

OPERATION AND PARTS MANUAL



WHITEMAN

JA-SERIES WALK-BEHIND TROWEL

MODEL # _____

SERIAL # _____

Revision #6 (11/14/05)



MULTIQUIP INC.

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Montreal, Canada • Manchester, UK
Rio De Janiero, Brazil • Guadalajara, Mexico



WARNING



CALIFORNIA — Proposition 65 Warning

Engine exhaust and some of its constituents, and some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks.
- Cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: **ALWAYS** work in a well ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.

HERE'S HOW TO GET HELP

*PLEASE HAVE THE MODEL AND SERIAL NUMBER
ON-HAND WHEN CALLING*

PARTS DEPARTMENT

800-427-1244 or 310-537-3700

FAX: 800-672-7877 or 310-637-3284

SERVICE DEPARTMENT/TECHNICAL ASSISTANCE

800-478-1244 or 310-537-3700

FAX: 310- 537-4259

WARRANTY DEPARTMENT

888-661-4279, or 310-661-4279

FAX: 310- 537-1173

MAIN

800-421-1244 or 310-537-3700

FAX: 310-537-3927

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MQ WHITEMAN — JA-SERIES TROWEL

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NOTE

*Specification and part number
are subject to change without
notice.*

JA-SERIES TROWEL— PARTS ORDERING PROCEDURES

- Dealer account number
- Dealer name and address
- Shipping address (if different than billing address)
- Return fax number
- Applicable model number
- Quantity, part number and description of each part
- Specify preferred method of shipment:
 - UPS Ground
 - UPS Second Day or Third Day*
 - UPS Next Day*
 - Federal Express Priority One (please provide us with your Federal Express account number)*
 - Airborne Express*
 - Truck or parcel post

**Normally shipped the same day the order is received, if prior to 2PM west coast time.*

Earn Extra Discounts when you order by FAX!

All parts orders which include complete part numbers and are received by fax qualify for the following extra discounts:

<u>Number of line items ordered</u>	<u>Additional Discount</u>
1-9 items	3%
10+ items**	5%

Get special freight allowances when you order 10 or more line items via FAX!**

- UPS Ground Service at no charge for freight
- UPS Third Day Service at one-half of actual freight cost

No other allowances on freight shipped by any other carrier.

**Common nuts, bolts and washers (all items under \$1.00 list price) do not count towards the 10+ line items.

DISCOUNTS ARE SUBJECT TO CHANGE

Fax order discount and UPS special programs revised June 1, 1995

**Extra Fax Discount
for Domestic USA
Dealers Only**

**Up to 5%
extra savings!**

**UPS
Special**
For faxed orders only

**Now! Direct TOLL-FREE access
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JA-SERIES TROWEL— TRAINING CHECKLIST

TRAINING CHECKLIST

This checklist will lists some of the minimum requirements for machine maintenance and operation. Please feel free to detach it and make copies. Use this checklist whenever a new operator is to be trained or it can be used as a review for more experienced operator's.

TRAINING CHECKLIST			
NO.	DESCRIPTION	OK?	DATE
1	Read Operator's Manual completely.		
2	Machine layout, location of components, checking of engine and gearbox fluid level.		
3	Fuel system, refueling procedure		
4	Operation of controls (machine not running).		
5	Safety controls, kill switch operation.		
6	Emergency stop procedures.		
7	Startup of machine.		
8	Maneuvering		
9	Pitching		
10	Concrete finishing techniques.		
11	Shutdown of machine.		
12	Lifting of machine (optional equipment).		
13	Machine transport and storage.		

Operator _____ Trainee _____

COMMENTS:

JA-SERIES TROWEL— DAILY PRE-OPERATION CHECKLIST

DAILY PRE-OPERATION CHECKLIST

DAILY PRE-OPERATION CHECKLIST	
1	Engine Oil Level.
2	Gearbox Fluid Level.
3	Condition of Blades.
4	Blade Pitch Operation.
5	Safety Kill Switch Operation.
6	Clutch Operation

COMMENTS:

JA-SERIES TROWEL— SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the Safety Messages and Operating Instructions could result in injury to yourself and others.

NOTE

This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the MQ Whiteman JA-SERIES TROWEL. For engine maintenance information, please refer to the engine manufacturers instructions for data relative to its safe operation.

Before using this WALK-BEHIND TROWEL, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

The three (3) Safety Messages shown below will inform you about potential hazards that could injure you or others. The Safety Messages specifically address the level of exposure to the operator, and are preceded by one of three words: **DANGER**, **WARNING**, or **CAUTION**.



DANGER: You **WILL** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.



WARNING: You **CAN** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.



CAUTION: You **CAN** be injured if you **DO NOT** follow directions.

Potential hazards associated with JA-Series trowel operation will be referenced with "**Hazard Symbols**" which appear throughout this manual, and will be referenced in conjunction with Safety "**Message Alert Symbols**".

HAZARD SYMBOLS



Lethal Exhaust Gases



Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.



Explosive Fuel



Gasoline is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids. **DO NOT** fill the fuel tank while the engine is running or hot. **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system. Store fuel in approved containers, in well-ventilated areas and away from sparks and flames. **NEVER** use fuel as a cleaning agent.



Burn Hazards



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operations. **NEVER** operate the engine with heat shields or heat guards removed.



Rotating Parts



NEVER operate equipment with covers, or guards removed. Keep fingers, **hands**, **hair** and **clothing** away from all moving parts to prevent injury.

JA-SERIES TROWEL— SAFETY MESSAGE ALERT SYMBOLS



Accidental Starting



OFF **ALWAYS** place the engine ON/OFF switch in the **OFF** position, when the trowel is not in use.



Respiratory Hazard



ALWAYS wear approved respiratory protection.



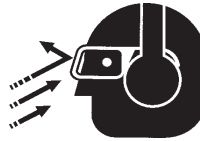
Over Speed Conditions



NEVER tamper with the factory settings of the engine governor or settings. Personal injury and damage to the engine or equipment can result if operating in speed ranges above maximum allowable.



Sight and Hearing hazard



ALWAYS wear approved eye and hearing protection.

NOTE

This *walk-behind trowel*, other property, or the surrounding environment could be damaged if you do not follow instructions.



Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your trowel, other property, or the surrounding environment.

JA-SERIES TROWEL— RULES FOR SAFE OPERATION

CAUTION:



Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the JA-Series walk-behind trowel.

SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual.



- This equipment should not be operated by persons under 18 years of age.
- **NEVER** operate the trowel without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.

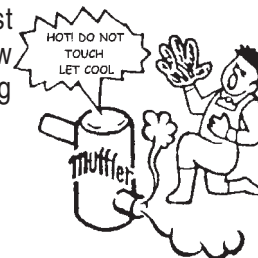


- **NEVER** operate the trowel under the influence of drugs or alcohol.



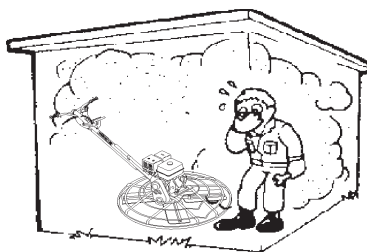
- **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- Manufacture does not assume responsibility for any accident due to equipment modifications.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- **ALWAYS** check the trowel for loosened threads or bolts before starting.

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing the trowel.



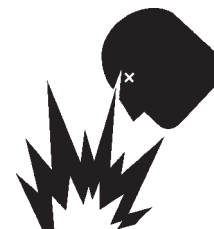
- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with **hot!** components can cause serious burns.

- The engine of this trowel requires an adequate free flow of cooling air. **NEVER** operate the trowel (except electric models) in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the trowel's engine and may cause injury to people. Remember the trowel's engine gives off **DEADLY** carbon monoxide gas.



- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.

- **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool.



- **NEVER** smoke around or near the machine. Fire or explosion could result from **fuel vapors**, or if fuel is spilled on a **hot!** engine.



- **NEVER** operate the trowel in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.

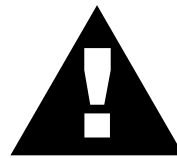
- Topping-off to filler port is dangerous, as it tends to spill fuel.

JA-SERIES TROWEL— RULES FOR SAFE OPERATION

- **DO NOT** operate this trowel unless all guards and safety devices are attached and in place. See Pages 16 and 17.
- **ALWAYS** use proper lifting techniques when moving the trowel.
- **ALWAYS** check to make sure that the operating area is clear before starting the engine.
- **ALWAYS** test the safety *kill switch* devices before operating the trowel.
- **NEVER** place your *feet* or *hands* inside the guard rings while starting or operating this equipment.
- **AVOID** wearing jewelry or loose fitting clothing that may snag on the controls or moving parts, this can cause a serious injury.
- **ALWAYS** keep clear of *rotating* or *moving parts* while operating the trowel.
- **NEVER** leave the machine *unattended* while running.
- **Moving Parts** – Shut down the engine before performing service or maintenance functions. Contact with moving parts can cause serious injury.
- Keep the trowel in proper running condition.
- Make sure that there is no buildup of concrete, grease, oil or debris on the trowel.
- Fix damage to the trowel immediately and always replace broken parts.
- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used *motor oil*, *fuel* and *fuel filters*.
- **High Temperatures** – Allow the machine and engine to *cool* before adding fuel or performing service and maintenance functions. Contact with *hot!* components can cause serious burns.

CAUTION

Emergencies



- **ALWAYS** know the location of the nearest *fire extinguisher* and *first aid kit*. Know the location of the nearest telephone. Also know the phone numbers of the nearest *ambulance*, *doctor* and *fire department*. This information will be invaluable in the case of an *emergency*.

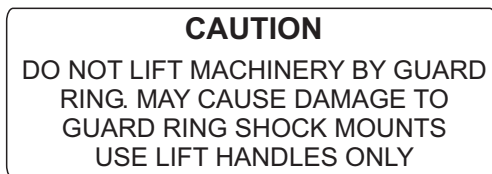
Maintenance Safety

- Disconnect the spark plug wires before attempting any type of service.
- Securely support any machine components that must be raised.
- **NEVER** lubricate components or attempt service on a running machine.
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour *waste*, *oil* or *fuel* directly onto the ground, down a drain or into any water source.

JA-SERIES TROWEL— OPERATION AND SAFETY DECALS

Machine Safety Decals

The JA-Series walk-behind trowel is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. Figure 1 below illustrates these decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.



