

OPERATION AND PARTS MANUAL



MODELS

JS36H55

JS36H90H

JS36LE

WALK-BEHIND TROWEL

**(HONDA GX160UT2QX2/GX270UT2QA2
GASOLINE ENGINES)**

Revision #6 (12/07/22)

Original Version

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publication, visit our website at:

www.multiquip.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

PN: 22902

FUEL AND CHEMICAL EXPOSURE WARNINGS



SILICOSIS/RESPIRATORY WARNINGS

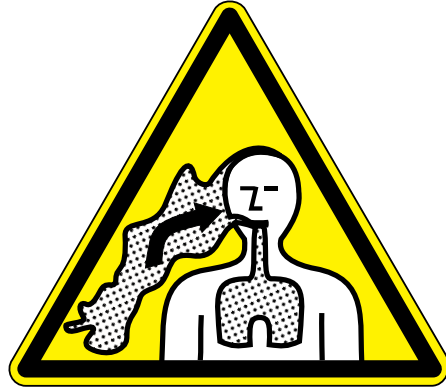
⚠️ WARNING



SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

⚠️ WARNING



RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

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NOTICE

Specifications and part numbers are subject to change without notice.

TRAINING CHECKLIST

Training Checklist			
No.	Description	OK?	Date
1	Read operation manual completely.		
2	Machine layout, location of components, checking of engine oil level.		
3	Fuel system, refueling procedure.		
4	Operation of controls (machine not running).		
5	Safety controls, safety stop switch operation.		
6	Safety controls, manual clutch operation.		
7	Emergency stop procedures.		
8	Startup of machine, engine choke.		
9	Maintaining a hover.		
10	Maneuvering.		
11	Pitching.		
12	Concrete finishing techniques.		
13	Shutdown of machine.		
14	Lifting of machine (lifting bale).		
15	Machine transport and storage.		

DAILY PRE-OPERATION CHECKLIST

Daily Pre-Operation Checklist		✓	✓	✓	✓	✓	✓
1	Engine oil level						
2	Gearbox oil level						
3	Condition of blades						
4	Blade pitch operation						
5	Safety stop switch operation						
6	Manual clutch operation						

SAFETY INFORMATION


Do not operate or service the equipment before reading the entire manual. 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.




SAFETY MESSAGES

The four 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 four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.


SAFETY SYMBOLS

 **DANGER**

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

 **WARNING**

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




 **CAUTION**

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



NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with **hazard symbols** which may appear throughout this manual in conjunction with safety messages.

SYMBOL	SAFETY HAZARD
	<p>WARNING Lethal Exhaust Gas Hazard</p> <ul style="list-style-type: none"> Inhaling exhaust fumes can result in severe injury or death. Only operate equipment in well ventilated areas. DO NOT inhale exhaust gases/fumes.
	<p>WARNING Explosive Fuel Hazard</p> <ul style="list-style-type: none"> Gasoline fuel can cause fire or explosion. Stop engine before refueling. Keep cigarettes, sparks and flames away from hot surfaces.
	<p>CAUTION Burn Hazard</p> <ul style="list-style-type: none"> HOT PARTS can burn skin. DO NOT touch hot parts. Allow machine a sufficient amount of time to cool before performing maintenance.

Warning decals associated with the operation of this equipment are defined below:

DECAL	SAFETY HAZARD
	<p>WARNING Rotating Blade Hazard</p> <ul style="list-style-type: none"> Keep hands and feet clear of guard rings. Stop engine before servicing.
	<p>WARNING Read Manual</p> <p>To avoid injury you must read and understand operator's manual before using this machine.</p>
	<p>WARNING Lifting Crush Hazard</p> <ul style="list-style-type: none"> NEVER allow any person to stand underneath the trowel while lifting. DO NOT lift trowel with pans attached. ALWAYS make sure handle is securely attached. On Quick Pitch™ models make sure T-Handle latch is locked (engaged).
	<p>ALWAYS wear protective clothing when operating this equipment</p>
	<p>WARNING Training</p> <p>This machine to be operated by qualified personnel. Ask for training as needed.</p>
	<p>WARNING Guard Hazard</p> <p>NEVER operate this equipment with guards removed. Keep hands clear.</p>

SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- Avoid wearing jewelry or loose fitting clothes that may snag on the controls or moving parts as this can cause serious injury.

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



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



- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.

- No one other than the operator is to be in the working area when the equipment is in operation.

- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest **fire extinguisher**.
- **ALWAYS** know the location of the nearest **first aid kit**.
- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



SAFETY INFORMATION

TROWEL SAFETY

DANGER

- Engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



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



WARNING

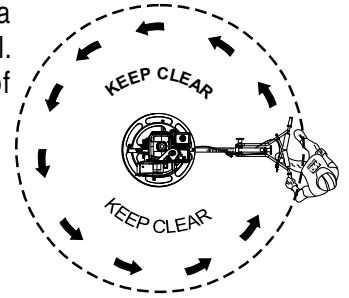
- **ALWAYS** keep clear of rotating or moving parts while operating the trowel.
- **DO NOT** start or operate the trowel if the drive train will not disengage. Centrifugal force between the trowel and surface when starting can cause uncontrolled handle movement that can cause serious injury. The handle must not move while pulling the engine recoil starter.
- **NEVER** disconnect any **emergency or safety devices.** These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.



CAUTION

- **NEVER** stand on trowel during operation.
- **NEVER** lubricate components or attempt service on a running machine.
- **NEVER** place your feet or hands inside the guard rings while starting or operating this equipment.

- **ALWAYS** keep work area clear around the trowel. Make sure it is free of debris and objects.



NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- A safety manual for operating and maintenance personnel of concrete power trowels produced by the Association of Equipment Manufacturers (AEM) can be obtained for a fee by ordering through their website at www.aem.org.

Order FORM PT-160

ENGINE SAFETY

WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- Keep fingers, hands hair and clothing away from all moving parts to prevent injury.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Allow the oil to cool before performing maintenance. This will prevent scalding of personnel.



CAUTION

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



SAFETY INFORMATION

NOTICE

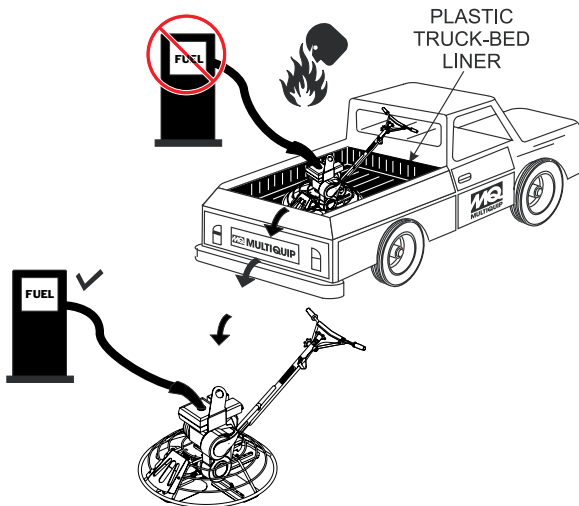
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

⚠ DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **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 appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

⚠ CAUTION

- **NEVER** allow any person or animal to stand underneath the equipment while lifting.



NOTICE

- Some walk-behind trowels can be lifted or moved by two people utilizing lifting tubes or other special attachments. Generally, however, they must be lifted using lifting bales and cranes, hoists, or forklifts.
- **NEVER** transport trowel with float pans attached unless safety catches are used and are specifically cleared for such transport by the manufacturer.
- **NEVER** hoist the trowel more than three feet off the ground with float pans attached.
- Before lifting, make sure that the lifting bales are not damaged.
- Always make sure crane or lifting device has been properly secured to the lifting bales of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with strap or rope.

SAFETY INFORMATION

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life cycle of this equipment is over, remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- When the life cycle of this equipment is over, it is recommended that the trowel frame and all other metal parts be sent to a recycling center.



Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

EMISSIONS INFORMATION

NOTICE

The gasoline engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in gasoline exhaust emissions.

This engine has been certified to meet US EPA Evaporative emissions requirements in the installed configuration.

Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulation(s).

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized engine distributor.

TROWEL SPECIFICATIONS/DIMENSIONS

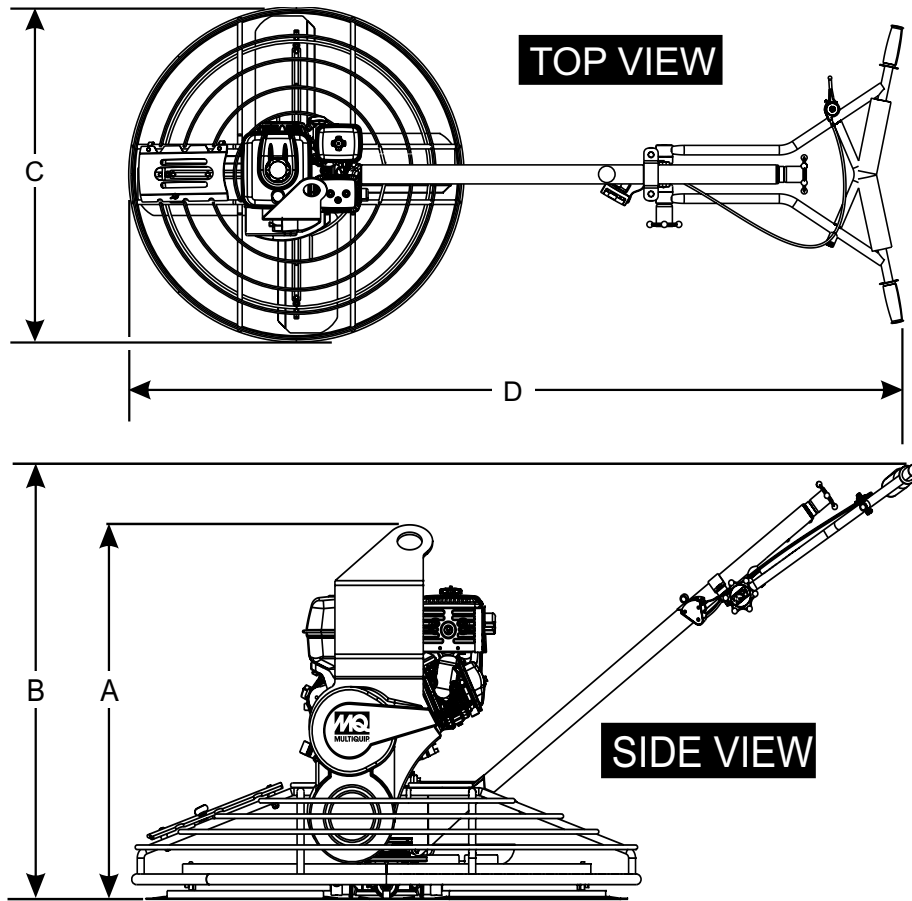


Figure 1. Dimensions

Table 1. Trowel Specifications

A-Height (Lifting Bale) –mm (in.)	686 (27)	Path Width – mm (in.)	914 (36)
B-Height (Handle) – mm (in.) Standard Quick Pitch™	950 (37.4)	Rotor – RPM (Dry Concrete) JS36H55	60-115
	1,067 (42)	Rotor – RPM (Dry Concrete) JS36MH55	60-115
C-Width (Ring Diameter) – mm (in.)	950 (37.3)	Rotor – RPM (Dry Concrete) JS36H90H	90-155
		Gear Box Oil Capacity – ml (oz.)	828 (28)
D-Width – mm (in.)	1,880 (74)	Shipping Weight – kg (lbs.) JS36H55	
		Standard	102 (225)
Number of Blades	4	Quick Pitch™	107(235)
		Shipping Weight – kg (lbs.) JS36H90H	
		Standard	107 (235)
		Quick Pitch™	111 (245)
		Shipping Weight – kg (lbs.) JS36LE	
		Standard	87 (191)
		Quick Pitch™	92 (202)

ENGINE SPECIFICATIONS

Table 2. JS36H55 Noise and Vibration Emissions

Model		JS36H55/JS36MH55	JS36H90H
Guaranteed ISO 11201:2010 Based Sound Pressure Level at Operator Station in dB(A)		87	90
Guaranteed ISO 3744:2010 Based Sound Power Level in dB(A)		108	107
Hand-Arm Vibration Per ISO 5349-1: 2001 in $m/s^2 \Sigma A(8)$	Standard Handle (SXHP)	1.1	1.5
	Quick Pitch™ Handle (QXHP)	1.6	0.98

NOTES:

1. Sound Pressure and Power Levels are “A” weighted Measures per ISO 226:2003 (ANSI S1.4-1981). They are measured with the operating condition of the machine which generates the most repeatable but highest values of the sound levels. Under normal circumstances, the sound level will vary depending on the condition of the material being worked upon.
2. The vibration level indicated is the vector sum of the RMS (Root Mean Square) Values of amplitudes on each axis, standardized to an 8 hour exposure period, and obtained using operating condition of the machine that generates the most repeatable but highest values in accordance with the applicable standards for the machine.
3. Per EU Directive 2002/44/EC, the daily exposure action value for hand-arm vibration is $2.5 m/s^2 \Sigma A(8)$. The daily exposure limit value is $5.0 m/s^2 \Sigma A(8)$.

