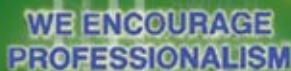


## By Bill Brayton



# ***Jatco 5 Speed***

**I**

# ***Jatco 5 Speed***

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# Jatco 5 Speed

## Transmission Case: Disassembly

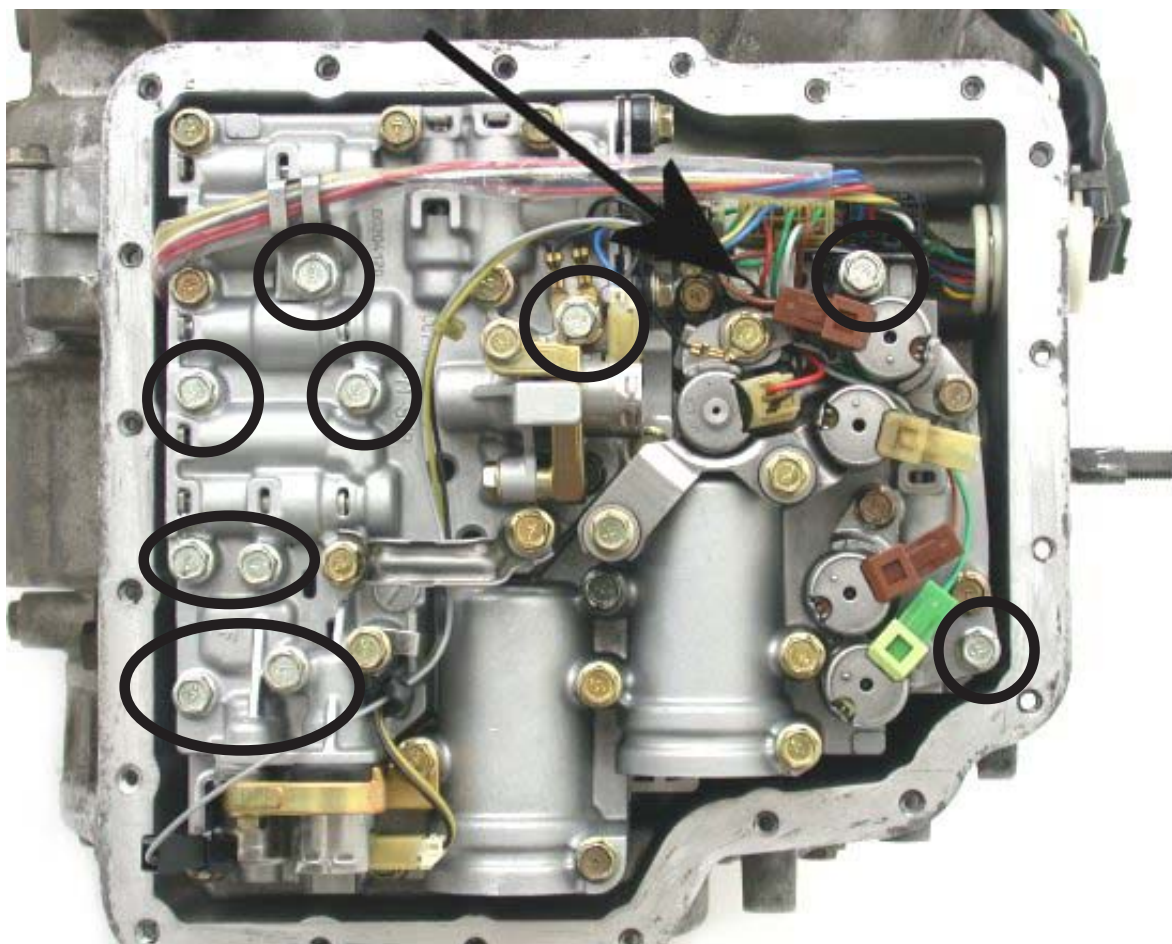
1. Remove the side cover.



2. Remove the bolt holding the internal harness connectors and disconnect the (2) internal harness connectors.



3. Remove only the valve body bolts shown and remove the valve body. To get to the bolt under the wiring (arrow) disconnect the solenoid.

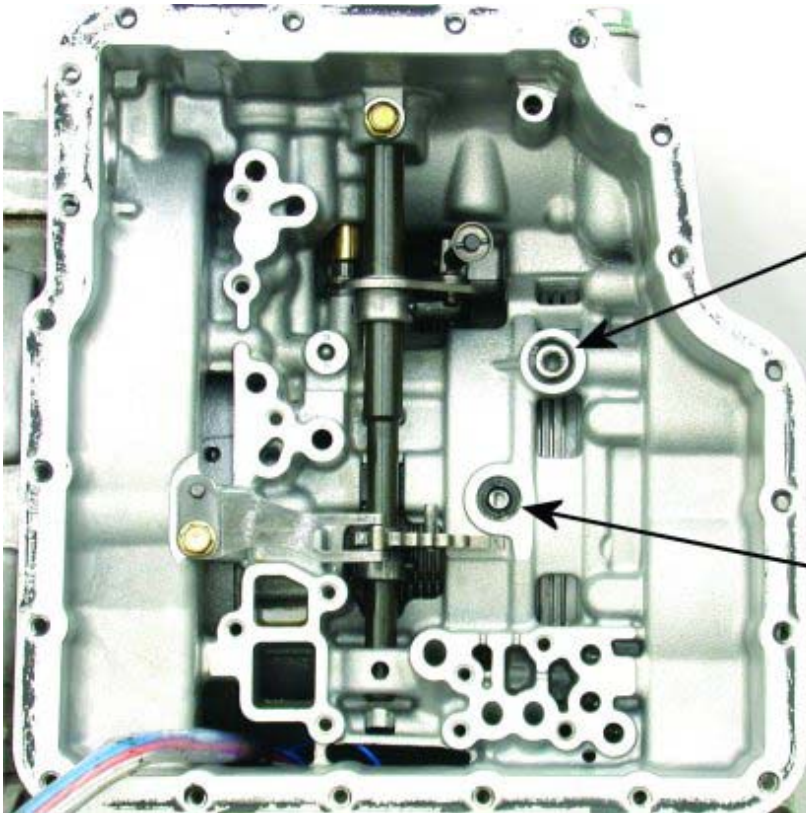


# Jatco 5 Speed

4. Remove the case connector retaining clip and remove the internal wiring harness.

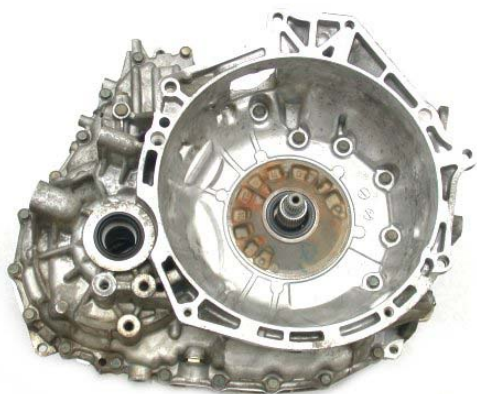


5. Remove the valve body to case seals





6. Remove the (22) bellhousing to case bolts.
7. Lightly tap the converter housing with a plastic hammer to separate the halves.



8. Remove the differential.
9. Remove the filter, pump O-ring and the input shaft O-ring.



10. Remove the front pump and the gasket.
11. Remove the input shaft.





# Jatco 5 Speed

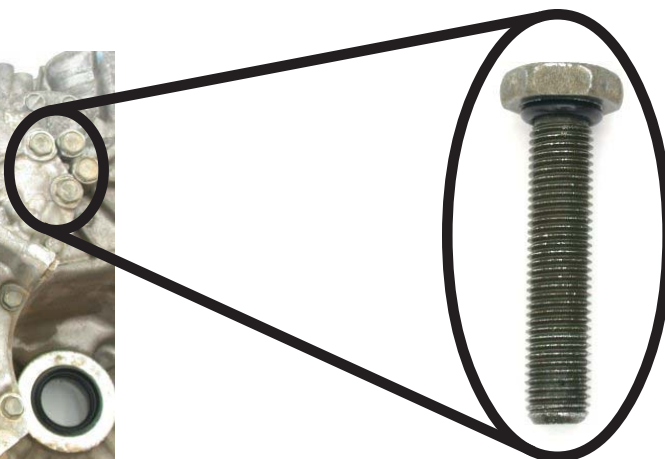
12. Remove the reduction gear assembly.
13. Remove the reduction sun gear assembly.



14. Remove the direct clutch.
- 15.. Remove the reduction brake band and the band anchor bolt.



16. Remove the (16) rear case cover bolts. Note the O-rings on the two larger bolts.



17. Remove the 2-4 piston and the sealing rings from the rear cover.
18. Remove the 2-4 accumulator assembly from the rear cover.



19. Remove the (3) bolts holding the one way clutch inner race to the case. Note the O-rings on the larger bolts.



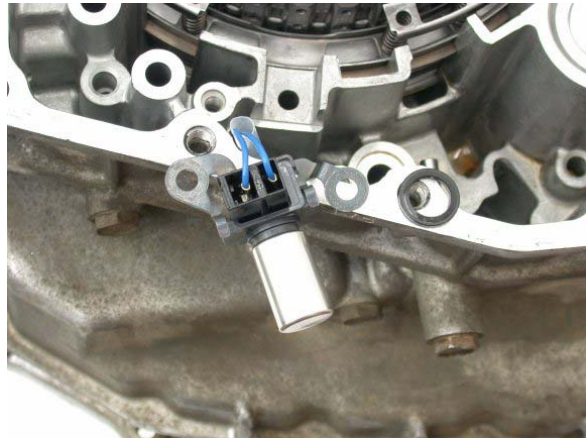
20. Remove the oil pipes.





# Jatco 5 Speed

21. Remove the speed sensor bolts.
22. Remove the speed sensor and the rear cover to main case seal.



23. Remove the direct clutch accumulator assembly.
24. Remove the 2-4 clutch piston return spring.

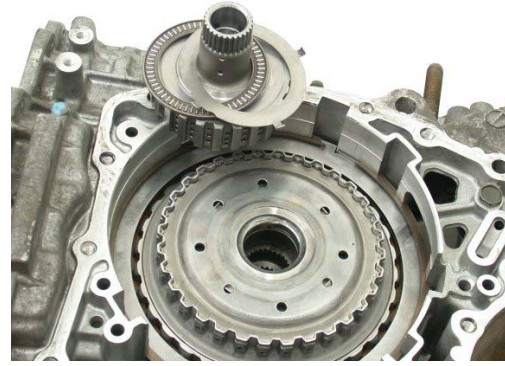


25. Remove the Rev/High clutch drum bearing.
26. Remove the Rev/High clutch drum.





- 27. Remove the clutch hub to Rev/High clutch drum bearing.
- 28. Remove the clutch hub and the clutch hub to sun shell bearing.



- 29. Remove the sun shell and the sun shell to planet bearing.
- 30. Remove the front planet and the planet to sun gear bearing.



- 31. Remove the sun gear and the sun gear to rear planet bearing.
- 32. Remove the rear planet and the rear planet to ring gear bearing.

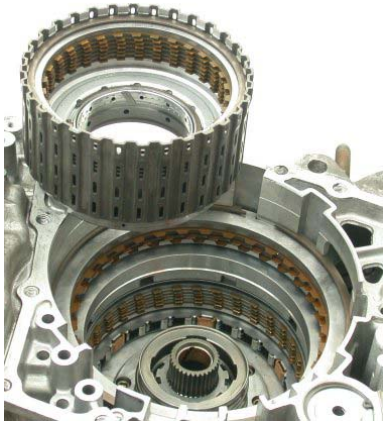


# Jatco 5 Speed

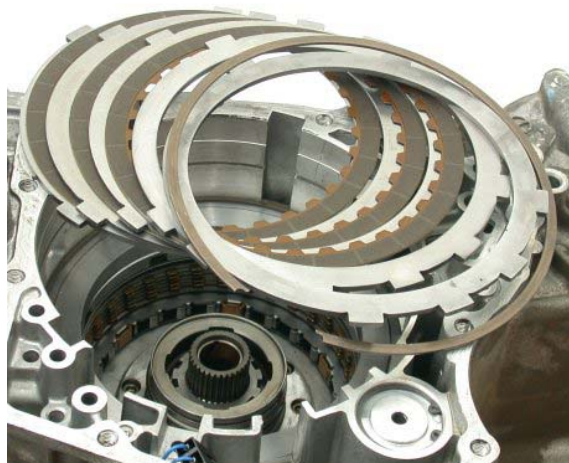
33. Remove the rear ring gear and the ring gear to Low drum bearing.



34. Remove the Low Drum and the Low drum to case bearing.



35. Remove the 2-4 clutches (3) and steels (4). **Note:** There are (2) 2-4 steel plates back to back next to the snap ring.





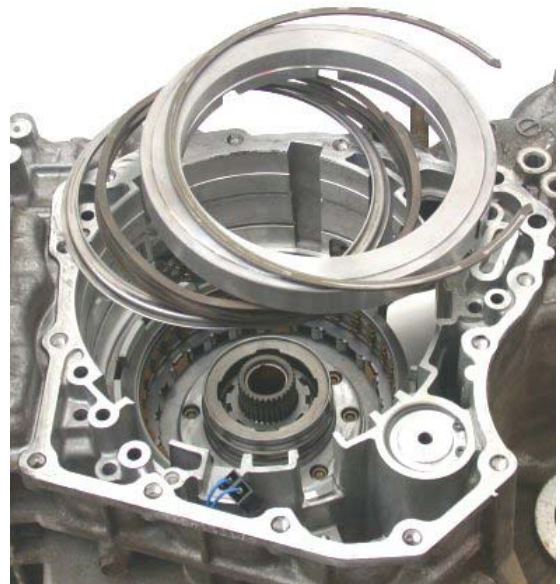
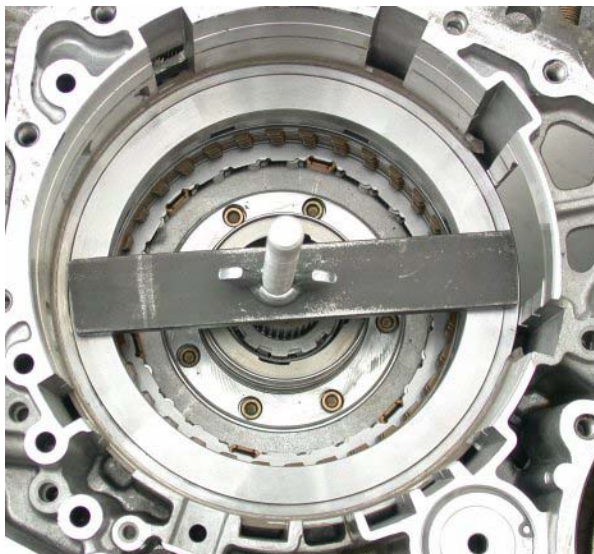
For this next step a special tool needs to be used. A speical tool can be fabricated out of a piece of flat steel or a piece of bar stock. A long bolt or a length of all-thread is required as well.

