SERVICE MANUAL

NISSAN FULL AUTOMATIC TRANSMISSION

MODEL 3N71A

(SPECIFICATION AND INSPECTION)

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

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TRANSMISSION

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QUICK REFERENCE INDEX

FOREWORD

This service manual has been prepared for the purpose of assisting service personnel of our dealers for effective service and maintenance of NISSAN FULL AUTOMATIC TRANSMISSION.

Since proper maintenance and service are most essential to satisfy our customers by keeping their cars in the best condition, this manual should be carefully studied. The followings should be noted for effective utilization of this manual.

1. This Service Manual is written on the bases of the NISSAN service policy that every dealer will do the service of Automatic Transmission such as inspection and adjustment on cars, replacement of exterior electric part of A/T and replacement of automatic transmission unit, exclusing disassembly and re-assembly of Automatic T/M Unit.

2. Since only the information concerning the NISSAN FULL AUTOMATIC TRANSMISSION herein, please refer to both this and the service manuals for ENGINE, CHASSIS AND BODY for the details of the car.

3. Only the genuine service parts listed in the DATSUN 1000 / 2000 / 2300 PARTS CATALOG should be used as replacements.

4. All informations, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication approval.

5. It is emphasized that those who use this manual revise the contents according to the SERVICE JOURNAL issued by the factory which carries the latest factory approved servicing method.

6. Rights for alternation in specifications and others at any time are reserved.

EXPORT ENGINEERING DEPT.
NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

GENERAL DESCRIPTION

The NISSAN full automatic transmission, model 3N71A, is consists of the converter, front pump, clutches, gear train to provide three driving ranges and one reverse range. The torque converter acts to multiply engine torque according to vehicle requirements, thus providing variable transmission torque multiplication throughout to operating range. Gear shifting is automatic and governed by car speed and the condition of intake manifold vacuum.

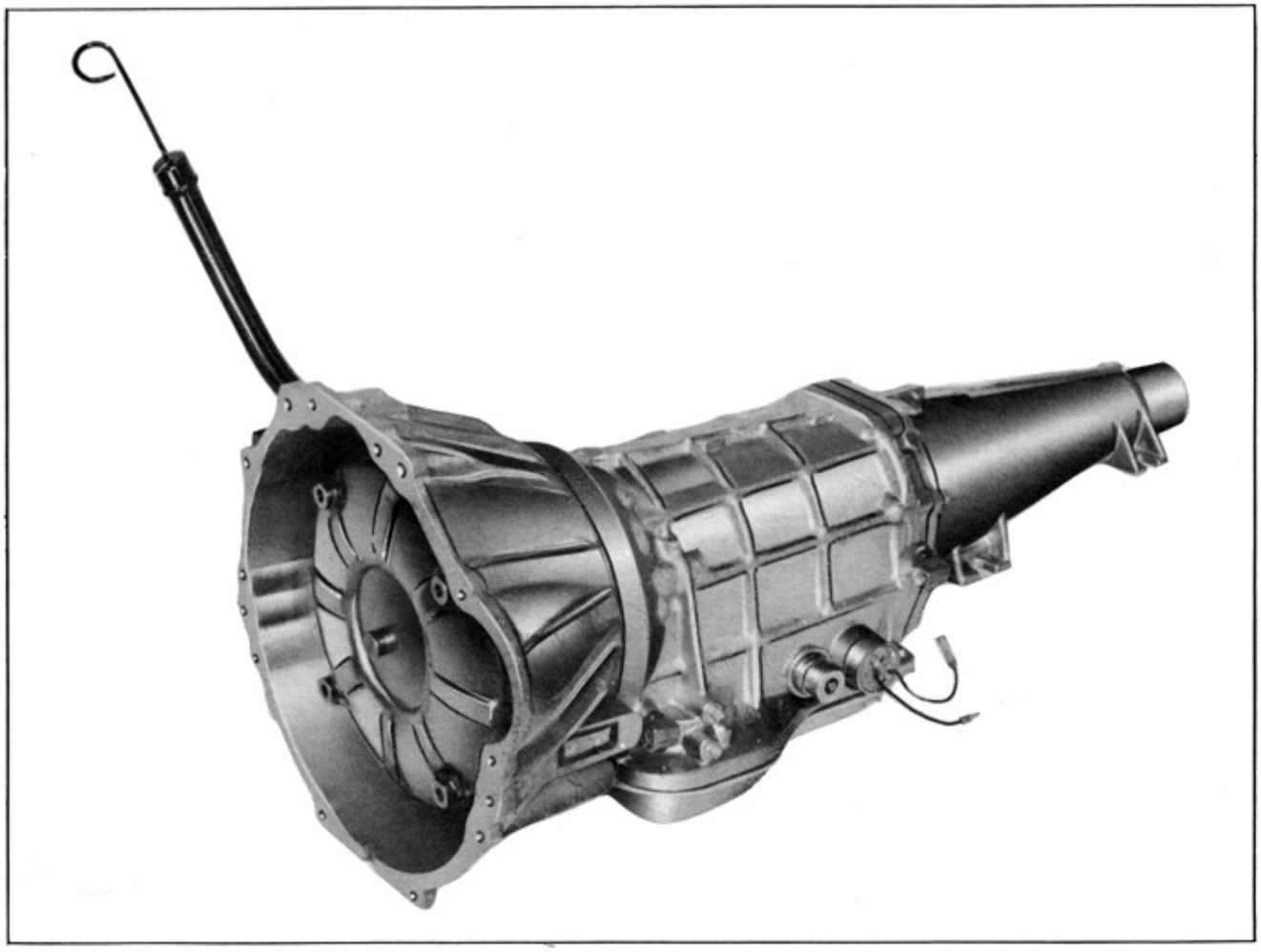


Fig. TM-1 General view of automatic transmission

REPLACEABLE PARTS OF AUTOMATIC TRANSMISSION

1	Automatic transmission ass'y	30	"O" ring
2	Torque converter ass'y	31	Tube comp. (only B10)
3	Converter bolt	32	Down shift solenoid ass'y
4	Air inlet screen R.H. (only B10)	33	"O" ring
5	Air inlet screen L.H. (only B10)	34	Vacuum diaphragm ass'y
6	Stone gaurd comp. (only B10)	35	Diaphragm rod
7	Screen and guard screw (only B10)	36	Vacuum tube
8	Oil pan comp.	37	Tube joint (except B10)
9	Drain plug	38	Vacuum connector
10	Drain plug gasket	39	Elbow tube
11	Oil pan magnet	40	Vacuum tube clamp
12	Oil pan gasket	41	Dust cover (except (W)P(L)130)
13	Inhibitor switch ass'y	42	Bolt
14	"O" ring	43	Washer (except (W)P(L)130)
15	Inhibitor switch gasket	44	Nut (only (W)P(L)130)
16	Inhibitor switch bolt	45	Oil charging pipe
17	Range select lever	46	Oil level gauge
18	Nut	47	"O" ring
19	Lock washer	48	Bolt
20	Speedometer pinion	49	Washer
21	Speedometer pinion sleeve	50	Nut
22	Speedometer pinion seal	51	Oil pan bolt with washer
23	"O" ring	52	Air breather
24	Retaining pin	53	Rear extension oil seal
25	Lock plate	54	Square head plug
26	Speedometer lock washer	55	Bolt
27	Speedometer bolt	56	Washer
28	Oil tube connector	57	Nut (only (W)P(L)130)
29	Oil tube nut	58	Torque convertor oil

