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## NISSAN RL4F02A

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**Automatic Transmission Service Group**

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**Miami, FL 33156**

**(305) 661-4161**



## **INTRODUCTION NISSAN RL4FO2A**

The RL4FO2A is a 4 speed automatic transaxle computer controlled front wheel drive with a converter clutch.

The removal - installation, teardown and assembly is covered in detail.

**We thank the Nissan Corporation  
for the illustrations and information  
that made this booklet possible**

The information and part numbers contained in this booklet have been carefully compiled from industry sources known for their reliability, but ATSG does not guarantee its accuracy.

**ROBERT D. CHERRNAY  
TECHNICAL DIRECTOR**

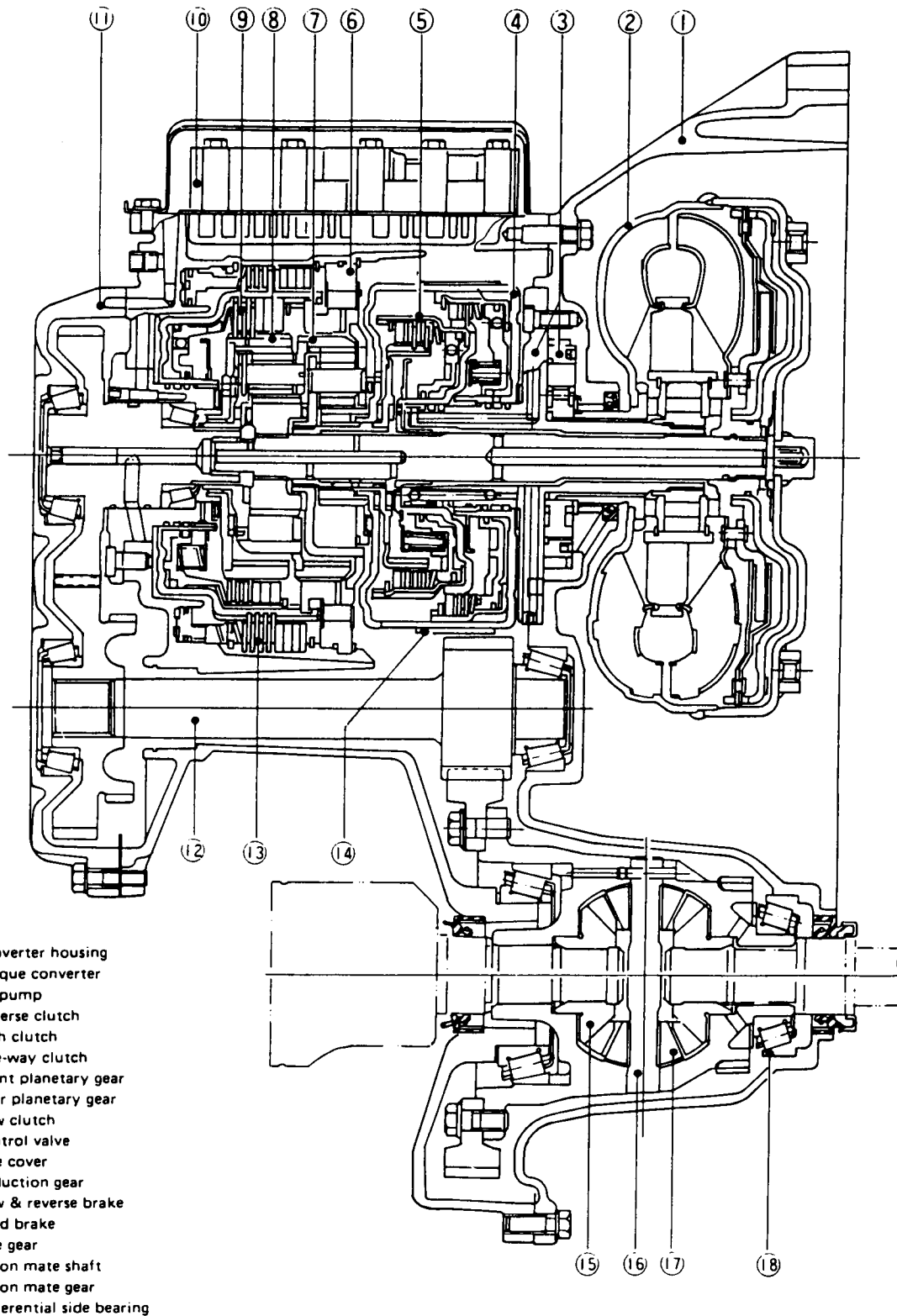
**DALE ENGLAND  
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## AUTOMATIC TRANSMISSION SERVICE GROUP

## Repair Notes

- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts of the transmission from becoming contaminated by dirt or other foreign matter.
- Disassembly should be done in a clean work area.
- Use a nylon cloth or paper towel for wiping parts clean. Common shop rags can leave lint that might interfere with the transmission's operation.
- When disassembling parts, be sure to place them in order in parts rack so they can be put back in the unit in their proper positions.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals, and O-rings should be replaced. It is also very important to perform functional tests whenever it is designated.
- The valve body contains many precision parts and requires extreme care when parts are

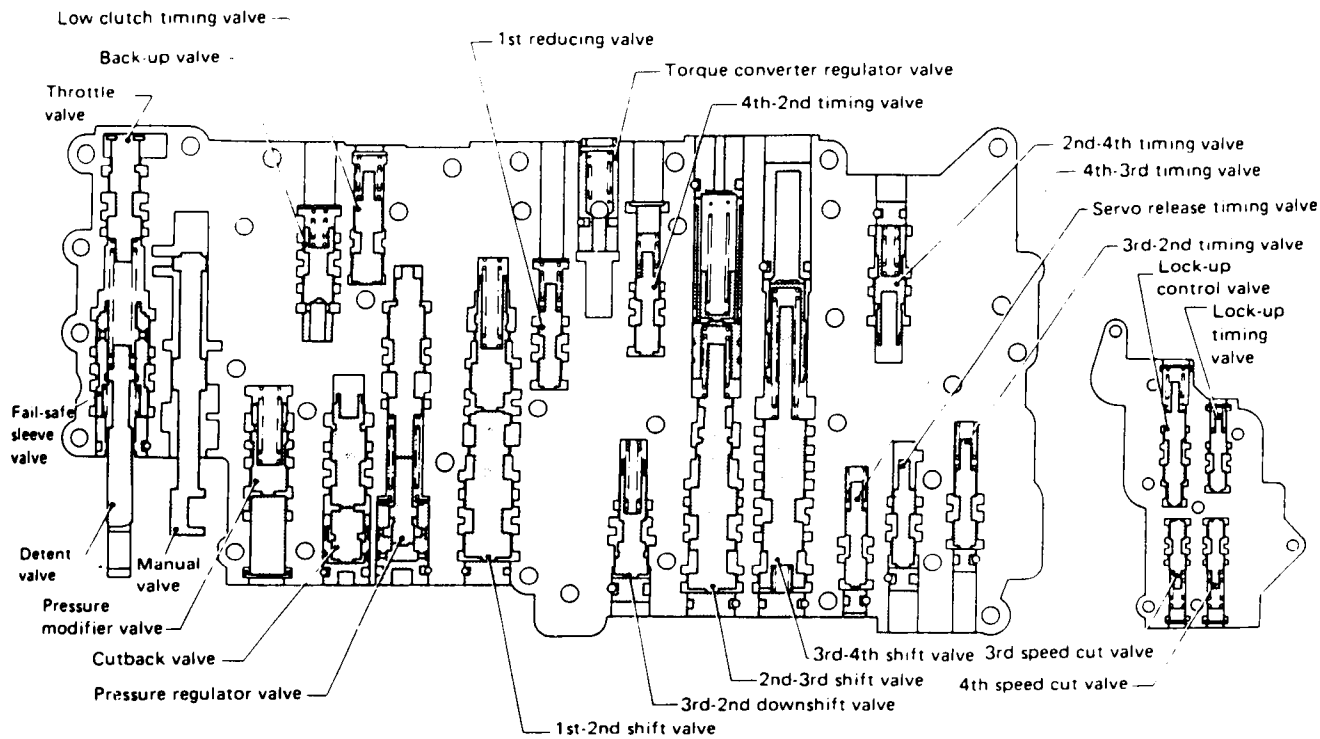
removed and serviced. Place removed parts on a parts rack so they can be put back in the valve body in the same positions and sequences. Care will also prevent springs and small parts from becoming scattered or lost.

- Before assembly, apply a coat of recommended A.T.F. to all parts. Petroleum jelly may be applied to O-rings and seals. Do not use any grease.
- Care should be taken to avoid damaging O-rings, seals and gaskets when assembling.

Abbreviations used throughout this section stand for the following:

- A.T.F. .... Automatic transmission fluid
- D<sub>1</sub> ..... Drive range 1st gear
- D<sub>2</sub> ..... Drive range 2nd gear
- D<sub>3</sub> ..... Drive range 3rd gear
- D<sub>4</sub> ..... Drive range 4th gear
- O.D. .... Overdrive
- 1<sub>2</sub> ..... 1 range 2nd gear
- 1<sub>1</sub> ..... 1 range 1st gear

## Control Valve

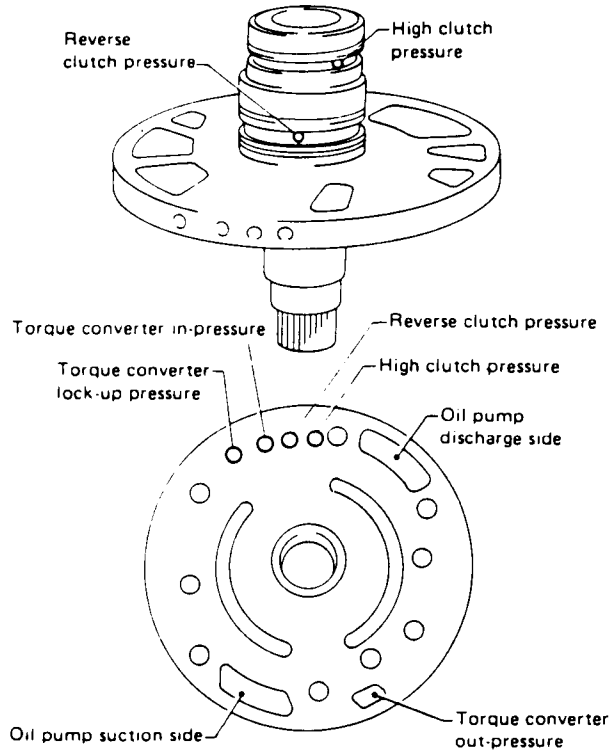


In regard to the description of each component, refer to Control Valve Body.

## Oil Channel

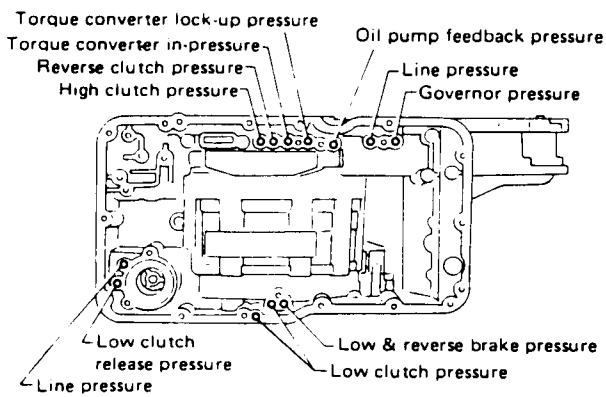
Oil channels which connect components are located in areas shown below.

### OIL CHANNELS IN OIL PUMP COVER

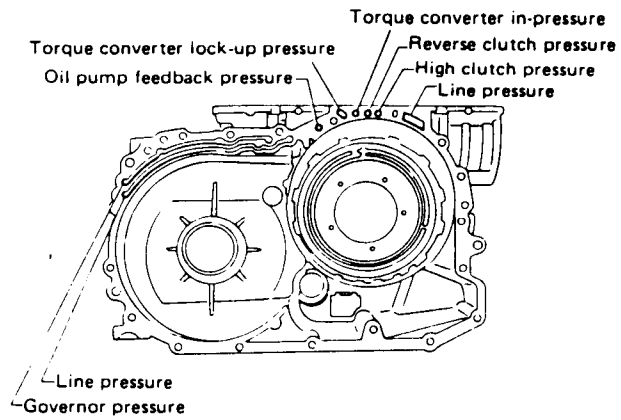


### OIL CHANNELS IN TRANSMISSION CASE

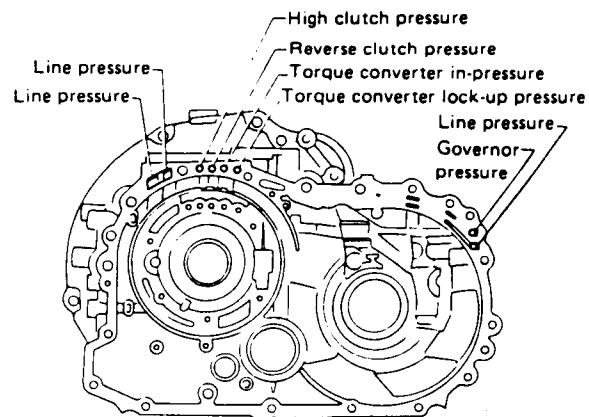
#### Control valve attaching side



#### Converter housing attaching side



### OIL CHANNELS IN CONVERTER HOUSING





# Technical Service Information

## Mechanical Operation

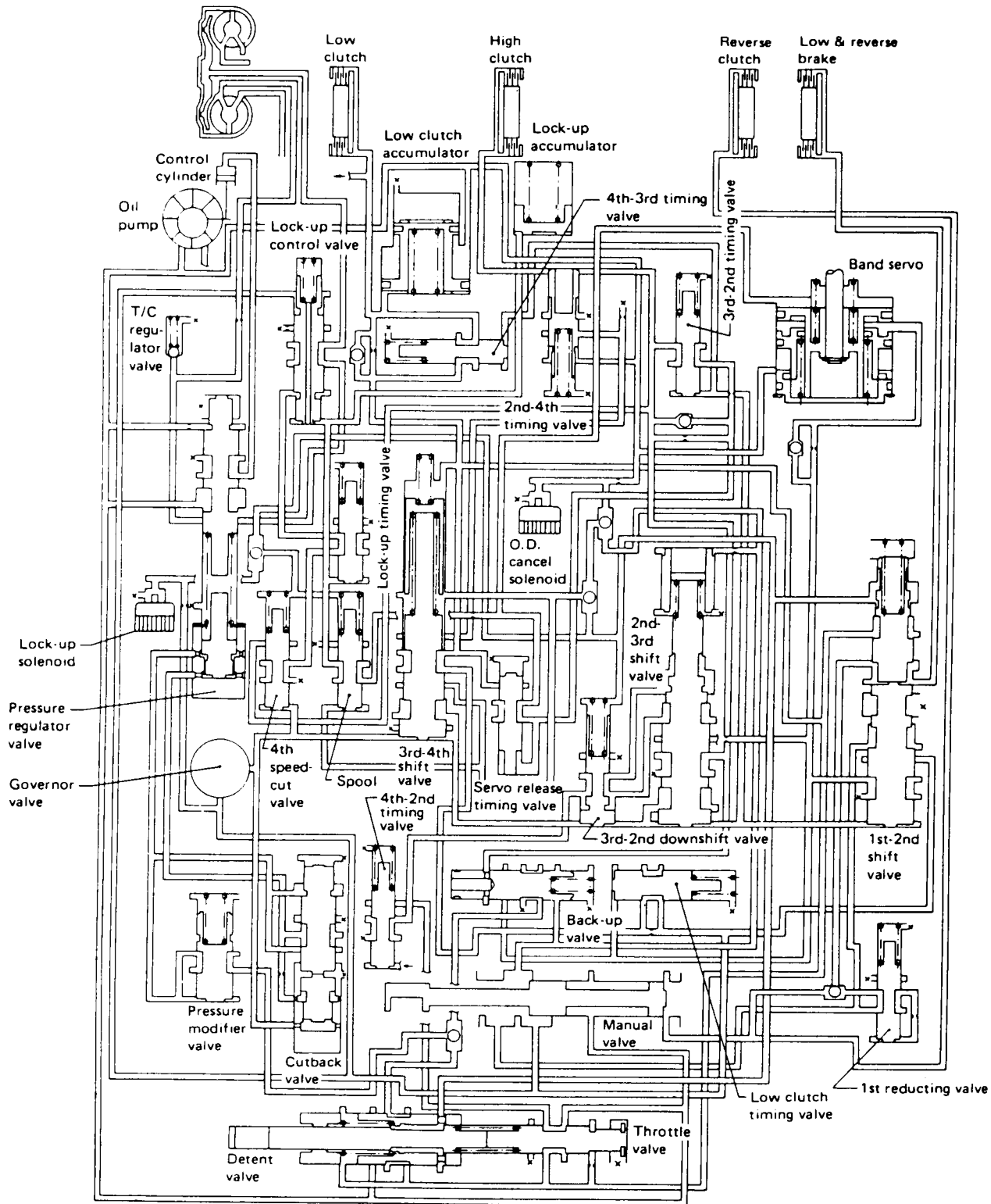
Each part operates as shown in the following table at each gear position.

### RL4F02A

Range	Gear ratio	Reverse clutch	High clutch	Low clutch	Band servo		Low & reverse brake	One-way clutch	Parking pawl	Lock-up
					Operation	Release				
Park	-								on	
Reverse	2.272	on					on			
Neutral	-									
Drive	D <sub>1</sub> Low	2.785		on				on		
	D <sub>2</sub> Second	1.545		on	on					
	D <sub>3</sub> Top (3rd)	1.000		on	on	(on)	on			
	D <sub>4</sub> O.D. (4th)	0.694		on		on				on
2	2 <sub>1</sub> Low	2.785		on				on		
	2 <sub>1</sub> Second	1.545		on	on					
1	1 <sub>1</sub> Low	2.785		on			on	on		
	1 <sub>1</sub> Second	1.545		on	on					

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Hydraulic Control Circuits



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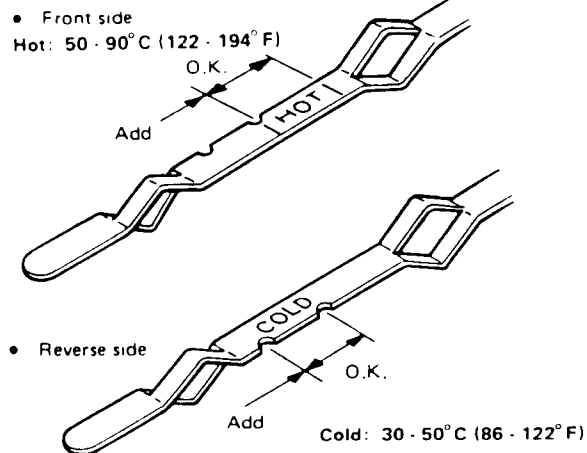


## Technical Service Information ON-VEHICLE SERVICE

### Fluid Level

Use the dipstick to check the fluid level at "HOT" fluid temperatures [50 to 80°C (122 to 176°F)] after the vehicle has been driven approximately 10 minutes. The fluid level can also be checked at "COLD" fluid temperatures [30 to 50°C (86 to 122°F)].

1. Park the vehicle on a level surface and set the parking brake.
2. Start the engine and then move the selector lever through each gear range, ending in "P".
3. Check the fluid level with the engine idling. (If the vehicle has not been driven for some time and the outside temperature is below 30°C (86°F), a "COLD" fluid temperature can be obtained by warming the engine up completely.)
4. Remove the dipstick and clean it with lint-free paper. Reinsert it into the charging pipe as far as it will go.
5. Remove the dipstick and note the reading. If the fluid temperature is "HOT", the level should be in the hot range (in the shaded area). If it is "COLD", the level should be in the cold range (within the cutout portion).



Keep the fluid at the proper level.

- Overfilling may blow off the fluid or damage the transaxle.
- Underfilling may cause the clutches to slip, resulting in damage to them.



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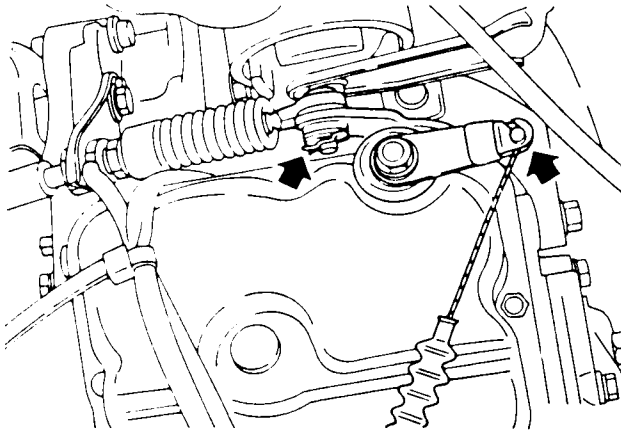
**Control Valve**

---

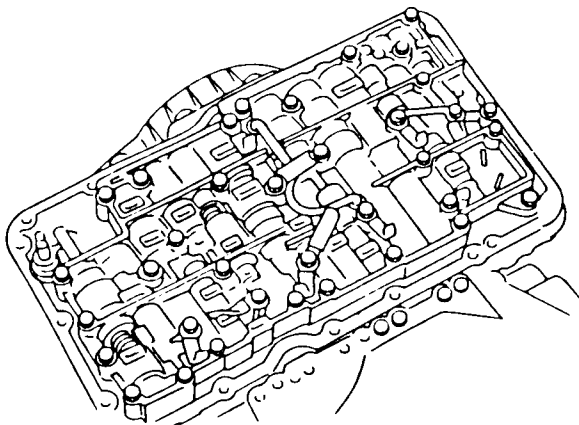
1. Remove the battery and its bracket.
2. Remove the air cleaner, air flow meter, air damper and solenoid valves all as an assembly.

Be careful not to damage the air flow meter.

3. Disconnect control cable and throttle wire then remove throttle lever.



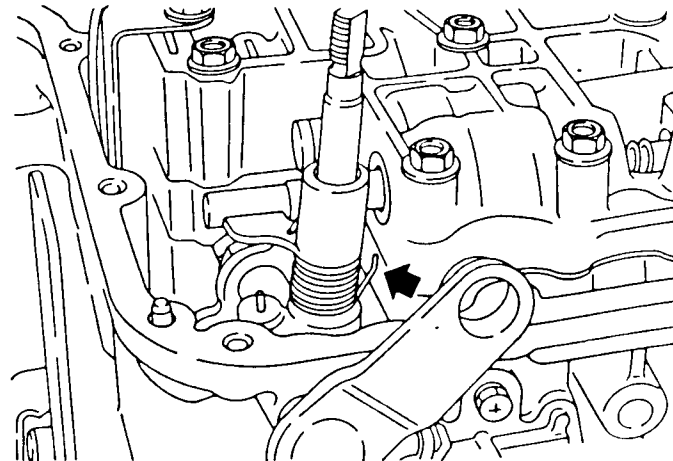
4. Remove control cylinder.
5. Disconnect harness connector on control valve and remove control valve assembly.



Be careful not to drop manual valve out of valve body.

6. Disassemble, inspect and assemble control valve assembly. Refer to Control Valve Body.

- Set manual shaft at Neutral, then align manual plate with groove in manual valve of control valve assembly.

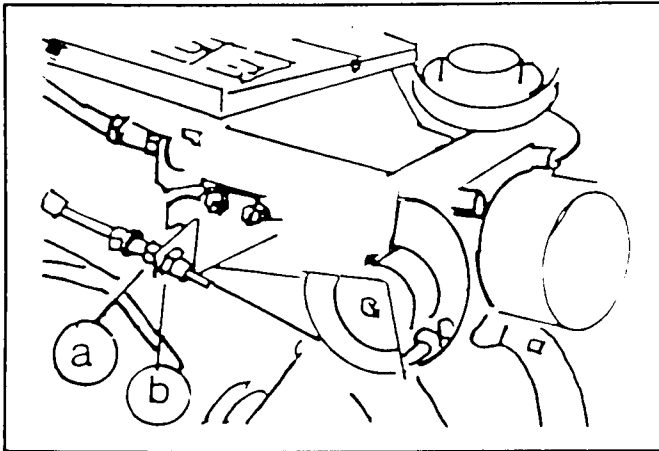


- After installing control valve to transmission case, make sure that control lever can be moved to all positions.

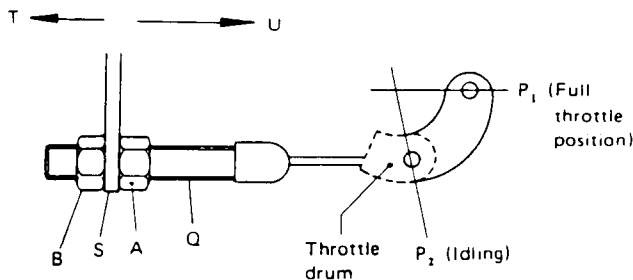
## ON-VEHICLE SERVICE

### Throttle Wire Adjustment

1. Loosen throttle wire double nuts A and B on throttle valve side.



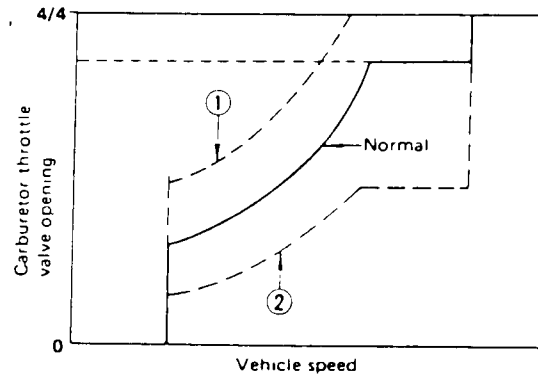
2. With throttle drum set at "P<sub>1</sub>" (full-throttle), pull fitting "Q" fully in direction T and tighten nut "B" by hand until it contacts bracket "S".



3. Back off nut "B" 3/4 to 1-1/4 revolutions in direction "T", then tighten nut "A" securely. Throttle drum should stay at "P<sub>1</sub>".

If throttle wire stroke is improperly adjusted, the following problems may arise.

- When full-throttle position "P<sub>1</sub>" of throttle drum is closer to direction T, the shift schedule will be as shown by ② in the figure below, and the kickdown range will greatly increase.



- When full-open position "P<sub>1</sub>" of throttle drum is closer to direction U, the shift schedule will be as shown by ① in figure above, and kick-down range will not occur.

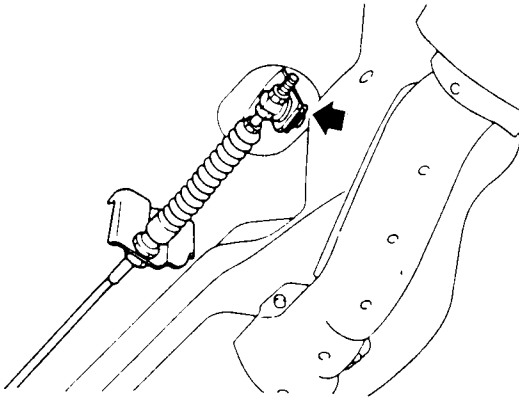
### Control Cable Adjustment

Move the selector lever from the "P" range to "1" range. You should be able to feel the detents in each range.

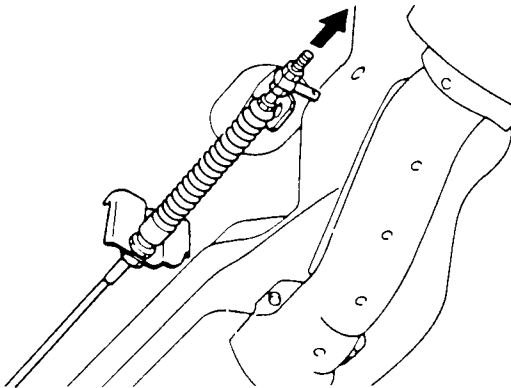
If the detents cannot be felt or the pointer indicating the range is improperly aligned, the control cable needs adjustment.

Adjust control cable as follows:

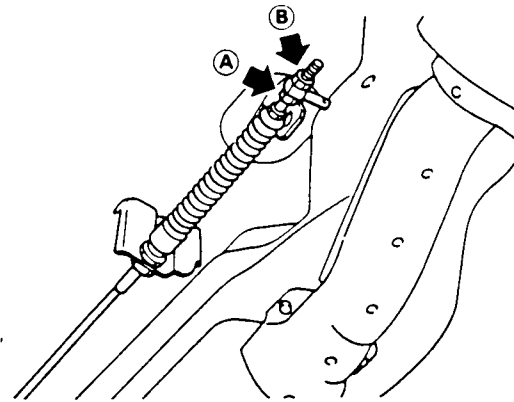
1. Release the parking brake.
2. Remove control cable from selector lever.



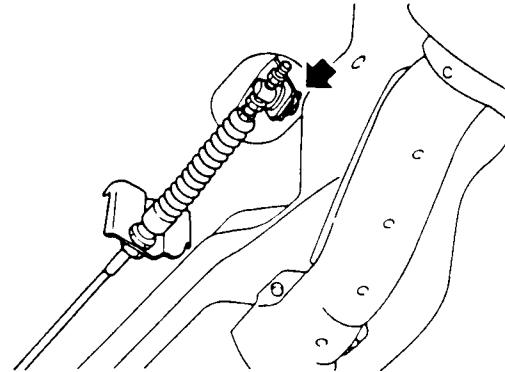
3. Pull the control cable in order to place the manual lever in "P" range.



4. Make sure that drive shafts do not turn. To do this, try to rotate both R.H. and L.H. drive shafts in the same direction.
5. Loosen trunnion nuts A and B.



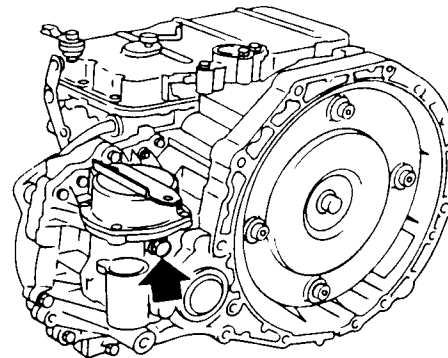
6. Make sure that control lever can move smoothly and without any sliding noise, and then place selector lever in "P" range.
7. Connect the control cable to control lever.



8. Tighten nuts A and B by hand and then tighten them to the specified torque.

### Governor Shaft

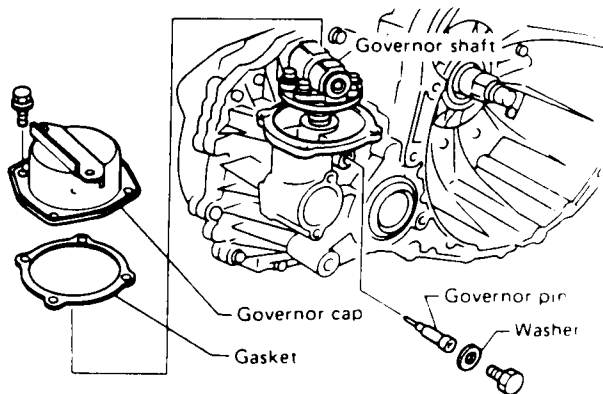
1. Remove the battery.
2. Remove the air cleaner, air flow meter, air damper and solenoid valves as an assembly.
3. Remove governor cap.
4. Remove governor shaft securing bolt.



## ON-VEHICLE SERVICE

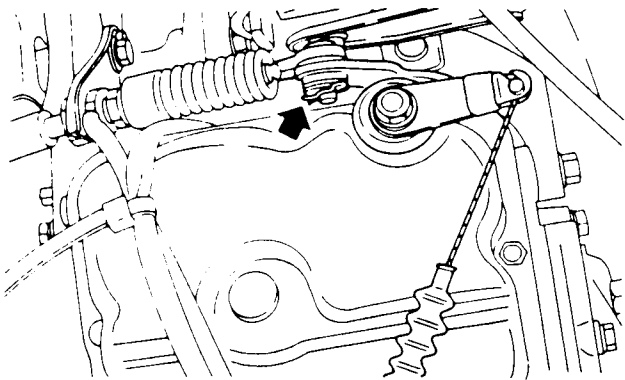
### Governor Shaft (Cont'd)

- Remove governor shaft assembly.

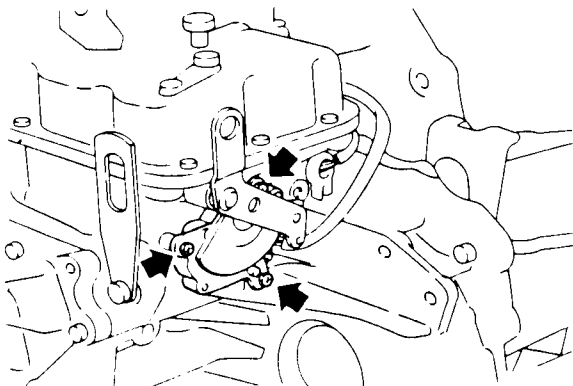


### Inhibitor Switch Adjustment

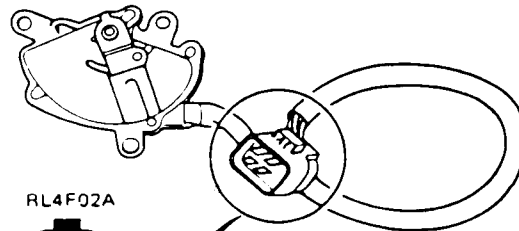
- Remove the battery.
- Remove the air cleaner, air flow meter, air damper and solenoid valves as an assembly.
- Remove control cable end from unit.



- Disconnect harness at connector, then remove inhibitor switch.



- Check continuity at "N", "P" and "R" ranges.



RL4F02A



Connector	1	2	3	4
Range				
N, P	○	○		
R			○	○

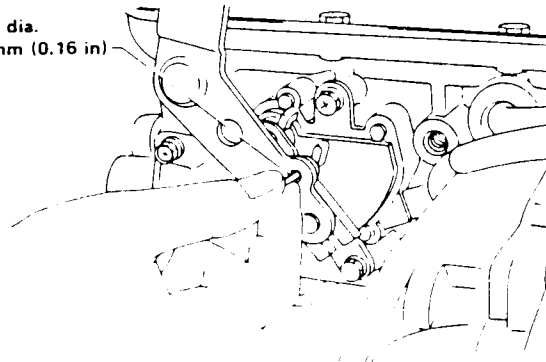
- With selector lever held in "Neutral", turn manual lever an equal amount in both directions to see if current flow ranges are nearly the same. (Current normally begins to flow before manual lever reaches an angle of 1.5° in either direction.)

If current flows outside normal range, or if normal flow range is out of specifications, properly adjust inhibitor switch.

Adjust inhibitor switch as follows:

- Loosen attaching screws.
- Set selector lever (manual shaft) at "N" position.
- Insert a pin into adjustment holes in both inhibitor switch and switch lever as near vertical as possible.

Pin dia.  
4 mm (0.16 in)

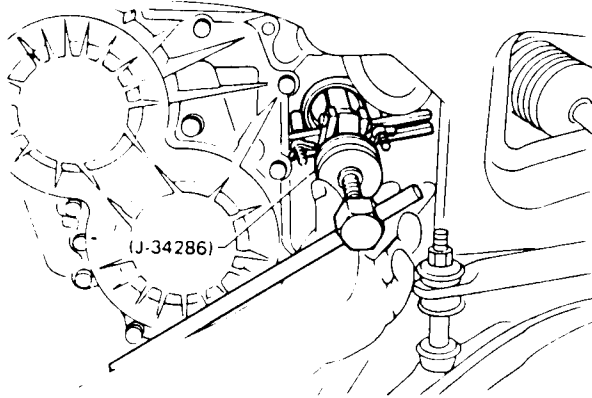


- Tighten screws.
- Recheck for continuity. If faulty, replace the switch.

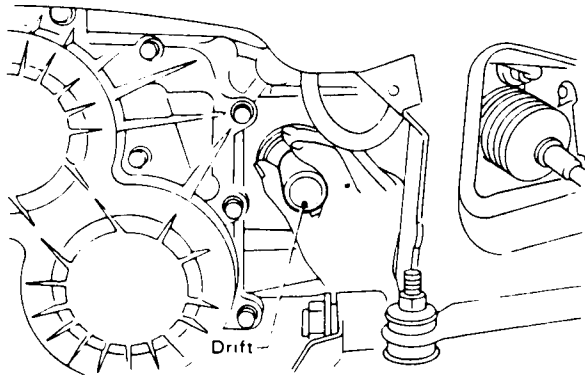
## ON-VEHICLE SERVICE

### — Diff. Side Oil Seal Replacement —

1. Remove left drive shaft assembly. Refer to Drive Shaft in FA section.
2. Remove oil seal.



3. Apply coat of A.T.F. to oil seal surface, then drive new oil seal into place.



4. Install left drive shaft assembly. Refer to Drive Shaft in FA section.

**Be extremely careful not to scratch oil seal when inserting drive shaft.**



# Technical Service Information

## REMOVAL AND INSTALLATION

### Removal

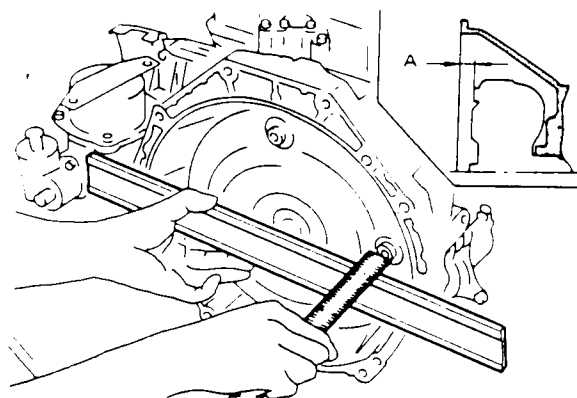
1. Remove transaxle with engine.  
Refer to EM section.
2. Remove transaxle-to-engine bolts and draw out rear plate.
3. Remove bolts securing torque converter to drive plate.

Before removing torque converter, inscribe matching marks on two parts so that they may be replaced in their original positions during assembly.

- When connecting torque converter to transaxle, measure distance "A" to be certain that they are correctly assembled.

Distance "A":

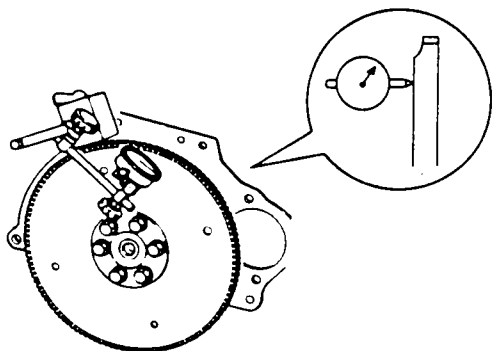
17.5 - 20.0 mm (0.689 - 0.787 in)



### Installation

- Drive plate runout

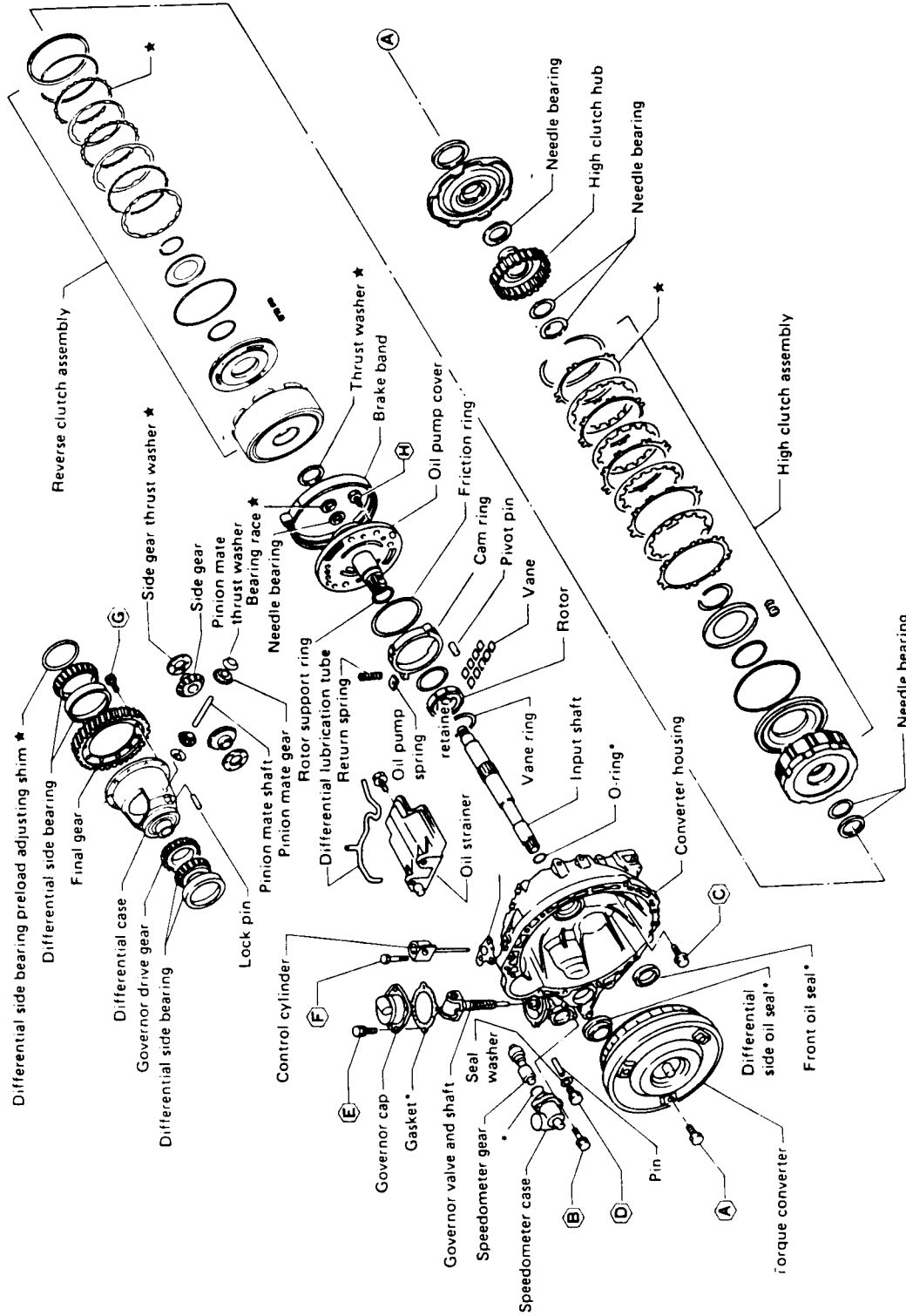
Maximum allowable runout:  
0.5 mm (0.020 in)



If this runout is out of allowance, replace drive plate and ring gear.

- Install transaxle to engine.
- Bolt converter to drive plate. Refer to photograph in Removal.
  - a. Align matching marks painted across both parts during disassembly.
  - b. Before installing torque converter securing bolts, apply locking sealer to threads of bolts.
- After converter is installed, rotate crankshaft several turns and check to be sure that transaxle rotates freely without binding.
- Adjust control cable. Refer to On-Vehicle Service.
- Check inhibitor switch for operation.
- Check fluid level in transaxle.
- Move hand lever through all positions to be sure that transaxle operates correctly.  
With hand brake applied, run engine at idle. Without disturbing the above setting, move selector lever through "N" to "D", to "2", to "1" and to "R". A slight shock should be felt by hand gripping hand lever each time transaxle is shifted.
- Check to be sure that line pressure is correct. To do this, refer to Line Pressure Test.
- Perform stall test.

