

OPERATION MANUAL



MODELS

JTNS20HTCSL

JTNSW20HTCSL

RIDE-ON POWER TROWELS

(HONDA GX630RQZB2-R280 GASOLINE ENGINE)

Revision #4 (10/15/13)

Original Version

To find the latest revision of this
publication, visit our website at:
www.multiquip.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

PN: 22904

FUEL AND CHEMICAL EXPOSURE WARNINGS



WARNING

Gasoline engine exhaust and some of its constituents, and some dust created by power sanding, sawing, grinding, drilling and other construction activities contain chemicals known to cause cancer, birth defects and other reproductive harm.

Some examples of these chemicals are:

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

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

SILICOSIS/RESPIRATORY WARNINGS

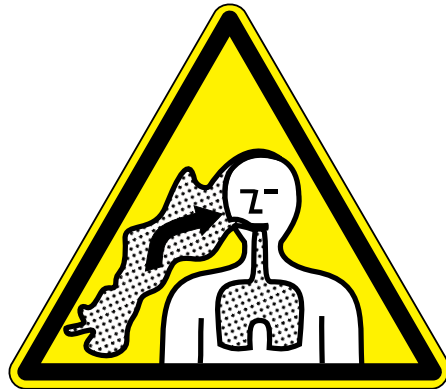
WARNING



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.

JTNS20HTCSL JTNSW20HTCSL Series Ride-On Power Trowel

Fuel And Chemical Exposure Warnings	2
Silicosis/Respiratory Warnings	3
Table Of Contents	4
Training Checklist	5
Daily Pre-Operation Checklist	6
Safety Information	7-12
Specifications/Dimensions.....	13-14
General Information.....	15
Components	16-17
Basic Engine.....	18
Set-Up	19
Inspection	20-21
Operation.....	22-23
Maintenance	24-36
Wiring Diagram Component Locator	37
Wiring Diagram.....	38-39
Troubleshooting	40-43
EC Declaration of Conformity	45

NOTICE

Specifications 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 levels.		
3	Fuel system, refueling procedure.		
4	Operation of spray and lights.		
5	Operation of controls (machine not running).		
6	Safety controls, safety stop switch operation.		
7	Emergency stop procedures.		
8	Startup of machine, pre-heat, engine choke.		
9	Maintaining a hover.		
10	Maneuvering.		
11	Pitching.		
12	Matching blade pitch. Twin-Pitch™		
13	Concrete finishing techniques.		
14	Shutdown of machine.		
15	Lifting of machine (lift loops).		
16	Machine transport and storage.		

DAILY PRE-OPERATION CHECKLIST

Daily Pre-Operation Checklist		✓	✓	✓	✓	✓	✓
1	Engine oil level						
2	Condition of blades						
3	Blade pitch operation						
4	Safety stop switch operation						
5	Steering control 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
	Lethal exhaust gas hazards
	Explosive fuel hazards







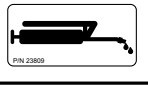
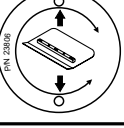
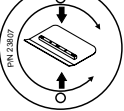
Symbol	Safety Hazard
	Burn hazards
	Rotating parts hazards

DECALS

Decals associated with the operation of this equipment are defined below:

DECAL	SAFETY HAZARD
	WARNING Rotating Blade Hazard <ul style="list-style-type: none"> • Keep hands and feet clear of guard rings. • Stop engine before servicing.
	WARNING Read Manual To avoid injury you must read and understand operator's manual before using this machine.
	WARNING Lifting Crush Hazard <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).
	ALWAYS wear protective clothing when operating this equipment
	WARNING Training This machine to be operated by qualified personnel. Ask for training as needed.
	WARNING Guard Hazard NEVER operate this equipment with guards removed. Keep hands clear.

SAFETY INFORMATION

DECAL	SAFETY HAZARD
	DANGER Spring Compression Hazard • DO NOT disassemble. • Spring inside is under compression.
	WARNING Lethal Exhaust Gas Hazard • Inhaling exhaust fumes can result in severe injury or death. • Only operate equipment in well ventilated areas. DO NOT inhale exhaust gases/fumes.
	WARNING DO NOT Use Water Hazard
	Lifting Point. Attach lifting strap to this point
	CAUTION Burn Hazard • HOT PARTS can burn skin. • DO NOT touch hot parts. Allow machine a sufficient amount of time to cool before performing maintenance.
	Use <u>unleaded</u> gasoline only.
	Lubrication Point. Apply grease.
	Right-Hand Pitch Control. Turn clockwise to <u>raise</u> blade. Counterclockwise to <u>lower</u> blade
	Left-Hand Pitch Control. Turn clockwise to <u>lower</u> blade. Counterclockwise to <u>raise</u> blade

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.

