

GENERAL DESCRIPTION

DIFFERENTIALS

1. General Description

A: SPECIFICATIONS

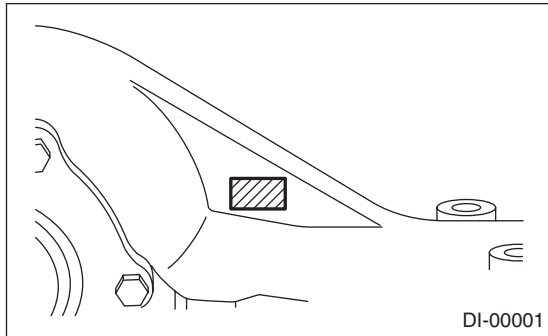
When replacing a rear differential assembly, select the correct one according to the following table.

NOTE:

Using the different rear differential assembly causes the drive line and tires to “drag” or emit noise.

MODEL	Non-turbo				Turbo
	with rear drum brake		with rear disk brake		
	MT	AT	MT	AT	MT, AT
Rear differential type	T-type (without LSD)		T-type (with LSD)		
LSD type	—		Viscous coupling		
Identification	T2	TP	JP	CF	CF
Type of gear	Hypoid gear				
Gear ratio (Number of gear teeth)	4.111 (37/9)	4.444 (40/9)	4.111 (37/9)	4.444 (40/9)	4.444 (40/9)
Oil capacity	0.8 ℓ (0.8 US qt, 0.7 Imp qt)				
Rear differential gear oil	GL-5				

• **Identification**

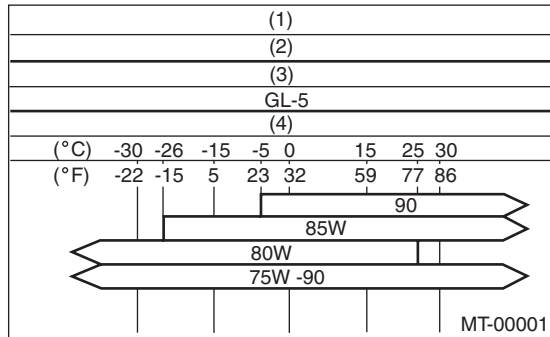


• **Rear differential gear oil**

Recommended oil

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

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1. SERVICE DATA

Front and rear bearing preload at companion flange bolt hole N (kgf, lb)	New bearing	18.1 — 38.8 (1.8 — 4.0, 4.1 — 8.7)
Side gear backlash mm (in)		0.10 — 0.20 (0.0039 — 0.0079)
Side bearing standard width mm (in)		20.00 (0.7874)
Hypoid driven gear to drive pinion backlash mm (in)		0.10 — 0.20 (0.0039 — 0.0079)
Hypoid driven gear runout on its back surface mm (in)		Less than 0.05 (0.0020)

2. ADJUSTING PARTS

Front and rear bearing preload at companion flange bolt hole N (kgf, lb)	New bearing	19 — 26 (1.9 — 2.6, 4.3 — 5.8)
Preload adjusting spacer	Part No.	Length mm (in)
	383695201	56.2 (2.213)
	383695202	56.4 (2.220)
	383695203	56.6 (2.228)
	383695204	56.8 (2.236)
	383695205	57.0 (2.244)
	383695206	57.2 (2.252)
Preload adjusting washer	Part No.	Length mm (in)
	383705200	2.59 (0.1020)
	383715200	2.57 (0.1012)
	383725200	2.55 (0.1004)
	383735200	2.53 (0.0996)
	383745200	2.51 (0.0988)
	383755200	2.49 (0.0980)
	383765200	2.47 (0.0972)
	383775200	2.45 (0.0965)
	383785200	2.43 (0.0957)
	383795200	2.41 (0.0949)
	383805200	2.39 (0.0941)
	383815200	2.37 (0.0933)
	383825200	2.35 (0.0925)
383835200	2.33 (0.0917)	
383845200	2.31 (0.0909)	