The bar stock needs to 7-7 1/4 inches long with a hole drilled in the middle large enough for the bolt or the all thread to pass easily through the tool.

The long bolt shown is from Kent-Moore tool # J-23327-1.



36. Using the special tool compress the low/reverse piston and remove the retaining snap ring. **Note:** The opening of the snap ring has curved ends and only fits into the case one way.





# Jatco 5 Speed

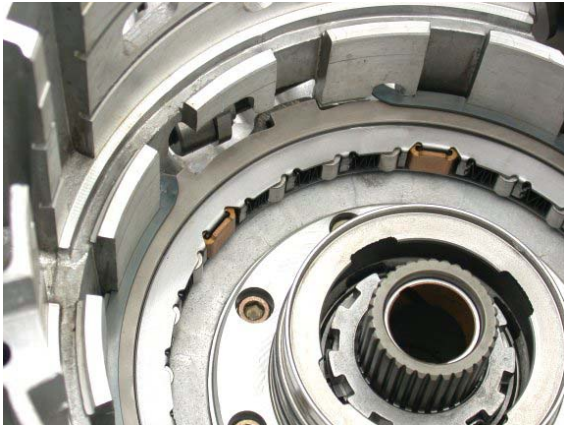
37. Remove the low/rev clutches (6) and steel plates (7). Note the position of the dished plate for reassembly.



**Top**



38. Remove the low/rev sprag retaining snap ring and the low/rev sprag. Note the position of the snap ring opening for reassembly.



39. Remove the servo cover snap ring.  
40. Remove the servo cover by blowing shop air into the port shown.



**WARNING!**

On the right is the original servo cover that was removed from this transmission. This cover was stuck in the bore. No amount of air pressure was going to force this cover out of the bore. Breaking the cover apart was the only solution.

**The Cause**

The problem is corrosion between the lip of the servo cover and the transmission case.

**The Solution**

Prior to assembly run a bead of silicone around the servo just below the lip. This will keep out moisture and prevent corrosion.



## **Subassembly Rebuild Procedure**

### **Front Pump: Disassembly And Assembly**

1. Remove (8) 5mm allen bolts and split the pump halves apart.
2. Remove the pump gears from the body.



3. Clean and dry all pump components.
4. Inspect the pump gears and the pump pocket for wear and scoring.
5. Inspect the stator support half for wear and scoring. Inspect the bushing for wear.





6. Install a new pump bushing and seal. **Note:** The step in the bushing is installed towards the gear.

**Step is installed towards the gear**



7. Lightly lube the pump pocket and install the pump gears. Use a small amount of assembly gel to keep the pump gears centered in the pocket.
8. Install the stator support onto the pump body. Install the (8) 5mm bolts and tighten them to 96 in. lbs.



# Jatco 5 Speed

## ***Reverse/High Clutch Drum: Teardown And Assembly***

1. Remove the reverse clutch retaining snap ring and the reverse clutch pressure plate.
2. Remove (2) reverse clutches and (2) reverse steel plates.



3. Remove the direct clutch retaining snap ring and pressure plate.
4. Remove the (5) direct clutches and (5) direct steels.

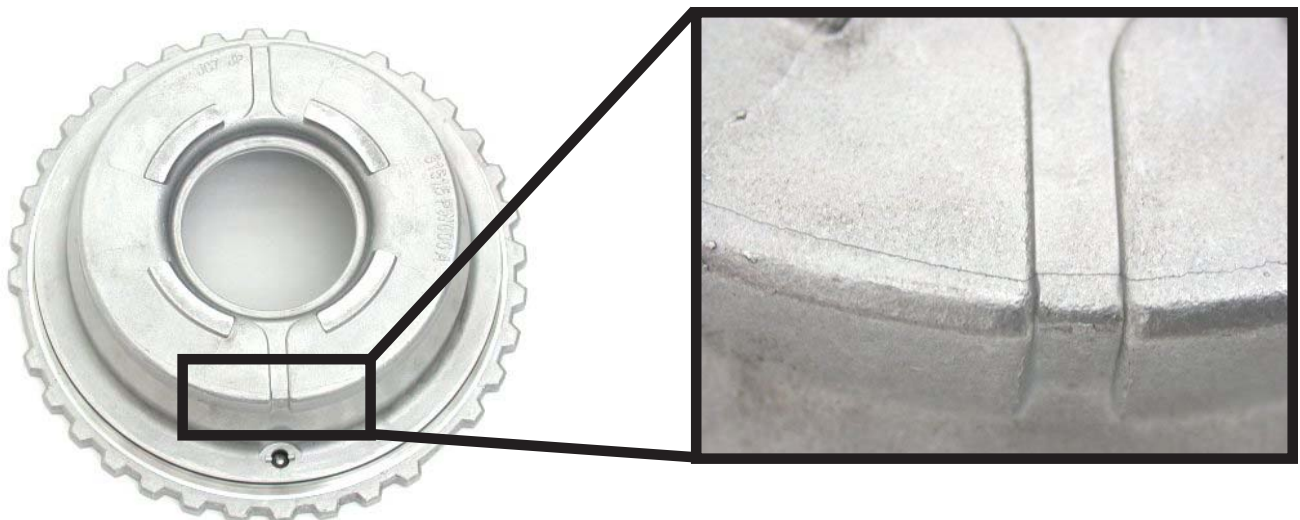


5. Using a suitable press, compress the piston return spring and remove the retaining snap ring.
6. Remove the retainer, return springs and the pistons from the drum. Remove and discard the piston seals.
7. Clean and dry all rev/hi clutch drum parts.



### **Caution**

Carefully inspect the reverse piston. The piston can crack. The crack is very difficult to see. If the clutches in the drum are burnt, **ALWAYS** replace the reverse piston. The Mazda part number is FP03-19-480.





# Jatco 5 Speed

8. Install new seals on the pistons and install the pistons into the drum.
9. Using a suitable press, compress the spring retainer and install the retaining snap ring.



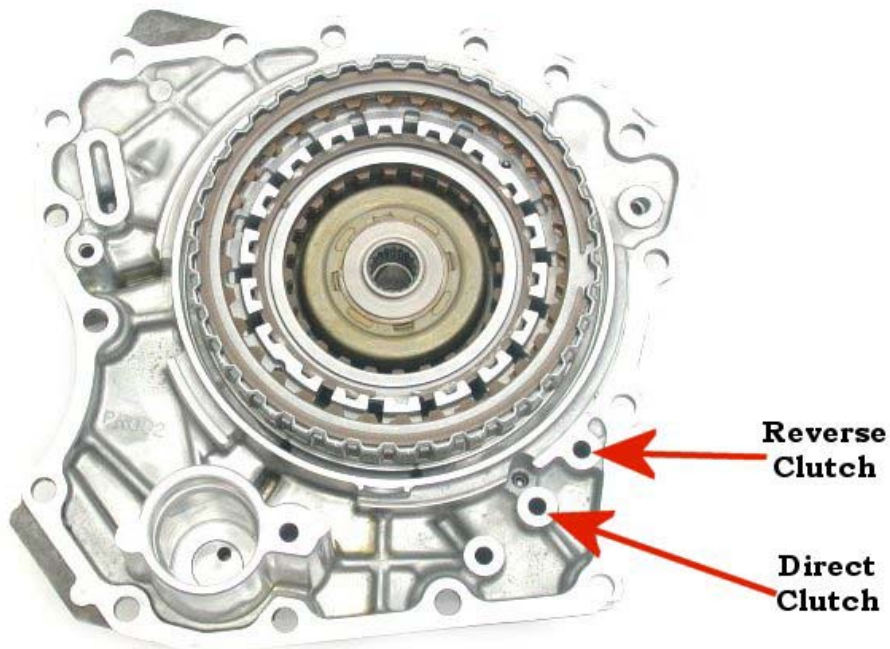
10. Install the (5) direct clutches and (5) steel plates.
11. Install the pressure plate and the retaining snap ring. Direct clutch clearance should be .031-.043 in. and is adjusted by changing the pressure plate.



12. Install the (2) reverse clutches and (2) steel plates.
13. Install the reverse pressure plate and the retaining snap ring. Reverse clutch clearance should be .020-.030 in. and is adjusted by changing the pressure plate.



14. Install (3) sealing rings onto the rear cover and place the drum onto the rear cover to air check the clutch drum.



# Jatco 5 Speed

## ***Direct Clutch Drum: Teardown and Assembly***

1. Remove the direct clutch retaining snap ring and pressure plate.
2. Remove the (4) direct clutches and (4) steel plates.



3. Using a suitable press, compress the spring retainer and remove the retaining snap ring.
4. Remove the retainer, return spring and the piston.





5. Remove the sprag retaining snap ring and the sprag retaining washer.
6. Remove the sprag and the needle bearing.



7. Clean and dry all direct clutch drum components.
8. Inspect the sprag race and the sprag elements for wear and scoring.
9. Install the bearing and the sprag into the drum. **Note:** The lip on the sprag faces up.
10. Install the retainer and the snap ring.



# Jatco 5 Speed

11. Install new seals onto the piston. Lightly lube the seals and install the piston into the drum.
12. Using a suitable press, compress the return spring and install the retaining snap ring.



13. Install (4) direct clutches and (4) steel plates.
14. Install the direct clutch pressure plate and the retaining snap ring. Direct clutch clearance should be .040-.080 in. and can be adjusted by changing the pressure plate.



15. Install the inner sprag race into the sprag to air check the drum.
16. The sprag race should freewheel counter clockwise.



**Air  
Check**





# Jatco 5 Speed

## ***Low Clutch Drum: Teardown and Assembly***

1. Remove the retaining snap ring and the low clutch pressure plate.
2. Remove the (7) Low clutches and (7) steel plates.



3. Using a suitable press, compress the spring retainer and remove the snap ring.
4. Remove the retainer, return spring and the low piston.



5. Clean and dry all low clutch drum components.
6. Inspect the sprag race on the drum for wear and scoring.

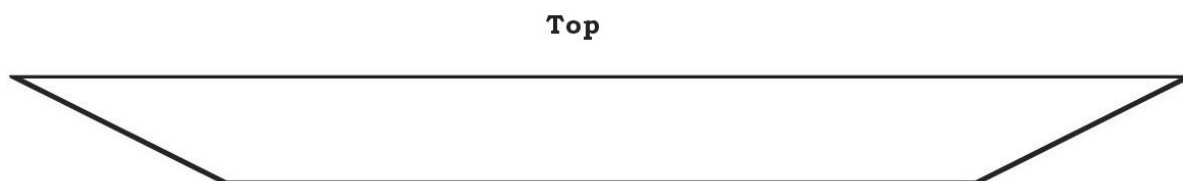


7. Install new seals on the piston and spring retainer.
8. Lightly lube the piston and install the piston, return spring and retainer into the low drum.
9. Using a suitable press, compress the return spring and install the snap ring.



# Jatco 5 Speed

10. Install the dished spring plate as shown.



11. Install (7) low clutches and (7) steel plates.  
12. Install the low pressure plate and snap ring. Low clutch clearance should be .044-.051 in. and is adjusted by changing the pressure plate.





## ***Planetary Gear Sets***

Inspect the planetary gear sets for gear wobble and broken or cracked teeth. If any are damaged or worn the planetary gear set must be replaced.



# Jatco 5 Speed

## ***Transfer Gear / Reduction Gear: Teardown And Assembly***

1. Remove the lock nut on the transfer shaft.
2. Using a suitable press, support the idler gear and press the shaft through the bearing race and the reduction gear.



3. Clean and dry all transfer gear/reduction gear components.
4. Inspect the idler gear (large gear) bearings for wear and scoring.
5. Inspect the reduction gear planetary gear set for gear wobble and broken or cracked teeth.



6. Place the idler gear onto the reduction gear shaft. Using a sleeve start the bearing onto the shaft.
7. Place the reduction gear onto the shaft. Using a sleeve start the gear onto the shaft.



