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Edging Trowel

CT 24-4A



OPERATOR'S MANUAL



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CALIFORNIA

Proposition 65 Warning:



Engine exhaust, some of its constituents, and certain vehicle components, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1. Foreword

This manual provides information and procedures to safely operate and maintain this Wacker model. For your own safety and protection from injury, carefully read, understand and observe the safety instructions described in this manual.

Keep this manual or a copy of it with the machine. If you lose this manual or need an additional copy, please contact Wacker Corporation. This machine is built with user safety in mind; however, it can present hazards if improperly operated and serviced. Follow operating instructions carefully! If you have questions about operating or servicing this equipment, please contact Wacker Corporation.

The information contained in this manual was based on machines in production at the time of publication. Wacker Corporation reserves the right to change any portion of this information without notice.

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2. Safety Information

This manual contains DANGER, WARNING, CAUTION, *NOTICE* and NOTE callouts which must be followed to reduce the possibility of personal injury, damage to the equipment, or improper service.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

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

NOTICE: Used without the safety alert symbol, **NOTICE** indicates a hazardous situation which, if not avoided, could result in property damage.

Note: *Contains additional information important to a procedure.*

2.1 Laws Pertaining to Spark Arresters

Notice: State Health Safety Codes and Public Resources Codes specify that in certain locations spark arresters be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified and rated by the United States Forest Service for this purpose.

In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.

2.2 Operating Safety



WARNING

Familiarity and proper training are required for the safe operation of the machine. Machines operated improperly or by untrained personnel can be dangerous. Read the operating instructions contained in both this manual and the Engine Manual and familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the machine before being allowed to operate it.

- 2.2.1 NEVER allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.
- 2.2.2 NEVER touch the engine or muffler while the engine is on or immediately after it has been turned off. These areas get hot and may cause burns.
- 2.2.3 NEVER use accessories or attachments that are not recommended by Wacker. Damage to equipment and injury to the user may result.
- 2.2.4 NEVER leave the machine running unattended.
- 2.2.5 NEVER operate the machine with the beltguard missing. Exposed drive belt and pulleys create potentially dangerous hazards that can cause serious injuries.
- 2.2.6 NEVER operate this machine in applications for which it is not intended.
- 2.2.7 NEVER use the trowel around pop-ups in the concrete that are lower than the lowest ring on the ring guard.
- 2.2.8 NEVER lift the machine solely by the handle. The component may fail, causing the machine to fall, possibly injuring bystanders.
- 2.2.9 ALWAYS wear protective clothing appropriate to the job site when operating the machine.
- 2.2.10 ALWAYS wear hearing and eye protection when operating this machine.
- 2.2.11 ALWAYS remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the machine.
- 2.2.12 ALWAYS read, understand, and follow procedures in the Operator's Manual before attempting to operate the machine.
- 2.2.13 ALWAYS store the machine properly when it is not being used. The machine should be stored in a clean, dry location out of the reach of children.
- 2.2.14 ALWAYS close fuel valve on engines equipped with one when machine is not being operated.

- 2.2.15 ALWAYS operate machine with all safety devices and guards in place and in working order. DO NOT modify or defeat safety devices. DO NOT operate machine if any safety devices or guards are missing or inoperative.
- 2.2.16 ALWAYS be sure operator is familiar with proper safety precautions and operation techniques before using machine.
- 2.2.17 ALWAYS test the function of the engine control module before operating the trowel. DO NOT operate the trowel if the engine control module is not functioning properly.

2.3 Operator Safety while using Internal Combustion Engines



DANGER

Internal combustion engines present special hazards during operation and fueling. Read and follow the warning instructions in the engine Owner's Manual and the safety guidelines below. Failure to follow the warnings and safety standards could result in severe injury or death.

- 2.3.1 DO NOT run the machine indoors or in an enclosed area such as a deep trench unless adequate ventilation, through such items as exhaust fans or hoses, is provided. Exhaust gas from the engine contains poisonous carbon monoxide gas; exposure to carbon monoxide can cause loss of consciousness and may lead to death.
- 2.3.2 DO NOT smoke while operating the machine.
- 2.3.3 DO NOT smoke when refueling the engine.
- 2.3.4 DO NOT refuel a hot or running engine.
- 2.3.5 DO NOT refuel the engine near an open flame.
- 2.3.6 DO NOT spill fuel when refueling the engine.
- 2.3.7 DO NOT run the engine near open flames.
- 2.3.8 ALWAYS refill the fuel tank in a well-ventilated area.
- 2.3.9 ALWAYS replace the fuel tank cap after refueling.

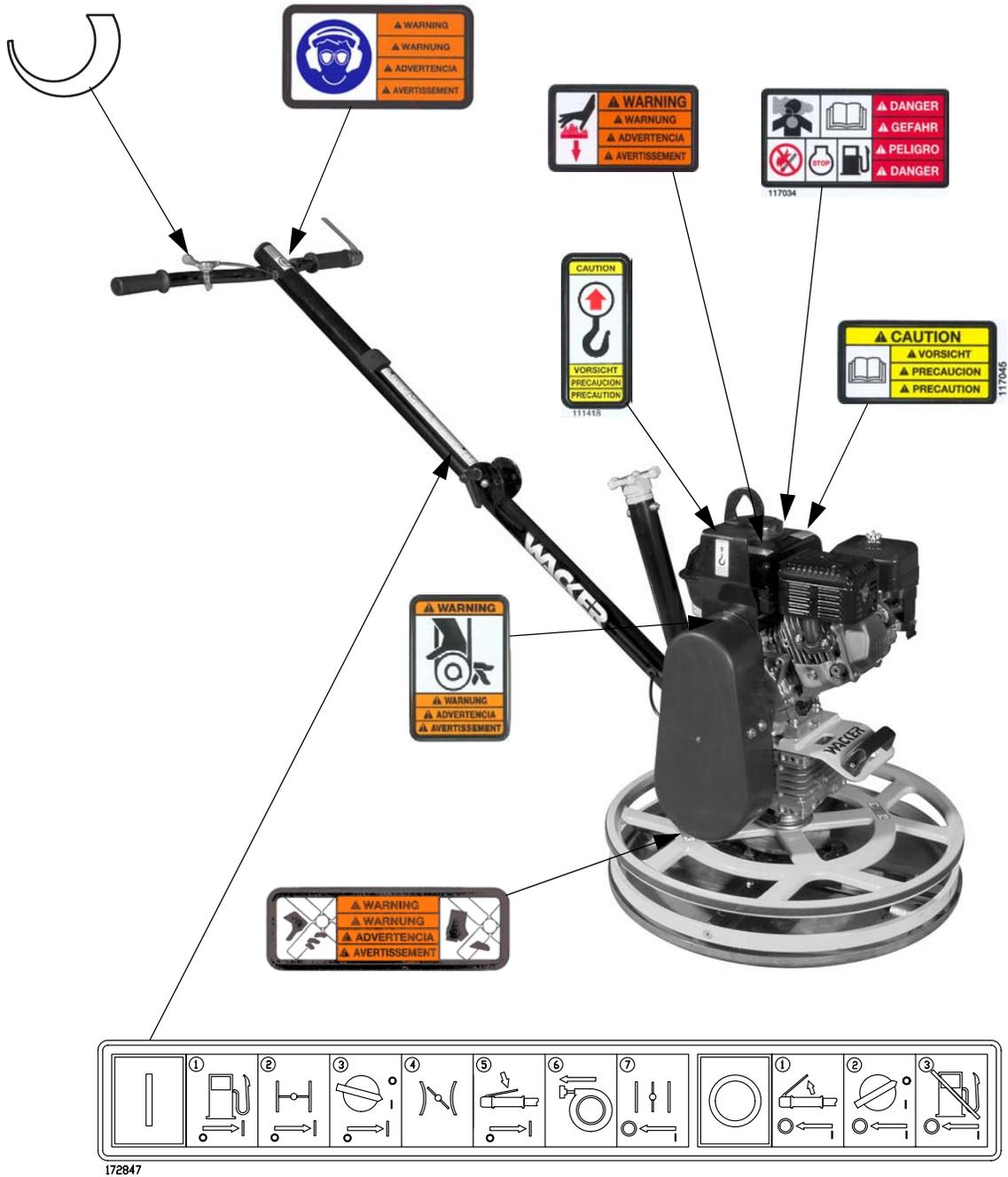
2.4 Service Safety

**WARNING**

A poorly maintained machine can become a safety hazard! In order for the machine to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

- 2.4.1 DO NOT attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.
- 2.4.2 DO NOT crank a flooded engine with the spark plug removed on gasoline-powered engines. Fuel trapped in the cylinder will squirt out the spark plug opening.
- 2.4.3 DO NOT test for spark on gasoline-powered engines if the engine is flooded or the smell of gasoline is present. A stray spark could ignite the fumes.
- 2.4.4 DO NOT use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive.
- 2.4.5 DO NOT remove blades while the machine is hanging overhead.
- 2.4.6 ALWAYS support the machine securely before changing blades.
- 2.4.7 ALWAYS keep the area around the muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite the debris and start a fire.
- 2.4.8 ALWAYS replace worn or damaged components with spare parts designed and recommended by Wacker Corporation.
- 2.4.9 ALWAYS disconnect the spark plug on machines equipped with gasoline engines, before servicing, to avoid accidental start-up.
- 2.4.10 ALWAYS keep the machine clean and labels legible. Replace all missing and hard-to-read labels. Labels provide important operating instructions and warn of dangers and hazards.
- 2.4.11 ALWAYS handle blades carefully. The blades can develop sharp edges which can cause serious cuts.