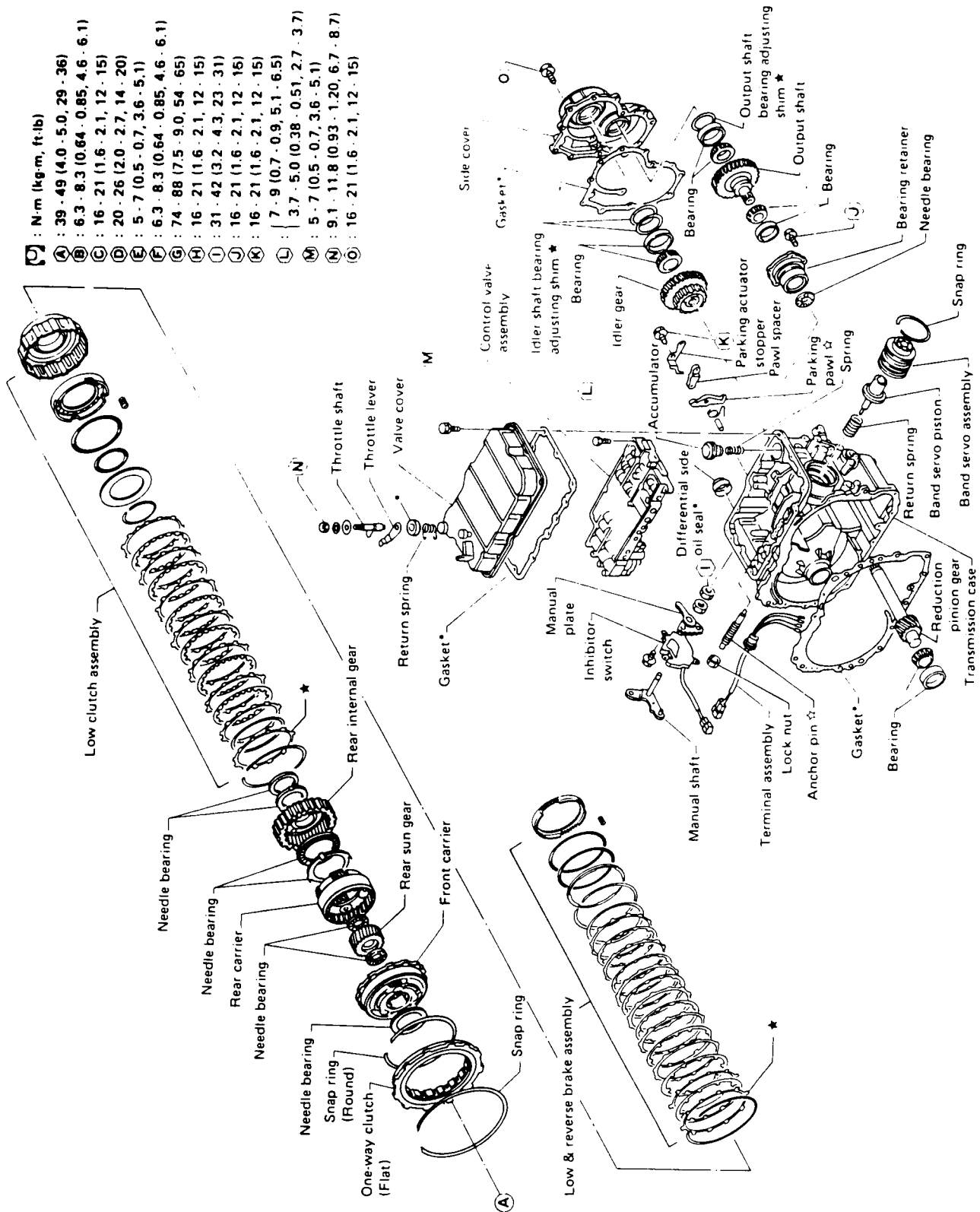
# MAJOR OVERHAUL



\* : Always replace when disassembled.  
 ☆ : Select with proper thickness.  
 ☆ : Adjustment is required.

## MAJOR OVERHAUL

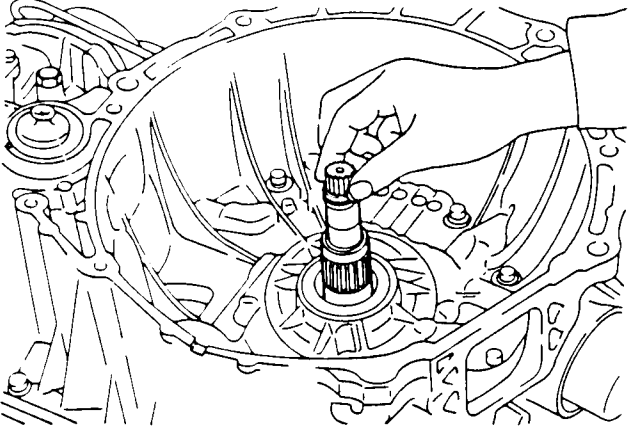
- : N·m (kg·m, ft·lb)
- Ⓐ : 39 · 49 (4.0 · 5.0, 29 · 36)
  - Ⓑ : 6.3 · 8.3 (0.64 · 0.85, 4.6 · 6.1)
  - Ⓒ : 16 · 21 (1.6 · 2.1, 12 · 15)
  - Ⓓ : 20 · 26 (2.0 · 2.7, 14 · 20)
  - Ⓔ : 5 · 7 (0.5 · 0.7, 3.6 · 5.1)
  - Ⓕ : 6.3 · 8.3 (0.64 · 0.85, 4.6 · 6.1)
  - Ⓖ : 74 · 88 (7.5 · 9.0, 54 · 65)
  - Ⓜ : 16 · 21 (1.6 · 2.1, 12 · 15)
  - Ⓝ : 31 · 42 (3.2 · 4.3, 23 · 31)
  - Ⓝ : 16 · 21 (1.6 · 2.1, 12 · 15)
  - Ⓝ : 16 · 21 (1.6 · 2.1, 12 · 15)
  - Ⓝ : 7 · 9 (0.7 · 0.9, 5.1 · 6.5)
  - Ⓝ : 3.7 · 5.0 (0.38 · 0.51, 2.7 · 3.7)
  - Ⓝ : 5 · 7 (0.5 · 0.7, 3.6 · 5.1)
  - Ⓝ : 9.1 · 11.8 (0.93 · 1.20, 6.7 · 8.7)
  - Ⓝ : 16 · 21 (1.6 · 2.1, 12 · 15)



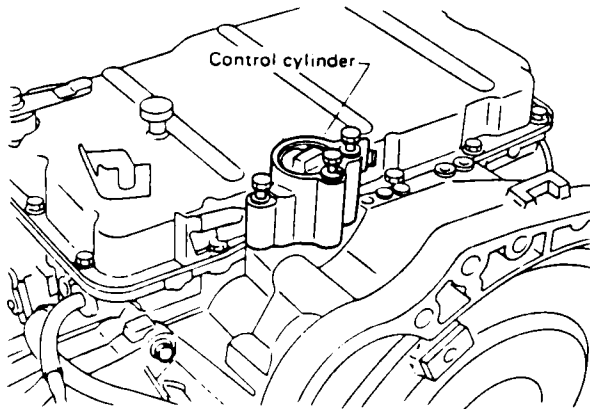


## DISASSEMBLY

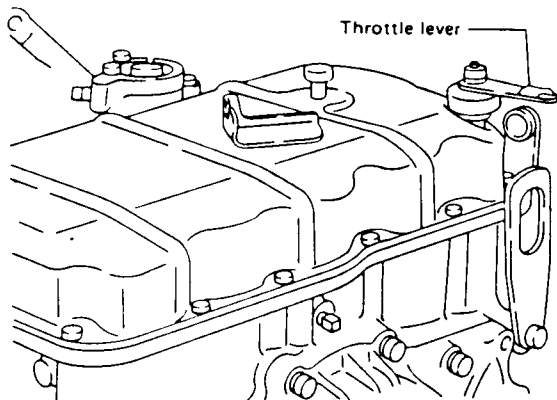
1. Drain A.T.F.
2. Remove torque converter.
3. Draw out input shaft.



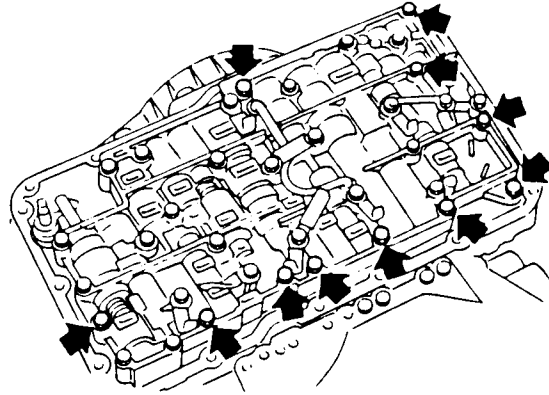
4. Remove control cylinder.



5. Remove throttle lever and valve cover.



6. Disconnect harness connectors on control valve and remove control valve assembly.



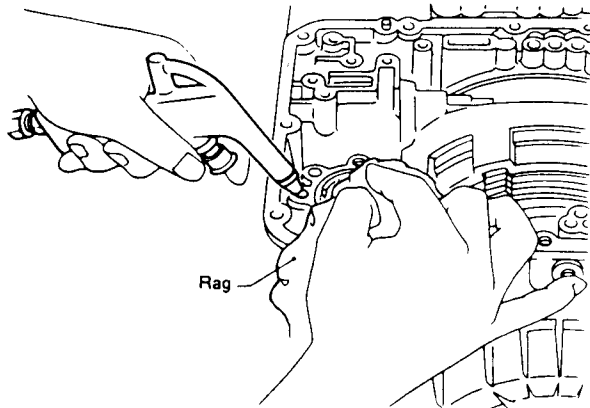
7. Remove terminal assembly.

**CAUTION:**

The terminal retrieving hooks will break if they are forced inward too far. Bend them gently inward while carefully pulling outward on the terminal. Do not pull on the wires.

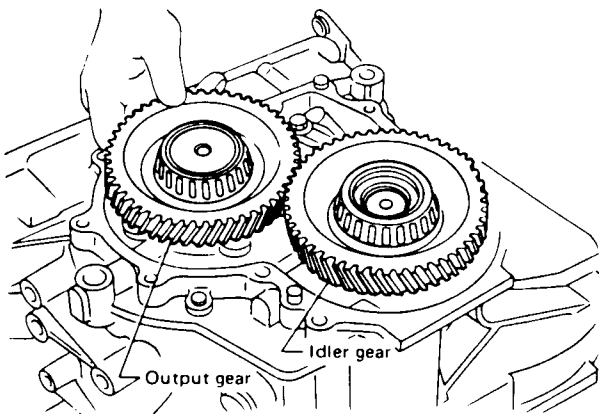
## DISASSEMBLY

9. Remove accumulator.

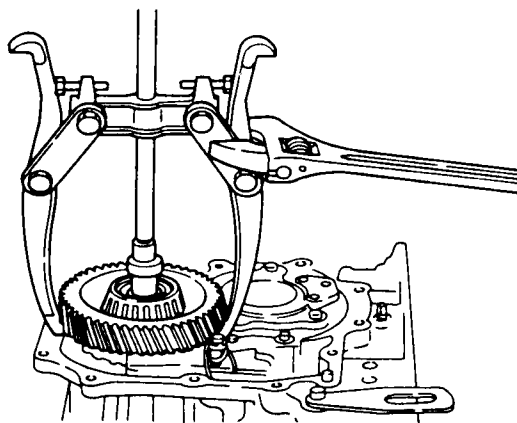


10. Remove side cover.

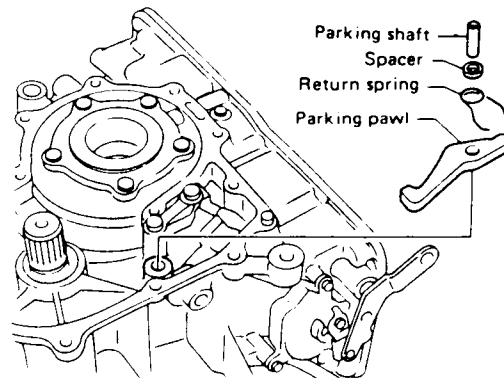
11. Remove output gear.



12. Draw out idler gear.

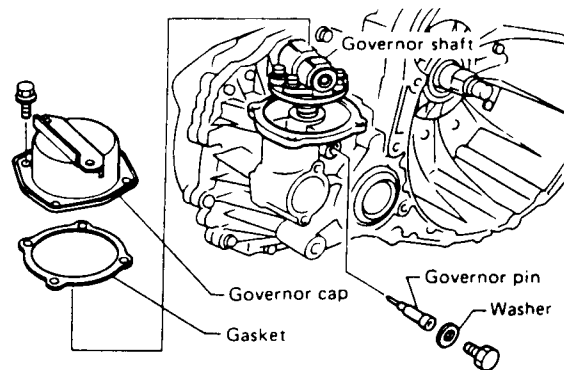


13. Remove parking pawl, return spring, pawl shaft and spacer.

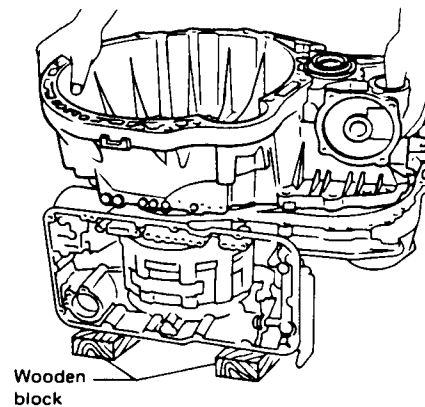


14. Remove speedometer case and speedometer gear.

15. Remove governor cap and pin, then draw out governor shaft assembly.



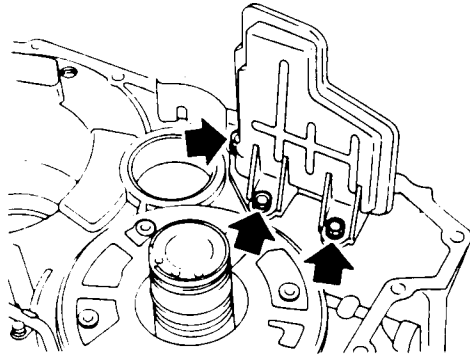
16. Put transmission assembly on wooden block and remove converter housing.



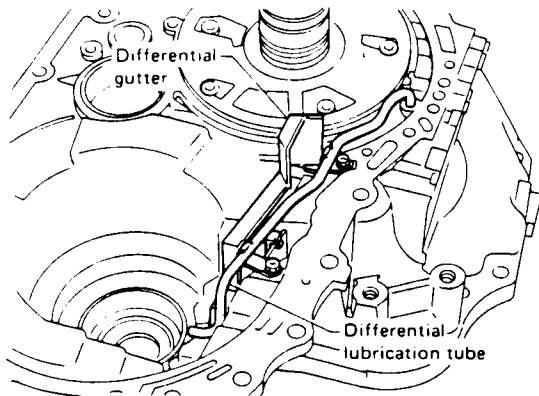
17. Remove final drive assembly and reduction pinion gear.

**DISASSEMBLY**

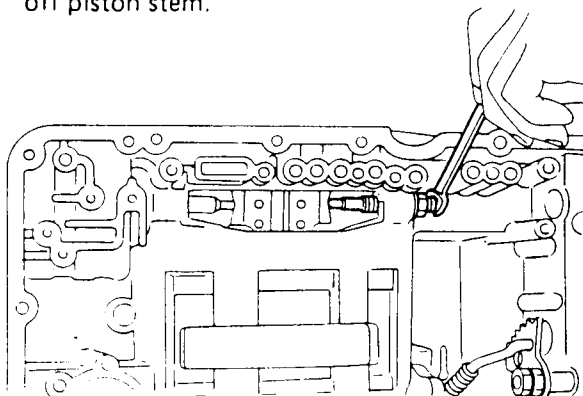
18. Remove oil strainer.



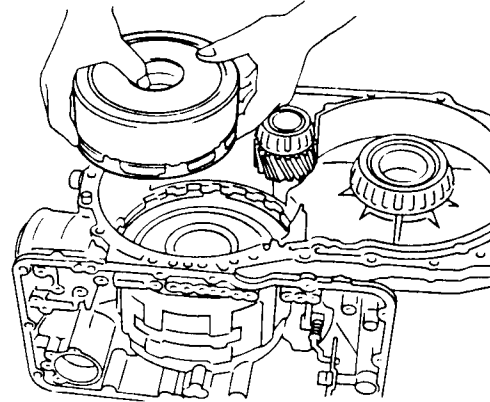
19. Remove diff. lubrication tube and diff. gutter.



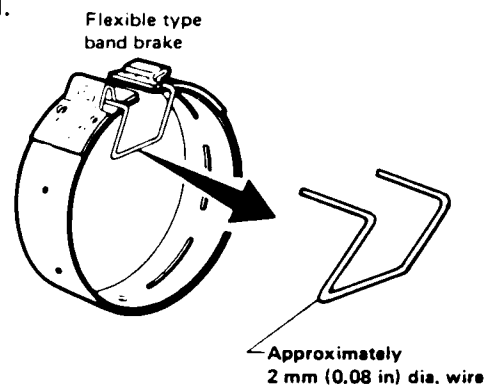
20. Loosen band brake stem lock nut, then back off piston stem.



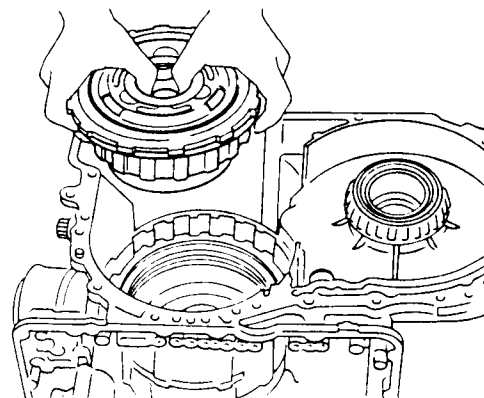
21. Remove brake band and high clutch & reverse clutch pack.



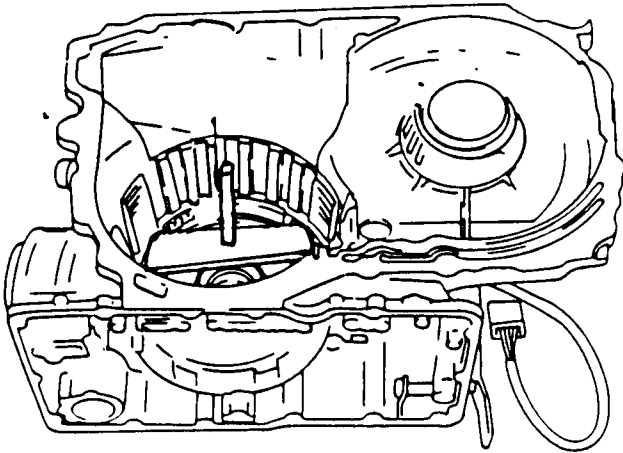
To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. Before removing the brake band, always secure it with a clip as shown in the figure below. Leave the clip in position after removing the brake band.



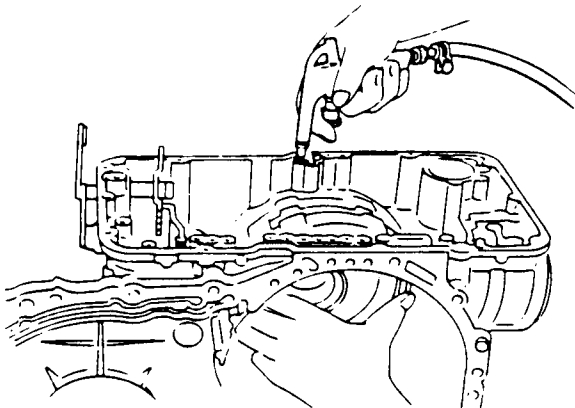
22. Remove one-way clutch, front carrier, rear carrier and low clutch as a set.



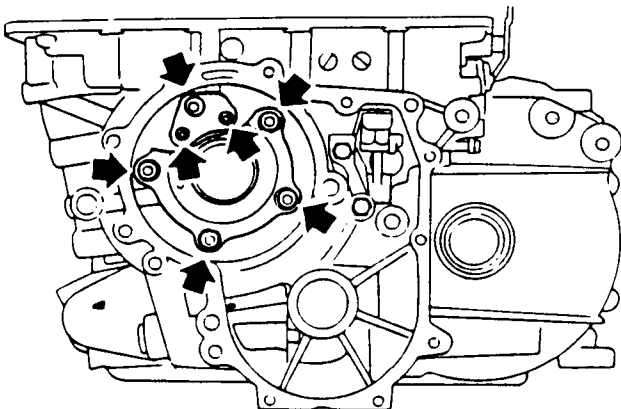
23. Remove low & reverse brake clutches, and detach low & reverse brake retainer snap ring.



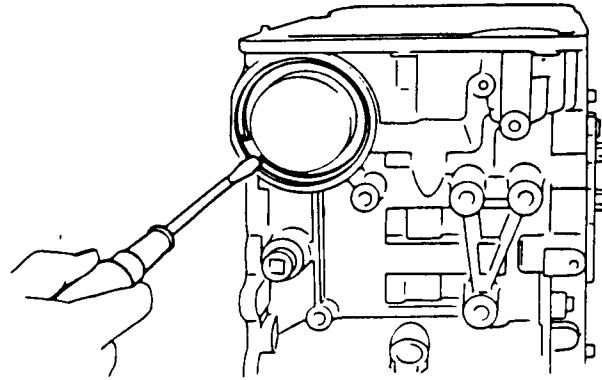
24. Remove low and reverse brake piston with compressed air.



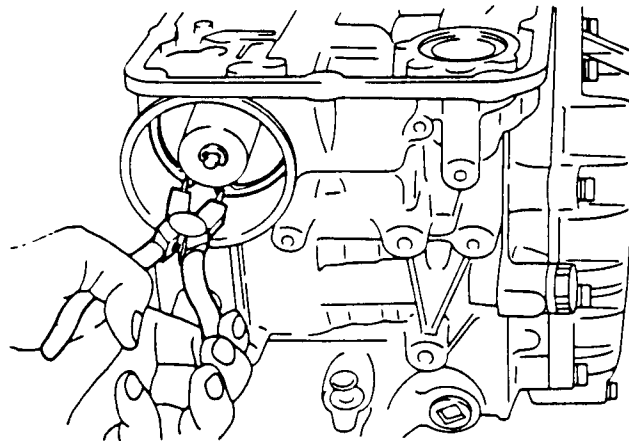
25. Remove bearing retainer assembly.



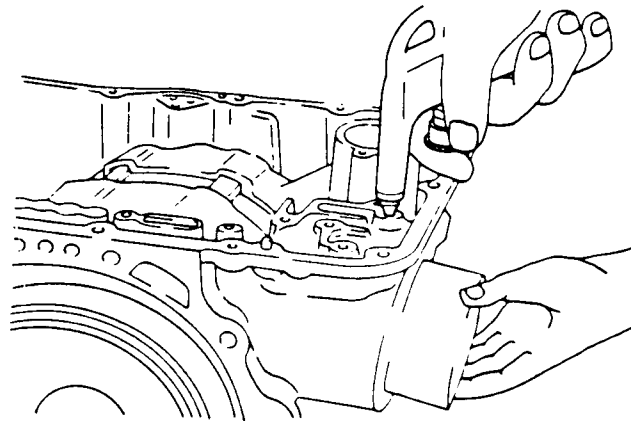
26. Remove band servo snap ring.



27. Remove snap ring.

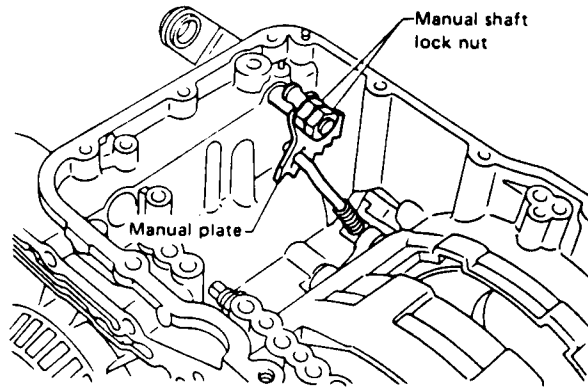


28. Remove band brake servo, retainer and return spring.



**DISASSEMBLY**

29. Loosen manual shaft lock nuts and remove manual plate.

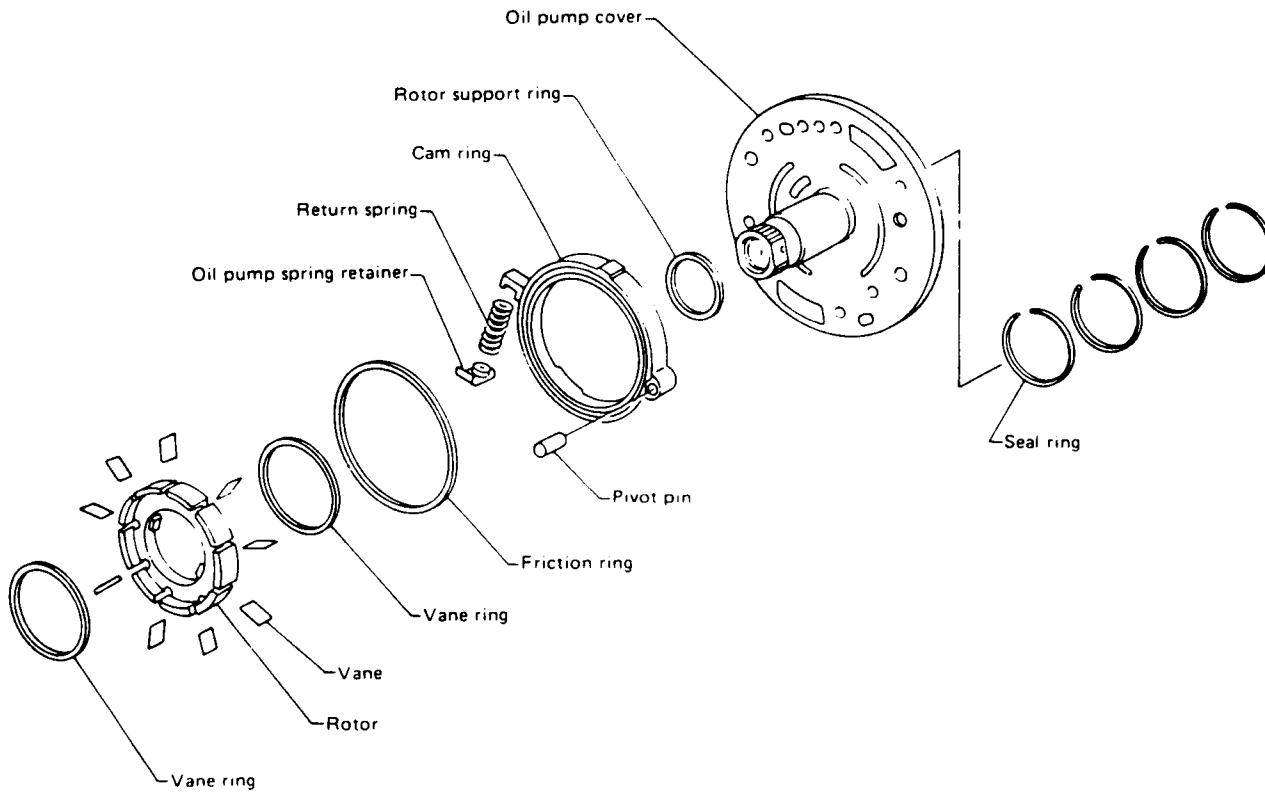


30. Pull out retaining pin, then remove manual plate and manual shaft.



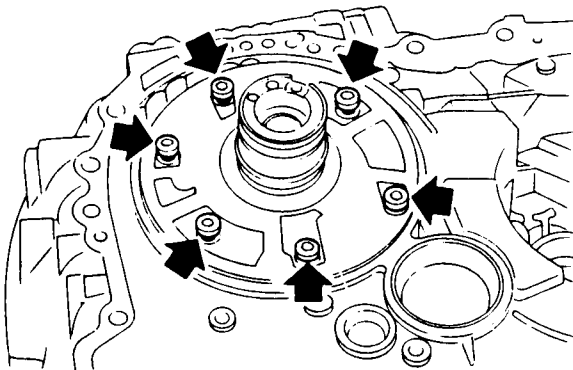
**REPAIR FOR COMPONENT PARTS**

**Oil Pump**

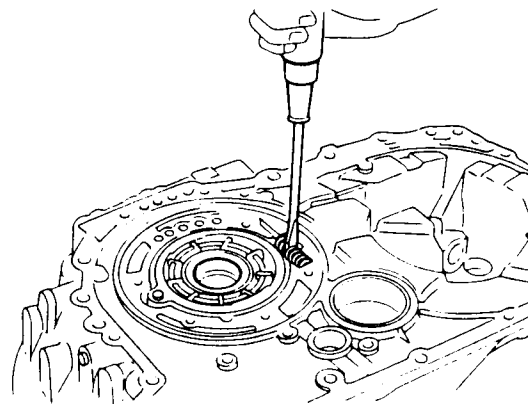


**DISASSEMBLY**

1. Remove oil pump cover.



2. Remove cam ring spring while taking care not to damage converter housing.



**INSPECTION**

1. Inspect oil pump cover, cam ring, rotor and vanes for faults and visible wear.

## REPAIR FOR COMPONENT PARTS

### Oil Pump (Cont'd)

- Measure clearance between clutch housing and cam ring, rotor and vanes in at least four places. The maximum measured value should be within the specified range.

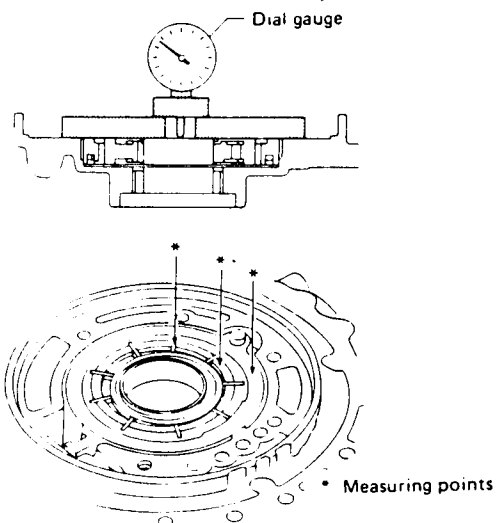
Standard clearance:

0.010 - 0.024 mm (0.0004 - 0.0009 in)

Wear limit:

0.034mm (0.0013 in)

If the clearance is more than the specified wear limit, replace oil pump as an assembly.



Be sure to remove friction ring and vane ring when measuring clearance. If the clearance is more than the specified wear limit, replace oil pump as an assembly.

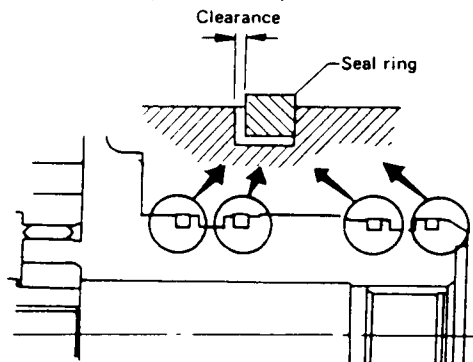
- Measure clearance between seal ring and ring groove.

Standard clearance:

0.10 - 0.25 mm (0.0039 - 0.0098 in)

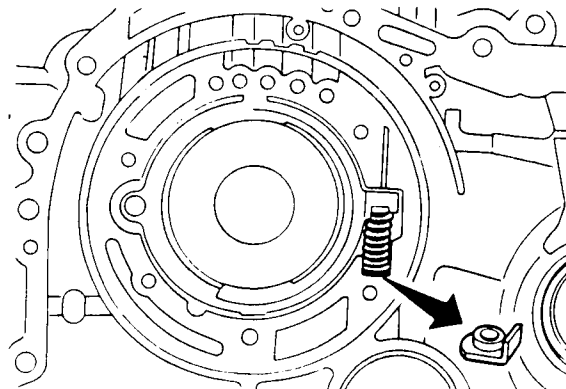
Wear limit:

0.25mm (0.0098 in.)

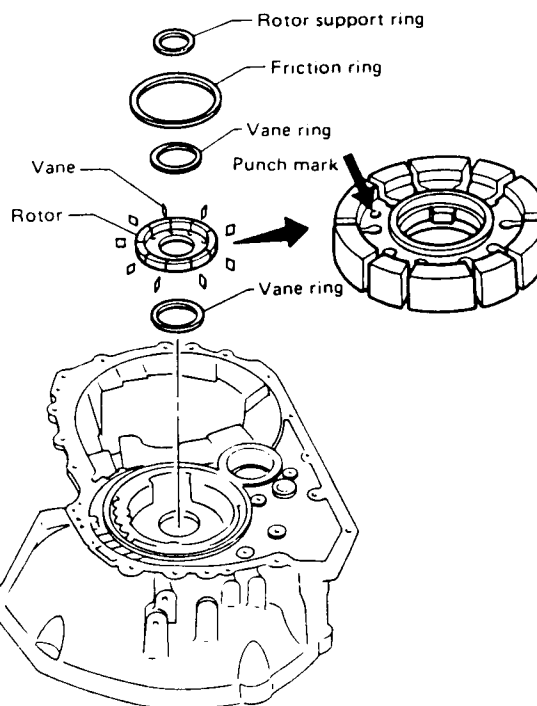


### ASSEMBLY

- Install cam ring, oil pump spring retainer and cam ring spring while paying attention to the direction of the retainer.



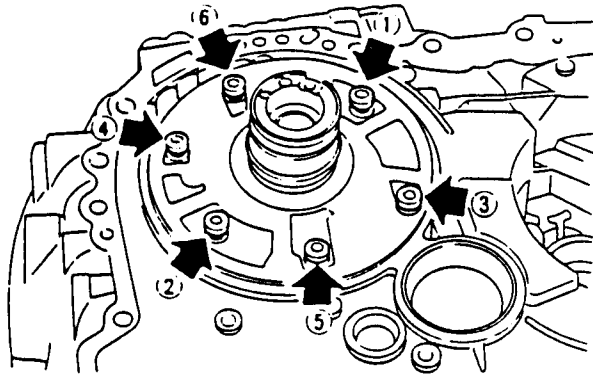
- Assemble rotor, vanes, friction ring, rotor support ring and vane rings. Pay attention to direction of rotor.



## REPAIR FOR COMPONENT PARTS

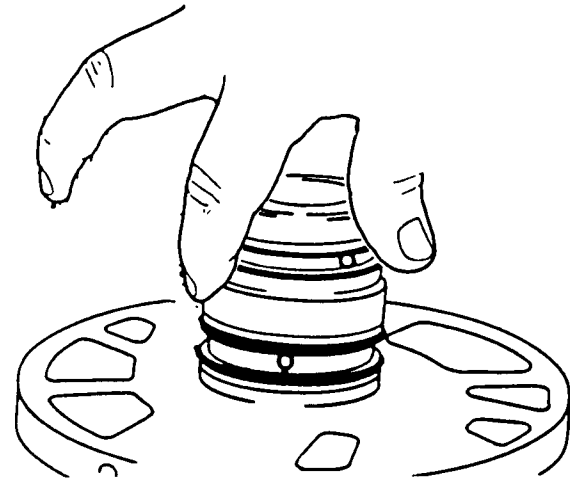
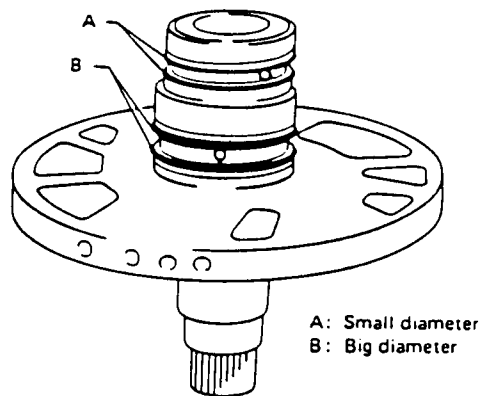
### Oil Pump (Cont'd)

3. Install oil pump cover.  
Tighten cover evenly in a criss-cross type pattern.



4. Rotate the pump after it has been assembled to ensure that all parts have been correctly assembled.
5. Install seal rings.

Refer to the following figure for proper locations of the two different types of seal rings.



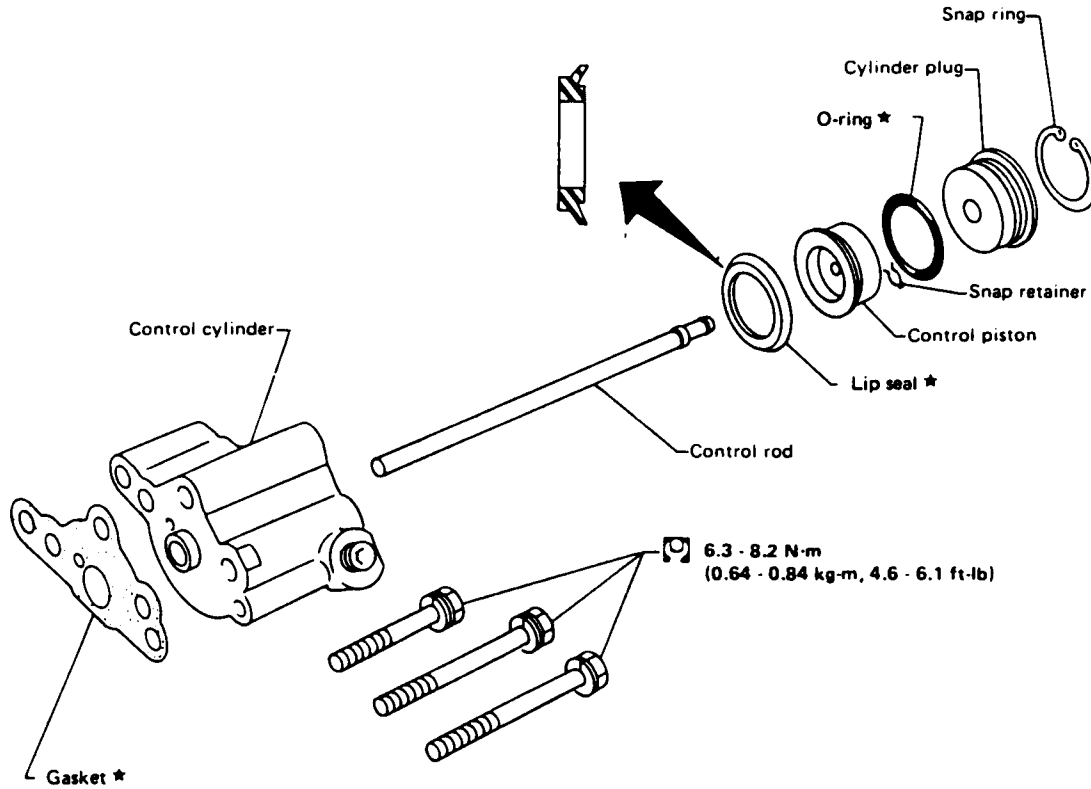
**CAUTION:**

These seal rings can be cut or deformed if they are improperly seated in their grooves when the drum is installed. Clean the ring grooves carefully and fill them with petroleum jelly. Then install the rings making sure they fit into the grooves as tightly as possible.



## REPAIR FOR COMPONENT PARTS

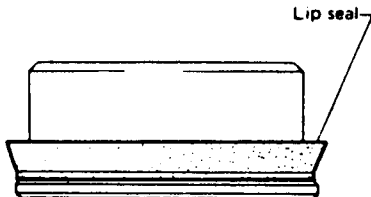
### Control Cylinder



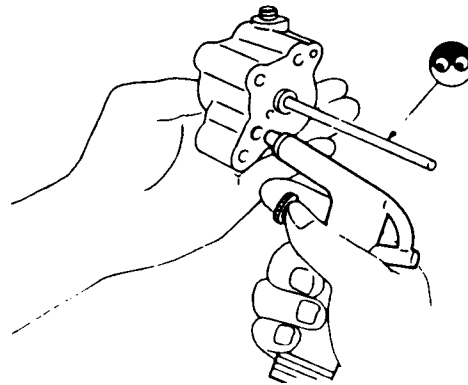
\*: Always replace when disassembled.

#### INSPECTION AND ASSEMBLY

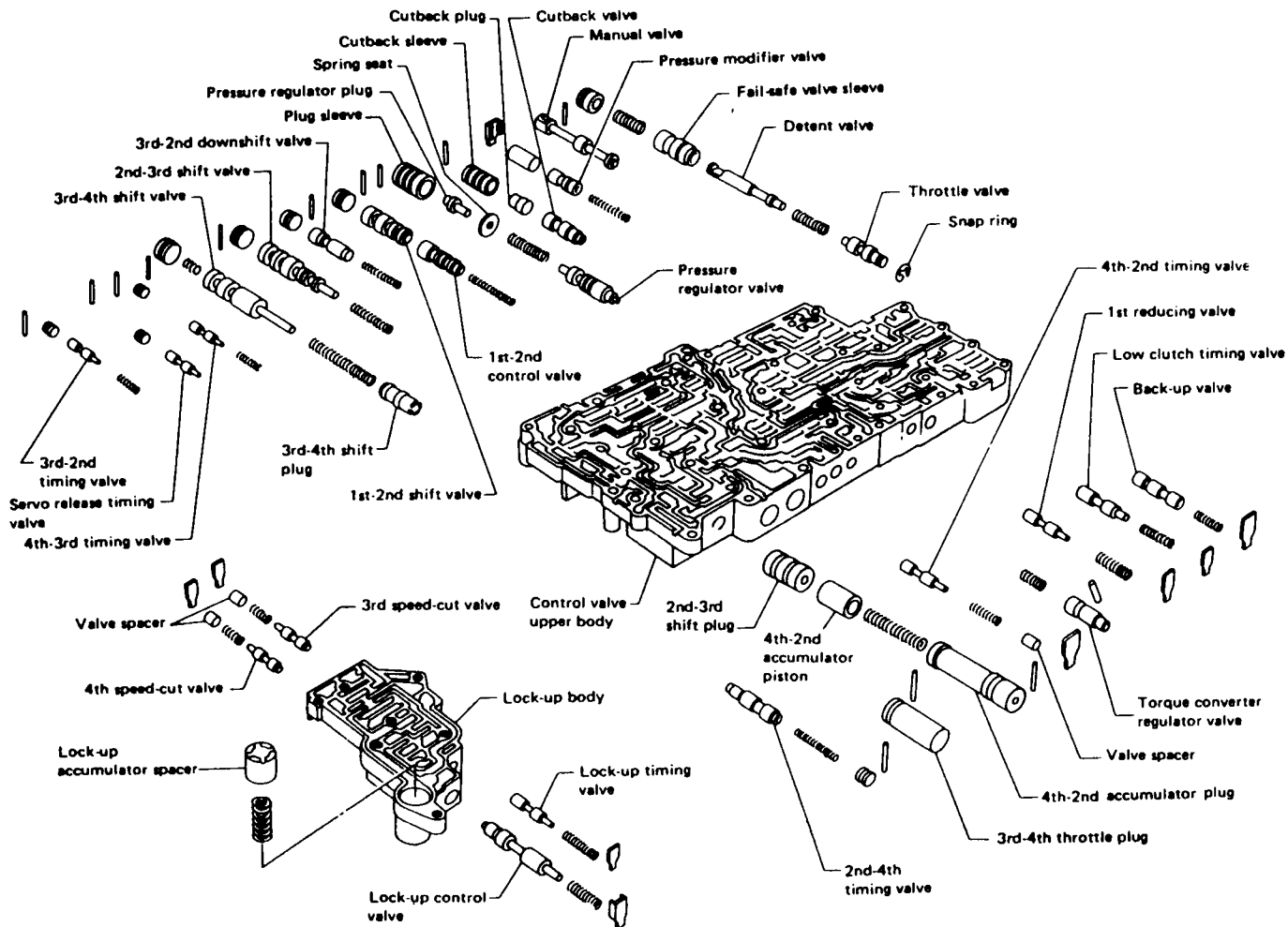
- Inspect control cylinder body, control piston and cylinder plug for scratches or damage. Replace if necessary.
- When assembling, pay attention to the direction of the lip seal.



