

General Description

DIFFERENTIALS

1. General Description

A: SPECIFICATION

1. REAR DIFFERENTIAL

When replacing a rear differential assembly, select the correct one according to the following table.

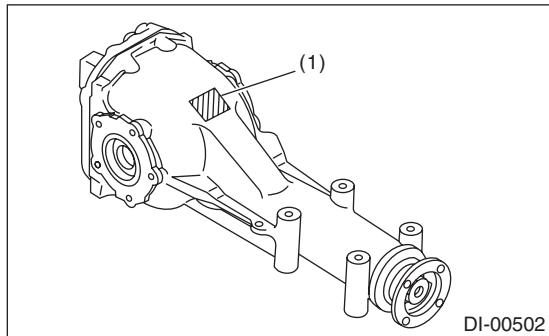
NOTE:

- Using a different rear differential assembly will cause the drive train and tires to drag or emit abnormal noise.
- For option code, refer to "ID" section. <Ref. to ID-2, IDENTIFICATION, Identification.>

Model	2.5 L high power turbo	2.0 L turbo	
	6MT	6MT	CVT
Rear differential type	T-type		
Identification	H5	B1	B2
LSD type	Torsen	—	
Type of gear	Hypoid gear		
Gear ratio (number of gear teeth)	3.545 (39/11)	4.111 (37/9)	3.900 (39/10)
Oil capacity	1.0 L (1.1 US qt, 0.9 Imp qt)	0.8 L (0.8 US qt, 0.7 Imp qt)	0.8 L (0.8 US qt, 0.7 Imp qt)
Rear differential gear oil	GL-5		

2. IDENTIFICATION

Identification positions are shown in the following figures.



(1) Identification

3. REAR DIFFERENTIAL GEAR OIL

Recommended gear oil:

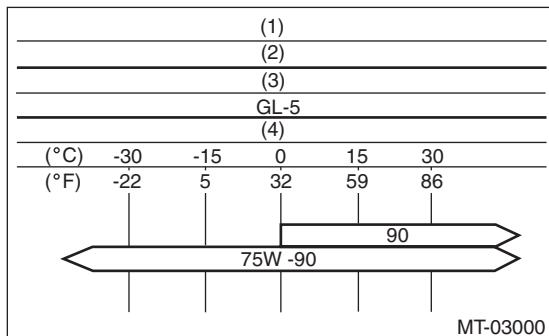
GL-5 (75W-90)

Alternative:

Equivalent product

CAUTION:

Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.



- (1) Item
- (2) Rear differential gear oil
- (3) API classification
- (4) SAE viscosity No. and applicable temperature