SAFETY INFORMATION

- **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.

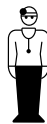
- **ALWAYS** know the location of the nearest **fire extinguisher**.



- **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.



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.
- **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** allow passengers or riders on the 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.

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 radiator cap while the engine is hot. High pressure boiling water will gush out of the radiator and severely scald any persons in the general area of the trowel.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the trowel.



SAFETY INFORMATION

CAUTION

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



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** 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.



BATTERY SAFETY

DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **DO NOT** charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.



CAUTION

- **ALWAYS** disconnect the **NEGATIVE** battery terminal before performing service on the equipment.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

SAFETY INFORMATION

TRANSPORTING SAFETY

⚠ CAUTION

- **NEVER** allow any person or animal to stand underneath the equipment while lifting.
- Ride-on trowels are very heavy and awkward to move around. Use proper heavy lifting procedures and **DO NOT** attempt to lift the trowel by the guard rings.



NOTICE

- The easiest way to lift the trowel is to utilize the lift loops that are welded to the frame. These lift loops are located to the left and right sides of the operator's seat.

A strap or chain can be attached to these lift loops, allowing a forklift or crane to lift the trowel up onto and off of a slab of concrete. The strap or chain should have a minimum of 2,000 pounds (1,000 kg) lifting capacity and the lifting gear must be capable of lifting at least this amount.
- **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 lift loops are not damaged.
- Always make sure crane or lifting device has been properly secured to the lift loops 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 rope.

TOWING SAFETY

⚠ CAUTION

- Check with your local county or state safety towing regulations, in addition to meeting **Department of Transportation (DOT) Safety Towing Regulations**, before towing your trowel.
- In order to reduce the possibility of an accident while transporting the trowel on public roads, **ALWAYS** make sure the trailer that supports the trowel and the towing vehicle are mechanically sound and in good operating condition.
- **ALWAYS** shutdown engine before transporting
- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer "gross vehicle weight rating."
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. **Trailer tires should be inflated to 50 psi cold.** Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a **safety chain**.
- **ALWAYS** properly attach trailer's safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
 - Connect and test electric brake operation.
 - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is 55 MPH unless posted otherwise. Recommended off-road towing is not to exceed 15 MPH or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.



SAFETY INFORMATION

- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place **chock blocks** underneath wheel to prevent rolling while parked.
- Place support blocks underneath the trailer's bumper to prevent tipping while parked.
- Use the trailer's swivel jack to adjust the trailer height to a level position while parked.

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 diesel 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 regulations.

