

How to use this manual

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to their personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts-wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have equipment hoisted in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.

Gasoline vapors and hydrogen gasses from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

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How to use this manual

INTRODUCTION

This base manual covers the service and repair procedures for the Honda GX120UT2/160UT2/200UT2.

Supplements Z, Y, X, W, V, and T are located after the base manual and build upon it for the additional models shown below. UH2 models should be treated as UT2 models because the only difference is the country where the engine was manufactured.

This base manual and included supplements apply to the following models of engines shown below.

Model	Serial Number Range	Supplement						
		Base	Z	Y	X	W	V	T
GX120UT2	GCBMT-1000001 ~ subsequent	•						
GX160UT2	GCBPT-1000001 ~ 3999999	•					•	
GX200UT2	GCBTT-1000001 ~ subsequent	•					•	
GX160UH2	GCBCH-1000001 ~ subsequent	•						
GX200UH2	GCBDH-1000001 ~ subsequent	•						
GX120RT2	GCBMT-1000001 ~ subsequent	•	•					
GX160RT2	GCBPT-4000001 ~ subsequent	•		•				
GX200RT2	GCBTT-1000001 ~ subsequent	•	•					
GX120T2	GCBNT-1000001 ~ subsequent	•			•			
GX160T2	GCBRT-1000001 ~ subsequent	•			•	•		
GX200T2	GCBUT-1000001 ~ subsequent	•			•	•		
GX160UD	GCAHD-1000001 ~ subsequent	•						•
GX200UD	GCAJD-1000001 ~ subsequent	•						•

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As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.

SAFETY MESSAGES

Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.

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SERVICE RULES

- Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may damage the unit.
- Use the special tools designed for the product.
- Install new gaskets, O-rings, etc. when reassembling.
- When torquing bolts or nuts, begin with larger-diameter or inner bolts first and tighten to the specified torque diagonally, unless a particular sequence is specified.
- Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
- After reassembly, check all parts for proper installation and operation.
- Many screws used in this machine are self-tapping. Be aware that cross-threading or overtightening these screws will strip the threads and ruin the hole.

Use only metric tools when servicing this unit. Metric bolts, nuts and screws are not interchangeable with non-metric fasteners. The use of incorrect tools and fasteners will damage the unit.

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommend engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

How to use this manual

ABBREVIATIONS

Throughout this manual, the following abbreviations are used to identify the respective parts or systems.

Abbreviated term	Full term
ACG	Alternator
API	American Petroleum Institute
Approx.	Approximately
Assy.	Assembly
ATDC	After Top Dead Center
ATF	Automatic Transmission Fluid
ATT	Attachment
BAT	Battery
BDC	Bottom Dead Center
BTDC	Before Top Dead Center
BARO	Barometric Pressure
CKP	Crankshaft Position
Comp.	Complete
CMP	Camshaft Position
CYL	Cylinder
DLC	Data Link Connector
EBT	Engine Block Temperature
ECT	Engine Coolant Temperature
ECM	Engine Control Module
EMT	Exhaust Manifold Temperature
EOP	Engine Oil Pressure
EX	Exhaust
F	Front or Forward
GND	Ground
HO2S	Heated Oxygen sensor
IAB	Intake Air Bypass
IAC	Idle Air Control
IAT	Intake Air Temperature
I.D.	Inside diameter
IG or IGN	Ignition
IN	Intake
INJ	Injection
L.	Left
MAP	Manifold Absolute Pressure
MIL	Malfunction Indicator Lamp
O.D.	Outside Diameter
OP	Optional Part
PGM-FI	Programmed-Fuel Injection
P/N	Part Number
Qty	Quantity
R.	Right
SAE	Society of Automotive Engineers
SCS	Service Check Signal
STD	Standard
SW	Switch
TDC	Top Dead Center
TP	Throttle Position
VTEC	Variable Valve Timing & Valve Lift Electronic Control

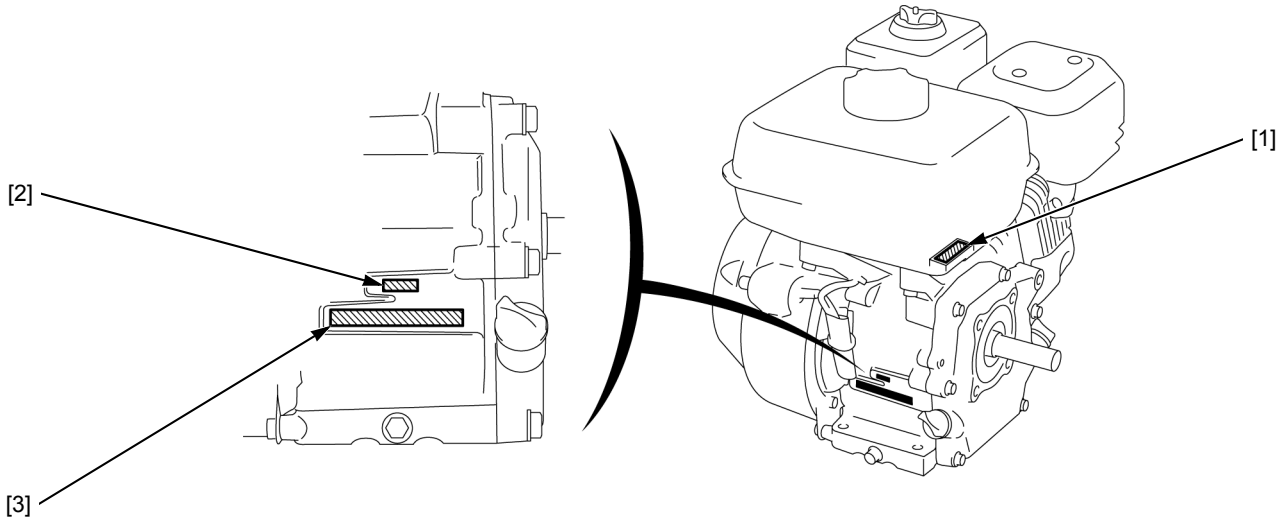
Bl	Black	G	Green	Br	Brown	Lg	Light green
Y	Yellow	R	Red	O	Orange	P	Pink
Bu	Blue	W	White	Lb	Light blue	Gr	Gray

1. SPECIFICATIONS

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SERIAL NUMBER LOCATION

The model [1], type [2], and engine serial number [3] are stamped on the crankcase.
Refer to them when ordering parts or making technical inquiries.



P.T.O. TYPE VARIATION

GX120UT2

P.T.O. type			H			L	P	Q							R	
Type			HH Q4	HX2	HX4	LX4	PX2	QA2	QH2 6	QH Q4	QX2	QX4	QX9	QX C9	QX S2	RH Q4
Air cleaner	Dual		○	○	○	○	○		○	○	○	○			○	○
	Dual silent												○			
	Cyclone													○		
	Low profile															
	Oil bath							○								
	Semi dry															
Muffler	Standard		○	○	○	○	○	○	○	○	○	○				○
	Silent												○	○		
	Low profile														○	
Spark arrester								○						○		
Fuel gauge																
Control base	Manual	Standard					○									
		Cyclone standard														
	Remote	Internal														
		EXP	○	○	○	○		○	○	○	○	○	○		○	○
		Cyclone											○			
Fixed throttle operation																
Charge coil	1 A															
	3 A															
	7 A															
Lamp coil	12 V – 15 W															
	12 V – 25 W															
	12 V – 50 W															○
Starter motor/combination switch																
Oil level switch				○	○	○	○				○	○	○	○	○	
Engine stop switch			○	○	○	○	○	○	○	○	○	○	○	○	○	○
Oil Alert® unit				○	○	○	○				○	○	○	○	○	
Circuit protector																
Reduction	Gear		○	○	○											
	Chain	Without clutch				○										
		With clutch														○

P.T.O. type			S			T	U	V	W
Type			SH Q4	SM A7	SX4	TX2	UX U	VEX 9	WM A3
Air cleaner	Dual		○		○	○	○		
	Dual silent			○				○	
	Cyclone								
	Low profile								
	Semi dry								○
Muffler	Standard		○		○	○	○		○
	Silent			○				○	
	Low profile								
Spark arrester				○					
Fuel gauge									
Control base	Manual	Standard				○	○		○
		Cyclone standard							
	Remote	Internal		○					
		EXP	○		○				
Fixed throttle operation							○		
Charge coil	1 A								
	3 A								
	7 A								
Lamp coil	12 V – 15 W								
	12 V – 25 W								
	12 V – 50 W								
Starter motor/combination switch									
Oil level switch				○	○	○	○	○	
Engine stop switch			○	○	○	○	○	○	○
Oil Alert® unit				○	○	○	○	○	
Circuit protector									
Reduction	Gear								
	Chain	Without clutch							
		With clutch							

GX160UT2

P.T.O. type			H					L			P	Q				
Type			HH2 6	HH Q4	HX2	HX4	HXE 8	LH Q4	LX2	LX4	PXU	QA2	QA X4	QB C2	QH2 6	QH Q4
Air cleaner	Dual		○	○	○	○	○	○	○	○	○		○		○	○
	Dual silent													○		
	Cyclone															
	Low profile															
	Oil bath											○				
	Semi dry															
Muffler	Standard		○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Silent															
	Low profile															
Spark arrester												○		○		
Fuel gauge																
Control base	Manual	Standard									○					
		Cyclone standard														
	Remote	Internal												○		
		EXP	○	○	○	○	○	○	○	○		○	○		○	○
		Cyclone														
Fixed throttle operation																
Charge coil	1 A						○									
	3 A															
	7 A												○			
Lamp coil	12 V – 15 W															
	12 V – 25 W															
	12 V – 50 W															
Starter motor/combination switch							○									
Oil level switch					○	○	○		○	○	○		○			
Engine stop switch			○	○	○	○		○	○	○	○	○		○	○	
Oil Alert® unit					○	○	○		○	○	○		○			
Circuit protector							○									
Reduction	Gear		○	○	○	○	○									
	Chain	Without clutch						○	○	○						
		With clutch														

P.T.O. type			Q										R			
Type			QM C6	QM C8	QM D6	QX2	QX4	QX9	QX C9	QX E2	QX E8	QX S2	QX U	RH2	RH Q4	RX4
Air cleaner	Dual					○	○			○	○	○	○	○	○	○
	Dual silent			○	○			○								
	Cyclone								○							
	Low profile															
	Oil bath															
	Semi dry		○													
Muffler	Standard		○			○	○		○	○	○		○	○	○	○
	Silent			○	○			○								
	Low profile											○				
Spark arrester				○	○				○							
Fuel gauge																
Control base	Manual	Standard														
		Cyclone standard														
	Remote	Internal		○	○											
		EXP	○			○	○	○		○	○	○	○	○	○	○
		Cyclone							○							
Fixed throttle operation																
Charge coil	1 A									○	○					
	3 A															
	7 A															
Lamp coil	12 V – 15 W															
	12 V – 25 W															
	12 V – 50 W		○		○							○				
Starter motor/combination switch									○	○						
Oil level switch				○	○	○	○	○	○	○	○	○	○			○
Engine stop switch			○	○	○	○	○	○	○			○	○	○	○	
Oil Alert® unit				○	○	○	○	○	○	○	○	○			○	
Circuit protector									○	○						
Reduction	Gear															
	Chain	Without clutch														
		With clutch												○	○	○

SPECIFICATIONS

GX120•GX160•GX200UT2

P.T.O. type		R	S							T			U	V	
Type		RX U	SD1 6	SH Q4	SM C7	SM C9	SX4	SX9	SXU	TX2	TX4	TXC 9	UX U	VA2	VSD 9
Air cleaner	Dual	○		○			○		○	○	○		○	○	
	Dual silent				○	○		○							○
	Cyclone											○			
	Low profile														
	Oil bath														
	Semi dry		○												
Muffler	Standard	○	○	○			○		○	○	○	○	○	○	
	Silent				○	○		○							○
	Low profile														
Spark arrester					○	○								○	
Fuel gauge															
Control base	Manual	Standard								○	○		○	○	
		Cyclone standard										○			
	Remote	Internal				○	○								
		EXP	○	○	○			○	○	○					
	Cyclone														
Fixed throttle operation															○
Charge coil	1 A														
	3 A														
	7 A														
Lamp coil	12 V – 15 W														
	12 V – 25 W						○								
	12 V – 50 W														
Starter motor/combination switch															
Oil level switch		○			○	○	○	○	○	○	○	○	○	○	○
Engine stop switch		○	○	○	○	○	○	○	○	○	○	○	○	○	○
Oil Alert® unit		○			○	○	○	○	○	○	○	○	○	○	○
Circuit protector															
Reduction	Gear														
	Chain	Without clutch													
		With clutch	○												

P.T.O. type			V			W		
Type			VX2	VXE 9	VXU 1	WK S	WK T2	WM BO
Air cleaner	Dual		○		○			
	Dual silent			○				
	Cyclone							
	Low profile							
	Oil bath							
	Semi dry					○	○	○
Muffler	Standard		○		○	○	○	○
	Silent			○				
	Low profile							
Spark arrester							○	
Fuel gauge								
Control base	Manual	Standard	○	○		○		○
		Cyclone standard						
	Remote	Internal					○	
		EXP						
	Cyclone							
Fixed throttle operation					○			
Charge coil	1 A			○				
	3 A							
	7 A							
Lamp coil	12 V – 15 W							
	12 V – 25 W							
	12 V – 50 W							
Starter motor/combination switch				○				
Oil level switch			○	○	○	○	○	
Engine stop switch			○		○	○	○	○
Oil Alert® unit			○	○	○	○	○	
Circuit protector				○				
Reduction	Gear							
	Chain	Without clutch						
		With clutch						

GX200UT2

P.T.O. type		H	L	P	Q								R		
Type		HX2	LX4	PXU	QH2 6	QH Q4	QX2	QX4	QX9	QX B2	QX C9	QX E2	QX E4	RH2	RH Q4
Air cleaner	Dual														
	Dual silent	○	○	○	○	○	○	○	○	○		○	○	○	○
	Cyclone										○				
	Low profile														
	Oil bath														
	Semi dry														
Muffler	Standard	○	○	○	○	○	○	○		○	○	○	○	○	○
	Silent							○							
	Low profile														
Spark arrester															
Fuel gauge															
Control base	Manual	Standard			○										
		Cyclone standard													
	Remote	Internal								○					
		EXP	○	○		○	○	○	○			○	○	○	○
		Cyclone									○				
Fixed throttle operation															
Charge coil	1 A											○	○		
	3 A														
	7 A														
Lamp coil	12 V – 15 W														
	12 V – 25 W														
	12 V – 50 W														
Starter motor/combination switch												○	○		
Oil level switch		○	○	○			○	○	○		○	○	○		
Engine stop switch		○	○	○	○	○	○	○		○				○	○
Oil Alert® unit		○	○	○			○	○	○		○	○	○		
Circuit protector												○	○		
Reduction	Gear		○												
	Chain	Without clutch		○											
		With clutch												○	○

P.T.O. type			R		S			T	V			
Type			RX4	RXU	SHQ4	SX4	SX9	SXU	TX2	VSD9	VXU	VXU1
Air cleaner	Dual											
	Dual silent		○	○	○	○	○	○	○	○	○	○
	Cyclone											
	Low profile											
	Oil bath											
Muffler	Semi dry											
	Standard		○	○	○	○		○	○		○	○
	Silent						○			○		
Low profile												
Spark arrester												
Fuel gauge												
Control base	Manual	Standard							○			
		Cyclone standard										
	Remote	Internal										
		EXP	○	○	○	○	○	○				
	Cyclone											
Fixed throttle operation										○	○	○
Charge coil	1 A											
	3 A											
	7 A											
Lamp coil	12 V – 15 W											
	12 V – 25 W											
	12 V – 50 W											
Starter motor/combination switch												
Oil level switch			○	○		○	○	○	○	○	○	○
Engine stop switch			○	○	○	○	○	○	○	○	○	○
Oil Alert® unit			○	○		○	○	○	○	○	○	○
Circuit protector												
Reduction	Gear											
	Chain	Without clutch										
		With clutch	○	○								

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX120UT2	GX160UT2	GX200UT2
Overall length	H *	370 mm (14.6 in)	377 mm (14.8 in)	386 mm (15.2 in)
	L *	332 mm (13.1 in)	343 mm (13.5 in)	352 mm (13.9 in)
	P, Q, T *	305.5 mm (12.03 in)	312.5 mm (12.30 in)	321.5 mm (12.66 in)
	R *	384 mm (15.1 in)	391 mm (15.4 in)	400 mm (15.7 in)
	S *	297 mm (11.7 in)	304 mm (12.0 in)	313 mm (12.3 in)
	U *	309.8 mm (12.20 in)	316.8 mm (12.47 in)	–
	V *	315.5 mm (12.42 in)	322.5 mm (12.70 in)	331.5 mm (13.05 in)
	W *	317.5 mm (12.50 in)	329.5 mm (12.97 in)	–
Overall width	H *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	L *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	P, Q, T *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	R *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	S *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	U *	346 mm (13.6 in)	362 mm (14.3 in)	–
	V *	346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
	W *	346 mm (13.6 in)	362 mm (14.3 in)	–
Overall height	H *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	L *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	P, Q, T *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	R *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	S *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	U *	329 mm (13.0 in)	346 mm (13.6 in)	–
	V *	329 mm (13.0 in)	346 mm (13.6 in)	346 mm (13.6 in)
	W *	329 mm (13.0 in)	346 mm (13.6 in)	–
Dry weight	H *	15.5 kg (34.2 lbs)	17.6 kg (38.8 lbs)	18.6 kg (41.0 lbs)
	L *	14.0 kg (30.9 lbs)	16.1 kg (35.5 lbs)	17.1 kg (37.7 lbs)
	P, Q, T *	13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
	R *	18.0 kg (39.7 lbs)	20.0 kg (44.1 lbs)	21.0 kg (46.3 lbs)
	S *	13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
	U *	13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	–
	V *	13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
	W *	13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	–
Operating weight	H *	18.0 kg (39.7 lbs)	21.1 kg (46.5 lbs)	22.1 kg (48.7 lbs)
	L *	16.5 kg (36.4 lbs)	19.6 kg (43.2 lbs)	20.6 kg (45.4 lbs)
	P, Q, T *	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	R *	21.0 kg (46.3 lbs)	24.0 kg (52.9 lbs)	25.0 kg (55.1 lbs)
	S *	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	U *	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	–
	V *	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	W *	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	–

*: P. T. O. type. [\(page 1-2\)](#)

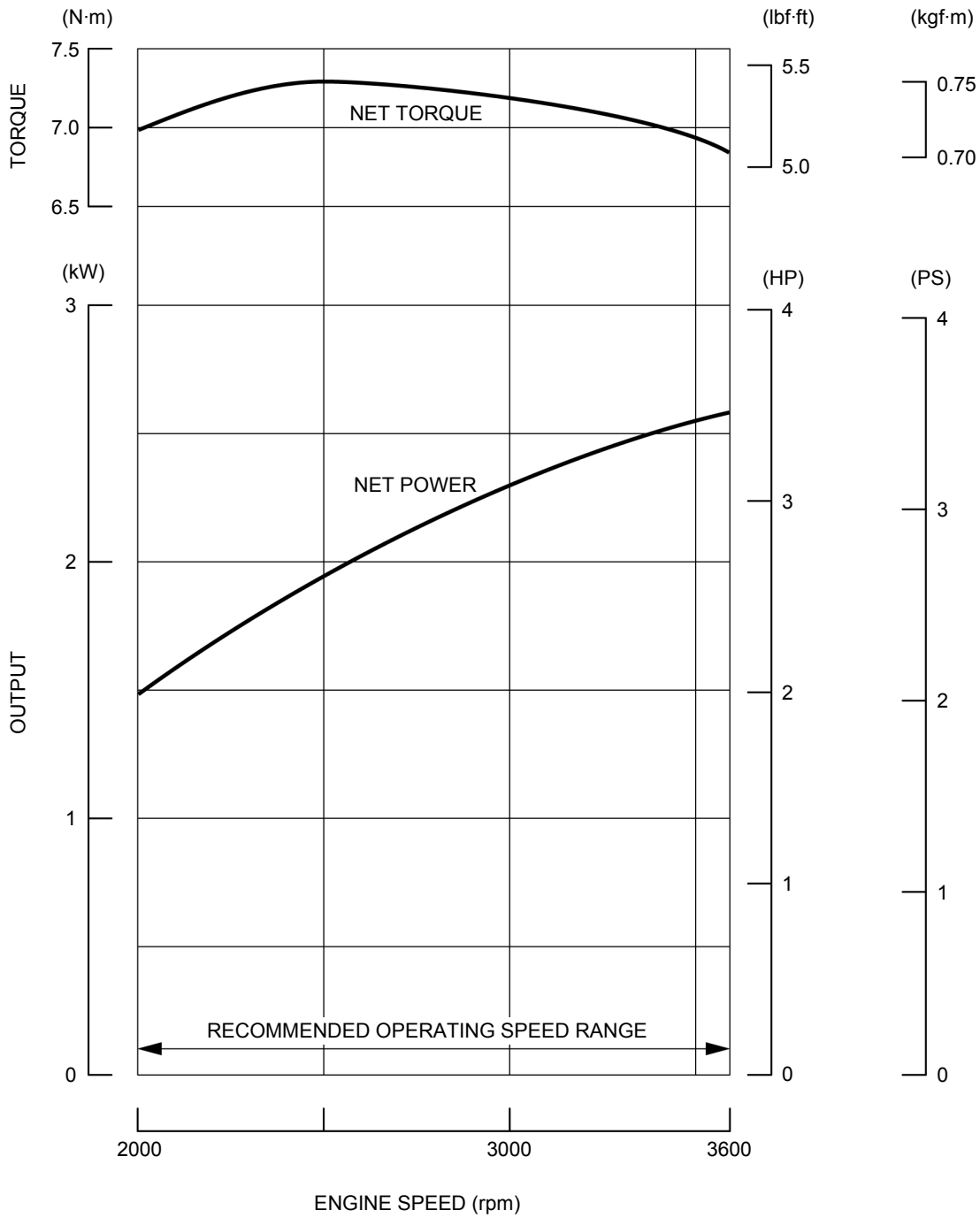
ENGINE SPECIFICATIONS

Model	GX120UT2		GX160UT2		GX200UT2	
Description code	GCBMT		GCBPT		GCBTT	
Type	4 stroke, overhead valve, single cylinder, inclined by 25°					
Displacement	118 cm ³ (7.2 cu-in)		163 cm ³ (9.9 cu-in)		196 cm ³ (12.0 cu-in)	
Bore x stroke	66.0 x 42.0 mm (2.60 x 1.65 in)		68.0 x 45.0 mm (2.68 x 1.77 in)		68.0 x 54.0 mm (2.68 x 2.13 in)	
Net power (SAE J1349) *1	2.6 kW (3.5 HP)/ 3,600 min ⁻¹ (rpm)		3.6 kW (4.9 HP)/ 3,600 min ⁻¹ (rpm)		4.1 kW (5.6 HP)/ 3,600 min ⁻¹ (rpm)	
Continuous rated power	2.1 kW (2.9 HP)/ 3,600 min ⁻¹ (rpm)		2.9 kW (3.9 HP)/ 3,600 min ⁻¹ (rpm)		3.7 kW (5.0 HP)/ 3,600 min ⁻¹ (rpm)	
Maximum net torque (SAE J1349) *1	7.3 N·m (0.7 kgf·m, 5.4 lbf·ft)/2,500 min ⁻¹ (rpm)		10.3 N·m (1.1 kgf·m, 7.6 lbf·ft)/2,500 min ⁻¹ (rpm)		12.4 N·m (1.3 kgf·m, 9 lbf·ft)/2,500 min ⁻¹ (rpm)	
Compression ratio	8.5 : 1		9.0 : 1		8.5 : 1	
Fuel consumption (at continuous rated power)	1.0 Liter (0.26 US gal, 0.22 Imp gal)/h		1.4 Liters (0.37 US gal, 0.31 Imp gal)/h		1.7 Liters (0.45 US gal, 0.37 Imp gal)/h	
Ignition system	C.D.I. (Capacitor Discharge Ignition) type magneto ignition					
Ignition timing	B.T.D.C. 20°/ 1,400 min ⁻¹ (rpm)		B.T.D.C. 18°/ 1,400 min ⁻¹ (rpm)		B.T.D.C. 20°/ 1,400 min ⁻¹ (rpm)	
Recommended spark plug	BPR6ES (NGK)/W20EPR-U (DENSO)					
Lubrication system	Forced splash					
Oil capacity	0.56 Liter (0.59 US qt, 0.49 Imp qt)		0.58 Liter (0.61 US qt, 0.51 Imp qt)		0.60 Liter (0.63 US qt, 0.53 Imp qt)	
Recommended oil	SAE 10W-30 API service category SJ or higher					
Cooling system	Forced air					
Starting system	Recoil Starter		Recoil or Recoil and electric starter		Recoil or Recoil and electric starter	
Stopping system	Ignition exciter coil circuit open					
Carburetor	Horizontal type, butterfly valve					
Air cleaner	Dual type, Dual silent type, Semi dry type, Oil bath type, Cyclone type				Dual silent type, Cyclone type	
Governor	Mechanical centrifugal					
Breather system	Reed valve type					
Fuel used	Unleaded gasoline with a pump octane rating 86 or higher					
Fuel tank capacity	2.0 Liters (0.53 US gal, 0.44 Imp gal)		3.1 Liters (0.82 US gal, 0.68 Imp gal)			
Reduction case oil capacity	Gear type	0.15 Liter (0.16 US qt, 0.13 Imp qt)				
	Chain type (without clutch)	Shared with engine oil				
	Chain type (with clutch)	0.50 Liter (0.53 US qt, 0.44 Imp qt)				
Clutch	Type	Centrifugal				
	Engagement start	1,800 min ⁻¹ (rpm)				
	Lock	2,200 min ⁻¹ (rpm)				

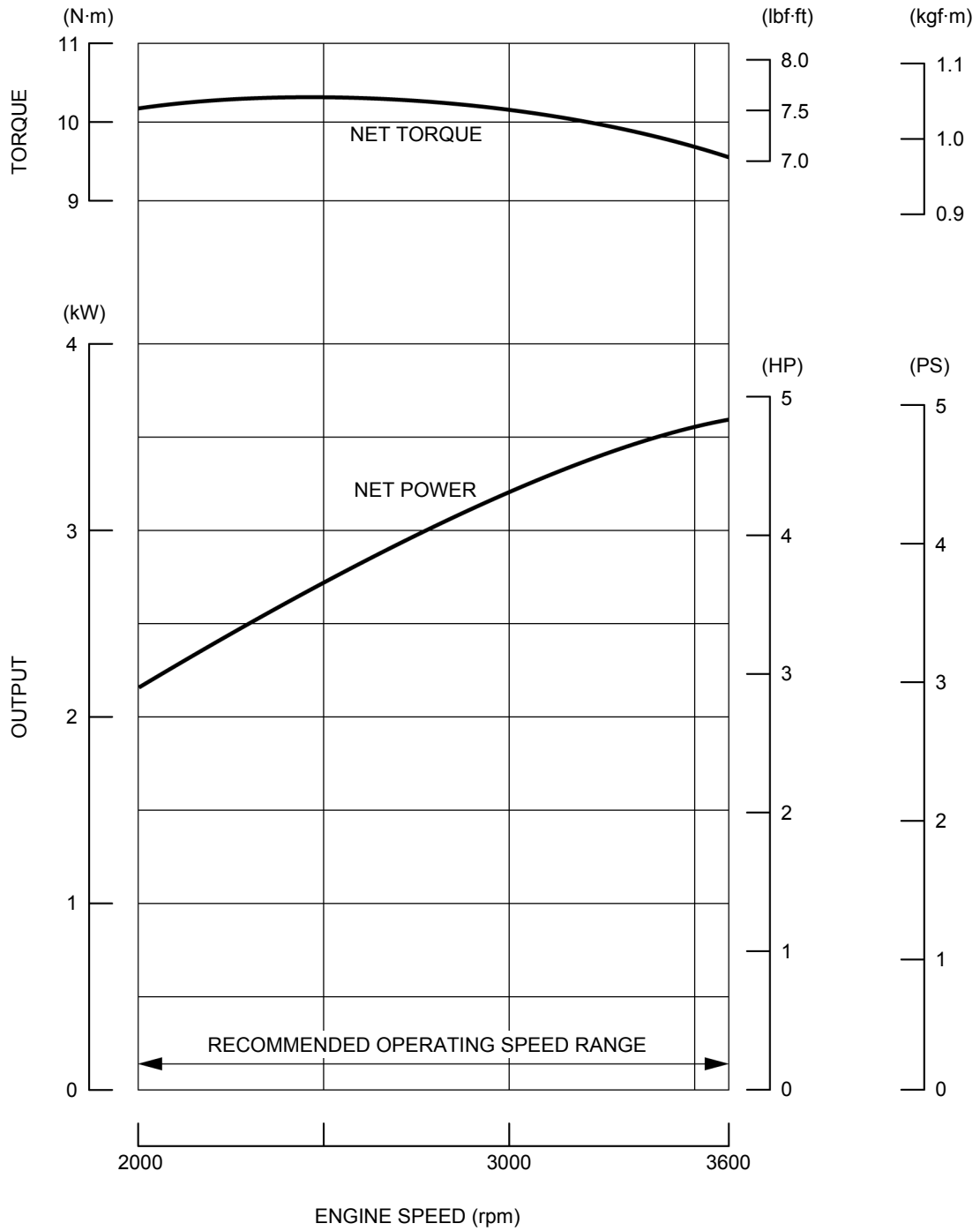
*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

PERFORMANCE CURVES

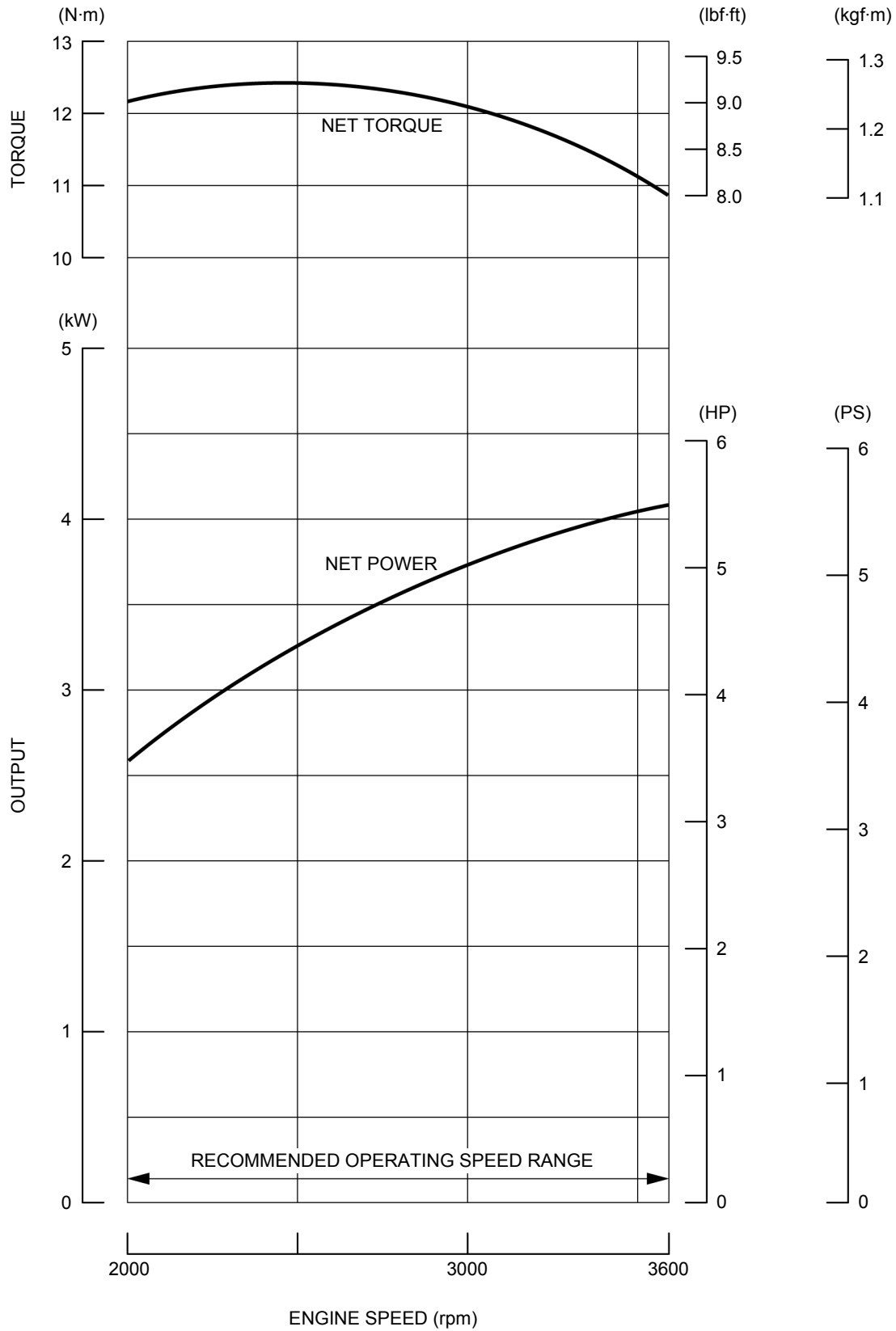
GX120



GX160



GX200

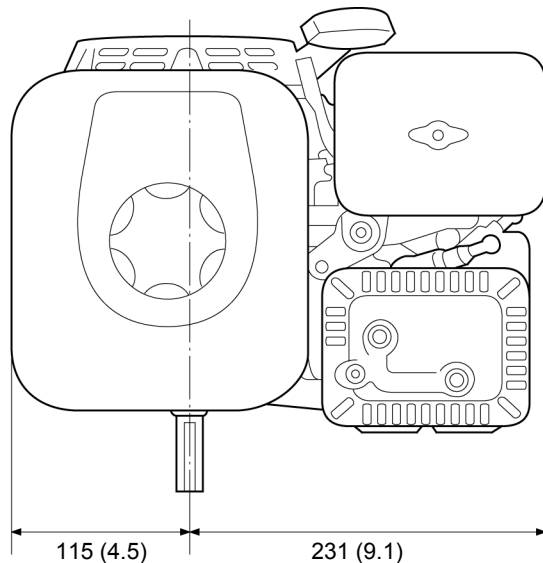


DIMENSIONAL DRAWINGS

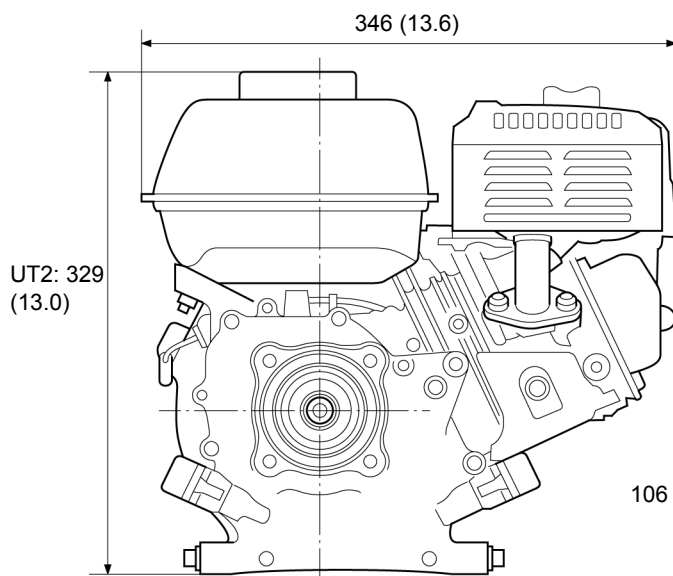
*: P.T.O. type: [\(page 1-2\)](#)

GX120 (WITHOUT REDUCTION)

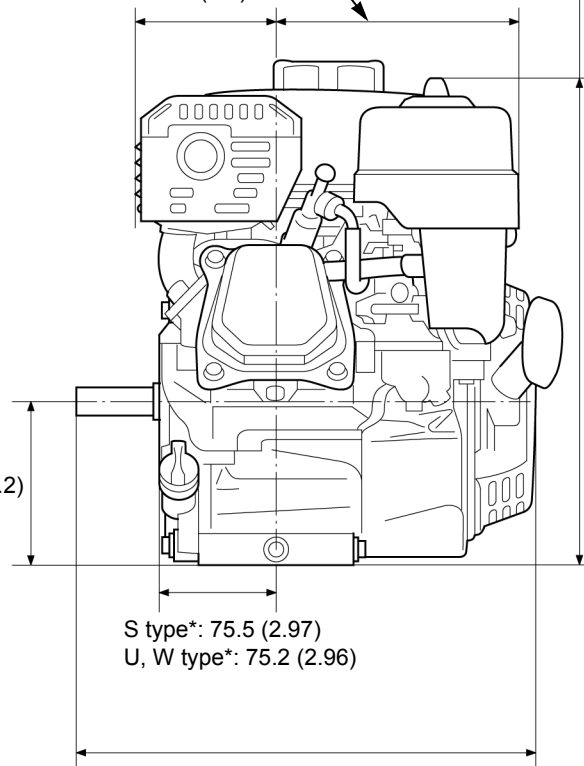
Unit: mm (in)



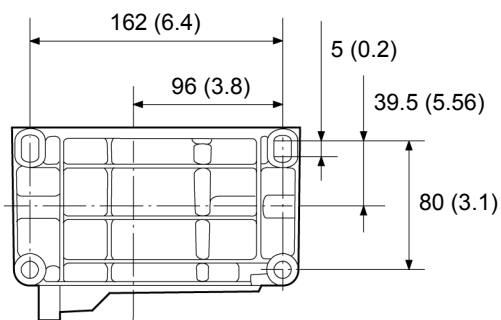
- Dual/dual silent: 160 (6.3)
- Cyclone: 166 (6.5)
- Oil bath: 157 (6.2)
- Semi dry: 156 (6.1)
- Dual/dual silent: 317 (12.5)
- Cyclone/Oil bath: 330 (13.0)
- Semi dry: 314 (12.4)



- Standard: 91 (3.6)
- Silent: 104 (4.1)



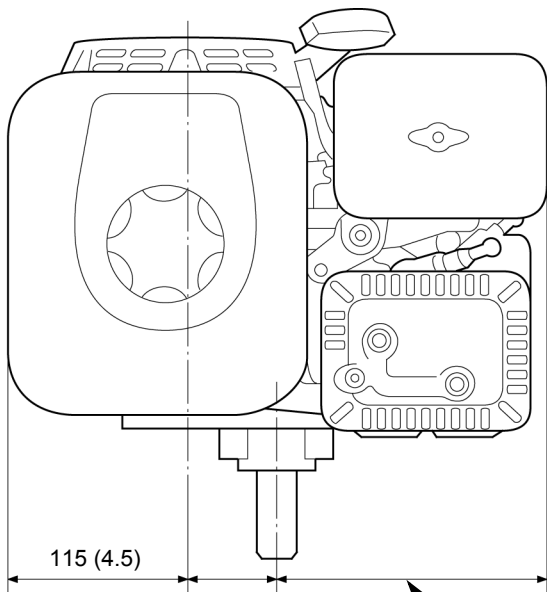
- S type*: 75.5 (2.97)
- U, W type*: 75.2 (2.96)



- P type*: 305.5 (12.03)
- Q type*: 305.5 (12.03)
- S type*: 297 (11.7)
- T type*: 305.5 (12.03)
- U type*: 309.8 (12.20)
- V type*: 315.5 (12.42)
- W type*: 317.5 (12.50)

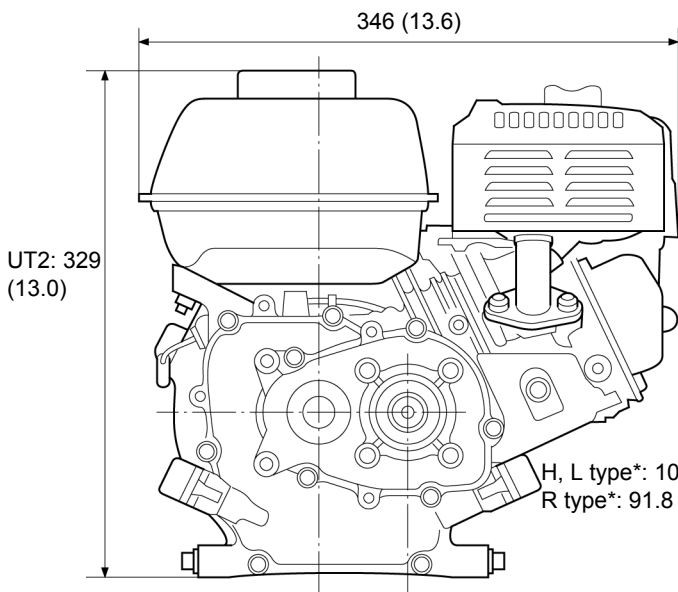
GX120 (WITH REDUCTION)

Unit: mm (in)



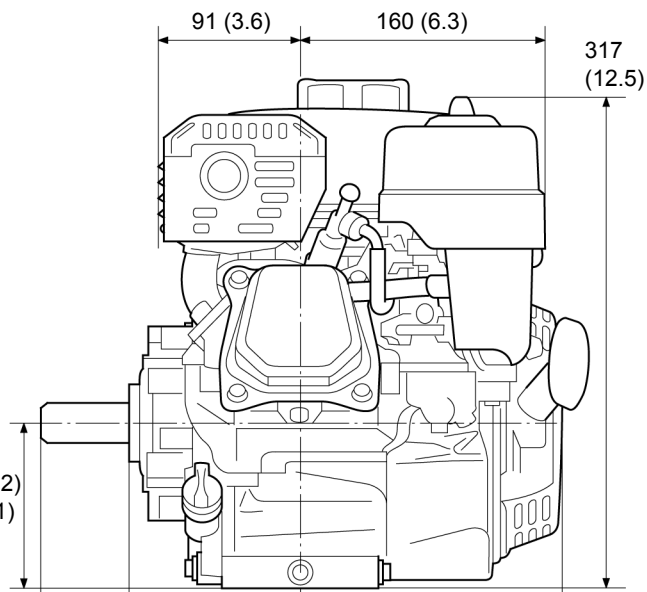
H type*: 45.1 (1.78)
 L type*: 66.1 (2.60)
 R type*: 89.7 (3.53)

H type*: 185.9 (7.32)
 L type*: 164.9 (6.49)
 R type*: 141.3 (5.56)



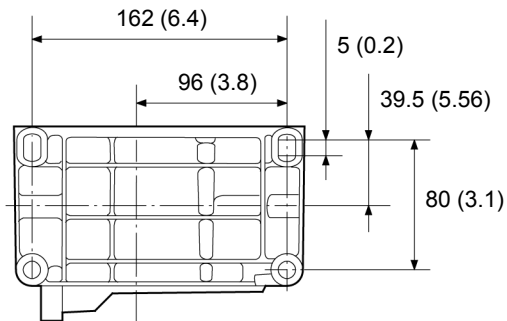
UT2: 329
 (13.0)

H, L type*: 106 (4.2)
 R type*: 91.8 (3.61)



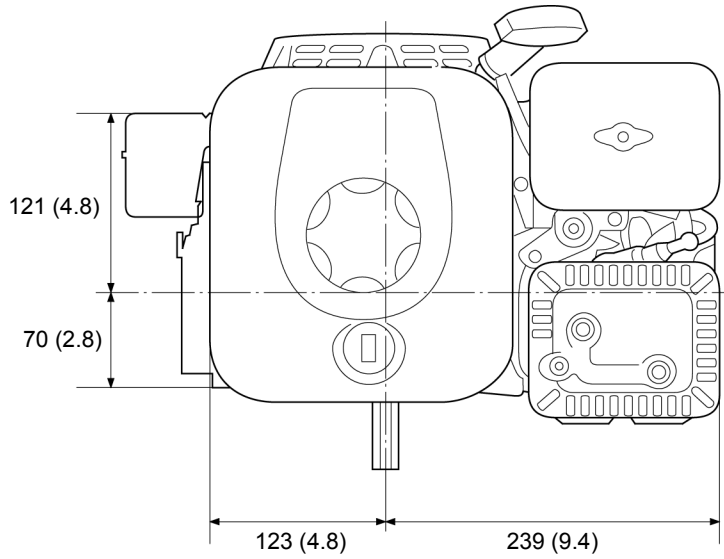
H type*: 151.2 (5.95)
 L type*: 110 (4.3)
 R type*: 162.8 (6.41)

H type*: 370 (14.6)
 L type*: 332 (13.1)
 R type*: 384 (15.1)



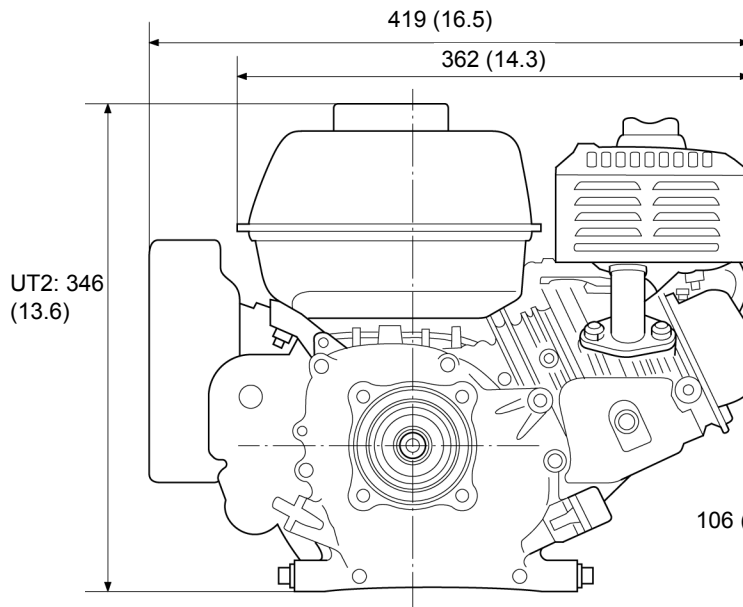
GX160 (WITHOUT REDUCTION)

Unit: mm (in)

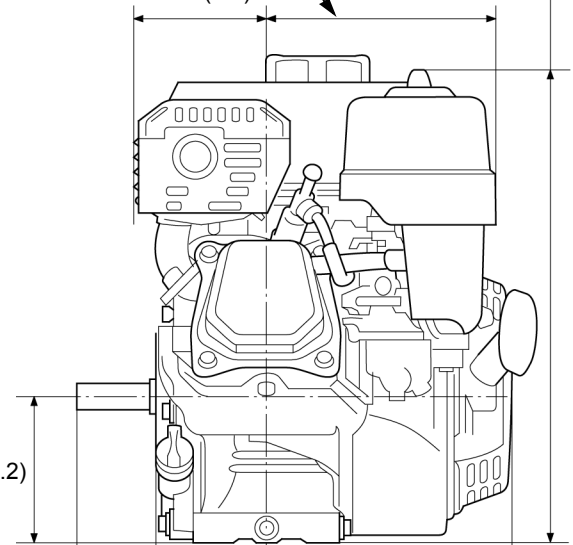


Dual/dual silent: 160 (6.3)
 Cyclone: 168 (6.6)
 Oil bath: 159 (6.3)
 Semi dry: 156 (6.1)

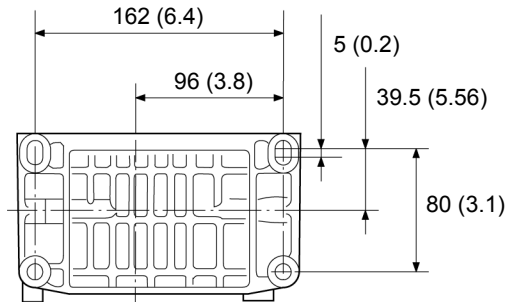
Dual/dual silent: 337 (13.3)
 Cyclone/Oil bath/Semi dry: 333 (13.1)



Standard: 93 (3.7)
 Silent: 106 (4.2)



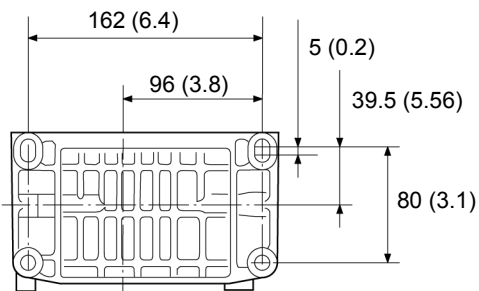
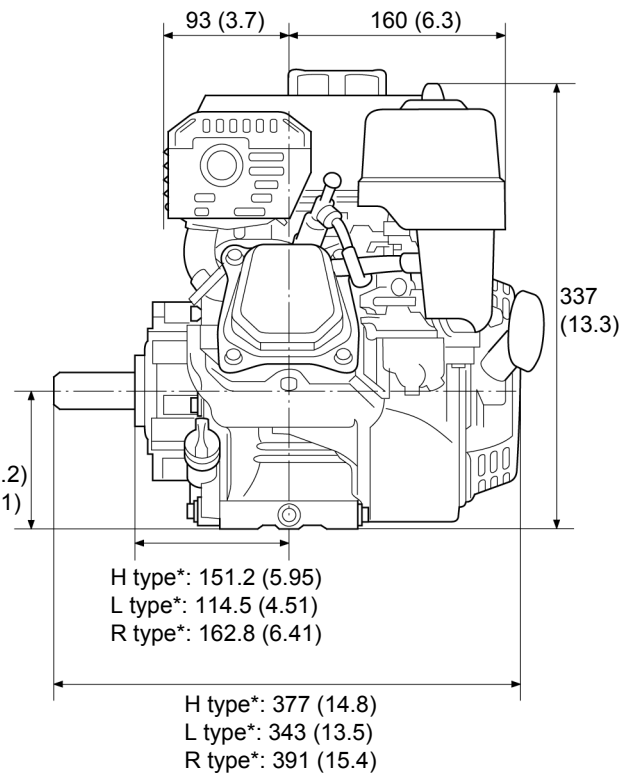
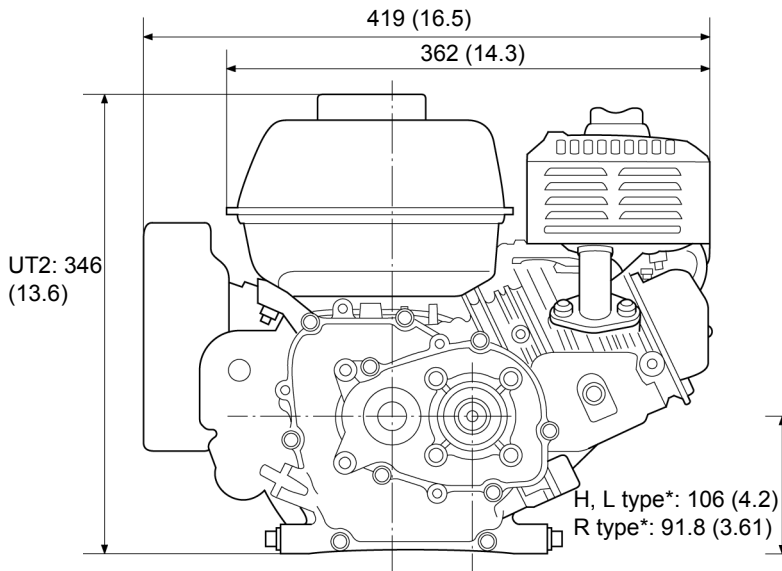
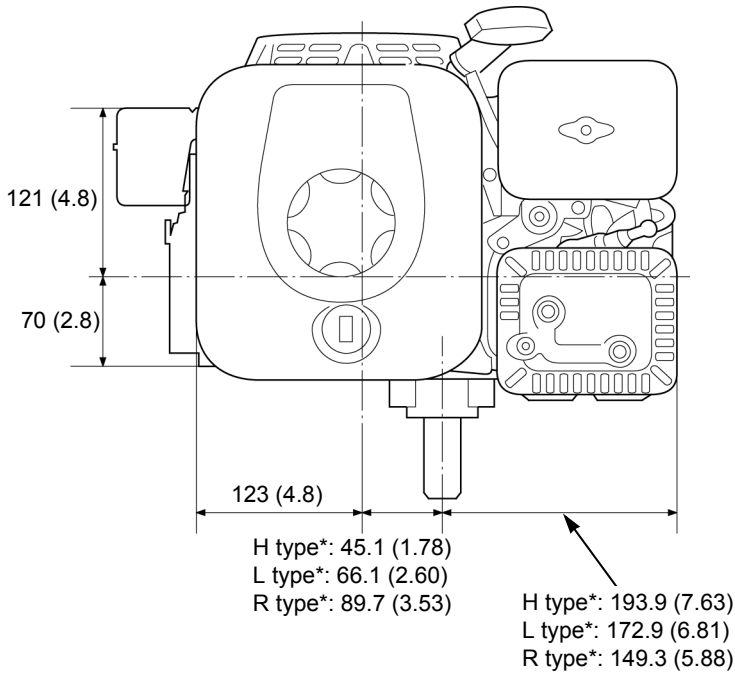
S type*: 75.5 (2.97)
 U, W type*: 75.2 (2.96)



P type*: 312.5 (12.30)
 Q type*: 312.5 (12.30)
 S type*: 304 (12.0)
 T type*: 312.5 (12.30)
 U type*: 316.8 (12.47)
 V type*: 322.5 (12.70)
 W type*: 329.5 (12.97)

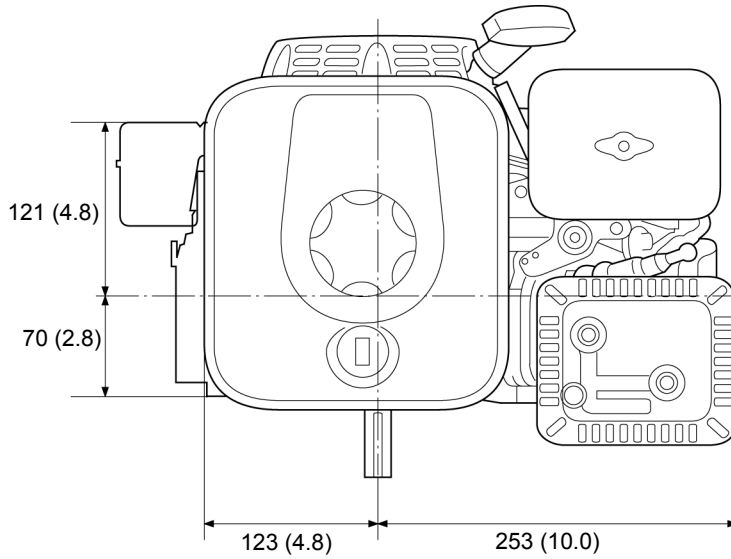
GX160 (WITH REDUCTION)

Unit: mm (in)

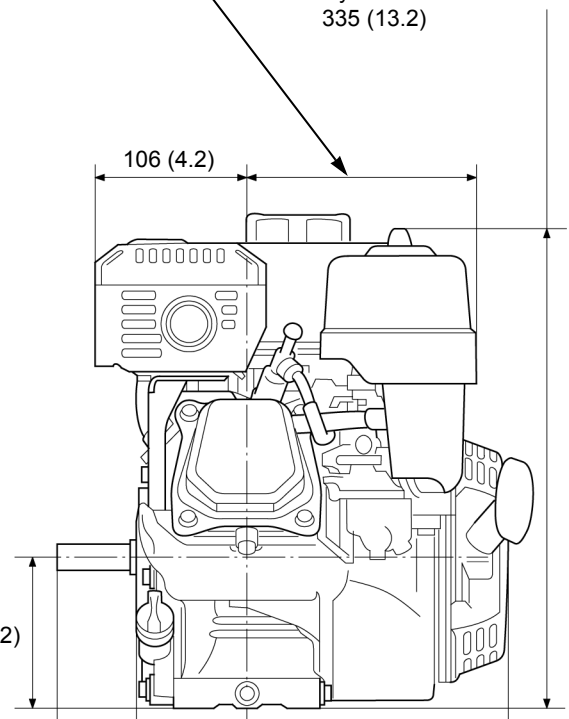
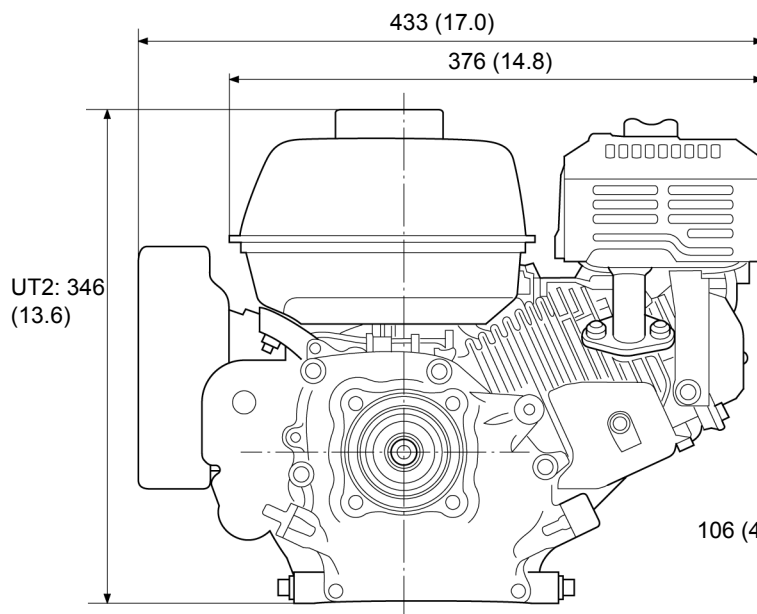


GX200 (WITHOUT REDUCTION)

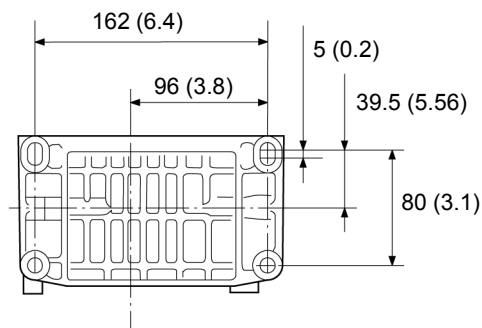
Unit: mm (in)



Dual/dual silent: 160 (6.3)
Cyclone: 168 (6.6)
Oil bath: 159 (6.3)
Semi dry: 156 (6.1) Dual/dual silent: 339 (13.3)
Cyclone/Oil bath/Semi dry: 335 (13.2)



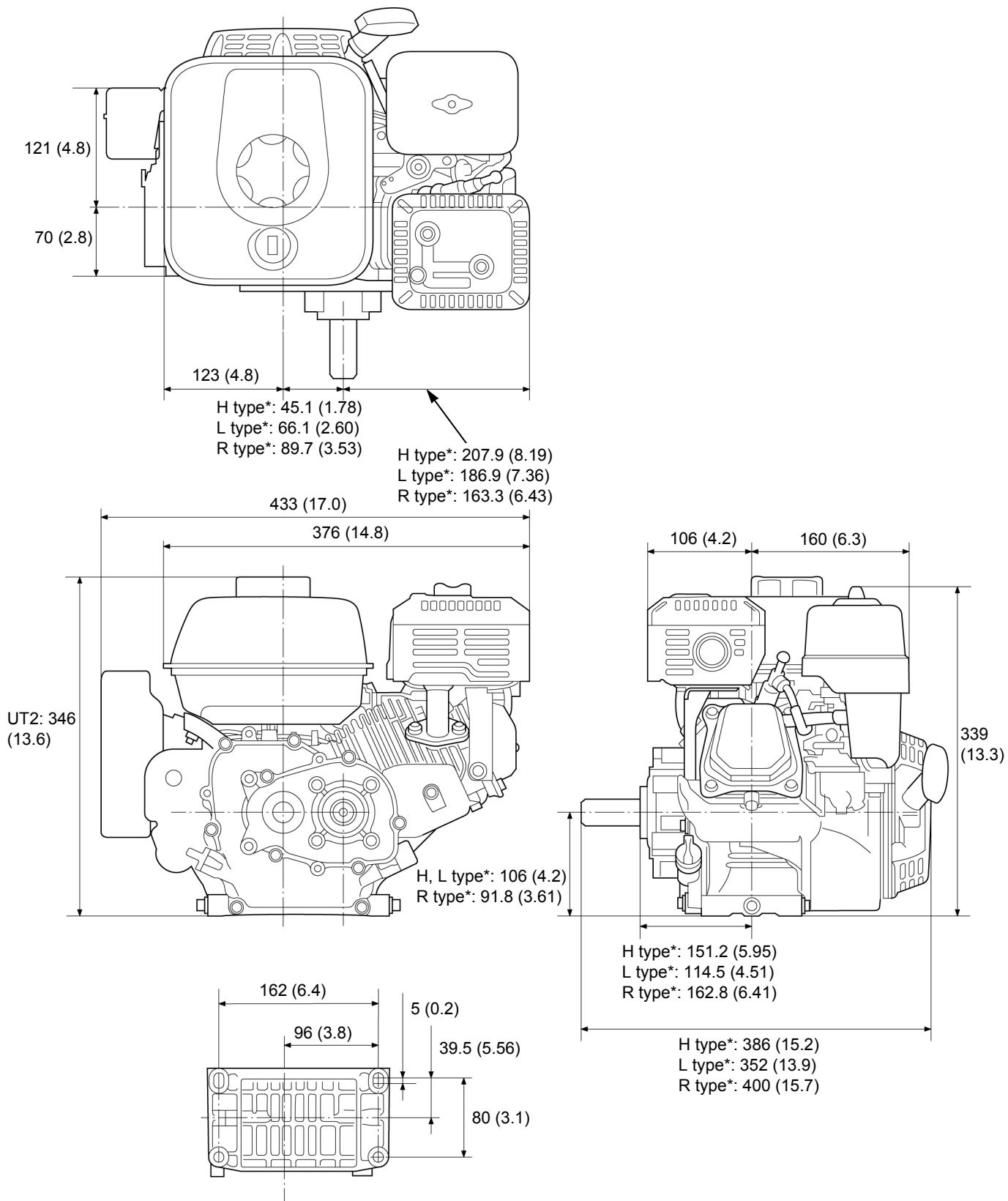
S type*: 75.5 (2.97)
U, W type*: 75.2 (2.96)



P type*: 321.5 (12.66)
Q type*: 321.5 (12.66)
S type*: 313 (12.3)
T type*: 321.5 (12.66)
V type*: 331.5 (13.05)

GX200 (WITH REDUCTION)

Unit: mm (in)

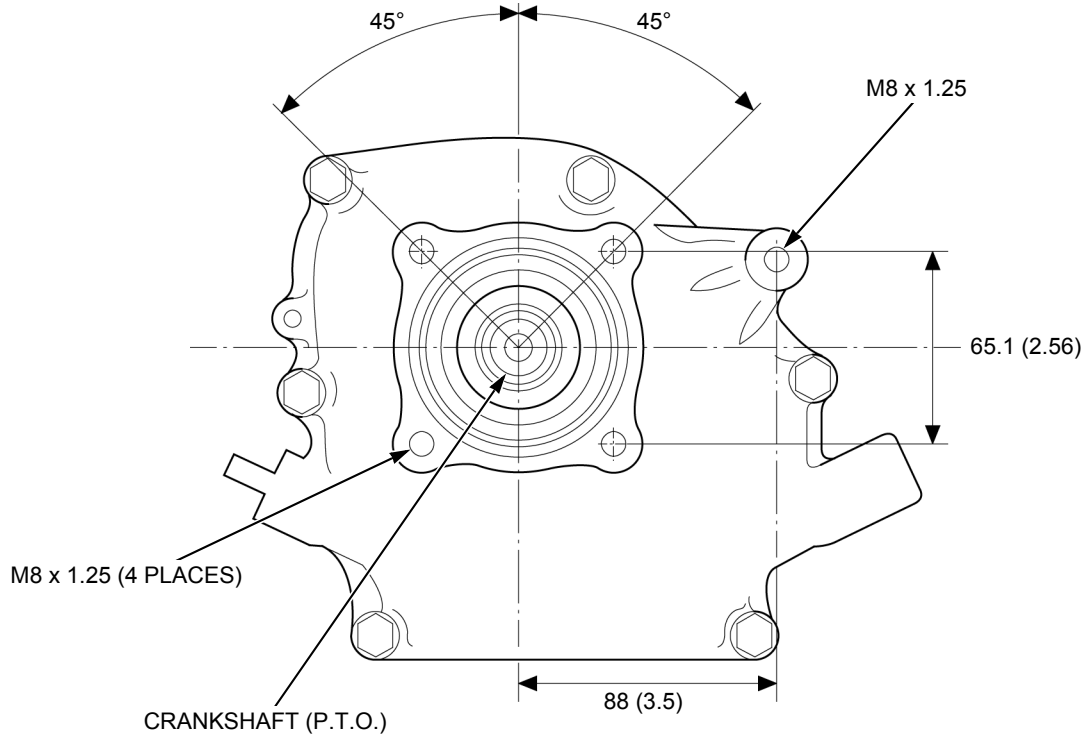


P.T.O. DIMENSIONAL DRAWINGS

*: P.T.O. type. [\(page 1-2\)](#)

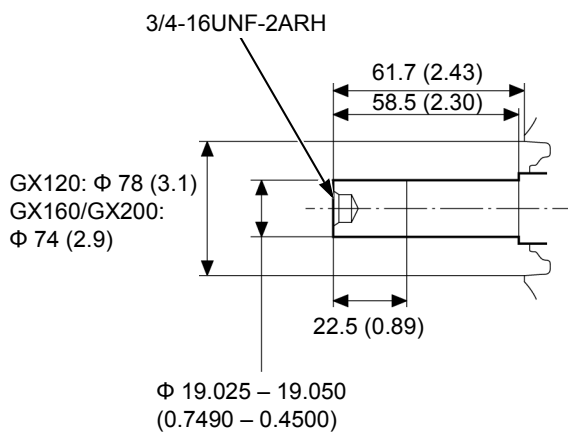
WITHOUT REDUCTION

Unit: mm (in)



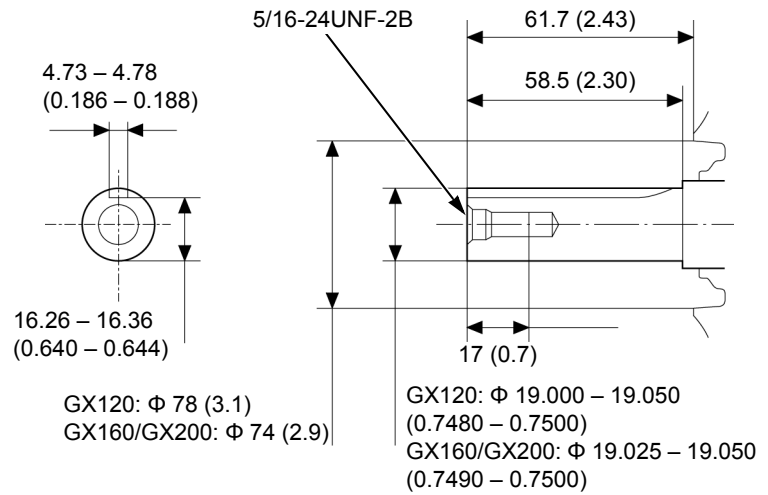
P type*

Unit: mm (in)

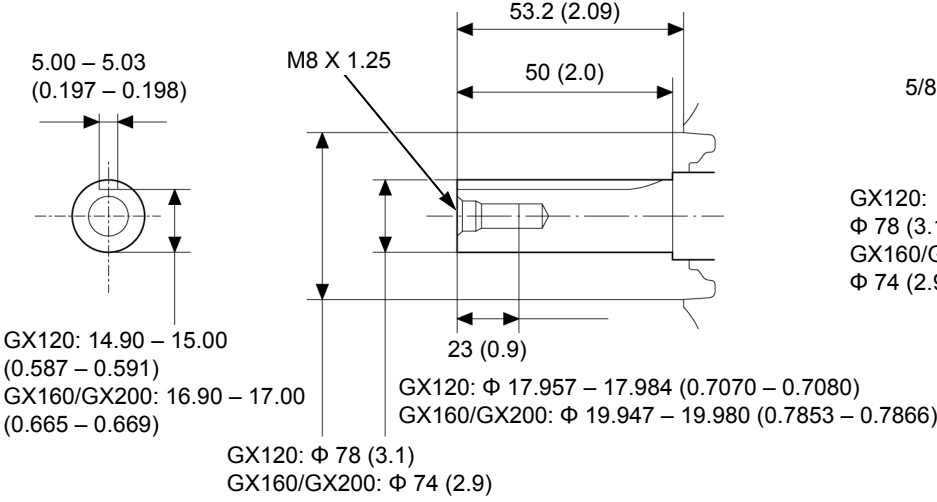


Q type*

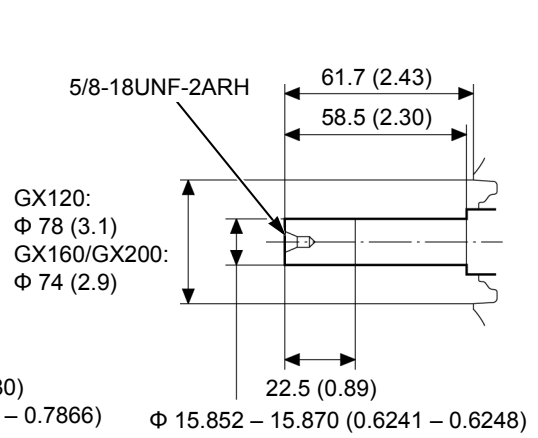
Unit: mm (in)



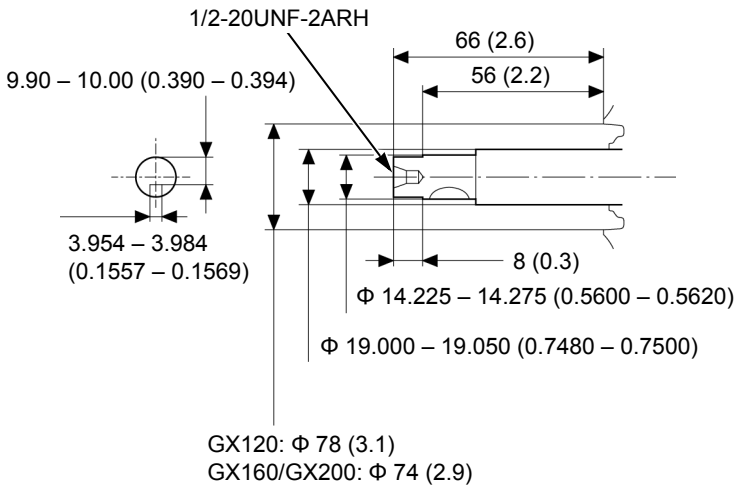
S type* Unit: mm (in)



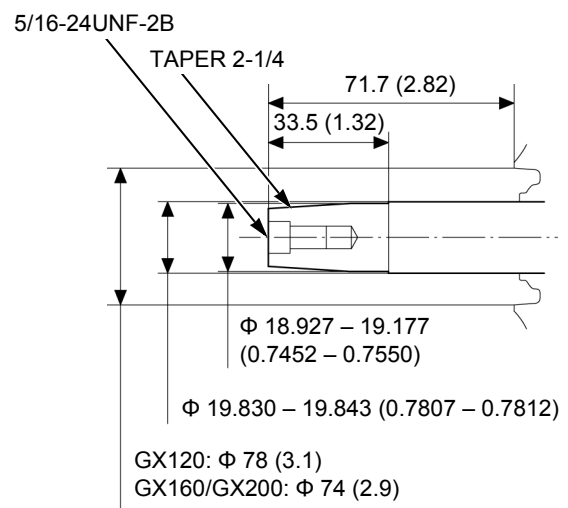
T type* Unit: mm (in)



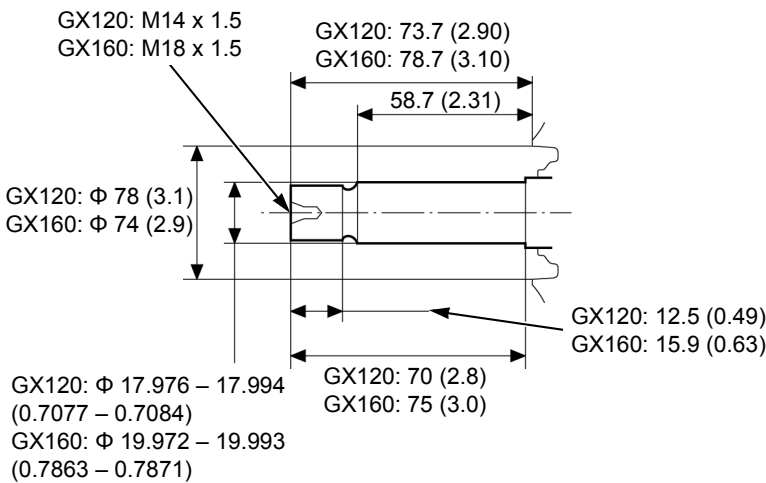
U type* Unit: mm (in)



V type* Unit: mm (in)



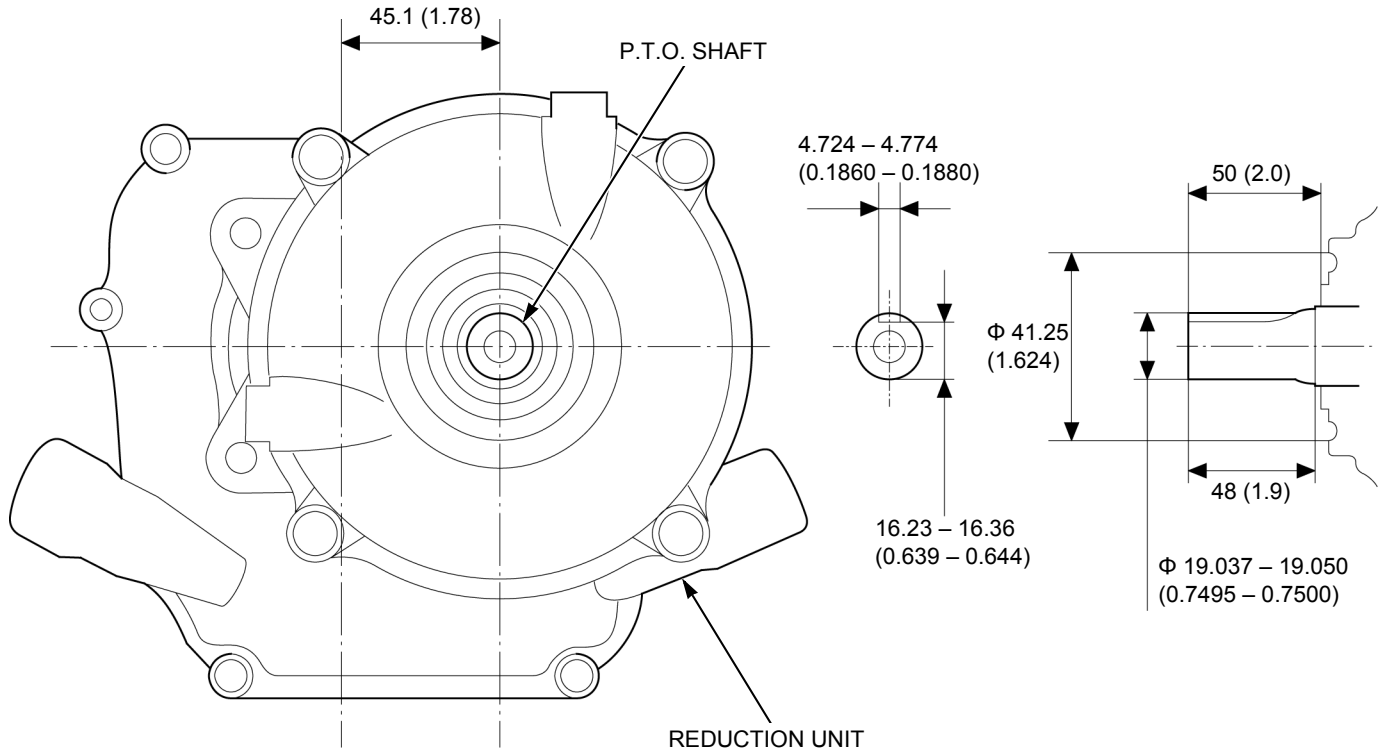
W type* Unit: mm (in)



WITH REDUCTION

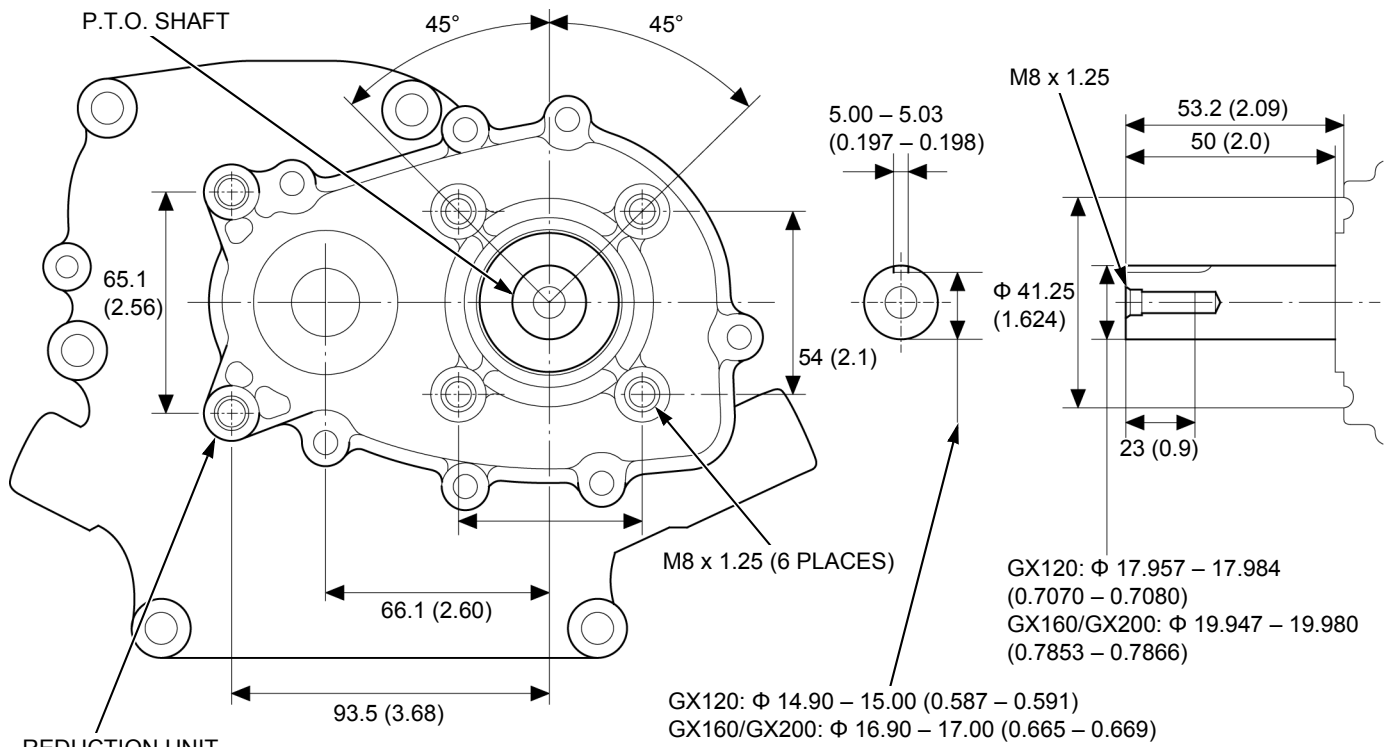
H type*

Unit: mm (in)



L type*

Unit: mm (in)



2. SERVICE INFORMATION

MAINTENANCE STANDARDS	2-2	TOOLS	2-8
TORQUE VALUES	2-6	HARNES AND TUBE ROUTING	2-10
LUBRICATION & SEAL POINTS	2-7		

MAINTENANCE STANDARDS

GX120

Unit: mm (in)

Part	Item		Standard	Service limit
Engine	Maximum speed (at no load)		3,900 ± 100 min ⁻¹ (rpm)	–
	Idle speed		1,400 + 200 – 150 min ⁻¹ (rpm)	–
	Cylinder compression		0.49 – 0.69 MPa (5.0 – 7.0 kgf/cm ² , 71 – 100 psi)/600 min ⁻¹ (rpm)	–
Cylinder head	Warpage		–	0.10 (0.004)
Cylinder	Sleeve I.D.		60.000 – 60.015 (2.3622 – 2.3628)	60.165 (2.3687)
Piston	Skirt O.D.		59.965 – 59.985 (2.3608 – 2.3616)	59.845 (2.3561)
	Piston-to-cylinder clearance		0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)
	Piston pin bore I.D.		13.002 – 13.008 (0.5119 – 0.5121)	13.048 (0.5137)
Piston pin	Pin O.D.		12.994 – 13.000 (0.5116 – 0.5118)	12.954 (0.5100)
	Piston pin-to-piston pin bore clearance		0.002 – 0.014 (0.0001 – 0.0006)	0.08 (0.003)
Piston rings	Ring side clearance	Top	0.035 – 0.070 (0.0014 – 0.0028)	0.15 (0.006)
		Second	0.045 – 0.080 (0.0018 – 0.0032)	0.15 (0.006)
	Ring end gap	Top	0.200 – 0.350 (0.0079 – 0.0138)	1.0 (0.04)
		Second	0.350 – 0.500 (0.0138 – 0.0197)	1.0 (0.04)
		Oil (side rail)	0.2 – 0.7 (0.01 – 0.03)	1.0 (0.04)
	Ring width	Top	0.950 – 0.970 (0.0374 – 0.0382)	0.93 (0.037)
Second		0.940 – 0.960 (0.0370 – 0.0378)	0.92 (0.036)	
Connecting rod	Small end I.D.		13.005 – 13.020 (0.5120 – 0.5126)	13.07 (0.515)
	Big end side clearance		0.1 – 0.7 (0.004 – 0.028)	1.1 (0.04)
	Big end I.D.		26.020 – 26.033 (1.0244 – 1.0249)	26.066 (1.026)
	Big end oil clearance		0.040 – 0.063 (0.0016 – 0.0025)	0.12 (0.005)
Crankshaft	Crankpin O.D.		25.970 – 25.980 (1.0224 – 1.0228)	25.92 (1.020)
	Crankshaft runout		–	0.10 (0.004)
Cylinder barrel	Camshaft journal I.D.		14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)
Crankcase cover	Camshaft journal I.D.		14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)
Valves	Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	–
		EX	0.20 ± 0.02 (0.008 ± 0.001)	–
	Valve stem O.D.	IN	5.468 – 5.480 (0.2153 – 0.2157)	5.318 (0.2094)
		EX	5.425 – 5.440 (0.2136 – 0.2142)	5.275 (0.2077)
	Valve guide I.D.	IN/EX	5.500 – 5.512 (0.2165 – 0.2170)	5.572 (0.2194)
	Guide-to-stem clearance	IN	0.020 – 0.044 (0.0008 – 0.0017)	0.10 (0.004)
		EX	0.060 – 0.087 (0.0024 – 0.0034)	0.12 (0.005)
	Valve guide installation height	IN	4.8 – 5.2 (0.19 – 0.20)	–
	Valve seat width	IN/EX	0.70 – 0.90 (0.028 – 0.035)	2.0 (0.08)
	Valve spring free length		30.5 (1.20)	29.0 (1.14)
Valve spring perpendicularity		–	1.5° max.	
Camshaft	Cam height	IN	27.500 – 27.900 (1.0827 – 1.0984)	27.450 (1.0807)
		EX	27.547 – 27.947 (1.0845 – 1.1003)	27.500 (1.0827)
	Camshaft O.D.		13.966 – 13.984 (0.5498 – 0.5506)	13.916 (0.5479)
Carburetor	Main jet	BE60W A	#62	–
		BE99A A	#60	–
		BE61M A	#62	–
		BE99B A	#62	–
	Pilot screw opening	BE60W A	2-1/8 turns out	–
		BE99A A	1-5/8 turns out	–
		BE61M A	2-1/8 turns out	–
		BE99B A	2-1/8 turns out	–
Float height		13.7 (0.54)	–	
Spark plug	Gap		0.70 – 0.80 (0.028 – 0.031)	–
Spark plug cap	Resistance (20°C/68°F)		7.5 – 12.5 kΩ	–
Ignition coil	Air gap		0.2 – 0.6 (0.01 – 0.02)	–
	Primary resistance		0.6 – 0.9 Ω	–
	Secondary resistance		5.6 – 6.9 kΩ	–

Part	Item	Standard	Service limit	
Lamp coil	Resistance	12 V – 50 W	0.18 – 0.23 Ω	–
Reduction unit (Chain type: without clutch)	P.T.O. shaft journal O.D.		19.929 – 19.950 (0.7846 – 0.7854)	–
	P.T.O. shaft journal I.D. (Crankcase cover)		20.000 – 20.021 (0.7874 – 0.7882)	–
Reduction unit (Chain type: with clutch)	Clutch friction disc thickness		3.5 (0.14)	3.0 (0.12)
	Clutch plate warpage		–	0.10 (0.004)

GX160

Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Maximum speed (at no load)	3,900 \pm 100 min ⁻¹ (rpm)	–	
	Idle speed	1,400 + 200 – 150 min ⁻¹ (rpm)	–	
	Cylinder compression	0.49 – 0.69 MPa (5.0 – 7.0 kgf/cm ² , 71 – 100 psi)/600 min ⁻¹ (rpm)	–	
Cylinder head	Warpage	–	0.10 (0.004)	
Cylinder	Sleeve I.D.	68.000 – 68.015 (2.6772 – 2.6778)	68.165 (2.6837)	
Piston	Skirt O.D.	67.985 – 67.995 (2.6766 – 2.6770)	67.845 (2.6711)	
	Piston-to-cylinder clearance	0.005 – 0.030 (0.0002 – 0.0012)	0.12 (0.005)	
	Piston pin bore I.D.	18.002 – 18.008 (0.7087 – 0.7090)	18.048 (0.7105)	
Piston pin	Pin O.D.	17.994 – 18.000 (0.7084 – 0.7087)	17.954 (0.7068)	
	Piston pin-to-piston pin bore clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.08 (0.003)	
Piston rings	Ring side clearance	Top	0.060 – 0.095 (0.0024 – 0.0037)	0.15 (0.006)
		Second	0.045 – 0.080 (0.0018 – 0.0032)	0.15 (0.006)
	Ring end gap	Top	0.200 – 0.350 (0.0079 – 0.0138)	1.0 (0.04)
		Second	0.350 – 0.500 (0.0138 – 0.0197)	1.0 (0.04)
		Oil (side rail)	0.10 – 0.35 (0.004 – 0.014)	1.0 (0.04)
	Ring width	Top	0.925 – 0.945 (0.0364 – 0.0372)	0.905 (0.0356)
Second		0.940 – 0.960 (0.0370 – 0.0378)	0.92 (0.036)	
Connecting rod	Small end I.D.	18.005 – 18.020 (0.7089 – 0.7094)	18.07 (0.711)	
	Big end side clearance	0.1 – 0.7 (0.004 – 0.028)	1.1 (0.04)	
	Big end I.D.	30.020 – 30.033 (1.1819 – 1.1824)	30.066 (1.1837)	
	Big end oil clearance	0.040 – 0.063 (0.0016 – 0.0025)	0.12 (0.005)	
Crankshaft	Crankpin O.D.	29.970 – 29.980 (1.1799 – 1.1803)	29.92 (1.178)	
	Crankshaft runout	–	0.10 (0.004)	
Cylinder barrel	Camshaft journal I.D.	14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)	
Crankcase cover	Camshaft journal I.D.	14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)	
Valves	Valve clearance	IN	0.08 \pm 0.02 (0.003 \pm 0.001)	–
		EX	0.10 \pm 0.02 (0.004 \pm 0.001)	–
	Valve stem O.D.	IN	5.468 – 5.480 (0.2153 – 0.2157)	5.318 (0.2094)
		EX	5.425 – 5.440 (0.2136 – 0.2142)	5.275 (0.2077)
	Valve guide I.D.	IN/EX	5.500 – 5.512 (0.2165 – 0.2170)	5.572 (0.2194)
	Guide-to-stem clearance	IN	0.020 – 0.044 (0.0008 – 0.0017)	0.10 (0.004)
		EX	0.060 – 0.087 (0.0024 – 0.0034)	0.12 (0.005)
	Valve guide installation height	IN	4.8 – 5.2 (0.19 – 0.20)	–
	Valve seat width	IN	0.70 – 0.90 (0.028 – 0.035)	2.0 (0.08)
		EX	0.90 – 1.10 (0.035 – 0.043)	2.0 (0.08)
	Valve spring free length		30.5 (1.20)	29.0 (1.14)
Valve spring perpendicularity		–	1.5° max.	
Camshaft	Cam height	IN/EX	27.503 – 27.903 (1.0828 – 1.0985)	27.450 (1.0807)
	Camshaft O.D.		13.966 – 13.984 (0.5498 – 0.5506)	13.916 (0.5479)

Part	Item	Standard	Service limit	
Carburetor	Main jet	BE54C A	#70	-
		BE54D A	#68	-
		BE66U A	#68	-
		BE54P A	#70	-
		BE54J B	#68	-
	Pilot screw opening	BE54C A	2-1/4 turns out	-
		BE54D A	1-7/8 turns out	-
		BE66U A	1-7/8 turns out	-
		BE54P A	2-1/2 turns out	-
		BE54J B	1-7/8 turns out	-
	Float height		13.7 (0.54)	-
Spark plug	Gap	0.70 – 0.80 (0.028 – 0.031)	-	
Spark plug cap	Resistance (20°C/68°F)	7.5 – 12.5 kΩ	-	
Ignition coil	Air gap	0.2 – 0.6 (0.01 – 0.02)	-	
	Primary resistance	0.6 – 0.9 Ω	-	
	Secondary resistance	5.6 – 6.9 kΩ	-	
Starter motor	Brush length	11.0 (0.43)	6.0 (0.24)	
	Mica depth	1.6 (0.06)	1.1 (0.04)	
Charge coil	Resistance	1 A	3.15 – 3.85 Ω	-
		7 A	0.22 - 0.30 Ω	-
Lamp coil	Resistance	12 V – 25 W	0.36 - 0.46 Ω	-
		12 V – 50 W	0.18 - 0.23 Ω	-
Reduction unit (Chain type: without clutch)	P.T.O. shaft journal O.D.	19.929 – 19.950 (0.7846 – 0.7854)	-	
	P.T.O. shaft journal I.D. (Crankcase cover)	20.000 – 20.021 (0.7874 – 0.7882)	-	
Reduction unit (Chain type: with clutch)	Clutch friction disc thickness	3.5 (0.14)	3.0 (0.12)	
	Clutch plate warpage	-	0.10 (0.004)	

GX200

Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Maximum speed (at no load)	3,850 ± 150 min ⁻¹ (rpm)	-	
	Idle speed	1,400 + 200 - 150 min ⁻¹ (rpm)	-	
	Cylinder compression	0.35 MPa (3.6 kgf/cm ² , 51 psi)/600 min ⁻¹ (rpm)	-	
Cylinder head	Warpage	-	0.10 (0.004)	
Cylinder	Sleeve I.D.	68.000 – 68.015 (2.6772 – 2.6778)	68.165 (2.6837)	
Piston	Skirt O.D.	67.965 – 67.985 (2.6758 – 2.6766)	67.845 (2.6711)	
	Piston-to-cylinder clearance	0.015 – 0.050 (0.0006 – 0.0020)	0.12 (0.005)	
	Piston pin bore I.D.	18.002 – 18.008 (0.7087 – 0.7090)	18.048 (0.7105)	
Piston pin	Pin O.D.	17.994 – 18.000 (0.7084 – 0.7087)	17.954 (0.7068)	
	Piston pin-to-piston pin bore clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.08 (0.003)	
Piston rings	Ring side clearance	Top	0.035 – 0.070 (0.0014 – 0.0028)	0.15 (0.006)
		Second	0.045 – 0.080 (0.0018 – 0.0032)	0.15 (0.006)
	Ring end gap	Top	0.200 – 0.350 (0.0079 – 0.0138)	1.0 (0.04)
		Second	0.350 – 0.500 (0.0138 – 0.0197)	1.0 (0.04)
		Oil (side rail)	0.2 – 0.7 (0.01 – 0.03)	1.0 (0.04)
	Ring width	Top	0.950 – 0.970 (0.0374 – 0.0382)	0.93 (0.037)
Second	0.940 – 0.960 (0.0370 – 0.0378)	0.92 (0.036)		
Connecting rod	Small end I.D.	18.005 – 18.020 (0.7089 – 0.7094)	18.07 (0.711)	
	Big end side clearance	0.1 – 0.7 (0.004 – 0.028)	1.1 (0.04)	
	Big end I.D.	30.020 – 30.033 (1.1819 – 1.1824)	30.066 (1.1837)	
	Big end oil clearance	0.040 – 0.063 (0.0016 – 0.0025)	0.12 (0.005)	
Crankshaft	Crankpin O.D.	29.970 – 29.980 (1.1799 – 1.1803)	29.92 (1.178)	
	Crankshaft runout	-	0.10 (0.004)	
Cylinder barrel	Camshaft journal I.D.	14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)	
Crankcase cover	Camshaft journal I.D.	14.000 – 14.018 (0.5512 – 0.5519)	14.048 (0.5531)	

Part	Item	Standard	Service limit	
Valves	Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	–
		EX	0.20 ± 0.02 (0.008 ± 0.001)	–
	Valve stem O.D.	IN	5.468 – 5.480 (0.2153 – 0.2157)	5.318 (0.2094)
		EX	5.425 – 5.440 (0.2136 – 0.2142)	5.275 (0.2077)
	Valve guide I.D.	IN/EX	5.500 – 5.512 (0.2165 – 0.2170)	5.572 (0.2194)
	Guide-to-stem clearance	IN	0.020 – 0.044 (0.0008 – 0.0017)	0.10 (0.004)
		EX	0.060 – 0.087 (0.0024 – 0.0034)	0.12 (0.005)
	Valve guide installation height	IN	4.8 – 5.2 (0.19 – 0.20)	–
	Valve seat width	IN/EX	0.70 – 0.90 (0.028 – 0.035)	2.0 (0.08)
Valve spring free length		30.5 (1.20)	29.0 (1.14)	
Valve spring perpendicularity		–	1.5° max.	
Camshaft	Cam height	IN	27.500 – 27.900 (1.0827 – 1.0984)	27.450 (1.0807)
		EX	27.547 – 27.947 (1.0845 – 1.1003)	27.500 (1.0827)
	Camshaft O.D.		13.966 – 13.984 (0.5498 – 0.5506)	13.916 (0.5479)
Carburetor	Main jet	BE59L A	#75	–
		BE59N A	#75	–
		BE59U A	#75	–
		BE74Y A	#78	–
	Pilot screw opening	BE59L A	1-7/8 turns out	–
		BE59N A	1-7/8 turns out	–
		BE59U A	2-1/4 turns out	–
		BE74Y A	2-3/4 turns out	–
Float height		13.7 (0.54)	–	
Spark plug	Gap	0.70 – 0.80 (0.028 – 0.031)	–	
Spark plug cap	Resistance (20°C/68°F)	7.5 – 12.5 kΩ	–	
Ignition coil	Air gap	0.2 – 0.6 (0.01 – 0.02)	–	
	Primary resistance	0.6 – 0.9 Ω	–	
	Secondary resistance	5.6 – 6.9 kΩ	–	
Starter motor	Brush length	11.0 (0.43)	6.0 (0.24)	
	Mica depth	1.6 (0.06)	1.1 (0.04)	
Charge coil	Resistance	1 A	3.15 – 3.85 Ω	–
Reduction unit (Chain type: without clutch)	P.T.O. shaft journal O.D.		19.929 – 19.950 (0.7846 – 0.7854)	–
	P.T.O. shaft journal I.D. (Crankcase cover)		20.000 – 20.021 (0.7874 – 0.7882)	–
Reduction unit (Chain type: with clutch)	Clutch friction disc thickness		3.5 (0.14)	3.0 (0.12)
	Clutch plate warpage		–	0.10 (0.004)

TORQUE VALUES

Item	Tread Dia. (mm)	Torque values		
		N·m	kgf·m	lbf·ft
Crankcase cover bolt (GX120)	M6 x 1.0	12	1.2	9
Crankcase cover bolt (GX160/GX200)	M8 x 1.25	24	2.4	18
Cylinder head bolt	M8 x 1.25	24	2.4	18
Engine oil drain bolt	M10 x 1.25	18	1.8	13
Connecting rod bolt (GX120/GX200)	M7 x 1.0	12	1.2	9
Connecting rod bolt (GX160)	M6 x 1.0	10	1.0	7
Rocker arm pivot bolt	M8 x 1.25 (Special bolt)	24	2.4	18
Rocker arm pivot adjusting nut	M6 x 0.5 (Special nut)	10	1.0	7
Spark plug	M14 x 1.25 (Special)	18	1.8	13
Oil level switch joint nut	M10 x 1.25	10	1.0	7
Flywheel nut	M14 x 1.5 (Special nut)	75	7.6	55
Fuel tank nut/bolt	M6 x 1.0	10	1.0	7
Fuel tank joint	M10 x 1.25	2	0.2	1.5
Air cleaner elbow nut	M6 x 1.0	9	0.9	6.6
Muffler nut	M8 x 1.25	24	2.4	18
Drive sprocket bolt (Reduction unit: chain type (without clutch))	M8 x 1.25	24	2.4	18
Reduction case oil level bolt (Reduction unit: gear type)	M12 x 1.5	23	2.3	17
Reduction case oil drain bolt (Reduction unit: chain type (with clutch))	M12 x 1.5	23	2.3	17
Recoil starter center screw	M6 x 1.0 (Special bolt)	5.4	0.6	4.0
Fuel strainer cup	M24 x 1.0	3.9	0.4	2.9

STANDARD TORQUE VALUES

Item	Tread Dia. (mm)	Torque values		
		N·m	kgf·m	lbf·ft
Screw	4 mm	2.1	0.2	1.5
	5 mm	4.3	0.4	3.2
	6 mm	9	0.9	6.6
Bolt and nut	5 mm	5.3	0.5	3.9
	6 mm	10	1.0	7
	8 mm	22	2.2	16
	10 mm	34	3.5	25
	12 mm	54	5.5	40
Flange bolt and nut	5 mm	5.3	0.5	3.9
	6 mm	12	1.2	9
	8 mm	23	2.3	17
	10 mm	40	4.1	30
SH (Small head) flange bolt	6 mm	9	0.9	6.6
CT (Cutting threads) flange bolt (Retightening)	5 mm	5.4	0.6	4.0
	6 mm	12	1.2	9

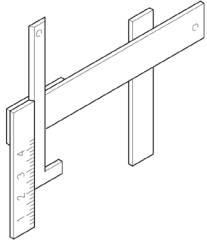
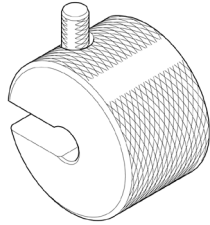
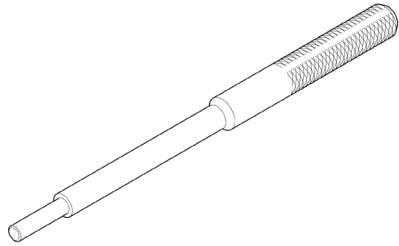


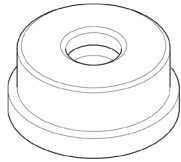
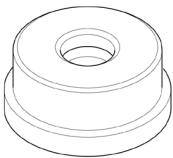
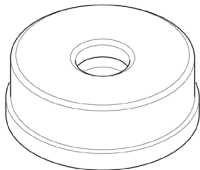



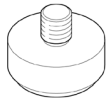
LUBRICATION & SEAL POINTS

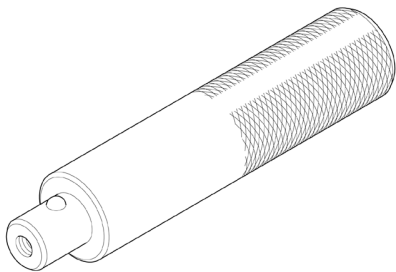
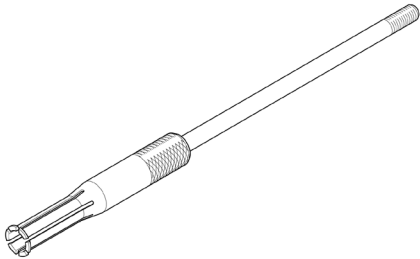
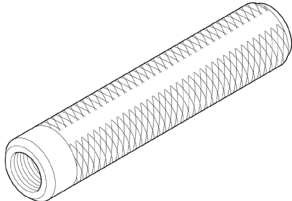
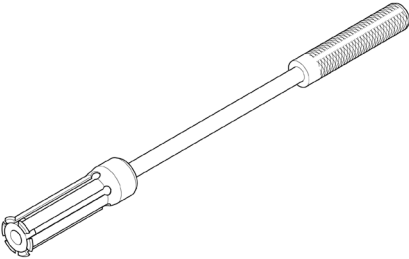
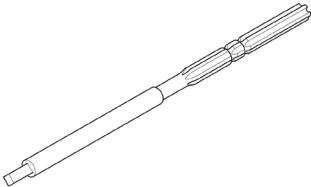
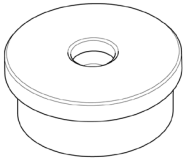
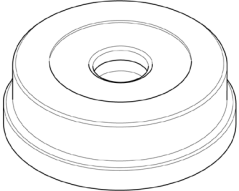
Material	Location	Remarks
Engine oil	Crankshaft pin and gear teeth	
	Piston outer surface, ring groove, and piston pin hole	
	Piston pin outer surface	
	Piston ring entire surface	
	Cylinder inner surface	
	Connecting rod big and small end bearing	
	Connecting rod bolt threads and seating surface	
	Camshaft cam lobes and journal	
	Valve lifter pivot, pivot end, and slipper surface	
	Valve stem sliding surface and stem end	
	Valve rocker arm tappet surface and pivot	
	Rocker arm pivot threads and pivot	
	Flywheel nut threads and seating surface	
	Governor weight holder gear and sliding surface	
	Governor holder shaft journal	
	Governor arm shaft journal	
	Cylinder head bolt threads and seating surface	
	P.T.O. shaft gear teeth and journal	Reduction unit (gear type)
	Drive sprocket, P.T.O. shaft gear teeth, and journal	Reduction unit (chain type: without clutch)
	Drive sprocket, P.T.O. shaft, clutch center gear teeth, and journal	Reduction unit (chain type: with clutch)
Clutch disc, clutch plate entire surface		
Multi-purpose grease	Oil seal lips	
	Control lever sliding surface	
	Recoil starter case pulley sliding surface	
	Recoil starter ratchet sliding surface	
	Recoil starter spring retainer inside	
Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1)	Camshaft cam profile	When installing a new camshaft
Hondalock 1, Threebond® 2430, or equivalent	Recoil starter center screw threads	
Hondalock 3, LOCTITE® 638, or equivalent	Limiter cap inside	

TOOLS

SPECIAL TOOLS

Special tools used in this manual can be ordered using normal American Honda parts ordering procedures.

<p>Float level gauge 07401-0010000</p> 	<p>Remover weight 07936-371020A</p> 	<p>Valve guide driver, 5.5 mm 07742-0010100</p> 
<p>Attachment, 32 x 35 mm 07746-0010100</p> 	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Attachment, 40 x 42 mm 07746-0010900</p> 
<p>Attachment, 42 x 47 mm 07746-0010300</p> 	<p>Attachment, 52 x 55 mm 07746-0010400</p> 	<p>Pilot, 20 mm 07746-0040500</p> 
<p>Pilot, 22 mm 07746-0041000</p> 	<p>Pilot, 25 mm 07746-0040600</p> 	<p>Pilot, 30 mm 07746-0040700</p> 

<p>Driver 07749-0010000</p> 	<p>Puller collar set 07APC-ZY1A100</p>	<p>Bearing remover, 20 mm 07936-3710600</p> 
<p>Remover handle 07936-3710100</p> 	<p>Bearing remover, 25 mm 07936-ZV10100</p> 	<p>Valve guide reamer, 5.5 mm 07984-200000D</p> 
<p>Attachment, 45 x 50 mm 07946-6920100</p> 	<p>Attachment, 62 x 64 mm 07947-6340400</p> 	

COMMERCIALLY AVAILABLE TOOLS

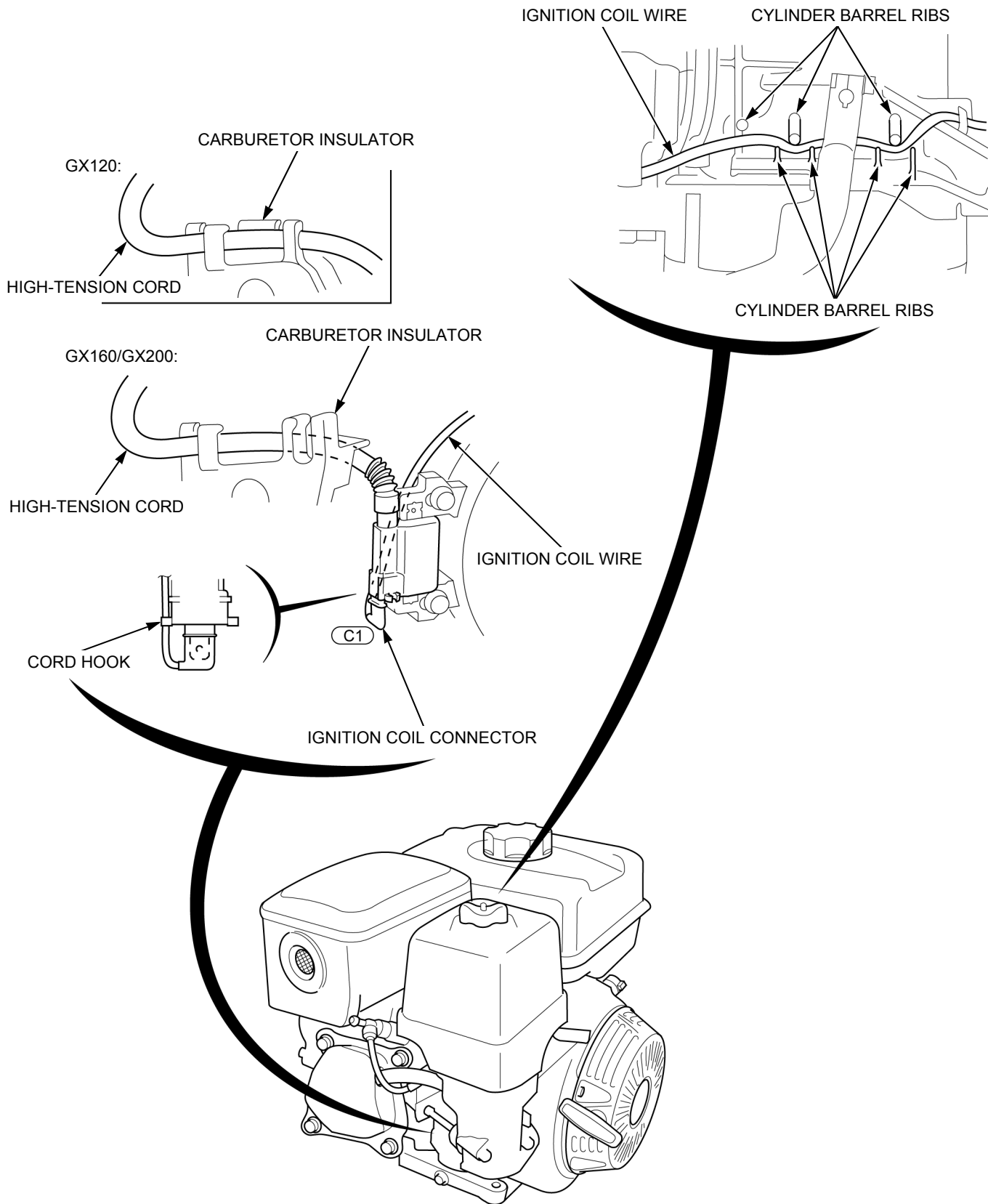
Tool name	Tool number	Application
Steering wheel puller	OTC7403	Flywheel removal Use with 07APC-ZY1A100
Fuel line clip pliers	HCP6A	Carburetor removal
Steering wheel puller	OTC7403	Flywheel removal with starter motor Use with 07APC-ZY1A100
Two-jaw puller	OTC1035	Flywheel removal without starter motor
Valve seat cutter, 31°	NWYCU115	Valve seat reconditioning
Valve seat cutter, 45°	NWYCU122	
Valve seat cutter, 60°	MWYCU111	
Solid pilot (short) 5.5 mm	NWYPM10055SH	
Accessory kit	NWYKACC246	
T-wrench	NWYTW505	
Adapter, 1/2"-3/8"	NWYTW503-1	

There are two convenient ways to order: online or by toll-free phone.