4. SERVICE DATA

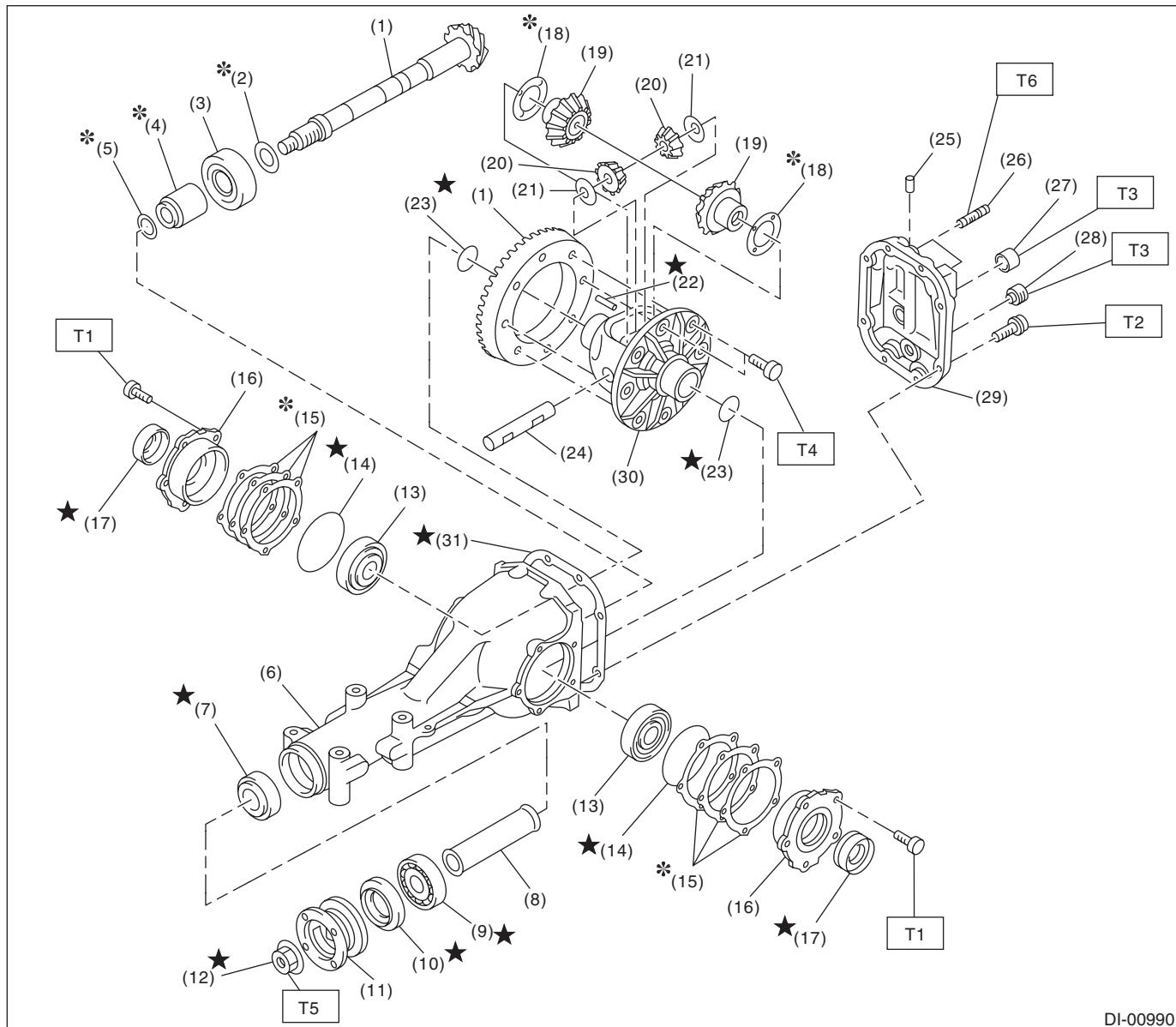
Drive pinion bearing preload (for new bearing)	Measured with spring measurement (measured at companion flange bolt hole) N (kgf, lbf)	T-type (B1, B2)	18.1 — 38.8 (1.8 — 4.0, 4.1 — 8.7)
		T-type (H5)	24.1 — 38.6 (2.5 — 3.9, 5.4 — 8.7)
Measured with torque wrench N·m (kgf-m, ft-lb)	T-type (B1, B2)	0.69 — 1.47 (0.07 — 0.15, 0.51 — 1.08)	
	T-type (H5)	0.98 — 1.57 (0.10 — 0.16, 0.72 — 1.16)	
Side gear backlash	mm (in)	T-type (B1, B2)	0.10 — 0.20 (0.004 — 0.008)
Side bearing standard width	mm (in)		20.00 (0.7874)
Hypoid driven gear to drive pinion backlash	mm (in)		0.10 — 0.20 (0.004 — 0.008)
Hypoid driven gear runout on its back surface	mm (in)		0.05 (0.002)
Companion flange mating surface runout	mm (in)		0.08 (0.003)
Companion flange runout on its inner surface	mm (in)		0.08 (0.003)
Total preload (measured from the companion flange bolt hole)	N (kgf, lbf)	T-type (B1, B2)	20.7 — 54.4 (2.1 — 5.5, 4.7 — 12.2)
		T-type (H5)	26.5 — 53 (2.7 — 5.4, 6.0 — 11.9)

