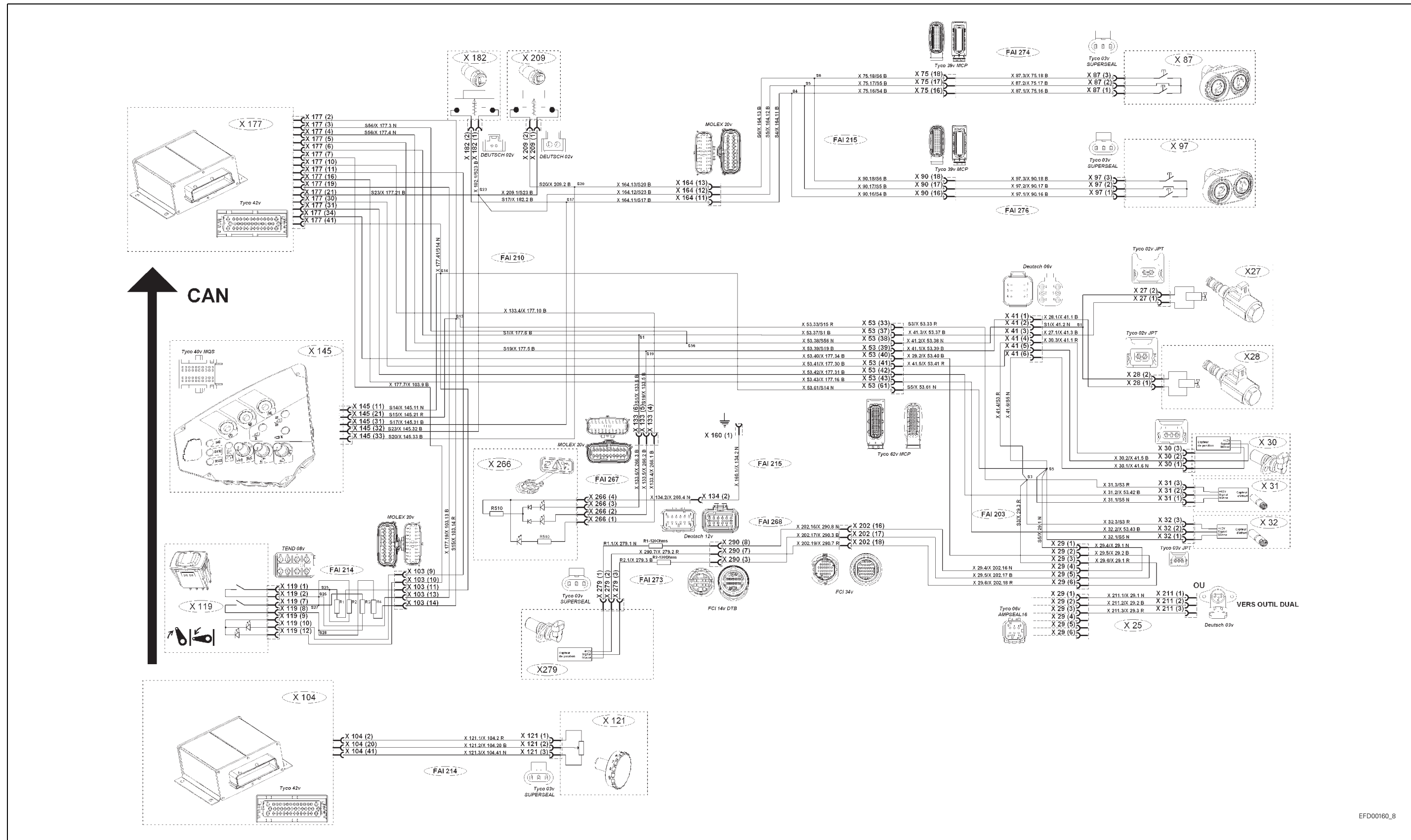
A.62 Electrohydraulic spool valves



EFD00159_7_1

Fig. 62

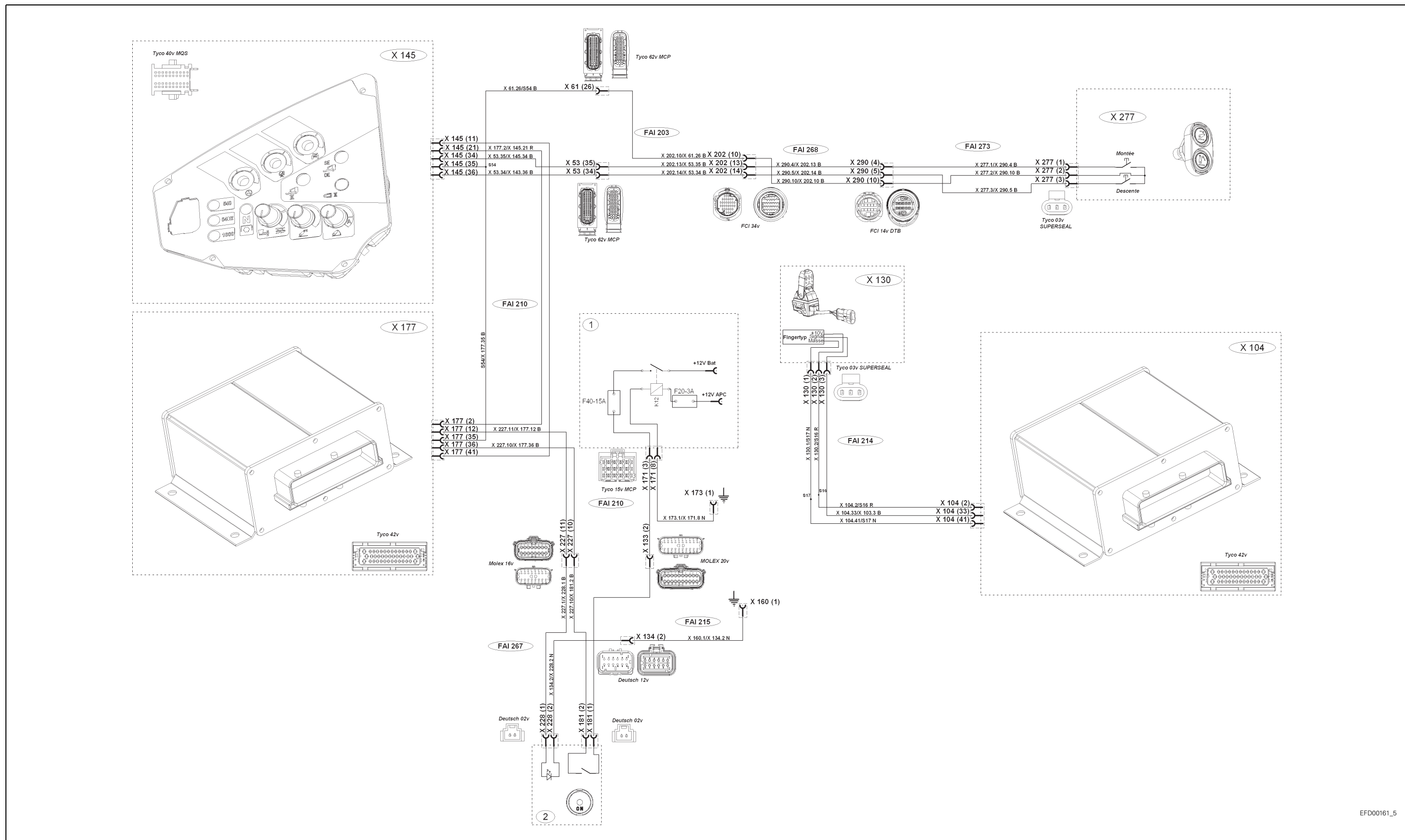
A.63Rear linkage



EFD00160_B

Fig. 63

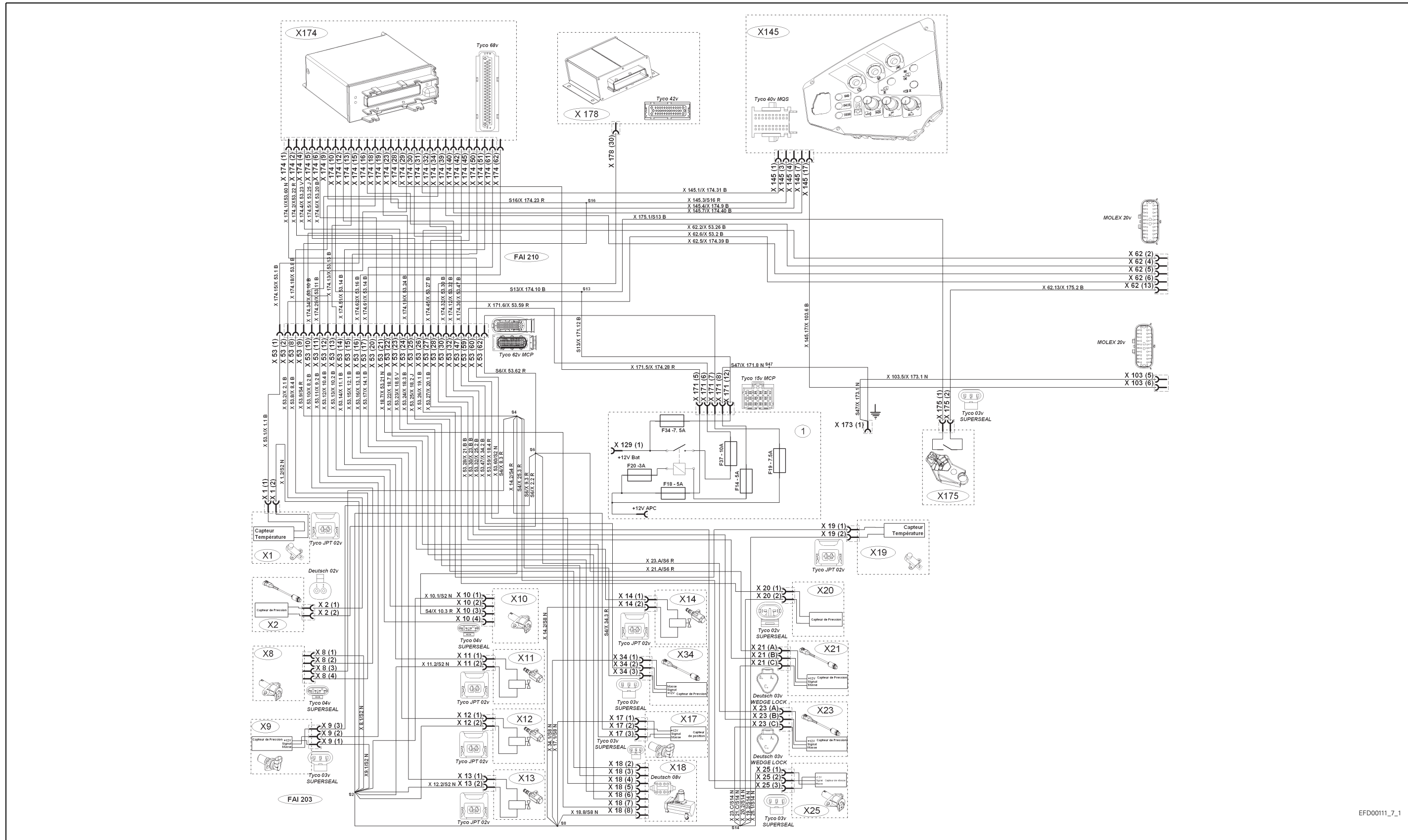
A.64 Front linkage



EFD00161_5

Fig. 64

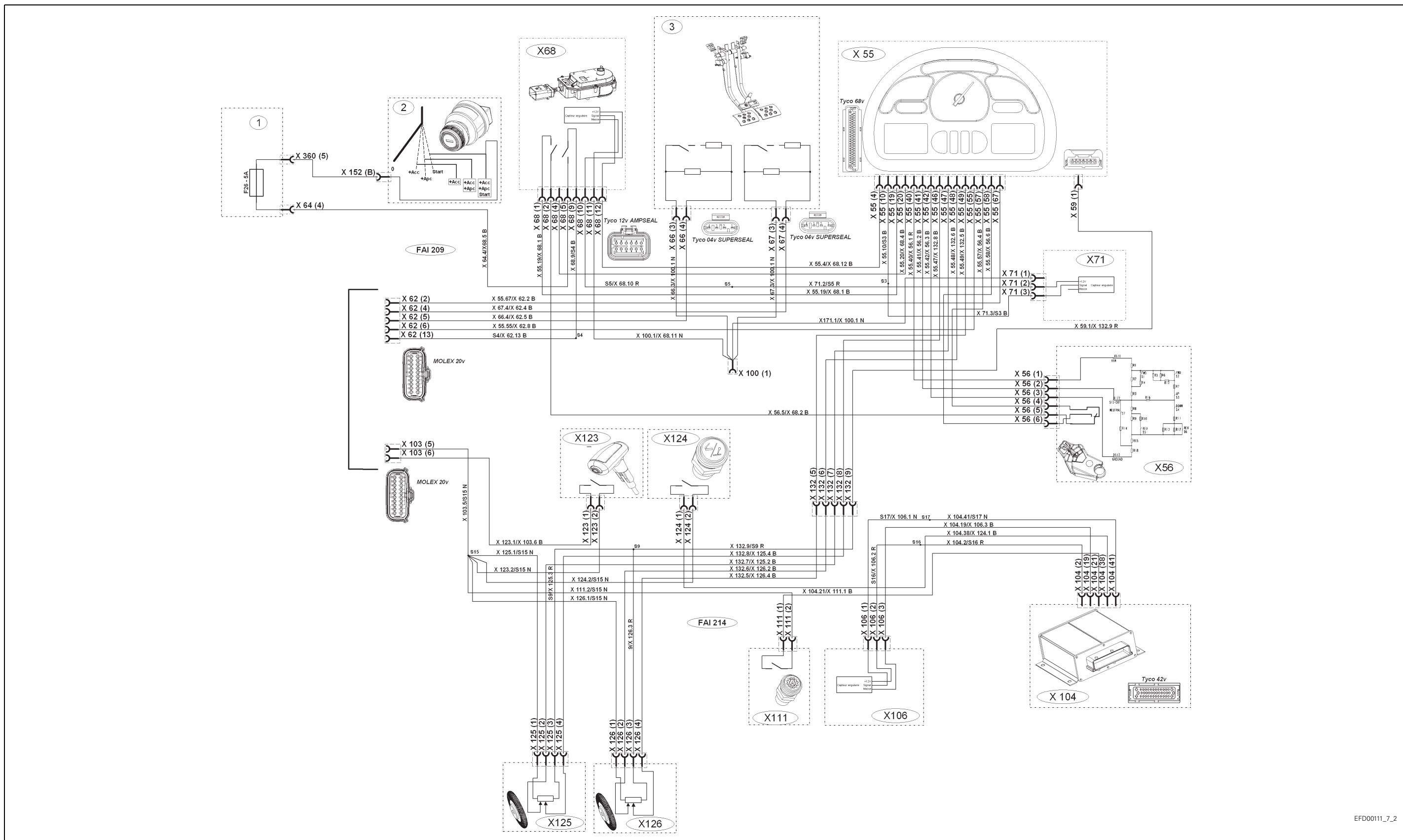
A.65 Transmission



EFD00111_7_1

Fig. 65

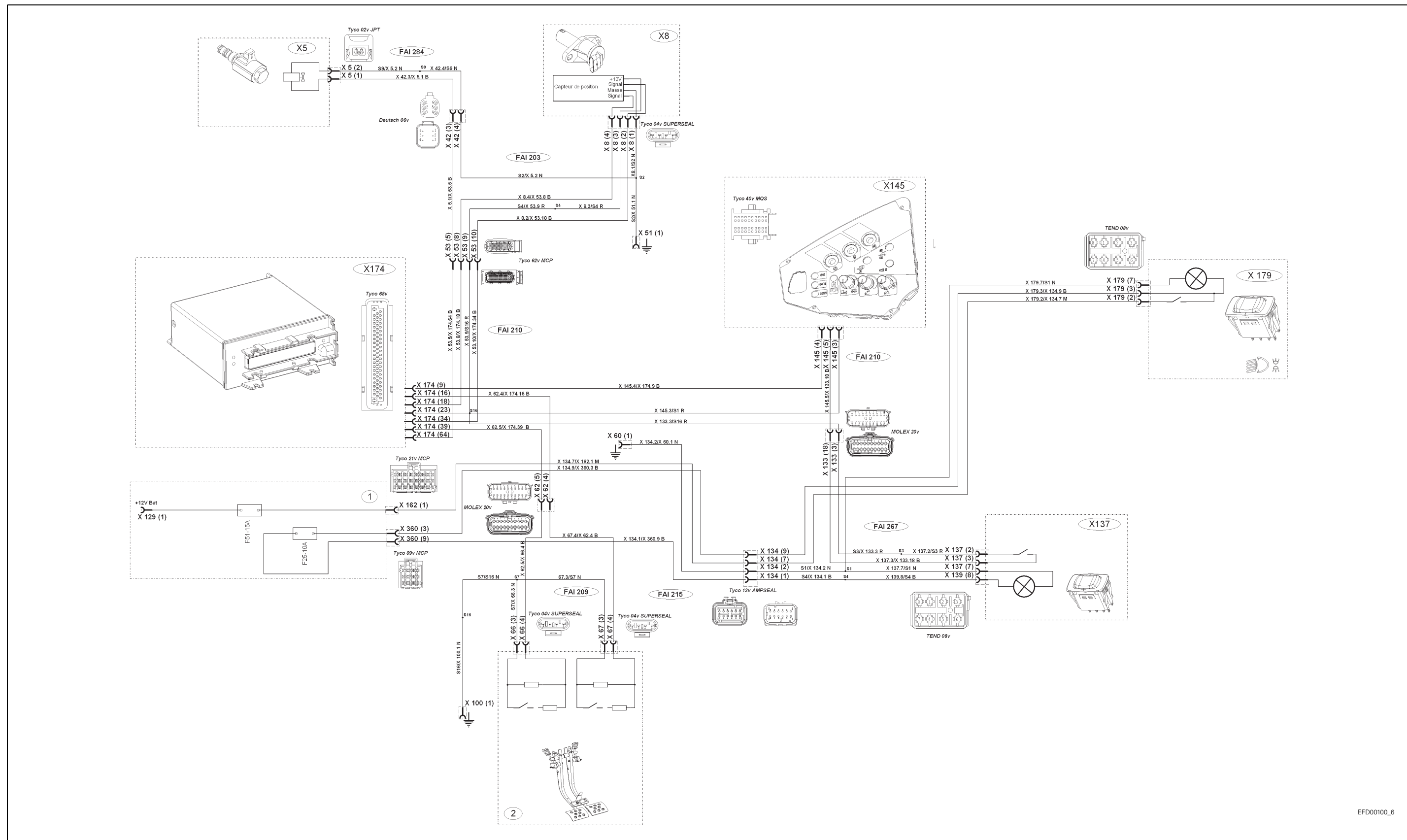
A.66Transmission



EFD00111_7_2

Fig. 66

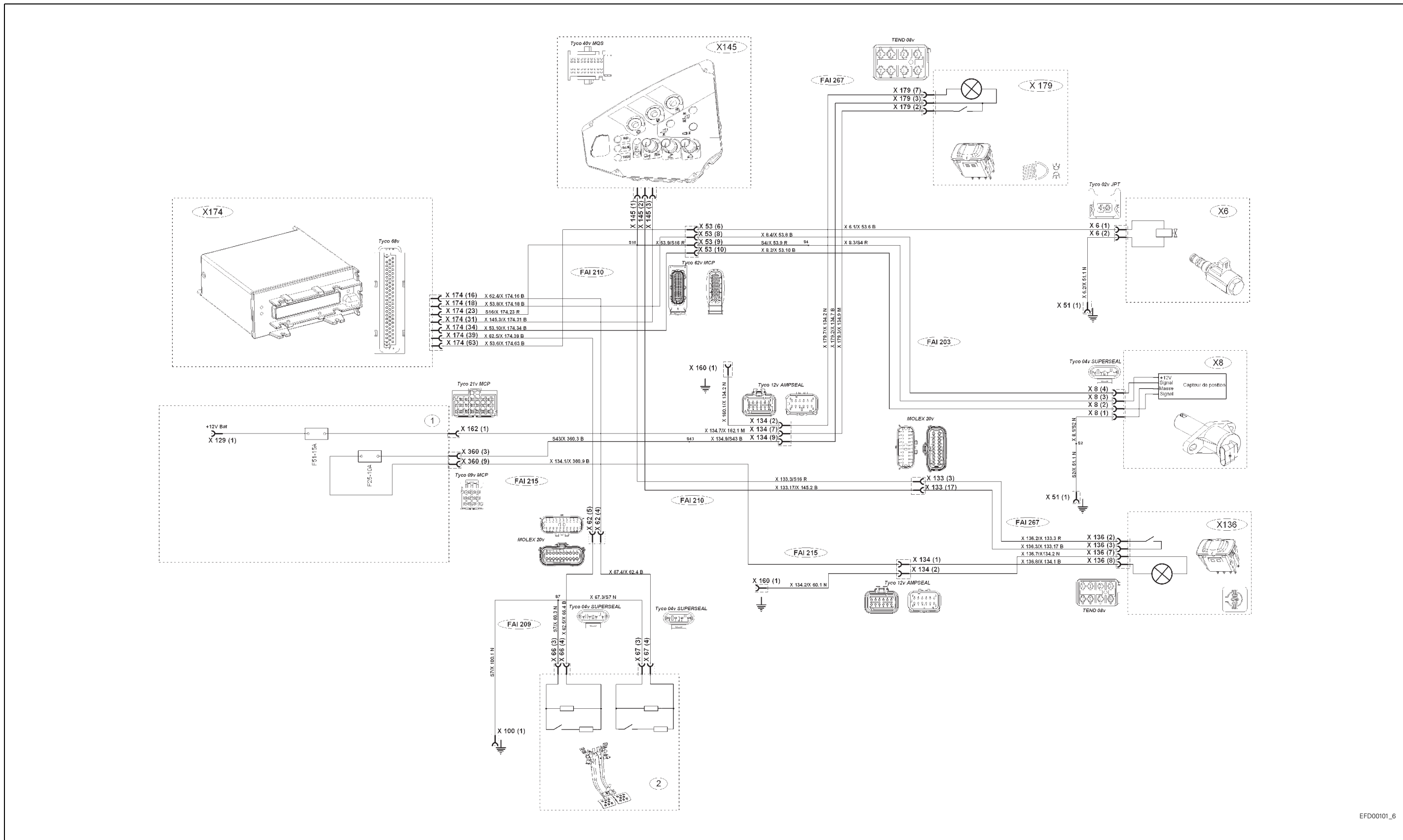
A.674WD front axle



EFD00100_6

Fig. 67

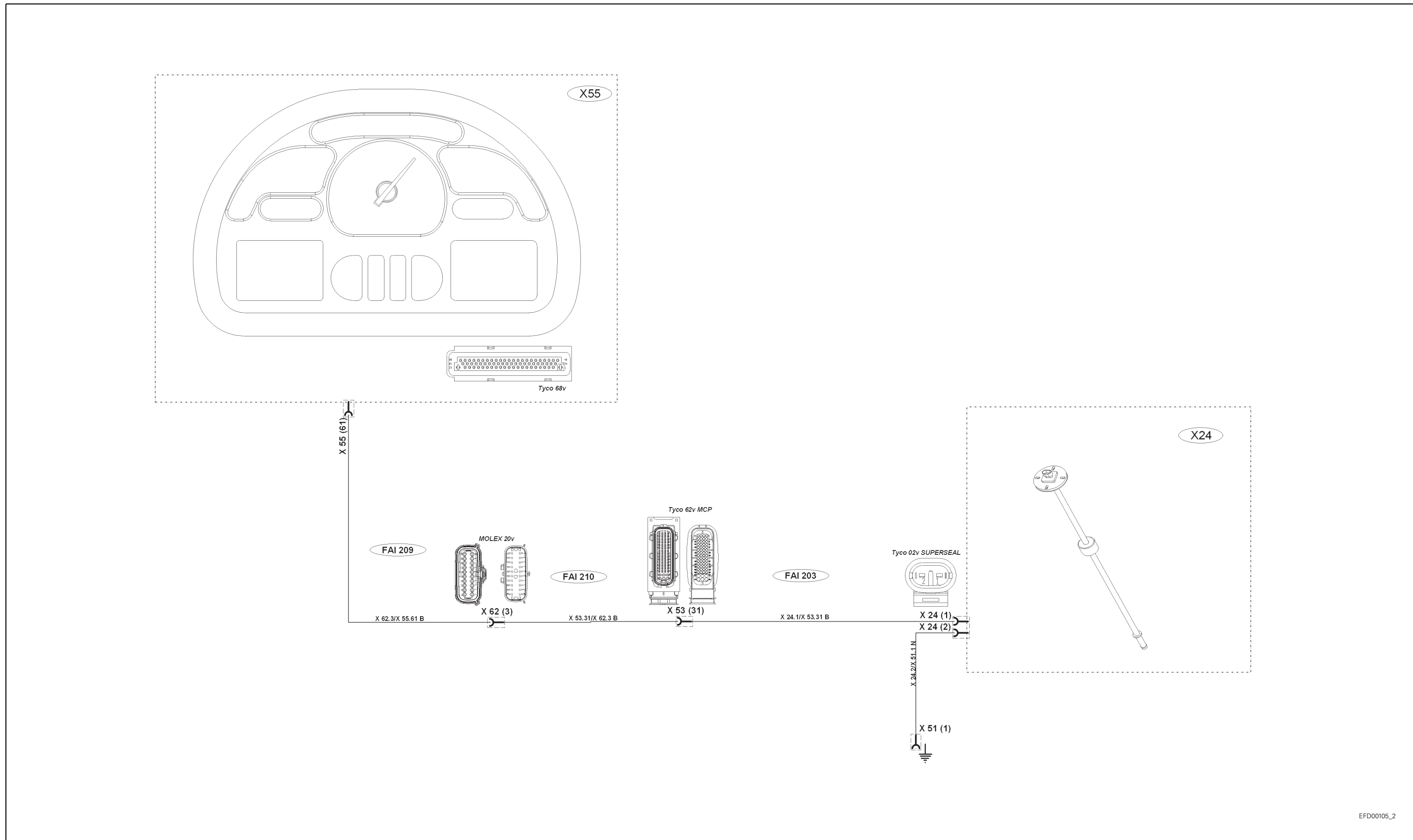
A.68 Differential lock



EFD00101_6

Fig. 68

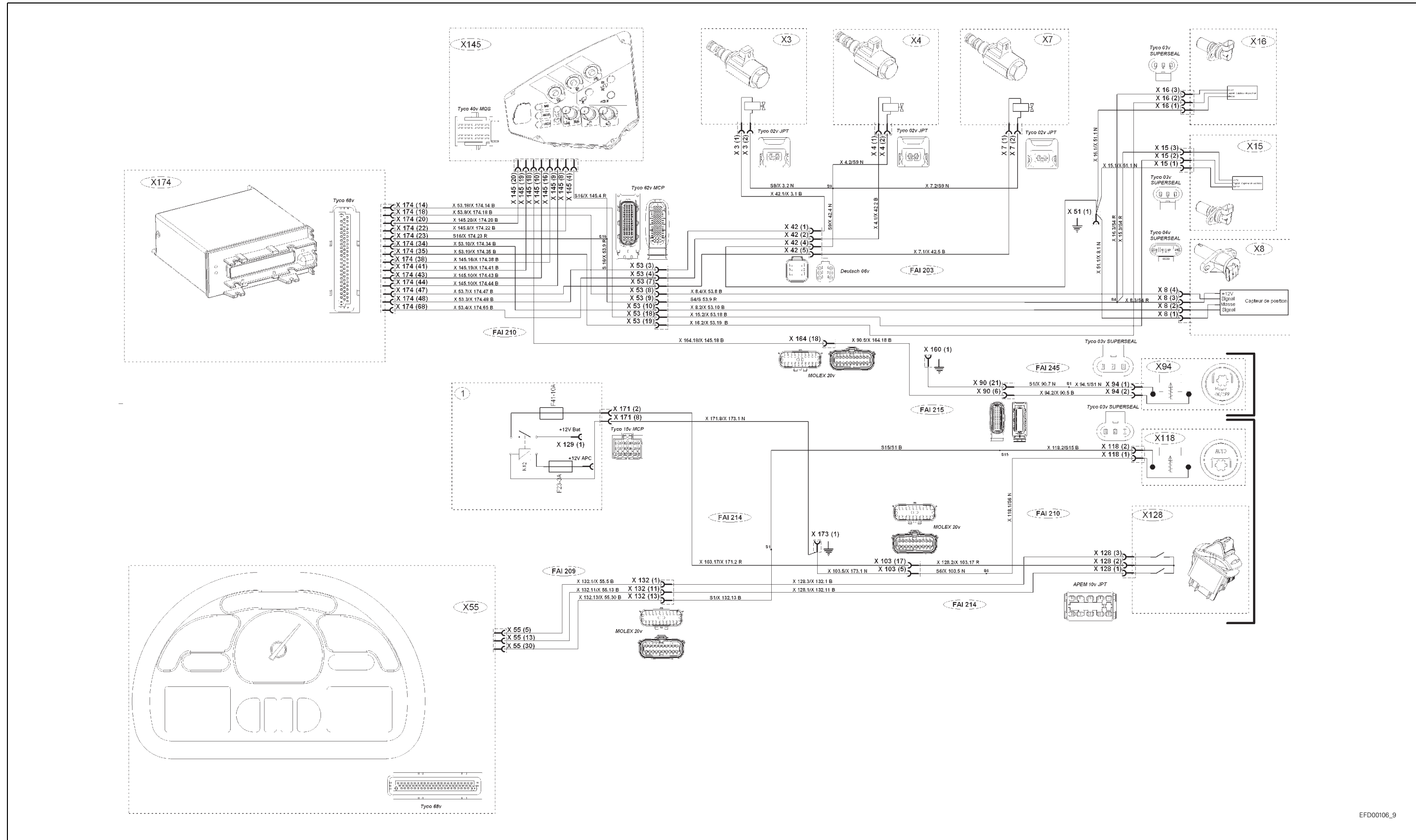
A.69 Auxiliary hydraulic oil gauge



EFD00105_2

Fig. 69

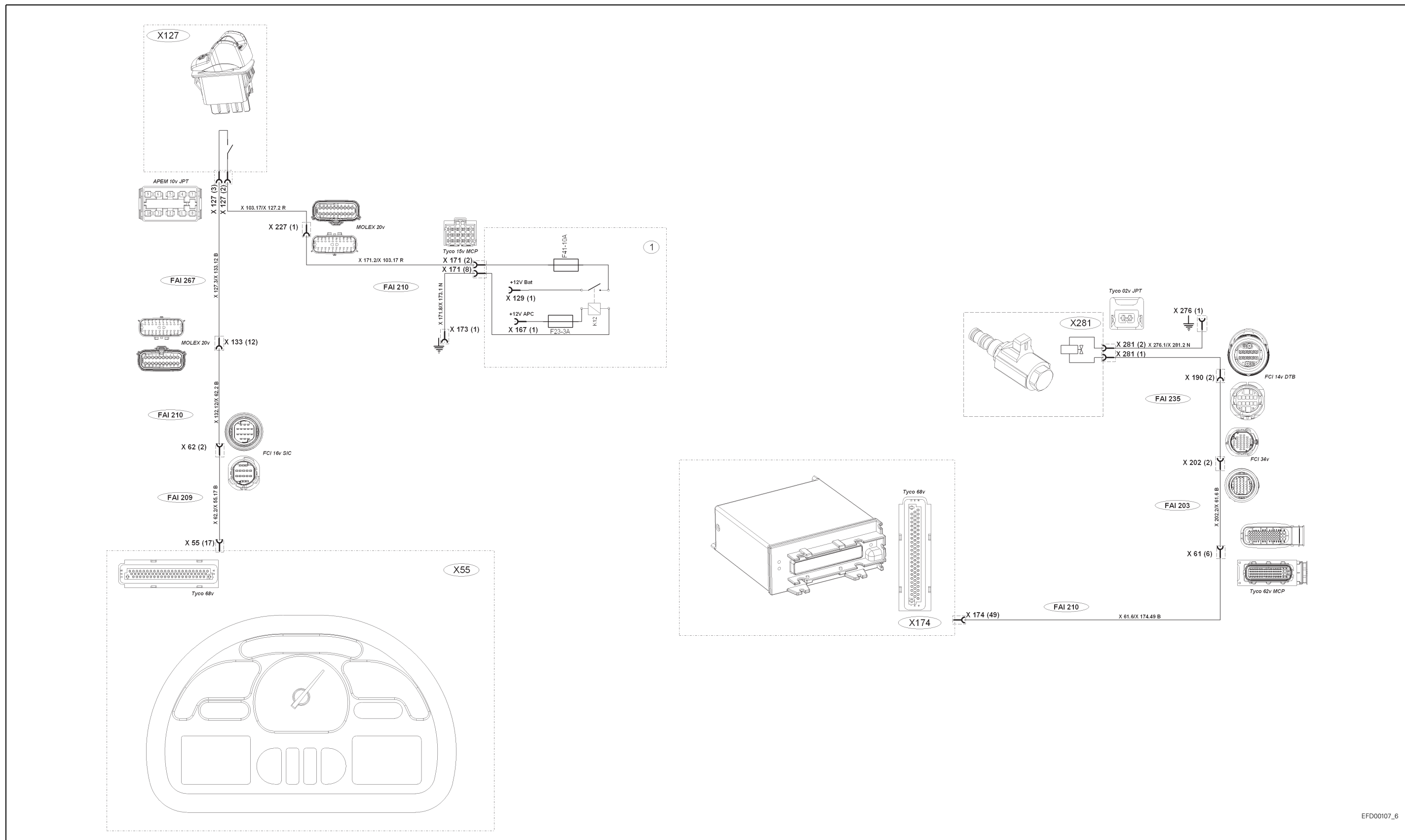
A.70Rear power take-off (PTO)