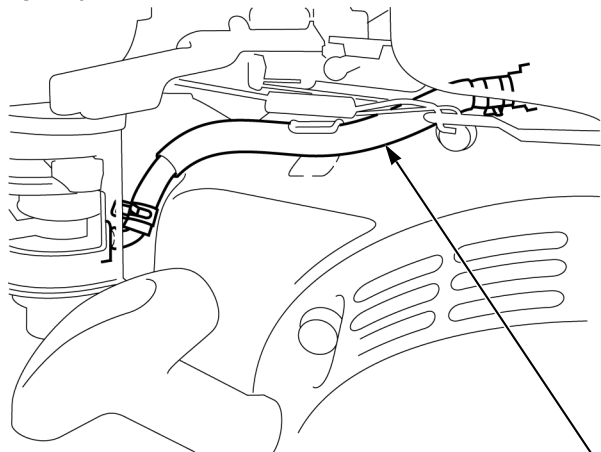
- To order online, go to the iN: SERVICE>Tools>Tool and Equipment Program>Online Catalog, and then search by model number.
- To order by phone, call 1-888-424-6857.
Customer service representatives are available from 7:30 AM until 7:00 PM CT, Monday through Friday.

HARNES AND TUBE ROUTING

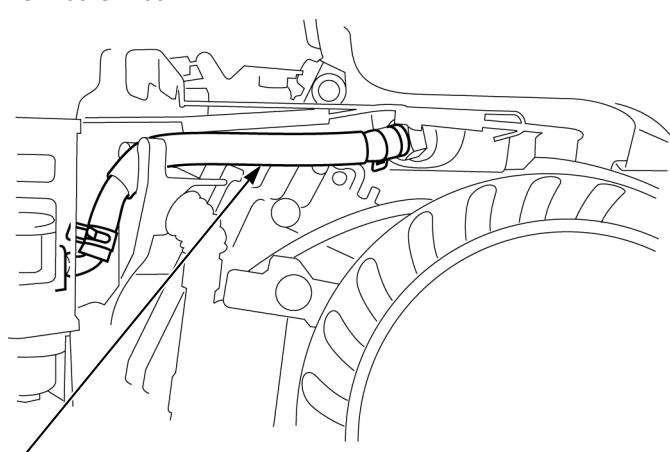
Connection of regulator/rectifier, charge/lamp coil, and sub wire harness depend on the application of the engine; therefore, the routing of these parts is not indicated in this manual.



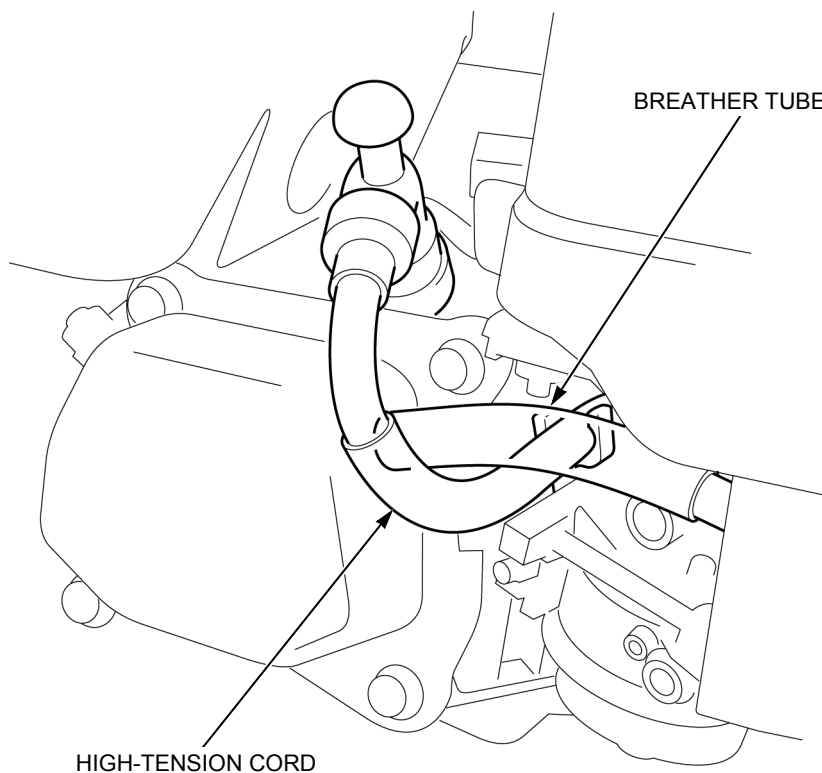
GX120:



GX160/GX200:



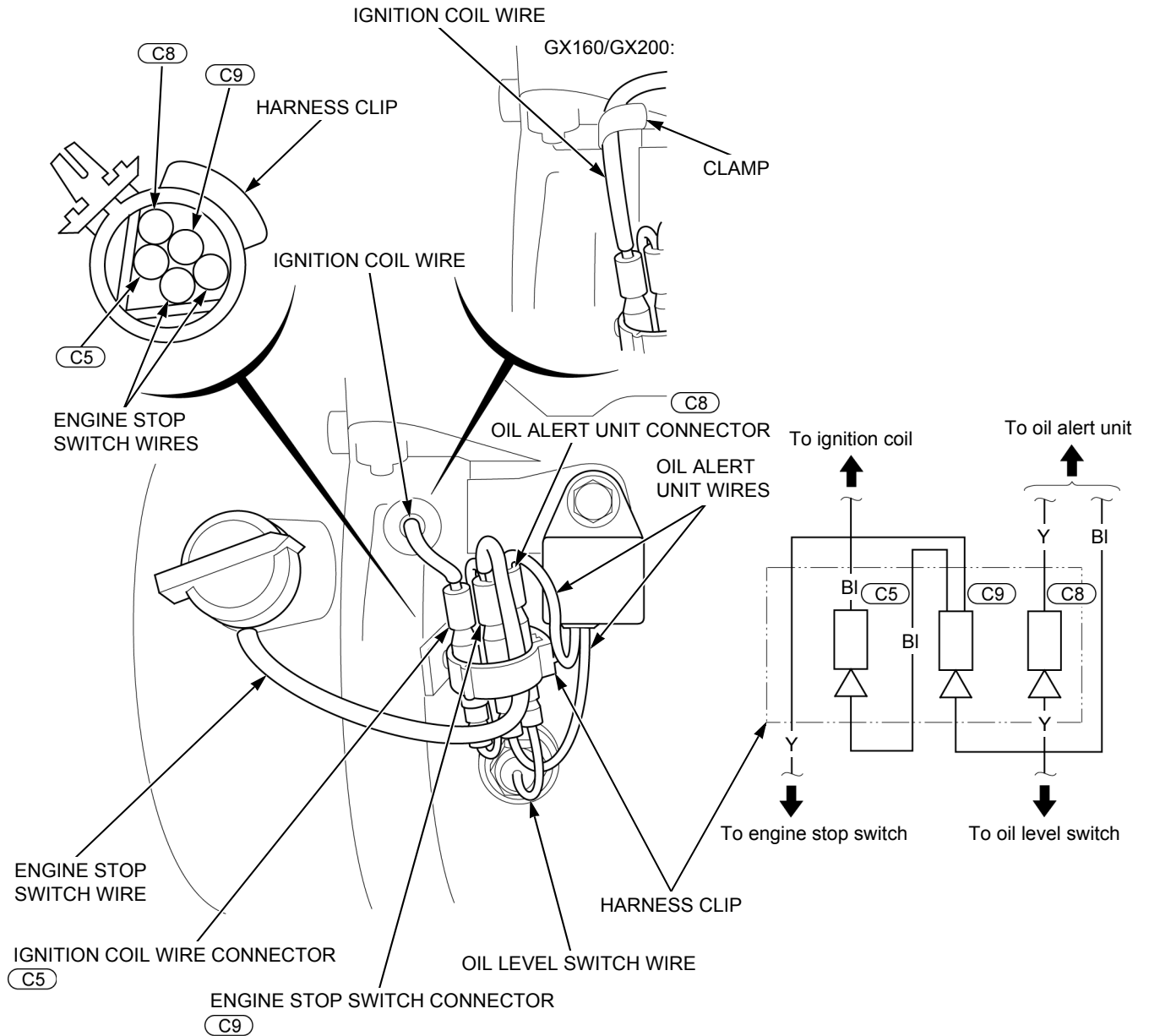
FUEL TUBE



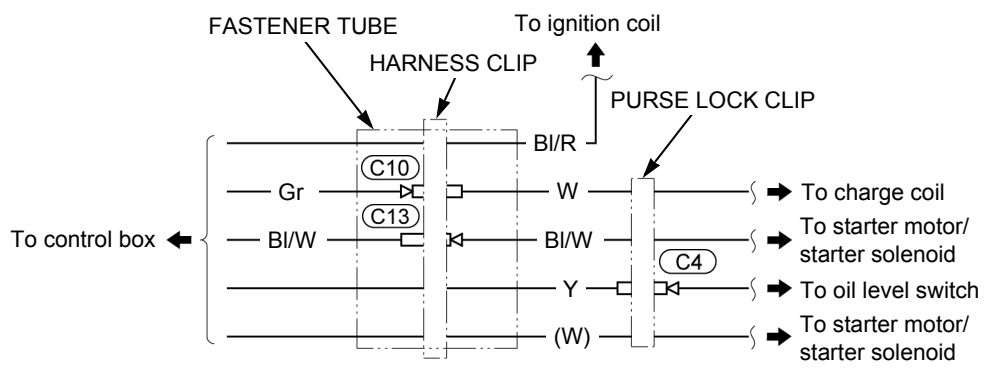
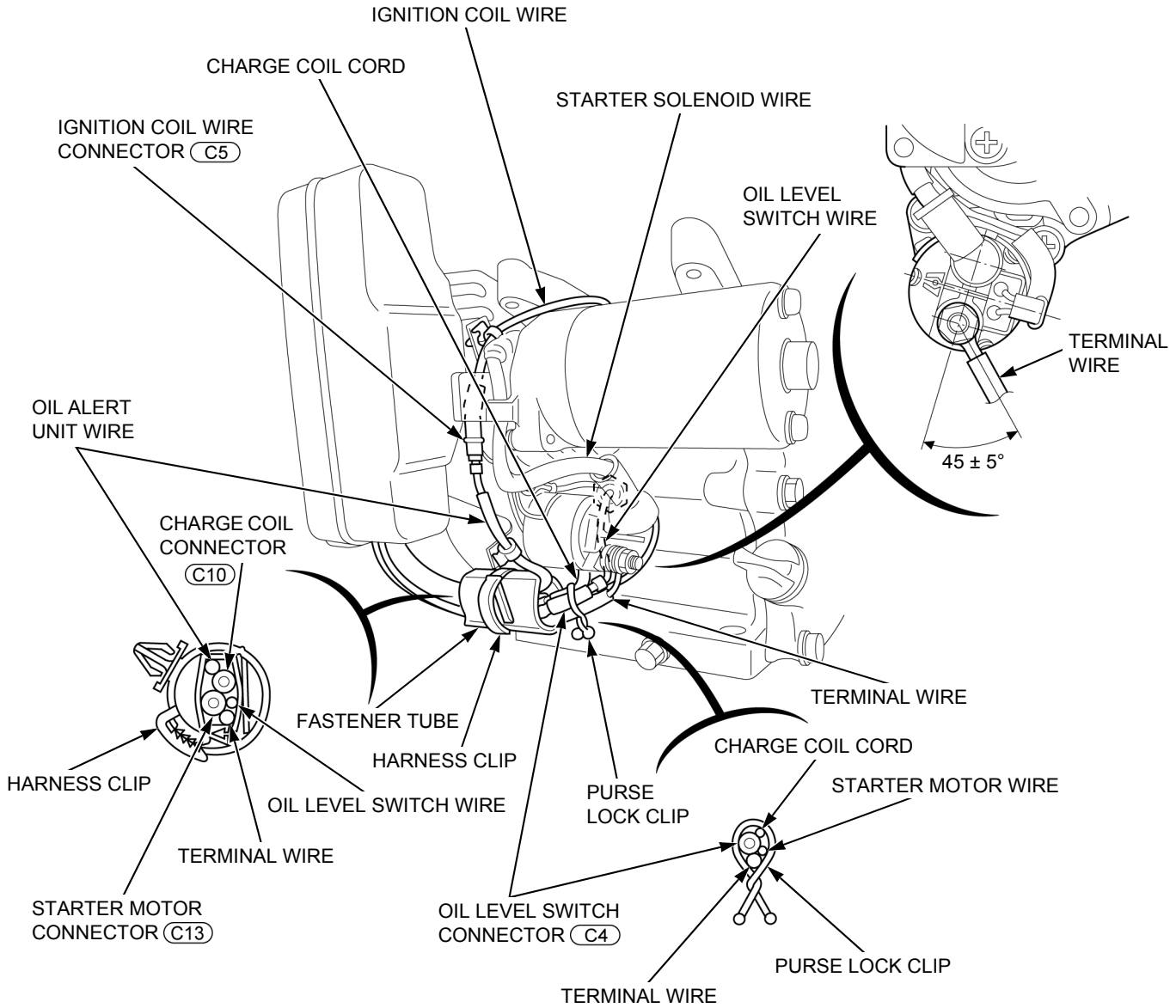
BREATHER TUBE

HIGH-TENSION CORD

WITH OIL LEVEL SWITCH AND OIL ALERT UNIT:

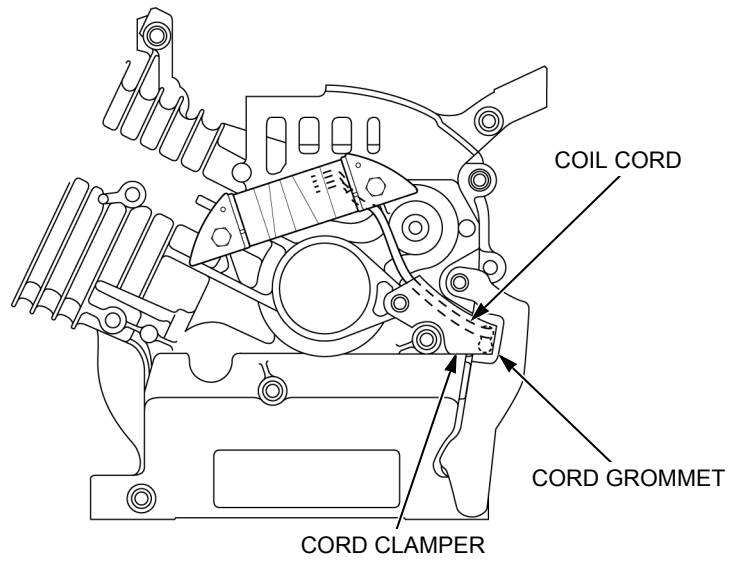


COMBINATION SWITCH (CONTROL BOX) TYPE

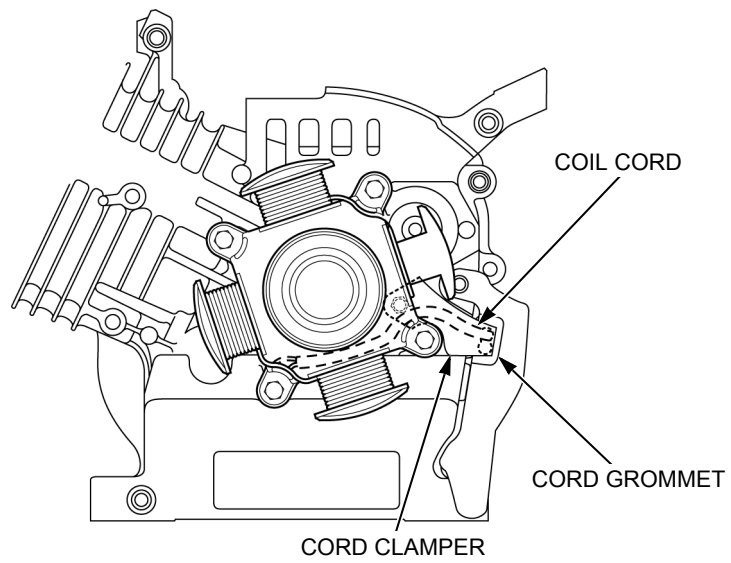


WITH CHARGE COIL/LAMP COIL

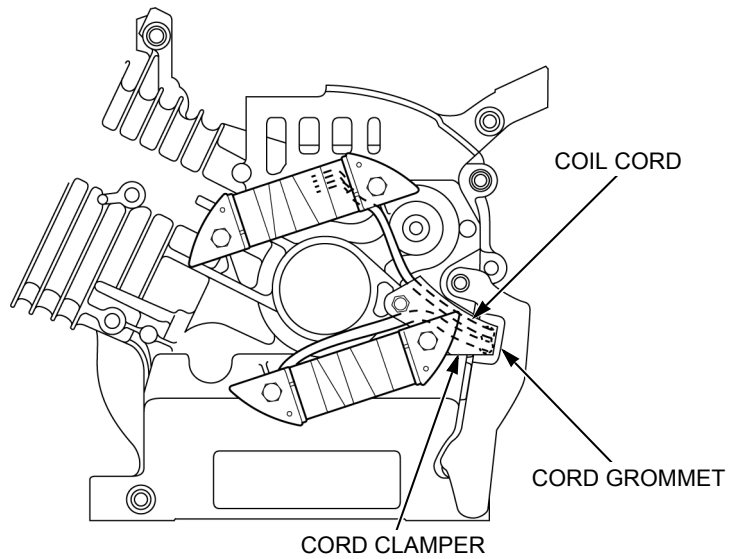
1 A/3 A CHARGE COIL, 12 V – 15 W/12 V – 25 W LAMP COIL TYPE:



7 A CHARGE COIL TYPE:



12 V – 50 W LAMP COIL TYPE:



3. MAINTENANCE

MAINTENANCE SCHEDULE	3-2	SPARK PLUG REPLACEMENT	3-11
ENGINE OIL LEVEL CHECK/CHANGE	3-3	SPARK ARRESTER CLEANING	3-12
REDUCTION CASE OIL LEVEL CHECK/ CHANGE	3-4	IDLE SPEED CHECK/ADJUSTMENT	3-13
AIR CLEANER CHECK/CLEANING/ REPLACEMENT	3-7	VALVE CLEARANCE CHECK/ ADJUSTMENT	3-13
SEDIMENT CUP CLEANING	3-10	COMBUSTION CHAMBER CLEANING	3-15
SPARK PLUG CHECK/ADJUSTMENT	3-11	FUEL TANK AND FILTER CLEANING	3-15
		FUEL TUBE CHECK	3-16

MAINTENANCE SCHEDULE

ITEM	Perform at every indicated month or operating hour interval, whichever comes first.	REGULAR SERVICE PERIOD (2)					Refer to page	
		Each use	First month or 20 hrs.	Every 3 months or 50 hrs.	Every 6 months or 100 hrs.	Every year or 300 hrs.		
Engine oil	Check level	○					3-3	
	Change		○		○		3-3	
Reduction case oil (applicable types)	Check level	○					3-4	
	Change		○		○		3-5	
Air cleaner	Check	○					3-7	
	Clean			○ (1)	○ (*) (1)		3-7	
		(Cyclone type) Every 6 months or 150 hours						3-7
	Replace					○ (**)	3-7	
(Cyclone type) Every 2 years or 600 hours						3-7		
Sediment cup	Clean				○		3-10	
Spark plug	Check-adjust				○		3-11	
	Replace					○	3-11	
Spark arrester (applicable types)	Clean				○		3-12	
Idle speed	Check-adjust					○	3-13	
Valve clearance	Check-adjust					○	3-13	
Combustion chamber	Clean	After every 500 hours						3-15
Fuel tank and filter	Clean				○		3-15	
Fuel tube	Check	Every 2 years (Replace if necessary)						3-16

(1) Service more frequently when used in dusty areas.

(2) For commercial use, log hours of operation to determine proper maintenance intervals.

(*) Internal vent carburetor with dual element type only.

(**) Replace paper element type only.

ENGINE OIL LEVEL CHECK/CHANGE

CHECK

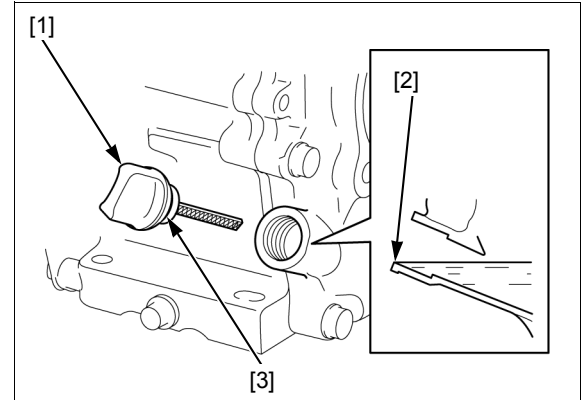
Place the engine on a level surface.

Remove the oil filler cap [1] and check the oil level shown into the oil filler neck [2].

If the oil level is low, fill with recommended oil to the upper level of the oil filler neck (page 3-3).

Check that the oil filler packing [3] is in good condition; replace it if necessary.

Install and tighten the oil filler cap securely.

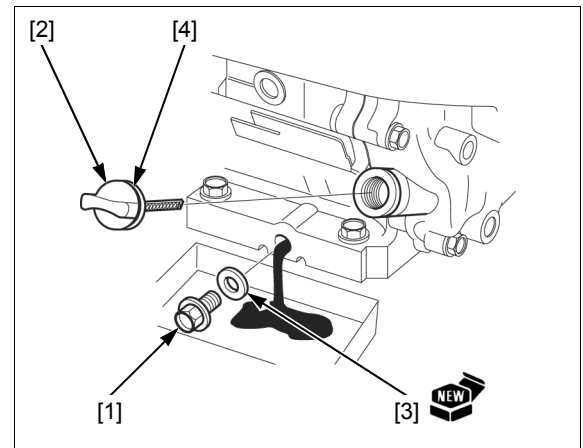


CHANGE

Place the engine on a level surface and place a suitable container under the drain plug bolt [1].

Remove the oil filler cap [2], drain bolt, and drain bolt washer [3], and drain the oil into a suitable container.

Please dispose of used oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash, pour it on the ground, or pour it down a drain.



CAUTION

Used engine oil contains substances that have been identified as carcinogenic. If repeatedly left in contact with the skin for prolonged periods, it may cause skin cancer. Wash your hands thoroughly with soap and water as soon as possible after contact with used engine oil.

Install the drain bolt with a new drain bolt washer, and tighten the bolt to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Add the specified amount of recommended oil into the engine.

RECOMMENDED OIL:
SAE 10W-30
API service category: SJ or higher

OIL CAPACITY:
GX120: 0.56 Liter (0.59 US qt, 0.49 Imp qt)
GX160: 0.58 Liter (0.61 US qt, 0.51 Imp qt)
GX200: 0.60 Liter (0.63 US qt, 0.53 Imp qt)

After adding the oil, check the oil level.

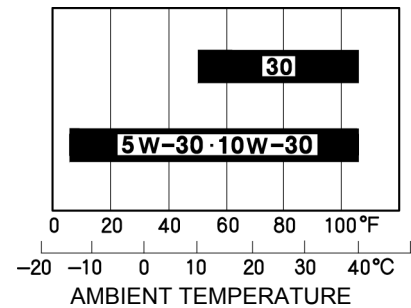
Check that the oil filler packing [4] is in good condition; replace it if necessary.

Install and tighten the oil filler cap securely.

Make sure there are no oil leaks.

SAE 10W - 30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the recommended range.

SAE VISCOSITY GRADES



REDUCTION CASE OIL LEVEL CHECK/ CHANGE

NOTE:

- For the chain type (without clutch), refer to the ENGINE OIL LEVEL CHECK/CHANGE because it shares the reduction oil with the engine oil ([page 3-3](#)).

CHECK

GEAR TYPE

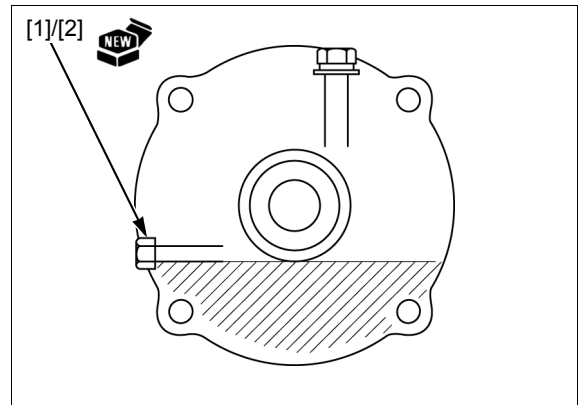
Place the engine on a level surface.

Remove the oil level bolt [1] and oil level bolt washer [2], and check whether oil flows out.

Fill with recommended oil if it does not flow ([page 3-5](#)).

Install the oil level bolt with a new oil level bolt washer, and tighten it to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)



CHAIN TYPE (with clutch)

Place the engine on a level surface.

Remove the oil filler cap/oil level gauge [1], and wipe the oil level gauge clean.

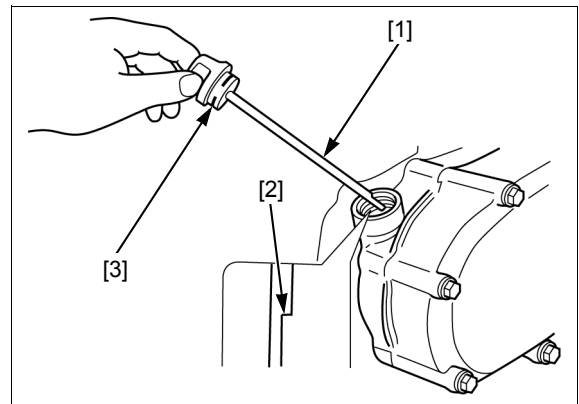
Insert the oil level gauge without screwing it into the oil filler neck.

Remove the oil level gauge and check oil level shown on the oil level gauge.

If the oil level is low, fill with recommended oil to the upper level [2] of the oil level gauge ([page 3-6](#)).

Check that the O-ring [3] is in good condition; replace it if necessary.

Install and tighten the oil filler cap/oil level gauge securely.



CHANGE

GEAR TYPE

Remove the oil fill/breather bolt [1].

Remove the oil level bolt [2] and oil level bolt washer [3], tilt the engine, and drain the oil into a suitable container.

Please dispose of used oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash, pour it on the ground, or pour it down a drain.

⚠ CAUTION

Used engine oil contains substances that have been identified as carcinogenic. If repeatedly left in contact with the skin for prolonged periods, it may cause skin cancer. Wash your hands thoroughly with soap and water as soon as possible after contact with used engine oil.

SAE 10W - 30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the recommended range.

Fill with the recommended engine oil through the oil fill/breather bolt hole until oil begins to run out of the oil level bolt hole.

RECOMMENDED OIL:
SAE 10W-30
API service category SJ or higher

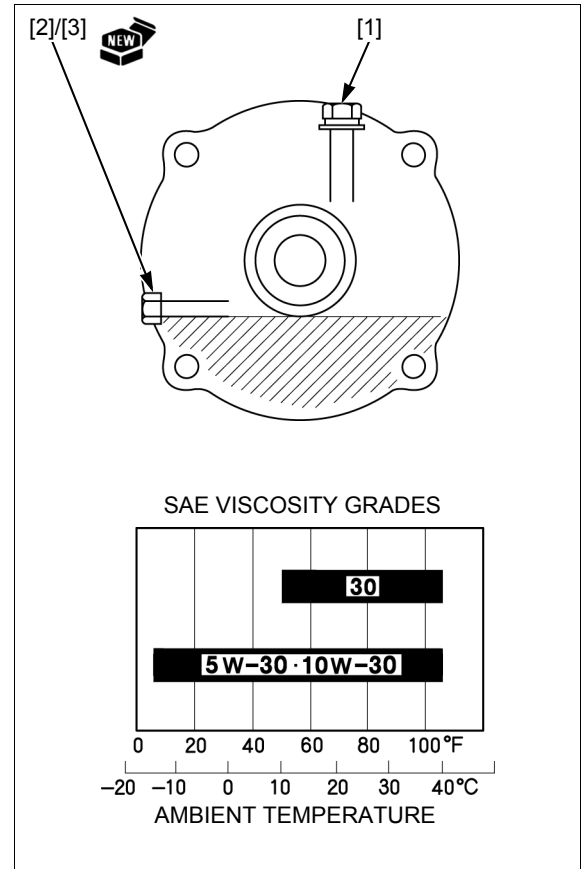
OIL CAPACITY: 0.15 Liter (0.16 US qt, 0.13 Imp qt)

Install the oil level bolt with a new oil level bolt washer, and tighten the bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Install and tighten the oil fill/breather bolt securely.

Make sure there are no oil leaks.

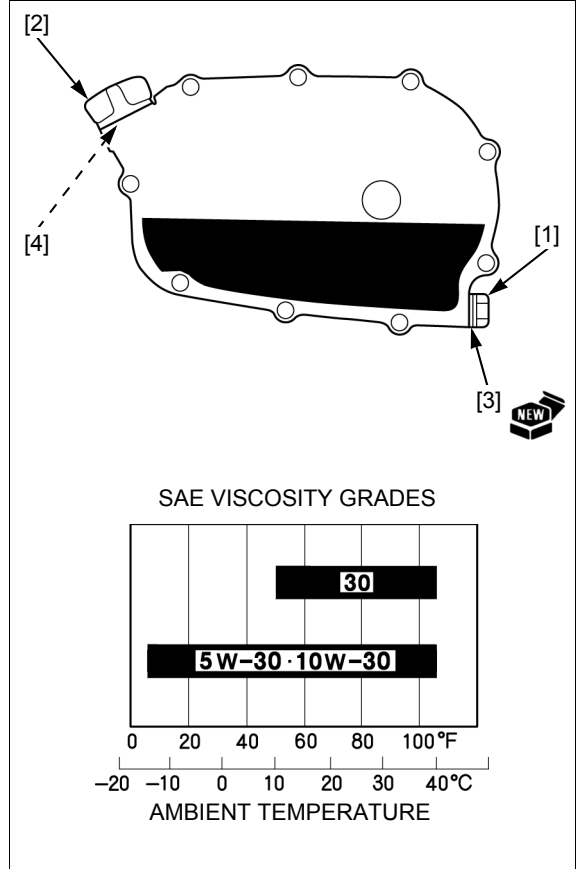


CHAIN TYPE (with clutch)

Place the engine on a level surface and place a suitable container under the drain plug bolt [1].

Remove the oil filler cap/oil level gauge [2], drain bolt, and drain bolt washer [3], and drain the oil into a suitable container.

Please dispose of used oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash, pour it on the ground, or pour it down a drain.



CAUTION

Used engine oil contains substances that have been identified as carcinogenic. If repeatedly left in contact with the skin for prolonged periods, it may cause skin cancer. Wash your hands thoroughly with soap and water as soon as possible after contact with used engine oil.

Install the drain bolt with a new drain bolt washer, and tighten the bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

Add the specified amount of recommended oil into the reduction case.

RECOMMENDED OIL:
SAE 10W-30
API service category: SJ or higher

OIL CAPACITY: 0.50 Liter (0.53 US qt, 0.44 Imp qt)

After adding the oil, check the oil level.
 Check that the O-ring [4] is in good condition; replace it if necessary.

Install and tighten the oil filler cap/oil level gauge securely.

Make sure there are no oil leaks.

SAE 10W - 30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the recommended range.

AIR CLEANER CHECK/CLEANING/ REPLACEMENT

A dirty air filter will restrict air flow to the carburetor, reducing engine performance. If the engine is operated in dusty areas, clean the air cleaner more often than specified in the MAINTENANCE SCHEDULE.

NOTICE

- *Operating the engine without the air filters or with the filter installed loosely will allow dirt to enter the engine, causing rapid engine wear. Install the air filters securely.*

DUAL, DUAL SILENT TYPE

Remove the following:

- Nut [1]
- Air cleaner cover [2]
- Wing nut [3]
- Element Assy.
 - Grommet [4]
 - Inner filter (Paper) [5]
 - Outer filter (Foam) [6]

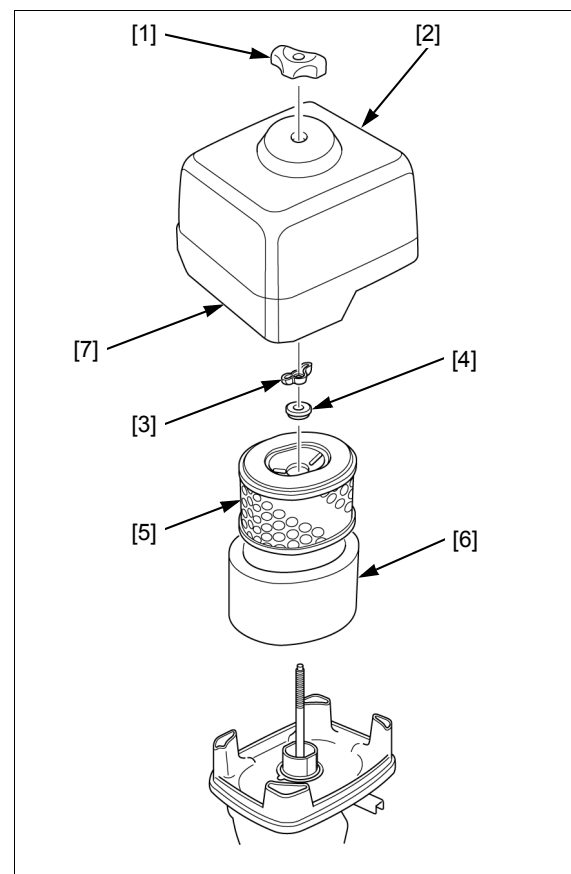
Carefully check both filters for holes or tears and replace if damaged.

Clean the filters if they are to be reused ([page 3-9](#)).

Installation is in the reverse order of removal.

NOTE:

- Install the air cleaner cover with its long skirt portion [7] facing forward.



CYCLONE TYPE

Remove the following:

- Bolt (4 x 6 mm) [1] (3)
- Pre air cleaner case [2]
- Air cleaner guide [3]
- Wing nut [4]
- Air cleaner cover Assy. [5]
- Wing nut [6]
- Element Assy.
 - Grommet [7]
 - Inner filter (Paper) [8]
 - Outer filter (Foam) [9]

Carefully check both filters for holes or tears and replace if damaged.

Clean the filters if they are to be reused [\(page 3-9\)](#).

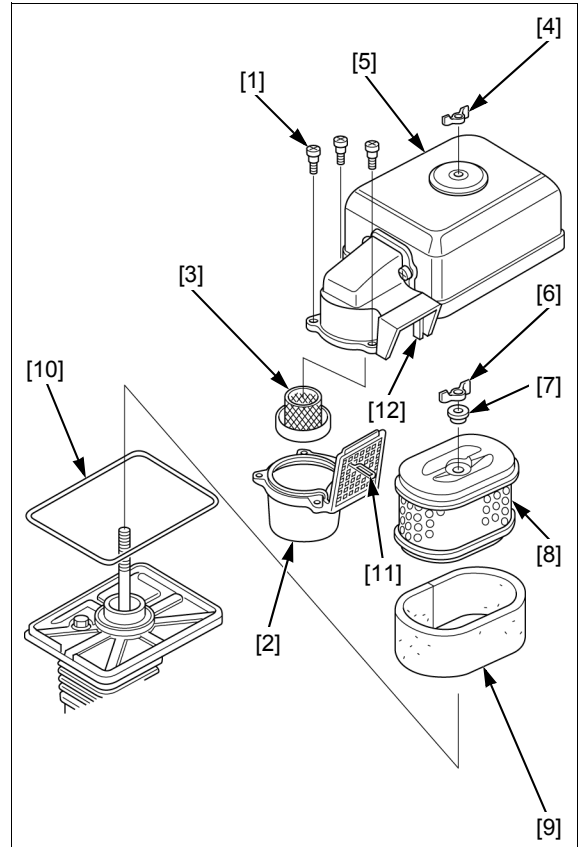
Clean the pre air cleaner case and air cleaner guide.

Check that the air cleaner cover packing [10] is in good condition; replace it if necessary.

Installation is in the reverse order of removal.

NOTE:

- Install the pre air cleaner case by align the groove [11] and tab [12] of the air cleaner cover Assy.



LOW PROFILE TYPE

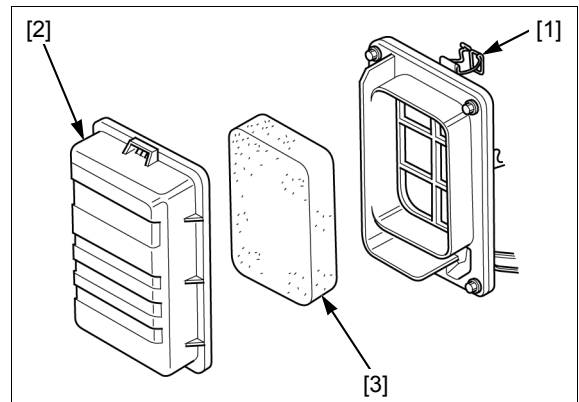
Remove the air cleaner case lid spring [1] and air cleaner cover [2].

Remove the pre air cleaner element [3].

Carefully check the air cleaner element and replace if damaged.

Clean the filter if it is to be reused [\(page 3-9\)](#).

Installation is in the reverse order of removal.



OIL BATH TYPE

Remove the following:

- Wing nut [1]
- Air cleaner cap [2]
- Air cleaner cover [3]
- Air cleaner element [4]

Carefully check the element for holes or tears and replace if damaged.

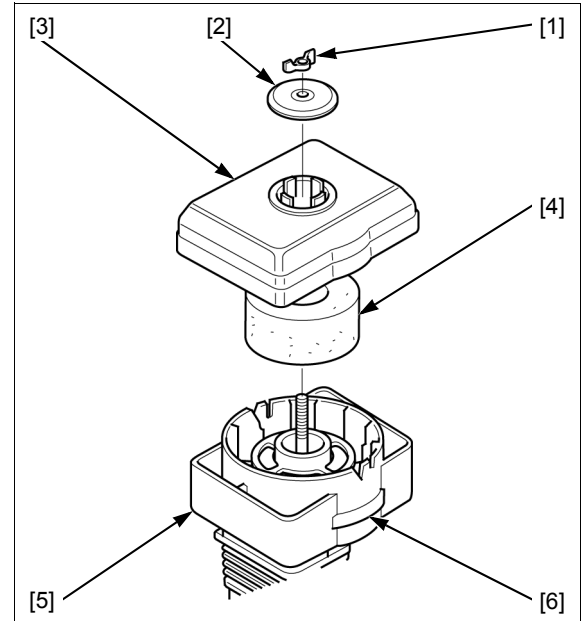
Clean the element if it is to be reused [\(page 3-9\)](#).

Check the oil contamination and oil level of the cleaner oil pan [5].

If the oil level is low, fill with the recommended oil [\(page 3-3\)](#) to the upper level [6] of the cleaner oil pan. If the oil is dirty, clean the cleaner oil pan and add the recommended oil to the upper level of the cleaner oil pan.

OIL CAPACITY: 60 cc

Installation is in the reverse order of removal.



SEMI DRY TYPE

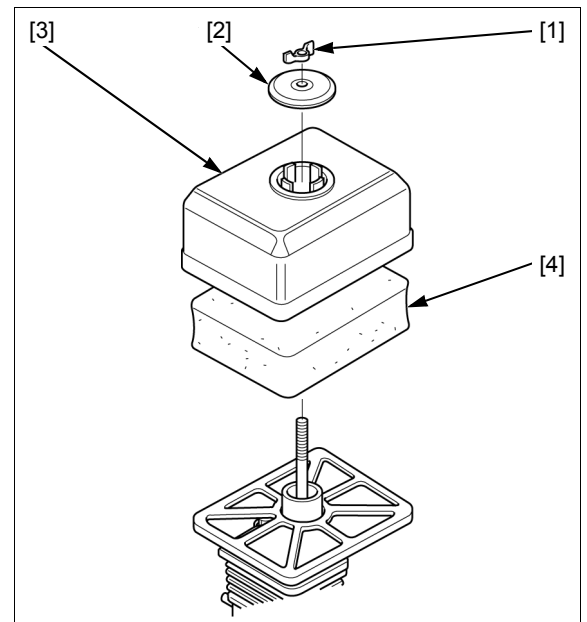
Remove the following:

- Wing nut [1]
- Air cleaner cap [2]
- Air cleaner cover [3]
- Air cleaner element [4]

Carefully check the element for holes or tears and replace if damaged.

Clean the element if it is to be reused [\(page 3-9\)](#).

Installation is in the reverse order of removal.



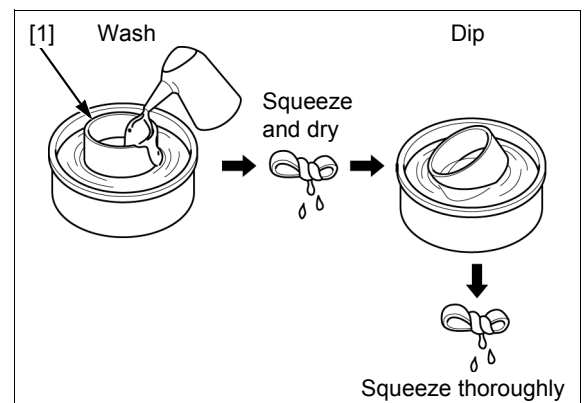
ELEMENT CLEANING

FOAM

Clean the filter [1] in warm soapy water, rinse, and allow to dry thoroughly, or clean with a non-flammable solvent and allow to dry thoroughly.

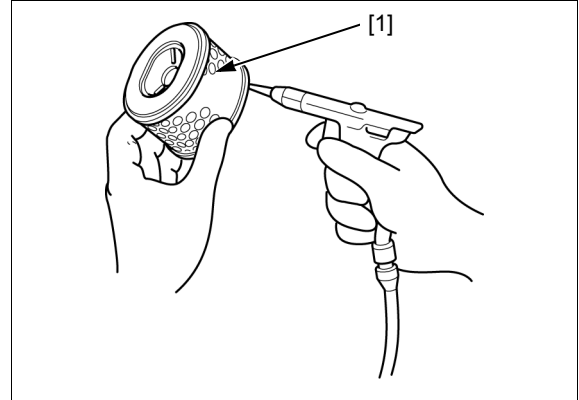
Dip the filter in clean engine oil, and squeeze out all the excess oil.

Excess oil will restrict air flow through the foam element and may cause the engine to smoke at startup.



PAPER

Tap the inner filter [1] lightly several times on a hard surface to remove excess dirt, or blow compressed air lightly (206 kPa [2.11 kgf/cm², 30 psi] or less) through the paper filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers.



SEDIMENT CUP CLEANING

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Turn the fuel valve lever [1] to the OFF position.

Remove the following:

- Sediment cup [2]
- O-ring [3]
- Cup filter [4]

Clean the sediment cup and the cup filter with non-flammable solvent and allow them to dry thoroughly.

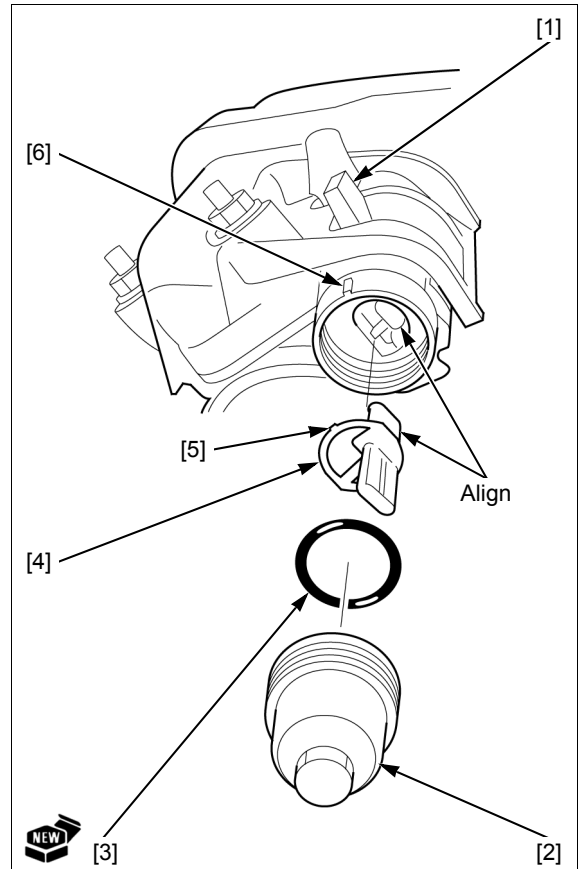
Install the cup filter while aligning the tip with the groove of the carburetor and cup filter tab [5] with the mark [6] of the carburetor.

Install a new O-ring and sediment cup.

Tighten the sediment cup to the specified torque.

TORQUE: 3.9 N·m (0.4 kgf·m, 2.9 lbf·ft)

Check the installation part of the sediment cup for any sign of fuel leakage.



SPARK PLUG CHECK/ADJUSTMENT

Remove the spark plug [\(page 3-11\)](#).

Visually inspect the spark plug. Replace the plug if it is heavily fouled or the insulator [1] is cracked or chipped.

Check the following and replace if necessary.

- Insulator and sealing washer [2] for damage
- Center electrode [3] and side electrode [4] for wear
- Burning condition, coloration

RECOMMENDED SPARK PLUG:

BPR6ES (NGK)

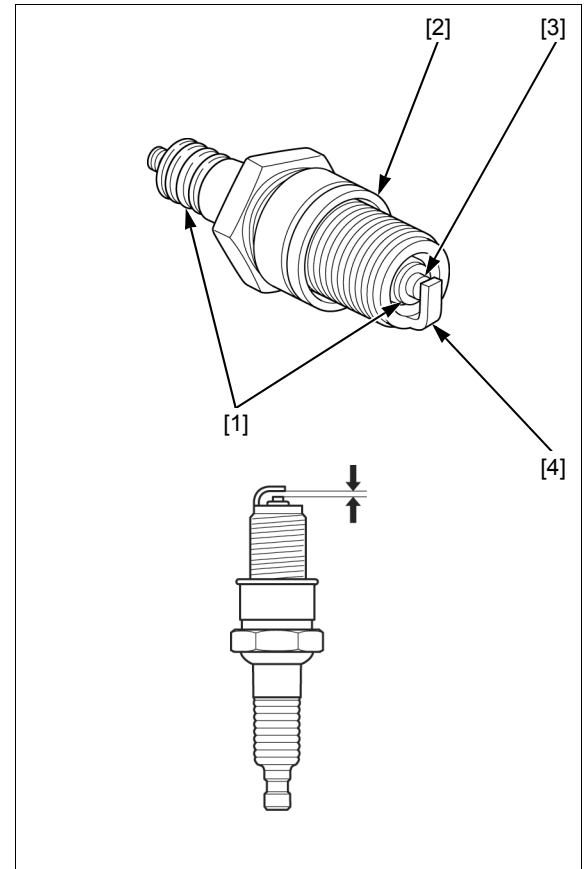
W20EPR-U (DENSO)

Measure the plug gap with a wire-type feeler gauge.

PLUG GAP: 0.70 – 0.80 mm (0.028 – 0.031 in)

If the measurement is out of the specification, adjust by bending the side electrode.

Install the spark plug [\(page 3-11\)](#).



SPARK PLUG REPLACEMENT

REMOVAL

⚠ CAUTION

The engine and the muffler becomes very hot during operation and remain hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

Disconnect the spark plug cap [1] and remove the spark plug [2].

NOTE:

- Clean around the spark plug base with compressed air before removing the spark plug, and be sure that no debris is allowed to enter into the combustion chamber.

INSTALLATION

Install the spark plug finger tight to seat the washer.

RECOMMENDED SPARK PLUG:

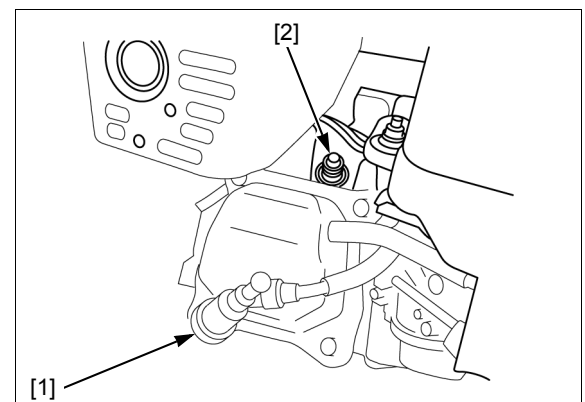
BPR6ES (NGK)

W20EPR-U (DENSO)

Tighten the spark plug to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Connect the spark plug cap.



SPARK ARRESTER CLEANING

⚠ CAUTION

The engine and the muffler comes very hot during operation and remain hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

STANDARD, SILENT TYPE

Remove the air cleaner (page 6-5).

Disconnect the spark plug cap [1].

Remove the four screws (5 x 8 mm) [2] and muffler protector [3].

Remove the screw (4 x 6 mm) [4] and spark arrester [5].

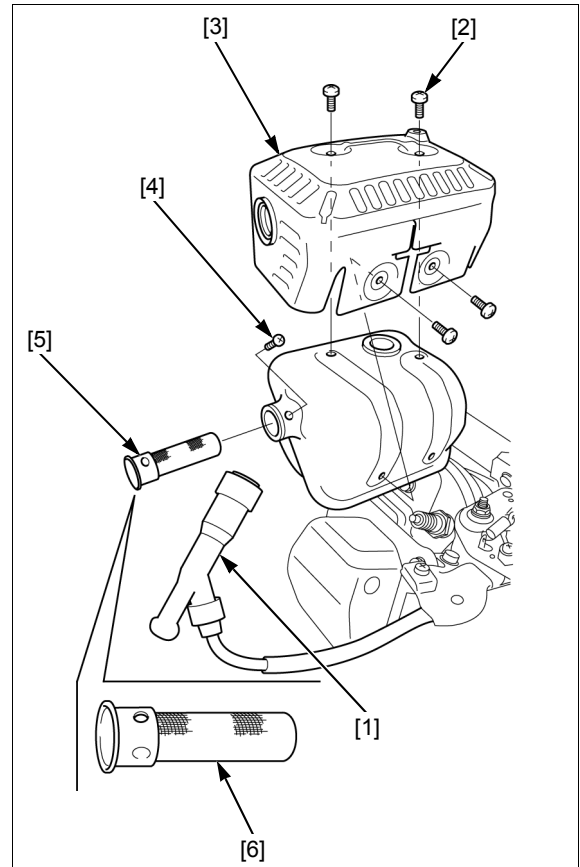
NOTICE

- Be careful to avoid damaging the screen.

Clean the carbon deposits from the spark arrester screen [6] with a wire brush.

Check the spark arrester screen for damage. If the screen is damaged, replace the spark arrester.

Install the spark arrester in the reverse order of removal.



LOW PROFILE TYPE

Remove the two bolts (8 x 20 mm) [1], muffler [2] and muffler gasket [3].

Remove the spark arrester [4].

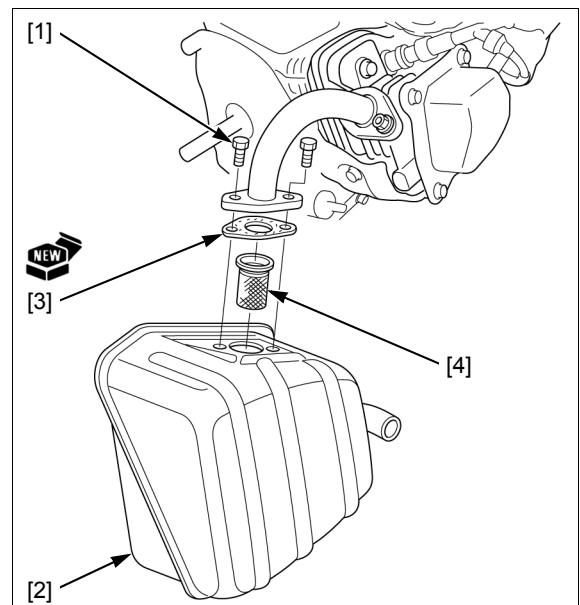
NOTICE

- Be careful to avoid damaging the screen.

Clean the carbon deposits from the spark arrester screen with a wire brush.

Check the spark arrester screen for damage. If the screen is damaged, replace the spark arrester.

Replace the muffler gasket with a new one and install the spark arrester in the reverse order of removal.



IDLE SPEED CHECK/ADJUSTMENT

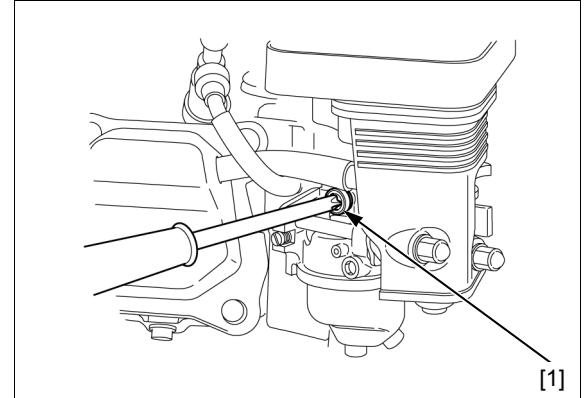
Ensure the governor arm and governor arm shaft are installed correctly ([page 7-5](#)).

Use a tachometer with graduations of 50 min^{-1} (rpm) or smaller that will accurately indicate 50 min^{-1} (rpm) change.

Start the engine and allow it to warm up to normal operating temperature.

Turn the throttle stop screw [1] to obtain the specified idle speed.

IDLE SPEED: $1,400 \begin{matrix} + 200 \\ - 150 \end{matrix} \text{ min}^{-1}$ (rpm)



VALVE CLEARANCE CHECK/ADJUSTMENT

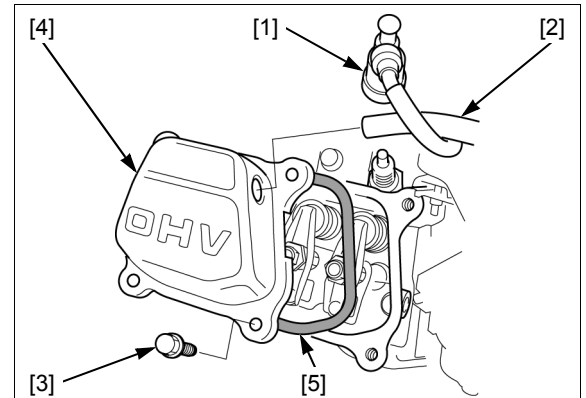
NOTICE

- *Inspect and adjust the valve clearance while the engine is cold.*

CHECK

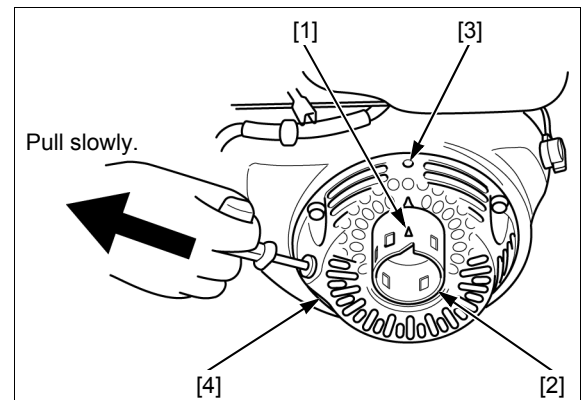
Disconnect the spark plug cap [1] and remove the following:

- Breather tube [2]
- Head cover bolt (6 x 12 mm) [3] (4)
- Head cover [4]
- Head cover packing [5]



Set the piston near top dead center of the cylinder compression stroke (both valves fully closed) by pulling the recoil starter slowly. When the piston is near top dead center of the compression stroke, the triangle mark [1] on the starter pulley [2] will align with the top hole [3] on the recoil starter case [4].

If the exhaust valve is open, use the recoil starter to turn the crankshaft one additional turn and align the triangle mark on the starter pulley with the top hole on the recoil starter case again.



Insert a thickness gauge [1] between the valve rocker arm [2] and valve stem [3] to measure the valve clearance.

VALVE CLEARANCE:

GX120/GX200:

IN: 0.15 ± 0.02 mm (0.006 ± 0.001 in)

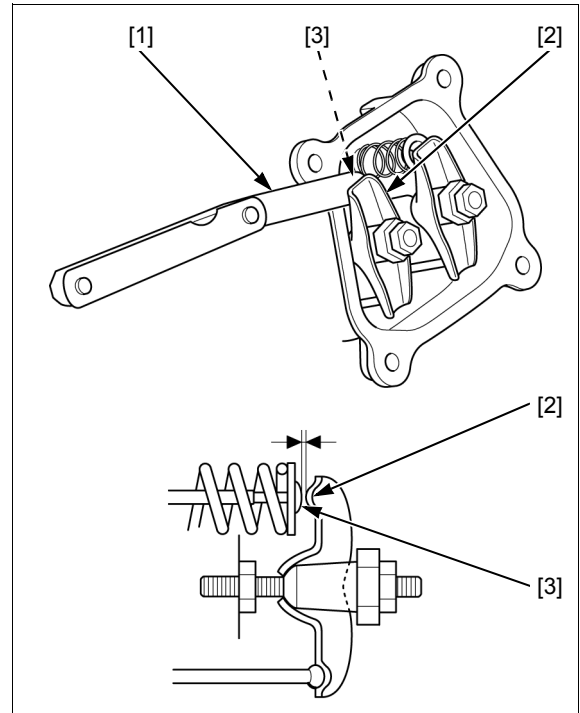
EX: 0.20 ± 0.02 mm (0.008 ± 0.001 in)

GX160:

IN: 0.08 ± 0.02 mm (0.003 ± 0.001 in)

EX: 0.10 ± 0.02 mm (0.004 ± 0.001 in)

If adjustment is necessary, proceed as follows.



ADJUSTMENT

Hold the rocker arm pivot [1] and loosen the pivot adjusting nut [2].

Insert a thickness gauge [3] between the valve rocker arm and the valve stem.

Adjust by turning the adjusting screw until there is a slight drag on the feeler gauge.

VALVE CLEARANCE:

GX120/GX200:

IN: 0.15 ± 0.02 mm (0.006 ± 0.001 in)

EX: 0.20 ± 0.02 mm (0.008 ± 0.001 in)

GX160:

IN: 0.08 ± 0.02 mm (0.003 ± 0.001 in)

EX: 0.10 ± 0.02 mm (0.004 ± 0.001 in)

Hold the rocker arm pivot and retighten the pivot adjusting nut to the specified torque.

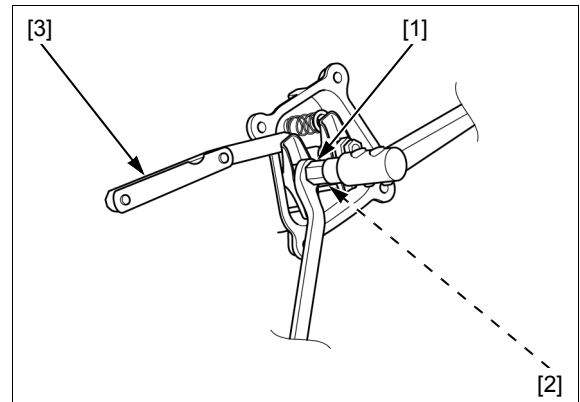
TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Recheck the valve clearance, and if necessary, readjust the clearance.

Replace the head cover packing with a new one and install the removed parts in the reverse order of removal.

NOTE:

- Route the high-tension cord and breather tube properly ([page 2-10](#)).

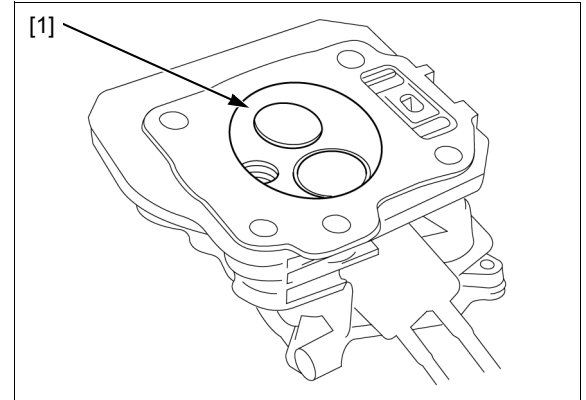


COMBUSTION CHAMBER CLEANING

Remove the cylinder head ([page 13-3](#)).

Clean any carbon deposits from the combustion chamber [1].

Installation is in the reverse order of removal.



FUEL TANK AND FILTER CLEANING

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Remove the fuel tank ([page 6-3](#)).

Remove the fuel tank joint [1] and O-ring [2] from the fuel tank [3].

Clean the fuel tank joint and fuel tank with non-flammable solvent, and allow them to dry thoroughly.

Check the screen of the fuel tank joint for clogs or damage.

Replace if necessary.

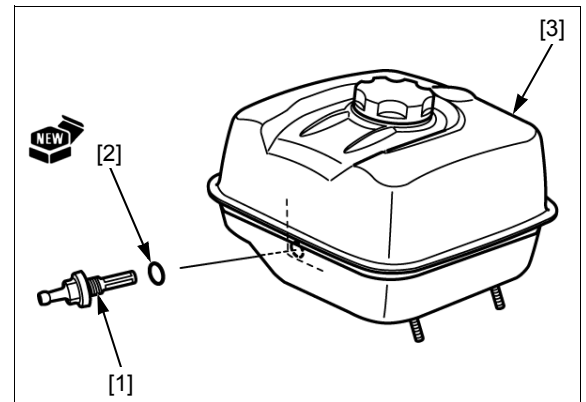
Install a new O-ring on the fuel tank joint and install the fuel tank joint to the fuel tank.

Tighten the fuel tank joint to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m, 1.5 lbf·ft)

Install the fuel tank ([page 6-3](#)).

After installation, check for any signs of fuel leakage.



FUEL TUBE CHECK

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

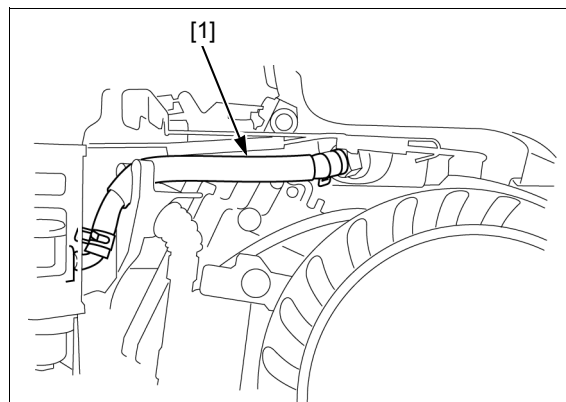
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Check the fuel tube [1] for deterioration, cracks, or signs of leakage.

Replace if necessary.

NOTE:

- When checking, GX160/GX200 remove the fan cover [\(page 5-2\)](#).



4. TROUBLESHOOTING

BEFORE TROUBLESHOOTING.....4-2

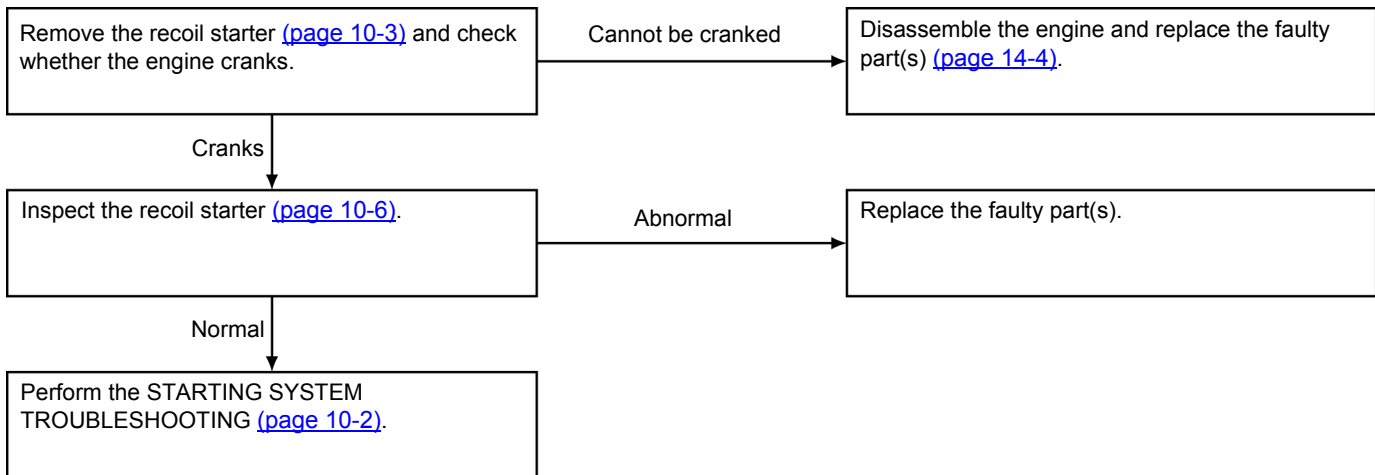
TROUBLESHOOTING4-2

BEFORE TROUBLESHOOTING

- Use a known-good battery for troubleshooting.
- Check that the connectors are connected securely.
- Check for sufficient fresh fuel in the fuel tank.
- Read the circuit tester's operation instructions carefully, and observe the instructions during inspection.

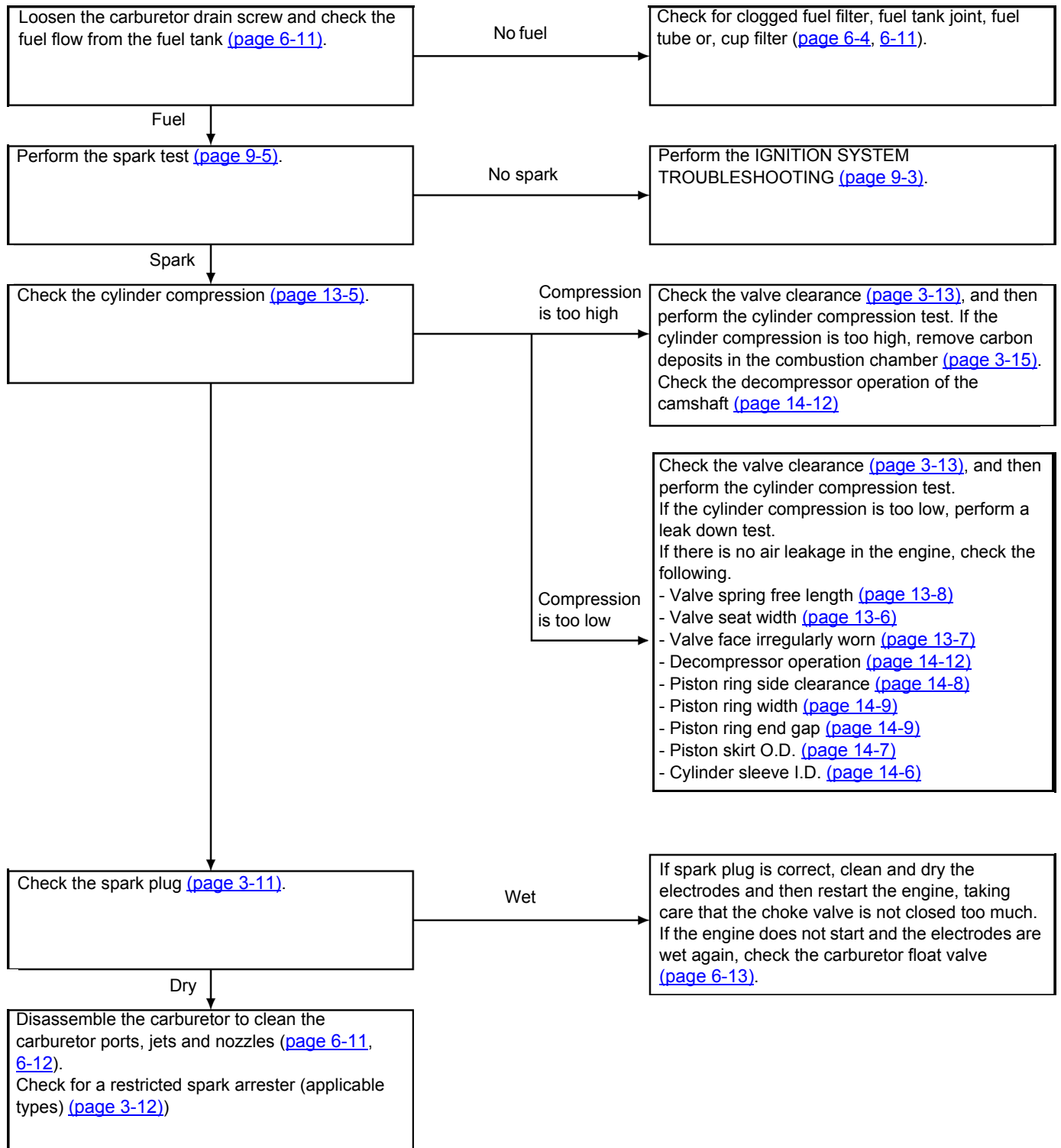
TROUBLESHOOTING

ENGINE DOES NOT CRANK

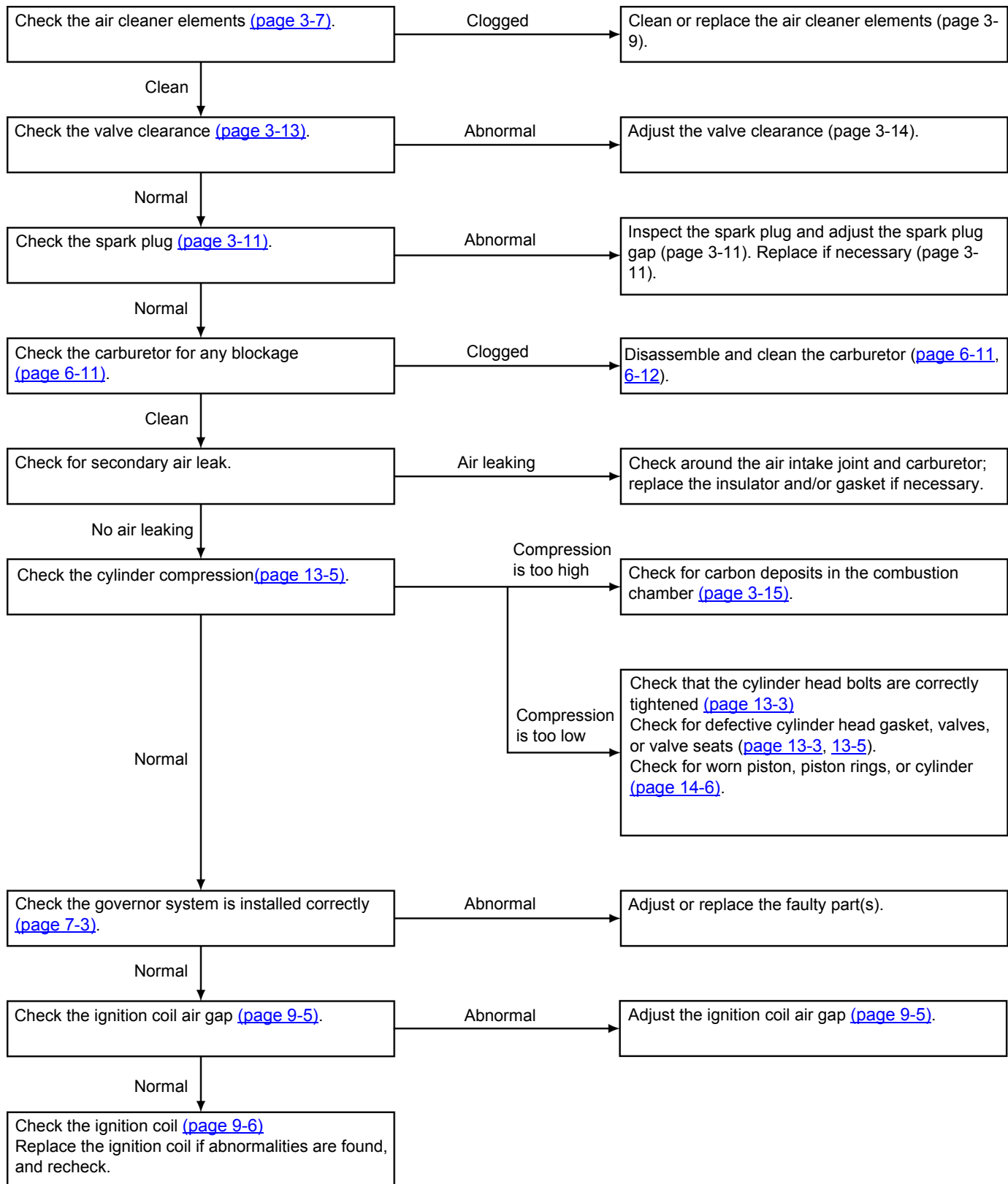


ENGINE CRANKS BUT WON'T START

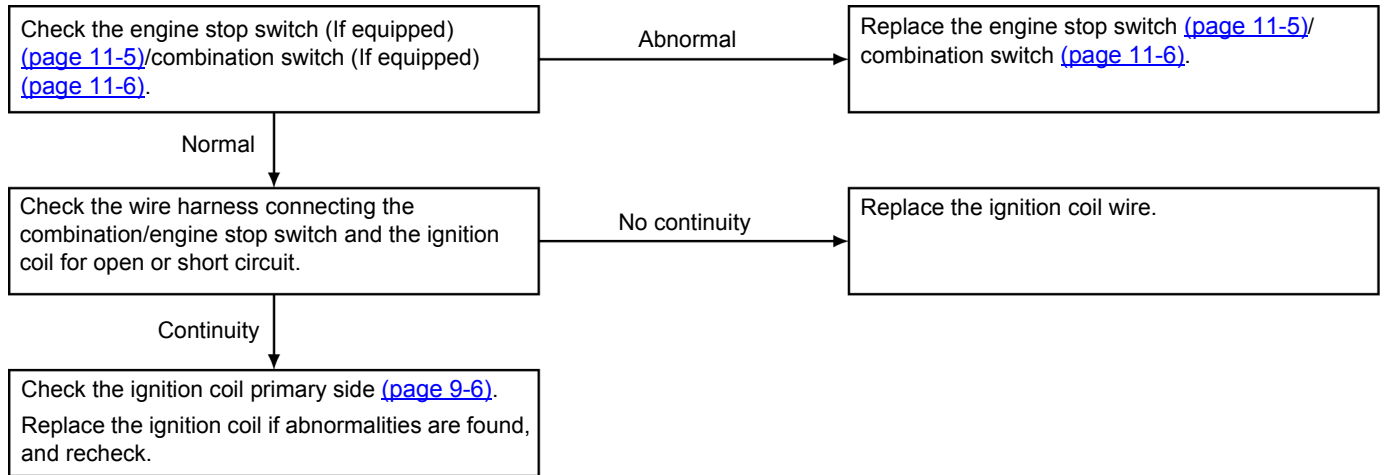
- Check the oil level before troubleshooting ([page 3-3](#)).



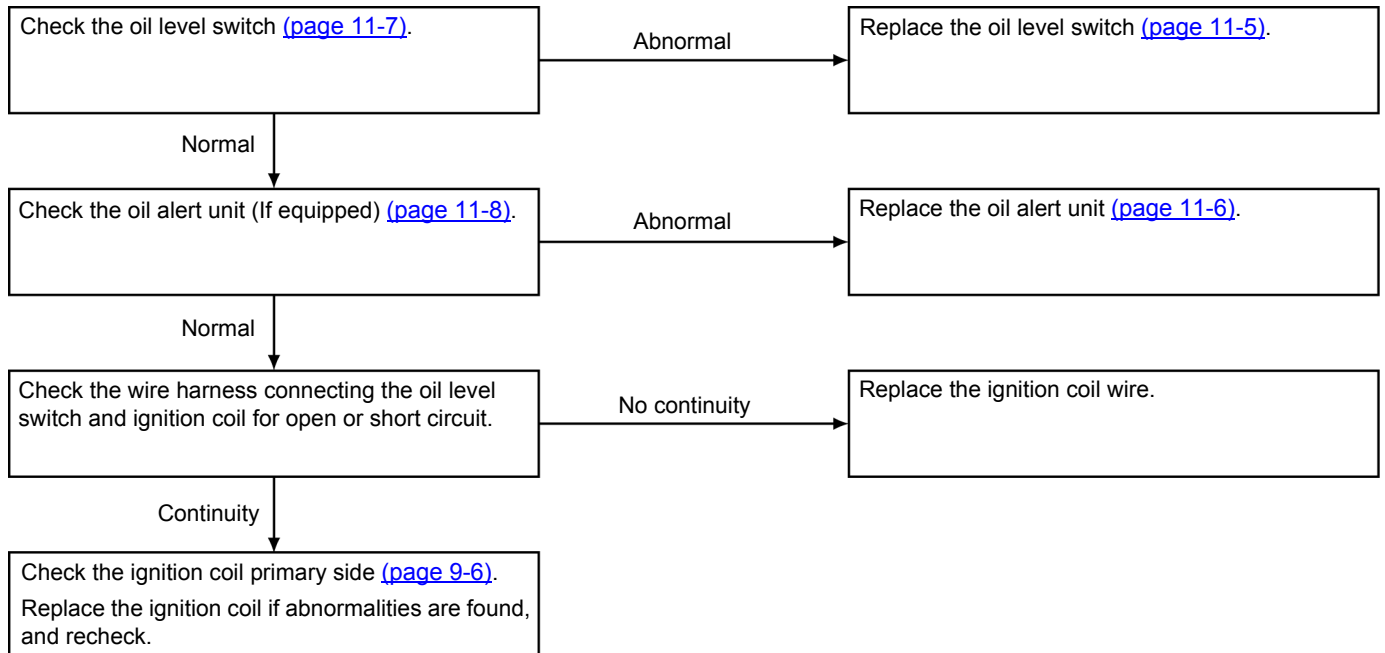
ENGINE SPEED DOES NOT INCREASE OR STABILIZE



**ENGINE DOES NOT STOP WHEN COMBINATION/
ENGINE STOP SWITCH IS TURNED OFF**



**ENGINE DOES NOT STOP WHEN ENGINE OIL
LEVEL IS LOW**



MEMO

FAN COVER REMOVAL/INSTALLATION....5-2

FAN COVER REMOVAL/INSTALLATION

GX120: Remove the fuel tube from the clamp.

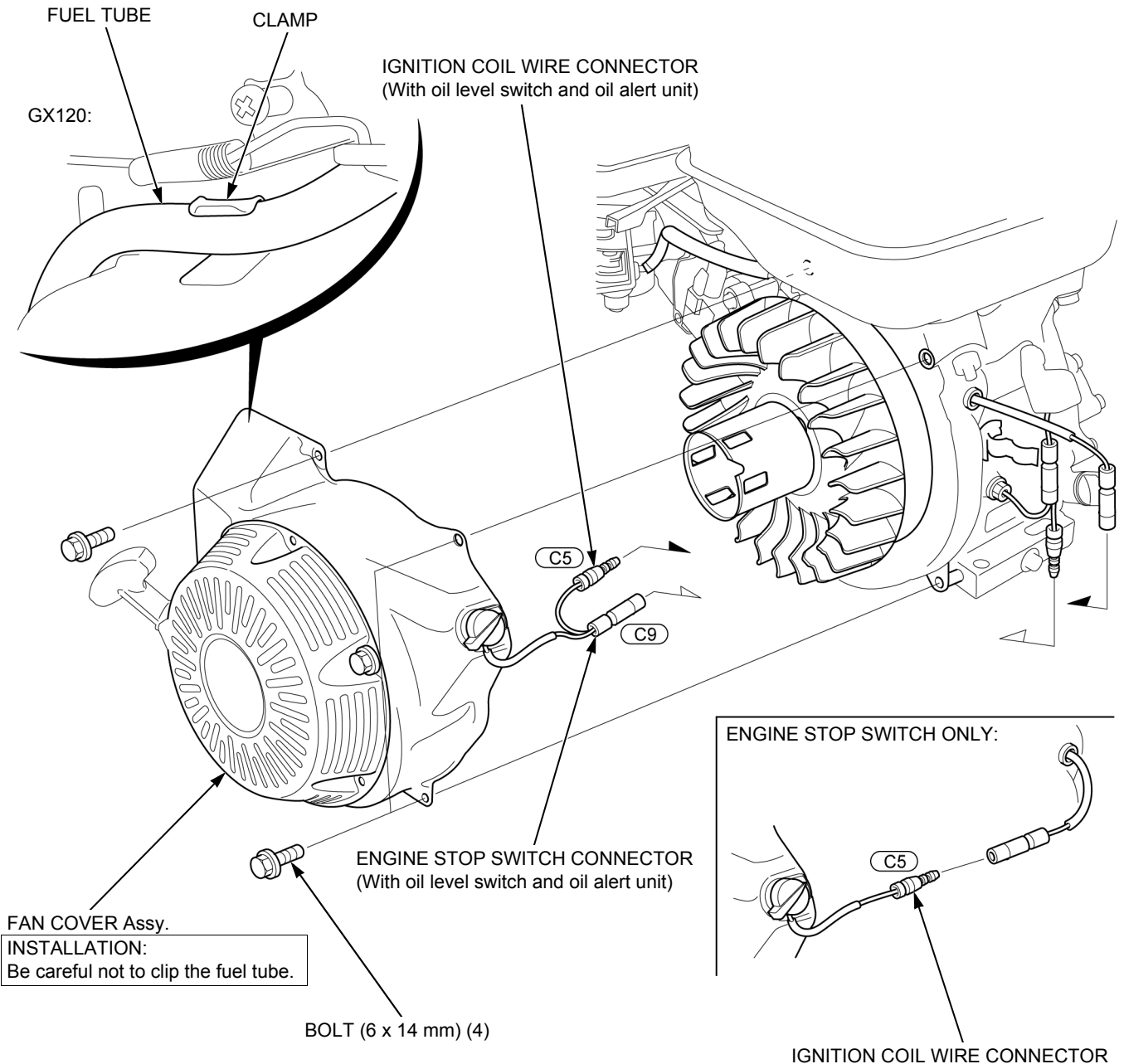
Starter motor type: Remove the control box ([page 11-3](#)).

When disassembling the fan cover, remove the following:

- Recoil starter Assy. ([page 10-3](#))
- Engine stop switch ([page 11-5](#))
(with engine stop switch type)
- Grommet
(without engine stop switch type)

NOTE:

- Route the tube and wires properly ([page 2-10](#)).

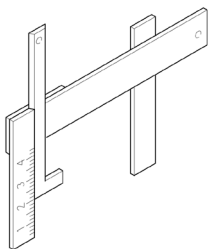


6. FUEL SYSTEM

TOOLS.....	6-2	CARBURETOR BODY CLEANING	6-12
FUEL TANK REMOVAL/INSTALLATION	6-3	CARBURETOR INSPECTION	6-12
AIR CLEANER REMOVAL/ INSTALLATION.....	6-5	PILOT SCREW REPLACEMENT	6-13
CARBURETOR REMOVAL/ INSTALLATION.....	6-10	CHOKE REPLACEMENT	6-14
CARBURETOR DISASSEMBLY/ ASSEMBLY	6-11	CARBURETOR STUD BOLT REPLACEMENT	6-14

TOOLS

Float level gauge
07401-0010000



Jet cleaner set
07JPZ-001010B



HONDA	
Cleaner / Jet	Size / Range
1.	35 - 40
2.	42 - 48
3.	50 - 55
4.	58 - 62
5.	65 - 72
6.	75 - 82
7.	85 - 90
8.	92 - 95
9.	98 - 100
10.	102 - 110

or 07JPZ-001010A

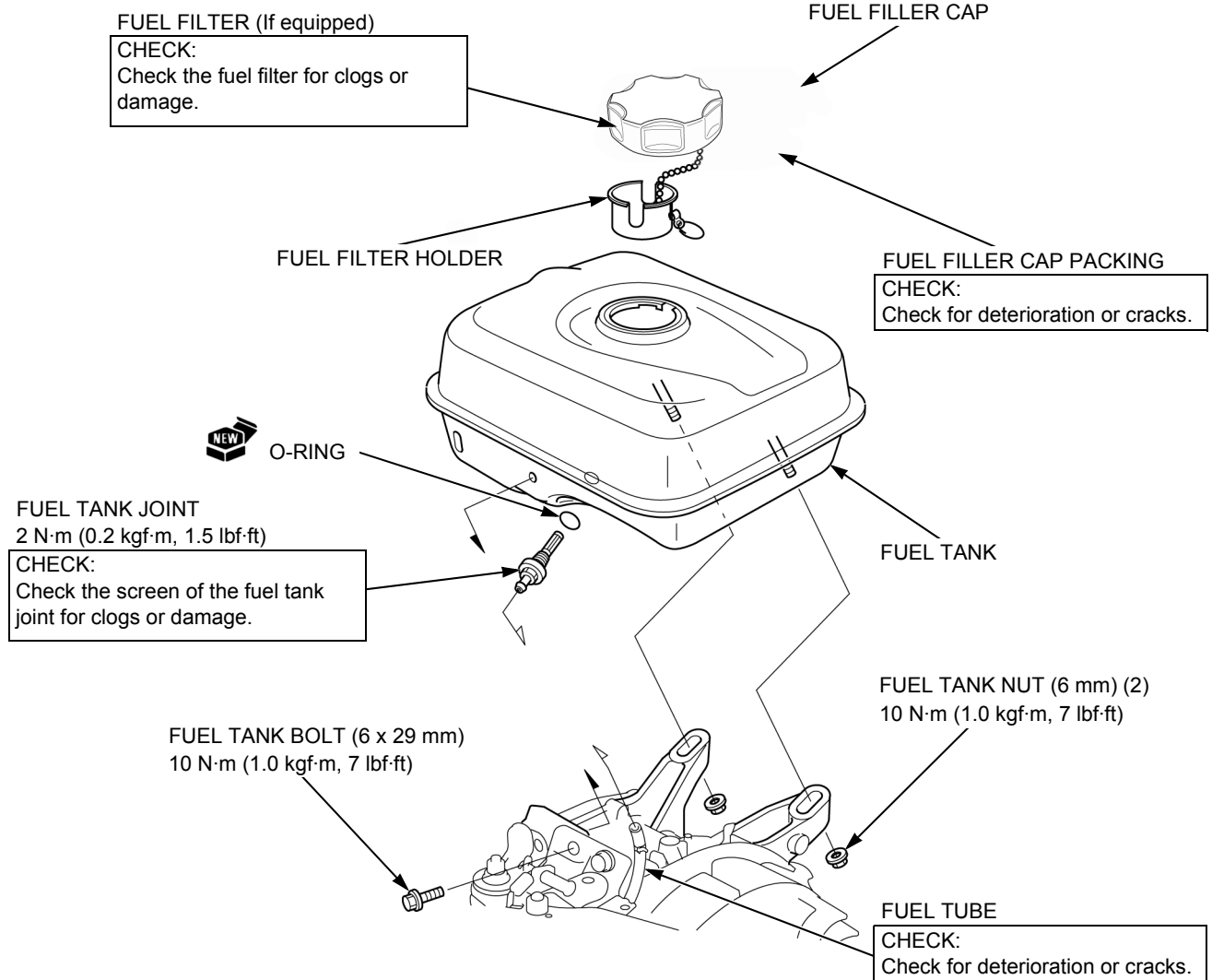
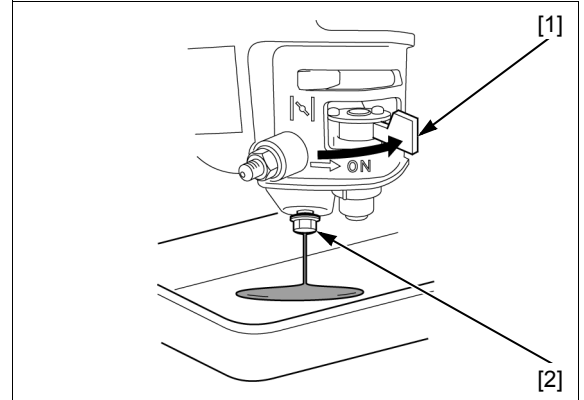
FUEL TANK REMOVAL/INSTALLATION

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

- GX160/GX200:* Remove the fan cover ([page 5-2](#)).
- Starter motor type:* Remove the starter motor ([page 10-7](#)).
- Place a suitable container under the carburetor.
- Turn the fuel valve lever [1] to the ON position.
- Loosen the drain screw [2] and drain the fuel.
- NOTE:**
- Route the fuel tube properly ([page 2-10](#)).



FUEL FILLER CAP/FUEL FILTER HOLDER REMOVAL/INSTALLATION

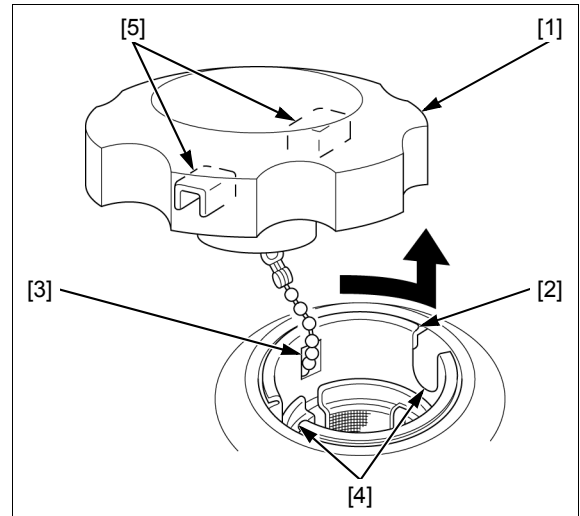
Remove the fuel filler cap [1].

Turn the fuel filter holder [2] to align it the tether hole [3] with the cutout [4] of the fuel filler neck, and then remove the fuel filler cap.

Before installing, check the air vent hole of the fuel filler cap for clogs. If necessary, clean it using low-pressure compressed air.

Install the fuel filter holder into the fuel filler neck and align the cutouts.

Set the fuel filler cap to the fuel filler neck by aligning the projections [5] of the cap with the cutouts of the fuel filler neck and fuel filter holder and then turn the fuel filler cap.

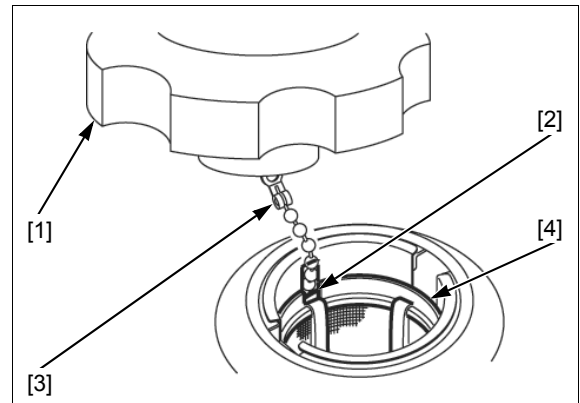


FUEL FILTER REMOVAL/INSTALLATION

Remove the fuel filler cap [1].

Remove or install the fuel filter by aligning the cutout [2] of the fuel filter with the fuel filler cap tether [3] as shown.

Before installing, check the screen of the fuel filter [4] for clogs or damage.

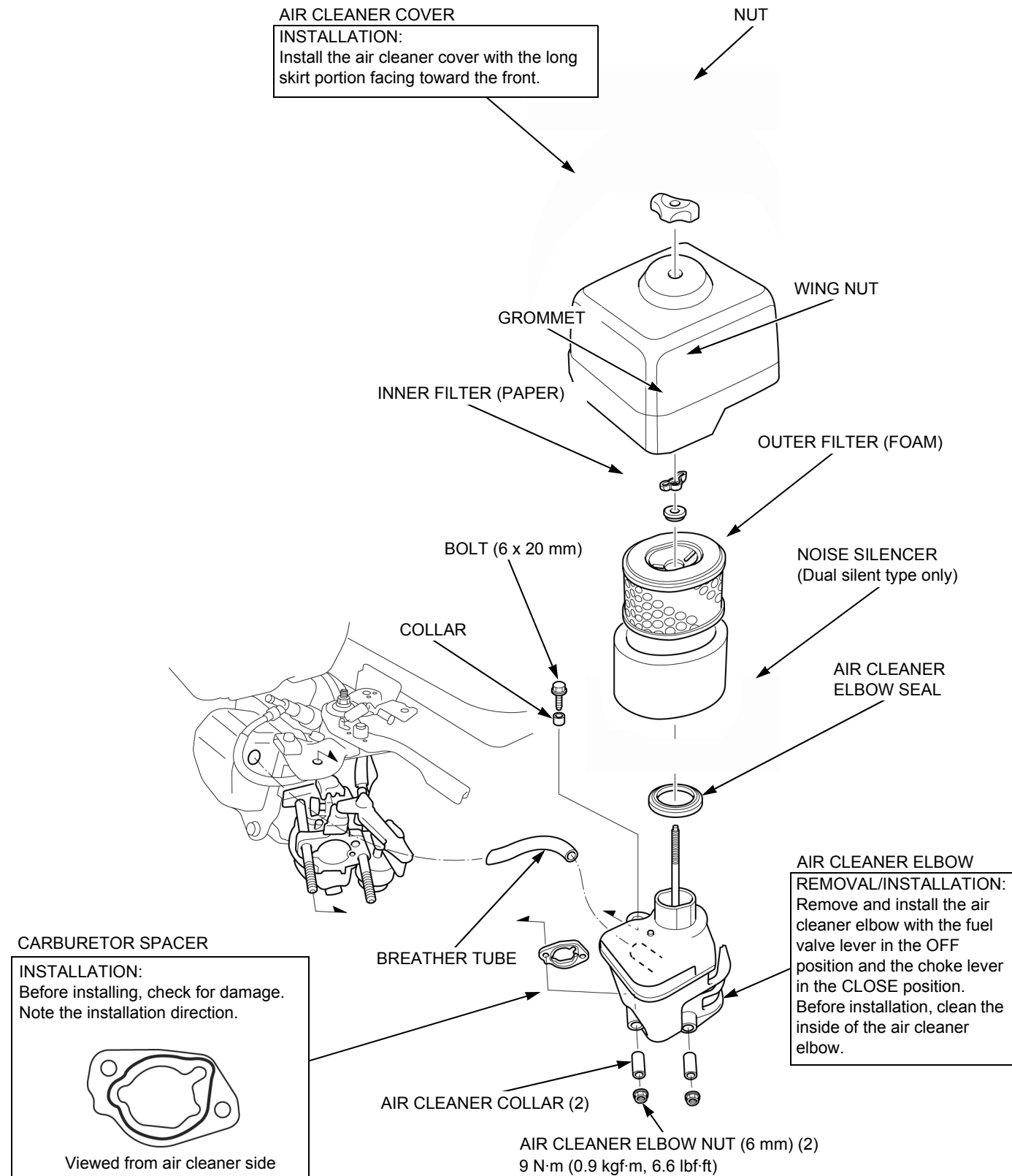


AIR CLEANER REMOVAL/ INSTALLATION

DUAL, DUAL SILENT TYPE

NOTE:

- Route the breather tube properly ([page 2-10](#)).



CYCLONE TYPE

CARBURETOR SPACER

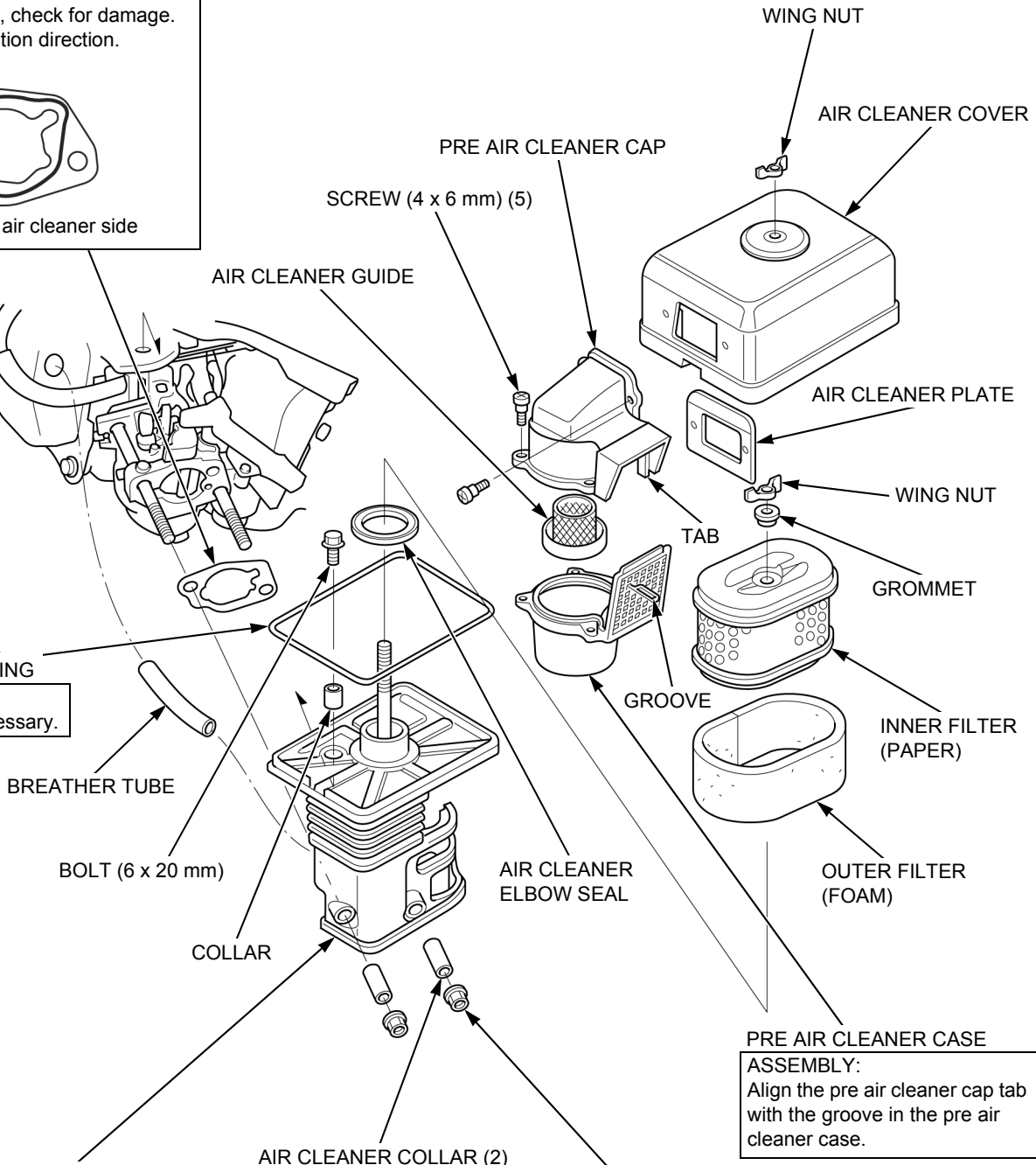
INSTALLATION:
Before installing, check for damage.
Note the installation direction.



Viewed from air cleaner side

AIR CLEANER COVER PACKING

CHECK:
Replace if necessary.



AIR CLEANER ELBOW

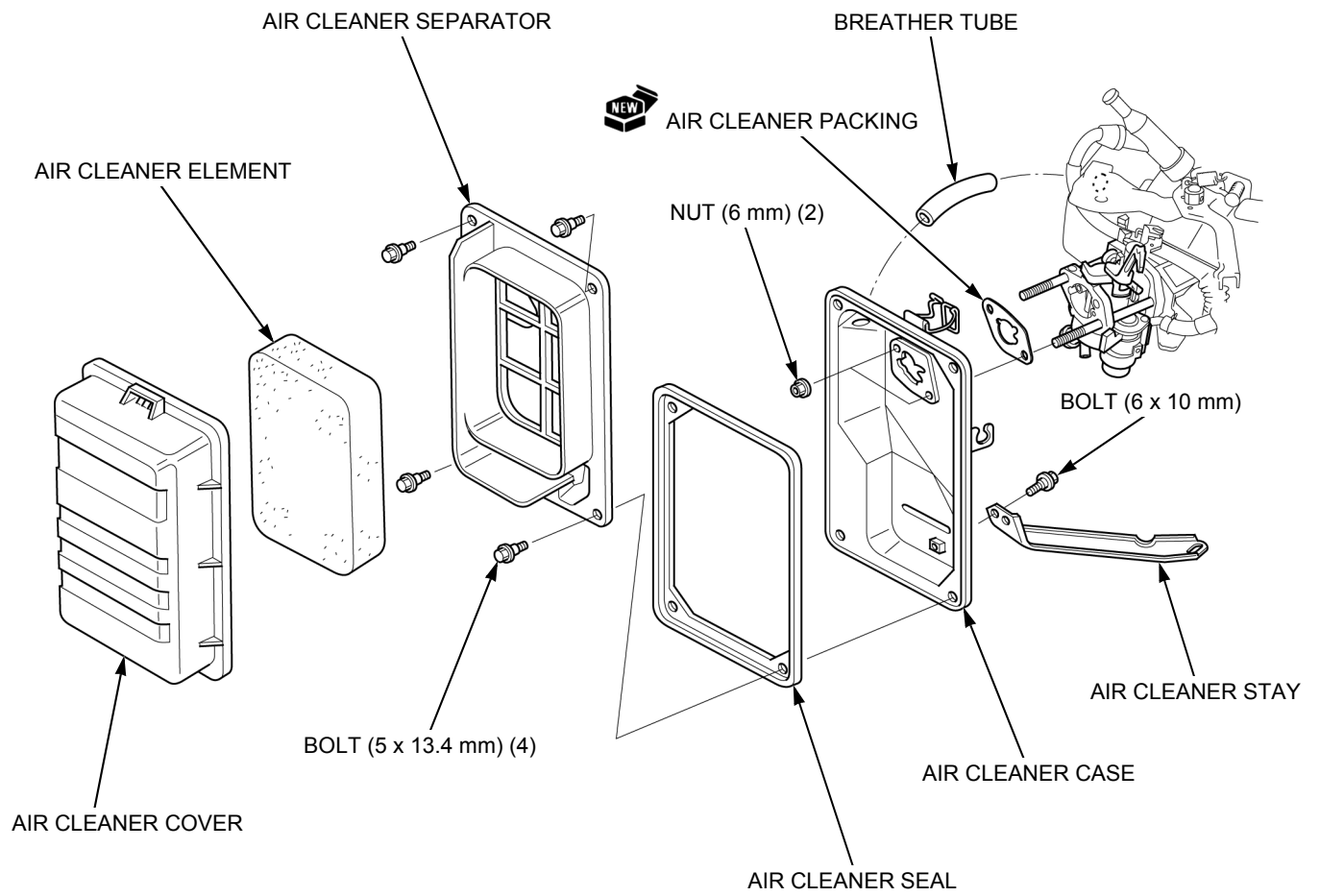
REMOVAL/INSTALLATION:
Remove and install the air cleaner elbow with the fuel valve lever in the OFF position and the choke lever in the CLOSE position. Before installation, clean the inside of the air cleaner elbow.

AIR CLEANER COLLAR (2)

AIR CLEANER ELBOW NUT (6 mm) (2)
9 N·m (0.9 kgf·m, 6.6 lbf·ft)

PRE AIR CLEANER CASE ASSEMBLY:
Align the pre air cleaner cap tab with the groove in the pre air cleaner case.

