



# 삼산



Operator's Manual Hydraulic Ride-On Power Trowel

HPT 461

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Manufacturer

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Original instructions

This Operator's Manual presents the original instructions. The original language of the Operator's Manual is English.

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## **Foreword**

This manual contains important instructions for this machine. These instructions must be followed during installation, operation, and maintenance of the machines.

This manual provides information and procedures to safely operate. For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this manual.

We reserves the right to change any of the contents in this manual without notice.

## **Warranty**

Our products are covered by warranty for a period of twelve (12) months from the date of purchase against defects in material or workmanship provided that:

- I The product concerned has been operated and maintained in accordance with the operating instructions.
- I Has not been damaged by accident, misuse or abuse.
- I Has not been tampered with or repaired by any unauthorized person.

Any evidence of failure to meet these conditions may result in a denial of the warranty claim.

The owner is responsible for the cost of transportation to and from the authorized repairer and the unit is at the owners risk while in transit to and from the repairer.

Impact damage is not covered under warranty. Clutches are not covered under any warranty.

Engines are officially guaranteed by engine manufacturer. Please refer to the annex for engine warranty.

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# 1. SAFETY INFORMATION

## 1.1 Operating Safety

- I Only trained personnel are permitted to start, operate, and shut down the machine. They have received instruction on how to properly use the machine and are familiar with required safety devices.
- I Read, understand, and follow procedures in the Operator's Manual before attempting to operate the machine.
- I The machine must not be accessed or operated by children and people impaired by alcohol or drugs.
- I NEVER operate this machine in application for which it is not intended.
- I NEVER operate the machine with the belt guard missing. Exposed drive belt and pulleys create potentially dangerous hazards that can cause serious injuries.
- I 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.
- I Do not operate the machine with unapproved accessories or attachments.
- I Do not allow anyone to stank or lean on the unit during operation.
- I 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. Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell. Exposure to carbon monoxide can cause loss of consciousness and CAN KILL YOU IN MINUTES.
- I Do not 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.
- I ALWAYS wear protective clothing, safety glassed, hearing protection, safety-toed footwear to the job site while operating the machine.
- I ALWAYS close fuel valve on engines equipped with one when machine is not being operated.
- I 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.

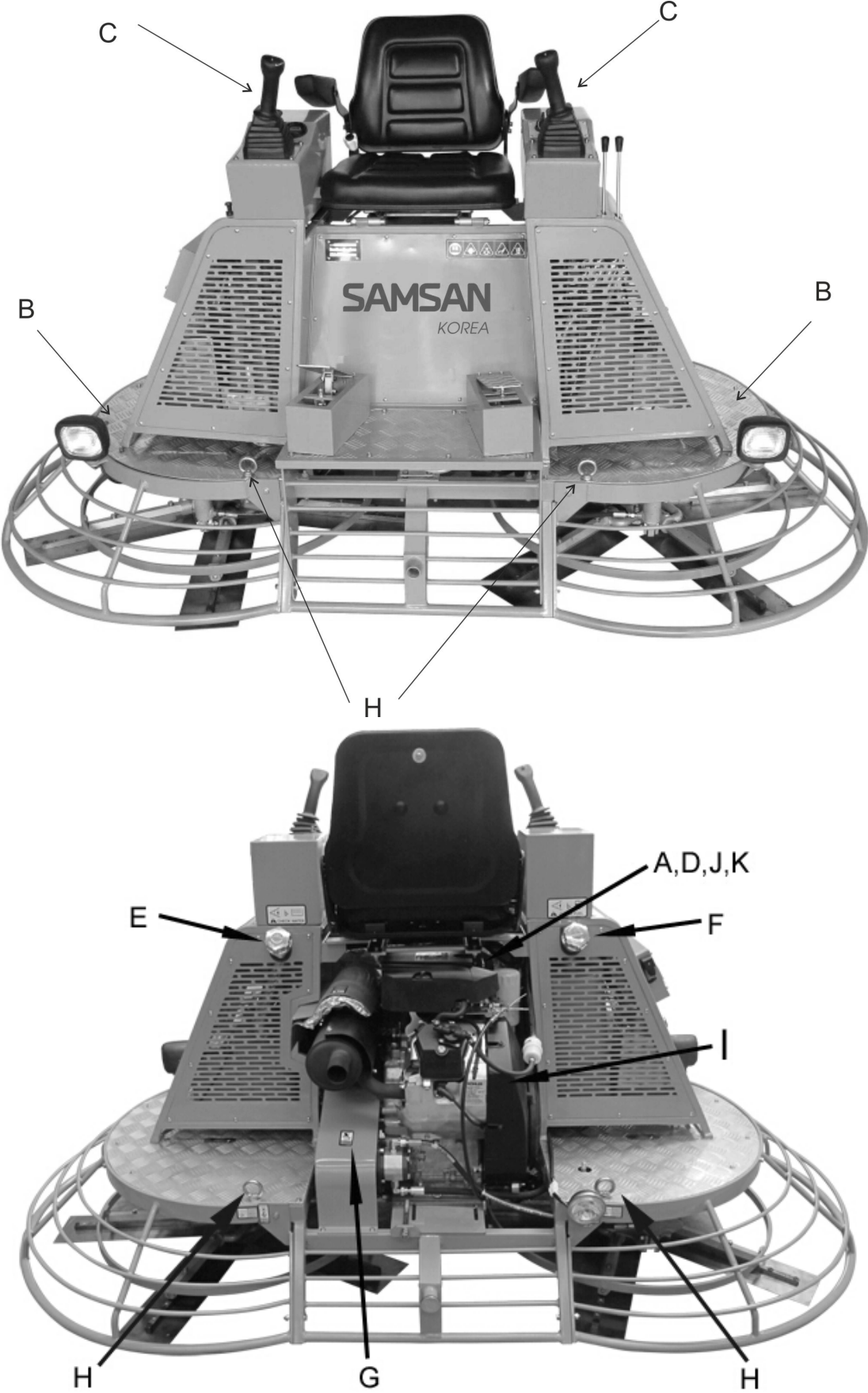
## **1.2 Operator Safety while using Internal Combustion Engines**

