Minimum tightening torques for fasteners – For normal assembly applications

Bolts and lock nuts - Imperial sizes

Nominal size	Grade SAE 2		Grade SAE 5		Grade SAE 8		Lock nuts	
	Not plated or silver plated	Plated Zn/Cr Gold	Not plated or silver plated	Plated Zn/Cr Gold	Not plated or silver plated	Plated Zn/Cr Gold	Not plated or silver plated	Plated Zn/Cr Gold
1/4	6.2 N·m (4.57 lb ft)	8.1 N·m (5.97 lb ft)	9.7 N·m (7.15 lb ft)	13 N·m (9.59 lb ft)	14 N·m (10.33 lb ft)	18 N·m (13.28 lb ft)	6.9 N·m (5.09 lb ft)	9.8 N·m (7.23 lb ft)
5/16	13 N·m (9.59 lb ft)	17 N·m (12.54 lb ft)	20 N·m (14.75 lb ft)	26 N·m (19.18 lb ft)	28 N·m (20.65 lb ft)	37 N·m (27.29 lb ft)	14 N·m (10.33 lb ft)	20 N·m (14.75 lb ft)
3/8	23 N·m (16.96 lb ft)	30 N·m (22.13 lb ft)	35 N·m (25.81 lb ft)	46 N·m (33.93 lb ft)	50 N·m (36.88 lb ft)	65 N·m (47.94 lb ft)	26 N·m (19.18 lb ft)	35 N·m (25.81 lb ft)
7/16	37 N·m (27.29 lb ft)	47 N·m (34.67 lb ft)	57 N·m (42.04 lb ft)	73 N·m (53.84 lb ft)	80 N·m (59.00 lb ft)	104 N·m (76.71 lb ft)	41 N·m (30.24 lb ft)	57 N·m (42.04 lb ft)
1/2	57 N·m (42.04 lb ft)	73 N·m (53.84 lb ft)	87 N·m (64.17 lb ft)	113 N·m (83.34 lb ft)	123 N·m (90.72 lb ft)	159 N·m (117.27 lb ft)	61 N·m (44.99 lb ft)	88 N·m (64.91 lb ft)
9/16	81 N·m (59.74 lb ft)	104 N·m (76.71 lb ft)	125 N·m (92.20 lb ft)	163 N·m (120.22 lb ft)	176 N·m (129.81 lb ft)	229 N·m (168.90 lb ft)	88 N·m (64.91 lb ft)	125 N·m (92.20 lb ft)
5/8	112 N·m (82.61 lb ft)	145 N·m (106.95 lb ft)	174 N·m (128.34 lb ft)	224 N·m (165.21 lb ft)	244 N·m (179.97 lb ft)	316 N·m (233.07 lb ft)	122 N·m (89.98 lb ft)	172 N·m (126.86 lb ft)
3/4	198 N·m (146.04 lb ft)	256 N·m (188.82 lb ft)	306 N·m (225.69 lb ft)	397 N·m (292.81 lb ft)	432 N·m (318.63 lb ft)	560 N·m (413.03 lb ft)	217 N·m (160.05 lb ft)	306 N·m (225.69 lb ft)
7/8	193 N·m (142.35 lb ft)	248 N·m (182.92 lb ft)	495 N·m (365.09 lb ft)	641 N·m (472.78 lb ft)	698 N·m (514.82 lb ft)	904 N·m (666.76 lb ft)	350 N·m (258.15 lb ft)	494 N·m (364.36 lb ft)
1	289 N·m (213.16 lb ft)	373 N·m (275.11 lb ft)	742 N·m (547.27 lb ft)	960 N·m (708.06 lb ft)	1048 N·m (772.97 lb ft)	1356 N·m (1000.13 lb ft)	523 N·m (385.74 lb ft)	739 N·m (545.06 lb ft)

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Engine - General specification

Engine data

Make and model	NEF 4 Emission Compliant Tier 4B Direct Injection – High Pressure Common rail system Turbocharged with aftercooler
Number of cylinders (firing order)	4 (1-3-4-2)
Bore	**104 mm** (**4.1 in**)
Stroke	**132 mm** (**5.2 in**)
Displacement	**4.5 l** (**274.6 in³**)
Compression ratio	17:1
Injection pressure pump type	**Bosch®** Cp 3.3
Revolution (from flywheel side)	Anti-clockwise

Power and torque

Data	Farmlift 633, Farmlift 737, Farmlift 935	Farmlift 636, Farmlift 742
Rated Power	**89 kW** (**121 Hp**) at **2200 RPM**	**96 kW** (**129 Hp**) at **2200 RPM**
Peak Power	**98 kW** (**133.2 Hp**) at **1800 RPM**	**107 kW** (**145.5 Hp**) at **1800 RPM**
Peak Torque	**549 N·m** (**404.9 lb ft**) at **1500 RPM**	**591 N·m** (**435.9 lb ft**) @ **1500 RPM**

Engine speeds

Rated speed - full load: **2200 RPM**
Low Idle speed at no load: **1000 – 1100 RPM**
High Idle speed at no load: **2280 – 2380 RPM** (LM6.32, LM7.35 and LM9.35)
High Idle speed at no load: **2450 – 2550 RPM** (LM6.35 and LM7.42)

Stall

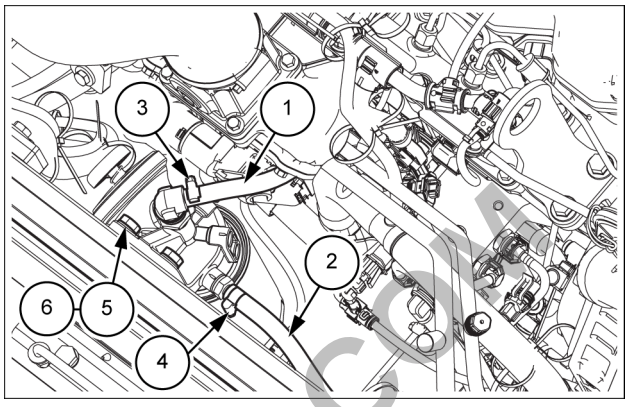
Data	Farmlift 633, Farmlift 737, Farmlift 935	Farmlift 636, Farmlift 742
Torque Converter Stall	**1950 – 2050 RPM**	**2100 – 2200 RPM**
Hydraulic Stall	**2200 – 2300 RPM**	**2300 – 2400 RPM**
Combined Stall	**1700 – 1800 RPM**	**1850 – 1950 RPM**

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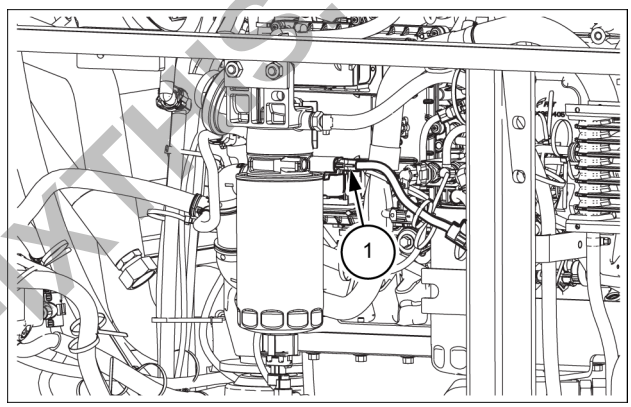
Pre-filter - Install

1. Install the fuel pre-filter to the lower hood frame using the two bolts **(5)** and related washers **(6)**.
   Tighten the two bolts **(5)** to **69.5 – 94.0 N·m** (**51.3 – 69.3 lb ft**).
2. Connect the fuel outlet hose **(1)** (pre-filter to engine) to the fuel pre-filter using the collar **(3)**.
   Tighten the collar **(3)** to **1.8 – 2.2 N·m** (**1.3 – 1.6 lb ft**).
3. Connect the fuel inlet hose **(2)** (tank to pre-filter) to the fuel pre-filter using the collar **(4)**.
   Tighten the collar **(4)** to **1.8 – 2.2 N·m** (**1.3 – 1.6 lb ft**).



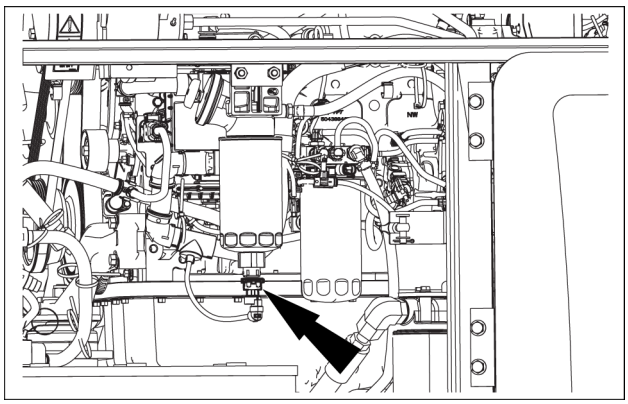
LEIL17TLH1306AB 1

4. If equipped with the cold starting device, connect the wire harness **(1)** of the cold starting to the fuel pre-filter.



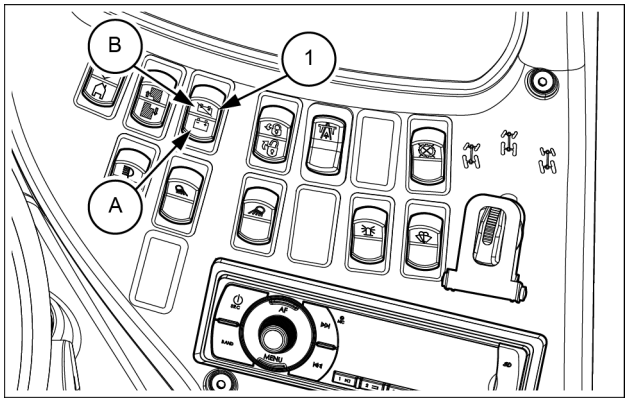
LEIL17TLH1305AB 2

5. Connect the engine wire harness to the bottom of the pre-filter.



LEIL17TLH0785AB 3

6. Fill the engine fuel system.
7. Press the battery isolator switch **(1)** in the lower position **(A)** to enable the battery.