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

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

SPECIFICATIONS/DIMENSIONS

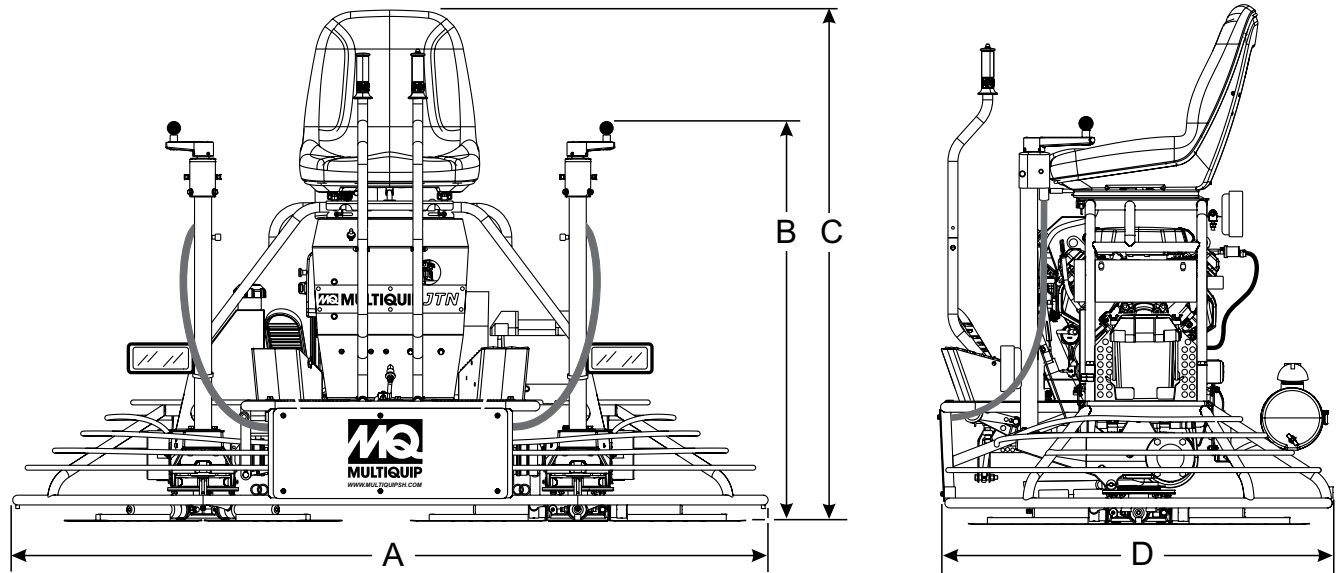


Figure 1. Dimensions

Table 1. Trowel Specifications		
Model	JTNS20HTCSL	JTNSW20HTCSL
A–Length – in. (cm)	77.0 (195.6)	77.0 (195.6)
B– Height (Handle) in. (cm)	39 (99)	41 (104)
C–Height (Seat) – in. (cm)	49 (125)	51(131)
D–Width – in. (cm)	39.5 (101)	39.5 (101)
Weight – lbs. (kgs.) Operating	616 (280)	616 (280)
Weight – lbs. (kgs.) Shipping	836 (380)	836 (380)
Engine – kW (HP)	15.5 kW (20.8 HP/3600 rpm)	15.5 kW (20.8 HP/3600 rpm)
Fuel Tank – gallons (liters)	2.3 (9.1)	2.3 (9.1)
Blades Per Rotor	4	4
Rotor – RPM (Dry Concrete)	138	138
Path Width – in. (cm)	75 (191)	75 (191)
Engine Oil Capacity (w/ new filter)	2 Quarts (1.9 Liters)	2 Quarts (1.9 Liters)
Gear Box Oil Capacity	27 oz. (798 ml) ISO-VG640	25 oz. (750 ml) ISO-VG640

SPECIFICATIONS/DIMENSIONS

Table 2. JTNSW20HTCSL Noise and Vibration Emissions

Model	JTNSW20HTCSL
Guaranteed ISO 11201:2010 Based Sound Pressure Level at Operator Station in dB(A)	90.84
Guaranteed ISO 3744:2010 Based Sound Power Level in dB(A)	115.66
Whole Body Vibration Per ISO 2631-1:1997+A1:2010 in $m/s^2 \Sigma A(8)$	0.06

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 whole body vibration is $0.5 m/s^2 \Sigma A(8)$. The daily exposure limit value is $1.15 m/s^2 \Sigma A(8)$.

Table 3. Engine Specifications/Dimensions

Model	Honda GX630 RH QZB2-R280 Engine
Type	4 Stroke, Overhead Valve, 90° V-Twin 2 cylinder gasoline engine.
Bore x Stroke	78 x 72 mm (3.1 x 2.8)
Piston Displacement	688 cc (41.9 cu.in).
Net Power Output	15.5 kW (20.8 HP/3,600 rpm)
Max. Torque	48.3 N·m (4.93 kgf·m 35.6 lbf·ft) @ 2,500 rpm
Cooling System	Forced Air
Engine Oil Capacity SAE 10W-30 API Service Class SE or later	1.6 qt. (1.50 liters) 1.8 qt. (1.7 liters w/oil filter replacement)
Fuel	Unleaded gasoline Octane rating of 86 or higher. Maximum 10% ethanol. See engine manual for further details.
Fuel Consumption	6 liters/hr. @ 3600 RPM
Starting System	Electric Start/CDI Type Magneto Ignition
Spark Plug Type	ZFR5F NGK
Spark Plug Gap	0.70 - 0.80 mm (0.028-0.031 in.)
L x W x H	405 x 410 x 438 mm (15.9 x 16.1 x 17.2 in.)
Weight (dry)	44.4 kg (97.8 lbs.)

JTNS20 SERIES RIDE-ON POWER TROWEL FAMILIARIZATION

The JTNS20 Series Ride-On Power Trowel is designed for the floating and finishing of concrete slabs.