Table 3. Engine Specifications/Dimensions

Model	Honda GX160UT2QX2* Engine (JS36H55/JS36MH55)	Honda GX270UT2QA2* Engine (JS36H90H)	Less Engine (JS36LE/JS36MLE)
Type	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine	Usage of engines other than those listed in columns 1 and 2 may void MQ Warranties and invalidates MQ CE Declaration of Conformity.
Bore X Stroke	68 mm x 45 mm (2.70 in. X 1.8 in.)	77 mm x 58 mm (3.0 in. X 2.3 in.)	
Displacement	163 cc (9.9 cu-in.)	270 cc (16.4 cu-in.)	
Max. Output	5.5 H.P. @ 3600 RPM	9.0 H.P. @ 3600 RPM	
Fuel Tank Capacity	Approx. 3.6 Liters (0.95 U.S. Gallons)	Approx. 6.0 Liters (1.95 U.S. Gallons)	
Fuel	Unleaded Gasoline	Unleaded Gasoline	
Lube Oil Capacity	0.6 liters (0.63 qt.)	1.1 liters (1.06 qt.)	
Oil Type	4-Stroke API, SF or SG SAE 10W-30 General Use	4-Stroke API, SF or SG SAE 10W-30 General Use	
Speed Control Method	Centrifugal Flyweight Type	Centrifugal Flyweight Type	
Cooling System	Forced Air	Forced Air	
Starting Method	Recoil Start	Recoil Start	
Spark Plug Type	BPR6ES NGK	BPR6ES NGK	
Spark Plug Gap	0.70 - 0.80 mm (0.028-0.031 in.)	0.70 - 0.80 mm (0.028-0.031 in.)	
Dimensions (L x W x H)	312 X 362 X 335 mm (12.3 x 14.3 X 13.2 in.)	381 X 428 X 422 mm (15.0 x 16.8 X 16.6 in.)	
Dry Net Weight	15 Kg. (33.1 lbs.)	25 Kg. (55.1 lbs.)	

GENERAL INFORMATION

INTENDED USE

Operate this trowel, tools and components in accordance with the manufacturer's instructions. Use of any other tools for stated operation is considered contrary to designated use. The risk of such use lies entirely with the user. The manufacturer cannot be held liable for damages as a result of misuse.

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 (Figure 2) like the engine, blades, steering handle, kill switch, gearbox, 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.

ENGINE

This trowel is equipped with either a HONDA 5.5 or 9.0 HP gasoline engine. Refer to the engine owner's manual for instructions regarding the operation and maintenance of your engine. Please contact your nearest Multiquip Dealer for a replacement should the original manual disappear or otherwise become unusable.

DRIVE SYSTEM

Power is transferred from the engine to the gearbox input shaft via a V-belt pulley drive system. The pulley engages using a centrifugal clutch. See parts section of this manual for a breakdown of the drive system.

GEARBOX

The **gearbox** is located beneath the engine and transfers power to the **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 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.

GUARD RING

This unit is equipped with a safety guard ring. It is designed to help protect items from coming into contact with the rotating blades while the trowel is in operation.

BLADES

The blades of the trowel finish the concrete as they are rotated around the surface. This trowel comes equipped with four **combination blades** (8 in./203 mm wide) per rotor equally spaced in a radial pattern and attached to a vertical rotating shaft by means of a spider assembly.

CENTRIFUGAL SAFETY STOP SWITCH (Used on machines equipped with the Centrifugal Clutch)

In the event of a trowel runaway condition (operator releases handlebars during operation), the centrifugal safety stop switch will stop the engine and bring the trowel to a halt.

MANUAL CLUTCH

In the event of a trowel runaway condition (operator releases the handle), the manual clutch will disengage 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.

TRAINING

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

TROWEL COMPONENTS

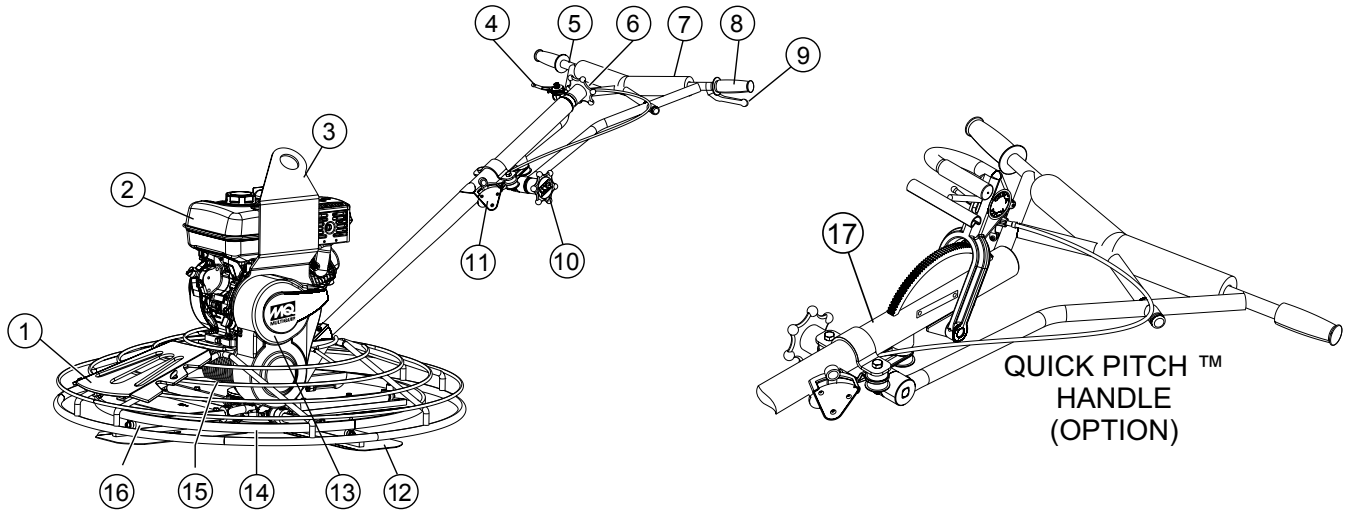
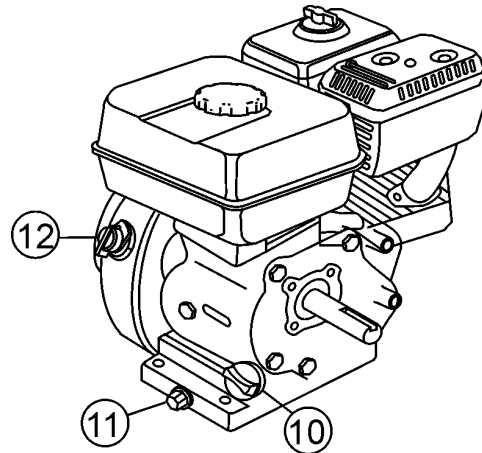
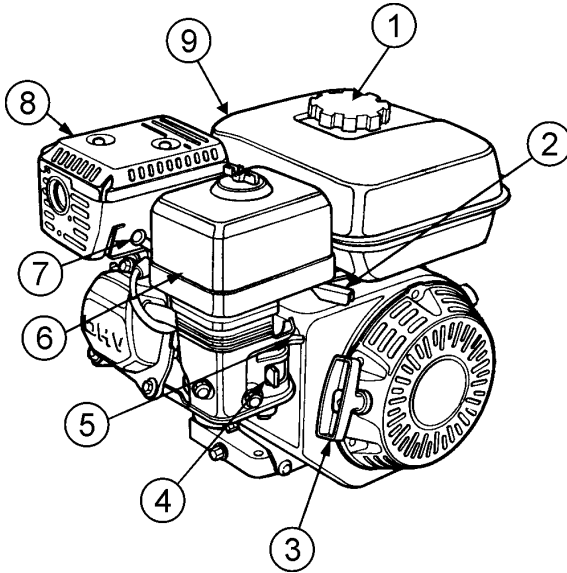


Figure 2. Trowel Control and Components

Figure 2 shows the location of the basic controls or components, for the trowel. Listed below is a brief explanation of each control or component.

1. **Access Panel** — Allows access to the blade area. **NEVER** run the trowel with this access panel removed.
2. **Engine** — Honda 5.5 or 9.0 HP gasoline engine.
3. **Lifting Bale** — Attach a suitable lifting device to lifting bale whenever lifting of the trowel is required.
4. **Throttle Lever** — Controls engine speed. Returns engine to idle when released.
5. **Vibratory Handle Bar** — Installed rubber shock mounts/isolators reduces vibration when the trowel is operating.
6. **Pitch Control Star Wheel**— To adjust the pitch of the blades, rotate the star wheel clockwise to pitch blades upwards. Rotate star wheel counterclockwise to pitch blades flat (no pitch).
7. **Handle Bar Pad** — Foam rubber pad that protects the body when coming in contact with handle bar.
8. **Hand Grips** — When maneuvering of the trowel is required **ALWAYS** place both hands on each grip to operate the trowel. Replace hand grips when they become worn or damaged.
9. **Clutch Engagement Lever** — When this lever is engaged, the blades will begin to rotate.
10. **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.
11. **Centrifugal Safety Switch** — In the event the operator loses control of the trowel, this switch will shut down the engine. (Not used on the machine with the Manual Clutch).
12. **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.
13. **V-Belt Cover** — Remove this cover to gain access to the V-belt. **NEVER** operate the trowel with this cover removed.
14. **Guard Ring** — **NEVER** put hands or feet inside guard ring while the machine is running.
15. **Gearbox** — Helical worm gear drive gearbox. Provides rotation of blades via engine interface. **ALWAYS** check gearbox oil level (sight glass) prior to each use. Fill with recommended type gearbox oil.
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. **Quick Pitch™ Control Handle** — Contact MQ unit sales for this option.

ENGINE COMPONENTS



INITIAL SERVICING

Figure 3. Engine Controls and Components

The engine (Figure 3) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's engine manual for instructions and details of operation and servicing.

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



Add fuel to the tank 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. This lever is connect to the throttle lever cable located on the handle bars. Reference throttle cable installation procedure in this manual.
3. **Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.
4. Fuel Valve Lever – **OPEN** to let fuel flow, **CLOSE** to stop the flow of fuel.
5. **Choke Lever** – Used in the starting of a cold engine, or in cold weather conditions. The choke enriches the fuel mixture.

6. **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.

NOTICE

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.

7. **Spark Plug** – Provides spark to the ignition system. Set spark plug gap according to engine manufacturer's instructions. Clean spark plug once a week.
8. **Muffler** – Used to reduce noise and emissions. **NEVER** touch when **hot!**
9. **Fuel Tank** – Fill with unleaded gasoline. Reference Table 3 for fuel tank capacity. For additional information refer to Honda engine owner's manual.
10. **Dipstick/Oil Filler Cap** – Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 4.
11. **Oil Drain Plug** – Remove this plug to remove oil from the engine's crankcase.
12. **Engine ON/OFF Switch** – **ON** position permits engine starting, **OFF** position stops engine operation.

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 provides general instructions on how to install those components. Instruction sheet P/N 20485 provides further details for the handle assembly.

Handle Tube Installation

1. Attach the main handle (tube) to the gearbox as shown in (Figure 4). The mounting hardware should be contained in the shipping container.