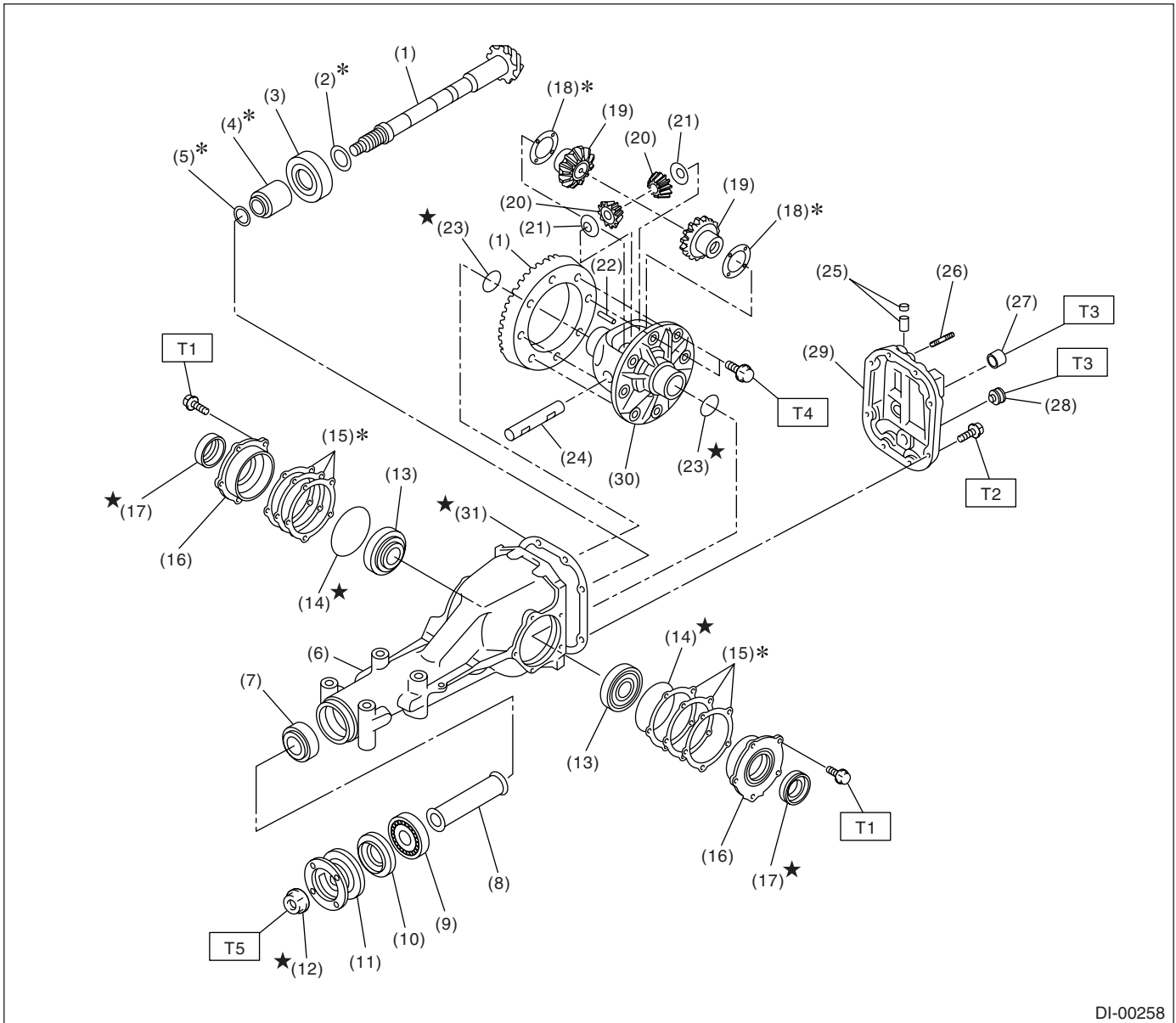
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Pinion height adjusting shim	Part No.	Thickness mm (in)
	383495200	3.09 (0.1217)
	383505200	3.12 (0.1228)
	383515200	3.15 (0.1240)
	383525200	3.18 (0.1252)
	383535200	3.21 (0.1264)
	383545200	3.24 (0.1276)
	383555200	3.27 (0.1287)
	383565200	3.30 (0.1299)
	383575200	3.33 (0.1311)
	383585200	3.36 (0.1323)
	383595200	3.39 (0.1335)
	383605200	3.42 (0.1346)
	383615200	3.45 (0.1358)
	383625200	3.48 (0.1370)
	383635200	3.51 (0.1382)
	383645200	3.54 (0.1394)
	383655200	3.57 (0.1406)
	383665200	3.60 (0.1417)
	383675200	3.63 (0.1429)
383685200	3.66 (0.1441)	
Side gear backlash mm (in)	0.1 — 0.2 (0.0039 — 0.0079)	
Side bearing standard width mm (in)	—	20.00 (0.7874)
Side bearing retainer shim	Part No.	Thickness mm (in)
	383475201	0.20 (0.0079)
	383475202	0.25 (0.0098)
	383475203	0.30 (0.0118)
	383475204	0.40 (0.0157)
	383475205	0.50 (0.0197)
Hypoid driven gear to drive pinion backlash	Limit mm (in)	0.10 — 0.20 (0.0039 — 0.0079)
Hypoid driven gear runout on its back surface		0.05 (0.0020)

