

# OPERATING INSTRUCTIONS

## FLEXTOL PROFINISH<sup>®</sup> WALK-BEHIND POWER TROWEL (DIESEL) FP436D



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## INTRODUCTION

Thank you for your selection of Flextool equipment.

Flextool has specialised in the design and manufacture of quality products since 1951 and 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 extensive dealer network.

The goal of Flextool is to provide power equipment that helps the operator works safely and efficiently. The operator is the most crucial safety component for this equipment and using caution and sound judgement is the best way to prevent injury. While we cannot cover all potential hazards, we have highlighted some key points. Operators should pay attention to and follow Caution, Warning, and Danger signs on equipment and in the workplace, as well as reading and following the safety instructions for each product in the operating instructions manual.

It is important to understand how each machine operates. Even if you have had experience with similar equipment previously, inspect each machine carefully before use. Get the “feel” of it and familiarise yourself with its capabilities, limitations, potential hazards, how it operates, and how it stops.

## APPLICATIONS

The Flextool ProFinish series of walk-behind power trowels are designed for trowelling concrete from the initial floating and breaking in of the concrete right through to the final finishing operations.

The Flextool ProFinish series of walk-behind power trowels can be used across a wide range of applications that include (but not limited to):

- Residential foundations
- Tilt and precast panels
- Commercial and industrial warehouse flooring
- Civil infrastructure projects

## FUNCTIONS AND KEY FEATURES

The Flextool ProFinish series of walk-behind power trowels are available in operating widths ranging from 24" to 46" with one diesel and four petrol models. Designed for professionals, the ProFinish walk-behind power trowels are equipped with a heavy-duty gearbox and robust spiders, making them suitable for the toughest panning, floating, and finishing applications.

The Flextool ProFinish walk-behind power trowel includes the following key features.  
(Diesel model only)



Flextool ProFinish® Walk-Behind Power Trowel FP436D

## GENERAL SAFETY AND HAZARD INSTRUCTIONS

Always follow the safety instructions outlined in this manual and review the associated product Risk Assessment prior to operating this equipment. Ensure that safety information and equipment decals are always well-maintained and legible. Compliance with safety instructions is mandatory.

For additional safety information relating to engines, motors and batteries, please refer to the manufacturer's Operating Instructions.

### RISKS AND HAZARDS

- NEVER allow an untrained person to operate equipment without adequate instruction.
- ENSURE all users read, understand, and follow the operating instructions.
- SERIOUS INJURY may result from improper or careless use of this equipment.
- NEVER operate this equipment without personal protective equipment.
- NEVER operate this equipment when feeling unwell due to illness, fatigue, or medication.
- ALWAYS keep a first aid kit and appropriate fire extinguishers in accessible location.
- ALWAYS follow appropriate lifting and site handling procedures.

### MECHANICAL HAZARDS

- DO NOT operate the equipment unless all protective guards are in place.
- ENSURE where applicable to remove spark plugs, disconnect battery from motor and isolate power cable from power outlet prior to undertaking any maintenance and repair.
- AVOID contact with hot surfaces such as engines, batteries and motors, as this can lead to severe burns.
- KEEP hands and feet clear of rotating or moving parts to avoid injury.
- ONLY trained and competent personnel should perform equipment repairs and maintenance.
- ONLY licenced personnel should perform electrical repairs and maintenance.

### FIRE AND EXPLOSION HAZARDS

- DO NOT operate or refuel this equipment in combustible environments.
- FUEL is extremely flammable and explosive under some conditions.
- ENSURE that fuel is only stored in an approved storage container.
- DO NOT refuel the engine while it is in operation or hot.
- DO NOT operate or refuel this equipment in the vicinity of sparks, naked flames or other sources of ignition.
- DO NOT smoke near equipment or fuel storage.
- DO NOT overfill the fuel tank and avoid spills when refuelling. Spilled fuel or fuel vapor may ignite. If spillage occurs, ensure that the equipment is dry before starting the engine.
- ENSURE that the fuel tank cap is securely fitted after refuelling.
- NEVER use fuel as cleaning agent.

