

OPERATOR'S MANUAL ENGINE DRILL EDR-2400

INTRODUCTION

ECHO Engine Drill EDR-2400 is a lightweight, high performance, two-stroke engined unit designed for drilling.

Do not use this unit for any purpose other than aforementioned.

This Manual provides the information necessary for operation and maintenance.

Specifications, descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to change without notice.

Illustrations may include optional equipment and accessories, and may not include all standard equipment.



MARNING

IMPROPER USE OR CARE OF THIS UNIT, OR FAILURE TO WEAR PROPER PROTECTION CAN **RESULT IN SERIOUS INJURY. READ AND** UNDERSTAND THE RULES FOR SAFE **OPERATION AND ALL INSTRUCTIONS IN THIS** MANUAL.

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DECALS AND SYMBOLS



DANGER

This symbol accompanied by the word "DANGER" calls attentions to an act or a condition which will lead to serious personal injury or death of operators and bystanders.



WARNING

This symbol accompanied by the word "WARNING" calls attentions to an act or a condition which can lead to serious personal injury or death of operators and bystanders.



CAUTION

"CAUTION" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Circle and slash symbol means whatever is shown is prohibited.

NOTE

This enclosed message provides tips for use, care and maintenance of the unit.

Symbol form/shape	Symbol form/shape Symbol description/application		Symbol description/application	
	Carefully read the operator's manual	<u>ullullillu.</u>	Hot surface objects	
	Wear eyes, ears and head protection		Petrol and oil mixture	
	Never reach into rotating auger	STOP	Emergency stop	

- Read and understand the entire operator's manual before using this machine.
- Follow all danger warnings in this manual.
- Locate this safety decal on your unit. The complete unit illustration found in the "DESCRIPTION" section will help you locate them. Make sure the decal is legible and that you understand and follow the instructions on it. If a decal cannot be read, a new one can be ordered from your ECHO dealer.



Part number X505-002310



Part number X505-002430

SAFETY



WARNING

ENGINE DRILL USERS RISK INJURY TO THEMSELVES AND OTHERS IF THE ENGINE DRILL IS USED IMPROPERLY, AND/OR SAFETY PRECAUTIONS ARE NOT FOLLOWED. PROPER CLOTHING AND SAFETY GEAR MUST BE WORN WHEN OPERATING ENGINE DRILL.

OPERATOR SAFETY

- Read this Engine drill Operator's Manual carefully.
 Be sure you understand how to operate this unit properly before you use it.
- If you have any questions or problems, please contact your ECHO dealer.
- Be familiar with all the controls and the proper use of the machine.
- Wear proper clothing to protect legs and other exposed parts of your body.
- Wear non-skid sole shoes. Do not wear open-toed shoes or operate unit while bare footed.
- Wear eye and hearing protection devices.
- Use caution when handling fuel. Put the caps back tightly on both the fuel can and the engine drill fuel tank.

Move at least 3 m from the re-fuelling point and be sure there is no leakage of fuel from the fuel tank cap or the fuel system before starting the engine.

- Operate this petrol powered engine equipment in a well-ventilated area only.
- Start the unit on the ground with the throttle set at idle. Do not start if the drills are obstructed by the ground or any other object.
- Never allow children to use the machine.
- Do not allow anyone to hold the material you are drilling.
- Keep a firm grip on the engine drill with both hands, one hand on the front handle, the other hand on the rear handle.



WARNING

ALWAYS STOP THE ENGINE WHEN A DRILL JAM OCCURS. DO NOT ATTEMPT TO REMOVE AN OBJECT CAUSING A DRILL JAM IF THE ENGINE IS RUNNING. PHYSICAL INJURY CAN OCCUR IF A DRILL JAM IS REMOVED AND THE DRILLS START MOVING.

 Do all drilling at full throttle speed. Drilling at less at than full speed can damage the clutch by allowing it to slip.



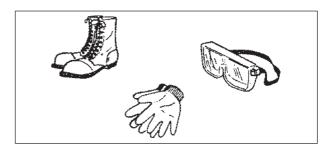
WARNING

USE A FIRM GRIP WITH THUMBS AND FINGERS ENCIRCLING THE HANDLES. A FIRM GRIP WILL HELP YOU KEEP CONTROL OF THE ENGINE DRILL. NEVER OPERATE THE ENGINE DRILL ONLY ONE HAND OR BODILY INJURY CAN OCCUR.