P/N 1261



P/N 20526



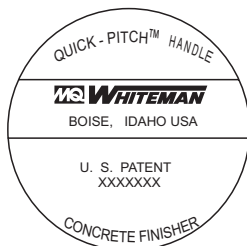
P/N 1940



P/N 20527



P/N 1736



P/N 1758



P/N 12405



P/N 1492



P/N 1848



P/N 1735



P/N 2938



P/N1499

	Symbol indicates that it is mandatory to wear safety glasses, safety helmet and ear protection. P/N 11247 (Part of decal kit 12620)		CONTACT MULTIQUIP SERVICE DEPT.
	Symbol indicates that it is mandatory to wear gloves. P/N 11247 (Part of decal kit 12620)		Symbol indicates that it is mandatory to wear safety shoes, with extra protection (steel toed). P/N 11247 (Part of decal kit 12620)
	Radiating heat symbol. Symbol indicates equipment is hot. P/N 11246 (Part of decal kit 12620)		This is the symbol for belt drive. P/N 11246 (Part of decal kit 12620)
	Symbol for examining or checking of the machine. Mostly used for maintenance. Check lubrication oil in gearbox. P/N 11246 (Part of decal kit 12620)		This is the symbol for gear drive. P/N 11246 (Part of decal kit 12620)

Figure 1. JA-Series Trowel Decals

JA-SERIES TROWEL— SPECIFICATIONS (TROWEL)

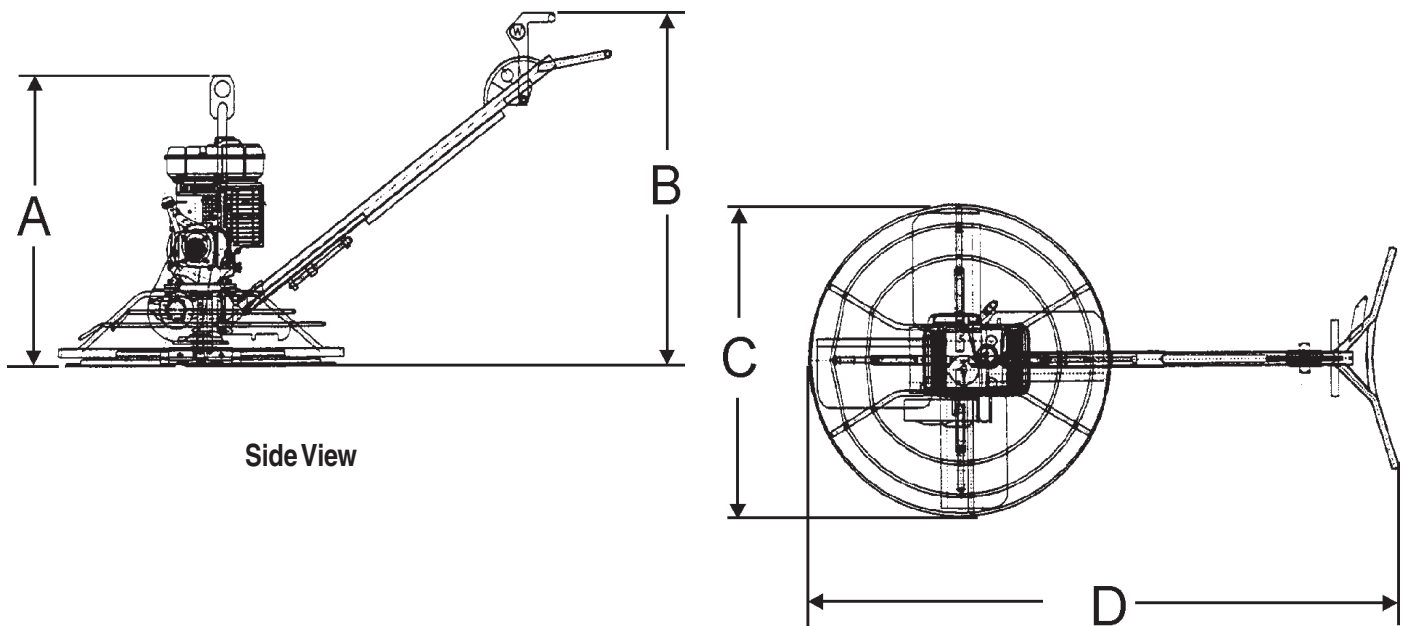


Figure 2. JA-Series Trowel Dimensions

Table 1. JA-Series Trowel Specifications	
A- Height (Lifting Hook)	36.7 in (931.6 mm)
B- Height Engagement Lever)	41.4 in (1,044.2 mm)
C-Width	36.5 (927.1 mm)
D-Length	70.5 (1,789.4 mm)
Weight – Operating	see Table 3.
Sound Pressure	94 db
Vibration	2.0g (19.6 m/s ²)
Ring Diameter	36.5 in (92.7 cm)
Number of Blades	3 or 4
Blade Tip Speed – FPM (m/s)	1,182 fpm (6.0 m/s)
Rotor – RPM (max.)	129 rpm @ 4000

NOTE:

1. Sound pressure is a weighted measure. Measured at the operators ear position while the walk-behind trowel is operating at full throttle on concrete in a manner most often experienced in “*normal*” circumstances. Sound pressure may vary depending upon the condition of the concrete. Hearing protection is always recommended.
2. The vibration level indicated is the maximum RMS (Root Mean Square) value obtained at the handle grip while operating the walk-behind trowel on curing concrete in a manner most often experienced in “*normal*” circumstances. Values were obtained from all three axes of motion. The values shown represent the maximum RMS value from these measurements.

JA-SERIES TROWEL— SPECIFICATIONS (ENGINES)

Table 2. Specifications (Engines)

	Model	HONDA GX160K1QA2	ROBIN EH17-2	BRIGGS & STRATTON INTEK I/C 1114000
Engine	Type	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine
	Bore X Stroke	2.7 in. X 1.8 in. (68 mm x 45 mm)	2.64 in. x 1.93 in. (67 mm x 49 mm)	2.69 in. x 2.04 in. (68.3 mm x 51.8 mm)
	Displacement	9.9 cu. in. (163 cc)	10.50 cu. in. (172 cc)	11.57 cu. in. (190 cc)
	Max Output	5.5 H.P./4000 rpm	6.0 H.P./4000 rpm	5.5 H.P./4000 R.P.M
	Fuel Tank Capacity	0.95 U.S. Gallons (3.6 Liters)	0.95 U.S. Gallons (3.6 Liters)	0.75 U.S. Gallons (2.84 Liters)
	Fuel	Unleaded Automobile Gasoline	Unleaded Automobile Gasoline	Unleaded Automobile Gasoline
	Lube Oil Capacity	0.63 qt. (0.6 liter)	0.68 qt. (0.65 liter)	0.63 qt. (0.6 liter)
	Speed Control Method	Centrifugal Fly-weight Type	Centrifugal Fly-weight Type	Centrifugal Fly-weight Type
	Starting Method	Recoil Start	Recoil Start	Recoil Start
Dimension (L x W x H)	12.3 x 14.3 X 13.2 in. (312 X 362 X 335 mm)	12.09 x 13.98 X 14.96 in. (307 X 355 X 380 mm)	15.56 x 10.01 X 15.19 in. (395 X 254 X 386 mm)	
Dry Net Weight	40.8 lbs (15.0 Kg.)	35.3 lbs (16 Kg.)	31.25 lbs (14.17 Kg.)	

Table 3. Specifications (Trowel Weights)

MODEL	POWER SOURCE	OPERATING WEIGHT	SHIPPING WEIGHT
JA-45-H	5.5 HP Honda	154 lbs. (70 kg.)	194 lbs. (88 kg.)
JA-45-BS	5.5 HP Briggs and Stratton	145 lbs. (65.8 kg.)	187 lbs. (84.8 kg.)
JA-46-R	6 HP Robin	151 lbs. (68.5 kg.)	192 lbs. (87 kg.)
JA-46-RM	6 HP Robin, Manual Clutch	151 lbs. (68.5 kg.)	192 lbs. (87 kg.)
JA-45-HM	5.5 HP Honda, Manual Clutch	154 lbs. (70 kg.)	194 lbs. (88 kg.)

JA-SERIES TROWEL— GENERAL INFORMATION

JA-Series Walk-Behind Trowel Familiarization

This walk-behind trowel is designed for the **floating** and **finishing** of concrete slabs.

Take a walk around the trowel. Take notice of all the major components (see Figure 3, pages 16 and 17) like the engine, blades, quick pitch control, air cleaner, centrifugal stop switch etc. Check that there is always oil in the engine.

Read all the safety instructions carefully. Safety instructions will be found throughout this manual and on the trowel. Keep all safety information in good, readable condition. Operators should be well trained on the operation and maintenance of the trowel.

Before using your trowel, test it on a flat watered down section of finished concrete that is free of any debris and other objects.

This trial test run will increase your confidence in using the trowel and at the same time it will familiarize you with the trowel's controls. In addition you will understand how the trowel handles under actual conditions.

Engines

This trowel is available with either an 5.5 HP **HONDA**, 6 HP **ROBIN**, or a 5.5 HP **Briggs and Stratton** gasoline engine. Refer to the engine owner's manual for instructions regarding the operation and maintenance of your engine. The engine manual is included with your trowel at the time of shipping from Whiteman. Please contact your nearest Multiquip Dealer for a replacement should the original manual disappear or become unusable.

Drive System

Power is transferred from the engine or electric motor to the gearbox input shaft via a V-belt or pulley drive system. The pulley engages using either a centrifugal or manual clutch. See page 23.

Gearbox

The **gearbox** is located beneath the engine and transfers power to the **rotor** or **spider** assembly. The gearbox controls the rotational speed of the trowel and is equipped with two shafts (input and output).

Spider

The vertical output shaft of the gearbox connects to a cast hub called the **spider**. The spider has either 3 or 4 arms that extend outward that are used for attachment of blades or other accessories. Remember as the gearbox output shaft rotates so does the spider assembly.

Blades

The blades of the trowel finish the concrete as they are rotated around the surface. Blades are classified as **combination** (8 inches wide), **float** (10 or 8 inches wide), and **finish** (6 inches wide). This trowel comes equipped with either **three** or four **blades** per rotor equally spaced in a radial pattern and attached to vertical rotating shaft by means of a **spider assembly**.

Centrifugal Stop Switch

In the event of a trowel runaway condition (operator releases the handle), a **centrifugal stop switch**, or **manual clutch** depending which trowel you have, will stop the engine and bring the trowel to a halt.

CAUTION



NEVER attempt to **lift** the trowel by yourself. **ALWAYS** get the assistance of another person to help lift the trowel or use a crane or lifting device to move the trowel.

Moving the JA-Series Walk-Behind Trowel

This walk-behind trowel is designed to be moved and handled in several ways. The easiest way to lift the trowel is to use the **auxiliary lifting tube** that is attached to the main handle. See page 24, Figure 21. When using the auxiliary tube, always use **two persons** to lift the trowel.

Some models have a **lifting bale** (option) installed. A strap or chain can be attached to the lifting bale, allowing a forklift or crane to lift the trowel up onto a slab of concrete. Use a lifting device of adequate lifting capacity to lift the trowel.

Training

For proper training, please use the "**TRAINING CHECKLIST**" located in the front of this manual (Page 6). This checklist will provide an outline for an experienced operator to provide training to a new operator.