EFD00106_9

Fig. 70

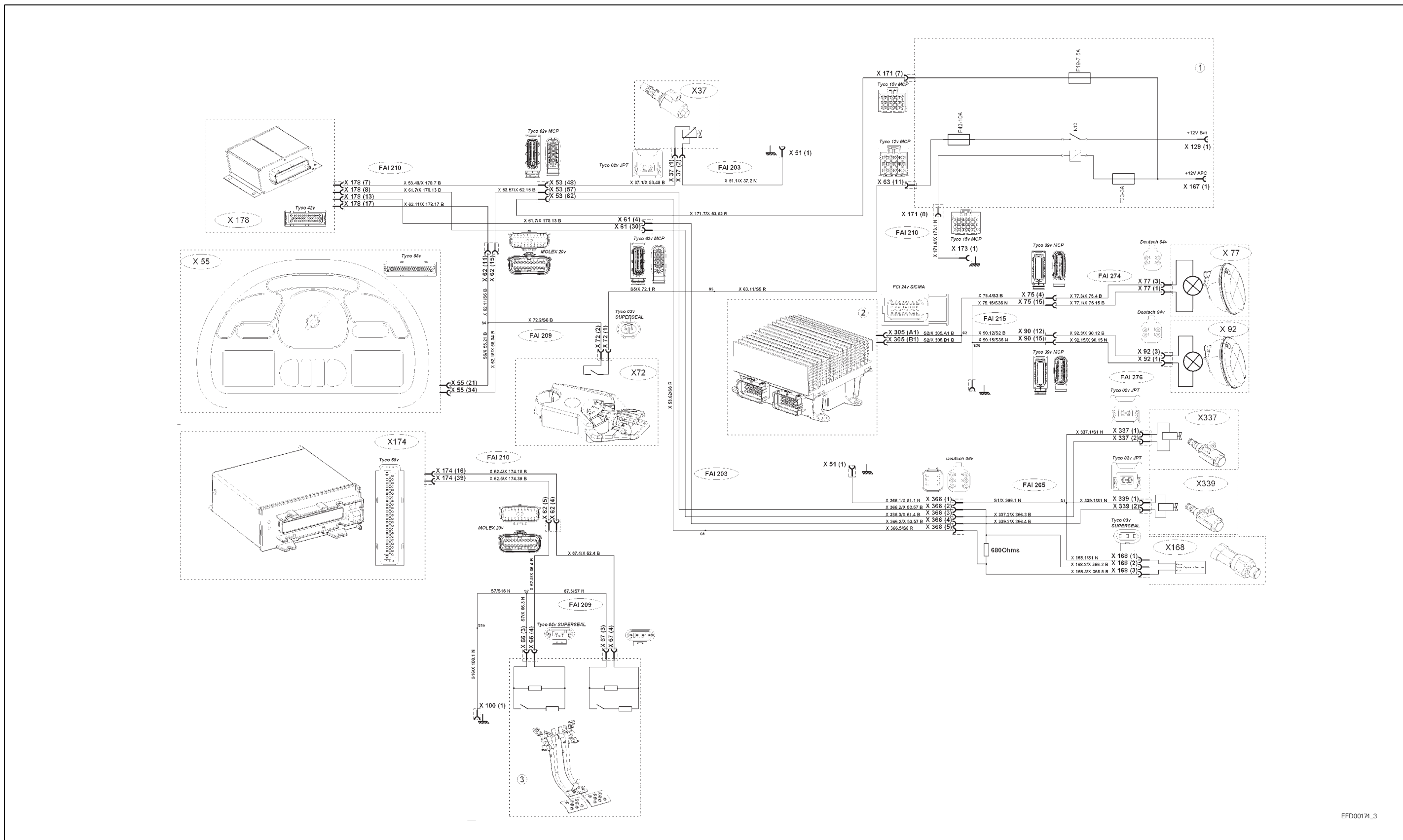
A.71 Front power take-off



EFD000107_6

Fig. 71

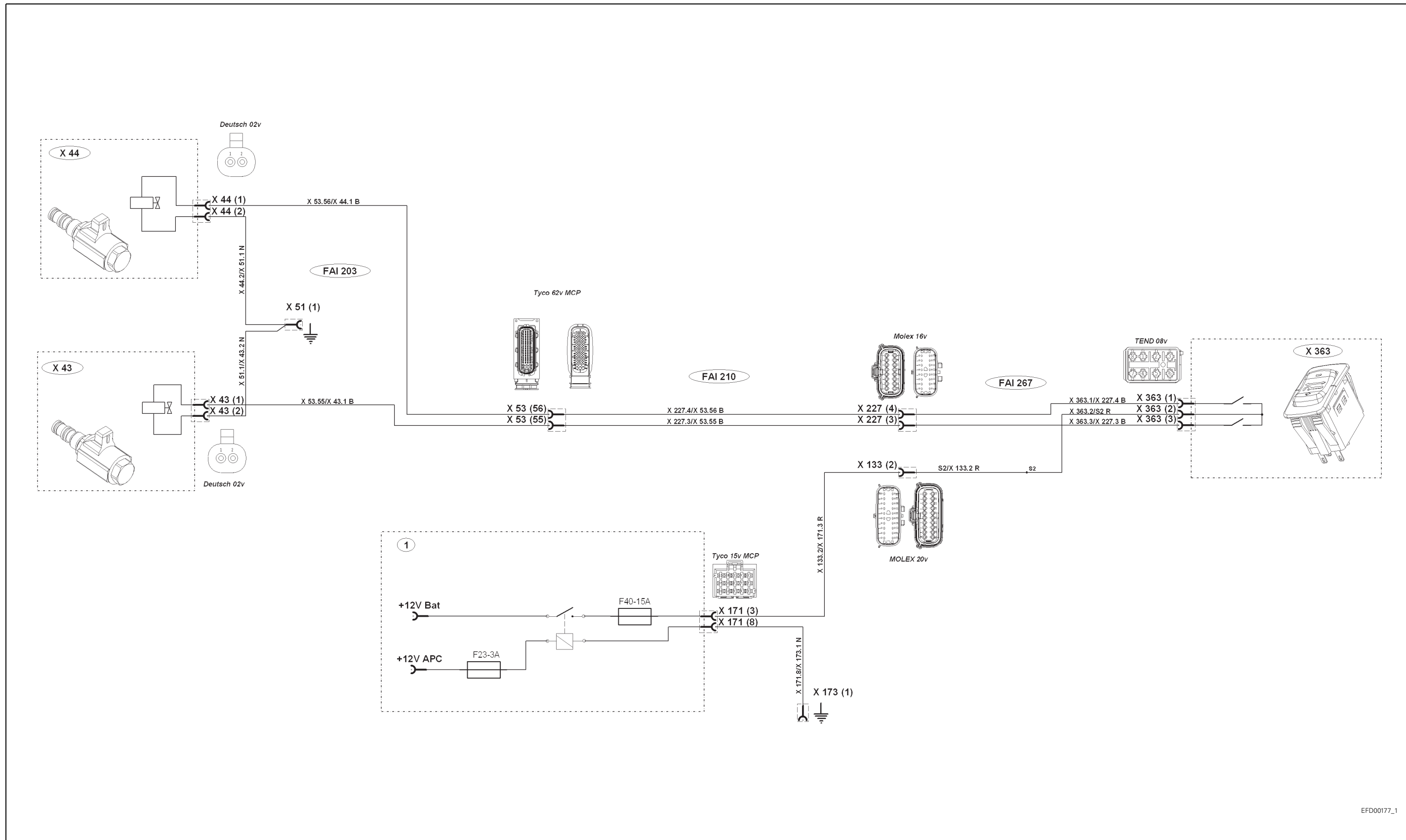
A.72 Pneumatic brake



EFD00174_3

Fig. 72

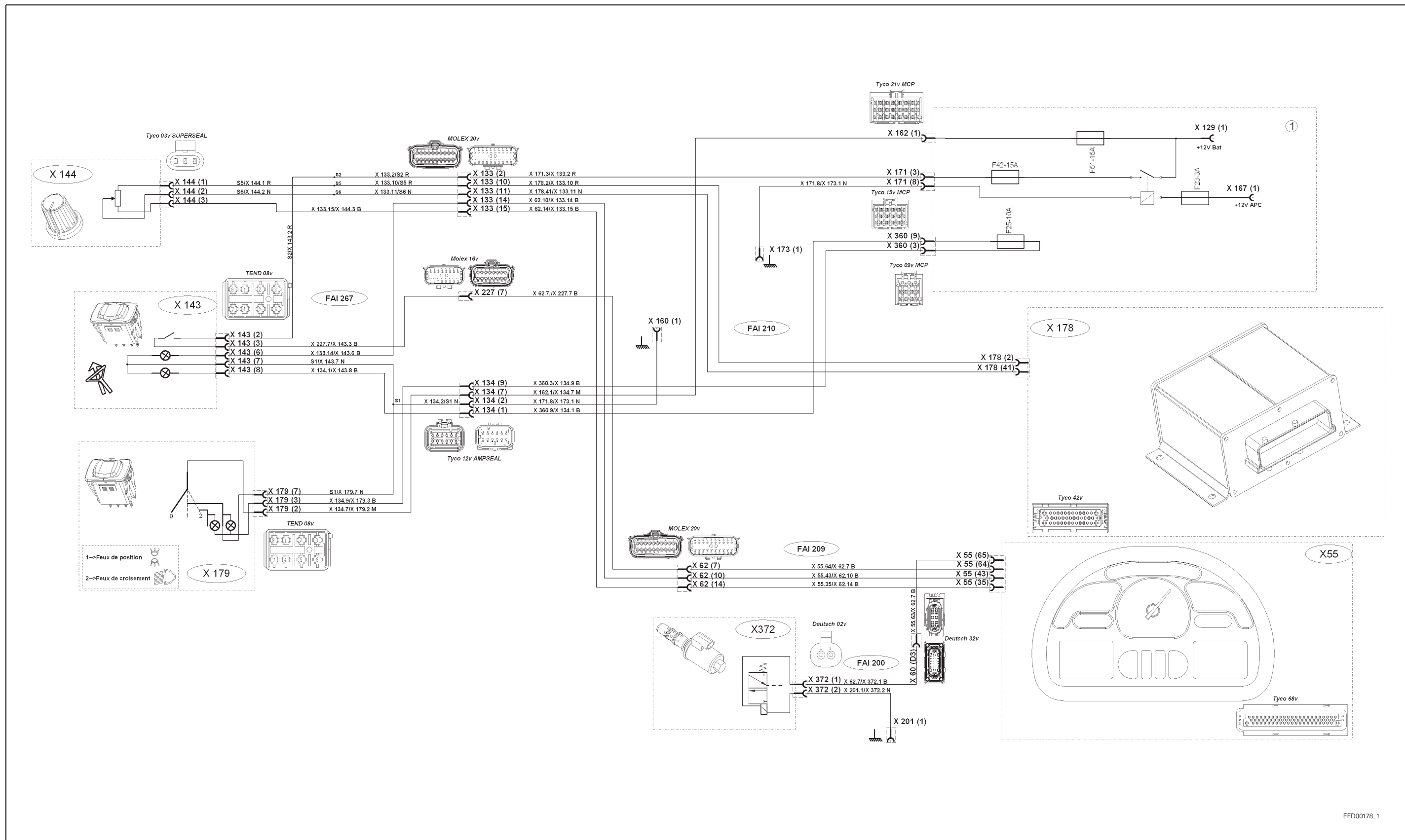
A.73Dromone hitch



EFD00177_1

Fig. 73

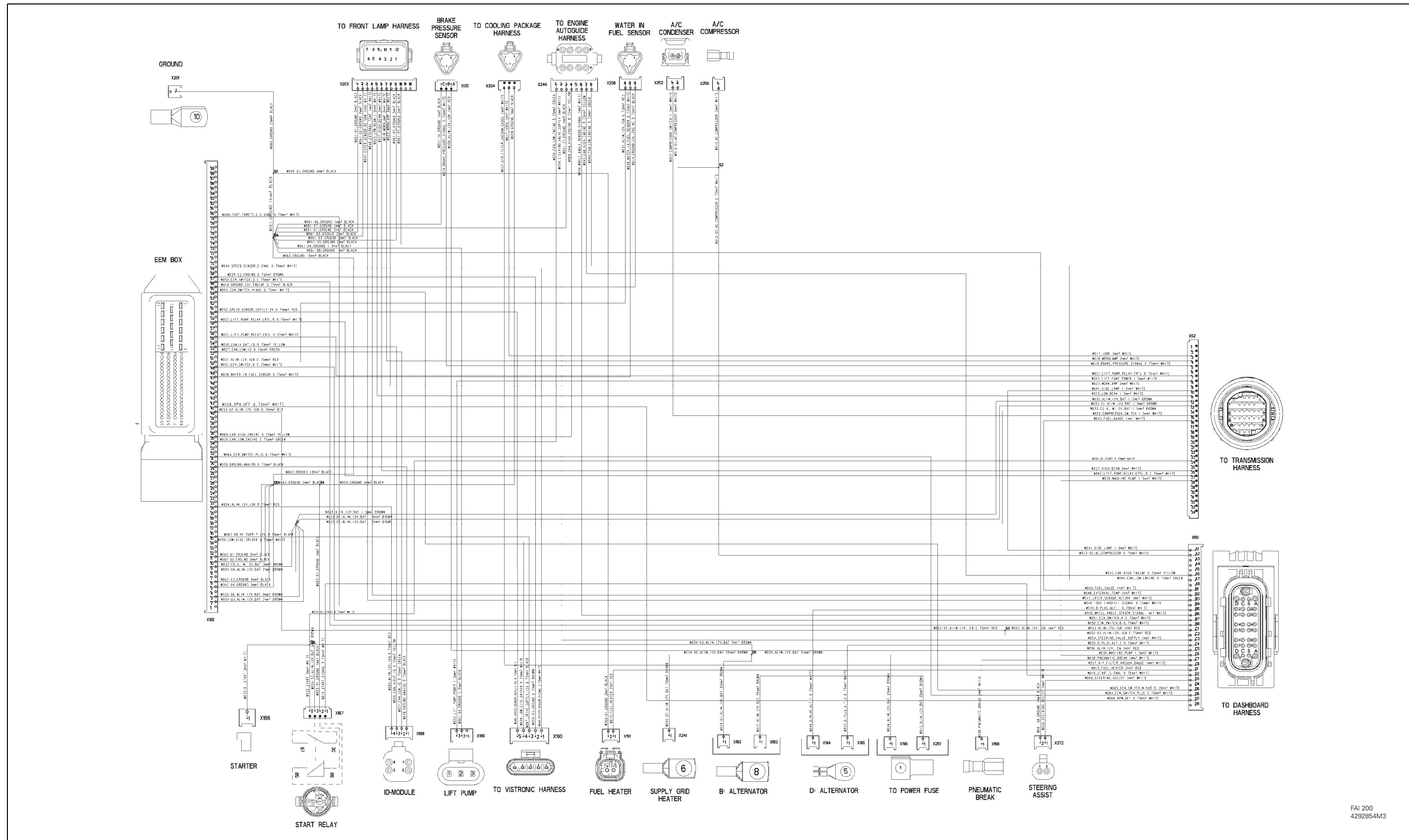
A.74 Fast steering



EFD00178_1

Fig. 74

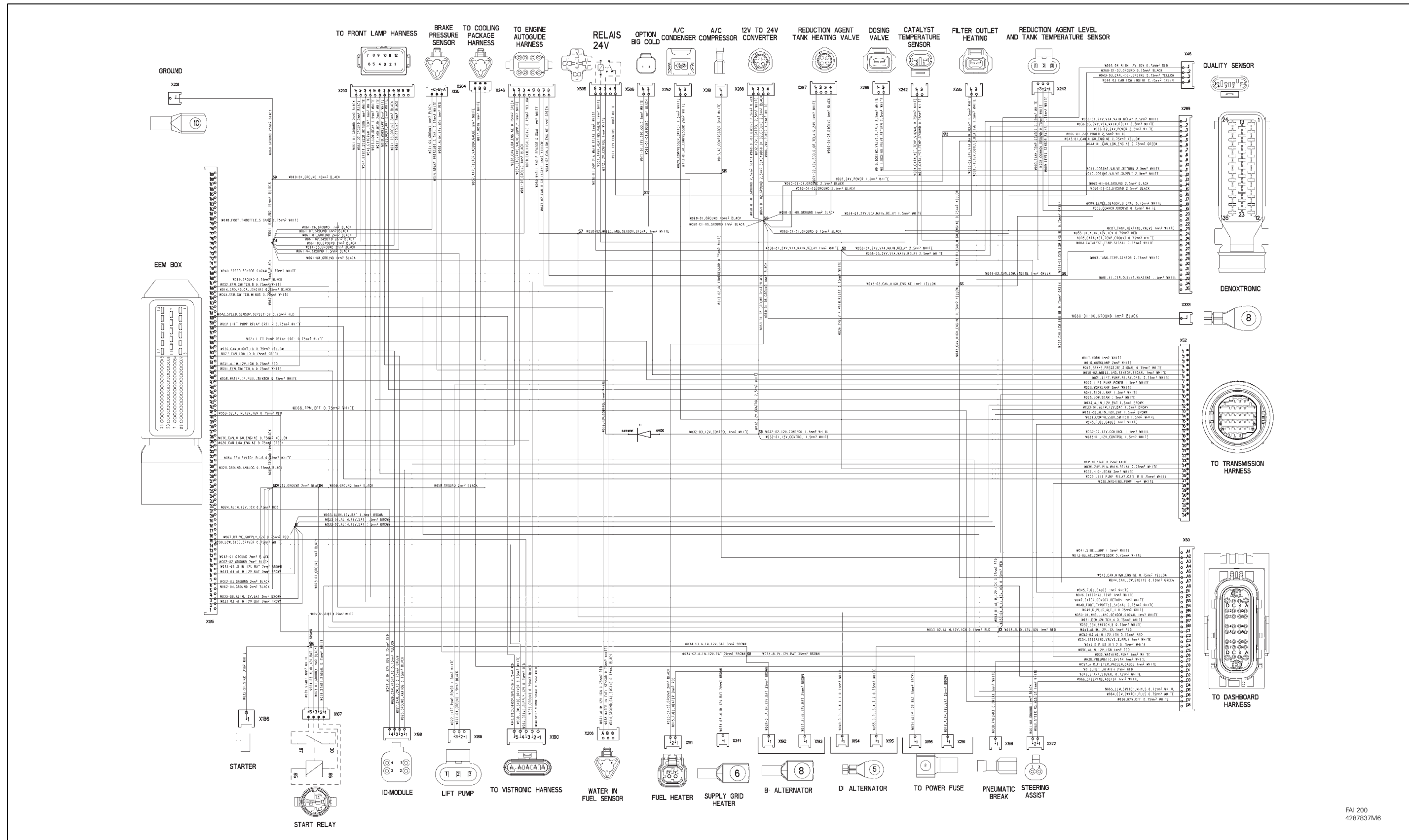
A.75FAI200 - EGR Sisu engine harness



FAI 200
4292854M3

Fig. 75

A.76FAI200 - SCR Sisu engine harness



FAI 200
4287837M6

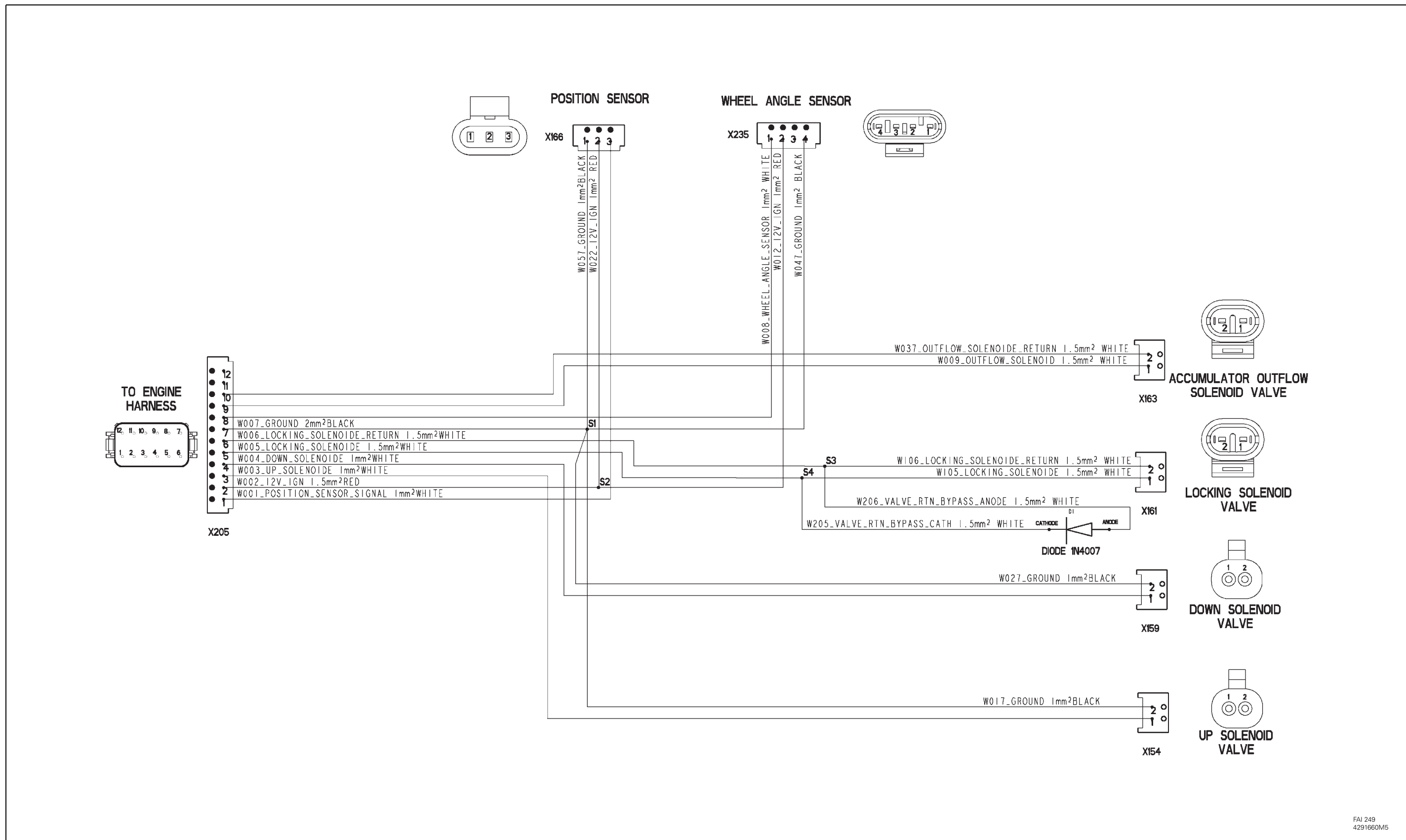
Fig. 76

A.77FAI202 - Auto-Guide fixed front axle harness



Fig. 77

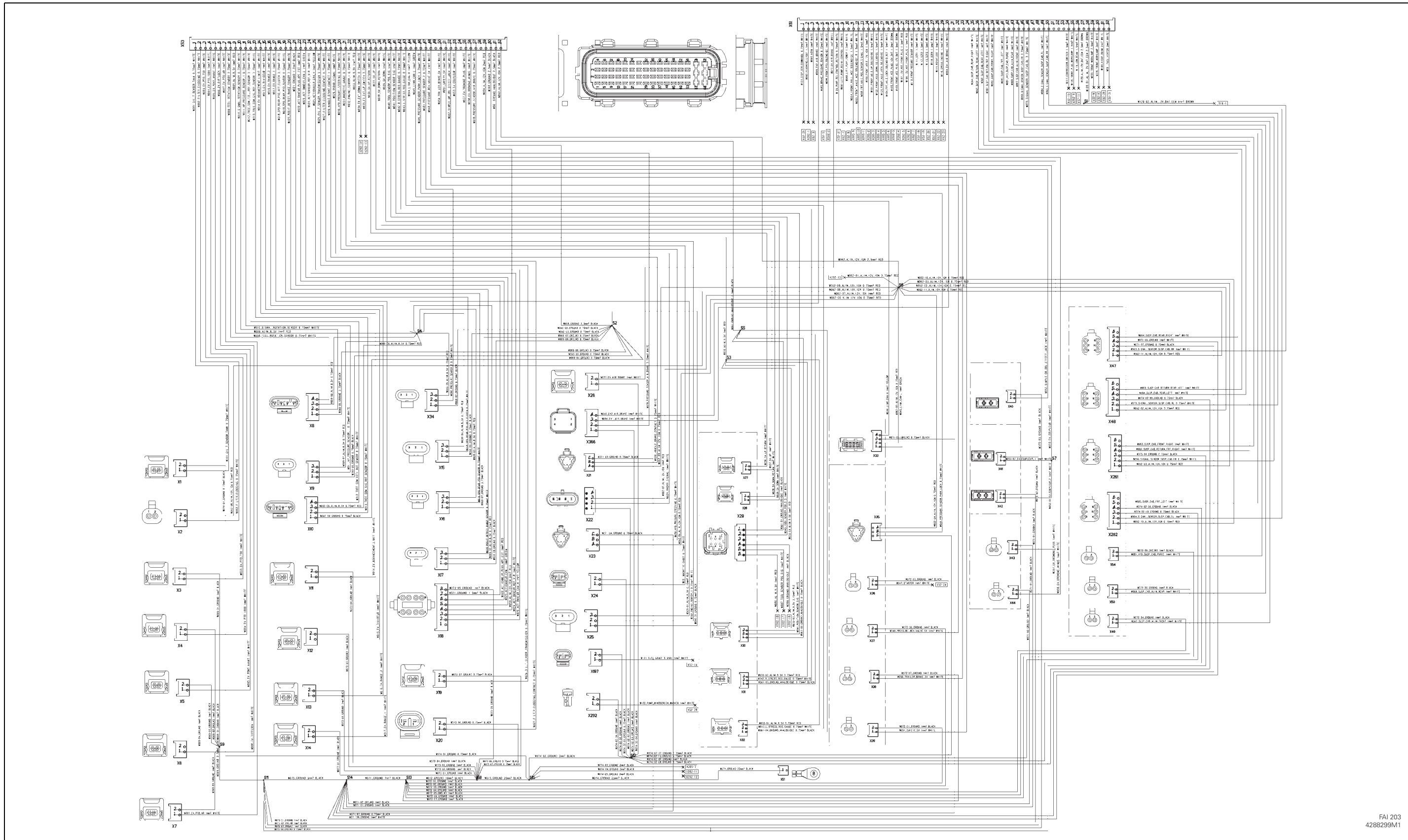
A.78FAI202 - Suspended front axle harness