 Always carry the engine drill with the engine stopped and the HOT muffler away from your body.

PROTECTIVE EQUIPMENT

- Always wear eye protection goggles that meet the national standards.
- Wear hearing protection.
 ECHO recommends that hearing protection be worn at all times.
- Dress properly! Do not wear loose clothing or jewellery, they can be caught in moving parts. Use of sturdy gloves, non-skid footwear, and safety glasses is recommended.
- While operating the machine always be sure of a secure position.



 Wear non-slip, heavy-duty work gloves to improve your grip on the engine drill handles. The gloves also help reduce the transmission of machine vibrations to your hands.

PROTECTING OTHERS

Spectators, children, fellow workers and animals must be warned to come no nearer than 5 m while the engine drill is in use.

People working in the area near you should wear the same protective equipment as the operator.

PHYSICAL CONDITION

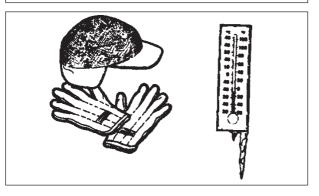
Your judgement and dexterity may be impaired if you are ill or have taken alcohol or other substances known to affect the way you would normally function.



WARNING PRECAUTION AGAINST VIBRATION AND COLD

IT IS BELIEVED THAT A CONDITION CALLED RAYNAUD'S PHENOMENON, WHICH AFFECTS THE FINGERS OF CERTAIN INDIVIDUALS MAY BE BROUGHT ABOUT BY EXPOSURE TO VIBRATION AND COLD. EXPOSURE TO VIBRATION AND COLD MAY CAUSE TINGLING AND BURNING SENSATIONS FOLLOWED BY LOSS OF COLOR AND NUMBNESS IN THE FINGERS. THE FOLLOWING PRECAUTIONS ARE STRONGLY RECOMMENDED BECAUSE THE MINIMUM EXPOSURE WHICH MIGHT TRIGGER THE AILMENT IS UNKNOWN.

- KEEP YOUR BODY WARM, ESPECIALLY THE HEAD, NECK, FEET, ANKLES, HANDS AND WRISTS.
- MAINTAIN GOOD BLOOD CIRCULATION BY PERFORMING VIGOROUS ARM EXERCISES DURING FREQUENT WORK BREAKS AND ALSO BY NOT SMOKING.
- LIMIT THE HOURS OF OPERATION. TRY TO FILL EACH DAY WITH JOBS WHERE OPERATING THE ENGINE DRILL OR OTHER HAND-HELD POWER EQUIPMENT IS NOT REQUIRED.
- IF YOU EXPERIENCE DISCOMFORT, REDNESS AND SWELLING OF THE FINGERS FOLLOWED BY WHITENING AND LOSS OF FEELING, CONSULT YOUR PHYSICIAN BEFORE FURTHER EXPOSING YOURSELF TO COLD AND VIBRATION.

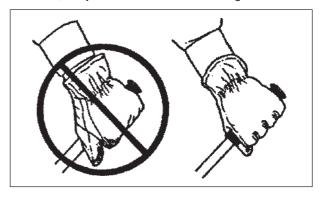


Repetitive Stress Injuries

It is believed that over-using the muscles and tendons of the fingers, hands, arms and shoulders may cause soreness, swelling, numbness, weakness and extreme pain in those areas. Certain repetitive hand activities may put you at a high risk for developing a Repetitive Stress Injury (RSI).

To reduce the risk of RSI/CTS, do the following:

 Avoid using your wrist in a bent, extended or twisted position. Instead try to maintain a straight wrist position. Also, when grasping, use your whole hand, not just the thumb and index finger.

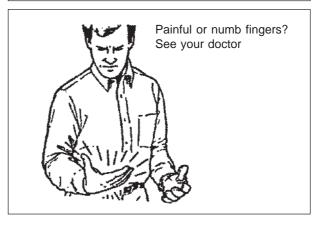


- Take periodic breaks to minimize repetition and rest your hands.
- Reduce the speed and force with which you do the repetitive movement.
- Do exercise to strengthen the hand and arm muscles.
- See a doctor if you feel tingling, numbness or pain in the fingers, hands, wrists or arms. The sooner RSI/CTS is diagnosed, the more likely permanent nerve and muscle damage can be prevented.