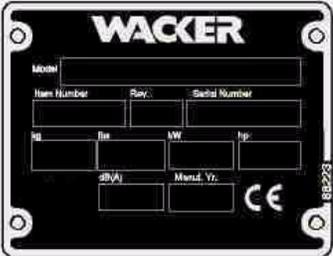
2.5 Label Locations

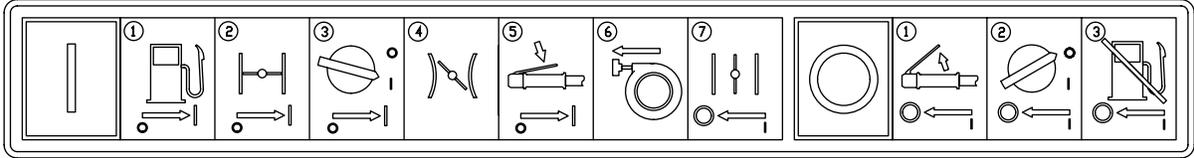
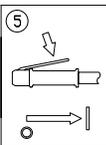


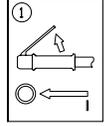
2.6 Safety and Information Labels

Wacker machines use international pictorial labels where needed. These labels are described below:

Label	Meaning
	<p>DANGER! Engines emit carbon monoxide; operate only in well-ventilated area. Read the Operator's Manual. No sparks, flames, or burning objects near the machine. Shut off the engine before refueling.</p>
	<p>WARNING! Hot surface!</p>
	<p>WARNING! Hand injury if caught in moving belt. Always replace beltguard.</p>
	<p>WARNING! Always wear hearing and eye protection when operating this machine.</p>
	<p>WARNING! Cutting hazard. Always replace blade guard!</p>
	<p>Variable speed throttle</p>

Label	Meaning
	<p>CAUTION! Read and understand the supplied Operator's Manuals before operating this machine. Failure to do so increases the risk of injury to yourself or others.</p>
	<p>CAUTION! Lifting point.</p>
	<p>A nameplate listing the model number, item number, revision number, and serial number is attached to each unit. Please record the information found on this plate so it will be available should the nameplate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model number, item number, revision number, and serial number of the unit.</p>
	<p>This machine may be covered by one or more patents.</p>

Label	Meaning
 <p>172847</p>	
	<p>Open the fuel flow valve.</p>
	<p>Close the choke.</p>
	<p>Turn engine key switch to “ON” position.</p>
	<p>Place throttle in the IDLE position.</p>
	<p>Engage operator present lever.</p>
	<p>Pull the rewind starter.</p>

Label	Meaning
	<p>Open the choke.</p>
	<p>Release operator present lever.</p>
	<p>Turn engine key switch to “OFF” position.</p>
	<p>Close the fuel flow valve.</p>

3. Operation

3.1 Application

This trowel is a modern, high production machine intended for floating and finishing freshly poured concrete slabs. The machine's good balance, adjustable handle, and easily reached controls add to operator comfort and productivity. An Operator Present Lever provides added operator safety. Finishing rates will depend on operator skill and job conditions.

DO NOT use this machine for any application other than troweling concrete.

3.2 New Machine Set-up

Trowels are shipped from the factory with the handle folded. Follow instructions on *Unfolding Handle* and *Installing Blades* when setting up new machines or when installing new blades.

3.3 Recommended Fuel

The engine requires regular grade unleaded gasoline. Use only fresh, clean gasoline. Gasoline containing water or dirt will damage fuel system. Consult engine Owner's Manual for complete fuel specifications.

3.4 Installing Blades

See Graphic: wc_gr004417

There are two types of blades available for the trowels. Float pans are large “pizza pan” style blades, which hook on over finish blades. Float blades are used in the earliest stages of work, and are not pitched.

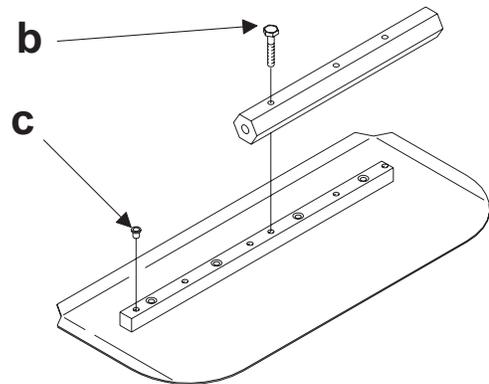
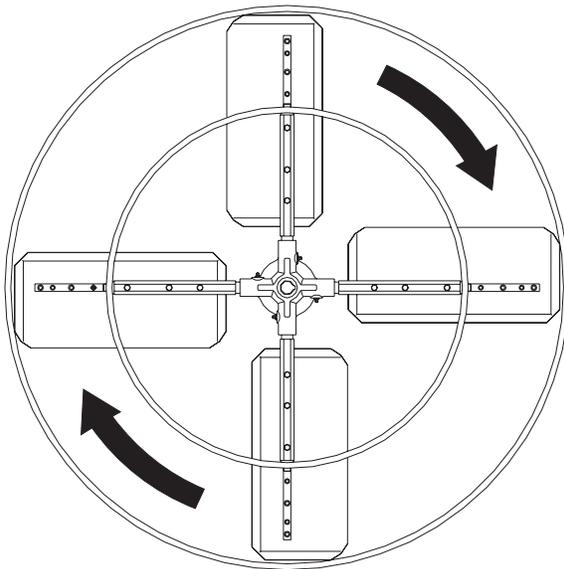
Finish blades are used in the final stages of working, and are progressively pitched to burnish the concrete.

Note: *Trowel blades must NOT be interchanged, i.e., do NOT put larger diameter blades on a smaller diameter trowel.*

- 3.4.1 Secure blades to trowel arms with screws **(b)**. Dip threads of screws in grease prior to installation. This will prevent concrete from cementing the screws in place and will make removal of the blades easier later on.
- 3.4.2 Plug the remaining threaded holes in the blade brace with plastic plugs **(c)** to prevent them from filling with concrete.



Do not lift the trowel overhead with a float pan attached, as the pan could fall off and strike personnel working in the vicinity.



wc_gr004417

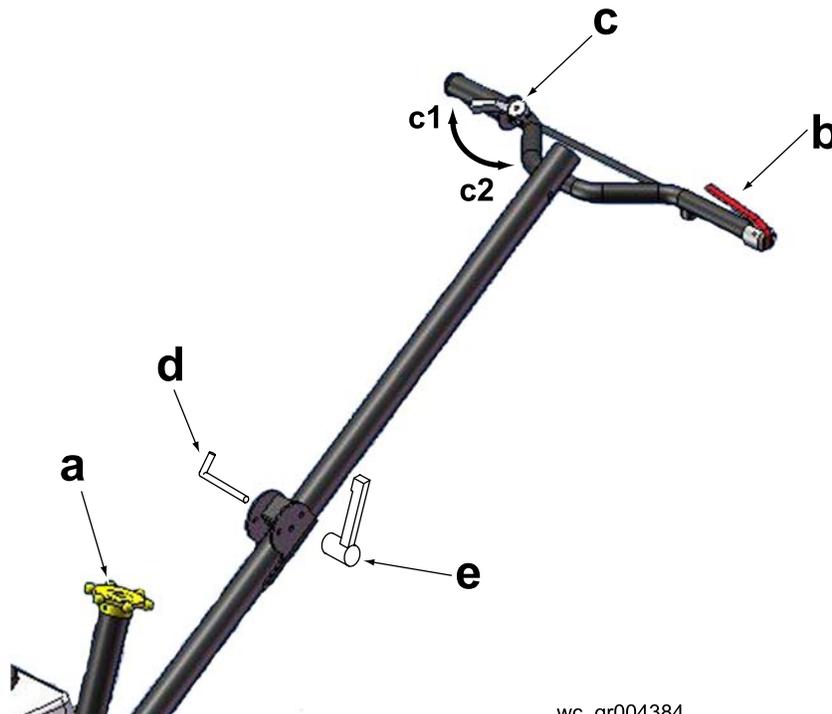
3.5 Unfolding Handle

See Graphic: *wc_gr004384*

On new machines the handle comes folded with the following components attached: Twist pitch control **(a)**, Operator Present Lever **(b)**, throttle lever **(c)**, hinge pin **(d)**, and adjustable lever **(e)**.

To unfold and secure the handle assembly:

- 3.5.1 While holding the hinge pin, unscrew and remove the adjustable lever and metal washer.
- 3.5.2 Remove the hinge pin.
- 3.5.3 Straighten the handle and re-insert the hinge pin.
- 3.5.4 Replace the metal washer over the threaded end of the hinge pin, and re-install the adjustable lever.
- 3.5.5 Tighten the adjustable lever to lock the handle in its fully opened position.