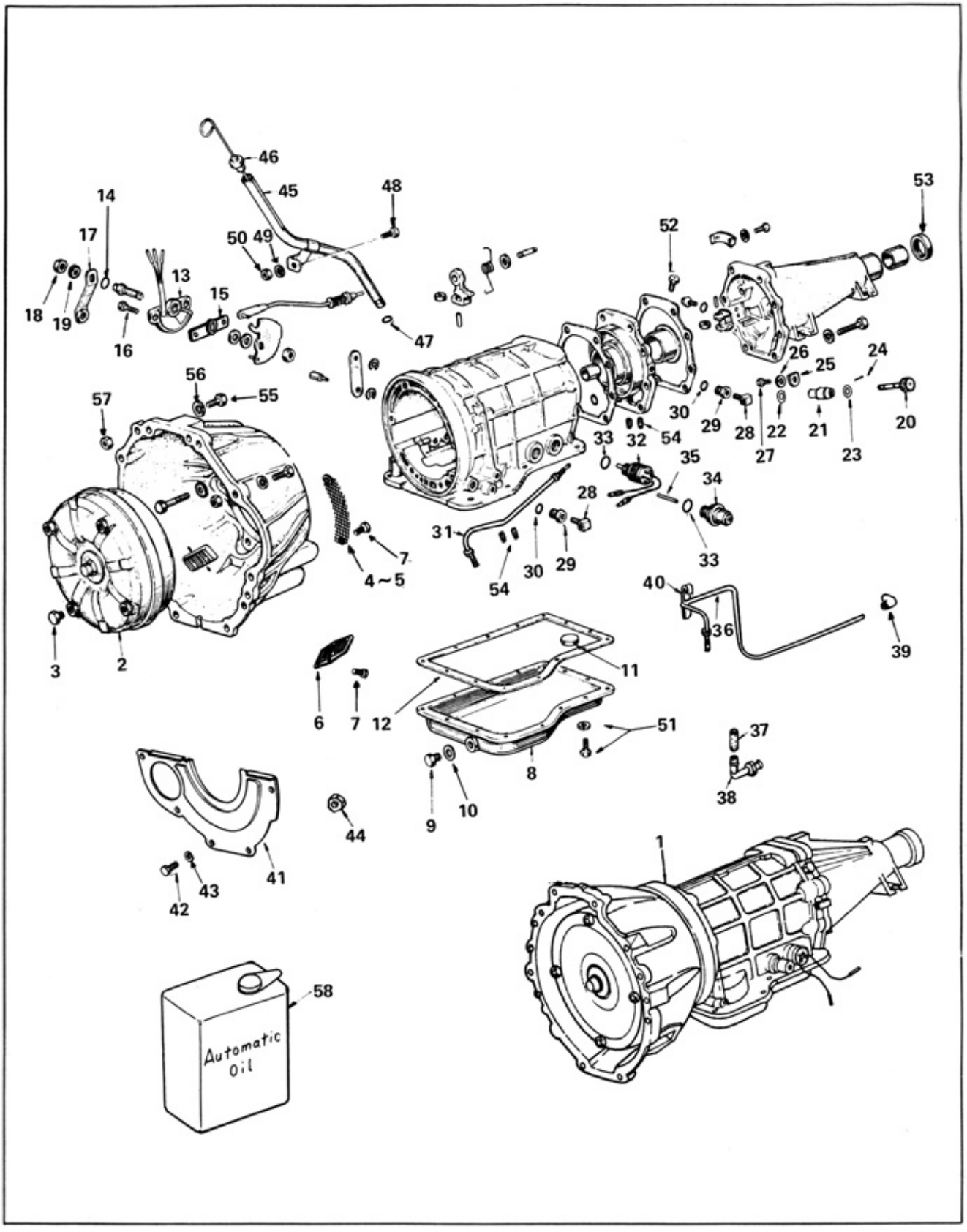


Fig. TM-2 Transmission case

SERVICE JOURNAL OR BULLETIN REFERENCE

DATE	JOURNAL or BULLETIN No.	PAGE No.	SUBJECT

TROUBLE DIAGNOSES AND ADJUSTMENT

CONTENTS

As the troubles on the automatic transmission can be mostly repaired by doing simple adjustment, so do not replace immediately if the automatic transmission is in trouble.

If the trouble could not be solved by this procedure, then remove and replace the automatic transmission. It is advisable to check, each point in the order itemized in the "trouble shooting chart".

1. In the "trouble shooting chart" the diagnosis items are arranged in the order from easy to difficult and therefore please follow these items. The transmission should not be removed, unless necessary.

2. The test and adjustment for trouble diagnosis should be made on the basis of standard values and the data should be recorded.

General checking requirements are described below.

INSPECTION AND ADJUSTMENT BEFORE TROUBLE DIAGNOSIS

Testing instrument for inspection

1. Engine tachometer
2. Vacuum gauge
3. Oil pressure gauge

It is convenient to install these instruments in a way that allows measurements to be made from the driver's seat.

Checking oil level

In checking the automatic transmission the oil level and the condition of oil around the oil level gauge should be examined, in the first place. These steps are easy and effective in trouble shooting as some change of oil conditions are linked with developed troubles in many cases.

For instance:

Lack of oil causes defective operation by making the clutches and brakes slip, developing severe wear.

The cause of this operation is that the oil pump has begun to suck air which caused oil foaming, thus rapidly deteriorating the oil quality and producing sludge and varnish.

Meanwhile, excessive oil is also bad as in the case of a lack of oil, because of oil foaming by being stirred up by the gears. Moreover, in high speed driving with excessive oil in the transmission the oil often blows out from the breather.

1. Measuring oil level

With the select lever in "P", warm the oil and make it circulate completely through all parts and then measure the level with the engine idling. In this inspection, the car must be placed on a level surface. This is required for the purpose of checking the oil level when the oil fills the torque converter as illustrated below.

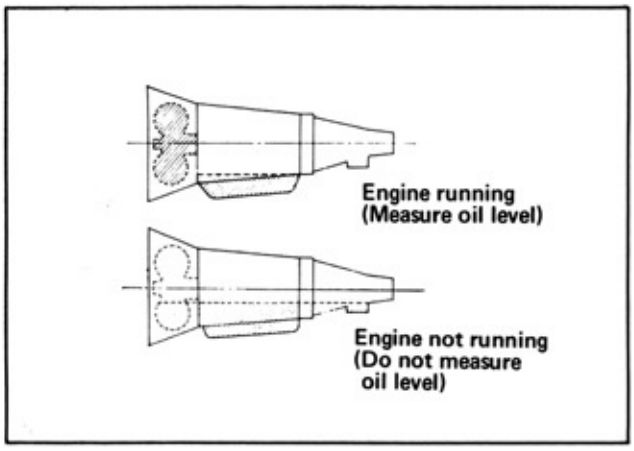


Fig. TM-3 Measuring oil level

The amount of the oil varies with the temperature. As a rule the oil level must be measured after its temperature becomes sufficiently high.

After approximately 10 km (6 miles) run, measure the level, with the part "HOT" at 100° C (212° F) of the oil level gauge, when checking the level after starting the engine in the morning, first operate the engine at 1, 200 rpm for about two minutes for warming up and change over into normal idling before measuring the level on the part "COLD" for 40° C (104° F).

