



SERVICE BULLETIN

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AIR CONDITIONING (A/C) SYSTEM RETROFIT INFORMATION AND PROCEDURES

NTB96-023a

This amended version of NTB96-023/HA96-001 updates the retrofit matrix from page 3 of the original bulletin.

SERVICE INFORMATION

HA96-001a

This service bulletin identifies the necessary vehicle specific components required to install a Nissan approved retrofit A/C system. On some vehicles a "complete kit" is required and on others a common "main kit" with the additional listed components will be required. Complete kits contain vehicle specific installation instructions.

This bulletin also describes the generic retrofit procedure and necessary specifications (lubricant and refrigerant) to accompany this procedure. Where a "complete kit" is indicated, refer to the specific instructions supplied with that kit.

Refer to the appropriate service manual, NTB93-001, NTB94-091, and SIR video, Vol. 14 for information not included in this service bulletin:

- Technical Service Bulletin NTB93-001 (Classification number HA93-001), entitled "A/C System Changes for R-134a Refrigerant (All Models)" describes general differences between the R-12 system and the R-134a system.
- Technical Service Bulletin NTB94-091 (Classification number HA94-005), entitled "Service Procedure for Retrofitted A/C Systems" details general service information for all models retrofitted to R-134a A/C systems, using a Nissan approved retrofit kit.
- SIR video "R-134a Air Conditioning System Retrofits, Vol. 14" gives the information needed to properly convert a R-12 refrigerant based A/C system to R-134a refrigerant.

APPLIED VEHICLES: Various 1984-1994 model vehicles equipped with R12 A/C systems

SERVICE PROCEDURE

Important Points

- When recharging the system with R134a, use the J39500 ACR4 Recovery / Recycling / Recharging equipment to ensure accurate charging (to .01 lb.).
- Use only Nissan A/C System PAG Lubricant Type "R" for vane rotary compressors, or Nissan A/C System Lubricant type "S" for swash plate and V-6 variable displacement compressors. Use only Nissan A/C System PAG Lubricant Type "F" for the Quest. If another type lubricant is used, compressor failure is likely to occur.

This bulletin contains:

- Typical replacement parts used to retrofit an A/C system
- Retrofit kit / parts matrix
- Retrofit main kit, J2270-10Y25 (parts listing)
- R-134a system information
- General specifications for retrofitted systems
- Unique 300ZX (Z31 and Z32) data and 240SX (S13) V6 compressor information
- How to perform an A/C retrofit (procedure manual).

