

**ATSG**

# CHECKBALL BOOK

## *Domestic Volume I*

### INDEX

**CHRYSLER CORP.**

A904/727, A500/518, 42RE/47RE .....	34
A404/413/670, 31TH .....	36
A604 (41TE) .....	37
A606 (42LE) .....	40
45RFE .....	114

**FORD MOTOR COMPANY**

FMX .....	41
C-3 .....	42
C-4 .....	44
C-5 .....	46
C-6 .....	48
A4LD .....	49
4R44E/55E, 5R44E/55E .....	53
AOD .....	54
AODE/4R70W .....	55
E4OD (Valve Body) .....	57
E4OD (Case) .....	62
4R100 (Valve Body) .....	58
4R100 (Case) .....	63
ATX .....	64
AXOD .....	68
AXODE (AX4S) .....	72
AX4N (4F50N) .....	77
5R55N .....	112
5R55W .....	113
4F20E .....	118

**GENERAL MOTORS CORP.**

125C .....	4
180C .....	5
200C .....	6
200-4R .....	7
325 .....	9
325-4L .....	10
350C .....	12
400 .....	13
425 .....	15
440-T4 .....	16
700-R4 .....	20
4L60-E .....	22
4L80-E .....	24
4T40-E .....	26
4T60-E .....	27
4T65-E .....	116
4T80-E .....	29
4/5L40-E .....	115
Saturn (TAAT) .....	32

**IMPORT TRANSMISSIONS FOUND IN DOMESTIC VEHICLES****CHRYSLER CORP.**

KM 170, 171, 172 .....	107
KM 175, F4A21, 22, 23, 33 .....	110
JM600 (4N71B) .....	87

**GENERAL MOTORS CORP.**

F3A .....	80
MX-17 .....	82
A130/A131 .....	84

**FORD MOTOR COMPANY**

F3A .....	80
3N71B .....	86
G4A-HL .....	89
G4A-EL .....	94
GF4A-EL .....	99
F4EAT .....	105



Updated  
January, 2003

## INTRODUCTION *CHECKBALL BOOK DOMESTIC*

This "Checkball Manual" will show you the checkball locations in the case and valve body of transmissions manufactured from 1980 up through 2003. We have covered the updates that have occurred in similar model transmissions, where checkball locations may have changed. This manual covers most transmissions manufactured by Chrysler Corporation, Ford Motor Company and General Motors Corporation. We also have included some Import transmissions that are found in Domestic vehicles.

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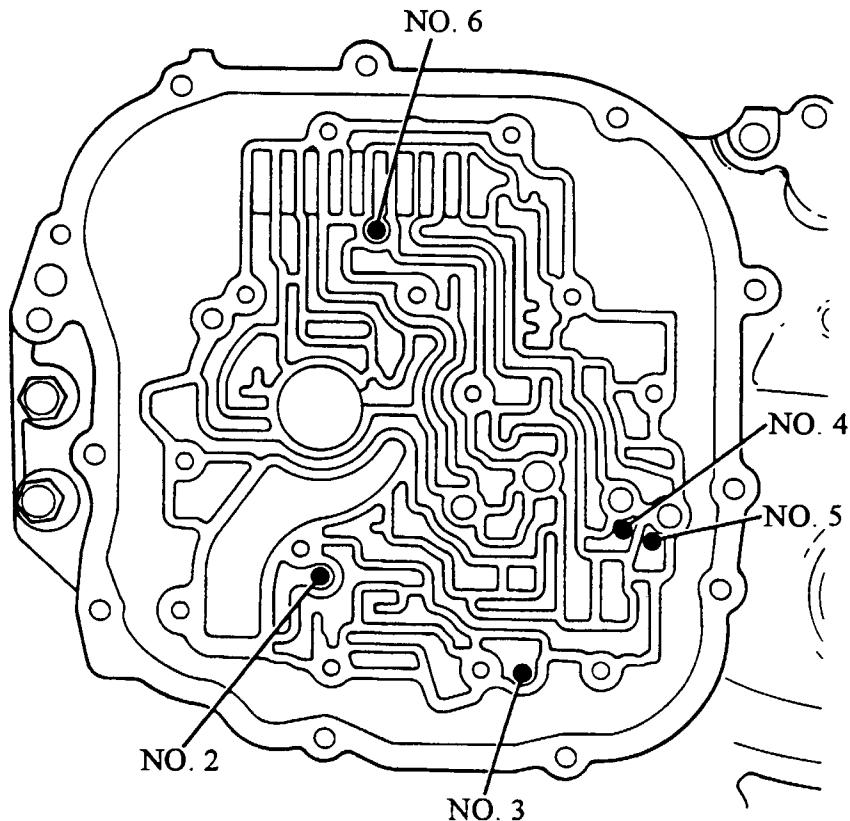
**AUTOMATIC TRANSMISSION SERVICE GROUP**  
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MIAMI, FLORIDA 33157  
(305) 670-4161



*CHECK BOOK DOMESTIC*

***NOTES***

*AUTOMATIC TRANSMISSION SERVICE GROUP*

**THM 125C**  
**VALVE BODY & MAIN CASE CHECKBALL LOCATIONS**

NO. 1 DIRECT CLUTCH EXHAUST  
NO. 2 DIRECT CLUTCH ACCUMULATOR  
NO. 3 LO 1ST CHECKBALL  
NO. 4 LO AND REVERSE CHECKBALL  
NO. 5 DIRECT AND REVERSE CLUTCH  
NO. 6 RNDI AND DETENT CHECKBALL

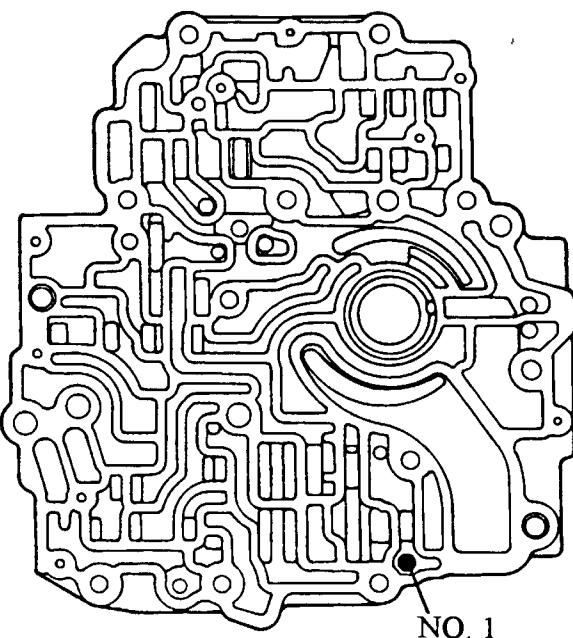
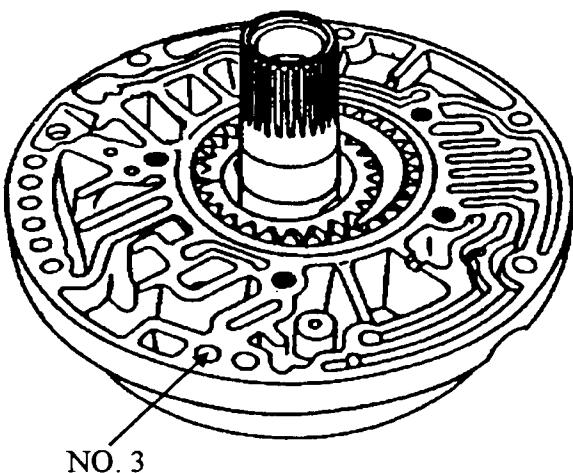
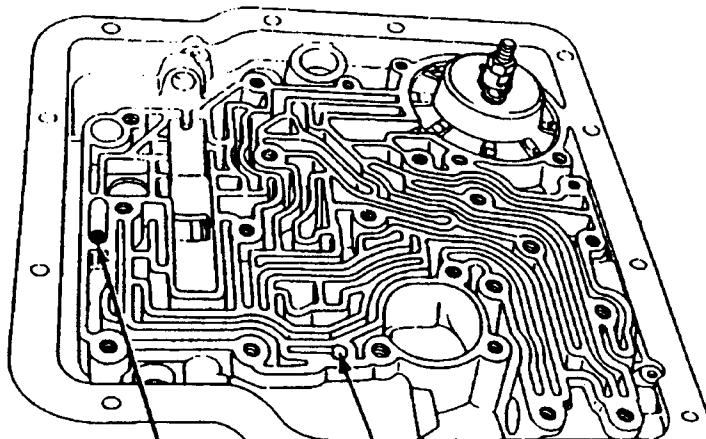


Figure 1

**THM 180C**  
**PUMP & MAIN CASE CHECKBALL LOCATIONS**



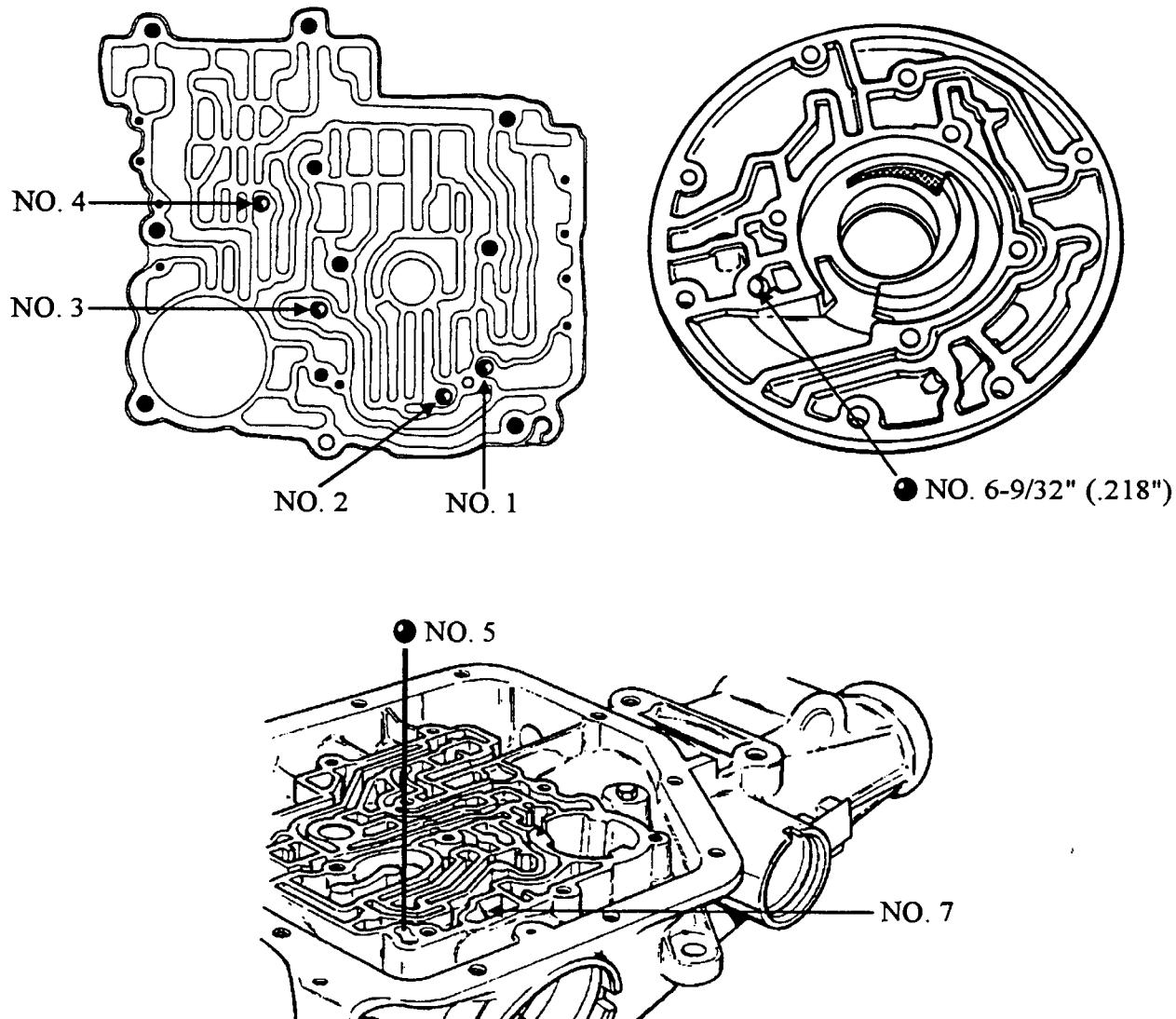
**NO. 1 LOW/REVERSE BOOST SHUTTLE BALL**

**NO. 2 2ND GEAR ORIFICE BALL** (On later models with 1759 or 2279 cm<sup>3</sup> engines with H4 and L1 calibration respectively, the 2nd clutch orifice ball was deleted and a revised transfer plate installed)

**NO. 3 REVERSE ORIFICE CONTROL BALL** (Not used in most models)  
(Can cause delayed engagements into reverse, take ball out and leave the capsule in)

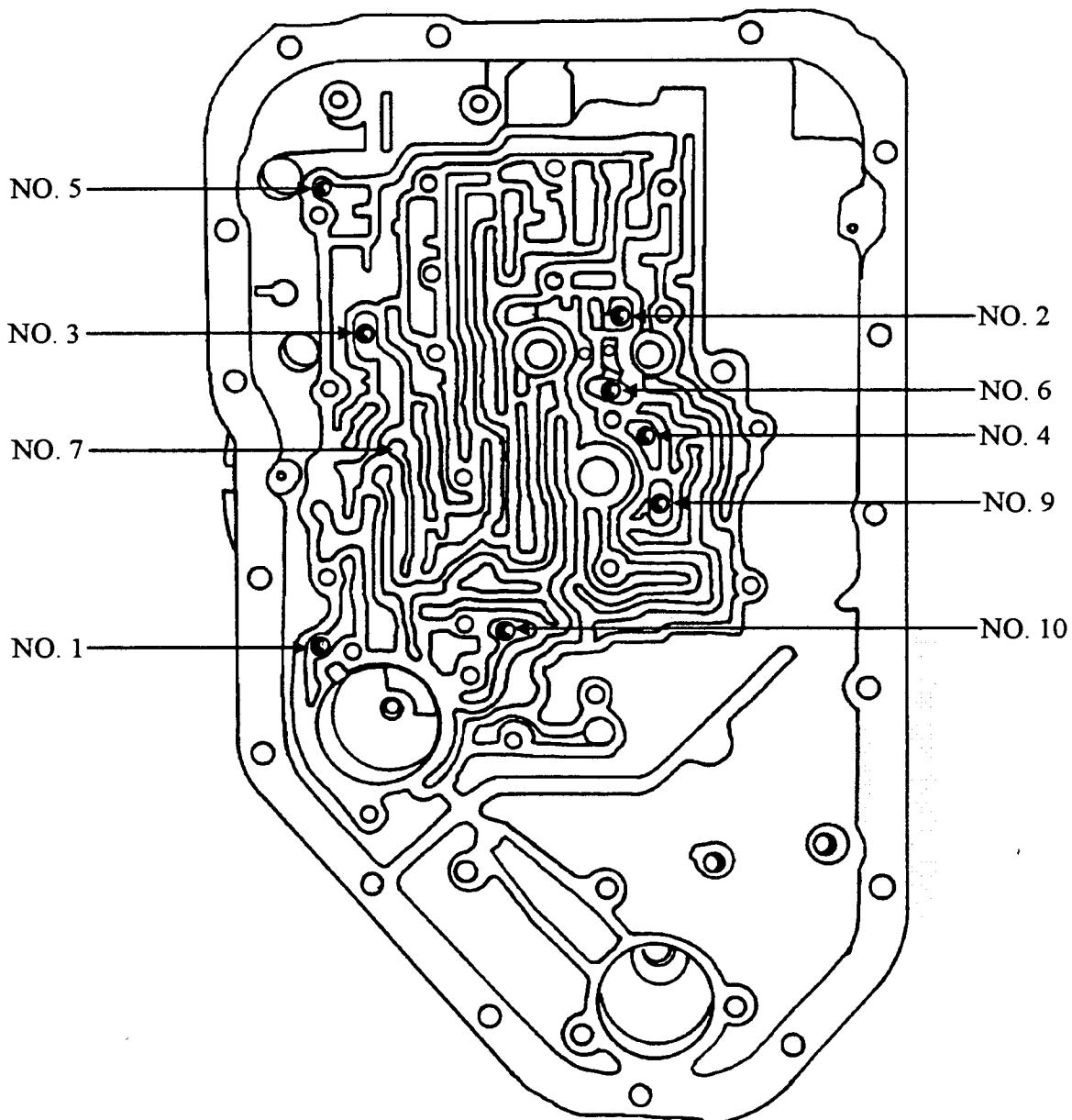
Figure 2

**THM 200C**  
**PUMP, VALVE BODY & MAIN CASE CHECKBALL LOCATIONS**



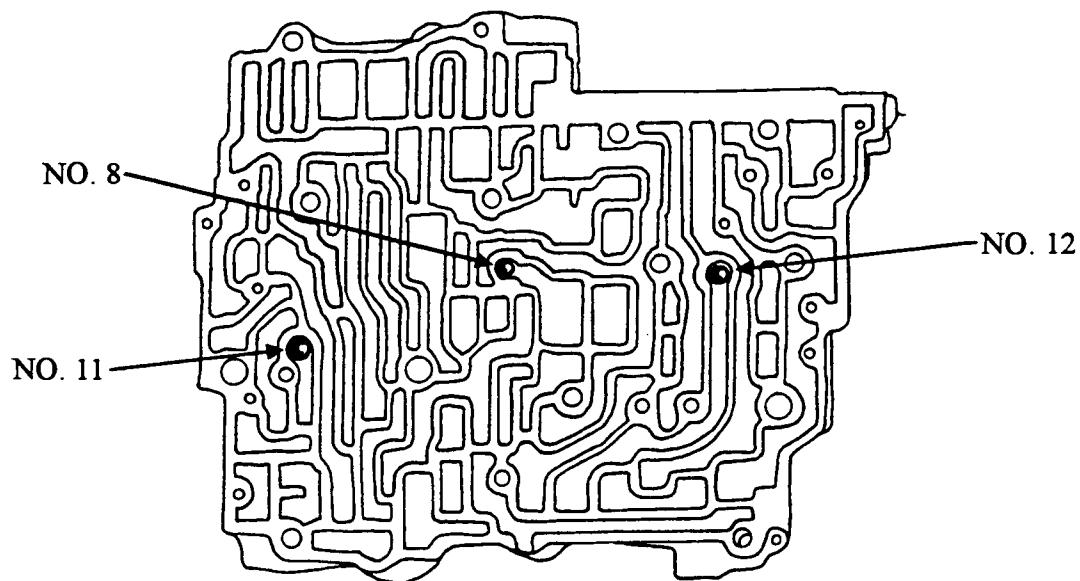
- NO. 1 SHIFT T.V. & REVERSE BOOST SHUTTLE BALL
- NO. 2 DIRECT CLUTCH ACCUMULATOR EX. BALL
- NO. 3 INTERMEDIATE REVERSE BOOST SHUTTLE BALL
- NO. 4 DIRECT CLUTCH EXHAUST BALL
- NO. 5 T.V. EXHAUST LIFTER BALL
- NO. 6 3RD & REVERSE SHUTTLE BALL
- NO. 7 3RD ACCUMULATOR & 3-2 EXHAUST CAPSULE - 8630570

Figure 3

THM 200-4R  
MAIN CASE CHECKBALL LOCATIONS

- NO. 1 FOURTH ACCUMULATOR
- NO. 2 THIRD CLUTCH ACCUMULATOR
- NO. 3 PART THROTTLE & DRIVE 3
- NO. 4 3-2 EXHAUST
- NO. 5 T.V. EXHAUST
- NO. 6 THIRD & REVERSE SHUTTLE BALL
- NO. 7 THIRD CLUTCH ACCUMULATOR & EXHAUST BALL  
(located in a capsule inside the case - 8634400)
- NO. 9 LO/DETENT
- NO. 10 LO/ REVERSE

Figure 4

**THM 200-4R**  
**VALVE BODY CHECKBALL LOCATIONS**

NO. 8 1-2 SHIFT CHECKBALL

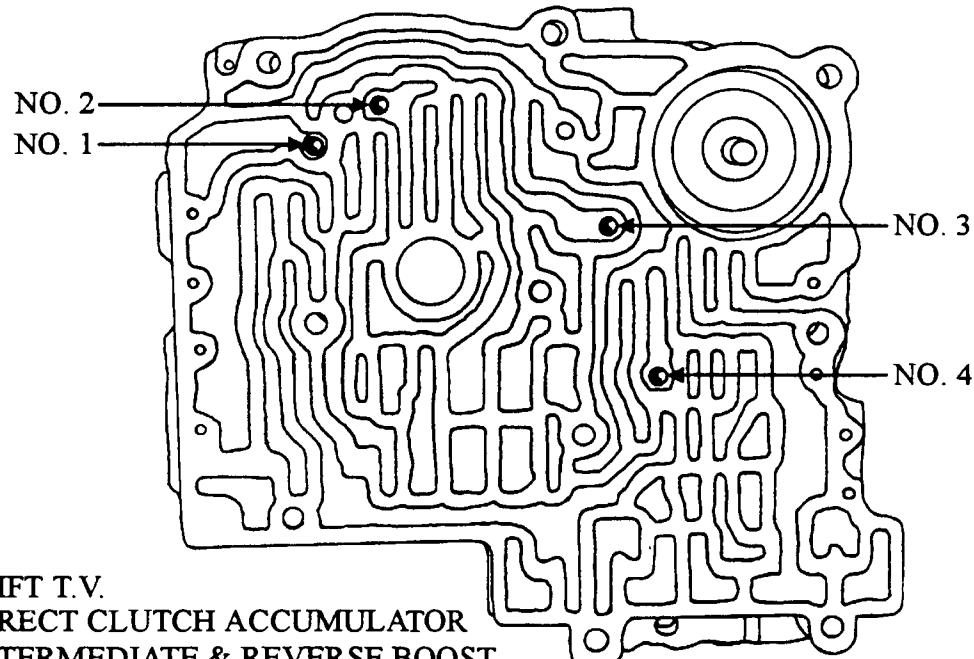
NO. 11 DRIVE 3 (D3) CHECKBALL

NO. 12 LO/1ST CHECKBALL

Figure 5

### THM 325

#### VALVE BODY & MAIN CASE CHECKBALL LOCATIONS



- NO. 1 SHIFT T.V.
- NO. 2 DIRECT CLUTCH ACCUMULATOR
- NO. 3 INTERMEDIATE & REVERSE BOOST
- NO. 4 DIRECT CLUTCH EXHAUST
- NO. 5 T.V. EXHAUST
- NO. 6 DIRECT & REVERSE CLUTCH SHUTTLE BALL

NOTE: The #7 Direct Clutch Accumulator  
Exhaust is located in the case cover.  
(See 325-4L for Check Ball location)

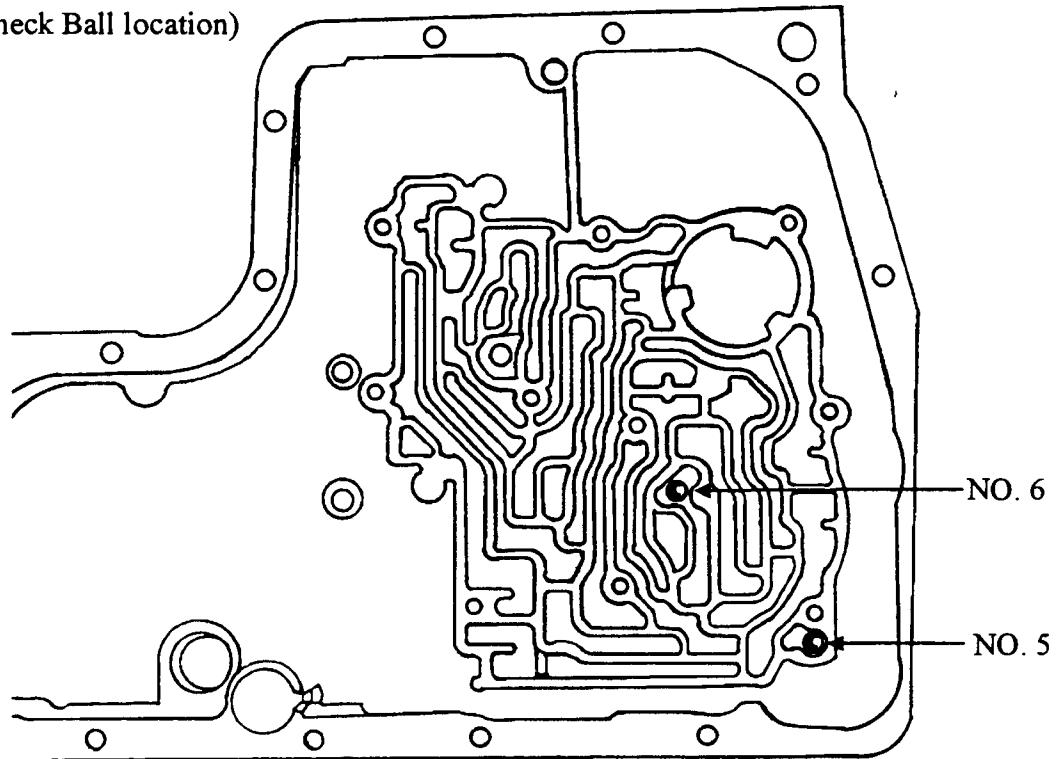


Figure 6

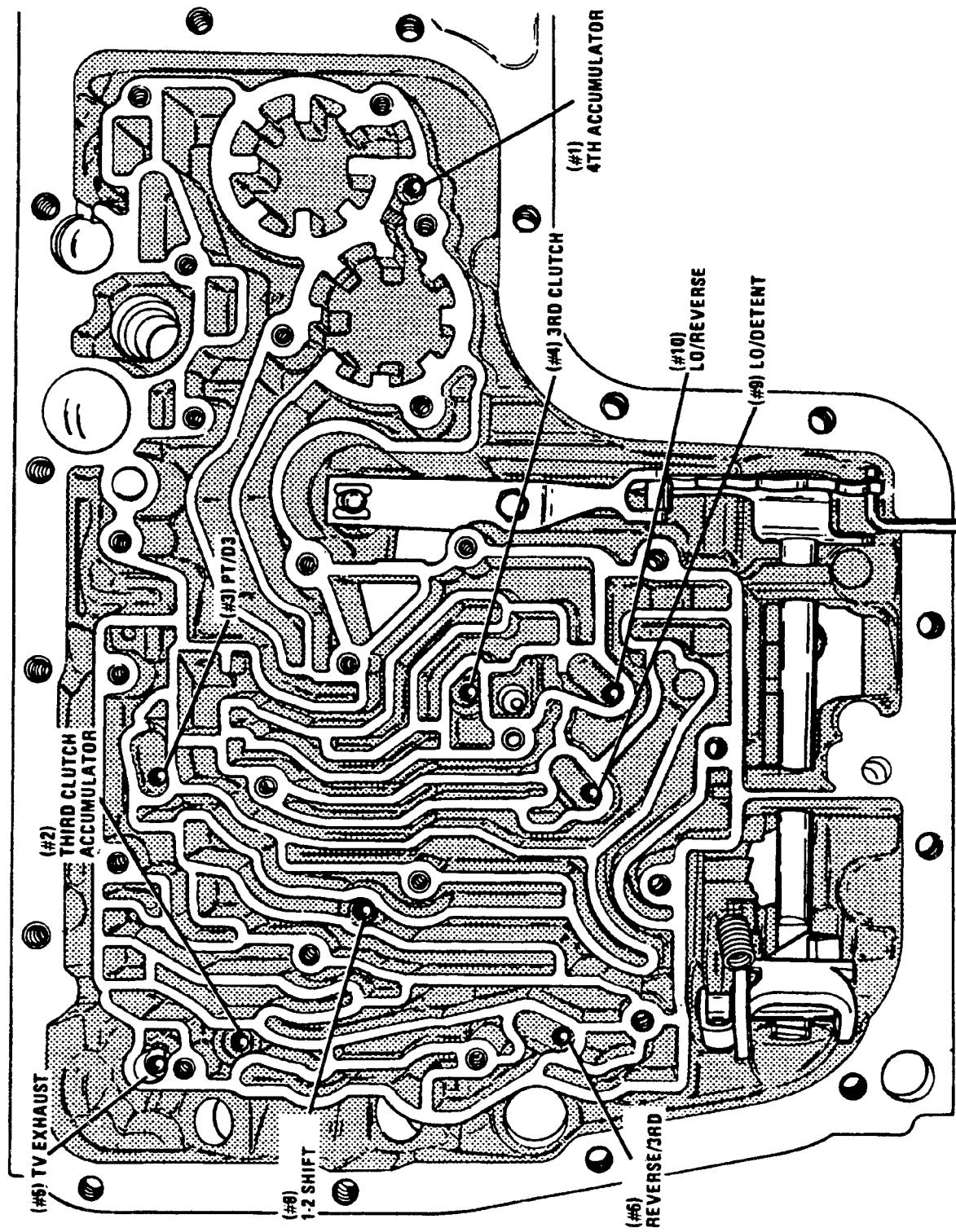
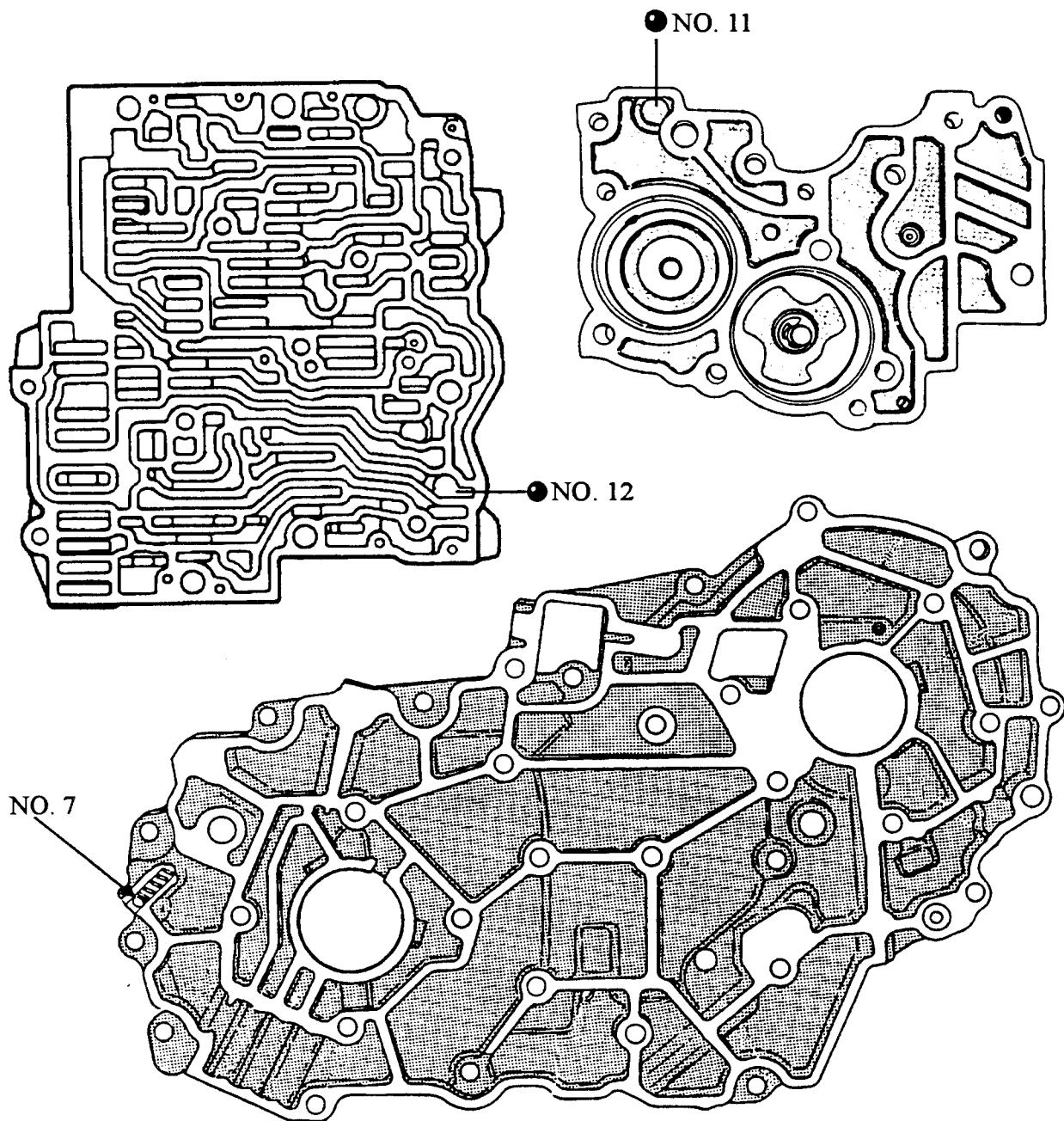
THM 325-4L  
MAIN CASE CHECKBALL LOCATIONS

Figure 7

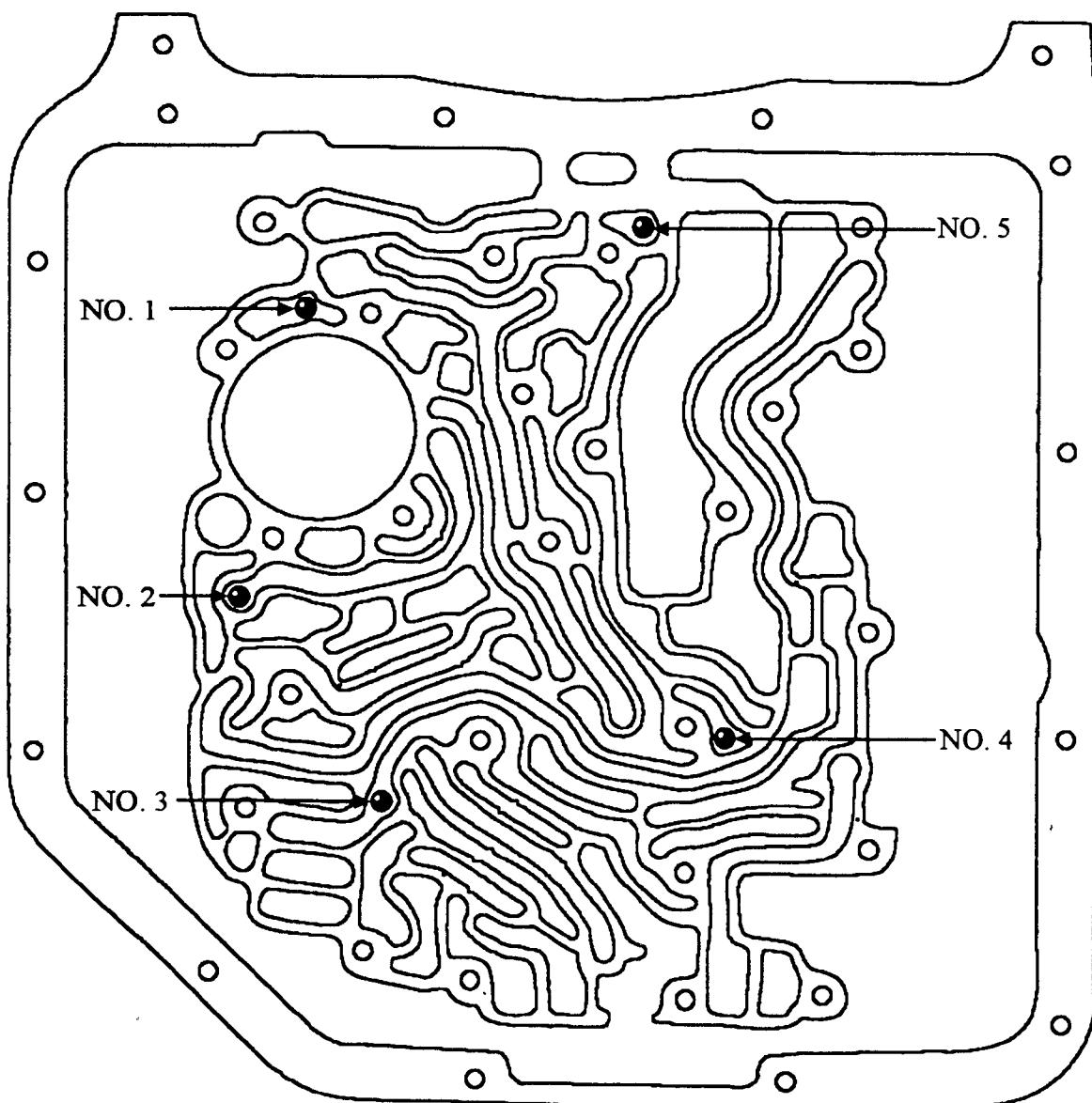
**THM 325-4L****VALVE BODY, ACCUM. BODY & CASE COVER CHECKBALL LOCATIONS**

NO. 7 3RD CLUTCH ACCUMULATOR CHECK BALL & SPRING

NO. 11 D3 OVERRUN CLUTCH CHECK BALL

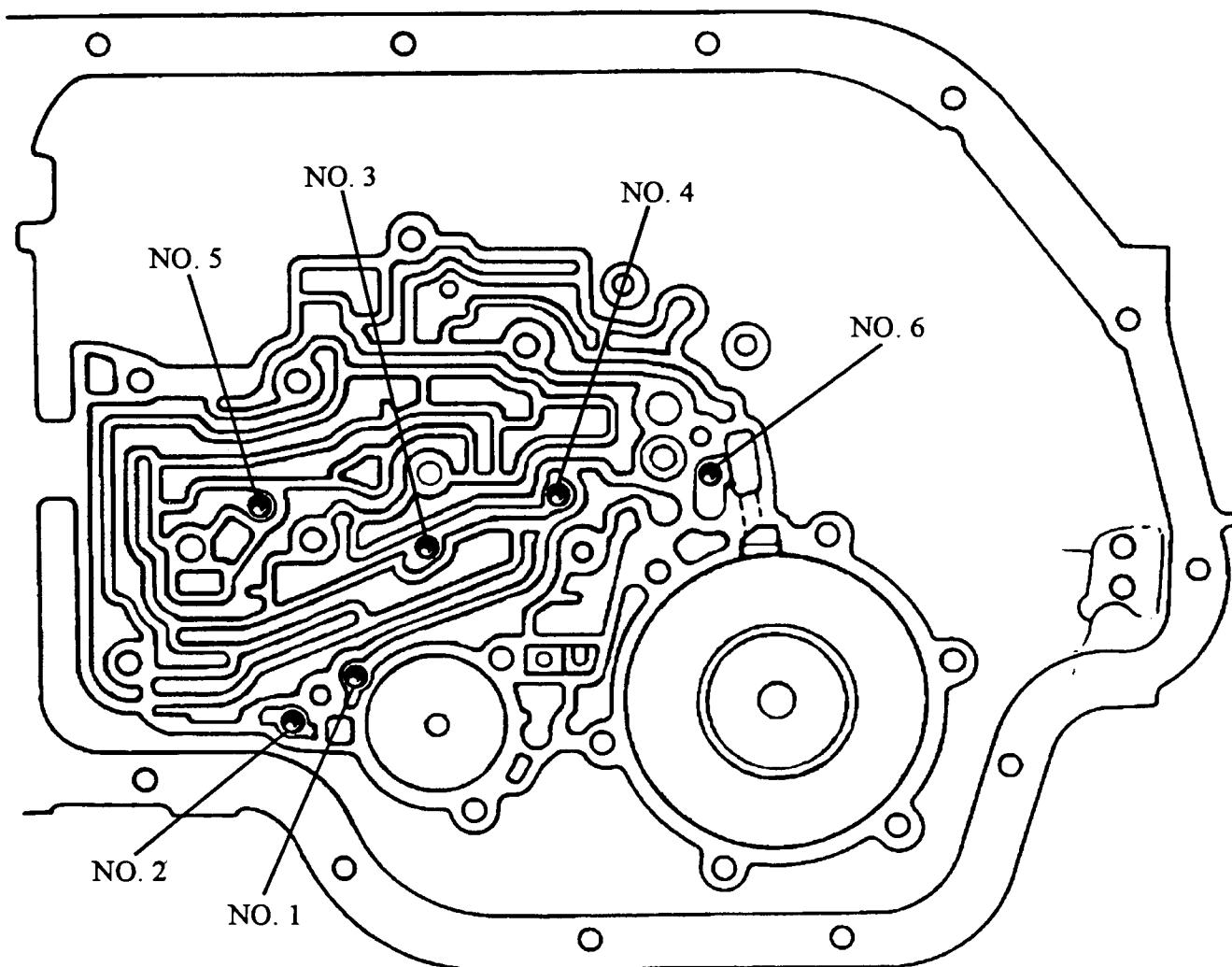
NO. 12 LO/1ST CHECK BALL

Figure 8

THM 350C  
MAIN CASE CHECKBALL LOCATIONS

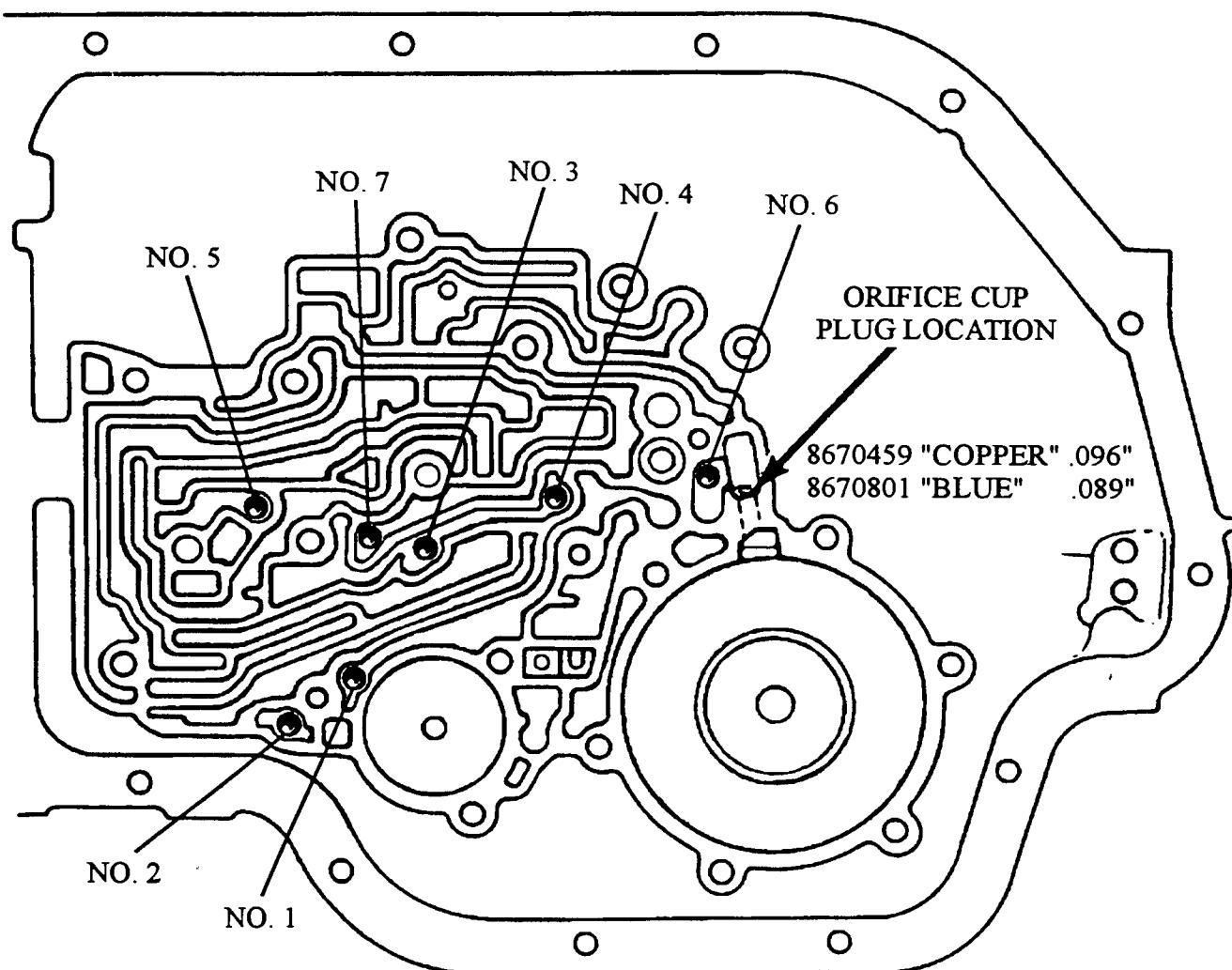
NO. 1 2-3 ACCUMULATOR BALL  
NO. 2 LINE TO 1-2 ACCUMULATOR (PISTON SIDE)  
NO. 3 MODULATOR BALL  
NO. 4 REVERSE BALL  
NO. 5 CONVERTER RELEASE BALL

Figure 9

THM 400  
1965 - 1987 MODELS, SIX BALL CASE

- NO. 1 NON-FUNCTIONAL (OMIT DURING REBUILD)
- NO. 2 INTERMEDIATE SERVO
- NO. 3 2-3 DRIVE
- NO. 4 1-2 SHIFT
- NO. 5 INTERMEDIATE
- NO. 6 LO/REVERSE

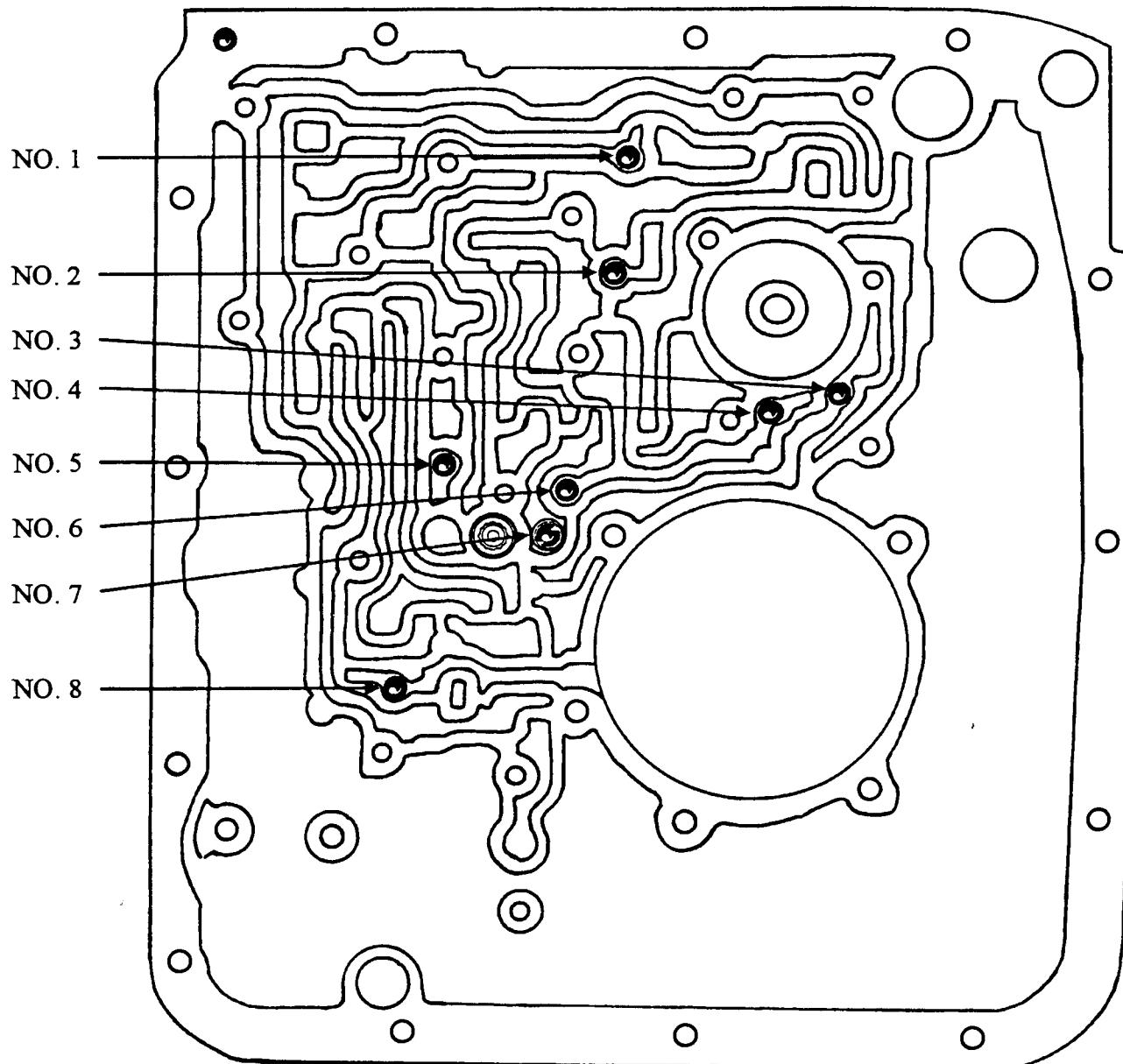
Figure 10

THM 400  
1988 - 1990 MODELS, 7 BALL CASE

- NO. 1 NON-FUNCTIONAL (OMIT DURING REBUILD)
- NO. 2 INTERMEDIATE SERVO
- NO. 3 2-3 DRIVE
- NO. 4 1-2 SHIFT
- NO. 5 INTERMEDIATE
- NO. 6 LO/REVERSE
- NO. 7 REVERSE

Figure 11

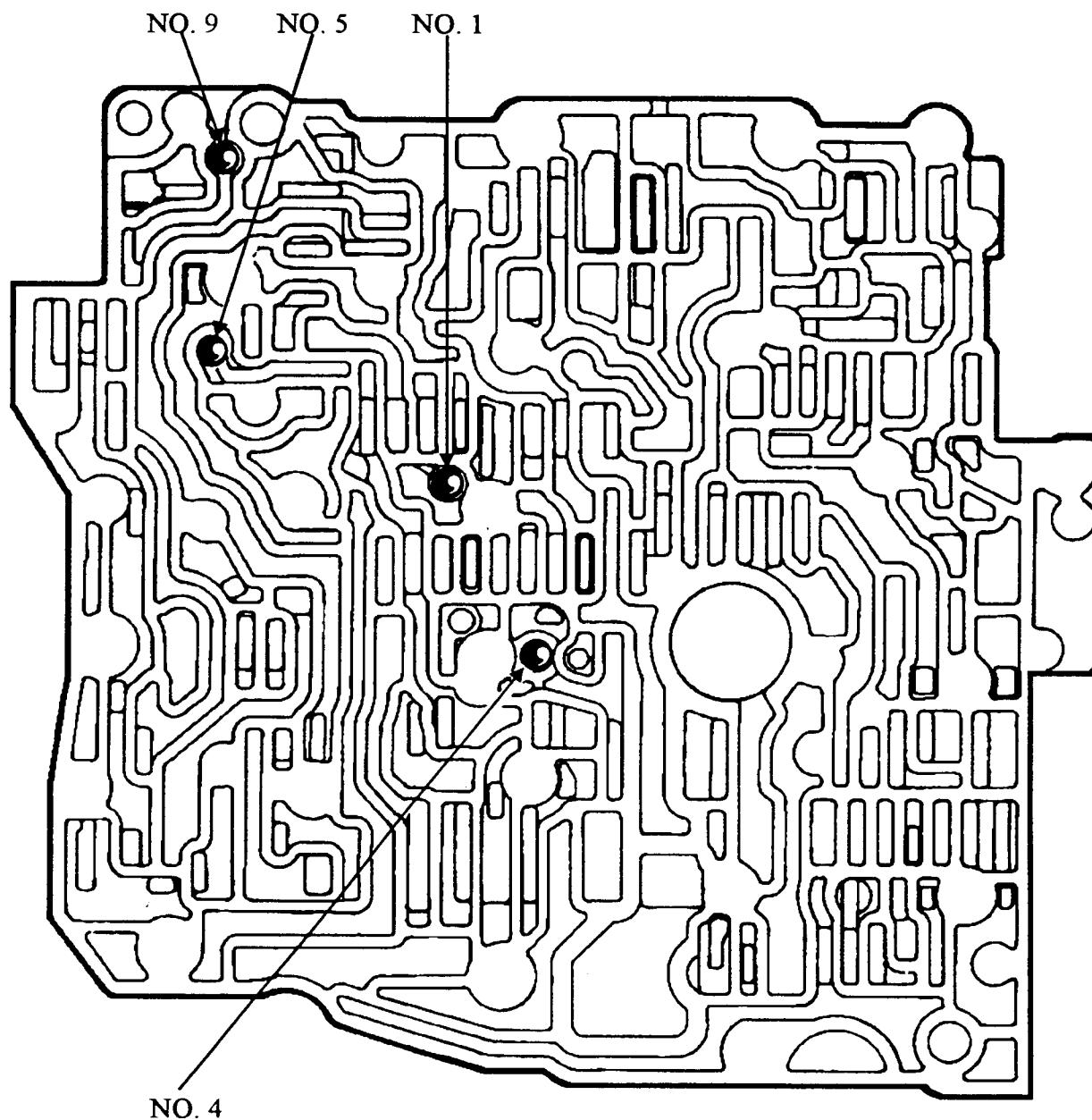
## THM 425 CASE CHECKBALL LOCATIONS



- NO. 1 - RND ORIFICE CONTROL BALL TO FRONT SERVO
- NO. 2 - MODULATOR/INTERMEDIATE LINE BOOST DIRECTIONAL CONTROL BALL
- NO. 3 - DIRECT CLUTCH ACCUMULATOR ORIFICE CONTROL BALL
- NO. 4 - INTERMEDIATE SERVO ORIFICE CONTROL BALL
- NO. 5 - LOW/REVERSE DIRECTIONAL CONTROL BALL
- NO. 6 - INTERMEDIATE CLUTCH ORIFICE CONTROL BALL
- NO. 7 - REVERSE ORIFICE CONTROL BALL
- NO. 8 - LOW/REVERSE SERVO ORIFICE CONTROL BALL

Figure 12

**THM 440-T4**  
**VALVE BODY CHECKBALL LOCATIONS**  
**1985 HYDRAULICS ONLY**



NO. 1 3-4 SHIFT

NO. 4 2-3 SHIFT

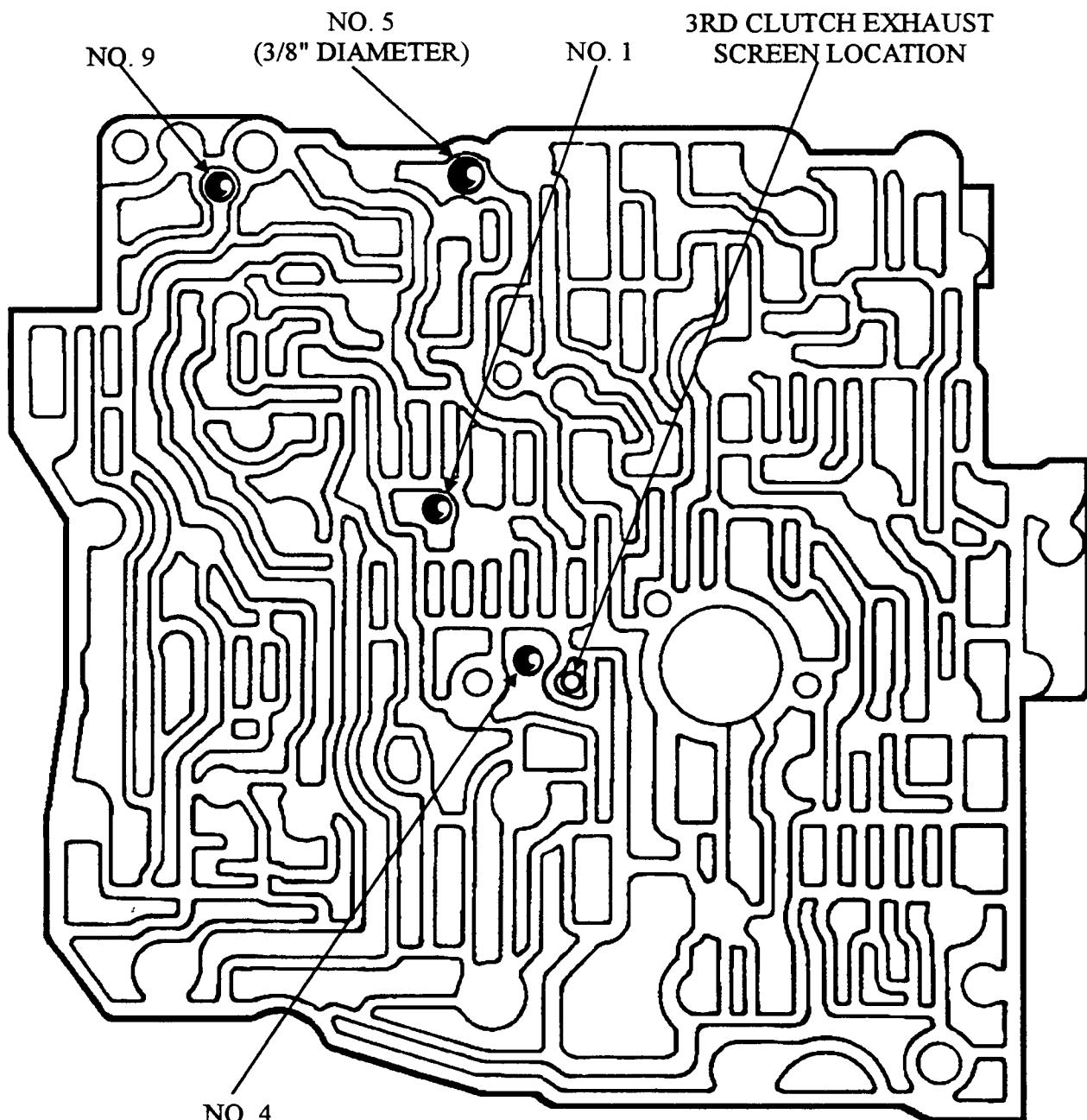
NO. 5 2-3 ACCUMULATOR FEED

NO. 9 REVERSE SERVO FEED

ALL CHECKBALLS IN THIS MODEL ARE 1/4" DIAMETER.

