



**647828EN (21/05/ 2021)**

**MHT-X 790 MINING 104JD ST3A S1**

**REPAIR MANUAL**

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Never step on a part of the machine that has not been designed for it.



Never wear clothes, jewelry or objects that could get caught during work and cause accidents.

Always wear protection glasses, gloves, safety shoes as well as any other protection required for the work to be carried out.



When carrying out maintenance operations near a mobile object, make sure it is securitized.



When changing, or draining oils or fuel, or any other operation with liquids, solids, gases that are harmful to the environment, make sure the necessary precautions are taken to avoid contaminating the environment.



# ENGINE



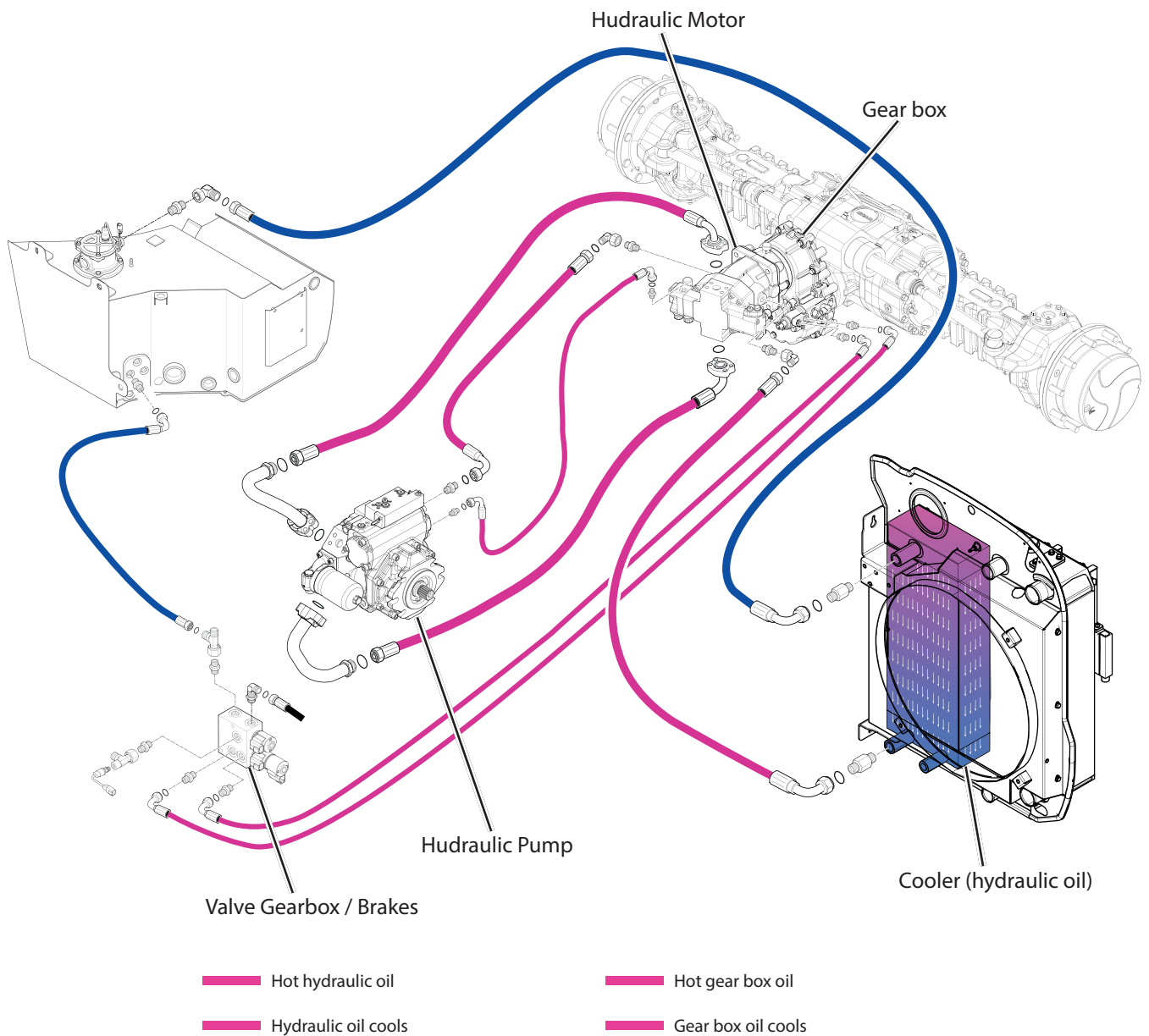
- **ENGINE CHARACTERISTICS AND SPECIFICATIONS**
- **ENGINE COMPONENTS LOCATION**
- **ENGINE CONTROL AND ADJUSTMENT**
- **ENGINE REMOVAL**

- **CHARACTERISTICS AND SPECIFICATIONS**
- **CONTROL AND ADJUSTMENT**
- **TROUBLESHOOTING**
- **SPECIFIC TOOLING**



**(Engine 4045 PWX)**

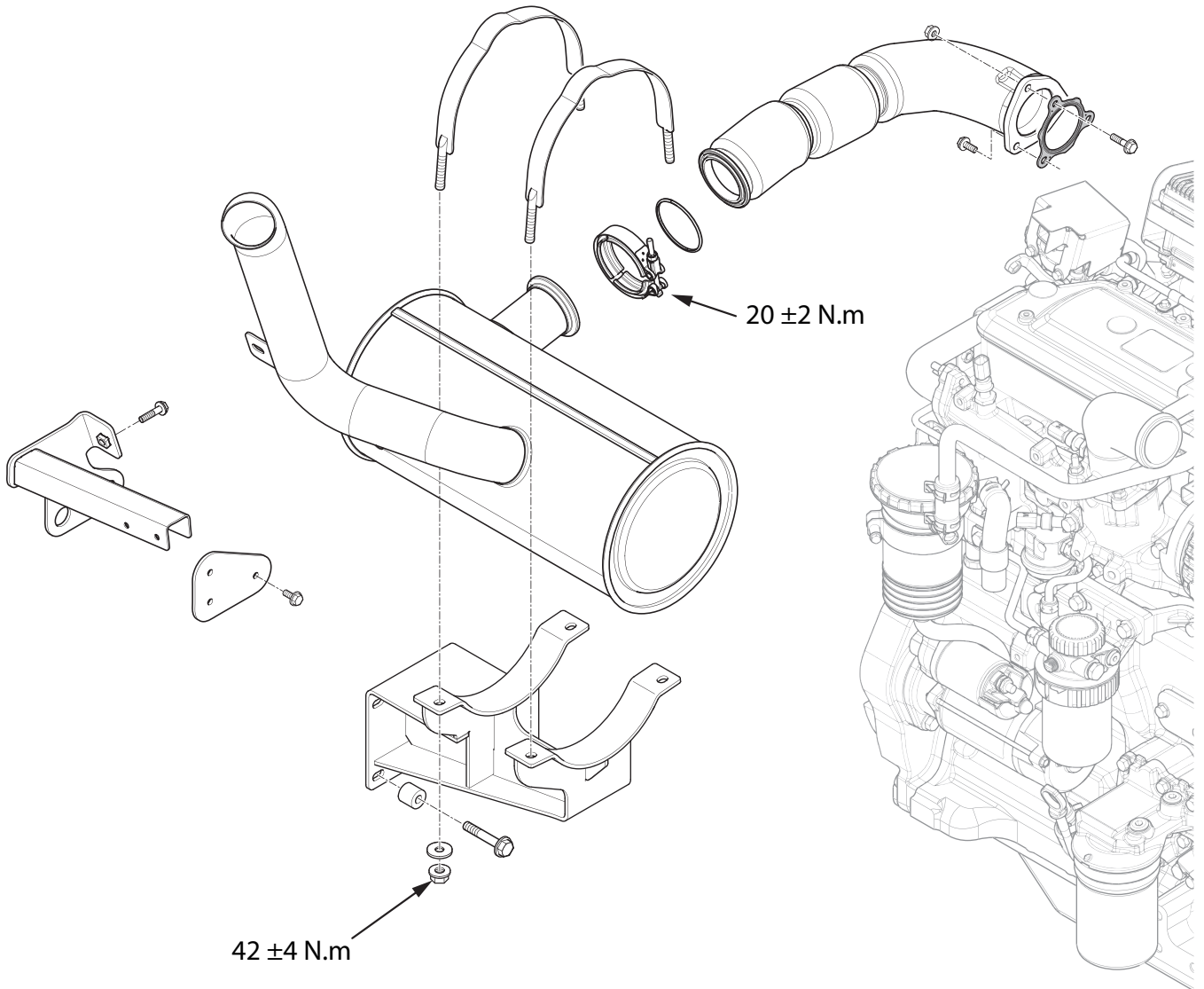
## GEAR BOX/HYDRAULIC OIL COOLING CIRCUITS

**OPERATING PRINCIPLE FOR "THERMOSTAT REGULATOR"**

- If the temperature when entering the regulator is:  $T < 65\text{ °C}$ , then the oil is only directed towards the gear box. It is not possible for oil to pass through the cooler.
- If the temperature when entering the regulator is:  $65\text{ °C} \leq T \leq 80\text{ °C}$ , then the oil is directed towards the gear box and the cooler.
- If the temperature when entering the regulator is:  $T > 80\text{ °C}$ , then the oil is only directed towards the cooler. It is not possible for oil to pass through the gear box.

## EXHAUST

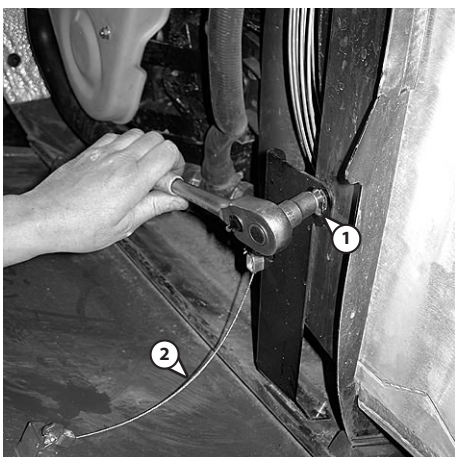
MHT-X 790 104JD H ST3A



## REMOVAL PROCEDURE

### ENGINE HOUSING

Remove the screw from the support (Ref. 1) allowing the attachment of the housing closure cable (Ref. 2).



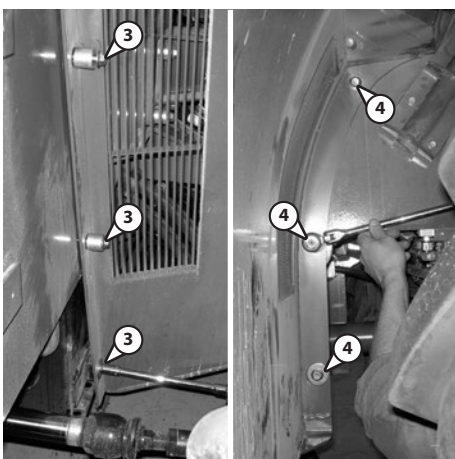
Take up the load of the engine housing in its position using a pallet truck.



Remove the engine housing rear (Ref. 3) and front (Ref. 4) fasteners.

Also unscrew the 5 screws of the air filter plate.

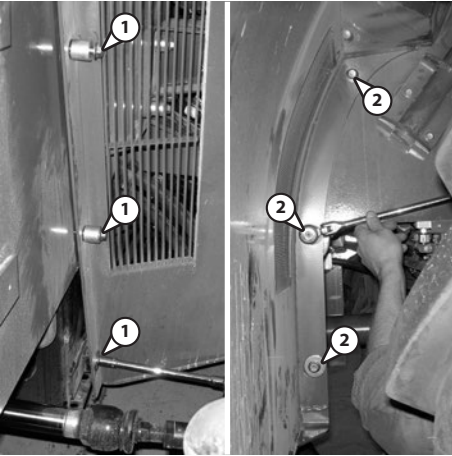
Remove the engine housing.



### FUEL PUMP

Remove the fuel pump (Ref. 5).

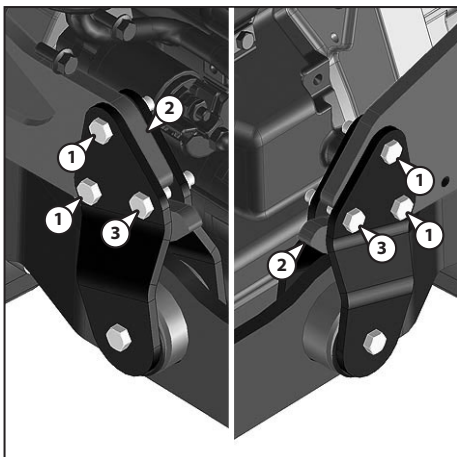




Remove the engine housing rear (Ref. 1) and front (Ref. 2) fasteners.

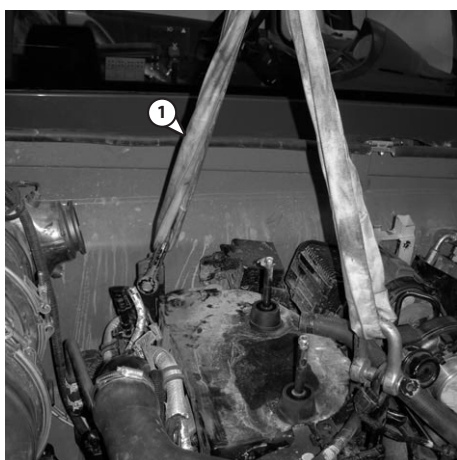
Also unscrew the 5 screws of the air filter plate.

Remove the engine housing.

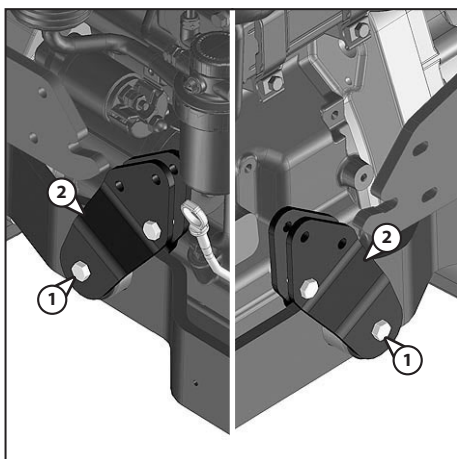


Remove the two fasteners (Ref. 1) from either side of the engine mount (Ref. 2).

Loosen the third fastener (Ref. 3).

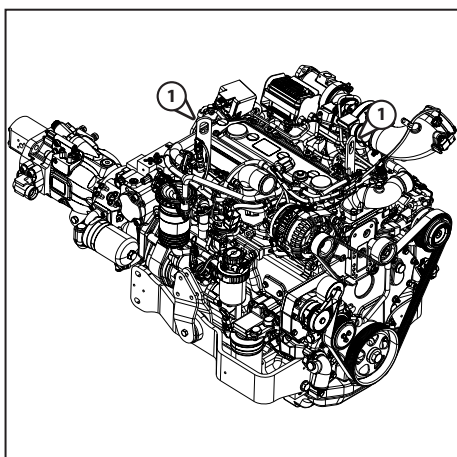


Using a hoist and strap (Ref. 1), lift the engine slightly by 2 to 3 mm.

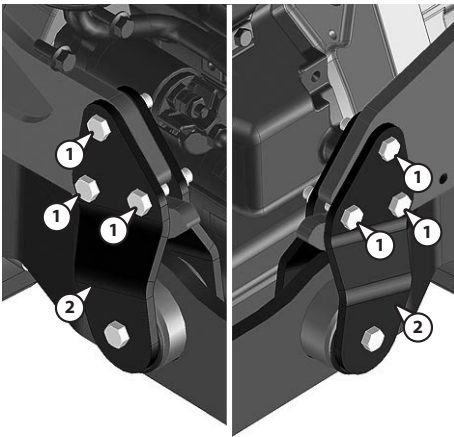


Loosen the screws of each silent block (Ref. 1).

Tilt the engine mounts' silent block supports (Ref. 2).




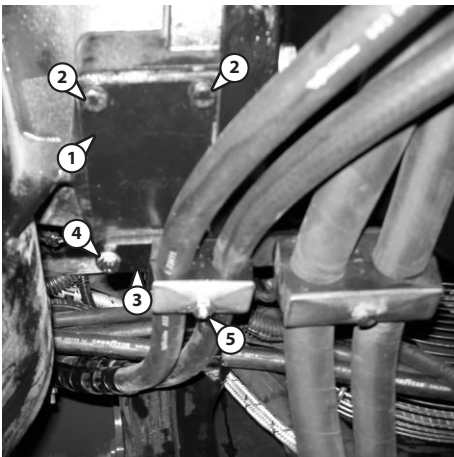
Use the support (Ref. 1) for remove the engine with the pumps from the truck.



Place the 3 screws (Ref. 1) of the engine silent block/frame support bracket (Ref. 2) on each side of the engine.

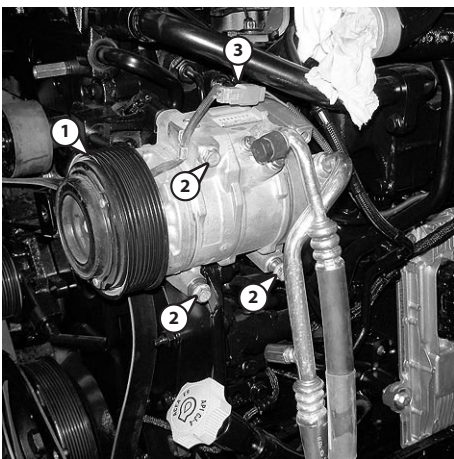
Apply a tightening torque of 97 N.m to each screw.

 10-ENGINE CONTROL AND ADJUSTMENT: "ENGINE SUSPENSION FITTING" section.



Position the plate, situated under the converter, (Ref. 1) and secure it with its 2 screws (Ref. 2).

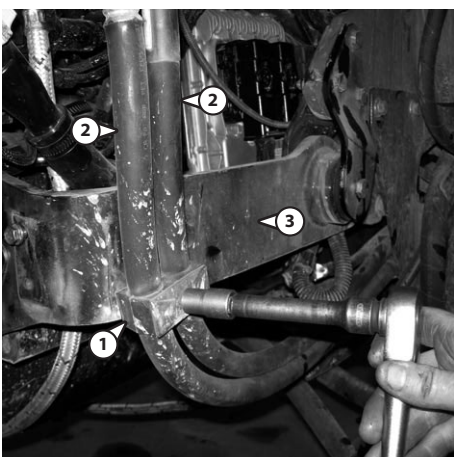
Position the hose clamp support plate (Ref. 3) and secure it with the screw (Ref. 4) and the nut (Ref. 5).



#### **AIR CONDITIONING OPTION:**

Refit the air conditioning compressor (Ref. 1) on the engine and attach it by means of its 3 screws (Ref. 2).

Connect its electrical connector (Ref. 3).



Attach the clamp (Ref. 1) securing the air conditioning hoses (Ref. 2) on the engine mount/frame (Ref. 3).