LOW PROFILE TYPE



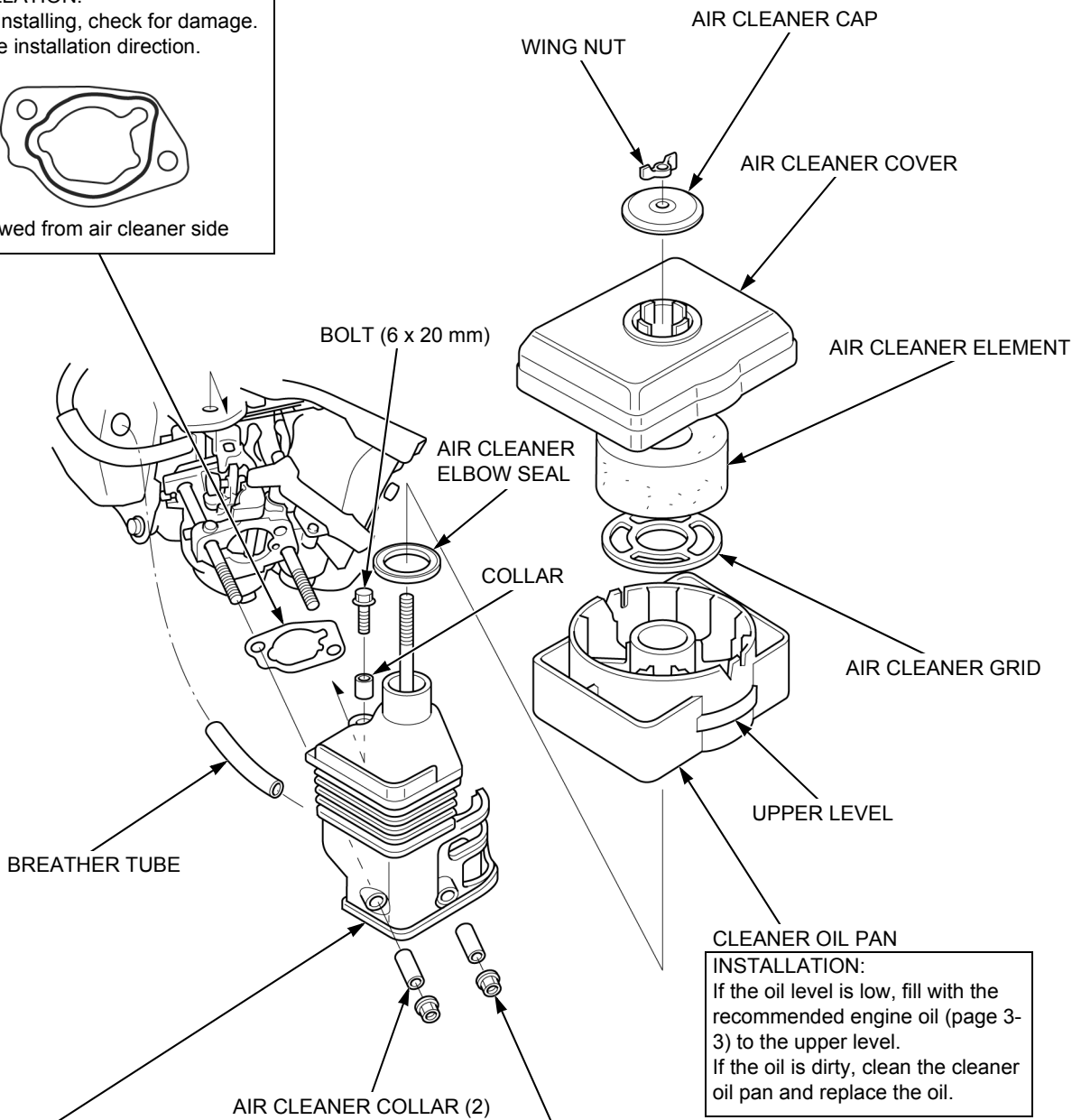
OIL BATH TYPE

CARBURETOR SPACER

INSTALLATION:
Before installing, check for damage.
Note the installation direction.



Viewed from air cleaner side



AIR CLEANER ELBOW

REMOVAL/INSTALLATION:
Remove and install the air cleaner elbow with the fuel valve lever in the OFF position and the choke lever in the CLOSE position. Before installation, clean the inside of the air cleaner elbow.

AIR CLEANER ELBOW NUT (6 mm) (2)
9 N·m (0.9 kgf·m, 6.6 lbf·ft)

CLEANER OIL PAN

INSTALLATION:
If the oil level is low, fill with the recommended engine oil (page 3-3) to the upper level.
If the oil is dirty, clean the cleaner oil pan and replace the oil.

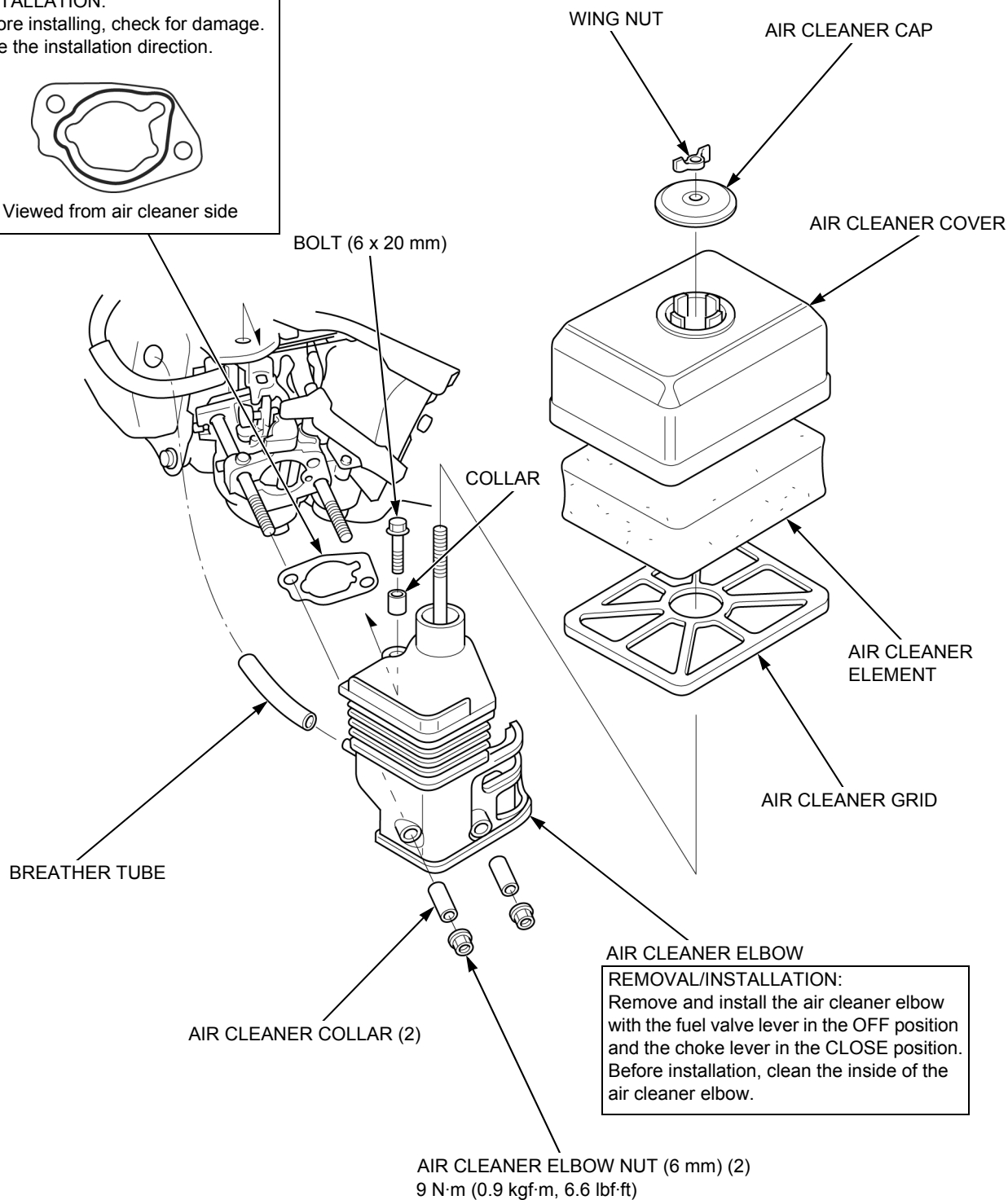
SEMI DRY TYPE

CARBURETOR SPACER

INSTALLATION:
Before installing, check for damage.
Note the installation direction.



Viewed from air cleaner side



REMOVAL/INSTALLATION:
Remove and install the air cleaner elbow
with the fuel valve lever in the OFF position
and the choke lever in the CLOSE position.
Before installation, clean the inside of the
air cleaner elbow.

CARBURETOR REMOVAL/ INSTALLATION

⚠ WARNING

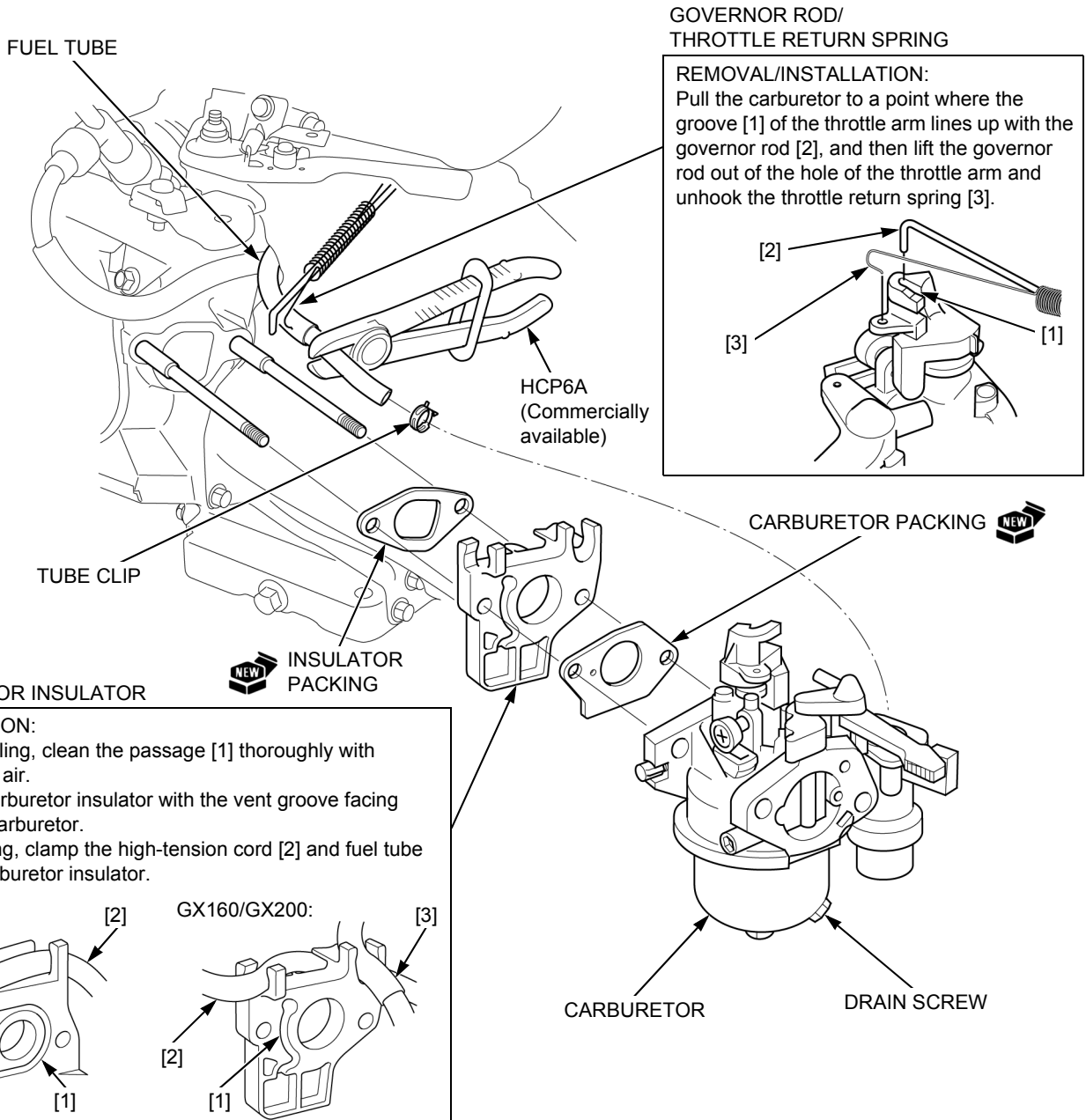
Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Remove the air cleaner [\(page 6-5\)](#).

Set a commercially available tube clamp HCP6A on the fuel tube.

Loosen the drain screw of the carburetor to drain the fuel completely [\(page 6-3\)](#).



CARBURETOR DISASSEMBLY/ ASSEMBLY

⚠ WARNING

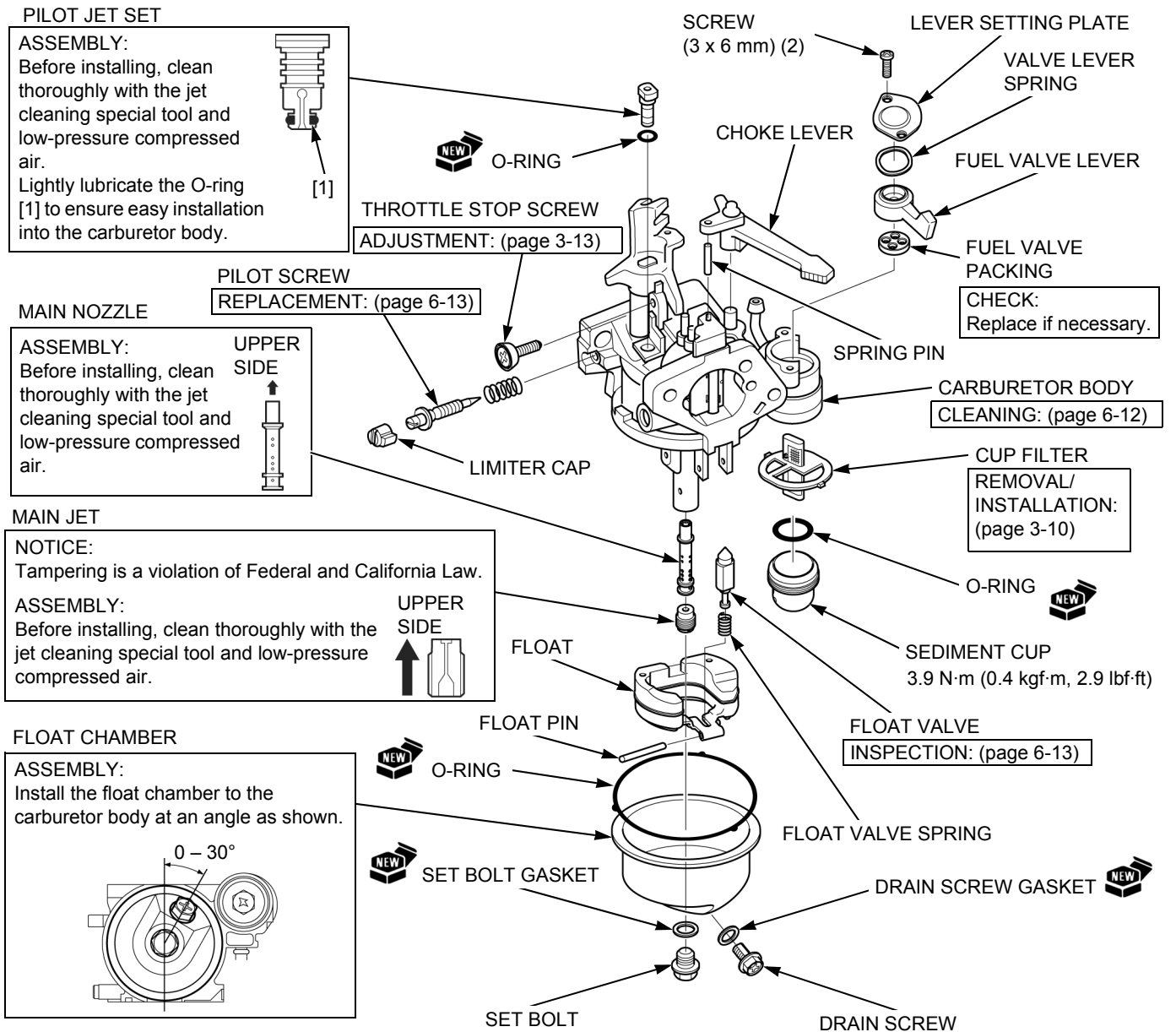
Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

⚠ CAUTION

To prevent serious eye injury, always wear safety goggles or other eye protection when using compressed air.

Remove the carburetor ([page 6-10](#)).
Before disassembly, clean the outside of the carburetor.



CARBURETOR BODY CLEANING

⚠ CAUTION

To prevent serious eye injury, always wear safety goggles or other eye protection when using compressed air.

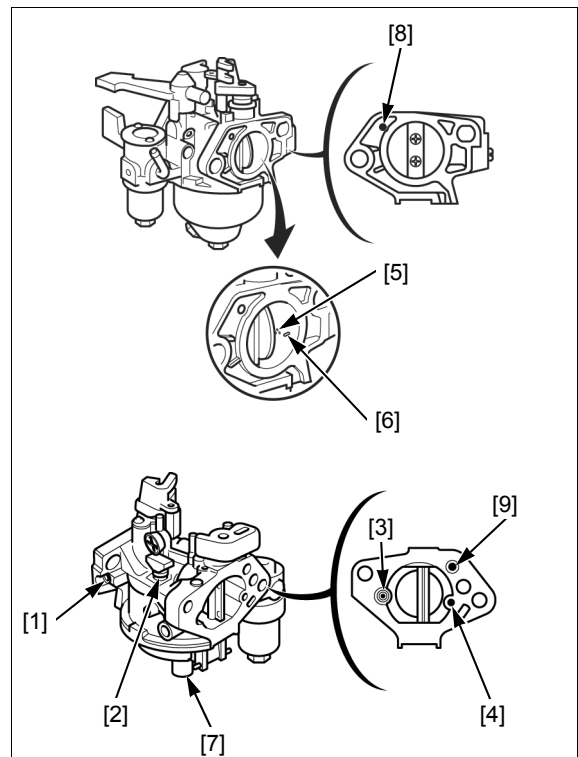
NOTICE

- Some commercially available chemical cleaners are very caustic. These cleaners may damage plastic parts such as the O-ring, the float, and the float seat of the carburetor. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.
- High air pressure may damage the carburetor body. Use low air pressure (206 kPa [2.11 kgf/cm², 30 psi] or less) when cleaning passages and ports.

Clean the carburetor body with non-flammable solvent.

Clean thoroughly the following passages and ports with the jet cleaning special tool and low-pressure compressed air.

- Pilot screw hole [1]
- Pilot jet hole [2]
- Pilot air jet [3]
- Main air jet [4]
- Transition ports [5]
- Pilot outlet [6]
- Main nozzle holder [7]
- External vent port [8]
- Internal vent port [9]



CARBURETOR INSPECTION

FLOAT LEVEL HEIGHT

Place the carburetor in the position as shown. Measure the distance between the float top and carburetor body when the float just contacts the seat without compressing the valve spring.

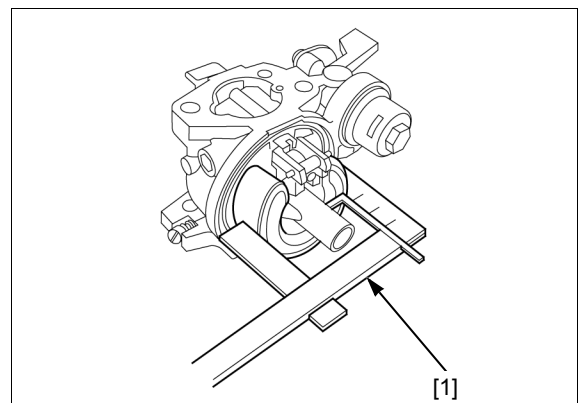
TOOL:

Float level gauge [1] 07401-0010000

FLOAT HEIGHT: 13.7 mm (0.54 in)

If the measured float height is out of specification, check the float valve and float valve spring ([page 6-13](#)).

If the float valve and float valve spring are normal, replace the float ([page 6-11](#)).



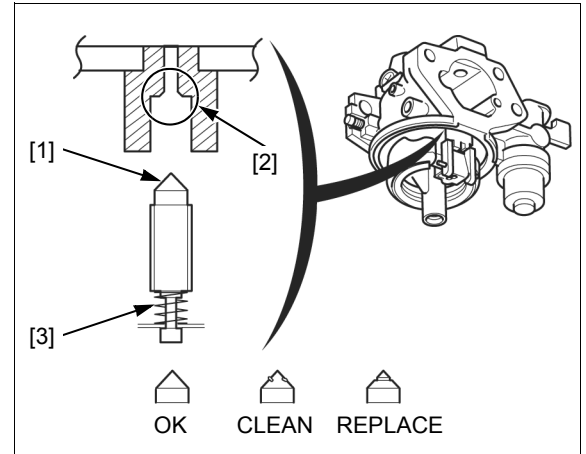
FLOAT VALVE

Check the float valve and its seat [1] for wear or contamination.

Check the valve seat [2] for clogs.

Before installation, check for wear or a weak float valve spring [3].

Check the operation of the float valve.



PILOT SCREW REPLACEMENT

NOTICE

• *Tampering is violation of Federal and California Law.*

Only remove the pilot screw [1] and limiter cap [2] when necessary for repair or to clean stubborn deposits from the pilot circuit passages.

Removal of the limiter cap requires breaking the pilot screw. A new pilot screw and limiter cap must be installed.

When the limiter cap has been broken off, remove the broken pilot screw.

Place the spring on the replacement pilot screw, and install it on the carburetor.

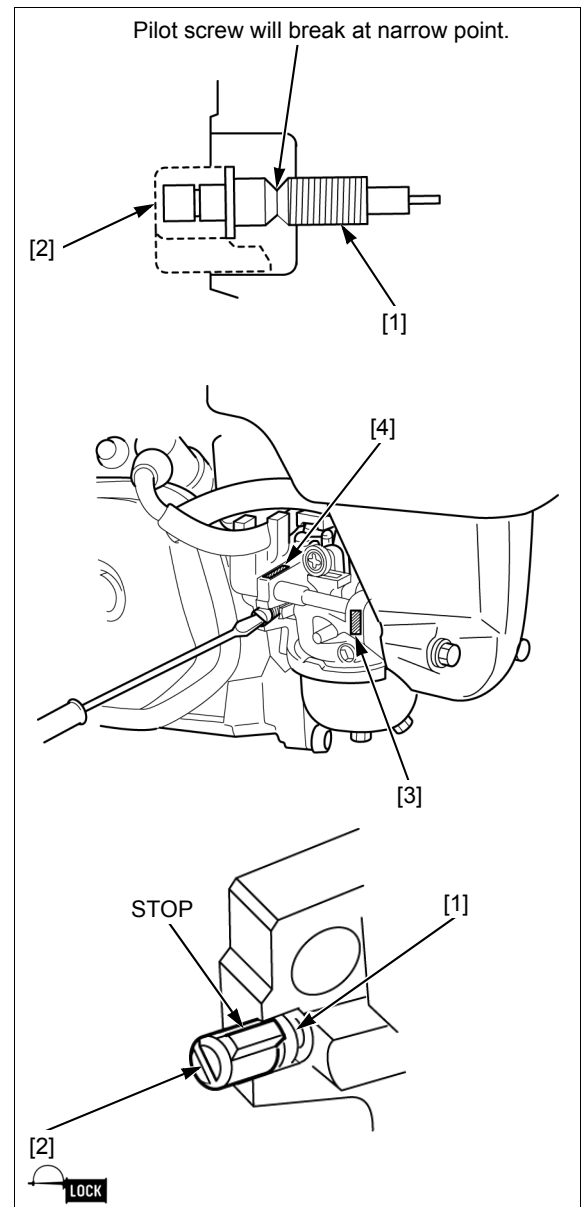
Turn the pilot screw in until it is lightly seated, and then turn the screw out the required number of turns.

Model	Carburetor identification Number [3] + [4]	Pilot screw opening
GX120	BE60W A	2-1/8
	BE99A A	1-5/8
	BE61M A	2-1/8
	BE99B A	2-1/8
GX160	BE54C A	2-1/4
	BE54D A	1-7/8
	BE66U A	1-7/8
	BE54P A	2-1/2
GX200	BE54J B	1-7/8
	BE59L A	1-7/8
	BE59N A	1-7/8
	BE59U A	2-1/4
	BE74Y A	2-3/4

Refer to the table above for carburetor pilot screw initial opening setting.

Apply Hondalock 3, LOCTITE 638, or equivalent to the inside of the limiter cap, and then install the cap so the stop prevents the pilot screw from being turned counterclockwise.

Be careful to avoid turning the pilot screw while installing the limiter cap. The pilot screw must stay at its required setting.



CHOKE REPLACEMENT

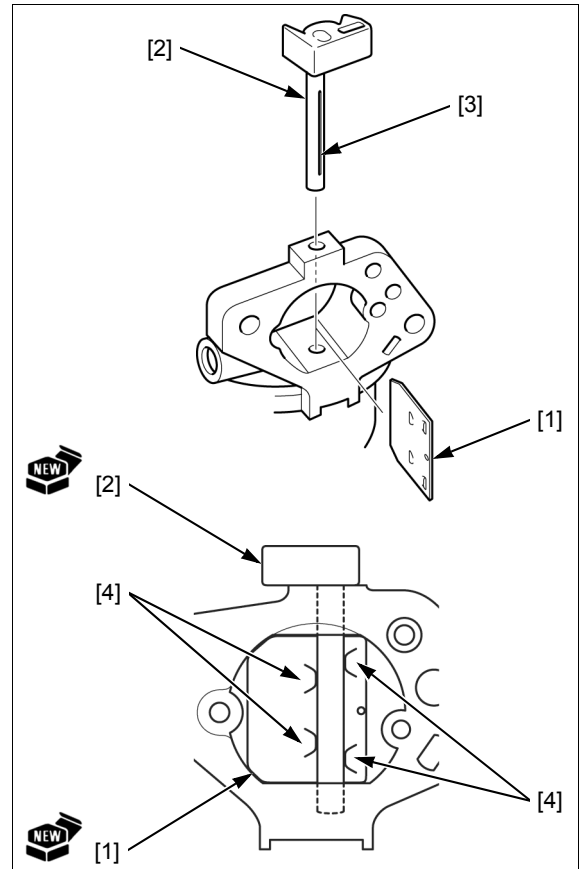
Remove the carburetor ([page 6-10](#)).

Pull out the choke valve plate [1].

Remove the choke shaft [2] and install a new choke shaft.

Insert a new choke valve plate into the slit [3] of the choke shaft.

Be sure the choke shaft is in the position between the projections [4] of the choke valve plate.

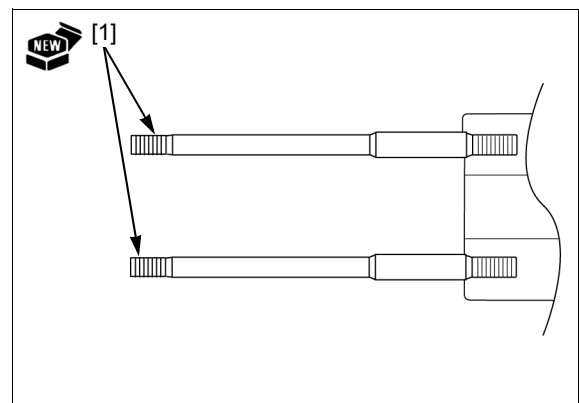


CARBURETOR STUD BOLT REPLACEMENT

Remove the carburetor ([page 6-10](#)).

Thread two nuts onto the carburetor stud bolt [1] and tighten them together, then use a wrench to turn the stud bolt out.

Install and tighten new stud bolts until they are fully seated.



7. GOVERNOR SYSTEM

GOVERNOR MECHANISM	7-2	GOVERNOR ADJUSTMENT	7-5
GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION	7-3	GOVERNOR DISASSEMBLY/ ASSEMBLY	7-6
CONTROL BASE Assy. DISASSEMBLY/ ASSEMBLY	7-4	MAXIMUM SPEED ADJUSTMENT	7-7

GOVERNOR MECHANISM

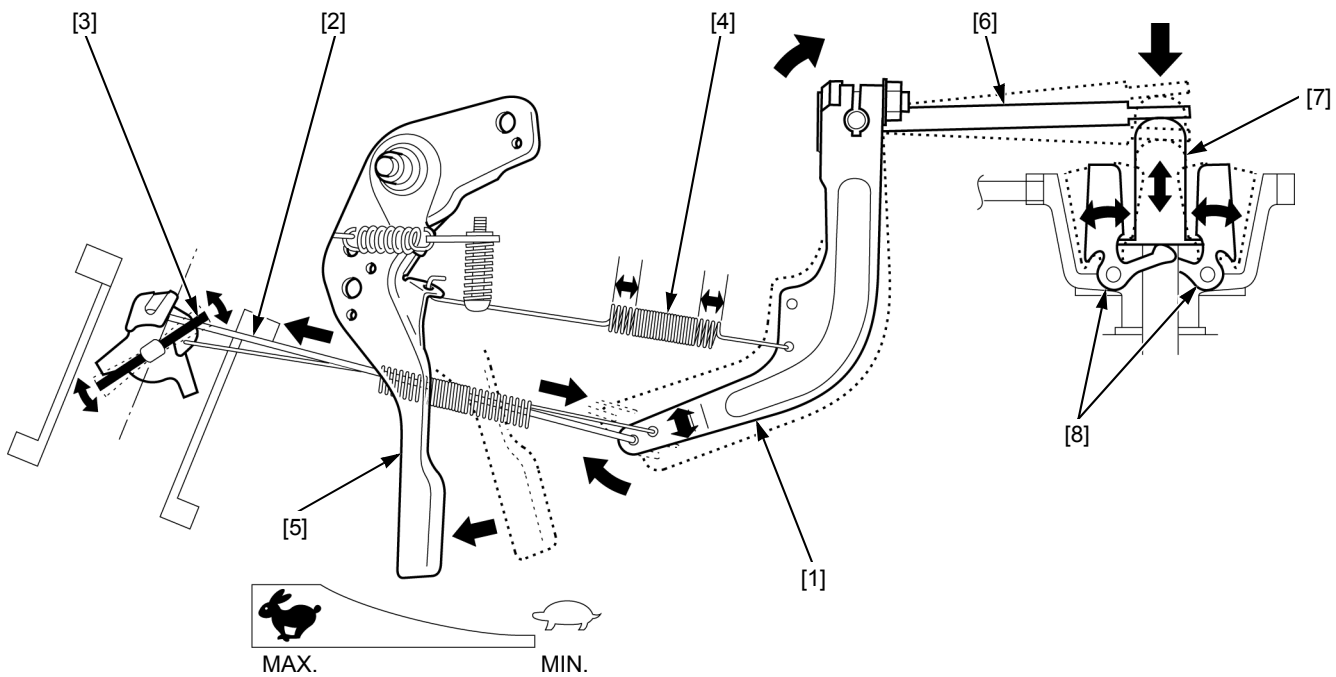
FUNCTION OF THE COMPONENTS

The free end of the governor arm [1] is linked by the governor rod [2] to the carburetor throttle valve [3]. The governor arm moves to open and close the throttle.

The middle of the governor arm is connected by the governor spring [4] to the throttle lever [5]. The pivot end of the governor arm is connected by the governor arm shaft [6] to the governor slider [7]. During operation, the governor arm is pulled left or right by the action of the governor spring and the governor arm shaft.

Centrifugal weights [8] apply outward pressure against the governor slider in proportion to the engine speed. As engine speed increases, the governor slider is forced outward against the governor arm shaft, which rises to move the free end of the governor arm to the right. This force is opposed by the governor spring. When the engine speed matches the speed set by the throttle lever, the force of the governor spring and the force of the governor arm shaft are equal, and the engine speed is stable.

If engine speed increases beyond the speed set by the throttle lever, the force of the governor mechanism will be stronger than the governor spring, and the free end of the governor arm will move right to reduce the throttle valve opening. If the engine speed falls below the speed set by the throttle lever, the force of the spring will be stronger than the governor mechanism, and the free end of the governor arm will move left to increase the throttle valve opening.



GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION

Remove the following parts.

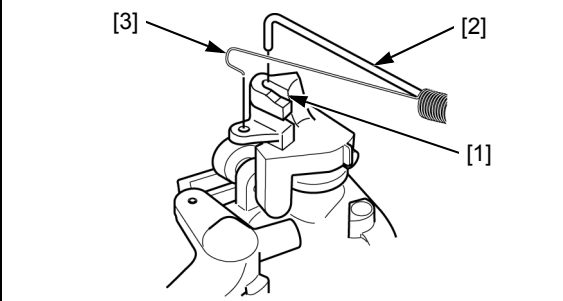
- Air cleaner [\(page 6-5\)](#)
- Fuel tank [\(page 6-3\)](#)

NOTE:

- After installation, adjust the following:
 - Governor [\(page 7-5\)](#)
 - Idle speed [\(page 3-13\)](#)
 - Maximum speed [\(page 7-7\)](#)

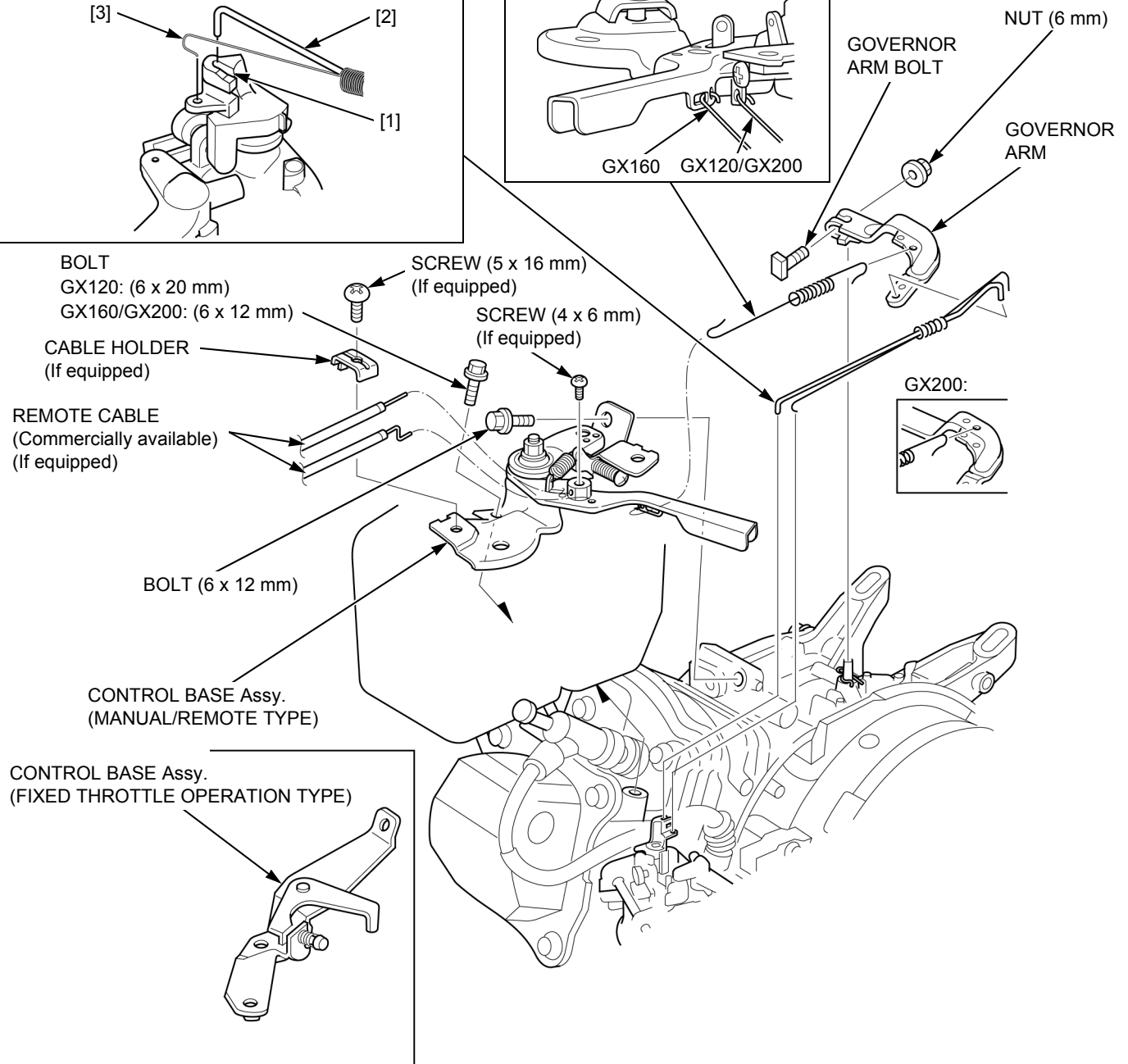
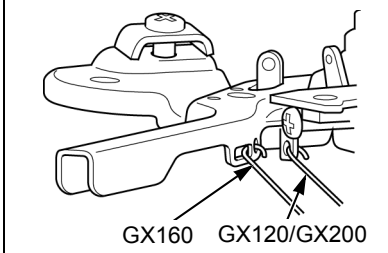
GOVERNOR ROD/THROTTLE RETURN SPRING

REMOVAL/INSTALLATION:
Pull the carburetor to a point where the groove [1] of the throttle arm lines up with the governor rod [2], and then lift the governor rod out of the hole of the throttle arm and unhook the throttle return spring [3].



GOVERNOR SPRING

INSTALLATION:
Hook the governor spring to the appropriate hole on the control lever as shown.



CONTROL BASE Assy. DISASSEMBLY/ ASSEMBLY

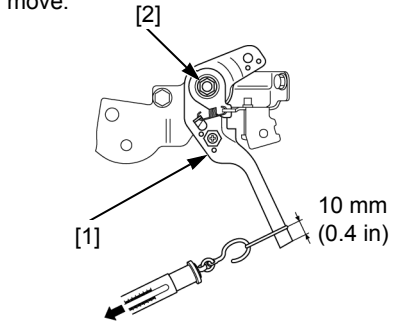
MANUAL/REMOTE TYPE

Remove the control base Assy. [\(page 7-3\)](#).

LOCK NUT (6 mm)

INSTALLATION:

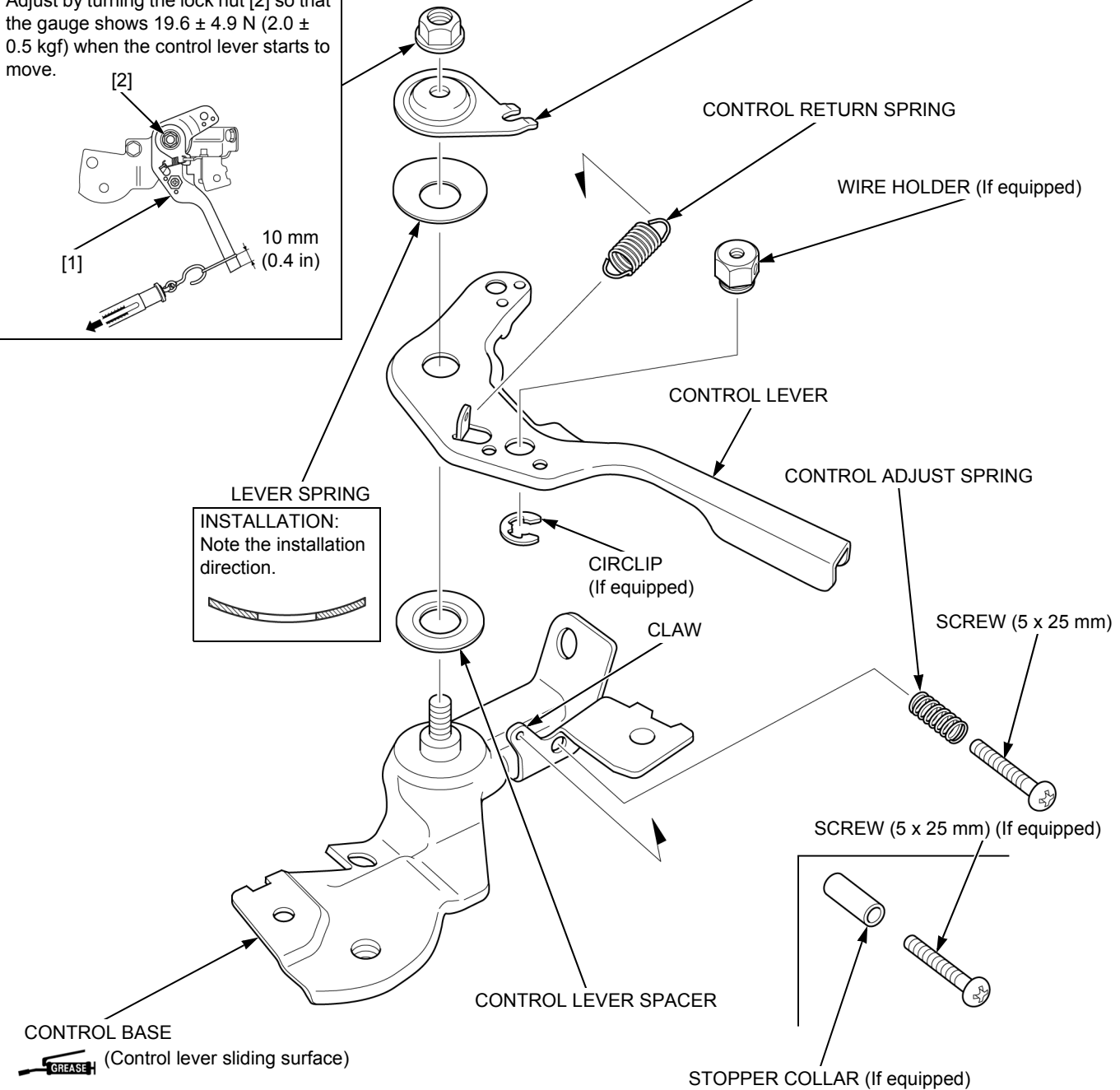
After installation the control base Assy., measure force at 10 mm (0.4 in) from the tip of the control lever [1] by pulling. Adjust by turning the lock nut [2] so that the gauge shows 19.6 ± 4.9 N (2.0 ± 0.5 kgf) when the control lever starts to move.



CONTROL LEVER WASHER

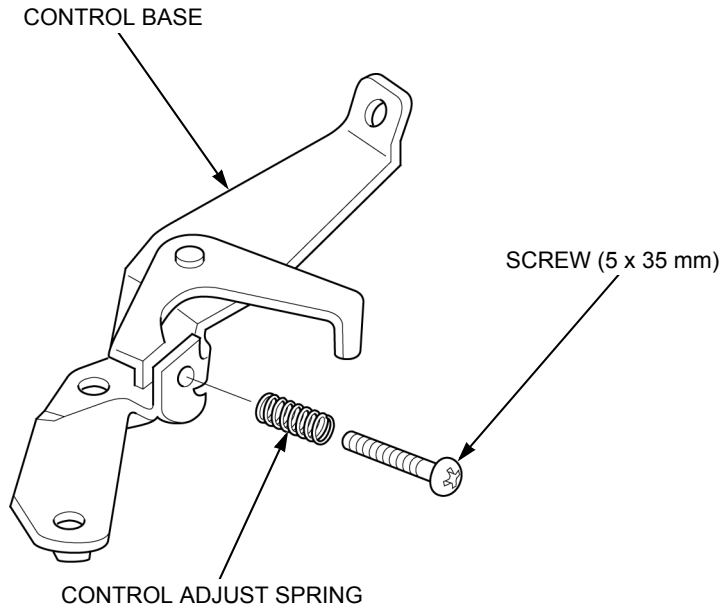
INSTALLATION:

Install the control lever washer by aligning the cutout of the control lever washer with the claw of the control base.



FIXED THROTTLE OPERATION TYPE

Remove the control base Assy. [\(page 7-3\)](#).



GOVERNOR ADJUSTMENT

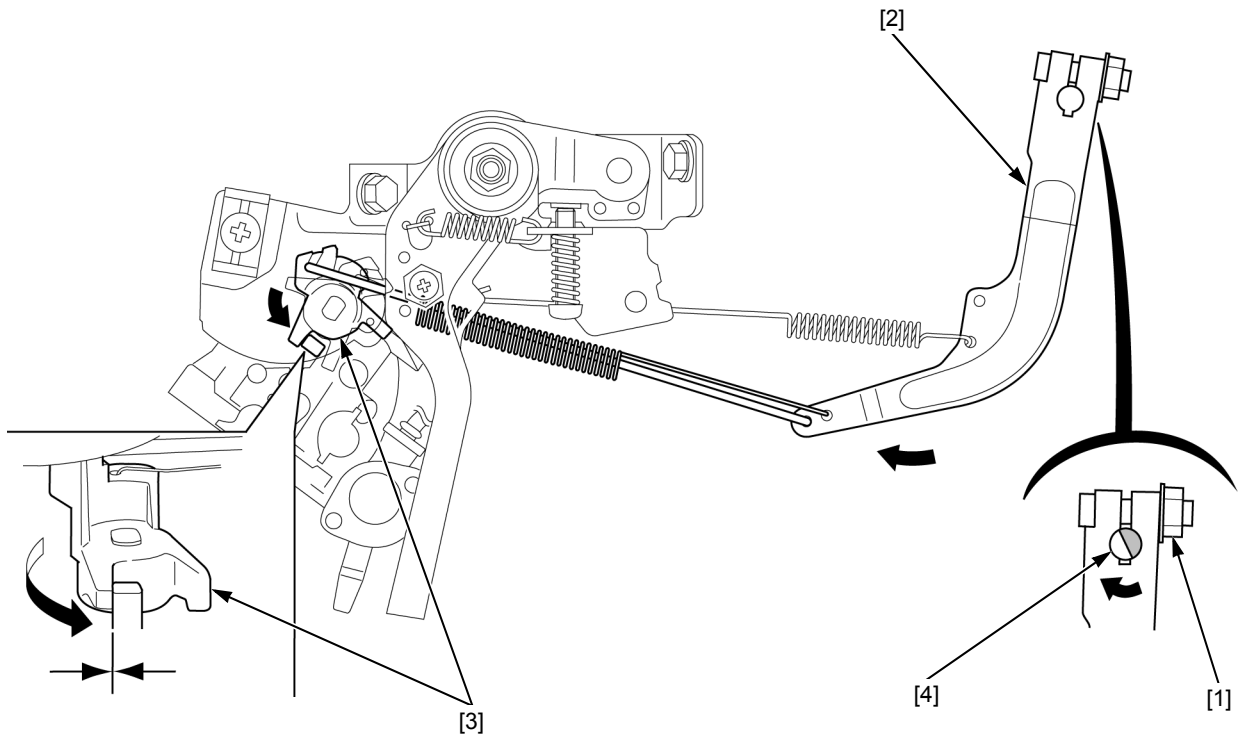
Loosen the nut (6 mm) [1] of the governor arm.

Turn the governor arm [2] clockwise to fully open the carburetor throttle valve [3].

Rotate the governor arm shaft [4] as far as it will go in the same direction the governor arm moved to open the throttle valve.

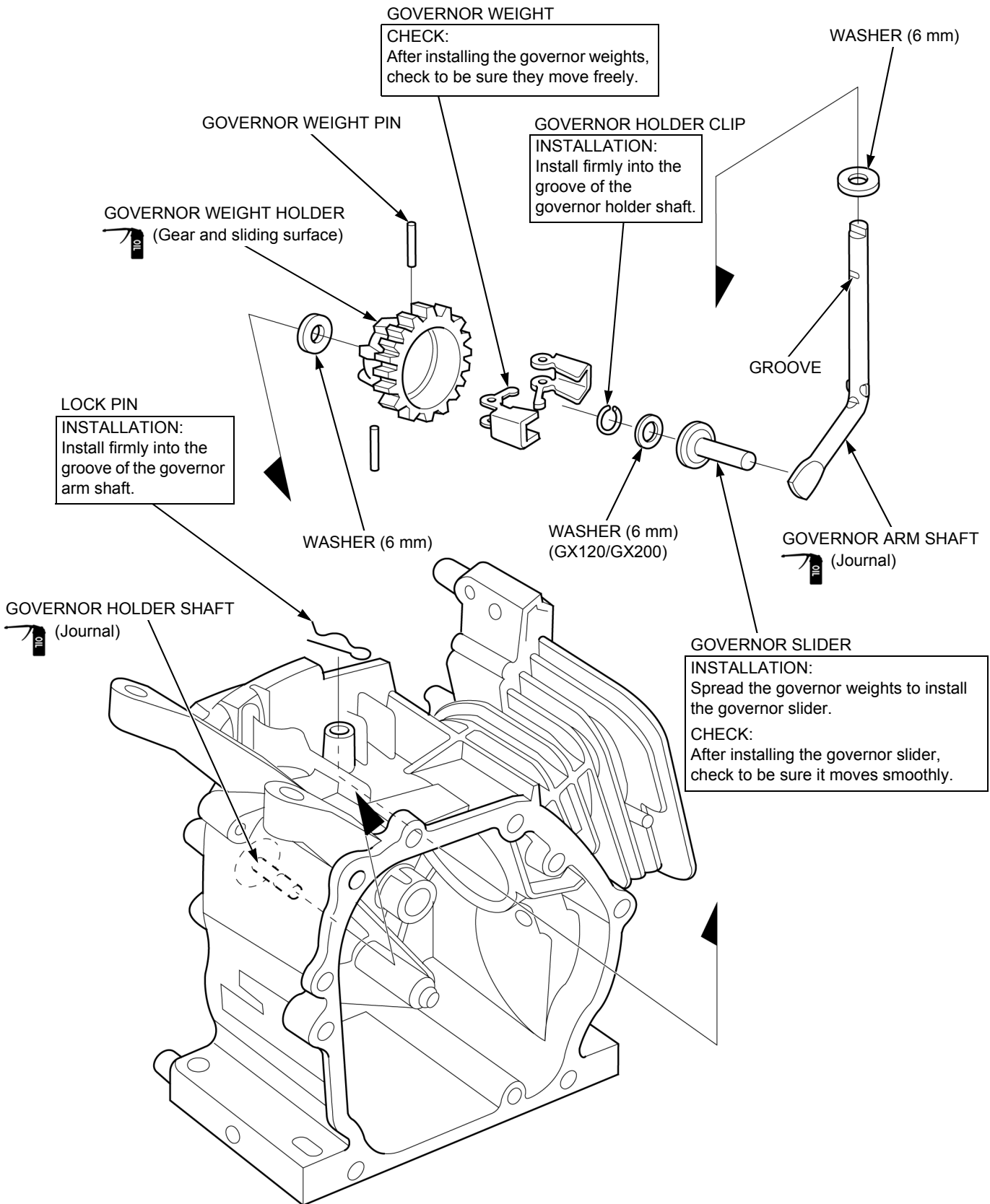
Make sure the carburetor throttle valve is fully open.

Tighten the nut (6 mm) securely.



GOVERNOR DISASSEMBLY/ ASSEMBLY

Remove the crankshaft ([page 14-4](#)).



MAXIMUM SPEED ADJUSTMENT

Use a tachometer with graduations of 50 min^{-1} (rpm) or smaller that will accurately indicate 50 min^{-1} (rpm) changes.

Start the engine and allow it to warm up to normal operating temperature.

Move the control lever [1] to run the engine at the specified maximum speed, and hold the control lever.

Make sure the carburetor throttle valve [2] is fully open.

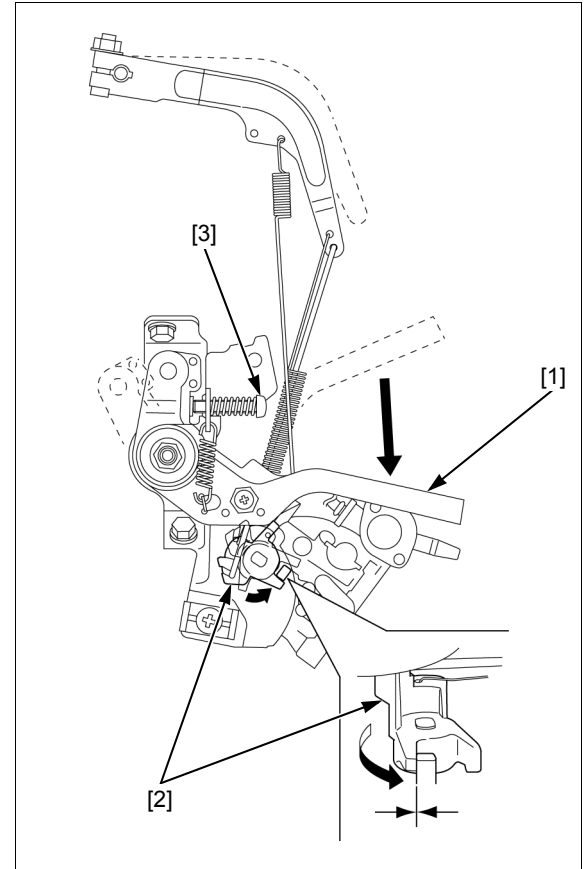
Turn the screw [3] of the control base to obtain the specified maximum speed.

MAXIMUM SPEED:

GX120: $3,900 \pm 100 \text{ min}^{-1}$ (rpm)

GX160: $3,900 \pm 100 \text{ min}^{-1}$ (rpm)

GX200: $3,850 \pm 150 \text{ min}^{-1}$ (rpm)



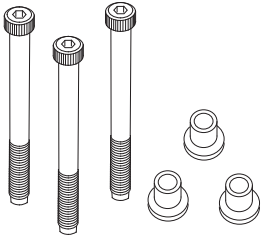
MEMO

8. CHARGING SYSTEM

TOOL	8-2	COOLING FAN/FLYWHEEL REMOVAL/ INSTALLATION	8-5
SYSTEM DIAGRAM	8-3	CHARGE/LAMP COIL REMOVAL/ INSTALLATION	8-7
CHARGING SYSTEM TROUBLESHOOTING	8-4	CHARGE/LAMP COIL INSPECTION	8-8

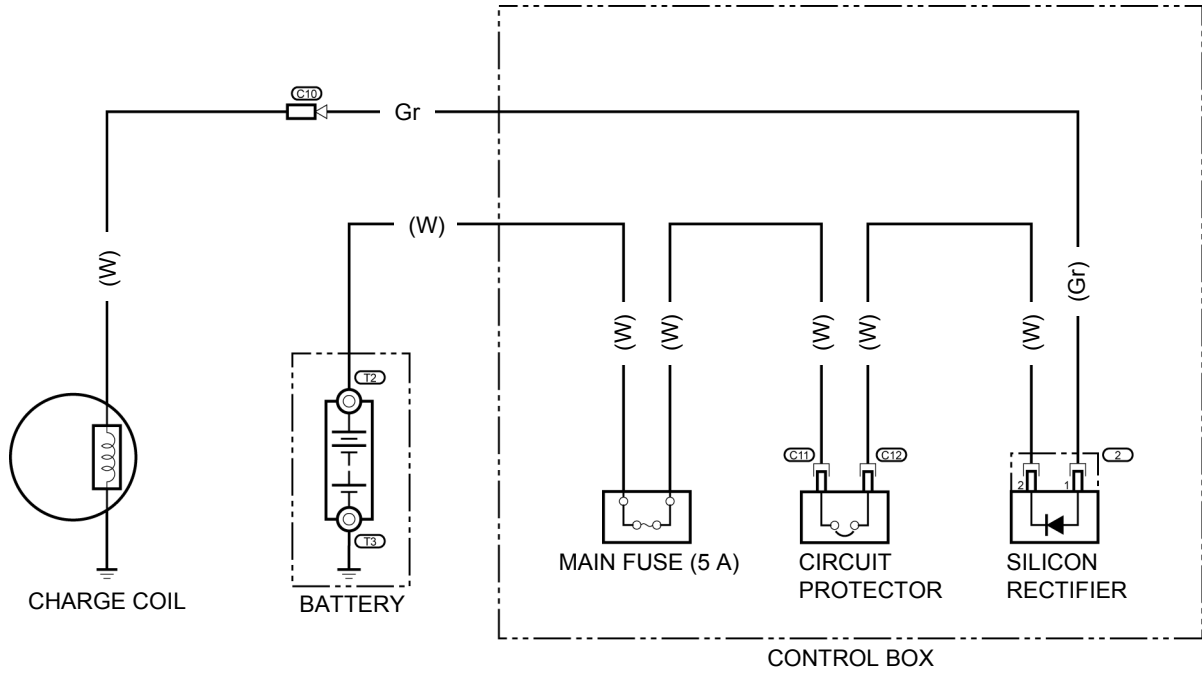
TOOL

Puller collar set
07APC-ZY1A100

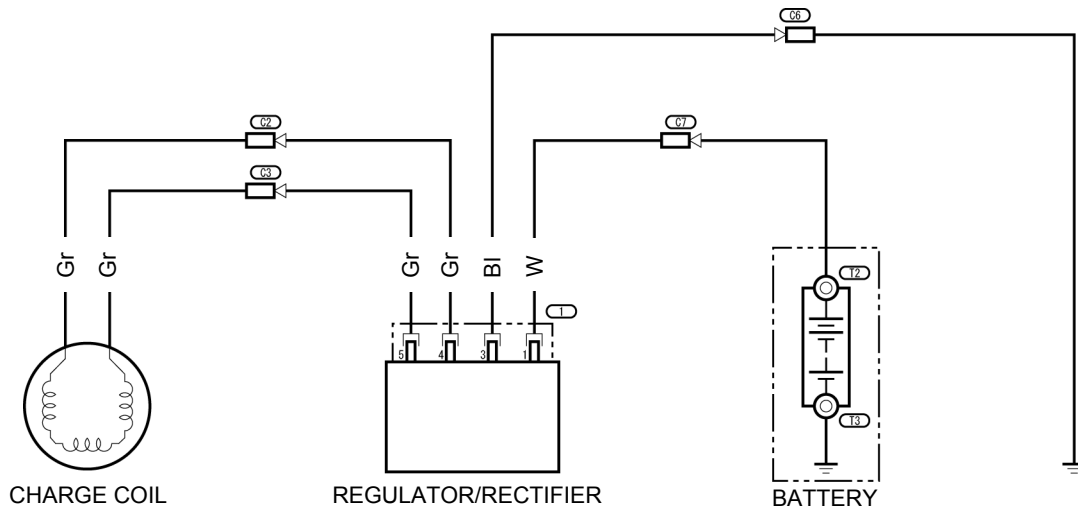


SYSTEM DIAGRAM

1 A/3 A CHARGE COIL TYPE:



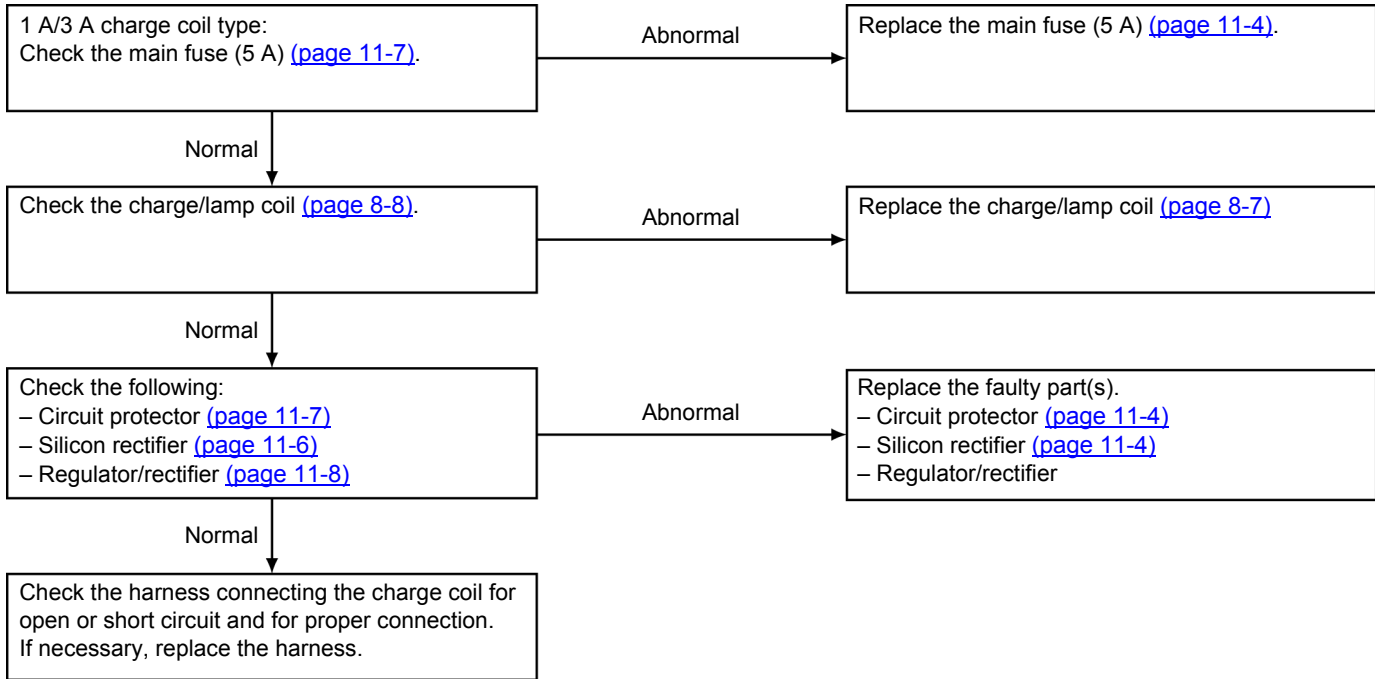
7 A CHARGE COIL TYPE:



CHARGING SYSTEM TROUBLESHOOTING

Check the following before troubleshooting:

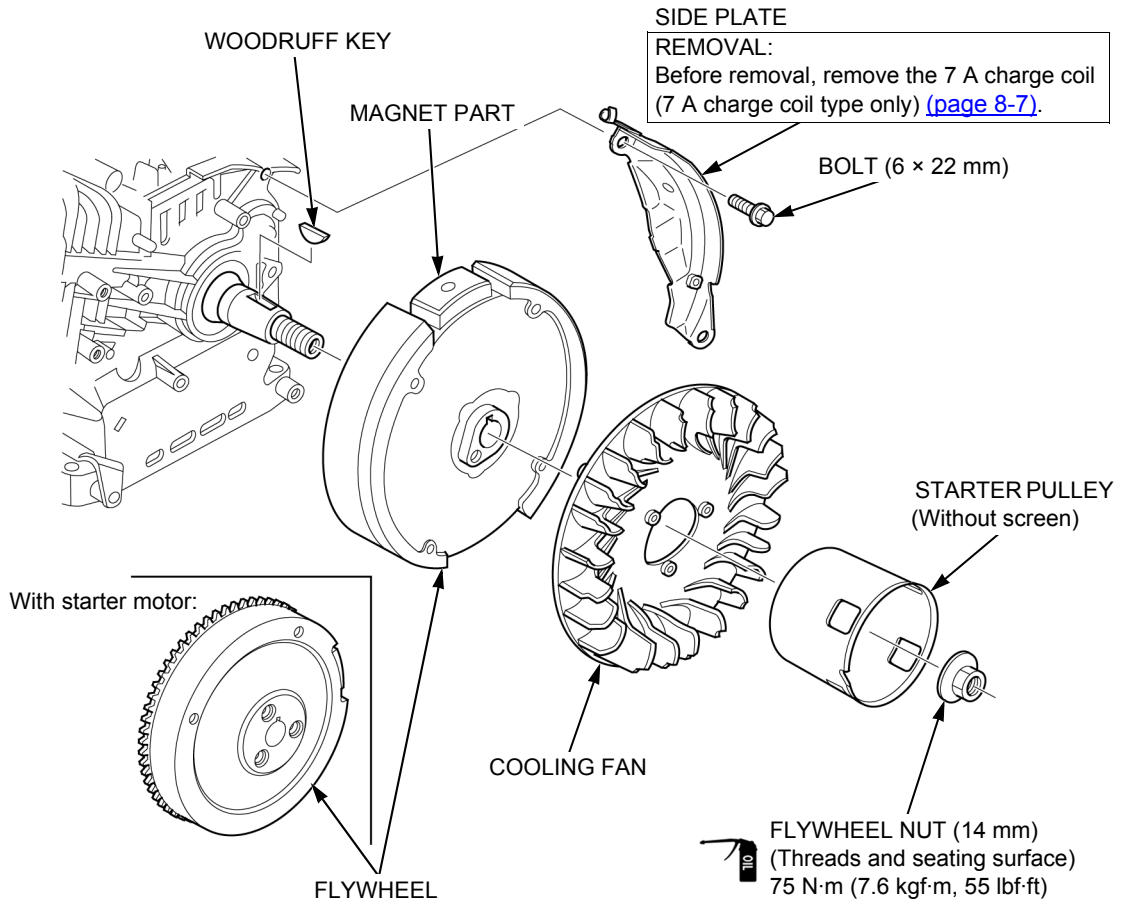
- Faulty battery
- Loose connectors



COOLING FAN/FLYWHEEL REMOVAL/INSTALLATION

REMOVAL

Remove the ignition coil ([page 9-4](#)).



REMOVAL:
 Hold the flywheel [1] with a commercially available strap wrench [2], being careful not to damage the magnet part.
 Use the special tool [3] and/or commercially available tool [4] to remove the flywheel.

With starter motor:

[3] / [4]
 PULLER COLLAR SET
 07APC-ZY1A100
 STEERING WHEEL PULLER
 OTC7403

Without starter motor:

[4]
 TWO-JAW PULLER
 OTC1035

REMOVAL:
 Hold the flywheel [1] with a commercially available strap wrench [2], being careful not to damage the magnet part.
 Remove the flywheel nut (14 mm) [3].

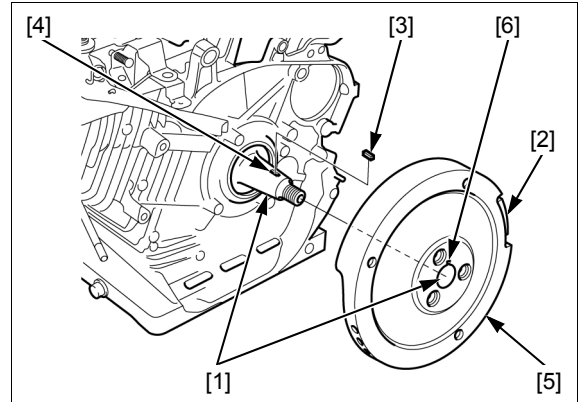
INSTALLATION

NOTICE

- Clean the tapered parts [1] of dirt, oil, grease, and other foreign material before installation.
- Be sure there are no metal parts or other foreign material on the magnet part [2] of the flywheel.

Set the woodruff key [3] in the key groove [4] of the crankshaft securely.

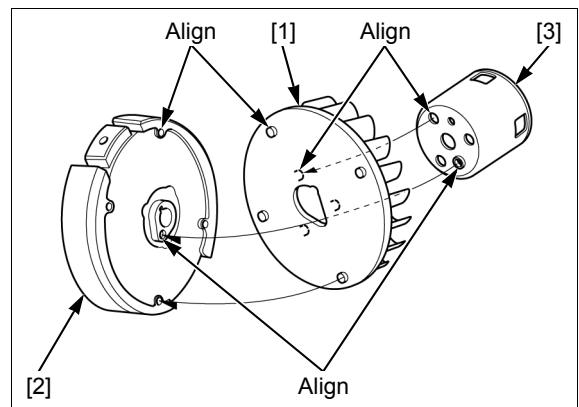
Set the flywheel [5] by aligning the key slot [6] with the the woodruff key on the crankshaft.



Attach the cooling fan [1] to the flywheel [2] by aligning the four projections of the cooling fan with the holes of the flywheel.

Attach the starter pulley [3] by aligning the following:

- Holes of the pulley and tabs of the cooling fan
- Tab of the pulley and hole of the flywheel

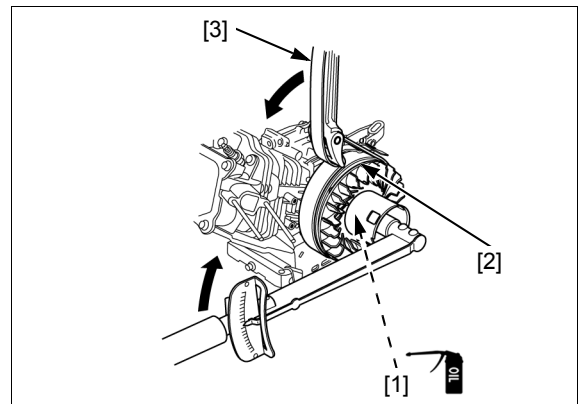


Apply a light coat of oil to the threads and the seating surface of the flywheel nut [1] and loosely tighten the nut.

Hold the flywheel [2] with a commercially available strap wrench [3], being careful not to damage the magnet part.

Tighten the flywheel nut to the specified torque.

TORQUE: 75 N·m (7.6 kgf·m, 55 lbf·ft)



CHARGE/LAMP COIL REMOVAL/ INSTALLATION

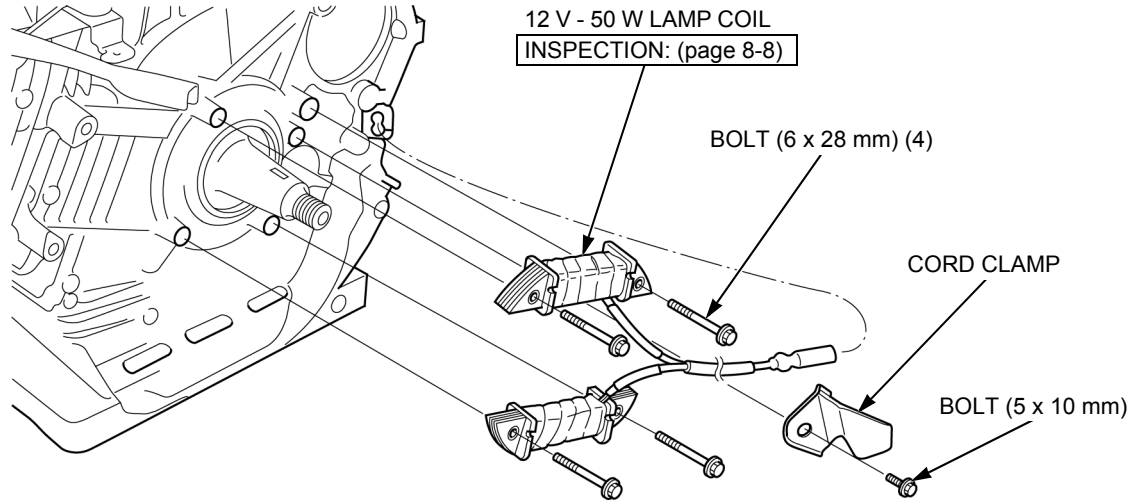
Disconnect the charge/lamp coil connectors.

Remove the flywheel ([page 8-5](#)).

NOTE:

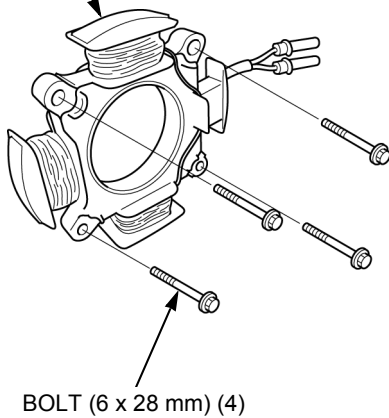
- When installation, route the wire harness properly ([page 2-10](#)).

12 V-50 W LAMP COIL TYPE:



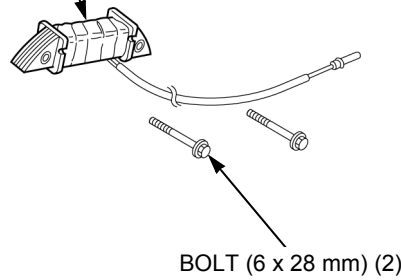
7 A CHARGE COIL TYPE:

7 A CHARGE COIL
INSPECTION: (page 8-8)



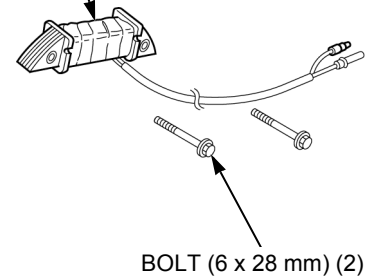
1 A/3 A CHARGE COIL TYPE:

1 A/3 A CHARGE COIL
INSPECTION: (page 8-8)



12 V - 15 W/12 V - 25 W LAMP COIL TYPE:

12 V - 15 W/12 V - 25 W LAMP COIL
INSPECTION: (page 8-8)



CHARGE/LAMP COIL INSPECTION

7 A CHARGE COIL/12 V - 25 W LAMP COIL TYPE

Disconnect the charge/lamp coil connectors [1].

Measure the resistance between the terminals of the charge/lamp coil connectors.

Resistance:

7 A charge coil: 0.22 – 0.30 Ω

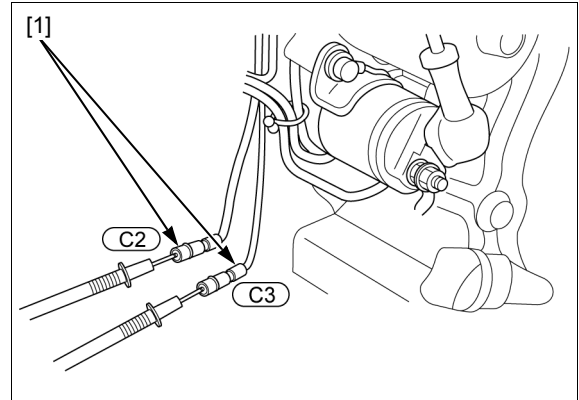
12 V - 25 W lamp coil: 0.36 – 0.46 Ω

Check for continuity between each terminal and engine ground.

There should be no continuity.

If the measured resistance is not within the specified range or if any wire has continuity to engine ground, replace the charge/lamp coil ([page 8-7](#)).

If the resistance is good and the flywheel is ok, replace the charge/lamp coil and retest.



1 A/3 A CHARGE COIL/12 V - 50 W LAMP COIL TYPE

Disconnect the charge/lamp coil connector [1].

Measure the resistance between the terminal and engine ground.

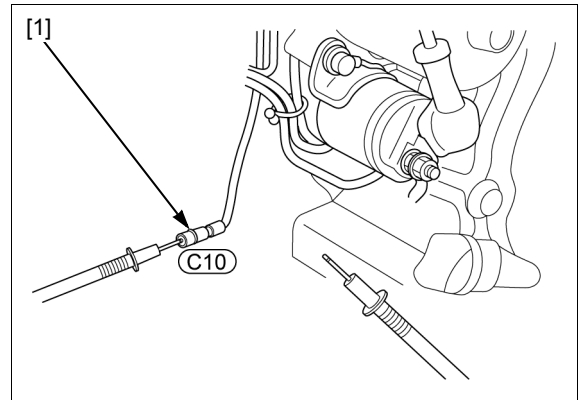
Resistance:

1 A charge coil: 3.15 – 3.85 Ω

3 A charge coil: 0.30 – 0.42 Ω

12 V - 50 W lamp coil: 0.18 – 0.23 Ω

If the measured resistance is not within the specified range, replace the charge/lamp coil ([page 8-7](#)).

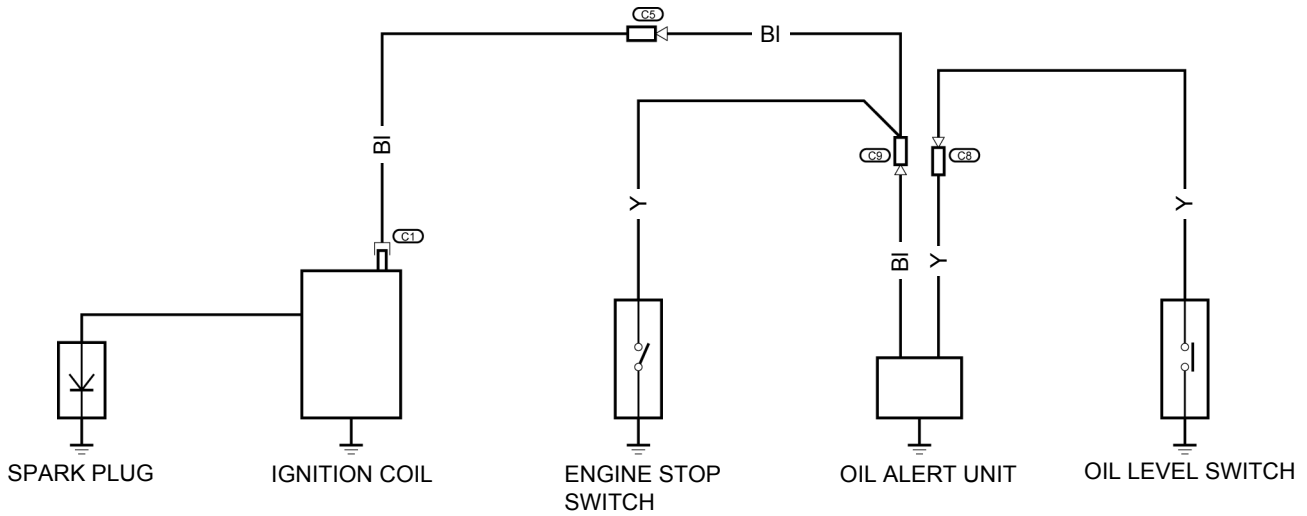


9. IGNITION SYSTEM

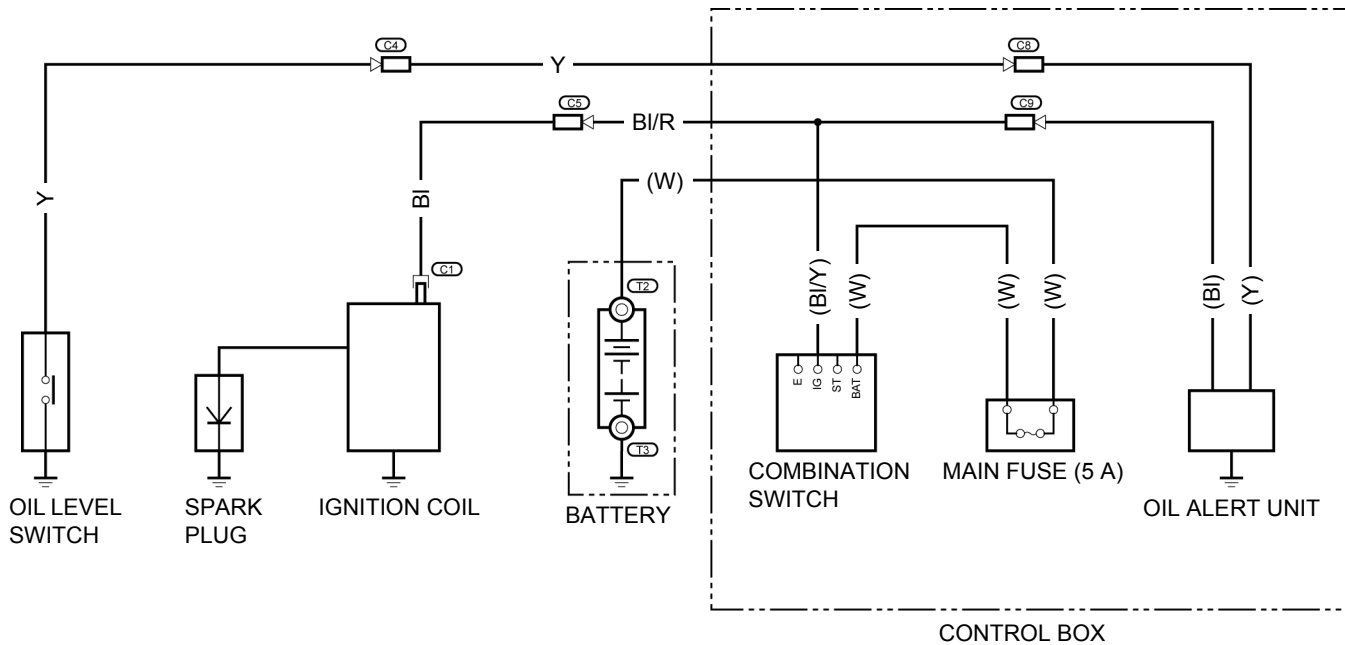
SYSTEM DIAGRAM	9-2	IGNITION COIL AIR GAP CHECK/ ADJUSTMENT	9-5
IGNITION SYSTEM TROUBLESHOOTING.....	9-3	SPARK TEST	9-5
IGNITION COIL REMOVAL/ INSTALLATION.....	9-4	SPARK PLUG CAP INSPECTION.....	9-6
		IGNITION COIL INSPECTION	9-6

SYSTEM DIAGRAM

ENGINE STOP SWITCH TYPE:



CONTROL BOX TYPE:

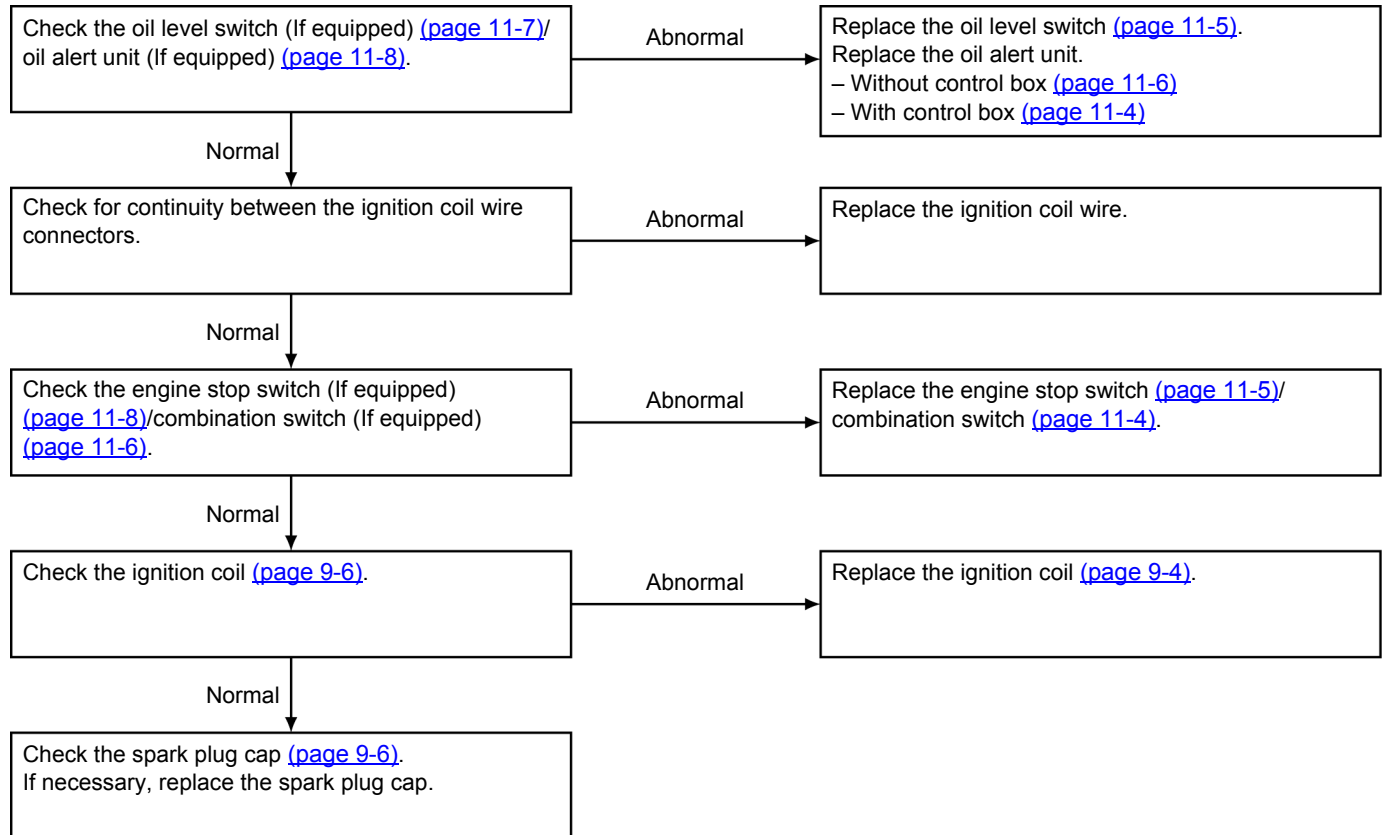


IGNITION SYSTEM TROUBLESHOOTING

NO OR WEAK SPARK AT SPARK PLUG

Check the following before troubleshooting:

- Loose connectors
- Spark plug ([page 3-11](#))
- Engine oil level ([page 3-3](#))



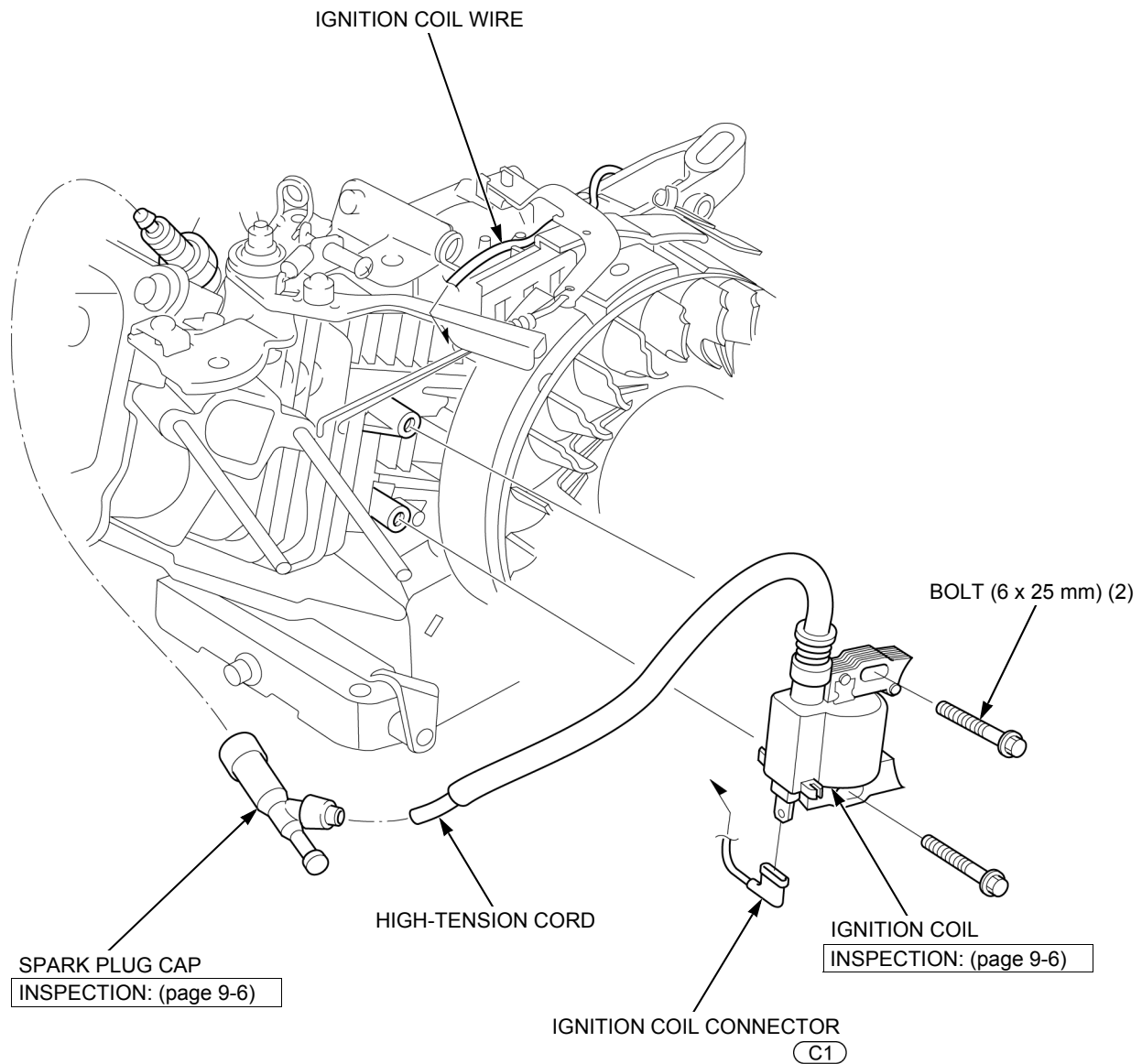
IGNITION COIL REMOVAL/ INSTALLATION

Remove the following:

- Fan cover ([page 5-2](#))
- Fuel tank ([page 6-3](#))
- Carburetor ([page 6-10](#))

NOTE:

- Route the ignition coil wire and high-tension code properly ([page 2-10](#)).
- After installation, check the ignition coil air gap ([page 9-5](#)).



IGNITION COIL AIR GAP CHECK/ ADJUSTMENT

Remove the fan cover ([page 5-2](#)).

Insert the thickness gauge [1] of proper thickness between the ignition coil [2] and the flywheel [3].

IGNITION COIL AIR GAP:

0.2 – 0.6 mm (0.01 – 0.02 in)

NOTICE

- Avoid the magnet part of the flywheel when adjusting.
- Adjust the ignition coil air gap equally on both sides.

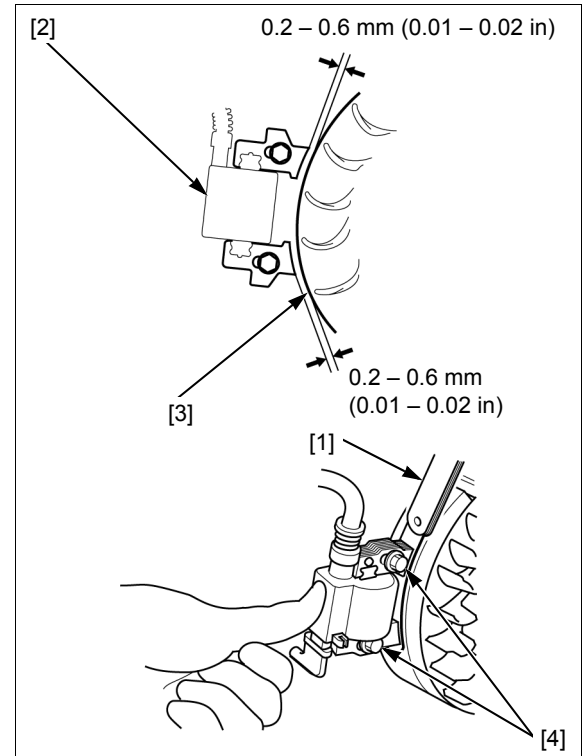
If measured clearance is out of specification, adjust the air gap.

Loosen the two bolts (6 x 25 mm) [4].

Insert the thickness gauge of proper thickness between the ignition coil and flywheel.

Push the ignition coil firmly against the flywheel and tighten the ignition coil bolts securely.

Remove the thickness gauge.



SPARK TEST

CAUTION

Never hold the high-tension cord with wet hands while performing this test.

Check for the following before conducting the spark test.

- Faulty spark plug
- Loose spark plug cap
- Water in the spark plug cap (leaking the ignition coil secondary voltage)
- Loose ignition coil connector

Disconnect the spark plug cap [1] from the spark plug [2].

Connect a known-good spark plug to the spark plug cap and ground the spark plug to the cylinder head cover bolt.

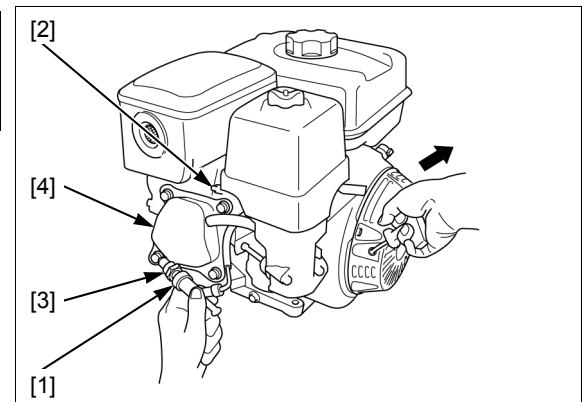
With engine stop switch/combination switch type:

Turn the engine stop switch/combination switch to "ON" position.

Crank the engine by pulling the recoil starter or crank the engine with the starter motor and check whether sparks jump across the electrodes.

NOTICE

- To avoid discharging the battery, do not operate the starter motor for more than 5 seconds at a time. Wait for approximately 10 seconds before operating it again.

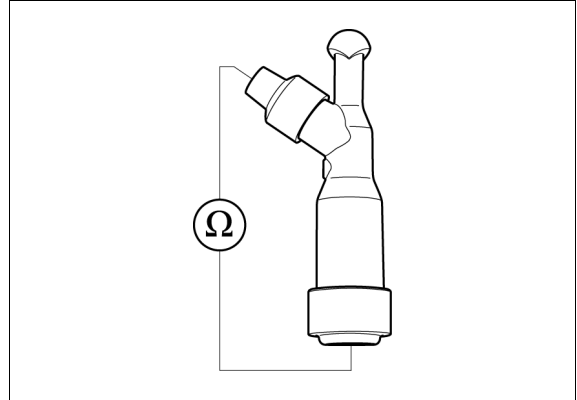


SPARK PLUG CAP INSPECTION

Measure the resistance of the spark plug cap [1] by attaching one ohmmeter probe to the terminal in the spark plug cap and the other to the high-tension cord terminal.

RESISTANCE: 7.5 – 12.5 k Ω (20°C/68°F)

If measured resistance is out of specification, replace the spark plug cap.



IGNITION COIL INSPECTION

Remove the fan cover ([page 5-2](#)).

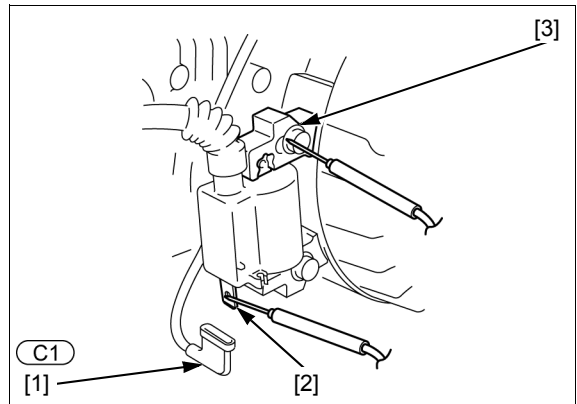
PRIMARY SIDE

Disconnect the ignition coil connector [1].

Measure the resistance of the primary coil by attaching one ohmmeter probe to the ignition coil wire terminal [2] and the other at the iron core [3].

RESISTANCE: 0.6 – 0.9 Ω

If measured resistance is out of specification, replace the ignition coil.



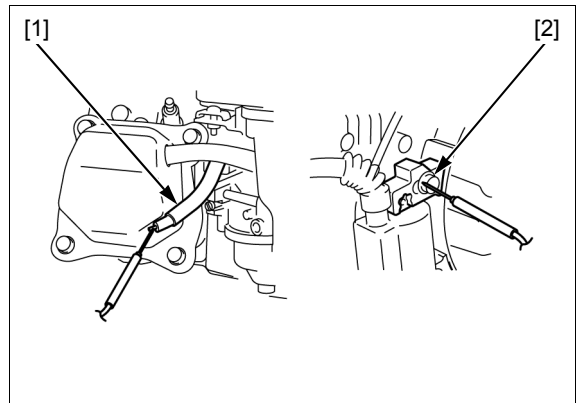
SECONDARY SIDE

Disconnect the spark plug cap from the high-tension cord [1].

Measure the resistance of the secondary coil by attaching one ohmmeter probe to the high-tension cord and the other at the iron core [2].

RESISTANCE: 5.6 – 6.9 k Ω

If measured resistance is out of specification, replace the ignition coil.

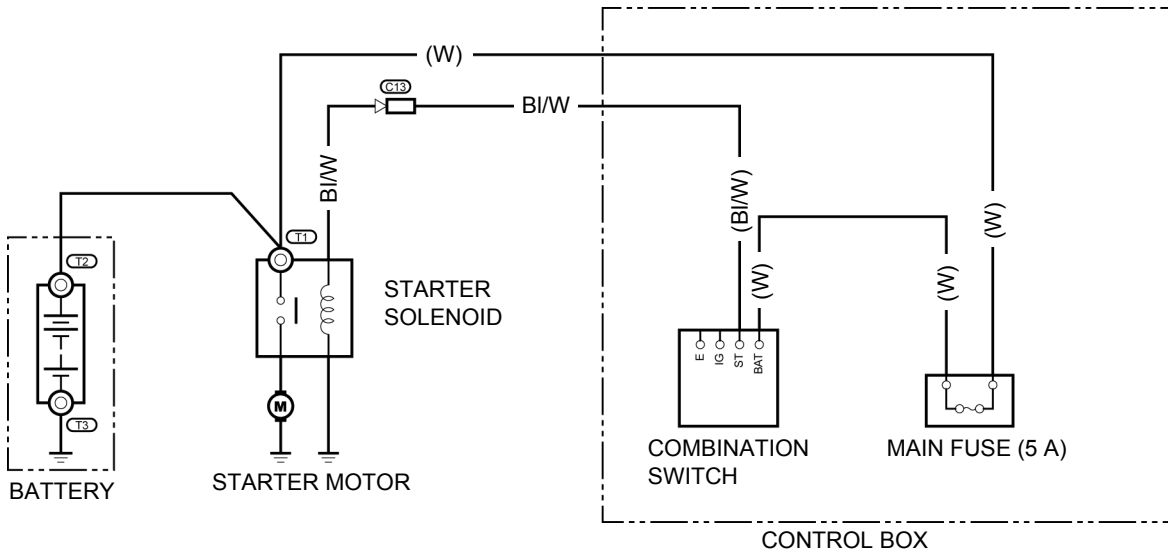


10. STARTING SYSTEM

SYSTEM DIAGRAM	10-2	RECOIL STARTER INSPECTION	10-6
STARTING SYSTEM TROUBLESHOOTING.....	10-2	STARTER MOTOR REMOVAL/ INSTALLATION	10-7
RECOIL STARTER Assy. REMOVAL/ INSTALLATION.....	10-3	STARTER MOTOR DISASSEMBLY/ ASSEMBLY.....	10-8
RECOIL STARTER Assy. DISASSEMBLY/ ASSEMBLY	10-4	STARTER MOTOR INSPECTION	10-9

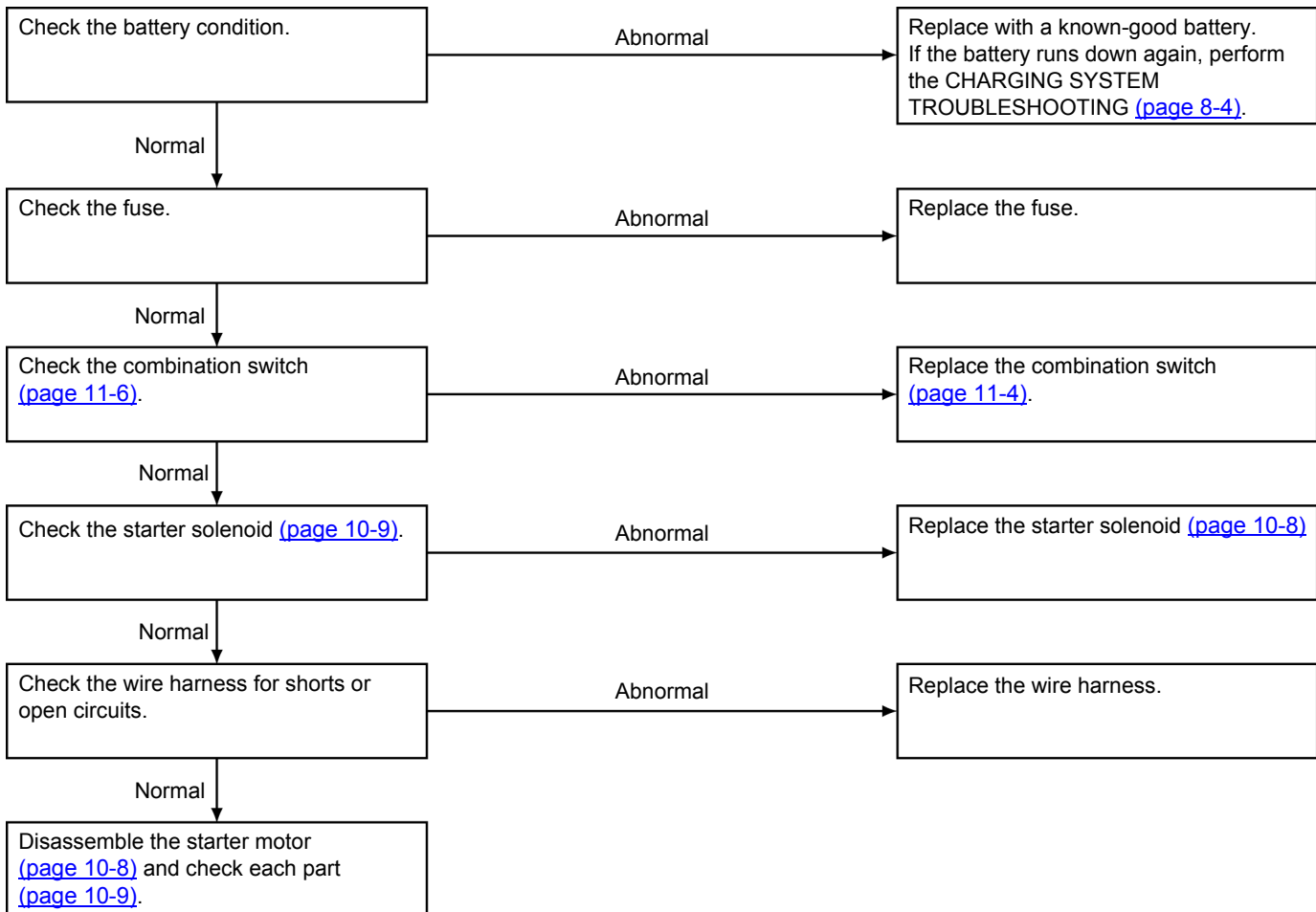
SYSTEM DIAGRAM

STARTER MOTOR TYPE:

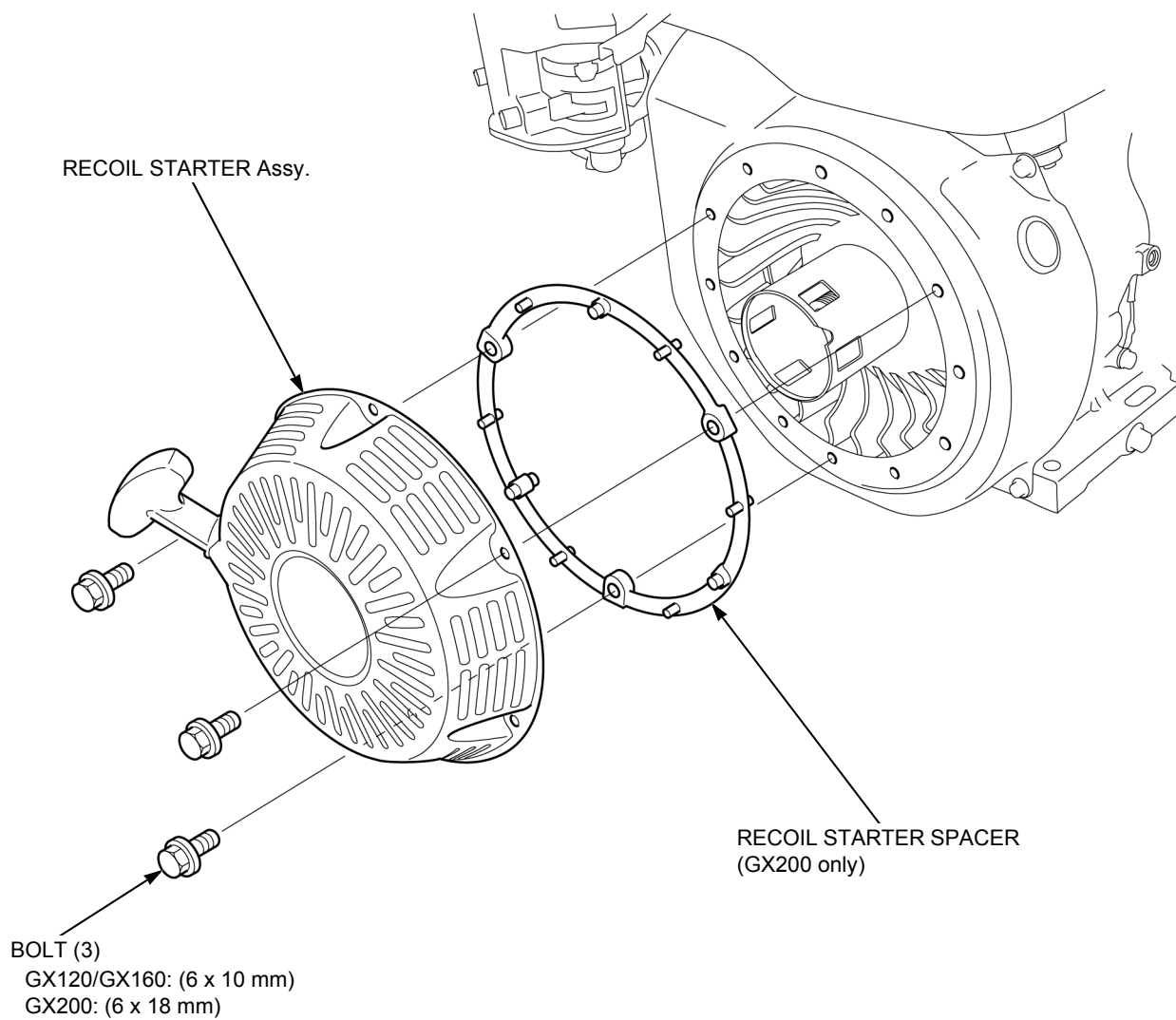


STARTING SYSTEM TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE



RECOIL STARTER Assy. REMOVAL/ INSTALLATION



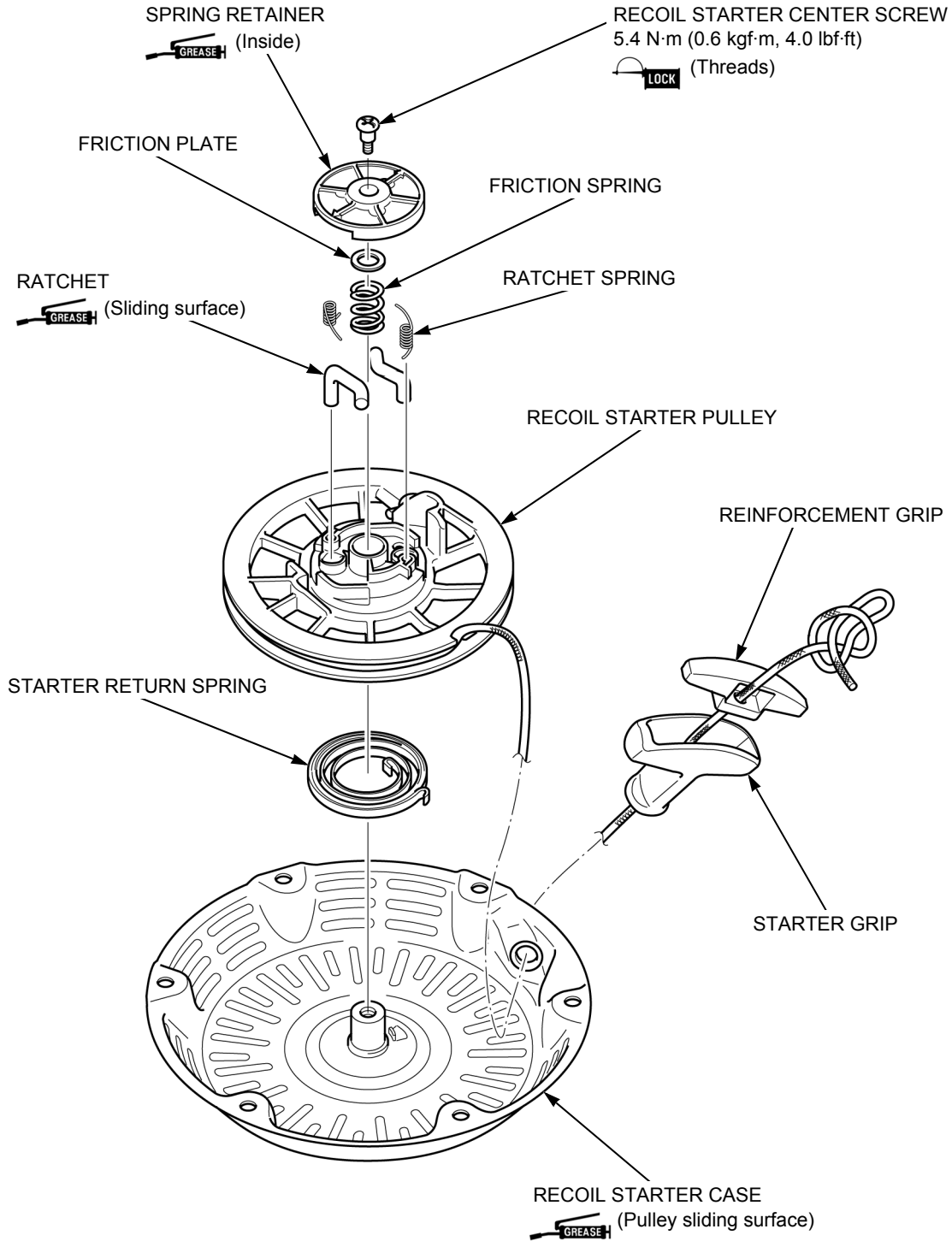
RECOIL STARTER Assy. DISASSEMBLY/ASSEMBLY

CAUTION

- Wear gloves and eye protection.
- During disassembly/assembly, take care not to allow the return spring to come out.