- I DO NOT smoke when refueling the engine or during any other fuel handling operation.
- I DO NOT refuel a hot or running engine.
- I DO NOT refuel the engine near an open flame.
- I DO NOT spill fuel when refueling the engine.
- I Do not 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.
- I If fuel is spilled during refueling, wipe it off from the engine immediately and discard the rag in a safe place. Do not operate the unit if fuel or oil leaks exist-repair immediately.
- I NEVER operate this equipment in an explosive atmosphere.
- I NEVER operate any gas powered equipment in a poorly ventilated or enclosed area.
- I NEVER perform any work on the unit while it is running. Before working on it, stop the engine and disconnect the spark plug wire to prevent accidental starting.
- I Avoid prolonged breathing of exhaust gases.
- I Avoid contact with hot exhaust systems and engine parts.
- I Allow engine to cool before performing any repairs or service.
- I ALWAYS transport and handle fuel only when contained in approved safety containers.
- I 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.

## **1.3 Service Safety**



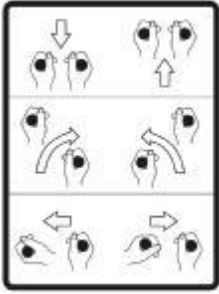


- I Read and understand the instructions contained in the manual delivered with the machine before servicing or maintaining
- I Familiarize yourself with the location and proper use of all controls and safety devices before servicing or maintaining.
- I Contact local dealer for additional training if necessary.
- I Do not allow improperly trained people to service or maintain the machine. Personnel servicing or maintaining the machine must be familiar with the associated potential risks and hazards.
- I Do not attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.
- I Do not remove blades while the machine is hanging overhead.
- I Disconnect the spark plug on machines equipped with gasoline engines, before servicing, to avoid accidental start-up.
- I When replacement parts are required for this machine, use only our replacement parts or those parts equivalent to the original in all types of specifications, such as physical dimensions, type, strength, and material.