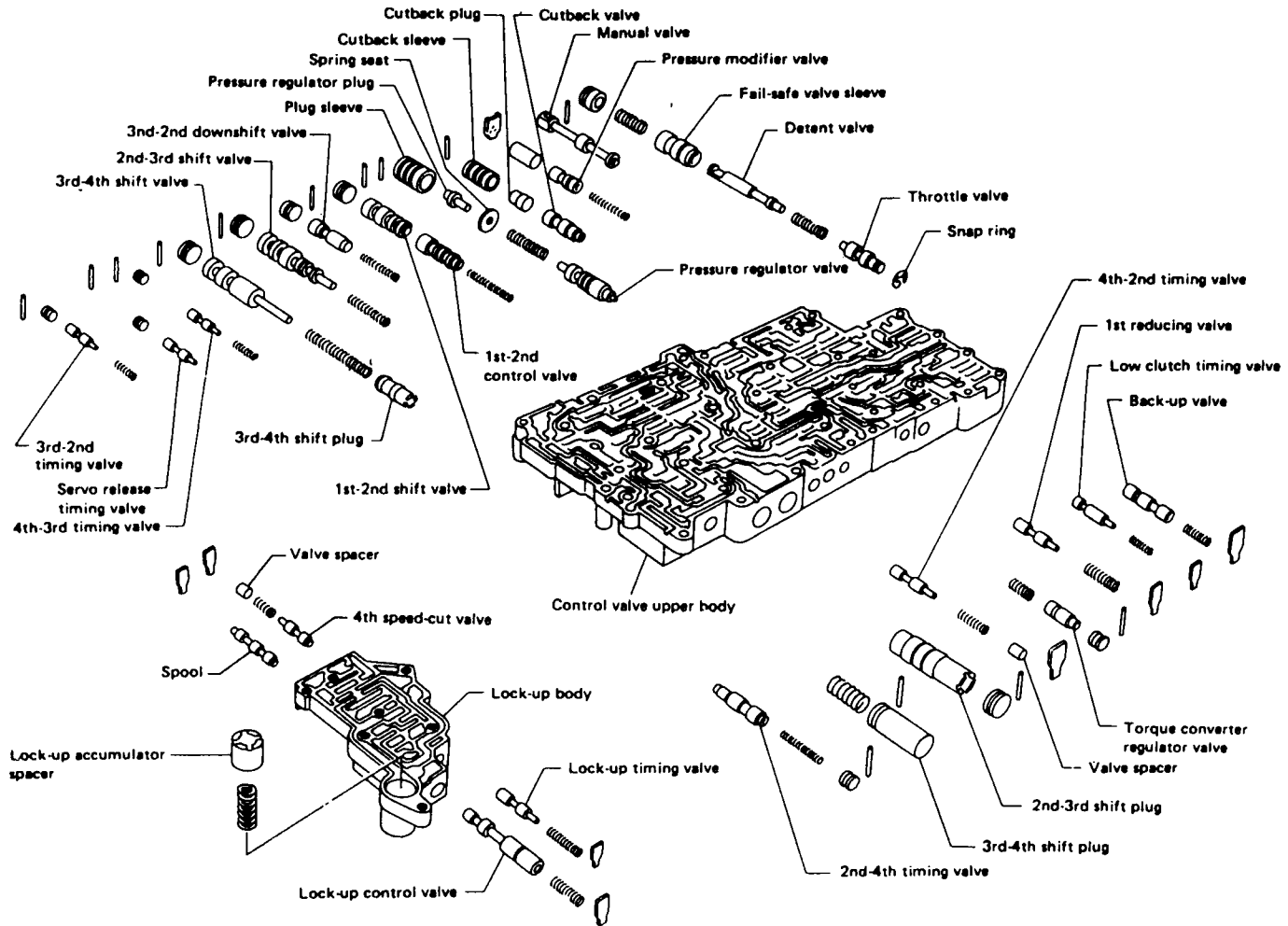
- After assembling, check the operation.



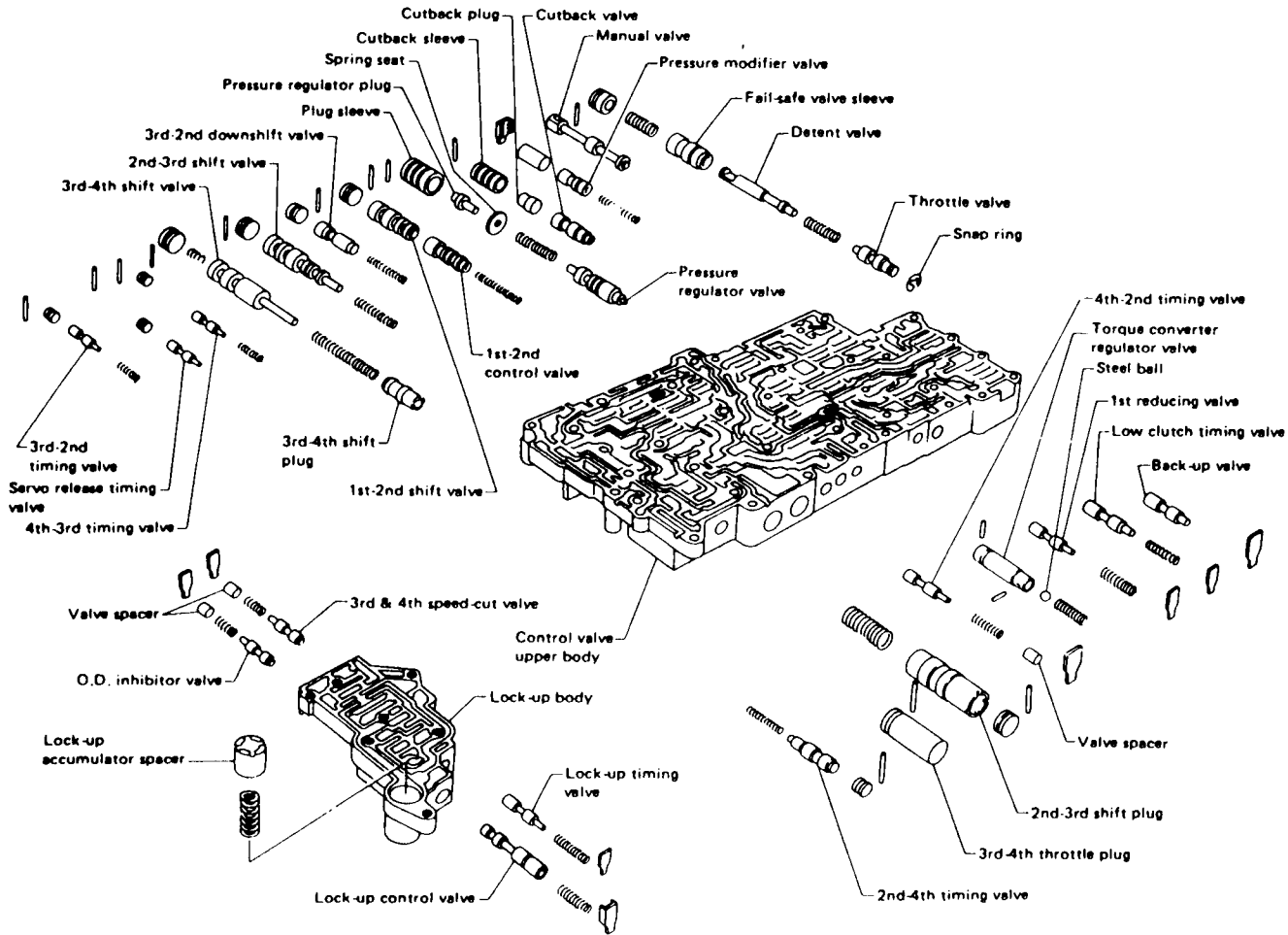
1985 - 1986 MAXIMA  
VALVE BODY



### 1986 STANZA WAGON VALVE BODY



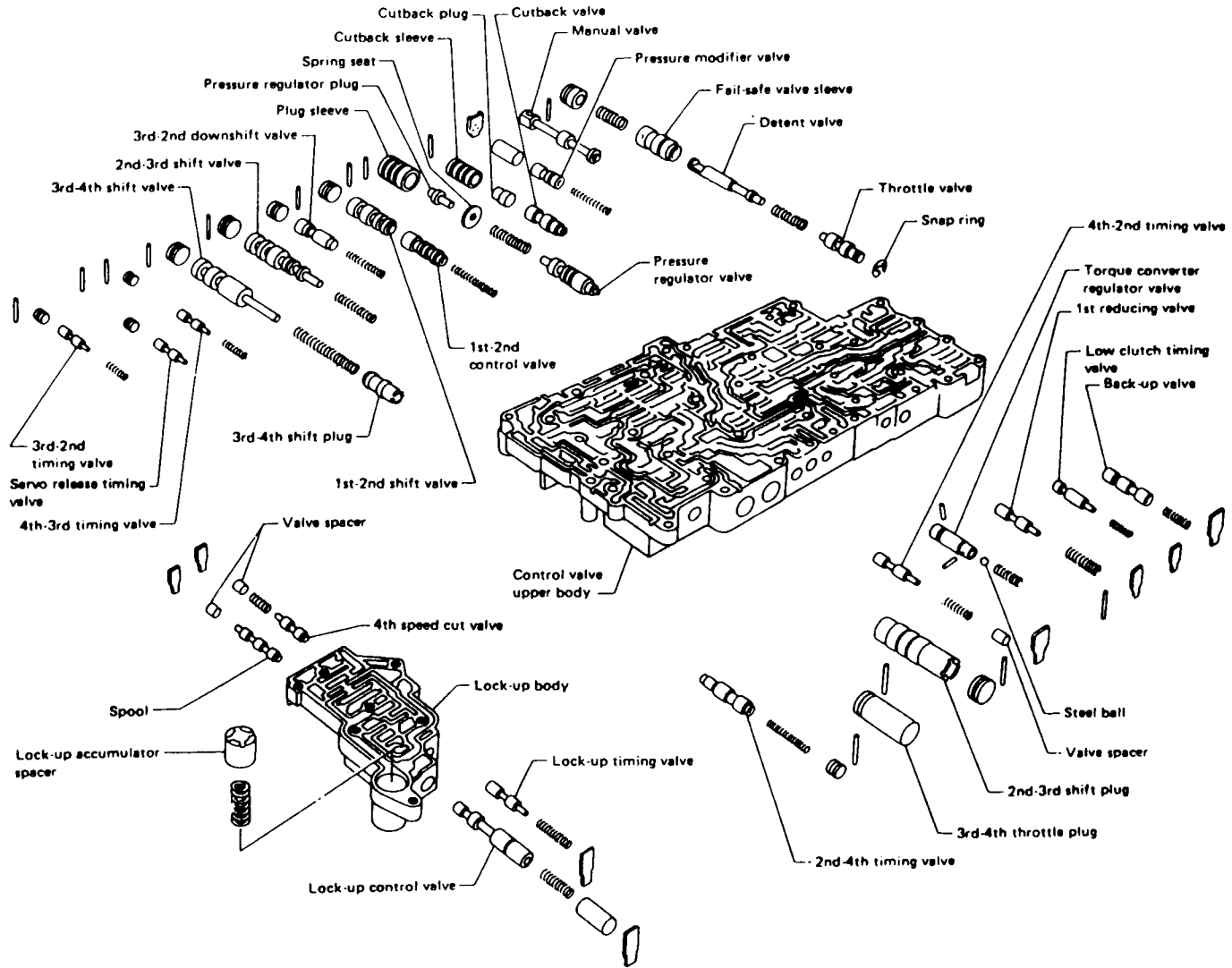
## 1987 MAXIMA VALVE BODY





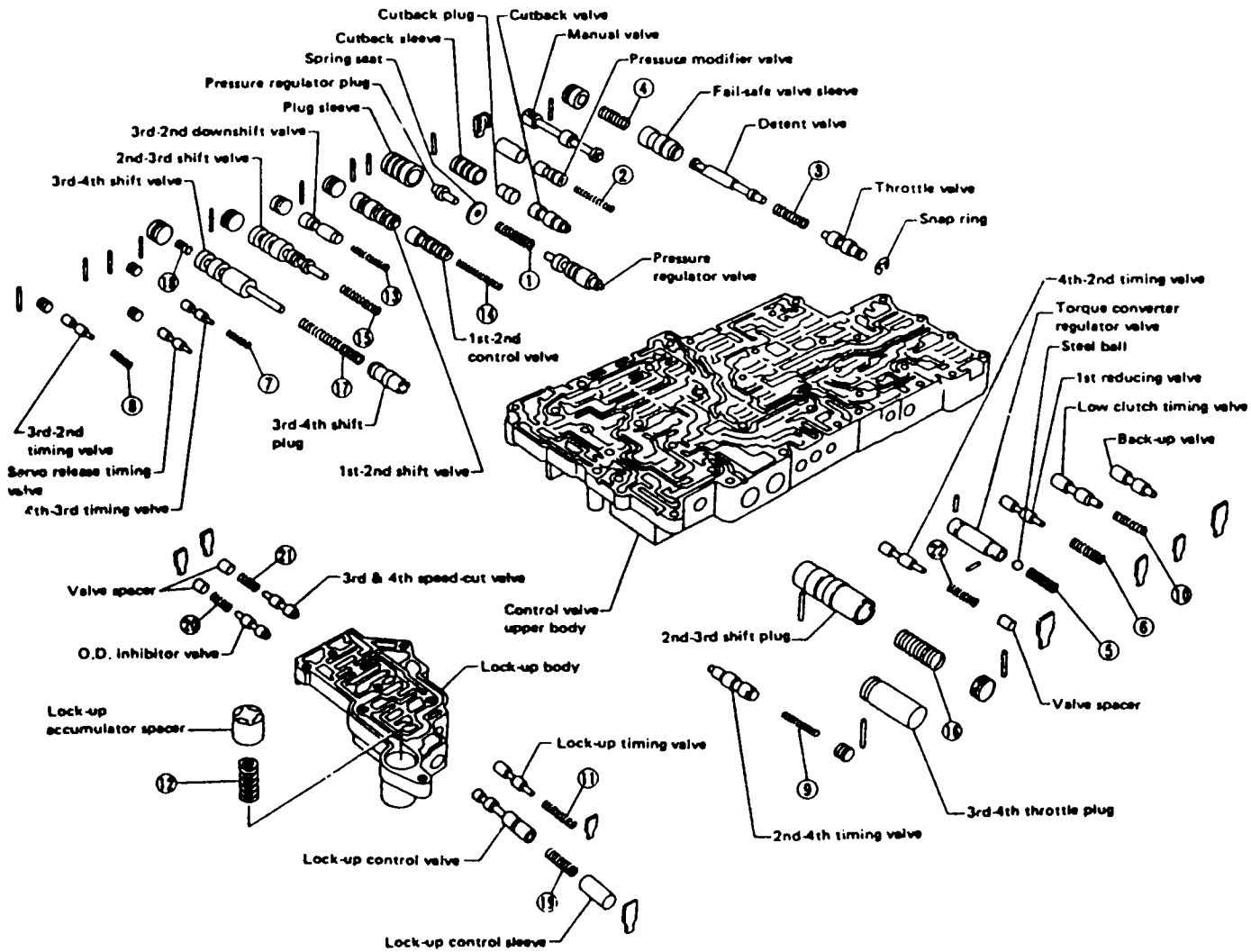
# Technical Service Information

## 1987 STANZA, 1987-88 STANZA WAGON & 1988 PULSAR VALVE BODY



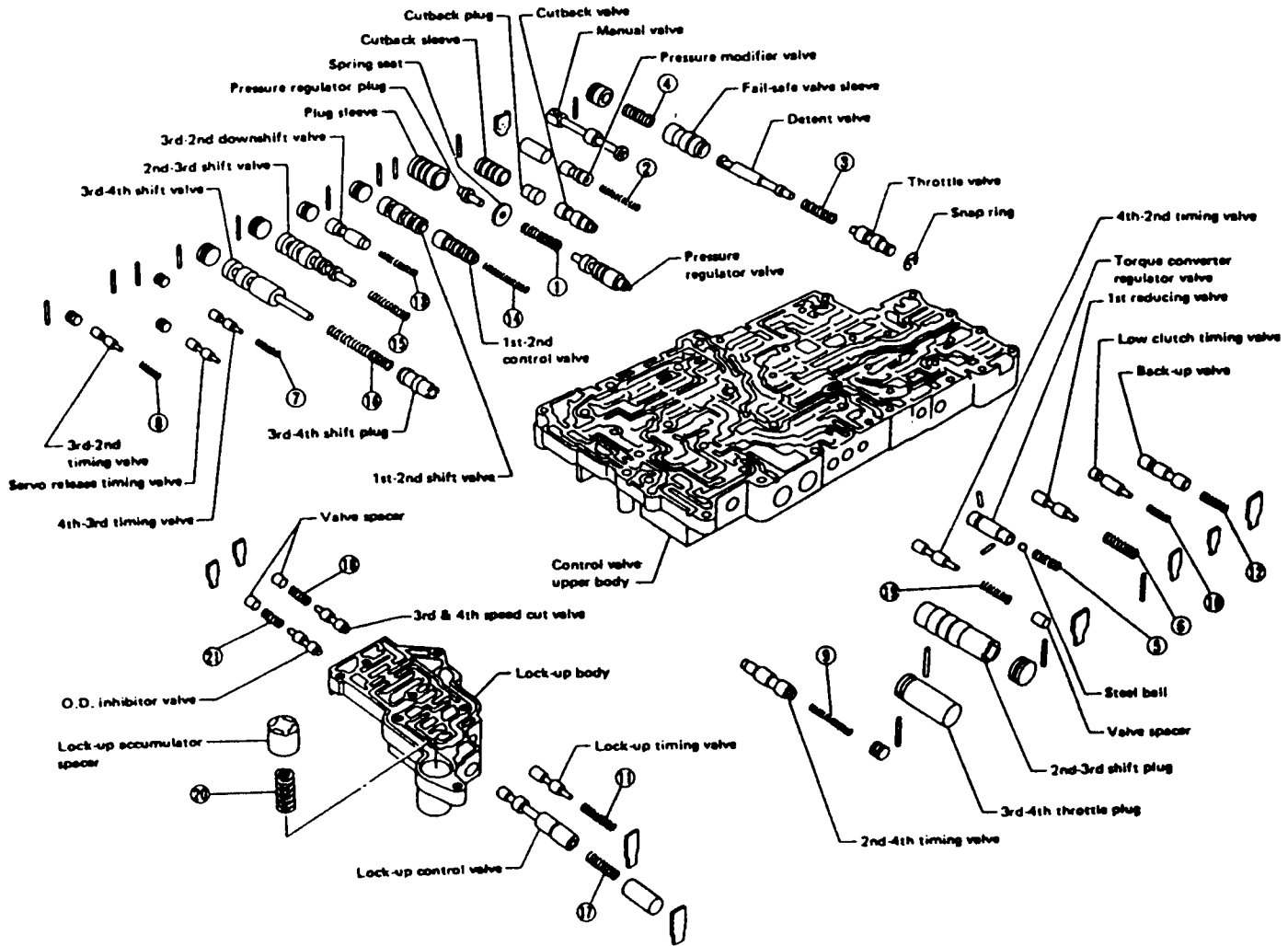
AUTOMATIC TRANSMISSION SERVICE GROUP

1988 MAXIMA  
VALVE BODY

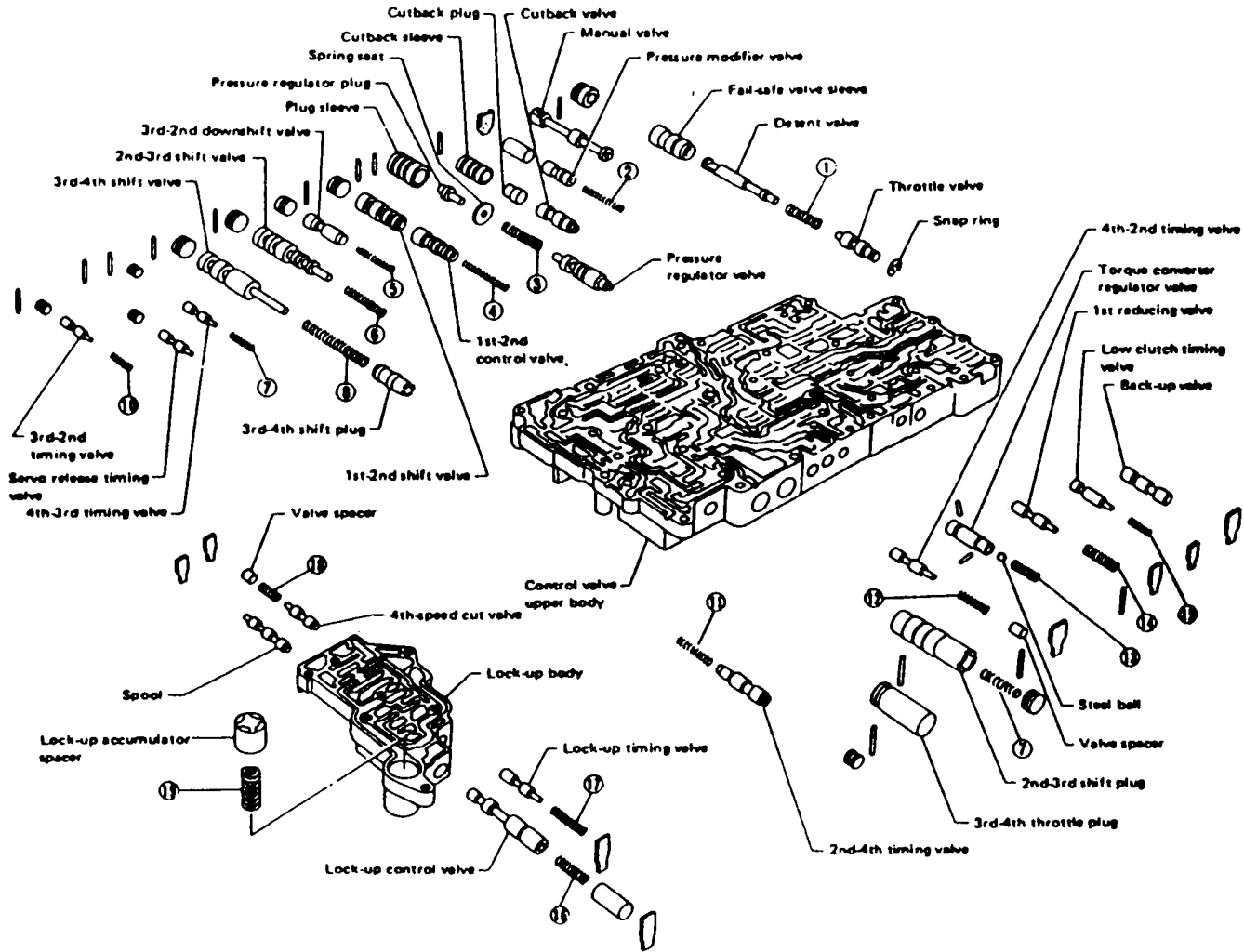


AUTOMATIC TRANSMISSION SERVICE GROUP

### 1988 STANZA VALVE BODY

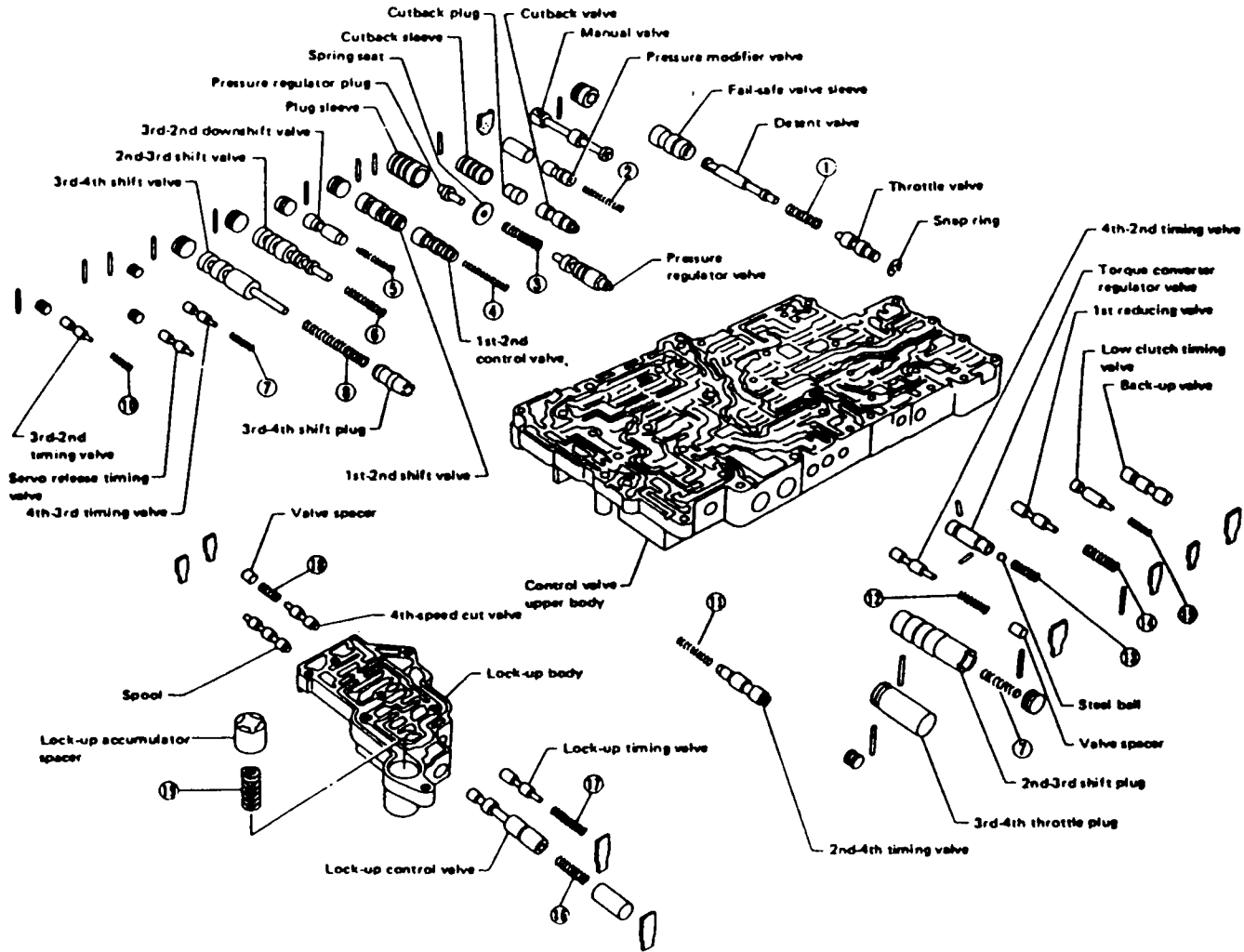


### 1989 PULSAR VALVE BODY

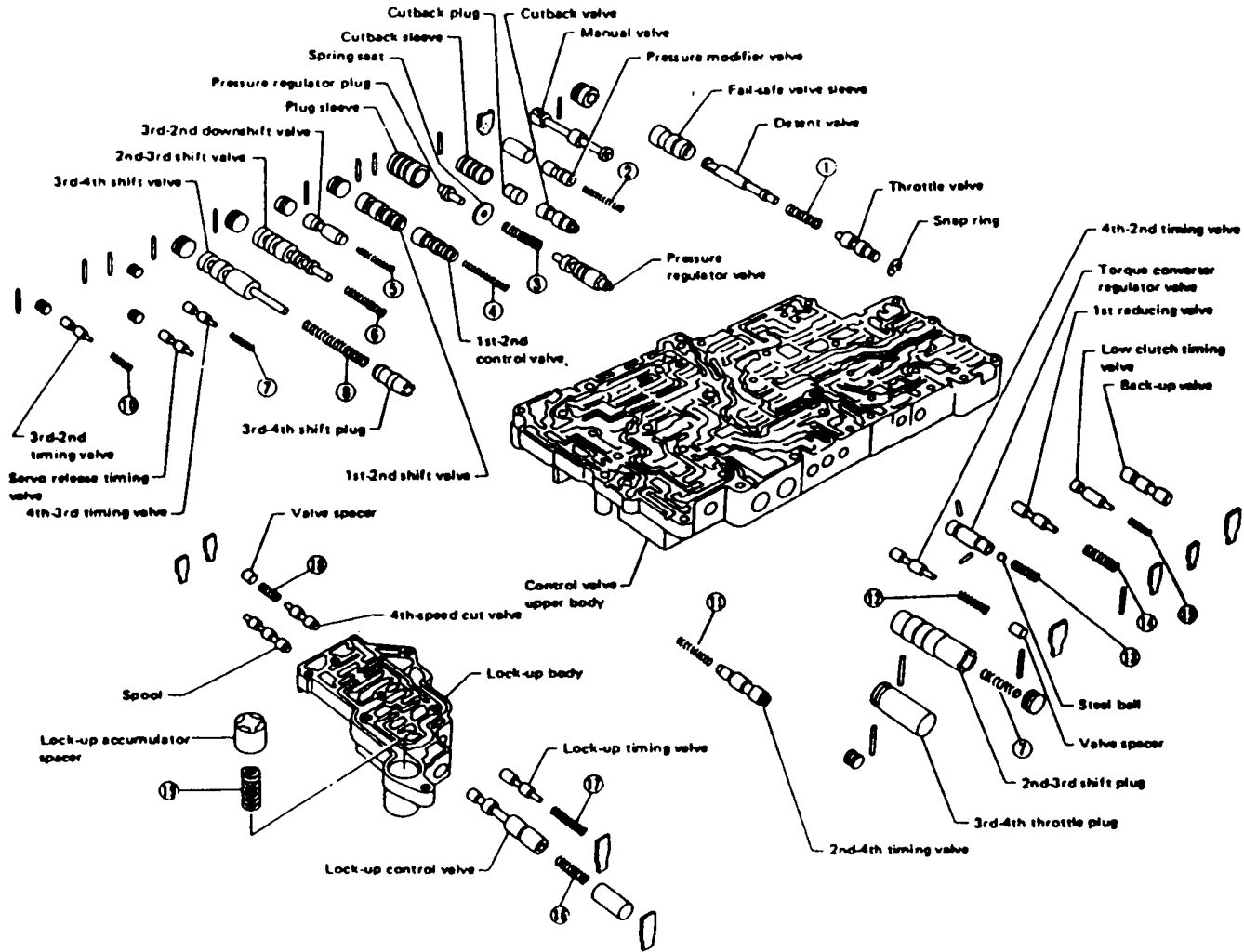




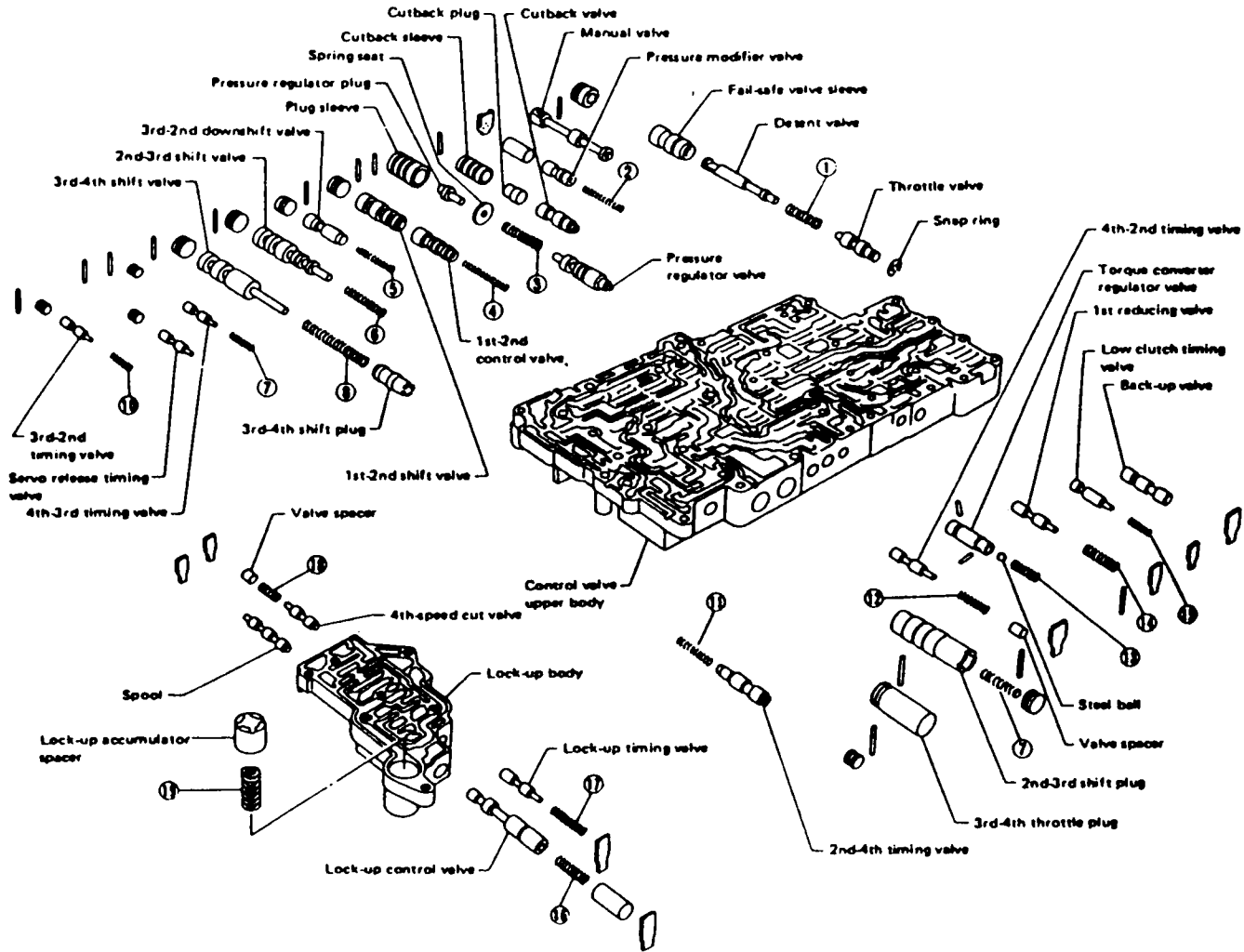
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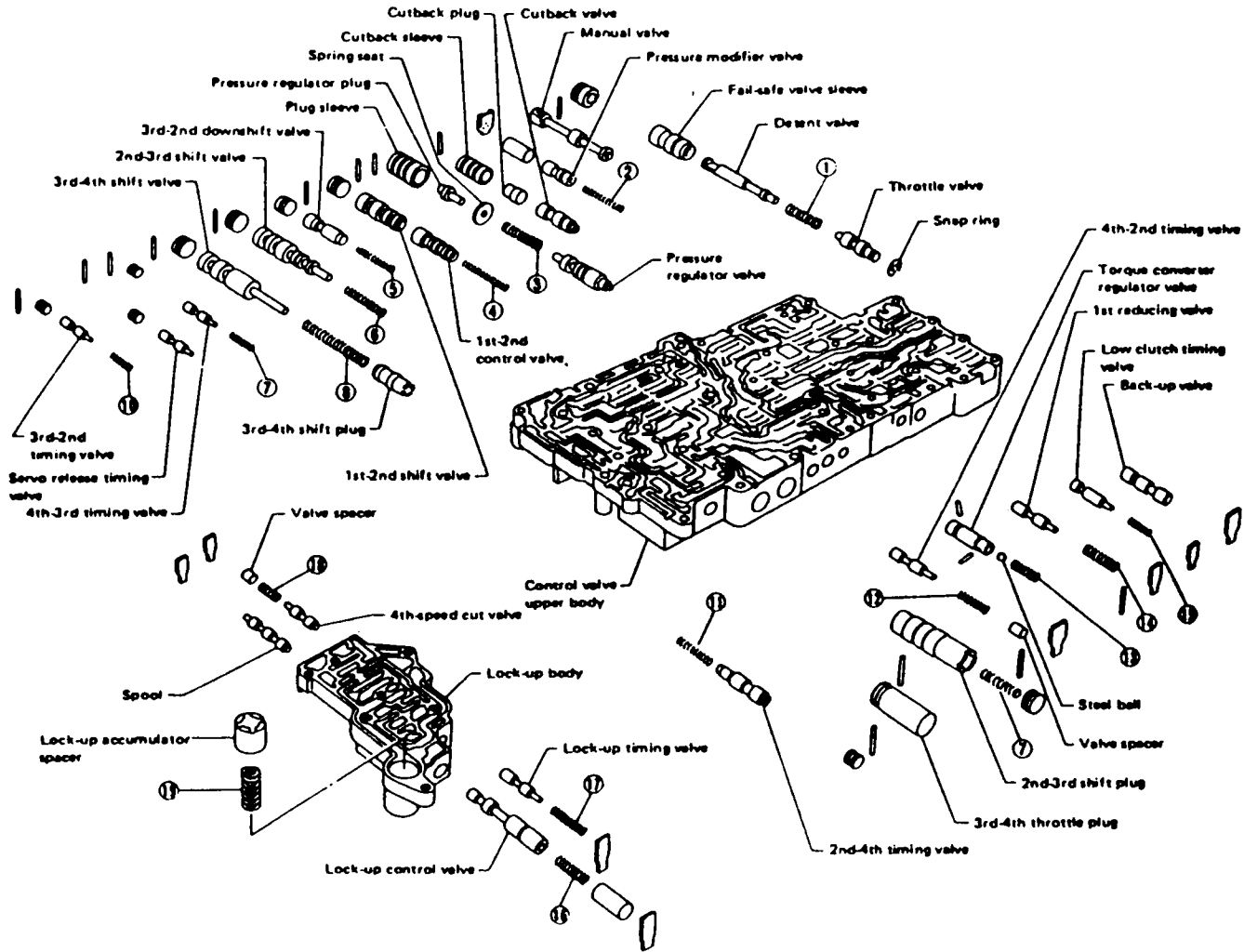
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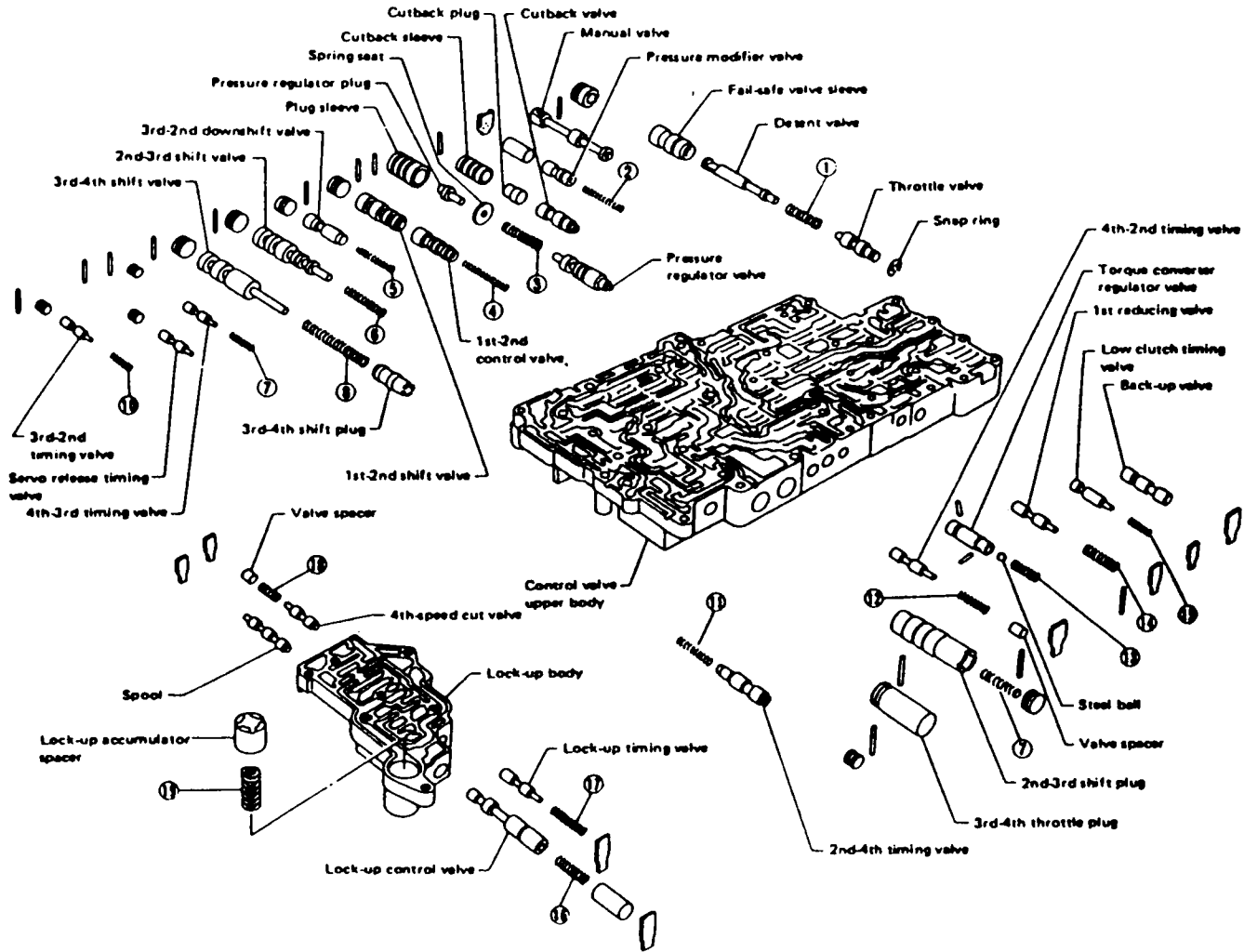
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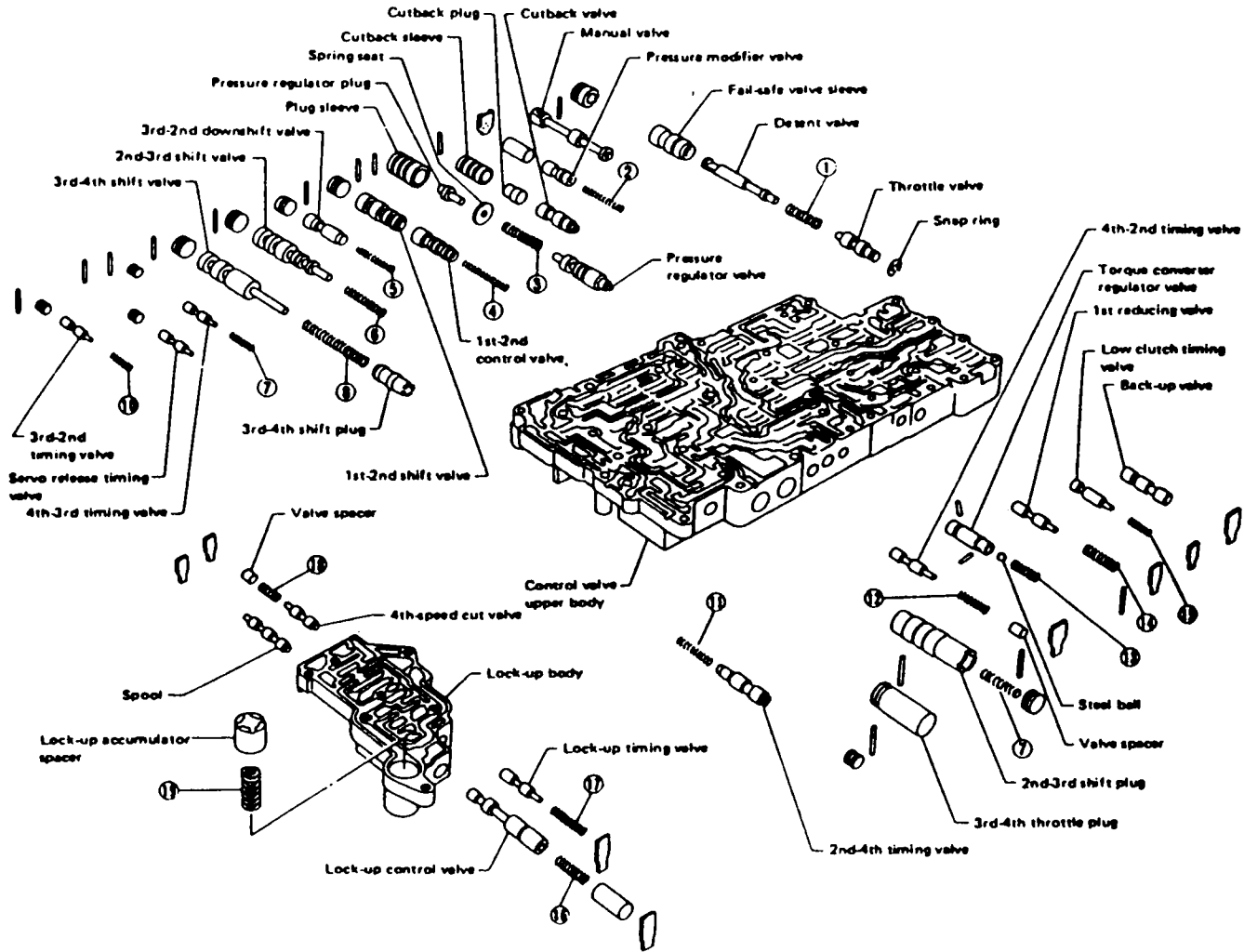
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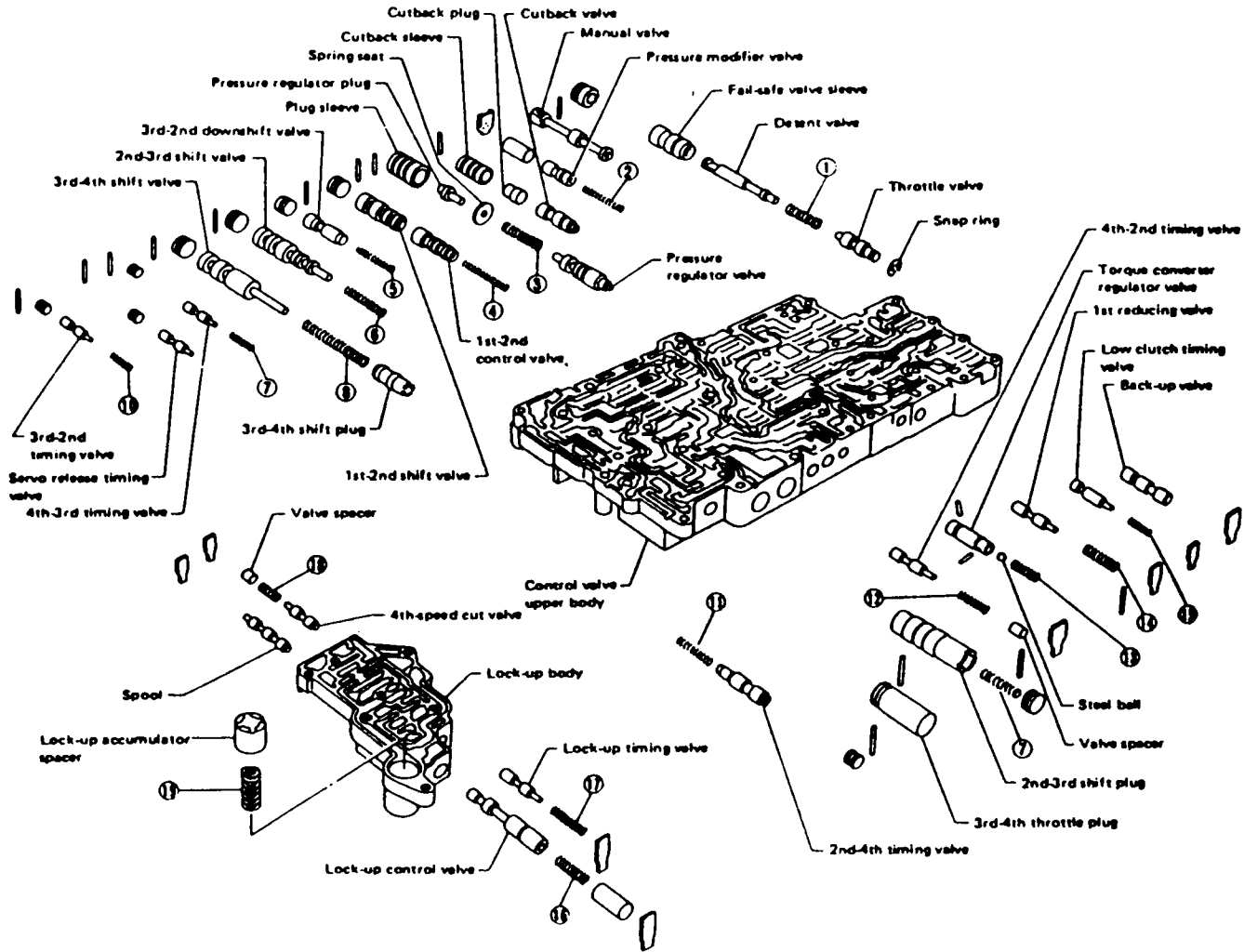
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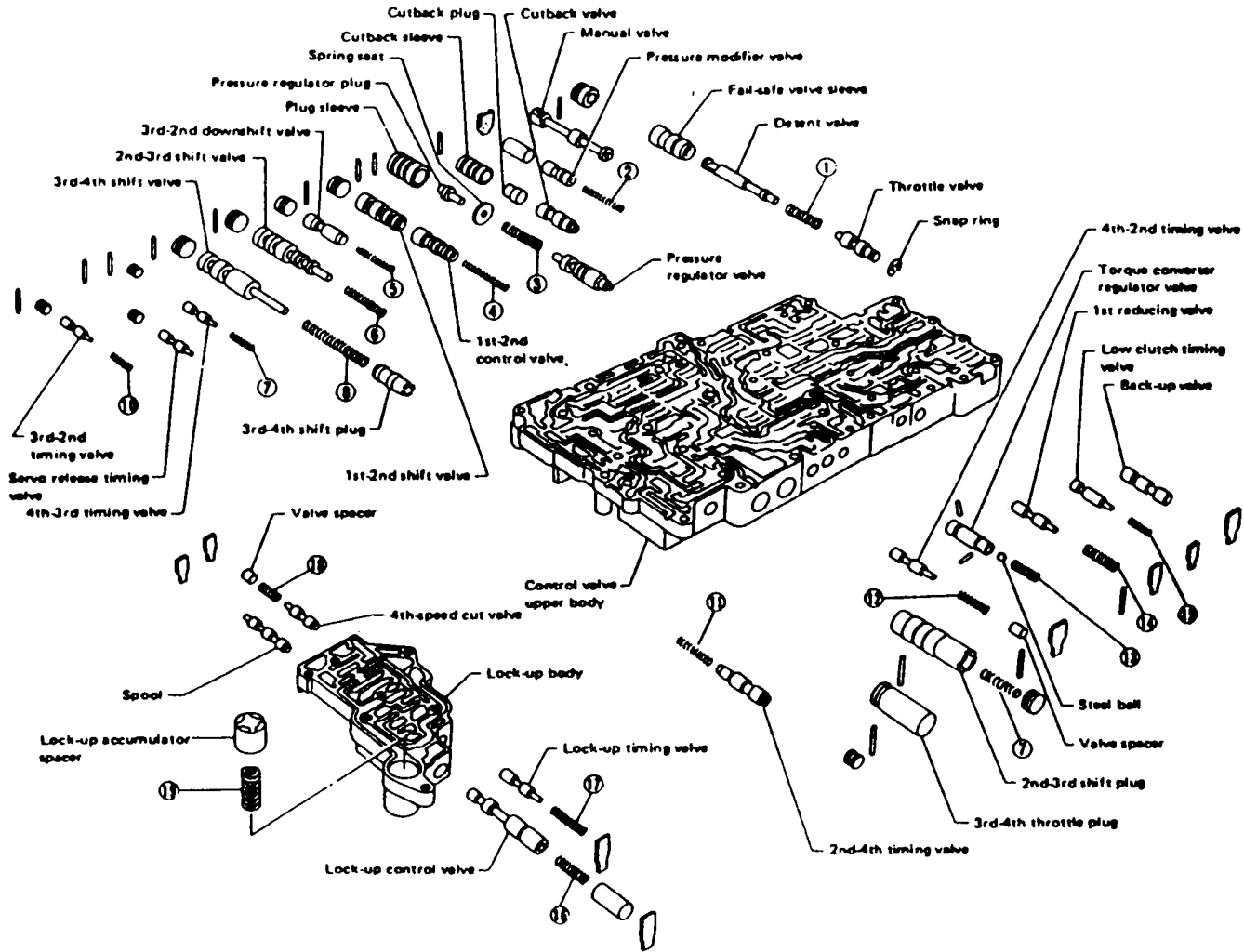
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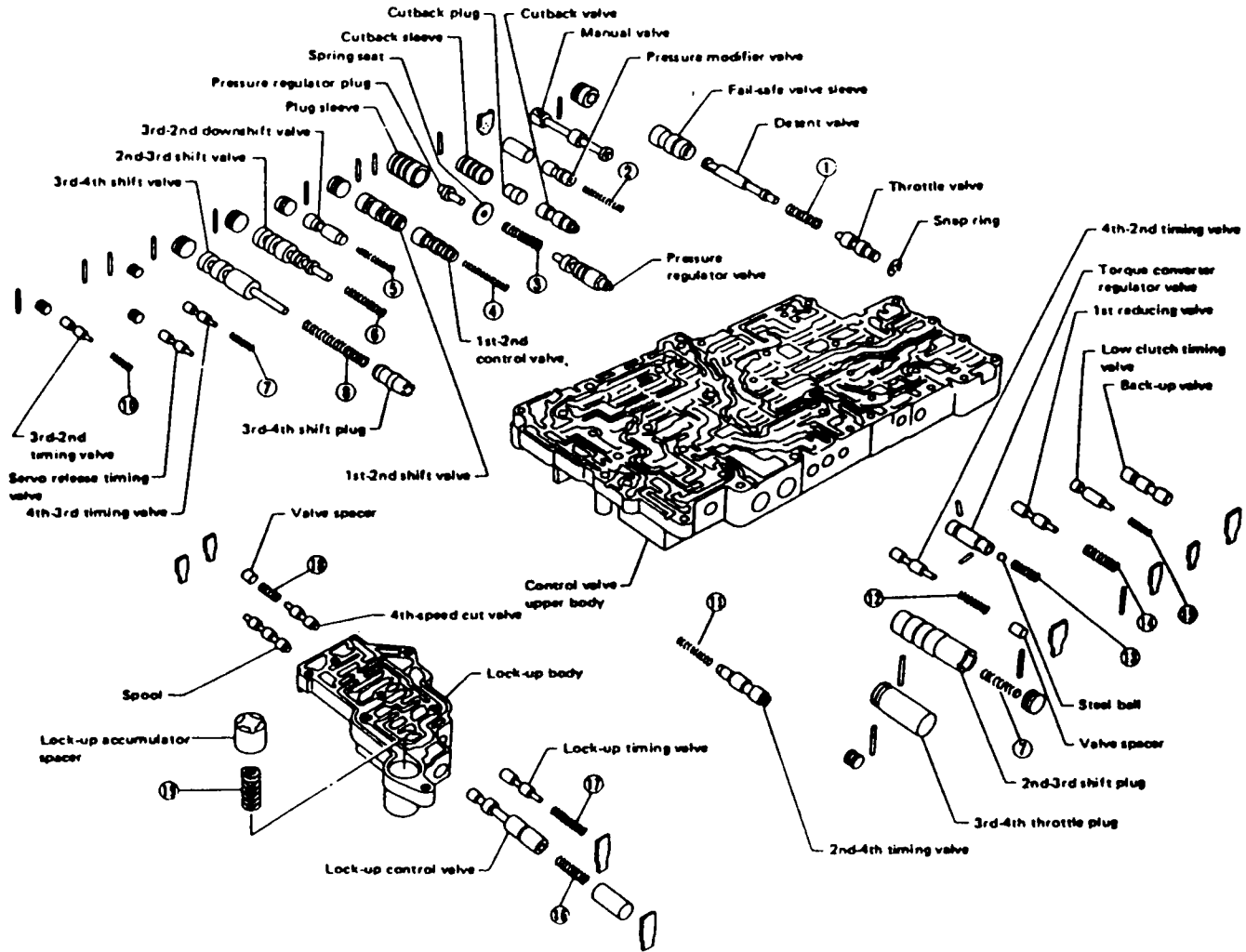