8. Press the gear and the bearing into place.
9. Press the bearing race into place.



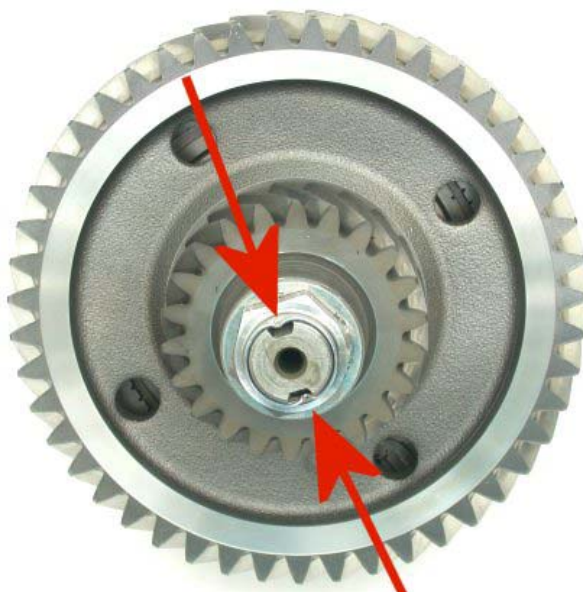


# Jatco 5 Speed

10. Tighten the nut onto the reduction shaft until 5-15 in. lbs. of turning torque is obtained.

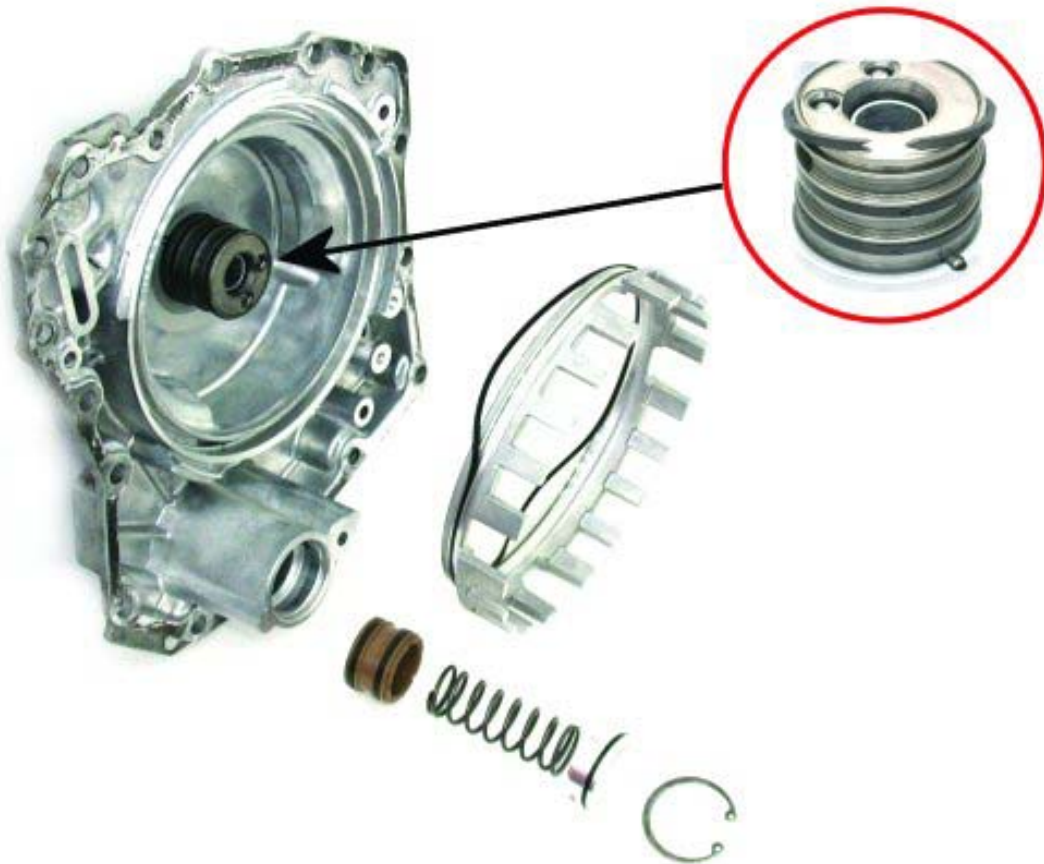


11. Stake the nut into place.



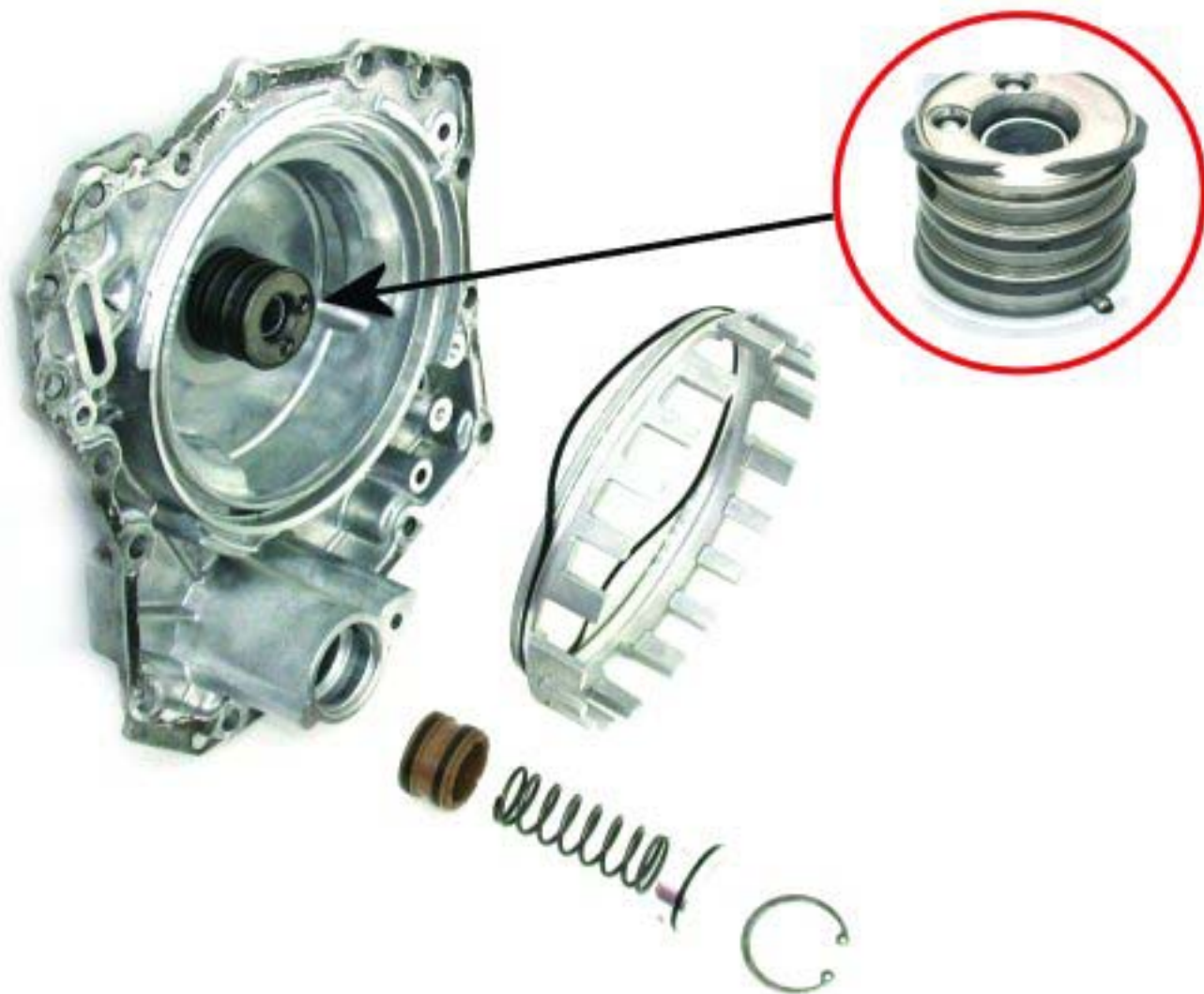
## ***Rear Cover: Teardown And Assembly***

1. Remove the piston and discard the seals.
2. Remove the accumulator cover retaining snap ring.
3. Remove the accumulator cover, the spring and the piston.
4. Remove the three sealing rings.



# Jatco 5 Speed

5. Clean and dry all rear cover components
6. Inspect the accumulator bore for wear. The bore should be smooth and free from any scoring.
7. Install new seals on the 2-4 piston. Lightly lube the seals and install the piston into the rear cover.
8. Install (2) new teflon sealing rings onto the accumulator piston and install the piston into the rear cover.
9. Install the spring and the accumulator cover with a new O-ring.
10. Install the retaining snap ring.
11. Install (3) new sealing rings with the V-cut as shown.

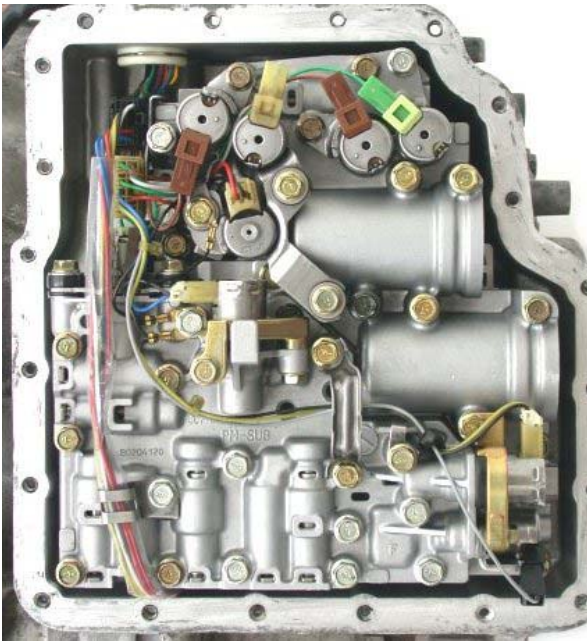




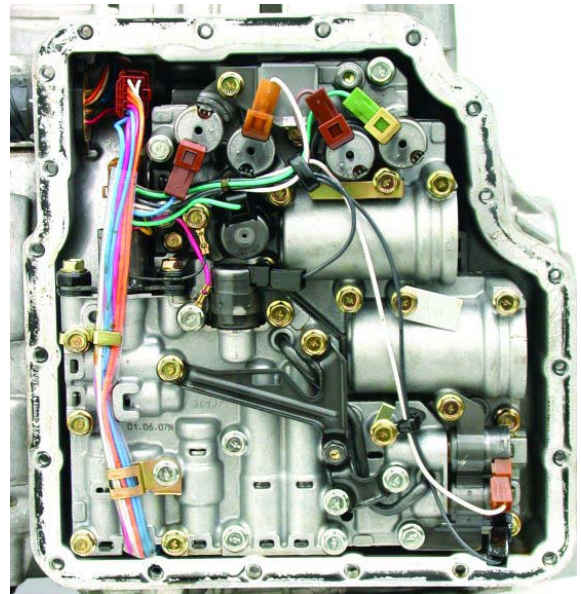
## Valve Body: Teardown And Assembly

There are two valve body configurations for this transmission. The Mazda valve body and the Volkswagen/Jaguar. These valve bodies are **NOT** interchangeable. The Jaguar valve body is the same as the Volkswagen except that it has one less checkball. **Caution:** Some of the valves in both valve bodies are teflon coated. **DO NOT** use abrasives on these valves. If the valves are worn or become sticky in the bores the valve body may need to be replaced.

### Mazda

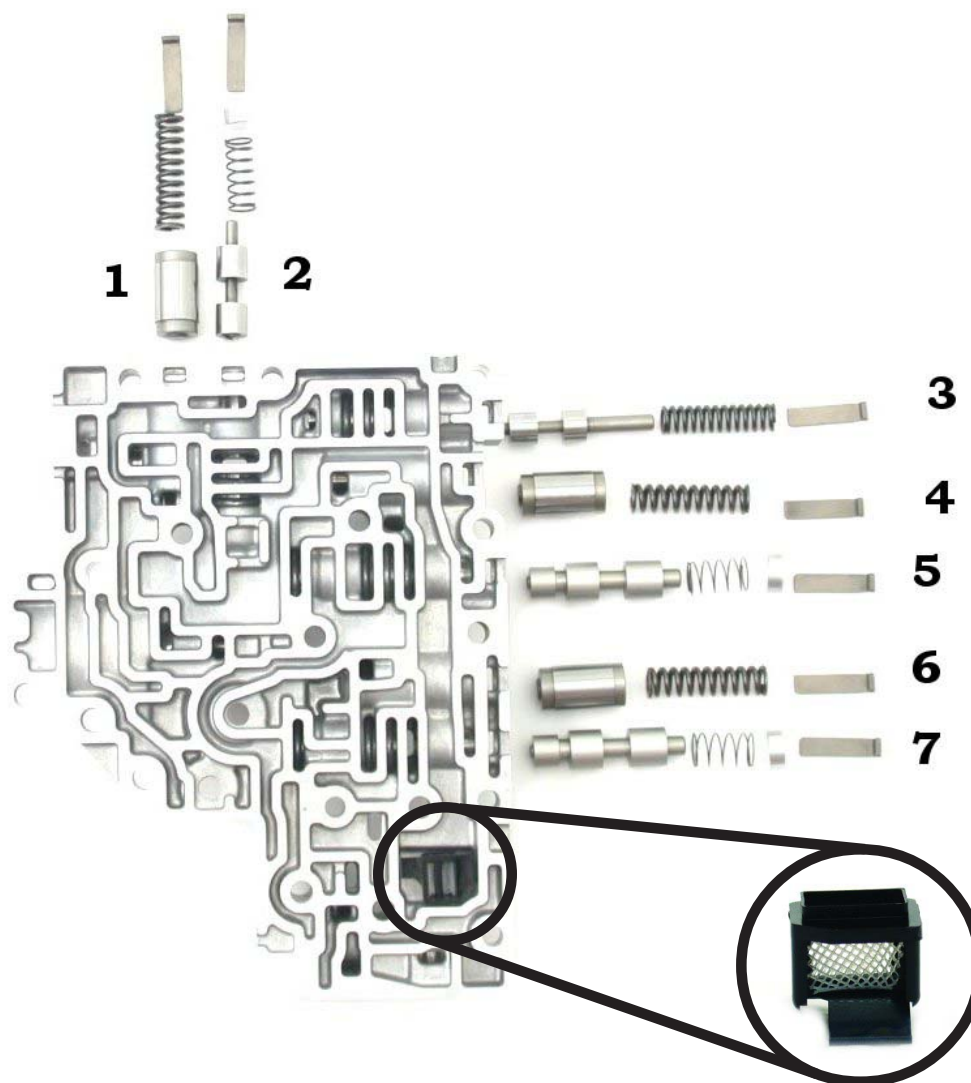


### VW/Jaguar



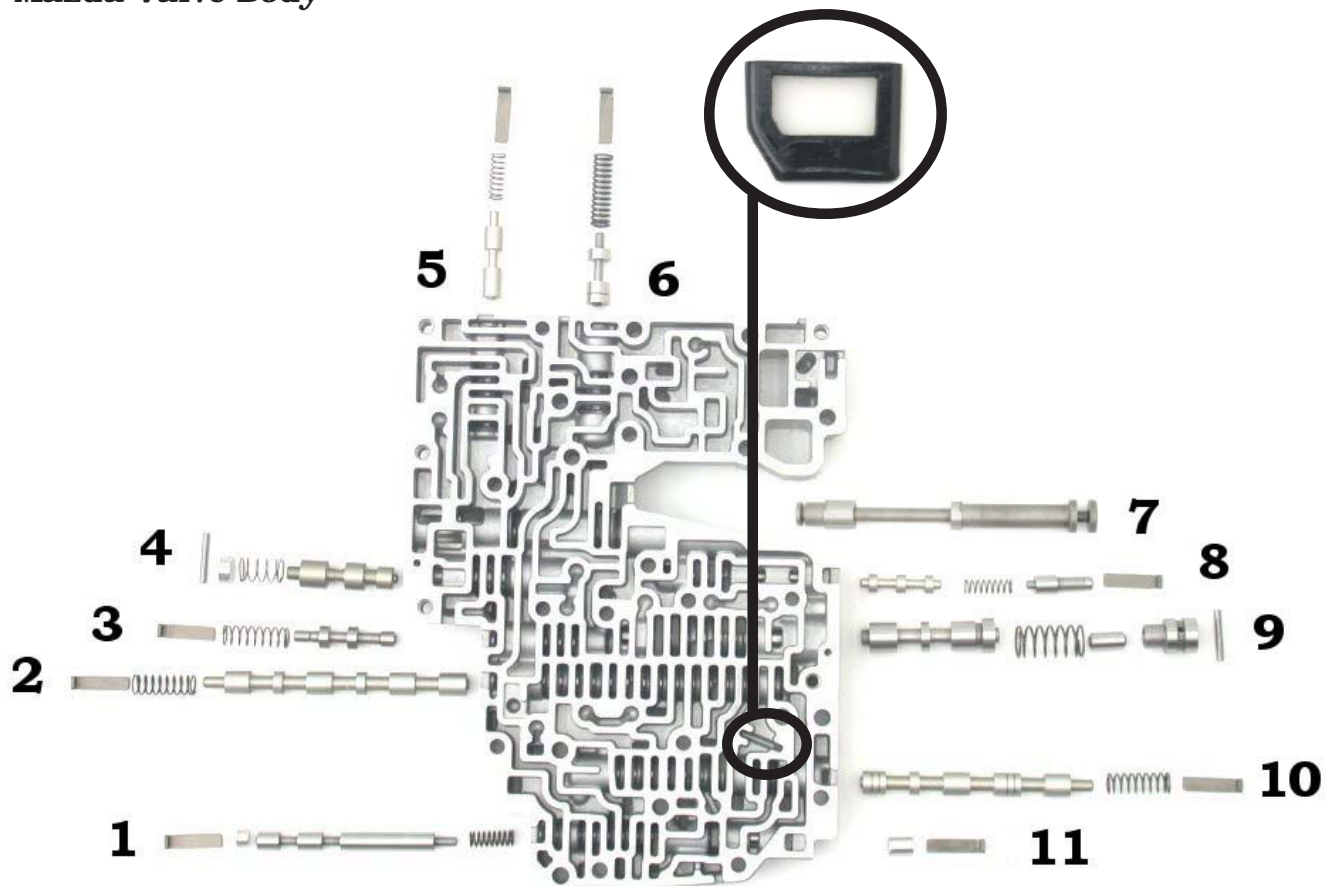
# Jatco 5 Speed

## Mazda Valve Body



ID	Description
1	Modifier Accumulator Valve
2	Pressure Modifier Valve
3	Torque Converter Pressure Regulator Valve
4	Throttle Accumulator Valve A
5	Accumulator Valve A
6	Throttle Accumulator Valve C
7	Accumulator Control Valve C