Typical Replacement Parts Used to Retrofit an A/C System



Retrofit Kit Matrix

MODEL	MY	Main/Comp.#	Exp.Valve	Liquid Tank	Misc. Parts	Comments
KN13 PULSAR	87-90	J2270-10Y25	92200-89905	92132-89907	N/A	3 Part #s req.
B12 SENTRA	87-90	J2270-10Y25	92200-01R05	92132-89902	N/A	3 Part #s req.
B13 SENTRA/NX	91-93/1.6L	27030-65Y05	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
B13 SENTRA/NX	91-93/2.0L	27030-65Y05	Inc. in the kit	Inc. in the kit	92442-64C03	B13&Hi Pipe
T12 STANZA	87-89	J2270-10Y25	92200-89905	92132-89904	N/A	3 Part #s req.
U12 STANZA	90	J2270-10Y25	92200-89905	92132-89901	N/A	3 Part #s req.
U12 STANZA	91-92	J2270-10Y25	92200-7E100	92132-89900	N/A	3 Part #s req.
U11 MAXIMA	>88 NCI	J2270-10Y25	92200-89905	92132-89904	N/A	3 Part #s req.
U11 MAXIMA	85-88 USA	J2270-10Y25	92200-89905	92132-89904	N/A	3 Part #s req.
J30 MAXIMA	89-90	27030-85E20	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
J30 MAXIMA	91-92	27030-85E21	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
S12 200SX	85-88	J2270-10Y25	92200-01R05	92132-89908	N/A	3 Part #s req.
S13 240SX	89-90	J2270-10Y25	92200-01R05	92132-89901	N/A	3 Part #s req.
S13 240SX	91-MID93	27030-53F10	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
Z31 300ZX	84-89	B7030-40P22	N/A	Inc. in the kit	N/A	Complete Kit
300ZX ATC-Turbo	90-93	B7030-33P00	N/A	Inc. in the kit	N/A	Complete Kit
300ZX ATC-Atmo	90-93	B7030-30P00	N/A	Inc. in the kit	N/A	Complete Kit
300ZX Man. A/C- Turbo	90-93	B7030-33P05	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
300ZX Man. A/C-Atmo	90-93	B7030-30P05	Inc. in the kit	Inc. in the kit	N/A	Complete Kit
M10 STANZA WAGON	86-88	J2270-10Y25	92200-01R05	92132-01R05	N/A	3 Part #s req.
M11 AXXESS	90/91-3NCI	J2270-10Y25	92200-89905	92132-89901	N/A	3 Part #s req.
QUEST-FRONT	93-Mid 94	27030-0B025	N/A	Inc. in the kit	N/A	Complete Kit
QUEST-FR/REAR	93-Mid 94	27030-0B026	N/A	Inc. in the kit	N/A	Complete Kit
TRUCK/PATHFINDER	86.5-89	J2270-10Y25	92200-01R05	92132-89910	N/A	3 Part #s req.
TRUCK/PATHFINDER	90-92	J2270-10Y25	92200-59G00	92132-89910	N/A	3 Part #s req.
M30 INFINITI	90	J2270-10Y25	92200-89905	92132-89901	N/A	3 Part #s req.
M30 INFINITI	91-92	J2270-10Y25	92200-89905	92132-89900	N/A	3 Part #s req.
G20 INFINITI	91-93	J2270-10Y25	92200-7E100	92132-89900	N/A	3 Part #s req.
Q45 INFINITI	90-93	27030-60U10	Inc. in the kit	Inc. in the kit	N/A	Complete Kit

3 Part #s req. = expansion valve and liquid tank are required in addition to the main kit. Complete Kit = only main kit is required.

Retrofit Main Kit Contents (P/N J2270-10Y25)

Part Description	Part #	Quantity
8 mm O - Ring	92470 -N8200	4
12 mm O - Ring	92471 - N8200	2
16 mm O - Ring	92473 - N8200	1
19 mm O - Ring	92477 - N8200	1
11 mm O - Ring	J2476 - 89956	1
Insulation - TXV wrap	B7755 - 02A65	1
Insulation - Pipe / sensing bulb	27288 - 4E100	1
Cover - Valve, low	J2275 - 89900	1
Cover - Valve, high (7/16 - 20 UNF)	J2275 - 89910	1
Cover - Valve, high (3/8 - 24 UNF)	J2275 - 89915	1
Label - Caution, A/C	27090 - 89960	1
Label - Caution	92605 - 89910	2
Pressure relief valve, with O - Ring	92270 - 10Y00	1

Quest R-134a System Information

Model	PAG Type	PAG Part#	Total PAG Charge amt.	Refrigerant Charge Amount
Quest (V40) Front System Only	F	KLHOO-PAGQF - 10 oz.	7.0 oz. (0.21 L)	1.75 lbs. (0.8 Kg.)
Quest (V40) Front & Rear System	F	KLHOO-PAGQF - 10 oz.	10.0 oz . (0.30 L)	2.75 lbs . (1.25 Kg.)

NOTE: PAG S1 and R1 are packaged in a 6 pack of 40 ml. cans. S2 and R2 are packaged in single 236 ml. cans.

