

OPERATOR'S INSTRUCTION MANUAL

GT-3500GE MODEL

PORTABLE IMPACT WRENCH



Product of Japan

- C E SPEC TYPE (Documents Included)
- USA GAS EMISSION CONTROL VERSION (EPA PHASE/CARB Tier 1)
- INTERNATIONAL SPEC MODEL

VESSEL®

Tools since 1916

**VESSEL**

17-25, FUKAE KITA 2-CHOME,
HIGASHINARI-KU, OSAKA, JAPAN
Tel : +81 6 6976 7778
Fax : +81 6 6972 9441

GB: EC DECLARATION OF CONFORMITY	— Individual machinery and safety components
F : DECLARATION DE CONFORMITE NORME CE	— Machine seule et composants de sécurité
D : CE KONFORMITÄTSEKHLARUNG	— Gesamtmaschine und Sicherheitseinrichtungen
SP : DECLARACION DE CONFORMIDAD CE	— Maquinaria individual y componentes de seguridad
I : DICHIARAZIONE DI CONFORMITA CE	— Macchina singola e componenti di sicurezza
P : CE DECLARACAO DE CONFORMIDADE	— Maquinaria individual e dispositivos de segurança
NL : EG KONFORMITEITSVERKLARING	— Individuele machine en veiligheidscomponenten
DK : CE OVERENSSTEMMELSE DEKLARATION	— Enkle maskin og sikkerhedskomponenter
S : EG-DEKLARATION OM OVERENSSTAMMELSE	— Individuella maskiner och säkerhetskomponenter
N : EF OVERENSSTEMMELSESERKLÆRING	— Individuel maskine og sikkerhedsudstyr
FIN : VAATIMUSTENMUKAISUUSVAKUUTUS	— Erilliset koneistot ja turvalaitteet
G : EC ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ	— Ατομικά μηχανήματα και εξαρτήματα ασφαλείας

We, **VESSEL CO., INC.** OSAKA JAPAN, declare under our sole responsibility that the products: to which this declaration relates is in conformity with the following Machinery Directive and Standard: Machinery Directive 89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 2006/42/EC.

Model / Modele / Modell / Modelo /
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GT-3500GE

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Kenneth W. Ishihara, Director

Signature of issuer / Signature de l'émetteur / Unterschrift des Erstellers / Firma del expedidor / Firma del dichiarante / Assinatura do emissor / Handtekening van de uitgever / Udsteder, underskrift / Utsteders signatur / Utfårdarens namnteckning / Ilmoituksen antajan allekirjoitus / Υπογραφή εκδότη

VESSEL CO., INC.

GT-3500GE

PORTABLE GASOLINE ENGINE IMPACT WRENCH

OPERATOR'S MANUAL & SPARE PARTS LISTS

INDEX

		PAGE No.
CHAPTER 1.	TECHNICAL DATA -----	1
CHAPTER 2.	WARNINGS & SAFETY INSTRUCTIONS -----	2~3
CHAPTER 3.	OPERATING INSTRUCTION -----	4~5
CHAPTER 4.	TROUBLE SHOOTING -----	6~8
CHAPTER 5.	MAINTENANCE INSTRUCTION -----	9~11
CHAPTER 6.	EXPLODED VIEWS AND SPARE PARTS LISTS -----	12
	Engine - Exploded Diagram Drawing -----	13
	Engine - Parts List -----	14
	Engine components - Exploded Diagram Drawing -----	15
	Engine components - Parts List -----	16
	Recoil Starter - Exploded Diagram Drawing & Parts List -----	17
	Carburetor - Exploded Diagram Drawing & Parts List -----	18
	Impact Mechanism - Exploded Diagram Drawing -----	19
	Impact Mechanism - Parts List -----	20
	Impact Mechanism - Exploded Diagram Drawing -----	21
	Handle Components - Exploded Diagram Drawing -----	22
	Damper Unit - Parts List -----	23

INTRODUCTION

GT-3500GE GASOLINE ENGINE IMPACT WRENCH is a high quality tool with self-contained heavy duty and high power two cycle engine as power source. And its unique design of impact mechanism with VESSEL pneumatic V-Hammer ultra light weight impact wrench series, even small engine (46.5 cc) can create higher fastening torque with enormous light weight only 19.50kg (42.99 lbs.)

Because of self-contained high power two cycle engine, it is very easily mobile to carry by one man to any construction sites in the rain forest, hill or desert such remote areas where electricity supply or air compressor, generator are not available.

The capacity of this tool is 32mm (1 1/4") bolt size and ideal for fastening and loosening bolts of wood sleepers at railroad construction and many more applications.

Engine	Type	: Two Stroke, Forced, Air Cooled, Single Cylinder	
	Displacement	: 46.5cc, Φ 43x32mm(Inner bore size x stroke)	
	Fuel Tank Capacity	: 1 liter	
	Fuel Mixture Ratio	: 25:1(gasoline : 2 cycle oil)	
	Revolution(idling)	: 2700 rpm \pm 250	
	Revolution(loaded, impact)	: 7120 rpm	
	Revolution(non loaded, max)	: 9880 rpm	
	Maximum Output	: 2.3 Ps/7500 rpm	
	Maximum Torque	: 0.34 kg-m/5500 rpm	
	Compression Rate	: 7.1 : 1	
	Fuel Consumption Rate	: 380 g/Ps.h	
Ignition	Type	: Electronic	
	Spark Plug Type	: NGK BP6A	
Carburetor	Type	: Diaphragm	
Impact	Square Drive Size	: 25.4 mm(1")	
	Fastening Torque Range	: 1700Nm(Full Throttle : 1255ft. lbf) 950Nm(Half Throttle : 701ft. lbf)	
	Free Speed	: 1200 rpm	
Vibration (ISO8662)	Unloaded	without damper : 8.9 m/S ²	with damper : 2.3 m/S ²
	Loaded	: 19 m/S ²	: 11.6 m/S ²
Noise (ISO15744)	Idle	: 74.6dBA (LpA)	
	Loaded	: 104dBA (LpA)	
Capacity	Bolt Diameter	: 32 mm (1 1/4")	
Weight	Without fuel	: without damper 19.5 kg (42.99 lbs.)	
		: with damper 21.3 kg (46.96 lbs.)	
Overall Dimensions	Length Height Width	without damper	with damper
		: 680 mm (28")	: 680 mm (28")
		: 338 mm (13")	: 346 mm (13")
		: 390 mm (15")	: 390 mm (15")
Accessories	Hex Key Wrench	4mm 1pc.	
		5mm 1pc.	
		6mm 1pc.	
	Spark Plug Wrench	1pc.	
	Spanner	10-13mm 1pc.	

Note: To improve the performance, the specifications are subject to change without notice.

Read these instructions carefully before operating, maintaining or servicing this tool. Please keep these instructions in a safe accessible place.



Read to fully understand and observe the following safety precautions and warnings. Careless or improper use of tool may cause serious or fatal injury.



Always wear eye, head and ear protectors when using this tool.



WARNING!
Indicates instant possibility of severe personal injury or loss of life, if instructions are not followed.



CAUTION!
Indicates a possibility of personal injury or equipment damage, if instructions are not followed.



KEEP FIRE AWAY



CAUTION. HOT
Engine and the exhaust parts are at high heat.

Operator safety

- Always wear a safety face shield or goggles.
- Always wear heavy, long pants, boots and gloves. Do not wear loose clothing, jewellery, short pants, sandals or go barefoot. Secure hair so it is above shoulder length.
- Do not operate that tool when you are tired, ill or under the influence of alcohol, drugs or medication.
- Never let a child or inexperienced person operate the machine.
- Wear hearing protection.
- Never start or run the engine inside a closed room or building. Breathing exhaust fumes can kill.
- Keep handles free of oil and fuel.
- Keep hands away from anvil.
- Do not grab or hold the unit by rotating anvil.
- Hold the handles firmly with both hands and make sure to stand on the firm base or ground.
- Do not touch spark plug, high voltage cord during operation as it may cause electric shock.
- To avoid burn do not touch those places like engine, muffler, exhaust where get very hot during in use or even after stop engine until it gets cool for the time being.
- When operation is prolonged, take a break from time to time so that you may avoid possible white finger disease which is caused by vibration.

Tool safety

- Inspect the entire tool before each use. Replace damaged parts. Check for fuel leaks and make sure all fasteners are in place and securely fastened.
- Replace parts that are cracked, chipped or damaged in any way before using the tool.
- Keep others away when making carburetor adjustments.
- Use only accessories as recommended for this tools by the manufacturer.