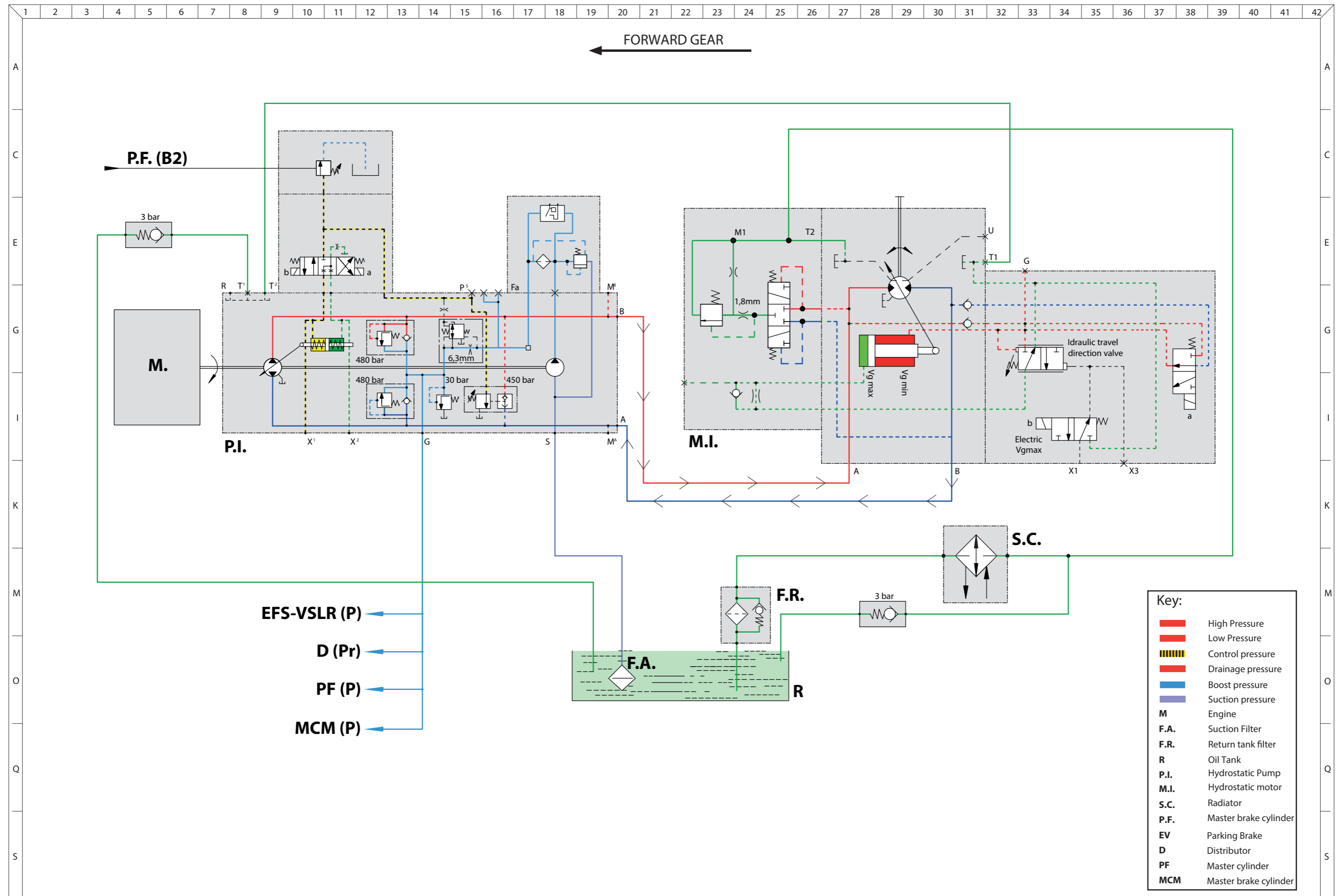
## ENGINE DIAGNOSTIC

## VEHICLE ERROR

SPN	FMI	J1939 Lamp	Suspect Parameter	Fault / Description	Possible Cause	Remedy
27	3	W	Engine Exhaust Gas Recirculation Valve Position	EGR Valve Position Voltage OOR High	Open circuit in the harness, either signal or ground. Sensor failure.	EGR sensor circuit fault.
27	4	W	Engine Exhaust Gas Recirculation Valve Position	EGR Valve Position Voltage OOR Low	Sensor signal shorted to ground. Sensor failed.	EGR sensor circuit fault.
27	7	W	Engine Exhaust Gas Recirculation Valve Position	EGR Valve Not Responding or Out of Adjustment	EGR Valve actuator mismatch error	EGR Valve not responding or out of adjustment.
29	3	W	Percent Accelerator Position #2	Throttle #2 Voltage OOR High	Sensor shorted to 5V.	0
29	4	W	Percent Accelerator Position #2	Throttle #2 Voltage OOR Low	Sensor open or shorted to ground.	0
51	7	W	Engine Throttle Position	Air Throttle Not Responding or Out of Adjustment	Air Throttle actuator mismatch error	Air Throttle Not Responding or Out of Adjustment
51	14	S	Engine Throttle Position	Sensed position of EGR is open and Air Throttle is closed at power-up.	Actuator connectors swapped. Impact: actuators go to unpowered state.	EGR system fault. Engine power limited.
70	9	W	#N/D	#N/D	#N/D	#N/D
91	2	W	#N/D	#N/D	#N/D	#N/D
91	3	W	Accelerator Pedal Position	Throttle Voltage OOR High	Sensor shorted to 5V.	Foot throttle sensor circuit voltage high. Use hand throttle. Restart engine to attempt vehicle recovery
91	4	W	Accelerator Pedal Position	Throttle Voltage OOR Low	Sensor open or shorted to ground.	Foot throttle sensor circuit voltage low. Use hand throttle. Restart engine to attempt vehicle recovery.
94	3	W	Engine Fuel Delivery Pressure	Fuel Pressure Voltage OOR High	Pressure sensor harness has an open in the ground circuit or a short in the harness to high voltage or pressure sensor failure.	Fuel pressure sensor voltage high.
94	4	W	Engine Fuel Delivery Pressure	Fuel Pressure Voltage OOR Low	Pressure sensor not connected or open in the signal line. Pressure sensor supply connection open. Harness shorted to ground. Pressure sensor failure.	Fuel pressure sensor voltage low.
94	16	W	Engine Fuel Delivery Pressure	Fuel Pressure High - Moderately Severe Level	"Pump will have speed mismatch or lost communication faults; with lost communication the pump will run full speed. (fault will need to be superceded) Restriction in the air bleed or return line, would give high inlet pressure (pump goes to min speed)"	Fuel Pressure High. Check fuel supply and filters
94	17	W	Engine Fuel Delivery Pressure	"Fuel Pressure Low - Least Severe Level -5 kPa for>30 sec"	Low pressure in the fuel supply pump circuit. Restriction in the low pressure system due to a plugged filter or pump failure. Out of fuel.	Fuel pressure low. Check fuel supply and filters
94	18	W	Engine Fuel Delivery Pressure	"Fuel Pressure Low - Moderately Severe Level -20kPa for>5 sec"	"Low pressure in the fuel supply pump circuit. Restriction in the low pressure system due to a plugged filter or pump failure. This probably doesn't need to be a stop alarm. It could be on the second low level on Rail Pressure"	Fuel pressure low. Check fuel supply and filters
97	3	W	Water In Fuel Indicator	Water In Fuel Voltage OOR High	Open circuit in the harness, either signal or ground. Water in fuel sensor failure.	Water separator sensor voltage high.
97	4	W	Water In Fuel Indicator	Water In Fuel Voltage OOR Low	Water in fuel sensor signal shorted to ground. Water in fuel sensor failed.	Water separator sensor voltage low.
97	16	S	Water In Fuel Indicator	Water In Fuel Detected	Water has been detected in the separator bowl.	Engine Water Separator Full. Drain water separator.

SPN	FMI	J1939 Lamp	Suspect Parameter	Fault / Description	Possible Cause	Remedy
3695	9	W	#N/D	#N/D	#N/D	#N/D
3711	14	W	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Gas Temperature	DOC inlet temperature target not reached during ETM with parasitic loading	Regeneration failure. Service only level.	Exhaust Filter inlet temperature not reached. Active Exhaust Filter Cleaning unavailable.
3711	31	W	Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Gas Temperature	DOC inlet temperature target not reached during ETM	"Very low ambient, and/or parasitics; elevated idle is disabled; application requirements not met. In range sensor failure."	Exhaust Filter inlet temperature not reached. Active Exhaust Filter Cleaning unavailable.
3719	0	W	Particulate Trap #1 Soot Load Percent	Soot level high-most severe level	Soot at the service only level. A derate will be applied.	Exhaust Filter Restricted. Engine Power Limited. Contact service representative.
3719	10	W	DPF Soot Loading	Soot load increases faster than expected.	Excessive ash loading, Engine Miss, Smoke, DOC outlet temperature problem	0
3719	13	W	Particulate Trap #1 Soot Load Percent	Exceeding the number of allowed Exhaust Filter Recovery	Too many exhaust filter recoveries without an active regen. Once exceeded, requires service tool to reset.	Exhaust filter system requires service.
3719	16	W	Particulate Trap #1 Soot Load Percent	Soot level high-moderately severe level	Engine power limited. Start parked filter cleaning on engine setting page	Exhaust Filter Restricted. Engine Power Limited. Start parked filter cleaning on engine settings page per Operators Manual.
3720	15	W	Particulate Trap #1 Ash Load Percent	Ash load in exhaust filter is high	Ash load is high; invalid/offset in-range delta P reading on DPF sensor; potential for plugged or restricted lines to delta P sensor.	Ash load in exhaust filter is high. Contact service representative for ash removal.
3720	16	W	Particulate Trap #1 Ash Load Percent	Ash load in exhaust filter is high	Time based after first threshold is active	Ash load in exhaust filter is high. Contact service representative for ash removal.
3936	0	S	Diesel Particulate Filter	Large difference between DPF inlet and outlet temperatures may indicate unintended hydrocarbon injection - Most Severe Level	Turbo seals failure, injector misfire, leaking dosing nozzle, leaking coolant - check engine liquid levels	Unexpected temperature in Exhaust Filter
3936	16	W	Diesel Particulate Filter	Large difference between DPF inlet and outlet temperatures may indicate unintended hydrocarbon injection-Moderately Severe Level	Turbo seals failure, injector misfire, leaking dosing nozzle, leaking coolant - check engine liquid levels	Unexpected temperature in Exhaust Filter
4490	12	W	Specific Humidity	Sensor indicating an error condition	"Sensor failure Impact to condensation AECD, Reduced accuracy of engine out Nox models, revert to T3 humidity model No derate required"	Compressor inlet sensor fault
4765	0	W	DOC Inlet Temperature	High Inlet Temperature. In-range sensor failure.	Unable to complete Regen	0
4765	12	W	Particulate Trap Intake Gas Temperature	Error reported from sensor	"Thermocouple channel wires are open circuit or shorted to ground or power. Impact - dosing not allowed"	Exhaust filter temperature sensor error.
4766	12	W	Particulate Trap Intermediate Gas Temperature	Error reported from sensor	"Thermocouple channel wires are open circuit or shorted to ground or power. Impact - dosing not allowed, loss of unintended dosing diagnostic"	Exhaust filter temperature sensor error.
4766	15	W	Particulate Trap Intermediate Gas Temperature	DOC Outlet Temperature High	"System dosing more than expected, slow response time of sensors (sooted up), erratic fuel supply or nozzle performance; DOC over performance; see also unintended HC fault Impact - regeneration must retry"	TBD
4766	16	W	Particulate Trap Intermediate Gas Temperature	DOC Outlet Temperature Higher than expected for too many times in one key cycle	"System dosing more than expected, slow response time of sensors (sooted up), erratic fuel supply or nozzle performance; DOC over performance; see also unintended HC fault Impact - regeneration cannot complete"	Exhaust filter temperature higher than expected. Active Exhaust Filter Cleaning unavailable.
4766	17	W	Particulate Trap Intermediate Gas Temperature	Desired temperature not reached after {#DesiredDOCOutletTemperatureDiagnosticsTimerThreshold} seconds.	"Face plugging, dosing injector not operating correctly; excessive DOC deactivation (poisoning); fuel coking in dosing line; undetected in-range failure of DOC inlet (reading too high) or outlet temp Impact: regen is aborted"	Exhaust filter cleaning system fault. Not able to continue cleaning.
4766	18	W	Particulate Trap Intermediate Gas Temperature	Desired temperature not reached after {#DesiredDOCOutletTemperatureDiagnosticsTimerThreshold} seconds and happens {#DesiredDOCOutletTemperatureNotReachedFlagPCTThreshold} times.	"Face plugging, dosing injector not operating correctly; excessive DOC deactivation (poisoning); fuel coking in dosing line; undetected in-range failure of DOC inlet (reading too high) or outlet temp Impact: regen is aborted until power cycle Impact: regen is aborted"	Exhaust filter cleaning system fault. Not able to continue cleaning.
4795	13	W	Diesel Particulate Filter	Calibration string does not match what is expected	"Correct DPF not installed Impact: Speed derate"	Exhaust Filter calibration data invalid. Engine power limited.
4795	31	W	Diesel Particulate Filter	DPF delta P is much lower than expected	"Missing DPF, lines are broken open. Impact: Derate"	Exhaust filter missing or severely damaged. Engine power limited
5018	0	S	Aftertreatment Diesel Oxidation Catalyst System	Too many occurrences of DOC out >x+C DOC in when regen is not active and DOC in is >300°C	"Turbo seals failure, injector misfire, leaking dosing nozzle, leaking coolant - check engine liquid levels Impact - engine power derate and inhibit active regen"	Unexpected temperature in Exhaust Filter Catalyst
5018	16	W	Aftertreatment Diesel Oxidation Catalyst System	Too many occurrences of DOC out >x+C DOC in when regen is not active and DOC in is >300°C	"Turbo seals failure, injector misfire, leaking dosing nozzle, leaking coolant - check engine liquid levels Impact - none"	Unexpected temperature in Exhaust Filter Catalyst
5125	3	W	Sensor Supply Voltage 7	Sensor Supply Voltage OOR High	5V Supply shorted to a higher voltage. Refer to schematic for pinout information.	Sensor Supply Voltage OOR High
5125	4	W	Sensor Supply Voltage 7	Sensor Supply Voltage OOR Low	5V Supply shorted to ground. Refer to schematic for pinout information.	Sensor Supply Voltage OOR Low

FORWARD GEAR SCHEMATIC DIAGRAM



## 2 - PRE START-UP OR POST MAINTENANCE CHECKS

- Check the oil level in the tank.
- Check all couplings and hoses for leaks.
- Check the electrical connections of the electrovalve.
- Check circuit is topped up, and in some cases fill oil filter cartridge before fitting for full priming.
- Check control hose connections:
- Connect the boost - pilot - HP and case manometers.

### Starting up

- Check all the wheels as a safety precaution.
- Turn the engine over on the starter without starting it up to completely drain the circuit.
- Ensure that the boost pressure rises to approx. 14 bar by turning over on the starter.



***Never start up without boost pressure as this risks damaging the transmission.***

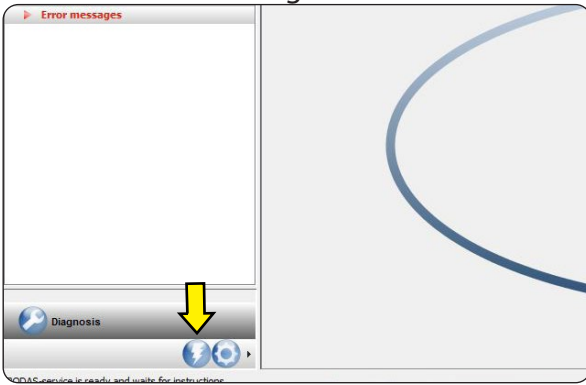
- Start the engine and let it run at min rpm for a few minutes.
- 30 bar boost pressure with 2 bar casing pressure.

Needle instability indicates an intake of air through the suction port (emulsion of the surface of the oil in the tank and cavitation noise on the transmission).

*"Forward/reverse selector in neutral" in both loops of the HP circuit. The pressure is equal to the boost pressure.*

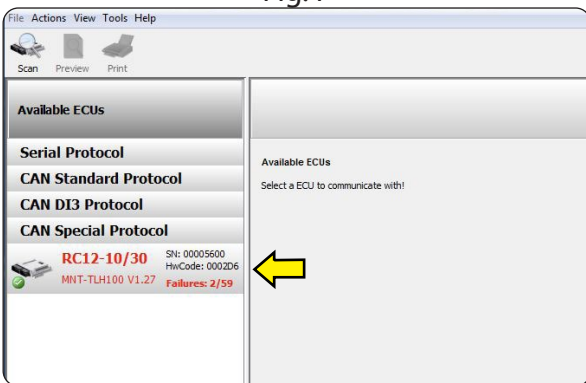
- Gradually accelerate to heat up circuit oil
- When, the oil is at the operating temperature 50° to 60° - check the engine speed.
  - ⇒ Min rpm
  - ⇒ Full speed unladen

Fig. E



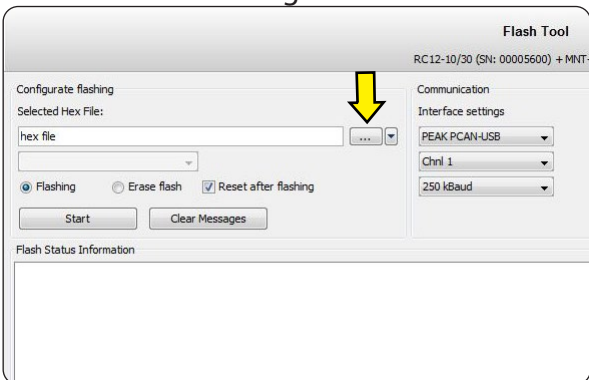
Wait for the software to, then select the command «Flash Tool» (Fig. E).

Fig. F



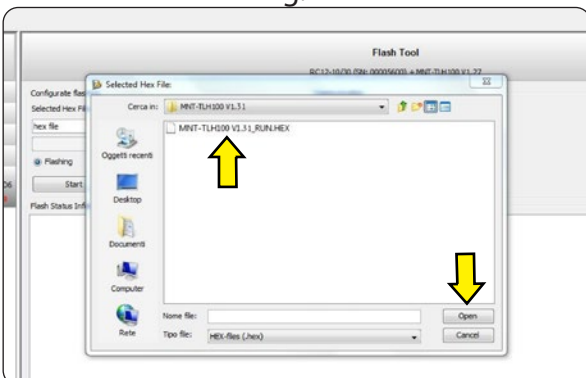
Select the command «RC12-10/30» from the «Available ECUs» drop-down menu (Fig. F).

Fig. G

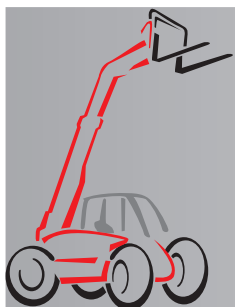


Select the button highlighted by the arrow (Fig. G) in the Selected Hex File menu.

Fig. H



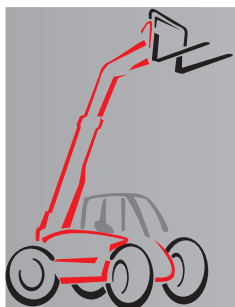
Select the file depending on the type of gearbox:  
 «MNT-DRCA410\_v1.04\_stand.HEX»  
 for standard versions  
 «MNT-DRCA411\_v1.06\_SoF.HEX»  
 for Shift on Fly versions  
 and confirming by selecting the Open button (Fig. H).



