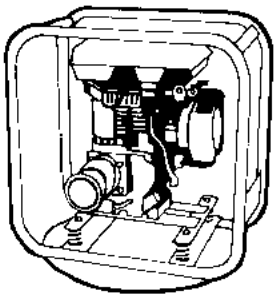
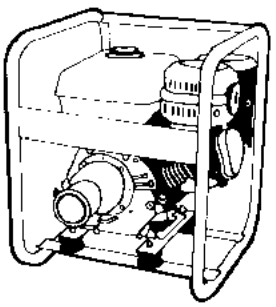
PETROL DRIVE UNIT

DP4 - DP6

OPERATING INSTRUCTIONS





⚠ WARNING

To reduce the risk of injury, all operators and maintenance personnel must read and understand these instructions before operating, changing accessories, or performing maintenance on Flextool power equipment. All possible situations cannot be covered in these instructions. Care must be exercised by everyone using, maintaining or working near this equipment.

CONTENTS

INTRODUCTION

Thank you for your selection of Flextool equipment. Flextool have specialised in the design and manufacture of quality products since 1951.

We have taken care in the design, manufacture and testing of this product. It is covered by a six month warranty. Should service or spare parts be required, prompt and efficient service is available from our branches.

General Safety Instructions for the Operation of Power Equipment
The goal of Flextool is to produce power equipment that helps the operator work safely and efficiently. The most important safety device for this or any tool is the operator. Care and good judgement are the best protection against injury. All possible hazards cannot be covered here, but we have tried to highlight some of the important items, individuals should look for and obey Caution, Warning and Danger signs placed on equipment, and displayed in the workplace. Operators should read and follow safety instructions packed with each product.

Learn how each machine works. Even if you have previously used similar machines, carefully check out each machine before you use it. Get the "feel" of it and know its capabilities, limitations, potential hazards, how it operates, and how it stops.

APPLICATIONS

Heavy duty concrete vibrators, 28 mm - 60 mm dia.
Submersible pumps, up to 50 mm discharge.

FUNCTION

This portable drive unit is designed to power flexshaft drive submersible pumps and model VP (pendulum) vibrators. A quick action 60 mm diameter flexible shaft coupling with aluminium alloy housing, rotary trigger latch and hardened 45 mm 3-tooth dog drive enable ease of use by allowing the operator to simply engage or disengage the flexible shaft coupling, to facilitate either a change of position or a change of flexshaft driven device.

FUNCTIONS AND CONTROLS

Bell housing / Rotary trigger
Is mounted directly to the motor and enables quick connection between the coupling and the 3-tooth dog drive mounted on the crankshaft. The rotary trigger latch assures a positive engagement between drive dogs.

Motor
The motor is controlled by an on/off switch or push button switch mounted on the motor below the fuel tank.

To STOP the machine TURN the switch to the OFF position or PRESS the push button in until the motor stops.

Honda, Robin and Vanguard motors are fitted with an oil sensor device that will stop the motor or prevent starting when the crankcase oil level falls below a safe level.

The motor speed is controlled by a throttle lever mounted below the air cleaner. The throttle should be adjusted to the maximum position when operating a flexible shaft driven device.

HAZARDS AND RISKS

NEVER allow any person to operate a machine without adequate instruction.

ENSURE all operators read, understand and follow the operating instructions.

SERIOUS INJURY may result from improper or careless use of this machine

! MECHANICAL HAZARDS

DO NOT operate the machine unless all protective guards are in place

KEEP hands and feet clear of rotating and moving parts as they will cause injury if contacted.

BE CAREFUL not to come in contact with the muffler when the engine is hot, since it can cause severe burns.

ENSURE that the motor operation switch is in the OFF position and the spark plug ignition lead is disconnected before removing guards or making adjustments.

ENSURE both the machine and the operator are stable by setting up on level terrain and the machine will not move or fall while in operation or unattended.

DO NOT leave the machine in operation while it is unattended.