DISASSEMBLY

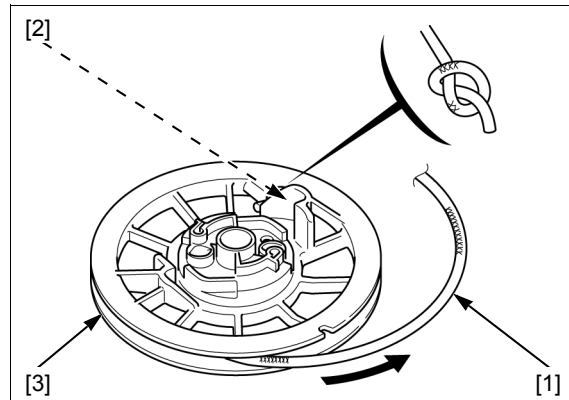
Remove the recoil starter Assy. [\(page 10-3\)](#).



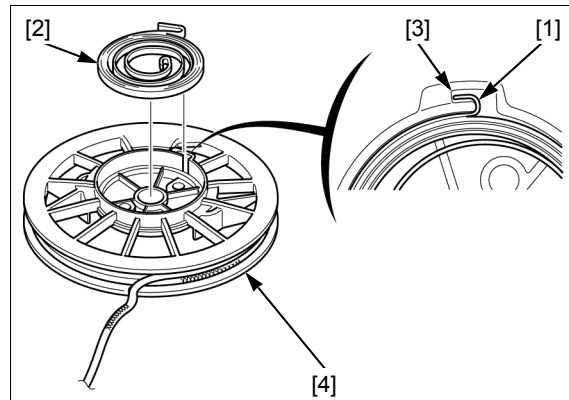
ASSEMBLY

Pass the recoil starter rope [1] through the hole [2] of the recoil starter pulley [3], and then tie the rope as shown.

Wind the recoil starter rope onto the recoil starter pulley counterclockwise as shown.

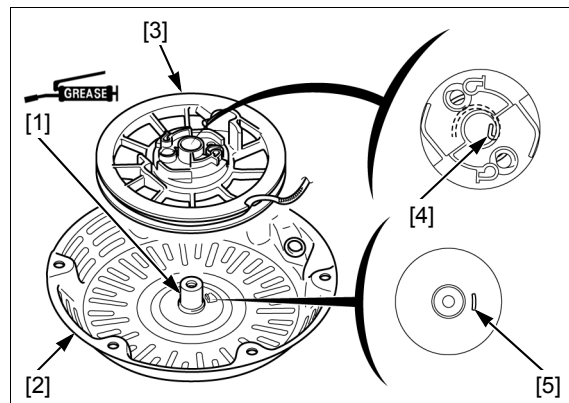


Hook the outer hook [1] of the starter return spring [2] to the groove [3] of the recoil starter pulley [4], and then install the starter return spring by winding it.



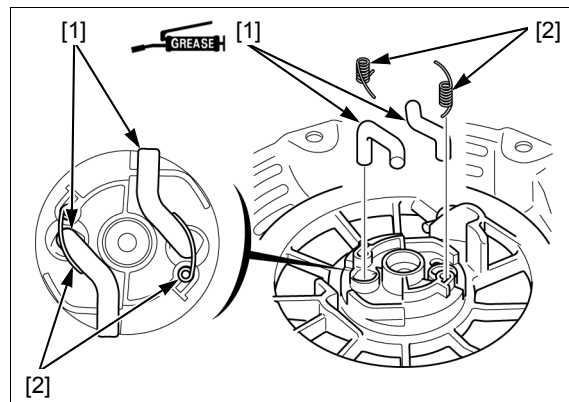
Apply grease to the starter pulley sliding surface [1] of the recoil starter case [2].

Set the recoil starter pulley [3] to the recoil starter case by aligning the inner hook [4] of the starter return spring with the boss [5] of the recoil starter case as shown.



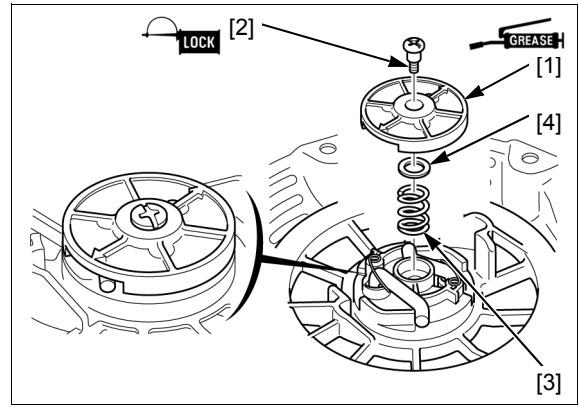
Apply grease to the ratchets [1].

Install the ratchet springs [2] and ratchets to the recoil starter pulley as shown.

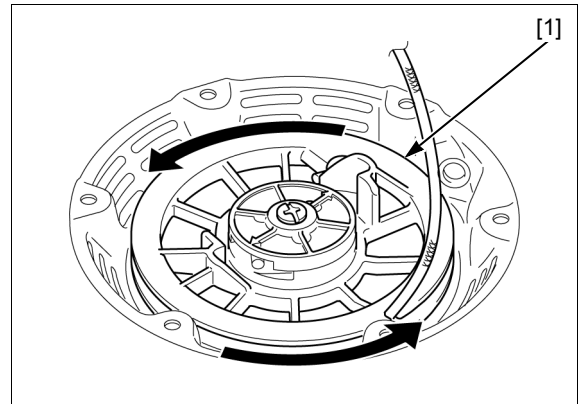


Apply grease to the inside of the spring retainer [1].
 Apply locking agent (Hondalock 1, Threebond 2430, or equivalent) to the threads of the center screw [2].
 Set the friction spring [3], friction plate [4], and spring retainer to the recoil starter pulley in the direction as shown.
 Hold the spring retainer and tighten the center screw to the specified torque.

TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)

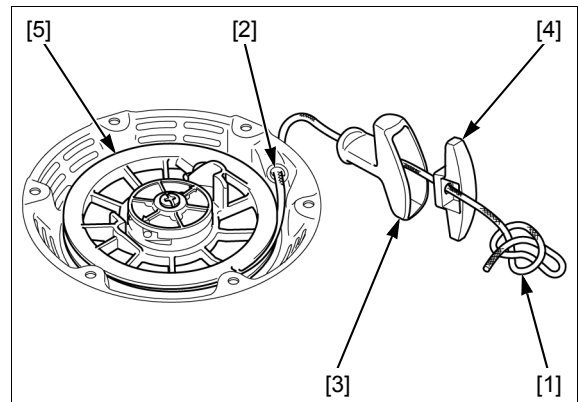


Turn the recoil starter pulley [1] 2 turns counterclockwise to preload the starter return spring. Be sure to hold the recoil starter pulley.



Pass the recoil starter rope [1] through hole [2] of the recoil starter case, starter grip [3], and reinforcement grip [4], and then tie the rope as shown. Be sure to hold the recoil starter pulley [5].

Check the recoil starter operation ([page 10-6](#)).

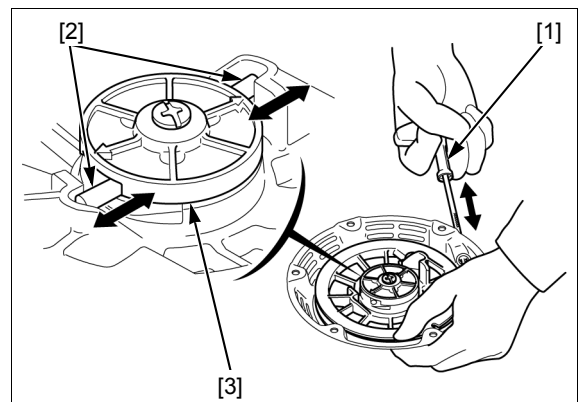


RECOIL STARTER INSPECTION

RECOIL STARTER OPERATION

Remove the recoil starter Assy. ([page 10-3](#)).

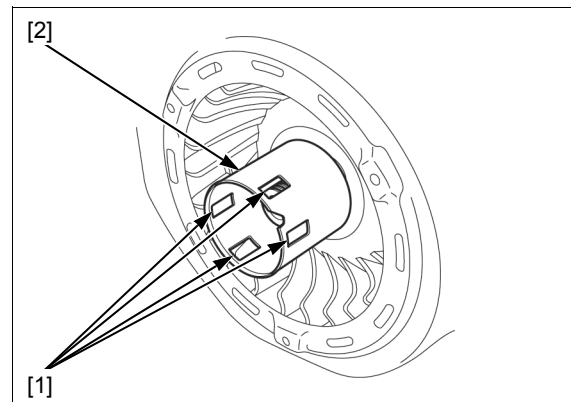
Pull the starter grip [1] several times to inspect that the ratchets [2] are operated properly (the ratchet ends come out from the spring retainer [3]).



STARTER PULLEY

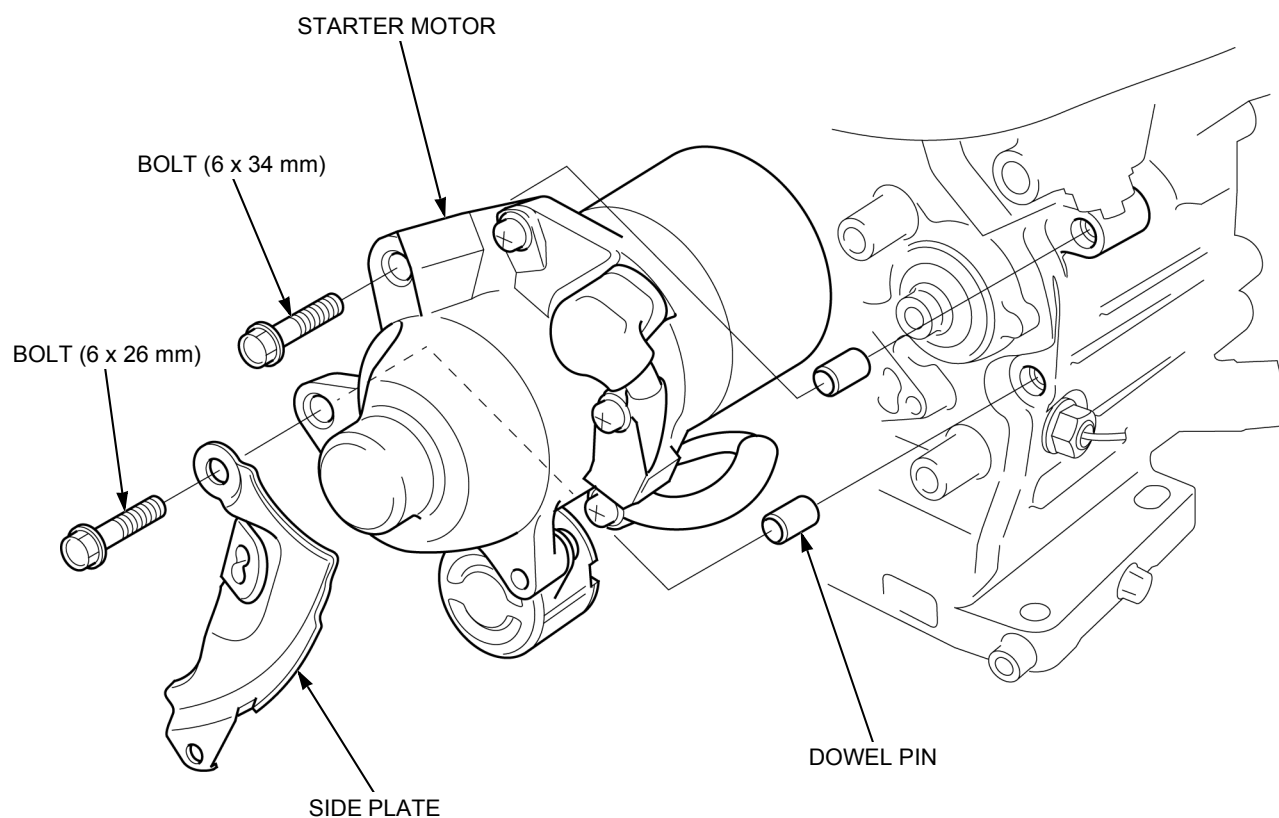
Remove the recoil starter Assy. ([page 10-3](#)).

Inspect the square holes [1] of the starter pulley [2] for deformation.

**STARTER MOTOR REMOVAL/
INSTALLATION**

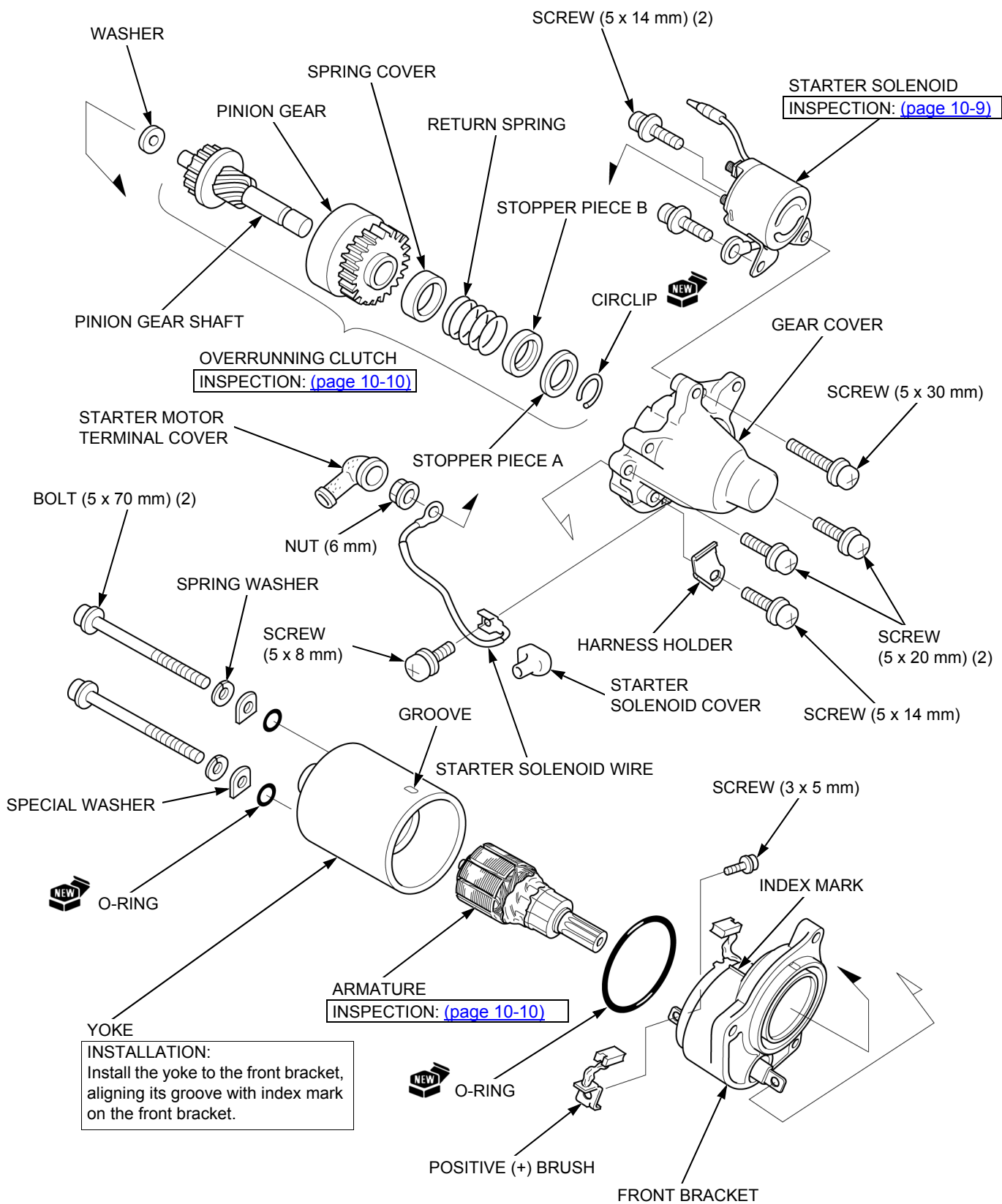
Remove the following:

- Control box ([page 11-3](#))
- Flywheel ([page 8-5](#))



STARTER MOTOR DISASSEMBLY/ ASSEMBLY

Remove the starter motor [\(page 10-7\)](#).



INSTALLATION:
Install the yoke to the front bracket, aligning its groove with index mark on the front bracket.

STARTER MOTOR INSPECTION

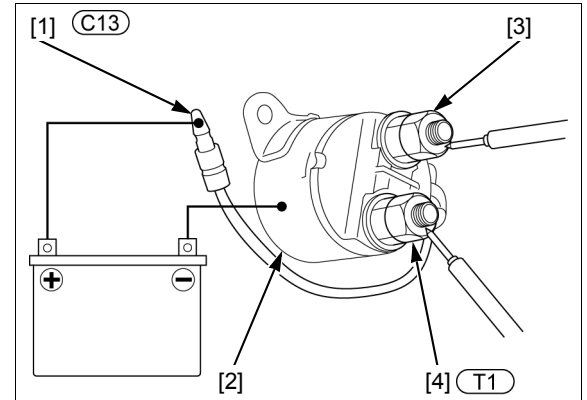
STARTER SOLENOID

Disconnect the starter motor connector [1].

Connect the positive (+) lead of a 12 V battery to the starter motor connector and the negative (-) lead to the solenoid body [2].

Check the continuity between the starter motor terminal [3] and battery terminal [4] as shown.

Continuity should exist when the battery is connected and not exist when the battery is disconnected.



BRUSH

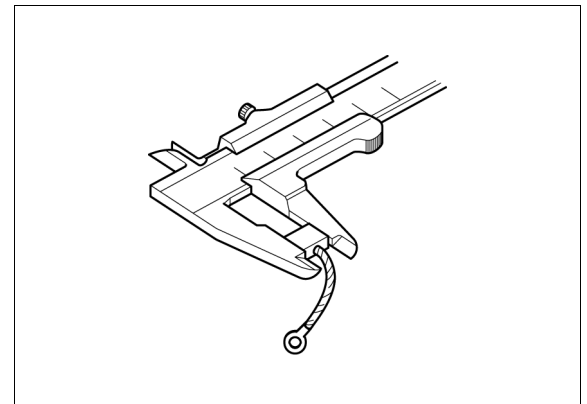
BRUSH LENGTH

Measure the brush length.

STANDARD: 11.0 mm (0.43 in)

SERVICE LIMIT: 6.5 mm (0.26 in)

If the brush length is less than the service limit, replace the front bracket.

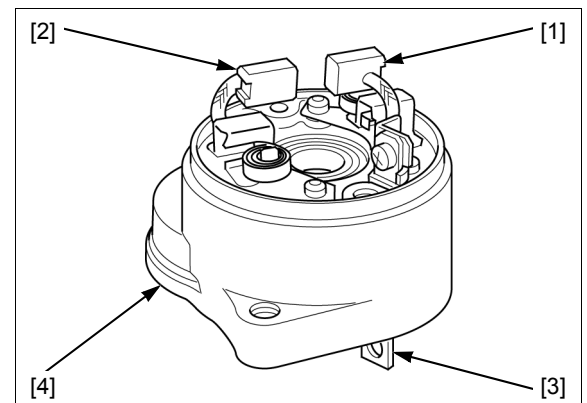


BRUSH CONTINUITY CHECK

Check the continuity as follows:

- There should be no continuity between the positive (+) brush [1] and negative (-) brush [2].
- There should be continuity between the positive (+) brush and terminal [3].
- There should be no continuity between the positive (+) brush and front bracket [4].
- There should be continuity between the negative (-) brush [2] and front bracket.

If the correct continuity is not obtained, replace the front bracket.



ARMATURE

Visually inspect the commutator [1] surface for dust, rust, or other damage.

If necessary, wipe it with a clean lint-free cloth.

If rusted or damaged, dress with a fine emery cloth.

Measure the mica depth.

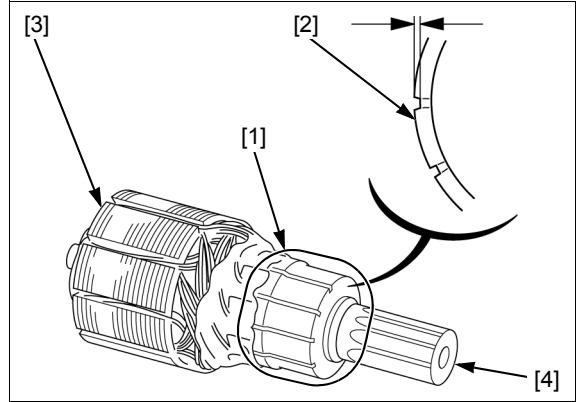
STANDARD: 1.6 mm (0.06 in)

SERVICE LIMIT: 1.1 mm (0.04 in)

If the mica depth is less than the service limit, replace the armature.

Check the continuity as follows:

- There should be continuity between each segment [2].
- There should be no continuity between each segment and armature core [3].
- There should be no continuity between each segment and armature shaft [4].



OVERRUNNING CLUTCH

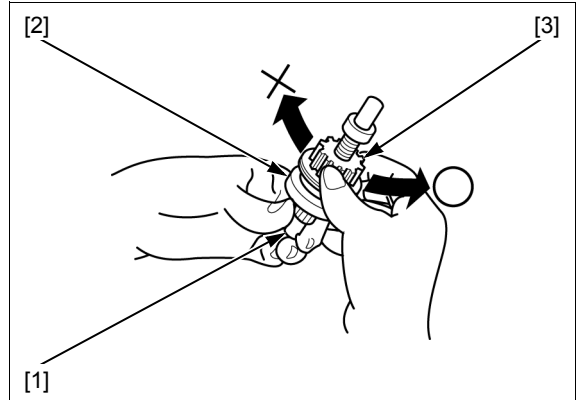
Check the pinion gear shaft [1] for smooth axial movement.

Replace the overrunning clutch [2] if necessary.

Check the pinion gear [3] operation by holding the pinion gear shaft and turning the pinion gear. The pinion gear should turn counterclockwise freely and should not turn clockwise.

Check the pinion gear for wear or damage and replace the overrunning clutch if necessary.

If the pinion gear is worn or damaged, the flywheel ring gear must be inspected.

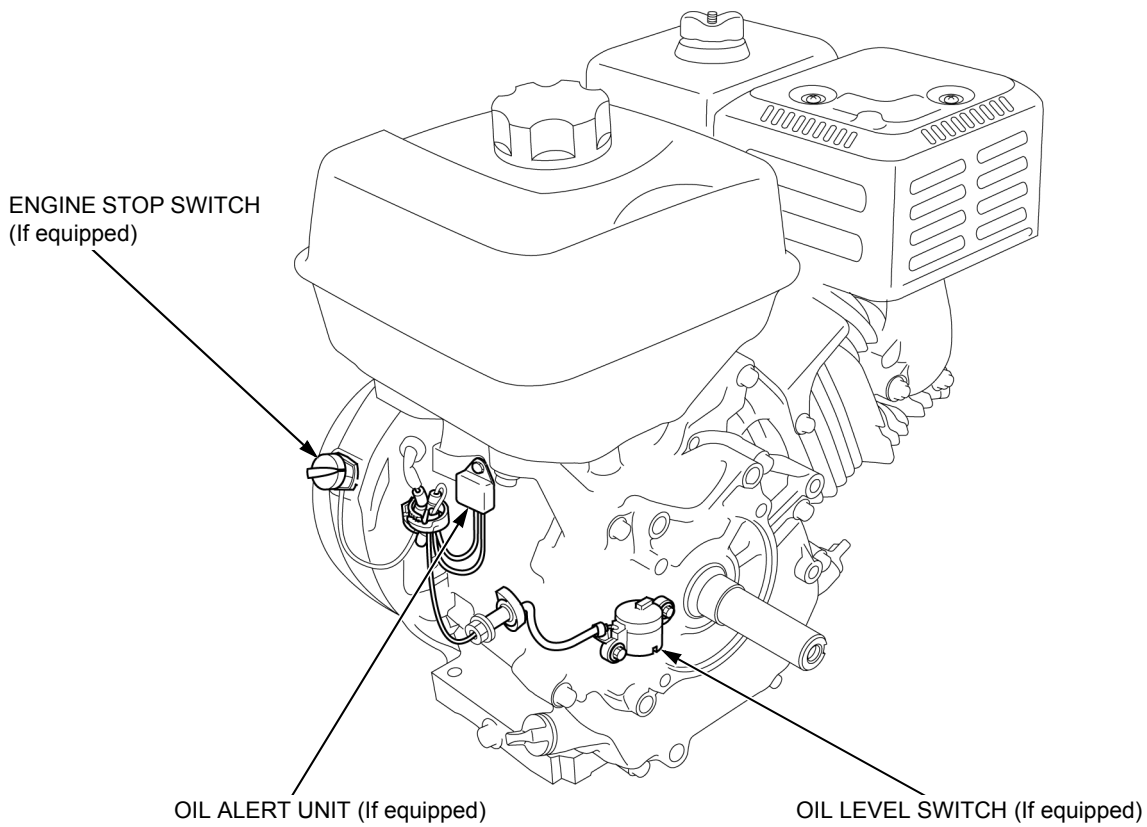


11. OTHER ELECTRICAL

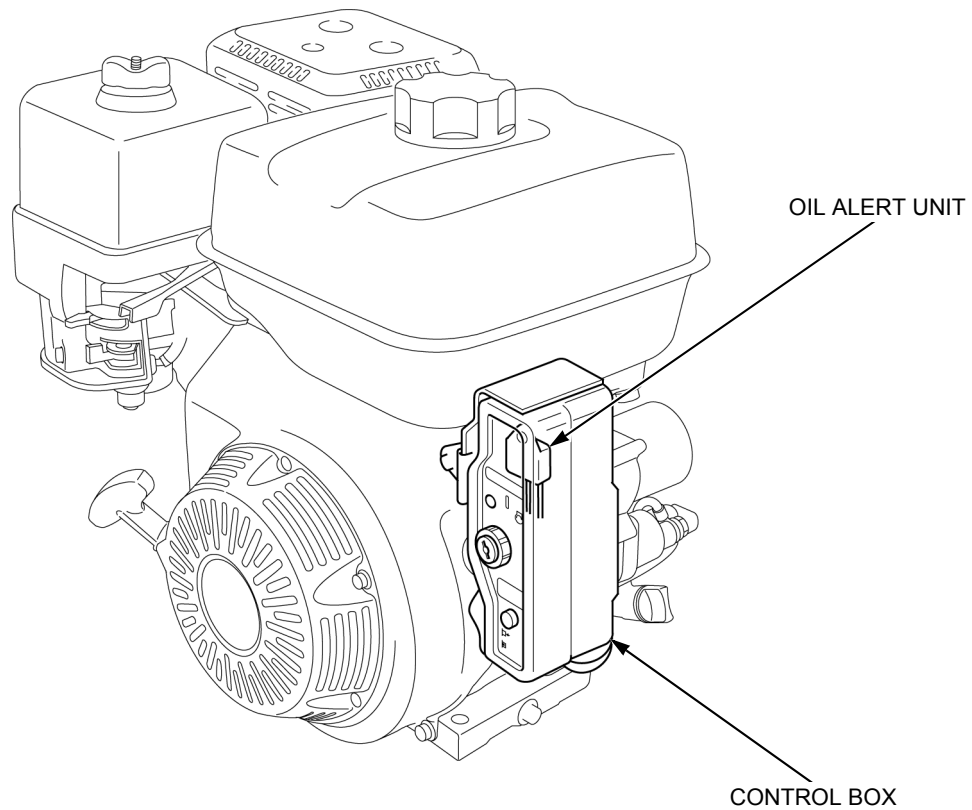
COMPONENT LOCATION	11-2	COMBINATION SWITCH INSPECTION	11-6
CONTROL BOX REMOVAL/ INSTALLATION	11-3	SILICON RECTIFIER INSPECTION	11-6
CONTROL BOX DISASSEMBLY/ ASSEMBLY	11-4	CIRCUIT PROTECTOR INSPECTION	11-7
OIL LEVEL SWITCH REMOVAL/ INSTALLATION	11-5	MAIN FUSE INSPECTION	11-7
ENGINE STOP SWITCH REMOVAL/ INSTALLATION	11-5	OIL LEVEL SWITCH INSPECTION	11-7
OIL ALERT UNIT REMOVAL/ INSTALLATION	11-6	ENGINE STOP SWITCH INSPECTION	11-8
		OIL ALERT UNIT INSPECTION	11-8
		REGULATOR/RECTIFIER INSPECTION ...	11-8

COMPONENT LOCATION

WITHOUT CONTROL BOX:



WITH CONTROL BOX:

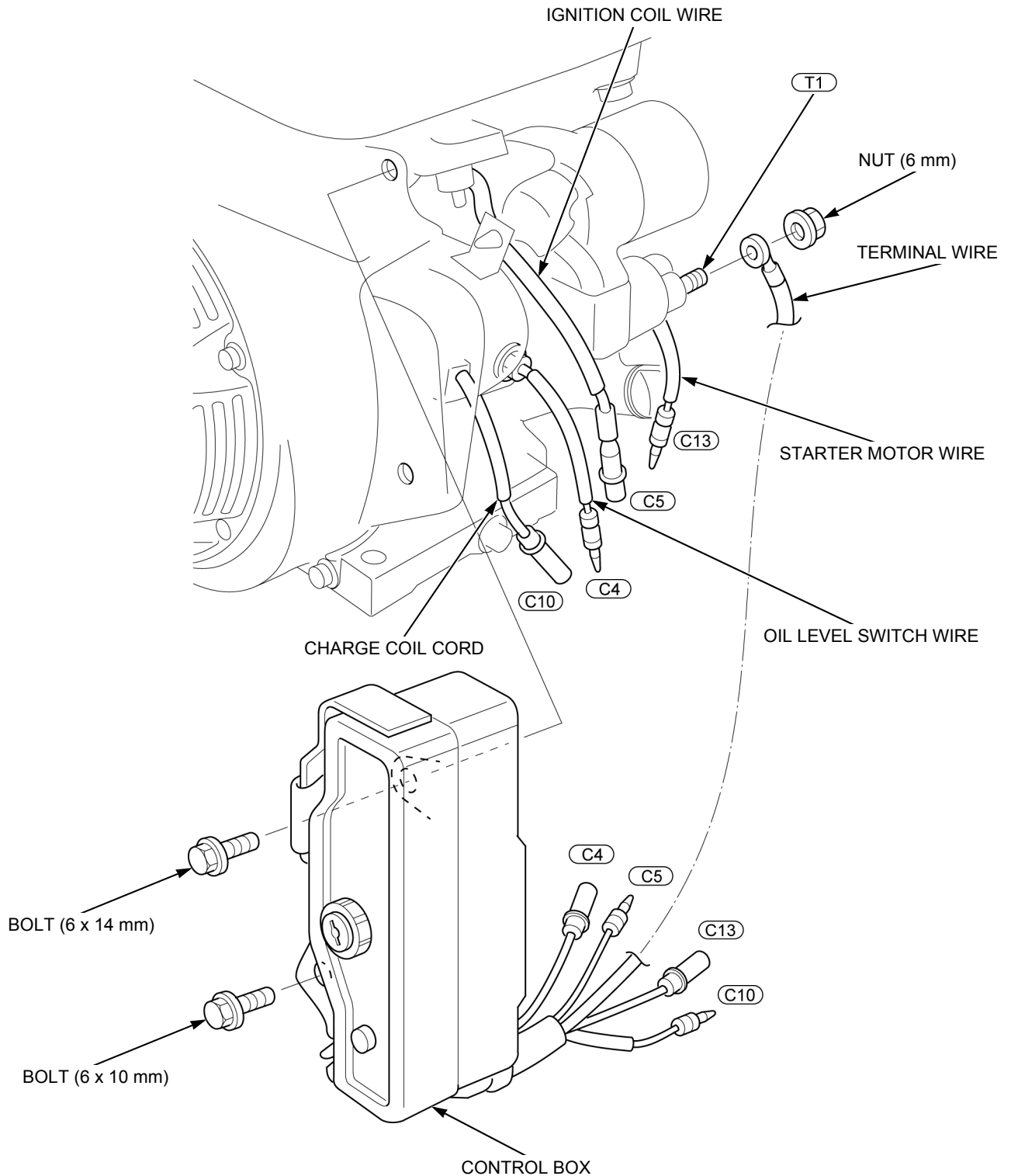


CONTROL BOX REMOVAL/ INSTALLATION

Disconnect the control box wires.

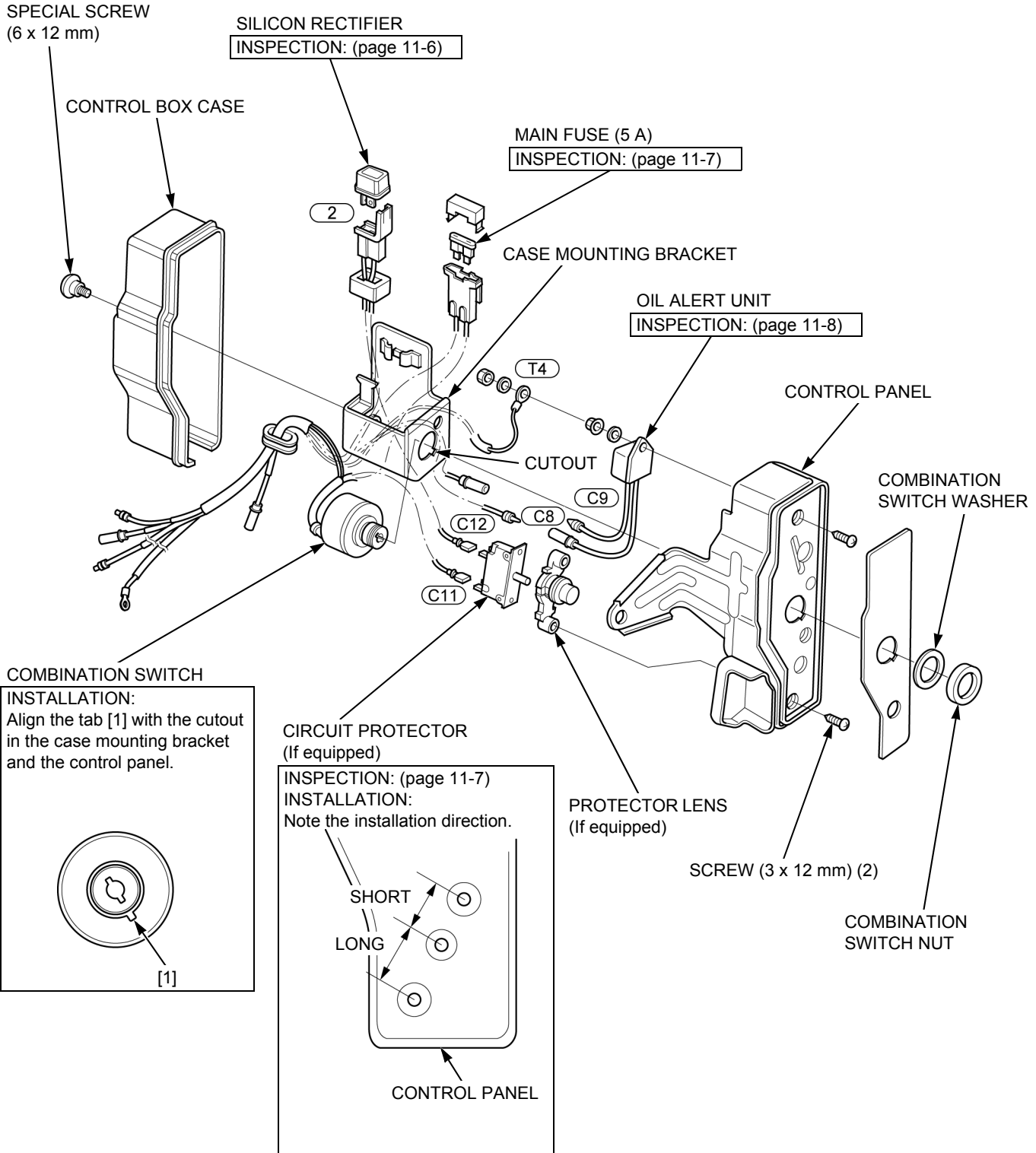
NOTE:

- Route the wire harness properly ([page 2-10](#)).



CONTROL BOX DISASSEMBLY/ ASSEMBLY

Remove the control box [\(page 11-3\)](#).



OIL LEVEL SWITCH REMOVAL/ INSTALLATION

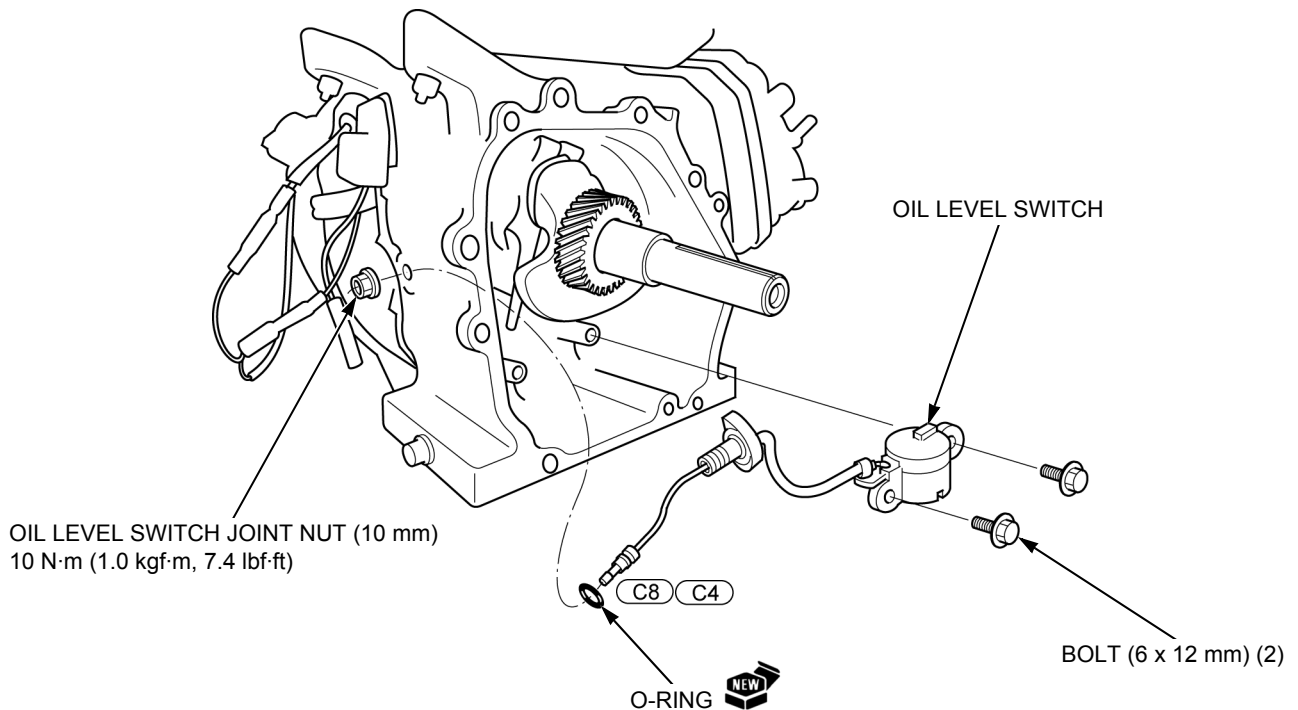
Except control box type: Disconnect the Oil Alert® unit connectors.

Control box type: Disconnect the oil level switch connector.

Remove the camshaft [\(page 14-4\)](#).

NOTE:

- Take care not to drop the valve lifter.



ENGINE STOP SWITCH REMOVAL/ INSTALLATION

NOTE:

- Remove the engine stop switch only if necessary for engine stop switch or fan cover replacement.

Remove the fan cover [\(page 5-2\)](#).

Straighten the tab [1] of the engine stop switch [2] and remove the engine stop switch.

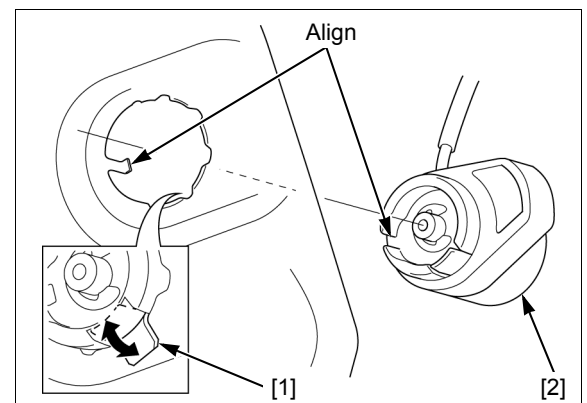
Install the engine stop switch to the fan cover, aligning its groove with the boss of the fan cover.

Bend the tab until it is fully seated on the fan cover so the engine stop switch is held.

NOTE:

- The tab is used for ground terminal.

Install the fan cover [\(page 5-2\)](#).



OIL ALERT UNIT REMOVAL/INSTALLATION

With control box: Disassemble the control box [\(page 11-4\)](#).

Without control box: Disconnect the Oil Alert unit connectors [1].

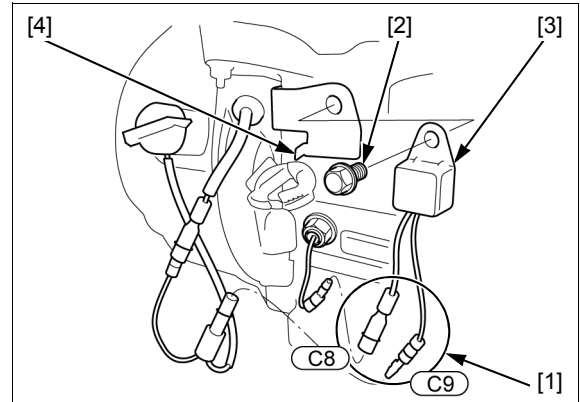
Remove the bolt (6 x 12 mm) [2] and oil alert unit [3].

Install the Oil Alert unit and bolt.

Hold the Oil Alert unit against the boss [4] of the stay, and then tighten the bolt.

NOTE:

- Route the wire harness properly [\(page 2-10\)](#).



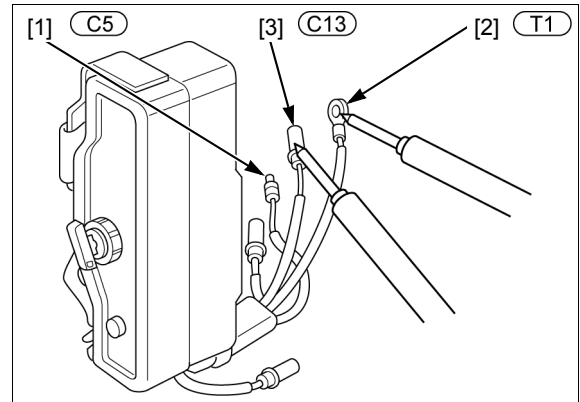
COMBINATION SWITCH INSPECTION

Disconnect the combination switch connectors.

Check the continuity between the terminals at each switch position.

	BI/R [1]	Ground	W [2]	BI/W [3]
OFF	○	○		
ON				
START			○	○

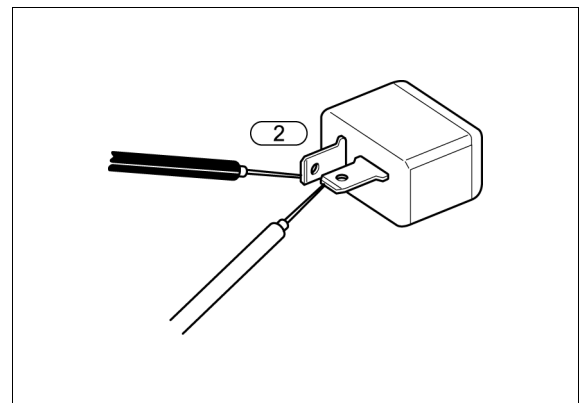
If the correct continuity is not obtained, replace the combination switch [\(page 11-4\)](#).



SILICON RECTIFIER INSPECTION

Remove the silicon rectifier [\(page 11-4\)](#).

Check the continuity between the terminals. There should be continuity in one direction only. Replace the rectifier if there is continuity in both directions or in neither direction.



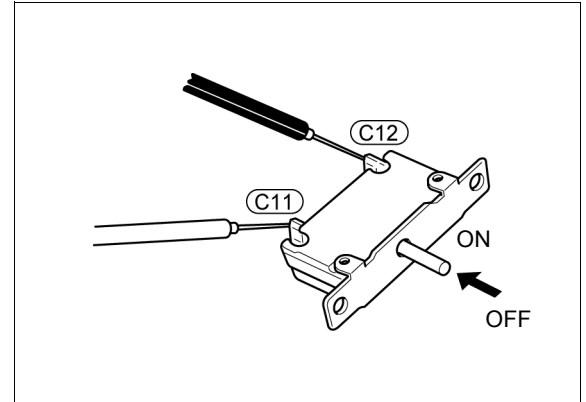
CIRCUIT PROTECTOR INSPECTION

Remove the circuit protector ([page 11-4](#)).

Check the continuity between the terminals.

Switch position	Continuity
ON	Yes
OFF	No

If the correct continuity is not obtained, replace the circuit protector.



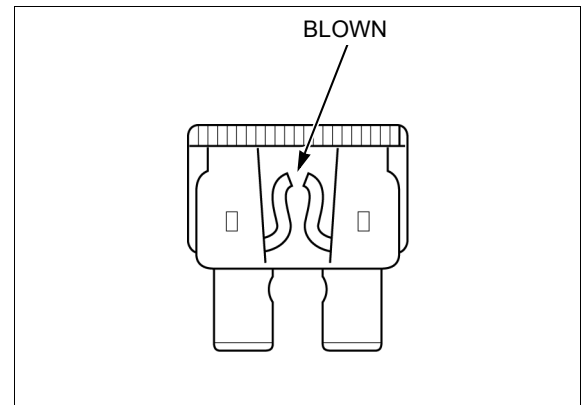
MAIN FUSE INSPECTION

Remove the main fuse (5 A) ([page 11-4](#)).

Visually inspect the fuse to see if it is blown.

Check the continuity across the two blades.

Replace the fuse if it is blown or there is no continuity across the blades.



OIL LEVEL SWITCH INSPECTION

Check the oil level ([page 3-3](#)).

Without control box: Disconnect the Oil Alert unit connector [1].

With control box: Disconnect the oil level switch connector [1].

Check the continuity between the switch terminal and engine ground.

There should be no continuity when the engine is full of oil.

Drain the engine oil completely ([page 3-3](#)).

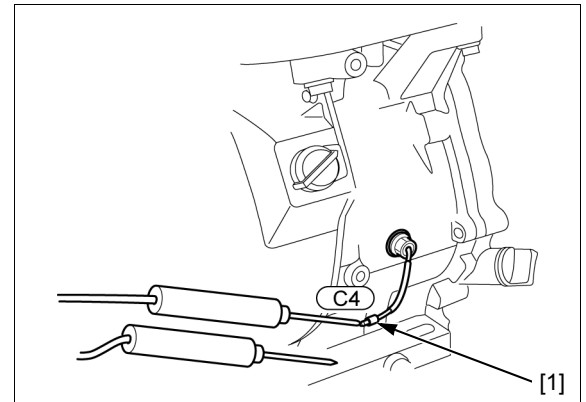
Check the continuity between the switch terminal and engine ground.

There should be continuity.

Check the continuity between the switch terminals while filling the engine with oil.

The ohmmeter reading should go from continuity to no continuity as the oil is filled.

If the correct continuity is not obtained, replace the oil level switch ([page 11-5](#)).



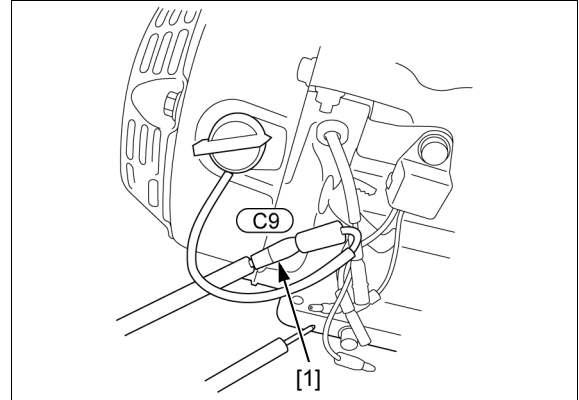
ENGINE STOP SWITCH INSPECTION

Remove the engine stop switch connector [1].

Check the continuity between the terminals at each switch position.

Switch position	Continuity
ON	No
OFF	Yes

If the correct continuity is not obtained, replace the engine stop switch ([page 11-5](#)).



OIL ALERT UNIT INSPECTION

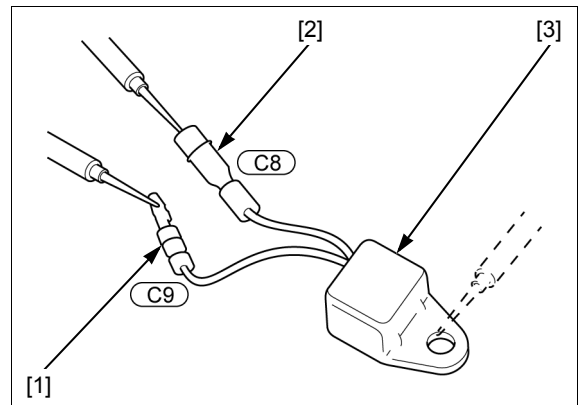
Remove the Oil Alert unit.

- Without control box ([page 11-6](#))
- With control box ([page 11-4](#))

Check the continuity between the terminals, and Oil Alert unit body.

Unit: kΩ

		(+)		
		BI [1]	Y [2]	Body [3]
(-)	BI [1]	-	0.5 - 10	∞
	Y [2]	0.5 - 10	-	∞
	Body [3]	∞	∞	-



REGULATOR/RECTIFIER INSPECTION

Disconnect the regulator/rectifier connector.

Measure the resistance between the terminals and be sure that the measurements conform to the ranges shown in the table.

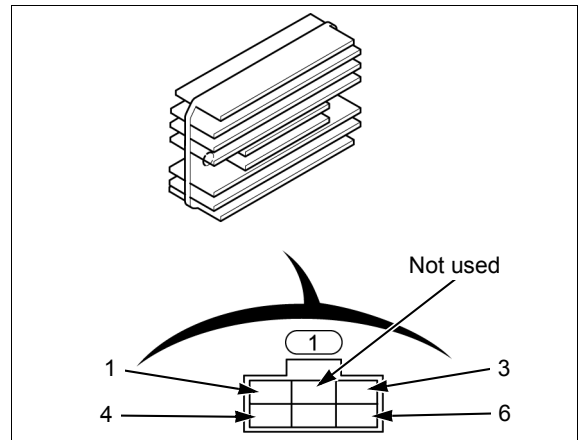
Unit: kΩ

	4	6	1	3
4	-	∞	∞	∞
6	∞	-	∞	∞
1	1 - 200	1 - 200	-	0.5 - 100
3	0.1 - 50	0.1 - 50	∞	-

Use a tester that has an internal resistance equal to or greater than: 20 kΩ/VDC, 9 kΩ/VAC

Be careful not to touch the metallic part of the tester probe with your fingers; otherwise, the correct resistance value cannot be obtained.

Read the tester manufacturer's operation instructions carefully before operating the tester. Follow the instructions of the service manual. Be sure the tester's battery is fully charged, and check the meter before using the tester.



MUFFLER REMOVAL/INSTALLATION.....12-2

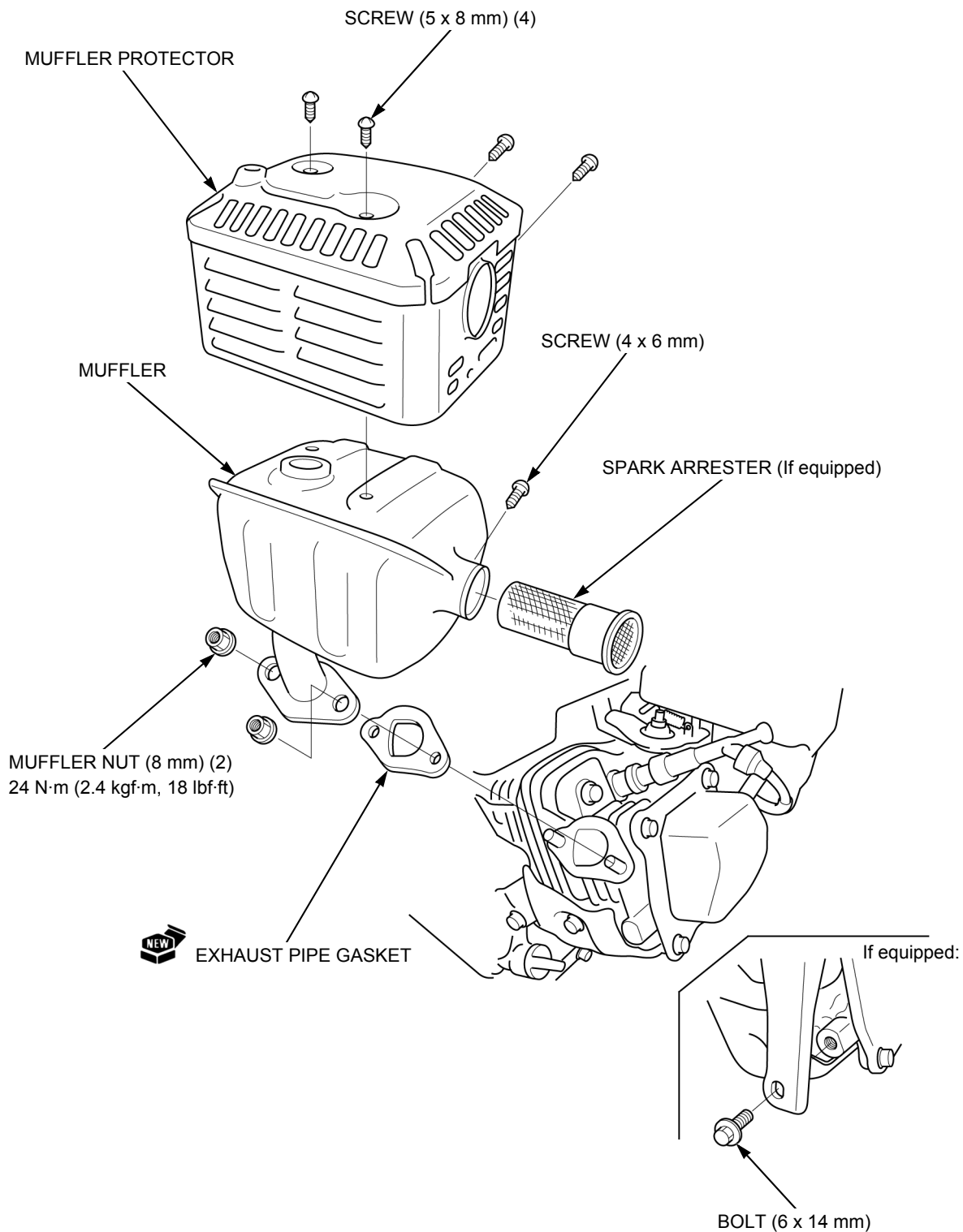
EXHAUST PIPE STUD BOLT
REPLACEMENT 12-3



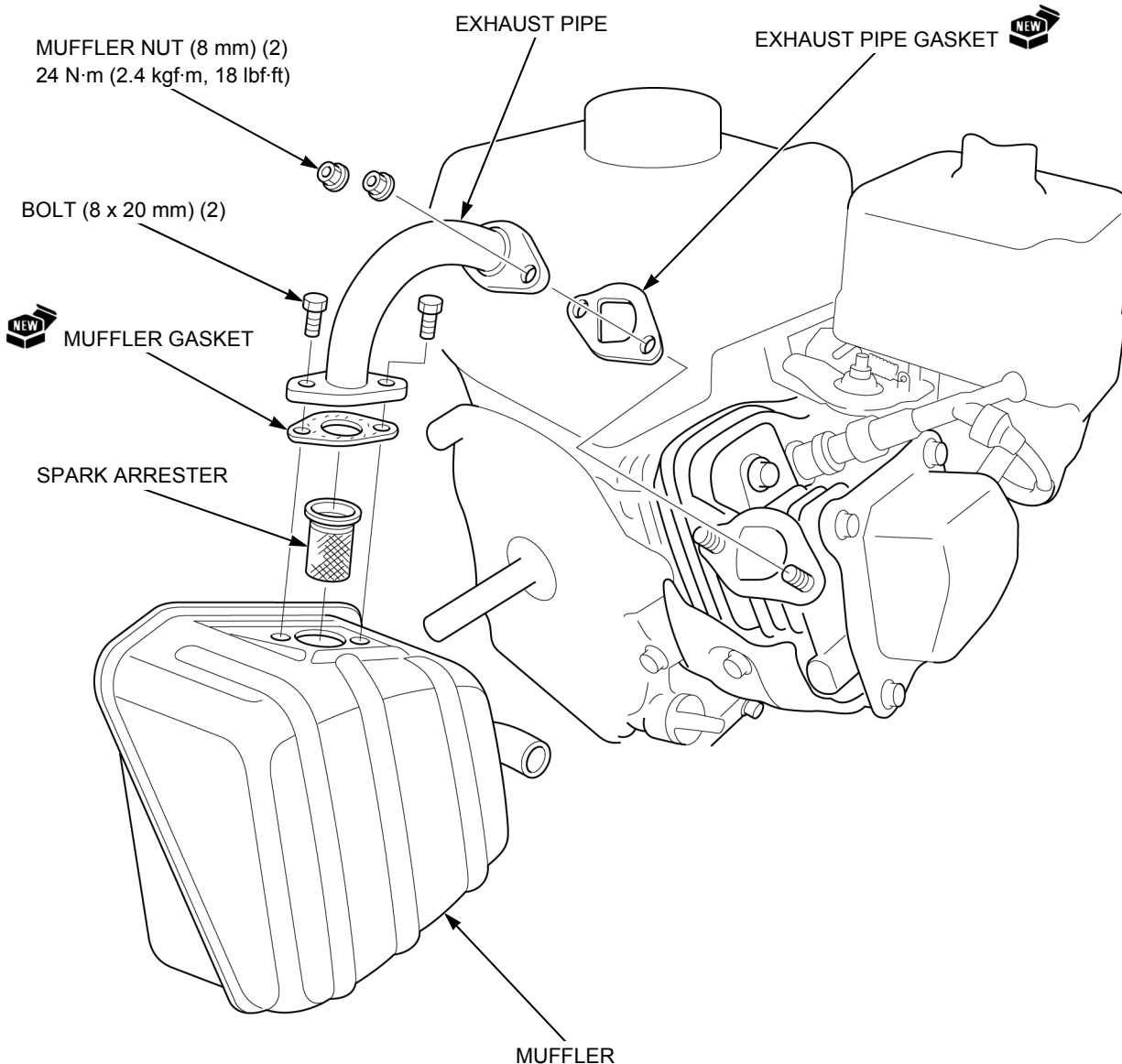
MUFFLER REMOVAL/INSTALLATION

⚠ CAUTION
 The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

STANDARD, SILENT TYPE



LOW PROFILE TYPE



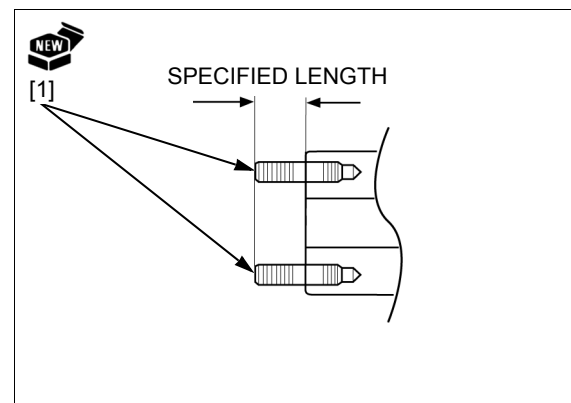
EXHAUST PIPE STUD BOLT REPLACEMENT

Remove the muffler ([page 12-2](#)).

Thread two nuts onto the exhaust pipe stud bolt [1] and tighten them together; then use a wrench to turn the stud bolt out.

Install and tighten the new stud bolts until they are the specified length.

SPECIFIED LENGTH: 15 mm (0.6 in)



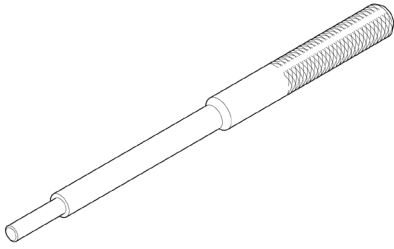
MEMO

13. CYLINDER HEAD

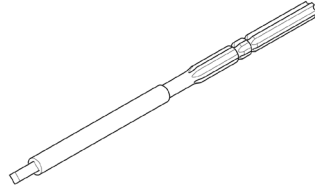
TOOLS.....	13-2	CYLINDER HEAD/VALVES INSPECTION.....	13-5
CYLINDER HEAD REMOVAL/ INSTALLATION.....	13-3	VALVE GUIDE REPLACEMENT	13-8
CYLINDER HEAD DISASSEMBLY/ ASSEMBLY	13-4	VALVE GUIDE REAMING	13-9
		VALVE SEAT RECONDITIONING.....	13-10

TOOLS

Valve guide driver, 5.5 mm
07742-0010100



Valve guide reamer, 5.5 mm
07984-200000D



CYLINDER HEAD REMOVAL/ INSTALLATION

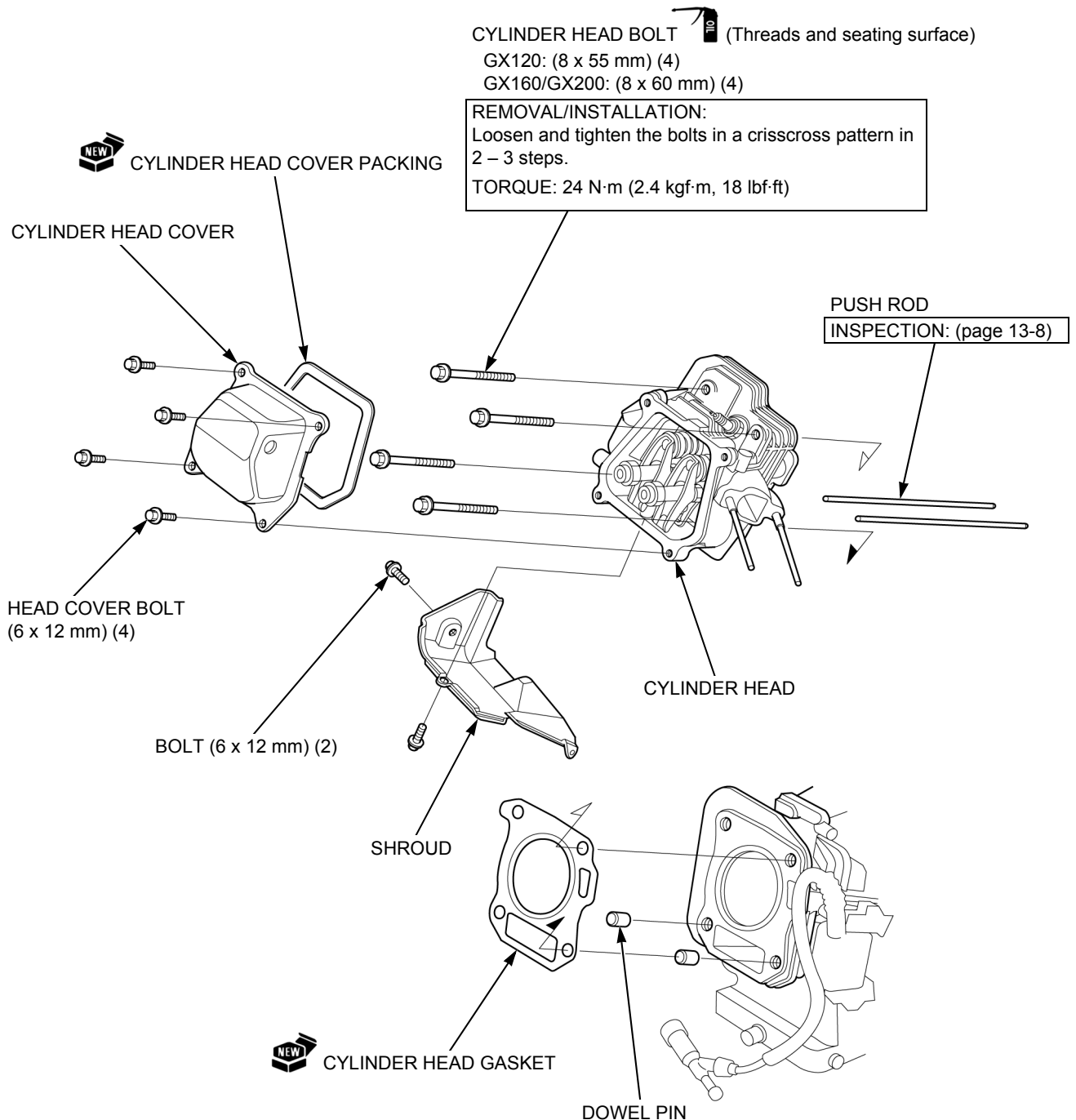
Set the piston at top dead center of the cylinder compression stroke ([page 3-13](#)).

Remove the following:

- Fan cover ([page 5-2](#))
- Carburetor ([page 6-10](#))
- Control base Assy ([page 7-3](#))
- Muffler ([page 12-2](#))

After installation, inspect following:

- Valve clearance ([page 3-13](#))
- Cylinder compression ([page 13-5](#))



CYLINDER HEAD DISASSEMBLY/ ASSEMBLY

Remove the cylinder head [\(page 13-3\)](#).

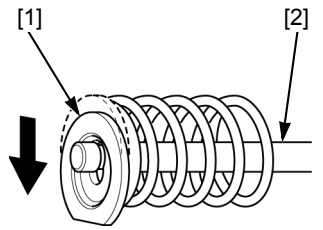
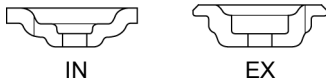
INTAKE/EXHAUST VALVE SPRING RETAINER

REMOVAL:

Push down and slide the valve spring retainer [1] to the side so that the valve stem [2] slips through the hole at the side of the valve spring retainer. Do not remove the valve spring retainer while the cylinder head is installed to the cylinder barrel, or the valve will drop into the cylinder.

INSTALLATION:

Do not interchange the intake and exhaust retainers (GX200 only).

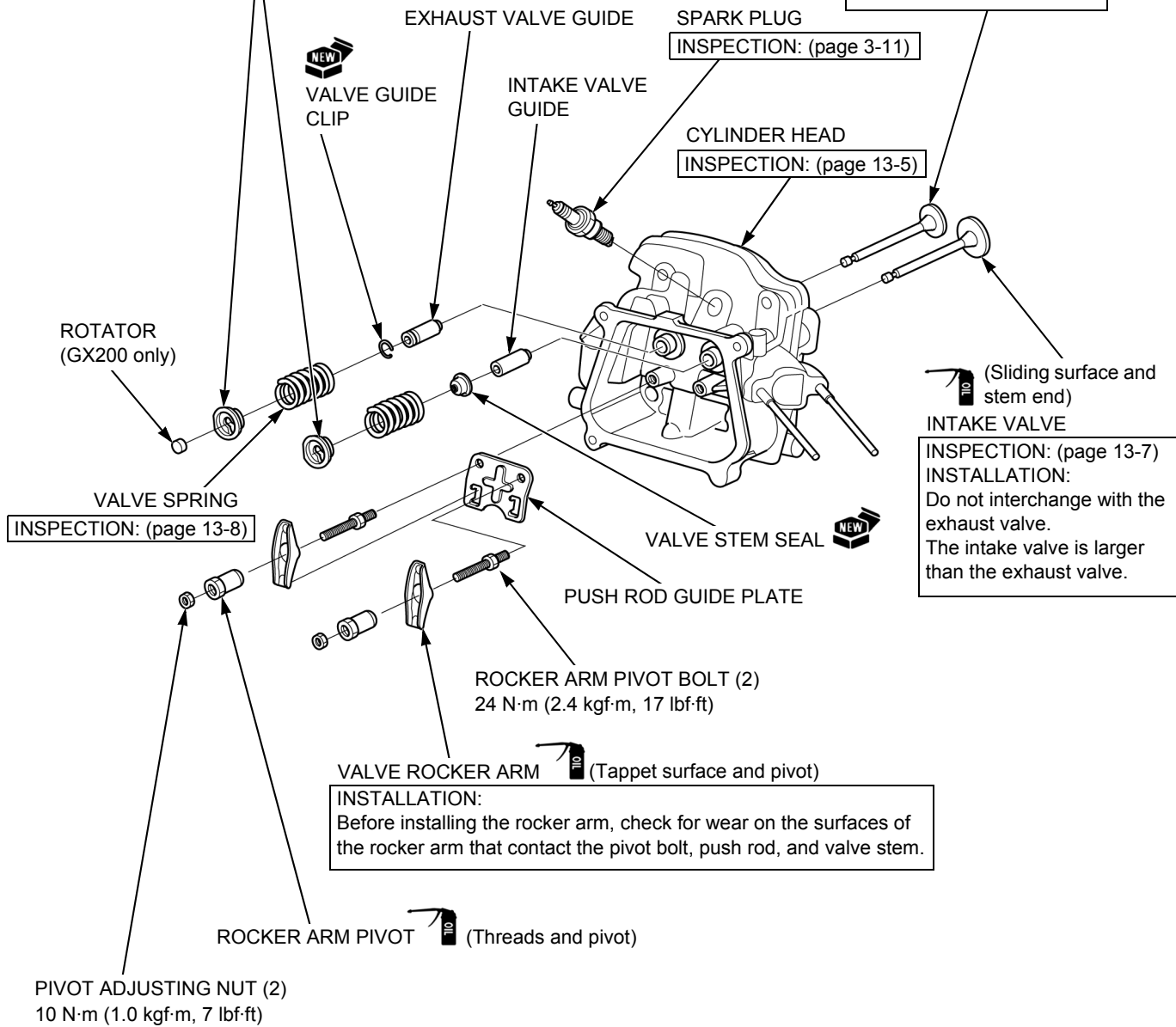


EXHAUST VALVE

INSPECTION: (page 13-7)

INSTALLATION:

Do not interchange with the intake valve. The exhaust valve is smaller than the intake valve.



CYLINDER HEAD/VALVES INSPECTION

CYLINDER COMPRESSION CHECK

Start the engine and warm up to normal operating temperature.

Turn off the engine stop switch/combination switch to stop the engine.

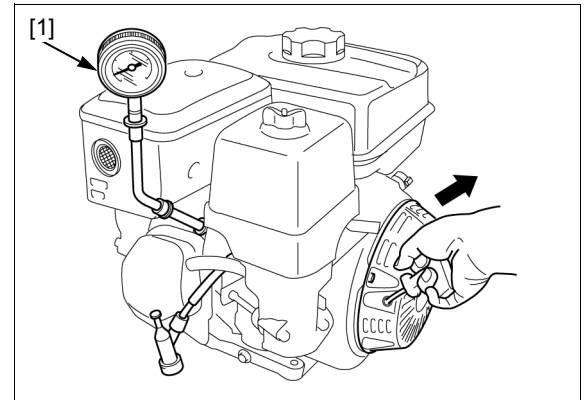
Turn the fuel valve lever to the OFF position, and then loosen the drain screw of the carburetor to drain the fuel completely (page 6-3).

Remove the spark plug (page 3-11).

Pull the recoil starter several times to expel unburned gas.

Attach a commercially available compression gauge [1] to the spark plug hole.

Pull the recoil starter forcefully to measure stable cylinder compression.



CYLINDER COMPRESSION:

GX120/GX160:

0.49 - 0.69 MPa (5.0 - 7.0 kgf/cm², 71 - 100 psi)/
600 min⁻¹ (rpm)

GX200:

0.35 MPa (3.6 kgf/cm², 51 psi)/600 min⁻¹ (rpm)

CYLINDER HEAD WARPAGE

Check the spark plug hole and valve areas for cracks.

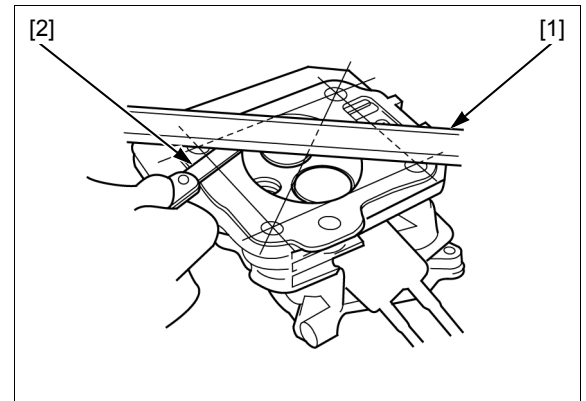
Clean any gasket material from the cylinder head mating surface and check the cylinder head warpage using a straightedge [1] and thickness gauge [2].

NOTE:

- Be careful not to damage the mating surface.

SERVICE LIMIT: 0.10 mm (0.004 in)

If the measurement is more than the service limit, replace the cylinder head.



VALVE SEAT WIDTH

Remove the carbon deposits from the combustion chamber ([page 3-15](#)).

Inspect each valve face for irregularities.

If necessary, replace the valve.

Apply a light coat of Prussian Blue or erasable felt-tipped marker ink to each valve seat.

Insert the valve, and snap it closed against its seat several times. Be sure the valve does not rotate on the seat.

The transferred marking compound will show any area of the valve face that is not concentric.

Measure the valve seat width of the cylinder head.

STANDARD:

GX120/GX200:

IN/EX: 0.70 – 0.90 mm (0.028 – 0.035 in)

GX160:

IN: 0.70 – 0.90 mm (0.028 – 0.035 in)

EX: 0.90 – 1.10 mm (0.035 – 0.043 in)

SERVICE LIMIT:

GX120/GX200:

IN/EX: 2.0 mm (0.08 in)

GX160:

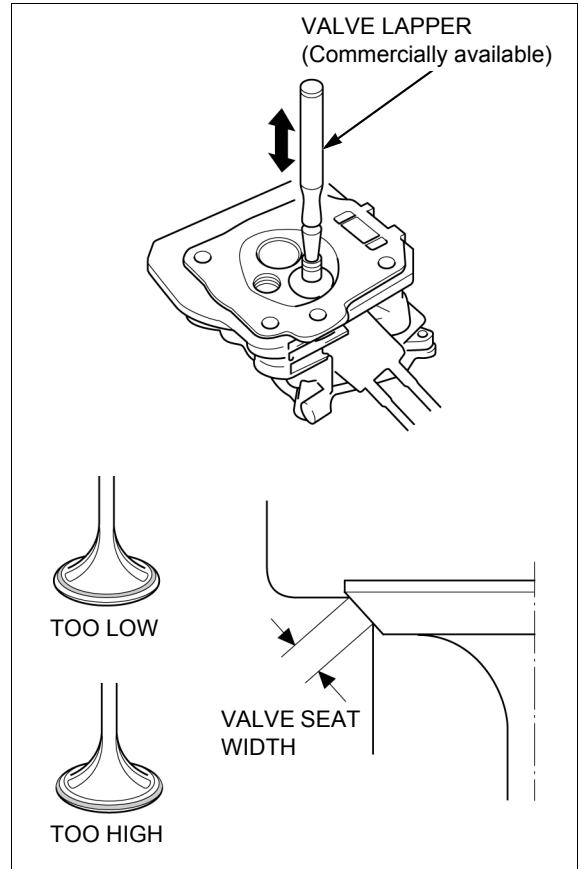
IN: 2.0 mm (0.08 in)

EX: 2.0 mm (0.08 in)

If the measurement is more than the service limit, recondition the valve seat ([page 13-10](#)).

Check whether the valve seat contact area of the valve is too high.

If the valve seat is too high or too low, recondition the valve seat ([page 13-10](#)).



VALVE GUIDE I.D.

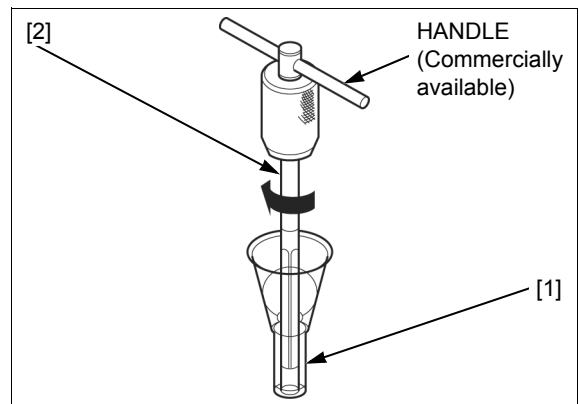
Ream the valve guide to remove any carbon deposits before measuring the guide I.D. [1].

TOOL:

Valve guide reamer 5.5 mm [2] 07984-20000D

NOTICE

- Turn the valve guide reamer (special tool) clockwise, never counterclockwise.
- Continue to rotate the special tool while removing it from the valve guide.

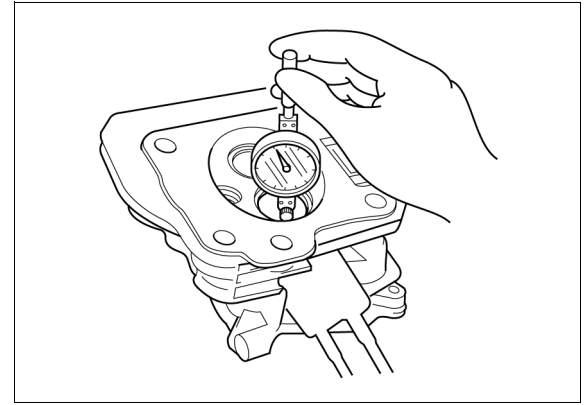


Measure and record each valve guide I.D.

STANDARD: 5.500 – 5.512 mm (0.2165 – 0.2170 in)

SERVICE LIMIT: 5.572 mm (0.2194 in)

If the measured valve guide I.D. is more than the service limit, replace the valve guide ([page 13-8](#)).



VALVE FACE/VALVE STEM O.D.

Inspect each valve face [1] for irregularities.

If necessary, replace the valve.

Inspect each valve [2] for bending or abnormal stem wear.

If necessary, replace the valve.

Measure and record each valve stem O.D.

STANDARD:

IN: 5.468 – 5.480 mm (0.2153 – 0.2157 in)

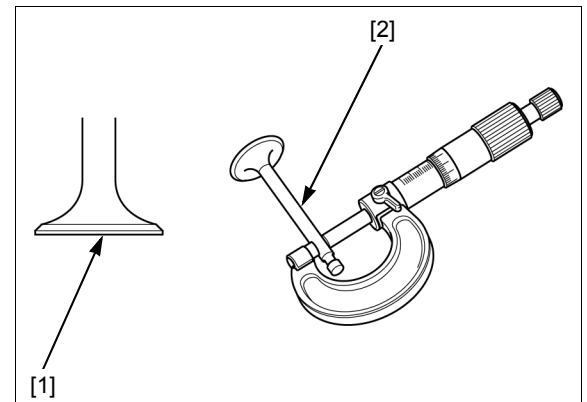
EX: 5.425 – 5.440 mm (0.2136 – 0.2142 in)

SERVICE LIMIT:

IN: 5.318 mm (0.2094 in)

EX: 5.275 mm (0.2077 in)

If the measurement is less than the service limit, replace the valve.



GUIDE-TO-STEM CLEARANCE

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the guide-to-stem clearance.

STANDARD:

IN: 0.020 – 0.044 mm (0.0008 – 0.0017 in)

EX: 0.060 – 0.087 mm (0.0024 – 0.0034 in)

SERVICE LIMIT:

IN: 0.10 mm (0.004 in)

EX: 0.12 mm (0.005 in)

If the calculated clearance is more than the service limit, replace the valve and valve guide as a set ([page 13-8](#)).

VALVE SPRING FREE LENGTH/ PERPENDICULARITY

Measure the valve spring free length.

STANDARD: 30.5 mm (1.20 in)

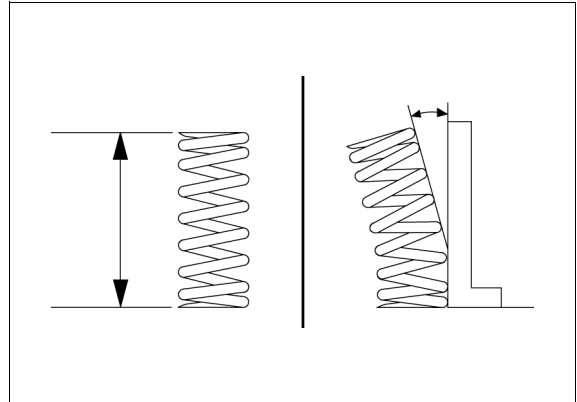
SERVICE LIMIT: 29.0 mm (1.14 in)

If the measured length is less than the service limit, replace the valve spring.

Measure the valve spring perpendicularity.

SERVICE LIMIT: 1.5° max.

If the measured perpendicularity is more than the service limit, replace the valve spring.

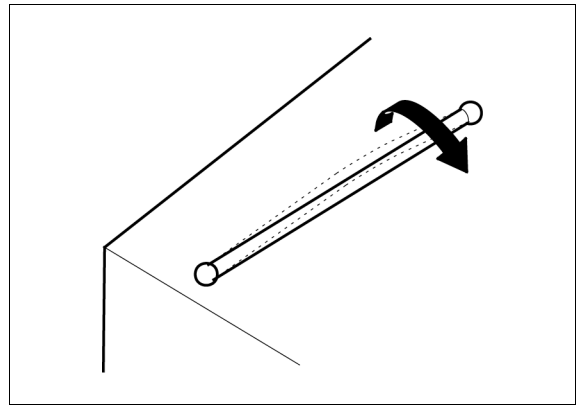


PUSH ROD RUNOUT

Check both ends of the push rod for wear.

Check the push rod for straightness.

If necessary, replace the push rod.



VALVE GUIDE REPLACEMENT

Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

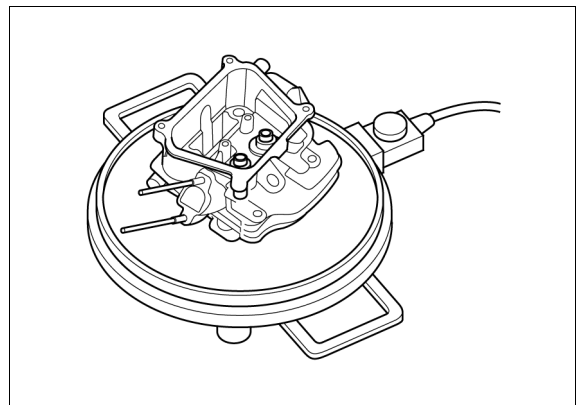
Use a hot plate or oven to heat the cylinder head evenly to 150°C (302°F).

CAUTION

To avoid burns, use heavy gloves when handling the heated cylinder head.

NOTICE

- Do not use a torch to heat the cylinder head; warpage of the cylinder head may result.
- Do not get the cylinder head hotter than 150°C (302°F); excessive heat may loosen the valve seat.

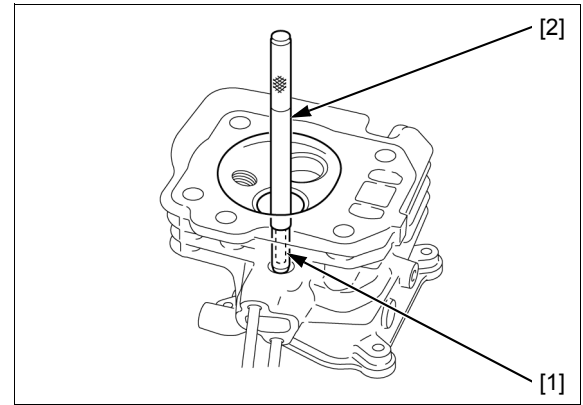


Remove the heated cylinder head from the hot plate and support it with wooden blocks.
 Drive the valve guides [1] out of the cylinder head from the combustion chamber side.

TOOL:
Valve guide driver 5.5 mm [2] 07742-0010100

NOTICE

- When driving the valve guides out, be careful not to damage the cylinder head.



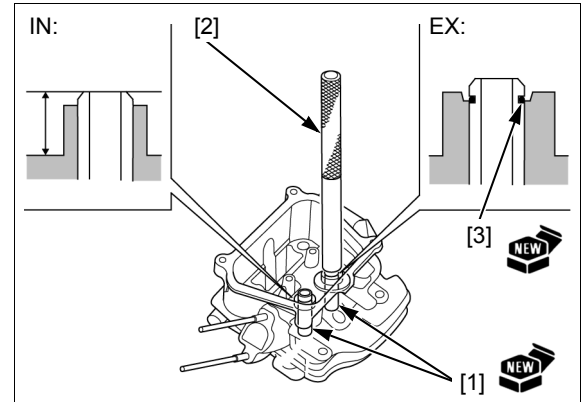
Remove the new valve guides [1] from the refrigerator one at a time as needed.
 Install the valve guides from the valve spring side of the cylinder head.

TOOL:
Valve guide driver 5.5 mm [2] 07742-0010100

- EX:** Drive the exhaust valve guide until new valve guide clip [3] is fully seated as shown.
- IN:** Drive the intake valve guide to the specified height (measured from the end of the valve guide to the cylinder head as shown).

IN VALVE INSTALLATION HEIGHT:
4.8 – 5.2 mm (0.19 – 0.20 in)

After installing the valve guide, check the guide for damage.
 Replace the valve guide if damaged.
 Let the cylinder head cool to room temperature.
 Ream the valve guide ([page 13-9](#)).



VALVE GUIDE REAMING

For best results, be sure the cylinder head is at room temperature before reaming valve guides.
 Coat the reamer and valve guide with cutting oil.

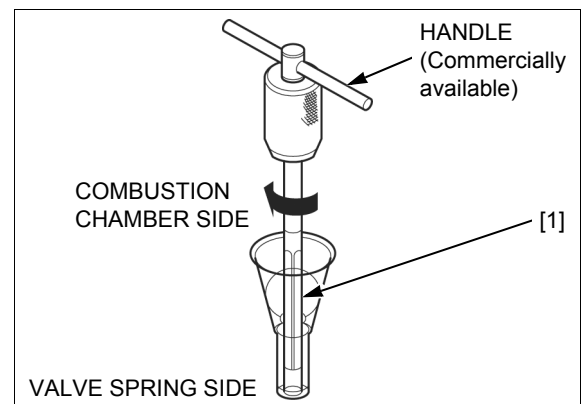
TOOL:
Valve guide reamer 5.5 mm [1] 07984-200000D

Rotate the reamer clockwise through the valve guide the full length of the reamer.

NOTICE

- Turn the valve guide reamer (special tool) clockwise, never counterclockwise.
- Continue to rotate the special tool while removing it from the valve guide.

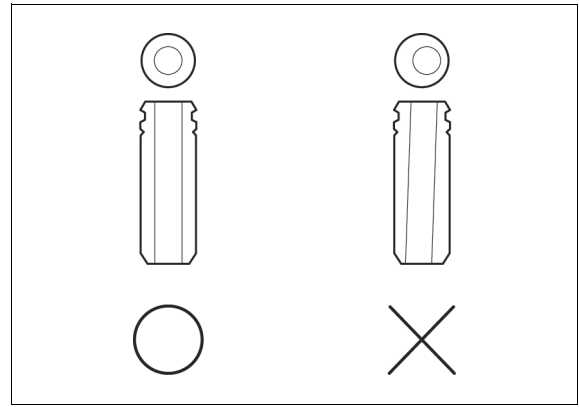
Thoroughly clean the cylinder head to remove any cutting residue.



Check the valve guide bore; it should be straight, round and centered in the valve guide. Insert the valve and check operation. If the valve does not operate smoothly, the guide may have been bent during installation.

Replace the valve guide if it is bent or damaged ([page 13-8](#)).

Check the valve guide-to-stem clearance ([page 13-7](#)).



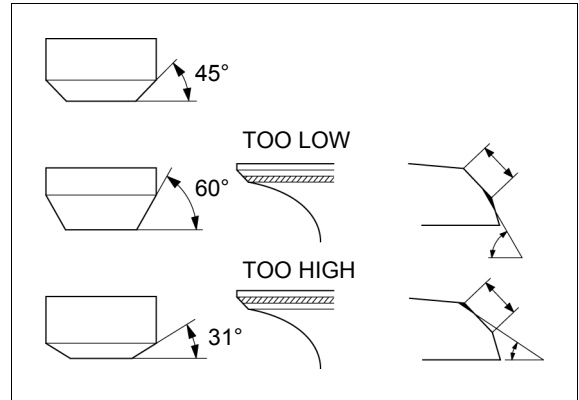
VALVE SEAT RECONDITIONING

Inspect the valve seat contact area ([page 13-6](#)).

Using a 45° seat cutter, remove any roughness or irregularities from the seat.

If the contact area is too low on the valve, the seat must be raised using a 60° interior cutter.

If the contact area is too high on the valve, the seat must be lowered using a 31° flat cutter.



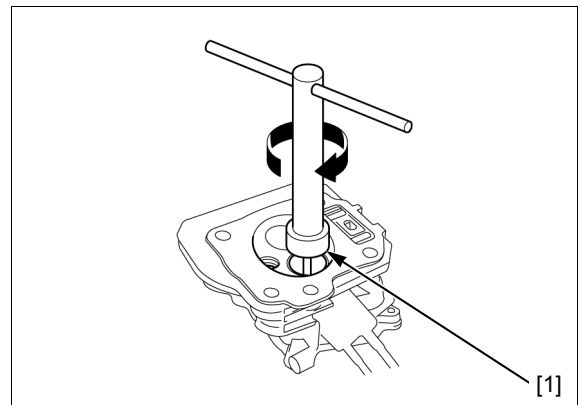
Valve seat cutters [1]/grinder or equivalent valve seat refacing equipment is recommended to correct a worn valve seat.

NOTICE

- Turn the cutter clockwise, never counterclockwise.
- Continue to turn the cutter as you lift it from the valve seat.

TOOLS (Commercially available):

Valve seat cutter, 31°	NWYCU115
Valve seat cutter, 45°	NWYCU122
Valve seat cutter, 60°	MWYCU111
Solid pilot (short) 5.5 mm	NWYPM10055SH
Accessory kit	NWYKACC246
T-wrench	NWYTW505
Adapter, 1/2"-3/8"	NWYTW503-1



Make a light pass with the 45° cutter to remove any possible burrs at the edge of the seat.

Be sure that the width of the finished valve seat is within specification.

STANDARD:

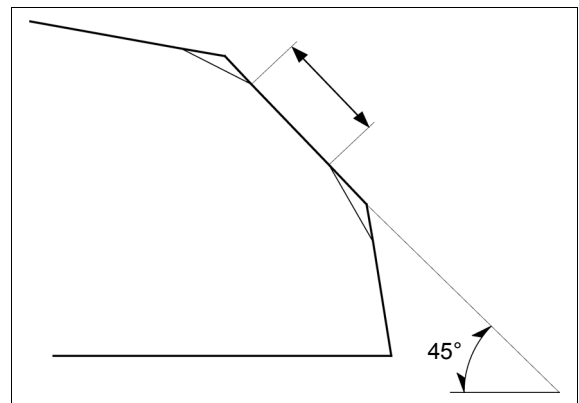
GX120/GX200:

IN/EX: 0.70 – 0.90 mm (0.028 – 0.035 in)

GX160:

IN: 0.70 – 0.90 mm (0.028 – 0.035 in)

EX: 0.90 – 1.10 mm (0.035 – 0.043 in)

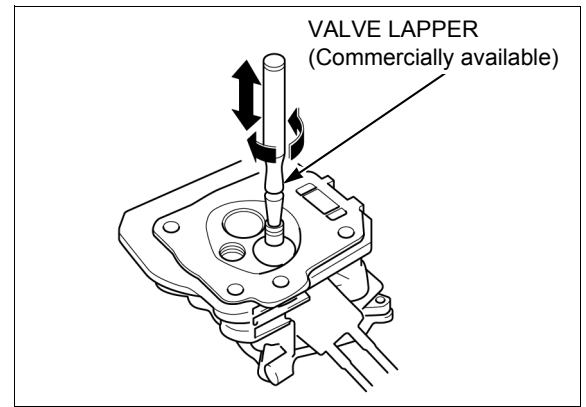


Lap the valves into their seats, using a commercially available valve lapper and lapping compound.

After lapping, wash all residual compound off the cylinder head and valve.

NOTICE

- *Do not push the valve against the seat with force during lapping. Apply a light pass with the valve lapper.*
- *Avoid lapping the valve in the same position as it causes uneven wear. Lap the valve by turning the lapper slowly.*
- *Take care not to allow the lapping compound to enter the gap between the stem and guide.*



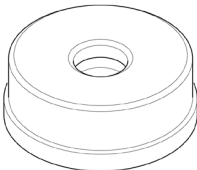


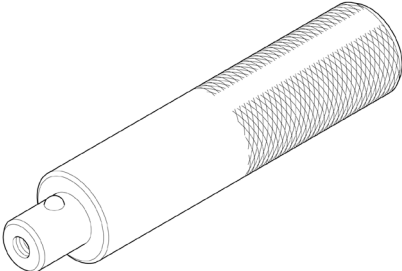


MEMO

14. CRANKCASE

TOOLS.....	14-2	PISTON Assy. DISASSEMBLY/ ASSEMBLY.....	14-5
CRANKCASE COVER REMOVAL/ INSTALLATION.....	14-3	CRANKCASE COVER/CYLINDER BARREL/ PISTON/CONNECTING ROD/CRANKSHAFT/ CAMSHAFT INSPECTION.....	14-6
CRANKSHAFT/PISTON REMOVAL/ INSTALLATION.....	14-4	CRANKSHAFT BEARING/OIL SEAL REPLACEMENT	14-13

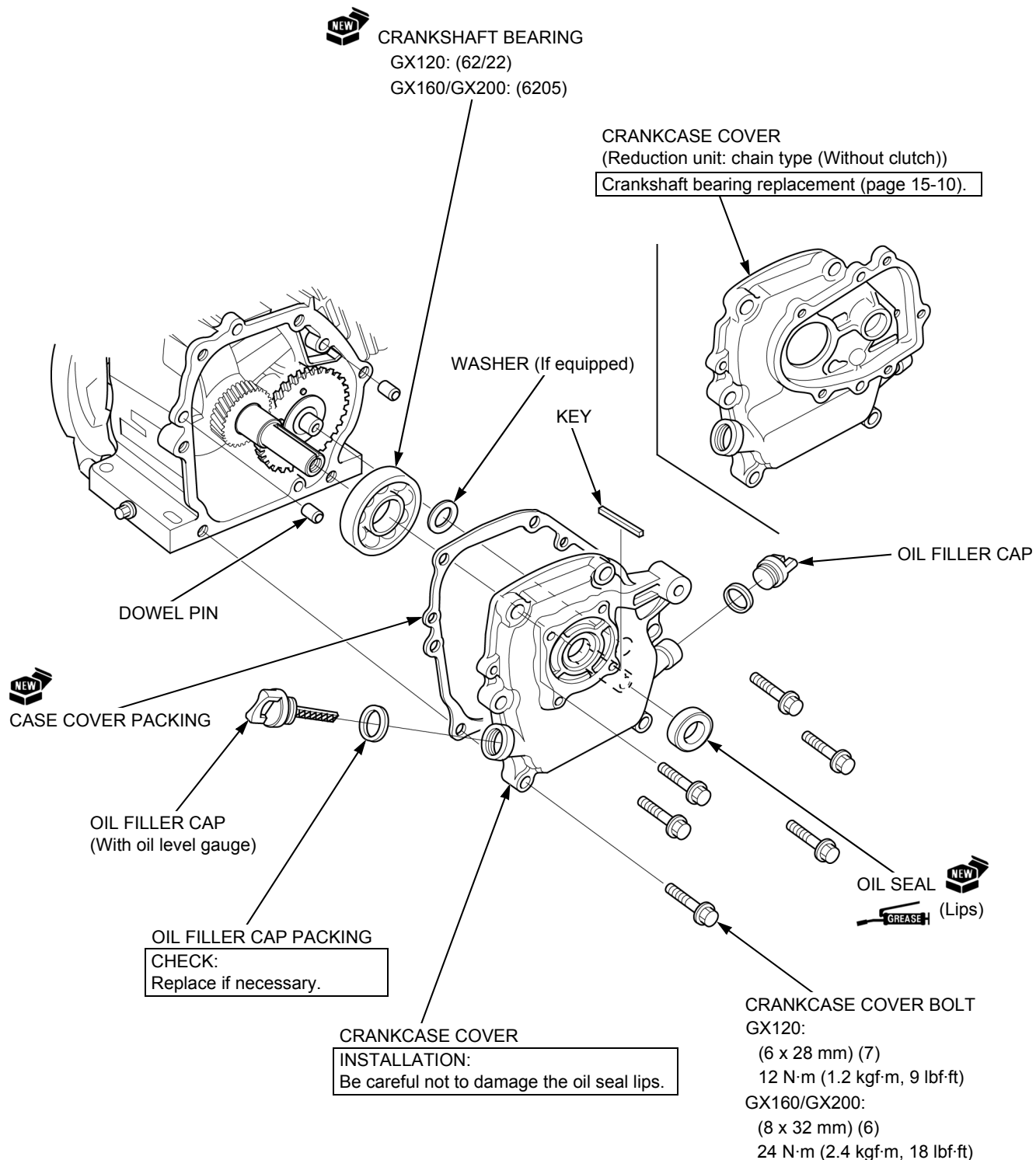
TOOLS

<p>Attachment, 32 x 35 mm 07746-0010100</p> 	<p>Attachment, 37 x 40 mm 07746-0010200</p> 	<p>Attachment, 52 x 55 mm 07746-0010400</p> 
<p>Pilot, 22 mm 07746-0041000</p> 	<p>Pilot, 25 mm 07746-0040600</p> 	<p>Driver 07749-0010000</p> 

CRANKCASE COVER REMOVAL/ INSTALLATION

Drain the engine oil ([page 3-3](#)).


Reduction type: Remove the reduction unit ([page 15-4](#)).



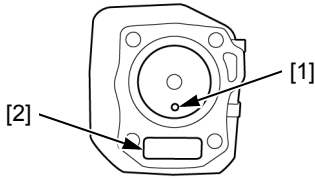
CRANKSHAFT/PISTON REMOVAL/ INSTALLATION

Remove the following:

- Fuel tank (page 6-3)
- Flywheel (page 8-5)
- Cylinder head (page 13-3)
- Crankcase cover (page 14-3)

 PISTON Assy.
(Outer surface and big end bearing)



INSTALLATION:
Install the piston Assy. to the cylinder barrel with the mark [1] on the piston head toward the push rod hole [2] of the cylinder head.





VALVE LIFTER


REMOVAL:
Mark the valve lifters so that the intake and exhaust sides can be distinguished.

INSTALLATION:
Attach the valve lifters to the cylinder barrel immediately before installing the camshaft.


 OIL SEAL
(Lips)



 CYLINDER BARREL
(Cylinder inner surface)
INSPECTION: (page 14-6)


 CRANKSHAFT BEARING
GX120: (62/22)
GX160/GX200: (6205)


 CONNECTING ROD LOWER
(Big end bearing)

INSTALLATION:
Set the connecting rod lower with the oil dipper toward the camshaft.

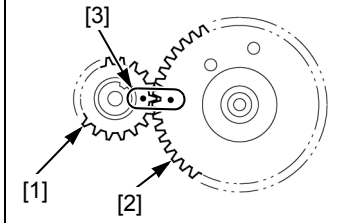
 CONNECTING ROD BOLT (2)
(Threads and seating surface)
GX120/GX200:
(7 x 34 mm)
12 N·m (1.2 kgf·m, 9 lbf·ft)
GX160:
(6 x 34 mm)
10 N·m (1.0 kgf·m, 7 lbf·ft)

 CRANKSHAFT
(Pin and gear teeth)
INSPECTION: (page 14-6)
INSTALLATION:
Be careful not to damage the oil seal lips.

 (Pivot, pivot end and slipper surface)

 CAMSHAFT
(Cam lobes and journal)

INSPECTION: (page 14-6)
INSTALLATION:
Install the timing gear [1] of the crankshaft and camshaft [2] by aligning the punch marks [3].

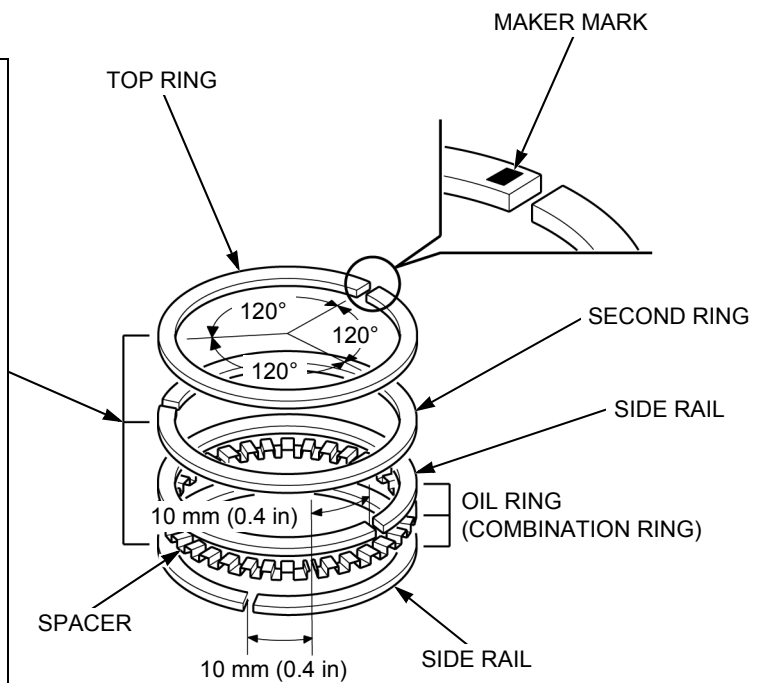
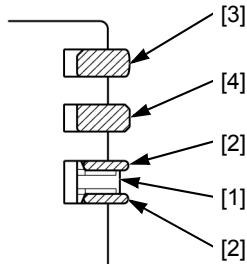


PISTON Assy. DISASSEMBLY/ ASSEMBLY

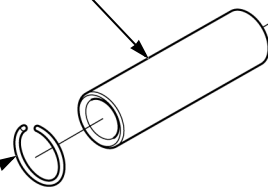
Remove the piston Assy. [\(page 14-4\)](#).

PISTON RING SET (Entire surface)

INSPECTION: (page 14-6)
INSTALLATION:
 To install the oil ring, install the spacer [1] first, and then install the side rails [2].
 Be sure that the top ring [3] and second ring [4] are not interchanged.
 Install the top ring and second ring on the piston with the maker mark side facing up.
 Check that the piston rings rotate smoothly after installing them.
 Space the piston ring end gaps 120° apart, and do not align the ring end gaps with the piston pin bore.