LEIL17TLH1157AB 4

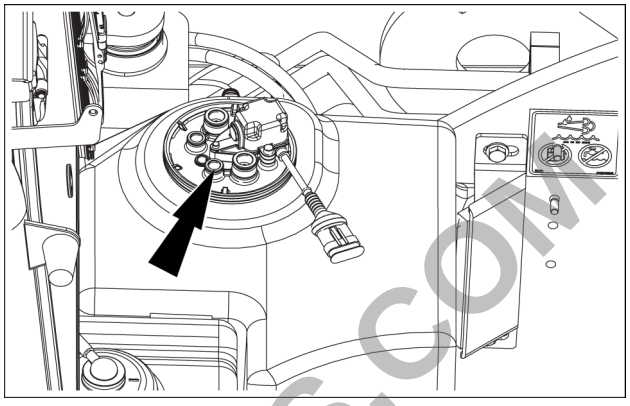
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Diesel Exhaust Fluid (DEF)/AdBlue®/ARLA filters - Install - In line filter

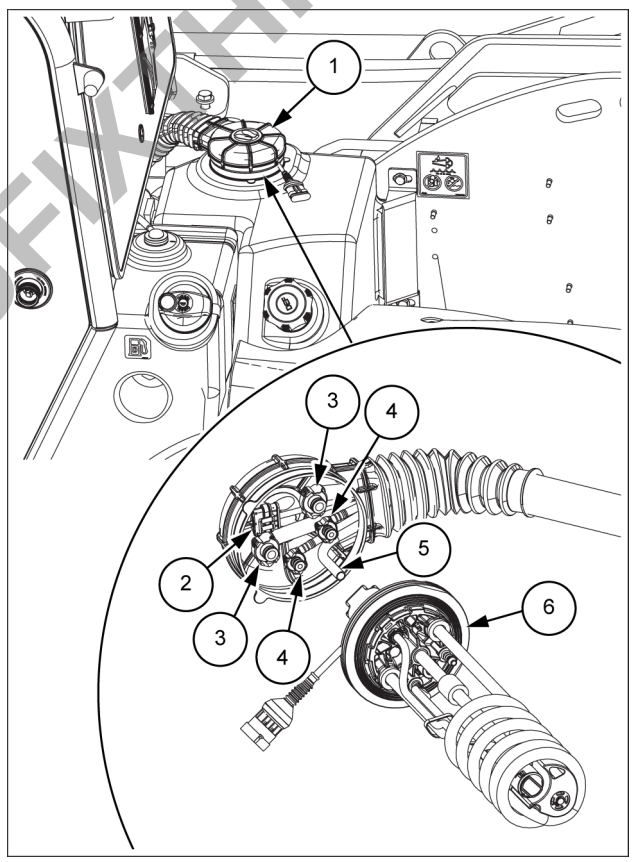
1. Install the **DEF/ADBLUE®** in-line filter into the **DEF/ADBLUE®** suction port of the **DEF/ADBLUE®** level/temperature sensor, pulling downwards the filter with a pair of flat pliers.

NOTE: *be careful not to damage or bend filter.*



LEIL17TLH0971AA 1

2. Remove the plugs from all the lines.
3. Connect the engine coolant inlet/outlet lines **(3)**, the **DEF/ADBLUE®** suction/return lines **(4)** and the purge line **(5)** to the **DEF/ADBLUE®** level/temperature sensor **(6)**. To connect, push connections together all the way, and then pull back to lock.
4. Connect the DENOX harness **(2)** to the **DEF/ADBLUE®** level/temperature sensor **(6)**.
5. Install the rubber boot cover **(1)** on the top of **DEF/ADBLUE®** supply tank around the liquid level/ temperature sensor sending unit area.



LEIL17TLH0966BB 2

6. Fill **DEF/ADBLUE®** storage tank and engine cooling system.

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Fan and drive - Install

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

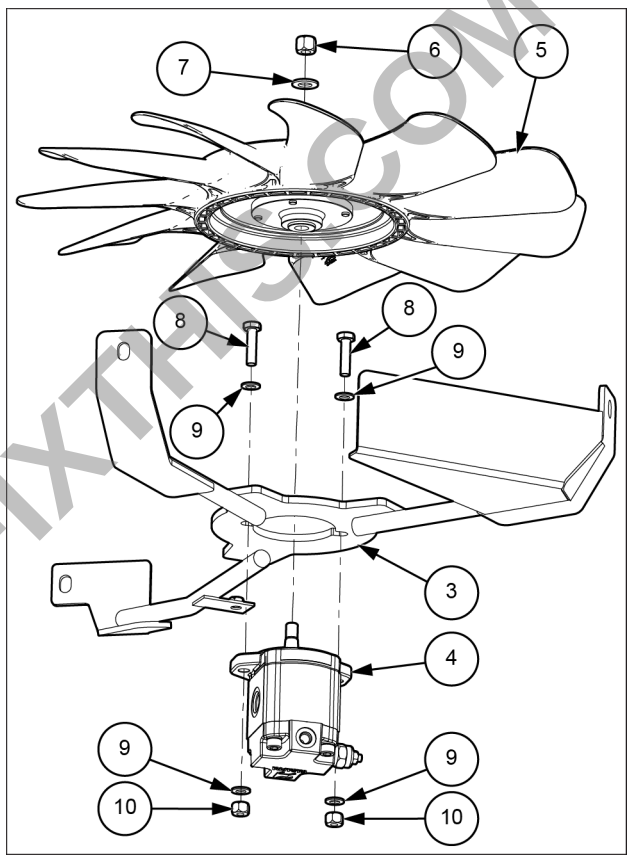
W0398A

1. Position the fan drive motor mount **(3)** on the fan drive motor **(4)**.

NOTE: *use e suitable lifting device to support properly the fan drive motor mount **(3)** and the fan drive motor **(4)**.*

2. Install the bolts **(8)**, the washers **(9)** and the nuts **(10)** to fix the fan drive motor **(4)**to the fan drive motor mount **(3)**.
   Tighten the bolts **(8)** to **69.5 – 94 N·m** (**51.3 – 69.3 lb ft**).
3. Position the fan **(5)** on the fan drive motor mount **(3)** and the fan drive motor **(4)** assembly.
4. Install the washer **(7)** and the nut **(6)** to fix the fan drive motor **(4)**to the fan **(5)**. Tighten the nut **(6)** to **67 – 74 N·m** (**49.4 – 54.6 lb ft**).

NOTE: *apply **LOCTITE® 243™** to the nut **(6)** during the installation.*

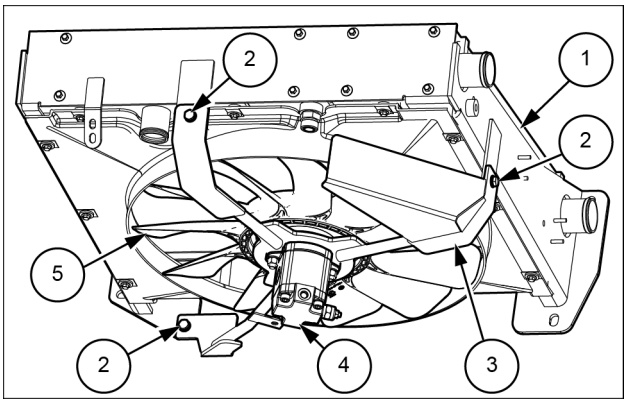


LEIL17TLH1295BB 1

5. Position the whole fan drive assembly in the main cooling package **(1)**

NOTE: *use e suitable lifting device to support properly the fan drive assembly and the main cooling package **(1)**.*

6. Install the three bolts **(2)** with the relevant washers to fix the fan drive motor mount **(3)** to the main cooling package.
   Tighten the bolts **(2)** to **69.5 – 94 N·m** (**51.3 – 69.3 lb ft**).



LEIL17TLH1294AB 2

Next operation:
Engine cooling system - Install - Main cooling package (10.400)
Engine hood - Install (90.105)

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Shifting logic and mode:
after start-up, the system wakes-up in MANUAL MODE, then the other mode could be selected.
Machine starts in 3rd speed.
MANUAL MODE: all gear speeds manually selected.
SEMI AUTO MODE: speeds from 1st to 3rd manually selected, when the 4th gear is selected the transmission shifts automatically between 4th and 6th up/down.
FULL AUTO MODE: when the 2nd gear is selected the transmission shifts automatically between 2nd and 6th up/down.
MANUAL, SEMI and FULL AUTO mode are commanded by a switch in the cab.

Powershift transmission - Torque

Adhesives and tightening torques

Apply the adhesives on the flat contact surfaces, on bolts thread or on curved surfaces of pins and bushes.

