



This Service Information bulletins supersedes S.I. 24 01 98 **dated January 1999.**

**NEW** designates changes to this revision

## SUBJECT

### Transmission Fluid Level Checking Procedure and Application Chart

## MODEL

All with the ZF and GM automatic transmission

## SITUATION

Checking the fluid level may be necessary if there is evidence of a leak, a complaint related to fluid level or in the event repairs are made to the transmission.

**NOTE: USE ONLY THE TRANSMISSION FLUID THAT IS APPROVED FOR USE WITH THE SPECIFIC TRANSMISSION AS INDICATED IN THE ATTACHED FLUIDS APPLICATION CHART. ALL OTHER FLUIDS WILL CAUSE NON WARRANTABLE TRANSMISSION DAMAGE.**

## PROCEDURE

### Fluid Level Checking Procedure for all Transmissions without a Dipstick:

1. The transmission temperature must be between 30°C and 50°C before checking can begin. Use the DIS or the MODIC to determine the transmission temperature.
2. The vehicle must be level and without load. With the engine running, switch on the air conditioning. This will increase the idle speed and ensure that all oil passages in the transmission are filled with oil.
3. Step on the brake firmly, apply parking brake fully and move the selector lever through each gear position, pausing briefly in each gear.
4. With the engine running and the selector lever in Park position, remove the filler plug located on the transmission (see picture for location). If a small stream of oil runs out, the fluid level is correct.
5. If no oil runs out when the filler plug is removed, the fluid level is too low. Add oil until it starts to overflow.
6. With the engine running, reinstall the oil filler plug and tighten to proper torque. (Refer to section F below for proper

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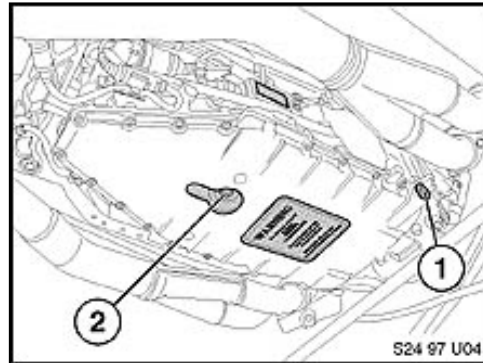
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tightening torque)

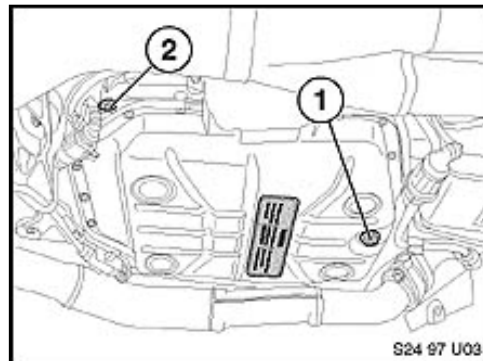
### Transmission Filler & Drain Plug Locations:

#### ZF Transmissions

5 HP 30 (A5S 560Z)



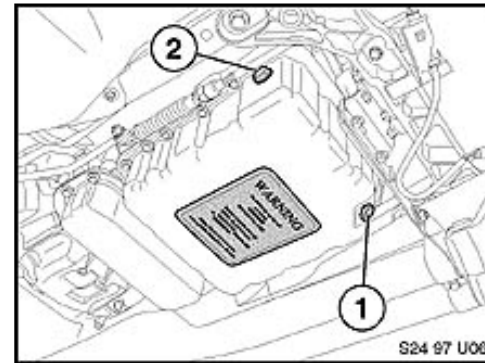
5 HP 24 (A5S 440Z)



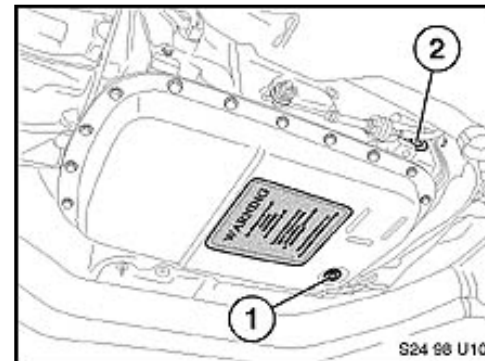
**NEW** 5HP 19 (A5S 325Z)