### CHEMICAL HAZARDS

- DO NOT operate or refuel engines in confined spaces without adequate ventilation as carbon monoxide exhaust gases can cause severe injury or death.

**NOISE HAZARDS**

- EXCESSIVE NOISE can lead to temporary or permanent loss of hearing.
- WEAR approved hearing protection to limit noise exposure.

**VIBRATION HAZARDS**

- EXCESSIVE or prolonged exposure to body and hand vibration, can cause temporary and permanent injury.
- ENSURE any abnormal or excessive vibration in equipment is reported and repaired.
- ALWAYS grip controls as lightly as possible, whilst in full control, using vibration absorbing gloves.

**PERSONAL PROTECTIVE EQUIPMENT**

- ALWAYS wear appropriate personal protective equipment as outlined in the safety decal section of this manual.

**ENVIRONMENTAL SAFETY**

- ENSURE correct and safe disposal of waste, fuel or oil in accordance with local authority guidelines.
- ONLY operate equipment within prescribed times as determined by local noise control laws.

**ADDITIONAL HAZARDS**

- ALWAYS maintain a clean and safe work environment, free from obstacles and tripping hazards as slips, trips and falls are major causes of serious injury or death.
- ALWAYS maintain good footing when operating the equipment.
- ENSURE there are no electrical leads or hoses on floor being trowelled.
- ALWAYS wear gloves when changing trowel blades as they can be very sharp
- **For further information on hazards, please refer to the risk assessment document available on [flextool.com.au](http://flextool.com.au).**

## SAFETY DECAL AND LABELS

Before operating this equipment, it is essential to read this entire manual and follow all safety precautions outlined in the manual and the product risk assessment, which can be found on the Flextool website ([www.flextool.com.au](http://www.flextool.com.au)).

Failure to understand and follow these safety warnings may result in injury. The safety decals on the machine play a crucial role in ensuring the operator's safety. If any decal is damaged or illegible, it must be replaced immediately.

The decals associated with the operation of this equipment are detailed in the manual.

### SAFETY COLOUR CODING

Flextool uses a colour coding system with four colours to alert you to potential hazards that could cause harm to you or others.

The safety messages are tailored to the operator's level of exposure and are introduced by one of three signal words: DANGER, WARNING, or CAUTION or general feature identification.

#### DANGER (RED)

Indicates a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY.

#### WARNING (ORANGE)

Indicates a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.



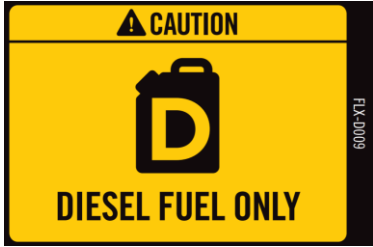
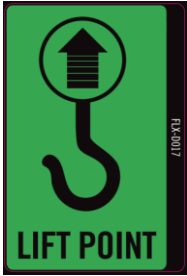

#### CAUTION (YELLOW)

Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE INJURY.

#### FEATURE IDENTIFICATION (GREEN)

Addresses product features and practices not related to personal injury

Safety Decal	Safety Decal Instruction
	<p><b>Noise</b> – Always wear hearing protection while using equipment, use of this equipment without the use of hearing protection can lead to hearing loss.</p> <p><b>Moving Blades</b> - Keeps hands and feet clear of moving blades to avoid injury.</p> <p><b>Rotating Parts</b> – Keeps hands and feet clear of rotating and moving parts to avoid serious cut.</p> <p><b>Operating Manual</b> – Read and understand the operating manual in full prior to operating equipment.</p>
	<p><b>Carbon monoxide</b> – DO NOT operate this equipment in confined spaces as the engine emits harmful levels of carbon monoxide gas which can lead to serious injury or death.</p> <p><b>Refuelling</b> – DO NOT refuel motor while operating or hot, adding fuel to a hot motor can lead to fire hazard.</p> <p><b>Noise</b> – Always wear hearing protection while using equipment, use of this equipment without the use of hearing protection can lead to hearing loss.</p> <p><b>Operating Manual</b> – Read and understand the operating manual in full prior to operating equipment.</p>