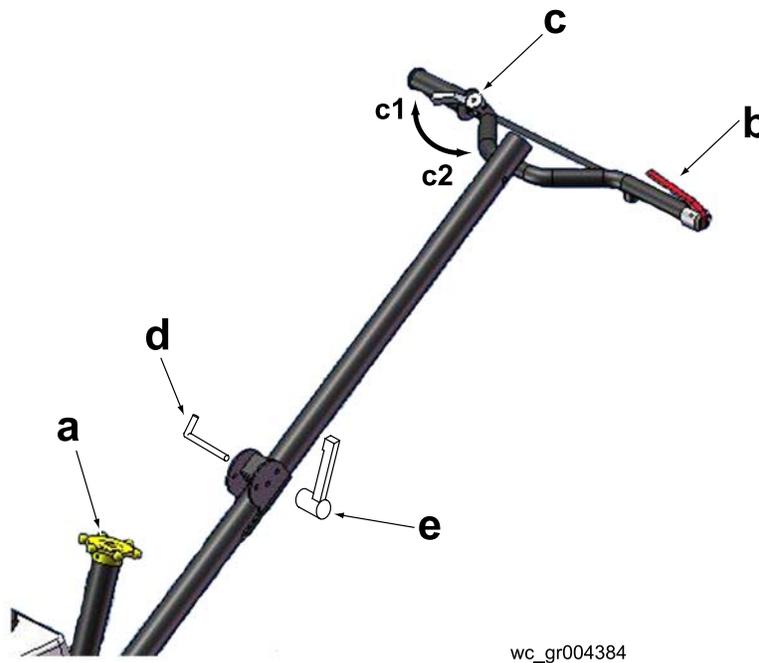


wc_gr004384

3.6 Controls

See Graphic: wc_gr004384

Ref.	Description	Ref.	Description
a	Twist pitch control	d	Hinge pin
b	Operator Present Lever	e	Adjustable lever
c	Throttle lever		



wc_gr004384

3.7 Operator Present Lever

See Graphic: wc_gr004384

When the Operator Present Lever **(b)** is released, the engine will not run.



Watch for spinning blades! Even after the engine has shut off, the trowel blades will continue to rotate. To avoid severe injury, keep feet and fingers away from the ring guard until the blades have come to a complete stop.

3.8 Before Starting

Before starting trowel, check the following:

- oil level in engine
- oil level in gearbox
- fuel level
- condition of air filter
- condition of fuel lines
- condition of trowel arms and blades
- condition of ring guard
- label descriptions
- adjustable lever is tight

3.9 To Start

See Graphic: *wc_gr004384, wc_gr001098*

3.9.1 Open fuel valve by moving lever to the right **(g1)**.

Note: *If engine is cold, move choke lever to CLOSED position (i1). If engine is hot, set choke to OPEN position (i2).*

3.9.2 Turn engine switch to ON **(h1)**.

3.9.3 Move the throttle lever **(c)** to the IDLE position **(c1)**.



WARNING

Start engine with throttle in the IDLE position. If the engine is started when the throttle is not in the IDLE position, the trowel blades may spin unexpectedly and cause injury.

3.9.4 Squeeze and hold the Operator Present Lever **(b)**.

3.9.5 Pull starter rope **(j)**.



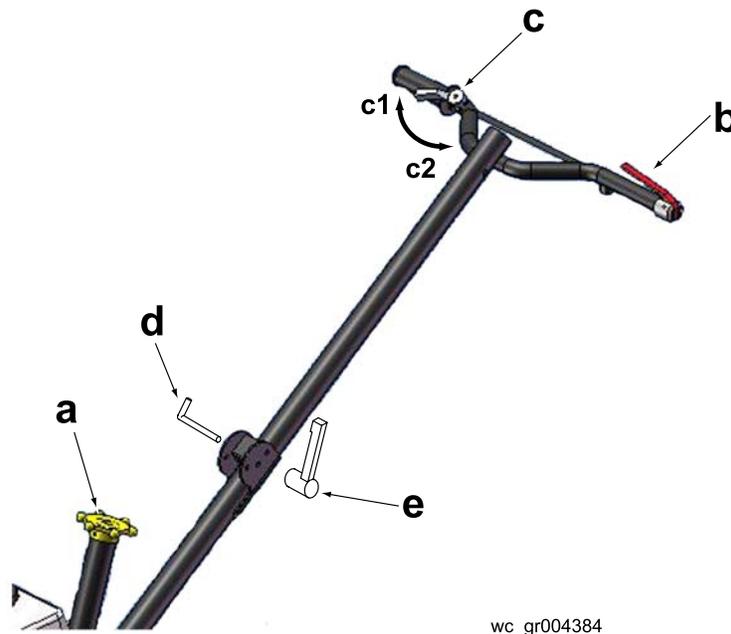
WARNING

Do not place foot on the ring guard when starting the engine, as severe injury can occur if foot slips through the ring guard as the blades start to spin.

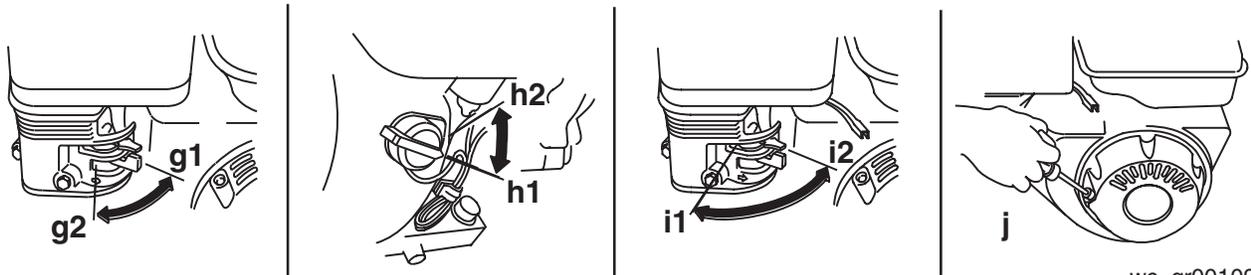
Note: *If the engine oil is low, the engine will not start. If engine does not start, check the oil level and add oil as needed.*

3.9.6 Open choke as engine warms **(i2)**.

3.9.7 Move the throttle lever to the OPEN position **(c2)** to operate trowel. Adjust blade RPM with throttle speed to suit conditions.



wc_gr004384



wc_gr001098

3.10 To Stop

See Graphic: *wc_gr004384, wc_gr001098*

- 3.10.1 Reduce engine RPM to idle by moving the throttle lever to IDLE position (**c1**).
- 3.10.2 Release the Operator Present Lever (**b**).
- 3.10.3 Turn engine switch to OFF (**h2**).
- 3.10.4 Close fuel valve by moving lever to the left (**g2**).

3.11 Operation

See Graphic: wc_gr004418



ALWAYS test the function of the Operator Present Lever before operating the trowel. DO NOT operate the trowel if the Operator Present Lever is not functioning properly.

Choose correct blade type and attach blades to trowel arms.

Note: *When operating on soft concrete, do not let trowel stand in one spot too long. Always lift trowel from slab when operation is complete.*

Note: *“Left” and “Right” references are made from the operator's position.*

- 3.11.1 Start engine and engage blades by increasing engine speed. Set speed with throttle control on handle bar to appropriate speed for job conditions.
- 3.11.2 To move trowel forward twist handle clockwise **(a)**.
- 3.11.3 To move backward twist handle counterclockwise **(b)**.
- 3.11.4 To move to the left lift up slightly on the handle **(c)**.
- 3.11.5 To move to the right press down slightly on the handle **(d)**.
- 3.11.6 Clean trowel after each use to remove concrete splatter.

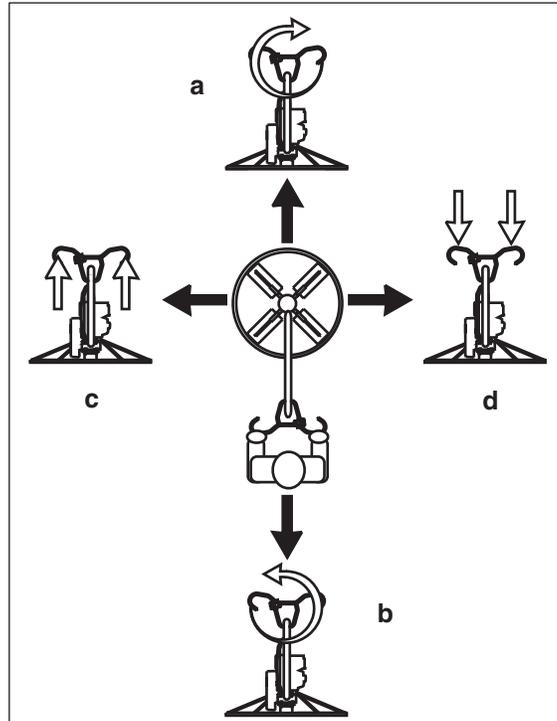


Allow the muffler to cool before cleaning or servicing the machine. A hot muffler could ignite the fuel and start a fire.



Personnel other than the trowel operator should not be allowed in the work area, as severe injury can occur from contact with operating trowel blades.

