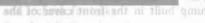
DATSUN 280ZX

Model \$130 Series









COOLING SYSTEM

CO

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Fig. CO I Conling System

DRAHBING AND PLUSHING COOLING SYSTEM

system with clean soft water

COOLING SYSTEM

DESCRIPTION

The cooling system is of the conventional pressure type. A centrifugal pump built in the front cover of the engine serves to circulate the coolant. The pressure type radiator filler cap installed on the radiator operates the cooling system at higher than atmospheric pressure.

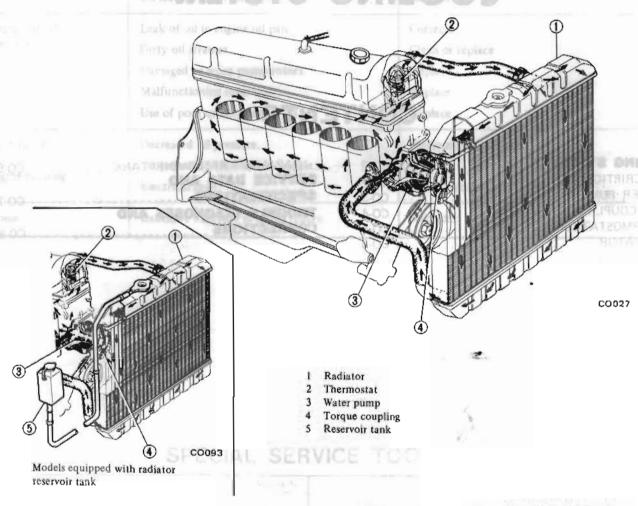


Fig. CO-1 Cooling System

COOLANT LEVEL

- Without coolant reservoir
 The coolant level should be checked and maintained at 20 to 35 mm (0.79 to 1.38 in) below the bottom of the radiator filler neck.
- With coolant reservoir
 Pour coolant into the radiator up to the cap and also into the reservoir up to the "MAX" level.

WARNING:

To avoid serious personal injury, never remove radiator cap quickly when engine is hot. Sudden release of cooling system pressure is very dangerous.

If it is necessary to remove radiator cap when radiator is hot, turn cap slowly counterclockwise to the first stop. After all pressure in the cooling system is released, turn cap passing the stop and remove it.

DRAINING AND FLUSHING COOLING SYSTEM

To drain cooling system, release drain cock at bottom of radiator, remove radiator cap and drain plug on right side of cylinder block. If heater system is installed, set heater temperature control valve to open position. After coolant is drained completely, close drain cock and plug and refill system with clean soft water.

WATER PUMP

The water pump is of a centrifugal type, which is mounted on the engine front cover. The pump shaft is supported by a double row of ball bearings press fit in an aluminum die cast pump body. The bearings are permanently lubricated and sealed to prevent loss of lubricant and entry of dirt.

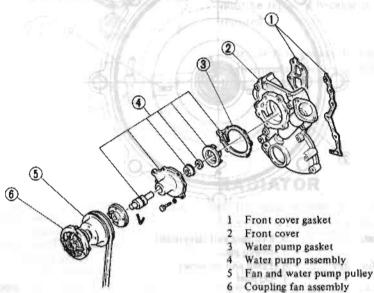


Fig. CO-2 Water Pump and Engine Front Cover

CO094

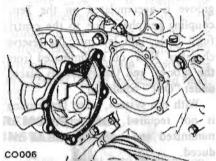
REMOVAL

1. Drain coolant into a clean container.

Note: Prior to removing water pump, clean cooling system with suitable cleaner.

- Loosen bolts retaining fan shroud to radiator and remove shroud.
- Loosen belt, then remove fan blade and pulley from hub.
- 4. Remove water pump assembly and gasket from front cover.