B: COMPONENT

1. REAR DIFFERENTIAL WITHOUT LSD



DI-00258

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

Tightening torque: N-m (kgf-m, ft-lb)

T1: 10.3 (1.05, 7.6)

T2: 29 (3.0, 21.7)

T3: 49 (5.0, 36.2)

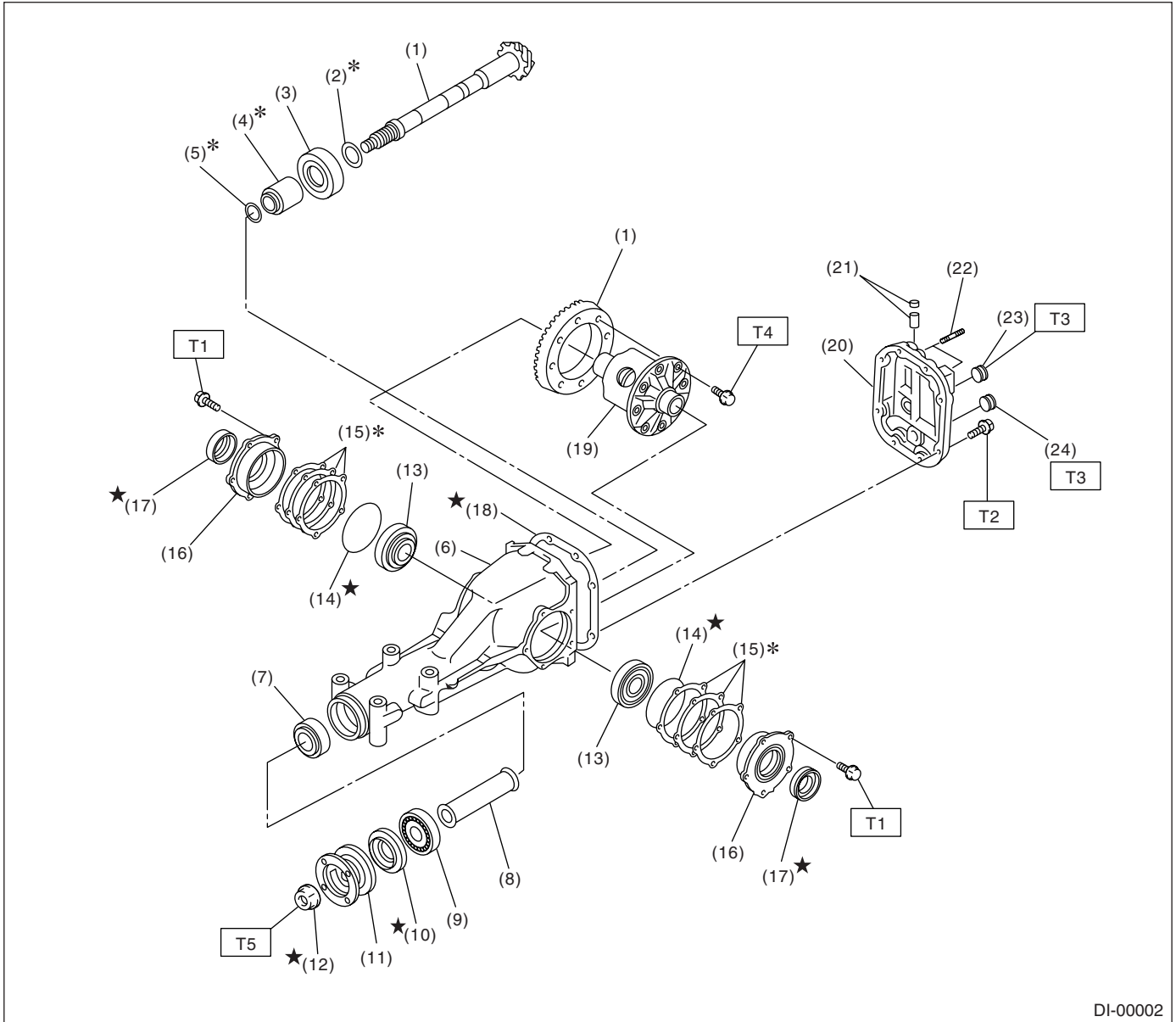
T4: 105 (10.7, 77.4)