NOTE: *apply only on the indicated side.*

Gasket sealants

Reference	Brand and type	Technical characteristics	Strength
(A1)	**LOCTITE® 510™ SUPERBOND ® 529 ADHESIVE**	Flat surface sealing	High
(A2)	**LOCTITE® 573™ SUPERBOND ® 519 ADHESIVE**	Flat surface sealing	Low
(A3)	**LOCTITE® 518™**	Uneven surface sealing	High
(A4)	**LOCTITE® 5205**	Even surface sealing with possibility of micro movements	High
(A5)	**LOCTITE® 5188 FLANGE SEALANT**	Even and/or uneven surface sealing with possibility of micro movements	High

NOTE: (A3) *can be used instead of* ***(A1)****.*

NOTE: (A5) *can be used instead of* ***(A1), (A2), (A3), (A4)****.*

Thread parts adhesives

Reference	Brand and type	Technical characteristics	Strength
(B1)	**LOCTITE® 542™ SUPERBOND® 321 ADHESIVE**	Locking of threaded parts	Medium
(B2)	**LOCTITE® 270**	Locking of threaded parts	High
(B3)	**LOCTITE®** 986/AVX SUPERBOND® 438	Locking of threaded parts	High, special applications

Fixing parts adhesives

Reference	Brand and type	Technical characteristics	Strength
(C1)	**LOCTITE®** 402™ SUPERBOND® istant 25	Fixing adhesive	Medium bond
(C2)	**LOCTITE® 638™**	Fixing adhesive	Strong bond
(C3)	**LOCTITE® 542™ SUPERBOND® 321 ADHESIVE**	Fixing adhesive	Medium bond
(C4)	**LOCTITE® 496 INSTANT ADHESIVE** SUPERBOND® SB14	Rubber fixing adhesive	Strong bond

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Transmission control valve - Remove - Hydraulic control valve blocks

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

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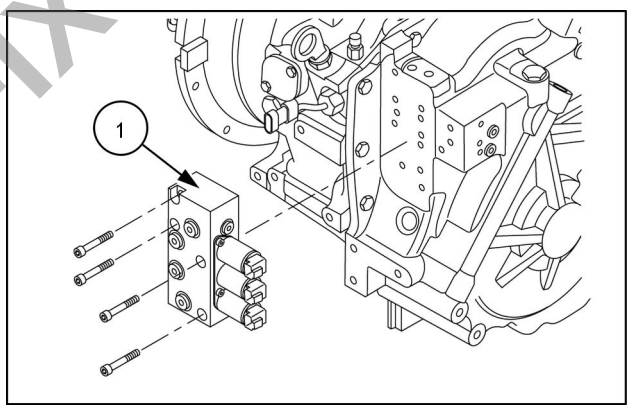
⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

W0371A

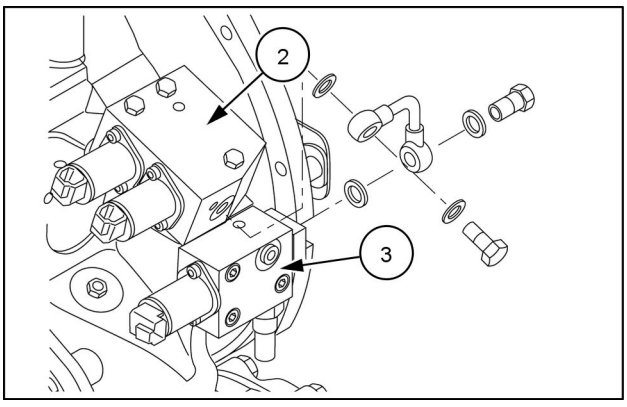
1. Drain oil from transmission.
   Install the transmission on the appropriate special stand.
2. Remove the fixing bolts and control valve unit **(1)** from the transmission.

NOTE: *remove only the elements that need to be replaced or overhauled. Replace damaged or worn O-ring.*



LEIL18TLH0254AA 1

3. Remove the link pipe to control valve blocks **(2)** and **(3)**.



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Transmission cooler - Install

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

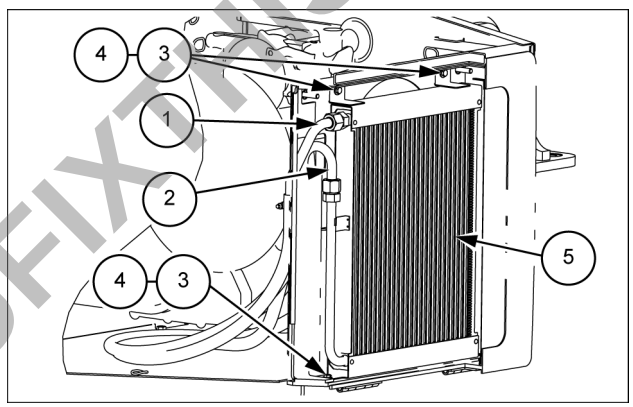
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⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals. Failure to comply could result in death or serious injury.

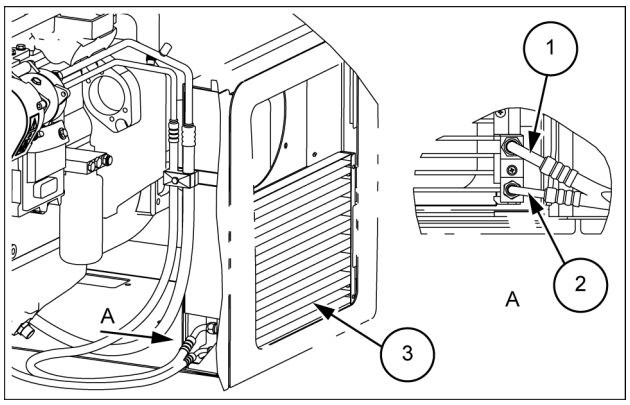
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1. Tilt the radiators panel to access the front of the transmission cooler frame.
2. Install the transmission cooler **(5)** to the frame by means of the three bolts **(3)** with related washers **(4)**. Tighten the bolts **(3)** to **24.5 – 33.2 N·m** (**18.1 – 24.5 lb ft**).
3. Connect the pipes **(1)** and **(2)** to the transmission cooler **(5)**. Tighten the pipes **(1)** and **(2)** to **82 – 89 N·m** (**60.5 – 65.6 lb ft**).



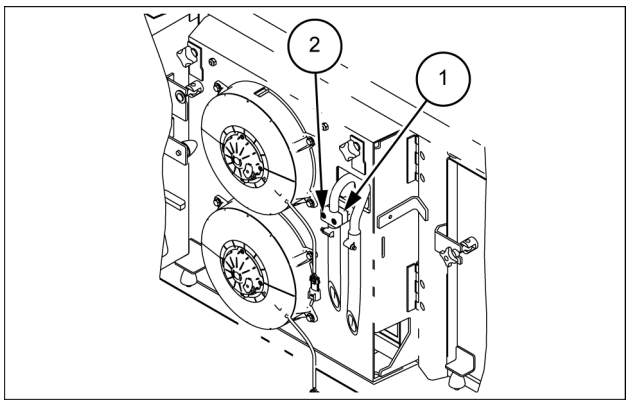
LEIL18TLH0982AB 1

4. Open the battery panel to access the side of the transmission cooler frame.
5. Connect the hoses **(1)** and **(2)** to the air conditioning condenser. Tighten the hose **(1)** to **32.5 – 39.3 N·m** (**24.0 – 29.0 lb ft**). Tighten the hose **(2)** to **13.6 – 20.3 N·m** (**10.0 – 15.0 lb ft**).
6. Recharge the air conditioning system with refrigerant to the required amount. Refer to **Air conditioning - Charging (50.200)**.



LEIL18TLH0980AB 2

7. Install the clamp **(1)** on the transmission oil line. Install the two screws **(2)** to secure the clamp **(1)** to the transmission cooler frame. Tighten the screws **(2)** to **14.5 – 19.6 N·m** (**10.7 – 14.5 lb ft**).



LEIL18TLH0981AB 3

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MANUFACTURING / MAINTENANCE DATA	
Tube dimensions: Diameter Thickness	 **89 mm** (**3.5 in**) **2.5 mm** (**0.1 in**)
Tube length	**1067 mm** (**42.0 in**)
Spider dimension: Diameter (D) Length (L) Thickness (S)	 **35 mm** (**1.4 in**) **106.3 mm** (**4.2 in**) N/A
Spider maintenance	Free of maintenance
Sleeve Joint (spline) Maintenance	Every **500 h**
Grease description: Thickener type Dropping point Worked penetration [mm/10] NLGI-grade	 Lithium-complex soap grease >230°C (DIN ISO 2176) 300–320 (DIN ISO 2137) 1/2 (DIN 51818)
Spline size and Standard	**39.6 mm** (**1.6 in**) - 16 tooth parallel spline
Slip Joint Stroke	**62 mm** (**2.4 in**)
Spline Coating Type	Nylon
Shaft Assembly Weight	**13.4 kg** (**29.5 lb**)
Critical speed	**5448 RPM** (at 70%)
Static Test: Torque	**4474 N·m** (**3299.9 lb ft**)
Fatigue Test: Pulsating Torque [Nm]/Cycles	**–2710 – +2710 N·m** (**–1998.8 – +1998.8 lb ft**) for 500000 cycles minimum
Durability Test : Torque RPM degree/Hours	**2300 N·m** (**1696.4 lb ft**) at **170 RPM** for **5138 h** **2455 N·m** (**1810.7 lb ft**) at **220 RPM** at **0.5°** articulation angle for **3291 h**

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Technical data and dimensions

Model	26.28M HD
Differential Type	Limited slip

Dry weight	approximately **506 kg**
Adjustment steering angle	min. **38°** max. **40°**
Flange to flange distance	**1920 mm** (**75.6 in**)
Toe-in	**1918 – 1920 mm** (**75.5 – 75.6 in**)
Bevel gear ratio	2.909/1
Epicyclic reduction gear ratio	6.000/1
Total ratio	17.454/1
Input/output rotation	Counterclockwise
Parking brake	SAHR (Spring Applied Hydraulic Release)

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°**)	Fp= **92.0 – 137.9 mm** (**3.6 – 5.4 in**)
Total preloading (1) of pinion-ring gear bearings (measured on Ø= **34.8°**)	Ft= (Fp+26.4)÷(Fp+39.6) N
Pinion bearings rolling torque (1) measured without seal	Mp= **1.6 – 2.4 mm** (**0.1 – 0.1 in**)
Total pinion-ring gear bearing rolling torque (1)	Mt= (Mp+0.46)÷(Mp+0.69) Nm

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

Service brake data

Brake discs for each side	3
Maximum braking torque at wheels	**29527 N·m** (**21778 lb ft**)
Maximum operating pressure	**80 bar** (**1160 psi**)
Oil displacement for brake actuation	**8 + 8 cm³**
Operating temperature	**-20 – +150 °C** (**-4 – +302 °F**)

Parking brake data

Maximum braking torque at wheels	**20100 N·m** (**14825 lb ft**)
Disengagement pressure	**18 – 30 bar** (**261 – 435 psi**)
Oil displacement for brake actuation	**250 cm³**

Steering sensor

Refer to **Wheel angle sensor - General specification (55.047)** for the technical data of the steering sensor.

