

General Description

DIFFERENTIALS

1. General Description

A: SPECIFICATION

1. REAR DIFFERENTIAL

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

NOTE:

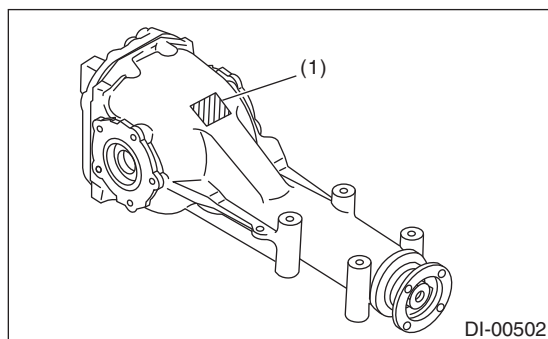
Using a different rear differential oil will cause the drive train and tires to drag or emit abnormal noise.

Model	2.5 L Non-turbo	
	4AT	5MT
Rear differential type	T-type	
Identification	TP	T2
Type of gear	Hypoid gear	
Gear ratio (Number of gear teeth)	4.444 (40/9)	4.111 (37/9)
Oil capacity	0.8 ℓ (0.8 US qt, 0.7 Imp qt)	
Rear differential gear oil	GL-5	

Model	2.5 L Turbo	
	4AT	
Rear differential type	T-type	
Identification	B1	
Type of gear	Hypoid gear	
Gear ratio (Number of gear teeth)	4.111 (37/9)	
Oil capacity	0.8 ℓ (0.8 US qt, 0.7 Imp qt)	
Rear differential gear oil	GL-5	

2. IDENTIFICATION

Identification label positions are shown in the following figures. For details concerning identification, refer to the “ID” section.



(1) Identification

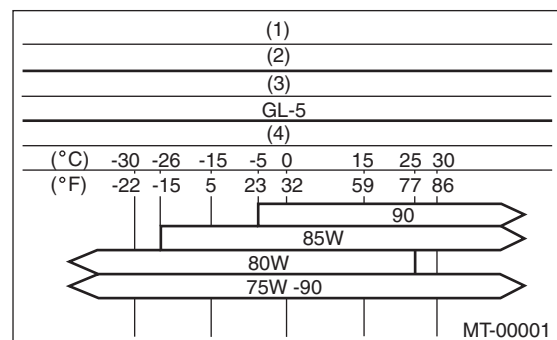
3. REAR DIFFERENTIAL GEAR OIL

Recommended gear oil:

GL-5 (75W-90)

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)	Measure with spring measurement. (Measured from the companion flange bolt)	N (kgf, lbf)	17.7 — 38.8 (1.8 — 4.0, 4.0 — 8.7)
	Measure with torque wrench	N·m(kgf-m, ft-lb)	0.67 — 1.47 (0.07 — 0.15, 0.49 — 1.08)
Side gear backlash		mm (in)	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)