JA-SERIES TROWEL— CONTROLS AND COMPONENTS

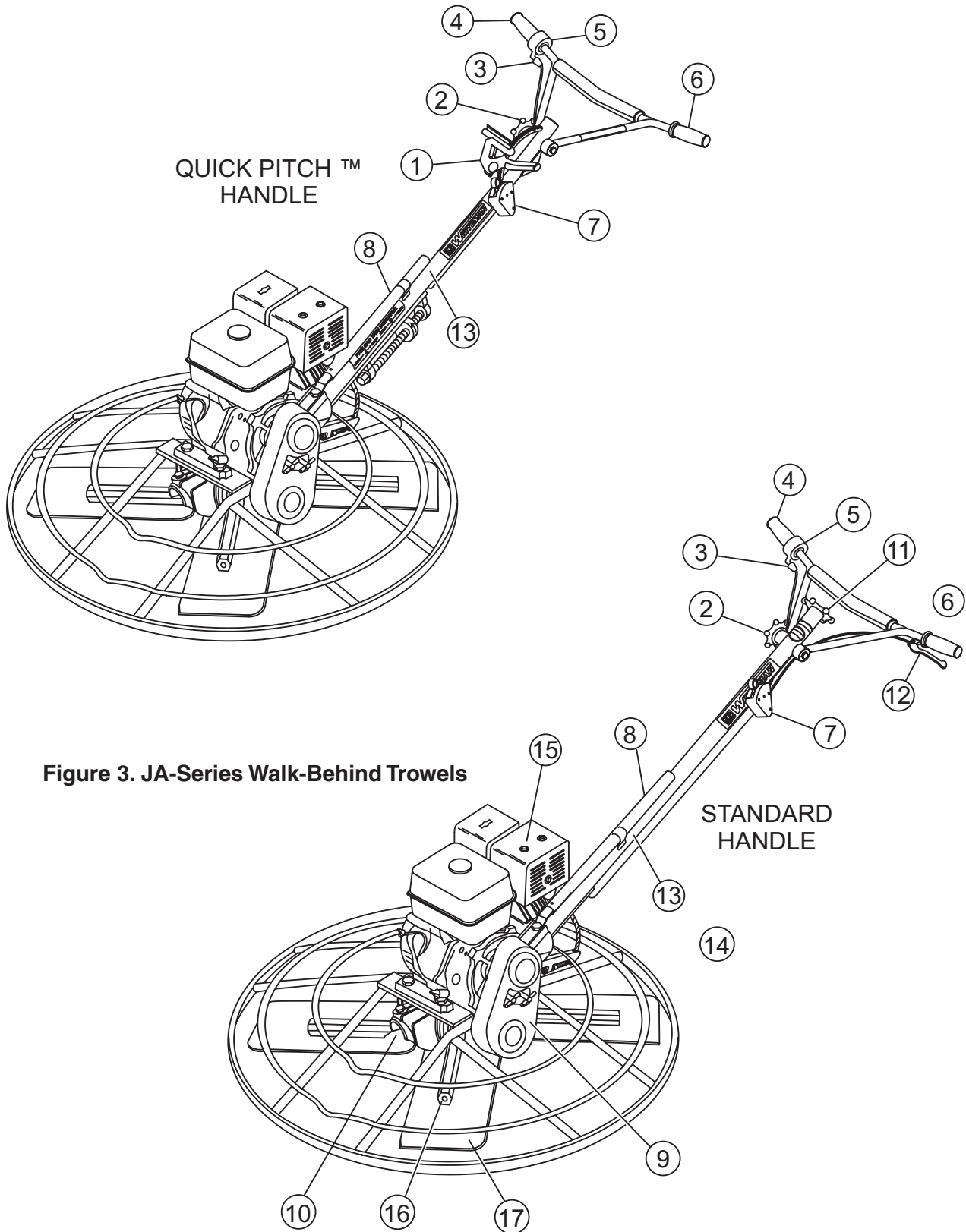


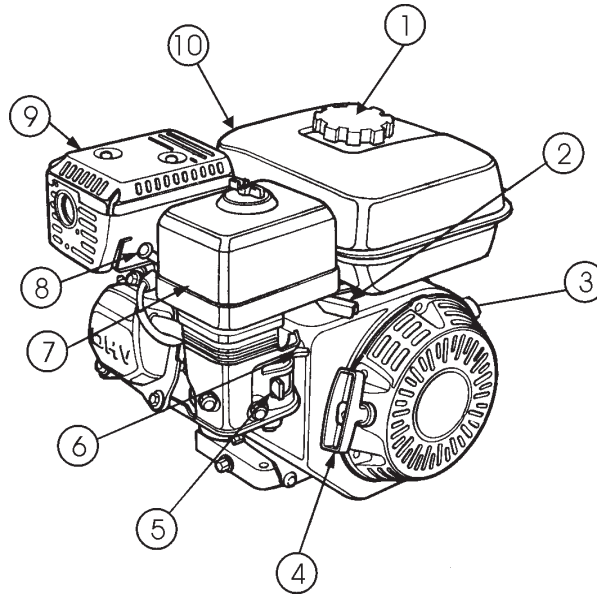
Figure 3. JA-Series Walk-Behind Trowels

JA-SERIES TROWEL— CONTROLS AND COMPONENTS

Figure 3 shows the location of the Basic controls or components, for the JA-Series trowel. Listed below is a brief explanation of each control or component

1. **Quick Pitch™ Control Handle** – To adjust the pitch of the blades, grasp the handle then squeeze and either move the handle forward or backward to achieve the desired blade pitch.
2. **Handlebar Adjuster** – Change the angle/height of the handle bars by loosening star wheel, adjust handlebars to desired location, tighten starwheel firmly to hold handlebars in that position.
3. **Hand Grip/Handlebar** – When operating the trowel, place both hands on each grip to maneuver the trowel. Replace hand grips when they become worn or damaged.
4. **Throttle Control Grip** – Controls the speed of the engine. Rotate the hand grip away from the operator to increase engine speed (high), toward the operator to decrease engine speed (low).
5. **Throttle** – Controls engine speed when throttle control grip is rotated.
6. **Hand Grip/Handlebar** – When operating the trowel, place both hands on each grip to maneuver the trowel. Replace hand grips when they become worn or damaged.
7. **Centrifugal Kill Switch** – In the event the operator loses control of the trowel, this switch will shut-down the engine.
8. **Auxiliary Lifting Tube** - Use this tube to lift the trowel onto a slab. Tube is to be inserted into socket located in front of the gearbox.
9. **V-Belt Cover** – Remove this cover to gain access to the V-belt. **NEVER** operate the trowel with this cover removed.
10. **Trowel Lifting Point** – Insert the auxiliary lifting tube here. See Figure 21.
11. **Pitch Control (standard models)** - Turn this "Star Wheel" clockwise for increase blade pitch, and counter-clockwise for decrease blade pitch.
12. **Clutch Lever** - Clutch engagement lever. When this lever is engaged, the blades will begin to rotate. May be used with either Quick Pitch™ or Standard handle.
13. **Main Tube** - When disassembling components inside the tube exercise extreme **CAUTION!** Tube is spring-loaded, severe injury could result if not disassembled correctly.
14. **Guard Ring- NEVER** put hands or feet inside guard ring.
15. **Engine** – This trowel uses Honda, Robin and Briggs and Stratton type gasoline engines.
16. **Trowel Arm** – **NEVER** operate the trowel with a bent, broken or out of adjustment trowel arm. If the blades show uneven wear patterns or some blades wear out faster than others, the trowel arm may need to be adjusted. Use the trowel arm adjustment tool P/N 1817 to adjust the trowel arms.
17. **Blades** – This trowel is equipped with combination blades. These blades are versatile and should take care of most troweling needs. In addition float discs can be attached to the trowel arms that will allow the trowel to float on "wet" concrete.

JA-SERIES TROWEL— JASIC ENGINE



HONDA engine shown.

Figure 4. Engine Controls and Components

INITIAL SERVICING

The engine (Figure 4) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's engine manual for instructions & details of operation and servicing. The engine shown above is a **HONDA** engine, operation for other types of engines may vary somewhat.

1. **Fuel Filler Cap** – Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.



DANGER

Adding fuel to the tank should be done only when the engine is stopped and has had an opportunity to cool down. 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.

2. **Throttle Lever** – Used to adjust engine RPM speed (lever advanced forward **SLOW**, lever back toward operator **FAST**).
3. **Engine ON/OFF Switch** – ON position permits engine starting, OFF position stops engine operations.
4. **Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

5. **Fuel Valve Lever** – **OPEN** to let fuel flow, **CLOSE** to stop the flow of fuel.
6. **Choke Lever** – Used in the starting of a cold engine, or in cold weather conditions. The choke enriches the fuel mixture.
7. **Air Cleaner** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter canister to gain access to filter element.

NOTE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

8. **Spark Plug** – Provides spark to the ignition system. Set spark plug gap to 0.6 - 0.7 mm (0.028 - 0.031 inch) Clean spark plug once a week.
9. **Muffler** – Used to reduce noise and emissions.



WARNING

Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

10. **Fuel Tank** – Holds unleaded gasoline. For additional information refer to engine owner's manual.

JA-SERIES TROWEL — ASSEMBLY AND INSTALLATION

Assembly and Installation

Before the trowel can be put into operation there are some components that must be installed before the trowel can be used. This section provided general instructions on how to install those components. Instruction sheet P/N 20485 provides further details for the handle assembly.

Handle Tube Installation (All Models)

1. Install the **handle tube** to the gearbox as shown in (Figure 5). The mounting hardware should be contained in the shipping container.

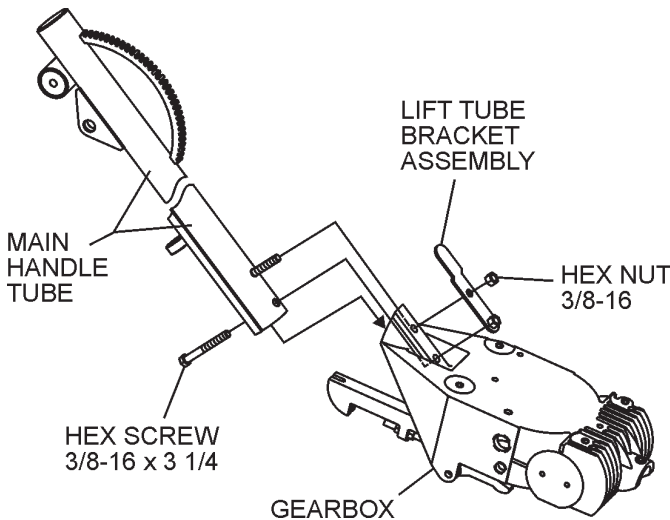


Figure 5. Handle Tube Installation

2. On Quick-Pitch™ models, pivot the **T-handle** back (full pitch) (Figure 6). This will relax the spring inside the handle tube. On either model, spread the handle bar ends just enough to engage the teeth on the handle tube. Attach the hand wheel assembly, position handlebar to desired location, and tighten hand wheel firmly.

CAUTION



The Quick-Pitch™ handle is spring loaded, personal injury or damage could result from improper handling or installation. Be careful when installing this component.

NOTE

Considerable force may be required when moving the Quick-Pitch™ **T-handle** forward or backward.

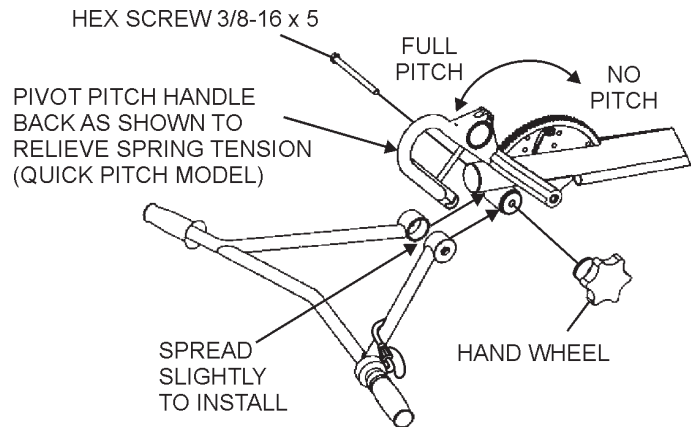


Figure 6. Handlebar Installation

Throttle Cable Installation (Honda and Robin Engines)

1. Set the **throttle** (Figure 7) to the idle position by rotating the grip toward the operator and away from the engine.

IDLE POSITION -
DECREASE THROTTLE

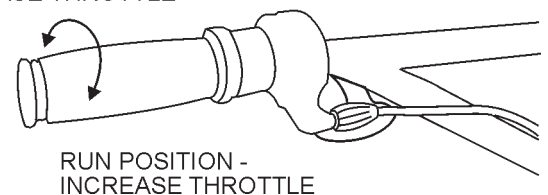


Figure 7. Throttle

2. Feed the throttle cable through the cable housing. Make sure the throttle indicator is on 1".
3. Connect the throttle cable to the engine. (Figure 8), **Honda** and (Figure 9), **Robin**. There should be a piece of wire installed on the trowel to show where to route the throttle cable. When connecting the cable housing, make sure that no more than **1/4" (6.4mm)** of the cable housing protrudes past the housing clamp on the engine.