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Technical data and dimensions

MODEL	26.28M HD
DIFFERENTIAL TYPE	Limited slip

DESCRIPTION	VALUES
Dry weight	**477 kg**
Adjustment steering angle	min. 38° max. 40°
Flange to flange distance	**1920 mm** (**75.6 in**)
Toe-in	**1919 – 1921 mm** (**75.6 – 75.6 in**)
Bevel gear ratio	2.909/1
Epicyclic reduction gear ratio	6.000/1
Total ratio	17.454/1
Input 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)	$F_T = (F_P+26.4)\div(F_P+39.6)$ 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)	$M_T = (M_P+0.46)\div(M_P+0.69)$ Nm

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

Service brake data

Brake discs 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**)

Steering sensor

Refer to **Wheel angle sensor - General specification (55.047)** for the technical data of the steering sensor.

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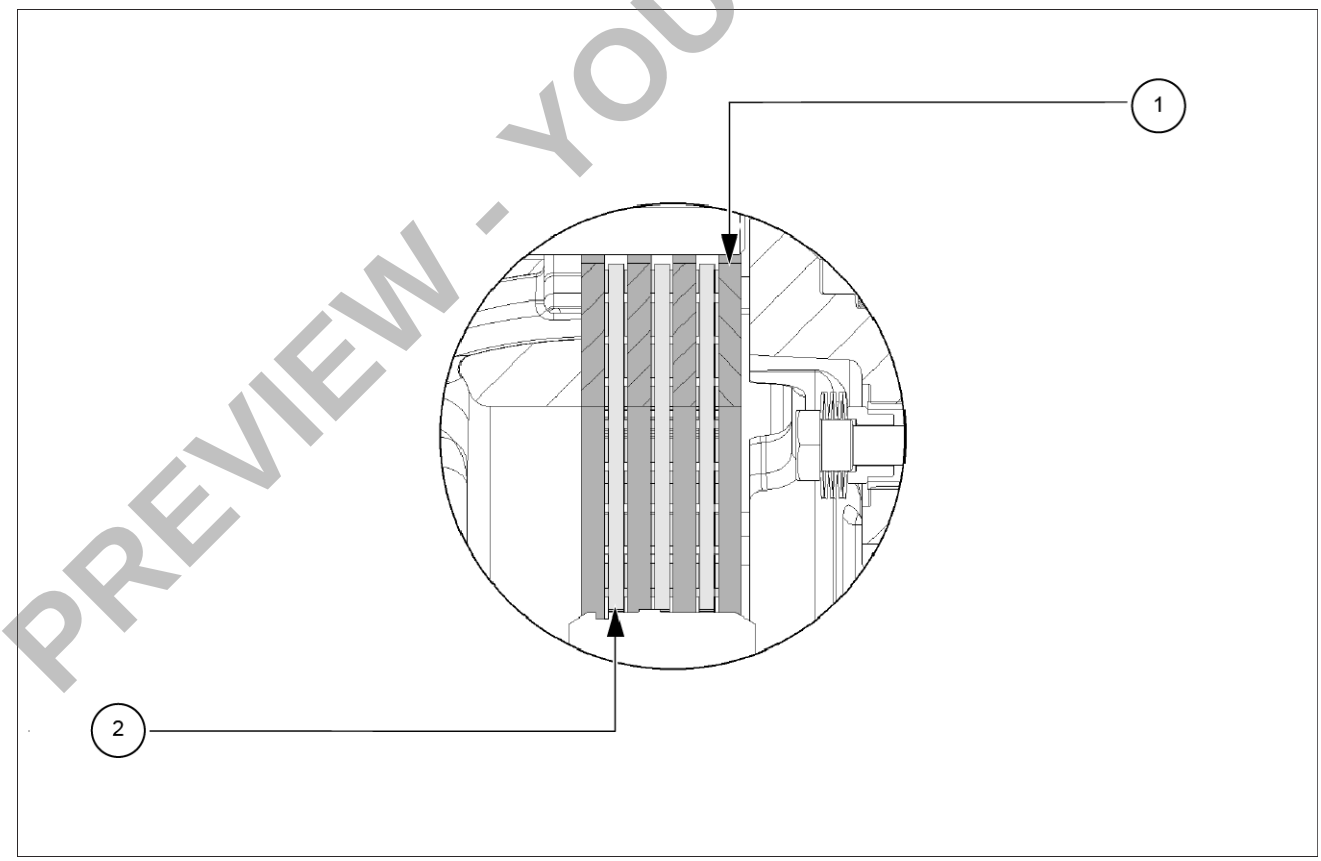
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Brake discs - General specification

Service brake typical data

Brake type	Wet discs brake		
Brake actuation	Hydraulic		
Brake operating temperature	**-20 – 150 °C** (**-4 – 302 °F**)		
Storage temperature	**-40 – 45 °C** (**-40 – 113 °F**)		
Maximum operating pressure	**44 bar** (**638 psi**)		
Oil specification for brake actuation	Mineral oil		
Oil displacement for actuation (each side)	**16 cm³**		
Discs/counter discs for each group brake/axle side			
FRONT Axles	Pieces	Thickness	Minimum thickness
Discs **(2)** quantity	3	**4.75 – 4.85 mm** (**0.19 – 0.19 in**)	4.0 mm
Counter discs **(1)** quantity	4	**4.92 – 5.08 mm** (**0.19 – 0.20 in**)	–
REAR Axles	Pieces		
Discs **(2)** quantity	2	**4.75 – 4.85 mm** (**0.19 – 0.19 in**)	4.0 mm
Counter discs **(1)** quantity	3	**4.92 – 5.08 mm** (**0.19 – 0.20 in**)	–

Brake discs specifications (one set for each side)

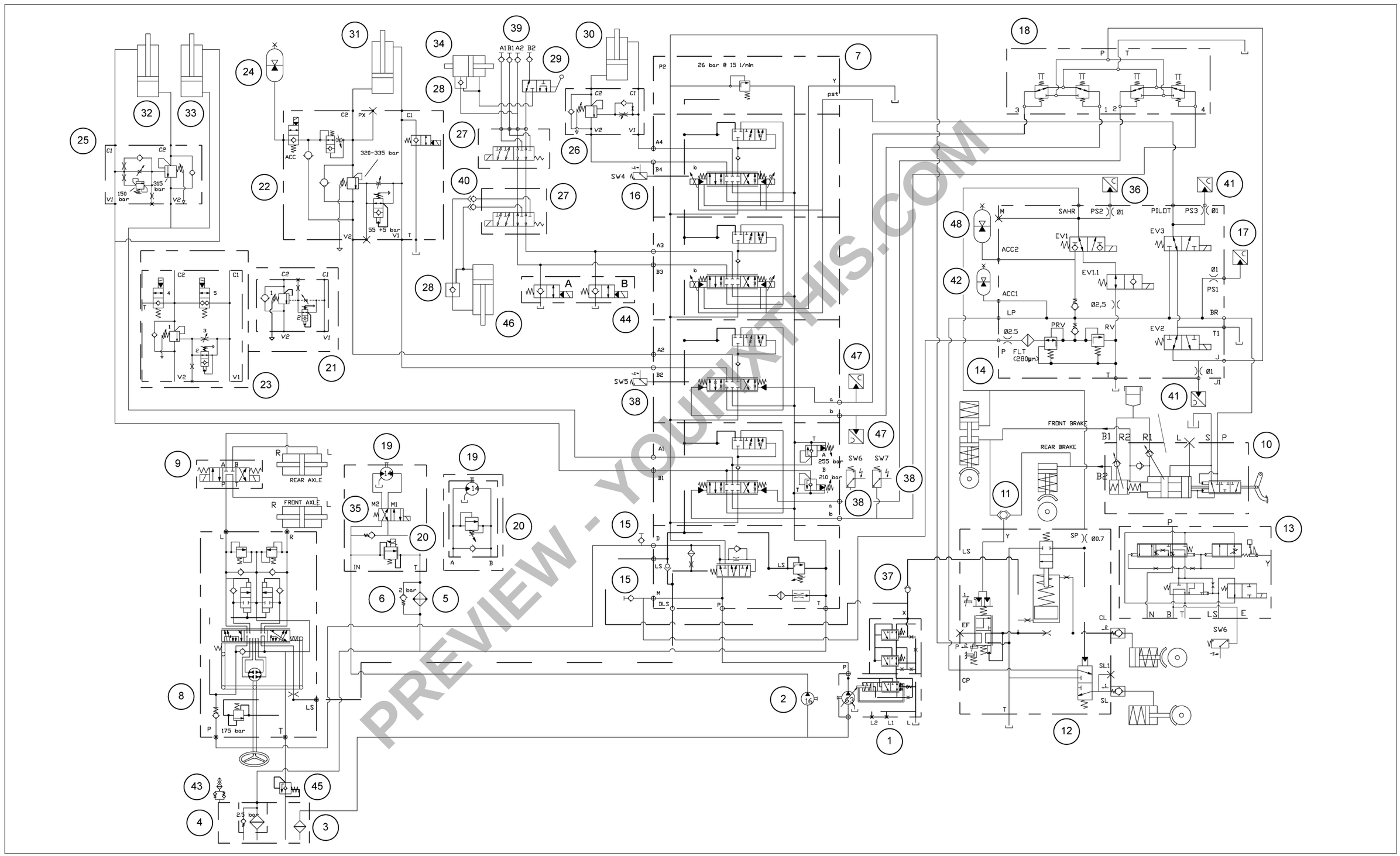


LEIL13TLH0617FB 1

1. New counter disc thickness = **4.92 – 5.08 mm** (**0.19 – 0.20 in**)

2. New friction disc thickness = **4.75 – 5.08 mm** (**0.19 – 0.20 in**)
Worn disc minimum thickness = **4.0 mm** (**0.2 in**)