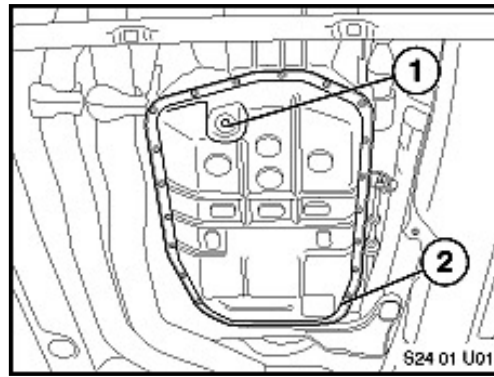
#### GM Transmissions

THM R1 (A4A 310R & A4S 270R)



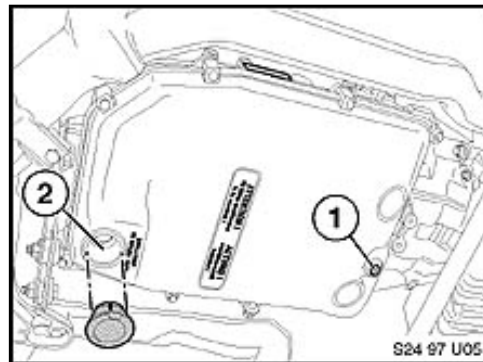
5L40-E (A5S 360R and A5S 390R)





- (1) Drain plug
- (2) Filler plug

5 HP 18 (A5S 310Z)



- (1) Drain plug
- (2) Filler plug

### Fluid Level Checking Procedure for all Transmissions with a Dipstick

(As of 02/91 the THM R1 transmissions are not equipped with a dipstick):

1. The transmission temperature must be between 30°C and 50°C before checking can begin. Use the DIS or the MODIC to determine the transmission temperature.
2. The vehicle must be level and without load. With the engine running, switch on the air conditioning. This will increase the idle speed and ensure that all oil passages in the transmission are filled with oil.
3. Step on the brake firmly, apply parking brake fully and move the selector lever through each gear position, pausing briefly in each gear.
4. Pull out dipstick and wipe clean with a lint free cloth
5. Reinsert dipstick completely. Pull out dipstick and place bottom tip on a level surface, measure level from bottom tip

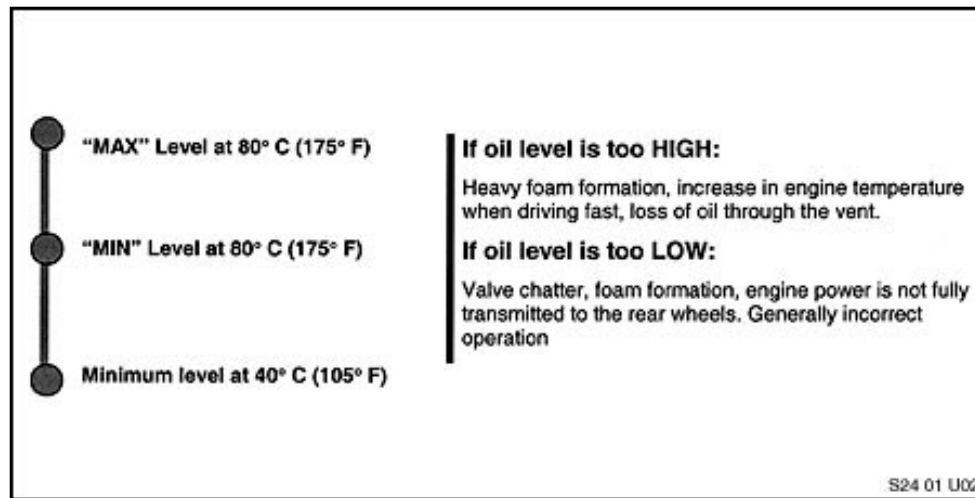
as shown.

Compare measurement and oil temperature reading from MoDiC or DIS with Table below.

Oil °C	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
MIN (mm)	3	5	8	11	13	14	16	17	19	21	22	24	26	29	31
MAX (mm)	15	17	20	22	25	26	27	28	29	32	34	36	38	41	43

6. Add additional oil if needed.

Reinsert dipstick completely. Pull out dipstick and look at level. Level should be between MAX and MIN marks as shown.