General Specifications - Lubricant and Refrigerant

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					U12			
Model	B12 B13 N13	N13	'90 year model	'91 - '92 year models				
Compressor type			ZEXEL DKV-14C ATSUGI NVR140S					
Lubricant								
Name		Nissan A/C System Oil Type R						
Part number		KLH00-PAGR1						
Capacity mℓ (US fl oz, li	mp fl oz)	200 (6.8, 7.0)						
Refrigerant								
Туре				HFC-134a (R-134a)				
Capacity	kg (lb)	0.75 - 0.85 (1.65 - 1.87)	0.55 - 0.65 (1.21 - 1.43)	0.75 - 0.85 (1.65 - 1.87)	0.70 - 0.80 (1.54 - 1.76)	0.65 - 0.75 (1.43 - 1.65)		
			r					
Madal				S	S13			
Model		T12	S12	'89 - '90 year models	'91 - '93 year models	M10		
Compressor type		ATSUGI NVR140S	HITACHI MJS170	ATSUGI NVR140S	CALSONIC V-6 *	HITACHI MJS170		
Lubricant								
Name		Nissan A/C System Oil Type R	Nissan A/C System Oil Type S	Nissan A/C System Oil Type R	Nissan A/C System Oil Type S			
Part number		KLH00-PAGR1	KLH00-PAGS1	KLH00-PAGR1	KLH00-PAGS1			
Capacity mℓ (US fI oz, li	mp fl oz)	200 (6.8, 7.0)	150 (5.1, 5.3)	200 (6.8, 7.0)	300 (10.1, 10.6)	150 (5.1, 5.3)		
Refrigerant								
Туре		HFC-134a (R-134a)						
Capacity kg (lb)		0.85 - 0.95	(1.87 - 2.09)	0.80 - 0.90 (1.76 - 1.98)	0.70 - 0.80 (1.54 - 1.76)	0.85 - 0.95 (1.87 - 2.09)		
Model						100		
		75¥51 /	L					
Lubricant		HITACHI MJS1/U ZEXEL DKS-16H						
Name		Nicona A/C System Oil Turo S						
Part number								
Capacity	mp fl.oz)	200 (6.8, 7.0)		150 (5.1, 5.3)		200 (6.8, 7.0)		
Befrigerant								
Type		HEC-134a (B-134a)						
Capacity	kg (lb)	0.75 - 0.85 (1.65 - 1.87)	0.80 - 0.90 (1.76 - 1.98)	Kit number : 27030-16E10 0.85 - 0.95 (1.87 - 2.09) Kit number : 27030-16E05 27030-16E06 0.80 - 0.90 (1.76 - 1.98)		0.75 - 0.85 (1.65 - 1.87)		

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* A V6 compressor and the appropriate amount of PAG lubricant is included in the retrofit kit. Additional PAG lubricant is not required for retrofitting.

General Specifications - Lubricant and Refrigerant (cont.)

	D	21	Z31		
Model	'86 - '89 year models	'90 - '92 year models	'86 - '88 year models	'89 year model	
Compressor type	ZEXEL DKV-14C		HITACHI MJS170	ZEXEL DKS-16H	
Lubricant					
Name	Nissan A/C System Oil Type R		Nissan A/C System Oil Type S		
Part number	KLH00-PAGR1		KLH00-PAGS1		
Capacity mℓ (US fl oz, Imp fl oz)	200 (6.8, 7.0)		150 (5.1, 5.3)	200 (6.8, 7.0)	
Refrigerant					
Туре	HFC-134a (R-134a)				
Capacity kg (lb)	0.75 - 0.85 (1.65 - 1.87) 0.70 - 0.80 (1.54 - 1.76) 0.75 - 0.85 (1.65 - 1.87)			(1.65 - 1.87)	
		·····			
Model	Z32				
Compressor type	ZEXEL DKS-16H				
Lubricant					
Name	Nissan A/C System Oil Type S				
Part number	KLH00-PAGS1				
	200 (6.8, 7.0)				
Capacity mℓ (US fl oz, Imp fl oz)		200 (6	5.8, 7.0)		
Capacity mt (US fl oz, Imp fl oz) Refrigerant		200 (6	5.8, 7.0)	· · · · · · · · · · · · · · · · · · ·	
Capacity mℓ (US fl oz, Imp fl oz) Refrigerant Type		200 (€ 	a (R-134a)		

Retrofit Data Kit - Z31 and Z32



Electrical Components Inspection

For Z31 and Z32 models, the low-pressure switch has been replaced by the dual-pressure switch.

