



# PROFINISH WALK BEHIND TROWEL

## FP436D - DIESEL

### 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 this power equipment. All possible situations cannot be covered in these instructions. However care must be exercised by everyone using, maintaining or working near this equipment.

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## INTRODUCTION

Thank you for your selection of Parchem equipment.

Parchem have specialised in the design and manufacture of quality products since 1951.

We have taken care in the assembly and testing of this product. 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 Parchem 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 ones. 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.

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## APPLICATIONS

The power trowel can be used for trowelling concrete surface through floating and finishing operations. Three types of blades can be fitted with the trowel: combination, floating and finishing blades. Two types of float pans are compatible and available: regular dish pan and mild dish pan. The following are some examples of the suitable applications:

- Tilt panels
- Warehouse floor
- Bridge decks
- House slabs

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## FUNCTIONS AND CONTROLS

The trowelling machine reproduces the action of hand trowelling while giving a high quality dense finish with wear resistance. The angle of the blades is adjustable during operation from a floating position, with the full blade area in contact to flatten the surface, to a finishing position with the blades tilted to give a finished surface.

The trowel machine is equipped with the following major controls and components.

Familiarise yourself with the controls and components before operating or servicing the machine.



1. Handle Grip/Handle Bar – When operating the trowel, hold both handgrips with hands. Replace handgrips when they are worn or damaged.
2. Blade Pitch Control – Turn the ball knob clockwise to increase blade pitch, and counter-clockwise to decrease blade pitch.
3. Throttle Control Lever – Controls the speed of engine. Push the lever downwards to increase engine speed, upwards to decrease engine speed.
4. Safety Stop Switch Lever – When the operator loses control and lets go of the trowel, the lever will return to OFF position, and shut down the engine. This switch should be tested before each use of the trowel. It is also recommended that this switch be used to stop the engine for each use of the trowel.
5. Lifting Hook – Use the lifting hook to lift the trowel and move to desired location.
6. Engine – Yanmar L48N6-MTMR diesel engine. Read the Owner's Manual supplied with the trowel before operating and servicing the machine
7. V-belt Cover – Safety guard for V-belts and pulleys. Remove the cover to get access to the V-belts for inspection and replacement. Make sure the cover is always in place when trowel is in operation.
8. Gearbox – Transfers power from engine to the spider assembly. Check oil level in gearbox through the sight glass on a daily basis, and refill as necessary.
9. Trowel Arm – NEVER use broken or bent trowel arms. Check for arm alignment if blades show uneven wear or some wear earlier than others.
10. Blades & Pans – Combination blades, floating blades, finishing blades and floating pans can be fitted with the trowel. For details on compatible blades and pans, please refer to Specification section of this manual.
11. Guard Ring – NEVER put hands or feet inside the guard ring while the engine is running.

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## HAZARDS AND RISKS

NEVER allow any person to operate 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.

Power trowels are heavy units and require a multiple person lift, using correct lifting techniques and people of appropriate strength. If provided, use the lifting eye for a mechanical lift using approved lifting devices.

### ! MECHANICAL HAZARDS

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

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

DO NOT increase the governed no-load motor speed above 3,600 r/min. Any increase may result in personal injury and damage to the machine.

Be sure the runaway protection switch provided is working properly so that if the handle should slip away from your control, the ignition supply will be cut off. However momentum may cause the handle to rotate one full turn, so watch your back.

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

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

It is important that the operator retains a firm grip with the left hand at some point on the handle when starting the engine, preferably close to throttle control.

When starting the trowel do not exceed 1/4 throttle setting.

A higher setting could engage the centrifugal clutch causing the handle to rotate.

Be careful with the trowel around pipes sticking out of the floor or other obstacles. Should the trowel blades catch on these, serious damage to the machine or harm to the operator may result.

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.

WEAR an approved hearing protection device to limit noise exposure, as required by Occupational Health and Safety regulations.

### PROTECTIVE CLOTHING

ALWAYS wear approved hearing protection. Protective goggles, clothing and footwear may also be necessary.

### ! ADDITIONAL HAZARDS

Slip/Trip/Fall is a major cause of serious injury or death.

Beware of obstacles or water left on the walking or work surface.

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

Always maintain good footing so that you do not slip and lose control of the handle when starting or operating the trowel.