Do not attempt to clean, service or perform adjustments on the trowel while it is running.



wc_gr004418

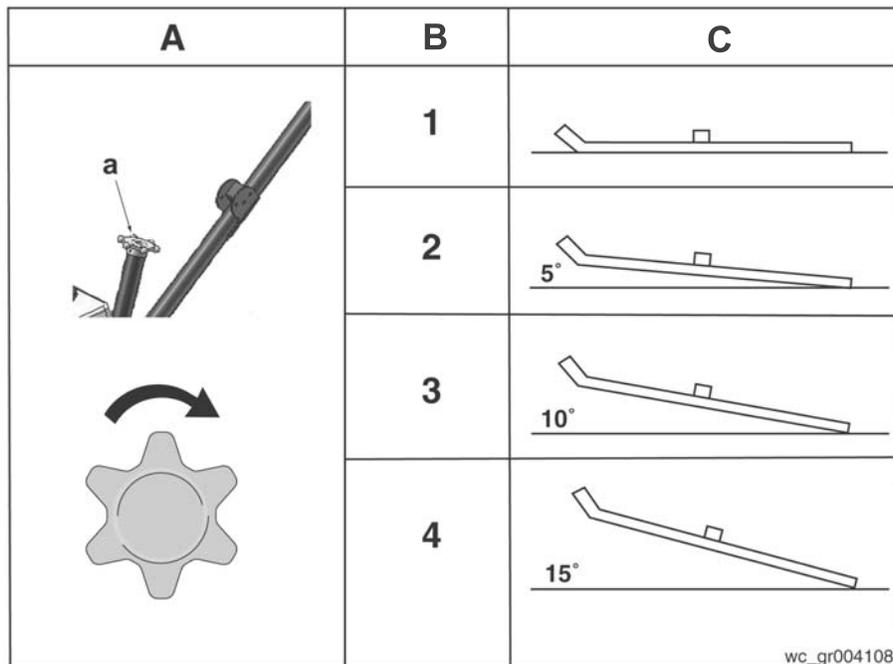
3.12 Pitch Adjustment

See Graphic: wc_gr004108

To adjust blade pitch (angle):

A = Twist pitch: turn the pitch adjusting knob (a) clockwise to increase pitch and counterclockwise to decrease pitch.

Ref.	B = Working condition of concrete	C = Suggested working pitch
1	Wet surface working stage	Flat (no pitch)
2	Wet to plastic working stage	Slight pitch (5°)
3	Plastic working stage	Additional pitch (10°)
4	Semi-hard working stage to hard finishing stage (burnishing)	Maximum pitch (15°)



4. Maintenance

4.1 Periodic Maintenance Schedule

The chart below lists basic machine and engine maintenance. Refer to your engine Operator’s Manual for additional information on engine maintenance.

	Daily	After first 20 hrs.	Every 50 hrs.	Every 100 hrs.	Every 300 hrs.
Check fuel level.	■				
Check engine oil level.	■				
Inspect fuel lines.	■				
Inspect air filter. Replace as needed.	■				
Check external hardware.	■				
Clean trowel after each use to remove concrete splatter.	■				
Grease blade arms as needed.			■		
Clean air cleaner elements.			■		
Change engine oil.		■		■	
Check drive belt.				■	
Clean sediment cup.				■	
Check and clean spark plug.				■	
Check and adjust valve clearances.					■

4.2 Engine Oil

See Graphic: *wc_gr004132*

4.2.1 Drain oil while the engine is still warm.

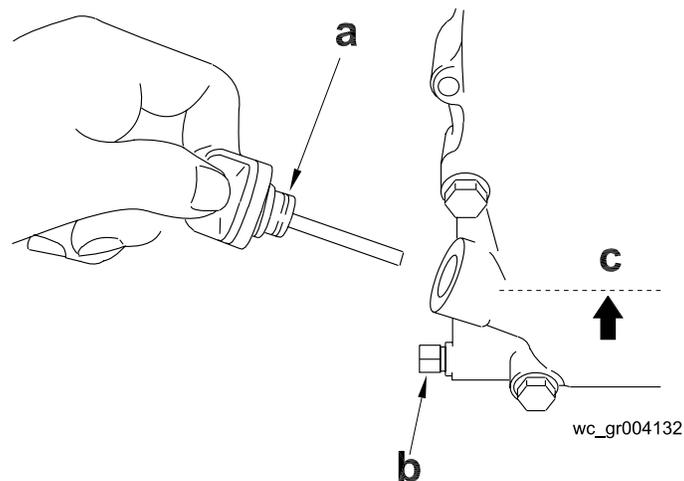
4.2.2 Remove the oil fill plug (**a**) and drain cap (**b**) to drain oil.

Note: *In the interests of environmental protection, place a plastic sheet and a container under the machine to collect any liquid which drains off. Dispose of this liquid in accordance with environmental protection legislation.*

4.2.3 Install drain cap.

4.2.4 Fill the engine crankcase with recommended oil up to the level of the plug opening (**c**). See *Technical Data* for oil quantity and type.

4.2.5 Install the oil filler plug.



4.3 Air Cleaner

See Graphic: *wc_gr000025*

The engine is equipped with a dual element air cleaner. Service air cleaner frequently to prevent carburetor malfunction.

NOTICE: NEVER run engine without air cleaner. Severe engine damage will occur.

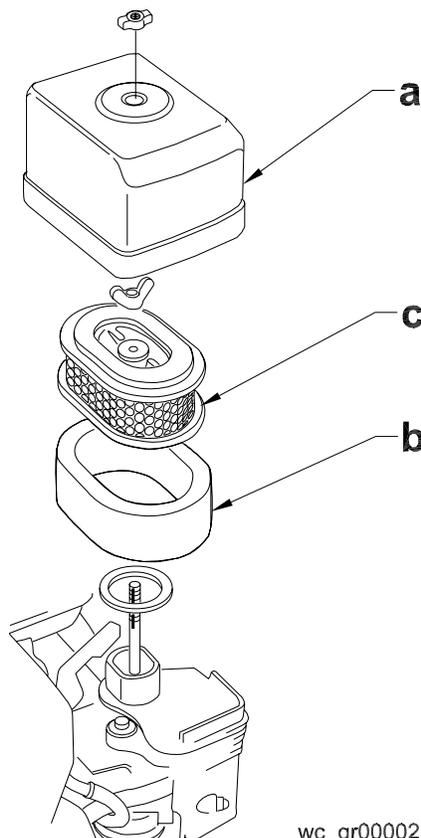


WARNING

NEVER use gasoline or other types of low flash point solvents for cleaning the air cleaner. A fire or explosion could result.

To service:

- 4.3.1 Remove air cleaner cover **(a)**. Remove both elements and inspect them for holes or tears. Replace damaged elements.
- 4.3.2 Wash foam element **(b)** in solution of mild detergent and warm water. Rinse thoroughly in clean water. Allow element to dry thoroughly. Soak element in clean engine oil and squeeze out excess oil.
- 4.3.3 Tap paper element **(c)** lightly to remove excess dirt. Replace paper element if it appears heavily soiled.



wc_gr000025

4.4 Spark Plug

See Graphic: *wc_gr000028*

Clean or replace the spark plug as needed to ensure proper operation. Refer to your engine operator's manual.



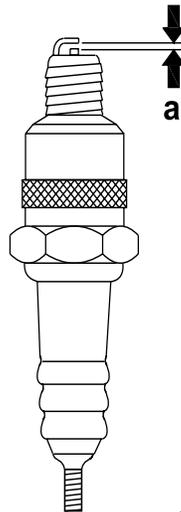
WARNING

The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Do not touch the muffler while it is hot.

Note: Refer to section *Technical Data* for the recommended spark plug type and the electrode gap setting.

- 4.4.1 Remove the spark plug and inspect it.
- 4.4.2 Replace the spark plug if the insulator is cracked or chipped.
- 4.4.3 Clean the spark plug electrodes with a wire brush.
- 4.4.4 Set the electrode gap (**a**).
- 4.4.5 Tighten the spark plug securely.

NOTICE: A loose spark plug can become very hot and may cause engine damage.

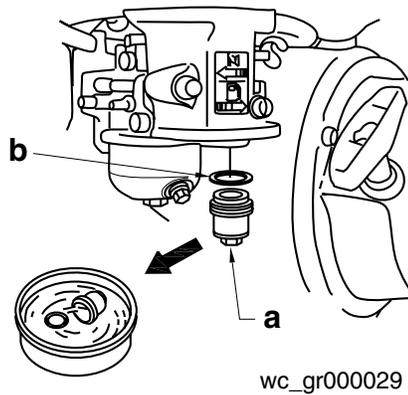


wc_gr000028

4.5 Cleaning Sediment Cup

See Graphic: *wc_gr000029*

- 4.5.1 Turn the fuel valve off.
- 4.5.2 Remove the sediment cup **(a)** and the O-ring **(b)**.
- 4.5.3 Wash both thoroughly in a nonflammable solvent. Dry and reinstall them.
- 4.5.4 Turn the fuel valve on and check for leaks.