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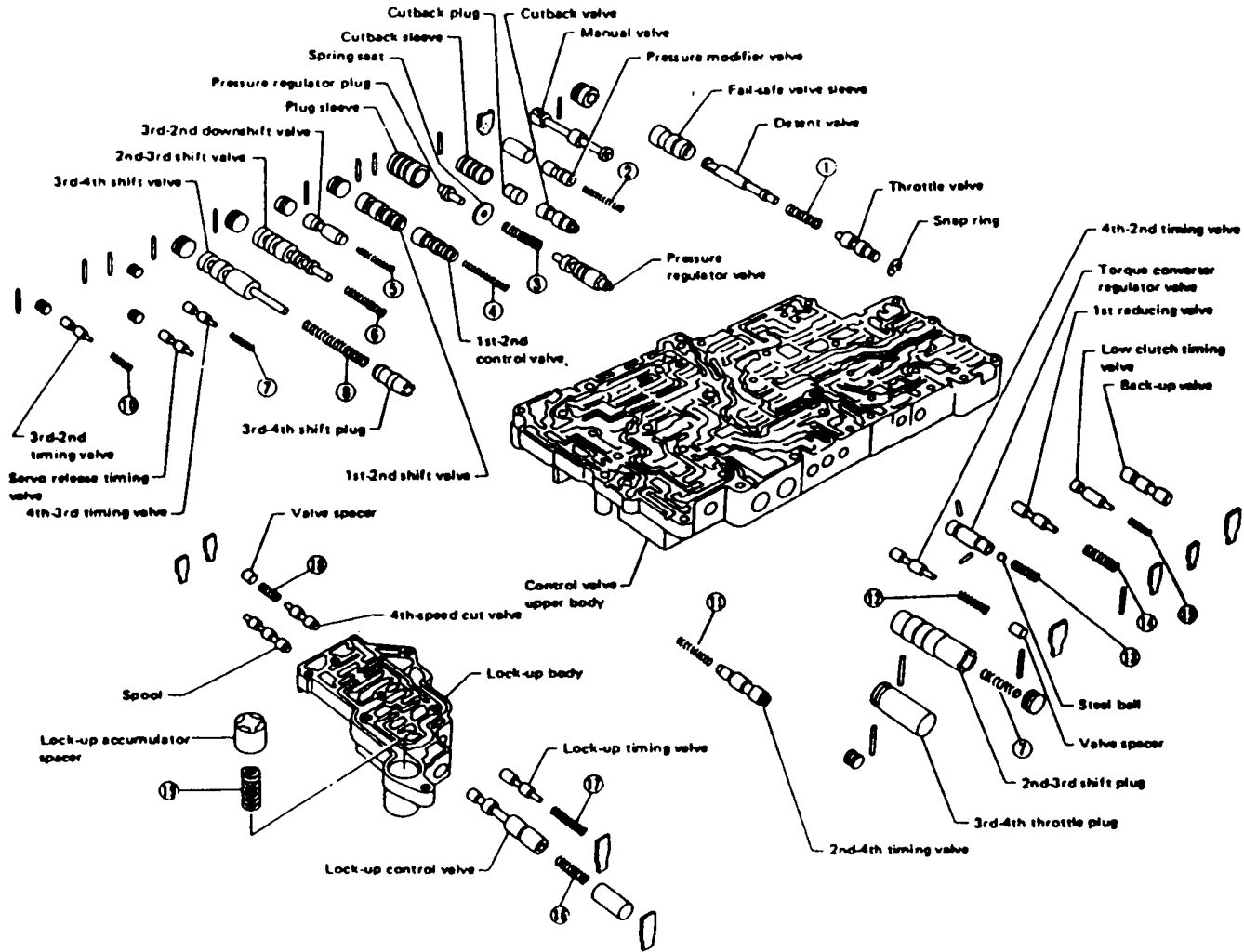




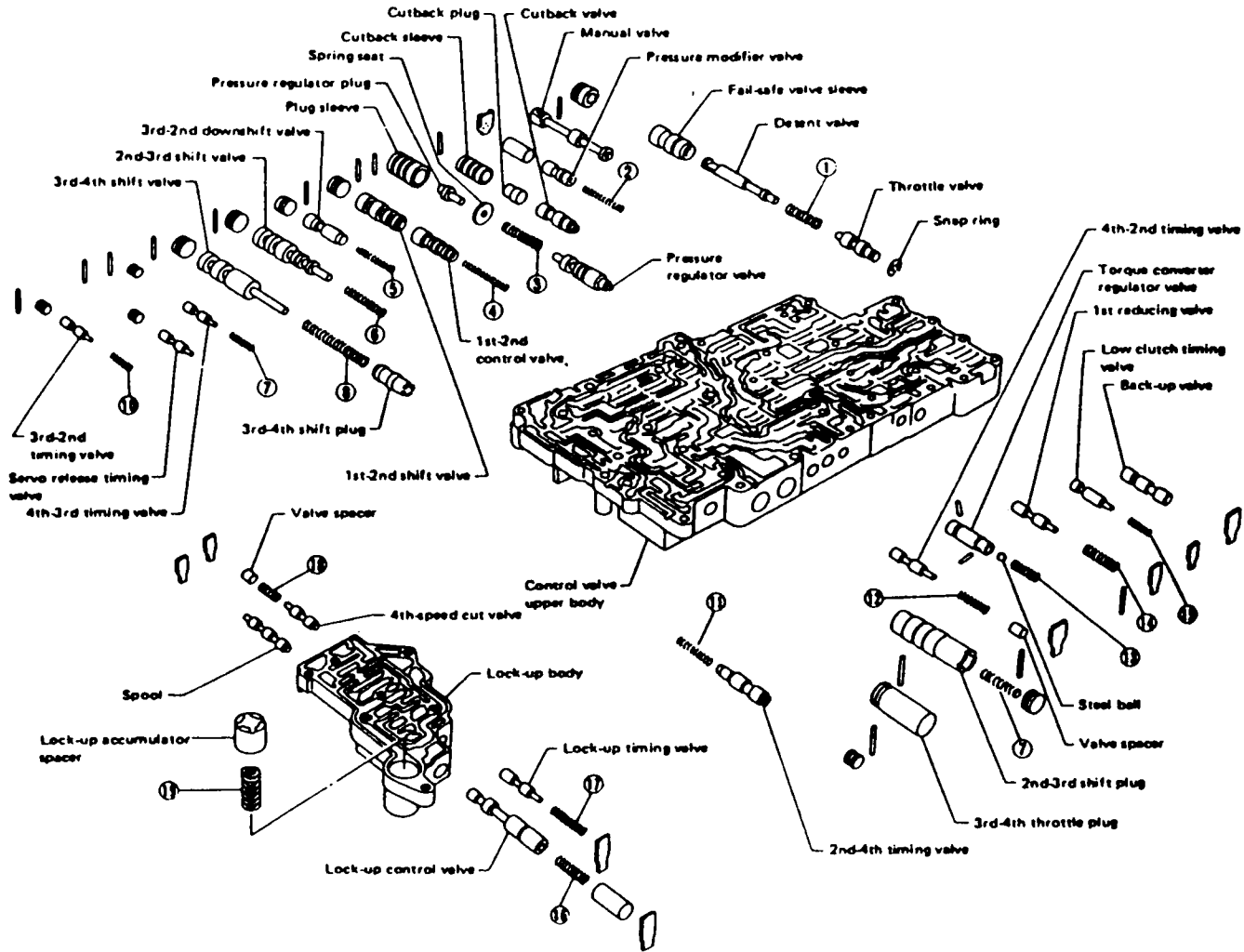
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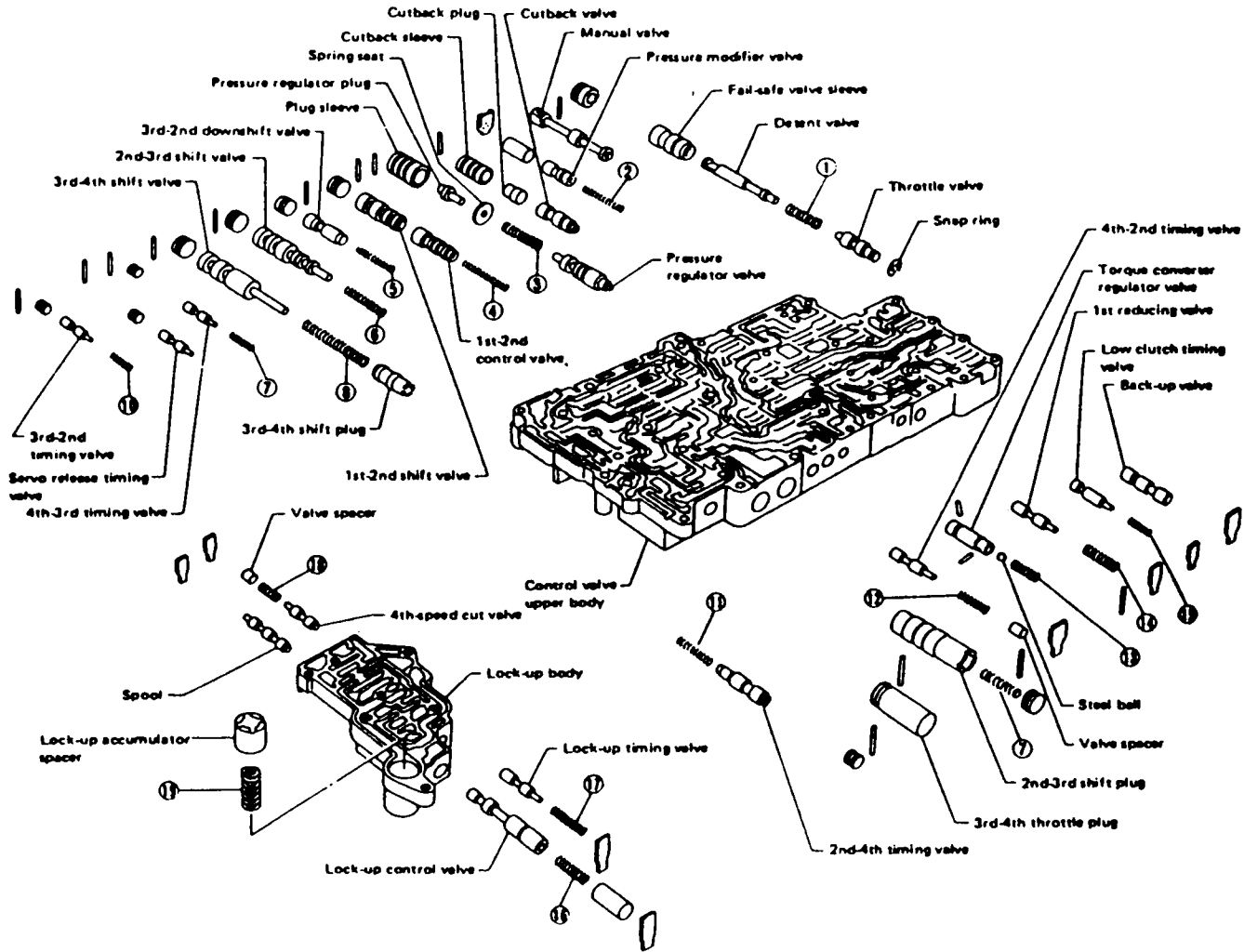
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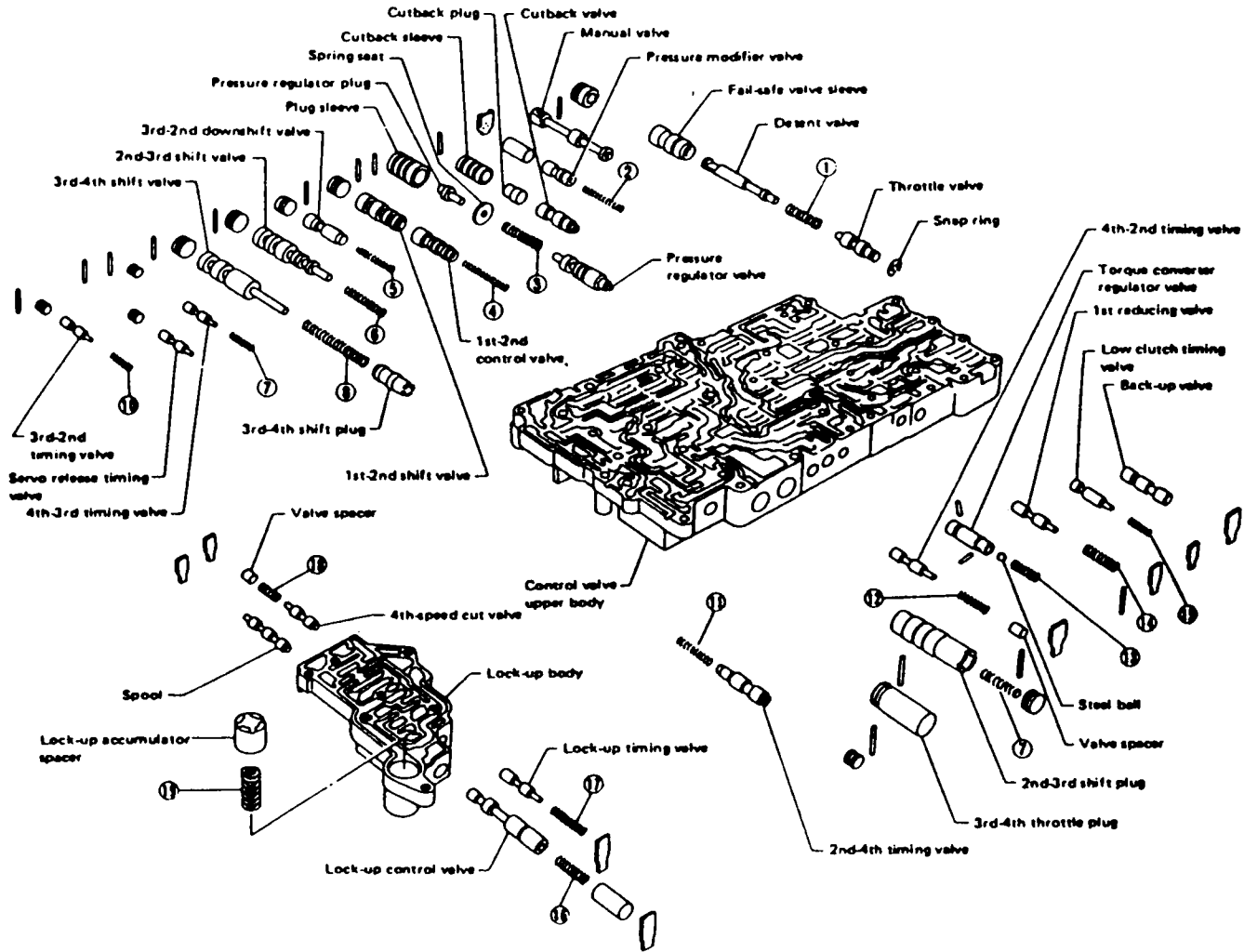
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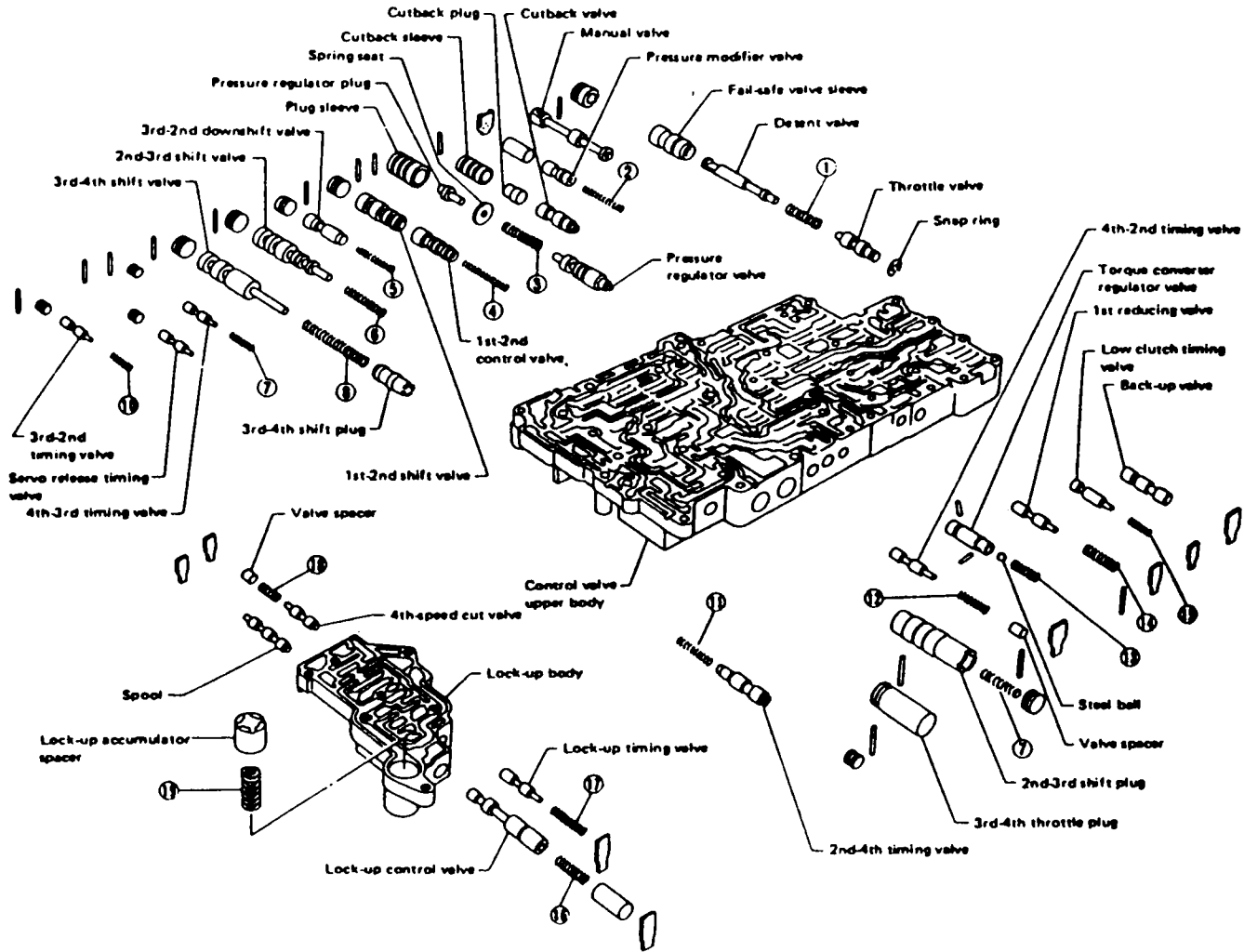
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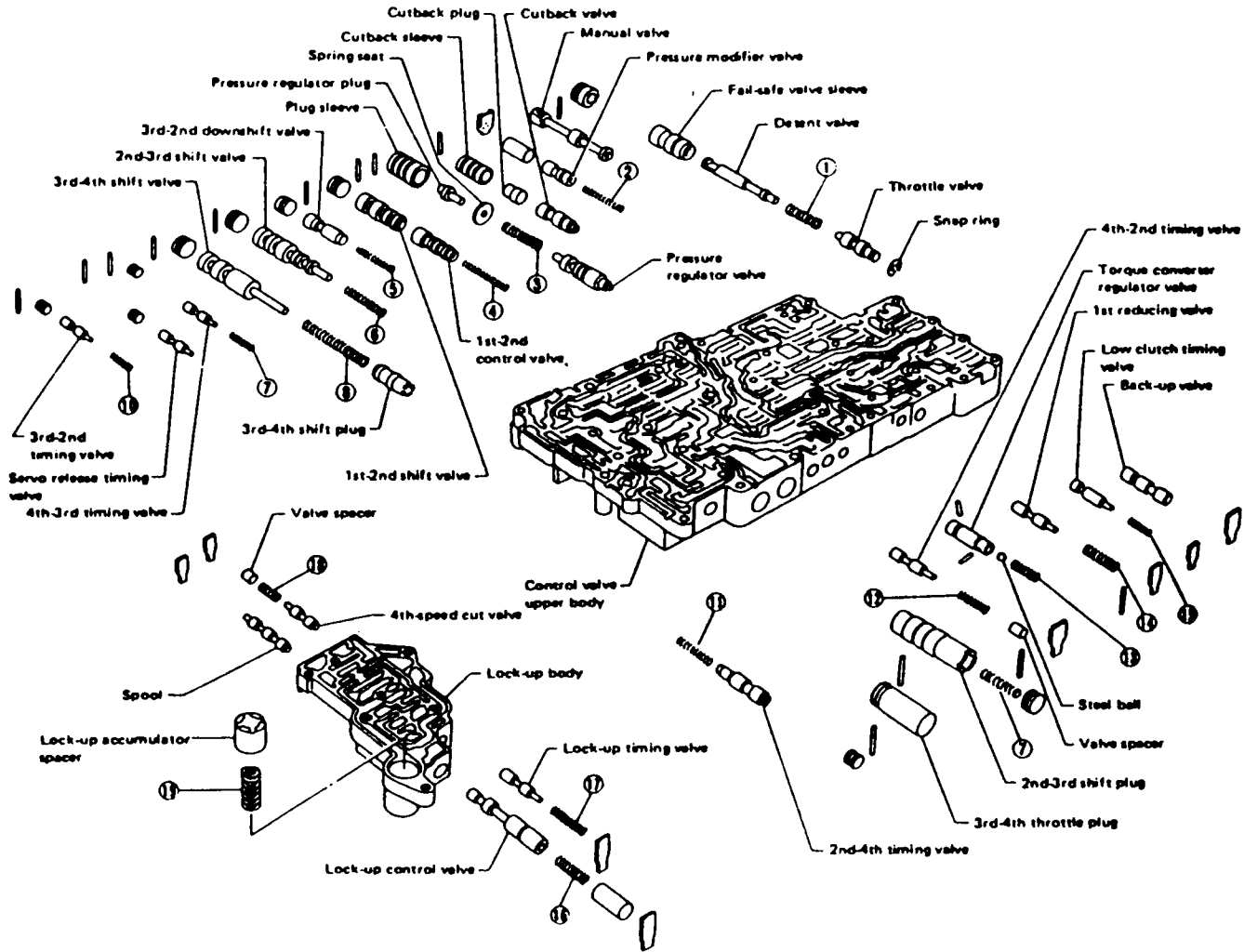
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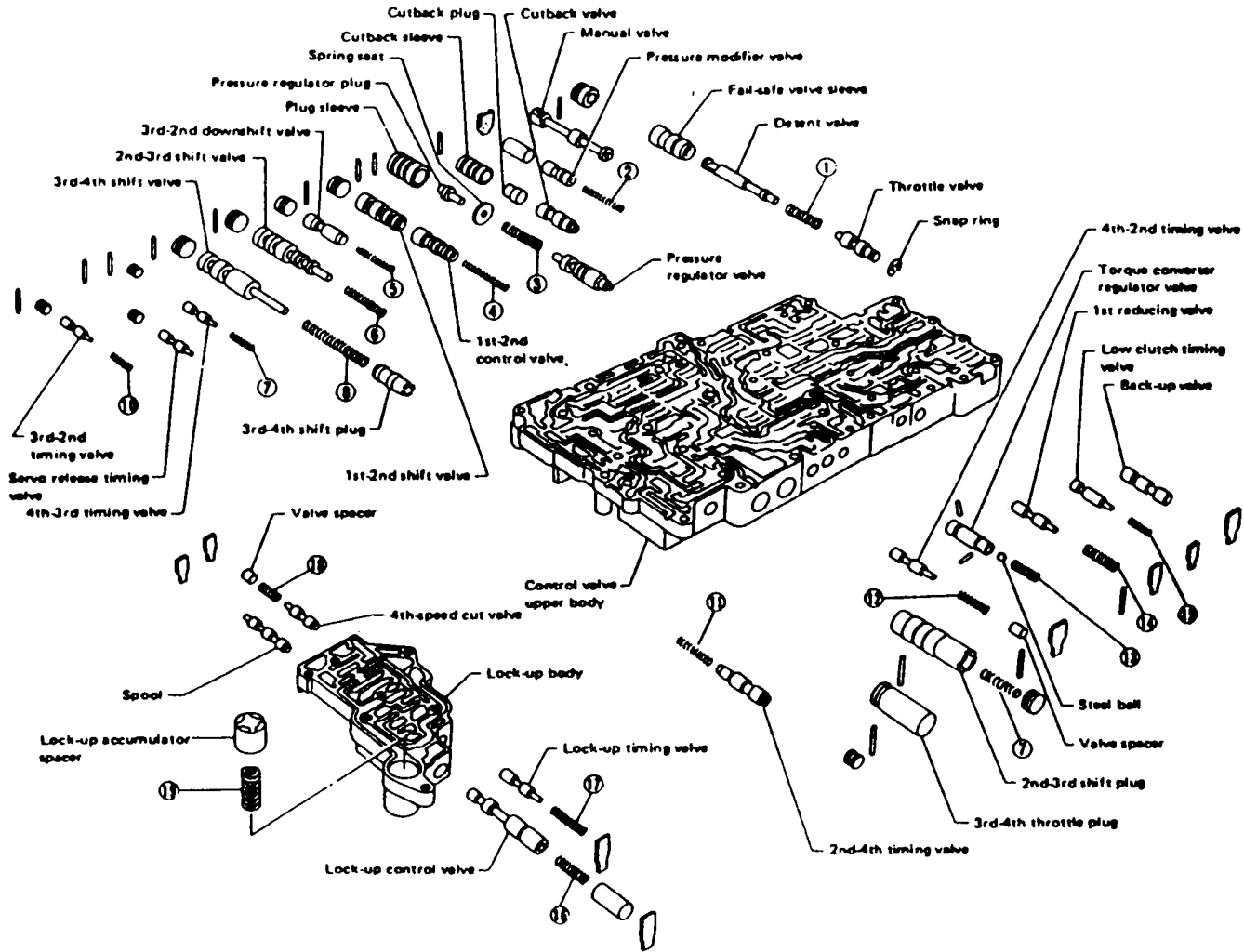
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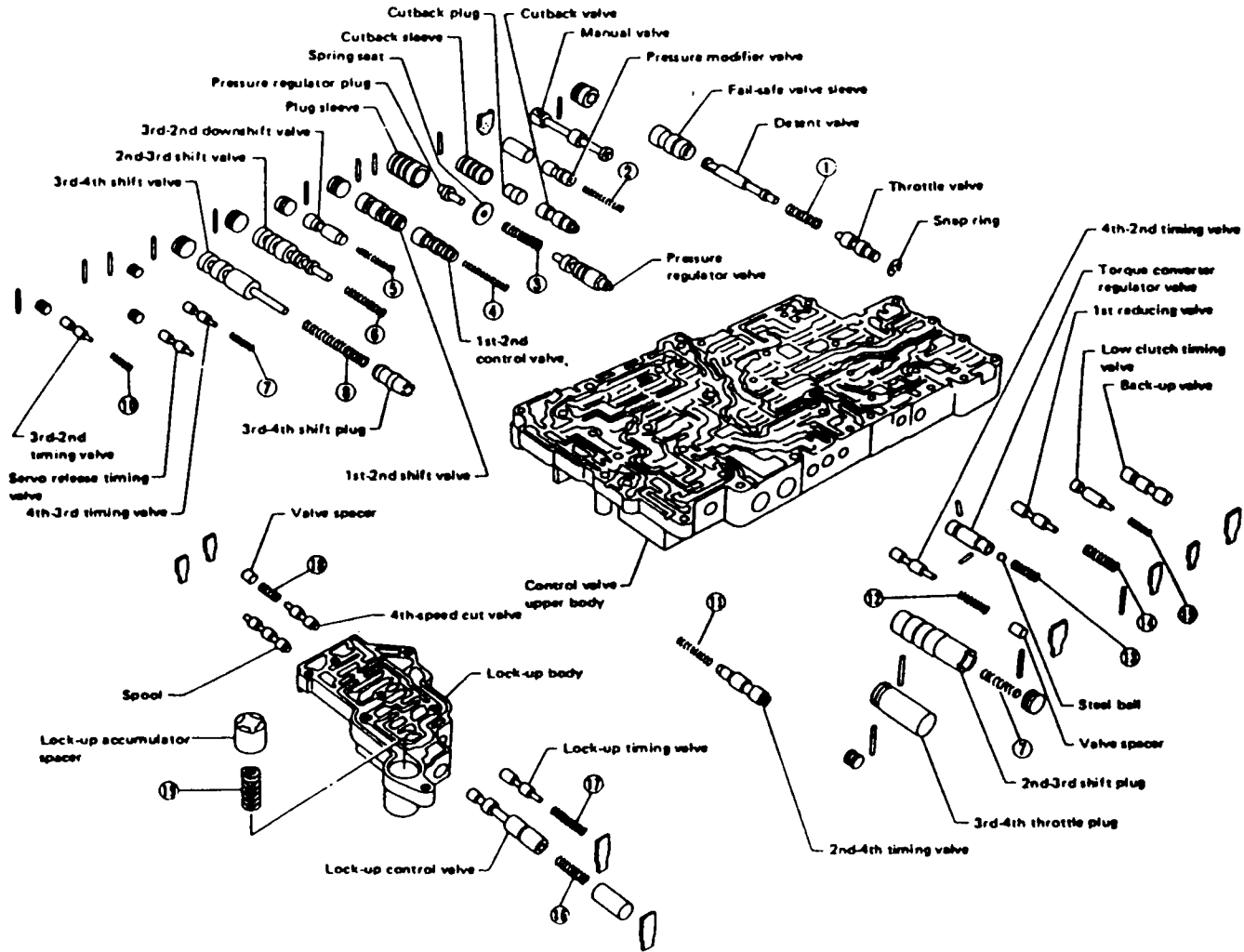


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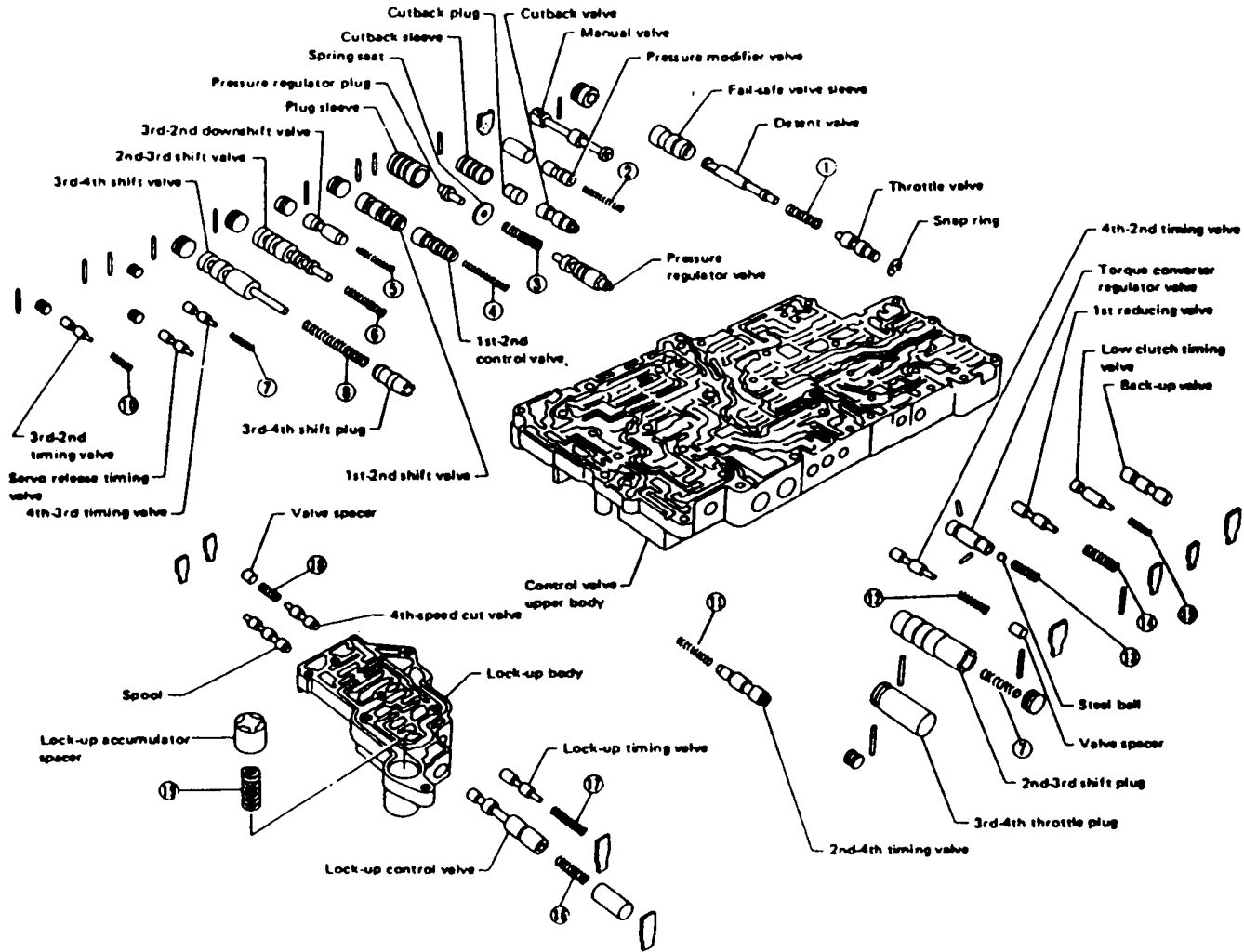