	<p><b>Danger</b> – DO NOT allow any person to walk under equipment while it is suspended.</p>
	<p><b>Caution</b> – Be careful not to contact hot surfaces as this can lead to severe burns.</p>
	<p><b>Caution</b> – Use diesel fuel only while refuelling this equipment. (Diesel model ONLY)</p>
	<p><b>Lift Point</b> – Designed for use with approved and rated lifting slings and chains.</p>
	<p><b>Grease daily</b> – Regular maintenance and greasing of the extends the service life of the machine and allows for smooth operation.</p>



## OPERATION

It is essential to operate the equipment and its components strictly in accordance with the provided operating instructions. Take the time to learn how each machine works, even if you have previously used similar equipment. Carefully inspect each machine before use, and familiarize yourself with its capabilities, limitations, potential hazards, and how it operates and stops.

### BEFORE STARTING

- Ensure there is a clear and safe working environment that is free from hazards prior to operation.
- Ensure all guards are in place and correctly fitted.
- Inspect trowel blades for uneven wear or damage. Always replace worn or damaged blades.
- Check engine oil level – For further information on how to check the engine oil level please consult the engine manufacturers manual.
- Check gearbox oil level – Look at the sight glass on the side of the gearbox to determine if gearbox oil is low. The correct oil level is to the halfway point on the sight glass.
- Inspect the main machine controls such as the throttle control and blade pitch function to ensure they are good working order and free from damage. (Discontinue use, isolate machine and repair immediately if these controls or any other part of the machine is not in good working condition and free from damage.)

### STARTING THE ENGINE

1. Move the throttle control lever on the handlebar to the “MIN” position to prevent unwanted movement of the trowel when starting.
2. Move the engine fuel valve lever positioned under the fuel tank to the “ON” position.
3. Grasp the start grip and very slowly pull it outward until hard resistance is felt, then return the start grip to its resting position.
4. Depress the engine decompression valve (small red lever) positioned at the top of the engine and under the lifting hook.
5. Squeeze and hold the lever on the handlebar (this lever must remain activated during operation, or the engine will shut off.)
6. Grasp the start grip again, this time pull the grip briskly and smoothly to start the engine.
7. When the engine starts, allow the engine to idle for 1-2 minutes, allowing it to warm up. If the engine doesn't start repeat the starting procedure from step 3.
8. To turn the engine off return the engine speed to the idle position and release the lever mounted on the handlebar.

### OPERATING AND MANOEUVRING THE TROWEL

- With the engine started and operating at idle, stand in the operators position behind the handle with a secure footing and a firm grasp on both handlebars.
- Gently increase the engine speed by moving the throttle control lever towards the “MAX” position until a suitable blade speed is achieved to match the concrete and trowelling conditions.
- Guiding and moving the trowel on the concrete is simple but can take some getting used.

- To travel left, place a gentle and small amount of upward pressure on the handlebar and to travel to the right place a gentle and small amount of downward pressure on the handlebar. Holding the handle in the middle or neutral position will leave the trowel to operate on the spot.
- To move backwards and forward slowly walk the machine backward and forward. Be careful when moving backwards so that hazards can be avoided.
- The best method when finishing concrete is to slowly walk backwards guiding the trowel from side to side. This motion will ensure you cover any footprints in the wet concrete.
- If you lose control of the trowel, simply step away and allow it to come to a complete stop before trying to recover it.

