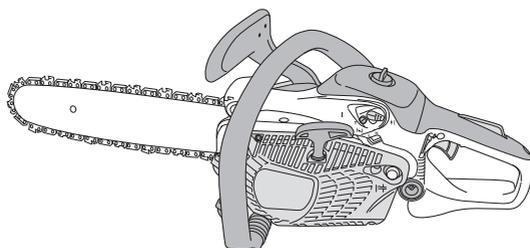


Tanaka

Chain Saw Model TCS 33ED

Handling instructions



Note:

Before using this machine, carefully read through these HANDLING INSTRUCTIONS to ensure efficient, safe operation. It is recommended that these INSTRUCTIONS be kept readily available as an important reference when using this machine.



MEANINGS OF SYMBOLS

NOTE: Some units do not carry them.

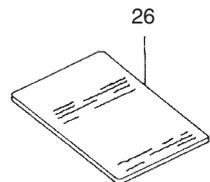
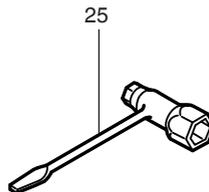
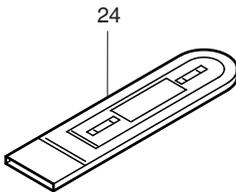
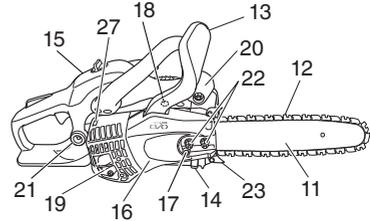
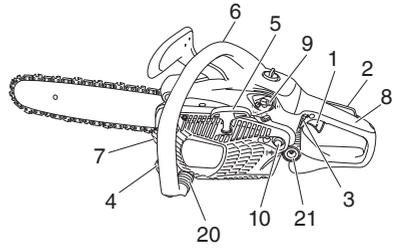
Symbols	
 WARNING The following show symbols used for the machine. Be sure that you understand their meaning before use.	
	 Emergency stop
	 Fuel and oil mixture
	 Chain oil fill
	 Carburetor adjustment - Idle speed
	 Carburetor adjustment - Low speed mixture
	 Carburetor adjustment - High speed mixture
	 Priming pump
	 Guaranteed Sound power level
	 Hot surface
	 Oil pump adjustment

Contents

WHAT IS WHAT?	3
WARNINGS AND SAFETY INSTRUCTIONS	4
SPECIFICATIONS	6
ASSEMBLY PROCEDURES.....	7
OPERATING PROCEDURES.....	8
MAINTENANCE.....	12
Parts breakdown	

WHAT IS WHAT?

1. Throttle lever: Device activated by the operator's finger, for controlling the engine speed.
2. Throttle lever lockout: Device that prevents the accidental operation of the throttle lever until manually released.
3. Stop switch: Device for allowing the engine to be started or stopped.
4. Oil tank cap: For closing the oil tank.
5. Recoil starter: Pull handle to start the engine.
6. Front handle: Support handle located at or towards the front of the engine housing.
7. Fuel tank cap: For closing the fuel tank.
8. Rear handle: Support handle located at or towards the rear of the engine housing.
9. Choke lever: Device for enriching the fuel/air mixture in the carburetor, to aid starting.
10. Priming pump; Device for supplying extra fuel, to aid starting.
11. Guide bar: The part that supports and guides the saw chain.
12. Saw chain: Chain, serving as a cutting tool.
13. Chain brake (Front hand guard): Device for stopping or locking the chain.
14. Chain catcher: device for restraining the saw chain.
15. Air filter cover: Cover for air filter and carburetor.
16. Side case: Protective cover to the guide bar, saw chain, clutch and sprocket when the chain saw is in use.
17. Tension adjustment bolt: Device, often acting on the guide bar, for adjusting the saw chain tension.
18. Chain oil adjusting screw: Device for adjusting the delivery of saw chain oil to the guide bar and the saw chain.
19. Muffler: Reduces engine exhaust noise and directs the exhaust gases.
20. Anti-vibration spring: Reduce the transmission of vibrations to the operator's hands.
21. Anti-vibration rubber: Reduce the transmission of vibrations to the operator's hands.
22. Chain bar clamp nut: Secures the side case and the guide bar.
23. Spiked bumper: Device for acting as a pivot when in contact with a tree or log.
24. Guide bar cover: Device for covering the guide bar and saw chain when the unit is not being used.
25. Combi box spanner: The tool for removing or installing a spark plug and tensioning the saw chain.
26. Handling instructions: Included with unit. Read before operation and keep for future reference to learn proper, safe techniques.
27. Hot surface caution label: Label for caution to hot surface.



WARNINGS AND SAFETY INSTRUCTIONS

Pay special attention to statements preceded by the following words:

WARNING

Indicates a strong 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.

NOTE

Helpful information for correct function and use.

Operator safety

- Always wear a safety face shield or goggles.
- Gloves should be used when sharpening chain.
- Always wear safety protective equipment such as jacket, trousers, gloves, helmet, boots with steel toe-caps and non-slip soles, and eye, ear and leg protection equipment whenever you use a chain saw. For working in trees the safety boots must be suitable for climbing techniques. Ask Tanaka dealer for help in choosing the right equipment. Do not wear loose clothing, jewelry, short pants, sandals or go barefoot. Secure hair so it is above shoulder length.
- Do not operate this 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. Pay attention to your surroundings. Be aware of any bystanders who may be signaling a problem. Remove safety equipment immediately upon shutting off engine.
- Wear head protection.
- Never start or run the engine inside a closed room or building. Breathing exhaust fumes can be fatal.
- For respiratory protection, wear a protection mask while emitting the chain oil mist and dust from sawdust.
- Keep handles free of oil and fuel.
- Keep hands away from cutting equipment.
- Do not grab or hold the unit by the cutting equipment.
- When the unit is shut off, make sure the cutting attachment has stopped before the unit is set down.
- When operation is prolonged, take a break periodically so that you may avoid possible Hand-Arm Vibration Syndrome (HAVS) which is caused by vibration.
- National regulation can restrict the use of machine.
- The operator must obey the local regulations of cutting area.

WARNING

- Antivibration systems do not guarantee that you will not sustain Hand-Arm Vibration Syndrome or carpal tunnel syndrome. Therefore, continual end regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice immediately.
- Long or continuous exposure to high noise levels may cause permanent hearing impairment. Always wear approved hearing protection when operating a unit/machine.
- 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.

Unit/machine safety

- Inspect the entire unit/machine before each use and after dropping or other impacts. Replace damaged parts. Check for fuel leaks and make sure all fasteners are in place and securely tightened.
- Replace parts that are cracked, chipped or damaged in any way before using the unit/machine.
- Make sure the side case is properly attached.
- Keep others away when making carburetor adjustments.
- Use only accessories as recommended for this unit/machine by the manufacturer.
- Never let the chain strike any obstacle. If the chain makes contact, the machine should be stopped and checked carefully.
- Make sure the automatic oiler is working. Keep the oil tank filled with clean oil. Never let chain run dry on the guide bar.

- All chain saw service, other than the items listed in the operator's/owner's manual, should be performed by competent chain-saw service personnel. (For example, if improper tools are used to remove the flywheel or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur and could subsequently cause the flywheel to burst.)

