

GENERAL DESCRIPTION

Differentials

1. General Description S303001

A: SPECIFICATIONS S303001E49

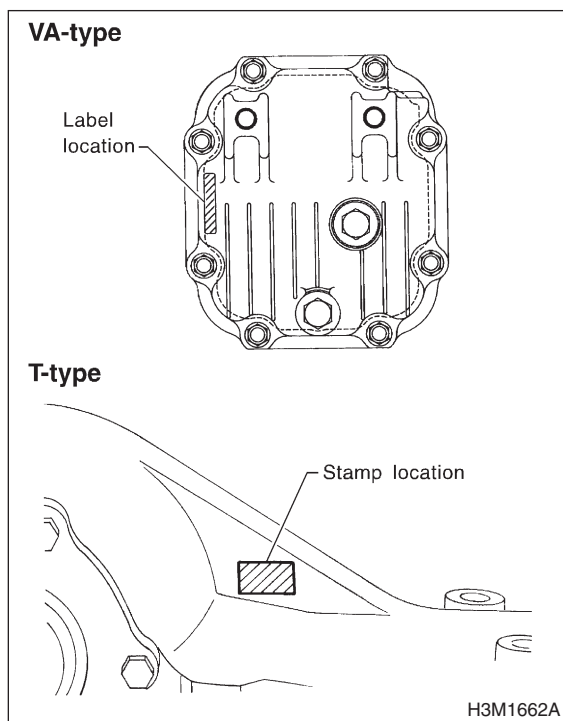
Model	2200 cc		2500 cc	
	MT	AT	MT	AT
Rear differential type	T type T1	VA type VA1REG-XJ	T type BK	T type CF
	Without LSD		With LSD	
Type of gear	Hipoide gear			
Gear train (Number of gear teeth)	3.900 (39/10)	4.111 (37/9)	4.111 (37/9)	4.444 (40/9)
Oil capacity	0.8 ℓ (0.8 US qt, 0.7 Imp qt)			
Rear differential gear oil	GL-5			

● Identification

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

CAUTION:

Using the different rear differential assembly causes the drive line and tires to “drag” or emit abnormal noise when AWD is selected.



● Rear Differential Gear Oil

Recommended oil

CAUTION:

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

ITEM									
• Rear differential gear oil									
API Classification									
GL-5									
SAE Viscosity No. and Application Temperature									
(°C)	-30	-26	-15	-5	0	15	25	30	
(°F)	-22	-15	5	23	32	59	77	86	
H3M1272A									

1. ADJUSTING PARTS S303001E4902

● VA-Type

Front and rear bearing preload at companion flange bolt hole	New bearing	12.7 — 32.4 N (1.3 — 3.3 kgf, 2.9 — 7.3 lb)
Preload adjusting spacer	Part No.	Length mm (in)
	32288AA040	52.3 (2.059)
	32288AA050	52.5 (2.067)
	31454AA100	52.6 (2.071)
	32288AA060	52.7 (2.075)
	31454AA110	52.8 (2.079)
	32288AA070	52.9 (2.083)
	31454AA120	53.0 (2.087)
	32288AA080	53.1 (2.091)
	32288AA090	53.3 (2.098)
Preload adjusting washer	Part No.	Thickness mm (in)
	38336AA000	1.500 (0.0591)
	38336AA120	1.513 (0.0596)
	38336AA010	1.525 (0.0600)
	38336AA130	1.538 (0.0606)
	38336AA020	1.550 (0.0610)
	38336AA140	1.563 (0.0615)
	38336AA030	1.575 (0.0620)
	38336AA150	1.588 (0.0625)
	38336AA040	1.600 (0.0630)
	38336AA160	1.613 (0.0635)
	38336AA050	1.625 (0.0640)
	38336AA170	1.638 (0.0645)
	38336AA060	1.650 (0.0650)
	38336AA180	1.663 (0.0655)
	38336AA070	1.675 (0.0659)
	38336AA190	1.688 (0.0665)
	38336AA080	1.700 (0.0669)
	38336AA200	1.713 (0.0674)
	38336AA090	1.725 (0.0679)
	38336AA210	1.738 (0.0684)
	38336AA100	1.750 (0.0689)
	38336AA220	1.763 (0.0694)
	38336AA110	1.775 (0.0699)
Pinion height adjusting shim	Part No.	Thickness mm (in)
	32295AA200	0.150 (0.0059)
	32295AA210	0.175 (0.0069)
	32295AA220	0.200 (0.0079)
	32295AA230	0.225 (0.0089)
	32295AA240	0.250 (0.0098)
	32295AA250	0.275 (0.0108)
Side gear backlash	0.05 — 0.15 mm (0.0020 — 0.0059 in)	
Side gear thrust washer	Part No.	Thickness mm (in)
	803135011	0.925 — 0.950 (0.0364 — 0.0374)
	803135012	0.950 — 0.975 (0.0374 — 0.0384)
	803135013	0.975 — 1.000 (0.0384 — 0.0394)
	803135014	1.000 — 1.025 (0.0394 — 0.0404)
	803135015	1.025 — 1.050 (0.0404 — 0.0413)
Crown gear to drive pinion backlash	Limit	0.10 — 0.15 (0.0039 — 0.0059)
Crown gear runout on its back surface		0.05 (0.0020)
Oil capacity		0.8 ℓ (0.8 US qt, 0.7 Imp qt)