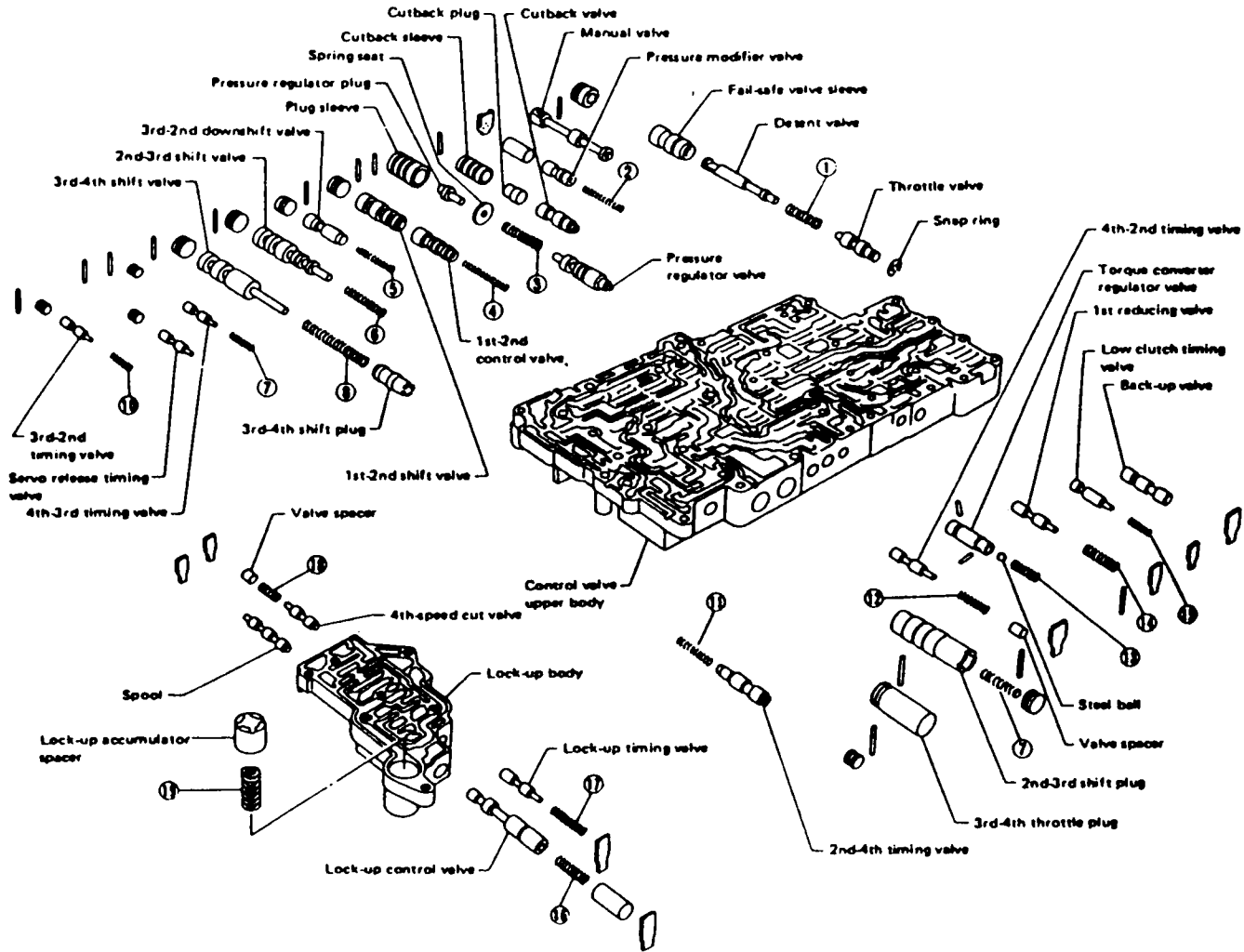
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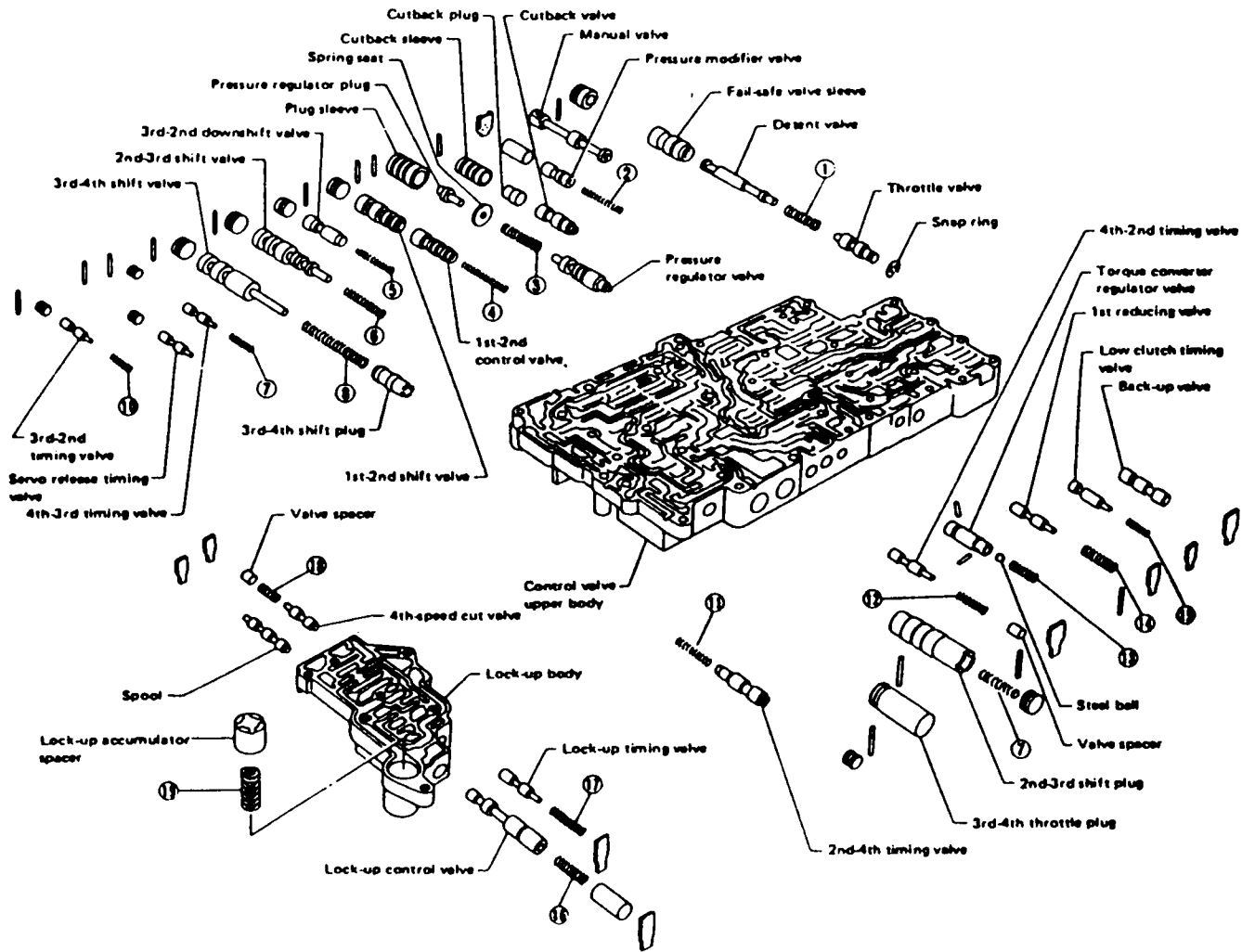
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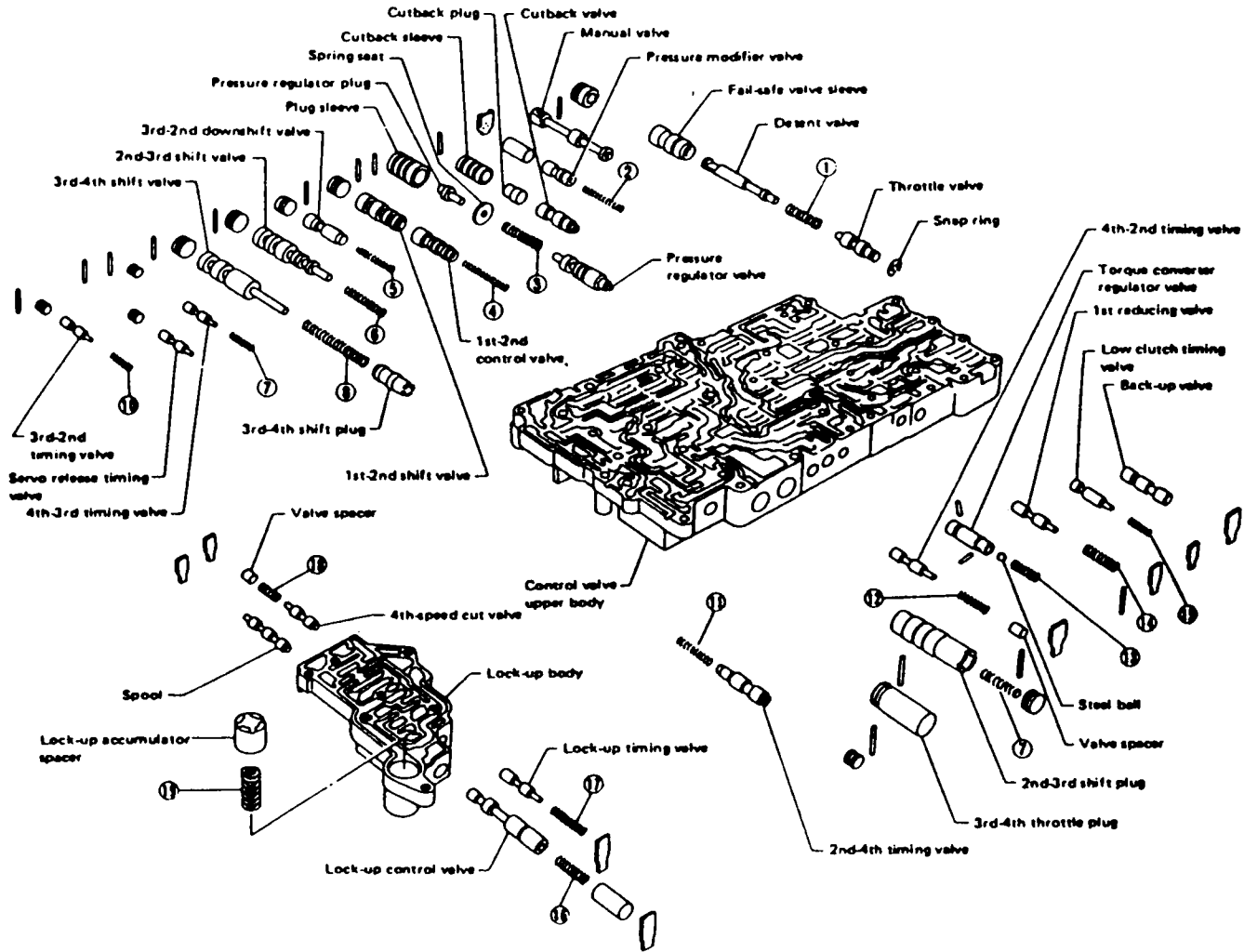
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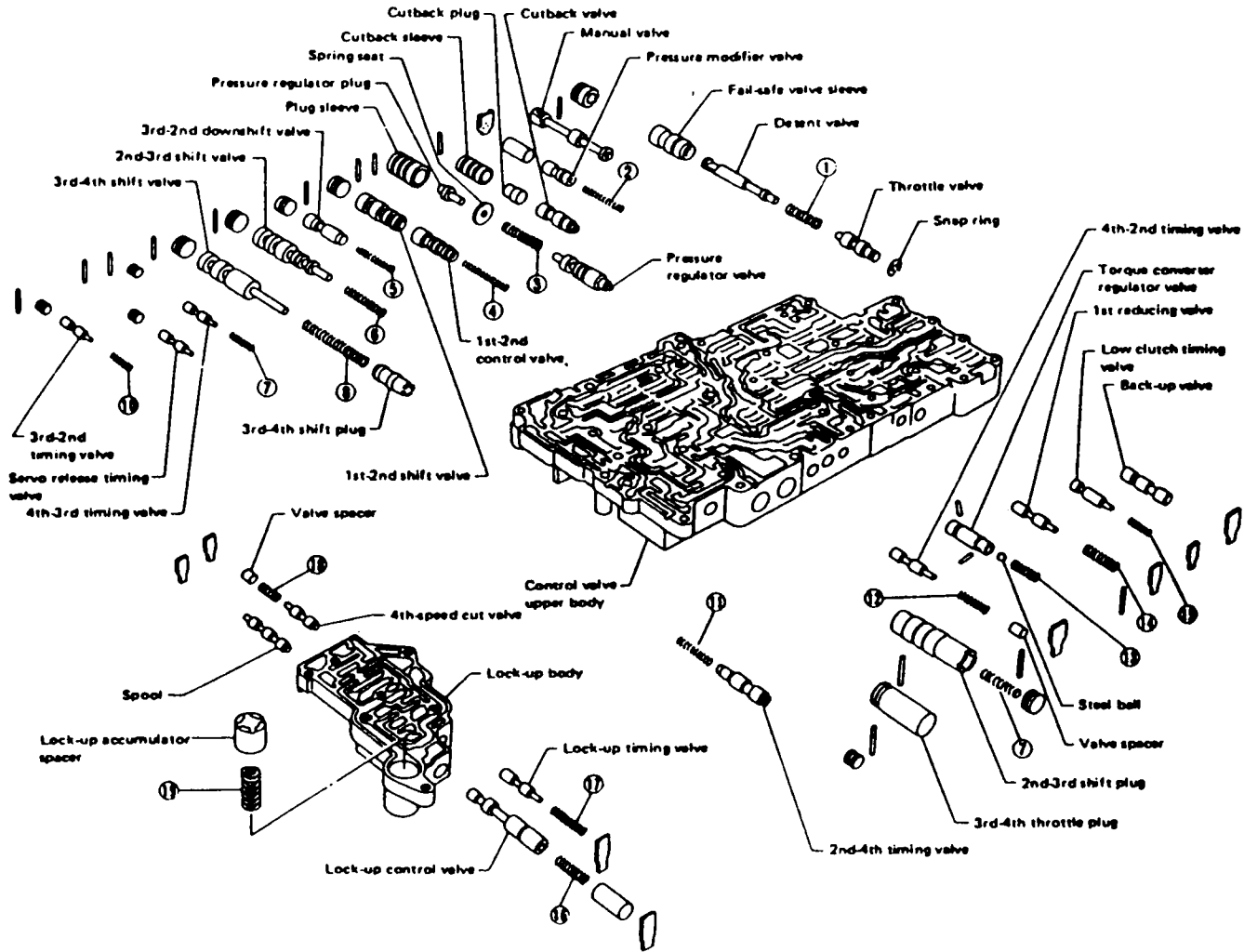
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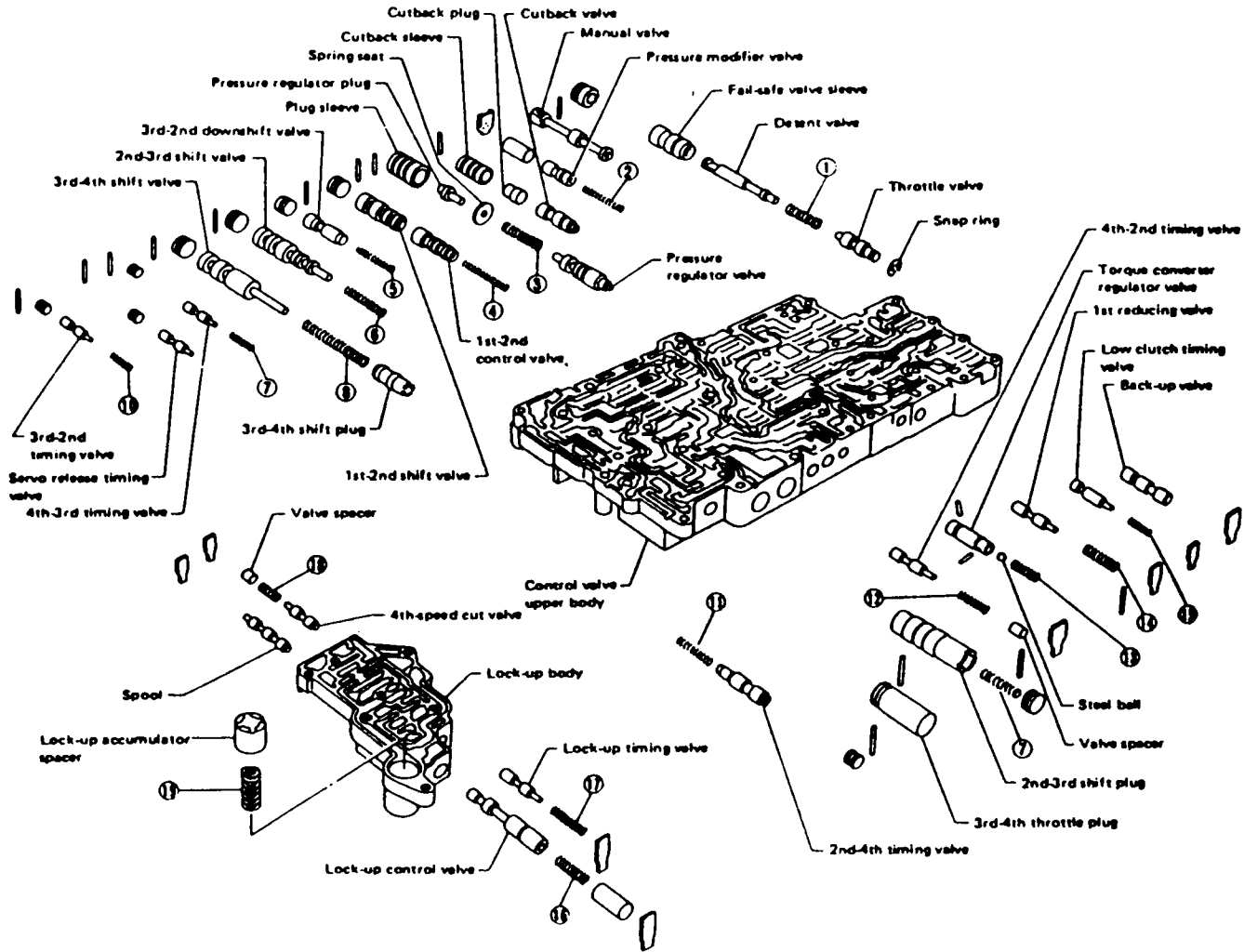
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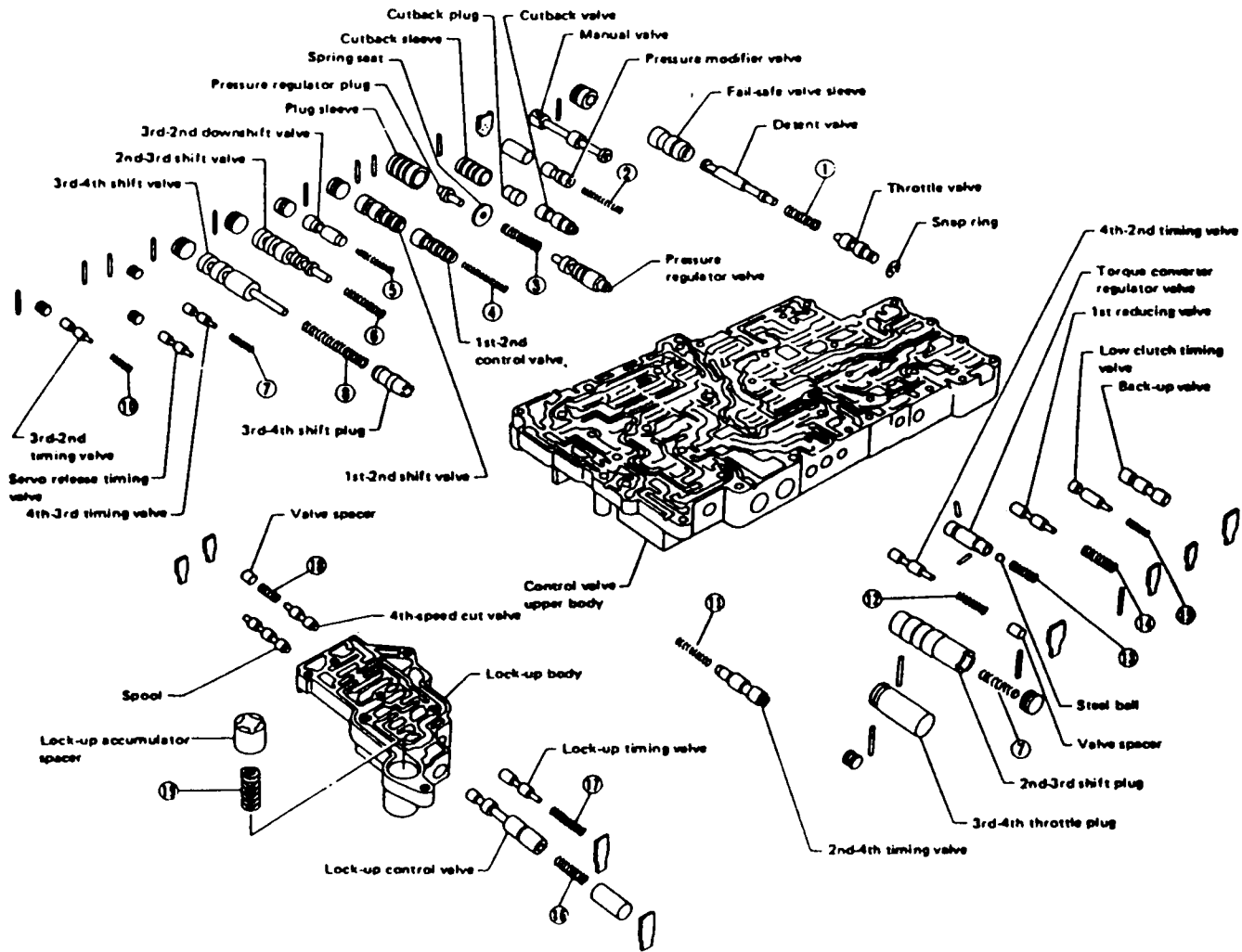
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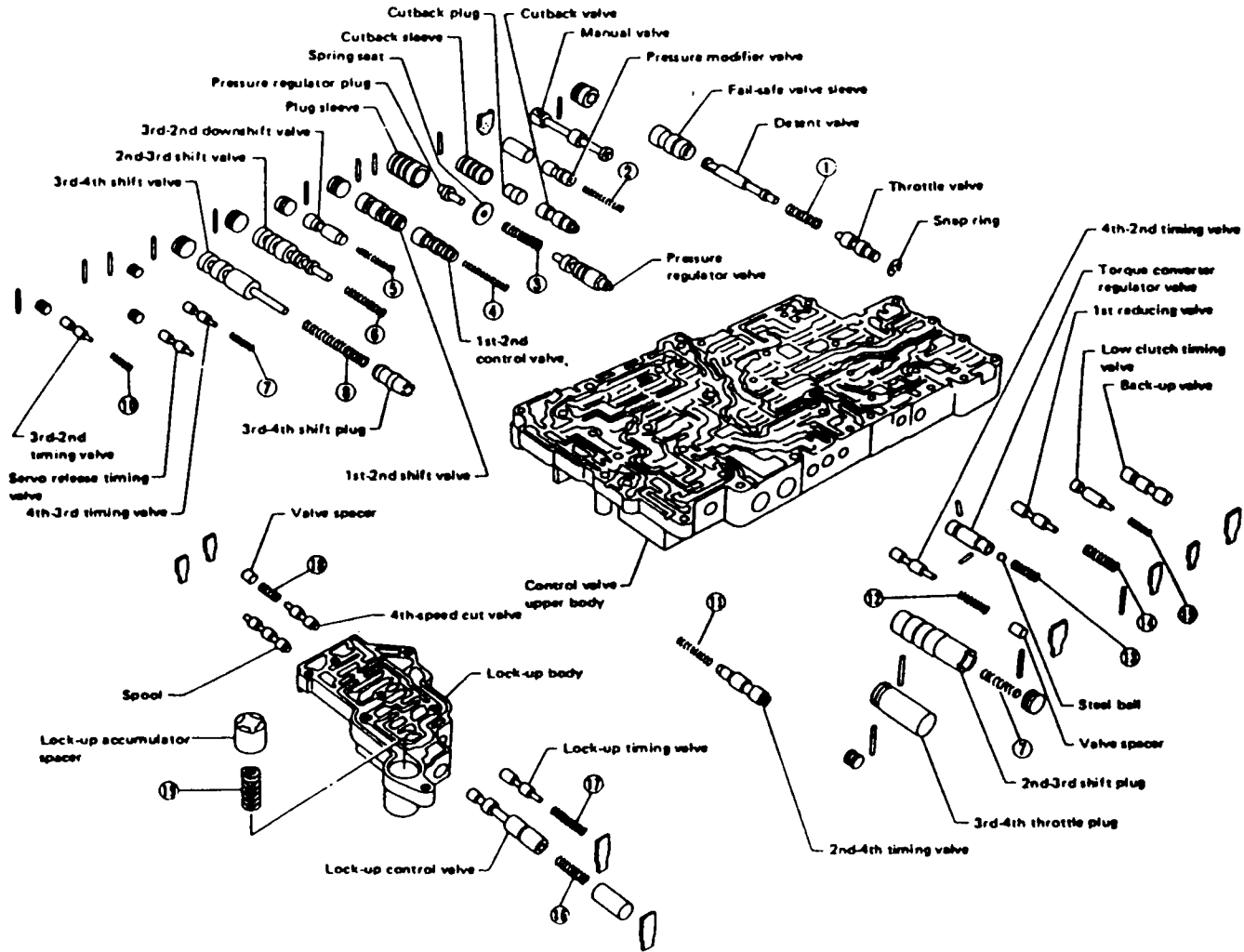


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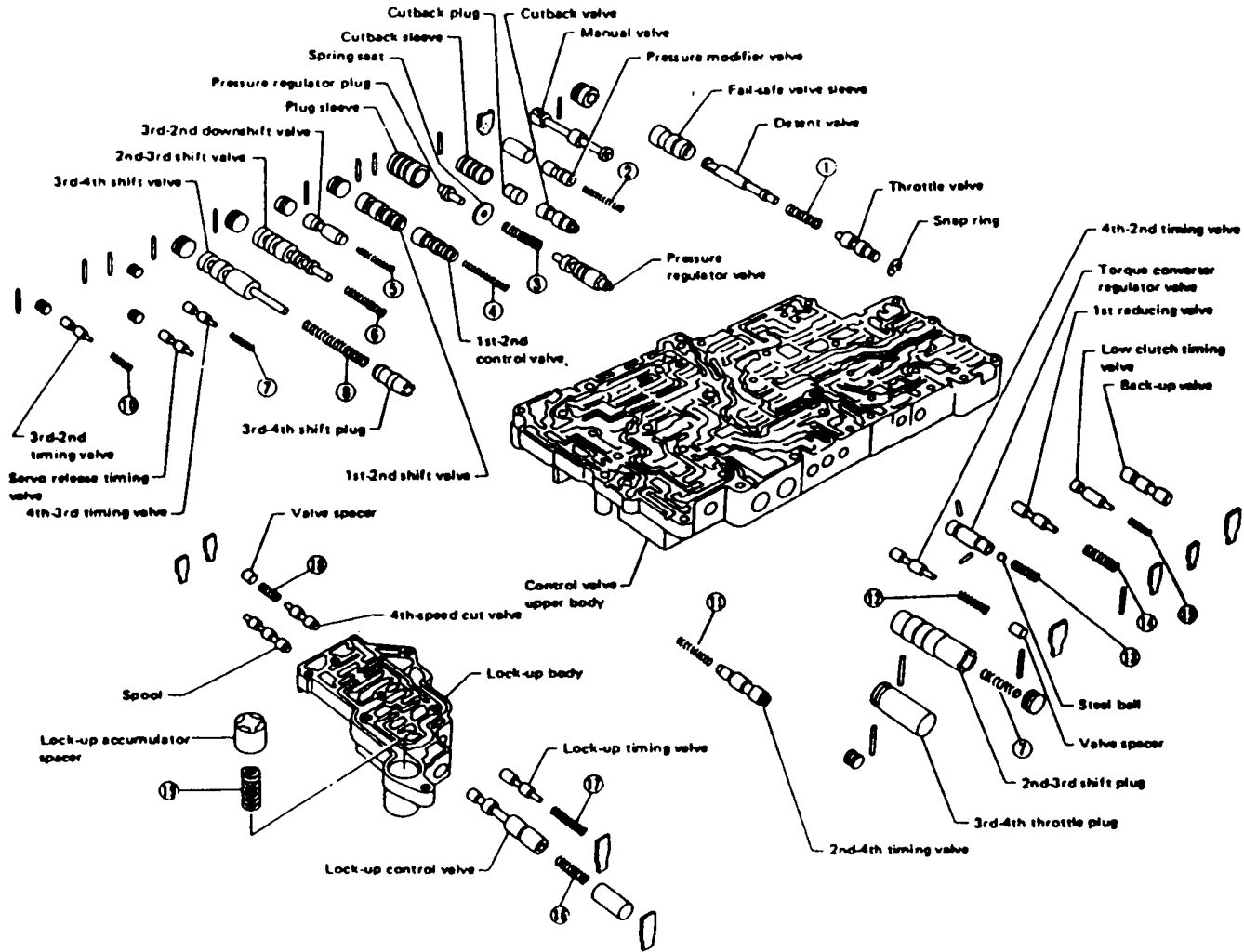