## **TRANSMISSION REFIT**

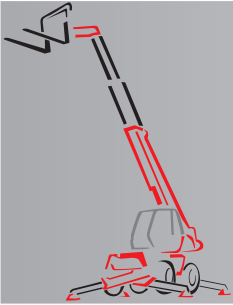
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SPN / FMI	SPN / FMI	DTC	Fault / Description	Possible Cause	Reaction	Quit	Remedy	Result	Note
8021	32801	7F021	Gbx clutch pressure sw	Pressure switch doesn't work. Power supply VSS2 faulty.	Gearbox locked. Limited speed in 1st gear No reaction in 2nd gear		Check the wiring pin: 231 (signal) 255 (supply)		
FMI = 2, DATA ERRATIC, INTERMITTENT OR INCORRECT	2	2	(out_Driving.GbxCluCtrl_b AND NOT in_RC.GearBox_Pressure_sw_b8) OR (NOT out_Driving.GbxCluCtrl_b AND in_RC.GearBox_Pressure_sw_b8)					ok	
FMI = 3, VOLTAGE ABOVE NORMAL, OR SHORTED TO HIGH SOURCE	3	3	in_getStatus()					not	Never occurs
FMI = 4, VOLTAGE BELOW NORMAL, OR SHORTED TO LOW SOURCE	4	4	in_getStatus()					not	Never occurs
FMI = 5, CURRENT BELOW NORMAL OR OPEN CIRCUIT	5	5	in_getStatus()					not	Never occurs
FMI = 6, CURRENT ABOVE NORMAL OR GROUNDED CIRCUIT	6	6	in_getStatus()					not	Never occurs
FMI = 11, ROOT CAUSE NOT KNOWN	11	B	in_getStatus()					not	Never occurs
FMI = 13, OUT OF CALIBRATION	13	D	in_getStatus()					not	Never occurs
FMI = 31, CONDITION EXISTS	31	1F	in_getStatus()					not	Never occurs
8022	32802	7F022	Gbx hyd oil temp sw	Temperature switch doesn't work.	Gearbox locked. Vehicle velocity limited.		Check the wiring pin: 121 (signal) 145 (gnd)		
FMI = 3, VOLTAGE ABOVE NORMAL, OR SHORTED TO HIGH SOURCE	3	3	in_getStatus()					nok	Never occurs
FMI = 4, VOLTAGE BELOW NORMAL, OR SHORTED TO LOW SOURCE	4	4	in_getStatus()					not	Never occurs
FMI = 5, CURRENT BELOW NORMAL OR OPEN CIRCUIT	5	5	in_getStatus()					not	Never occurs
FMI = 6, CURRENT ABOVE NORMAL OR GROUNDED CIRCUIT	6	6	in_getStatus()					not	Never occurs
FMI = 11, ROOT CAUSE NOT KNOWN	11	B	in_getStatus()					not	Never occurs
FMI = 13, OUT OF CALIBRATION	13	D	in_getStatus()					not	Never occurs
FMI = 31, CONDITION EXISTS	31	1F	in_getStatus()					not	Never occurs
8023	32803	7F023	Pump oil filter sw	Oil filter switch doesn't work. Power battery supply faulty.	Gearbox locked. Vehicle velocity limited.		Check the wiring pin: 247 (signal) 245 (supply)		
FMI = 3, VOLTAGE ABOVE NORMAL, OR SHORTED TO HIGH SOURCE	3	3	in_getStatus()					nok	Never occurs



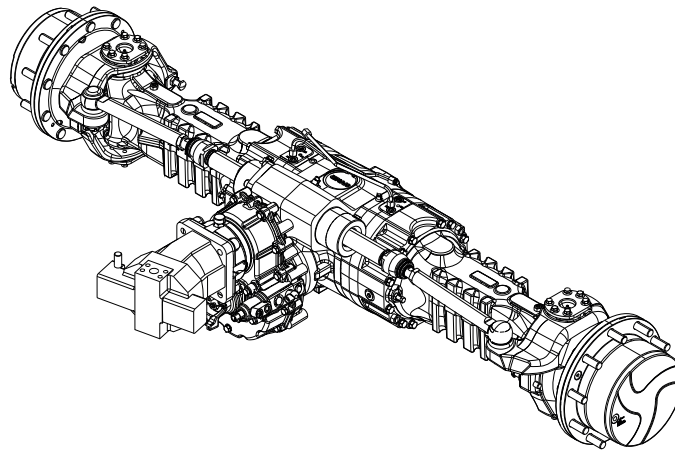
## ***SPECIFIC TRANSMISSION TOOLING***

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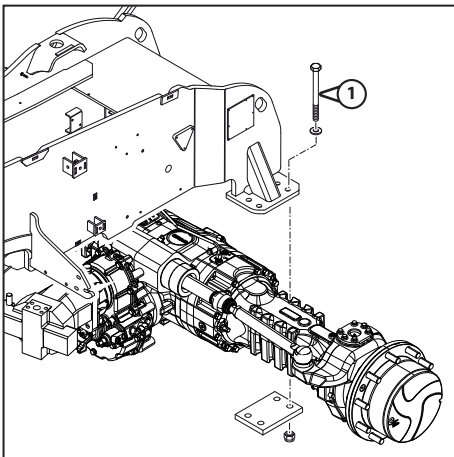
## **AXLE REMOVAL**

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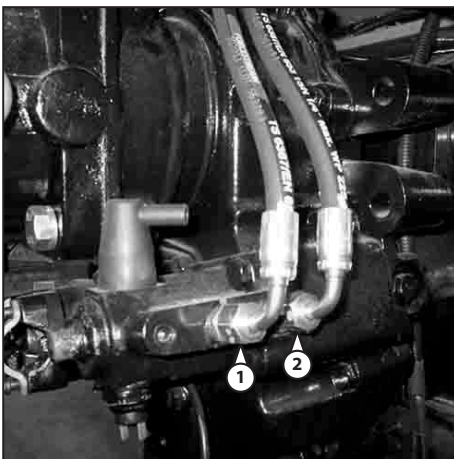


### REINSERTING THE FRONT AXLE AND HYDROSTATIC MOTOR

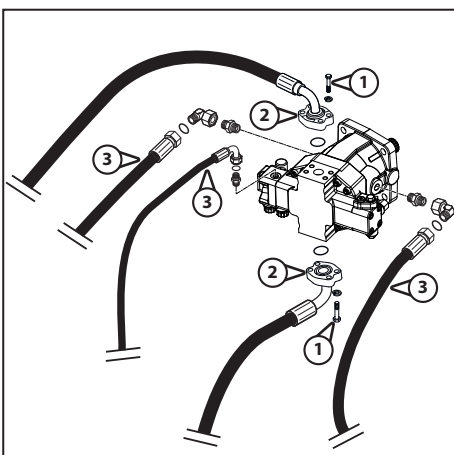
Bring the front axle and the hydrostatic motor to their original position and hold them steady. Connect the axle to the front of the chassis by means of the screws (Ref. 1).

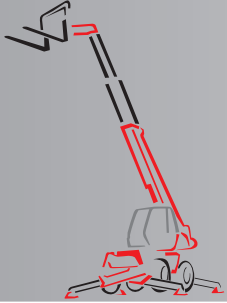


Reconnect the hydraulic tubes (Ref. 1 and 2).



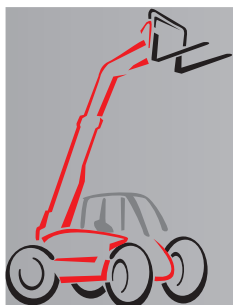
Refit the flanges (Ref. 2) on the two sides of the hydrostatic motors, tightening the screws (Ref. 1) and reconnect the tubes. Reconnect the tubes (Ref. 3).





## ***BRAKE COMPONENTS LOCATION***

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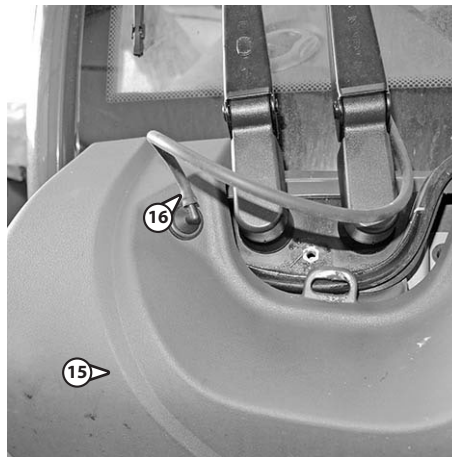
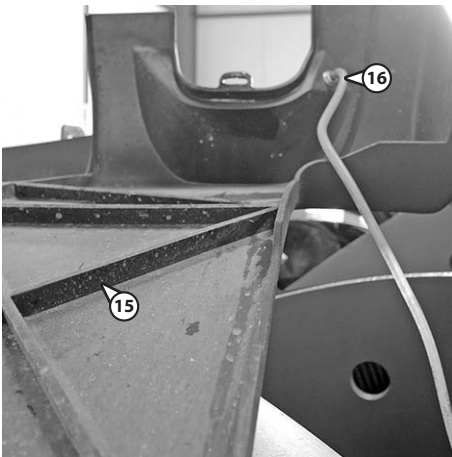
After bleeding, decompress the circuit and remove the bleeding tool.

Remove the excess brake fluid with a syringe (Item 14).

Clean any oil stains off the machine if required.

Perform a brake test in a secure area.

Check for any hydraulic leaks.

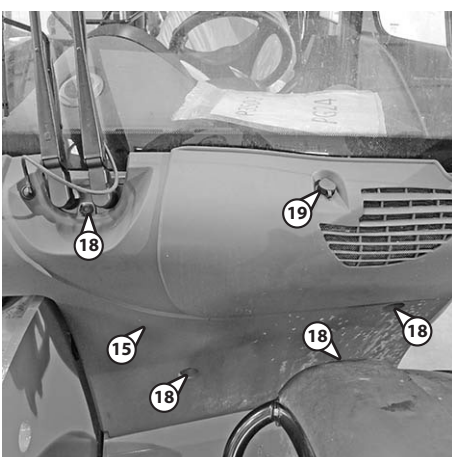


Fit the cab's front fairing (Item 15).

Connect the windscreen washer hoses (Item 16).



Attach the antenna (Item 17).

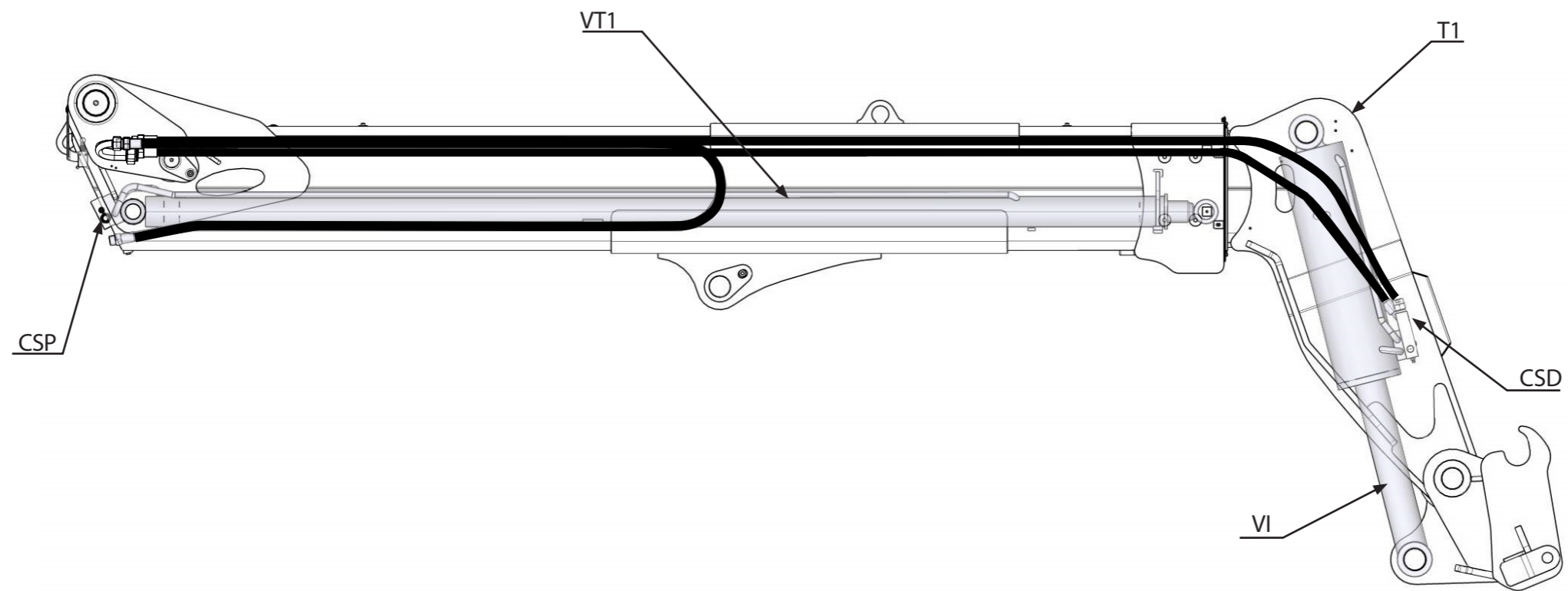


Tighten the four screws (Item 18) securing the front fairing (Item 15).

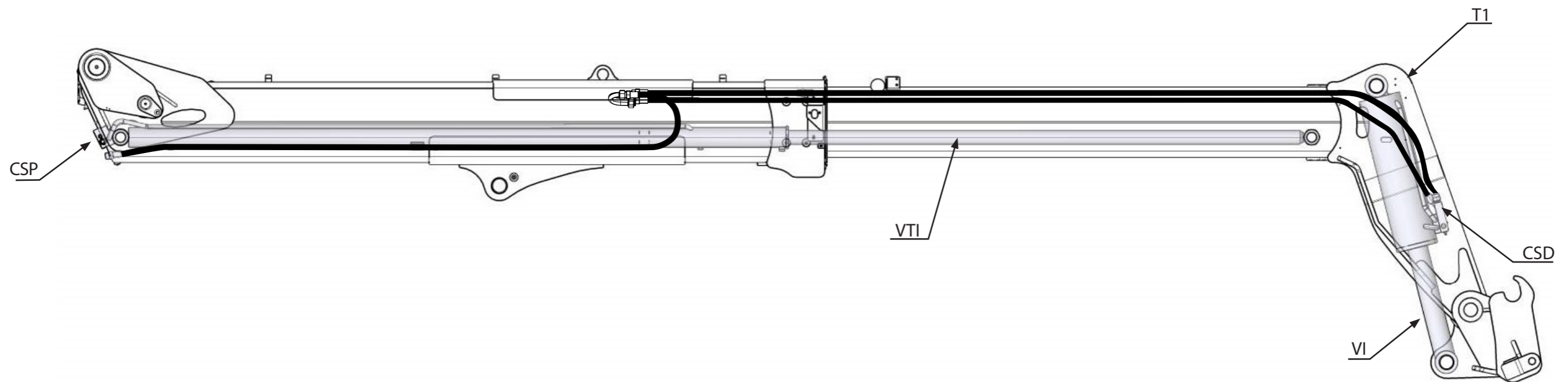
Close the inspection case with the ignition key (Item 19).

**BOOM OPERATING MECHANISM**

**DIAGRAM OF HYDRAULIC CIRCUIT AT BOOM RETRACTED POSITION**



**DIAGRAM OF HYDRAULIC CIRCUIT AT BOOM EXTENDED POSITION**

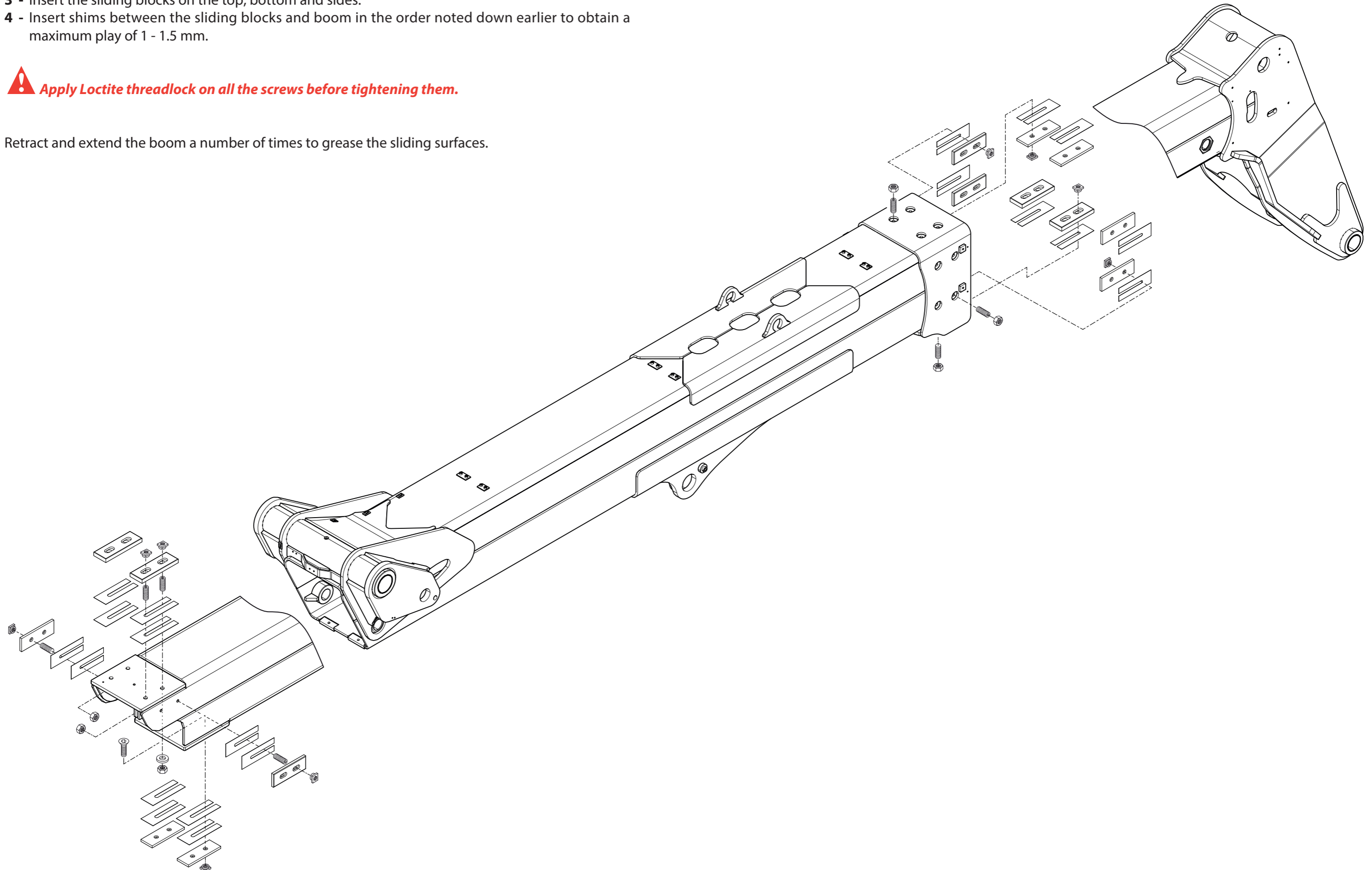


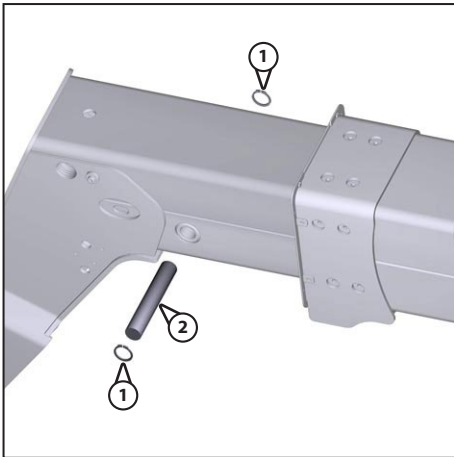
**ADJUSTING THE SLIDING BLOCKS**

- 1 - Lubricate the surfaces of the boom on which the sliding blocks slide.
- 2 - Grease the sliding surfaces of each sliding block before inserting these.
- 3 - Insert the sliding blocks on the top, bottom and sides.
- 4 - Insert shims between the sliding blocks and boom in the order noted down earlier to obtain a maximum play of 1 - 1.5 mm.

 **Apply Loctite threadlock on all the screws before tightening them.**

Retract and extend the boom a number of times to grease the sliding surfaces.



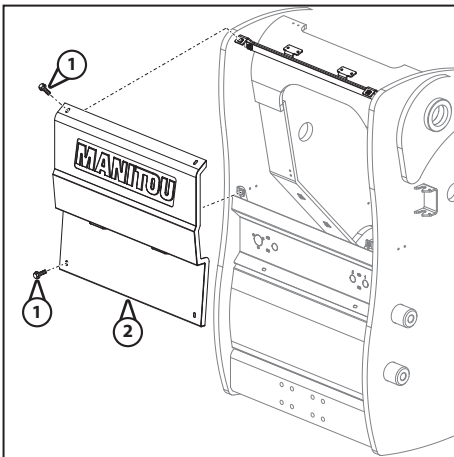


### REMOVING THE EXTENSION CYLINDER

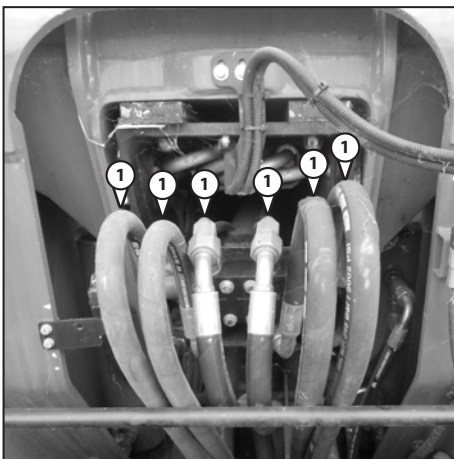
Extend the boom just enough to access the extension cylinder locking pin.