Take a walk around your trowel. Take notice of all the major components like the engine, blades, air cleaner, fuel system, fuel shut-off valve, ignition switch etc. Check that there is always oil in the engine, and gear oil in the gearbox assembly.

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

Look at the operator control levers. Grab the control levers and move them around a bit. Notice how moving the control levers causes the gearboxes and frame to move.

Notice the foot pedal which controls the engine speed. Also take a look at the main drive line of the trowel. Take note and reference how the belts look. This is the way the belts should look when adjusted properly.

Before using your trowel, test it on a flat, watered-down section of finished concrete. 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 and indicators. In addition you will understand how the trowel will handle under actual conditions.

ENGINE

This trowel is equipped with an air-cooled, 4-stroke, overhead valve, 2-cylinder Honda GX630, 20 HP gasoline engine. Refer to the engine owner's manual for specific instructions regarding engine operation. This manual is included with the trowel at the time of shipping. Contact your nearest Multiquip Dealer if you need a replacement.

BLADES

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

Figure 2 and Figure 3 show the location and functions of the controls, indicators and general maintenance parts. Each control may perform more than one function.

GEARBOXES

The JTN ride-on trowel consists of two separate gearbox assemblies that are enclosed in rugged cast aluminum gear cases. The main gear is a high quality bronze and steel composite. The worm gear is composed of hardened steel.

Cooling fins are integrated into the gearbox to provide maximum cooling for the gearbox oil. The gearbox casing holds 50% more oil capacity than competitors, which allows more lubrication to be provided to critical points.

STEERING LEVERS

Dual control levers located in front of the operator's seat are provided for steering the trowel.

Push the left control lever forward and pull the right control lever backward and the trowel will rotate clockwise on approximately a center axis. Pull the left control lever backward and push the right control lever forward and the trowel will rotate counterclockwise. See Table 5 for a complete description on the control levers directional positioning.

CONSTANT VELOCITY JOINTS (CV-JOINTS)

Constant velocity joints insure the efficient transfer of power to the drive shaft and maintain the timing of the gearboxes without any chance of slippage.

TRAINING

For training, please use the "Training Checklist" located in the front of this manual. This checklist is not intended to be a substitute for proper training but will provide an outline for an experienced operator to provide training to a new operator.

COMPONENTS

1. **Seat** — Engine will not start unless operator is seated.
2. **Retardant Spray Control Button** — Sprays retardant through the nozzle at the front of the machine.
3. **Steering Control Levers** — Directs the unit forward, reverse, left, or right.
4. **Twin Pitch Control** — Both pitch towers are linked together. One crank may be turned to adjust the blade pitch simultaneously or individually controlled for each set of blades. Turn the crank as marked on its top surface to increase or decrease blade pitch.
5. **Left Front Light** — 12 volt halogen lights, used for night operations.
6. **Left Foot Riser** — Operator foot rest pedal.
7. **Spray Nozzle** — Spray nozzle for retardant.
8. **Right Foot Pedal** — Controls blade speed. Slow blade speed is accomplished by slightly depressing the foot pedal. Maximum blade speed is accomplished by fully depressing the foot pedal.
9. **EZ- Mover Boss** — Front attachment point for EZ Mover. Used to move the trowel.
10. **Right Front Light** — 12 volt halogen lights, used for night operations.
11. **Ignition Switch Control Panel** — With key inserted, turn clockwise to start engine.
 - **Hour Meter** — Indicates number of hours the engine has run.
 - **Choke Control Lever** — In cold weather pull this lever to start engine. After engine warms push knob all the way in.
12. **Light Switch** — Turns on three halogen lights. Two in front, one in rear.