Note: a. In oil level checking, use special paper waste to handle the level gauge and take care not to let the scraps of paper and cloth stick to the gauge.

b. Insert the gauge fully and take it out quickly before the splashing oil adheres to the gauge and then observe the level.

c. Use the recommended oil only and fill to the line "F". The difference of capacities between both "F" and "L" is approximately 0.4 liters (7/8 US pts, 3/4 Imp pts) and therefore take care not to fill beyond the line "F".

Recommended Oil: CASTROL "TQF"
CALTEX "4571A"

2. Inspecting oil condition

The condition of oil sticking to the level gauge indicates whether to overhaul and repair the transmission or look for the defective part. If the oil has deteriorated into a varnish-like quality, it causes the control valve to stick. The blackened oil gives the proof of the burned clutch, brake band, etc. In these cases, the transmission must be replaced.

Inspection and repair of oil leakage

As the leaking oil covers the vicinity of the leaking point, it is generally difficult to find out the oil leak point.

To make it easy to find out the oil leak point, some instances of the oil leakage are described below for each part.

1. Oil leakage from converter housing

Leaking oil from the oil seal of the pump housing, honey-comb holes of the pump housing external wall, and the oil seal of the engine

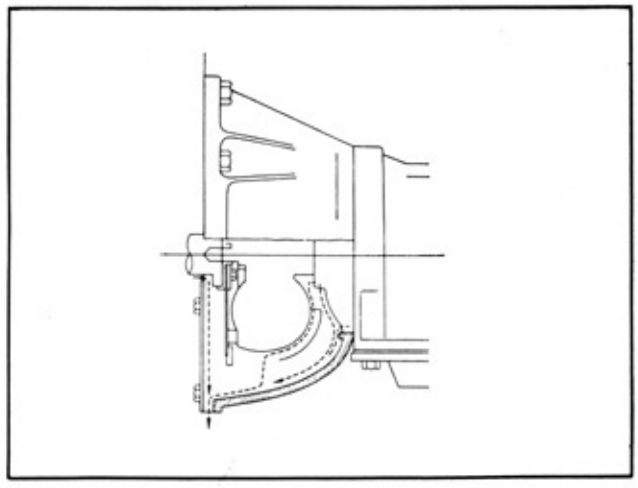


Fig. TM-4 Oil leak point of converter housing

crankshaft travels along the internal wall of the converter housing and drips from the housing. An oil leakage from the rubber ring around the oil pump housing appears on the external wall of the converter housing.

To ascertain the oil leakage point accurately;

(1) Place the car over the pit and examine whether the leaking oil is torque converter oil or not.
The torque converter oil can be distinguished from the engine oil because its color is like a red wine when shipped from the factory.

(2) Remove the dust cover of the converter housing and completely wipe of the leaked oil and dust. Some non-combustible organic solvents such as carbon tetrachloride are recommended to use when cleaning.

(3) Warm up the oil temperature by running the engine and change the gear into "D" or "R" and the oil pressure will increase thus making it easier for the oil to ooze out from the leaking point.

2. Oil leakage from transmission body and rear extension

As oil leakage from the breather does not occur except during high speed running, it is impossible to make sure if it is leaking when the car is not in motion. Sometimes, however, the oil leakage can be found when the leaking out oil is splashed on the exhaust tube and begins to burn.

Oil leakages from between the transmission and rear extension, the elbow connector for rear lubrication, and oil pressure inspection hole must be checked after completely wiping out the pertinent areas in the same way as in the case of the converter housing.

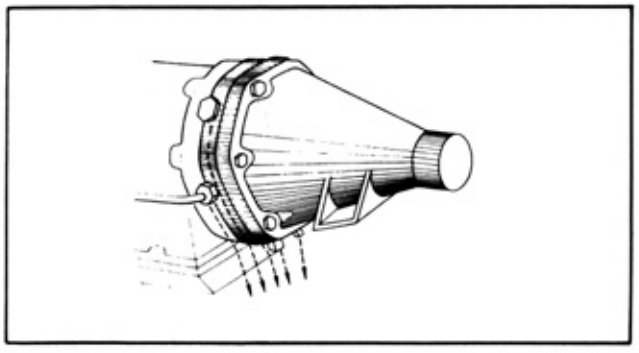


Fig. TM-5 Oil leak point of rear extension

3. Oil leakage from vacuum diaphragm

When the oil leakage occurs because of the damaged rubber membrane of the vacuum diaphragm, the engine exhaust becomes abnormally whitish and in an extreme case it looks as if a smoke screen is being laid down.

In such a case, the lubrication oil within the automatic transmission extremely decreases and in addition the engine suffers damage. The damaged diaphragm must be replaced immediately.

Checking engine idling rpm

The engine idling revolution should be properly adjusted in accordance with the service manuals for L23 engine, L20 engine and H20 engine, and the model B10.

If the engine revolution is too low, the engine does not operate smoothly, and if too high, a strong shock or creep develops when changing over from "N" to "D" or "R".

Checking and adjusting kick down switch and downshift solenoid

When the kick down operation is not made properly or the speed changing point is too high, check the kick down switch, downshift solenoid, and wiring between them. When the ignition key

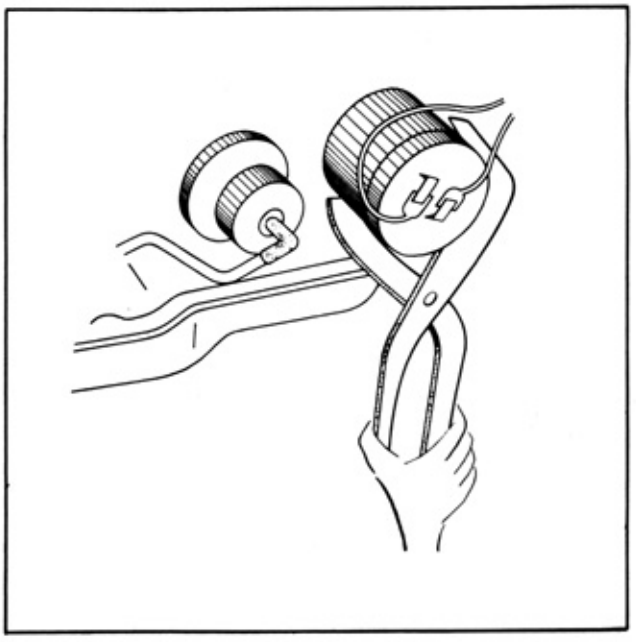


Fig. TM-6 Removing downshift solenoid

is positioned at the 1st stage and the accelerator pedal is depressed deeply, the switch contact should be closed and the solenoid should click. If it does not click, it indicates a defect. Then check each part with the testing instruments.

Note: Before replacing the solenoid, drain the torque converter oil by approximately 1 liter (2-1/8 US pts, 1-3/4 Imp pts).