If the boom is disconnected from the machine use a hydraulic control unit.

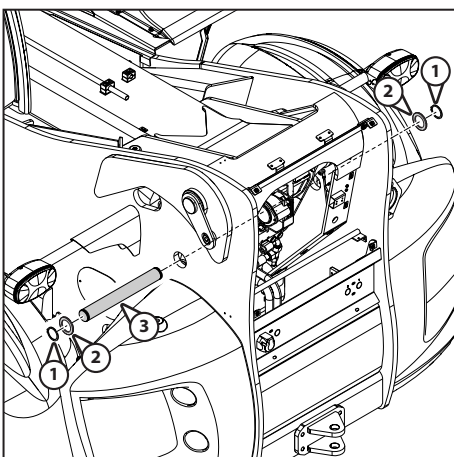
Remove the circlips (Ref. 1) and remove the pin (Ref. 2) which blocks the extension cylinder rod.



Slacken the screws (Ref. 1) and the washers and remove the rear guard (Ref. 2).



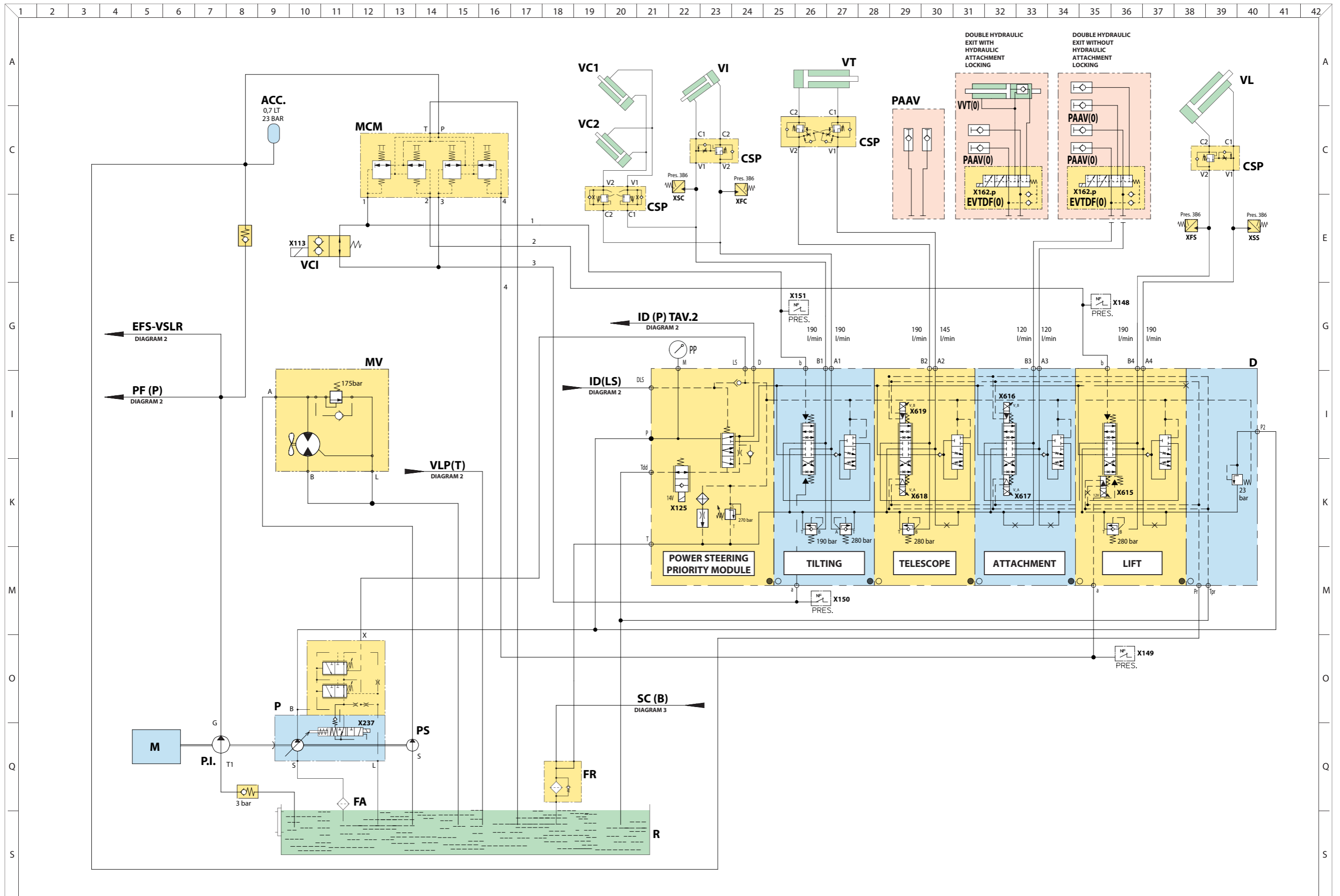
Disconnect the tubes (Ref. 1) and any component that blocks access to the cylinder extension.

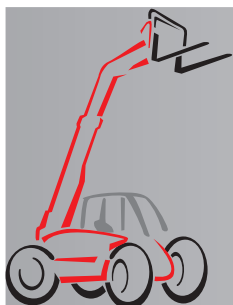


Remove the circlips (Ref. 1) and the spacers (Ref. 2) then remove the locking pin (Ref. 3) through the holes on the frame to free the extension cylinder.

### REFITTING PROCEDURE

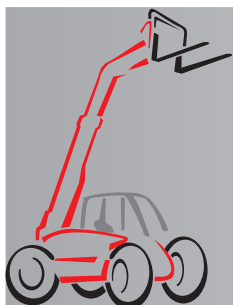
Proceed in the reverse order to refit.





## HYDRAULIC CONTROL AND ADJUSTMENT

	pages
<b>PRESSURE TEST PORTS</b> .....	<b>2</b>
– VALUES .....	2
– PRESSURE TEST PORT LOCATION .....	3
<b>TIGHTENING TORQUES</b> .....	<b>4</b>
– MAIN DISTRIBUTOR .....	4







## **HYDRAULIC SPECIFIC TOOLING**

	pages
<b>BASIC MANOMETER SET .....</b>	<b>2</b>
<b>DIGITAL MANOMETER SET .....</b>	<b>3</b>


## FUSE AND RELAY BOXES IN THE CAB


### RELAYS BOX

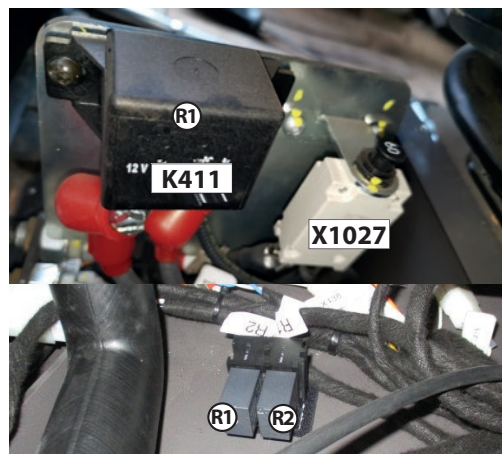
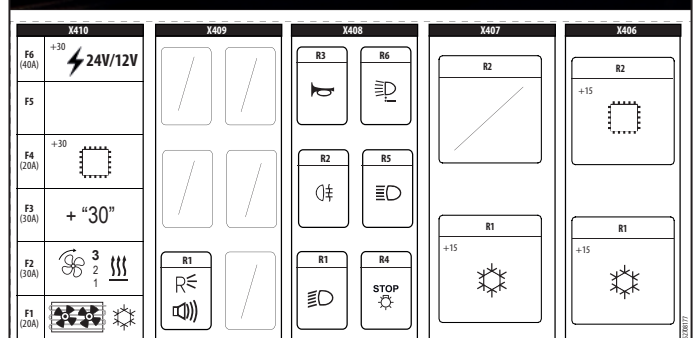
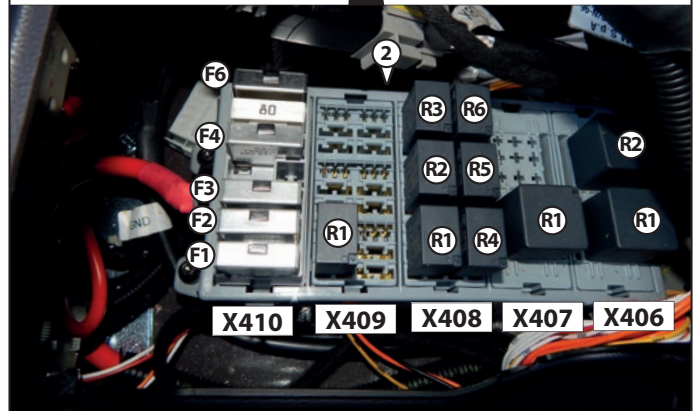
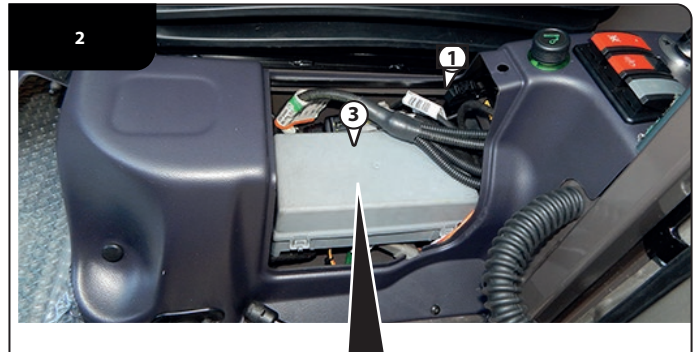
- Open the compartment (1, ) next to the driver's seat to access the fuses and relays box (2, .
- Remove the protective casing (3, ) to access the fuses and relays box (2, .



**Always replace a faulty fuse with an equivalent one. Never use a repaired fuse.**

Fuses/relays functions and position ( 2):

	FUNCTIONS		REFERENCE IN DIAGRAM
<b>X 411</b>			
R1		+30 Service relay	K411
<b>X 410</b>			
F1	20 A	Fuse +30 for electric fan roof (air conditioning)	FG1
F2	30 A	Fuse +30 heating relay	FG2
F3	30 A	Fuse +30 for start-up panel	FG3
F4	20 A	Fuse +30 vp relay	FG4
F5		Not used	FG6
F6	40A	+30 Supply fuse	FG6
<b>X 409</b>			
R1		Relay for reversing lights + reversing buzzer	K409.1
<b>X 408</b>			
R1		Low beam relay	K408.1
R2		Rear fog light relay	K408.2
R3		Horn relay	K408.3
R4		Relay for brake-reversing lights	K408.4
R5		High beam relay	K408.5
R6		Head boom working lights relay	K408.6
<b>X 407</b>			
R1		Fans control relay	K407.1
<b>X 406</b>			
R1		Relay +15 for conditioner assy from relay	K406.1
R2		Relay +15 vp MC2M	K406.2
<b>X 1027</b>			
	60A	Circuit Breaker +30	X1027.1 / X1027.2
<b>TOWER LIGHT RELAY'S</b>			
R1		Yellow Light Tower Relay	KR1
R2		Red Light Tower Relay	KR2



<i>Reference</i>	<i>Pin</i>	<i>Colour</i>	<i>Cross-section</i>	<i>Direction</i>	<i>Wire N°</i>
<b>X875</b>	1	B	1	X870.s/27	7378
		B	1	X875/B	7378
	2				
	3	C	1	SA76	00F2
	4				
	5				
	6				
	7				
	8				
	9	N	1	SA73	
	10	G	1	SA77	0F13
	A				
	B	B	1	X875/1	7378
	<b>Z</b>	-	SCH		SA999

<b>Reference</b>	<b>Pin</b>	<b>Colour</b>	<b>Cross-section</b>	<b>Direction</b>	<b>Wire N°</b>
<b>X104.p</b>	1	V	1	X433/19	3325
	2	V	1	X433/20	3061
	3	V	1	X454/3	3209
	4	A	1	X434/R16	1313
	5	A	1	X409/R1_86	1314
	6	C	1	SA60	00F1
	7	V	1	X453/9	3493
	8	H	1	SA128	1007
<b>X108.s</b>	1	G	1	SA68	2000
	2	N	1	Gnd6.2	
<b>X121.p</b>	1	G	1.5	X408/R1_87	2010
	2	G	1.5	X408/R5_87	2009
	3	G	1	X1021/F4b	2001
	4	G	1	X459/7	2003
	5	C	1	X1021/F13b	0F60
	6	B	1	X434/L35	6651
	7	A	1	X433/17	1389
	8	A	1	X433/18	1387
	9	B	1.5	X408/R3_87	6072
	10	B	1	X454/6	6051
	11	C	1	SA60	00F1
	12	C	1	X1020/F5b	00F5
	13	B	1	SA134	6141
	14	A	1	X434/R14	1300
	15	A	1	X434/L2	1301
	16	V	1	X433/4	3057
	17	B	1	X454/8	6846
	18	B	1	X454/7	6052
	19	R	1.5	X1022/F2a	0F61
	20	G	1	X409/R1_87	2011
	21	B	1	SA124	6372
	22	B	1	SA124	6372
	23	Z	1	SA125	0600
	24	V	1	X434/R15	3072
	25	Z	1	SA125	0600
	26	B	1	X434/L28	6845
	27	V	1	X434/R10	3261
	28				
	29	G	1	SA79	2002
	30	G	1	SA68	2000
	31	A	1	X433/5	1391

Reference	Pin	Colour	Cross-section	Direction	Wire N°
<b>X434</b>	R22				
	R23	B	1	X479.s/7	7334
	R24	B	1	X479.s/8	7335
	R25	B	1	X479.s/5	7332
	R26	V	1	X128.p/43	3094
	R27	V	1	X128.p/44	3092
	R28	V	1	X128.p/45	3091
	R29	V	1	X128.p/46	3093
	R30	V	1	X128.p/47	3095
	R31				
	R32				
	R33				
	R34				
	R35	B	1	X443/2	6611
	R36				
	R37	V	1	X128.p/40	
	R38	V	1	X128.p/41	3116
	R39	V	1	X128.p/42	3117
	R40				
	L1				
	L2	A	1	X121.p/15	1301
	L3	B	1	X416/2	6723
	L4	B	1	X451/2	6878
	L5	B	1	SA69	6078
	L6	B	1	X416/3	6055
	L7				
	L8	B	1	X401.2/1	6861
	L9	B	1	X450/C	6876
	L10	B	1	SA54	6377
	L11	B	1	X128.p/12	6488
	L12	V	1	X128.p/36	3526
	L13				
	L14	B	1	SA67	6527
L15	B	1	X870.p/2	6326	
L16	B	1	X870.p/3	6327	
L17	B	1	X870.p/11	6850	
L18	B	1	X870.p/14	6855	
L19	B	1	X870.p/9	6880	
L20	B	1	X870.p/10	6881	
L21	B	1	X870.p/12	6882	
L22	B	1	X870.p/13	6883	

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Reference	Pin	Colour	Cross-section	Direction	Wire N°
<b>X870.p</b>	15	N	1	Gnd5.1	
	16	C	1	SA62	0F15
	17	A	1	X434/L24	1326
	18	A	1	SA127	1327
	19				
	20				
	21				
	22				
	23				
	24				
	25	G	0.5	SA90	
	26	V	0.5	SA91	
	27	B	1	X454/17	7378
	28	B	1	X454/16	7379
	29	B	1	X454/15	6287
	30	B	1	X453/5	7380
	31	C	1	SA59	00F2
	32	G	1	X417.2/1	0F13
	33	B	1	SA80	6162
	34	N	1	Gnd6.2	
	35				
	36	B	0.5	SA118	
	37	L	0.5	SA117	
	38	B	1	SA122	6140
	39				
	40				
	41				
	42				
	43				
	44				
	45				
	46				
	47				
<b>X877.p</b>	1				
	2				
	3				
	4	B	1	X877.p/5	8027
	5	B	1	X877.p/4	8027
	6				

Reference	Pin	Colour	Cross-section	Direction	Wire N°
<b>X104.s</b>	1	V	1	X100.s/1	3062
	2	V	1	X102.p/1	3061
	3	V	1	X110/1	3209
	4	A	1	X500/1	1313
	5	A	1	X501/1	1314
	6	C	1	X208/1	00F1
	7	V	1	X208/2	3493
	8	H	1	SA45	1007
<b>X109</b>	1	H	0.5	SA45	1007
	2				
	3				
	4				
	5	B	0.5	X201/4	6745
	6	Z	0.5	X201/3	0641
	7	B	0.5	SA2	6746
	8	B	0.5	X305/3	6747
	9	Z	0.5	SA1	0642
	10				
	11	N	1.5	Gnd3.1	
	12				
<b>X110</b>	1	V	1	X104.s/3	3209
	2	N	1	Gnd3.1	
<b>X200</b>	1	H	6	X302/87	1001
<b>X201</b>	1	Z	0.5	SA1	0642
	2	B	0.5	SA2	6746
	3	Z	0.5	X109/6	0641
	4	B	0.5	X109/5	6745
<b>X202</b>	1	R	1	SA13	0201
	2	R	1	X304/B	F202
<b>X203</b>	F1a	R	8	SA13	0201
	F1b	R	8	SA8	F201
<b>X204</b>	F1a	R	6	SA13	0201
	F1b	R	6	X302/30	F200
<b>X205</b>	1	V	0.5	SA4	CAN001
	2	G	0.5	SA3	CAN001
	3				
	4				
	5				
	6				
	7	B	1	X103.s/7	6308
	8				

<i>Reference</i>	<i>Pin</i>	<i>Colour</i>	<i>Cross-section</i>	<i>Direction</i>	<i>Wire N°</i>
<b>X141</b>	A	R	1	Sal11	0F61
	B	C	1	Sal10	0F60
	C	N	1	Gnd1.2	
<b>X142</b>	1	C	1	Sal20	00F2
	2	V	1	X128.s/39	3157
<b>X143.p</b>	A	R	1	Sal11	0F61
	B	C	1	Sal10	0F60
	C	N	1	Gnd2.1	
<b>X143.s</b>	A				
	B				
	C				
<b>X144</b>	1	C	1	Sal2	00F1
	2	B	1	X121.s/6	6651
<b>X145.p</b>	1	C	1	Sal20	00F2
	2	B	1	X128.s/12	6488
<b>X145.s</b>	1				
	2				
<b>X146.p</b>	1	G	2	X128.s/4	2013
	2	N	2	Gnd2.4	
<b>X146.s</b>	1				
	2				
<b>X147</b>	1	C	1	Sal2	00F1
	2	B	1	X128.s/1	6546
<b>X148.1</b>	1	C	1	X149.1/1	00F1
<b>X148.2</b>	1	V	1	X455.s/4	3092
<b>X149.1</b>	1	C	1	X148.1/1	00F1
		C	1	X150.1/1	00F1
<b>X149.2</b>	1	V	1	X455.s/3	3094
<b>X150.1</b>	1	C	1	X151.1/1	00F1
		C	1	X149.1/1	00F1
<b>X150.2</b>	1	V	1	X455.s/8	3524
<b>X151.1</b>	1	C	1	X455.s/1	00F1
		C	1	X150.1/1	00F1
<b>X151.2</b>	1	V	1	X455.s/7	3095
<b>X152.p</b>	1	R	1.5	Sal14	
	2	N	1.5	Sal15	
	3	B	0.5	Sal12	CAN015
	4	L	0.5	Sal13	CAN015

