Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935
Stage IIIB
Telescopic Handler

SERVICE MANUAL

Part number 48192604
English
August 2017

CASE IH
AGRICULTURE

Reassembling hydraulic equipment

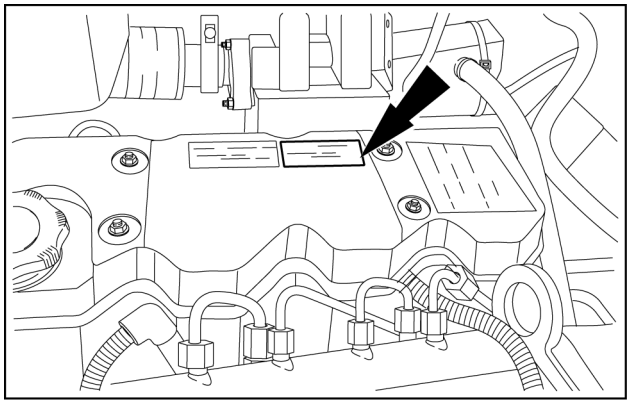
- Clean parts in a well ventilated room.
- Remove residual oil with compressed air, and apply fresh hydraulic oil or gear oil to surfaces before reassembly.
- Replace removed o-rings, back-up rings and oil seals with new ones. Apply gear oil on them before reassembling.
- Thoroughly clean and dry surfaces on which liquid sealant must be reapplied.
- Before assembling, remove rust preventives on new parts.
- Use special tools to fit bearings, bushing and oil seal.
- Assemble parts matching to the marks.
- After completion, check that there is no omission of parts.

Fac-Simile of Identification of turbocharged engine with after cooler

The identification plate is located at the top of the engine as shown in the figure. Record the serial number below for quick reference in the case of necessity.

ENGINE TYPE: _____

SERIAL NUMBER: _____



LEIL13TLH0487AB 5

EMISSION CONTROL INFORMATION

ENGINE FAMILY | MODEL | MANUFACTURE DATE (MO-Y²)

DISPLACEMENT | L | ADVERTISED POWER | 100 rpm | POWER CATEGORY

THIS ENGINE COMPLIES WITH U.S. EPA REGULATION FOR | MODEL YEAR NON ROAD AND STATIONARY

DIESEL ENGINES AND CALIFORNIA REGULATION FOR | MODEL YEAR NON ROAD AND ENGINES

THIS ENGINE IS CERTIFIED TO OPERATE ON ULTRA LOW SULFUR FUEL ONLY

ECS: Mb

DELEGATED ASSEMBLY

ENGINE TYPE | SERIAL NUMBER

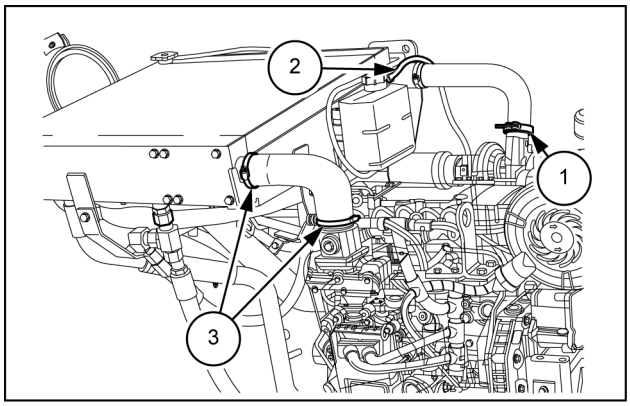
E3

Ra

e3 | Rb

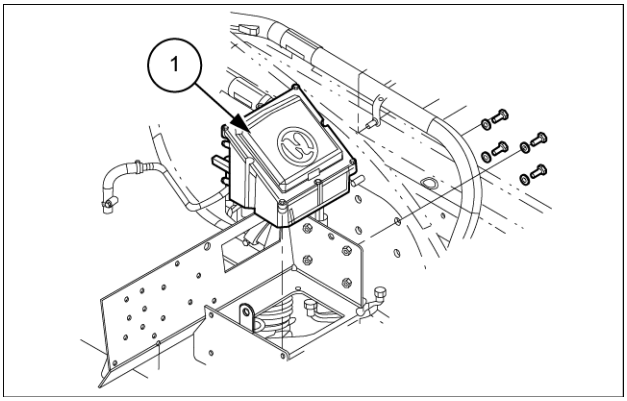
LEIL14TLH0457EA 6

Repeat the operation for the main cooling package assembly.
Tighten the clamp **(1)** to **2 N·m** (**1 lb ft**)
Tighten the clamps **(2)** and **(3)** to **4 N·m** (**3 lb ft**)



LEIL13TLH0984AB 4

Tighten the bolt **M10x25 (1)** of the supply module support to **57 N·m** (**42 lb ft**).



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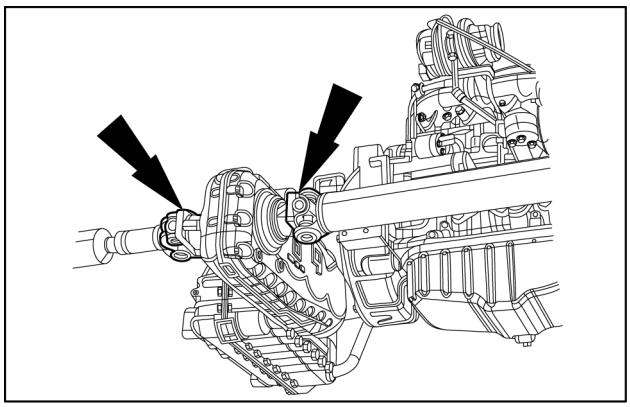
Tighten the bolts 3/8-24 x 3/4 **(2)** that attach the drive shaft to the transmission to **80 N·m** (**59 lb ft**).



LEIL13TLH0949AB 6

Following refitment, make certain that all mechanical, hydraulic and electrical components are correctly reconnected. Tighten the hydraulic pipes. According to the tightening torque tables. Top up the hydraulic and transmission oil to the indicated level, using the specific recommended lubricant. Refill the engine cooling system using a mixture of water and **50%** coolant.

Engine lubrication system - General specification

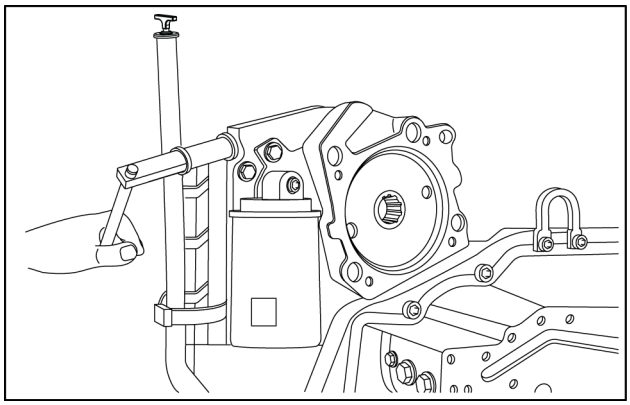
Minimum oil pressure during operation: **300 kPa**
(Engine oil temperature: **120 °C** – rated speed)

Lubricating Oil Specifications:
SAE 10W-40, API CJ-4, ACEA E7/E9 (Standard temperature)
SAE 0W-40, API CJ-4, ACEA E9-08 (Low temperature)

Transmission/Converter oil pump - Disassemble

Remove the locking screw.

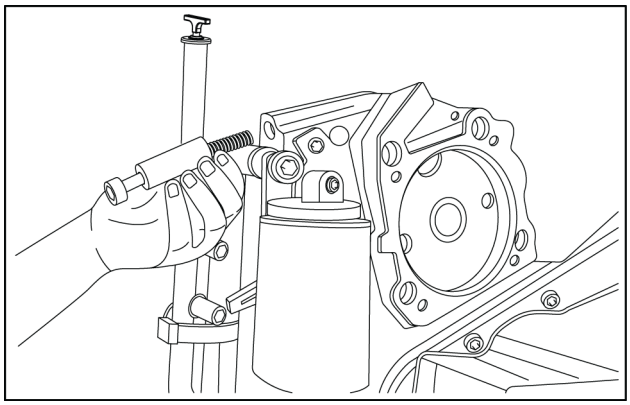
NOTICE: *the oil pressure pump can only be replaced as complete unit! The system pressure valve is preset by the manufacturer and is not permitted to be changed without approval by CASE IH.*



LEIL16TLH0005AA 1

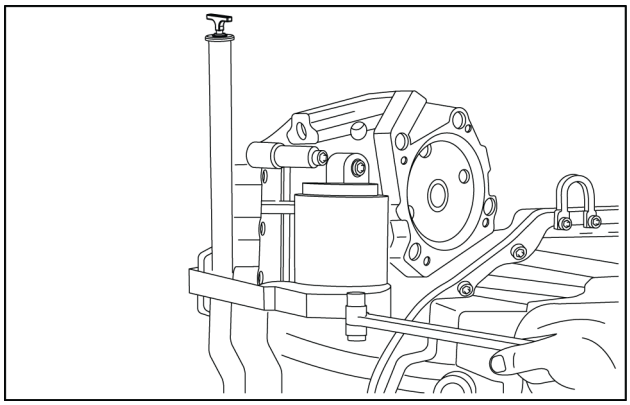
Withdraw piston and pressure spring from the bore.

NOTE: *pay attention to adjusting spacer(s) becoming free – inserted into piston.*



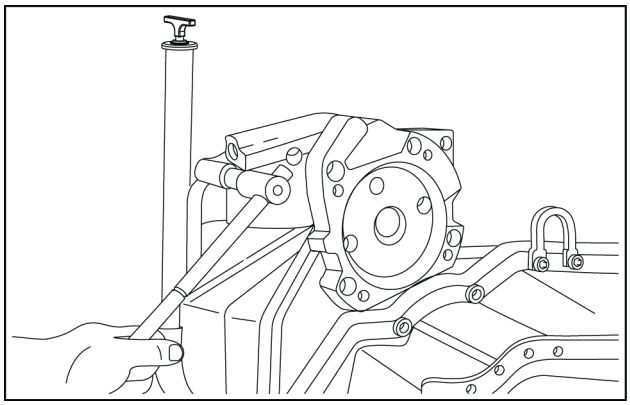
LEIL16TLH0006AA 2

Remove the oil filter.



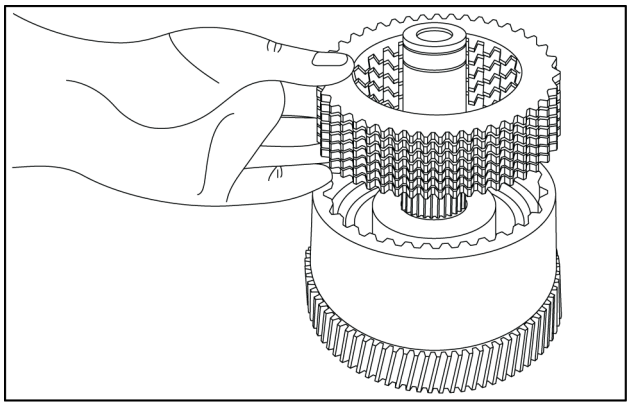
LEIL16TLH0007AA 3

Remove the whole oil pump.



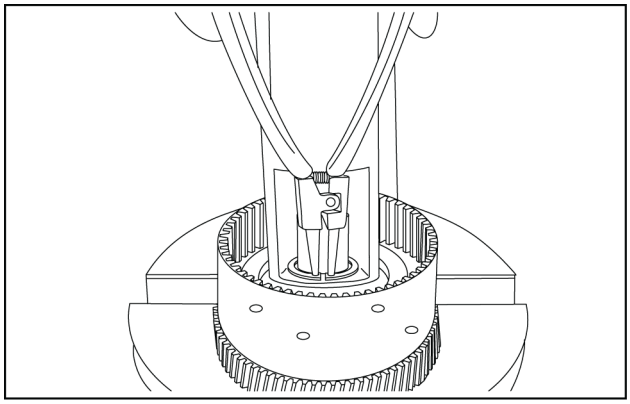
LEIL16TLH0008AA 4

Remove the shim and the disc pack.



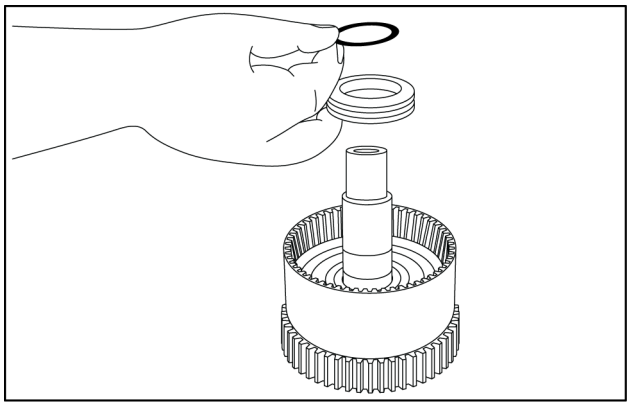
LEIL13TLH1132AA 25

Equalise preload of the plate spring pack using the pressing bush **380200488**.
Squeeze out the retaining ring.



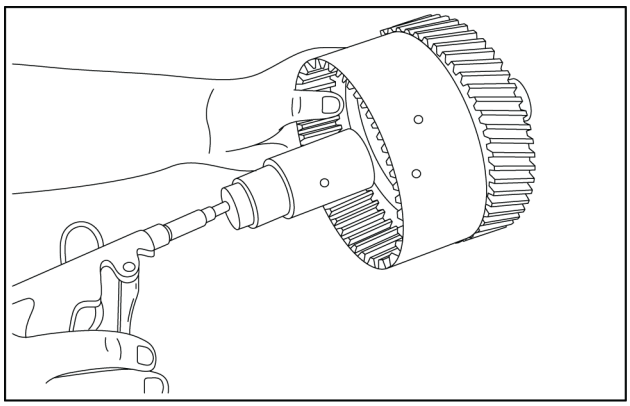
LEIL13TLH1133AA 26

Remove the shim and the spring pack.



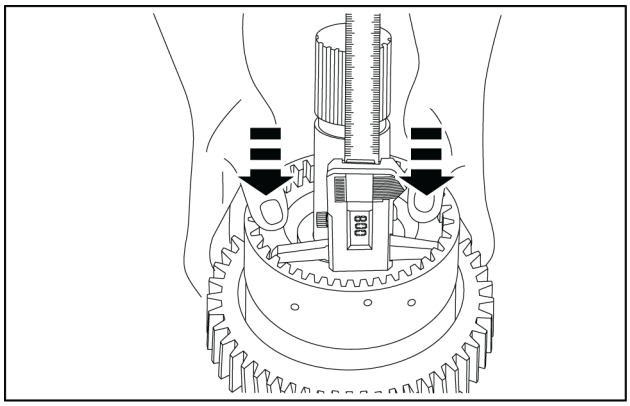
LEIL13TLH1134AA 27

Remove the piston from the shaft with compressed air.



LEIL13TLH1135AA 28

Press the disc pack against shoulder (Force F = about **40 N** (**9 lb**)).
Determine the dimension I from the end face of the disc carrier to the end shim.
Dimension I e.g: **8.30 mm** (**0.33 in**)

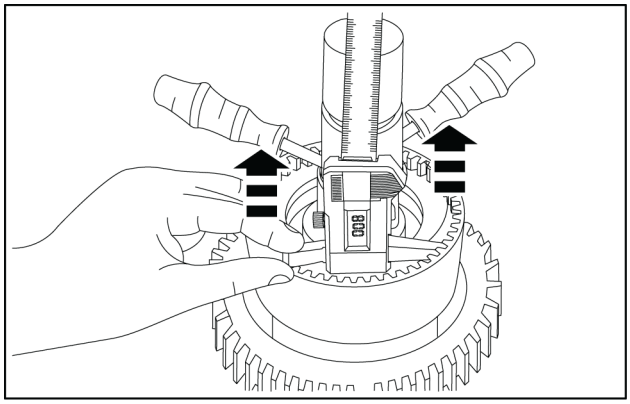


LEIL13TLH1231AB 59

Position the end shim and the snap ring on the outer face of the recess/disc carrier, until it is in contact.
Determine the dimension II from the end face of the disc carrier to the end shim.
Dimension II e.g.: **6.90 mm** (**0.27 in**)

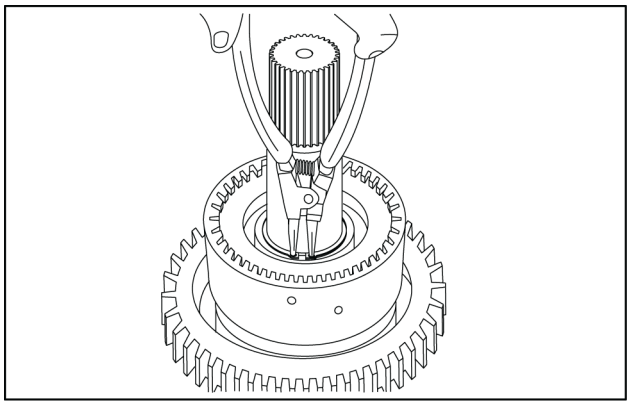
CALCULATION EXAMPLE:
Dimension I e.g. **8.30 mm** (**0.33 in**)
Dimension II e.g. **6.90 mm** (**0.27 in**)
gives dimension X (disc clearance) = **1.40 mm** (**0.06 in**)

If the required total disc clearance e.g. **1.6 – 2.4 mm** (**0.1 – 0.1 in**) should not be obtained, correct it with one corresponding snap ring.



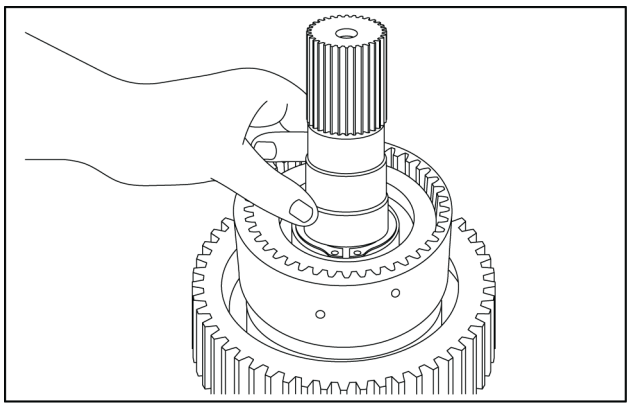
LEIL13TLH1232AB 60

Squeeze in the retaining ring.



LEIL13TLH1233AA 61

Align the guard plate.



LEIL13TLH1234AA 62

Shaft sealing ring (output)

1. Gearbox housing
2. Output shaft „K3“
3. Shaft sealing ring

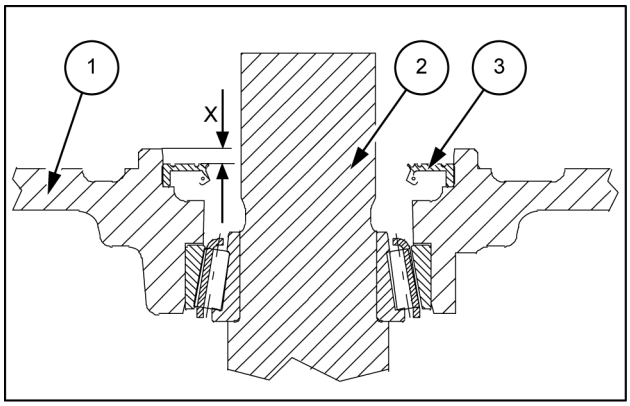
X = Installation measure **4 – 4.5 mm** (**0.2 – 0.2 in**)

Use the required installation position **(X)** to install the shaft sealing ring **(3)**.

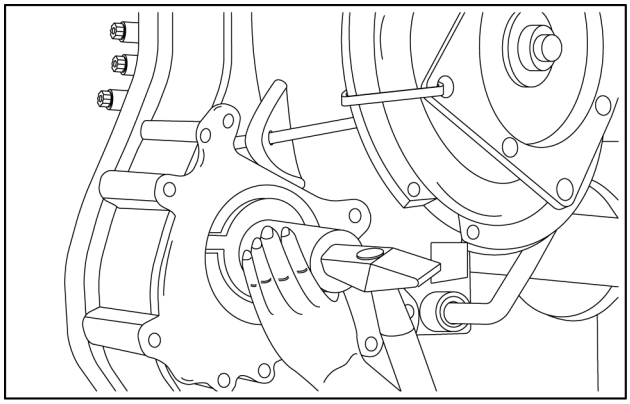
NOTE: *installation position of shaft sealing ring – sealing lip showing towards the oil compartment.*

Contact surface (outer shell of the shaft sealing ring:
if metal, apply sealing compound (Loctite No. 586).
if rubberised, wet with spirit.

Grease shaft sealing ring near the sealing and dust lip. Use the support **380200494** to ensure a plain installation position of the shaft sealing ring.



LEIL13TLH1326AB 16

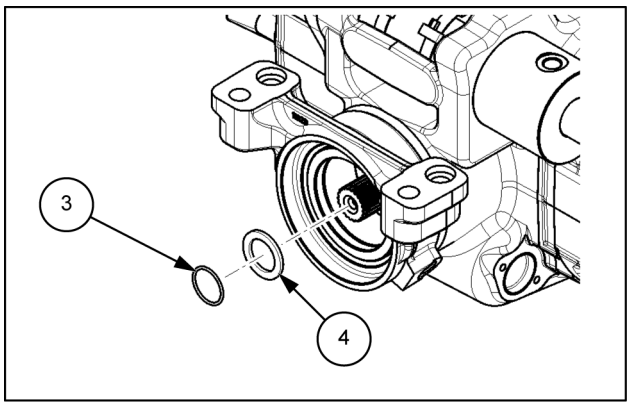


LEIL13TLH1327AA 17

Drive shaft universal joint - Assemble

Some of the following pictures may not show exactly your axle, but the indicated operations are correct anyway.

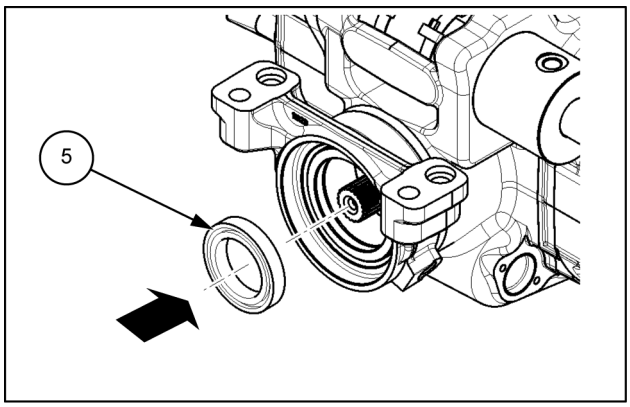
Install the washer **(4)** and a new O-Ring **(3)** on the pinion shaft.



LEIL13TLH0627AB 1

Assemble a new seal ring **(5)** to the differential support by using the driver **380200526** and a hammer.

NOTE: *the driver must be used with the handle* ***380002211****. Wear protective gloves.*

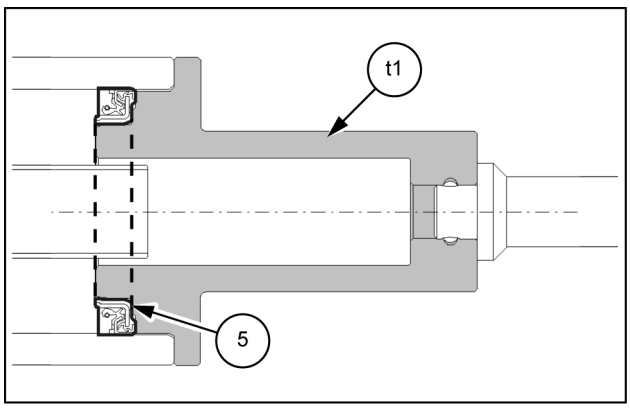


LEIL13TLH0628AB 2

Seal ring **(5)** assembly scheme.

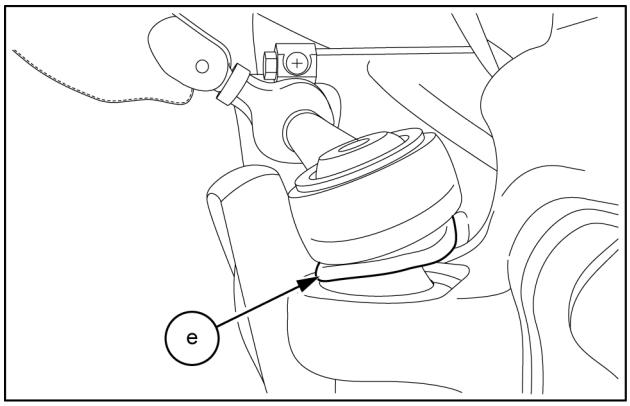
NOTE: *use the driver* ***380200526 (T1)*** *and a hammer.*

NOTE: *the driver must be used with the handle* ***380002211****. Wear protective gloves.*



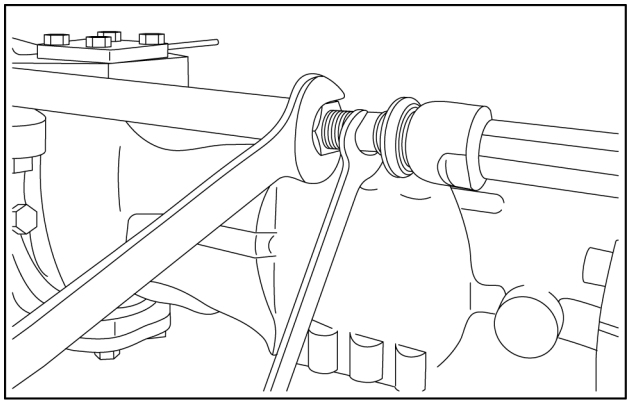
LEIL13TLH0629AB 3

NOTICE: *if the tie-rod turns the rubber* ***(e)*** *can be damaged; lock the tie-rod with another wrench.*



LEIL13TLH0874AB 8

After adjusting, screw in the lock nuts **(2)** of the steering rods **(1)** to the prescribed tightening torque.



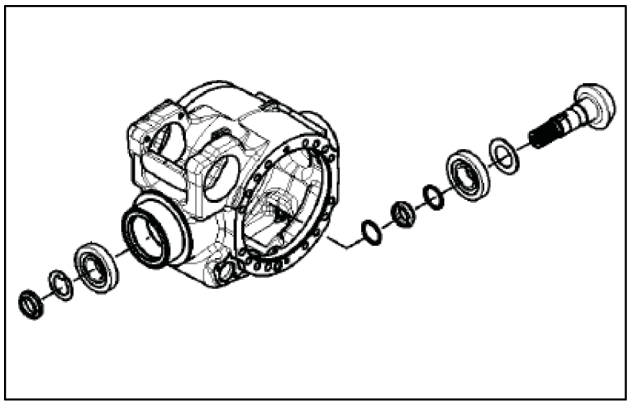
LEIL13TLH0875AA 9

Differential housing - Assemble

Differential support group

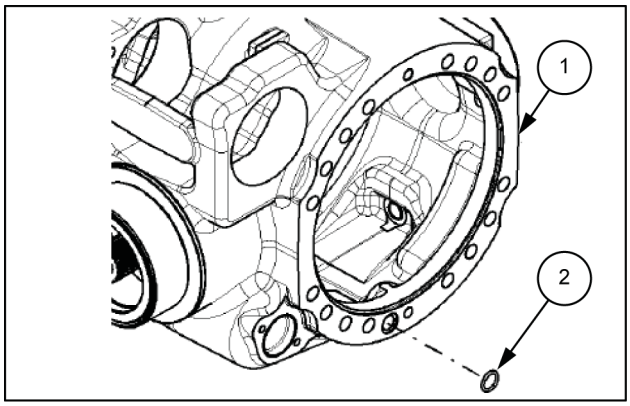
Some of the following pictures may not show exactly your axle, but the indicated operations are correct anyway.