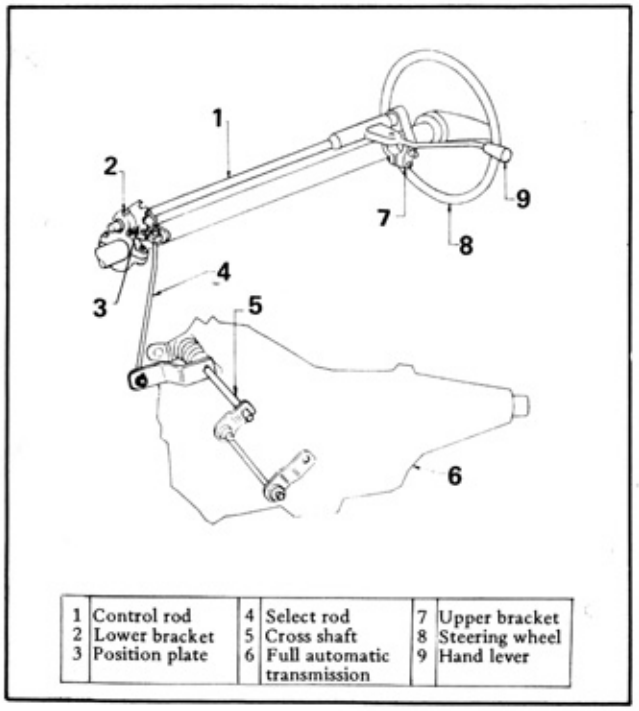
Checking and adjusting manual linkage

Adjustment of the manual linkage is equally important as checking the oil level for the automatic transmission. A maladjusted manual linkage often causes the damage to the transmission.

1. Checking procedure

When the selector lever is pulled and then turned from "P" to "1", the hand feels a slight resistance at each position. This indicates the manual valve is at each detained position within the valve body and the lever is properly positioned.

Check whether the pointer of the selector dial correctly corresponds to such positions and whether the lever, when released, corresponds to the relevant step of the position plate.



1	Control rod	4	Select rod	7	Upper bracket
2	Lower bracket	5	Cross shaft	8	Steering wheel
3	Position plate	6	Full automatic transmission	9	Hand lever

Fig. TM-7 Manual linkage

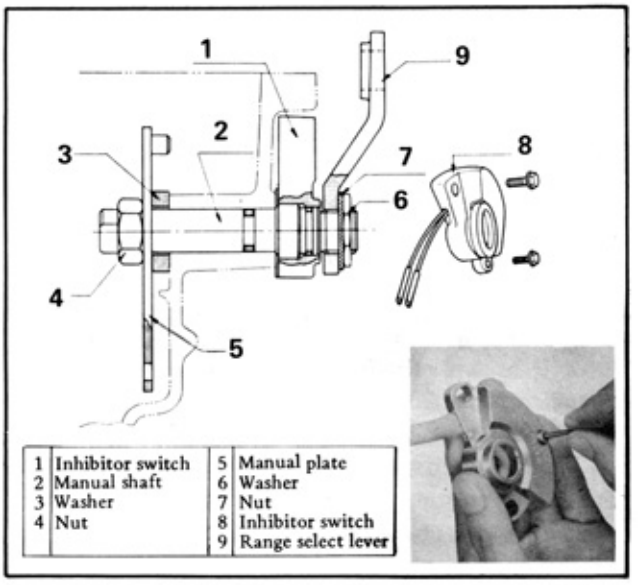
2. Adjusting procedure

If any disorder is found by checking, try to move the lever while pulling it towards you and, after making sure that it does not move down beyond "1" return it to "D".

Adjust the linkage in the engine compartment so that the detained position "D" will correspond to the position "D" of the position plate.

Checking and adjusting inhibitor switch

The inhibitor switch serves to light the reverse lamp in the range "R" of the transmission operation and also to rotate the starter motor in the ranges "N" and "P".



1	Inhibitor switch	5	Manual plate
2	Manual shaft	6	Washer
3	Washer	7	Nut
4	Nut	8	Inhibitor switch
		9	Range select lever

Fig. TM-8 Construction of inhibitor switch

Check whether the reverse lamp and the starter motor operate normally in these ranges. If there is any trouble, first check the linkage. If no defect is found in the linkage, check the inhibitor switch.

Separate the manual lever from the remote control lower rod and turn the range select lever to "N".

Note: In the position "N" the slot of the manual shaft is vertical.

By the use of the tester, check the two black-yellow (BY) wires from the inhibitor switch in the ranges "N" and "P" and the two red-black (RB) wires in the range "R" for continuity. Turn range select lever to both directions from each lever set position and check each continuity range. It is normal if the electricity is on while the lever is within an angle of about 3° on both sides from each lever set line. However, if its continuity range is obviously unequal on both sides, the adjustment is required.

If any malfunction is found, unscrew the fastening nut of the range selector lever and two fastening bolts of the switch body and then remove the machine screw under the switch body. Adjust the manual shaft correctly to the position "N" by means of the selector lever. (When the slot of the shaft becomes vertical, the detent works to position the shaft correctly with a click sound.)

Move the switch slightly aside so that the screw hole will be aligned with the pin hole of the internal rotor combined with the manual shaft and check their alignment by inserting a 1.5 mm dia. (0.0591 in) pin into the holes. If the alignment is made correct, fasten the switch body with the bolts, pull out the pin and tighten up the screw again into the hole, and fasten the selector lever as before. Check over again the continuity with the tester. If the malfunction still remains, replace the inhibitor switch.

STALL TEST

The purpose of this test is to check the transmission and engine for trouble by measuring the maximum numbers of revolutions of the engine while the vehicle is held in a stalled condition and the carburetor is in full throttle operation with the selector lever in ranges "D", "2" and "1" respectively and by comparing the measured results with the standard values.

Components to be tested and test items

1. Clutches brake and band in transmission for slipping.
2. Torque converter for function
3. Engine for overall property

Stall test procedures

Before testing, check the engine oil and torque converter oil, warm up the engine cooling water to the suitable temperature by warming up operation at 1200 rpm with the selector lever in the range "P" for several minutes, and warm up the torque converter oil to the suitable temperature (60° C to 100° C) (140° F to 212° F).

1. Mount the engine tachometer at a location that allows good visibility from the driver's seat and put a mark on "1700 ± 100 rpm" on the meter in accordance with the standard.

2. Secure the front and rear wheels completely with chocks and apply the hand brake. Be sure to depress the brake pedal firmly with the left foot before depressing down the accelerator pedal.

3. Throw the selector lever into the range "D".

4. Slowly depress the accelerator pedal down till the throttle valve is fully opened. Quickly read and record the engine revolution when the engine begins to rotate steadily and then release the accelerator pedal.

5. Turn the selector lever into "N" and operate the engine at approximately 1200 rpm for more than one minute to cool down the torque converter oil and coolant.

6. Make similar stall tests in the ranges "2", "1" and "R".

Note: The stall test operation as specified in the item (4) should be made within five seconds. If it takes too long, the oil deteriorates and the clutches, brake and band are adversely affected. Sufficient cooling time should be given between each test for the four ranges "D", "2", "1", and "R".

Judgement

1. High stall revolution more than standard revolution

If the engine revolution in stall condition is higher than the standard values, it indicates that one or more clutches in the transmission are slipping and therefore no further test is required.

Transmission selector position		Gear ratios	Front clutch	Rear clutch	Low and Reverse brake	Band servo	One way clutch	Parking pawl
P					On			On
R		2.182	On		On			
N								
D	D_1	2.458		On			On	
	D_2	1.458		On		On		
	D_3	1.000	On	On				
2		1.458		On		On		
1	1_2	1.458		On		On		
	1_1	2.458		On	On			

For the following abnormalities, the respective causes are presumed.

High rpm in all ranges ..... Low line pressure
High rpm in "D", "2" and "1" ..... Rear clutch slipping
High rpm in "D" and "2" and normal rpm in "1" ..... One way clutch slipping
High rpm in "R" only ..... Front clutch or low and reverse brake slipping.

To determine which is slipping, either front clutch or low and reverse brake, a road test is need.