## LED FLASHING LIGHTS

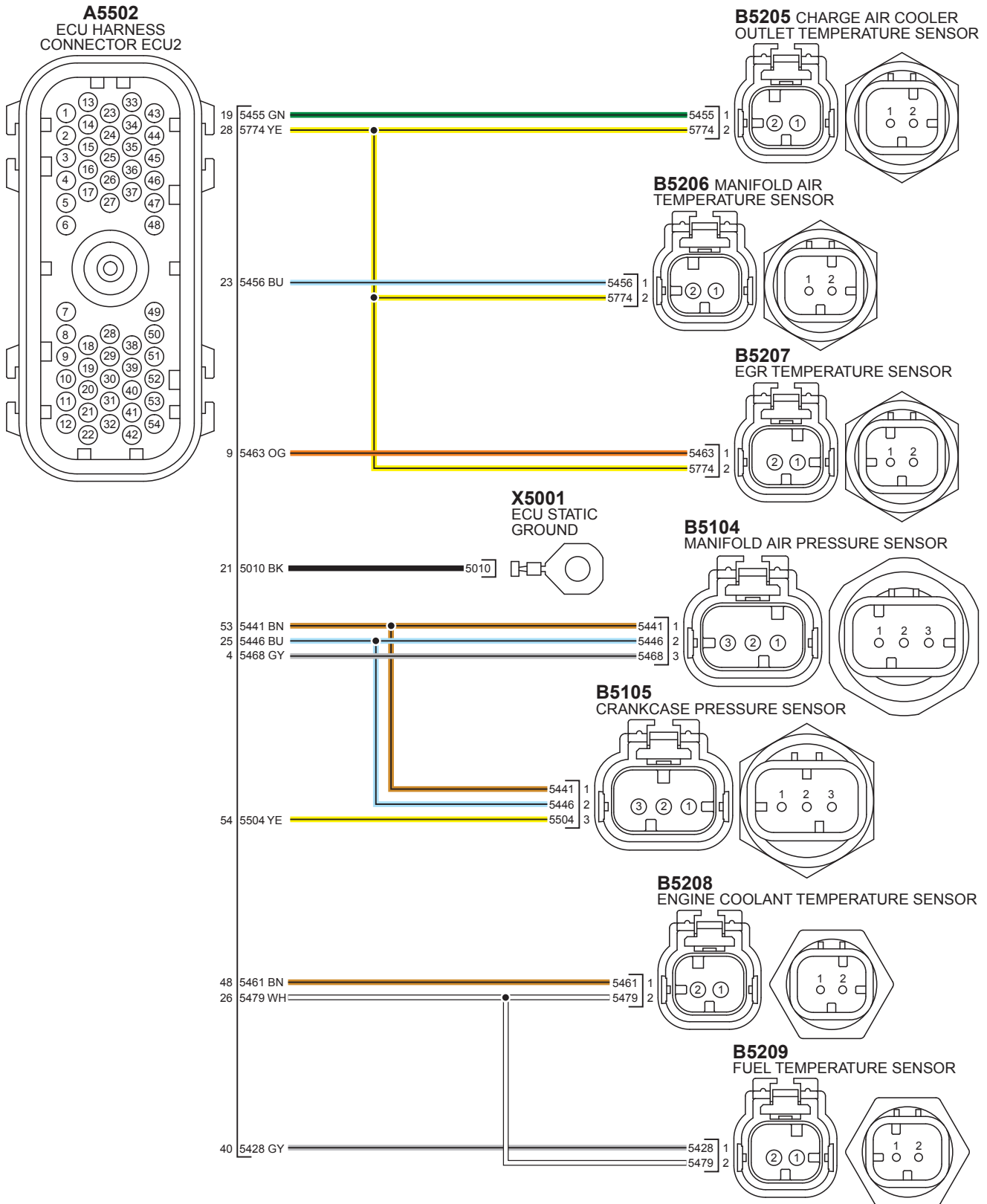
Reference	Pin	Colour	Cross-section	Direction	Wire N°
SA1	-	GV	1	X748.s/1	
		GV	1	XGF/1	
		GV	1	XL1/1	
		GV	1	XL2/1	
		GV	1	XL3/1	
		GV	1	XL4/1	
SA2	-	N	1	XL4/2	
		N	1	X748.s/2	
		N	1	XGF/2	
		N	1	XL1/2	
		N	1	XL2/2	
		N	1	XL3/2	
X748.s	1	GV	1	SA1	
	2	N	1	SA2	
XGF	1	GV	1	SA1	
	2	N	1	SA2	
XL1	1	GV	1	SA1	
	2	N	1	SA2	
XL2	1	GV	1	SA1	
	2	N	1	SA2	
XL3	1	GV	1	SA1	
	2	N	1	SA2	
XL4	1	GV	1	SA1	
	2	N	1	SA2	

## LMI LINE

Reference	Pin	Colour	Cross-section	Direction	Wire N°
SA1	-	L	0.34	Xccr2/3-L	
		B	0.5	SA10	CAN002
		B	0.5	SA5	CAN001
SA2	-	L	0.5	SA6	CAN001
		L	0.5	SA11	CAN002
		N	0.34	Xccr2/4-N	
SA3	-	N	1	Xsc/2	
		B	0.34	Xccr2/2-B	
		N	1	Xmdc/1	
		N	1	SA7	
		N	1	Xss/2	
		N	1	Xfc/2	
		N	1	Xfs/2	
		N	1	Xs/4	2019
SA4	-	M	0.34	Xccr2/1-M	
		Z	1	Xfc/1	
		Z	1	Xsc/1	
		Z	1	Xmdc/8	
		Z	1	Xss/1	
		Z	1	Xfs/1	
SA5	-	B	1	X125.s/3	
		B	0.5	SA1	CAN001
SA6	-	L	0.5	SA2	CAN001
		L	1	X125.s/4	
SA7	-	SCH		SA9	CAN001
		N	1	X125.s/2	
		N	1	SA3	
SA9	-	SCH		SA7	CAN001
		SCH		SCH/-	CAN002
SA10	-	B	0.5	SA1	CAN002
		B	0.5	Xmdc/19	
SA11	-	L	0.5	SA2	CAN002
		L	0.5	Xmdc/20	
SA12	-	C	1	X125.s/1	00F2
		C	1	Xmdc/16	00F2
		C	1	Xmdc/14	00F2
		C	1	Xmdc/3	00F2
		C	1	Xmdc/13	00F2
SCH	-	SCH		SA9	CAN002

Reference	Pin	Colour	Cross-section	Direction	Wire N°
SA15	-	N	1	SA52	
		N	1	X877.p/2	
		N	1	SA10	
		N	1	X927/2	
SA48	-	L	0.5	X993.s/4	CAN038
		L	0.5	X995/C2	CAN037
		L	0.5	X426.p/B	CAN004
SA49	-	SCH		SA4	CAN004
		SCH		A/-	CAN037
		SCH		C/-	CAN038
SA50	-	B	1	X995/K1	6983
		B	1	X993.s/11	6983
		B	1	X804.p/3	6983
		B	1	X995/H1	6983
SA52	-	N	1	X995/J2	
		N	1	SA15	
		N	1	X995/G3	
		N	1	X995/G2	
		N	1	X995/J3	
SA54	-	B	1	X927/5	6030
		B	1	X995/H3	6030
		B	1	X804.p/1	6030
		B	1	X995/H2	6030
X426.p	A	B	0.5	SA6	
	B	L	0.5	SA48	
	C	B	0.5	SA4	6140
X555.s	1	C	1	SA11	0F80
	2	B	1	X877.p/7	7715
X771.s	1	B	1	X804.p/4	6527
	2	B	1	X995/J1	6204
X804.p	1	B	1	SA54	6030
	2				
	3	B	1	SA50	6983
	4	B	1	X771.s/1	6527
	5				
	6	B	1	X992.2	
	7	B	1	X877.p/4	6948
	8	B	1	X993.s/12	7367

<b>Reference</b>	<b>Pin</b>	<b>Colour</b>	<b>Cross-section</b>	<b>Direction</b>	<b>Wire N°</b>
<b>X791</b>	1	N	1	SA1	
	2				
	3	Z	1	SA5	
	4	V	1	X793.s/5	3120
	5	V	1	X793.s/4	3119
	6	V	1	X793.s/1	3116
	7	V	1	X793.s/2	3117
	8	V	1	X793.s/3	3118
	9				
	10				
	11				
	12				
	13	Z	1	SA5	
	14	Z	1	SA5	
	15				
	16	Z	1	SA5	
	17				
	18				
	19	B	0.5	SA2	CAN005
	20	L	0.5	SA3	CAN005
	21				
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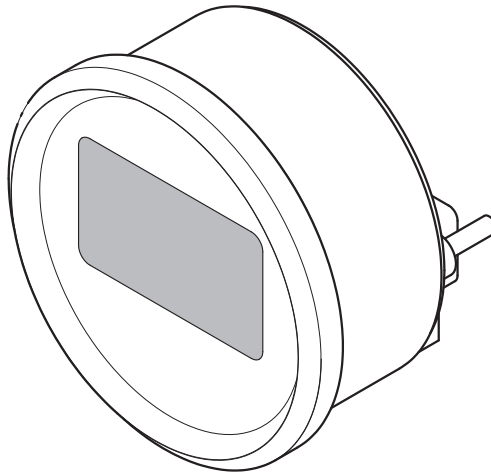


**A5502**—ECU harness connector ECU 2  
**A5502-4**—[5468 gray] Manifold air pressure signal  
**A5502-9**—[5463 orange] Exhaust gas recirculation (EGR) temperature signal  
**A5502-19**—[5455 green] Boost air cooler outlet temperature signal  
**A5502-21**—[5010 black] ECU static ground  
**A5502-23**—[5456 blue] Manifold air temperature signal  
 (21/05/2021)

**A5502-25**—[5446 purple] 5V sensor supply no. 7 A, return  
**A5502-26**—[5479 white] 5V sensor supply no. 1A, return  
**A5502-28**—[5774 yellow] 5V sensor supply no. 6 A, return  
**A5502-40**—[5428 gray] Fuel temperature signal  
**A5502-48**—[5461 brown] Engine coolant temperature signal  
**A5502-53**—[5441 brown] 5V sensor supply no. 7, positive  
**A5502-54**—[5504 yellow]

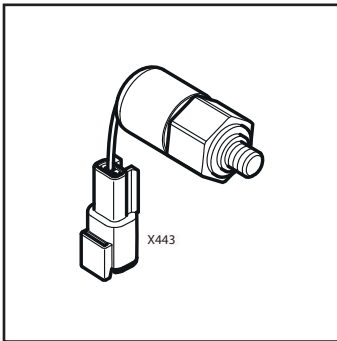
Crankcase pressure signal  
**B5104**—Intake manifold pressure sensor  
**B5105**—Crankshaft pressure sensor  
**B5205**—Boost air cooler outlet temperature sensor  
**B5206**—Intake air temperature sensor  
**B5207**—EGR temperature sensor  
**B5208**—Engine coolant temperature sensor  
**B5209**—Fuel temperature sensor

**X5001**—ECU static ground

**GUARDIAN ANGEL**

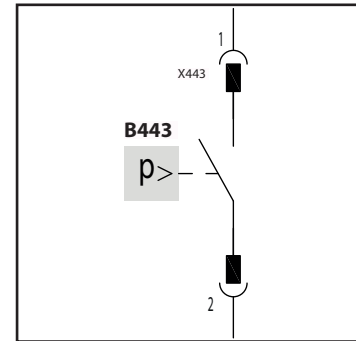
<b>GUARDIAN ANGEL</b>		
<b>X019</b>		
<b>No. PIN</b>	<b>TYPE</b>	<b>Designation</b>
<b>A1</b>	+15	+15 power supply
<b>A2</b>	Digital input	Sensor 1(-)
<b>A3</b>	Digital input	Sensor 2(-)
<b>A4</b>	Digital input	Sensor 3(-)
<b>A5</b>	Digital input	Sensor 4(-)
<b>A6</b>	Digital input	Sensor 5(-)
<b>A7</b>	Digital input	Sensor 6(+)
<b>A8</b>	Digital output	Output 1 (5A)
<b>B1</b>	Digital output	Output 2 (5A)
<b>B2</b>	Digital input	Sensor 7(+) – speed transducer
<b>B3</b>	Digital input	Sensor 8 (+) - bypass key switch
<b>B4</b>	Analog input	Transducer or sensor 1 (0...10V)
<b>B5</b>	Analog input	Transducer or sensor 2 (NTC)
<b>B6</b>	Analog input	Transducer or sensor 3 (NTC)
<b>B7</b>	Analog input	Transducer or sensor 4 (4...20mA)
<b>B8</b>	Digital output	Output 3 (5A)
<b>C1</b>	Digital output	Output 4 (5A)
<b>C2</b>	Digital input	Signal +50 - start up
<b>C3</b>	Digital input	Signal D+ alternator signal – engine started confirmation
<b>C4</b>	CAN BUS	J1939 (CAN_H)
<b>C5</b>	CAN BUS	J1939 (CAN_L)
<b>C6</b>	CAN BUS	CAN OPEN (CAN_H)
<b>C7</b>	CAN BUS	CAN OPEN (CAN_L)
<b>C8</b>	GND	GND power supply)

**B443 SERVICE BRAKE PRESSURE SENSOR**



PIN	Function
1	Stop pedal
2	SA60

Corresponding connector

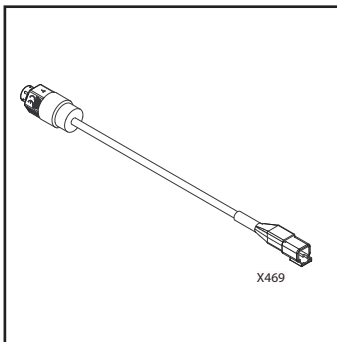


Diagram

	PIN	Minimum	Typical	Maximum
Supply voltage			12V	/
Supply current			6 mA	/
Intlet logic				
Type of inlet	Analogic input battery			

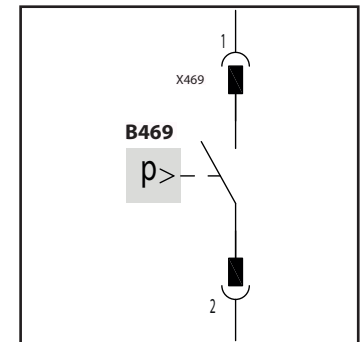
Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**B469 HYDRAULIC STEERING PRESSURE SENSOR**



PIN	Function
1	To welding
2	Steering Pressure Signal

Corresponding connector

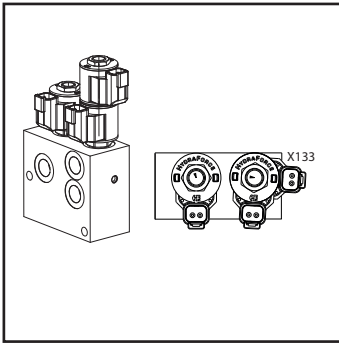


Diagram

	Typical
Supply voltage	12 V
Consumption	6 mA

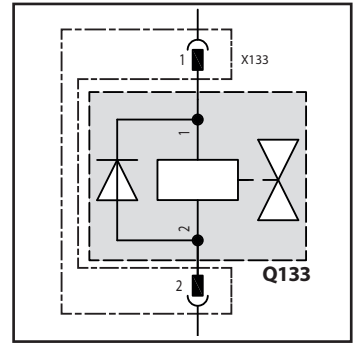
Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Q133 SLOW SPEED SOLENOID VALVE**