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● T-Type

Front and rear bearing preload at companion flange bolt hole	New bearing	19.6 — 28.4 N (2.0 — 2.9 kgf, 4.4 — 6.4 lb)
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.	Thickness 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)
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	0.10 — 0.20 mm (0.0039 — 0.0079 in)	

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	Part No.	Thickness mm (in)
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)
	383445204	0.90 — 0.95 (0.0354 — 0.0374)
	383445205	0.95 — 1.00 (0.0374 — 0.0394)
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)
Crown gear to drive pinion backlash	Limit	0.10 — 0.20 mm (0.0039 — 0.0079 in)
Crown gear runout on its back surface		0.05 mm (0.0020 in)
Oil capacity		0.8 ℓ (0.8 US qt, 0.7 Imp qt)

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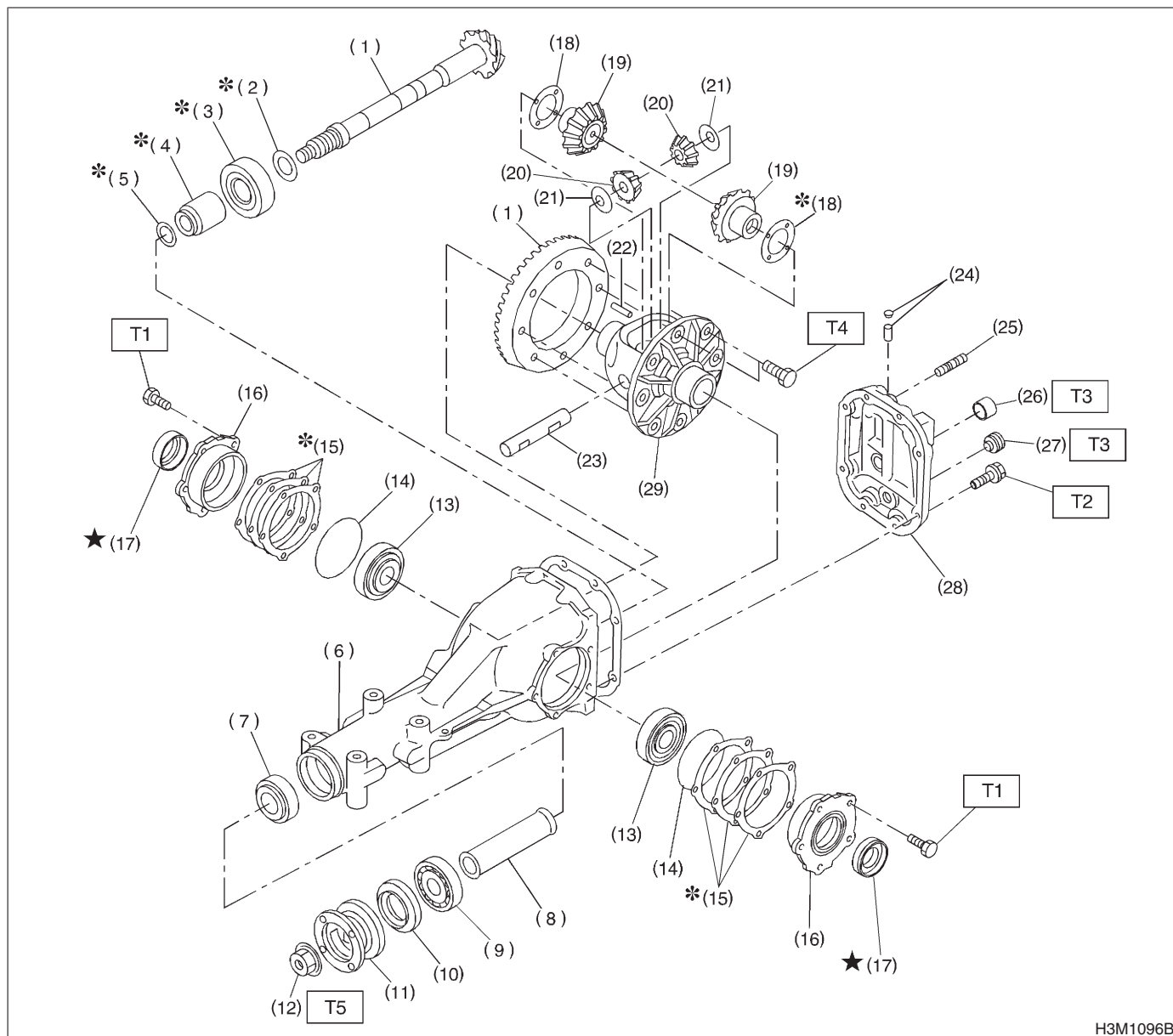
Differentials