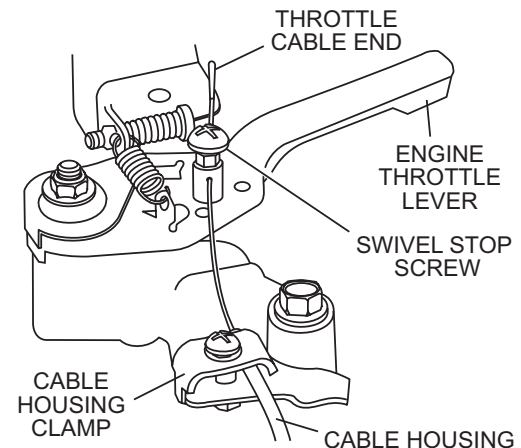


Figure 8. Throttle Cable Connection (HONDA)

JA-SERIES TROWEL — ASSEMBLY AND INSTALLATION

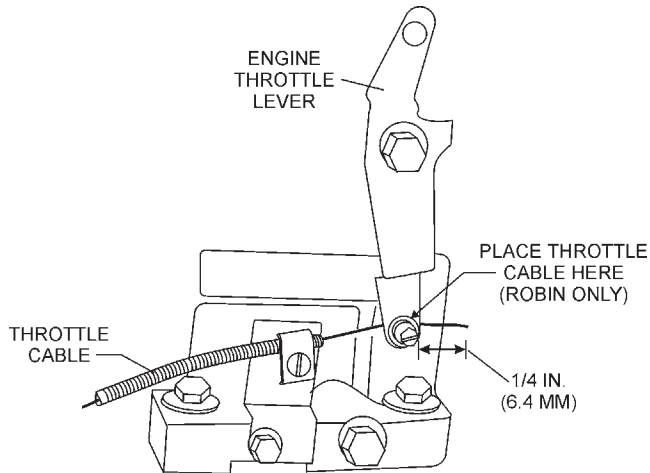


Figure 9. Throttle Cable Connection (ROBIN)

4. Tighten cable clamp screw and swivel stop screw.
5. After the cable has been installed on the engine, adjust and tighten operator position of the handle to lock the throttle cable at the proper length.
6. Adjust cable tension by rotating the barrel adjuster. (Figure 10)

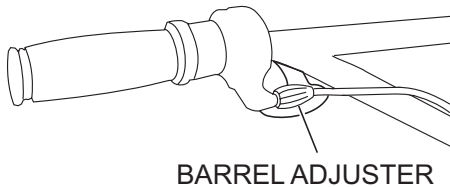


Figure 10. Barrel Adjuster

7. These are general instructions. Installation of the throttle cable may vary for different engine configurations. Please look for more detailed instructions inside the box containing the handle. These more detailed instructions should provide adequate guidance for installing.

Handle Height Adjustment

If handle height adjustment is desired, a handle wedge kit can be purchased for your trowel by ordering P/N 2576 from your Multiquip dealer. These wedges are placed between the handle and the gearbox to adjust the operating height of the handle. This kit comes complete with wedges, new bolts and installation instructions. This will move your operating handle position up or down approximately 3" (76mm).

Safety Kill Wire

Locate the **RED** wire protruding from the handle tube (Figure 11) and connect it to the **RED** tail wire on the engine. Test the kill switch to insure proper operation.

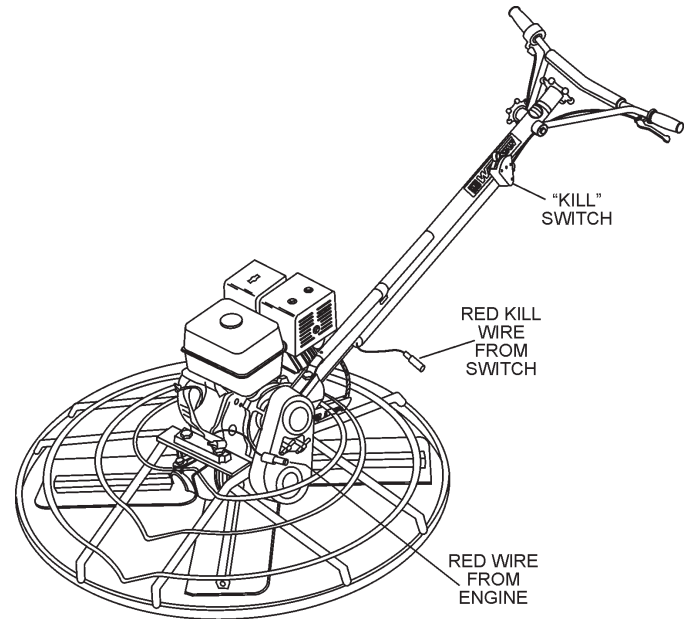


Figure 11. Engine Kill Wire Connection

Pitch Cable Installation

1. Expose the pitch cable to maximum by adjusting the handle pitch to the "no pitch" position. On the standard model turn the pitch control counter-clockwise, (Figure 12). On the Quick-Pitch™ model, pivot the pitch handle forward or no pitch, (Figure 13).

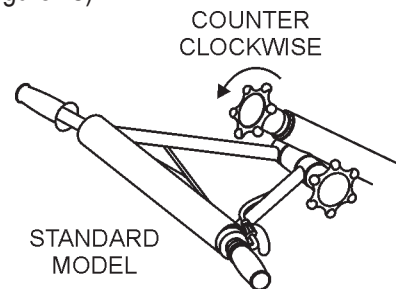


Figure 12. "No Pitch" Position (Standard)

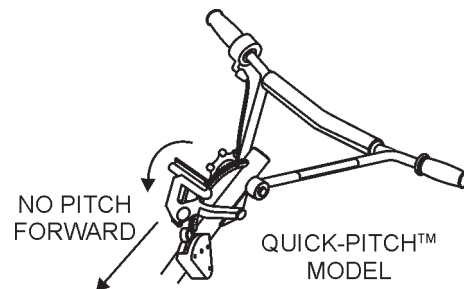


Figure 13. "No Pitch" Position (Quick-Pitch™)

JA-SERIES TROWEL — ASSEMBLY AND INSTALLATION

2. Lock the spring in the compressed position, by releasing the blade pitch adjustment trigger, (Quick-Pitch™ model).
3. Remove one brass set nut from the blade pitch cable end as shown in (Figure 14).
4. Thread the second brass set nut towards the cable as far as possible.

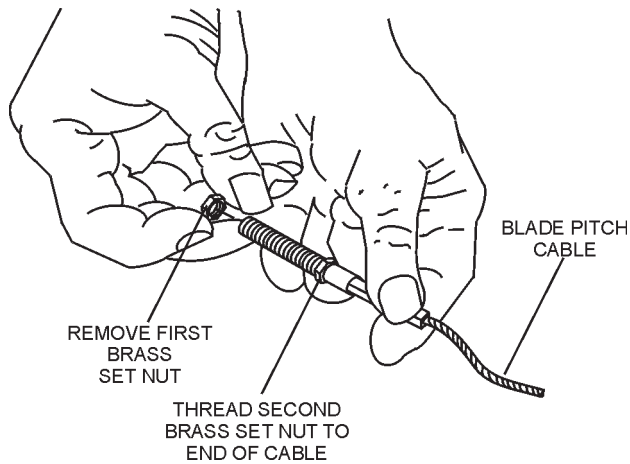


Figure 14. Blade Pitch Cable

5. Insert the cable end through the yoke eyelet (Figure 15). Tighten the first brass set nut by hand to remove all the slack from the cable.
6. Using a wrench, tighten the second brass set nut up against the yoke boss. This will lock the cable in place.
7. Use a wrench and finish tightening the first brass set nut up against the yoke boss.

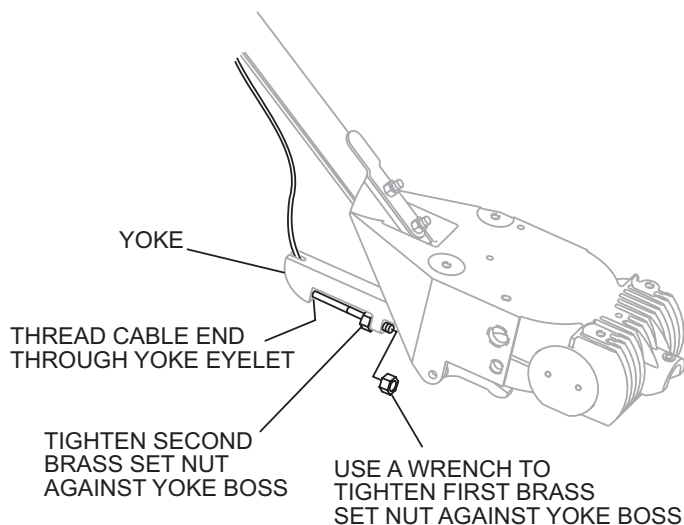


Figure 15. Cable Yoke Attachment

Pre-load Adjustment (Quick-Pitch™ Models Only)

1. After the Quick-Pitch™ handle has been installed on the trowel, spring pre-load adjustment will be required.
2. Locate the adjustment screw on the underside of the handle tube (Figure 16).

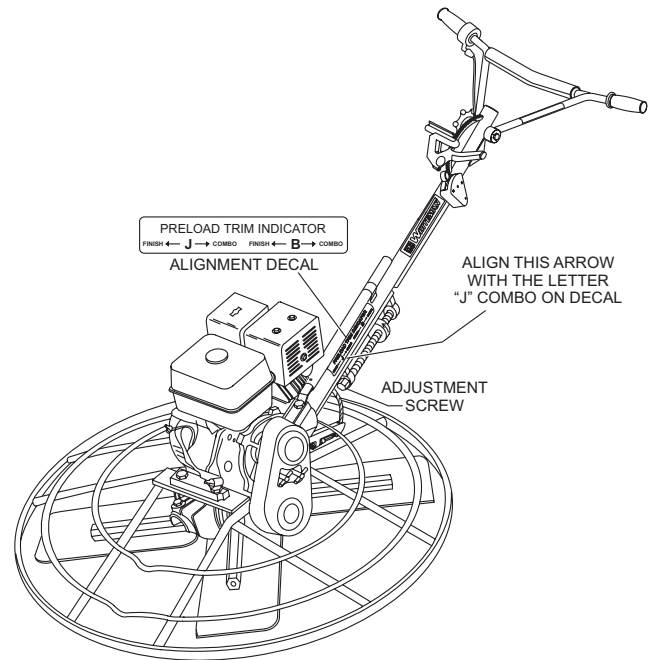


Figure 16. Pre-load Adjustment

3. A **decal** has been placed on the side of the handle tube to assist the user in the adjustment of the spring.
4. Align the **arrow** on the adjustment screw with the letter "**J**" **COMBO** on the **decal**. The letter "**J**" stands for JA-Series Walk-Behind trowel.
5. Test the pitch control operation and adjust if necessary.

JA-SERIES TROWEL— PRE-INSPECTION

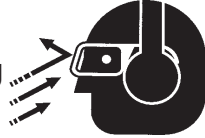
CAUTION



NEVER operate the trowel in a confined area or enclosed area structure that does not provide ample *free flow of air*.



ALWAYS wear approved eye and hearing protection before operating the trowel.



NEVER place hands or feet inside the guard rings while the engine is running. **ALWAYS** shut the engine down before performing any kind of maintenance service on the trowel.



It is recommended that the trowel's **kill switch** be used to stop the engine after every use. Doing this will verify that the switch is working properly and presents no danger to the operator.

Before Starting

1. Read safety instructions at the beginning of manual.
2. Clean the **trowel**, removing dirt and dust, particularly the engine cooling air inlet, carburetor and air cleaner.
3. Check the air filter for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.

Engine Oil Check

1. To check the engine oil level, place the trowel on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (Figure 17) and wipe it clean.

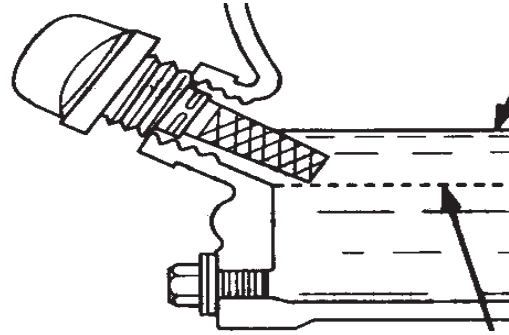


Figure 17. Engine Oil Dipstick (Removal)

3. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
4. If the oil level is low (Figure 18), fill to the edge of the oil filler hole with the recommended oil type (Table 4).