### PITCHING THE BLADES

- The blade pitch adjustment feature permits quick and accurate pitch changes of the trowel blades without having to stop the machine.
- To increase the pitch angle of the blades, turn the crank handle positioned at the top of the handlebar stem in a clockwise direction. To decrease the pitch angle, turn the crank handle in a counter-clockwise direction.

### FLOATING OPERATION (Combination Blades)

- To achieve a quality concrete finish, the operator needs to commence the floating operation at the correct time. This can be determined by using a footprint test. If the operator steps onto the wet concrete and leaves an approximate 3 mm impression on the surface, then it is ready for floating. An impression of greater than 3 mm suggests the concrete is still too wet.
- It is recommended that during the floating operation the blades be kept in a flat position with the trowel operating at approximately half speed. A small amount of tension on the blade tilt cable is recommended and will cause the trowel to operate much smoother.
- When moving across the concrete each pass should overlap the previous pass by half the width of the trowel.
- A second trowel pass is recommended to achieve an optimum finish. Crossover floating (operating at 90 degrees to the first pass) is also recommended, with blade pitch at a slightly higher level and the trowel operating at approximately  $\frac{3}{4}$  speed.
- CAUTION: Do not let the machine stand in one spot on the soft concrete when not in operation as the blades may stick to the concrete and cause damage to the concrete surface. Always lift the trowel from the concrete when not in operation.

### FINISHING OPERATION (Finishing or Combination Blades)

- Once the initial floating operation is completed and the operator can walk on the concrete without leaving any footprints, the next operation is the finishing operation. This process can be completed with both finishing or combination blades.
- The finishing operation does as the name suggests and is the process of creating the final finish of the concrete surface.
- To commence the finishing operation, pitch the blades enough so that the leading edge of the blade is raised off the concrete surface and the trowel is operating at approximately  $\frac{3}{4}$  speed.

- When moving across the concrete each pass should overlap the previous pass by half the width of the trowel.
- As the concrete hardens, increase the blade pitch and keep it at a level corresponding to the desired finish. During the final finishing passes the trowel can be operated at maximum speed.
- Several trowel passes may be required to achieve the desired finish. Crossover finishing (operating at 90 degrees to the previous pass) is also recommended for best results.
- As a rule, the greater the blade pitch, the smoother the finish. However, excessive blade pitch will cause the blades to wear rapidly.

## SERVICE AND PREVENTIVE MAINTENANCE

Qualified personnel should be assigned the task of performing service and maintenance on this equipment. To ensure safe operation and optimal performance, thorough inspection and on time maintenance is imperative.

Consistently monitor the machine's condition and proactively maintain it in its optimal state.

- ENSURE mechanical repairs and maintenance of the equipment is performed only by trained and competent personnel.
- ONLY use genuine parts and accessories to ensure compatibility and safe operation of equipment.
- ENSURE where applicable to remove spark plugs, disconnect batteries and isolate power cable from power outlet prior to undertaking any maintenance and repair.
- ENSURE guards, safety switches and any other safety mechanisms are free from damage and installed prior to testing and returning product to service.
- WEAR PPE when servicing and repairing equipment (gloves, glasses, dust mask and steel cap boots) to reduce risk of cuts, burns, crushing, eye injuries, skin exposure to fuel or oils, dust inhalation, etc.
- NEVER work underneath equipment suspended by lifting device or on ramps.
- For all engine, motor and battery service and maintenance information, please refer to the relevant operating instructions.

**SERVICE MAINTENANCE SCHEDULE**

All parts and components should be replaced if signs of deterioration, cracks, damage or wear has been identified to maintain equipment safety and performance.