WARNING!

Never modify the tool in any way. Do not use your tool for any job except that for which it is intended.

(if you are using any medical electric/electronic devices such as a pacemaker, consult your physician as well as the device manufacturer prior to operating any power equipment.)

Fuel safety

- Mix and pour fuel outdoors and where there are no sparks or flames.
- Use a container approved for fuel.
- Do not smoke or allow smoking near fuel or the tool or while using the tool.
- When filling up fuel, stop engine and make sure engine is cool and choose the places where no flammables and well ventilation.
- Wipe up all fuel spills before starting engine.

- Move at least 3m away from fueling site before starting engine.
- Stop engine before removing fuel cap.
- Empty the fuel tank before storing the tool. It is recommended that the fuel be emptied after each use. If fuel is left in the tank, store so fuel will not leak.
- Store tool and fuel in area where fuel vapors cannot reach sparks or open flames from water heaters, electric motors or switches, furnaces, etc.

WARNING!

Antivibration systems do not guarantee that you will not sustain white finger disease or carpal tunnel syndrome. Therefore, continual and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice immediately.

Maintenance safety

- Maintain the tool according to recommended procedures.
- Disconnect the spark plug before performing maintenance except for carburetor adjustments.
- Keep others away when making carburetor adjustments.
- Use only genuine replacement parts as recommended by the manufacturer.

Transport and storage

- Carry the tool by hand with the engine stopped and the muffler away from your body.
- Allow the engine to cool, empty the fuel tank, and secure the tool before storing or transporting in a vehicle.
- Empty the fuel tank before storing the tool. It is recommended that the fuel be emptied after each use. If fuel is left in the tank, store so fuel will not leak.
- Store tool out of the reach of children.
- Clean the unit carefully and store it in a dry place.
- Make sure engine switch is off when transporting or storing.

If situations occur which are not covered in this manual, take care and have a good judgement. Contact your dealer if you need assistance.

1.FUEL

Use only quality two cycle oil with gasoline at mixture ratio of 25:1 (Gasoline : Two cycle oil) (FIG. 3)

*Never use by gasoline only as engine will burn.

⚠ WARNING!

Do not smoke and keep all other fire away from fuel tank during filling fuel as it causes fire or burn yourself. (FIG. 3-1)

Fill up fuel after well mixed fuel and oil in a separate clean container.

⚠ CAUTION!

Wipe up all fuel spills before starting engine.

2.START UP ENGINE

- (1) Place the tool on a firm stand or solid floor.
- (2) Set **gear change lever** to neutral (N) position. (FIG. 3-2)
- (3) Press **priming bulb** several times so that fuel flows through bulb into carburetor. (FIG.3-3)
- (4) Turn **choke lever** to closed position. (FIG. 3-4)
- (5) Pull **throttle lever**, and then press the **support button**. then the throttle lever is stayed there in the state of half-throttle, and won't be back to the original location. (FIG.3-5)
- (6) Pull **recoil starter handle** strongly, taking care to keep the handle in your grasp and not allow to withdraw rope until the end. (FIG.3-6)

⚠ CAUTION!

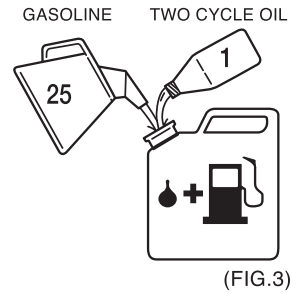
Return recoil starter rope gently to its original position.

- (7) After initial fires, engine will continue to run, return **choke lever** slowly to open position.
- (8) If engine will stop after a few fires by procedure of (7), return **choke lever** to open position and pull **recoil starter handle** strongly again.
- (9) If engine does not start by procedure of (8), repeat procedures from (4).
- (10) After starting engine, return **throttle lever** to idle position for slow engine. Then allow the engine about 2~3 minutes to warm up before in use.

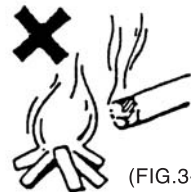
⚠ WARNING!

*Once starting the engine, do not leave tool alone. Always hold handle tightly so that tool will not move around on the stand or floor.

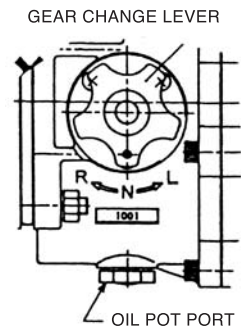
*Before and during operation, always take a firm stance and keep safety position from slipping of falling down.



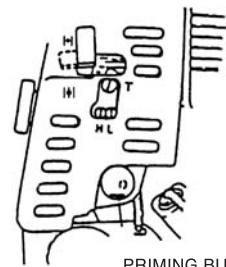
(FIG.3)



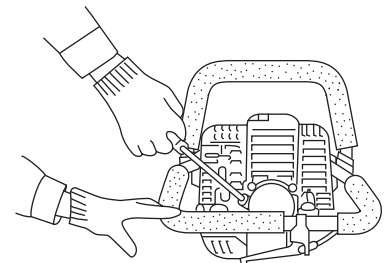
(FIG.3-1)



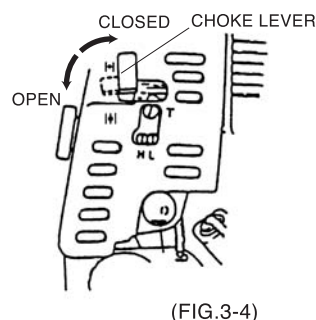
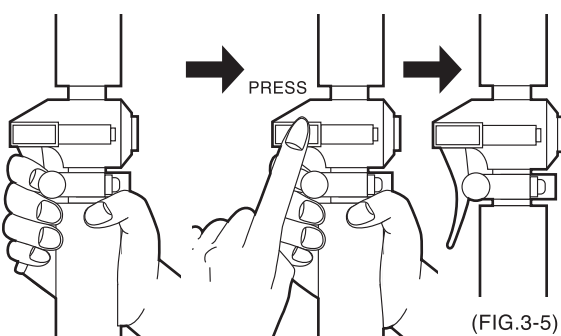
(FIG.3-2)



(FIG.3-3)

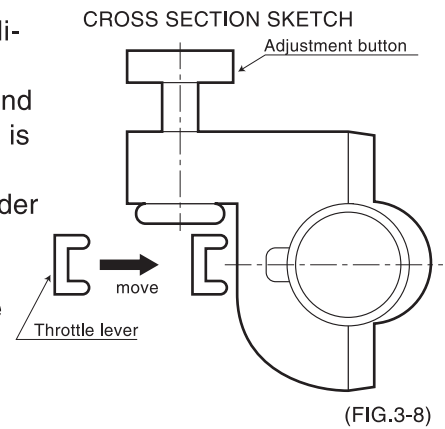


(FIG.3-6)

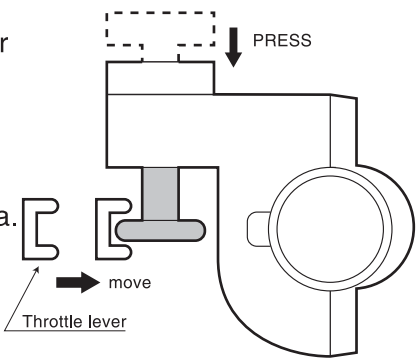


3.OPERATION.