T5: 181 (18.5, 134)

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2. REAR DIFFERENTIAL WITH LSD



DI-00002

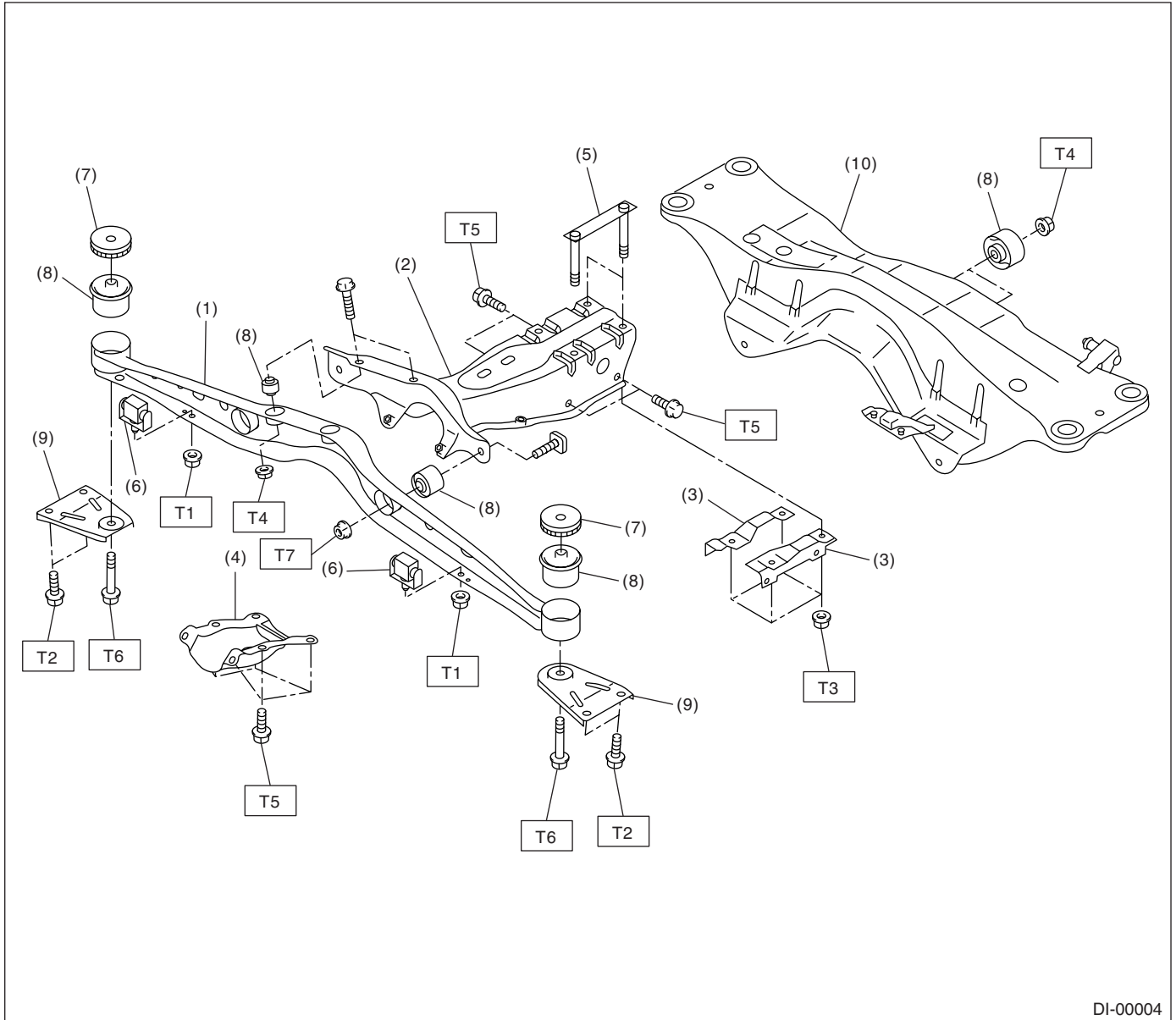
- | | |
|---|--|
| (1) Hypoid driven gear and drive pinion set | (11) Companion flange |
| (2) Pinion height adjusting shim | (12) Self-locking nut |
| (3) Rear bearing | (13) Side bearing |
| (4) Bearing preload adjusting spacer | (14) O-ring |
| (5) Bearing preload adjusting washer | (15) Side bearing retainer shim |
| (6) Differential carrier | (16) Side bearing retainer |
| (7) Front bearing | (17) Side oil seal |
| (8) Collar | (18) Gasket |
| (9) Pilot bearing | (19) Differential case (Viscous coupling type) |
| (10) Front oil seal | (20) Rear cover |