Trowel Maintenance Schedule						
		Daily	Weekly or every 20 hrs	Monthly or every 50 hrs	Quarterly or every 100 hrs	Yearly or every 200 hrs
V-Belt	Inspect for signs of cuts, era and damage			Y		
Trowel Arms	Grease	Y				
	Remove and clean					Y
Blades	Check for wear and replace			Y		
Thrust Collar	Remove and clean					Y
Throttle Cable	Inspect for wear and damage			Y		
Pitch Control Cable	Check and adjust					Y
Clutch	Remove and clean					Y
Safety Switch	Inspect for wear and damage / check operation	Y				

Engine Maintenance Schedule						
		Daily	Weekly or every 20 hrs	Monthly or every 50 hrs	Quarterly or every 100 hrs	Yearly or every 200 hrs
Engine Oil	Check Engine Oil Level	Y				
	Change Engine Oil				Y	
Air Cleaner	Check Air Filter	Y				
	Change Air Filter					Y
Fuel Filter	Change Fuel Filters					Y

Oil and Lubricant Chart					
Model	Engine Oil		Gearbox Oil		Spider Plate/ Arm Grease
	Type	Capacity (ml)	Type	Capacity (ml)	Type
FP436D	SAE 10W-30	800	SAE 90	Level with fill plug	EP2 Grease

## STORAGE, LIFTING AND TRANSPORT

It is essential to prioritise safety and proper handling when it comes to the storage, lifting, and transportation of equipment. Following safe storage practices ensures the longevity and operational reliability of the equipment. During transportation and lifting it is important to exercise caution to avoid any potential harm and to adhere to the following guidelines.

- ALWAYS use certified and tested lifting sling.
- ENSURE lifting slings are regularly inspected by a competent person for damage or material fatigue.
- ALWAYS ensure that the lifting device (forklift, crane, etc.) has adequate lifting capacity to lift the equipment.
- ALWAYS inspect straps, hooks, chains, ropes, and crane/lifting points for damage prior to use.
- ALWAYS follow correct manual handling techniques.
- NEVER allow any person to stand underneath equipment while lifting.
- NEVER lift equipment while connected to power outlet or when engine is running.
- ALWAYS secure equipment during transport by using suitable tie down points on both equipment and vehicle.
- ENSURE all equipment is restrained according to the NVHR load restraint guidelines.

## PRODUCT DECOMMISSIONING

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned or dismantled, please adhere to the following guidelines.

- ALWAYS contact your local council or recycling agency in your area to arrange for proper disposal of:
  - Electrical components and batteries. Exercise caution when handling and transporting batteries.
  - Oil and other waste associated with this equipment. DO NOT pour waste or oil directly onto the ground, down a drain or into any water source.
- CONSIDER recycling all recyclable materials in line with local council or recycling agency capabilities in your area. This can include steel, aluminium, copper, plastics, etc.

## TECHNICAL DATA

Model	Trowel Diameter mm (in)	Operating Weight kg (lb)	Number of Blades	Rotor Speed Range rpm	Blade Pitch Max deg	Lifting Hook	Engine Make	Engine Model	Max Rated Power hp	Fuel Type	Product Code
FP436D	915 (36)	94 (196)	4	50-130	30	Yes	Yanmar	L48	4.7		FT23436D-UNIT

## TROUBLE SHOOTING

Efficient troubleshooting is vital for the optimal functioning of this equipment. In addressing issues, a systematic approach is key. This section provides guidance on identifying, analysing, and resolving potential challenges to maintain the equipment's performance and longevity.