- (1) Select **R** (for clockwise direction) or **L** (counter clockwise direction) **gear** for fastening or loosening bolts and nuts.
- (2) Always release **throttle lever** to allow slow engine for idling and turn **gear change lever** and do not change gear when engine is accelerating.
- (3) This new model has implemented an **adjustment button** in order to operate two different torque values.
 - A.FULL THROTTLE(MAXIMUM TORQUE)1030 Nm
If you squeeze the throttle lever fully, the machine shows the maximum torque,1030Nm.
 - B.HALF THROTTLE(MEDIUM TORQUE) about 800Nm
 - 1.Press the **adjustment button**.
 - 2.Squeeze the **throttle lever** and the **adjustment valve** will prevent the **throttle lever** from moving further more. In other words, the throttle lever would hit at the **adjustment valve** and would not create further torque. (FIG.3-8)



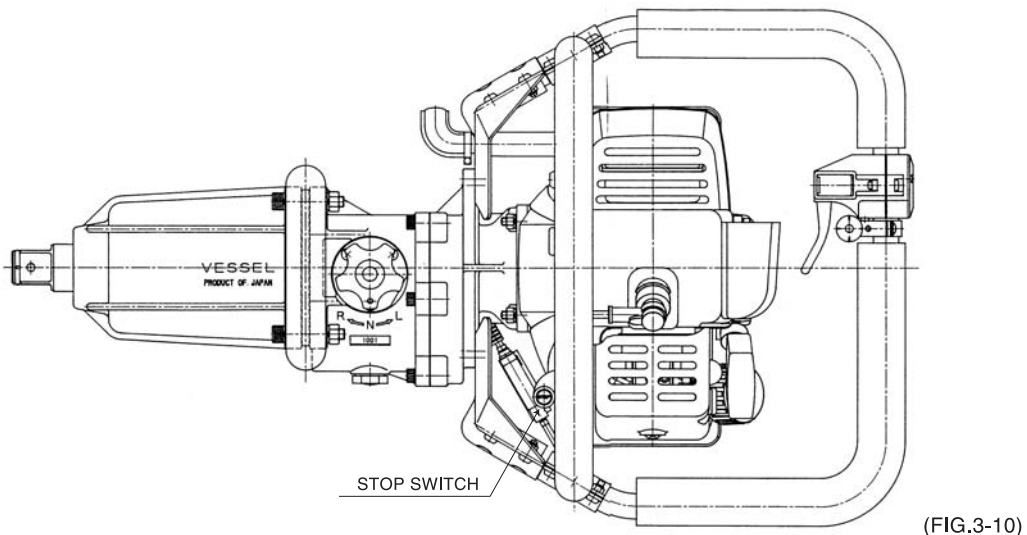
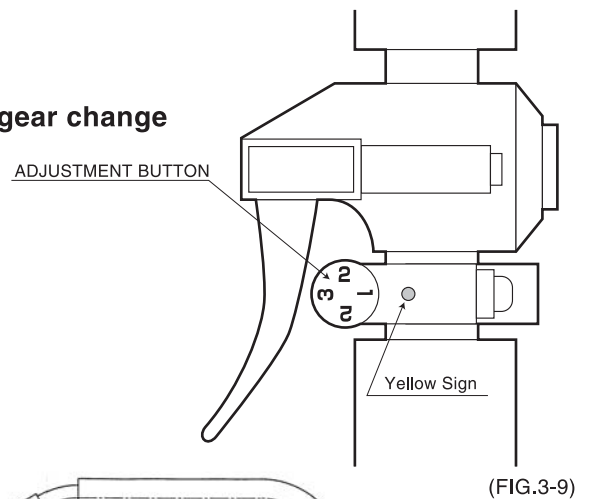
Fine tune might be required by turning **adjustment button** from number 1 to 3. The number should be set at the yellow sign area. (FIG.3-9)



- (4) Once bolts or nuts fastened, release throttle lever for idling and not allow driving shaft turn and remove socket from bolts or nuts.

4.STOPPING ENGINE

- (1) Release **throttle lever** to decrease engine speed.
- (2) Push **stop switch** to stop engine. (FIG. 3-10)
- (3) Place the tool on firm stand or solid floor and turn **gear change lever** to N (neutral) position.



SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
<p>ENGINE DOES NOT START</p>	<p><Fuel System></p> <ul style="list-style-type: none"> ● Empty fuel or shortage ● Wet spark plug due to too much intake of fuel ● Bent or disconnection of fuel pipe ● Poor function of carburetor <p><Electrical system></p> <ul style="list-style-type: none"> ● Ignition stop switch in stop position ● No spark ● Short circuit of stop switch lead wire ● Dirty plug ● Wider spark plug gap ● Poor connection of high voltage cord in ignition with spark plug ● Bad ignition coil 	<p>Fill up fuel at mixture ratio 25 gasoline : 1 two cycle oil</p> <ol style="list-style-type: none"> 1. Remove spark plug 2. Exhaust exceeded fuel by pulling recoil starter handle 5-6 times 3. Install spark plug 4. Turn choke lever to open position and pull recoil starter handle <p>Repair</p> <p>Air leak from carburetor Incorrect carburetor adjustment Bad diaphragm in carburetor Incorrect carburetor valve hinge height adjustment</p> <p>Turn to on position</p> <ol style="list-style-type: none"> 1. Bad connection/Ignition coil 2. Incorrect air gap/Ignition coil 3. Bad ignition coil <p>Repair or replace</p> <p>Clean up or replace</p> <p>Adjust correct gap to 0.6 mm</p> <p>Correct connection</p> <p>Replace</p>

TROUBLE SHOOTING - 2

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
ENGINE INSTALLED SOON AFTER STARTING OR IS LIKELY TO STOP	<p><Fuel System></p> <ul style="list-style-type: none"> ● Shortage of fuel ● Choke lever in closed position ● Air goes through to fuel system ● Poor function of carburetor <p><Electrical system></p> <ul style="list-style-type: none"> ● Bad spark plug ● Bad ignition coil 	<p>Fill up fuel at mixture ratio of 25 gasoline : 1 two cycle oil</p> <p>Turn to open position</p> <p>Check if cracks are found on pipe or connector and pipe is securely fixed</p> <p>Air leak from carburetor Incorrect carburetor adjustment Bad diaphragm in carburetor Incorrect carburetor valve hinge height adjustment</p> <p>Replace</p> <p>Replace</p>

TROUBLE SHOOTING - 3

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
ENGINE OVERHEATS	<ul style="list-style-type: none"> ● Bad mixture ratio fuel ● Wrong selection of spark plug ● Clogged cylinder with dirt ● Clogged cooling duct with dirt 	<p>Fill up correct mixture ratio fuel at 25 gasoline : 1 two cycle oil</p> <p>Replace. Use pure and instructed parts only</p> <p>Clean up</p> <p>Clean up</p>
NON-REVOLUTION OF ANVIL SHAFT	<ul style="list-style-type: none"> ● Gear change lever in neutral position ● Worn out of drum shoe on clutch arm 	<p>Turn to R (clockwise direction) or L (counter clockwise direction) position</p> <p>Replace</p>
OUTPUT POWER REDUCTION	<ul style="list-style-type: none"> ● Dirty air cleaner element ● Carbon deposits in muffler, exhaust port on cylinder ● Poor cylinder pressure due to worn out of piston, piston ring, cylinder ● Worn out of anvil ● Worn out of clutch ● Worn out of cam plate ● Worn out of hammer ● Broken of return spring ● Carbon stuck on Spark Arrester. 	<p>Clean up</p> <p>Clean up</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Replace</p> <p>Remove carbon on Spark Arrester.</p>

MAINTENANCE/CHECK-UP/REPAIRING

It is recommended to practice regular check-up and maintenance in accordance with usage frequency to keep your tool better condition and long life and eventually it reduces total running costs.

This practice also protects you from serious injuries.

Daily Check-Up

- * Check all nuts and screws are securely tightened.
- * Check fuel level, and when filling up fresh fuel, wipe up spill and clean fuel tank.
- * Check oil level of gear box through window. Oil level should be center of window and if lower than this level, add oil to this level.

Weekly Maintenance

- * Check the starter, especially cord and return spring.
- * Clean the exterior of the spark plug.
- * Remove spark plug and check the electrode gap. Adjust it to 0.6 mm, or change the spark plug.
- * Clean the cooling fins on the cylinder and check that the air intake at the starter is not clogged.
- * Clean the air filter.

Monthly Maintenance

- * Rinse the fuel tank with gasoline.
- * Clean the exterior of the carburetor and the space around it.
- * Clean the fan and the space around it.

1. CARBURETOR ADJUSTMENT

(1) The carburetor on your unit has been factory adjusted, but may require fine tuning due to a change in operating conditions. Adjustment is always required to make after tip sockets removed. Before adjusting the carburetor, make sure that the provided air/fuel filters are clean and fresh and the fuel properly mixed. And do adjust after “a few-minutes” warm up of engine turning.

(2) When idle speed is higher(when the anvil is rotating) or lower(engine will stop), adjust to correct speed by idle adjustment screw.

Turn to clockwise for higher idle

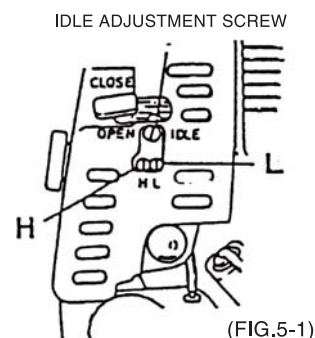
Turn to anti clockwise for lower idle (FIG. 5-1)

How to adjust L adjustment screw(lower speed fuel adjustment) and H adjustment(higher speed fuel adjustment)

(3) ① Under idle condition, turn L adjustment screw to right or left to look for the peak of idle speed. And from this position, return adjustment screw to the left 1/4 turn.