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## OPERATION

### BEFORE OPERATION

The following items should be checked on a daily basis before operating the trowel:

- Engine oil level
- Gearbox oil level
- Blade condition and pitch control operation
- Safety Stop Switch operation
- V-belt clutch operation

### STARTING THE ENGINE

1. Move the engine Fuel Cock to "ON" position.
2. Hold the safety switch lever on the trowel handle with your left hand so that the

### ENGINE SPEED CONTROL LEVER IS IN "RUN" POSITION.

3. Turn the Throttle Control Lever on the handle to approximately 1/4 throttle.
4. Grasp the recoil starter grip and pull it out slowly until you feel strong resistance.

Return the starter grip slowly to its initial position. Push the decompression lever down then release it (it will automatically return to its initial position after engine starts). Grasp the recoil starter grip again and slowly pull it out until hard resistance is felt. Pull the starter grip briskly and smoothly to start the engine.

5. If the engine is not started, repeat 1 to 4 steps above.
6. Run the engine to warm up for a few minutes and make sure the machine is in normal working condition.
7. Test the Safety Stop Switch Lever by releasing it from your left hand, and the

engine should stop working. If the engine does not stop working, servicing is required to make sure the safety stop switch is functioning to shut down the engine. This test should be conducted in a clear area.

8. Repeat 1 to 6 steps above to bring the machine into working condition.

### MANOEUVRING THE TROWEL

1. The operator should start with standing behind the trowel, keep a secure foothold and hold the handle with both hands. Increase the engine speed by turning the Throttle Control Lever slowly towards the "MAX" position to obtain the desired speed. Always start the trowel with the blade pitch in the flat position, and adjust from there.
2. To move the trowel to the left, gently lift up on the handle; to

move to the right, slowly push down on the handle. To move the trowel forwards, slightly turn the handle to the right; to move backwards, slightly turn the handle to the left.

3. Walk backwards and guide the trowel from side to side to cover the area/path to be trowelled.

4. Step away from the trowel if it runs out of your hands. The Safety Stop Switch Lever should bring the trowel to a full stop. Do not attempt to recover the trowel until it has come to a full stop.

### PITCHING THE BLADES

To pitch the blades upward, turn Pitch Control Knob clockwise; To lay the blades flat, turn the knob counter-clockwise. The pitch adjustment feature of the trowel permits quick and accurate pitch changes of the trowel blades without having to stop the machine. By adjusting pitch to suit varying conditions over the concrete surface, the operator can do the work faster and achieve better concrete finish.

### FLOATING OPERATION

For floating and finishing operations, guiding the trowel on the concrete is simple: a slight upward lift of the handle causes the trowel to travel to the left. Holding the handle in neutral

position leaves the trowel rotate in one spot. Slight downward pressure on the handle causes the trowel to travel to the right. A slight twist to the right will move the trowel forward, and a twist to the left will move it backward.

To achieve quality concrete finish, the operator should start floating operation at the right time. This can be determined by using a footprint test. If the operator steps onto the slab and leaves a 3 mm impression on the surface, then it is ready for the floating.

It is recommended that, during floating, blades be kept in a flat position with the trowel working at  $\frac{1}{2}$  to  $\frac{3}{4}$  of the full speed, and each pass should overlap the previous by half the width of the trowel. A second trowel pass may be required for the desired finish. Crossover floating is recommended for this pass with blade pitch at a slightly higher level and trowel at about  $\frac{3}{4}$  of the full speed.

Under normal operating conditions the machine should cover as much as 90 square metres in about 15 minutes. After the floated concrete has set sufficiently it is ready for the finishing operation.

**CAUTION:** Do not let the machine stand in one spot on the soft concrete. Lift the trowel from the slab when the floating operation is completed.

### FINISHING OPERATION

For better concrete surface finish, the operator should adjust the blade pitch based on the hardness or plasticity of the concrete surface. When the concrete is wet or plastic, begin with the blades lying flat or at a small angle on the surface. When the concrete has sufficiently hardened, increase the blade pitch and keep it at a level corresponding to the concrete hardness and the desired finish. Check the obtained finish, and adjust blade pitch as necessary. As a general rule, the greater the blade pitch, the smoother the finish. However, excessive blade pitch will cause the blades to wear rapidly.

When finishing, run the trowel at full throttle, and keep blade coverage at approximately 10 cm on each turn. In other words, let the trowel move right or left, backwards or forwards approximately 10 cm with each revolution of the trowel blades. To fill a hole or cut down a hump, move the unit back and forth over the hole or hump. More passes may be required for the desired surface finish.