FAI 249
4291660M5

Fig. 78

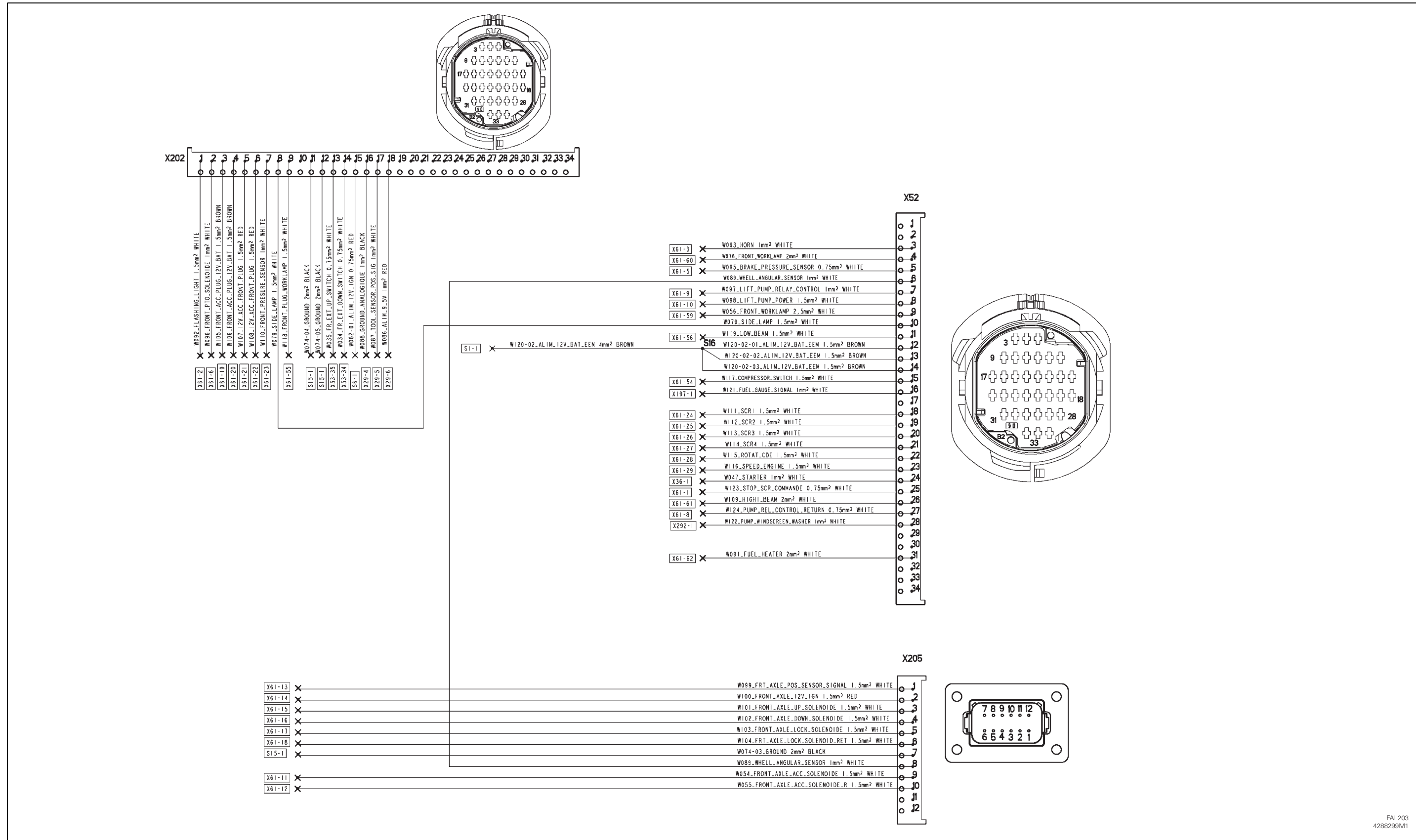
A.79FAI203 - Transmission harness



FAI 203
4288299M1

Fig. 79

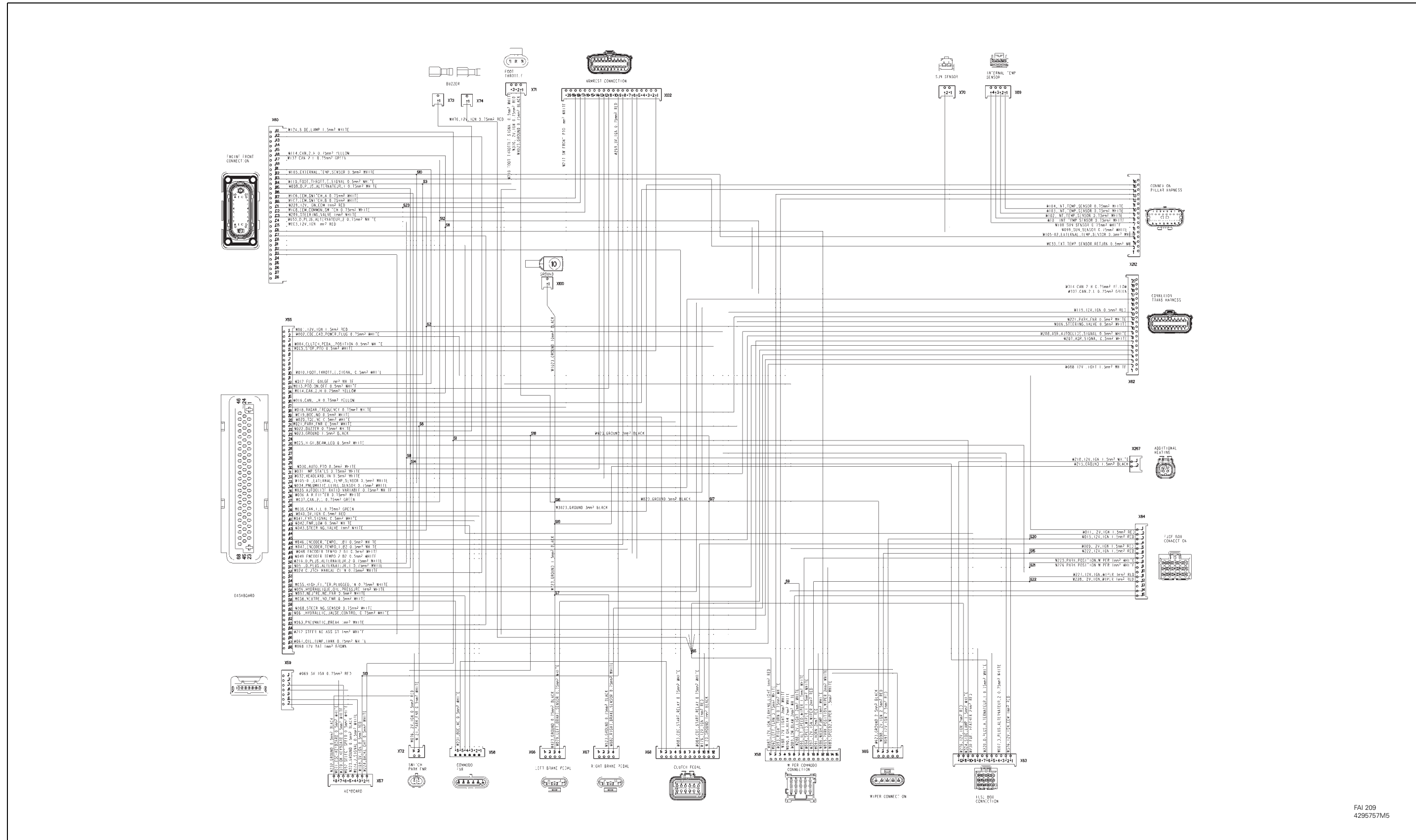
A.80FAI203 - Transmission harness



FAI 203
428829M1

Fig. 80

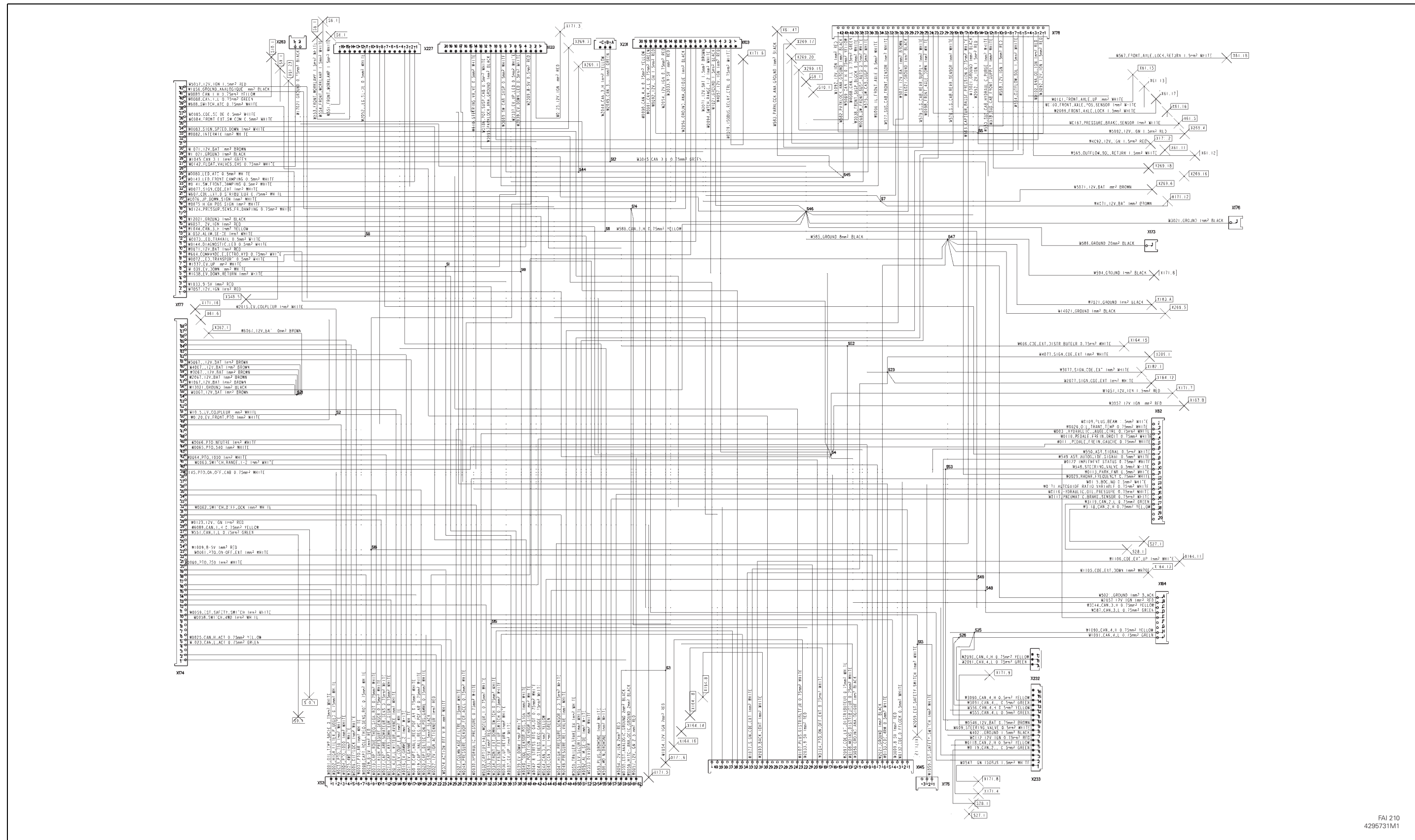
A.81FAI209 - Instrument panel harness



FAI 209
4295757M5

Fig. 81

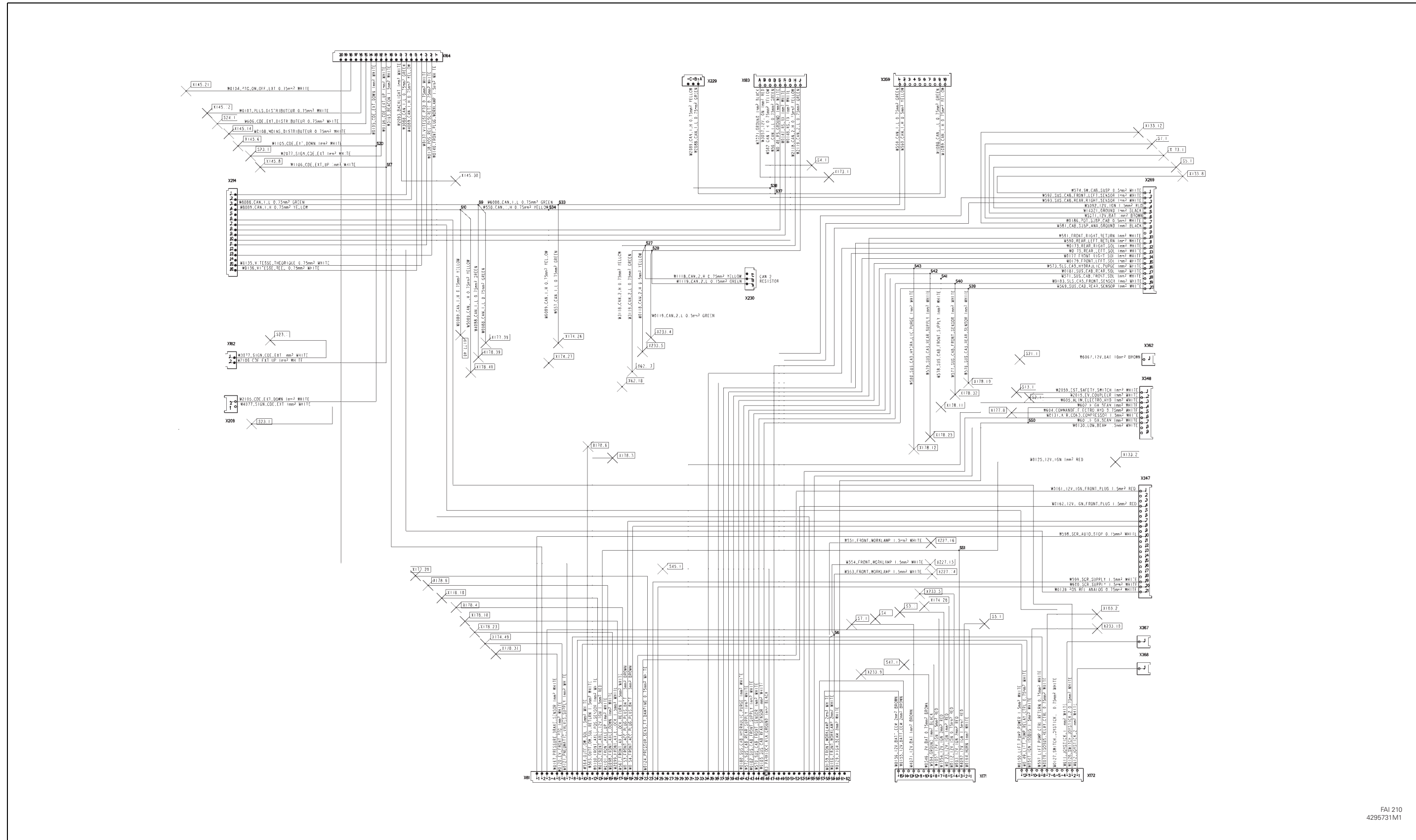
A.82FAI210 - Cab transmission harness



FAI 210
4295731M1

Fig. 82

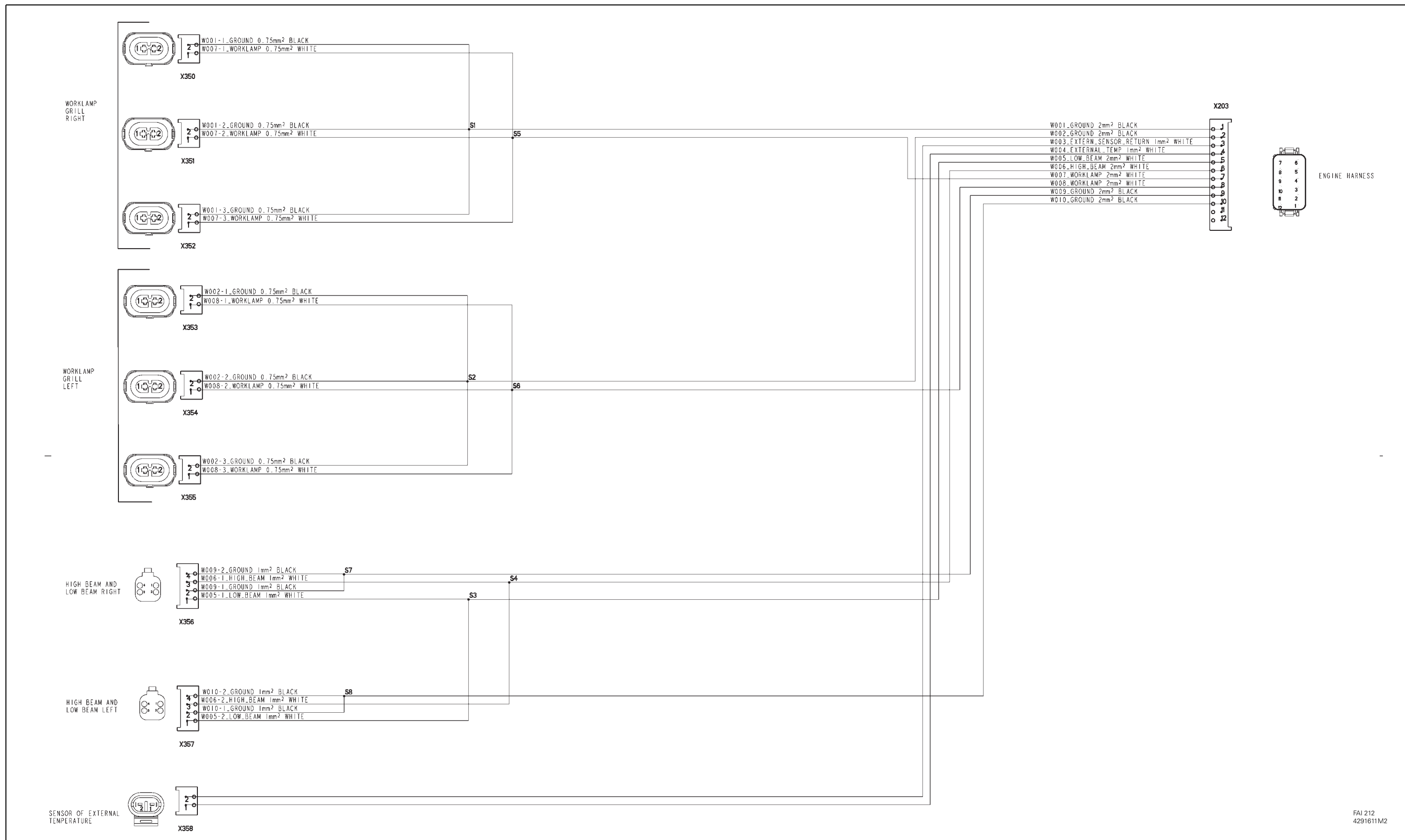
A.83FAI210 - Cab transmission harness



FAI 210
4295731M1

Fig. 83

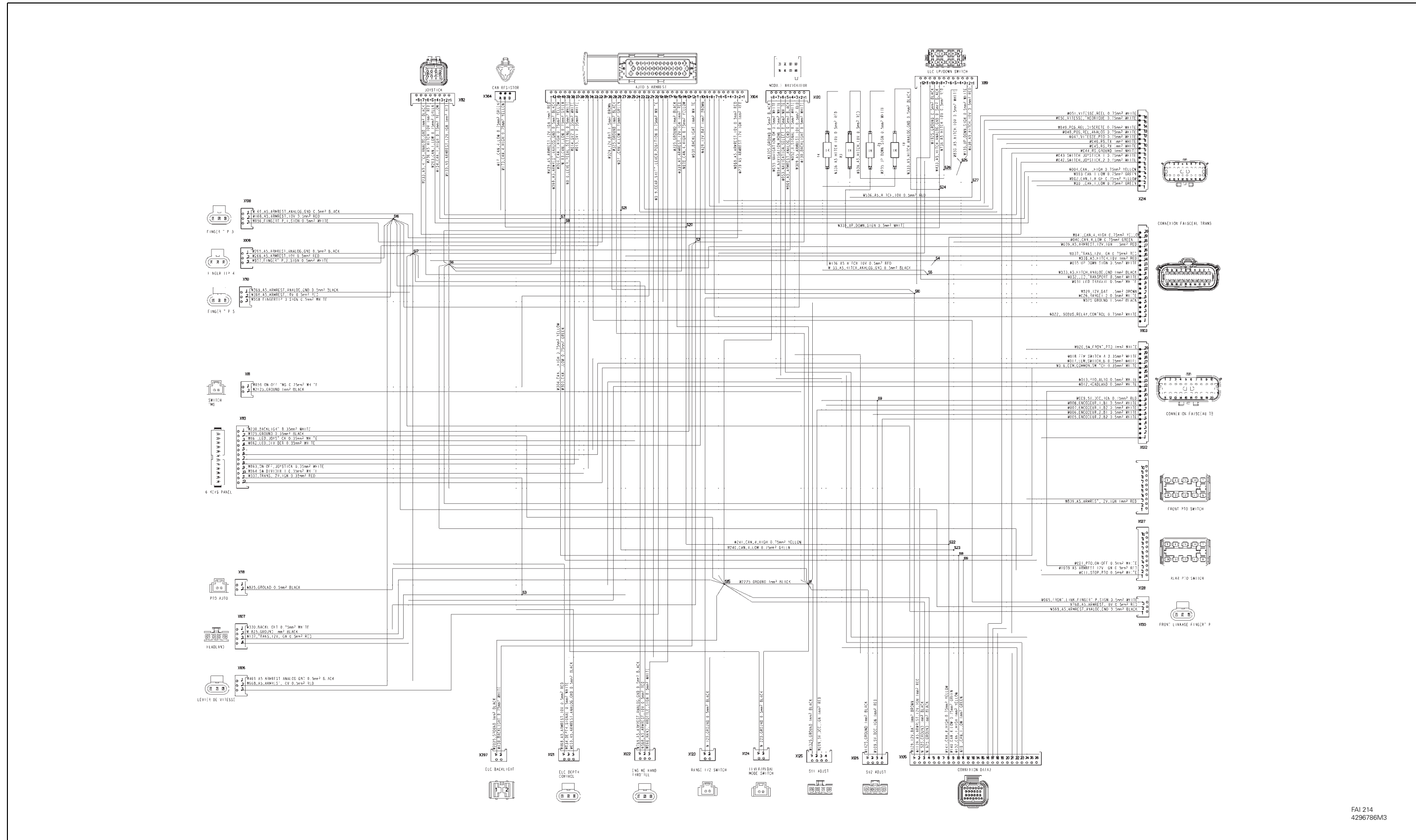