- | |
|-----------------------|
| (21) Air breather cap |
| (22) Stud bolt |
| (23) Oil filler plug |
| (24) Oil drain plug |

Tightening torque: N·m (kgf·m, ft·lb)

- | |
|-----------------------------|
| T1: 10.3 (1.05, 7.6) |
| T2: 29 (3.0, 21.7) |
| T3: 49 (5.0, 36.2) |
| T4: 105 (10.7, 77.4) |
| T5: 181 (18.5, 134) |

3. REAR DIFFERENTIAL MOUNTING SYSTEM



DI-00004

- | | |
|--------------------------------------|--------------------------------|
| (1) Differential front member | (9) Differential mount bracket |
| (2) Differential bracket | (10) Crossmember |
| (3) Differential mount lower bracket | |
| (4) Differential mount front cover | |
| (5) Plate | |
| (6) Dynamic damper | |
| (7) Stopper | |
| (8) Bushing | |

Tightening torque: N·m (kgf·m, ft·lb)

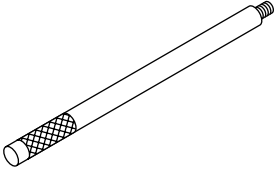
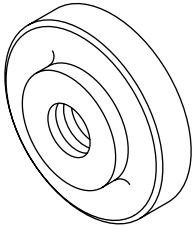
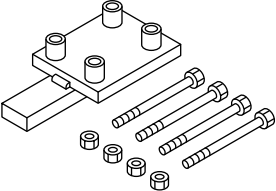
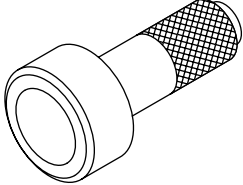
- T1: 20 (2.0, 14.5)**
T2: 33 (3.4, 24.3)
T3: 65 (6.6, 47.9)
T4: 70 (7.1, 51.6)
T5: 90 (9.2, 66.4)
T6: 100 (10.2, 73.8)
T7: 125 (12.7, 92.2)

C: CAUTION

- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn your hands, because each part on the vehicle is hot after running.
- Use SUBARU genuine gear oil, grease etc. or the equivalent. Do not mix gear oil, grease etc. with that of another grade or from other manufacturers.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Apply gear oil onto sliding or revolution surfaces before installation.
- Before installing O-rings or snap rings, apply 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 shop cloth between the part and the vise.
- Avoid damaging the mating face of the case.