4.6 Adjusting Idle Speed

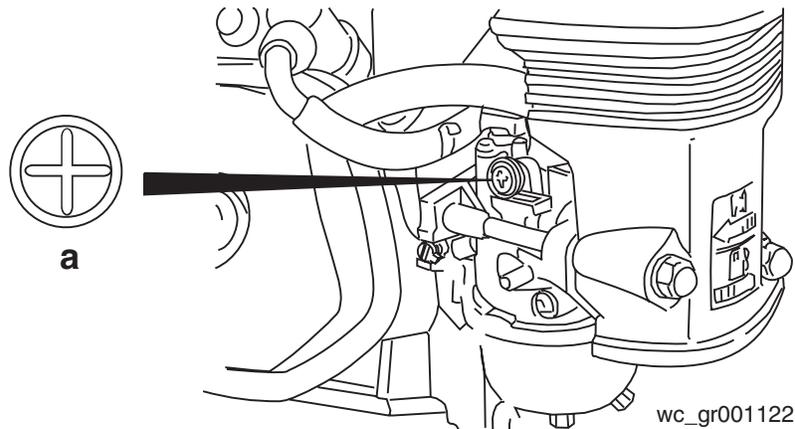
See Graphic: *wc_gr001122*



Remove the drive belt before making any adjustment to the carburetor. See *Belt Replacement*. The blades will engage unless the belt is removed from the machine.

Adjust engine to the no load or idle speed per the Technical Data.

- 4.6.1 Start the engine and allow it to warm up to normal operating temperature.
- 4.6.2 Turn the throttle stop screw **(a)** in to increase speed, out to decrease speed. Make sure the throttle lever is touching the stop screw before measuring rpm.



wc_gr001122

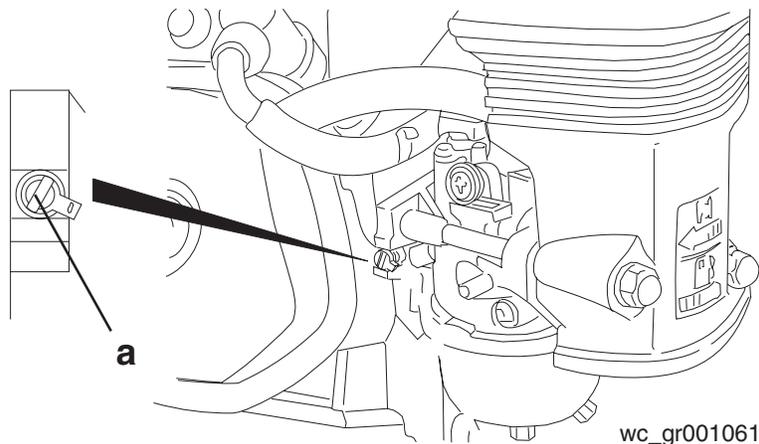
4.7 Carburetor Adjustment

See Graphic: *wc_gr0001061*



Remove the drive belt before making any adjustment to the carburetor. See *Belt Replacement*. The blades will engage unless the belt is removed from the machine.

The pilot screw **(a)** is fitted with a limiter cap to prevent excessive enrichment of the air-fuel mixture in order to comply with emission regulations. The mixture is set at the factory and no adjustment should be necessary. Do not attempt to remove the limiter cap. The limiter cap cannot be removed without breaking the pilot screw.



4.8 Belt Replacement

See Graphic: wc_gr004429

The trowel is equipped with a self-adjusting clutch. This clutch automatically tightens the belt and compensates for belt wear. Replace the belt if the clutch can no longer tighten belt enough to engage gearbox without slipping.

To replace the drive belt:

- 4.8.1 Disconnect the spark plug lead.



WARNING

To avoid accidental starting of the engine, always disconnect the spark plug lead before working on machine.

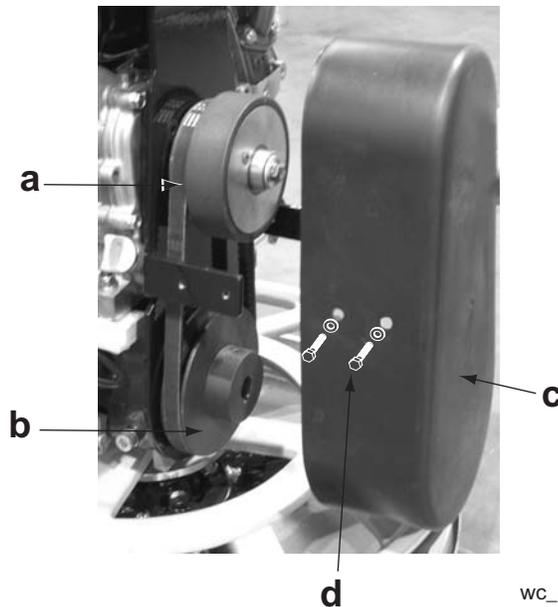
- 4.8.2 Loosen the screws **(d)** and remove the belt guard **(c)**.

- 4.8.3 Slowly turn the pulley **(b)** and roll the belt **(a)** off.

Note: *The clutch and the pulley are aligned at the factory and neither should be removed during belt replacement.*

- 4.8.4 Install the new belt.

- 4.8.5 Reattach the belt guard with washers and screws. Torque the screws to 5 Nm (3.7 ft.lbs.).



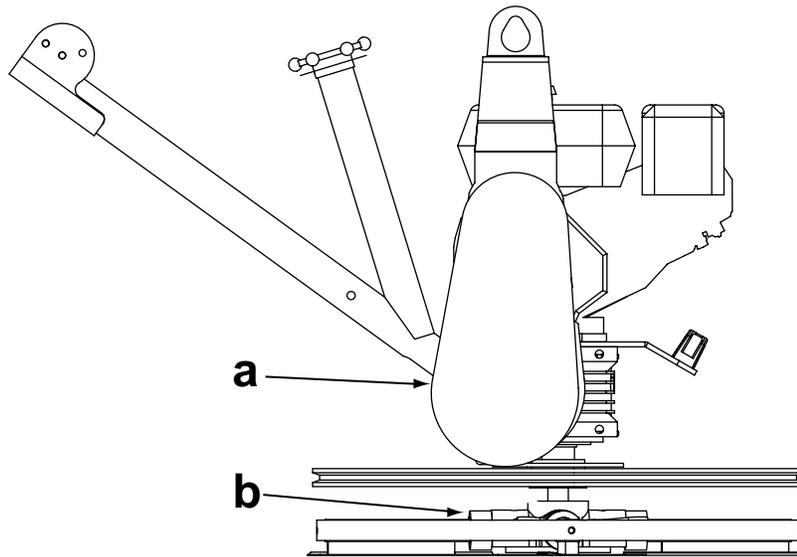
wc_gr004429

4.9 Trowel Lubrication

See Graphic: *wc_gr0014389*

Grease trowel arms (**b**) with Shell Alvania RL2 grease or equivalent. Oil the pitch control cable and other parts of trowel on an as needed basis.

Oil in the gearbox should not require replacement unless it was drained to service gearbox. Check quantity through plug (**a**) located on side of gearbox. Oil level should be to bottom of the plug threads. See *Technical Data* for oil quantity and type.



wc_gr004389

4.10 Lifting

See Graphic: wc_gr004390



WARNING

NEVER lift the machine solely by the handle. The component may fail, causing the machine to fall, possibly injuring bystanders.

See *Technical Data* for the weight of the machine.

To lift the machine manually:

- 4.10.1 Stop machine.
- 4.10.2 Obtain a partner and plan the lift.
- 4.10.3 Balance the weight between the partners and lift the machine by the guard ring **(a)** and the lifting handle **(c)**.



WARNING

To reduce risk of back injury while lifting, keep your feet flat on ground and shoulder width apart. Keep your head up and back straight.

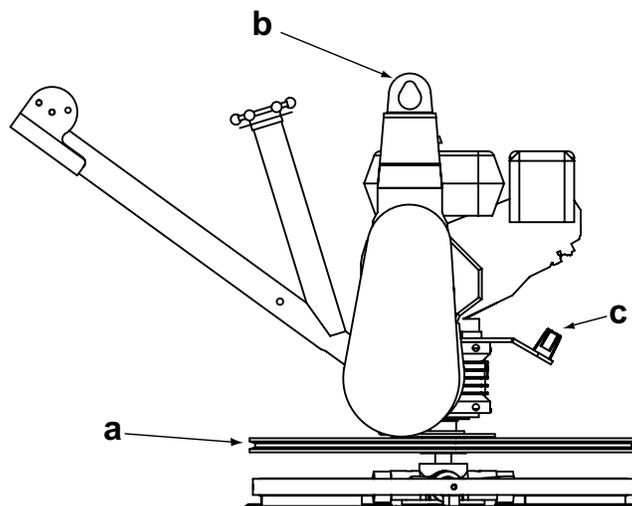
To lift the machine mechanically:

- 4.10.4 Stop machine.
- 4.10.5 See *Dimensions and Weight* for weight of machine and be sure that lifting device(s) can safely lift the weight.
- 4.10.6 Attach hook, harness, or cable to the lifting bracket **(b)** on machine as shown and lift as desired.



WARNING

Do not lift the trowel overhead with a float pan attached, as the pan could fall off and strike personnel working in the vicinity.