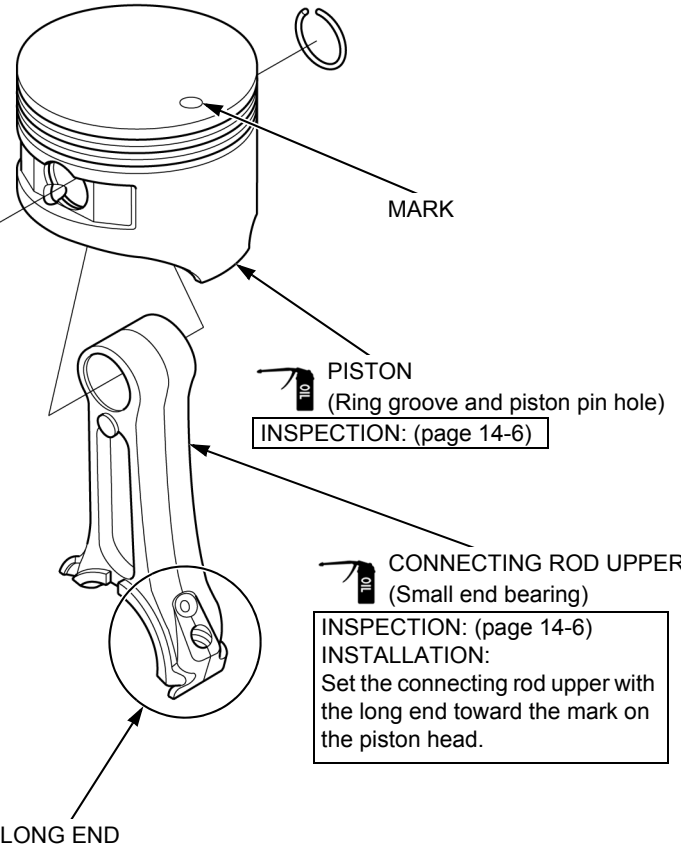
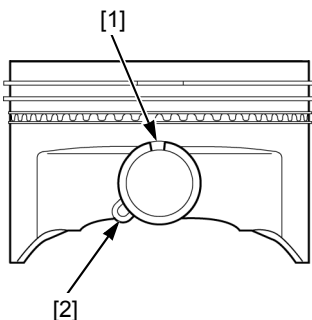


PISTON PIN (Outer surface) **INSPECTION:** (page 14-6)



PISTON PIN CLIP

INSTALLATION:
 Install by setting one end of the piston pin clip in the groove of the piston pin bore, holding the other end with long needle pliers, and rotating the clip in.
 Do not align the end gap [1] of the piston pin clip with the cutout [2] of the piston pin bore.



PISTON (Ring groove and piston pin hole) **INSPECTION:** (page 14-6)

CONNECTING ROD UPPER (Small end bearing)

INSPECTION: (page 14-6)
INSTALLATION:
 Set the connecting rod upper with the long end toward the mark on the piston head.

CRANKCASE COVER/CYLINDER BARREL/PISTON/CONNECTING ROD/CRANKSHAFT/CAMSHAFT INSPECTION

CAMSHAFT HOLDER I.D.

CRANKCASE COVER SIDE

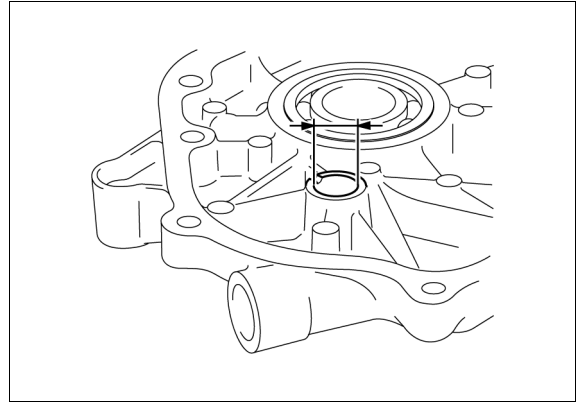
Measure the camshaft holder I.D. of the crankcase cover.

STANDARD: 14.000 – 14.018 mm (0.5512 – 0.5519 in)

SERVICE LIMIT: 14.048 mm (0.5531 in)

If the measurement is more than the service limit, replace the crankcase cover.

Inspect the camshaft O.D. ([page 14-12](#)).



CYLINDER BARREL SIDE

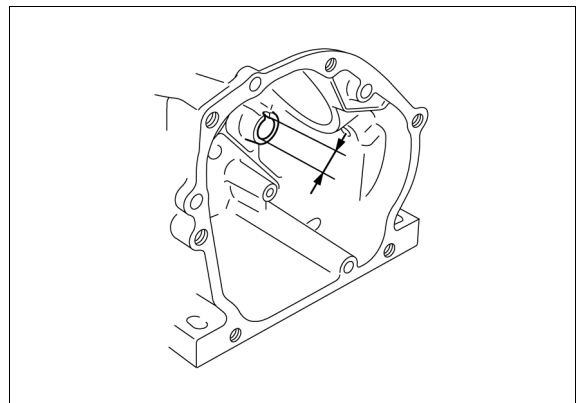
Measure the camshaft holder I.D. of the cylinder barrel assembly.

STANDARD: 14.000 – 14.018 mm (0.5512 – 0.5519 in)

SERVICE LIMIT: 14.048 mm (0.5531 in)

If the measurement is more than the service limit, replace the cylinder barrel.

Inspect the camshaft O.D. ([page 14-12](#)).



CYLINDER SLEEVE I.D.

Measure and record the cylinder I.D. at three levels in both the "X" axis (perpendicular to crankshaft) and the "Y" axis (parallel to crankshaft). Take the maximum reading to determine cylinder wear and taper.

GX120:

STANDARD: 60.000 – 60.015 mm (2.3622 – 2.3628 in)

SERVICE LIMIT: 60.165 mm (2.3561 in)

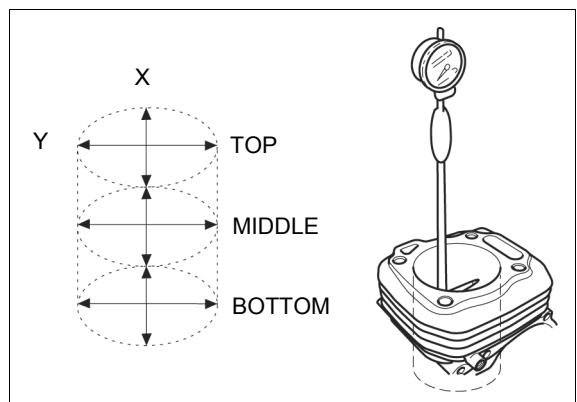
GX160/GX200:

STANDARD: 68.000 – 68.015 mm (2.6772 – 2.6778 in)

SERVICE LIMIT: 68.165 mm (2.6837 in)

If the measurement is more than the service limit, replace the cylinder barrel.

Inspect the piston skirt O.D. ([page 14-7](#)).



PISTON SKIRT O.D.

Measure and record the piston O.D. at a point 10 mm (0.4 in) from the bottom of the skirt and 90° to the piston pin bore.

GX120:

STANDARD: 59.965 – 59.985 mm
(2.3608 – 2.3616 in)

SERVICE LIMIT: 59.845 mm (2.3561 in)

GX160:

STANDARD: 67.985 – 67.995 mm
(2.6766 – 2.6770 in)

SERVICE LIMIT: 67.845 mm (2.6711 in)

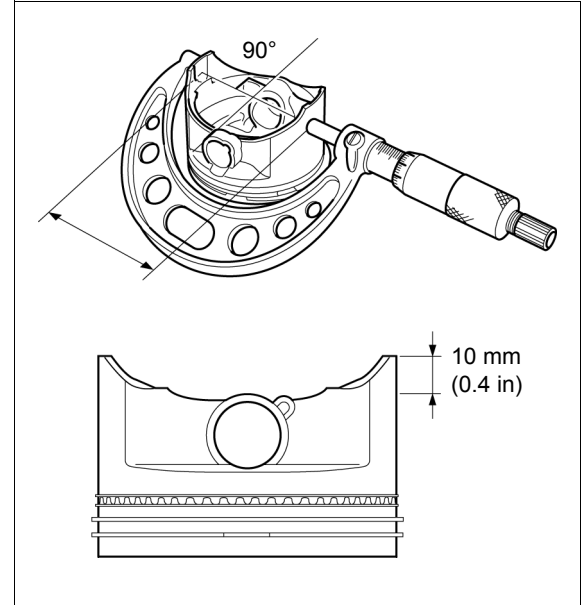
GX200:

STANDARD: 67.965 – 67.985 mm
(2.6758 – 2.6766 in)

SERVICE LIMIT: 67.845 mm (2.6711 in)

If the measurement is less than the service limit, replace the piston.

Inspect the cylinder sleeve I.D. ([page 14-6](#)).

**PISTON-TO-CYLINDER CLEARANCE**

Subtract the piston skirt O.D. from the cylinder sleeve I.D. to obtain the piston-to-cylinder clearance.

GX120/GX200:

STANDARD: 0.015 – 0.050 mm
(0.0006 – 0.0020 in)

SERVICE LIMIT: 0.12 mm (0.005 in)

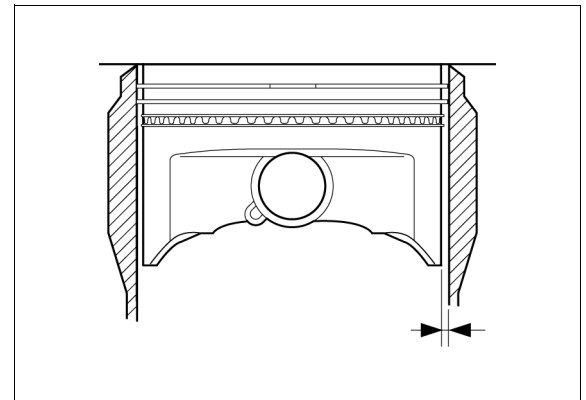
GX160:

STANDARD: 0.005 – 0.030 mm
(0.0002 – 0.0012 in)

SERVICE LIMIT: 0.12 mm (0.005 in)

If the calculated clearance is more than the service limit, replace the piston and recheck the clearance.

If the clearance is still more than the service limit with the new piston, replace the cylinder barrel.

**PISTON PIN BORE I.D.**

Measure and record the piston pin bore I.D. of the piston.

GX120:

STANDARD: 13.002 – 13.008 mm
(0.5119 – 0.5121 in)

SERVICE LIMIT: 13.048 mm (0.5137 in)

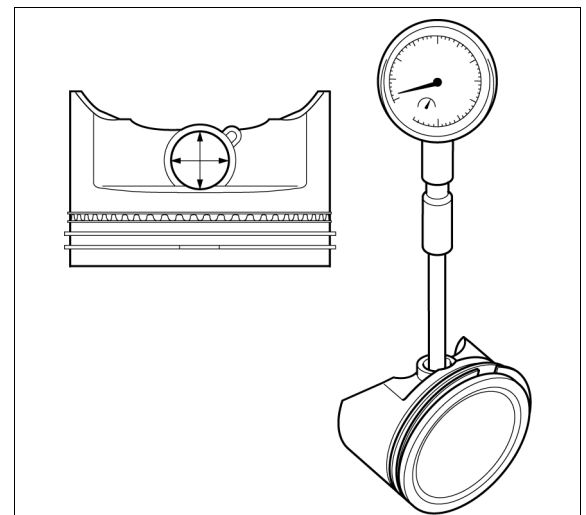
GX160/GX200:

STANDARD: 18.002 – 18.008 mm
(0.7087 – 0.7090 in)

SERVICE LIMIT: 18.048 mm (0.7105 in)

If the measurement is less than the service limit, replace the piston.

Inspect the piston pin O.D. ([page 14-8](#)).



PISTON PIN O.D.

Measure and record the piston pin O.D. at three points (both ends and middle). Take the minimum reading to determine piston pin O.D.

GX120:

STANDARD: 12.994 – 13.000 mm
(0.5116 – 0.5118 in)
SERVICE LIMIT: 12.954 mm (0.5100 in)

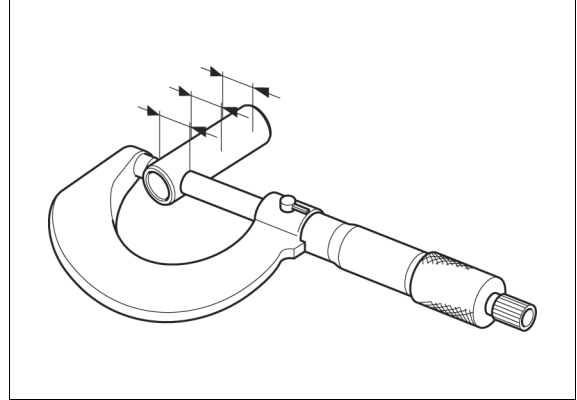
GX160/GX200:

STANDARD: 17.994 – 18.000 mm
(0.7084 – 0.7087 in)
SERVICE LIMIT: 17.954 mm (0.7068 in)

If the measurement is less than the service limit, replace the piston pin.

Inspect the piston pin bore I.D. ([page 14-7](#)).

Inspect the connecting rod small end I. D. ([page 14-10](#)).



PISTON PIN-TO-PISTON PIN BORE CLEARANCE

Subtract the piston pin O.D. from the piston pin bore I.D. to obtain the piston pin-to-piston pin bore clearance.

STANDARD: 0.002 – 0.014 mm (0.0001 – 0.0006 in)

SERVICE LIMIT: 0.08 mm (0.003 in)

If the calculated clearance is more than the service limit, replace the piston pin and recheck the clearance.

If the clearance is still more than the service limit with the new piston pin, replace the piston.

PISTON RING SIDE CLEARANCE

Measure the clearance between each piston ring and ring groove of the piston using a feeler gauge.

GX120/GX200:

STANDARD:
Top: 0.035 – 0.070 mm (0.0014 – 0.0028 in)
Second: 0.045 – 0.080 mm (0.0018 – 0.0032 in)

SERVICE LIMIT:
Top: 0.15 mm (0.006 in)
Second: 0.15 mm (0.006 in)

GX160:

STANDARD:
Top: 0.060 – 0.095 mm (0.0024 – 0.0037 in)
Second: 0.045 – 0.080 mm (0.0018 – 0.0032 in)

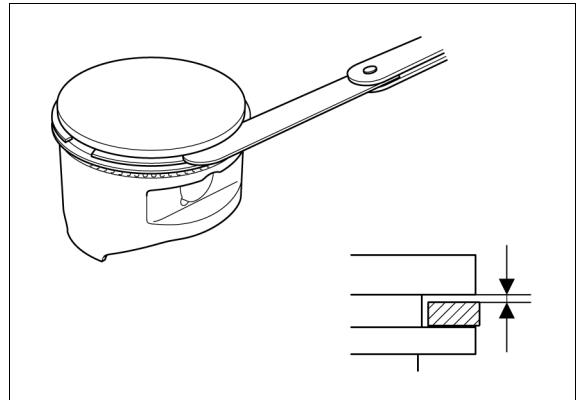
SERVICE LIMIT:
Top: 0.15 mm (0.006 in)
Second: 0.15 mm (0.006 in)

If any of the measurements is more than the service limit, inspect the piston ring width.

If the piston ring width is normal, replace the piston and reinspect the clearance.

If necessary, replace the piston rings (top, second, oil) as a set and reinspect the clearance.

If any of the measurements is still more than the service limit with the new piston rings, replace the piston.



PISTON RING WIDTH

Measure each piston ring width.

GX120/GX200:**STANDARD:**

Top: 0.950 – 0.970 mm (0.0374 – 0.0382 in)

Second: 0.940 – 0.960 mm (0.0370 – 0.0378 in)

SERVICE LIMIT:

Top: 0.93 mm (0.037 in)

Second: 0.92 mm (0.036 in)

GX160:**STANDARD:**

Top: 0.925 – 0.945 mm (0.0364 – 0.0372 in)

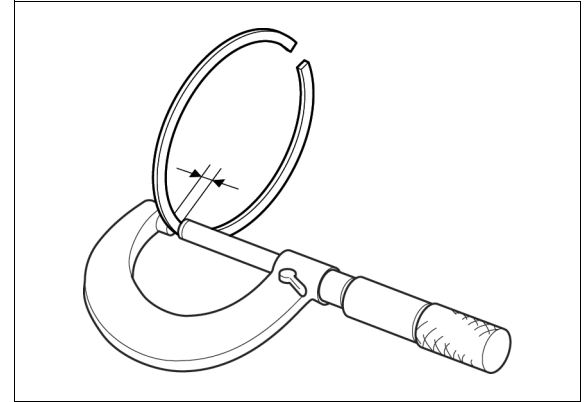
Second: 0.940 – 0.960 mm (0.0370 – 0.0378 in)

SERVICE LIMIT:

Top: 0.905 mm (0.0356 in)

Second: 0.92 mm (0.036 in)

If any of the measurements is less than the service limit, replace the piston rings (top, second, oil) as a set.

**PISTON RING END GAP**

Before inspection, check whether the cylinder sleeve I.D. is within the specification ([page 14-6](#)).

Measure each piston ring end gap using a feeler gauge.

GX120/GX200:**STANDARD:**

Top: 0.200 – 0.350 mm
(0.0079 – 0.0138 in)

Second: 0.350 – 0.500 mm
(0.0138 – 0.0197 in)

Oil (side rail): 0.2 – 0.7 mm
(0.01 – 0.03 in)

SERVICE LIMIT:

Top: 1.0 mm (0.04 in)

Second: 1.0 mm (0.04 in)

Oil (side rail): 1.0 mm (0.04 in)

GX160:**STANDARD:**

Top: 0.200 – 0.350 mm
(0.0079 – 0.0138 in)

Second: 0.350 – 0.500 mm
(0.0138 – 0.0197 in)

Oil (side rail): 0.10 – 0.35 mm
(0.004 – 0.014 in)

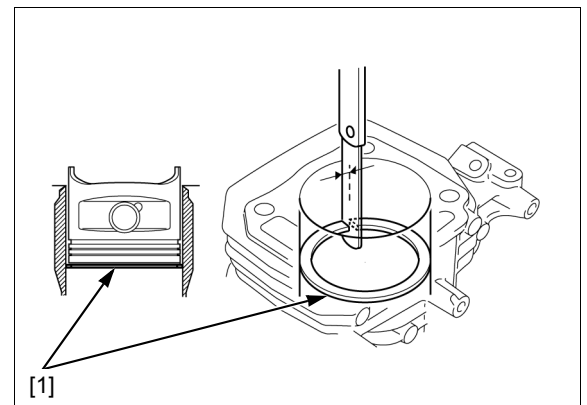
SERVICE LIMIT:

Top: 1.0 mm (0.04 in)

Second: 1.0 mm (0.04 in)

Oil (side rail): 1.0 mm (0.04 in)

If any of the measurements is more than the service limit, replace the piston rings (top, second, oil) as a set.



CONNECTING ROD BIG END SIDE CLEARANCE

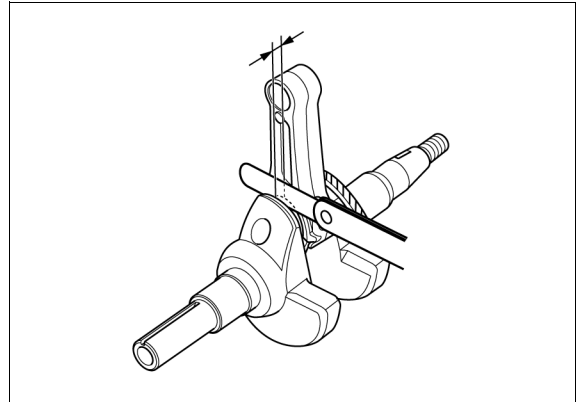
Measure the clearance between the connecting rod big end and crankshaft using a feeler gauge.

STANDARD: 0.1 – 0.7 mm (0.004 – 0.028 in)

SERVICE LIMIT: 1.1 mm (0.04 in)

If the measurement is more than the service limit, replace the connecting rod ([page 14-5](#)) and recheck the clearance.

If the clearance is still more than the service limit with the new connecting rod, replace the crankshaft.



CONNECTING ROD SMALL END I.D.

Measure the connecting rod small end I.D.

GX120:

**STANDARD: 13.005 – 13.020 mm
(0.5120 – 0.5126 in)**

SERVICE LIMIT: 13.07 mm (0.515 in)

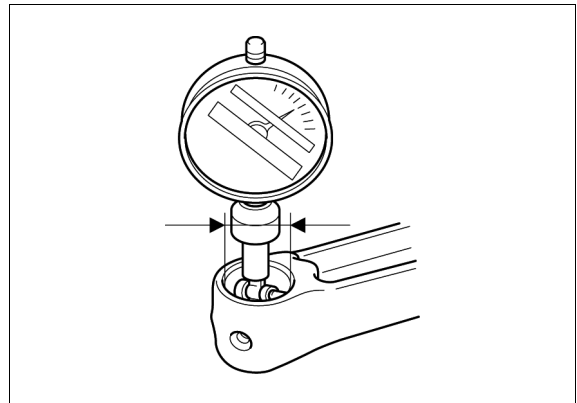
GX160/GX200:

**STANDARD: 18.005 – 18.020 mm
(0.7089 – 0.7094 in)**

SERVICE LIMIT: 18.07 mm (0.711 in)

If the measurement is more than the service limit, replace the connecting rod.

Inspect the piston pin O.D. ([page 14-8](#)).



CONNECTING ROD BIG END I.D.

Set the connecting rod lower to the connecting rod upper and tighten the connecting rod bolts to the specified torque.

TORQUE:

GX120/GX200: 12 N·m (1.2 kgf·m, 9 lbf·ft)

GX160: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Measure the connecting rod big end I.D.

GX120:

**STANDARD: 26.020 – 26.033 mm
(1.0244 – 1.0249 in)**

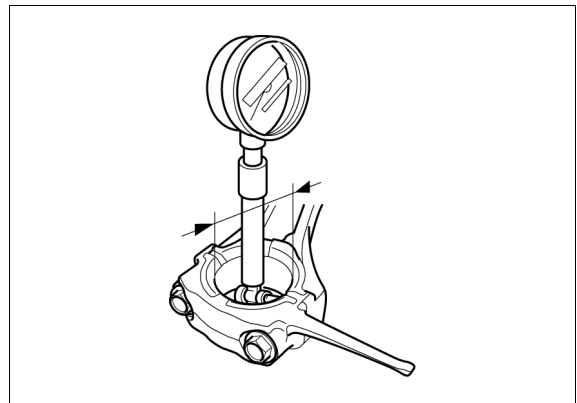
SERVICE LIMIT: 26.066 mm (1.026 in)

GX160/GX200:

**STANDARD: 30.020 – 30.033 mm
(1.1819 – 1.1824 in)**

SERVICE LIMIT: 30.066 mm (1.1837 in)

If the measurement is more than the service limit, replace the connecting rod ([page 14-5](#)).



CRANKPIN O.D.

Measure the crankpin O.D. of the crankshaft.

GX120:

STANDARD: 25.970 – 25.980 mm
(1.0224 – 1.0228 in)

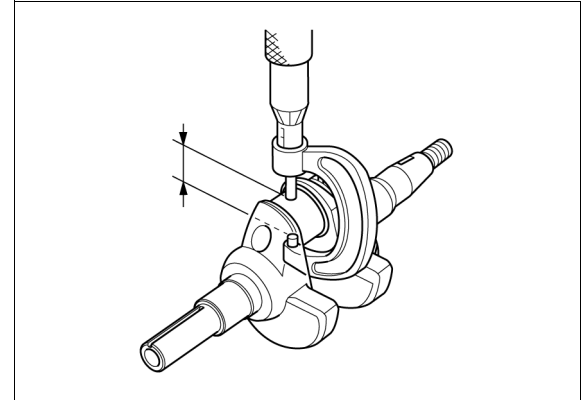
SERVICE LIMIT: 25.92 mm (1.020 in)

GX160/GX200:

STANDARD: 29.970 – 29.980 mm
(1.1799 – 1.1803 in)

SERVICE LIMIT: 29.92 mm (1.178 in)

If the measurement is less than the service limit, replace the crankshaft.

**CONNECTING ROD BIG END OIL CLEARANCE**

Clean all oil from the crankpin and connecting rod big end surface.

Place a piece of plastigauge on the crankpin, install the connecting rod upper and the connecting rod lower, and tighten the connecting rod bolts to the specified torque.

TORQUE:

GX120/GX200: 12 N·m (1.2 kgf·m, 9 lbf·ft)

GX160: 10 N·m (1.0 kgf·m, 7 lbf·ft)

NOTE:

- Do not rotate the crankshaft while the plastigauge is in place.

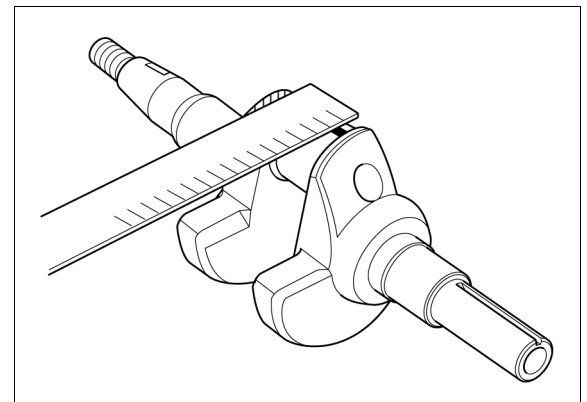
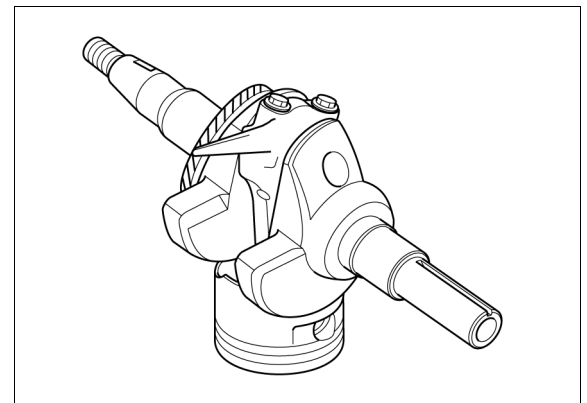
Remove the connecting rod and measure the plastigauge.

STANDARD: 0.040 – 0.063 mm (0.0016 – 0.0025 in)

SERVICE LIMIT: 0.12 mm (0.005 in)

If the clearance is more than the service limit, inspect the connecting rod big end I.D. and the crankpin O.D.

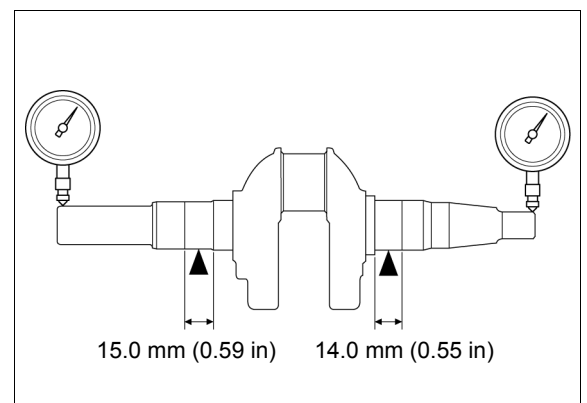
If necessary replace the part that is not within the service limit and reinspect the clearance.

**CRANKSHAFT RUNOUT**

Set the crankshaft on V-blocks and measure the runout using a dial indicator.

SERVICE LIMIT: 0.10 mm (0.004 in)

If the measured runout is more than the service limit, replace the crankshaft.



CAMSHAFT CAM HEIGHT

Measure the cam height of the camshaft.

GX120/GX200:

STANDARD:

IN: 27.500 – 27.900 mm (1.0827 – 1.0984 in)

EX: 27.547 – 27.947 mm (1.0845 – 1.1003 in)

SERVICE LIMIT:

IN: 27.450 mm (1.0807 in)

EX: 27.500 mm (1.0827 in)

GX160:

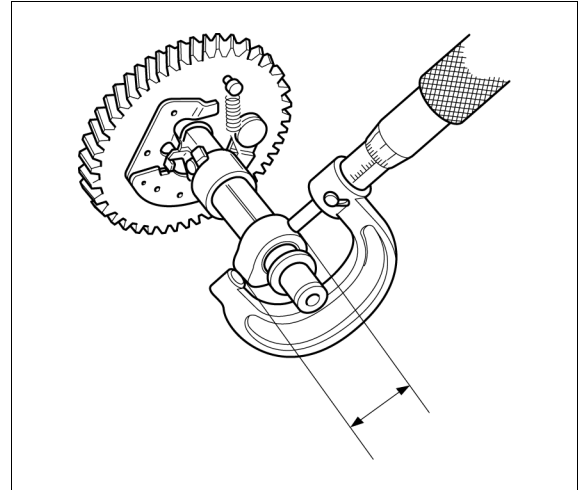
STANDARD:

IN/EX: 27.503 – 27.903 mm (1.0828 – 1.0985 in)

SERVICE LIMIT:

IN/EX: 27.450 mm (1.0807 in)

If the measurement is less than the service limit, replace the camshaft.



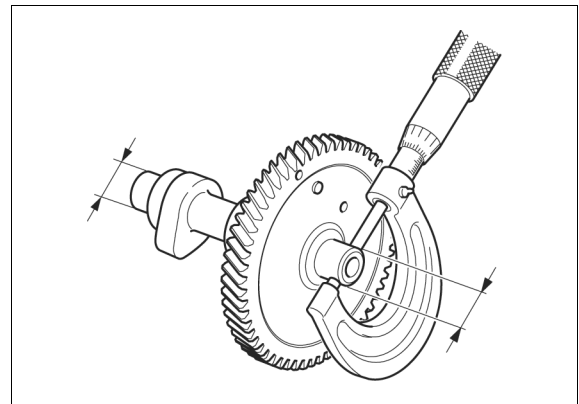
CAMSHAFT O.D.

Measure the O.D. of the camshaft.

STANDARD: 13.966 – 13.984 mm (0.5498 – 0.5506 in)

SERVICE LIMIT: 13.916 mm (0.5479 in)

If the measurement is less than the service limit, replace the camshaft.



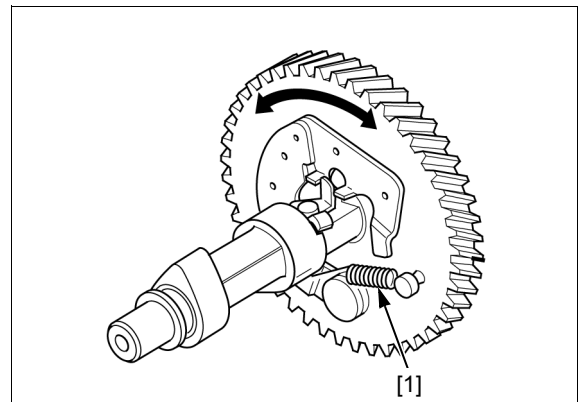
DECOMPRESSOR WEIGHT

Check for worn and weakened spring.

If the return spring [1] is worn or weakened, replace the weight return spring.

Check that the decompressor weight moves smoothly.

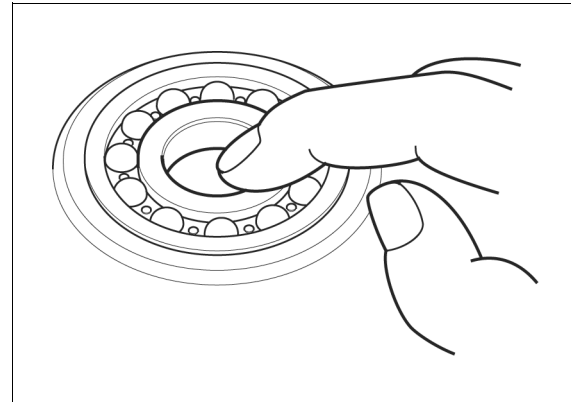
If the decompressor weight does not move correctly, replace the camshaft.



CRANKSHAFT BEARING

Turn the inner race of the bearing with your finger and check for play.

Replace the bearing if it is noisy or has excessive play.



CRANKSHAFT BEARING/OIL SEAL REPLACEMENT

CRANKSHAFT BEARING

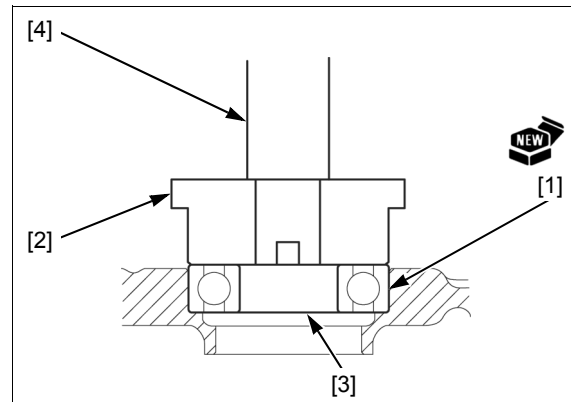
CRANKCASE SIDE/CYLINDER BARREL SIDE

Remove the oil seal and drive out the crankshaft bearing.

Drive a new crankshaft bearing [1] until it is fully seated on the end using the special tools.

TOOLS: GX120 (62/22):
 Attachment, 52 x 55 mm [2] 07746-0010400
 Pilot, 22 mm [3] 07746-0041000
 Driver [4]

TOOLS: GX160/GX200 (6205):
 Attachment, 52 x 55 mm [2] 07746-0010400
 Pilot, 25 mm [3] 07746-0040600
 Driver [4]



CRANKSHAFT OIL SEAL

CRANKCASE SIDE

Remove the oil seal.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT:
 GX120: 5.0 mm (0.20 in)
 GX160/GX200: 5.5 mm (0.22 in)

TOOLS:
 Attachment, 37 x 40 mm [2] 07746-0010200
 Driver [3]

CYLINDER BARREL SIDE

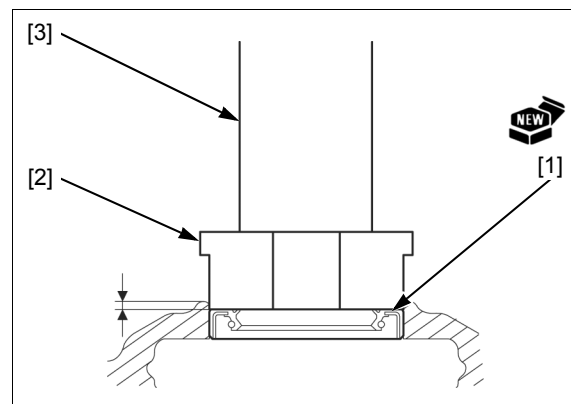
Remove the oil seal.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT: 1.5 mm (0.06 in)

TOOLS: GX120:
 Attachment, 32 x 35 mm [2] 07746-0010100
 Driver [3]

TOOLS: GX160/GX200:
 Attachment, 37 x 40 mm [2] 07746-0010200
 Driver [3]



MEMO

15. REDUCTION UNIT

TOOLS15-2

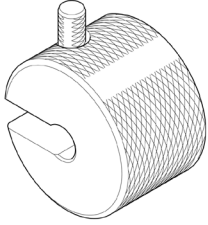
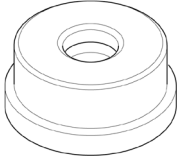

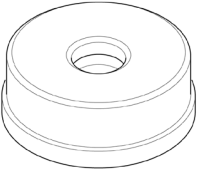


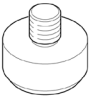
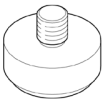
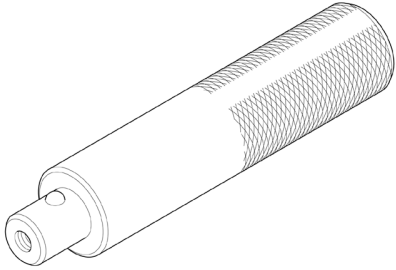
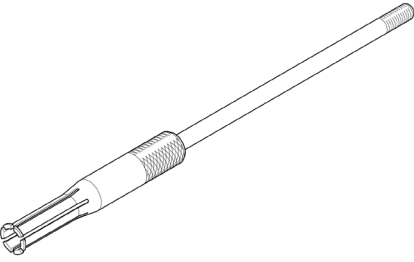
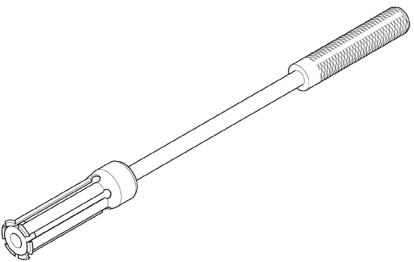
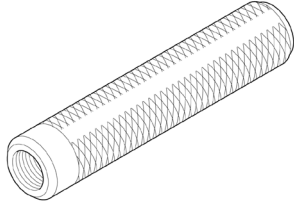
REDUCTION UNIT INSPECTION 15-7

REDUCTION UNIT DISASSEMBLY/
ASSEMBLY15-4

REDUCTION UNIT BEARING/OIL SEAL
REPLACEMENT 15-9



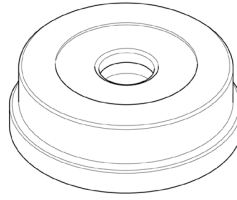
TOOLS

<p>Remover weight 07936-371020A</p> 	<p>Attachment, 40 x 42 mm 07746-0010900</p> 	<p>Attachment, 42 x 47 mm 07746-0010300</p> 
<p>Attachment, 52 x 55 mm 07746-0010400</p> 	<p>Pilot, 20 mm 07746-0040500</p> 	<p>Pilot, 22 mm 07746-0041000</p> 
<p>Pilot, 25 mm 07746-0040600</p> 	<p>Pilot, 30 mm 07746-0040700</p> 	<p>Driver 07749-0010000</p> 
<p>Bearing remover, 20 mm 07936-3710600</p> 	<p>Bearing remover, 25 mm 07936-ZV10100</p> 	<p>Remover handle 07936-3710100</p> 

Attachment, 45 x 50 mm
07946-6920100



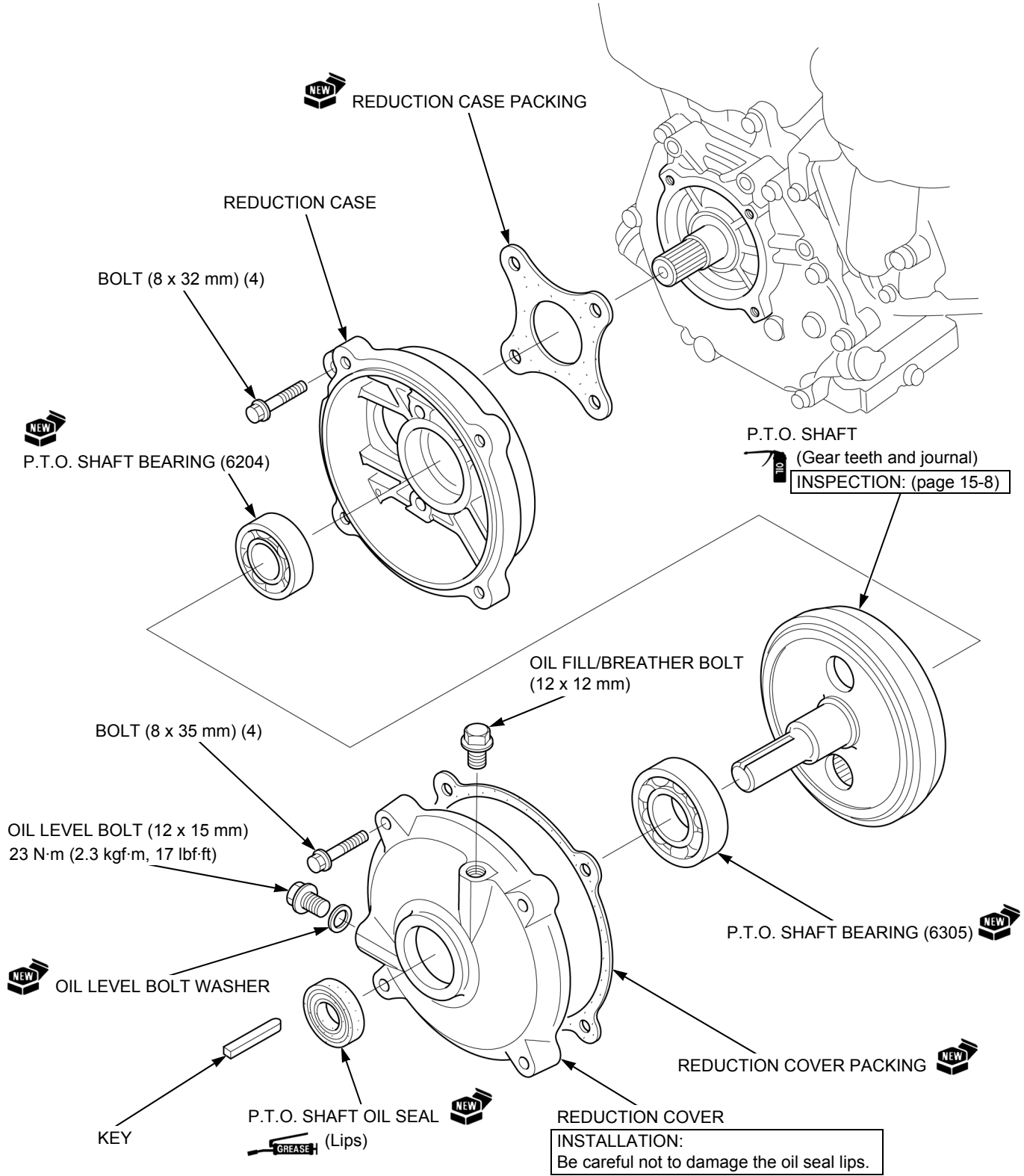
Attachment, 62 x 64 mm
07947-6340400



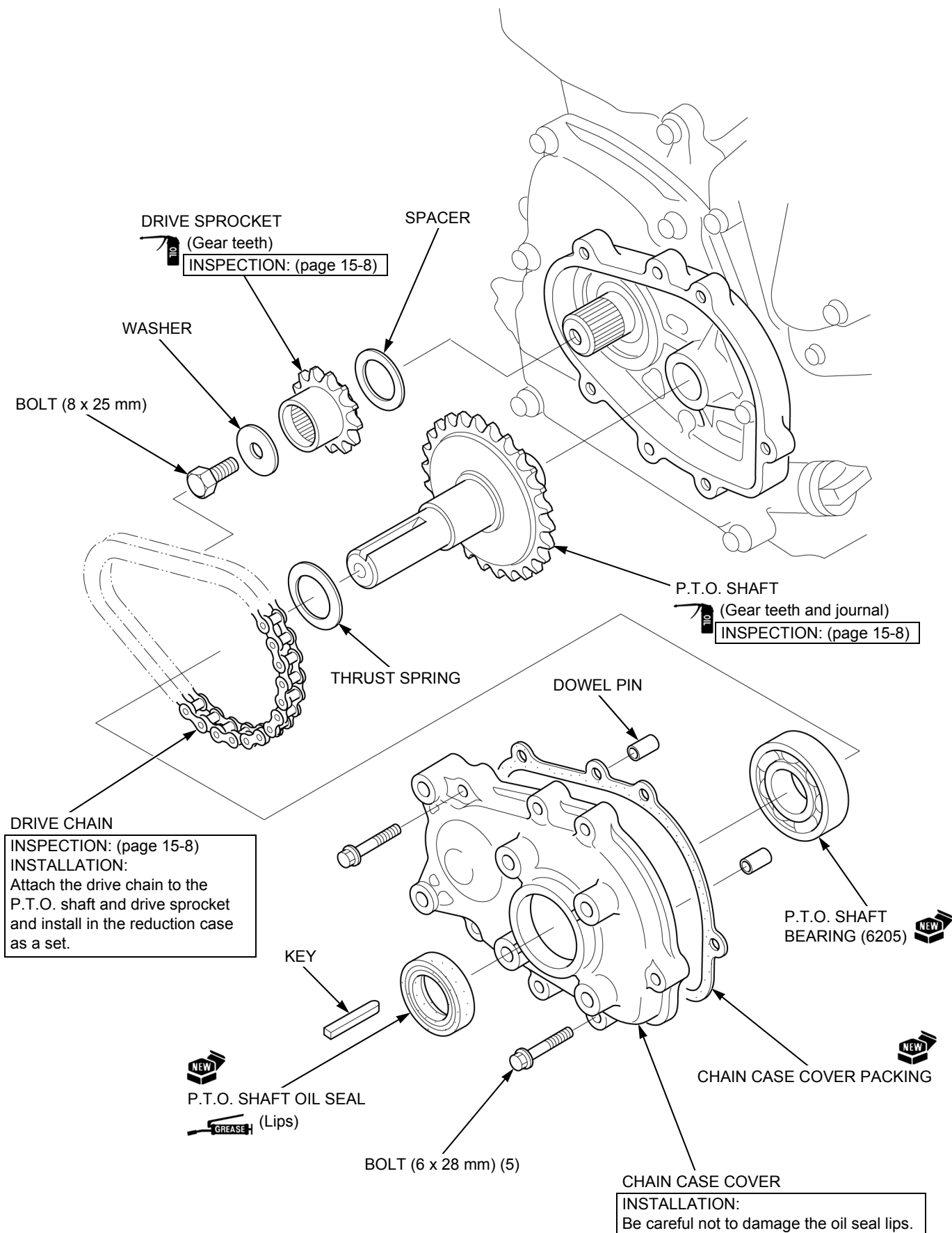
REDUCTION UNIT DISASSEMBLY/ ASSEMBLY

1/6 GEAR TYPE

Drain the reduction case oil (page 3-5).
After assembly, fill the reduction case oil (page 3-5).

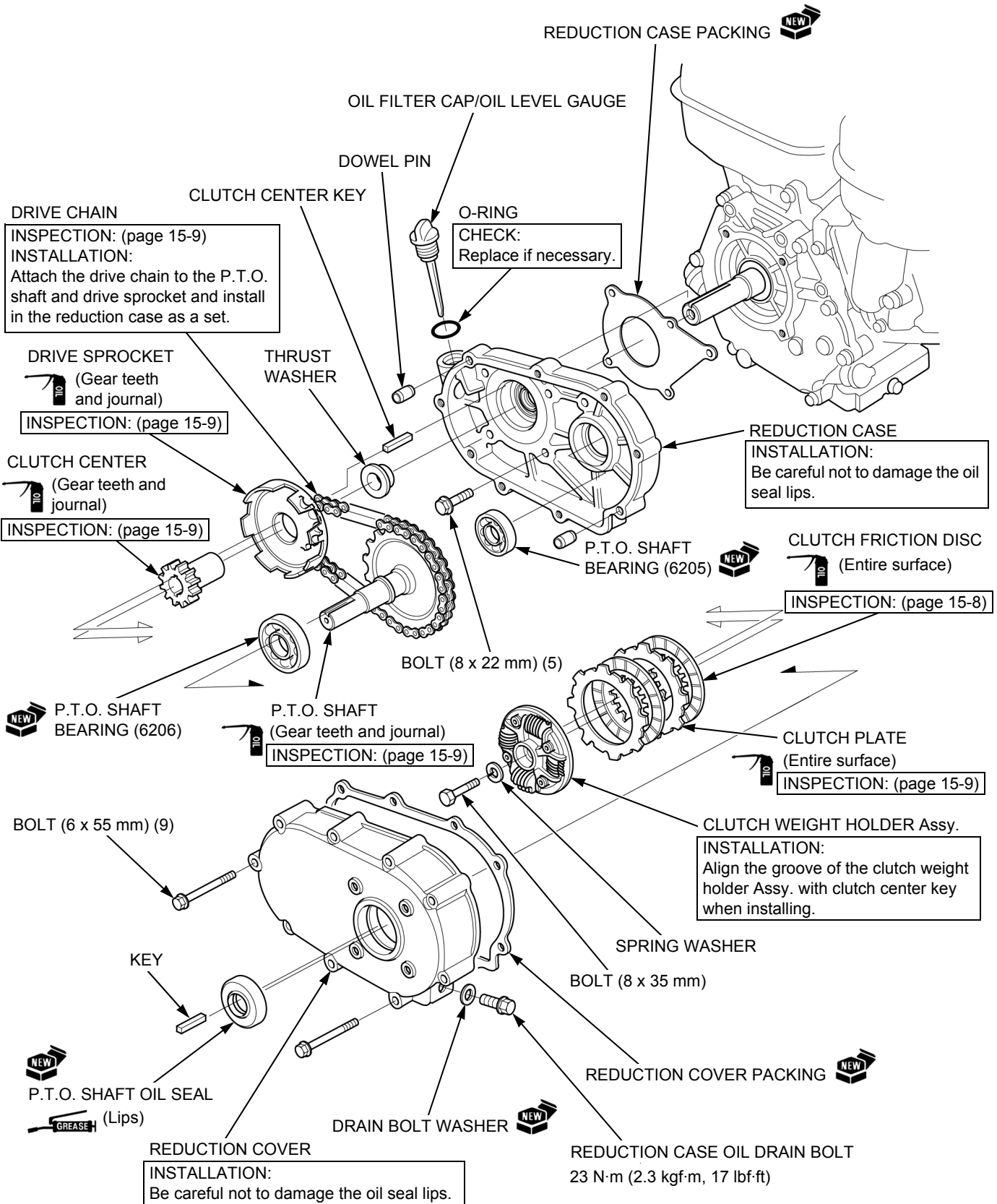


1/2 CHAIN TYPE (without clutch)



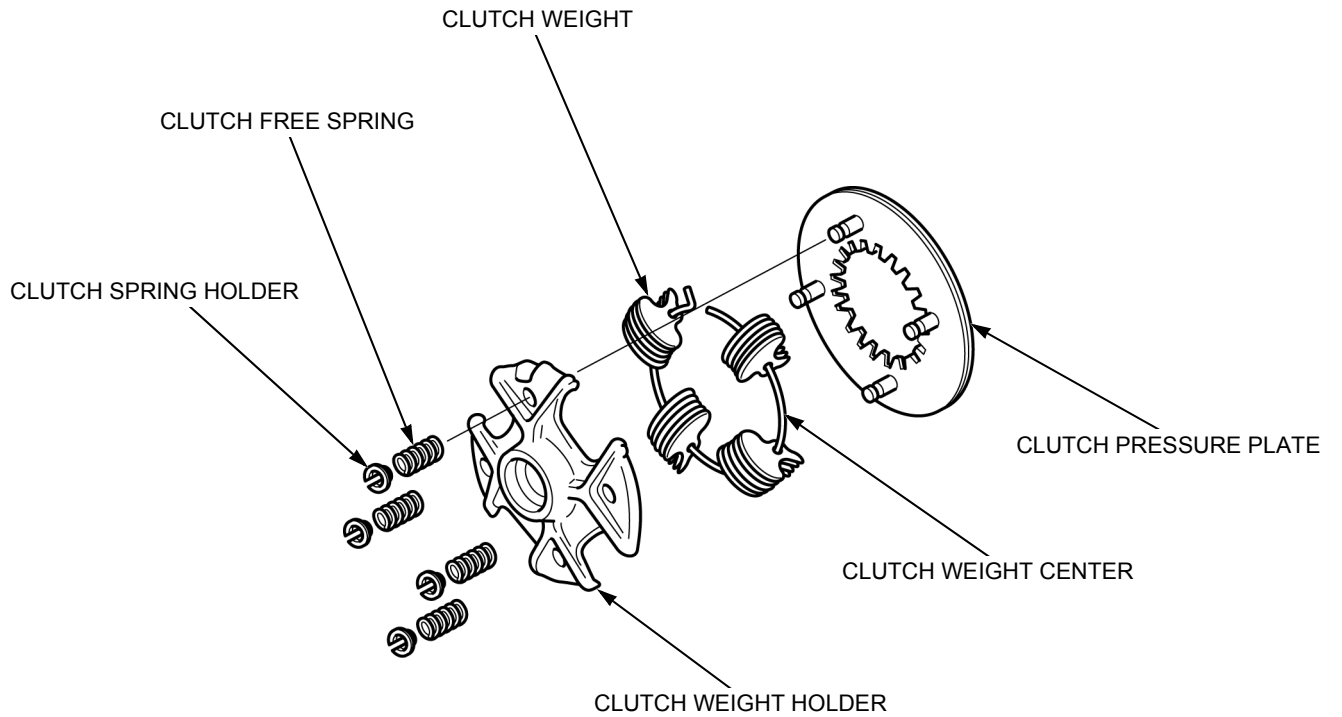
1/2 CHAIN TYPE (with clutch)

Drain the reduction case oil (page 3-6).
 After assembly, fill the reduction case with oil (page 3-6).



**CLUTCH WEIGHT HOLDER Assy.
DISASSEMBLY/ASSEMBLY**

Remove the clutch weight holder Assy. [\(page 15-6\)](#).

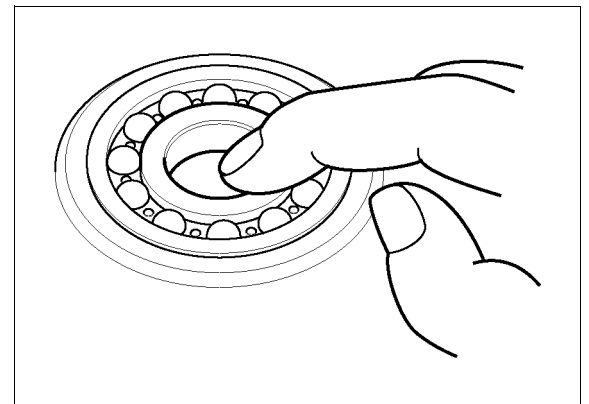


REDUCTION UNIT INSPECTION

**P.T.O. SHAFT, CRANKSHAFT
BEARING**

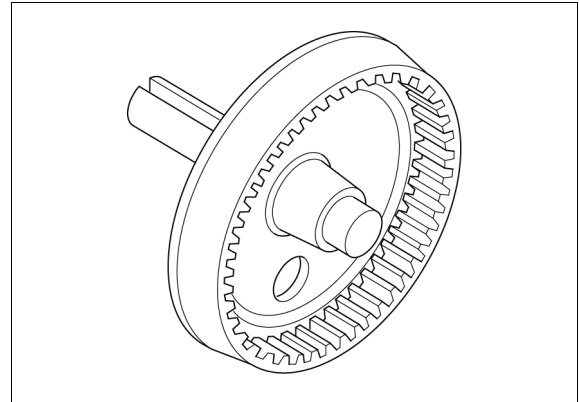
Turn the inner race of the bearing with your finger and check for play.

Replace the bearing if it is noisy or has excessive play.



GEAR TYPE**P.T.O. SHAFT**

Check the P.T.O. shaft for wear or damage.

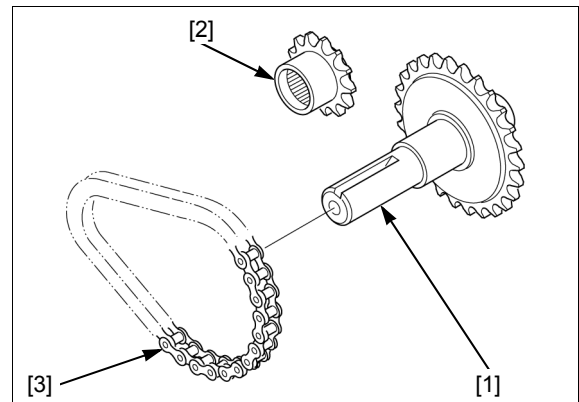
**CHAIN TYPE (without clutch)****P.T.O. SHAFT, DRIVE SPROCKET, DRIVE CHAIN**

Check the following for wear or damage:

- P.T.O. shaft [1]
- Drive sprocket [2]
- Drive chain [3]

NOTE:

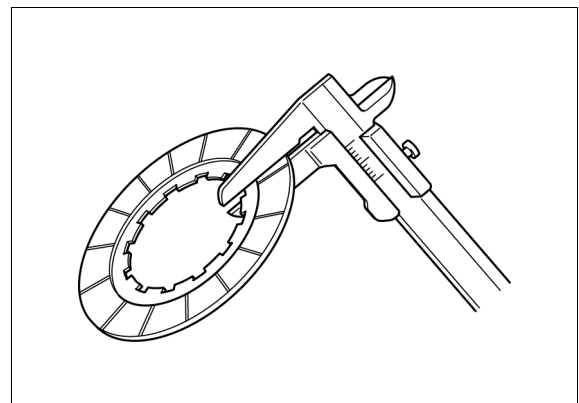
- Replace the P.T.O. shaft, drive sprocket, and drive chain as a set.

**CHAIN TYPE (with clutch)****CLUTCH FRICTION DISC**

Measure the clutch friction disc thickness.

STANDARD: 3.5 mm (0.14 in)

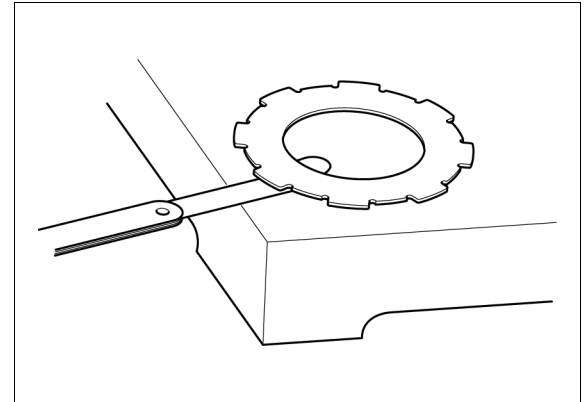
SERVICE LIMIT: 3.0 mm (0.12 in)



CLUTCH PLATE

Check the clutch plate warpage on a flat plate using a feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)



P.T.O. SHAFT, DRIVE SPROCKET, DRIVE CHAIN, CLUTCH CENTER

Check the following for wear or damage:

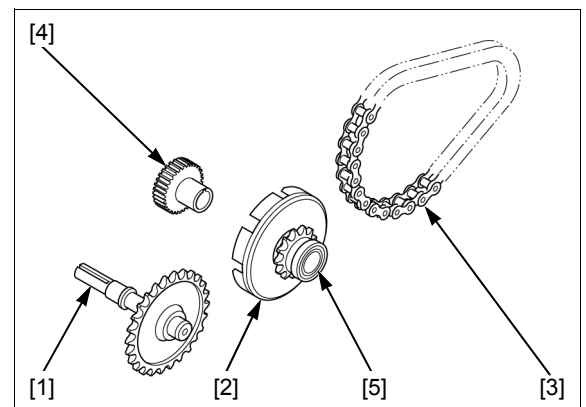
- P.T.O. shaft [1]
- Drive sprocket [2]
- Drive chain [3]
- Clutch center [4]

NOTE:

- Replace the P.T.O. shaft, drive sprocket, and drive chain as a set.

Check the grooves of the drive sprocket for damage or wear caused by the clutch plate; replace it if necessary.

Check the drive sprocket bushing [5] for damage or excessive wear; replace the drive sprocket if necessary.



REDUCTION UNIT BEARING/OIL SEAL REPLACEMENT

GEAR TYPE

REDUCTION CASE SIDE P.T.O. SHAFT BEARING (6204)

Pull out the P.T.O. shaft bearing [1] using the special tools.

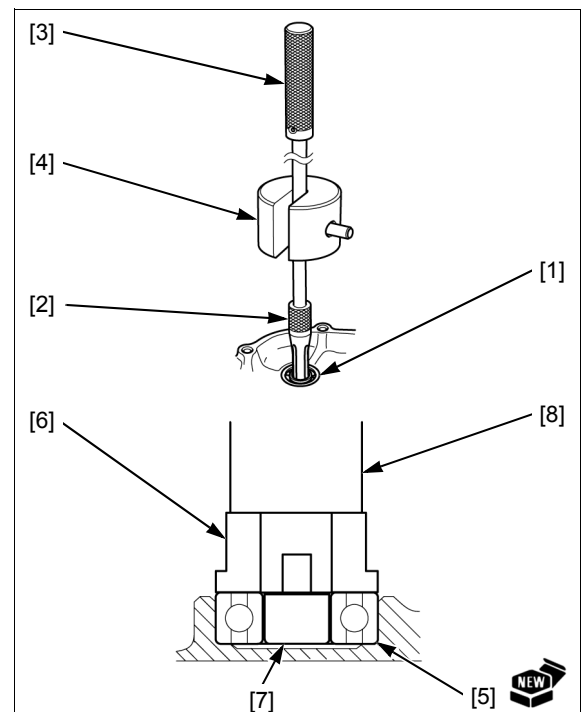
TOOLS:

- Bearing remover, 20 mm [2]** 07936-3710600
- Remover handle [3]** 07936-3710100
- Remover weight [4]** 07936-371020A

Drive a new P.T.O. shaft bearing [5] until it is fully seated on the end using the special tools.

TOOLS:

- Attachment, 42 x 47 mm [6]** 07746-0010300
- Pilot, 20 mm [7]** 07746-0040500
- Driver [8]** 07749-0010000



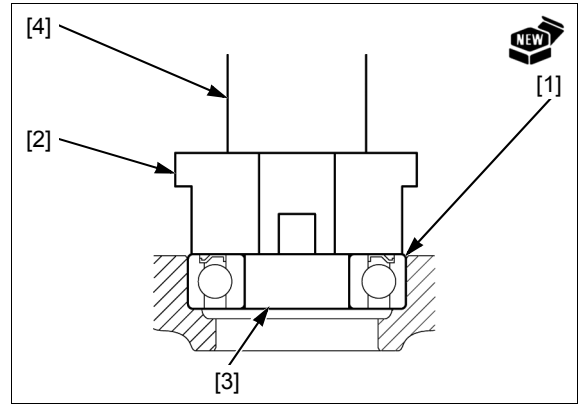
REDUCTION COVER SIDE P.T.O. SHAFT BEARING (6305)

Remove the oil seal and drive out the P.T.O. shaft bearing.

Drive a new P.T.O. shaft bearing [1] until it is fully seated on the end using the special tools.

TOOLS:

- Attachment, 62 x 64 mm [2] 07947-6340400**
- Pilot, 25 mm [3] 07746-0040600**
- Driver [4] 07749-0010000**



P.T.O. SHAFT OIL SEAL

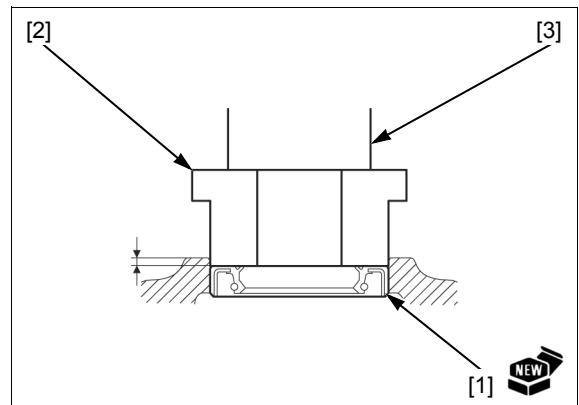
Remove the oil seal from the reduction cover.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT: 2.0 mm (0.08 in)

TOOLS:

- Attachment, 40 x 42 mm [2] 07746-0010900**
- Driver [3] 07749-0010000**



CHAIN TYPE (without clutch)

CRANKCASE COVER SIDE CRANKSHAFT BEARING

Remove the crankcase cover ([page 14-3](#)).

Drive out the crankshaft bearing [1].

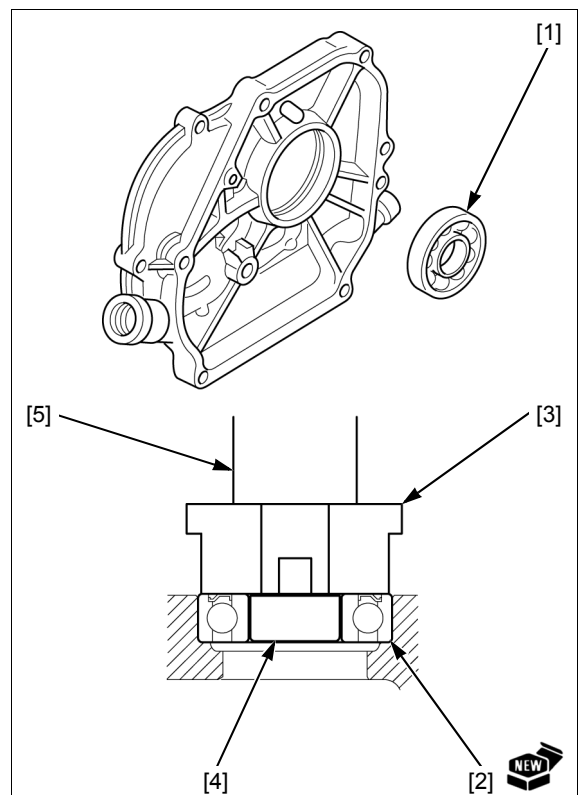
Drive a new crankshaft bearing [2] until it is fully seated on the end using the special tools.

TOOLS: GX120 (62/22):

- Attachment, 52 x 55 mm [3] 07746-0010400**
- Pilot, 22 mm [4] 07746-0041000**
- Driver [5] 07749-0010000**

TOOLS: GX160/GX200 (6205):

- Attachment, 52 x 55 mm [3] 07746-0010400**
- Pilot, 25 mm [4] 07746-0040600**
- Driver [5] 07749-0010000**



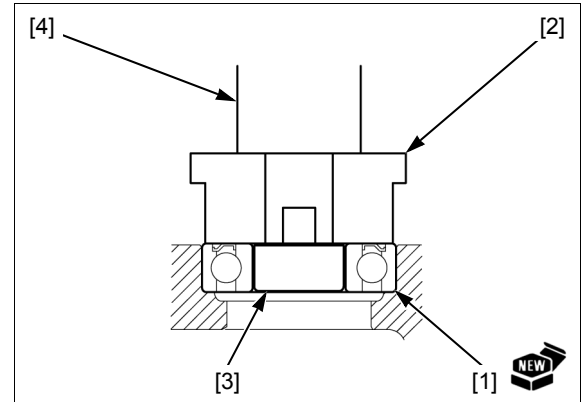
CHAIN CASE COVER SIDE P.T.O. SHAFT BEARING (6205)

Remove the oil seal and drive out the P.T.O. shaft bearing.

Drive a new P.T.O. shaft bearing [1] until it is fully seated on the end using the special tools.

TOOLS:

- Attachment, 52 x 55 mm [2] 07746-0010400**
- Pilot, 25 mm [3] 07746-0040600**
- Driver [4] 07749-0010000**



P.T.O. SHAFT OIL SEAL

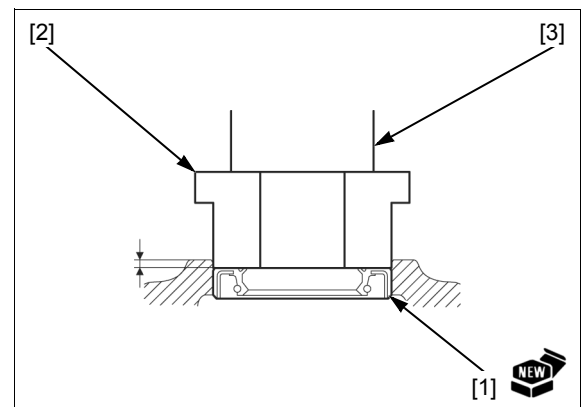
Remove the oil seal from the chain case cover.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT: 3.0 mm (0.12 in)

TOOLS:

- Attachment, 40 x 42 mm [2] 07746-0010900**
- Driver [3] 07749-0010000**



CHAIN TYPE (with clutch)

REDUCTION CASE SIDE P.T.O. SHAFT BEARING (6205)

Pull out the P.T.O. shaft bearing [1] using the special tools.

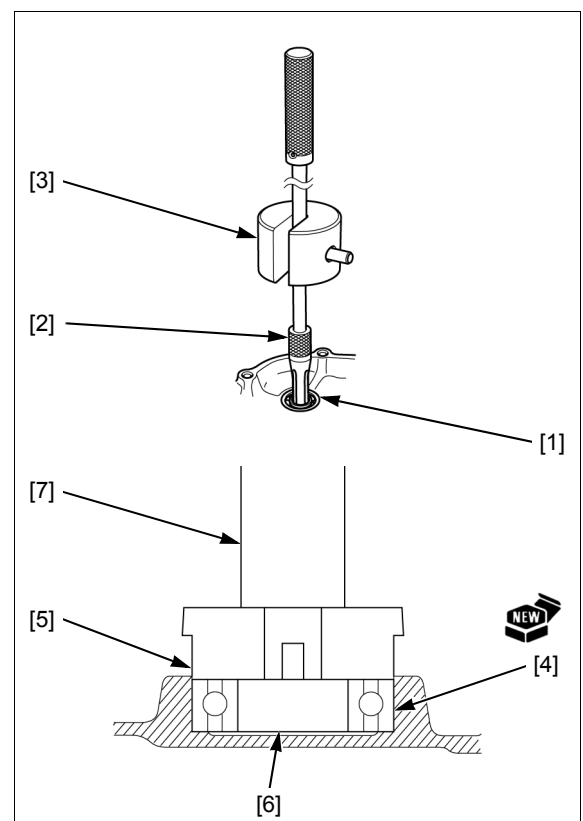
TOOLS:

- Bearing remover, 25 mm [2] 07936-ZV10100**
- Remover weight [3] 07936-371020A**

Drive a new P.T.O. shaft bearing [4] until it is fully seated on the end using the special tools.

TOOLS:

- Attachment, 52 x 55 mm [5] 07746-0010400**
- Pilot, 25 mm [6] 07746-0040600**
- Driver [7] 07749-0010000**



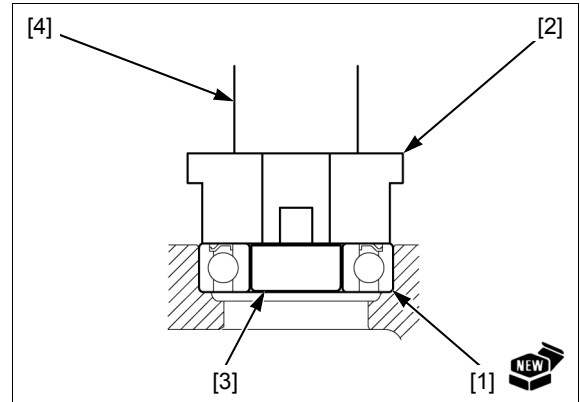
REDUCTION COVER SIDE P.T.O. SHAFT BEARING (6206)

Remove the oil seal and drive out the P.T.O. shaft bearing.

Drive a new P.T.O. shaft bearing [1] until it is fully seated on the end using the special tools.

TOOLS:

- | | |
|-----------------------------------|----------------------|
| Attachment, 62 x 64 mm [2] | 07947-6340400 |
| Pilot, 30 mm [3] | 07746-0040700 |
| Driver [4] | 07749-0010000 |



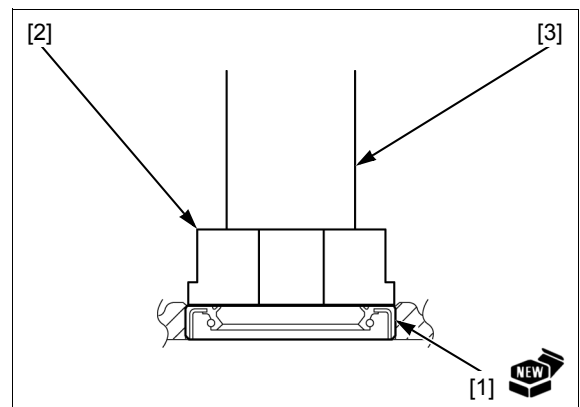
P.T.O. SHAFT OIL SEAL

Remove the oil seal from the reduction cover.

Drive a new oil seal [1] until it is flush using the special tools.

TOOLS:

- | | |
|-----------------------------------|----------------------|
| Attachment, 45 x 50 mm [2] | 07746-6920100 |
| Driver [3] | 07749-0010000 |



16. WIRING DIAGRAMS

HOW TO READ A WIRING DIAGRAM &
RELATED INFORMATION16-2

NO CHARGE COIL TYPE16-4

1 A/3 A CHARGE COIL TYPE 16-4

7 A CHARGE COIL TYPE 16-5

HOW TO READ A WIRING DIAGRAM & RELATED INFORMATION

The wiring diagram, connector general layout drawing, connector drawings, and the symbols used in troubleshooting are explained in this section.

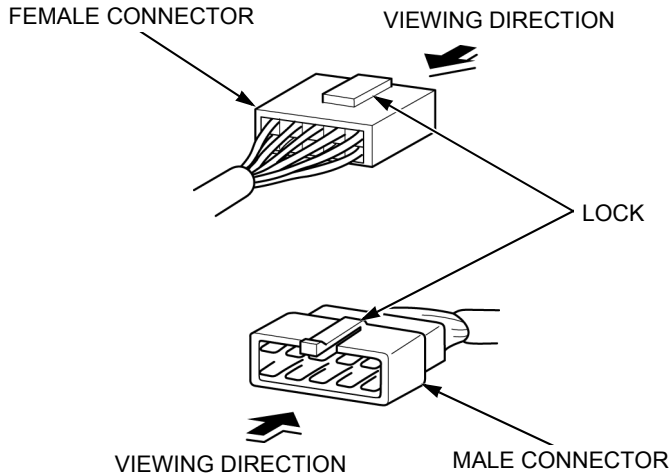
HOW TO READ CONNECTOR DRAWINGS

Connector drawings show the terminal arrangement, terminal No., number of pins, and the shape of terminal (male or female).

Both the male and female connectors are shown for the common connectors, while only the main wire harness side connectors are shown for the dedicated connectors.

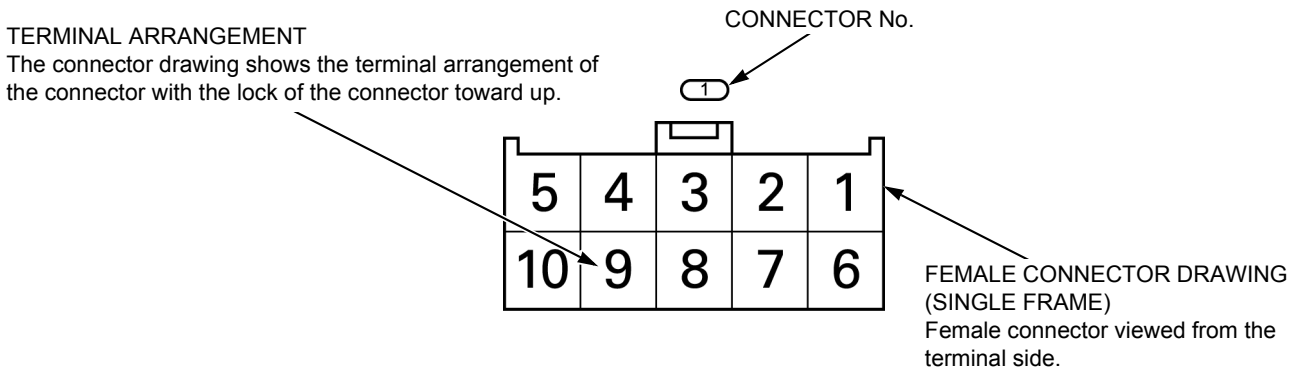
The double frame connectors represent the male connectors and the single frame connectors represent the female connectors.

Both the male and female connectors are shown by viewing them from the terminal side.



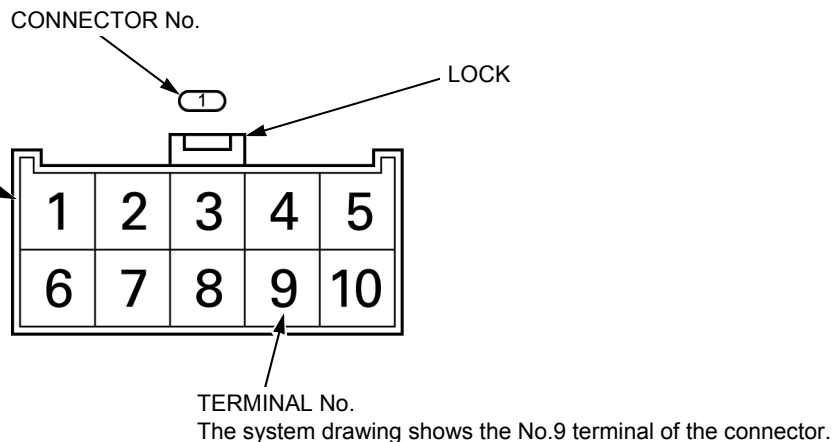
TERMINAL ARRANGEMENT

The connector drawing shows the terminal arrangement of the connector with the lock of the connector toward up.

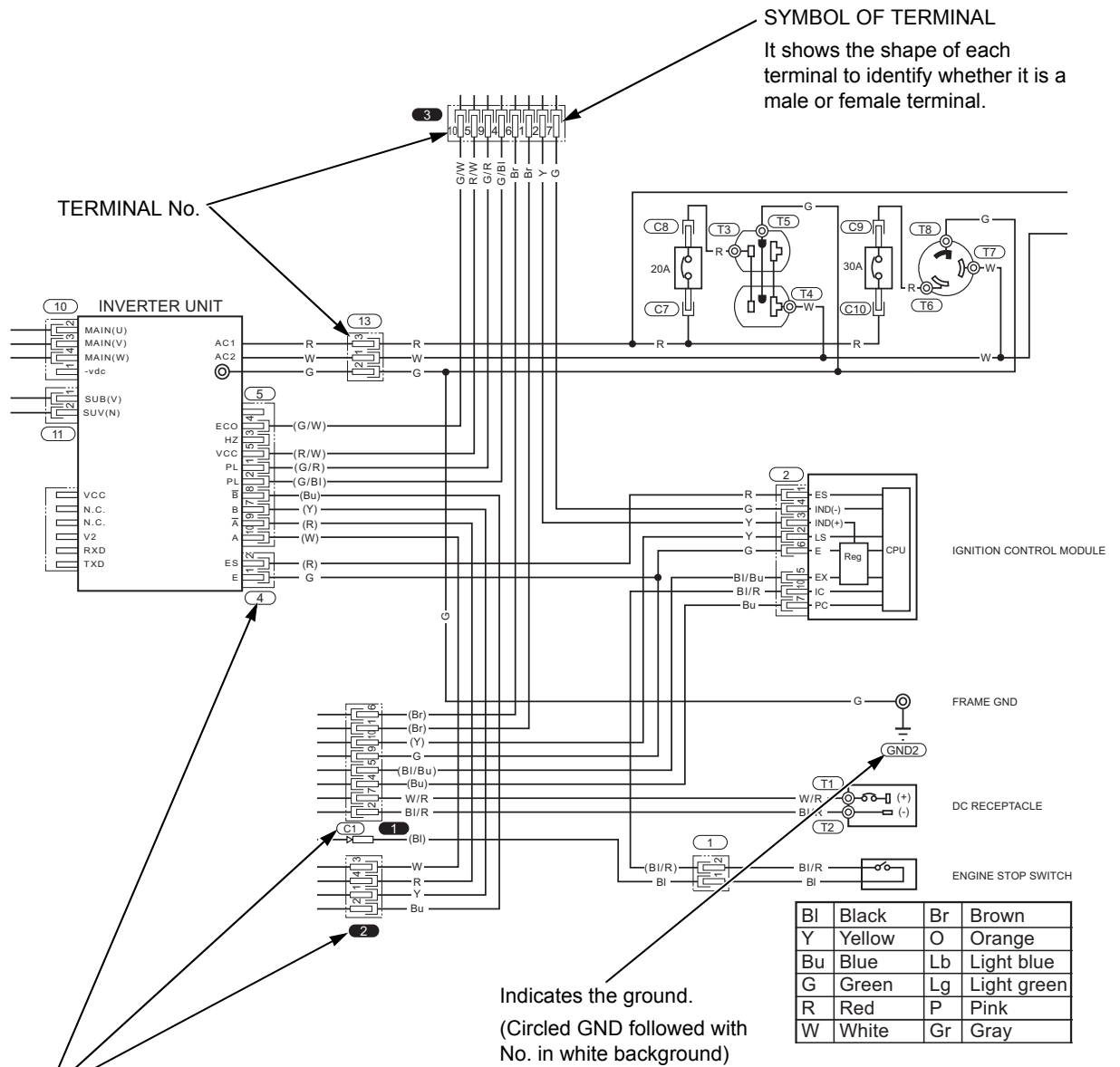


MALE CONNECTOR DRAWING (DOUBLE FRAME)

Male connector viewed from the terminal side.



HOW TO READ WIRING DIAGRAM

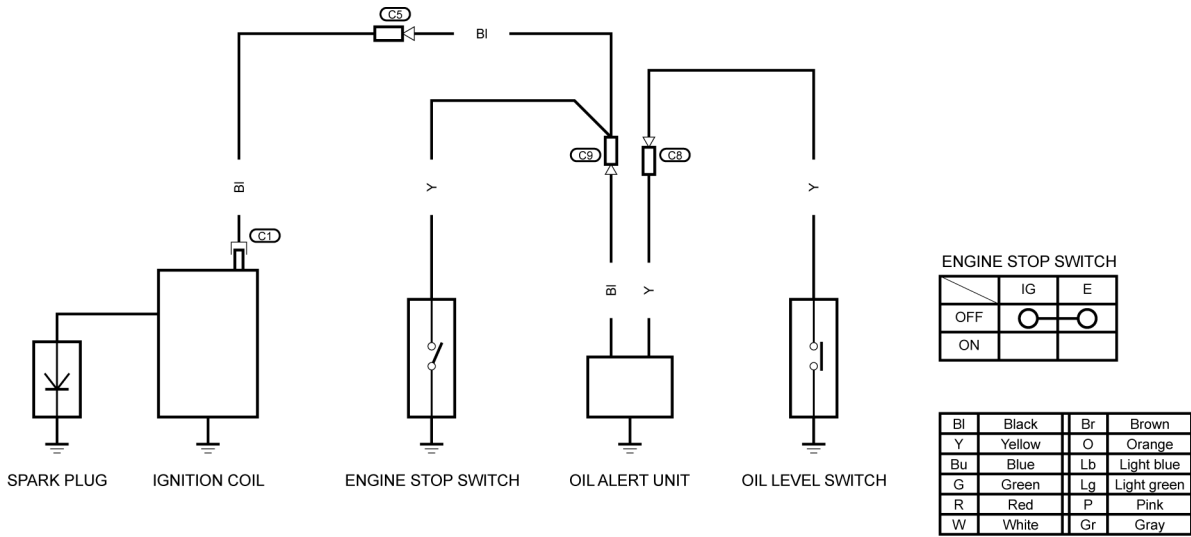


CONNECTOR/TERMINAL No.

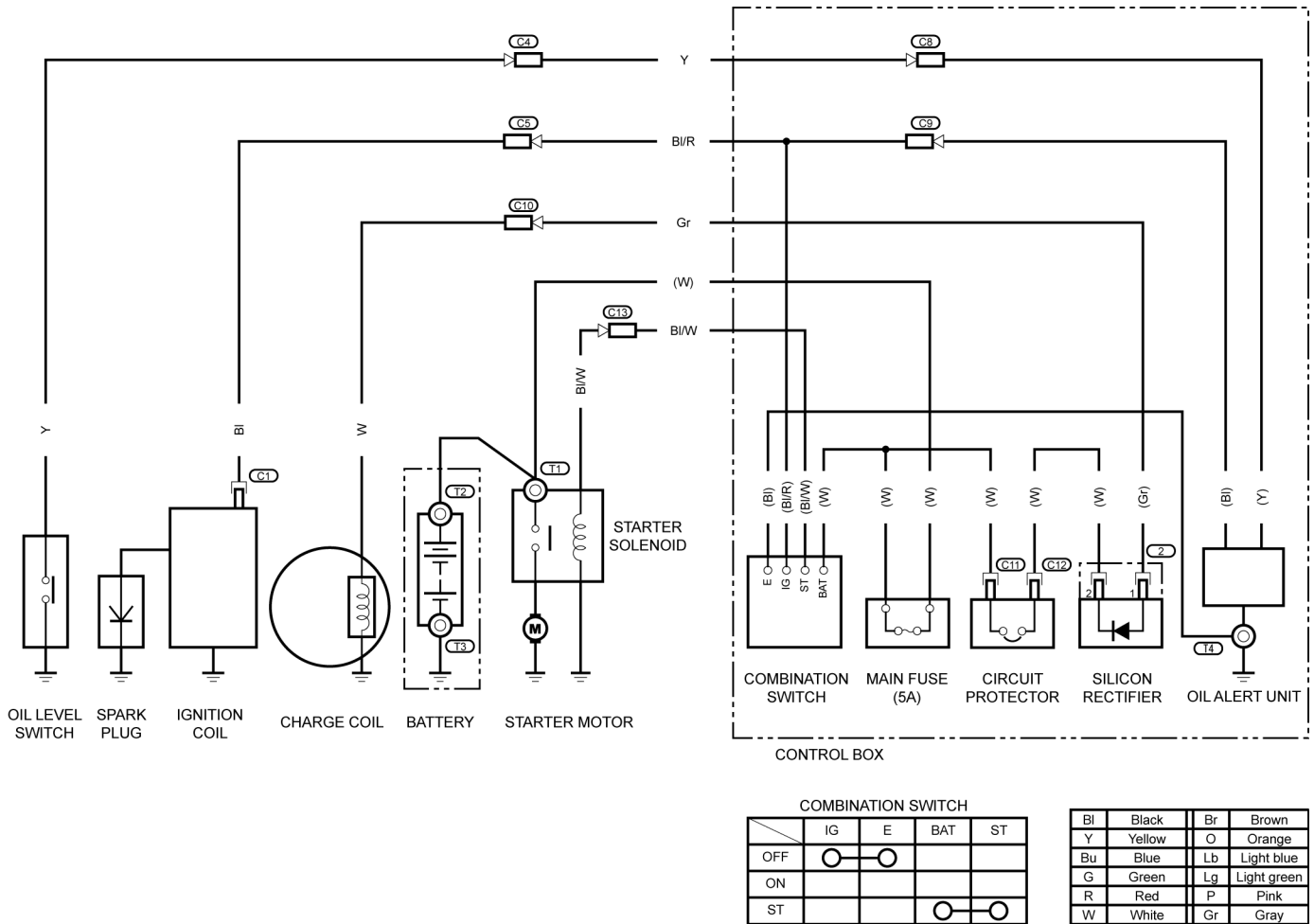
Every connector and terminal has a number to help the users find the location and shape of the connector and the terminal arrangement by referring to the "Connector general layout drawing" and/or the "Connector drawing." All the connector/terminal numbers shown in this Service Manual are either of those shown in this section.

- 1** : Connector that relays from a harness to a harness (Circled No. in black background)
- 1** : Connector that connects to electrical equipment (Circled No. in white background)
- C1** : Connector (Circled C followed with No. in white background)
- T1** : Terminal (Circled T followed with No. in white background)
- GND1** : Ground (Circled GND followed with No. in white background)

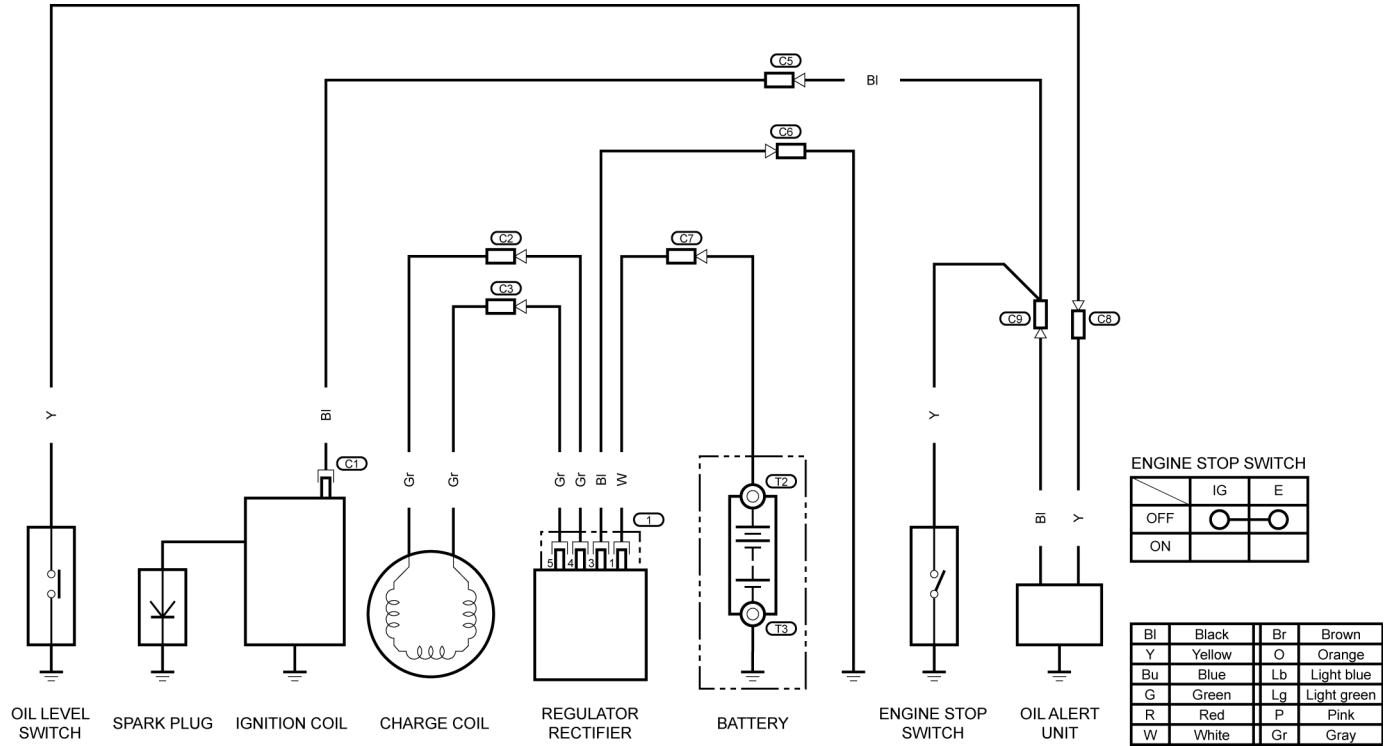
NO CHARGE COIL TYPE



1 A/3 A CHARGE COIL TYPE



7 A CHARGE COIL TYPE



MEMO

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HONDA

**SHOP
MANUAL**

**GX120RT2 • GX200RT2
ENGINE**

Supplement Z
to the
**GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual**

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have engine-power equipment up in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX120RT2·GX200RT2 Engines.

For service information that is not covered in this supplement, please refer to the GX120UT2·GX160UT2·GX200UT2 base shop manual.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice.


No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.


SAFETY MESSAGES


Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgement.


You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:


 DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

 WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

 CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.









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WIRING DIAGRAMS	16
INDEX	

 The marked sections contain no changes. They are not covered in this supplement.

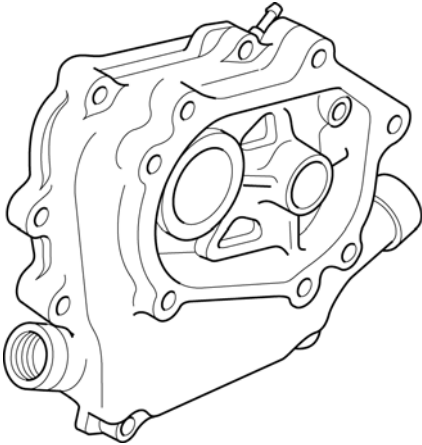
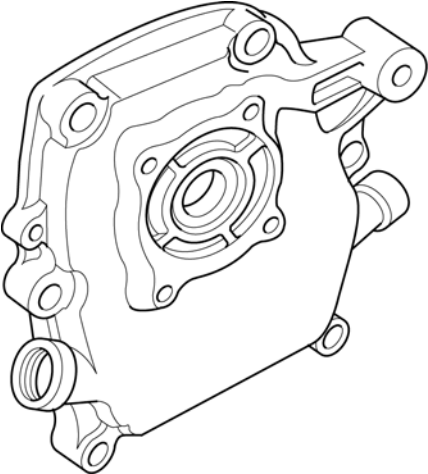
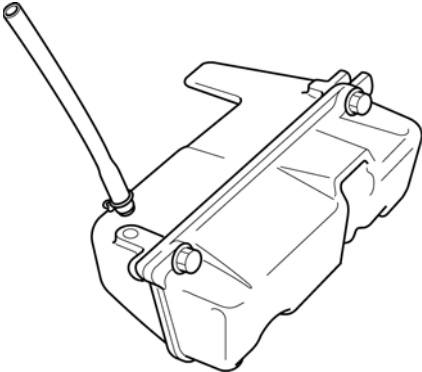
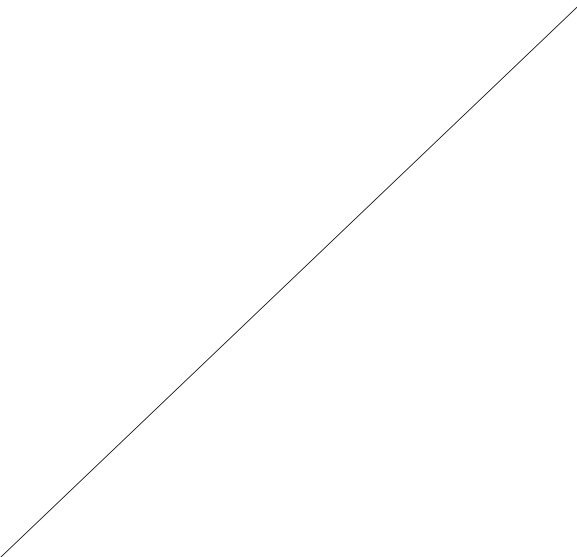
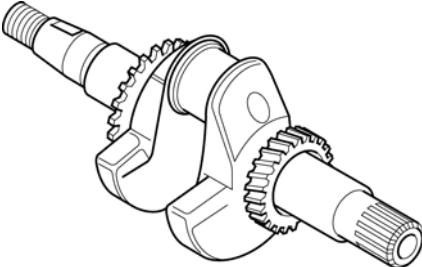
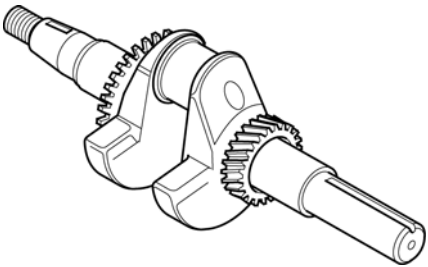
How to use this manual

SYMBOLS

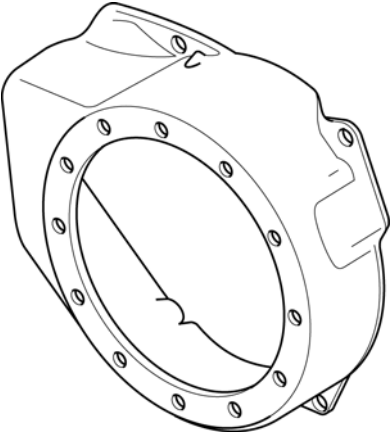
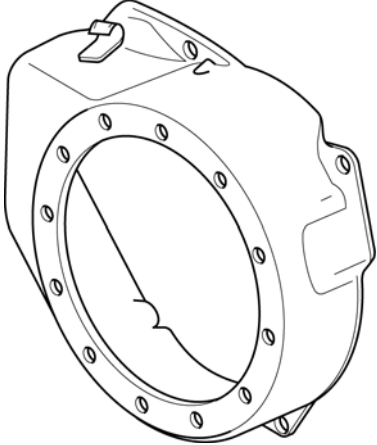
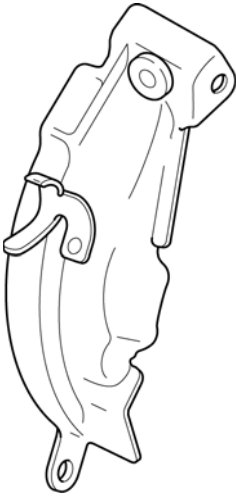
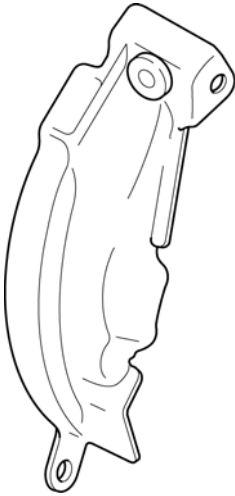
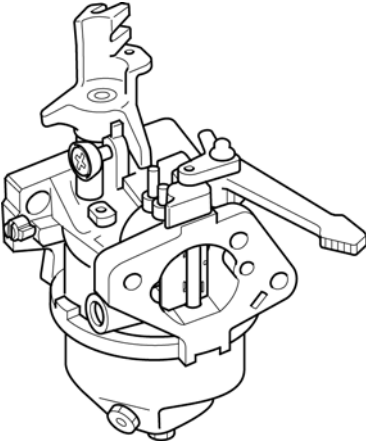
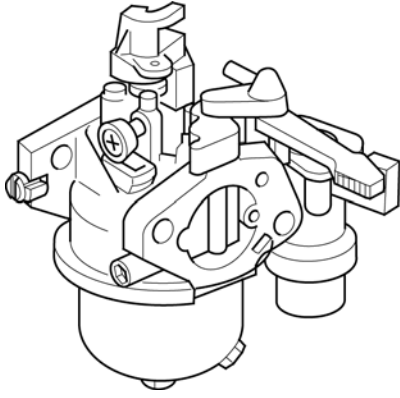
The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

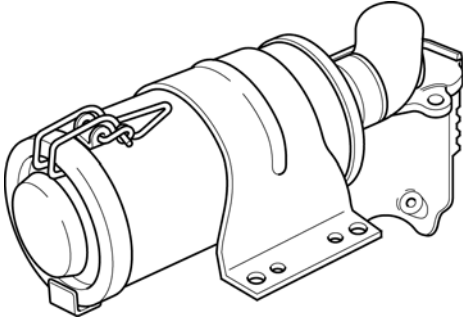
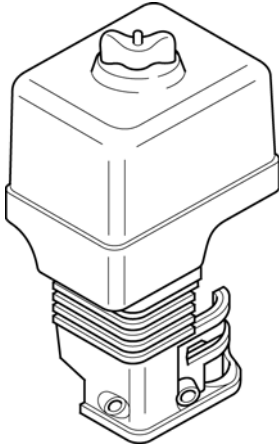
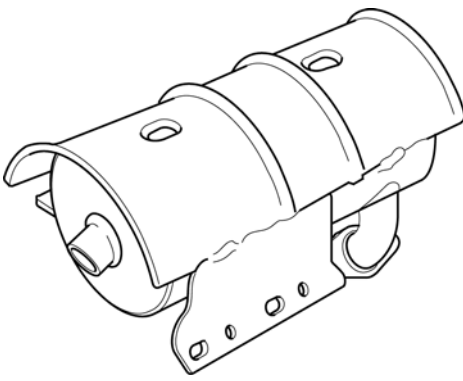
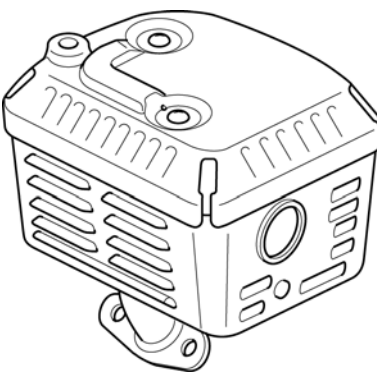
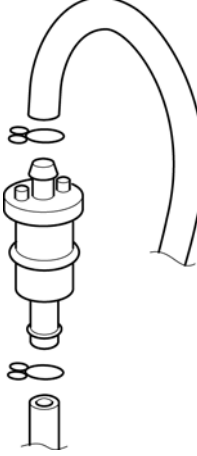
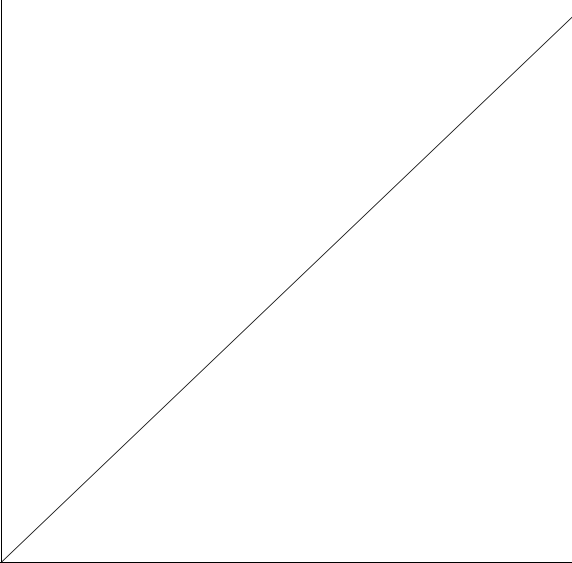
OUTLINE OF CHANGES

ITEM	MODEL	
	NEW GX120RT2	EXISTING GX120UT2
CRANKCASE COVER		
OIL TANK		
CRANKSHAFT		

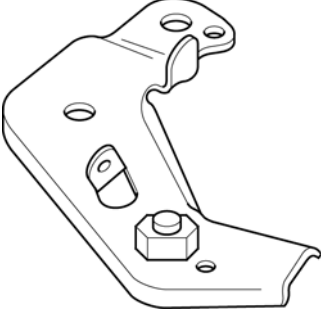
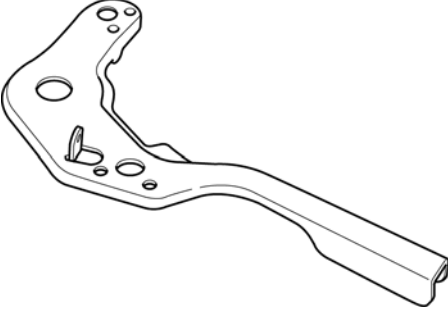
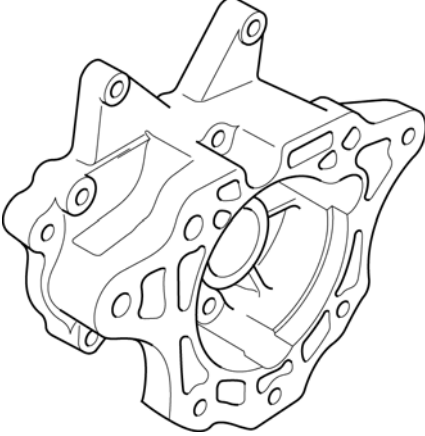
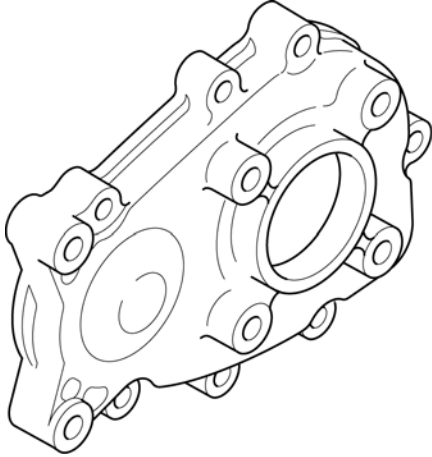
OUTLINE OF CHANGES

ITEM	MODEL	
	NEW GX120RT2	EXISTING GX120UT2
FAN COVER		
SIDE PLATE		
CARBURETOR		

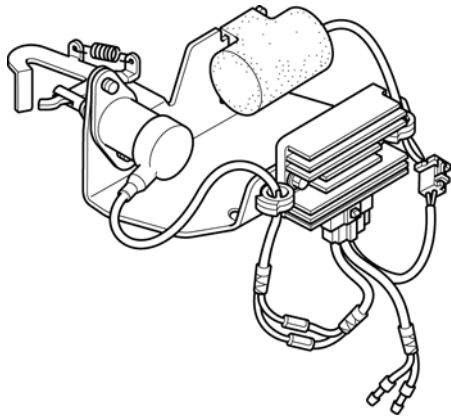
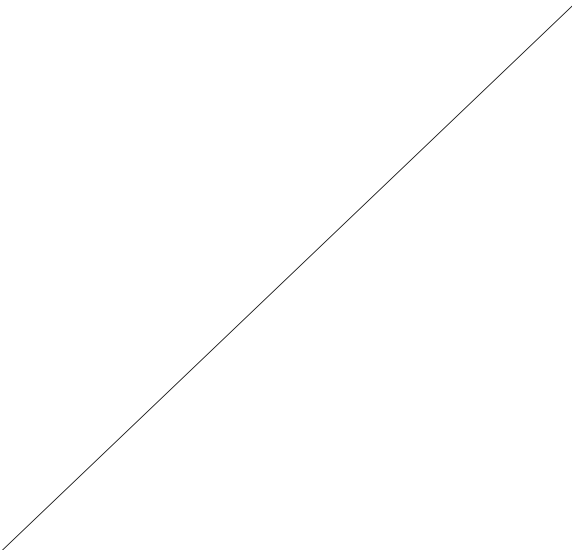
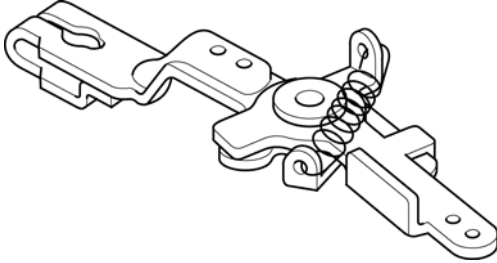
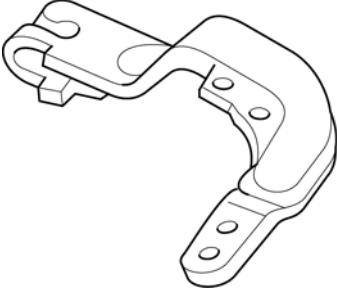
OUTLINE OF CHANGES

ITEM	MODEL	
	NEW GX120RT2	EXISTING GX120UT2
AIR CLEANER		
MUFFLER		
AIR VENT TUBE/ STRAINER		

OUTLINE OF CHANGES

ITEM	MODEL	
	NEW GX120RT2	EXISTING GX120UT2
CONTROL LEVER		
CHAIN CASE COVER		

OUTLINE OF CHANGES

ITEM	MODEL	
	NEW GX120RT2	EXISTING GX120UT2
AUTO THROTTLE		
GOVERNOR ARM		

MEMO

1. SPECIFICATIONS

P.T.O. TYPE VARIATION	1-2 (Z)
DIMENSIONS AND WEIGHTS SPECIFICATIONS	1-4 (Z)
ENGINE SPECIFICATIONS	1-5 (Z)
DIMENSIONAL DRAWINGS	1-6 (Z)
P.T.O. DIMENSIONAL DRAWINGS	1-7 (Z)