A.84FAI212 - Lighting harness



FAI 212
4291611M2

Fig. 84

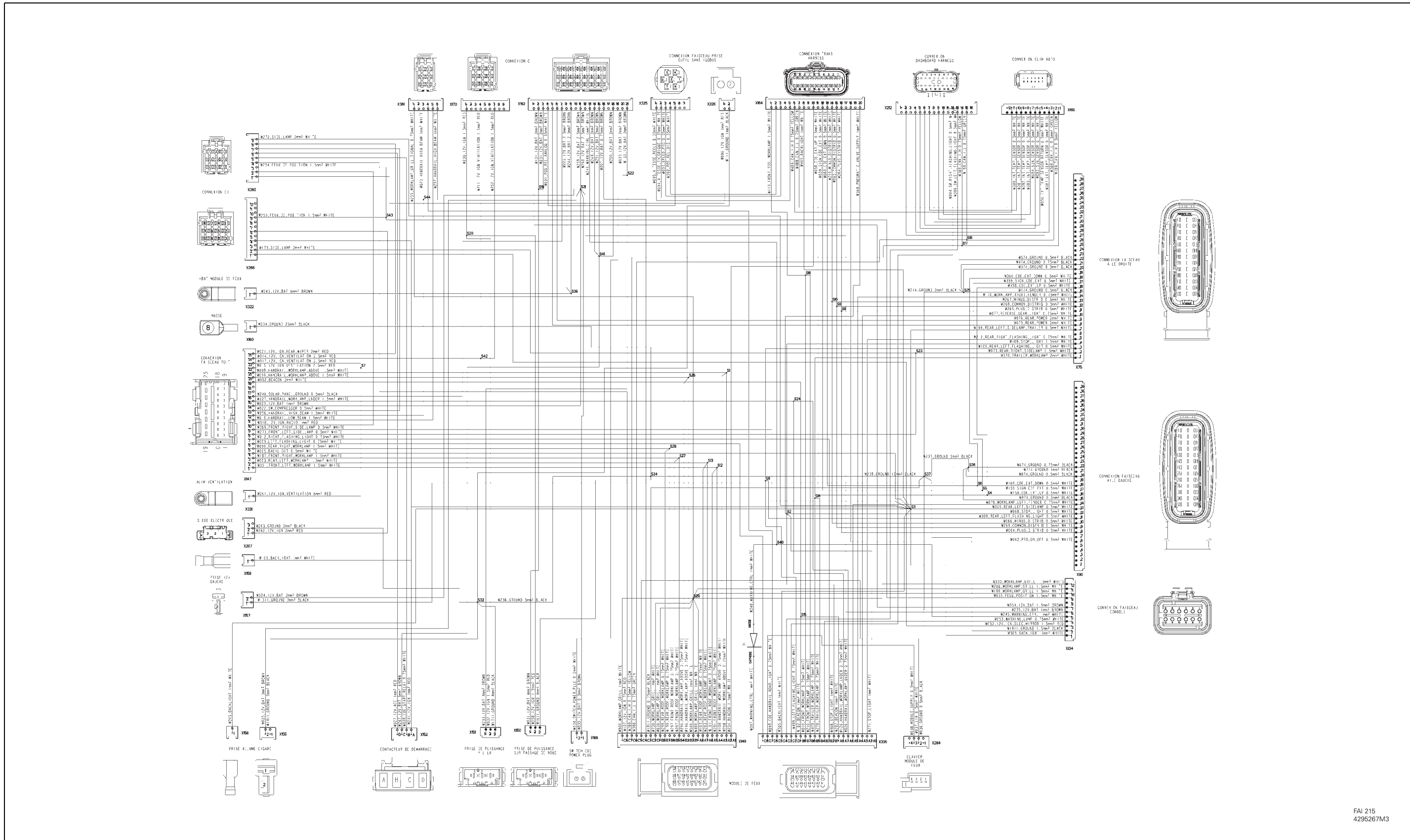
A.85FAI214 - Armrest harness



FAI 214
4296786M3

Fig. 85

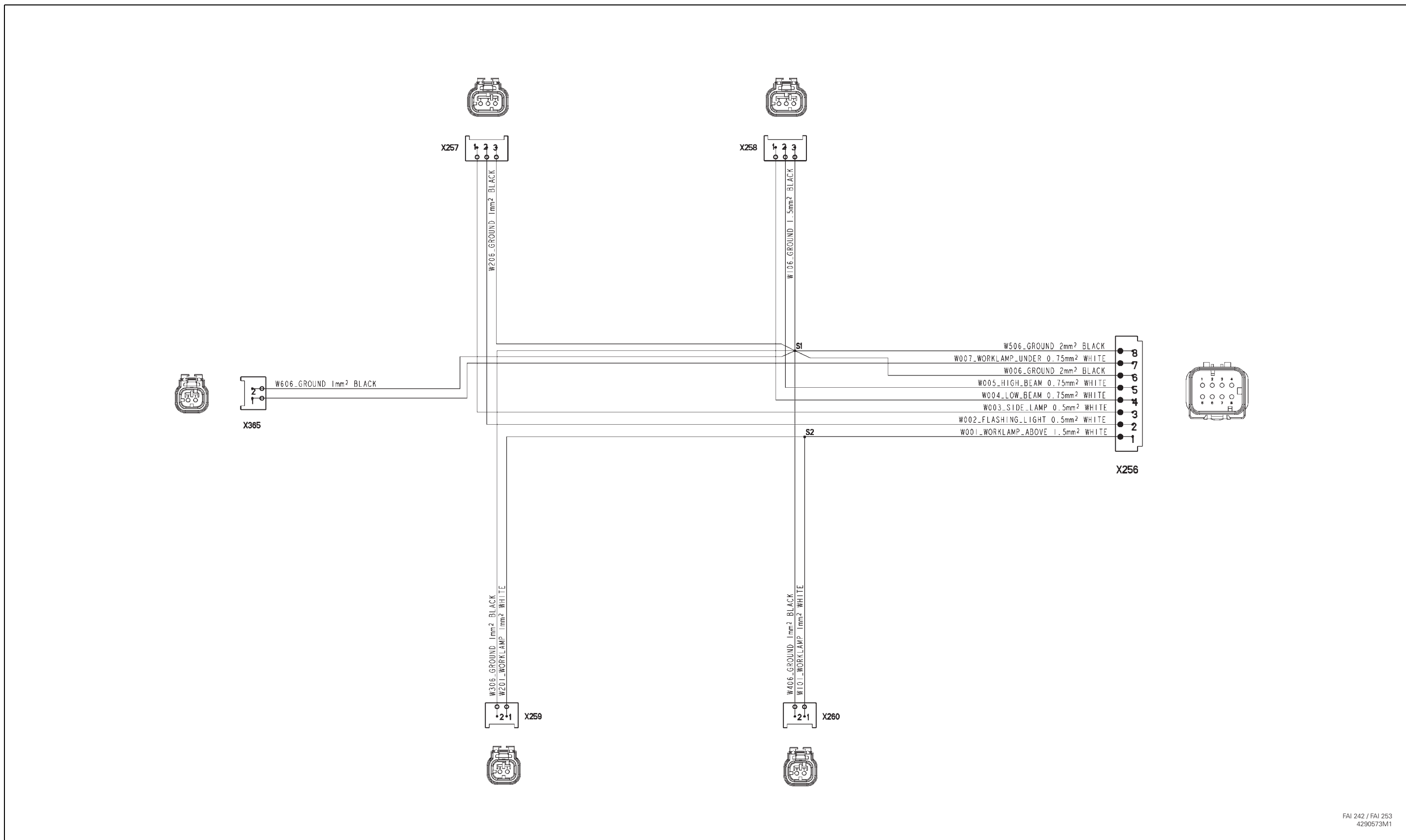
A.86FAI215 - Pillar harness



FAI 215
4295267M3

Fig. 86

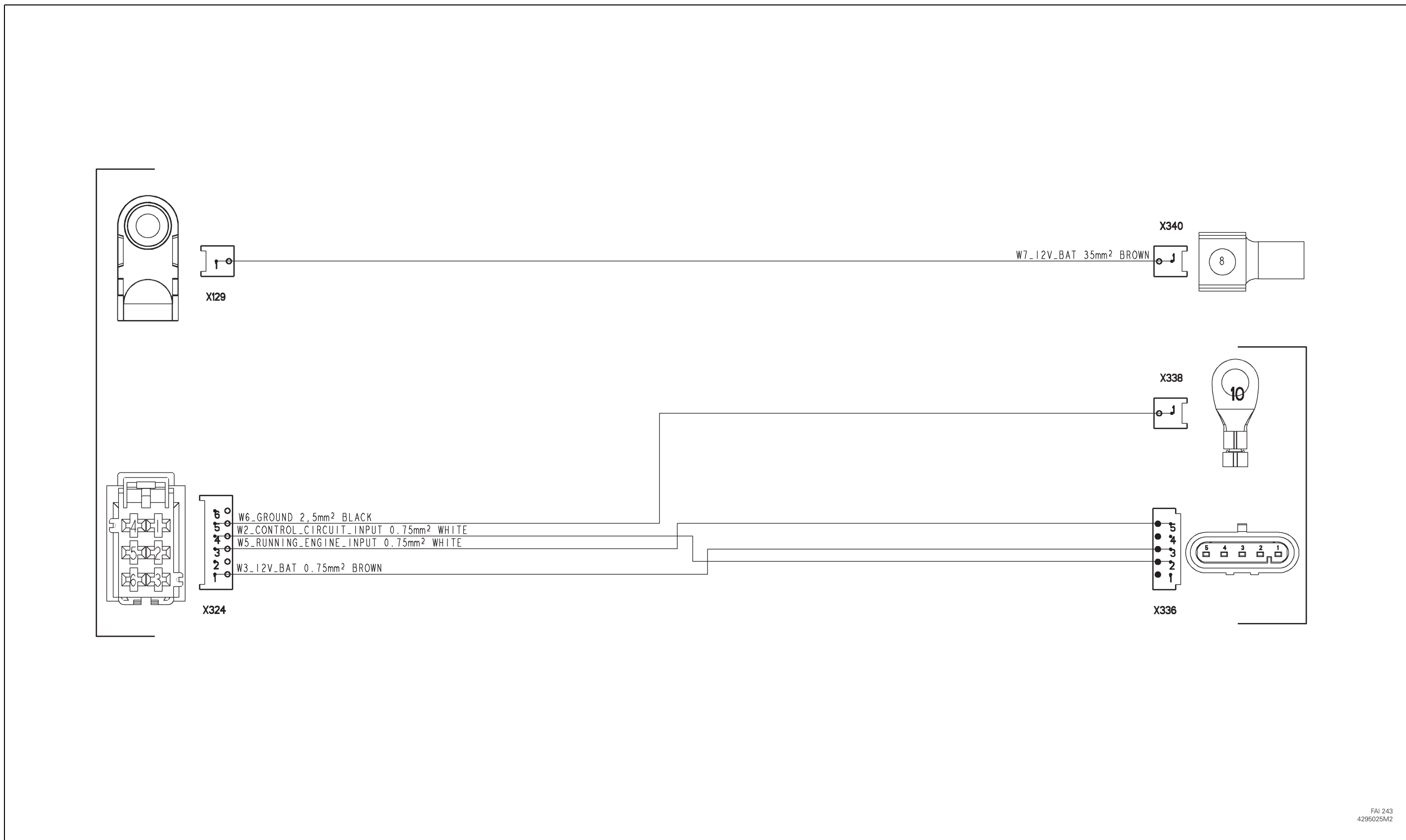
A.87FAI242 / FAI253 - Hand rail main beam and work light harness



FAI 242 / FAI 253
4290573M1

Fig. 87

A.88FAI243 - Circuit breaker harness



FAI 243
4295025M2

Fig. 88

A.89FAI260 - Cooling unit harness

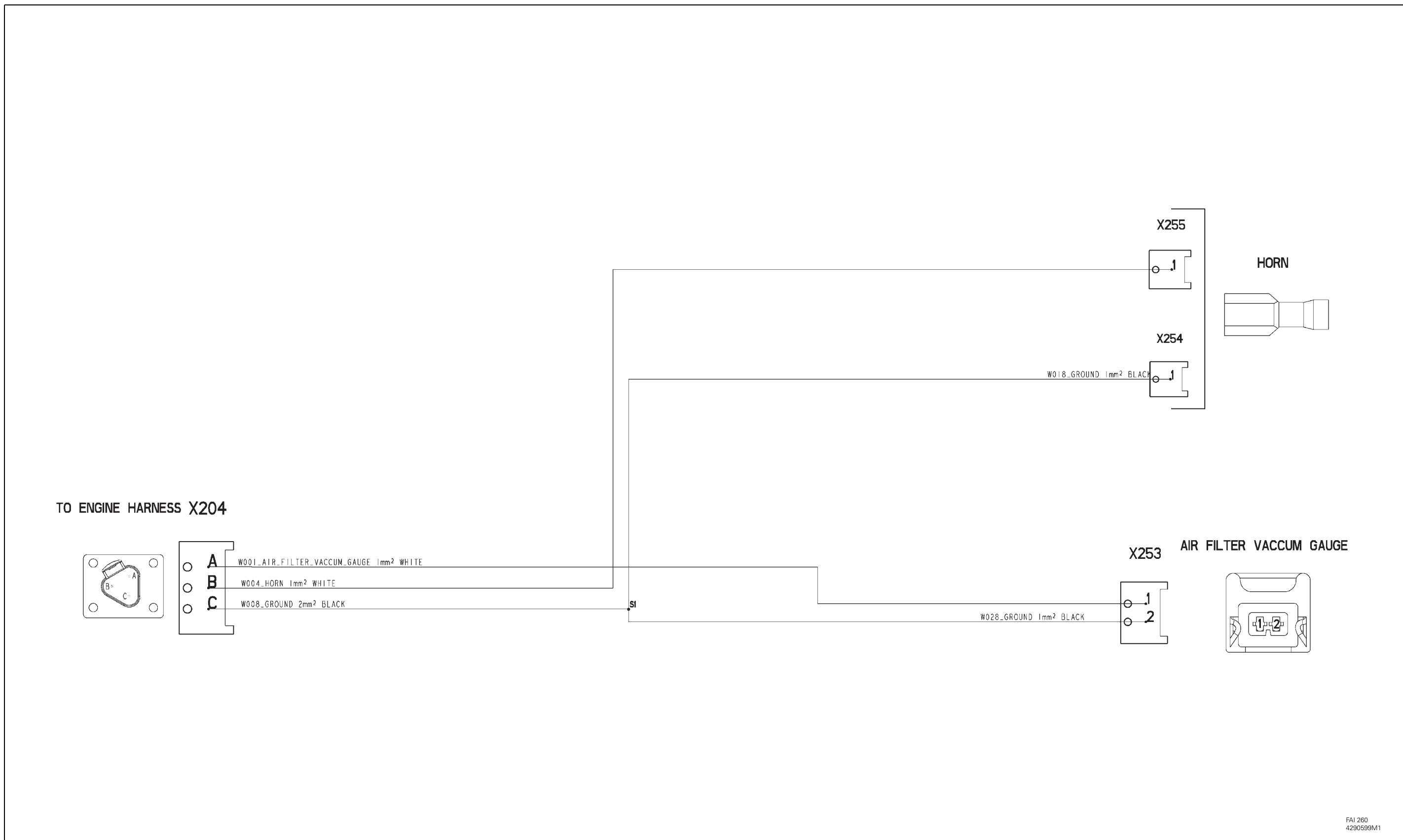
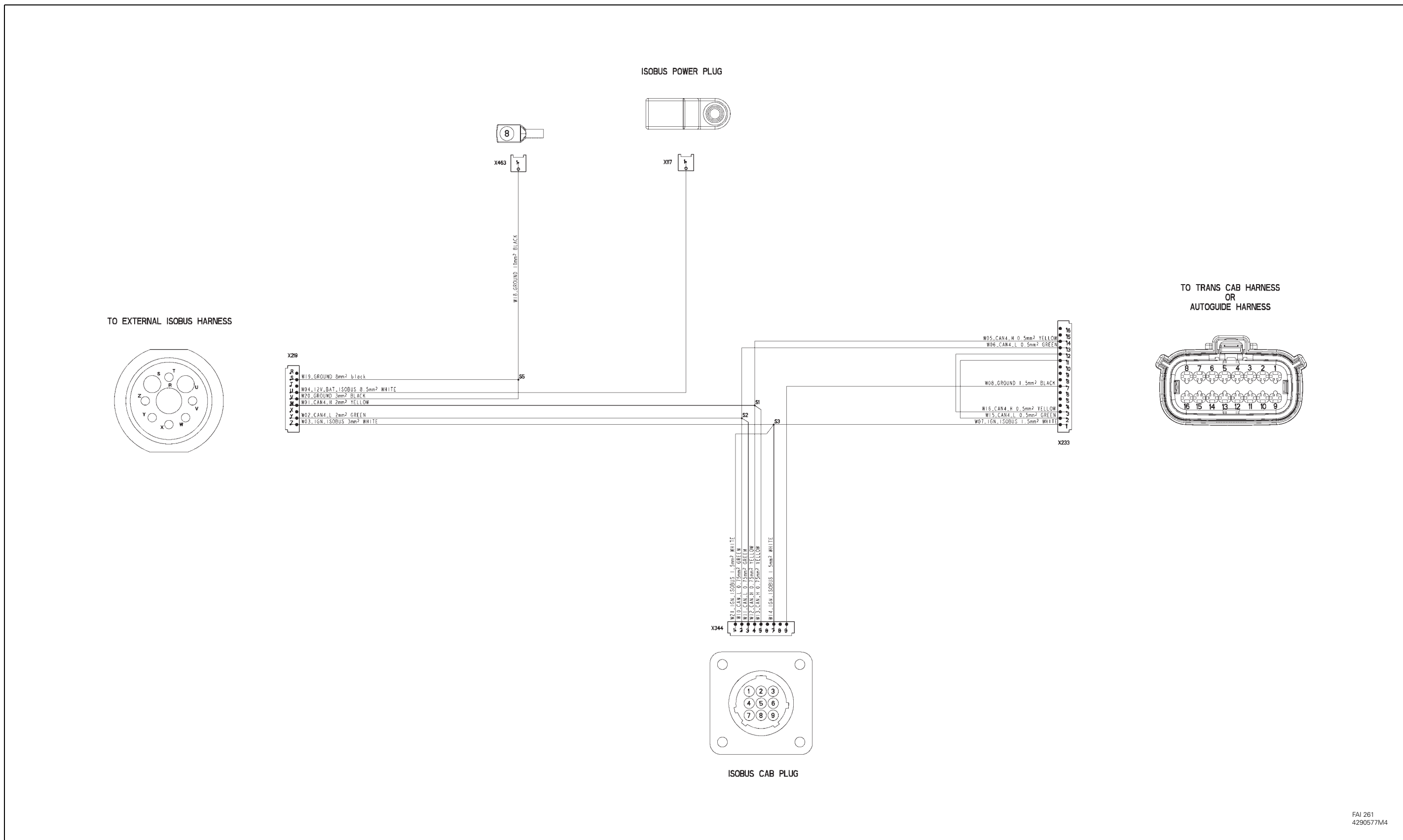