WARNING

IF INTENDED USE INVOLVES PROLONGED PERIODS OF OPERATION, THIS MAY CAUSE CIRCULATORY PROBLEMS IN THE USER'S HANDS DUE TO VIBRATION.



OPERATING TECHNIQUES

When starting to drill, run the engine at full throttle.



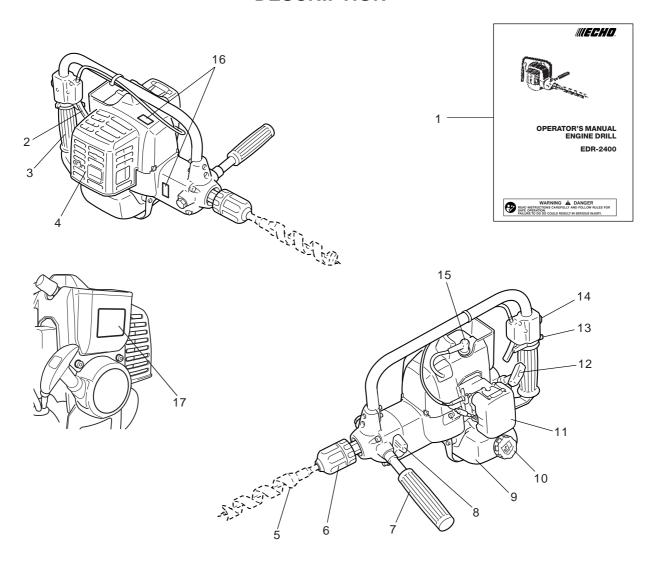
WARNING

BEFORE DRILLING, BE SURE TO READ AND **UNDERSTAND THE ENTIRE OPERATOR'S** MANUAL TO AVOID THE CHANCE OF SERIOUS INJURY.

- Do not force the drills and only move as quickly as the drills will allow.
- Stop the engine and disconnect from ignition cable before: - cleaning or when clearing a blockage; checking, maintenance or working on the machine.
- Handle fuel with care; it is highly flammable. Never add fuel to a machine with a running or hot engine.
- Do not attempt to repair the machine unless you are qualified to do so.

- Do not operate the machine with a damaged or excessively worn drill bit.
- Always ensure all handles and guards are fitted when using the machine. Never attempt to use an incomplete machine or one fitted with an unauthorized modification.
- When transporting or storing the machine always remove the drill bit.
- To reduce fire hazard keep engine and silencer free of debris, leaves or excessive grease.
- Handle drill with care, contacting with drills may cause injury.

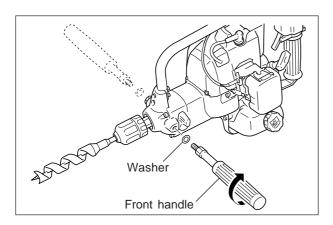
DESCRIPTION



- 1. **Operator's manual** Included with unit. Read before operation and keep for future reference to learn proper, safe operating techniques.
- 2. **Throttle trigger** Device activated by the operator's finger, for controlling the engine speed.
- 3. **Rear handle** Handle located furthest from the drill bit.
- 4. Silencer cover
- 5. Drill bit Not included with unit.
- 6. Chuck
- Front handle Handle located on the front gear case.
- 8. Shift lever
- 9. Fuel tank Contains fuel and fuel filter.
- 10. Fuel tank cap For closing the fuel tank.

- 11. Air cleaner cover Covers air filter.
- 12. Starter handle Pull handle to start the engine.
- Throttle trigger lockout Device that prevents the accidental operation of the throttle trigger until manually released.
- 14. **Ignition switch** Device for allowing the engine to be started and stopped.
- 15. Spark plug
- 16. Safety decal Part number X505-002310
- 17. Safety decal Part number X505-002430

ASSEMBLING

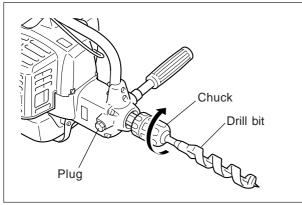


FRONT HANDLE

 Insert the front handle to the machine, and turn clockwise.