DUAL-PRESSURE SWITCH

High-pressure side line pressure kPa (kg/cm², psi)	Operation	Continuity
Decreasing to 152.0 - 201.0 (1.55 - 2.05, 22.0 - 29.2) Increasing to 2,452 - 2,844 (25 - 29, 356 - 412)	Turn OFF.	Does not exist.
Increasing to 157 - 216 (1.6 - 2.2, 23 - 31) Decreasing to 1,275 - 1,667 (13 - 17, 185 - 242)	Turn ON.	Exists. HA96001E



The service valves are specially designed for the HFC-134a (R-134a) system. Those for the CFC-12 (R-12) system are different in size and configuration. HA96001E

The seal cap color for the HFC-134a (R-134a) system is blue or light blue.

Special Service Tools for V-6 Compressor



Compressor Clutch

Removal

• When removing center bolt, hold clutch disc with clutch disc wrench.



• Remove the clutch disc using the clutch disc puller. Insert the holder's three pins into the holes in the clutch disc. Rotate the holder clockwise to hook it onto the plate. Then, tighten the center bolt to remove the clutch disc. After removing the clutch disc, remove the shims from either the drive side or the clutch disc.



• Remove the snap ring using external snap ring pliers.



• Pulley removal

Use any commercially available pulley puller. Position the center of the puller on the end of the drive shaft, and remove the pulley assembly.

To prevent the pulley grove from being deformed, the puller claws should be positioned onto the edges of the pulley assembly.



• Remove the field coil harness clip using a screwdriver.



• Remove the snap ring using external snap ring pliers.



INSPECTION

Clutch disc

If the contact surface shows signs of damage due to excessive heat, replace clutch disc and pulley.

Pulley

Check the appearance of the pulley assembly. Check the contact surface for any sign of excessive grooving due to slippage. If any sign is found, replace both the pulley and clutch disc. The contact surfaces of the pulley assembly should be cleaned with a suitable solvent before reinstallation.



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Coil

Check coil for loose connections or cracked insulation.

Installation

• Install the field coil.



Be sure to align the coil's pin with the hole in the compressor's front head.

- Install the field coil harness clip using a screwdriver.
- Install the pulley assembly using a suitable tool, then install the snap ring using snap ring pliers.



• Install the clutch disc on the drive shaft with the original shim(s). Press the clutch disc down by hand.



• Using the holder to prevent clutch disc rotation, tighten the bolt to **10 ft. lb** (14 N.m, 1.4 kg-m) torque.



• Check clearance around the entire periphery of the clutch disc.



Disc-to-pulley clearance

0.012 - 0.024 in. (0.3 - 0.6 mm)

If the specified clearance is not obtained, replace the adjusting spacer and readjust.

Break-in operation

When replacing the compressor clutch assembly, always conduct the break-in operation. This is done by engaging and disengaging the clutch about thirty times. Break-in operation raises the level of transmitted torque.

How to Perform an A/C Retrofit - Generic Instructions Except Quest

This procedure is used to replace R-12 refrigerant with R-134a refrigerant for Nissan vehicle A/C systems. For specific component removal and installation procedures, refer to the appropriate vehicle service manual.

Required Equipment

- A set of R-12 service equipment certified to meet the requirements of SAE J1991. The J38750-A, ACR3 Recovery / Recycling / Recharging station meets these specifications.
- A set of R-134a service equipment certified to meet the requirements of SAE J2210. The J39500-A, ACR4 Recovery / Recycling / Recharging System meets these specifications.
- An adequate supply of R-134a refrigerant.
- An adequate supply of PAG type "S", "R", and "F" A/C lubricant. Use only the lubricant specified for a particular system. Refer to the application table shown on page 3 of this bulletin.

Preliminary Checks

- 1. Before servicing any A/C system, determine which type of refrigerant and lubrication oil is currently in the system. This is important in order to avoid contamination of your existing refrigerant supplies or potential damage to your refrigerant equipment.
- 2. Ask the customer about the A/C service history. Have any alternative refrigerants been installed in the system? Has an A/C retrofit already been performed?
- 3. Check the engine compartment for A/C labels which may indicate previous retrofit work, oil additives, etc.
- 4. Verify the system you are working on, R-12 or R-134a.