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4.11 Storage

If trowel is being stored for more than 30 days:

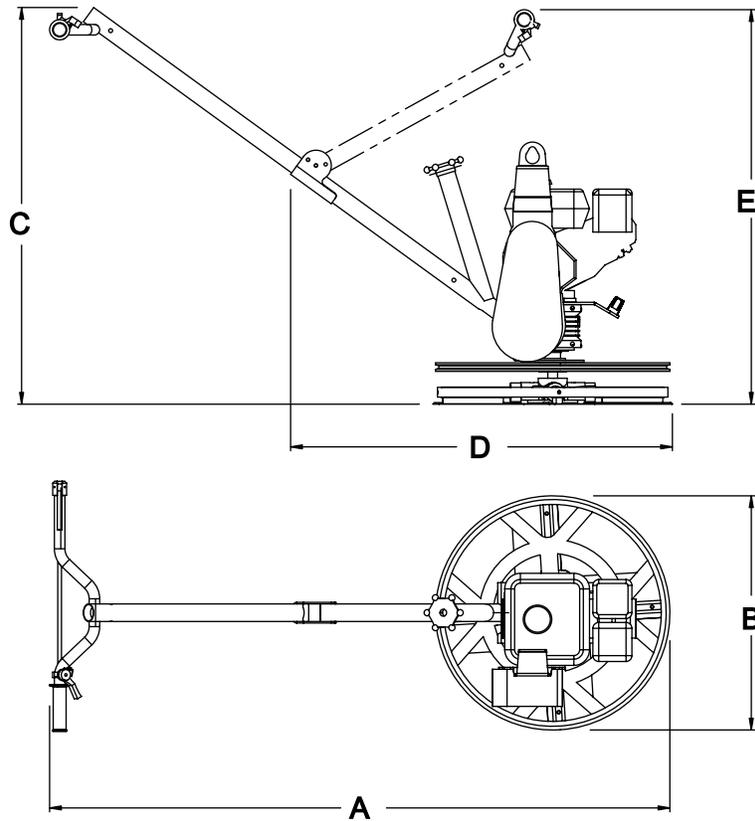
- Change engine oil.
- Drain fuel from engine.
- Remove spark plug and pour 15 ml (½ ounce) of SAE 30 engine oil into the cylinder. Replace spark plug and crank engine to distribute oil. Refer to engine manual.
- Clean dirt from cylinder, cylinder head fins, blower housing, rotating screen, and muffler areas.
- To save space, place handle in its storage position.
- Cover trowel and engine and store in a clean, dry area.

4.12 Troubleshooting

Problem / Symptom	Reason / Remedy
Trowel does not develop full speed.	<ul style="list-style-type: none"> • Remove deposits built up in engine cylinder and engine head. • Engine speed too low. Adjust speed. • Clean or replace air filter. • Clean debris from moving parts and trowel blades. • In cold weather, warm engine in idle 3 or 4 minutes. • Check throttle lever and cable for proper operation.
Engine runs; poor trowel operation.	<ul style="list-style-type: none"> • Check drive belt for wear or damage. • Check clutch for wear or damage. • Clean debris from moving parts and trowel arms.
Engine does not start or runs erratically.	<ul style="list-style-type: none"> • Check fuel level. Open fuel valve. • Clean air filter. • Check/replace spark plug. • Check in-line fuel filter. • Check engine oil level. • Check engine stop button. • Check that throttle is in idle position when starting machine.
Trowel handle tends to rotate when idling.	<ul style="list-style-type: none"> • Check engine idle speed. (It may be too high). • Belt alignment may be off.

5. Technical Data

5.1 Dimensions and Weight



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Dimensions mm (in.)		Dry Weight kg (lbs.)	
A	1537 (60-1/2)	without float pan	65 (144)
B	610 (24)	with float pan	71 (156)
C	972 (38-1/4)	Full Wet (Operating) Weight kg (lbs.)	
D	940 (37)	without float pan	67 (148)
E	788 (31)	with float pan	73 (160)

5.2 Engine

Item No.	CT 24-4A 0620105	
Engine		
Engine Make	Honda	
Engine Model	GX 120 UT1 QX2	
Rated Power	kW (Hp)	2.9 (4) @ 3600rpm
Spark Plug	NGK BPR6ES or Denso W20EPR-U	
Electrode Gap	mm (in.)	0.70–0.80 (0.028–0.031)
Engine Speed - full load	rpm	3800±100
Engine Speed - idle	rpm	1450±100
Clutch engagement	rpm	1800
Valve Clearance (cold)		
intake:	mm (in.)	0.15±0.02 (0.00591±0.00079)
exhaust:		0.20±0.02 (0.00787±0.00079)
Air Cleaner	type	Dual element
Engine Lubrication	oil grade	SAE 10W30 API SJ or SL
Engine Oil Capacity	l (oz.)	0.6 (20)
Fuel	type	Regular unleaded gasoline
Fuel Tank Capacity	l (qts.)	2.5 (2.64)
Running time	hr.	2

5.3 Trowel

Model	Item No.	Trowel Diameter* mm (in.)	Number of Blades	Gear Box Lubrication liters	Speed Range rpm	Pitch Range degrees
Trowel						
CT 24-4A	0620105	610 (24)	4	Mobilgear SH 220 Synthetic, E-Series (or equiv.) 0.4	90–141	0–15

*Trowel blades must NOT be interchanged, i.e., do NOT put larger diameter blades on a smaller diameter trowel.

5.4 Sound and Vibration Data

The required sound specification, Paragraph 1.7.4.f of 89/392/EEC Machinery Directive, is:

- the sound pressure level at operator’s location (L_{pA}) : 97 dB(A)
- the guaranteed sound power level (L_{WA}) = 83 dB(A)

These sound values were determined according to ISO 3744 for the sound power level (L_{WA}) and ISO 6081 for the sound pressure level (L_{pA}) at the operator’s location.

ISO 5349 Part 1 Annex F states, “The vibration characteristics of a vibrating tool can be highly variable. It is therefore important that the range of vibration conditions associated with different workpieces, materials, working conditions, methods of use of the tool, and exposure duration patterns be reported.”

- The average hand and arm vibration value obtained for the entire operating rpm range is 6.9 m/s².
- The maximum hand and arm vibration value obtained within the entire operating rpm range is 8.4 m/s².
- The minimum hand and arm vibration value obtained within the entire operating rpm range is 6.0 m/s².

The sound and vibration specifications were obtained on wetted and cured concrete using the most commonly sold machine configurations. Vibration values will vary depending on throttle position, operating conditions, and handle option.

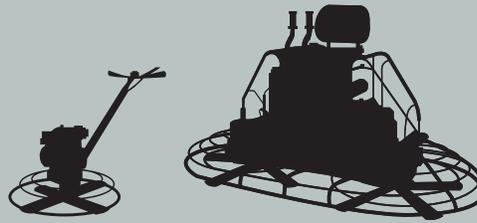
**CONCRETE
POWER TROWELS**

www.aem.org



SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



SAFETY ALERT SYMBOL



This Safety Alert Symbol means **ATTENTION** is required!

The Safety Alert Symbol identifies important safety messages on machines, safety signs, in manuals or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to YOU?

3 BIG REASONS

- **Accidents KILL or DISABLE**
- **Accidents COST**
- **Accidents CAN BE AVOIDED**

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WORD OF EXPLANATION

The following is a partial list of reference material on safe operating practices:

U.S. Department of Labor publishes Safety and Health Regulations and Standards under the authority of the Occupational Safety and Health Act for the General Construction and Mining Industries. Its address is: U.S. Department of Labor, Washington, DC 20210 (www.OSHA.gov and www.MSHA.gov).

ANSI – American National Standards Institute, c/o The American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017 (www.ANSI.org).

ISO – International Standards Organization, 1, rue de Varembé Case postale 56, CH-1211 Geneva 20, Switzerland (www.ISO.ch).

SAE – Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096, publishes a list, "Operator Precautions" SAE J153 MAY 87 (www.SAE.org).

AEM – Association of Equipment Manufacturers, 111 East Wisconsin Avenue, Milwaukee, WI 53202 (www.AEM.org).

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FOREWORD

This safety manual is intended to point out some of the basic situations which may be encountered during the normal operation and maintenance of your walk-behind or ride-on concrete power trowel and to suggest possible ways of dealing with these conditions.

Additional precautions may be necessary, depending on application and attachments used and conditions at the work site or in the maintenance area.

The trowel manufacturer has no direct control over machine application, operation, inspection, lubrication, or maintenance. Therefore, it is your responsibility to use good safety practices in these areas.

Do not use the trowel for any purpose other than its intended purposes or applications.

The information provided in this manual supplements the specific information about your machine and its application that is contained in the manufacturer's manual(s).

Other information which may affect the safe operation of your machine may be displayed on safety signs, or in insurance requirements, employer's safety programs, safety codes, local, state/provincial, and federal laws, rules, and regulations.

If you do not understand any of this information, or if errors or contradictions seem to exist, consult with your supervisor before operating your trowel!

IMPORTANT: If you do not have the manufacturer's manual(s) for your particular machine, get a replacement manual from your employer, equipment dealer, or manufacturer of your machine. Keep this safety manual and the manufacturer's manual(s) accessible to the operator and maintenance personnel.

A WORD TO THE USER

Remember that **YOU** are the key to safety. Good safety practices not only protect you but also protect the people around you. It is your responsibility to study this manual and the manufacturer's manual(s) for your specific machine before operating your machine. Make them a working part of your safety program. Keep in mind that this safety manual is written for concrete power trowels only. Practice all other usual and customary safe working precautions, and above all –

**REMEMBER – SAFETY IS UP TO YOU
YOU CAN PREVENT SERIOUS
INJURY OR DEATH**



5

FOLLOW A SAFETY PROGRAM

EQUIPMENT/CLOTHING

Consult your supervisor for specific instructions on a job, and the personal safety equipment required. For instance, you may need:

- Hard Hat
- Heavy Gloves
- Eye Protection
- Ear Protectors
- Safety Shoes
- Dust Mask or Respirator

Do not wear loose clothing or any accessory – flopping cuffs, dangling neckties and scarves, or jewelry – that can catch in moving parts.