DO NOT increase the governed no-load motor speed above 3,000 r/min on an engine with a power output of less than 5.6 kW, or a flexible shaft smaller than 16 x 38mm. Any increase may result in personal injury and damage to the machine.

KEEP bystanders and animals clear of the work area.

ENSURE that repairs to the motor and machine are carried out by COMPETENT personnel.

! FIRE & EXPLOSION HAZARDS

PETROL is extremely flammable and explosive under certain conditions.

ENSURE that petrol is only stored in an approved storage container.

DO NOT refuel the motor while it is in operation or hot.

DO NOT refuel the motor in the vicinity of sparks, a naked flame or a person smoking.

DO NOT overfill the fuel tank and avoid spilling petrol when refuelling. Spilled petrol or petrol vapour may ignite. If spillage occurs, ensure that the area is dry before starting the motor.

ENSURE that the fuel tank cap is securely fitted after refuelling.

! CHEMICAL HAZARDS

DO NOT operate or refuel a petrol motor in a confined area without adequate ventilation.

CARBON MONOXIDE exhaust gases from internal combustion motor driven units can cause death in confined spaces.

! NOISE HAZARDS

EXCESSIVE NOISE can lead to temporary or permanent loss of hearing.

! ADDITIONAL HAZARDS

Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose, the flexible shaft and water left on the walking or work surface.

DO NOT allow waste water to accumulate under foot.

Exercise caution and ensure that the perimeter of elevated formwork or platforms is protected.

Exercise care when working in the vicinity of unprotected holes or excavations

OPERATION

For information on correct starting procedures refer to the engine manufacturers operation manual.

Before engaging the flexshaft with a petrol drive unit start the motor using the recoil starter, increase the speed to full throttle and allow it to warm up for a few minutes. (If the motor is fitted with an on/off switch this must first be turned ON before starting.)
Stop the motor.
Turn the bell housing trigger 180 degrees. Insert the flexshaft coupling fully into the housing of the drive unit and release the trigger. Push the coupling into the housing and twist the flexible shaft until the drive dogs are fully engaged and the trigger returns to the horizontal position.
The motor may now be started

Drive units should be operated on a level surface. If the surface is not level the drive unit should be restrained to ensure that it does not move due to vibration or the weight of a pump and hose or vibrator.

CARE AND PREVENTIVE MAINTENANCE

Check the condition of the drive dog regularly and that the three tooth drive dogs are fully meshed. The position of the drive dog on the crank shaft is critical and should also be checked. The correct distance from the face of the teeth to the face of the bell housing is 73 mm (2.875 inches).

Worn coupling housings and poorly operating triggers together with worn grooves in the shaft coupling will lead to a shorter operating life and should be replaced before they have worn excessively.

Check the oil level in the petrol motor crankcase daily.

SERVICE

Change the oil in the petrol motor crankcase regularly to minimise wear.

Inspect, clean and/or replace the motor air cleaner regularly, particularly when operating in a dusty environment.

Inspect, clean and/or replace the spark plug regularly.

CLEANING AND STORAGE

Keep the unit clean and free of concrete residue.

Ensure the cooling fins on the motor are kept unobstructed.

HAZARD EVALUATION AND CONTROL

Description of Plant: Drive Unit - Petrol _____ Model No: DP4 / DP6 _____

Assessed By: Evan Miller _____ Company : Flextool (Aust) Pty Ltd Date: 18/12/96 Issue: B__

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
A - ENTANGLEMENT 1 Can anyone's hair, clothing, gloves necktie, jewellery, cleaning brushes, rags, or other materials become entangled with moving parts of the plant, or materials in motion?	Y	Entaglement with output shaft, drive dog while rotating	5	C	* Do not operate the machine unless all protective guards are in place. * Keep hands and feet clear of rotating and moving parts as they will cause injury if contacted. * Ensure that the motor operation switch is in the off position and the spark plug ignition lead is disconnected before removing guards or making adjustments.
B - CRUSHING 1. Can anyone be crushed due to:-					
a. Material falling off the plant?	N				
b. Uncontrolled or unexpected movement of the plant or its load?	N				
c. Lack of capacity for the plant to be slowed, stopped or immobilised?	N				
d. The plant tipping or rolling over?	Y	In use on an incline	5	E	* Ensure both the machine and the operator are stable by setting up on level terrain and the machine will not move or fall while in operation or unattended.
e. Parts of the plant collapsing?	N				
f. Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair?	N				
g. Being thrown off or under the plant?	N				
h. Being trapped between the plant and material or fixed structures?	N				

* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

HAZARD EVALUATION AND CONTROL

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
i. Other factors not mentioned?	N				
C. CUTTING, STABBING & PUNCTURING? 1. Can anyone be cut, stabbed or punctured due to:					
a. Coming in contact with sharp or flying objects?	N				
b. Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair of the plant?	Y	Output shaft, drive dog contact while rotating	5	E	* Do not operate the machine unless all protective guards are in place. * Keep hands and feet clear of rotating and moving parts as they will cause injury if contacted. * Ensure that the motor operation switch is in the off position and the spark plug ignition lead is disconnected before removing guards or making adjustments.
c. The plant, parts of the plant or work pieces disintegrating?	N				
d. Work pieces being ejected?	N				
e. The mobility of the plant?	N				
f. Uncontrolled or unexpected movement of the plant?	N				
g. Other factors not mentioned?	N				
D. SHEARING 1. Can anyone's body parts be sheared between two parts of the plant, or material handled by the plant?	Y	Rotating output shaft, drive dog against stationary guard	5	C	* Keep hands and feet clear of rotating and moving parts as they will cause injury if contacted. * Ensure that the motor operation switch is in the off position and the spark plug ignition lead is disconnected before removing guards or making adjustments.
E. FRICTION 1. Can anyone be burnt due to contact with moving parts or surfaces of the plant, or between a part of the plant and a work piece or structure?	N				

* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

HAZARD EVALUATION AND CONTROL

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
F. STRIKING 1. Can anyone be struck by moving objects due to :					
a. Uncontrolled or unexpected movement of the plant?	Y	Plant moving while unattended	4	E	* Do not leave the machine in operation while it is unattended
b. The plant, parts of the plant or work pieces disintegrating?	N				
c. Work pieces being ejected?	N				
d. Mobility of the plant?	N				
e. Other factors not mentioned?	N				
G. HIGH PRESSURE SUBSTANCES 1. Can anyone come into contact with substances under high pressure, due to plant failure or misuse of the plant?	N				
H. ELECTRICAL 1. Can anyone be injured by electrical shock or burnt due to:					
a. The plant contacting live electrical conductors?	N				
b. The plant working in close proximity to electrical conductors?	N				
c. Overload of electrical circuits?	N				
d. Damaged or poorly maintained electrical leads and cables?	N				
e. Damaged electrical switches?	N				
f. Water near electrical equipment?	N				

* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

HAZARD EVALUATION AND CONTROL

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
g. Lack of isolation procedures?	N				
h. Other factors not mentioned?	N				
I. **EXPLOSION** 1. Can anyone be injured by explosion of gases, vapours, liquids, dusts or other substances, triggered by the operation of the plant or by material handled by the plant?	Y	Petrol vapour	5	B	* Petrol is extremely flammable and explosive under certain conditions. * Ensure that petrol is only stored in an approved storage container. * Do not refuel the motor while it is in operation or hot. * Do not refuel the motor in the vicinity of sparks, a naked flame or a person smoking. * Do not overfill the fuel tank and avoid spilling petrol when refuelling. Spilled petrol or petrol vapour may ignite. If spillage occurs, ensure that the area is dry before starting the motor. * Ensure that the fuel tank cap is securely fitted after refuelling.
J. **SLIPPING, TRIPPING & FALLING** 1. Can anyone using the plant, or in the vicinity of the plant, slip, trip or fall due to:					
a. Uneven or slippery work surfaces?	Y	Slip, trip, fall	3	E	* Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose, the flexible shaft and water left on the walking or work surface. * Do not allow waste water to accumulate under foot.
b. Poor housekeeping, eg, swarf in the vicinity of the plant, spillage not Cleaned up?	Y	Slip, trip, fall	3	E	* Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose, the flexible shaft and water left on the walking or work surface. * Do not allow waste water to accumulate under foot.
c. Obstacles being placed in the vicinity of the plant, other factors not mentioned?	N				
2. Can anyone fall from a height due to:					
a. Lack of proper work platform?	N				

* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

HAZARD EVALUATION AND CONTROL

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
b. Lack of proper stairs or ladders?	N				
c. Lack of guardrails or other suitable edge protection?	Y	Slip, trip, fall	4	C	* Exercise caution and ensure that the perimeter of elevated formwork or platforms is protected. * Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose, the flexible shaft and water left on the walking or work surface.
d. Unprotected holes, penetrations or gaps?	Y	Slip, trip, fall	3	C	* Exercise caution and ensure that the perimeter of elevated formwork or platforms is protected. * Exercise care when working in the vicinity of unprotected holes or excavations. * Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose, the flexible shaft and water left on the walking or work surface.
e. Poor floor or walking surfaces, such as the lack of a slip-resistant surface?	N				
f. Steep walking surfaces?	N				
g. Collapse of the supporting structure?	N				
h. Other factors not mentioned?	N				
K. ERGONOMIC 1. Can anyone be injured due to:					
a. Poorly designated seating?	N				
b. Repetitive body movement?	N				
c. Constrained body posture or the need for excessive effort?	N				
d. Inadequate or poorly placed lighting?	N				
e. Lack of consideration given to human error or human behaviour?	N				

* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

HAZARD EVALUATION AND CONTROL

Hazard Description	Hazard Y/N	Plant & / or Situation	Likelihood	Severity	Risk Control
f. Mismatch of the plant with human traits and natural limitations?	N				
g. Other factors not mentioned?	N				
L. SUFFOCATION 1. Can anyone be suffocated due to lack of oxygen, or atmospheric contamination?	Y	Motor exhaust fumes	4	A	Warning label on motor * Do not operate or refuel a petrol motor in a confined area without adequate ventilation. * Carbon monoxide exhaust gases from internal combustion motor driven units can cause death in confined spaces.
M. HIGH TEMPERATURE OR FIRE 1. Can anyone come into contact with objects at high temperature?	Y	Motor muffler	3	E	Muffler guard marked "Hot" - Honda motor * Be careful to avoid contact with the muffler when engine is hot as it may cause severe burns.
N. TEMPERATURE (THERMAL COMFORT) 1. Can anyone suffer ill health due to exposure to high or low temperatures?	N				
O. OTHER HAZARDS 1. Can anyone be injured or suffer ill health from exposure to:					
a. Chemicals?	N				
b. Toxic gases or vapours?	Y	Motor exhaust fumes	4	A	Warning label on motor * Do not operate or refuel a petrol motor in a confined area without adequate ventilation. * Carbon monoxide exhaust gases from internal combustion motor driven units can cause death in confined spaces.
c. Fumes?	Y	Motor exhaust fumes	4	A	Warning label on motor * Do not operate or refuel a petrol motor in a confined area without adequate ventilation. * Carbon monoxide exhaust gases from internal combustion motor driven units can cause death in confined spaces.