NOTE

Reference manufacturer engine manual for specific servicing instructions.

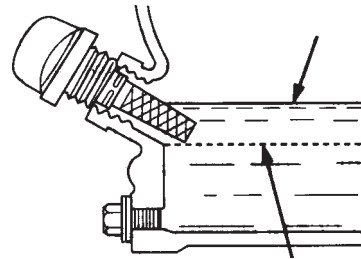


Figure 18. Engine Oil Dipstick (Oil Level)

Table 4. Oil Type

Season	Temperature	Oil Type
Summer	25°C or Higher	SAE 10W-30
Spring/Fall	25°C~10°C	SAE 10W-30/20
Winter	0°C or Lower	SAE 10W-10

JA-SERIES TROWEL— PRE-INSPECTION



Fuel Check

Motor fuels are highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the trowel if the engine is *hot!* or *running*.

1. Remove the gasoline cap located on top of fuel tank.
2. Visually inspect to see if fuel level is low. If fuel is low, replenish with unleaded fuel.
3. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. Wipe up any spilled fuel.

Gearbox Oil

1. Determine if the **gearbox** oil is low by removing the oil plug located on the side of the gearbox. This plug will be marked by the "**check**" decal. See (Figure 19). The correct level of the lubrication oil should be to the bottom of the fill plug.

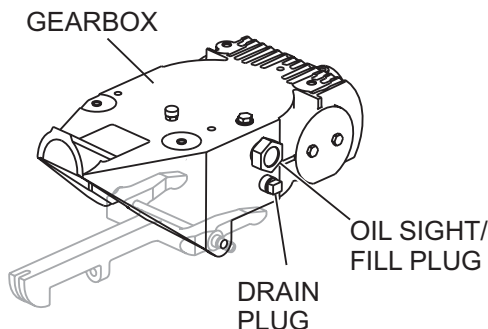


Figure 19. Gearbox

2. If oil does not reach the middle of the **sight glass** fill with type ISO 680 (Whiteman P/N 10139) gearbox lubricant oil until the oil level reaches the middle of the sight glass.

V-belt Check

A worn or damaged V-belt can adversely affect the performance of the trowel. If a V-belt is defective or worn, simply replace the V-belt as outlined in the maintenance section of this manual.

Blade Check

Check for worn or damaged blades. Check to see if one blade is worn out while the others look new. If this is the case there could be a blade pitch problem. Refer to the maintenance section of this manual for blade pitch adjustment procedure. Replace any worn blades.

CONTROLS

Safety Kill Switches

This trowel has been equipped with a safety kill switch or a hand operated clutch. Safety kill switches or hand clutches should be tested every time the engine is started.

NOTE

NEVER! disable or disconnect the kill switch. It is provided for operator safety. Injury may result if it is disabled, disconnected or improperly maintained.

Centrifugal Type Kill Switch

The switching mechanism of this switch (Figure 20) should operate freely and should **always** be kept in this condition. With the switch in the **OFF** position, the engine should not start or run. The purpose of this switch is to stop the engine in a runaway situation, (i.e. -the operator releasing the handle during operation).

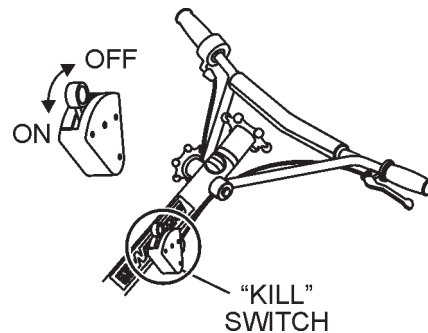


Figure 20. Centrifugal Kill Switch

Hand Clutch

Some finisher models are equipped with a **hand operated clutch**. These units are not equipped with a safety kill switch. The unit automatically stops rotating when the clutch lever is released.

DO NOT let the machine sit unused with the engine at high speed for an extended period of time. It will cause premature belt wear or may destroy the belt. Always set the engine speed to idle when the hand clutch is disengaged.

JA-SERIES TROWEL — INITIAL START-UP (GASOLINE ENGINE)

CAUTION



The trowel is **heavy** and **awkward** to move around. Use proper heavy lifting procedures and **DO NOT lift the trowel by the guard rings**.

Lifting the Trowel Onto a Slab.

Auxiliary Lifting Tube

Remove the auxiliary lifting tube located on top of the main handle. Insert the tube into the socket located on the opposite side of the gearbox (Figure 21) from the handle.

Make sure that the hole in the tube engages with the pin in the socket. With one person lifting from the main handle, and another lifting from the auxiliary lifting tube pick up the machine to move onto a slab.

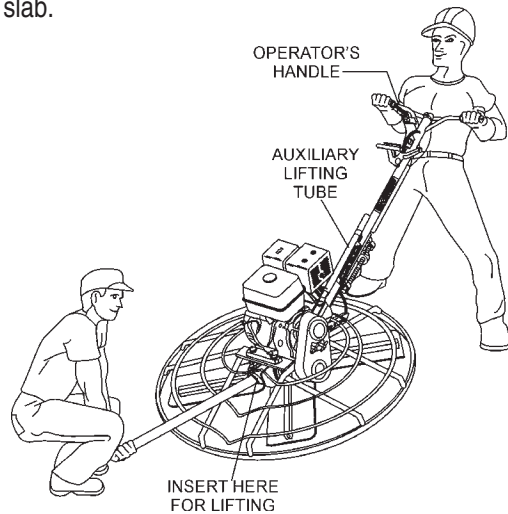


Figure 21. Lifting the Trowel

CAUTION



The trowel must be stabilized by the person carrying the **operator's handle** (Figure 21). If it is not stabilized properly the handle may swing around and **flip** the trowel, thus causing damage to the trowel and bodily injury.

Lifting Bale (Option)

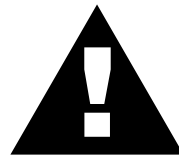
The lift bale is optional on new trowels. It provides an optimal lift point for moving the trowel. **Lift Bales** or **forklift** can be used to lift a trowel up onto a building with a crane. See "**Optional Equipment**" section in this manual for ordering information.

Using a **crane** to move a machine with a lift bale is highly recommended, and is perfectly safe for the machine. Extra care should be taken when lifting the machine off the ground, though. Serious damage to the machine or personal injury could be caused by dropping a trowel.

This section is intended to assist the operator with the initial start-up of the walk-behind trowel. It is extremely important that this section be read carefully before attempting to use the trowel in the field.

DO NOT use your trowel until this section is thoroughly understood.

CAUTION



DO NOT attempt to operate the trowel until the Safety, General Information and Inspection sections of this manual have been read and thoroughly understood. Depending on engine manufacturer, operating steps may vary. See engine manufacturer's operating manual.

Starting the Engine (HONDA engine)

1. Place the engine **fuel valve lever** (Figure 22) to the "ON" position.

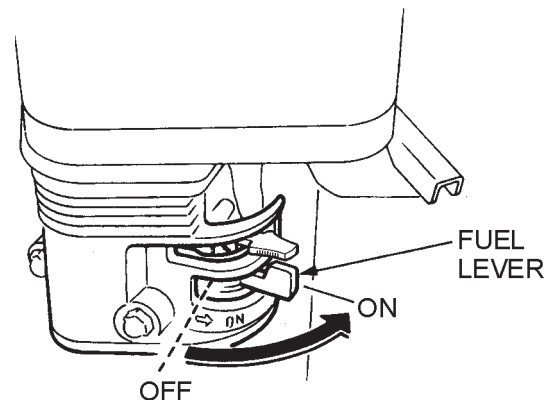


Figure 22. Engine Fuel Valve Lever

2. Rotate the throttle (Figure 23) toward the "RUN" position.

IDLE POSITION

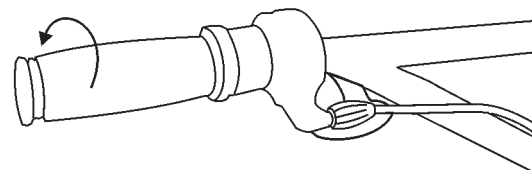


Figure 23. Throttle (Idle Position)

JA-SERIES TROWEL — INITIAL START-UP (GASOLINE ENGINE)

- Place the *centrifugal kill switch* (Figure 24) in the "ON" position. For models that use this feature.

CAUTION



NEVER disable or disconnect the centrifugal kill switch. It is provided for the operators' safety and injury may result if it is disabled, disconnected or improperly maintained.

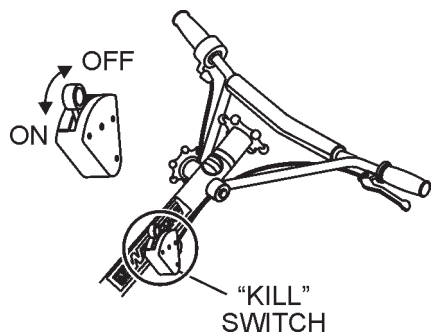


Figure 24. Centrifugal Kill Switch

- Place the *Choke Lever* (Figure 25) in the "OPEN" position

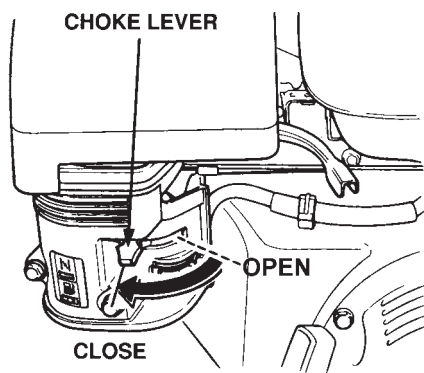


Figure 25. Engine Choke Lever

- Grasp the starter grip (Figure 26) and slowly pull it out. The resistance becomes the hardest at a certain position, corresponding to the compression point. Pull the starter grip briskly and smoothly for starting.

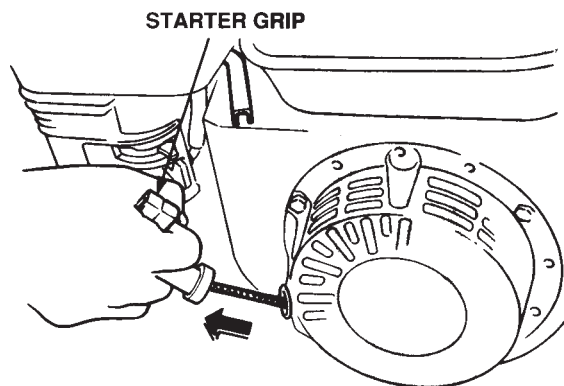


Figure 26. Starter Grip

- If the engine has started, slowly return the choke lever (Figure 25) to the **CLOSED** position. If the engine has not started repeat steps 1 through 5.
- Before the trowel is placed into operation, run the engine for several minutes. Check for fuel leaks, and noises that would associate with a loose guard ring and/or covers.
- To begin troweling, rotate the throttle (Figure 27) toward the "RUN" position.

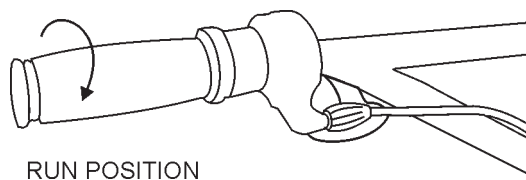


Figure 27. Throttle (Run Position)

JA-SERIES TROWEL — OPERATION

The following steps are intended as a basic guide to machine operation, and are not to be considered a complete guide to concrete finishing. We suggest that all operators (experienced and novice) read "*Slabs on Grade*" published by the **American Concrete Institute, Detroit, Michigan**. Read the "Training" section of this manual for more information.

