Tire Inflation Systems

Error list

ISOBUS

PTG-X-110-077 . Version 01.2023

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No.	Display on tractor terminal	Description	Limit MIN	Limit MAX	Cause(s)	Remedy
E0	CTIS: ECU power high/low 16.2 V	Voltage ECU_PWR[1)] on agricultural tractor too high/too low, in the example with 16.2 V too high	11.0 V DC	15.0 V DC	(1) Too low: Cable harness fault or poor/missing contact at Plus or ground (2) Too high: on-board voltage too high	(1) Check contacts of power supply in cable harness and at connection in vehicle, for continuity[2)] (2) Rectify cause for on-board voltage being too high (vehicle manufacturer)
E1	CTIS: ACT power high/low 10.8 V	Voltage ACT_PWR[1)] on agricultural tractor too high/too low, in the example with 10.8 V too low	11.0 V DC	15.0 V DC	(1) Too low: Cable harness fault or poor/missing contact at Plus or ground (2) Too high: on-board voltage too high	(1) Check contacts of power supply in cable harness and at connection in vehicle, for continuity[2)] (2) Rectify cause for on-board voltage being too high (vehicle manufacturer)
E2	CTIS: ECU temperature high 91°C	Temperature is too high on the printed circuit board within the ECU on the agricultural tractor	-	+85°C	ECU is installed in a place on the machine that heats up to more than 85°C during operation	Move ECU to a place on the machine that does not get any warmer than 85°C during operation
E3	CTIS: System defaulted	ECU on agricultural tractor has been reset to factory setting	-	-	see description (information only)	-
E4	CTIS: FRONT set point pressure low 0.2 bar	Controlled variable (red connection) of the ECV VA is min. 0.1 bar below the minimum permissible tyre pressure of the VA (p_{min}: 0.5 bar)	p_{min} - 0.1 bar	-	(1) Insufficient supply/leak in the ECV VA for control air (black connection or Allen setscrews on the right on the ECV VA) (2) Leak in the ECV VA for controlled variable (red connection or Allen setscrews on the left on the ECV VA) (3) Leak in the ECV VA for controlled variable (damaged/leaking magnetic valve in the ECV)	(1) On the ECV VA, check the black connection and Allen setscrews on the right, seal if necessary If HA also affected, use a manometer to check the control pressure at the outlet of the system pressure controller (p_{sys}: 2.5+0.2 bar) (2) On the ECV VA, check red connection and Allen setscrews on the left, seal if necessary (3) Check vent hose (6 mm, black) of the ECV VA for intermittent loss of air during the pressure adjustment VA. If air is lost, send in ECV VA for

						repair or replace. (4) Check white pressure equalization element in the black cover of the ECV VA for air leak. If air is escaping, send in ECV VA for repair or replace.
E5	CTIS: FRONT tire pressure high/low 0.0 bar	Tyre pressure (yellow connection) of the ECV VA is min. 0.1 bar below the minimum permissible tyre pressure of the VA (p_{min}: 0.5 bar) or min. 0.4 bar above the maximum permissible tyre pressure of the VA (p_{max}: 2.5 bar)	p_{min} - 0.1 bar	p_{max} + 0.4 bar	(1) Tyre pressure too low due to leak/damage to actual tyre (2) Tyre pressure too low after the tyre cooled down following intensive work at low tyre pressure ➔ *Inflate air brake up to shut down pressure, motor off, ignition on, set VA to inflation and listen for air leaks* (3) Displays 0.0 bar, but tyres not empty: Leak/damage to working line between ECV VA and the wheels, therefore unable to measure pressure (4) Displays 0.0 bar, but tyres not empty: Leak/damage to yellow measuring line between ECV VA and the distributor block VA, therefore unable to measure pressure (5) Displays 0.0 bar, HA also shows 0.0 bar, but tyres not empty: insufficient air supply of the RDRA, since reserve pressure of air brake system is below 6.5 bar (6) Displays 2.9 bar or higher: Tyre pressure too high after the tyre, in spite of the high tyre pressure, heated up further due to too much	(1) Check tyres of VA for leaks/damage (2) Following intensive work at low tyre pressure, increase it by 0.3 bar before switching off the machine (3) Check working line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary. Check rotary union for leaks, use leak detector if necessary (4) Check measuring line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary. (5) Note shut down pressure of air brake system – it should be min. 6.8 bar (6) Reduce speed or wheel load – tyre may already be overloaded!

					flexing	
E6	CTIS: REAR tire pressure high/low 0.0 bar	Tyre pressure (yellow connection) of the ECV HA is min. 0.1 bar below the minimum permissible tyre pressure of the HA (p_{min}: 0.5 bar) or min. 0.4 bar above the maximum permissible tyre pressure of the HA (p_{max}: 2.5 bar)	p_{min} - 0.1 bar	p_{max} + 0.4 bar	(1) Tyre pressure too low due to leak/damage to actual tyre (2) Tyre pressure too low after the tyre cooled down following intensive work at low tyre pressure ➔ *Inflate air brake up to shut down pressure, motor off, ignition on, set HA to inflation and listen for air leaks* (3) Displays 0.0 bar, but tyres not empty: Leak/damage to working line between ECV HA and the wheels, therefore unable to measure pressure (4) Displays 0.0 bar, but tyres not empty: Leak/damage to yellow measuring line between ECV HA and the measuring connection HA, therefore unable to measure pressure (5) Displays 0.0 bar, VA also shows 0.0 bar, but tyres not empty: insufficient air supply of the RDRA, since reserve pressure of air brake system is below 6.5 bar (6) Displays 2.9 bar or higher: Tyre pressure too high after the tyre, in spite of the high tyre pressure, heated up further due to too much flexing	(1) Check tyres of HA for leaks/damage (2) Following intensive work at low tyre pressure, increase it by 0.3 bar before switching off the machine (3) Check working line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary. Check rotary union for leaks, use leak detector if necessary (4) Check measuring line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary. (5) Note shut down pressure of air brake system – it should be min. 6.8 bar (6) Reduce speed or wheel load – tyre may already be overloaded!
E7	CTIS: REAR set point pressure low 0.2 bar	Controlled variable (red connection) of the ECV HA is min. 0.1 bar below the minimum permissible tyre pressure of the	p_{min} - 0.1 bar	-	(1) Insufficient supply/leak in the ECV HA for control air (black connection or Allen setscrews on the right on the ECV HA)	(1) On the ECV HA, check the black connection and Allen setscrews on the right, seal if necessary If VA also affected, use a manometer

		HA (p_{min}: 0.5 bar)				to check the control pressure at the outlet of the system pressure controller (p_{sys}: 2.5+0.2 bar)
					(2) Leak in the ECV HA for controlled variable (red connection or Allen setscrews on the left on the ECV HA)	(2) On the ECV HA, check red connection and Allen setscrews on the left, seal if necessary
					(3) Leak in the ECV HA for controlled variable (damaged/leaking magnetic valve in the ECV)	(3) Check vent hose (6 mm, black) of the ECV HA for intermittent loss of air during the pressure adjustment HA. If air is lost, send in ECV HA for repair or replace.
					(4) Leak in the ECV HA for controlled variable (damaged/leaking pressure sensor in the ECV)	(4) Check white pressure equalization element in the black cover of the ECV HA for air leak. If air is escaping, send in ECV HA for repair or replace.
E8	CTIS: TRAILER tire pressure high/low 0.0 bar	Tyre pressure (yellow connection) of the ECV GW is min. 0.1 bar below the minimum permissible tyre pressure of the GW (p_{min}: 1.0 bar) or min. 0.4 bar above the maximum permissible tyre pressure of the GW (p_{max}: 4.2 bar)	p_{min} - 0.1 bar	p_{max} + 0.4 bar	(1) Tyre pressure too low due to leak/damage to actual tyre	(1) Check tyres of GW for leaks/damage
					(2) Tyre pressure too low after the tyre cooled down following intensive work at low tyre pressure ➔ *Inflate air brake up to shut down pressure, motor off, ignition on, set GW to inflation and listen for air leaks*	(2) Following intensive work at low tyre pressure, increase it by 0.3 bar before switching off the machine
					(3) Displays 0.0 bar, but tyres <u>not</u> empty: Leak/damage to working line between ECV GW and the wheels, therefore unable to measure pressure	(3) Check working line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary. Check rotary union for leaks, use leak detector if necessary
					(4) Displays 0.0 bar, but tyres <u>not</u> empty: Leak/damage to yellow measuring line between ECV GW and	(4) Check measuring line for visual damage. Check that all push-in fittings are sealed, plug in again if necessary.

					the measuring connection GW, therefore unable to measure pressure (5) Displays 0.0 bar, but tyres not empty: insufficient air supply of the RDRA, since reserve pressure of air brake system is below 6.5 bar or additional compressor is defective/switched off (6) Displays 4.6 bar or higher: Tyre pressure too high after the tyre, in spite of the high tyre pressure, heated up further due to too much flexing	(5) Note shut down pressure of air brake system – it should be min. 6.8 bar. Check the additional compressor, switch on if necessary (6) Reduce speed or wheel load – tyre may already be overloaded!
E9	CTIS: TRAILER set point pressure low 0.2 bar	Controlled variable (red connection) of the ECV GW is min. 0.1 bar below the minimum permissible tyre pressure of the GW (p_{min}: 1.0 bar)	p_{min} - 0.1 bar	-	(1) Insufficient supply/leak in the ECV GW for control air (black connection or Allen setscrews on the right on the ECV GW) (2) Leak in the ECV GW for controlled variable (red connection or Allen setscrews on the left on the ECV GW) (3) Leak in the ECV GW for controlled variable (damaged/leaking magnetic valve in the ECV) (4) Leak in the ECV GW for controlled variable (damaged/leaking pressure sensor in the ECV)	(1) Using a manometer, check the control pressure at the outlet of the system pressure controller (p_{sys}: 4.5+0.2 bar) On the ECV GW, check black connection and Allen setscrews on the right, seal if necessary (2) On the ECV GW, check red connection and Allen setscrew on the left, seal if necessary (3) Check vent hose (6 mm, black) of the ECV GW for intermittent loss of air during the pressure adjustment GW. If air is lost, send in ECV GW for repair or replace. (4) Check white pressure equalization element in the black cover of the ECV GW for air leak. If air is escaping, send in ECV GW for repair or replace.
E10	CTIS: FRONT pressure	Adjustment of the tyre pressure VA takes longer than the maximum permissible	-	t_{max}	(1) Insufficient air supply of the RDRA, since delivery rate of the air	(1) Motor of tractor should run at min. half the rated rpm when