INSTALLATION



not supplied to the groove, oil m

Fig. CO-3 Removing Water Pump

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INSTALLATION

- 1. Be sure to clean gasket surfaces in contact with pump and front cover. Always use new gaskets when installing water pump assembly. Be sure to tighten bolts.
- Tightening torque: Water pump securing bolts 0.4 to 0.5 kg-m (2.9 to 3.6 ft-lb)

- 2. Fill cooling system and check for leaks at pump.
- 3. Install fan pulley and fan blade, and tighten fixing bolts securely. Install belt and adjust to specified tension.
- 4. Operate the engine at fast idling and recheck for leaks.
- Install fan shrouds if applicable.

Note: Ensure that clearance between shroud and fan is even at any place.

DISASSEMBLY

Water pump should not be disassembled.

INSPECTION

Inspect pump assembly for the following conditions and replace if necessary.

- 1. Badly rusted or corroded body assembly and vane.
- Excessive end play or roughness of bearings in operation.

Note: If excessive mechanical seal squeak occurs when engine is running, use suitable water pump seal lubricant to prevent squeak.

ON" denotes that cooling is re-

quired and the fan operates up to

about 2,450 rpm, Wi

ADJUSTMENT

Check belt deflection between alternator and fan pulley by a force of 10 kg (22 lb),

Fan belt deflection: 8 to 12 mm best sile and bellate (0.31 to 0.47 in)

If adjustment is necessary, loosen bolt retaining alternator adjusting bar to alternator. Move alternator toward or away from engine until the correct tension is obtained. will give restricted and the lines of the

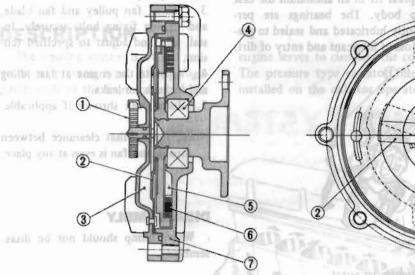
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WATER PUMP SPEED COURSE

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TEM-COUPLING



- Bi-metal thermostat
- Slide valve
- Reserve chamber for "OFF" 8 Pump unit oil outlet
- 4 Bearing
- ath and volumers gross 1200cm 5 Driving chamber
- 6 Coupling part (labyrinth)
- 7 Driven part
- 9 Oil inlet

CO078

Fig. CO-4 Tem-Coupling

WATER PUMP

wos aldasab a vd betrog

type, which is mounted on the

front cover. The purisp shaft

The water pump is of a classificated

Tem-coupling is a type of fan coupling which is provided with a temperature control system.

The conventional coupling always slips the fan at a high speed under a constant ratio regardless of the engine cooling requirement.

The slipping ratio of the Temcoupling, however, is properly changed with the cooling requirement.

"ON" denotes that cooling is required and the fan operates up to about 2,450 rpm. When high cooling is not required (during cold season, with the engine warmed up, etc.), the operation is placed under "OFF" condition and the fan slips at about 1,100 rpm.

The coiled bimetal thermostat installed on the front center portion of the Tem-coupling detects temperature of air passing through the radiator (The air temperature is directly relative to the engine coolant temperature.) and the inside slide valve is opened or closed as required, and thus, the ON-OFF control is performed. When the air temperature rises, the bimetal is expanded, and the valve is opened, silicone oil is forwarded to the groove that transmits torque, and the system is placed under "ON" condition.

When the valve closes, silicone oil is not supplied to the groove, oil in the groove is accumulated on the Temcoupling periphery due to the centrifugal force, and led into the reserve chamber. Now, oil is eliminated from the groove, and the system is placed under "OFF" condition.

is not required, the output loss is minimized and noise can be far re-

22Wher Pumpared Engine Front Cover

With this system, when fan cooling Fig. Cit. Revisioning Water From p. HISTALLATION

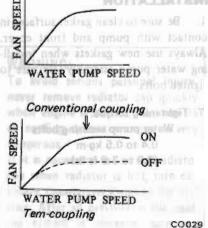


Fig. CO-5 Characteristic of Tem-Coupling

INSPECTION

Check Tem-coupling for oil leakage or bend of bimetal.

If the above symptoms are found, replace it with a new one as an assembly.