DUST PRECAUTION

Some dust created by construction activities may cause silicosis or respiratory harm.

Your risk of exposure varies depending on how often you do this type of work. To reduce your risk, work in a well ventilated area, use a dust control system, and wear approved personal safety equipment such as a dust/particle respirator designed to filter out microscopic particles.



6

PREPARE FOR SAFE OPERATION

LEARN TO BE SAFE

- Read the operator's manual. If one has not been provided, get one and study it before operating the equipment.
- Learn the location and understand the functions of all controls before attempting to operate the equipment.
- Know the meaning of all identification symbols on the controls and gauges.
- Check to determine that the manufacturer's furnished safety warning labels are securely attached to the trowel and all warnings can clearly read. Replace labels and decals if they are missing or become worn or unreadable.
- Know the location and type of emergency shut-down control the trowel is equipped with.
- Never start or operate the trowel without protective guards and panels in place.
- Know the capabilities and limitations of the trowel.



SAFETY DEVICES

Know what safety devices your trowel is equipped with ... and see that each item is securely in place and in operating condition.

For example:

- Emergency stop switch or other "Shut-Down" devices
- Guards, Shields & Panels
- Alarms or Warning Lamps
- Drain Covers, Plugs, and Caps
- Pressure Relief Devices
- Lights



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PREPARE FOR SAFE OPERATION

PRE-OPERATIONAL CHECKS

Walk around the trowel. Carefully inspect for evidence of physical damage, such as cracks, bends, or deformation of plates and welds. Check for loose, broken or missing parts on the trowel, including brackets, vibration isolators, nuts and bolts. Hardware should be replaced with original equipment manufacturer's (OEM) parts, and should be properly tightened to the manufacturer's recommendations.

Remove all trash and debris from the trowel. Make sure oily rags, leaves, or other flammable material are removed and not stored on the trowel. Avoid potential fire hazards!

Clean all oil or grease from operator areas such as control handles, foot pedals, or platforms to prevent slipping.

Check for fuel, oil, and hydraulic fluid leaks. All leaks must be corrected before the trowel is operated.



Inspect all hydraulic hoses for cracks or signs of wear and replace if necessary. Secure all caps and filler plugs for all systems.

Always use a flashlight or shielded trouble light when checking for leaks – never use an open flame. Never check for hydraulic leaks with your hand. Hydraulic systems are under high pressure and leaks in these systems can penetrate the skin which can result in serious injury or even death. Always use a piece of cardboard or wood when looking for hydraulic leaks.

Be sure the trowel is properly lubricated. See that the fuel, lubricating oil, coolant and hydraulic reservoirs are filled to the proper levels with the correct fluids according to the manufacturer's instructions and recommendations.



PREPARE FOR SAFE OPERATION

FIRE PREVENTION

Always stop the engine and allow it to cool before refueling.

Never refuel –

- When engine is running
- Near open flame or sparks
- While smoking
- In poorly ventilated areas



Never overfill fuel tanks or fluid reservoirs. In the event of a fuel spill, do not attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry. Replace fuel cap securely after refueling.



Inspect electrical wiring for damage or wear.

Batteries produce explosive gas. Keep open flame or sparks away.

In case of accident or fire, be ready to act quickly, yet calmly. Do not panic. Knowing ahead of time where to locate a first aid kit, fire extinguisher, or to get assistance will help should an emergency situation come up.

CHECK THE WORK AREA

Learn – beforehand – as much about your working area as possible.

Be observant of other workers, bystanders and other machinery in the area. Keep all unauthorized, untrained people and children out of the area while the trowel is in operation.



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PREPARE FOR SAFE OPERATION

CHECK THE AREA

Thoroughly check the area for unusual or dangerous conditions, such as tools, or items that may damage the trowel or be propelled by the trowels rotating blades. Note where pipes and forms are located. Locate and mark protrusions (rebar, anchor bolts, floor drains, etc.) in the concrete.

GETTING ON AND OFF A RIDE-ON TROWEL

If operating a ride-on trowel, mount and dismount carefully. Use the steps and hand holds provided. Do not use control levers as hand holds and never use guard rings as steps. Watch for surfaces that may be slippery. Never jump off a ride-on trowel.

OPERATING ON AN ELEVATED DECK (MULTI-STORY OPERATION)

Consult local/state regulations before you operate equipment on an elevated deck. If operating on an elevated deck, ensure perimeter safety cabling of proper size and strength is in place. Do not operate the trowel close to the edge of the deck.

TRANSPORTING THE TROWEL

Never transport the trowel with float pans attached unless safety catches are used and are specifically cleared for such transport by the manufacturer. Under no circumstances hoist the trowel more than three feet off the ground with float pans attached. Always consult the manufacturer's operation manual for specific information on transporting the trowel.

START CORRECTLY – START SAFELY

Before starting, check for proper functioning of all operation and shutdown controls. Check all controls to be sure they are in the correct startup position. Know the proper starting procedure for your trowel. Follow the manufacturer's operational instructions.

WALK-BEHIND TROWELS

- Ensure that the operator is familiar with the trowel and is trained on its operation.
 - Ensure the operator is well rested, not fatigued, is alert, and not impaired in any way (medications, drugs, alcohol, etc.).
 - Do not start or operate the trowel if the drive train will not disengage. Centrifugal force between the trowel and surface when starting can cause uncontrolled handle movement that can cause serious injury. The handle must not move while pulling the engine recoil starter.
 - Visually check to be sure that the blades are free of obstructions and the area is clear for operation.
- For trowels that use this feature, ensure that the emergency stop switch is in the ON position.
 - Move the throttle to the idle position.
 - Switch the engine ON/OFF switch to the ON position.
 - Never place your foot on the ring guard when starting the engine or severe injury can occur if your foot slips through the ring guard as the blades start to spin.
 - While firmly holding the handle with one hand, start the engine following the guidelines in the engine manufacturer's instruction manual.
 - Hold the handle bar firmly with both hands while the trowel is "throttled-up".
 - If control of the trowel is lost, stay clear and do not attempt to regain control until the trowel has stopped moving. Depending on the engine speed, the trowel handle can swing around before it stops completely.
 - You are ready to operate the trowel!

START SAFELY

RIDE-ON TROWELS

- Ensure that the operator is familiar with the trowel and is trained on its operation.
 - Ensure the operator is well rested and not fatigued, is alert, and not impaired in any way (medications, drugs, alcohol, etc.).
 - Adjust the seating if necessary and get into a comfortable position where all controls are accessible.
 - Visually check to be sure that the blades are free of obstructions and the area is clear for operation.
 - Start the trowel following the instructions in the engine manufacturer's operation manual. For diesel powered trowels, follow the instructions for glow plug and cold start operation.
- Observe any gauges and warning lights to ensure they are functioning and their readings are within the manufacturer's normal operating range.
 - Check operation of controls. Make certain they operate properly.
 - You are ready to operate the trowel!



SAFE WORKING PROCEDURES

DANGER – CARBON MONOXIDE

Exhaust from the engine contains poisonous carbon monoxide gas that is not easily detected as it is colorless and odorless. Exposure to carbon monoxide can cause loss of consciousness and may lead to death! Do not operate your trowel indoors or in an enclosed area unless adequate ventilation is provided. Ensure that permissible carbon monoxide levels are monitored and not exceeded.



OTHER PRECAUTIONS

- Never leave the trowel unattended while it is running.
- Always keep clear of rotating or moving parts.
- Never use additional weights other than the weights recommended by the manufacturer. The use of unauthorized weights could lead to personal injury or damage to the trowel.

- Never fill the fuel tank while the engine is running. Turn the engine off and allow it to cool before refueling.

- The muffler, exhaust pipes and other engine parts will become hot during operation and will remain hot for a while after shutdown. Do not touch until allowed to sufficiently cool. Do not allow debris, rags, paper, or leaves to accumulate around these areas.



- Do not keep tools, buckets, loose materials on the trowel while it is running and never allow anyone other than the operator on or near the trowel while it is in operation.
- Do not use the trowel for any purpose other than its intended purposes or applications.

WORK SAFELY

ELECTRICAL EQUIPMENT

Some walk-behind trowels are powered by electric motors. Electric motors and components present special hazards during operation. Read the operator's manual.

- Never operate a trowel with a damaged or worn electrical cord. When using an extension cord, be sure to use one heavy enough to carry the current load. When trowel is used outdoors, use only extension cords that are marked for outdoor use.
- Use only appropriate extension cords that have grounding-type plugs and receptacles that accept the machine's plug.



- Keep all electrical cords away from rotating elements, heat, oil, and sharp edges to avoid damaging them.
- Avoid body contact with grounded surfaces such as pipes, metal railings, radiators and metal ductwork.
- Always check the power supply before running the trowel. Using the wrong voltage supply will damage the motor.
- Always make sure the motor switch is OFF or in the stop position before plugging the trowel into the power supply.
- Do not operate an electric powered trowel in the rain or snow. Keep the motor, switch, and electrical cords dry.
- Never operate the trowel in areas exposed to flammable or explosive liquids or gases. Sparks could ignite fumes.

