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2023 Nissan Titan XD Service and Repair Manual

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Perform Lubricant Return Operation

RPR-001937706

CAUTION:
If a large amount of refrigerant or lubricant leakage is detected, never perform lubricant return operation.

1 Start the vehicle and set to the following conditions.

- A/C switch: ON
- HEAT switch: OFF
- Blower motor speed: Maximum speed set
- Intake switch: Recirculation set
- Temperature setting: Full cold

2 Perform lubricant return operation for approximately 10 minutes.

3 Stop A/C operation.

4 Lubricant return operation is complete.

Lubricant Adjusting Procedure for Components Replacement Except Compressor

RPR-001937707

Fill with lubricant for the amount that is calculated according to the following conditions.

Example: Lubricant amount to be added when replacing evaporator and inner condenser [mℓ (Imp fl oz)] = 40 (1.4) + 20 (0.7) + α

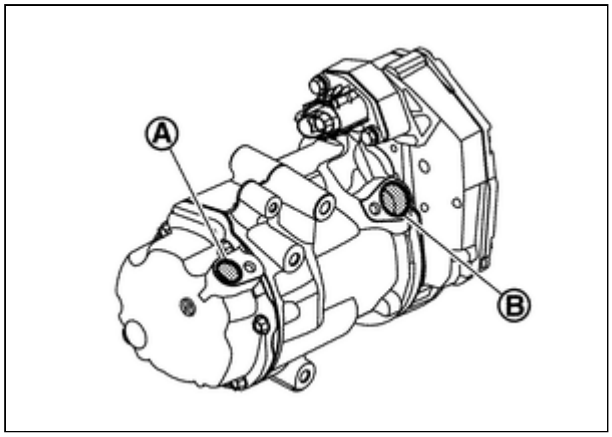
Item		Lubricant amount to be added to A/C system mℓ (Imp fl oz)
Replace evaporator		40 (1.4)
Replace condenser		20 (0.7)
Replace inner condenser		20 (0.7)
Replace battery coolant chiller		10 (0.4)
Replace accumulator		40 (1.4) + The amount of lubrication extracted from the removed accumulator.
Refrigerant leakage is detected	Large amount leakage	30 (1.1)
	Small amount leakage	—
Lubricant amount that is recycled together with refrigerant during recycle operation		α

Lubricant Adjusting Procedure for Compressor Replacement

RPR-001937708

1 Drain lubricant from removed compressor and measure lubricant amount.

a Turn the compressor so that it faces downward, and drain the compressor oil from high-pressure port Ⓐ and low-pressure port Ⓑ.



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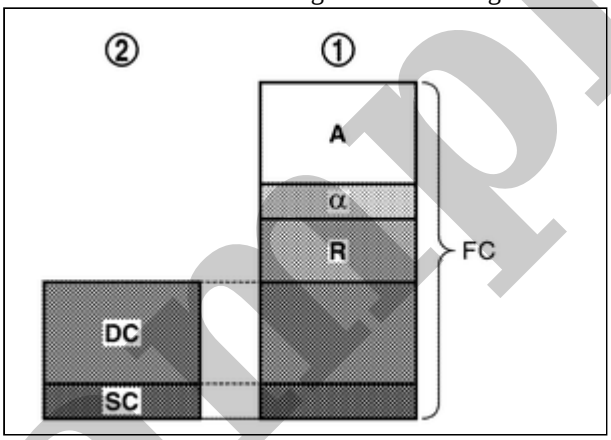
b Measure total amount of lubricant that is drained from removed compressor.

2 Drain lubricant from a new compressor that is calculated according to the following conditions.



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①	: New compressor
②	: Removed compressor

Amount to be drained (A)

[m ℓ (Imp fl oz)] = FC − (DC + SC + R + α)

FC	: Lubricant amount that a new compressor contains [220 (7.7)]
DC	: Lubricant amount that is drained from removed compressor
SC	: Lubricant amount that remains inside of removed compressor [20 (0.7)]
R	: Lubricant amount to be added according to components that are removed except compressor
α	: Lubricant amount that is recycled together with refrigerant during recycle operation

CAUTION:
If lubricant amount that is drained from removed compressor is less than 60 m ℓ (2.1 Imp fl oz), perform calculation by setting "DC" as 40 m ℓ (1.4 Imp fl oz).