Figure 13

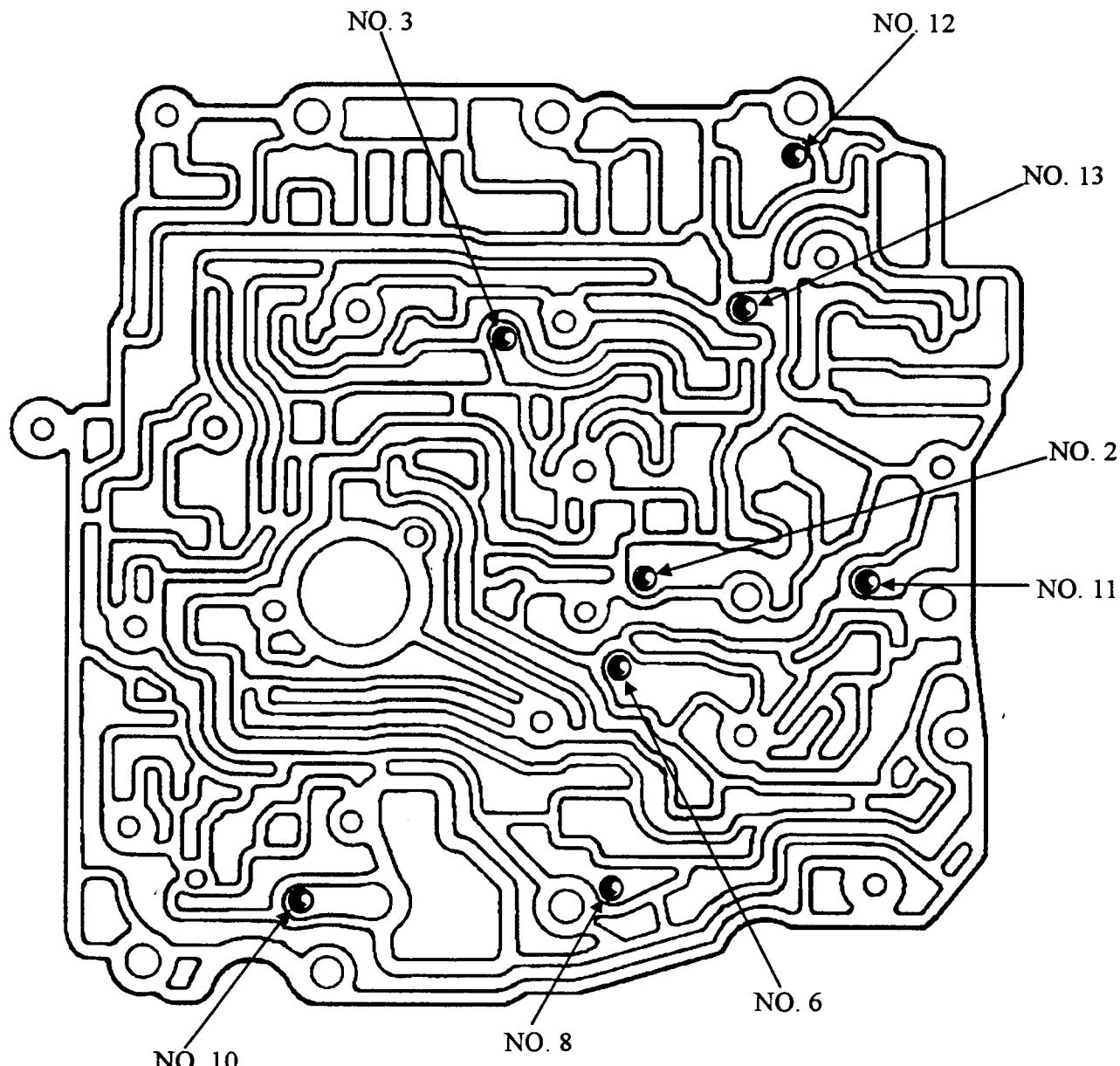
## THM 440-T4

VALVE BODY CHECKBALL LOCATIONS  
1985-1/2 AND LATER HYDRAULICS ONLY

- NO. 1 3-4 SHIFT
- NO. 4 2-3 SHIFT
- NO. 5 2-3 ACCUMULATOR FEED (3/8" DIAMETER)
- NO. 9 REVERSE SERVO FEED

Figure 14

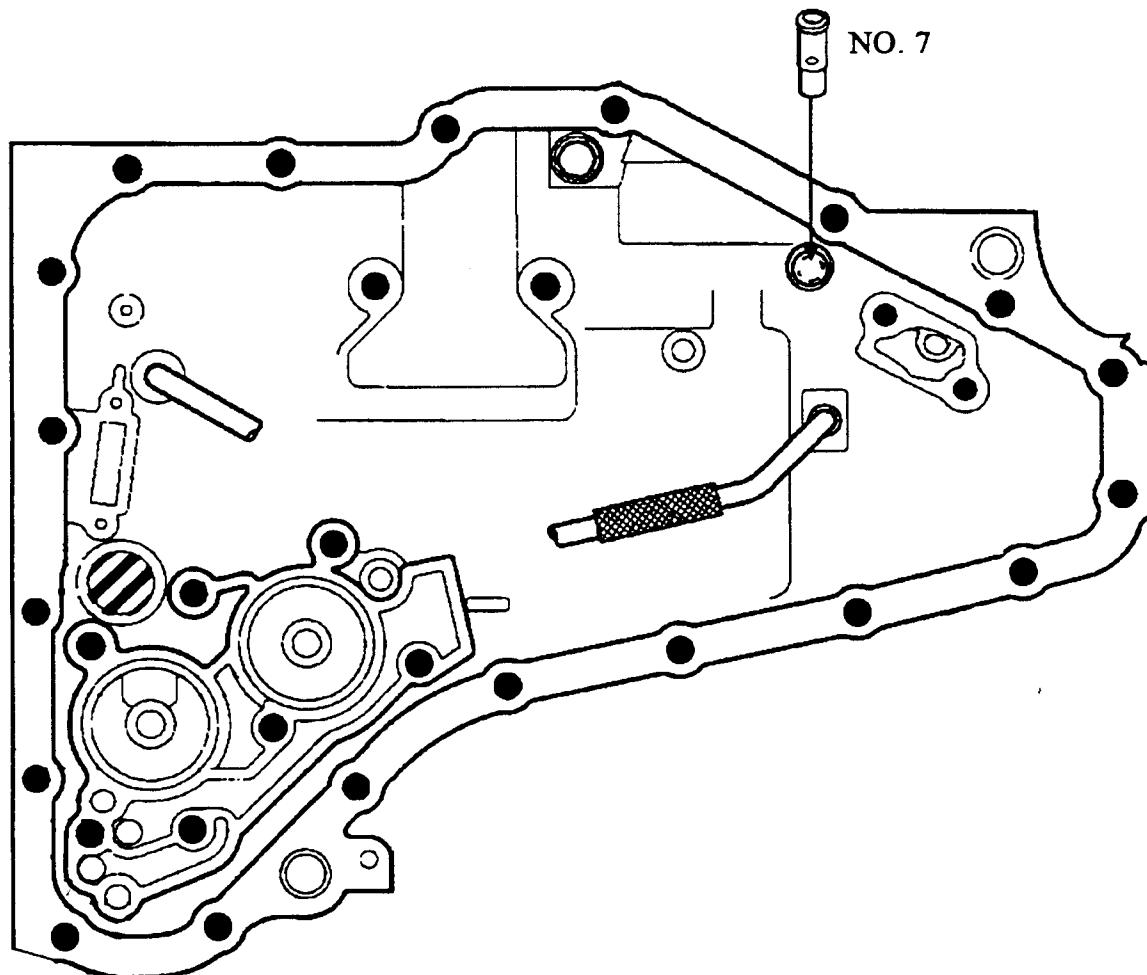
**THM 440-T4**  
**CHANNEL PLATE CHECKBALL LOCATIONS**  
**FOR ALL MODELS OF 440-T4**



- NO. 2 3-2 CONTROL
- NO. 3 PART THROTTLE/DRIVE 3
- NO. 6 2-3 ACCUMULATOR EXHAUST
- NO. 8 1-2 SHIFT
- NO. 10 TCC APPLY/RELEASE
- NO. 11 THIRD/LO-1ST
- NO. 12 1-2 SERVO FEED
- NO. 13 INPUT CLUTCH/REVERSE

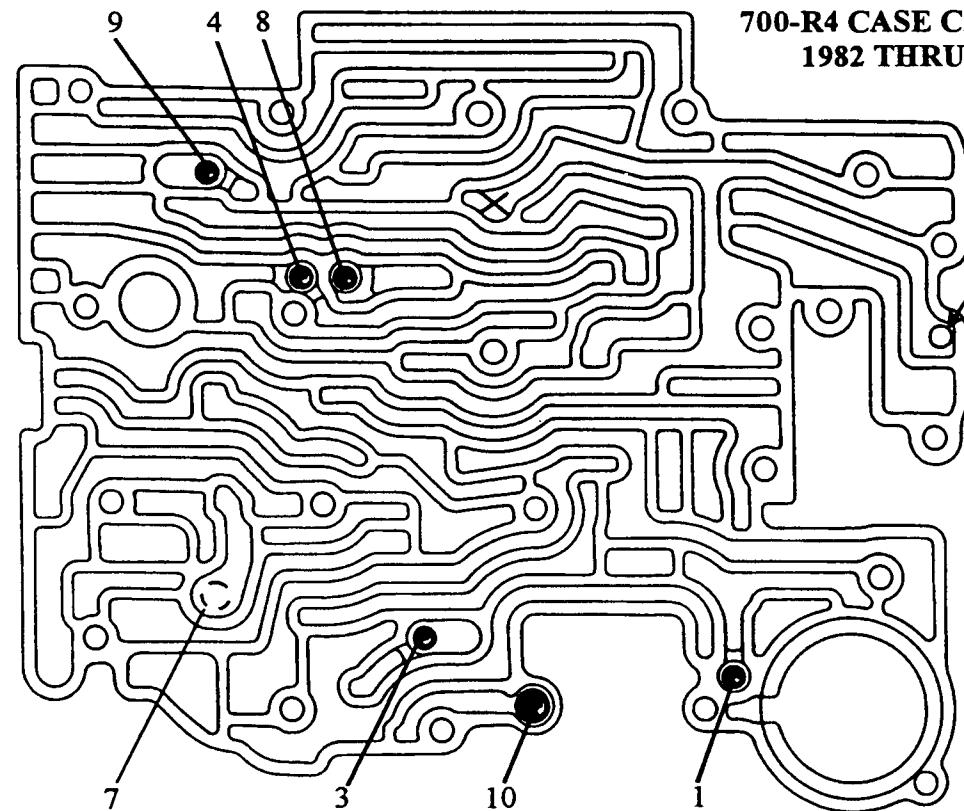
Figure 15

**THM 440-T4**  
**MAIN CASE CHECKBALL LOCATION**  
**FOR ALL MODELS OF 440-T4**



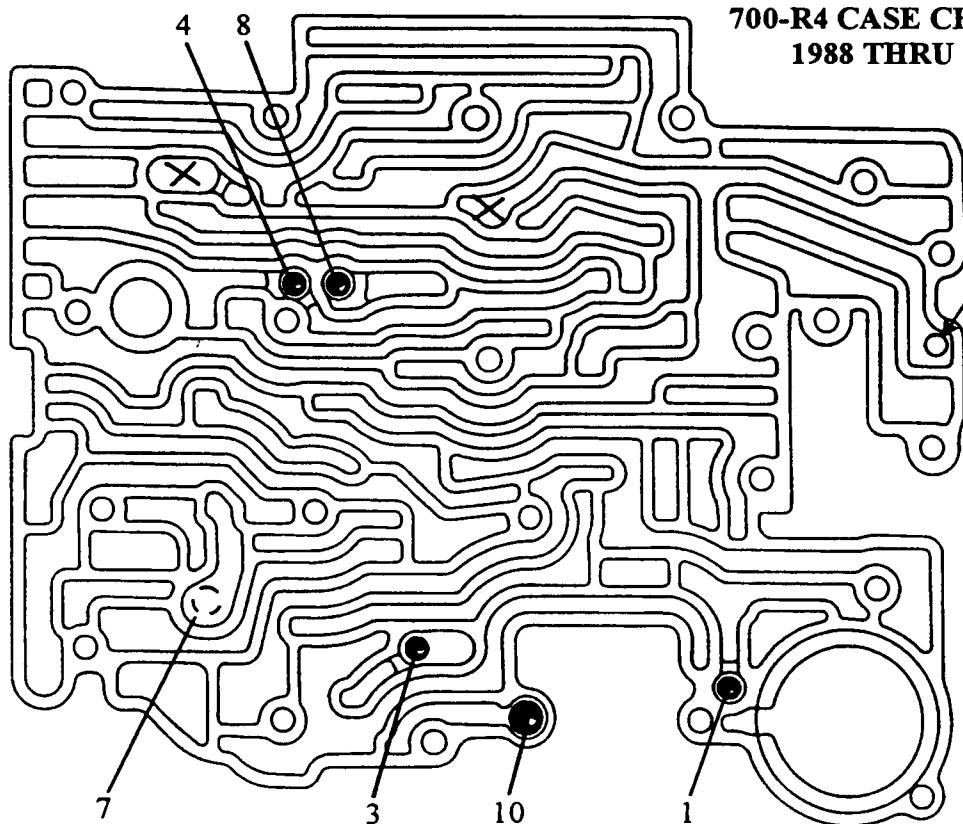
NO. 7 3RD ACCUMULATOR & 3-2 EXHAUST CAPSULE - 8668287

Figure 16

**700-R4 CASE CHECKBALL LOCATIONS  
1982 THRU 1987 MODELS ONLY**

Began in 1987:  
Double orifice check ball  
Allows for both controlled  
apply and rapid release of  
the low/reverse clutch.  
Part # 8663890

- 1 4TH ACCUMULATOR
- 3 PT. THROTTLE/D3
- 4 3-2 EXHAUST
- 7 3RD ACCUM. & EX  
CAPSULE - 8634400
- 8 1-2 SHIFT
- 9 LO/DETENT
- 10 TV EXHAUST

**700-R4 CASE CHECKBALL LOCATIONS  
1988 THRU 1993 MODELS ONLY**

Began in 1987:  
Double orifice check ball  
Allows for both controlled  
apply and rapid release of  
the low/reverse clutch.  
Part # 8663890

- 1 4TH ACCUMULATOR
- 3 PT. THROTTLE/D3
- 4 3-2 EXHAUST
- 7 3RD ACCUM. & EX.  
CAPSULE - 8634400
- 8 1-2 SHIFT
- 10 TV EXHAUST

Figure 17

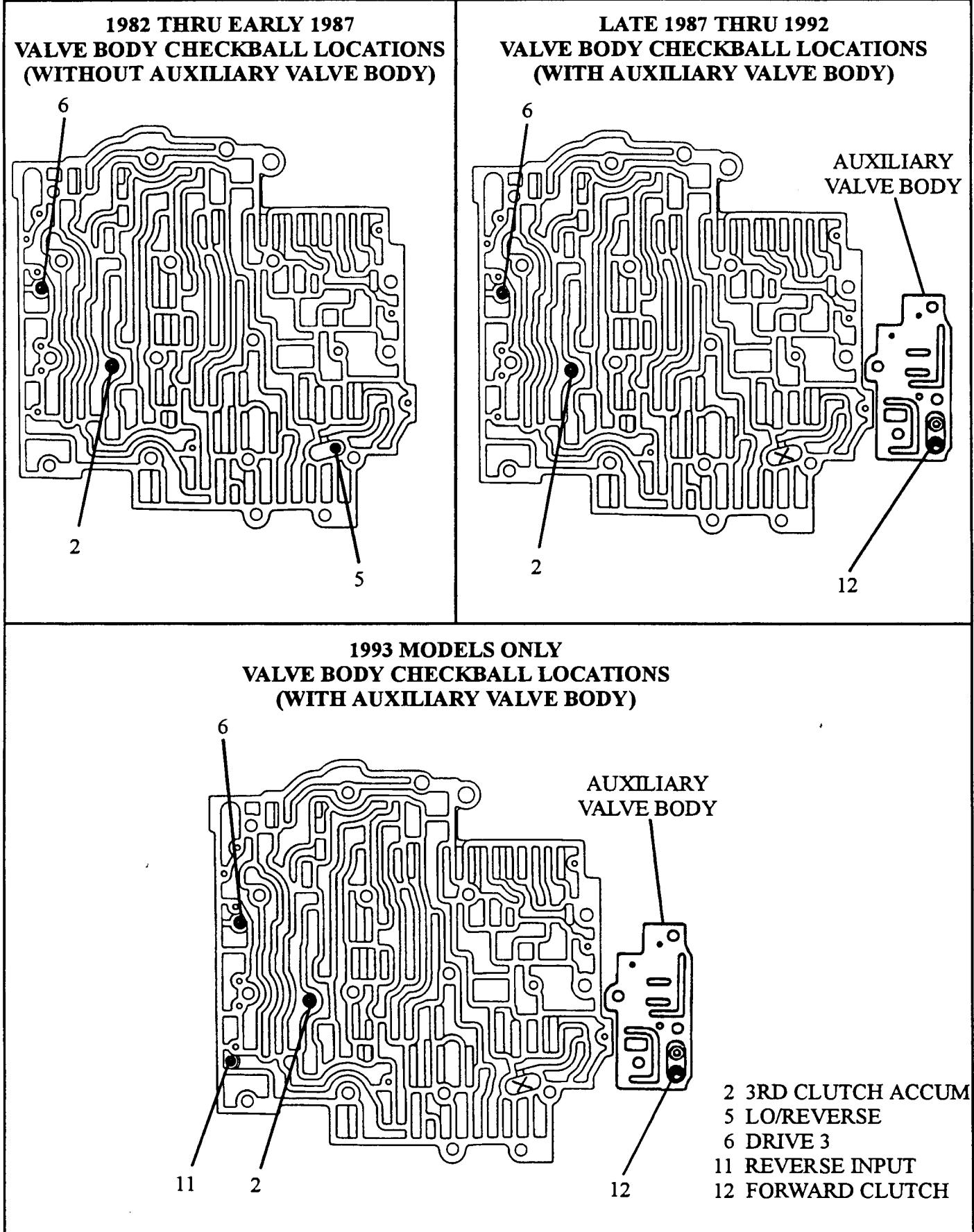
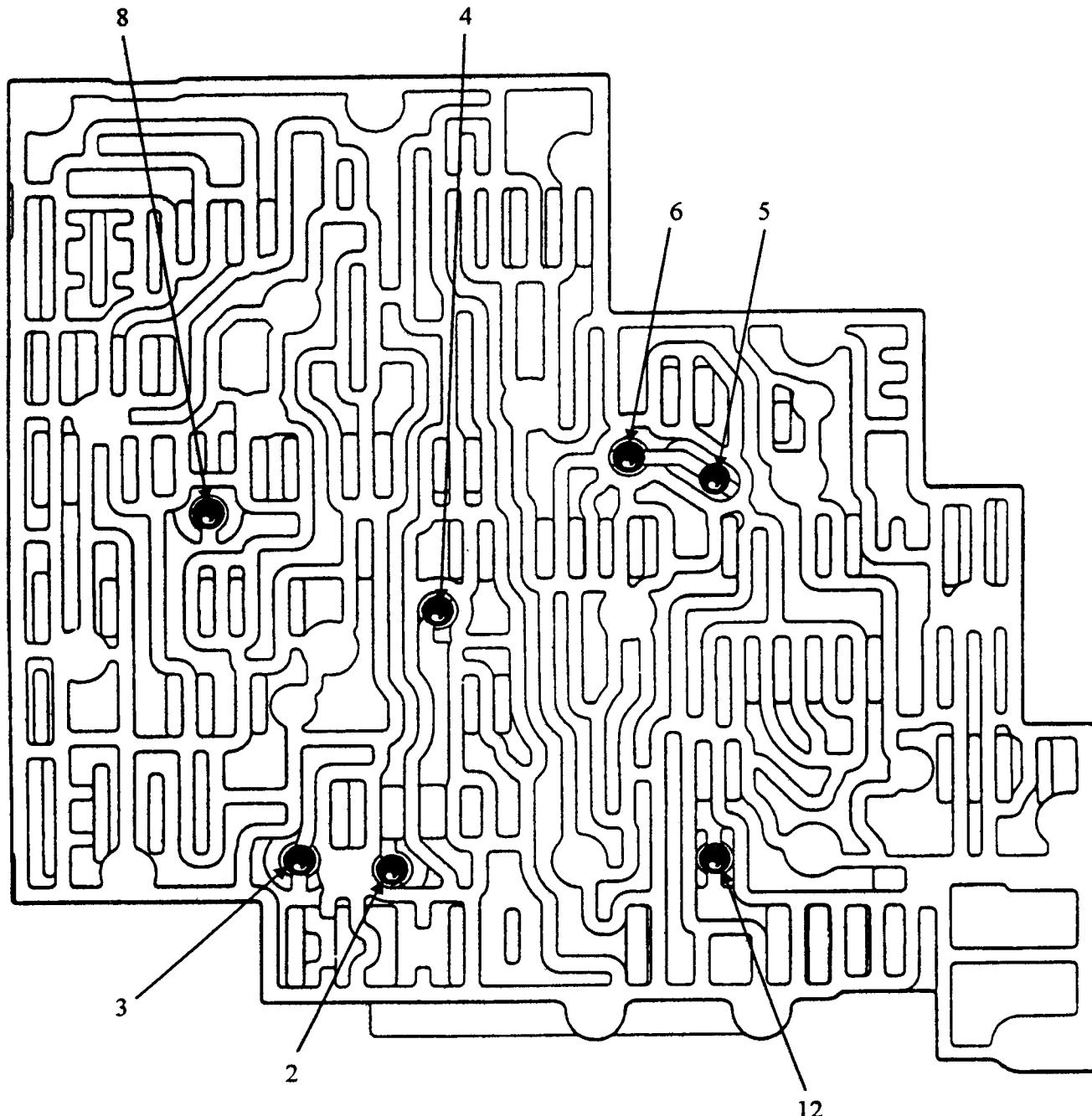


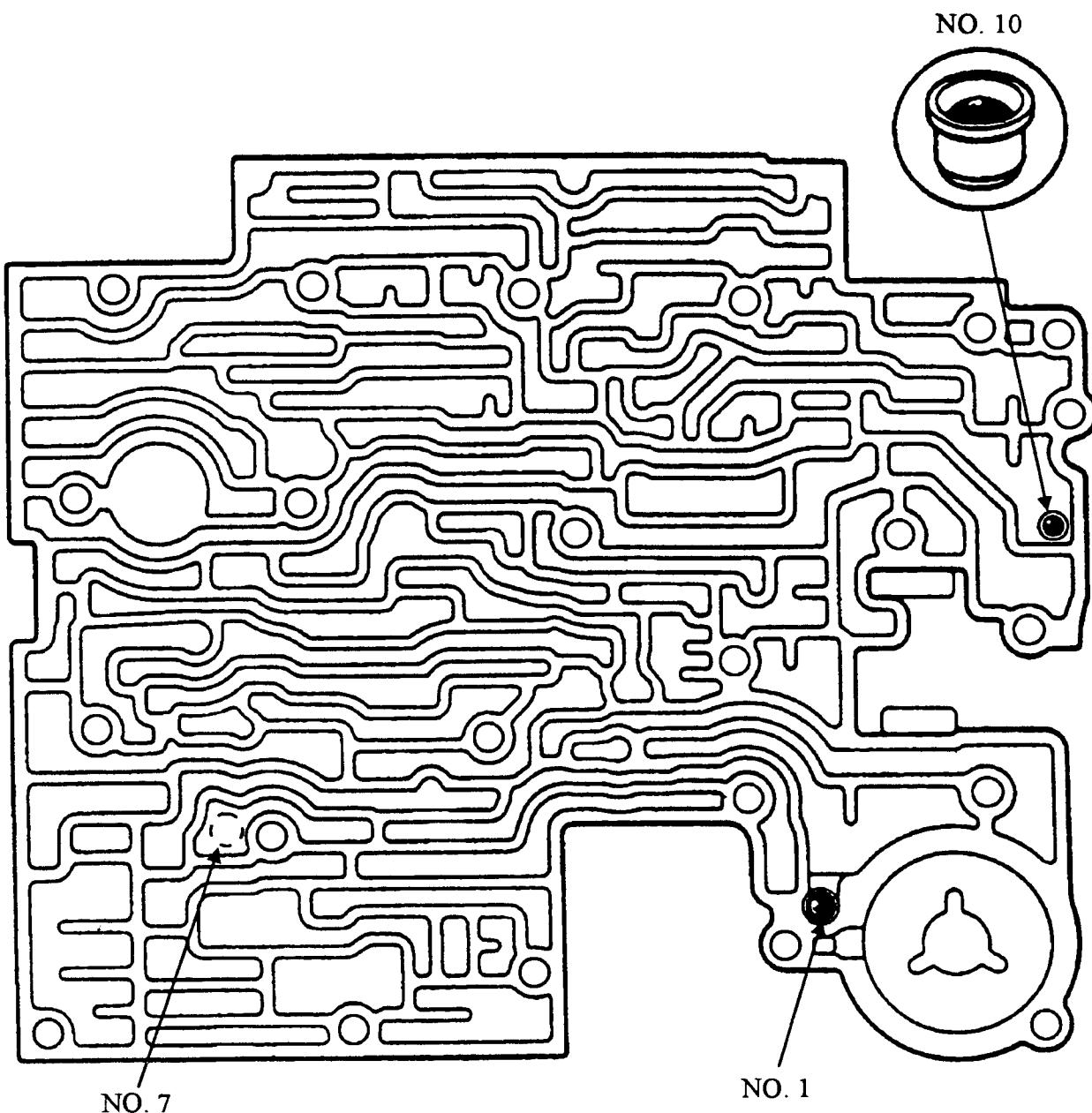
Figure 18

AUTOMATIC TRANSMISSION SERVICE GROUP

THM 4L60-E  
VALVE BODY CHECKBALL LOCATIONS

- 2 3RD ACCUMULATOR
- 3 REVERSE INPUT
- 4 3-4 CLUTCH EXHAUST
- 5 OVERRUN CLUTCH FEED
- 6 OVERRUN CLUTCH CONTROL
- 8 1-2 UPSHIFT
- 12 FORWARD CLUTCH ACCUMULATOR

Figure 19  
AUTOMATIC TRANSMISSION SERVICE GROUP

THM 4L60-E  
CASE CHECKBALL LOCATIONS

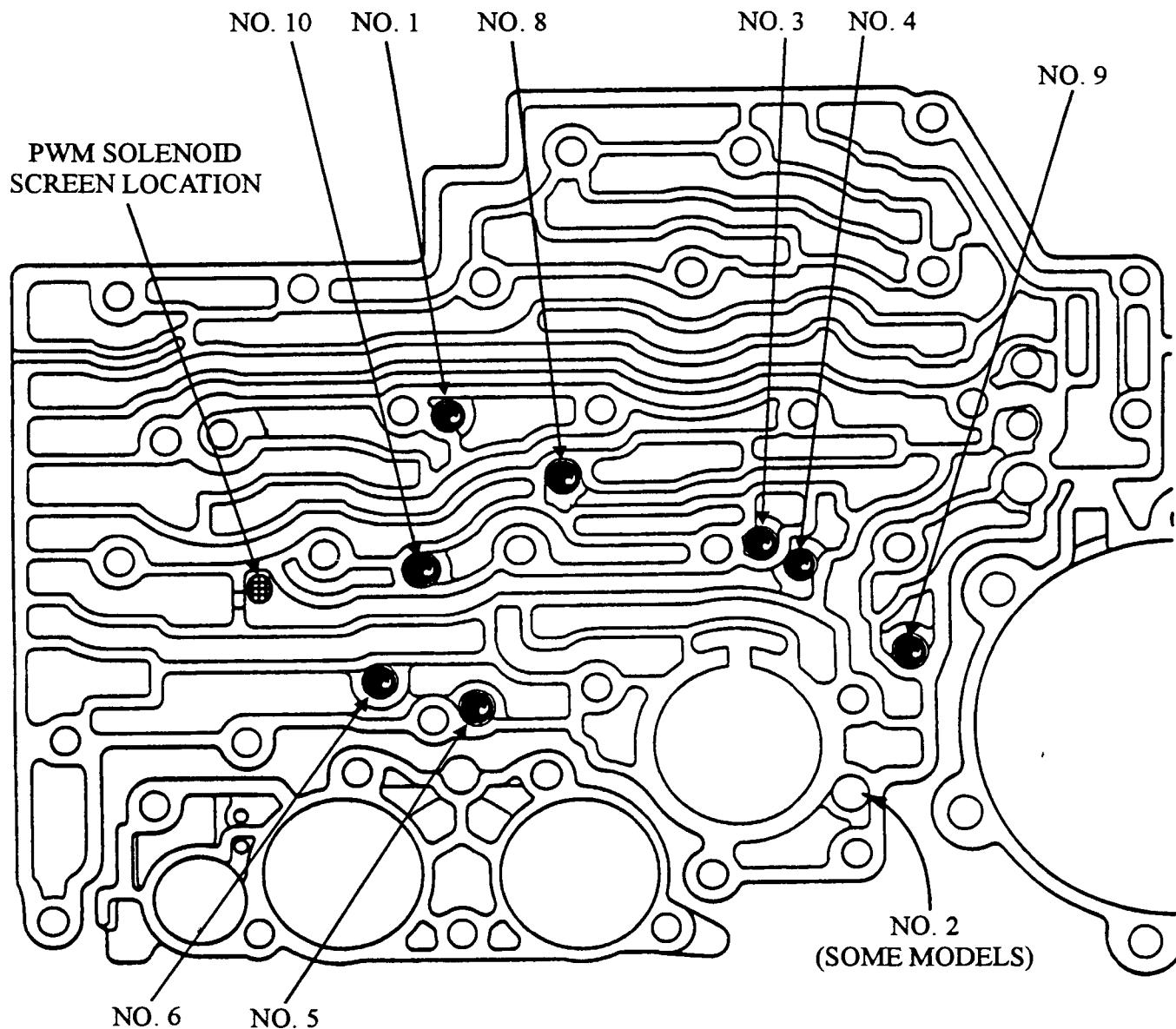
NO. 1 3-4 ACCUMULATOR

NO. 7 3RD ACCUMULATOR & EXHAUST CAPSULE - 8634400

NO. 10 REVERSE BALL CAPSULE - 8663890

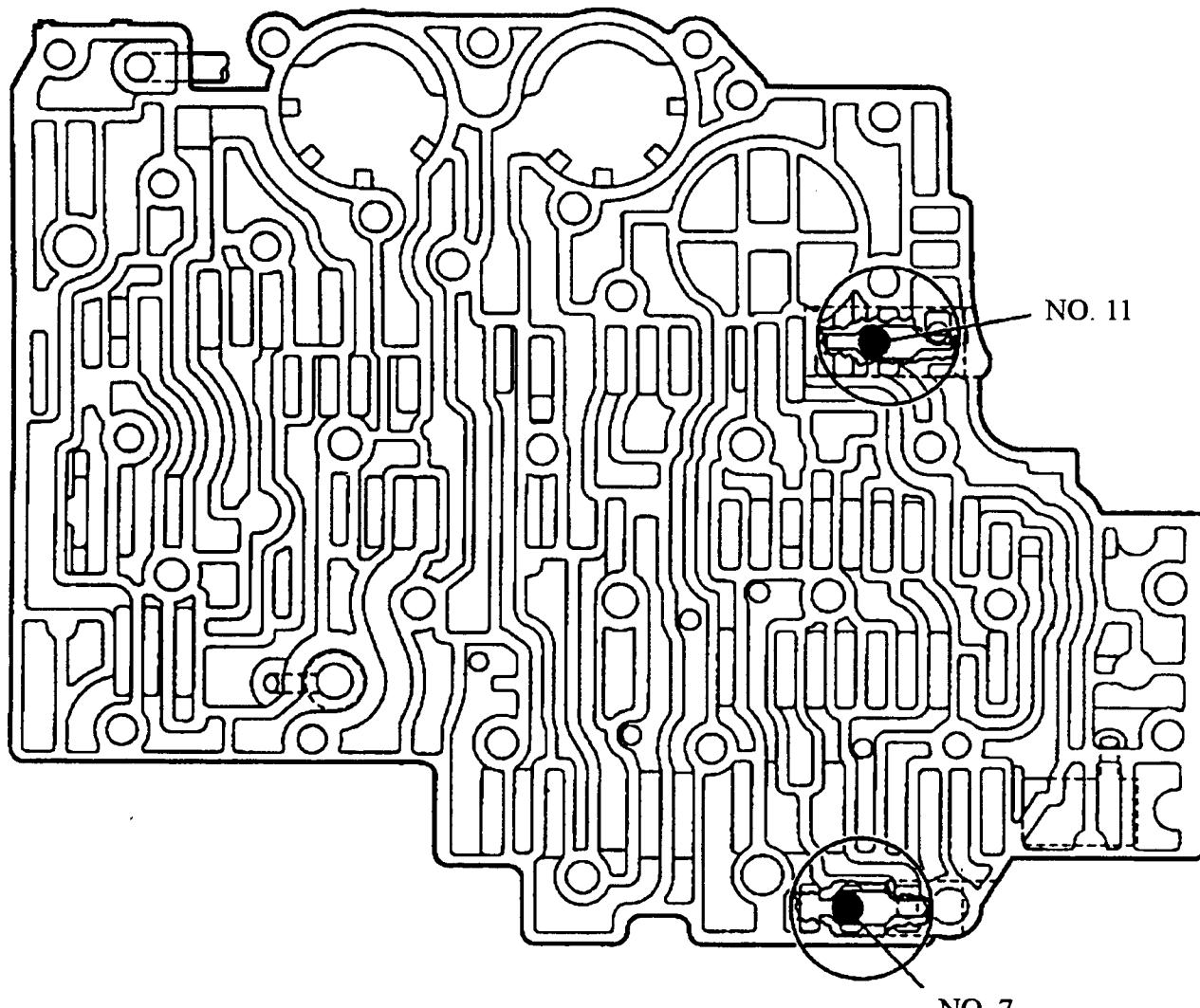
Figure 20

AUTOMATIC TRANSMISSION SERVICE GROUP

**THM 4L80-E/4L80-EHD**  
**CASE CHECKBALL LOCATIONS**

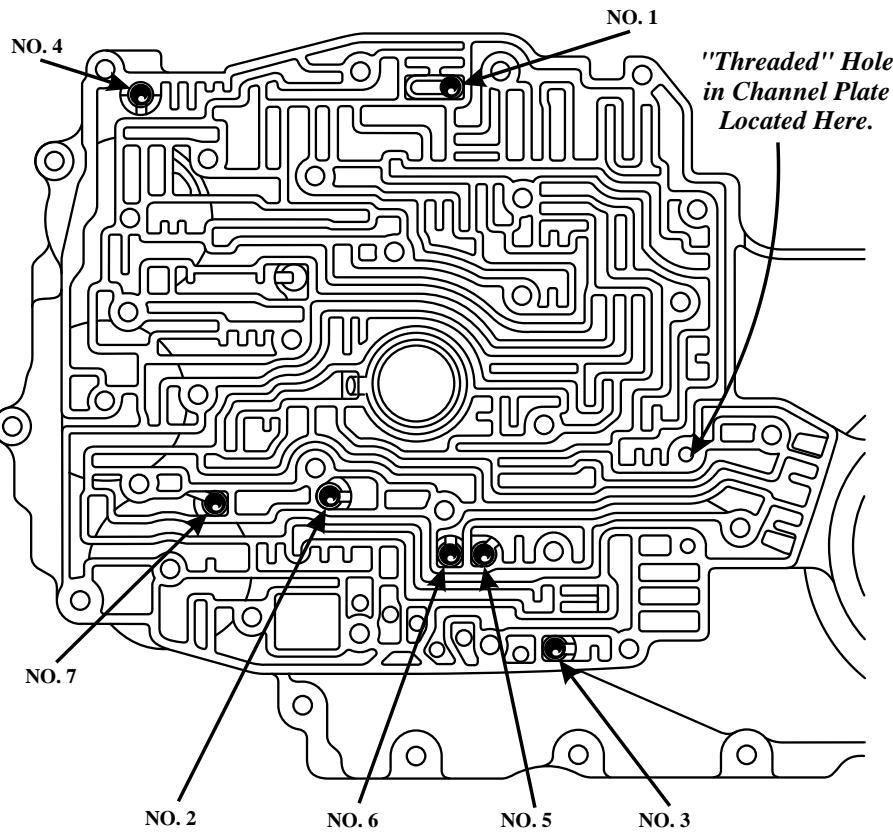
- NO. 1 OVERRUN CLUTCH
- NO. 2 2ND ACCUMULATOR (SOME MODELS)
- NO. 3 FRONT BAND APPLY
- NO. 4 2ND CLUTCH
- NO. 5 3RD ACCUMULATOR
- NO. 6 4TH ACCUMULATOR
- NO. 8 3RD CLUTCH
- NO. 9 REVERSE
- NO. 10 4TH CLUTCH

Figure 21  
AUTOMATIC TRANSMISSION SERVICE GROUP

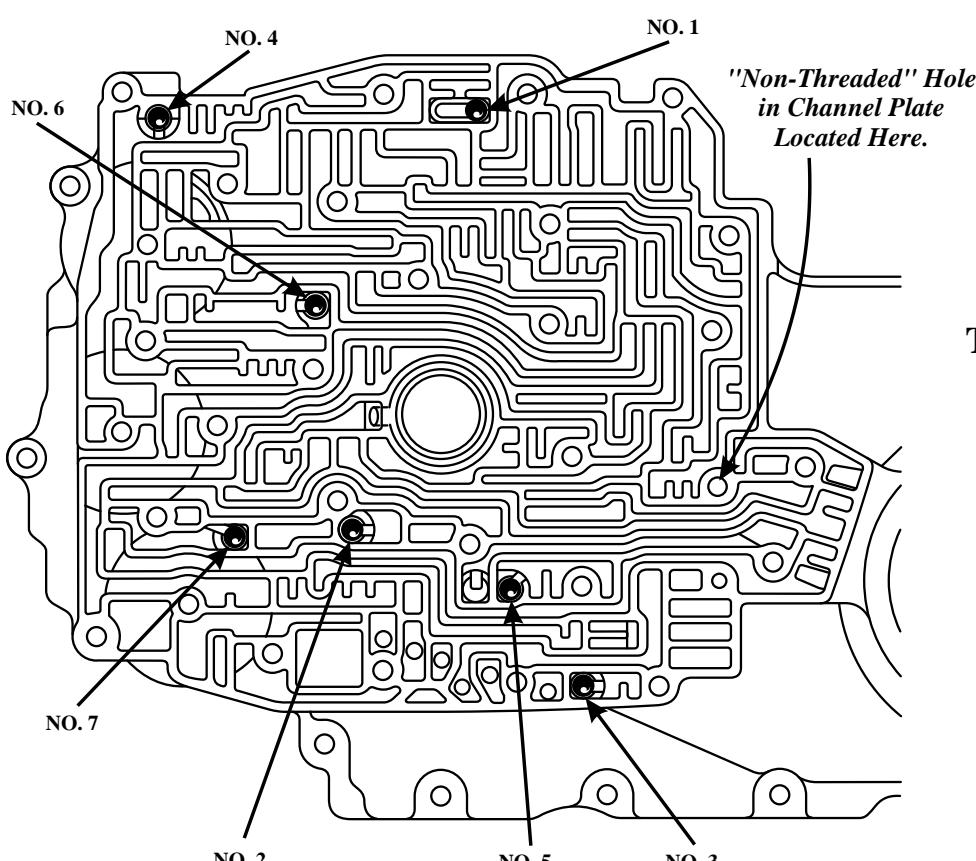
**THM 4L80-E/4L80-EHD**  
**VALVE BODY CHECKBALL LOCATIONS**

NO. 7 LO/REVERSE SHUTTLE BALL  
NO. 11 3RD/REVERSE SHUTTLE BALL

Figure 22  
AUTOMATIC TRANSMISSION SERVICE GROUP



**THM 4T40-E 1995-1996  
MODELS "ONLY"**

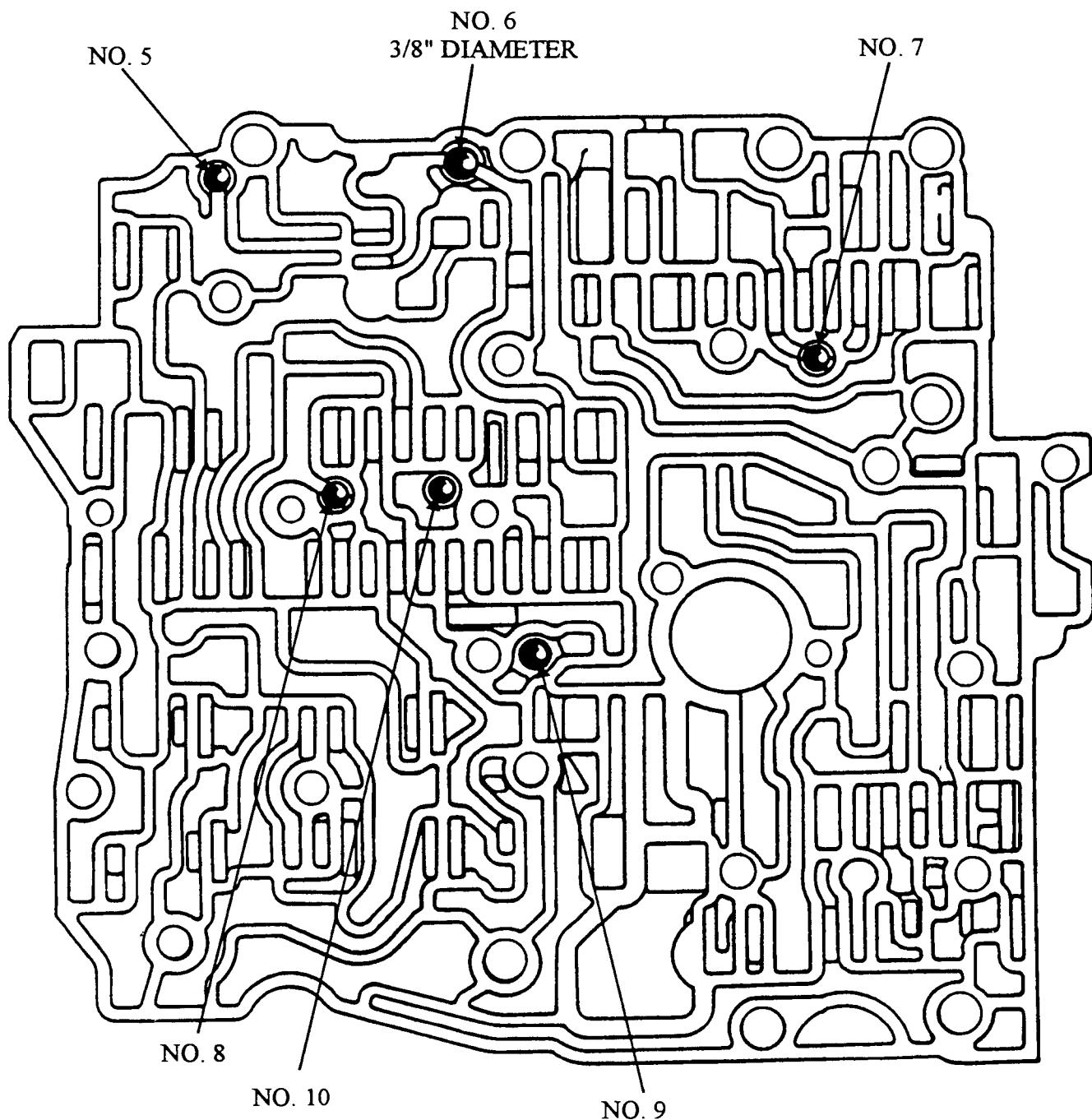


**THM 4T40-E 1997-UP  
MODELS "ONLY"**

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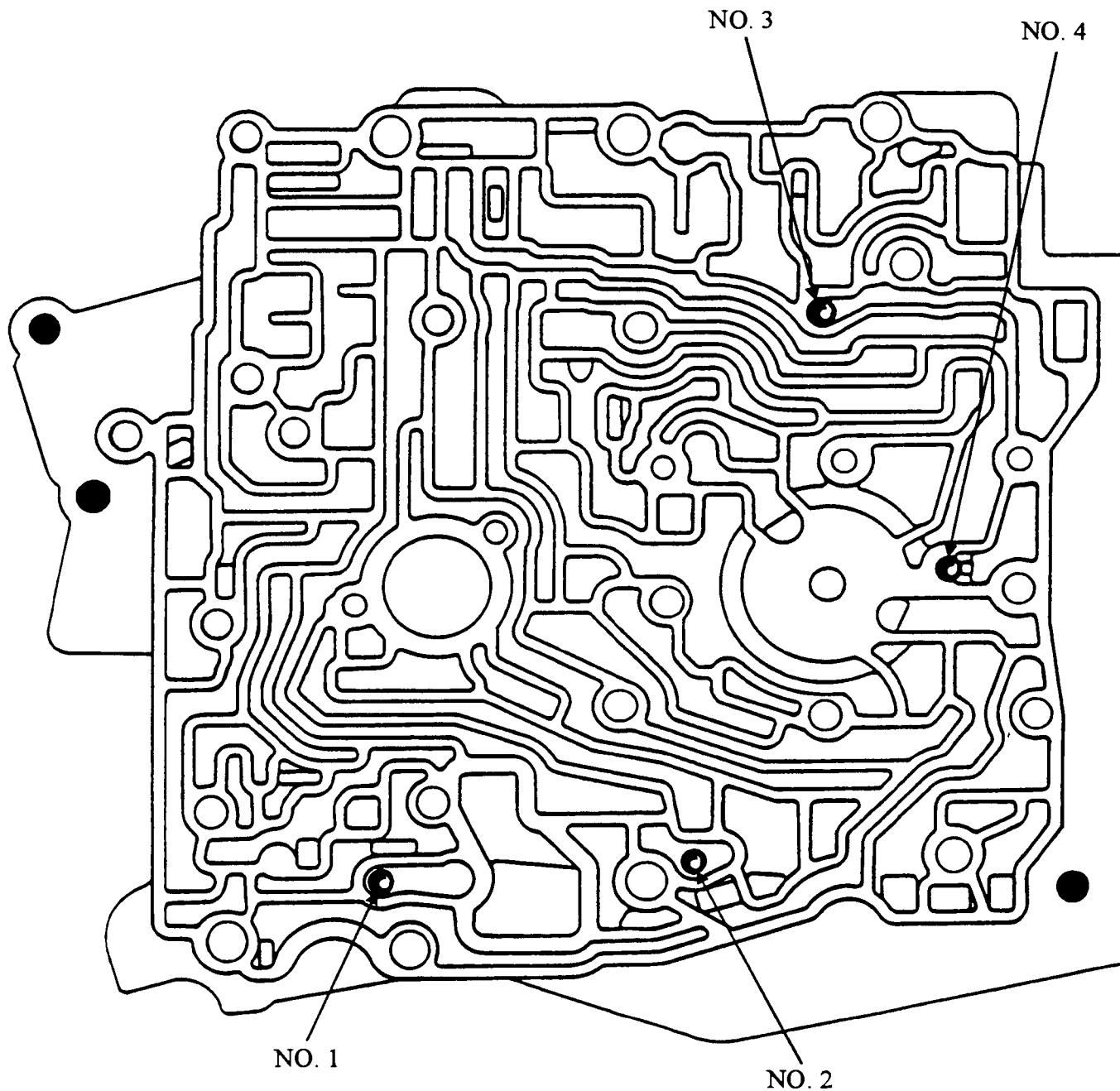
Figure 23

AUTOMATIC TRANSMISSION SERVICE GROUP

THM 4T60-E  
VALVE BODY CHECKBALL LOCATIONS

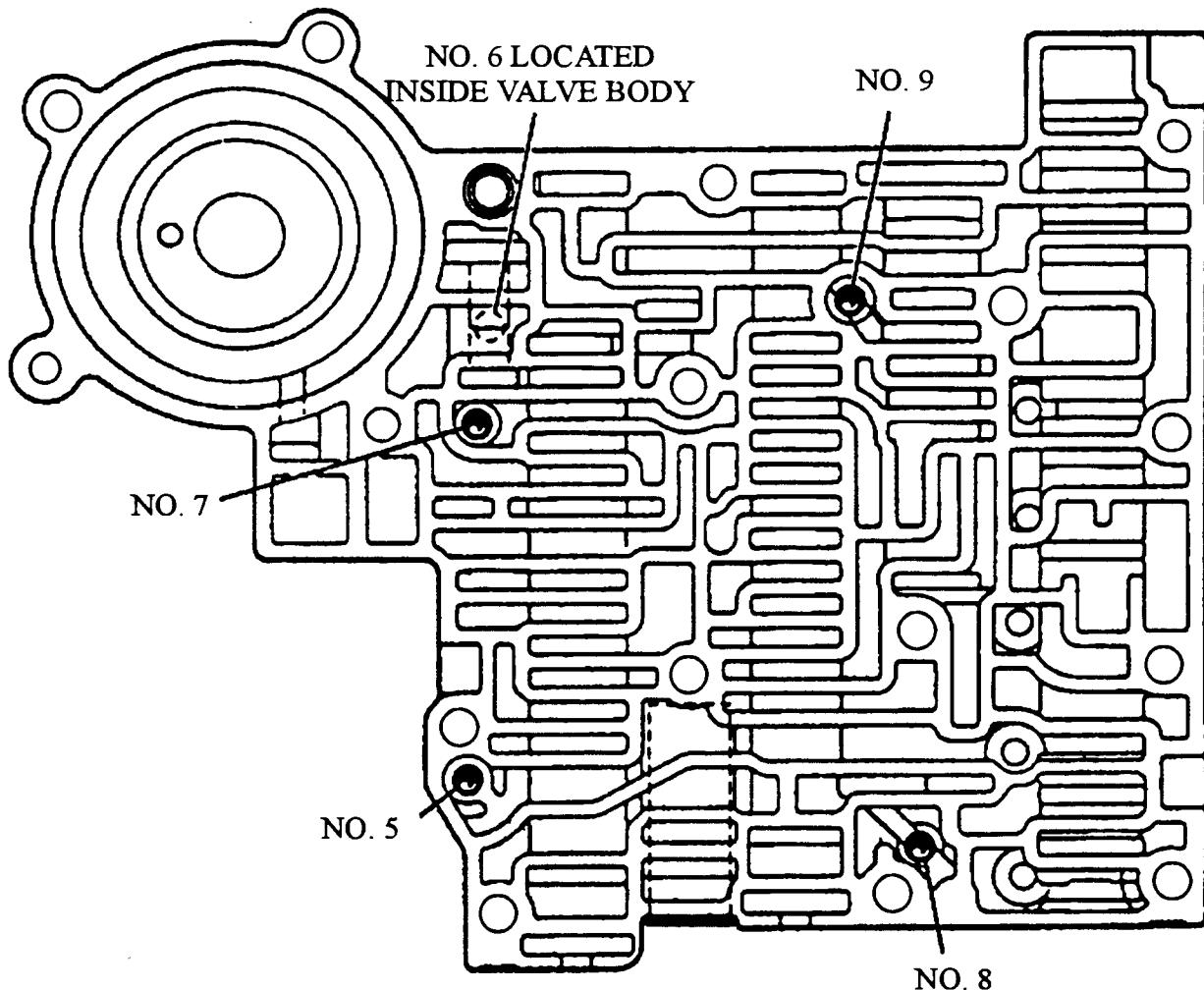
- NO. 5 REVERSE SERVO
- NO. 6 FORWARD SERVO APPLY (3/8" DIAMETER)
- NO. 7 3RD CLUTCH LO-1ST
- NO. 8 MANUAL 2-1 SERVO FEED
- NO. 9 2-3 SHIFT
- NO. 10 3-4 SHIFT

Figure 24  
AUTOMATIC TRANSMISSION SERVICE GROUP

THM 4T60-E  
CHANNEL PLATE CHECKBALL LOCATIONS

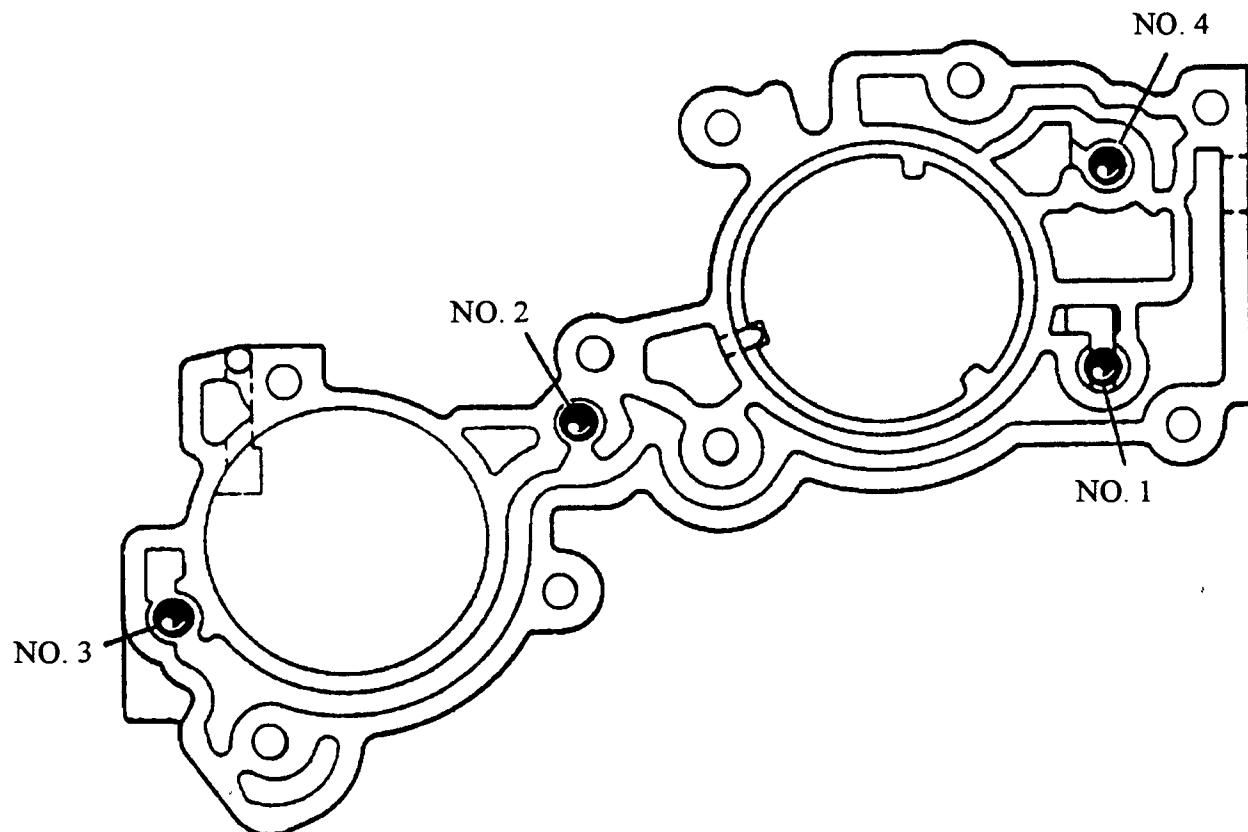
- NO. 1 TCC APPLY/RELEASE
- NO. 2 1-2 SHIFT
- NO. 3 INPUT CLUTCH/PRN
- NO. 4 3RD CLUTCH/LO-1ST

Figure 25

THM 4T80-E  
VALVE BODY CHECKBALL LOCATIONS

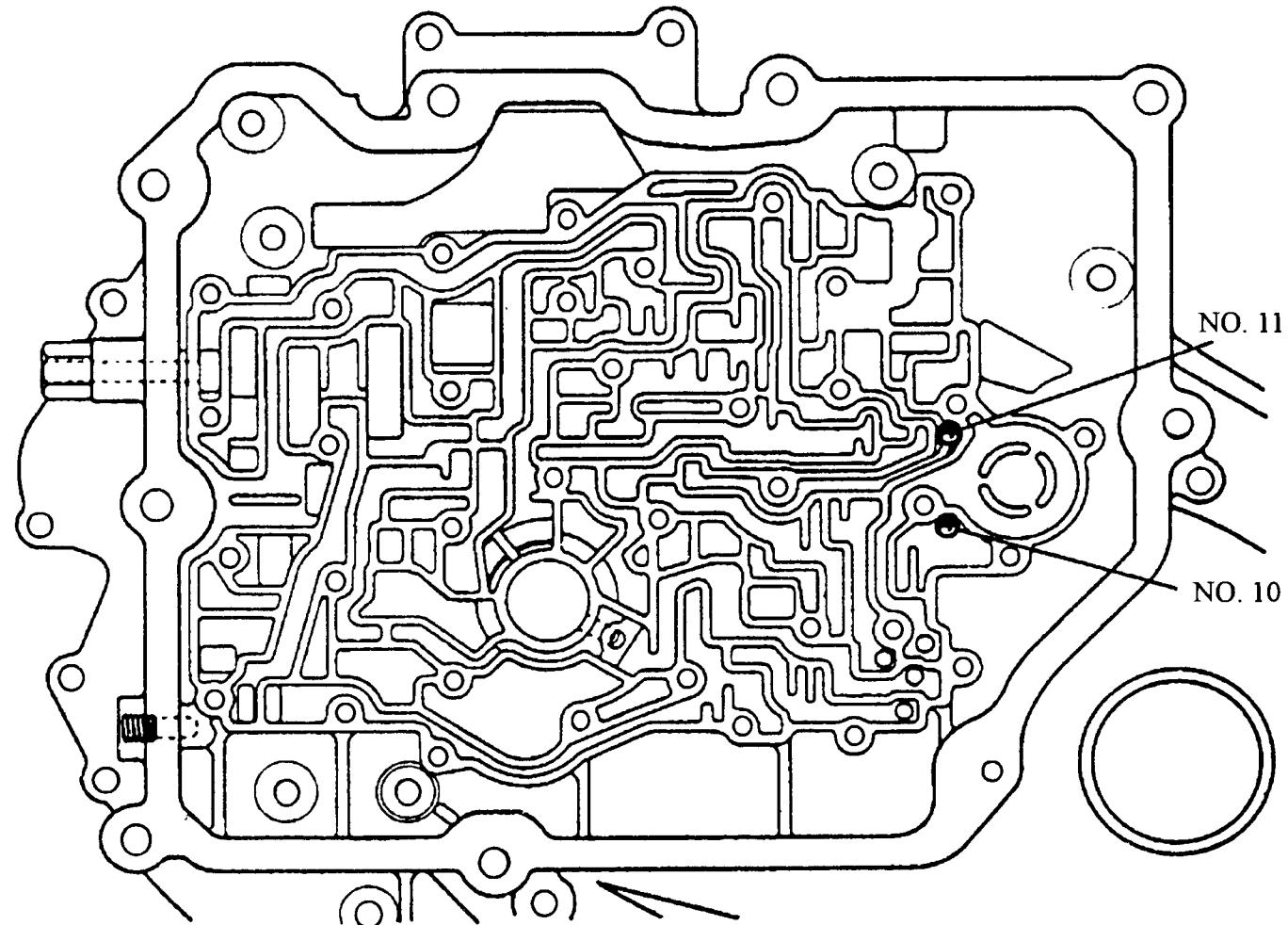
- NO. 5 FORWARD CLUTCH
- NO. 6 REV BAND/LO-REV BAND REDUCE
- NO. 7 REVERSE CLUTCH
- NO. 8 LO
- NO. 9 COAST CLUTCH FEED