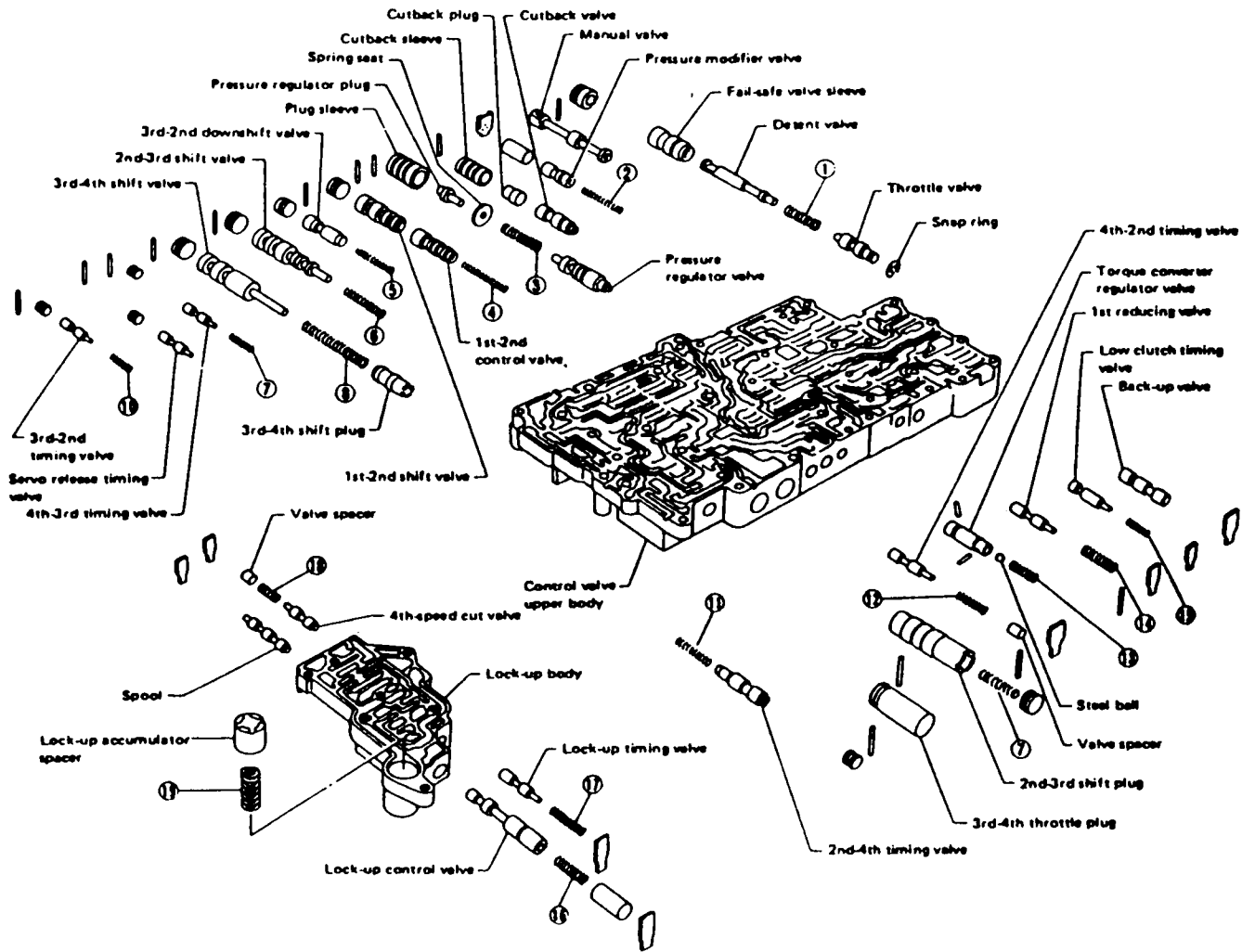
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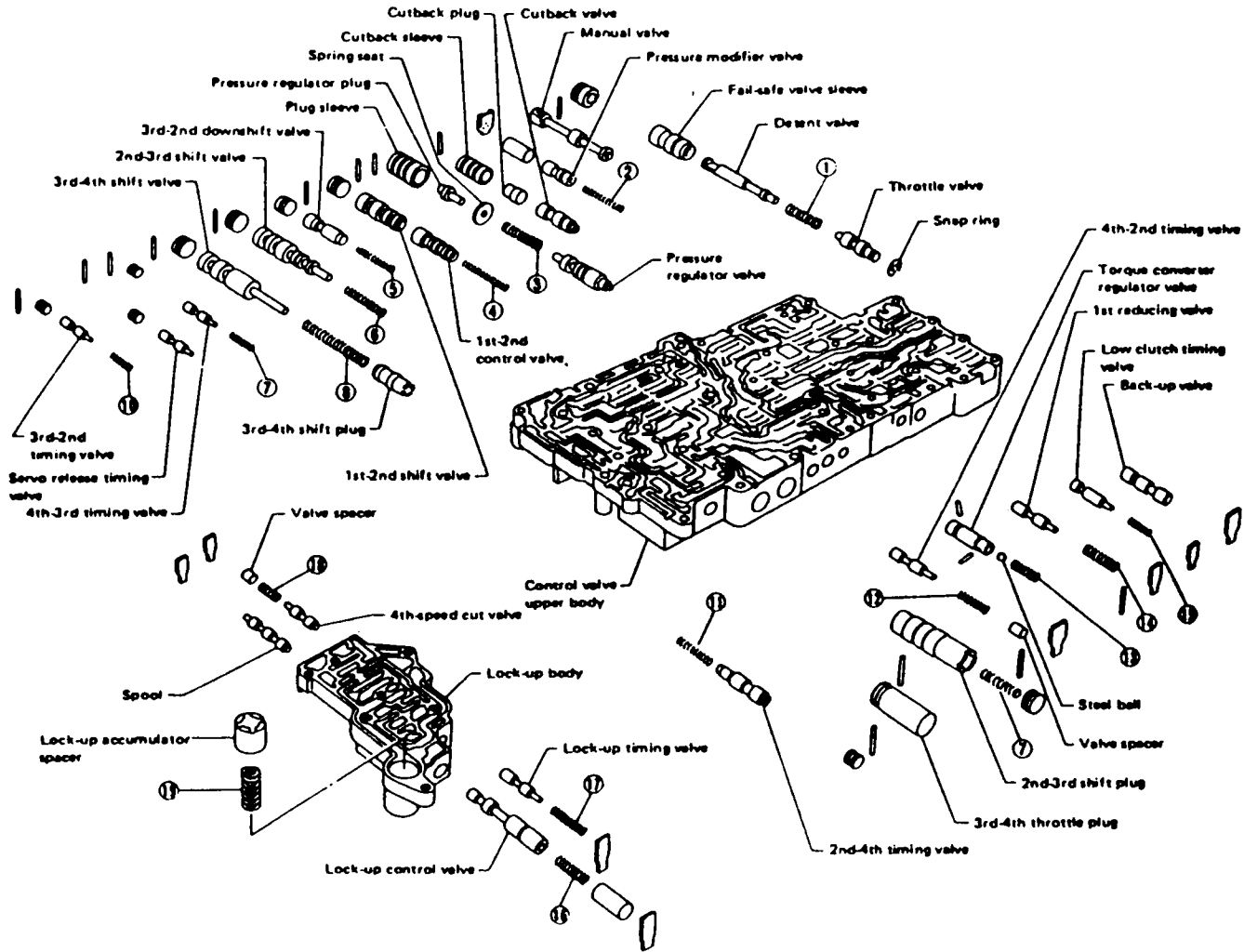
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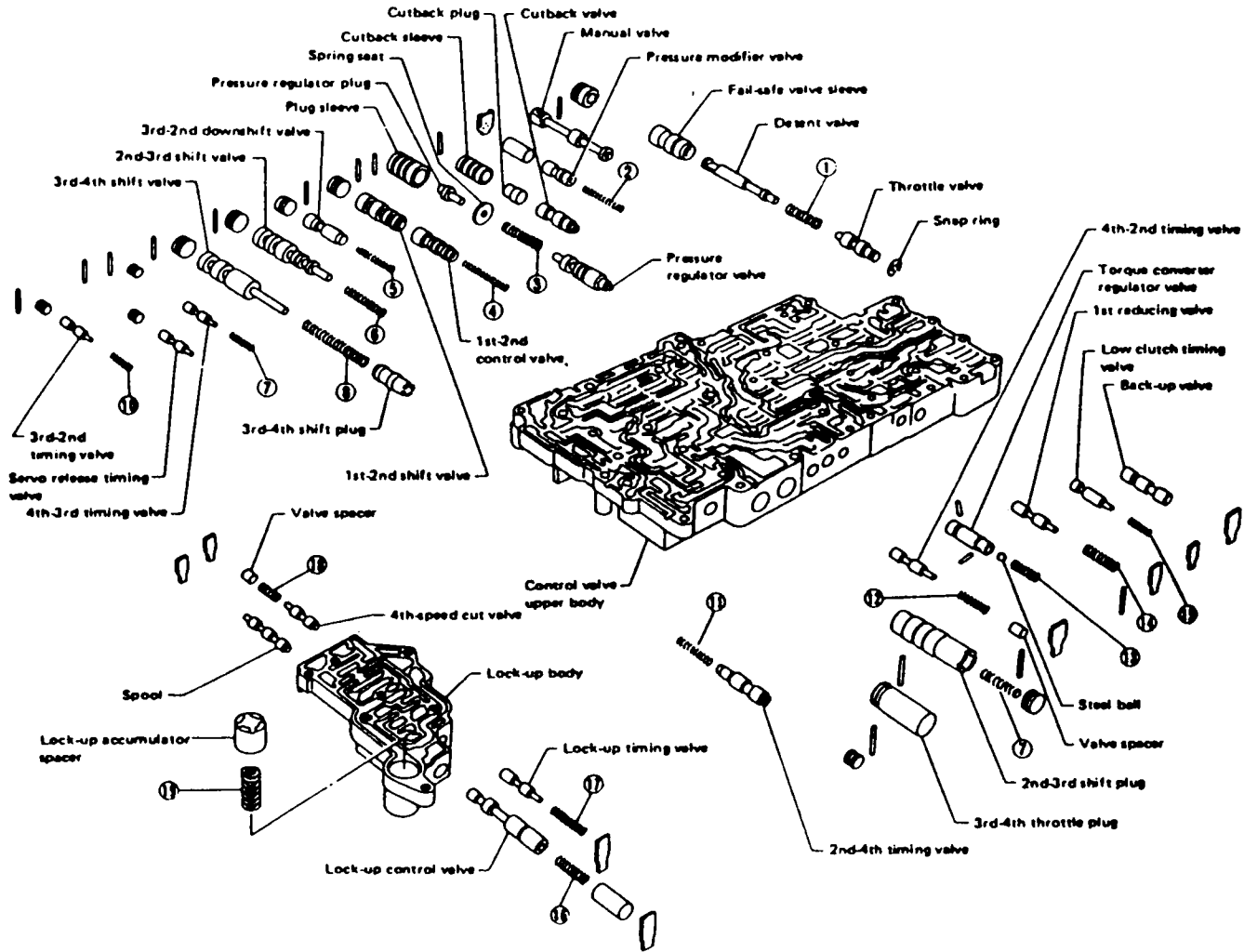
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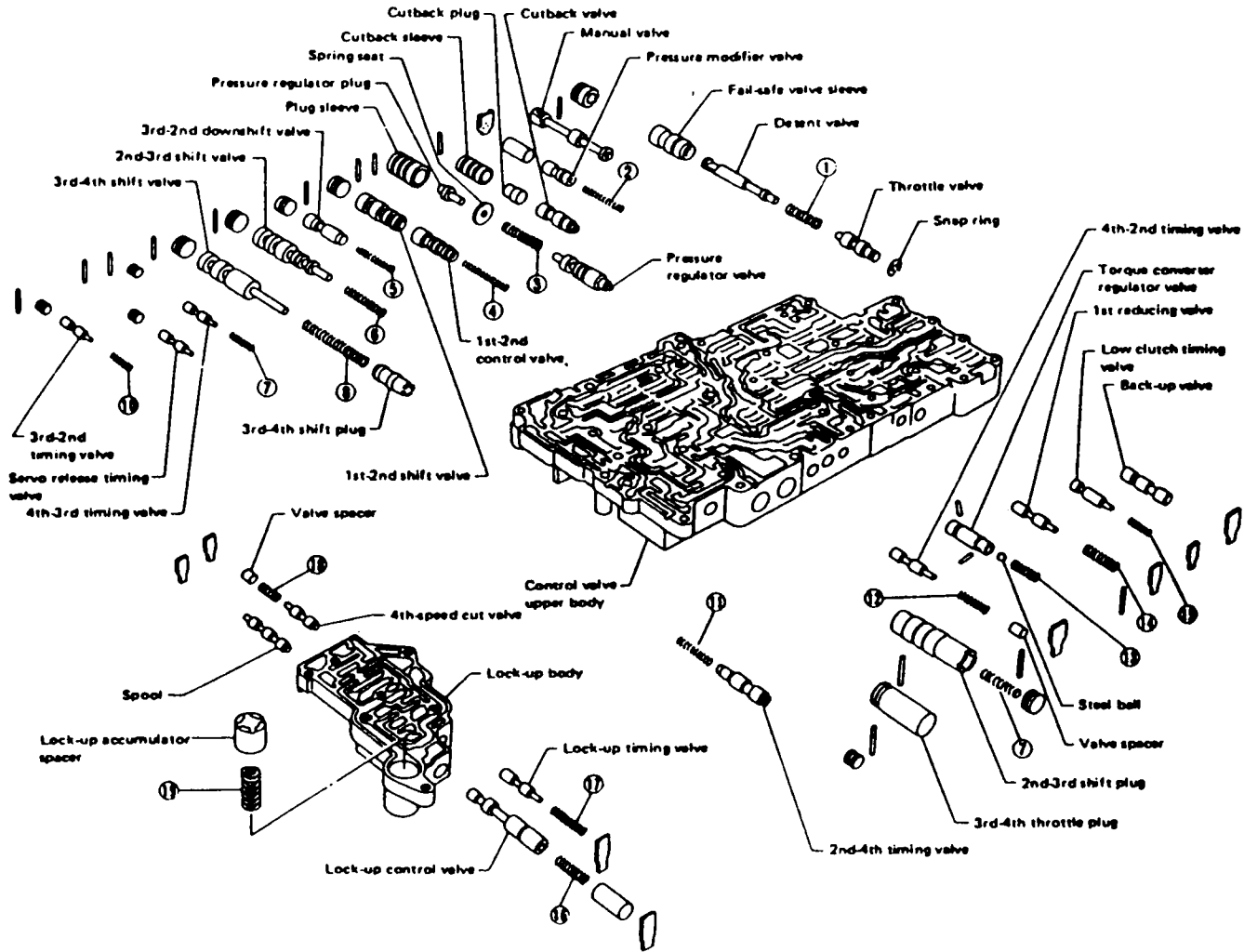
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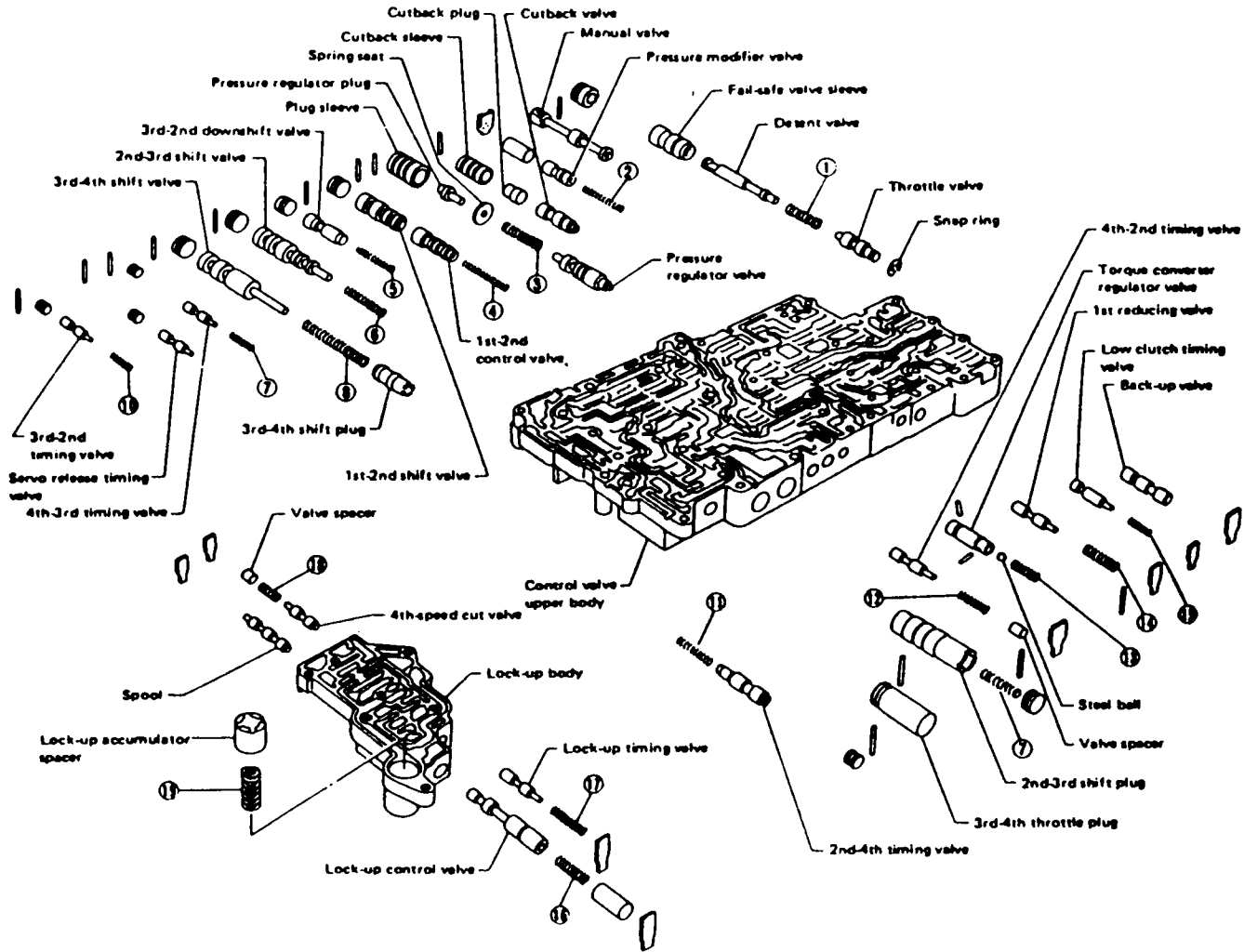
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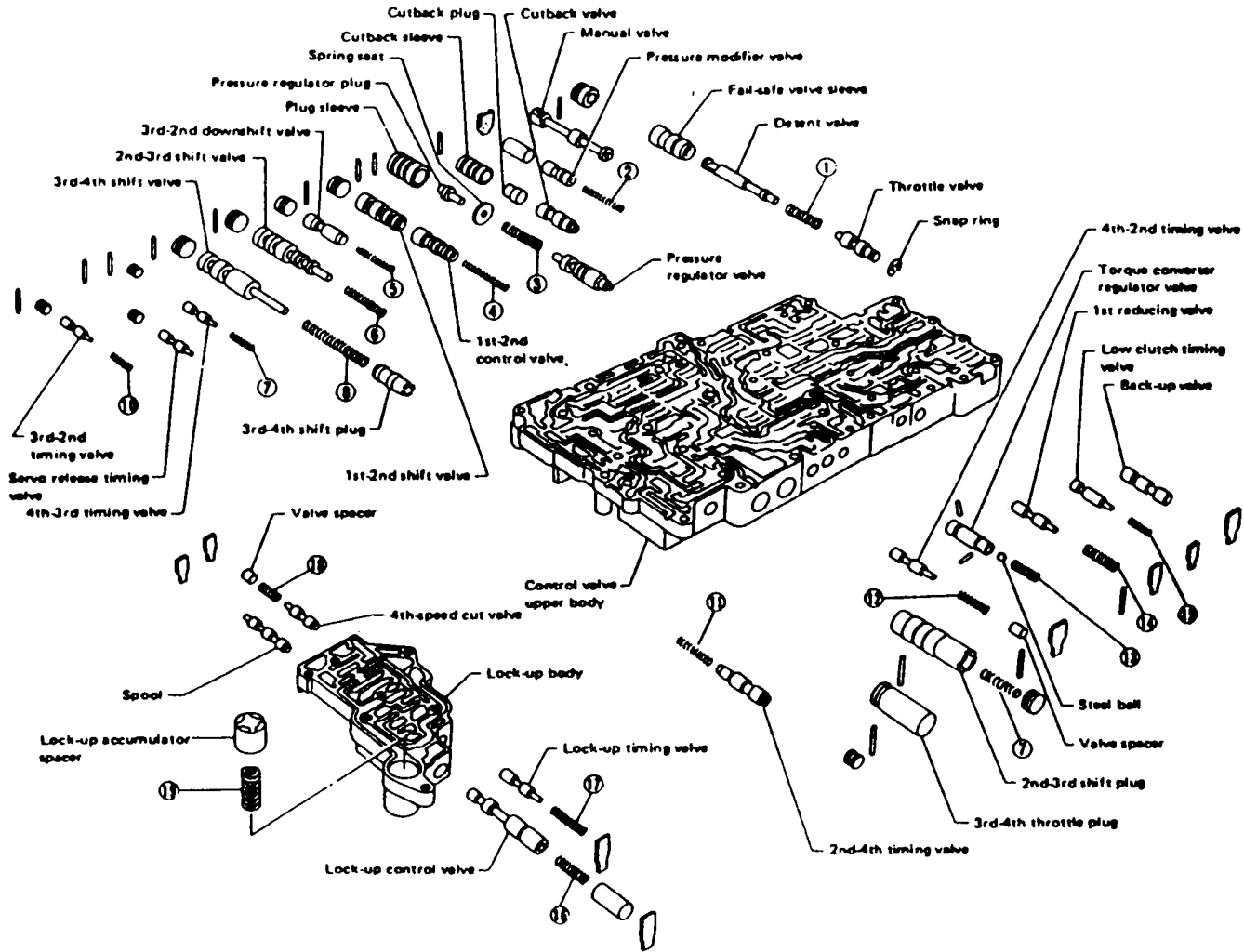
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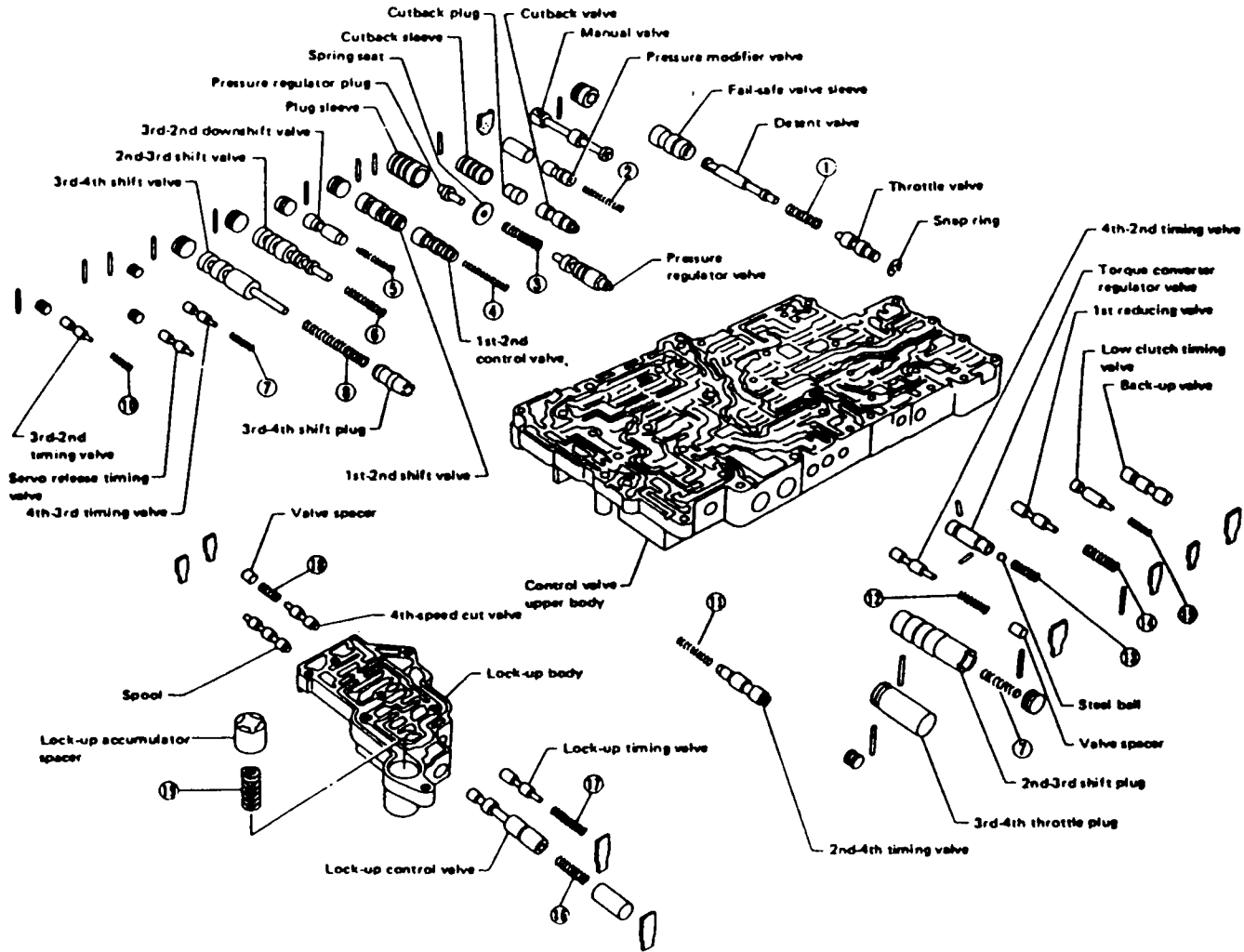


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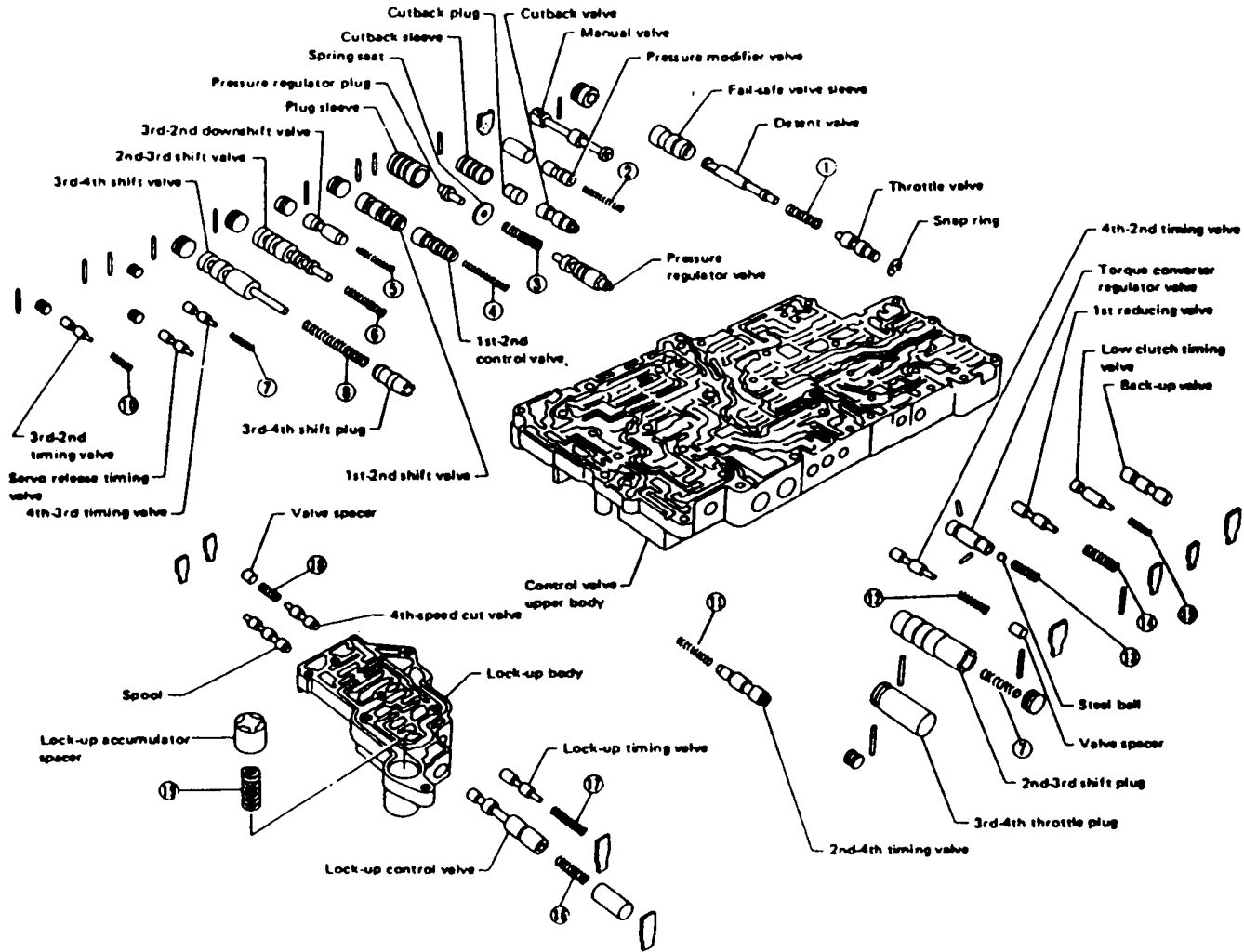




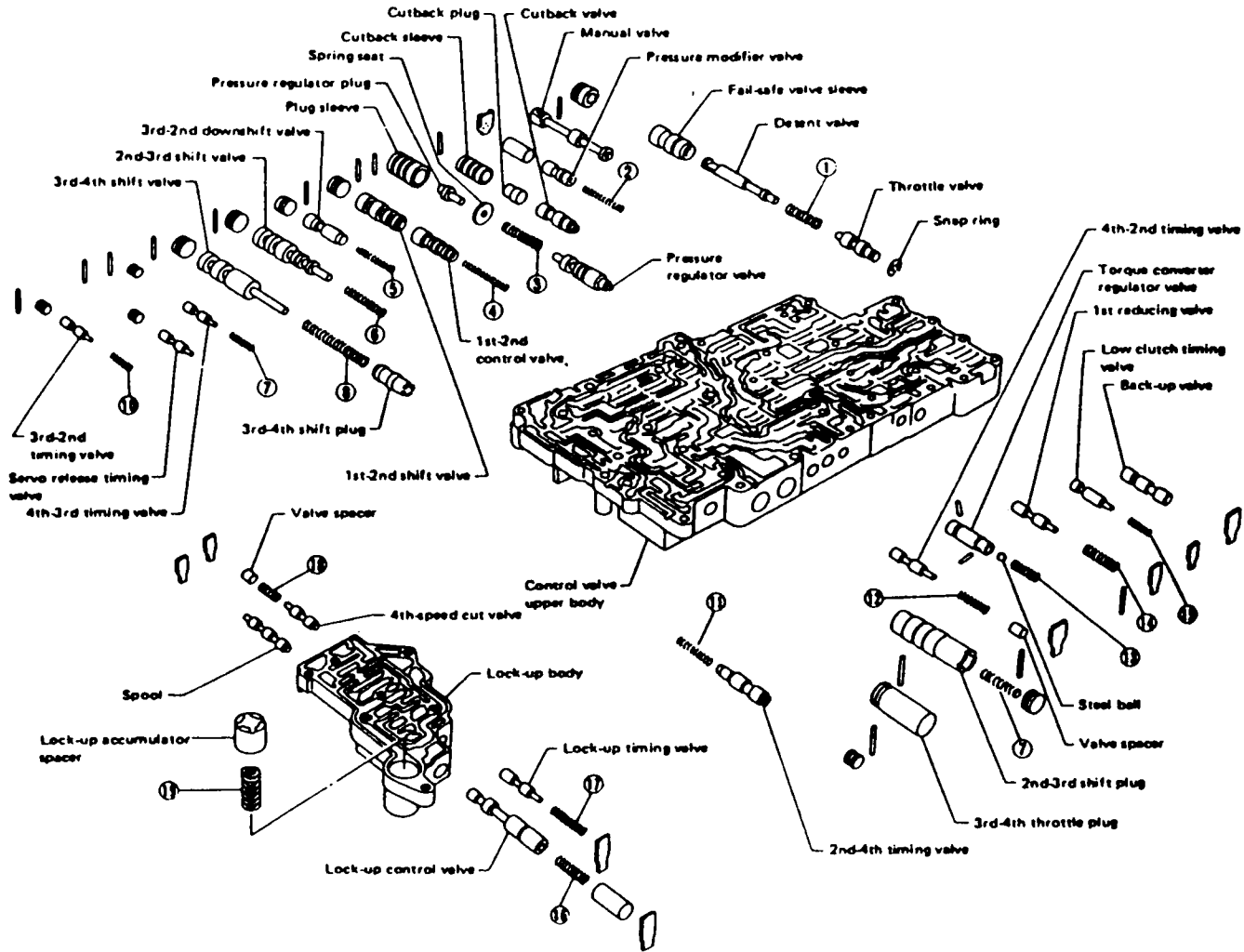
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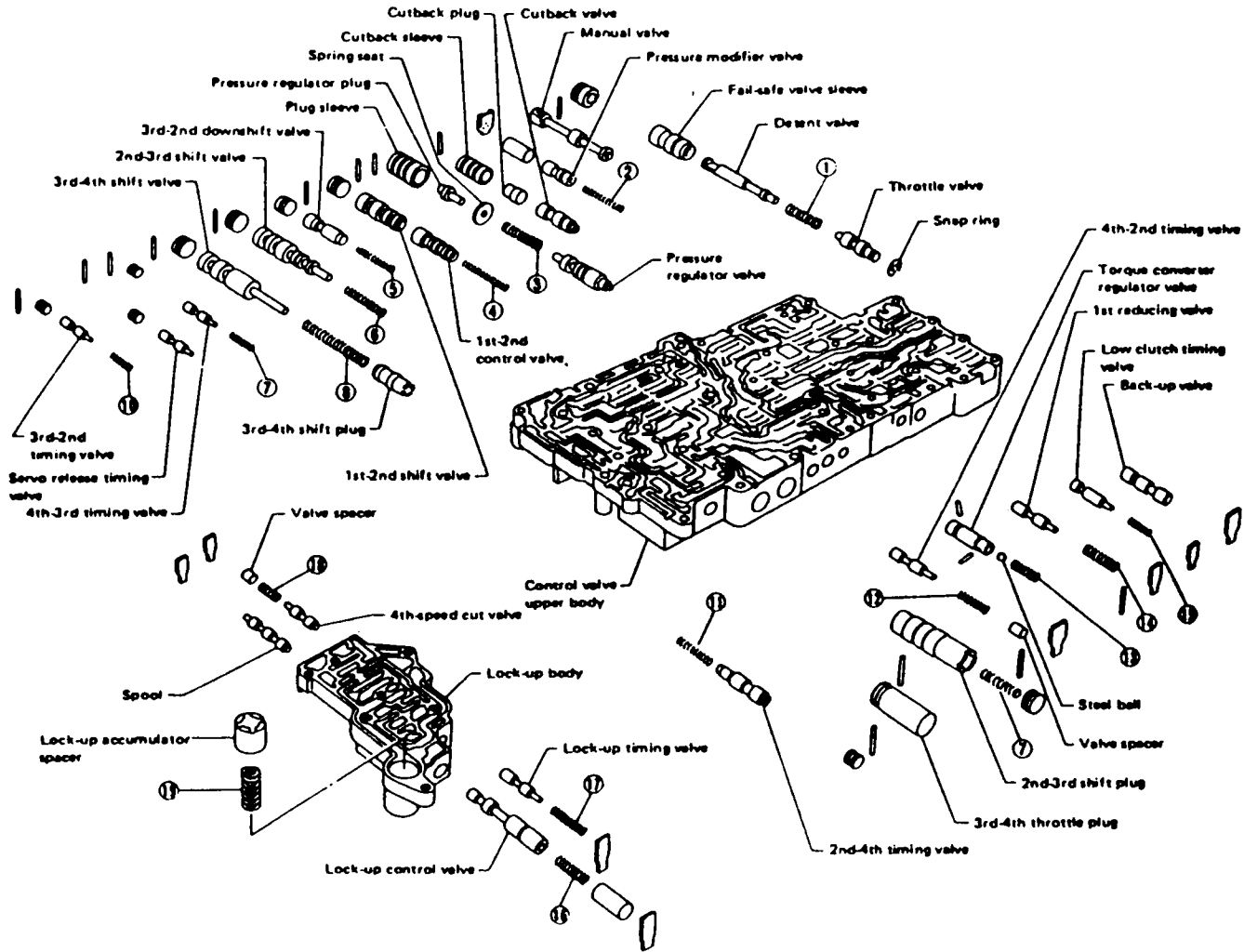
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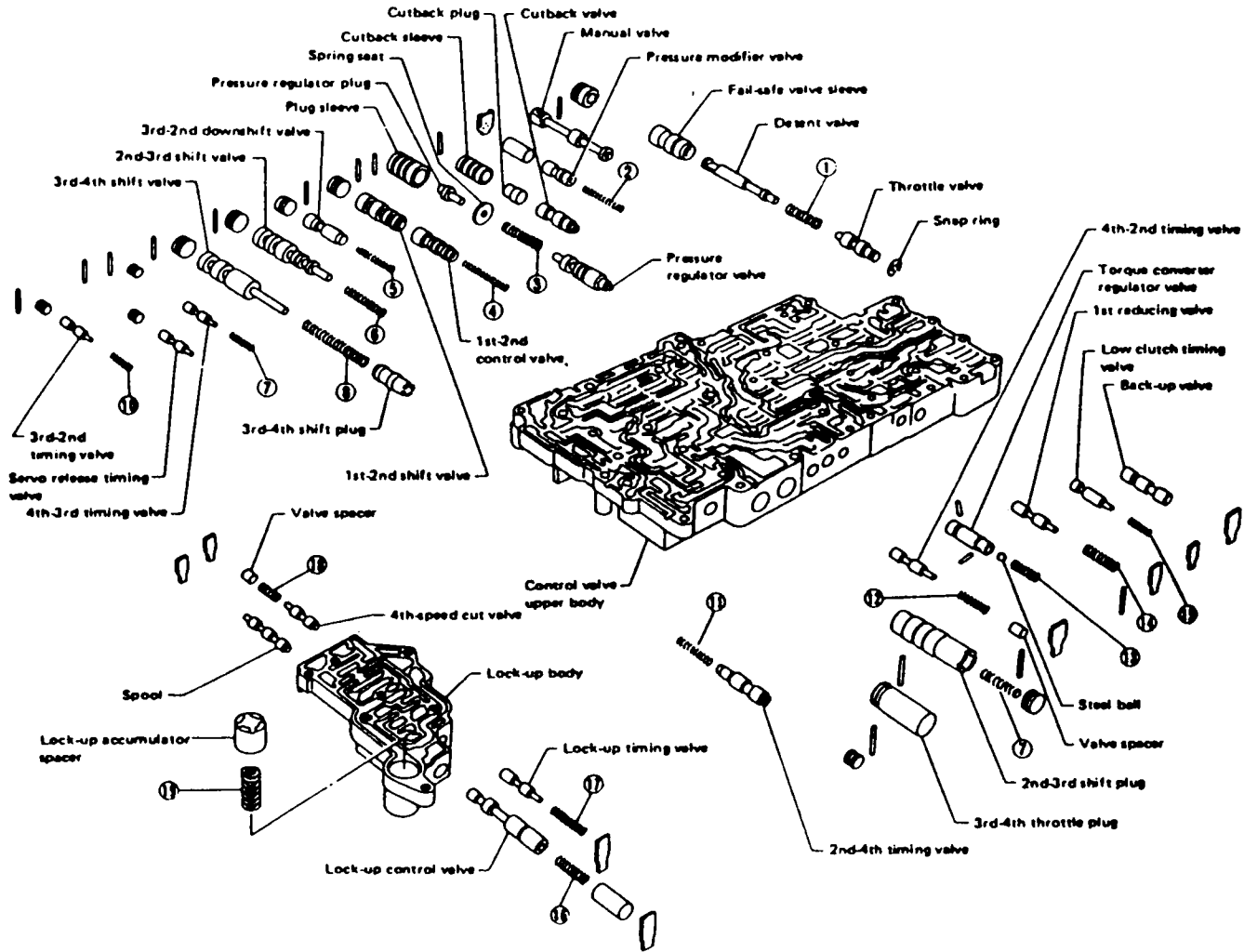
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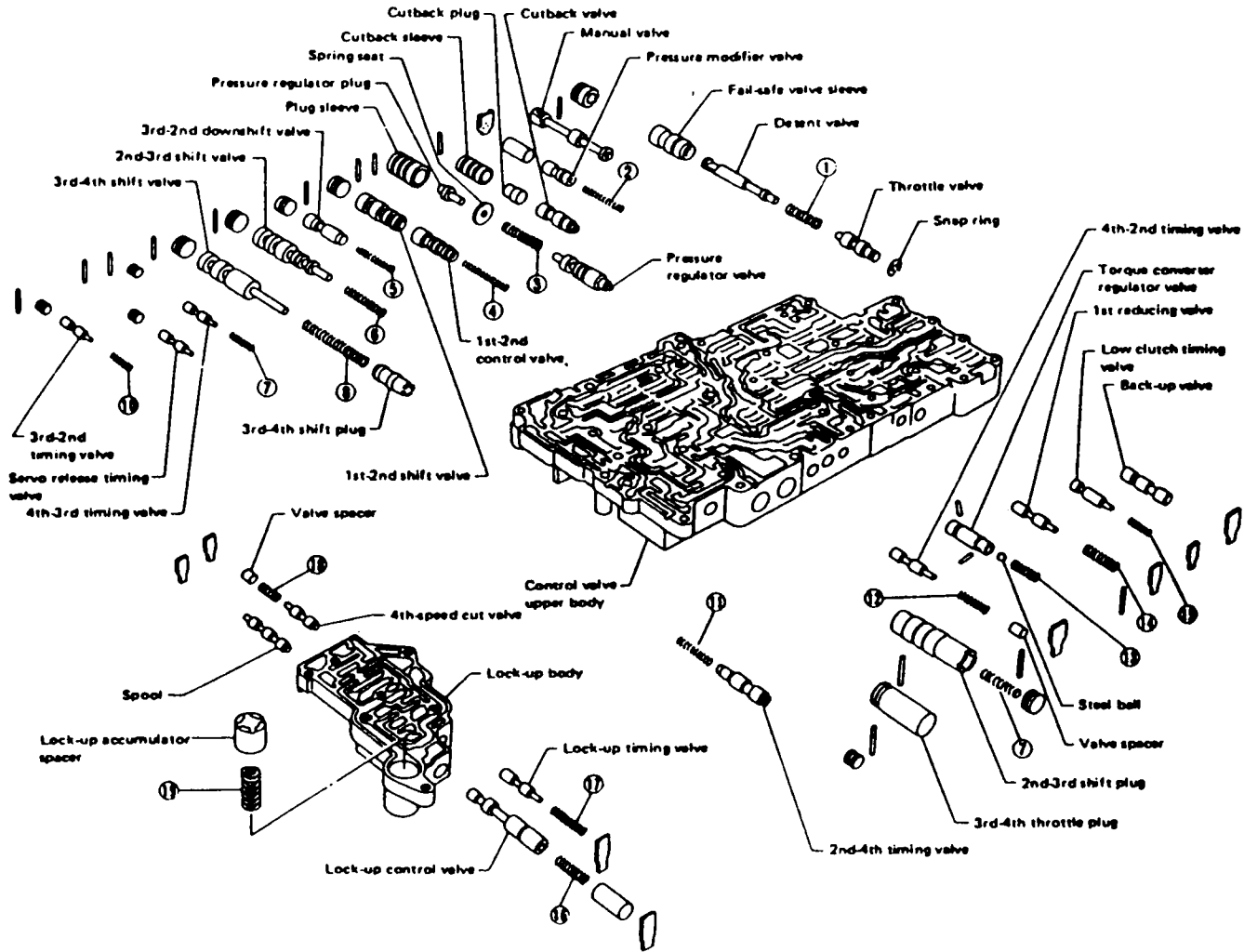
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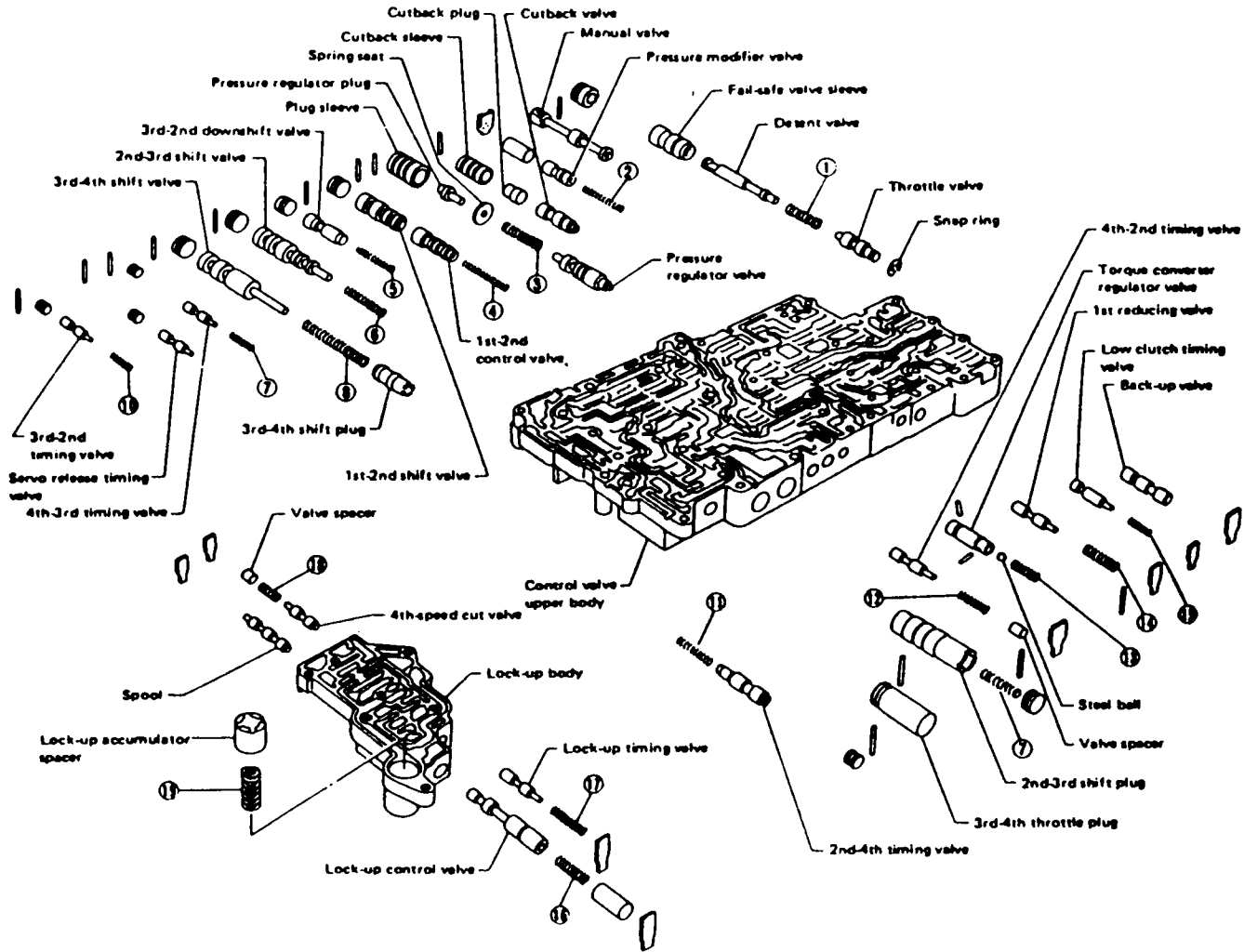
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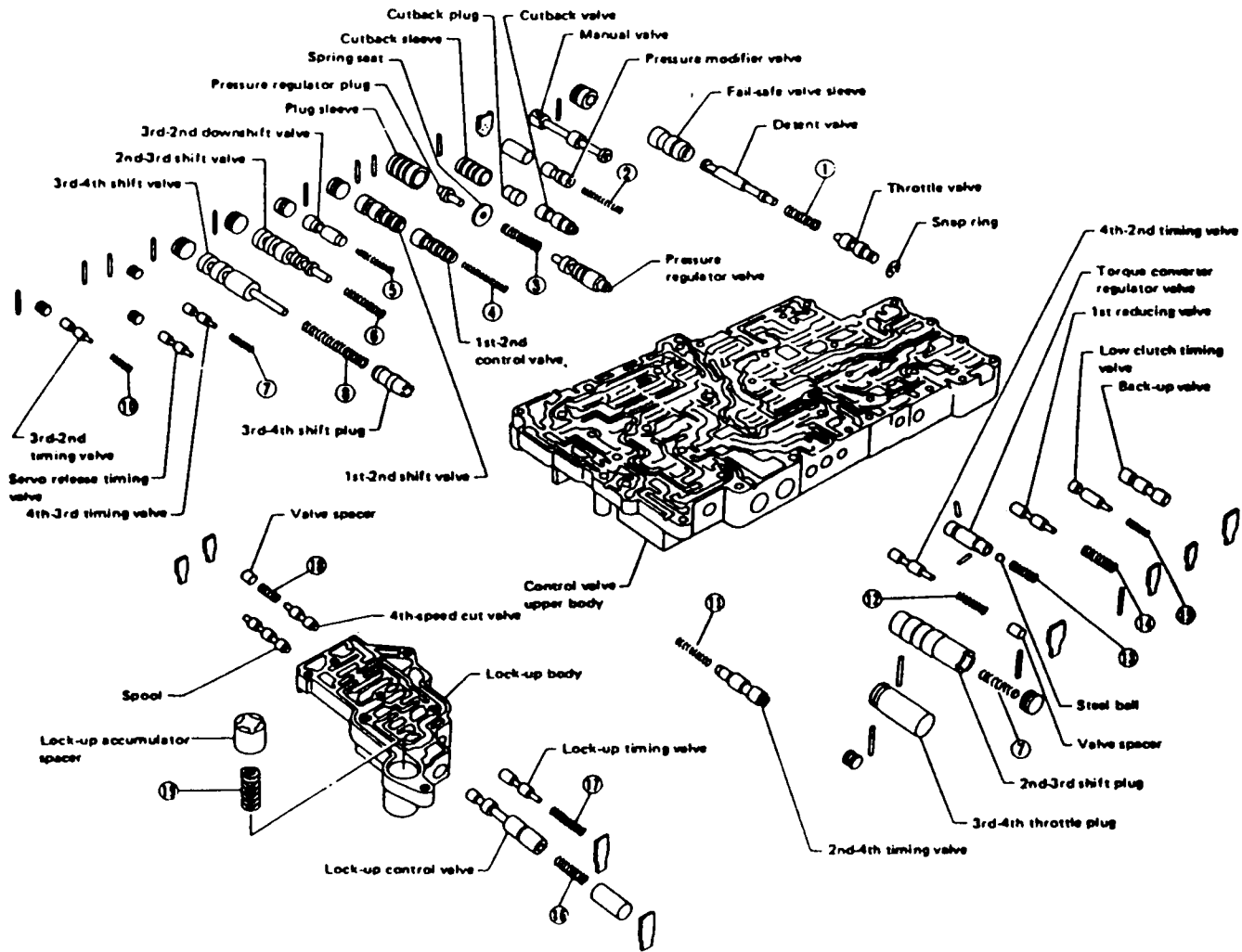
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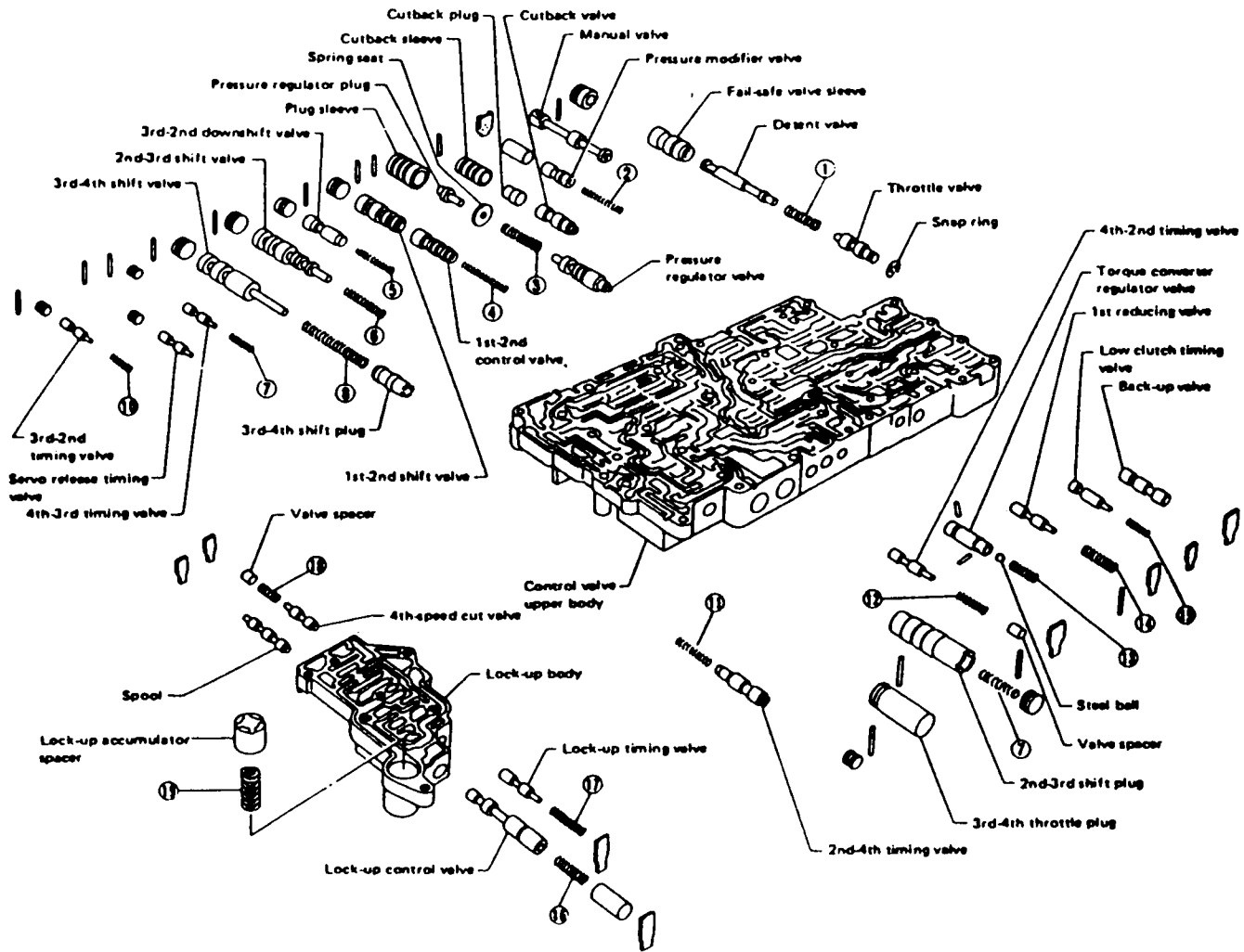