5. ADJUSTING PARTS

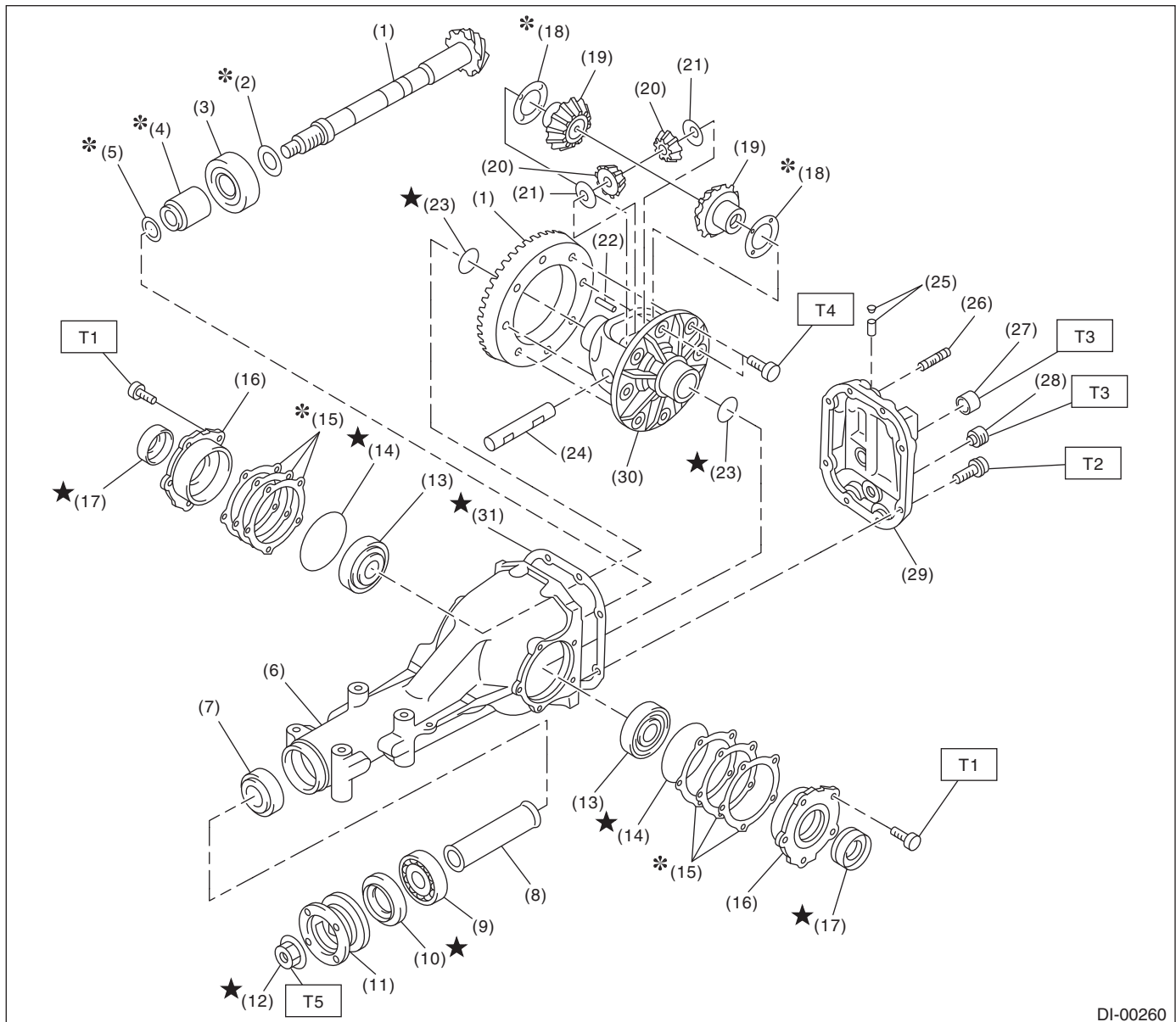
	Part No.	Length mm (in)
Preload adjusting spacer	383695201	56.2 (2.213)
	383695202	56.4 (2.220)
	383695203	56.6 (2.228)
	383695204	56.8 (2.236)
	383695205	57.0 (2.244)
	383695206	57.2 (2.252)

	Part No.	Thickness mm (in)
Preload adjusting washer	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)

General Description

DIFFERENTIALS

	Part No.	Thickness mm (in)
Pinion height adjusting washer	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 thrust washer	383445201	0.75 — 0.80 (0.0295 — 0.0315)
	383445202	0.80 — 0.85 (0.0315 — 0.0335)
	383445203	0.85 — 0.90 (0.0335 — 0.0354)
Side bearing retainer shim	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)
Drive pinion bearing preload	Measure with spring measurement. (Measured from the companion flange bolt)	N (kgf, lb) 17.7 — 38.8 (1.8 — 4.0, 4.0 — 8.7)
	Measure with torque wrench	N·m(kgf-m, ft-lb) 0.67 — 1.47 (0.07 — 0.15, 0.49 — 1.08)
Side gear backlash	mm (in)	0.10 — 0.20 (0.004 — 0.008)
Hypoid driven gear to drive pinion backlash limit	mm (in)	0.10 — 0.20 (0.004 — 0.008)
Hypoid driven gear runout limit on its back surface	mm (in)	0.05 (0.002)