WARNING

- Never modify the unit/machine in any way. Do not use your unit/machine for any job except that for which it is intended.
- Never use chain saw without any safety equipment or that has faulty safety equipment. It could result in serious personal injury.
- Using guide bar/chain other than recommended by the manufacturer which are not approved, could result in a high risk of personal accidents or injury.

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 unit/machine or while using the unit/machine.
- Wipe up all fuel spills before starting engine.
- Move at least 3 m away from fueling site before starting engine.
- Stop engine and let it cool for a few minutes before removing fuel tank cap.
- Empty the fuel tank before storing the unit/machine. 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 unit/machine and fuel in area where fuel vapors cannot reach sparks or open flames from water heaters, electric motors or switches, furnaces, etc.

WARNING

Fuel can be easily ignited and easily inhaled, pay special attention when handling.

Cutting safety

- Do not cut any material other than wood or wooden objects.
- For respiratory protection, wear an aerosol protection mask when cutting the wood after insecticide has been applied.
- Keep others including children, animals, bystanders and helpers outside the hazard zone. Stop the engine immediately if you are approached.
- Hold the unit/machine firmly with the right hand on the rear handle and the left hand on the front handle.
- Keep firm footing and balance. Do not over-reach.
- Keep all parts of your body away from the muffler and cutting attachment when the engine is running.
- Keep guide bar/chain below waist level.
- Before felling a tree, the operator must be accustomed to the sawing techniques of the chain saw.
- Be sure to pre-plan a safe exit from a falling tree.
- While cutting, hold the unit/machine firmly with both hands with thumb firmly locked around front handle, and stand with feet well balanced and your body balanced.
- Stand to the side of the guide bar when cutting - never directly behind it.
- Always keep the spiked bumper facing forward a tree, because the chain may suddenly be drawn into a tree, if so equipped.
- When completing a cut, be ready to hold up the units as it breaks into clear, so it will not fall through and cut your legs, feet or body, or contact an obstruction.
- Be alert against kickback (when chain saw kicks up and back at operator). Never cut with the nose of the guide bar.
- When relocating to a new work area, be sure to shut off the machine and ensure that all cutting attachments are stopped.
- Never place the machine on the ground when running.
- Always ensure that the engine is shut off and any cutting attachments have completely stopped before clearing debris or removing grass from the cutting attachment.
- Always carry a first-aid kit when operating any power equipment.
- Never start or run the engine inside a closed room or building and/or near the inflammable liquid. Breathing exhaust fumes can be fatal.

Maintenance safety

- Maintain the unit/machine 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 Tanaka replacement parts as recommended by the manufacturer.

CAUTION

Do not disassemble the recoil starter. There is a possibility of personal injury with recoil spring.

⚠ WARNING

Improper maintenance could result in serious engine damage or in serious personal injury.

Transport and storage

- Carry the unit/machine 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 unit/machine before storing or transporting.
 - Empty the fuel tank before storing the unit/machine. 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 unit/machine out of the reach of children.
 - Clean and maintain the unit carefully and store it in a dry place.
 - Make sure stop switch is off when transporting or storing.
 - When transporting or storage, cover chain with guide bar cover.
- If situations occur which are not covered in this manual, take care and use common sense. Contact Tanaka dealer if you need assistance.

⚠ WARNING

KICKBACK DANGER (Fig. 1)

One of the most severe dangers when working with a chain saw is the possibility of kickback. Kickback may occur when the upper tip of the guide bar touches an object, or when the wood closes in and pinches the saw chain in the cut. Tip contact in some cases may cause a lightning fast reverse reaction, kicking the guide bar up and back toward you. Pinching the saw chain along the top of the guide bar may also push the guide bar rapidly back towards you. Either of these reactions may cause you to lose control of the chain saw which could result in serious personal injury. Even though your chain saw has safety built into its design, you should not rely on these safety features exclusively. Know where your guide bar tip is at all times. Kickback does occur if you allow the kickback zone (1) of the guide bar to touch an object. Do not use that area. Kickback from pinching is caused by a cut closing and pinching the upper side of the guide bar. Study your cut and make sure it will open as you cut through. Maintain control when the engine is running by always keeping a firm grip on the chain saw with your right hand on the rear handle, your left hand on the front handle and your thumbs and fingers encircling the handles. Always hold the chain saw with both hands during operation and cut at high engine speed.

Follow manufacturer's sharpening and maintenance instructions for the saw chain. The lack of this maintenance may increase the possibility of kickback.

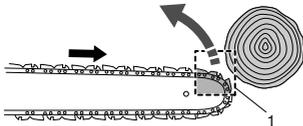


Fig. 1

SPECIFICATIONS

Model	TCS33ED (35S)	TCS33ED (40S)
Type of equipment	Chain saw, portable	
Engine Size (cm ³)	32.2	
Spark Plug	NGK BPMR-7A	
Fuel Tank Capacity (cm ³)	290	
Chain Oil Tank Capacity (cm ³)	180	
Dry Weight (kg) (Without guide bar and chain)	3.7	
Guide bar length (mm)	350	400
Chain pitch (mm)	9.53	
Chain gauge (mm)	1.27	
Sound pressure level LpA (dB (A)) by ISO 22868 Equivalent *1 Uncertainty	100 1	
Sound power level LwA (dB (A)) by ISO 22868 Measured *2 Uncertainty	112 1.5	
Sound power level LwA (dB (A)) by 2000/14/EC Measured *2 Guaranteed	112 114	
Vibration level (m/s ²) by ISO 22867 Front handle *1 Rear handle *1 Uncertainty	3.8 4.6 1	
Max. engine power by ISO 7293 (kW)	1.3	
Max. engine speed (min ⁻¹)	13500	
Idle engine speed (min ⁻¹)	2800 – 3200	
Type of chain	91PX (Oregon)	
Max. chain speed (m/sec)	25.7	
Sprocket (number of teeth)	6	
Type of drive sprocket	Spur	

NOTE: Noise level/vibration levels are calculated as the time-weighted energy total for noise/vibration levels under various working conditions with the following time distribution:

*1: 1/3 idle, 1/3 full, 1/3 racing speed.

*2: 1/2 full, 1/2 racing speed.

All data subject to change without notice.

ASSEMBLY PROCEDURES

⚠ WARNING

Switch off the engine before carrying out any checks or maintenance.

Never try to start engine without side case, guide bar and chain securely fastened.

