SERVICE DATA

CHAIN SAW

ECHO: CS-4920

(Serial number : C92340000001 - C92340999999)

shindaiwa: 493

(Serial number : C93340000001 - C93340999999)

INTRODUCTION

We are constantly working on technical improvement of our products. For this reason, technical data, equipment and design are subject to change without notice. All specifications and directions in this SERVICE DATA are based on the latest product information available at the time of publication.

CONTENTS

Reference No. **01-50H-02**
REVISED: 202306
ISSUED: 202211

1 SERVICE INFORMATION

1-1 Specifications

Dimensions	Length*	mm(in)	437 (17.2)
	Width	mm(in)	237 (9.3)
	Height	mm(in)	298 (11.7)
Dry weight*		kg(lb)	5.0 (11.1)
Engine	Type		YAMABIKO, stratified scavenging, air-cooled, two-stroke, single cylinder
	Rotation		Clockwise as viewed from the output end
	Displacement	$cm^3(in^3)$	50.1 (3.057)
	Bore	mm(in)	45.0 (1.772)
	Stroke	mm(in)	31.5 (1.240)
	Compression ratio		7.3
Carburetor	Type		Diaphragm, horizontal-draft
	Model		HLI GC-04
	Venturi size-Throttle bore	mm(in)	16.0 - 17.5 (0.630 - 0.689)
Ignition	Type		CDI (Capacitor discharge ignition) system, Digital Magneto
	Spark plug		NGK BPMR8Y
Exhaust	Muffler type		Spark arrester muffler
Starter	Type		ES (Effortless-Start)
	Rope diameter x length	mm(in)	3.5 x 900 (0.14 x 35.4)
Fuel	Type		Mixed two-stroke fuel
	Mixture ratio		50 : 1 (2 %)
	Gasoline		Minimum 89 octane
	Two-stroke air cooled engine oil		ISO-L-EGD (ISO/CD13738), JASO FC/FD
	Tank capacity	L (UK.fl.oz.)	0.48 (16.2)
Clutch	Type		Centrifugal type, 3-shoe slide with 3-tension spring
Guide bar / Saw chain lubrication type			Adjustable automatic oiler
Oil	Tank capacity	L (UK.fl.oz.)	0.33 (11.2)
Auto oiler	Type		Clutch driven type
Sprocket	Type		Spur
	Number of teeth		7
	Pitch	in	0.325

* Without guide bar and saw chain.

Cutting devices					
Guide bar	Type	B33S95-56ML	B38S95-64ML	B45S95-72ML	Y50S20-80AL
	Called length cm	33	38	45	50
	Gauge in	0.050			
Saw chain	Type	Oregon 95TXL			
	Number of drive links	56	64	72	80
	Pitch in	0.325			
	Gauge in	0.050			

1-2 Technical data

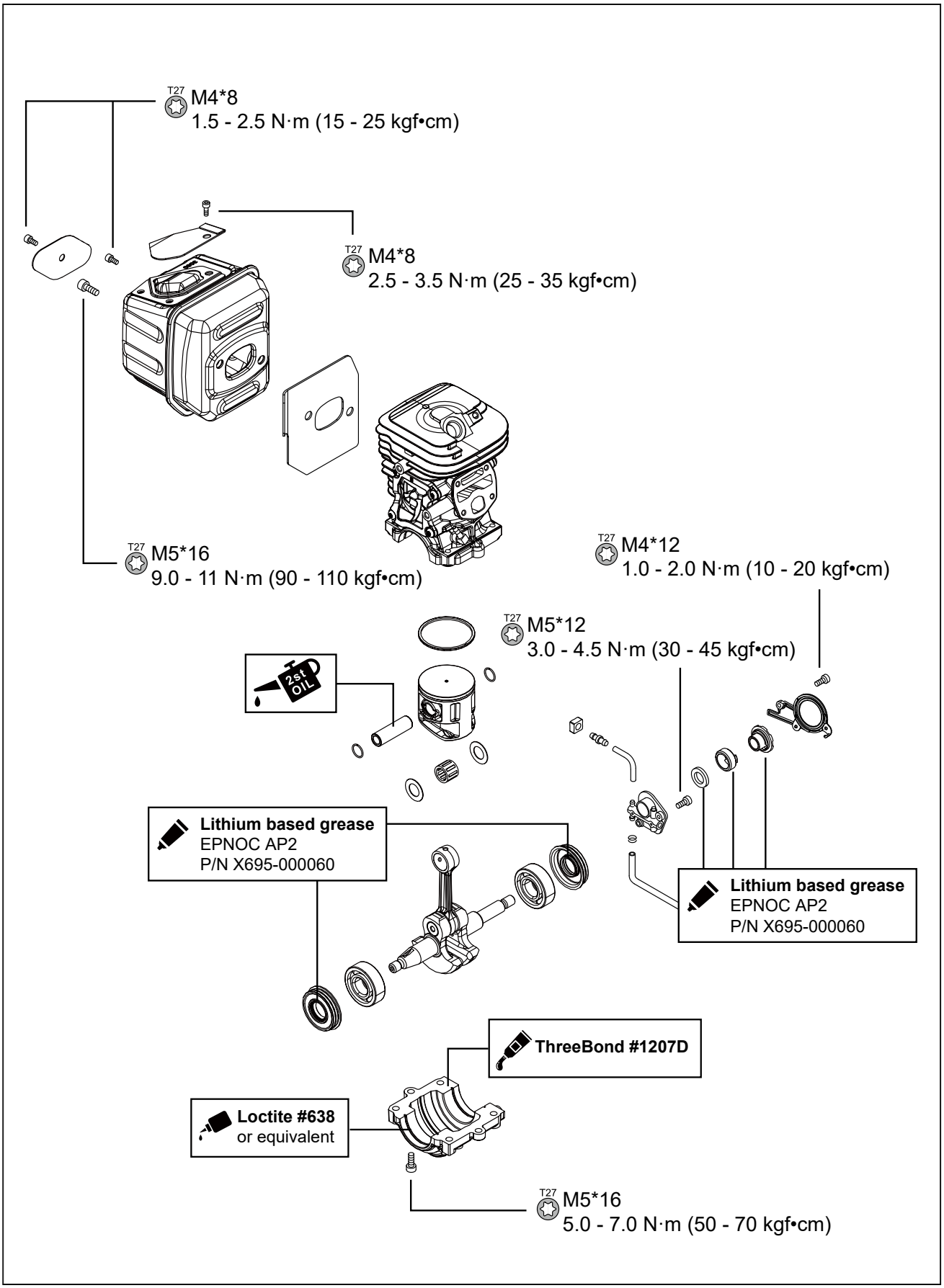
Engine					
Compression pressure		MPa (kgf/cm^2) (psi)	1.06 (10.8) (154)		
Clutch engagement speed		r/min	4200		
Ignition system					
Spark plug gap		mm(in)	0.6 - 0.7 (0.024 - 0.028)		
Spark test	Tester gap w/ spark plug	mm(in)	4.0 (0.16)		
	Tester gap w/o spark plug	mm(in)	6.0 (0.24)		
Secondary coil resistance		Ω	760 - 1160		
Pole shoe air gaps		mm (in)	0.3 - 0.4 (0.012 - 0.016)		
Ignition timing	at 3000 r/min	°BTDC	13		
	at 10000 r/min	°BTDC	31		
Carburetor					
Test Pressure, minimum		MPa (kgf/cm^2) (psi)	0.05 (0.5) (7.0)		
Metering lever height		mm(in)	0.1 - 0.25 (0.004 - 0.010) lower than diaphragm seat		
Tool to adjust mixture needles			D-shaped tool (L) P/N X645-000032 (Carb. adjustment tool P/N Y089-000095)		
Carburetor adjustment					
Fuel type:			Mixed two-stroke **Regular fuel**	Mixed two-stroke **E10 fuel**	Premixed **Alkylate fuel**
1) Initial setting	H mixture needle	turn out	2 1/2		
	L mixture needle	turn out	3 1/4		
	Throttle adjust screw	turn out*1	6 7/8		
Engine warm-up	Idle - WOT : Total	sec.	5 - 10 : 150		
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed.*2		
3) Set idle maximum speed w/ TAS		r/min	3800		
4) Set idle speed by turning L mixture needle CCW		r/min	3000		
5) Confirm H mixture needle position before WOT setting			Turn H mixture needle CCW to confirm engine speed reduces less than or equal to 12000 r/min.		
6) WOT setting			Turn H mixture needle CW in 1/8 turn increment with the engine at idle, then accelerate to WOT and check the engine speed. The final engine speed should fall within		
		r/min	12000 - 12200	12300 - 12500	12000 - 12200
7) Verify final engine speed with standard equipment			Idle: 2700 - 3500		
		r/min	WOT: 12000 - 12200	WOT: 12300 - 12500	WOT: 12000 - 12200
Chain oil discharge volume			Adjustable: 1.5 - 13 (0.05 - 0.46)		
		mL/min(UK.fl.oz./min)	(Factory set: 7 mL/min)		