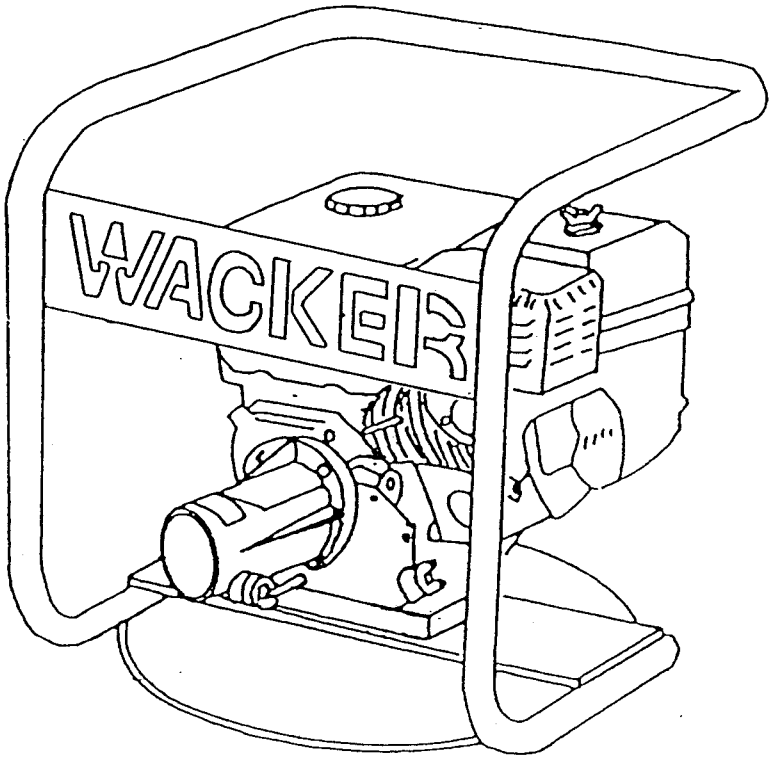
* Refer to Flextool operating instructions.

Likelihood of Occurrence
1. Expected to Happen
2. Common
3. Sometimes
4. Rarely
5. Highly Unlikely

Severity of Result
A. Fatality
B. Permanent Disability
C. Lost Time Injury
D. Medical Treatment
E. First Aid Injury

WACKER

HD 3.7



WACKER AUSTRALIA PTY. LTD.