1. Pull the front hand guard (2) toward the front handle to check that the chain brake is disengaged. (Fig. 2)

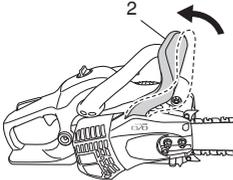


Fig. 2

2. Remove guide bar clamp nuts (3). Remove the side case (4). (Fig. 3)

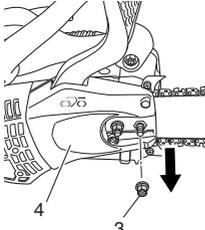


Fig. 3

* In case of installing the spiked bumper (5), install the spiked bumper (5) to the unit with two screws. (Fig. 4)

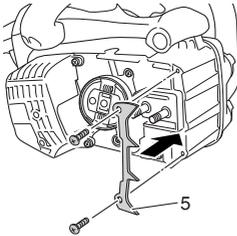


Fig. 4

3. Install the guide bar (6) onto the bolts (7), then push it toward the sprocket (8) as far as it will go. (Fig. 5)

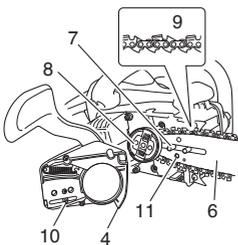


Fig. 5

4. Confirm the direction of saw chain (9) is correct as in the figure, and align the chain on the sprocket (8). (Fig. 5)
5. Guide the chain drive links into the bar groove all around the guide bar (6).
6. Install the side case (4) onto the bolts (7). Make sure that the boss of chain tension adjust bolt (10) fits into the hole of the guide bar (11). (Fig. 5) Then tighten the guide bar clamp nuts (3) by hand that allows the guide bar end to move up and down easily. (Fig. 6)

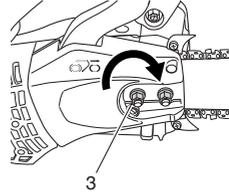


Fig. 6

7. Raise the guide bar end, and tighten the chain (9) by turning the tension adjustment bolt (12) clockwise. To check proper tension, lightly lift up the center of chain and there should be about 0 – 0.5 mm clearance between guide bar (6) and edge of drive link (13). (Fig. 7, 8)

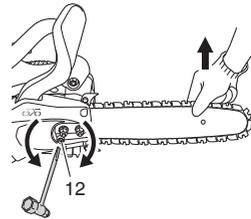


Fig. 7

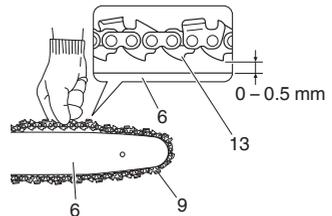


Fig. 8

CAUTION

PROPER TENSION IS EXTREMELY IMPORTANT

8. Raise the guide bar end and securely tighten the guide bar clamp nuts (3) with the combi box spanner (14). (Fig. 9)

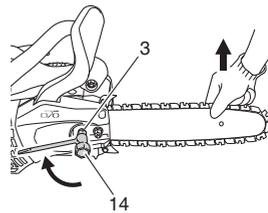


Fig. 9

9. A new chain will stretch so adjust the chain after a few cuts and watch chain tension carefully for the first half hour of cutting.

NOTE

Check the chain tension frequently for optimum performance and durability.

CAUTION

- When the chain is excessively tightened, the guide bar and chain will be damaged rapidly. Conversely, when the chain is excessively loosened, it may get out of the groove in the guide bar.
- Always wear gloves when touching the chain.

WARNING

During operation, hold chain saw firmly with both hands. A single hand operation may cause serious injury.

OPERATING PROCEDURES

Fuel (Fig. 10)

WARNING

- The chain saw is equipped with a two-stroke engine. Always run the engine on fuel, which is mixed with oil. Provide good ventilation, when fueling or handling fuel.
- Fuel is highly flammable and it is possible to get seriously injured when inhaling or spilling on your body. Always pay attention when handling fuel. Always have good ventilation when handling fuel inside building.

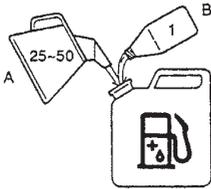


Fig. 10

Fuel

- Always use branded 89 octane unleaded gasoline.
- Use genuine two-cycle oil or use a mix between 25:1 to 50:1, please consult the oil bottle for the ratio or Tanaka dealer.
- If genuine oil is not available, use an anti-oxidant added quality oil expressly labeled for air-cooled 2-cycle engine use (JASO FC GRADE OIL or ISO EGC GRADE). Do not use BIA or TCV (2-stroke water-cooling type) mixed oil.
- Never use multi-grade oil (10 W/30) or waste oil.
- Never mix fuel and oil in machine's fuel tank. Always mix fuel and oil in a separate clean container.

Always start by filling half the amount of gasoline, which is to be used.

Then add the whole amount of oil. Mix (shake) the fuel mixture. Add the remaining amount of gasoline.

Mix (shake) the fuel-mix thoroughly before filling the fuel tank.

Mixing amount of two-cycle oil and gasoline

Gasoline (Liter)	Two-cycle oil (ml)	
	Ratio 50:1	Ratio 25:1
0.5	10	20
1	20	40
2	40	80
4	80	160

Fueling (Fig. 11)

WARNING

- Always shut off the engine and let it cool for a few minutes before refueling.
- Do not smoke or bring flames or sparks near the fueling site.

- Slowly open the fuel tank (15), when filling up with fuel, so that possible overpressure disappears.
- Tighten the fuel tank cap carefully, after fueling.
- Always move the unit at least 3 m from the fueling area before starting.
- Always wash any spilled fuel from clothing immediately with soap.
- Be sure to check any fuel leaking after refueling.

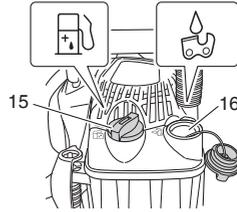


Fig. 11

Before fueling, clean the tank cap area carefully, to ensure that no dirt falls into the tank. Make sure that the fuel is well mixed by shaking the container, before fueling.

Chain oil (Fig. 11)

WARNING

Never use waste or regenerated oil. If you use them, it will cause damage to your health or this unit.

Slowly open the oil tank (16), and fill up with chain oil. Always use high quality chain oil. When the engine is running, the chain oil is automatically discharged. Fill up the oil tank (16) with chain oil every time when refueling.

NOTE

When pouring fuel or chain oil into the tank, place the unit with cap side up. (Fig. 11)

ADJUSTMENT OF CHAIN OIL SUPPLY

The chain oil quantity discharged through the lubrication system is adjusted to the maximum in the factory. Adjust the quantity in accordance with the operating condition.

Turn the adjusting screw (17) counterclockwise to increase the quantity and turn it clockwise to decrease the quantity. (Fig. 12)

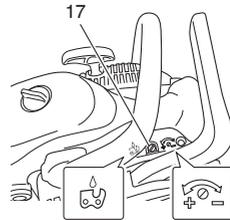


Fig. 12

Chain brake operation (Fig. 2, 13)

Chain brake is designed to activate in an emergency such as kick-back action.

Application of brake is made by moving the front hand guard (2) towards the guide bar. During the chain brake operation, even if the throttle lever is pulled, the engine speed does not increase and the chain does not turn. To release the brake, pull up the front hand guard (2) toward the front handle.

If the engine keeps rotating at high speed with the brake engaged, the clutch will overheat causing trouble.

When the brake engages during operation, immediately release the throttle lever to slow down the engine.

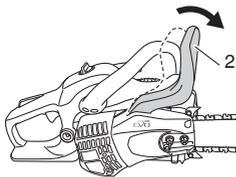


Fig. 13

How to confirm the activation of the chain brake (Fig. 14)

- 1) Turn off the engine.
- 2) Holding the chain saw horizontally, release your hand from the front handle, hit the tip of the guide bar to a stump or a piece of wood, and confirm brake operation. Operating level varies by bar size.