BTDC: Before top dead center. **WOT:** Wide open throttle **CCW:** Counterclockwise **TAS:** Throttle adjust screw

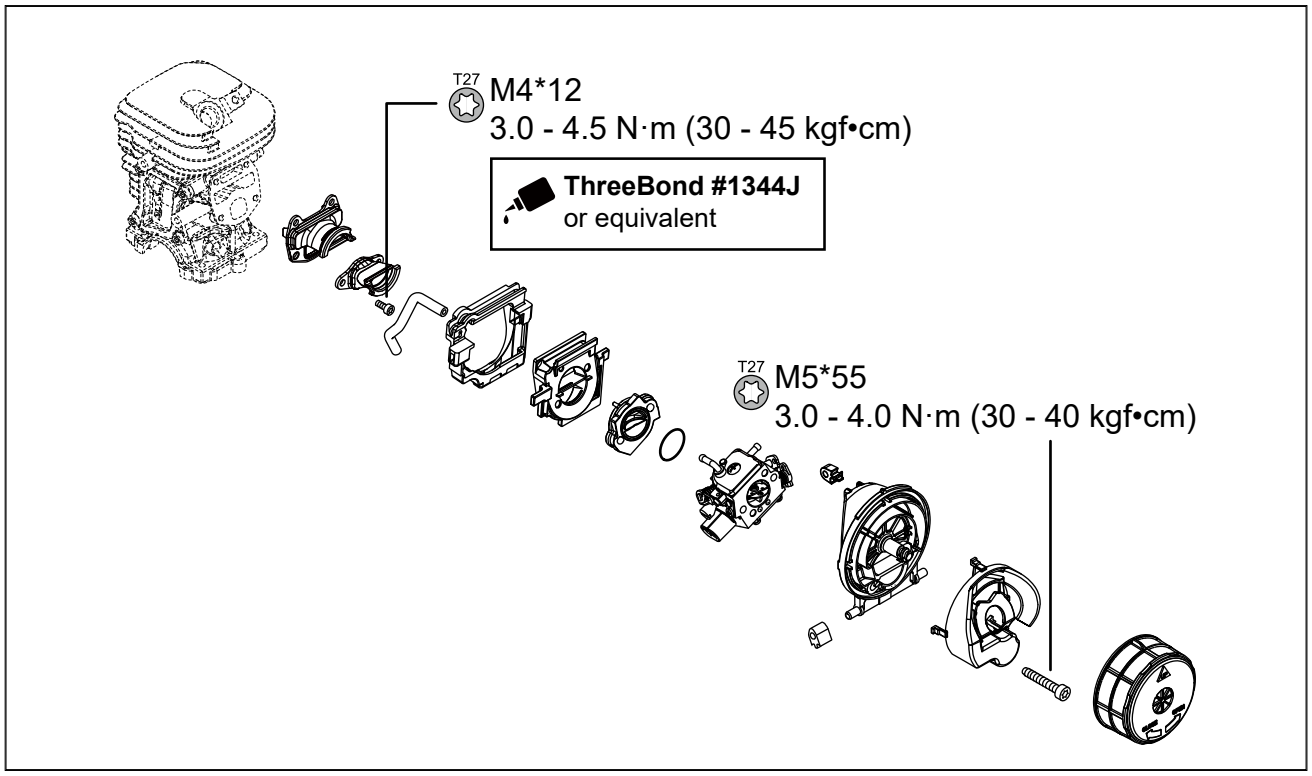
*1 Turn TAS clockwise until lightly seated. Then turn TAS counterclockwise.