② Full open throttle lever and turn H adjustment screw to right or left and follow the same procedures as L adjustment screw explained.

※ Carburetors are pre set at the factory. Minor adjustments may optimize performance based on climate, altitude, etc. Never turn the adjustment screws in increments greater than 90 degrees, as engine damage can result from incorrect adjustment. If you are not familiar with type of adjustment-assistance, ask your local distributor.



(FIG.5-1)

2. CHECK-UP SPARK CONDITION

(1) Remove spark plug and touch it to metal part except spark plug mounting thread.

⚠ WARNING!

* Never touch spark plug to the area at spark plug mounting thread since remaining gas might be exploded.

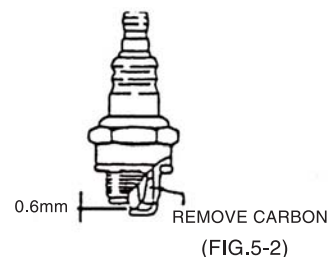
(2) Pull recoil starter handle.

⚠ WARNING!

* When pulling recoil starter handle, do not touch the metal part of spark plug or you will get electric shock.

* After wipe and clean up fuel around the place where spark plug to touch and make sure no fire possibility and check spark plug.

(3) When in normal condition, you see spark.



3. SPARK PLUG (FIG. 5-2)

(1) Use recommended type of spark plug.

(2) In a best operation condition, electrodes on the spark plug show dark brown and keep dry. If the spark plug is dirty, clean it and check the electrode gap. If readjustment is necessary, the correct gap is 0.6mm.

The spark plug condition is influenced by the following factors ;

- * An incorrect carburetor setting.
- * Wrong fuel mixture (too much oil in the gasoline).
- * A dirty air filter.
- * Hard running conditions (under cold weather operation).

The spark plug should be replaced after about 100 operation hours or earlier if the electrodes are badly eroded.

4. AIR FILTER (FIG. 5-3)

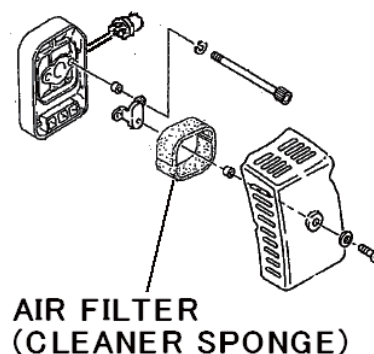
(1) When the air filter gets dirty and closed with dust, it will cause various troubles :

- * Carburetor malfunctions.
- * Starting problems.
- * Engine power reduction.
- * Unnecessary wear on the engine parts.
- * Abnormal fuel consumption.

(2) Cleaning the air filter

Air filter must be cleaned from dust and dirt regularly and damaged filter must be replaced with a new one.

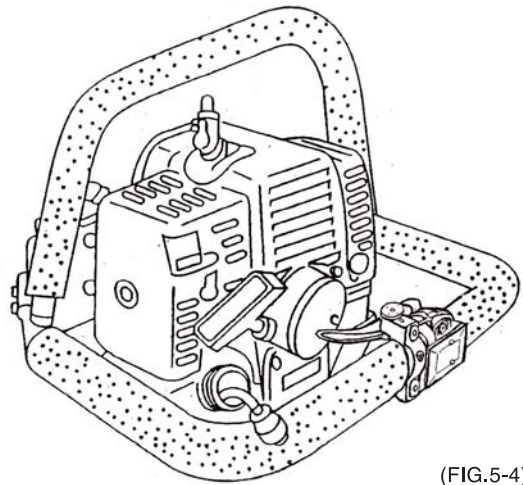
- * Remove the air filter cover and the filter.
- * Rinse it in warm soap suds and wring tight and dry it before re-assembly.
- * Damaged air filter must be replaced with a new one.



5. FUEL FILTER (FIG. 5-4)

If fuel filter is clogged with impurities in the fuel, fuel will not flow into carburetor and it will make engine malfunction. Regular check-up is recommended.

- * Drain all fuel from fuel tank and pull out fuel filter line from tank.
- * Pull filter element out of holder assembly and rinse element in warm water with detergent.
- * Rinse thoroughly until all traces of detergent are eliminated.
- * Squeeze, but do not wring and keep dry.
- * If element is too dirty, replace it.

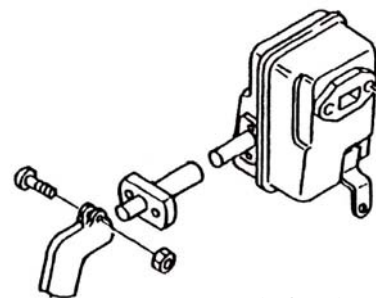


(FIG.5-4)

6. MUFFLER (FIG. 5-5)

Engine power reduction maybe cause by a lot of carbon accumulated around exhaust port on cylinder, muffler inlet or outlet in the long use. Regular clean-up is recommended.

- * Remove the muffler and clean up any excess carbon from the exhaust port or muffler inlet every 100 hours of operation.
- * When cleaning up, remove carbon carefully not to hurt piston, cylinder and do not let carbon into crank case.



(FIG.5-5)

7. IMPACT MECHANISM

When contact places of anvil and hammer become worn-out to be dull by percussion, the tool becomes output power reduction and due to extra longer percussion than normal condition it will cause damage and earlier broken of parts.

- * Empty all oil in the gear box and remove hammer housing complete and check the degree of worn-out of anvil and hammer at least once every month. And give grease around hitting area.

8. STORAGE

- (1) Clean each part and apply two cycle oil on the metal part to prevent from corrosion.
- (2) To keep tool for a long time(more than 3 weeks), drain fuel from fuel tank and keep running engine without load until the engine will stop and exhaust all remaining fuel in the carburetor.
- (3) Remove spark plug and pure two cycle oil into cylinder and pull recoil starter handle several times to spread oil.
- (4) Stop the recoil starter handle when you feel engagement.
- (5) Damaged parts should be repaired before storage.
- (6) Keep the tool where the place without dust, humidity also the temperature below 50 °C.
- (7) Store tool out of the reach of children.
- (8) Keep fuel into safety container in the cool room or place where no flammable. And do not use stale fuel as it causes engine troubles.

SPARE PARTS ORDER

1. When order for spare parts, please indicate index number, part name and quantity.
2. Quantity as number required here is for one unit.
3. V marks indicate over-size shims for precise adjustment.
4. Minimum order is 10 pcs. or more for such small items like screws, nuts and washers.
5. Each spare parts for engine is not supplied but as assembly or complete set only except spark plug.
6. Specifications are subject to change without notice.