1.4 Label Location







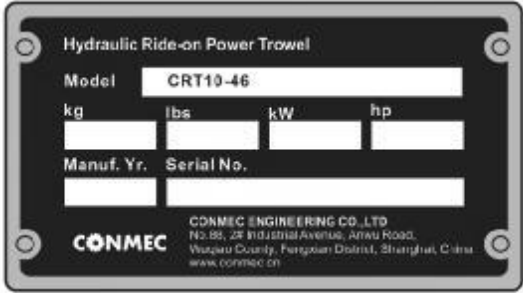


## 1.5 Safety and Operating Labels

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

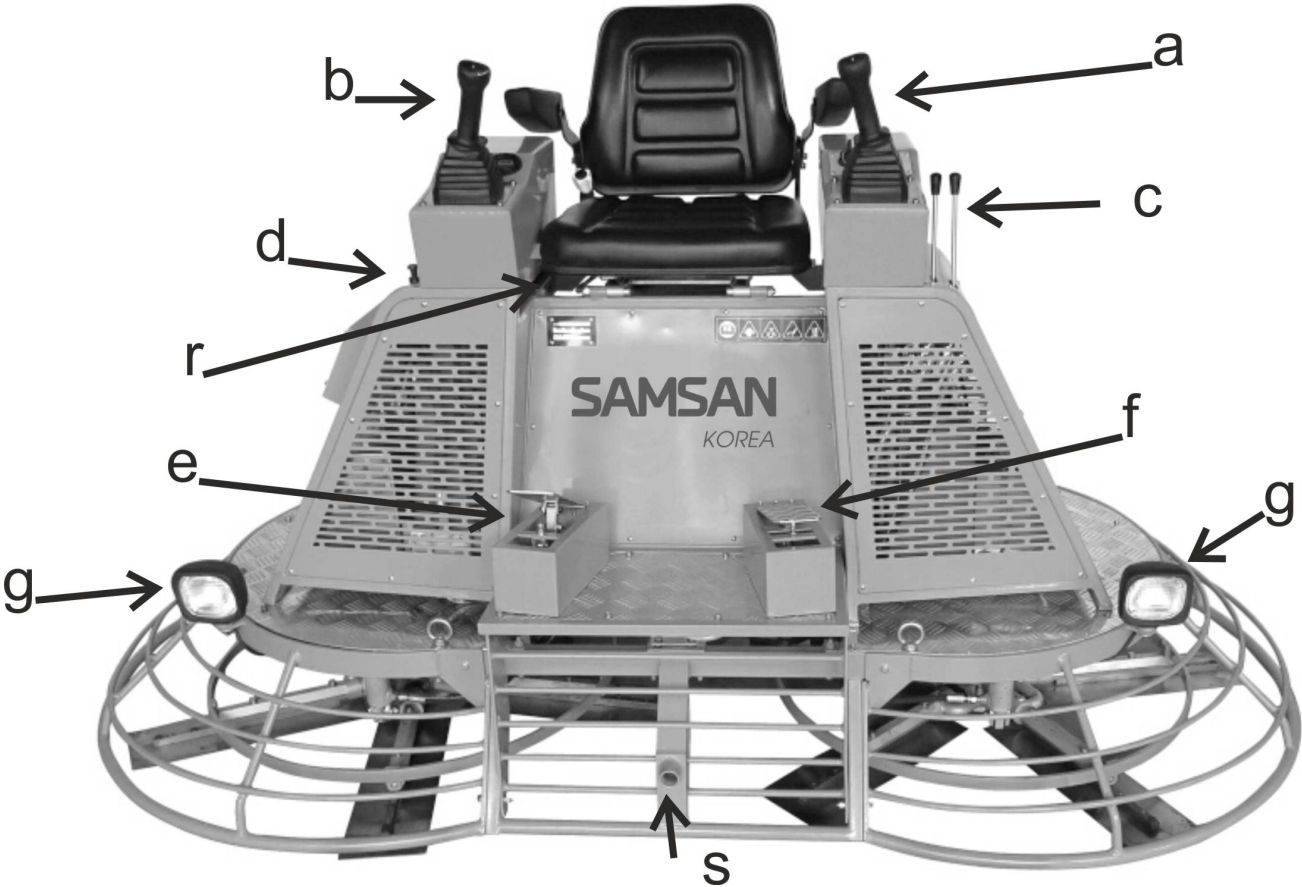
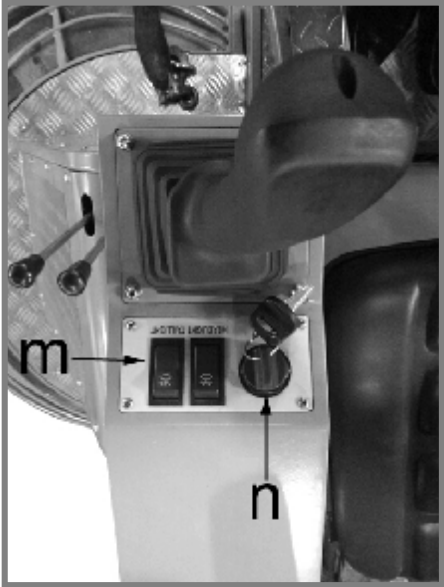
Ref.	Label	Meaning
A		<p><b>DANGER!</b> Engines emit carbon monoxide; operate only in well-ventilated area. Read the Operation Manual for machine information. No sparks, flames, or burning objects near the machine. Shut off the engine before refueling. Use only clean, filtered unleaded gasoline.</p>
B		<p><b>WARNING!</b> Cutting hazard. Always replace blade guard!</p>
C		<p>Steering control. Refer to section Steering.</p>
D		<p><b>WARNING!</b> Always wear hearing and eye protection when operating this machine.</p>
E		<p>Water tank fill. Use only clean water or water-based retardants.</p>