If, while coasting after starting with the lever in "1" range, engine braking does not work properly, it is determined the low and reverse brake is slipping. Otherwise, the front clutch is slipping.

The slipping of the band brake is difficult to ascertain. However, if it occurs with the lever in "2" range, the engine revolution increases up to the same level as in 1st speed and therefore it can be found out by careful observation. It is impossible to check it in the stall test.

2. Standard stall revolution

If the engine revolution in stall condition is within the standard values, the control elements are normally operating in the ranges "D", "2", "1" and "R".

Also, the engine and one way clutch of the torque converter are normal in performance and operation.

The one way clutch of the torque converter, however, sometimes sticks. This should be determined in the road test.

3. Low stall revolution less than standard revolution

If the engine revolution in stall condition is lower than the standard values, it indicates that the engine is abnormal condition or the torque converter's one way clutch is clipping.

4. Others

(1) If the accelerating performance is poor until the car speed of approximately 50 km/h (30

MPH) is attained and then normal beyond that speed, it can be judged that the torque converter's one way clutch is slipping.

(2) If the torque converter's one way clutch sticks, the car speed can not exceed approximately 80 km/h (50 MPH) in the road test. In such a case, the torque converter oil' temperature rises up abnormally and so special care is required.

(3) If the transmission does not operate properly in all car speeds, it indicates poor engine performance.

ROAD TEST

An accurate knowledge of the automatic transmission is prerequisite to its exact diagnosis by a road test.

It is recommended to prepare a diagnosis guide chart in which are written the standard car speeds for each stage of the up and down-shiftings. Measured car speeds are to be filled in the adjoining column in each testing.

Also it is advisable to mount a stopper for positioning the throttle opening.

Car speed at gear shift

Throttle opening	Selector lever position	Gear shift	Car speed at gear shift km/h (mph) for DATSUN 2000 2300	Car speed at gear shift km/h (mph) for DATSUN 1000	Output shaft rpm
Kick down (0 mmHg)	D	D1 → D2	50 to 55 (31 to 35)	43 to 48 (27 to 30)	1800 to 2000
	D	D2 → D3	88 to 93 (55 to 59)	77 to 82 (68 to 51)	3200 to 3400
	D	D3 → D2	81 to 87 (51 to 55)	71 to 76 (44 to 48)	2950 to 3150
	D	D2 → D1	39 to 44 (24 to 28)	34 to 39 (21 to 24)	1400 to 1600
Full open (0 mmHg)	D	D1 → D2	39 to 44 (24 to 28)	34 to 39 (21 to 24)	1400 to 1600
	D	D2 → D3	63 to 69 (40 to 43)	55 to 60 (34 to 38)	2300 to 2500
	D	D3 → D2	33 to 39 (20 to 24)	29 to 34 (18 to 21)	1200 to 1400
	D	D2 → D1	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
	1	D2 → D1	39 to 44 (24 to 28)	34 to 39 (21 to 24)	1400 to 1600
Half open (-200 mmHg)	D	D1 → D2	14 to 19 (9 to 12)	12 to 17 (8 to 11)	500 to 700
	D	D2 → D3	33 to 39 (20 to 24)	29 to 34 (18 to 21)	1200 to 1400
	D	D3 → D2	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
	D	D2 → D1	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
Minimum open (-450 mmHg)	D	D1 → D2	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
	D	D2 → D3	23 to 29 (15 to 18)	20 to 25 (13 to 16)	850 to 1050
	D	D3 → D2	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
	D	D2 → D1	10 to 15 (6 to 9)	8 to 13 (5 to 8)	350 to 550
	1	D2 → D1	37 to 43 (23 to 27)	32 to 37 (20 to 23)	1350 to 1550

$$\text{Car speed (km/h)} = \frac{2\pi \times 60}{1,000} \times \frac{\text{Output shaft rpm}}{\text{Final gear ratio}} \times \text{Tire effective radius (m)}$$

Checking speed changing condition

The driver's feeling during car speed changes should also be checked attentively.

If a sharp shock or unsmoothness are felt during a speed change, or

If a speed change is made with a long and dragging feeling, these indicate that the throttle pressure is too low or some valve connected to the throttle is defective.

Checking items during speed change

1. In "D" range, speed changes, $D_1 \rightarrow D_2 \rightarrow D_3$ are effected. In "R" range, the speed does not increase. In "2" range, no speed change occurs.

2. The kick down operates properly.

3. By moving the lever from "D" into "1", speed changes $D_3 \rightarrow 1_2 \rightarrow 1_1$ are effected. In the ranges "1_2" and "1_1", the engine braking works properly.

4. In "1", the speed does not increase.

5. In "P", the car can be parked properly.

If any malfunction occurs in the second gear during the road test, that is, if the car shakes, drags or sling in shifting up from "D", directly to "D3" or in shifting up from "D_1" to "D_2", the brake band is defected. In this case, replace Automatic Transmission Unit with new one.

LINE PRESSURE TEST

When any slipping occurs in clutch or brake, or the feeling during a speed change is not correct, the line pressure must be checked.

Measuring the line pressure is done by a pressure gauge attached to two pressure measuring holes after removing blind plugs located at the rear flange.

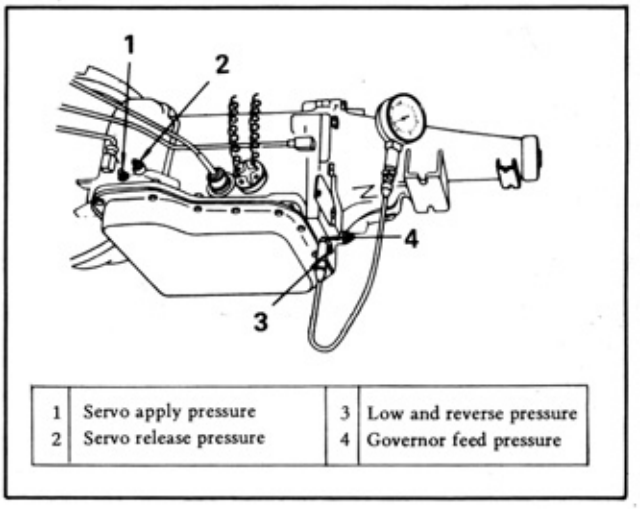


Fig. TM-9 Measuring line pressure

A sharp shock in up-shifting or too high changing speeds are caused mostly by too high a throttle pressure.

Slipping or incapability of operation is mostly due to oil pressure leakage within the gear trains or spool valve.

The line pressure measurement is begun at idling and taken step by step by enlarging the throttle opening.

Line pressure

Range	Throttle opening	At low speed (under about 15 km/h (9.3 mph))	At high speed (over about 35 km/h (21.7 mph))
D	Full throttle	10 kg/cm2 (142 lb/sq in)	6 kg/cm2 (85 lb/sq in)
	Half throttle	7 kg/cm2 (99 lb/sq in)	4.8 kg/cm2 (68 lb/sq in)
	Minimum throttle	3.5 kg/cm2 (49 lb/sq in)	3.5 kg/cm2 (49 lb/sq in)
2	Full throttle	10 kg/cm2 (142 lb/sq in)	6 kg/cm2 (85 lb/sq in)
	Half throttle	9.3 kg/cm2 (132 lb/sq in)	5.7 kg/cm2 (81 lb/sq in)
	Minimum throttle	9.3 kg/cm2 (132 lb/sq in)	5.7 kg/cm2 (81 lb/sq in)
1 (At 1st speed)	Full throttle	10 kg/cm2 (142 lb/sq in)	6 kg/cm2 (85 lb/sq in)
	Half throttle	7 kg/cm2 (99 lb/sq in)	4.8 kg/cm2 (68 lb/sq in)
	Minimum throttle	3.5 kg/cm2 (49 lb/sq in)	3.5 kg/cm2 (49 lb/sq in)
R	Full throttle	15 kg/cm2 (213 lb/sq in)	— — —
	Half throttle	10.7 kg/cm2 (152 lb/sq in)	— — —
	Minimum throttle	5.4 kg/cm2 (76 lb/sq in)	— — —

Judgement in measuring line pressure

1. Low idling line pressures in the ranges "D", "2", "1", "R" and "P"

It can be attributed to trouble in the pressure supply system or too low output of power caused by, for example, a worn oil pump, an oil pressure leakage in the oil pump, valve body or case, and a sticking regulator valve.