B: COMPONENT

S303001A05

1. REAR DIFFERENTIAL FOR T-TYPE WITHOUT LSD

S303001A0501



H3M1096B

- (1) Pinion crown gear set
- (2) Pinion height adjusting shim
- (3) Rear bearing
- (4) Bearing preload adjusting spacer
- (5) Bearing preload adjusting washer
- (6) Differential carrier
- (7) Front bearing
- (8) Spacer
- (9) Pilot bearing
- (10) Front oil seal
- (11) Companion flange
- (12) Self-locking nut

- (13) Side bearing
- (14) O-ring
- (15) Side bearing retainer shim
- (16) Side bearing retainer
- (17) Side oil seal
- (18) Side gear thrust washer
- (19) Side gear
- (20) Pinion mate gear
- (21) Pinion mate gear washer
- (22) Pinion shaft lock pin
- (23) Pinion mate shaft
- (24) Air breather cap
- (25) Stud bolt

- (26) Oil filler plug
- (27) Oil drain plug
- (28) Rear cover
- (29) Differential case

Tightening torque: N·m (kgf-m, ft-lb)

T1: 10.3 (1.05, 7.6)

T2: 29 (3.0, 21.7)

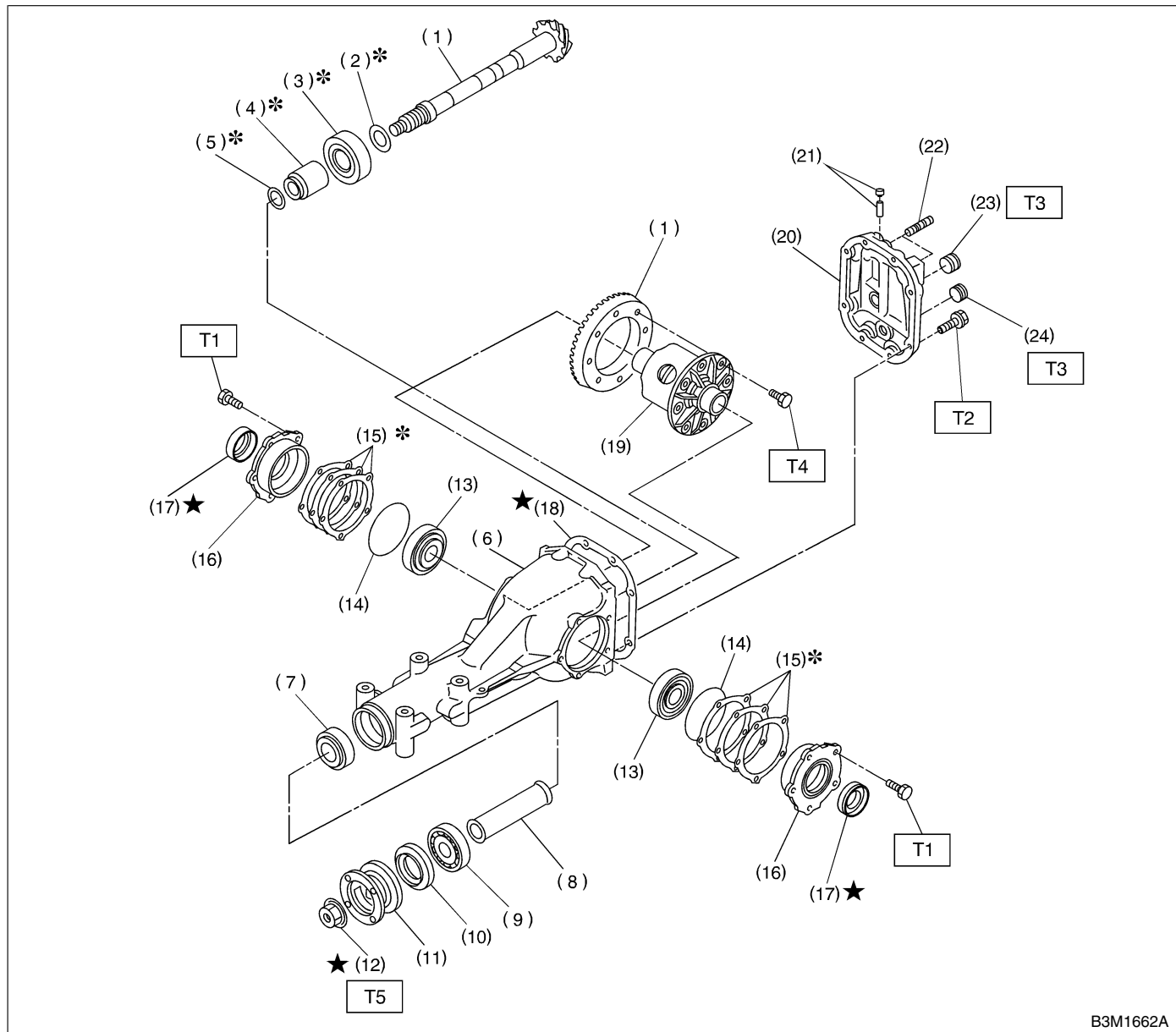
T3: 49.0 (5.0, 36.2)