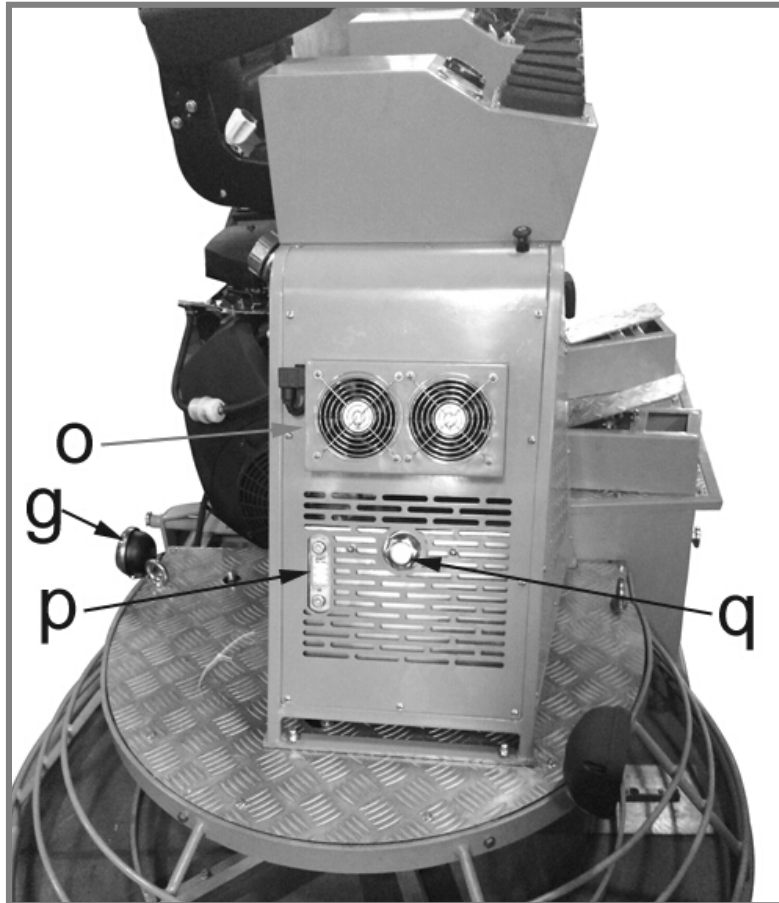


Ref.	Label	Meaning
F	 <p>A rectangular label with a black border. On the left, there is a pictogram of an eye and a fuel pump nozzle. Below the pictogram is a triangle with an exclamation mark and the text 'CHECK FUEL'.</p>	<p><b>CAUTION!</b> Check the fuel. Use only clean, filtered gasoline fuel.</p>
G	 <p>A rectangular label with a black border. At the top, it says 'WARNING' with a triangle and exclamation mark. Below is a pictogram of a hand being caught in a rotating belt. At the bottom, it lists the word 'WARNING' in four different languages: 'WARNING', 'ADVERTENCIA', 'AVERTISSEMENT', and 'AVVERTISSEMENT'.</p>	<p><b>WARNING!</b> Hand injury if caught in moving belt. Always replace belt guard.</p>
H	 <p>A rectangular label with a black border. On the left is a pictogram of a rope being tied to a point. On the right, it says 'CAUTION' in four languages: 'CAUTION', 'VORSICHT', 'PRECAUCION', and 'PRECAUTION'.</p>	<p><b>CAUTION!</b> Tie-down point.</p>
I	 <p>A square pictogram with a black border. It shows a key inserted into a circular switch. To the right of the key is a small circle with a vertical line, representing the 'On' position. To the left is another small circle, representing the 'Off' position.</p>	<p>Key switch, engine start: Off On Start</p>
J	 <p>A rectangular label with a black border. On the left, it says 'WARNING' in four languages: 'WARNING', 'ADVERTENCIA', 'AVERTISSEMENT', and 'AVERTISSEMENT'. On the right is a pictogram of a hand touching a hot surface with a flame. Below the pictogram is a right-pointing arrow.</p>	<p><b>WARNING!</b> Hot surface!</p>
K	 <p>A rectangular label with a black border. At the top, it says 'WARNING' with a triangle and exclamation mark. Below is a pictogram of an open book. The text below the pictogram is in four languages, warning to read and understand the operator's manual before operating the machine. At the bottom, it says 'AVVERTISSEMENT'.</p>	<p><b>WARNING!</b> Read and understand the supplied Operator's Manual before operating the machine. Failure to do so increase the risk of injury to yourself or others.</p>
	 <p>A rectangular nameplate with a black background and white text. It lists the model number 'CRT10-46' and provides fields for weight in kg and lbs, and power in kW and hp. It also has fields for 'Manuf. Yr.' and 'Serial No.'. At the bottom, it says 'CONMEC ENGINEERING CO., LTD' and provides the company's address and website.</p>	<p>A nameplate listing the model number and serial number is attached to each unit. Please record the information found on this plate so it will be available if the nameplate lost or damaged. When requesting service information, the serial number should be specified of the unit.</p>

2. OPERATION