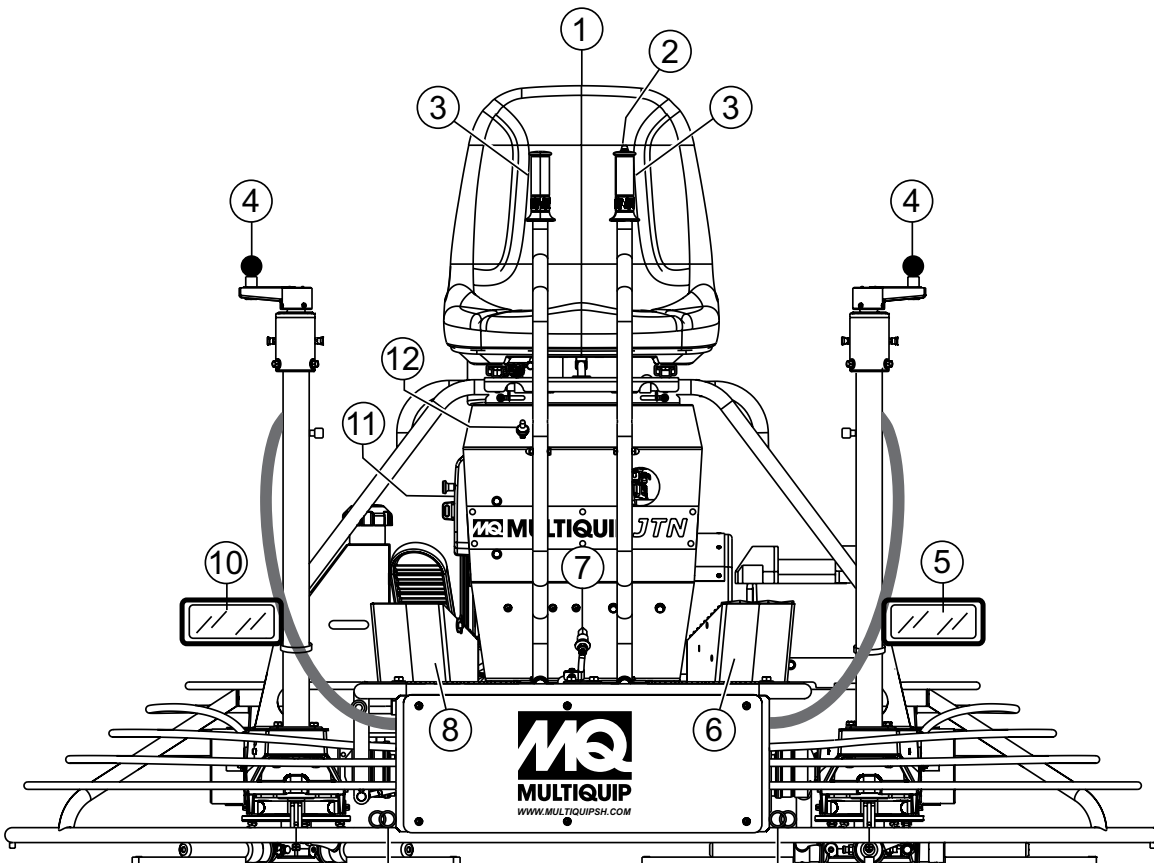


Figure 2. Components – Front

COMPONENTS

13. **Lift Loops** — Located on both sides of the main frame. Used to lift the trowel.
14. **Engine Stop Switch** — Located within the seat is the an engine start/stop switch. Operator must be sitting in the seat for the to start engine. Conversely if operator exits seat, engine will stop.
15. **Rear Light** — 12 volt halogen lights, used for night operations.
16. **Battery** — Provides +12V DC power to the electrical system.
17. **Retardant Spray Pump** — Delivers retardant to the spray nozzle.
18. **Engine** — Air cooled 4-stroke overhead valve 2 cylinder Honda GX630, 20 HP gasoline engine.
19. **Right-Side Spider** — Consists of trowel arms, blades, wear plate, and thrust collar.
20. **EZ-Mover Boss** — Rear attachment point for EZ Mover. Used to transport the trowel.
21. **Retardant Spray Tank** — Holds 5 gallons of retardant.
22. **Left-Side Spider** — Consists of trowel arms, blades, wear plate, and thrust collar.
23. **Fuel Tank** — Holds 5 gallons of unleaded gasoline.
24. **Fuel Filler Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** overfill.
25. **Belt Guard** — Encloses drive belt used in conjunction with clutch.