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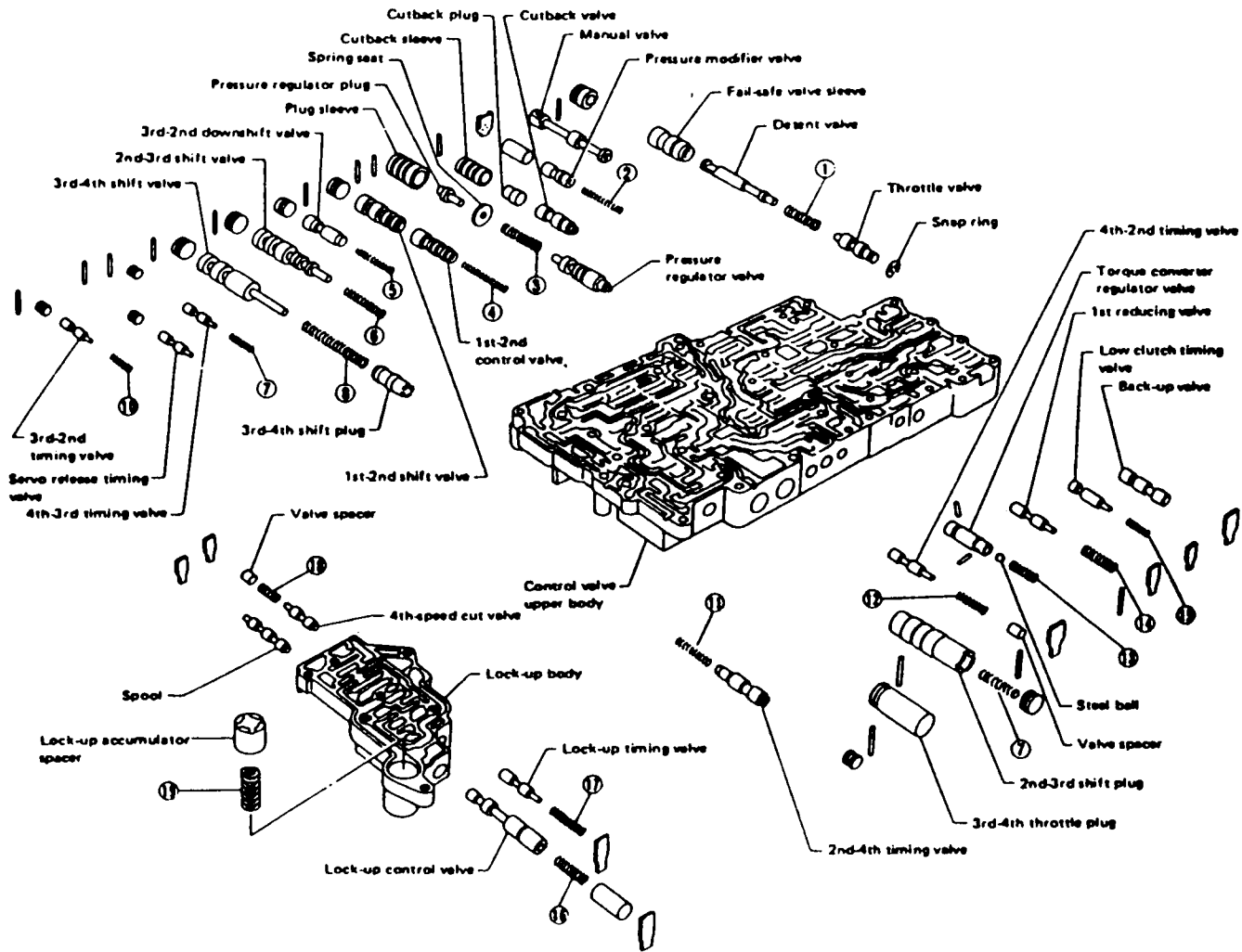




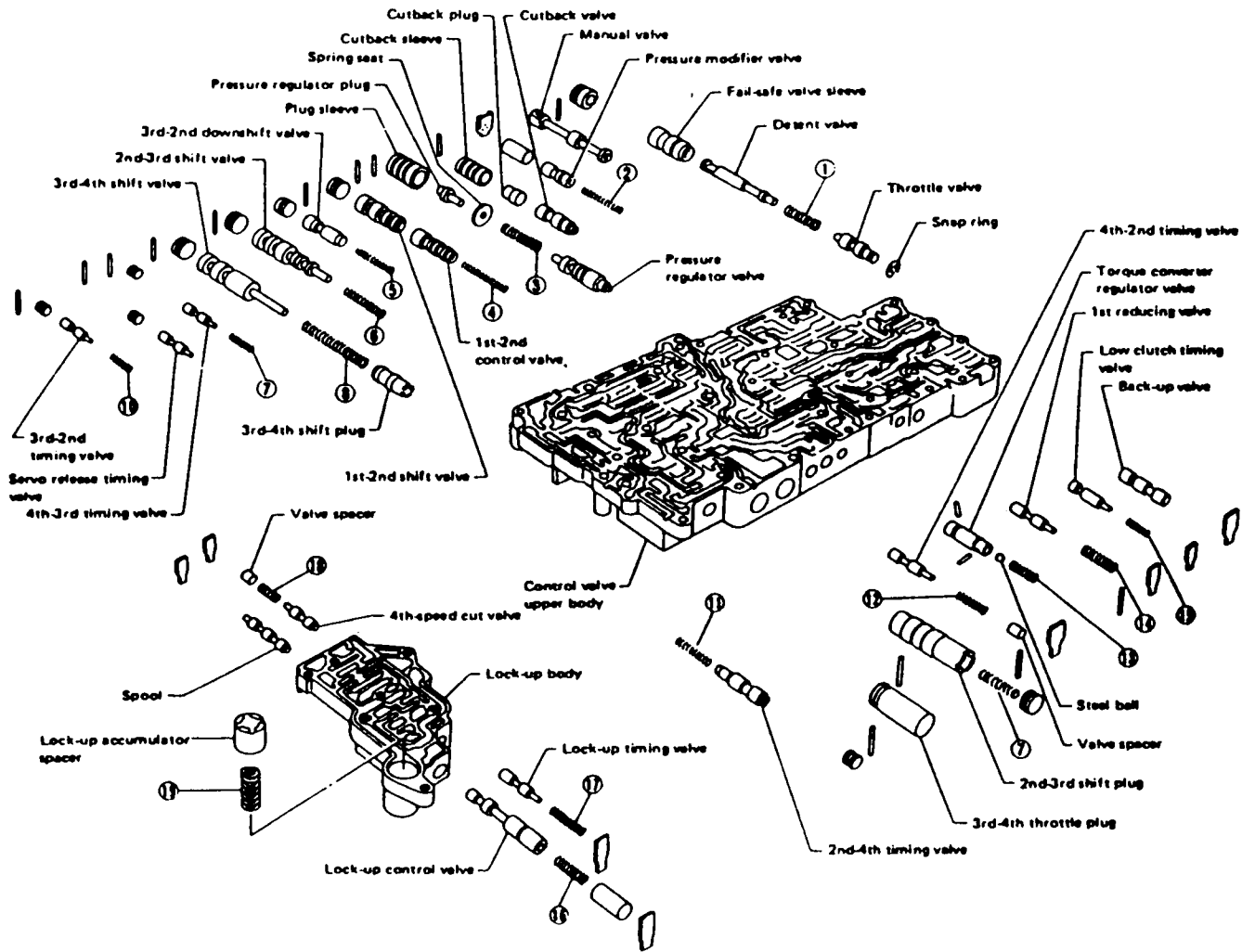
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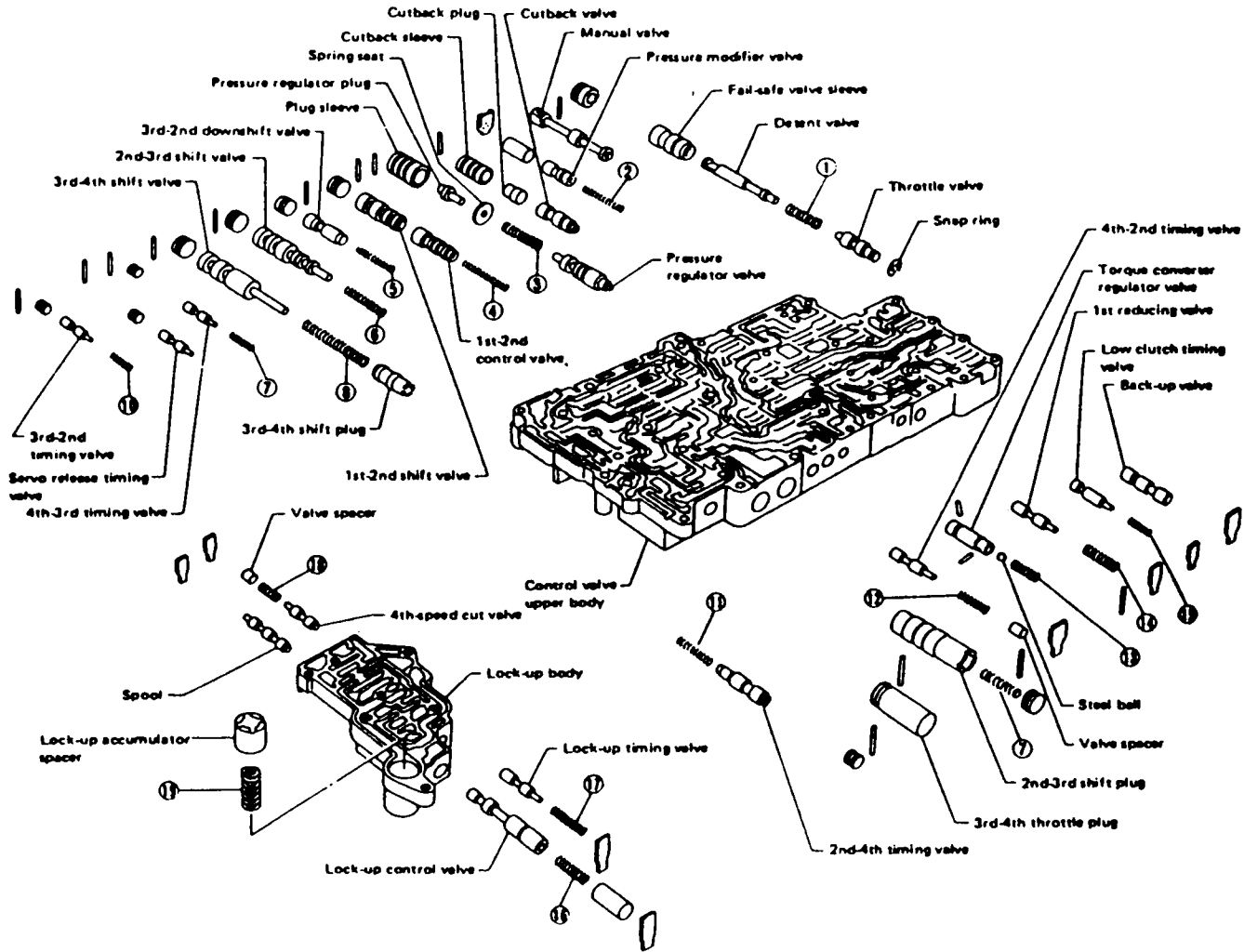
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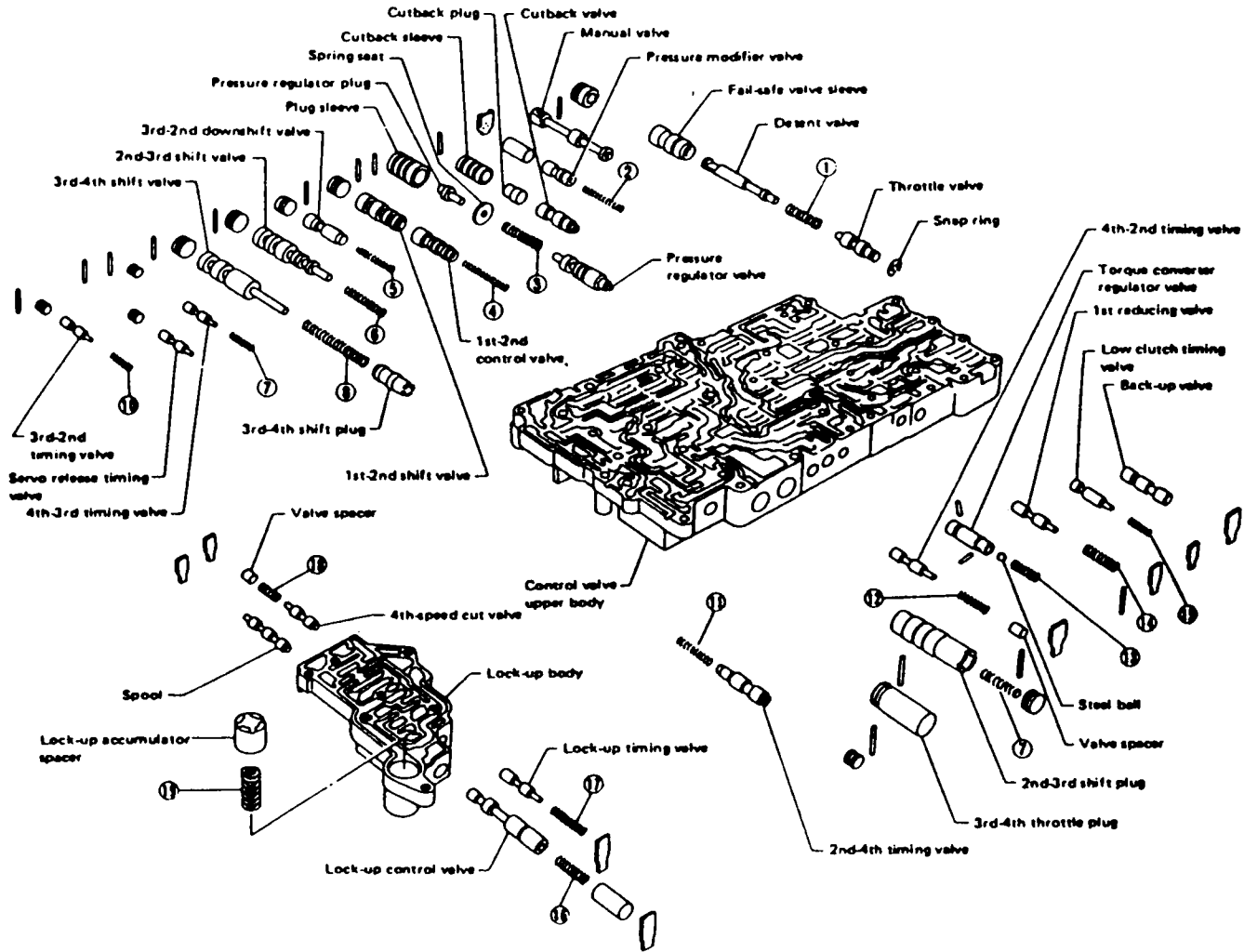
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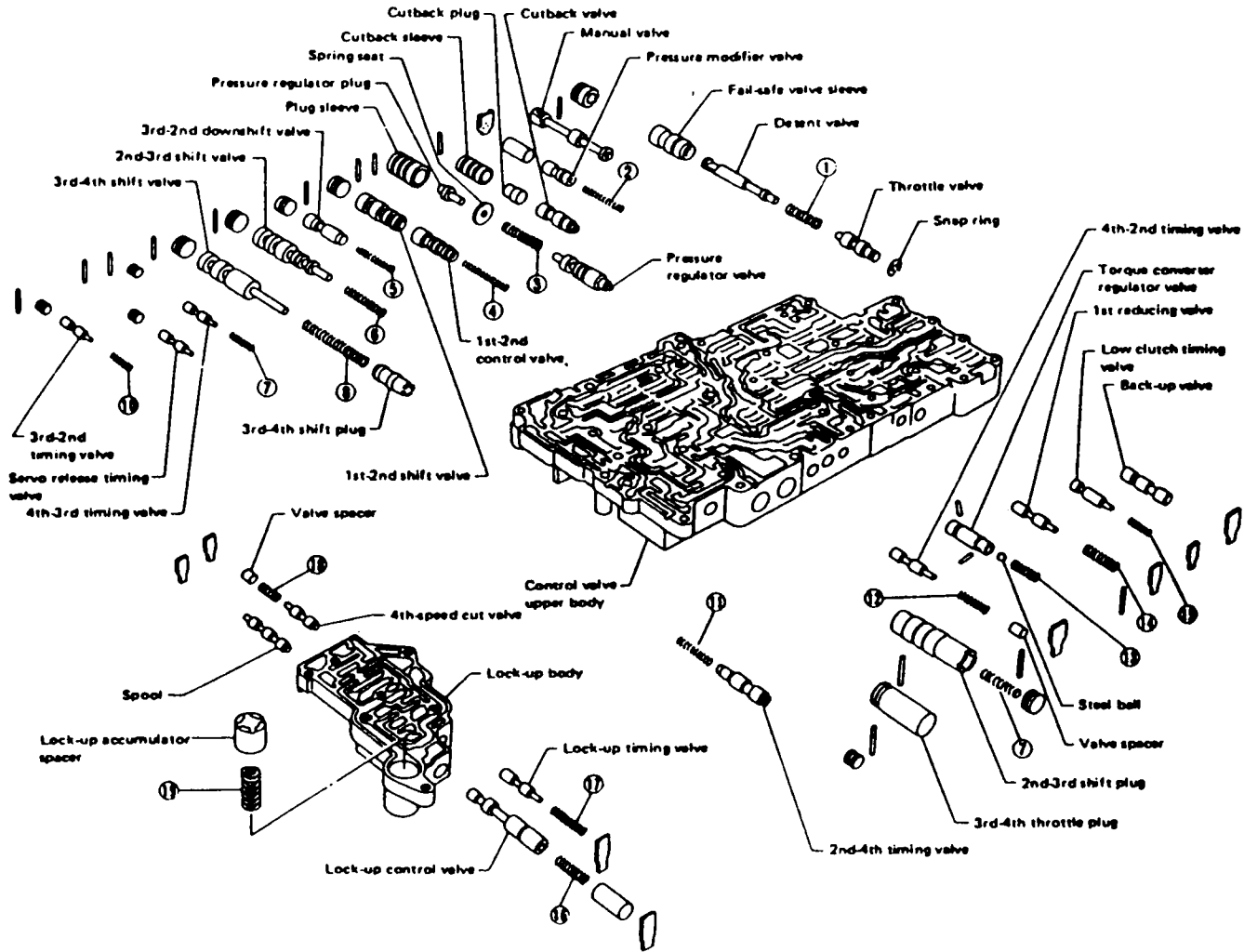
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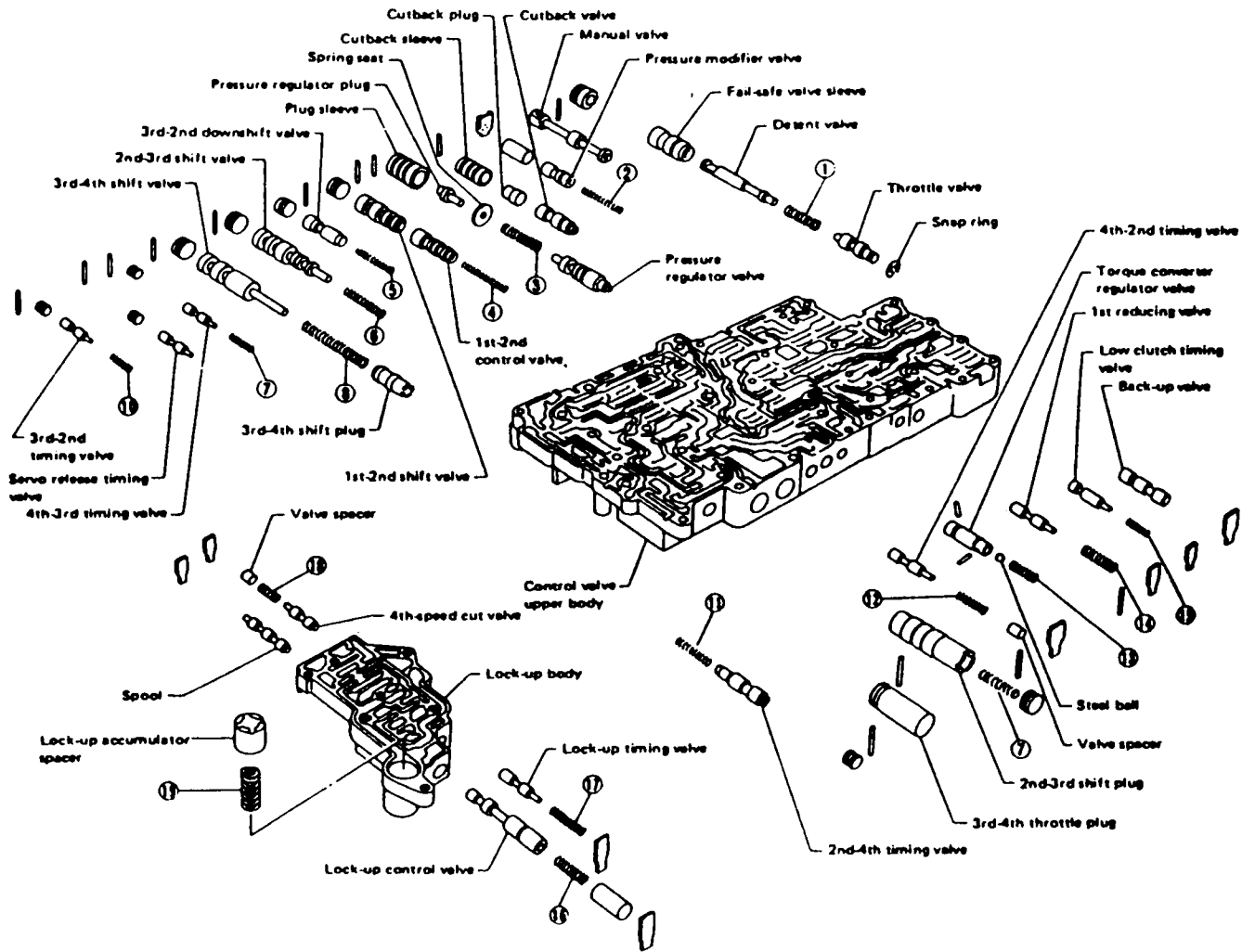
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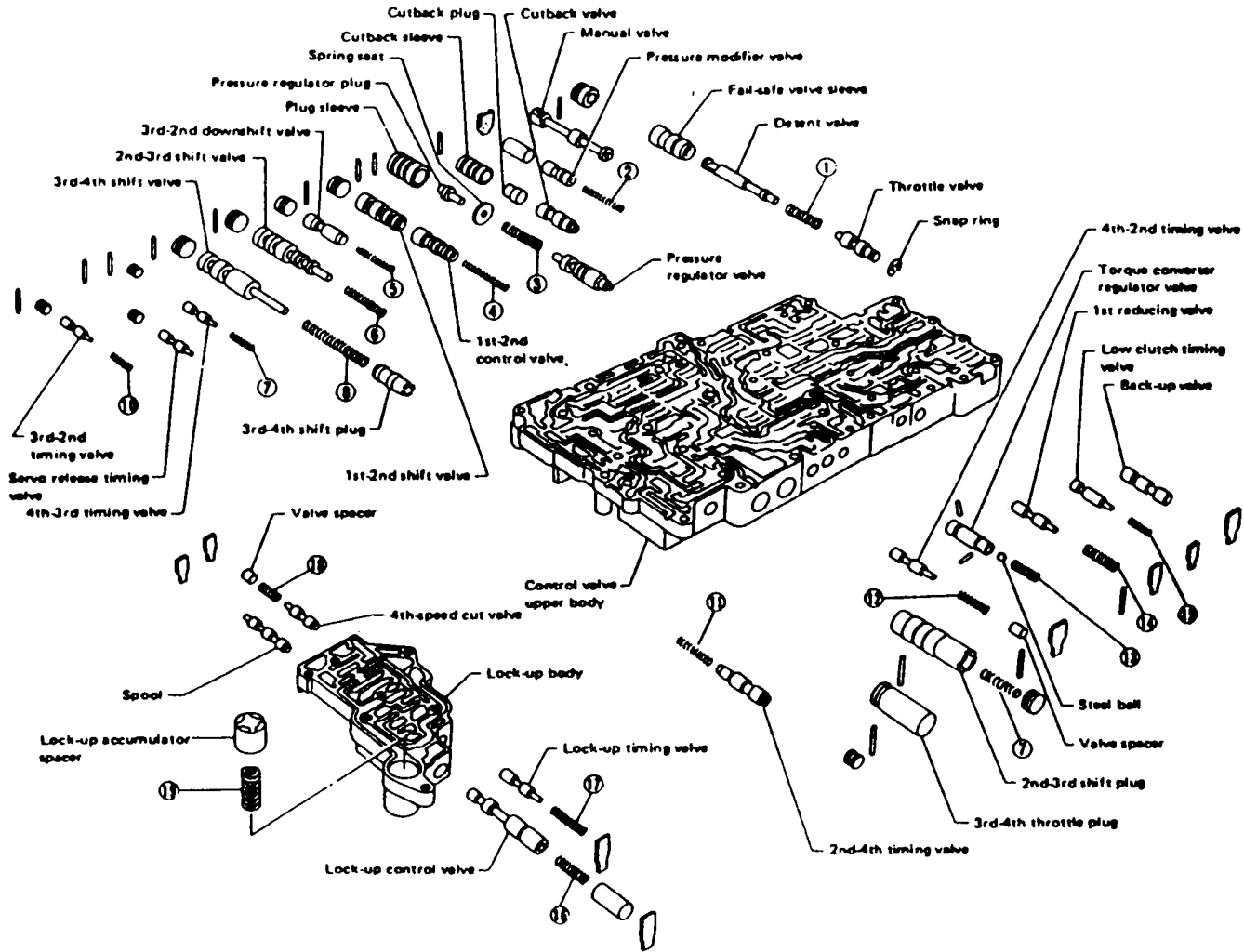
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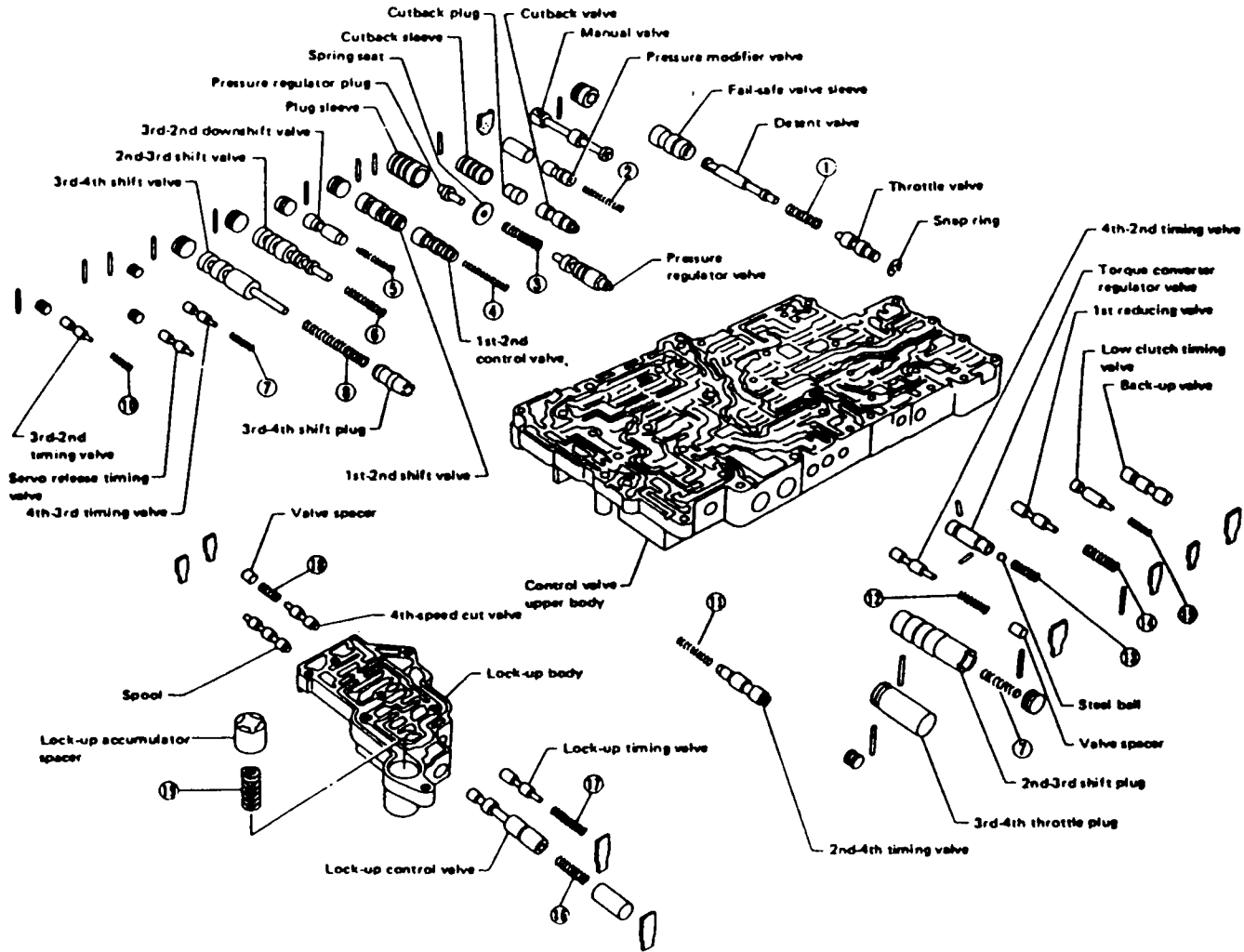


### 1989 PULSAR VALVE BODY

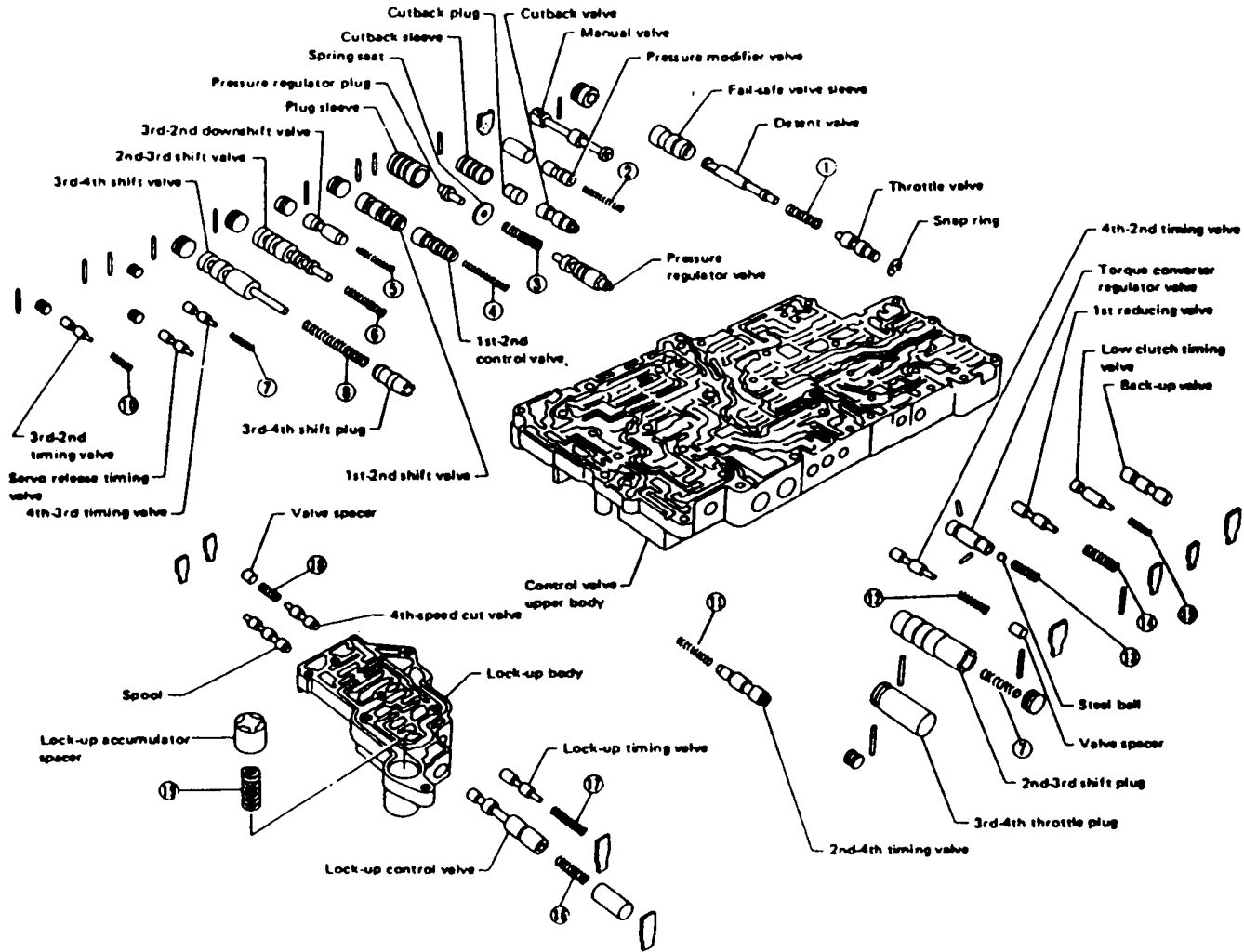




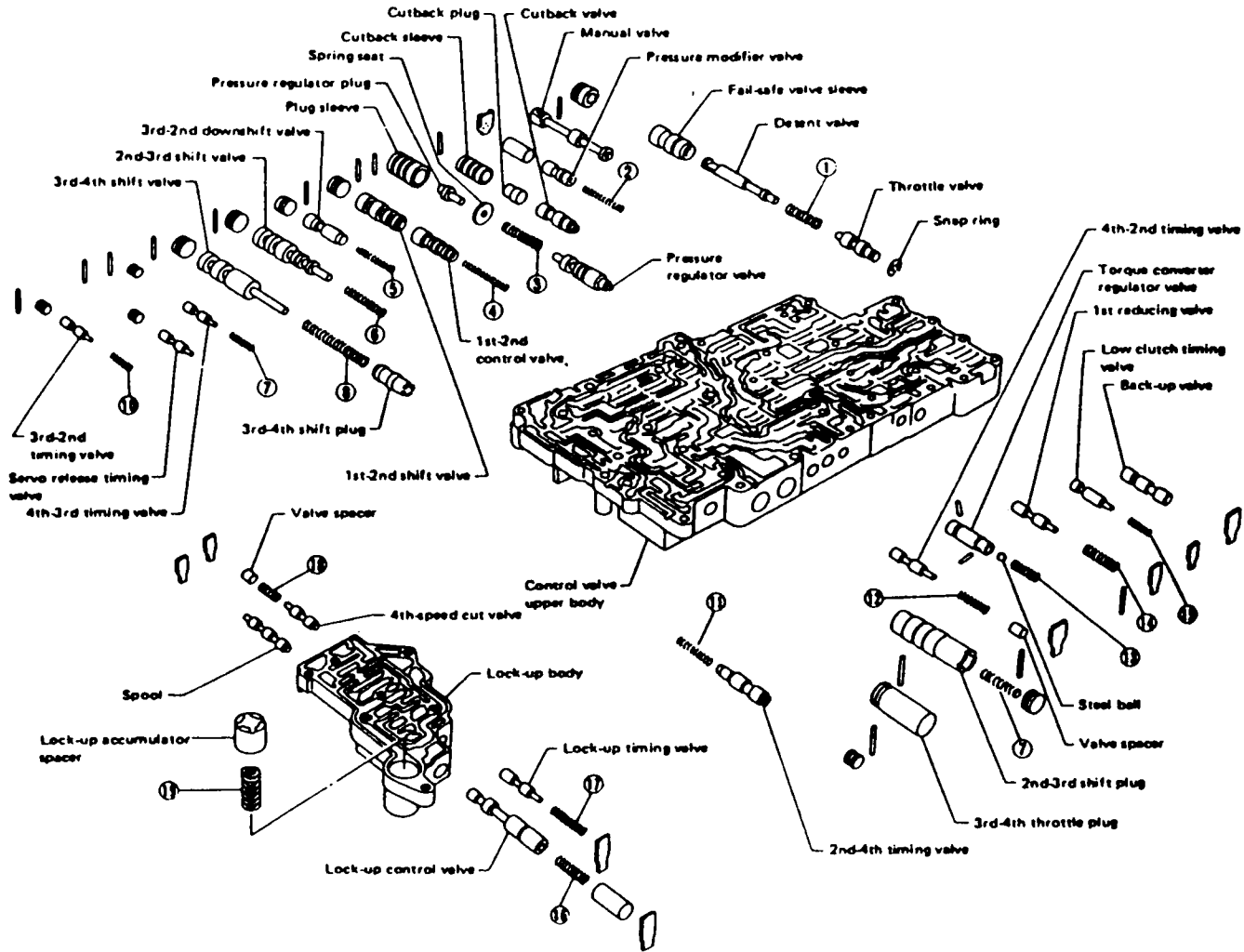
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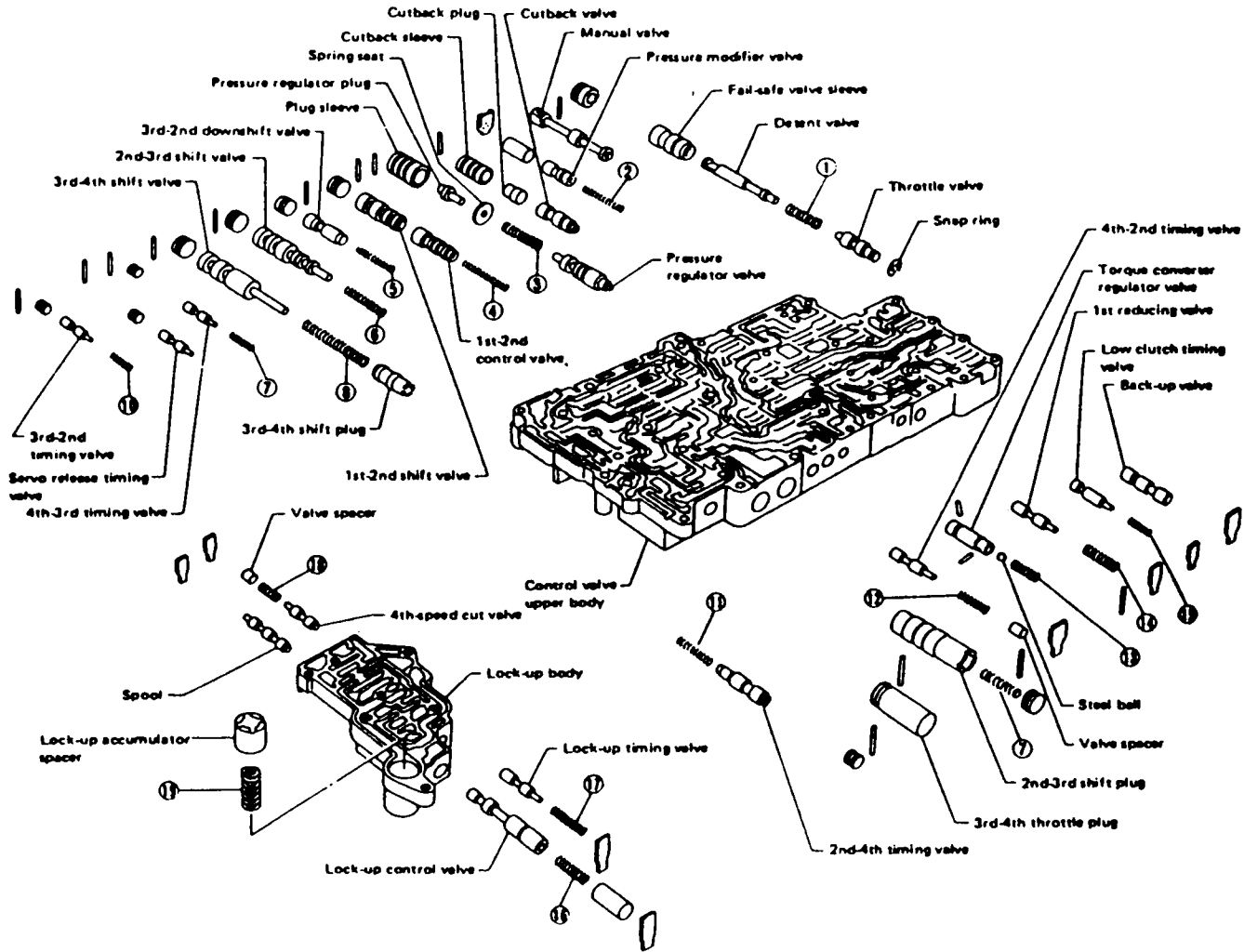
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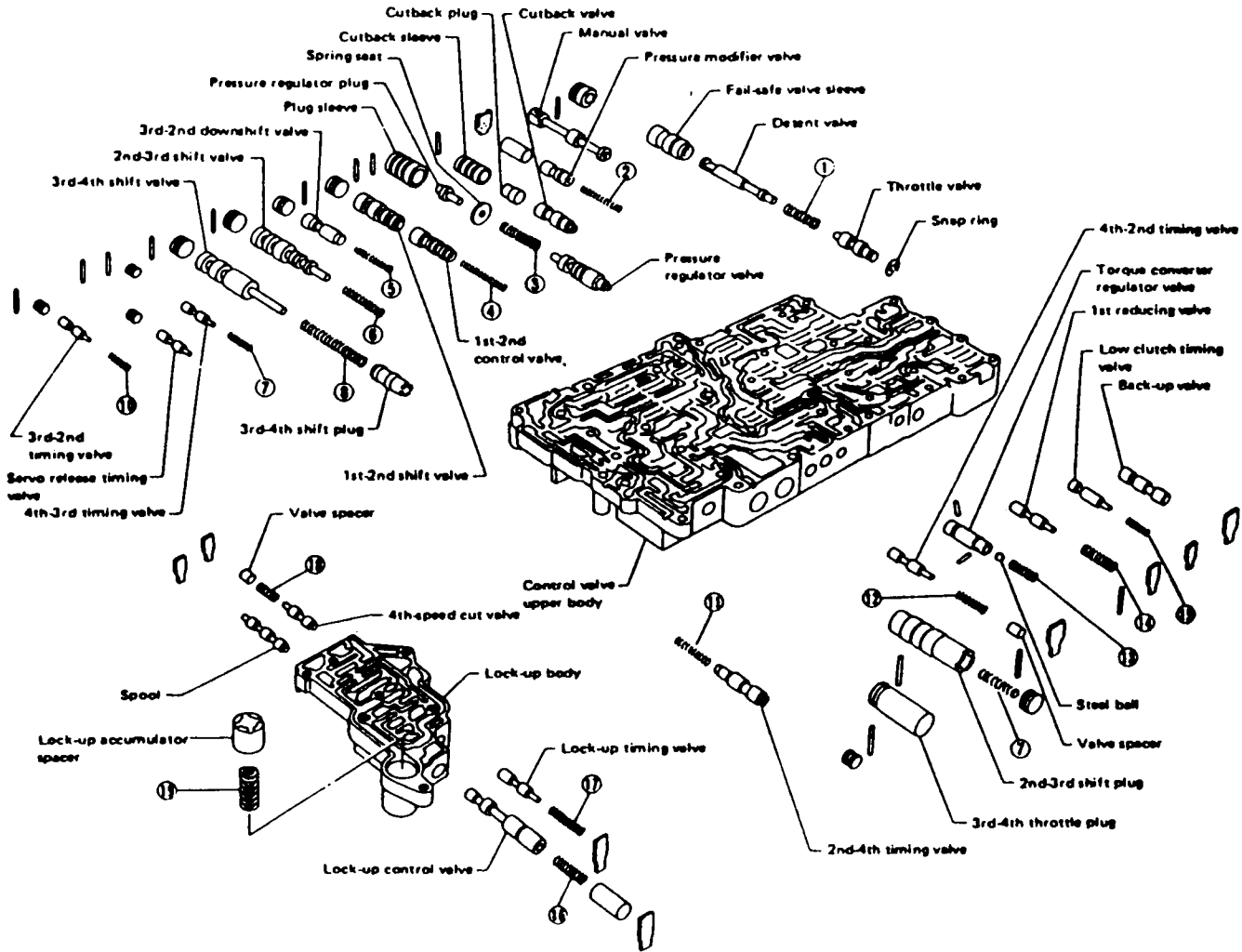
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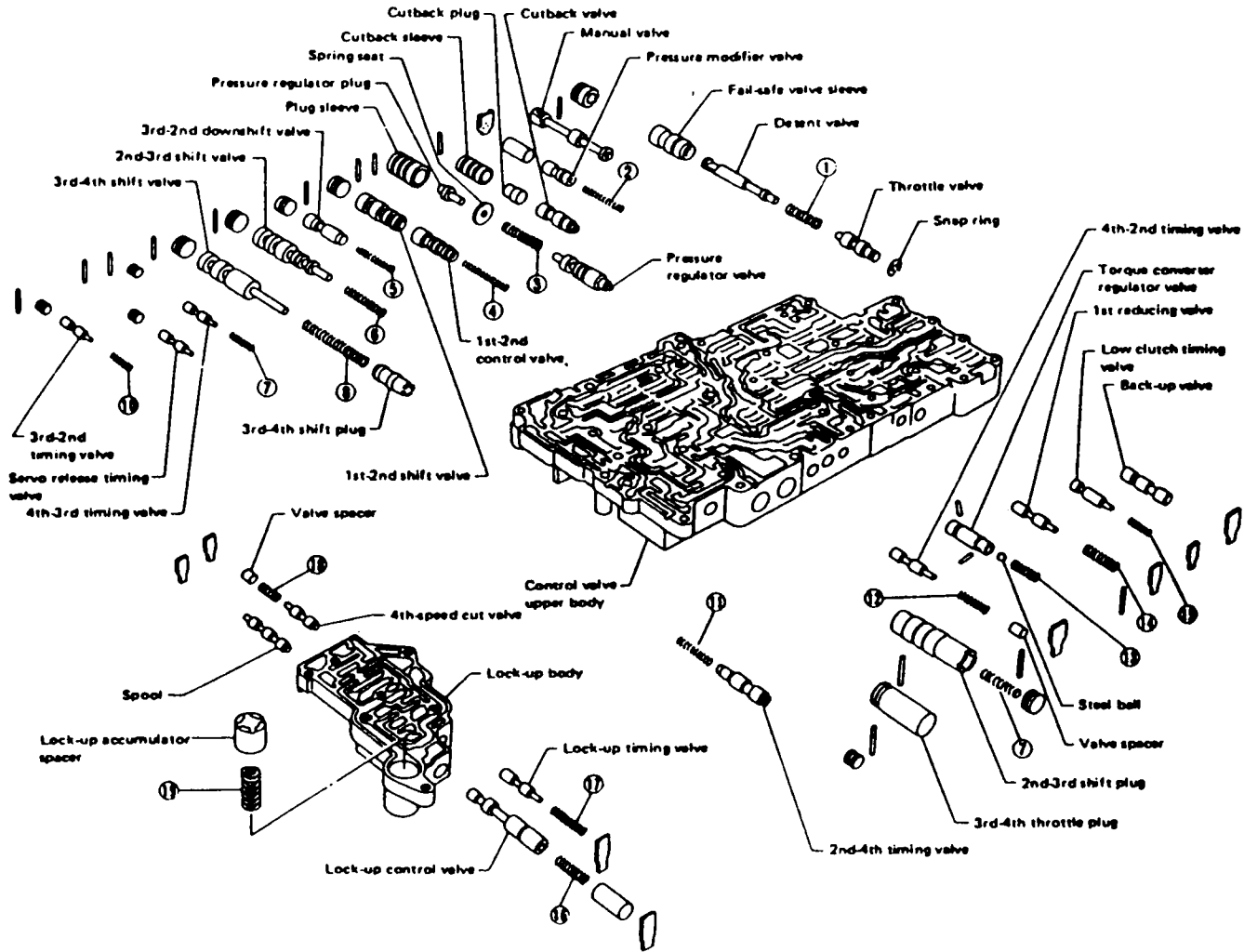
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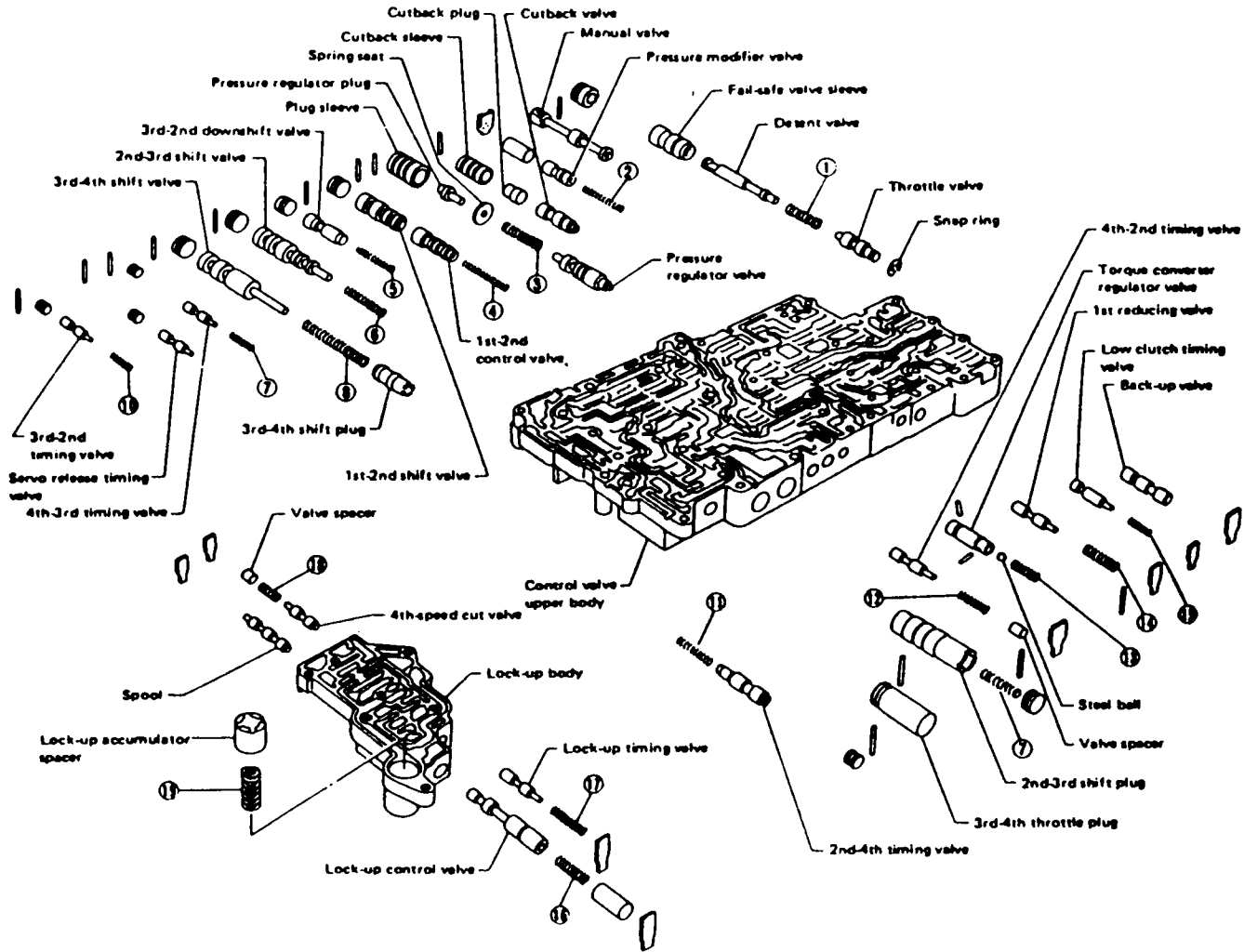
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VALVE BODY