2.1 Features and Controls





Ref. No.	Description	Ref. No.	Description
a	Joystick (Forward & Reverse)	j	Hydraulic Pressure Indicator
b	Joystick (Left & Right, Forward & Reverse)	k	Volt and Hour Meter
c	Pitch Control	m	Work Light Switch
d	Engine Choke Control	n	Engine Key Switch
e	Foot Pedal (Throttle Control)	o	Hydraulic Cooling System
f	Foot Pedal (Safety Stop Switch)	p	Hydraulic Oil Level Gauge
g	Work Light (3 Lights)	q	Hydraulic Oil Tank Cap
h	Operator's Seat	r	Seat Adjustment
i	Water Spray Control	s	Trolley Wheel Lift Points

## 2.2 Preparing the Machine for First Use

- 2.2.1 Make sure all loose packaging materials have been removed from the machine.
- 2.2.2 Check the machine and its components for damage. If there is visible damage, do not operate the machine! Contact our dealer immediately for assistance.
- 2.2.3 Take inventory of all items included with the machine and verify that all loose components and fasteners are accounted for.
- 2.2.4 Attach component parts not already attached.
- 2.2.5 Add fluids as needed and applicable, including fuel, engine oil, hydraulic oil and battery acid.
- 2.2.6 Move the machine to its operating location.

## 2.3 Before Starting

New Ride-on Power Trowel has been assembled and tested at the factory. However, before starting the trowel, the following items should be checked:

- I Oil level in engine
- I Hydraulic oil level in the hydraulic pump
- I Fuel level in fuel tank
- I Water level in water tank
- I Condition of the air filter
- I Condition of trowel arms and blades
- I Verify that daily maintenance of grease points has been performed
- I Check all hoses and fittings for leaks

**NOTICE:** Check the oil level in the engine and gearbox. Engine and trowel warranties are VOID if this unit is run without oil.

## 2.4 To Start

Before starting the operator must know the location and function of all controls.

1. Adjust the chair to the comfortable position for the operator.
2. Push down on the left safety stop pedal, turn the engine keyswitch, and hold it until the engine starts.  
NOTICE: If the engine is cold, pull out the choke control knob fully. The choke may need to be opened even when starting a warm engine.  
NOTICE: Cranking the engine for more than 5 seconds can cause starter damage. If the engine fails to start, release the keyswitch and wait 10 seconds before operating the starter again.
3. Allow the engine to warm up before operating the trowel.
4. Push down on the throttle foot pedal to start the trowel

## **2.5 To Stop**

1. Return the control levers to their neutral position and release pressure on the throttle foot pedal.
2. Release pressure on the safety stop switch.
3. To stop the engine, turn the keyswitch to “O” (off).

NOTICE: Release the safety stop switch for emergency stop.