(TIGHTEN THE SCREW FIRMLY)

 To operate front handle with right hand, remove right plug then reverse sides when installing handle and plug.



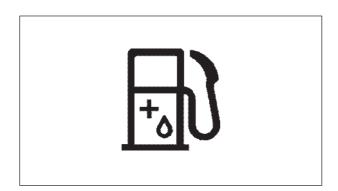
DRILL BIT

 Loosen the chuck and insert the drill bit (not provided with unit). Then tighten the chuck by turning it clockwise.

IMPORTANT

Use drill bits suited for the material being drilled and for the depth of hole required.

OPERATION

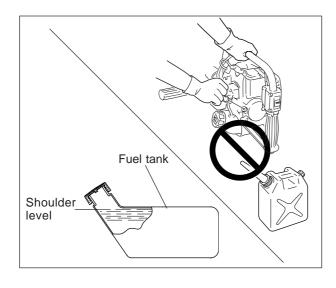


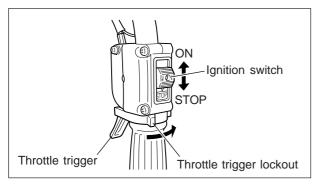
FUEL

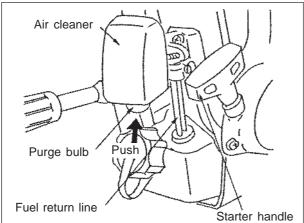
- Fuel is a mixture of regular grade petrol and an aircooled 2-stroke engine oil of reputable brand name. Minimum 89 Octane unleaded petrol is recommended. Do not use fuel containing methyl alcohol or more than 10 % of ethyl alcohol.
- Recommended mixture ratio; 50 : 1 (2 %) for ISO-L-EGD Standard (ISO/CD 13738), JASO FC, FD grade and ECHO Premium 50 : 1 oil.
 - Do not mix directly in engine fuel tank.
 - Avoid spilling petrol or oil. Spilled fuel should always be wiped up.
 - Handle petrol with care, it is highly inflammable.
 - Always store fuel in approved container.

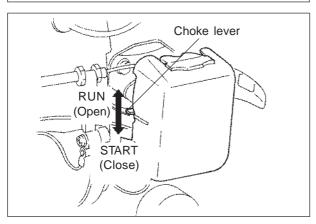
NOTE

Stored fuel ages. Do not mix more fuel than you expect to use in thirty (30) days. Do not mix directly in fuel tank.









HANDLING FUEL



DANGER

AFTER REFUELLING, TIGHTEN FUEL CAP FIRMLY AND CHECK FOR LEAKAGE. IN CASE OF FUEL LEAKAGE, REPAIR BEFORE STARTING OPERATION SINCE THERE IS A DANGER OF FIRE.

- Never smoke or allow flame or sparks near fuel.
- Always fill the fuel tank outdoors. Never pour fuel indoors.
- Always remove the fuel cap slowly to relieve any pressure buildup in the tank.
- Never refuel the engine when it is hot or running.
- · Always use an approved, safe fuel container.
- It is not permitted to fill fuel above the shoulder level of fuel tank.
- · After fuelling, always wipe away spilled fuel.
- Always move at least 3 m away from the fuelling spot before starting the engine.
- Never store the unit with fuel in the tank a fuel leak could start a fire.

STARTING COLD ENGINE



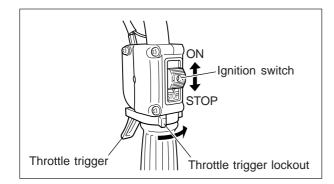
WARNING

WHEN ENGINE IS STARTED, CONFIRM IF THERE IS NOT ANY ABNORMAL VIBRATION OR SOUND. IF THERE IS ABNORMAL VIBRATION OR SOUND, ASK YOUR DEALER TO REPAIR.