Item	Lubricant amount to be added to A/C system m ℓ (Imp fl oz)
Replace evaporator	40 (1.4)

Item	Lubricant amount to be added to A/C system m ℓ (Imp fl oz)
Replace condenser	20 (0.7)
Replace inner condenser	20 (0.7)
Replace battery coolant chiller	10 (0.4)
Replace accumulator	40 (1.4) + The amount of lubrication extracted from the removed accumulator.

Example: Lubricant amount to be drained from a new compressor when replacing compressor and condenser [m ℓ (Imp fl oz)] [D = 60 (2.1), α = 5 (0.2)]

220 (7.7) − [60 (2.1) + 20 (0.7) + 20 (0.7) + 5 (0.2)] = 115 (4.0)

3 Install compressor and check the operation.

CAUTION:
Set the vehicle to READY and operate the air conditioner for at least 1 minute with the vehicle parked to perform a break-in.

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CONNECTION OF SERVICE TOOLS AND EQUIPMENT

Be certain to follow the manufacturer’s instructions for connecting to the machine.

CAUTION:
To prevent fluorescent indicator from entering, prepare and use exclusive hose for EV (electric vehicle) and HEV (hybrid vehicle) when connecting recovery/recycling/recharging equipment.

DETECTING LEAKAGES WITH FLUORESCENT INDICATOR

CAUTION:
Never use fluorescent indicators as these may reduce the insulation resistance.

CHECK REFRIGERANT LEAKAGE USING ELECTRICAL LEAK DETECTOR

CAUTION:
Be careful of the following items so that inaccurate checks or misidentifications are avoided.

- **Never allow refrigerant vapor, shop chemical vapors, cigarette smoke, or others around the vehicle.**
- **Always check refrigerant leakage in a low air flow environment so that refrigerant may not disperse when leakage occurs.**

1 Connect recovery/recycling/recharging equipment (for HFO-1234yf) or manifold gauge to A/C service valve.

2 Check that refrigerant gas pressure is 345 kPa (3.5 bar, 3.5 kg/cm^2, 50 psi) or more when temperature is 16°C (61°F) or more. When pressure is lower than the specified value, fully recover all refrigerant and then charge with refrigerant from the service can to the specified level.

NOTE:
Leakages may not be detected if refrigerant gas pressure is 345 kPa (3.5 bar, 3.5 kg/cm^2, 50 psi) less when temperature is 16°C (61°F) or less.

3 Clean area where refrigerant leakage check is performed, and check refrigerant leakage along all surfaces of pipe connections and A/C system components using electrical leak detector probe.

CAUTION:

- **Even when a leakage point has been found, always continue and complete checking along all pipe connections and A/C system components for additional leakage.**
- **When a leakage is detected, clean leakage area using compressed air and check again.**
- **When checking leakage of cooling unit inside, always clean inside of drain hose so that the probe surface may not be exposed to water or dirt.**

NOTE:

- **Always check leakage starting from high-pressure side and continue to low-pressure side.**
- **When checking for leakage inside cooling unit, operate blower motor for 15 minutes or more at the maximum fan speed, and then insert electrical leak detector probe into drain hose and leave it inserted for 10 minutes or more.**
- **When disconnecting shut-off valve that is connected to A/C service valve, always evacuate remaining refrigerant so that misidentification can be avoided.**

4 Repair or replace parts where refrigerant leakage is detected. (Leakage is detected but leakage location is unknown. GO TO 5.)

5 Start the vehicle and set A/C control in the following conditions.

- A/C switch: ON
- HEAT switch: OFF

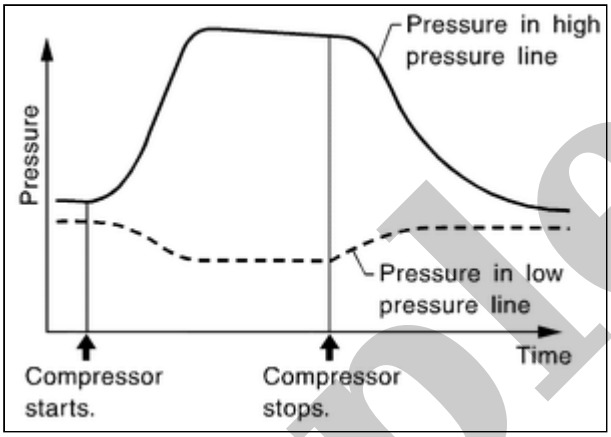
- Mode switch: Ventilation set
- Intake switch: Recirculation set
- Temperature setting: Full cold
- Blower motor speed: Maximum speed set