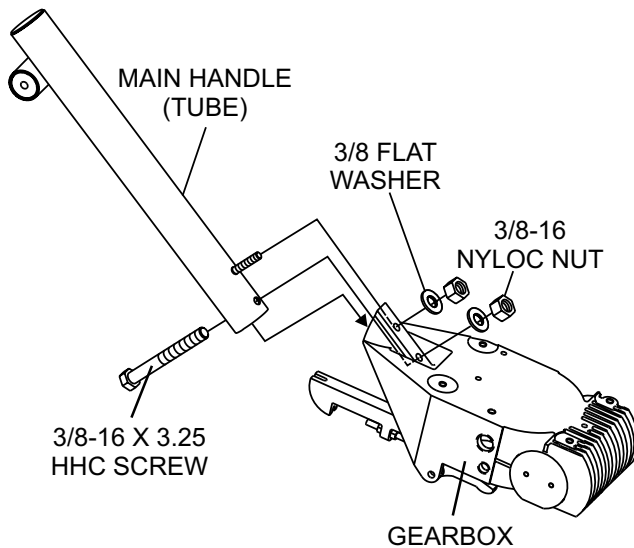


Figure 4. Handle Tube Installation

Vibratory T-Handle Bar Placement

1. The vibratory T-handle bar is already attached to the main handle tube.
2. To adjust the height of the T-bar, loosen the star wheel (Figure 5) and position T-handle bar in the desired position.

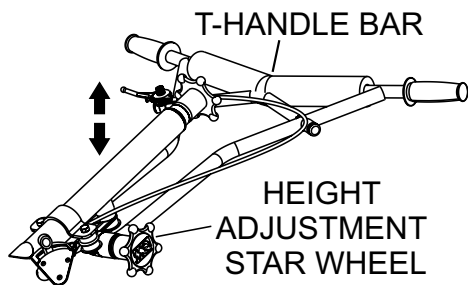


Figure 5. T-Handle Bar Adjustment

3. Tighten star wheel firmly.

NOTICE

If additional 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" (76 mm).

Throttle Cable Installation (Engine)

1. Uncoil the throttle cable and housing.
2. Feed the throttle cable through the cable housing.
3. Connect the **trowel throttle cable** to the engine throttle linkage (Figure 6). There should be a piece of wire installed on the trowel to show where to route the throttle cable.
4. Route **cable end** through the **idle control spring** and **swivel stop**. When connecting the **cable housing**, make sure that no more than 1/4" (6.4 mm) of the **cable housing** protrudes past the **housing clamp** on the engine.

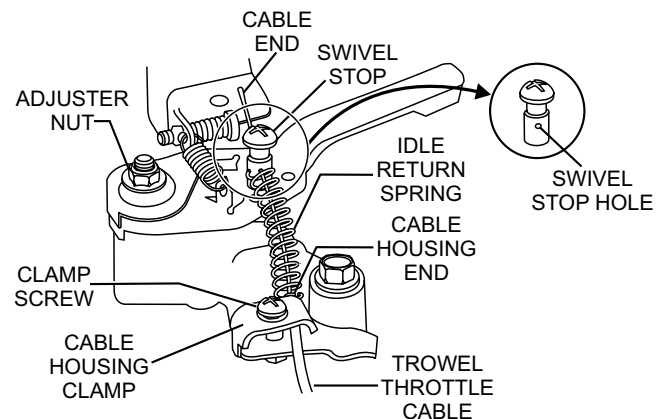


Figure 6. Throttle Cable Installation (Engine)

5. Tighten **cable clamp** screw and **swivel stop** screw.
6. After the trowel throttle cable has been connected to the engine throttle linkage, adjust and tighten operator position of the T-bar handle to lock the throttle cable at the proper length.

ASSEMBLY AND INSTALLATION

- Adjustment of the throttle cable tension may be required. If so, loosen the **adjusting nut** (top nut) on the throttle cable receiver (Figure 7) and loosen or tighten the **locking nut** (bottom nut). Retighten **adjusting nut**.

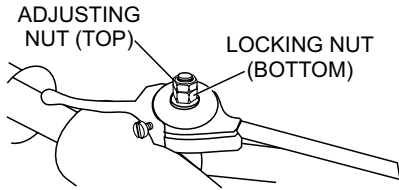


Figure 7. Throttle Cable Receiver Adjustment

NOTICE

If the throttle lever does not return to the "neutral" position with throttle backed off, loosen adjuster nut 1/2 turn at a time, tighten and recheck. Readjust throttle tension as necessary.

Safety Stop Switch Connection (For trowels with centrifugal clutch only)

- Connect the black tail wire from the engine to the **top** black safety stop wire from the centrifugal stop switch as shown in in Figure 8.

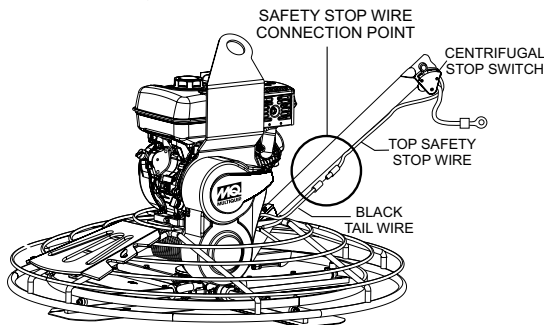


Figure 8. Safety Stop Switch Connection

- Remove the existing bottom mounting screw on the recoil starter cover (Figure 9) and connect the **bottom** wire from the centrifugal stop switch to this engine ground point.

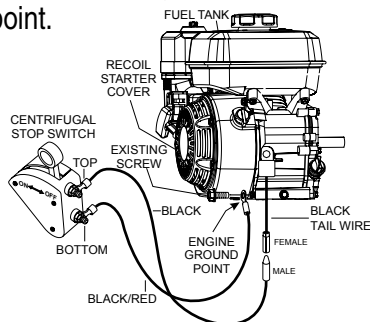


Figure 9. Engine Ground Point

Pitch Cable Installation

- For **Standard Handle** models expose the pitch cable to maximum by turning the blade pitch star wheel (Figure 10) fully counterclockwise for no pitch (blades flat).

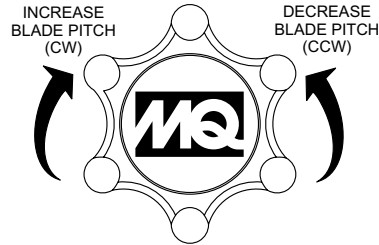


Figure 10. Blade Pitch Star Wheel (Standard Handle)

- For **Quick Pitch™ Handle** models expose the pitch cable to maximum by grasping the T-handle (Figure 11), then squeezing the trigger lock and pushing the T-handle forward for no pitch (blades flat).

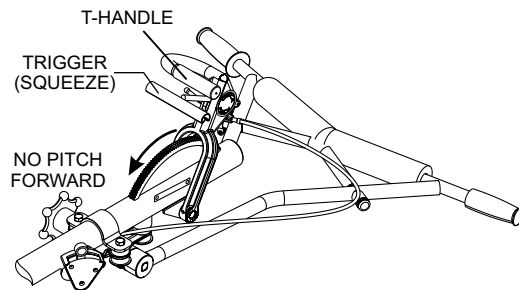


Figure 11. Blade Pitch T-Handle (Quick Pitch™ Handle)

- Remove brass set nut #1 from the blade pitch cable end as shown in (Figure 12).

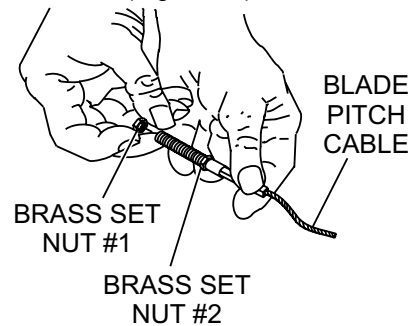


Figure 12. Blade Pitch Cable

- Thread brass set nut #2 (Figure 12) towards the cable as far as possible.

ASSEMBLY AND INSTALLATION

5. Insert the cable end through the yoke eyelet (Figure 13). Tighten brass set nut #1 by hand to remove all the slack from the cable.

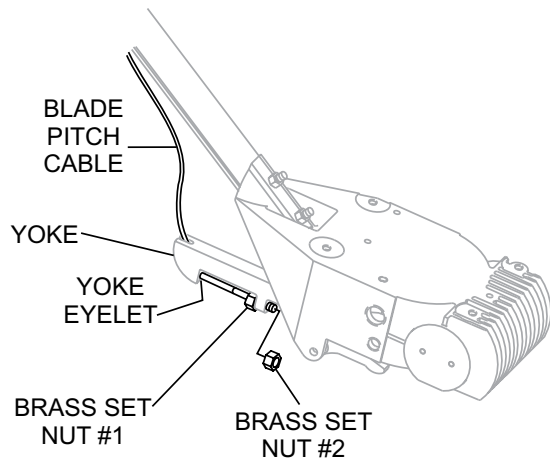


Figure 13. Pitch Cable Yoke Attachment

6. Using a wrench, tighten the brass set #2 nut up against the yoke boss. This will lock the cable in place.
7. Use a wrench and finish tightening the brass set #1 nut up against the yoke boss.

Attachment of Manual Clutch Cable

The JS36MH55 is equipped with a manual clutch, which will have to be attached to the trowel after the Standard or Quick Pitch™ handle has been installed on the trowel. To install the Clutch Cable, perform the following steps:

1. Remove the belt cover by removing the 3 screws. The belt will already be on the machine.
2. Remove the hand grip on the operator-preferred side of the trowel handle and mount the hand clutch lever onto the trowel handle. Insert the fitting on the clutch cable into the hand clutch lever and route the cable down the handle and up through the guard ring as shown in Figure 14.

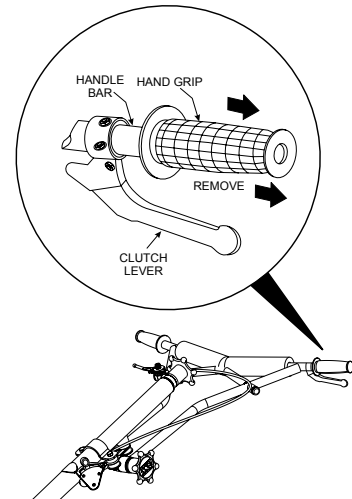


Figure 14. Hand Clutch Lever Installation

3. Insert ferrule over the end of the clutch cable as shown in Figure 15.

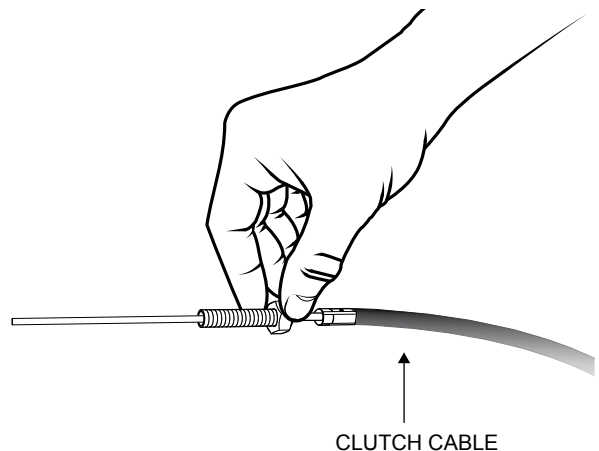


Figure 15. Clutch Cable with Ferrule

4. Now add the clutch engagement spring (Figure 16).

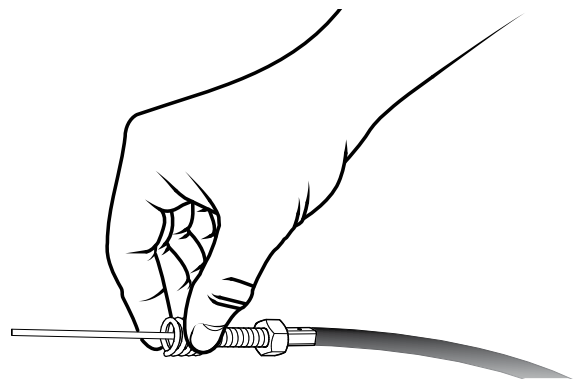


Figure 16. Clutch Engagement Spring

ASSEMBLY AND INSTALLATION

5. Finally, add the clutch return spring (Figure 17).

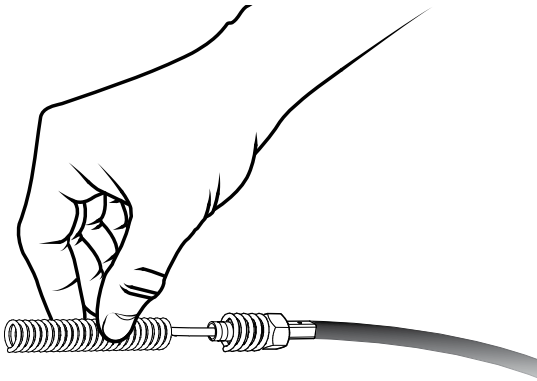


Figure 17. Clutch Return Spring

6. Place the clutch cable through the clutch bracket (Figure 18), with the clutch engagement spring below the clutch bracket, and the clutch return spring above it. Route the clutch cable through the clutch lever as shown.