## Mazda Valve Body

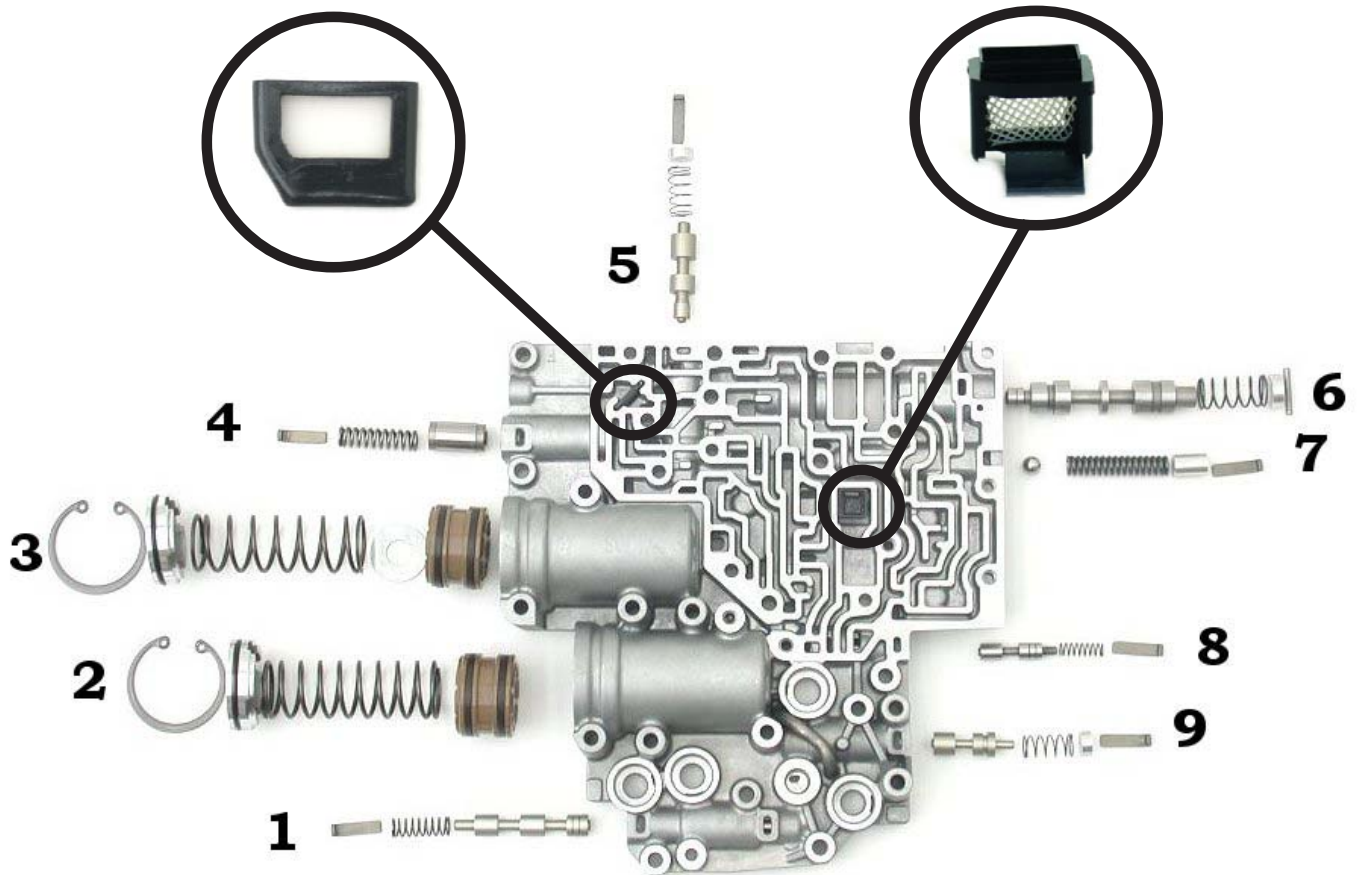


ID	Description
1	Failsafe Valve
2	Shift Valve A
3	Reverse Inhibit Valve
4	Neutral Control Valve
5	Accumulator Switch Valve
6	Pilot Valve
7	Manual Valve
8	Neutral Shift Valve
9	TCC Control Valve
10	Shift Valve B
11	Plug



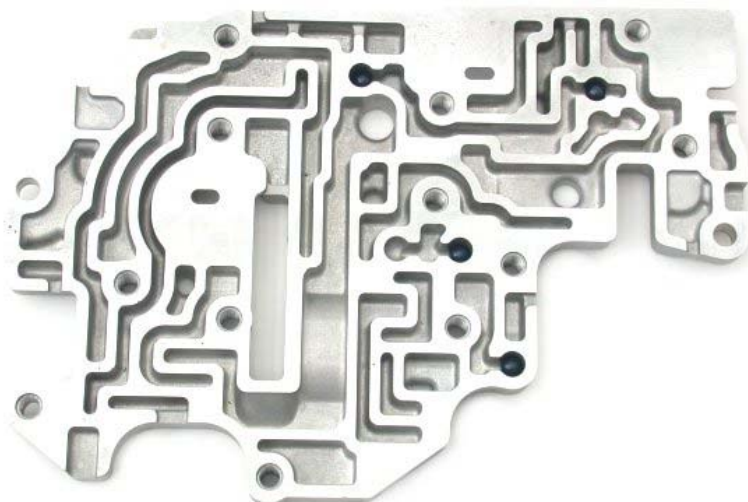
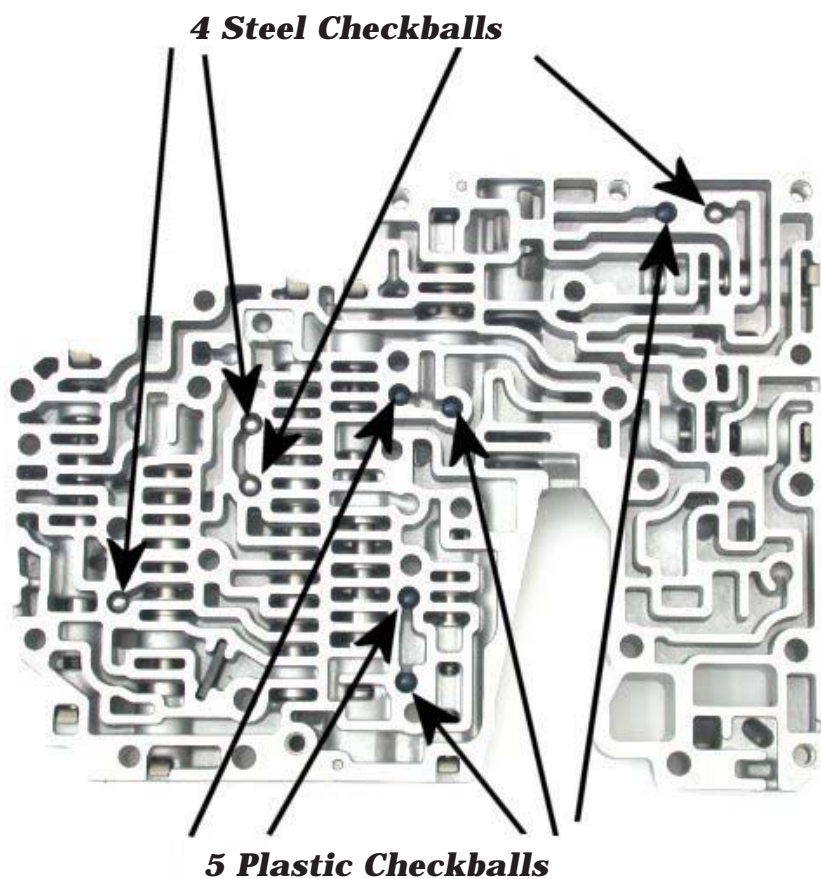
# Jatco 5 Speed

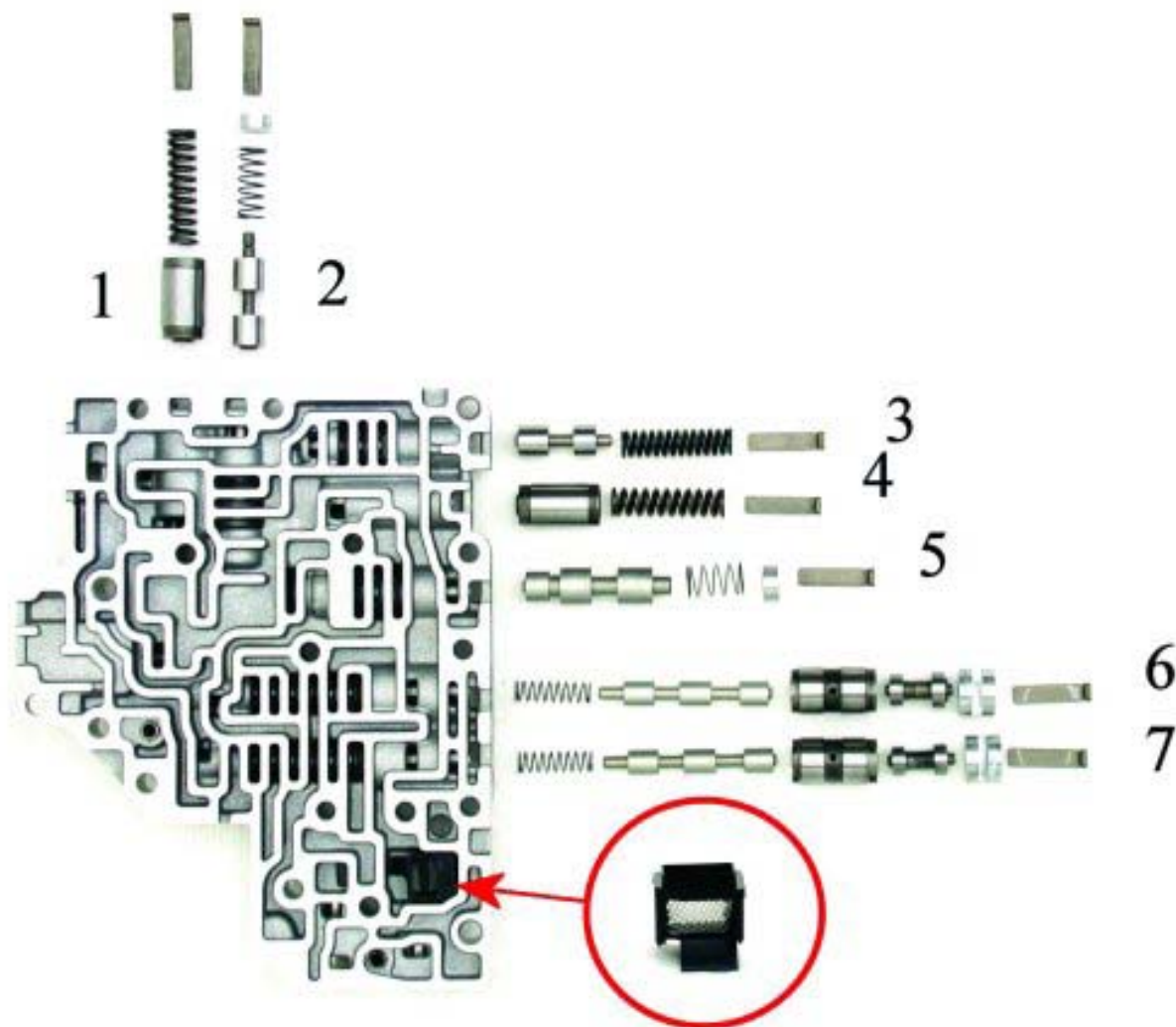
## Mazda Valve Body



ID	Description
1	Shift Valve C
2	Low Clutch Accumulator
3	High Clutch Accumulator
4	Throttle Accumulator B
5	Accumultor Valve B
6	Pressure Regulator Valve
7	Line Pressure Relief Valve
8	Reduction Timing Valve
9	Reduction Reducing Valve