Figure 26

**THM 4T80-E**  
**ACCUMULATOR BODY CHECKBALL LOCATIONS**

- NO. 1 FORWARD CLUTCH  
NO. 2 1-2 ACCUMULATOR  
NO. 3 3-4 ACCUMULATOR  
NO. 4 REVERSE CLUTCH

Figure 27

4T80-E  
CASE COVER CHECKBALL LOCATIONS

NO. 10 2-3 ACCUMULATOR  
NO. 11 3RD CLUTCH

Figure 28

## TAAT

## SATURN UPPER VALVE BODY CHECKBALL LOCATIONS

FORWARD/REVERSE SERVO  
APPLY CONTROL BALL

.250" Ball

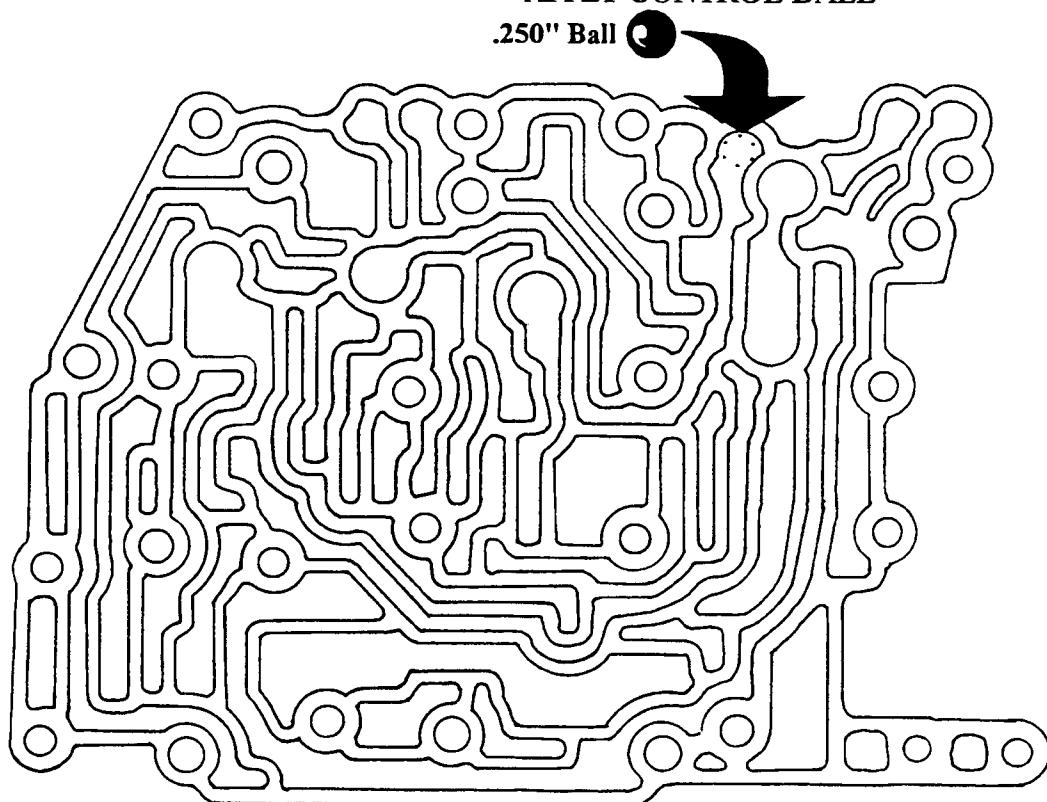


Figure 29

TAAT  
SATURN LOWER VALVE BODY CHECKBALL LOCATIONS

BOTH BALLS FUNCTION TOGETHER TO CONTROL FIRST CLUTCH APPLY AND SERVO RELEASE IN ALL FORWARD RANGES

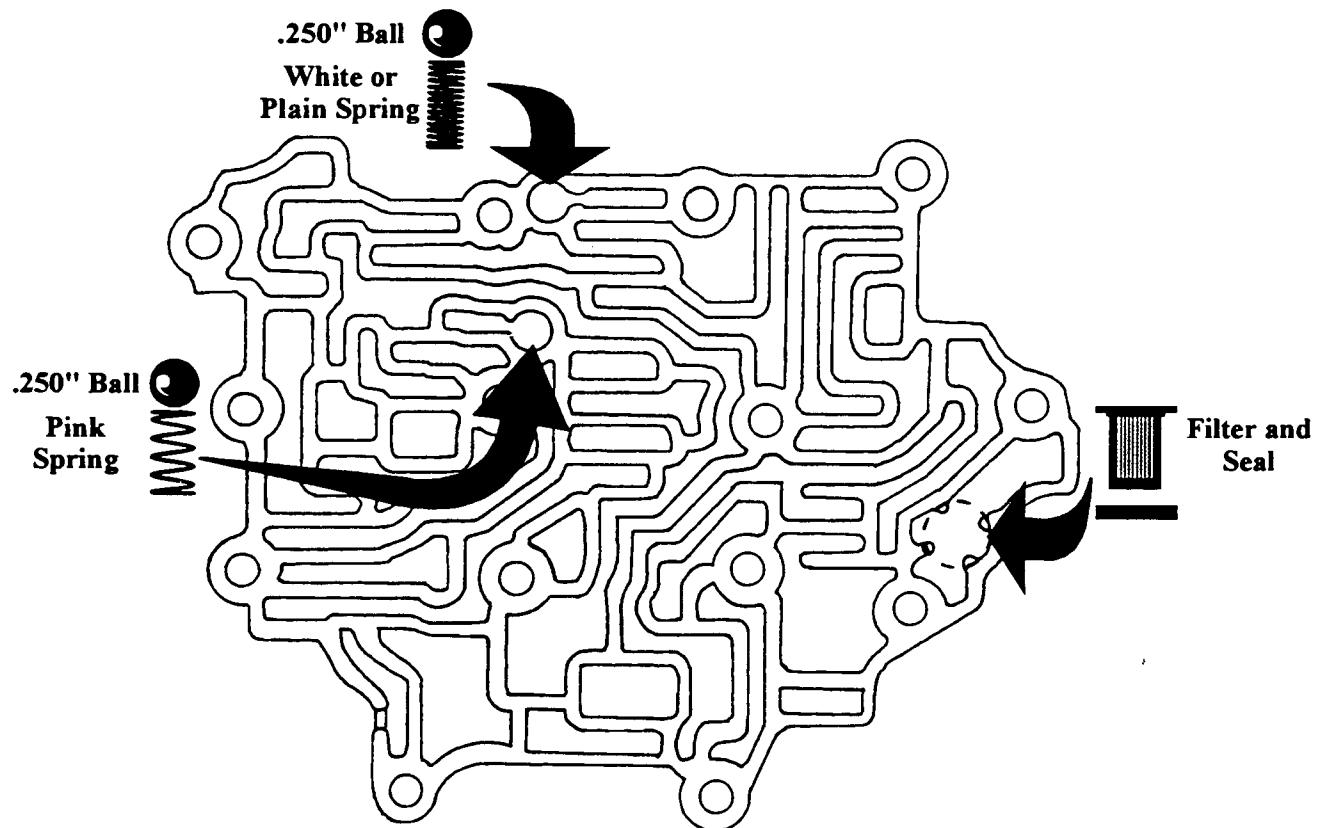
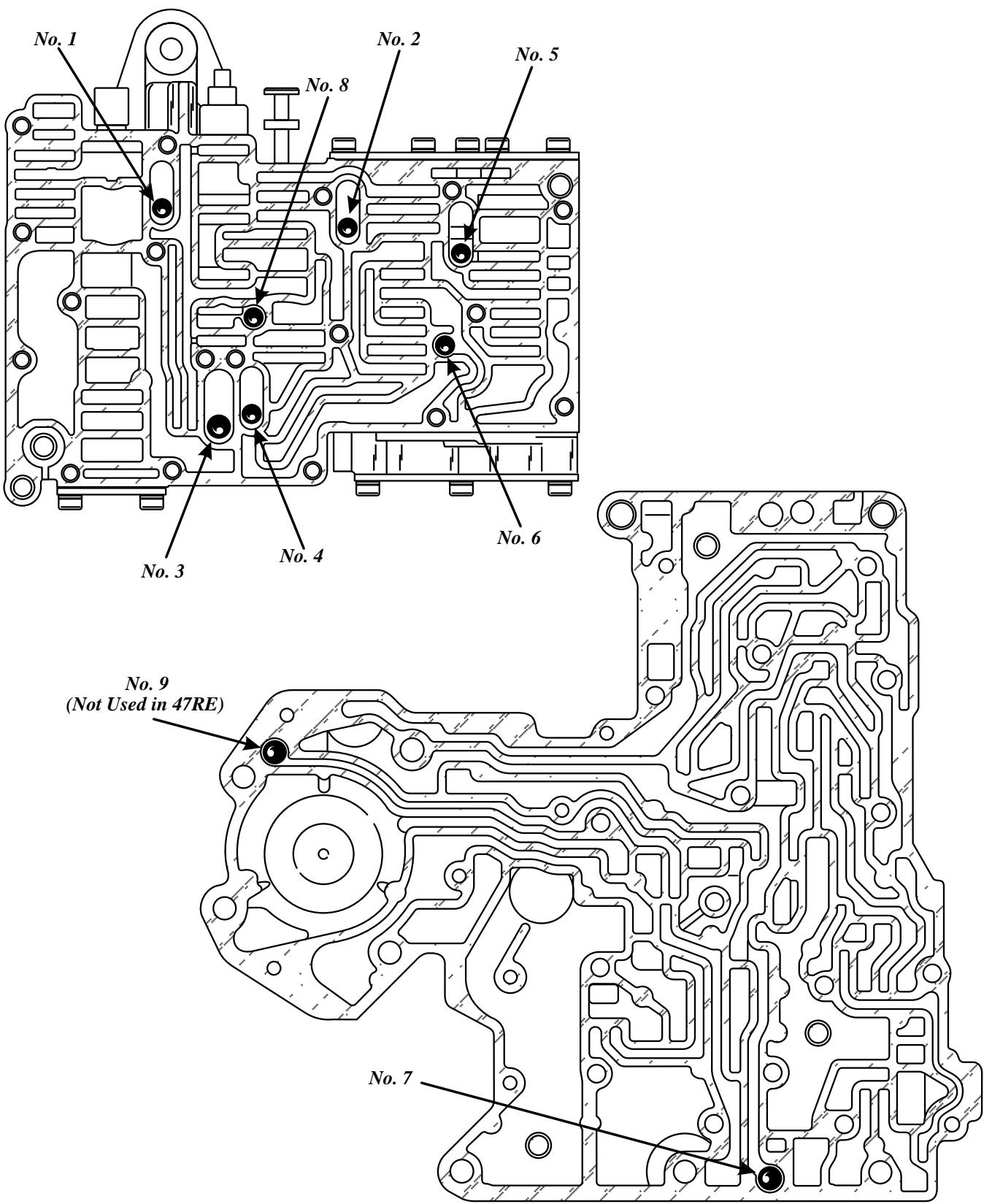


Figure 30

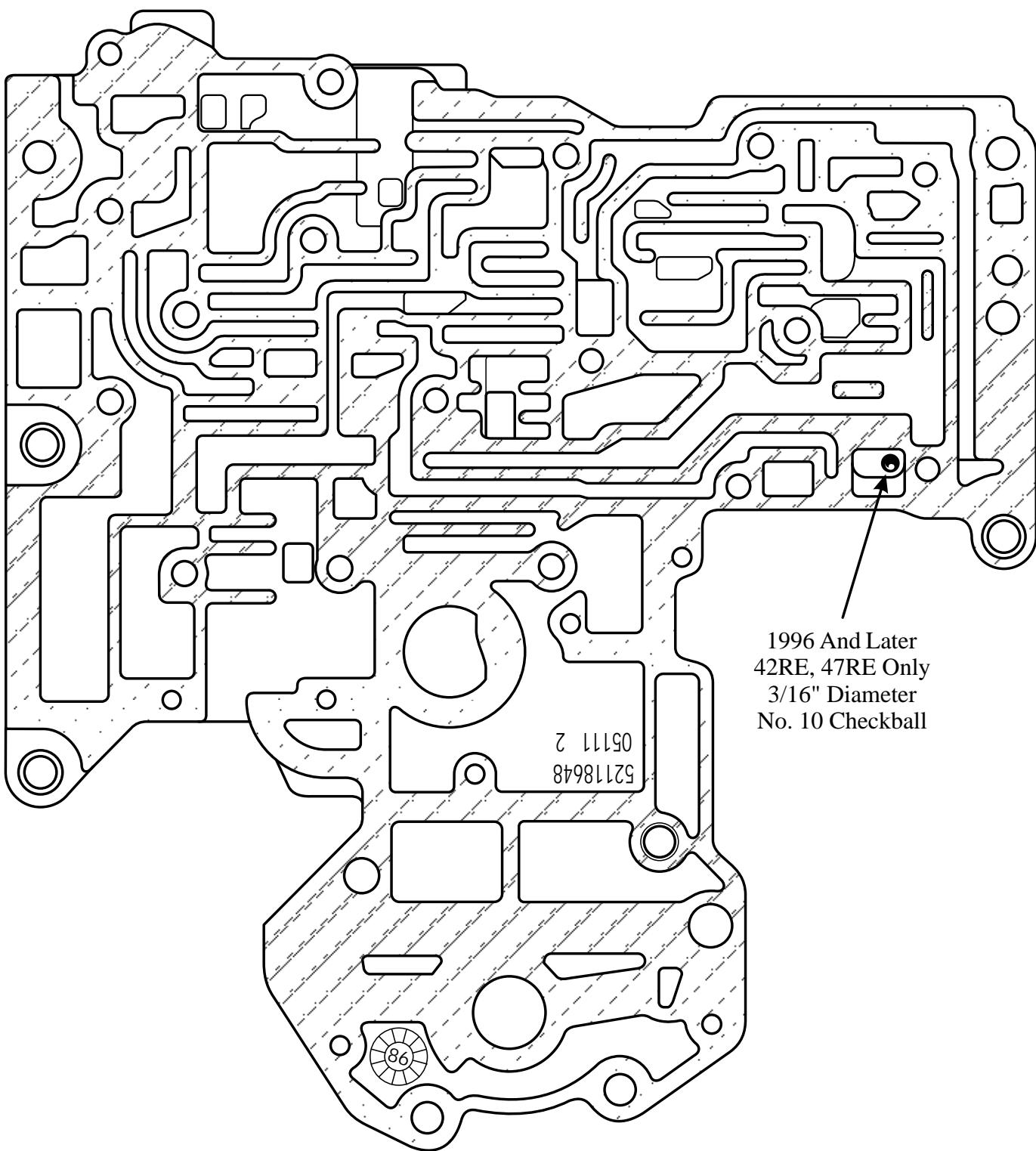
**A904, A727, A500, A518, 42RE, 47RE**  
**MAIN VALVE BODY AND TRANSFER PLATE "UPPERSIDE"**



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Figure 31

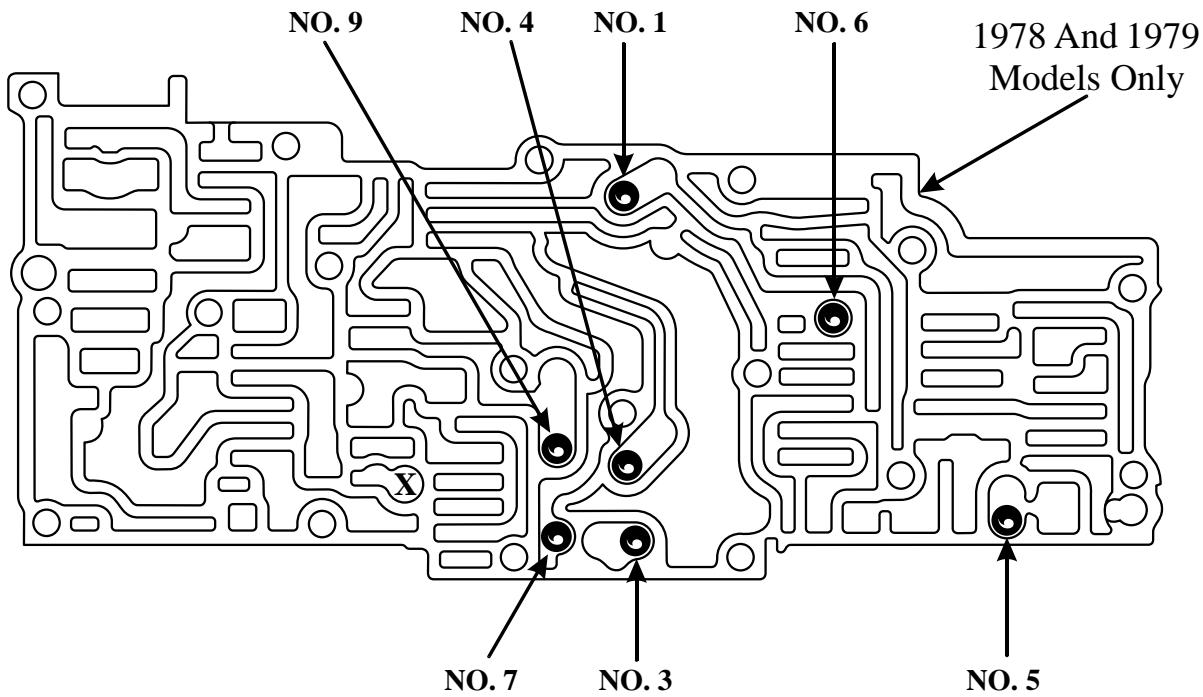
AUTOMATIC TRANSMISSION SERVICE GROUP

TRANSFER PLATE "LOWER SIDE"  
CHECKBALL LOCATIONS, 1996-UP 42RE, 47RE ONLY

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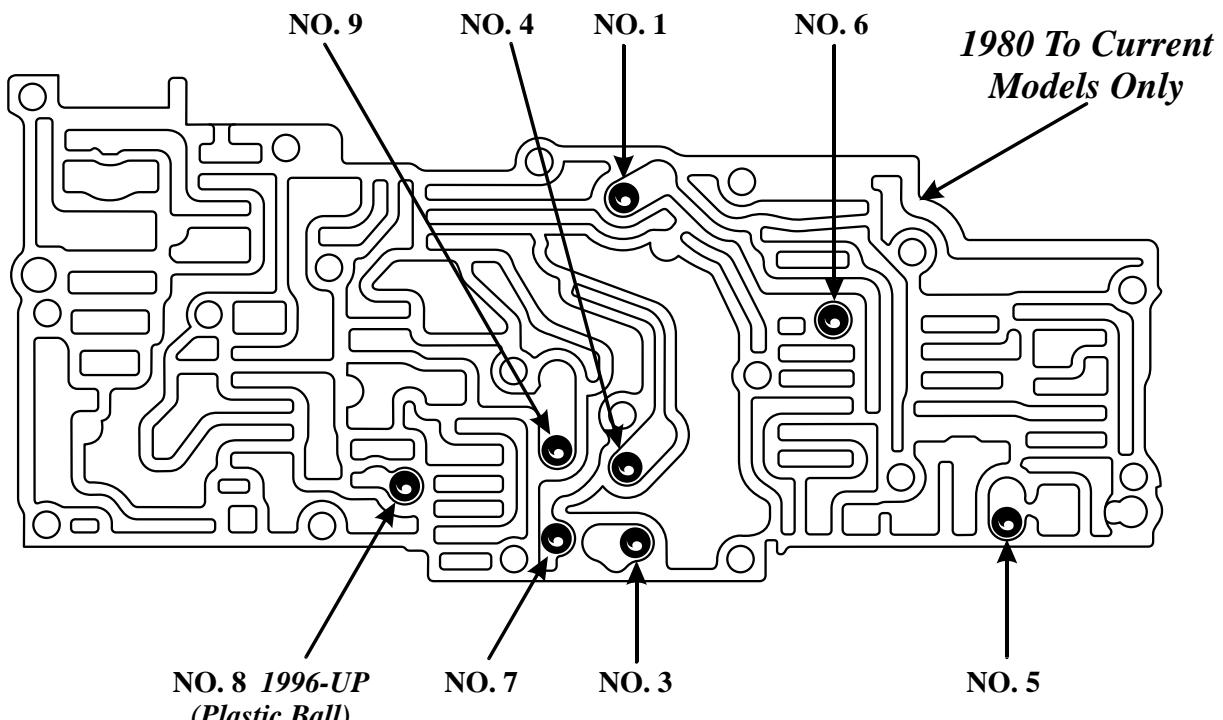
Figure 32

AUTOMATIC TRANSMISSION SERVICE GROUP



**NO. 1** Manual Low Control Checkball  
**NO. 3** 3rd/Reverse Shuttle Ball  
**NO. 4** Low/Reverse Shuttle Ball  
**NO. 5** TV And Line Control To Shift Valves

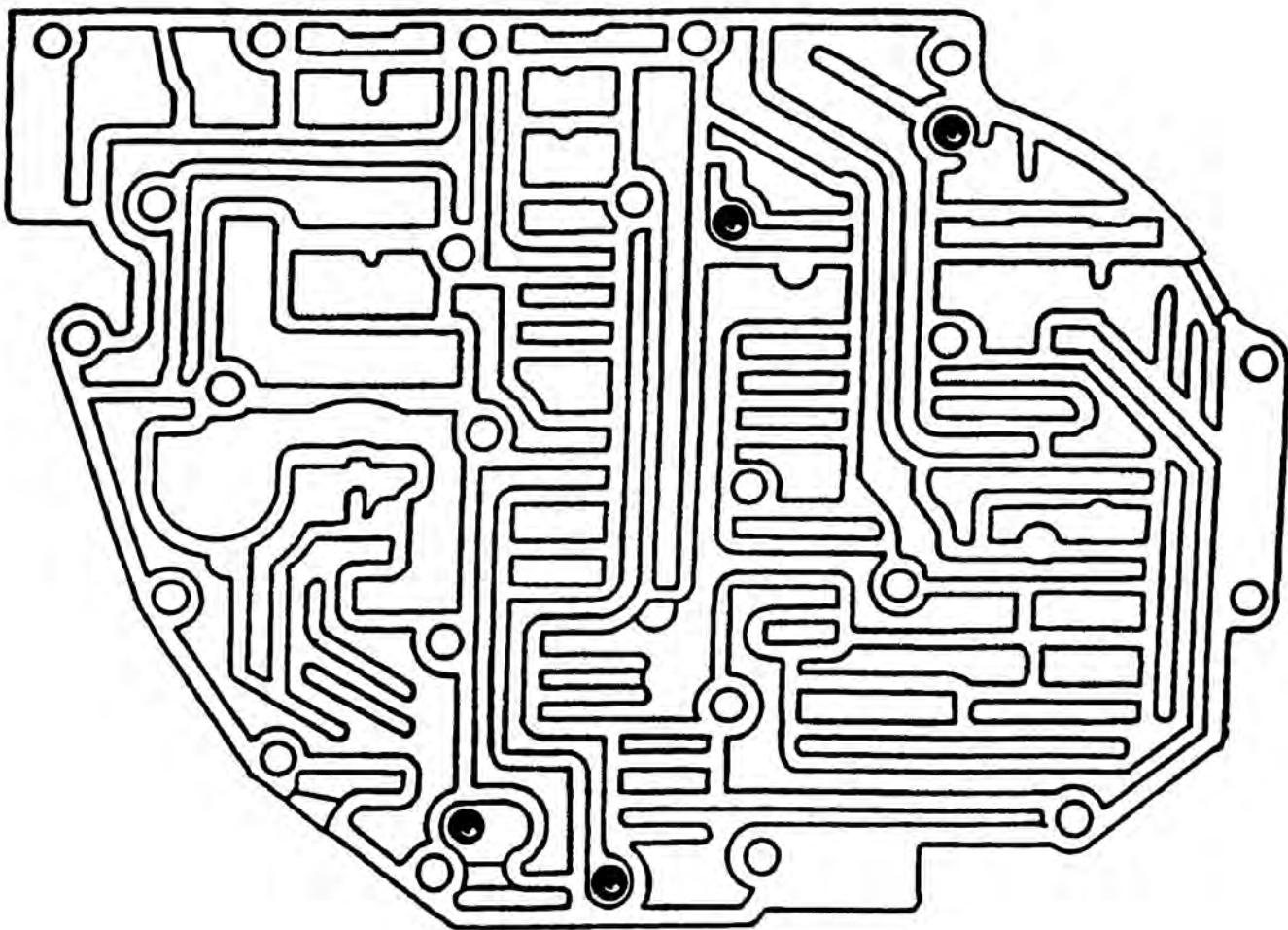
**NO. 6** Intermediate Accumulator And Front Servo Control Checkball  
**NO. 7** Forward Clutch Control Checkball  
**NO. 8** TV Feed Control Checkball  
**NO. 9** TV Feed, 1-2 Accumulator And Exhaust Checkball



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Figure 33

AUTOMATIC TRANSMISSION SERVICE GROUP

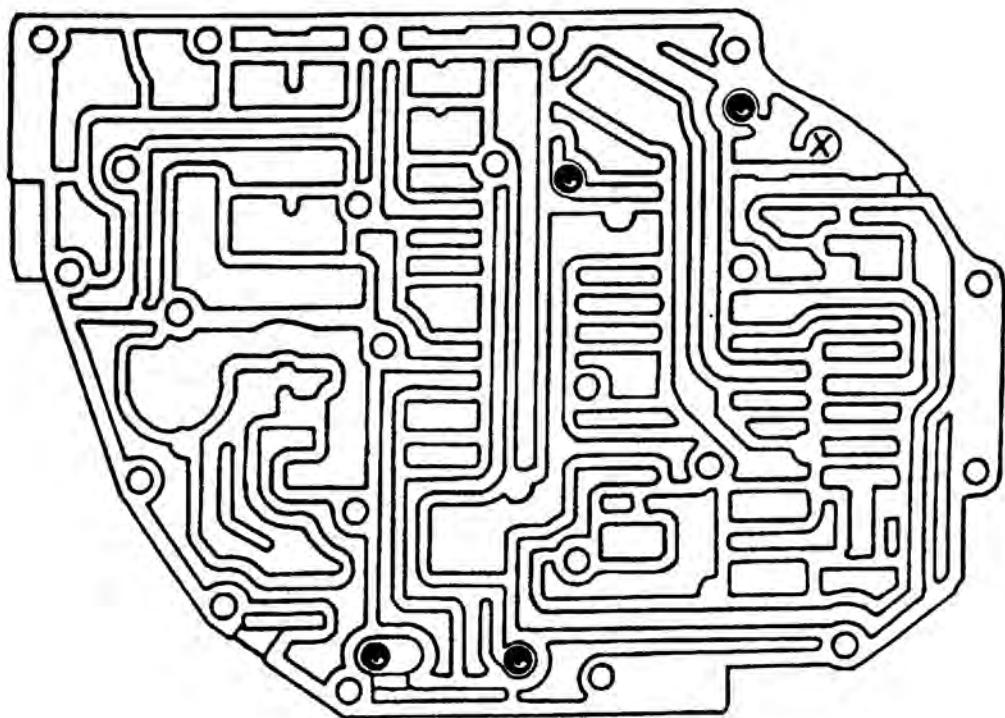
1989-1991 VALVE BODY CHECKBALL LOCATIONS  
FOR VALVE BODY CASTING NO. 4446639

REQUIRES "FOUR" CHECKBALLS IN THE LOCATIONS SHOWN ABOVE.

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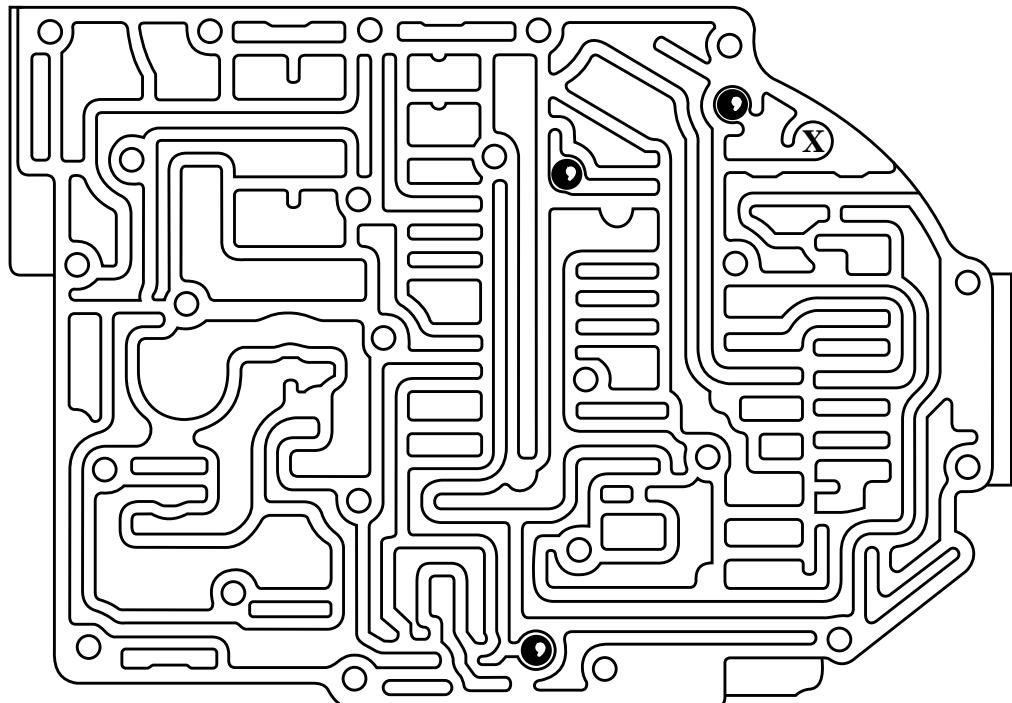
Figure 34

AUTOMATIC TRANSMISSION SERVICE GROUP

1992-1994 VALVE BODY CHECKBALL LOCATIONS  
FOR VALVE BODY CASTING NO. 4511644

REQUIRES "FOUR" CHECKBALLS IN THE LOCATIONS SHOWN ABOVE.

## 1995-UP VALVE BODY CHECKBALL LOCATIONS

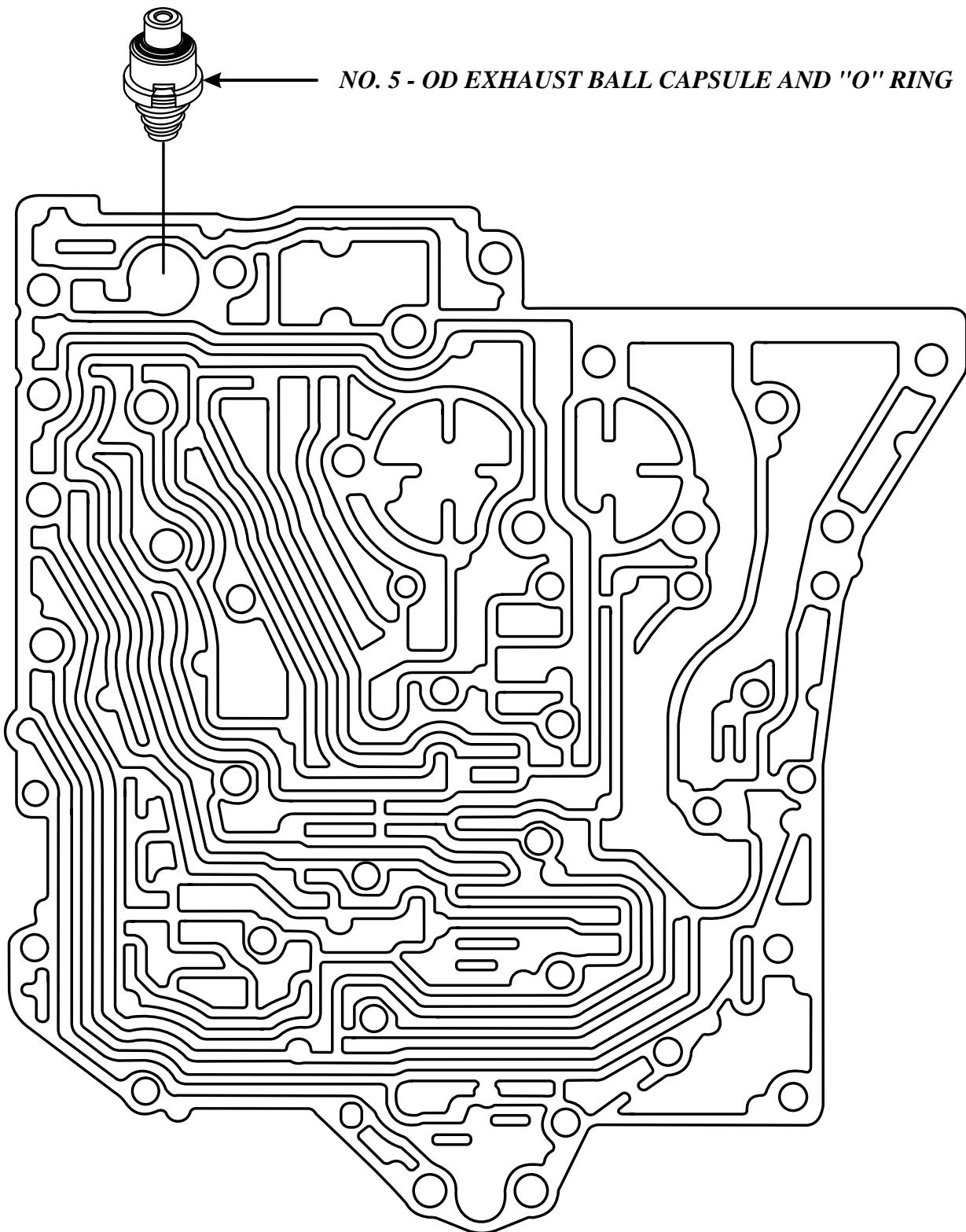


REQUIRES "THREE" CHECKBALLS IN THE LOCATIONS SHOWN ABOVE.

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Figure 35

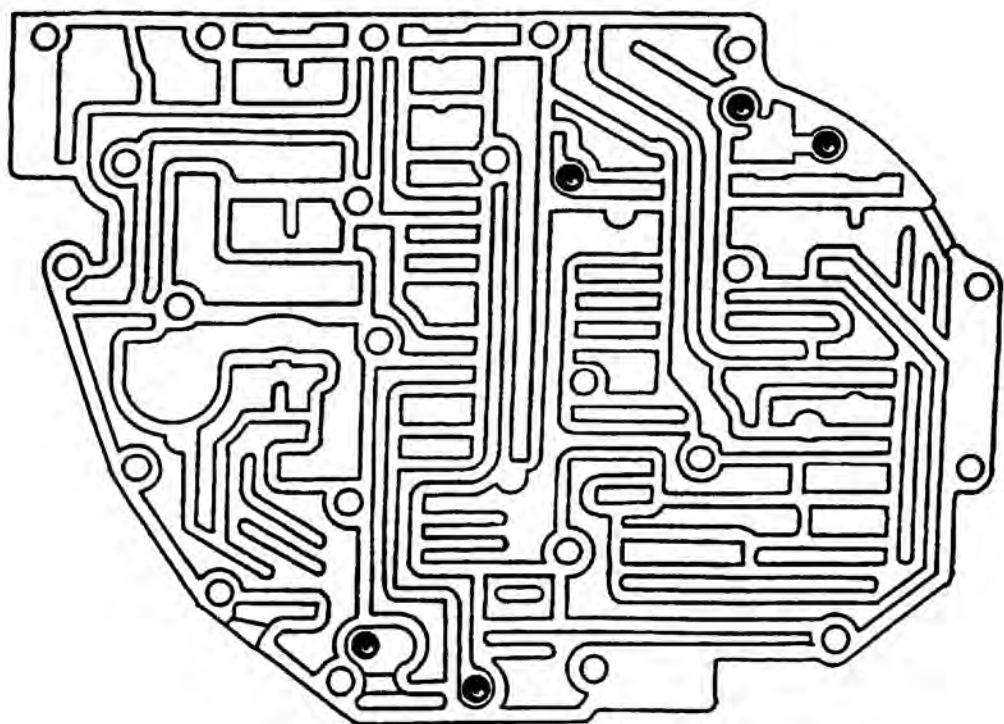
AUTOMATIC TRANSMISSION SERVICE GROUP

A604 TRANSFER PLATE  
(ALL YEARS)

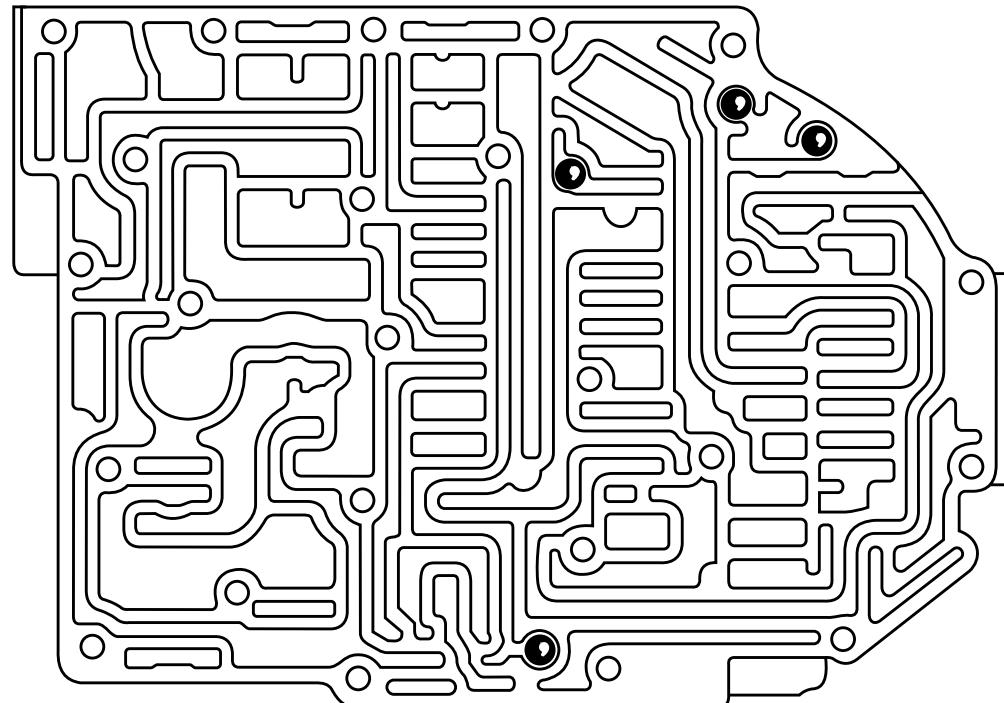
Copyright © 2002 ATSG

Figure 36

AUTOMATIC TRANSMISSION SERVICE GROUP

CHRYSLER 42LE (A606)  
1993 AND 1994 ONLY

REQUIRES "FIVE" CHECKBALLS IN THE LOCATIONS SHOWN ABOVE.

CHRYSLER 42LE (A606)  
1995 TO CURRENT

REQUIRES "FOUR" CHECKBALLS IN THE LOCATIONS SHOWN ABOVE.

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Figure 37

AUTOMATIC TRANSMISSION SERVICE GROUP

## FORD FMX TRANSMISSION VALVE BODY CHECKBALL LOCATIONS

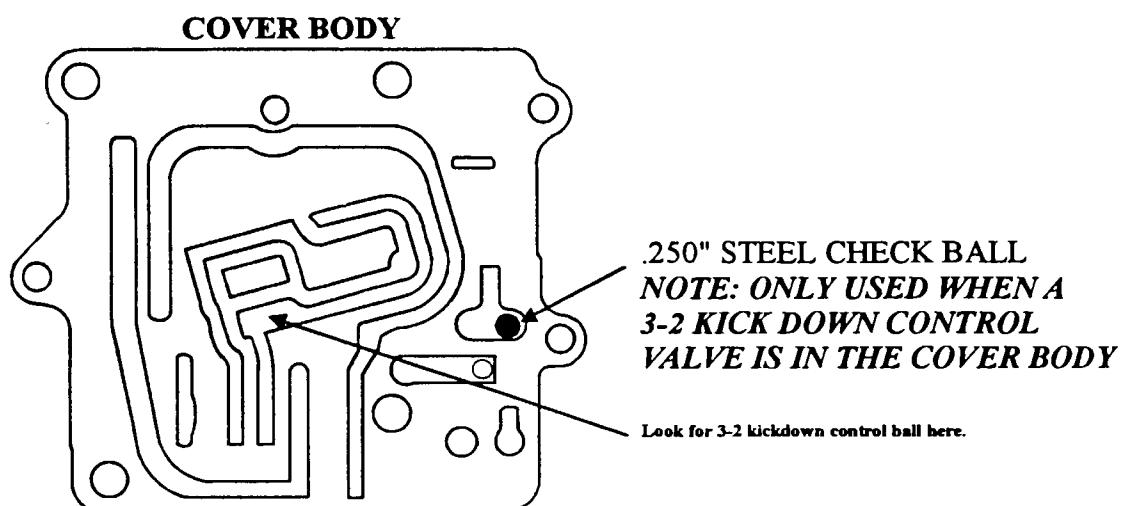
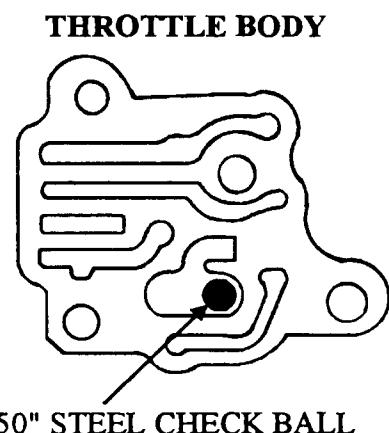
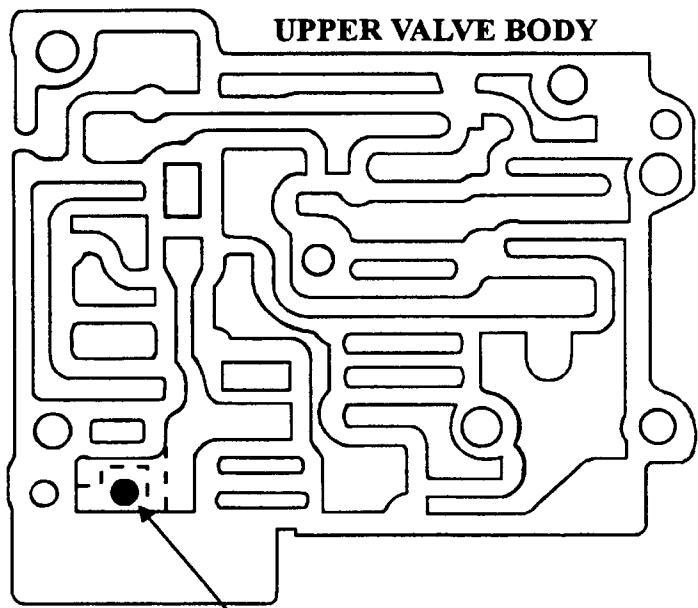
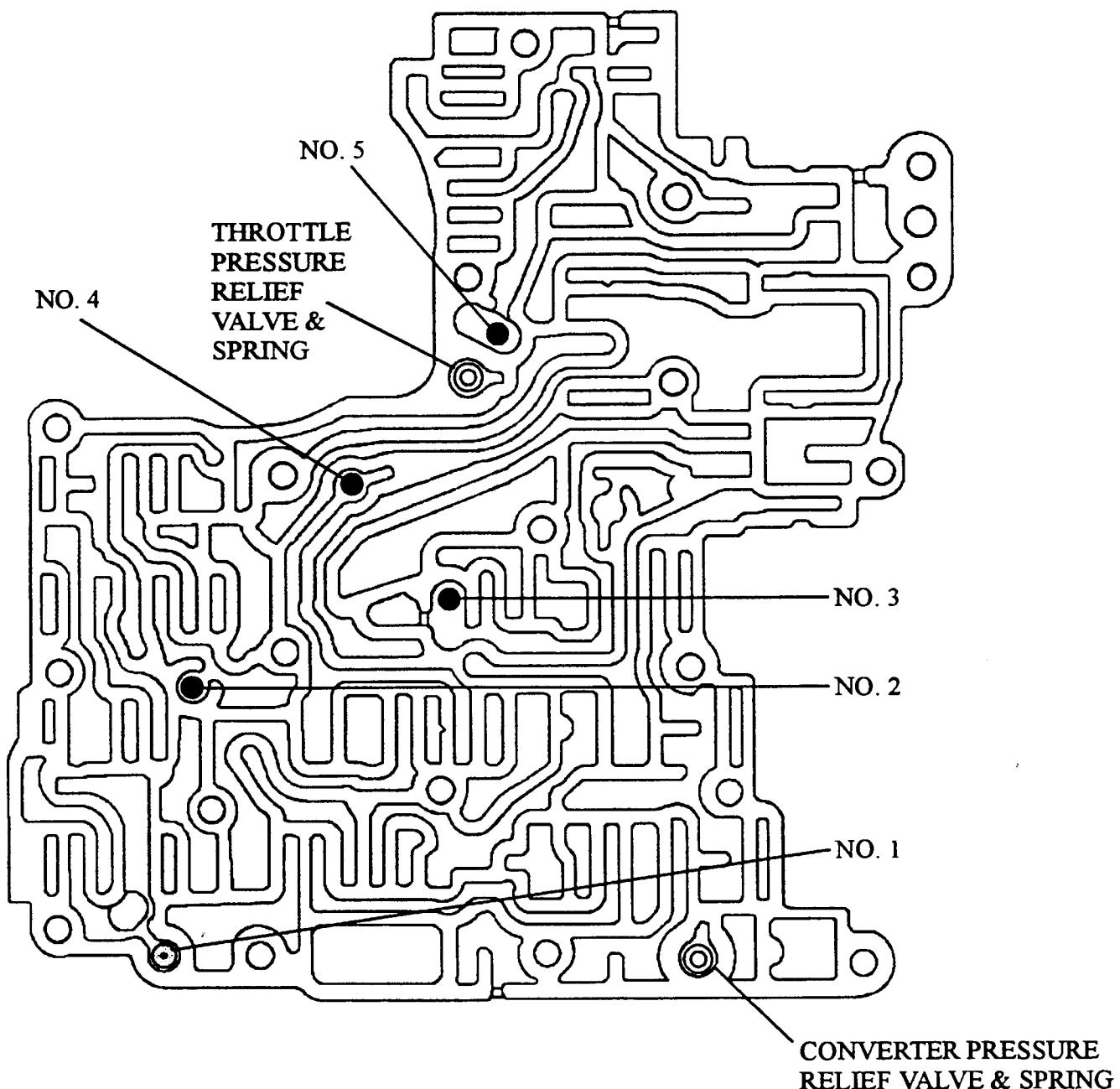


Figure 38

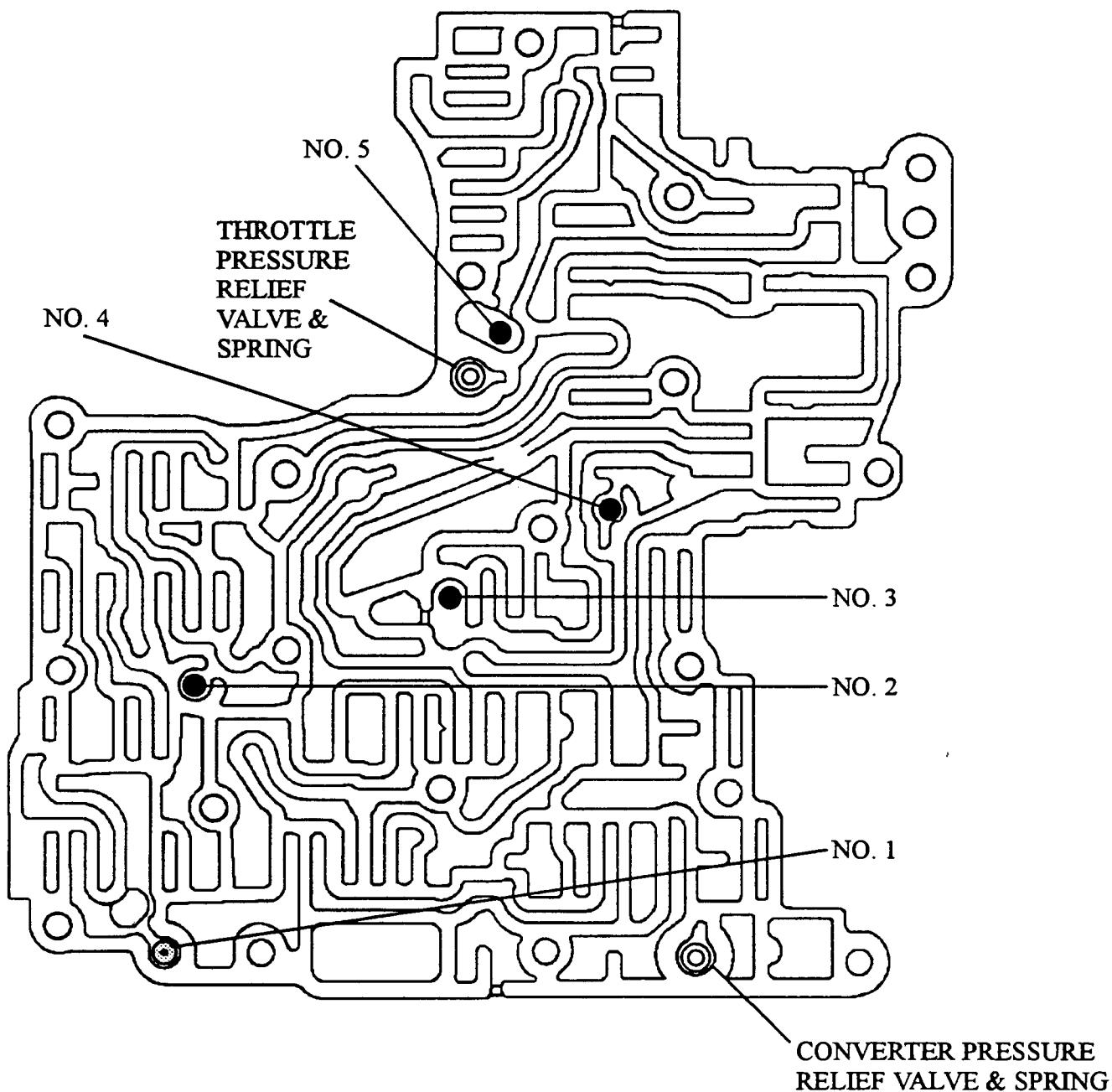
**FORD C-3 TRANSMISSION**  
**1973-1979 VALVE BODY CHECKBALL LOCATIONS**

- NO. 1 INTERMEDIATE SERVO RELEASE PUCK
- NO. 2 DIRECT CLUTCH CONTROL AND EXHAUST BALL (3rd & REV)
- NO. 3 REVERSE/MANUAL 2 AND MANUAL 1 DIRECTIONAL CONTROL BALL
- NO. 4 DIRECT CLUTCH CONTROL BALL - REVERSE ONLY
- NO. 5 TV COAST & BOOST CONTROL BALL

Figure 39

## FORD C-3 TRANSMISSION

### 1980-1986 VALVE BODY CHECKBALL LOCATIONS



- NO. 1 INTERMEDIATE SERVO RELEASE PUCK
- NO. 2 DIRECT CLUTCH CONTROL AND EXHAUST BALL (3rd & REV)
- NO. 3 REVERSE/MANUAL 2 AND MANUAL 1 DIRECTIONAL CONTROL BALL
- NO. 4 DIRECT CLUTCH CONTROL BALL - REVERSE ONLY
- NO. 5 TV COAST & BOOST CONTROL BALL

Figure 40

**FORD C-4 TRANSMISSION**  
**UPPER VALVE BODY CHECKBALL LOCATIONS**  
**(1971 & UP)**

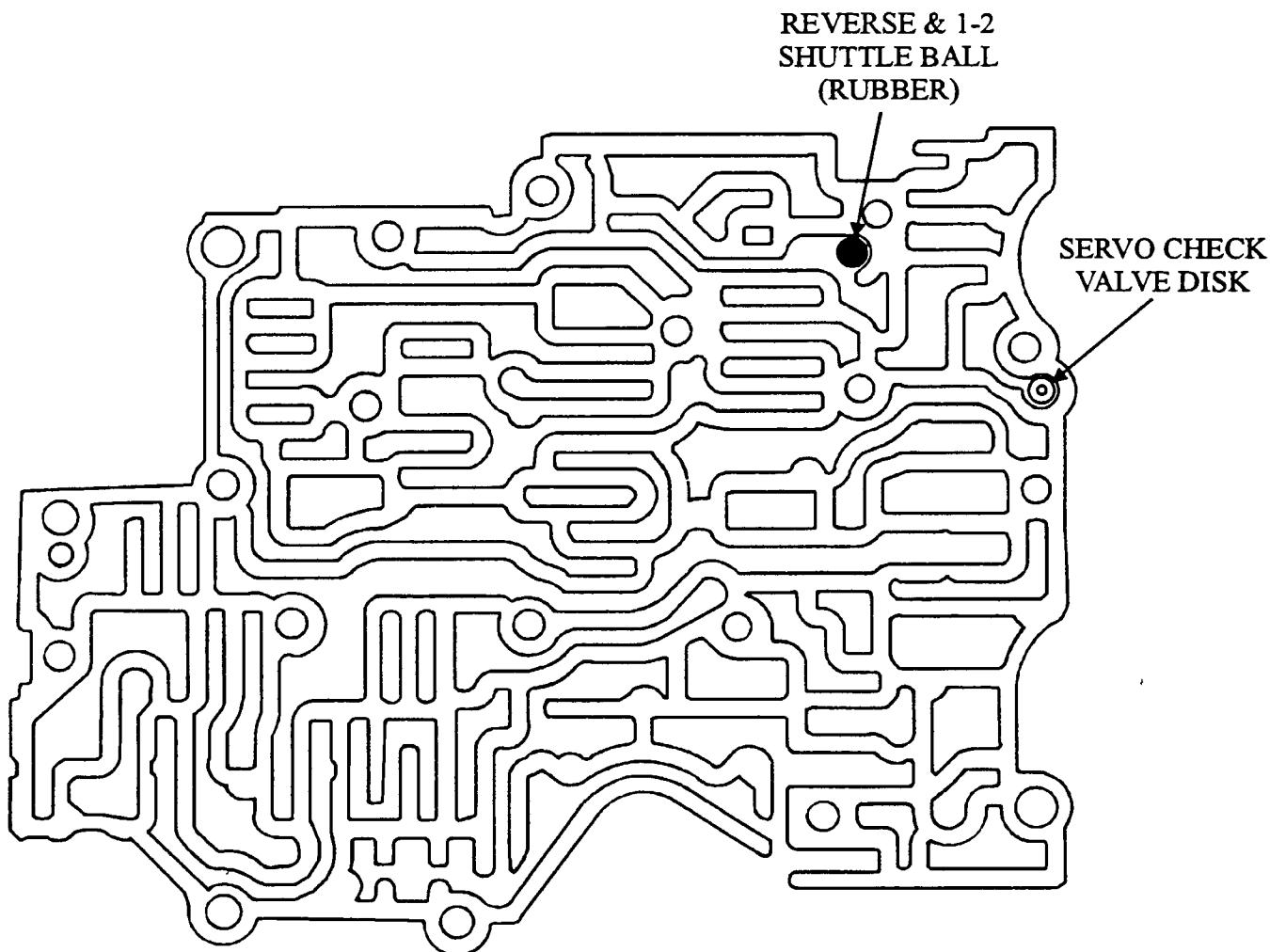


Figure 41

## FORD C-4 TRANSMISSION

### LOWER VALVE BODY CHECKBALL LOCATIONS (1971 & UP)

HIGH SPEED KICK DOWN  
SHUTTLE VALVE BALL

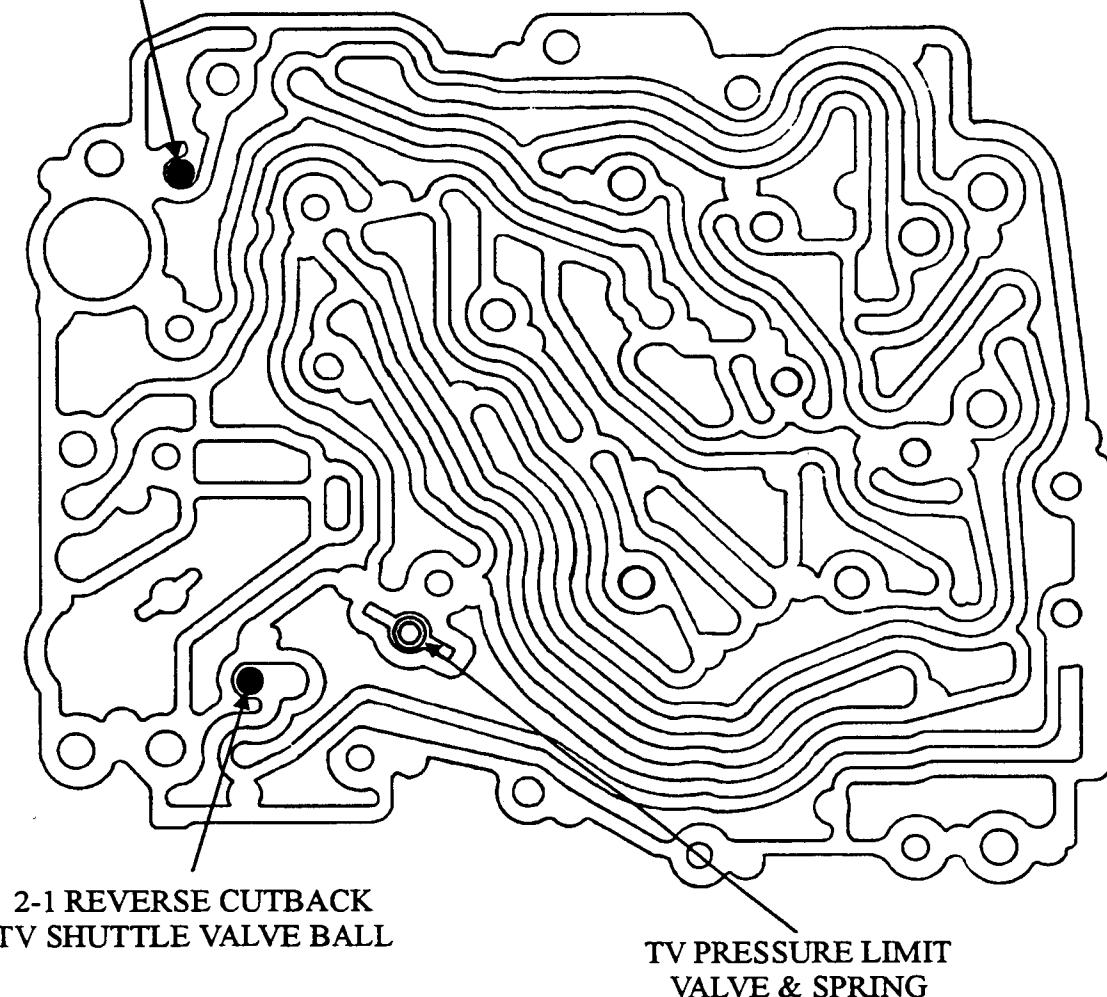


Figure 42

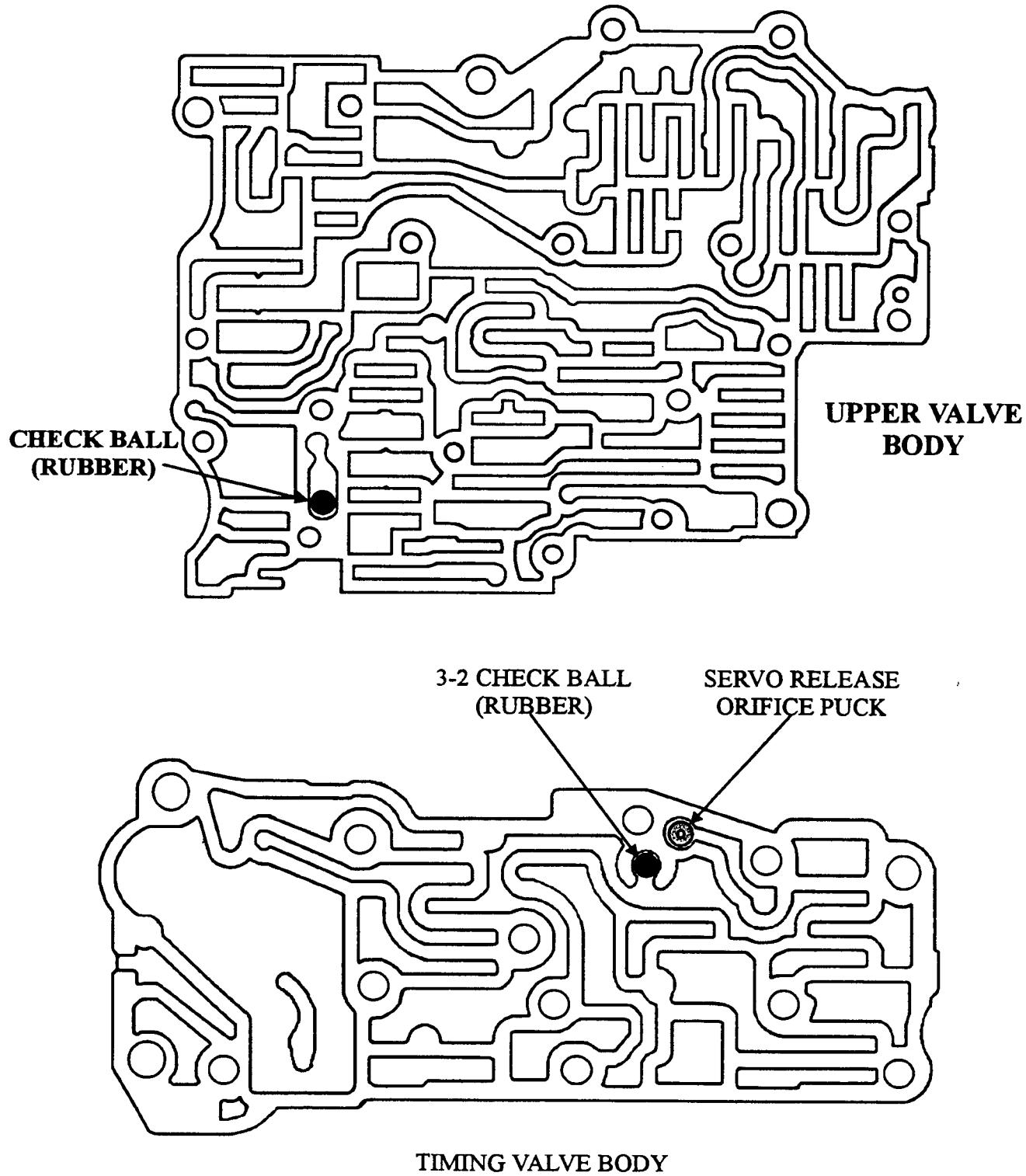
**FORD C-5 TRANSMISSION**  
**UPPER & TIMING VALVE BODY CHECKBALL LOCATIONS**