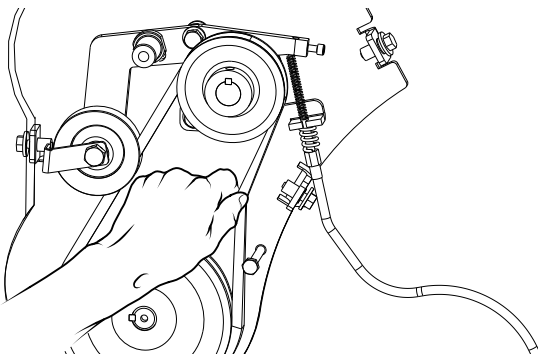


Figure 18. Clutch Cable thru Bracket and Lever

7. While lifting the clutch arm by the pulley, grab the clutch cable with pliers and pull all slack out from the cable while at the same time making sure good tension is on the belt (Figure 19). Once all slack is removed from cable and belt is snug, tighten cable retention screw.

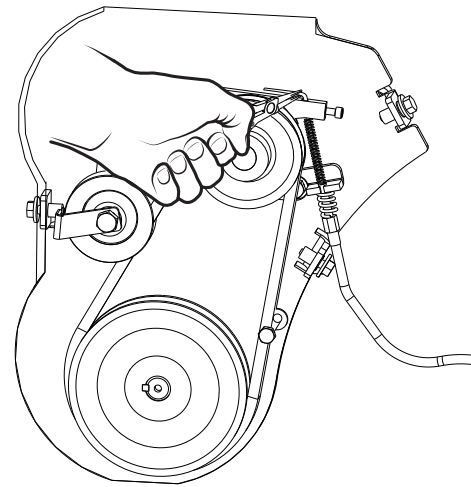


Figure 19. Clutch Cable Slack Removal

8. Squeeze the clutch handle a few times to work any slack out of the clutch cable. Repeat last step as necessary.

Pre-Load Adjustment (Quick Pitch™ Handle Only)

WARNING

The Quick Pitch™ handle is spring loaded, personal injury or damage could result from improper handling, installation or adjustment. Use extreme caution when installing this component.

1. After the Quick-Pitch™ handle has been installed on the trowel, spring pre-load adjustment will be required.
2. Locate the spring pre-load adjustment screw (Figure 20) on the underside of the handle tube.

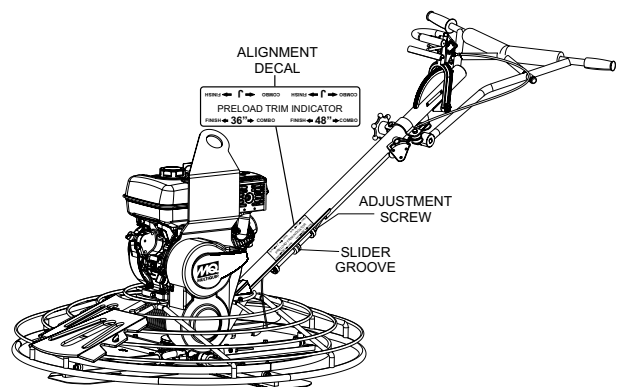


Figure 20. Spring Pre-Load Adjustment

INSPECTION

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 groove on the slider with the text 36" COMBO/ "J" COMBO on the decal. The letter "J" stands for J-36 Walk-Behind Trowel

CAUTION

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.

Before Starting

1. Read all 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 dipstick from the engine oil filler hole (Figure 21) and wipe clean.

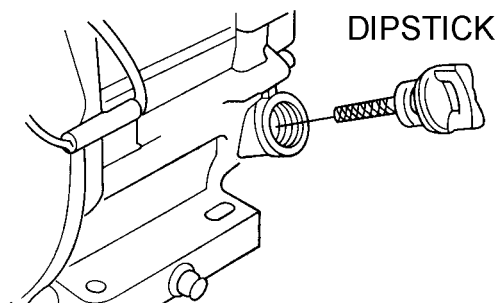


Figure 21. Engine Oil Dipstick Removal

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 22), fill to the edge of the oil filler hole with the recommended oil type as listed in Table 4. Reference Table 3 for maximum engine oil capacity.

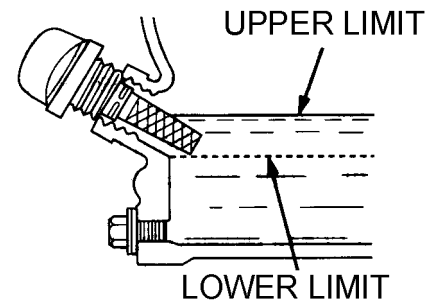


Figure 22. Engine Oil Dipstick (Oil Level)

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

DANGER

EXPLOSIVE FUEL!

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.

Fuel Check

1. Visually inspect to see if fuel level is low. If fuel is low, replenish with unleaded fuel.
2. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. Wipe up any spilled fuel immediately.

Gearbox Oil

1. Determine if the gearbox oil is low by removing the oil plug located on the side of the gearbox. (Figure 23) This plug will be marked by the "check" decal. The correct level of the lubrication oil should be to the bottom of the fill plug.

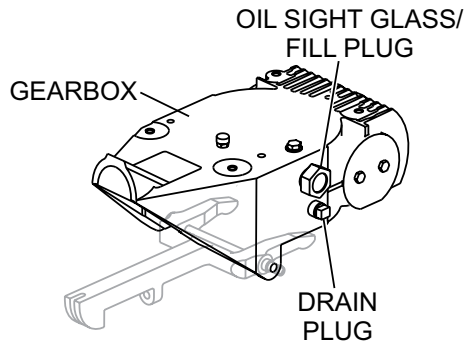


Figure 23. Gearbox

2. If lubrication oil begins to seep out as the drain plug is being removed, then it can be assumed that the gearbox has a sufficient amount of oil.
3. If lubrication oil does not seep out as the drain plug is being removed, fill with type ISO 680 (P/N 10139) gearbox lubricant oil until the oil filler hole overflows.

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.

Belt Guard Check

Check for damage, loose or missing hardware.

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.

Hand Clutch

The JS36MH55 is equipped with a hand-operated clutch. The unit automatically stops rotating when the clutch lever is released. Clutch operation should be tested each time the machine is started.

WARNING

NEVER disable or disconnect the centrifugal safety "**STOP**" switch. It is provided for operator safety. Injury may result if it is disabled, disconnected or improperly maintained.

Centrifugal Safety "STOP" Switch

NOTICE

Model JS36MH55 has a manual clutch, and therefore does not come equipped with a centrifugal safety "STOP" switch.

This trowel has been equipped with a centrifugal safety "**STOP**" switch (Figure 24). This switch should be tested every time the engine is started.

The switching mechanism of this switch 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).

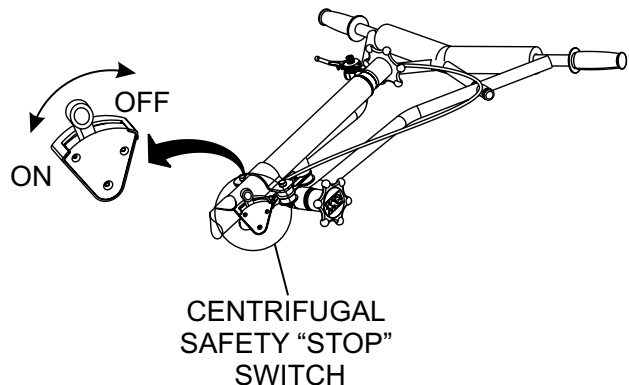


Figure 24. Centrifugal Safety "STOP" Switch

OPERATION

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.

Lifting the Trowel Onto a Slab

Extra care should be taken when lifting the trowel off the ground. Serious damage to the machine or personal injury could be caused by dropping a trowel.

WARNING

NEVER attempt to lift this machine alone. **NEVER** lift the trowel by the guard ring as it may rotate and cause injury.

ALWAYS make certain the handle is secure and use only the manufacturer's approved lifting point. The trowel may be lifted at the center lifting bale by crane or other lifting device of adequate capacity.

NOTICE

DO NOT attempt to operate the trowel until the Safety, General Information and Inspection sections of this manual have been read and thoroughly understood.

NOTICE

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 Bale

The lift bale provides an optimal lift point for lifting the trowel. When lifting the trowel onto a concrete slab, attach a chain or rope to the lifting bale. Make sure the lifting device has adequate lifting capacity to lift the trowel.

Using a crane or forklift (Figure 25) to lift the trowel is highly recommended, and is perfectly safe for the trowel. **ALWAYS** use extra care when lifting the trowel off the ground.

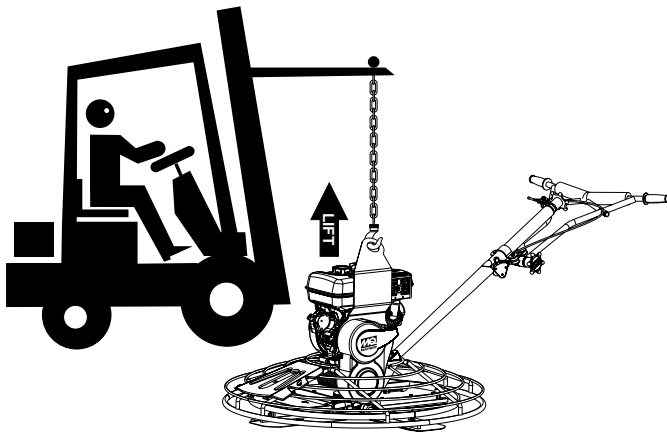


Figure 25. Lifting the Trowel

WARNING

NEVER lift the trowel to unnecessary heights. **DO NOT** stand underneath the trowel while it is being lifted. Serious damage to the machine or personal injury could be caused by dropping a trowel.