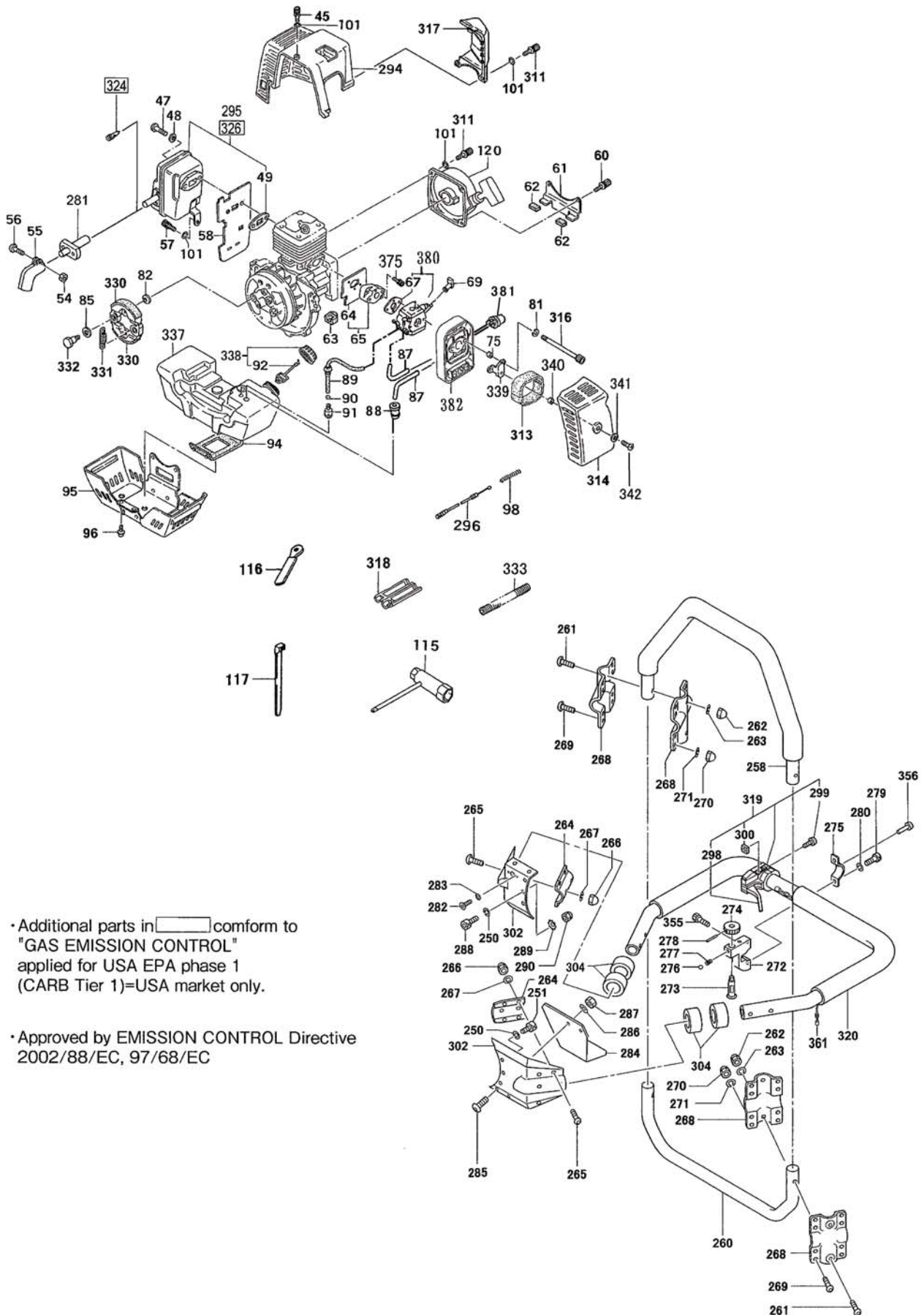
= NOTE =

Engine-Parts List

INDEX No.	PART NAME	NUMBER REQUIRED
001	SPARK PLUG CAP ASS'Y	1
002	SPARK PLUG RUBBER COVER	1
003	SPARK PLUG BPMR6A	1
004	CYLINDER SET(INDEX NO.4, 6)	1
005	HEX. HOLE BOLT 5x18/S	4
006	CYLINDER GASKET	1
007	PISTON RING	2
008	PISTON PIN CIRCLIP	2
009	PISTON SET(INDEX NO.7, 8, AND 9)	1
011	NEEDLE BEARING, 1014125	1
012	CRANK SHAFT COMPLETE(INDEX NO. 11,12)	1
013	SMALL NUT 10	1
014	STARTER PAWL	1
015	STARTER PAWL SPRING	1
016	STOP RING E-5	1
017	STARTER PULLEY(INDEX NO.14, 15, 16, AND 17)	1
018	CRANK CASE GASKET	1
019	OIL SEAL 15257	2
020	BALL BEARING #6202 C3	2
021	CRANK SHAFT SHIM 0.05	V
021	CRANK SHAFT SHIM 0.10	V
021	CRANK SHAFT SHIM 0.15	V
021	CRANK SHAFT SHIM 0.20	V
021	CRANK SHAFT SHIM 0.30	V
022	CRANK SHAFT WASHER 0.5	2
023	WOOD-RUFF KEY 3x13x5	1
026	MAGNET ROTOR COMPLETE	1
027	SMALL WASHER 10	1
028	NUT 10	1
032	PRIMARY CORD GROMMET	1
034	PRIMARY CORD GROMMET	1
036	HEX. HOLE BOLT 6x20/S	4
037	CRANK CASE ASS'Y(INDEX NO.18, 19, 20, AND 37)	1
038	NUT 6	1
039	OUTER RECEIVER	1
040	PISTON PIN COLLER	2
041	IGNITOR COMPLETE	1
043	CORD CLAMP COMPLETE	1
291	HEX. HOLE BOLT 5x18/S	3
292	HEX. HOLE BOLT 5x14	2
305	CORD B180M	1
306	STOP SWITCH COMPLETE	1
307	RETAINER PLATE, STOP BUTTON	1
308	RUBBER COVER, STOP BUTTON	1
310	NUT, STOP BUTTON	1
321	WASHER, 5	2
322	S. WASHER, 5	2
323	SMALL WASHER, 5	3
334	S.WASHER, 8	1
335	FAN CASE COMPLETE	1
336	PISTON PIN	1
370	S. WASHER, 6	4
371	HEX. HOLE BOLT 6x45	2
372	HEX. HOLE BUTTON SCREW 6x35	2
373	IGNITION COIL ASS'Y	1
374	GROUND WIRE COMPLETE	1
803	EXHAUST COVER(USA/EU MARKETS)	1

GT-3500GE without Damper Unit

FIG.2 ENGINE COMPONENTS - EXPLODED DIAGRAM DRAWING



• Additional parts in conform to "GAS EMISSION CONTROL" applied for USA EPA phase 1 (CARB Tier 1)=USA market only.

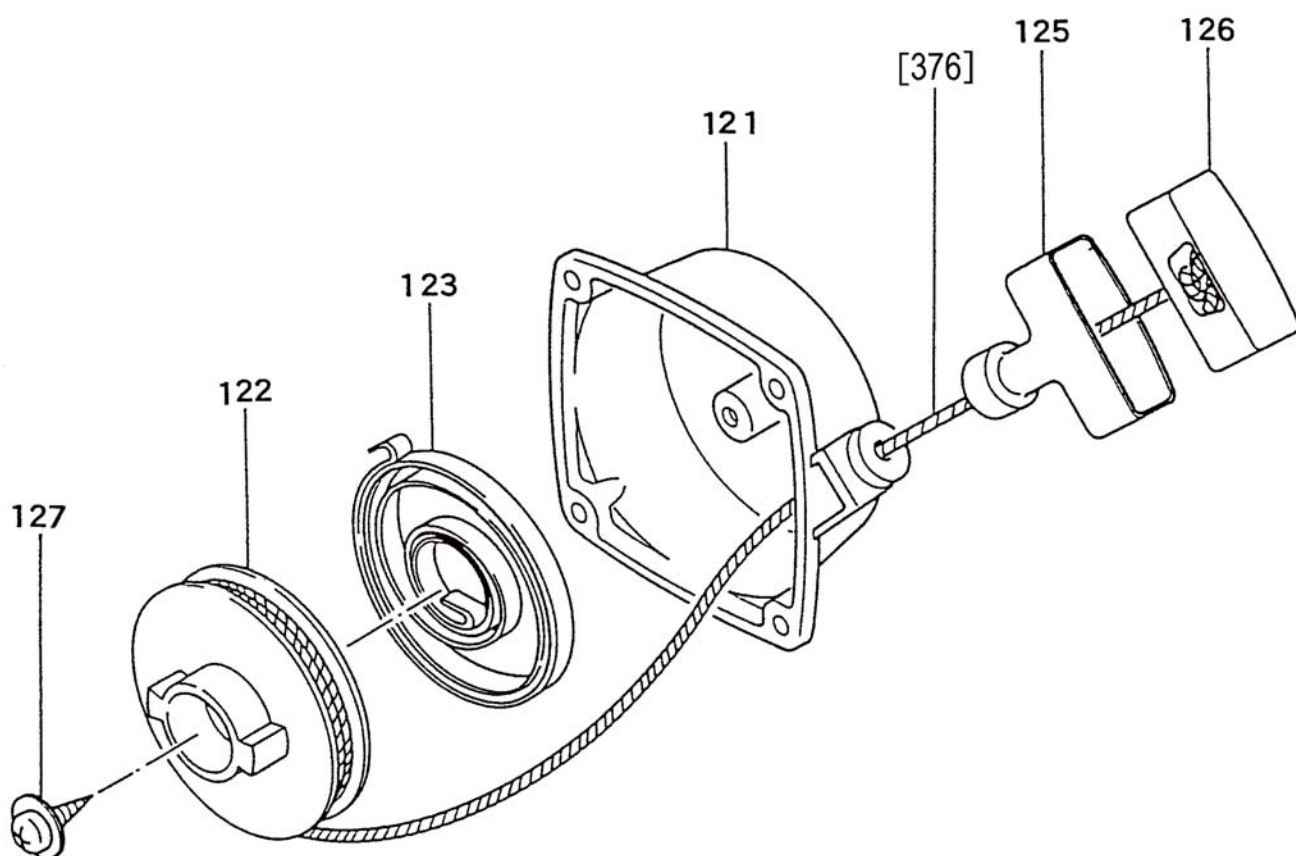
• Approved by EMISSION CONTROL Directive 2002/88/EC, 97/68/EC