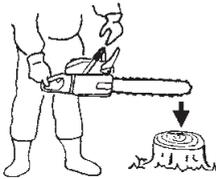


Fig. 14

In case the brake is not effective, ask our dealer for inspection and repairs.

Starting the cold engine (Fig. 2, 13, 15-18)

CAUTION

Before starting, make sure that the guide bar/chain does not touch anything.

1. Push the front hand guard (2) so that the brake is engaged. (Fig. 13)
2. Set stop switch (18) to ON position. (Fig. 15)

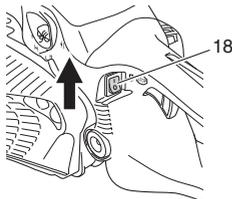


Fig. 15

3. Push priming pump (20) approximately ten times so that fuel flows into carburetor. (Fig. 16)

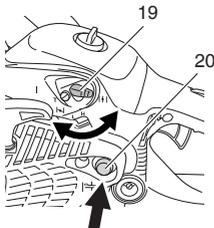


Fig. 16

4. Turn the choke lever (19) to set it in the START position. (N) (Fig. 16) This will automatically lock to half-throttle.
5. Pull recoil starter (21) rapidly, taking care to keep the handle in your grasp and not allowing the handle to snap back. (Fig. 17)

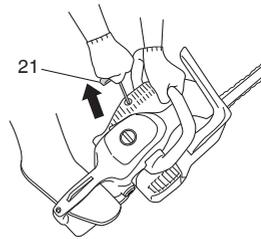


Fig. 17

6. When you hear first ignition, return the choke lever (19) to set it in the RUN position (H). (Fig. 16)

NOTE

When the choke lever is put back to the RUN position (H) from the START position (N) by hand, the throttle lever will be kept half-open (half-throttle).

7. Pull recoil starter (21) rapidly again in the aforementioned manner. (Fig. 17)

NOTE

If engine does not start, repeat procedures from 4 to 7.

8. As soon as the engine starts, pull throttle lever (23) full once with the throttle lever lockout (22) pressed and immediately release the throttle lever (23). Then half-throttle is disengaged. (Fig. 18)

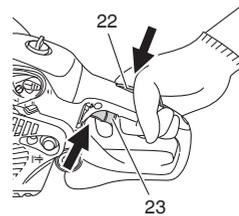


Fig. 18

9. Pull the front hand guard (2) so that the brake is disengaged. (Fig. 2)
Allow the engine about 2-3 minutes to warm up before subjecting it to any load.
Do not run the engine at high speed without the load to avoid shortening the life of the engine.

Starting the warm engine

Use only 1, 2, 7, and 9 of the starting procedure for a cold engine. If the engine does not start, use the same starting procedure as for a cold engine.

Chain lubrication test (Fig. 19)

Check that chain oil is discharged properly. When the saw chain starts to revolve, point the head of the guide bar to a stump, etc., and pull the throttle lever to perform high-speed operation for around 10 seconds. If chain oil is sprayed over the stump, it is discharged properly.



Fig. 19

⚠ WARNING

Do not carry the machine with the engine running.

Stopping (Fig. 20)

Decrease engine speed, and push stop switch (18) to stop position.

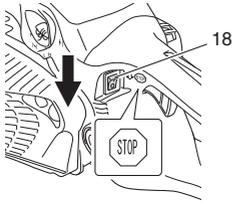


Fig. 20

⚠ WARNING

Do not put the machine where there are flammable materials such as dried grass, since the muffler is still hot after the engine has stopped.

NOTE

If the engine does not stop, it can be forced to stop by turning the choke lever in the START position (N). Before restarting the engine, ask Tanaka dealer for repairs.

⚠ WARNING

- Do not overreach or cut above shoulder height.
- Use extra caution when felling, and do not use the chain saw in a nose-high position or above shoulder height.

CHAIN CATCHER

The chain catcher is located on the power head just below the chain to further prevent the possibility of a broken chain striking the chain saw user.

⚠ WARNING

Do not stand in-line with chain when cutting.

BASIC TECHNIQUES FOR MAKING FELLING, LIMBING AND BUCKING CUTS

The intention of the following information is to provide you with the general introduction to wood cutting techniques.

⚠ WARNING

- This information does not cover all specific situations, which may depend on differences in terrain, vegetation, kind of wood, form and size of trees, etc. Consult Tanaka dealer, forestry agent or local forestry schools for advice on specific woodcutting problems in your area. This will make your work more efficient and safer.
- Avoid cutting in adverse weather conditions, such as dense fog, heavy rain, bitter cold, high winds, etc.
Adverse weather is often tiring to work in and creates potentially dangerous conditions such as slippery ground.
High winds may force the tree to fall in an unexpected direction causing property damage or personal injury.

CAUTION

Never use a chain saw to pry or for any purpose for which it is not intended.

⚠ WARNING

- Avoid stumbling on obstacles such as stumps, roots, rocks, branches and fallen trees. Watch out for holes and ditches. Be extremely cautious when working on slopes or uneven ground. Shut off the engine when moving from one work place to another. Always cut at wide open throttle. A slow moving chain can easily catch and force the chain saw to jerk.
- Never use the chain saw with only one hand.
You cannot control the chain saw properly and you may lose control and injure yourself severely.
Keep the chain saw body close to your body to improve control and reduce strain.
When cutting with the bottom part of the chain the reactive force

will pull the chain saw away from you towards the wood you are cutting.

The chain saw will control the feeding speed and sawdust will be directed towards you. (Fig. 21)

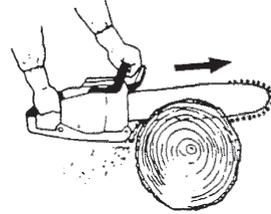


Fig. 21

- When cutting with the upper part of the chain the reactive force will push the chain saw towards you and away from the wood you are cutting. (Fig. 22)

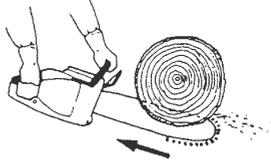


Fig. 22

- There is a risk of kickback if the chain saw is pushed far enough so that you begin to cut with the nose of the guide bar. The safest cutting method is to cut with the bottom part of the chain. Sawing with the upper part makes it much more difficult to control the chain saw and increases the risk of kickback.
- In case the chain locked, immediately release the throttle lever. If the throttle lever keeps rotating at high speed with the chain locked, the clutch will overheat causing trouble.

NOTE

Always keep the spiked bumper face to a tree, because the chain may suddenly be drawn into a tree, if so equipped.

FELLING

Felling is more than cutting down a tree. You must also bring it down as near to an intended place as possible without damaging the tree or anything else.

Before felling a tree, carefully consider all conditions which may effect the intended direction, such as:

Angle of the tree. Shape of the crown. Snow load on the crown. Wind conditions. Obstacles within tree range (e.g., other trees, power lines, roads, buildings, etc.).

⚠ WARNING

- Always observe the general conditions of the tree. Look for decay and rot in the trunk which will make it more likely to snap and start to fall before you expect it.
- Look for dry branches, which may break and hit you when you are working.
Always keep animals and people at least twice the tree length away while felling. Clear away shrubs and branches from around the tree.
Prepare a path of retreat away from the felling direction.