Starting the Engine

1. Place the engine fuel valve lever (Figure 26) in the "ON" position.

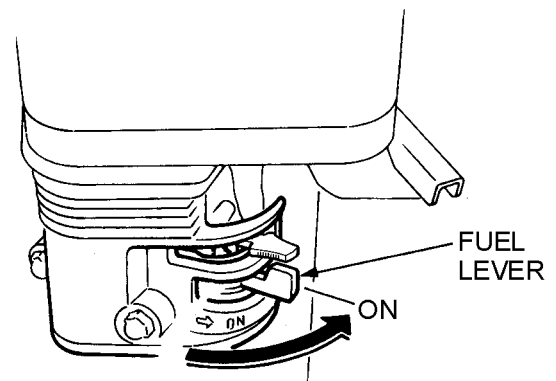


Figure 26. Engine Fuel Valve Lever (ON)

2. Pull the **throttle lever** (Figure 27) slightly backwards and place in the "IDLE" position.

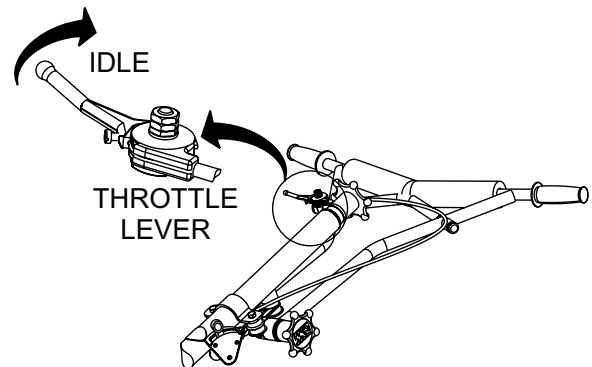


Figure 27. Throttle (Idle Position)

3. Place the **centrifugal safety "STOP" switch** (Figure 28) in the "ON" position.

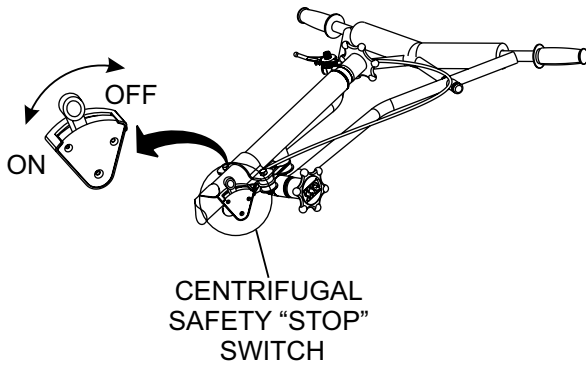


Figure 28. Centrifugal Safety "Stop" Switch (ON)

CAUTION

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

4. Place the **choke lever** (Figure 29) in the "**OPEN**" position.

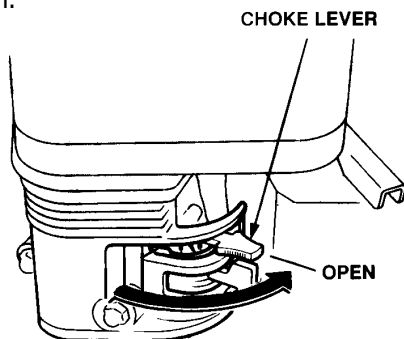


Figure 29. Choke Lever Open

5. Grasp the starter grip (Figure 30) 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.

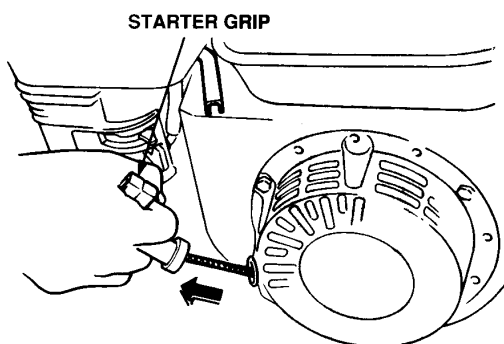


Figure 30. Starter Grip

6. If the engine has started, slowly return the choke lever (Figure 31) to the **CLOSED** position. If the engine has not started repeat steps 1 through 5.

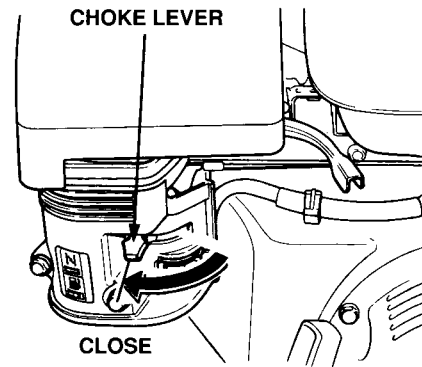


Figure 31. Choke Lever Closed

7. 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.

Testing the Centrifugal Safety Stop Switch

1. With the engine running at idle, place the safety stop switch lever in the "**OFF**" position (Figure 32). Verify that the engine shuts off. If the engine continues to run, replace centrifugal safety stop switch.

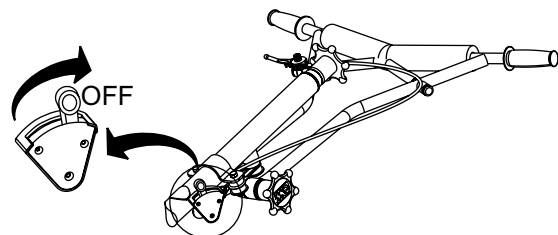


Figure 32. Testing Safety Stop Switch

2. Before performing this test, clear the area around the trowel. Make sure it is free of debris and objects. Move the safety stop switch lever to the "**ON**" position, restart the engine and let idle.

Stand behind the handle and spin the handle to the right, simulating a runaway situation. (See Figure 33). Centrifugal force should throw the safety switch outward to the "**OFF**" position thus shutting off the engine.

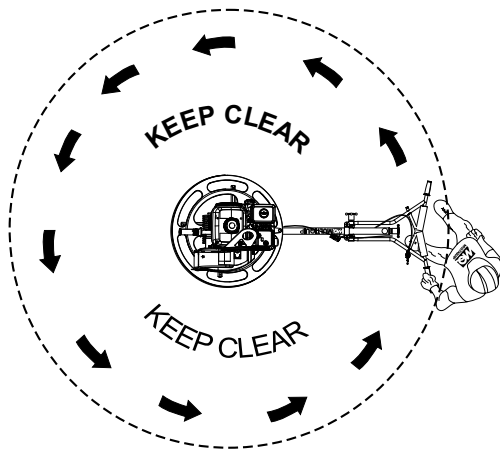


Figure 33. Testing Safety Stop Switch Runaway Situation

To Begin Troweling

1. To begin troweling, pull the throttle lever (Figure 34) backward to the "RUN" position.

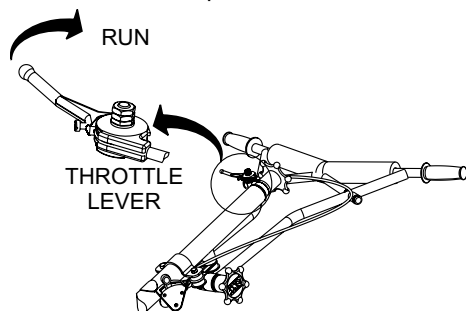


Figure 34. Throttle Lever (Run)

Concrete Finishing Techniques

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 (Standard Handle)

To pitch the blades upwards using the "*Standard*" handle, (Figure 35) simply turn the *star-wheel* clockwise. Turning the star wheel counter clockwise will cause the blades to lay flat.

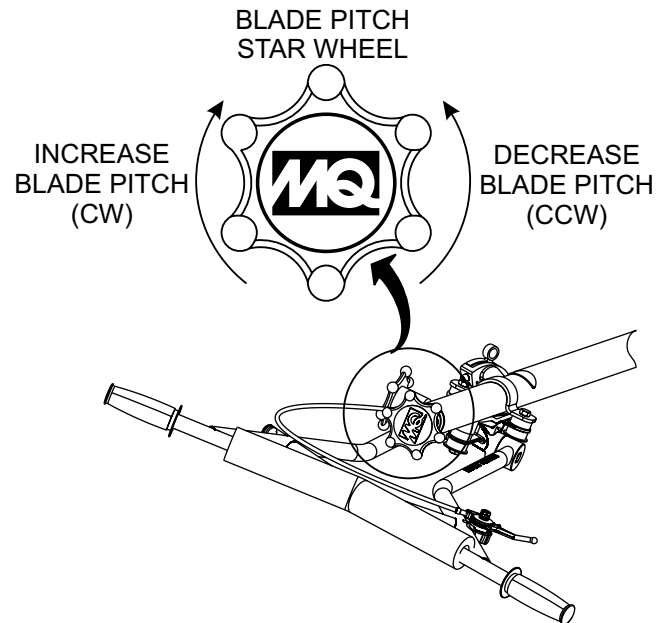


Figure 35. Blade Pitch Star Wheel

Pitching the Blades (Quick Pitch™ Handle)

To pitch the blades upwards using the "*Quick Pitch™*" handle, (Figure 36) simply **pull** the T-handle backwards while squeezing the trigger. Pushing the T-handle forward will cause the blades to lay flat.

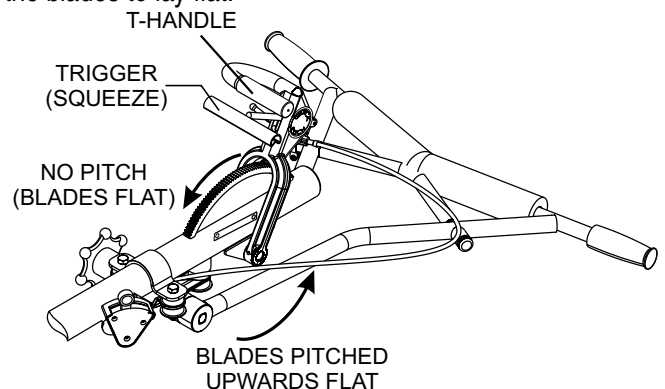


Figure 36. Blade Pitch T-Handle

OPERATION

Maneuvering the Trowel

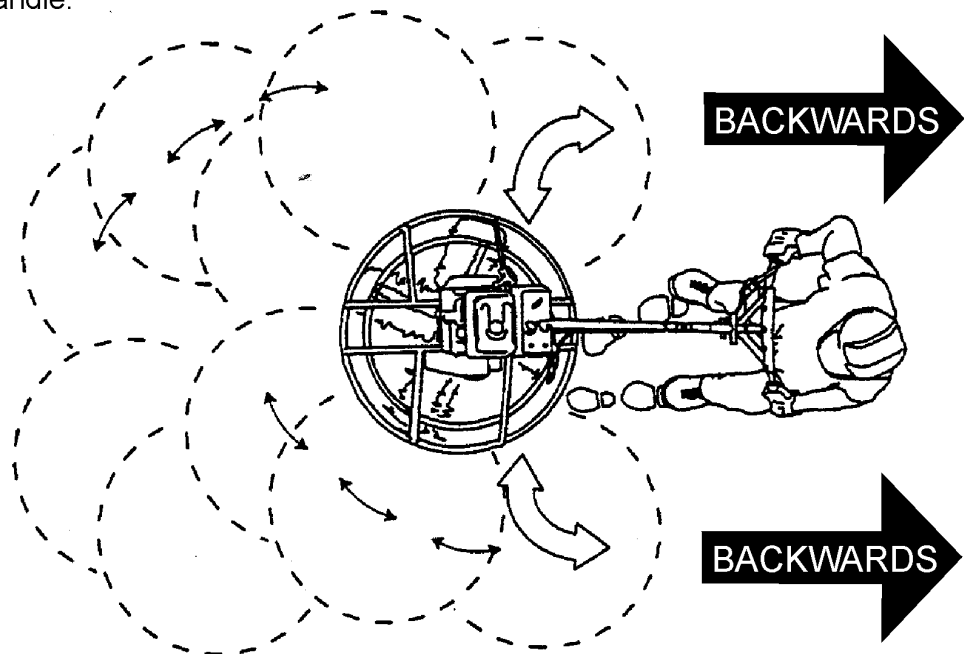
1. Get into the operator's position behind the handle. With a secure foothold and a firm grasp on the handle, slowly increase the engine speed until the desired blade speed is obtained.
2. Figure 37 below illustrates a typical walk-behind trowel application. Practice maneuvering the trowel. The trick is to let the trowel do the work.

3. 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 37. 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.

Stopping The Engine

1. Move the throttle lever forward to the (Figure 38) "IDLE" position and run the engine for three minutes at low speed.

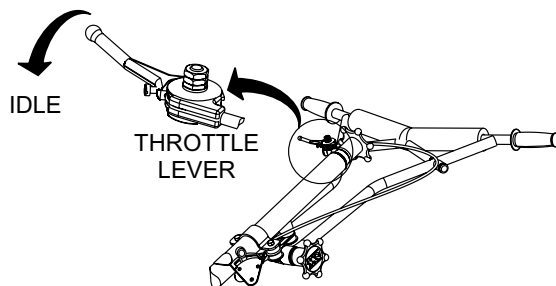


Figure 38. Throttle Lever (Idle)

2. After the engine cools, turn the engine start/stop switch to the "OFF" position (Figure 39).

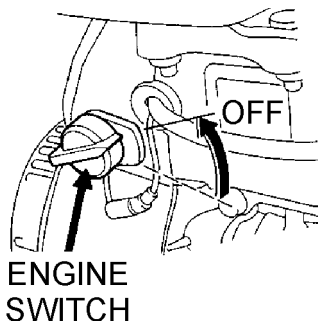


Figure 39. Engine ON/OFF Switch (OFF Position)

3. Place the safety stop switch (Figure 40) in the "OFF" position.



Figure 40. Safety Stop Switch (OFF)

4. Close the fuel shut-off valve (Figure 41) by moving the fuel valve lever to the "OFF" position.

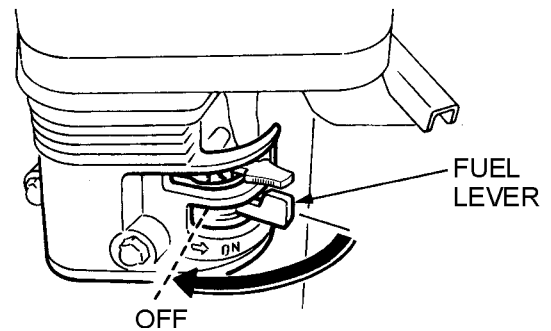


Figure 41. Fuel Valve Lever (OFF)

NOTICE

Trowel 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 steel.