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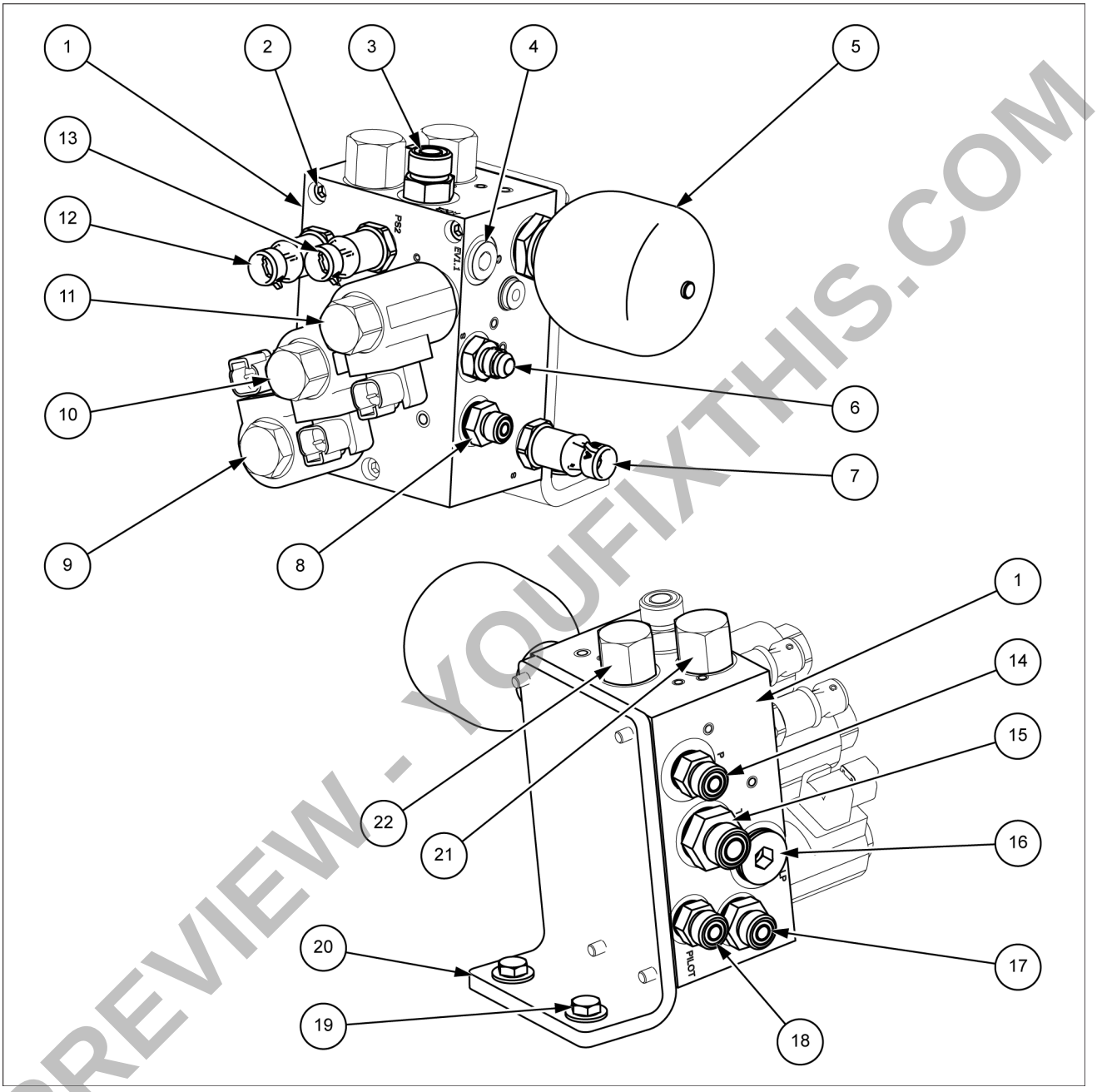


LEIL17TLH0837JB 1

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Pilot control manifold - Component identification

FARMLIFT 636 STAGE IV 6 m (19.7 ft), 107 kW (145 Hp) [FNHZK634NJKE00001 -]	WE
FARMLIFT 742 STAGE IV 7 m (22.9 ft), 107 kW (145 Hp) [FNHZK742NJKE00001 -]	WE



LEIL17TLH1071GB 1

Item	Description	Tightening torque
1	Pilot control manifold	-
2	Screw (quantity 4)	**10.1 – 13.6 N·m** (**7.449 – 10.031 lb ft**)
3	ACC2 port fitting - Additional accumulator	**80.1 – 97.9 N·m** (**59.079 – 72.207 lb ft**)
4	M port plug	-
5	ACC1 port - Accumulator	**80.1 – 97.9 N·m** (**59.079 – 72.207 lb ft**)
6	SHAR port fitting - To parking brake	**33.3 – 40.7 N·m** (**24.561 – 30.019 lb ft**)
7	PS1 port - Brake booster pressure sensor	**42.3 – 51.7 N·m** (**31.199 – 38.132 lb ft**)
8	BR port fitting - From brake master cylinder	**42.3 – 51.7 N·m** (**31.199 – 38.132 lb ft**)
9	EV3 - Pilot ON/OFF solenoid valve	**31 – 37 N·m** (**22.9 – 27.3 lb ft**)
10	EV1 - Parking brake ON/OFF solenoid valve	**31 – 37 N·m** (**22.9 – 27.3 lb ft**)

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Ride control lines - Component localization

FARMLIFT 633 STAGE IV 6 m (19.7 ft), 99 kW (133 Hp) [FNHZP633NJKE00001 -]	WE
FARMLIFT 737 STAGE IV 7 m (22.9 ft), 99 kW (133 Hp) [FNHZP737NJKE00001 -]	WE
FARMLIFT 935 STAGE IV 9 m (29.5 ft), 99 kW (133 Hp) [FNHZP935NJKE00001 -]	WE

Item	Description	Tightening torque
1	Ride control valve	–
2	Hexagon socket screw M8x1.25x50 (quantity 4)	**35.1 – 47.5 N·m** (**25.9 – 35.0 lb ft**)
3	Bracket	–
4	Accumulator	–
5	45 ORS/SAE O-ring boss adapter	**80.1 – 97.9 N·m** (**59.08 – 72.21 lb ft**)
6	Ride control hydraulic hose	**58.5 – 71.5 N·m** (**43.15 – 52.74 lb ft**)
7	Connector STR 1–3/16–12 ORFS - M22x1.5	**142.2 – 173.8 N·m** (**104.88 – 128.19 lb ft**)
8	Fitting	**94.5 – 115.5 N·m** (**69.70 – 85.19 lb ft**)
9	Connector STR 13/16-16 ORFS - M16x1.5	**52.2 – 63.8 N·m** (**38.50 – 47.06 lb ft**)
10	Elbow, 90 ADJ - 8 ORFSxM16x1.5 ORB	**31.5 – 38.5 N·m** (**23.23 – 28.40 lb ft**)
11	“T” port hose (ride control hydraulic hose)	**58.5 – 71.5 N·m** (**43.15 – 52.74 lb ft**)
12	Washer, 10.2x25x3 mm	–
13	Bolt **M10 x 25**	**69.5 – 94 N·m** (**51.26 – 69.3 lb ft**)
14	Bolt M10x55	**48.7 – 65.9 N·m** (**35.9 – 48.6 lb ft**)
15	Fitting	**42.3 – 51.7 N·m** (**31.20 – 38.13 lb ft**)
16	Automatic pressure switch **5 bar** (**72.5 psi**)	**15 – 20 N·m** (**11.06 – 14.75 lb ft**)
17	Sensor	**20 – 25 N·m** (**14.8 – 18.4 lb ft**)
18	Bracket	–
19	Bracket	–
20	Washer 6.15x16x2 mm	–
21	Nut M6	**3.2 – 3.6 N·m** (**2.36 – 2.66 lb ft**)
22	Cable tie 277 mm	–
23	Bracket	–
24	Washer, 9x16x1.6 mm	–
25	Bolt **M8 x 25**	**35.1 – 47.5 N·m** (**25.89 – 35.03 lb ft**)
26	Hydraulic system warning decal	–
27	Proximity switch (2 channel output)	**20 – 25 N·m** (**14.8 – 18.4 lb ft**)
28	Return manifold	–

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Hydraulic steering system - Component identification