	adjustment too slow	adjustment time (t_{max}: 30 min)			brake system is too low or additional compressor is defective/switched off (2) Leak in rotary union/working line VA causes increased demand for air for adjustment	inflating the tyres to achieve feasible inflation times. Switch on additional compressor. (2) Check rotary union/working line VA for leaks, use leak detector if necessary
E11	CTIS: REAR pressure adjustment too slow	Adjustment of the tyre pressure HA takes longer than the maximum permissible adjustment time (t_{max}: 30 min)	-	t_{max}	(1) Insufficient air supply of the RDRA, since delivery rate of the air brake system is too low or additional compressor is defective/switched off (2) Leak in rotary union/working line HA causes increased demand for air for adjustment	(1) Motor of tractor should run at min. half the rated rpm when inflating the tyres to achieve feasible inflation times. Switch on additional compressor. (2) Check rotary union/working line HA for leaks, use leak detector if necessary
E12	CTIS: TRAILER pressure adjustment too slow	Adjustment of the tyre pressure GW takes longer than the maximum permissible adjustment time (t_{max}: 30 min)	-	t_{max}	(1) Insufficient air supply of the RDRA, since delivery rate of the air brake system is too low or additional compressor is defective/switched off (2) Leak in rotary union/working line GW causes increased demand for air for adjustment	(1) Motor of tractor should run at min. half the rated rpm when inflating the tyres to achieve feasible inflation times. Switch on additional compressor. (2) Check rotary union/working line GW for leaks, use leak detector if necessary
E13	CTIS: TRAILER compressor service due in: 10h	Service due on additional compressor in 10 Bh (compressor)	-	t_{comp}	Message appears at the end of every Bh in the last 10 Bh before reaching the service interval (t_{comp}: 100 Bh)	Perform service on additional compressor
E14	CTIS: FRONT tire pressure deviation	Automatic tyre pressure check: the deviation between the previously selected set point pressure VA and the current tyre pressure VA is greater than 0.25 bar	0.25 bar	-	Regular remeasuring of the tyre pressure using the function Automatic tyre pressure check eventually causes the tyre pressure to increase by more than 0.25 bar	Deactivate the automatic tyre pressure check for VA in the system configuration screen 2 (remove check mark)
E15	CTIS: REAR tire pressure deviation	Automatic tyre pressure check: the deviation between the previously selected set point pressure HA and the current tyre pressure HA is greater than 0.25 bar	0.25 bar	-	Regular remeasuring of the tyre pressure using the function Automatic tyre pressure check eventually causes the tyre pressure to increase by more than 0.25 bar	Deactivate the automatic tyre pressure check for HA in the system configuration screen 2 (remove check mark)

E16	CTIS: TRAILER tire pressure deviation	Automatic tyre pressure check: the deviation between the previously selected set point pressure GW and the current tyre pressure GW is greater than 0.25 bar	0.25 bar	-	Regular remeasuring of the tyre pressure using the function Automatic tyre pressure check eventually causes the tyre pressure to increase by more than 0.25 bar	Deactivate the automatic tyre pressure check for GW in the system configuration screen 2 (remove check mark)
E17	CTIS: FRONT leaking valves	Tyre pressure (yellow connection) of the ECV VA is min. 0.2 bar even though the tyre pressure on the VA is not being adjusted just now - it should only be 0.0 bar	0.2 bar	-	➔ *Repeat tyre pressure adjustment on the VA, as soon as the fault arises, pull a thin blue control line directly off the tyre valve in the rim and monitor the response.* (1) Tyre valves VA close immediately after the control line is pulled off: tyre valve is OK. A blockage/damage or incorrect wiring of the control line prevents the tyre valves from closing in the tyres after the tyre pressure adjustment VA, which is why there is still pressure on the working line/measuring line (2) Tyre valves VA still do not close after the control line is pulled off: Tyre valve is defective or blocked by a foreign object, which is why there is still pressure on the working line/measuring line	(1) Check control line to the tyre valves VA for kinks/damage or incorrect wiring, replace if necessary or connect correctly (see layout diagram) (2) Replace or clean tyre valve(s) VA
E18	CTIS: REAR leaking valves	Tyre pressure (yellow connection) of the ECV HA is min. 0.2 bar even though the tyre pressure on the HA is not being adjusted just now - it should only be 0.0 bar	0.2 bar	-	➔ *Repeat tyre pressure adjustment on the HA, as soon as the fault arises, pull a thin blue control line directly off the tyre valve in the rim and monitor the response.* (1) Tyre valves HA close immediately after the control line is pulled off: tyre valve is OK. A blockage/damage or incorrect wiring of the control line prevents the tyre valves from closing in the tyres after the tyre pressure adjustment HA, which is why there is still pressure on the working	(1) Check control line to the tyre valves HA for kinks/damage or incorrect wiring, replace if necessary or connect correctly (see layout diagram)

					line/measuring line (2) Tyre valves HA still do not close after the control line is pulled off: Tyre valve is defective or blocked by a foreign object, which is why there is still pressure on the working line/measuring line	(2) Replace or clean tyre valve(s) HA
E19	CTIS: TRAILER leaking valves	Tyre pressure (yellow connection) of the ECV GW is min. 0.2 bar even though the tyre pressure on the GW is not being adjusted just now - it should only be 0.0 bar	0.2 bar	-	➔ *Repeat tyre pressure adjustment on the GW, as soon as the fault arises, pull a thin blue control line directly off the tyre valve in the rim and monitor the response.* (1) Tyre valves GW close immediately after the control line is pulled off: tyre valve is OK. A blockage/damage or incorrect wiring of the control line prevents the tyre valves from closing in the tyres after the tyre pressure adjustment GW, which is why there is still pressure on the working line/measuring line (2) Tyre valves GW still do not close after the control line is pulled off: Tyre valve is defective or blocked by a foreign object, which is why there is still pressure on the working line/measuring line	(1) Check control line to the tyre valves GW for kinks/damage or incorrect wiring, replace if necessary or connect correctly (see layout diagram) (2) Replace or clean tyre valve(s) GW
E20	CTIS: ECU power high/low 16.2 V	Voltage ECU_PWR[1)] on trailer too high/too low, in the example with 16.2 V too high	11.0 V DC	15.0 V DC	(1) Too low: Cable harness fault or poor/missing contact at Plus or ground (2) Too high: on-board voltage too high	(1) Check contacts of power supply in cable harness and at connection in vehicle, for continuity[2)] (2) Rectify cause for on-board voltage being too high (vehicle manufacturer)
E21	CTIS: ACT power high/low 10.8 V	Voltage ACT_PWR[1)] on trailer too high/too low, in the example with 10.8 V too low	11.0 V DC	15.0 V DC	(1) Too low: Cable harness fault or poor/missing contact at Plus or ground	(1) Check contacts of power supply in cable harness and at connection in vehicle, for continuity[2)]

					(2) Too high: on-board voltage too high	(2) Rectify cause for on-board voltage being too high (vehicle manufacturer)
E22	CTIS: ECU temperature high 91°C	Temperature is too high on the printed circuit board within the ECU on the trailer	-	+85°C	ECU is installed in a place on the machine that heats up to more than 85°C during operation	Move ECU to a place on the machine that does not get any warmer than 85°C during operation
E23	CTIS: System defaulted	ECU on trailer has been reset to factory setting	-	-	see description (information only)	-
E24	CTIS: FRONT sensor error	Idle value of the set point and/or tyre pressure sensor in the ECV VA is outside the permissible range	53 digits	69 digits	➔ *Call up diagnostic screen, check sensor values in bottom half of screen. Correct values are RAW (57...59) and BAR (0.0).* (1) SET and TIRE show RAW (0...1) and BAR (0.0): Set point and tyre pressure sensor in the ECV VA are defective or EVV VA is not connected correctly to ECU, but is configured as "present" (2) SET and TIRE show RAW (57...59) and BAR (1.2): ECV VA was only connected to the ECU after the system start, which is why the automatic calibration of the sensors failed. (3) SET or TIRE shows RAW (0...1) and BAR (0.0): Set point or tyre pressure sensor in the ECV VA is defective or the values are not transmitted to the ECU due to a cable harness/contact problem	(1) Check if the cable harness is connected correctly between the ECV VA and ECU. Visually check the contact pins 1, 2 and 3 of the plug-in connection on the ECV VA, move into position if necessary. If necessary, replace ECV VA and/or cable harness VA. (2) Trigger calibration manually per softkey. (3) Visually check the contact pins 2 and 3 of the plug-in connection on the ECV VA, move into position if necessary. If necessary, replace ECV VA and/or cable harness VA.
E25	CTIS:	Idle value of the set point and/or tyre pressure sensor in the ECV HA is outside	53 digits	69 digits	➔ *Call up diagnostic screen, check sensor values in bottom half of*	

	REAR sensor error	the permissible range			*screen. Correct values are RAW (57...59) and BAR (0.0).* (1) SET and TIRE show RAW (0...1) and BAR (0.0): Set point and tyre pressure sensor in the ECV HA are defective or EVV HA is not connected correctly to ECU, but is configured as "present" (2) SET and TIRE show RAW (57...59) and BAR (1.2): ECV HA was only connected to the ECU after the system start, which is why the automatic calibration of the sensors failed. (3) SET or TIRE shows RAW (0...1) and BAR (0.0): Set point or tyre pressure sensor in the ECV HA is defective or the values are not transmitted to the ECU due to a cable harness/contact problem	(1) Check if the cable harness is connected correctly between the ECV HA and ECU. Visually check the contact pins 1, 2 and 3 of the plug-in connection on the ECV HA, move into position if necessary. If necessary, replace ECV HA and/or cable harness HA. (2) Trigger calibration manually per softkey. (3) Visually check the contact pins 2 and 3 of the plug-in connection on the ECV HA, move into position if necessary. If necessary, replace ECV HA and/or cable harness HA.
E26	CTIS: TRAILER sensor error	Idle value of the set point and/or tyre pressure sensor in the ECV GW is outside the permissible range	53 digits	69 digits	➔ *Call up diagnostic screen, check sensor values in bottom half of screen. Correct values are RAW (57...59) and BAR (0.0).* (1) SET and TIRE show RAW (0...1) and BAR (0.0): Set point and tyre pressure sensor in the ECV GW are defective or EVV VA is not connected correctly to ECU, but is configured as "present" (2) SET and TIRE show RAW (57...59) and BAR (1.2):	(1) Check if the cable harness is connected correctly between the ECV GW and ECU. Visually check the contact pins 1, 2 and 3 of the plug-in connection on the ECV GW, move into position if necessary. If necessary, replace ECV GW and/or cable harness GW.