### SHUTTING DOWN THE TROWEL

To shut down the trowel machine, the following steps should be followed:

1. Move the Throttle Control Lever to the "MIN" position.
  2. For maximum engine life, it is recommended to run the engine at low idle speed or run without load for at least five minutes before shutting down the trowel.
  3. Release the Safety Stop Switch Lever to shut down the trowel.
- CAUTION:** If the engine continues to run after the Safety Stop Switch Lever is released (and engine speed control should return to "STOP" position), turn the Fuel Cock to the "CLOSED" position.
4. After the engine stops, turn the Fuel Cock lever to the "CLOSED" position.
  5. Pull the Recoil Starter Grip out slowly to the point of resistance. This helps to prevent rust while the engine is not in use.
  6. If the trowel machine will not be used for six months or longer, follow the additional instructions in Long Term Storage section of Owner's Manual of the engine.

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## CARE AND PREVENTIVE MAINTENANCE

ENSURE repairs and maintenance of the trowelling machine is performed by qualified personnel.

**CAUTION:** Make sure the engine is shut down and cool enough before performing repairs and maintenance.

For details on the preventive maintenance of the engine, please refer to the Owner's Manual of the Yanmar engine supplied with the trowel. The following schedule should be followed when performing regular maintenance of the trowel:

### DAILY (8 – 10 HOURS)

- Check the engine oil level before each use, refill as necessary. The gearbox is fitted with a sight glass, maintain the oil level at approximately half way level on the sight glass.
- Check to make sure the safety switch is able to shut down the engine before each use of the trowel.
- Check that the V-belt is running true. Adjust or replace as necessary.
- Keep the trowel clean and free of concrete residue after each use.

### WEEKLY (50 – 60 HOURS)

- Check blades for their condition, and adjust or replace if necessary.
- Relubricate trowel arms, thrust collars and clutch.

### MONTHLY (200 – 300 HOURS)

- Remove, clean, reinstall and relubricate the trowel arms and thrust collars.
- Check and adjust the trowel arms for alignment.
- Remove, clean, reinstall and relubricate the clutch.

### YEARLY (2000 – 2500 HOURS)

- Check arm bushings, thrust collar bushings, and shaft seals. Replace if necessary.

Check safety switch cable, throttle control cable, pitch control cable and associated connections to make sure they are in normal working condition. Replace if necessary.

## SPECIFICATIONS

### TROWEL MACHINE

Part Number	F03436D
Motor	YANMAR, L48N6-MTMR, Diesel Engine, Constant Output 3.1Kw, 3600 RPM, Max. Output 3.5, 3600 RPM
Governed Motor Speed	3600RPM
Blade Speed	125RPM Max.
Trowelling Path	36" (914mm)
Weight	89Kg
Machine Dimensions	1730mm x 970mm x 970mm

### COMPATIBLE BLADES & FLOAT PANS

Part Number	Size	Quantity (per set)	Type
BR-20479	355mm x 203mm (14" x 8")	4	Comination Blade
BR-20479P	355mm x 203mm (14" x 8")	4	Comination Blade (plastic)
BR-20415	355mm x 254mm (14" x 10")	4	Floating Blade
BR-20414	355mm x 152mm (14" x 6")	4	Finishing Blade
BR-11691	O.D. 930mm, 17.6kg	1	Float Pan (regular dish)





## TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES AND CORRECTION
Engine will not start	<ul style="list-style-type: none"> <li>■ Check the Fuel Cock switch to ensure that it is switched to "ON"</li> <li>■ Check the Safety Stop Switch is operational</li> <li>■ Check the diesel fuel supply, refuel if necessary</li> <li>■ Check the fuel filter to ensure they are clean, replace if necessary</li> <li>■ Check for compressed air leakage from intake/exhaust valves (contact Yanmar dealer)</li> <li>■ Check for fuel injection condition (contact Yanmar dealer)</li> <li>■ Check for faulty engine stop solenoid (contact Yanmar dealer)</li> </ul>
Engine stops	<ul style="list-style-type: none"> <li>■ Check the Safety Stop Switch is operational</li> <li>■ Check the diesel fuel supply, refuel if necessary</li> <li>■ Check the fuel filter to ensure they are clean, replace if necessary</li> <li>■ Check for compressed air leakage from intake/exhaust valves (contact Yanmar dealer)</li> <li>■ Check for fuel injection condition (contact Yanmar dealer)</li> <li>■ Check for faulty engine stop solenoid (contact Yanmar dealer)</li> </ul>
White or black exhaust smoke	<ul style="list-style-type: none"> <li>■ Check for engine overload, reduce load if necessary</li> <li>■ Check air cleaner elements, clean or replace if necessary</li> <li>■ Check for diesel fuel type to make sure it is right</li> <li>■ Check fuel injection and intake/exhaust valve clearance (contact Yanmar dealer)</li> </ul>



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