Trouble shooting guide (Trowel)		
Symptom	Possible problem	Solution
Handle vibration or rocking motion, marks or leaves swirls in concrete.	Trowel blades	Inspect trowel blades and ensure they are in good operating condition and not excessively worn. Ensure they are not bent or twisted and sit flat on the ground, also ensure the face of the blade is clean and does not have any build-up of cured concrete. If unsure replace with a new set of trowel blades.
	Blade pitch adjustment	Ensure that all blade arms can rotate freely in the hub and that all arms pitch at the exact same angle. If a blade arm is tight or unable to move freely it will need to be removed, and the hub and arm surfaces will need to be cleaned and relubricated before reinstalling. If the blades do not pitch to the same angle the pitch adjustment will need to be recalibrated.
	Bent trowel arms	Check the spider assembly for bent trowel arms. If one arm is bent, it will need replacing immediately.
	Spider hub	Check the fit of the trowel arms into the spider hub. The arms should rotate freely from left to right but should not be able to move up or down. Movement of more than 2 mm at the tip of the blade arm indicates that both the spider hub and trowel arms should be replaced.
	Thrust collar	The thrust collar should have a high tolerance fit to gearbox output shaft and should move freely up and down, for any rocking or lateral movement of more than 1 mm the thrust collar should be replaced.
	Thrust bearing	Check the thrust bearing to ensure it is spinning freely, replace if necessary.
	Mainshaft	Check the gearbox mainshaft for straightness. The mainshaft must run straight and must not exceed deflection of greater than 0.1 mm out of round.
	Yoke	Check that both arms of the yoke create even pressure on the thrust plate cover. Replace if necessary.

Trowel blades not rotating, clutch slipping or slow response to engine speed change.	Worn, stretched or broken V-belt	Replace V-Belt.
	Centrifugal clutch	Inspect clutch for wear, this includes damage or wear to clutch springs, shoes and bushings as well as clutch grooves for damage and wear to belt contact surfaces. Replace components or entire clutch if necessary.
	Worn gearbox bearings	Remove the V-Belt and rotate the gearbox input shaft by hand, if the shaft rotates with difficulty, check the input and output shaft bearings. Replace if necessary.
	Worn or broken gears in gearbox	Check that the gearbox output shaft rotates when the input shaft rotates. If the output shaft stops rotating completely, or even momentarily, the gearbox gears should be inspected by disassembling the gearbox. Replace both worm and worm gear if there is evidence of wear or a broken gear tooth.
Trowel rotates at idle or low rpm.	Centrifugal clutch	Inspect clutch for wear. This includes damage or wear to clutch springs, shoes and bushings as well as clutch grooves for damage and wear to belt contact surfaces. Replace components or entire clutch if necessary.
	Engine speed too high	Check for damage to the throttle cable that may be preventing correct operation. Adjust or replace throttle cable if necessary.

**Trouble shooting guide (Engine)**

Symptom	Possible problem	Solution
Engine will not start.	Lever and cable mounted on the handlebar is malfunctioning	Check that the lever and cable are functioning correctly. This lever is responsible for operating the fuel shut off valve. If the lever and cable are damaged adjust or replace where necessary.
	Insufficient fuel	Check that there is fuel in the tank, that fuel tap is in the open position and the engine is getting fuel.
	Contaminated or incorrect fuel	Immediately discontinue use and drain and flush the entire fuel system (fuel tank, fuel lines and fuel filters).
	Blockage fuel filter	Inspect and replace fuel filter.
Engine lacks power or runs roughly.	Air filter	Inspect the condition of the air filter. Clean or replace if necessary.
	Contaminated or incorrect fuel	Immediately discontinue use and drain and flush the entire fuel system (fuel tank, fuel lines and fuel filters).
	Blockage fuel filter	Inspect and replace fuel filter.



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This manual summarises our best knowledge of the product based on the information available at the time of publication. You should read this manual carefully and consider the information in the context of how the product will be used. Our responsibility for products sold is subject to our standard terms and conditions of sale.

### DISCLAIMER:

Any advice, recommendation, information, assistance or service provided by us in this manual is given in good faith and is believed by us to be appropriate and reliable. However, any advice, recommendation, information, assistance or service provided by us is provided without liability or responsibility PROVIDED THAT the foregoing shall not exclude, limit, restrict or modify the right entitlements and remedies conferred upon any person or the liabilities imposed upon us by any condition or warranty implied by Commonwealth, State or Territory Act or ordinance void or prohibiting such exclusion limitation or modification. The product can be expected to perform as indicated in this manual so long as operation and operational procedures of the individual products are followed as recommended in this manual.

Design and technical specifications may be subject to changes.

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