BASIC RULES FOR FELLING TREES

Normally the felling consists of two main cutting operations, notching and making the felling cut. Start making the upper notch cut on the side of the tree facing the felling direction. Look through the kerf as you saw the lower cut so you do not saw too deep into the trunk. The notch should be deep enough to create a hinge of sufficient width and strength. The notch opening should be wide enough to direct the fall of the tree as long as possible. Saw the felling cut from the

other side of the tree between one and two inches (3–5 cm) above the edge of the notch. (Fig. 23)

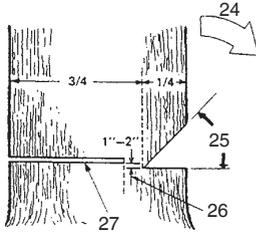


Fig. 23

- 24. Felling direction
- 25. 45° minimum notch opening
- 26. Hinge
- 27. Felling cut

Never saw completely through the trunk. Always leave a hinge. The hinge guides the tree. If the trunk is completely cut through, you lose control over the felling direction.

Insert a wedge or a felling lever in the cut well before the tree becomes unstable and starts to move. This will prevent the guide bar from binding in the felling cut if you have misjudged the falling direction. Make sure no people have come into the range of the falling tree before you push it over.

FELLING CUT, TRUNK DIAMETER MORE THAN TWICE GUIDE BAR LENGTH

Cut a large, wide notch. Then cut a recess into the center of the notch. Always leave a hinge on both sides of the center cut. (Fig. 24) Complete the felling cut by sawing around the trunk as in the Fig. 25.

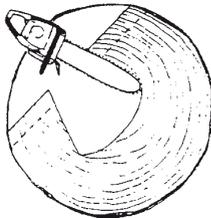


Fig. 24

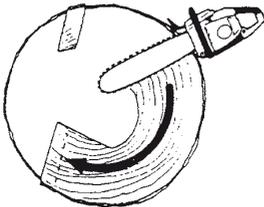


Fig. 25

⚠ WARNING

These methods are extremely dangerous because they involve the use of the nose of guide bar and can result in kickback. Only properly trained professionals should attempt these techniques.

LIMBING

Limbing is removing the branches from a feller tree.

⚠ WARNING

A majority of kickback accidents occur during limbing. Do not use the nose of the guide bar. Be extremely cautious and avoid contacting the log, other limbs or objects with the nose of the guide bar. Be extremely cautious of limbs under tension. They can spring back towards you and cause loss of control resulting in injury. (Fig. 26)

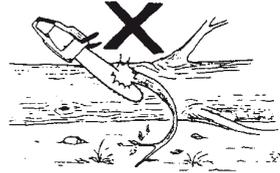


Fig. 26

Stand on the left side of the trunk. Maintain a secure footing and rest the chain saw on the trunk. Hold the chain saw close to you so that you are in full control of it. Keep well away from the chain. Move only when the trunk is between you and the chain. Watch out for spring back of limbs under tension.

LIMBING THICK BRANCHES

When limbing thick branches, the guide bar may get pinched easily. Branches under tension often snap up, so cut troublesome branches in small steps. Apply the same principles as for cross cutting. Think ahead and be aware of the possible consequences of all your actions.

CROSS CUTTING/BUCKING

Before starting to cut through the log, try to imagine what is going to happen. Look out for stresses in the log and cut through it in such a manner that the guide bar will not get pinched.

CROSS CUTTING LOGS, PRESSURE ON TOP

Take a firm stance. Begin with an upper cut. Do not cut too deeply, about 1/3 of the log diameter is enough. Finish with a bottom cut. The saw cuts should meet. (Fig. 27)

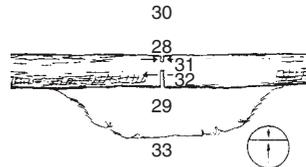


Fig. 27

- 28. Relieving cut
- 29. Cross cut
- 30. Pressure on top
- 31. Pressure side
- 32. Tension side
- 33. Relative depth of saw cuts

THICK LOG, LARGER THAN GUIDE BAR LENGTH

Begin by cutting on the opposite side of the log. Pull the chain saw towards you, followed by previous procedure. (Fig. 28) If the log is lying on the ground make a boring cut to avoid cutting into the ground. Finish with a bottom cut. (Fig. 29)

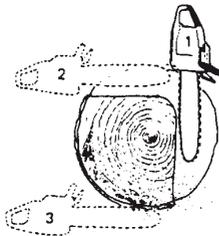


Fig. 28

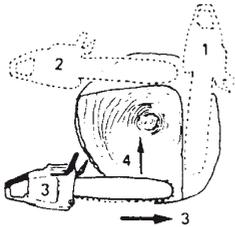


Fig. 29

**⚠ WARNING
KICKBACK DANGER**

Do not attempt a boring cut if you are not properly trained. A boring cut involves the use of the nose of the guide bar and can result in kickback.

CROSS CUTTING LOGS, PRESSURE ON BOTTOM

Take a firm stance. Begin with a bottom cut. The depth of the cut should be about 1/3 of the log diameter.

Finish with an upper cut. The saw cuts should meet. (Fig. 30)

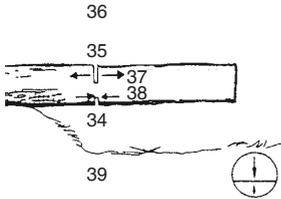


Fig. 30

- 34. Relieving cut
- 35. Cross cut
- 36. Pressure on bottom
- 37. Tension side
- 38. Pressure side
- 39. Relative depth of saw cuts

THICK LOG, LARGER THAN GUIDE BAR LENGTH

Begin by cutting on the opposite side of the log. Pull the chain saw towards you, followed by previous procedure. Make a boring cut if the log is close to the ground. Finish with a top cut. (Fig. 31)

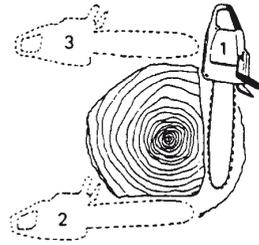


Fig. 31

**⚠ WARNING
KICKBACK DANGER**

Do not attempt a boring cut if you are not properly trained. A boring cut involves the use of the nose of the guide bar and can result in kickback. (Fig. 32)

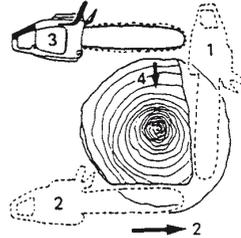


Fig. 32

IF THE CHAIN SAW GETS STUCK

Stop the engine. Raise the log or change its position, using a thick branch or pole as a lever. Do not try to pull the chain saw free. If you do, you can deform the handle or be injured by the saw chain if the chain saw is suddenly released.

MAINTENANCE

Carburetor adjustment (Fig. 33)

In the carburetor, fuel is mixed with air. When the engine is test run at the factory, the carburetor is adjusted. A further adjustment may be required, according to climate and altitude. The carburetor has one adjustment possibility:

T = Idle speed adjustment screw.