Assemble the pinion group before assemble the differential support group.



LEIL13TLH0808AA 1

Lubricate and assemble new O-Ring **(2)** on every side of the central body **(1)**.

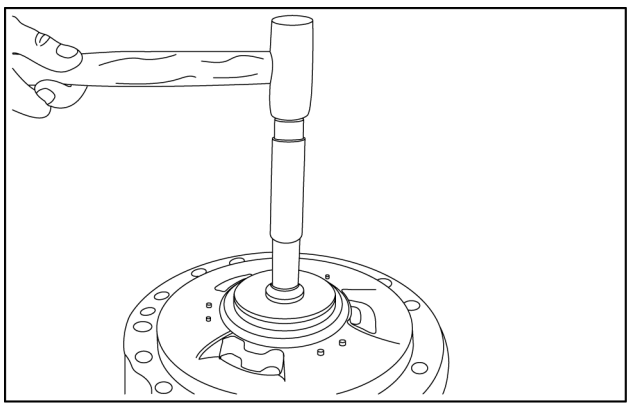


LEIL13TLH0809AB 2

Position the flange **(6)** on a flat surface and force the bearing cup **(4)** using the driver **380200521**.

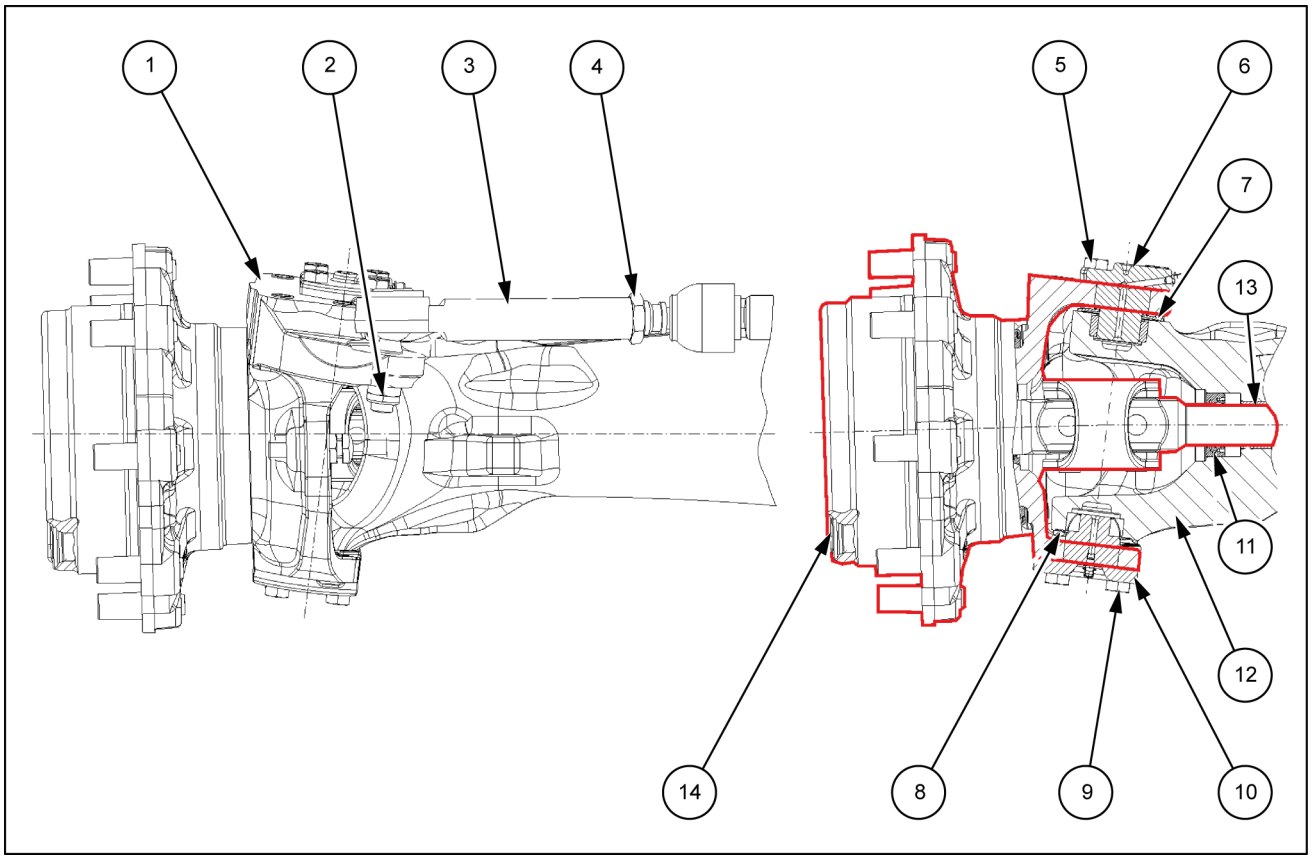
NOTE: *do not invert the bearing cups if the bearings are not replaced.*

NOTE: *the driver must be used with the handle **380002211**. Wear protective gloves.*



LEIL13TLH0810AA 3

Steering knuckle housing and steering articulation hub - Disassemble

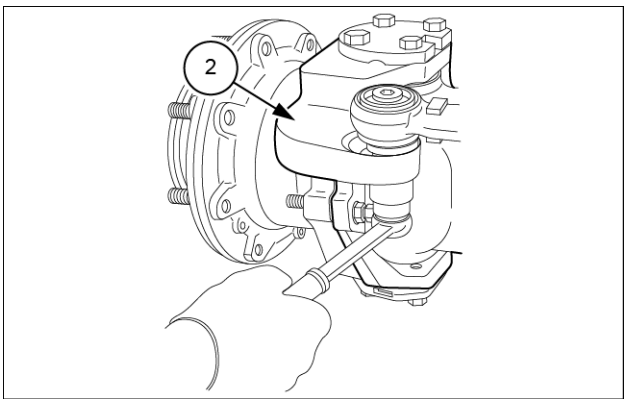


LEIL13TLH0899FB 1

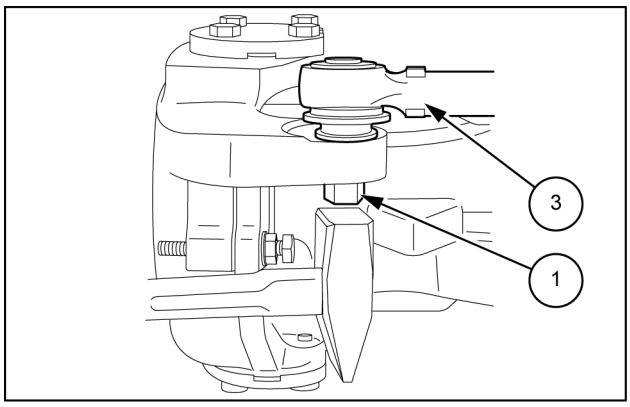
Drain the differential oil completely from the axle. Remove the nut **(1)** and detach the tie rod **(3)** from the swivel housing **(2)** as described in “Steering cylinder - Disassemble”.

NOTE: *don’t beat on the threaded pin end of the tie rod* ***(3)****.*

NOTE: *this is a destructive operation for the nut* ***(2)****; use a new nut in the reassembly.*



LEIL13TLH0937AB 2



LEIL13TLH0900AB 3

Technical data and dimensions - with limited slip differential (All models)

CNH CODE	84514747
MODEL	26.28M
DIFFERENTIAL TYPE	Limited slip

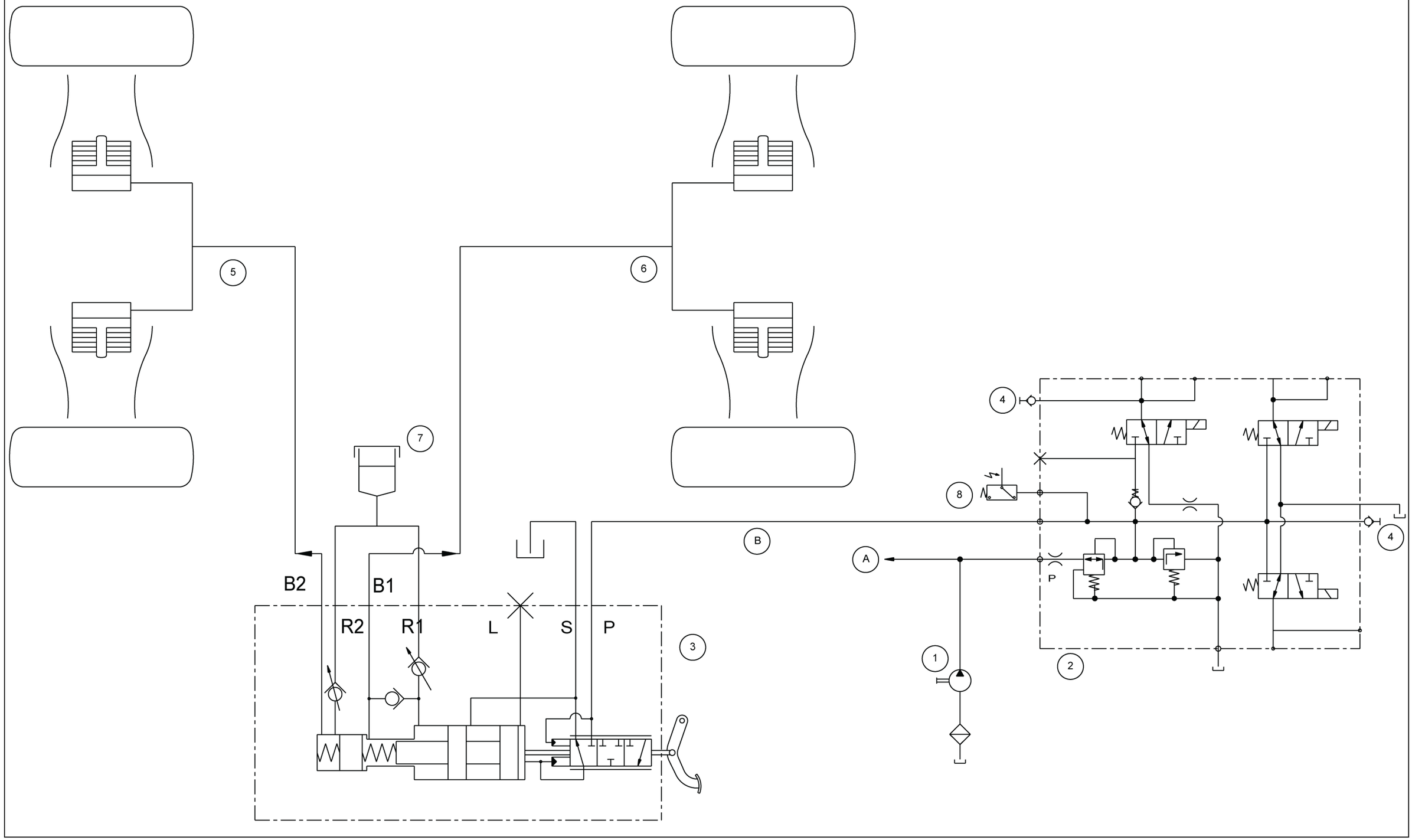
DESCRIPTION	VALUES
Dry weight	416 kg
Adjustment steering angle	min. 38° max. 40°
Toe-in	**1918 – 1922 mm** (**76 – 76 in**)
Bevel gear ratio	2.615/1
Epicyclic reduction gear ratio	6.000/1
Total ratio	15.692/1
Input/output rotation	Clockwise
Wet discs brake (maximum operation pressure)	44 bar

ASSEMBLY MAIN DATA	
Coupling backlash of bevel gear set	**0.15 – 0.30 mm** (**0.01 – 0.01 in**)
Pinion bearings preloading(1) (measured on Ø= 34.8 mm)	F_P= **92.0 – 137.9 N** (**20.7 – 31.0 lb**)
Total preloading(1) of pinion-ring gear bearings (measured on Ø= 34.8 mm)	F_T= (F_P+26.4)÷(F_P+39.6) N
Pinion bearings rolling torque(1) measured without seal	M_P= **1.6 – 2.4 N·m** (**1.2 – 1.8 lb ft**)
Total pinion-ring gear bearing rolling torque(1)	M_T= (M_P+0.46)÷(M_P+0.69) Nm

NOTE: *(1) only for new bearings.*

Service brake data

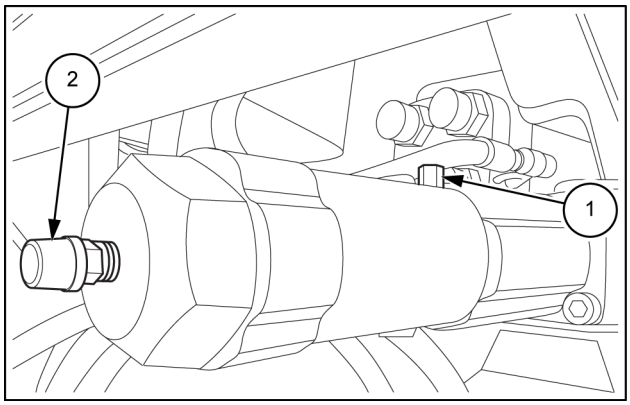
Brake disks for each side	2
Maximum braking torque	**19685 N·m** (**14519 lb ft**)
Maximum operating pressure	**80 bar** (**1160 psi**)
Oil displacement for brake actuation	**7 + 7 cm³**
Operating temperature	**-20 °C** (**-4 °F**) - **+150 °C** (**+302 °F**)



LEIL13TLH0996JB 1

Bleeding from brake master cylinder

19. Keep the brake pedal constantly and heavily pressed by the operator in the cab.
20. Loosen the bleeding screw **(1)** on the brake master cylinder (figure **6**) till the air or the oil flows down (by the operator outside).
21. Tighten the bleeding screw **(1)** to **7 N·m** (**5.2 lb ft**) with the brake pedal still pressed in the cab.
22. After the bleeding screw **(1)** has been tightened, release the brake pedal in the cab.
23. As the reservoir oil level drops, refill the brake oil reservoir to the proper level and press and release the brake pedal several times.
24. Repeat the steps from **19** to **23** till the oil flows down without air.
25. Connect the transparent rubber hose to the bleeding screw **(2)** on the brake master cylinder and repeat the steps from **19** to **23** till the oil flows down through the transparent rubber hose without air into the recovery container.
26. At the end of this procedure, install the brake reservoir cap (see figure **2**).
27. Test the brake pedal with engine ON and it should become hard in the first mid of stroke. If the brake results spongy, repeat again fully the brake bleeding procedure from step **1**.

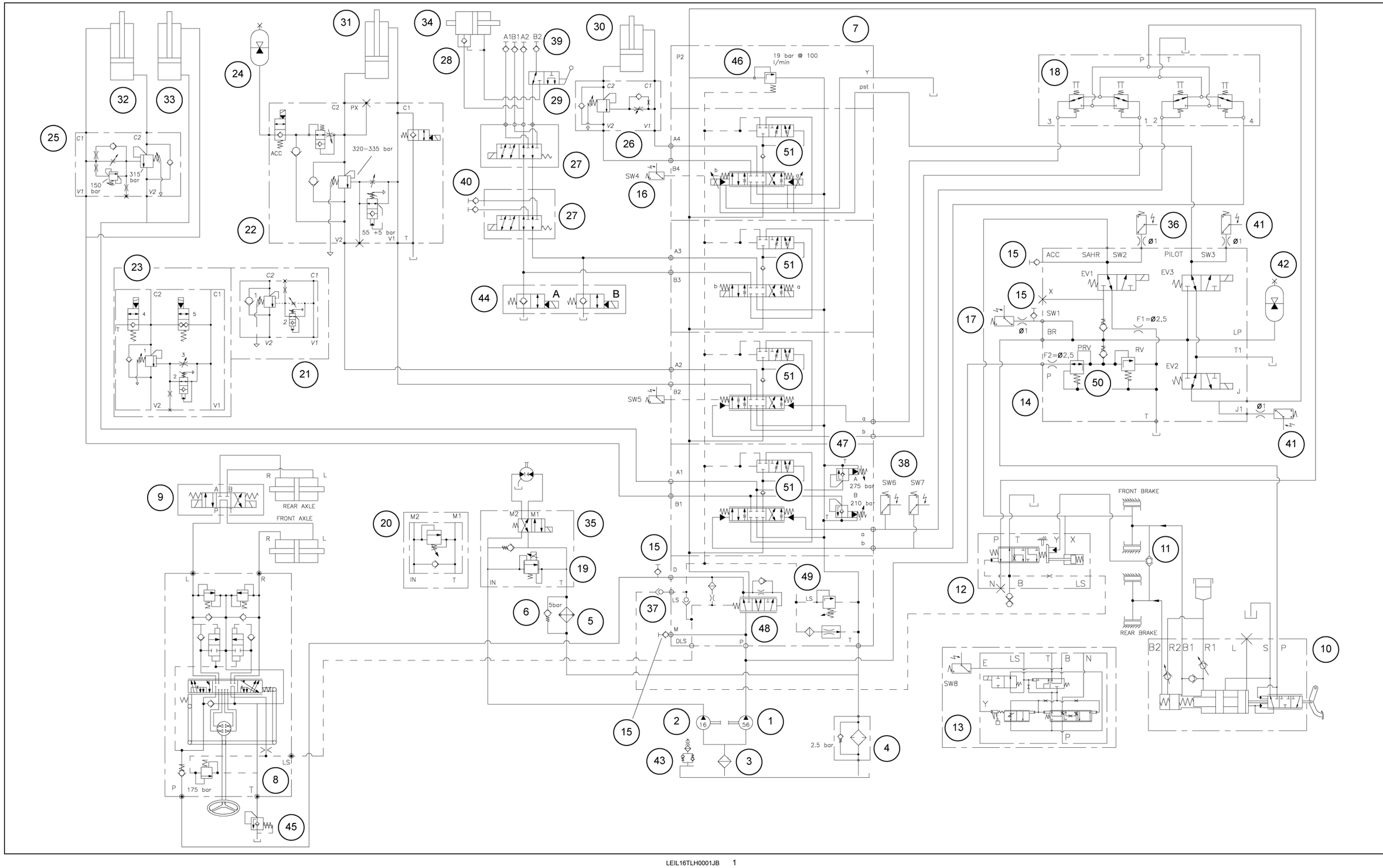


LEIL17TLH0641AB 6

Brakes and controls - 33

Front axle brake - 204

Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935

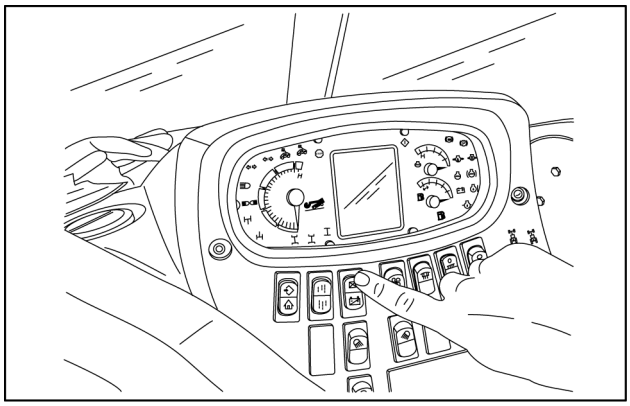


LEIL16TLH0001JB 1

Fixed displacement pump - Remove

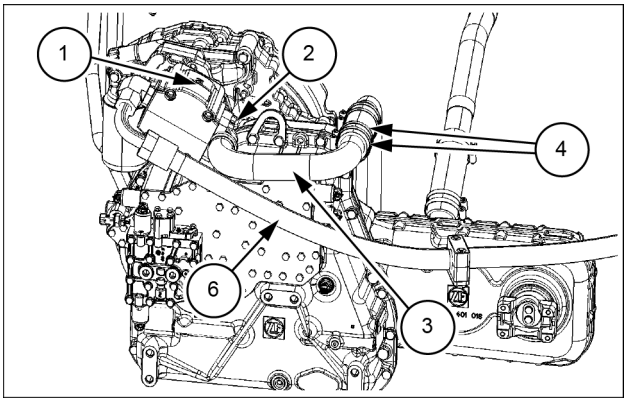
NOTE: *when disconnecting the hydraulic fittings, seal the hoses and the fittings to avoid that impurities enter the hydraulic system.*

Park the machine on a flat, level surface and lower the boom arm to the floor.
Press the battery isolator switch and disconnect the battery. Engage the parking brake switch.
Unscrew the filler tap on the tank to release any air which may be present in the tank.



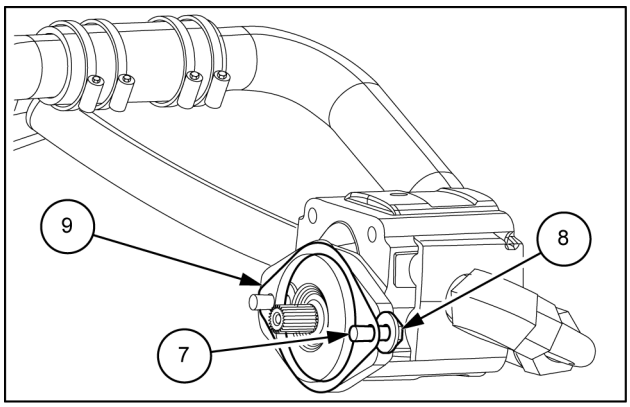
LEIL13TLH0948AA 1

Remove the four screws **(2)** and washers from the pump body **(1)**. Loosen the clamps **(4)**. Loosen and disconnect the hose **(6)** from the elbow. Disconnect the hydraulic tubes **(3)**. Remove and discard the O-rings from the ends of the tubes.

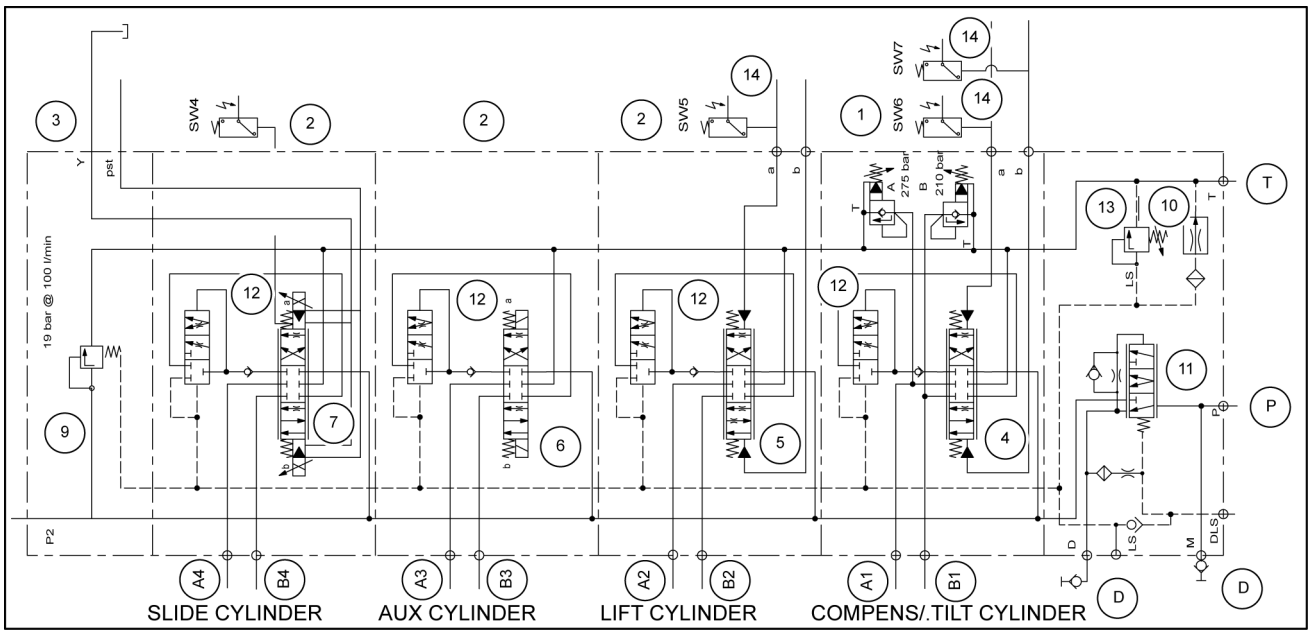


LEIL14TLH1031AB 2

Fasten the hydraulic pump **(1)** to a lifting device. Put the lifting device harness under light tension.
Remove the two screws **(7)** and the two washers **(8)** which fix the pump to the transmission. Lift the hydraulic pump **(1)** from the transmission. Remove the hydraulic pump **(1)** from the machine.
Remove and discard the gasket **(9)**.



LE13TLH1005AB 3



LE13TLH1021CB 2

Hydraulic fan drive cooling system - Dynamic description

Cooling Fan Reversing

Good oil cooler performance, which is extremely important for the engine, depends mainly on the cooling air flow through the radiator elements. A fouled oil cooler reduces the air flow very significantly and therefore impairs the proper operation of this component. The reversible fan (optional) allows to clean the oil cooler by inverting the air flow from suction to blowing.

Cooling Fan Reversing Activation

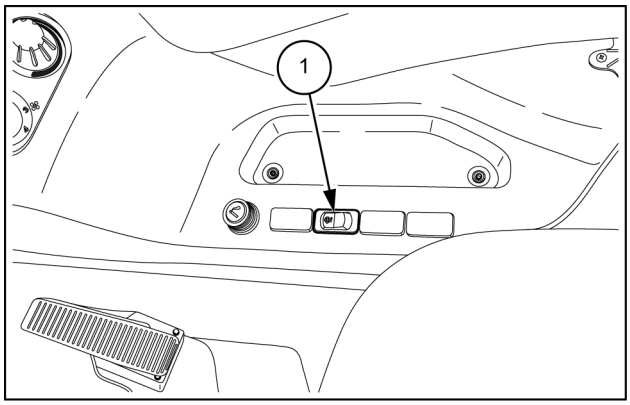
Two stable positions switch will let the user to activate the periodical reversal rotation of the main fan drive and of the electro fans. Changing from Suck state (default state) to Blow state (reversal state), the air flow clean the radiators.