2. Low idling, line pressures in certain ranges only

It is caused presumable by an oil leakage in the devices or circuits connected to the relevant ranges. For example, when there is an oil leakage in the rear clutch and governor, the line pressures in "D", "2" and "1" are low but the pressure is normal in "R". When an oil leakage occurs in the low and reverse brake circuit, the line pressures in "R" and "P" are low but the pressure is normal in "D", "2" and "1".

3. High idling line pressures

It is presumed to be caused by an increased vacuum throttle pressure owing to a leakage in the vacuum tube or diaphragm or by a increased line pressure due to a sticking regulator valve.

Vacuum leakage is checked by directly measuring the negative pressure after removing the vacuum pipe.

A puncture of the vacuum diaphragm can be easily ascertained because the torque converter oil is absorbed into the engine and the exhaust pipe blows up the white smoke.

4. Checking items when the line pressure is increasing

In this checking, the line pressures should be measured with vacuums of 300 mmHg and 0 mmHg in accordance with the stall test procedure.

(1) If the line pressures do not increase despite the vacuum decrease, check whether the vacuum rod is incorporated.

(2) If the line pressures do not meet the standard, it is caused mostly by a sticking pressure regulating valve, pressure regulating valve plug, or amplifier.

TROUBLE SHOOTING CHART

Inspecting items

a) Inspection with automatic transmission on the car

A	Oil level
B	Range select linkage
C	Inhibitor switch and wiring
D	Vacuum diaphragm and piping
E	Downshift solenoid, downshift switch and wiring
F	Engine idling rpm
G	Oil pressure (throttle)
H	Engine stall rpm
I	Rear lubrication piping
J	Control valve (manual)
K	Governor valve
L	Band servo
M	Transmission air check
N	Oil quantity
O	Ignition switch and starter motor
P	Engine adjustment and brake inspection

b) Inspection after removing automatic transmission from the car

u	One way clutch of torque converter

Trouble shooting chart for Nissan Full Automatic Transmission (Type 3N71A)

(The number shown below indicates the sequence of the checking items to be taken up.)

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	u
Engine can not start in "N", "P".	.	2	3	.	.	.	.	.	.	.	.	.	.	.	1	.	.
Engine start in other range than "N", "P".	.	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sharp shock in shifting from "N" to "D".	.	.	.	2	.	1	3	.	.	4	.	.	.	.	.	.	.
Car will not run in "D" (but runs in "2", "1", "R").	.	1	.	.	.	.	2	.	.	3	.	.	.	.	.	.	.
Car will not run in "D", "1", "R" (but runs in "R"), clutches slips. Very poor accelration.	1	2	.	.	.	.	4	.	.	5	.	.	6	3	.	7	.
Car will not run in "R" (but runs in "D", "2", "1"). Clutches lips. Very poor acceleration.	1	2	.	.	.	.	4	.	.	5	.	.	6	3	.	.	.
Car will not run in all ranges.	1	2	.	.	.	.	3	.	.	5	.	.	6	4	.	.	.
Clutches or brakes somewhat slips in starting.	1	2	.	6	.	.	3	.	.	5	.	.	7	4	.	.	.
Car runs in "N".	.	1	.	.	.	.	.	.	.	3	.	.	.	2	.	.	.
Maximum speed not attained. Acceleration poor.	1	2	.	.	.	.	4	5	.	7	.	6	.	3	.	8	.
Car braked by throwing lever into "R".	.	.	.	.	.	.	.	.	.	.	.	3	2	1	.	.	.
Large creep.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
No creep at all.	1	2	.	.	.	3	.	.	.	5	.	.	.	4	.	.	.
Failure to change speed from 1st to 2nd.	.	1	.	2	3	.	.	.	.	5	6	8	7	4	.	.	.
Failure to change speed from 2nd to 3rd.	.	1	.	2	3	.	.	.	.	5	6	8	7	4	.	.	.
Too high speed change point in case from 1st to 2nd, from 2nd to 3rd.	.	.	.	1	2	.	3	.	.	5	6	.	.	4	.	.	.
Speed change from 1st to 3rd occurs.	.	.	.	.	.	.	.	.	.	2	4	.	3	1	.	.	.

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	u
Too sharp shock in change from 1st to 2nd.	.	.	.	1	.	.	.	2	.	4	.	5	.	3	.	.	.
Too sharp shock in change from 2nd to 3rd.	.	.	.	1	2	.	3	.	.	4	.	6	5	.	.	.	.
Almost no shock or clutches slipping in change from 1st to 2nd.	1	2	.	3	.	.	4	.	.	6	.	8	7	5	.	.	.
Almost no shock or slipping in change from 2nd to 3rd. Engine extremely races.	1	2	.	3	.	.	4	.	.	6	.	8	7	5	.	.	.
Car braked by speed change from 1st to 2nd.	.	.	.	.	.	.	.	.	.	2	.	.	.	1	.	.	.
Car braked by speed change from 2nd to 3rd.	.	.	.	.	.	.	.	.	.	3	.	2	.	1	.	.	.
Failure to change speed from 3rd to 2nd.	.	.	.	1	.	.	.	.	.	3	4	6	5	2	.	.	.
Failure to change speed from 2nd to 1st or from 3rd to 1st.	.	.	.	1	.	.	.	.	.	3	4	6	5	2	.	.	.
Speed change shock felt during car speed decrease by releasing accelerating pedal.	.	1	.	2	3	.	4	.	.	5	6	.	.	.	.	.	.
Too high change point in case from 3rd to 2nd, from 2nd to 1st.	.	1	.	2	3	.	4	.	.	5	6	.	.	.	.	.	.
Kickdown does not operate by depressing pedal in 3rd within kickdown car speed 82 to 87 km/h (51 to 55 mph)	.	.	.	2	1	.	.	.	.	4	5	.	.	3	.	.	.
Kickdown operates or engine overruns by depressing pedal in 3rd beyond kickdown car speed limit (over 100 km/h (60 mph)).	.	1	.	2	.	.	3	.	.	5	6	.	7	4	.	.	.
Extremely races or slips in changing from 3rd to 2nd by depressing pedal.	.	.	.	1	.	.	2	.	.	4	.	6	5	3	.	.	.
Failure to change from 3rd to 2nd by changing lever into "2".	.	1	.	.	.	.	2	.	.	4	.	5	.	3	.	.	.
Speed changes between 2nd and 1st and between 2nd and 3rd occur in "2".	.	1	.	.	.	.	2	.	.	3	.	.	.	.	.	.	.