Figure 43

## FORD C-5 TRANSMISSION

## LOWER VALVE BODY (Bottom &amp; Upper View) CHECKBALL LOCATIONS

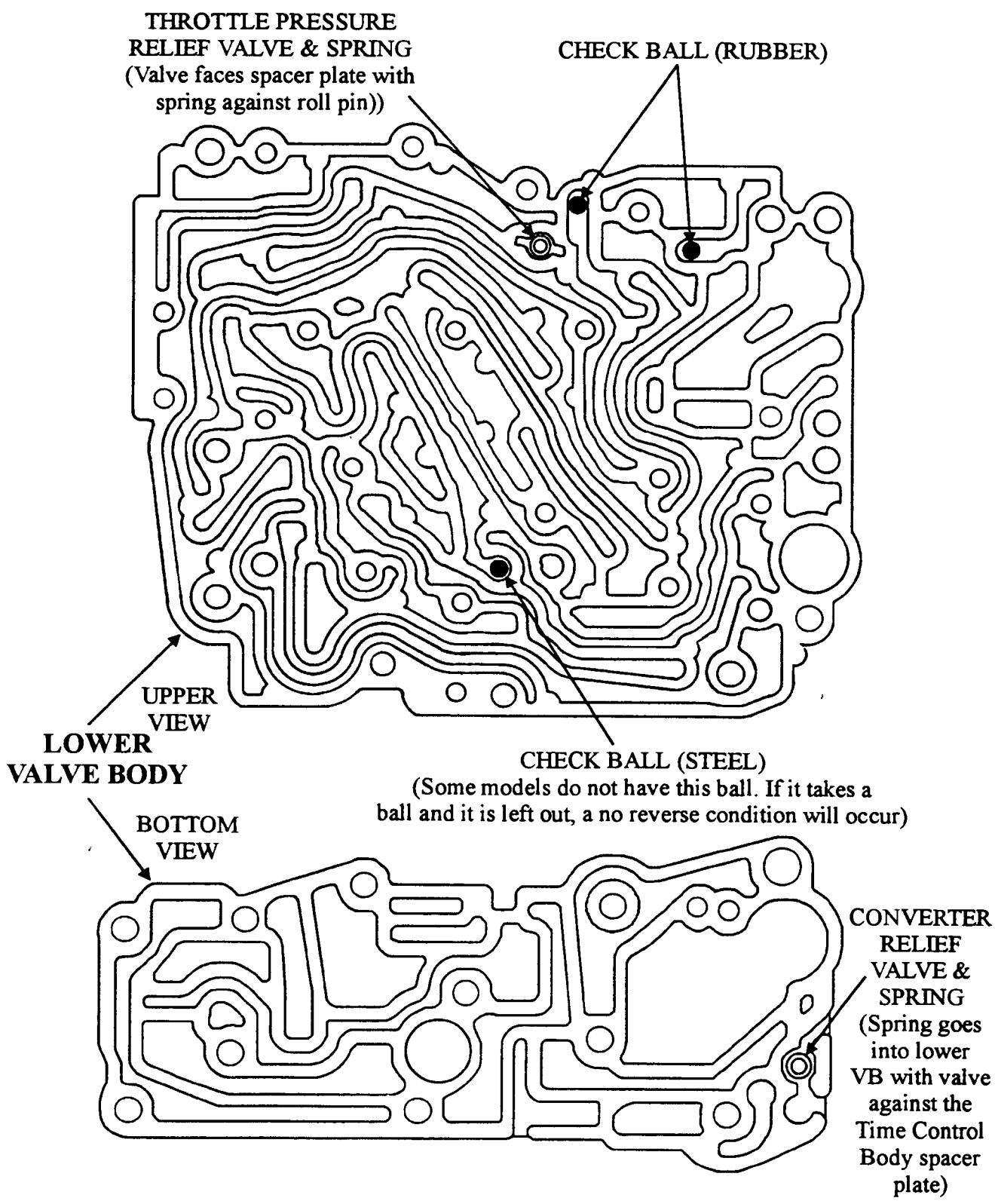


Figure 44

## FORD C-6 TRANSMISSION

### MAIN VALVE BODY CHECKBALL LOCATIONS

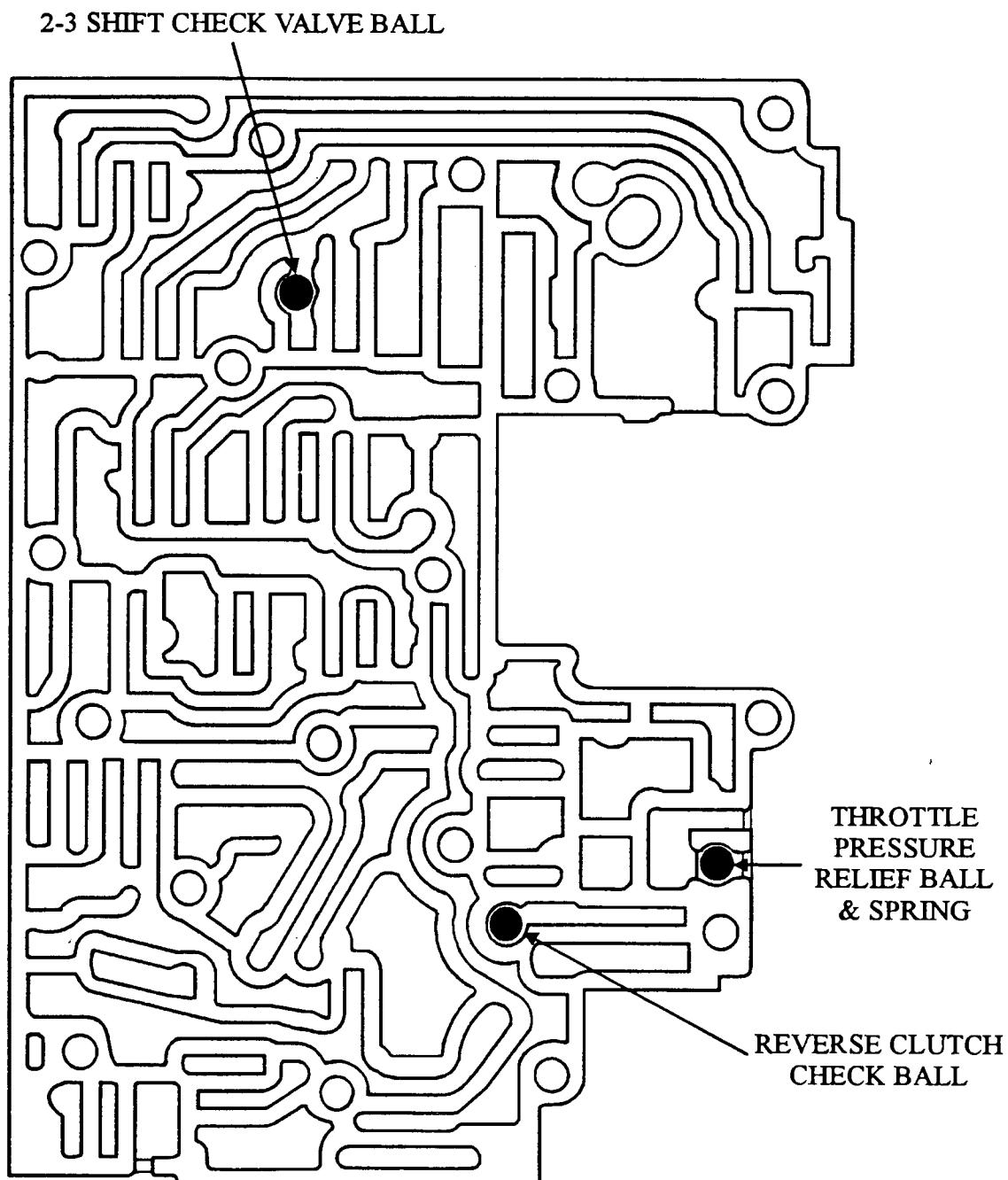


Figure 45

## FORD A4LD TRANSMISSION

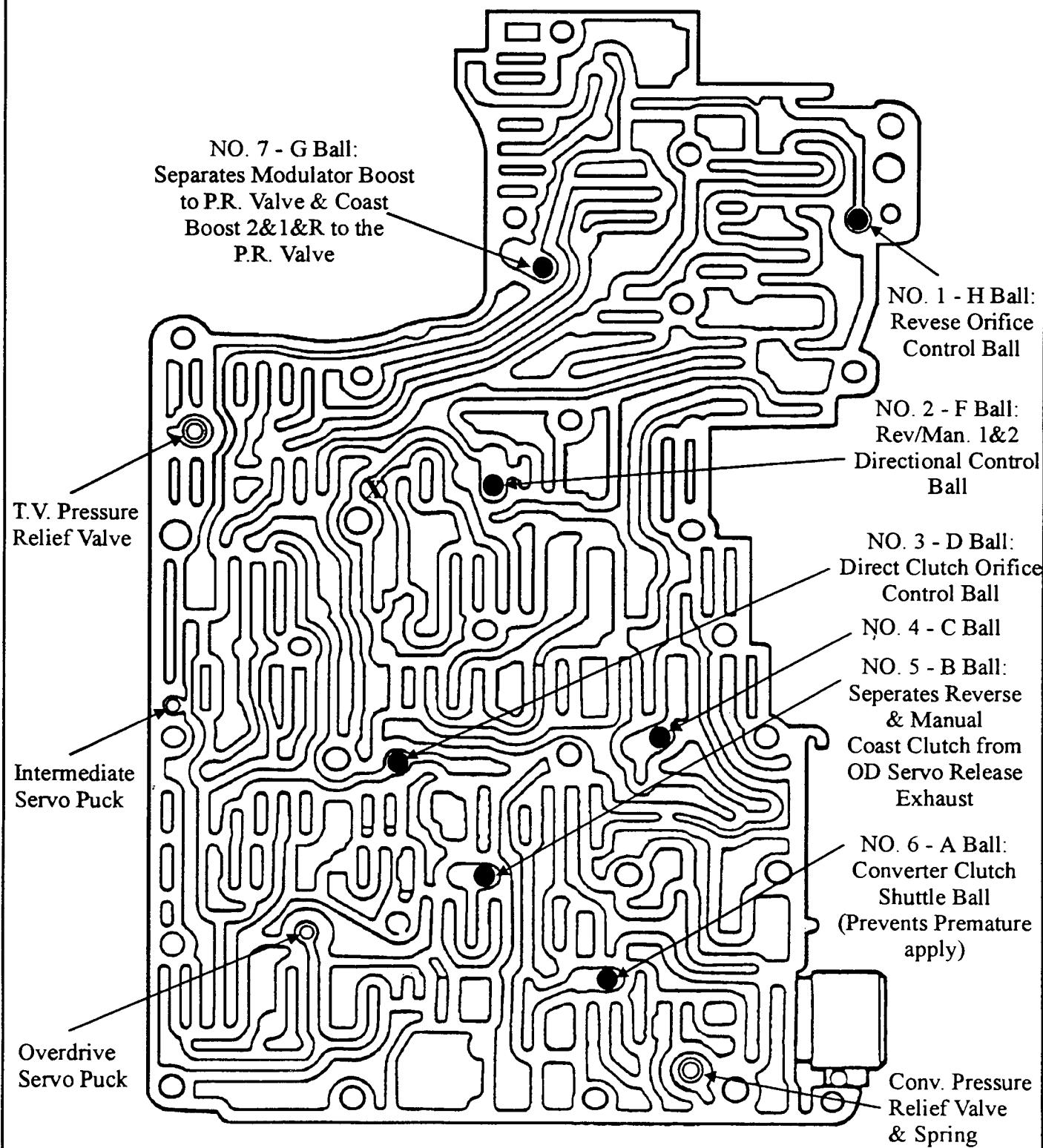
SINGLE SOLENOID MAIN VALVE BODY CHECKBALL LOCATIONS  
*SCORPIO/MERCUR ONLY*

Figure 46

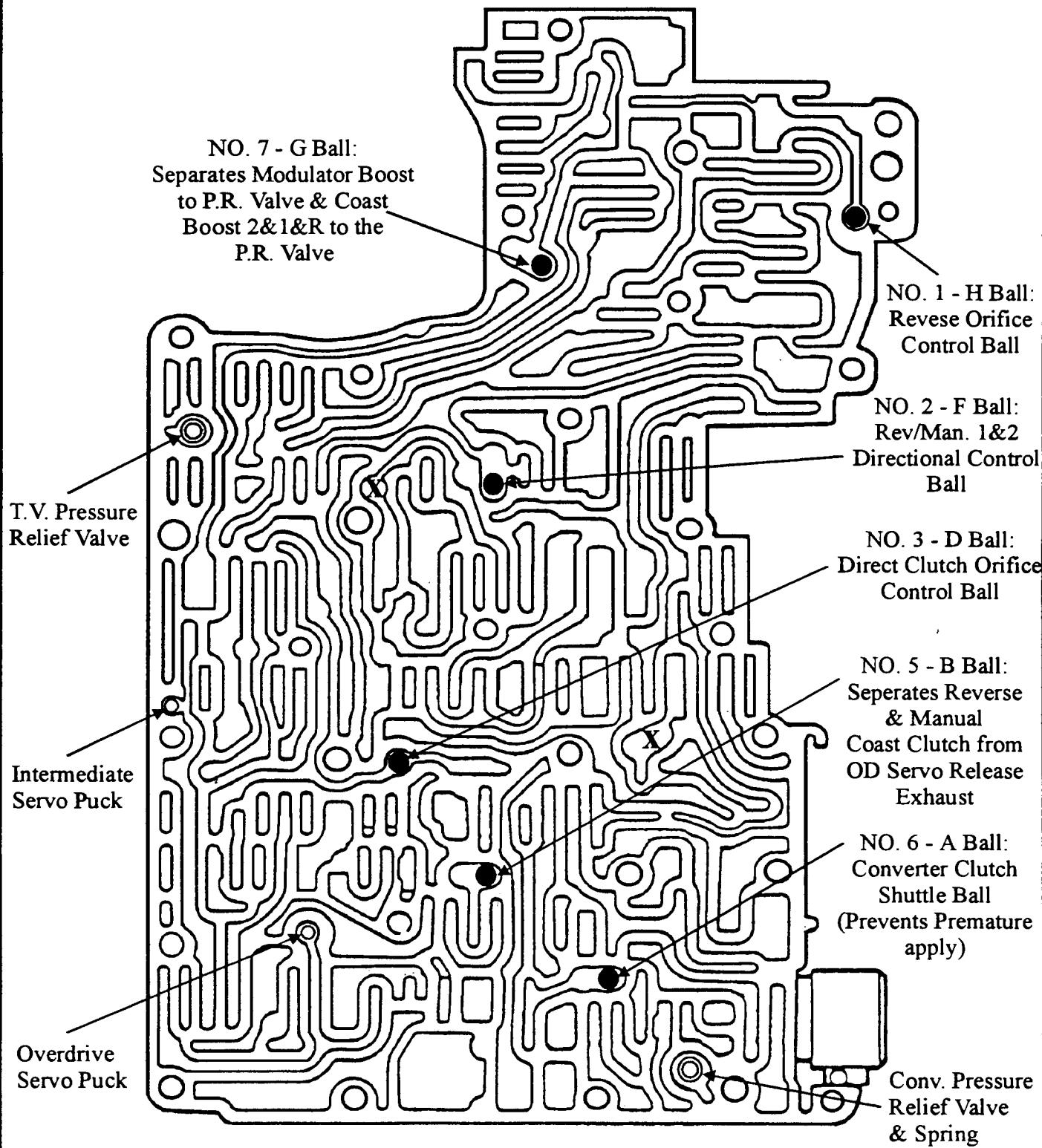
**FORD A4LD TRANSMISSION****SINGLE SOLENOID MAIN VALVE BODY CHECKBALL LOCATIONS  
ALL MODELS EXCEPT SCORPIO/MERCUR**

Figure 47

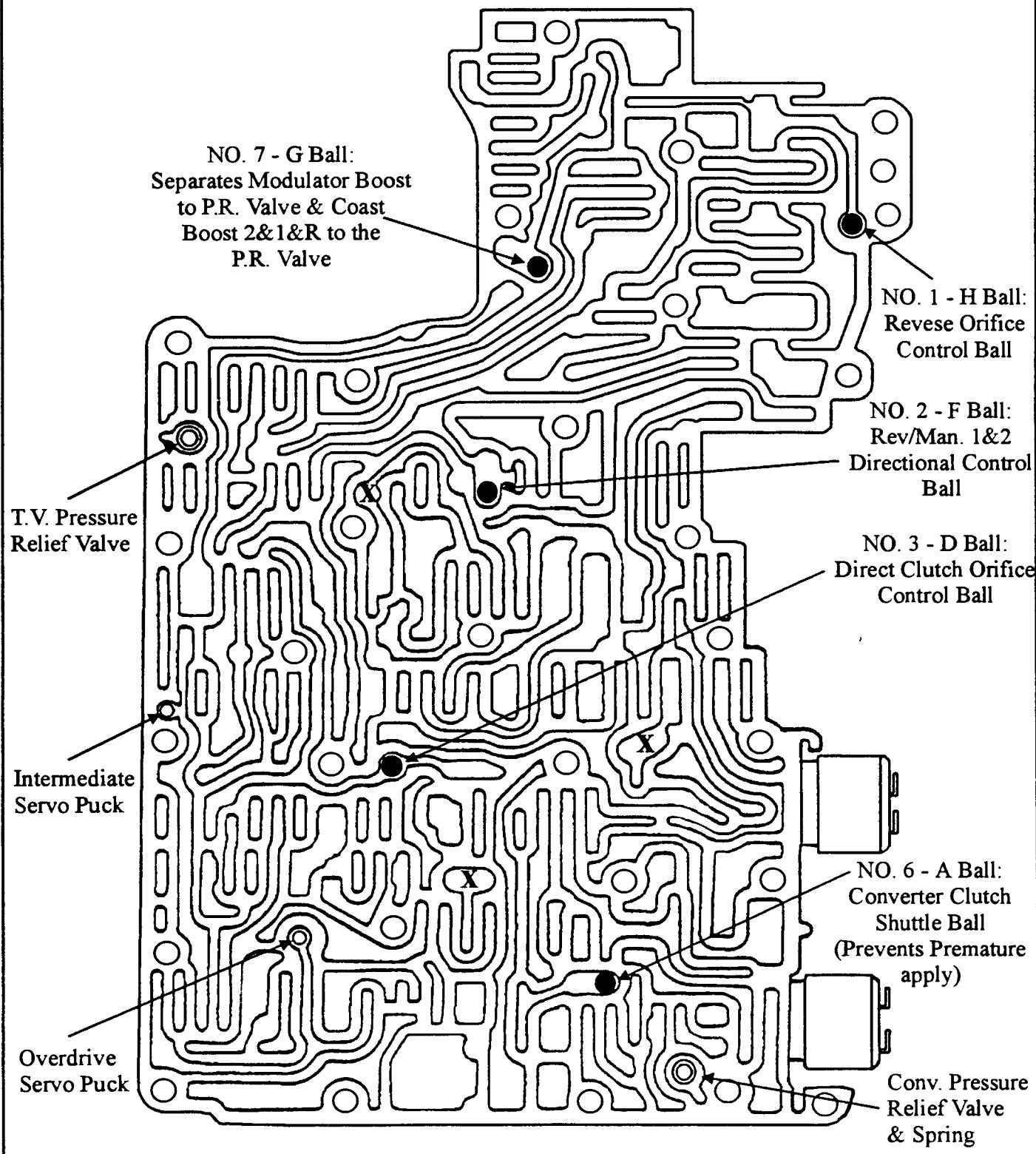
**FORD A4LD TRANSMISSION****DOUBLE SOLENOID MAIN VALVE BODY CHECKBALL LOCATIONS  
WITHOUT REVERSE ENGAGEMENT CONTROL VALE**

Figure 48

## FORD A4LD TRANSMISSION

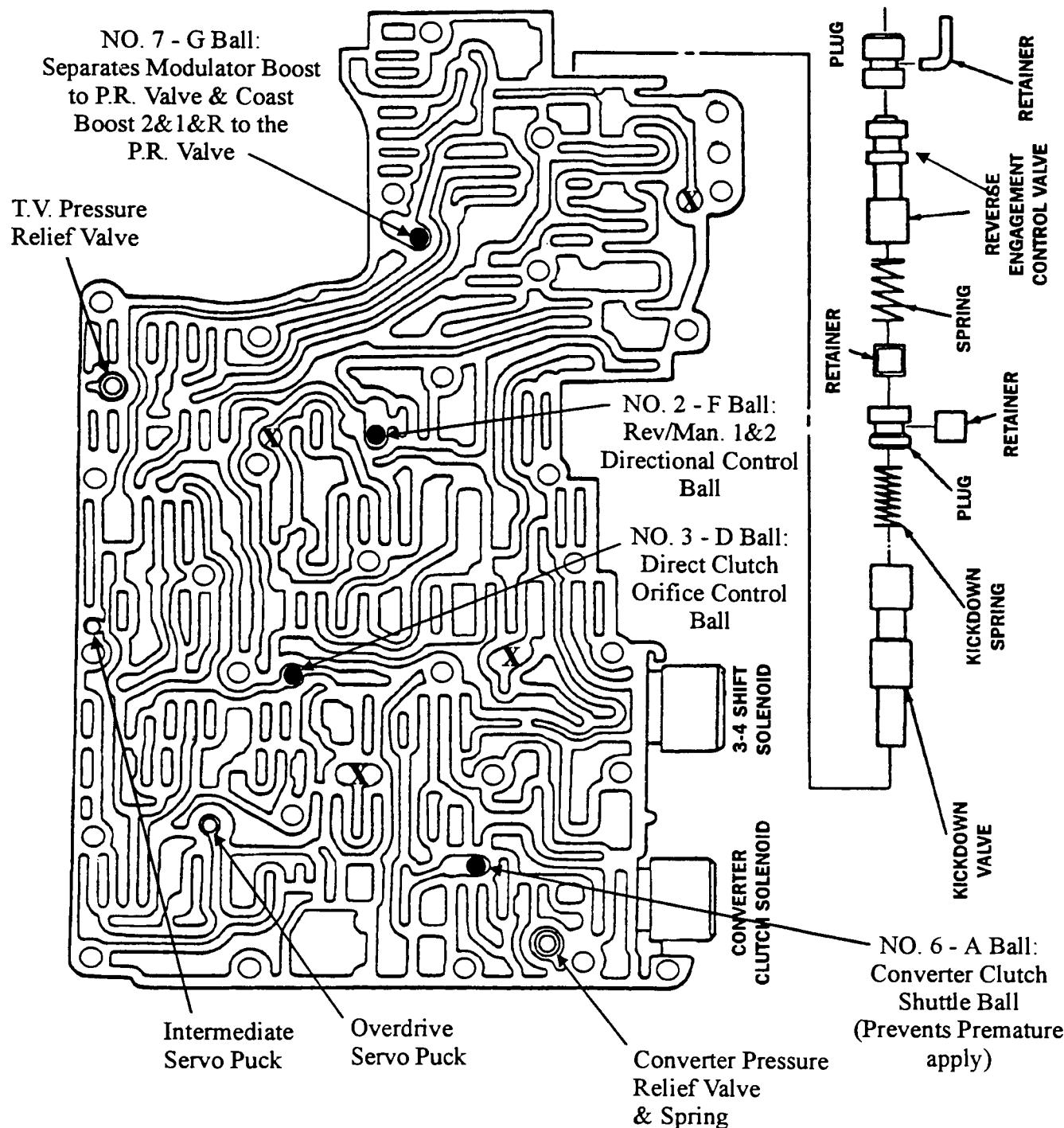
DOUBLE SOLENOID MAIN VALVE BODY CHECKBALL LOCATIONS  
*WITH REVERSE ENGAGEMENT CONTROL VALE*

Figure 49

## FORD A4R44/55-E TRANSMISSION

### MAIN VALVE BODY CHECKBALL LOCATIONS

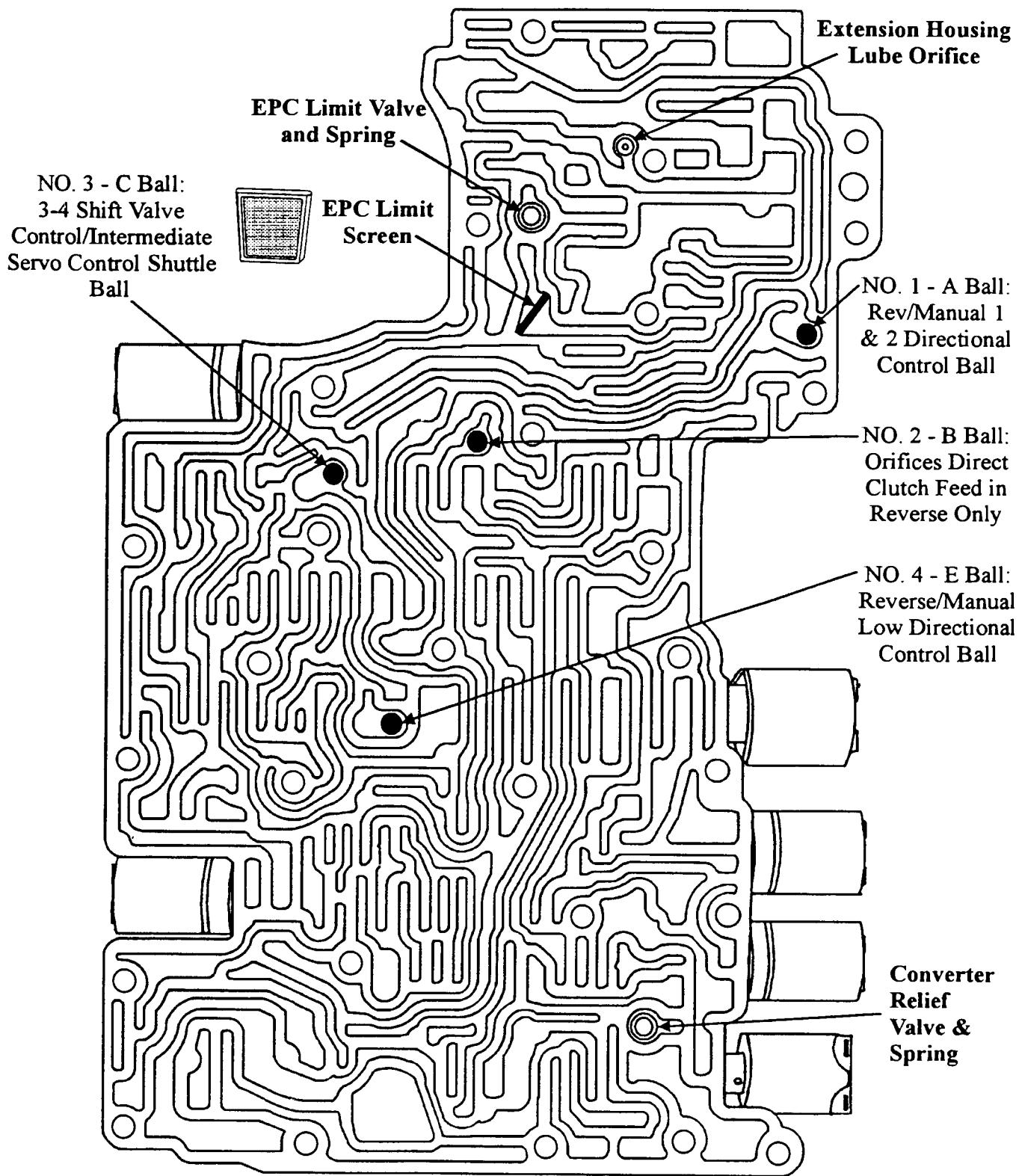
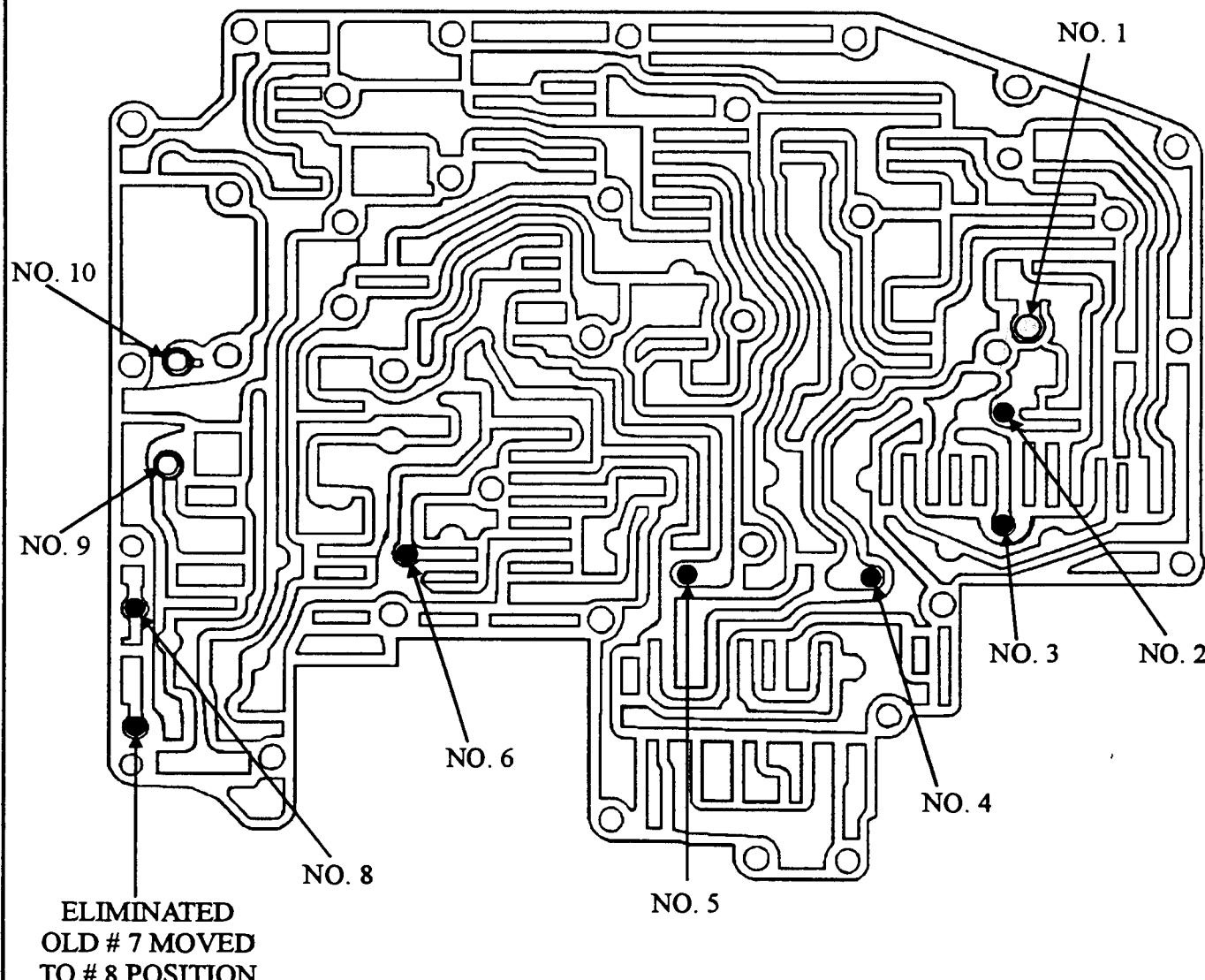
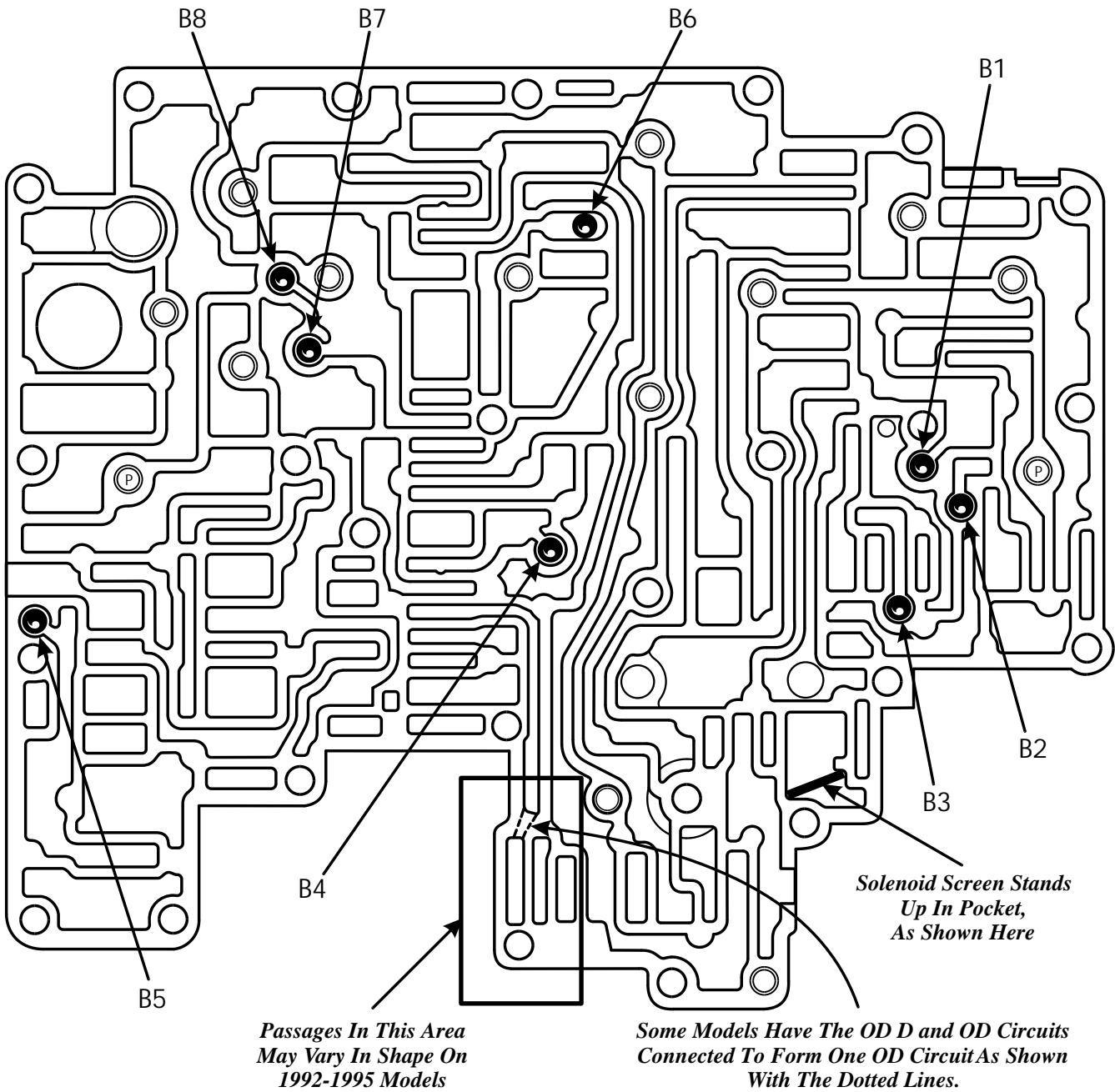


Figure 50

**FORD AOD TRANSMISSION**  
**MAIN VALVE BODY CHECKBALL LOCATIONS**

- NO. 1 FORWARD CLUTCH TIME CONTROL & EXHAUST BALL (4-3 KD - .310" Orange)
- NO. 2 2-3 ACCUMULATOR TIME CONTROL & EXHAUST BALL
- NO. 3 2-3 ORIFICE K CONTROL BALL
- NO. 4 PARK, REVERSE, MANUAL 3,2,1 & KD SHUTTLE BALL
- NO. 5 PARK, REVERSE, MANUAL 2,1 & KD SHUTTLE BALL
- NO. 6 3-4 EXHAUST CONTROL BALL
- NO. 8 3-4 ACCUMULATOR SHOULDER PRESSURE ORIFICE CONTROL BALL
- NO. 9 CONVERTER PRESSURE RELIEF VALVE
- NO. 10 T.V. PRESSURE RELIEF VALVE

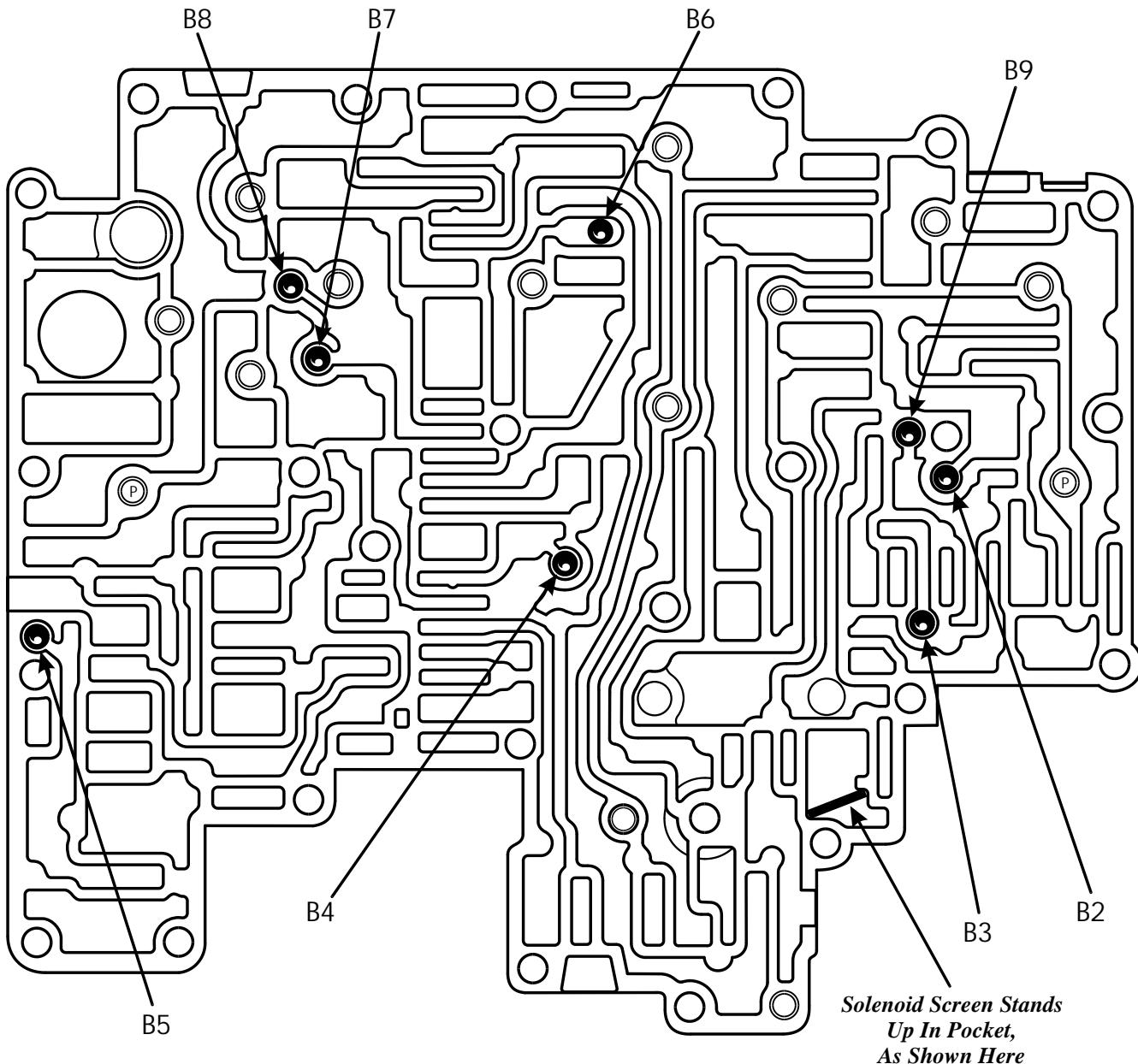
Figure 51

**1992-1995 AODE/4R70W CHECKBALL LOCATIONS**


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Figure 52

## 1996-UP AODE/4R70W CHECKBALL LOCATIONS



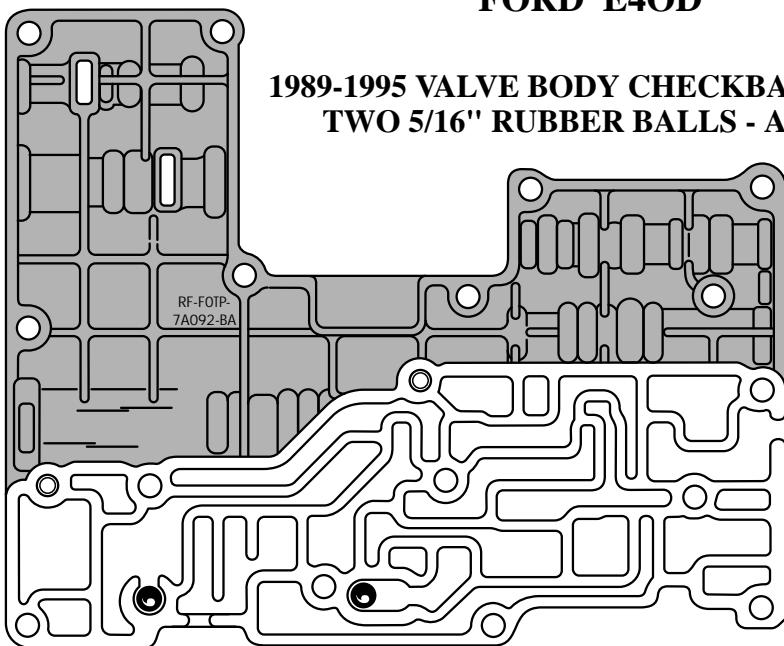
- B2 - In the Forward Clutch circuit near the 3-4 shift valve.  
B3 - In the Direct Clutch circuit near the 2-3 backout valve.  
B4 - In the Overdrive and Forward Clutch circuits near the 1-2 shift valve.  
B5 - In the Reverse circuit near orifice number one.  
B6 - Shuttle ball between the Low and Reverse circuits.  
B7 - Between the L234 and Torque Converter Clutch circuits.  
B8 - Between the L234 and Intermediate Clutch circuits.  
B9 - Between the FC34 and 23BP circuits (1996-Up Only).

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Figure 53

## FORD E4OD

1989-1995 VALVE BODY CHECKBALL LOCATIONS  
TWO 5/16" RUBBER BALLS - ALL MODELS

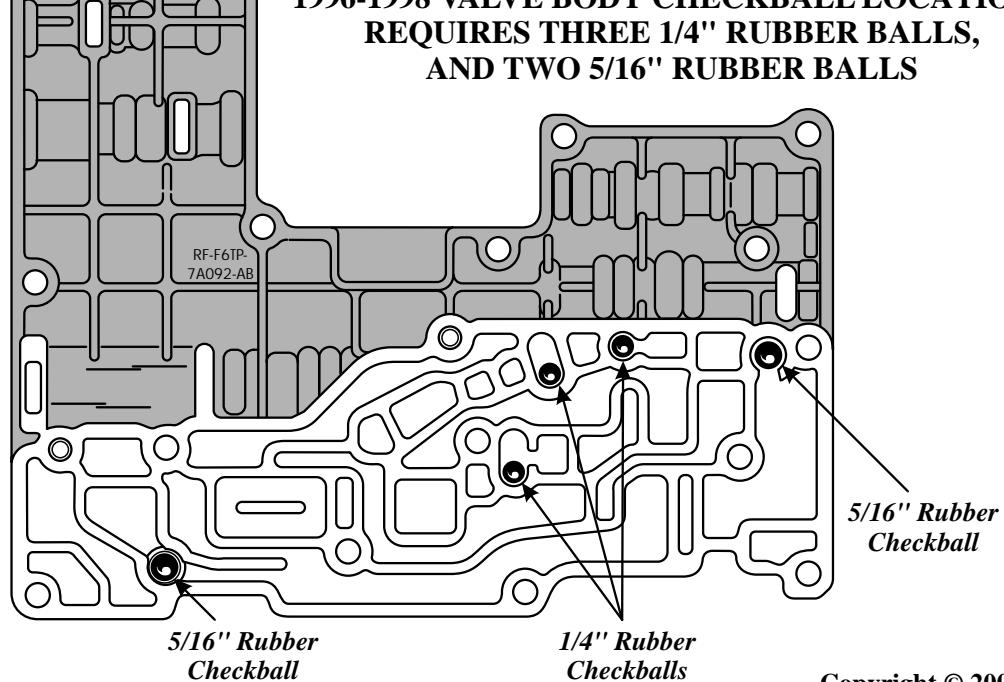


## SPECIAL NOTE:

Some 1995 models were built with 1996 production valve body, spacer plate, and valve body gaskets. Be very careful to identify the parts on any 1995 model properly.

## FORD E4OD

1996-1998 VALVE BODY CHECKBALL LOCATIONS  
REQUIRES THREE 1/4" RUBBER BALLS,  
AND TWO 5/16" RUBBER BALLS

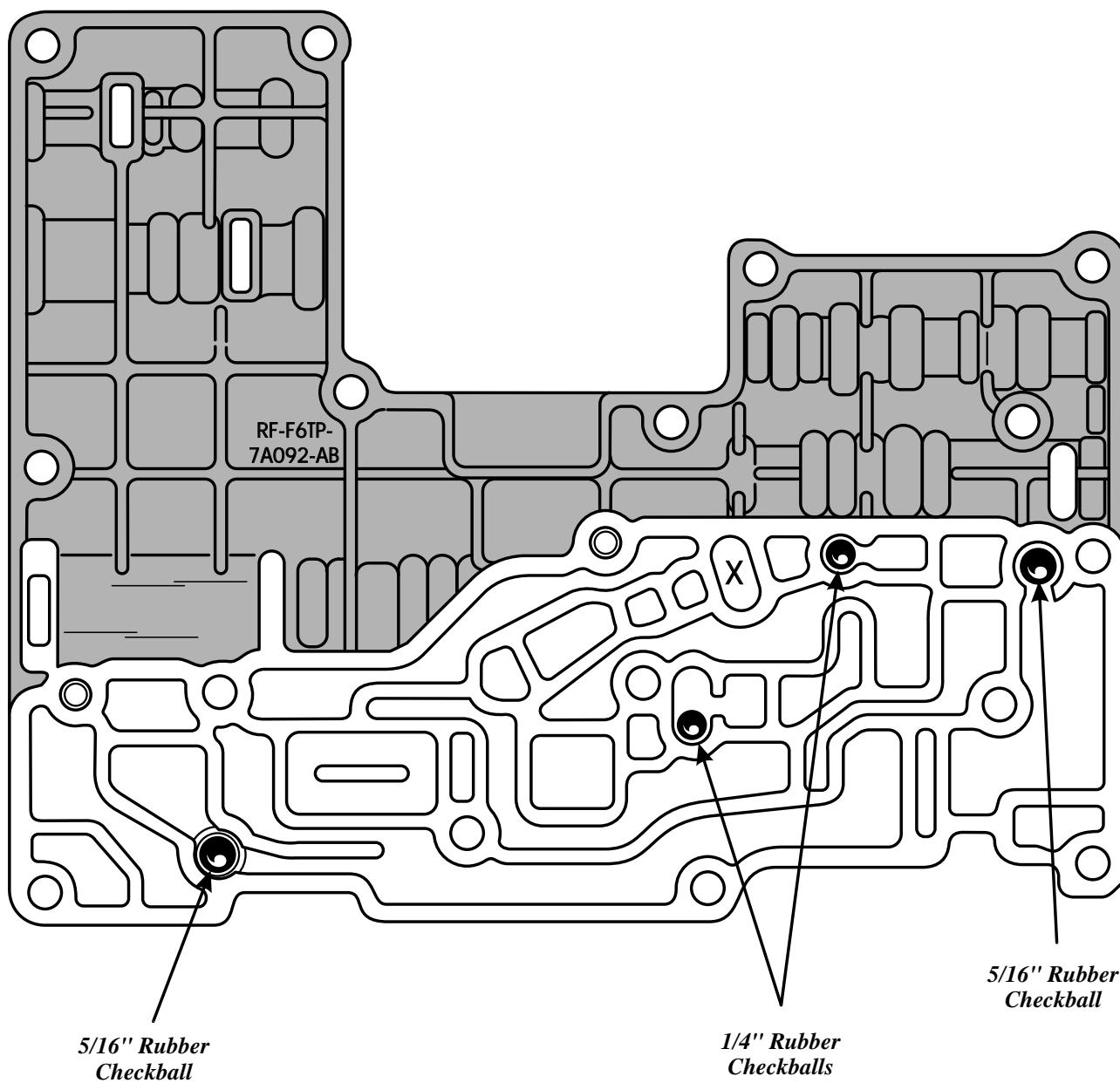


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Figure 54

## FORD 4R100

1998-2003 VALVE BODY CHECKBALL LOCATIONS  
REQUIRES "TWO" 1/4" RUBBER BALLS,  
AND "TWO" 5/16" RUBBER BALLS



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Figure 55

AUTOMATIC TRANSMISSION SERVICE GROUP

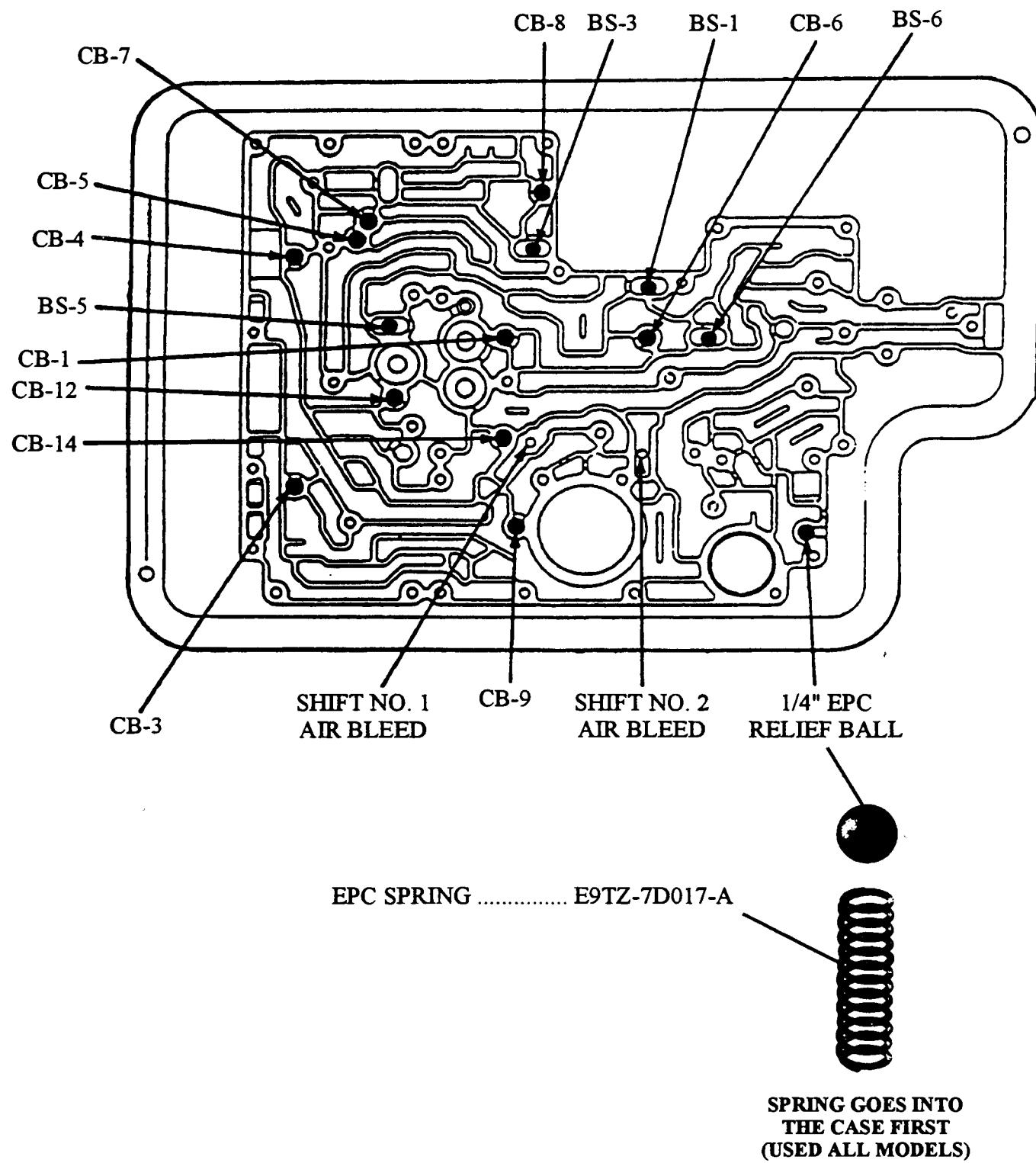
**EARLY 1989 CASE CHECKBALL LOCATIONS  
REQUIRES FOURTEEN (5/16") RUBBER BALLS**