Cleaning Cycle details:

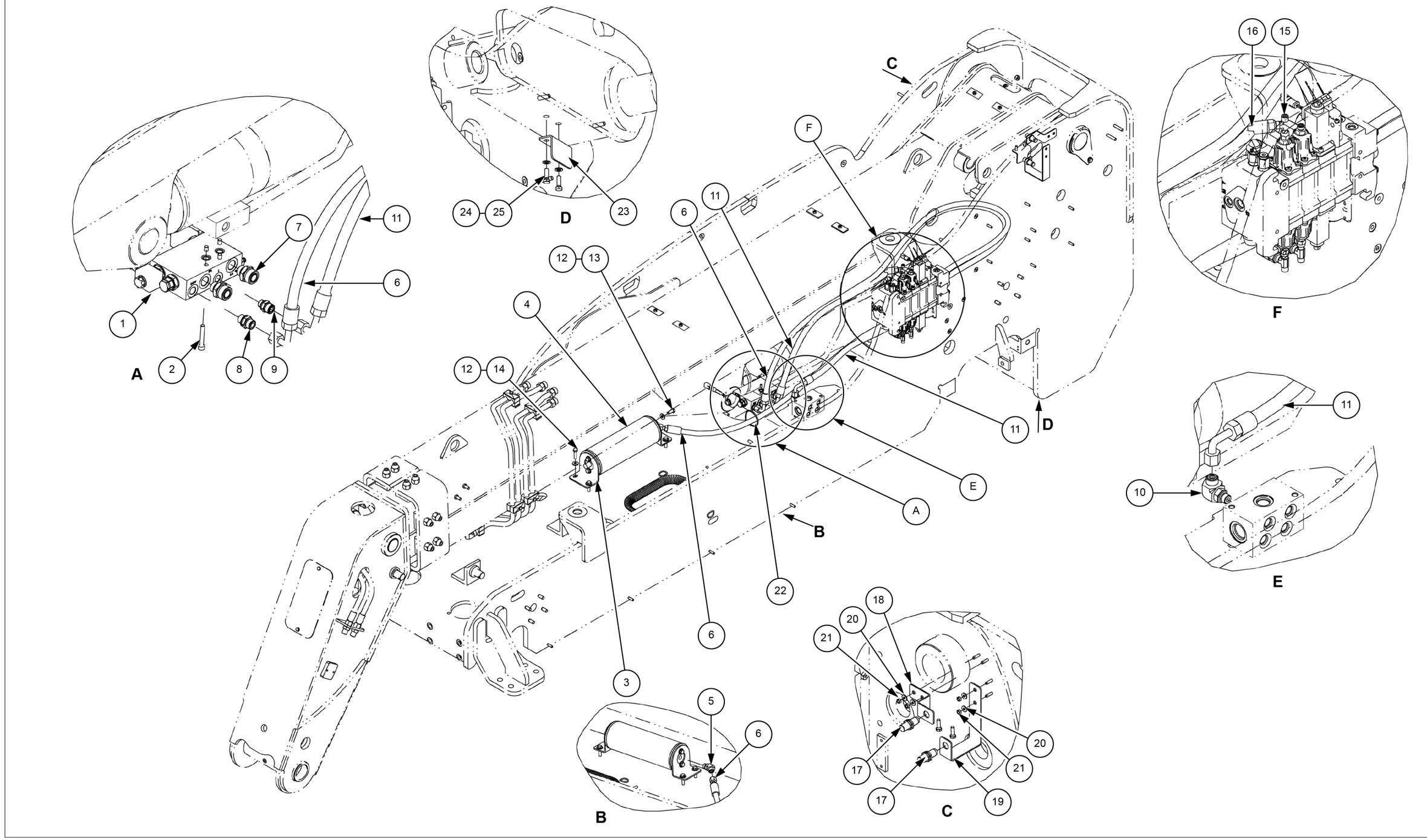
- Suction state (default).
- Fan rotation stopping time.
- 15 seconds of inverted fan rotation to clean coolers (Blowing).
- Fan rotation stopping time.
- Suction state (default).

This cycle is repeated every 6 minutes.

This functionality is available when Engine is ON.



LEIL13TLH1652AB 1

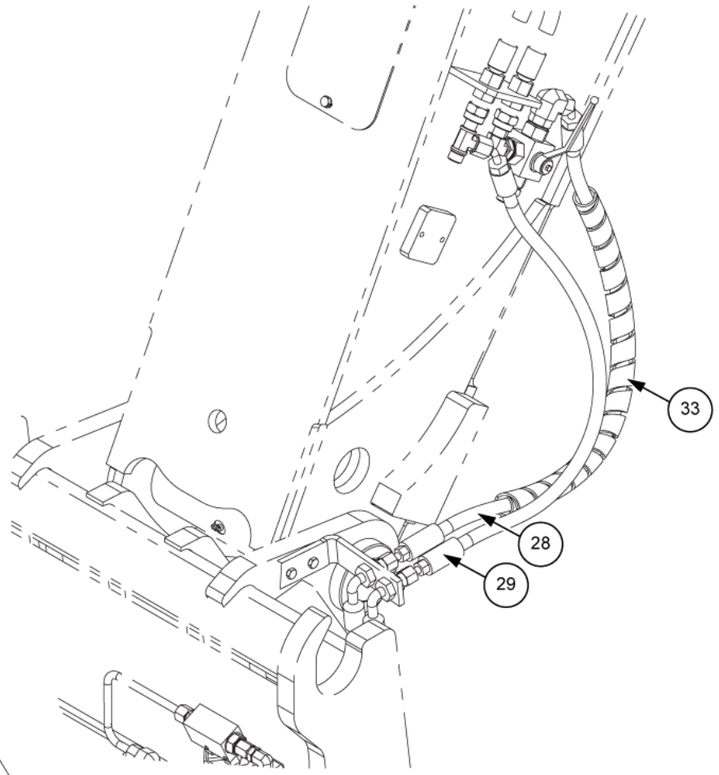


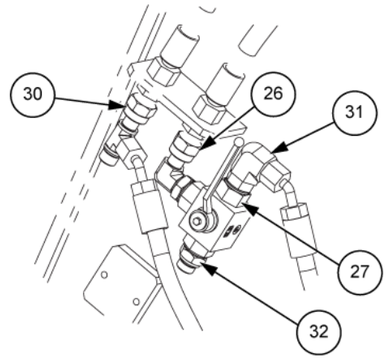
LEIL14TLH1049JB 1

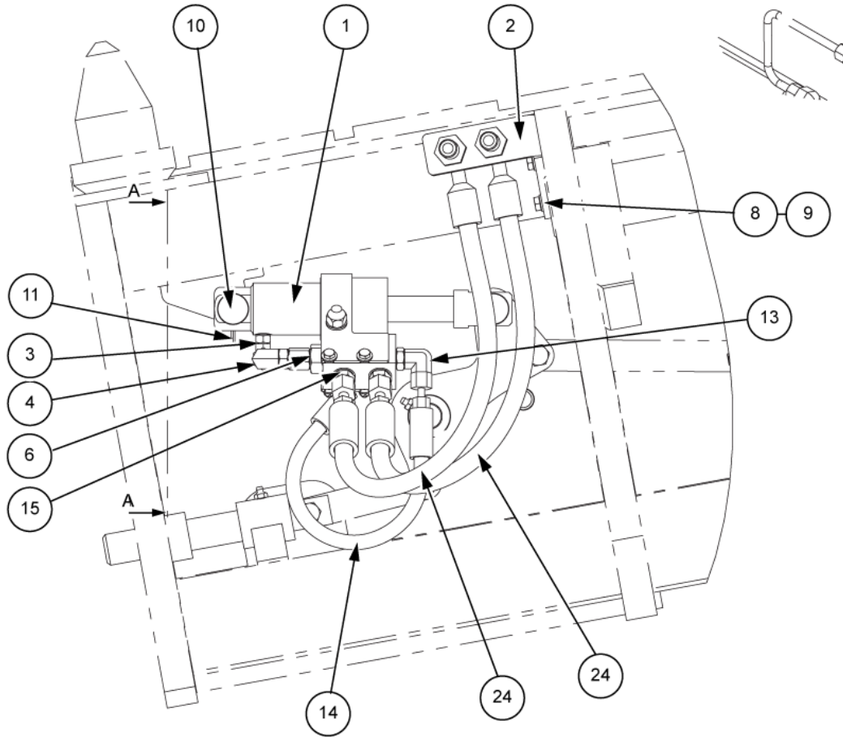
Hydraulic systems - 35

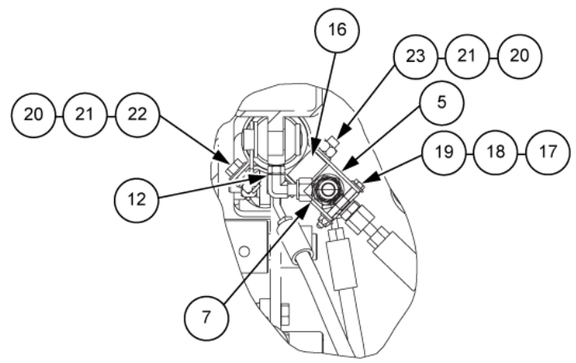
Tool quick coupler hydraulic system - 734

Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935

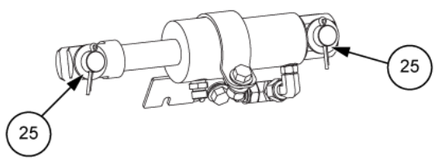




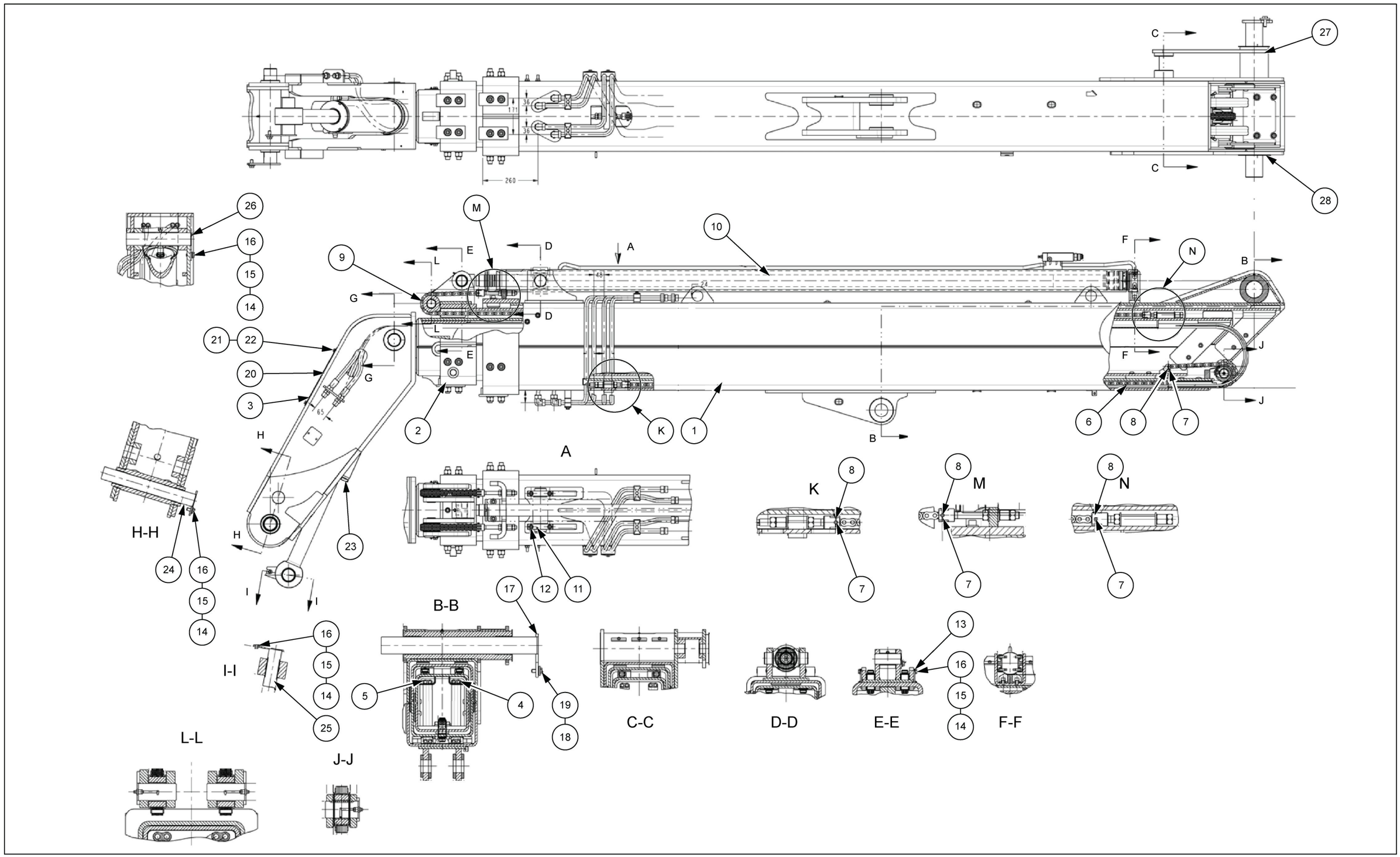




A-A



LEIL17TLH0668JB 1



LEIL13TLH1444JB 1

Telescopic arm hydraulic system - Assemble

Farmlift 632	WE
Farmlift 635	WE
Farmlift 735	WE
Farmlift 742	WE

Preliminary operations

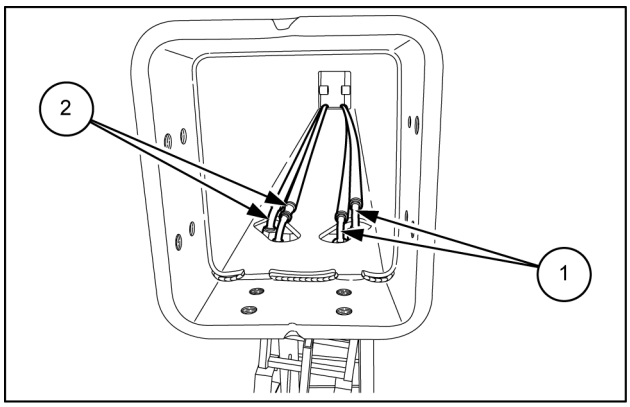
- Clean all components thoroughly before refitting the boom assembly.

NOTICE: *always wear safety glasses with side shields when using compressed air to clean components, in order to reduce the risk of personal injury caused by flying particles. Limit pressure to* ***2 bar*** *(****29 psi****), in accordance with applicable local or national regulations.*

- Check that the surface of each component is entirely free from burrs, scratches, cracks or other defects.
- Check that there are no foreign bodies, dents or signs of rust along the sliding sections of the pads.
- Apply suitable grease along the sliding sections of the pads.
- Check all the sliding pads for signs of wear.

Boom assembly procedure

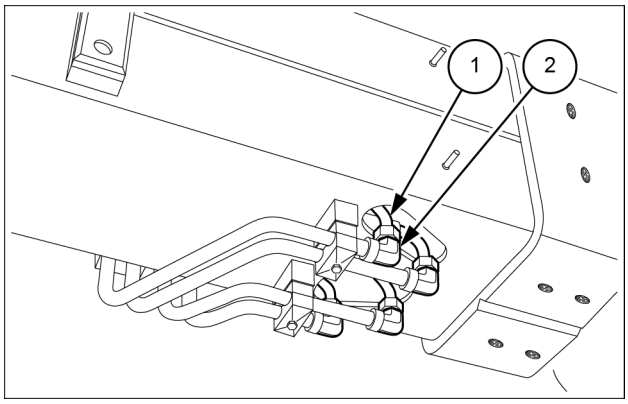
Place the twin hoses **(1)** and **(2)** inside the boom first section.



LEIL13TLH1635AB 1

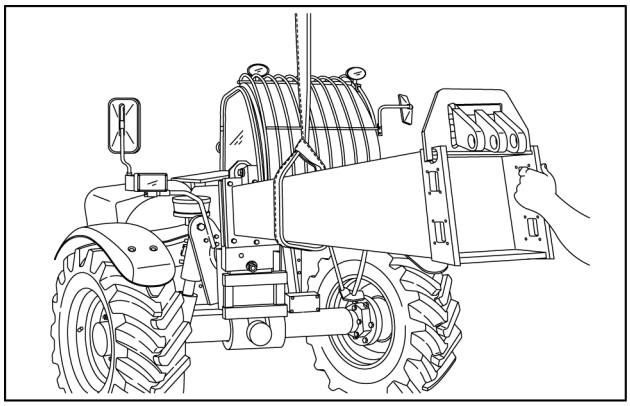
Tighten the fittings between the inner twin hoses **(1)** and outer pipes **(2)**.
Tightening torque: **65 N·m** (**48 lb ft**).

NOTICE: *handle all parts with care. Never place hands or fingers between parts. Wear approved protective clothing such as glasses, gloves and safety shoes.*



LEIL14TLH1166AB 2

Use a hoist equipped with lifting straps to sling and lift the boom second section. Insert the boom second section inside the boom first section.

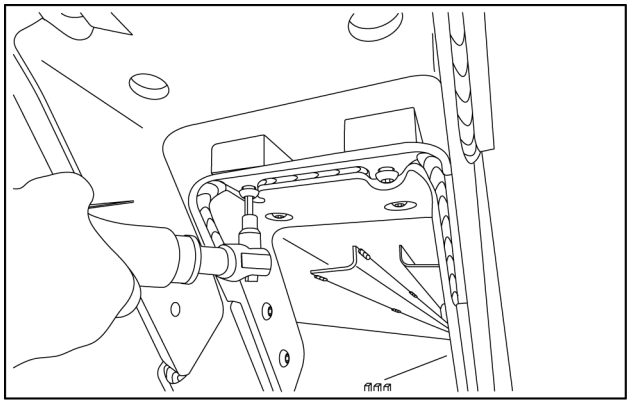


LEIL13TLH1603AA 17

Install the two upper pads to the rear of the boom second section with the relative shims, washers and fixing screws.
Tightening torque of the fixing screws: **100 N·m** (**73.8 lb ft**).

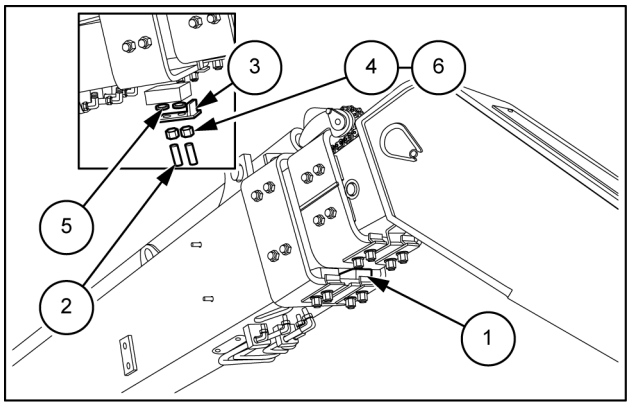
NOTE: *before the installation, apply* ***LOCTITE® 243™*** *to threaded part of the fixing screws.*

NOTE: *provided shims thickness:* ***0.5 – 1.0 mm*** *(****0.02 – 0.04 in****). Fit the shims to ensure a correct vertical clearance of* ***2 – 3 mm*** *(****0.1 – 0.1 in****).*



LEIL13TLH1708AA 18

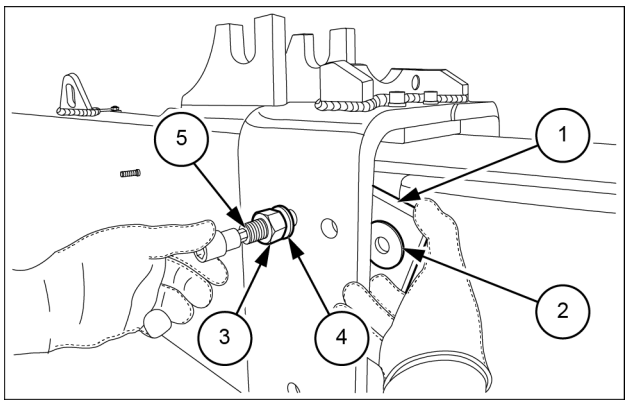
Use a hoist equipped with lifting straps to lift the boom second section. Bring the boom second section slightly forward in toder to facilitate the installation of the pads. Use the screws **(2)**, the washers **(5)**, the nuts **(4)** with the washers **(6)** to install the two lower pads **(1)** and the pad stop brackets **(3)**.



LEIL13TLH1474AB 19

Install the locknut **(3)**, the washer **(4)** and the screws **(5)** to install the four side pads **(1)** (two pads for each side). Tighten the screws **(5)** until to the pad **(1)** contact. Tighten the locknut **(3)** without final tightening.
Tightening torque of the locknut **(3)**: **500 N·m** (**368.8 lb ft**).

NOTE: *screw or unscrew to ensure a side clearance from 0.5 to 1.00 mm on each side.*



LEIL14TLH1125AB 20

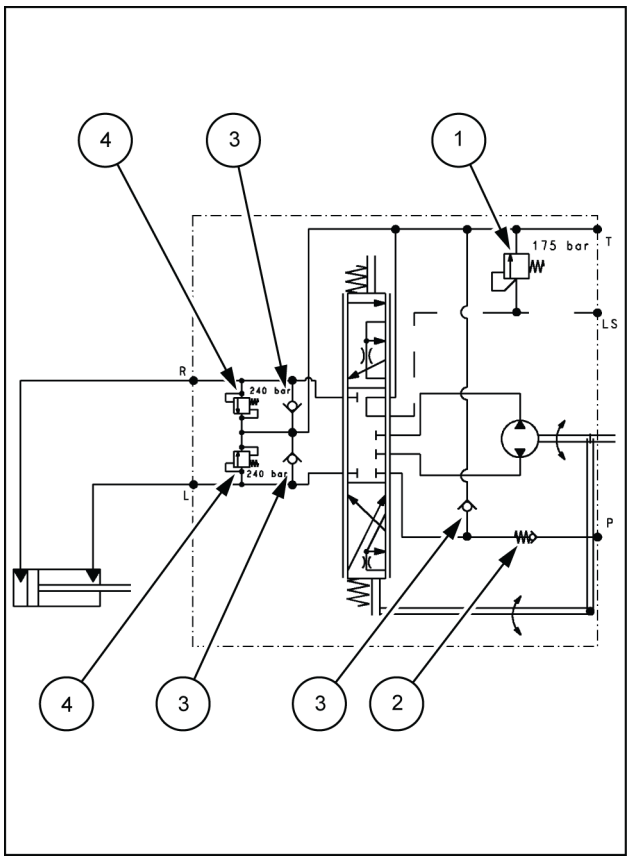
SERVICE MANUAL

Steering

Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935

Power steering control valve - Component identification

1. Pressure relief valve: **175 bar** (**2538 psi**)
2. Check valve
   This valve which is fitted in the P connection prevents: the return flow of oil from the steering cylinder into the hydraulic system when the cylinder pressure, due to travel obstructions, is greater than the system pressure. Steering shocks at the steering wheel are thereby suppressed.
   The sucking in of air via the P connection during emergency operation.
3. Anti-cavitation valves
   If the hydraulic pump fails then the pressure fluid is drawn from the reservoir via this valve, which is fitted between the P and T connections.
4. Shock valves: **240 bar** (**3480 psi**)



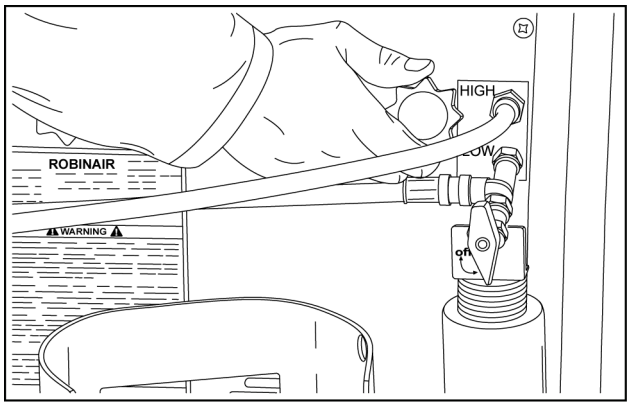
LEIL14CWL0733BB 1

Cab climate control - 50

Ventilation - 104

Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935

10. Slowly open the oil drain valve and drain the oil into the reservoir. When the oil stops draining, close the oil drain valve completely.



LEIL13WHL1096AA 3

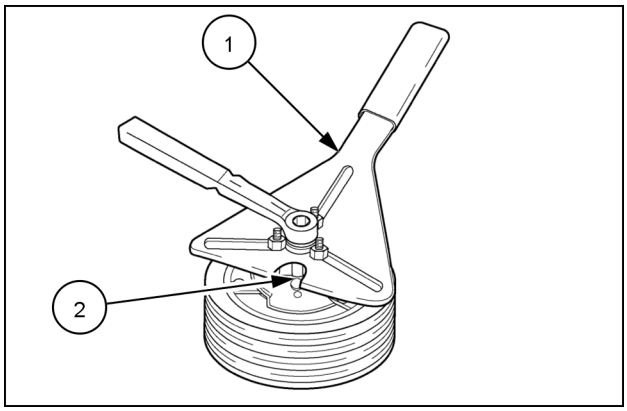
11. Fill the A/C compressor with new SP-10 PAG oil equal to the amount contained in the reservoir.
12. Disconnect the hoses from the service ports and install the caps.
13. Replace the receiver-drier if one or more of the following conditions occurs before you remove the air and moisture from the system:
    - The system was previously open for maintenance.
    - Receiver-drier has operated two or more years.
    - Disassembly of compressor shows small particles of moisture removing material (gold or brown particles).
    - Large system leakages (broken hoses or rigid pipes).
    - Too much air or moisture in system.
    - Removal of the compressor caused the system to remain open (uncapped) for over **5 min**.

Air-conditioning compressor - Repair - Clutch head

Keyed Shaft Armature Removal

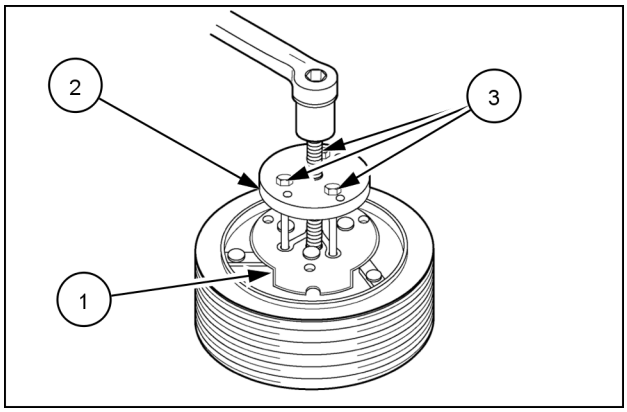
NOTE: *The keyed shaft can be identified in that the holes for the armature plate spanner will have threads in them.*

1. Insert the pins of the armature plate spanner, **(1)**, into the threaded holes of the armature assembly, **(2)**.
2. Hold the armature assembly stationary while removing the retaining nut.



86064021N 1

3. Remove the armature assembly, **(1)**, using the puller, **(2)**. Thread three puller bolts, **(3)**, into the threaded holes in the armature assembly. Turn the center screw clockwise until armature comes loose.

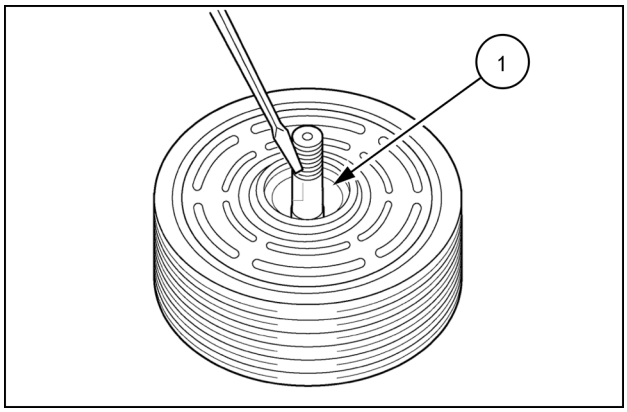


86064022N 2

4. If any shims are above shaft key, remove them now. If the shims are below shaft key, the key and bearing dust cover, **(1)**, (if applicable) must be removed before the shims can be removed.
5. Remove the bearing dust cover, **(1)**, (if applicable).

NOTE: *When removing the cover, be careful not to deform it.*

6. Remove the shaft key by tapping it with a flat blade screwdriver and hammer.
7. Remove the shims with a pointed tool and a small screwdriver.