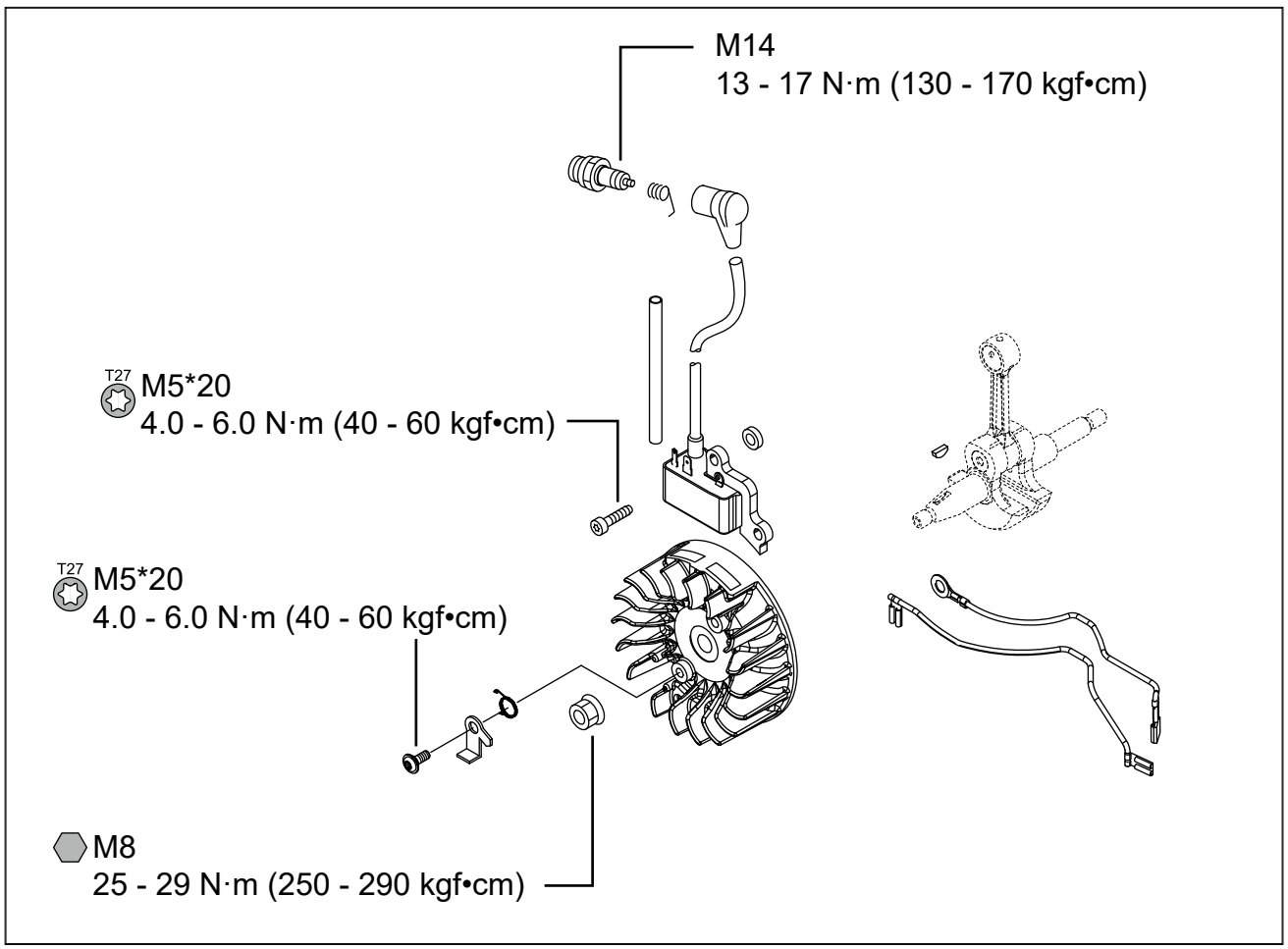
*2 If clutch engages during adjustment process 2), reduce engine speed by turning TAS CCW until clutch disengages and then redo 2).