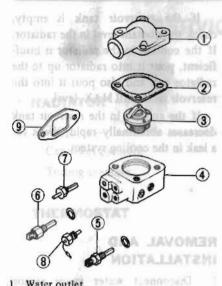
Loosen belt, then remove fan THERMOSTAT IN LABOR OF THE SERVICE STATE STATE OF THE SERVICE STATE OF THE SERVICE STATE STATE STATE STATE STATE O

REMOVAL AND INSTALLATION

Disconnect upper radiator hose, water hose and then disconnect cable at thermotime switch, water temperature switch and water temperature sen-SOI.

Signatura professionarios assessinos

- Remove thermostat housing from cylinder head.
- Loosen securing bolts and remove water outlet, gasket and thermostat from thermostat housing.



- Water outlet
- Gasket
- Thermostat and above are a systematic
- Thermostat housing
- Water temperature sensor
- Thermotime switch
- Thermal transmitter
- Water temperature sensing switch
- Gasket

CO127

Fig. CO-6 Thermostat

- 4. After checking thermostat, reinstall, replacing with a new housing gasket.
- 5. Reinstall water outlet and tighten securing nuts.
- Replenish coolant and check for leaks.

INSPECTION

- 1. Submerge thermostat in hot water 5°C (9°F) above the specified temperature. (Refer to Service Data and Specifications.)
- After preparing for the marked screwdriver at about 8 mm (0.31 in) from the tip, inspect the lift height "H" of valve by inserting it.

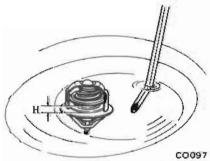


Fig. CO-7 Inspecting Thermostat

3. Now, place thermostat in water 5°C (9°F) below the specified temperature.

If thermostat does not operate at the above specified temperature, it must be replaced because it cannot be repaired.

Note: It is necessary to check a new thermostat before installing it in the engine.

RADIATOR

The radiator filler cap is designed to maintain a pre-set pressure (0.9 kg/cm², 13 psi) above atmospheric pressure.

The relief valve consisting of a blow-off valve and a vacuum valve. helps to prevent the coolant from boiling by giving pressure to it. However, when the pressure is reduced below atmospheric pressure, the vacuum valve allows air to re-enter the radiator preventing the formation of a vacuum in the cooling system. The bottom tank on cars equipped with automatic transmission incorporates an oil cooler for the transmission fluid.

REMOVAL AND INSTALLATION

- 1. Drain coolant into a clean container.
- Disconnect radiator upper and lower hoses, and reservoir tank hoses.
- Remove radiator shroud attaching bolts and then remove shroud. (if applicable)
- 4. On a car with automatic transmission, disconnect cooler inlet and outlet lines from radiator.
- Remove radiator retaining bolts and then remove radiator upward.
- Install radiator in the reverse sequence of removal.

INSPECTION

Radiator cap should be checked for working pressure at regular tune up intervals. First, check rubber seal on cap for tears, cracks or deterioration

after cleaning it. Then, install radiator cap on a tester. If cap does not hold or will not release at the specified pressure, replace cap.

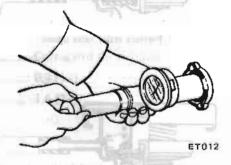


Fig. CO-8 Testing Radiator Cap

Also, inspect radiator for water leakage using cap tester and applying a pressure of 1.6 kg/cm² (23 psi).

If a malfunction is detected, repair or replace radiator.

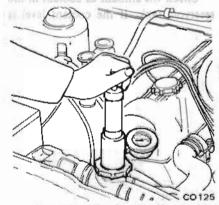
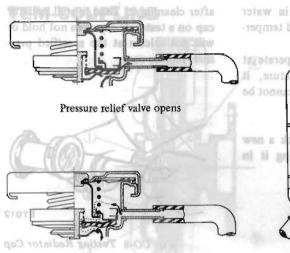


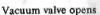
Fig. CO-9 Testing Cooling System

RAD!ATOR RESERVÕIR TANK

OPERATION

The radiator reservoir tank is mounted to the right hand side hoodledge panel. When the coolant temperature in the radiator rises and pressure builds up to an extent, the pressure relief valve provided in the radiator cap opens to release excess coolant into the reservoir tank. When the coolant temperature lowers and pressure decreases in the radiator, the vacuum valve provided in the radiator cap opens to allow the coolant to re-enter the radiator.