Caution:

- Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or A/C system.
- Avoid breathing A/C refrigerant and lubricant vapors or mist. Exposure may irritate eyes, nose, and throat. To remove R-134a from the A/C system, always use service equipment certified to meet the requirements of SAE J2210 (R-134a recycling equipment). Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.
- Do not release refrigerant into the atmosphere. Use approved recovery / recycling equipment to capture the refrigerant every time an air conditioning system is discharged. If accidental discharge occurs, ventilate work area before resuming service.
- R-134a service equipment or vehicle A/C systems should not be pressure tested or leak tested with compressed air. Some mixtures of air / R-134a have been shown to be combustible at elevated pressures. These mixtures are potentially dangerous and may result in fire or explosion causing injury or property damage. Additional health and safety information may be obtained from refrigerant and lubricant manufacturers.

When installing refrigerant components, observe the following:

- Do not remove the seal caps until just before connecting components (refer to "A" in Figure 1 below).
- Be sure the O-ring is on the tube end and apply a small amount of refrigerant lubricant to the O-ring before assembling (refer to "B" in Figure 1 below).
- Install tubes into mating parts and finger tighten nuts.
- When tightening fittings, be sure to use a torque wrench and back up wrench (refer to "C" in Figure 1 below).



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Figure 1

Retrofit Preparation

- 5. Determine the parts required for the vehicle system being retrofitted.
- 6. Conduct a "pre-retrofit performance test":
 - If the system is functioning properly, proceed to step 7
 - If the system is not functioning properly, determine the cause
 - If the system does not contain the proper amount of refrigerant, charge the system to 50 PSI with R-12 refrigerant and identify any leaks and/or failed components
 - If the system is still not functioning, proceed to step 7.
- 7. Recover the refrigerant using approved R-12 recovery / recycling equipment.
- Repair or replace any failed components with the appropriate replacement.
 NOTE: When replacing a failed compressor, prior to retrofit, determine the type of lubricant the replacement contains. If the replacement compressor contains a lubricant other than the specified PAG lubricant, drain that lubricant before installation.
- 9. Disconnect the negative battery cable.

Passenger Compartment

- 10. Remove the evaporator assembly as follows:
 - A. Disconnect the high and low pressure tubes from the evaporator assembly.
 - B. Disconnect the harness connector from the blower motor resistor (as necessary).
 - C. Remove and save all mounting hardware.
 - D. Remove the evaporator assembly.



Figure 2

- 11. Remove and save the resistor bucket (2 screws) from the evaporator case assembly (if equipped).
- 12. Remove the thermistor from the evaporator core (if equipped). Note the thermistor location so it can be re-installed to its original location.
- 13. Remove and save the case halves from the evaporator core. (Carefully cut the air seals where the case halves meet).
- 14. Remove and discard the TXV bulb insulating wraps.
- 15. Disconnect the TXV equalizer tube from the evaporator outlet tube (use a backup wrench).
- 16. Remove the TXV sensing bulb from the evaporator outlet tube (1 clip).
- 17. Remove and discard the TXV (2 fittings).
- 18. Remove and discard O-rings on the TXV inlet and outlet tubes. Clean the tube ends.
- 19. Using new O-rings, install the new TXV onto the evaporator core.
- 20. Connect the TXV equalizer tube to evaporator outlet tube (lubricate the O-ring with the appropriate PAG lubricant as required) and torque fittings to specification (use a backup wrench).
- 21. Secure the TXV sensing bulb to the evaporator core.
- 22. Install new insulator foam wrap around the TXV sensing bulb.

- 23. Install new insulator butyl tape around the TXV.
- 24. Reassemble the case halves to the evaporator core.
- 25. Reinstall the thermistor to its original position (if equipped).
- 26. Reinstall the resistor bucket to the evaporator case (if equipped).
- 27. Repair air seals. If seals are not suitable for reuse, replace with new ones (available separately through NMC parts supply).
- 28. Reinstall the complete evaporator assembly into the vehicle in the reverse order of removal. Install new O-rings on the evaporator inlet and outlet tubes. Lubricate the

O-rings with the appropriate PAG lubricant.