T4: 103 (10.5, 76)

T5: 181 (18.5, 134)

2. REAR DIFFERENTIAL FOR T-TYPE WITH LSD

S303001A0502



- (1) Pinion crown gear set
- (2) Pinion height adjusting shim
- (3) Rear bearing
- (4) Bearing preload adjusting spacer
- (5) Bearing preload adjusting washer
- (6) Differential carrier
- (7) Front bearing
- (8) Collar
- (9) Pilot bearing
- (10) Front oil seal

- (11) Companion flange
- (12) Self-locking nut
- (13) Side bearing
- (14) O-ring
- (15) Side bearing retainer shim
- (16) Side bearing retainer
- (17) Side oil seal
- (18) Gasket
- (19) Differential case
- (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)

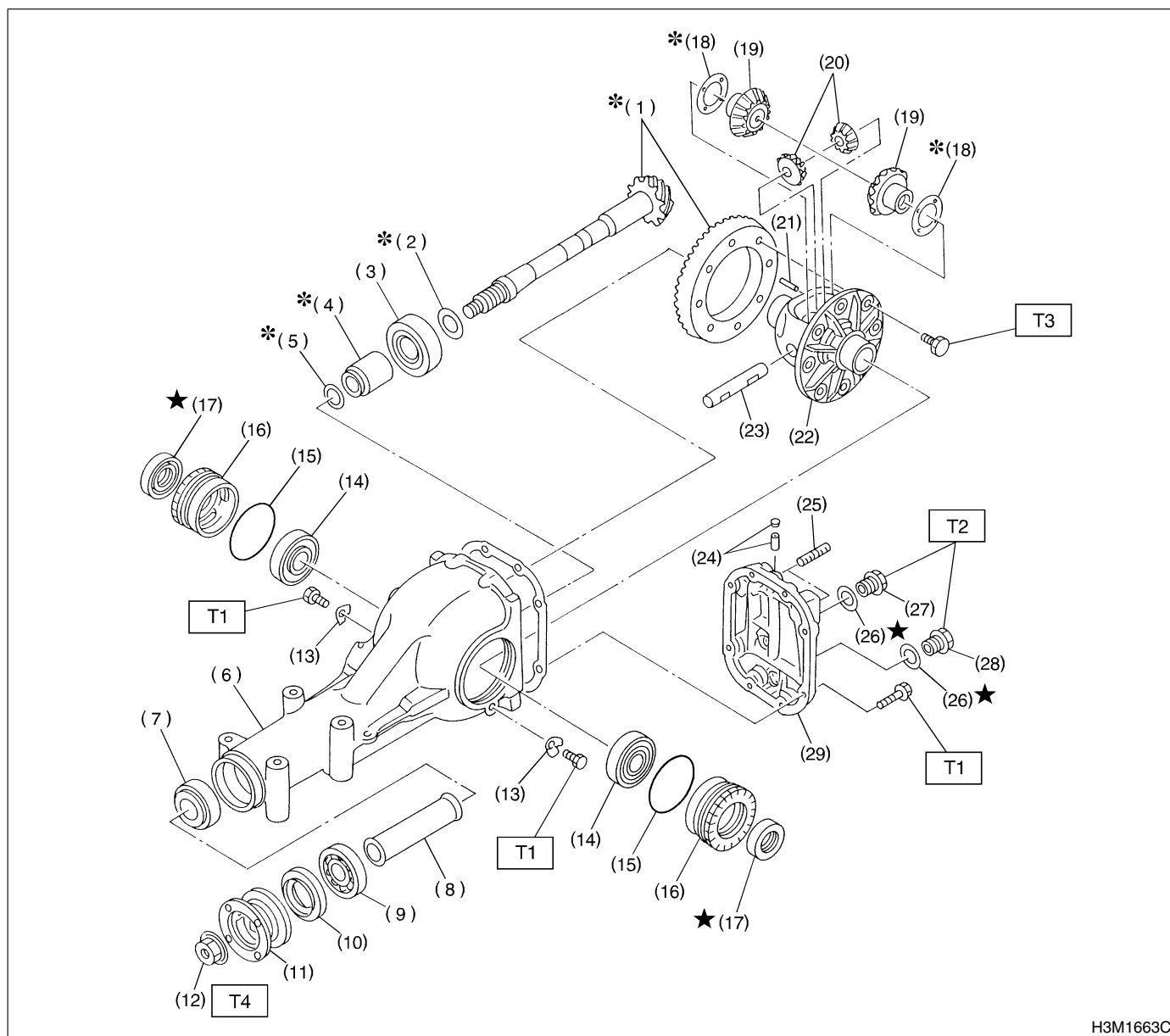
T1: 10.3 (1.05, 7.6)
T2: 29 (3.0, 21.7)
T3: 49.0 (5.0, 36.2)
T4: 103 (10.5, 76)
T5: 181 (18.5, 134)