Pitching The Blades

Quick Pitch Handle

1. To pitch the blades upwards using the "**Quick-Pitch™**" **T-handle**, (Figure 28) simply squeeze the trigger lock and pull the **T-handle** towards the operator. Pushing the **T-handle** towards the engine will cause the blades to lay flat.

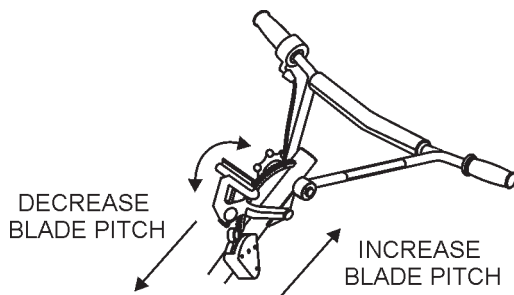


Figure 28. Quick-Pitch™ T-Handle

Standard Handle

1. To pitch the blades upwards using the "**Standard**" handle, (Figure 29) simply turn the **star-wheel** clockwise. Turning the star wheel counter clockwise will cause the blades to lay flat.

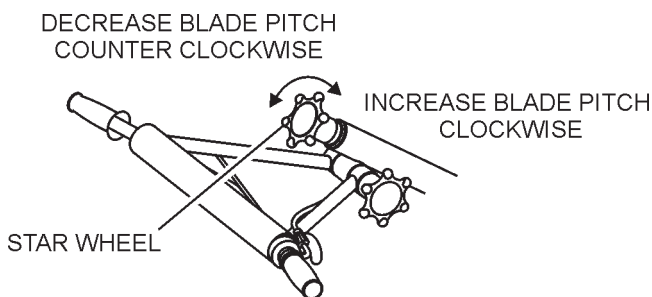


Figure 29. Standard Handle

Maneuvering the Trowel

1. Get into the operator's position behind the handle. With a secure foothold and a firm grasp on the handles slowly increase the engine speed until the desired blade speed is obtained.

If your trowel has a **hand clutch** (Figure 30), set your engine speed with the throttle, then pull on the hand clutch lever to start the blades turning. Adjust the blade speed after the hand clutch is fully engaged.

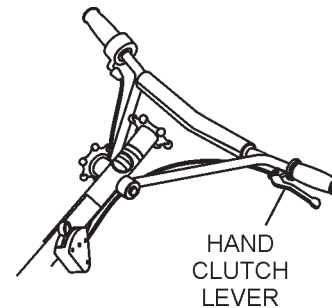


Figure 30. Hand Clutch Lever

2. To maneuver the trowel, gently lift up on or press down on the main trowel handle. To move the machine to the operator's left, **lift up** on the handle, to move machine to the right, **push down** on the handle.
3. The best method for finishing concrete is to slowly walk backwards (Figure 31) with the trowel, guiding the trowel from side to side. This will cover all footprints on wet concrete.
4. Remember that if you let go of the trowel, just step away and let the trowel come to a complete stop before trying to recover the trowel.

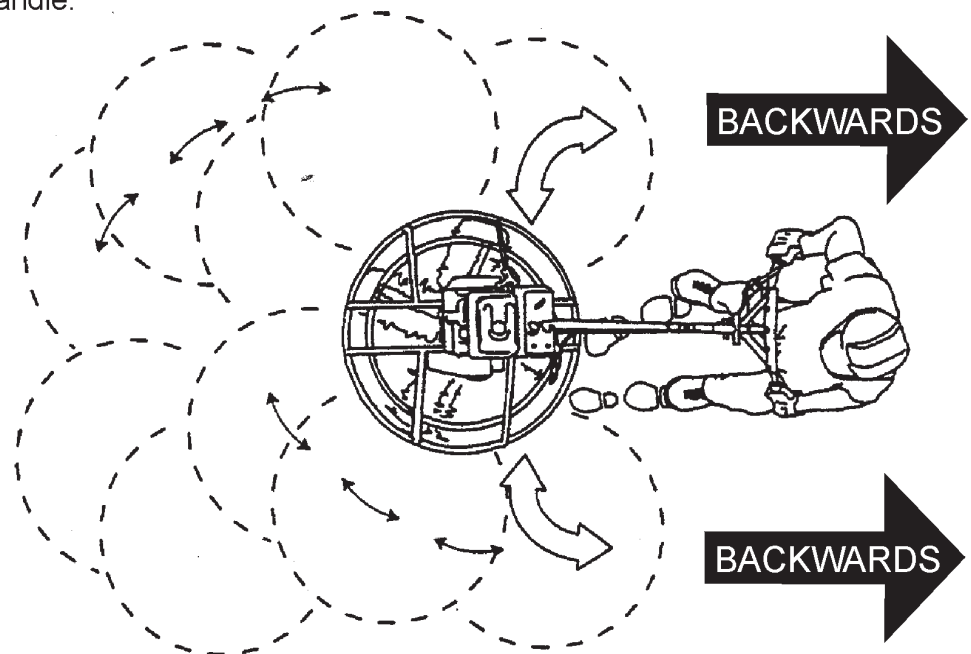
JA-SERIES TROWEL — OPERATION

(Figure 31) below illustrates a typical walk-behind trowel application. Practice maneuvering the trowel. The trick is to let the trowel do the work.

Continue to practice maneuvering the trowel. Try to practice as if you were finishing a slab of concrete. Practice edging and covering a large area. Remember a good finishing technique is to work backwards. Be careful when moving backwards so that hazards can be avoided. The best way to get accustomed to the trowel is repeated use.

To move the trowel to the operator's left, **lift up** on the handle, to move the trowel to the right **push down** on the handle.

Remember! that if you let go of the trowel, just **step away** and let the trowel come to a complete **STOP** before trying to recover the trowel.



The best method for finishing concrete is to slowly walk **backwards** with the trowel, guiding the trowel from side to side. This will cover all footprints on wet concrete.

Figure 31. Maneuvering The Trowel

CAUTION



NEVER place your **feet** or **hands** inside the guard rings while starting or operating this equipment.

CAUTION



ALWAYS keep clear of **rotating** or **moving** parts while operating this equipment.

JA-SERIES TROWEL — OPTIONS

Blades

NOTE

Blades should be changed when they fail to finish concrete in a satisfactory manner.

Blades are a vital part of finishing concrete. This trowel, or **finisher**, has been designed to finish concrete and the blades are built to stringent quality standards out of the finest trowel steel. If you need replacement blades, consult your parts list in this manual for part numbers and order them from your Multiquip parts dealer or importer.

Combo Blades

This trowel was equipped with combination **float/finish** (Figure 32) blades as original equipment. These blades have been designed for optimum performance in both the floating and finishing operations. These blades are versatile and should take care of most troweling needs.

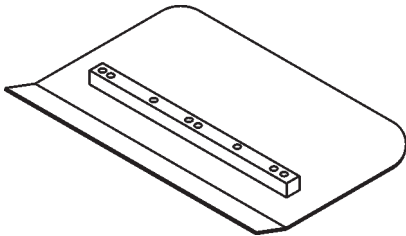


Figure 32. Combination Blade

Finish Blades (Optional)

These blades (Figure 33) have been specifically designed for finish operations with this trowel. They will provide a premium surface finishing capability from your trowel. They should only be used after the concrete has set to the point where the trowel does not sink into the concrete when placed on it.

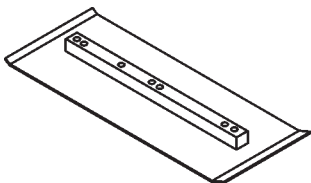


Figure 33. Finish Blade

Clip-On Float Blades (Optional)

These blades will clip (Figure 34) on to an existing installed blade, allowing your finisher to float on “wet” concrete so that the troweling operation can begin as early as possible. They are easily removable, so that after the floating operation, when the concrete is sufficiently cured, they can be removed to expose the finish blades for continued troweling.

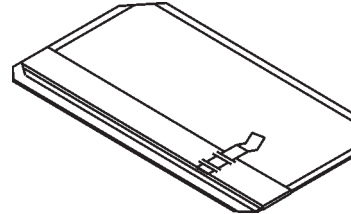


Figure 34. Clip-On Float Blade

Float Discs (Optional)

These round discs (Figure 35) attach to the spiders and allow the machine to “float” on “wet” concrete. The disc design allows early floating and easy movement from wet to dry areas. They are also very effective in embedding large aggregates and surface hardeners.

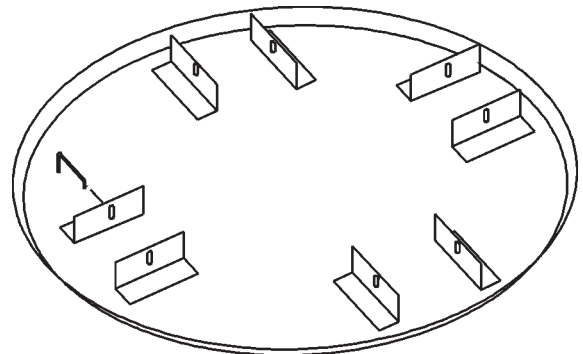


Figure 35. Float Disk

Grinding Attachments

Available grinding attachments are used for grinding surface imperfections or joints. These attachments allow greater utilization of your trowel. Figure 36 illustrates a typical grinding disk assembly, complete with hub and stone mounting plate.

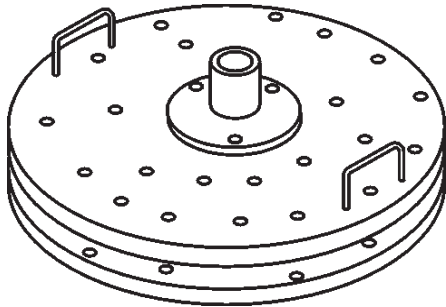


Figure 36. Grinding Disk

Trowel Arm Adjustment Tool

If blades show uneven wear patterns or some tend to wear out faster than others, the trowel arms may need to be adjusted. Whiteman makes a special tool (Figure 38) that will adjust all of the trowel arms consistently. The Trowel Arm Fixture P/N is 1817.

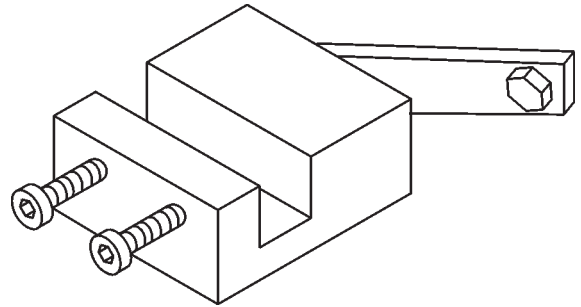


Figure 38. Trowel Arm Adjustment Fixture

Lifting Bale

There is a heavy duty, center balance type lifting bale (Figure 37) made specifically for your trowel. These bales are ideal for lifting and transporting your trowel. They are designed to lift the finisher and balance it on its center of gravity, providing great stability while lifting. This option is not available on electric trowel models.

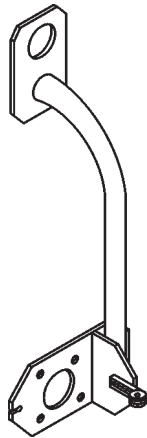


Figure 37. Lifting Bale

JA-SERIES TROWEL — MAINTENANCE

NOTE

See the engine manual supplied with your machine for appropriate engine maintenance schedule and troubleshooting guide for problems.

At the front of the book (Page 7) there is a "**Daily Pre-Operation Checklist**". Make copies of this checklist and use it on a daily basis.

CAUTION!



ALWAYS allow the engine to cool before servicing. **NEVER** attempt any maintenance work on a **hot!** engine.