## **2.6 Operation**

To utilize your Ride-On Trowel to its fullest capacity, the machine should be driven in the direction that the operator is facing. This will finish the widest possible area, while giving the operator an excellent view of the slab surface about to be troweled. When the machine reaches the end of the slab, make a 180° U-turn, and repeat the straight line of direction to the other end of the slab.

NOTICE: DO NOT use excessive pressure on the control levers. Excessive pressure does not increase the reaction time of the machine and can damage the steering controls.

NOTICE: Attempting to use the trowel too early in the curing stage of the concrete may result in an undesirable finish. Only experienced concrete finishers should operate the trowel.

## **2.7 Steering the ride-on trowel**

A slight “feathering motion” forward and backward with the left hand joystick is required to move the machine in a straight path to the left or right while operating the right hand joystick.

1. Reverse: Pull the control arm reverse
2. Forward: Push the control arms forward
3. rotate clockwise: Push the left control arm forward, pull the right control arm reverse.
4. rotate counter-clockwise: Push the right control arm forward, pull the left control arm reverse.
5. left sideways: Turn the left control arm left.
6. right sideways: Turn the right control arm right.

## **2.8 Pitch Adjustment**

When changing or setting the pitch (angle) of the trowel blades, slow the machine, set the desired pitch on the left side of the machine, then adjust the right side to match.

To increase the pitch, turn the pitch control inward.

### 3 MAINTENANCE

#### 3.1 Periodic Maintenance Schedule

The chart below lists basic trowel and engine maintenance. Refer to engine manufacturer's Operator's Manual for additional information on engine maintenance. A copy of the engine Operator's Manual was supplied with the machine when it was shipped. To service the engine, tilt the seat forward.

	Daily	Every 20 hours	Every 50 hours	Every 100 hours	Every 200 hours	Every 300 hours
Grease trowel arms.	I					
Check fuel level.	I					
Check engine oil level.	I					
Inspect air filter. Replace as needed.	I					
Check external hardware.	I					
Pressure wash all surfaces until free of concrete.	I					
Check oil level in gearboxes.		I				
Grease gearbox, drive system and pitch posts fittings.		I				
Grease control linkage.		I				
Check drive belt for wear.			I			
Change engine oil.				I		
Check fuel filter.				I		
Check hydraulic oil filter.				I		
Clean and check spark plug.					I	
Replace oil filter.					I	
Replace spark plug.						I
Replace fuel filter.						I
Replace gearbox pressure relief valve.						I
Replace oil in gearboxes.						I

#### 3.2 Trowel Gearbox

Check the gearboxes for the correct oil level after every 20 hours of operation. Change the gearbox oil every 300 hours.

NOTICE: DO NOT mix types of gear oil. DO NOT overfill the gearbox with oil. Damage to the gearbox may occur if oils are mixed, or if the gearbox is overfilled. See Technical Data for oil quantity and type.

### 3.3 Lubrication

#### 1. Engine oil

The long life and successful operation of any piece of machinery is dependent on frequent and thorough lubrication

Before using the trowel, always check your engine for oil. Use proper engine oil as recommended in the engine manufacturer's manual. Fill crankcase to levels as recommended.

#### 2. Trowel

The drive system, gearbox and pitch posts are equipped with several grease fittings. Grease these fittings once a week, or every 20 hours, to prevent wear.

Use a general purpose grease and add one to two shots of grease at each fitting.