PIN	Function
1	EV Slow speed
2	GND

Corresponding connector

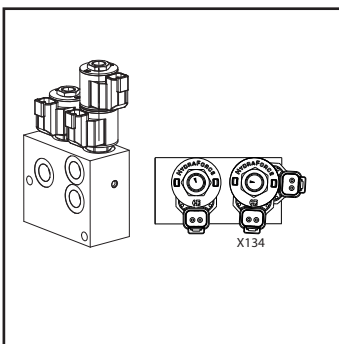


Diagram

	Typical
Supply voltage	24 V
Consumption	0.8 A

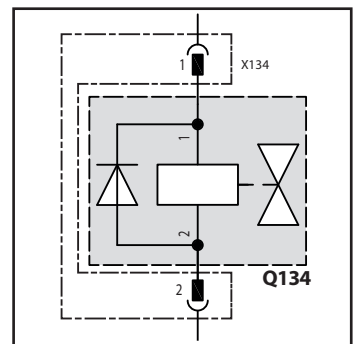
Notes: \_\_\_\_\_

**Q134 FAST SPEED SOLENOID VALVE**



PIN	Function
1	EV Fast speed
2	GND

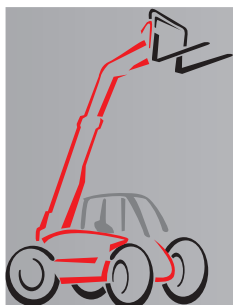
Corresponding connector



Diagram

	Typical
Supply voltage	24 V
Consumption	0.8 A

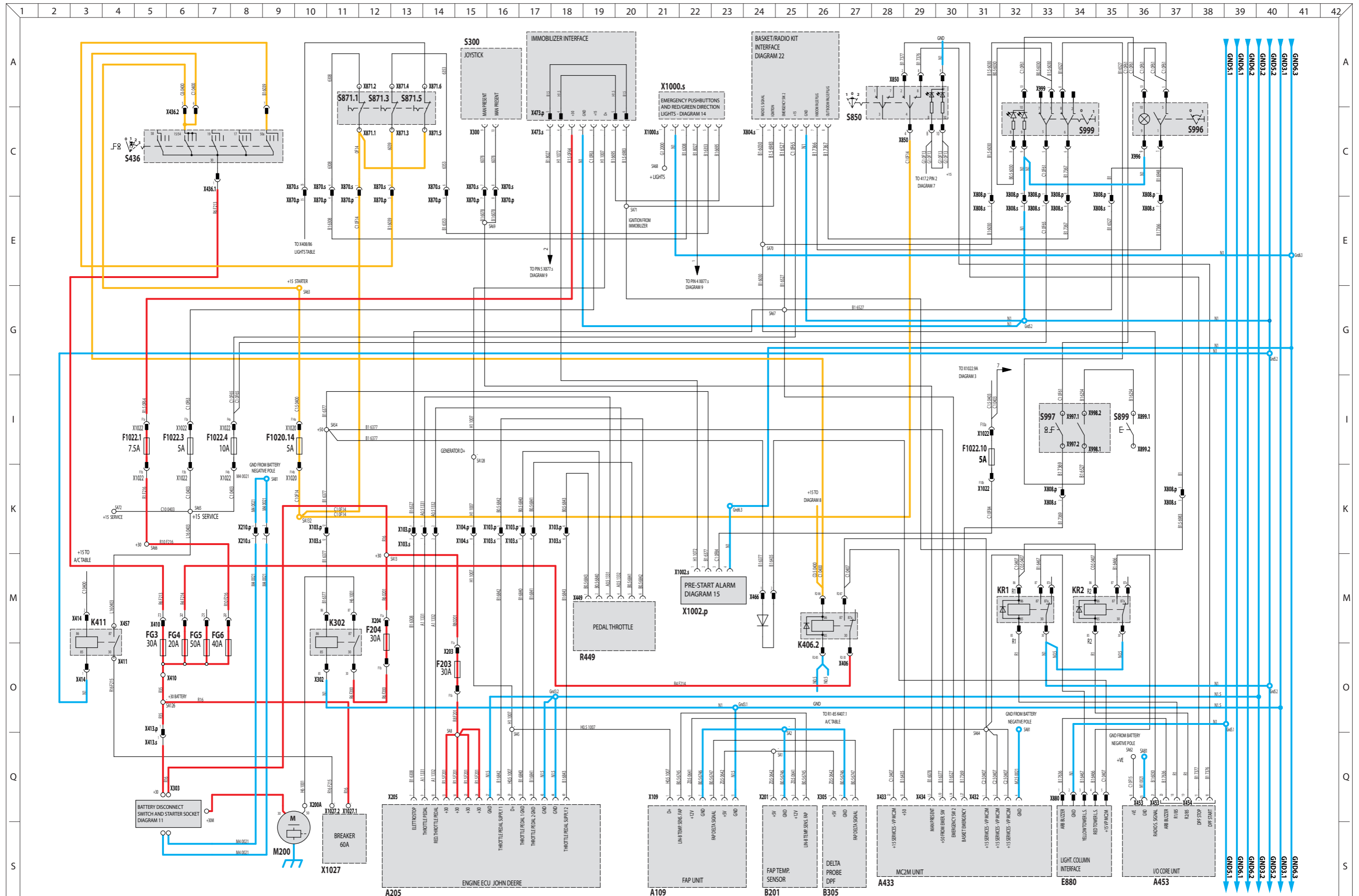
Notes: \_\_\_\_\_

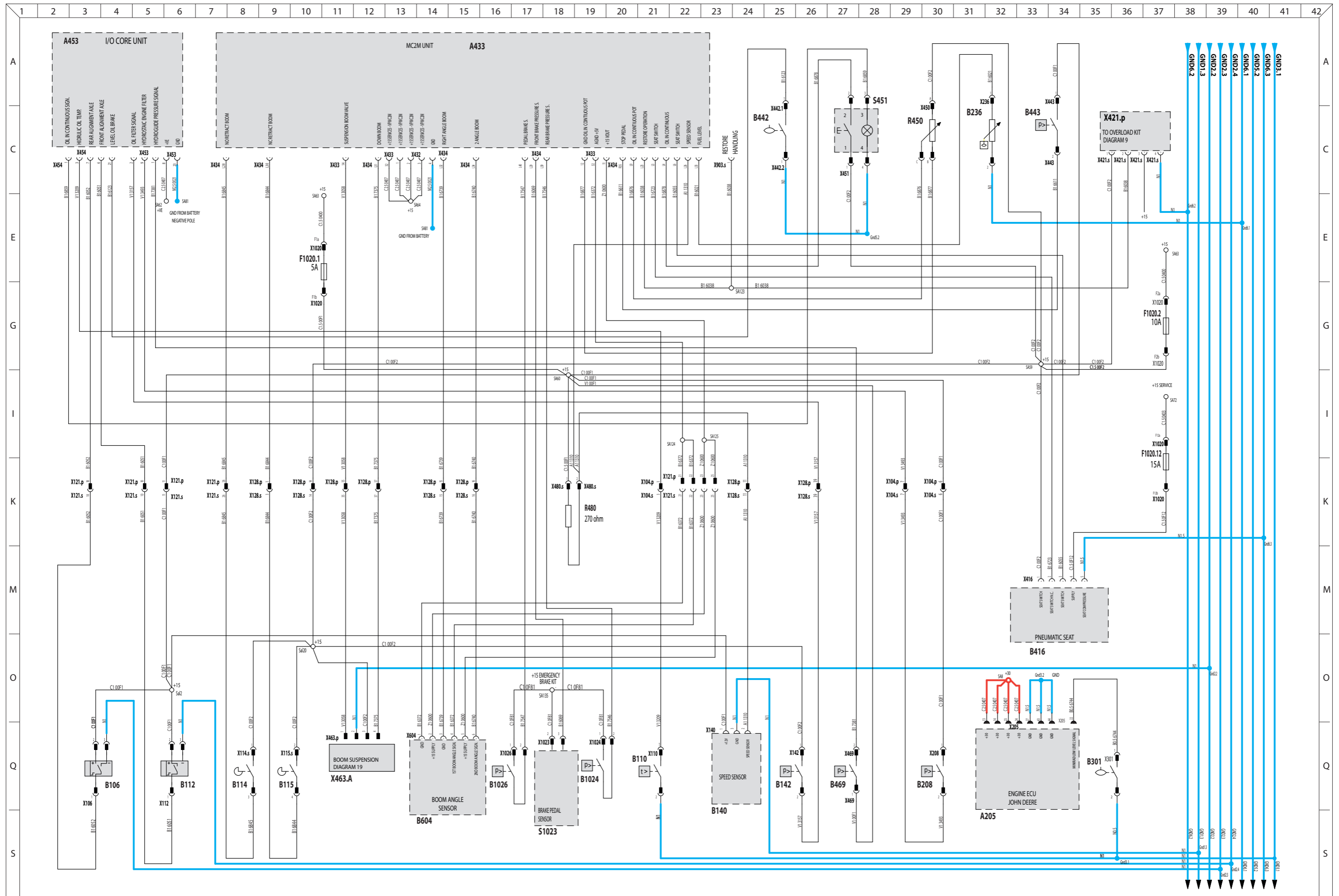


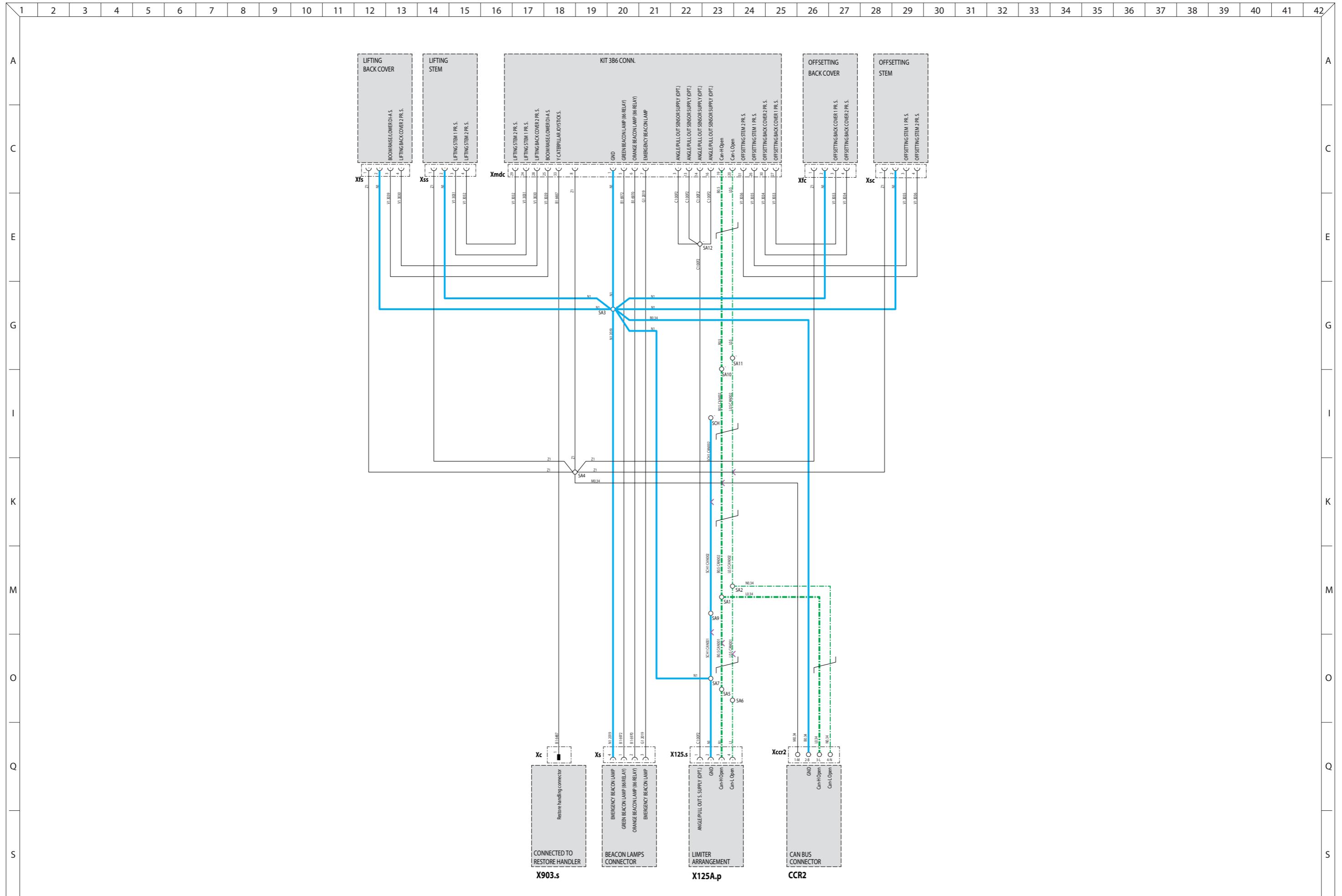
## ELECTRICAL SCHEMATIC DIAGRAMS

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– 23 – RADIO CONTROL.....	66

Electrical connectors																															
Item	Diag. 1	Diag. 2	Diag. 3	Diag. 4	Diag. 5	Diag. 6	Diag. 7	Diag. 8	Diag. 9	Diag. 10	Diag. 11	Diag. 12	Diag. 13	Diag. 14	Diag. 15	Diag. 16	Diag. 17	Diag. 18	Diag. 19	Diag. 20	Diag. 21	Diag. 22	Diag. 23	Diag. 24	Diag. 25	Diag. 26	Diag. 27	Diag. 28	Diag. 29	Diag. 30	Diag. 31
SA69	√																														
SA70	√																														
SA71	√								√																						
SA72	√		√		√	√	√		√																						
SA73		√	√	√				√																							
SA76			√	√				√																							
SA77			√	√				√																							
SA78		√	√																												
SA79						√																									
SA80		√																													
SA81	√	√	√	√	√	√		√	√																						
SA90		√																													
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SA119		√																													
SA120		√																													
SA121		√																													
SA122		√																													
SA123					√																										
SA124					√																										
SA125					√																										
SA126	√																														
SA127			√																												
SA128	√								√																						







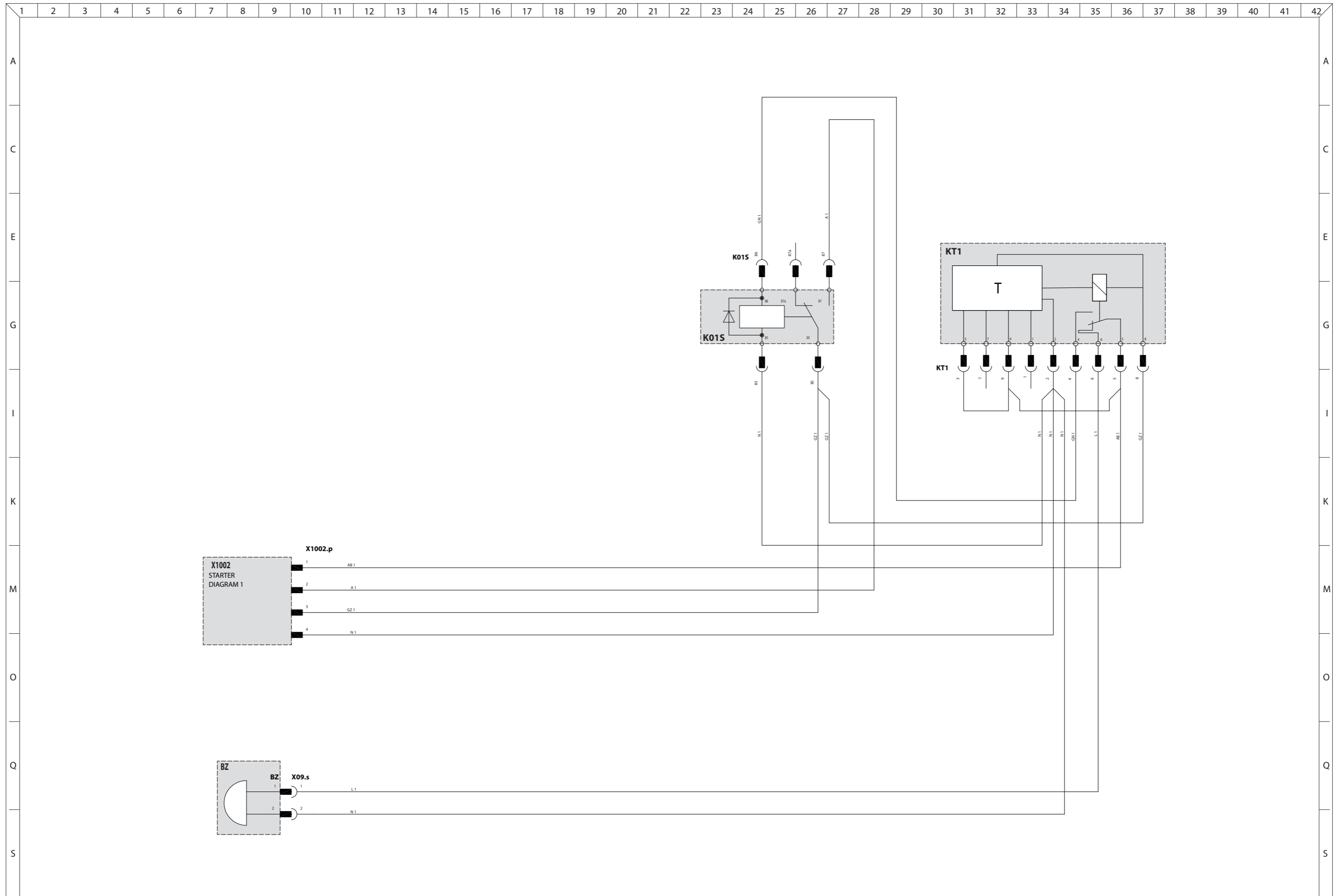


DIAGRAM 20 (Boom suspension)

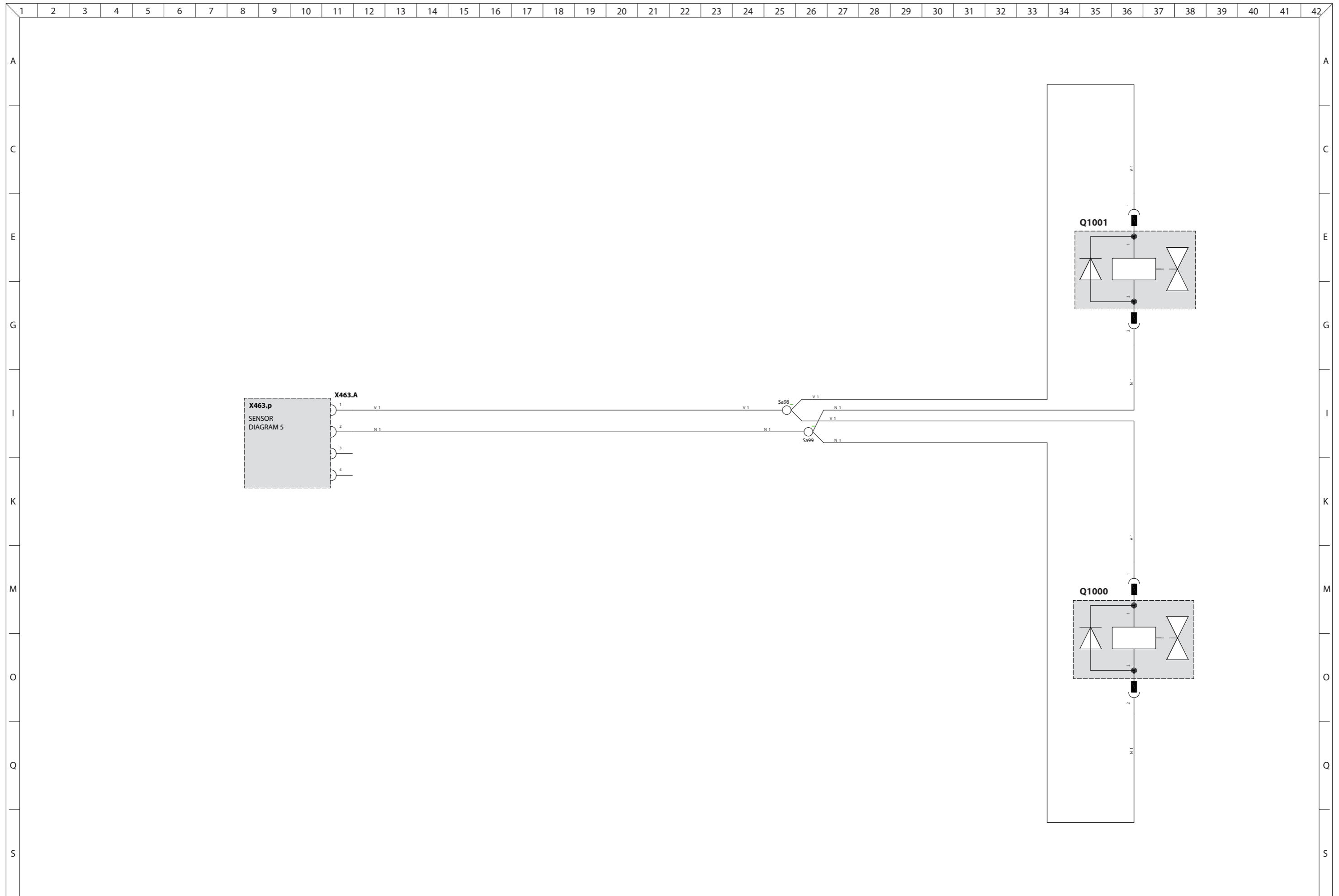


DIAGRAM 25 (Clamp control cabin)