- 29. Reconnect the low and high pressure tubes to the evaporator. Torque fittings to specification.
- 30. Affix the "Retrofitted to R-134a" label to the evaporator case in a visible location. (Refer to Figure 2).
- 31. Remove and discard the existing pressure relief valve from the high pressure side (compressor side) flange.
- 32. Install the new pressure relief valve onto the high pressure hose flange. Lubricate

O-ring with the appropriate PAG lubricant. Torque the pressure relief valve to specification.

33. Affix the "Retrofitted to R-134a" label to the compressor in a visible location as shown in Figure 3.



Liquid Tank Removal / Installation



- 34. Disconnect the liquid tank (LT) switch harness from the vehicle harness.
- 35. Remove and save the pressure switch from the old LT.
- 36. Disconnect the tubes from the LT. Remove the LT.
- 37. Remove and discard the blind plug from the new LT. Make sure the fusible plug remains in the new LT.
- 38. Install the old pressure switch into the new LT blind plug port, use a new O-ring. Lubricate with appropriate PAG lubricant.
- 39. Loosely install the new LT into the LT bracket.
- 40. Reconnect the pressure switch harness connector to the vehicle harness.
- 41. Install new O-rings on the LT inlet and outlet tubes. Lubricate O-rings with the appropriate PAG lubricant.
- 42. Reconnect the tubes to the LT. Torque to specification.
- 43. Tighten the LT bracket pinch bolt to secure the LT in the LT bracket.

Final Assembly

44. Install the charge adapters to the high and low pressure service valves. Torque adapters to specification (use a backup wrench).

NOTE: There are two types of high pressure service valves 7/16-20 UNF and 3/8-24 UNF. Both sizes of adapters are included in the retrofit kit. Install the correct adapter after confirming the service valve configuration.



- 45. Using an ink pen, completely fill out the retrofit label. After filling out the label, peel the backing from the label's adhesive clear cover shield and firmly press the cover shield against the label face to permanently seal the label.
- 46. Affix the caution label to the engine room wall or suitable (permanent under-hood body panel) visible location as shown in Figure 6. Make sure the surface is clean before installing the label.



- 47. With a permanent marker, delete references to R-12 from the original caution label.
- 48. Reconnect the negative battery cable.

After Installation

- 49. Evacuate the A/C system for a minimum of 30 minutes.
- 50. Add the appropriate PAG oil as specified in the "Lubricant / Refrigerant Specification Chart" shown on page 5 of this bulletin.

NOTE: Do not compensate for lubricant change. Add the **full amount** indicated in the chart.

- 51. Charge the A/C system with the specified amount of R-134a refrigerant. (Refer to the "Retrofit Lubricant / Refrigerant Specification" chart on page 4 of this bulletin).
- 52. Perform a refrigerant leak test using Kent-Moore tool J39400 to insure there are no refrigerant leaks.
- 53. Conduct an A/C performance test. (Refer to the "Performance Characteristics" information listed below).

Performance Characteristics for Retrofitted A/C Systems

General performance characteristics for R-12 A/C systems and the retrofit R-134a systems differ. These differences are outlined below:

Recirculating-to-discharge Air Temperature

- The retrofitted system retains the original R-12 heat exchanger (evaporator and condenser)
- Some R-12 lubricant oil remains in the A/C system
- Because of these two reasons, the retrofit A/C system has a slightly lower cooling capacity than the R-12 A/C system. The maximum discharge temperature is increased by approximately 3.6 deg. F (2 deg. C).

Ambient Air Temperature-to-Operating Pressure

The retrofit A/C system has a higher operating pressure than the R-12 A/C system when the outside temperature exceeds **59 deg. F** (15 deg. C).

- High pressure side (discharge side): Maximum pressure increase of approximately **43 PSI** (294 kPa, 3 kg/cm,).
- Low pressure side (suction side): Same as R-12 A/C system.

Refer to the appropriate service manual for discharge air temperatures and operating pressure values for individual models. After verifying the discharge air temperature is within specifications, the retrofit is complete.