Amount of oil between MAX and MIN marks is 0.3 lit (0.6 pts)

**On vehicles with a dipstick tube if transmission fluid is needed use only Dexron III.**

**Adding Oil after Transmission Repairs:**

1. With the engine stopped, add oil to the transmission until it overflows.
2. Insert the filler plug and tighten by hand. Place the selector lever in Park position and start the engine.
3. Follow the fluid level checking procedure as described under step A or B.



## Notes on fluid level checking and adding transmission oil:

- Whenever all lifetime use oils (Shell LA 2634, Esso LT71141 or Texaco ETL 7045 or 8072B) are to be collected in a clean container and reused .
- It is preferred to check the transmission fluid level at 30°C, this way the transmission will hold extra oil versus topping off at 50°C.
- If the transmission temperature rises above 50°C during the fluid level checking procedure, the resulting oil level will be too low.
- Have necessary equipment, oil pump and transmission fluid available before starting the fluid level checking procedure.

### **NEW** Tightening Torque

ZF Trans	Oil Filler Plug	Oil Drain Plug	GM Trans	Oil Filler Plug	Oil Drain Plug
A5S310Z	100 Nm	15 Nm	A4S270R	25 Nm	33 Nm
A5S560Z	100 Nm	50 Nm	A4S310R	25 Nm	33 Nm
A5S440Z	35 Nm	30 Nm	A5S360R	20 Nm	20 Nm
A5S325Z	30 Nm	35 Nm	A5S 390R	20 Nm	20 Nm

### **NEW** PARTS INFORMATION

Attached to this bulletin are copies of the Transmission Fluids Application Charts which identify what type of transmission fluid is to be used with each model based on production date. These charts can be ordered from Product Engineering (a pre-printed order form is attached).

Item Number	Description	Price
SD 92-113	Set of Transmission Fluid Application Charts-ZF/GM	\$4.00
SD 92-114	Transmission Fluid Check/Filling Card-ZF/GM	\$2.00
SD 92-115	Set of Transmission Fluid Application & Filling Procedure Wall Charts-ZF/GM	\$10.00

### ATTACHMENTS

view PDF attachment [240198OrderForm.](#)

view PDF attachment [SD92-113.](#)

view PDF attachment [SD92-114](#).

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## GM TRANSMISSION AND OIL APPLICATION CHART (1991-1999)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>E34 525i/iT</b>	THM-R1 (A4S 310R) 12/95								
<b>E39 528i/iT</b>						THM-R1 (A4S 270R) 2/96			5L40 9/99
<b>E36 318i/iS/iC/ti</b>	THM-R1 (A4S 310R) 9/95					THMR1 (A4S 270R)			
<b>E36 325i/iS/iC</b>	THM-R1 (A4S 310R) / (A4S270R as of 9/95) 10/95								
<b>E36 323i/iS/iC</b>							THM-R1 (A4S 270R) 9/97		
<b>E36 328i/iS/iC</b>						THM-R1 (A4S 270R) 10/95			
<b>E46 323i/iS/iC</b>								5L40 (A5S 360R) 7/98	
<b>E46 328i/iS</b>								5L40 (A5S 360R) 6/98	
<b>Z3 (1.9L/2.8L)</b>						THM-R1 (A4S 270R) 10/95			

### USE OF ANY OTHER OIL WILL CAUSE A NON-WARRANTABLE TRANSMISSION FAILURE !

<b>APPROVED OILS:</b>	UNICAL DEXRON III - D - "MULTI - PURPOSE ATF" CASTROL DEXRON III - MERCON TEXACO ATF MERCON - DEXRON III LIFETIME FILL AS OF 9/95 VEHICLE PRODUCTION	USE ONLY TEXACO ETL 7045E (REPLACES TEXACO ETL 7045) BMW PART NUMBER 83 22 0 026 922 25 LITER CONTAINER LIFETIME FILL	USE ONLY TEXACO ETL 8072 B BMW PART NUMBER 83 22 0 024 359 25 LITER CONTAINER LIFETIME FILL
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### PRIOR TO REPLACING A GM FIVE SPEED TRANSMISSION - AN AUTHORIZATION CODE MUST BE OBTAINED FROM THE BMW TECHNICAL HOTLINE !