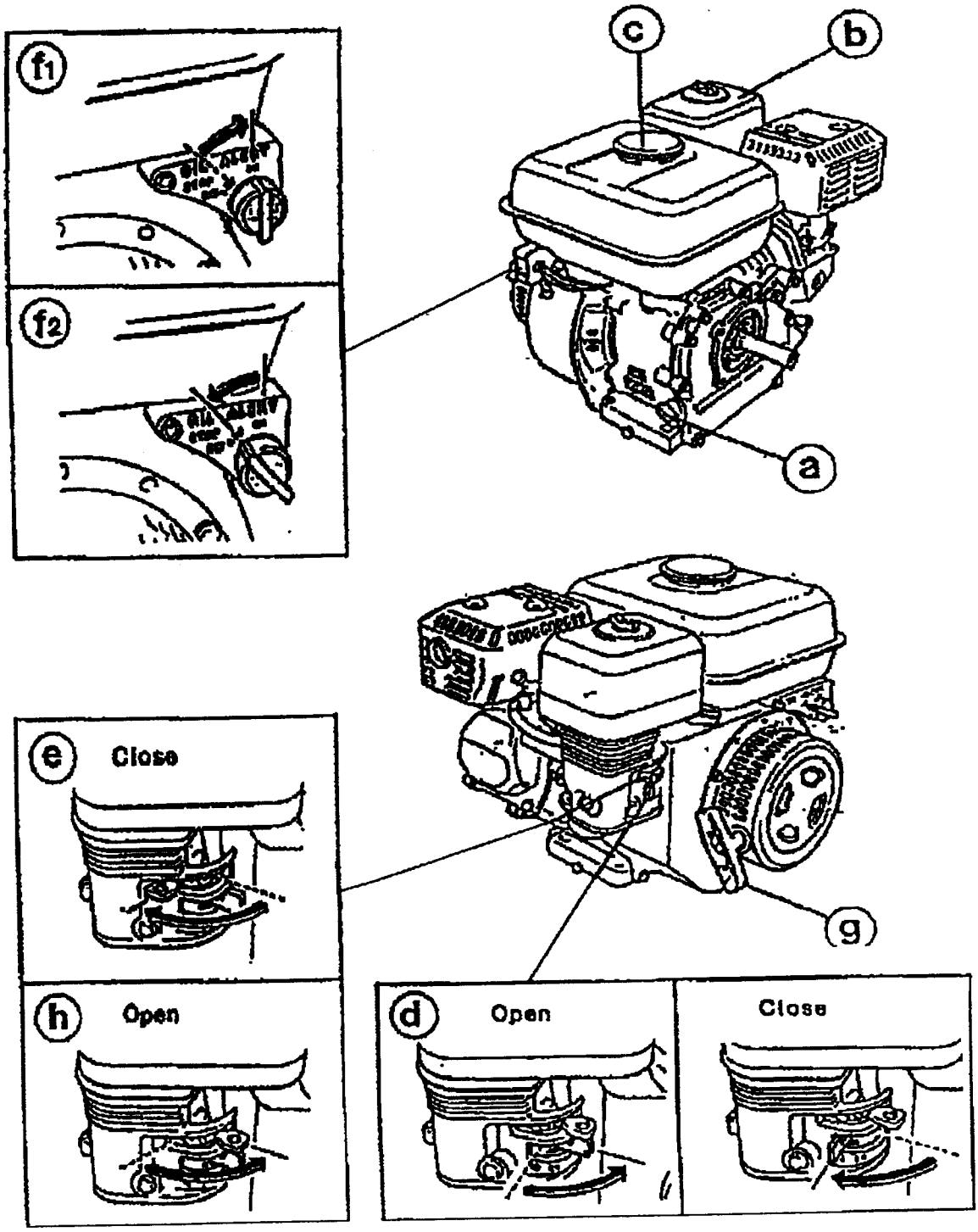
A.C.N. 004 659 590

913 PRINCES HIGHWAY, SPRINGVALE, VIC. 3171. PH: (03) 9547 4033 FAX: (03) 9562 3371

BRANCHES:

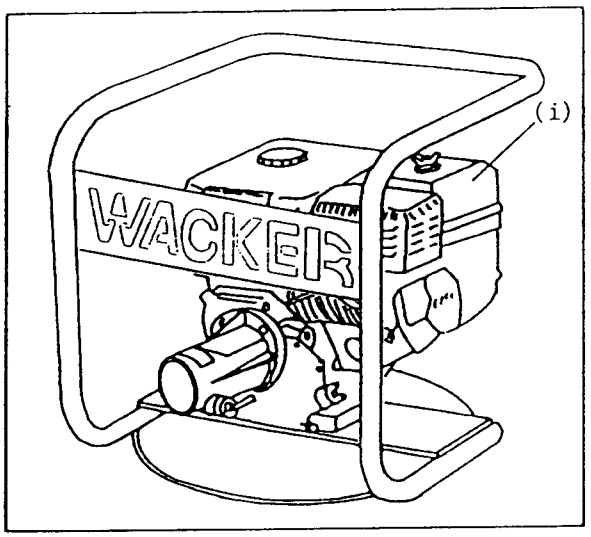
Adelaide: 45 Beulah Road Norwood. S.A. 5067 Phone: (08) 8362 2331 Fax: (08) 8362 8469	Brisbane: Unit 2, 6-8 Pendrey Crt Woodridge. Qld. 4114 Phone: (07) 3208 9577 Fax: (07) 3808 3280	Perth: Unit P, 69-73 Hector St Osborne Park W.A. 6017 Phone: (08) 9445 2911 Fax: (08) 9445 2361	Sydney: 14 Vore Street. Auburn. N.S.W. 2144 Phone: (02) 9748 0366 Fax: (02) 9748 0774

WAM 250/1, 1-98


f1
f2
c
b
a
g
e
Close
h
Open
d
Open
Close

OPERATION

BEFORE STARTING



Check:

1. Engine oil (a)
2. Air cleaner (b)
3. Fuel level (c)

Read **"Safety First"**.