P.T.O. TYPE VARIATION

GX120RT2

P.T.O. type		KR								V
Type		AR	DKR	KRF4	KRR4	KRS4	KRS5	KRS6	KRSB	VPR4
Air cleaner	Dual			○						
	Dual silent					○	○			
	Cyclone									
	Low profile									○
	Oil bath									
	Semi dry									
	Rammer	○	○		○					
Muffler	Standard									
	Silent									
	Low profile									○
	Low profile (With protector)									
	Rammer	○	○	○	○	○	○	○	○	
Spark arrester										○
Fuel gauge										
Control base	Manual	Standard								
		Cyclone standard								
	Remote	Internal	○	○	○	○	○	○	○	○
		EXP								
		Cyclone								
	Fixed throttle operation									
Auto throttle										
Charge coil	1 A									
	3 A									
	7 A									
Lamp coil	12 V - 15 W									
	12 V - 25 W									
	12 V - 50 W									
Combination switch										
Starter motor										
Oil level switch										○
Engine stop switch		○	○	○	○	○	○	○		
Oil alert unit										○
Circuit protector										
Reduction	Gear (1/6)									
	Chain (1/2)	Without clutch								
		With clutch								
	Chain (1/1)		○	○	○	○	○	○	○	○

GX200RT2

P.T.O. type		S			V				VE
Type		RHG4	RMG2	SWG4	VEE9	VGGN	VPM4	VS19	VENN
Air cleaner	Dual	○	○	○		○			
	Dual silent								
	Cyclone								
	Low profile				○		○	○	○
	Oil bath								
	Semi dry								
	Rammer								
Muffler	Standard								
	Silent								
	Low profile							○	
	Low profile (With protector)								○
	Rammer								
Spark arrester							○	○	○
Fuel gauge									
Control base	Manual	Standard							
		Cyclone standard							
	Remote	Internal							
		EXP Cyclone							
	Fixed throttle operation				○		○	○	
Auto throttle								○	
Charge coil	1 A				○				○
	3 A								
	7 A								
Lamp coil	12 V - 15 W								
	12 V - 25 W								
	12 V - 50 W		○						
Combination switch					○				
Starter motor				○	○				
Oil level switch				○	○	○	○	○	○
Engine stop switch		○	○			○	○	○	○
Oil alert unit				○	○	○	○	○	○
Circuit protector									
Reduction	Gear (1/6)								
	Chain (1/2)	Without clutch							
		With clutch	○	○					
	Chain (1/1)								

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX120RT2	GX200RT2
Overall length	KR *	313 mm (12.3 in)	–
	S *	–	313 mm (12.3 in)
	V *	315.5 mm (12.42 in)	331 mm (13.0 in)
	VE *	–	287 mm (11.3 in)
Overall width	KR *	331 mm (13.0 in)	–
	S *	–	376 mm (14.8 in)
	V *	346 mm (13.6 in)	376 mm (14.8 in)
	VE *	–	376 mm (14.8 in)
Overall height	KR *	321 mm (12.6 in)	–
	S *	–	346 mm (13.6 in)
	V *	329 mm (13.0 in)	346 mm (13.6 in)
	VE *	–	346 mm (13.6 in)
Dry weight	KR *	16.5 kg (36.4 lbs)	–
	S *	–	16.1 kg (35.5 lbs)
	V *	13.0 kg (28.7 lbs)	16.1 kg (35.5 lbs)
	VE *	–	16.1 kg (35.5 lbs)
Operating weight	KR *	16.9 kg (37.3 lbs)	–
	S *	–	19.6 kg (43.2 lbs)
	V *	15.5 kg (34.2 lbs)	19.6 kg (43.2 lbs)
	VE *	–	19.6 kg (43.2 lbs)

*: P. T. O. type. (page 1-2)

ENGINE SPECIFICATIONS

Model	GX120RT2		GX200RT2	
Description code	GCBMT		GCBTT	
Type	4 stroke, overhead valve, single cylinder, inclined by 25°			
Displacement	118 cm ³ (7.2 cu-in)		196 cm ³ (12.0 cu-in)	
Bore x stroke	60.0 x 42.0 mm (2.36 x 1.65 in)		68.0 x 54.0 mm (2.68 x 2.13 in)	
Net power (SAE J1349) *1	2.6 kW (3.5 HP)/3,600 min ⁻¹ (rpm)		4.1 kW (5.6 HP)/3,600 min ⁻¹ (rpm)	
Continuous rated power	2.1 kW (2.9 HP)/3,600 min ⁻¹ (rpm)		3.7 kW (5.0 HP)/3,600 min ⁻¹ (rpm)	
Maximum net torque (SAE J1349) *1	7.3 N·m (0.7 kgf·m, 5.4 lbf·ft)/ 2,500 min ⁻¹ (rpm)		12.4 N·m (1.3 kgf·m, 9 lbf·ft)/ 2,500 min ⁻¹ (rpm)	
Compression ratio	8.5 : 1			
Fuel consumption (at continuous rated power)	1.0 Liter (0.26 US gal, 0.22 Imp gal)/h		1.7 Liters (0.45 US gal, 0.37 Imp gal)/h	
Ignition system	C.D.I. (Capacitor Discharge Ignition) type magneto ignition			
Ignition timing	B.T.D.C. 20°/1,400 min ⁻¹ (rpm)			
Recommended spark plug	BPR4ES (NGK)/ W14EPR-U (DENSO)		BPR6ES (NGK)/ W20EPR-U (DENSO)	
Lubrication system	Forced splash			
Oil capacity	0.40 Liter (0.42 US qt, 0.35 Imp qt) *2		0.60 Liter (0.63 US qt, 0.53 Imp qt)	
Recommended oil	SAE 10W-30 API service classification SJ or higher			
Cooling system	Forced air			
Starting system	Recoil Starter		Recoil, Recoil and Starter motor	
Stopping system	Ignition exciter coil circuit open			
Carburetor	Horizontal type, float valve		Horizontal type, butterfly valve	
Air cleaner	Dual type, Dual silent type, Low profile type, Rammer type		Dual type, Low profile type	
Governor	Mechanical centrifugal			
Breather system	Reed valve type			
Fuel used	Unleaded gasoline with a pump octane rating 86 or higher			
Fuel tank capacity	-		3.1 Liters (0.82 US gal, 0.68 Imp gal)	
Reduction case oil capacity	Chain type (without clutch)	Shared with engine oil		-
	Chain type (with clutch)	-		0.50 Liter (0.53 US qt, 0.44 Imp qt)
Reduction unit: Chain type (with clutch)	Type	-		Centrifugal
	Engagement start	-		1,800 min ⁻¹ (rpm)
	Lock	-		2,200 min ⁻¹ (rpm)

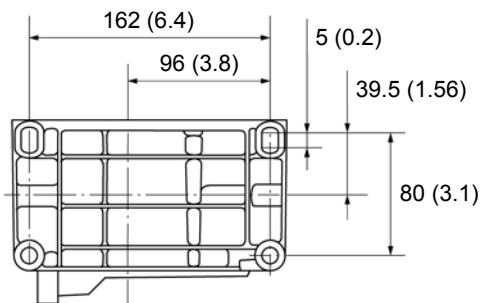
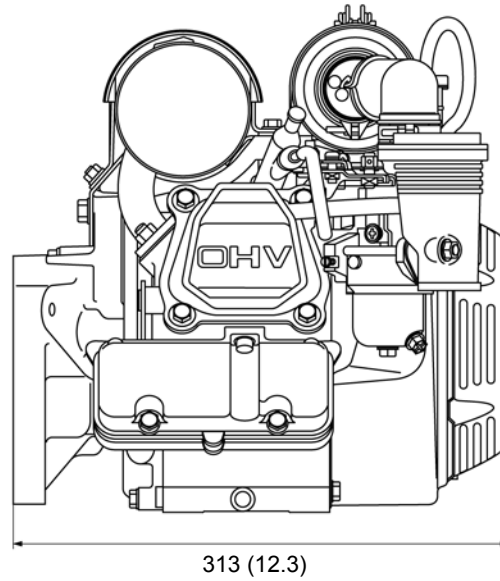
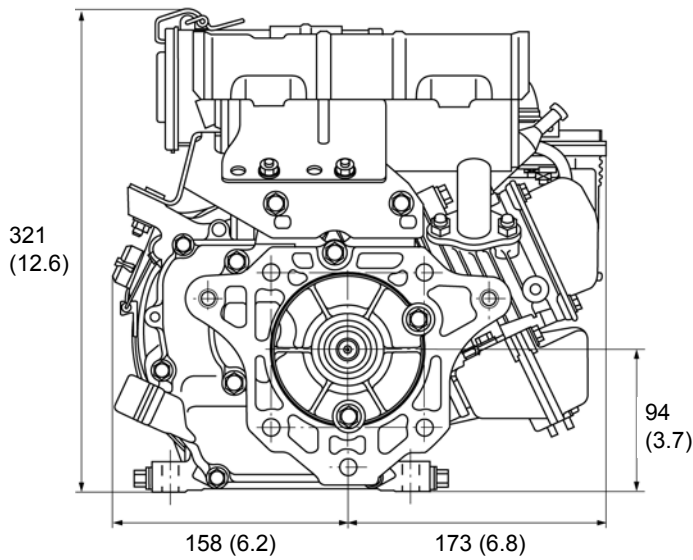
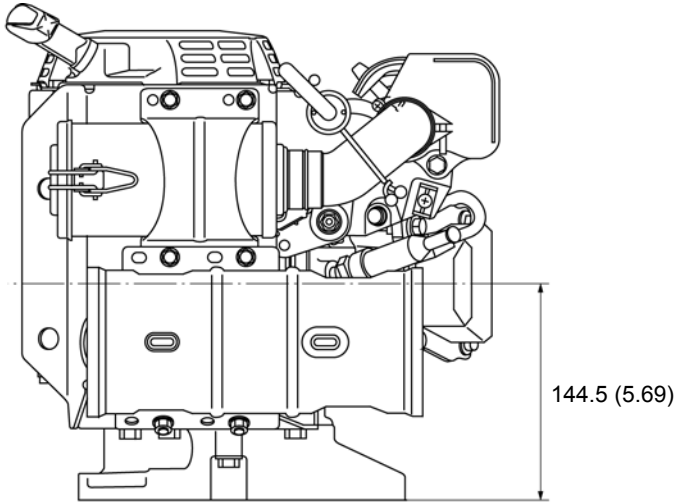
*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

*2: When tilted at 14°

DIMENSIONAL DRAWINGS

GX120RT2 (RAMMER TYPE)

Unit: mm (in)

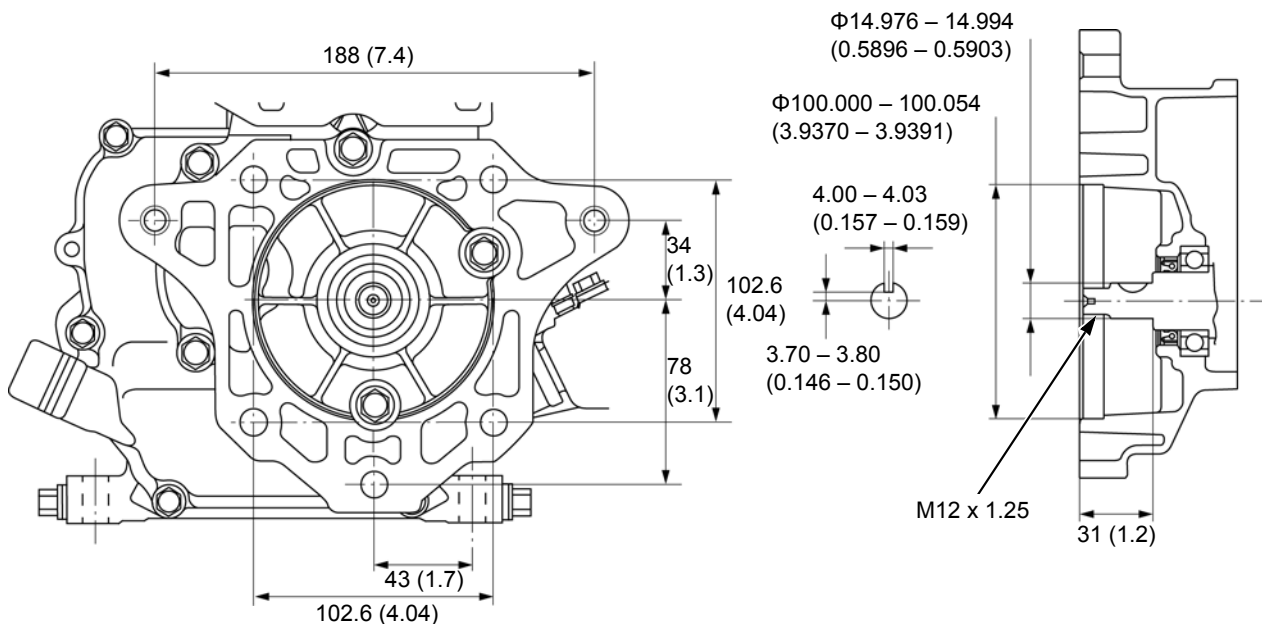


P.T.O. DIMENSIONAL DRAWINGS

*: P.T.O. type. (page 1-2)

GX120RT2 (RAMMER TYPE)

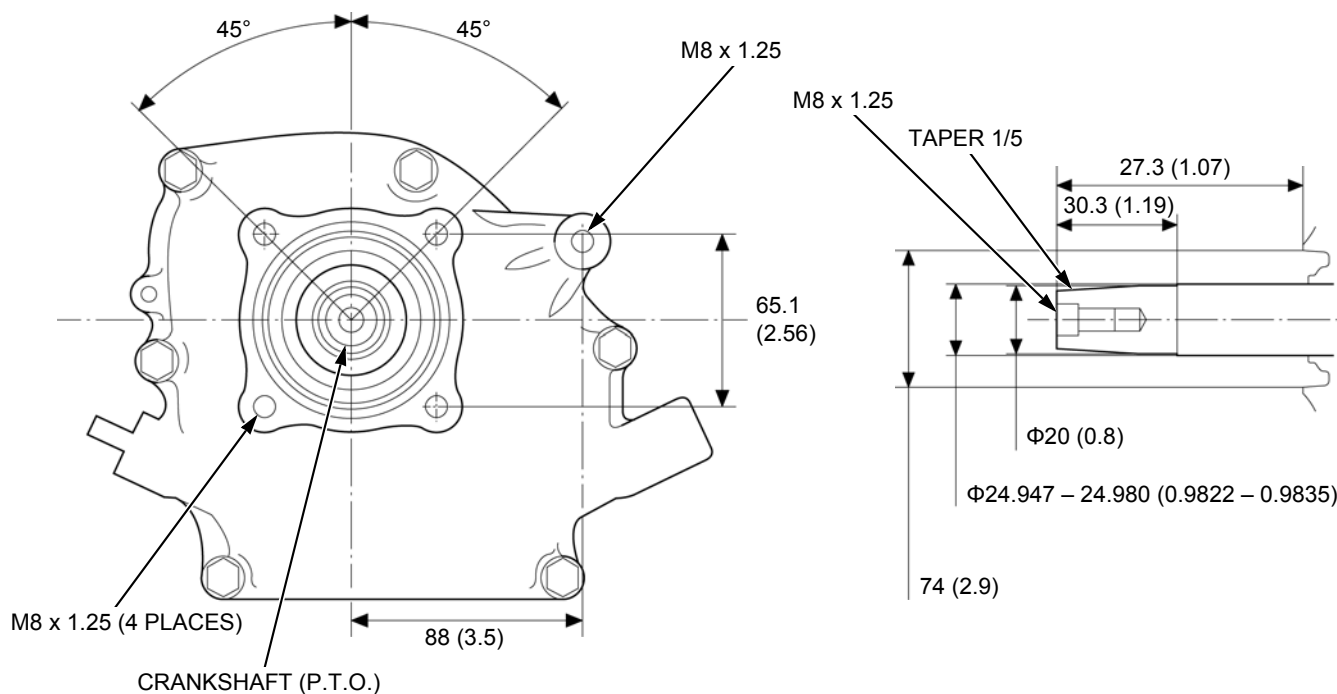
Unit: mm (in)



GX200RT2

VE type*

Unit: mm (in)



MEMO

2. SERVICE INFORMATION

MAINTENANCE STANDARDS	2-2 (Z)
TORQUE VALUES	2-2 (Z)

MAINTENANCE STANDARDS**GX120RT2**

Part	Item		Standard	Service limit
Carburetor	Main jet	BE62J A	#62	—
		BE62K A	#62	—
	Pilot screw opening	BE62J A	1-1/2 turns out	—
		BE62K A	1-5/8 turns out	—
	Float height	BE62J A	18.7 mm (0.74 in)	—
		BE62K A	13.7 mm (0.54 in)	—

GX200RT2

Part	Item		Standard	Service limit
Carburetor	Main jet	BE59L A	#75	—
		BE74V A	#78	—
		BE74Z A	#78	—
		BE59P A	#75	—
	Pilot screw opening	BE59L A	1-7/8 turns out	—
		BE74V A	2-3/4 turns out	—
		BE74Z A	2-3/4 turns out	—
		BE59P A	1-7/8 turns out	—
	Float height		13.7 mm (0.54 in)	—

TORQUE VALUES

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

Other items should be tightened to standard torque values (page 2-6*).

Item	Tread Dia. (mm)	Torque values		
		N-m	kgf-m	lbf-ft
Connecting tube band screw	M4 x 0.7	2	0.2	1.5
Air cleaner elbow nut	M6 x 1.0	9	0.9	6.6
Air cleaner mounting bolt	M6 x 1.0	12	1.2	9
Muffler stay bolt	M8 x 1.25	24	2.4	18
Muffler stay bolt	M6 x 1.0	12	1.2	9
Muffler stay nut	M6 x 1.0	12	1.2	9
Muffler nut	M8 x 1.25	24	2.4	18
Crankcase cover bolt	M6 x 1.0	12	1.2	9
Auto throttle solenoid screw	M5 x 0.8	5	0.5	3.7
Regulator/rectifier bolt	M6 x 1.0	10	1.0	7

3. MAINTENANCE

AIR CLEANER CHECK/CLEANING/REPLACEMENT..... 3-2 (Z)

AIR CLEANER CHECK/CLEANING/ REPLACEMENT

GX120RT2 (RAMMER TYPE)

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

NOTE:

- Never use gasoline or low flash point solvents for cleaning the air filter element. A fire or explosion could result.

Unhook the clip [1] and remove the following:

- Air cleaner cover [2]
- Air cleaner element (Paper) [3]
- Outer filter (Foam) [4]

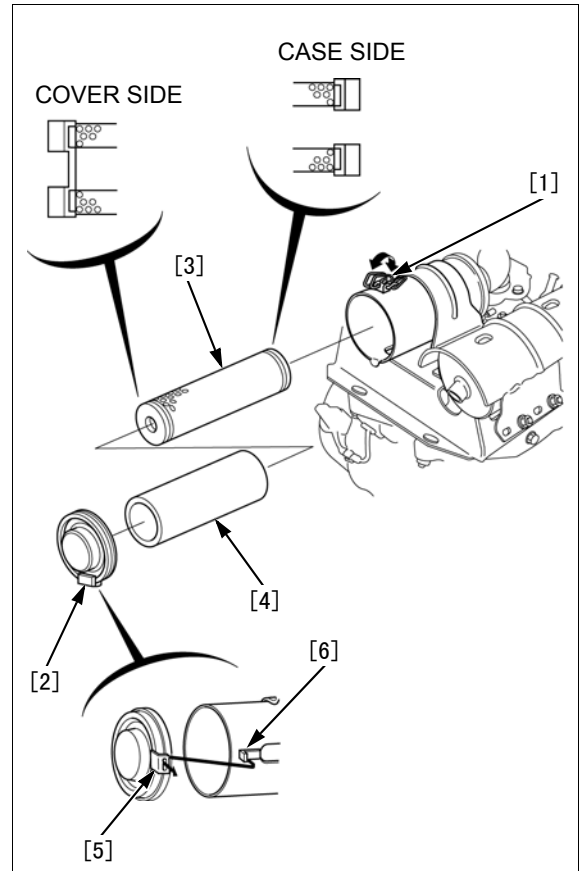
Carefully check the element and filter for holes or tears and replace if damaged.

Clean the filters if they are to be reused (page 3-9*).

Installation is in the reverse order of removal.

NOTE:

- Install the air cleaner element in the direction as shown.
- When installing the air cleaner cover, align the hole [5] with the tab [6] of the air cleaner case.



6. FUEL SYSTEM

AIR CLEANER REMOVAL/INSTALLATION.....	6-2 (Z)
CARBURETOR DISASSEMBLY/ASSEMBLY	6-3 (Z)

AIR CLEANER REMOVAL/ INSTALLATION

GX120RT2 (RAMMER TYPE)

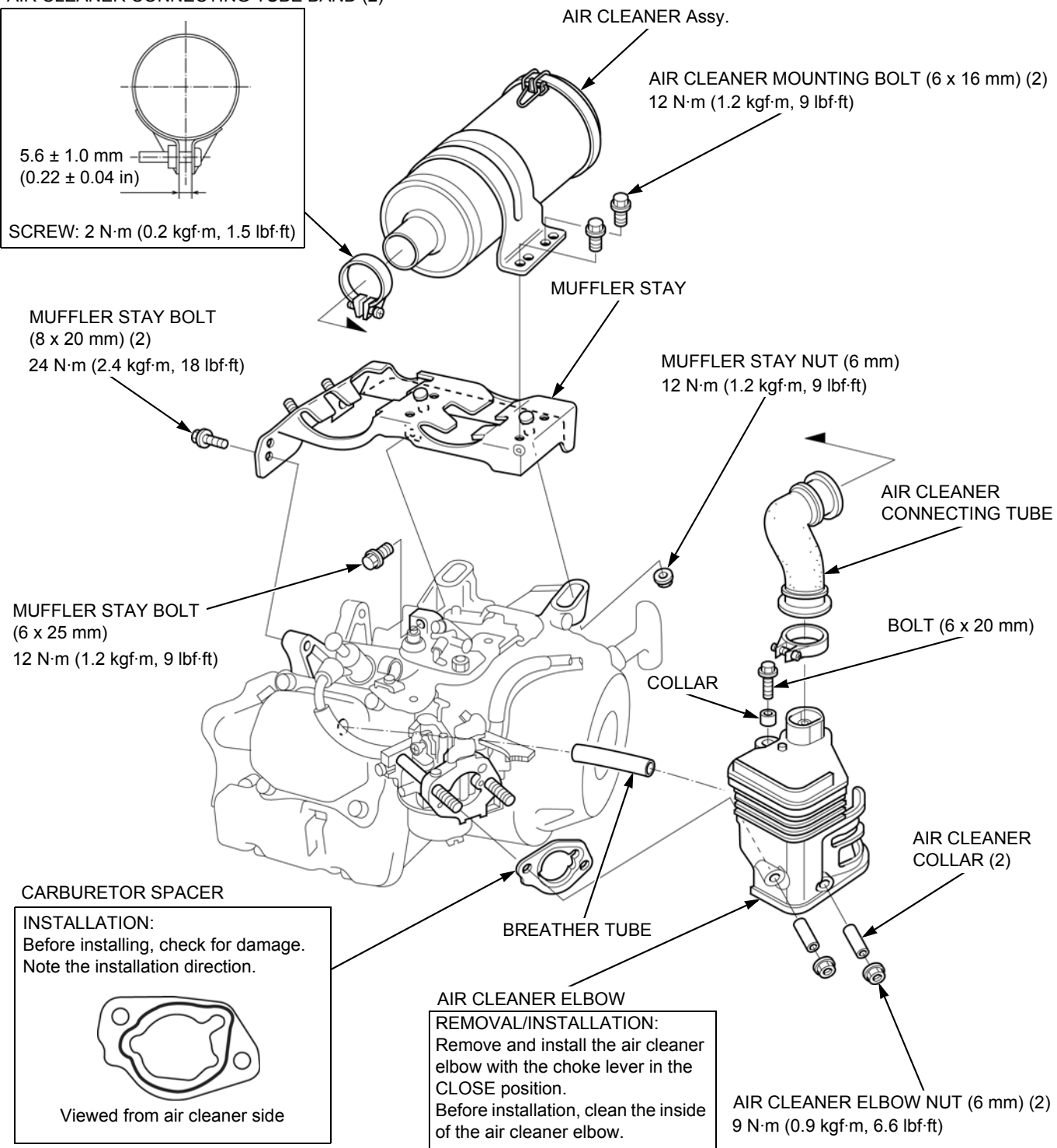
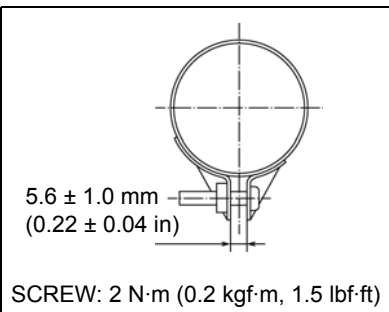
(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

Remove the muffler (page 12-2).

NOTE:

- Route the breather tube properly (page 2-11*).

AIR CLEANER CONNECTING TUBE BAND (2)



INSTALLATION:
Before installing, check for damage.
Note the installation direction.



Viewed from air cleaner side

REMOVAL/INSTALLATION:
Remove and install the air cleaner
elbow with the choke lever in the
CLOSE position.
Before installation, clean the inside
of the air cleaner elbow.

AIR CLEANER ELBOW NUT (6 mm) (2)
9 N·m (0.9 kgf·m, 6.6 lbf·ft)

CARBURETOR DISASSEMBLY/ASSEMBLY

GX120RT2 (RAMMER TYPE)

(* Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

⚠ CAUTION

To prevent serious eye injury, always wear safety goggles or other eye protection when using compressed air.

Remove the following:

- Air cleaner (page 6-2)
- Carburetor (page 6-10*)

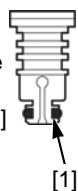
Before disassembly, clean the outside of the carburetor.

NOTICE

Tampering is a violation of Federal and California law.

PILOT JET SET

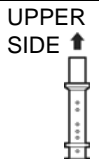
ASSEMBLY:
Before installing, clean thoroughly with low-pressure compressed air.
Lightly lubricate the O-ring [1] to ensure easy installation into the carburetor body.



NEW O-RING
THROTTLE STOP SCREW
ADJUSTMENT: (page 3-13*)

MAIN NOZZLE

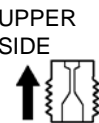
ASSEMBLY:
Before installing, clean thoroughly with low-pressure compressed air.



PILOT SCREW
REPLACEMENT: (page 6-13*)
LIMITER CAP
PILOT SCREW SPRING
CARBURETOR BODY

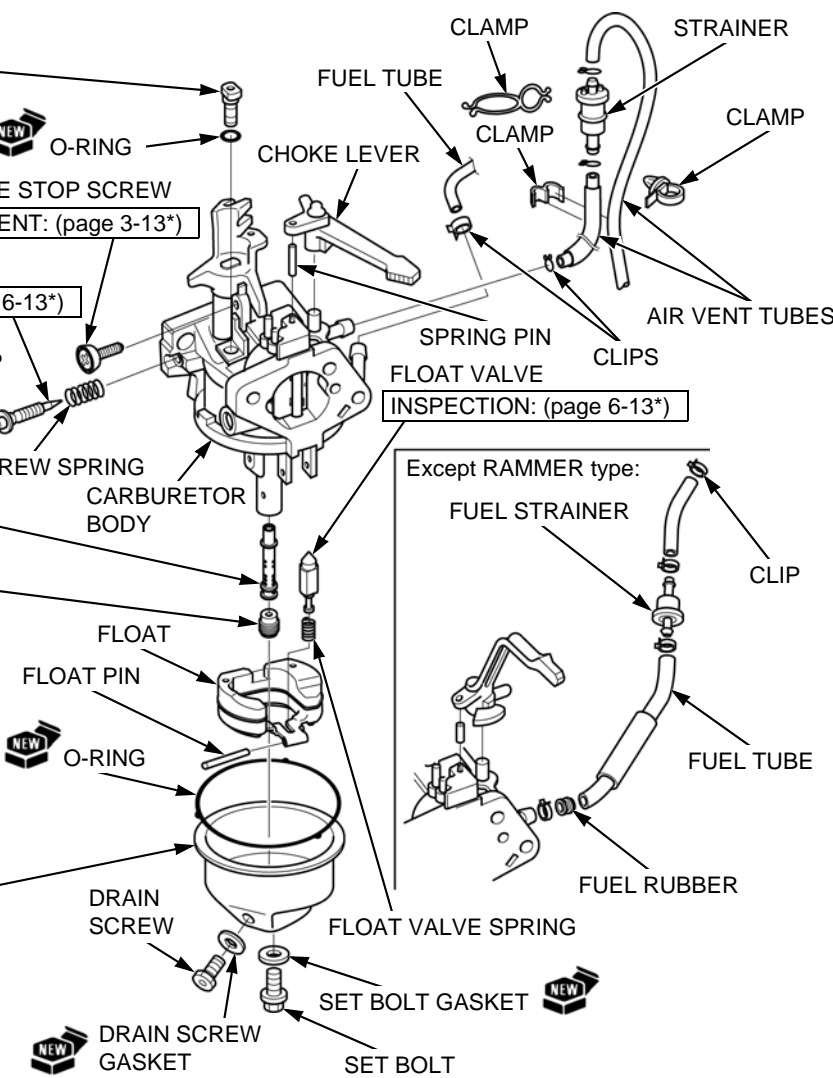
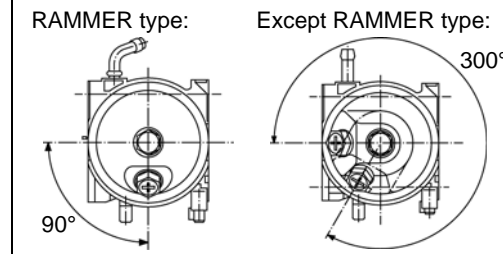
MAIN JET

ASSEMBLY:
Before installing, clean thoroughly with low compressed air.



FLOAT CHAMBER

ASSEMBLY:
Install the float chamber to the carburetor body at an angle as shown.



MEMO

7. GOVERNOR SYSTEM

GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION. . .	7-2 (Z)
AUTO THROTTLE Assy. REMOVAL/INSTALLATION	7-3 (Z)
MAXIMUM SPEED ADJUSTMENT	7-4 (Z)
AUTO THROTTLE SOLENOID INSPECTION	7-5 (Z)

GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION

GX200RT2 (AUTO THROTTLE TYPE)

(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

Remove the following parts.

- Air cleaner (page 6-7*)
- Fuel tank (page 6-3*)
- Muffler (page 12-2)
- Auto throttle Assy. (page 7-3)

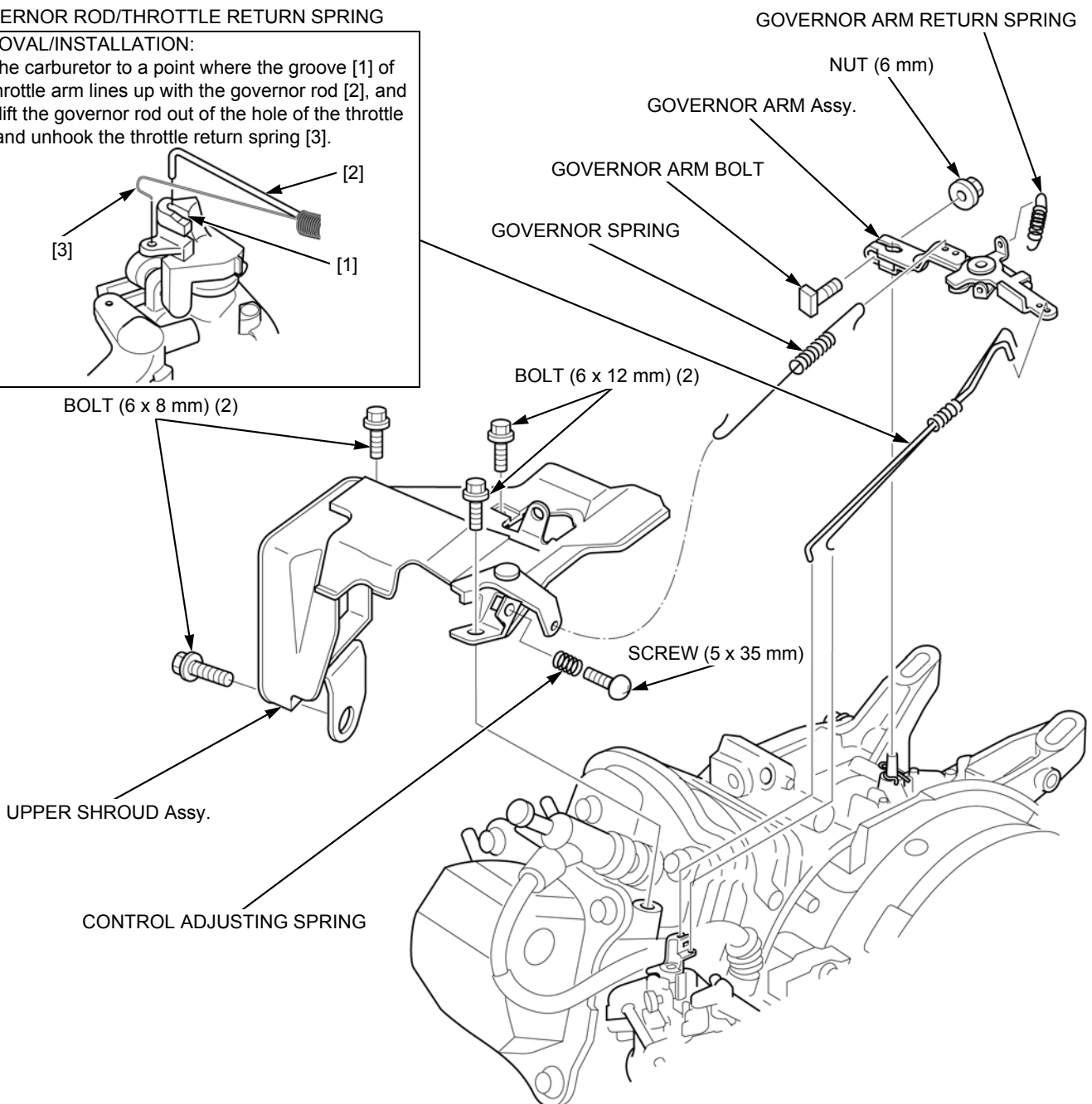
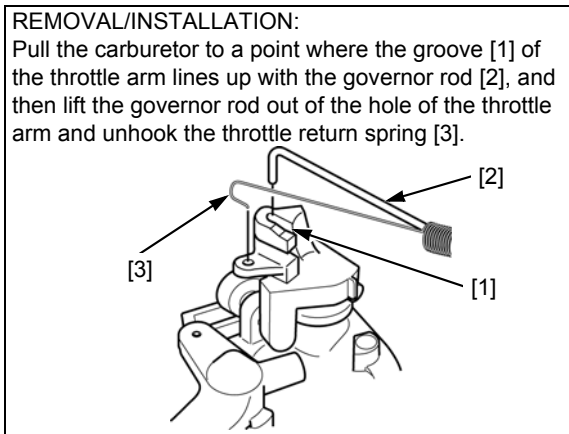
NOTE:

- After installation, adjust the maximum speed (page 7-4).

GOVERNOR ROD/THROTTLE RETURN SPRING

REMOVAL/INSTALLATION:

Pull the carburetor to a point where the groove [1] of the throttle arm lines up with the governor rod [2], and then lift the governor rod out of the hole of the throttle arm and unhook the throttle return spring [3].



AUTO THROTTLE Assy. REMOVAL/ INSTALLATION

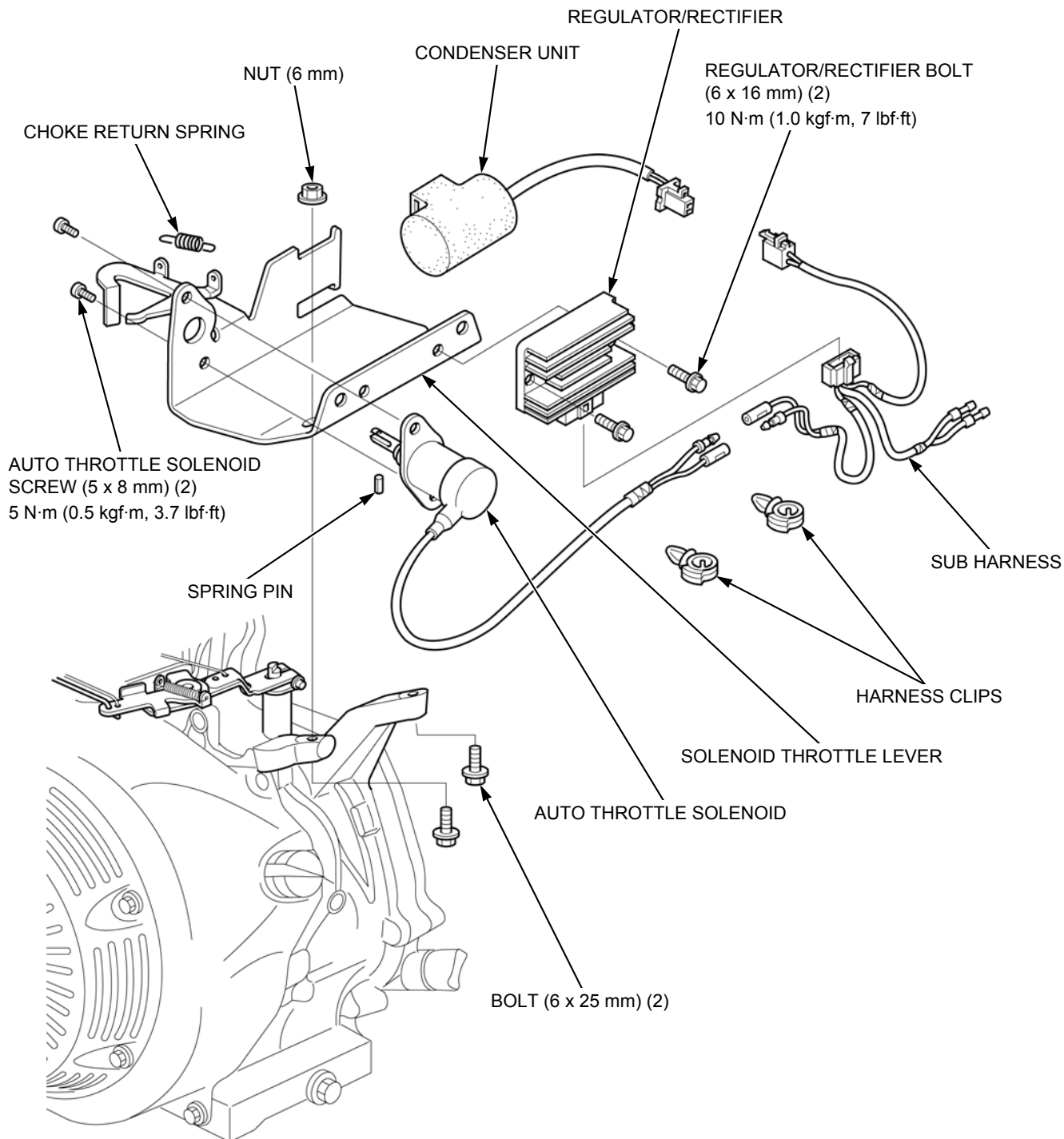
GX200RT2 (AUTO THROTTLE TYPE)

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

Remove the fuel tank (page 6-3*).

NOTE:

- After installation, adjust the maximum speed (page 7-4).



MAXIMUM SPEED ADJUSTMENT

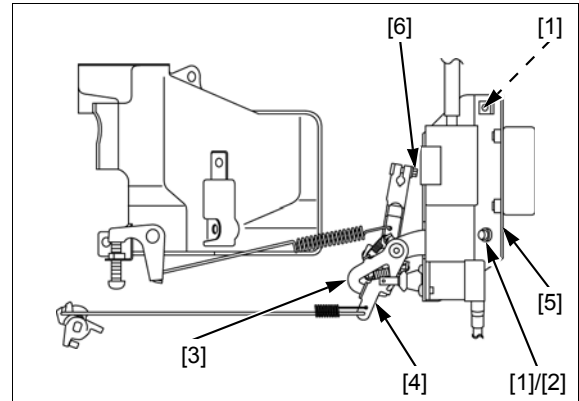
GX200RT2 (AUTO THROTTLE TYPE)

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

Remove the fuel tank (page 6-3*).

Loosen the bolts (6 x 25 mm) [1] and nut (6 mm) [2].
Release the solenoid throttle lever [3] from the governor sub arm [4] by moving the auto throttle assy. [5].

Loosen the nut (6 mm) [6] of the governor arm.



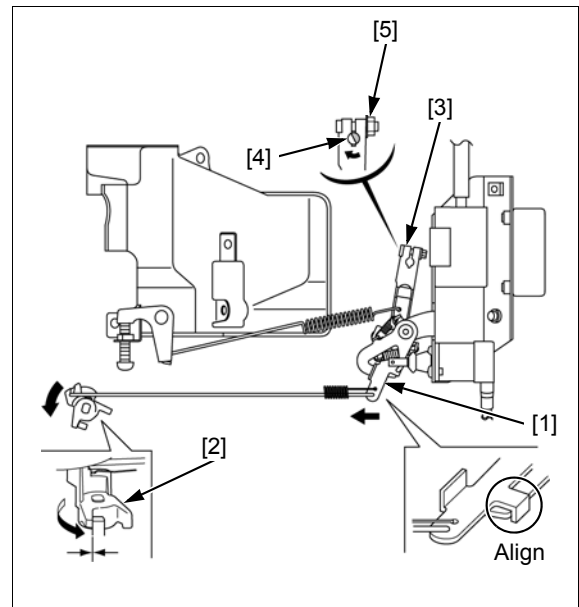
Turn the governor sub arm [1] clockwise to fully open the carburetor throttle valve [2].

Make sure the stoppers of the governor arm [3] with the governor sub arm are aligned.

Rotate the governor arm shaft [4] as far as it will go in the same direction the governor sub arm moved to open the throttle valve.

Make sure the carburetor throttle valve is fully opened.

Tighten the nut (6 mm) [5] securely.



Align the solenoid throttle lever [1] to the governor sub arm [2] by moving the auto throttle assy. [3] and tighten the bolts (6 x 25 mm) [4] and nut (6 mm) [5].

Install the fuel tank (page 6-3*).

Turn the auto throttle switch to "OFF" position.

Use a tachometer with graduations of 50 min^{-1} (rpm) or smaller that will accurately indicate 50 min^{-1} (rpm) changes.

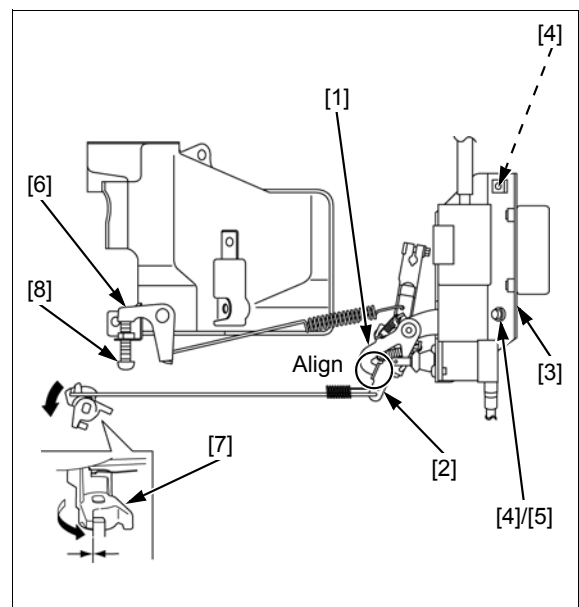
Start the engine and allow it to warm up to normal operating temperature.

Move the control lever [6] to run the engine at the specified maximum speed, and hold the control lever.

MAXIMUM SPEED: $3,900 \pm 100 \text{ min}^{-1}$ (rpm)

Make sure the carburetor throttle valve [7] is fully opened and turn the screw [8] until its end lightly touches the control lever.

If necessary, adjust the idle speed (page 3-13*).



AUTO THROTTLE SOLENOID INSPECTION

GX200RT2 (AUTO THROTTLE TYPE)

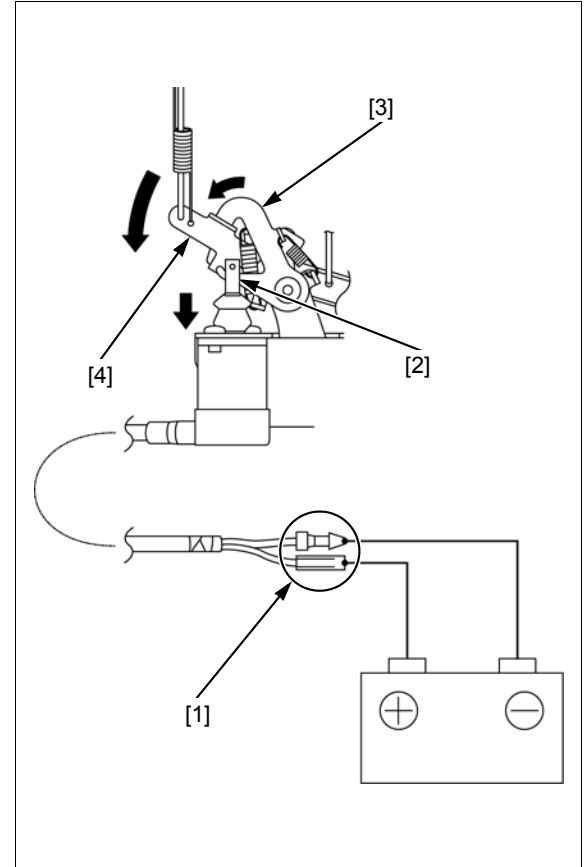
(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

Remove the fuel tank (page 6-3*).

Connect a fully charged 12 V battery to the auto throttle solenoid terminals [1] and check the auto throttle solenoid operation.

Make sure that the auto throttle solenoid [2], throttle solenoid lever [3], and governor sub arm [4] move as shown when a 12 V battery is connected.

Also make sure that the auto throttle solenoid, throttle solenoid lever, and governor sub arm return to the original position when disconnecting battery.



MEMO

12. MUFFLER

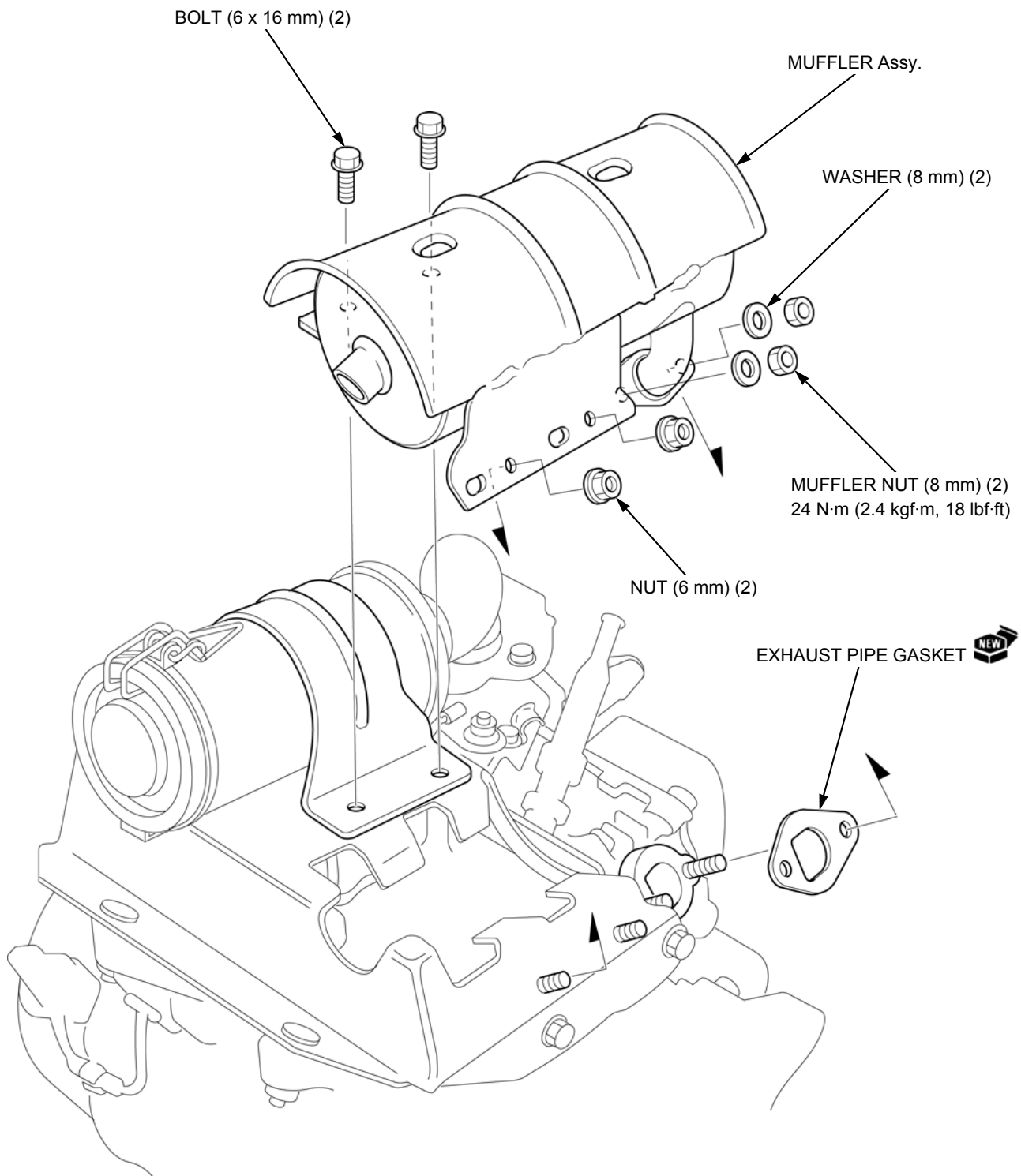
MUFFLER REMOVAL/INSTALLATION..... 12-2 (Z)

MUFFLER REMOVAL/INSTALLATION

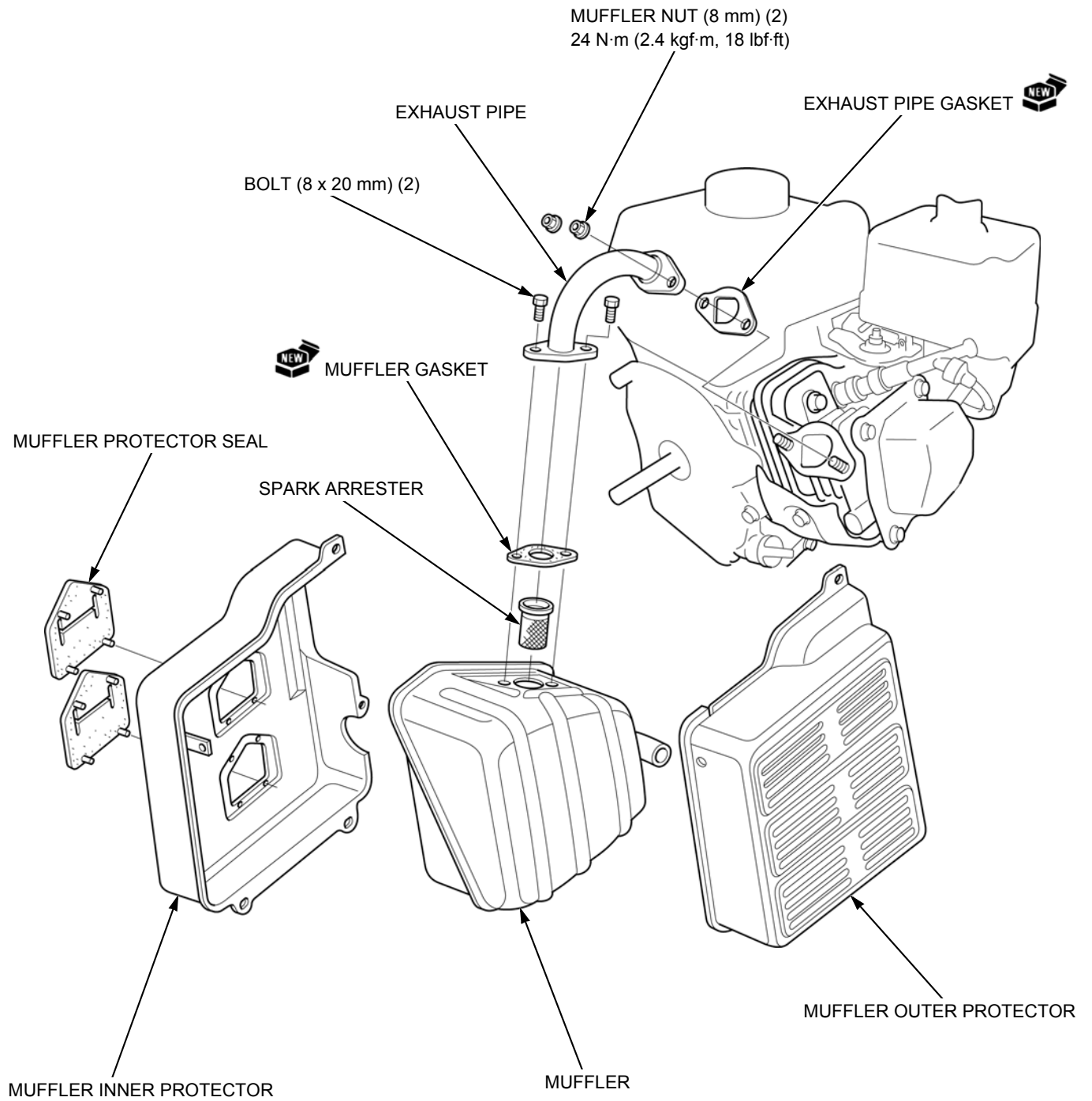
⚠ CAUTION

The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

GX120RT2 (RAMMER TYPE)



GX200RT2 (LOW PROFILE TYPE)



MEMO

14. CRANKCASE

CRANKCASE COVER REMOVAL/INSTALLATION..... 14-2 (Z)



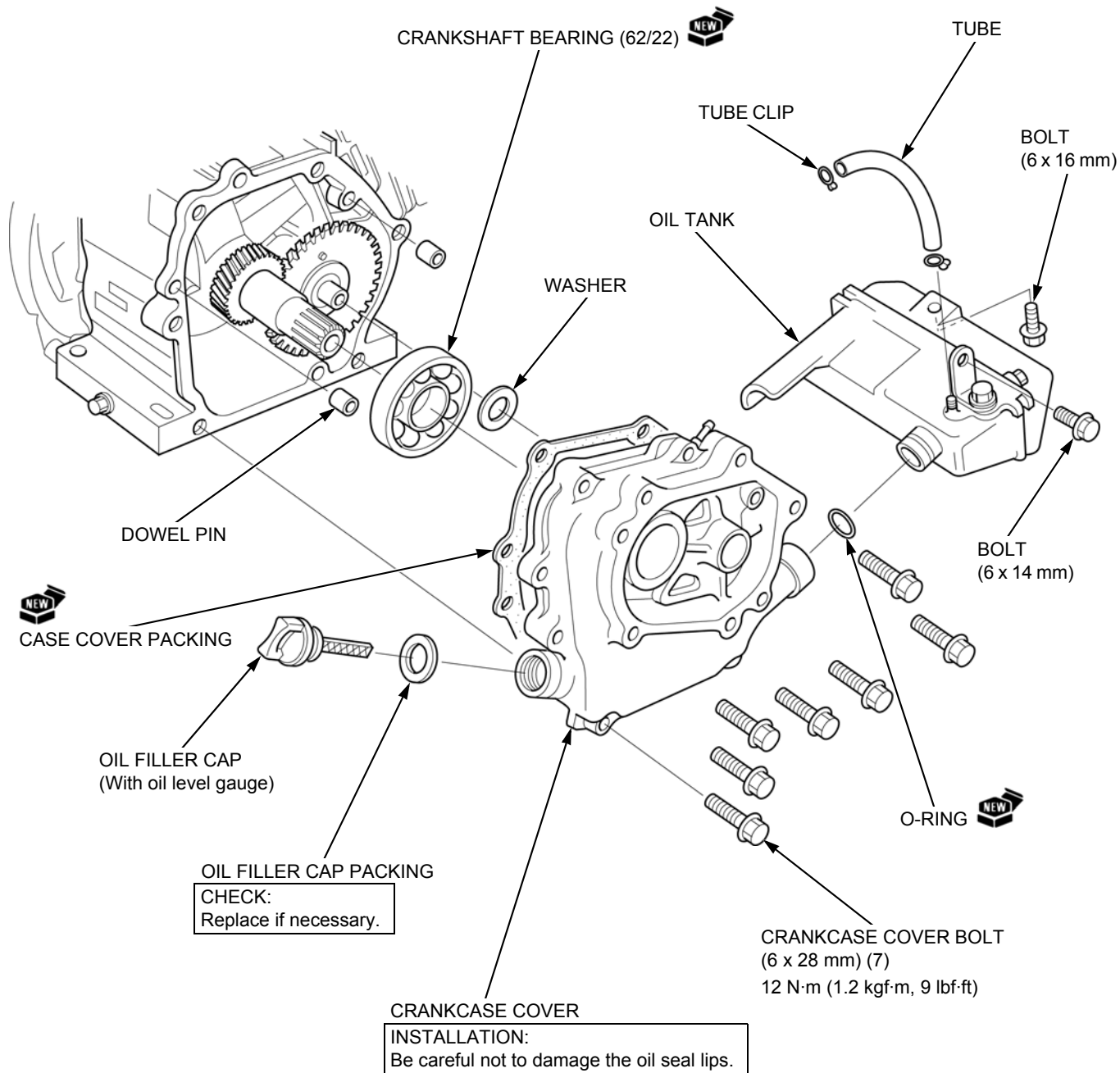
CRANKCASE COVER REMOVAL/ INSTALLATION

GX120RT2 (RAMMER TYPE)

(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

Drain the engine oil (page 3-3*).

Remove the reduction unit (page 15-2).

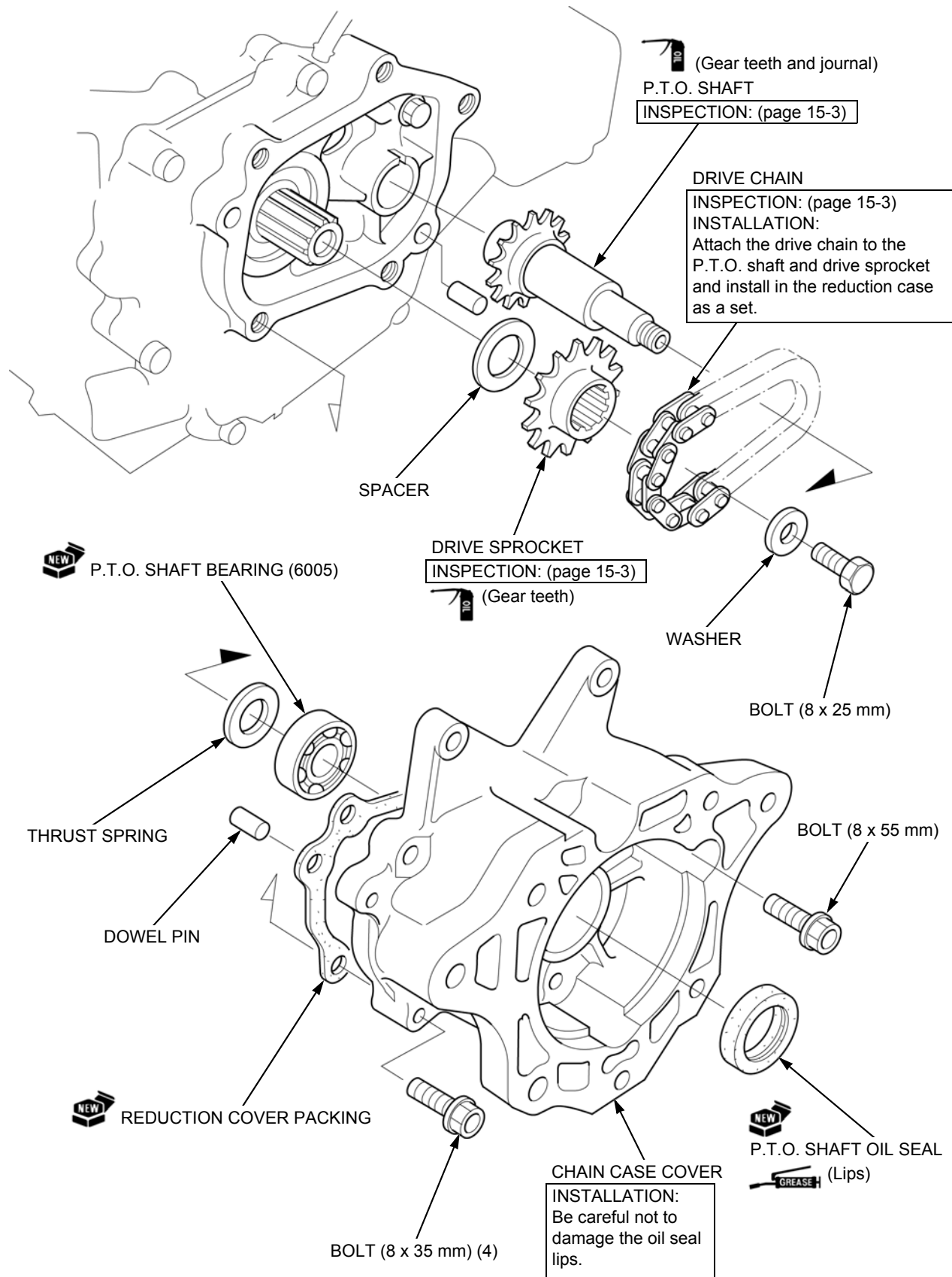


15. REDUCTION UNIT

REDUCTION UNIT DISASSEMBLY/ASSEMBLY	15-2 (Z)
REDUCTION UNIT INSPECTION.....	15-3 (Z)
REDUCTION UNIT BEARING/OIL SEAL REPLACEMENT	15-3 (Z)

REDUCTION UNIT DISASSEMBLY/ ASSEMBLY

GX120RT2 (RAMMER TYPE)



REDUCTION UNIT INSPECTION

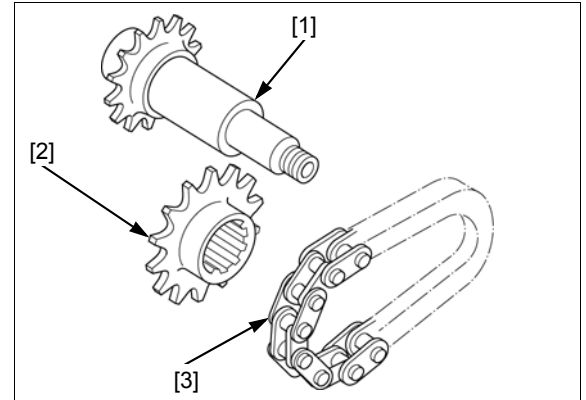
P.T.O. SHAFT, DRIVE SPROCKET, DRIVE CHAIN

Check the following for wear or damage:

- P.T.O. shaft [1]
- Drive sprocket [2]
- Drive chain [3]

NOTE:

- Replace the P.T.O. shaft, drive sprocket, and drive chain as a set.



REDUCTION UNIT BEARING/OIL SEAL REPLACEMENT

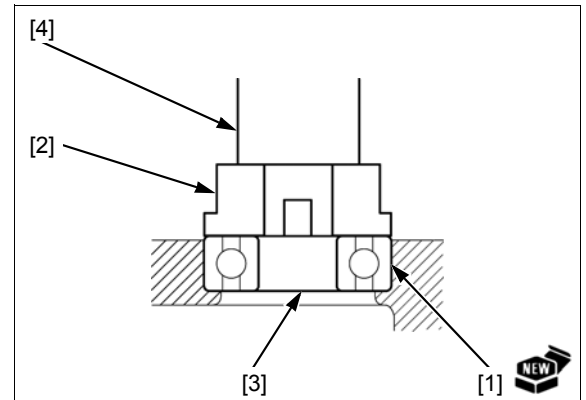
CHAIN CASE COVER SIDE P.T.O. SHAFT BEARING (6005)

Remove the oil seal and drive out the P.T.O. shaft bearing.

Drive a new P.T.O. shaft bearing [1] until it is fully seated on the chain case cover using the special tools.

TOOLS

- | | |
|--|---------------|
| Bearing driver attachment,
42 x 47 mm [2] | 07746-0010300 |
| Pilot, 25 mm [3] | 07746-0040600 |
| Driver handle [4] | 07749-0010000 |



P.T.O. SHAFT OIL SEAL

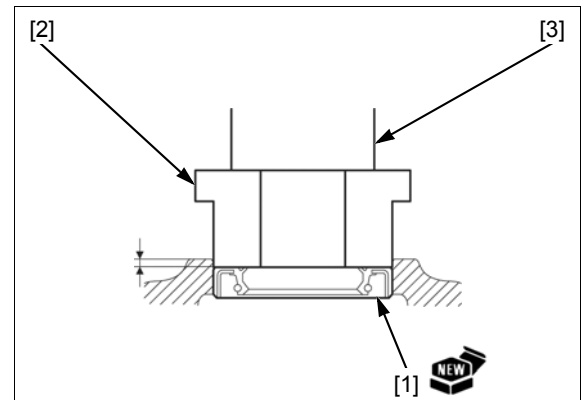
Remove the oil seal from the chain case cover.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT: 2.0 mm (0.08 in)

TOOLS

- | | |
|--|---------------|
| Bearing driver attachment,
37 x 40 mm [2] | 07746-0010200 |
| Driver handle [3] | 07749-0010000 |



MEMO

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AIR CLEANER REMOVAL/INSTALLATION.....	6-2
AUTO THROTTLE Assy. REMOVAL/INSTALLATION.....	7-3
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MEMO

HONDA

**SHOP
MANUAL**

**GX160RT2
ENGINE**

Supplement Y
to the
GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have engine-power equipment up in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX160RT2 Engines.

For service information that is not covered in this supplement, please refer to the GX120UT2·GX160UT2·GX200UT2 base shop manual and supplement Z.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice.


No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.


SAFETY MESSAGES


Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgement.


You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

 DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

 WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.


 CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.

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SERVICE PUBLICATION OFFICE

Date of Issue: October, 2011









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 The marked sections contain no changes. They are not covered in this supplement.

How to use this manual

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

1. SPECIFICATIONS

P.T.O. TYPE VARIATION.....1-2 (Y)

ENGINE SPECIFICATIONS..... 1-3 (Y)

DIMENSIONS AND WEIGHTS
SPECIFICATIONS.....1-3 (Y)

DIMENSIONAL DRAWINGS..... 1-4 (Y)

SPECIFICATIONS

P.T.O. TYPE VARIATION

P.T.O. type		Q	S		V							VE	
Type		QHG4	RHG4	SWG4	VGE4	VGE5	VHH4	VPM5	VS19	VWS	VWWN	EMAN	VSE6
Air cleaner	Dual	○			○		○						
	Dual silent		○	○		○							
	Cyclone												
	Low profile							○	○	○	○	○	○
	Oil bath												
Muffler	Semi dry												
	Standard	○	○				○						
	Silent												
	Low profile								○				
Low profile (With protector)												○	○
Spark arrester									○			○	○
Fuel gauge													
Remote choke lever				○									
Control base	Manual	Standard											
		Cyclone standard											
	Remote	Internal											
		Internal S			○								
		EXP	○	○									
Cyclone													
Fixed throttle operation					○	○	○	○	○	○	○	○	○
Charge coil	1 A												
	3 A												
	7 A												
Lamp coil	12 V - 15 W												
	12 V - 25 W											○	
	12 V - 50 W												
Combination switch													
Starter motor				○									
Oil level switch				○	○	○	○	○	○	○	○	○	○
Engine stop switch		○	○		○		○	○	○		○	○	
Oil Alert® unit				○	○	○	○	○	○	○	○	○	○
Circuit protector													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch											
		With clutch		○									
Chain (1/1)													

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX160RT2
Overall length	Q *	312.5 mm (12.30 in)
	S *	304 mm (12.0 in)
	V *	322.5 mm (12.70 in)
	VE *	281 mm (11.1 in)
Overall width	Q *	347 mm (13.7 in)
	S *	347 mm (13.7 in)
	V *	347 mm (13.7 in)
	VE *	–
Overall height	Q *	337 mm (13.3 in)
	S *	337 mm (13.3 in)
	V *	337 mm (13.3 in)
	VE *	–

*: P. T. O. type (page 1-2).

ENGINE SPECIFICATIONS

Model	GX160RT2	
Description code	GCBPT	
Type	4 stroke, overhead valve, single cylinder, inclined by 25°	
Displacement	163 cm ³ (9.9 cu-in)	
Bore x stroke	68.0 x 45.0 mm (2.68 x 1.77 in)	
Net power (SAE J1349) *1	3.6 kW (4.9 HP)/3,600 min ⁻¹ (rpm)	
Continuous rated power	2.9 kW (3.9 HP)/3,600 min ⁻¹ (rpm)	
Maximum net torque (SAE J1349) *1	10.3 N·m (1.1 kgf·m, 8 lbf·ft)/2,500 min ⁻¹ (rpm)	
Compression ratio	9.0 : 1	
Fuel consumption (at continuous rated power)	1.4 Liters (0.37 US gal, 0.31 Imp gal)/h	
Ignition system	C.D.I. (Capacitor Discharge Ignition) type magneto ignition	
Ignition timing	B.T.D.C. 18°/1,400 min ⁻¹ (rpm)	
Recommended spark plug	BPR6ES (NGK)/W20EPR-U (DENSO)	
Lubrication system	Forced splash	
Oil capacity	0.58 Liter (0.61 US qt, 0.51 Imp qt)	
Recommended oil	SAE 10W-30 API service classification SJ or higher	
Cooling system	Forced air	
Starting system	Recoil, Recoil and Starter motor	
Stopping system	Ignition exciter coil circuit open	
Carburetor	Horizontal type, butterfly valve	
Air cleaner	Dual type, Dual silent type, Low profile type	
Governor	Mechanical centrifugal	
Breather system	Reed valve type	
Fuel used	Unleaded gasoline with a pump octane rating 86 or higher	
Reduction case oil capacity: Chain type (with clutch)	0.50 Liter (0.53 US qt, 0.44 Imp qt)	
Reduction unit: Chain type (with clutch)	Type	Centrifugal
	Engagement start	1,800 min ⁻¹ (rpm)
	Lock	2,200 min ⁻¹ (rpm)

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

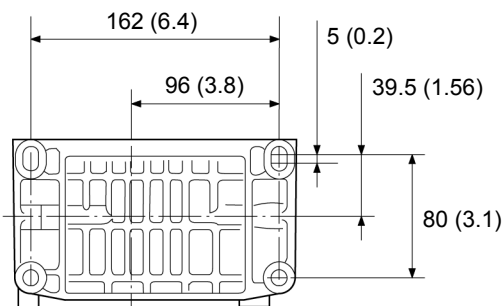
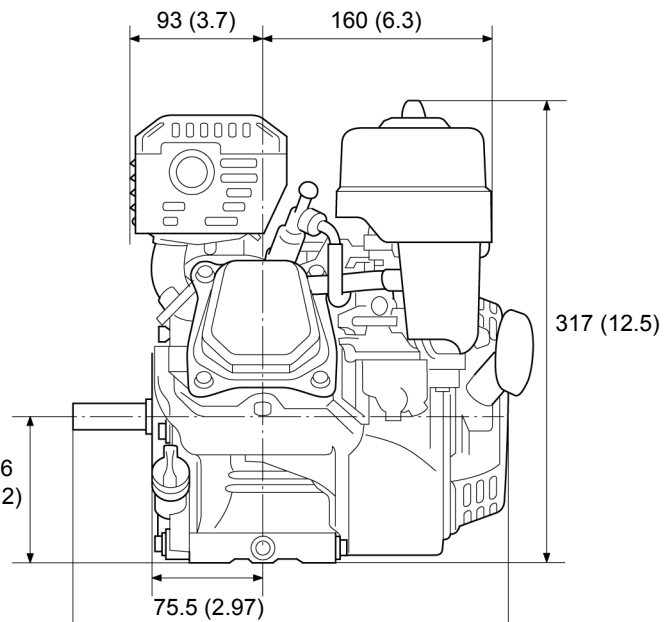
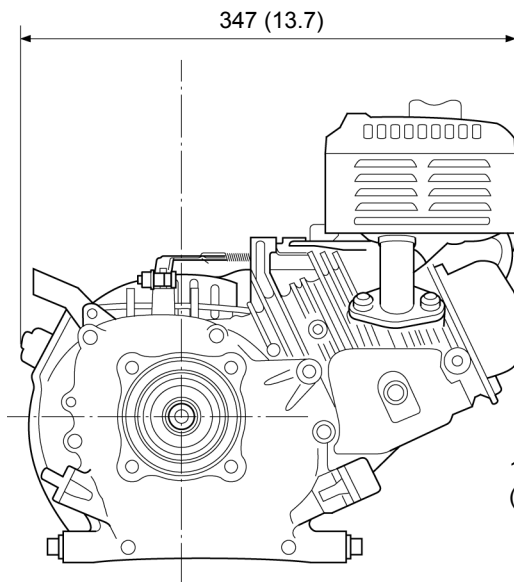
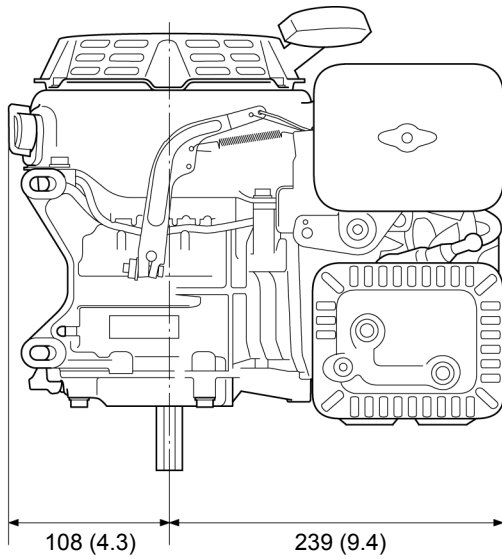
SPECIFICATIONS

DIMENSIONAL DRAWINGS

*: P.T.O. type (page 1-2).

EXCEPT LOW PROFILE TYPE

Unit: mm (in)



Q type*: 321.5 (12.30)
S type*: 304 (12.0)
V type*: 322.5 (12.70)

2. SERVICE INFORMATION

MAINTENANCE STANDARDS2-2 (Y)

SERVICE INFORMATION**MAINTENANCE STANDARDS**

Part	Item	Standard	Service limit	
Carburetor	Main jet	BE54C A	#70	
		BE54D A	#68	–
		BE67W A	#75	–
	Pilot screw opening	BE54C A	2-1/4 turns out	
		BE54D A	1-7/8 turns out	–
		BE67W A	2-7/8 turns out	–
	Float height		13.7 mm (0.54 in)	–

6. FUEL SYSTEM

AIR CLEANER REMOVAL/
INSTALLATION 6-2 (Y)

CARBURETOR DISASSEMBLY/
ASSEMBLY 6-3 (Y)

FUEL SYSTEM

AIR CLEANER REMOVAL/ INSTALLATION

REMOTE CHOKE LEVER TYPE

(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

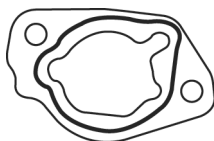
NOTE:

- Route the breather tube properly (page 2-11*).

CARBURETOR SPACER

INSTALLATION:

Before installing, check for damage.
Note the installation direction.

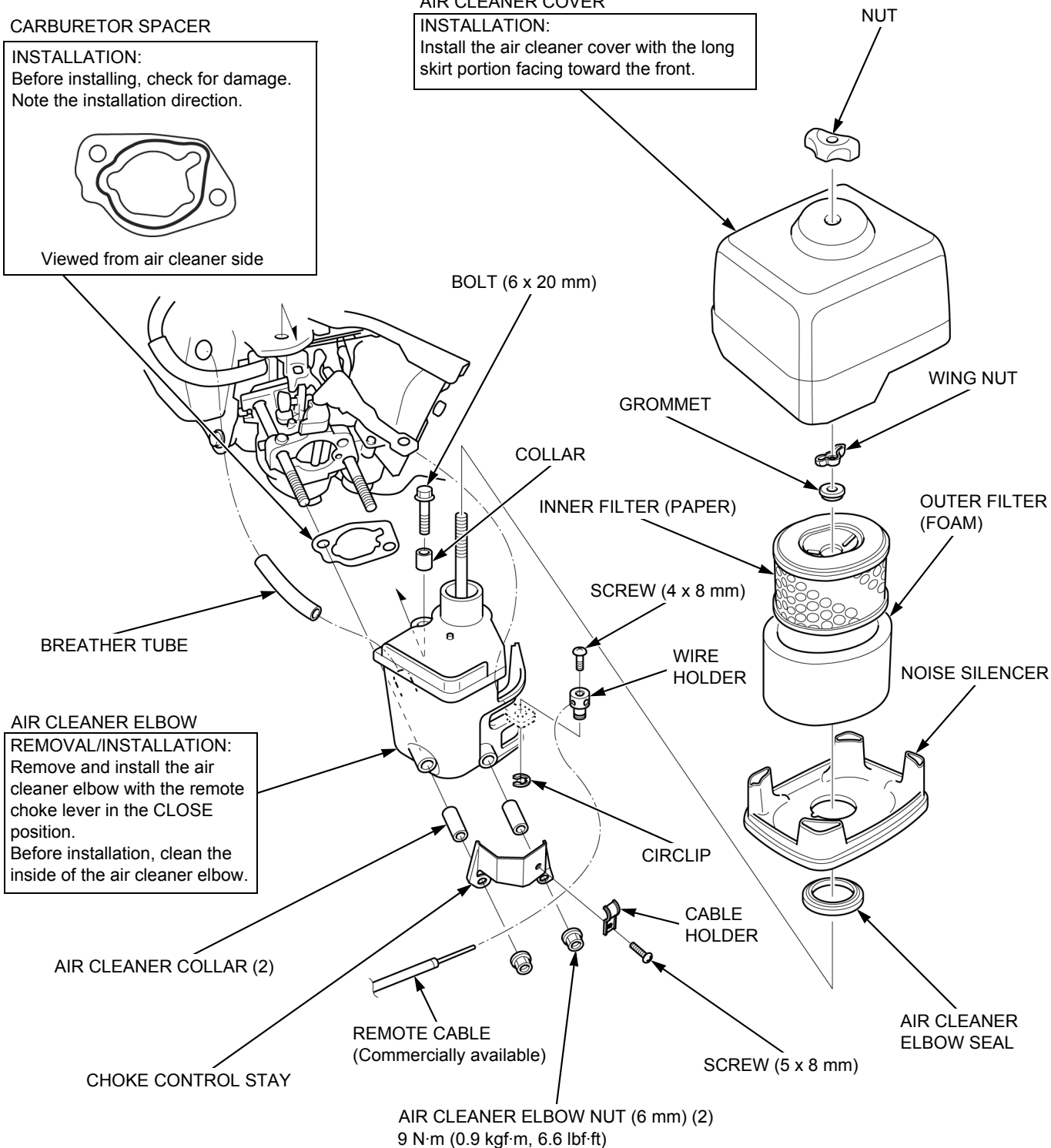


Viewed from air cleaner side

AIR CLEANER COVER

INSTALLATION:

Install the air cleaner cover with the long skirt portion facing toward the front.



CARBURETOR DISASSEMBLY/ ASSEMBLY

REMOTE CHOKE LEVER TYPE

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

NOTICE

Tampering is a violation of Federal and California law.

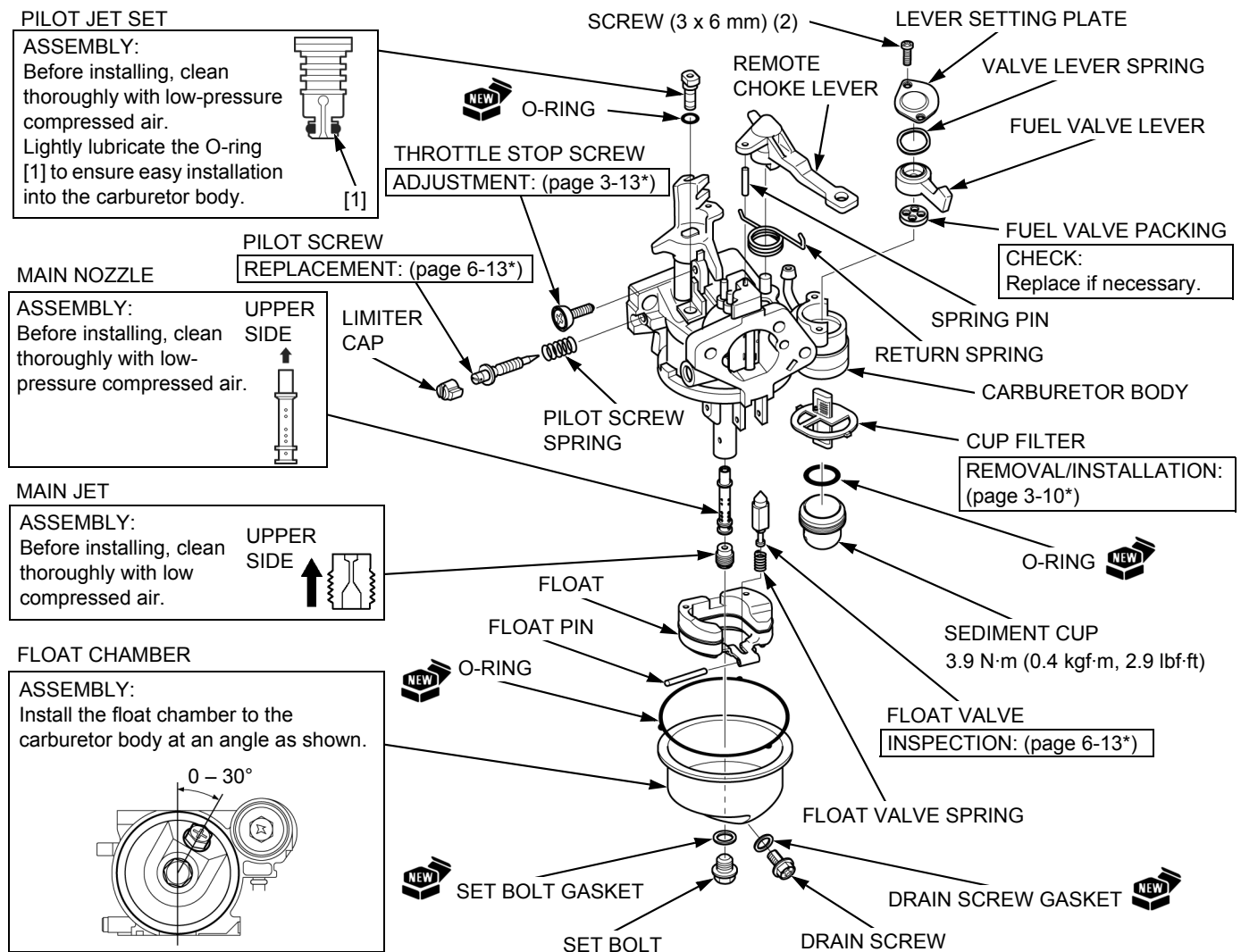
⚠ CAUTION

To prevent serious eye injury, always wear safety goggles or other eye protection when using compressed air.

Remove the following:

- Air cleaner (page 6-2)
- Carburetor (page 6-10*)

Before disassembly, clean the outside of the carburetor.



FUEL SYSTEM

LOW PROFILE TYPE

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

NOTICE

Tampering is a violation of Federal and California law.

⚠ CAUTION

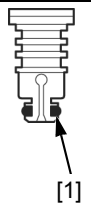
To prevent serious eye injury, always wear safety goggles or other eye protection when using compressed air.

Remove the carburetor (page 6-10*).

Before disassembly, clean the outside of the carburetor.

PILOT JET SET

ASSEMBLY:
Before installing, clean thoroughly with low-pressure compressed air. Lightly lubricate the O-ring [1] to ensure easy installation into the carburetor body.



O-RING

THROTTLE STOP SCREW
ADJUSTMENT: (page 3-13*)

CHOKE LEVER

VPM5 type:

FUEL STRAINER

CLIP

FUEL TUBE

PILOT SCREW
REPLACEMENT: (page 6-13*)

LIMITER CAP

PILOT SCREW SPRING

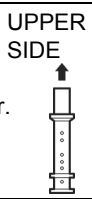
SPRING PIN

CLIP

FUEL TUBE

MAIN NOZZLE

ASSEMBLY:
Before installing, clean thoroughly with low-pressure compressed air.



UPPER SIDE

MAIN JET

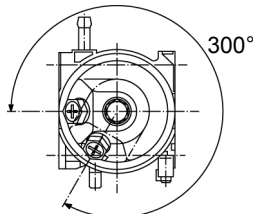
ASSEMBLY:
Before installing, clean thoroughly with low compressed air.



UPPER SIDE

FLOAT CHAMBER

ASSEMBLY:
Install the float chamber to the carburetor body at an angle as shown.



30°

CARBURETOR BODY

FLOAT VALVE

INSPECTION: (page 6-13*)

FLOAT VALVE SPRING

FLOAT PIN

FLOAT

O-RING



SET BOLT GASKET

SET BOLT

DRAIN SCREW GASKET



DRAIN SCREW

7. GOVERNOR SYSTEM

GOVERNOR ARM/CONTROL BASE Assy.
REMOVAL/INSTALLATION 7-2 (Y)

GOVERNOR SYSTEM

GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION

INTERNAL S TYPE

(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

Remove the air cleaner (page 6-2).

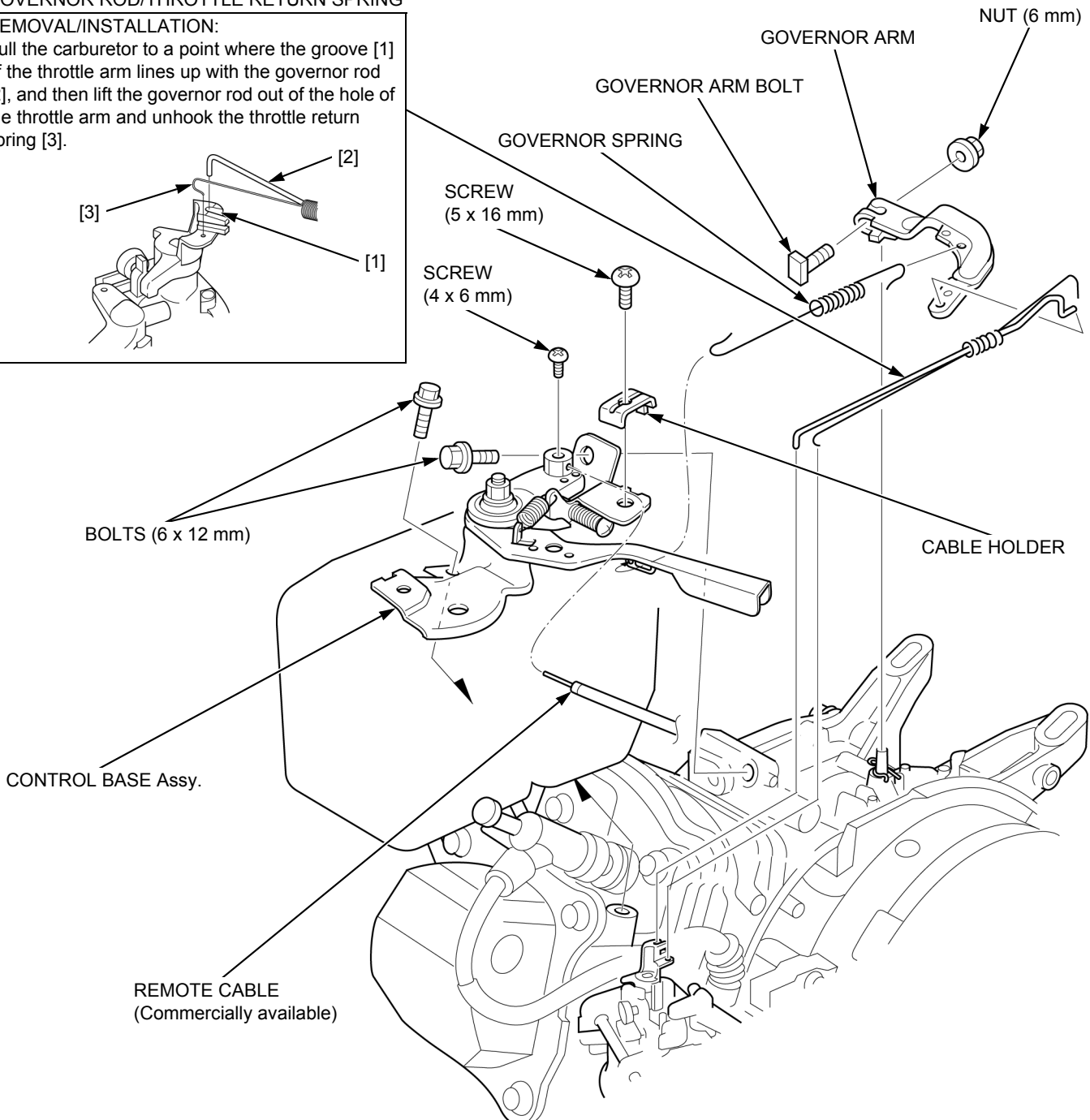
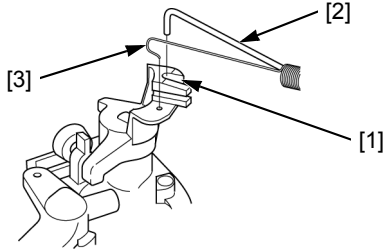
NOTE:

- After installation, adjust the following:
 - Governor (page 7-5*)
 - Idle speed (page 3-13*)
 - Maximum speed (page 7-7*)

GOVERNOR ROD/THROTTLE RETURN SPRING

REMOVAL/INSTALLATION:

Pull the carburetor to a point where the groove [1] of the throttle arm lines up with the governor rod [2], and then lift the governor rod out of the hole of the throttle arm and unhook the throttle return spring [3].



INDEX

AIR CLEANER REMOVAL/INSTALLATION	6-2	GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/ INSTALLATION	7-2
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NOTES

HONDA

**SHOP
MANUAL**

**GX120T2 • GX160T2 • GX200T2
ENGINE**

Supplement X
to the
**GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual**

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have engine-power equipment up in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX120T2·GX160T2·GX200T2 Engines.

For service information that is not covered in this supplement, please refer to the GX120UT2·GX160UT2·GX200UT2 base shop manual and supplements Z and Y.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice.


No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.


SAFETY MESSAGES


Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgement.


You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

 DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

 WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.


 CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.

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SERVICE PUBLICATION OFFICE

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 The marked sections contain no changes. They are not covered in this supplement.

How to use this manual

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

1. SPECIFICATIONS

P.T.O. TYPE VARIATION.....1-2 (X)

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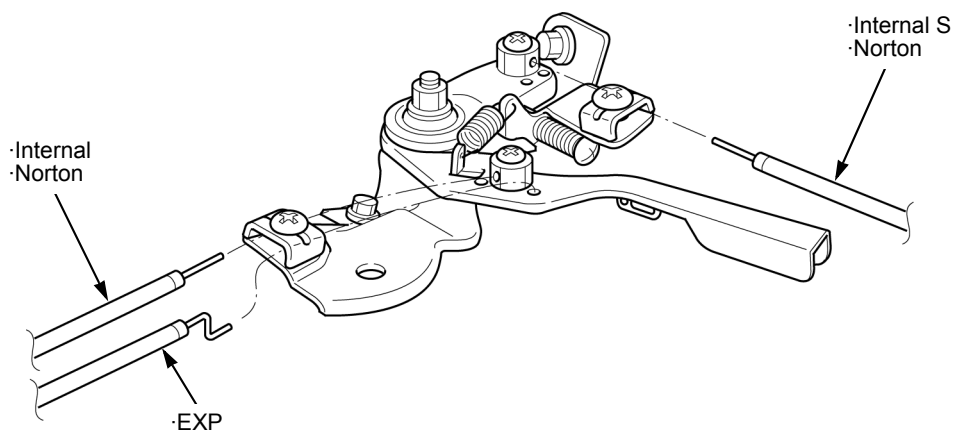
SPECIFICATIONS

P.T.O. TYPE VARIATION

GX120T2

P.T.O. type		KR	L						Q			
Type		ARH	L1C1	LH	LH2	LHL	LJ	LTK1	QD	QH	QHB1	QMP4
Air cleaner	Dual			○	○					○		
	Dual silent											
	Cyclone											
	Low profile											
	Oil bath					○		○			○	○
	Semi dry		○				○		○			
	Rammer	○										
Muffler	Standard		○	○	○	○			○	○	○	○
	Standard (With lower protector)						○	○				
	Silent											
	Low profile											
	Low profile (With protector)											
	Rammer	○										
Spark arrester												
Fuel gauge												
Remote choke lever												
Control base	Manual		○									
	Remote*	Internal	○					○	○			○
		Internal S										
		EXP			○	○	○			○	○	
		Norton										
Fixed throttle operation												
Charge coil	1 A											
	3 A											
	7 A											
Lamp coil	12 V - 15 W											
	12 V - 25 W											
	12 V - 50 W											
Combination switch												
Starter motor												
Oil level switch												
Engine stop switch		○	○	○	○	○	○	○	○	○		
Oil Alert® unit												
Circuit protector												
Auto throttle												
Reduction	Gear (1/6)											
	Chain (1/2)	Without clutch		○	○	○	○	○	○			
		With clutch										
		Camshaft P.T.O.										
Chain (1/1)	○											

*: Remote type



SPECIFICATIONS

P.T.O. type		Q		S									
		QTN	QX	S1P4	SAJ	SD	SD2	SJ	SK	SM11	SMJ	SYA	
Type													
Air cleaner	Dual		○								○		
	Dual silent									○			
	Cyclone												
	Low profile												
	Oil bath	○											
	Semi dry			○	○	○	○	○	○	○			○
Rammer													
Muffler	Standard	○	○	○		○	○		○	○			
	Standard (With lower protector)				○			○			○		
	Silent												
	Low profile												
	Low profile (With protector)												
Rammer													
Spark arrester													
Fuel gauge											○		
Remote choke lever													
Control base	Manual												
	Remote	Internal			○	○			○			○	○
		Internal S											
		EXP	○	○			○	○		○			
		Norton									○		
Fixed throttle operation													
Charge coil	1 A												
	3 A												
	7 A												
Lamp coil	12 V - 15 W											○	
	12 V - 25 W												
	12 V - 50 W			○									
Combination switch													
Starter motor													
Oil level switch			○									○	
Engine stop switch		○	○	○	○	○	○	○	○	○	○	○	
Oil Alert® unit			○									○	
Circuit protector													
Auto throttle													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch											
		With clutch											
		Camshaft P.T.O.											
Chain (1/1)													

SPECIFICATIONS

P.T.O. type		T		V				W		WB
Type		TH	TX	VSP	VSX	VSX1	VT	W1A3	WMK	WBT
Air cleaner	Dual	○	○		○	○				
	Dual silent									
	Cyclone									
	Low profile									
	Oil bath									
	Semi dry			○			○	○	○	○
	Rammer									
Muffler	Standard	○	○		○	○	○	○	○	○
	Standard (With lower protector)									
	Silent									
	Low profile									
	Low profile (With protector)									
	Rammer									
Spark arrester										
Fuel gauge										
Remote choke lever										
Control base	Manual	○	○				○	○	○	
	Remote	Internal								○
		Internal S								
		EXP								
		Norton								
Fixed throttle operation			○	○	○					
Charge coil	1 A									
	3 A									
	7 A									
Lamp coil	12 V - 15 W									
	12 V - 25 W									
	12 V - 50 W									
Combination switch										
Starter motor										
Oil level switch			○		○	○				
Engine stop switch		○	○	○	○	○	○	○	○	○
Oil Alert® unit			○		○	○				
Circuit protector										
Auto throttle										
Reduction	Gear (1/6)									
	Chain (1/2)	Without clutch								
		With clutch								
		Camshaft P.T.O.								
Chain (1/1)										

GX160T2

P.T.O. type		L				N	Q						
		LDW	LHB3	LJG	LSK	NJG	QHB1	QHP1	QM	QMPB	QTB	QTD	
Air cleaner	Dual		○					○					
	Dual silent												
	Cyclone												
	Low profile												
	Oil bath						○			○	○	○	
	Semi dry	○		○	○	○			○				
	Rammer												
Muffler	Standard	○	○				○	○	○	○	○		
	Standard (With lower protector)			○	○	○							
	Silent												
	Low profile												
	Low profile (With protector)												
Rammer													
Spark arrester													
Fuel gauge				○	○	○							
Remote choke lever													
Control base	Manual												
	Remote	Internal			○	○	○	○			○		○
		Internal S											
		EXP	○	○					○	○		○	
		Norton											
Fixed throttle operation													
Charge coil	1 A												
	3 A												
	7 A												
Lamp coil	12 V - 15 W												
	12 V - 25 W												
	12 V - 50 W												
Combination switch													
Starter motor													
Oil level switch													
Engine stop switch		○	○	○	○	○		○	○	○	○	○	
Oil Alert® unit													
Circuit protector													
Auto throttle													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch	○	○	○	○							
		With clutch											
		Camshaft P.T.O.											
Chain (1/1)													

SPECIFICATIONS

P.T.O. type		Q		R			S						
Type		QTN	QX	R1P0	R1U0	RMD	SJG	SJH	SM11	SMJ	SMJ1	SNX	
Air cleaner	Dual		○							○	○	○	
	Dual silent								○				
	Cyclone												
	Low profile												
	Oil bath	○											
	Semi dry			○	○	○	○	○					
Rammer													
Muffler	Standard	○	○			○							
	Standard (With lower protector)			○	○		○	○	○		○	○	
	Silent												
	Low profile									○			
	Low profile (With protector)												
Rammer													
Spark arrester													
Fuel gauge							○			○	○	○	
Remote choke lever													
Control base	Manual												
	Remote	Internal			○	○		○	○		○	○	○
		Internal S					○						
		EXP	○	○									
		Norton								○			
Fixed throttle operation													
Charge coil	1 A				○								
	3 A												
	7 A												
Lamp coil	12 V - 15 W												
	12 V - 25 W												
	12 V - 50 W				○			○					
Combination switch													
Starter motor				○									
Oil level switch			○							○	○	○	
Engine stop switch		○	○	○		○	○	○	○	○	○		
Oil Alert® unit			○							○	○	○	
Circuit protector													
Auto throttle													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch											
		With clutch			○	○	○						
		Camshaft P.T.O.											
Chain (1/1)													

SPECIFICATIONS

P.T.O. type Type		S		V							
		ST	SYA	VH	VHB	VPM6	VSW3	VSW5	VSX	VSX1	VX
Air cleaner	Dual								○	○	○
	Dual silent										
	Cyclone										
	Low profile					○	○	○			
	Oil bath				○						
	Semi dry	○	○	○							
	Rammer										
Muffler	Standard			○	○						○
	Standard (With lower protector)	○									
	Silent										
	Low profile										
	Low profile (With protector)						○	○			
Rammer											
Spark arrester						○					
Fuel gauge							○	○			
Remote choke lever											
Control base	Manual			○	○						○
	Remote	Internal	○	○							
		Internal S									
		EXP									
		Norton									
Fixed throttle operation						○	○	○	○	○	
Charge coil	1 A	○									
	3 A										
	7 A										
Lamp coil	12 V - 15 W		○								
	12 V - 25 W										
	12 V - 50 W										
Combination switch											
Starter motor		○									
Oil level switch						○	○	○	○	○	○
Engine stop switch				○	○	○			○	○	○
Oil Alert® unit						○	○	○	○	○	○
Circuit protector											
Auto throttle											
Reduction	Gear (1/6)										
	Chain (1/2)	Without clutch									
		With clutch									
		Camshaft P.T.O.									
Chain (1/1)											

SPECIFICATIONS

P.T.O. type		VE		W		WB
		VED	VED3	W1B0	WMK	WB1
Air cleaner	Dual					
	Dual silent					
	Cyclone					
	Low profile			○		
	Oil bath					
	Semi dry		○		○	○
	Rammer					
Muffler	Standard		○		○	○
	Standard (With lower protector)					
	Silent					
	Low profile					
	Low profile (With protector)			○		
Rammer						
Spark arrester			○			
Fuel gauge						
Remote choke lever						
Control base	Manual				○	○
	Remote	Internal				○
		Internal S				
		EXP				
		Norton				
Fixed throttle operation		○	○			
Charge coil	1 A					
	3 A					
	7 A					
Lamp coil	12 V - 15 W					
	12 V - 25 W					
	12 V - 50 W					
Combination switch						
Starter motor						
Oil level switch			○			
Engine stop switch		○		○	○	○
Oil Alert® unit			○			
Circuit protector						
Auto throttle						
Reduction	Gear (1/6)					
	Chain (1/2)	Without clutch				
		With clutch				
		Camshaft P.T.O.				
Chain (1/1)						

GX200T2

P.T.O. type		L			N		Q						
		LHB2	LJG	LSK	NJG	NW	QAPW	QHB1	QHP1	QM	QMP4	QTB	
Air cleaner	Dual												
	Dual silent		○					○		○			
	Cyclone												
	Low profile												
	Oil bath						○		○			○	○
	Semi dry			○	○	○					○		
	Rammer												
Muffler	Standard		○	○	○	○	○	○	○	○	○	○	
	Standard (With lower protector)												
	Silent												
	Low profile												
	Low profile (With protector)												
	Rammer												
Spark arrester				○									
Fuel gauge			○	○	○								
Remote choke lever													
Control base	Manual												
	Remote	Internal		○	○	○	○						
		Internal S							○			○	
		EXP	○					○		○	○		○
		Norton											
Fixed throttle operation													
Charge coil	1 A												
	3 A												
	7 A												
Lamp coil	12 V - 15 W												
	12 V - 25 W												
	12 V - 50 W												
Combination switch													
Starter motor													
Oil level switch							○						
Engine stop switch		○	○	○	○	○	○		○	○		○	
Oil Alert® unit							○						
Circuit protector													
Auto throttle													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch	○	○	○								
		With clutch											
		Camshaft P.T.O.											
Chain (1/1)													

SPECIFICATIONS

P.T.O. type		Q			S				V				
Type		QTD	QTN	QX	SJG	SM11	SMG1	SMG2	VHB	VSP	VSW	VX	
Air cleaner	Dual												
	Dual silent			○		○	○			○		○	
	Cyclone												
	Low profile										○		
	Oil bath	○	○						○				
	Semi dry				○			○					
Rammer													
Muffler	Standard		○	○	○	○	○	○	○	○		○	
	Standard (With lower protector)												
	Silent												
	Low profile												
	Low profile (With protector)										○		
Rammer													
Spark arrester													
Fuel gauge					○							○	
Remote choke lever													
Control base	Manual												
	Remote	Internal	○			○		○	○		○		○
		Internal S											
		EXP		○	○								
		Norton					○						
Fixed throttle operation									○	○			
Charge coil	1 A						○	○					
	3 A												
	7 A												
Lamp coil	12 V - 15 W												
	12 V - 25 W												
	12 V - 50 W												
Combination switch													
Starter motor							○	○					
Oil level switch				○			○			○	○	○	
Engine stop switch		○	○	○	○	○			○	○		○	
Oil Alert® unit				○						○	○	○	
Circuit protector													
Auto throttle													
Reduction	Gear (1/6)												
	Chain (1/2)	Without clutch											
		With clutch											
		Camshaft P.T.O.											
Chain (1/1)													

P.T.O. type		VE		
		VEN	VES	VES1
	Type			
Air cleaner	Dual			
	Dual silent			○
	Cyclone			
	Low profile	○	○	
	Oil bath			
	Semi dry			
Muffler	Rammer			
	Standard			○
	Standard (With lower protector)			
	Silent			
	Low profile			
Spark arrester	Low profile (With protector)	○	○	
	Rammer			
Fuel gauge				
Remote choke lever				
Control base	Manual			○
	Remote	Internal		
		Internal S		
		EXP		
		Norton		
Fixed throttle operation	○	○		
Charge coil	1 A	○		
	3 A			
	7 A			
Lamp coil	12 V - 15 W			
	12 V - 25 W		○	○
	12 V - 50 W			
Combination switch				
Starter motor				
Oil level switch		○	○	○
Engine stop switch		○	○	○
Oil Alert® unit		○	○	○
Circuit protector				
Auto throttle		○	○	
Reduction	Gear (1/6)			
	Chain (1/2)	Without clutch		
		With clutch		
		Camshaft P.T.O.		
Chain (1/1)				

SPECIFICATIONS

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX120T2	GX160T2	GX200T2
Overall length	KR*	313 mm (12.3 in)	–	–
	L*	332 mm (13.1 in)	343 mm (13.5 in)	352 mm (13.9 in)
	N*	–	288.8 mm (11.37 in)	312 mm (12.3 in)
	Q*	305.5 mm (12.03 in)	312.5 mm (12.30 in)	321.5 mm (12.66 in)
	R*	–	391 mm (15.4 in)	–
	S*	297 mm (11.7 in)	304 mm (12.0 in)	313 mm (12.3 in)
	T*	305.5 mm (12.03 in)	–	–
	V*	315.5 mm (12.42 in)	322.5 mm (12.70 in)	331.5 mm (13.05 in)
	VE*	–	–	290.1 mm (11.42 in)
	W*	317.5 mm (12.50 in)	329.5 mm (12.97 in)	–
	WB*	284.5 mm (11.20 in)	291.5 mm (11.48 in)	–
	Overall width	KR*	331 mm (13.0 in)	–
L*		346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
N*		–	362 mm (14.3 in)	376 mm (14.8 in)
Q*		346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
R*		–	362 mm (14.3 in)	–
S*		346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
T*		346 mm (13.6 in)	–	–
V*		346 mm (13.6 in)	362 mm (14.3 in)	376 mm (14.8 in)
VE*		–	–	376 mm (14.8 in)
W*		346 mm (13.6 in)	362 mm (14.3 in)	–
WB*		346 mm (13.6 in)	362 mm (14.3 in)	–
Overall height		KR*	321 mm (12.6 in)	–
	L*	318 mm (12.5 in)	335 mm (13.2 in)	335 mm (13.2 in)
	N*	–	335 mm (13.2 in)	335 mm (13.2 in)
	Q*	318 mm (12.5 in)	335 mm (13.2 in)	335 mm (13.2 in)
	R*	–	335 mm (13.2 in)	–
	S*	318 mm (12.5 in)	335 mm (13.2 in)	335 mm (13.2 in)
	T*	318 mm (12.5 in)	–	–
	V*	318 mm (12.5 in)	335 mm (13.2 in)	335 mm (13.2 in)
	VE*	–	–	335 mm (13.2 in)
	W*	318 mm (12.5 in)	335 mm (13.2 in)	–
	WB*	318 mm (12.5 in)	335 mm (13.2 in)	–
	Dry weight	KR*	16.5 kg (36.4 lbs)	–
L*		14.0 kg (30.9 lbs)	16.1 kg (35.5 lbs)	17.1 kg (37.7 lbs)
N*		–	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
Q*		13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
R*		–	20.0 kg (44.1 lbs)	–
S*		13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
T*		13.0 kg (28.7 lbs)	–	–
V*		13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
VE*		–	–	16.1 kg (35.5 lbs)
W*		13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	–
WB*		13.0 kg (28.7 lbs)	15.1 kg (33.3 lbs)	–
Operating weight		KR*	16.9 kg (37.3 lbs)	–
	L*	16.5 kg (36.4 lbs)	19.6 kg (43.2 lbs)	20.6 kg (45.4 lbs)
	N*	–	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	Q*	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	R*	–	24.0 kg (52.9 lbs)	–
	S*	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	T*	15.5 kg (34.2 lbs)	–	–
	V*	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)
	VE*	–	–	19.6 kg (43.2 lbs)
	W*	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	–
	WB*	15.5 kg (34.2 lbs)	18.6 kg (41.0 lbs)	–

*: P. T. O. type (page 1-2).