					ECV GW was only connected to the ECU after the system start, which is why the automatic calibration of the sensors failed. (3) SET or TIRE shows RAW (0...1) and BAR (0.0): Set point or tyre pressure sensor in the ECV GW is defective or the values are not transmitted to the ECU due to a cable harness/contact problem	(2) Trigger calibration manually per softkey. (3) Visually check the contact pins 2 and 3 of the plug-in connection on the ECV GW, move into position if necessary. If necessary, replace ECV GW and/or cable harness GW.

[1] Both voltages ECU_PWR and ACT_PWR are always bridged on the agricultural tractor – they must therefore always have virtually the same value. The ECU must always be supplied with a switched voltage supply (ignition voltage, cl. 15). The limit values refer to 12-V on-board power supplies.

[2] If the ground of the voltage supply is connected directly to the vehicle body, make sue there is good electrical contact. With Fendt tractors especially, the color of the vehicle body often isolates too well.

ACT_PWR	Voltage supply for power consumers on ISOBUS
BAR	Pressure unit bar, displays the converted raw value of the sensor on the diagnostic screen
CTIS	Central tyre inflation system
ECU	Electronic control unit
ECU_PWR	Voltage supply for electronic control devices on ISOBUS
ECV	Electronic control valve
FRONT	Front axle (VA)
if nec.	if necessary
GW	Slurry trailer (also trailer)
HA	Rear axle
RAW	Raw value of sensor on diagnostic screen
RDRA	Tyre inflation system

REAR	Rear axle (HA)
SET	Set point, displays the set point sensor on the diagnostic screen
TIRE	Tyres, displays the tyre pressure sensor on the diagnostic screen
TRAILER	Trailer (also slurry trailer, GW)
VA	Front axle

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F00	CTIS: ECU power high 16.2 V [SPN 520193] [FMI 03]	ECU_PWR[1)] voltage on the agricultural tractor too high	-	15.0 V DC	[1] CTIS connected to 24-V vehicle electrical system [2] On-board voltage too high [3] Defective ECU	[1] Connect CTIS to 12-V vehicle electrical system. [2] Rectify the cause of the excessively high on-board voltage and check that the ISOBUS terminating resistors are working correctly (see documentation from the manufacturer). [3] Send the ECU to be checked or replace the ECU.
	F01	CTIS: ECU power low 10.8 V [SPN 520193] [FMI 04]	ECU_PWR[1)] voltage on the agricultural tractor too low	11.0 V DC	-	[1] No power supply [2] Bad electrical contact at positive or ground[2)] [3] Cable harness error [4] Defective ECU	[1] Check the voltage supply at the connection points for positive and ground on the vehicle. [2] Check the voltage supply of the positive contact (pin 1, red) and the ground contact (pin 2, black) on the 2-pin connection of the cable harness. ➔ *Disconnect the 2-pin connection of the cable harness, use wires to guide out contact pins 1 and 2 of the female connector for measuring* [3] Check the cable harness for damage. Check the voltage supply of the positive contact (pin K3, red) and the ground contact (pin J3, black) on the 30-pin connection to the ECU. ➔ *Disconnect the 30-pin connection from the ECU, use wires to guide out contact pins* K3 *and* J3 *of the female connector for measuring* [4] Send the ECU to be checked or replace the ECU.
	F02	CTIS: ACT power high 16.2 V [SPN 520194] [FMI 03]	ACT_PWR[1)] voltage on the agricultural tractor too high	-	15.0 V DC	**CAUTION: In case of error message F00, rectify the errors there first!** Defective ECU	Send the ECU to be checked or replace the ECU.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F03	CTIS: ACT power low 10.8 V [SPN 520194] [FMI 04]	ACT_PWR[1)] voltage on the agricultural tractor too low	11.0 V DC	-	**CAUTION: In case of error message F01, rectify the errors there first!** [1] Cable harness error [2] Defective ECU	[1] Check the cable harness for damage – especially the positive jumper (pins G3-F2, red) and the ground jumper (pins H3-F3, black) on the 30-pin connection to the ECU. Check the voltage supply of the positive contact (pin F2, red) and the ground contact (pin F3, black) on the 30-pin connection to the ECU. ➔ *Disconnect the 30-pin connection from the ECU, use jumper to connect contact pins J3 and H3 of the female connector, use jumper to connect contact pins K3 and G3 of the female connector, use wires to guide out contact pins F2 and F3 of the female connector for measuring.* ***CAUTION: Wires must not touch, risk of short circuit!*** [2] Send the ECU to be checked or replace the ECU.
	F04	CTIS: ECU temperature high 91°C [SPN 520205] [FMI 00]	Temperature of the PCB inside the ECU on the agricultural tractor too high	-	+85°C	The ECU is installed at a location in the machine where the temperature exceeds 85°C during operation.	Move the ECU to a location in the machine where the temperature does not reach 85°C during operation.
	F05	CTIS: ECU defaulted [SPN 520192] [FMI 14]	ECU on the agricultural tractor was reset to default factory settings	-	-	(Information only)	-

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F06	CTIS: FRONT tire pressure high 2.9 bar 42 psi [SPN 520700] [FMI 00]	Tire pressure (yellow connection) of the front-axle ERV is at least 0.4 bar 6 psi above the maximum permissible tire pressure for the front axle (p_{max}: 2.5 bar 36 psi)	-	2.5 + 0.4 bar 36 + 6 psi	➔ *Check the front-axle tire pressure manually (tire pressure gauge)* [1] Tire pressure ≤2.5 bar ≤36 psi: Front-axle wheel valves do not open while a tire pressure of roughly 2.5 bar 36 psi shall be measured. [2] Tire pressure >2.5 bar >36 psi: Tire pressure too high because the tire has heated up more due to intensive flexing.	[1] Check the pressure of the control line (4 mm, blue) at the control connection of the front-axle wheel valves (min. 1.5 bar 22 psi). If the control pressure is <1.5 bar <22 psi at the front-axle wheel valve, trace back the control line to the front-axle ERV and check for leaks. Check the front-axle rotary unions for leaks. [2] Reduce the speed or wheel load – the tires could already be overloaded!

	F07	CTIS: FRONT tire pressure low 0.4 bar 6 psi [SPN 520700] [FMI 01]	Tire pressure (yellow connection) of the front-axle ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the front axle (p_{min}: 0.5 bar 7 psi)	0.5 - 0.1 bar 7 - 1.5 psi	-	**Displays 0.0 bar 0 psi, <u>but tires not flat</u>:** [1] Rear axle also shows 0.0 bar 0 psi, <u>but tires are not flat</u>: No air supplied to the CTIS, or to the front-axle ERV. ➔ *Fill the air-brake system to the cut-out pressure, engine off, ignition on, set the front axle to inflate and listen for air leaks*. [2] Work line (14 mm, blue) leaking/damaged between the front-axle ERV and the wheels, thus impossible to measure tire pressure. [3] Measurement line (4 mm, yellow) leaking/damaged between the front-axle ERV and the front axle distributor block, thus impossible to measure tire pressure. **Displays >0.0 bar 0 psi:** [4] Tire pressure too low because the tire has cooled down following the machine being switched off after intensive work with low tire pressure. [5] Tire pressure too low due to leaking of the front-axle wheel valves. [6] Tire pressure too low due to the tire itself leaking/being damaged.	[1] Observe the cut-out pressure of the air-brake system – should be at least 6.8 bar 99 psi. Check the additional compressor and switch it on if necessary. Check the system pressure supply of the front-axle ERV (4 mm, black) for leaks and installation errors. System pressure should be 2.5 + 0.2 bar 36 + 3 psi. [2] Check the work line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. Check the rotary union for leaks, using a leak detector if necessary. [3] Check the measurement line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. [4] After intensive work with low tire pressure, increase the tire pressure by 0.3 bar 4 psi before switching off the machine. [5] Use a leak detector to check the front-axle wheel valves for leaks at the rim hole. Unplug the work line (14 mm, blue) and check whether the wheel valve is completely closed. [6] Check the front-axle tires for leaks/damage.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F08	CTIS: FRONT set pressure low 0.2 bar 3 psi [SPN 520703] [FMI 01]	Manipulated variable (red connection) of the front-axle ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the front axle (p_{min}: 0.5 bar 7 psi)	0.5 - 0.1 bar 7 - 1.5 psi	-	[1] Front-axle ERV not supplied/leaking in the system pressure circuit. [2] Front-axle ERV externally leaking in the manipulated variable circuit. [3] Front-axle ERV internally leaking in the manipulated variable circuit (damaged/leaking solenoid valve inside the ERV). [4] Front-axle ERV internally leaking in the manipulated variable circuit (damaged/leaking pressure sensor inside the ERV).	[1] On the front-axle ERV, check the black connection and the press-in expander on the right-hand side. If the rear axle is also affected, check the system pressure at the outlet of the pressure limiter using a pressure gauge (2.5 + 0.2 bar 36 + 3 psi). [2] On the front-axle ERV, check the red connection and the press-in expander on the left-hand side. [3] Check the ventilation hose (6 mm, black) of the front-axle ERV for intermittent air loss during front axle pressure adjustment. In case of air loss, send the front-axle ERV to be checked or replace the front-axle ERV. [4] Check the white breather vent in the black cover of the front-axle ERV for air leakage during front-axle pressure adjustment. In case of air leakage, send the front-axle ERV to be checked or replace the front-axle ERV.
	F09	CTIS: REAR tire pressure high 2.9 bar 42 psi [SPN 520701] [FMI 00]	Tire pressure (yellow connection) of the rear-axle ERV is at least 0.4 bar 6 psi above the maximum permissible tire pressure for the rear axle (p_{max}: 2.5 bar 36 psi)	-	2.5 + 0.4 bar 36 + 6 psi	➔ *Check the rear-axle tire pressure manually (tire pressure gauge)* [1] Tire pressure ≤2.5 bar ≤36 psi: Rear-axle wheel valves do not open while a tire pressure of roughly 2.5 bar 36 psi shall be measured. [2] Tire pressure >2.5 bar >36 psi: Tire pressure too high because the tire has heated up more due to intensive flexing.	[1] Check the pressure of the control line (4 mm, blue) at the control connection of the rear-axle wheel valves (min. 1.5 bar 22 psi). If the control pressure is <1.5 bar <22 psi at the rear-axle wheel valve, trace back the control line to the rear-axle ERV and check for leaks. Check the rear-axle rotary unions for leaks. [2] Reduce the speed or wheel load – the tires could already be overloaded!