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B: COMPONENT

1. REAR DIFFERENTIAL (T-TYPE (B1, B2))



(1) Hypoid driven gear and drive pinion set	(14) O-ring	(27) Filler plug
(2) Pinion height adjusting washer	(15) Side retainer shim	(28) Drain plug
(3) Rear bearing	(16) Side retainer	(29) Rear cover
(4) Preload adjusting spacer	(17) Side oil seal	(30) Differential case
(5) Preload adjusting washer	(18) Side gear thrust washer	(31) Gasket
(6) Differential carrier	(19) Side gear	
(7) Front bearing	(20) Pinion mate gear	
(8) Spacer	(21) Pinion mate gear washer	
(9) Pilot bearing	(22) Pinion shaft lock pin	
(10) Front oil seal	(23) Snap ring	
(11) Companion flange	(24) Pinion mate shaft	
(12) Self-locking nut	(25) Air breather cap	
(13) Side bearing	(26) Stud bolt	

Tightening torque: N·m (kgf-m, ft-lb)

T1: 10.5 (1.1, 7.7)

T2: 29.5 (3.0, 21.8)

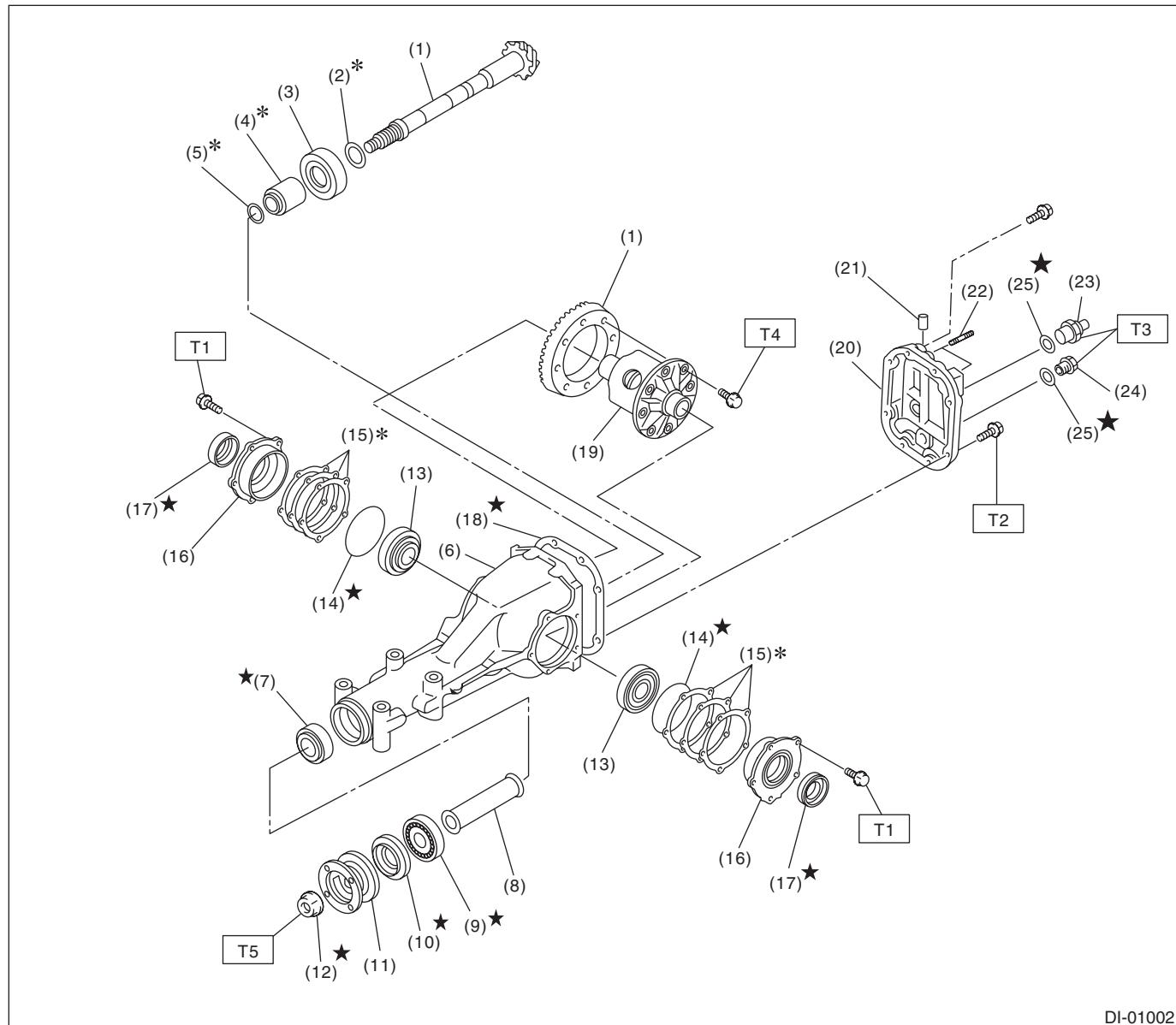
T3: 49 (5.0, 36.1)