Idle speed adjustment (T)

Check that the air filter is clean. When the idle speed is correct, the cutting attachment will not rotate. If adjustment is required, close (clockwise) the T-screw, with the engine running, until the cutting attachment starts to rotate. Open (counter-clockwise) the screw until the cutting attachment stops. You have reached the correct idle speed when the engine runs smoothly in all positions well below the rpm when the cutting attachment starts to rotate.

If the cutting attachment still rotates after idle speed adjustment, contact Tanaka dealer.

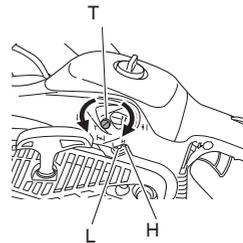


Fig. 33

⚠ WARNING

When the engine is idling the cutting attachment must under no circumstances rotate.

NOTE

Do not touch the High speed adjustment (H) and the Low speed adjustment (L).

Those are only for Tanaka dealer.

If you rotate them, it will cause a serious damage to the machine.

Air filter (Fig. 34)

The air filter (40) must be cleaned from dust and dirt in order to avoid:

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

Clean the air filter daily or more often if working in exceptionally dusty areas.

Remove the air filter cover (41) and the filter (40).

Rinse them in warm soap suds. Check that the filter is dry before reassembly. An air filter that has been used for some time cannot be cleaned completely. Therefore, it must regularly be replaced with a new one. A damaged filter must always be replaced.

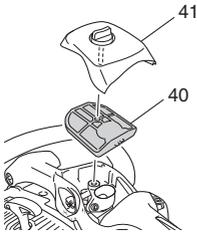


Fig. 34

Spark plug (Fig. 35)

The spark plug condition is influenced by:

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

These factors cause deposits on the spark plug electrodes, which may result in malfunction and starting difficulties. If the engine is low on power, difficult to start or runs poorly at idling speed, always check the spark plug first. If the spark plug is dirty, clean it and check the electrode gap. Readjust if necessary. The correct gap is 0.6 mm. The spark plug should be replaced after about 100 operation hours or earlier if the electrodes are badly eroded.

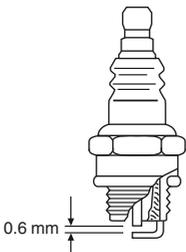


Fig. 35

NOTE

In some areas, local law requires using a resistor spark plug to suppress ignition signals. If this machine was originally equipped with resistor spark plug, use same type of spark plug for replacement.

Oiler port (Fig. 36)

Clean the chain oiler port (42) whenever possible.

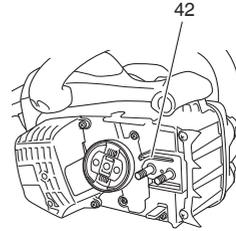


Fig. 36

Guide bar (Fig. 37)

Before using the machine, clean the groove and oiler port (43) in the guide bar.

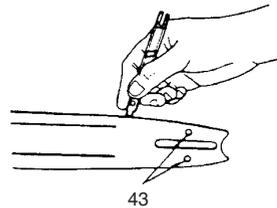


Fig. 37

Side case (Fig. 38)

Always keep the side case and drive area clean of saw dust and debris. Periodically apply oil or grease to this area to protect from corrosion as some trees contain high levels of acid.

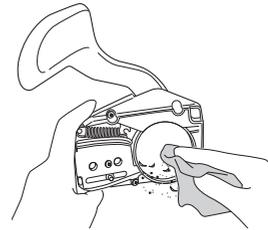


Fig. 38

NOTE

Pull up the front hand guard towards you and release the brake to remove or install the side case.

Fuel filter (Fig. 39)

Remove the fuel filter (44) from the fuel tank and thoroughly wash it in solvent. After that, push the filter into the tank completely.

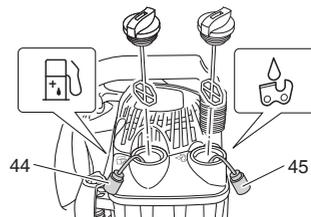


Fig. 39

NOTE

If the fuel filter (44) is hard due to dust and dirt, replace it.

Chain oil filter (Fig. 39)

Remove the oil filter (45) and thoroughly wash it in solvent. After that, push the filter into the tank completely.

NOTE

If the oil filter (45) is hard due to dust and dirt, replace it.

For long-term storage

Drain all fuel from the fuel tank. Start and let engine run until it stops. Repair any damage which has resulted from use. Clean the unit with a clean rag, or the use of high pressure air hose. Put a few drops of two-cycle engine oil into the cylinder through the spark plug hole, and spin the engine over several times to distribute oil. Cover the unit and store it in a dry area.

CHAIN SHARPENING

Parts of a cutter (Fig. 40, 41)

⚠ WARNING

- Gloves should be used when sharpening chain.
- Be sure to round off the front edge to reduce the chance of kickback or tie-strap breakage.

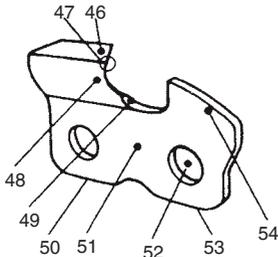


Fig. 40

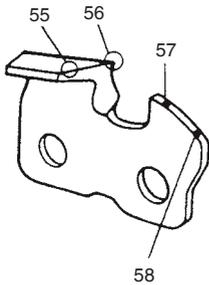


Fig. 41

- 46. Top plate
- 47. Cutting corner
- 48. Side plate
- 49. Gullet
- 50. Heel
- 51. Chassis
- 52. Rivet hole
- 53. Toe
- 54. Depth gauge
- 55. Correct angle on top plate (degree of angle depends on chain type)
- 56. Slightly protruding "hook" or point (curve on non-chisel chain)
- 57. Top of depth gauge at correct height below top plate
- 58. Front of depth gauge rounded off

LOWERING DEPTH GAUGES WITH A FILE

⚠ WARNING

- Do not smoothen the upper part of the bumper drive links (59) with a file or deform them. (Fig. 42)

- Adjust the depth gauge to the specified setting. Failure to observe the above raises the possibility of a kickback and may result in injury.

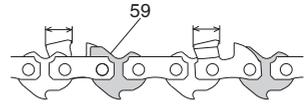


Fig. 42

- 1) If you sharpen your cutters with a file holder, check and lower the depth.
- 2) Check depth gauges every third sharpening.
- 3) Place depth gauge tool on cutter. If depth gauge projects, file it level with the top of the tool. Always file from the inside of the chain toward an outside cutter. (Fig. 43)

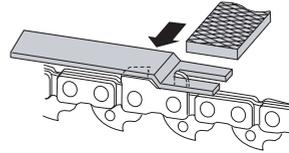


Fig. 43

- 4) Round off front corner to maintain original shape of depth gauge after using depth gauge tool. Always follow the recommended depth gauge setting found in the maintenance or operator manual for your chain saw. (Fig. 44)

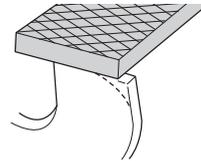


Fig. 44

GENERAL INSTRUCTIONS FOR FILING CUTTERS

File (60) cutter on one side of the chain from the inside out. File on forward stroke only. (Fig. 45)

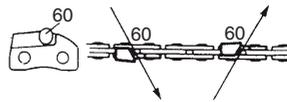


Fig. 45

- 5) Keep all cutters the same length. (Fig. 42)
- 6) File enough to remove any damage to cutting edges (side plate (61) and top plate (62)) of cutter. (Fig. 46)

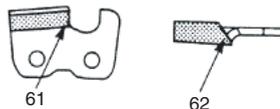


Fig. 46

SHARPENING ANGLES FOR SHARPENING SAW CHAIN

1. Part Number	91PX
2. Pitch	3/8"
 3. Depth Gauge Setting	0.025"
 4. Side Plate Filing Angle	80°
 5. Top Plate Angle	30°
 6. File Guide Angle	90°

Guide bar and saw chain combinations

	BAR NO.	LENGTH-TYPE	NOSE-TYPE	CHAIN NO. (OREGON)
MODEL NO. E&S	PO14-50CR PO16-50CR	14" 16"	SPROCKET SPROCKET	91PX – 52 91PX – 57

Maintenance schedule

Below you will find some general maintenance instructions. For further information please contact Tanaka dealer.