	F10	CTIS: REAR tire pressure low 0.4 bar 6 psi [SPN 520701] [FMI 01]	Tire pressure (yellow connection) of the rear-axle ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the rear axle (p_{min}: 0.5 bar 7 psi)	0.5 - 0.1 bar 7 - 1.5 psi	-	**Displays 0.0 bar 0 psi, <u>but tires not flat</u>:** [1] Front axle also shows 0.0 bar 0 psi, <u>but tires are not flat</u>: No air supplied to the CTIS, or to the rear-axle ERV (If front axle is not installed, point [1] of the troubleshooting must still be checked). ➔ *Fill the air-brake system to the cut-out pressure, engine off, ignition on, set the rear axle to inflate and listen for air leaks*. [2] Work line (14 mm, blue) leaking/damaged between the rear-axle ERV and the wheels, thus impossible to measure tire pressure. [3] Measurement line (4 mm, yellow) leaking/damaged between the rear-axle ERV and the rear-axle measurement connection, thus impossible to measure tire pressure. **Displays >0.0 bar 0 psi:** [4] Tire pressure too low because the tire has cooled down following the machine being switched off after intensive work with low tire pressure. [5] Tire pressure too low due to leaking of the rear-axle wheel valves. [6] Tire pressure too low due to the tire itself leaking/being damaged.	[1] Observe the cut-out pressure of the air-brake system – should be at least 6.8 bar 99 psi. Check the additional compressor and switch it on if necessary. Check the system pressure supply of the rear-axle ERV (4 mm, black) for leaks and installation errors. System pressure should be 2.5 + 0.2 bar 36 + 3 psi. [2] Check the work line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. Check the rotary union for leaks, using a leak detector if necessary. [3] Check the measurement line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. [4] After intensive work with low tire pressure, increase the tire pressure by 0.3 bar 4 psi before switching off the machine. [5] Use a leak detector to check the rear-axle wheel valves for leaks at the rim hole. Unplug the work line (14 mm, blue) and check whether the wheel valve is completely closed. [6] Check the rear-axle tires for leaks/damage.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F11	CTIS: REAR set pressure low 0.2 bar 3 psi [SPN 520704] [FMI 01]	Manipulated variable (red connection) of the rear-axle ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the rear axle (p_{min}: 0.5 bar 7 psi)	0.5 - 0.1 bar 7 - 1.5 psi	-	[1] Rear-axle ERV not supplied/leaking in the system pressure circuit. [2] Rear-axle ERV externally leaking in the manipulated variable circuit. [3] Rear-axle ERV internally leaking in the manipulated variable circuit (damaged/leaking solenoid valve in the ERV). [4] Rear-axle ERV internally leaking in the manipulated variable circuit (damaged/leaking pressure sensor in the ERV).	[1] On the rear-axle ERV, check the black connection and the press-in expander on the right-hand side. If the front axle is also affected, check the system pressure at the outlet of the pressure limiter using a pressure gauge (2.5 + 0.2 bar 36 + 3 psi). [2] On the rear-axle ERV, check the red connection and the press-in expander on the left-hand side. [3] Check the ventilation hose (6 mm, black) of the rear-axle ERV for intermittent air loss during rear-axle pressure adjustment. In case of air loss, send the rear-axle ERV to be checked or replace the rear-axle ERV. [4] Check the white breather vent in the black cover of the rear-axle ERV for air leakage during rear-axle pressure adjustment. In case of air leakage, send the rear-axle ERV to be checked or replace the rear-axle ERV.
	F12	CTIS: TRAILER tire pressure high 4.6 bar 67 psi [SPN 520702] [FMI 00]	Tire pressure (yellow connection) of the trailer ERV is at least 0.4 bar 6 psi above the maximum permissible tire pressure for the trailer (p_{max}: 4.0 bar 58 psi)	-	4.0 + 0.4 bar 58 + 6 psi	➔ *Check the trailer tire pressure manually (tire pressure gauge)* [1] Tire pressure ≤4.0 bar ≤58 psi: Trailer wheel valves do not open while a tire pressure of roughly 4.0 bar 58 psi shall be measured. [2] Tire pressure >4.0 bar >58 psi: Tire pressure too high because the tire has heated up more due to intensive flexing.	[1] Check the pressure of the control line (4 mm, blue) at the control connection of the trailer wheel valves (min. 1.5 bar 22 psi) If the control pressure <1.5 bar <22 psi at the trailer wheel valve, trace back the control line to the trailer ERV and check for leaks. Check the trailer rotary unions for leaks. [2] Reduce the speed or wheel load – the tires could already be overloaded!

	F13	CTIS: TRAILER tire pressure low 0.9 bar 13 psi [SPN 520702] [FMI 01]	Tire pressure (yellow connection) of the trailer ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the trailer (p_{min}: 1.0 bar 15 psi)	1.0 - 0.1 bar 15 - 1.5 psi	-	**Displays 0.0 bar 0 psi, <u>but tires not flat</u>:** [1] No air supplied to the CTIS, or to the trailer ERV. ➔ *Fill the air brake to the cut-out pressure, engine off, ignition on, set the trailer to inflate and listen for air leaks*. [2] Work line (14 mm, blue) leaking/damaged between the trailer ERV and the wheels, thus impossible to measure tire pressure. [3] Measurement line (4 mm, yellow) leaking/damaged between the trailer ERV and the trailer measurement connection, thus impossible to measure tire pressure. **Displays >0.0 bar >0 psi:** [4] Tire pressure too low because the tire has cooled down following the machine being switched off after intensive work with low tire pressure. [5] Tire pressure too low due to leaking of the trailer wheel valves. [6] Tire pressure too low due to the tire itself leaking/being damaged.	[1] Observe the cut-out pressure of the air-brake system – should be at least 6.8 bar 99 psi. Check the additional compressor and switch it on if necessary. Check the system pressure supply of the trailer ERV (4 mm, black) for leaks and installation errors. System pressure should be 4.0 + 0.3 bar 58 + 4 psi. [2] Check the work line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. Check the rotary union for leaks, using a leak detector if necessary. [3] Check the measurement line for visible damage. Check that all plug-in connections are secure and plug them in again if necessary. [4] After intensive work with low tire pressure, increase the tire pressure by 0.3 bar 4 psi before switching off the machine. [5] Use a leak detector to check the trailer wheel valves for leaks at the rim hole. Unplug the work line (14 mm, blue) and check whether the wheel valve is completely closed. [6] Check the trailer tires for leaks/damage.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F14	CTIS: TRAILER set pressure low 0.2 bar 3 psi [SPN 520705] [FMI 01]	Manipulated variable (red connection) of the trailer ERV is at least 0.1 bar 1.5 psi below the minimum permissible tire pressure for the trailer (p_{min}: 1.0 bar 15 psi)	1.0 - 0.1 bar 15 - 1.5 psi	-	[1] Trailer ERV not supplied/leaking in the system pressure circuit. [2] Trailer ERV externally leaking in the manipulated variable circuit. [3] Trailer ERV internally leaking in the manipulated variable circuit (damaged/leaking solenoid valve inside the ERV). [4] Trailer ERV internally leaking in the manipulated variable circuit (damaged/leaking pressure sensor inside the ERV).	[1] On the trailer ERV, check the black connection and the press-in expander on the right-hand side. Check the system pressure at the outlet of the pressure limiter using a pressure gauge (4.0 + 0.3 bar 58 + 4 psi). [2] On the trailer ERV, check the red connection and the press-in expander on the left-hand side. [3] Check the ventilation hose (6 mm, black) of the trailer ERV for intermittent air loss during trailer pressure adjustment. In case of air loss, send the trailer ERV to be checked or replace the trailer ERV. [4] Check the white breather vent in the black cover of the trailer ERV for air leakage during trailer pressure adjustment. In case of air leakage, send the trailer ERV to be checked or replace the trailer ERV.
	F15	CTIS: FRONT pressure adjustment slow [SPN 520706] [FMI 10]	Adjustment of the front-axle tire pressure is taking longer than the maximum permissible adjustment duration (t_{max}: 30 min)	-	30 min	[1] No air supplied to the CTIS because the flow rate of the-air-brake system is too low, or the additional compressor is defective/switched off. [2] A leak in the front-axle rotary union/work line is causing increased air demand for adjustment.	[1] When filling the tires, the tractor engine should reach at least ¾ nominal speed to achieve viable filling times. Switch on the additional compressor. [2] Check the front-axle rotary union/work line (14 mm, blue) for leaks, using a leak detector if necessary.
	F16	CTIS: REAR pressure adjustment slow [SPN 520707] [FMI 10]	Adjustment of the rear-axle tire pressure is taking longer than the maximum permissible adjustment duration (t_{max}: 30 min)	-	30 min	[1] No air supplied to the CTIS because the flow rate of the air-brake system is too low, or the additional compressor is defective/switched off. [2] A leak in the rear-axle rotary union/work line is causing increased air demand for adjustment.	[1] When filling the tires, the tractor engine should reach at least ¾ nominal speed to achieve viable filling times. Switch on the additional compressor. [2] Check the rear-axle rotary union/work line (14 mm, blue) for leaks, using a leak detector if necessary.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F17	CTIS: TRAILER pressure adjustment too slow [SPN 520708] [FMI 10]	Adjustment of the trailer tire pressure is taking longer than the maximum permissible adjustment duration (t_{max}: 30 min)	-	30 min	[1] No air supplied to the CTIS because the flow rate of the air-brake system is too low, or the additional compressor is defective/switched off. [2] A leak in the trailer rotary union/work line is causing increased air demand for adjustment.	[1] When filling the tires, the tractor engine should reach at least ¾ nominal speed to achieve viable filling times. Switch on the additional compressor. [2] Check the trailer rotary union/work line (14 mm, blue) for leaks, using a leak detector if necessary.
	F18	CTIS: FRONT tire pressure deviation 0.3 bar 4 psi [SPN 520709] [FMI 10]	Automatic tire pressure monitoring: The deviation between the most recently selected front-axle pressure setpoint and the current front-axle tire pressure is larger than 0.25 bar 3.5 psi	0.25 bar 3.5 psi	-	[1] Front-axle tire pressure higher than the most recently selected front-axle target pressure [2] Front-axle tire pressure lower than the most recently selected front-axle target pressure	[1] ➔ *See causes and troubleshooting for error F06* [2] ➔ *See causes and troubleshooting for error F07*
	F19	CTIS: REAR tire pressure deviation 0.3 bar 4 psi [SPN 520710] [FMI 10]	Automatic tire pressure monitoring: The deviation between the most recently selected rear-axle pressure setpoint and the current rear-axle tire pressure is larger than 0.25 bar 3.5 psi	0.25 bar 3.5 psi	-	[1] Rear-axle tire pressure higher than the most recently selected rear-axle target pressure [2] Rear-axle tire pressure lower than the most recently selected rear-axle target pressure	[1] ➔ *See causes and troubleshooting for error F09* [2] ➔ *See causes and troubleshooting for error F10*
	F20	CTIS: TRAILER tire pressure deviation 0.3 bar 4 psi [SPN 520711] [FMI 10]	Automatic tire pressure monitoring: The deviation between the most recently selected trailer pressure setpoint and the current trailer tire pressure is larger than 0.25 bar 3.5 psi	0.25 bar 3.5 psi	-	[1] Trailer tire pressure higher than the most recently selected trailer target pressure [2] Trailer tire pressure lower than the most recently selected trailer target pressure	[1] ➔ *See causes and troubleshooting for error F12* [2] ➔ *See causes and troubleshooting for error F13*