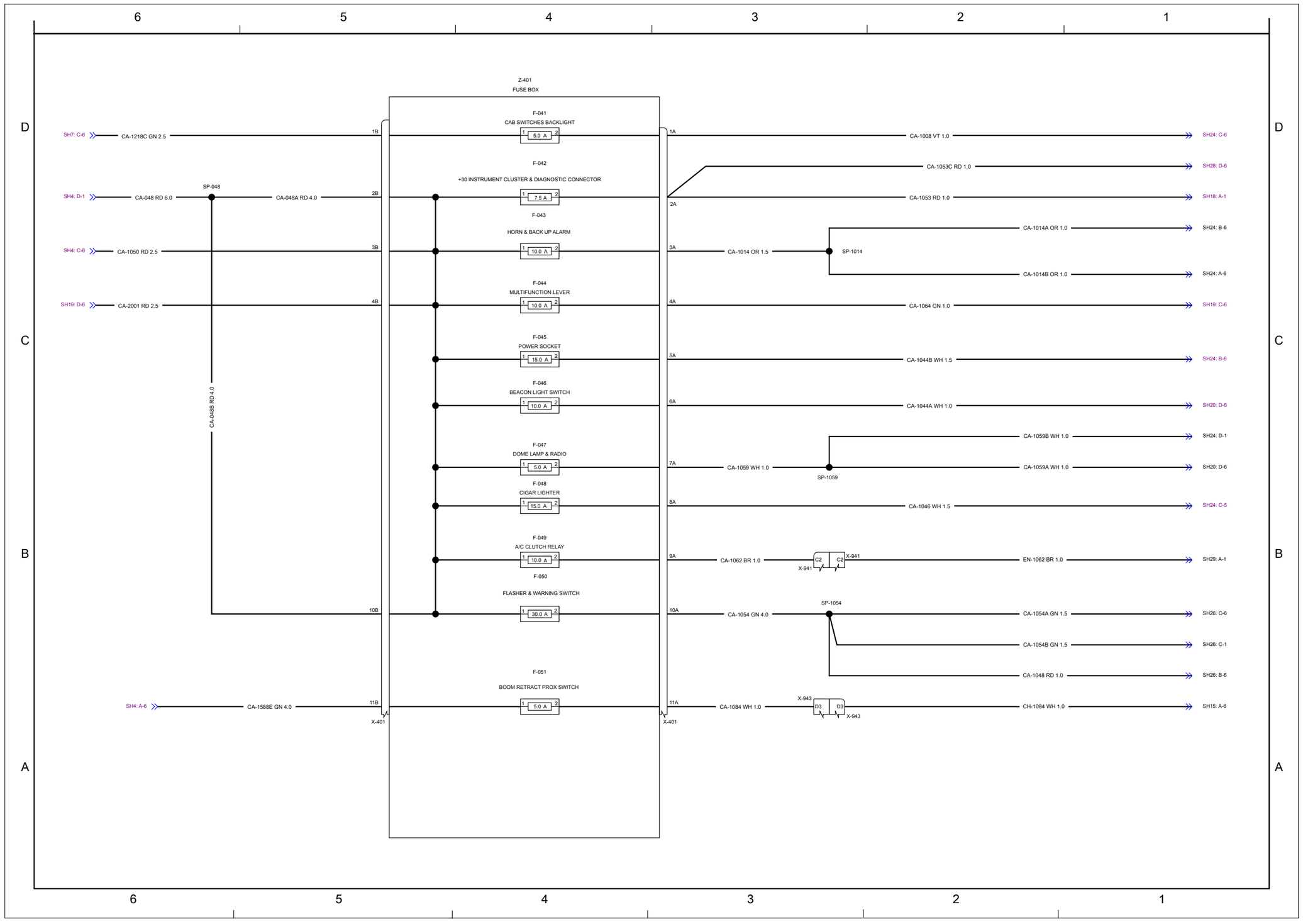
86064023N 3

Harnesses and connectors - Component identification - Cab electrical system

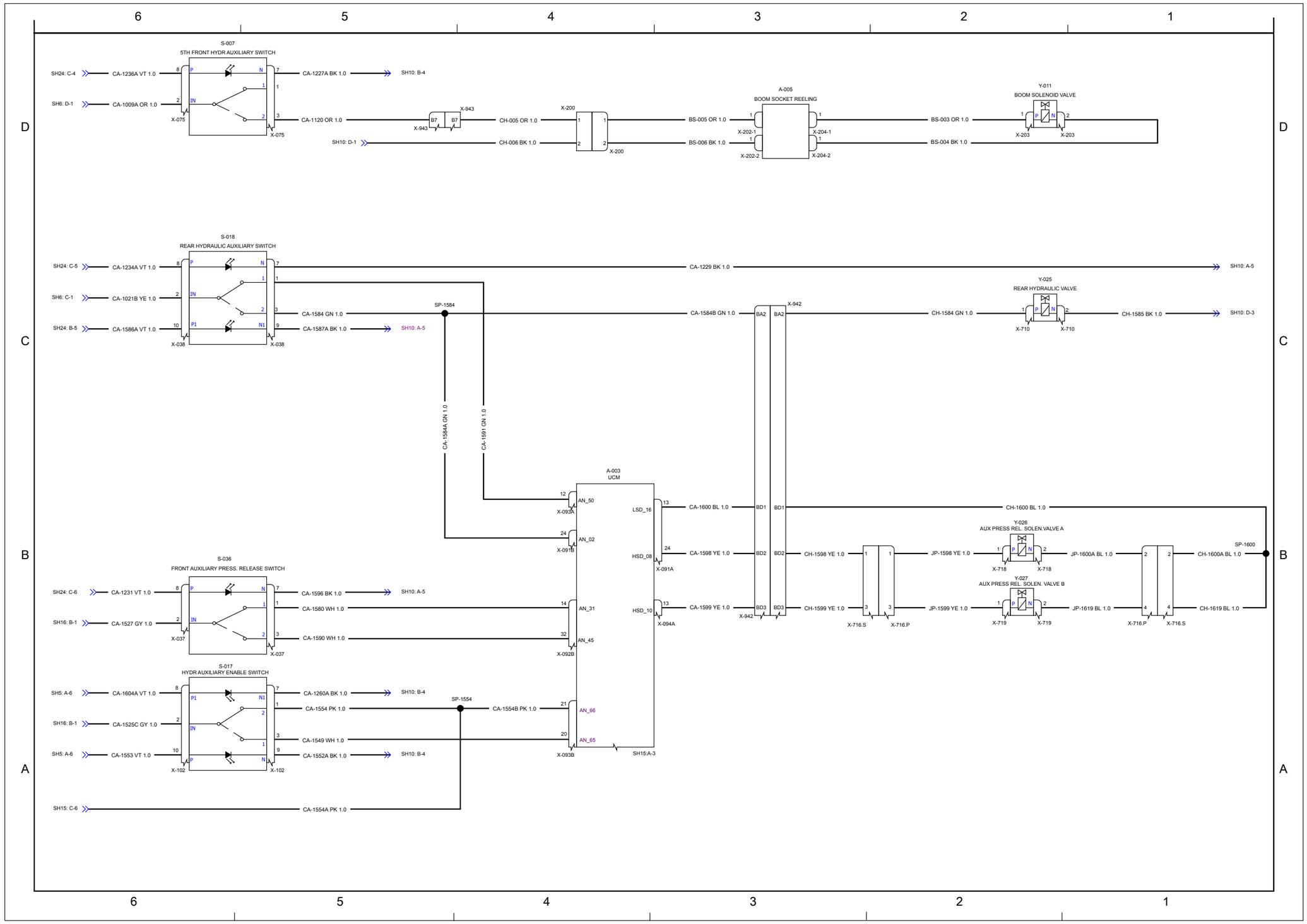
Farmlift 635	WE
Farmlift 742	WE

Components list

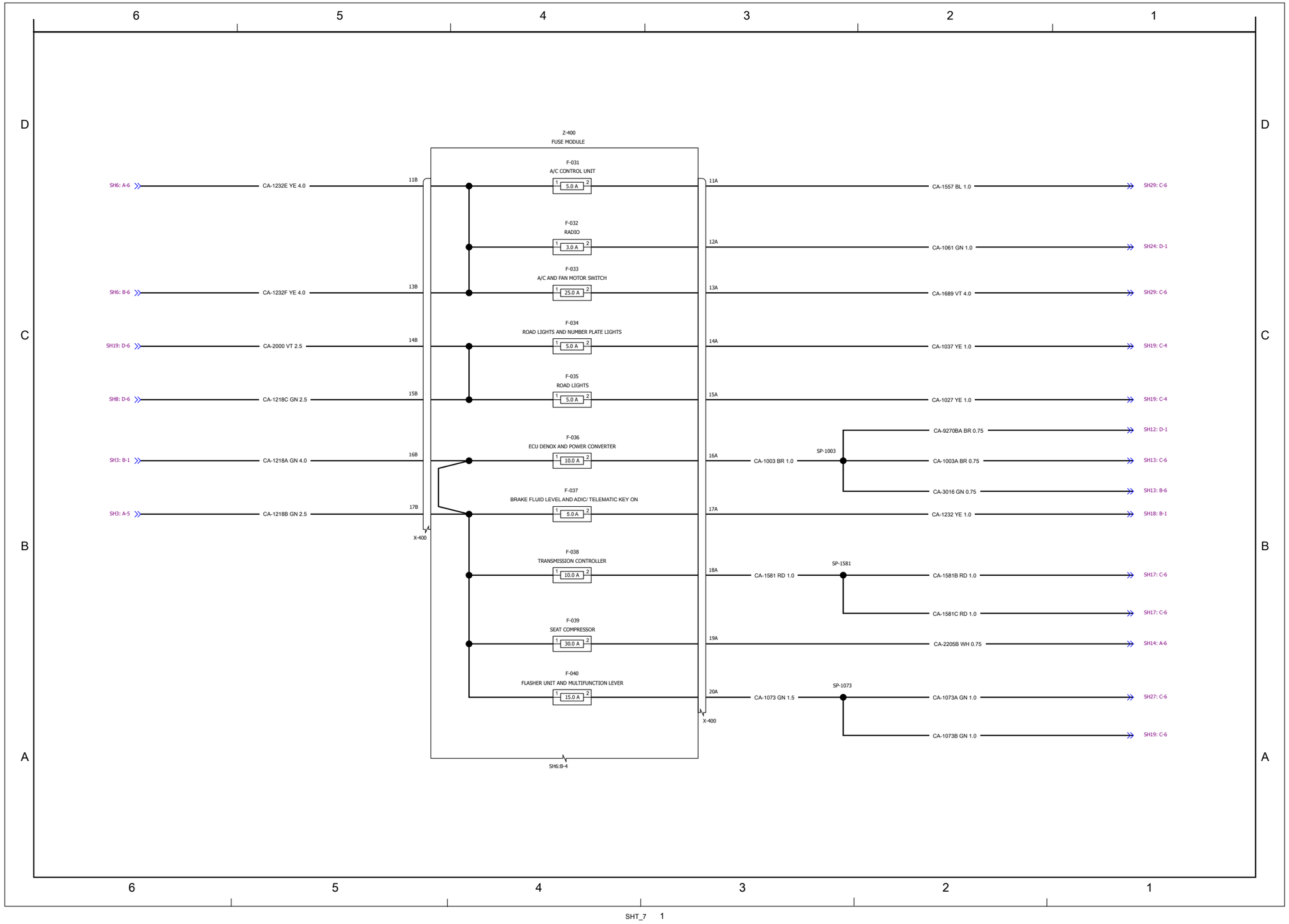
Item	Description	Quantity
1	Main cab wire harness	1
2	Roof wire harness	1
3	Battery cable	1
4	Antenna cable	1
5	Universal Control Module (UCM)	1
6	Foot throttle pedal	1
7	Headlights switch	1
8	Wash wipe switch	1
9	Power-Take-Off brake switch	1
10	ELITE controller	1
11	Load moment override switch	1
12	Relay, **12 V**, **70 A**	3
13	Fuse-relay decal	1
14	Dust cap	1
15	Relay	6
16	Fuse **5 A**	16
17	Fuse **15 A**	12
18	Frame for five modules	1
19	Fuse **10 A**	14
20	Fuse **7 A**	3
21	Fuse **20 A**	2
22	Fuse	2
23	Fuse **25 A**	1
24	Fuse **3 A**	5
25	Fuse-relay decal	1
26	Mounting bracket holder	2
27	Antenna	1
28	Fuse **40 A**	1
29	Block junction	1
30	UP/DOWN indicator rocker switch	1
31	Parking brake rocker switch	1
32	De-clutch rocker switch	1
33	Display enter rocker switch	1
34	Hydraulic auxiliary enable rocker switch	1
35	Washer wiper rocker switch	1
36	Front work lights rocker switch	1
37	Road mode rocker switch	1
38	Battery isolator	1
39	4WS steering switch	1
40	**25 A** socket	1
41	OFF/RUN/IGNITION switch (**50 A**)	1
42	Ignition key	2
43	Cigarette lighter	1
44	Plug	1
45	Tapping screw	1
46	Cab inner console lamp	1
47	Socket	1
48	Flasher unit	1


Z-401
FUSE BOX
F-041
CAB SWITCHES BACKLIGHT
5.0 A
F-042
+30 INSTRUMENT CLUSTER & DIAGNOSTIC CONNECTOR
7.5 A
F-043
HORN & BACK UP ALARM
10.0 A
F-044
MULTIFUNCTION LEVER
10.0 A
F-045
POWER SOCKET
15.0 A
F-046
BEACON LIGHT SWITCH
10.0 A
F-047
DOME LAMP & RADIO
5.0 A
F-048
CIGAR LIGHTER
15.0 A
F-049
A/C CLUTCH RELAY
10.0 A
F-050
FLASHER & WARNING SWITCH
30.0 A
F-051
BOOM RETRACT PROX SWITCH
5.0 A
SH7: C-6
CA-1218C GN 2.5
1B
SH4: D-1
CA-048 RD 6.0
SP-048
CA-048A RD 4.0
2B
SH4: C-6
CA-1050 RD 2.5
3B
SH19: D-6
CA-2001 RD 2.5
4B
CA-048B RD 4.0
10B
SH4: A-6
CA-1588E GN 4.0
11B
X-401
1A
CA-1008 VT 1.0
SH24: C-6
CA-1053C RD 1.0
SH28: D-6
2A
CA-1053 RD 1.0
SH18: A-1
CA-1014A OR 1.0
SH24: B-6
3A
CA-1014 OR 1.5
SP-1014
CA-1014B OR 1.0
SH24: A-6
4A
CA-1064 GN 1.0
SH19: C-6
5A
CA-1044B WH 1.5
SH24: B-6
6A
CA-1044A WH 1.0
SH20: D-6
CA-1059B WH 1.0
SH24: D-1
7A
CA-1059 WH 1.0
SP-1059
CA-1059A WH 1.0
SH20: D-6
8A
CA-1046 WH 1.5
SH24: C-5
9A
CA-1062 BR 1.0
C2
X-941
C2
X-941
EN-1062 BR 1.0
SH29: A-1
10A
CA-1054 GN 4.0
SP-1054
CA-1054A GN 1.5
SH26: C-6
CA-1054B GN 1.5
SH26: C-1
CA-1048 RD 1.0
SH26: B-6
11A
CA-1084 WH 1.0
X-943
D3
D3
X-943
CH-1084 WH 1.0
SH15: A-6
X-401
6
5
4
3
2
1
D
C
B
A

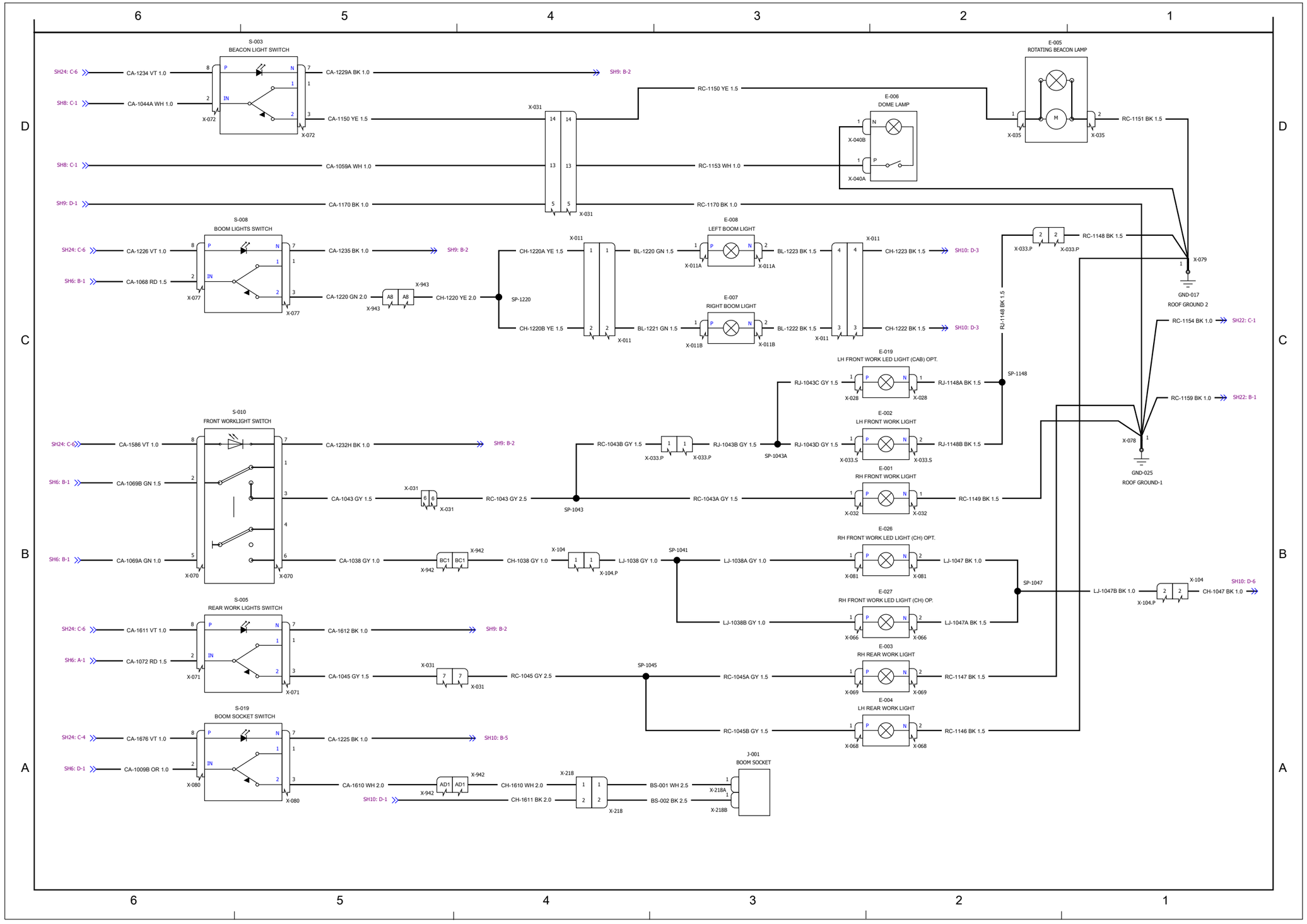
SHT_8 1


S-007
5TH FRONT HYDR AUXILIARY SWITCH
SH24: C-4
CA-1236A VT 1.0
SH6: D-1
CA-1009A OR 1.0
X-075
CA-1227A BK 1.0
SH10: B-4
CA-1120 OR 1.0
SH10: D-1
CA-1009A OR 1.0
X-943
CH-005 OR 1.0
CH-006 BK 1.0
X-200
BS-005 OR 1.0
BS-006 BK 1.0
A-005
BOOM SOCKET REELING
X-202-1
X-202-2
X-204-1
X-204-2
BS-003 OR 1.0
BS-004 BK 1.0
Y-011
BOOM SOLENOID VALVE
X-203
S-018
REAR HYDRAULIC AUXILIARY SWITCH
SH24: C-5
CA-1234A VT 1.0
SH6: C-1
CA-1021B YE 1.0
SH24: B-5
CA-1586A VT 1.0
X-038
CA-1229 BK 1.0
SH10: A-5
CA-1584 GN 1.0
CA-1587A BK 1.0
SH10: A-5
SP-1584
CA-1584B GN 1.0
X-942
CH-1584 GN 1.0
CH-1585 BK 1.0
SH10: D-3
Y-025
REAR HYDRAULIC VALVE
X-710
CA-1584A GN 1.0
CA-1591 GN 1.0
A-003
UCM
AN_50
AN_02
AN_31
AN_45
AN_66
AN_65
X-093A
X-091B
X-092B
X-093B
LSD_16
HSD_08
HSD_10
X-091A
X-094A
CA-1600 BL 1.0
CA-1598 YE 1.0
CA-1599 YE 1.0
CH-1600 BL 1.0
CH-1598 YE 1.0
CH-1599 YE 1.0
X-716.S
X-716.P
JP-1598 YE 1.0
JP-1599 YE 1.0
Y-026
AUX PRESS REL. SOLEN.VALVE A
X-718
Y-027
AUX PRESS REL. SOLEN. VALVE B
X-719
JP-1600A BL 1.0
JP-1619 BL 1.0
CH-1600A BL 1.0
CH-1619 BL 1.0
SP-1600
S-036
FRONT AUXILIARY PRESS. RELEASE SWITCH
SH24: C-6
CA-1231 VT 1.0
SH16: B-1
CA-1527 GY 1.0
X-037
CA-1596 BK 1.0
SH10: A-5
CA-1580 WH 1.0
CA-1590 WH 1.0
S-017
HYDR AUXILIARY ENABLE SWITCH
SH5: A-6
CA-1604A VT 1.0
SH16: B-1
CA-1525C GY 1.0
SH5: A-6
CA-1553 VT 1.0
X-102
CA-1260A BK 1.0
SH10: B-4
CA-1554 PK 1.0
CA-1549 WH 1.0
CA-1552A BK 1.0
SH10: B-4
SP-1554
CA-1554B PK 1.0
SH15: C-6
CA-1554A PK 1.0
SH15:A-3
6
5
4
3
2
1
A
B
C
D

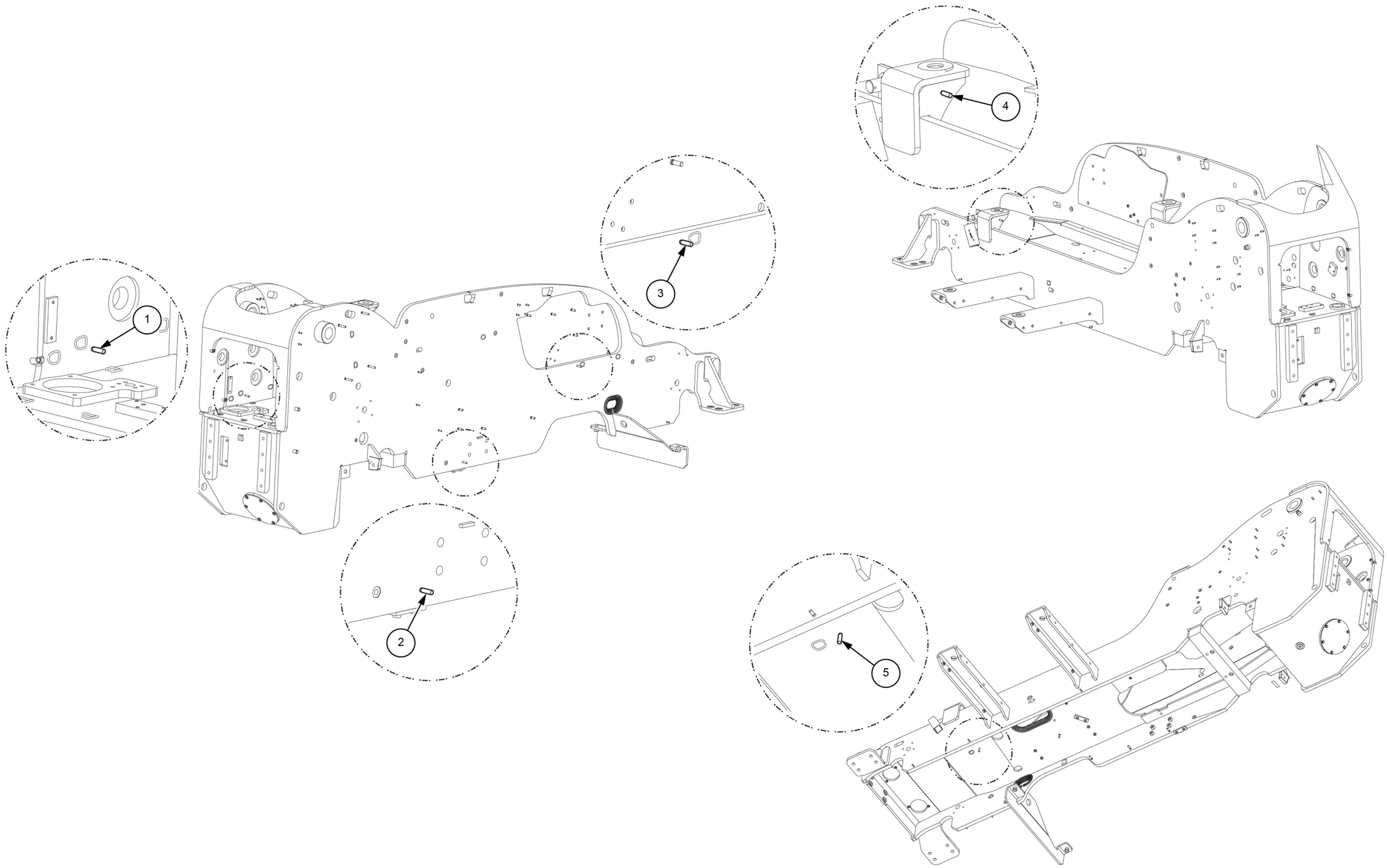
SHT_21 1


6
5
4
3
2
1
D
C
B
A
Z-400
FUSE MODULE
F-031
A/C CONTROL UNIT
5.0 A
F-032
RADIO
3.0 A
F-033
A/C AND FAN MOTOR SWITCH
25.0 A
F-034
ROAD LIGHTS AND NUMBER PLATE LIGHTS
5.0 A
F-035
ROAD LIGHTS
5.0 A
F-036
ECU DENOX AND POWER CONVERTER
10.0 A
F-037
BRAKE FLUID LEVEL AND ADIC/ TELEMATIC KEY ON
5.0 A
F-038
TRANSMISSION CONTROLLER
10.0 A
F-039
SEAT COMPRESSOR
30.0 A
F-040
FLASHER UNIT AND MULTIFUNCTION LEVER
15.0 A
SH6: A-6
CA-1232E YE 4.0
11B
11A
CA-1557 BL 1.0
SH29: C-6
12A
CA-1061 GN 1.0
SH24: D-1
SH6: B-6
CA-1232F YE 4.0
13B
13A
CA-1689 VT 4.0
SH29: C-6
SH19: D-6
CA-2000 VT 2.5
14B
14A
CA-1037 YE 1.0
SH19: C-4
SH8: D-6
CA-1218C GN 2.5
15B
15A
CA-1027 YE 1.0
SH19: C-4
CA-9270BA BR 0.75
SH12: D-1
SH3: B-1
CA-1218A GN 4.0
16B
16A
CA-1003 BR 1.0
SP-1003
CA-1003A BR 0.75
SH13: C-6
CA-3016 GN 0.75
SH13: B-6
SH3: A-5
CA-1218B GN 2.5
17B
17A
CA-1232 YE 1.0
SH18: B-1
X-400
18A
CA-1581 RD 1.0
SP-1581
CA-1581B RD 1.0
SH17: C-6
CA-1581C RD 1.0
SH17: C-6
19A
CA-2205B WH 0.75
SH14: A-6
20A
CA-1073 GN 1.5
SP-1073
CA-1073A GN 1.0
SH27: C-6
CA-1073B GN 1.0
SH19: C-6
X-400
SH6:B-4