Fig. 89

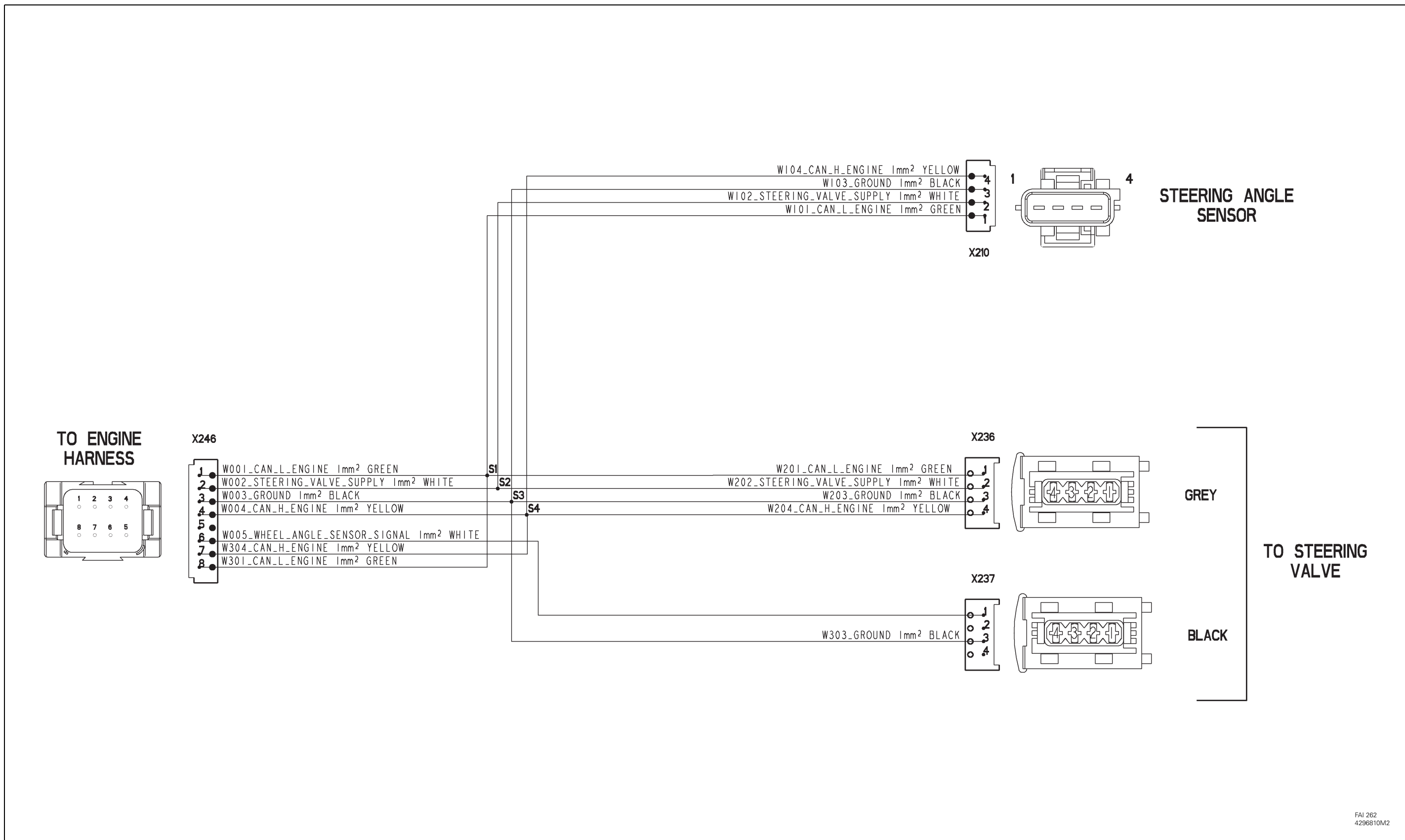
A.90FAI261 - Cab Isobus harness



FAI 261
4290577M4

Fig. 90

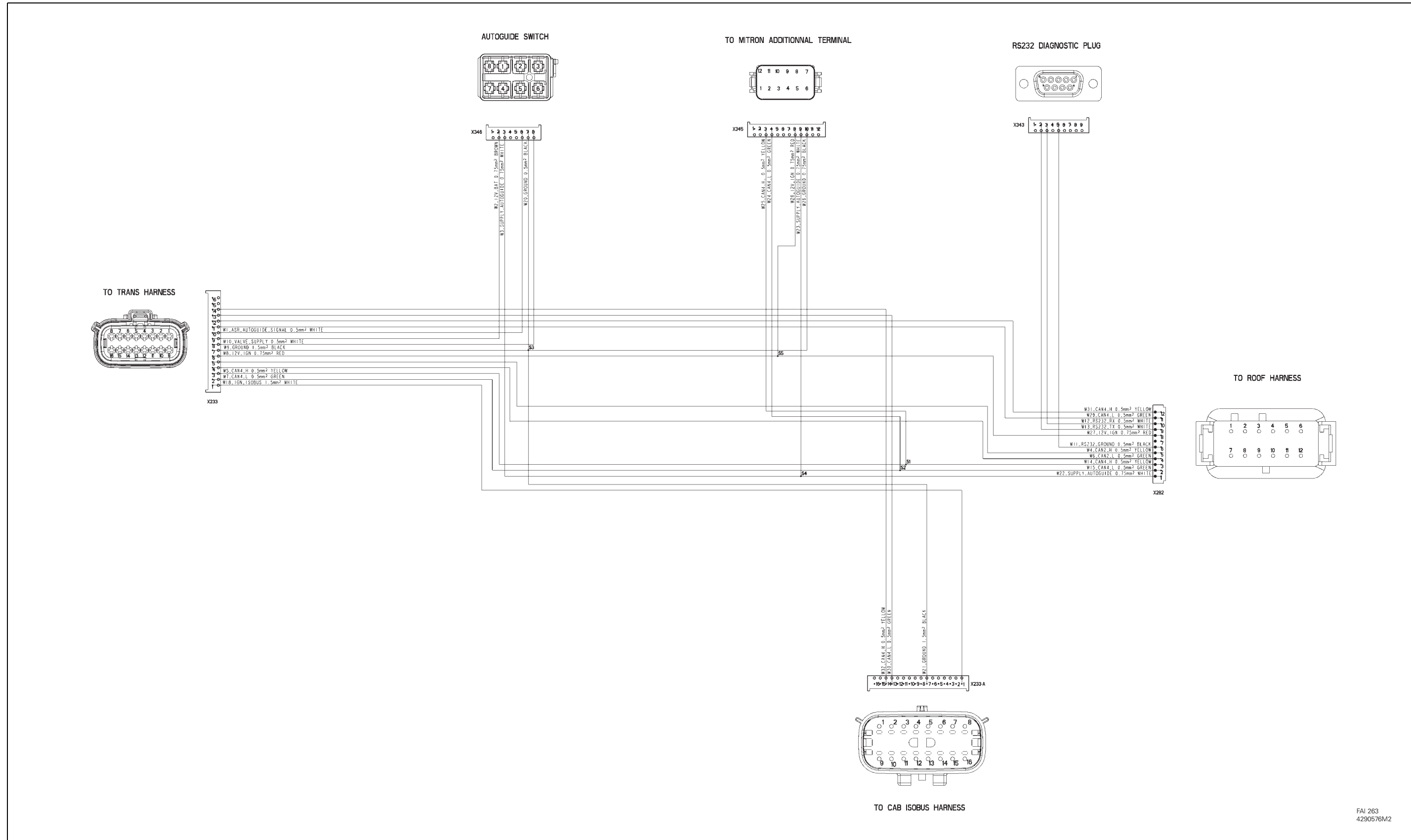
A.91FAI262 - Auto-Guide/engine adapter harness



FAI 262
4296810M2

Fig. 91

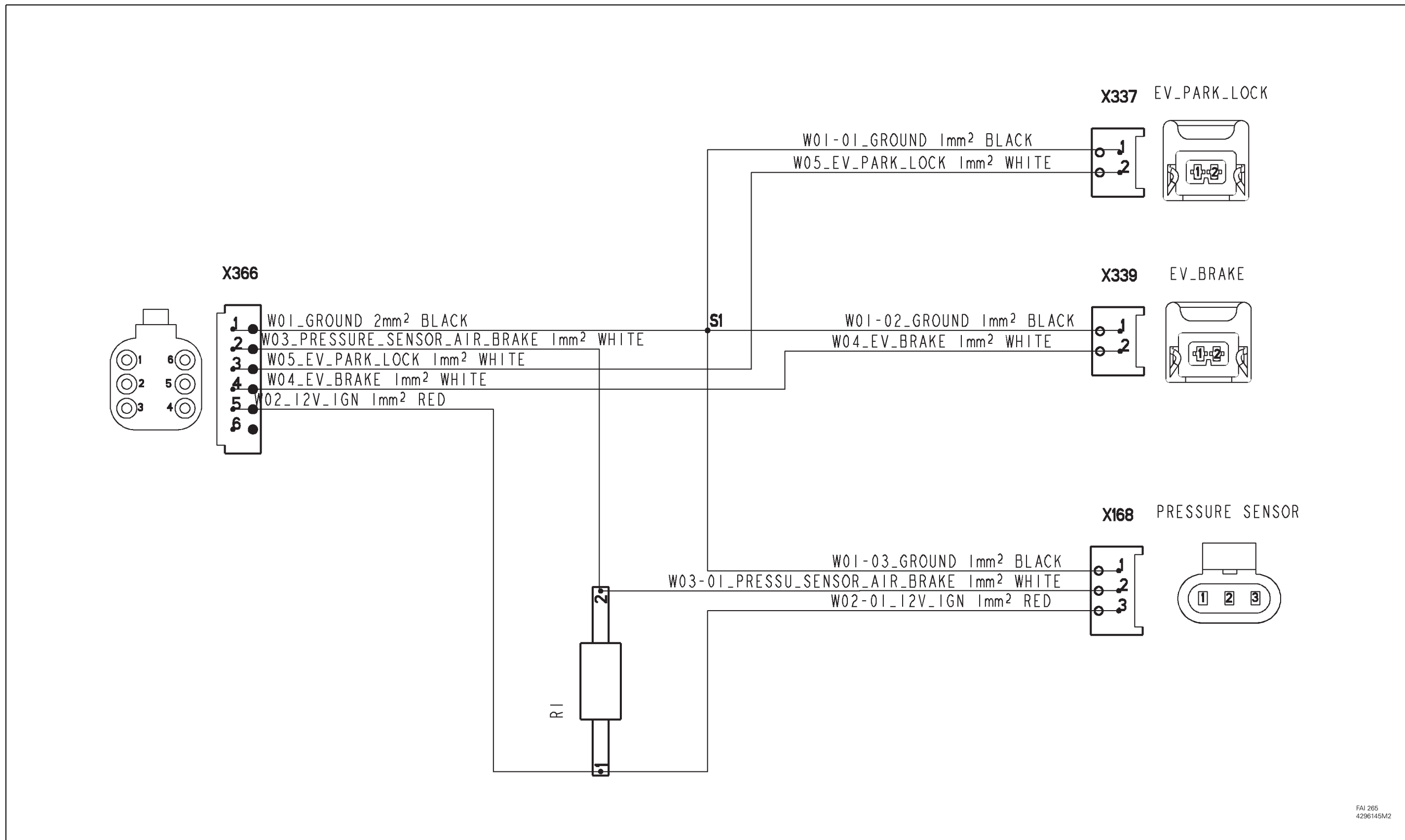
A.92FAI263 - Auto-Guide/cab adapter harness



FAI 263
4290576M2

Fig. 92

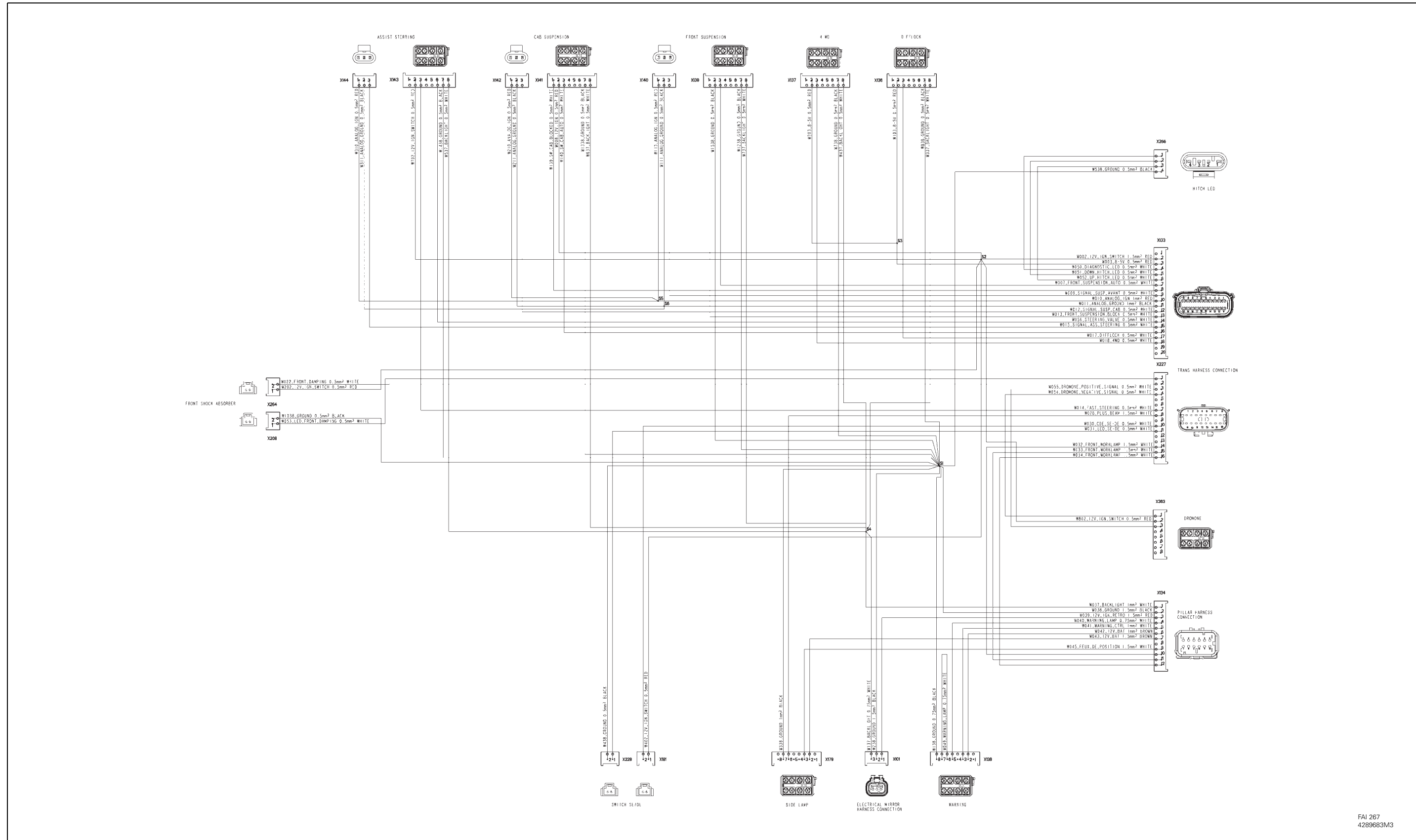
A.93FAI265 - Pneumatic brake harness



FAI 265
4296145M2

Fig. 93

A.94FAI267 - Console harness



FAI 267
4289683M3

Fig. 94

A.95FAI268 - Front function harness

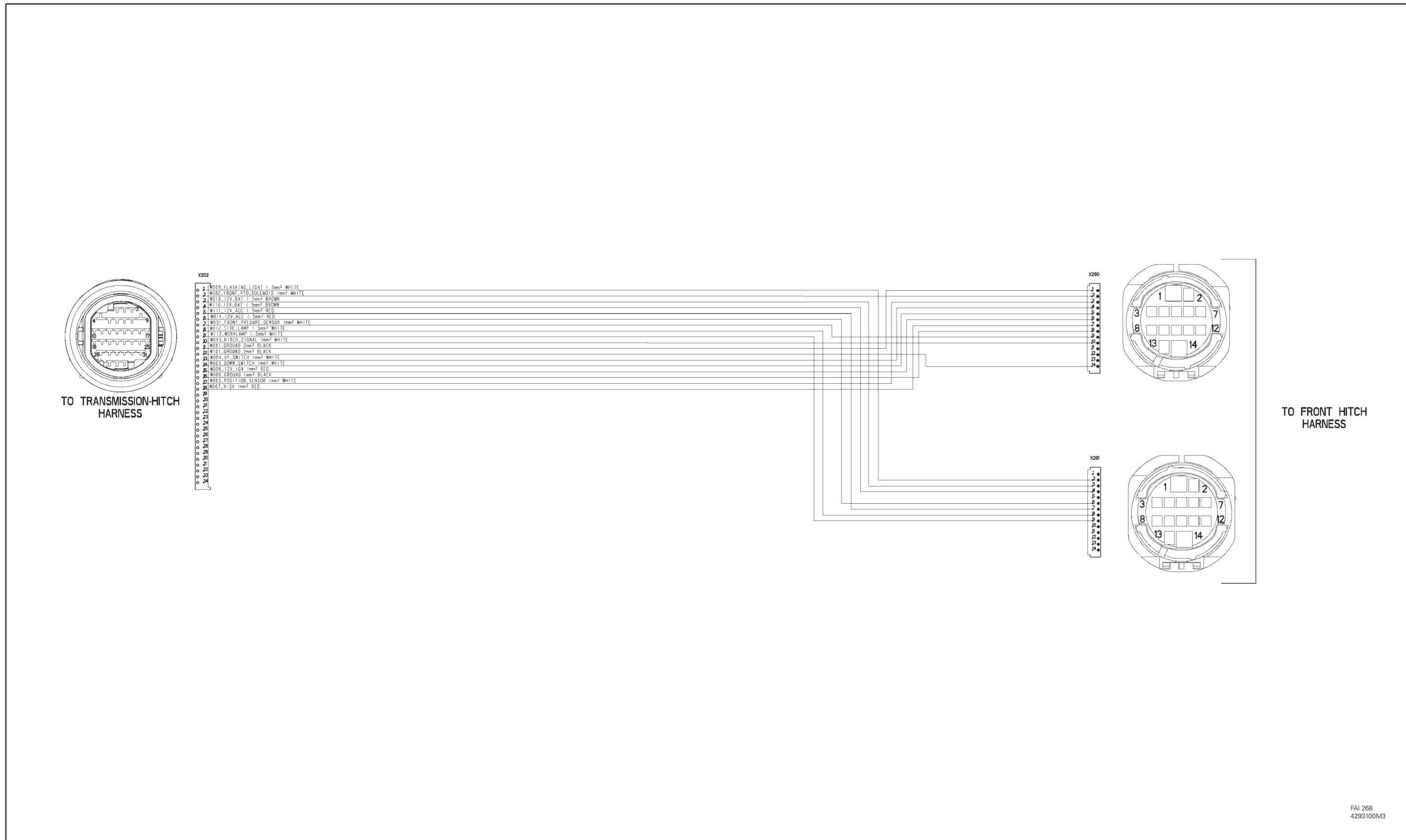
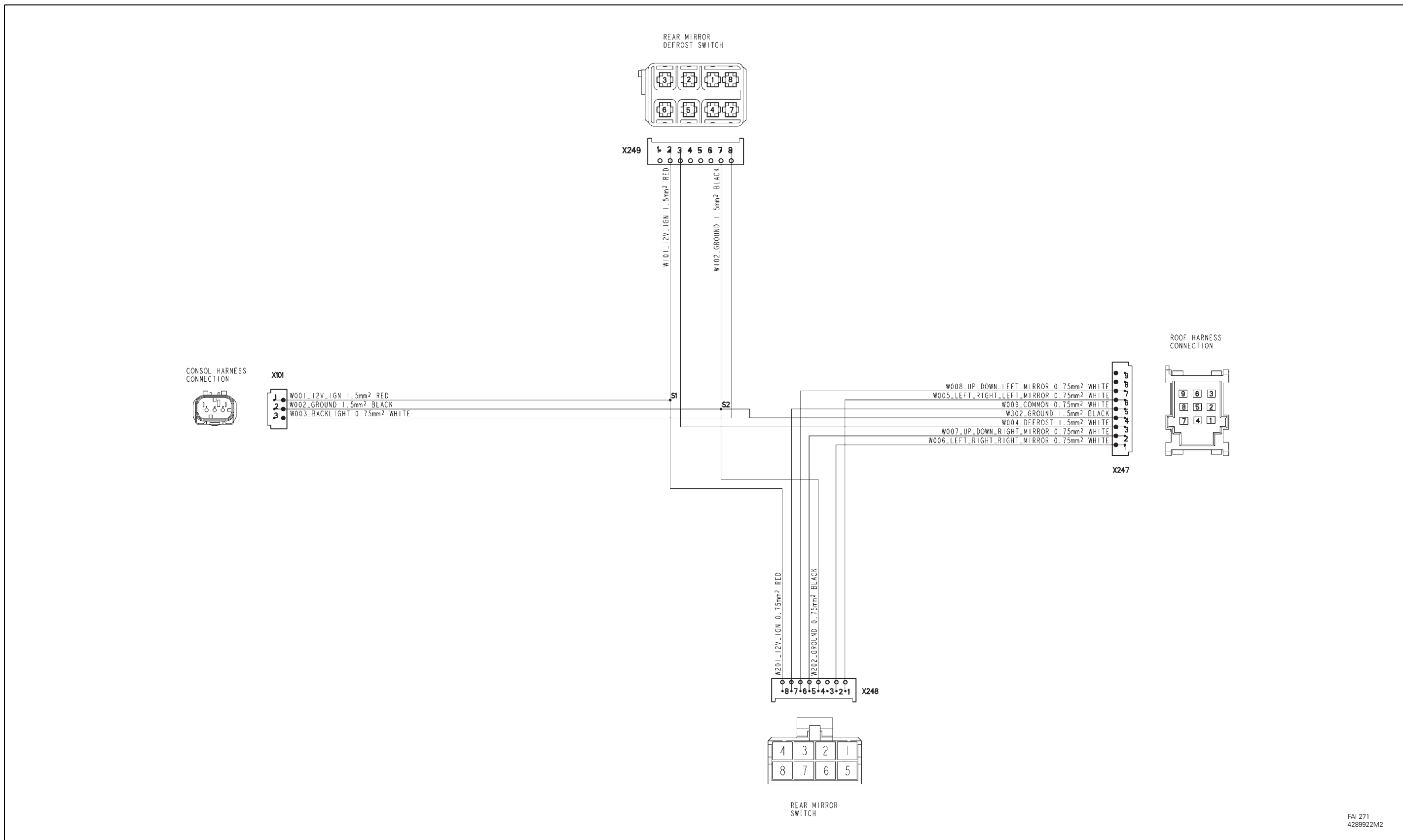


Fig. 95

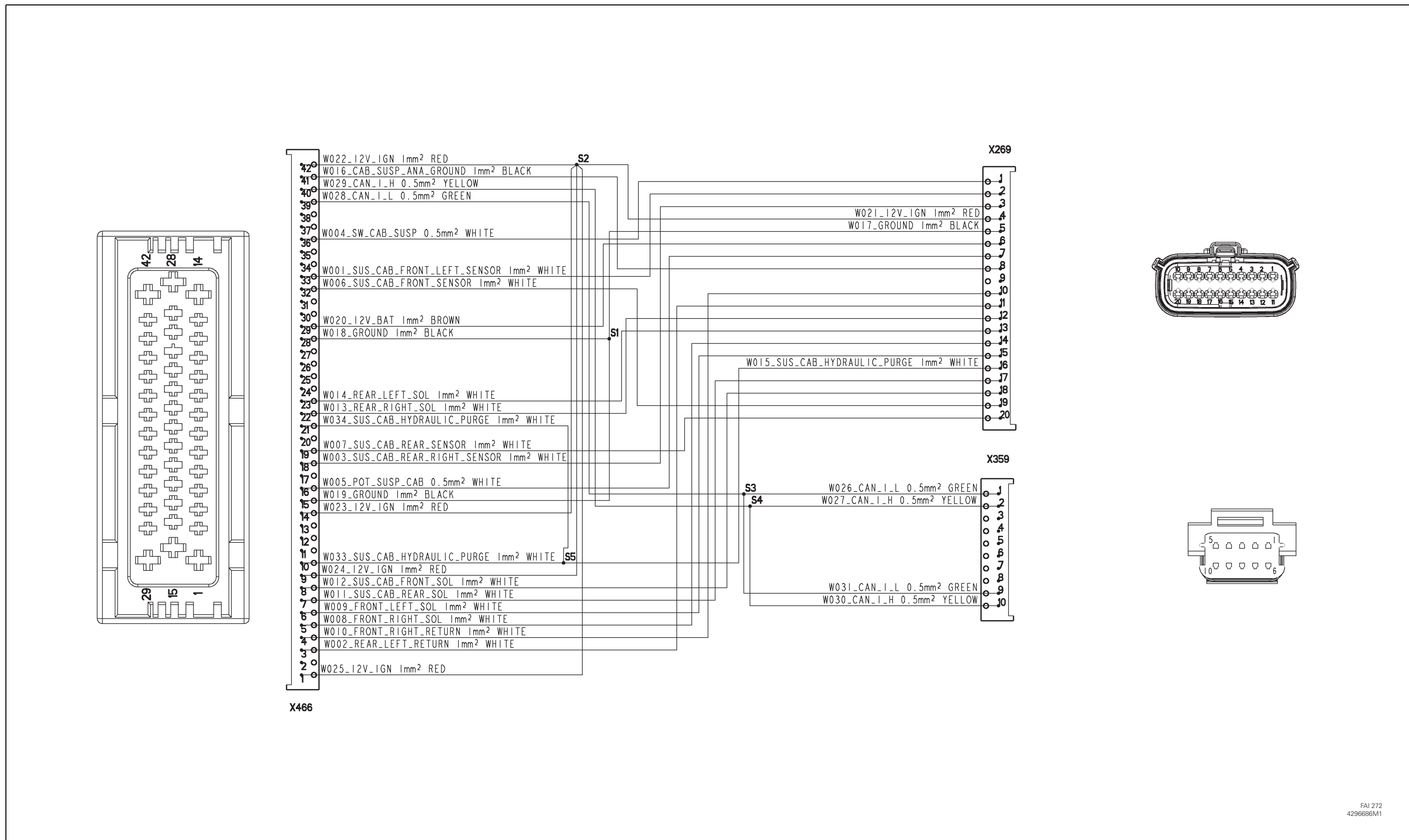
A.96FAI271 - Cab electric rear-view mirror harness