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F21	CTIS: FRONT leaking valves [SPN 520712] [FMI 09]	Tire pressure (yellow connection) of the front-axle ERV is at least 0.2 bar 3 psi even though the tire pressure on the front axle is not currently being adjusted – the tire pressure should only read 0.0 bar 0 psi	0.2 bar 3 psi	-	➔ *Repeat tire pressure adjustment on the front axle; as soon as the error occurs, disconnect the control line (4 mm, blue) directly at the wheel valve in the rim and observe the behavior.* [1] Front-axle wheel valves close immediately after disconnecting the control line: The wheel valve is OK. A blockage/damage or incorrect connection of the control line is preventing the wheel valves in the rims from closing once front-axle tire pressure adjustment has finished. [2] One or more front-axle wheel valves do not close after disconnecting the control line: Wheel valve is defective or blocked by foreign material.	[1] Check control line to the front-axle wheel valves for kinks/damage or incorrect connection; replace or correctly connect the control line if necessary. ➔ *See layout drawing* Check ventilation hose (6 mm, black) of the front-axle distributor for blockages. Check ventilation hose (6 mm, black) of the front-axle ERV for blockages. [2] Replace the front-axle wheel valve(s).
	F22	CTIS: REAR leaking valves [SPN 520713] [FMI 09]	Tire pressure (yellow connection) of the rear-axle ERV is at least 0.2 bar 3 psi even though the tire pressure on the rear axle is not currently being adjusted – the tire pressure should only read 0.0 bar 0 psi	0.2 bar	-	➔ *Repeat tire pressure adjustment on the rear axle; as soon as the error occurs, disconnect the control line (4 mm, blue) directly at the wheel valve in the rim and observe the behavior.* [1] Rear axle wheel valves close immediately after disconnecting the control line: The wheel valve is OK. A blockage/damage or incorrect connection of the control line is preventing the wheel valves in the rims from closing once rear-axle tire pressure adjustment has finished. [2] One or more rear-axle wheel valves do not close after disconnecting the control line: Wheel valve is defective or blocked by foreign material.	[1] Check control line to the rear-axle wheel valves for kinks/damage or incorrect connection; replace or correctly connect the control line if necessary. ➔ *See layout drawing* Check ventilation hose (6 mm, black) of the rear-axle ERV for blockages. [2] Replace the rear-axle wheel valve(s).

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F23	CTIS: TRAILER leaking valves [SPN 520714] [FMI 09]	Tire pressure (yellow connection) of the trailer ERV is at least 0.2 bar 3 psi even though the tire pressure on the trailer is not currently being adjusted – the tire pressure should only read 0.0 bar 0 psi	0.2 bar	-	➔ *Repeat tire pressure adjustment on the trailer; as soon as the error occurs, disconnect the control line (4 mm, blue) directly at the wheel valve in the rim and observe the behavior.* [1] Trailer wheel valves close immediately after disconnecting the control line: The wheel valve is OK. A blockage/damage or incorrect connection of the control line is preventing the wheel valves in the rims from closing once trailer tire pressure adjustment has finished. [2] One or more trailer wheel valves do not close after disconnecting the control line: Wheel valve is defective or blocked by foreign material.	[1] Check control line to the trailer wheel valves for kinks/damage or incorrect connection; replace or correctly connect the control line if necessary. ➔ *See layout drawing* Check ventilation hose (6 mm, black) of the trailer ERV for blockages. [2] Replace the trailer wheel valve(s).
	F24	CTIS: TRAILER ECU power high 16.2 V [SPN 520718] [FMI 03]	ECU_PWR[1)] voltage on the trailer too high	-	15.0 V DC	[1] CTIS connected to 24-V vehicle electrical system [2] On-board voltage too high [3] Defective ECU	[1] Connect CTIS to 12-V vehicle electrical system. [2] Rectify the cause of the excessively high on-board voltage and check that the ISOBUS terminating resistors are working correctly (see documentation from the manufacturer). [3] Send the ECU to be checked or replace the ECU.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F25	CTIS: TRAILER ECU power low 10.8 V [SPN 520718] [FMI 04]	ECU_PWR[1)] voltage on the trailer too low	11.0 V DC	-	[1] No power supply [2] Bad electrical contact at positive or ground[2)] [3] Cable harness error [4] Defective ECU	[1] Check the voltage supply at the connection points for positive and ground on the vehicle. [2] Check the voltage supply of the positive contact (pin 1, red) and the ground contact (pin 2, black) on the 2-pin connection of the cable harness. ➔ *Disconnect the 2-pin connection of the cable harness, use wires to guide out contact pins 1 and 2 of the female connector for measuring* [3] Check the cable harness for damage. Check the voltage supply of the positive contact (pin K3, red) and the ground contact (pin J3, black) on the 30-pin connection to the ECU. ➔ *Disconnect the 30-pin connection from the ECU, use wires to guide out contact pins K3 and J3 of the female connector for measuring* [4] Send the ECU to be checked or replace the ECU.
	F26	CTIS: TRAILER ACT power high 16.2 V [SPN 520719] [FMI 03]	ACT_PWR[1)] voltage on the trailer too high	-	15.0 V DC	**CAUTION: In case of error message F24, rectify the errors there first!** Defective ECU	Send the ECU to be checked or replace the ECU.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F27	CTIS: TRAILER ACT power low 10.8 V [SPN 520719] [FMI 04]	ACT_PWR[1)] voltage on the trailer too low	11.0 V DC	-	**CAUTION: In case of error message F25, rectify the errors there first!** [1] Cable harness error [2] Defective ECU	[1] Check the cable harness for damage – especially the positive jumper (pins G3-F2, red) and the ground jumper (pins H3-F3, black) on the 30-pin connection to the ECU. Check the voltage supply of the positive contact (pin F2, red) and the ground contact (pin F3, black) on the 30-pin connection to the ECU. ➔ *Disconnect the 30-pin connection from the ECU, use jumper to connect contact pins J3 and H3 on the female connector, use jumper to connect contact pins K3 and G3 on the female connector, use wires to guide out contact pins F2 and F3 of the female connector for measuring.* ***CAUTION: Wires must not touch, risk of short circuit!*** [2] Send the ECU to be checked or replace the ECU.
	F28	CTIS: TRAILER ECU temperature high 91°C [SPN 520720] [FMI 00]	Temperature on the PCB inside the ECU on the trailer too high	-	+85°C	The ECU is installed at a location in the machine where the temperature exceeds 85°C during operation.	Move the ECU to a location in the machine where the temperature does not reach 85°C during operation.
	F29	CTIS: TRAILER ECU defaulted [SPN 520721] [FMI 14]	ECU on the trailer was reset to default factory settings	-	-	(Information only)	-