Trouble	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	u
No shock at changing from "1" to "2" or extreme high engine rpm.	1	2	.	3	.	4	.	1	.	6	.	.	7	5	.	.	.
Failure to change from 3rd to 2nd by turning lever into "1".	.	1	.	.	.	.	2	.	.	4	5	7	6	3	.	.	.
Engine brake does not operate in "1".	.	1	.	.	.	.	2	.	.	4	.	.	5	3	.	.	.
Speed change from 1st to 2nd in "1". Speed change from 2nd to 3rd in "2".	.	1	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.
Speed does not change from 2nd to 1st in "1".	1	2	.	.	.	.	.	.	.	4	5	6	7	3	.	.	.
Large shock changing from 2nd to 1st in "1".	.	.	.	1	.	.	.	2	.	4	.	.	.	3	.	.	.
Car will move when changing into "P" or parking gear does not disengage by turning off "P".	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Transmission overheats.	1	.	.	.	.	.	3	4	2	6	.	8	7	5	.	.	⑨
Oil shoots out during run. White smoke issues out from tail pipe during run.	1	.	.	3	.	.	5	6	2	7	.	.	8	4	.	.	⑨
Offensive smell at oil charging pipe.	1	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	③
Transmission noisy in "P", "N".	1	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.
Transmission noisy in "D", "2", "1", "R".	1	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.

MEMO:

Trouble shooting guide for Nissan Full Automatic Transmission (Type 3N71A)

Order	Test item	Procedure
1 Checking	1. Oil level gauge	Check gauge for oil level and leakage before and after each test.
	2. Downshift solenoid	Check by sound whether solenoid operates when depressing accelerating pedal fully with ignition key ON.
	3. Manual linkage	Check changing conditions into "P", "R", "N", "D", "2" and "1" by moving selector lever.
	4. Inhibitor switch	Check whether starter operates in "N", "P" only and whether reverse lamp operates in "R" only.
	5. Engine idling rpm	Check whether idling rpm meet standard.
	6. Vacuum pressure of vacuum pipe	Checking whether vacuum pressure is more than 450 mmHg in idling and whether it decreases with increasing rpm.
	7. Operation in each range	Check whether transmission engages positively by shifting "N" → "D", "N" → "2", "N" → "1" and "N" → "R" while idling with brake applied.
	8. Creep of car	Check whether there is any creep in "D", "2", "1", "R".
2 Stall test	1. Oil pressure before testing	Measure line pressures in "D", "2", "1", "R" while idling.
	2. Stall test	Measure engine rpm and line pressures in "D", "2", "1", "R", during full throttle operation. **Note: a. Temperature of torque converter oil used in test should be from 60°C to 100°C (140°F to 212°F) i.e. sufficiently warmed up but not overheated.** **b. For cooling oil between each stall test for "D", "2", "1", "R", idle engine, i.e. rpm at about 1,200 rpm for more than 1 minute in "P". Measurement time must not be more than 5 seconds.**
	3. Oil pressure after testing	Same as the item 1.
3 Road test	1. Slow acceleration, 1st → 2nd, 2nd → 3rd	Check car speeds and engine rpm in shifting up 1st → 2nd and 2nd → 3rd while running with lever in "D" and engine vacuum pressure of about 200 mmHg.
	2. Quick acceleration, 1st → 2nd 2nd → 3rd	Same as the item 1 above except with engine vacuum pressure of 0 mmHg (i.e., in position just before kick down).
	3. Kick down operation, 3rd → 2nd or 2nd → 1st	Check whether the kick down operates and measure the time delays while running at 30, 40, 50, 60, 70 km/h in "D_3".

Order	Test item	Procedure
	4. Shift down, $D_3 \rightarrow D_2 \rightarrow D_1$	Check car speeds and engine rpm in shifting down 3rd → 2nd → 1st (continued) while coasting with accelerating pedal released in "D_3" and engine vacuum pressure of about 450 mmHg.
	5. Shift down, "D_3" → "1_2" → "1_1"	Check for shifting down $D_3 \rightarrow 1_2$ and engine braking, and further for shifting down $1_2 \rightarrow 1_1$ and engine braking, after shifting the lever into "1" range with the accelerator pedal released and the engine vacuum pressure of 0 mmHg while driving at about 50 km/h in "D_3" range.
	6. Shift down, "D_3" → "2"	Check for quick shifting down $D_3 \rightarrow 2$ and engine braking, after shifting the lever into "2" range while driving at about 50 km/h in "D_3" range. Further, check for the transmission being locked to the 2nd gear ratio regardless of the car speed.
	7. Shift up, "1_1" → "1_2"	Check for the transmission not shifting up during acceleration, when starting in "1" range.
	8. Shift up or down when starting in "2" range	Check for the transmission not shifting up or down during acceleration or deceleration, when starting in "2" range.
	9. Parking	Confirm that the car will not move on grade when shifting to "P" range.
4 Others	Abnormal shock, Oil leakage	Put on record observed conditions during these tests such as gear noise, abnormal noise of clutches and acceleration performance.

MEMO:

REMOVAL AND INSTALLATION

CONTENTS

REMOVAL

1. Open the hood and disconnect battery cable from the battery.

2. Remove torsion shaft of the carburetor.

3. Remove lower shift rod ① from manual lever ②.

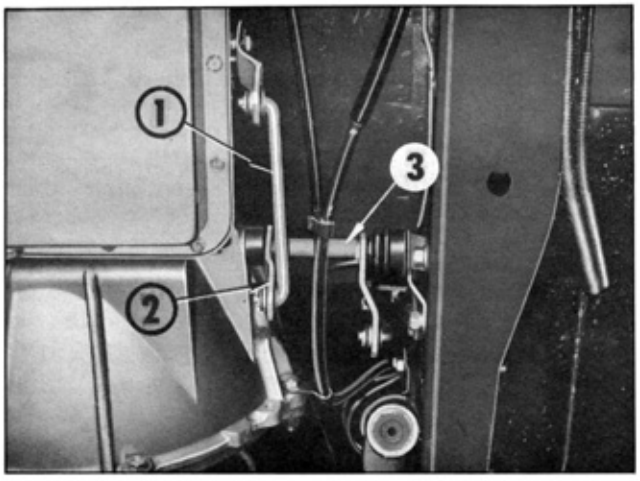


Fig. TM-10 Removing position

4. Remove cross shaft ③ from transmission.

5. Disconnect wiring for inhibitor switch and downshift solenoid.

6. Remove speedometer cable.

7. Remove drain plug and drain off torque converter oil.

Note: As the drained torque converter oil can be used again, the oil should be prevented from mixing foreign matter.