- Stand the engine upright on a level surface.
- Place ignition switch in ON (START/RUN) position.
- Push purge bulb 3 to 4 times (or until fuel is visible in fuel return line).
- Shift choke lever to close position (START).
- Pull starter handle until the engine fires.
- Shift choke lever to full open position, and if necessary, start the engine again and allow to warm up before using.
 - The clutch engages at approximately 3500 r/min. Therefore the drill bit may rotate at fast idle engine speed.

STARTING WARM ENGINE

- Place ignition switch in ON (START/RUN) position.
- Pull starter handle until the engine fires.
 - Do not use the choke.



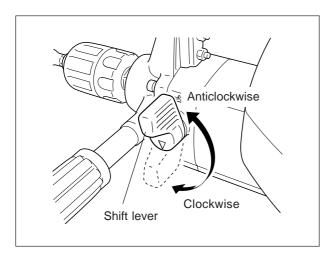
STOPPING ENGINE

- Set throttle trigger in idle position.
- Place ignition switch in STOP position.

NOTE

When engine does not stop, shift choke lever to close position.

Check and repair ignition switch before starting the engine again.



REVERSE ROTATION

- This model is equipped with reverse rotation mechanism.
- When drilling, set shift lever down to clockwise rotation position.
- If bit is locked due to deep penetration during drilling operation, set shift lever up to anticlockwise rotation position and operate reversed for easy pulling-out.
- When changing direction of drill rotation, operate as follows:
 - Return engine to idle.
 - Engine shift lever to clockwise or anticlockwise position with a slight acceleration of the throttle trigger.
 - To properly lock the gears in the gear case.
 - Do not operate shift lever forcibly when changing rotation direction.

NOTE

Do not shift from forward to reverse (or vice-versa) while the chuck is turning.

Failure to do so may cause unit damage.

Always release throttle and allow the unit to return to idle before shifting.

Do not stand close to drill or chuck with your body or clothes while operation.

When drilling, ensure that no power cable or other obstacle exist.



WARNING

- WHEN THE DRILL CAN NOT PULL OUT FROM THE WOOD, DO NOT TRY TO PULL OUT THE DRILL BY FORCE.
- WHEN CHANGING THE BIT, ENSURE TO STOP THE ENGINE.
- AFTER A JOB, BIT AND GEAR CASING MAY BE HEATED, DO NOT TOUCH THEM WITH BARE HANDS.

MAINTENANCE AND CARE

AREA	MAINTENANCE	PAGE	BEFORE USE	MONTHLY	YEARLY
Air Filter	Clean/Replace	13	•		
Fuel Filter	Inspect/Clean/Replace	13 •		•	
Spark Plug	Inspect/Clean/Adjust/Replace	13		•	
Carburettor	Adjust	14			•
Cooling System	Inspect/Clean	14	•		
Silencer	Inspect/Tighten/Clean	14	•		
Starter Rope	Inspect/Replace	-		•	
Drills	Inspect/Clean/Lubricate	-			•
Fuel Leaks	Inspect	13	•		
Screws, Bolts and Nuts	Inspect, Tighten/Replace	-	•		
Fuel Line	Inspect	-		•	

IMPORTANT

Time intervals are maximum. Actual use and your experience will determine the frequency of required maintenance.

Record dates of monthly and yearly inspections.

TROUBLE SHOOTING

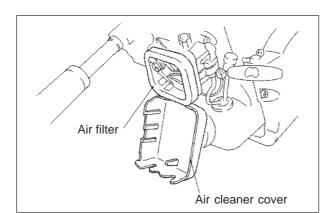
	Trouble			
Engine - hard to start - does not start		Cause	Remedy	
Engine cranks	Fuel at carburettor	No fuel at carburettor	Fuel filter cloggedFuel line cloggedCarburettor	Clean or replaceCleanAsk your ECHO dealer
	Fuel at cylinder	No fuel at cylinder	Carburettor	Ask your ECHO dealer
	→	Silencer wet with fuel	Fuel mixture is too rich	Open chokeClean/replace air filterAdjust carburettorAsk your ECHO dealer
	Spark at end of plug wire	No spark at end of plug wire	Ignition switch off Electrical problem	Turn switch on Ask your ECHO dealer
•	Spark at plug	No spark at plug	Spark gap incorrectCovered with carbonFouled with fuelSpark plug defective	Adjust 0.6 to 0.7 mmClean or replaceClean or replaceReplace plug
Engine does not crank	\		Internal engine problem	Ask your ECHO dealer
Engine Dies or accelerates poorly		 Air filter dirty Fuel filter dirty Fuel vent plugged Spark plug Carburettor Cooling system plugged Exhaust port/silencer plugged 		 Clean or replace Clean or replace Clean Clean and adjust/replace Adjust Clean Clean