6 Operate A/C for 2 minutes or longer.

7 Stop the A/C. Check again for refrigerant leakage. GO TO 3.

NOTE:

- **Start refrigerant leakage check immediately after the A/C is stopped.**



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- **When refrigerant circulation is stopped, pressure on the low-pressure side rises gradually, and after this, pressure on the high-pressure side falls gradually.**
- **The higher the pressure is, the easier it is to find the refrigerant leakage.**

Recycle Refrigerant

RPR-001937703

WARNING:

- **Always use HFO-1234yf for refrigerant gas. If CFC-12 or HFC-134a is accidentally charged, compressor is damaged due to insufficient lubrication.**
- **Always observe and follow precautions described on refrigerant container and service manual. Incorrect handling may result in an explosion of refrigerant container, frostbite, or the loss of eyesight.**
- **Never breathe refrigerant gas and lubricant vapor or mist. Exposure my irritate eyes, nose, or throat.**
- **Never allow HFO-1234yf to be exposed to an open flame or others because it generates poisonous gas when in contact with high temperature objects. Keep workshop well ventilated.**
- **Never place the refrigerant containers and recovery/recycling equipment in a place where the temperature exceeds 40°C (104°F).**
- **To prevent fluorescent indicator from entering, prepare and use exclusive hose for EV (electric vehicle) and HEV (hybrid vehicle) when connecting recovery/recycling/recharging equipment.**

1 Perform oil return operation. Refer to Perform Lubricant Return Operation. (If refrigerant or lubricant leakage is detected in a large amount, omit this step, and then GO TO 2.)

CAUTION:
Never perform lubricant return operation if a large amount of refrigerant or lubricant leakage is detected.

2 Check gauge pressure readings of recovery/recycling/recharging equipment (for HFO-1234yf). When remaining pressure exists, recycle refrigerant from high-pressure hose and low-pressure hose.

NOTE:
Follow manufacturer instructions for the handling or maintenance of the equipment. Never fill the equipment with non-specified refrigerant.

3 Remove A/C service valve cap from the vehicle.

4 Connect recovery/recycling/recharging equipment (for HFO-1234yf) to the A/C service valve.

5 Operate recovery/recycling/recharging equipment (for HFO-1234yf), and recycle refrigerant from the vehicle.

6 Evacuate air for 10 minutes or more to remove any remaining refrigerant integrated to compressor lubricant, etc.

7 Refrigerant recycle operation is complete.

Charge Refrigerant

RPR-001937704

WARNING:

- **Always use HFO-1234yf for refrigerant gas. If CFC-12 or HFC-134a is accidentally charged, compressor is damaged due to insufficient lubrication.**
- **Always observe and follow precautions described on refrigerant container and service manual. Incorrect handling may result in an explosion of refrigerant container, frostbite, or the loss of eyesight.**
- **When charging with refrigerant gas, charge with the prescribed amount from a new service can.**
- **Never breathe refrigerant gas and lubricant vapor or mist. Exposure my irritate eyes, nose, or throat.**
- **Never allow HFO-1234yf to be exposed to an open flame or others because it generates poisonous gas when in contact with high temperature objects. Keep workshop well ventilated.**
- **Never place the refrigerant containers and recovery/recycling equipment in a place where the temperature exceeds 40°C (104°F).**
- **To prevent fluorescent indicator from entering, prepare and use exclusive hose for EV (electric vehicle) and HEV (hybrid vehicle) when connecting recovery/recycling/recharging equipment.**

1 Connect manifold gauge (for HFO-1234yf) to the service valve.

2 Connect vacuum pump to manifold gauge and operate the pump. Apply vacuum to the cooler cycle for approximately 25 minutes or longer.

CAUTION:
Evacuate air for 15 minutes or more if the parts are replaced.

3 Check the airtightness of A/C system for 25 minutes or more. If pressure raises more than the specified level, charge A/C system with approximately 200 g (0.4 lb) refrigerant and check that there is no refrigerant leakage. Refer to Leak Test.

CAUTION:
Check the airtightness for 15 minutes or more if the parts are replaced.

4 If parts other than compressor were replaced, add compressor oil according to parts that were replaced. Refer to Lubricant Adjusting Procedure for Components Replacement Except Compressor.

5 Charge the A/C system from a service can with the specified amount of refrigerant.

6 Check that A/C system operates normally.

7 Disconnect manifold gauge.

8 Install A/C service valve cap.

9 Refrigerant charge is complete.