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3. REAR DIFFERENTIAL FOR VA-TYPE

S303001A0503



- (1) Pinion crown gear set
- (2) Pinion height adjusting shim
- (3) Rear bearing
- (4) Bearing preload adjusting spacer
- (5) Bearing preload adjusting washer
- (6) Differential carrier
- (7) Front bearing
- (8) Collar
- (9) Pilot bearing
- (10) Front oil seal
- (11) Companion flange
- (12) Self-locking nut

- (13) Lock plate
- (14) Side bearing
- (15) O-ring
- (16) Axle shaft holder
- (17) Side oil seal
- (18) Side gear thrust washer
- (19) Side gear
- (20) Pinion mate gear
- (21) Pinion shaft lock pin
- (22) Differential case
- (23) Pinion mate shaft
- (24) Air breather cap
- (25) Stud bolt

- (26) Gasket
- (27) Oil filler plug
- (28) Oil drain plug
- (29) Rear cover

Tightening torque: N·m (kgf-m, ft-lb)

T1: 25 (2.5, 18.1)

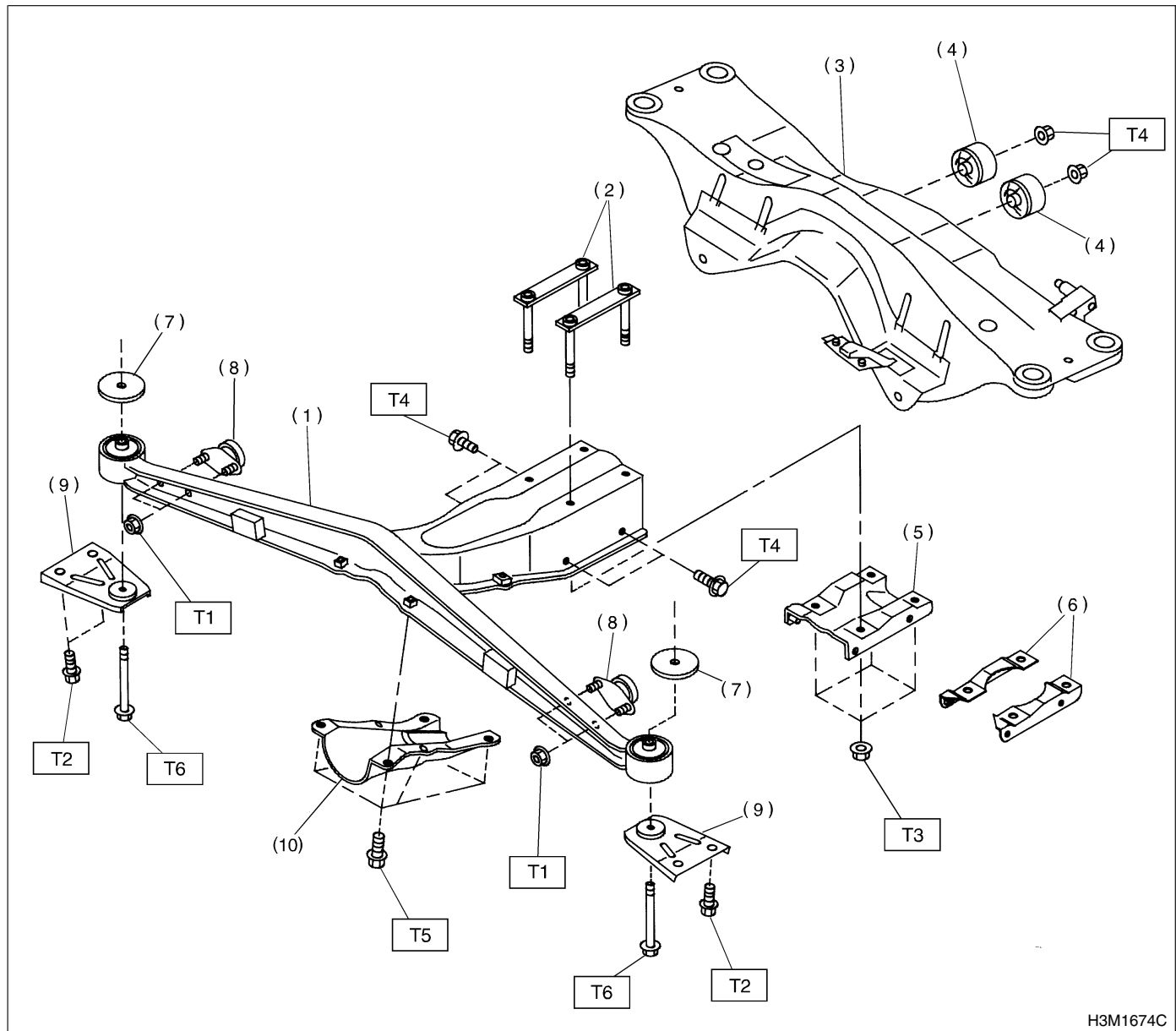
T2: 34 (3.5, 25.3)