MARNING

- ALL ENGINE DRILL SERVICE OPERATIONS, OTHER THAN ITEMS LISTED IN THE **OPERATOR'S MANUAL, SHOULD BE** PERFORMED BY COMPETENT SERVICE PERSONNEL.
- FUEL VAPORS ARE EXTREMELY FLAMMABLE AND MAY CAUSE FIRE AND/OR EXPLOSION. **NEVER TEST FOR IGNITION SPARK BY GROUNDING SPARK PLUG NEAR CYLINDER** PLUG HOLE, OTHERWISE SERIOUS PERSONAL INJURY MAY RESULT.

MAINTENANCE

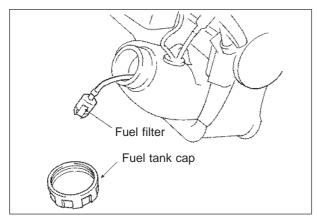


 If you have any questions or problems, please contact your ECHO dealer.

AIR FILTER

(Before Each Use)

- 1. Remove air cleaner cover and pull out air filter.
- Lightly brush off dust or wash it in water and detergent.
- 3. Dry completely before putting it back in place.



FUEL FILTER

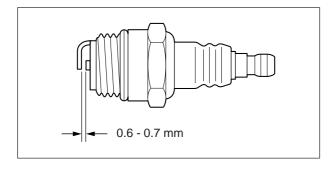
(Check Periodically)

- 1. Do not allow dust to enter into fuel tank.
- 2. Clogged filter will cause difficulty in starting engine or poor engine performances.
- Pick up fuel filter through fuel inlet port with a piece of steel wire or the like.
- 4. When filter is dirty, replace it.

CHECK FUEL SYSTEM

(Check Before Every Use)

- After refuelling, make sure fuel does not leak or exude from around fuel pipe, fuel grommet or fuel tank cap.
- 2. In case of fuel leakage or exudation there is a danger of fire. Stop using the machine immediately and request your dealer to inspect or replace.



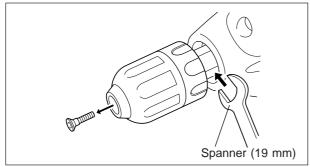
SPARK PLUG

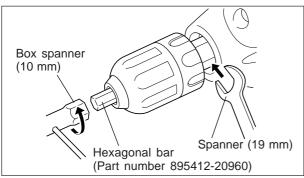
(Check Periodically)

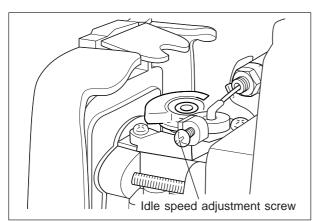
- 1. The standard spark gap is 0.6 to 0.7 mm.
- 2. Correct spark gap if it is wider or narrower than the standard gap.
- If the belectrodes are coated with carbon deposits replace with a new spark plug.
 Do not sandblast to clean.
 Remaining sand will damage engine.
- 4. Fastening torque = 15 to 17 N•m (150 to 170 kgf•cm).

NOTE

Do not over tighten plug.







REPLACEMENT OF CHUCK

Replacement of chuck should be done in the following manner:

- Fit 19 mm spanner onto driving axle and keep it fitted.
- Remove bolt with hexagonal hole fixed in the driving axle.
- Insert accessory hexagonal bar (Part number 895412-20960) into chuck and fix.
- Fit 10 mm box spanner onto the hexagonal bar and turn it into direction as indicated by an arrow to remove chuck.
- 5. Fit a new chuck in the reversed order of removing.

ADJUSTING CARBURETTOR

(As Required)

GENERAL INFORMATION

The idle speed adjuster screw controls the throttle opening at the idle position.