Engine components-Parts List

Index No.	Part Name	Number Required	Index No.	Part Name	Number Required
045	HEX.HOLE BOLT 5×12S	1	274	BUTTON, ADJUSTMENT	1
047	HEX.HOLE BUTTON SCREW 6×65	2	275	BRACKET, ADJUSTMENT	1
048	WASHER 6	2	276	BALL, ADJUSTMENT 4 IN DIA.	1
049	MUFFLER GASKET	1	277	SPRING, ADJUSTMENT S3.8×0.6	1
054	U NUT 4	1	278	FIXED PIN SP 2.5×16 FOR ADJUST BUTTON	1
055	TAIL PIPE COMPLETE	1	279	HEX. CAP BUTTON BOLT M5×12	2
056	SCREW 4×12	1	280	WASHER M5, SPRING	2
057	HEX.HOLE BOLT 5×12S	1	281	BRACKET FOR TAIL PIPE	1
058	HEAT SHIELD	1	282	HEX. CAP BUTTON BOLT M6×12	2
060	HEX.HOLE BOLT 5×20PS	2	283	WASHER 2H-M6, JAGGED SPRING	2
061	TANK BRACKET	1	284	COVER FOR WIRES	1
062	FUEL TANK CUSHION RUBBER	2	285	HEX. CAP BUTTON BOLT M6×16	2
063	FUEL TANK CUSHION RUBBER	2	286	WASHER M6, SPRING	2
064	INLET MANIFOLD GASKET	1	287	HEX NUT M6	2
065	CARB. INSULATOR SET(INDEX NO.64,65)	1	288	HEX. CAP THREAD-THROUGH BOLT M6×22	3
067	CARBURETOR GASKET	1	289	WASHER 2H-M6, JAGGED SPRING	3
069	CHOKE LEVER 1565-30	1	290	HEX U-NUT M6	3
075	COLLAR 5.8	2	294	MUFFLER PROTECTOR	1
081	S.WASHER 5	2	295	MUFFLER SET (INDEX NO.49,295)	1
082	CLUTCH WASHER B 1.6	2	296	THROTTLE WIRE COMPLETE 300mm	1
085	WAVE WASHER 10	2	298	THROTTLE ARM	1
087	FUEL PIPE 2.5×4×90	2	299	5×20 SCREW	1
088	RETURN GROMMET	1	300	SPECIAL NUT M5	1
089	FUEL PIPE ASS'Y 3×5×230	1	302	HANDLE BRACKET	2
090	CLIP, 6.3 DIA.	1	304	HANDLE DUMPER RUBBER	4
091	PUMP FILTER BODY ASS'Y	1	311	HEX HOLE BOLT 5×30S	2
092	TANK CAP CHAIN	1	313	CLEANER SPONGE	1
094	CUSHION RUBBER	1	314	CLEANER CAP	1
095	TANK HOLDING METAL COMPLETE	1	316	HEX.HOLE BOLT 5×60	2
096	HEX.HOLE BOLT 5×15WS	2	317	AIR COVER	1
098	ADJUST SPRING	1	318	CONNECTOR CASE	1
101	WASHER 5	4	319	THROTTLE LEVER ASS'Y	1
115	COMBI.BOX SPANNER 10×19, PLUS	1		(INDEX NO. 298,299,300 AND 319)	
116	CORD CLAMP COMPLETE	1	320	HANDLE FRAME ASS'Y	1
117	CORD CLAMP	1	324	SPARK ARRESTER COMPLETE	1
120	RECOIL STARTER BODY ASS'Y	1		(USA/EU MARKETS)	
250	WASHER, SPRING M6	6	326	MUFFLER SET (USA/EU MARKETS)	1
251	HEX.CAP BOLT M6×12	3	330	CLUTCH ARM COMPLETE	2
258	ANTI-VIBRATION SUPPORT HANDLE RUBBER COVERED	1	331	CLUTCH SPRING	1
260	PIPE FOR PROTECTING TANK	1	332	CLUTCH STEP BOLT	2
261	HEX.CAP BUTTON BOLT M5×35	4	333	SPRIT PROTECTION TUBE 10×200L	1
262	HEX. U-NUT M5	4	337	TANK	1
263	WASHER M5, SPRING	4	338	TANK CAP D-ASS'Y (INDEX NO.92,338)	1
264	PLATE FOR HANDLE	2	339	BLOW OVER CHECK BOARD	1
265	HEX.CAP BUTTON BOLT M5×16	8	340	COLLAR 10	1
266	HEX. U-NUT M5	8	341	WASHER 1.6, BRAKE SHAKE	1
267	WASHER M5, SPRING	8	342	BOLT, COVER FASTENING	1
268	BRACKET FOR SUPPORT HANDLE	4	355	HEX. CAP BOLT M5×14	2
269	HEX.CAP BUTTON BOLT M5×14	16	356	RIVET	1
270	HEX. U-NUT M5	16	361	THROTTLE WIRE COMPLETE 4T	1
271	WASHER M5, SPRING	16	375	HEX. HOLE BOLT 5×20 PS	2
272	ADJUSTMENT BASE COMPLETE	1	380	CARBURETOR SET (USA/EU MARKETS)	1
	(INDEX NO. 272,273,274,276,277,278 AND 355)		381	PRIMING PUMP COMPLETE	1
273	VALVE, ADJUSTMENT	1	382	CLEANER BODY	1

GT-3500GE

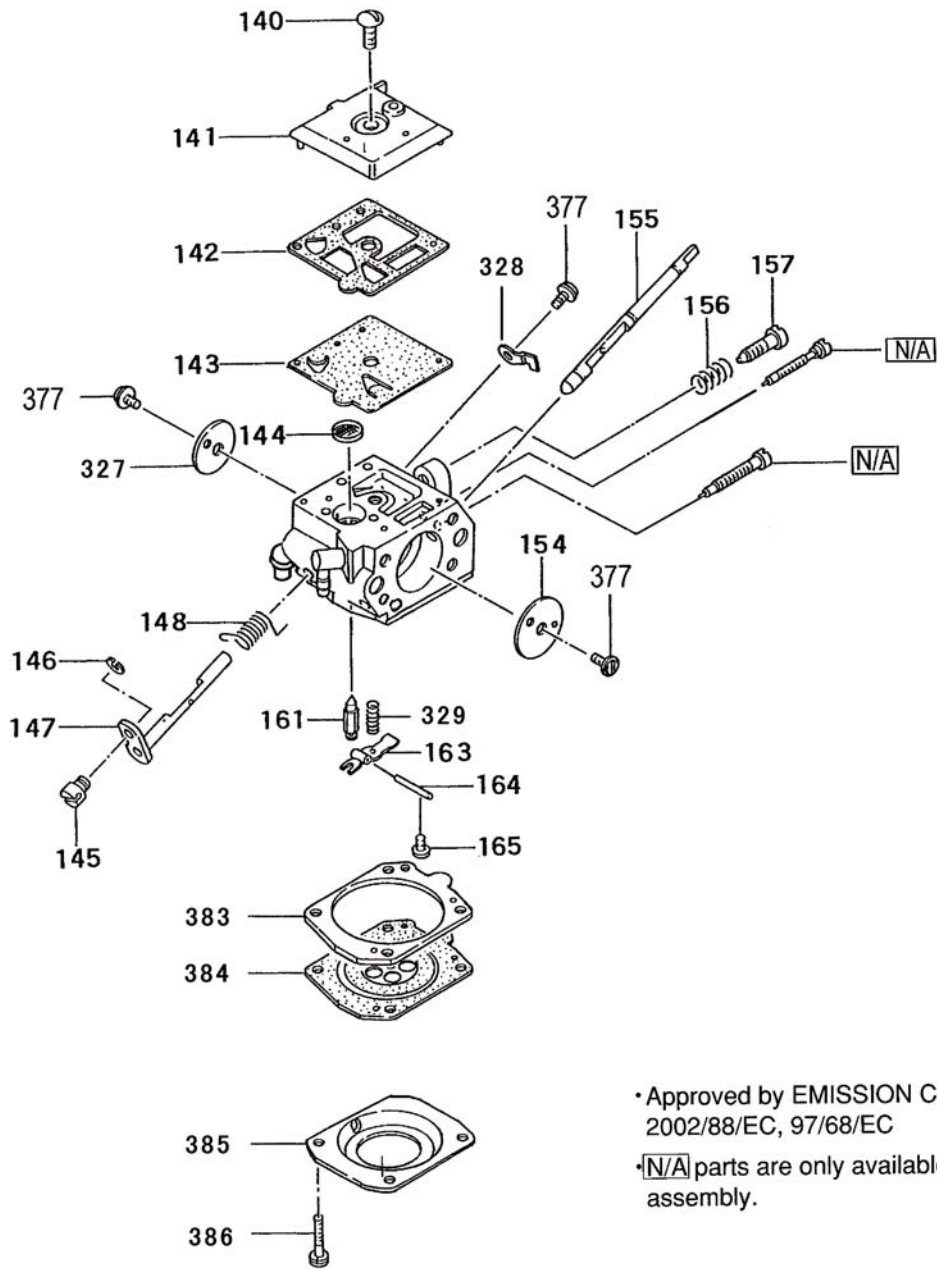
FIG.3 RECOIL STARTER-EXPLODED DIAGRAM DRAWING & PARTS LIST