Steering piping

Item	Description	Tighten Torque
1	Hydraulic hose, power steering control valve Port T - Tank (return manifold)	**58.5 – 71.5 N·m** (**43.1 – 52.7 lb ft**)
2	Hydraulic hose, power steering control valve Port P - Main valve Port D	**58.5 – 71.5 N·m** (**43.1 – 52.7 lb ft**)
3	Hydraulic hose, power steering control valve Port LS - Main valve Port DLS	**24.3 – 29.7 N·m** (**17.9 – 21.9 lb ft**) (Port LS side); **39.6 – 48.4 N·m** (**29.2 – 35.7 lb ft**) (Port DLS side)
4	Hydraulic hose, power steering control valve Port R - Front axle	**58.5 – 71.5 N·m** (**43.1 – 52.7 lb ft**)
5	Hydraulic hose, power steering control valve Port L - Steering valve Port P	**58.5 – 71.5 N·m** (**43.1 – 52.7 lb ft**) (Port L side); **39.6 – 48.4 N·m** (**29.2 – 35.7 lb ft**) (Port P side)
6	Hydraulic hose, steering valve Port T - Front axle	**58.5 – 71.5 N·m** (**43.1 – 52.7 lb ft**) (Front axle side); **39.6 – 48.4 N·m** (**29.2 – 35.7 lb ft**) (Port T side)
7	Hydraulic hose, steering valve Port A - Rear axle	**39.6 – 48.4 N·m** (**29.2 – 35.7 lb ft**)
8	Elbow 45 ADJ 12 mm ORFS - ORB M18	**66.6 – 81.4 N·m** (**49.1 – 60.0 lb ft**)
9	Elbow 90 ADJ 10 mm ORFS - ORB M18	**66.6 – 81.4 N·m** (**49.1 – 60.0 lb ft**)
10	Straight connector	**66.6 – 81.4 N·m** (**49.1 – 60.0 lb ft**)
11	Hydraulic hose, steering valve Port B - Rear axle	**39.6 – 48.4 N·m** (**29.2 – 35.7 lb ft**)
12	Bracket	**69.5 – 94.0 N·m** (**51.3 – 69.3 lb ft**)
13	Clamp	
14	Washer 11x20x2	
15	Bolt M10x25	**69.5 – 94 N·m** (**51.3 – 69.3 lb ft**)
16	Washer 13x20x2.5	
17	Bolt M12x16	**69.5 – 94 N·m** (**51.3 – 69.3 lb ft**)
18	Nut M10	

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Air conditioning - Dynamic description

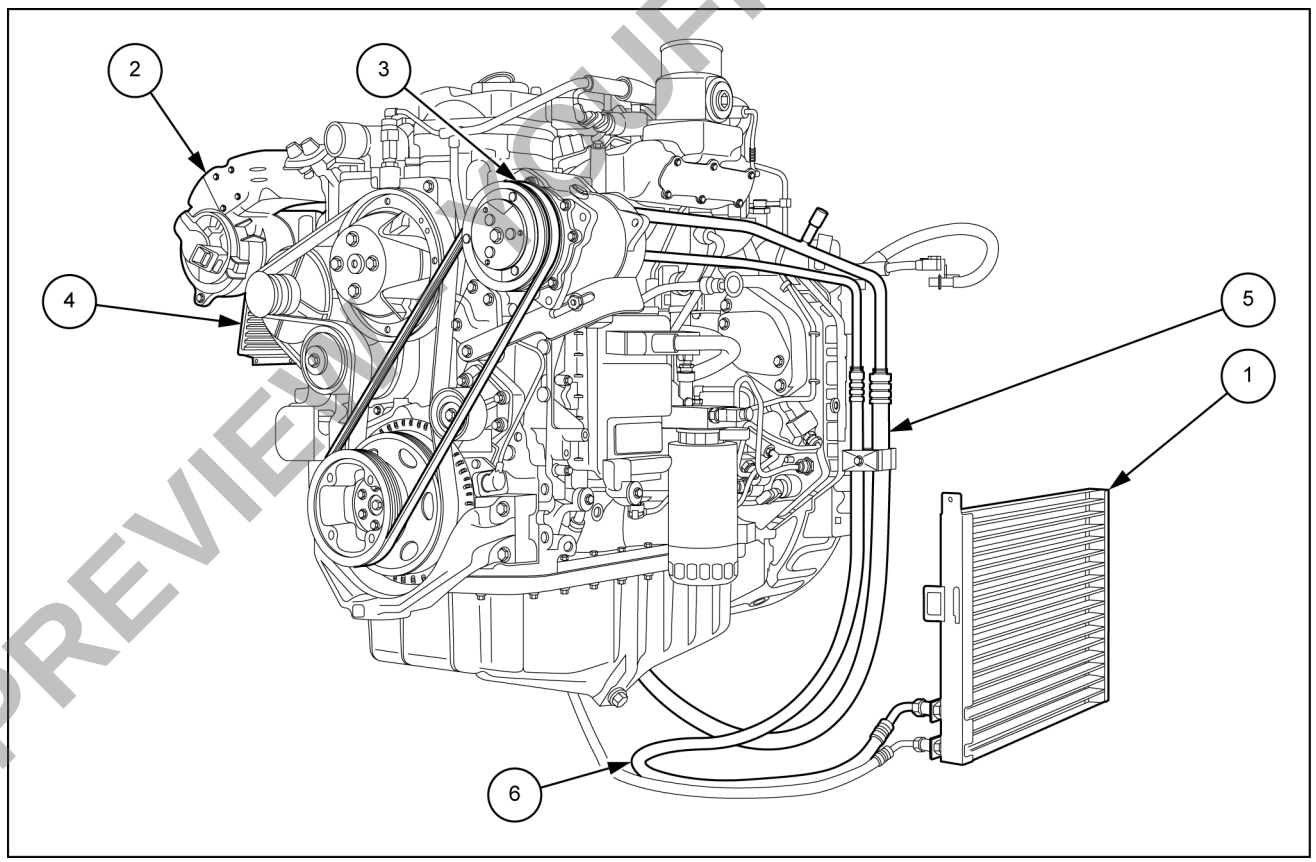
Operation

The operating principle with temperatures and pressures depending on the outside temperature is basically as follows: **R134A** refrigerant fluid, in the gaseous state, is drawn into the compressor **(3)** at a pressure of **0.5 – 2 bar** (**7.2 – 29 psi**) and compressed further to a pressure of between **16 – 25 bar** (**232 – 363 psi**). The fluid is heated by the force of compression to a temperature of between **89 – 100 °C** (**192 – 212 °F**). Still as a gas, it is directed into the condensing unit **(1)**, cooled in a stream of air generated by the fan and brought to the point of condensation, passing to the liquid state at high pressure. This action cools the refrigerant to the point of condensation between **40 – 60 °C** (**104 – 140 °F**) depending on the outside temperature, changing the vapourinto liquid.

Thereafter, the liquid refrigerant enters receiver-dryer **(8)**, essentially a filter that serves to remove any moisture and solids from the flow. The filtered liquid reaches the thermostatic expansion valve, of which the function is to regulate the flow of refrigerant through the evaporator **(10)** to a pressure of **0.5 – 2 bar** (**7.2 – 29 psi**), causing it to change state again from liquid back to gas. At the same time, air is directed through the evaporator by the fan at a temperature higher than that of the refrigerant in the evaporator core, causing the liquid to boil and vaporize completely, so that heat is given off.

The air is cooled, depositing particles of moisture on the fins of the evaporator in the form of tiny droplets, which drop into collection tanks and are drained away externally of the cab.

The cooled and dehumidified air is ducted into the cab. On leaving the evaporator, the refrigerant is again drawn into the compressor, and a new cycle begins.

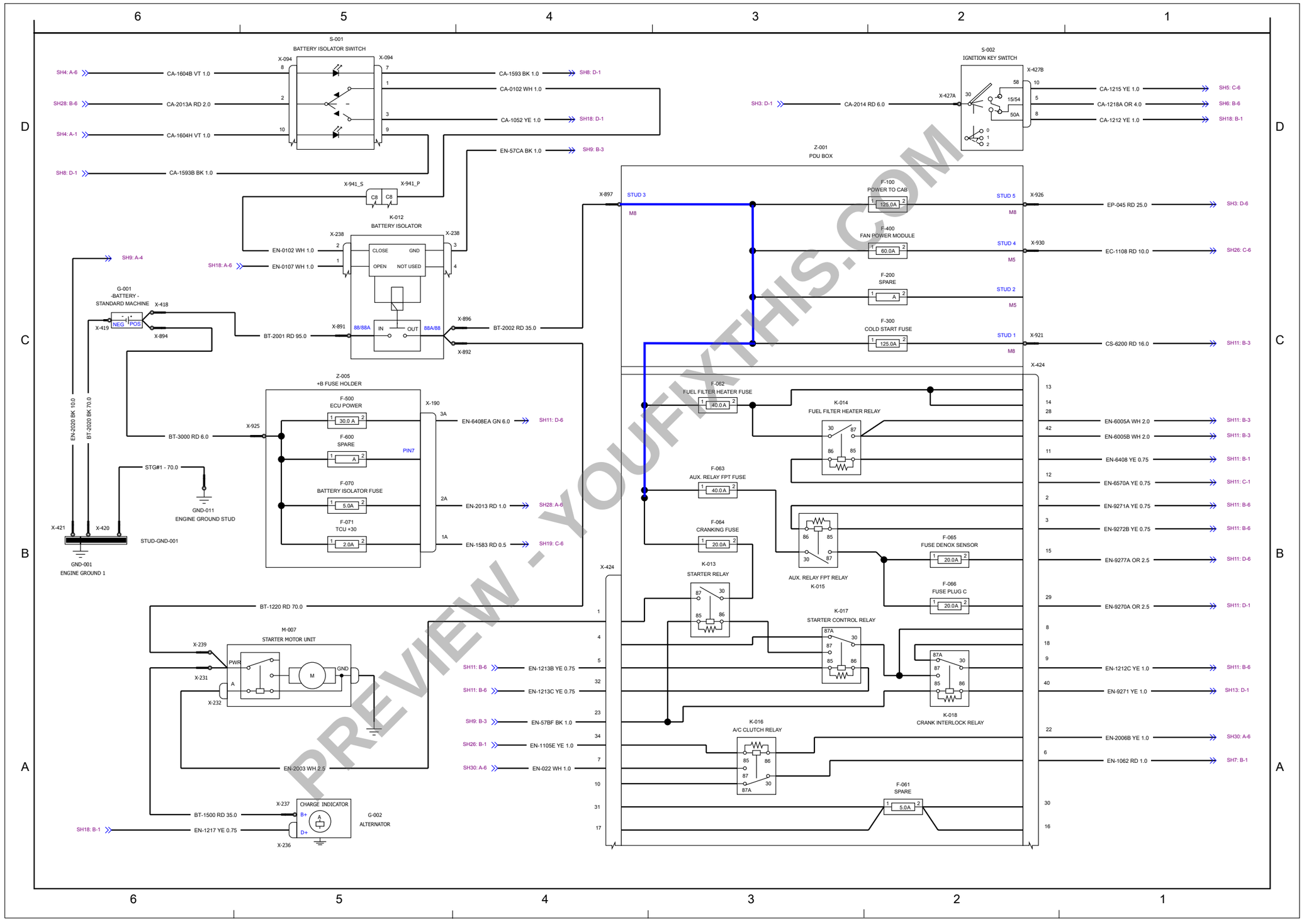


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1. Condenser unit
2. Air conditioning unit
3. Compressor
4. Filter
5. Hose
6. Hose

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Battery - Install

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Before working on any component(s) of the electrical circuit, put the starter switch key in the off (shut down) position. When disconnecting batteries, always disconnect the negative (-) cable first. When reconnecting batteries, always connect the negative (-) cable last.
Failure to comply could result in death or serious injury.