1-3 Torque limits and Special maintenance materials

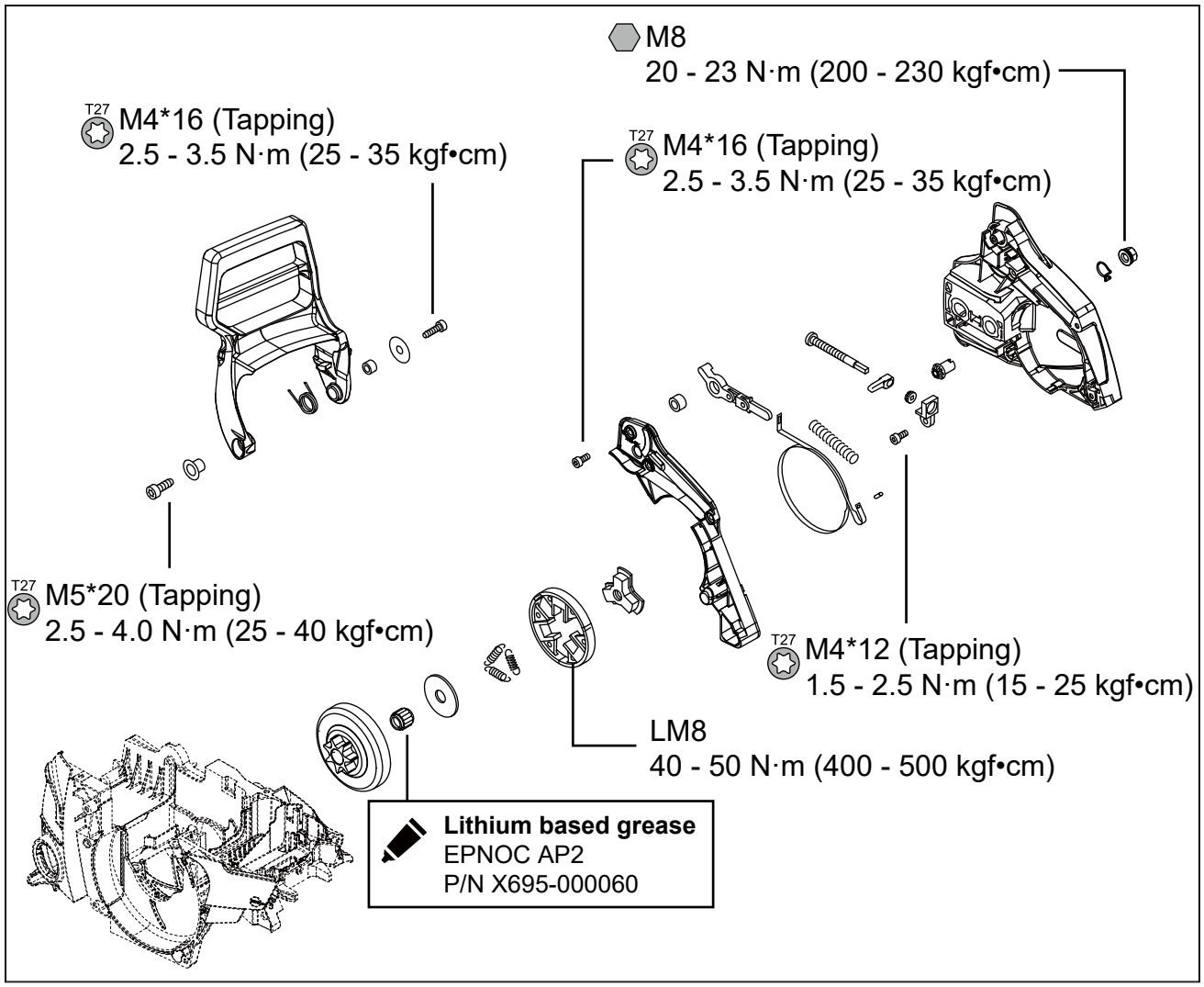


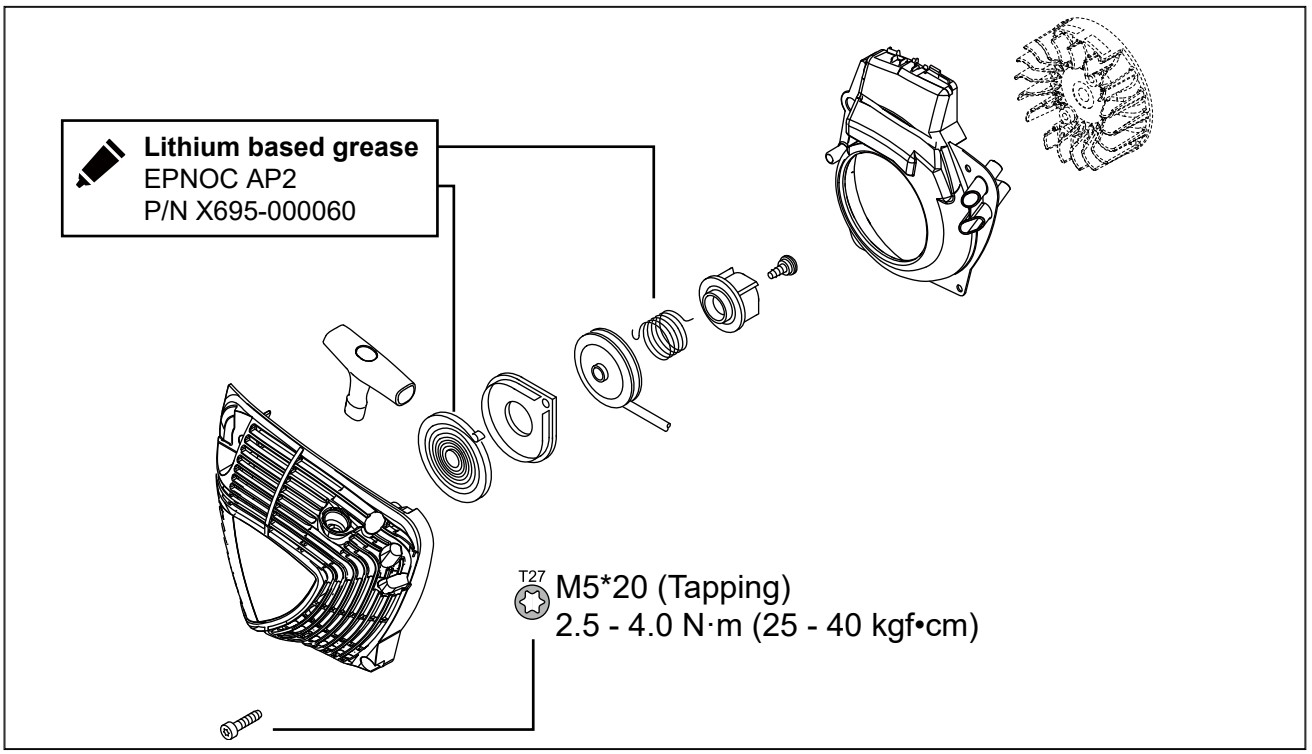
1-3 Torque limits and Special maintenance materials (Continued)