SHT_7 1


S-003
BEACON LIGHT SWITCH
SH24: C-6
CA-1234 VT 1.0
SH8: C-1
CA-1044A WH 1.0
X-072
CA-1229A BK 1.0
SH9: B-2
CA-1150 YE 1.5
X-031
RC-1150 YE 1.5
E-005
ROTATING BEACON LAMP
RC-1151 BK 1.5
X-035
E-006
DOME LAMP
X-040B
X-040A
SH8: C-1
CA-1059A WH 1.0
RC-1153 WH 1.0
SH9: D-1
CA-1170 BK 1.0
RC-1170 BK 1.0
S-008
BOOM LIGHTS SWITCH
SH24: C-6
CA-1226 VT 1.0
SH6: B-1
CA-1068 RD 1.5
X-077
CA-1235 BK 1.0
SH9: B-2
CA-1220 GN 2.0
X-943
CH-1220 YE 2.0
SP-1220
CH-1220A YE 1.5
CH-1220B YE 1.5
X-011
BL-1220 GN 1.5
BL-1221 GN 1.5
E-008
LEFT BOOM LIGHT
X-011A
E-007
RIGHT BOOM LIGHT
X-011B
BL-1223 BK 1.5
BL-1222 BK 1.5
CH-1223 BK 1.5
CH-1222 BK 1.5
SH10: D-3
RJ-1148 BK 1.5
X-033.P
RC-1148 BK 1.5
X-079
GND-017
ROOF GROUND 2
RC-1154 BK 1.0
SH22: C-1
RC-1159 BK 1.0
SH22: B-1
X-078
GND-025
ROOF GROUND-1
SP-1148
E-019
LH FRONT WORK LED LIGHT (CAB) OPT.
RJ-1043C GY 1.5
RJ-1148A BK 1.5
X-028
S-010
FRONT WORKLIGHT SWITCH
SH24: C-6
CA-1586 VT 1.0
SH6: B-1
CA-1069B GN 1.5
CA-1232H BK 1.0
SH9: B-2
CA-1043 GY 1.5
RC-1043 GY 2.5
SP-1043
RC-1043B GY 1.5
RC-1043D GY 1.5
SP-1043A
RJ-1043B GY 1.5
X-033.P
E-002
LH FRONT WORK LIGHT
X-033.S
RJ-1148B BK 1.5
RC-1043A GY 1.5
E-001
RH FRONT WORK LIGHT
X-032
RC-1149 BK 1.5
SH6: B-1
CA-1069A GN 1.0
X-070
CA-1038 GY 1.0
X-942
CH-1038 GY 1.0
X-104
X-104.P
LJ-1038 GY 1.0
SP-1041
LJ-1038A GY 1.0
LJ-1038B GY 1.0
E-026
RH FRONT WORK LED LIGHT (CH) OPT.
X-081
E-027
RH FRONT WORK LED LIGHT (CH) OP.
X-066
LJ-1047 BK 1.0
LJ-1047A BK 1.5
SP-1047
LJ-1047B BK 1.0
CH-1047 BK 1.0
SH10: D-6
S-005
REAR WORK LIGHTS SWITCH
SH24: C-6
CA-1611 VT 1.0
SH6: A-1
CA-1072 RD 1.5
X-071
CA-1612 BK 1.0
SH9: B-2
CA-1045 GY 1.5
RC-1045 GY 2.5
SP-1045
RC-1045A GY 1.5
RC-1045B GY 1.5
E-003
RH REAR WORK LIGHT
X-069
RC-1147 BK 1.5
E-004
LH REAR WORK LIGHT
X-068
RC-1146 BK 1.5
S-019
BOOM SOCKET SWITCH
SH24: C-4
CA-1676 VT 1.0
SH6: D-1
CA-1009B OR 1.0
X-080
CA-1225 BK 1.0
SH10: B-5
CA-1610 WH 2.0
CH-1610 WH 2.0
SH10: D-1
CA-1611 BK 2.0
CH-1611 BK 2.0
X-218
BS-001 WH 2.5
BS-002 BK 2.5
J-001
BOOM SOCKET
X-218A
X-218B

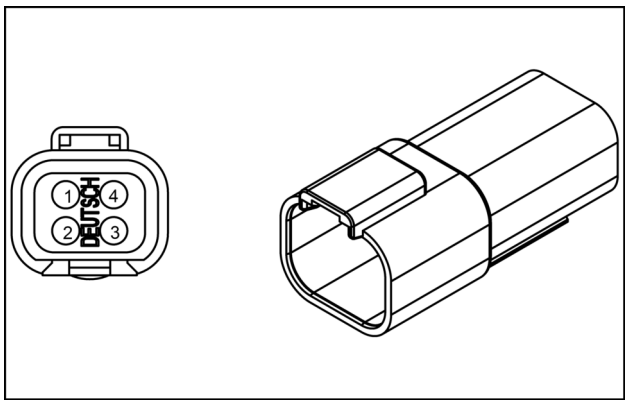
SHT_20 1



LEIL17TLH0750JB 1

Pin	From	Wire	Description	Color-Size	Frame
1	**X-943 (Plug) pin D3** CHASSIS BULKHEAD	CH-1084	+ Boom Retract Prox.	WH - 1.0	**SHEET 15**

X-716.P - AUX PRESS REL. SOLEN. VALVES (87694110) (Plug)

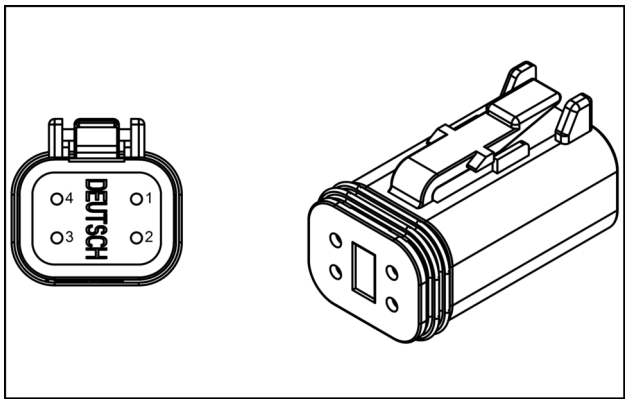


87694110 28

87694110

Pin	From	Wire	Description	Color-Size	Frame
1	**X-718 (Receptacle) pin 1** AUX PRESS REL. SOLEN.VALVE A	JP-1598	JP-1598	YE - 1.0	**SHEET 21**
2	**X-718 (Receptacle) pin 2** AUX PRESS REL. SOLEN.VALVE A	JP-1600A	JP-1600A	BL - 1.0	
3	**X-719 (Receptacle) pin 1** AUX PRESS REL. SOLEN.VALVE B	JP-1599	JP-1599	YE - 1.0	
4	**X-719 (Receptacle) pin 2** AUX PRESS REL. SOLEN.VALVE B	JP-1619	Gnd	BL - 1.0	

X-716.S - AUX PRESS REL. SOLEN. VALVES (87695564) (Receptacle)

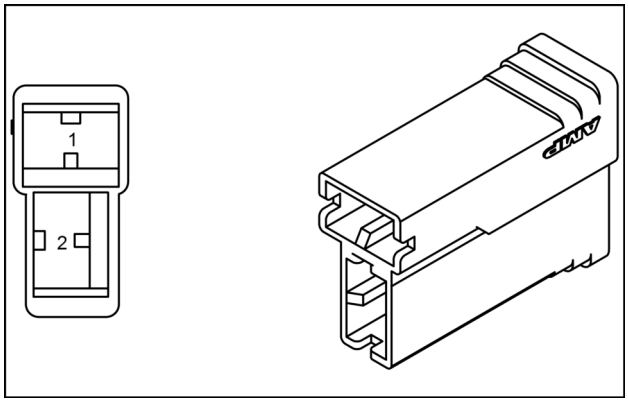


87695564 29

87695564

Pin	From	Wire	Description	Color-Size	Frame
1	**X-942 (Receptacle) pin BD2** CHASSIS - CAB INTERC.	CH-1598	AUX PRESS REL. SOLEN.VALVE A	YE - 1.0	**SHEET 21**
2	SP-1600-P-X	CH-1600A	AUX. PRESS RELEASE VALVE RETURN	BL - 1.0	
3	**X-942 (Receptacle) pin BD3** CHASSIS - CAB INTERC.	CH-1599	AUX PRESS REL. SOLEN. VALVE B	YE - 1.0	
4	SP-1600-P-X	CH-1619	CH-1619	BL - 1.0	

X-053 - CIGAR LIGHTER [J-007] (82944110) (Receptacle)

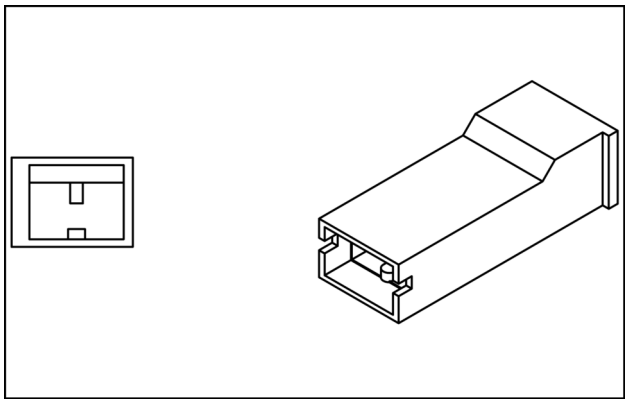


82944110 4

82944110

Pin	From	Wire	Description	Color-Size	Frame
1	SP-093-P-X	CA-1243	Gnd, Cigar Lighter	BK - 1.5	**SHEET 09**
2	**X-401 (Receptacle) pin 8A**	CA-1046	+ CIGAR LIGHTER	WH - 1.5	**SHEET 24**

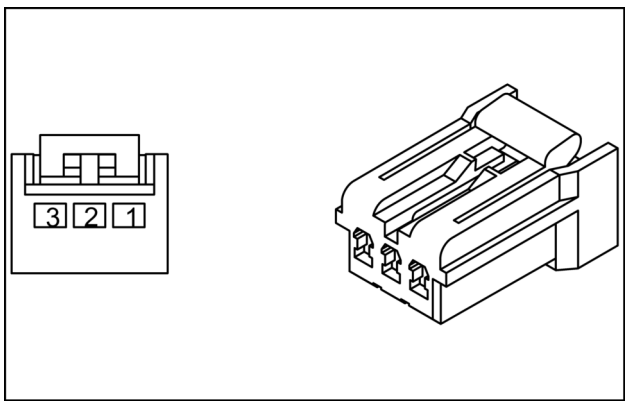
X-053A - CIGAR LIGHTER [J-007] (87581782) (Plug)



87581782 5

87581782

X-054 - THERMOSTAT [A-015] (84136442) (Plug)

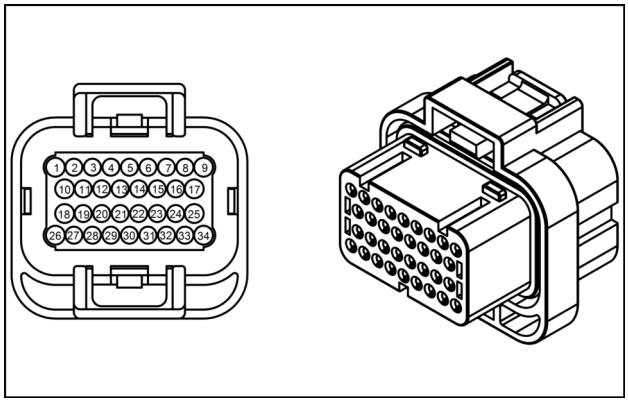


84136442 6

84136442

Pin	From	Wire	Description	Color-Size	Frame
22	**X-942 (Plug) pin AA1** CHASSIS - CAB INTERC.	CA-1175	4WS STEERING SOLENOID VALVE-UCM	VT - 1.0	**SHEET 14**
23	SP-1561-P-X	CA-1561C	A/C SWITCH-UCM	VT - 1.0	
25	**X-942 (Plug) pin AB1** CHASSIS - CAB INTERC.	CA-1075	UCM- BOOM FLOAT/RIDE VALVE	BR - 1.0	**SHEET 15**
26	SP-068-P-X	CA-2233	GND UCM	BK - 1.0	**SHEET 04**

X-093B - UCM CN3B [A-003] (84130760) (Receptacle)

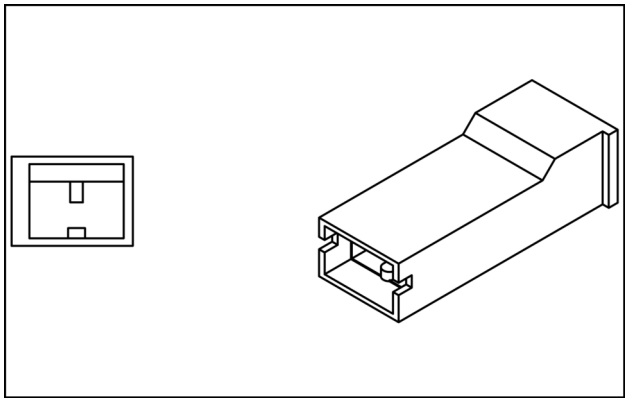


84130760 10

84130760

Pin	From	Wire	Description	Color-Size	Frame
1	**X-067 (Receptacle) pin C** STEERING MODE SELECTOR	CA-1025	UCM-STEERING MODE SELECTOR SW	BR - 1.0	**SHEET 14**
3	SP-060-P-X	CA-2208	FUSE-UCM	WH - 0.75	**SHEET 04**
6	**X-942 (Plug) pin AA2** CHASSIS - CAB INTERC.	CA-1174	UCM-CRAB STEERING SOLENOID VALVE	WH - 1.0	**SHEET 14**
8	SP-060-P-X	CA-2207	FUSE-UCM	WH - 0.75	**SHEET 04**
9	SP-060-P-X	CA-2206	FUSE-UCM	WH - 0.75	
11	**X-067 (Receptacle) pin B** STEERING MODE SELECTOR	CA-1024	UCM-STEERING MODE SELECTOR SW	WH - 1.0	**SHEET 14**
16	**X-067 (Receptacle) pin D** STEERING MODE SELECTOR	CA-1028	UCM-STEERING MODE SELECTOR SW	WH - 1.0	
19	**X-049 (Receptacle) pin 3** JOY STICK 2	CA-1034	CONTROL HANDLE-UCM	BL - 1.0	**SHEET 15**
20	**X-102 (Receptacle) pin 3** HYDR AUXILIARY ENABLE SWITCH	CA-1549	HYDR AUXILLARY ENABLE SW-UCM	WH - 1.0	**SHEET 21**
21	SP-1554-P-X	CA-1554B	HYDR AUXILLARY ENABLE SW-UCM	PK - 1.0	
23	**X-062 (Receptacle) pin 7** SHUTTLE LEVER	CA-2102	UCM-SHUTTLE LEVER	GY - 0.75	**SHEET 14**
26	SP-068-P-X	CA-2234	GND UCM	BK - 1.0	**SHEET 04**
29	**X-049 (Receptacle) pin 1** JOY STICK 2	CA-1568	CONTROL HANDLE-UCM	BL - 1.0	**SHEET 15**
30	**X-094B (Receptacle) pin 4** UCM CN4B	CA-1022	BRIDGE UCM	YE - 1.0	**SHEET 16**
32	**X-941 (Plug) pin A7** CAB BULK HEAD	CA-1254	UCM-FAN REVERSING SOLENOID VALVE	WH - 1.0	**SHEET 14**
33	**X-941 (Plug) pin A6** CAB BULK HEAD	CA-1253	UCM-FAN PRESSURE RELIEF SOLENOID VALVE	WH - 1.0	
34	SP-068-P-X	CA-2235	GND UCM	BK - 1.0	**SHEET 04**

X-204-1 - BOOM SOCKET REEL [A-005] (87581782) (Receptacle)

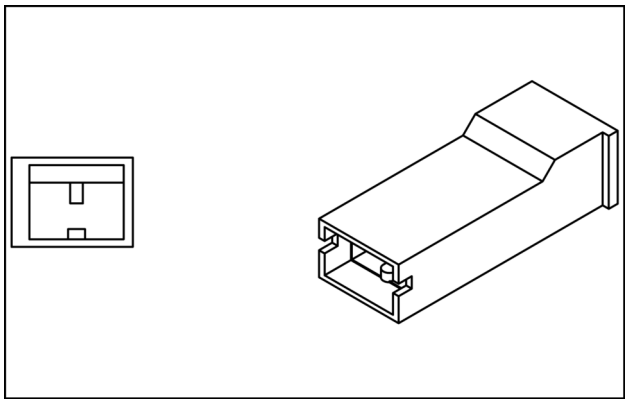


87581782 6

87581782

Pin	From	Wire	Description	Color-Size	Frame
1	**X-203 (Receptacle) pin 1** BOOM SOLENOID VALVE	BS-003	BS-003	OR - 1.0	**SHEET 21**

X-204-2 - BOOM SOCKET REEL [A-005] (87581782) (Receptacle)



87581782 7

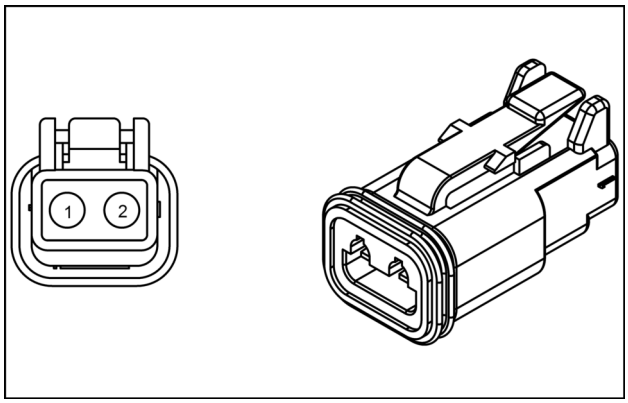
87581782

Pin	From	Wire	Description	Color-Size	Frame
1	**X-203 (Receptacle) pin 2** BOOM SOLENOID VALVE	BS-004	BS-004	BK - 1.0	**SHEET 21**

Wire connectors - Component diagram 70

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

X-701 - AUX OUT VALVE [Y-009] (87708145) (Receptacle)

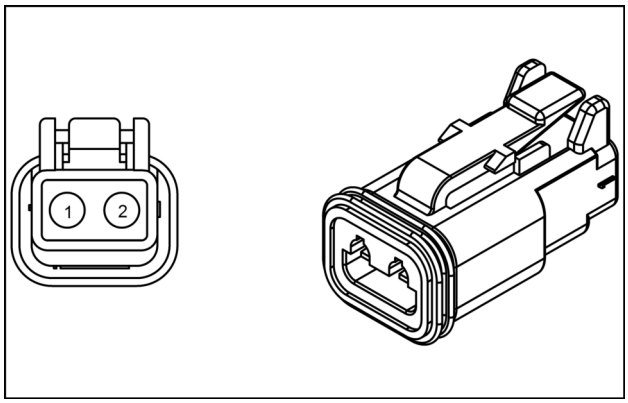


87708145 1

87708145

Pin	From	Wire	Description	Color-Size	Frame
1	**X-942 (Receptacle) pin AA7** CHASSIS - CAB INTERC.	CH-1056	AUX OUT VALVE	BR - 1.0	**SHEET 15**
2	SP-1503-P-X	CH-1503A	AUX OUT VALVE	BR - 1.0	

X-702 - TELESCOPE EXTD VALVE [Y-010] (87708145) (Receptacle)

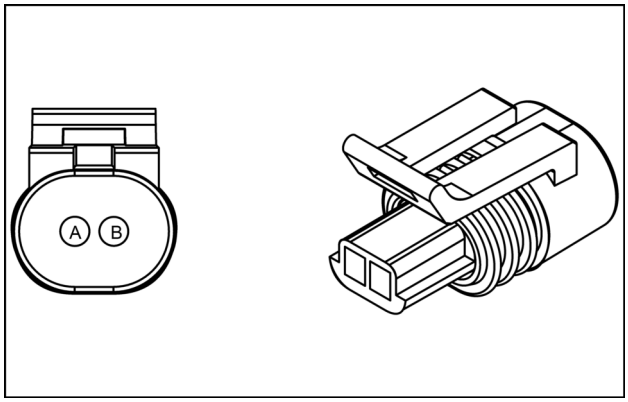


87708145 2

87708145

Pin	From	Wire	Description	Color-Size	Frame
1	**X-942 (Receptacle) pin AA8** CHASSIS - CAB INTERC.	CH-1057	TELESCOPE EXTD VALVE	BR - 1.0	**SHEET 15**
2	SP-1507-P-X	CH-1507A	TELESCOPE EXTD VALVE	BR - 1.0	

X-932 - Y2 SOLENOID VALVE [Y-002] (82012093) (Receptacle)

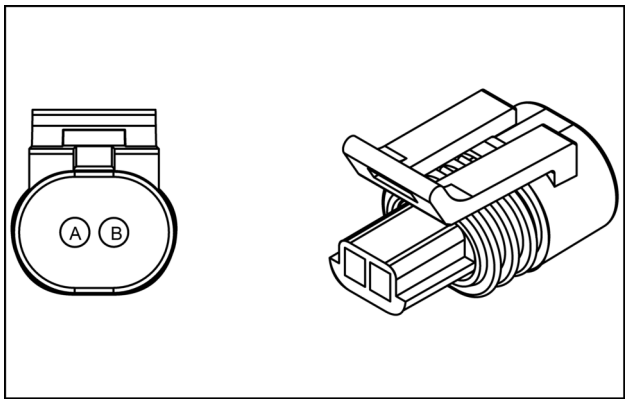


82012093 3

82012093

Pin	From	Wire	Description	Color-Size	Frame
A	**X-941 (Plug) pin D6** CAB BULK HEAD	EN-1071	EN-1071	YE - 1.0	**SHEET 17**
B	SP-2000-P-X	EN-2004	EN-2004	BK - 1.0	

X-933 - Y3 SOLENOID VALVE [Y-003] (82012093) (Receptacle)

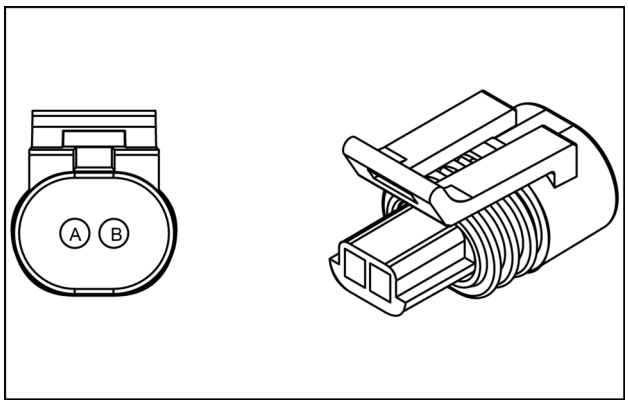


82012093 4

82012093

Pin	From	Wire	Description	Color-Size	Frame
A	**X-941 (Plug) pin D7** CAB BULK HEAD	EN-1078	EN-1078	YE - 1.0	**SHEET 17**
B	SP-2000-P-X	EN-2007	EN-2007	BK - 1.0	

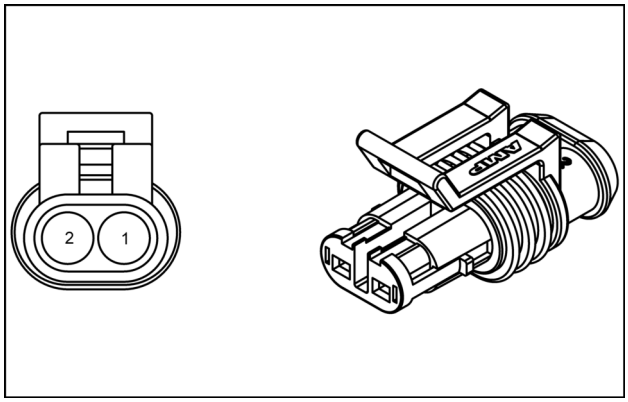
X-934 - Y4 SOLENOID VALVE [Y-004] (82012093) (Receptacle)



82012093 5

82012093

X-011A - LH Boom Light [E-008] (82012083) (Receptacle)

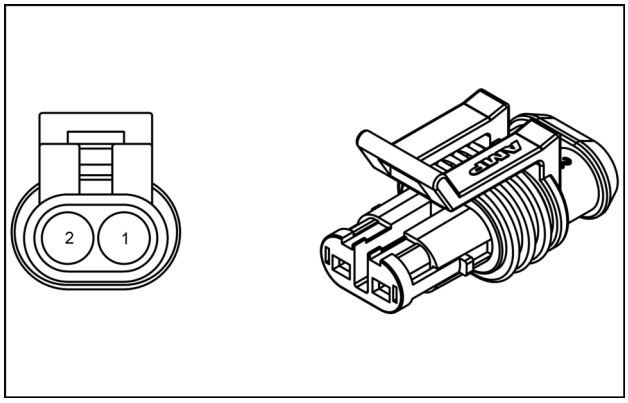


82012083 3

82012083

Pin	From	Wire	Description	Color-Size	Frame
1	**X-011 (Plug) pin 1** BOOM WORK LIGHT	BL-1220	BL-1220	GN - 1.5	**SHEET 20**
2	**X-011 (Plug) pin 4** BOOM WORK LIGHT	BL-1223	BL-1223	BK - 1.5	

X-011B - RH Boom Light [E-007] (82012083) (Receptacle)



82012083 4

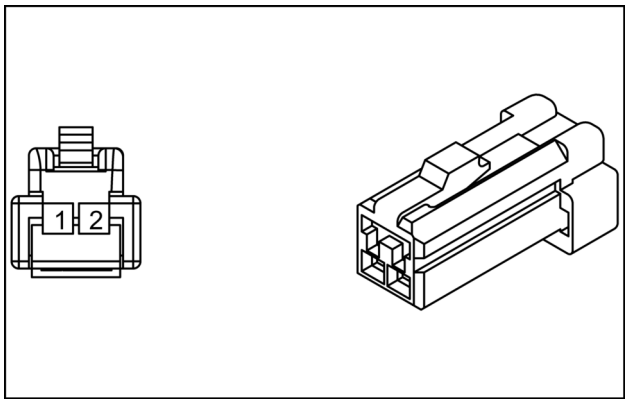
82012083

Pin	From	Wire	Description	Color-Size	Frame
1	**X-011 (Plug) pin 2** BOOM WORK LIGHT	BL-1221	BL-1221	GN - 1.5	**SHEET 20**
2	**X-011 (Plug) pin 3** BOOM WORK LIGHT	BL-1222	BL-1222	BK - 1.5	

Wire connectors - Component diagram 05

Farmlift 635	WE
Farmlift 742	WE

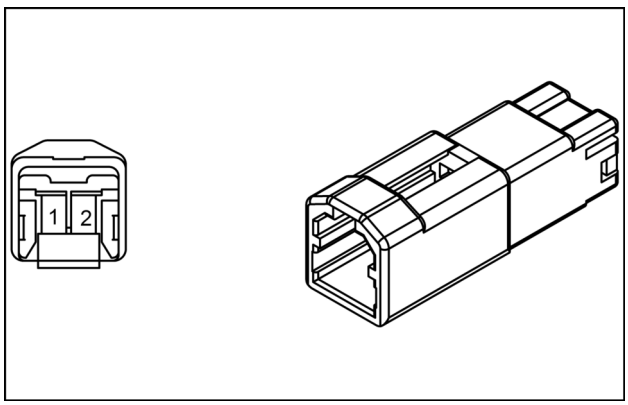
X-050 - POTENTIOMETER A/C TEMP [R-001] (87493513) (Plug)



87493513 1

87493513

X-051 - A/C SWITCH ILLUMINATION [E-015] (84278792) (Plug)