B: COMPONENT**1. REAR DIFFERENTIAL (T-TYPE)**

DI-00260

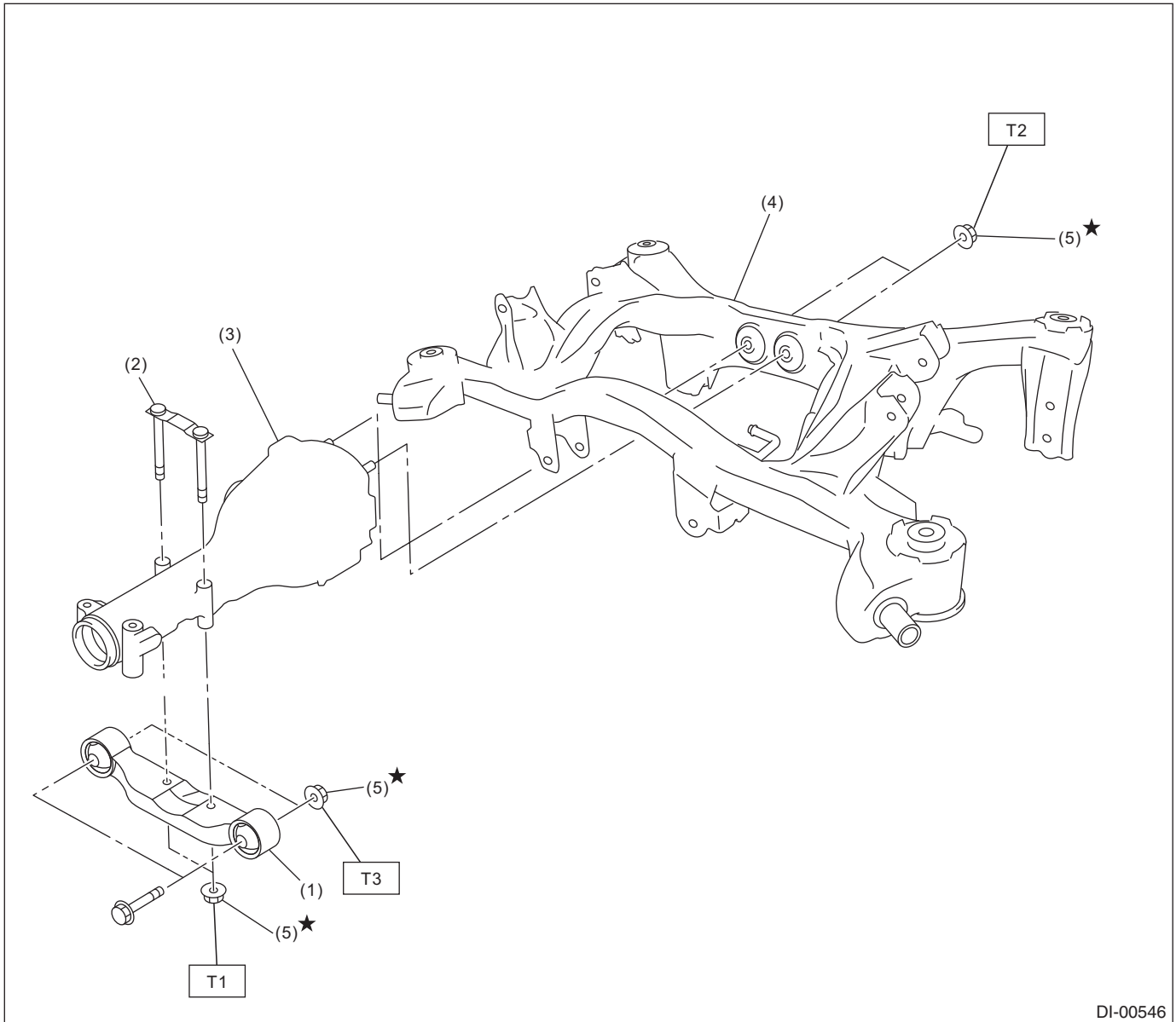
- | | | |
|---|------------------------------|------------------------|
| (1) Hypoid driven gear and drive pinion set | (13) Side bearing | (26) Stud bolt |
| (2) Pinion height adjusting washer | (14) O-ring | (27) Oil filler plug |
| (3) Rear bearing | (15) Side retainer shim | (28) Oil drain plug |
| (4) Bearing preload adjusting spacer | (16) Side 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) Snap ring | |
| (12) Self-locking nut | (24) Pinion mate shaft | |
| | (25) Air breather cap | |