Associated adjusted for water leakage using cap tester and applying a pressure of 1.6 kg/cm² (23 psi).

INSPECTION not not be the little

Check the amount of coolant in the reservoir tank. If the coolant level is



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orther registers reserving and no believe arrivation to the registers of the condensed to the registers and side hoods being panel. When the condense the condense tests present to the register reservoired in the reduction of the registers of the registers of the registers of the registers and passed to desire temperature fowers and passed to the registers in the registers and passed the registers in the registers and passed the registers and registers are allowed the registers and registers are allowed the registers are allowed the registers are allowed the registers are allowed the registers.

 Now, place thermostat in water 5°C (9°F) below the specified temperture.

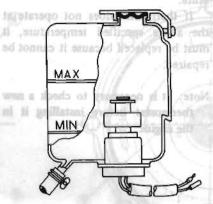


Fig. CO-10 Operation of Reservoir Tank

maintain a pre-set pressure (0.9

CO129

below the MIN. level, remove the reservoir tank filler cap and add enough coolant to reach MAX. level.

helps to prevent the coolmit from bouling by giving pressure to it. However, when the pressure is reduced below atmospheric pressure, the vacual yave allows at to re-enter the military preventing the formation of a vacuum in the cooling system. The bottoot lank on cars equipped with automatic transmission moorporases automatic transmission moorporases an oil cooler for the transmission moorporases an oil cooler for the transmission moorporases.

REMOVAL AND COMPS IN A PROPERTY OF A PROPERT

Disconnect radiator upper and lower house, and reservoir rank house.

Remove radiator shroud attaching builts and then remove through applicable)

 On a car with automatic trabpide tion, disconnect coolugine turnd, outlet times from radiator.

Remove radiator retaining polits
and then remove radiator upward.

Installeradiator in the reverse
anenue of removal.

NSPECTION

Radiator cap should be checked for working pressure at regular tune up only who buying theck subber seal on cap for teats cracks or deterioration If the reservoir tank is empty, check the coolant level in the radiator. If the coolant in the radiator is insufficient, pour it into radiator up to the radiator cap and also pour it into the reservoir tank until MAX. level.

If the coolant in the reservoir tank decreases abnormally rapid, check for a leak in the cooling system.

REMOVAL AND INSTALLATION

- Disconnect water gauge sensor harness connector.
- Remove reservoir tank hose from radiator upper side.
- 3. Remove reservoir tank.
- 4. Install in the reverse order of removal.

Fig. CO-5, Thermostal INSPECTION

After checking thermostat reinstall, replacing with a new bouring
garket.

5. Reinstall water onlier and refriensecuring nuts.

6. Replanuts on Replaced to

INSPECTION

 Submerge Thermoster in line water 5°C (4°F) above the openied temperature (Refer to Service Data and Specifications).

I. After propaging for the marked screwthiver at about 8 min (of 1) on a foots the introduction the introduction "H" of valve by marking marked at 12 at 12