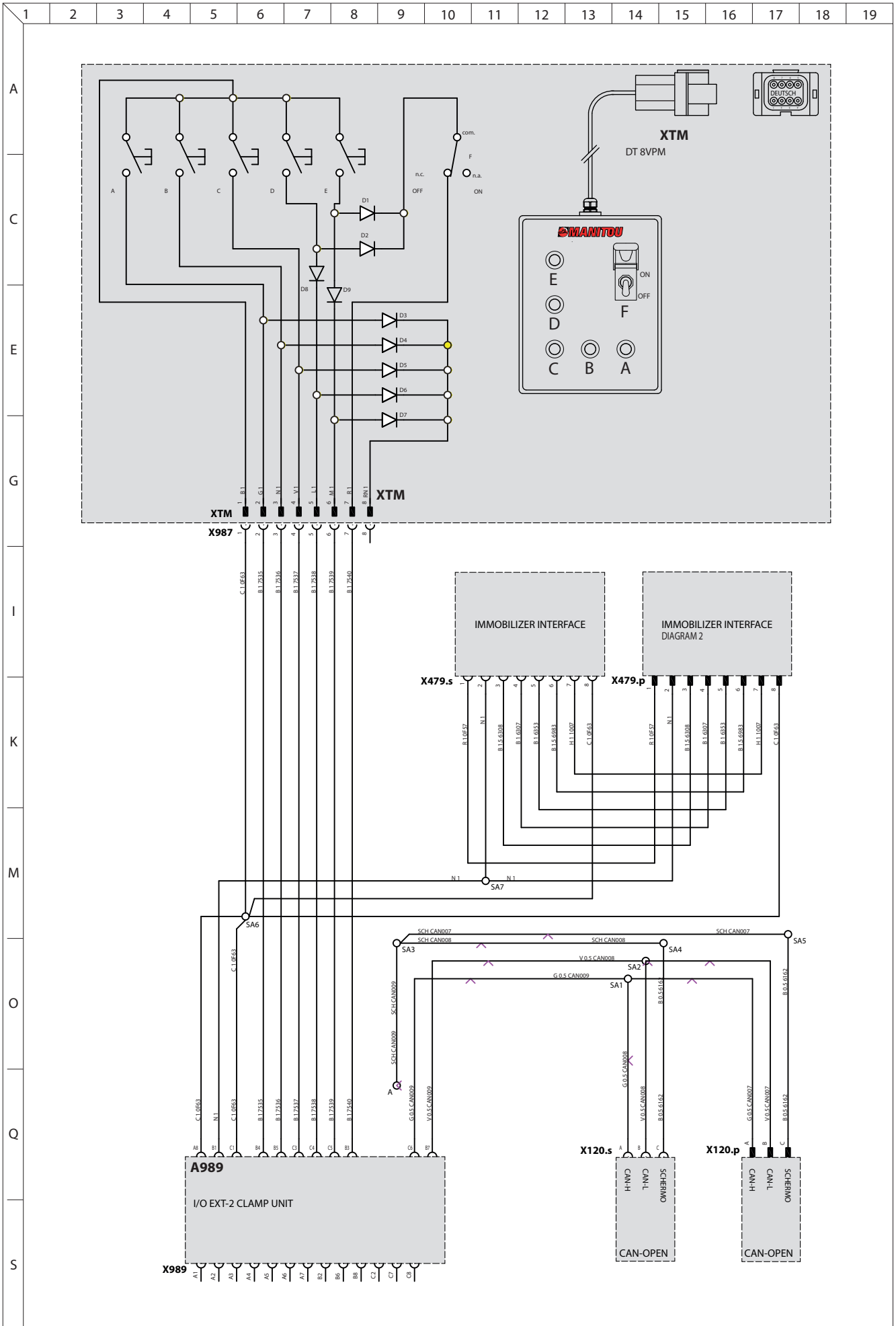
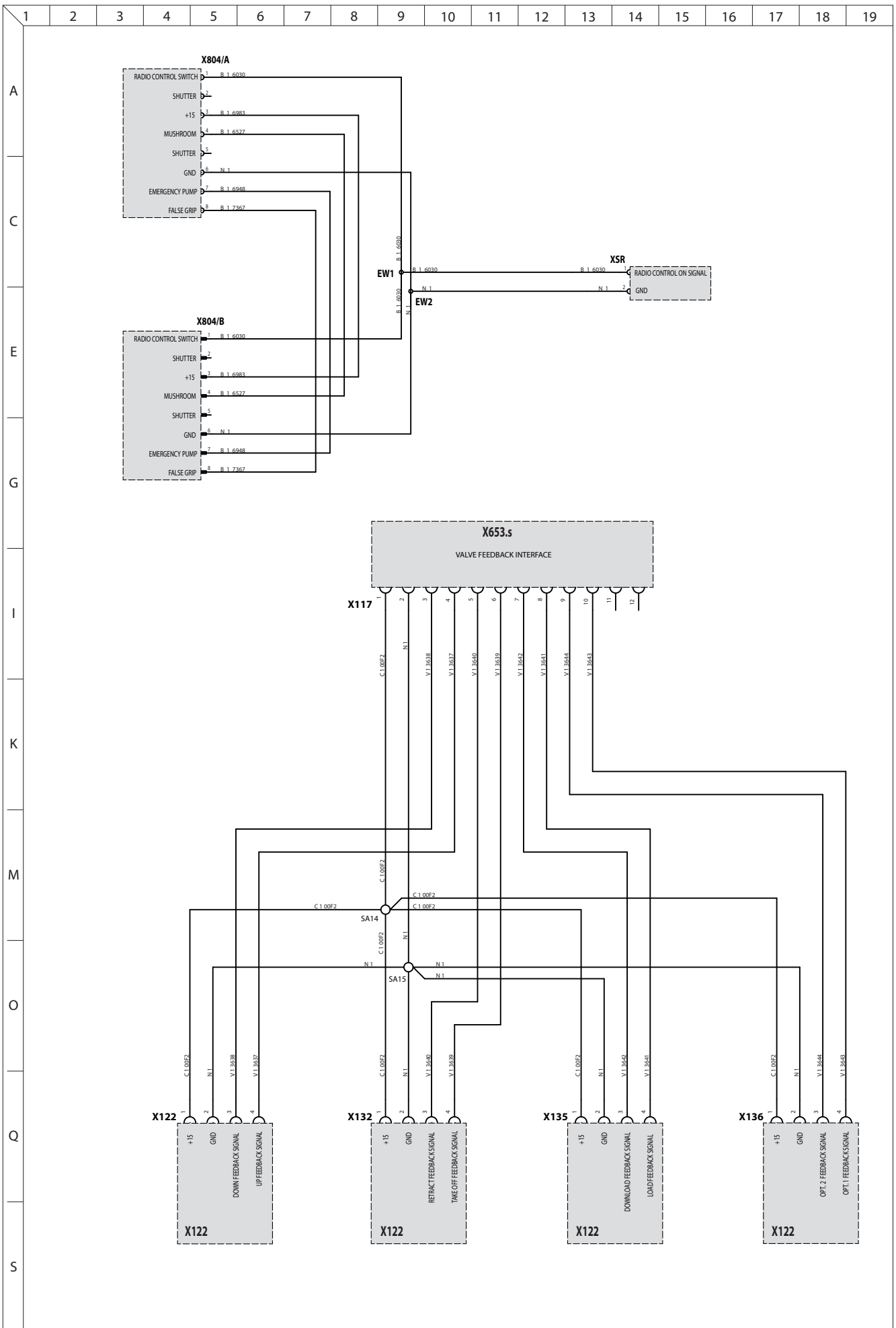
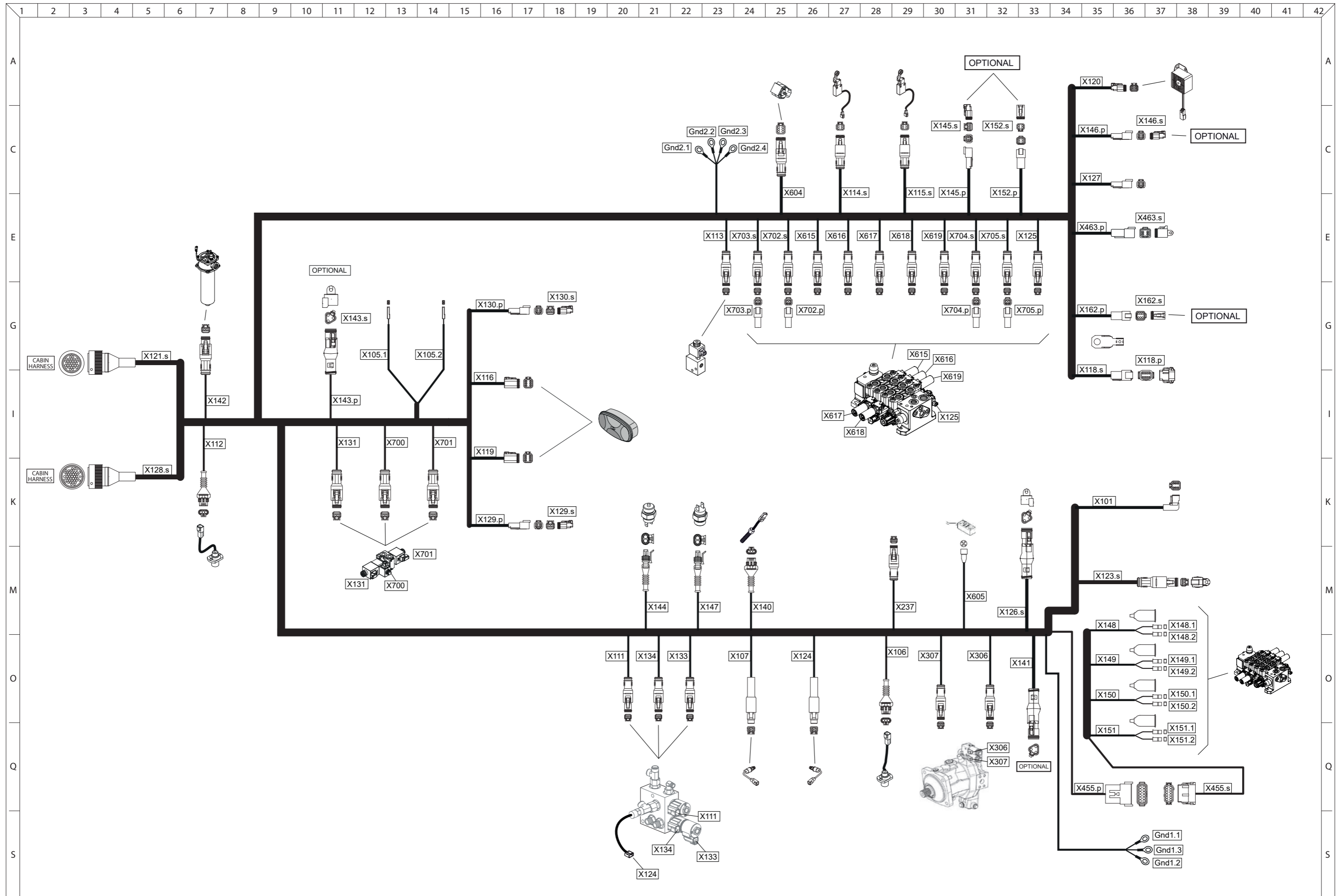


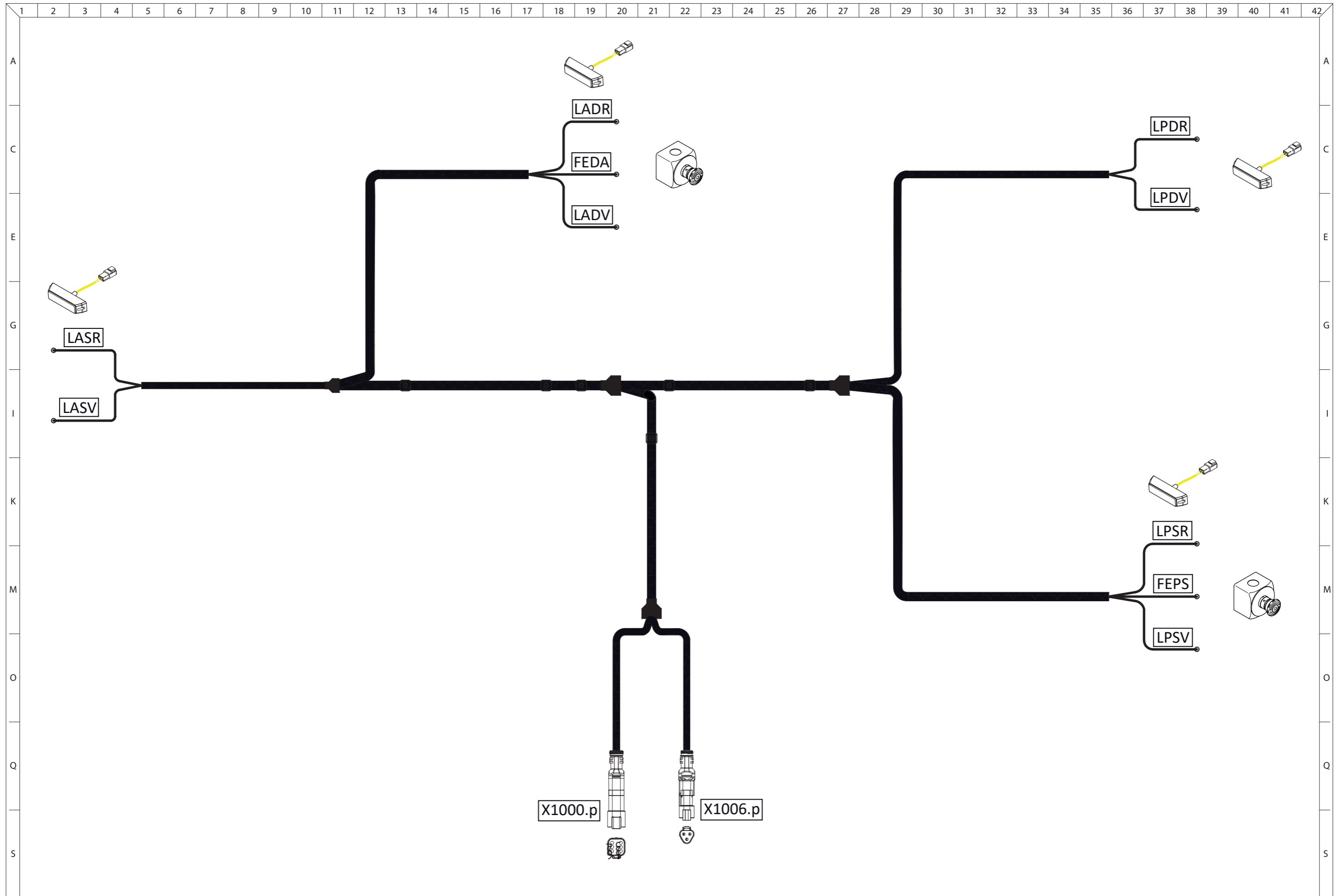
DIAGRAM 30 (Radio control signal and distributor feedback)

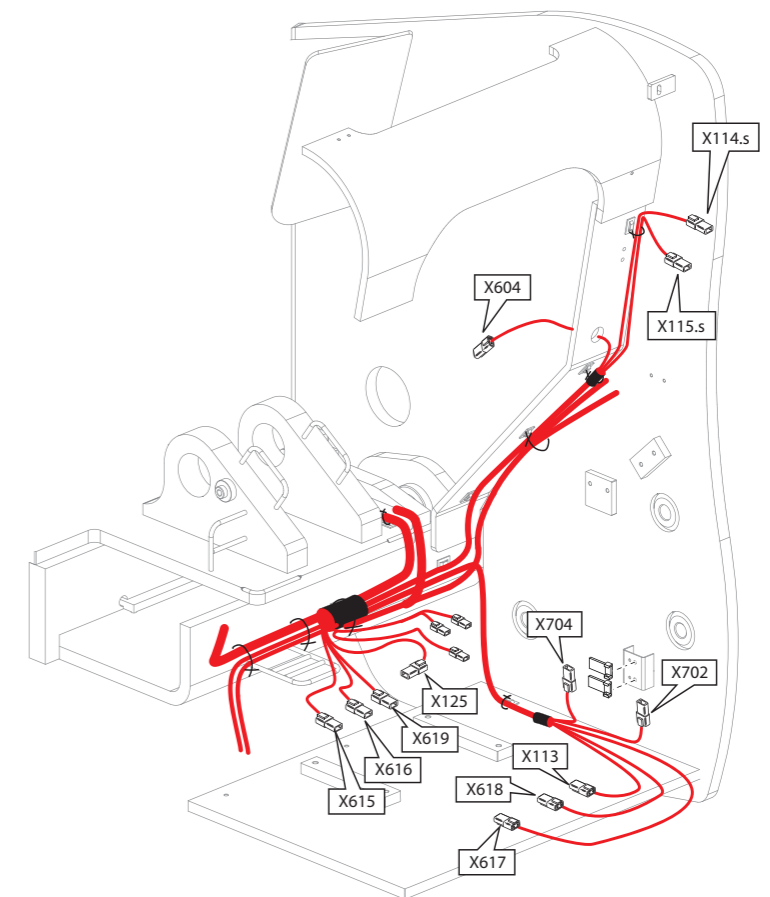
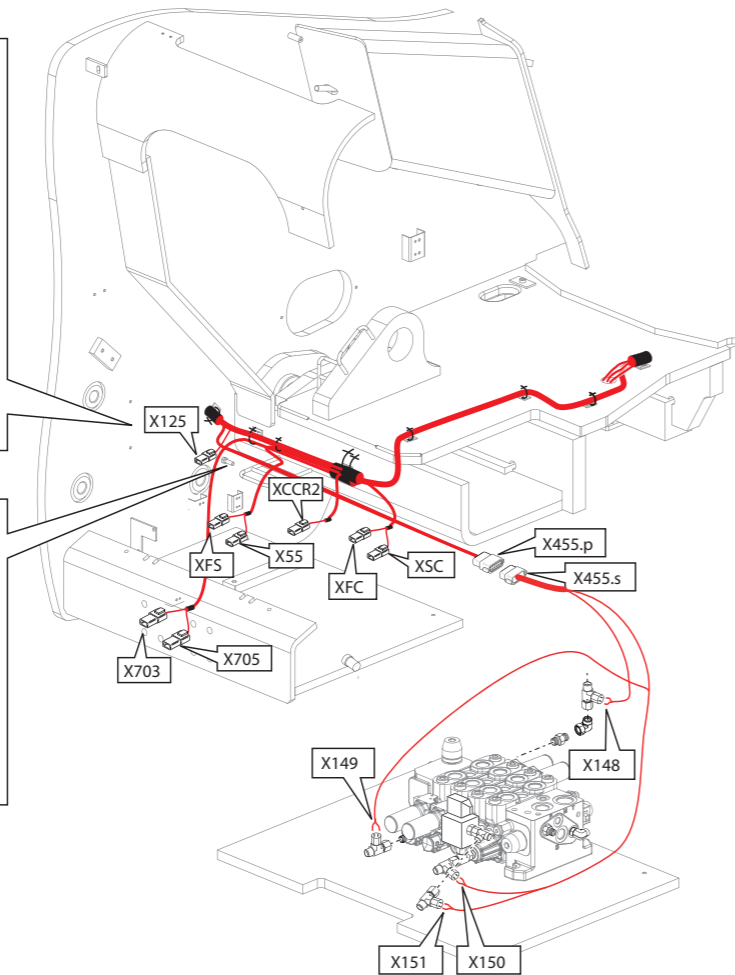
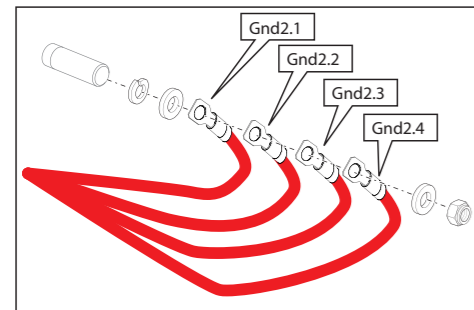
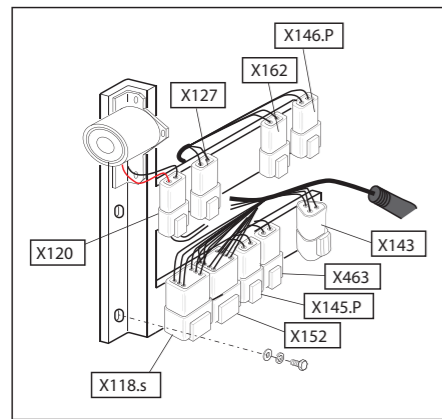
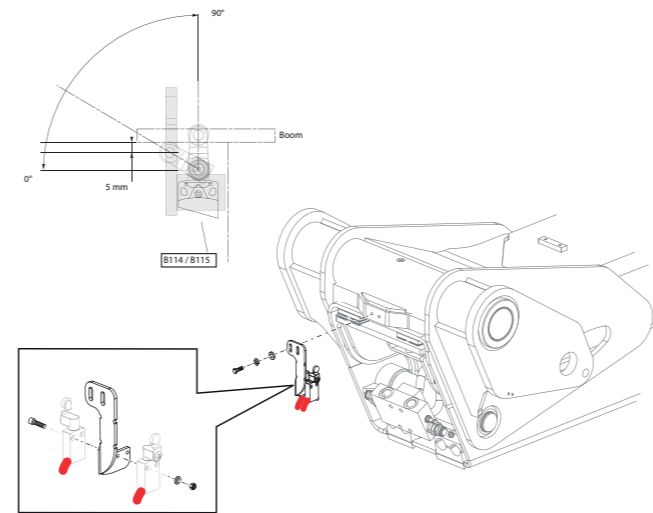
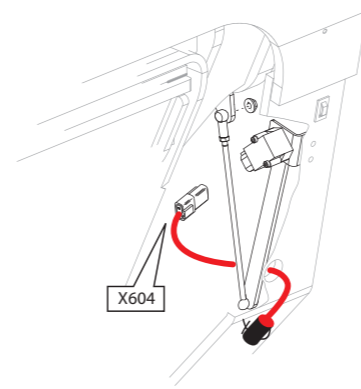
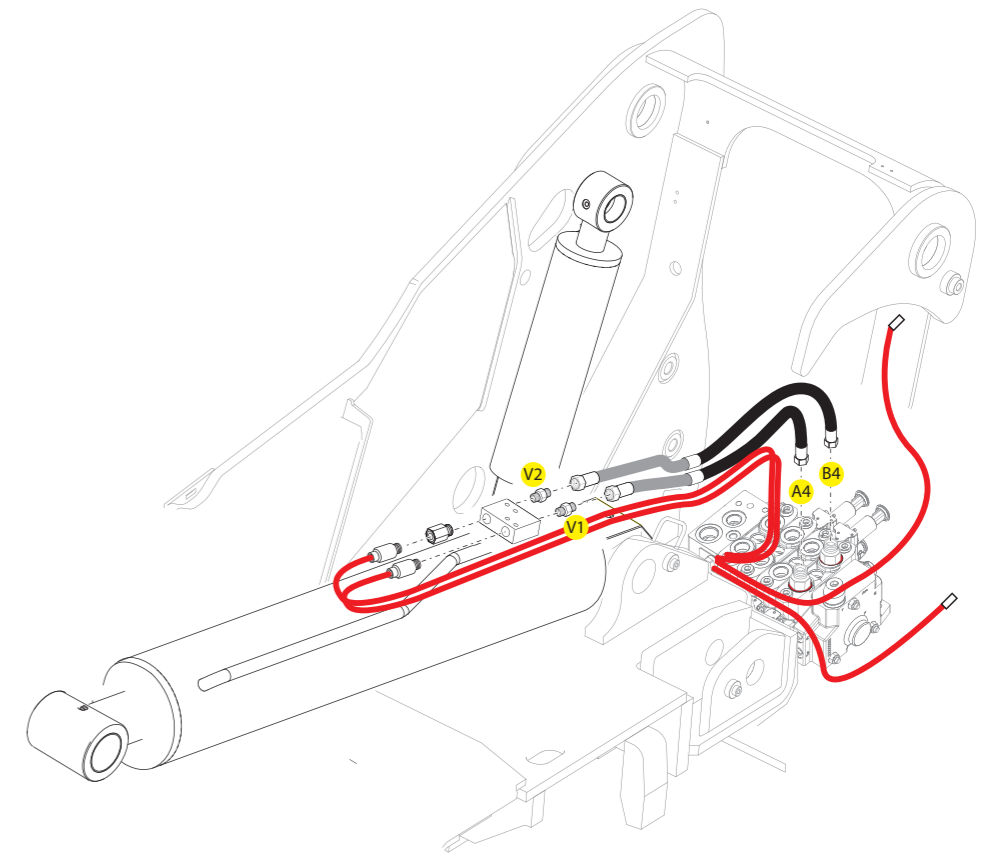
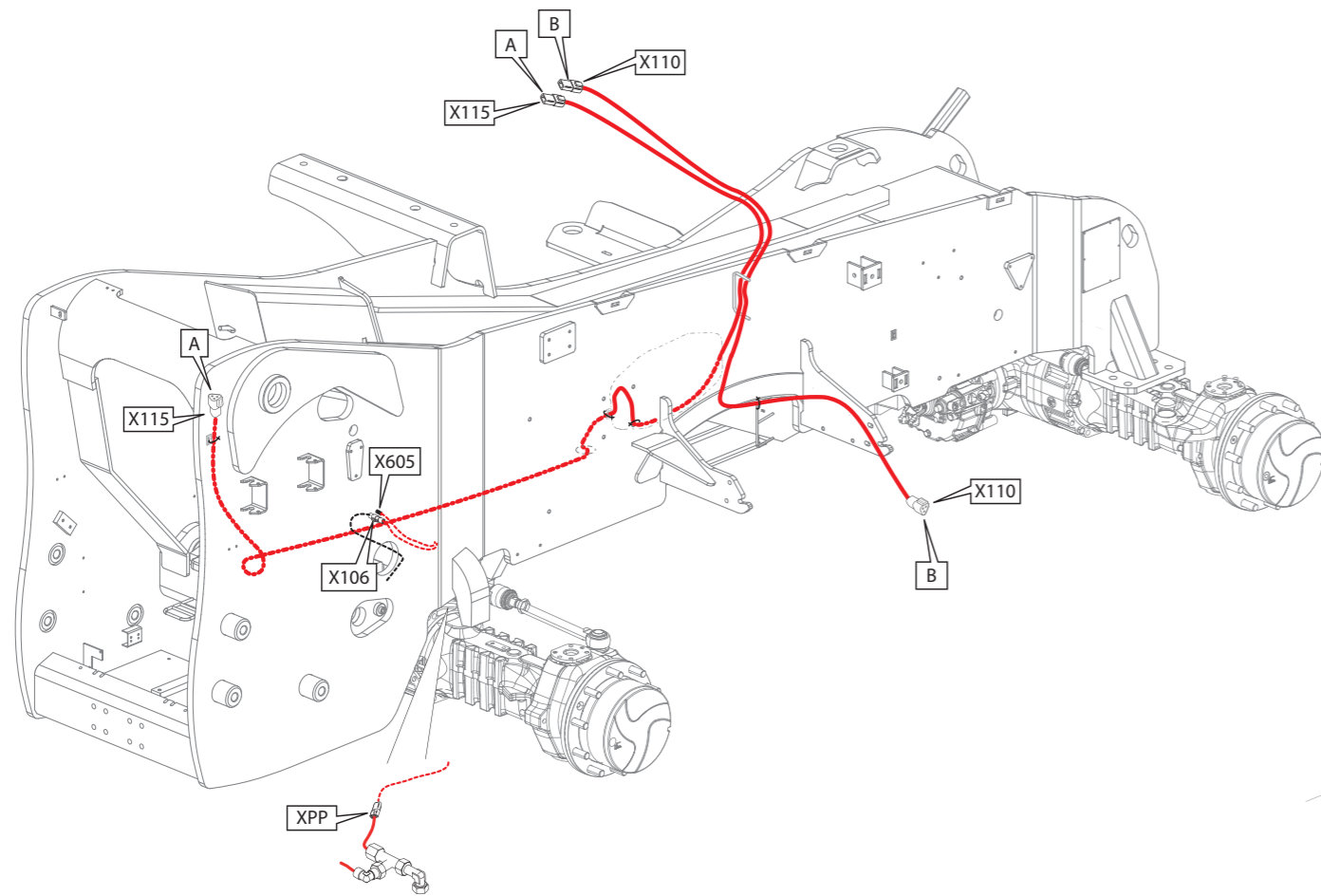