T4: 103 (10.5, 76.0)

T5: 181.5 (18.5, 133.9)

T6: 44 (4.5, 32.5)

2. REAR DIFFERENTIAL (T-TYPE (H5))



DI-01002

(1) Hypoid driven gear and drive pinion set	(12) Self-locking nut	(23) Oil temperature sensor
(2) Pinion height adjusting washer	(13) Side bearing	(24) Drain plug
(3) Rear bearing	(14) O-ring	(25) Gasket
(4) Preload adjusting spacer	(15) Side retainer shim	
(5) Preload adjusting washer	(16) Side retainer	
(6) Differential carrier	(17) Side oil seal	
(7) Front bearing	(18) Gasket	
(8) Spacer	(19) Differential case ASSY	
(9) Pilot bearing	(20) Rear cover	
(10) Front oil seal	(21) Air breather cap	
(11) Companion flange	(22) Stud bolt	

Tightening torque: N·m (kgf·m, ft·lb)

T1: 10.5 (1.1, 7.7)

T2: 44 (4.5, 32.5)

T3: 60 (6.1, 44.3)

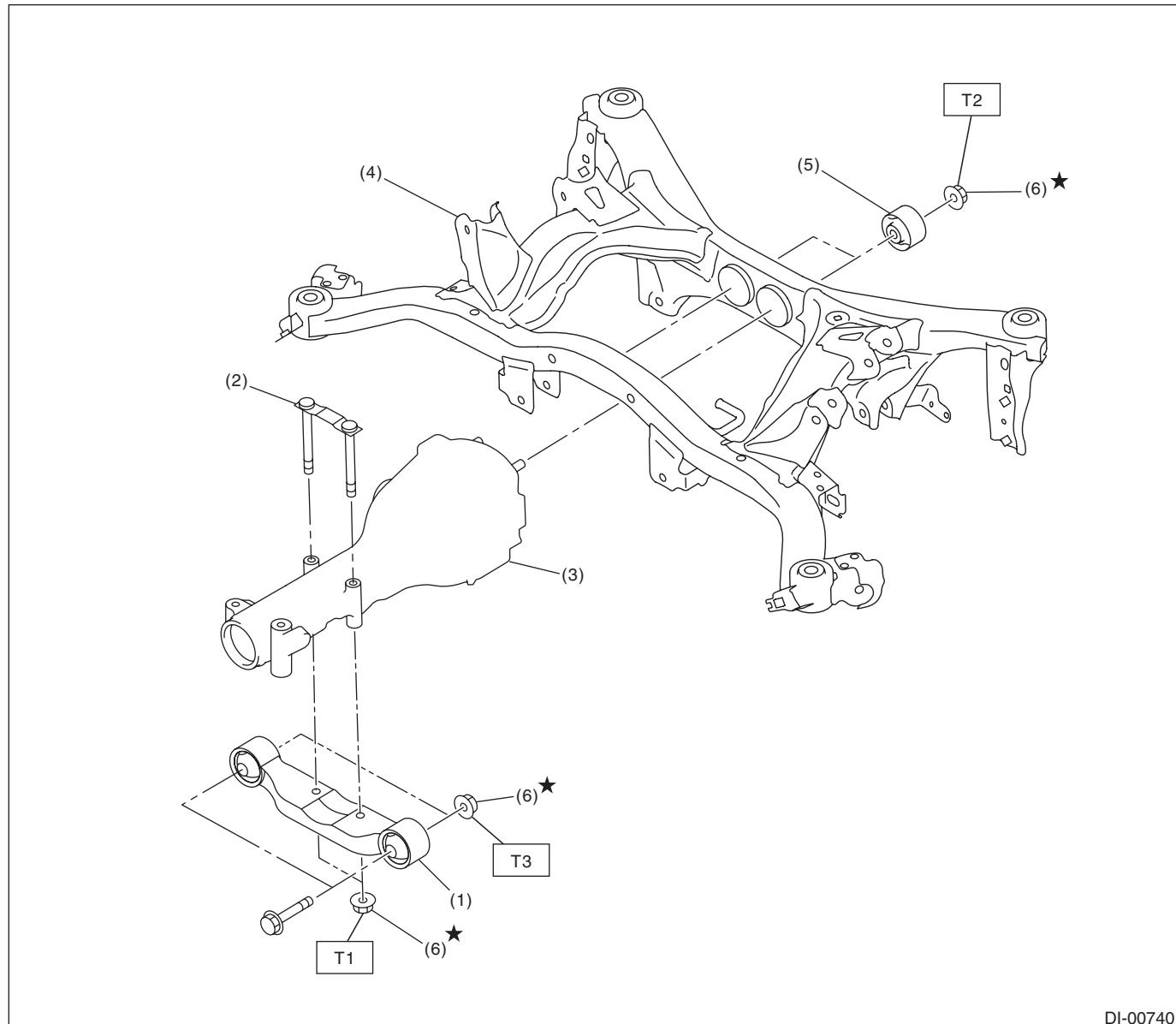
T4: 103 (10.5, 76.0)