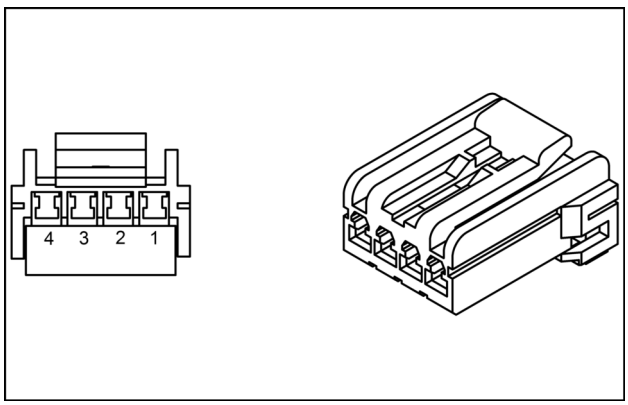


84278792 2

84278792

Pin	From	Wire	Description	Color-Size	Frame
1	SP-1566-P-X	CA-1566C	GND- A/C SW ILL.	BK - 0.5	**SHEET 29**
2	SP-1561-P-X	CA-1561B	THERMOSTAT-A/C SW-ILLUM.	VT - 0.5	

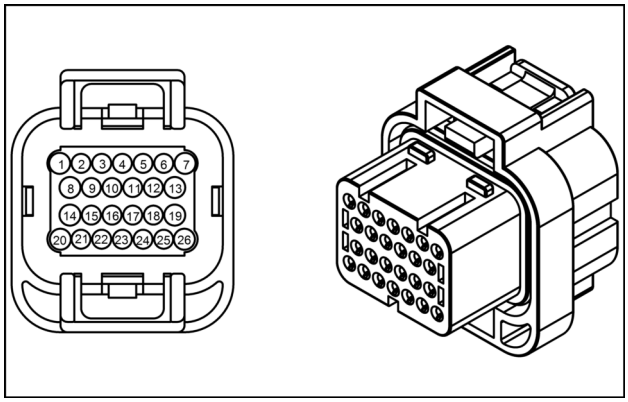
X-052 - A/C Switch [S-035] (87736481) (Plug)



87736481 3

87736481

X-093A - UCM (Universal Control Module) [SH19: A-4] (84130757) (Receptacle)

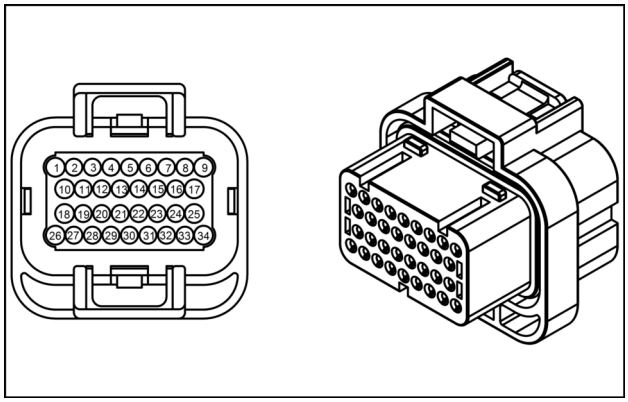


84130757 9

84130757

Pin	From	Wire	Description	Color-Size	Frame
2	SP-061-P-X	CA-2210	FUSE-UCM	WH - 0.75	**SHEET 04**
3	SP-061-P-X	CA-2211	FUSE-UCM	WH - 0.75	
4	**X-942 (Plug) pin AC6** CAB - CHASSIS BULKHEAD	CA-1511	UCM-PARK BRAKE VALVE	BR - 1.0	**SHEET 15**
6	**X-089 (Receptacle) pin 22** TRANSMISSION CONTROL UNIT	CA-0149	TCU-UCM	BL - 1.0	**SHEET 14**
7	SP-066-P-X	CA-2225	FUSE-UCM	WH - 0.75	**SHEET 04**
13	SP-066-P-X	CA-2226	FUSE-UCM	WH - 0.75	
17	**X-065 (Receptacle) pin 3** PEDAL BRAKE SW	CA-1210	PEDAL BRAKE SWITCH-UCM	RD - 1.0	**SHEET 16**
18	**X-065 (Receptacle) pin 4** PEDAL BRAKE SW	CA-1577	PEDAL BRAKE SW-UCM	GN - 1.0	
20	SP-068-P-X	CA-2236	UCM-GND CAB	BK - 1.0	**SHEET 04**
21	SP-061-P-X	CA-2212	FUSE-UCM	WH - 0.75	
22	**X-942 (Plug) pin AA1** CAB - CHASSIS BULKHEAD	CA-1175	UCM-4WS STEERING S.V.	VT - 1.0	**SHEET 14**
23	SP-1561-P-X	CA-1561C	UCM-A/C SWITCH	VT - 1.0	
25	**X-942 (Plug) pin AB1** CAB - CHASSIS BULKHEAD	CA-1075	UCM-BOOM FLOAT/RIDE VALVE	BR - 1.0	**SHEET 15**
26	SP-068-P-X	CA-2233	UCM-GND CAB	BK - 1.0	**SHEET 04**

X-093B - UCM (Universal Control Module) [A-003] (84130760) (Receptacle)



84130760 10

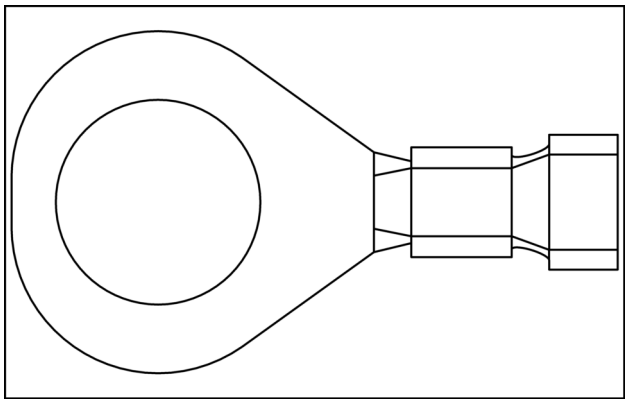
84130760

Pin	From	Wire	Description	Color-Size	Frame
1	**X-067 (Receptacle) pin C** Steering Mode Selector	CA-1025	UCM-STEERING MODE SELECTOR SW	BR - 1.0	**SHEET 14**
3	SP-060-P-X	CA-2208	FUSE-UCM	WH - 0.75	**SHEET 04**
6	**X-942 (Plug) pin AA2** CAB - CHASSIS BULKHEAD	CA-1174	UCM-CRAB STEERING SOLENOID VALVE	WH - 1.0	**SHEET 14**
8	SP-060-P-X	CA-2207	FUSE-UCM	WH - 0.75	**SHEET 04**
9	SP-060-P-X	CA-2206	FUSE-UCM	WH - 0.75	

Wire connectors - Component diagram 21

Farmlift 635	WE
Farmlift 742	WE

X-212 - [SH26: B-1] (47663140) (Plug)

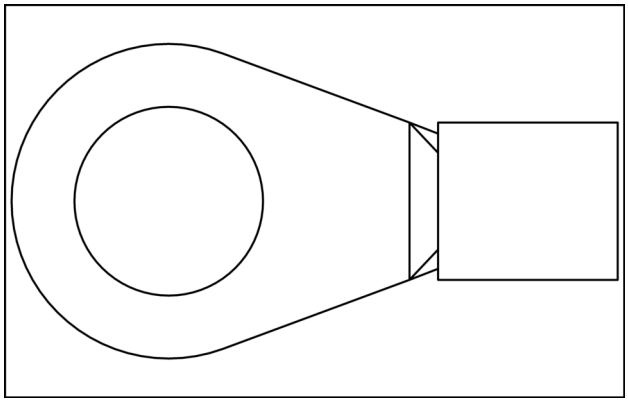


47663140 1

47663140

Pin	From	Wire	Description	Color-Size	Frame
1	**X-091 (Receptacle) pin C7** FLASHER UNIT	CA-1540	GND-FLASHER UNIT	BK - 1.0	**SHEET 09**
1	**X-091 (Receptacle) pin C8** FLASHER UNIT	CA-1541	GND-FLASHER UNIT	BK - 1.0	

X-213 - Main Cab Ground (47663139) (Plug)

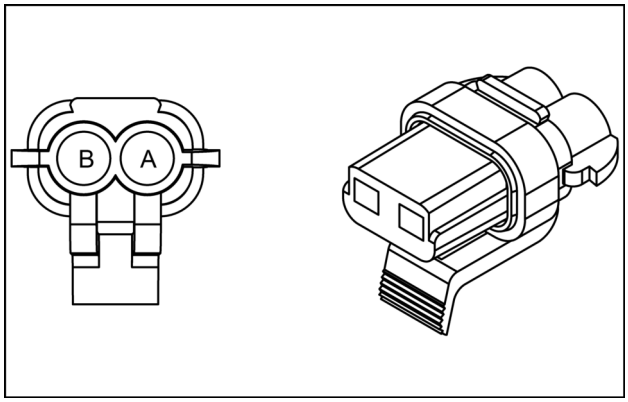


47663139 2

47663139

Pin	From	Wire	Description	Color-Size	Frame
1	SP-090-P-X	CA-1065	GND-MAIN CAB	BK - 10.0	**SHEET 09**

X-429 - FUEL HEATER 1 [R-003] (87679438) (Receptacle)



87679438 7

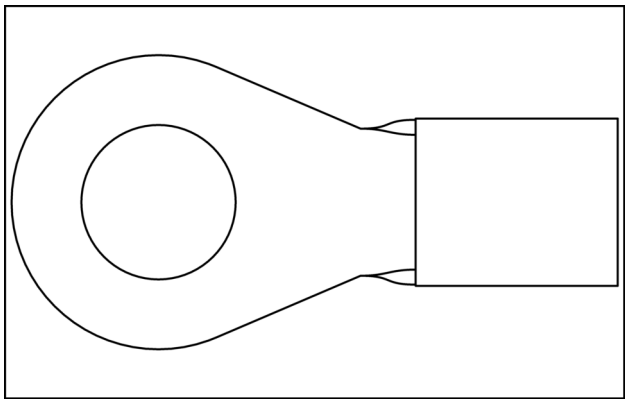
87679438

Pin	From	Wire	Description	Color-Size	Frame
A	SP-501-P-X	CS-6005A	CS-6005A	RD - 2.0	**SHEET 13**
B	SP-502-P-X	CS-0057A	CS-0057A	BK - 2.0	

Wire connectors - Component diagram 92

Farmlift 635	WE
Farmlift 742	WE

X-920 - CONNECTION BOX [W-002] (84398003) (Plug)

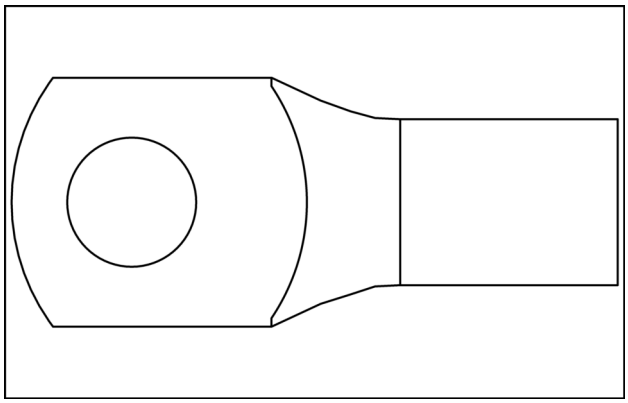


84398003 1

84398003

Pin	From	Wire	Description	Color-Size	Frame
1	**X-021 (Plug) pin 1** POWER INTERFACE WITH FUSEMODULE	EP-0045	EP-0045	RD - 25.0	**SHEET 03**

X-921 - COLD START FUSE [U-034] (84124293) (Plug)



84124293 2

84124293

Pin	From	Wire	Description	Color-Size	Frame
1	**X-233 (Plug) pin 1** STARTER MOTOR TO FUSE	BT-1200	BT-1200	RD - 16.0	**SHEET 03**

B-031 - PRESS SW TILT DOWN (N.C.) OPEN 3 BAR RISING (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 16**
Connectors	**X-123 (Receptacle)**

B-032 - PRESS SW. TELE OUT (N.C.) OPEN 5 BAR RISING (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 15**
Connectors	**X-956 (Receptacle)**

B-033 - BOOM RETRACTED PROX. SWITCH (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 15**
Connectors	**X-138 (Receptacle)**

B-034 - TRANS OIL TEMP (N.C.) OPEN 120~C RISING (Sensor)

Component Type	Sensor
Wiring frames	**SHEET 14**
Connectors	**X-937 (Receptacle)**

S-021 - DISPLAY NAVIGATION UP/DOWN-UCM (Switch)

Component Type	Switch
Wiring frames	**SHEET 18**
Connectors	**X-083 (Receptacle)**

S-022 - DECLUTCH BY SERVICE BRAKE ENABLE (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-085 (Receptacle)**

S-023 - CONTINUOUS FLOW AUX SW (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-086 (Receptacle)**

S-024 - PARK BRAKE SWITCH (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-087 (Receptacle)**

S-025 - COOLING FAN REV SWITCH (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-088 (Receptacle)**

S-026 - RIDE CTRL SWITCH (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-092 (Receptacle)**

S-027 - ROAD/WORK MODE SWITCH (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-093 (Receptacle)**

S-028 - REAR AXLE LOAD SENSOR (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-084 (Receptacle)**

S-029 - SEAT SWITCH & AIR SUSPENSION (Switch)

Component Type	Switch
Wiring frames	**SHEET 14**
Connectors	**X-057 (Receptacle)**

S-030 - LOAD MOMENT CONTROL OVERRIDE SWTICH (Switch)

Component Type	Switch
Wiring frames	**SHEET 16**
Connectors	**X-980-2 (Plug)** **X-980-1 (Plug)**

GND-012 - FUEL HEATER (Ground)

Component Type	Ground
Wiring frames	**SHEET 13**

GND-013 - CAB GROUND 5 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-014 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 15**

GND-015 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-016 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-017 - ROOF GROUND 2 (Ground)

Component Type	Ground
Wiring frames	**SHEET 20**

GND-018 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-019 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-020 - CAB GROUND 1 (Ground)

Component Type	Ground
Wiring frames	**SHEET 10**

GND-021 - (Ground)

Component Type	Ground
Wiring frames	**SHEET 14**

GND-022 - MAIN CAB GROUND 2 (Ground)

Component Type	Ground
Wiring frames	**SHEET 09**

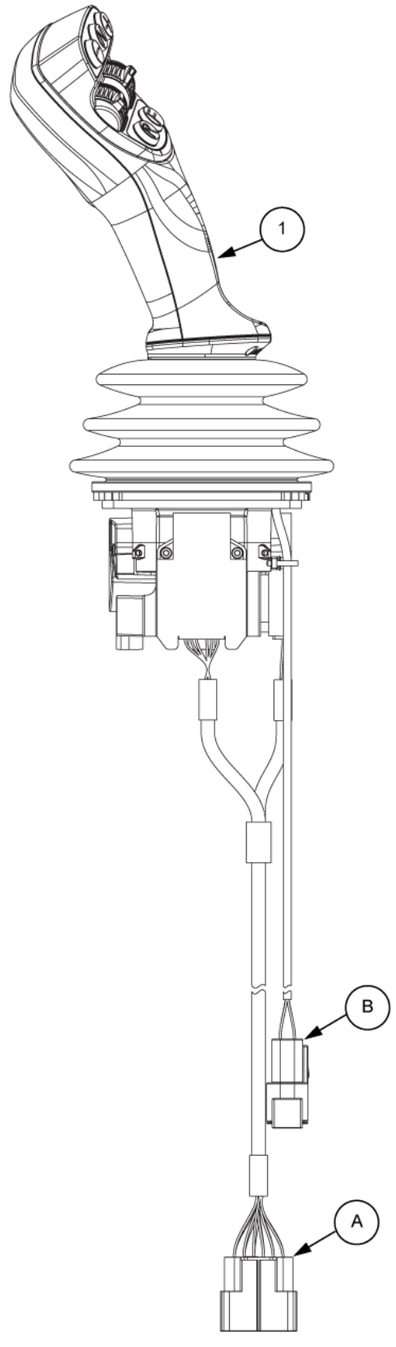
GND-024 - (Ground)

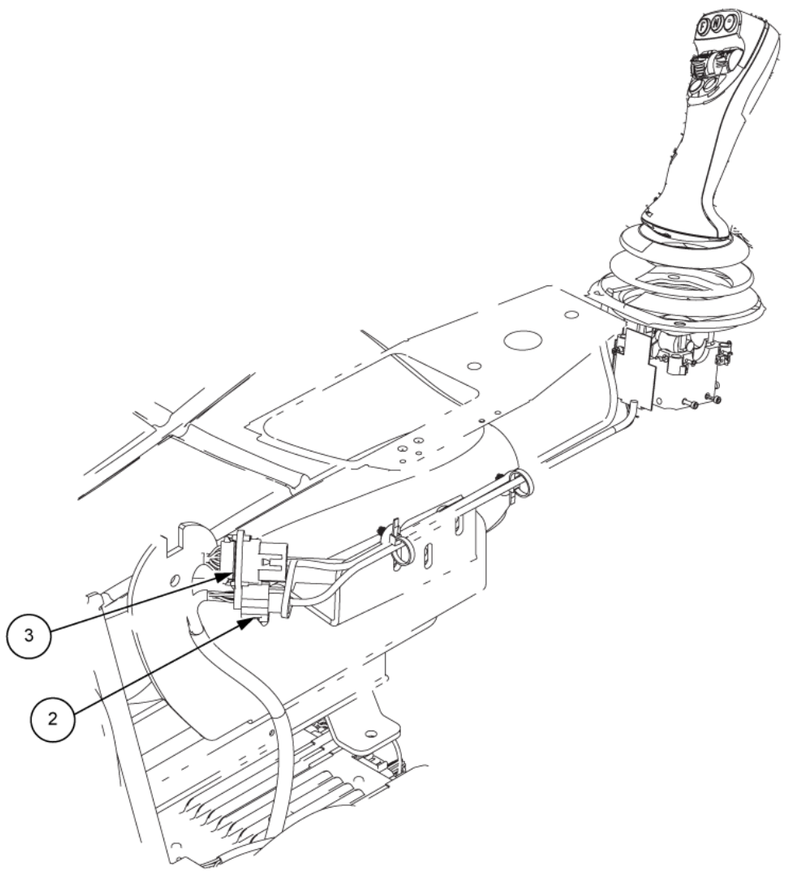
Component Type	Ground
Wiring frames	**SHEET 24**

Electrical systems - 55

Engine starting system - 201

Farmlift 632
Farmlift 635
Farmlift 735
Farmlift 742
Farmlift 935



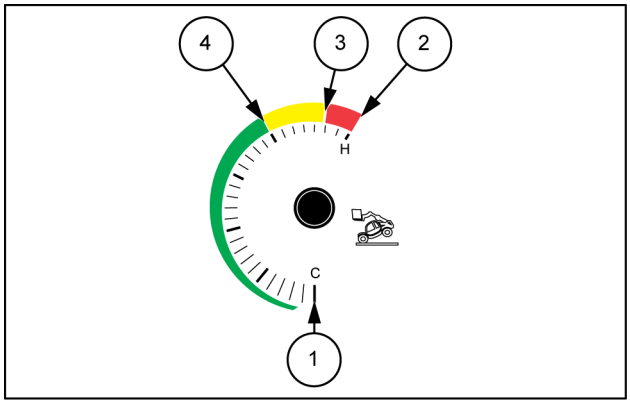


LEIL17TLH0644JB 1

3096	ECM BusOff on Vehicle CAN
3097	ECM BusOff on Engine private CAN
3102	Rail Pressure Sensor CP3 - Signal Below Range Min
3104	Rail Pressure Relief Valve - Open
3105	Rail Pressure Relief Valve - Pressure Shock Requested
3106	Rail Pressure Relief Valve - Did Not Open After Pressure Shock
3107	Metering Unit - Shortcircuit to Battery
3108	Metering Unit - Shortcircuit to Ground
3110	Rail Pressure Sensor Offset Monitoring - Value above Limit
3111	Rail Pressure Sensor Offset Monitoring - Value below Limit
3112	Rail Pressure Sensor CP3 - Signal Above Range Max
3113	Engine Controller High side supply #2 - Short to Battery
3114	Engine Controller High side supply #2 - Short to Ground
3118	ECM 12V Sensor Supply Voltage High
3119	ECM 12V Sensor Supply Voltage Low
3137	Metering Unit - Open Load
3138	Metering Unit - Temperature Too High
3141	Fuel Metering Unit: leakage is detected based on fuel quantity balance
3142	High Pressure Test - Test Active
3145	No key Switched input signals detected
3146	Water Detected In Fuel
3147	Oil Temperature Too High
3148	Coolant Temperature Sensor Dynamic Test - Failure (Minimum Temperature Raise Not Reached)
3154	Grid Heater Relay - Short circuit to Battery
3155	Grid Heater Relay - Short circuit to Ground
3156	Grid Heater Relay - No Load
3157	ECM Not Detected on CANbus –or– The engine dataset registration information was not available from the engine within the time required
3158	Invalid ECM Checksum (The engine dataset installed does not match the dataset registered for this machine. Register the new dataset if the dataset has just been updated)
3159	Invalid engine reference torque
3160	Fan actuator - short circuit to battery
3161	Fan actuator - short circuit to ground
3162	Fan actuator - no load
3163	Fan actuator - temperature too high
3166	Fuel Filter Heater Relay - Short circuit to Battery
3167	Fuel Filter Heater Relay - Short circuit to Ground
3168	Fuel Filter Heater Relay - Open Load
3169	Fuel Filter Heater Relay - Signal Not Plausible
3176	Engine is in overrun, injection quantity is zero and the pump is not a minimum flow to maintain the rail pressure
3177	Engine Overspeed Detected
3179	Timeout of CAN Message BC2EDC2
3180	Timeout of CAN Message VCM2EDC
3182	Timeout of CAN Message RxCCVS
3183	Timeout of CAN message TSC1-VR (when active)
3184	Timeout of CAN message TSC1-VR (when inactive)
3185	Timeout of CAN message TF
3188	Injector Cylinder1 Warning - Open Load
3192	Injector Cylinder2 Warning - Open Load
3196	Injector Cylinder3 Warning - Open Load
3200	Injector Cylinder4 Warning - Open Load
3210	Bank1 - General Shortcircuit on Injection Cable
3211	Bank1 - Injection Cable Shortcircuit Low Side to Ground

Warning indicators, alarms, and instruments - Check - SAR-anti-tipping system

To ensure that the system functions with continuity and security, the operator should perform daily verification of operation.



LEIL13TLH1691AB 1

Verify of operation

The verify with machine loaded allows to test the full operation of the device and is the only possible way to verify the correct fixing of the sensor on the axle.

The procedure is as follows:

Lift a load such that the maximum capacity of the machine at horizontal boom is approximately 2/3 of the boom extension.

Place the machine on level ground with wheels straight and closed boom down (boom angle approximately 0°).

Make sure that the load is almost to the ground and a possible lifting of the rear wheels do not place the machine in a dangerous situation.

Verify that the Load Moment gauge is within in the Green Zone.

Carefully extend the boom to the block point.

Verify that the Load Moment gauge is within in the Amber Zone.

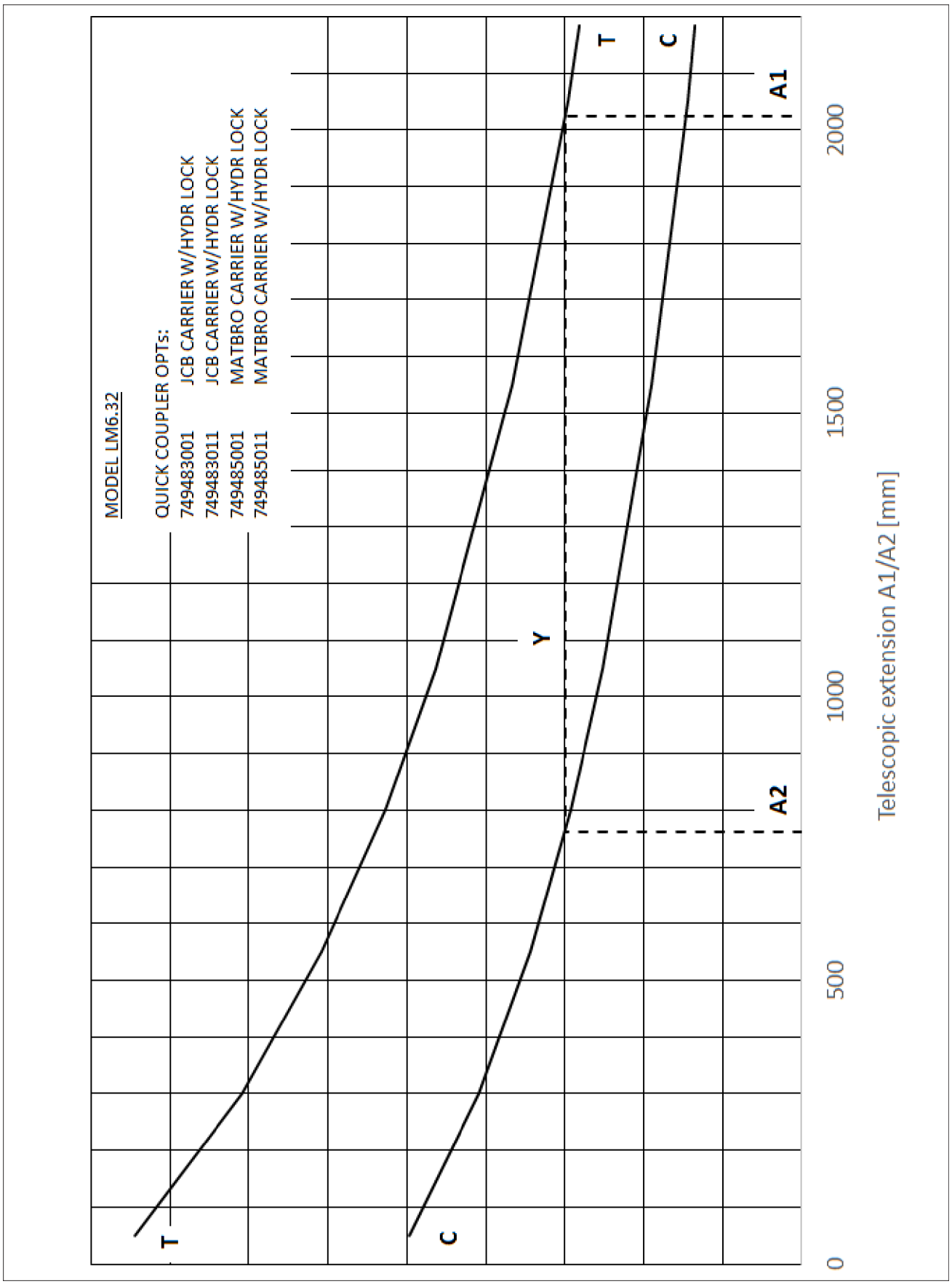
The machine must stop at the point set by the load table provided by the manufacturer.

Bypass the cut-off pressing override button.

Carefully extend the boom with the load a few cm from the ground up to the limit point (point of balance).

Close the boom to finish.

If the procedure is unsuccessful the device not guarantee the safety on operation.



LEIL17TLH0015HA 61

(*) See content for specific models

2633 - Direction input disagreement, invalid pattern

Farmlift 635	WE
Farmlift 742	WE

Control Module: UCM

Context:
UCM has detected an input disagreement on Forward and Reverse signal.