ENGINE SPECIFICATIONS

Model		GX120T2	GX160T2	GX200T2
Description code		GCBNT	GCBST	GCBUT
Type		4 stroke, overhead valve, single cylinder, inclined by 25°		
Displacement		118 cm ³ (7.2 cu-in)	163 cm ³ (9.9 cu-in)	196 cm ³ (12.0 cu-in)
Bore x stroke		60.0 x 42.0 mm (2.36 x 1.65 in)	68.0 x 45.0 mm (2.68 x 1.77 in)	68.0 x 54.0 mm (2.68 x 2.13 in)
Net power (SAE J1349) *1		2.6 kW (3.5 HP)/ 3,600 min ⁻¹ (rpm)	3.6 kW (4.8 HP)/ 3,600 min ⁻¹ (rpm)	4.1 kW (5.5 HP)/ 3,600 min ⁻¹ (rpm)
Continuous rated power		2.1 kW (2.8 HP)/ 3,600 min ⁻¹ (rpm)	2.9 kW (3.9 HP)/ 3,600 min ⁻¹ (rpm)	3.7 kW (5.0 HP)/ 3,600 min ⁻¹ (rpm)
Maximum net torque (SAE J1349) *1		7.3 N·m (0.7 kgf·m, 5.4 lbf·ft)/2,500 min ⁻¹ (rpm)	10.3 N·m (1.1 kgf·m, 7.6 lbf·ft)/2,500 min ⁻¹ (rpm)	12.4 N·m (1.3 kgf·m, 9 lbf·ft)/2,500 min ⁻¹ (rpm)
Compression ratio		8.5 : 1	9.0 : 1	8.5 : 1
Fuel consumption (at continuous rated power)		1.0 Liter (0.26 US gal, 0.22 Imp gal)/h	1.4 Liters (0.37 US gal, 0.31 Imp gal)/h	1.7 Liters (0.45 US gal, 0.37 Imp gal)/h
Ignition system		C.D.I. (Capacitor Discharge Ignition) type magneto ignition		
Ignition timing		B.T.D.C. 20°/ 1,400 min ⁻¹ (rpm)	B.T.D.C. 18°/ 1,400 min ⁻¹ (rpm)	B.T.D.C. 20°/ 1,400 min ⁻¹ (rpm)
Recommended spark plug	Except rammer type	BPR6ES (NGK)/W20EPR-U (DENSO)		
	Rammer type	BPR4ES (NGK)/ W14EPR-U (DENSO)	–	–
Lubrication system		Forced splash		
Oil capacity	Except rammer type	0.56 Liter (0.59 US qt, 0.49 Imp qt)	0.58 Liter (0.61 US qt, 0.51 Imp qt)	0.60 Liter (0.63 US qt, 0.53 Imp qt)
	Rammer type	0.40 Liter (0.42 US qt, 0.35 Imp qt) *2	–	–
Recommended oil		SAE 10W-30 API service classification SJ or higher		
Cooling system		Forced air		
Starting system		Recoil Starter	Recoil, Recoil and Starter motor	
Stopping system		Ignition exciter coil circuit open		
Carburetor (Rammer type)		Horizontal type, butterfly valve (float valve)	Horizontal type, butterfly valve	
Air cleaner (Rammer type)		Dual type, Dual silent type, Low profile type, Semi dry type, Oil bath type, (Rammer type)	Dual type, Dual silent type, Low profile type, Semi dry type, Oil bath type	Dual silent type, Low profile type, Semi dry type, Oil bath type
Governor		Mechanical centrifugal		
Breather system		Reed valve type		
Fuel used		Unleaded gasoline with a pump octane rating 86 or higher		
Fuel tank capacity		2.0 Liters (0.53 US gal, 0.44 Imp gal)	3.1 Liters (0.82 US gal, 0.68 Imp gal)	
Reduction case oil capacity	Chain type (Without clutch)	Shared with engine oil		
	Chain type (With clutch)	–	0.50 Liter (0.53 US qt, 0.44 Imp qt)	–
	Camshaft P.T.O.	–	Shared with engine oil	
Clutch	Type	–	Centrifugal	–
	Engagement start	–	1,800 min ⁻¹ (rpm)	–
	Lock	–	2,200 min ⁻¹ (rpm)	–

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

*2: When tilted at 14°

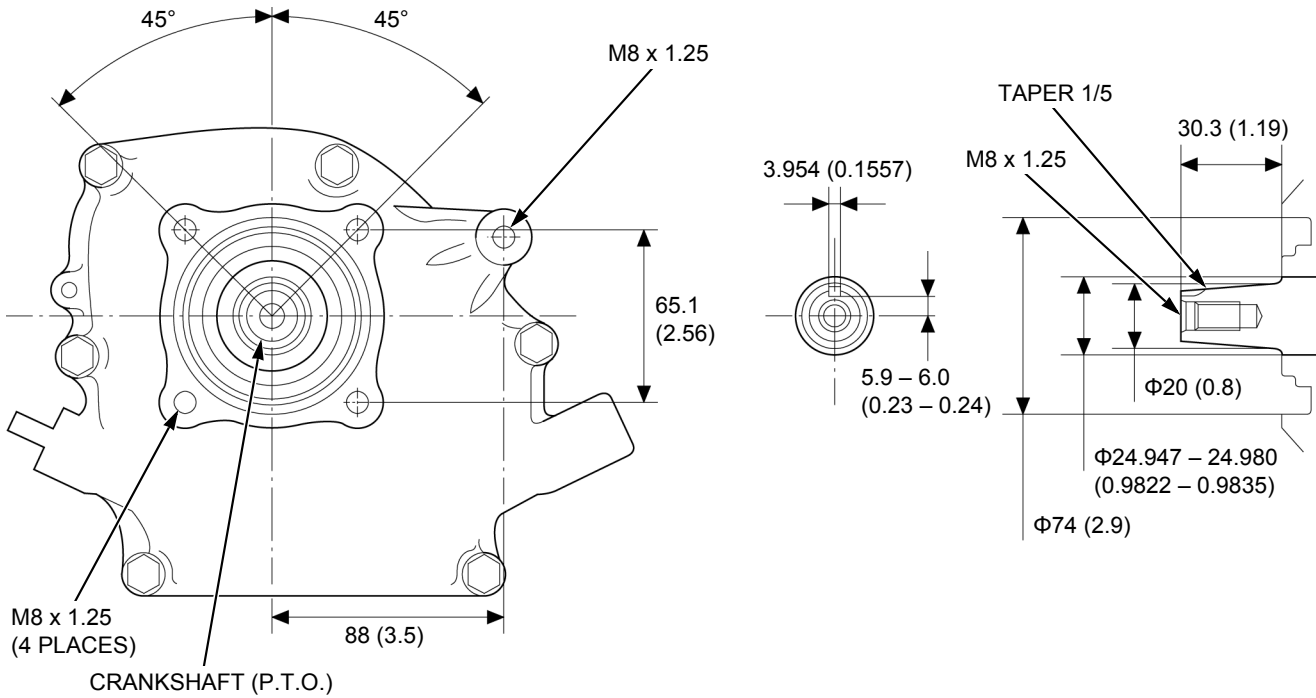
SPECIFICATIONS

P.T.O. DIMENSIONAL DRAWINGS

*: P.T.O. type (page 1-2).

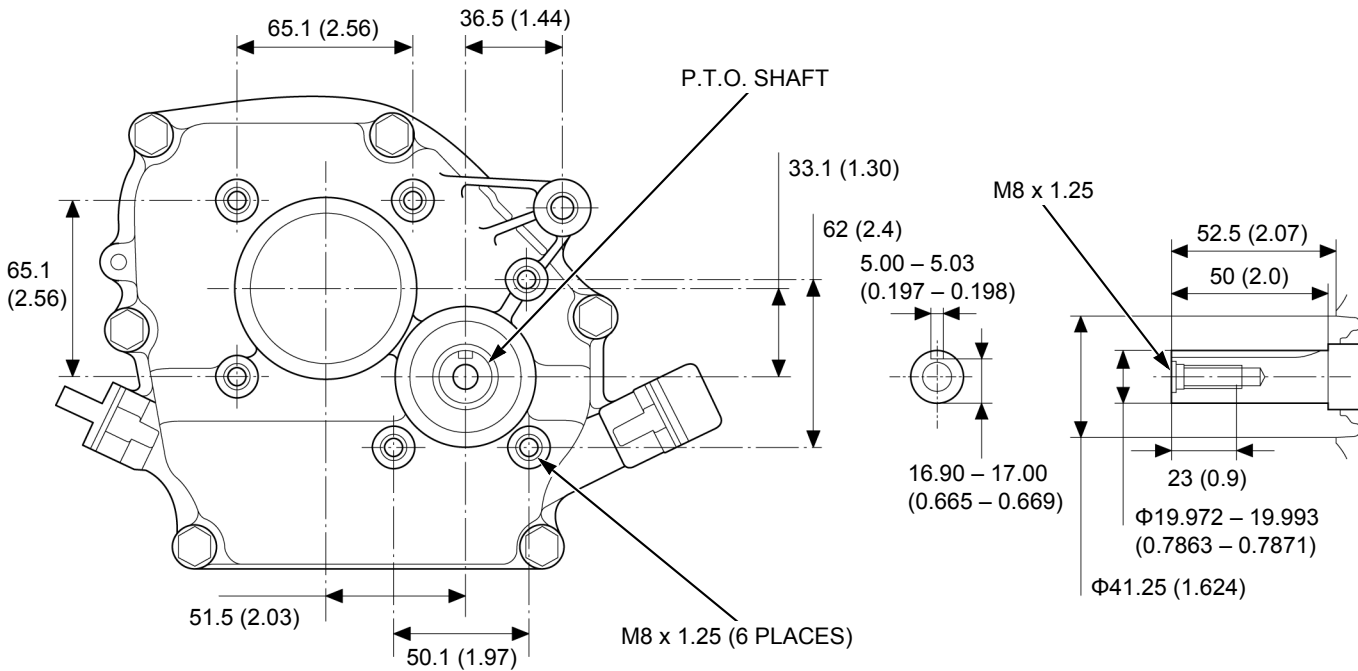
VE type*

Unit: mm (in)



N type*

Unit: mm (in)



2. SERVICE INFORMATION

MAINTENANCE STANDARDS 2-2 (X)

SERVICE INFORMATION

MAINTENANCE STANDARDS

GX120T2

Part	Item	Standard	Service limit	
Carburetor	Main jet	BE60N A	#62	—
		BE60W A	#62	—
		BE60Y A	#62	—
		BE60Z A	#60	—
		BE61L A	#62	—
		BE61M A	#62	—
		BE61N A	#60	—
		BE62J A	#62	—
		BE99A A	#60	—
	BE99D A	#62	—	
	Pilot screw opening	BE60N A	2-1/8 turns out	—
		BE60W A	2-1/8 turns out	—
		BE60Y A	2-1/8 turns out	—
		BE60Z A	1-5/8 turns out	—
		BE61L A	2-1/8 turns out	—
		BE61M A	2-1/8 turns out	—
		BE61N A	1-5/8 turns out	—
		BE62J A	1-1/2 turns out	—
		BE99A A	1-5/8 turns out	—
	BE99D A	2-1/8 turns out	—	
	Float height	BE60N A	13.7 mm (0.54 in)	—
		BE60W A	13.7 mm (0.54 in)	—
		BE60Y A	13.7 mm (0.54 in)	—
		BE60Z A	13.7 mm (0.54 in)	—
		BE61L A	13.7 mm (0.54 in)	—
		BE61M A	13.7 mm (0.54 in)	—
		BE61N A	13.7 mm (0.54 in)	—
		BE62J A	18.7 mm (0.74 in)	—
		BE99A A	13.7 mm (0.54 in)	—
	BE99D A	13.7 mm (0.54 in)	—	

GX160T2

Part	Item	Standard	Service limit	
Carburetor	Main jet	BE54D A	#68	—
		BE54G A	#70	—
		BE54H A	#68	—
		BE54J A	#68	—
		BE54K A	#68	—
		BE54M A	#70	—
		BE54P A	#70	—
		BE54Q A	#70	—
		BE66U A	#68	—
		BE66V A	#68	—
		BE67V A	#75	—
		Pilot screw opening	BE54D A	1-7/8 turns out
	BE54G A		2 turns out	—
	BE54H A		1-7/8 turns out	—
	BE54J A		1-7/8 turns out	—
	BE54K A		1-7/8 turns out	—
	BE54M A		2-1/2 turns out	—
	BE54P A		2-1/2 turns out	—
	BE54Q A		2-1/2 turns out	—
	BE66U A		1-7/8 turns out	—
	BE66V A		1-7/8 turns out	—
	BE67V A	2-7/8 turns out	—	
	Float height		13.7 mm (0.54 in)	—

GX200T2

Part	Item	Standard	Service limit	
Carburetor	Main jet	BE59L A	#75	—
		BE59M A	#75	—
		BE59N A	#75	—
		BE59Q A	#75	—
		BE59S A	#75	—
		BE59U A	#75	—
		BE59V A	#75	—
		BE59W A	#75	—
		BE69D A	#75	—
		BE74W A	#78	—
	BE74Y A	#78	—	
	Pilot screw opening	BE59L A	1-7/8 turns out	—
		BE59M A	1-7/8 turns out	—
		BE59N A	1-7/8 turns out	—
		BE59Q A	1-7/8 turns out	—
		BE59S A	2-1/4 turns out	—
		BE59U A	2-1/4 turns out	—
		BE59V A	2-1/4 turns out	—
		BE59W A	2-1/4 turns out	—
		BE69D A	2-1/4 turns out	—
	BE74W A	2-3/4 turns out	—	
BE74Y A	2-3/4 turns out	—		
Float height		13.7 mm (0.54 in)	—	

MEMO

FUEL TANK REMOVAL/INSTALLATION 6-2 (X)

FUEL SYSTEM

FUEL TANK REMOVAL/INSTALLATION

(*) Refer to page of base shop manual (GX120UT2/160UT2/200UT2).

⚠ WARNING

Gasoline is highly flammable and explosive. You can be burned or seriously injured when handling fuel.

- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

Remove the fan cover (page 5-2*).

Starter motor type: Remove the starter motor (page 10-7*).

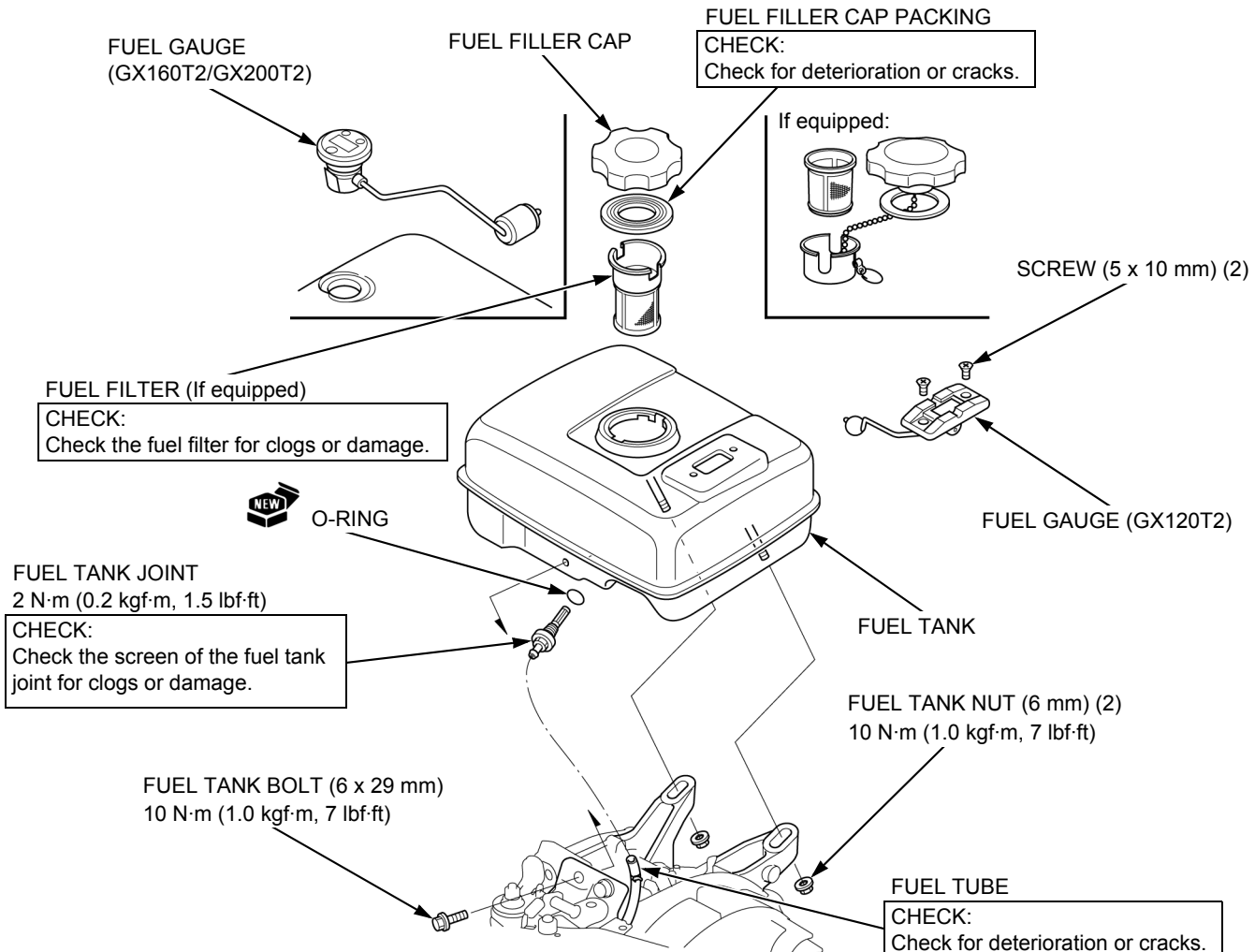
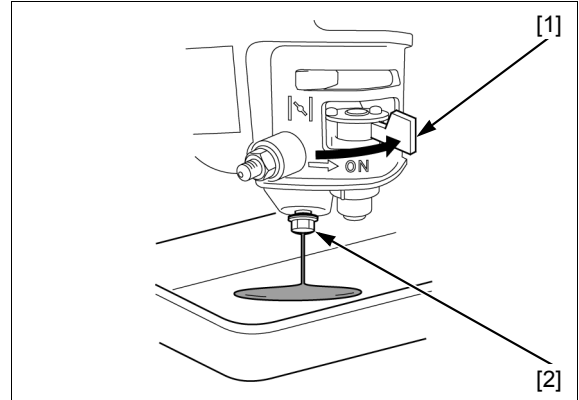
Place a suitable container under the carburetor.

Turn the fuel valve lever [1] to the ON position.

Loosen the drain screw [2] and drain the fuel.

NOTE:

- Route the fuel tube properly (page 2-11*).



MUFFLER REMOVAL/INSTALLATION..... 12-2 (X)

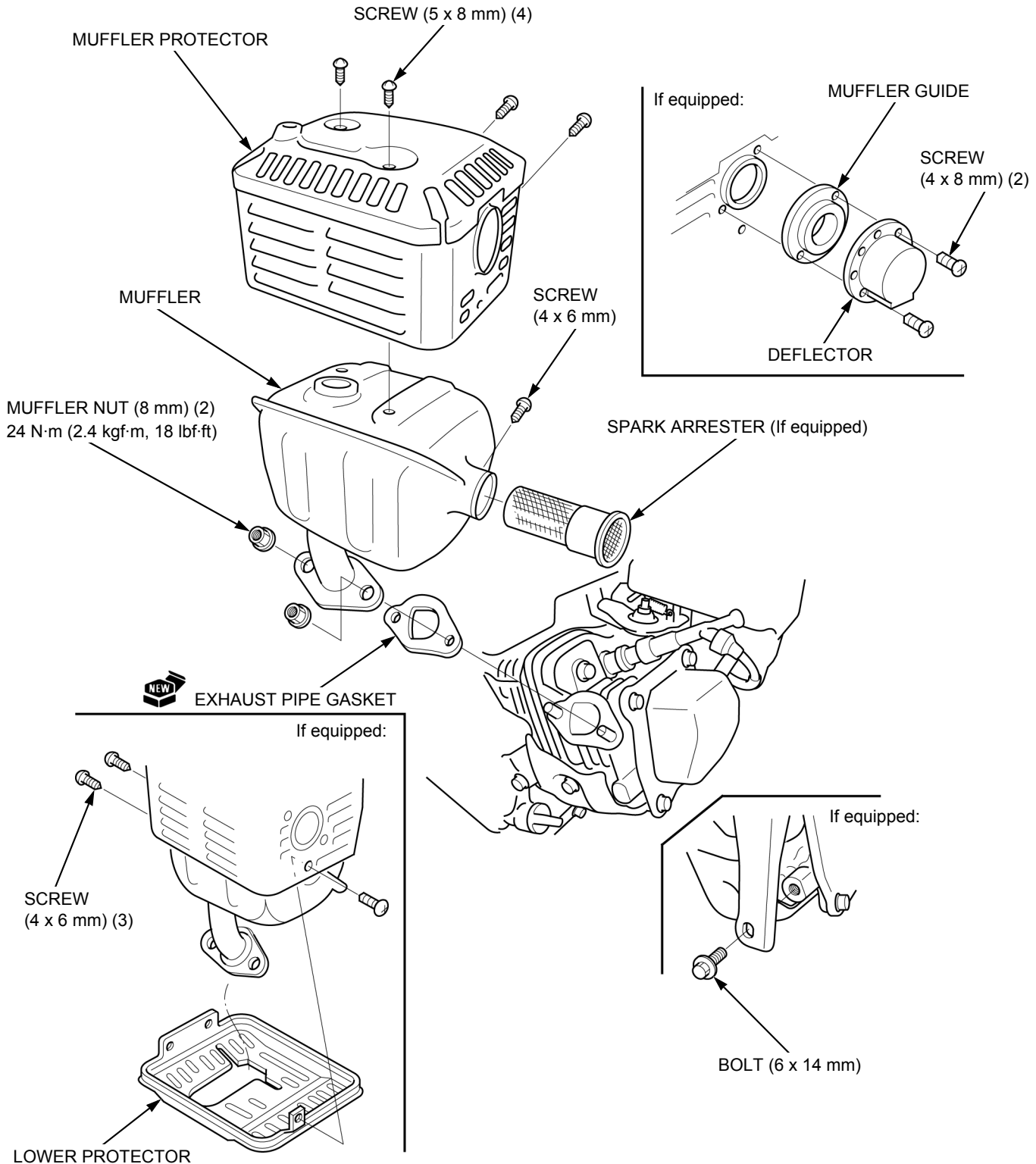
MUFFLER

MUFFLER REMOVAL/INSTALLATION

⚠ CAUTION

The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Allow it to cool before proceeding.

STANDARD, SILENT TYPE



15. REDUCTION UNIT

REDUCTION UNIT DISASSEMBLY/
ASSEMBLY 15-2 (X)

REDUCTION UNIT BEARING/OIL SEAL
REPLACEMENT 15-3 (X)

REDUCTION UNIT INSPECTION 15-3 (X)

REDUCTION UNIT

REDUCTION UNIT DISASSEMBLY/ ASSEMBLY

CHAIN (1/2) CAMSHAFT P.T.O. TYPE

(*) Refer to page of base shop manual (GX120UT2/
160UT2/200UT2).

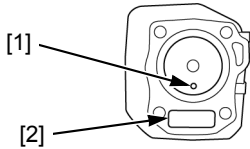
Drain the engine oil (page 3-3*).

PISTON Assy.

(Outer surface and big end bearing)

INSTALLATION:

Install the piston Assy. to the cylinder barrel with the mark [1] on the piston head toward the push rod hole [2] of the cylinder head.



CONNECTING ROD LOWER

(Big end bearing)

INSTALLATION:

Set the connecting rod lower with the oil dipper toward the camshaft.

CYLINDER BARREL

(Cylinder inner surface)

INSPECTION: (page 14-6*)

CRANKSHAFT

(Pin and gear teeth)

INSPECTION: (page 14-6*)

INSTALLATION:

Be careful not to damage the oil seal lips.

VALVE LIFTER

(Pivot, pivot end and slipper surface)

REMOVAL:

Mark the valve lifters so that the intake and exhaust sides can be distinguished.

INSTALLATION:

Attach the valve lifters to the cylinder barrel immediately before installing the camshaft.

CAMSHAFT (Cam profile and journal)

INSPECTION: (page 14-6*)

NEW
OIL SEAL
(Lips)
GREASE

NEW
CRANKSHAFT
BEARING (6205)

NEW
CONNECTING ROD BOLT (2)
(Threads and seating surface)

GX160: (6 x 34 mm)
10 N·m (1.0 kgf·m, 7 lbf·ft)

GX200: (7 x 34 mm)
12 N·m (1.2 kgf·m, 9 lbf·ft)

DRIVE CHAIN

P.T.O. SHAFT
BEARING (6205) **NEW**

CASE COVER
PACKING **NEW**

CRANKSHAFT
BEARING (6304) **NEW**

OIL FILLER CAP
(With oil level gauge)

OIL FILLER CAP PACKING

CHECK:
Replace if necessary.

NEW
P.T.O. SHAFT
OIL SEAL
(Lips)
GREASE

BOLT (8 x 32 mm) (6)

CRANKCASE COVER

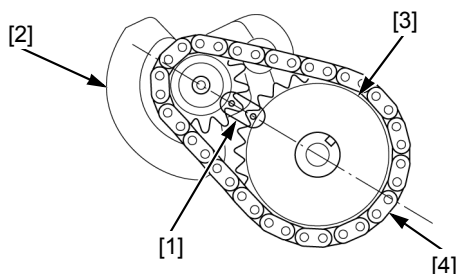
INSTALLATION:

Be careful not to damage the oil seal lips.

INSPECTION: (page 15-3)

INSTALLATION:

Align the timing marks [1] on the crankshaft [2] and camshaft [3] sprockets, install the drive chain [4] onto the sprockets, and install them into the cylinder barrel as a set.



REDUCTION UNIT INSPECTION

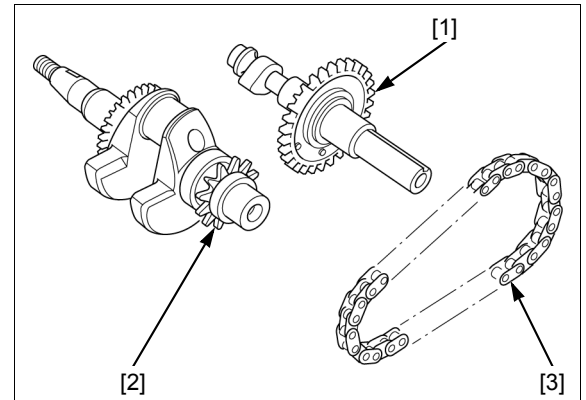
CAMSHAFT, CRANKSHAFT, DRIVE CHAIN

Check the following for wear or damage:

- Camshaft (driven sprocket) [1]
- Crankshaft (drive sprocket) [2]
- Drive chain [3]

NOTE:

- Replace the camshaft, crankshaft and, drive chain as a set.



REDUCTION UNIT BEARING/OIL SEAL REPLACEMENT

CRANKCASE COVER SIDE BEARING

CRANKSHAFT BEARING (6304)

Pull out the crankshaft bearing [1] using the special tools.

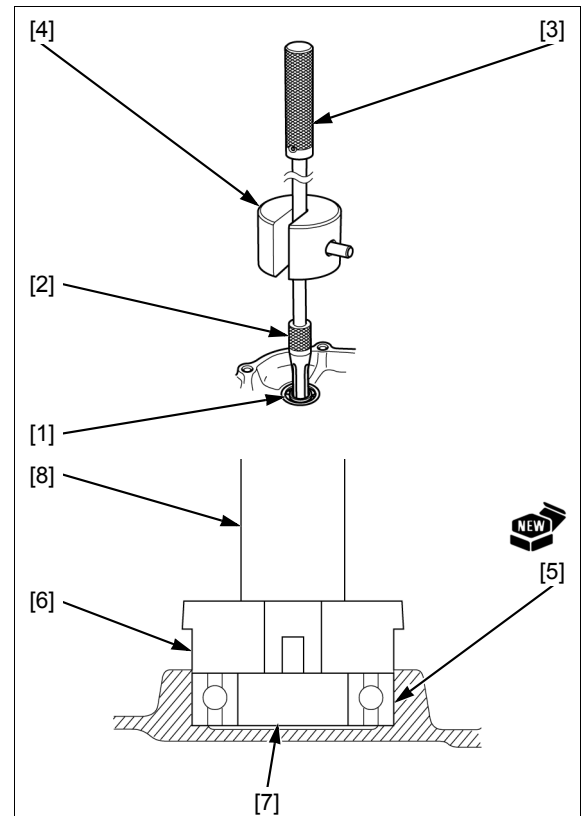
TOOLS:

- Bearing remover shaft set, 20 mm [2] 07936-3710600
- Bearing remover shaft handle [3] 07936-3710100
- Sliding hammer weight [4] 07741-0010201

Drive a new crankshaft bearing [5] until it is fully seated on the end using the special tools.

TOOLS:

- Bearing driver attachment, 52 x 55 mm [6] 07746-0010400
- Pilot, 20 mm [7] 07746-0040500
- Driver handle [8] 07749-0010000



REDUCTION UNIT

P.T.O. shaft bearing (6205)

Remove the oil seal and drive out the P.T.O. shaft bearing.

Drive a new P.T.O. shaft bearing [1] until it is fully seated on the end using the special tools.

TOOLS:

Bearing driver attachment,

52 x 55 mm [2]

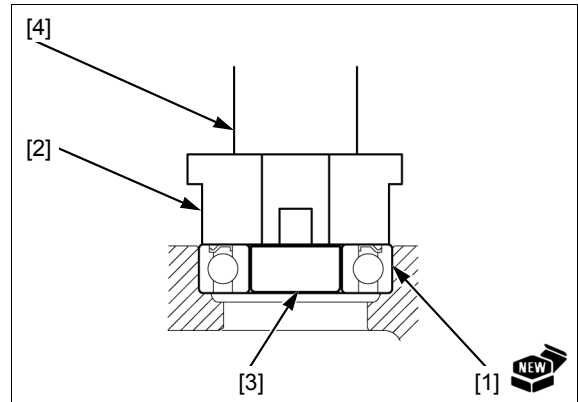
07746-0010400

Pilot, 25 mm [3]

07746-0040600

Driver handle [4]

07749-0010000



P.T.O. SHAFT OIL SEAL

Remove the oil seal from the chain case cover.

Drive a new oil seal [1] in the position as shown using the special tools.

INSTALLATION HEIGHT: 1.5 mm (0.06 in)

TOOLS:

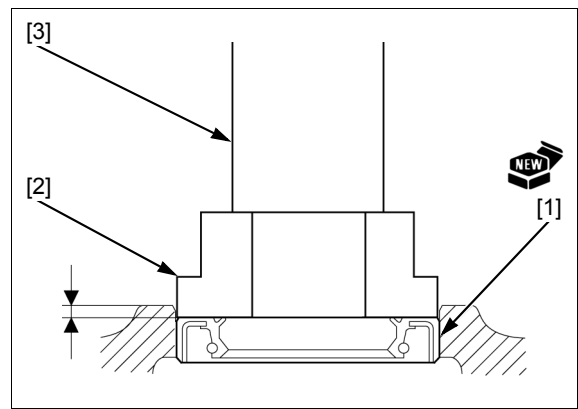
Bearing driver attachment,

37 x 40 mm [2]

07746-0010200

Driver handle [3]

07749-0010000



DIMENSIONS AND WEIGHTS SPECIFICATIONS	1-12	P.T.O. TYPE VARIATION.....	1-2
ENGINE SPECIFICATIONS	1-13	REDUCTION UNIT BEARING/OIL SEAL	
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NOTES

HONDA

**SHOP
MANUAL**

**GX160T2 QPW • GX200T2 QAPW
ENGINE**

Supplement W
to the
GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have engine-power equipment up in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX160T2 QPW type/GX200T2 QAPW type engines.

For service information that is not covered in this supplement, please refer to the base shop manual (part number 61Z4H00) and supplements (part number 61Z4H00X, 61Z4H00Y, 61Z4H00Z).

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.

SAFETY MESSAGES

Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol

▲ and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

▲ DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.









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The marked sections contain no changes.
They are not covered in this supplement.

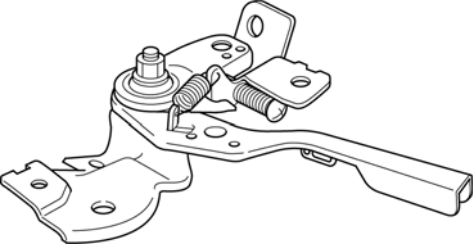
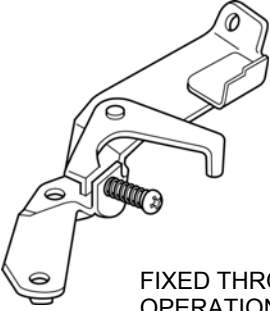
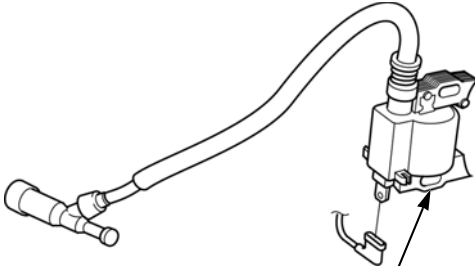
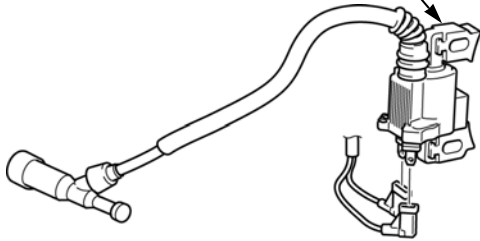
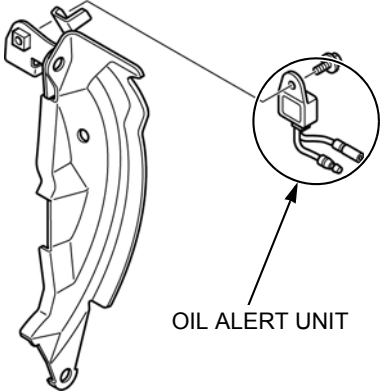

How to use this manual

SYMBOLS

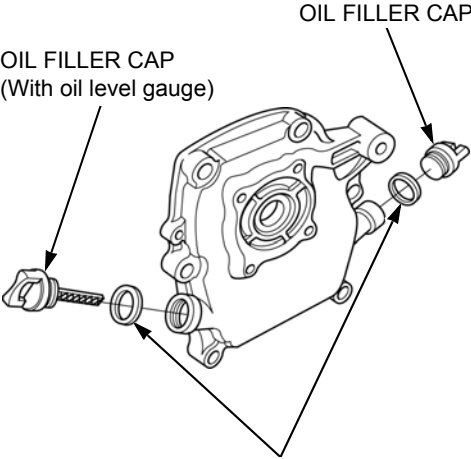
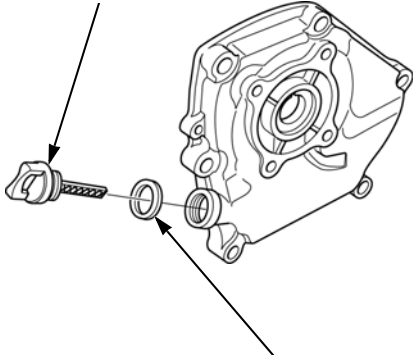
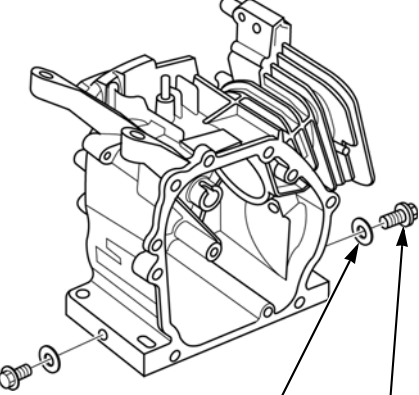
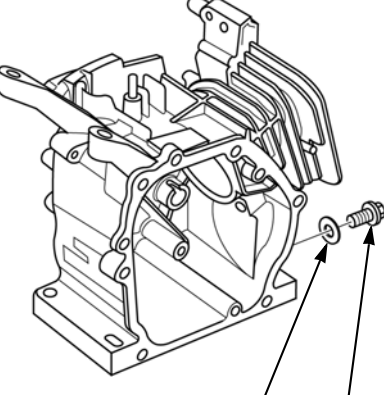
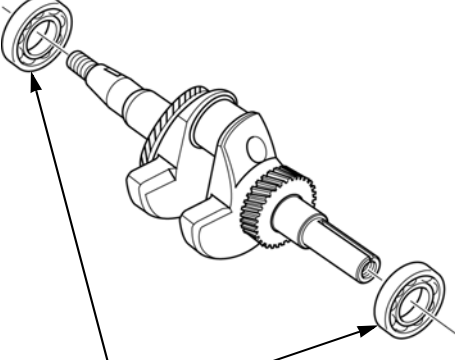
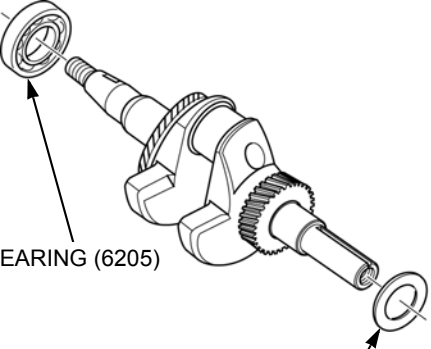
The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommend engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

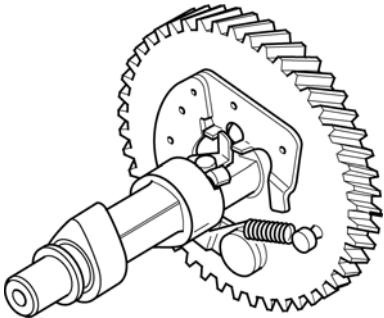
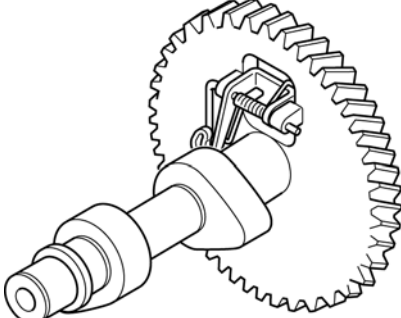
OUTLINE OF CHANGES

Item	Before modification	After modification
CONTROL BASE	<p data-bbox="565 289 673 317">QX2 type:</p>  <p data-bbox="711 653 1024 680">MANUAL OPERATION TYPE</p>	 <p data-bbox="1312 646 1523 701">FIXED THROTTLE OPERATION TYPE</p>
IGNITION COIL	 <p data-bbox="834 1272 1003 1299">IGNITION COIL</p>	 <p data-bbox="1279 867 1539 921">IGNITION COIL (Built-in oil alert unit type)</p>
SIDE PLATE	<p data-bbox="565 1415 673 1442">QX2 type:</p>  <p data-bbox="786 1776 964 1803">OIL ALERT UNIT</p>	

OUTLINE OF CHANGES

Item	Before modification	After modification
CRANKCASE COVER	 <p>OIL FILLER CAP (With oil level gauge)</p> <p>OIL FILLER CAP</p> <p>OIL FILLER CAP PACKING</p>	 <p>OIL FILLER CAP (With oil level gauge)</p> <p>OIL FILLER CAP PACKING</p>
CYLINDER BARREL	 <p>DRAIN PLUG BOLT WASHER (2)</p> <p>DRAIN PLUG BOLT (2)</p>	 <p>DRAIN PLUG BOLT WASHER</p> <p>DRAIN PLUG BOLT</p>
CRANKSHAFT	 <p>BEARING (6205)</p>	 <p>BEARING (6205)</p> <p>THRUST WASHER</p>

OUTLINE OF CHANGES

Item	Before modification	After modification
CAMSHAFT	 A technical line drawing of a camshaft assembly. The camshaft is shown in a perspective view, with a large gear mounted on its end. The gear has a complex profile with multiple lobes. The camshaft is supported by a bearing housing, and a spring is visible on the side. The drawing is a clean, black-and-white line drawing.	 A technical line drawing of a camshaft assembly, similar to the one in the 'Before modification' column. However, the gear mounted on the end of the camshaft has a different profile, with a more pronounced lobe. The camshaft and its supporting components are otherwise identical to the previous drawing.

MEMO

1. SPECIFICATIONS

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DIMENSIONS AND WEIGHTS
SPECIFICATIONS.....1-3

ENGINE SPECIFICATIONS..... 1-3
PERFORMANCE CURVES..... 1-4

SPECIFICATIONS

P.T.O. TYPE VARIATION

P.T.O. type			Q	
Model			GX160T2	GX200T2
Type			QPW	QAPW
Air cleaner	Dual			
	Dual silent		○	○
	Cyclone			
	Low profile			
	Oil bath			
Muffler	Semi dry			
	Standard		○	○
	Silent			
Low profile				
Spark arrester				
Fuel gauge				
Control base	Manual	Standard		
		Cyclone standard		
	Remote	Internal		
		EXP		
		Cyclone		
Fixed throttle operation		○	○	
Charge coil	1 A			
	3 A			
	7 A			
Lamp coil	12 V – 15 W			
	12 V – 25 W			
	12 V – 50 W			
Starter motor/combination switch				
Oil level switch			○	○
Engine stop switch			○	○
Oil Alert® unit				
Oil Alert® unit (built into ignition coil)			○	○
Circuit protector				
Reduction	Gear			
	Chain	Without clutch		
		With clutch		

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX160T2	GX200T2
Overall length	Q	312 mm (12.3 in)	321 mm (12.6 in)
Overall width		362 mm (14.3 in)	376 mm (14.8 in)
Overall height		346 mm (13.6 in)	346 mm (13.6 in)
Dry weight		14.8 kg (32.6 lbs)	15.8 kg (34.8 lbs)
Operating weight		17.5 kg (38.6 lbs)	18.5 kg (40.8 lbs)

*: P. T. O. type. [\(page 1-2\)](#)

ENGINE SPECIFICATIONS

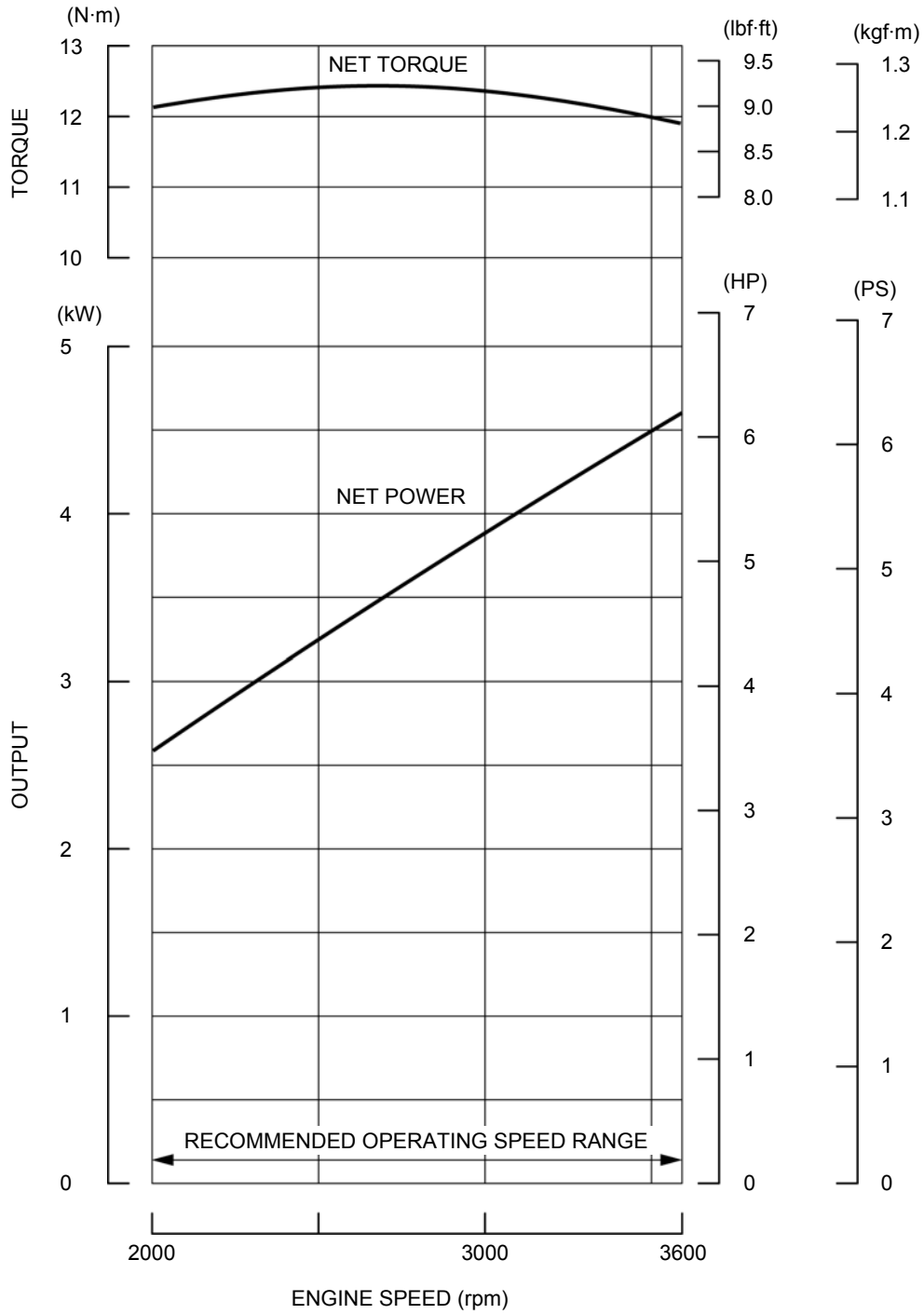
Model	GX160T2	GX200T2
Description code	GCBRT	GCBUT
Type	4 stroke, overhead valve, single cylinder, inclined by 25°	
Displacement	163 cm ³ (9.9 cu-in)	196 cm ³ (12.0 cu-in)
Bore x stroke	68.0 x 45.0 mm (2.68 x 1.77 in)	68.0 x 54.0 mm (2.68 x 2.13 in)
Net power (SAE J1349) *1	3.6 kW (4.8 HP)/ 3,600 rpm	4.6 kW (6.2 HP)/ 3,600 rpm
Continuous rated power	2.9 kW (3.9 HP)/ 3,600 rpm	3.8 kW (5.0 HP)/ 3,600 rpm
Maximum net torque (SAE J1349) *1	10.3 N·m (1.05 kgf·m, 7.6 lbf·ft)/ 2,500 rpm	12.4 N·m (1.26 kgf·m, 9.1 lbf·ft)/ 2,500 rpm
Compression ratio	9.0 : 1	
Fuel consumption (at continuous rated power)	1.6 Liters (0.42 US gal, 0.35 Imp gal)/h	2.0 Liters (0.53 US gal, 0.44 Imp gal)/h
Ignition system	Transistor magneto ignition	
Ignition timing	B.T.D.C. 18° ± 2 /3,850 rpm	B.T.D.C. 20° ± 2 /3,850 rpm
Recommended spark plug	BPR6ES (NGK)/W20EPR-U (DENSO)	
Lubrication system	Forced splash	
Oil capacity	0.58 Liter (0.61 US qt, 0.51 Imp qt)	
Recommended oil	SAE 10W-30 API service category SJ or higher	
Cooling system	Forced air	
Starting system	Recoil Starter	
Stopping system	Ignition primary circuit ground	
Carburetor	Horizontal type, butterfly valve	
Air cleaner	Silent type	
Governor	Centrifugal weight system	
Breather system	Reed valve type	
Fuel used	Unleaded gasoline with a pump octane rating 86 or higher	
Fuel tank capacity	3.1 Liters (0.82 US gal, 0.68 Imp gal)	

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

SPECIFICATIONS

PERFORMANCE CURVES

GX200T2 QAPW type



2. SERVICE INFORMATION

MAINTENANCE STANDARDS2-2
LUBRICATION & SEAL POINTS.....2-2

HARNESS AND TUBE ROUTING 2-3

SERVICE INFORMATION

MAINTENANCE STANDARDS

GX160T2

Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Maximum speed (at no load)	3,850 ± 150 rpm	–	
	Idle speed	–	–	
	Cylinder compression	0.44 – 0.64 MPa (4.5 – 6.5 kgf/cm ² , 64 – 93 psi) /600 rpm	–	
Crankshaft	Crankshaft thrust clearance	0.15 – 0.97 (0.006 – 0.038)	1.20 (0.047)	
	Crankshaft journal O.D.	24.967 – 24.980 (0.9830 – 0.9835)	24.950 (0.9823)	
Crankcase cover	Crankshaft journal holder I.D.	25.007 – 25.028 (0.9845 – 0.9854)	25.050 (0.9862)	
Camshaft	Cam height	IN	27.500 – 27.900 (1.0827 – 1.0984)	27.450 (1.0807)
		EX	27.547 – 27.947 (1.0845 – 1.1003)	27.500 (1.0827)
Carburetor	Main jet	BEA4Y A	#75	–
	Pilot screw opening		2-3/4 turns out	–
Valves	Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	–
		EX	0.20 ± 0.02 (0.008 ± 0.001)	–

GX200T2

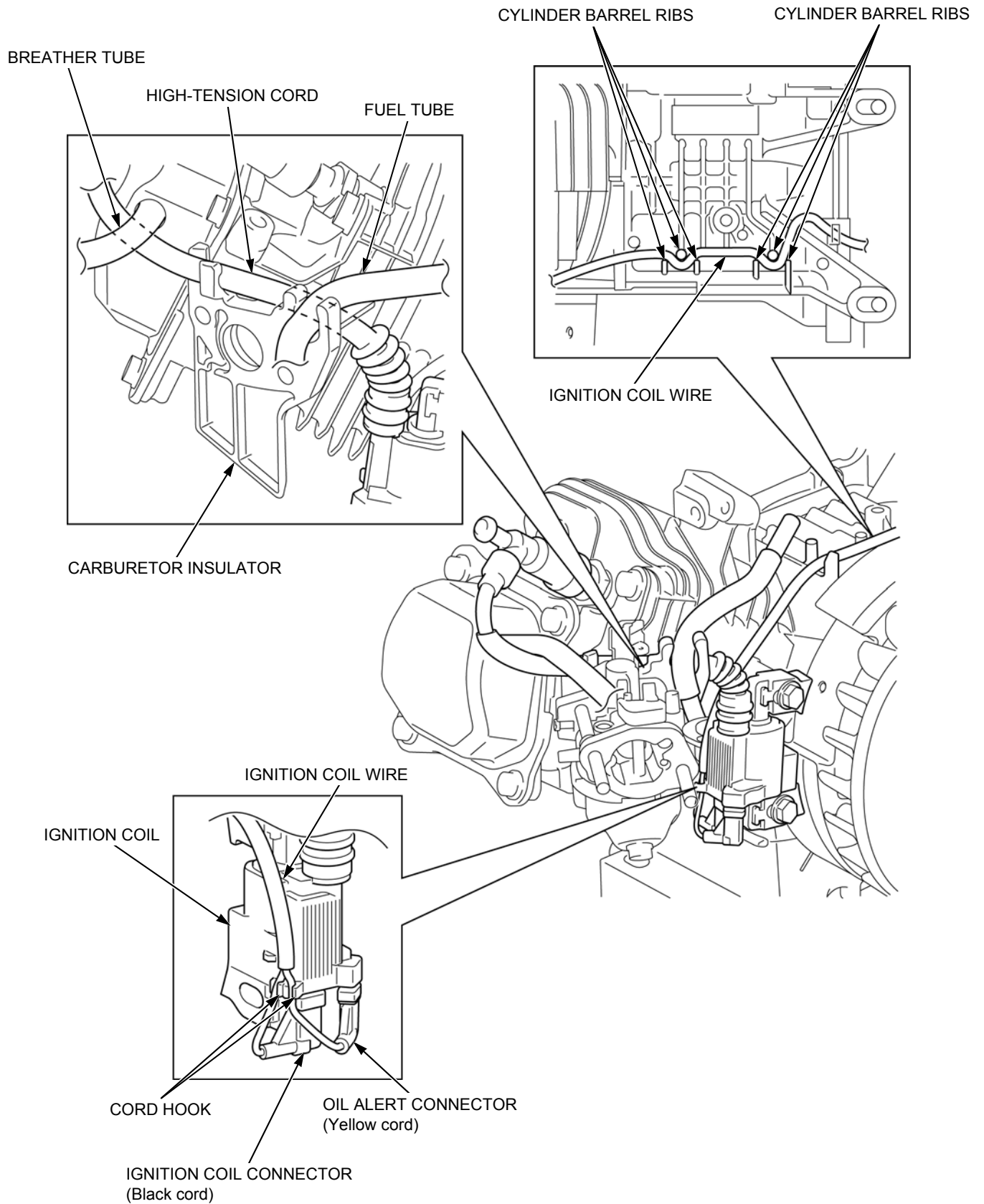
Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Maximum speed (at no load)	3,850 ± 150 rpm	–	
	Idle speed	–	–	
	Cylinder compression	0.36 – 0.56 MPa (3.7 – 5.7 kgf/cm ² , 52 – 81 psi) /600 rpm	–	
Crankshaft	Crankshaft thrust clearance	0.15 – 0.97 (0.006 – 0.038)	1.20 (0.047)	
	Crankshaft journal O.D.	24.967 – 24.980 (0.9830 – 0.9835)	24.950 (0.9823)	
Crankcase cover	Crankshaft journal holder I.D.	25.007 – 25.028 (0.9845 – 0.9854)	25.050 (0.9862)	
Carburetor	Main jet	BEA3J A	#75	–
	Pilot screw opening		1-7/8 turns out	–

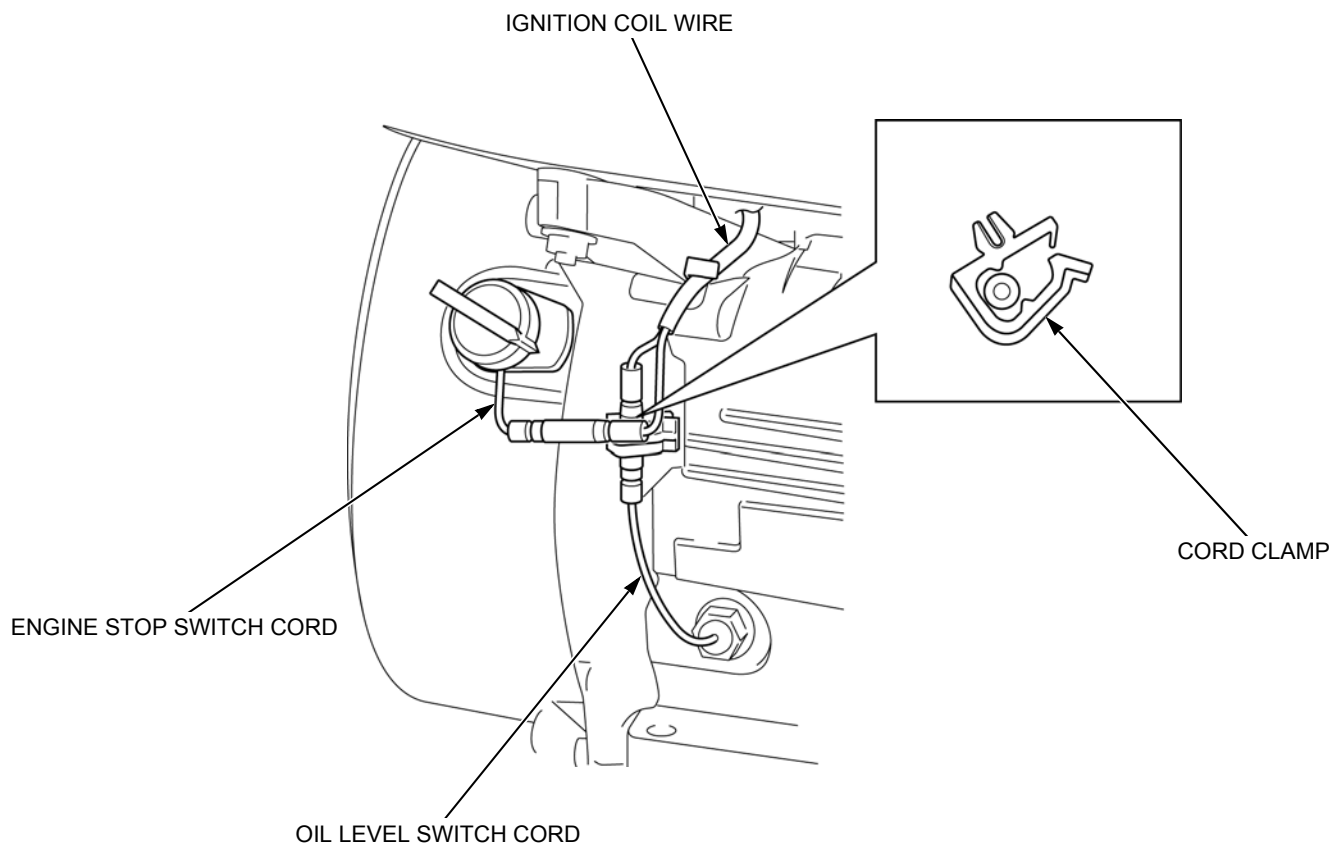
LUBRICATION & SEAL POINTS

Material	Location	Remarks
Engine oil	Crankshaft journal	P.T.O. side
	Crankcase cover bearing part	

HARNESS AND TUBE ROUTING



SERVICE INFORMATION



9. IGNITION SYSTEM

IGNITION SYSTEM TROUBLESHOOTING.....	9-2	IGNITION COIL REMOVAL/INSTALLATION	9-3
		IGNITION COIL INSPECTION	9-4

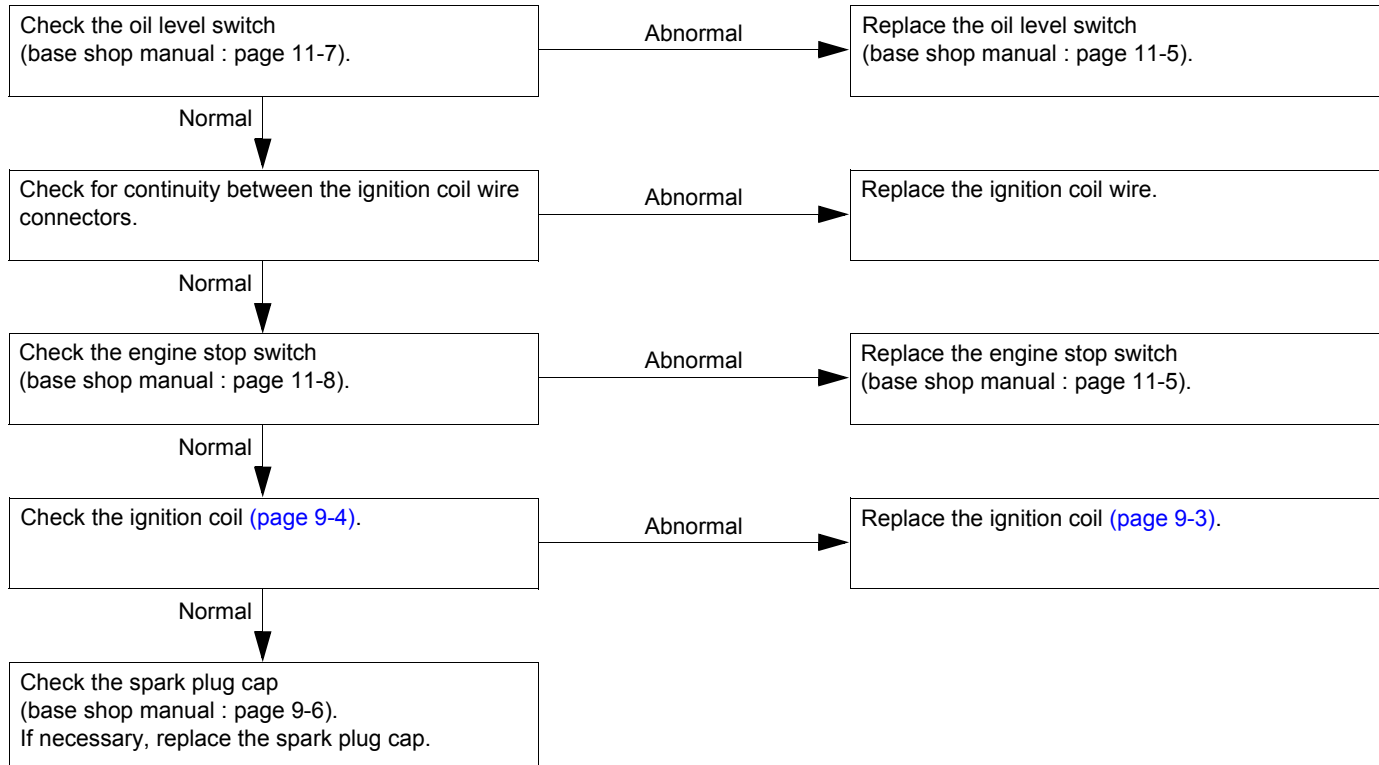
IGNITION SYSTEM

IGNITION SYSTEM TROUBLESHOOTING

NO OR WEAK SPARK AT SPARK PLUG

Check the following before troubleshooting:

- Loose connectors
- Spark plug (base shop manual : page 3-11)
- Engine oil level (base shop manual : page 3-3)



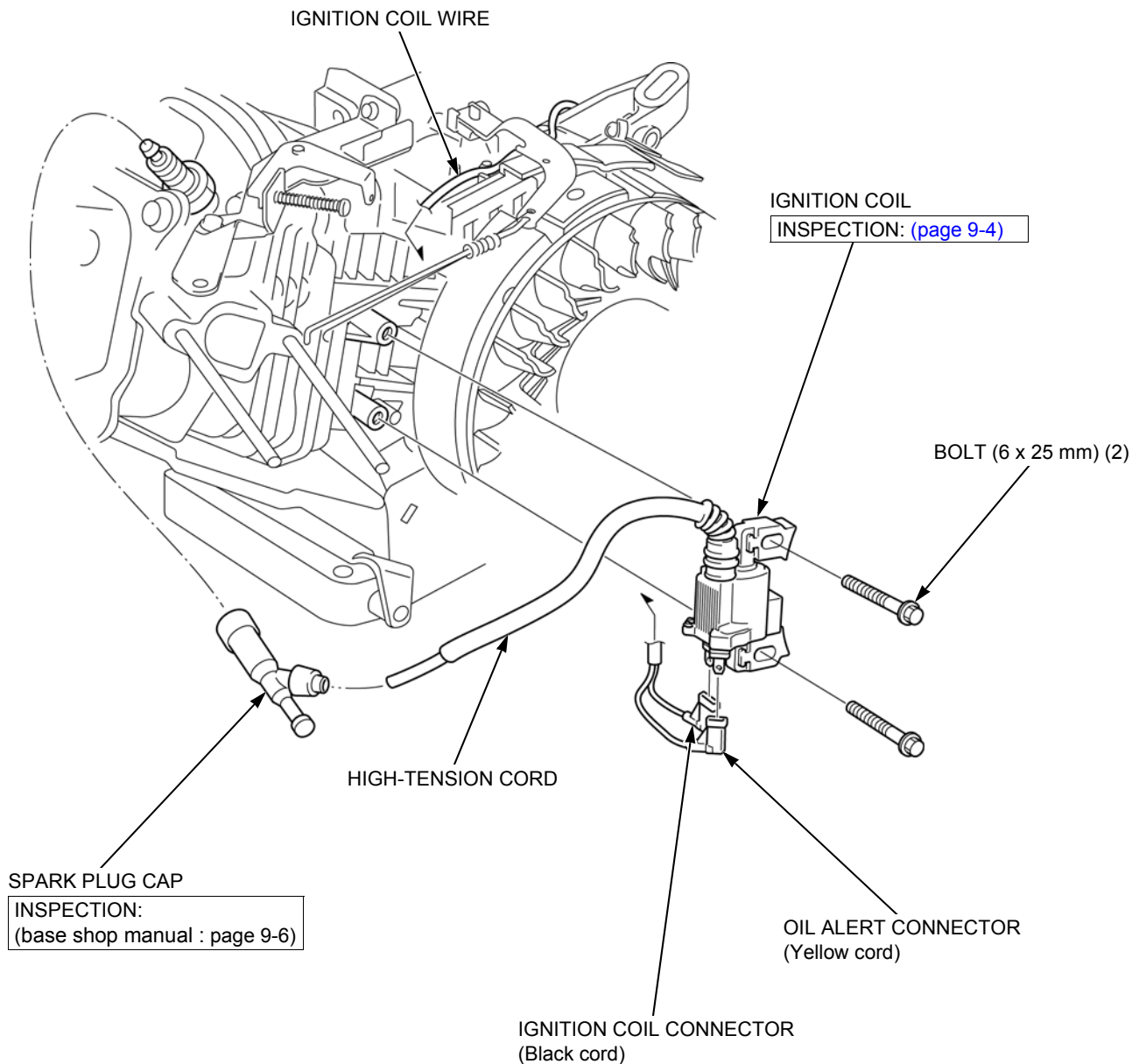
IGNITION COIL REMOVAL/INSTALLATION

Remove the following:

- Fan cover (base shop manual : page 5-2)
- Fuel tank (base shop manual : page 6-3)
- Carburetor (base shop manual : page 6-10)

NOTE:

- Route the ignition coil wire and high-tension code properly ([page 2-3](#)).
- After installation, check the ignition coil air gap (base shop manual : page 9-5).



IGNITION SYSTEM

IGNITION COIL INSPECTION

Disconnect the spark plug cap from the spark plug.

Remove the spark plug cap from the high tension cord [1].

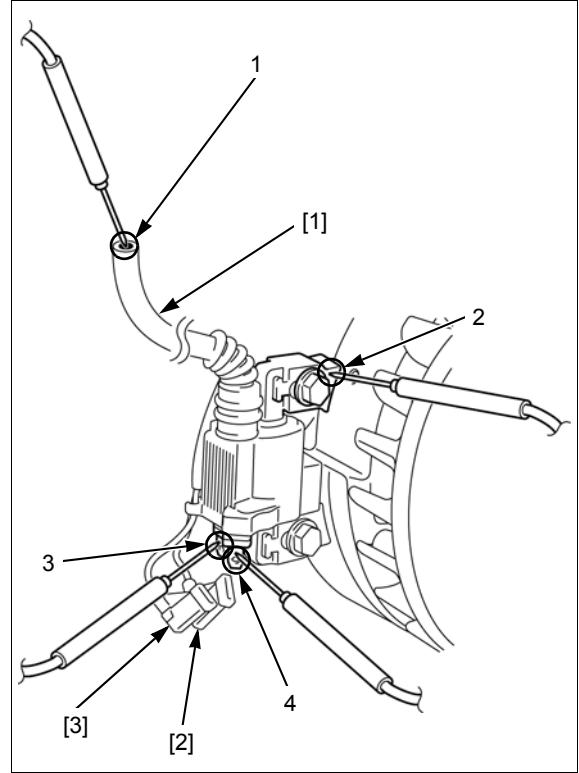
Disconnect the ignition coil connector [2] and oil alert connector [3] from the ignition coil.

Measure the resistance between the terminals and be sure that the measurements are within the specifications in the below.

Use a tester that is equivalent to or higher than the performance specified, internal resistance: 20 k Ω /VDC, 9 k Ω /VAC

Be careful not to touch the metallic part of the tester probe with your fingers; otherwise, the correct resistance value cannot be obtained.

Read the tester manufacturer's operation instructions carefully before operating the tester. Follow the instructions of the Service Manual. Be sure the tester's battery is fully charged, and check the meter before using the tester.



Unit: k Ω

		(+) Probe			
		HIGH- TENSION CORD 1	GND 2	IGN 3	ALERT 4
(-) Probe	HIGH-TENSION CORD 1		9 - 14	9 - 14	∞
	GND 2	9 - 14		0.4 - 0.7	∞
	IGN 3	9 - 14	0.4 - 0.7		∞
	ALERT 4	-	-	-	

14. CRANKCASE

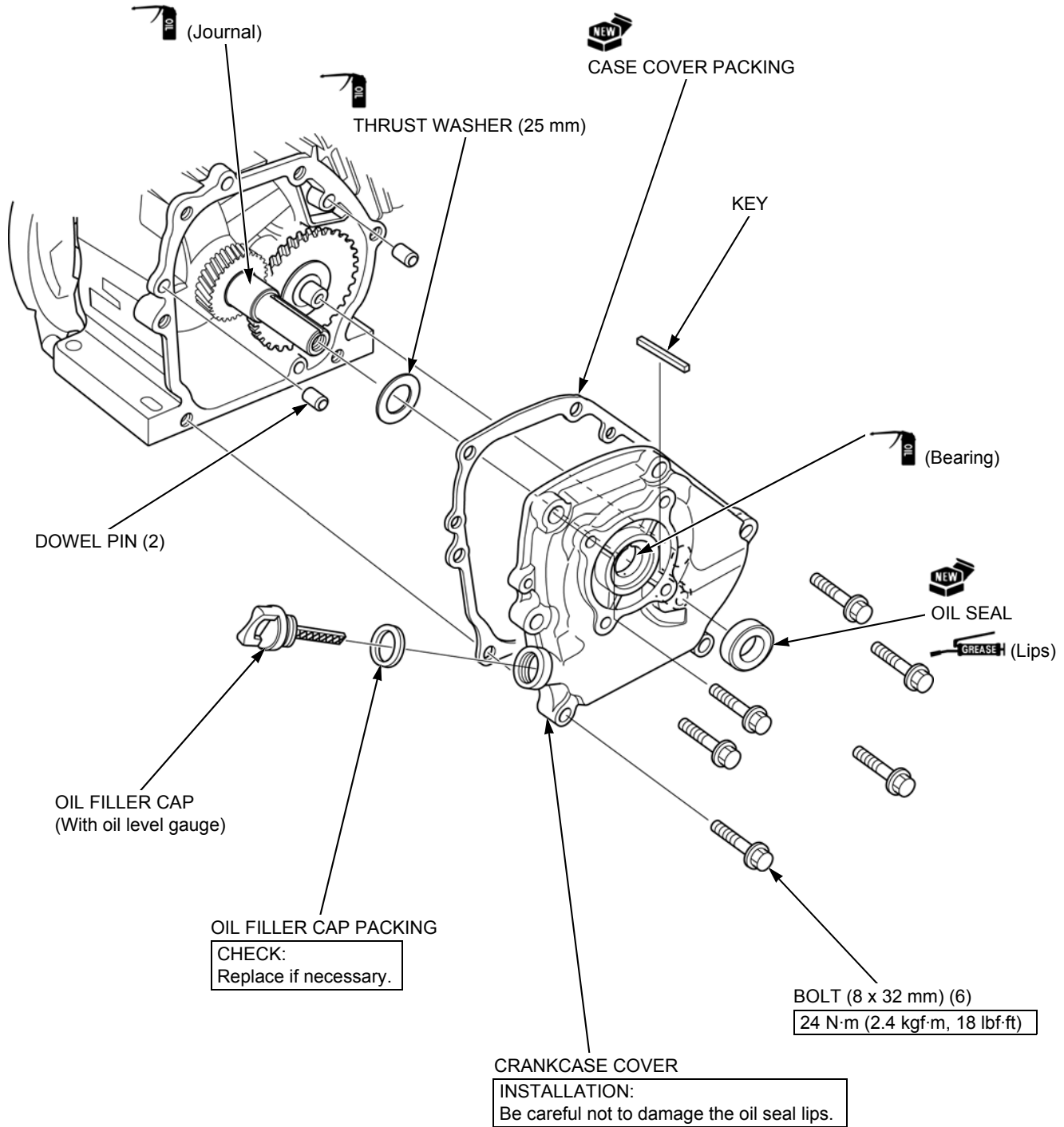
CRANKCASE COVER
REMOVAL/INSTALLATION14-2

CRANKCASE COVER/CYLINDER BARREL/
PISTON/CONNECTING ROD/CRANKSHAFT/
CAMSHAFT INSPECTION 14-3

CRANKCASE

CRANKCASE COVER REMOVAL/INSTALLATION

Drain the engine oil (base shop manual : page 3-3).



CRANKCASE COVER/CYLINDER BARREL/PISTON/CONNECTING ROD/ CRANKSHAFT/CAMSHAFT INSPECTION

CRANKSHAFT THRUST CLEARANCE

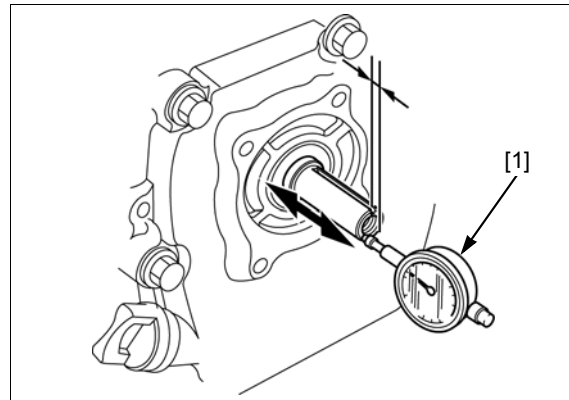
Set the dial indicator [1] perpendicularly so that its tip contacts the end of the crankshaft.

Move the crankshaft left and right and read the runout of the dial indicator. It must be within the specified range.

STANDARD: 0.15 – 0.97 mm (0.006 – 0.038 in)

SERVICE LIMIT: 1.20 mm (0.047 in)

If the measurement is more than the service limit, replace the faulty part(s).



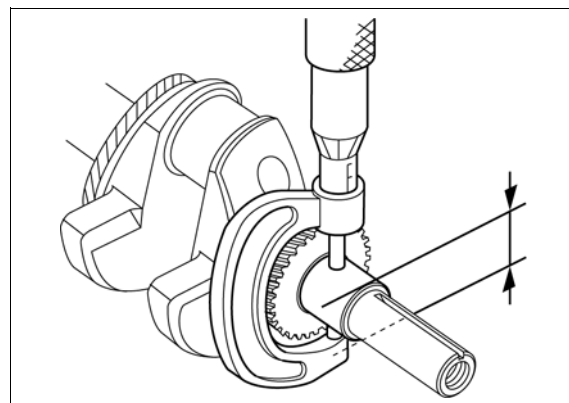
CRANKSHAFT JOURNAL O.D.

Measure the crankshaft journal O.D. of the crankshaft.

STANDARD: 24.967 – 24.980 mm (0.9830 – 0.9835 in)

SERVICE LIMIT: 24.950 mm (0.9823 in)

If the measurement is less than the service limit, replace the crankshaft.



CRANKSHAFT JOURNAL HOLDER I.D.

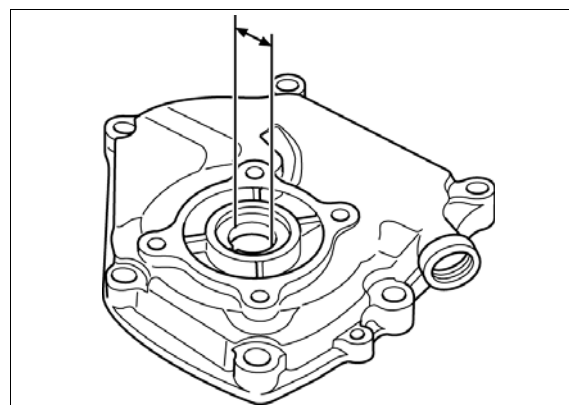
Measure the crankshaft journal holder I.D. of the crankcase cover.

STANDARD: 25.007 – 25.028 mm (0.9845 – 0.9854 in)

SERVICE LIMIT: 25.050 mm (0.9862 in)

If the measurement is more than the service limit, replace the crankcase cover.

Inspect the crankshaft journal O.D. ([page 14-3](#)).



CRANKCASE

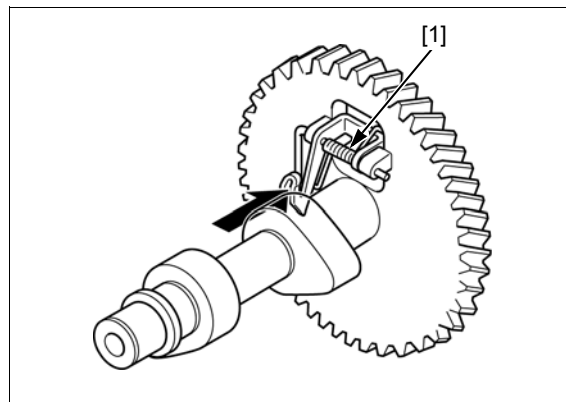
DECOMPRESSOR WEIGHT

Check for worn and weakened spring.

If the return spring [1] is worn or weakened, replace the weight return spring.

Check that the decompressor weight moves smoothly.

If the decompressor weight does not move correctly, replace the camshaft.

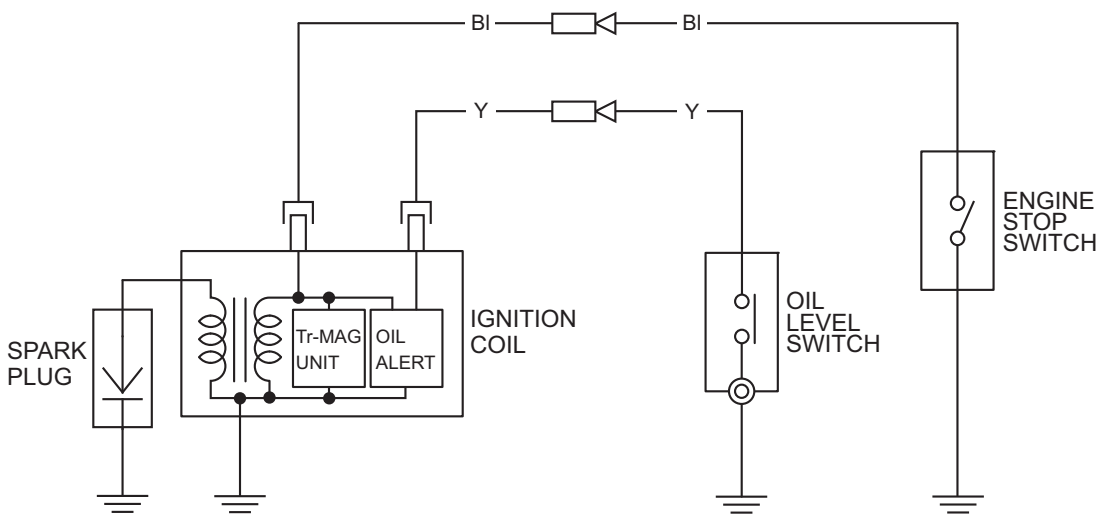


16. WIRING DIAGRAMS

WIRING DIAGRAMS16-2

WIRING DIAGRAMS

WIRING DIAGRAMS



ENGINE SWITCH CONTINUITY

	IG	E
OFF	○	○
ON		

Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

INDEX

CRANKCASE COVER REMOVAL/INSTALLATION	14-2	IGNITION COIL REMOVAL/INSTALLATION	9-3
CRANKCASE COVER/CYLINDER BARREL/PISTON/ CONNECTING ROD/CRANKSHAFT/CAMSHAFT INSPECTION	14-3	IGNITION SYSTEM TROUBLESHOOTING.....	9-2
DIMENSIONS AND WEIGHTS SPECIFICATIONS	1-3	LUBRICATION & SEAL POINTS.....	2-2
ENGINE SPECIFICATIONS	1-3	MAINTENANCE STANDARDS	2-2
HARNES AND TUBE ROUTING	2-3	P.T.O. TYPE VARIATION.....	1-2
IGNITION COIL INSPECTION	9-4	PERFORMANCE CURVES.....	1-4
		WIRING DIAGRAMS	16-2

HONDA

**SHOP
MANUAL**

**GX160UT2 • GX200UT2
CYCLONE AIR CLEANER**

Supplement V
to the
GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have engine-power equipment up in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX160UT2, GX200UT2 engines (Cyclone type air cleaner). For service information that is not covered in this supplement, please refer to the base shop manual (part number 61Z4H00) and supplements (part number 61Z4H00W, 61Z4H00X, 61Z4H00Y, 61Z4H00Z).

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice.

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SAFETY MESSAGES

Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol

▲ and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

▲ DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.

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SERVICE PUBLICATION OFFICE

Date of Issue: April 2017









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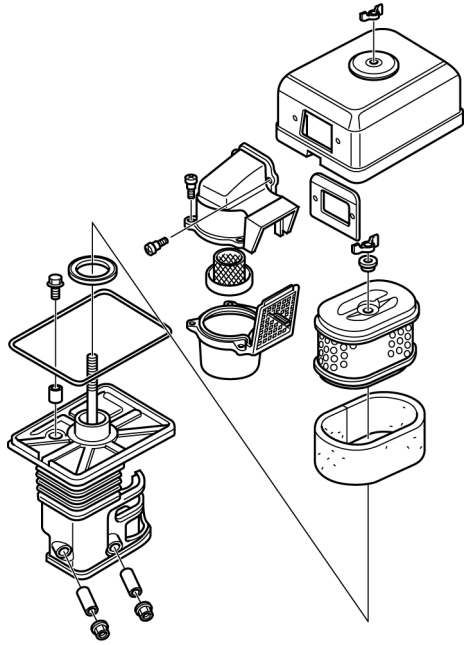
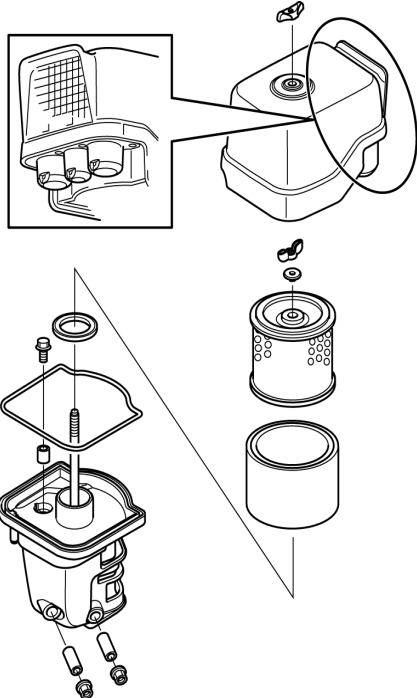
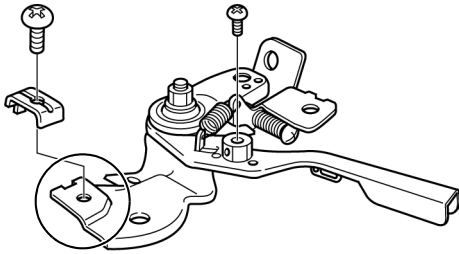
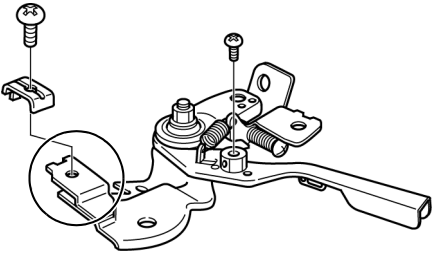
How to use this manual

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommend engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Use marine grease (water resistant urea based grease).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

OUTLINE OF CHANGES

Item	Before modification	After modification
AIR CLEANER	 <p>An exploded view diagram of the original air cleaner assembly. It shows a top housing with a central cap, a middle section with a filter, and a bottom housing with a fan. Various screws and gaskets are shown in their relative positions.</p>	 <p>An exploded view diagram of the modified air cleaner assembly. The top housing is shown with a different cap design. A callout box provides a close-up of the new cap's top surface. The middle and bottom housings are also shown, with a new filter element and gasket. The fan and base components are identical to the original design.</p>
CONTROL BASE	 <p>An exploded view diagram of the original control base. It features a main metal bracket with a handle, a control knob, and a mounting plate. A screw is shown passing through the knob into the bracket.</p>	 <p>An exploded view diagram of the modified control base. The main metal bracket and handle are identical to the original. However, the control knob and its mounting plate have been replaced with a different design. A callout box shows a close-up of the new knob's base.</p>

MEMO

1. SPECIFICATIONS

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PERFORMANCE CURVES..... 1-4

SPECIFICATIONS

P.T.O. TYPE VARIATION

Model			GX160UT2	GX200UT2
P.T.O. type			Q	
Type			QC9	QC9
Air cleaner	Dual			
	Dual silent			
	Cyclone		○	○
	Low profile			
	Oil bath			
Muffler	Semi dry			
	Standard		○	○
	Silent			
Low profile				
Spark arrester			○	
Fuel gauge				
Control base	Manual	Standard		
		Cyclone standard		
	Remote	Internal		
		EXP		
Cyclone		○	○	
Fixed throttle operation				
Charge coil	1 A			
	3 A			
	7 A			
Lamp coil	12 V – 15 W			
	12 V – 25 W			
	12 V – 50 W			
Starter motor/combination switch				
Oil level switch			○	○
Engine stop switch			○	○
Oil Alert® unit			○	○
Circuit protector				
Reduction	Gear			
	Chain	Without clutch		
With clutch				

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX160UT2	GX200UT2
Overall length	Q *	312 mm (12.3 in)	321 mm (12.6 in)
Overall width		364 mm (14.3 in)	376 mm (14.8 in)
Overall height		350 mm (13.8 in)	352 mm (13.9 in)
Dry weight		15.2 kg (33.5 lbs)	16.2 kg (35.7 lbs)
Operating weight		17.9 kg (39.5 lbs)	18.9 kg (41.7 lbs)

*: P. T. O. type. (base shop manual : page 1-2).

ENGINE SPECIFICATIONS

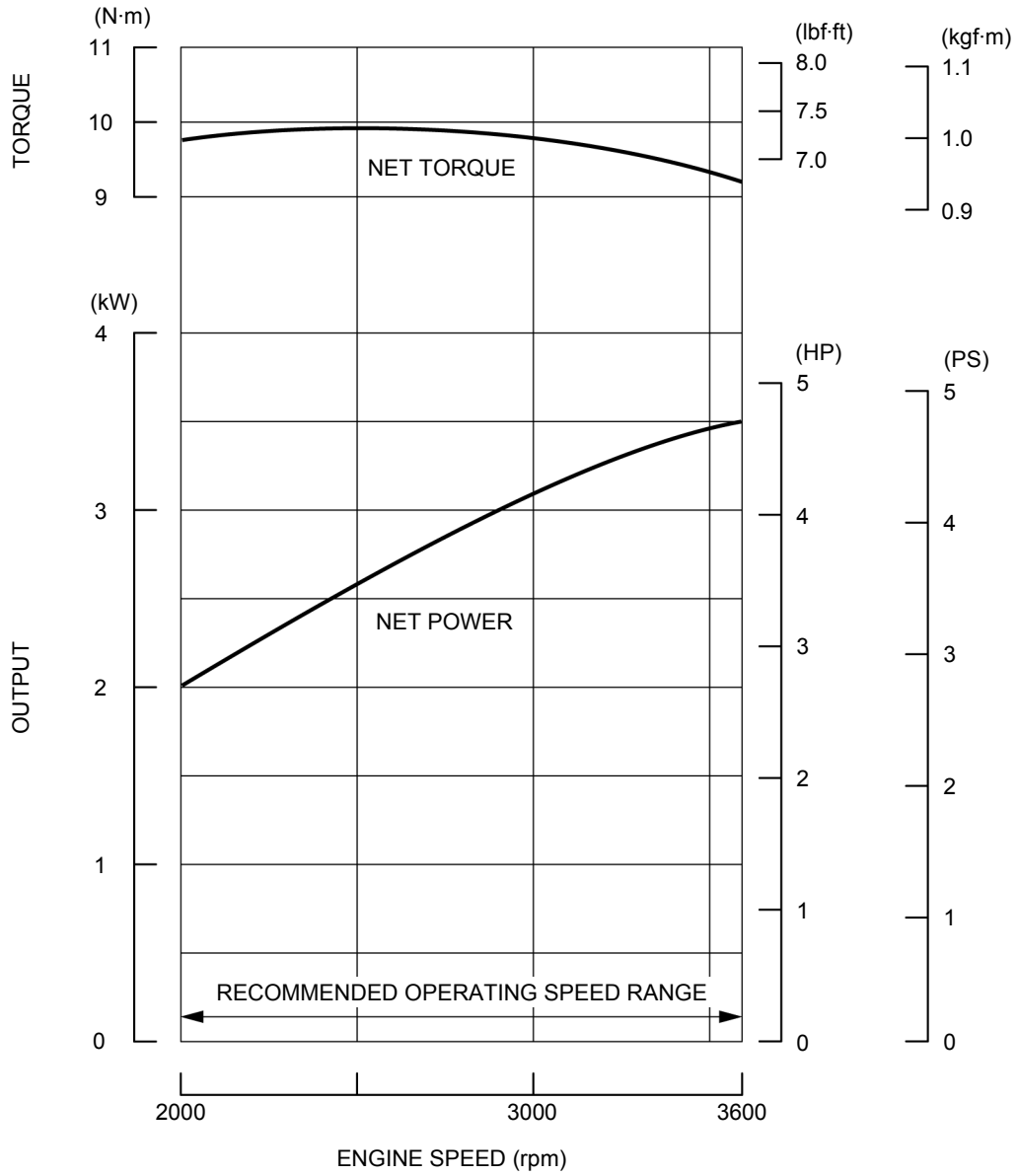
Model	GX160UT2		GX200UT2	
Description code	GCBPT		GCBTT	
Type	4 stroke, overhead valve, single cylinder, inclined by 25°			
Displacement	163 cm ³ (9.9 cu-in)		196 cm ³ (12.0 cu-in)	
Bore x stroke	68.0 x 45.0 mm (2.68 x 1.77 in)		68.0 x 54.0 mm (2.68 x 2.13 in)	
Net power (SAE J1349) *1	3.5 kW (4.7 HP)/3,600 rpm		4.1 kW (5.5 HP)/3,600 rpm	
Continuous rated power	2.8 kW (3.8 HP)/3,600 rpm		3.5 kW (4.7 HP)/3,600 rpm	
Maximum net torque (SAE J1349) *1	9.9 N·m (1.01 kgf·m, 7.3 lbf-ft)/2,500 rpm		12.0 N·m (1.22 kgf·m, 8.8 lbf-ft)/2,500 rpm	
Compression ratio	9.0 : 1		8.5 : 1	
Fuel consumption (at continuous rated power)	1.4 Liters (0.37 US gal, 0.31 Imp gal)/h		1.7 Liters (0.45 US gal, 0.37 Imp gal)/h	
Ignition system	Transistor magneto ignition			
Ignition timing	B.T.D.C. 18° ± 2 /1,400 rpm		B.T.D.C. 20° ± 2 /1,400 rpm	
Recommended spark plug	STD	BP6ES (NGK)/W20EP-U (DENSO)		
	Resistor spark plug	BPR6ES (NGK)/W20EPR-U (DENSO)		
Lubrication system	Forced splash			
Oil capacity	0.58 Liter (0.61 US qt, 0.51 Imp qt)		0.60 Liter (0.63 US qt, 0.53 Imp qt)	
Recommended oil	SAE 10W-30 API service category SJ or higher			
Cooling system	Forced air			
Starting system	Recoil starter			
Stopping system	Ignition exciter coil circuit open			
Carburetor	Horizontal type, butterfly valve			
Air cleaner	Cyclone type			
Governor	Mechanical centrifugal			
Breather system	Reed valve type			
Fuel used	Unleaded gasoline with a pump octane rating 86 or higher			
Fuel tank capacity	3.1 Liters (0.82 US gal, 0.68 Imp gal)			

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

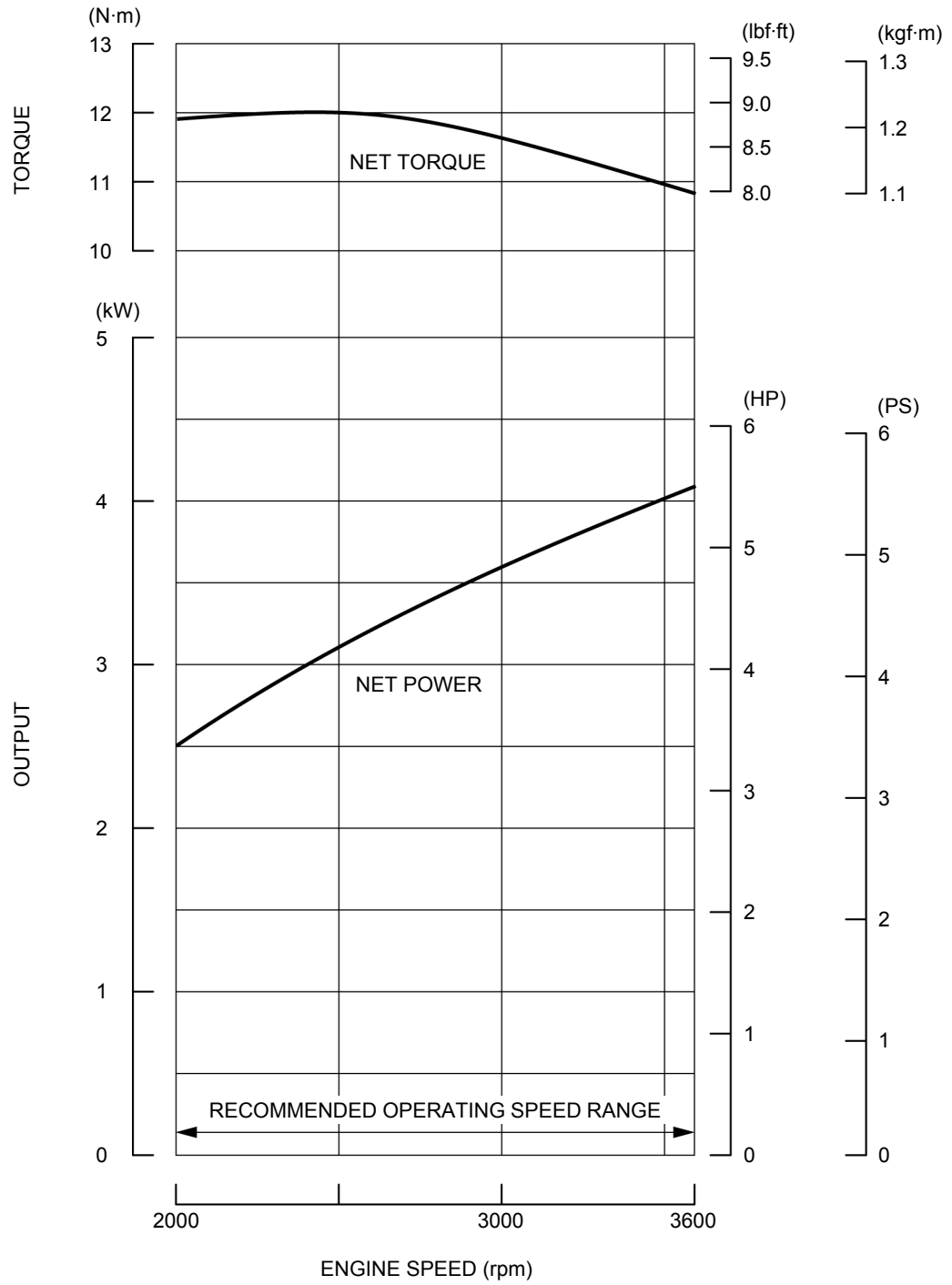
SPECIFICATIONS

PERFORMANCE CURVES

GX160UT2



GX200UT2



MEMO

2. SERVICE INFORMATION

MAINTENANCE STANDARDS2-2

SERVICE INFORMATION**MAINTENANCE STANDARDS****GX160UT2**

Unit: mm (in)

Part	Item		Standard	Service limit
Carburetor	Main jet	BEA4Z A	#72	–
	Pilot screw opening		2-1/4 turns out	–

GX200UT2

Unit: mm (in)

Part	Item		Standard	Service limit
Carburetor	Main jet	BEA3K A	#82	–
	Pilot screw opening		2-1/4 turns out	–

AIR CLEANER
CHECK/CLEANING/REPLACEMENT3-2

MAINTENANCE

AIR CLEANER CHECK/CLEANING/REPLACEMENT

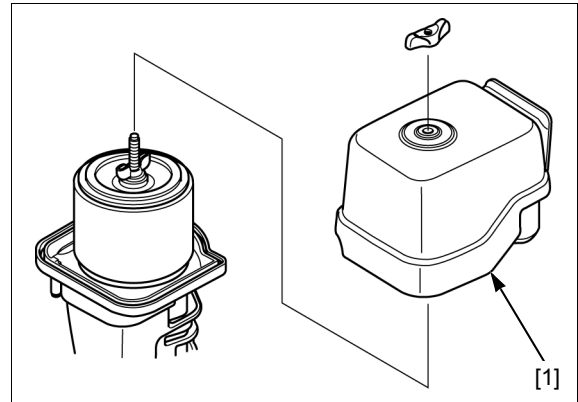
A dirty air filter will restrict air flow to the carburetor, reducing engine performance. If the engine is operated in dusty areas, clean the air cleaner more often than specified in the MAINTENANCE SCHEDULE.

NOTICE

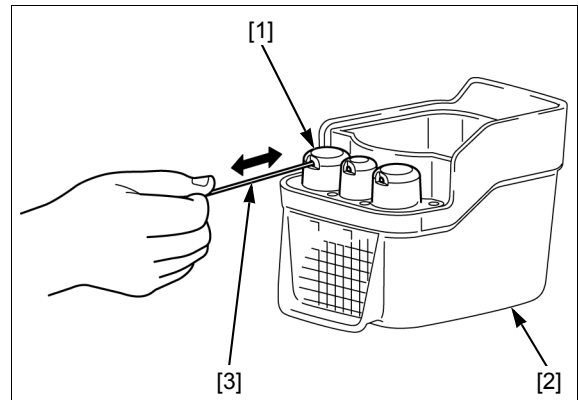
- *Operating the engine without the air filters or with the filter installed loosely will allow dirt to enter the engine, causing rapid engine wear. Install the air filters securely.*

CYCLONE TYPE

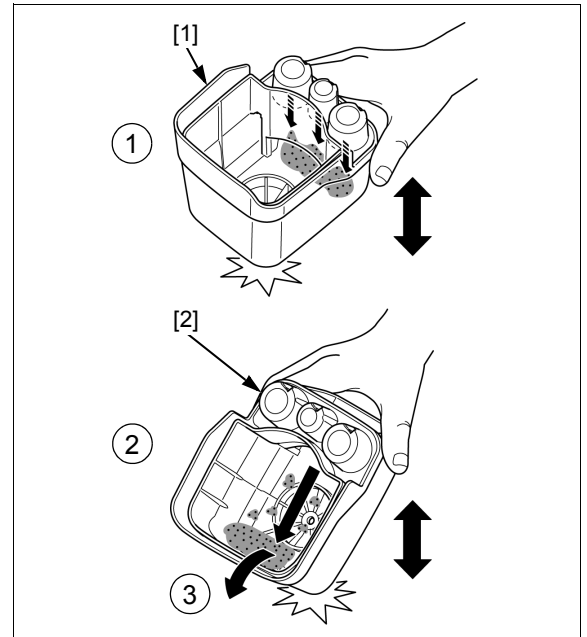
Remove the air cleaner cover assembly [1].



Check the outlet port in the pre air cleaner case [1] on the air cleaner cover assembly [2] for clogs. Remove dust and dirt with a thin rod [3] such as a piece of a wire if clogged.



1. Place the air cleaner cover assembly [1] upside down and tap it lightly to remove dust out of the pre air cleaner case.
2. With the pre air cleaner case [2] upward, tap the assembly lightly and get dust together to one side.
3. Clean away dust.



Clean the air cleaner elbow around the element with low pressure compressed air (206 kPa, [2.11 kgf/cm², 30 psi] or less).

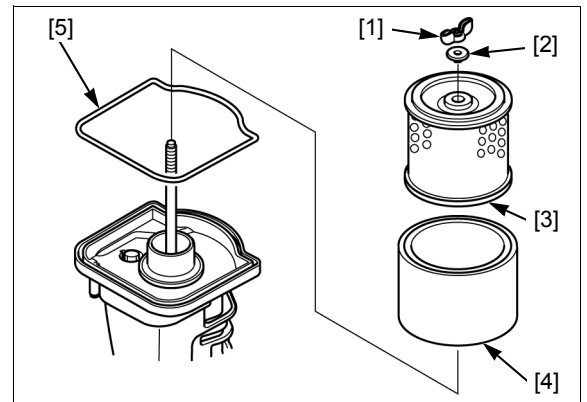
Remove the following:

- Wing nut [1]
- Element assembly.
 - Grommet [2]
 - Inner filter (Paper) [3]
 - Outer filter (Foam) [4]
- Air cleaner cover seal [5]

Carefully check both filters for holes or tears and replace if damaged.

Clean the filters if they are to be reused (page 3-5).

Check that the air cleaner cover seal is in good condition; replace it if necessary.



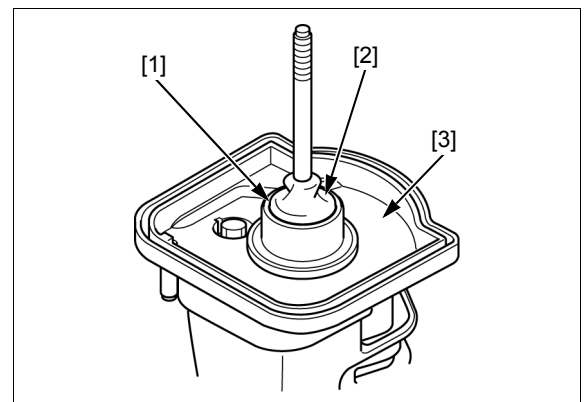
Cover the air intake port [1] with a clean shop towel [2] to prevent dust from entering the air cleaner elbow [3].

Wipe dirt from the elbow.

Installation is in the reverse order of removal.

NOTE:

- Make sure the air cleaner cover edge is fitted in the groove in the elbow securely and then tighten the nut (page 6-2).



MAINTENANCE

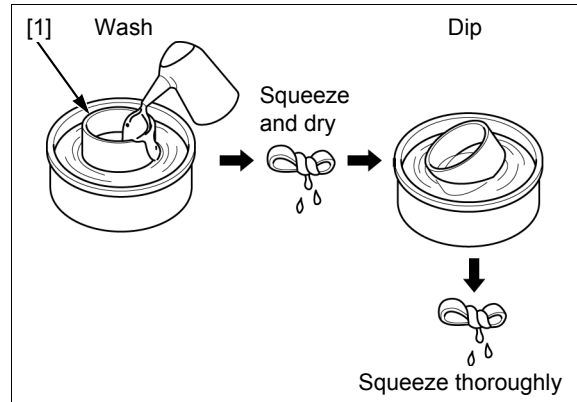
ELEMENT CLEANING

FOAM

Clean the filter [1] in warm soapy water, rinse, and allow it to dry thoroughly, or clean with a non-flammable solvent and allow it to dry thoroughly.

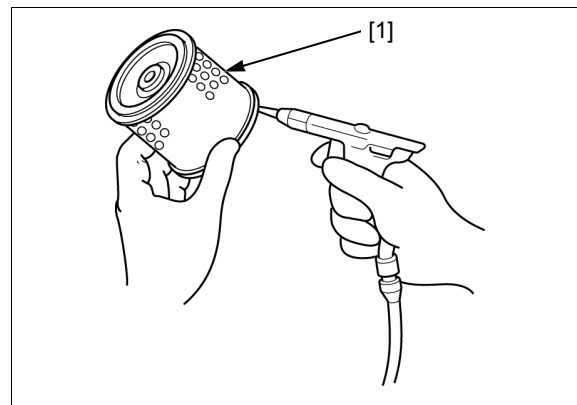
Dip the filter in clean engine oil, and squeeze out all the excess oil.

Excess oil will restrict air flow through the foam element and may cause the engine to smoke at startup.



PAPER

Tap the inner filter [1] lightly several times on a hard surface to remove excess dirt, or blow compressed air lightly (206 kPa [2.11 kgf/cm², 30 psi] or less) through the paper filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers.



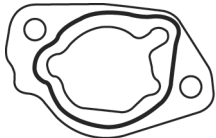
AIR CLEANER
REMOVAL/INSTALLATION.....6-2

AIR CLEANER REMOVAL/INSTALLATION

CYCLONE TYPE

CARBURETOR SPACER

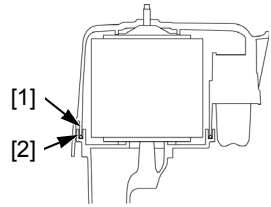
INSTALLATION:
Before installing, check for damage.
Note the installation direction.