TO START

1. Open fuel valve (d)
2. Close choke (e)
3. Turn engine switch to **"ON"** (f1)
4. Pull starter rope (g)
5. Open choke (h) as engine warms up

TO OPERATE

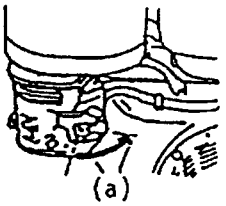
Accelerate engine by opening throttle control (i) fully.

TO STOP

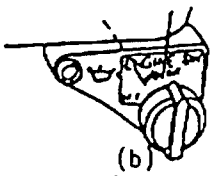
1. Retard throttle lever (i)
2. Turn engine switch to **"OFF"** (f2)
3. Close fuel valve (d)

4. STARTING THE ENGINE:

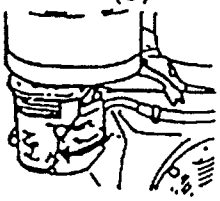
a) Turn the fuel valve to the **ON** position.


(a)

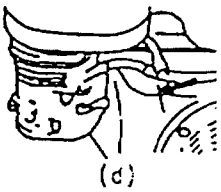
b) Turn the engine switch to the **ON** position.


(b)

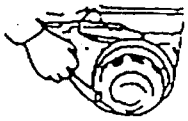
c) Move the choke lever to the **CLOSE** position. **NOTE:** If the engine is warm or the air temperature is high, move the control lever away from the **CHOKE** position as soon as the engine starts.


(c)

d) Move the throttle lever slightly to the left.


(d)

e) Pull the starter grip lightly until resistance is felt, then pull briskly. **CAUTION:** Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.


(e)

5. OPERATION OF ENGINE:

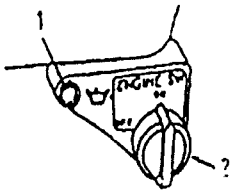
As the engine warms up gradually move the choke lever to the **OPEN** position. Position the throttle lever for the desired engine speed.

Oil Alert System:

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. When the oil level in the crankcase falls below the safe limit, the Oil Alert system will automatically shut down the engine (the engine switch will remain in the **ON** position). If the Oil Alert system shuts down the engine, the Oil Alert lamp will flash when you operate the starter, and the engine will not run. If this occurs, add engine oil.

(1) Oil Alert Lamp.

(2) Engine Switch.



OPERATION

GENERAL TIPS FOR OPERATORS:

1. Always make sure engine is switched **OFF** before attempting to connect flexible shafts.

2. To connect flexible shaft, (with engine switch in **OFF** position) turn trigger 180° to allow coupling to enter bell housing past the trigger lock, then turn engine over by pulling the rewind slowly keeping slight pressure on the coupling inwards till the coupling fully engages and the trigger springs back to locking position.

3. Start engine as per normal starting instructions (page 9).

4. To disconnect shaft (again with engine switch in **OFF** position) turn trigger 180° and move shaft out of the bell housing.

HONDA ENGINE:

1. MODEL GX 160 QX is stamped on the engine housing. Parts for the HONDA engine are available from WACKER or from HONDA dealers.

2. The engine speed has been set in our factory at 2800 RPM, being the optimum speed required for efficient operating performance of the flexible shaft vibrators/pumps.

OPERATION OF ENGINE:

1. OIL LEVEL CHECK:

   Insert dipstick in oil filler neck, but without screwing in. If oil level is low, fill to the top of the oil filler neck with high grade SAE 15 W 40 oil.

2. DUAL-AIR CLEANER DUAL ELEMENT TYPE:

   Check the air cleaner elements to be sure they are clean and in good condition. Clean or replace the elements if necessary.

3. FUEL:

   Use any regular grade automotive petrol (unleaded petrol is preferred) with pump octane rating of 86 or higher.

   Never use an oil/petrol mixture or dirty petrol. Avoid getting dirt, dust or water in the fuel tank.

   CAUTION: Petrol substitutes are not recommended, they may be harmful to the fuel system components.