W0264A

⚠ WARNING

Electrical shock hazard!
Do not reverse battery terminals. Connect positive cable ends to positive terminals (+) and negative cable ends to negative terminals (-).
Failure to comply could result in death or serious injury.

W0262A

⚠ WARNING

Hazardous chemicals!
Battery electrolyte contains sulfuric acid. Contact with skin and eyes could result in severe irritation and burns. Always wear splash-proof goggles and protective clothing (gloves and aprons). Wash hands after handling.
Failure to comply could result in death or serious injury.

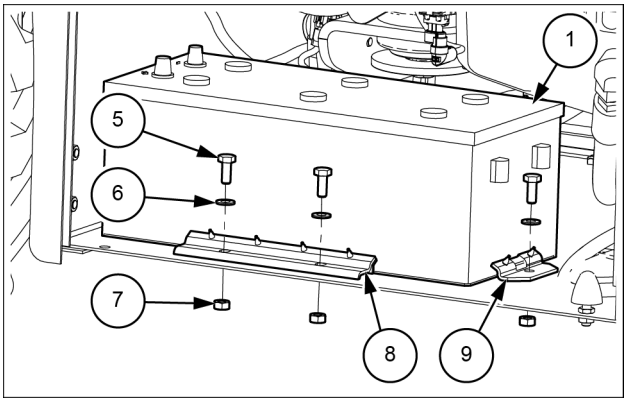
W0006A

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
Failure to comply could result in death or serious injury.

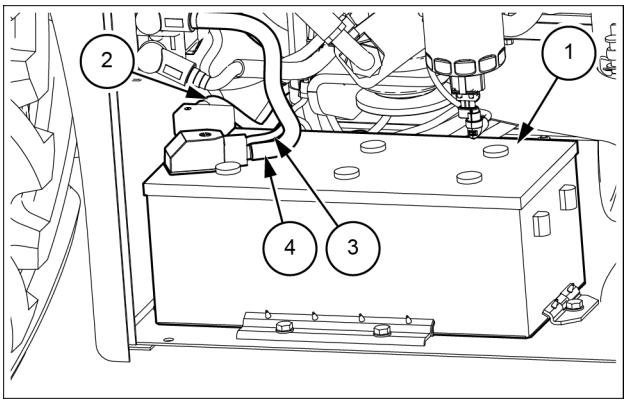
W0398A

1. Position the battery **(1)** with the bracket **(8)** and the plate **(9)** on the lower plane of the lower hood.
2. Install the three bolts **(5)** with the washers **(6)** and the nuts **(7)** to fix the bracket **(8)**, the plate **(9)** and the battery **(1)** to the lower hood.
3. Tighten the bolts **(5)** to **61 – 83 N·m** (**45 – 61.2 lb ft**).



LEIL17TLH1297AB 1

4. Connect the positive battery cable **(3)** and the battery disconnect relay cable **(4)** to the battery **(1)** positive terminal.
5. Connect the ground cable **(2)** to the battery **(1)** negative terminal.



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APPROACH A - Calibration table

Reach and telescope extension values for Point #3

CNH and Manitou carriers	Model	Load Q	80% ROLL OVER RISK	
			Reach $d_{80\%}$	Telescope Extension A2 (*)
749009111 CNH mechanical style carrier 406002011 CNH mechanical style carrier 749046091 Manitou mechanical carrier 406003011 Manitou mechanical carrier 749124101 CNH hydraulic style carrier 749124111 CNH hydraulic style carrier 406004011 CNH hydraulic style carrier 749148111 Hydraulic Manitou carrier 749148121 Hydraulic Manitou carrier 406005011 Hydraulic Manitou carrier	TH6.32	**3000 kg** (**6613.9 lb**)	**173 cm** (**68.1 in**)	**71 cm** (**28.0 in**)
	TH6.36		**208 cm** (**81.9 in**)	**106 cm** (**41.7 in**)
	TH7.32		**203 cm** (**79.9 in**)	**76 cm** (**29.9 in**)
	TH7.37		**217 cm** (**85.4 in**)	**90 cm** (**35.4 in**)
	TH7.42		**242 cm** (**95.3 in**)	**115 cm** (**45.3 in**)
	TH9.35		**247 cm** (**97.2 in**)	**49 cm** (**19.3 in**) (**)

JCB and Matbro carriers	Model	Load Q	80% ROLL OVER RISK	
			Reach $d_{80\%}$	Telescope Extension A2 (*)
749483001 JCB carrier with hydraulic lock 749483011 JCB carrier with hydraulic lock 406006001 JCB carrier with hydraulic lock 749485001 Matbro carrier with hydraulic lock 749485011 Matbro carrier with hydraulic lock 406007001 Matbro carrier with hydraulic lock	TH6.32	**3000 kg** (**6613.9 lb**)	**158 cm** (**62.2 in**)	**71 cm** (**28.0 in**)
	TH6.36		**192 cm** (**75.6 in**)	**106 cm** (**41.7 in**)
	TH7.32		**196 cm** (**77.2 in**)	**84 cm** (**33.1 in**)
	TH7.37		**206 cm** (**81.1 in**)	**94 cm** (**37 in**)
	TH7.42		**228 cm** (**89.8 in**)	**115 cm** (**45.3 in**)
	TH9.35		**242 cm** (**95.3 in**)	**53 cm** (**20.9 in**) (**)

(*) refer to figure **7** and figure **8** for distance measurement

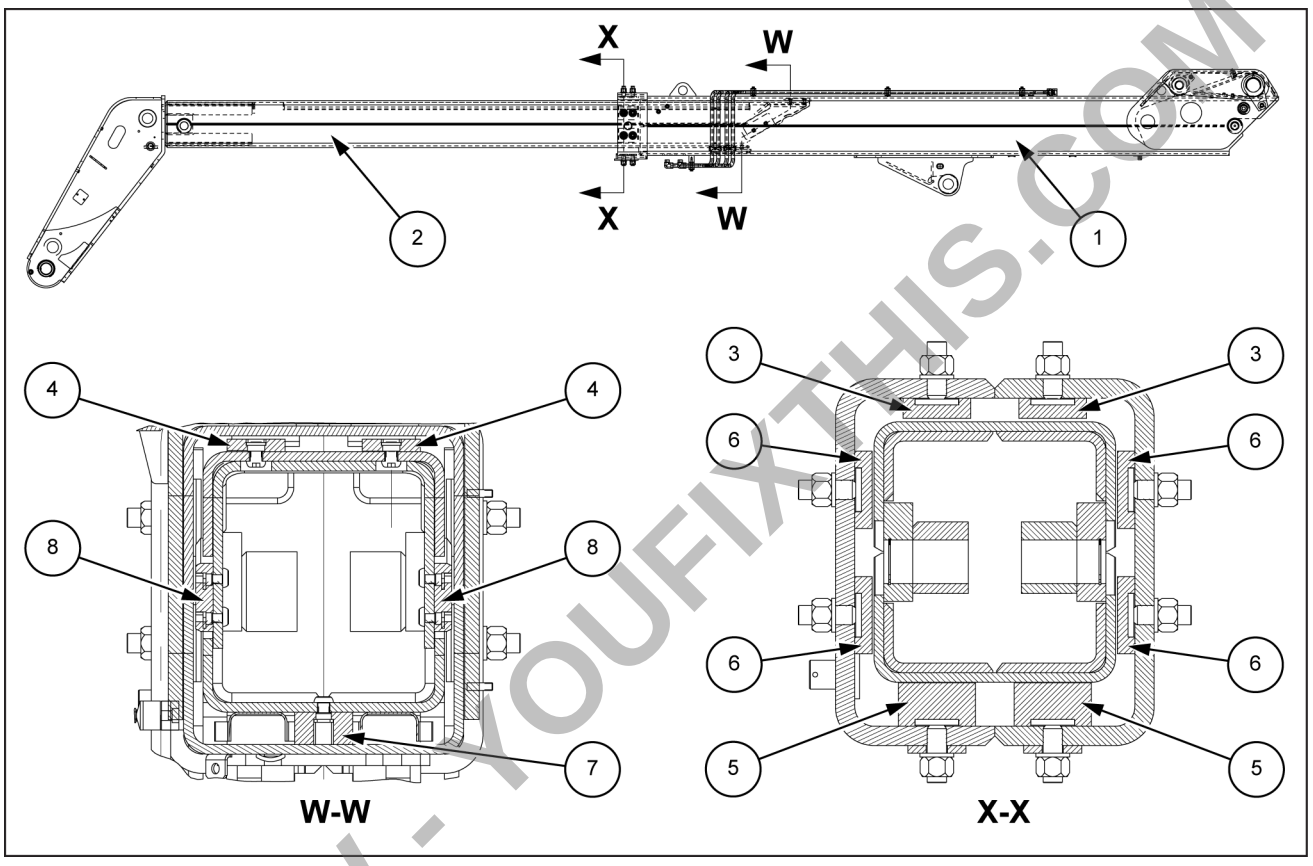
(**) telescope cylinder displacement (double for arm)