If you need replacement blades, consult the parts list in this manual for part numbers and order them from your Multiquip parts dealer or importer.

Combo Blades

This trowel is equipped with combination float/finish (Figure 42) 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.

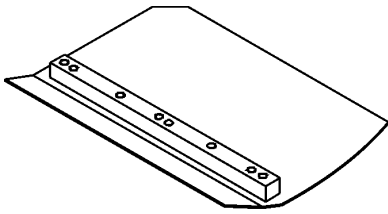


Figure 42. Combination Blade

Finish Blades (Optional)

These blades (Figure 43) 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.

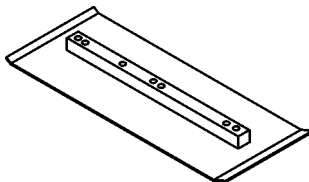


Figure 43. Finish Blade

Clip-On Float Blades (Optional)

These blades will clip (Figure 44) onto an existing installed blade, allowing your finisher to float on “wet” concrete so that the troweling operation can begin as early as possible. These blades 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.

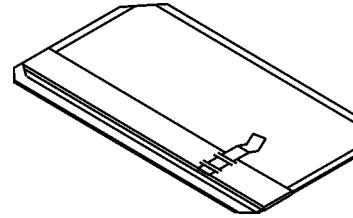


Figure 44. Clip-On Float Blade

Float Discs (Optional)

These round discs (Figure 45) 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.

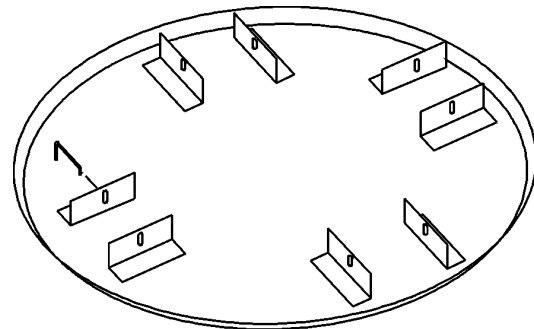


Figure 45. Float Disk/Pan

NOTICE

For optimum panning performance blade speed must be changed. Use Low Speed Kit. Reference Engine Assembly in parts section of this manual.

Trowel Arm Adjustment Tool (Optional)

If blades show uneven wear patterns or some tend to wear out faster than others, the trowel arms may need to be adjusted. A special tool is available (Figure 46) that will adjust all of the trowel arms consistently. The Trowel Arm Fixture P/N is 1817.

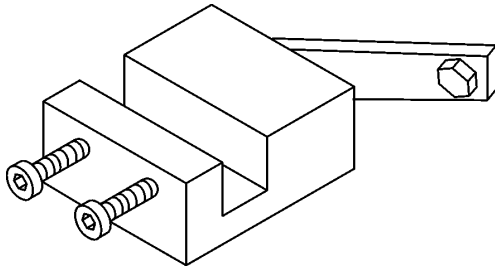


Figure 46. Trowel Arm Adjustment Fixture

Quick Pitch™ Handle (Optional)

This feature (Figure 47) is not standard equipment on this model walk-behind trowel. To order this feature please contact MQ unit sales.

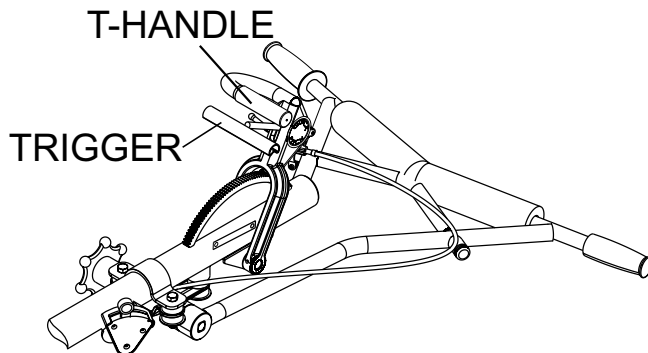


Figure 47. Quick Pitch™ Handle (Option)

The Quick Pitch™ Handle feature allows the operator to adjust the pitch of the blades by grasping the handle, then squeezing the trigger lever and then moving the handle either forward or backwards to achieve the desired blade pitch.

MAINTENANCE

Table 5. Engine Maintenance Schedule

DESCRIPTION (3)	OPERATION	BEFORE EACH USE	FIRST MONTH OR 20 HRS.	EVERY 6 MONTHS OR 100 HRS.	EVERY YEAR OR 300 HRS.	EVERY 2 YEARS OR 500 HRS.
Engine Oil	Check	X				
	Change		X	X		
Engine Oil Filter	Replace	Every 200 Hrs.				
Air Cleaner	Check	X				
	Clean			X (1)		
	Change					X (*)
Spark Plugs	Check/Adjust			X		
	Replace				X	
Spark Arrester	Clean			X		
Fuel Filter	Replace				X (2)	
Fuel Tube	Check	Every 2 years (replace if necessary) (2)				

* - Replace the paper filter element only.

(1) Service more frequently when used in **DUSTY** areas.

(2) These items should be serviced by your service dealer, unless you have the proper tools and are mechanically proficient. Refer to the HONDA Shop Manual for service procedures.

(3) For commercial use, log hours of operation to determine proper maintenance intervals.

Table 6. Trowel Maintenance Schedule

ITEM	OPERATION	DAILY	Periodic Maintenance Interval		
			Every 50-60 Hrs	Every 200-300 Hrs	Every 2000-2500 Hrs
V-Belt	Check/Replace	X			
Relube Trowel Arms	Grease		X		
Blades	Check/Replace		X		
Trowel Arms	Remove/Clean			X	
Thrust Collar/Bushing	Remove/Clean			X	
Blade Arms	Adjust			X	
Arm Bushing	Remove/Replace				X
Wear Ring	Remove/Replace				X
Thrust Collar Bearing	Remove/Replace				X
Pitch Control Cable	Check				X
Clutch	Remove/Clean			X	

General maintenance practices are crucial to the performance and longevity of your trowel. This equipment requires routine cleaning, blade and trowel arm inspection, lubrication and V-belt inspection for wear and damage. Reference Table 5 and Table 6 for scheduled engine and trowel maintenance.

The following procedures, devoted to maintenance, can prevent serious trowel damage or malfunctioning.

NOTICE

Reference **HONDA** engine manual supplied with your trowel for more detailed engine maintenance and troubleshooting.

CAUTION



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

CAUTION

ALWAYS disconnect the spark plug wire from the spark plug and secure away from the engine before performing maintenance or adjustments on the machine.

WARNING



Some maintenance operations may require the engine to be run. Ensure that the maintenance area is well ventilated. Gasoline engine exhaust contains poisonous carbon monoxide gas that can cause unconsciousness and may result in **DEATH**.

GENERAL CLEANLINESS

Clean the trowel daily. Remove all dust and slurry buildup. If the trowel is steam-cleaned, ensure that lubrication is accomplished **AFTER** steam cleaning.

ENGINE CHECK

Check daily for any oil and/or fuel leakage, thread nut and bolt tightness, and overall cleanliness.

Engine Air Cleaner

! DANGER



DO NOT use gasoline or low flash point solvents for cleaning the air cleaner, the possibility exists of fire or explosion which can cause damage to the equipment and severe bodily harm or even **DEATH!**

! CAUTION



Wear protective equipment such as approved safety glasses or face shields and dust masks or respirators when cleaning air filters with compressed air.

This engine is equipped with a replaceable, high-density paper air cleaner element. See Figure 48 for air cleaner components.

1. Remove the air cleaner cover and foam filter element.
2. Tap the paper filter element several times on a hard surface to remove dirt, or blow compressed air not exceeding 30 psi (207 kPa, 2.1 kgf/cm²) through the filter element from the inside out. **NEVER** brush off dirt. Brushing will force dirt into the fibers. Replace the paper filter element if it is excessively dirty.
3. Clean foam element in warm, soapy water or nonflammable solvent. Rinse and dry thoroughly. Dip the element in clean engine oil and completely squeeze out the excess oil from the element before installing.

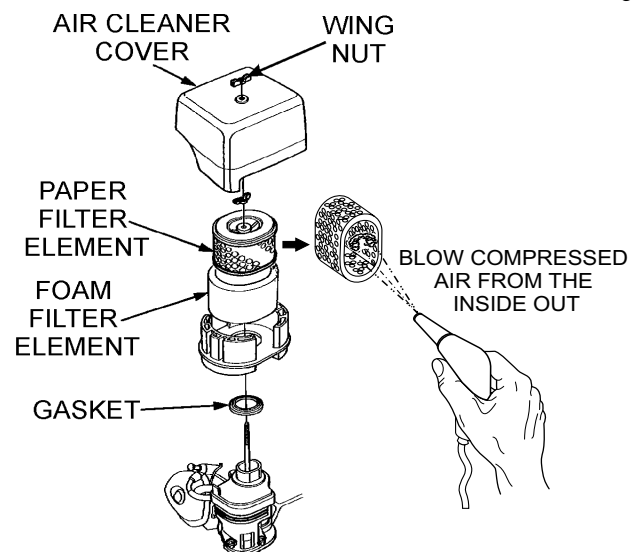


Figure 48. Engine Air Cleaner

NOTICE

Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

ENGINE OIL

1. Drain the engine oil when the oil is warm as shown in Figure 49.
2. Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container.
3. Replace engine oil with recommended type oil as listed in Table 4. For engine oil capacity, see Table 3 (engine specifications). **DO NOT** overfill.
4. Reinstall drain bolt with sealing washer and tighten securely.

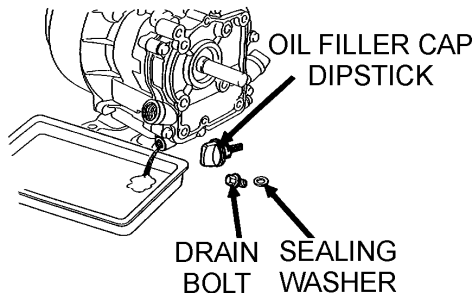


Figure 49. Draining Engine Oil

SPARK PLUG

NOTICE

NEVER use a spark plug of incorrect heat range.

1. Remove and clean spark plug (Figure 50) with a wire brush if it is to be reused. Discard spark plug if the insulator is cracked or chipped.
2. Using a feeler gauge adjust spark plug gap to 0.028 ~0.031 inch (0.7~0.8 mm).
3. Thread spark plug into cylinder hole by hand to prevent cross-threading, then tighten securely.

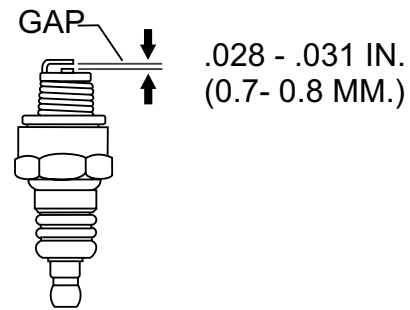


Figure 50. Spark Plug Gap

V-BELT

Visually examine the V-belt (Figure 51) and determine if it is full of tiny cracks, frayed, has pieces of rubber missing, is peeling or otherwise damaged.

Also, examine the belt and determine if it is **oil soaked** or "**glazed**" (hard shiny appearance on the sides of the belt). Either of these two conditions can cause the belt to run hot, which can weaken it and increase the danger of it breaking.

If the V-belt exhibits any of the above wear conditions replace the V-belt immediately.