Inspection and service before use

- Check that no peel-off, degradation, or damage is observed in the Anti-Vibration rubber members, and no loosening or damage is observed in their fixtures.
- Check that no damage is observed in the Anti-Vibration springs, and no loosening or damage is observed in their fixtures.
- Check that no deformation or damage is observed in the front and rear handles.
- Check that the fixtures for front and rear handles are sufficiently tightened and free of damage.
- Check that bolts, nuts, etc. used for each part are sufficiently tightened and free of damage.

Daily maintenance

- Clean the exterior of the unit.
- Clean the chain oil filter port.
- Clean the groove and oiler port in the guide bar.
- Clean the side case of saw dust.
- Check that the saw chain is sharp.
- Check that the guide bar clamp nuts are sufficiently tightened.
- Make sure that the guide bar cover is undamaged and that it can be securely fitted.
- Check that nuts and screws are sufficiently tightened.
- Check the tip of the guide bar. Please exchange it for the new one when it is worn out.
- Check the band of chain brake. Please exchange it for the new one when it is worn out.
- Check that the chain does not rotate when the engine is idling.
- Clean the air filter.

Weekly maintenance

- Check the recoil starter, especially cord.
- Clean the exterior of the spark plug.
- Remove the spark plug and check the electrode gap. Adjust it to 0.6 mm or change the spark plug.
- Check that the air intake at the recoil starter is not clogged.

Monthly maintenance

- Rinse the fuel tank with gasoline, and clean fuel filter.
- Clean chain oil filter.
- Clean the exterior of the carburetor and the space around it.

Quarterly maintenance

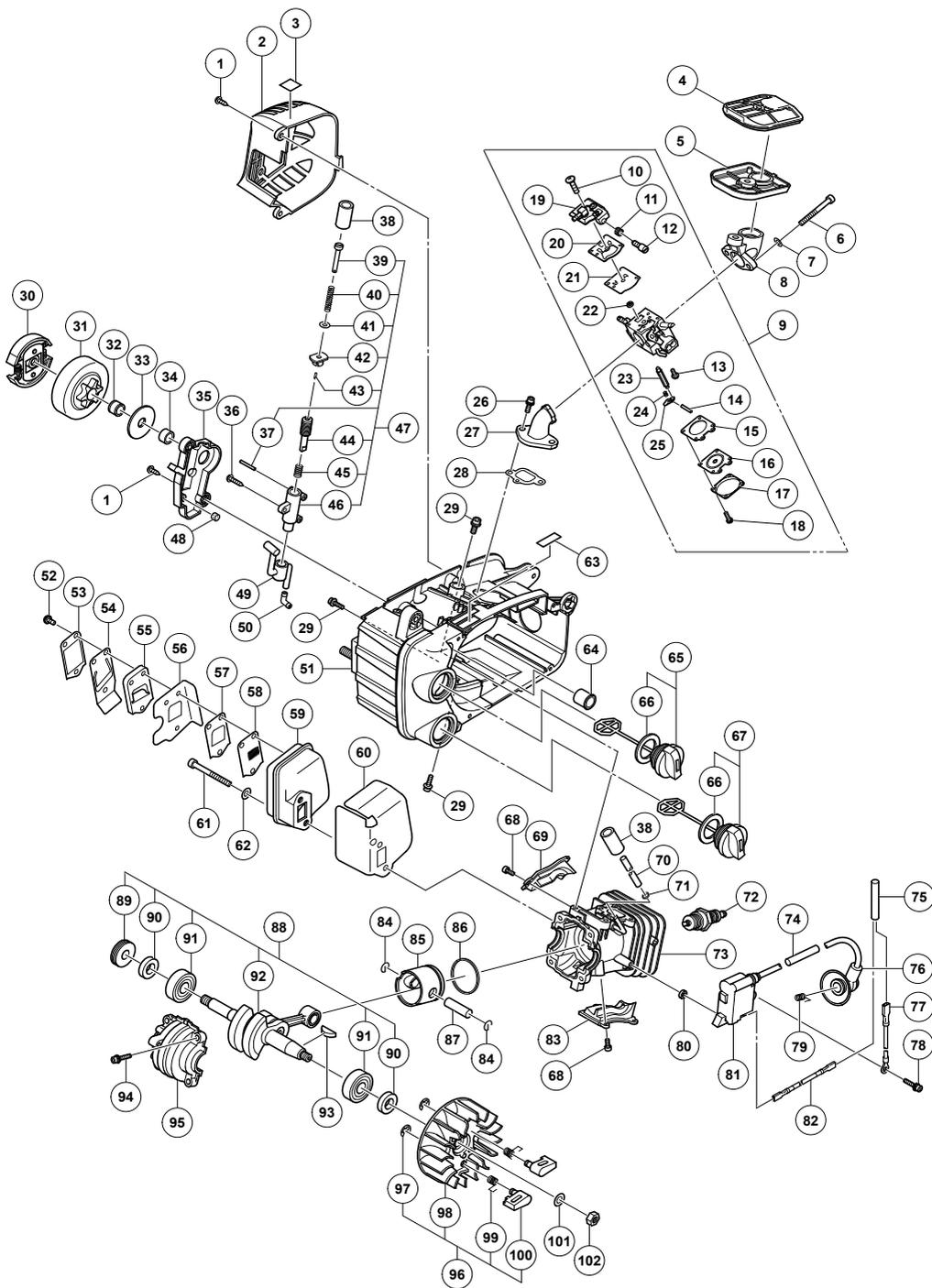
- Clean the cooling fins on the cylinder.
- Clean the fan and the space around it.
- Clean the carbon of muffler.

CAUTION

Cleaning of cylinder fins, fan and muffler shall be done by Tanaka dealer.

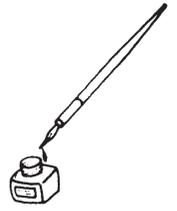
NOTE

When ordering the parts to Tanaka dealer, please use the item numbers showing on the parts breakdown section in this instruction.