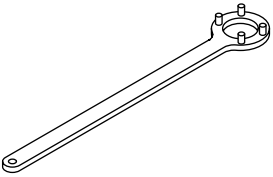
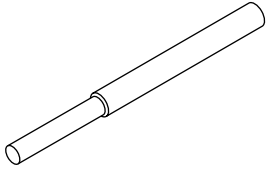
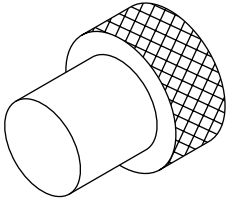
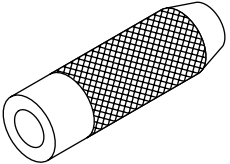
D: PREPARATION TOOL

1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST-398477701</p>	398477701	HANDLE	Used for installing front and rear bearing cone.
 <p>ST-398477702</p>	398477702	DRIFT	Used press-fitting the bearing cone of differential carrier (rear).
 <p>ST-398217700</p>	398217700	ATTACHMENT SET	Stand for rear differential carrier disassembly and assembly.
 <p>ST-498447120</p>	498447120	INSTALLER	Used for installing front oil seal.

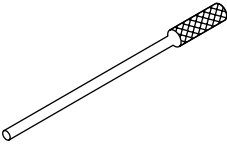
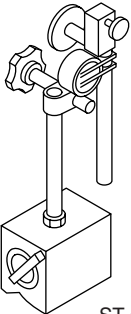
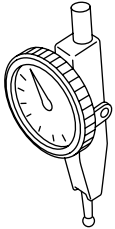
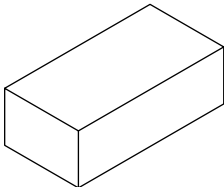
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-498427200</p>	498427200	FLANGE WRENCH	Used for stopping rotation of companion flange when loosening and tightening self-locking nut.
 <p style="text-align: center;">ST-398467700</p>	398467700	DRIFT	Used for removing pinion, pilot bearing and front bearing cone.
 <p style="text-align: center;">ST-399780104</p>	399780104	WEIGHT	Used for installing front bearing cone, pilot bearing companion flange.
 <p style="text-align: center;">ST-899580100</p>	899580100	INSTALLER	Used for press-fitting the front bearing cone, pilot bearing.

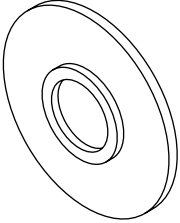
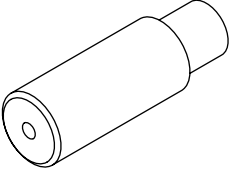
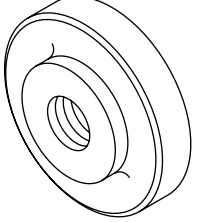
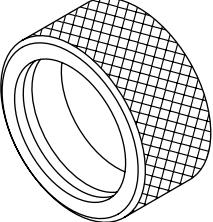
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-899904100</p>	899904100	STRAIGHT PIN REMOVER	Used for driving out differential pinion shaft lock pin.
 <p style="text-align: center;">ST-498247001</p>	498247001	MAGNET BASE	<ul style="list-style-type: none"> • Used for measuring backlash between side gear and pinion, and hypoid gear. • Used with DIAL GAUGE (498247100).
 <p style="text-align: center;">ST-498247100</p>	498247100	DIAL GAUGE	<ul style="list-style-type: none"> • Used measuring backlash between side gear and pinion, hypoid gear. • Used with MAGNET BASE (498247001).
 <p style="text-align: center;">ST-398507704</p>	398507704	BLOCK	Used for adjusting pinion height and preload.

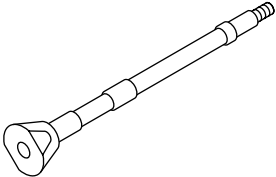
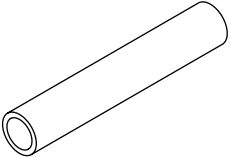
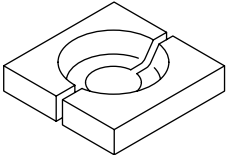
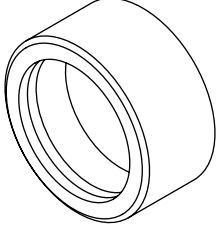
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-398177700</p>	398177700	INSTALLER	Used for installing rear bearing cone.
 <p style="text-align: center;">ST-398457700</p>	398457700	ATTACHMENT	Used for removing side bearing retainer.
 <p style="text-align: center;">ST-398477703</p>	398477703	DRIFT2	Used for press-fitting the bearing race (rear) of differential carrier.
 <p style="text-align: center;">ST-398437700</p>	398437700	DRIFT	Used for installing side oil seal.