FILL CAPACITY:	<u>TRANSMISSION MODEL</u>	<u>WITH TORQUE CONVERTER</u>	<u>WITHOUT TORQUE CONVERTER</u>
	THM-R1 (A4S 270R)	8.8 LITERS	7.8 LITERS
	THM-R1 (A4S 310R)	8.8 LITERS	7.8 LITERS
	5L40-E/GM5 (A5S 360R)	9.0 LITERS	8.0 LITERS
	5L40-E/GM5 (A5S 390R)	9.0 LITERS	8.0 LITERS
	5L40-E/GM5 (A5S 390R) FOR X5	9.6 LITERS	8.6 LITERS

## GM TRANSMISSION AND OIL APPLICATION CHART (2000-2002)

	2000	2001	2002
E46 323i/Ci	GM5 (A5S360R) 7/98 3/00		
E46 328i/Ci	GM5 (A5S 360R) 6/98 5/00		
E46 325xi/xiT		GM5 (A5S 390R) 8/00	
E46 325iT		GM5 (A5S 390R) 8/00 3/01	
E46 330xi		GM5 (A5S 390R) 8/00	
E39 528i/iT	GM5 (A5S 360R) 9/99 8/00		
E39 525i/iT		GM5 (A5S 390R) 9/00 3/01	
E39 530i		GM5 (A5S 390R) 9/00 3/01	
E53 X5 (3.0i)		GM5 (A5S 390R) 4/00	
E36 Z3 (2.3i / 2.8i / coupe)	THM-R1 (A4S 270R) 10/95 & (A4S 310R) 6/00		
E36 Z3 (2.5i / 3.0i / coupe)		GM5 (A5S 390R) 6/00	

**USE OF ANY OTHER OIL WILL CAUSE A NON-WARRANTABLE TRANSMISSION FAILURE !**

<b>APPROVED OILS:</b>	UNICAL DEXRON III - D - "MULTI - PURPOSE ATF" CASTROL DEXRON III - MERCON TEXACO ATF MERCON - DEXRON III LIFETIME FILL AS OF 9/95 VEHICLE PRODUCTION	USE ONLY TEXACO ETL 7045E (REPLACES TEXACO ETL 7045) BMW PART NUMBER 83 22 0 026 922 25 LITER CONTAINER LIFETIME FILL	USE ONLY TEXACO ETL 8072 B BMW PART NUMBER 83 22 0 024 359 25 LITER CONTAINER LIFETIME FILL
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**PRIOR TO REPLACING A GM FIVE SPEED TRANSMISSION - AN AUTHORIZATION CODE MUST BE OBTAINED FROM THE BMW TECHNICAL HOTLINE !**

FILL CAPACITY:	<u>TRANSMISSION MODEL</u>	<u>WITH TORQUE CONVERTER</u>	<u>WITHOUT TORQUE CONVERTER</u>
	THM-R1 (A4S 270R)	8.8 LITERS	7.8 LITERS
	THM-R1 (A4S 310R)	8.8 LITERS	7.8 LITERS
	5L40-E/GM5 (A5S 360R)	9.0 LITERS	8.0 LITERS
	5L40-E/GM5 (A5S 390R)	9.0 LITERS	8.0 LITERS
	5L40-E/GM5 (A5S 390R) FOR X5	9.6 LITERS	8.6 LITERS



## ZF TRANSMISSION AND OIL APPLICATION CHART (1991-1999)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
E30 325i/iX/iC	4HP22								
E31 850Ci	4HP24			6/94	5HP30 (A5S 560Z)		6/97		
E31 840Ci			6/93	5HP30 (A5S 560Z)		12/95	8/97		
E32 750iL	4HP24			3/94					
E32 740i/iL		5HP30 (A5S560Z)		8/92	4/94				
E32 735i/iL	4HP22		7/92						
E34 540i			5HP30 (A5S 560Z)		3/93	10/95			
E34 535i	4HP22		1/93						
E34 530i/iT			5HP18 (A5S 310Z)			3/93	11/95		
E36 M3					10/94	5HP 18 (A5S 310Z)		9/99	
E38 750iL					1/95	5HP30 (A5S 560Z)			
E38 740i/iL					5HP30 (A5S 560Z)		7/94	1/97	5HP24 (A5S 440Z)
E39 540i/iT						5HP30	3/96	1/97	5HP24 (A5S440Z)