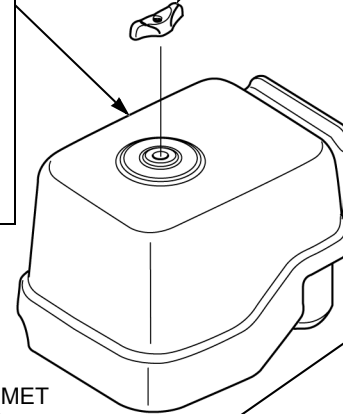
Viewed from air cleaner side

AIR CLEANER COVER ASSEMBLY

INSTALLATION:
Make sure the air cleaner cover edge [1] is fitted in the groove [2] in the elbow securely and then tighten the nut.

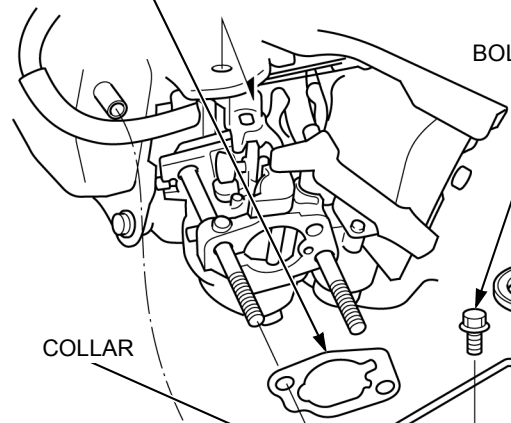


NUT



WING NUT

GROMMET



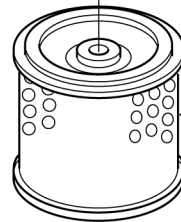
BOLT (6 x 20 mm)

ELBOW PACKING

AIR CLEANER COVER SEAL

COLLAR

INNER FILTER (PAPER)

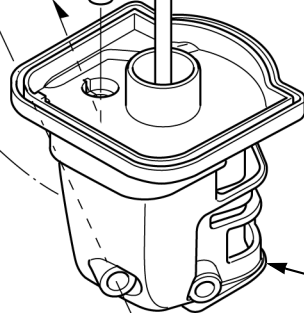


OUTER FILTER (FOAM)



BREATHER TUBE

TUBE CLIP (2)



AIR CLEANER COLLAR (2)

NUT (6 mm) (2)

9 N·m (0.9 kgf·m, 6.6 lbf·ft)

AIR CLEANER ELBOW

REMOVAL/INSTALLATION:
Remove and install the air cleaner elbow with the fuel valve lever in the OFF position and the choke lever in the CLOSE position. Before installation, clean the inside of the air cleaner elbow.

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HONDA

SHOP MANUAL

GX120UT3 ENGINE

Supplement U

to the

GX120UT2 • GX160UT2 • GX200UT2 Engine Shop Manual

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to his or her personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (Hot parts-wear gloves, for example). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

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- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
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Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
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- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from battery are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX120UT3 Engines.

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- Instructions – how to service these products correctly and safely.








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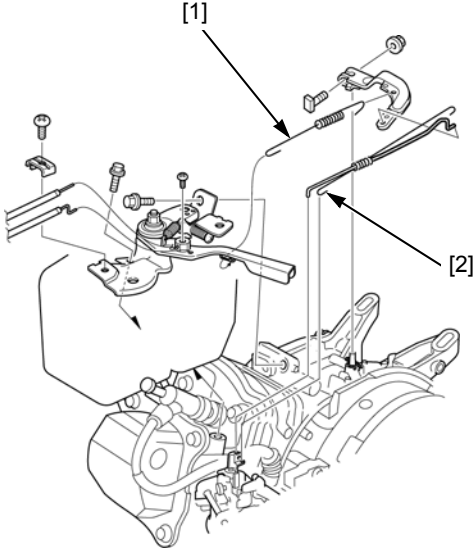
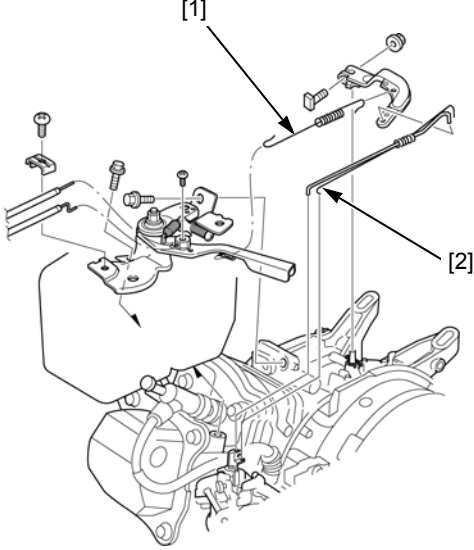
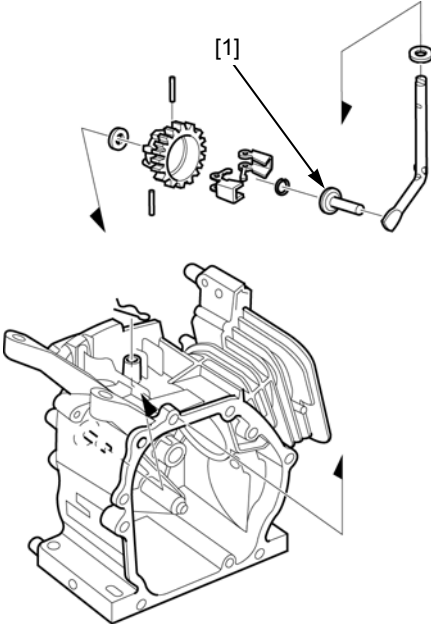
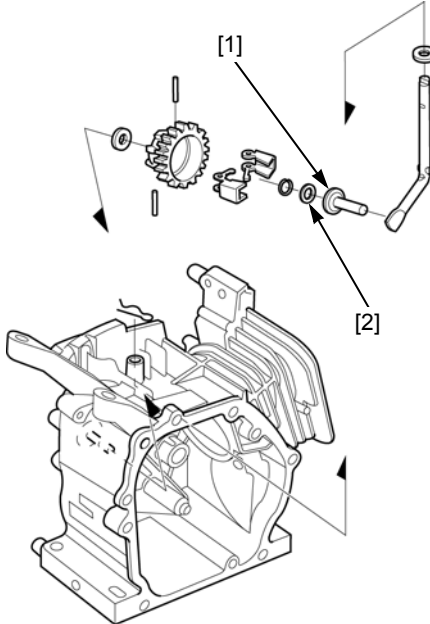
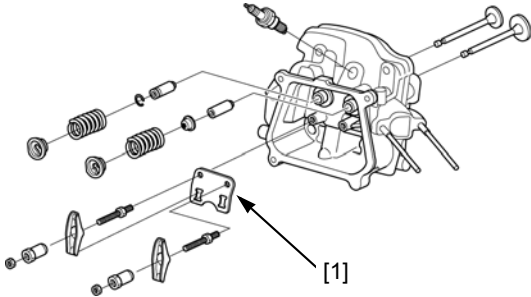
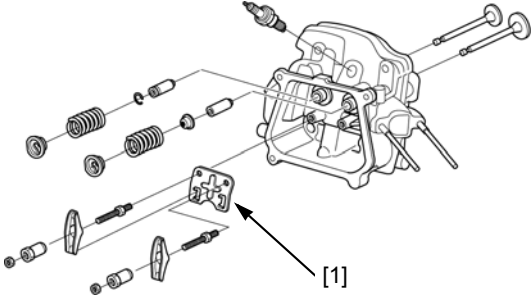
How to use this manual

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use automatic transmission fluid.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

OUTLINE OF CHANGES

ITEM	GX120UT3	GX120UT2
Governor spring [1] Throttle return spring [2]		
Governor slider [1] washer [2]		
Push rod guide plate [1]		

MEMO

P.T.O. TYPE VARIATION	1-2	PERFORMANCE CURVE	1-7
DIMENSIONS AND WEIGHTS SPECIFICATIONS.....	1-5	DIMENSIONAL DRAWINGS	1-8
ENGINE SPECIFICATIONS	1-6	P.T.O. DIMENSIONAL DRAWINGS	1-11

SPECIFICATIONS

P.T.O. TYPE VARIATION

GX120UT3

P.T.O. type			H						L		P	Q					
Type			HT2	HTC 2	HTF 2	HX2	HX4	HX UZ	LX4	LXU Z	PX2	QA2	QH2 6	QH Q4	QJ G2	QM E4	
Air cleaner	Dual																
	Dual silent		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Cyclone																
	Low profile																
	Oil bath																
	Semi dry																
Muffler	Standard		○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Standard (With lower protector)																
	Silent																
	Low profile																
Spark arrester												○					
Fuel gauge																	
Control base	Manual	Standard									○						
		Remote	Internal												○	○	
		Internal S															
		EXP	○	○	○	○	○	○	○	○		○	○	○			
		Cyclone															
		Norton															
Fixed throttle operation																	
Charge coil	1 A																
	3 A																
	7 A																
Lamp coil	12 V – 15 W																
	12 V – 25 W																
	12 V – 50 W														○		
Starter motor/combination switch																	
Oil level switch					○	○	○	○	○	○							
Engine stop switch			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Oil Alert® unit					○	○	○	○	○	○							
Circuit protector																	
Reduction	Gear		○	○	○	○	○										
	Chain	Without clutch															
		With clutch							○	○							

SPECIFICATIONS

P.T.O. type			Q						Q2	R	S				
			QW A4	QX2	QX4	QX9	QX S2	QX UZ	QX W2	QT R2	RH Q4	SA R4	SG2 4	SH Q4	SJD 2
Air cleaner	Dual														
	Dual silent		○	○	○	○	○	○	○	○	○	○	○	○	○
	Cyclone														
	Low profile														
	Oil bath														
Semi dry															
Muffler	Standard		○	○	○	○		○	○	○	○	○	○	○	○
	Standard (With lower protector)						○								
	Silent														
	Low profile														
Spark arrester			○			○				○		○	○		○
Fuel gauge															
Control base	Manual	Standard													
	Remote	Internal	○											○	○
		Internal S								○					
		EXP		○	○	○	○	○	○		○			○	
		Cyclone													
	Norton										○				
Fixed throttle operation															
Charge coil	1 A														
	3 A														
	7 A														
Lamp coil	12 V – 15 W														
	12 V – 25 W									○					
	12 V – 50 W						○								○
Starter motor/combination switch															
Oil level switch			○	○	○	○	○	○	○				○		
Engine stop switch			○	○	○	○	○	○	○		○	○	○	○	
Oil Alert® unit			○	○	○	○	○	○	○				○		
Circuit protector															
Reduction	Gear														
	Chain	Without clutch													
		With clutch									○				

SPECIFICATIONS

P.T.O. type		S					T	W		WB	
Type		SM1 2	SM CC	SM W2	SW X2	SX4	SXS 4	TX2	WM A3	WK T2	WK S
Air cleaner	Dual										
	Dual silent	○	○	○	○	○	○	○	○	○	○
	Cyclone										
	Low profile										
	Oil bath										
	Semi dry										
Muffler	Standard	○	○	○	○	○	○	○	○	○	○
	Standard (With lower protector)										
	Silent										
	Low profile										
Spark arrester		○	○	○			○			○	
Fuel gauge											
Control base	Manual	Standard						○	○		○
		Remote	Internal		○						○
	Internal S										
	EXP					○	○	○			
	Cyclone										
	Norton	○	○								
	Fixed throttle operation										
Charge coil	1 A										
	3 A										
	7 A										
Lamp coil	12 V – 15 W										
	12 V – 25 W										
	12 V – 50 W										
Starter motor/combination switch											
Oil level switch		○		○	○	○	○	○		○	○
Engine stop switch		○		○	○	○	○	○	○	○	○
Oil Alert® unit		○		○	○	○	○	○		○	○
Circuit protector											
Reduction	Gear										
	Chain	Without clutch									
		With clutch									

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	P.T.O. type	GX120UT3
Overall length	H *	370 mm (14.6 in)
	L *	332 mm (13.1 in)
	R *	384 mm (15.1 in)
	P *	305 mm (12.0 in)
	Q *	305 mm (12.0 in)
	Q2 *	281 mm (11.1 in)
	S *	297 mm (11.7 in)
	T *	305 mm (12.0 in)
	W *	317 mm (12.5 in)
	WB *	284.5 mm (11.2 in)
Overall width	H *	346 mm (13.6 in)
	L *	346 mm (13.6 in)
	R *	346 mm (13.6 in)
	P *	346 mm (13.6 in)
	Q *	346 mm (13.6 in)
	Q2 *	346 mm (13.6 in)
	S *	346 mm (13.6 in)
	T *	346 mm (13.6 in)
	W *	346 mm (13.6 in)
	WB *	346 mm (13.6 in)
Overall height	H *	333 mm (13.1 in)
	L *	333 mm (13.1 in)
	R *	333 mm (13.1 in)
	P *	333 mm (13.1 in)
	Q *	333 mm (13.1 in)
	Q2 *	333 mm (13.1 in)
	S *	333 mm (13.1 in)
	T *	333 mm (13.1 in)
	W *	333 mm (13.1 in)
	WB *	333 mm (13.1 in)
Dry weight	H *	15.7 kg (34.6 lbs)
	L *	14.2 kg (31.3 lbs)
	R *	18.2 kg (40.1 lbs)
	P *	13.2 kg (29.1 lbs)
	Q *	13.2 kg (29.1 lbs)
	Q2 *	13.2 kg (29.1 lbs)
	S *	13.2 kg (29.1 lbs)
	T *	13.2 kg (29.1 lbs)
	W *	13.2 kg (29.1 lbs)
	WB *	13.2 kg (29.1 lbs)
Operating weight	H *	18.3 kg (40.3 lbs)
	L *	16.7 kg (36.8 lbs)
	R *	21.2 kg (46.7 lbs)
	P *	15.7 kg (34.6 lbs)
	Q *	15.7 kg (34.6 lbs)
	Q2 *	15.7 kg (34.6 lbs)
	S *	15.7 kg (34.6 lbs)
	T *	15.7 kg (34.6 lbs)
	W *	15.7 kg (34.6 lbs)
	WB *	15.7 kg (34.6 lbs)

*: P. T. O. type. (page 1-2)

SPECIFICATIONS

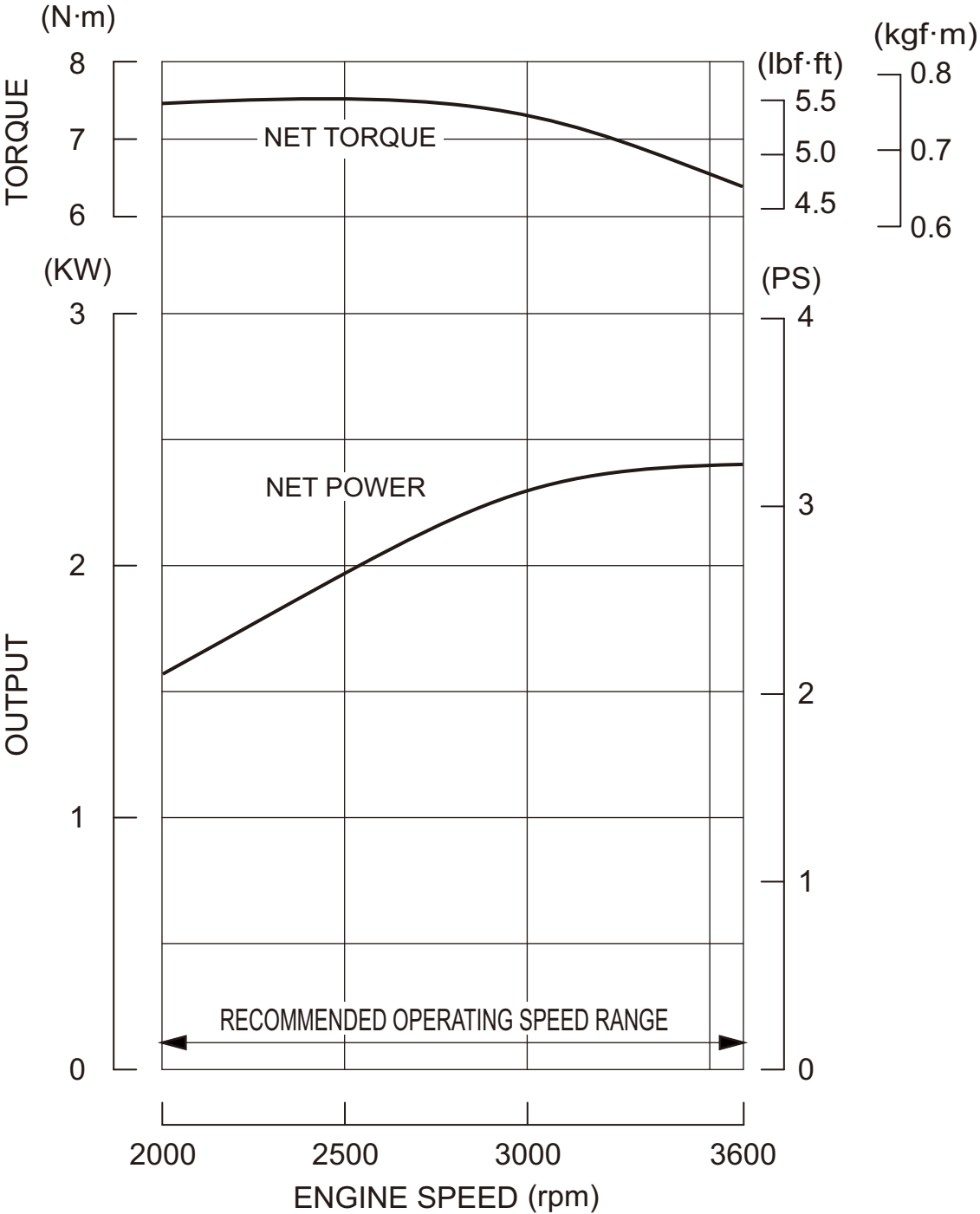
ENGINE SPECIFICATIONS

Model	GX120UT3	
Description code	GCCJT	
Type	4 stroke, overhead valve, single cylinder, inclined by 25°	
Displacement	122 cm ³ (7.4 cu-in)	
Bore x stroke	60.0 x 43.5 mm (2.36 x 1.71 in)	
Net power (SAE J1349) *1	2.4 kW (3.3 PS)/3,600 rpm	
Continuous rated power	2.1 kW (2.9 PS)/3,600 rpm	
Maximum net torque (SAE J1349) *1	7.5 N·m (0.76 kgf·m, 5.5 lbf·ft)/2,500 rpm	
Compression ratio	8.3 : 1	
Fuel consumption (at continuous rated power)	1.0 Liter (0.26 US gal, 0.22 Imp gal)/h	
Ignition system	C.D.I. (Capacitor Discharge Ignition) type magneto ignition	
Ignition timing	B.T.D.C. 23°/1,400 rpm	
Recommended spark plug	BPR6ES (NGK)/W20EPR-U (DENSO)	
Lubrication system	Forced splash	
Oil capacity	0.56 Liter (0.59 US qt, 0.49 Imp qt)	
Recommended oil	SAE 10W-30 API service category SJ or higher	
Cooling system	Forced air	
Starting system	Recoil Starter	
Stopping system	Ignition exciter coil circuit open	
Carburetor	Horizontal type, butterfly valve	
Air cleaner	Dual silent type	
Governor	Mechanical centrifugal	
Breather system	Reed valve type	
Fuel used	Unleaded gasoline E10	
Fuel tank capacity	2.0 Liters (0.53 US gal, 0.44 Imp gal)	
Reduction case oil capacity	Gear type	0.15 Liter (0.16 US qt, 0.13 Imp qt)
	Chain type (without clutch)	Shared with engine oil

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (net power) and at 2,500 rpm (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

PERFORMANCE CURVE

GX120UT3



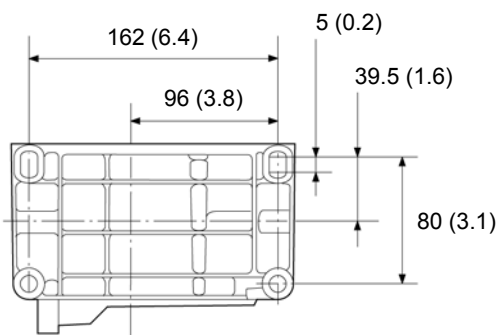
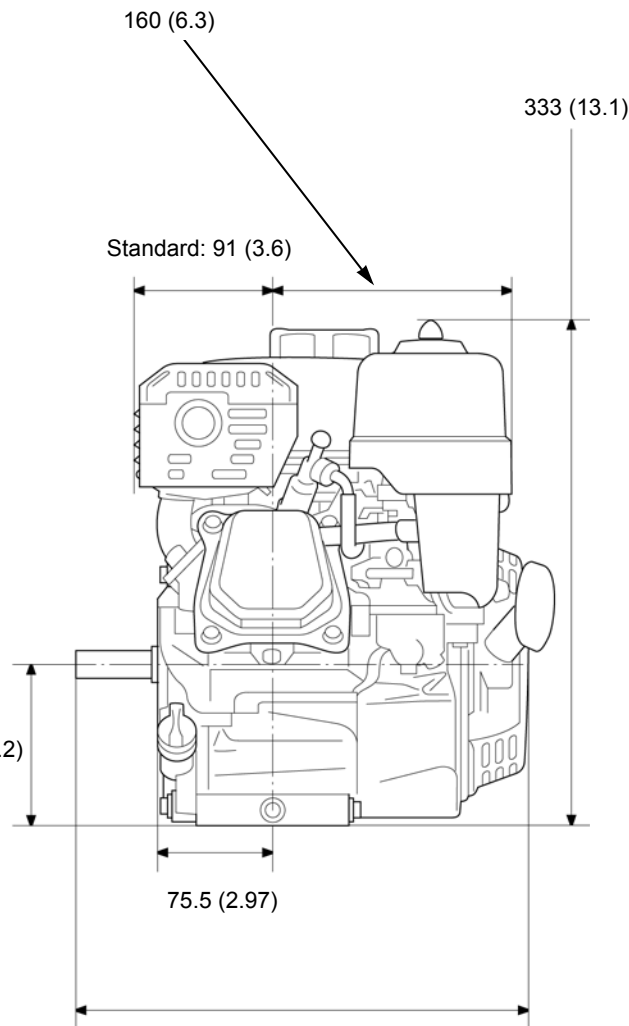
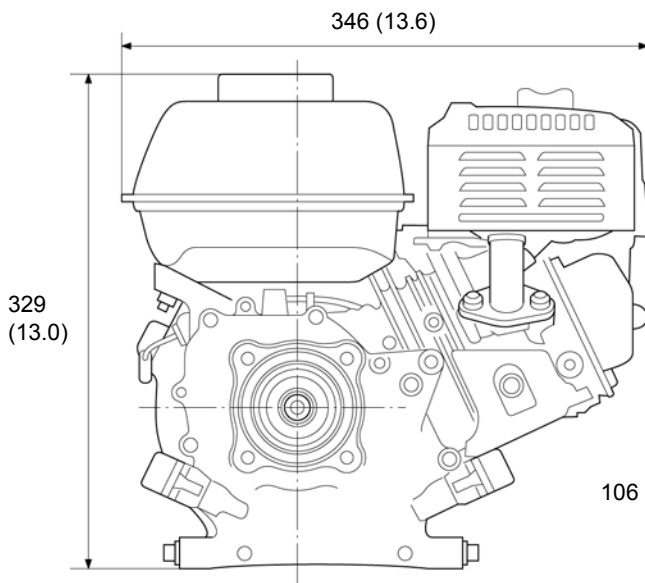
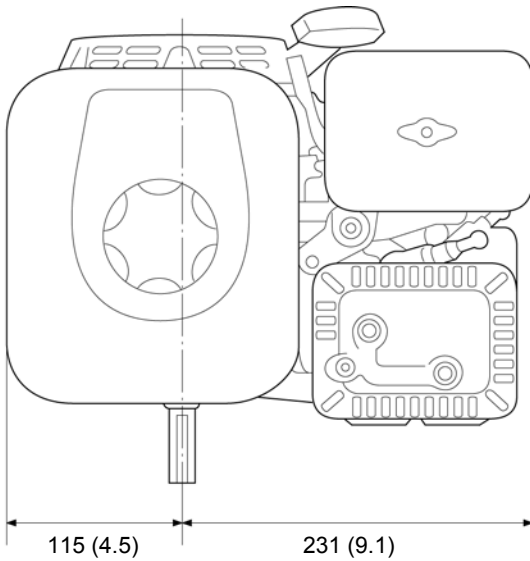
SPECIFICATIONS

DIMENSIONAL DRAWINGS

*: P.T.O. type. (page 1-2)

GX120UT3 (WITHOUT REDUCTION)

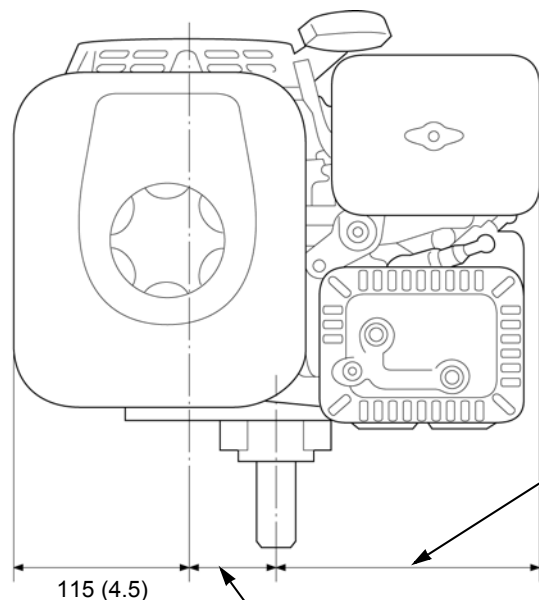
Unit: mm (in)



- P type*: 305 (12.0)
- Q type*: 305 (12.0)
- Q2 type*: 281 (11.1)
- S type*: 297 (11.7)
- T type*: 305 (12.0)
- W type*: 317 (12.5)
- WB type*: 284.5 (11.2)

GX120UT3 (WITH REDUCTION EXCEPT TYPE HT2)

Unit: mm (in)

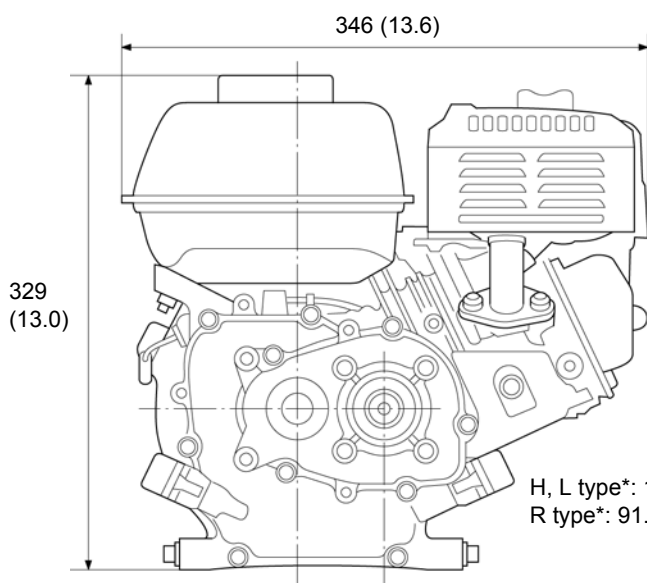


H type*: 185.9 (7.32)
L type*: 164.9 (6.49)
R type*: 141.3 (5.56)

115 (4.5)

H type*: 45.1 (1.78)
L type*: 66.1 (2.60)
R type*: 89.7 (3.53)

333
(13.1)



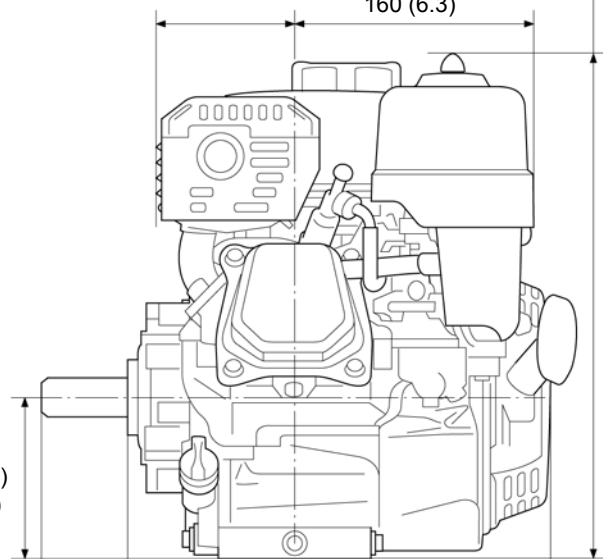
329
(13.0)

346 (13.6)

H, L type*: 106 (4.2)
R type*: 91.8 (3.61)

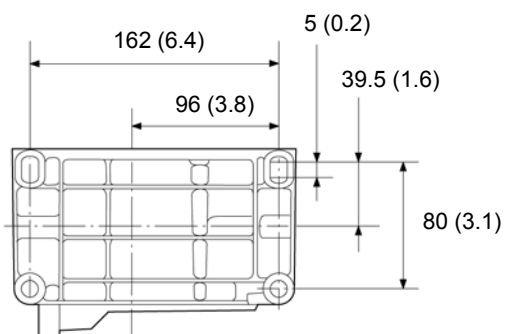
Standard: 91 (3.6)

160 (6.3)



H type*: 151.5 (5.96)
L type*: 110 (4.3)
R type*: 162.8 (6.41)

H type*: 370 (14.6)
L type*: 332 (13.1)
R type*: 384 (15.1)



162 (6.4)

5 (0.2)

96 (3.8)

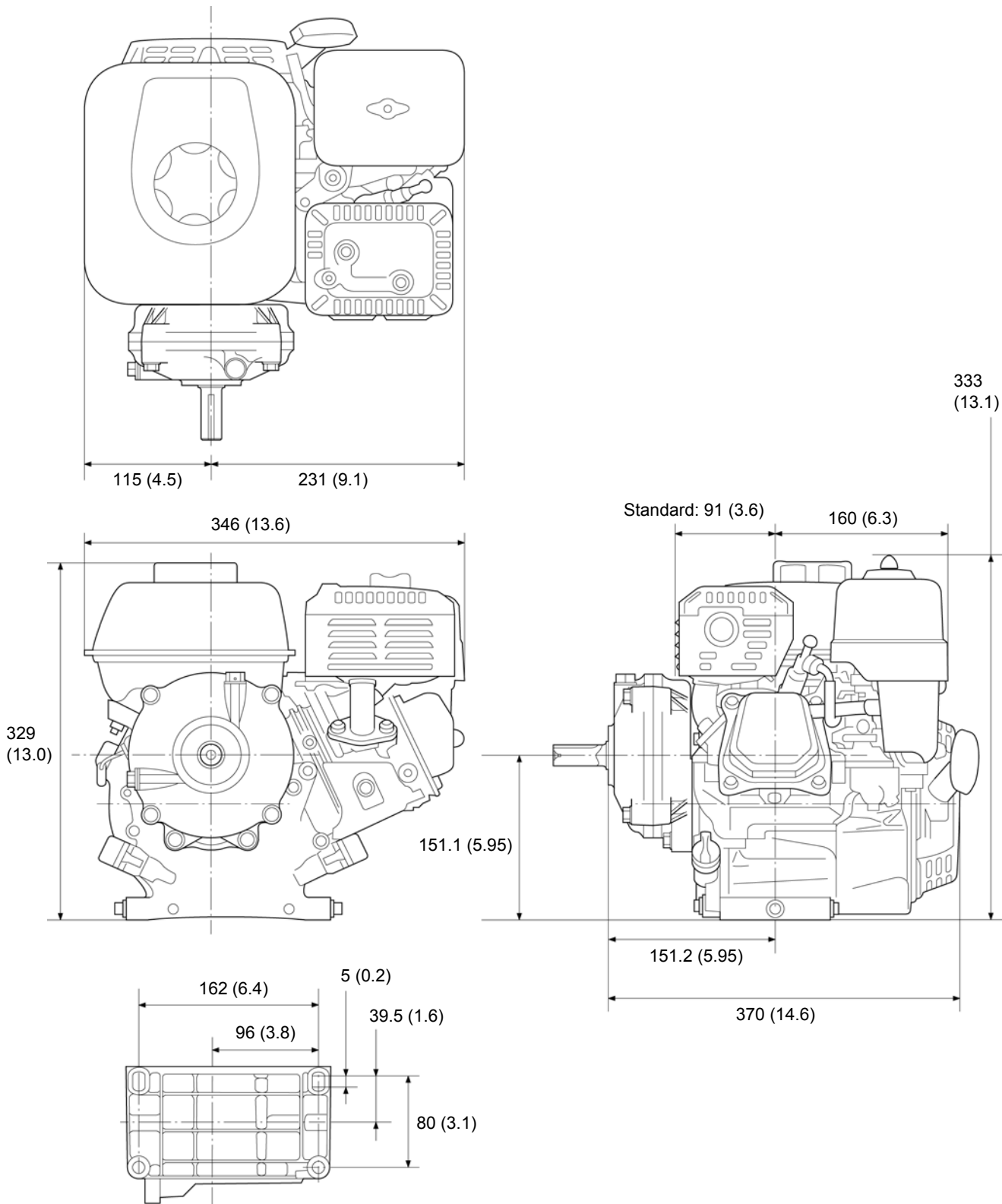
39.5 (1.6)

80 (3.1)

SPECIFICATIONS

GX120UT3 (WITH REDUCTION TYPE HT2)

Unit: mm (in)

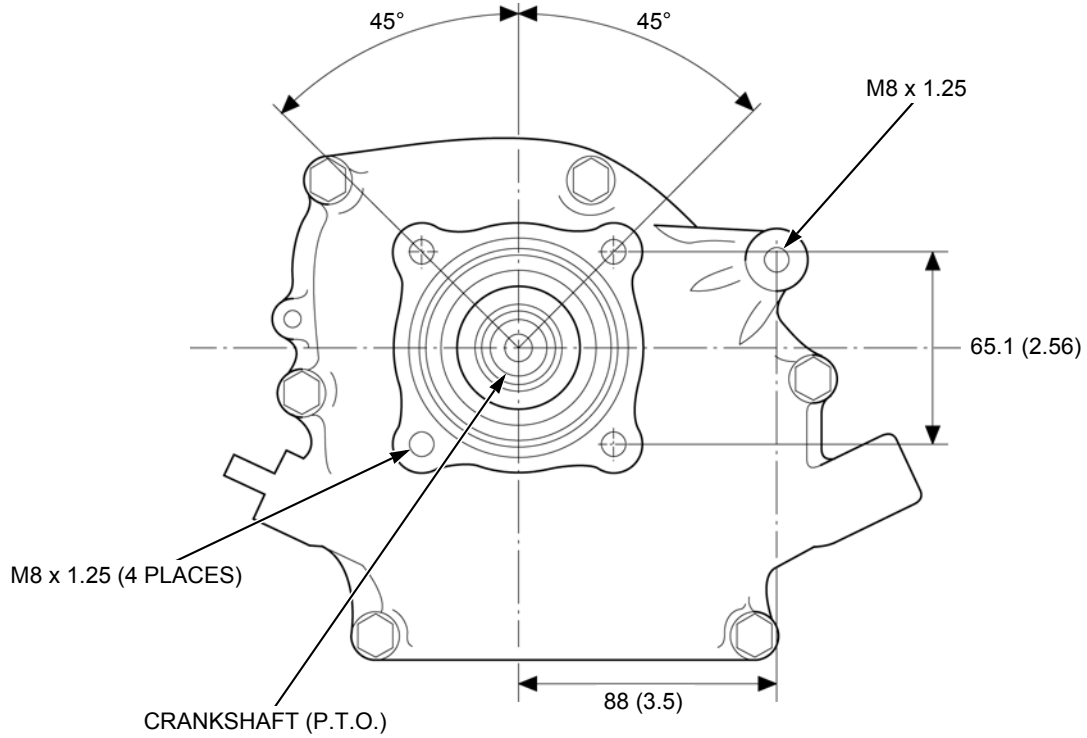


P.T.O. DIMENSIONAL DRAWINGS

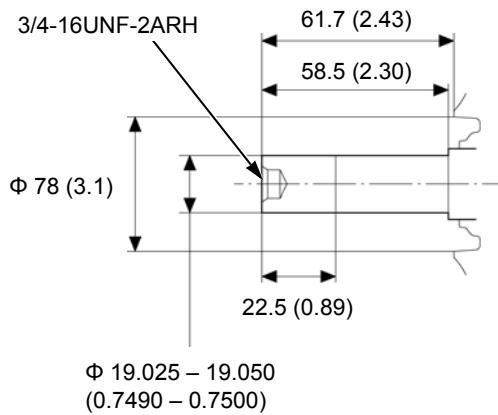
*: P.T.O. type. (page 1-2)

GX120UT3 (WITHOUT REDUCTION)

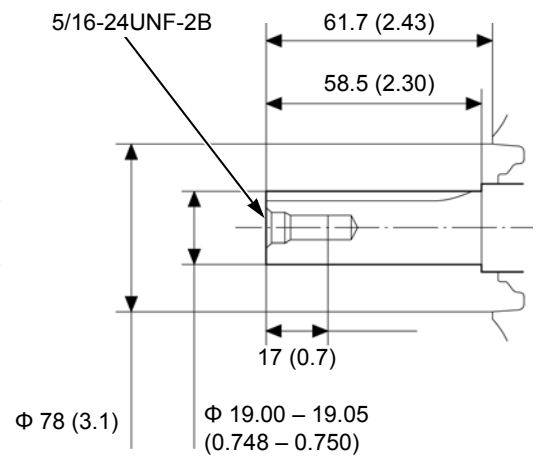
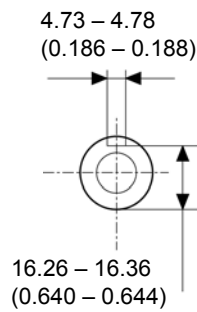
Unit: mm (in)



P type*

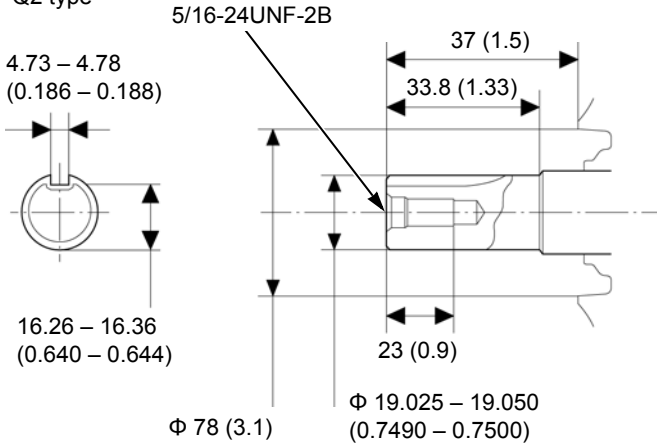


Q type*

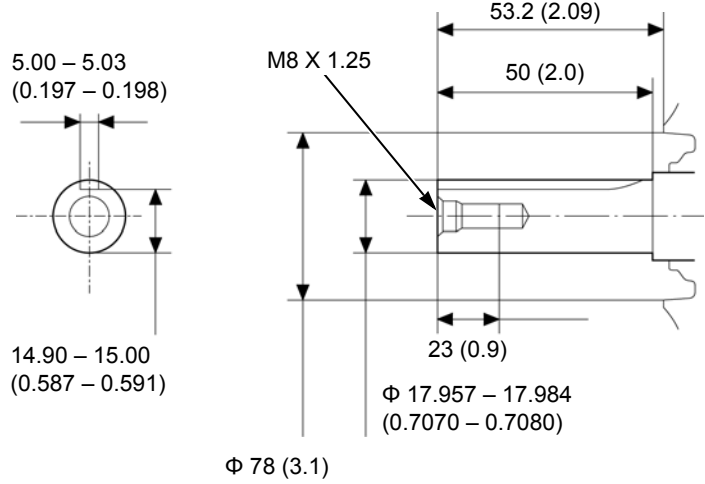


SPECIFICATIONS

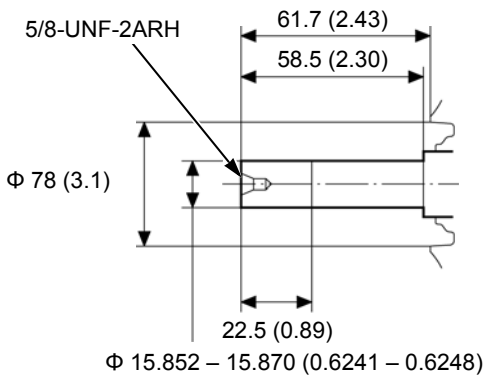
Q2 type*



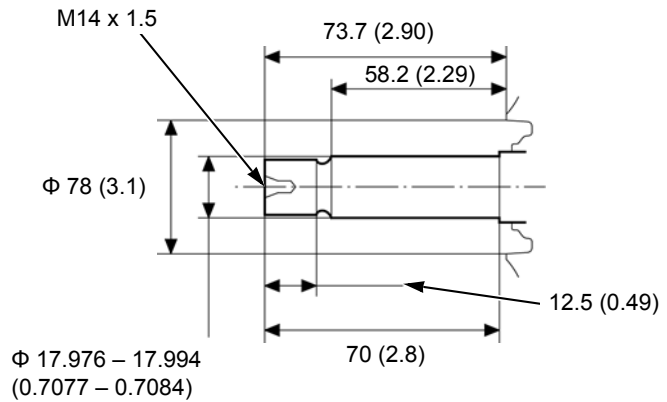
S type*



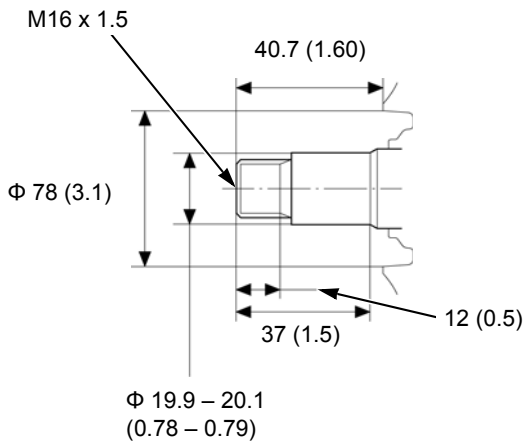
T type*



W type*



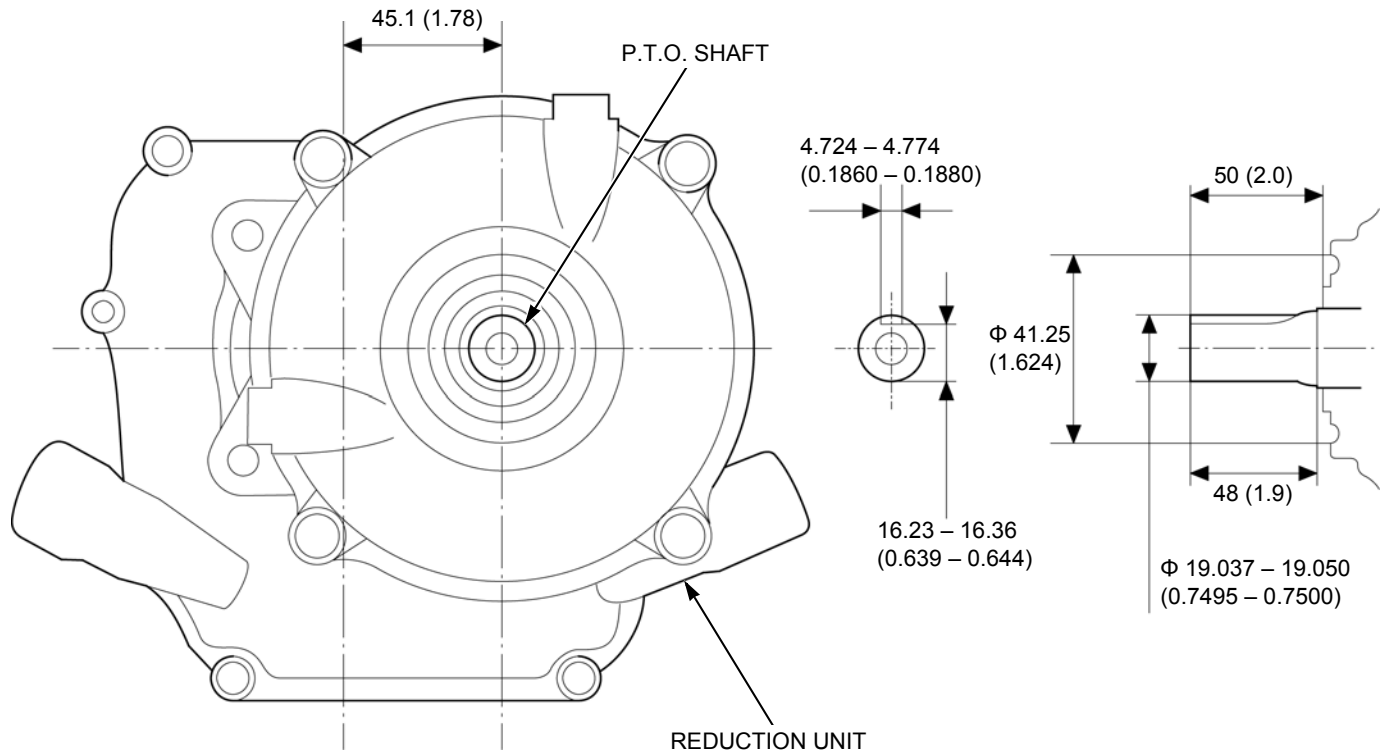
WB type*



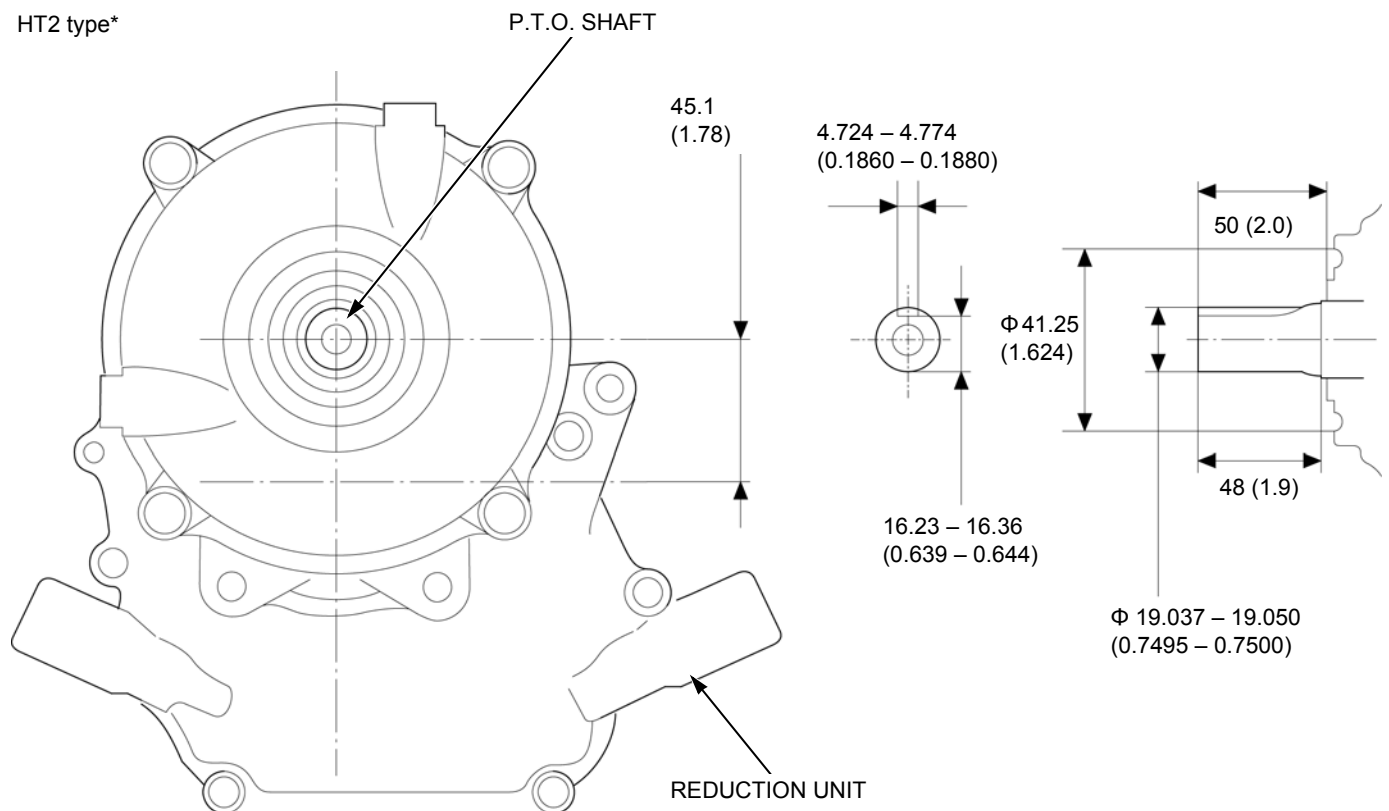
GX120UT3 (WITH REDUCTION)

H type*

Unit: mm (in)



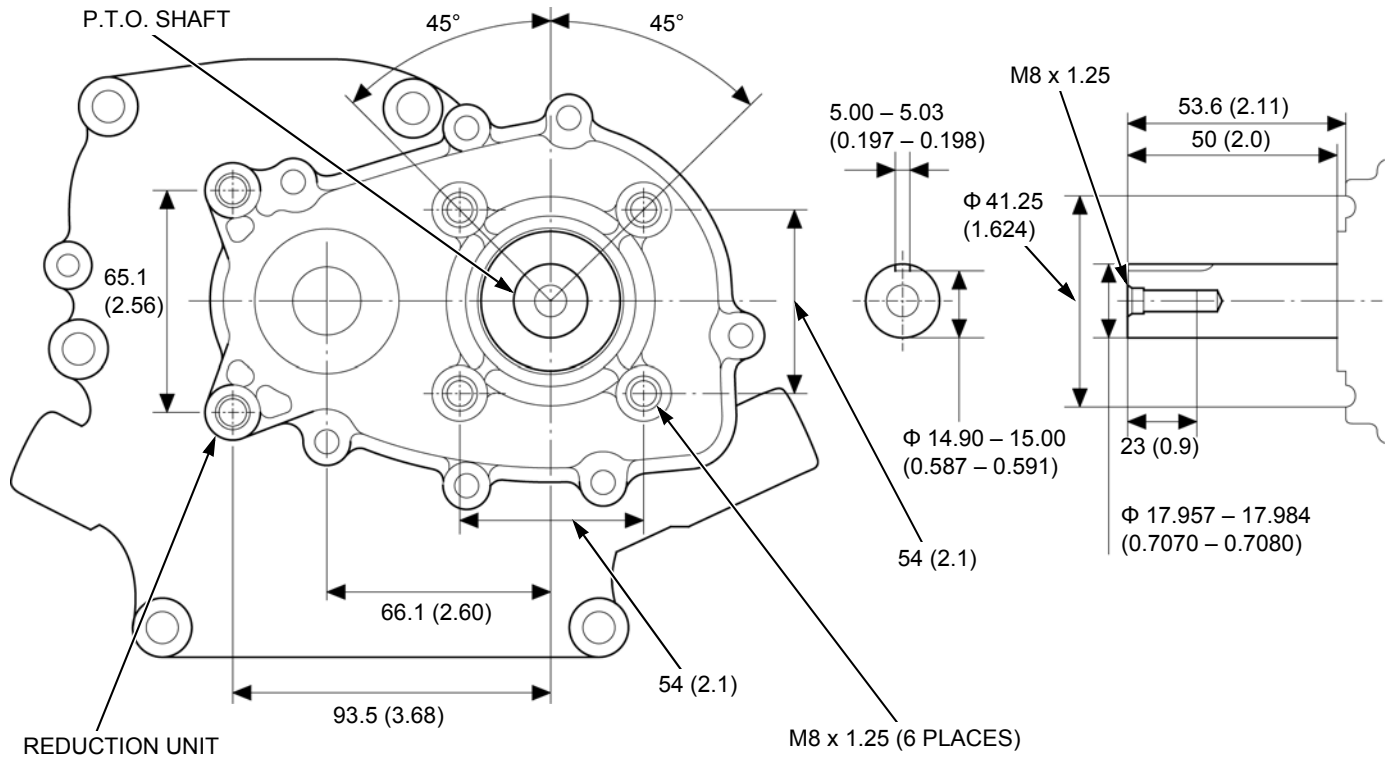
HT2 type*



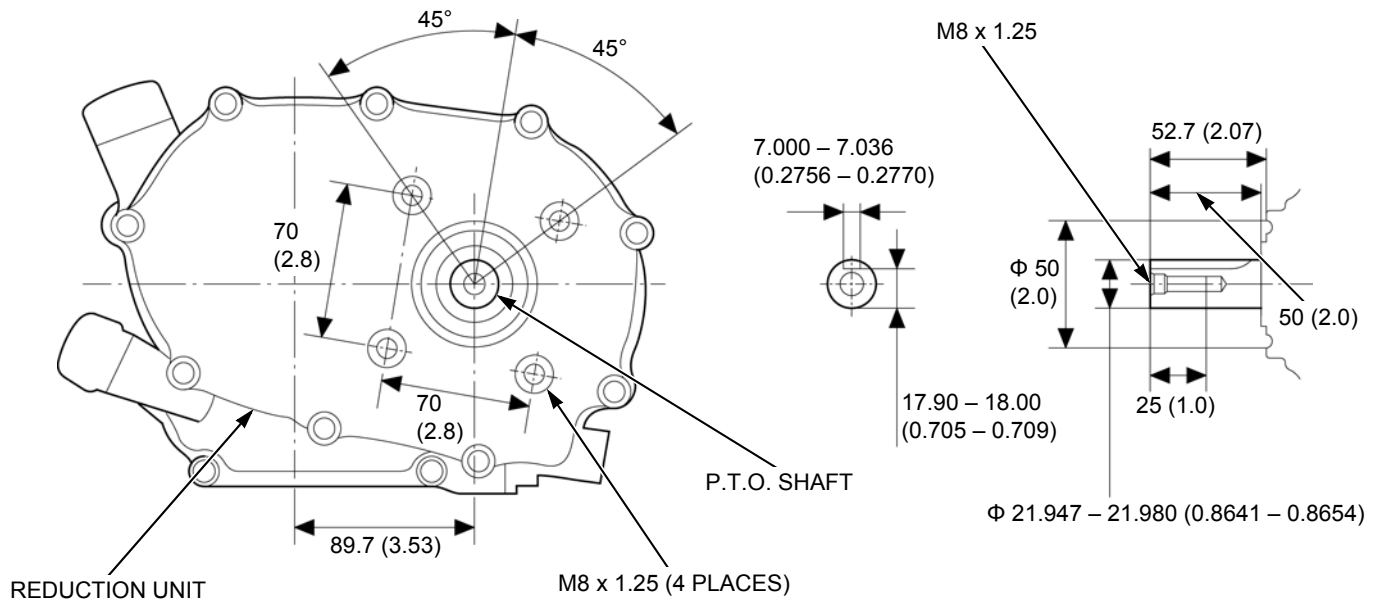
SPECIFICATIONS

L type*

Unit: mm (in)



R type*



2. SERVICE INFORMATION

MAINTENANCE STANDARDS 2-2 HARNESS AND TUBE ROUTING 2-2

SERVICE INFORMATION

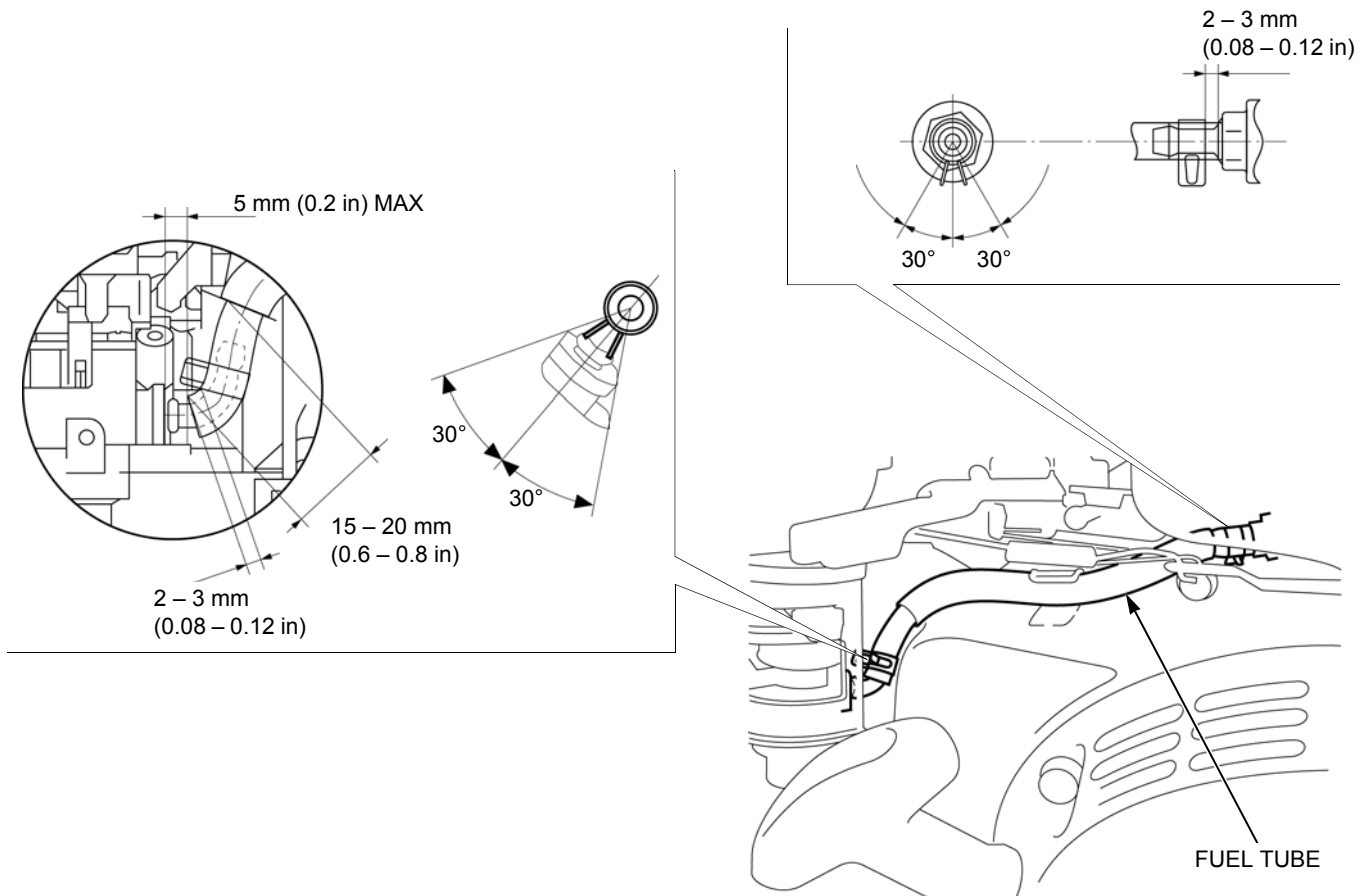
MAINTENANCE STANDARDS

GX120UT3

Unit: mm (in)

Part	Item	Standard	Service limit	
Engine	Maximum speed (at no load)	Except following	3,900 ± 100 rpm	—
		Type: SJD2	2,950 ± 150 rpm	—
		Type: SKB3	3,300 ± 100 rpm	—
		Type: SMCC	3,550 ⁺⁰ ₋₁₀₀ rpm	—
	Cylinder compression	0.40 – 0.60 MPa (4.1 – 6.1 kgf/cm ² , 58 – 87 psi)/600 rpm	—	
Piston rings	Ring end gap	Top	0.200 – 0.300 (0.0079 – 0.0118)	1.0 (0.04)
		Second	0.300 – 0.400 (0.0118 – 0.0157)	1.0 (0.04)
		Oil (side rail)	0.20 – 0.50 (0.008 – 0.020)	1.0 (0.04)
Valves	Valve clearance	IN	0.08 ± 0.02 (0.003 ± 0.001)	—
		EX	0.10 ± 0.02 (0.004 ± 0.001)	—
Camshaft	Cam height	IN	26.415 – 26.815 (1.0400 – 1.0557)	26.365 (1.0380)
		EX	26.200 – 26.600 (1.0315 – 1.0472)	26.150 (1.0295)
Carburetor	Main jet	BE99L A	#62	—
	Pilot screw opening	BE99L A	2-3/8 turns out	—
	Float height		13.7 (0.54)	—

HARNES AND TUBE ROUTING



7. GOVERNOR SYSTEM

GOVERNOR ARM/CONTROL BASE Assy.
REMOVAL/INSTALLATION 7-2

GOVERNOR
DISASSEMBLY/ASSEMBLY..... 7-3

GOVERNOR SYSTEM

GOVERNOR ARM/CONTROL BASE Assy. REMOVAL/INSTALLATION

Remove the following parts.

- Air cleaner (Base shop manual: 61Z4H00 page 6-5)
- Fuel tank (Base shop manual: 61Z4H00 page 6-3)

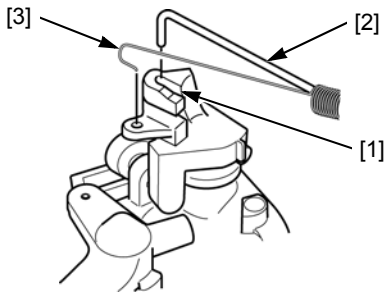
NOTE:

- After installation, adjust the following:
 - Governor (Base shop manual: 61Z4H00 page 7-5)
 - Idle speed (Base shop manual: 61Z4H00 page 3-13)
 - Maximum speed (Base shop manual: 61Z4H00 page 7-7)

GOVERNOR ROD/THROTTLE RETURN SPRING

REMOVAL/INSTALLATION:

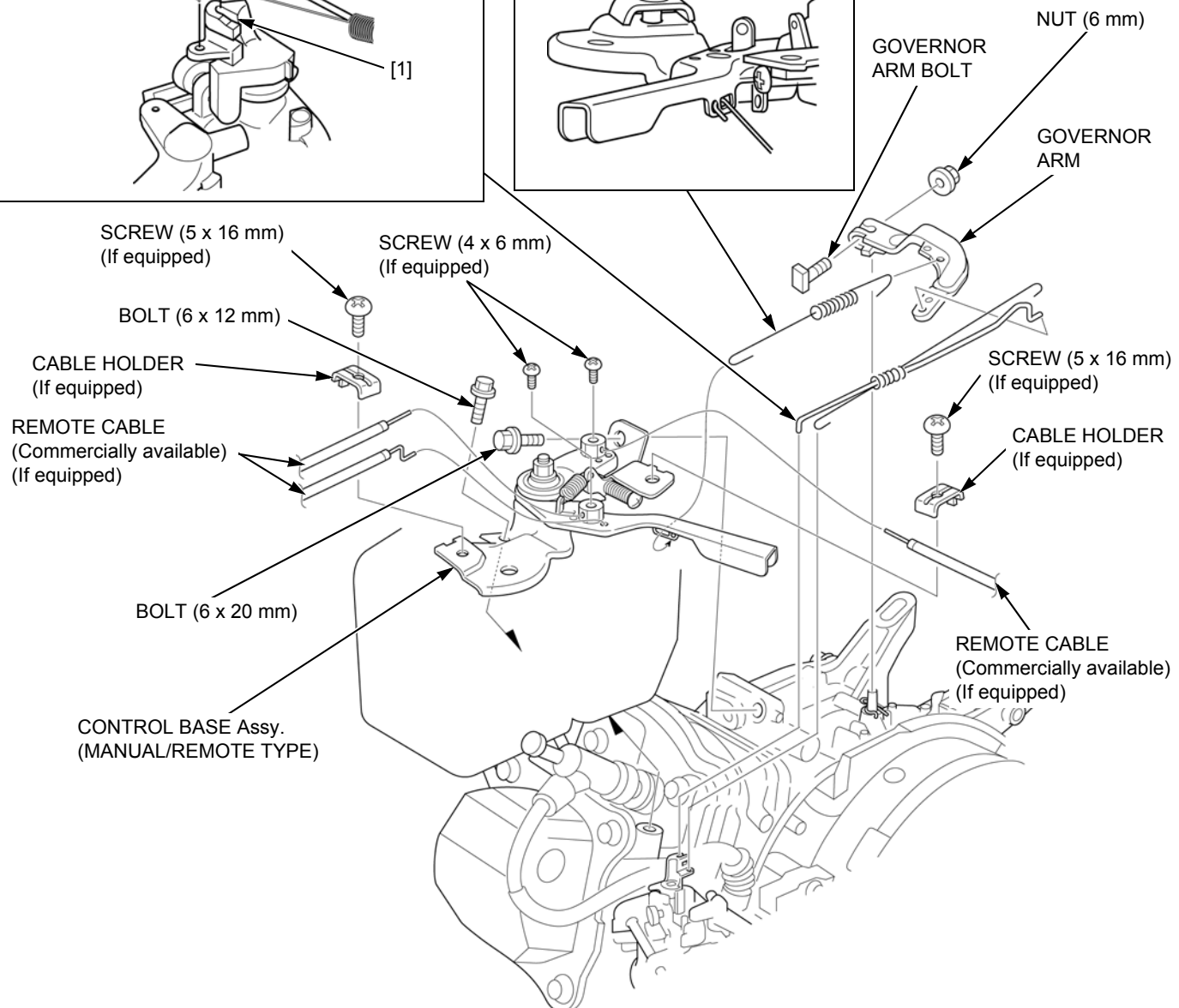
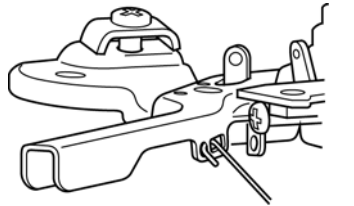
Pull the carburetor to a point where the groove [1] of the throttle arm lines up with the governor rod [2], and then lift the governor rod out of the hole of the throttle arm and unhook the throttle return spring [3]. When installing, make sure that the direction of the throttle spring. Install the shorter side to the carburetor.



GOVERNOR SPRING

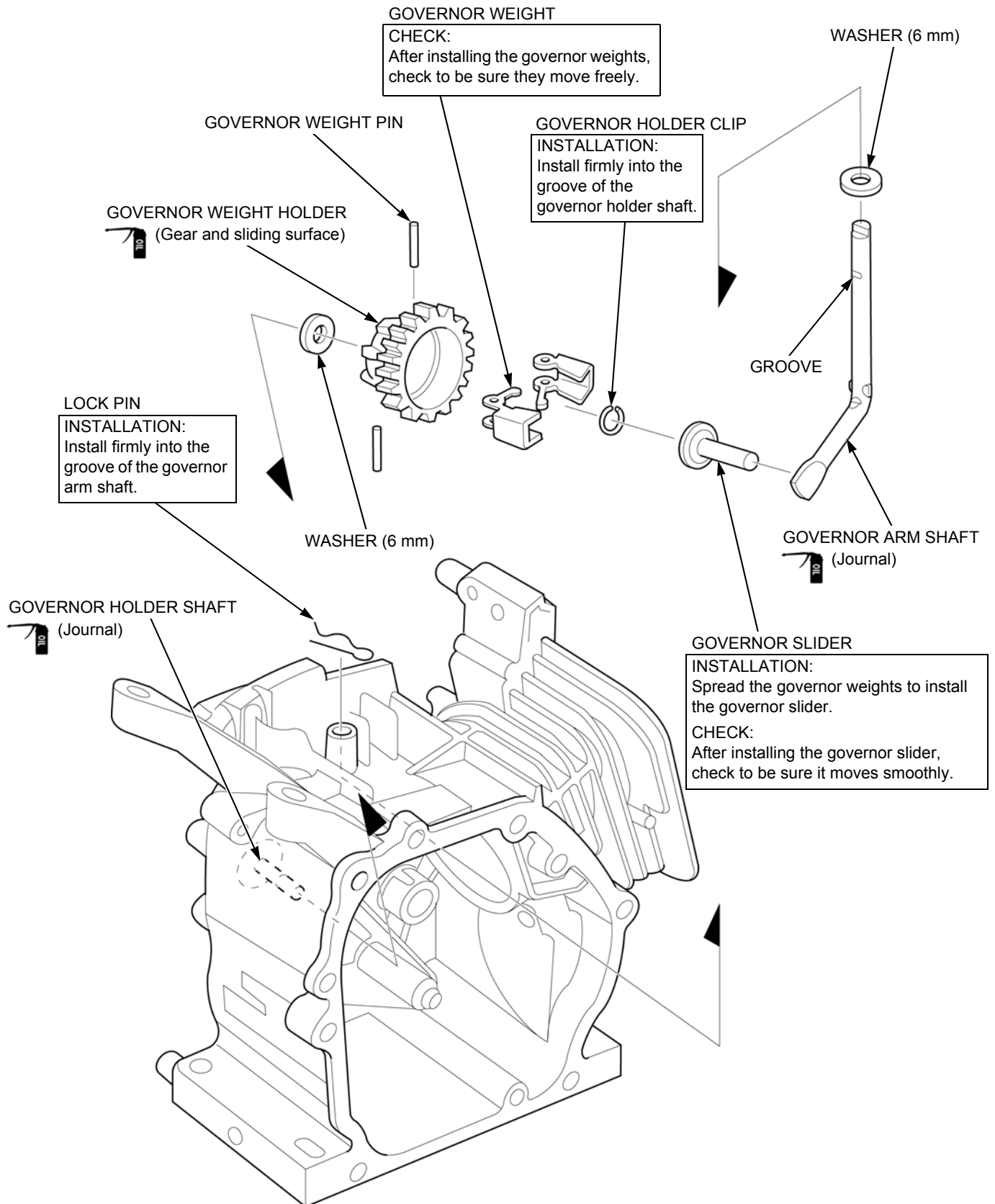
INSTALLATION:

Hook the governor spring to the appropriate hole on the control lever as shown.



GOVERNOR DISASSEMBLY/ASSEMBLY

Remove the crankshaft (Base shop manual: 61Z4H00 page 14-4).



MEMO

13. CYLINDER HEAD

CYLINDER HEAD
REMOVAL/INSTALLATION 13-2

CYLINDER HEAD
DISASSEMBLY/ASSEMBLY..... 13-3

PUSH ROD GUIDE PLATE INSPECTION OF
MOUNTING POSITION 13-4

VALVE SEAT RECONDITIONING..... 13-4

CYLINDER HEAD

CYLINDER HEAD REMOVAL/INSTALLATION

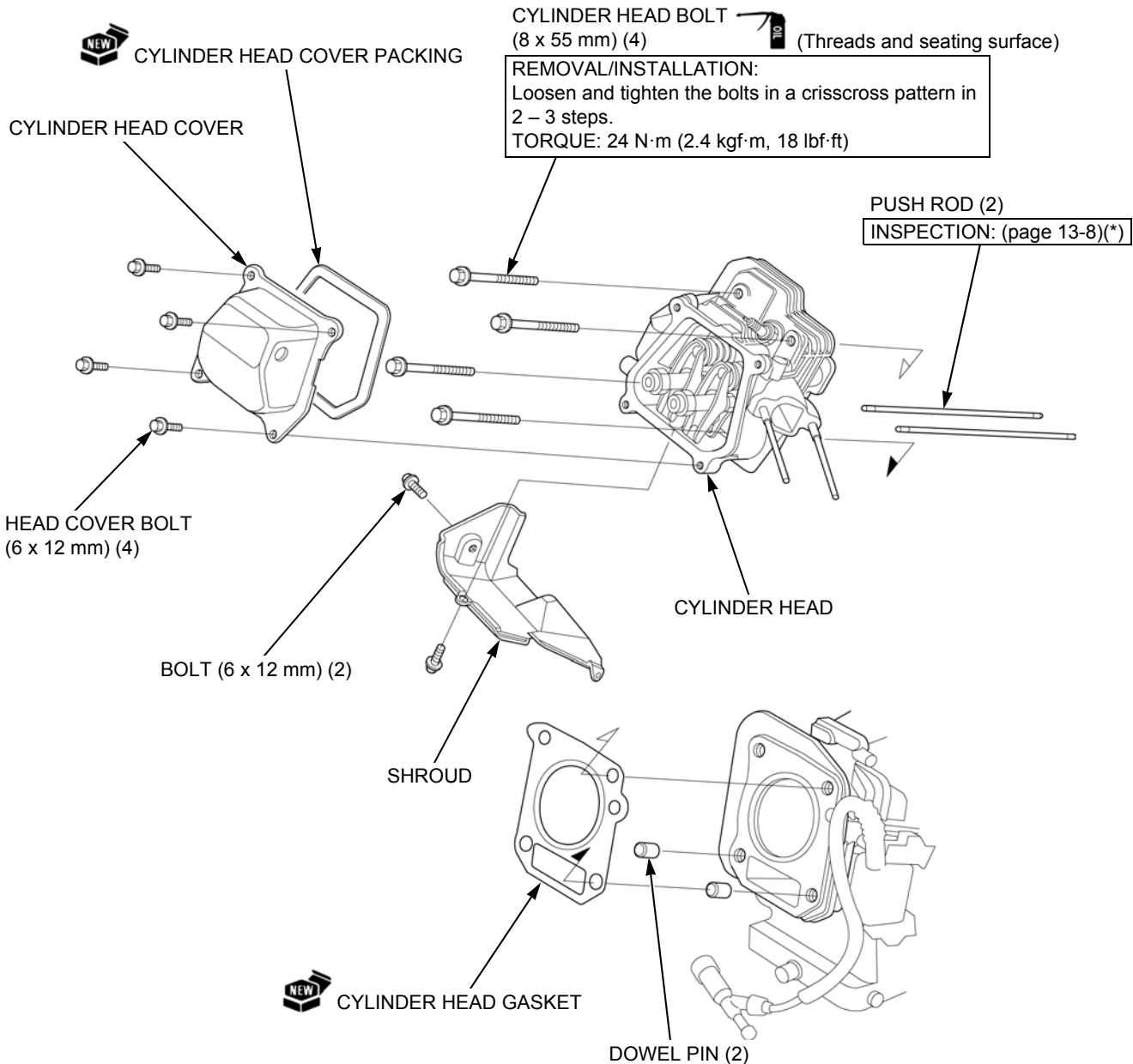
Set the piston at top dead center of the cylinder compression stroke
(Base shop manual: 61Z4H00 page 3-13).

Remove the following:

- Fan cover (Base shop manual: 61Z4H00 page 5-2)
- Carburetor (Base shop manual: 61Z4H00 page 6-10)
- Control base Assy. (page 7-2)
- Muffler (Base shop manual: 61Z4H00 page 12-2)

After installation, inspect following:

- Valve clearance (Base shop manual: 61Z4H00 page 3-13)
- Cylinder compression (Base shop manual: 61Z4H00 page 13-5)
- Push rod guide plate inspection of mounting position (page 13-4)



*: Refer to the page of base shop manual(61Z4H00).

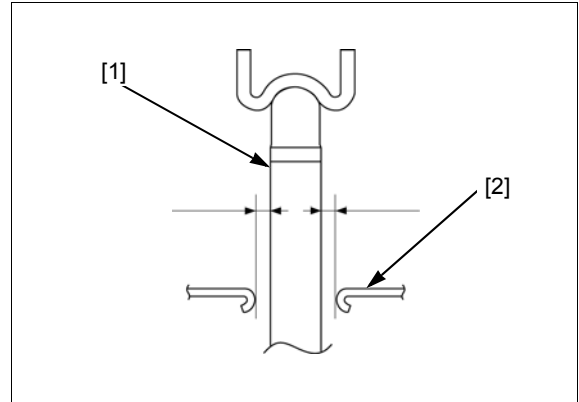
CYLINDER HEAD

PUSH ROD GUIDE PLATE INSPECTION OF MOUNTING POSITION

With the cylinder head bolt tightened, make sure that the left and right clearance between the push rod [1] and the push rod guide plate [2] are equal.

If not equal, loosen the rocker arm pivot bolt and adjust the mounting position.

After tightening the rocker arm pivot bolt with specified torque, check the clearance again.



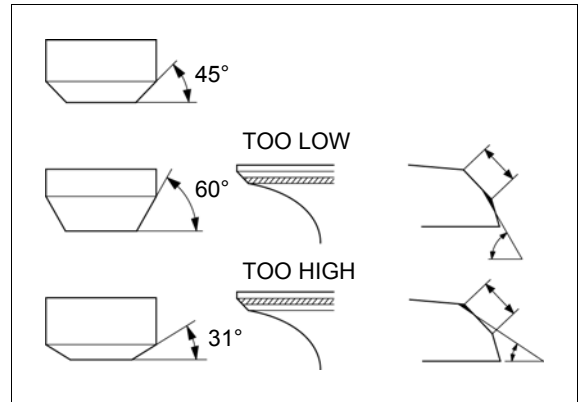
VALVE SEAT RECONDITIONING

Inspect the valve seat contact area (Base shop manual: 61Z4H00 page 13-6).

Using a 45° seat cutter, remove any roughness or irregularities from the seat.

If the contact area is too low on the valve, the seat must be raised using a 60° interior cutter.

If the contact area is too high on the valve, the seat must be lowered using a 31° flat cutter.



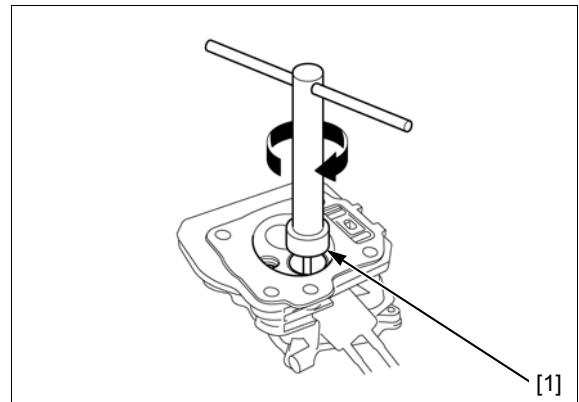
Valve seat cutters [1]/grinder or equivalent valve seat refacing equipment is recommended to correct a worn valve seat.

NOTICE

- Turn the cutter clockwise, never counterclockwise.
- Continue to turn the cutter as you lift it from the valve seat.

TOOLS (Commercially available):

Valve seat cutter, 31°	NWYCU115
Valve seat cutter, 45°	NWYCU122
Valve seat cutter, 60°	MWYCU111
Solid pilot (short) 5.5 mm	NWYPM10055SH
Accessory kit	NWYKACC246
T-wrench	NWYTW505
Adapter, 1/2"-3/8"	NWYTW503-1

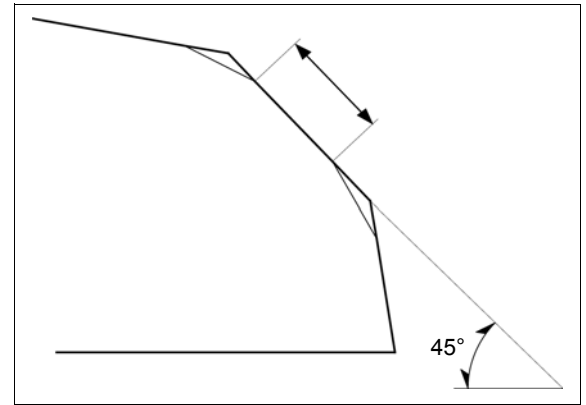


Make a light pass with the 45° cutter to remove any possible burrs at the edge of the seat.

Be sure that the width of the finished valve seat is within specification.

STANDARD:

IN/EX: 0.70 – 0.90 mm (0.028 – 0.035 in)

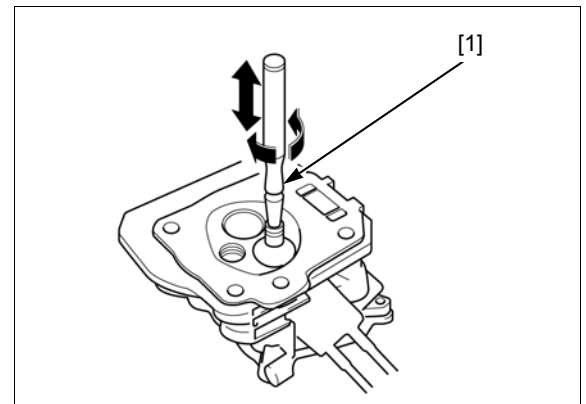


Lap the valves into their seats, using a commercially available valve lapper [1] and lapping compound.

After lapping, wash all residual compound off the cylinder head and valve.

NOTICE

- Do not push the valve against the seat with force during lapping. Apply a light pass with the valve lapper.
- Avoid lapping the valve in the same position as it causes uneven wear. Lap the valve by turning the lapper slowly.
- Take care not to allow the lapping compound to enter the gap between the stem and guide.



MEMO

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SHOP MANUAL

**GX160UD • GX200UD
ENGINE**

Supplement T
to the
GX120UT2 • GX160UT2 • GX200UT2
Engine Shop Manual

How to use this manual

A Few Words About Safety

SERVICE INFORMATION

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you and/or others. It could also damage this Honda product or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of special tools. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda must determine the risks to their personal safety and the safe operation of this product.

If you need to replace a part, use Honda Genuine parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of this product. Any error or oversight while servicing this product can result in faulty operation, damage to the product, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts-wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air, pressurized liquids, springs, or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have equipment hoisted in the air. Anytime you lift this product with a hoist, make sure that the hoist hook is securely attached to the product.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gasses from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
 - Never store gasoline in an open container.
 - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
-

INTRODUCTION

This supplement covers the construction, function, and servicing procedures of the Honda GX160UD/200UD Engines.

For service information that is not covered in this supplement, please refer to the GX120UT2/160UT2/200UT2 base shop manual (part number 61Z4H00).

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to this Honda product, other property, or the environment.

SAFETY MESSAGES

Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgment.

You will find important safety information in a variety of forms, including:

- Safety Labels – on the product.
- Safety Messages – preceded by a safety alert symbol

▲ and one of three signal words, DANGER, WARNING, or CAUTION.

These signal words mean:

▲ DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

▲ CAUTION You CAN be HURT if you don't follow instructions.

- Instructions – how to service these products correctly and safely.







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The marked sections contain no changes. They are not covered in this supplement.

How to use this manual

SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (mixture of engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
(O x O) (O)	Indicates the diameter, length, and quantity of metric bolts used.
page 1-1	Indicates the reference page.

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SPECIFICATIONS

P.T.O. TYPE VARIATION

GX160UD

P.T.O. type		S	
Type		SX4	
Air cleaner	Dual	○	
	Dual silent		
	Cyclone		
	Low profile		
	Oil bath		
	Semi dry		
Muffler	Standard	○	
	Silent		
	Low profile		
Spark arrester			
Fuel gauge			
Control base	Manual	Standard	
		Cyclone standard	
	Remote	Internal	
		EXP	○
		Cyclone	
Fixed throttle operation			
Charge coil	1 A		
	3 A		
	7 A		
Lamp coil	12 V – 15 W		
	12 V – 25 W		
	12 V – 50 W		
Starter motor/combination switch			
Oil level switch		○	
Engine stop switch		○	
Oil alert unit		○	
Circuit protector			
Reduction	Gear		
	Chain	Without clutch	
		With clutch	

GX200UD

P.T.O. type		S	
Type		SX4	
Air cleaner	Dual		
	Dual silent	○	
	Cyclone		
	Low profile		
	Oil bath		
	Semi dry		
Muffler	Standard	○	
	Silent		
	Low profile		
Spark arrester			
Fuel gauge			
Control base	Manual	Standard	
		Cyclone standard	
	Remote	Internal	
		EXP	○
Fixed throttle operation			
Charge coil	1 A		
	3 A		
	7 A		
Lamp coil	12 V – 15 W		
	12 V – 25 W		
	12 V – 50 W		
Starter motor/combination switch			
Oil level switch		○	
Engine stop switch		○	
Oil alert unit		○	
Circuit protector			
Reduction	Gear		
	Chain	Without clutch	
		With clutch	

DIMENSIONS AND WEIGHTS SPECIFICATIONS

	GX160UD	GX200UD
Overall length	304 mm (12.0 in)	313 mm (12.3 in)
Overall width	362 mm (14.3 in)	376 mm (14.8 in)
Overall height	346 mm (13.6 in)	346 mm (13.6 in)
Dry weight	15.1 kg (33.3 lbs)	16.1 kg (35.5 lbs)
Operating weight	18.6 kg (41.0 lbs)	19.6 kg (43.2 lbs)

SPECIFICATIONS

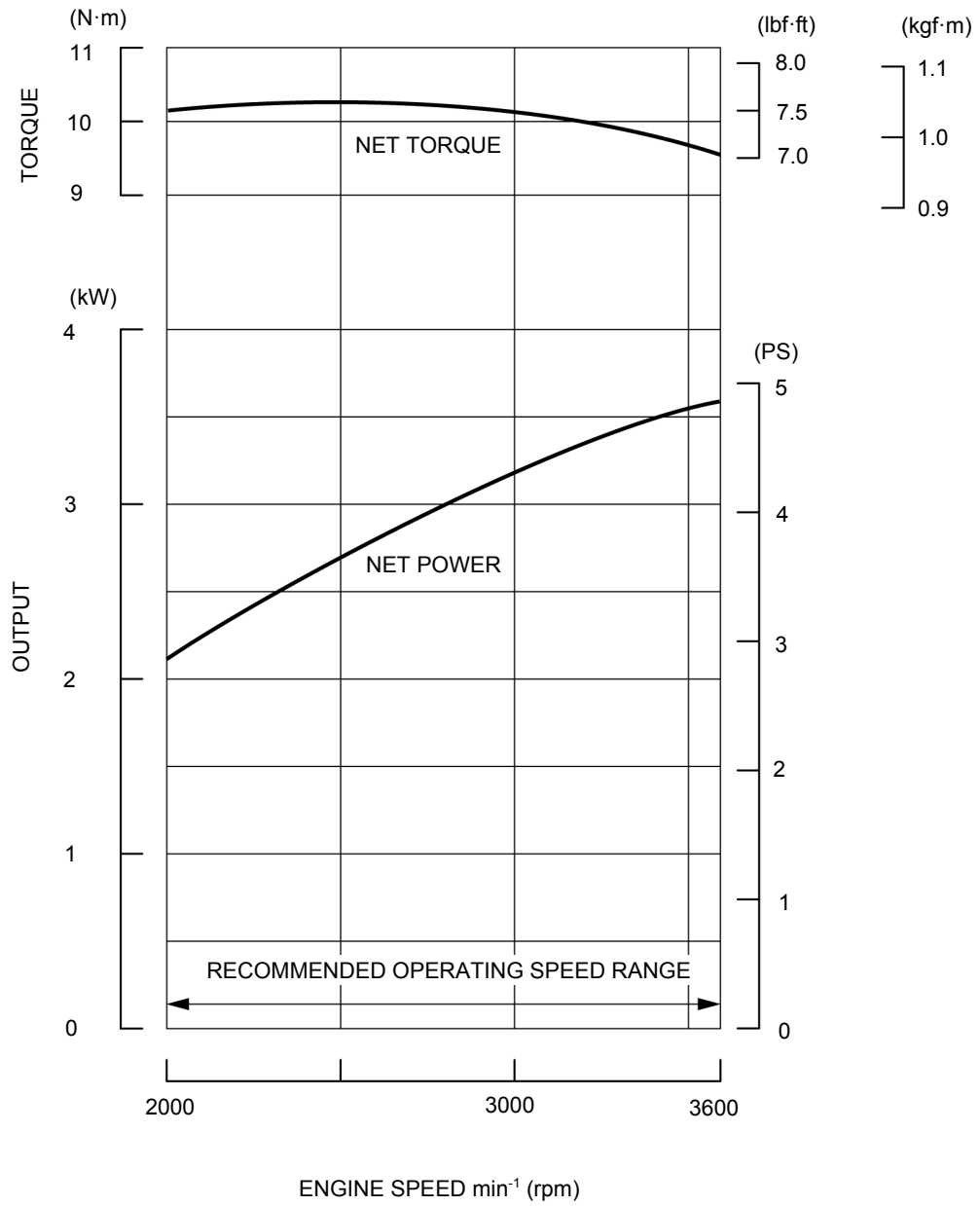
ENGINE SPECIFICATIONS

Model	GX160UD	GX200UD
Description code	GCAHD	GCAJD
Type	4 stroke, overhead valve, single cylinder, inclined by 25°	
Displacement	163 cm ³ (9.9 cu-in)	196 cm ³ (12.0 cu-in)
Bore x stroke	68.0 x 45.0 mm (2.7 x 1.8 in)	68.0 x 54.0 mm (2.7 x 2.1 in)
Net power (SAE J1349) *1	3.6 kW (4.9 PS)/ 3,600 min ⁻¹ (rpm)	4.3 kW (5.8 PS)/ 3,600 min ⁻¹ (rpm)
Continuous rated power	2.9 kW (3.9 PS)/ 3,600 min ⁻¹ (rpm)	3.7 kW (5.0 PS)/ 3,600 min ⁻¹ (rpm)
Maximum net torque (SAE J1349) *1	10.3 N·m (1.05 kgf·m, 7.6 lbf·ft)/ 2,500 min ⁻¹ (rpm)	12.4 N·m (1.26 kgf·m, 9.1 lbf·ft)/ 2,500 min ⁻¹ (rpm)
Compression ratio	9.0 : 1	8.5 : 1
Fuel consumption (at continuous rated power)	1.4 L (0.37 US gal, 0.31 Imp gal)/h	2.0 L (0.53 US gal, 0.44 Imp gal)/h
Ignition system	Transistor type magneto ignition	
Ignition timing	B.T.D.C. 22° ± 2°/ 1,400 min ⁻¹ (rpm)	B.T.D.C. 20° ± 2°/ 1,400 min ⁻¹ (rpm)
Recommended spark plug	BPR6ES (NGK)	
Lubrication system	Forced splash	
Oil capacity	0.58 L (0.61 US qt, 0.51 Imp qt)	0.60 L (0.63 US qt, 0.53 Imp qt)
Recommended oil	SAE 10W-30 API service classification SJ or higher	
Cooling system	Forced air	
Starting system	Recoil starter	
Stopping system	Ignition exciter coil circuit open	
Carburetor	Horizontal type, butterfly valve	
Air cleaner	Dual type	Dual silent type
Governor	Mechanical centrifugal	
Breather system	Reed valve type	
Fuel used	Unleaded gasoline E10	
Fuel tank capacity	3.1 L (0.82 US gal, 0.68 Imp gal)	

*1: The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 min⁻¹ (rpm) (net power) and at 2,500 min⁻¹ (rpm) (max net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

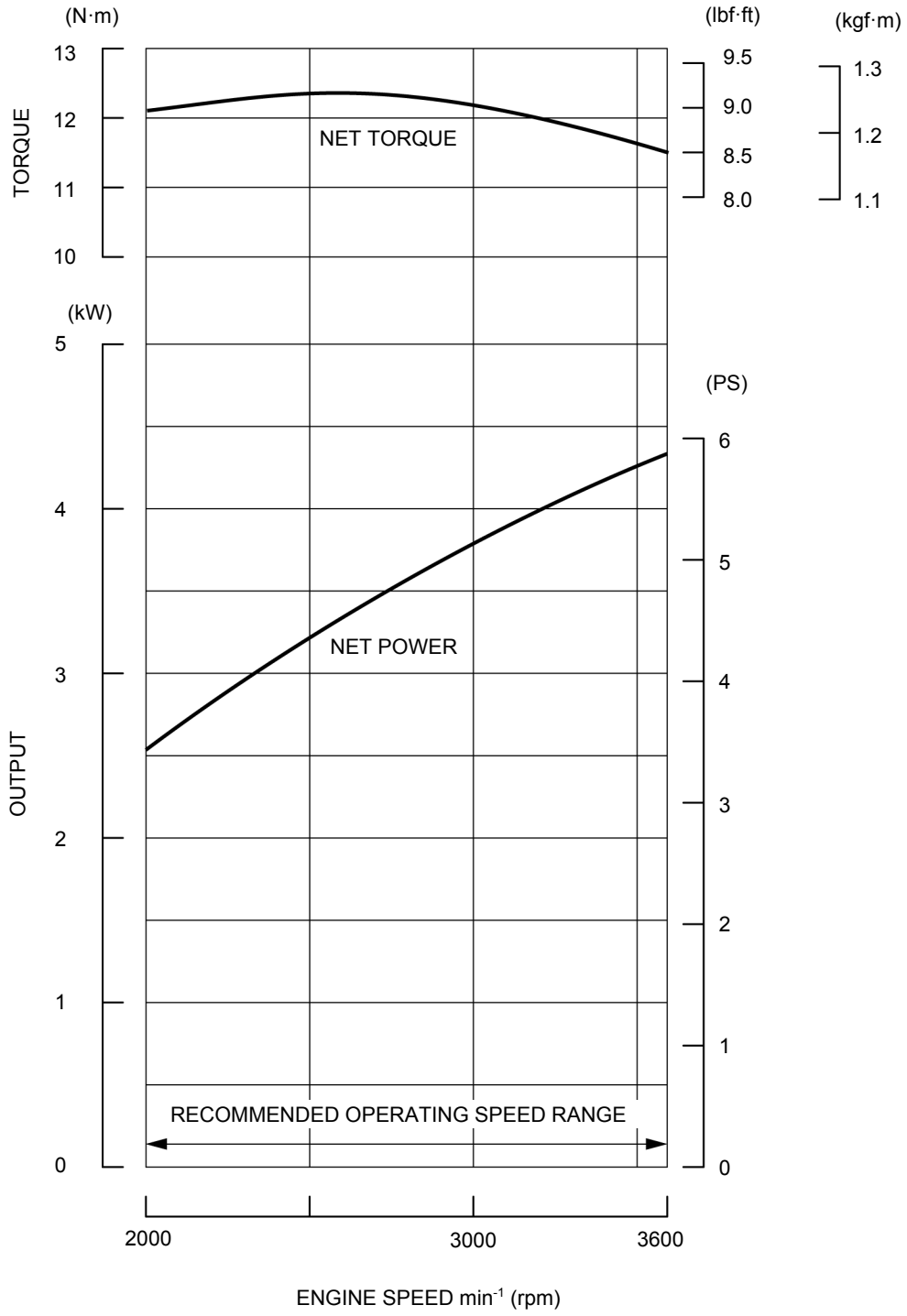
PERFORMANCE CURVES

GX160



SPECIFICATIONS

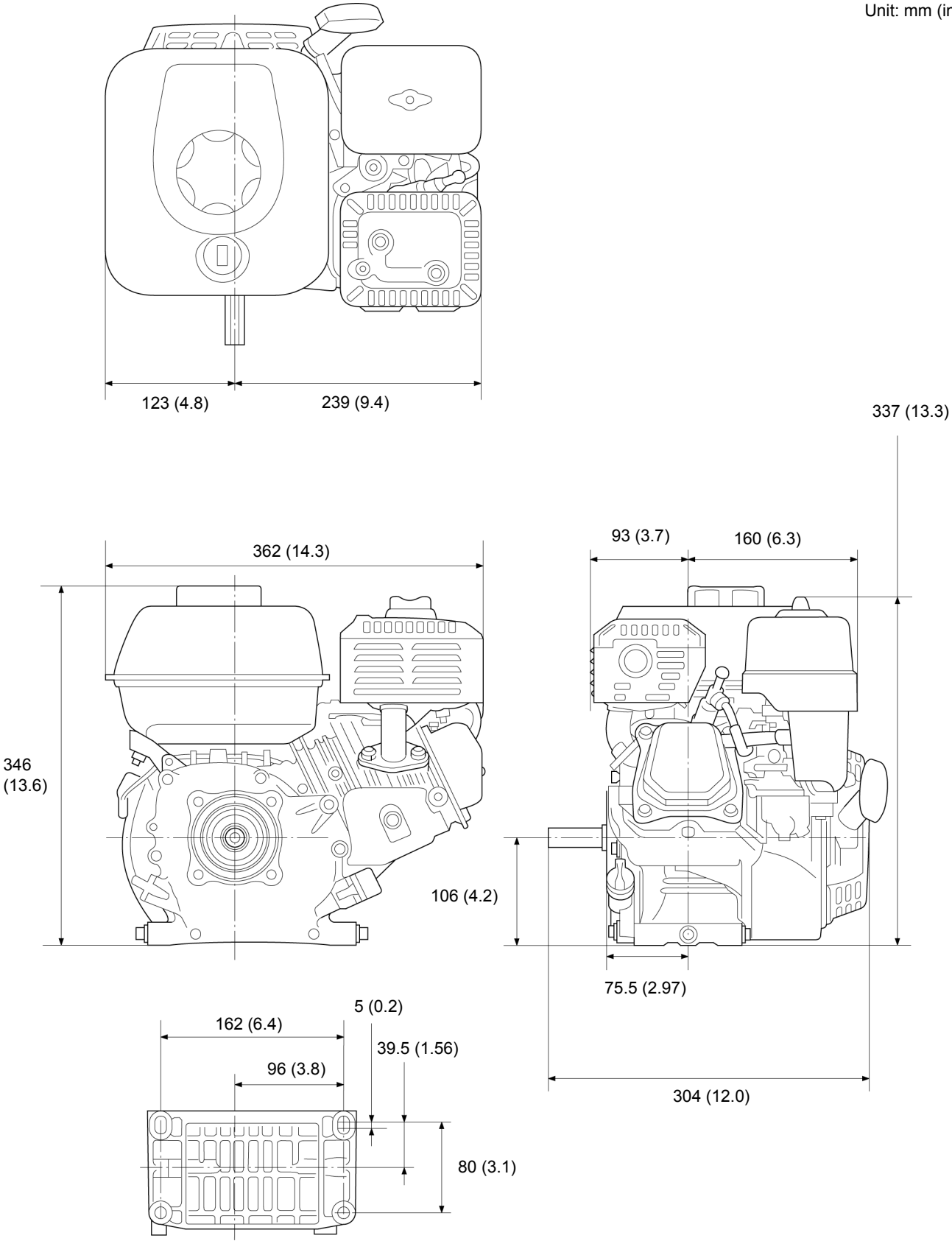
GX200



DIMENSIONAL DRAWINGS

GX160

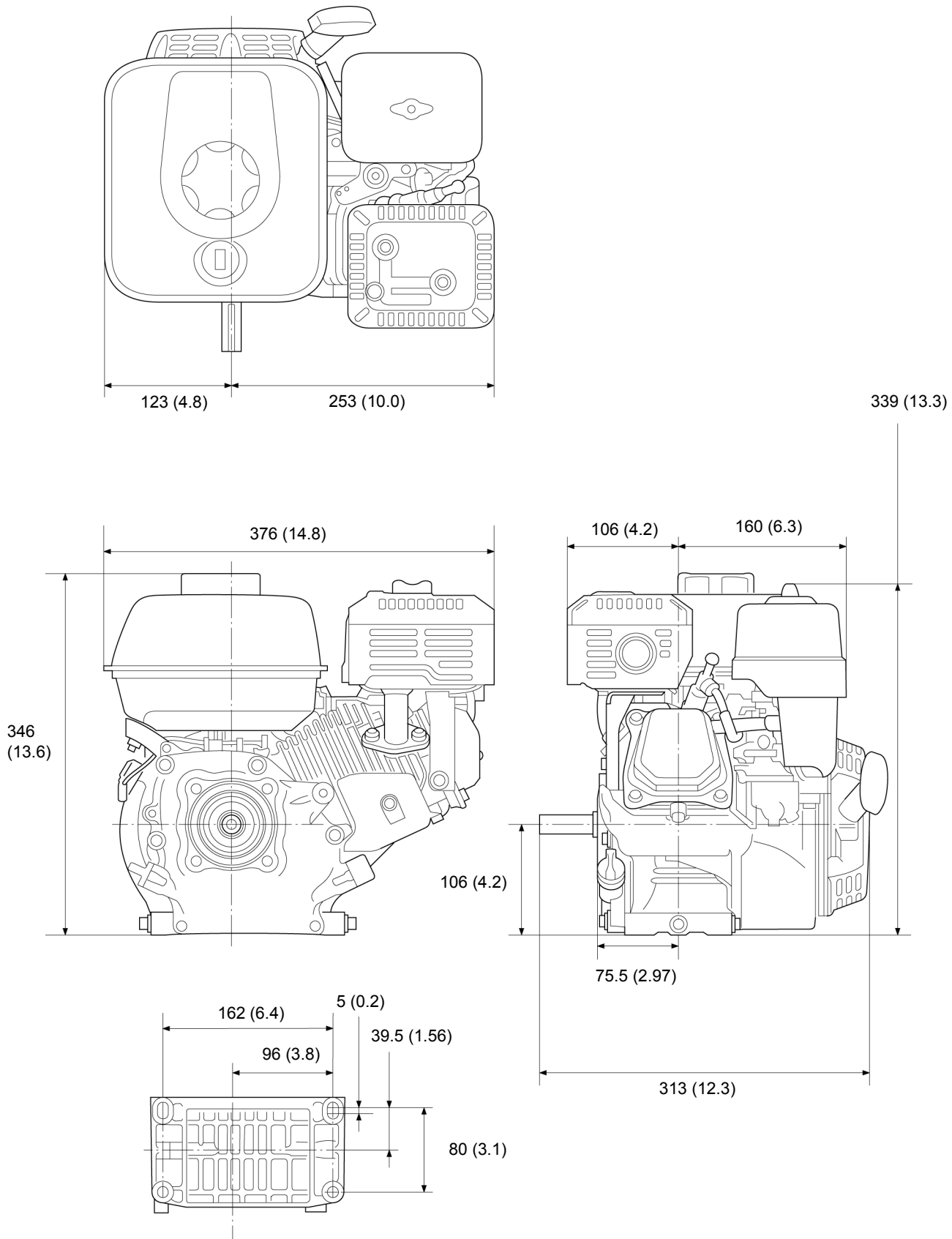
Unit: mm (in)



SPECIFICATIONS

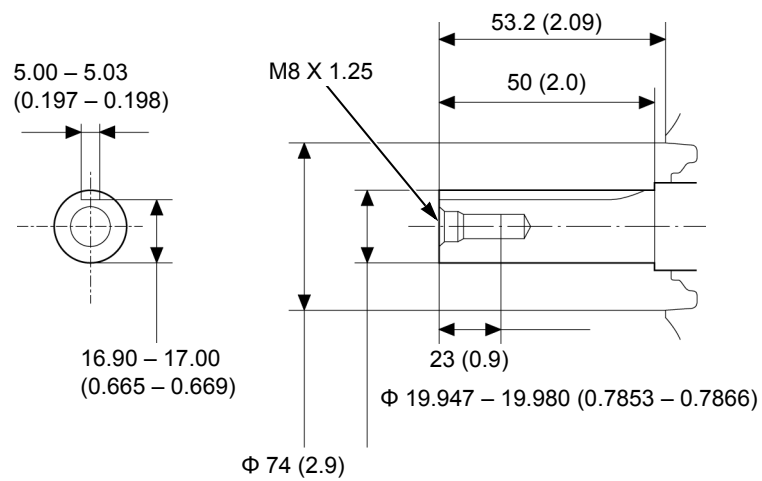
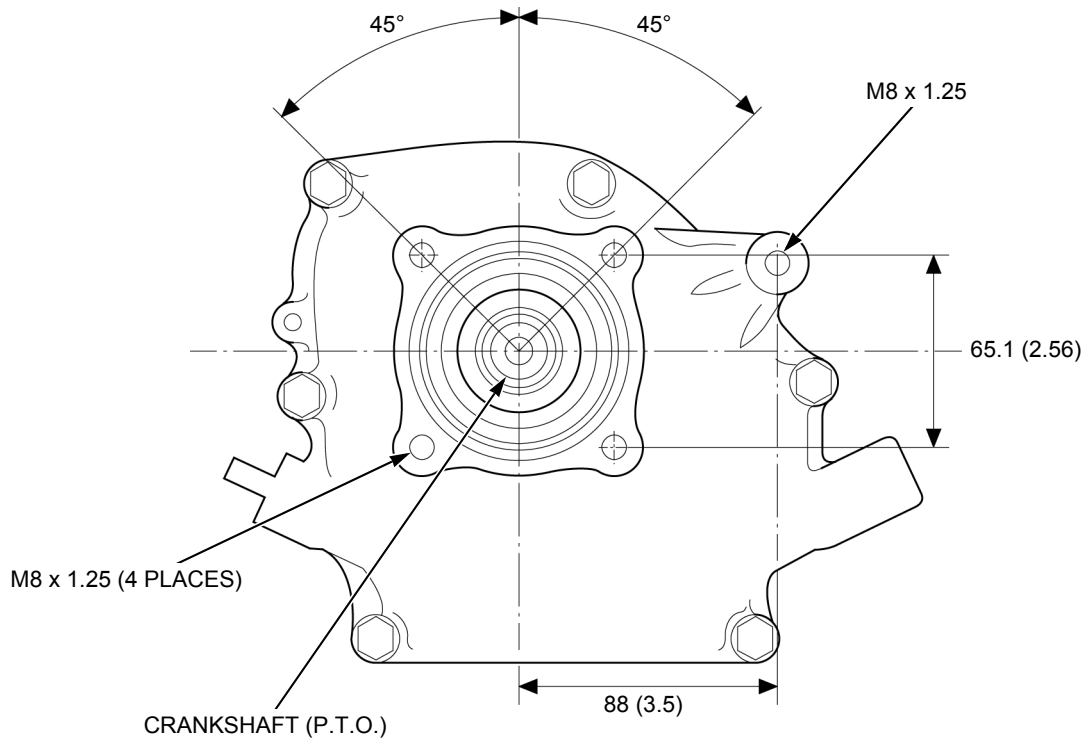
GX200

Unit: mm (in)



P.T.O. DIMENSIONAL DRAWINGS

Unit: mm (in)



MEMO

2. SERVICE INFORMATION

MAINTENANCE STANDARDS 2-2

SERVICE INFORMATION

MAINTENANCE STANDARDS

GX160UD

Unit: mm (in)

Part	Item	Standard	Service limit
Ignition coil	Air gap	0.2 – 0.6 (0.01 – 0.02)	–
	Primary resistance	0.4 – 0.7 Ω	–
	Secondary resistance	8 – 14 k Ω	–

GX200UD

Unit: mm (in)

Part	Item	Standard	Service limit
Ignition coil	Air gap	0.2 – 0.6 (0.01 – 0.02)	–
	Primary resistance	0.4 – 0.7 Ω	–
	Secondary resistance	8 – 14 k Ω	–

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