Index No.	Part Name	Number Required
121	RECOIL STARTER BODY COMPLETE	1
122	STARTER ROPE REEL	1
123	RECOIL SPRING	1
125	STARTER HANDLE	1
126	STARTER HANDLE CAP	1
127	SET SCREW	1
376	STARTER ROPE	1

GT-3500GE

FIG.4 CARBURETOR - EXPLODED DIAGRAM DRAWING & PARTS LIST



• Approved by EMISSION CONTROL Directive 2002/88/EC, 97/68/EC

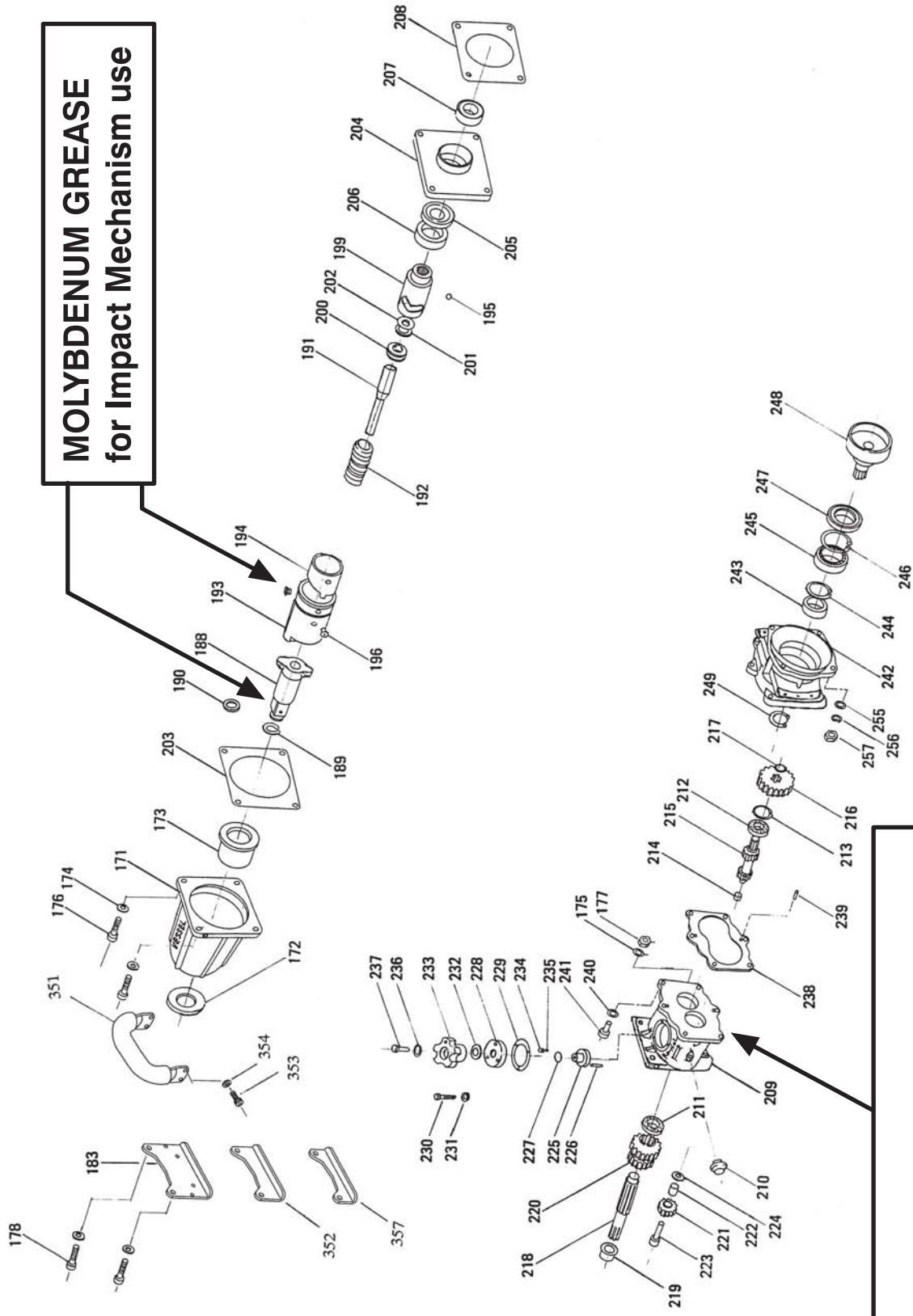
• [N/A] parts are only available as the unit assembly.

Part# 145 to 148, 154, 155, 327, 328 and 377 are not able to be supplied individually.

NO ITEM.	DESCRIPTION	NO USED	NO ITEM.	DESCRIPTION	NO USED
140	SET SCREW	1	161	NEEDLE VALVE	1
141	PUMP BODY	1	163	CONTROL LEVER	1
142	PUMP GASKET	1	164	HINGE PIN	1
143	PUMP DIAPHRAGM	1	165	HINGE PIN SET SCREW	1
144	INLET SCREEN	1	327	THROTTLE VALVE (USA/EU MARKETS)	1
145	SWIVEL	1	328	STOP PLATE (USA/EU MARKETS)	1
146	STOP RING	1	329	VALVE SPRING (USA/EU MARKETS)	1
147	THROTTLE SHAFT COMPLETE	1	377	SHUTTER SCREW	3
148	THROTTLE SPRING	1	383	DIAPHRAGM GASKET	1
154	CHOKE VALVE	1	384	MATERING DIAPHRAGM COMPLETE	1
155	CHOKE SHAFT	1	385	DIAPHRAGM COVER	1
156	IDLE ADJUST SPRING	1	386	SET SCREW	4
157	IDLE ADJUST SCREW	1			