**USE OF ANY OTHER OIL WILL CAUSE A NON-WARRANTABLE TRANSMISSION FAILURE !**

<b>APPROVED OILS:</b>	UNICAL DEXRON III "MULTI-PURPOSE ATF" CASTROL DEXRON III – MERCON TEXACO ATF MERCON – DEXRON III	USE ONLY SHELL LA 2634 BMW PART NUMBER 83 22 9 407 765 5 LITER BLACK - LIFETIME FILL	USE ONLY ESSO ATF LT 71141 BMW PART NUMBER 83 22 9 407 807 20 LITER BLUE – LIFETIME FILL
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**PRIOR TO REPLACING A TRANSMISSION - AN AUTHORIZATION CODE MUST BE OBTAINED FROM THE  
BMW TECHNICAL HOTLINE !**

FILL CAPACITY:	TRANSMISSION MODEL	WITH TORQUE CONVERTER	WITHOUT TORQUE CONVERTER
	4HP22	7.5 LITERS	3.0 LITERS
	4HP24	8.1 LITERS	3.1 LITERS
	5HP18 (A5S 310Z)	7.8 LITERS	3.2 LITERS
	5HP19 (A5S 325Z) FOR 2.5 L	8.9 LITERS	6.2 LITERS
	5HP19 (A5S 325Z) FOR 3.0 L	8.7 LITERS	6.1 LITERS
	5HP24 (A5S 440Z) FOR 4.4 L	9.0 LITERS	5.35 LITERS
	5HP24 (A5S 440Z) FOR 4.6 L	9.9 LITERS	5.35 LITERS
	5HP30 (A5S 560Z)	13.1 LITERS	5.5 LITERS

## ZF TRANSMISSION AND OIL APPLICATION CHART (2000-2002)

	2000	2001	2002
E46 323i/Ci	5HP19 (A5S 325Z) 3/00                      8/00		
E46 325i/Ci/Cic	8/00	5HP19 (A5S 325Z)	
E46 325iT		3/01	5HP19 (A5S 325Z)
E46 330i/Ci/Cic	6/00	5HP19 (A5S 325Z)	
E39 525i/iT		3/01	5HP19 (A5S 325Z)
E39 530i		3/01	5HP19 (A5S 325Z)
E39 540i/iT	1/97	5HP24 (A5S 440Z)	
E53 X5 (4.4i)	11/99	5HP24 (A5S 440Z)	
E53 X5 HP (4.6i)		9/01	5HP24 (A5S 440Z)
E38 740i/iL	1/97	5HP24 (A5S 440Z)	2/02
E38 750iL	1/95	5HP30 (A5S 560Z)	2/02

**USE OF ANY OTHER OIL WILL CAUSE A NON-WARRANTABLE TRANSMISSION FAILURE !**

<b>APPROVED OILS:</b>	UNICAL DEXRON III "MULTI-PURPOSE ATF" CASTROL DEXRON III – MERCON TEXACO ATF MERCON – DEXRON III	USE ONLY SHELL LA 2634 BMW PART NUMBER 83 22 9 407 765 5 LITER BLACK - LIFETIME FILL	USE ONLY ESSO ATF LT 71141 BMW PART NUMBER 83 22 9 407 807 20 LITER BLUE – LIFETIME FILL
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**PRIOR TO REPLACING A TRANSMISSION - AN AUTHORIZATION CODE MUST BE OBTAINED FROM THE  
BMW TECHNICAL HOTLINE !**

<b>FILL CAPACITY:</b>	<u>TRANSMISSION MODEL</u>	<u>WITH TORQUE CONVERTER</u>	<u>WITHOUT TORQUE CONVERTER</u>
	4HP22	7.5 LITERS	3.0 LITERS
	4HP24	8.1 LITERS	3.1 LITERS
	5HP18 (A5S 310Z)	7.8 LITERS	3.2 LITERS
	5HP19 (A5S 325Z) FOR 2.5 L	8.9 LITERS	6.2 LITERS
	5HP19 (A5S 325Z) FOR 3.0 L	8.7 LITERS	6.1 LITERS
	5HP24 (A5S 440Z) FOR 4.4 L	9.0 LITERS	5.35 LITERS
	5HP24 (A5S 440Z) FOR 4.6 L	9.9 LITERS	5.35 LITERS
	5HP30 (A5S 560Z)	13.1 LITERS	5.5 LITERS