FAI 271
428992M2

Fig. 96

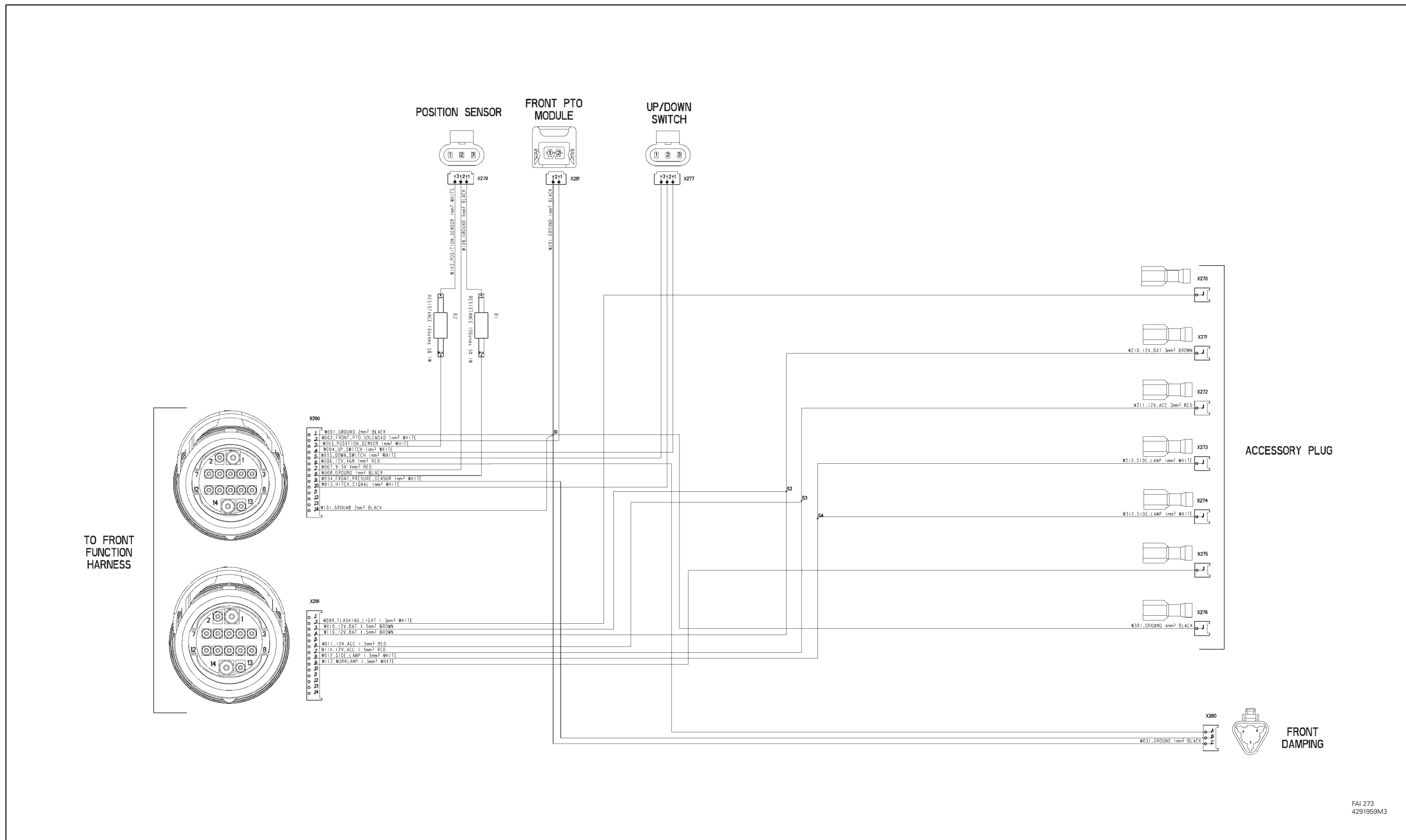
A.97FAI272 - Active suspended cab harness



FAI 272
4296686M1

Fig. 97

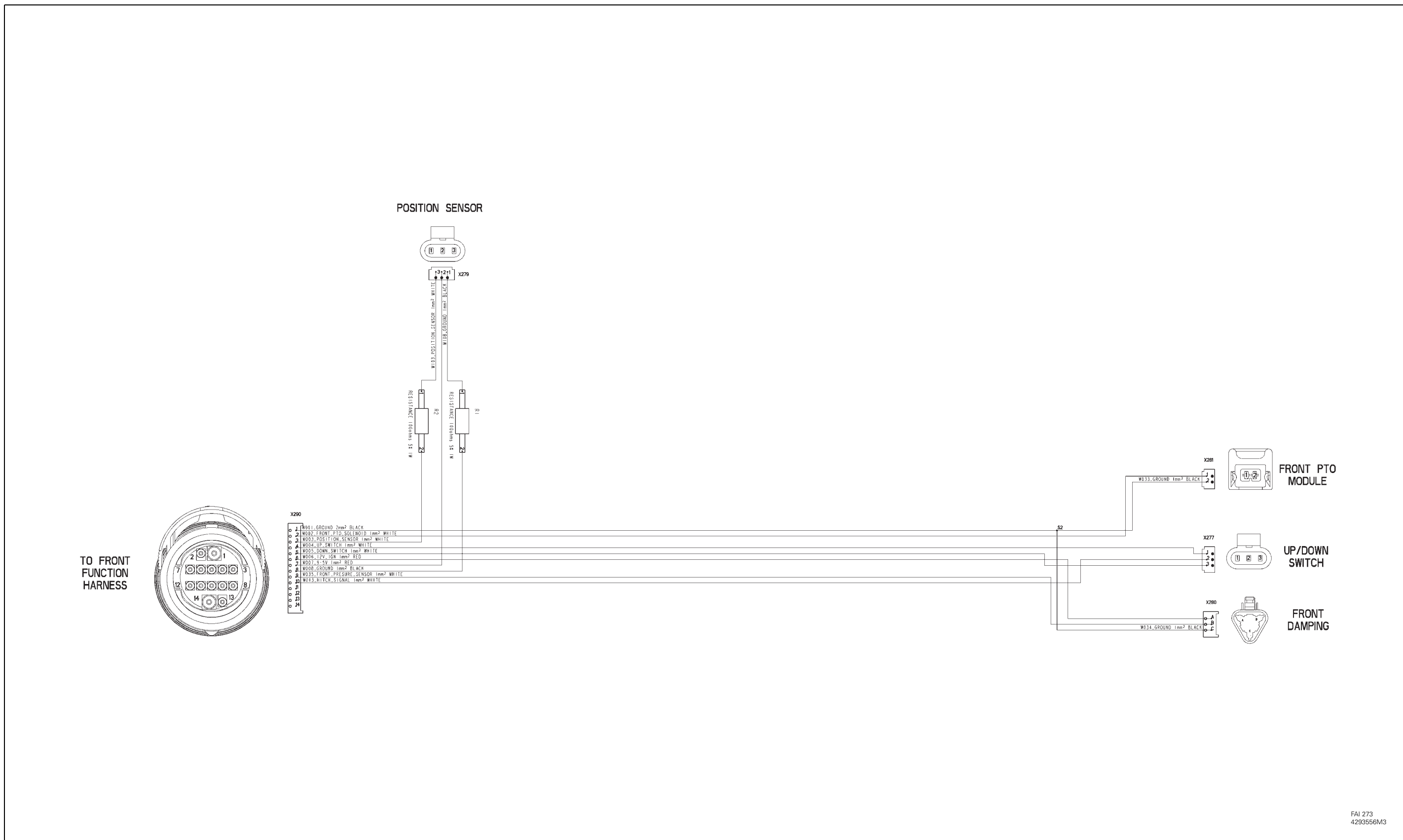
A.98FAI273 - Front linkage harness with accessory connection socket



FAI 273
4291959M3

Fig. 98

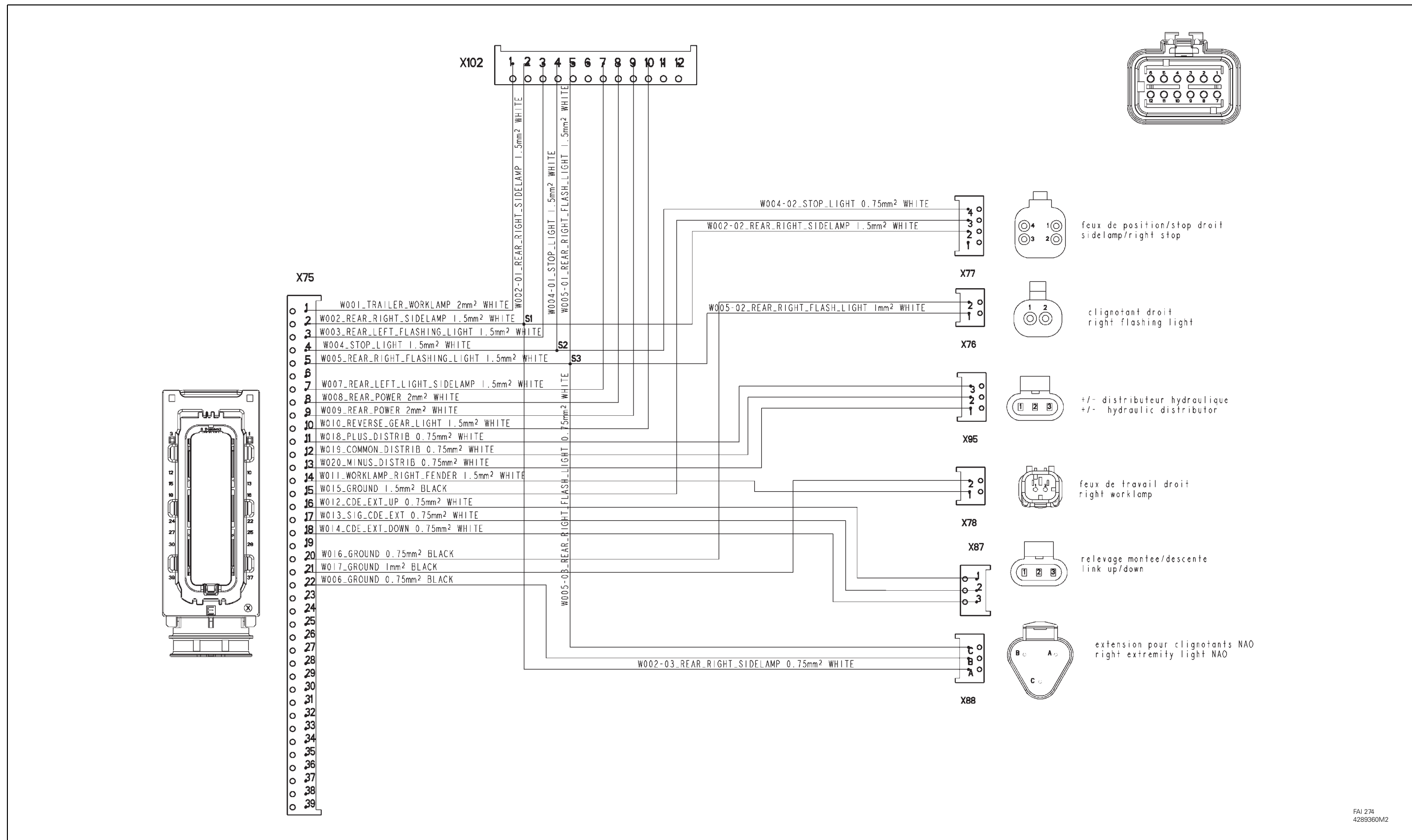
A.99FAI273 - Front linkage harness without accessory connection socket



FAI 273
4293556M3

Fig. 99

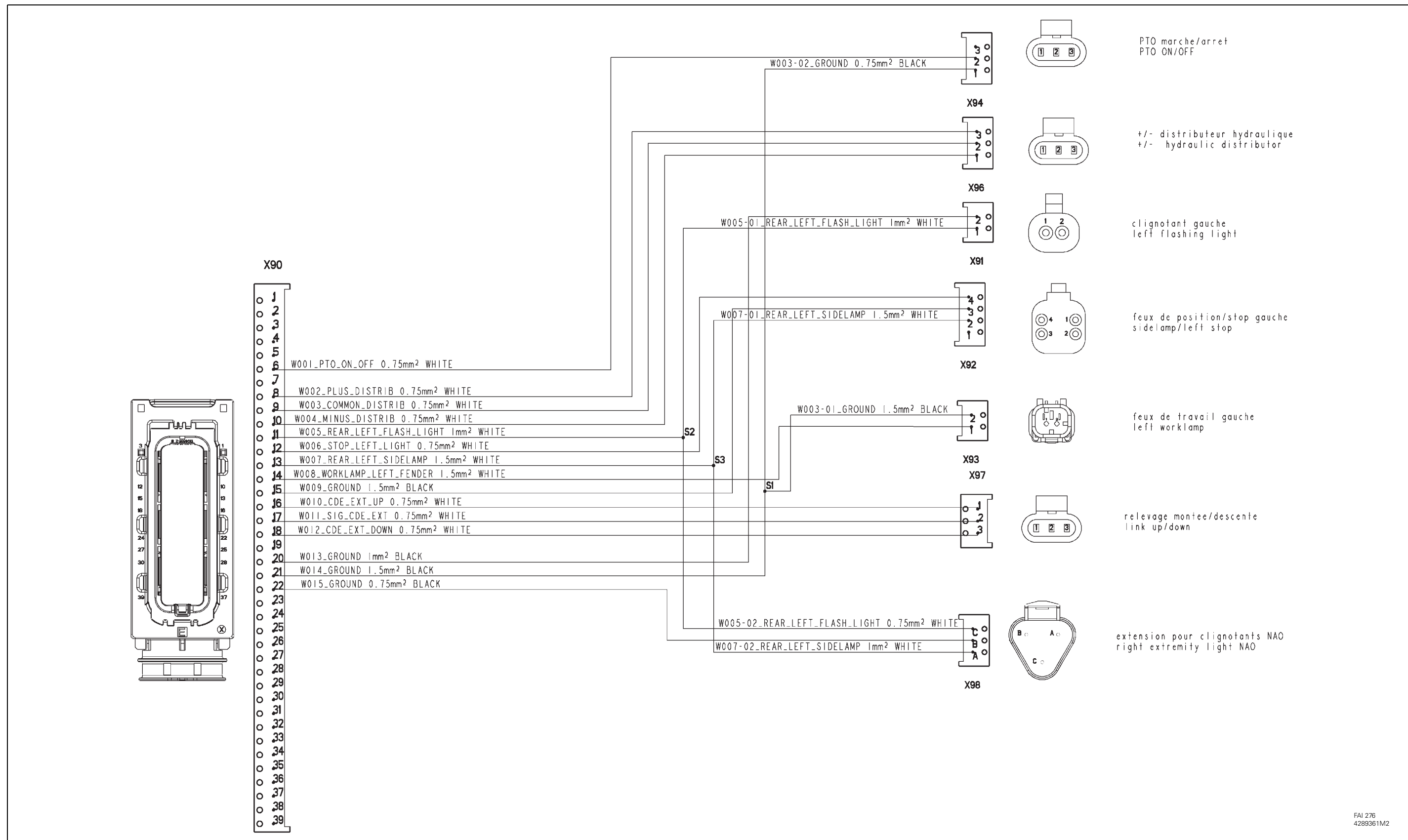
A.100FAI274 - Rear right-hand lighting harness



FAI 274
4289360M2

Fig. 100

A.101FAI276 - Rear left-hand lighting harness



FAI 276
4289361M2

Fig. 101

B. Hydraulics diagrams*Different systems*

- (1) Variable displacement pump
- (2) Orbitrol
- (3) ParkLock control unit
- (4) Brake master cylinder
- (5) Suspended front axle unit
- (6) Main brake unit

Pumps

- (P1) Variable displacement pump
- (P2) Steering pump
- (P3) Steering standby pump

Filters - Strainers

- (F1) Filter on the return to the tank
- (F2) Suction strainer
- (F3) Standby pump suction strainer
- (F4) Standby pump suction strainer

Rams

- (V1) Rear linkage rams
- (V2) Steering ram
- (V3) ParkLock rams
- (V4) Right-hand brake fitting
- (V5) Left-hand brake fitting
- (V6) Front axle suspension ram
- (V7) Front cab suspension ram
- (V8) Rear cab suspension ram
- (V9) Auto-hitch ram
- (V10) Trailer brake ram, if connected

Accumulators

- (AC1) ParkLock accumulator
- (AC2) Main brake accumulator
- (AC3) Front axle suspension left-hand side accumulator
- (AC4) Front axle suspension right-hand side accumulator
- (AC5) Front cab suspension ram accumulators
- (AC6) Rear cab suspension ram accumulators

Other components

- (R1) Oil cooler

Different systems

- (7) Trailer brake unit
- (8) Cab suspension unit
- (9) Auto-hitch unit
- (10) Priority block
- (11) Connection unit
- (12) Connection unit
- (13) Rear linkage

B.1 Main hydraulics diagram

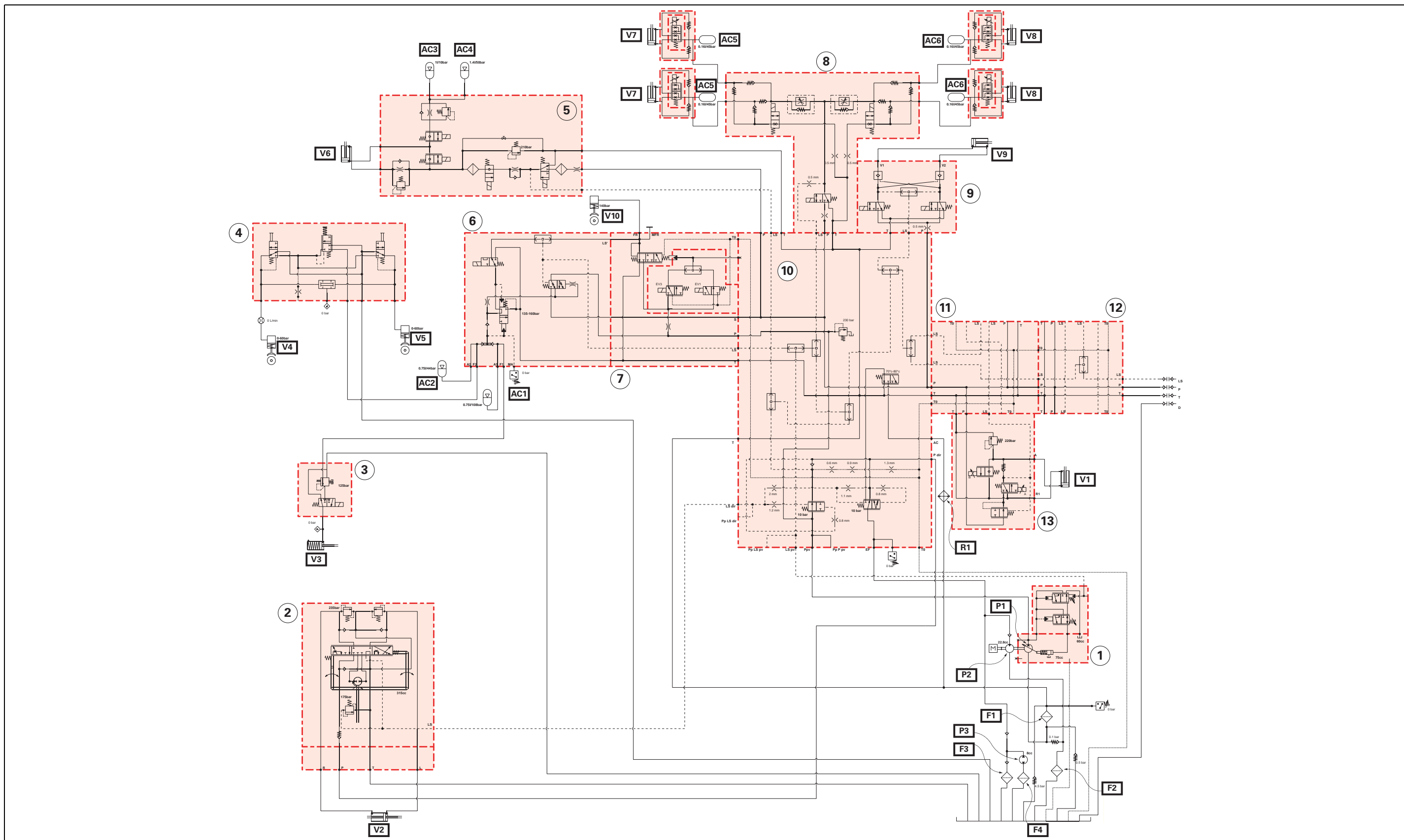


Fig. 102

Different systems

- (1) Valve block (fuel lift/lubrication)
- (2) Hydrostatic loop
- (3) Settings
- (4) Transmission control unit
- (5) Rear axle
- (6) Solenoid valve block on rear axle

Pumps

- (1P1) Service pump
- (1P2) Lubrication pump
- (2P1) Hydrostatic pump

Drive components

- (2A1) Hydrostatic motor
- (2A2) Hydrostatic motor
- (3A1) Piston for setting the hydrostatic pump displacement
- (3A2) Piston for setting the hydrostatic motor displacement
- (3A3) Forward speed limiter in limp home mode
- (4A1) Forward range selector
- (6A1) Rear PTO clutch
- (6A3) 1000 rpm PTO selector piston
- (6A4) Front axle clutch
- (6A5) Rear axle differential lock
- (6A6) 750 rpm PTO selector piston
- (6A7) Front axle differential lock

Sensors

- (1S1) Transmission oil temperature sensor
- (1S2) Pressure filter blockage switch
- (4S1) HP loop pressure sensor
- (4S2) Pressure sensor

Other components

- (1Z1) Intake filter with bypass
- (1Z2) Pressure filter with bypass
- (1Z3) Transmission oil cooler
- (1Z4) Transmission lubrication
- (3Z1) Cam channel adjustment shaft
- (3Z2) Control unit
- (4Z1) Clutch pedal with clutch master cylinder
- (4Z2) Accumulator
- (5Z2) Rear PTO lubrication
- (5Z3) Differential and right-hand brake lubrication
- (5Z4) Differential and left-hand brake lubrication

Valves (or spool valves/solenoid valves)

- (1V1) Cooler bypass valve
- (1V2) Flushing pressure relief valve
- (1V3) Fuel lift pressure relief valve
- (1V4) Lubricating pressure relief valve
- (1V5) Service pump pressure relief valve
- (1V6) System pressure relief valve
- (2V1) Reverse fuel lift non-return valve
- (2V2) Forward fuel lift non-return valve
- (2V3) Forward high-pressure relief valve
- (2V4) Reverse high-pressure relief valve
- (2V5) Flushing valve
- (2V6) Shuttle valve
- (3V1) Hydrostatic pump control spool valve
- (3V2) Hydrostatic motor control spool valve
- (4V1) Hare range solenoid valve
- (4V2) Tortoise range solenoid valve
- (4V3) Forward speed limiting solenoid valve

Valves (or spool valves/solenoid valves)

- (4V4) Coupler function solenoid valve
- (4V5) Clutch function spool valve
- (4V6) Rear axle pressure relief spool valve
- (6V1) Rear PTO clutch solenoid valve
- (6V3) 540 (or 750) rpm PTO control solenoid valve (depending on equipment)
- (6V4) Front axle clutch solenoid valve
- (6V5) Differential lock solenoid valve
- (6V6) 1000 rpm PTO control solenoid valve

Measurement points

- (M1) Pressure upstream of cooler
- (M2) Lubricating pressure
- (M3) Flushing pressure
- (M4) Fuel lift pressure
- (M5) Service pump pressure
- (M6) Transmission system pressure
- (M7) Range 1 engaging pressure (Tortoise)
- (M8) Range 2 engaging pressure (Hare)
- (M9) High pressure
- (M10) Rear axle and brake system pressure
- (M11) PTO clutch pressure
- (M13) 540 (or 750) rpm PTO selector pressure (depending on equipment)
- (M14) Front axle clutch pressure
- (M15) Differential lock pressure
- (M16) 1000 rpm PTO selector pressure
- (M18) Lubricating pressure
- (M22) Oil leak from clutch or coupler function valve

B.2 Transmission hydraulics diagram

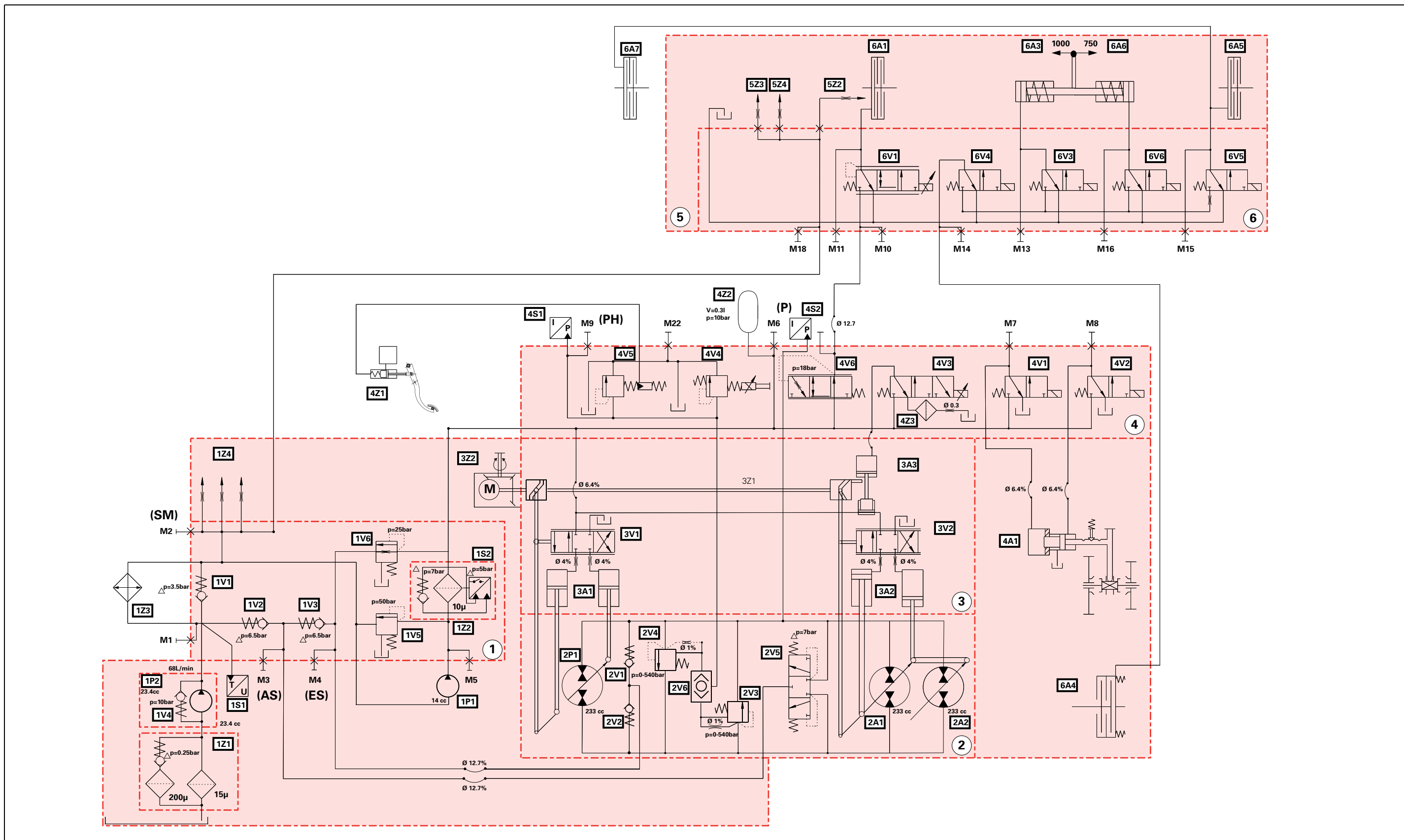


Fig. 103

Different systems

- (1) Rear linkage
- (2) Connection unit
- (3) Front linkage
- (4) Spool valve no. 1 for the no. 1 couplers at the front
- (5) Spool valve no. 2 for the no. 2 couplers at the front
- (6) Cover plate
- (7) Cover plate
- (8) Spool valve no. 1
- (9) Spool valve no. 2
- (10) Spool valve no. 3
- (11) Connection unit
- (12) Spool valve no. 4
- (13) Spool valve no. 5
- (14) Spool valve no. 6
- (15) Cover plate