Figure 56

LATE 1989 CASE CHECKBALL LOCATIONS  
REQUIRES TEN (5/16") RUBBER BALLS AND  
ONE 5/16" STEEL BALL IN CASE

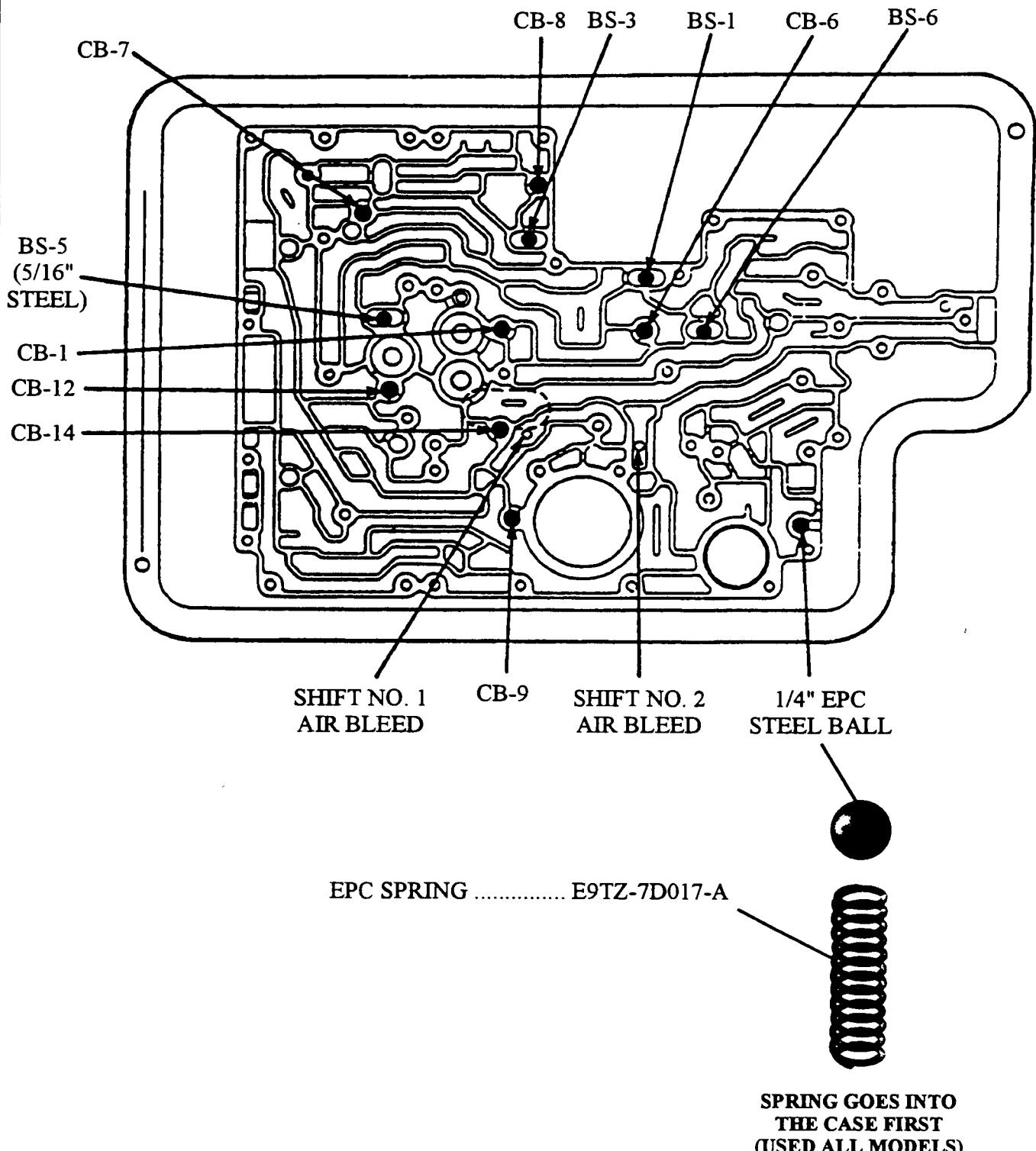


Figure 57

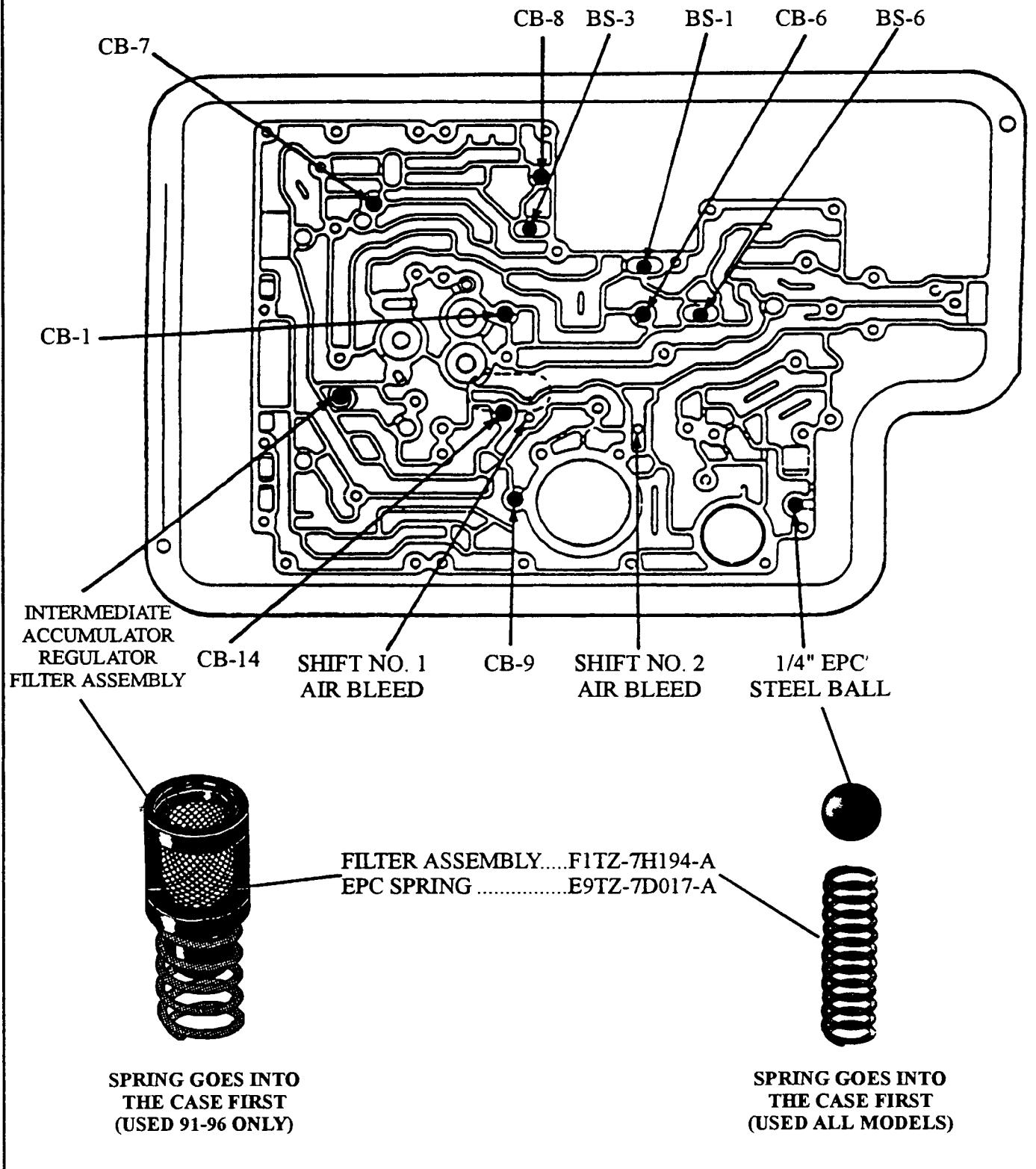
**1990 - 1995 CASE CHECKBALL LOCATIONS  
REQUIRES NINE (5/16") RUBBER BALLS**

Figure 58

## FORD E4OD

1996-1998 CASE CHECKBALL LOCATIONS  
REQUIRES EIGHT (5/16") RUBBER BALLS

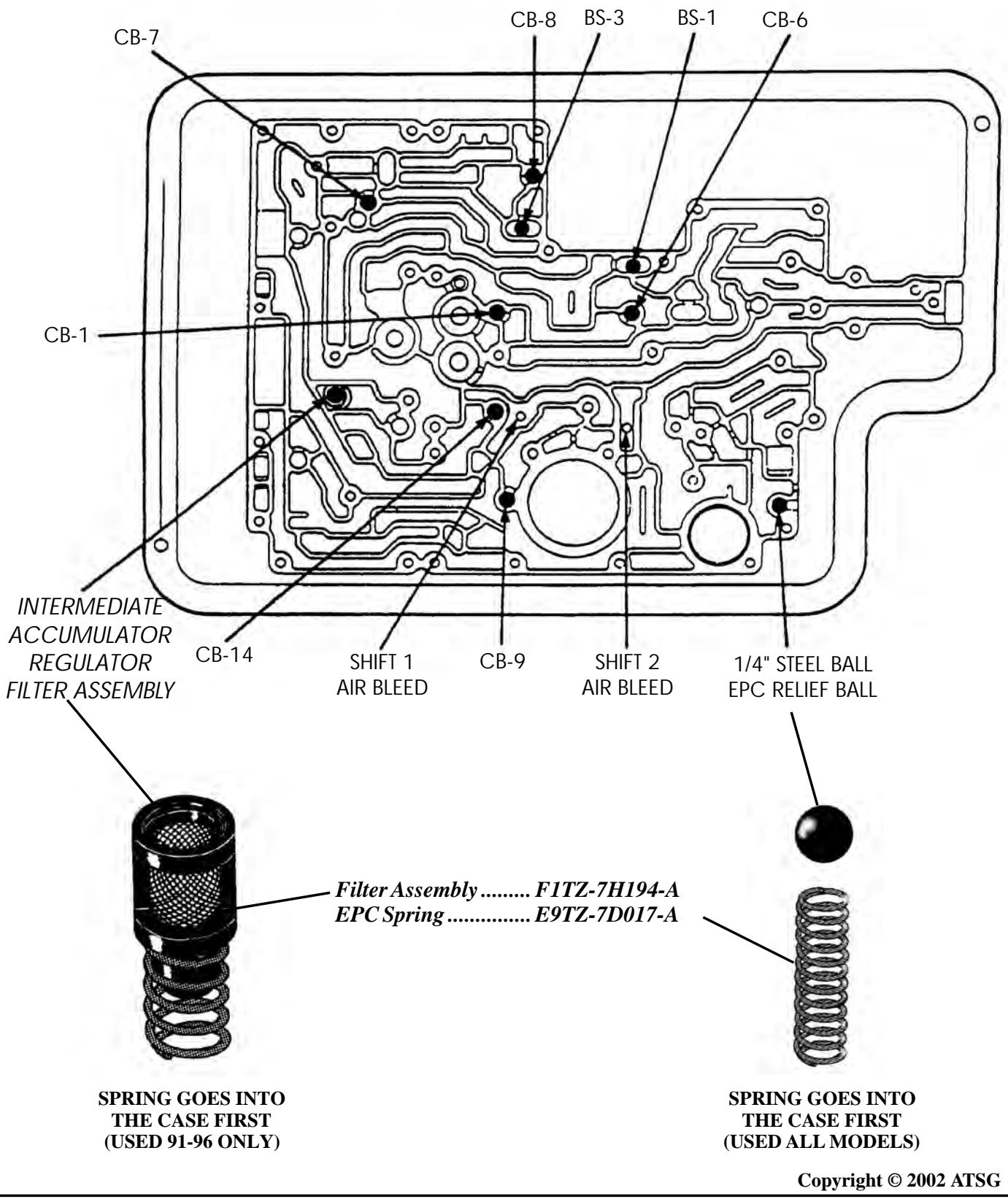
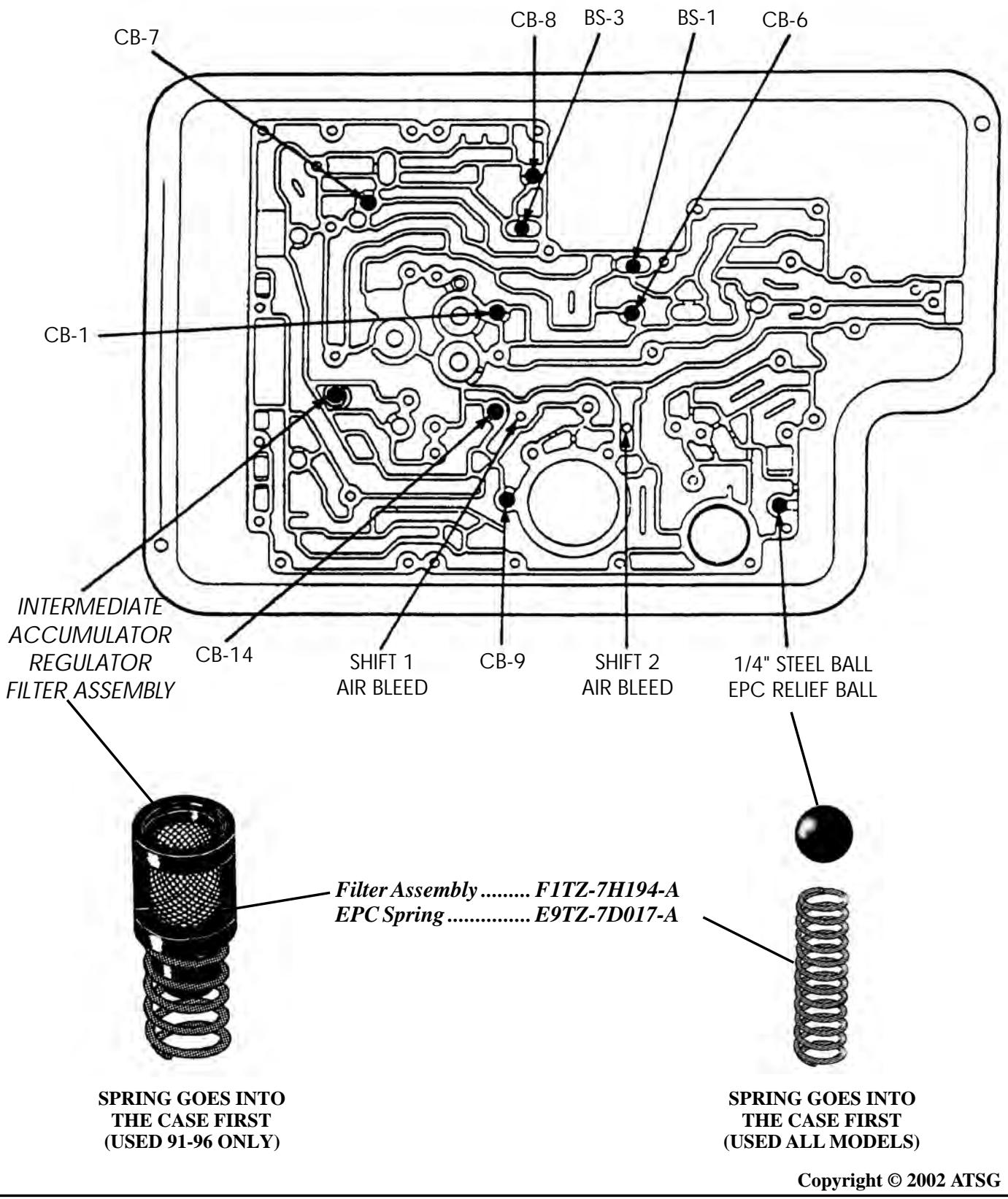


Figure 59

## FORD 4R100

1998-2003 CASE CHECKBALL LOCATIONS  
REQUIRES EIGHT (5/16") RUBBER BALLS



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Figure 60

AUTOMATIC TRANSMISSION SERVICE GROUP

**FORD ATX**  
**VALVE BODY CHECKBALL LOCATIONS**  
**1981 - 1986 ONLY**

**(USES THE GEAR TYPE CONVERTER)  
REQUIRES 5 CHECKBALLS**

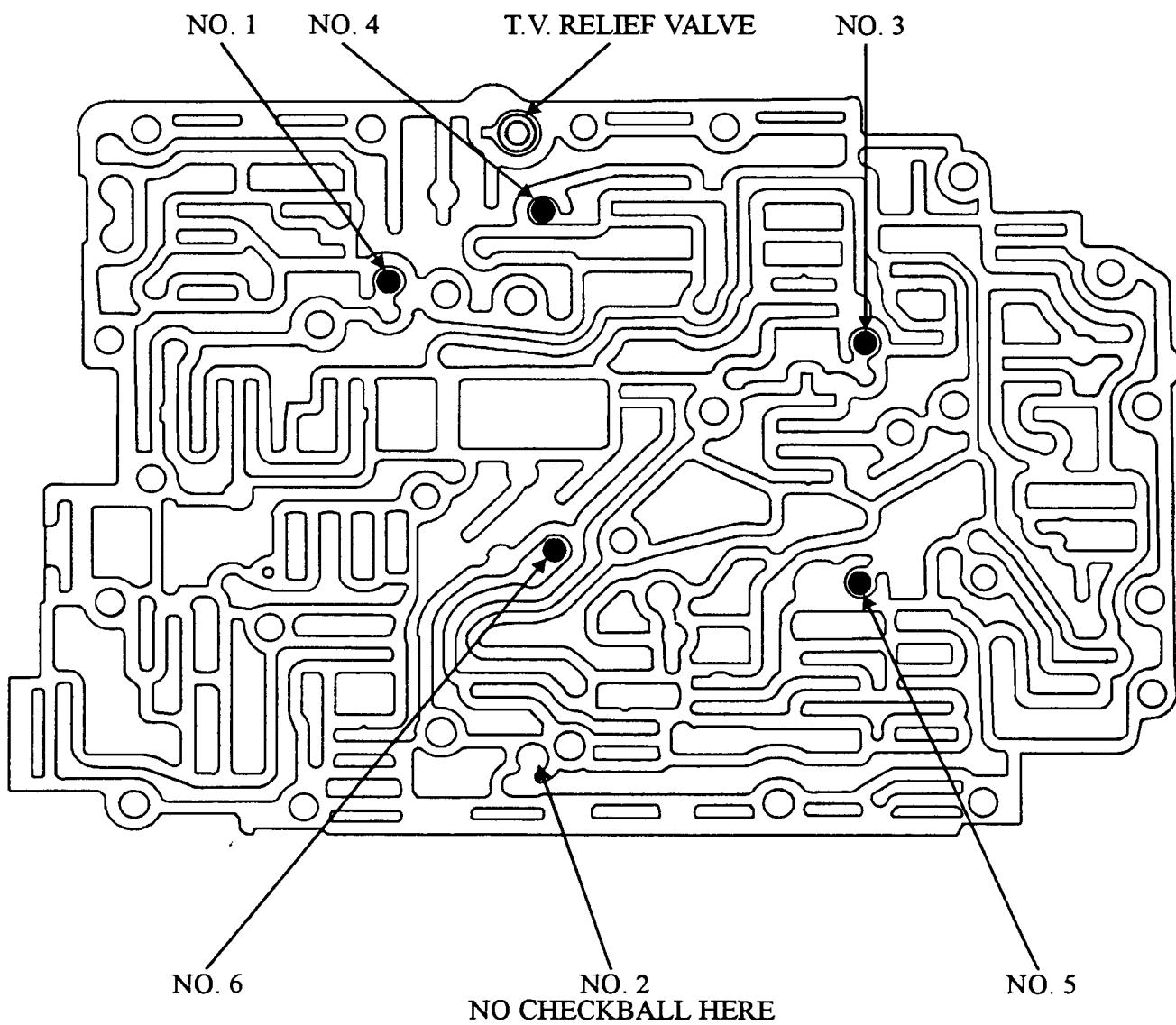


Figure 61

## FORD ATX

VALVE BODY CHECKBALL LOCATIONS  
TAURUS/SABLE 2.5L ENGINE

(USES THE CLC TYPE CONVERTER)  
REQUIRES 6 CHECKBALLS

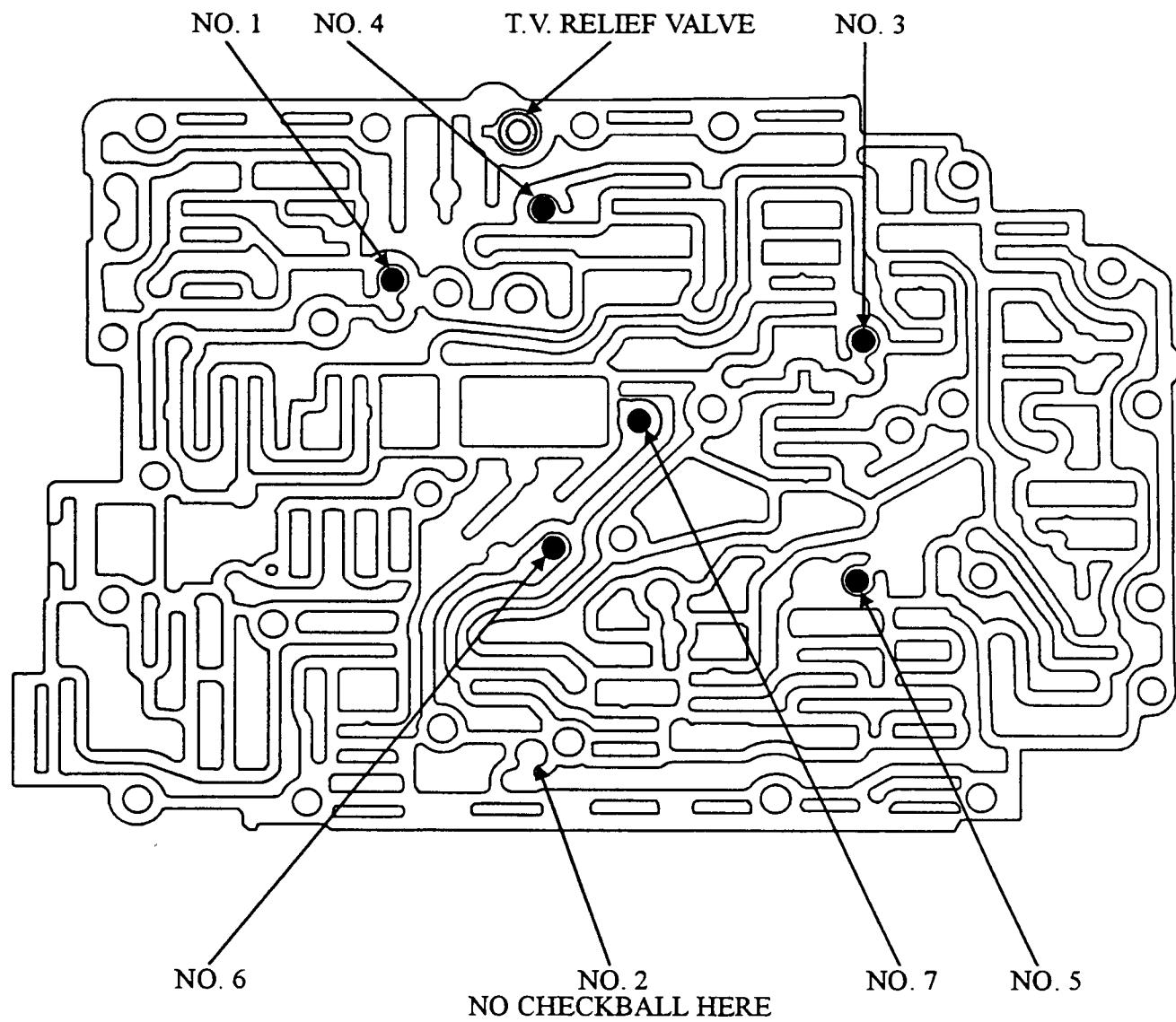


Figure 62

FORD ATX  
VALVE BODY CHECKBALL LOCATIONS  
1987-UP TEMPO/TOPAZ

(USES THE FLC TYPE CONVERTER)  
REQUIRES 7 CHECKBALLS

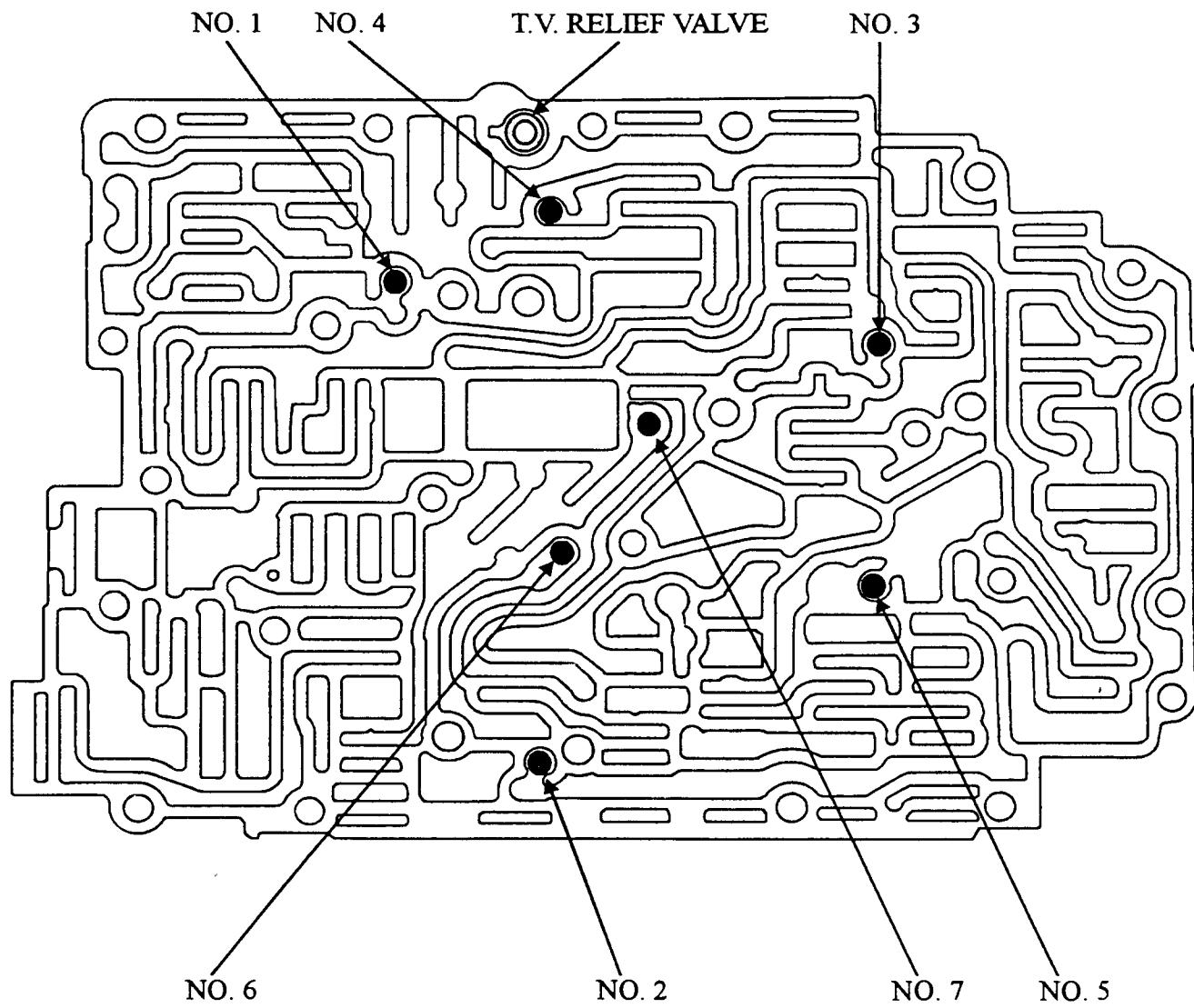


Figure 63



## **FORD ATX TRANSMISSION**

### **CHECK BALL FUNCTION**

**NO. 1 - Reverse clutch orifice control ball** - controls the apply of the reverse clutch.

**NO. 2 - Direct clutch orifice control ball** - controls the apply of the third clutch through the "B" orifice in the spacer plate.

**NO. 3 - D, 1, 2 orifice control ball for servo apply** - forces servo apply oil through a "C" orifice in the spacer plate via the 2-3 backout valve.

**NO. 4 - Reverse orifice control ball through 2-3 shift valve for servo release** - the direct clutch is applied by a modulated line pressure through the # 4 check ball, the 2-3 shift valve, the manual downshift modulator valve and orifice B. When the selector lever is moved out of reverse, it forces this pressure to be exhausted through the "D" orifice in the spacer plate.

**NO. 5 - Reverse/3rd servo release exhaust ball** - forces servo release oil to be exhausted through the 3-2 kickdown valve, 3-2 torque demand timing valve, 2-3 shift valve, through orifice "D" in the spacer plate and out to an exhaust at the manual valve.

**NO. 6 - R, 1, 2/Kick down shuttle ball** - allows Reverse, manual low and manual 2 oil to be directed to the 2-3 shift T.V. modulator valve to prevent the valve from going into regulation causing the circuit to be filled with line pressure. This action keeps the 2-3 shift valve in a closed position. In the drive position, this ball allows kick down pressure to enter the spring chamber of the 2-3 shift T.V. modulator valve kickdown valve. This action prevents the valve from modulating allowing full T.V. pressure to work on closing the 2-3 shift valve for a 3-2 kickdown.

**NO. 7 - This ball orifices intermediate clutch exhaust** on a 3-1 or 2-1 downshift for a controlled release.

Figure 64

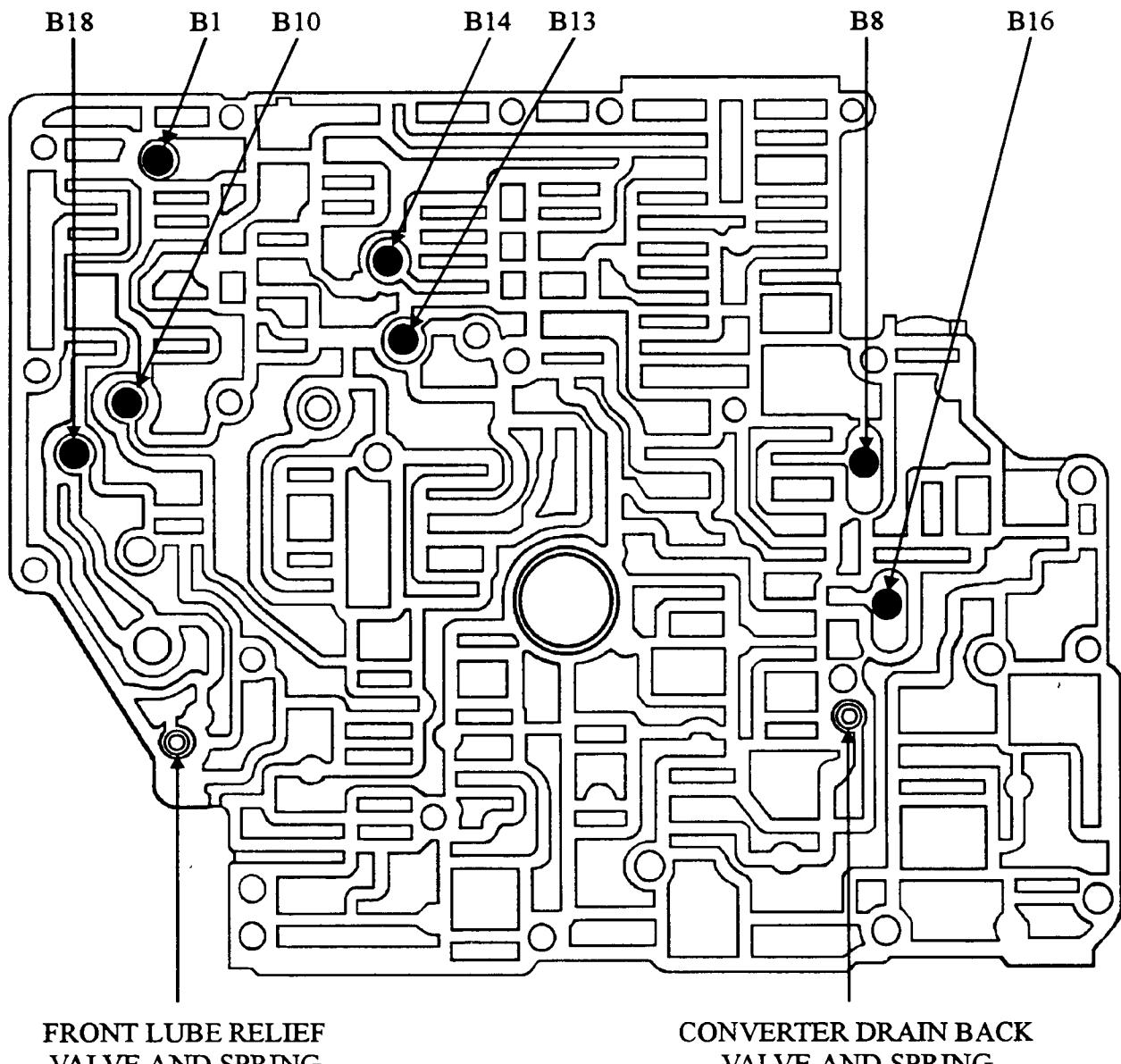
**FORD AXOD TRANSMISSION  
VALVE BODY CHECKBALL LOCATIONS**

Figure 65

**FORD AXOD TRANSMISSION**  
**PUMP BODY CHECKBALL LOCATIONS**  
*(9 CHECK BALL PUMP ONLY)*

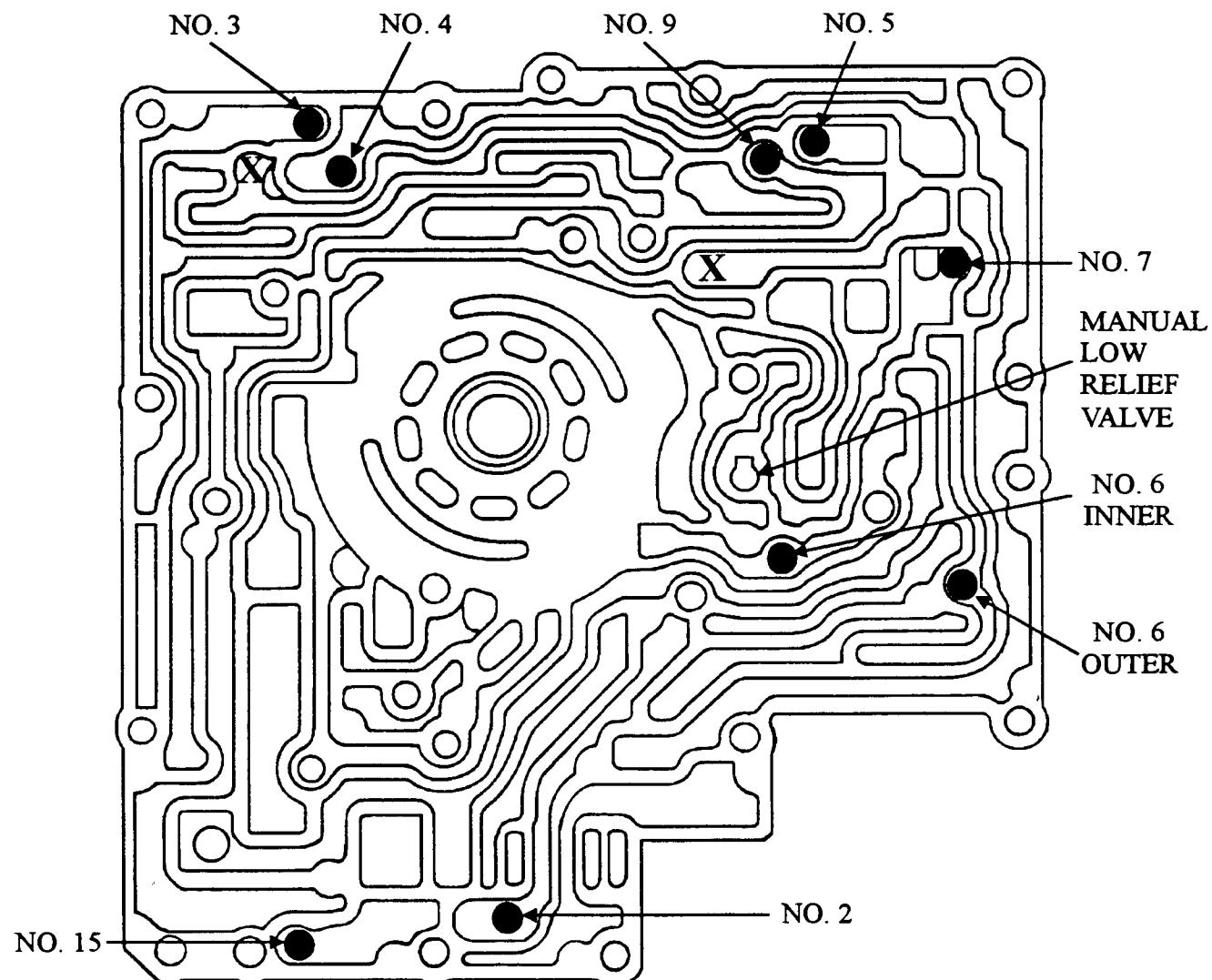


Figure 66

**FORD AXOD TRANSMISSION**  
**PUMP BODY CHECKBALL LOCATIONS**  
*(10 CHECK BALL PUMP ONLY)*

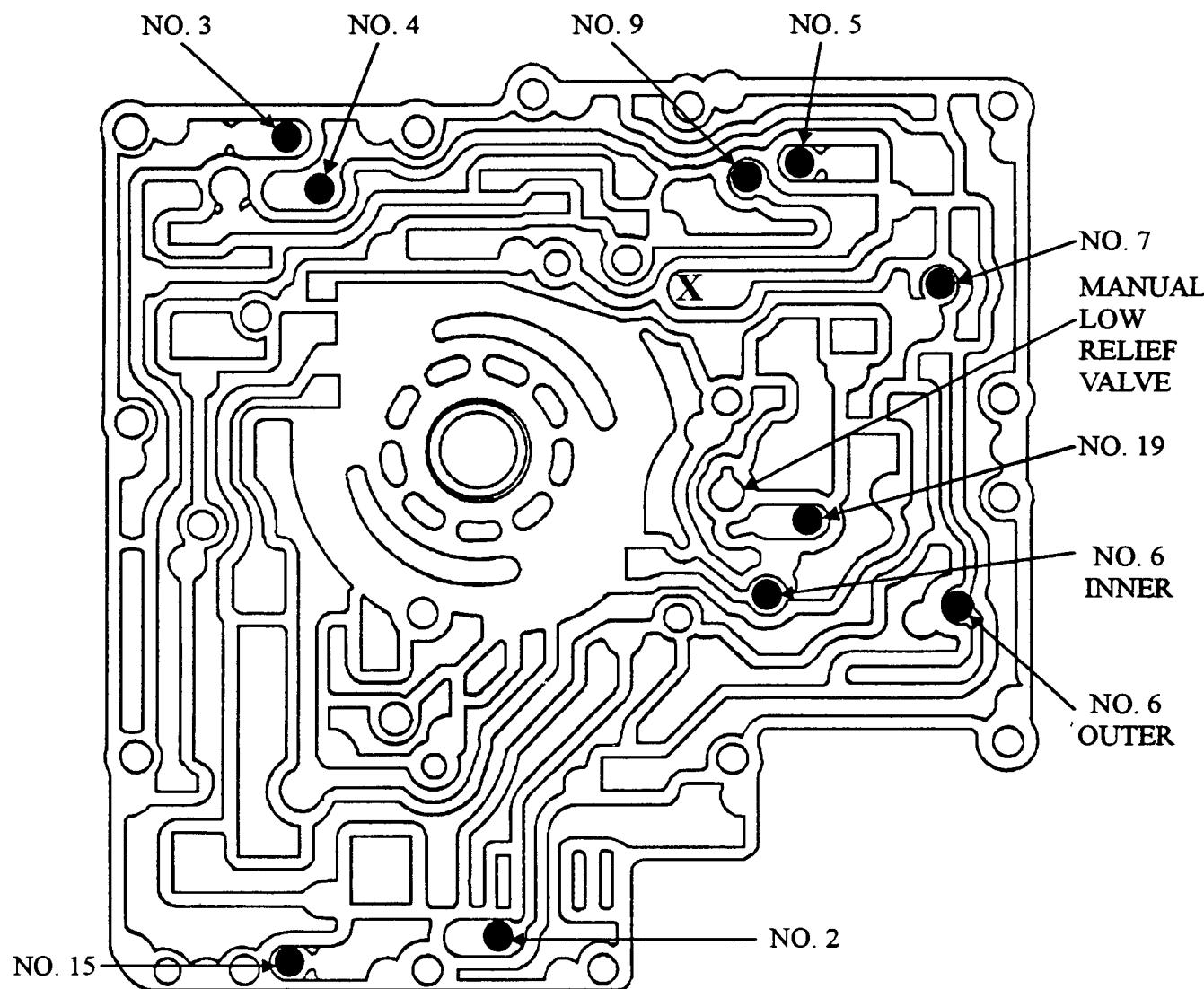


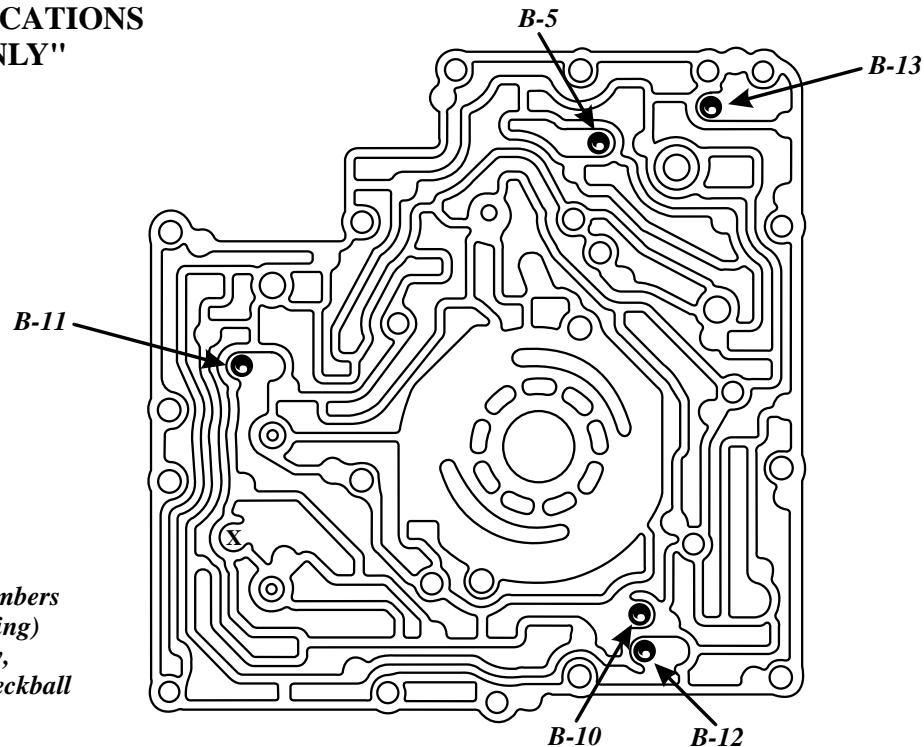
Figure 67

## FORD AXOD TRANSMISSION CHECK BALL FUNCTION

- B1: Forces reverse clutch feed oil through the A orifice and thermal element while allowing the clutch to exhaust without restriction.
- B2: Separates reverse clutch and forward clutch circuits feeding the forward clutch.
- B3: Separates manual low relief and TVLM passages to the main regulator boost valve.
- B4: Separates manual low relief and direct clutch circuits to the direct clutch.
- B5: Connects low/intermediate servo release and direct clutch passages during pressurization of these circuits while forcing low/intermediate servo release to be exhausted through the L orifice and the 3-2 control valve.
- B6: (2 required) Forces forward clutch feed oil through the K orifice for the 4-3 downshift while bypassing the orifice for a drive engagement.
- B7: Allows forward clutch to exhaust freely on the 3-4 upshift but forces forward clutch apply through the K orifice for the 4-3 downshift.
- B8: Separates low and kickdown circuits to the 2-3 shift valve.
- B9: Forces the direct clutch to exhaust through the M orifice on a 3-2 downshift while bypassing the orifice for the 3-1 downshift.
- B10: Exhausts low/intermediate servo apply directly through the manual valve on a drive-neutral or a drive-reverse engagement bypassing the B orifice.
- B11: Not used.
- B12: Not used.
- B13: Forces direct clutch feed through the E and F orifice bypassing the M orifice.
- B14: Forces overdrive servo apply feed through the H and G orifices while bypassing the orifices for exhaust.
- B15: Applies forward clutch through the PP orifice as well as the K orifice for a manual 3 pull in.
- B16: Separates the low and backout circuits to the backout valve.
- B17: Not used.
- B18: Feeds the N-D accumulator through the RR and SS orifices in parallel and exhausts N-D accumulator through the RR and SS orifices in series.

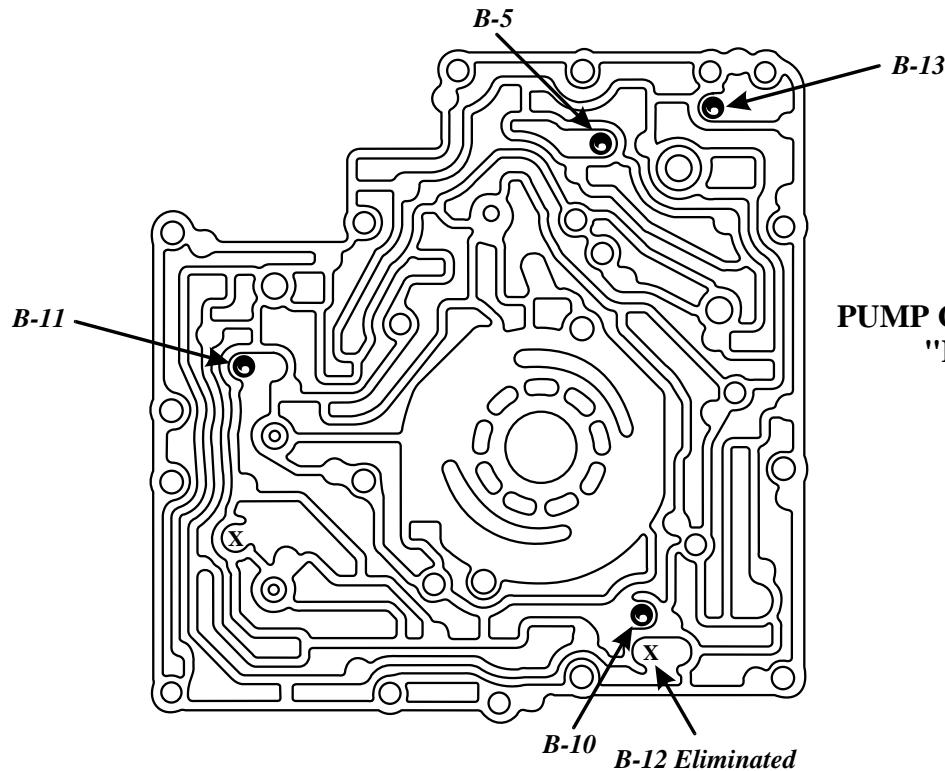
Figure 68

**PUMP CHECKBALL LOCATIONS**  
"EARLY" 1991 "ONLY"



*Transaxle Serial Numbers  
(Up To And Including)  
See Chart Below,  
Get A Number 12 Checkball*

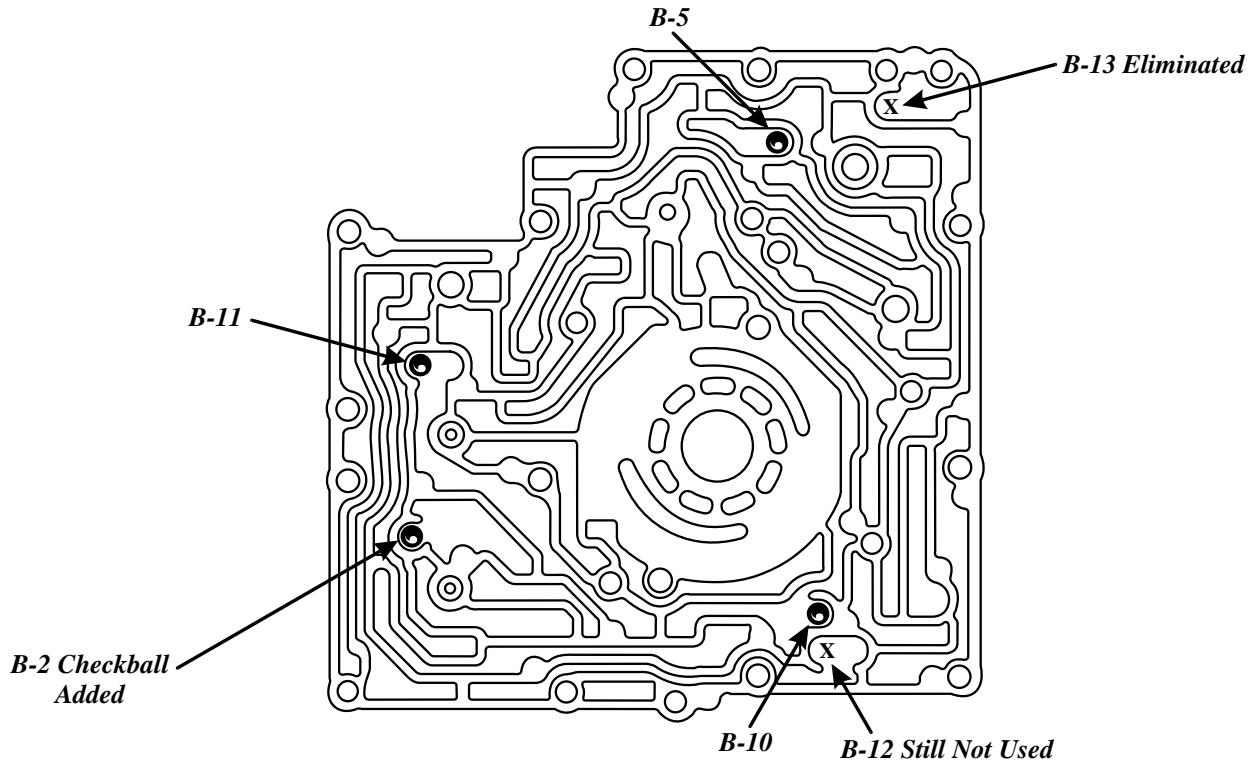
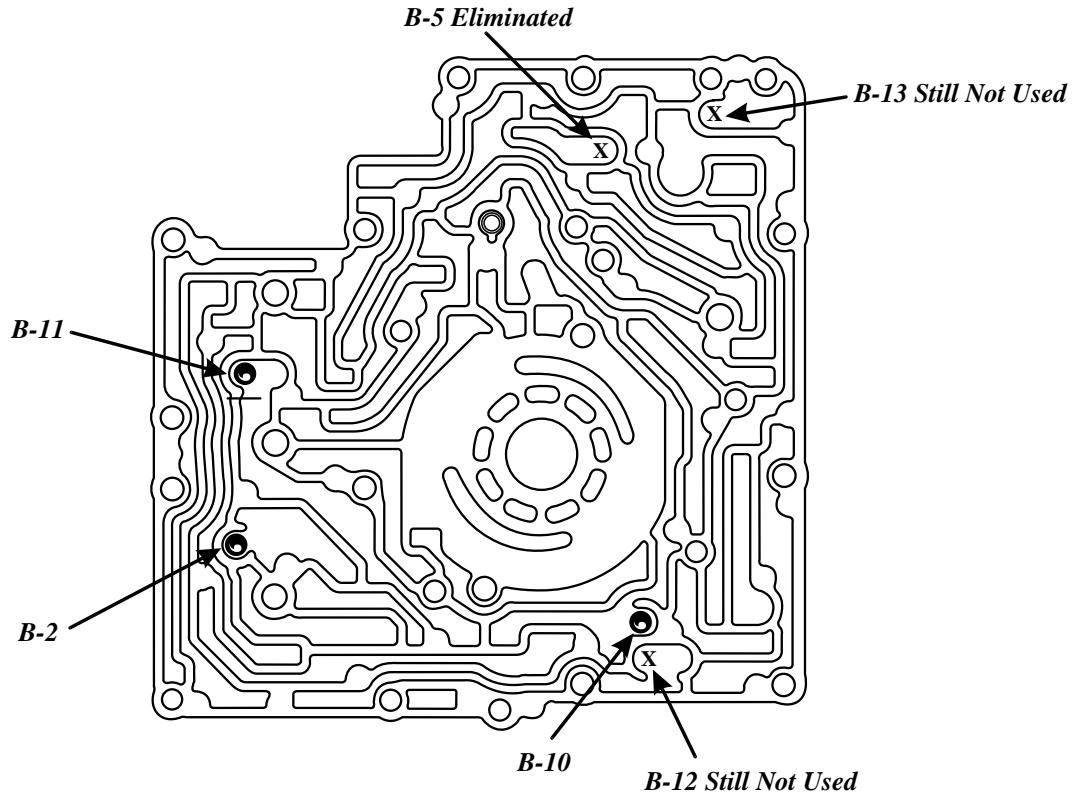
Vehicle Line	Up To And Including Serial Number	Model Code
1991 Taurus/Sable 3.8L	54553	PNA-EA
1991 Taurus/Sable 3.0L	195343	PNA-EC
1991 Continental 3.8L	39653	PNA-EB
1991 All Police 3.8L	10936	PNA-EE



**PUMP CHECKBALL LOCATIONS**  
"LATE" 1991 "ONLY"

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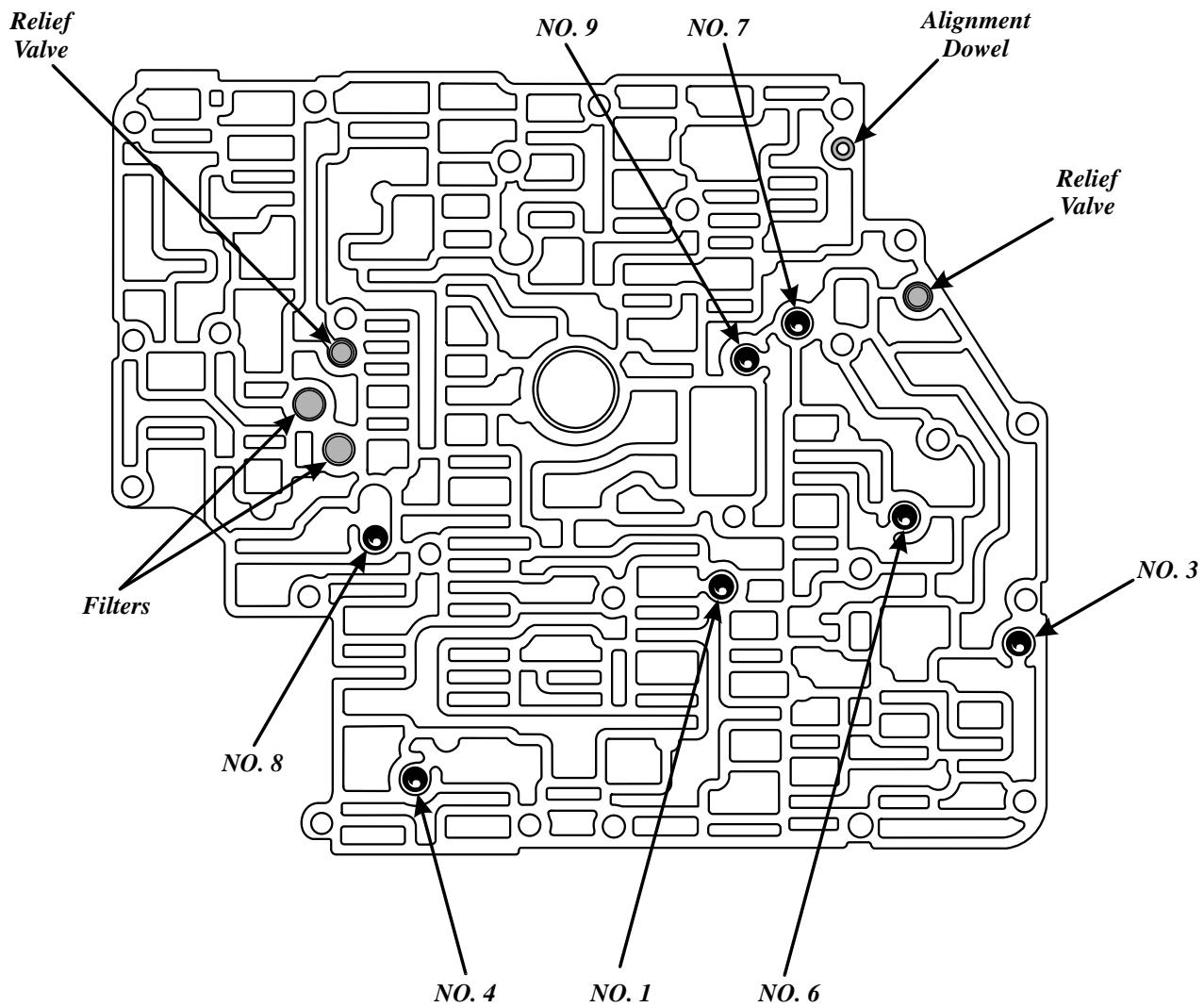
Figure 69

**PUMP CHECKBALL LOCATIONS 92-98 MODELS "ONLY"****PUMP CHECKBALL LOCATIONS 1999 AND LATER "ONLY"**

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Figure 70

AUTOMATIC TRANSMISSION SERVICE GROUP

AXODE (AX4S) 1991-1992 ONLY  
CHECKBALL AND RELIEF VALVE LOCATIONS

**B1:** Forces reverse clutch feed oil through the A orifice while allowing the clutch to exhaust without restriction.

**B2:** Forces forward clutch feed oil through the K orifice for a controlled engagement. Added in 1992.

**B3:** Forces Low/Inter. Servo apply pressure to be routed through the 2-3 servo regulator valve and engagement valve.

**B4:** Forces Overdrive Servo apply oil through the H orifice for a controlled apply.

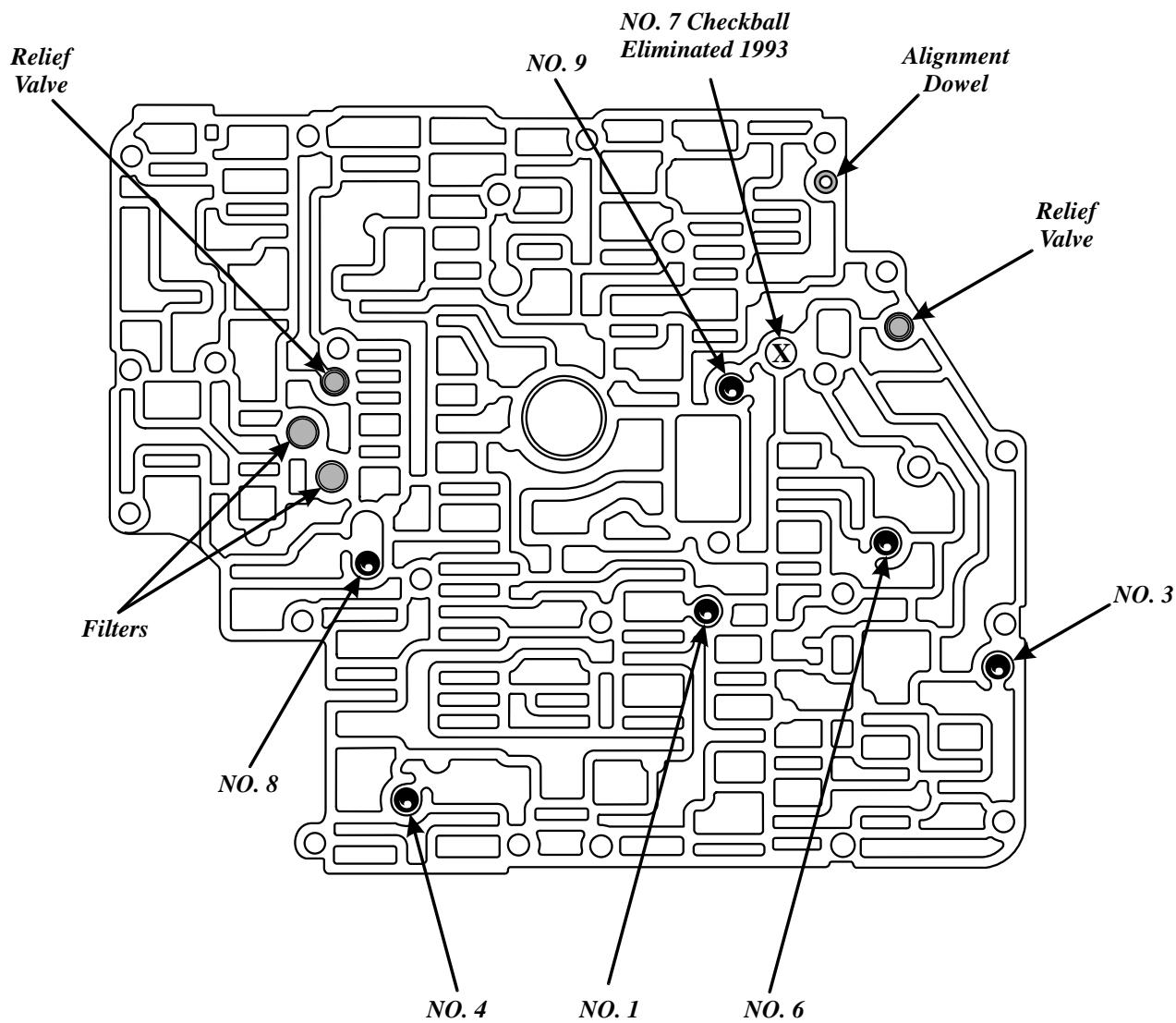
**B5:** Separates Reverse apply oil from the Low/Intermediate band apply circuit. Eliminated in 1999.