Possible failure modes:

1. Joystick failure
    1. Forward resistance value outside of admitted range
    2. Reverse resistance value outside of admitted range
    3. Forward/Reverse resistance value outside of admitted range
    4. Bad connection
2. UCM failure

Solution:

1. Check the Joystick control handle on the following points:
    A. Check the internal resistance between X-049-9 and X-049-1 of the Joystick control handle with the Forward switch pressed. The correct value is **469 Ω** (**47 Ω** + **422 Ω**).
    B. Check the internal resistance between X-049-9 and X-049-1 of the Joystick control handle with the Reverse switch pressed. The correct value is **287 Ω** (**47 Ω** + **240 Ω**).
    C. Check the internal resistance between X-049-9 and X-049-1 of the Joystick control handle with both switches pressed (Forward and Reverse). The correct value is **47 Ω**.
    D. Check the connection between X-049-9 of the Joystick control handle and X-92A-15 of UCM.
2. Replace the UCM.

3007 - Coolant Temperature Sensor - Signal Above Range Maximum

Farmlift 635	WE
Farmlift 742	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 monitors the fuel temperature sensor B-017 signal circuit. If the ECU detects a voltage greater than **4.93 V** in the B-017 circuit, this fault will occur. Coolant temperature value is used as default value. If also this sensor is defective, default value is fixed at **19.96 °C** (**67.93 °F**).

Cause:
The ECU has detected a voltage greater than **4.93 V** in the fuel temperature sensor B-017 signal circuit.

Possible failure modes:

1. Faulty fuel temperature sensor B-017 circuit wiring, shorted to high source or open circuit.
2. Faulty fuel temperature sensor B-017, internal failure.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step**2** .

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the fuel temperature sensor B-017 signal circuit wiring for an open circuit condition.

   Disconnect the connector **X-832**.

   Disconnect the connector **X-912**.

   Put the key switch in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-832 (Plug) pin 1**	Connector **X-912 (Plug) pin 35**	There should be continuity
Connector **X-832 (Plug) pin 2**	Connector **X-912 (Plug) pin 17**	There should be continuity

   A. If there is no continuity, there is an open circuit condition in the B-017 signal circuit, wires EC-0849 and EC-0859. Locate the fault and repair the broken conductor.

   B. If there is continuity, leave both connectors disconnected and continue with Step **4**.
4. Check the fuel temperature sensor B-017 signal circuit for a short circuit condition.

3022 - Boost Pressure Sensor - Signal Not Plausible

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 monitors the boost pressure of the LDFT boost pressure with air temperature sensor B-013. The plausibility of boost pressure sensor value is checked by comparing its value with the value of the ambient pressure sensor, which in internal to the ECU, when the engine is not running. No failure on boost pressure sensor or atmospheric pressure sensor already detected. The boost pressure is switched to the default value of **2.70 bar**.

Cause:
At engine start (engine not turning) the difference between boost pressure and ambient pressure is outside of plausibility range (**-0.2 – 0.2 bar**) for longer than **2 s**.

Possible failure modes:

1. Faulty LDFT boost pressure with air temperature sensor B-013 signal circuit, shorted to ground, shorted to a high source or open circuit.
2. Faulty LDFT boost pressure with air temperature sensor B-013, failed internally.
3. Faulty ECU A-002, software.
4. Faulty ECU A-002, failed internally.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the boost pressure sensor B-013 signal circuit wiring for a short to ground condition.

   Disconnect the connector **X-828**.

   Put the key switch in the OFF position.

   Use a multimeter to check for continuity on the engine harness as follows:

From	To	Value
Connector **X-828 (Plug) pin 3**	Chassis ground	There should be no continuity
Connector **X-828 (Plug) pin 4**	Chassis ground	There should be no continuity

Wiring harnesses - Electrical schematic sheet 11 (55.100)

The key must be in the ON position.

Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-911 (Plug) pin 2**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 3**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 8**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 9**	Chassis ground	There should be about **12 V**

A. If there is less than **12 V** on one or more the checks, there is a failure in the ECU A-002 supply wiring. Locate and repair the failed conductor.

B. If there is about **12 V** on all checks, leave the connector **X-911** disconnected and continue with Step **5**.

5. Check the ground connection of the ECU A-002.

The key must be in the OFF position.

Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-911 (Plug) pin 5**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 6**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 10**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 11**	Chassis ground	There should be continuity

A. If there is no continuity on one or more the checks, there is a failure in the ECU A-002 ground wiring. Locate and repair the failed conductor.

B. If there is continuity on all the checks, continue with Step **6**.

6. Check the charging system for proper operation.

A. If the charging system is not functioning properly, repair the charging system as necessary.

B. If the charging system is functioning properly, continue with Step **7**.

7. Replace the battery.

Use the EST to verify the status of this fault, **3052 - Battery Voltage to ECM too Low (55.640)**.

A. If the fault has been resolved, perform a parasitic draw test to measure excessive current draw from the battery. If an excessive draw is found, locate and repair as necessary and then return the machine to service.

B. If the fault has not been resolved, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 03 (55.100)
Wiring harnesses - Electrical schematic sheet 13 (55.100)

4. Check the cylinder 3 injector SV-012 low side control circuit for a short to battery condition.

   The key must be in the OFF position.

   Use a multimeter to perform the following voltage check on the engine harness side:

From	To	Value
Connector **X-827 (Plug) pin 3**	Chassis ground	There should be no voltage

   A. If there is voltage, there is a short circuit to battery condition in the cylinder 3 injector low side circuit, wire EC-0819. Locate and repair the conductor.

   B. If there is no voltage, leave the connector **X-827** disconnected and continue with Step **5**.

5. Check the cylinder 3 injector SV-012 low side control circuit for a short to high side condition.

   The key must be in the OFF position.

   Disconnect the connector **X-913**.

   Use a multimeter to perform the following continuity check on the engine harness side:

From	To	Value
Connector **X-913 (Plug) pin 16**	Connector **X-827 (Plug) pin 3**	There should be no continuity
Connector **X-913 (Plug) pin 1**	Connector **X-827 (Plug) pin 4**	There should be no continuity

   A. If there is continuity in one or more checks, there is a short circuit in the cylinder 3 injector high side and low side circuits, wires EC-0819 and EC-0820. Locate and repair the shorted conductor.

   B. If there is no continuity, continue with Step **6**.

6. Check the voltage supply to the ECU A-002.

   Disconnect the connector **X-911**.

   Put the key switch in the ON position.

   Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-911 (Plug) pin 2**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 3**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 8**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 9**	Chassis ground	There should be about **12 V**

   A. If there is less than **12 V** on one or more the checks, there is a failure in the ECU A-002 supply wiring. Locate and repair the failed conductor.

   B. If there is about **12 V** on all checks, leave the connector **X-911** disconnected and continue with Step **7**.

7. Check the ground connection of the ECU A-002.

   Put the key switch in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-911 (Plug) pin 5**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 6**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 10**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 11**	Chassis ground	There should be continuity

   A. If there is no continuity on one or more the checks, there is a failure in the ECU A-002 ground wiring. Locate and repair the failed conductor.

A. If there is no continuity on one or more the checks, there is a failure in the ECU A-002 ground wiring. Locate and repair the failed conductor.

B. If there is continuity on all the checks, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 11 (55.100)

A. If there is no continuity in one or more the checks, there is an open circuit condition between the ECU A-002 and the camshaft speed sensor B-018, wires EC-0865 and EC-0866. Locate and repair the broken conductor.

B. If there is continuity, leave both connectors disconnected and continue with Step **4**.

4. Check the camshaft speed sensor B-018 signal circuit for a short circuit condition.

   The key must be in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-912 (Plug) pin 10**	Connector **X-912 (Plug) pin 9**	There should be no continuity
Connector **X-912 (Plug) pin 10**	All other pins	There should be no continuity

   A. If there is continuity, there is a short circuit condition in the B-018 signal circuit, wires EC-0865 and EC-0866. Locate and repair the shorted conductor.

   B. If there is continuity, leave both connectors disconnected and continue with Step **5**.

5. Check the camshaft speed sensor B-018 signal circuit for a short to battery condition.

   Put the key switch in the ON position.

   Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-912 (Plug) pin 10**	Chassis ground	There should be no voltage

   A. If there is voltage, there is a short to power supply condition in the B-018 signal circuit. Locate and repair the shorted conductor.

   B. If there is no voltage, continue with Step **6**.

6. Check the B-018 wiring for any electrical interferences.

   Check if the correct camshaft sensor is installed and is properly secured, the sensor should not be loose or moving.

   Check tone wheel timing.

   A. If there is any electrical interference, the sensor is not correctly installed or timing is incorrect, repair as necessary.

   B. If there are no issues found, continue with Step **7**.

7. Replace the camshaft speed sensor B-018.

   Use the EST to verify the status of this fault, **3090 - Camshaft Sensor - No Signal (55.640)**.

   A. If the fault has been resolved, return to the machine to service.

   B. If the fault has not been resolved, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 11 (55.100)

3102 - Rail Pressure Sensor CP3 - Signal Below Range Minimum

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 monitors the fuel rail pressure sensor B-015 signal circuit. If the ECU determines that the voltage in the rail pressure sensor B-015 signal circuit is lower than expected, this fault will occur

Cause:
The ECU has detected a voltage lower than **254.15 mV** for more than **200 ms** in the rail pressure sensor signal circuit.

Possible failure modes:

1. Faulty rail pressure sensor B-015 signal circuit, shorted to ground.
2. Faulty rail pressure sensor B-015, internal failure.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the rail pressure sensor B-015 signal circuit for a short to ground condition.

   Disconnect the connector **X-830**.

   Put the key switch in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-830 (Plug) pin 1**	Chassis ground	There should be no continuity
Connector **X-830 (Plug) pin 3**	Chassis ground	There should be no continuity

   A. If there is continuity, there is a short circuit to ground in the B-015 signal circuit, wires EC-0872 and EC-0867. Locate the fault and repair the shorted conductor.

   B. If there is no continuity, continue with Step **4**.
4. Check the rail pressure sensor B-015 signal circuit at ECU side for a short to ground condition.

   Disconnect the **X-912** connector.

3137 - Metering Unit – Open Load

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

Context:
The power stage of the fuel high pressure pump Y-014 at low side is monitored by the Engine Control Unit (ECU) A-002 for electric failures. If the ECU detects an open circuit on the fuel metering unit Y-016, this fault will occur.

Cause:
The ECU has determined that the fuel high pressure pump Y-014 electrical control circuit is open.

Possible failure modes:

1. Faulty fuel high pressure pump Y-014, defective solenoid coil.
2. Faulty fuel high pressure pump Y-014 control circuit, broken wiring.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active. Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check condition of fuel high pressure pump Y-014 solenoid coil.

   The key must be in the OFF position.

   Disconnect the connector **X-833**.

   Use a multimeter to perform the following resistance check:

From	To	Value
Connector **X-833 (Plug) pin 1**	Connector **X-833 (Plug) pin 2**	The value should be between **2.5 – 4.5 Ω**

   A. If the value is not in the specified range, the fuel high pressure pump Y-014 has failed internally. Replace the component and reset ECU data.

   B. If the value is in the specified range, leave the connector X-833 disconnected and continue with Step **4**.
4. Check the fuel high pressure pump Y-014 circuit wiring for an open circuit condition.

   The key must be in the OFF position.

   Disconnect the connector **X-913**.

B. If you do not find damage and the display indicates only normal readings, then continue with Step **5**.

5. Verify the integrity of the coolant temperature sensor B-016.

   Disconnect the connector **X-831**.

   Put the key switch in the OFF position.

   Use a multimeter to measure the resistance between the following pins:

From	To	Value
Connector **X-831 (Plug) pin 1**	Connector **X-831 (Plug) pin 2** X-831 pin 2	There should be **332 – 10.149 kΩ** depending on coolant temperature.

   A. If the measured resistance is minimal or zero, the coolant temperature sensor B-016 has failed, internally. Replace the sensor.

   B. If the measured resistance is within the specified range, leave the connector **X-831** disconnected and continue with Step **6**.

6. Check the coolant temperature sensor B-016 signal circuit for a short to ground condition.

   The key must be in the OFF position.

   Disconnect the connector **X-912**.

   Use a multimeter to perform the following continuity check on the engine harness side:

From	To	Value
Connector **X-831 (Plug) pin 1**	Chassis ground	There should be no continuity
Connector **X-912 (Plug) pin 15**	Chassis ground	There should be no continuity

   A. If there is continuity, there is a short circuit to ground in the engine harness. Locate the fault and repair the shorted conductor.

   B. If there is no continuity, leave both connector disconnected and continue with Step **7**.

7. Check the coolant temperature sensor B-016 signal circuit wiring for an open circuit condition.

   The key must be in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-831 (Plug) pin 1**	Connector **X-912 (Plug) pin 15**	There should be continuity
Connector **X-831 (Plug) pin 2**	Connector **X-912 (Plug) pin 26**	There should be continuity

   A. If there is no continuity, there is an open circuit condition in the B-016 signal circuit, wires EC-0869 and EC-0870. Locate the fault and repair the broken conductor.

   B. If there is continuity, leave both connectors disconnected and continue with Step **8**.

8. Check the coolant temperature sensor B-016 signal circuit for a short circuit condition.

   Put the key switch in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-912 (Plug) pin 15**	All the other pins of connector **X-912**	There should be no continuity
Connector **X-912 (Plug) pin 26**	All the other pins of connector **X-912**	There should be no continuity

   A. If there is continuity, there is a short circuit condition in the B-016 signal circuit, wires EC-0869 and EC-0870. Locate the fault and repair the shorted conductor.

3161 - Fan Actuator – Short Circuit to Ground

Farmlift 635	WE
Farmlift 742	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 monitors the lower cooling fan 1 M-011 control circuit for a short to ground condition. If a short to ground condition is detected, this fault will occur.

Cause:
The ECU A-002 has detected a short to ground condition in the lower cooling fan 1 M-011 control circuit.

Possible failure modes:

1. Faulty lower cooling fan 1 M-011 signal circuit, shorted to ground.
2. Faulty lower cooling fan 1 M-011, internal failure.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the lower cooling fan 1 M-011 signal circuit for a short to ground condition.

   Put the key switch in the OFF position.

   Disconnect the connector **X-025**.

   Use a multimeter to perform the following continuity check on the engine harness side:

From	To	Value
Connector **X-025 (Receptacle) pin A**	Chassis ground	There should be no continuity
Connector **X-025 (Receptacle) pin B**	Chassis ground	There should be no continuity

   A. If there is continuity, there is a short circuit to ground in the M-011 signal circuit. Locate the fault and repair the shorted conductor.

   B. If there is no continuity, continue with Step **4**.
4. Replace the lower cooling fan 1 M-011.

   Use the EST to verify the status of this fault, **3161 - Fan Actuator – Short Circuit to Ground (55.640)**.

3176 - Engine is in overrun, injection quantity is zero and the pump is not a minimum flow to maintain the rail pressure

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

Context:
The rail pressure is monitored by various fault paths during active pressure control by the fuel high pressure pump Y-014. The fault path at hand detects an excessive leakage of fuel by monitoring the setpoint value of the fuel volume flow through the metering unit during overrun. The monitoring is only active if the high pressure governor is operating in closed loop control, the engine is in overrun condition, the fuel injection quantity is zero and the monitoring has not been inhibited by other faults.

Cause:
The setpoint value of the rail pressure governor for the fuel volume flow through the metering unit exceeds an upper limit during overrun. This limit is interpolated from the rail pressure dependent curve.

Possible failure modes:

1. Faulty high pressure section, leakage.
2. Faulty injection nozzle, stuck in open position.
3. Faulty high pressure pump, worn or internal failure.
4. Faulty pressure relief valve, leaking.
5. Faulty fuel filter, clogged.
6. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the high and low pressure system for leakage and failure. Check the fuel injectors, the high pressure pump and the pressure relief valve. Verify that the fuel filter is not clogged.

   A. If a fault in the high and low pressure system is detected, restore the operating conditions.

   B. If no fault is detected, continue with Step **3**.
3. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **4**.
4. Replace the fuel high pressure pump Y-014.

   Use the EST to verify the status of this fault, **3176 - Engine is in overrun, injection quantity is zero and the pump is not a minimum flow to maintain the rail pressure (55.640)**.

From	To	Value
Connector **X-911 (Plug) pin 34**	Chassis ground	There should be no continuity
Connector **X-911 (Plug) pin 35**	Chassis ground	There should be no continuity

A. If there is continuity, there is a short circuit to ground condition in the CAN A circuit, wires EN-5420V and EN-5400V. Locate and repair the shorted conductor.

B. If there is no continuity, leave the connector **X-911** disconnected and continue with Step **9**.

9. Check the ECU A-002 CAN A circuit for an open circuit condition.

   The key must be in the OFF position.

   Disconnect the diagnostic connector **X-030**.

   Use a multimeter to perform the following continuity check on the engine harness:

From	To	Value
Connector **X-911 (Plug) pin 34**	Connector **X-030 (Plug) pin D**	There should be continuity
Connector **X-911 (Plug) pin 35**	Connector **X-030 (Plug) pin C**	There should be continuity

A. If there is no continuity, there is an open circuit condition in the CAN A circuit, wires EN-5420V and EN-5400V. Locate and repair the shorted conductor.

B. If there is continuity, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 13 (55.100)
Wiring harnesses - Electrical schematic sheet 28 (55.100)

Use a multimeter to for continuity on the engine harness side:

From	To	Value
Connector **X-913 (Plug) pin 2**	Connector **X-825 (Plug)** pin 2	There should be continuity

A. If there is no continuity, there is an open circuit condition in the engine harness between the valve cover connector **X-825 (Plug)** pin 2 and the engine plug connector **X-913 (Plug) pin 2**, wire EC-0813. Locate and repair the broken conductor.

B. If there is continuity, leave both connectors disconnected and continue with Step **5**.

5. Determine the location of the open circuit condition.

The key must be in the OFF position.

Use a multimeter to for continuity on the engine harness side:

From	To	Value
Connector **X-913 (Plug) pin 15**	Connector **X-825 (Plug)** pin 1	There should be continuity

A. If there is no continuity, there is an open circuit condition in the engine harness between the valve cover connector **X-825 (Plug)** pin 1 and the engine plug connector **X-913 (Plug) pin 15**, wire EC-0814. Locate and repair the broken conductor.

B. If there is continuity, continue with Step **6**.

6. Check the integrity of the cylinder 2 injector Y-021.

Put the key switch in the OFF position.

Remove the injector (valve) cover and disconnect the injector from the cylinder 2.

Use a multimeter to perform the following resistance check on the cylinder 2 injector:

From	To	Value
Y-021 IN	Y-021 OUT	There should be between **0.2 – 0.5 Ω**

A. If the resistance is more than **0.5 Ω**, the cylinder 2 injector solenoid coil is defective. Replace the injector.

B. If the resistance is in the range, there is an internal open circuit in the cylinders 1&2 Y-058. Locate the fault and repair the broken conductor.

7. Check the voltage supply to the ECU A-002.

Disconnect the connector **X-911**.

Put the key switch in the ON position.

Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-911 (Plug) pin 2**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 3**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 8**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 9**	Chassis ground	There should be about **12 V**

A. If there is less than **12 V** on one or more the checks, there is a failure in the ECU A-002 supply wiring. Locate and repair the failed conductor.

B. If there is about **12 V** on all checks, leave the connector **X-911** disconnected and continue with Step **8**.

8. Check the ground connection of the ECU A-002.

Put the key switch in the OFF position.

3219 - Bank 2 - Injector Cable Short Circuit Low Side To Ground

Farmlift 635	WE
Farmlift 742	WE

Control Module: ECU

Context:
Hardware errors in the injectors and their respective Engine Control Unit (ECU) A-002 power stages are investigated within the ECU. The injector control scheme also groups the individual injector control circuits into banks. The ECU diagnostic procedure uses pattern detection to identify specific injector as well as bank errors. When an expected combination of errors is detected, the associated fault occurs. If a short circuit to ground on low side failure condition exists in bank 2, this fault will occur.

Cause:
The ECU has determined that a short circuit to ground on low side condition exists in injector control bank 2.

Possible failure modes:

1. Faulty bank 2 injector circuit wiring, shorted to ground.
2. Faulty bank 2 injector solenoid windings, internal failure.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the integrity of the cylinder 3 injector Y-012.

   Put the key switch in the OFF position.

   Disconnect the connector **X-827**.

   Use a multimeter to perform the following resistance check on the cylinder 3 injector:

From	To	Value
Connector **X-827 (Plug)** pin 4	Connector **X-827 (Plug)** pin 3	Resistance R > **0.2 Ω**

   A. If the resistance is less than **0.2 Ω**, the cylinder 3 injector solenoid coil is defective. Replace the injector.

   B. If the resistance is in the range, leave the connector **X-827** disconnected and continue with Step **4**.
4. Check the integrity of the cylinder 4 injector Y-022.

   Put the key switch in the OFF position.

3252 - Controller Watchdog - SPI Communication Failure

Control Module: ECU

Context:
Next to a CPU the ECU also contains a monitoring module (watchdog). These two components communicate via a Serial Peripheral Interface (SPI) Bus with each other. Both devices mutually monitor each other for correct functioning. If, however, the SPI communication between them fails this monitoring is impaired and an error counter is incremented. If the error counter exceeds a limit the fault path at hand is activated. Communication status is checked autonomously by the SPI driver component every **20 ms** and reports a detected error to the ECU.

Cause:
Error counter for failed SPI communication between CPU and monitoring module exceeds 2 over 2* **20 ms** (two tests).

Possible failure modes:

1. Faulty ECU A-002, defective monitoring module or CPU (e.g. impaired functioning of the CPU clock) of the ECU.
2. Faulty ECU A-002, Disturbed SPI-Bus.
3. Faulty ECU A-002, internal failure.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the ECU A-002 for the appropriate software and re-flash, if necessary.

   A. If the fault has been resolved, return to the machine to service.

   B. If the fault has not been resolved, escalate an ASIST concern.

4. Check the battery voltage.

   The engine must be running.

   Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-418 (Plug) pin 1**	Connector **X-419 (Plug) pin 1**	There should be about **12 V**

   A. If there is more than **12 V**, the battery should be defective. Check the battery and replace, if necessary.

   B. If there is about **12 V**, continue with Step **5**.

5. Check the voltage supply to the ECU A-002.

   Disconnect the connector **X-911**.

   Put the key switch in the ON position.

   Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-911 (Plug) pin 2**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 3**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 8**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 9**	Chassis ground	There should be about **12 V**

   A. If there is more than **12 V** on one or more the checks, there is a failure in the ECU A-002 supply wiring. Locate and repair the failed conductor.

   B. If there is about **12 V** on all checks, continue with Step **6**.

6. Check the ECU A-002 for the appropriate software and re-flash, if necessary.

   A. If the fault has been resolved, return to the machine to service.

   B. If the fault has not been resolved, escalate an ASIST concern.

Wiring harnesses - Electrical schematic sheet 03 (55.100)
Wiring harnesses - Electrical schematic sheet 13 (55.100)

3316 - Minimum Number Of Injections Not Reached - Stop Engine

Control Module: ECU

Context:
The injector shut-off function can switch off a single injector valve or an entire injection bank if a defect has been detected in this component (monitoring is performed in other fault paths). If too many cylinders are shut down by the shut-off function it is no longer possible to run the engine securely and it has to be shut down entirely. In this case the fault path at hand is set.

Cause:
The number of cylinders with error or shut off exceeds 2 over 1 test cycles (injections).

Possible failure modes:

1. Individual shut-off error of the injector/bank.
2. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the presence of other related faults.

   A. If one or more errors in injectors or banks is detected, resolve the fault. Then, repeat the Step **1**.

   B. If no other injector/bank fault is detected, continue with Step **3**.
3. Check the ECU A-002 for the appropriate software and re-flash, if necessary.

   A. If the fault has been resolved, return to the machine to service.

   B. If the fault has not been resolved, escalate an ASIST concern.

3339 - Timeout of CAN message TSC1-VE Speed (When Active)

Farmlift 635	WE
Farmlift 742	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 is capable of connecting to and communicating on two separate Controller Area Networks (CAN). Proper configuration and monitoring of the two twisted pair configured networks is also a function of the ECU. CAN Node A Bus is the main vehicle interface bus. The ECU provides a CAN termination resistor for the CAN Node A Bus, internal to the ECU. The ECU receives and responds to Torque/Speed Control (TSC) information at two different rates (active and passive) dependent upon change request status. If the ECU is not sensing the TSC message at the active rate, this fault will occur.

Cause:
CAN controller of the ECU reports a reception timeout for the VCM/BC message TSC1VEActIv while the override control mode is active. Defect condition fulfilled continuously for more than **200.0 ms**.

Possible failure modes:

1. Faulty vehicle system, related CAN fault.
2. Faulty ECU supply voltage or ground, missing.
3. Faulty CAN A circuit wiring, open circuit, short to ground, or short circuit.
4. Faulty ECU, termination resistor or software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check for other vehicle CAN faults.

   Use the EST to determine if related vehicle CAN faults exist.

   A. If other vehicle CAN faults do exist, resolve the vehicle CAN faults, then check if this fault, **3339 - Timeout of CAN message TSC1-VE Speed (When Active) (55.640)**, is also resolved.

   B. If other vehicle CAN faults do not exist, or this fault has not been resolved, continue with Step **3**.
3. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **4**.
4. Check the voltage supply to the ECU A-002.

   Disconnect the connector **X-911**.

   Put the key switch in the ON position.

3413 - Overheat protection activates torque limitation

Control Module: ECU

Context:
This fault path indicates that a power reduction due to engine overheat protection is currently active which limits the engine torque. In other words, this fault path is not used as an actual error status indicating a real defect but is used more for information purposes for service personnel to determine the exact cause of the power limitation (in case a real defect evokes a power reduction the triggering failure also has to be present in the failure memory).
Monitoring is only active if engine speed is above **500 RPM**.

Cause:
A power reduction due to engine overheat protection (via limiting torque) is active. Torque demand is greater than limitation torque, for over heat protection, or high idle torque demand is greater than limitation torque, for over heat protection.

Possible failure modes:

1. Active power reduction due to engine overheat protection.

Solution:

1. No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.

Disconnect the connector **X-909**.

Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-909 (Receptacle) pin 1**	Connector **X-909 (Receptacle) pin 2**	There should be no continuity

A. If there is continuity, there is a short circuit condition in the B-006 signal circuit, wires DX-9272 and DX-57XE. Locate the fault and repair the conductor.

B. If there is no continuity, continue with Step **4**.

4. Replace the NOx sensor B-006.

Use the EST to verify the status of this fault, **3530 - NOx Sensor Failure - Short Circuit (55.640)**.

A. If the fault has been resolved, return to the machine to service.

B. If the fault has not been resolved, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 12 (55.100)

3546 - SCR Dosing Valve Overheat Protection - Torque Limitation Level1 for SCR Protection active

Control Module: ECU

Context:
The dosing module of the urea dosing system (DNOX2) has to be cooled with urea especially at high engine loads with high exhaust temperatures. Otherwise the dosing valve can be damaged. If the DCU is unable to ensure sufficient cooling at high exhaust temperatures due to a defect it reports this via CAN to the ECU which in turn should trigger a torque limitation to protect the urea dosing module. In other words, this fault path is used more for information purposes and inhibit handling than as an actual error status. The troubleshooting will have to be carried out on the DCU side.

Cause:
Bits 2 and 3 in the 8th byte (SCR Status) of the SCR1 CAN message holds either values '01' (protection request active) or '11' (error) indicating that a level 1 protection of the urea dosing valve against overheat is currently necessary.