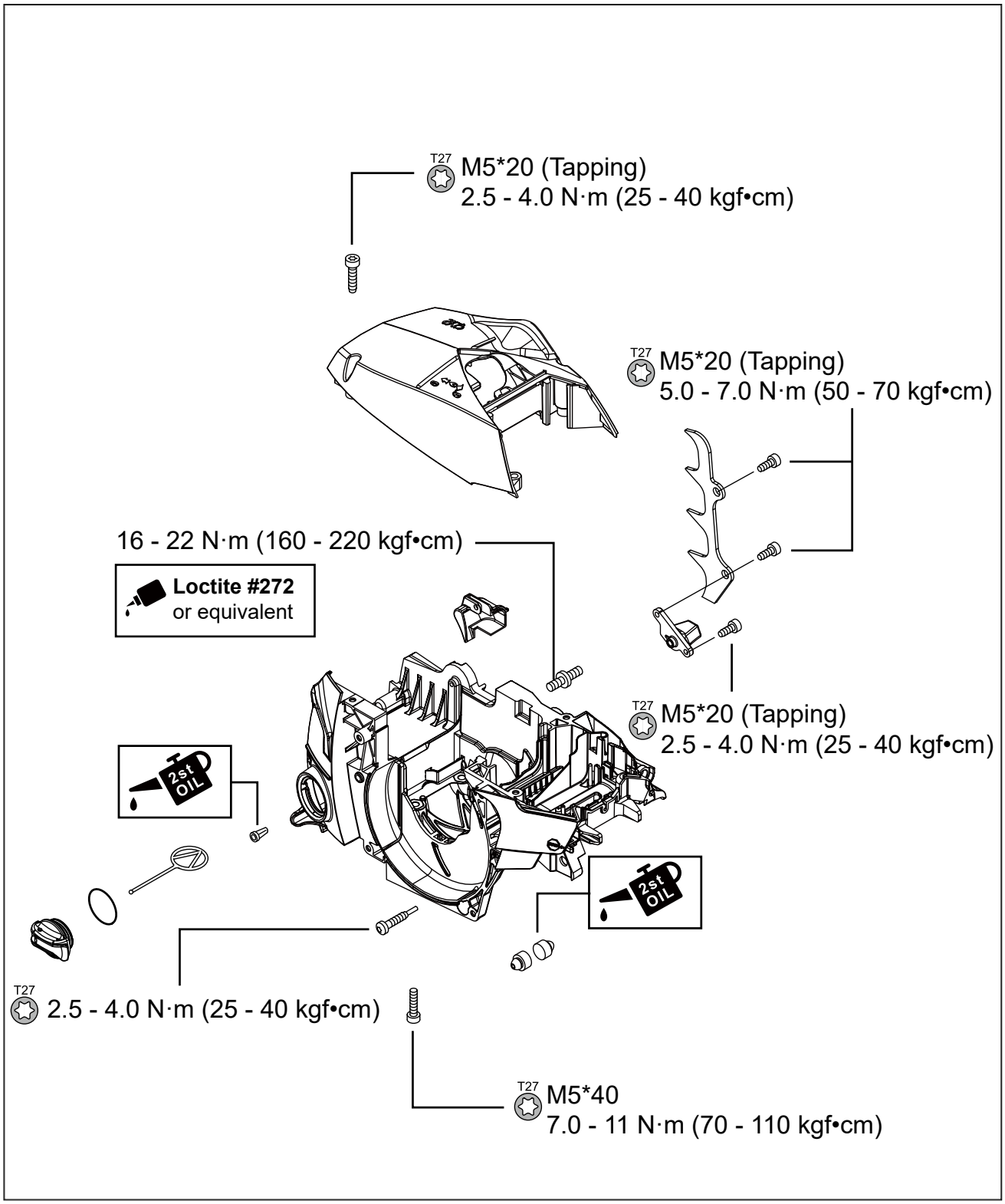


1-3 Torque limits and Special maintenance materials (Continued)