T5: 181.5 (18.5, 133.9)

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3. REAR DIFFERENTIAL MOUNTING SYSTEM



- (1) Rear differential front member
- (2) Rear differential member plate
- (3) Rear differential ASSY

- (4) Rear sub frame
- (5) Rear differential mount bushing
- (6) Self-locking nut

Tightening torque: N·m (kgf·m, ft·lb)

T1: 50 (5.1, 36.9)

T2: 70 (7.1, 51.6)

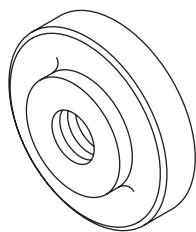
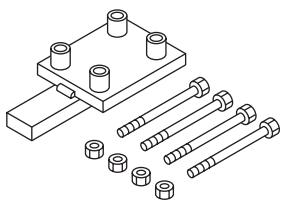
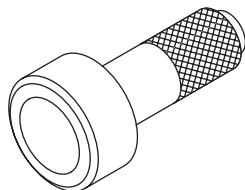
T3: 110 (11.2, 81.1)

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Use SUBARU genuine gear oil, grease or equivalent. Do not mix gear oil, grease, etc. of different grades or manufacturers.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Apply gear oil onto sliding or revolving surfaces before installation.
- Before installing the O-ring or snap ring, apply a sufficient amount of gear oil to avoid damage and deformation.
- Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or cloth between the part and the vise.
- Avoid damaging the mating surface of the case.

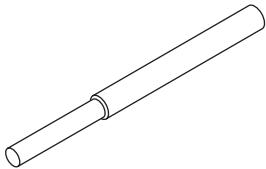
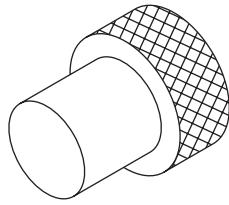
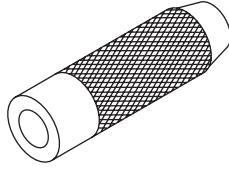
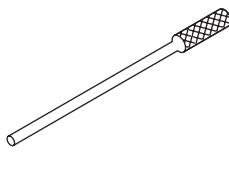
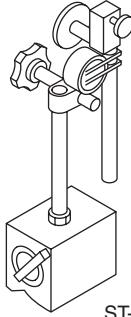
D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398477702	398477702	DRIFT	Used for installing the front bearing race.
 ST-398217700	398217700	ATTACHMENT SET	Stand for rear differential carrier disassembly and assembly.
 ST-498447120	498447120	INSTALLER	Used for installing the front oil seal.