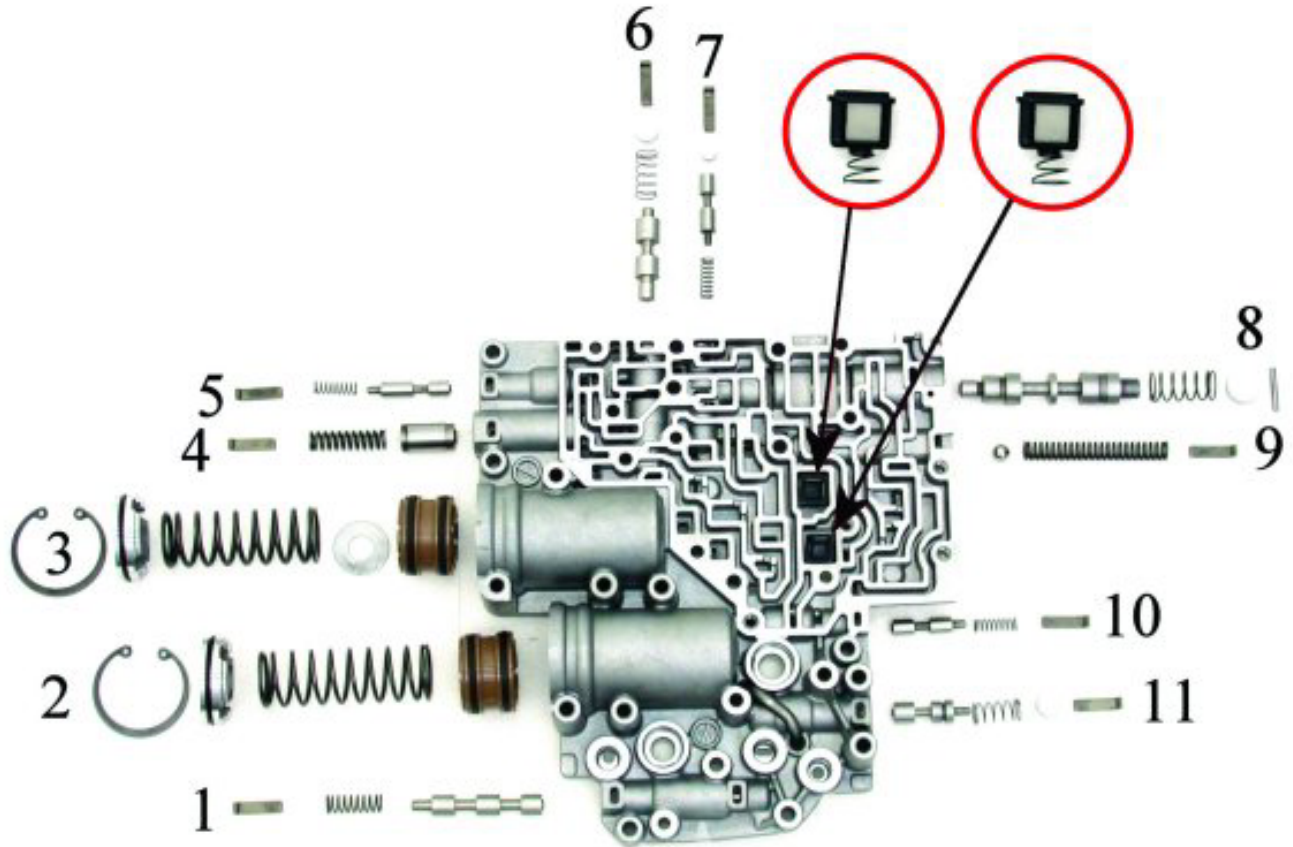
## **Mazda Checkball Locations**



**Volkswagen/Jaguar Valve body**

ID	Description
1	Modifier Accumulator
2	Pressure Modifier Valve
3	Torque Converter Regulator Valve
4	Throttle Accumulator Valve A
5	Accumulator Control Valve A
6	Unknown
7	Unknown

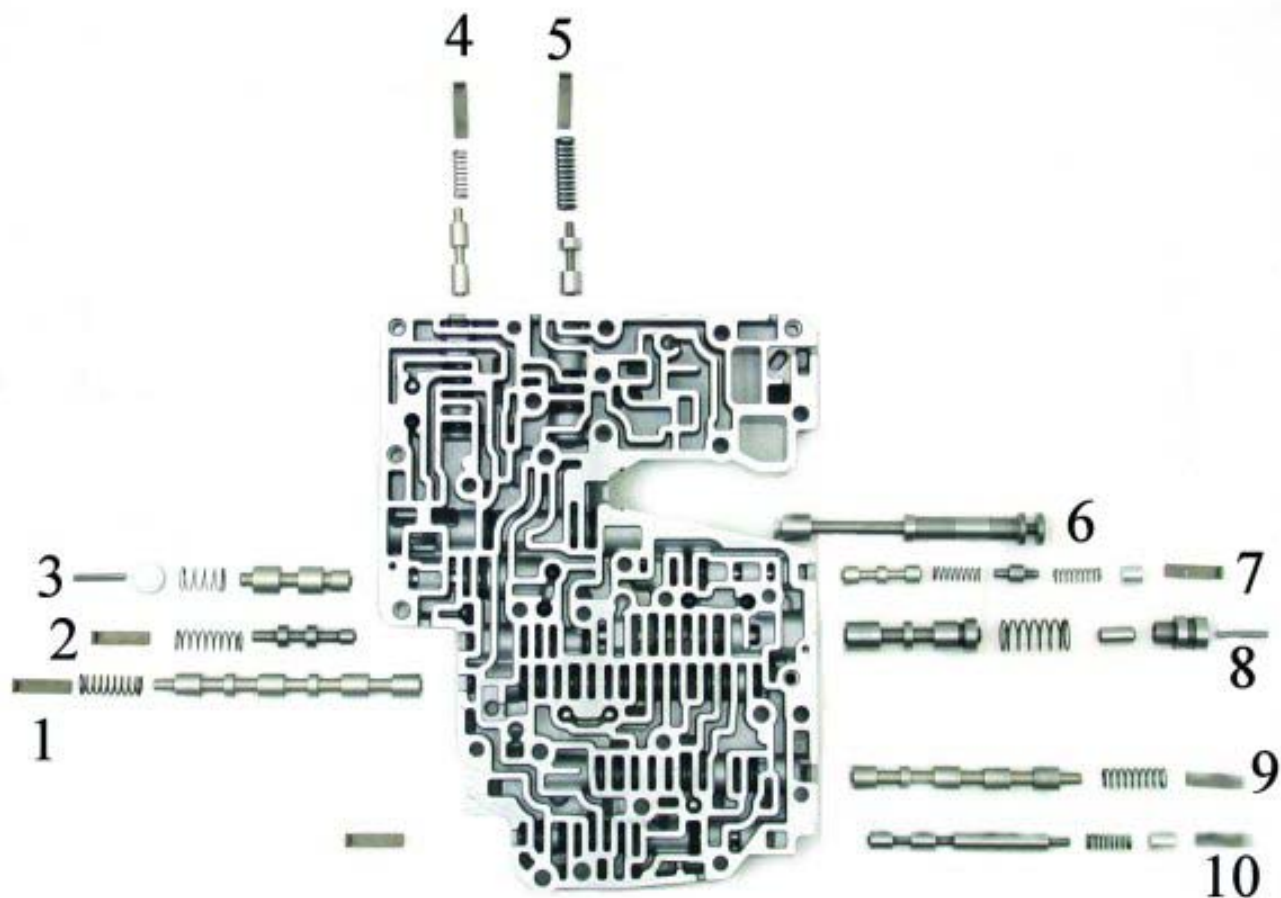


**Volkswagen/Jaguar Valve body**

ID	Description
1	Shift Valve C
2	Low Clutch Accumulator
3	High Clutch Accumulator
4	Throttle Accumulator
5	Unknown
6	Accumulator Control Valve B
7	Unknown
8	Pressure Regulator Valve
9	Line Pressure Relief Valve
10	Reduction Timing Valve
11	Reduction Reducing Valve

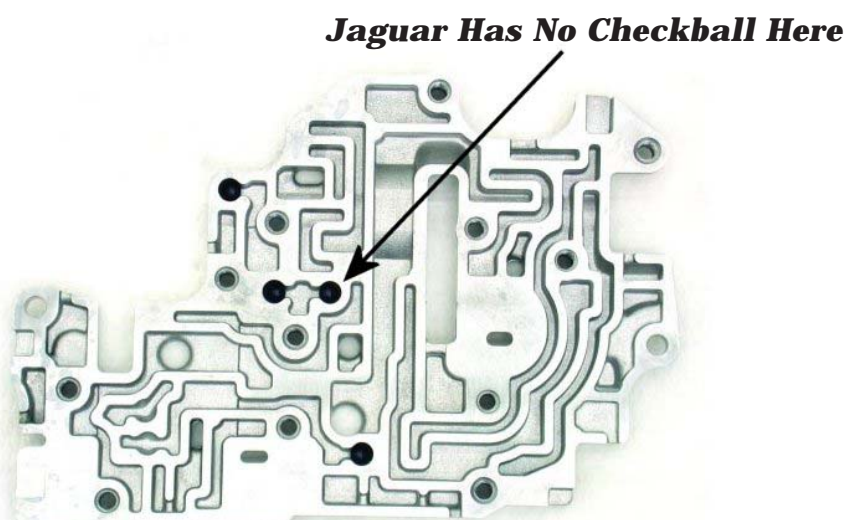
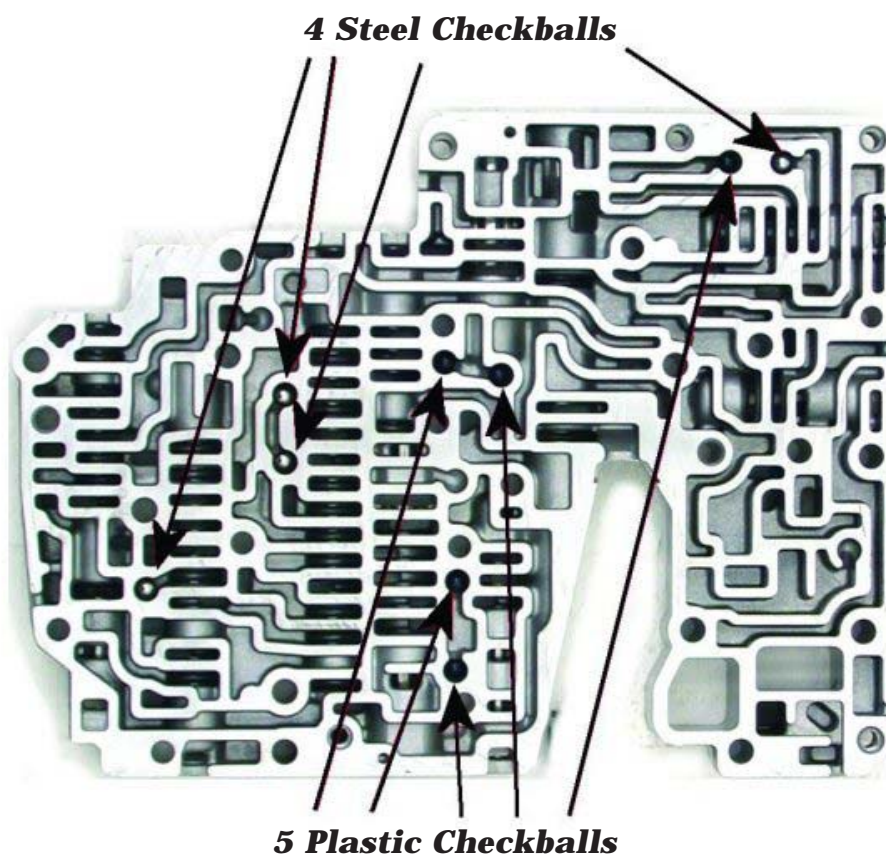
# Jatco 5 Speed

## Volkswagen/Jaguar Valve body



ID	Description
1	Shift Valve A
2	Reverse Inhibit Valve
3	Neutral Control Valve
4	Accumulator Switch Valve
5	Pilot Valve
6	Manual Valve
7	Neutral Shift Valve
8	TCC Control Valve
9	Shift Valve
10	Failsafe Valve

## ***Volkswagen/Jaguar Valve body***

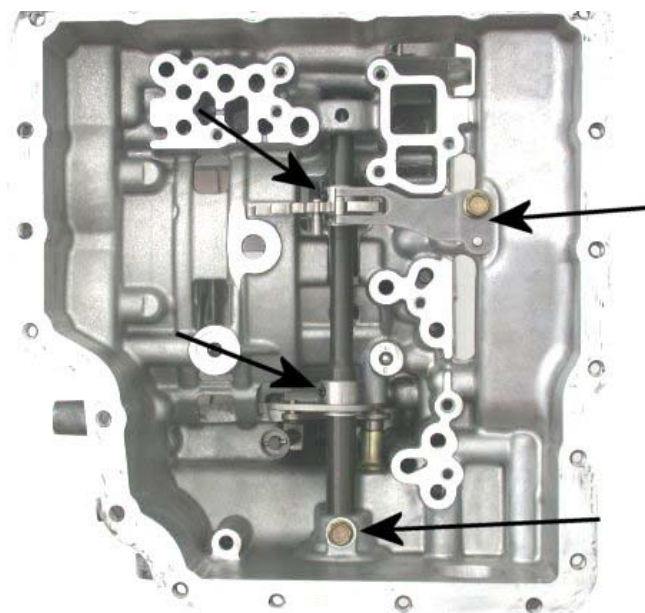




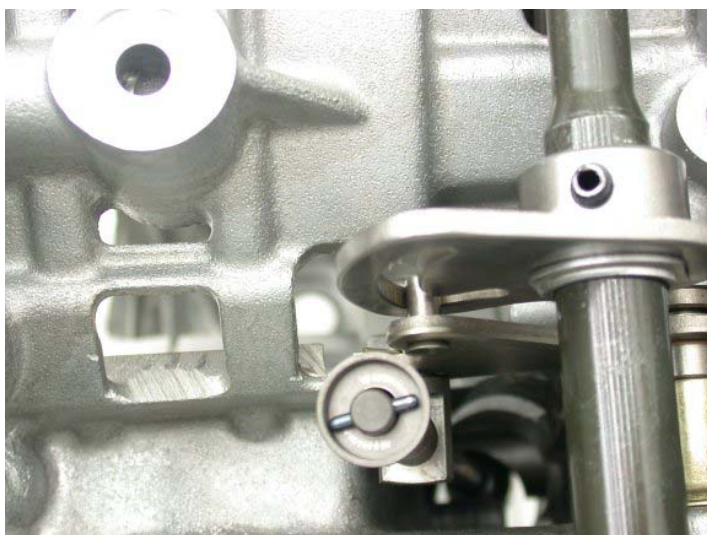
# Jatco 5 Speed

## Transmission Case: Assembly

1. Remove the manual lever detent spring. Drive out the (2) roll pins holding the rooster comb and park linkage. Remove the manual linkage retaining bolt.
2. Replace the manual lever seal and reinstall the manual linkage components.



**Note:** Before installing the retaining bolt be sure to align the park linkage.



3. Place a 1 1/4 in. 12 point socket over the splines to check the output gear turning torque. Turning torque should be 5.6- 11.5 in. .lbs.If not as specified replace the output gear bearing assembly.
4. Install (2) low clutch drum sealing rings. Retain with assembly gel.



5. Install (2) sealing rings onto the one way clutch inner race.
6. Install new O-rings onto the (2) large bolts and install the sprag race into the case. Torque the bolts to 24-28 ft. lbs.



# Jatco 5 Speed

7. Install the low/reverse sprag into the case with the smooth side facing up.
8. Install the retaining snap ring into the case. Note the location of the snap ring opening.