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)**

General Description

DIFFERENTIALS

2. REAR DIFFERENTIAL MOUNTING SYSTEM



DI-00546

- | | |
|------------------------------------|----------------------|
| (1) Rear differential front member | (4) Sub frame |
| (2) Rear differential member plate | (5) Self-locking nut |
| (3) Rear differential ASSY | |

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

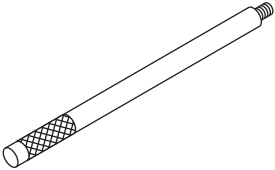
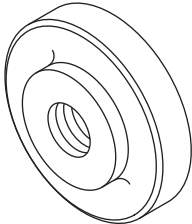
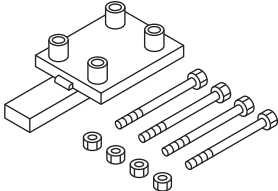
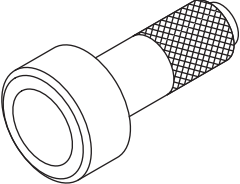
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, 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. 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.

General Description

DIFFERENTIALS

D: PREPARATION TOOL

1. SPECIAL TOOL

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

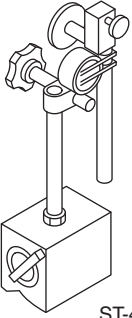
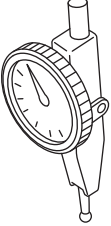
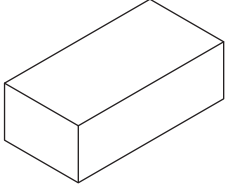
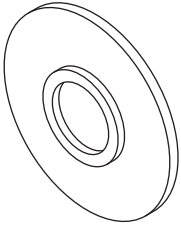
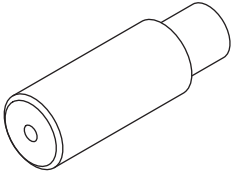
General Description

DIFFERENTIALS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
ST-498427200	498427200	FLANGE WRENCH	Used for preventing rotation of companion flange when loosening and tightening self-lock nut.
ST-398467700	398467700	DRIFT	Used for removing pinion, pilot bearing and front bearing cone.
ST-399780104	399780104	WEIGHT	Used for installing the front bearing cone and the pilot bearing companion flange.
ST-899580100	899580100	INSTALLER	Used for press-fitting the front bearing cone and pilot bearing.
ST-899904100	899904100	STRAIGHT PIN REMOVER	Used for driving out differential pinion shaft lock pin.