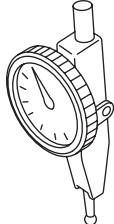
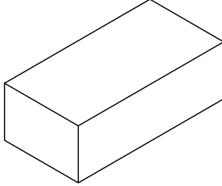
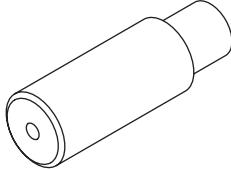
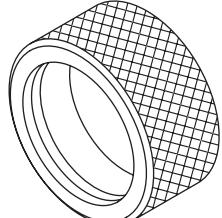
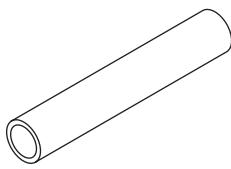
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398467700	398467700	DRIFT	Used for removing drive pinion shaft, pilot bearing and front bearing cone.
 ST-399780104	399780104	WEIGHT	<ul style="list-style-type: none"> Used for installing the pilot bearing and the companion flange. Used for installing the front bearing cone. (T-type (B1, B2))
 ST-899580100	899580100	INSTALLER	<ul style="list-style-type: none"> Used for installing the pilot bearing. Used for installing the front bearing cone. (T-type (B1, B2))
 ST-899904100	899904100	STRAIGHT PIN REMOVER	Used for removing and installing the pinion mate shaft lock pin. (T-type (B1, B2))
 ST-498247001	498247001	MAGNET BASE	<ul style="list-style-type: none"> Used for measuring backlash between side gear and pinion, and hypoid gear. Used together with DIAL GAUGE (498247100).

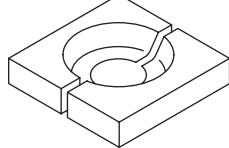
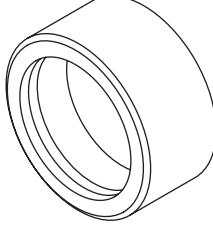
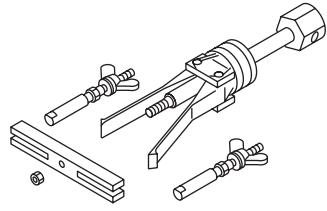
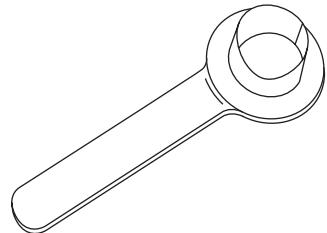
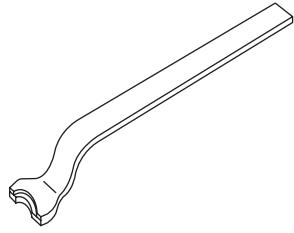
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498247100	498247100	DIAL GAUGE	<ul style="list-style-type: none"> Used for measuring backlash between side gear and pinion, and hypoid gear. Used together with MAGNET BASE (498247001).
 ST-398507704	398507704	BLOCK	Used for adjusting pinion height and preload. (T-type (B1, B2))
 ST-398457700	398457700	ATTACHMENT	Used for removing the side retainer.
 ST-398437700	398437700	DRIFT	Used for installing the side oil seal.
 ST-398507703	398507703	DUMMY COLLAR	<ul style="list-style-type: none"> Used for adjusting pinion height and preload. Used for installing the front bearing cone.