9. Install the low/reverse clutches (6) and steel plates (6).
10. Install the dished plate as shown.

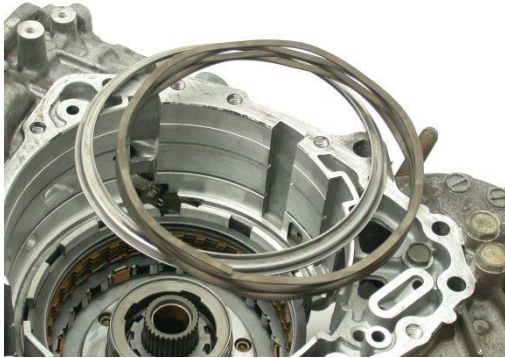


**Top**





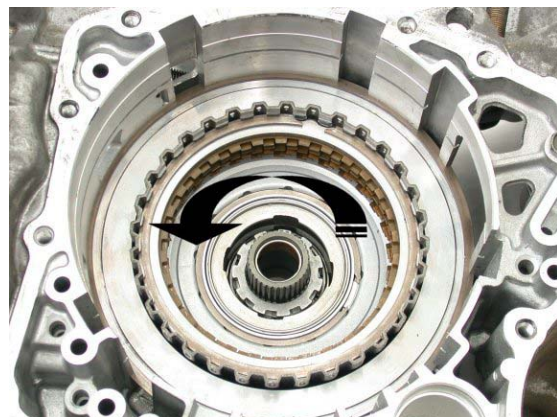
11. Install the low/reverse return spring seat and spring.
12. Install the low/reverse piston and piston housing.



13. Using the special tool made during transmission teardown, compress the low/reverse piston housing and spring assembly.
14. Install the retaining snap ring. Note the location of the snap ring opening.

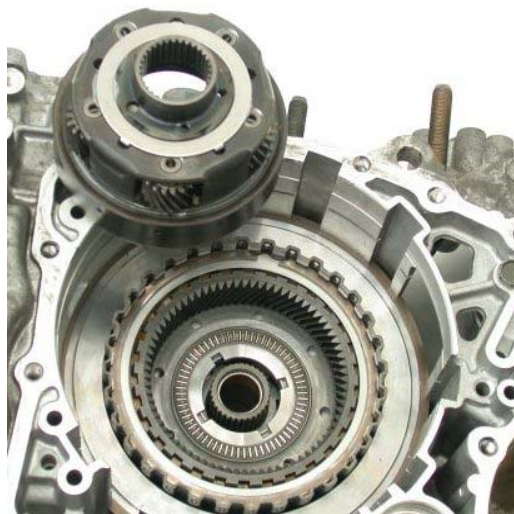
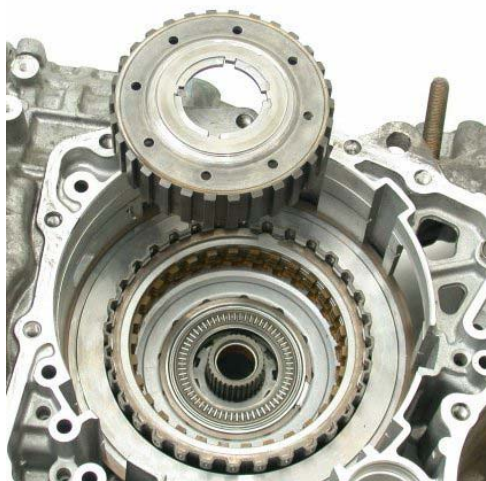


15. Using assembly gel, install the low clutch to case bearing on the low drum.
16. Using a twisting motion install the low drum down into the case. The drum should feewheel counterclockwise.

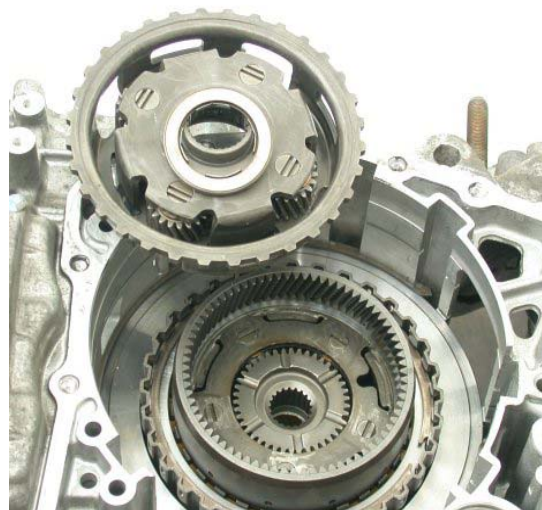
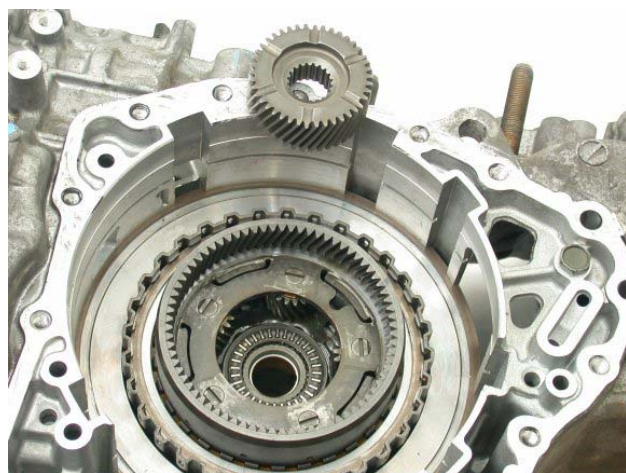


# Jatco 5 Speed

17. Install the bearing down into the drum and stick the bearing to the rear ring gear with assembly gel. Install the ring gear down into the drum.
18. Install the bearing down into the ring gear and stick the race to the rear planet with assembly gel. Install the planet down into the ring gear.

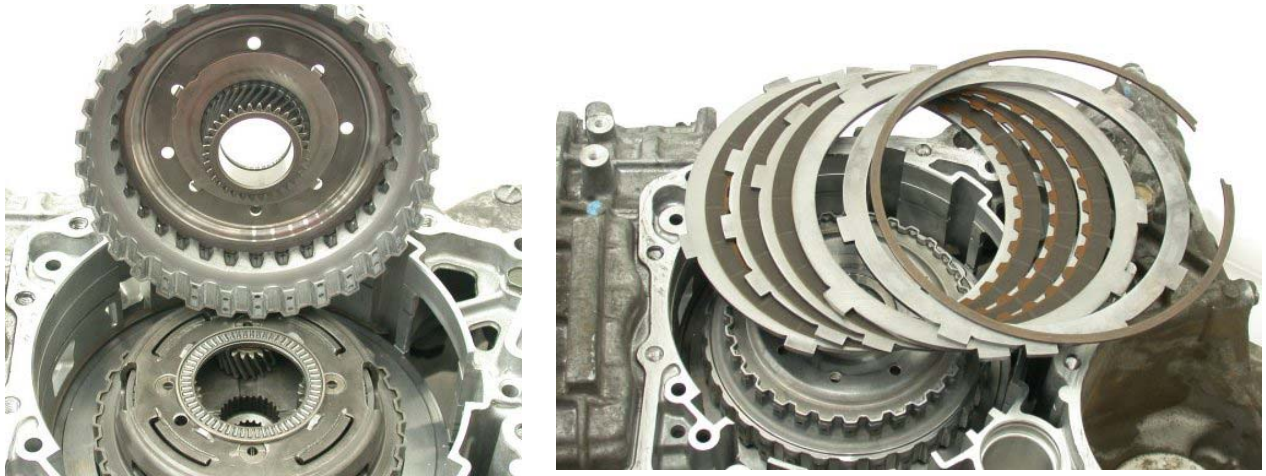


19. Install the sun gear to planet bearing down into the planet. Install the sun gear into the planet with the smooth surface facing down.
20. Stick the front planet to sun gear bearing onto the planet using assembly gel and install the planet down onto the sun gear.





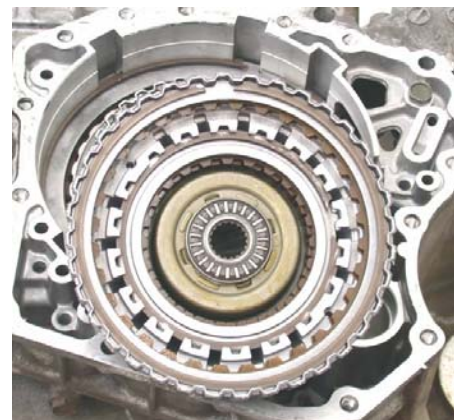
21. Install the bearing onto the planet and stick the race onto the sun shell with assembly gel. Install the sun shell down onto the planet.
22. Install the (3) 2-4 clutch plates and (5) steel plates.



23. Install the high clutch bearing race onto the sun shell and stick the high clutch hub bearing to hub using assembly gel.



24. Install the high clutch hub to high clutch race down into the hub. Stick the bearing to the high drum with assembly gel and install the high drum down onto the hub.



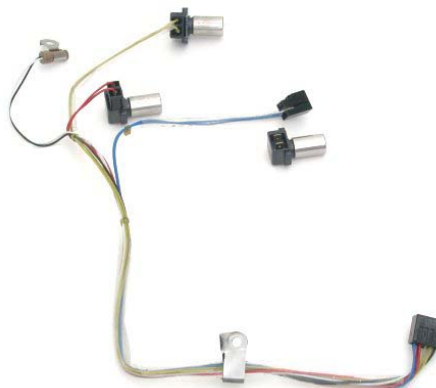


# Jatco 5 Speed

25. Install the high clutch to rear cover bearing down into the drum.
26. Install the 2-4 piston return spring.



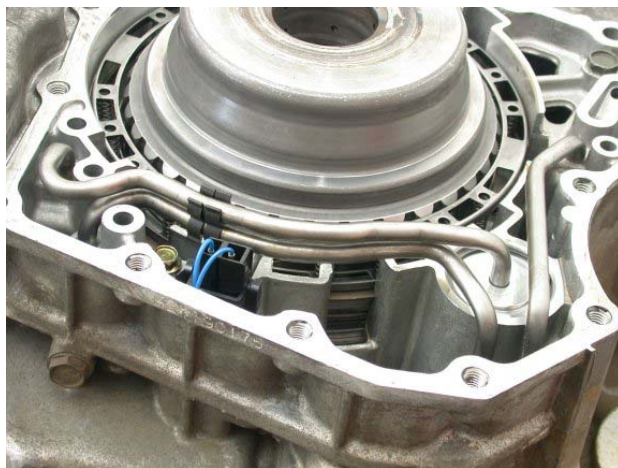
27. Install new seals on the accumulator piston and cover and Install the accumulator assembly into the case.



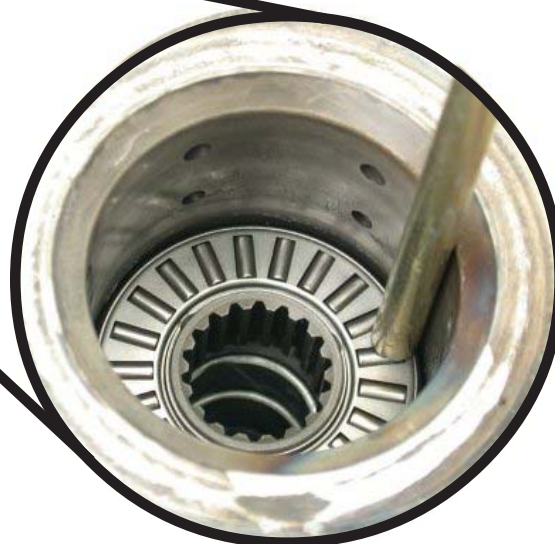
28. Install the speed sensor wiring loom into the case and install the input speed sensor. Install the case to rear cover seal (arrow).



29. Install the (3) oil tubes

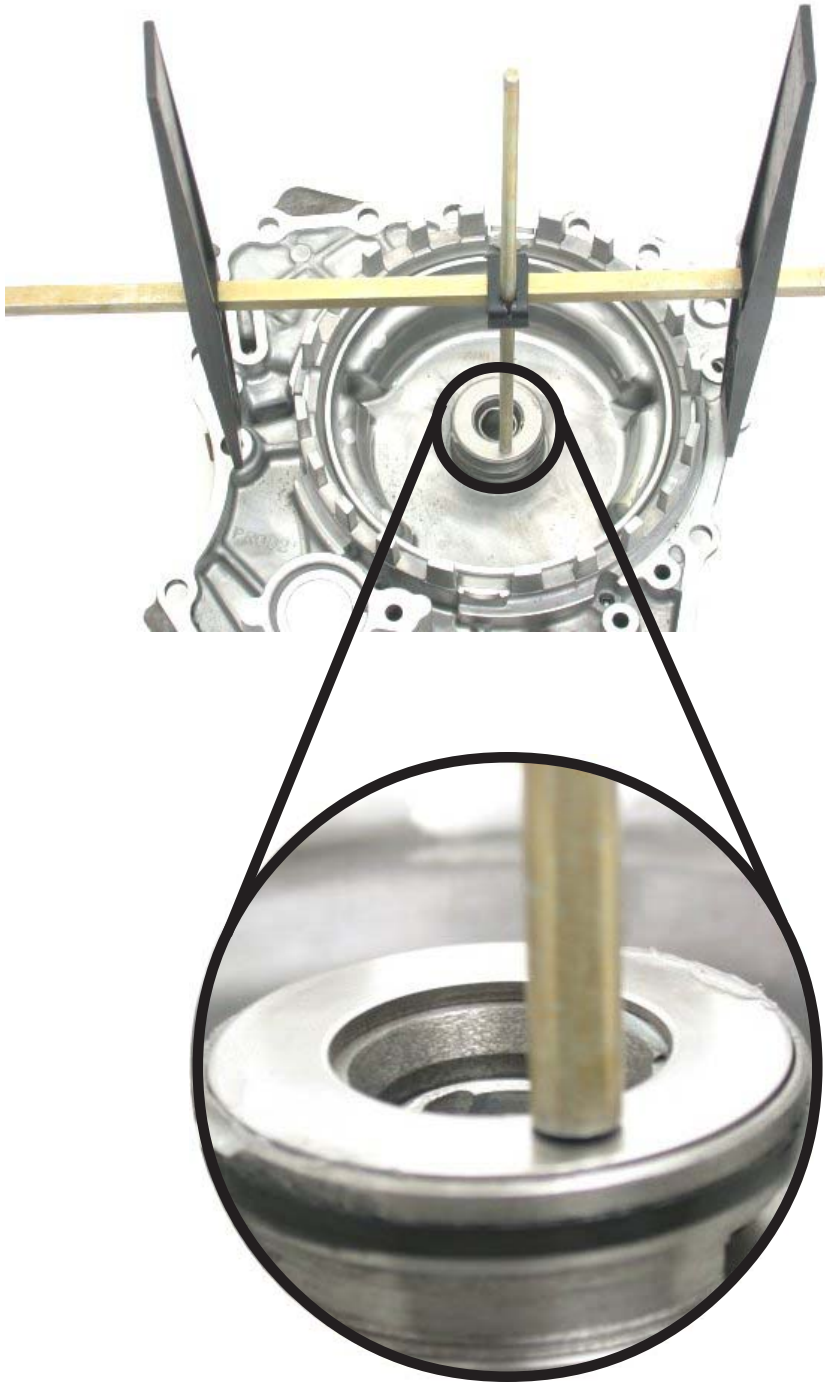


30. Using an H gauge check the endplay. Place the gauge on the transmission case and set the plunger down onto the high clutch bearing.