B.3 Auxiliary spool valve hydraulics diagram (with front couplers)

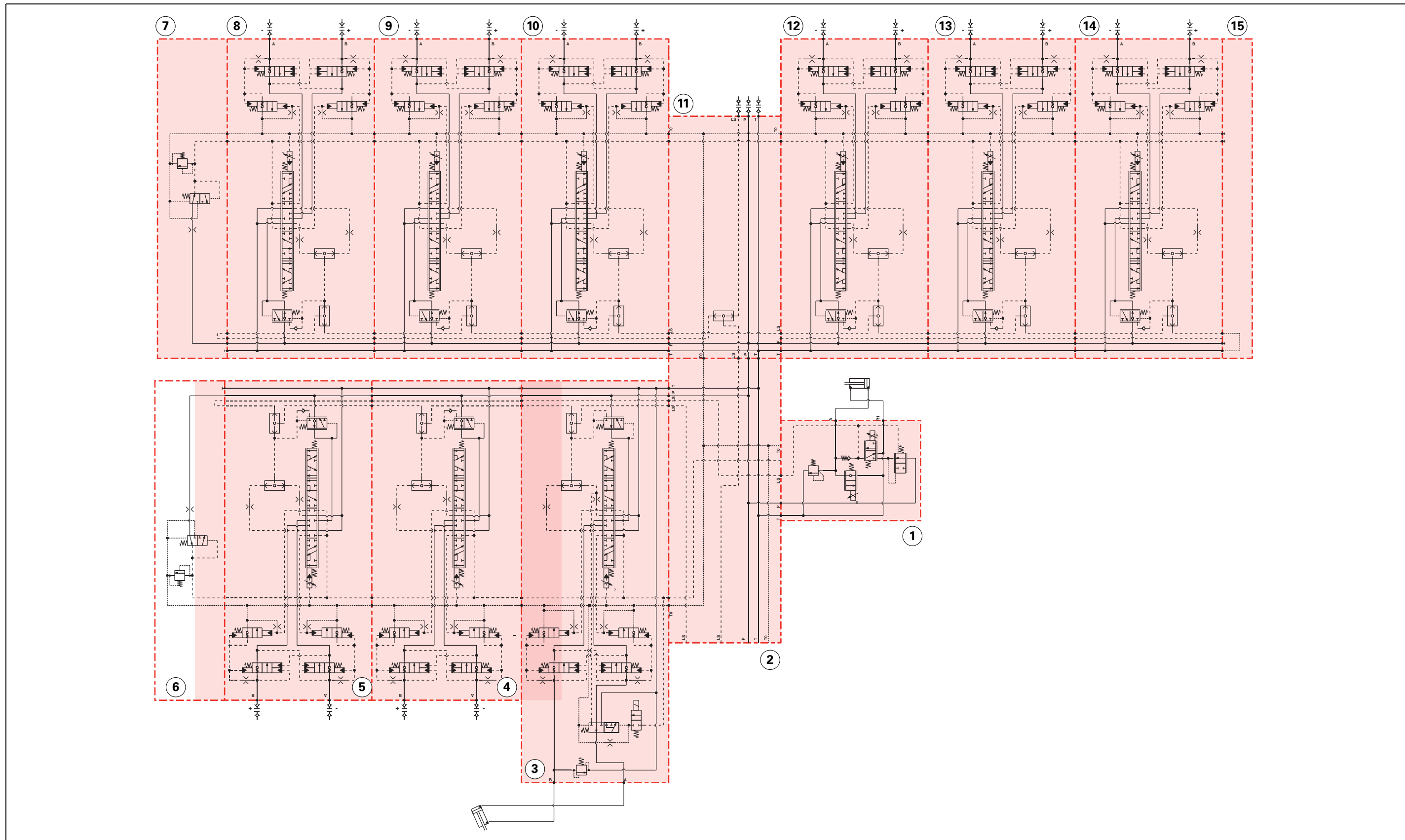


Fig. 104

Different systems

- (1) Rear linkage
- (2) Connection unit
- (3) Front linkage
- (4) Cover plate
- (5) Spool valve no. 1
- (6) Spool valve no. 2
- (7) Spool valve no. 6
- (8) Connection unit
- (9) Spool valve no. 3
- (10) Spool valve no. 4
- (11) Spool valve no. 5
- (12) Cover plate

B.4 Auxiliary spool valve hydraulics diagram (without front couplers)

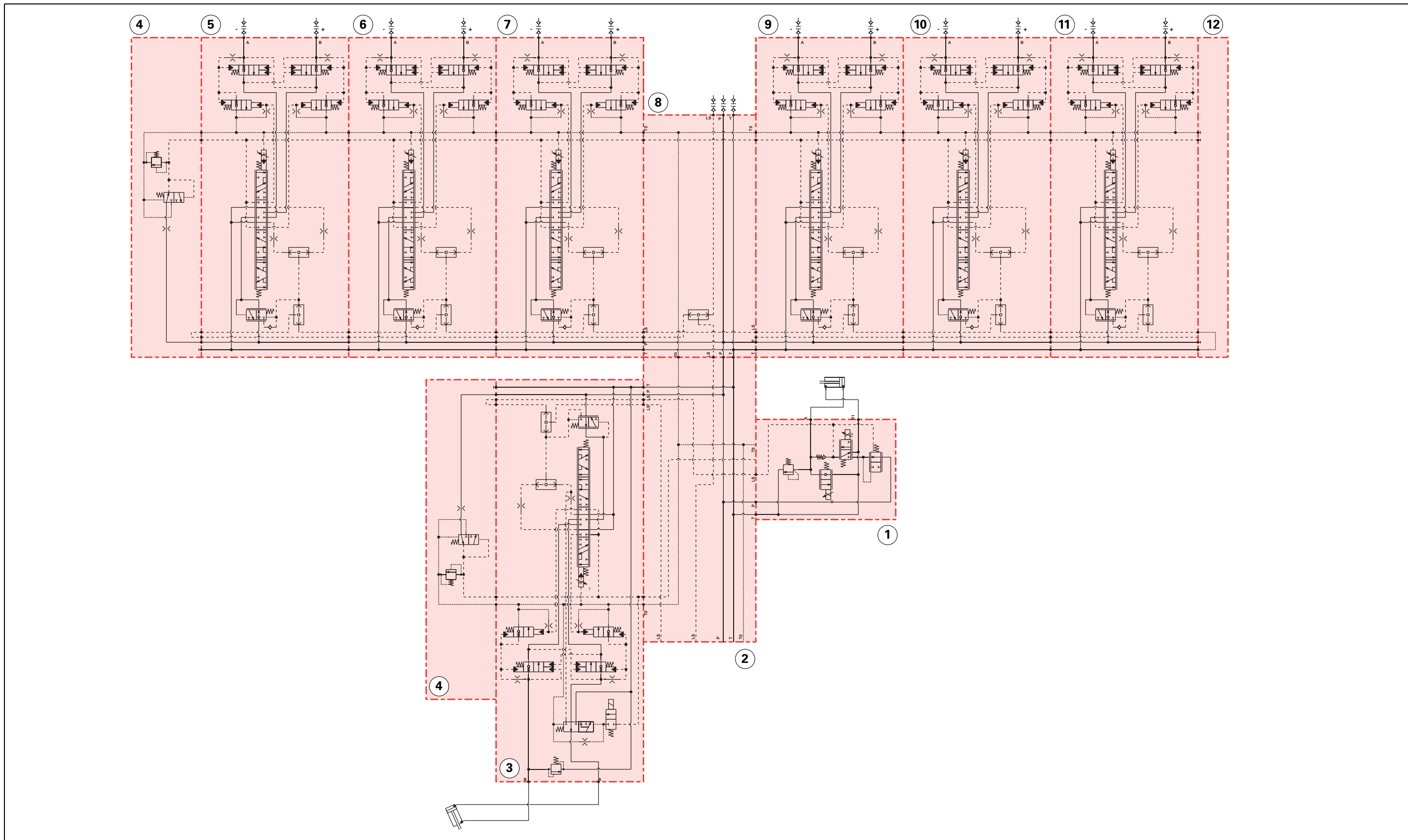


Fig. 105

1A13

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1A14

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1A15

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1A16

8600 series tractors - Adjustments, bleeding and calibrations

TABLE OF CONTENTS

A. Calibrations	301
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A. Calibrations

A.1 Forward speed display.

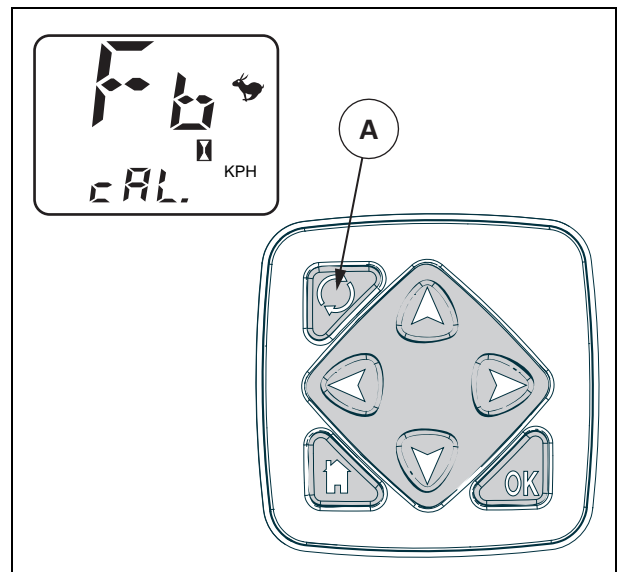
This calibration allows improved precision of forward speed depending on:

- the different tyre sizes available
- radar (if fitted)

1. Mark out a 100 m (depending on the unit of measurement selected) on a firm surface.
2. Start up the tractor, then press and hold the display selector switch (A) for 15 seconds.

NOTE: The daily hourmeter resets to 0 after 5 seconds.

3. "CAL" should appear on the screen (Fig. 1).
4. Drive the tractor forwards at normal working speed.
5. Press the display selector switch when crossing the starting line of the 100 m course.



1007510

Fig. 1

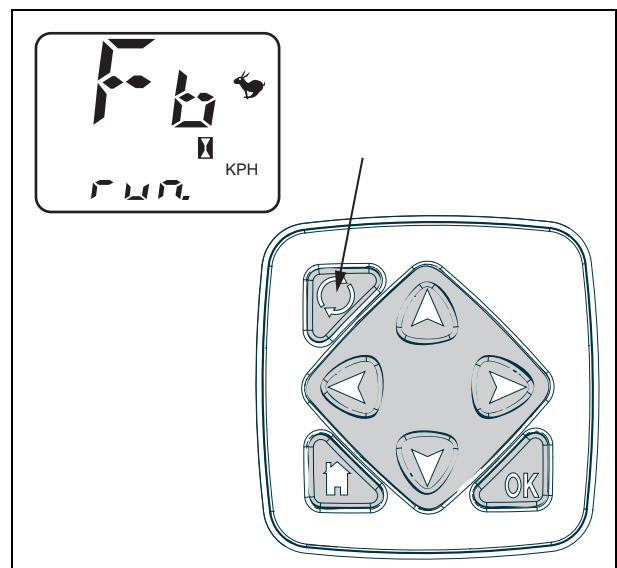
6. "run" should appear on the screen (Fig. 2).
7. Press the display selector switch when crossing the finish line of the course.
8. Press the display selector switch; the constant forward speed (theoretical) measured during calibration is displayed.
9. Press the display selector switch again; the actual constant forward speed (radar) measured during calibration is displayed on tractors fitted with radar.
10. Press the display selector switch a final time to return the instrument panel to normal operating mode.

NOTE: The tractor must always be moving before starting out on the measured course; otherwise calibration will be incorrect.

A.2 Throttle pedal potentiometer

The calibration of the throttle pedal potentiometer must be carried out each time one of the following elements is replaced or modified:

- throttle potentiometer
- instrument panel.



1007511

Fig. 2

Preliminary steps

11. Switch on the ignition, with ParkLock engaged.
12. The power take-off must be disengaged.

Calibration

The calibration is carried out in two successive steps so as to determine the minimum and maximum engine speeds in relation to the pedal position.

Minimum speed

13. Pedal fully released, minimum engine speed.
14. Press and hold down the differential lock switch for 5 seconds.
15. An alarm sounds. This indicates the end of the first calibration phase (pedal fully released).
Release the differential switch.

Maximum speed

16. Pedal fully depressed, maximum engine speed.
17. Press and hold down the differential lock switch for 5 seconds.
18. An alarm sounds. This indicates the end of the second calibration phase (pedal fully depressed).
Release the differential switch.

A.3 Forward lever on armrest

Input at level 2 - CAL 2



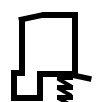
To select CAL2:

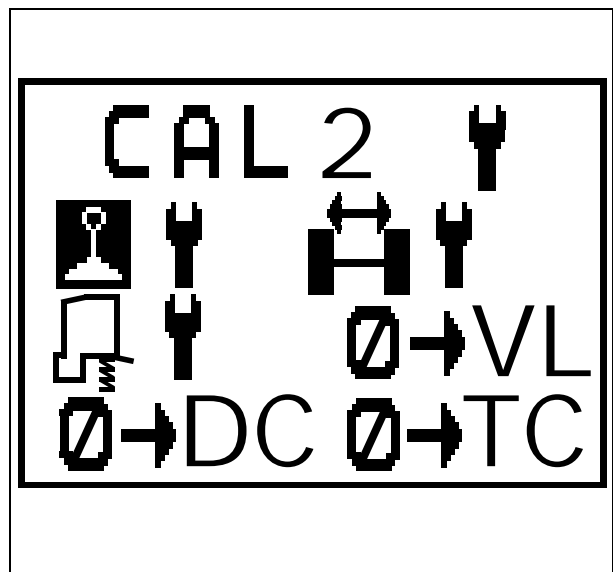
1. Switch on the ignition (do not start the engine).
2. Engage and release the clutch pedal in order to delete the "TC" "DC" display from the screen on the right-hand side of the instrument panel.
3. Within the next 5 seconds, simultaneously press keys



on the DOT MATRIX control keyboard.

The screen (Fig. 3) is displayed with 5 available texts and icons:

-  Calibration of the forward lever on the armrest
-  Calibration of the automatic differential disengagement function
-  Calibration of the suspended cab
- "DC": Clears the error codes stored in DCC3



1007461

Fig. 3

- "TC": Clears the error codes stored in TC (Autotronic 4)
- "VL": Clears the calibration values

The selected function is displayed in reverse video.



4. Select the required function using keys on the DOT MATRIX control keyboard and then press "OK".

Calibrating the forward lever on the armrest

The calibration of the armrest lever must be carried out each time one of the following elements is replaced or modified:

- Armrest lever potentiometer
- DCC3.



Select the icon and press "OK". The screen (Fig. 4) is displayed:

5. The value on the first line indicates the current position of the lever, i.e. Neutral.
6. Push the lever fully forward to "+", and the value of the first line will change. When the lever reaches its stop, validate the position by pressing the arrow at the top of the control keyboard.
7. Move the lever back to Neutral, and the value on the first line will change back until it reaches this position. Validate the position by pressing the "OK" key on the control keyboard.
8. Pull the lever fully backwards towards the rear of the cab to validate the limit position. When it reaches its back stop, press the arrow at the bottom of the control keyboard.
9. When calibration is complete, the values can be checked by moving the lever to the three positions "+", "0" and "-" and comparing the value on the first line with the selected position.
10. To quit this mode, press the "House" icon on the control keyboard.
11. **Switch off the ignition for at least 5 seconds to validate calibration.**

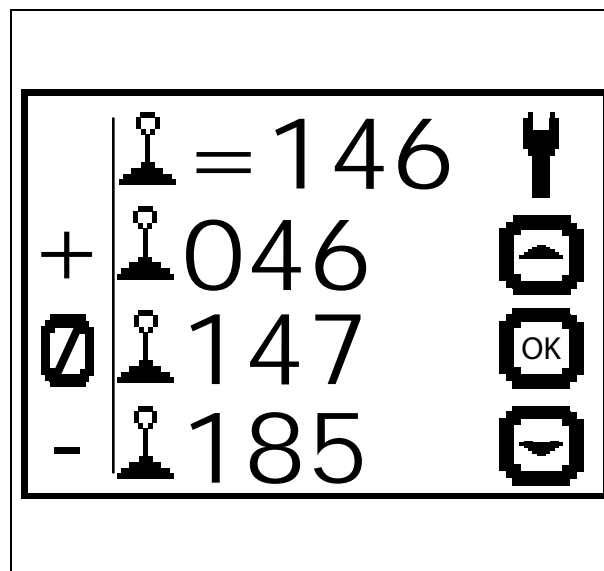
NOTE: If "ERROR" is displayed, repeat the procedure, making sure to observe the time of action and the lever position.

A.4 Automatic disengagement of the differential

Input at level 2 - CAL 2

To select CAL2:

1. Switch on the ignition (do not start the engine).



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Fig. 4

2. Engage and release the clutch pedal in order to delete the "TC" "DC" display from the screen on the right-hand side of the instrument panel
3. Within the next 5 seconds, simultaneously press keys




on the Dash Control Center keypad.

The screen (Fig. 3) is displayed with 5 available texts and icons:

-  Calibration of the forward lever on the armrest
-  Calibration of the automatic differential disengagement function
-  Calibration of the suspended cab
- "DC": Erase the error codes stored in the instrument panel
- "TC": Clears the error codes stored in TC (Autotronic 4)
- "VL": Clears the calibration values

The selected function is displayed in reverse video.

4. Select the required function using keys  on the Dash Control Center keypad and then press "OK".


Calibrating the automatic differential disengagement function

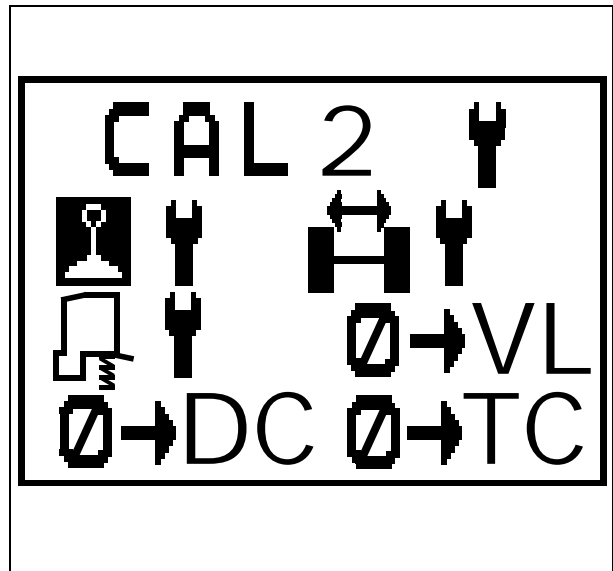
This function must be calibrated whenever one of the following elements is replaced or modified:

- angular sensor in the front axle
- front axle

NOTE: Before any calibration operations, move the front axle to central position. Switch off the engine in order to return to the CAL2 screen.



Select the icon  and press "OK". The screen (Fig. 6) is displayed:



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Fig. 5

1. The value on the first line is the reference value of the central position.
2. Press the "OK" key on the control keyboard to display this value. When the two values are identical, the calibration is considered to be correct.
3. To quit this mode, press the "House" icon on the control keyboard.

A.5 Suspended cab

Input at level 2 - CAL 2




To select CAL2:

1. Switch on the ignition (do not start the engine).
2. Engage and release the clutch pedal in order to delete the "TC" "DC" display from the screen on the right-hand side of the instrument panel
3. Within the next 5 seconds, simultaneously press keys



on the Dash Control Center keypad.

The screen (Fig. 7) is displayed with 5 available texts and icons:

-  Calibration of the forward lever on the armrest
-  Calibration of the automatic differential disengagement function
-  Calibration of the suspended cab
- "DC": Erase the error codes stored in the instrument panel
- "TC": Clears the error codes stored in TC (Autotronic 4)
- "VL": Clears the calibration values

The selected function is displayed in reverse video.



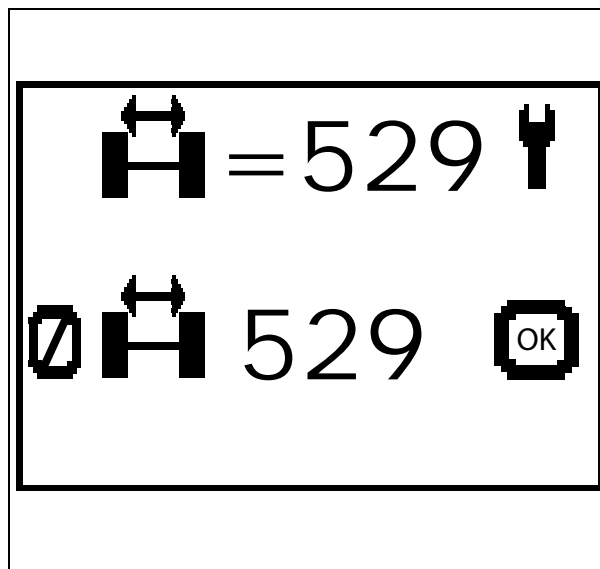
4. Select the required function using keys on the Dash Control Center keypad and then press "OK".

Calibrating the suspended cab

Passive and semi-active suspended cabs are fitted with 2 or 4 sensors respectively.

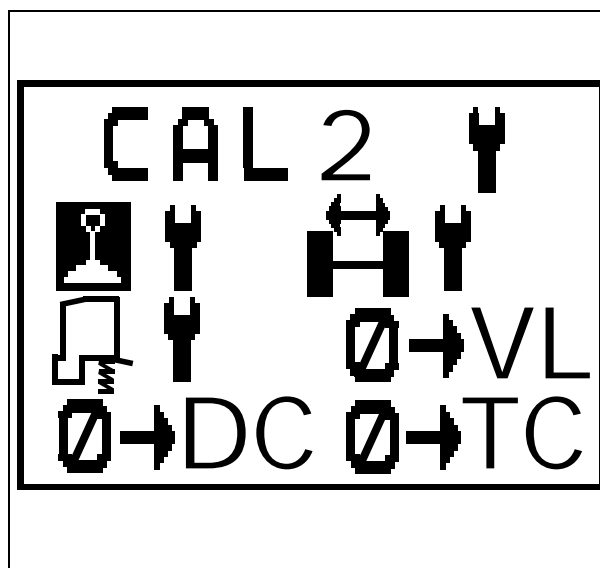
The suspended cab must be calibrated whenever one of the following components is replaced or modified:

- controller
- ram



1007463

Fig. 6



1007461

Fig. 7

- solenoid valve

Calibration consists of determining the values of the upper and lower suspension stops.



Select the icon and press "OK". The screen (Fig. 8) is displayed:

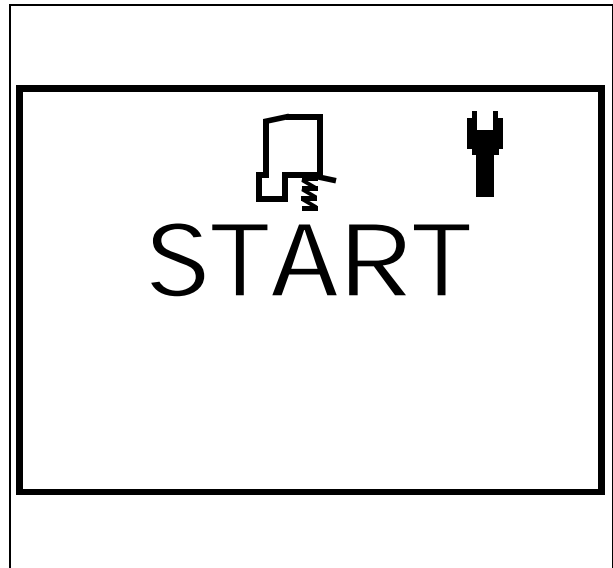
5. The message "START" is displayed to signal engine starting.
6. Press the "OK" key to start the calibration.
7. First, the system moves to the upper stop.
8. Secondly, the system moves to the lower stop.
9. Lastly, the suspended cab returns to the centre position.
10. The suspended cab is then calibrated.

A.6 Autotronic 4 - Hare/Tortoise range - Transmission - Coupler function - Power take-off

Calibration of the following Autotronic 4 functions is necessary for optimum performance:

- Hare/Tortoise range
- transmission
- coupler function

Calibration of the power take-off is also possible with special tools if there is a problem when starting.



1008677

Fig. 8

Input at level 1 - CAL 1

IMPORTANT: In order to carry out a calibration, any error codes must be corrected.

If an error code is active: the calibration returns an error immediately.

To select CAL1:

1. Start the engine.
2. Engage and release the clutch pedal in order to delete the "TC" "DC" display from the screen on the right-hand side of the instrument panel
3. Within the next 5 seconds, simultaneously press keys



on the Dash Control Center keypad.

4. The screen (Fig. 9) appears, displaying the 4 symbols of the functions to be calibrated:



Hare/Tortoise range



Transmission



Coupler function



Power take-off

The selected function is displayed in reverse video.

5. Before starting calibration, ensure that the tractor is in a suitable condition.
6. Select the function to be calibrated using keys



on the Dash Control Center keypad and then press "OK".