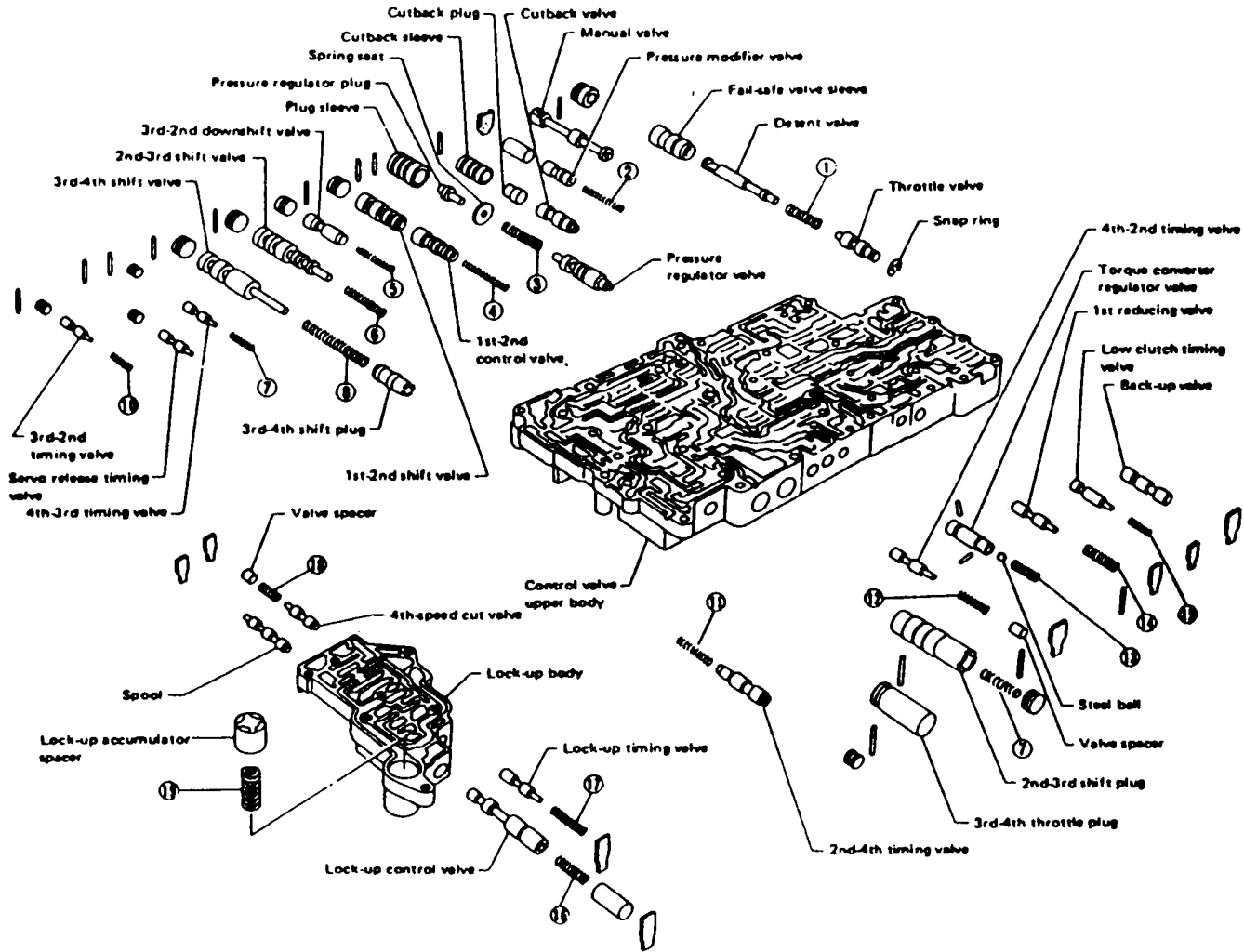
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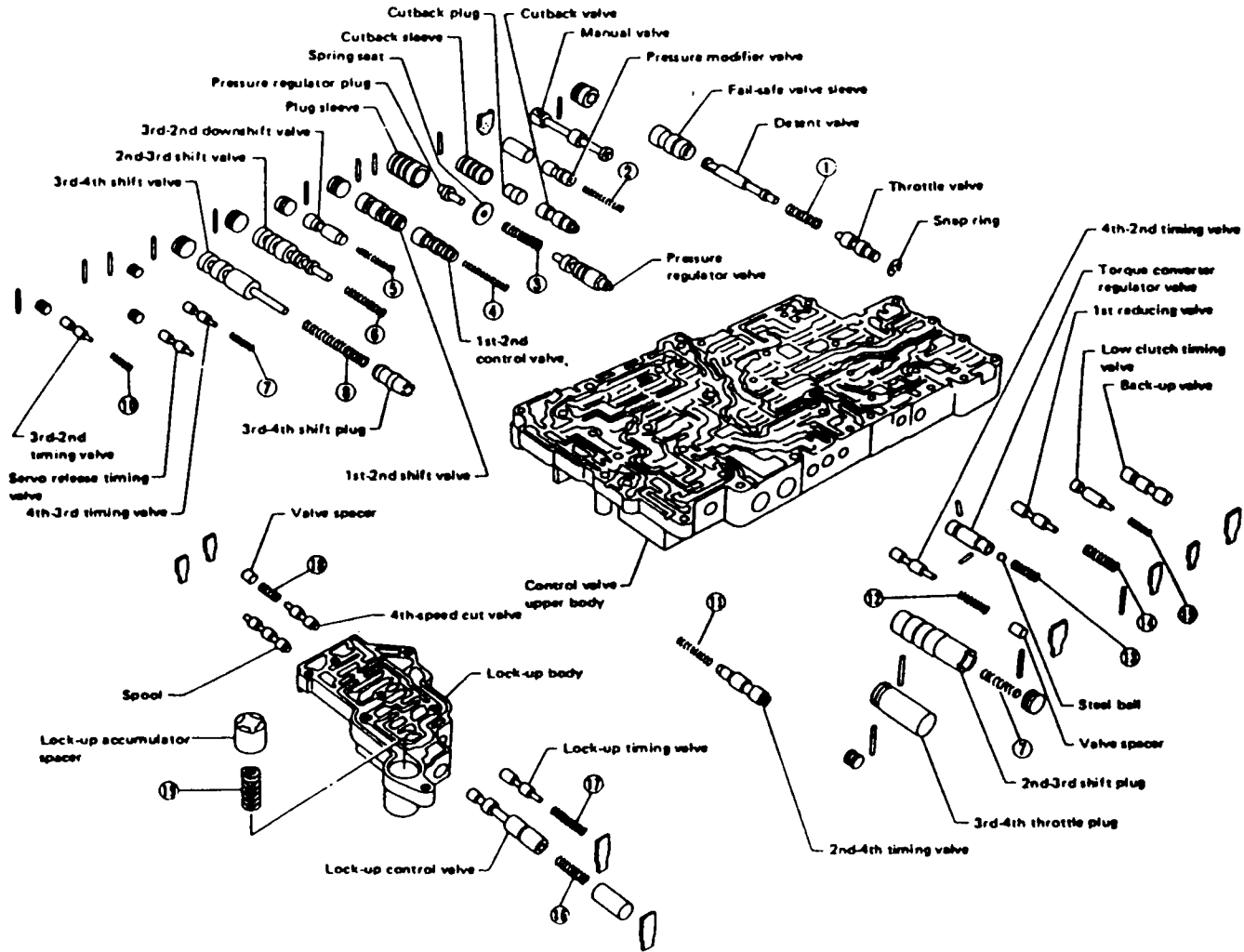


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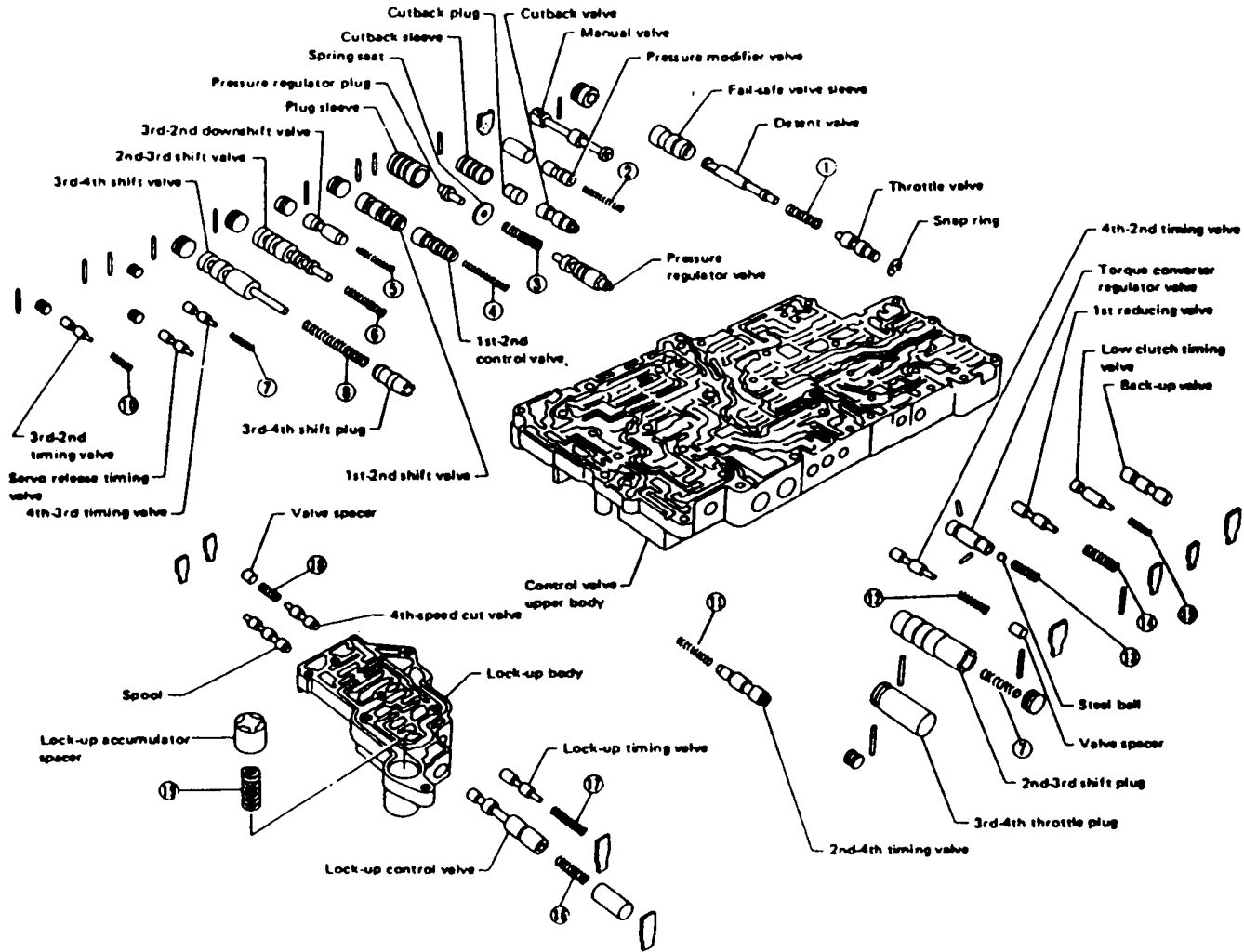




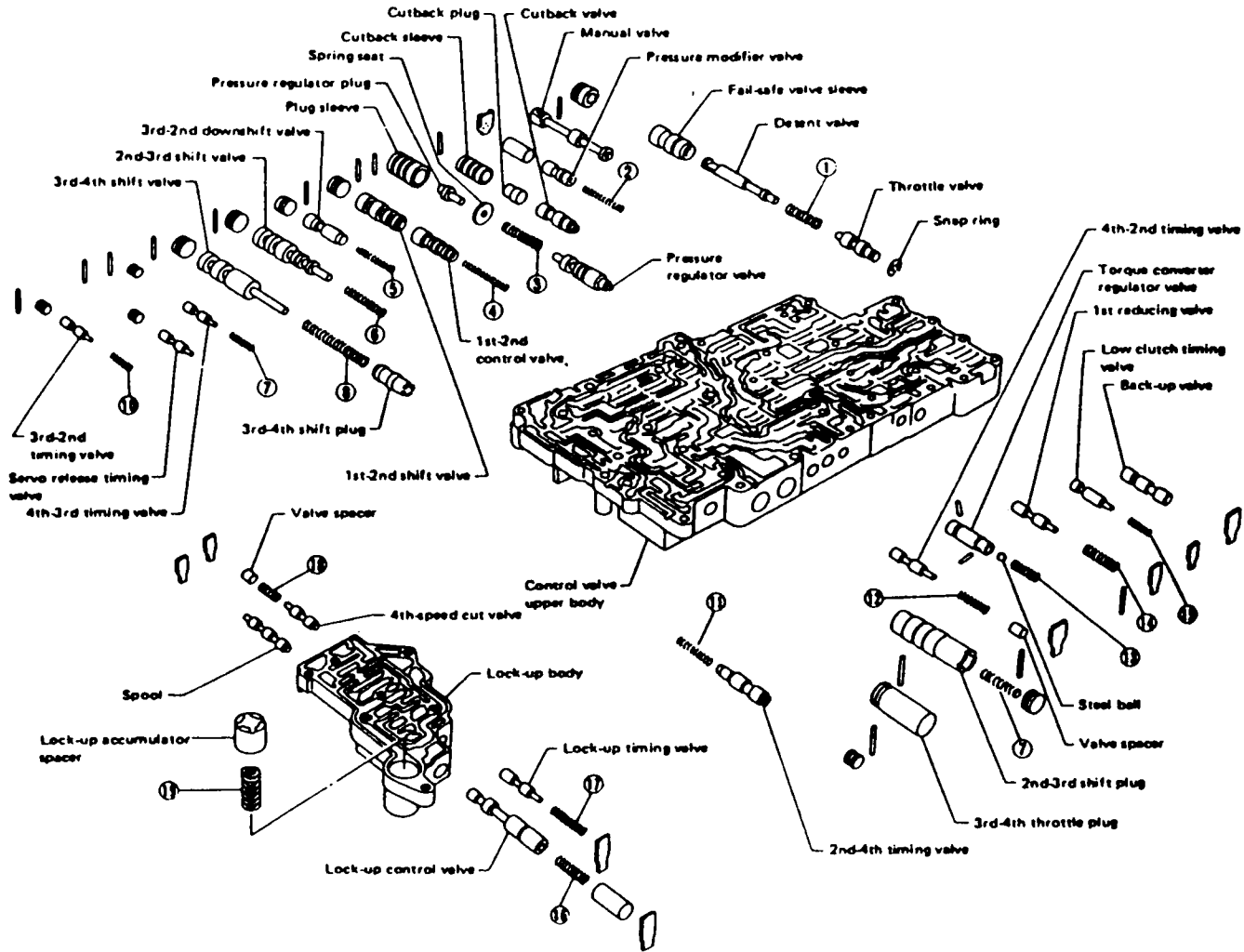
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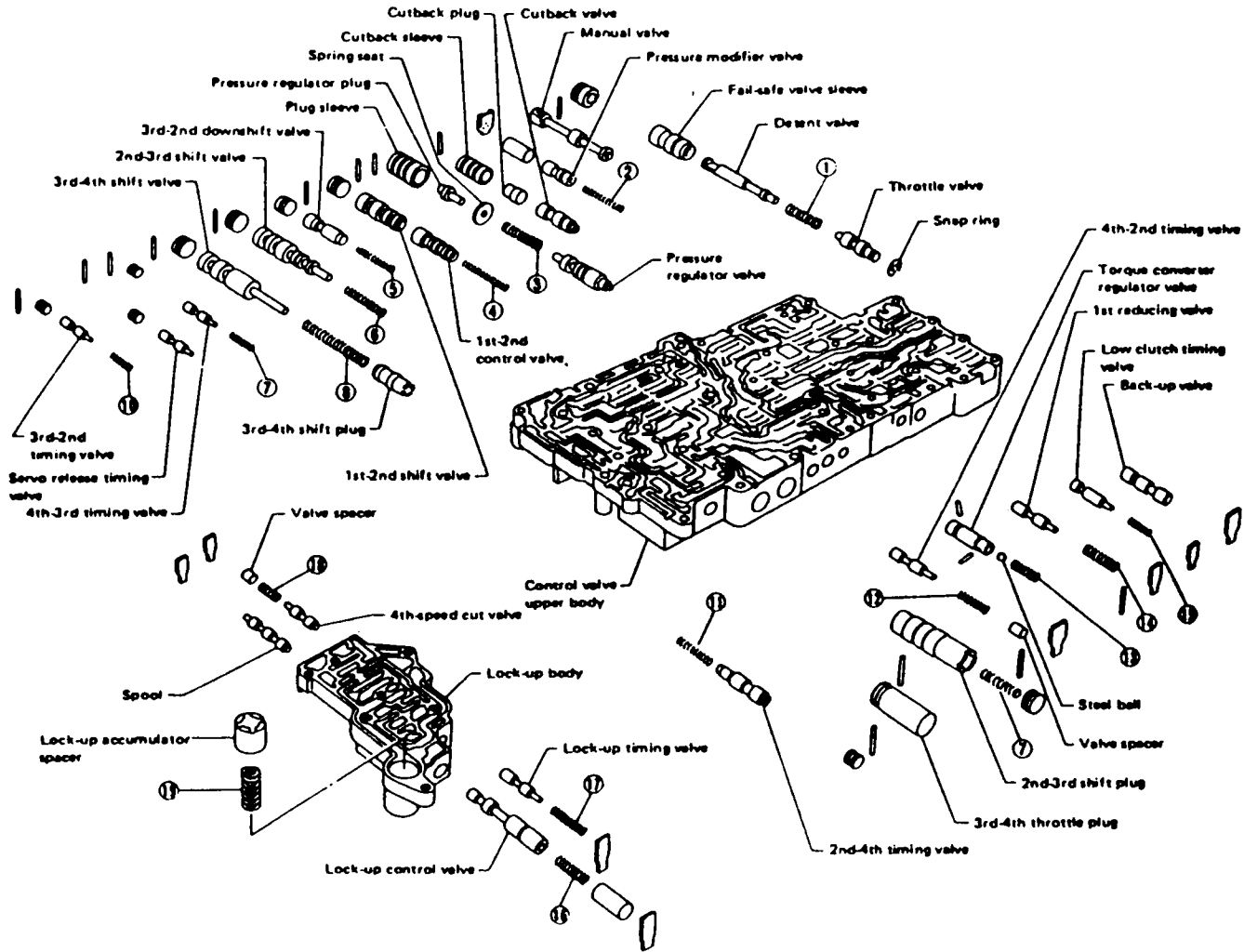
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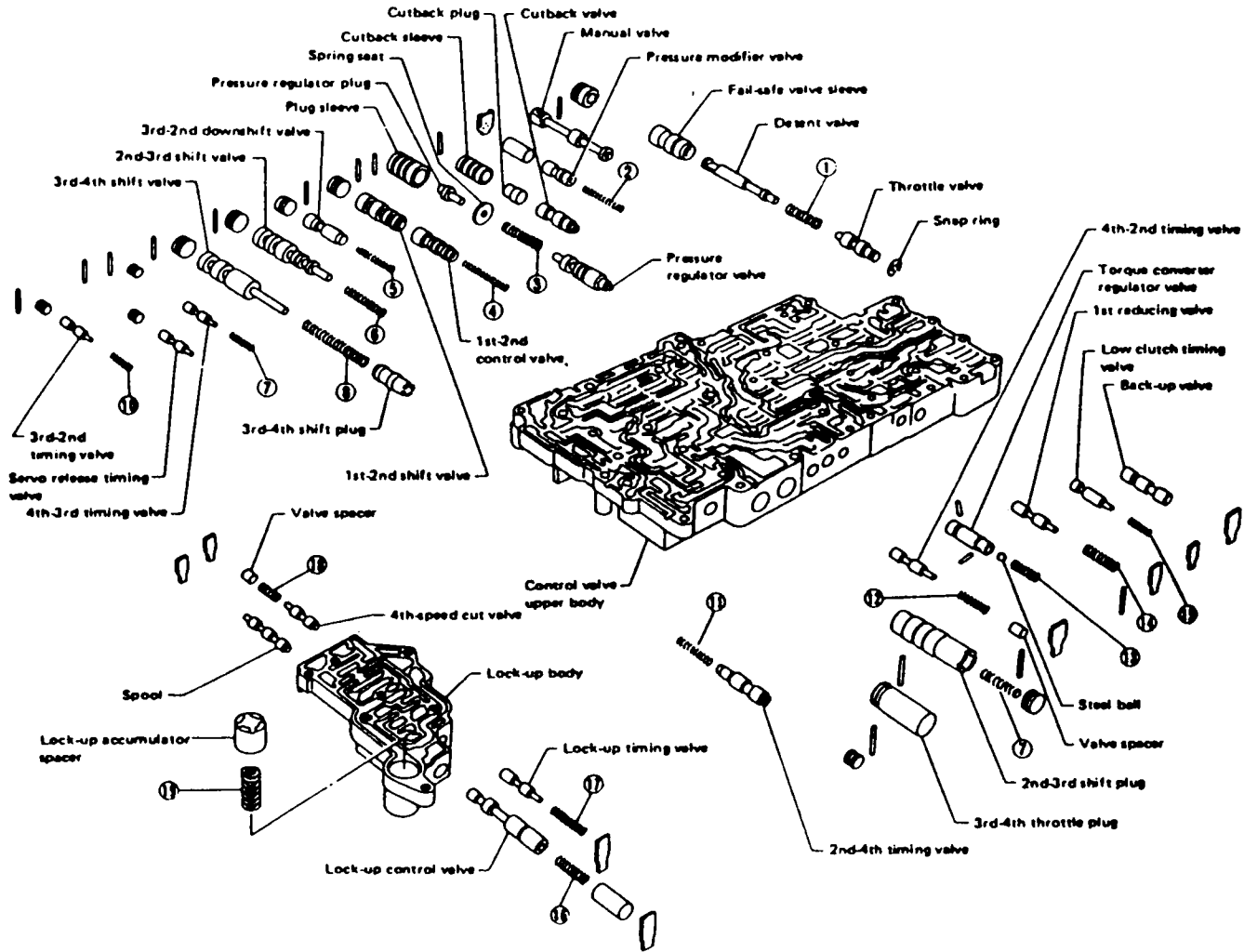
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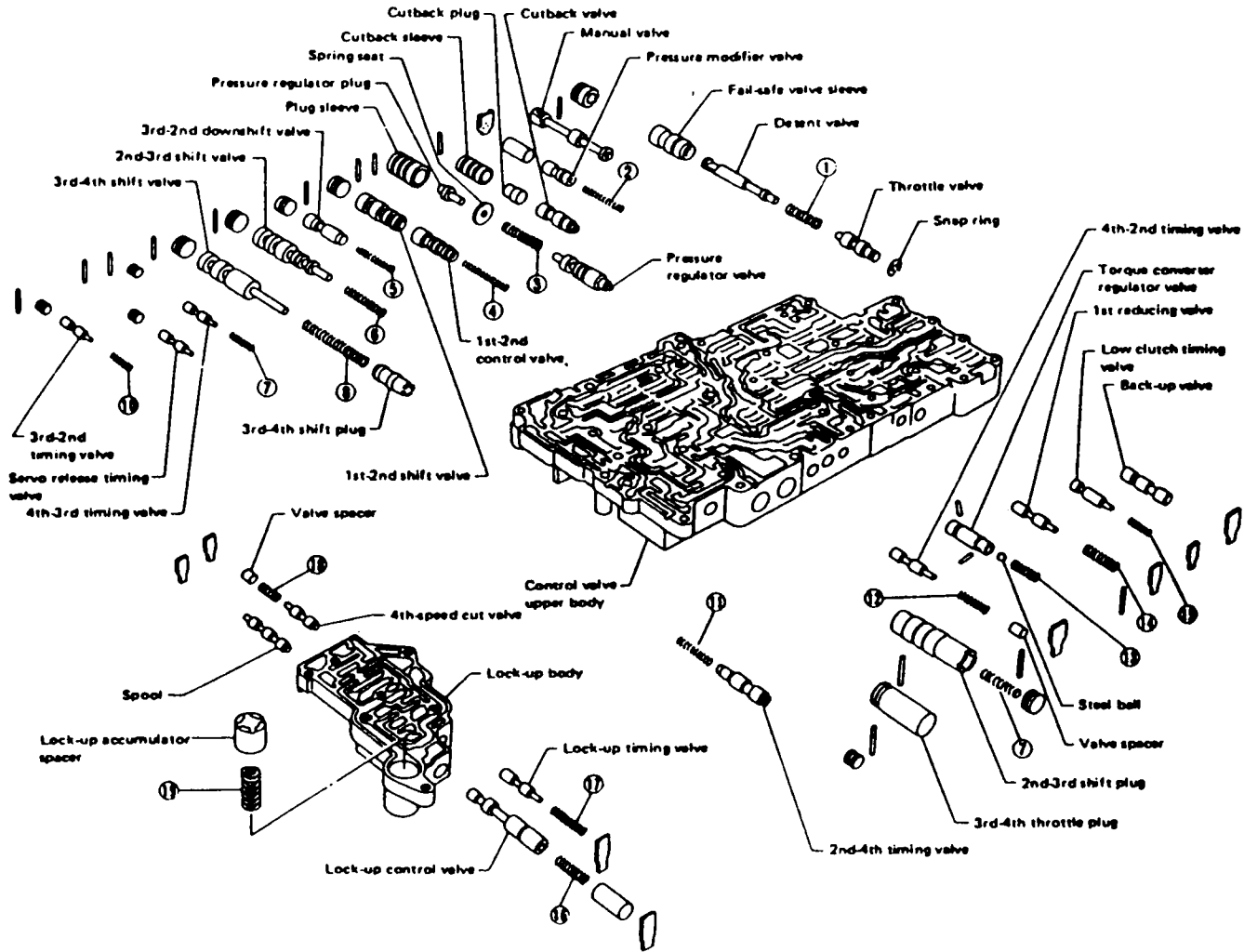
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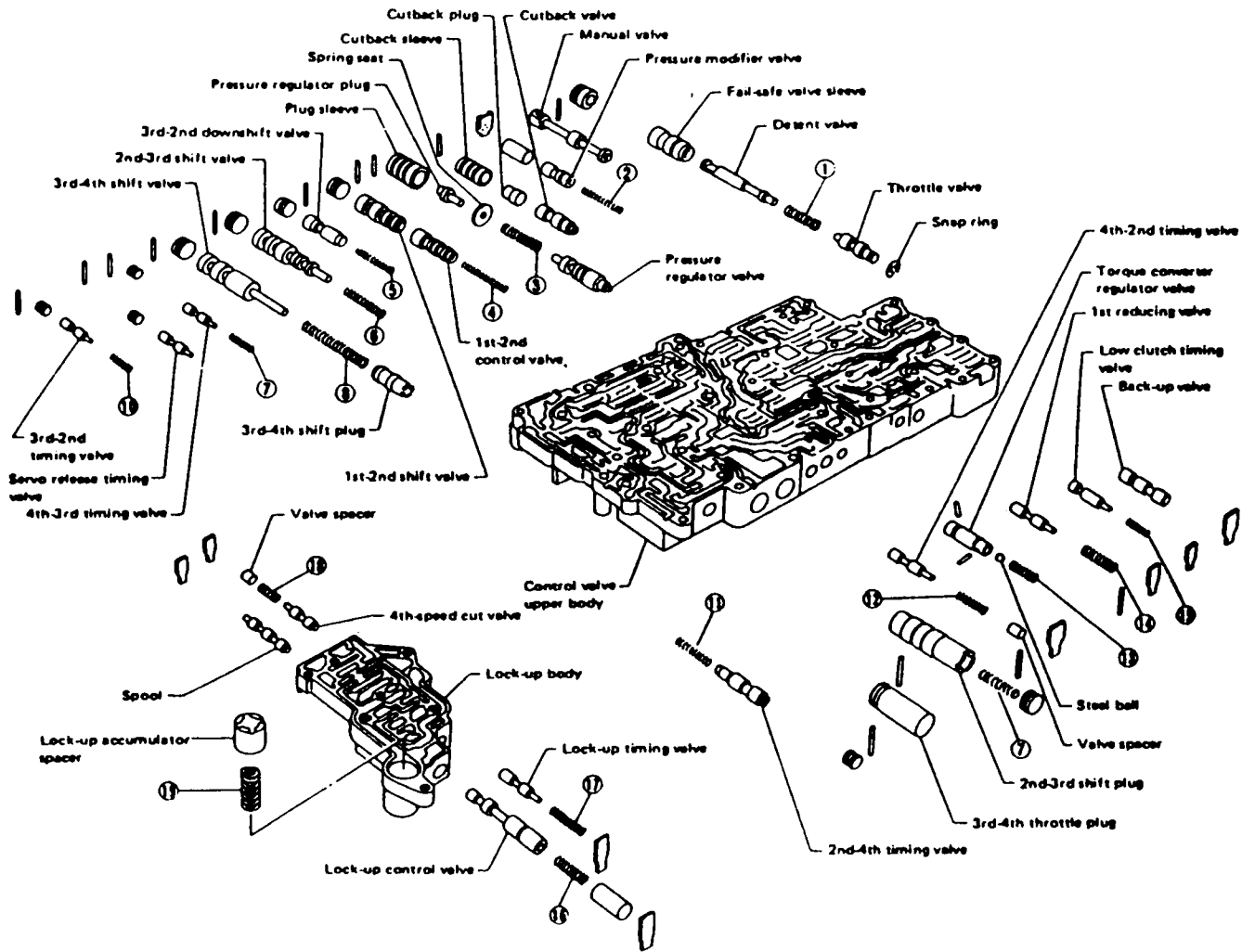
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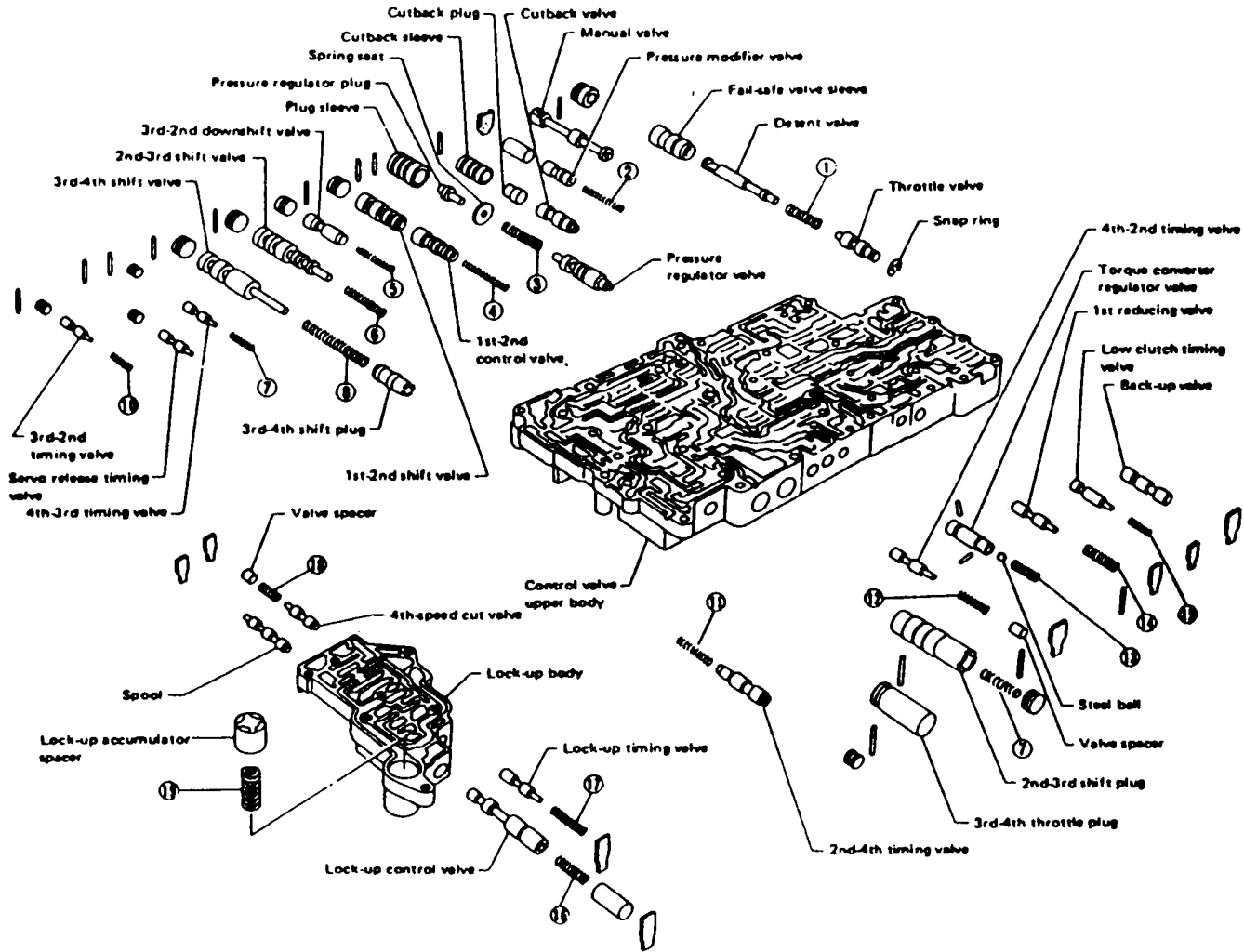
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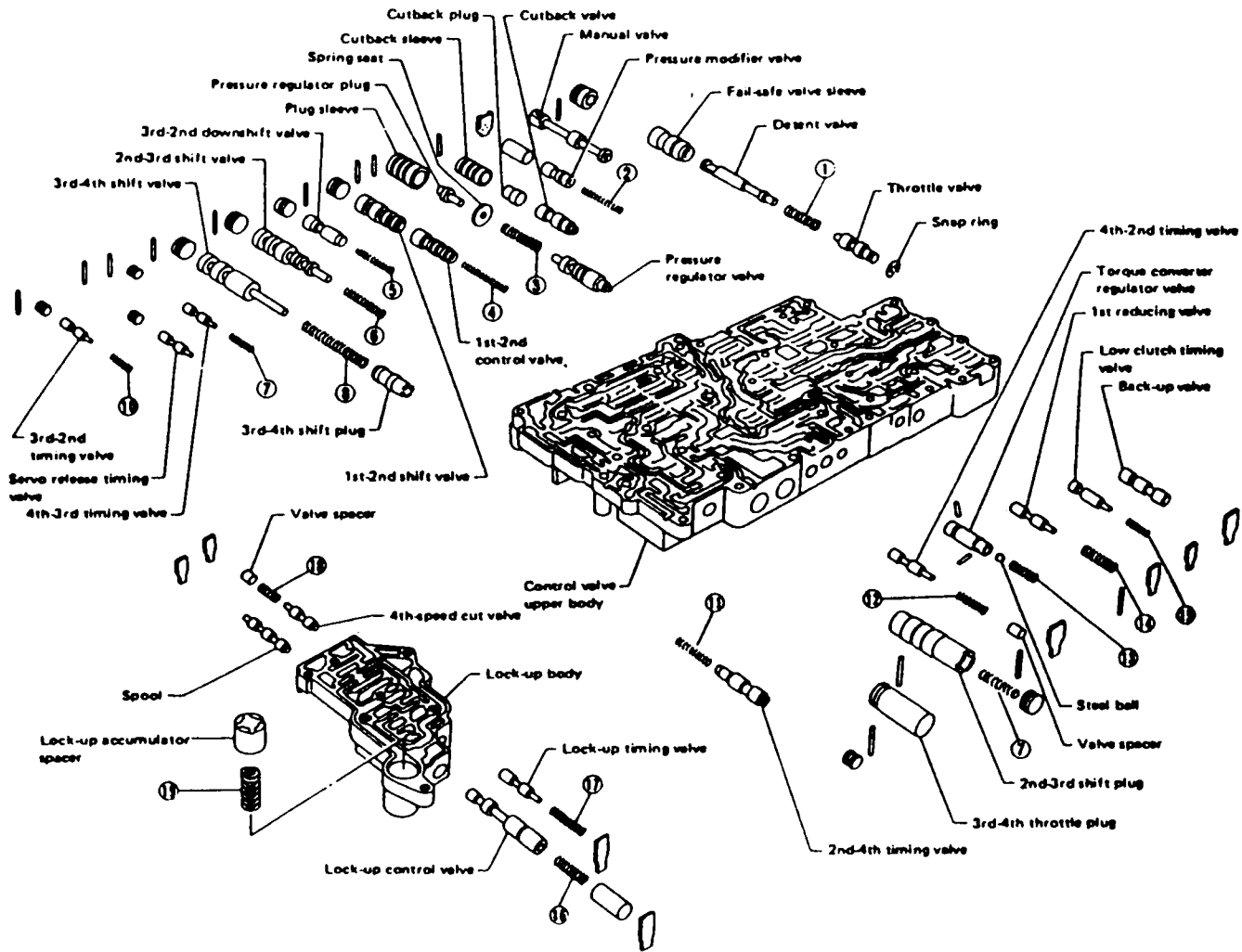


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