# Jatco 5 Speed

31. Flip the H gauge over onto the rear cover. When the washer is in place the end clearance should be .010 - .020 in. and is adjusted by changing the bearing race.

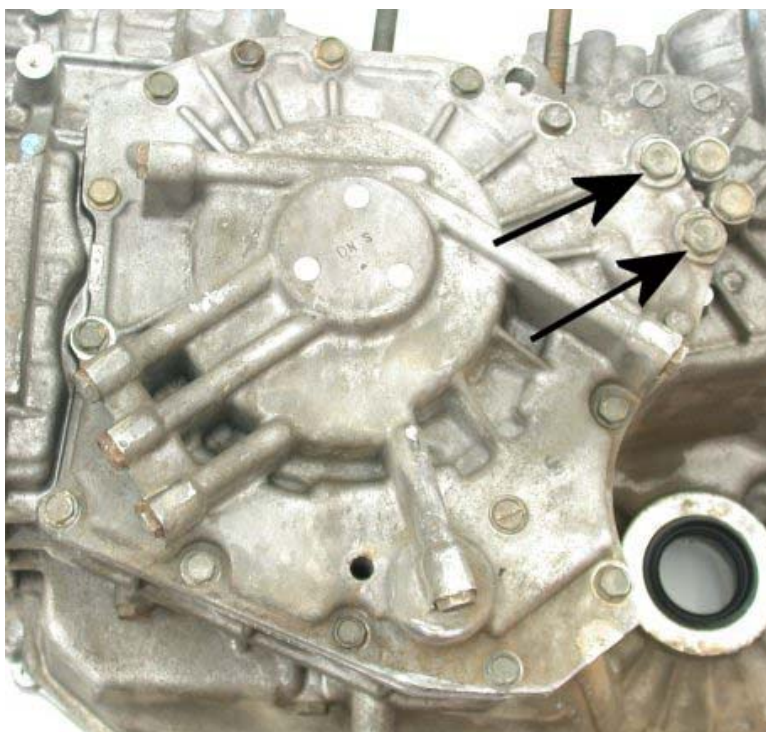




32. Place the end cover onto the transmission case. There will spring tension on the cover. Tighten the end cover bolts down evenly and torque the bolts to 14 - 16 ft. lbs.

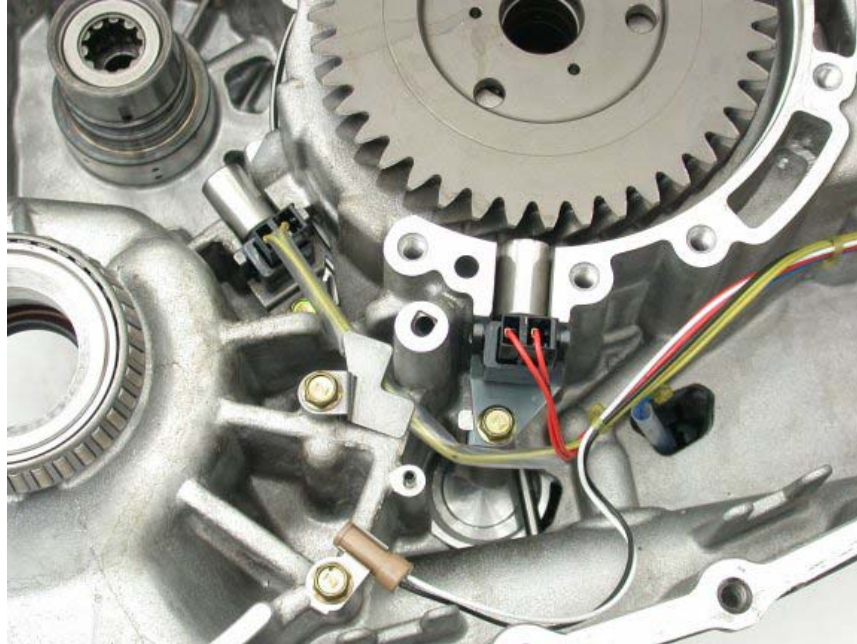


33. Replace the O-rings on the larger bolts.



# Jatco 5 Speed

34. Install the speed sensors and the TFT sensor into the case.

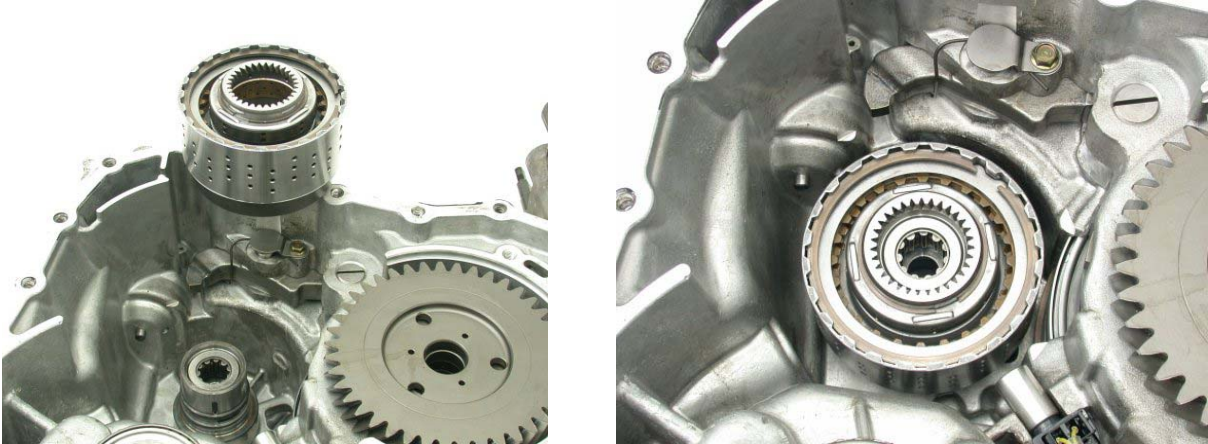


35. Install the servo into the case. **Note:** It is very important to loosen the lock nut on the servo prior to installation.





36. Install the direct drum down into the case.



37. Install the band down into the case. While holding the band in position, screw the band anchor bolt, from the outside of the case, into the slot in the band. **Note:** Add thread sealer to anchor bolt prior to installation to prevent leaks.



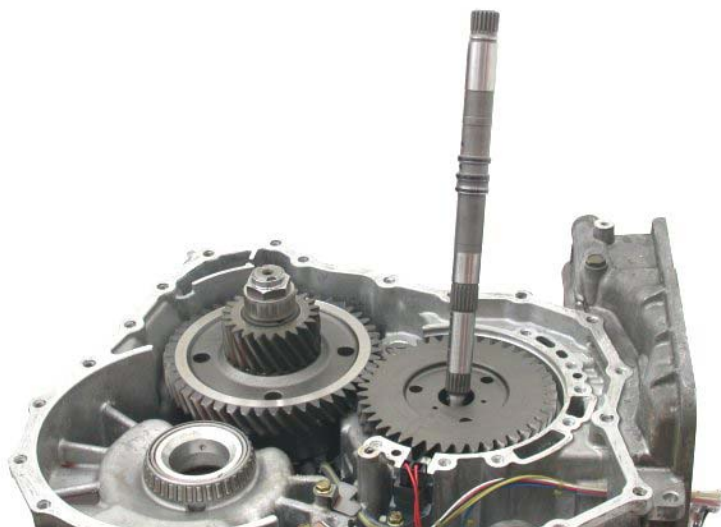
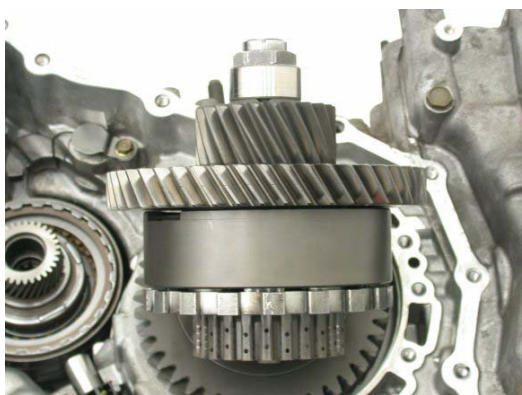


# Jatco 5 Speed

38. Install the sun gear bearing down into the center of the reduction drum and secure the race to the sun gear with assembly gel. Install the sun gear down into the reduction drum.



39. Install the reduction gear assembly down into direct clutch. The reduction gear assembly is all the way down into the drum when the reduction gear is flush with the output gear.
40. Install (3) new sealing rings onto the input shaft and install the input shaft into the transmission.



41. Install a new front pump gasket and install the front pump. Torque the front pump bolts to 14-16 ft. lbs.
42. Install a new input shaft O-ring, front pump O-ring and a new filter.



43. Install the final drive.



**Jaguar AWD**

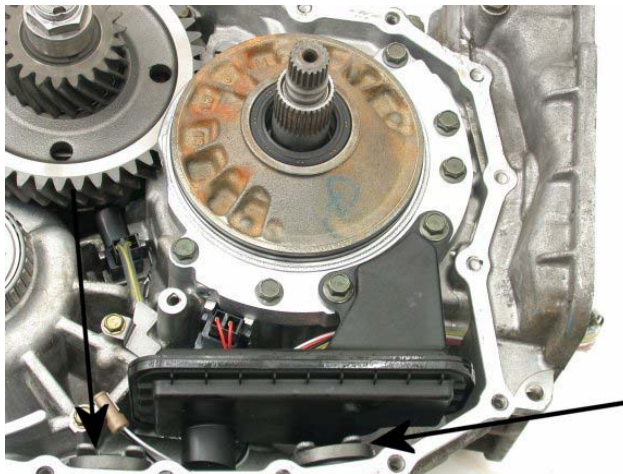
**VW/Mazda**





# Jatco 5 Speed

44. Thoroughly clean and dry the two magnets and install them into the case.



45. Flat file the bell housing to knock down any high spots prior to installation.

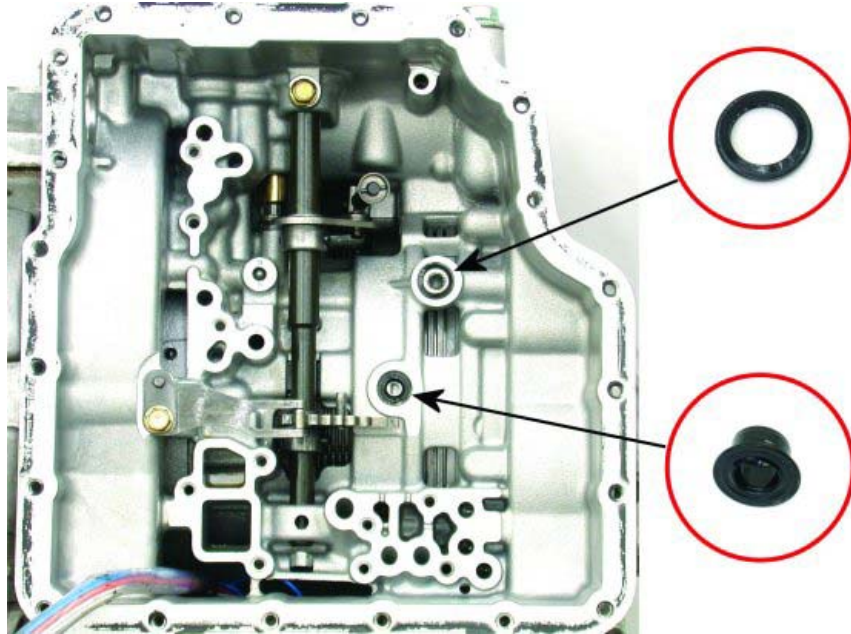


46. Lightly lube the pump O-ring and apply a bead of sealer to the bell housing. Install the bell housing onto the transmission case. Tighten all bolts to 20-22 ft. lbs.