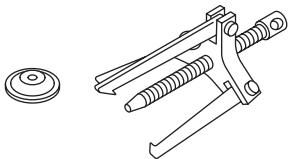
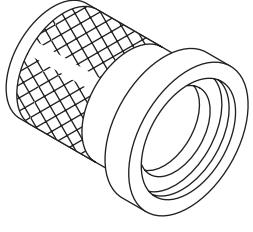
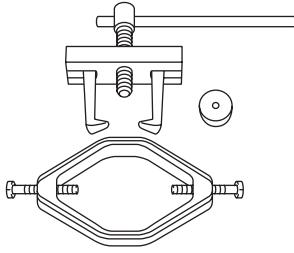
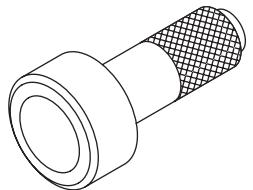
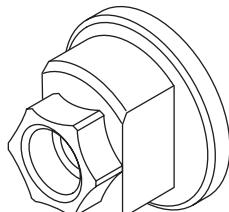
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398517700	398517700	REPLACER	Used for removing rear bearing cone.
 ST-398487700	398487700	DRIFT	Used for installing side bearing cone.
 ST-398527700	398527700	PULLER ASSY	<ul style="list-style-type: none"> Used for removing front oil seal. Used for removing the side bearing race.
 ST28099PA090	28099PA090	OIL SEAL PROTECTOR	Used for installing the rear drive shaft to the rear differential. (For oil seal protection)
 ST28099PA100	28099PA100	DRIVE SHAFT REMOVER	Used for removing the rear drive shaft from rear differential.

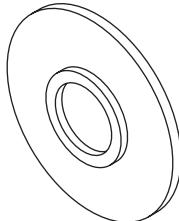
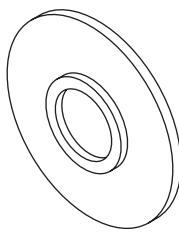
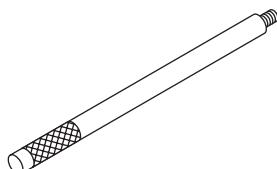
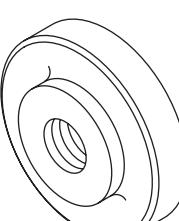
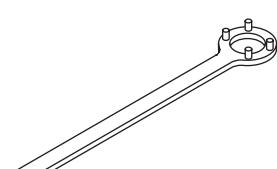
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-399703600	399703600	PULLER ASSY	Used for removing companion flange.
 ST-899874100	899874100	INSTALLER	Used for installing the companion flange.
 ST18759AA000	18759AA000	PULLER ASSY	Used for removing the side bearing cone.
 ST-398417700	398417700	DRIFT	Used for installing side bearing race.
 ST-498937110	498937110	HOLDER DRIVE PINION	Used for installing the pilot bearing and the companion flange. (T-type (H5))

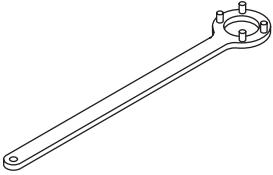
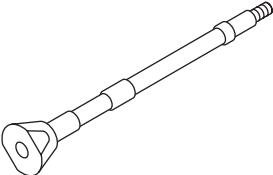
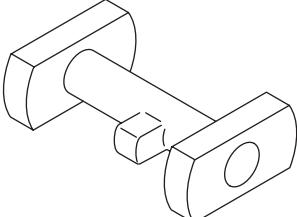
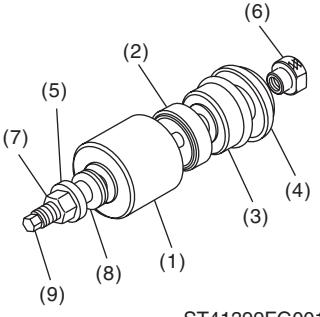
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18674AA000	18674AA000	INSTALLER	Used for installing the rear bearing cone. (T-type (H5))
 ST-398177700	398177700	INSTALLER	Used for installing the rear bearing cone. (T-type (B1, B2))
 ST-398477701	398477701	HANDLE	Used for installing the front and rear bearing races. (T-type (B1, B2))
 ST-398477703	398477703	DRIFT 2	Used for installing the rear bearing race. (T-type (B1, B2))
 ST-498427200	498427200	FLANGE WRENCH	Used for stopping rotation of companion flange when removing and tightening self-lock nut. (T-type (B1, B2))