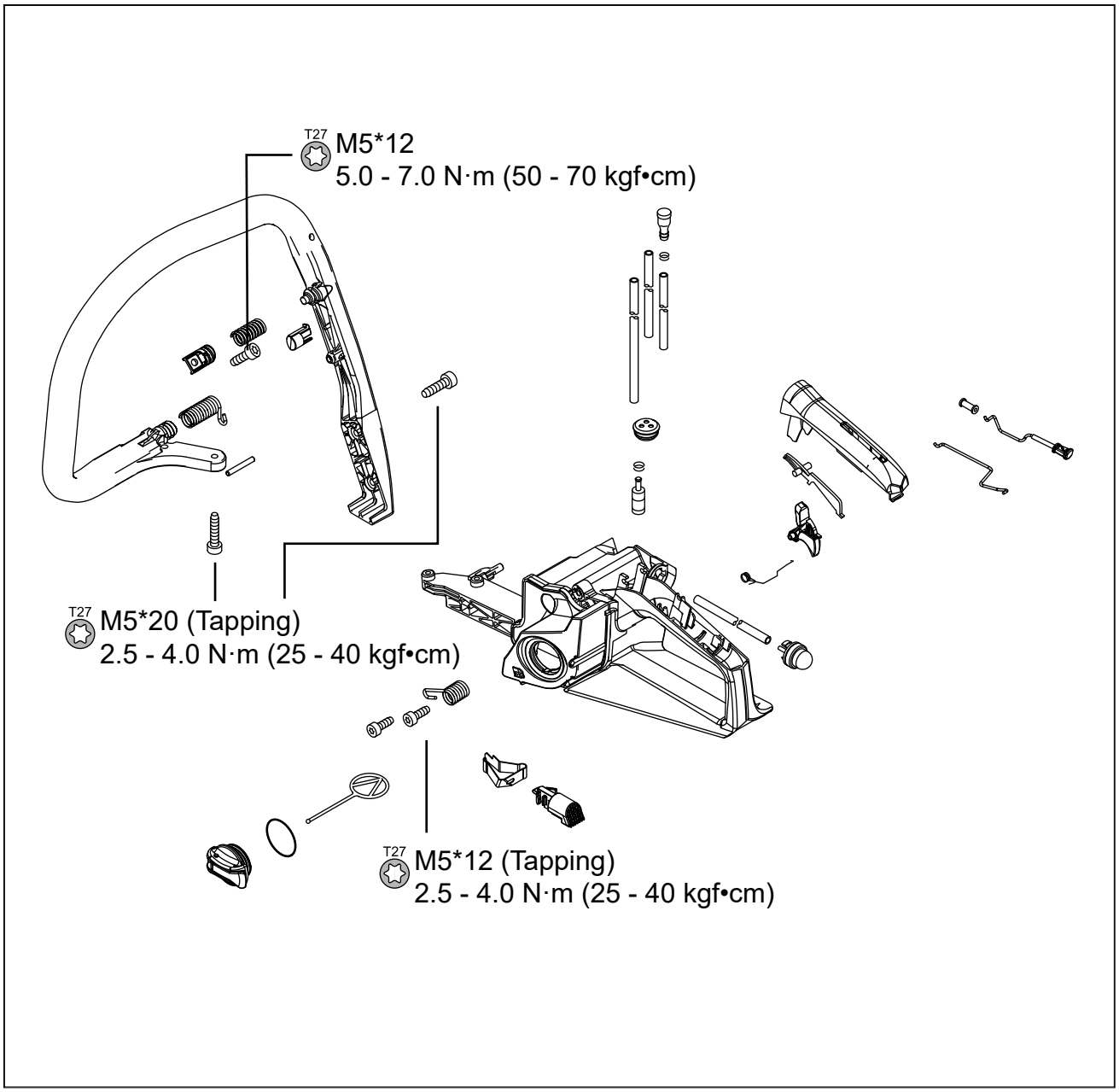




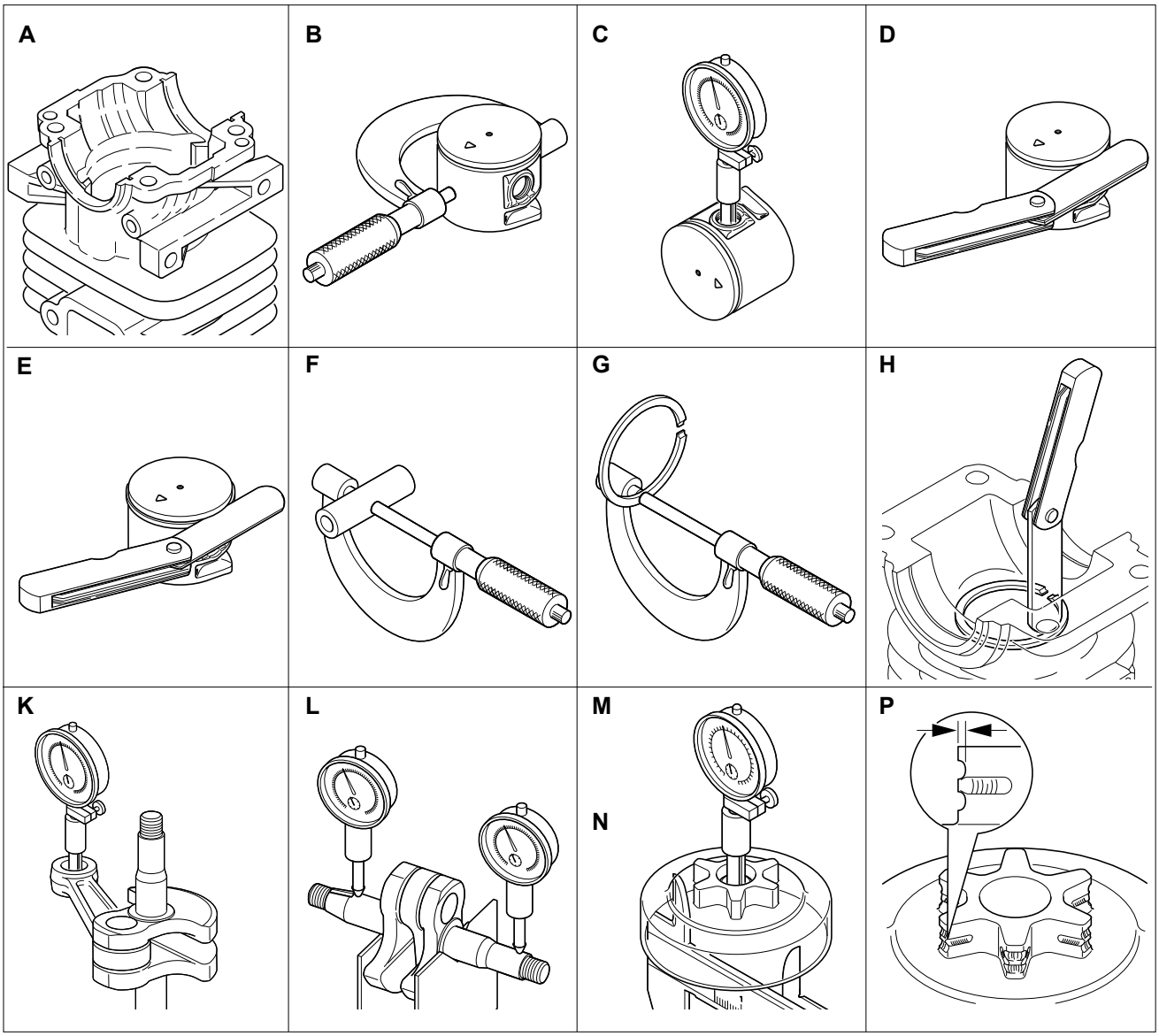
1-3 Torque limits and Special maintenance materials (Continued)



1-3 Torque limits and Special maintenance materials (Continued)