Fig. CO-7 drapped and Thermoodule

SERVICE DATA AND SPECIFICATIONS

		Probable gauss	Condition
RADIATOR			
Туре		Corrugated fir	n and tube
Cap relief pressure		kg/cm ² (psi) 0.9 (13)	
Testing pressure		kg/cm ² (psi) 1.6 (23)	
Replaces THERMOSTATIONS OF FOR THERMOSTATIONS THERMOSTATIONS OF FOR THERMOSTATIONS THERMOSTATIONS THERMOSTATIONS THERMOSTATION T		Damaged cylinder head gasket	
THERMOSIAI			
Replace		Frigid type Standard type	Tropical type
Check engine oil in crankcase for mixing			
with water by pulling oil level gauge	:oi	°C (°F) 88 (190) 82 (180)	
Valve opening temperature		°C (°F) 88 (190) 82 (180)	76.5 (170)
Tighten		Loose cylinder head bolts.	
Max. valve lift		mm/°C (in/°F) 8/100 (0.31/212) 8/95 (0.31/203)	
Check hoses for comps, and clear the ayerem		COMPONENT PARTS INSPECTI	oor circulation
of rust and dudge by flushing radiator. Perfectly: HOLLABOR DESERTED IN			
		Insufficient cooling	
Replace		Inoperative water purity	
Adjust		Loose fan belt.	
Replace. JUSTINOS MOLFORIAL JEL		Inoperative thermostat	
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	27
Business of the water than water is said. He said the said of SYSTEM COMPONENT PARAMETERS		Excessive imparity to water	
Cooling system should be draused and thus-		Charles and the Control of the Contr	
ed thoroughly at least twice a year		material postures and desiring of system	
Permanent antifraces (Ethylene glycial base)		ATT MEAT EATER	
can be used throughout the setsons of the			
FL ENGINE MAY	-		
INDVAL AND INSTALLATION			27 40
Replace	15	Faulty themicatar	
Clean out an passage thoroughly by using the	16	Radiator fin choked with mud, chaff, etc.	
pressure from engine side of radiator.		THE PROPERTY AND A PROPERTY OF	
Adjust		Incorrect ignition and valve timing	
A THE STREET SHEET SHEET SHEET		Dire of and studge in engine	
	- 11	AUXILIARY COOLING FAM	
Replace: a remain a furgital a		Inoperative water pump,	
		26 MARATIN Lited net special and a second an	
TOTAL COUNTRY OF THE PARTY.	- 1		
Replace. PHARTER RIA	EE	2 SEINGE HOLDSAND, Williamy	
Use soft, clean water, All State on		SPECIFICATION Will whoom!	
No. 1 and a second seco		THE MENT OF THE PROPERTY OF TH	-34.05.70
Replace: slight as full size.	- 10	LIGHTENNIATOROUS	2nliddydding
Replace.		THE THE PROPERTY OF THE PARTY O	A EF II
		CORRECTIONS	EF-51

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action		
Loss of water	Damaged radiator seams.	Repair.		
edut bas mit be	Leaks at heater connections or plugs.	Repair. doubles of community and the second state of		
	Leak at water temperature gauge.	Tighten.		
	Loose joints. (ieg) Amalysi (Tighten.		
	Damaged cylinder head gasket.	Replace.		
		Check engine oil for contamination and refill		
type Tropical type		as necessary,		
140 3400013	Cracked cylinder block.	Replace. Check engine oil in crankcase for mixing		
	The second second State of	with water by pulling oil level gauge.		
76.5 (170)	Cracked cylinder head.	Replace.		
	Loose cylinder head bolts.	Tighten.		
Poor circulation	Restriction in system.	Check hoses for crimps, and clear the system		
reservous vank. If the con	Land to reach MAX.	of rust and sludge by flushing radiator.		
	Insufficient coolant.	Replenish.		
	Inoperative water pump.	Replace.		
	Loose fan belt.	Adjust.		
	Inoperative thermostat.	Replace.		
Corrosion	Excessive impurity in water.	Use soft, clean water. (rain water is satisfactory).		
	Infrequent flushing and draining of system.	nd draining of system. Cooling system should be drained and flushed thoroughly at least twice a year. Permanent antifreeze (Ethylene glycol base) can be used throughout the seasons of a year.		
Overheating	Faulty thermostat.	Replace.		
	Radiator fin choked with mud, chaff, etc.	Clean out air passage thoroughly by using air pressure from engine side of radiator.		
	Incorrect ignition and valve timing.	Adjust.		
	Dirty oil and sludge in engine.	Refill.		
	Inoperative water pump.	Replace.		
	Loose fan belt.	Adjust.		
	Restricted radiator.	Flush radiator.		
	Inaccurate temperature gauge.	Replace.		
	Impurity in water.	Use soft, clean water.		
Overcooling	Faulty thermostat.	Replace.		
	Inaccurate temperature gauge.	Replace.		