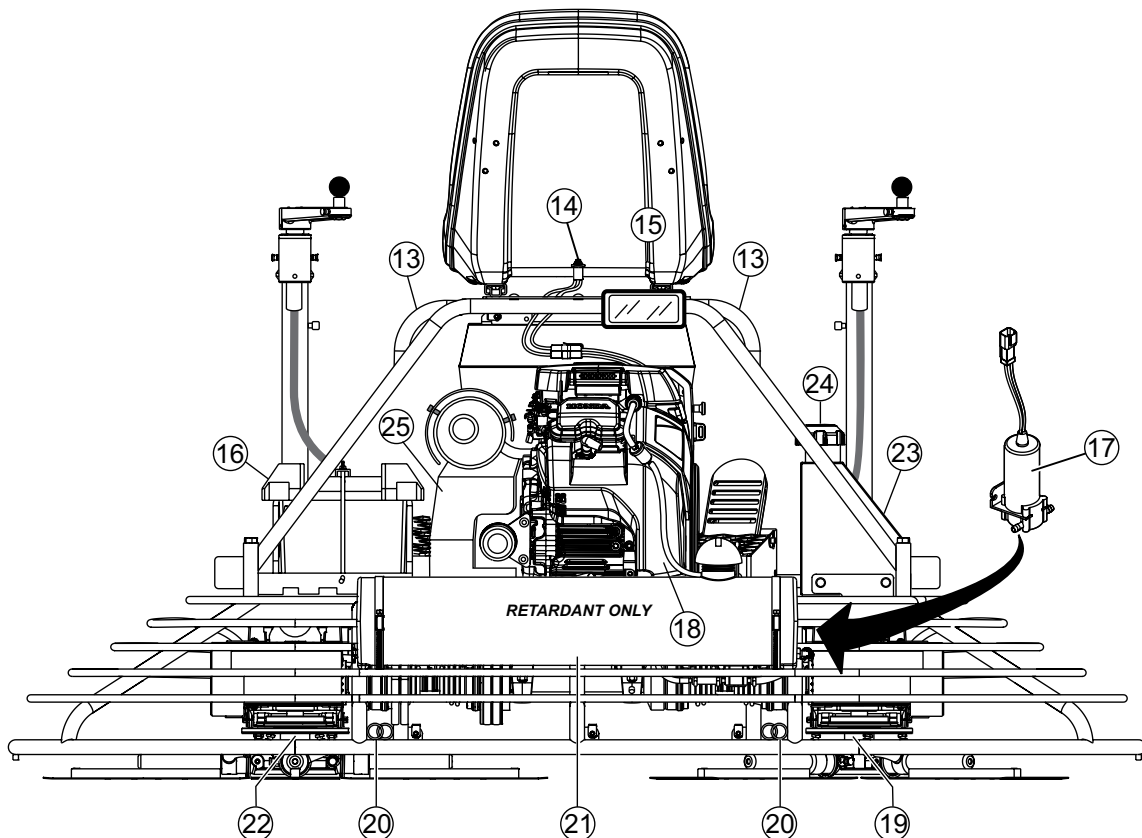


Figure 3. Components – Rear

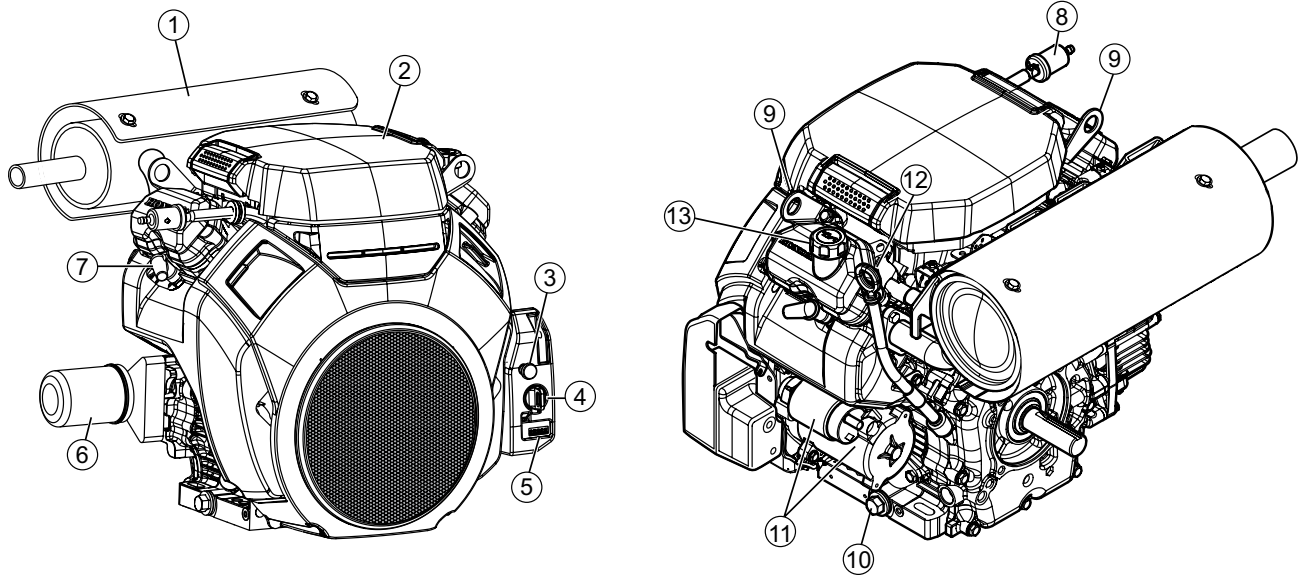


Figure 4. Engine Components

INITIAL SERVICING

The engine (Figure 4) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's engine manual for instructions and details of operation and servicing.

1. **Muffler** — Used to reduce noise and emissions.

WARNING



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

2. **Air Cleaner** — Prevents dirt and other debris from entering the fuel system. Unsnap air filter cover to gain access to filter element.
3. **Choke Knob** — Used in the starting of a cold engine or in cold weather conditions. The choke enriches the fuel mixture.
4. **Engine ON/OFF Switch** — "ON" position permits engine starting, "OFF" position stops engine operations.
5. **Hour Meter** — Indicates the number hours machine has been in use.

6. **Oil Filter** — Spin-on type, filters oil for contaminants.
7. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.6 - 0.7 mm (0.028 - 0.031 inch) Clean spark plug once a week.
8. **In-Line Fuel Filter** — Filters fuel for contaminants.
9. **Engine Lifting Hook** — Attach a chain or rope to these lifting hooks when lifting of the engine is required.
10. **Engine Oil Drain Plug** — Remove plug to drain crankcase oil.
11. **Starter/Solenoid** — Starts engine when ignition key is rotated to the "ON" position.
12. **Engine Oil Dip Stick** — Remove to check amount and condition of oil in crankcase.
13. **Engine Oil Filler Cap** — Remove to add engine oil.

The purpose of this section is to assist the user in setting up a **NEW** trowel. If your trowel is already assembled, (seat, handles, knobs and battery), this section can be skipped.

NOTICE