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Telescopic arm - Overhaul - Boom pads

FARMLIFT 633 STAGE IV 6 m (19.7 ft), 99 kW (133 Hp) [FNHZP633NJKE00001 -]	WE
FARMLIFT 636 STAGE IV 6 m (19.7 ft), 107 kW (145 Hp) [FNHZK634NJKE00001 -]	WE
FARMLIFT 737 STAGE IV 7 m (22.9 ft), 99 kW (133 Hp) [FNHZP737NJKE00001 -]	WE
FARMLIFT 742 STAGE IV 7 m (22.9 ft), 107 kW (145 Hp) [FNHZK742NJKE00001 -]	WE



LEIL17TLH1095FB 1

Composition of pads on boom first section **(1)**:
3. Upper front pad
5. Lower front pad
6. Side front pad

Tightening torque:
255 – 345 N·m (**188.1 – 254.5 lb ft**) on lock nut only
255 – 345 N·m (**188.1 – 254.5 lb ft**) on lock nut only
255 – 345 N·m (**188.1 – 254.5 lb ft**) on lock nut only

Composition of pads on boom second section **(2)**:
4. Upper rear pad **(*)**
7. Lower rear pad **(*)**
8. Side rear pad **(*)**

Tightening torque:
85 – 115 N·m (**62.7 – 84.8 lb ft**)
85 – 115 N·m (**62.7 – 84.8 lb ft**)
85 – 115 N·m (**62.7 – 84.8 lb ft**)

(*) Before the installation, apply **LOCTITE® 243™** on the threaded portion of the screws.

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Cab - Remove

FARMLIFT 636 STAGE IV 6 m (19.7 ft), 107 kW (145 Hp) [FNHZK634NJKE00001 -]	WE
FARMLIFT 742 STAGE IV 7 m (22.9 ft), 107 kW (145 Hp) [FNHZK742NJKE00001 -]	WE

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply could result in death or serious injury.

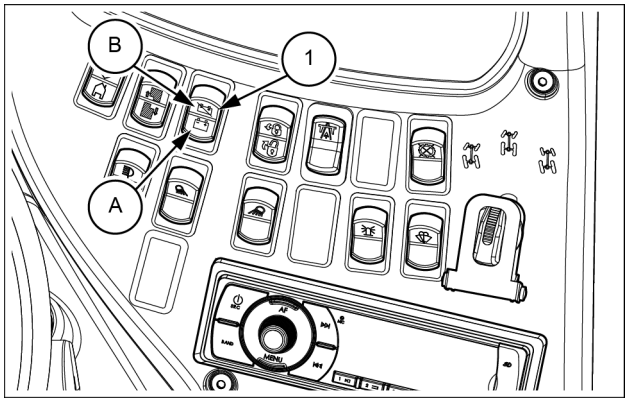
W0398A

⚠ WARNING

Chemical hazard!
When handling fuel, lubricants, and other service chemicals, follow the manufacturer's instructions. Wear Personal Protective Equipment (PPE) as instructed. Do not smoke or use open flame. Collect fluids in proper containers. Obey all local and environmental regulations when disposing of chemicals.
Failure to comply could result in death or serious injury.

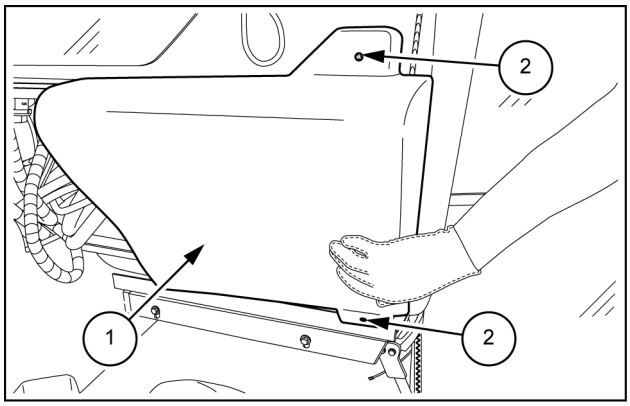
W0371A

1. Park the machine on level ground in neutral, with the parking brake applied and the boom completely raised. Lock the boom with the safety device.
2. Turn the engine OFF.
3. Press the battery isolator switch **(1)** in the upper position **(B)** to disable the battery.



LEIL17TLH1157AB 1

4. Move the joystick in all directions to release the hydraulic pressure.
5. Remove the two retaining screws **(2)**. Remove the filter protective cover **(1)**.



LEIL13TLH0387AB 2

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Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.216] Fuel tanks 10.2

[10.206] Fuel filters 10.3

[10.202] Air cleaners and lines 10.4

[10.500] Selective Catalytic Reduction (SCR) exhaust treatment 10.5

[10.400] Engine cooling system 10.6

[10.414] Fan and drive 10.7

Transmission 21

[21.113] Powershift transmission 21.1

[21.135] Powershift transmission external controls 21.2

[21.155] Powershift transmission internal components 21.3

[21.120] Gearbox 21.4

[21.109] Transmission cooler and lines 21.5

[21.700] Torque converter 21.6

Four-Wheel Drive (4WD) system 23

[23.314] Drive shaft 23.1

Front axle system 25

[25.100] Powered front axle 25.1

[25.102] Front bevel gear set and differential 25.2

[25.108] Final drive hub, steering knuckles, and shafts 25.3

Rear axle system 27

[27.100] Powered rear axle 27.1

[27.106] Rear bevel gear set and differential 27.2

[27.120] Planetary and final drives 27.3

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Electrical components - ECU description

FARMLIFT 633 STAGE IV 6 m (19.7 ft), 99 kW (133 Hp) [FNHZP633NJKE00001 -]	WE
FARMLIFT 737 STAGE IV 7 m (22.9 ft), 99 kW (133 Hp) [FNHZP737NJKE00001 -]	WE
FARMLIFT 935 STAGE IV 9 m (29.5 ft), 99 kW (133 Hp) [FNHZP935NJKE00001 -]	WE

A-001 - ECU (ECU)

Component Type	ECU
Wiring frames	**SHEET 10 SH10 - (ECU) CORE ENGINE** **SHEET 11 SH11 - (ECU) ENGINE CONTROL UNIT**
Connectors	**X-912 (Plug)** - ECU CORE ENGINE [A-001] (1 928 405 384)

A-002 - UCM 3 (ECU)

Component Type	ECU
Wiring frames	**SHEET 03 SH03 - UCM POWER FUSE (Z-404)** **SHEET 13 SH13 - (UCM) SHUTTLE LEVER, COOLING FAN REV SW.** **SHEET 14 SH14 - (UCM) JOYSTICK CONTROL HANDLE & amp; VALVES** **SHEET 15 SH15 - (UCM) PARK BRAKE & amp; CUT OFF VALVES** **SHEET 16 SH16 - (UCM) STEERING, FOOT THROTTLE, LOAD SENSOR** **SHEET 17 SH17 - (UCM) HYDRAULIC AUXILIARY**
Connectors	**X-007 (Plug)** - GND UCM [A-002] (47365222) **X-092B (Receptacle)** - UCM3 CN2B [A-002] (82028495) **X-094A (Receptacle)** - UCM3 CN4A [A-002] (82028493) **X-091B (Receptacle)** - UCM3 CN1B [A-002] (87410946) **X-091A (Receptacle)** - UCM3 CN1A [A-002] (82016219) **X-093A (Receptacle)** - UCM3 CN3A [A-002] (84130757) **X-006 (Plug)** - GND UCM [A-002] (47365222) **X-093B (Receptacle)** - UCM3 CN3B [A-002] (84130760) **X-092A (Receptacle)** - UCM3 CN2A [A-002] (82028493) **X-094B (Receptacle)** - UCM3 CN4B [A-002] (82028495)

A-003 - ADIC LOWLINE (ECU)

Component Type	ECU
Wiring frames	**SHEET 18 SH18 - (ADIC) INSTRUMENT CLUSTER**
Connectors	**X-061 (Receptacle)** - ADIC CN2 [A-003] (82016219) **X-060 (Receptacle)** - ADIC CN1 [A-003] (82028493) **X-064 (Plug)** - ADIC [A-003] (87691968)

A-004 - FLASHER UNIT (ECU)

Component Type	ECU
Wiring frames	**SHEET 27 SH27 - FLASHER UNIT**
Connectors	**X-091 (Receptacle)** - FLASHER UNIT [A-004] (87699386)

A-005 - DRIVE STEPPER MOTOR (ECU)

Component Type	ECU
Wiring frames	**SHEET 30 SH30 - A/C & amp; DRIVE STEPPER MOTOR**
Connectors	**X-045 (Receptacle)** - A/C UNIT [A-005] (87694702)

A-006 - RADIO (ECU)

Component Type	ECU
Wiring frames	**SHEET 25 SH25 - RADIO, BACK UP ALARM AND CIGAR LIGHTER**
Connectors	**X-055 (Receptacle)** - RADIO [A-006] (87709371) **X-056 (Receptacle)** - RADIO [A-006] (87709660) **X-951 (Plug)** - JACK ANTENNAS [A-006]

A-007 - TRANSMISSION CONTROL UNIT (TCH90) (ECU)

Component Type	ECU
Wiring frames	**SHEET 19 SH19 - (TCU) TRANSMISSION SOLENOID VALVES AND CONTROLS**

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From	To	Value
X-9001 pin 8	chassis ground	there should be no continuity.
X-9001 pin 8	all other pins on connector **X-9001**	there should be no continuity.

A. If there is continuity, there is a short to ground condition in the vehicle (VE) harness between connector **X-9001 pin 8** and connector **X-9101 pin 3**, wire VE-119. Locate and repair the grounded conductor.

B. If there is no continuity, check the ECU A-9000 for the appropriate software and re-flash, if necessary.

4. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses 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 erase the fault code and continue operation.

Wiring harnesses - Electrical schematic sheet 03 (55.100)

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