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F30	CTIS: FRONT tire sensor high [SPN 520715] [FMI 00]	Idle value of the tire-pressure sensor in the front-axle ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Front-axle TIRE shows RAW (70…210): a) System pressure supply (4 mm, black) for the front-axle ERV connected to the measurement connection (yellow) of the front-axle ERV. b) Tire-pressure sensor in the front-axle ERV is defective. [2] Front-axle TIRE shows RAW (>307): a) Short circuit between voltage supply and signal of the tire-pressure sensor. b) Tire-pressure sensor in the front-axle ERV is defective.	[1] a) Connect the system pressure supply for the front-axle ERV to the black connection of the front-axle ERV. b) Send the front-axle ERV to be checked or replace the front-axle ERV. [2] a) Check electric continuity from the positive contact (pin 1) to TIRE (pin 3) on the 8-pin female connector to the front-axle ERV. ➔ *Disconnect the cable harness at the front-axle ERV and ECU* b) Send the front-axle ERV to be checked or replace the front-axle ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F31	CTIS: FRONT tire sensor low [SPN 520715] [FMI 01]	Idle value of the tire-pressure sensor in the front-axle ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Front-axle TIRE shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between front-axle ERV and ECU is interrupted. b) Tire-pressure sensor in the front-axle ERV is defective. [2] Front-axle TIRE and SET show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between front-axle ERV and ECU is interrupted. b) Both pressure sensors in the front-axle ERV are defective. [3] Front-axle TIRE and SET show RAW (57...59) and BAR (1.2) PSI (17): Front-axle ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check TIRE contact (pin 3) on the 8-pin female connector to the front-axle ERV (correct the position if necessary). b) Send the front-axle ERV to be checked or replace the front-axle ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the front-axle ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the front-axle ERV. Supply voltage should be 12 VDC. b) Send the front-axle ERV to be checked or replace the front-axle ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F32	CTIS: REAR tire sensor high [SPN 520716] [FMI 00]	Idle value of the tire-pressure sensor in the rear-axle ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Rear-axle TIRE shows RAW (70…210): a) System pressure supply (4 mm, black) for the rear-axle ERV connected to the measurement connection (yellow) of the rear-axle ERV. b) Tire-pressure sensor in the rear-axle ERV is defective. [2] Rear-axle TIRE shows RAW (>307): a) Short circuit between voltage supply and signal of the tire-pressure sensor. b) Tire-pressure sensor in the rear-axle ERV is defective.	[1] a) Connect the system pressure supply for the rear-axle ERV to the black connection of the rear-axle ERV. b) Send the rear-axle ERV to be checked or replace the rear-axle ERV. [2] a) Check electric continuity from the positive contact (pin 1) to TIRE (pin 3) on the 8-pin female connector to the rear-axle ERV. ➔ *Disconnect the cable harness at the rear-axle ERV and ECU* b) Send the rear-axle ERV to be checked or replace the rear-axle ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F33	CTIS: REAR tire sensor low [SPN 520716] [FMI 01]	Idle value of the tire-pressure sensor in the rear-axle ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Rear-axle TIRE shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between rear-axle ERV and ECU is interrupted. b) Tire-pressure sensor in the rear-axle ERV is defective. [2] Rear-axle TIRE and SET show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between rear-axle ERV and ECU is interrupted. b) Both pressure sensors in the rear-axle ERV are defective. [3] Rear-axle TIRE and SET show RAW (57...59) and BAR (1.2) PSI (17): Rear-axle ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check TIRE contact (pin 3) on the 8-pin female connector to the rear-axle ERV (correct the position if necessary). b) Send the rear-axle ERV to be checked or replace the rear-axle ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the rear-axle ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the rear-axle ERV. Supply voltage should be 12 VDC. b) Send the rear-axle ERV to be checked or replace the rear-axle ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F34	CTIS: TRAILER tire sensor high [SPN 520717] [FMI 00]	Idle value of the tire-pressure sensor in the slurry-tanker ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Slurry-tanker TIRE shows RAW (70…210): a) Connect the system pressure supply (4 mm, black) for the slurry-tanker ERV connected to the measurement connection (yellow) of the slurry-tanker ERV. b) Tire-pressure sensor in the slurry-tanker ERV is defective. [2] Slurry-tanker TIRE shows RAW (>307): a) Short circuit between voltage supply and signal of the tire-pressure sensor. b) Tire-pressure sensor in the slurry-tanker ERV is defective.	[1] a) Connect the system pressure supply for the slurry-tanker ERV to the black connection of the slurry-tanker ERV. b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV. [2] a) Check electric continuity from the positive contact (pin 1) to TIRE (pin 3) on the 8-pin female connector to the slurry-tanker ERV. ➔ *Disconnect the cable harness at the slurry-tanker ERV and ECU* b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F35	CTIS: TRAILER tire sensor low [SPN 520717] [FMI 01]	Idle value of the tire-pressure sensor in the slurry-tanker ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Slurry-tanker TIRE shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between slurry-tanker ERV and ECU is interrupted. b) Tire-pressure sensor in the slurry-tanker ERV is defective. [2] Slurry-tanker TIRE and SET show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between slurry-tanker ERV and ECU is interrupted. b) Both pressure sensors in the slurry-tanker ERV are defective. [3] Slurry-tanker TIRE and SET show RAW (57...59) and BAR (1.2) PSI (17): Slurry-tanker ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check TIRE contact (pin 3) on the 8-pin female connector to the slurry-tanker ERV (correct the position if necessary). b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the slurry-tanker ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the slurry-tanker ERV. Supply voltage should be 12 VDC. b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F36	CTIS: FRONT set sensor high [SPN 520715] [FMI 00]	Idle value of the setpoint-pressure sensor in the front-axle ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* Front-axle SET shows RAW (>307): a) Short circuit between voltage supply and signal of the setpoint-pressure sensor. b) Setpoint-pressure sensor in the front-axle ERV is defective.	a) Check electric continuity from the positive contact (pin 1) to SET (pin 2) on the 8-pin female connector to the front-axle ERV. ➔ *Disconnect the cable harness at the front-axle ERV and ECU* b) Send the front-axle ERV to be checked or replace the front-axle ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F37	CTIS: FRONT set sensor low [SPN 520715] [FMI 01]	Idle value of the setpoint-pressure sensor in the front-axle ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Front-axle SET shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between front-axle ERV and ECU is interrupted. b) Setpoint-pressure sensor in the front-axle ERV is defective. [2] Front-axle SET and TIRE show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between front-axle ERV and ECU is interrupted. b) Both pressure sensors in the front-axle ERV are defective. [3] Front-axle SET and TIRE show RAW (57...59) and BAR (1.2) PSI (17): Front-axle ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check SET contact (pin 2) on the 8-pin female connector to the front-axle ERV (correct the position if necessary). b) Send the front-axle ERV to be checked or replace the front-axle ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the front-axle ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the front-axle ERV. Supply voltage should be 12 VDC. b) Send the front-axle ERV to be checked or replace the front-axle ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F38	CTIS: REAR set sensor high [SPN 520716] [FMI 00]	Idle value of the setpoint-pressure sensor in the rear-axle ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* Rear-axle SET shows RAW (>307): a) Short circuit between voltage supply and signal of the setpoint-pressure sensor. b) Setpoint-pressure sensor in the rear-axle ERV is defective.	a) Check electric continuity from the positive contact (pin 1) to SET (pin 2) on the 8-pin female connector to the rear-axle ERV. ➔ *Disconnect the cable harness at the rear-axle ERV and ECU* b) Send the rear-axle ERV to be checked or replace the rear-axle ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F39	CTIS: REAR set sensor low [SPN 520716] [FMI 01]	Idle value of the setpoint-pressure sensor in the rear-axle ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Rear-axle SET shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between rear-axle ERV and ECU is interrupted. b) Setpoint-pressure sensor in the rear-axle ERV is defective. [2] Rear-axle SET and TIRE show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between rear-axle ERV and ECU is interrupted. b) Both pressure sensors in the rear-axle ERV are defective. [3] Rear-axle SET and TIRE show RAW (57...59) and BAR (1.2) PSI (17): Rear-axle ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check SET contact (pin 2) on the 8-pin female connector to the rear-axle ERV (correct the position if necessary). b) Send the rear-axle ERV to be checked or replace the rear-axle ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the rear-axle ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the rear-axle ERV. Supply voltage should be 12 VDC. b) Send the rear-axle ERV to be checked or replace the rear-axle ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F40	CTIS: TRAILER set sensor high [SPN 520717] [FMI 00]	Idle value of the setpoint-pressure sensor in the slurry-tanker ERV is above the permissible range	-	69 counts	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* Slurry-tanker SET shows RAW (>307): a) Short circuit between voltage supply and signal of the setpoint-pressure sensor. b) Setpoint-pressure sensor in the slurry-tanker ERV is defective.	a) Check electric continuity from the positive contact (pin 1) to SET (pin 2) on the 8-pin female connector to the slurry-tanker ERV. ➔ *Disconnect the cable harness at the slurry-tanker ERV and ECU* b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F41	CTIS: TRAILER set sensor low [SPN 520717] [FMI 01]	Idle value of the setpoint-pressure sensor in the slurry-tanker ERV is below the permissible range	48 counts	-	 ➔ *Call up the diagnostic screen, check the sensor values in the lower half of the screen. Correct values are RAW (57...59) and BAR (0.0) PSI (0).* [1] Slurry-tanker SET shows RAW (0…1) and BAR (0.0) PSI (0): a) Cable connection between slurry-tanker ERV and ECU is interrupted. b) Setpoint-pressure sensor in the slurry-tanker ERV is defective. [2] Slurry-tanker SET and TIRE show RAW (0...1) and BAR (0.0) PSI (0): a) Cable connection between slurry-tanker ERV and ECU is interrupted. b) Both pressure sensors in the slurry-tanker ERV are defective. [3] Slurry-tanker SET and TIRE show RAW (57...59) and BAR (1.2) PSI (17): Slurry-tanker ERV was not connected to the ECU until after the system start, so the automatic sensor calibration failed.	[1] a) Visually check SET contact (pin 2) on the 8-pin female connector to the slurry-tanker ERV (correct the position if necessary). b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV. [2] a) Visually check positive contact (pin 1), TIRE contact (pin 3) and SET contact (pin 2) on the 8-pin female connector to the slurry-tanker ERV (correct the position if necessary). Measure the voltage between the positive contact (pin 1) and the ground contact (pin 8) on the 8-pin female connector to the slurry-tanker ERV. Supply voltage should be 12 VDC. b) Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV. [3] Manually initiate calibration via soft key from the diagnostic screen.

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F42	CTIS: FRONT set pressure not decreasing [SPN 520722] [FMI 10]	Value of the setpoint-pressure sensor in the front-axle ERV is not decreasing even though the corresponding solenoid valve in the front-axle ERV is being actuated			[1] Ventilation of the front-axle ERV blocked in the system pressure circuit [2] Defective solenoid valve in the front-axle ERV	[1] Check ventilation hose (6 mm, black) of the front-axle ERV for blockages. [2] Send the front-axle ERV to be checked or replace the front-axle ERV.
	F43	CTIS: REAR set pressure not decreasing [SPN 520723] [FMI 10]	Value of the setpoint-pressure sensor in the rear-axle ERV is not decreasing even though the corresponding solenoid valve in the front-axle ERV is being actuated			[1] Ventilation of the rear-axle ERV blocked in the system pressure circuit [2] Defective solenoid valve in the rear-axle ERV	[1] Check ventilation hose (6 mm, black) of the rear-axle ERV for blockages. [2] Send the rear-axle ERV to be checked or replace the rear-axle ERV.
	F44	CTIS: TRAILER set pressure not decreasing [SPN 520724] [FMI 10]	Value of the setpoint-pressure sensor in the slurry-tanker ERV is not decreasing even though the corresponding solenoid valve in the slurry-tanker ERV is being actuated			[1] Ventilation of the slurry-tanker ERV blocked in the system pressure circuit [2] Defective solenoid valve in the slurry-tanker ERV	[1] Check ventilation hose (6 mm, black) of the slurry-tanker ERV for blockages. [2] Send the slurry-tanker ERV to be checked or replace the slurry-tanker ERV.
	F45	CTIS: 26 km/h 0,8 bar 12 psi FRONT Overspeed detected Start inflation now! [SPN 520728] [FMI 00]	Speed limit for field work was exceeded for more than 10 s and tire pressure does not correspond to the target tire pressure for road transport. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	Acknowledge the error message. The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!
	F46	CTIS: 26 km/h 0,8 bar 12 psi REAR Overspeed detected Start inflation now! [SPN 520729] [FMI 00]	Speed limit for field work was exceeded for more than 10 s and tire pressure does not correspond to the target tire pressure for road transport. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	Acknowledge the error message. The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!
	F47	CTIS: 26 km/h 1,2 bar 17 psi TRAILER Overspeed detected Start inflation now! [SPN 520730] [FMI 00]	Speed limit for field work was exceeded for more than 10 s and tire pressure does not correspond to the target tire pressure for road transport. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	Acknowledge the error message. The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!