8. Remove exhaust front tube.

9. Remove vacuum tube.

10. Remove both inlet and outlet oil cooler tube.

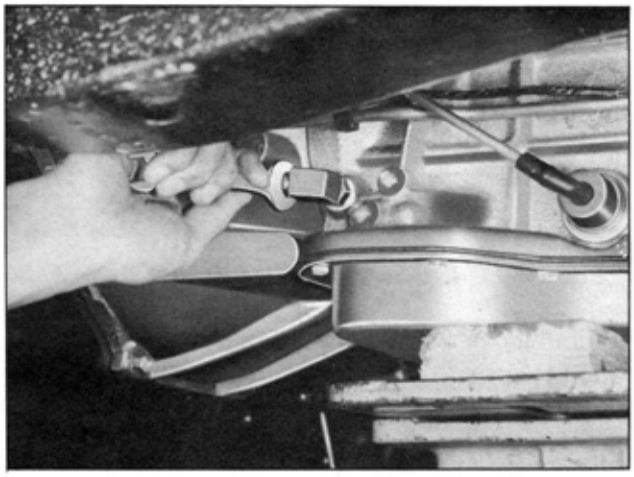


Fig. TM-11 Removing oil cooler tube

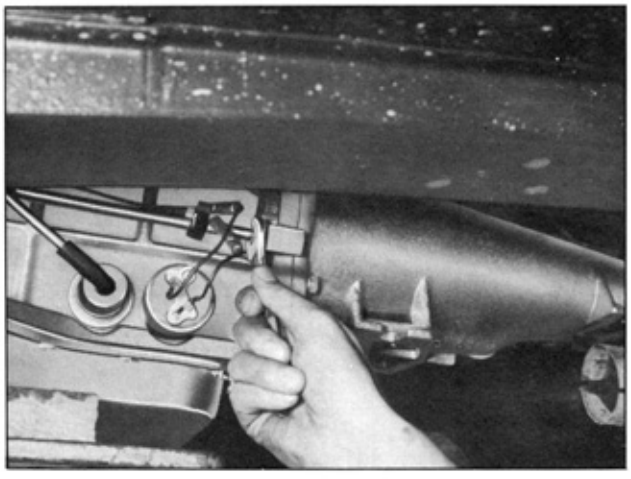


Fig. TM-12 Removing oil cooler tube

11. Remove propeller shaft.

12. Remove starter motor.

13. Support transmission with a mission jack at oil pan.

14. Remove mounting member.

15. Remove four bolts fixing torque converter to drive plate. Before releasing bolts, mark align mark between torque converter to drive plate.

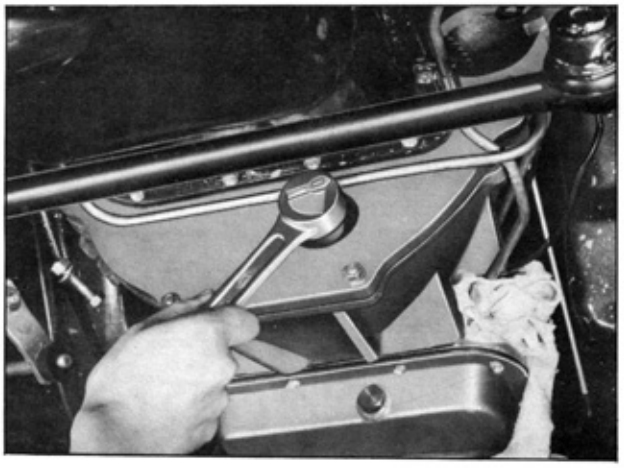


Fig. TM-13 Removing torque converter fixing bolt

16. Remove eight bolts fixing transmission to engine rear plate and separate transmission from engine.

INSTALLATION

Installation is the reversal procedure given for removal. Before transmission assembly is installed, check the following item.

Checking of run-out of drive plate

Set checking tool to the engine rear plate and measure the run-out of drive plate while turning the drive plate.

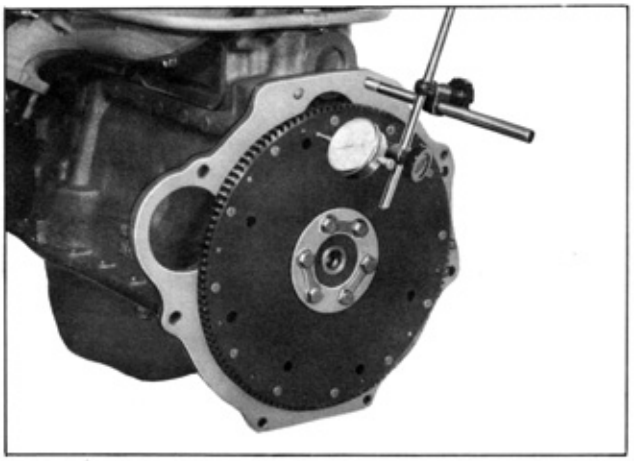


Fig. TM-14 Checking run-out of drive plate

Standard run-out should be less than 0.3 mm (0.012 in).

If the run-out is over 0.5 mm (0.02 in) replace the drive plate with new one.

When installing, tighten all bolts to the recommended torque outlined in the SPECIFICATIONS AND SERVICE DATA section.

MEMO:

SPECIFICATIONS AND SERVICE DATA

GENERAL SPECIFICATIONS

Model		3N71A	
		1000	
		(for DATSUN 2000 Series)	
		2300	
Transmission type		3 forward speeds and 1 reverse, Planetary gear type	
Control type		Column shift	
Selector lever position		P, R, N, D, 2, 1	
Stall speed		1,600 to 1,800 rpm	
Converter nominal size (diameter)		236 mm (9.29 in)	for 130
		236 mm (9.29 in)	for B10
Torque ratio		2.0 : 1	
Gear ratio	1st	2.458	
	2nd	1.458	
	3rd	1.000	
	Reverse	2.182	
Oil capacity		5.5 liters (5 7/8 US qts, 4 7/8 Imp qts)	

TIGHTENING TORQUE

	Datsun 1000 Model B10	Datsun 2000 Model P130	Datsun 2300 Model G130
Drive plate to crankshaft	4.8 to 6.0 kg-m (34.7 to 43.4 ft-lb)		
Drive plate to torque converter	0.8 to 1.0 kg-m (5.8 to 7.2 ft-lb)	4.0 to 5.0 kg-m (28.9 to 36.2 ft-lb)	4.0 to 5.0 kg-m (28.9 to 36.2 ft-lb)
Convertor housing to engine	2.0 to 2.5 kg-m (14.5 to 18.1 ft-lb)	3.5 to 4.5 kg-m (25.3 to 32.6 ft-lb)	3.5 to 4.5 kg-m (25.3 to 32.6 ft-lb)
Oil pan to transmission case	0.35 to 0.45 kg-m (2.5 to 3.3 ft-lb)		
Oil pan drain plug	3.5 to 4.5 kg-m (25.3 to 32.5 ft-lb)		
Breather to rear flange	0.3 to 0.5 kg-m (2.2 to 3.6 ft-lb)		
Oil cooling pipe connector locknut	2.2 to 3.0 kg-m (15.9 to 21.7 ft-lb)		
Oil cooling pipe flare nut	0.7 to 1.1 kg-m (5.1 to 8.0 ft-lb)		
Inhibitor switch to transmission case	0.7 to 1.1 kg-m (5.1 to 8.0 ft-lb)		
Manual shift lock nut	3.5 to 4.5 kg-m (25.3 to 32.5 ft-lb)		
Speedometer pinion sleeve to flare nut	0.35 to 0.45 kg-m (2.5 to 3.3 ft-lb)		

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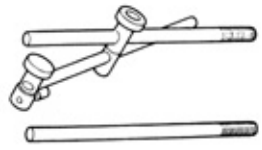
SERVICE EQUIPMENT

Tool number	Tool name	Figure	Note
ST451-10000 ST451-11000 ST451-12000 ST451-13000 ST451-14000 ST451-15000	Set-Oil pressure gauge ├ Pressure gauge ├ Rubber hose ├ Joint pipe ├ Adapter I └ Adapter II		for line pressure for L & R pressure
ST433-60000 ST433-61000 ST433-63000	Set checking tool ├ Checking tool (for the Datsun 1000) ├ Checking tool (for the Datsun 2000 2300) (10ø, P1.5) └ Checking tool (3/8", P16)		

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