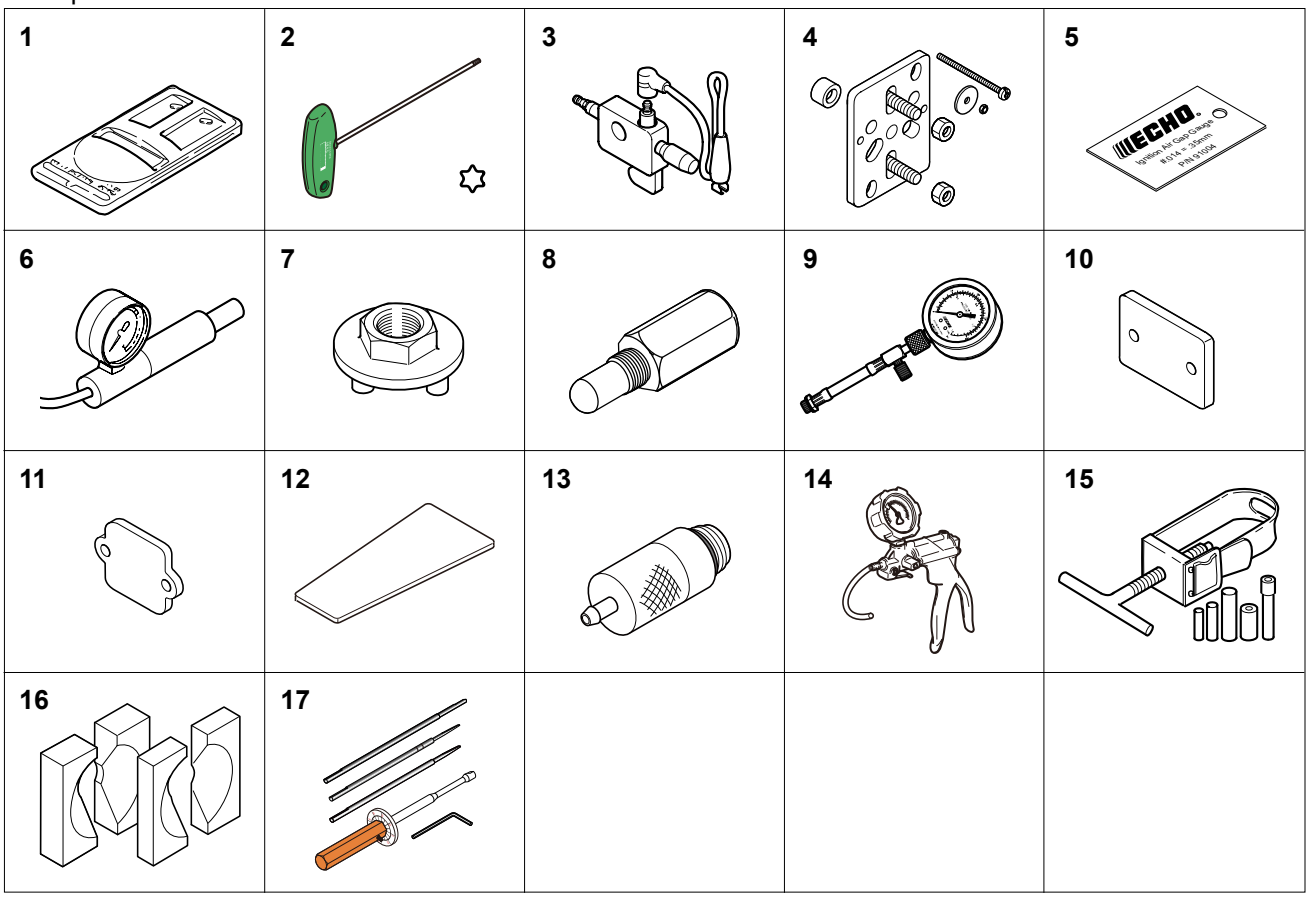


1-4 Service Limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminium can be seen
B	Piston outer diameter	Min.	44.90 (1.768)
C	Piston pin bore	Max.	11.035 (0.4344)
D	Piston ring groove	Max.	1.6 (0.063)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	10.98 (0.4323)
G	Piston ring width	Min.	1.45 (0.057)
H	Piston ring end gap	Max.	0.5 (0.02)
K	Con-rod small end bore	Max.	15.025 (0.5915)
L	Crankshaft runout	Max.	0.05 (0.002)
M	Sprocket bore	Max.	12.80 (0.5039)
N	Clutch drum bore	Max.	70.5 (2.78)
P	Sprocket wear limit	Max.	0.5 (0.02)

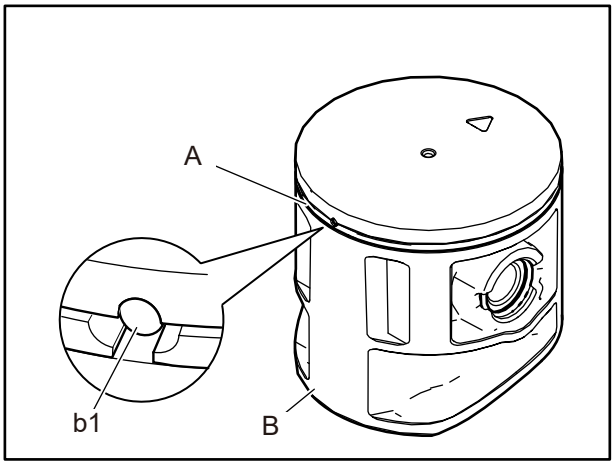
1-5 Special tools



Key	Part Number	Description	Reference
1	897802-33330	Tachometer PET-1000R	Measuring engine speed to adjust carburetor
2	X602-000340	Torx wrench (T27)	Removing and installing Torx bolt
3	897800-79931	Spark tester	Checking ignition system
4	Y089-000111	Puller	Removing magneto rotor (flywheel)
5	91004	Module air gap gauge	Adjusting pole shoe air gaps
6	897803-30133	Pressure tester	Testing carburetor and crankcase leakage
7	897505-16133	Clutch tool	Removing and installing clutch assembly
8	X644-000020	Piston stopper	Locking crankshaft rotation
9	91037	Compression gauge	Measuring cylinder compression
10	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
11	897827-16131	Pressure plate	Plugging intake port to test crankcase / cylinder leakages
12	91041	Pressure rubber plug	Plugging exhaust port to test crankcase / cylinder leakages
13	A131-000150	Pressure connector	Testing crankcase and cylinder leakage
14	91149	Pressure / vacuum tester	Testing tank vent and crankcase leakages
15	897702-30131	Piston pin tool	Removing and installing piston pin
16	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
17	Y089-000094	Carburetor adjustment tool	Adjusting carburetor