Location	Nr.	Display content	Description	MIN limit	MAX limit	Cause[s]	Troubleshooting[s]
	F48	CTIS: 26 km/h 0,8 bar 12 psi FRONT Overspeed detected Emergency inflation started! [SPN 520731] [FMI 14]	The error message F45 FRONT Overspeed detected was not acknowledged for more than 10 s. Emergency inflation to target tire pressure for road transport is started. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!
	F49	CTIS: 26 km/h 0,8 bar 12 psi REAR Overspeed detected Emergency inflation started! [SPN 520732] [FMI 14]	The error message F46 REAR Overspeed detected was not acknowledged for more than 10 s. Emergency inflation to target tire pressure for road transport is started. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!
	F50	CTIS: 26 km/h 1,2 bar 17 psi TRAILER Overspeed detected Emergency inflation started! [SPN 520733] [FMI 14]	The error message F47 TRAILER Overspeed detected was not acknowledged for more than 10 s. Emergency inflation to target tire pressure for road transport is started. (v_{max}: 25 km/h 16 mph)	-	25 km/h 16 mph	See Description	The tires are inflated to the target tire pressure for road transport. For the future, inflate the tires before going on the road!

[1] The two voltages ECU_PWR and ACT_PWR are always bridged on the agricultural tractor – they must therefore have almost the same values. The ECU must always be supplied with a switched voltage supply (ignition voltage, terminal 15). The limit values relate to 12 V vehicle electrical systems.

[2] If the ground of the voltage supply is connected directly to the vehicle body, ensure that there is good electrical contact. Especially in the case of Fendt tractors, the insulation provided by the paint of the vehicle body is often too good.

ACT_PWR Voltage supply for power consumers on the ISOBUS (in the case of the CTIS voltage supply of the solenoid valves in the ERV)

BAR The pressure unit "bar," display of the converted sensor raw value on the diagnostic screen

CTIS Central Tire Inflation System

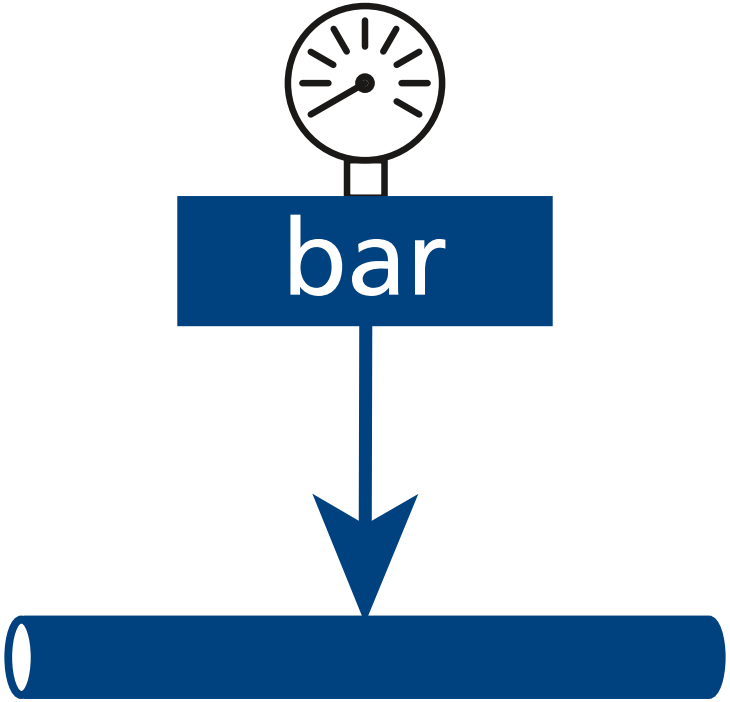
ECU Electronic Control Unit

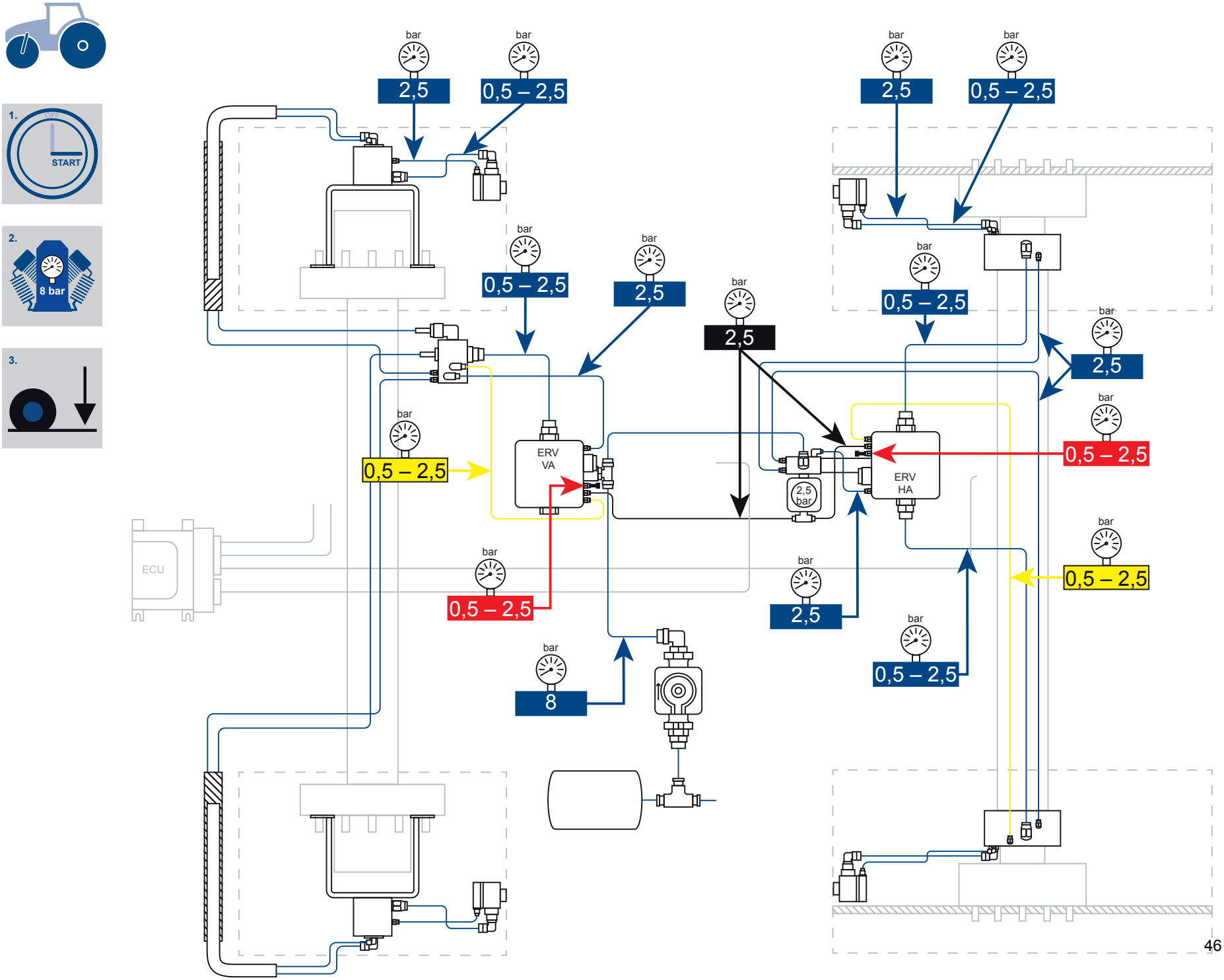
ECU_PWR Voltage supply for electronic control units on the ISOBUS (in the case of the CTIS voltage supply of the ECU and pressure sensors in the ERV)