MAINTENANCE SCHEDULE

Daily (8-10 Hours)

1. Check the oil level in the engine crankcase and gear box, fill as necessary.
2. Check V-belt.

Weekly (50-60 Hours)

1. Relube arms, thrust collar and clutch.
2. Replace blades if necessary.
3. Check and clean or replace the engine air filter as necessary.
4. Replace engine oil and filter as necessary, see engine manual.

Monthly (200-300 Hours)

1. Remove, clean, reinstall and relube the arms and thrust collar. Adjust the blade arms.
2. Remove, clean, reinstall clutch.

Yearly (2000-2500 Hours)

1. Check and replace if necessary the arm bushings, thrust collar bushings and shaft seals.
2. Check pitch control cables for wear.
3. Adjust blade speed.

Trowel Arm Adjustment Procedure

NOTE

The following procedure should be followed to adjust trowel arms when it becomes apparent that the trowel is finishing poorly or in need of routine maintenance.

A **level**, clean area to test the trowel prior to and after is essential. Any unlevel **spots** in the floor or debris under the trowel blades will give an incorrect perception of adjustment. Ideally, a 5 x 5" three-quarter inch thick **flat** steel plate should be used for testing.

1. To determine which blades need adjustment, place the trowel in the test area (three-quarter inch thick plate) and look for the following conditions:
 - Pitch the blades as flat as possible and look at the **adjustment bolts**. They should all barely make contact with the **lower wear plate** on the spider. If you can see that one of them is not making contact, some adjustment will be necessary.
 - Is the machine wearing out blades unevenly (i.e. one blade is completely worn out while the others look new)?

(Figure 39) below illustrates a "**worn spider bushings or bent trowel arms**". Check to see that adjustment bolt is barely touching (0.10" max. clearance) lower wear plate. All alignment bolts should be spaced the same distance from the lower wear plate.

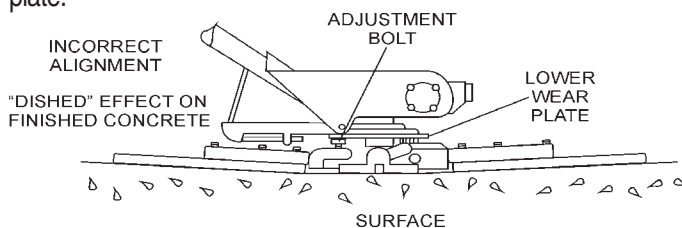


Figure 39. Worn Spider Plate

(Figure 40) below illustrates the "**correct alignment**" for a spider plate (as shipped from the factory).

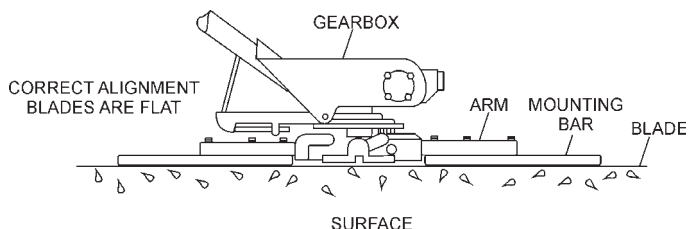


Figure 40. Correct Spider Plate Alignment

JA-SERIES TROWEL — MAINTENANCE

2. Start engine, and bring trowel blades up to full speed and look for the following conditions:
 - Does the trowel have a perceived rolling or bouncing motion when in use?
 - Look at the trowel while it is running, does the guard ring “rock up and down” relative to the ground?

Spider Removal

1. Once it is determined that an adjustment is required, remove the spider assembly from the gearbox shaft as follows:
 - a. Locate the cone point square head set screw (Figure 41) and attached jam nut found on the side of the spider assembly.

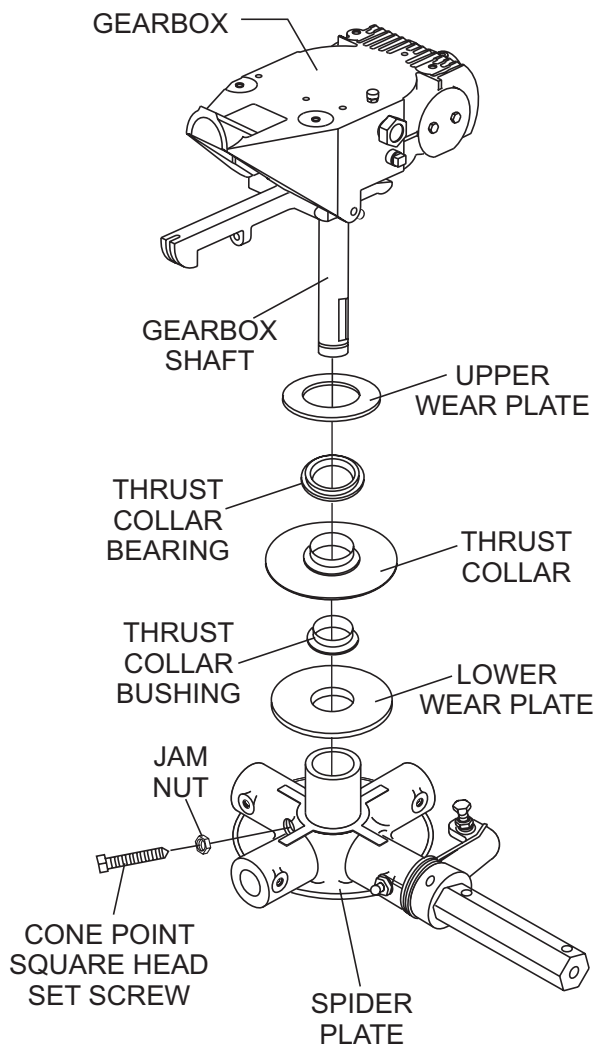


Figure 41. Spider/Gearbox Removal

- b. Loosen the jam nut and cone point square head set screw, and carefully lift the **upper trowel assembly** off of the spider assembly. A slight tap with a rubber mallet may be necessary to dislodge the spider from the main shaft of the gearbox.

Trowel Arm Removal

1. Each trowel arm is held in place at the spider plate by a hex head bolt (zerk grease fitting) and a roll pin. Remove both the hex head bolt and the roll pin (Figure 42) from the spider plate.
2. Remove the trowel arm from the spider plate.

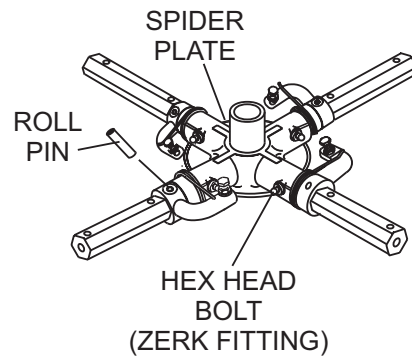


Figure 42. Removing Roll Pin and Zerk Grease Fitting

3. Should the trowel arm inserts (bronze bushing) come out with the trowel arm, remove the bushing from the trowel arm and set aside in a safe place. If the bushing is retained inside the spider plate, carefully remove the bushing.
 4. Examine the bronze trowel arm bushing insert (Figure 43), clean if necessary. Replace bushing if out of round or worn.

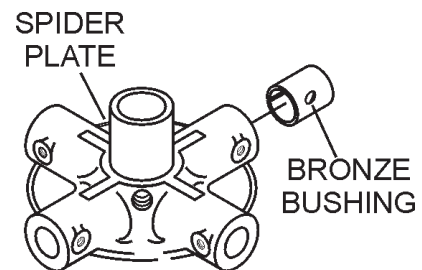


Figure 43. Bronze Bushings

JA-SERIES TROWEL — MAINTENANCE

Trowel Blade Removal

1. Remove the trowel blades from the trowel arm by removing the two hex head bolts (Figure 44) from the trowel arm. Set blades aside.

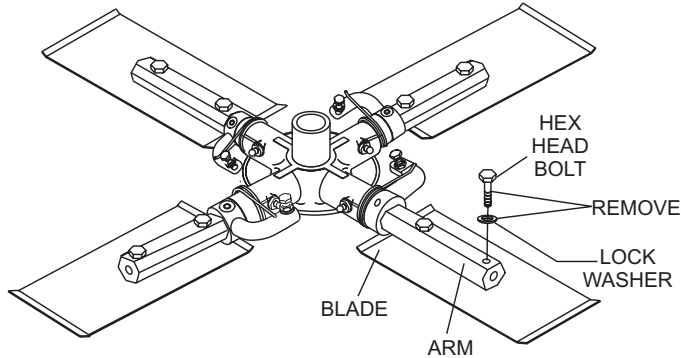


Figure 44. Trowel Blades

2. **Wire brush** any build-up of concrete from all six sides of the trowel arm. Repeat this for the remaining three arms.

Trowel Arm Flatness Test

1. Using a piece of 3/4 inch thick steel plate or any surface which is **true** and **flat**, check all **six sides** of each trowel arm for flatness.
2. Check each of the six sides of the trowel arm (hex section only) using a ten thousandths of an inch (max.) feeler gauge (Figure 45) between the flat of the trowel arm and an **extremely flat** test surface.

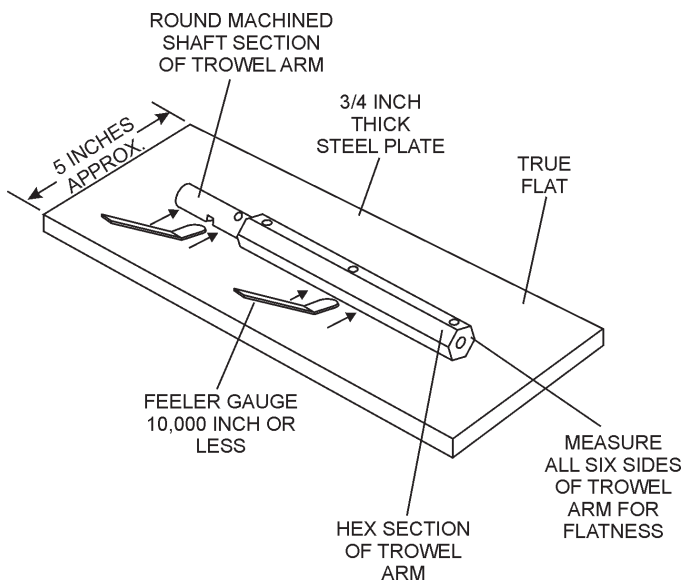


Figure 45. Trowel Arm Flatness Test

3. If the trowel arm is found to be **uneven** or **bent**, replace the trowel arm. A bent trowel will not allow the trowel to operate in a smooth fluid rotation.
4. Next, check each of the six sides of the round machined shaft section of the trowel arm. Each section should have the **same clearance** between the round of the trowel arm shaft and the test surface.

NOTE

Trowel arms can be damaged by rough handling or by striking exposed plumbing or forms while in operation. **ALWAYS** look-out for objects which might cause damage to the trowel arms.

Trowel Arm Adjustment

Shown in (Figure 46) is the adjustment fixture with a trowel arm inserted. As each trowel arm is locked into the fixture, the arm bolt is adjusted to where it contacts a stop on the fixture. This will consistently adjust all of the trowel arms, keeping the finisher as flat and evenly pitched as possible.

1. Locate the trowel arm adjustment tool P/N 1817. Set the adjustment tool for a clock-wise blade rotation, meaning the fixture arm is in the **"UP"** position.