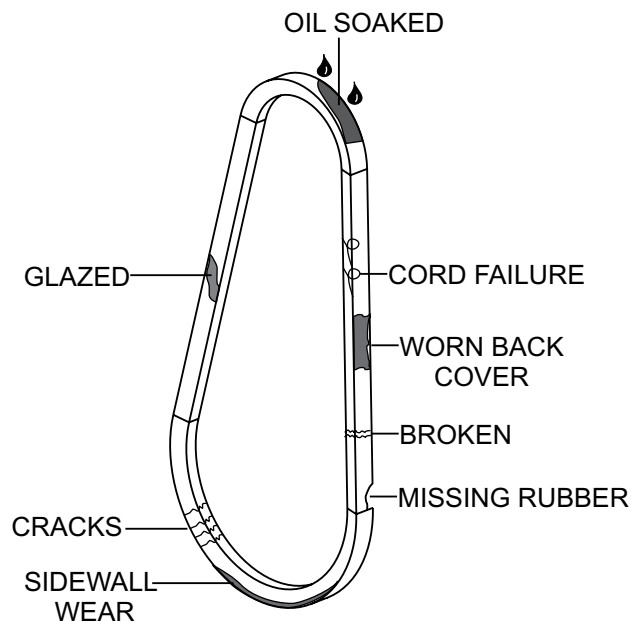


Figure 51. V-Belt Inspection

SPARK ARRESTER CLEANING

Clean the spark arrester every 6 months or 100 hours.

1. Remove the 4 mm screw (3) from the exhaust deflector, then remove the deflector. See Figure 52
2. Remove the 5 mm screw (4) from the muffler protector, then remove the muffler protector.
3. Remove the 4 mm screw from the spark arrester, then remove the spark arrester.

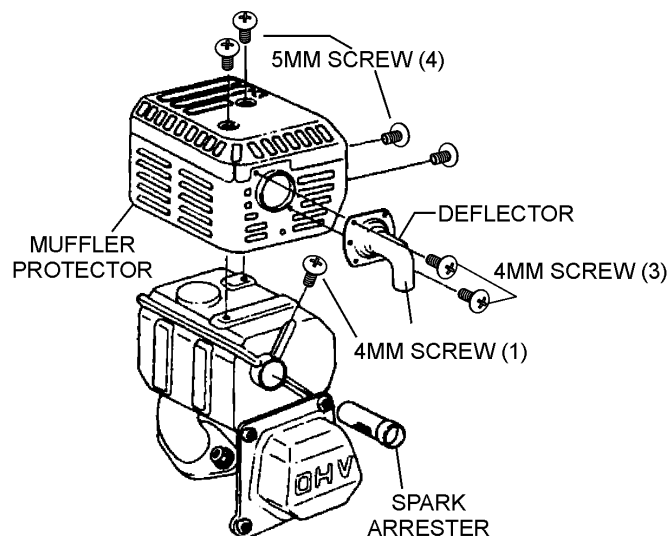


Figure 52. Spark Arrester Removal

4. Carefully remove carbon deposits from the spark arrester screen (Figure 53) with a wire brush.

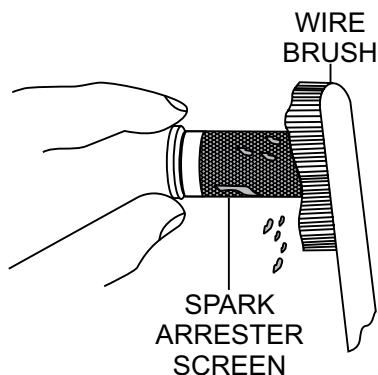


Figure 53. Cleaning The Spark Arrester

5. If the spark arrester is damaged and has breaks or holes, replace with a new one.
6. Reinstall the spark arrester and muffler protector in reverse order of disassembly.

BLADE PITCH ADJUSTMENT PROCEDURE

The maintenance adjustment of blade pitch is an adjustment that is made by a bolt (Figure 54) on the arm of the trowel arm lever. This bolt is the contact point of the trowel arm lever to the lower wear plate on the thrust collar. The goal of the adjustment is to promote consistent blade pitch and finishing quality. Adjustments are made by tightening or loosening the blade pitch adjustment bolt.

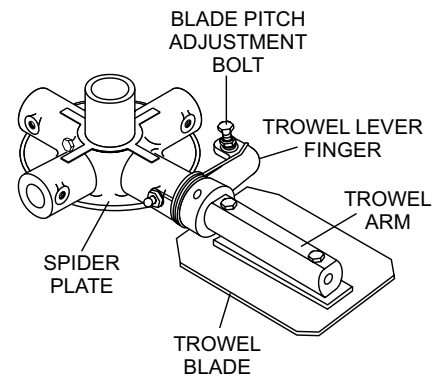


Figure 54. Blade Pitch Adjustment Bolt

Watch for the following indications when determining if blade pitch adjustments are necessary:

- Is the machine wearing out blades unevenly, (i.e. one blade is completely worn out while the others look new)?
- Does the machine have a perceptible rolling or bouncing motion when in use?
- Look at the machine while it is running, do the guard rings “rock up and down” relative to the ground?

If it is determined that blade pitch adjustments are required do the following:

NOTICE

Before any blade pitch adjustments can be made it is essential to have a clean level area free of dirt and debris to test the trowel. Any unlevel spots in the floor or debris under the trowel blades will give an incorrect perception of adjustment. Ideally, a 5 x 5 ft. (1.5 x 1.5 meter), three-quarter inch (19 mm) thick **FLAT** steel plate should be used for testing.

1. Place the trowel on a flat, level area free of dirt and debris.

- Pitch the blades as flat as possible. The pitch adjustment bolts (Figure 55) should all barely make contact (0.10 inch max. clearance) with the **lower wear plate** on the spider. All pitch alignment bolts should be spaced the same distance from the lower wear plate. If one is not making contact, adjustment will be necessary.

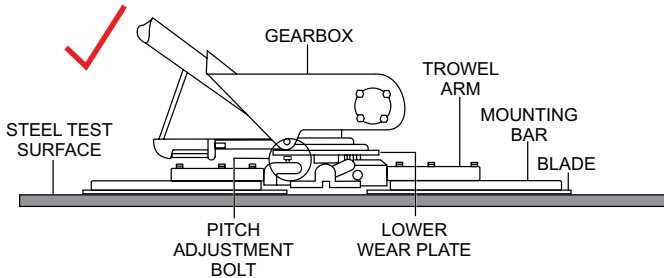


Figure 55. Correct Blade Pitch (Flat)

- Adjust the “**high**” bolts down to the level of the one that is not touching, or adjust the “**low**” bolt up to the level of the higher ones. If possible, adjust the low bolt up to the level of the rest of the bolts. This is the fastest way, but may not always work. Verify after adjustment the blades pitch correctly.
- Blades that are incorrectly adjusted often will not be able to pitch flat. This can occur if the adjusting bolts are raised too high. Conversely, adjusting bolts that are too low will not allow the blades to be pitched high enough for finishing operations.
- If, after making blade pitch adjustments the machine is still finishing poorly, blades, trowel arms, and trowel arm bushings may be suspect and should be looked at for adjustment, wear, or damage.
- Figure 56 illustrates, “incorrect alignment”, worn spider bushings or bent trowel arms.

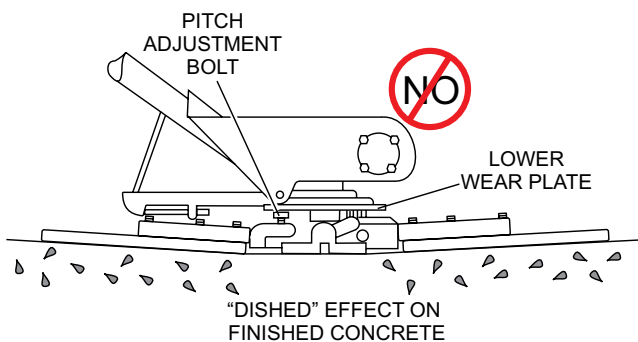


Figure 56. Incorrect Spider Plate Alignment

SPIDER REMOVAL

Remove the spider assembly from the gearbox shaft as follows:

- Locate the cone point square head set screw (Figure 57) and attached jam nut found on the side of the spider assembly.
- Loosen the jam nut and cone point square head set screw.
- Carefully lift the upper trowel/gearbox 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.

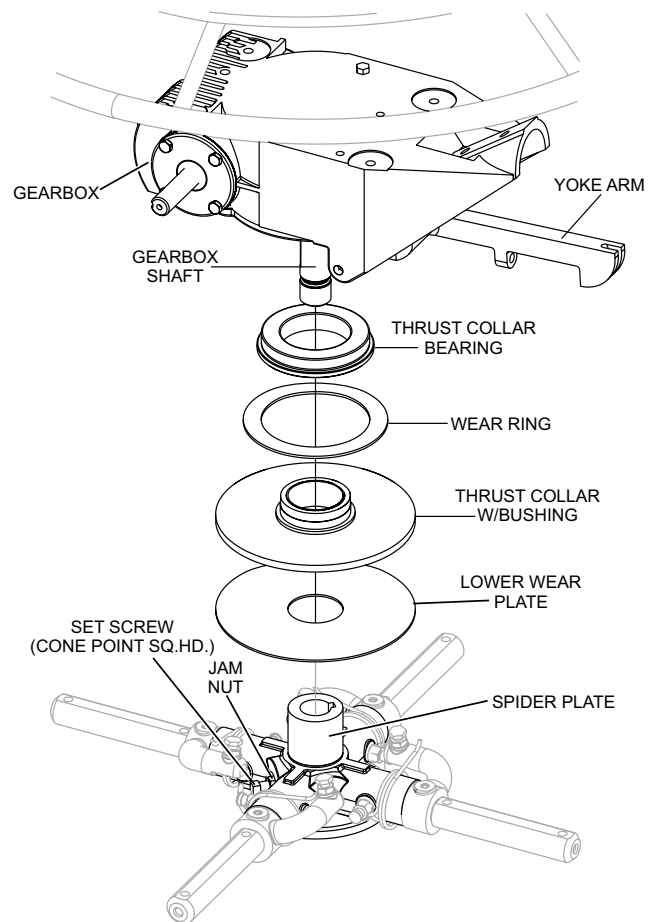


Figure 57. Spider Removal

CHANGING BLADES

It is recommended that **ALL** the blades on the trowel are changed at the same time. If only one or some of the blades are changed, the machine will not finish concrete consistently and the machine may wobble or bounce.

Perform the following procedure when changing blades: Please note the blade orientation on the trowel arm before removing.

1. Lift the trowel up, placing blocks under the main guard ring to support it.
2. Remove the bolts and lock washers from all the towel arms, and then remove the blades as shown in Figure 58.

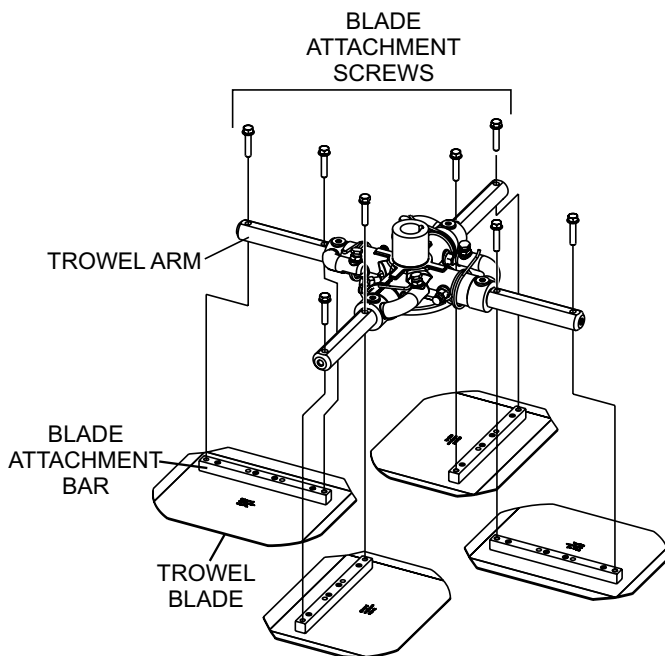


Figure 58. Blade Removal

3. Wire brush and remove all concrete and debris from all six sides of each of the four trowel arms. This is important to properly seat the new blades.
4. Install the new blades, maintaining the proper blade orientation for direction of rotation.
5. Reinstall the bolts and lock washers.

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 59) from the spider plate.
2. Remove the trowel arm from the spider plate.
3. Should the trowel arm inserts (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 trowel arm bushing insert (Figure 59), clean if necessary. Replace bushing if out of round or worn.