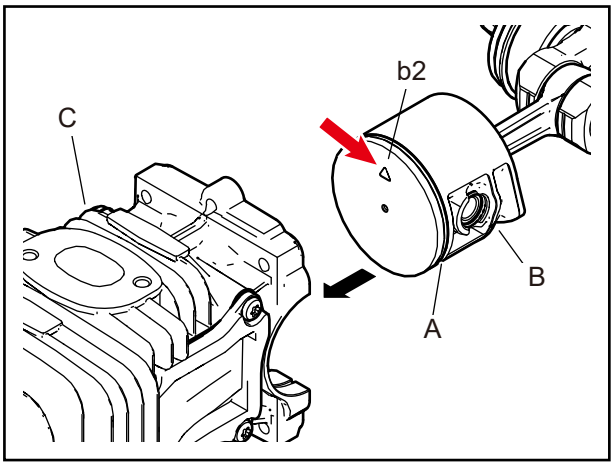
2 SERVICE HINT

2-1 Assembling cylinder and crankcase (upper crankcase and lower crankcase)



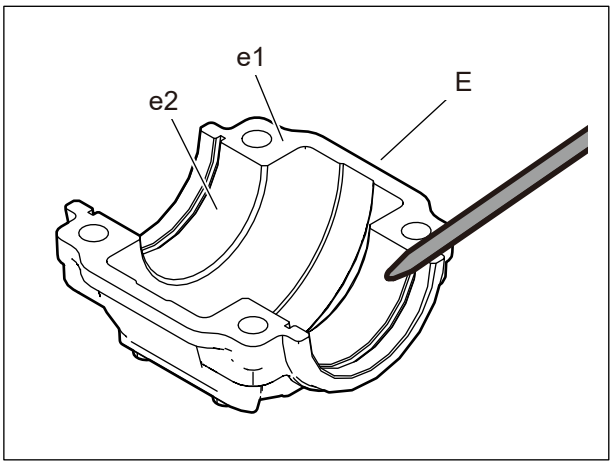
1. Position the end gaps of piston ring (A) around locating pin (b1) of piston (B) as shown.

2. Apply 2-stroke oil to piston ring (A) and internal wall of cylinder.



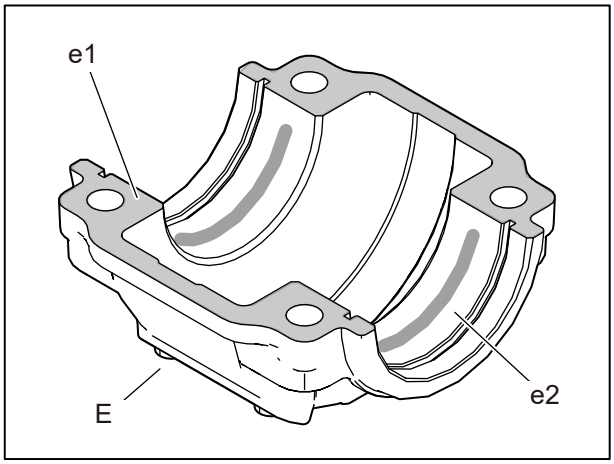
3. Install piston (B) in cylinder (C) with arrow (b2) pointing to muffler side as shown.

NOTE: When installing piston (B) in cylinder (C), do not twist cylinder (C) to avoid brakage of piston ring (A) and scoring cylinder bore.



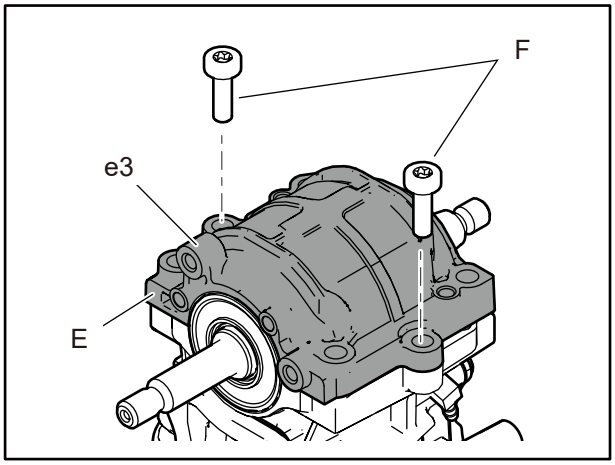
4. Completely remove sealant residue on mating surface (e1) and bearing bore (e2) of crankcase (E) using wooden or plastic scraper, or chemical gasket remover.

2-2 Assembling cylinder and crankcase (Upper crankcase and lower crankcase) (Continued)



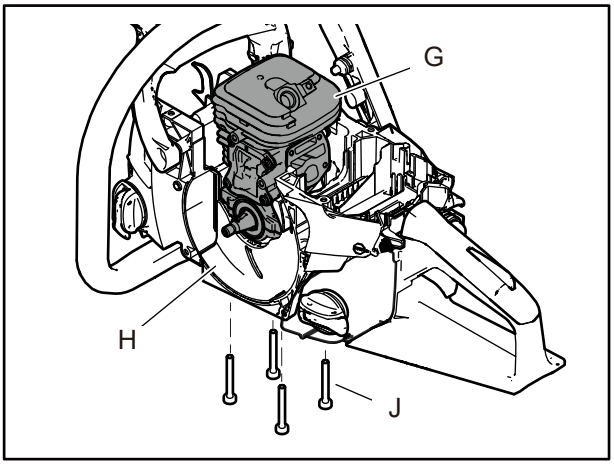
5. Apply adhesive (Loctite #638 or equivalent) on bearing bores (e2) of crankcase (E) as shown.

6. Apply liquid gasket (ThreeBond #1207D or equivalent) on mating surface (e1) of crankcase (E).



7. Set crankcase (E) and fasten two bolts (F).

NOTE: When assembling crankcase (E) to cylinder (C), match them together in correct direction so that boss (e3) of crankcase (E) faces to clutch side.



NOTE: Within 30 minutes, assemble the engine block (G) to engine cover (H) with four bolts (J) before the liquid gasket solidifies.