GT-3500GE without Damper Unit

FIG.5 IMPACT MECHANISM-EXPLODED DIAGRAM DRAWING

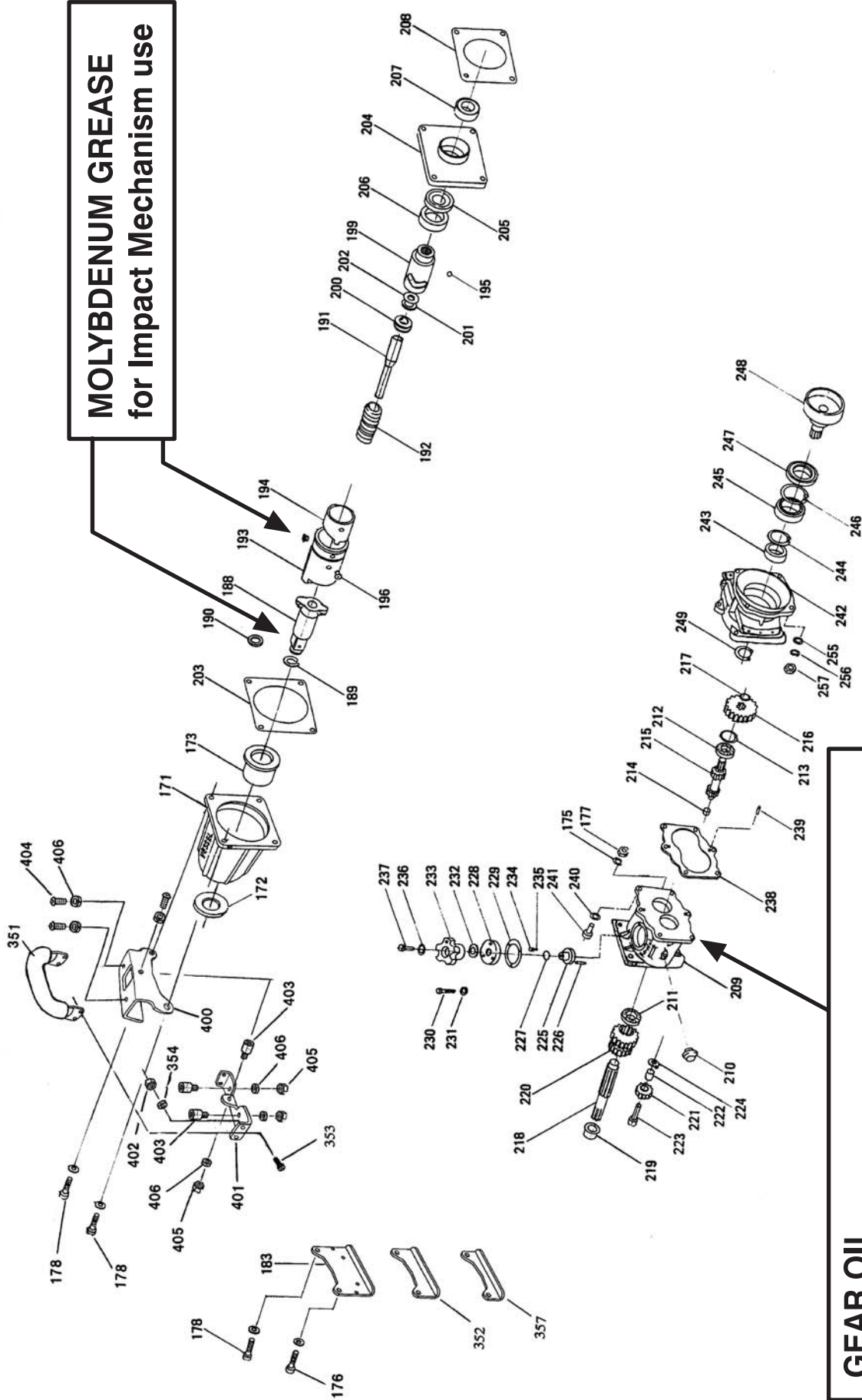


Impact Mechanism-Parts List

Index No.	Part Name	Number Required	Index No.	Part Name	Number Required	Index No.	Part Name	Number Required
171	HAMMER HOUSING COMPLETE (INDEX NO.171, 172 AND 173)	1	217	SNAP RING STW-16	1	351	D-HANDLE ANTI-VIBRATION RUBBER COVERED	1
172	OIL SEAL VB35505	1	218	SHAFT, BEARING COMPLETE (INDEX NO.218 AND 219)	1	352	FOOT REST SHORT 22mm	1
173	BUSHING, PRESS-IN TO INDEX NO.171	1	219	BUSHING, BEARING SHAFT	1	353	HEX, CAP BUTTON BOLT M6X16	4
174	WASHER 2H-M8, JAGGED SPRING	4	220	GEAR CLUSTER	1	354	WASHER 2H-M6, JAGGED SPRING	4
175	WASHER M8, SPRING	3	221	PLANETARY GEAR COMPLETE (INDEX NO.221 AND 222)	1	357	FOOT REST SHORT 15mm	1
176	HEX. CAP BOLT M8X45	3	222	BUSHING, PLANETARY GEAR	1			
177	U-NUT M8, HAMMER HOUSING	3	223	PLANETARY PIVOT	1			
178	HEX. CAP BOLT M8X50	3	224	PLANETARY SPACER	1			
183	FOOT REST LONG	1	225	GEAR SELECTOR COMPLETE (INDEX NO.225 AND 226)	1			
188	ANVIL COMPLETE (INDEX NO.188, 189 AND 190)	1	226	SPIRAL PIN 5 IN DIA.X26, GEAR SELECTOR	1			
189	RING, RETAINER	1	227	O-RING N14, GEAR SELECTOR	1			
190	O-RING P18, RETAINER RING	1	228	GEAR FLANGE	1			
191	CENTRAL SHAFT	1	229	PACKING, GEAR FLANGE	1			
192	SPRING, RETURN	1	230	HEX. CAP BOLT M5X10	3			
193	HAMMER COMPLETE (INDEX NO.193, 194, AND 196)	1	231	WASHER 2L-M5, JAGGED SPRING	3			
194	CAM PLATE	1	232	WASHER WW-16, SPRING	1			
195	BALL, ROLLER 13/32 DIA.	2	233	LEVER, GEAR CHANGE	1			
196	PLUG	4	234	RETAINER SPRING S3.8x7x0.6x6	1			
199	CLUTCH	2	235	STEEL BALL DIA.4	1			
200	BEARING NSK51104, THRUST	1	236	WASHER M6, SPRING	1			
201	SPACER	1	237	HEX. CAP BOLT M6X20	1			
202	THRUST	1	238	GASKET, GEAR CASE	1			
203	GASKET, HAMMER HOUSING	1	239	PIN 4 IN DIA. X13.8	2			
204	RING FLANGE COMPLETE (INDEX NO.204, 205,206 AND 207)	1	240	WASHER 2H-M6, JAGGED SPRING	6			
205	OIL SEAL SC30527	1	241	HEX. CAP BOLT M6X25	6			
206	BEARING 6007VV, BALL	1	242	CLUTCH SUPPORT FLANGE COMPLETE (INDEX NO.242,243,244,245,246 AND 247)	1			
207	BEARING 6006, BALL	1	243	BEARING 16005, BALL	1			
208	GASKET, RING FLANGE	1	244	SNAP RING IRTW-47	1			
209	GEAR CASE COMP.(INDEX NO.209, 210, 211 AND 214)	1	245	BEARING 6907, BALL	1			
210	OIL POT PORT PF3/8-19	1	246	SNAP RING IRTW-55	1			
211	BEARING 16004, BALL	1	247	OIL SEAL SC35558	1			
212	BEARING 16003, BALL	1	248	CLUTCH RING	1			
213	SNAP RING IRTW-35	1	249	SNAP RING STW-25	1			
214	BUSHING, SELECTOR SHAFT	1	255	WASHER 2H-M6, JAGGED SPRING	4			
215	SHAFT, SELECTOR	1	256	SPRING WASHER M6	4			
216	GEAR	1	257	HEX. NUT M6	4			

GT-3500GE with Damper Unit

IMPACT MECHANISM - EXPLODED DIAGRAM DRAWING



Damper Unit - Parts List

INDEX No.	PART NAME	NUMBERED REQUIRED
400	BRACKET, VIBRATION DAMPER D-HANDLE	1
401	BASE RETAINER, VIBRATION DAMPER D-HANDLE	1
402	HEX. U NUT M6	4
403	RUBBER, VIBRATION DAMPER VK25CR (BOLT EXPOSED 12mm)	3
404	BUTTON BOLT, HEX CAPPED M6x12	3
405	HEX. U NUT M6	3
406	SPRING WASHER M6	6
407	BASE RETAINER, VIBRATION DAMPER	2
408	HANDLE BRACKET, VIBRATION DAMPER	2
409	BRACKET, VIBRATION DAMPER HANDLE	2
410	RUBBER, VIBRATION DAMPER VK35CR (35H HARDNESS/ 45mm BOLT)	4
411	SHOULDER BOLT, HEX CAP ϕ 12X16 M10	2
412	HEX. U NUT M10	2
413	SPRING WASHER M10	2
414	BUTTON BOLT, HEX CAPPED M6x12	8
415	HEX. U NUT M6	8
416	SPRING WASHER M6	8
417	HEX. U NUT M8	8
418	SPRING WASHER M8	8
419	HEX. CAP BOLT M6x16	3

(Memorandum)



CERTIFICATE OF INSPECTION

MODEL	GT-3500GE	SERIAL NO.	
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We hereby certify that before shipment, above tool has been carefully inspected according to our factory engineering standard and the result has come out in satisfactory data. In order to maintain the best conditions of this tool, please be sure to take a few minutes to read through the enclosed instruction manuals and operate as recommended.

DATE: _____

CHIEF INSPECTOR: *7 Murakami*

Manufactured by :

VESSEL CO., INC.

17-25, Fukae-Kita 2-chome, Higashinari-ku, Osaka 537-0001 JAPAN
Tel : +81(0)6 6976 7778 Fax : +81(0)6 6972 9441
export@vessel.co.jp

VESSEL EUROPE

6, avenue du 1er Mai, ZAE Les Glaises, 91120 Palaiseau FRANCE
Tel : +33(0)1 69 19 17 42 Fax : +33(0)1 69 19 42 20
info.vessel-europe@vessel.co.jp

www.vessel.co.jp/english/