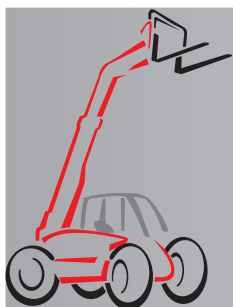
Item	Designation	Position on harness layout																		
		Cabin	Engine	Chassis	Cabin roof	Boom	Radio-clamp boom head	Boom clamp	Clamp control	AERIAL PLATFORM PRED. #1	AERIAL PLATFORM PRED. #2	KIT 3B6 + E-RECO	Guardian angel	EMERGENCY PUSHBUTTON AND DIRECTIONAL LIGHTS	Armrest	ROOF AMBER LIGHTS	A/C	Easy manager	Boom lights and working lights	ARB / residual brake pressure / USB socket / Kit Australia
X408	Light relais connector	I10 / I11																		
X409	Reverse speed light+buzzer+reverse speed s.v. relay connector	I9 / I10																		
X410	Starter switch +30 fuse connector	I9																		
X411	Service relay connector	E29 / E30																		
X413.p	Supply-driver harness interf. connector	G6 / G7																		
X413.s	Supply-driver harness interf. connector	G3 / G4																		
X414	Service relay connector	E32 / E33																		
X415	Diagnostick connector	E22																		
X416	Pneumatic seat connector	E15 / E16																		
X417.1	Cigar lighter socket	G16 / G17																		
X417.2	Socket backlighting connector	G18																		
X419	Mix bucket able switch connector	E20																		
X420	Speed regulation switch connector	E18																		
X421.p	Overl.kit-driver harness interf. connector																			C15 / C16 / C35 / C37
X421.s	Overload kit-driver harness interf. connector	O29																		
X422.s	Can open end line	O12 / Q12																		
X423.a	Can bus line interface																			E6 / E8 / G6 / G8
X423.b	Can bus line interface																			G6 / G8
X423.s	Can j1939 line 002	Q13 / Q14											E36 / E37 / G36 / G37							
X423A.p	Can 002_2 (j1939) line												C36 / C37							
X424	Rfid without basket					M10 / M11														
X425	Rfid without basket					O8 / O9		M17 / M18		M11 / M12										
X426.1	ARB by-pass selector																			A23 / A25
X426.2	ARB by-pass selector																			C23 / C25
X426.p	Chains micro sw. connector									G27 / G29										
X427	ARB botton																			C6 / C7
X432	MC2M unit connector	O9 / O10																		
X433	MC2M unit connector	O8 / O9																		
X434	MC2M unit connector	O7 / O8																		
X435.s	Base joystick																			Q27 / Q28 / S27 / S28
X436.1	Start key switch	Q28 / Q29																		
X436.2	Start key switch	Q29 / Q30																		
X437	Heating panel connector	M39 / M40																		
X438	Windshield motor steering column switch connector	O35 / O36 / Q35 / Q36																		
X439	Windshield motor steering column switch connector	Q33 / Q34																		
X440	Steering lights column switch	O33 / Q33																		
X441	Front windshield motor connector	Q21																		
X442.1	Brake oil level low sensor connector	Q23																		
X442.2	Brake oil level low sensor connector	Q24 / Q25																		
X443	Brakes pressure sensor connector	O21 / O22																		
X444	Radio connector	O39 / O40																		



EMERGENCY PUSHBUTTON AND DIRECTIONAL LIGHTS HARNESS



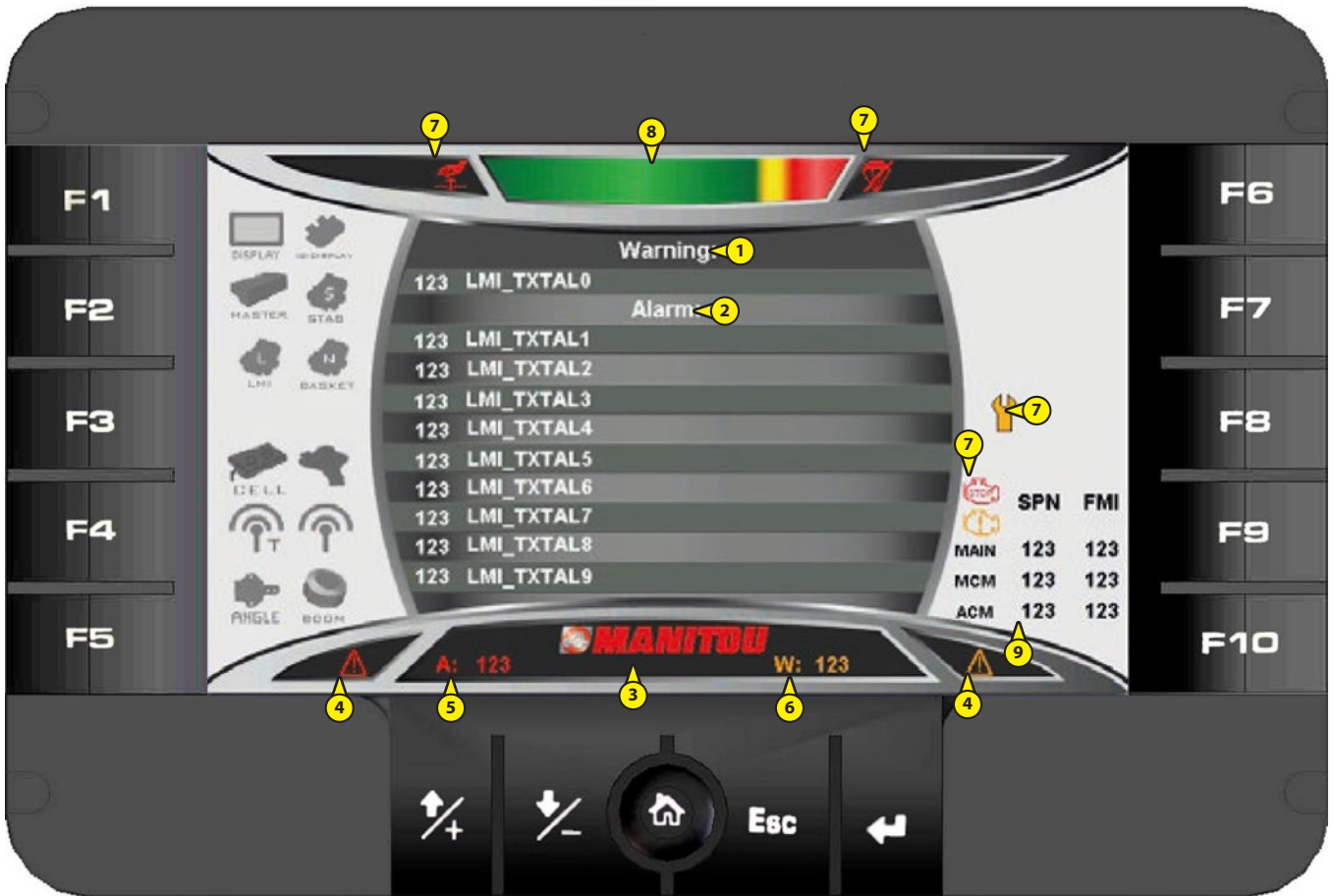





## **ELECTRICAL CONTROL AND ADJUSTMENT**

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<b>ELECTRONIC SYSTEM OVERVIEW .....</b>	<b>3</b>
– PRINCIPLE OF OPERATION .....	3
– MACHINE LAYOUT .....	4
– 3B6 VERSION: .....	4
– FUNCTIONAL DESCRIPTION .....	5
<b>OPERATOR PANEL .....</b>	<b>6</b>
– CONNECTION AND DIAGNOSTICS OF 3B6 CONTROL UNITS .....	13
– DOWNLOADING THE XENTRY STARTKEY ONLINE.....	14
– ON-BOARD ELECTRONIC CONTROL SYSTEM “GUARDIAN ANGEL”.....	16

DIAGNOSTICS PAGE (F5)



**! The indicator lights up to indicate a fault or error in a component or a unit. In the event of a component failure, the system stops all the movement.**

	Ref.	Description	Function
	1		• Warning list.
	2		• Alarm list.
	3		• Messages area.
	4	Indicator light on display.	• Attention, telehandler alarm.
	5		• Telehandler alarms code
	6		• Telehandler warnings.
	7		• Red warning lights.

In the Diagnostics page, use F7 to display the page containing the error messages log record (these pages are password protected).

Checking movement

Checking of the movement is done by means of two independent channels. .

- The system samples and calculates the CAN BUS or ANALOG electric signals coming from the joystick and guides the movement in proportion taking into account all the safety logics.
- The presence of an operator is necessary for the working of the system. This means the system stop some movement in case a component is faulty.

◀ paragraph "CONTROL PANEL AND LOAD LIMITER" in the Use and Maintenance Manual

## Reset the Digital Inclinometer



The Digital Inclinometer reset procedure must only be carried out after the "GUARDIAN ANGEL SYSTEM" was replaced. The original "GUARDIAN ANGEL SYSTEM" has been factory calibrated and does not need to be reset.

Select the "Digital Inclinometer" screen.



- Press the ▼ (3b) button for five seconds to enter the following screen.



- Locate the Digital inclinometer and place a Circular Inclinometer Level as close as possible next to the Digital inclinometer on the surface of the machine frame.

Ensure that the machine is parked on a level surface so that the "X" and "Y" axis is met, ensuring that the bubble on the Circular Inclinometer Level is in the center.

**Note: The engine of the machine must not be running when performing the next process.**





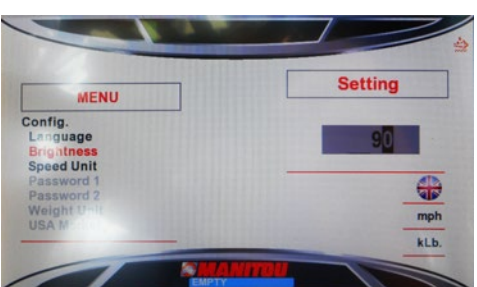
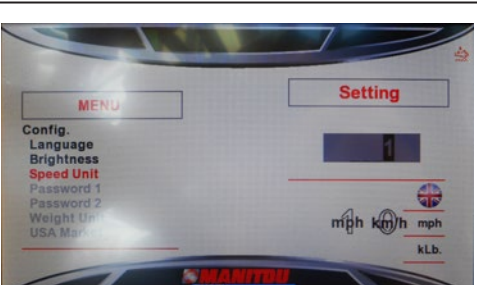
When the Circular Inclinometer Level indicates that the machine is now absolute level, long press the ▲ (3a) button.

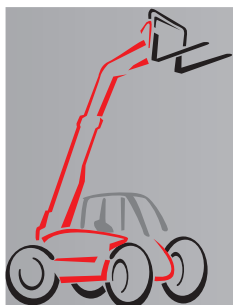
The Digital inclinometer Lateral Tilt and Frontal Tilt should display the 0.0 degrees

The setup is now complete.

## VEHICLE CONFIGURATION

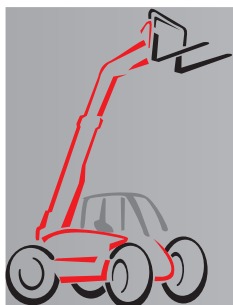
The vehicle's configurations and set-up are available under the Configuration menu.  
To access to the submenus, insert the first level password.

Image	Menu	Description																
	CONFIGURATION Config	Vehicle configuration (no password needed). The following parameters are available. <ul style="list-style-type: none"> <li>• language.</li> <li>• brightness</li> <li>• speed unit.</li> </ul>																
	Config. Language	Set the language for the messages. 8 Languages are available. <table border="0" style="width: 100%; text-align: center;"> <tr> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>ENGLISH</td> <td>ITALIAN</td> <td>FRENCH</td> <td>SPANISH</td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>GERMAN</td> <td>PORTOGUESE</td> <td>HOLLAND</td> <td>DANISH</td> </tr> </table>	0	1	2	3	ENGLISH	ITALIAN	FRENCH	SPANISH	4	5	6	7	GERMAN	PORTOGUESE	HOLLAND	DANISH
0	1	2	3															
ENGLISH	ITALIAN	FRENCH	SPANISH															
4	5	6	7															
GERMAN	PORTOGUESE	HOLLAND	DANISH															
	Config. Brightness	Set the brightness level of display																
	Config. Speed Unit	Set operating unit. 0 = ton / mt / km. 1 = kLb / ft / mi																



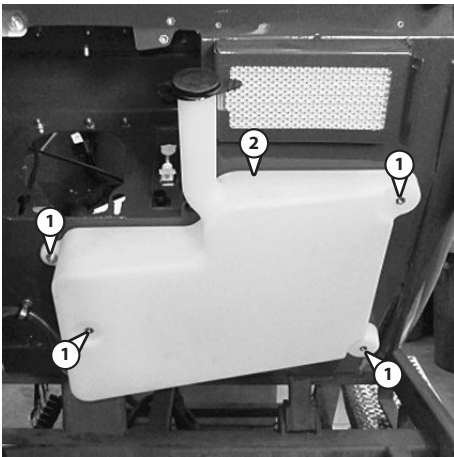
## ***ELECTRICAL SPECIFIC TOOLING***

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<b>SPECIFIC TOOLING .....</b>	<b>2</b>
<b>CONNECTION TO FORKLIFT TRUCK.....</b>	<b>3</b>
<b>BOXES KIT SPARK GAP .....</b>	<b>4</b>
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## **DRIVER'S CAB REMOVAL**

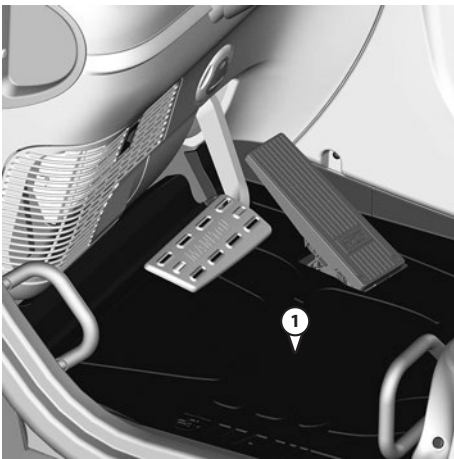
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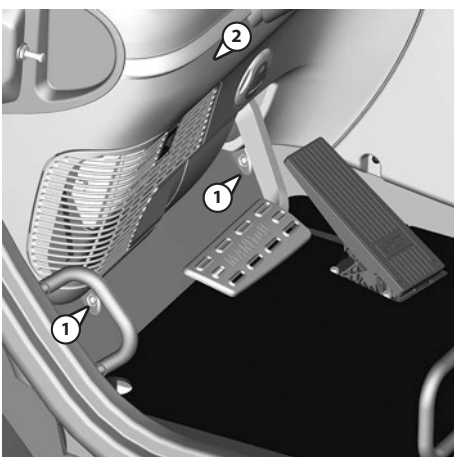
Unscrew the screws (Ref. 1) to remove the windscreen washer tank (Ref. 2).



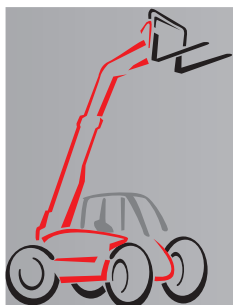
Remove the hydraulic pipes (Ref. 1) from the heater.



Remove the floor mat (Ref. 1) from inside the cab.



Unscrew the two screws (Ref. 1) securing the dashboard lower casing (Ref. 2) and remove it.



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