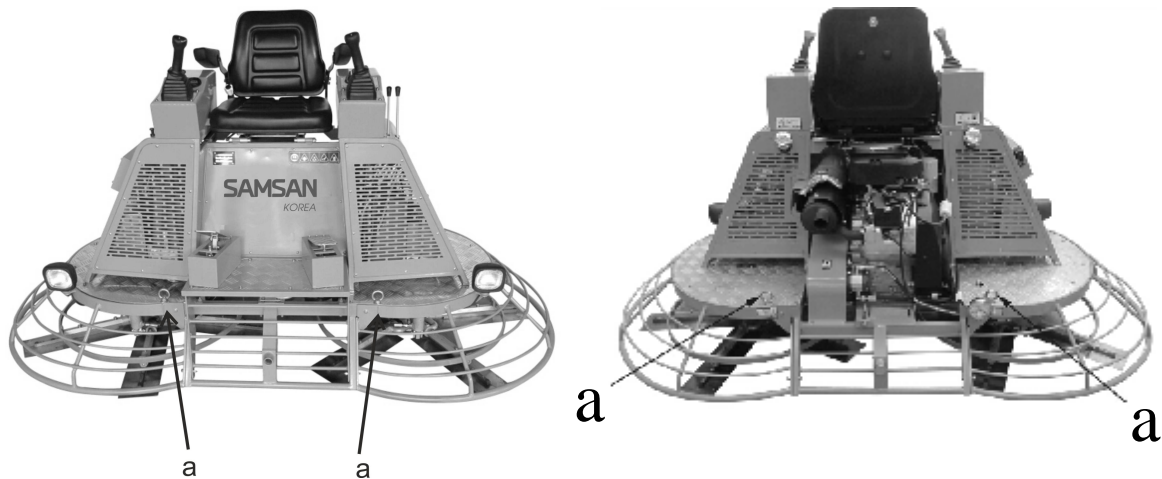
### 3.4 Transporting Trowels

ALWAYS turn the engine off and remove the key from the machine before moving or transporting machine.

To hoist the trowel:

1. Attach a sling or chains through the tie-down point (a) on each side of the guard ring.

NOTICE: Make sure lifting device has enough capacity to hold machine (see identification plate on machine for weight).



2. Optional trolley wheel are available for short moves or to aid in servicing the trowel.

### 3.5 Trouble Shooting

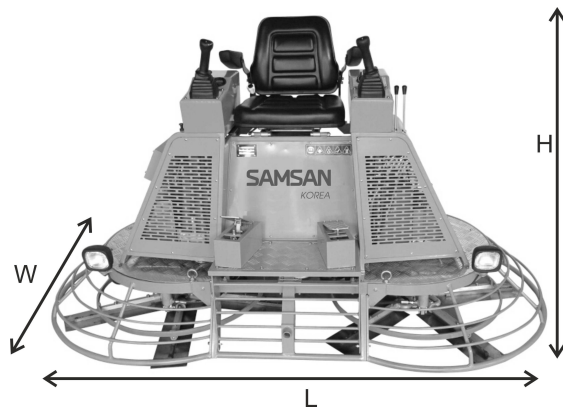
<b>SYMPTOM</b>	<b>POSSIBLE CAUSES</b>	<b>SOLUTION</b>
Engine does not start.	Engine problem.	Consult engine manufacturer's service manual.
Machine out of balance; wobbling excessively.	Operator is over-steering.	The movement of each gearbox is controlled by "stops" to provide the correct relationship of the control arm movement to machine movement. Excessive pressure on control arms in any direction will not increase reaction time and can damage steering controls causing machine to wobble.
	Trowel arm(s) bent.	Replace trowel arms(s).
	Trowel blade(s) bent.	Replace trowel blade(s).
Machine does not move.	Main shaft(s) bent due to machine being dropped.	Replace main shaft(s).
	Drive belt broken.	Replace drive belt.
	Vacuum between bottom of blades and surface of concrete.	Change pitch on blades to break suction.
Trowel noisy.	Key sheared in the main shaft.	Replace damaged key.
	Trowel blades have become misaligned and are contacting each other during rotation.	Replace damaged blades. Align blades so that one set represents a (+) and the other an (x) when viewed from above.
	Sheared key.	Check all keys in drive system.
	Loose clutch.	Tighten clutch.



#### 4. TECHNICAL DATA

Model	HRT461	
Engine type	Kohler CH940	
Power	kw(hp)	25.4/34
Operating weight	kg(lb)	546(1205)
Blade speed	rpm	75-150
Working Dia.	mm	2320
Blade pitch (range)	degree	0-15
Overlapping	type	Non-overlapping
Gearbox Lubrication	type/ml	Glygoyle / 1300
Fuel Tank Capacity	L	20
Water Tank Capacity	L	10

**Working Size (L x W x H):** 2400mm x 1260mm x 1170mm



#### Sound Specification

The required sound specification:

The sound pressure level at operator's location (LpA): 91 dB(A)

The guaranteed sound power level (LWA): 110 dB(A)

These sound values were determined according to ISO 3744 for the sound power level (LWA) and ISO 11204 for the sound pressure level (LpA) at the operator's location.

#### Vibration Specification

The weighted effective acceleration value, determined according to ISO 2361-1 and ISO 5349, is:

for **whole body**: 1.90 m/s<sup>2</sup>

for **hand arm**: 3.91 m/s<sup>2</sup>

The sound and vibration specifications were obtained with the unit operating on fully cured, water wetted concrete at nominal engine.