IDLE ADJUSTMENT

- Start engine and allow it to run at high idle until warm.
- 2. Turn the idle speed screw clockwise until drill bit begins to move.
- 3. Turn idle screw anticlockwise 1 and 1/2 to 2 turn or until the drill bit stops (2700 to 3300 r/min).

NOTE

When there is some trouble with the carburettor, contact your dealer.

CLEANING CYLINDER FINS

(Check Periodically)

NOTE

Clogged fins will cause poor engine cooling.

- Carefully remove housing and clean dirt and dust from fins.
- 2. Reinstall housing.

CLEANING SILENCER AND EXHAUST PORT

(Check Periodically)

- 1. Carefully remove housing halves.
- 2. Remove and disassemble silencer.

NOTE

Be careful not to scratch the cylinder or piston when cleaning the cylinder exhaust port.

Clean deposits from cylinder exhaust port and silencer.

STORAGE

LONG TERM STORAGE

(Over 30 Days)



WARNING

DO NOT STORE IN AN ENCLOSURE WHERE FUEL FUMES MAY ACCUMULATE OR REACH AN OPEN FLAME OR SPARK.

Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance which includes the following:

- Store unit in a dry, dust free place, out of the reach of children and other unauthorized persons.
- 2. Place the ignition switch in the STOP position.
- Remove accumulation of grease, oil, dirt and debris from exterior of unit.
- 4. Perform all periodic lubrication and services that are required.
- 5. Tighten all the screws, bolts and nuts.
- Drain the fuel tank completely and pull the recoil starter handle several times to remove fuel from the carburettor.
- Remove the spark plug and pour 1/2 tablespoon of fresh, clean, 2-stroke engine oil into the cylinder through the spark plug hole.
 - A. Place a clean cloth over the spark plug hole.
 - B. Pull the recoil starter handle 2 or 3 times to distribute the oil inside the engine.
 - C. Observe the piston location through the spark plug hole. Pull the recoil starter handle slowly until the piston reaches the top of its travel and leave it there.
- 8. Install the spark plug (do not connect ignition cable.)



NOTE

- For future reference, you should keep this operator's manual.
- If this operator's manual has become illegible through impairment or is lost, please purchase a new one from your ECHO dealer.
- When renting or lending this machine to a person who will operate it, always include this operator's manual, which provides explanation and instructions.
- When transferring a product, please deliver it attaching the operator's manual.

SPECIFICATIONS

		EDR-2400
Mass:		
Unit without specified drill bit, empty tank	kg	4.7
Unit with specified drill bit, full tank	kg	5.6
Volume : Fuel tank	L	0.45
Drill:		
Size	mm	32 - 178
Chuck capacity	mm	13
Speed	r/min	520
Mission:		
Reduction ratio		17.1 (regular side)
		18.6 (reverse side)
Lubrication		grease
External Dimensions :		
Length × Width × Height	mm	420 × 320 × 255
without drill bit		
Engine:		
Туре		Air cooled Two stroke single cylinder
Engine displacement	mL (cm ³)	23.6
Maximum shaft brake power (Referred to ISO 8893)	kW	0.68
Engine speed at maximum engine power	r/min	7500
Recommended maximum engine speed	r/min	9000
Recommended engine idling speed	r/min	2900
Carburettor	1/111111	Diaphragm type
Ignition		Flywheel magneto - CDI system
Spark plug		NGK BPMR7A
Starter		Recoil starter
Clutch		Automatic Centrifugal
Fuel:		Regular grade petrol. Minimum 89 Octane unleaded petrol is recommended. Do not use fuel containing methyl alcohol or more than 10 % of ethyl alcohol.
Oil		Two stroke, air-cooled engine oil. 50 : 1 for ISO-L-EGD Standard (ISO/CD 13738), JASO FC, FD grade and ECHO Premium 50 : 1 oil.
Ratio		50 : 1 (2 %)
Fuel consumption at maximum engine power Specific fuel consumption at maximum engine	L/h	0.67
power	g/(kW∙h)	729
Sound Pressure Level : (ISO 22868) LpAav =	dB(A)	97.2
Guaranteed Sound Power Level : (2000/14/EC) Lwa =	dB(A)	110
Vibration levels : (ISO 22867)		
Idling	m/s²	7.8
Drilling	m/s²	21.2

MEMORANDUM

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