NOTE: This procedure must be repeated for each calibration.

Hare/Tortoise range

Calibration procedure

This calibration must be carried out systematically after changing any of the following:


- Hare range solenoid valve
- Tortoise range solenoid valve
- Range position sensor
- Autotronic 4

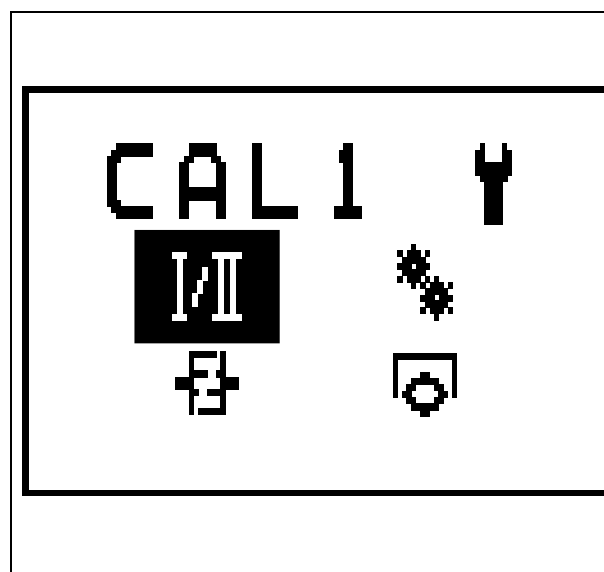
Preliminary conditions

1. Hand brake or ParkLock disengaged.
2. Power Control lever in neutral position.
3. Clutch pedal pressed down.
4. Engine speed less than 1000 rpm.

Calibration



5. Having selected  in the CAL1 screen (Fig. 9), press "OK" to start calibration.



1007464

Fig. 9

6. The calibration lasts for approximately 6 minutes and takes place in 3 steps, shown one after the other on the screen (Fig. 10):
 - Step 0: Tortoise range
 - Step 1: Hare range
 - Step 2: Neutral (intermediate position)
7. The calibration result is displayed:
 - "OK": successful calibration (since the calibration procedure is ended by placing the transmission in neutral, the Hare/Tortoise symbols flash alternately on the right-hand screen)
 - "ERROR": calibration failed (repair the fault before resuming the procedure)
8. **IMPORTANT:** Switch off the ignition for at least 30 seconds in order to validate the calibration.

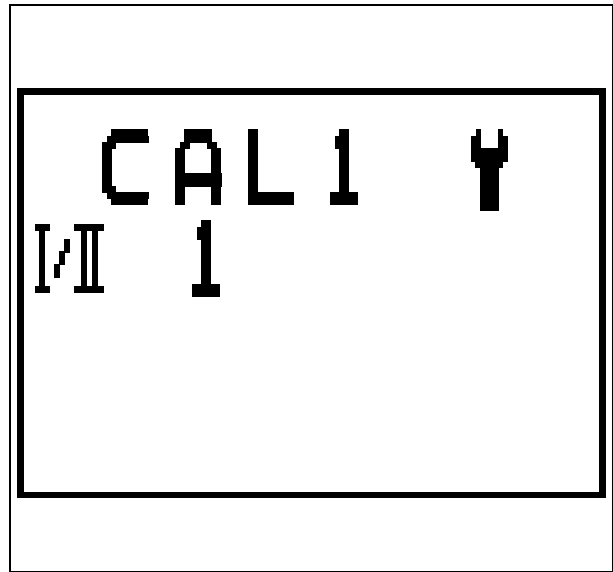


Fig. 10

Transmission

Calibration procedure

This calibration must be carried out systematically after changing any of the following:

- transmission control module
- transmission
- transmission high pressure sensor
- Autotronic 4


Preliminary conditions

Calibration must be carried out just after the range has been calibrated:

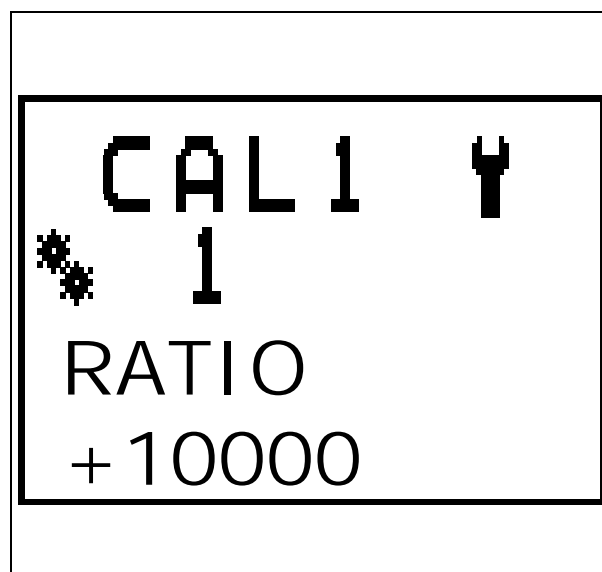
1. Hand brake applied or ParkLock engaged.
2. Power Control lever in neutral position.
3. Hare/Tortoise range in neutral (Hare/Tortoise symbols flash alternately on the right-hand screen).
The Hare/Tortoise range should be in neutral because calibration of the range has been carried out in the previous step.

Calibration



4. Having selected  in the CAL1 screen (Fig. 9), press "OK" to start calibration.
5. Engine speed automatically adjusts to 1600 rpm.
6. Hare/Tortoise symbols continue to flash alternately.

7. The calibration lasts for approximately 6 seconds and takes place in 7 steps, shown one after the other on the screen (Fig. 11). These 7 steps allow calibration of the hydraulic motors and pumps.



1007466

Fig. 11

8. The calibration result is displayed:
- "OK": successful calibration (Fig. 12)
 - "ERROR": calibration failed (repair the fault before resuming the procedure)
9. **IMPORTANT:** Switch off the ignition for at least 30 seconds in order to validate the calibration.

Coupler function

Calibration procedure

This calibration must be carried out systematically after changing any of the following:

- coupler function solenoid valve
- transmission oil high pressure sensor
- Autotronic 4

Preliminary conditions

1. Transmission temperature higher than or equal to 40°C (recommendation: do not cancel calibration if the value is too low).

There are 2 ways to view the transmission temperature:

- The value can be viewed on the gearbox screen of the diagnostic tool.
 - Use the instrument panel DIAG mode via the Dash Control Center:
 - Press the top arrow for 3 seconds.
 - Select DATA (in reverse video) then press "OK".
 - The value is indicated by the "Trans Temp" line.
2. Hand brake applied or ParkLock engaged.
3. Power Control lever in neutral position.
4. Hare range engaged.




1007467

Fig. 12

Calibration



5. Having selected  in the CAL1 screen (Fig. 9), press "OK" to start calibration.
6. Engine speed automatically adjusts to 1100 rpm.
7. The calibration lasts for approximately 2 minutes and takes place in 9 steps, shown one after the other on the screen (Fig. 13).
These 9 steps allow calibration of the solenoid valve current.
8. The calibration result is displayed:
 - "OK": successful calibration
 - "ERROR": calibration failed (repair the fault before resuming the procedure)
9. **IMPORTANT:** Switch off the ignition for at least 30 seconds in order to validate the calibration.

Power take-off

Calibration procedure


- This calibration must be performed only in the event of a starting problem with a high-inertia implement
- when changing the PTO solenoid valve
- when changing the Autotronic 4

Preliminary conditions

1. Hand brake applied or ParkLock engaged.
2. Power Control lever in neutral position.
3. Select a PTO speed (540, 540ECO or 1000 rpm) depending on the implement.

Calibration



4. Having selected  in the CAL1 screen (Fig. 9), press "OK" to start calibration.
5. Engage the PTO.



1007468

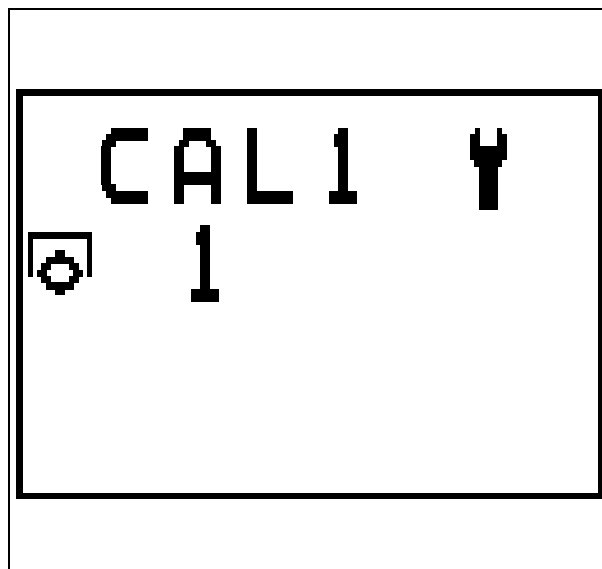
Fig. 13

6. Calibration takes place automatically, and the time taken depends on the implement (Fig. 14).
7. The calibration result is displayed:
 - "OK": successful calibration
 - "ERROR": calibration failed
8. **IMPORTANT:** Switch off the ignition for at least 30 seconds in order to validate the calibration.

A.7 Suspended front axle

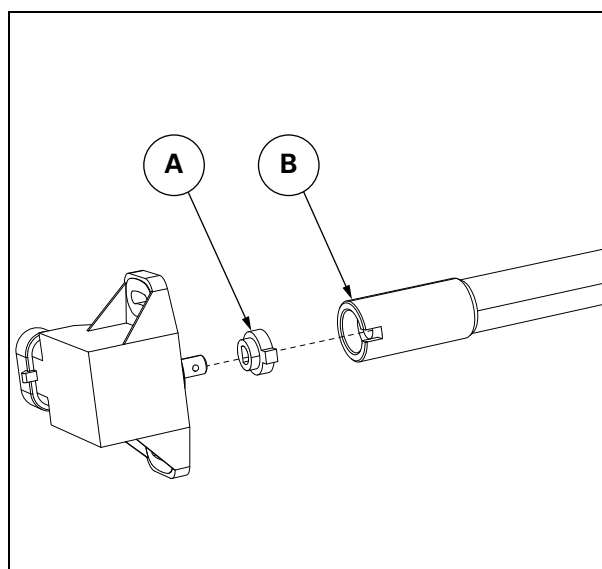
Settings

1. Correctly insert rubber guide (A) into the body of front axle (B), fitting the guide into the slot (Fig. 15).
2. Fit the sensor rod into rubber guide (A) (Fig. 15).



1007469

Fig. 14



1008023

Fig. 15

3. Tighten the sensor approximately in the centre of the ports (Fig. 16) so the voltage is between 0.5 V and 1.6 V in low position.

NOTE: After adjusting the sensor, it is recommended to carry out calibration.

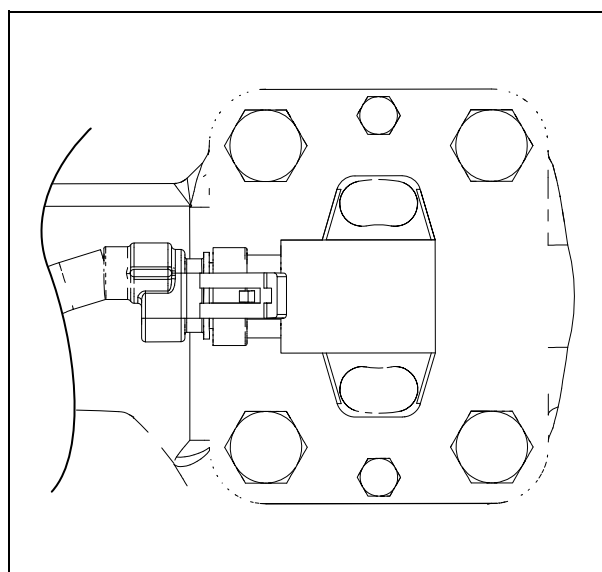
Calibration

Calibration must be carried out on the suspended front axle when:

- the position sensor is adjusted or replaced
- the Autotronic 5 is replaced

Calibration consists of determining the values of the upper and lower suspension stops.

If no calibration value has been stored, Autotronic 5 displays error 11.



1008024

Fig. 16

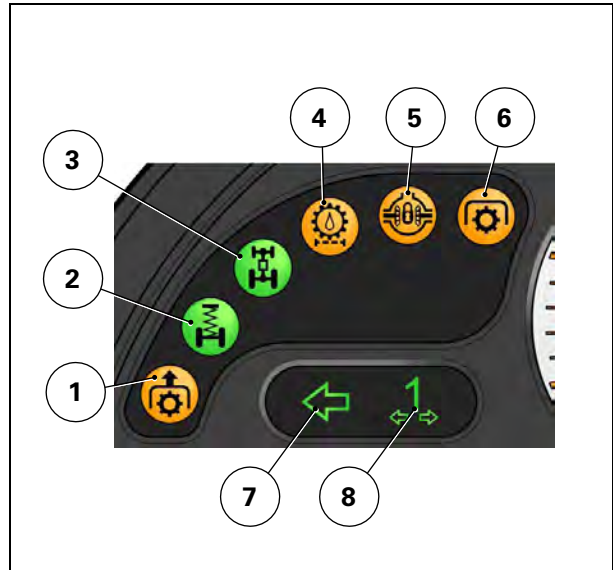
To enter calibration mode:

4. Press the suspension activation switch for 10 seconds.
5. The suspended front axle indicator light on the instrument panel (2) flashes (Fig. 17).
6. Press and hold down the suspension activation switch until the axle reaches its upper stop.
7. Once the maximum upper position is reached, release the switch.
8. Press and hold down the suspension deactivation switch until the axle reaches its lower stop.
9. Once the maximum lower position is reached, release the switch.
10. When the switch is released, the suspension activates automatically (intermediate position).

NOTE: If the stop values are outside the allowed tolerances or if suspension travel is lower than the minimum fixed value, the Autotronic 5 remains in Calibration mode. In this case, adjust the position sensor more accurately.

Reminder of the signal values:

- low position from 1.2 V to 1.6 V
- high position from 3.3 V to 4.5 V



1004255

Fig. 17

A.8 Adjusting the front linkage position sensor

Calibration

To ensure correct operation of the Front Dual Control, the front linkage position sensor must be calibrated.


IMPORTANT: This operation must be performed on first use, or as soon as work is carried out on the front linkage position sensor.

Calibration is carried out via the Datatronic CCD calibration screen.


Preparation for calibration

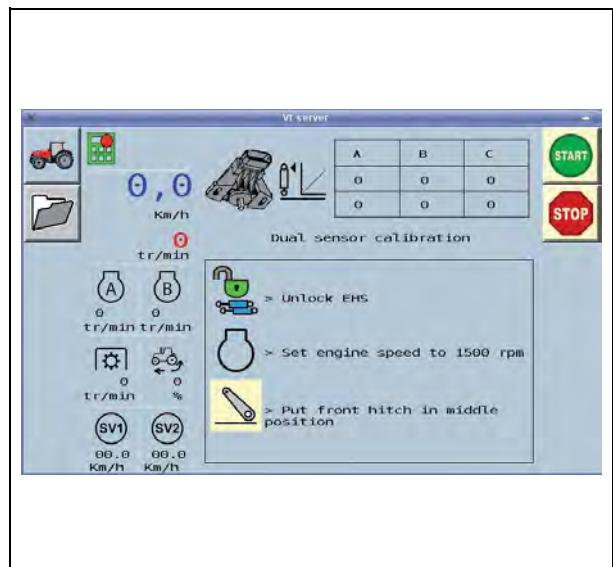
- A Minimum and maximum specified Dual Control activation specified values
- B Maximum (high) and minimum (low) position front linkage
- C Correction on lifting and lowering. This correction is mainly dependent upon ram capacity.

11. Call up the Front Dual Control settings window. The window (Fig. 18) is displayed.

12. Press the switch corresponding to the  icon when the window is open.

Conditions required for calibration:

1.  - Unlock the electrohydraulic spool valves.



1009377

Fig. 18



2. - Set engine speed to 1500 rpm.

IMPORTANT: To ensure correct calibration, the front linkage must be able to move from its highest position to its lowest position.

Calibration must therefore be carried out with no front implement attached.



3. - Place the front linkage in approximately its middle position.
4. Place the rear linkage control in the lowered position.
5. Place the rear linkage height/depth setting control between 3 and 4.
6. To start the calibration, press the switch corresponding to the "START" icon.
7. During calibration, the front linkage is lifted and lowered several times.
8. When the calibration is complete, the window is displayed again, complete with the calibration values.

Calibration values for optimum Dual Control operation:

- A 1 to 10
- B a difference of more than 100 points (the value of the top line is always higher than the value of the bottom line)
- C 5 to 100

NOTE: If the calibration values fall significantly out of this range, either the sensor working area needs to be modified or the sensor specifications are incorrect.

However, the Dual Control will operate using default values.

A.9 Rear linkage

Adjusting the position sensor

For correct linkage calibration, ensure that the position sensor is fitted properly.

Calibration is the only way to obtain precise linkage positioning.

1. Position the mark on the rotating shaft on the same side as the connector (arrow (Fig. 19)).
2. Tighten the sensor approximately in the centre of the ports (Fig. 19).

After adjusting, the linkage must be calibrated.

Calibrating the linkage

The linkage must be calibrated after changing:

- a linkage solenoid valve
- the position sensor
- the linkage height/depth setting potentiometer
- the Autotronic 5 or software type

The purpose of this calibration is:

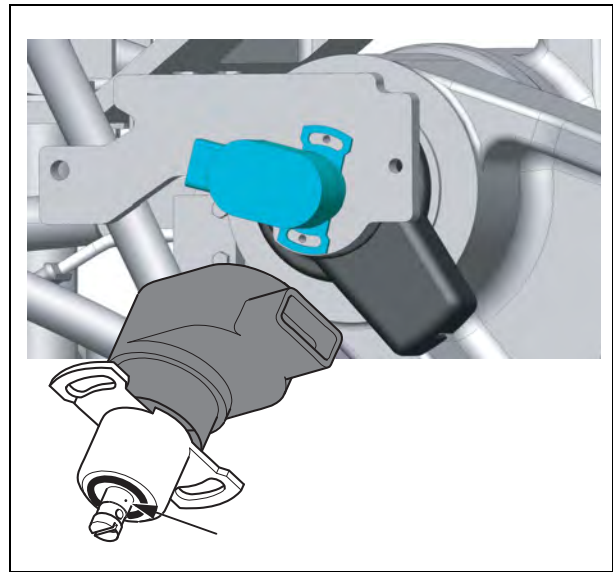
- to define the high and low stops of the linkage for optimum use of the linkage travel
- to measure sensor signals to obtain maximum linkage position precision according to the setting potentiometer
- to measure the solenoid valve starter currents that start to move the linkage

Preliminary steps

3. Hitch a weight of approximately 500 kg to the linkage.
4. Check that, with the hitch, the linkage is able to move through its entire operating range, between the upper and lower stops.
5. Position the tractor in a location where the linkage can operate freely, and ensure that no one can enter the area of linkage travel throughout the calibration process.

Procedure

6. Set the tractor engine to idle speed.
7. Position the height/depth setting potentiometer between positions 3 and 4 (Fig. 20).
8. Set the selector switch (A) (Fig. 20) to the linkage lowered position (work position).



1007512

Fig. 19



1007513

Fig. 20

9. Set the 3 linkage console potentiometers in position (Fig. 21), depending on the console type):
 - maximum raised stop (A)
 - pure position sensor (B)
 - maximum automatic lowering speed (C)
10. Press the shock absorber switch (D) 4 times in quick succession.
The indicator light (LED) (E) starts to flash (Fig. 21).
Calibration takes approximately 1 minute.
11. When calibration is complete, the indicator light stops flashing and the linkage locks.

NOTE: To exit the calibration process at any time, press the shock absorber switch or the lifting/lowering/neutral selector switch. In this case, the system uses the parameter settings stored previously or, in the event of a new Autotronic 5 unit, the default parameter settings are used.



DANGER: Ensure that no one can enter the linkage operating area throughout the calibration process.

Validation

12. Check maximum linkage travel using the cab controls:
 - high position
 - low position; the lowering indicator light should always remain illuminated.
13. Check the sensitivity of the linkage height/depth setting potentiometer.
14. Set the linkage to transport position, engage the shock absorber and ensure that the linkage is lowered slightly (the lowering indicator light should come on).
15. Check the external controls and ensure that the lifting switch raises the linkage to its mechanical stop (hydraulic pump throttling sound).

NOTE: If the calibration appears to be incorrect (impossible to change position), reset the linkage by pressing the shock absorber switch 5 times in quick succession. In this case, the controller uses the default values. A new calibration procedure must then be started.



1007514

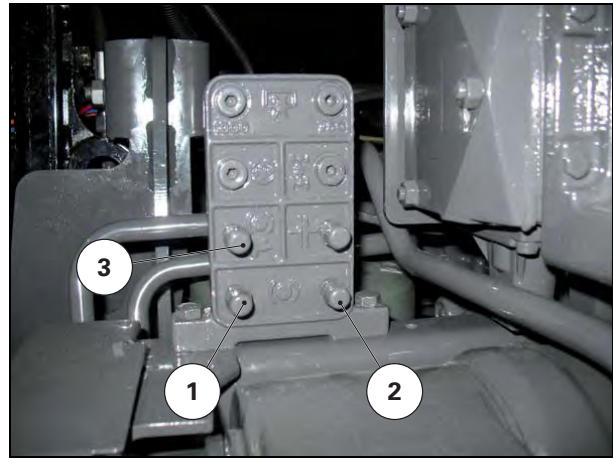
Fig. 21

B. Bleeding

B.1 Rear axle - Bleeding the brake system

16. The tractor brakes are bled via the bleed plugs (Fig. 22) located on the rear left-hand side of the tractor next to the auxiliary spool valves:

- 1) Rear left-hand brake
- 2) Rear right-hand brake
- 3) Trailer brake



1009721

Fig. 22

Bleeding method

17. Start the engine

18. Connect the pipes (preferably transparent pipes) to the bleed plugs and then connect them to the hydraulic tank.

19. Open the bleed plugs for the left-hand brake (1) and the right-hand brake (2).

20. Press moderately on the coupled brake pedals, with a pedal travel of approximately 20 mm.

NOTE: Never press the pedals down more than 25 mm when the bleed plugs are open. A jet of pressurised oil will spurt out of the bleed plugs.

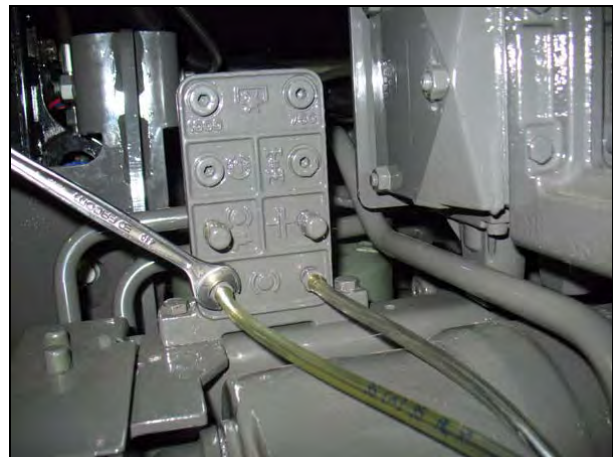
21. Let the air bleed out at the plugs.

22. Close the plugs again when the fluid coming out no longer shows any trace of foam or air bubbles. Release the pedals.

23. Open the trailer bleed plug (3).

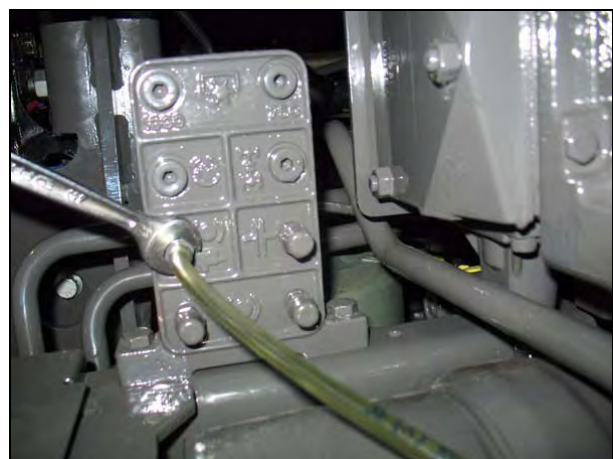
24. Repeat steps (operation 22)

25. Check the oil levels in the auxiliary hydraulics and gear-box.



1009722

Fig. 23



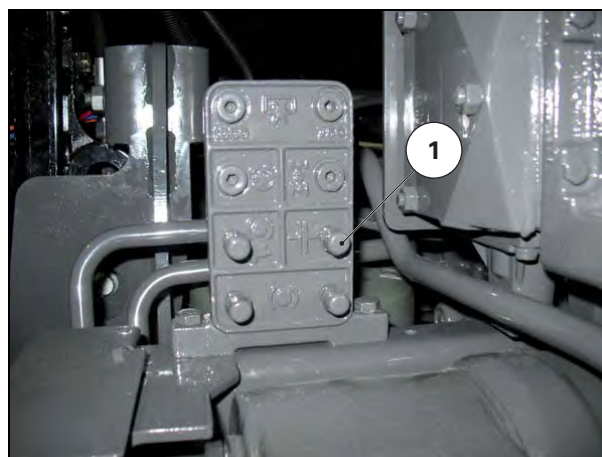
1009723

Fig. 24

B.2 Gearbox clutch control bleed device

26. Empty the clutch reservoir using a syringe.
27. Obtain a transparent pipe to connect to the bleed device (1) (Fig. 25)
28. Obtain an oil pump or a piston burette (measuring glass).
29. Obtain hydraulic clutch fluid type Pentosin CHS 11S

Essential instructions prior to bleeding



1009734

Fig. 25

30. Remove the protective plug
31. Connect one end of the pipe to the clutch bleed device and connect the other end of the pipe to the burette.
32. Fill the burette with clutch fluid.
33. Open the bleed device.
34. Activate the burette in order to fill the clutch reservoir up to the maximum level
35. Close the bleed device.
36. Disconnect the pipe.

NOTE: Do not forget to refit the protective plug on the bleed device.



1009733

Fig. 26

1A17

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1A18

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