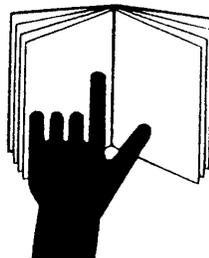
SHUT DOWN SAFELY

SHUT DOWN PROCEDURES

Never disable or disconnect the safety devices!

Always close fuel valves when the machine is not being used.

Refer to the manufacturer's manuals for specific shut down procedures.



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LOAD AND UNLOAD SAFELY

PRECAUTIONS

- Power trowels are heavy and awkward to move around.
- Do not attempt to lift the ride-on trowel by the guard rings.
- Use proper heavy lifting procedures.
- Keep all non-essential personnel clear of the area.
- Never hoist the trowel over areas where people are standing or working.
- Remove tools and loose items before lifting.
- Make sure the crossbars on the safety catches are in good condition if so equipped.
- Always consult your operator's manual for the best and proper lifting, loading, and unloading methods.

WALK-BEHIND TROWELS

Some walk-behind trowels can be lifted or moved by two people utilizing lifting tubes or other special attachments. Generally however, they must be

lifted using lifting bales (special lifting brackets), or other specific lifting points provided by the manufacturer, and cranes, hoists, or forklifts. Be certain any lifting devices used have adequate capacity.

RIDE-ON TROWELS

Ride-on trowels are very heavy. They require heavy-duty lifting devices such as cranes or heavy-duty hoists to lift them on and off the concrete slab.

Be certain any lifting devices used have adequate capacity. Some ride-on trowels are equipped with lifting bosses that are used with specialized apparatus to assist in moving the trowels around. Use extreme care when lifting or moving a ride-on trowel.

STORAGE

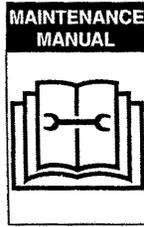
Always store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of reach of children.

PERFORM MAINTENANCE SAFELY

SERVICE AND MAINTENANCE SAFETY

Poorly maintained equipment can become a safety hazard! In order for your trowel to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

Do not attempt to clean, service, or perform adjustments on the trowel while it is running.



GOOD HOUSEKEEPING

Keep area clean and dry if possible. Oily and wet surfaces are slippery; greasy rags are a fire hazard; wet spots are dangerous around electrical equipment.

GENERAL PROCEDURES

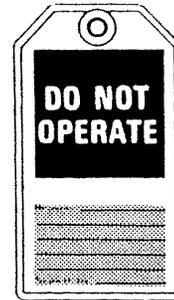
Do not perform any work on the trowel unless you are authorized to do so.

Standard maintenance procedures should always be observed. Read the manufacturer's manual or find assistance if you do not understand what you are doing.

Maintenance can be dangerous unless performed properly. Be certain that you have the necessary skill and information, correct tools and equipment to do the job correctly.

Attach a Do Not Operate tag or similar warning tag to the control panel (or handle on walk-behind trowels), and disconnect the battery (disconnect the spark plug wire on walk-behind trowels), before performing maintenance on the machine.

Disconnect the electric cord on electrical machines.



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PERFORM MAINTENANCE SAFELY

FORM GOOD DRESS HABITS

Loose clothing and jewelry can catch in moving parts and cause serious injury.

Keep hands – and clothing – away from moving parts.

GUARDS AND SAFETY DEVICES

After performing maintenance make certain all guards and panels have been reinstalled and all safety devices are functional.

BATTERY MAINTENANCE

Always wear eye and face protection.

Batteries produce explosive gases. Keep open flame or sparks away. See the manufacturer's instructions when servicing the batteries, when using jumper cables, or when using a battery charger.



Use a flashlight to check battery electrolyte level. Always check with engine stopped.

Battery electrolyte is poisonous. It is strong enough to burn your skin, eat holes in clothing, and can cause blindness if splashed into eyes. Always wear eye and face protection.

Flush any contacted area with water immediately.



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PERFORM MAINTENANCE SAFELY

FIRE PREVENTION

Avoid fire hazards.

Always stop the engine and allow it to cool before you refuel the trowel. Do not refuel while smoking or near open flame or sparks. Never overfill fuel tanks or fluid reservoirs.

Remove all trash or debris. Make sure oily rags or other flammable materials are not stored on or in the trowel.

Check for fuel, oil, or hydraulic fluid leaks. Repair the leaks and clean the machine before you operate it.

Inspect electrical wiring or worn or frayed insulation. Install new wiring if wires are damaged.

Do not weld or flame cut on pipes, tubes, or tanks that contain flammable fluids or gases.

Ether and starting fluid is flammable. Do not smoke when using. Always follow the instructions on the can and in the manufacturer's manual for your trowel.

Always use a safe, nonflammable solvent when you clean parts. Do not use flammable fluids or fluids that give off harmful vapors.

Store all flammable fluids and materials away from your work area.

Whenever the sparkplug is removed, do not test for spark on gasoline powered engines if engine is flooded or the smell of gasoline is present. A stray spark could ignite fumes.

Know where fire extinguishers are kept – how they operate – and for what type of fire they are intended!

Check readiness of fire suppression systems and fire detectors (is so equipped).



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PERFORM MAINTENANCE SAFELY

EXHAUST FUMES

Engine exhaust fumes can cause sickness or death.

When performing maintenance, if it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area when an exhaust pipe extension. If you do not have an exhaust pipe extension, make sure you open the doors and get outside air into the area.

Ensure that permissible carbon monoxide levels are monitored and not exceeded.



FLUID SIPHONING

Never siphon gasoline or hydraulic fluid using a hose and suction by mouth. Ingestion of these fluids even in small amounts will require immediate medical attention and can cause death.

COOLING SYSTEM

Maintain the cooling system according to the manufacturer's instructions.

Hot coolant can spray out and you can be burned if you improperly maintain or service the cooling system.

Remove filler cap only when cool.



PERFORM MAINTENANCE SAFELY

TROWEL BLADES AND PANS

- Do not attempt to clean, service or perform adjustments on the trowel while it is running.
- Do not remove while the trowel is hanging overhead. Always support the trowel securely on a flat, level surface before changing blades or pans.
- Always handle blades and pans carefully. Worn blades or pans may develop sharp edges that can cause serious cuts.
- Always replace worn or damaged parts with service parts designated by the manufacturer.
- Replace blades and pans as a complete set – even if only one blade or pan is showing wear or damage. They can wear differently depending on different jobs, and a difference in blade size will damage the finish of the slab surface.

HYDRAULIC SYSTEMS

Hydraulic fluid systems operate under high pressure. Even a small leak can have enough force to penetrate the eyes or skin. If injury occurs, seek immediate medical treatment by a physician familiar with injuries that are caused by hydraulic oil escaping under pressure.

Use a piece of wood or cardboard to find hydraulic oil leaks. Do not use your bare hands.

Wear safety glasses to prevent injuries to the eyes.

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TEST YOUR KNOWLEDGE

Do you understand this AEM manual and items such as –

- Your safety program?
- Your trowel manufacturer's manual(s)?
- Proper clothing and personal safety equipment?
- Your trowel's controls, warning signs and devices, and safety equipment?
- Proper trowel lifting and moving procedures?
- How to inspect and start your trowel?

- How to check your trowel for proper operation?
- Proper working procedures?
- Proper shut down procedures?
- Your work area and any special hazards that may exist?
- Under what conditions you should not operate your trowel?

If you do not understand any of these items, consult with your supervisor before operating your trowel.

A FINAL WORD TO THE USER

Remember that **YOU** are the key to safety. Good safety practices not only protect you but protect the people around you.

You have read this safety manual and the manufacturer's manual(s) for your specific trowel. Make them a working part of your safety program. Keep in mind that this safety manual is written for only this type of machine.

Practice all other usual and customary safe working precautions, and above all –

REMEMBER – SAFETY IS UP TO YOU

**YOU CAN PREVENT SERIOUS
INJURY OR DEATH**

This manual is another in a series on the safe operation of machinery published by AEM.
For additional publications visit our web site at www.aem.org.



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Preußenstraße 41
80809 München**

hereby certifies that the construction equipment specified hereunder / bescheinigt, daß das Baugerät / certifica que la máquina de construcción / atteste que le matériel :

1. Category / Art / Categoría / Catégorie

**Trowel
Betonglätter
Alisadora de hormigón
Truelle mécanique**

2. Type - Typ - Tipo - Type

CT 24

3. Item number of equipment / Artikelnummer / Número de referencia de la máquina / Numéro de référence du matériel :

0620105, 0620377

has been produced in accordance with the following standards:
in Übereinstimmung mit folgenden Richtlinien hergestellt worden ist:
ha sido fabricado en conformidad con las siguientes normas:
a été produit conforme aux dispositions des directives européennes ci-après :

**73/23/EEC
89/336/EEC
93/68/EEC
98/13/EEC
98/37/EC
EN 1050
EN 60204-1**



William Lahner
Vice President of Engineering

Robert Motl
Manager, Product Engineering

18.01.08

Date / Datum / Fecha / Date

WACKER CORPORATION