**B6:** Directs Low/Inter. Band release oil to be exhausted at the 1-2 shift valve, on 4-2 or 3-2 downshift.

**B7:** Forces Direct Clutch and Low/Intermediate Band release oil to be exhausted at the 1-2 shift valve, on a 4-2 or 3-2 downshift, and was eliminated in 1993.

**B8:** Separates Direct Clutch apply circuit, from Manual 1st direct clutch apply circuit.

**AXODE (AX4S) 1993-1998  
CHECKBALL AND RELIEF VALVE LOCATIONS**



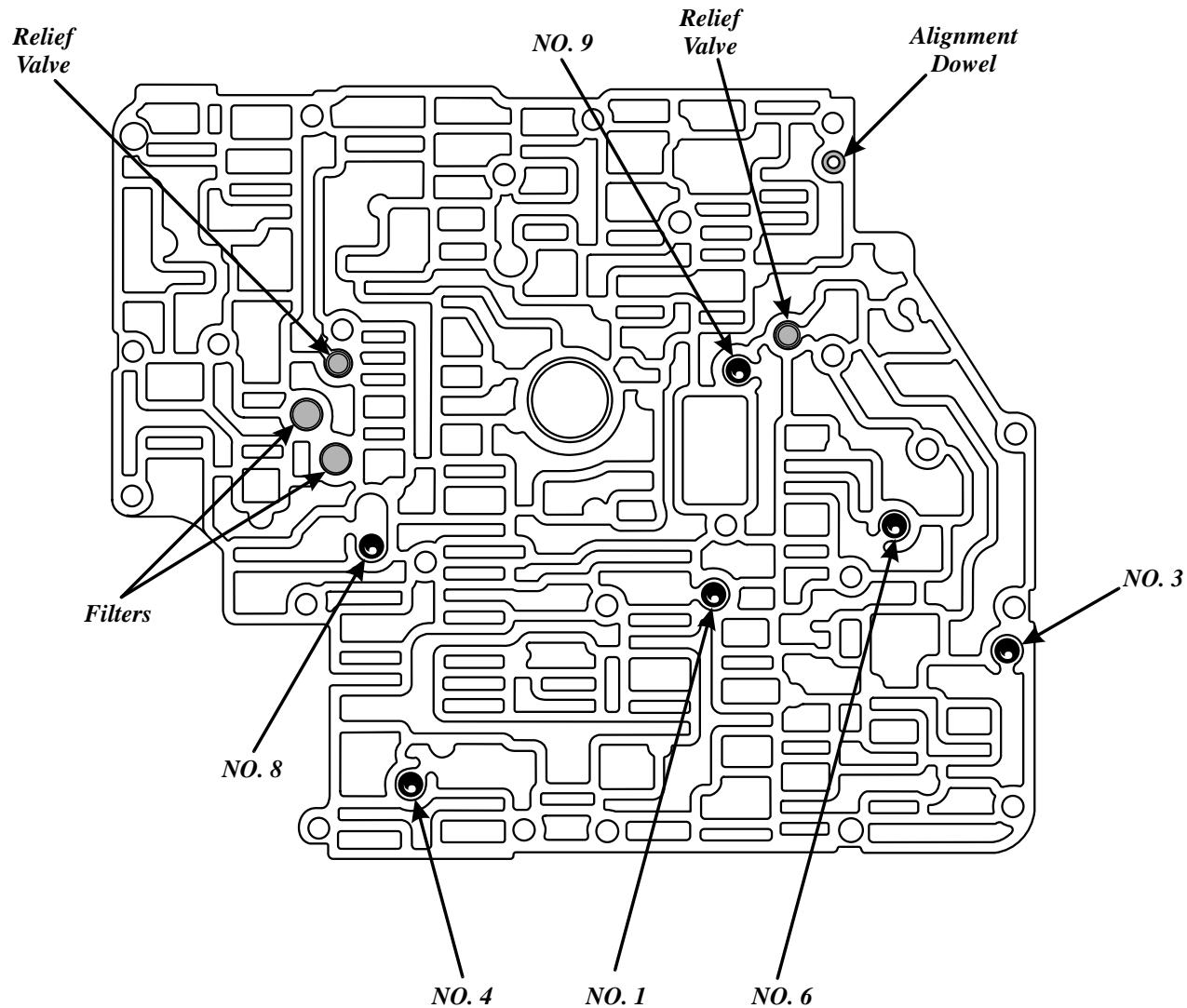
**B9:** Forces Direct Clutch apply oil and Low/Intermediate release oil to pass through the F orifice.

**B10:** Blocks Intermediate Clutch apply oil from entering the Low/Intermediate Band release circuit.

**B11:** This is Direct Clutch "Shuttle" ball. On the 2-3 shift, the direct clutch and band release is fed from the 2-3 shift valve via the 1-2 shift valve. When the 3-4 shift valve strokes, the 3-4 shift valve becomes the source of direct clutch and band release feed.

**B12:** Separates EPC pressure from the L234 pressure passages, and eliminated in late 1991.

**B13:** Forces Forward Clutch oil to be exhausted through the B orifice during a 3-4 upshift, and eliminated in 1992.

AXODE (AX4S) 1999-2002  
CHECKBALL AND RELIEF VALVE LOCATIONS

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Figure 73

AUTOMATIC TRANSMISSION SERVICE GROUP

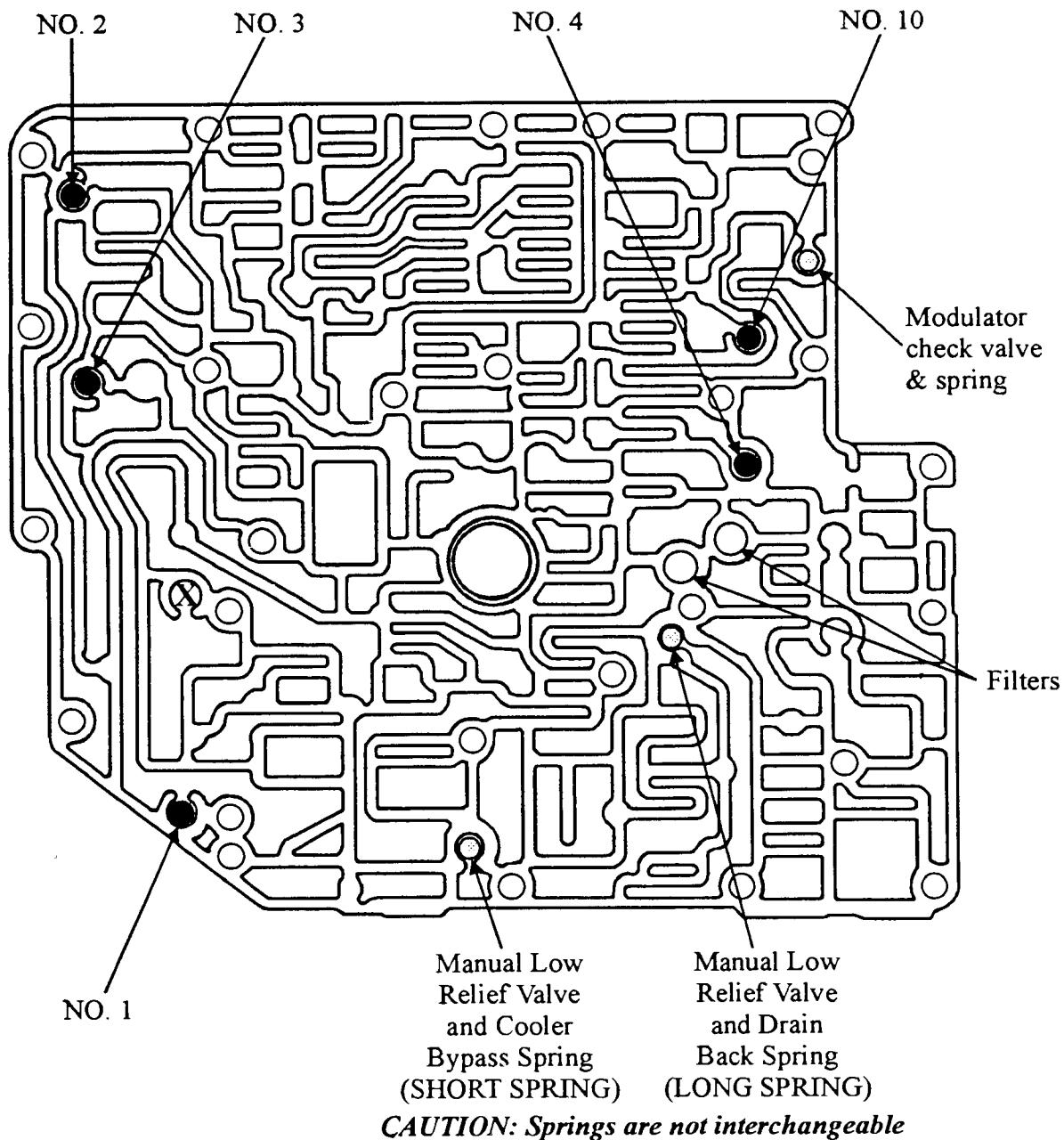
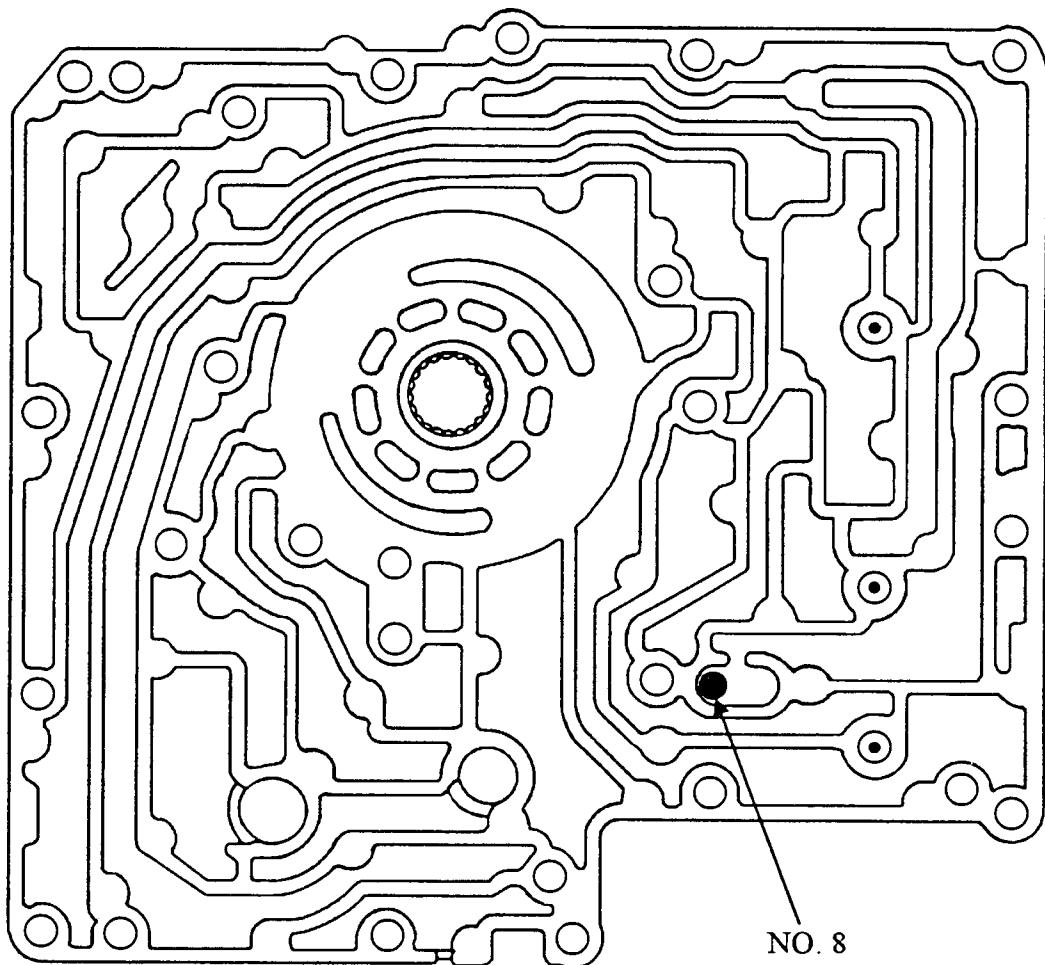
**FORD AX4N TRANSMISSION  
VALVE BODY CHECKBALL LOCATIONS**

Figure 74

**FORD AX4N TRANSMISSION  
PUMP CHECKBALL LOCATIONS**

*NOTE: If the number 8 ball is missing direct clutch oil will exhaust through the 1-2 shift valve.  
A no 2-3 upshift will occur as well as no engine breaking in manual low.*

Figure 75



# CHECKBALL BOOK

## Volume I

AX4N

### FORD AX4N TRANSMISSION

#### ***CHECK BALL FUNCTION***

- B1: Forces reverse clutch feed oil through the A orifice while allowing the clutch to exhaust without restriction.
- B2: Forces the Coast Band apply oil through the N orifice for a controlled apply.
- B3: Forces Low/Intermediate Clutch apply pressure through the E orifice for a controlled apply.
- B4: Forces Forward Clutch apply pressure through the X orifice for a controlled apply.
- B8: Separates Direct Clutch apply pressure in the drive range from Direct Clutch apply pressure in the manual low range.
- B10: Forces Intermediate Clutch apply through the GG orifice for a controlled apply.

Figure 76

**F3A**  
**MAIN VALVE BODY & CASE CHECK BALL  
& ORIFICE LOCATION**

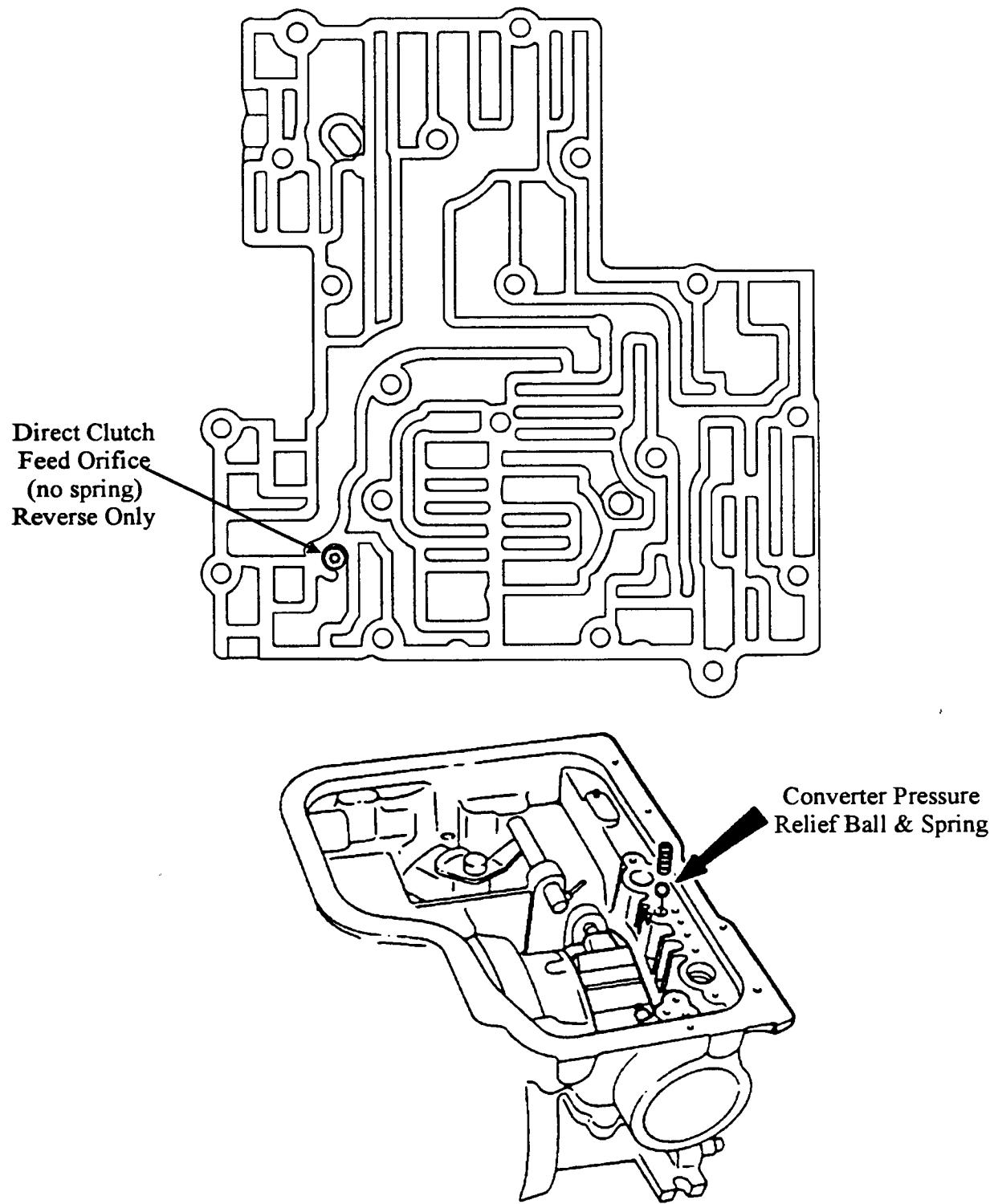


Figure 77

**F3A**  
**MAIN VALVE BODY & CASE CHECK BALL**  
**& ORIFICE LOCATION**

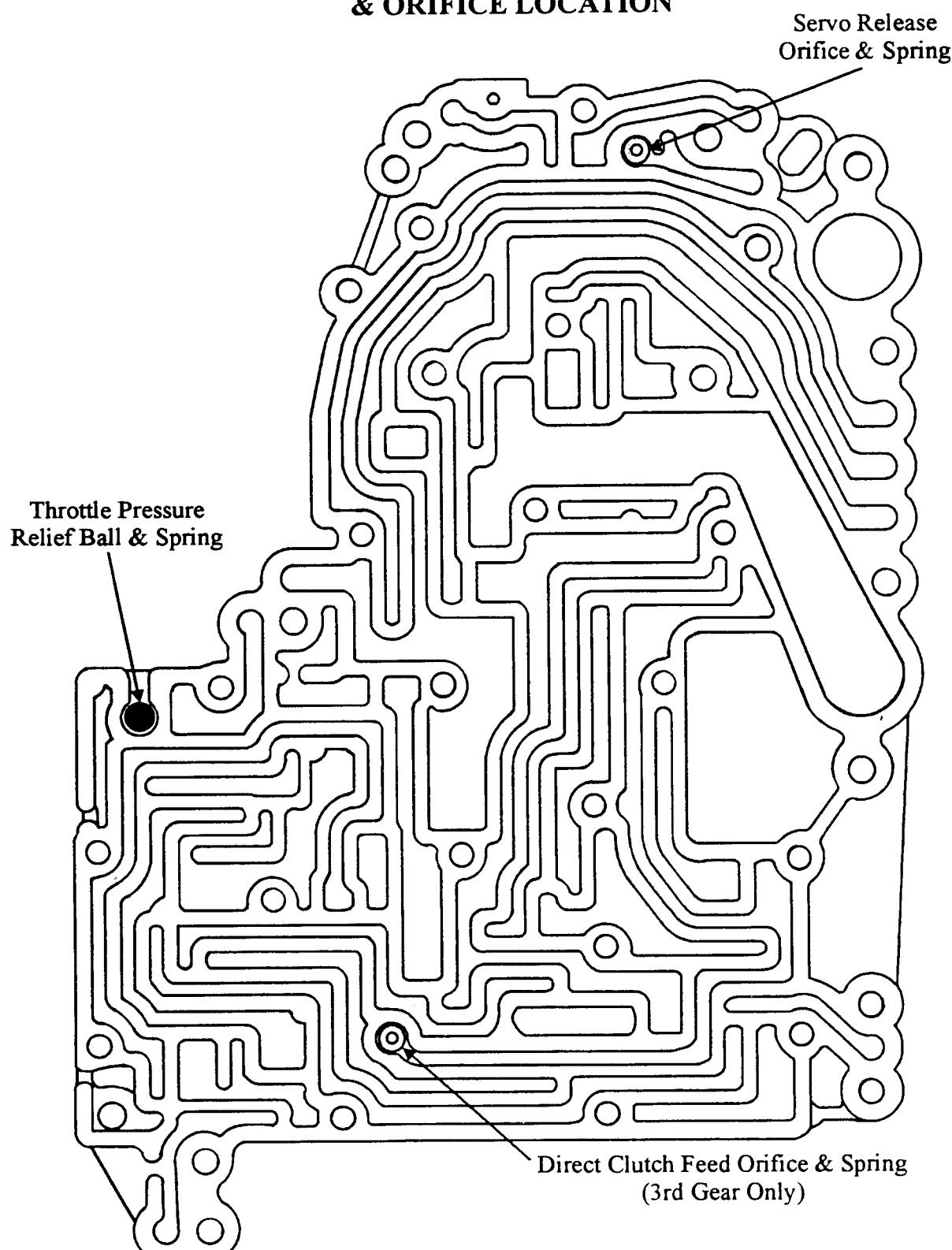
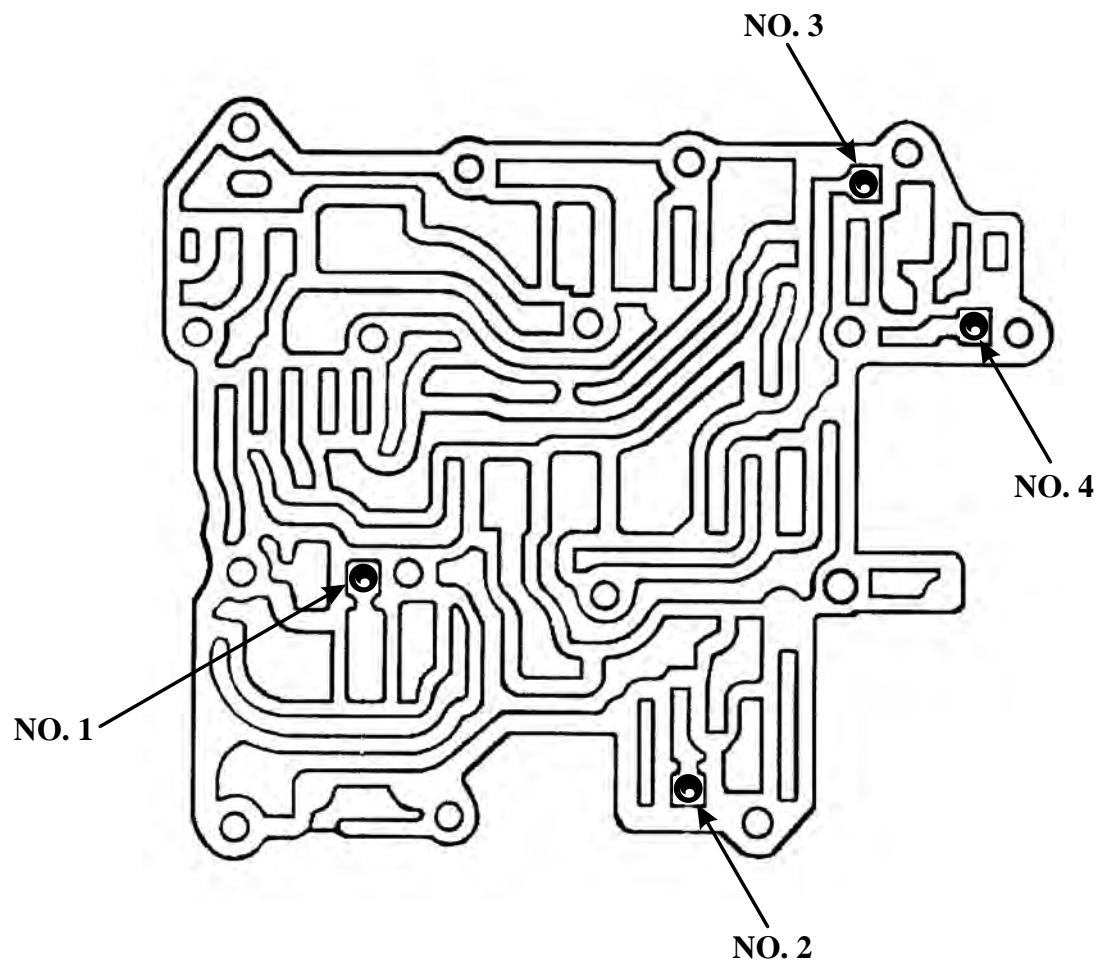


Figure 78

SPRINT MX-17  
UPPER VALVE BODY  
CHECKBALL LOCATIONS

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Figure 79

AUTOMATIC TRANSMISSION SERVICE GROUP

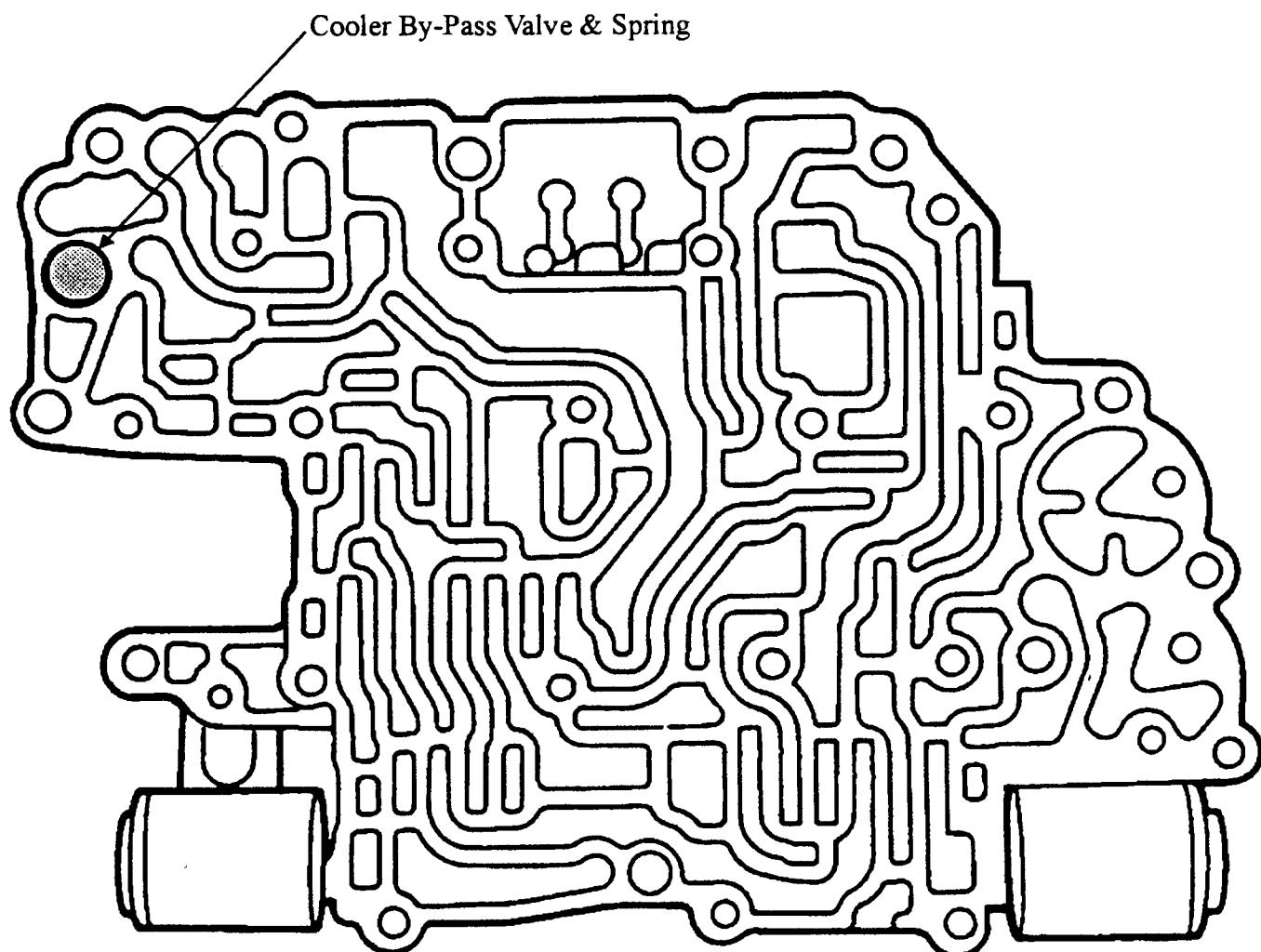
MX17  
LOWER VALVE BODY BY-PASS  
VALVE LOCATION

Figure 80

**A130**  
**LOWER VALVE BODY**  
**CHECK BALL LOCATION**

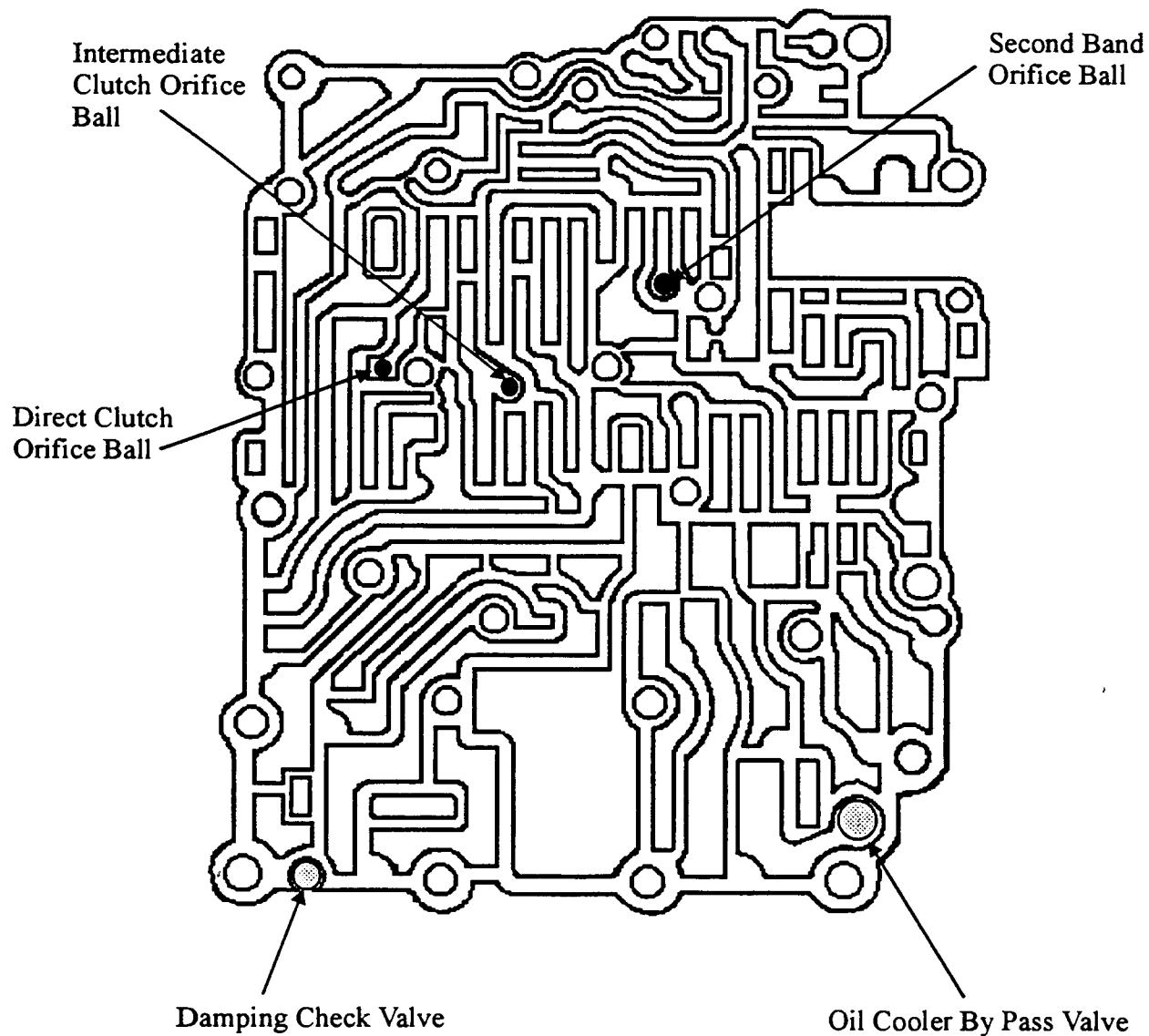


Figure 81

**A130**  
**UPPER VALVE BODY**  
**CHECK BALL LOCATION**

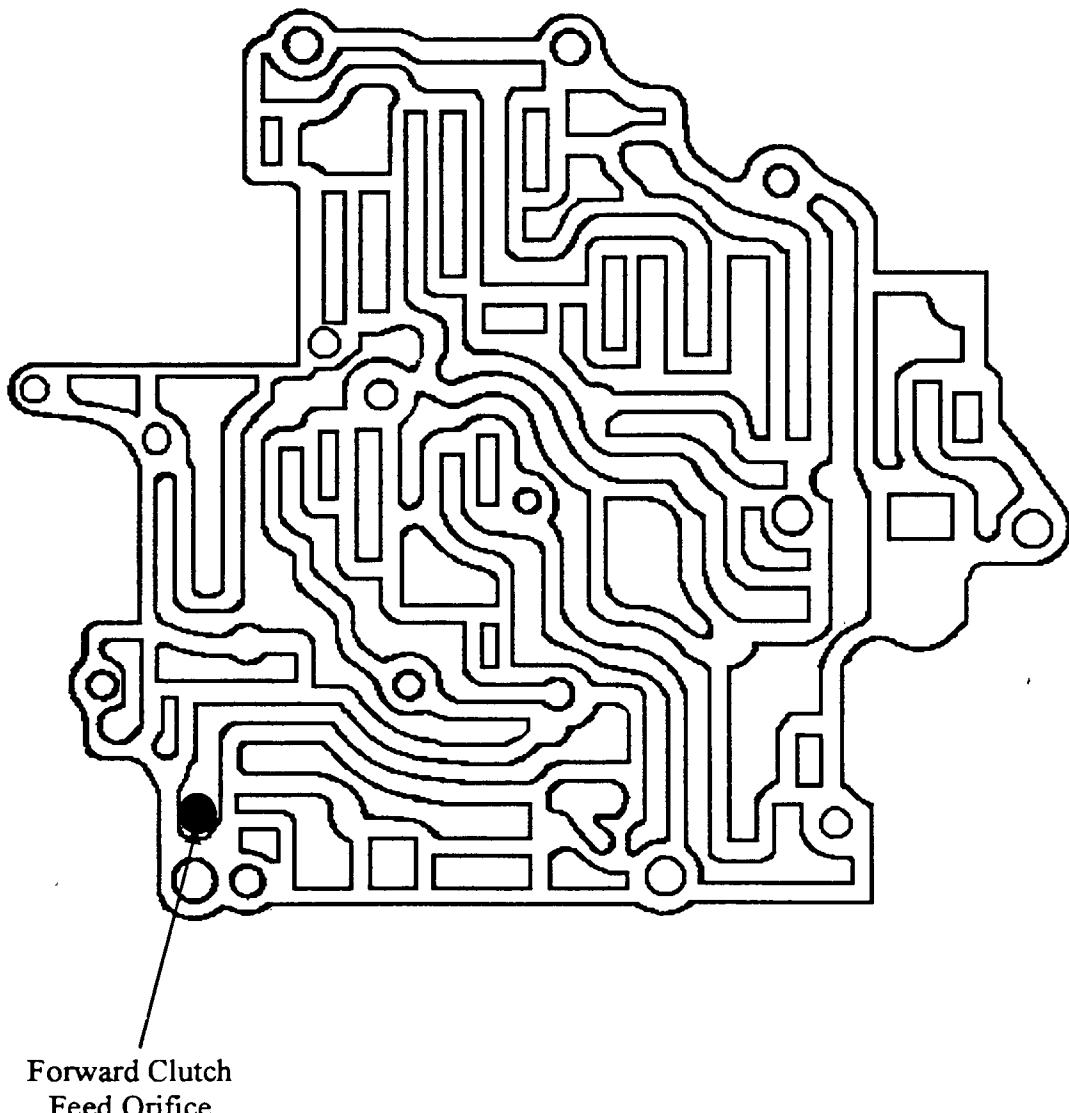


Figure 82

**3N71B**  
**VALVE BODY**  
**CHECK BALL LOCATION**

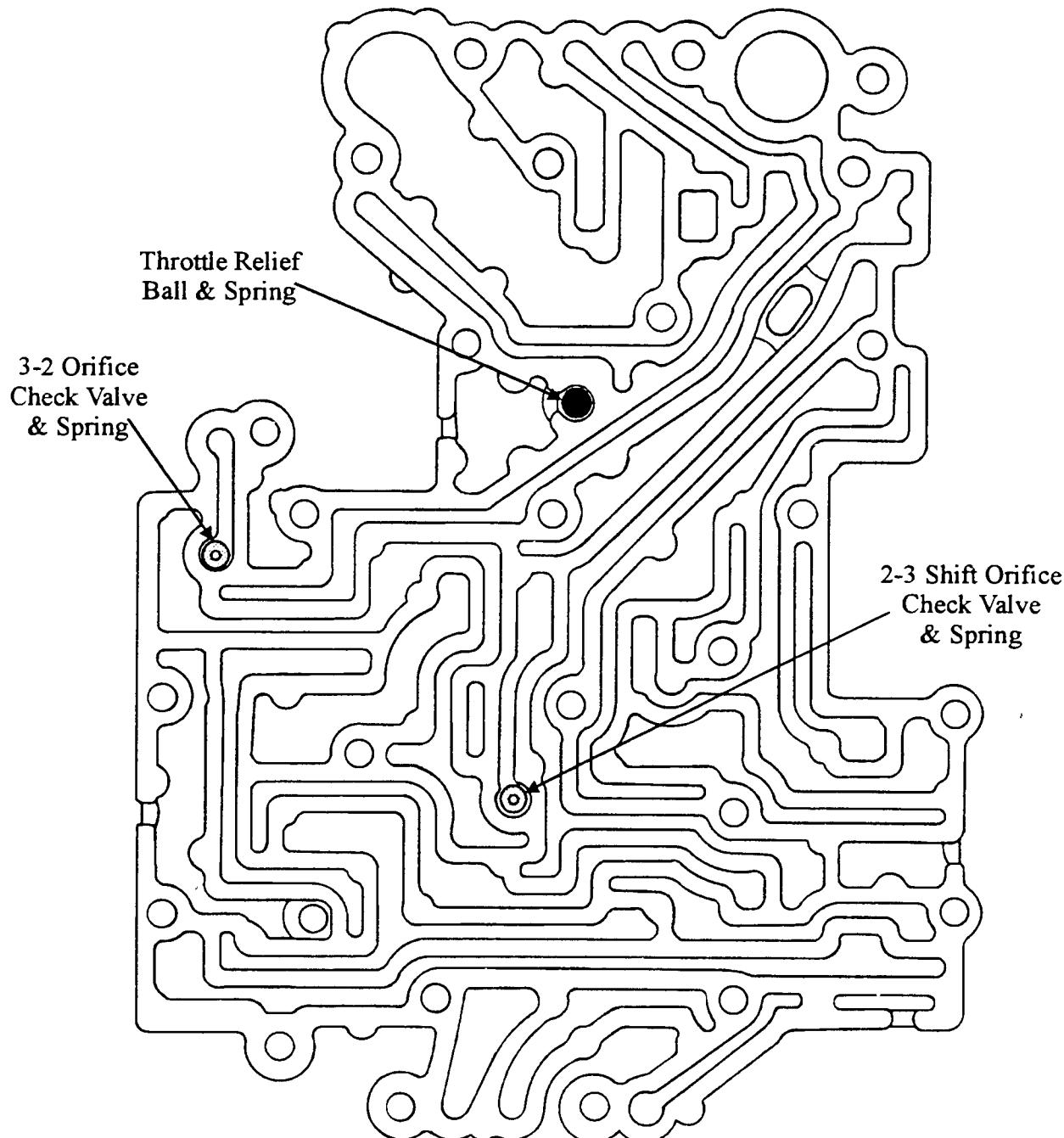


Figure 83

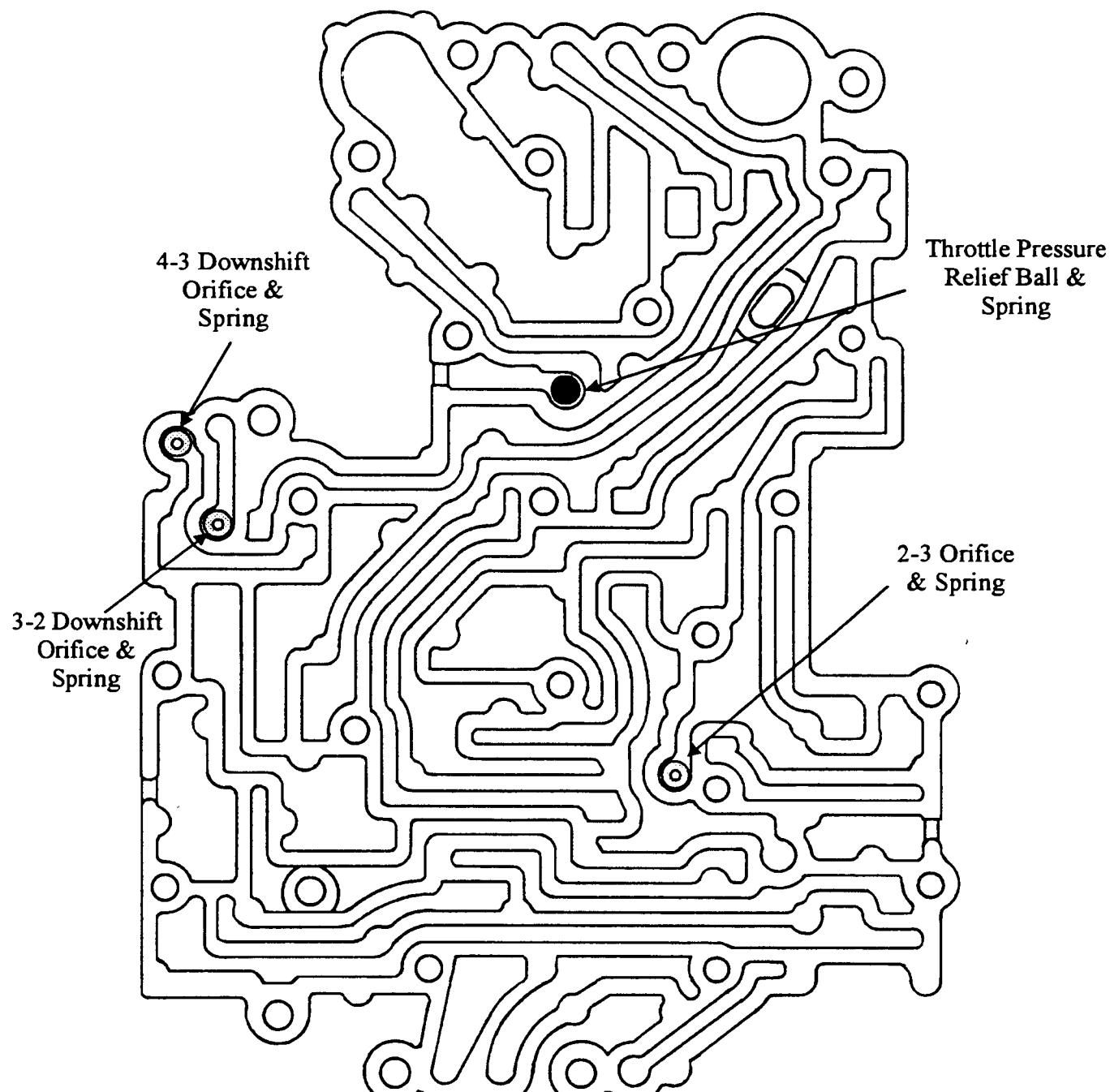
**4N71B**  
**VALVE BODY**  
**CHECK BALL LOCATION**