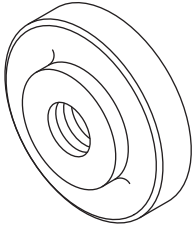
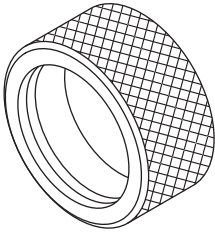
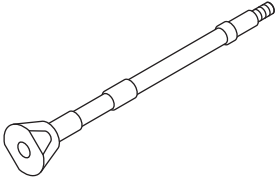
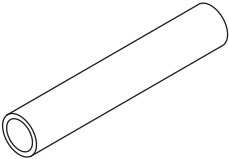
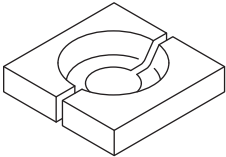
General Description

DIFFERENTIALS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498247001	498247001	MAGNET BASE	- Used for measuring backlash between side gear and pinion, and hypoid gear. - Used together with the DIAL GAUGE (498247100).
 ST-498247100	498247100	DIAL GAUGE	- Used for measuring backlash between side gear and pinion, and hypoid gear. - Used together with the MAGNET BASE (498247001).
 ST-398507704	398507704	BLOCK	Used for adjusting pinion height and preload.
 ST-398177700	398177700	INSTALLER	Used for installing the rear bearing cone.
 ST-398457700	398457700	ATTACHMENT	Used for removing the side retainer.

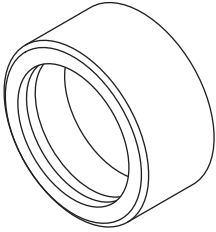
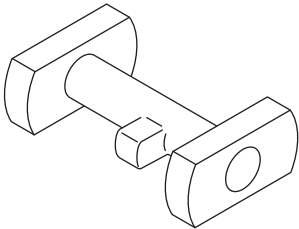
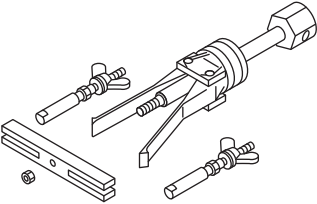
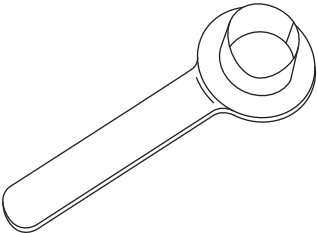
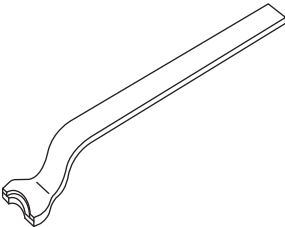
General Description

DIFFERENTIALS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398477703	398477703	DRIFT 2	Used for press-fitting bearing race (rear) of differential carrier.
 ST-398437700	398437700	DRIFT	Used for installing the side oil seal.
 ST-398507702	398507702	DUMMY SHAFT	Used for adjusting pinion height and preload.
 ST-398507703	398507703	DUMMY COLLAR	Used for adjusting pinion height and preload.
 ST-398517700	398517700	REPLACER	Used for removing rear bearing cone.

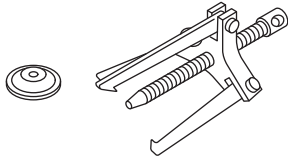
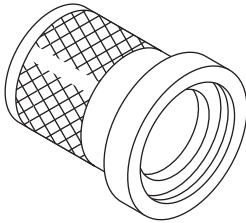
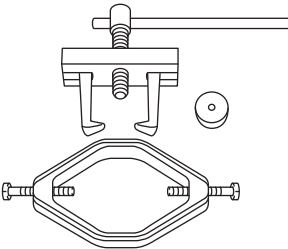
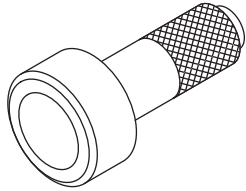
General Description

DIFFERENTIALS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398487700	398487700	DRIFT	Used for press-fitting side bearing cone.
 ST-398507701	398507701	DIFFERENTIAL CARRIER GAUGE	Used for adjusting pinion height.
 ST-398527700	398527700	PULLER ASSY	• Used for removing front oil seal. • Used for removing side bearing cup.
 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.

General Description

DIFFERENTIALS

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 differential side bearing cone.
 ST-398417700	398417700	DRIFT	Used for installing side bearing race.

2. GENERAL TOOL

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