JA-SERIES TROWEL — MAINTENANCE

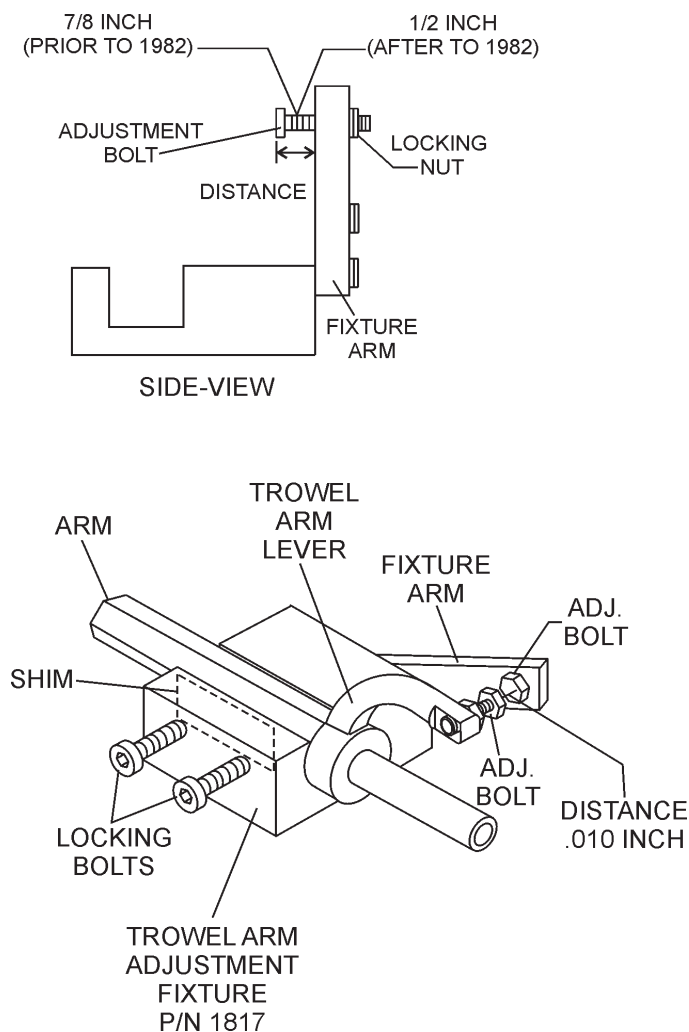


Figure 46. Trowel Arm Adjustment Tool

2. Trowels manufactured prior to June of 1982 require that the distance from the end of the adjusting bolt and the fixture arm must be 7/8" (Figure 46). Conversely, trowels manufactured after June of 1982 require that the distance from the end of the adjusting bolt and the fixture arm must be 1/2".

3. Un-screw the locking bolts on the adjustment tool, and place the trowel arm into the adjustment fixture channel as shown in (Figure 46). A *thin shim* may be required to cover the blade holes on the trowel arm. Make sure to align the trowel adjustment bolt with the fixture adjustment bolt.
4. Using an allen wrench, tighten the locking bolts on the adjustment tool and securely lock the trowel arm in place.
5. Loosen the locking nut on the trowel arm lever, then turn the trowel arm adjusting bolt until it barely touches (.010") the adjusting bolt on the fixture.
6. After the correct adjustment has been made, tighten lock nut on trowel arm lever to lock in place.
7. Loosen locking bolts on adjustment fixture, and remove trowel arm from fixture.
8. Repeat steps 2-7 for the remaining trowel arms.

Re-Assembly

1. Clean and examine the upper/lower wear plates and thrust collar. Examine the entire spider assembly. Wire brush any concrete or rust build-up. If any of the spider components are found to be damaged or out of round, replace them.
2. Make sure that the bronze trowel arm bushing is not damage or out of round. Clean the bushing if necessary. If the bronze bushing is damage or worn, replace it.
3. Reinstall bronze bushing onto trowel arm.
4. Repeat steps 2 -3 for each trowel arm.
5. Make sure that the spring tensioner is in the correct position to exert tension on the trowel arm.
6. Insert all trowel arms with levers into spider plate (with bronze bushing already installed) using care to align grease hole on bronze bushing with grease hole fitting on spider plate.
7. Lock trowel arms in place by tightening the hex head zerk grease fitting and jam nut.
8. Re-install the blades back onto the trowel arms
9. Reinstall **lower wear plate**, **thrust collar** and **upper wear ring** in the **reverse order** that they were dis-assembled onto the spider shaft. Make sure that there is little or no lateral movement between the thrust collar and the spider shaft.

JA-SERIES TROWEL — MAINTENANCE

10. Carefully lift the **upper trowel assembly**, line up the key-way on gear box main shaft and insert into spider assembly
11. Reinstall square head cone point into spider plate and tighten in place. Tighten jam nut. Use care in making sure point of set screw engages groove in gear box main shaft.
12. Lubricate all grease points (zerk fittings) with premium "**Lithum 12**" based grease, conforming to NLG1 Grade #2 consistency.

Testing

1. Place trowel in test area, start engine and test trowel for smoothness.
2. If trowel bounces has excessive vibration or does not run smoothly repeat alignment procedure.

Changing a Blade

Whiteman recommends that **all the blades be changed at the same time**. The machine may wobble or bounce if only some of the blades are changed at one time.

1. Place the machine on a flat, level surface. Adjust the blade pitch control to make the blades as flat as possible. Note the blade orientation on the trowel arm.

NOTE

Before removing the blades, please note the orientation of the blade on the trowel arm.

2. Remove the three bolts and lock washers that secure the blade to the trowel arm. Remove the blade.
3. Using a wire brush, scrape all concrete particles and foreign debris from the trowel arm.
4. Install the new trowel blade onto the trowel arm. Make sure blade is installed correctly, maintaining the proper orientation for direction of rotation.
5. Reinstall the three bolts and lock washers that secure the blade to the trowel arm. Tighten all three bolts securely.
6. Repeat steps 1-4 for all remaining blades.

Hand Clutch Adjustment

Some trowels are equipped with a hand-operated clutch instead of an automatic centrifugal clutch. Two types of hand clutches have been installed. Both are belt-tightener type clutches. They operate by removing **slack** in the V-belt which then transmits power from the engine to the gearbox.

There are two reasons to adjust the hand clutch: 1) operator comfort; 2) initial belt stretch and break-in.

The easiest and most simple adjustment is to adjust the clutch cable housing using the adjustment nut (Figure 47) located on the clutch lever. Rotating the nut provides either more or less (depending upon the direction of rotation) clutch engagement.

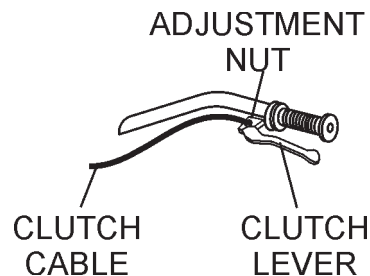


Figure 47. Clutch Cable Adjustment

Hand Clutch Disengagement

1. Start the trowel as outlined in the "**Initial Start-up**" section" in this manual. Move the throttle lever so that the engine is running about 1/4 to 1/3 of full speed.
2. Grip the trowel handle firmly and carefully engage the clutch by squeezing the clutch lever toward the handle with your left hand. After the trowel is stabilized and you feel comfortable with its operation, use your right hand to adjust the housing adjustment nut.
3. Rotating the nut so that it backs out of the lever housing increases the engagement and also the squeezing force required to keep it engaged.

Too much squeezing force may cause premature hand fatigue. Too little squeezing force may cause belt slippage and premature belt wear. Each operator should experiment with the adjustment to get the optimum combination of squeeze force and belt grip.

4. After initial break-in (approximately 8 hours) the above procedure should be repeated to attain optimum operator comfort and belt wear.
5. After considerable belt wear, the adjustments mentioned above may have a little or no effect on clutch engagement. If this is the case, the belt should be replaced.

JA-SERIES TROWEL — TROUBLESHOOTING (TROWEL)

TABLE 5. TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine running rough or not at all.	Kill switch malfunction?	Make sure that the kill switch is ON or replace switch if necessary.
	Fuel?	Look at the fuel system. Make sure there is fuel being supplied to the engine. Check to ensure that the fuel filter is not clogged.
	Ignition?	Check to ensure that the ignition switch has power and is functioning correctly.
Safety kill switch not functioning.	Other problems?	Consult engine manufacturer's manual.
	Loose wire connections?	Check wiring. Replace as necessary.
	Bad contacts?	Replace switch.
If trowel "bounces, rolls concrete, or makes uneven swirls in concrete".	Blades?	Make certain blades are in good condition, not excessively worn. Finish blades should measure no less than 2" (50mm) from the blade bar to the trailing edge, combo blades should measure no less than 3.5" (89mm). Trailing edge of blade should be straight and parallel to the blade bar.
	Spider?	Check that all blades are set at the same pitch angle as measured at the spider. A field adjustment tool is available for height adjustment of the trowel arms (see Optional Equipment).
	Bent trowel arms?	Check the spider assembly for bent trowel arms. If one of the arms is even slightly bent, replace it immediately.
	Trowel arm bushings?	Check the trowel arm bushings for tightness. This can be done by moving the trowel arms up and down. If there is more than 1/8" (3.2 mm) of travel at the tip of the arm, the bushings should be replaced. All bushings should be replaced at the same time.
	Thrust collar?	Check the flatness of the thrust collar by rotating it on the spider. If it varies by more than 0.02" (0.5 mm) replace the thrust collar.
	Thrust collar bushing?	Check the thrust collar by rocking it on the spider. If it can tilt more than 3/32" (2.4 mm) [as measured at the thrust collar O.D.], replace the bushing in the thrust collar.
	Thrust bearing worn?	Check the thrust bearing to see that it is spinning free. Note: Thrust cap, replace if necessary.
Machine has a perceptible rolling motion while running.	Main shaft?	The main output shaft of the gearbox assembly should be checked for straightness. The main shaft must run straight and cannot be more than 0.003" (0.08 mm) out of round at the spider attachment point.
	Yoke?	Check to make sure that both fingers of the yoke press evenly on the wear cap. Replace yoke as necessary.
	Blade Pitch?	Check to ensure that each blade is adjusted to have the same pitch as all other blades. Adjust per maintenance section in manual.

JA-SERIES TROWEL — TROUBLESHOOTING (TROWEL)

TABLE 6. TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Clutch slipping or sluggish response to engine speed change.	Worn V-belts?	Replace V-belt.
	Dirty centrifugal clutch?	Disassemble and clean clutch.
	Defective or worn out centrifugal clutch?	Replace entire clutch.
	Hand clutch out of adjustment?	Adjust per instructions in maintenance section of this manual.
	Worn or defective hand clutch parts?	Replace parts as necessary.
	Worn bearings in gearbox?	Rotate input shaft by hand. If shaft rotates with difficulty, check the input and output shaft bearings. Replace as necessary.
	Worn or broken gears in gearbox?	Verify that the gearbox shaft rotates when the input shaft is rotated. Replace both the worm and worm gear as a set.

JA-SERIES TROWEL — TROUBLESHOOTING (ENGINE)

TABLE 7. TROUBLESHOOTING (ENGINE)

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Difficult to start, "fuel is available, but no SPARK at spark plug".	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
Difficult to start, "fuel is available, and SPARK is present at the spark plug".	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
Difficult to start, "fuel is available, spark is present and compression is normal".	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
	Wrong fuel type?	Flush fuel system, and replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
Difficult to start, "fuel is available, spark is present and compression is low".	Choke Open?	Close Choke.
	Suction/exhaust valve stuck or protruded?	Re-seat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
No fuel present inside priming bulb.	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
	Fuel not available in fuel tank?	Fill with correct type of fuel.
	Fuel filter clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

JA-SERIES TROWEL — EXPLANATION OF CODES IN REMARKS COLUMN

How to read the marks and remarks used in this parts book.

Section 1: Items Found In the “Remarks” Column

Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Section 2: Items Found In the “Remarks” Column

Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Section 3: Items Found In the “Items Number” Column

All parts with same symbol in the number column, *, #, +, %, or ■, belong to the same assembly or kit.

Note: If more than one of the same reference number is listed, the last one listed indicates newest (or latest) part available.

NOTE

The contents of this parts catalog are subject to change without notice.