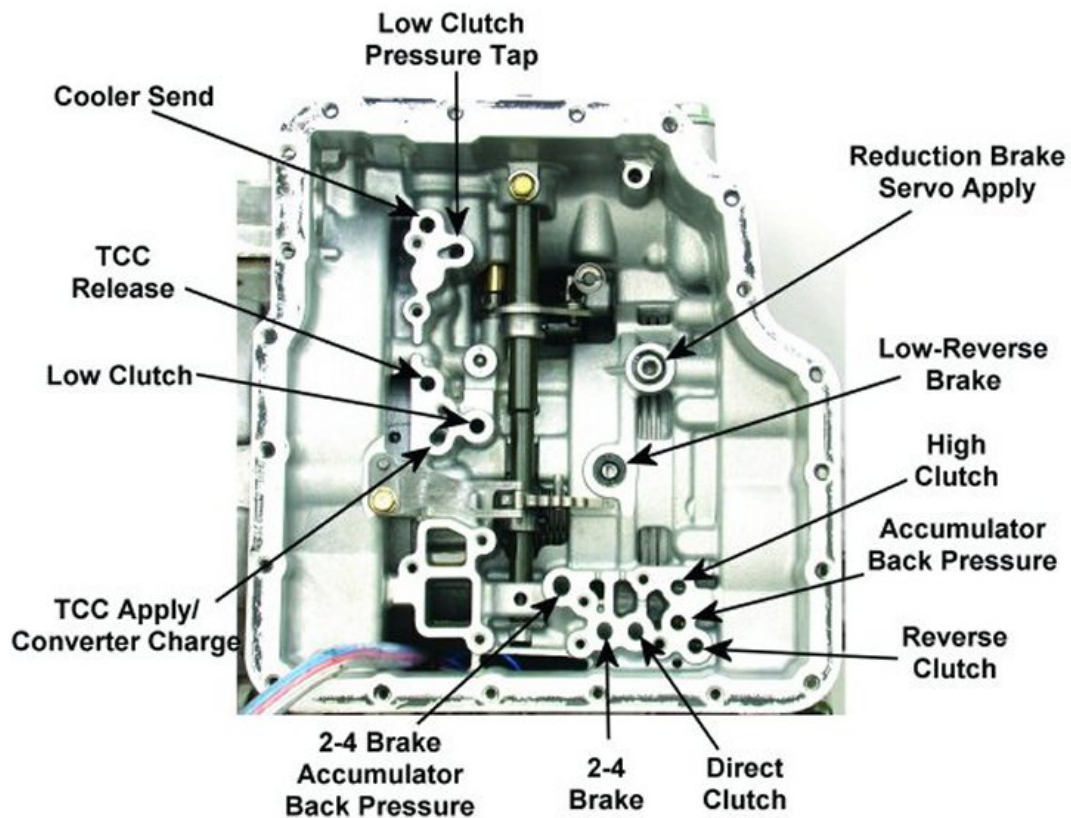




47. Install two case to valve body seals



48. Air Check passages.



# Jatco 5 Speed

## Valve Body Installation

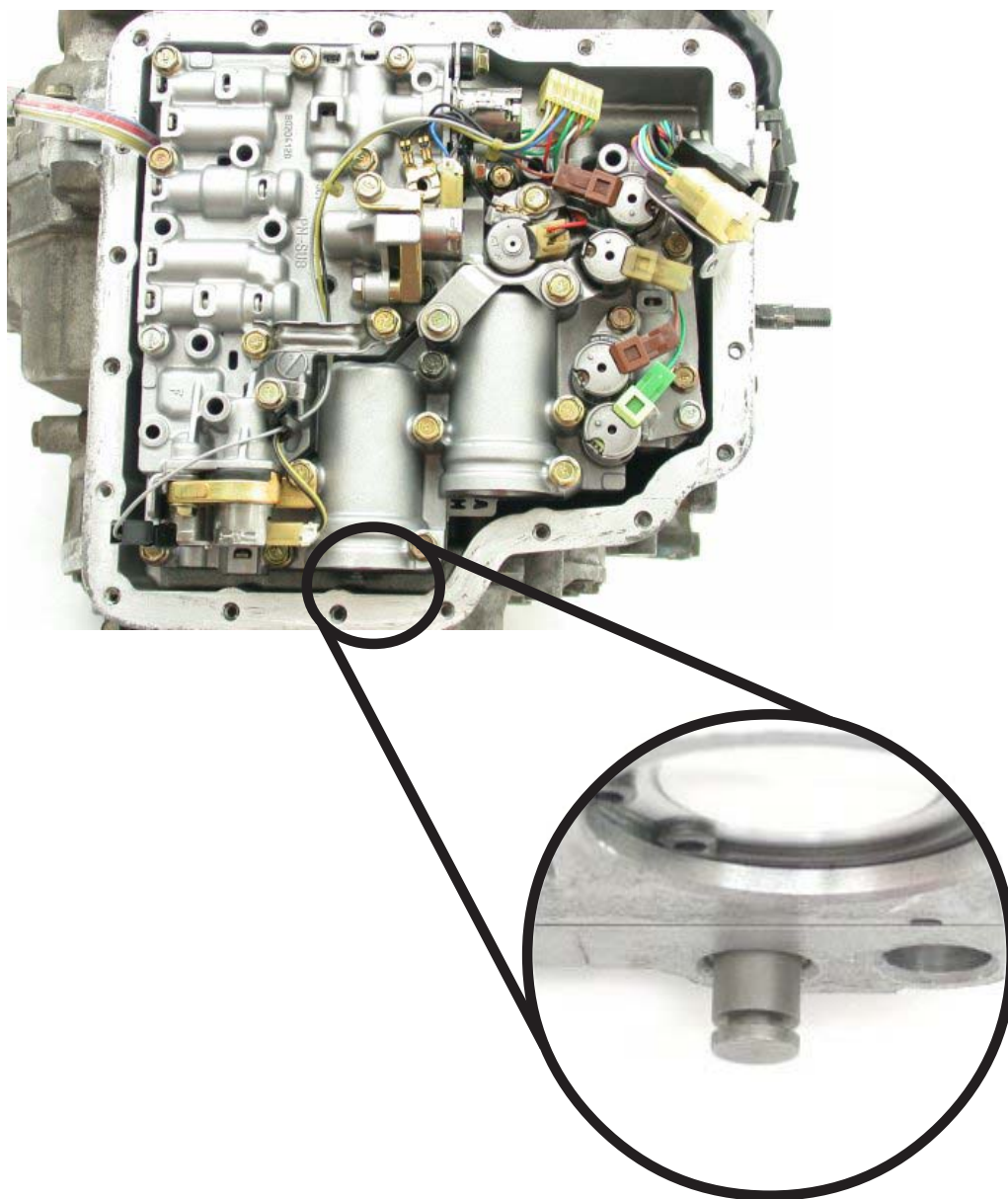
47. The manual valve cannot be seen during valve body installation. This makes the installation rather tricky

### The Easy Way

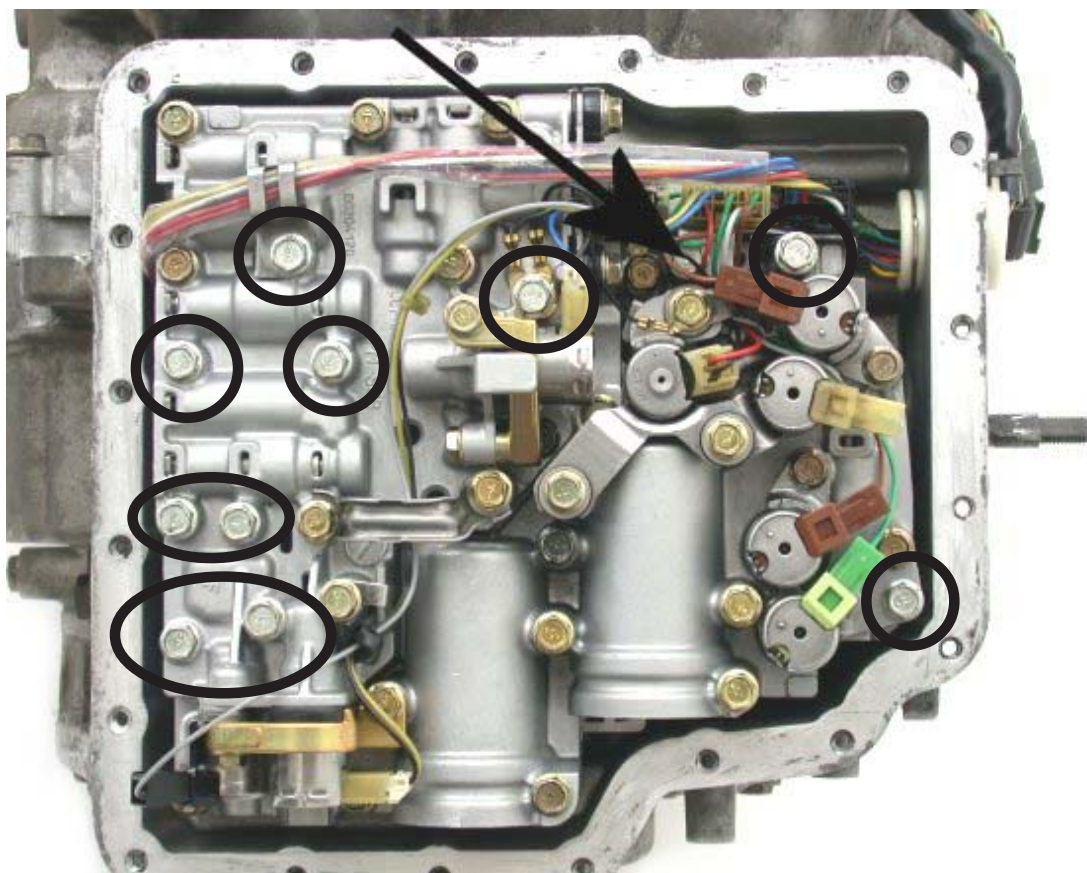
Place the manual linkage in the manual low position.

Slide the manual valve down into the valve body and lower the valve body onto the transmission case. Install two bolts only hand tight.

When the manual valve is engaged onto the linkage the manual valve can be seen sticking out of the valve body approx. 3/8 in. and will move in and out while rotating the manual lever.



48. Connect the speed sensor harness and the solenoid harness plug-ins. Install the valve body bolts. It may be necessary to unplug the solenoid to install the valve body bolt below the wiring harness (arrow). Tighten valve body bolts to 60-72 in. lbs.





# Jatco 5 Speed

49. Using a new side cover gasket, install the side cover.



50. **Band adjustment:** Loosen the lock nut several turns. Screw the band adjuster in until it bottoms out and back off 2 1/2 turns and tighten the lock nut down. **Note:** A 14mm crows foot may need to be modified to fit properly over the lock nut.



51. Install new seals on the servo accumulator piston and the servo cover. Assemble the servo cover and install the snap ring.



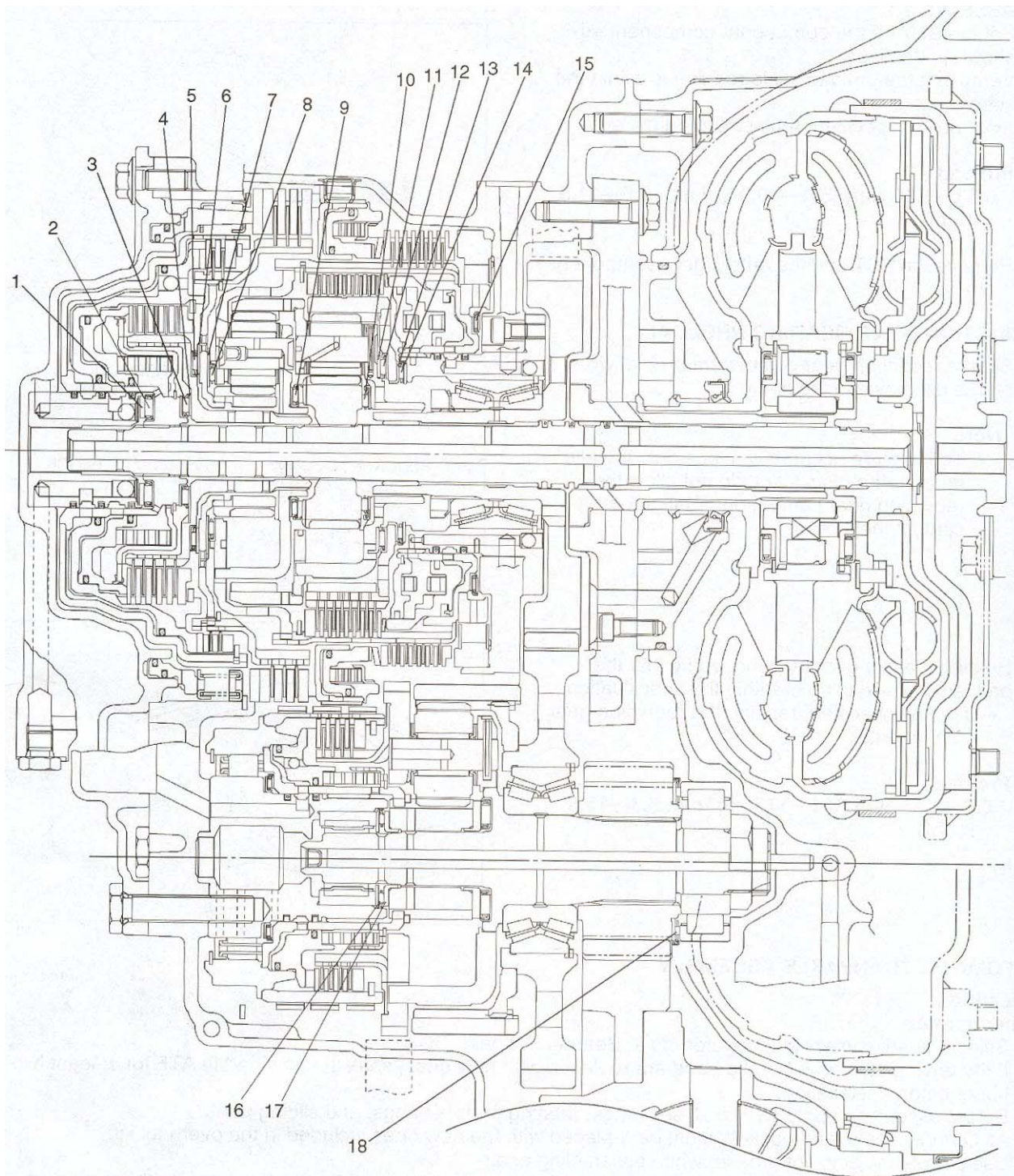
52. Place a bead of silicone around the upper lip of the servo cover (this will prevent corrosion) and install the servo cover into the transmission.





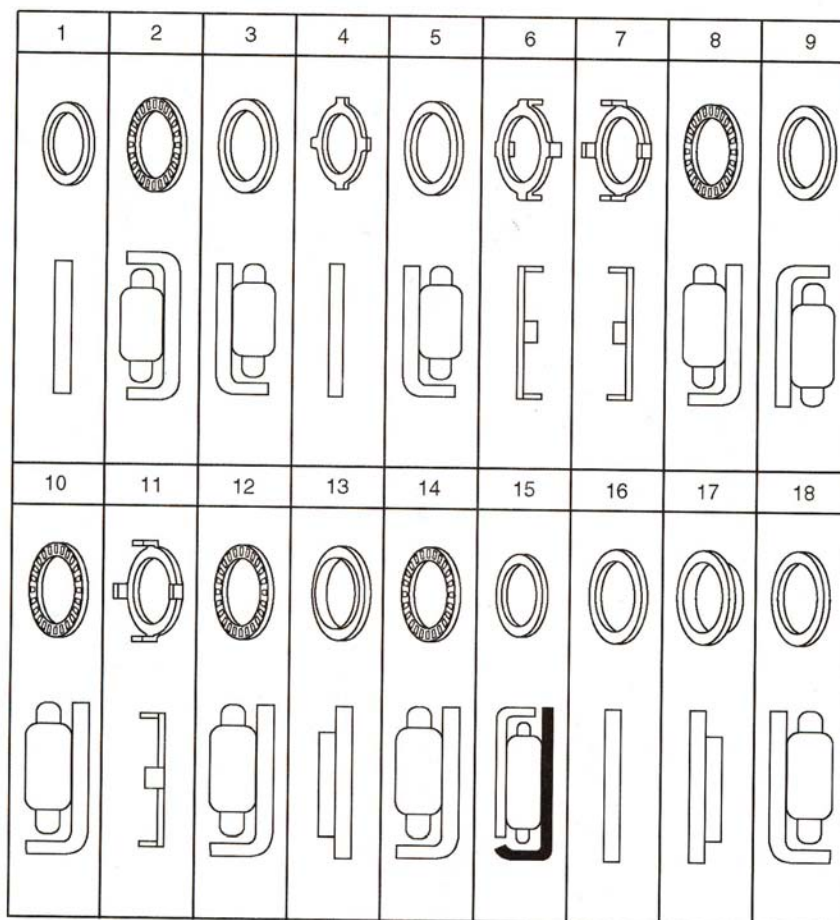
# Jatco 5 Speed

## Bearing And Race Locations





## Bearing And Race Locations



### Diameter of bearing and race

No.	Inner diameter (mm {in})	Outer diameter (mm {in})
1	25.0	42.3
2	23.0	44.0
3	25.5	46.0
4	27.4	45.0
5	58.0	78.0
6	60.0	80.0
7	52.6	80.0
8	52.1	70.0
9	35.0	53.0
10	34.0	53.0
11	58.8	75.0
12	58.0	78.0
13	52.0	69.5
14	50.0	72.0
15	93.1	110.9
16	21.1	39.5
17	25.0	37.3
18	44.4	64.4

# *Jatco 5 Speed*





# *Jatco 5 Speed*



# *Jatco 5 Speed*





# *Jatco 5 Speed*





# *Jatco 5 Speed*