Figure 84

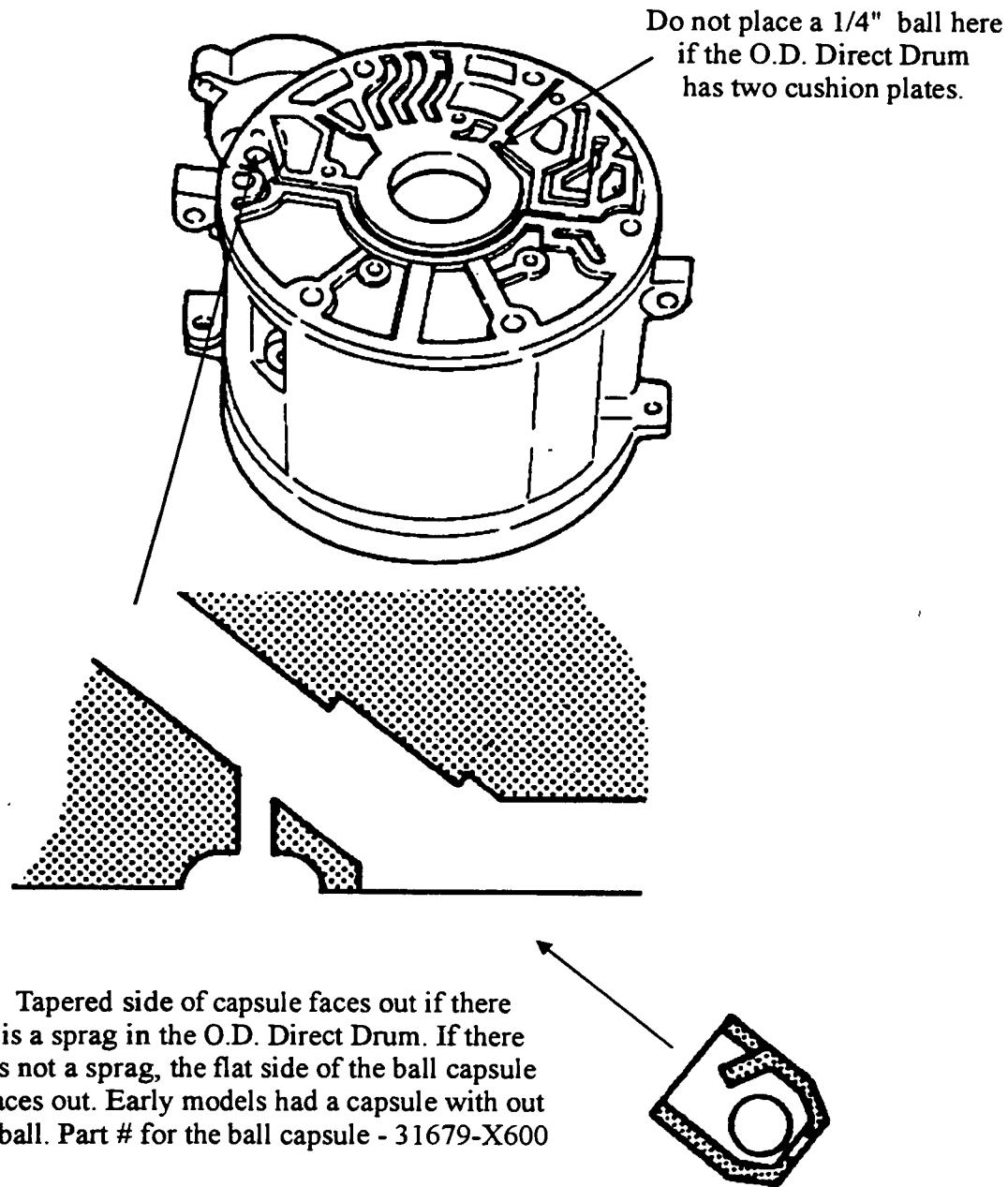
4N71B  
OD CASE  
CHECK BALL LOCATION

Figure 85

### G4A-HL REAR CONTROL BODY ORIFICE & CHECK BALL LOCATION

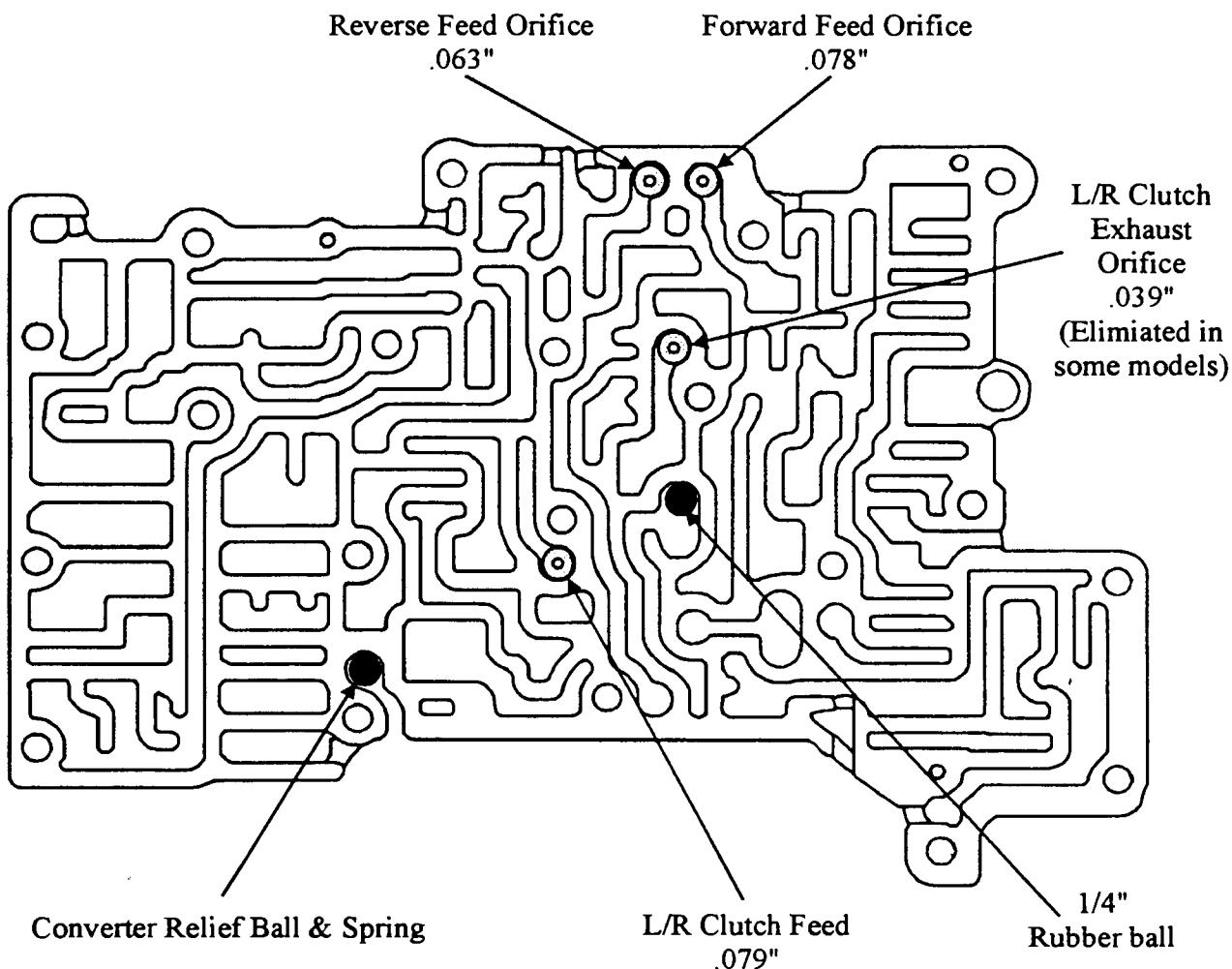


Figure 86

**G4A-HL**  
**MAIN CONTROL VALVE BODY**  
**ORIFICE & CHECK BALL LOCATION**

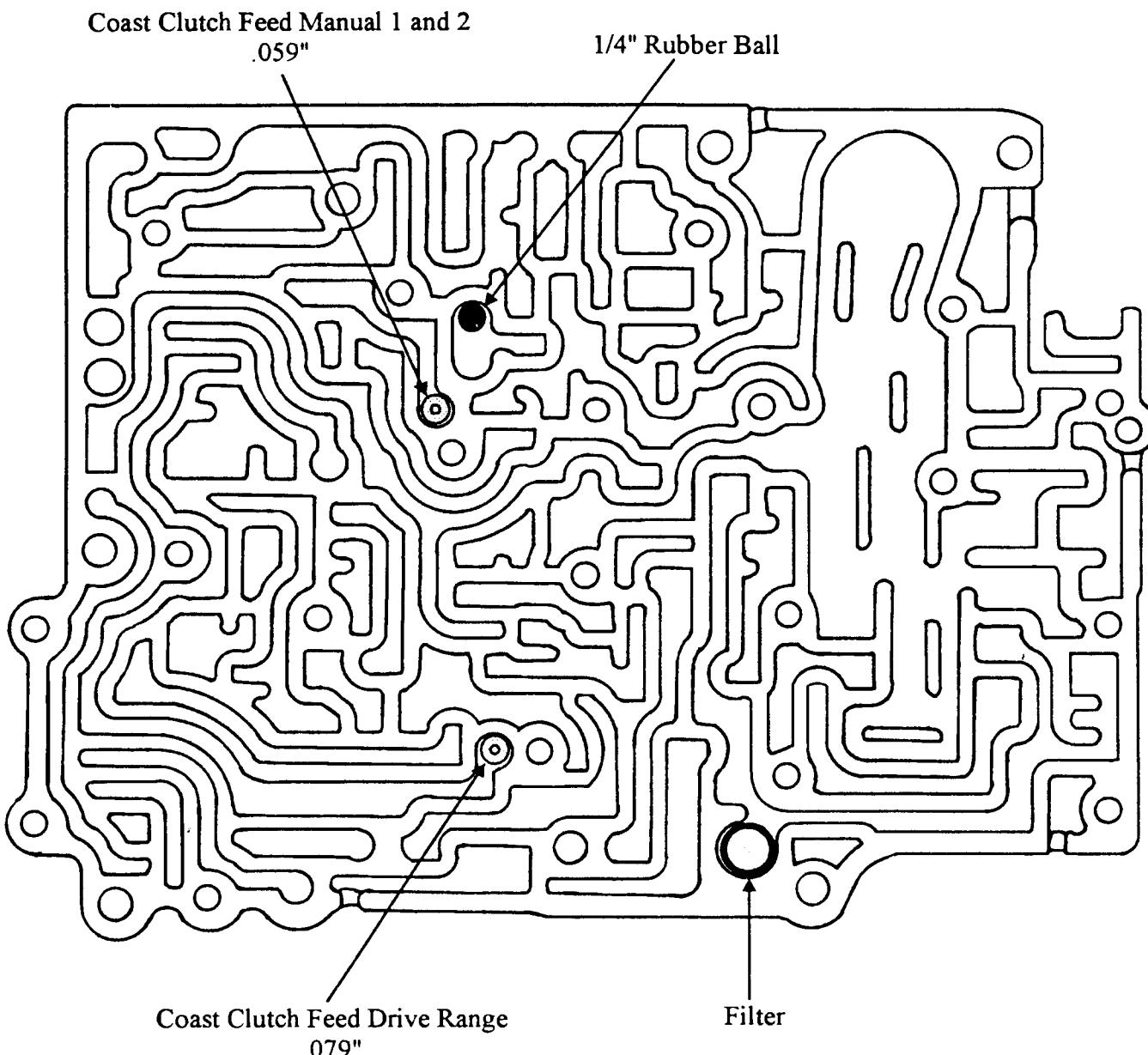


Figure 87

**G4A-HL**  
**MAIN CONTROL VALVE BODY**  
**CHECK BALL LOCATION**

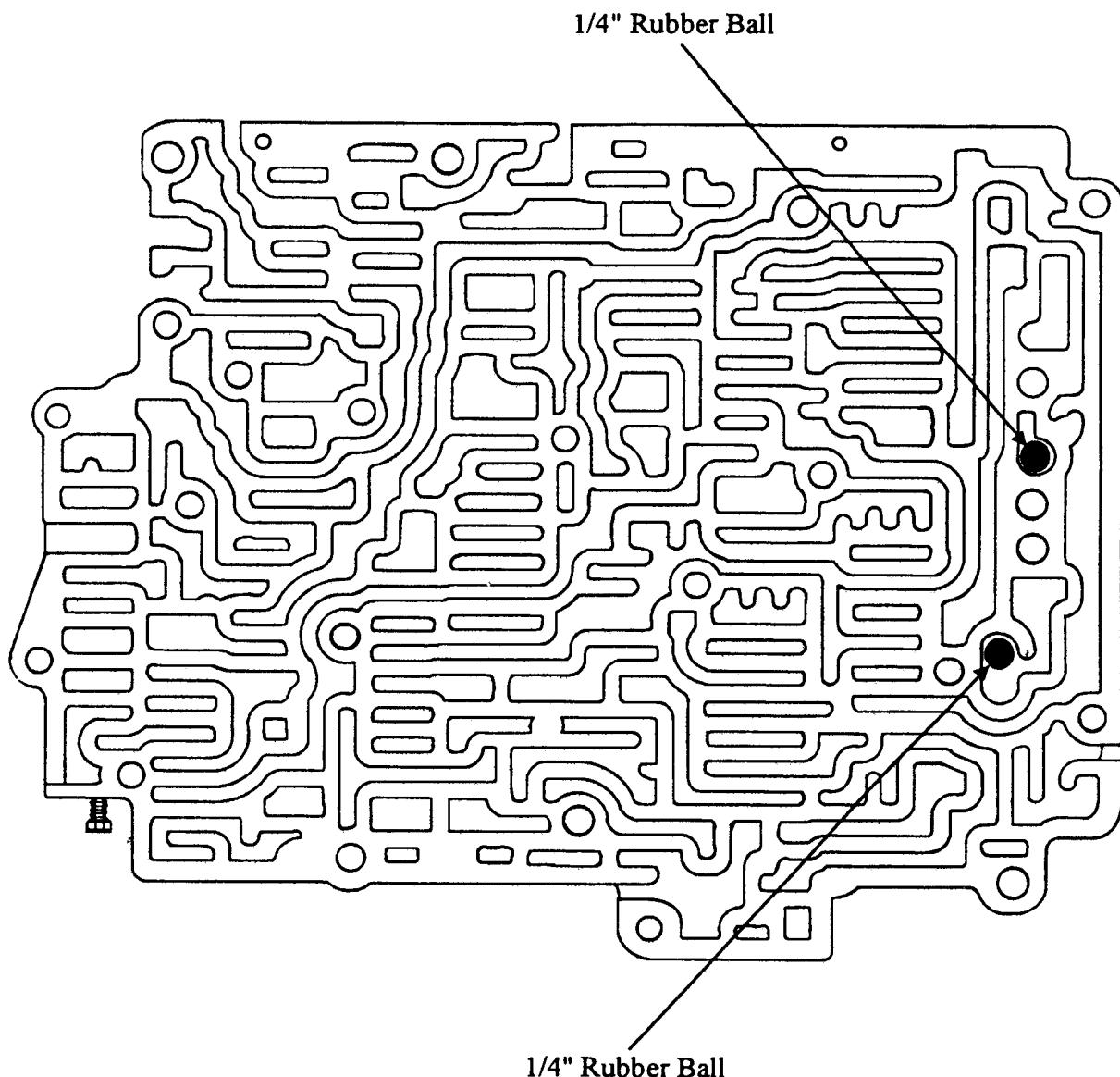


Figure 88

**G4A-HL**  
**PREMAIN VALVE BODY**  
**ORIFICE & CHECK BALL LOCATION**

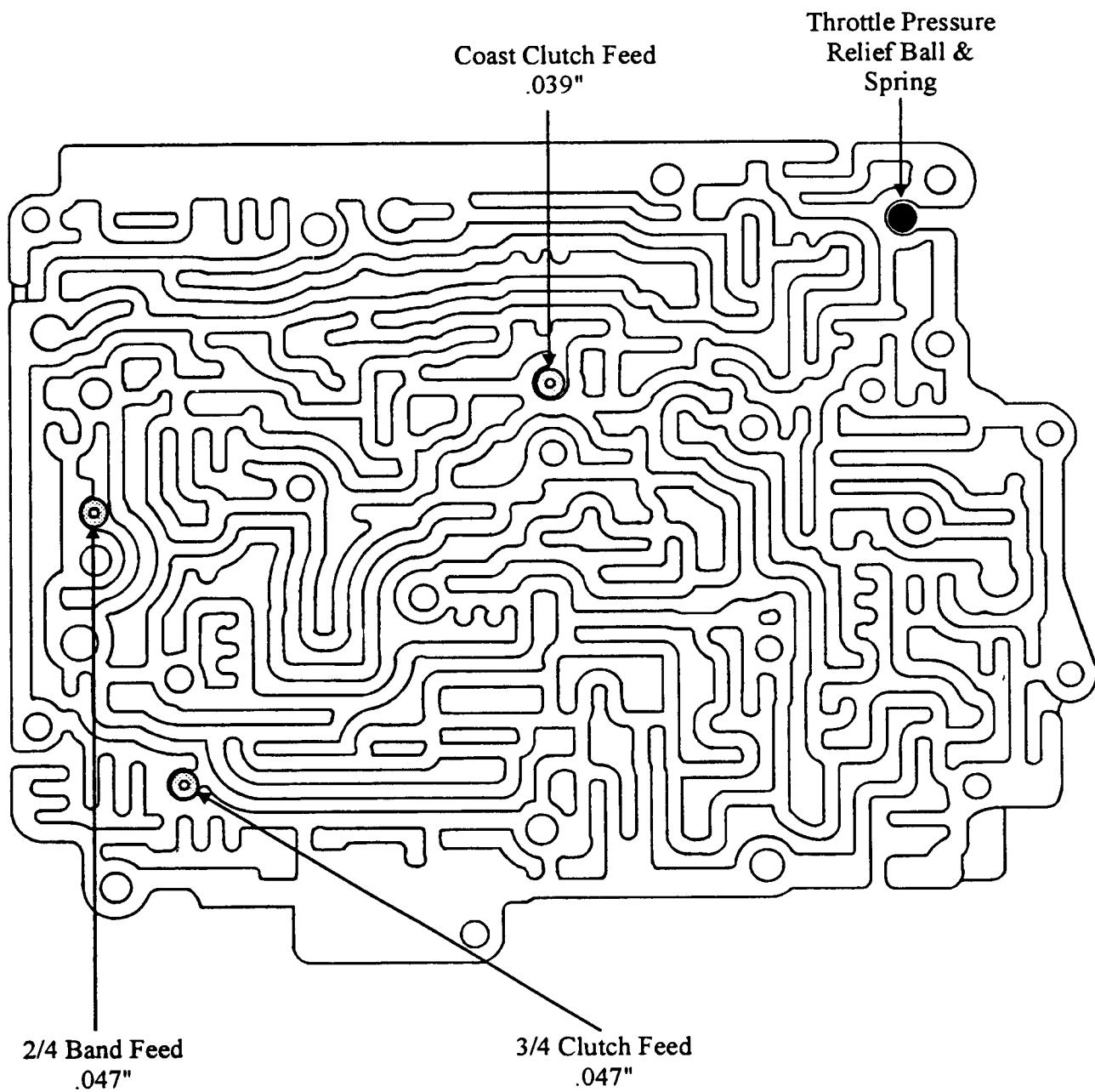


Figure 89

**G4A-HL**  
**PREMAM VALVE BODY**  
**CHECK BALL LOCATION**

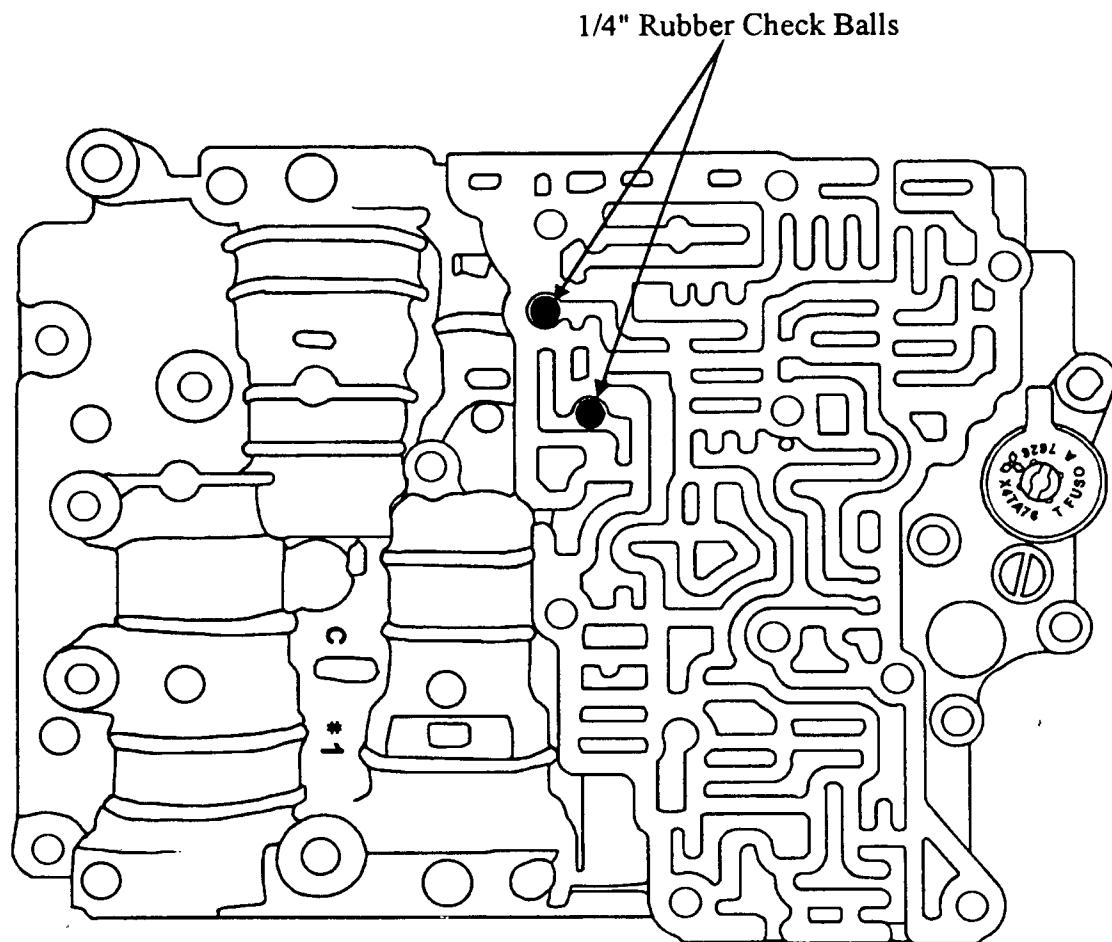
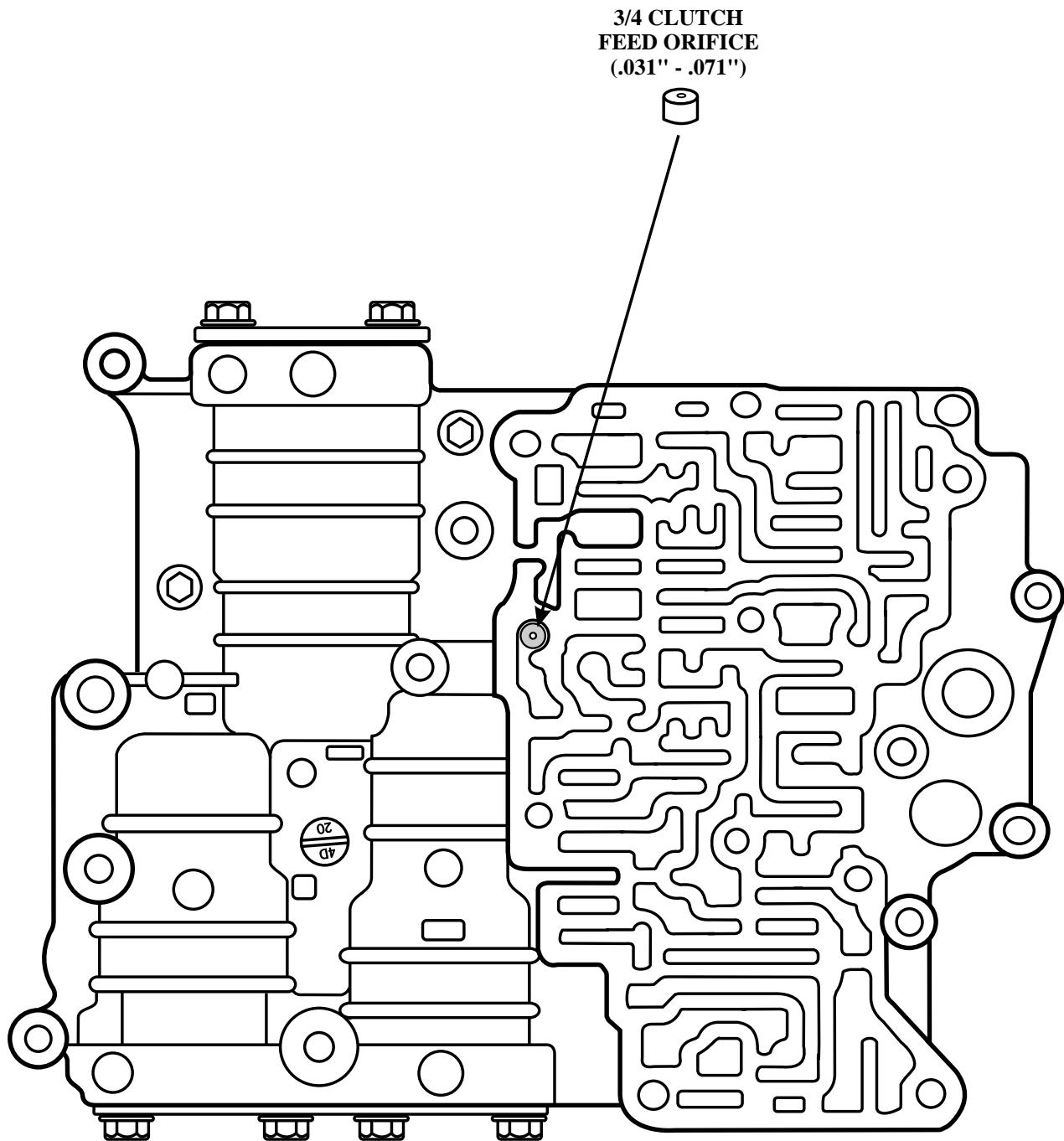


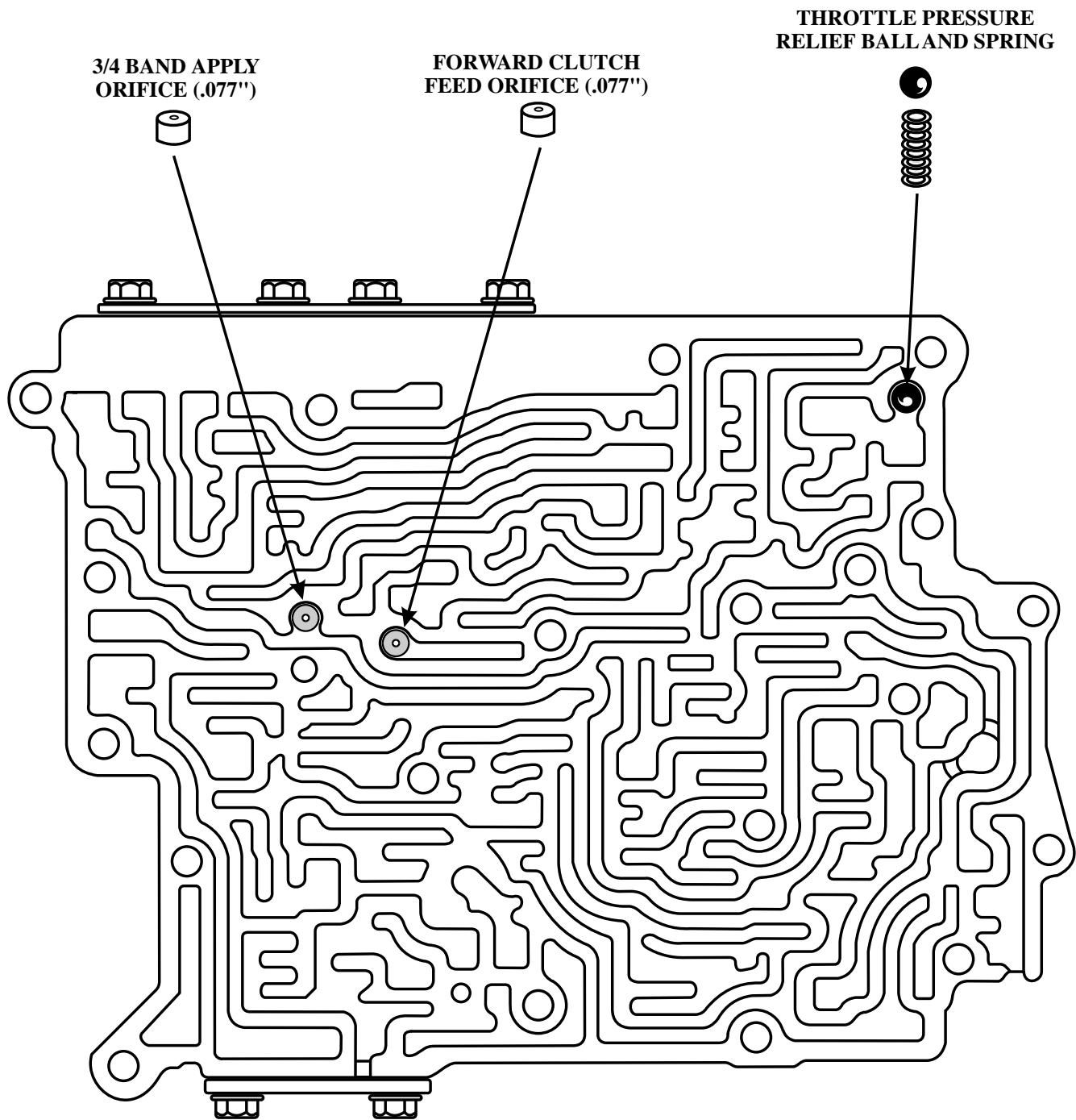
Figure 90

FORD G4A-EL  
PREMAIN VALVE BODY "COVER SIDE"

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Figure 91

AUTOMATIC TRANSMISSION SERVICE GROUP

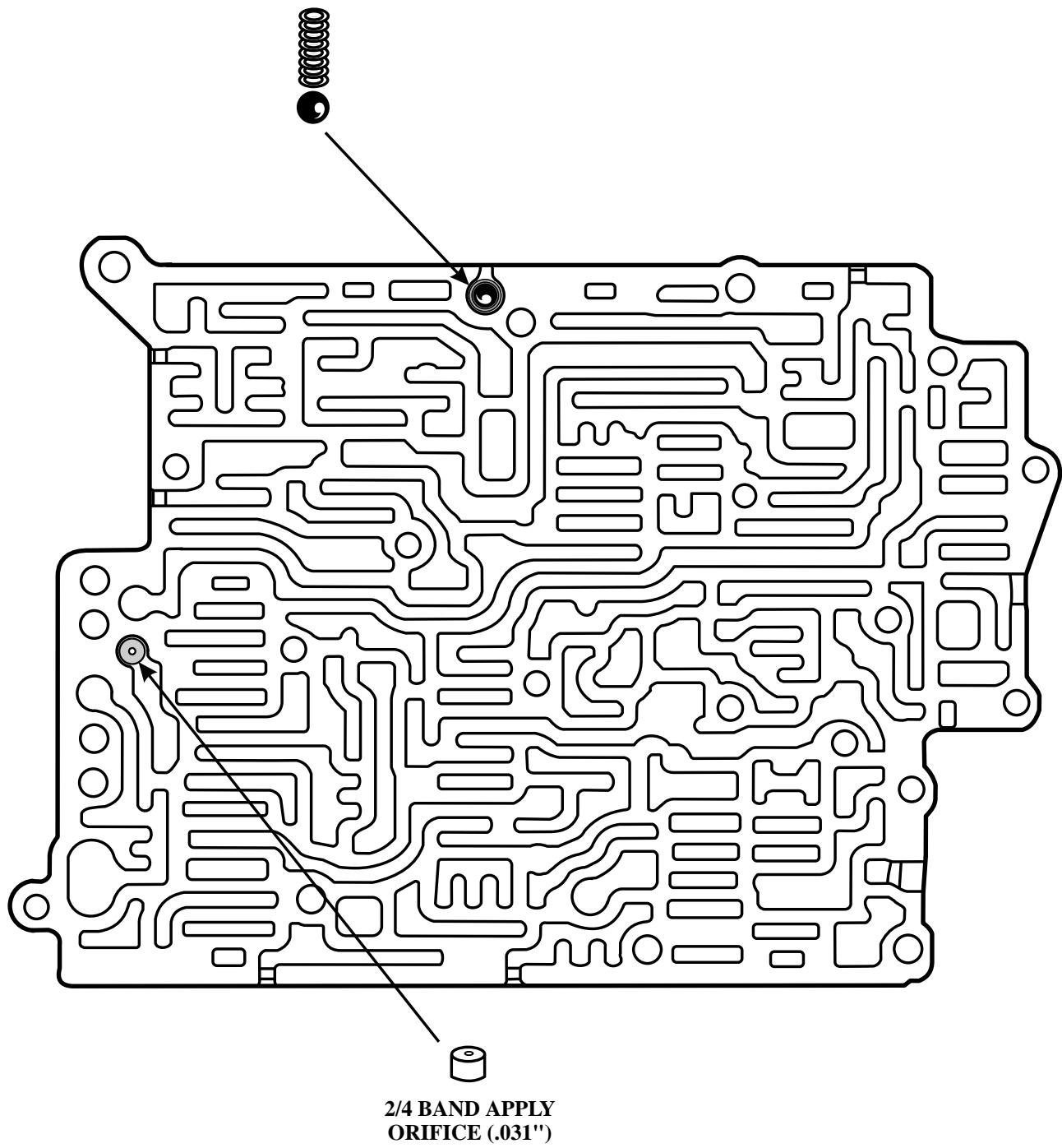
**FORD G4A-EL**  
**PREMAM VALVE BODY "MAIN BODY SIDE"**

Copyright © 2002 ATSG

Figure 92

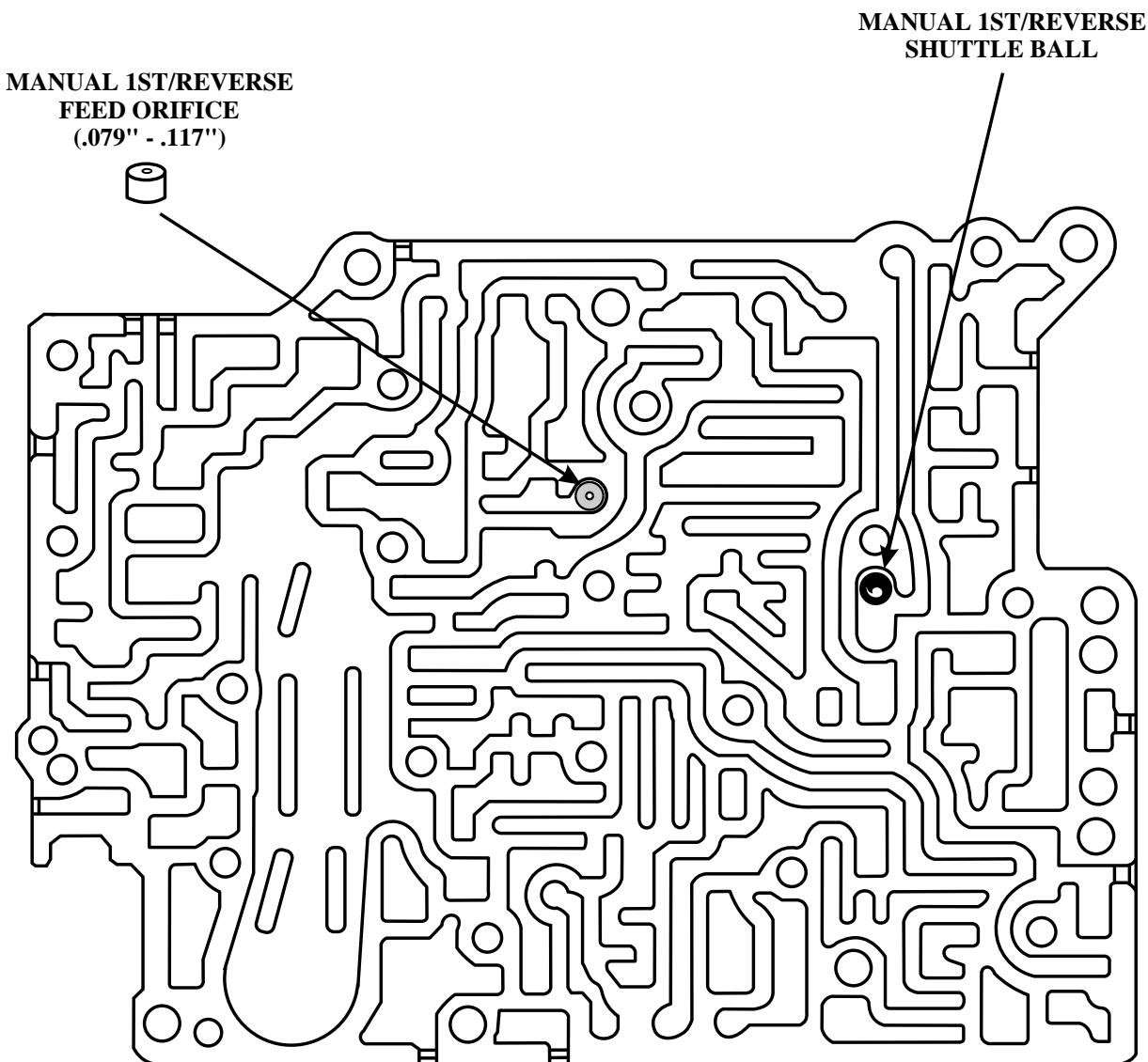
FORD G4A-EL  
MAIN VALVE BODY "PREMAIN BODY SIDE"

CONVERTER PRESSURE  
RELIEF BALL AND SPRING  
(Ball Down First)



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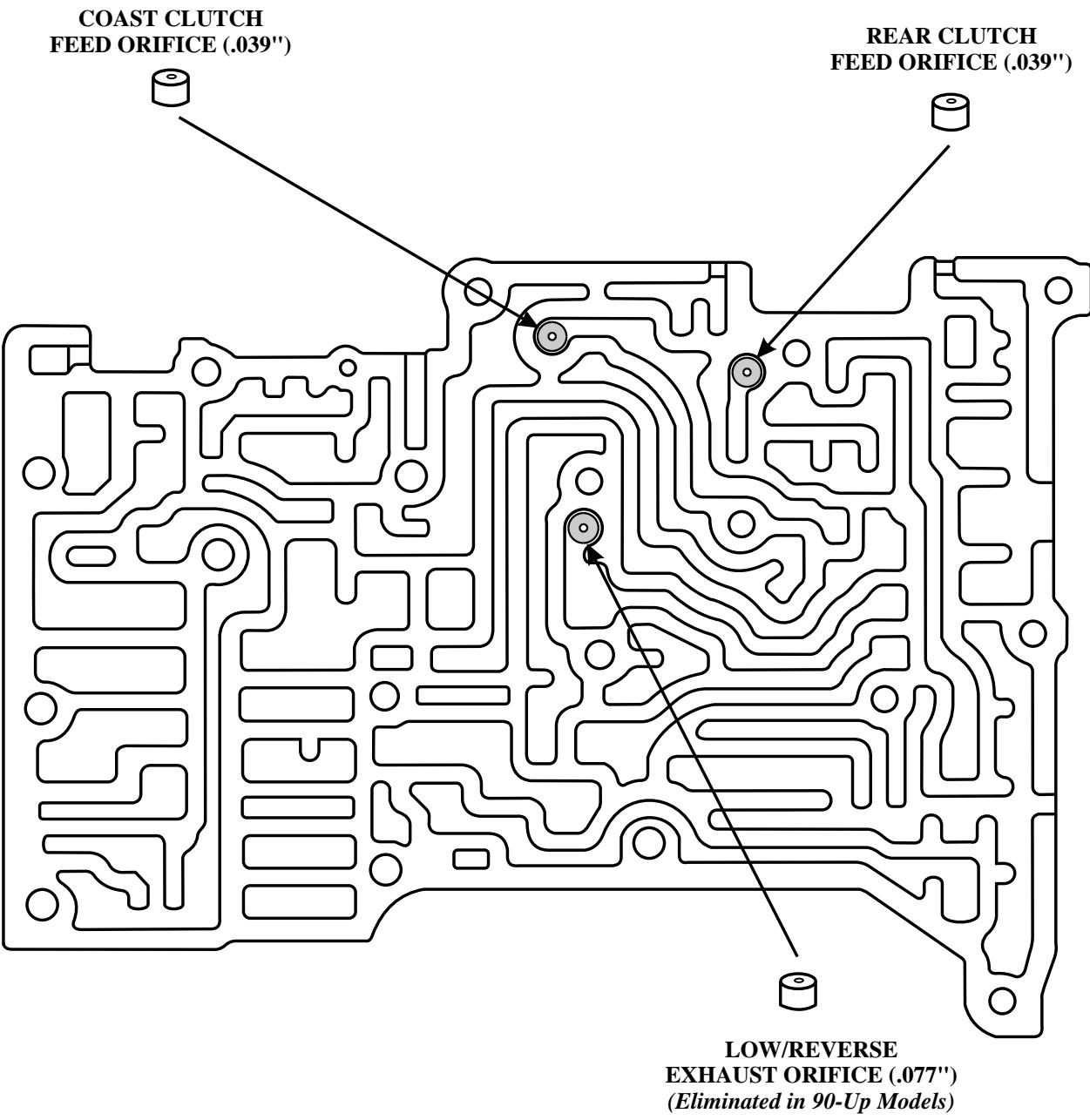
Figure 93

FORD G4A-EL  
MAIN VALVE BODY "REAR BODY SIDE"

Copyright © 2002 ATSG

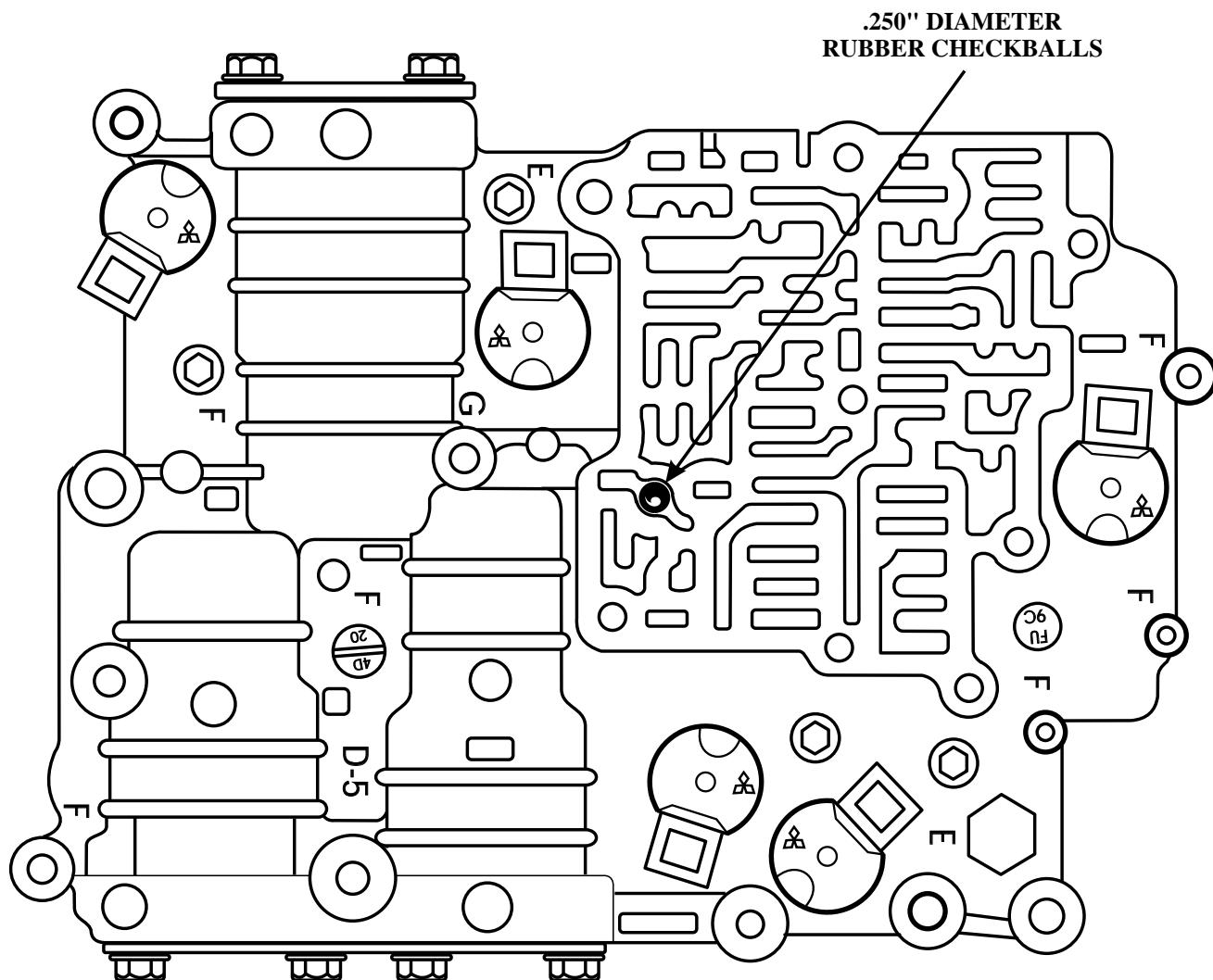
Figure 94

AUTOMATIC TRANSMISSION SERVICE GROUP

FORD G4A-EL  
REAR VALVE BODY

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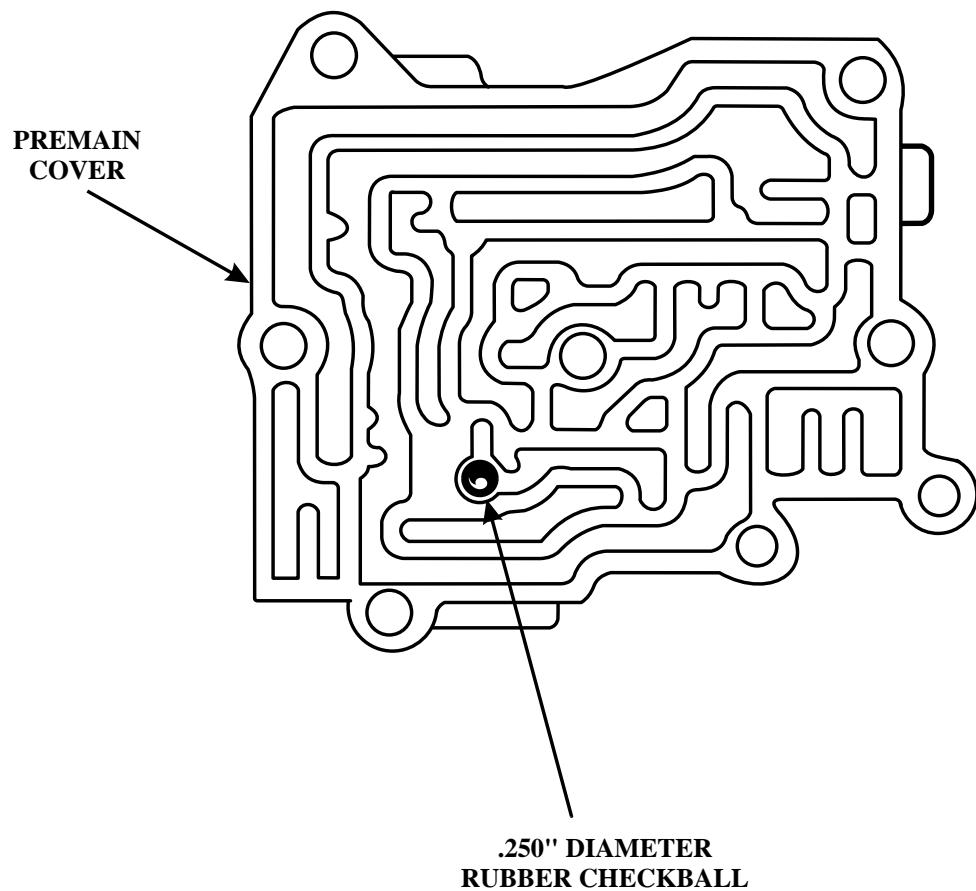
Figure 95

FORD GF4A-EL  
PREMAIN VALVE BODY "COVER SIDE"

Copyright © 2002 ATSG

Figure 96

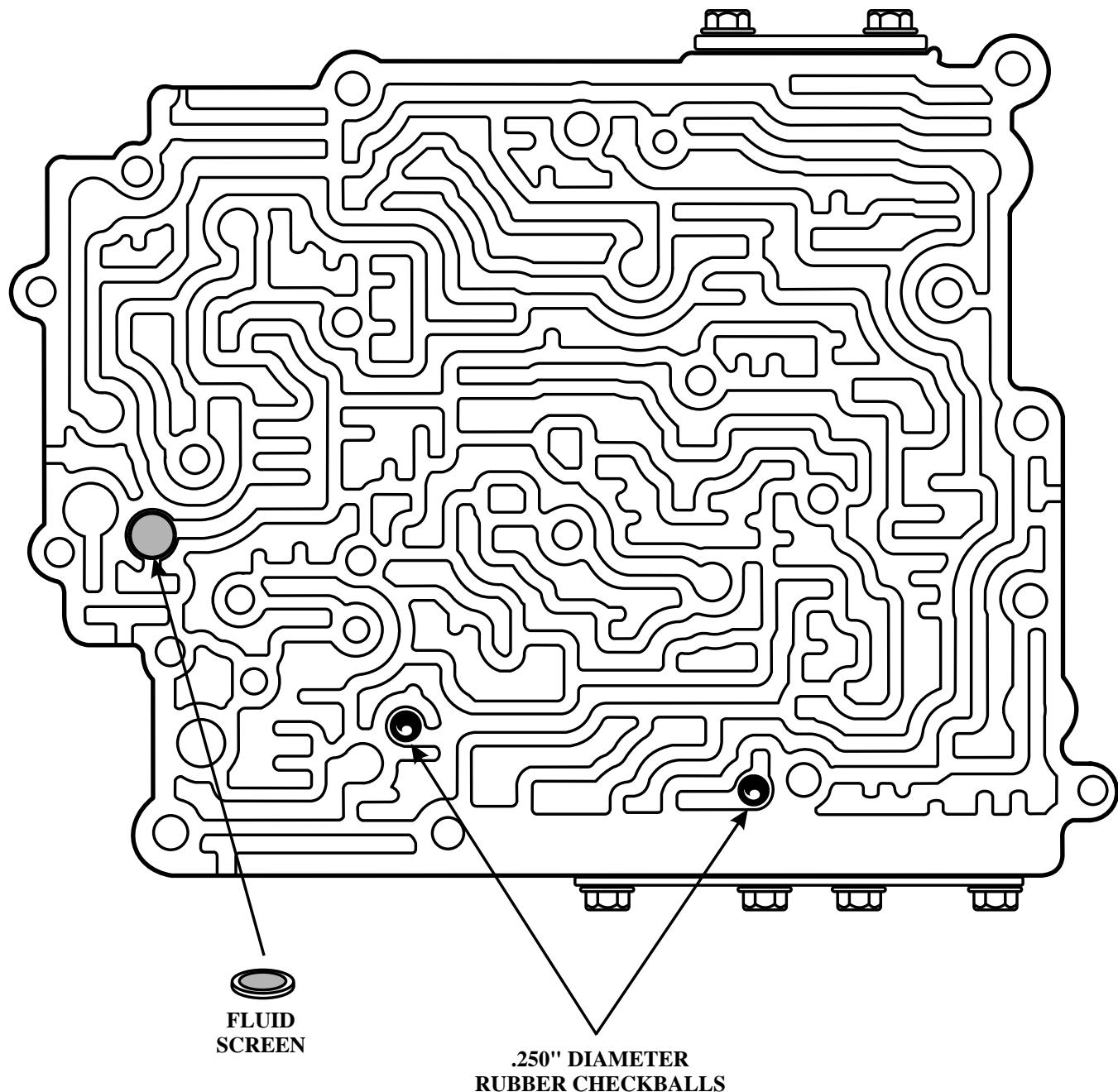
AUTOMATIC TRANSMISSION SERVICE GROUP

FORD GF4A-EL  
PREMAIN VALVE BODY COVER

Copyright © 2002 ATSG

Figure 97

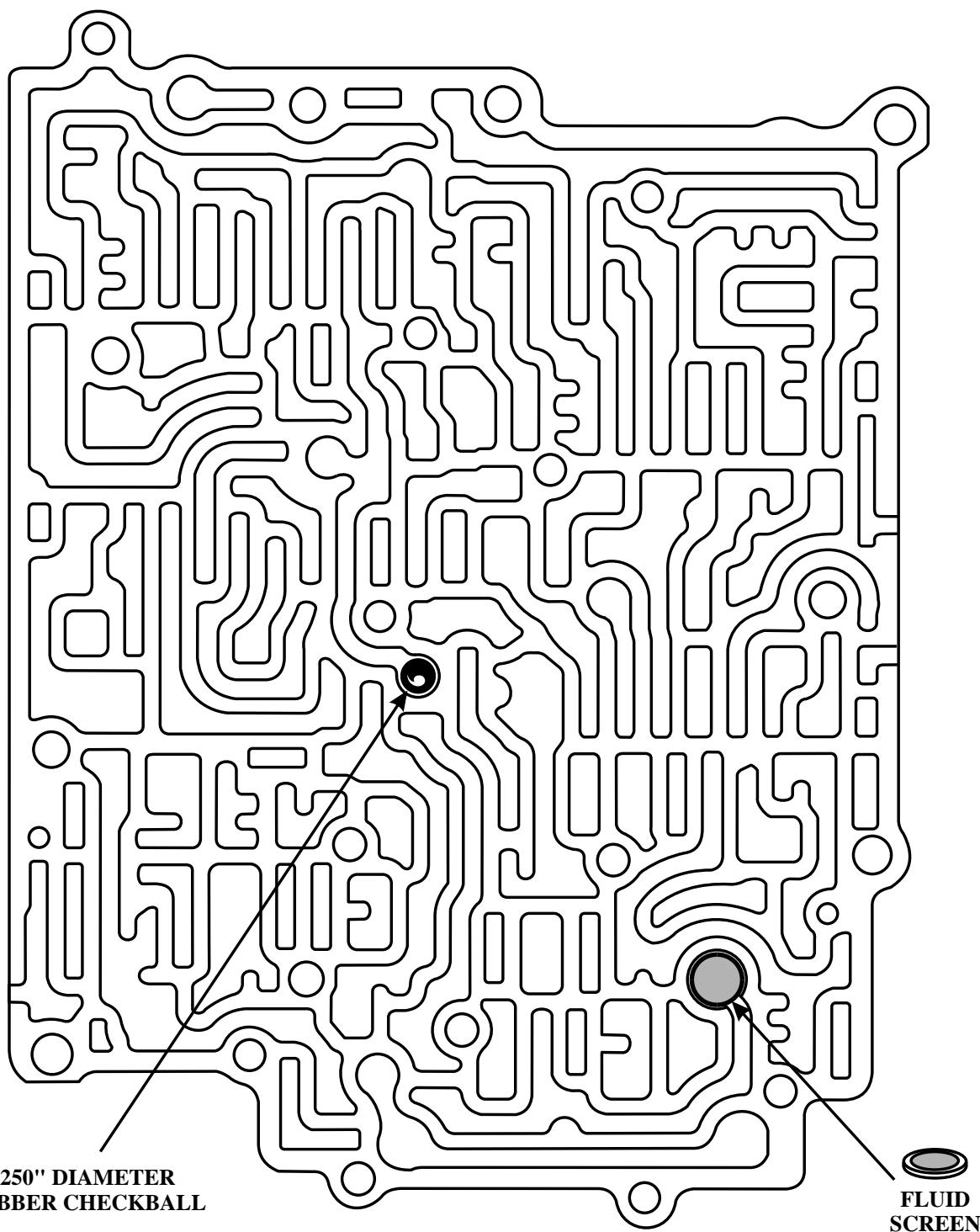
AUTOMATIC TRANSMISSION SERVICE GROUP

FORD GF4A-EL  
PREMAIN VALVE BODY "MAIN BODY SIDE"

Copyright © 2002 ATSG

Figure 98

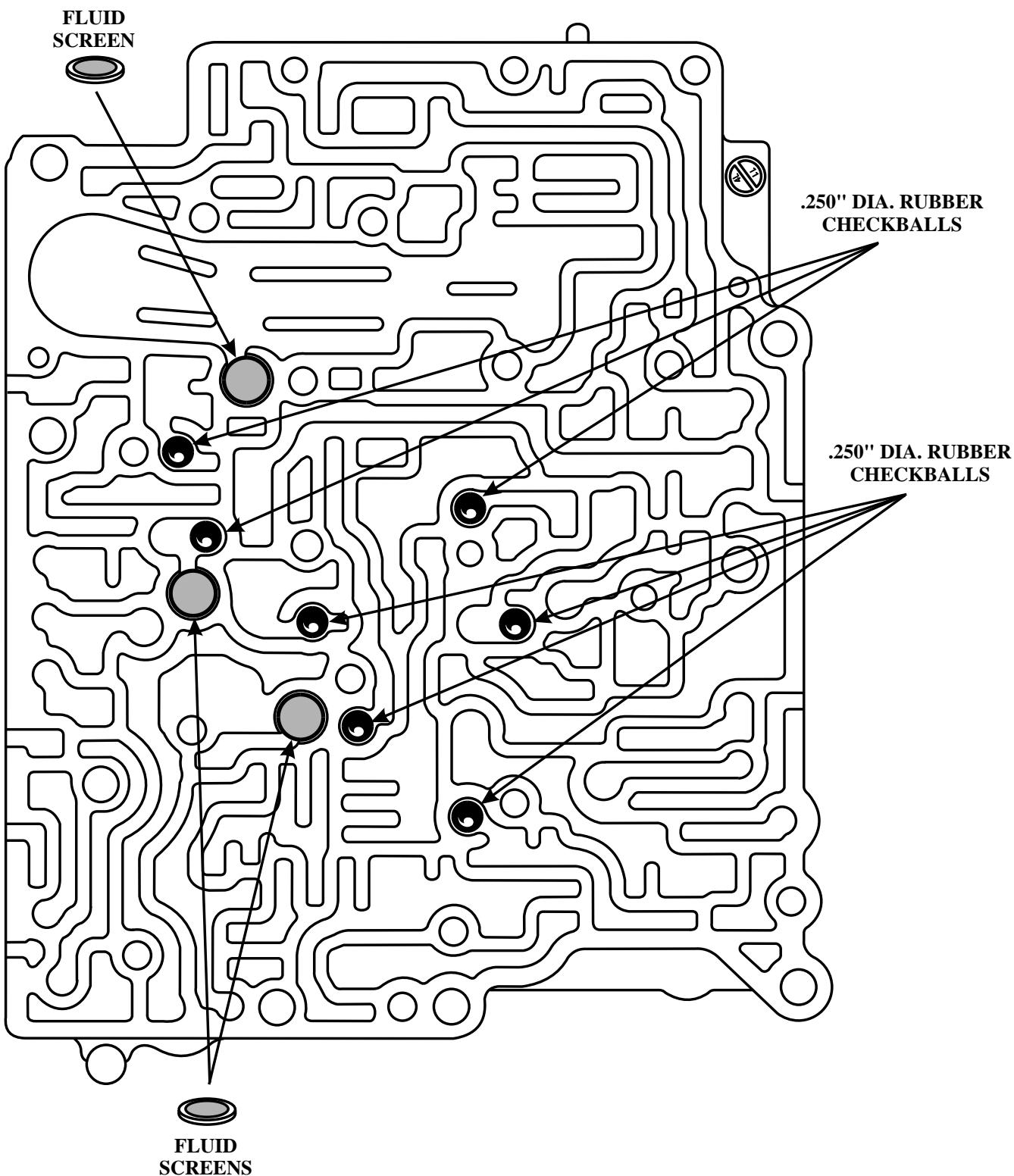
AUTOMATIC TRANSMISSION SERVICE GROUP

FORD GF4A-EL  
MAIN VALVE BODY "PREMAIN BODY SIDE"

Copyright © 2002 ATSG

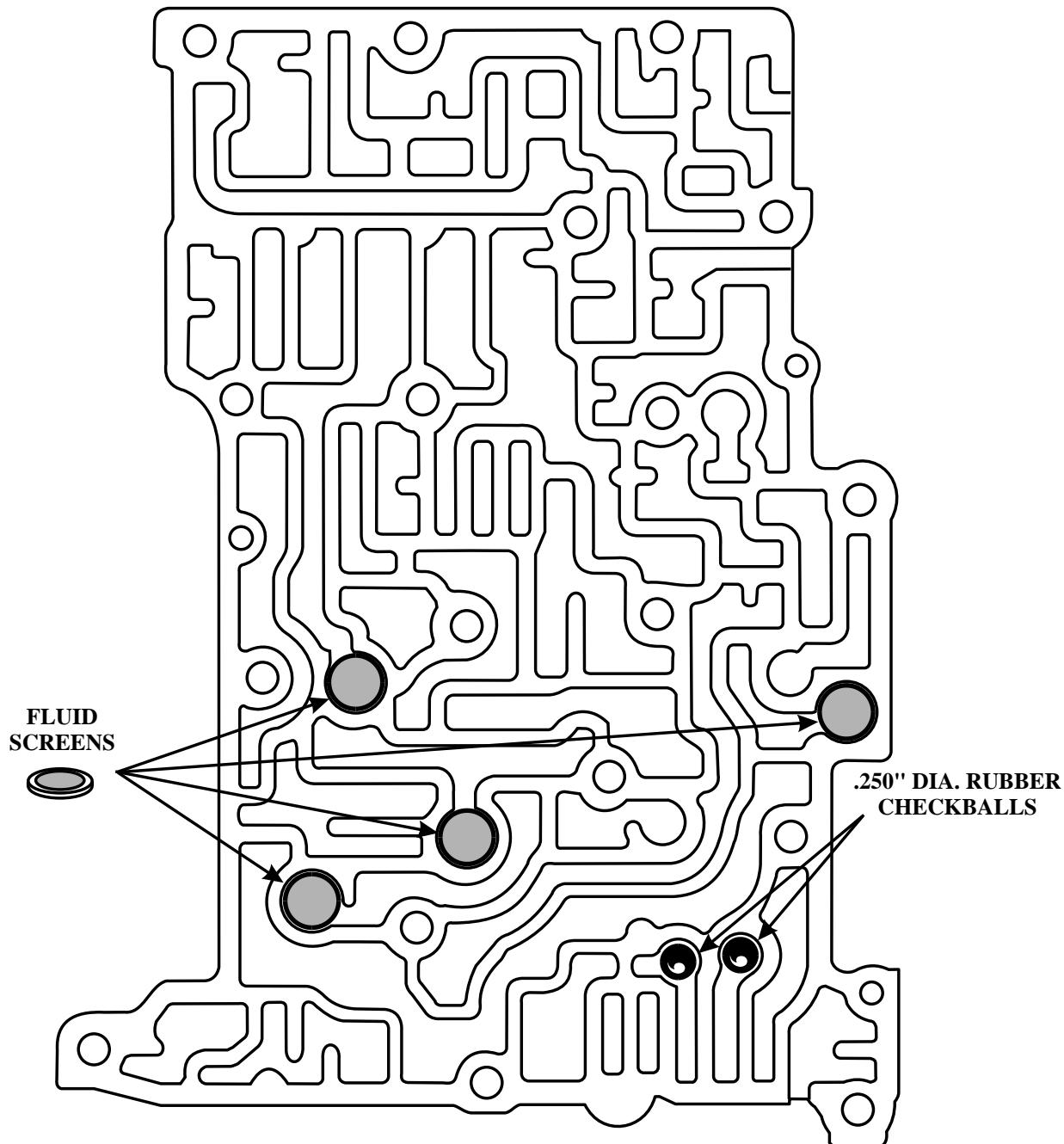
Figure 99

AUTOMATIC TRANSMISSION SERVICE GROUP

FORD GF4A-EL  
MAIN VALVE BODY "REAR BODY SIDE"

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Figure 100

FORD GF4A-EL  
REAR VALVE BODY "MAIN BODY SIDE"

Copyright © 2002 ATSG

Figure 101

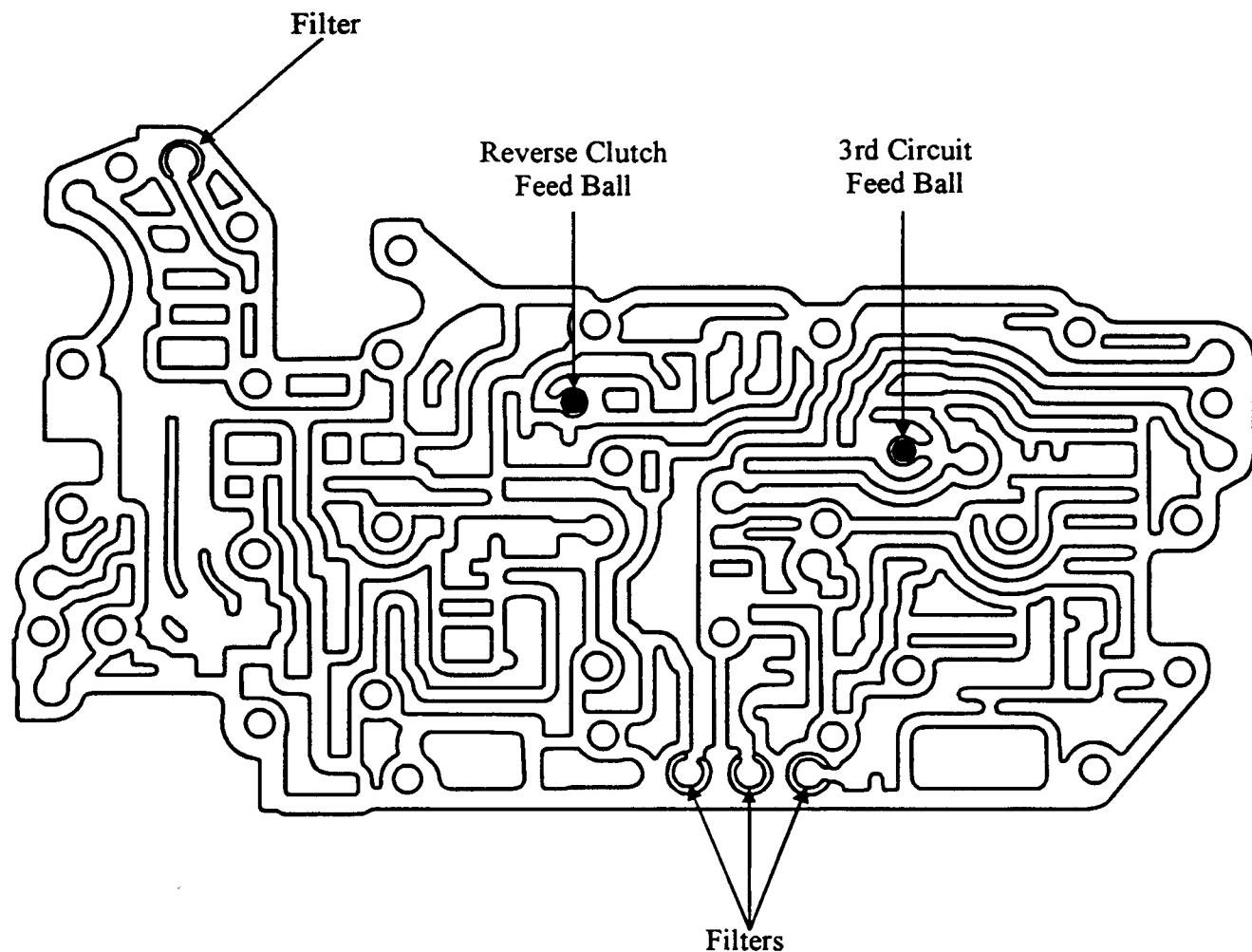
**F-4EAT**  
**MAIN VALVE BODY**  
**CHECK BALL LOCATION**