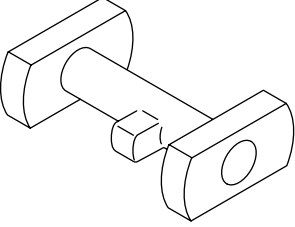
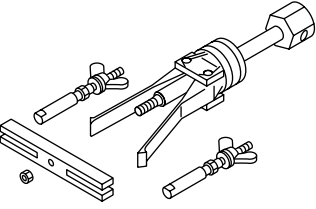
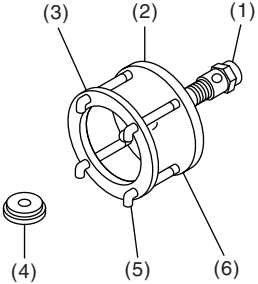
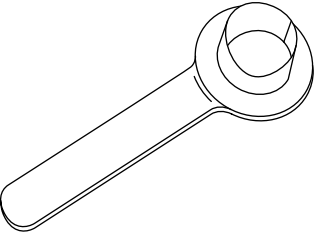
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-398507702</p>	<p style="text-align: center;">398507702</p>	<p style="text-align: center;">DUMMY SHAFT</p>	<p>Used for adjusting pinion height and preload.</p>
 <p style="text-align: center;">ST-398507703</p>	<p style="text-align: center;">398507703</p>	<p style="text-align: center;">DUMMY COLLAR</p>	<p>Used for adjusting pinion height and preload.</p>
 <p style="text-align: center;">ST-398517700</p>	<p style="text-align: center;">398517700</p>	<p style="text-align: center;">REPLACER</p>	<p>Used for removing rear bearing cone.</p>
 <p style="text-align: center;">ST-398487700</p>	<p style="text-align: center;">398487700</p>	<p style="text-align: center;">DRIFT</p>	<p>Used for press-fitting the side bearing cone.</p>

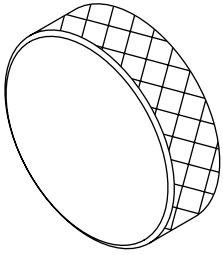
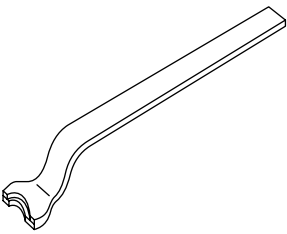
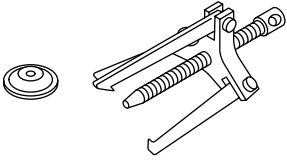
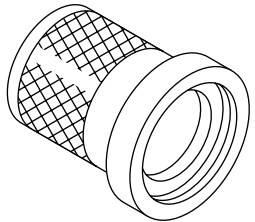
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 <p style="text-align: center;">ST-398507701</p>	398507701	DIFFERENTIAL CARRIER GAUGE	Used for adjusting pinion height.
 <p style="text-align: center;">ST-398527700</p>	398527700	PULLER ASSY	<ul style="list-style-type: none"> • Used for removing front oil seal. • Used for removing side bearing cup.
 <p style="text-align: center;">ST-399527700</p>	399527700	PULLER SET	Used for extracting side bearing cone. (1) BOLT (899521412) (2) PULLER (399527702) (3) HOLDER (399527703) (4) ADAPTER (398497701) (5) BOLT (899520107) (6) NUT (021008000)
 <p style="text-align: center;">ST28099PA090</p>	28099PA090	OIL SEAL PROTECTOR	<ul style="list-style-type: none"> • Used for installing rear drive shaft into rear differential. • For protecting oil seal.

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 ST-398237700	398237700	GAUGE	Used for installing side bearing.
 ST28099PA100	28099PA100	DRIVE SHAFT REMOVER	Used for removing rear drive shaft from rear differential.
 ST-399703600	399703600	PULLEY ASSY	Used for removing companion flange
 ST-899874100	899874100	INSTALLER	Used for installing companion flange.

2. GENERAL PURPOSE TOOLS

TOOL NAME	REMARKS
Transmission jack	Used for assembly/disassembly of rear differential.
Puller	Used for removal of side bearing retainer.
Thickness gauge	Used for measuring clearance.