T3: 62 (6.3, 45.6)

T4: 188 (19.2, 139)

4. REAR DIFFERENTIAL MOUNTING SYSTEM

S303001A0504



H3M1674C

- | | |
|--|---------------------------------------|
| (1) Differential front member | (7) Stopper |
| (2) Plate | (8) Dynamic damper (2500 cc MT model) |
| (3) Crossmember | (9) Differential mount bracket |
| (4) Rear bushing | (10) Differential mount front cover |
| (5) Differential mount lower bracket (2500 cc model) | |
| (6) Differential mount lower bracket (2200 cc model) | |

Tightening torque: N·m (kgf-m, ft-lb)

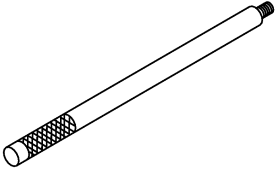
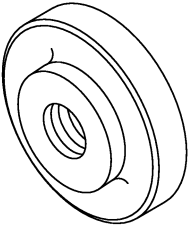
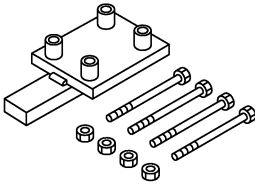
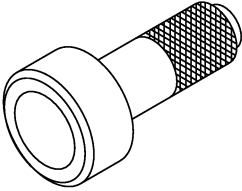
- | |
|----------------------------|
| T1: 20 (2.0, 14.5) |
| T2: 32 (3.3, 23.9) |
| T3: 64 (6.5, 47.0) |
| T4: 69 (7.0, 50.6) |
| T5: 88 (9.0, 65.0) |
| T6: 98 (10.0, 72.0) |

C: CAUTION S303001A03

- 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 vice, place cushioning material such as wood blocks, aluminum plate, or shop cloth between the part and the vice.
- Avoid damaging the mating face of the case.

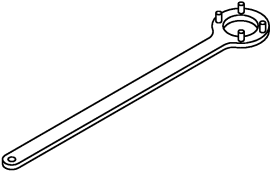
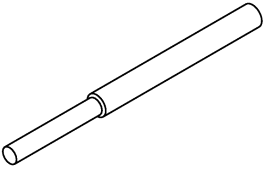
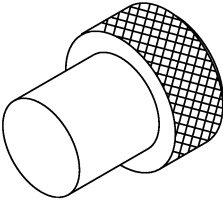
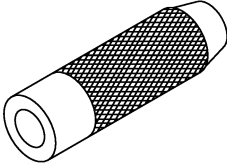
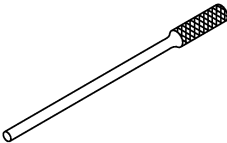
D: PREPARATION TOOL S303001A17

1. SPECIAL TOOL S303001A1701

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1893	398477701	HANDLE	Used for installing front and rear bearing cone.
 B3M1894	398477702	DRIFT	Used press-fitting the bearing cone of differential carrier (rear).
 B3M1895	398217700	ATTACHEMENT SET	Stand for rear differential carrier disassembly and assembly.
 B3M1896	498447120	DRIFT	Used for installing front oil seal.

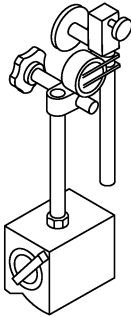
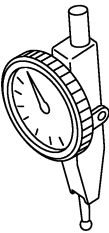
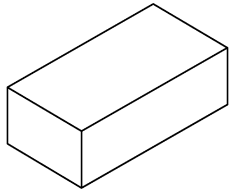
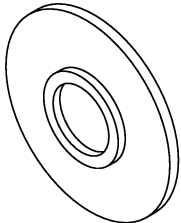
GENERAL DESCRIPTION

Differentials

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1897	498427200	FLANGE WRENCH	Used for stopping rotation of companion flange when loosening and tightening self-lock nut.
 B3M1898	398467700	DRIFT	Used for removing pinion, pilot bearing and front bearing cone.
 B3M1899	399780104	WEIGHT	Used for installing front bearing cone, pilot bearing companion flange.
 B3M1900	899580100	INSTALLER	Used for press-fitting the front bearing cone, pilot bearing.
 B3M1901	899904100	STRAIGHT PIN REMOVER	Used for driving out differential pinion shaft lock pin.