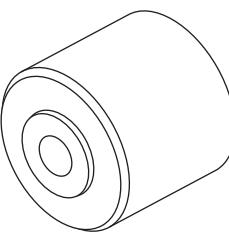
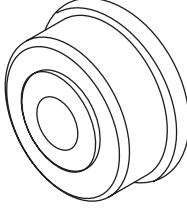
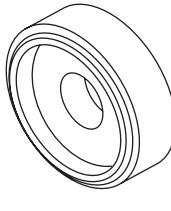
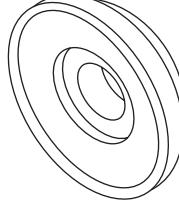
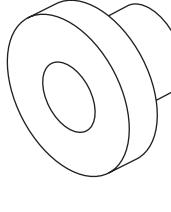
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 ST18633AA000	18633AA000	WRENCH COMPL	Used for preventing rotation of companion flange when loosening and tightening self-lock nut. (T-type (H5))
 ST-398507702	398507702	DUMMY SHAFT	Used for adjusting pinion height and preload. (T-type (B1, B2))
 ST-398507701	398507701	DIFFERENTIAL CARRIER GAUGE	Used for adjusting pinion height. (T-type (B1, B2))
 ST41399FG001	41399FG001	SPECIAL TOOL ASSY	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. Use (1), (3), (5), (6), (7), (8) and (9) for removal. Use (2), (4), (5), (6), (7), (8) and (9) for installation. <p>(1) SPECIAL TOOL A (41399FG010) (2) SPECIAL TOOL B (41399FG020) (3) SPECIAL TOOL C (41399FG031) (4) SPECIAL TOOL D (41399FG041) (5) SPECIAL TOOL SLEEVE (41399FG050) (6) SPECIAL TOOL RING (41399FG061) (7) SPECIAL TOOL NUT (41399FG070) (8) SPECIAL TOOL BEARING (41399FG080) (9) SPECIAL TOOL SHAFT (41399FG091)</p>

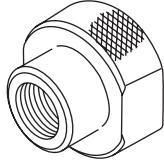
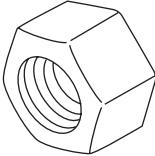
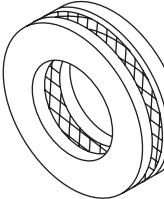
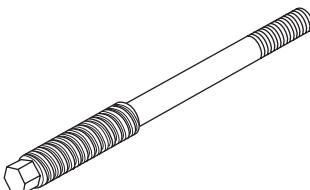
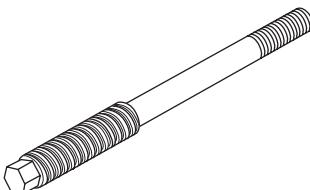
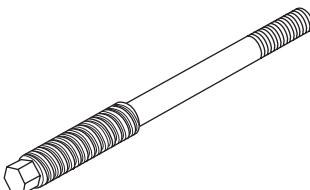
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	41399FG010	SPECIAL TOOL A	<ul style="list-style-type: none"> Used for removing the rear differential mount bushing. For combination of tools for removal, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG020	SPECIAL TOOL B	<ul style="list-style-type: none"> Used for installing the rear differential mount bushing. For combination of tools for installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG031	SPECIAL TOOL C	<ul style="list-style-type: none"> Used for removing the rear differential mount bushing. For combination of tools for removal, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG041	SPECIAL TOOL D	<ul style="list-style-type: none"> Used for installing the rear differential mount bushing. For combination of tools for installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG050	SPECIAL TOOL SLEEVE	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".

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	41399FG061	SPECIAL TOOL RING	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	ST41399FG061	SPECIAL TOOL NUT	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG070	SPECIAL TOOL BEARING	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	ST41399FG070	SPECIAL TOOL BEARING	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG080	SPECIAL TOOL BEARING	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	ST41399FG080	SPECIAL TOOL SHAFT	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	41399FG091	SPECIAL TOOL BEARING	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".
	ST41399FG091	SPECIAL TOOL SHAFT	<ul style="list-style-type: none"> Used for removing and installing the rear differential mount bushing. For combination of tools for removal and installation, refer to "SPECIAL TOOL ASSY (41399FG001)".

2. GENERAL TOOL

TOOL NAME	REMARKS
Transmission jack	Used for removing and installing the rear differential.
Puller	Used for removing the side bearing retainer.
Thickness gauge	Used for measuring clearance.