Item No.	Part Name	Q'TY
1	TAPPING SCREW (W/FLANGE) D4X16	4
2	MUFFLER COVER	1
3	CAUTION LABEL(HOT)	2
4	CLEANER ELEMENT (B)	1
5	CLEANER ELEMENT (A)	1
6	HEX. SOCKET HD. BOLT M5X45	2
7	WASHER D5	2
8	CLEANER SUPPORT	1
9	CARBURETOR ASS'Y (INCLUD.10-25)	1
10	SCREW	1
11	IDLE ADJUST SPRING	1
12	IDLE ADJUST SCREW	1
13	HINGE PIN SET SCREW	1
14	HINGE PIN	1
15	DIAPHRAGM PACKING-METERING	1
16	METERING DIAPHRAGM	1
17	DIAPHRAGM COVER-METERING	1
18	SET SCREW	4
19	PUMP BODY	1
20	PUMP GASKET	1
21	PUMP DIAPHRAGM	1
22	INLET SCREEN	1
23	NEEDLE VALVE	1
24	VALVE SPRING	1
25	CONTROL LEVER	1
26	HEX.SOCKET BOLT M4	2
27	INTAKE	1
28	INTAKE PACKING	1
29	SEAL LOCK HEX. SOCKET BOLT (W/WASHERS) M5	5
30	CLUTCH	1
31	CLUTCH HOUSING	1
32	NEEDLE BEARING (D)	1
33	CLUTCH WASHER	1
34	CRANK SHAFT COLLAR	1
35	OIL PUMP COVER	1
36	TAPPING SCREW (W/FLANGE) D4X20	1
37	NEEDLE ROLLER 2.5X19.8	2
38	IDOL SPONGE	2
39	OIL PUMP ADJUSTER (ED)	1
40	ADJUSTER SPRING	1
41	BOLT WASHER M4	1
42	ADJUSTER CAP	1
43	NEEDLE ROLLER	1
44	PUMP GEAR (ED)	1
45	PUMP GEAR SPRING (ED)	1
46	PUMP CASE	1
47	PUMP ASS'Y (INCLUD.37,39-46)	1
48	AIR VENT SPONGE	1
49	OIL PIPE	1
50	PIPE JOINT	1
51	ENGINE CASE	1
52	SCREW (W/WASHERS) M4X12	3
53	PACKING PLATE	1
54	MUFFLER SPECIAL PACKING(S)	1
55	EXHAUST PIPE	1
56	MUFFLER SPECIAL PACKING	1
57	GAUZE FIXING PLATE	1
58	MUFFLER GAUZE	1
59	MUFFLER (W/CATALYZER)	1
60	MUFFLER PACKING	1
61	HEX. SOCKET HD. BOLT M6X55	2
62	BOLT WASHER M6	3
63	TANK MARK LABEL	1
64	INNER CAP	1
65	FUEL TANK CAP ASS'Y (VERMILION) (INCLUD.66)	1
66	TANK CAP PACKING	2
67	FUEL TANK CAP ASS'Y (BLACK) (INCLUD.65)	1
68	HEX. SOCKET HD. BOLT M4X10	6
69	SCAVENGING COVER (B)	1
70	FUEL PIPE (FKM)	1
71	CLIP	1
72	SPARK PLUG BPMR7A	1
73	CYLINDER	1
74	CORD INSULATION TUBE	1
75	CORD INSULATION TUBE	1
76	SPARK PLUG CAP	1
77	CORD (B)	1
78	HEX. SOCKET HD. BOLT (W/FLANGE) M4X18	2
79	METAL FITTING OF PLUG CAP	1
80	GLASS WASHER	2
81	IGNITION COIL	1
82	CORD (A)	1
83	SCAVENGING COVER (A)	1
84	CIRCLIP	2
85	PISTON (M)	1

Item No.	Part Name	Q'TY
86	PISTON RING (XR1-1856)	1
87	PISTON PIN	1
88	CRANK WORM ASS'Y (INCLUD.89-92)	1
89	WORM	1
90	OIL SEAL	2
91	BALL BEARING	2
92	CRANK SHAFT	1
93	WOODRUFF KEY 3X13X4.5	1
94	HEX. SOCKET HD. BOLT (W/SP.WASHER) M5X18	4
95	CRANK CASE	1
96	MAGNETO ROTOR ASS'Y (INCLUD.97-100)	1
97	RETAINING RING	2
98	MAGNETO ROTOR COMP.	1
99	STARTER PAWL SPRING	2
100	STARTER PAWL	2
101	BOLT WASHER D7	1
102	FLYWHEEL NUT M7	1
121	SIDE CASE	1
122	BRAKE SUPPORT PLATE	1
123	BRAKE LEVER SPRING	1
124	BRAKE HANDLE	1
125	CAUTION LABEL	1
126	BRAKE LINK COVER	1
127	NAME PLATE	1
128	CHAIN BAR CLAMP NUT (EU)	2
129	CHAIN PULLER	1
130	GUIDE PLATE(B)	1
131	SAW CHAIN (3/8X16") 91PX-57XJ	1
132	CHAIN BAR 16 INCH 3/8 SPROCKET PRC	1
133	TAPPING SCREW D4X10	1
134	TAPPING SCREW D3	1
135	BRAKE SPRING	1
136	BRAKE LINK	1
137	BRAKE BAND	1
138	NEEDLE ROLLER D3	1
139	TAPPING SCREW (W/FLANGE) D4X16	6
140	CLEANER COVER	1
141	CLEANER KNOB	1
142	REAR HANDLE GRIP	1
143	TRIGGER LOCKOUT (VERMILION)	1
144	THROTTLE LEVER SPRING	1
145	SPRING PIN 5X25	1
146	STOP SWITCH	1
147	START LABEL	1
148	DAMPER(A)	2
149	DISTANCE PIECE (B)	2
150	DAMPER SET BOLT	2
151	CHOKE LEVER	1
152	THROTTLE ROD (ED)	1
153	GROMMET	4
154	THROTTLE LEVER (VERMILION)	1
155	ENGINE CASE COVER	1
156	GROMMET	1
157	SPRING HOLDER	2
158	DAMPER SET BOLT (A)	1
159	ANTIVIBRATION SPRING	2
160	FUEL GROMMET	1
161	FUEL PIPE	1
162	FUEL PIPE	1
163	FLANGE NUT M6	2
164	REAR HANDEL	1
165	IDOL SPONGE	1
166	FUEL PIPE 2.5X4X90	1
167	PRIMING PUMP COMP.	1
168	FUEL GROMMET (A)	1
169	AIR VENT VALVE (B)	1
170	TAPPING SCREW (W/FLANGE)	2
171	SPIKE	1
172	FLANGED TAPPING SCREW D5X15	1
173	CHAIN CATCHER	1
174	PUMP FILTER BODY	1
175	CLIP	2
176	OIL FILTER BODY	1
177	OIL FILTER	1
178	BOLT WASHER D5	1
179	FUEL PIPE	1
180	TAPPING SCREW (W/FLANGE) D5X25	2
181	WASHER 5	2
182	FRONT HANDLE	1
183	AIR DEFLECTOR	1
184	RECOIL STARTER ASS'Y (NS)	1
185	SPRING COVER	1
186	DAMPER SET BOLT	1
501	CHAIN COVER	1
502	COMBI BOX SPANNER	1



Koki Holdings Co., Ltd.

Shinagawa Intercity Tower A, 15-1, Konan 2-chome,
Minato-ku, Tokyo, Japan

806

Code No. E99253611 NA
Printed in China