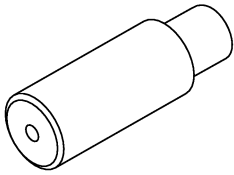
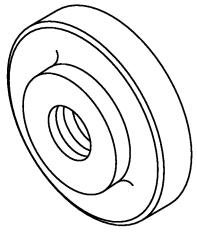
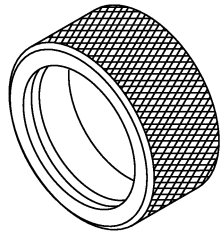
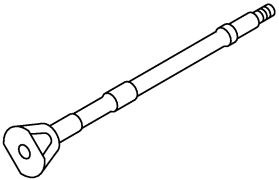
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1902	498247001	MAGENT BASE	- Used for measuring backlash between side gear and pinion, and hypoid gear.. - Used with DIAL GAUGE (498247100).
 B3M1903	498247100	DAIL GAUGE	- Used measurng backlash between side gear and pinion, hypoid gear. - Used with MAGNET BASE (498247001).
 B3M1904	398507704	BLOCK	Used for adjusting pinion height and preload.
 B3M1905	398177700	INSTALLER	- Used for installing rear bearing cone. - For T-type.

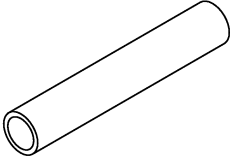
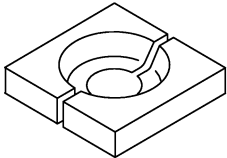
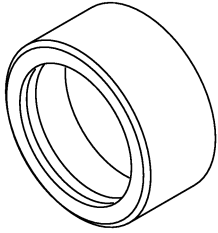
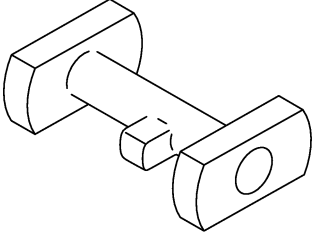
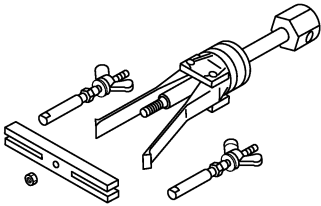
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1906	398457700	ATTACHMENT	- Used for removing side bearing retainer. - For T-type.
 B3M1907	398477703	DRIFT2	- Used for press-fitting the bearing race (rear) of differential carrier. - For T-type.
 B3M1908	398437700	DRIFT	- Used for installing said oil seal. - For T-type.
 B3M1909	398507702	DUMMY SHAFT	- Used for adjusting pinion height and preload. - For T-type.

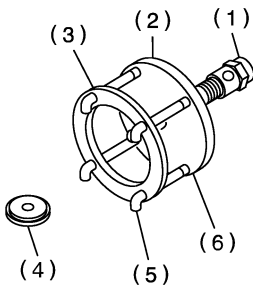
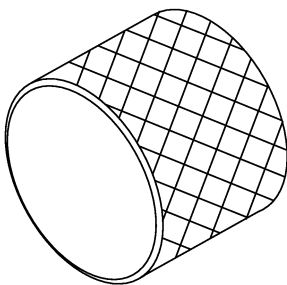
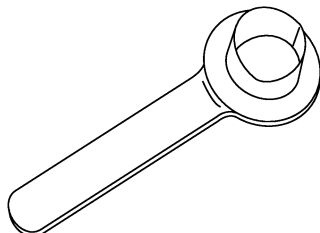
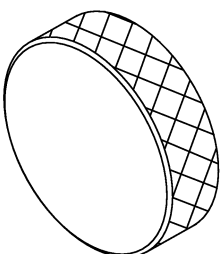
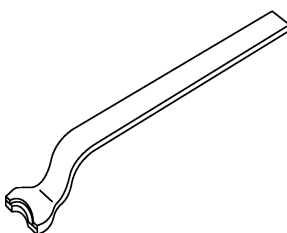
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1910	398507703	DUMMY COLLAR	- Used for adjusting pinion height and preload. - For T-type.
 B3M1911	398517700	REPLACER	- Used for removing rear bearing cone. - For T-type.
 B3M1912	398487700	DRIFT	- Used for press-fitting the side bearing cone. - For T-type.
 B3M1913	398507701	GAUGE	- Used for adjusting pinion height. - For T-type.
 B3M1914	398527700	PULLEY ASSY	- Used for removing oil seal and side bearing cup. - For T-type.