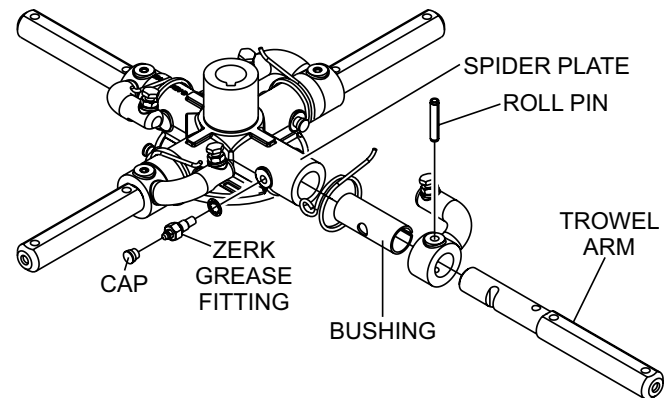


Figure 59. Trowel Arm Removal

CHECKING TROWEL ARM STRAIGHTNESS

Trowel arms (Figure 60) can be damaged by rough handling, such as dropping the trowel on the pad, or by striking exposed plumbing, forms, or rebar while in operation. A bent trowel arm will not allow the trowel to operate in a smooth fluid rotation. If bent trowel arms are suspect, check for flatness as follows:

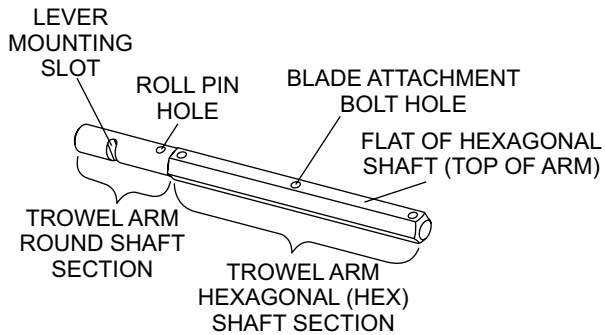


Figure 60. Trowel Arm

1. Use a thick steel plate, granite slab or any surface which is true and flat, to check all six sides of each trowel arm for flatness (Figure 61).
2. Check each of the six sides of the trowel arm (hex section). A feeler gauge of .004 inch (0.10 mm) should not pass between the flat of the trowel arm and the test surface along its length on the test surface.

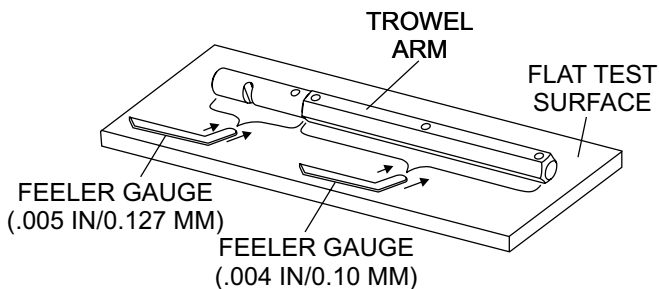


Figure 61. Checking Trowel Arm Flatness

3. Next, check the clearance between the round shaft and the test surface as one of the flat hex sections of the arm rests on the test surface. Rotate the arm to each of the flat hex sections and check the clearance of the round shaft. Use a feeler gauge (Figure 62) of .005 inch (0.127 mm). Each section should have the same clearance between the round of the trowel arm shaft and the test surface.
4. If the trowel arm is found to be uneven or bent, replace the trowel arm.

TROWEL ARM LEVER ADJUSTMENT

The easiest and most consistent way to adjust the trowel arm lever is to use the Trowel Arm Adjustment Fixture (P/N 1817).

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.

This fixture will allow consistent adjustment of the trowel arm lever. It comes with all the hardware necessary to properly accomplish this maintenance and instructions on how to properly utilize this tool. Adjusting the trowel arm lever without a fixture requires a special talent.

Perform the following procedure when adjusting the trowel arm lever:

1. Unscrew the locking bolts on the adjustment fixture and place the trowel arm (lever attached) into the fixture channel as shown in Figure 62.
2. Ensure the fixture arm is in the up position.
3. 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.

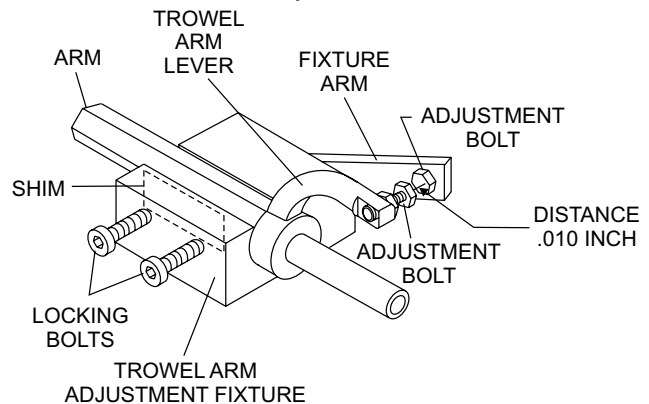


Figure 62. Trowel Arm Adjustment Fixture

4. Use an allen wrench to tighten the locking bolts securing the trowel arm in place.
5. Adjust the bolt distance shown in Figure 62 to match one of the arms. The other arms will be adjusted to match this distance.
6. Loosen the locking nut on the trowel arm lever, then turn the trowel arm adjusting bolt until it barely touches (.010") the fixture adjusting bolt.

7. Once the correct adjustment is made, tighten the lock nut on the trowel arm to lock in place.
8. Loosen locking nuts on the adjustment fixture, and remove trowel arm.
9. Repeat steps for the remaining trowel arms.

HAND CLUTCH ADJUSTMENT

This trowel is equipped with a hand-operated clutch that is a belt-tightener type clutch. It operates 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 63) located on the clutch lever. Rotating the nut provides either more or less (depending upon the direction of rotation) clutch engagement.

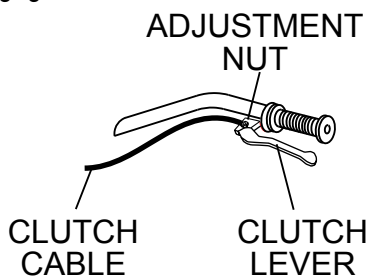


Figure 63. Hand Clutch Adjustment

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.

WARNING

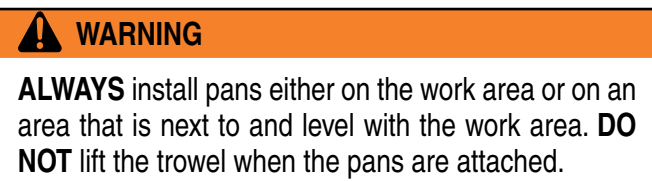
NEVER attempt to override the manual clutch by using tape or other means to hold down the clutch lever. Doing so may cause **SEVERE INJURY**.

REASSEMBLY

1. Clean and examine the upper/lower wear plates and thrust collar. Examine the entire spider assembly. Wire brush any concrete or rust buildup. 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 damaged or out of round. Clean the bushing if necessary. If the bronze bushing is damaged 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 bolt with zerk grease fitting and jam nut.
8. Reinstall the blades onto the trowel arms.
9. Install stabilizer ring onto spider assembly.

10. Reinstall lower wear plate, thrust collar and upper wear ring in the reverse order that they were disassembled onto the spider shaft. Make sure that there is little or no lateral movement between the thrust collar and the spider shaft.
11. Carefully lift the upper trowel assembly, line up the keyway on gear box main shaft and insert into spider assembly.
12. 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.
13. Lubricate all grease points (zerk fittings) with premium "Lithum 12" based grease, conforming to NLGI Grade #2 consistency.

INSTALLING PANS ONTO FINISHER BLADES



These round discs, sometimes referred to as "pans", attach to the spiders arms and allow early floating on wet concrete and easy movement from wet to dry areas. They are also very effective in embedding large aggregates and surface hardeners.

Refer to Figure 64 when installing pans onto finisher blades.

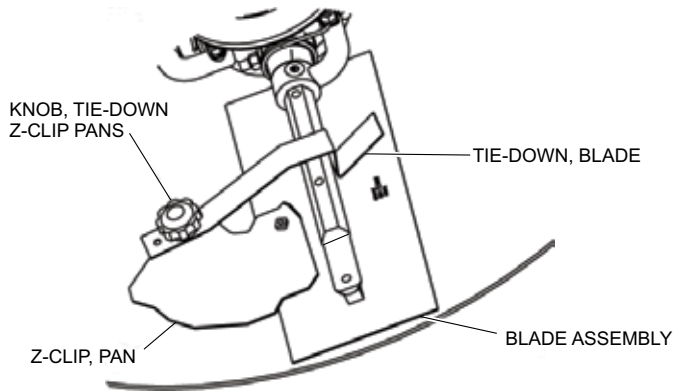


Figure 64. Z-Clip Finisher Pan Installation

1. Lift trowel just enough to slide pan under blades. Lower finisher onto pan with blades adjacent to Z-Clips.
2. Rotate blades into position under Z-Clips. Ensure that the blades are rotated in the direction of travel when the machine is in operation or use the engine to rotate the blades into position.
3. Attach the blade tie-downs to the far side of the Z-Clip brackets with tie-down knobs as shown in Figure 64.
4. Check to make certain that the blade edges are secured under the Z-Clips and the tie-downs are secured completely over the edges of the blade bar before the machine is put back into operation.

LONG-TERM STORAGE

For storage of the trowel for over 30 days, the following is required:

- Drain the fuel tank completely, or add STA-BIL to the fuel.
- Run the engine until the gasoline in the carburetor is completely consumed.
- Completely drain the oil from the crankcase and refill with fresh oil.
- Remove the spark plug. Pour 5 to 10 cc of SAE 30 oil into the cylinder. Turn the engine switch to the **START** position for a few seconds to distribute the oil. Reinstall the spark plug.
- Clean all external parts of the trowel with a cloth.
- Cover the trowel and store in a clean, dry place.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	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.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
	No oil?	Add oil as required.
	Oil pressure alarm lamp blinks upon starting? (if applicable)	Check automatic shutdown circuit, "oil sensor". (if applicable)
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.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	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.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat 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.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with ON/OFF switch in "ON" position.	ON/OFF switch not activated ON?	Turn on ON/OFF Switch.
	ON/OFF switch/wiring defective?	Replace ON/OFF switch. Check wiring.
	Centrifugal stop switch not activated ON?	Turn on centrifugal stop switch.
	Centrifugal stop switch/wiring defective?	Replace centrifugal stop switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Walk-Behind Trowel)		
Symptom	Possible Problem	Solution
Engine running rough or not at all.	Engine ON/OFF Switch in "OFF" position or malfunctioning?	Make sure that the Engine ON/OFF Switch is ON or replace switch if necessary.
	Centrifugal ON/OFF Switch in "OFF" position or malfunctioning?	Place centrifugal stop switch in "ON" position. Check wiring. 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.
	Loose wire connections	Check wiring. Replace or repair as necessary.
	Bad contacts in ON/OFF switch?	Replace ON/OFF switch.
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.
	Pitch adjustment?	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. (Contact Parts Dept.)
	Bent trowel arms?	Check the spider assembly for bent trowel arms. If one of the arms is even slightly bent, replace it immediately.
	Spider?	Check fit of arms in spider. This can be done by moving the trowel arms up and down. If there is more than 1/8 inch (3.2 mm) of travel at the tip of the arm, the spider and arms should be replaced.
	Thrust collar?	Check the flatness of the thrust collar by rotating it on the spider. If it varies by more than 0.02 inch (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 inch (2.4 mm) - as measured at the thrust collar O.D., replace the thrust collar.
	Thrust bearing worn?	Check the thrust bearing to see that it is spinning freely. Replace if necessary.

TROUBLESHOOTING

Troubleshooting (Walk-Behind Trowel) - continued		
Symptom	Possible Problem	Solution
Clutch slipping or sluggish response to engine speed change.	Worn V-belts?	Replace V-belt.
	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.
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.
Clutch slipping or sluggish response to engine speed change.	Worn V-belts?	Replace V-belt.
	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.
Trowel blades do not rotate.	Defective clutch?	Replace clutch.
	Broken V-belt?	Replace V-belt.
	Defective ON/OFF switch?	Check and replace ON/OFF switch if necessary.
	Defective centrifugal ON/OFF switch?	Check and replace centrifugal ON/OFF switch if necessary.