Possible failure modes:

1. A defect occurred in the urea dosing system which can impair the cooling of the urea dosing valve.

Solution:

1. Read out the DCU failure memory and perform troubleshooting according to DCU support.

3565 - Urea quality and urea warning level 1

Control Module: ECU

Context:
The failure is part of the SCR Driver's inducement. If a SCR-relevant failure occurs, the driver inducement is started. After a certain distance or engine running time with the SCR-relevant failure active, this failure is set.
This inducement warning level is triggered by FId (Fid_SCRCatWarnLvl1_mp).

Cause:
After this Warning Level is triggered by Fid (Fid_SCRCatWarnLvl1_mp) the engine is running for longer than **90 min** or driven for a distance > SCRCAT_LTHRESWARNLVL_C NOT FOUND IN LOADED LABELS! Defect condition fulfilled continuously for more than **100 ms**.

Possible failure modes:

1. This is not a standalone failure, this failure is triggered by another failure via Fid_SCRCatWarnLvl1_mp.

Solution:

1. Check and repair leading failure.

A. If there is voltage, there is a short circuit to battery condition in the B-003 signal circuit, wire DX-9252. Locate the fault and repair the shorted conductor.

B. If there is no voltage, continue with Step **16**.

16. Perform a complete cool down of the vehicle.

    Leave the vehicle shut down for at least **10 h** without sun exposure, then measure the signal of the three temperature sensors (B-007, B-002 and B-003).

    A. If temperature differences are above **20 °C**, replace the sensor which seem implausible.

    B. If temperature differences are below **20 °C**, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 12 (55.100)
Wiring harnesses - Electrical schematic sheet 13 (55.100)

The key must be in the OFF position.

Disconnect the connector **X-909**.

Use a multimeter to perform the following resistance check:

From	To	Value
Connector **X-909 (Receptacle) pin 1**	Connector **X-909 (Receptacle) pin 2**	There should be a measurable resistance

A. If the resistance is about **0 Ω** or more than **1 MΩ**, the NOx sensor B-006 is defective. Replace the component.

B. If there is a measurable resistance value, check the denox controller A-001 and replace, if necessary.

Wiring harnesses - Electrical schematic sheet 12 (55.100)

4477 - Auxiliary 4th: function outputs different from request or invalid (HSD_24; HSD_25; LSD15)

Control Module: Auxiliary 4th

Cause:

Auxiliary 4th: function outputs different from request or invalid (HSD_24; HSD_25; LSD15)

Possible failure modes:

1. Fuse F008 burnt
2. Short circuit to battery
3. Short circuit to ground
4. Low supply voltage

Solution:

1. Replace the fuse
2. Check if the line is shorted to battery on the following points:

   a) X091B-29 of UCM

   b) X942-AA7

   c) X701-1, X701-2 of Y009

   d) X942-AB8

   e) X091A-22

   f) X091B-30 of UCM

   g) X942-AB7

   h) X708-1, X708-2 of Y023
3. Check if the line is shorted to ground on the following points:

   a) X091B-29 of UCM

   b) X942-AA7

   c) X701-1, X701-2 of Y009

   d) X942-AB8

   e) X091B-30 of UCM

   f) X942-AB7

   g) X708-1, X708-2 of Y023
4. Check the supply voltage on Aux lines, it has to be above 8V

4946 - Longitudinal Load Moment Control (LLMC) Module: Application Programming Interface (API) timeout, work zone

Control Module: UCM

Context:
Software corruption.

Possible failure modes:

1. UCM does not work properly
2. UCM failure

Solution:

1. UCM needs to be re-programmed. Re-program the UCM.
2. Replace the UCM.

9004 - PWM output error for tilt B axis

Farmlift 635	WE
Farmlift 742	WE

Control Module: Hydraulic controller

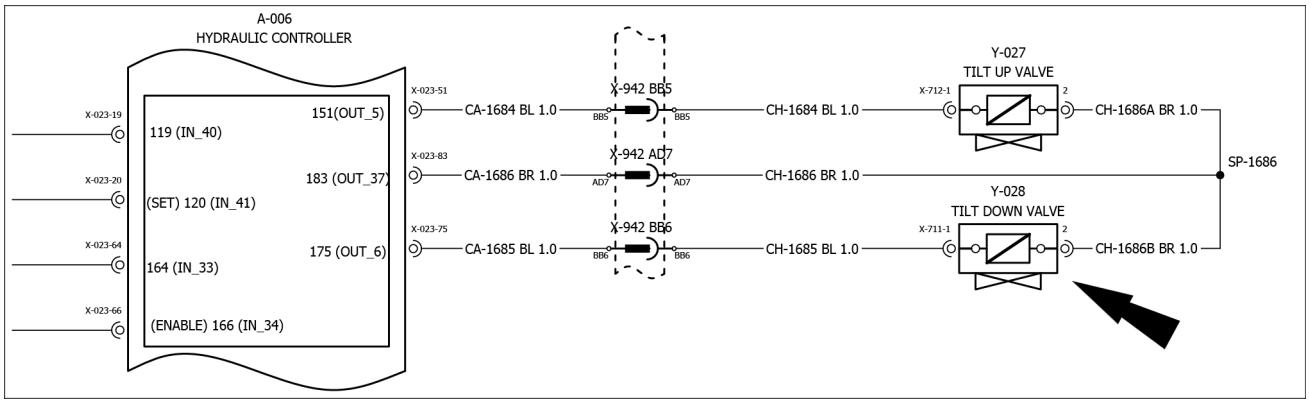
Context:
The Hydraulic controller has detected a malfunctioning of the Tilt down valve Y-028.

Possible failure modes:

1. Short circuit to battery of the Tilt down valve Y-028
2. Short circuit to ground of the Tilt down valve Y-028
3. Open circuit of the Tilt down valve Y-028 supply line

Solution:

1. Check if the line is shorted to battery on the following points:
   A. Connections X-023-75 and X-023-83 of the Hydraulic controller A-006
   B. Connections X-942-BB6 and X-942-AD7
   C. Connections X-711-1 and X-711-2 of the Tilt down valve Y-028
   D. Check the wires CA-1685-BL and CA-1686-BR
2. Check if the line is shorted to ground on the following points:
   A. Connections X-023-75 and X-023-83 of the Hydraulic controller A-006
   B. Connections X-942-BB6 and X-942-AD7
   C. Connections X-711-1 and X-711-2 of the Tilt down valve Y-028
   D. Check the wires CA-1685-BL and CA-1686-BR
3. Check if the line is opened on the following points:
   A. From X-023-75 to X-942-BB6
   B. From X-942-BB6 to X-711-1
   C. From X-711-2 to X-942-AD7
   D. From X-942-AD7 to X-023-83



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A. pin X-024-47 on the Hydraulic controller A-006

B. pin X-048-9 on the Joystick Z-005

8. Use the multimeter to check that the following connections are not shorted to battery (**+12 V**):

A. pin X-024-48 on the Hydraulic controller A-006

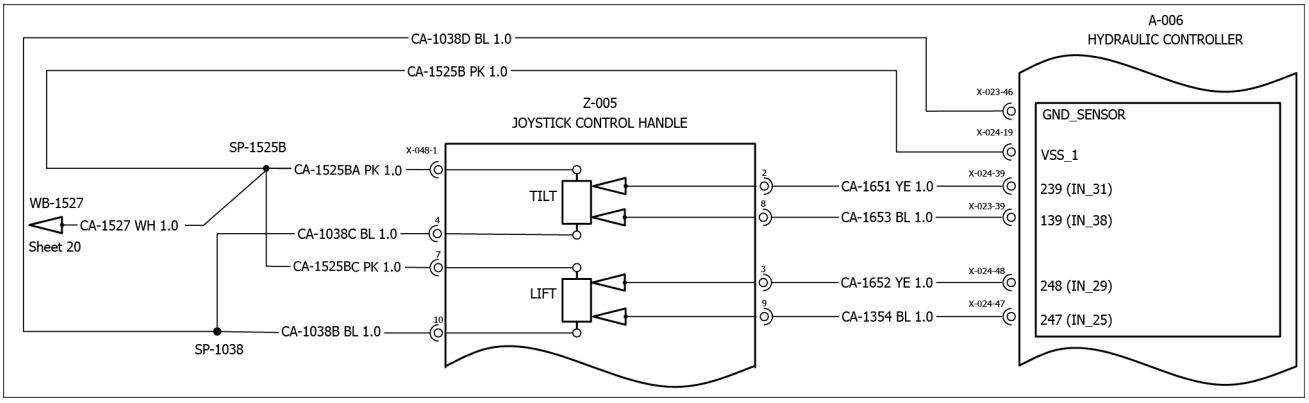
B. pin X-048-3 on the Joystick Z-005

9. Use the multimeter to check that the connections:

A. X-024-47 and X-024-48 on the Hydraulic controller A-006 are not jointed together

B. X-048-3 and X-048-9 on the Joystick Z-005 are not jointed together

10. Use the multimeter to check the continuity between the pin X-023-46 (Hydraulic controller ground sensor) and pins X-048-10 and X-048-4 (Joystick Z-005).



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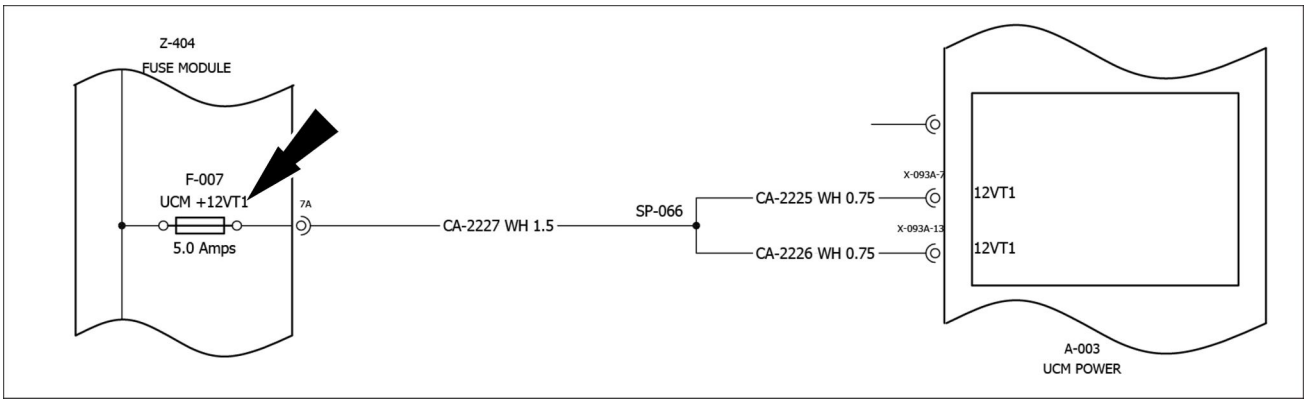
C. X-701-1

5. Check the continuity of the Auxiliary inlet valve Y-023 line:
   A. From pin X-023-28 to pin X-942-AB7
   B. From pin X-942-AB7 to pin X-708-1
6. Check if the following points are shorted to battery:
   A. X-023-28
   B. X-942-AB7
   C. X-708-1
7. Check the continuity of the Tilt up valve Y-027 line:
   A. From pin X-023-51 to pin X-942-BB5
   B. From pin X-942-BB5 to pin X-712-1
8. Check if the following points are shorted to battery:
   A. X-023-51
   B. X-942-BB5
   C. X-712-1
9. Check the continuity of the Tilt down valve Y-028 line:
   A. From pin X-023-75 to pin X-942-BB6
   B. From pin X-942-BB6 to pin X-711-1
10. Check if the following points are shorted to battery:
    A. X-023-75
    B. X-942-BB6
    C. X-711-1
11. Check the continuity of the Telescope extend valve Y-010 line:
    A. From pin X-023-78 to pin X-942-AA8
    B. From pin X-942-AA8 to pin X-709-1
12. Check if the following points are shorted to battery:
    A. X-023-78
    B. X-942-AA8
    C. X-709-1
13. Check the continuity of the Telescope retract valve Y-024 line:
    A. From pin X-023-54 to pin X-942-AC1
    B. From pin X-942-AA8 to pin X-702-1
14. Check if the following points are shorted to battery:
    A. X-023-54
    B. X-942-AC1
    C. X-702-1

4. Check the fuse F-007 (**5 A**).



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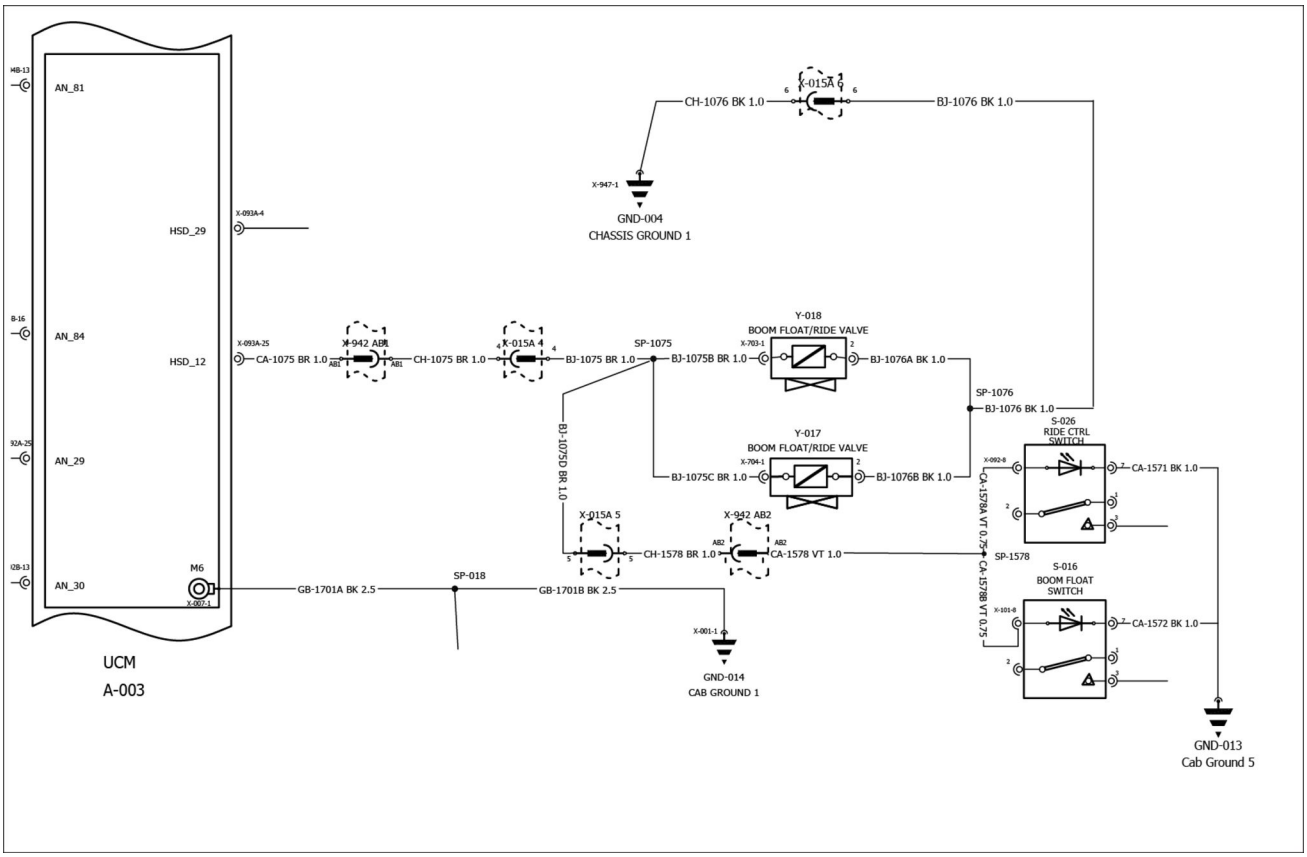
5. Replace the UCM.



LEIL15THL0208FA 2

The key must be in the ON position.

Use a multimeter to perform the following voltage check:

From	To	Value
Connector **X-911 (Plug) pin 2**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 3**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 8**	Chassis ground	There should be about **12 V**
Connector **X-911 (Plug) pin 9**	Chassis ground	There should be about **12 V**

A. If there is less than **12 V** on one or more the checks, there is a failure in the ECU A-002 supply wiring. Locate and repair the failed conductor.

B. If there is about **12 V** on all checks, leave the connector **X-911** disconnected and continue with Step **5**.

5. Check the ground connection of the ECU A-002.

The key must be in the OFF position.

Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-911 (Plug) pin 5**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 6**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 10**	Chassis ground	There should be continuity
Connector **X-911 (Plug) pin 11**	Chassis ground	There should be continuity

A. If there is no continuity on one or more the checks, there is a failure in the ECU A-002 ground wiring. Locate and repair the failed conductor.

B. If there is continuity on all the checks, continue with Step **6**.

6. Check the charging system for proper operation.

A. If the charging system is not functioning properly, repair the charging system as necessary.

B. If the charging system is functioning properly, continue with Step **7**.

7. Replace the battery.

Use the EST to verify the status of this fault, **19002 - Battery voltage sensing (electrical) - signal low / P0562 battery voltage evaluation – below lower limit (55.640)**.

A. If the fault has been resolved, perform a parasitic draw test to measure excessive current draw from the battery. If an excessive draw is found, locate and repair as necessary and then return the machine to service.

B. If the fault has not been resolved, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 03 (55.100)
Wiring harnesses - Electrical schematic sheet 13 (55.100)

19021 - Temperature sensor before catalyst (electrical) - signal above high error threshold

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Context:
This is the first temperature sensor used upstream of the selective catalytic reduction (SCR) muffler to monitor muffler operating efficiency. This error will occur when the signal voltage is higher than **2.2 V** for more than **0.7 s**.

Cause:
The voltage from the upstream temperature sensor circuit is too high.

Possible failure modes:

1. Faulty sensor.
2. Faulty electrical wiring or connection.
3. Faulty denox module.

Solution:

1. Verify this error is still present, and in an active state.

   A. If the error is still present and active, continue with step **2**.

   B. If the error is no longer present or inactive, return unit to field operation..
2. Make sure the machine is fully cooled down to ambient temperature. Disconnect the wiring harness from the upstream temperature sensor at connector UTS. Measure the resistance on the sensor from pin 1 to pin 2. There should be approximately **175 – 250 Ω**.

   A. If the resistance is within **175 – 250 Ω**, continue with step **3**.

   B. If the resistance is infinite or **0.0 Ω** the sensor has failed. Replace the sensor.
3. Test the wiring harness end of the upstream temp sensor connector UTS to the denox module.

   Check the resistance between connector UTS pin 1 and pin 2. Expected reading is approximately **1000 – 1600 Ω**.

   A. If wiring harness test is good, contact ASIST for further information.

   B. If the resistance reading out of range, continue with step **4**.
4. Test the wiring harness end of the upstream temp sensor for good ground.

   Check the resistance between connector UTS pin 2 and ground. Expected reading is less than **1.0 Ω**.

   A. If wiring harness test is good, contact ASIST for further information.

   B. If the resistance is infinite, locate bad ground connection and repair..

Wiring harnesses - Electrical schematic sheet 12 (55.100)

19075 - Replace Dosing Control Unit (DCU) - (internal tube heater electrical failure)

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: DCU

Context:
The Dosing Control Unit (DCU) has sensed a fault with the voltage supply for the internal heaters. The DEF/AdBlue® heaters are located in the DCU.

Cause:
The internal sensors for the DCU are sensing implausible values.

Possible failure modes:

1. The wiring is faulty.
2. The software is faulty.
3. The DCU is faulty.

Solution:

1. Verify the fault is still present and in an active state.

   A. If the fault is still present and active, continue with step **2**.

   B. If the fault is not present, the fault may be intermittent. Check for an intermittent the fault. If no the faults are found, clear the fault code. Return machine to service.
2. Check the DCU connector for proper operation of the power supply and ground circuits.

   Disconnect the harness from the DCU at connector.

   Use a multi-meter to measure the voltage from the harness side of connector pin 3 to pin 14. The meter should read between **20–28 V**.

   Use a multi-meter to measure the voltage from the harness side of connector pin 4 to pin 15. The meter should read between **20–28 V**.

   Use a multi-meter to measure the voltage from the harness side of connector pin 24 to chassis ground. The meter should read between **20–28 V**.

   A. All of the expected voltage measurements are not present, repair/replace the circuit to the DCU connector.

   B. All of the expected voltage measurements are present, continue with step **3**.

   NOTE: *Inspect the DCU power relays to verify correct part is installed (verify a **12 V** relay is NOT installed in the **24 V** position).*
3. Clear the fault code.

   A. If the fault code did not clear, continue with step **4**.

   B. If the fault code has cleared, return the machine back to service.
4. Verify the proper software level is installed in the DCU.

   A. The incorrect software level is installed. Install the correct software level. Test the system for proper operation.

   B. The correct software level is installed, replace the DCU. Install the current software level. Test the system to verify repairs.

19147 - Dosing Valve (electrical) - open load / P2047 Reductant Injector - circuit open

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

NOTE: *Because this fault causes inducement, it is necessary to perform the Engine Restart Counter Reset / Unlock Inducement configuration with the Electronic Service Tool (EST) before you return the machine to service.*

Context:
The Engine Control Unit (ECU) A-002 monitors the electrical current used to energize the denox dosing valve B-005. If the ECU detects an open circuit, this fault will occur.

Cause:
The ECU detects an open circuit condition in the denox dosing valve B-005 circuit.

Possible failure modes:

1. Faulty denox dosing valve B-005 solenoid coil, open circuit.
2. Faulty denox dosing valve B-005 circuit wiring, open circuit.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the integrity of the denox dosing valve B-005.

   The key must be in the OFF position.

   Disconnect the connector **X-904**.

   Use a multimeter to measure the resistance of the denox dosing valve B-005 solenoid coil, as follows:

From	To	Value
Connector **X-904 (Receptacle) pin 1**	Connector **X-904 (Receptacle) pin 2**	There should be measurable resistance.

   A. If the resistance is about **1 MΩ**, the denox dosing valve B-005 solenoid coil is broken. Replace the component.

   B. If there is measurable resistance, leave the connector X-904 disconnected and continue with Step **4**.

19264 - Tank heating Valve - open load / P20B1 Reagent - tank heating valve open circuit

Farmlift 632	WE
Farmlift 735	WE
Farmlift 935	WE

Control Module: ECU

Context:
The Engine Control Unit (ECU) A-002 monitors the reduction agent tank heating B-004 circuit. If the ECU detects an open circuit condition in the B-004 circuit, this fault will occur.

Cause:
The ECU detects an open circuit condition in the B-004 circuit.

Possible failure modes:

1. Faulty reduction agent tank heating B-004 solenoid coil, open circuit.
2. Faulty reduction agent tank heating B-004 circuit wiring, open circuit.
3. Faulty ECU A-002, software.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check the integrity of the reduction agent tank heating B-004.

   The key must be in the OFF position.

   Disconnect the connector **X-903**.

   Use a multimeter to measure the resistance of the reduction agent tank heating B-004 solenoid coil, as follows:

From	To	Value
Connector **X-903 (Receptacle) pin 1**	Connector **X-903 (Receptacle) pin 2**	There should be measurable resistance.

   A. If the resistance is about **1 MΩ**, the reduction agent tank heating B-004 solenoid coil is broken. Replace the component.

   B. If there is measurable resistance, leave the connector **X-903** disconnected and continue with Step **4**.
4. Check the reduction agent tank heating B-004 signal circuit for an open circuit condition.

Wiring harnesses - Electrical schematic sheet 12 (55.100)

19532 - Back flow line clogged / P2063 Reagent - dosing valve short circuit low

NOTE: *Because this fault causes inducement, it is necessary to perform the SCR Fault Repair Verification Test once the fault has been resolved.*

NOTE: *Because this fault causes inducement, it is necessary to perform the Engine Restart Counter Reset / Unlock Inducement configuration with the Electronic Service Tool (EST) before you return the machine to service.*

Context:
Once the **DEF/AdBlue®** ystem evacuation has begun, if the pressure does not drop down to **0.25 bar** (**3.62 psi**) within **0.0 s**, this fault will occur.

Cause:
The Engine Control Unit (ECU) A-002 has determined that the **DEF/AdBlue®** system was not evacuated properly, as system pressure remained above **0.25 bar** (**3.62 psi**).

Possible failure modes:

1. Faulty **DEF/AdBlue®** system back flow line (tube), restriction.
2. Faulty supply module reverting (reversing) valve, blocked (stuck) closed.
3. Faulty supply module pressure sensor, values too high.

Solution:

1. Verify that the fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with Step **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active.
2. Check the integrity of the harness and the connectors.

   Visually inspect the relevant harness and connector for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harness involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

   B. If you do not find damage and the display indicates only normal readings, then continue with Step **3**.
3. Check for blockage in **DEF/AdBlue®** system.

   Visually and tactually inspect the system back flow line (tube) for blockage and/or damage.

   There should be no blockage or damage.

   A. If blockage or damage is found, repair or replace the line (tube).

   B. If no blockage or damage is found, continue with Step **4**.
4. As the components internal to the **DEF/AdBlue®** system supply module are not serviceable, replace the supply module (Denox controller) A-001.

   Then use EST to perform the Engine Restart Counter Reset / Unlock Inducement configuration.

   Then perform the SCR Fault Repair Verification Test.

   Then check to see if fault **19532 - Back flow line clogged / P2063 Reagent - dosing valve short circuit low (55.640)** is resolved.

19596 - CAN Receive Frame EEC1 (Engine Speed Not In Range)

Farmlift 635	WE
Farmlift 742	WE

Possible failure modes:

1. Controller communication error

Solution:

1. Check for other error codes being displayed. Are there other codes displayed referring to time out of communication link. Are there other can bus communication error issues.

   A. If any other error code is being displayed, continue to these tests.

   B. If no other error code is displayed, continue to step **2**
2. Ensure all connectors are secured properly on the denox module/supply module connector , the denox terminator connector and the engine controller connector . The denox terminator connector is located behind cover at SCR muffler in NOX sensor harness. Check for damage, loose connections or broken can bus wires.

   A. A connector/wiring issue was located and corrected. Erase fault code and return unit to field operation.

   B. No connector/wiring issues were located. Continue with step **3**
3. Check the denox system can bus terminators. Disconnect denox terminator connector . Check the terminator resistance from pin 1 to pin 2. The expected reading is **120 Ω**.

   A. Expected reading is not found. Replace denox terminator. Erase fault code and return unit to field operation.

   B. Reading is as expected. Continue with step **4**
4. Next, check the harness end resistance on connector from pin 1 to pin 2. This will be checking the engine control modules internal terminator. The expected reading is **120 Ω**.

   A. Expected reading not found. There may be a short to ground, or open wire between denox terminator and engine control module connector , or the engine control module terminator is faulty. Troubleshoot the wiring harness make repairs, or replace engine control module.

   B. Reading is as expected. Erase fault code. If the fault code reoccurs contact ASIST.

Wiring harnesses - Electrical schematic sheet 12 (55.100)
Wiring harnesses - Electrical schematic sheet 28 (55.100)

A. If the resistance is about 0 Ω or more than 1 MΩ, the reduction agent tank level and temperature sensor B-001 is defective. Replace the component.

B. If there is measurable resistance, leave the connector **X-907** disconnected and continue with Step **4**.

4. Check the reduction agent tank level and temperature sensor B-001 signal circuit wiring for a short to ground condition.

   The key must be in the OFF position.

   Use a multimeter to perform the following continuity check:

From	To	Value
Connector **X-907 (Receptacle) pin 1**	Chassis ground	There should be no continuity

   A. If there is continuity, there is a short circuit to ground in the B-001 signal circuit, wire DX-9246. Locate the fault and repair the shorted conductor.

   B. If there is no continuity, check the ECU A-002 for the appropriate software and re-flash, if necessary.

Wiring harnesses - Electrical schematic sheet 12 (55.100)