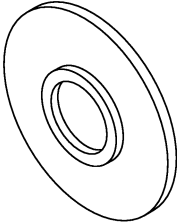
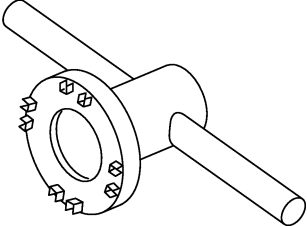
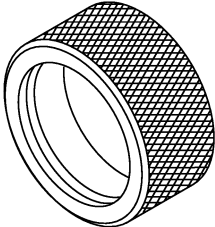
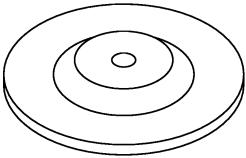
GENERAL DESCRIPTION

Differentials

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1915A	398527700	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) - For T-type.
 B3M1916	398227700	WEIGHT	- Used for installing side bearing. - For T-type.
 B3M1917	28099PA090	OIL SEAL PROTECTOR	- Used for installing rear drive shaft into rear differential. - For protecting oil seal. - For T-type.
 B3M1918	398237700	GAUGE	- Used for installing side bearing. - For T-type.
 B3M1919	28099PA100	DRIVE SHAFT REMOVER	- Used for removing rear drive shaft from rear differential. - For T-type.

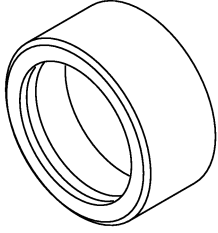
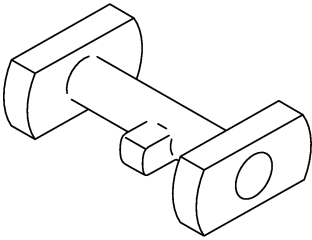
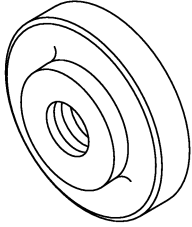
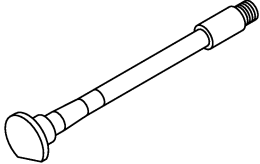
GENERAL DESCRIPTION

Differentials

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1920	498175500	INSTALLER	- Used for installing rear bearing cone. - For VA-type.
 B3M1921	499785500	WRENCH ASSY	- Used for removing and installing side oil seal holder. - For VA-type.
 B3M1922	498447100	DRIFT	- Used for installing oil seal. - For VA-type.
 B3M1923	399520105	SEAT	- Used for removing side bearing cone. - Used with PULLER SET (899524100). - For VA-type.

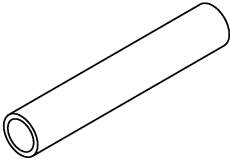
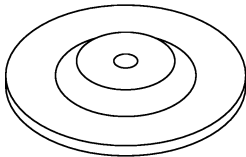
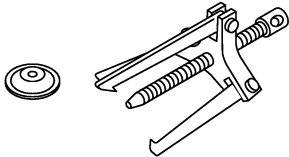
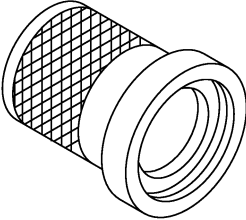
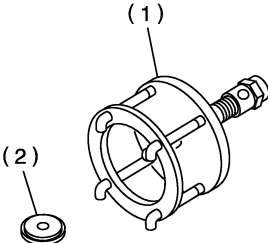
GENERAL DESCRIPTION

Differentials

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1924	498485400	DRIFT	- Used for installing side bearing cone. - For VA-type.
 B3M1925	498505501	GAUGE	- Used for adjusting pinion height. - For VA-type.
 B3M1926	498447110	BEARING OUTER RACE DRIFT	- Used for press-fitting the bearing race (front) of differential carrier. - For VA-type.
 B3M1927	498447150	DUMMY SHAFT	- Used for adjusting pinion height and Pre-load. - For VA-type.

GENERAL DESCRIPTION

Differentials

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B3M1928	32285AA000	DUMMY COLLAR	- Used for adjusting pinion height and Pre-load. - For VA-type.
 B3M1929	499705404	SEAT	- Used for removing side bearing race. - Used with PULLEY ASSY (499705401). - For VA-type.
 B3M1930	499705401	PULLEY ASSY	- Used for removing side bearing race. - Used with SEAT (499705404). - For VA-type.
 B3M1931	899874100	INSTALLER	- Used for installing companion flange. - For VA-type.
 B3M1932A	899524100	DIFFERENTIAL BEARING PULLER SET	- Used for removing side bearing cone of differential. - For VA-type. (1) Puller (2) Cap

GENERAL DESCRIPTION

Differentials

2. GENERAL TOOL S301001A1702

TOOL NAME	REMERKS
Transmission Jack	Used for assembly/disassembly of rear differential.
Puller	Used for removal of side bearing retainer. (T-type)
Thickness Gauge	Used for measuring clearance.
Tire Lever	Used for removal of rear drive shaft. (VA-type)