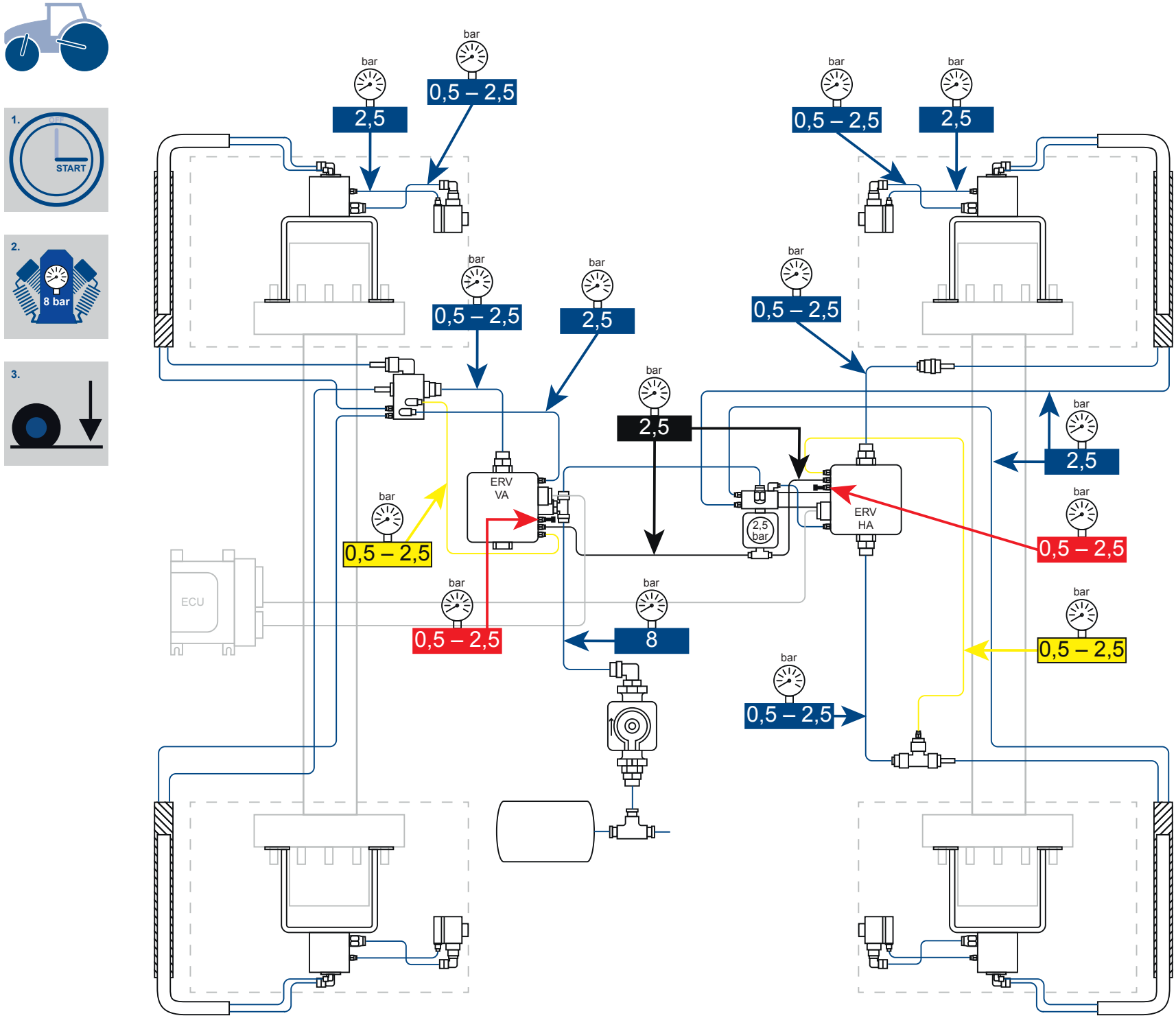
ERV Electronic Regulator Valve

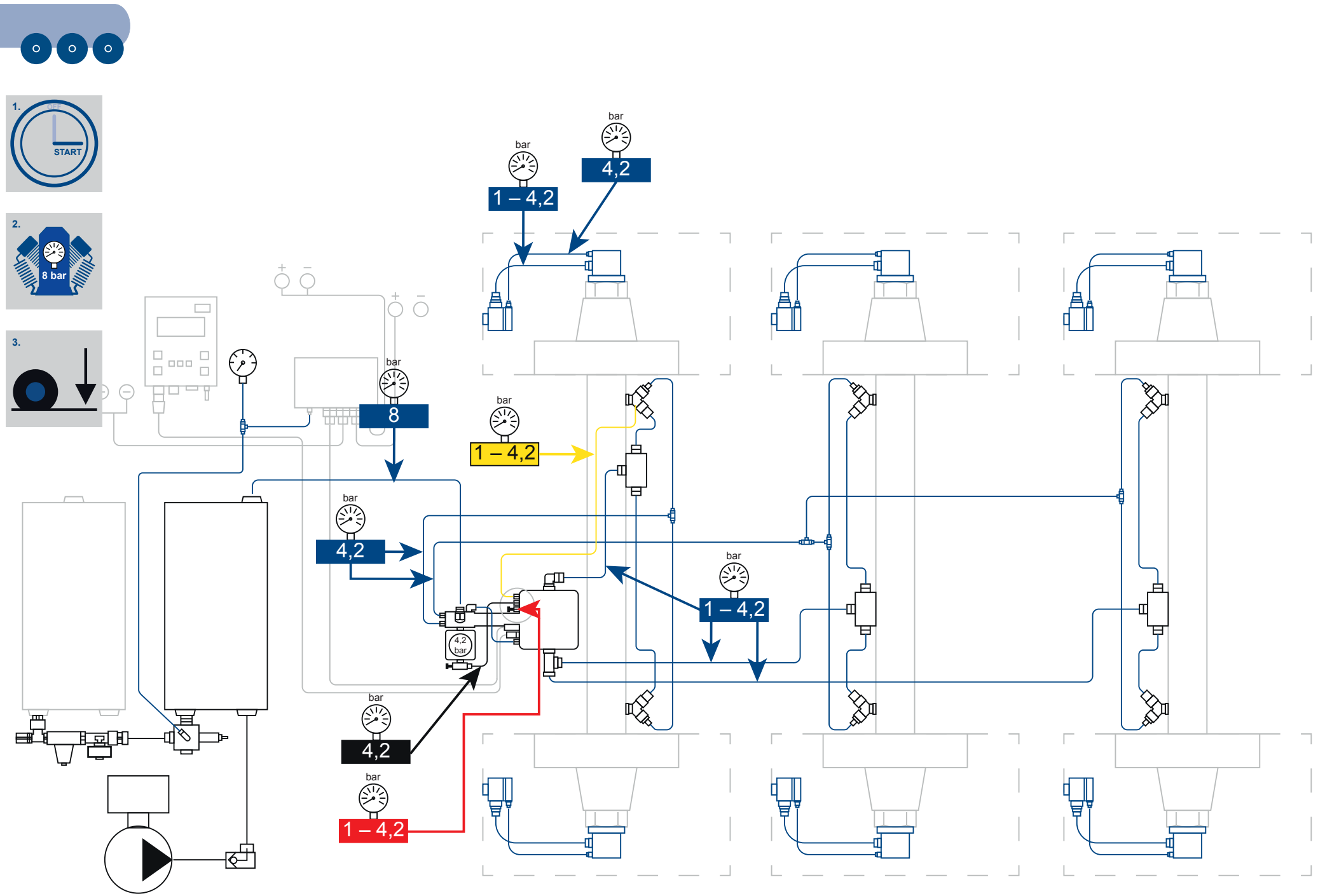
FRONT	Front axle
FMI	Failure Mode Identifier (J1939)
RAW	Raw sensor value on the diagnostic screen
REAR	Rear axle
SET	Setpoint, display of the setpoint-pressure sensor on the diagnostic screen
SPN	Suspect Parameter Number (J1939)
TIRE	Tire, display of the tire-pressure sensor on the diagnostic screen
TRAILER	Trailer (also slurry tanker)

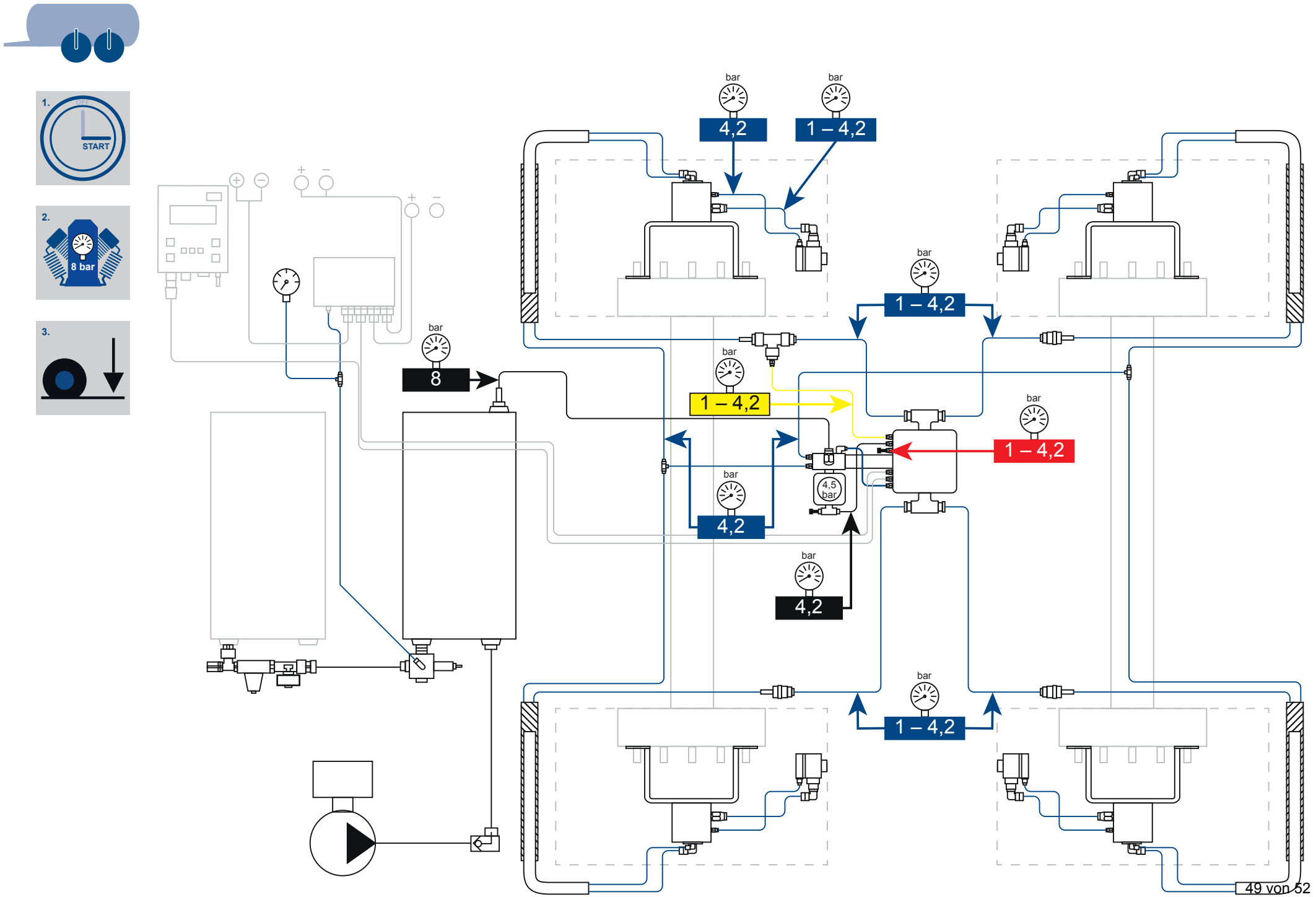
Test Instructions




1.
OFF
START
2.
8 bar
3.
bar
2,5
0,5 – 2,5
8
ERV VA
ERV HA
2,5 bar
ECU


1.
OFF
START
2.
8 bar
3.
bar
2,5
0,5 – 2,5
8
ERV
VA
ERV
HA
2,5
bar
ECU


1.
START
2.
8 bar
3.
bar
4,2
1 – 4,2
bar
4,2
1 – 4,2
bar
8
bar
4,2
bar
4,2
bar
1 – 4,2
bar
1 – 4,2
4,2 bar


1.
START
2.
8 bar
3.
bar
4,2
1 – 4,2
8
4,5 bar

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