Figure 102

**F-4EAT**  
**THROTTLE & LOWER VALVE BODY**  
**CHECK BALL LOCATION**

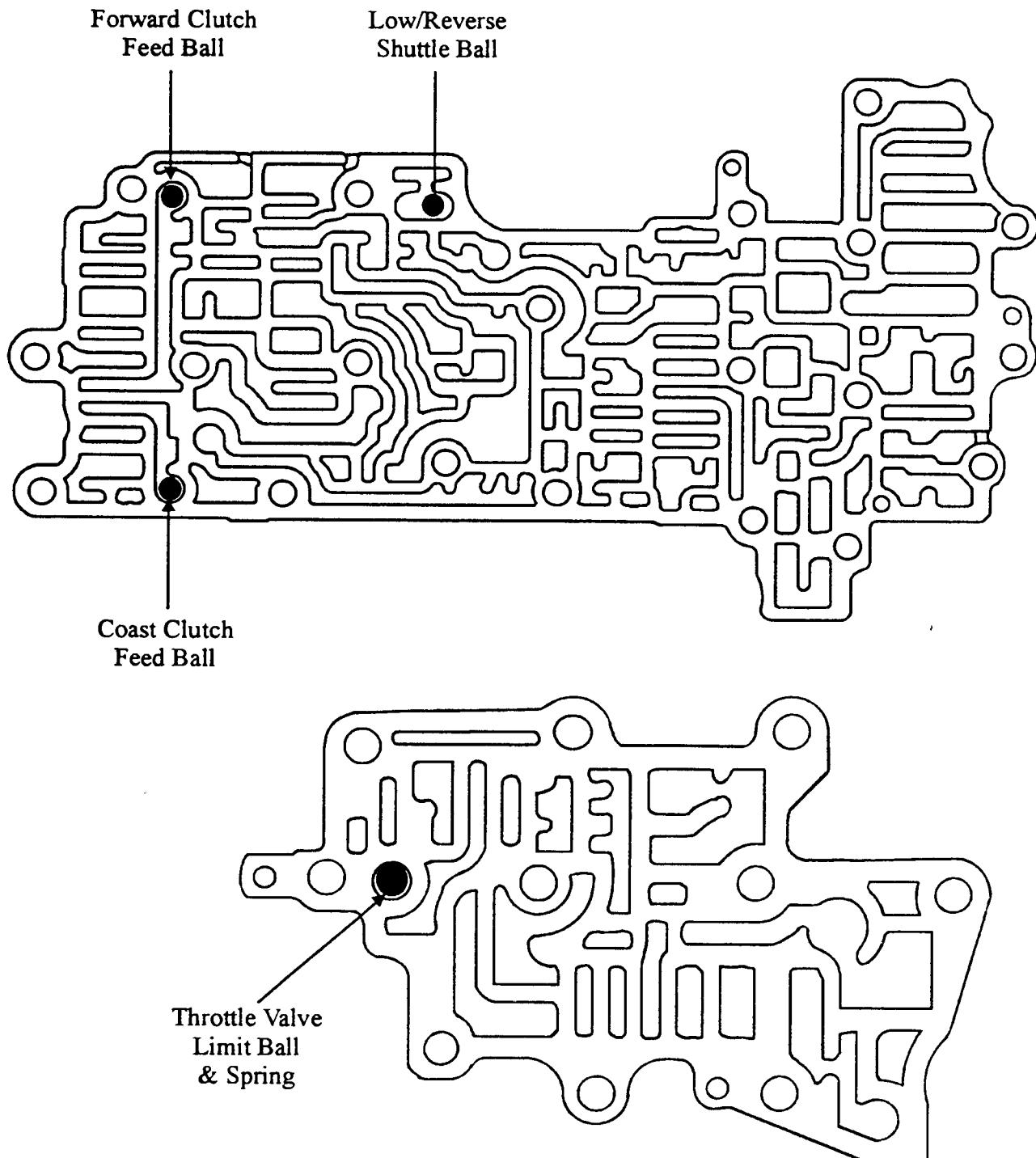


Figure 103

**KM 171**  
**MAIN VALVE BODY**  
**CHECK BALL LOCATION**

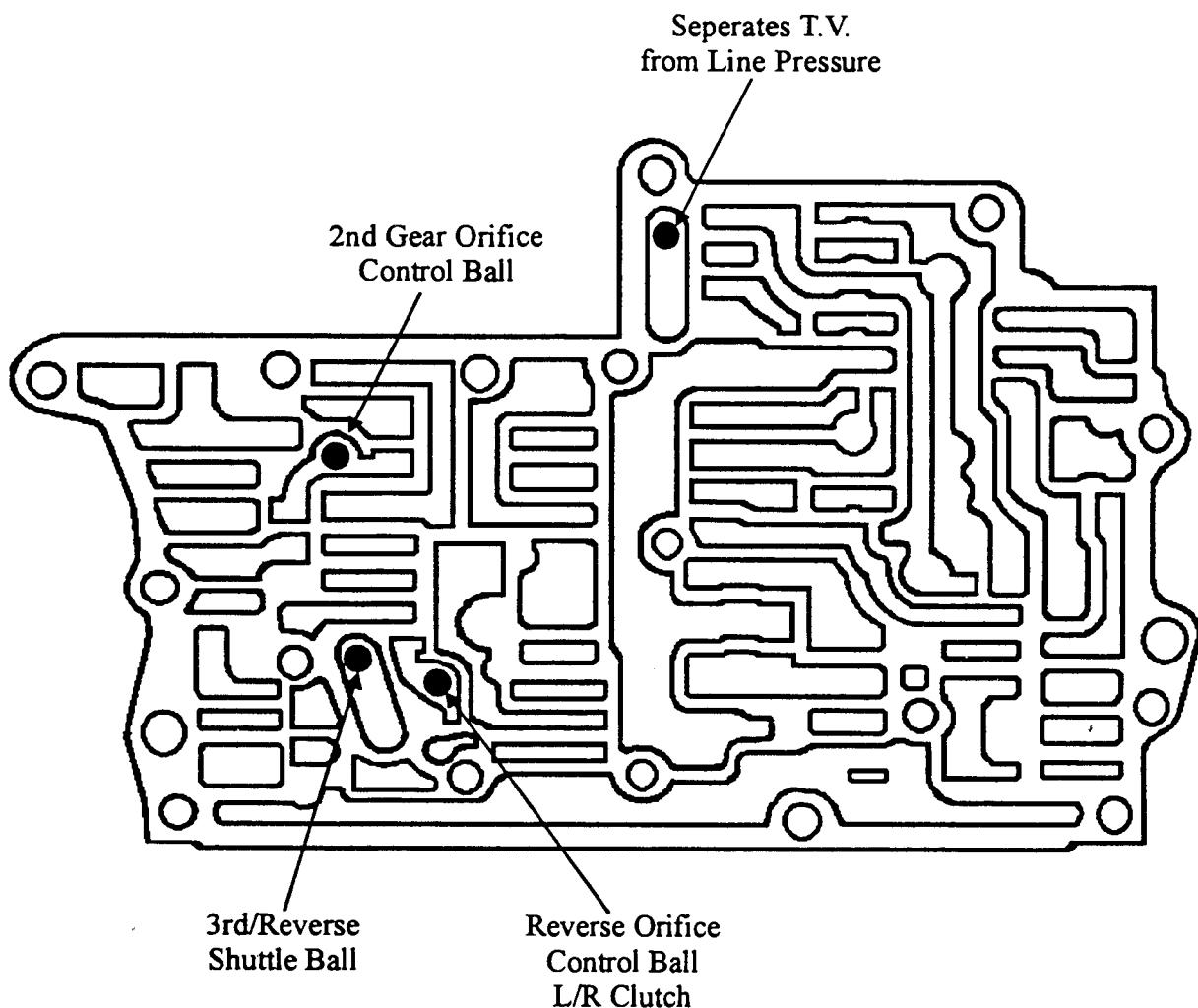


Figure 104

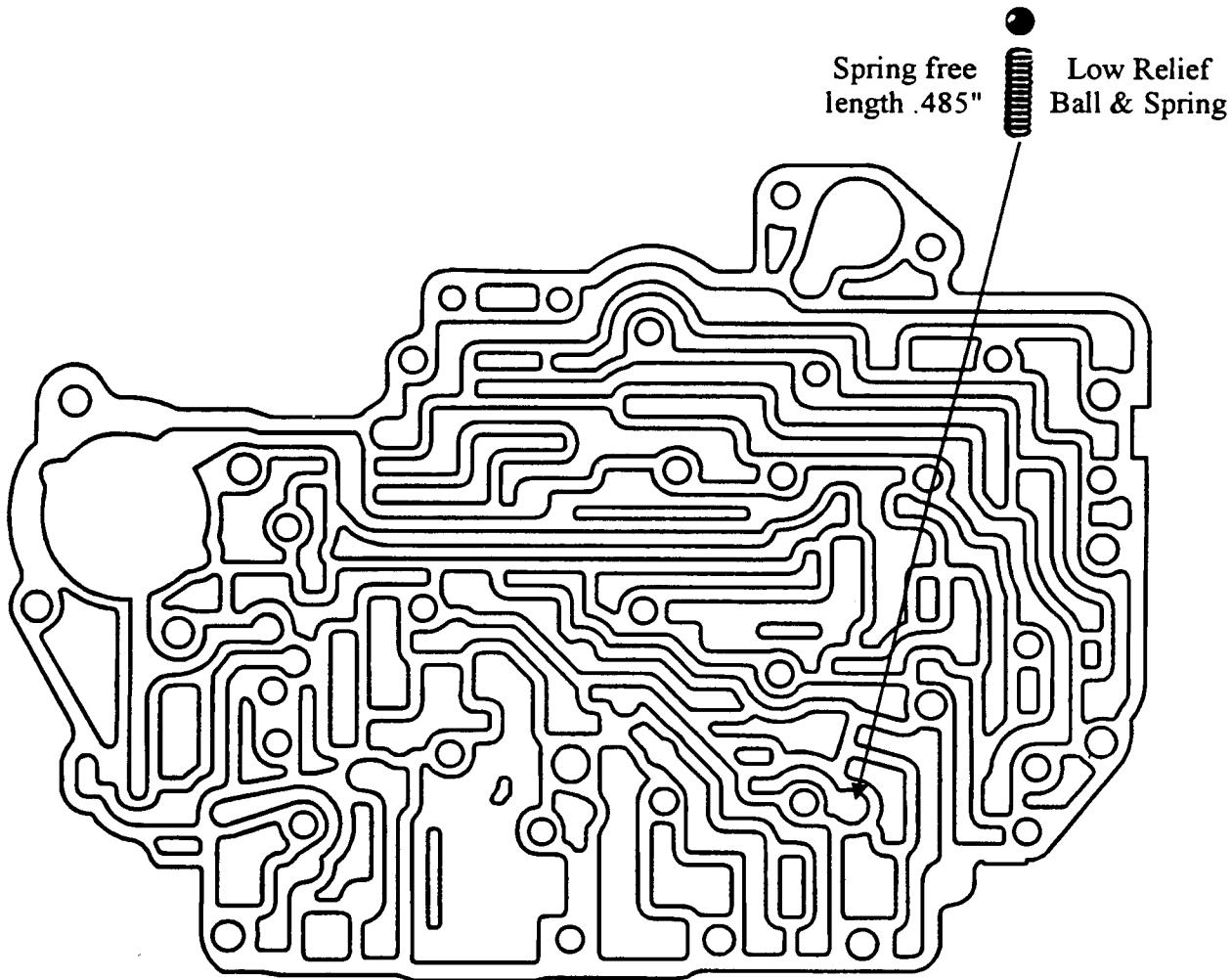
KM 171  
LOWER VALVE BODY  
CHECK BALL LOCATION

Figure 105

**KM 171**  
**LOWER VALVE BODY**  
**CHECK BALL LOCATION**

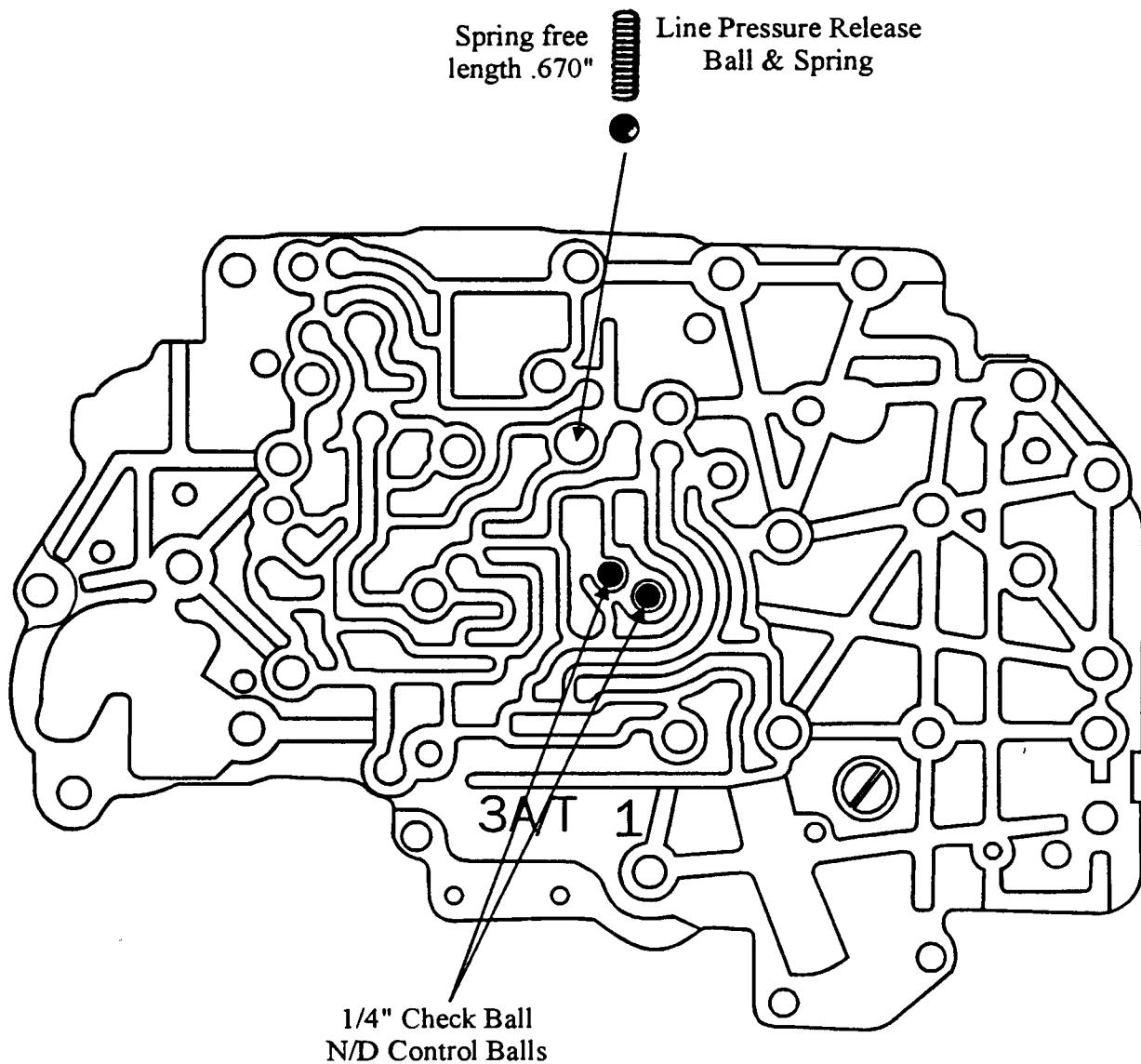


Figure 106

**KM 175**  
**MAIN VALVE BODY**  
**CHECK BALL LOCATION**

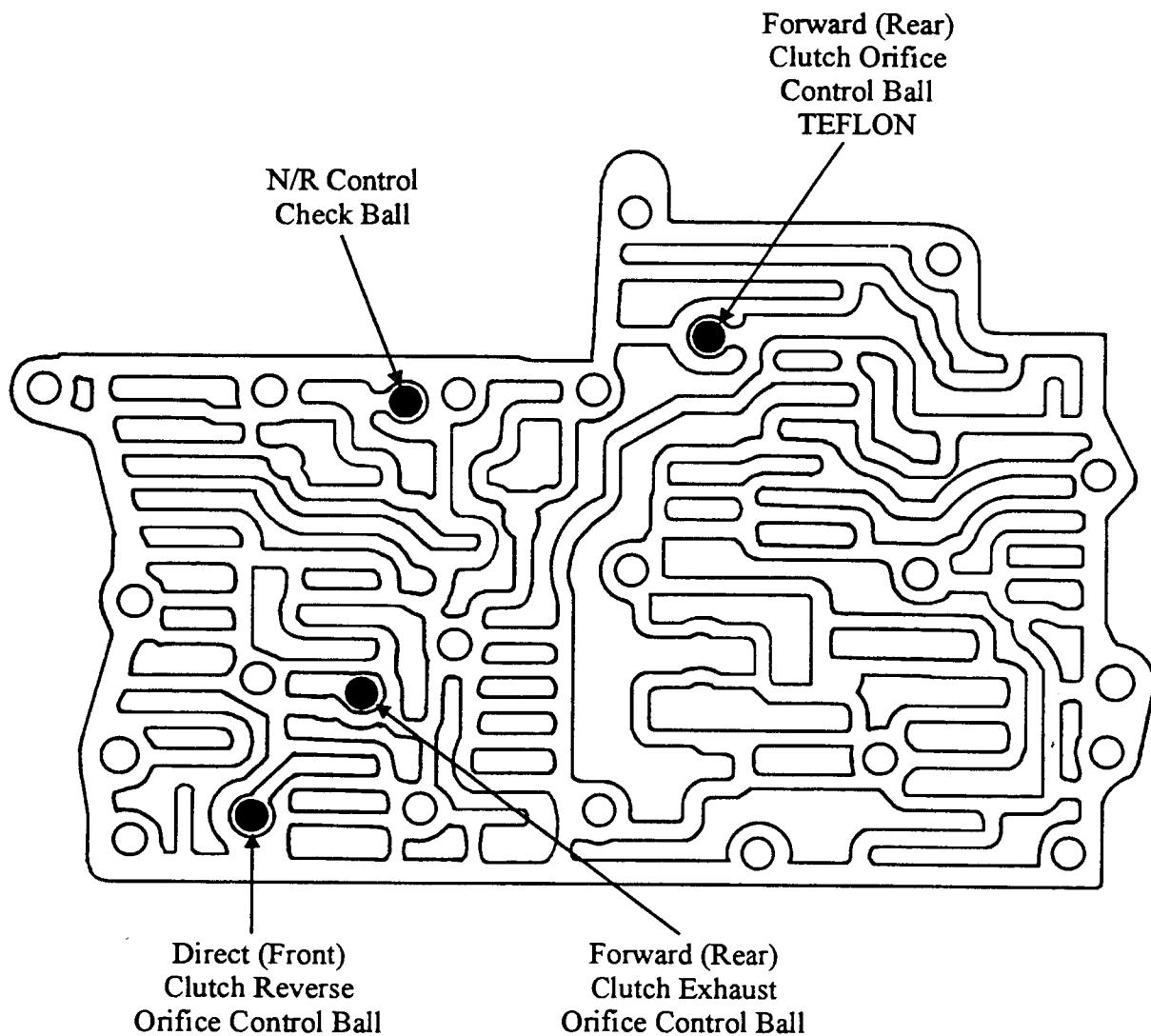


Figure 107

**KM 175**  
**UPPER VALVE BODY**  
**CHECK BALL LOCATION**

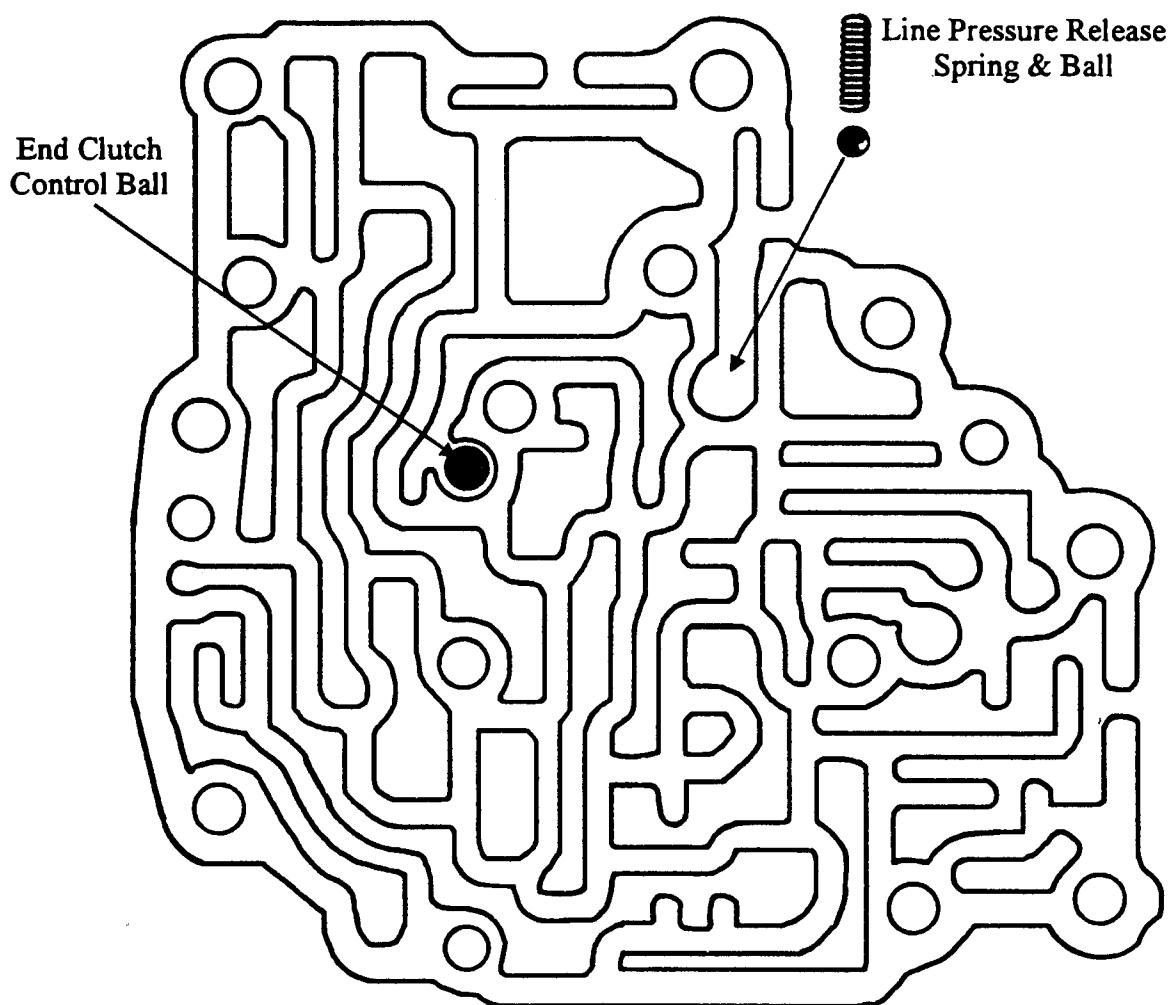
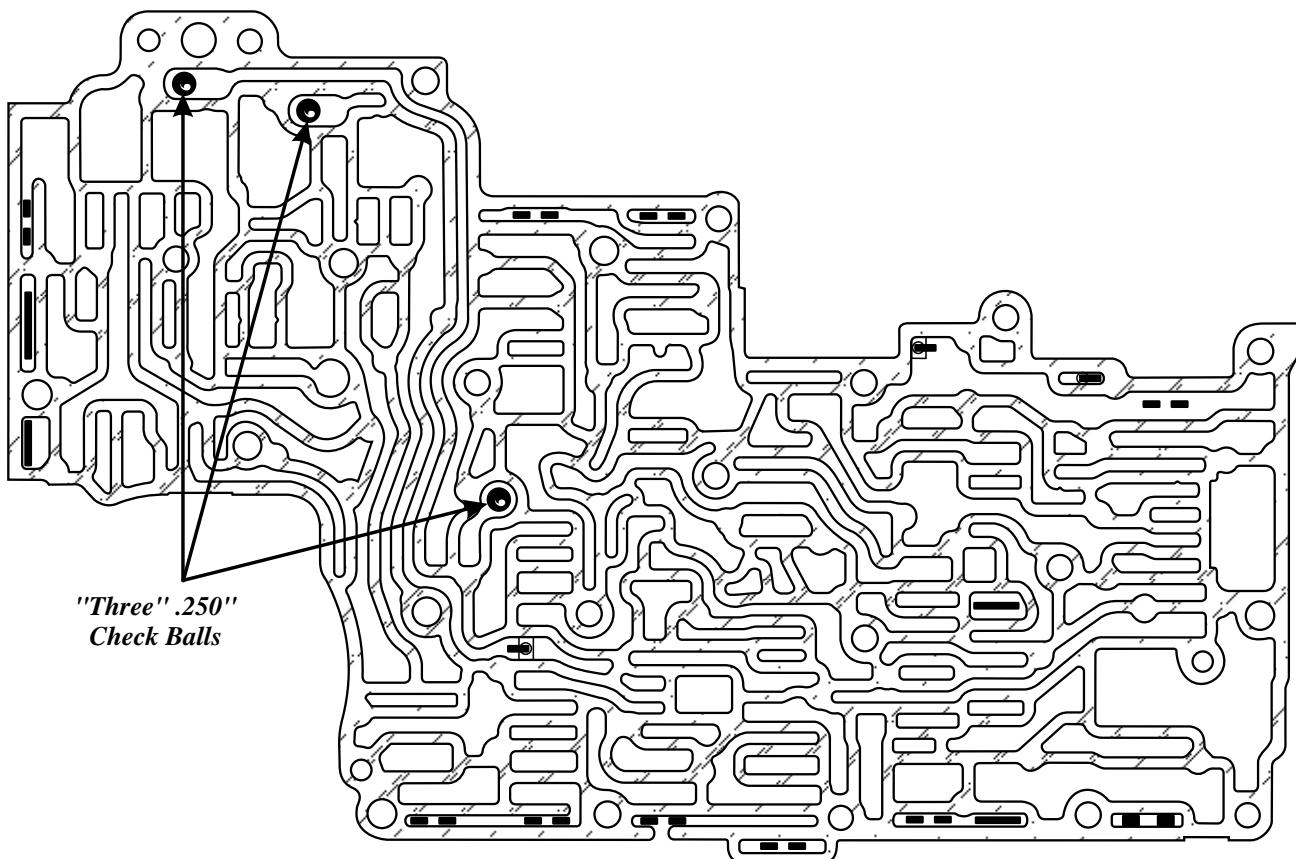


Figure 108

## FORD 5R55N

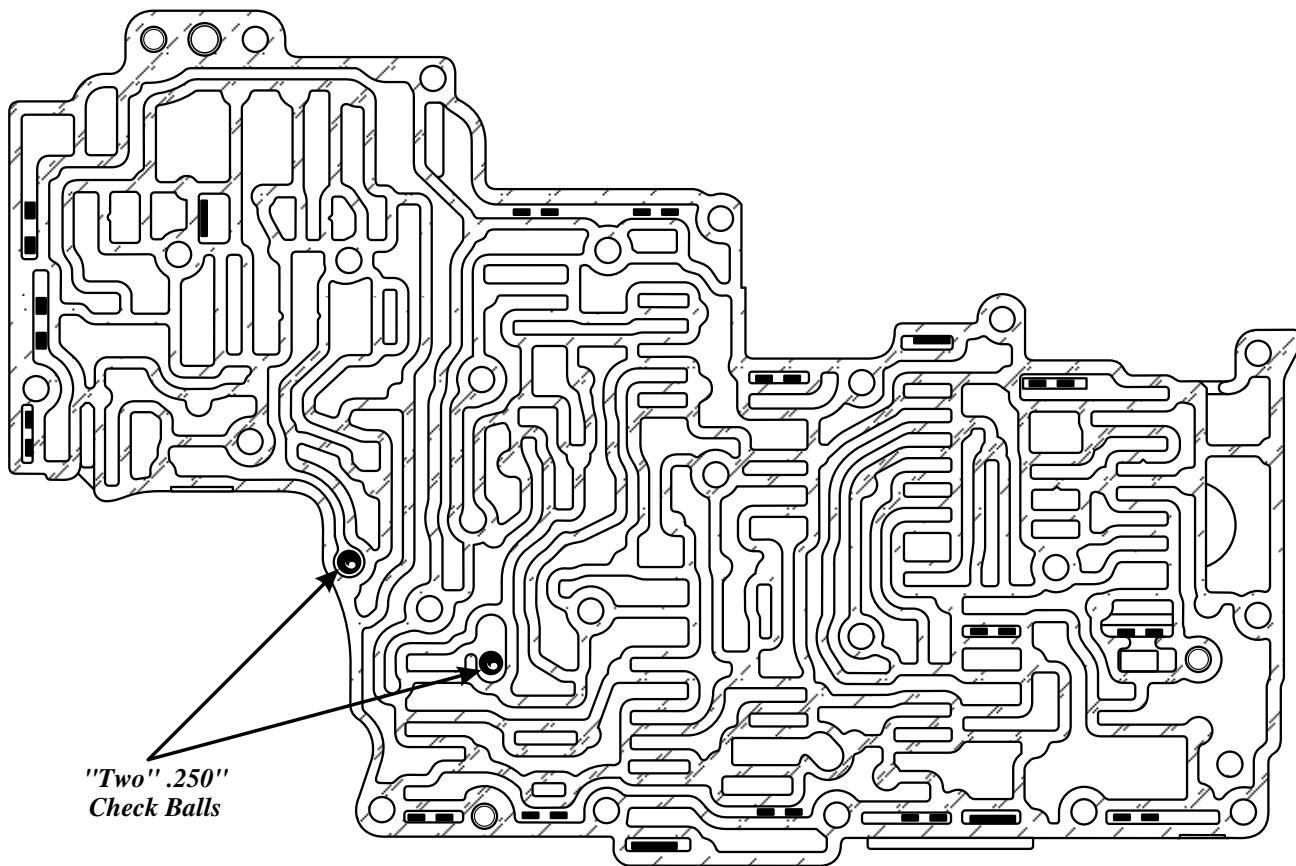
"5R55N" VALVE BODY  
CHECKBALL LOCATIONS

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Figure 109

AUTOMATIC TRANSMISSION SERVICE GROUP

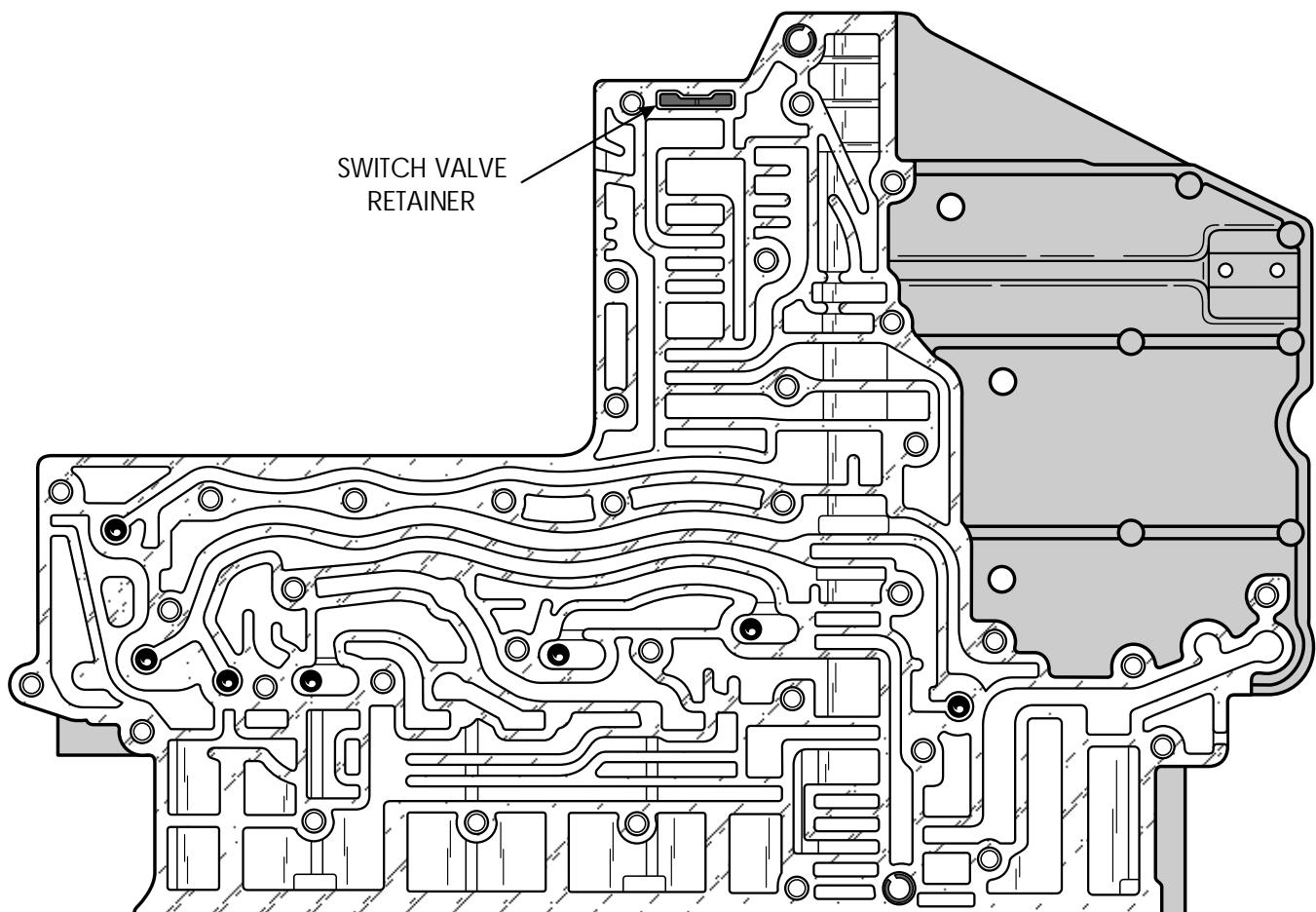
## FORD 5R55W

"5R55W" VALVE BODY  
CHECKBALL LOCATIONS

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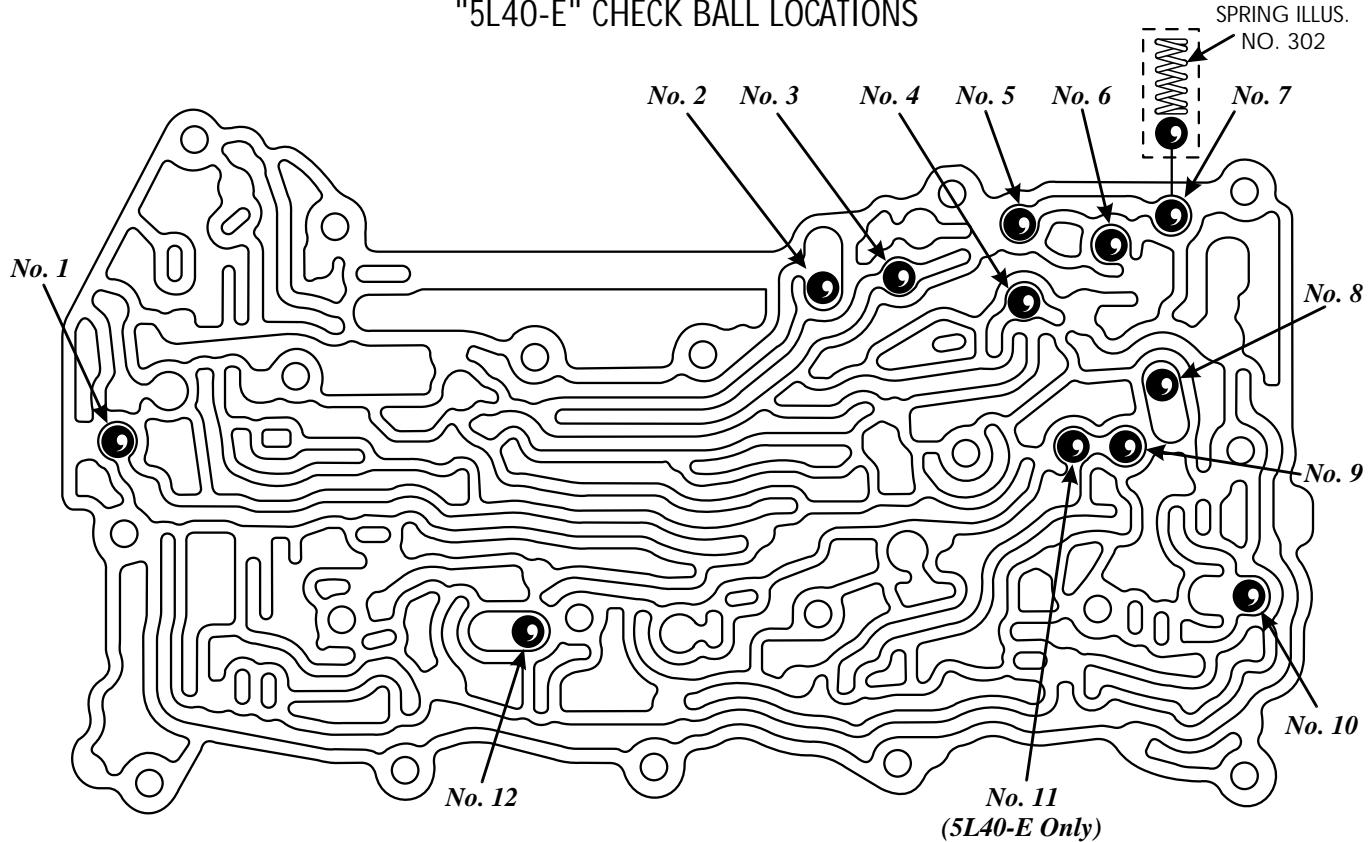
Figure 110

AUTOMATIC TRANSMISSION SERVICE GROUP

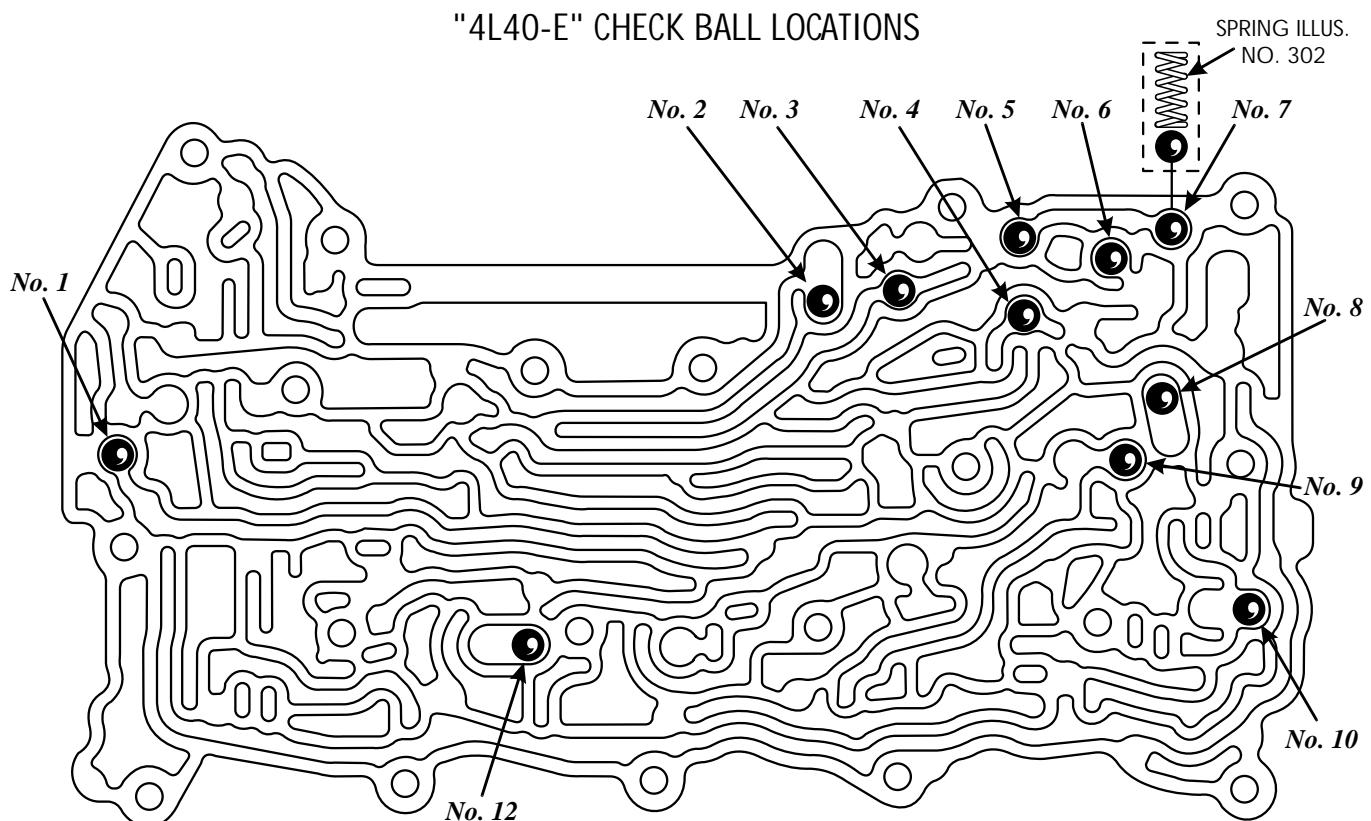
CHRYSLER 45RFE  
VALVE BODY CHECKBALL LOCATIONS

REQUIRES "SEVEN" 1/4" STEEL CHECKBALLS

## "5L40-E" CHECK BALL LOCATIONS

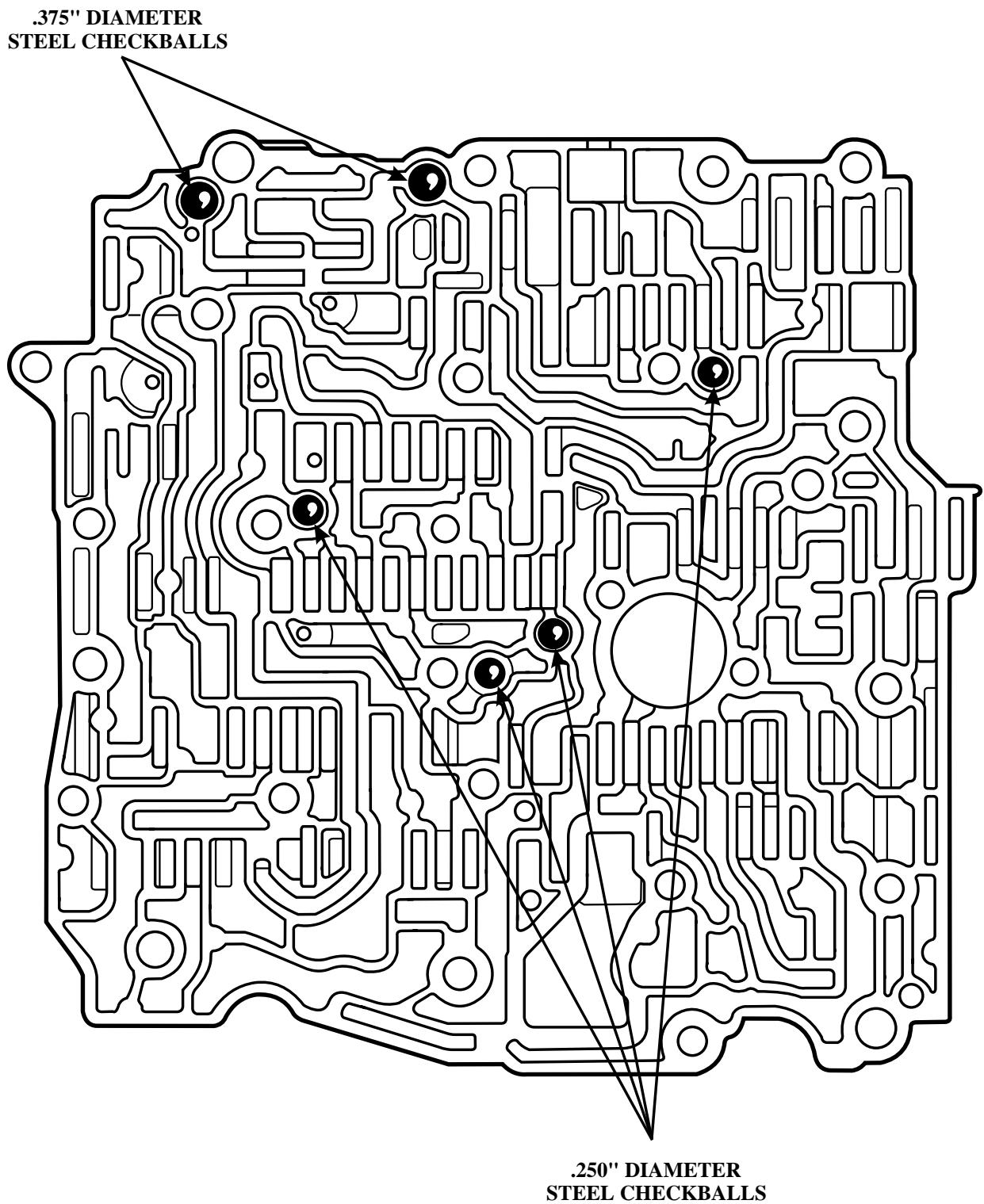


## "4L40-E" CHECK BALL LOCATIONS



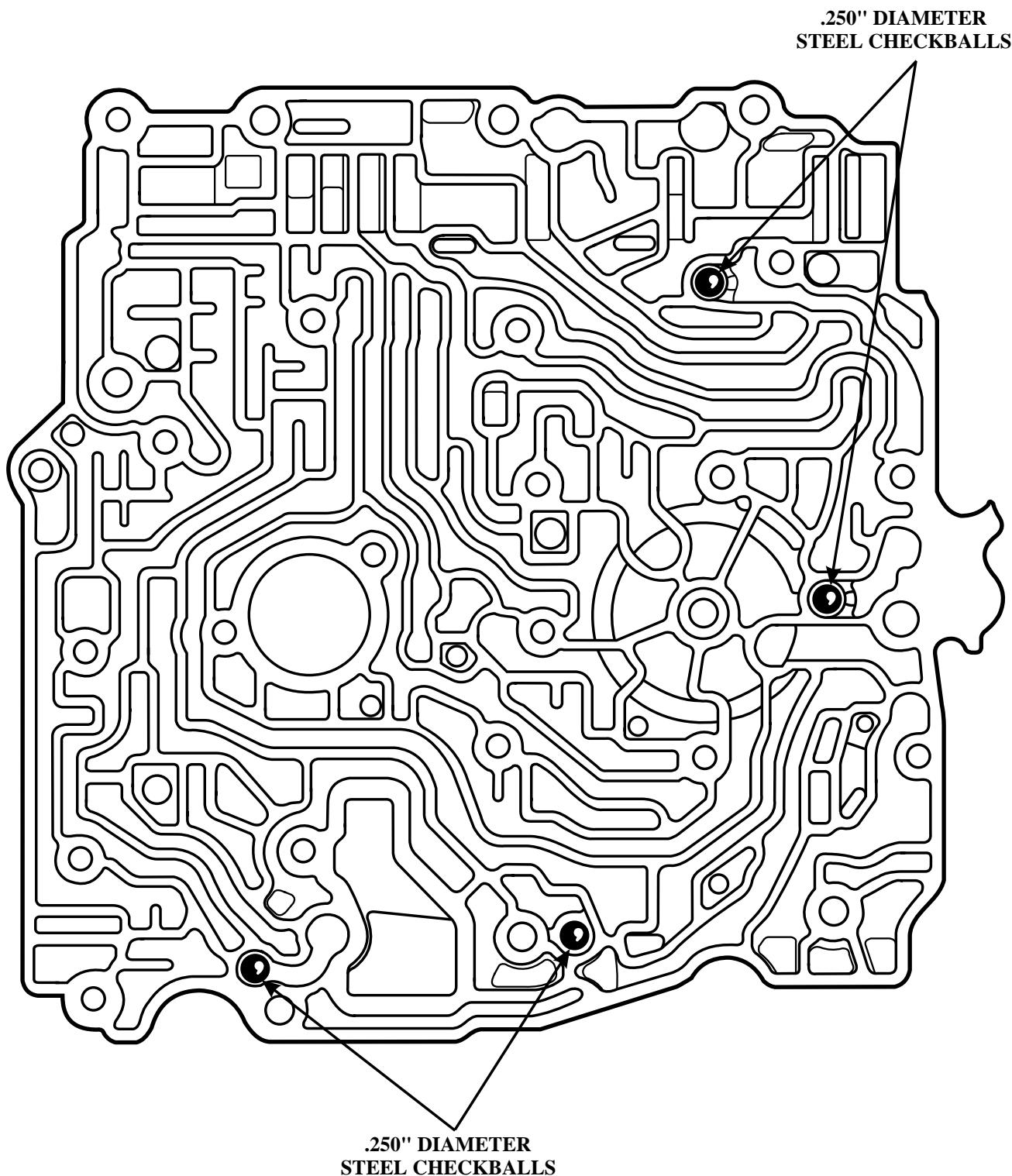
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Figure 112

THM 4T65-E  
VALVE BODY CHECKBALL LOCATIONS

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Figure 113

THM 4T65-E  
CHANNEL PLATE CHECKBALL LOCATIONS

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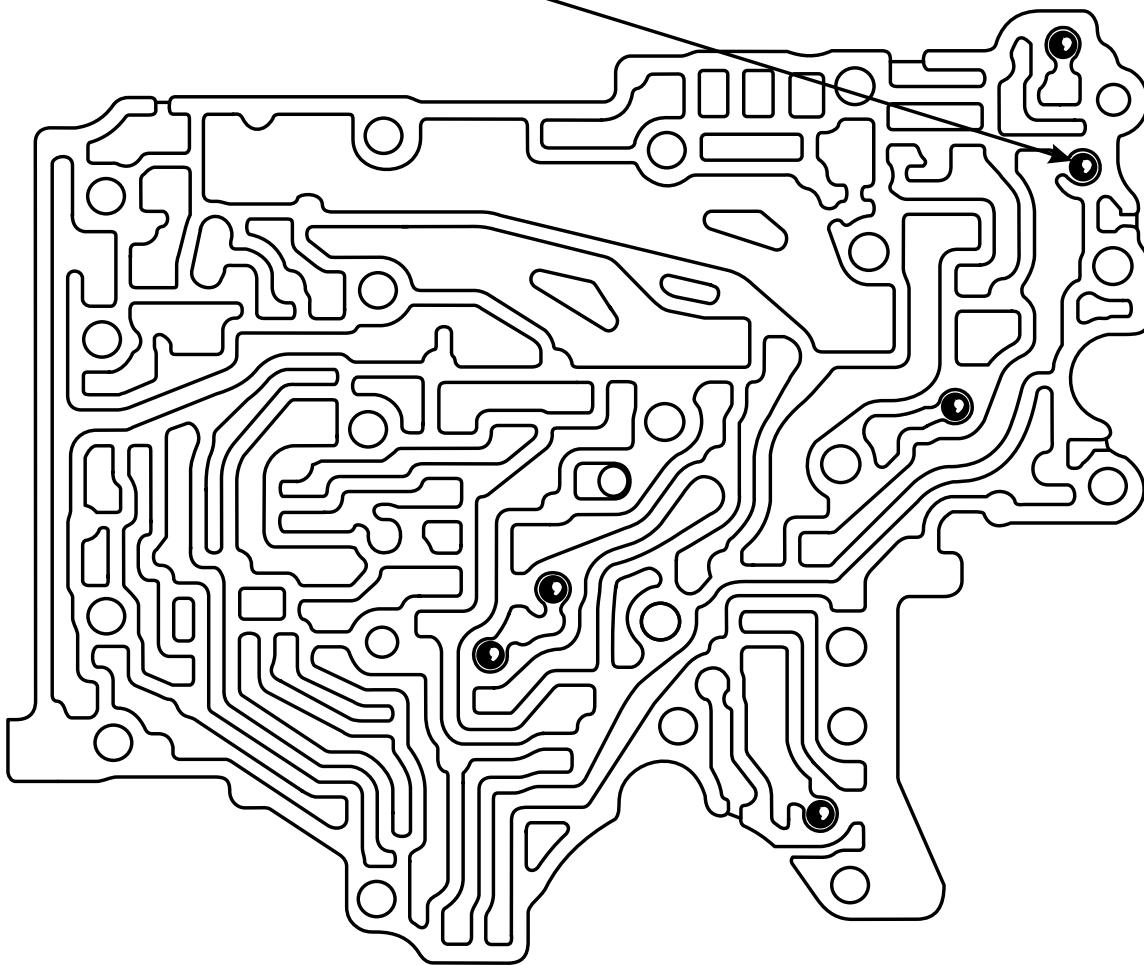
Figure 114

AUTOMATIC TRANSMISSION SERVICE GROUP

FORD 4F20E  
"INTERMEDIATE" VALVE BODY CHECKBALL LOCATIONS

REQUIRES SIX (6) STEEL CHECKBALLS  
5.5mm (.217") DIAMETER IN THE  
LOCATIONS SHOWN BELOW

*This Checkball Is Omitted  
On 1995-Up Models*



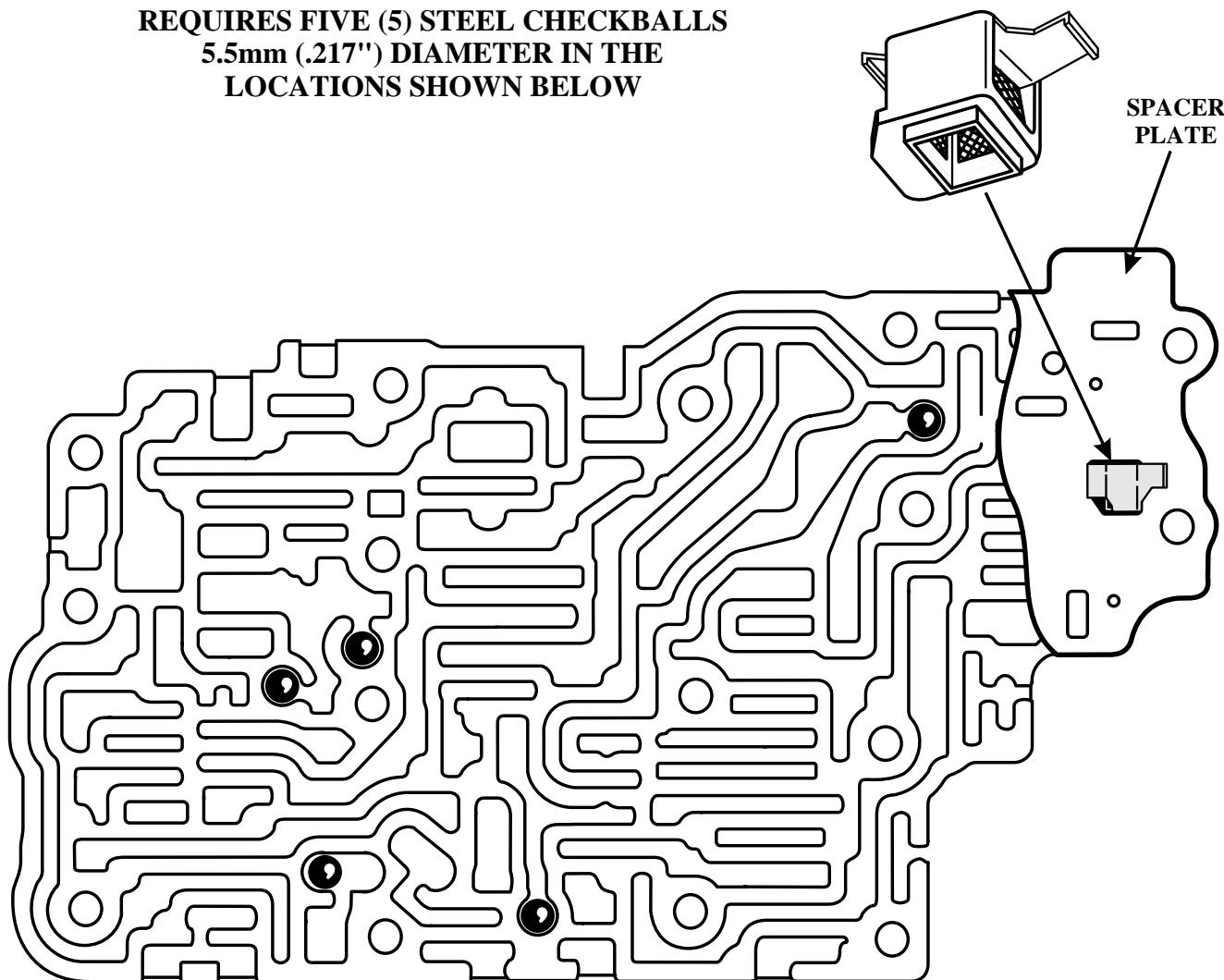
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Figure 115

FORD 4F20E  
"UPPER" VALVE BODY CHECKBALL LOCATIONS

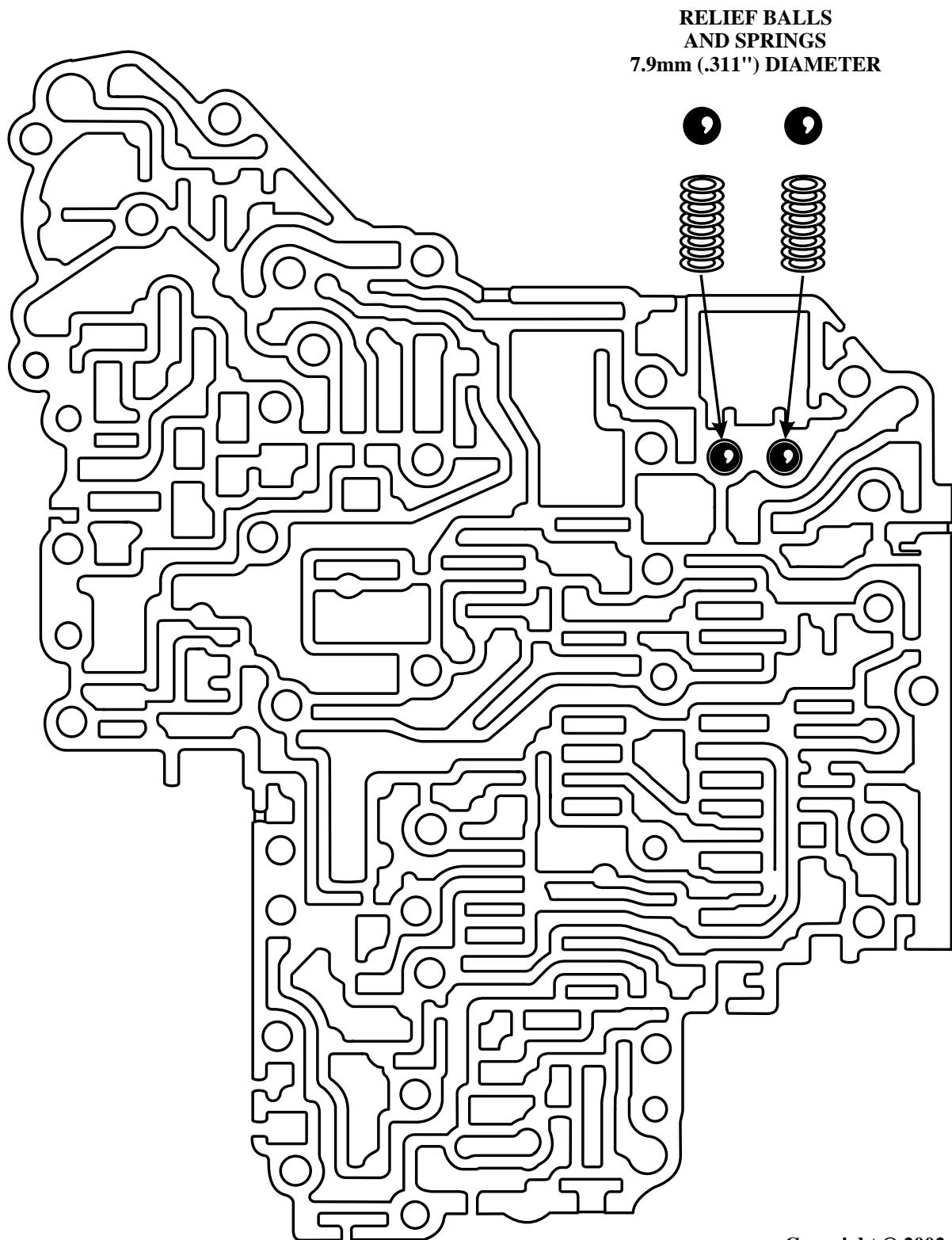
REQUIRES FIVE (5) STEEL CHECKBALLS  
5.5mm (.217") DIAMETER IN THE  
LOCATIONS SHOWN BELOW

PILOT FILTER INSTALLED  
ON SPACER PLATE WITH  
LEGS UP AS SHOWN



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Figure 116

FORD 4F20E  
"LOWER" VALVE BODY RELIEF BALL LOCATIONS

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Figure 117