The new trowel cannot be placed into service until the setup installation instructions are completed.

Before packaging and shipping, the JTNS20/SW SERIES Ride-On Power Trowel was run and tested at the factory. If there are problems, please let us know.

CONTROL HANDLE ASSEMBLY

The steering control handles are not attached to the trowel's two lower handles at the time of shipment. To attach the steering control handles to the two lower handle assemblies, perform the following:

1. Remove the bolts from the plastic bag tied to the control towers.
2. Remove all protective wrapping and straps from the control handles.
3. Slip the top (loose) piece into the base of the corresponding handle, making sure to line up the holes.
4. Install the bolt through the lined up holes and tighten the acorn nut onto the threaded end.

NOTICE

Some models are equipped with adjustable height handles. Adjust the height by placing the bolt through the set of holes that corresponds to the most comfortable height.

5. Pay close attention to any wires that may be inside the control handles. **DO NOT** pinch or cut any wires during installation.
6. Inside the plastic bag of parts are two knobs for the pitch control tower cranks. Install these two knobs onto the tower crank levers.

SEAT ASSEMBLY

The seat is not installed on the trowel for shipping purposes. To attach the seat perform the following:

1. Remove the seat from the protective wrapping.
2. Insert studs on bottom of seat through holes in the mounting plate.
3. Install and tighten the provided nuts.
4. Connect the "Engine Stop Switch" (seat) cable to the mating plug as shown in Figure 5.

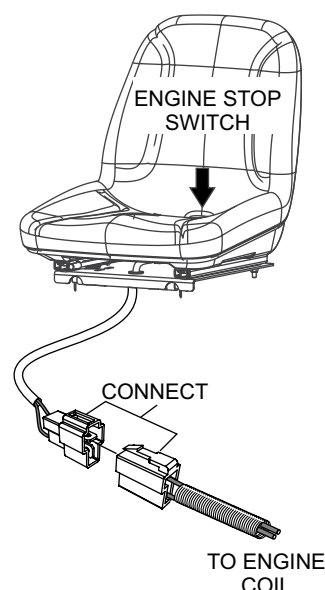


Figure 5. Engine Stop Switch (Seat)

BATTERY SETUP

This trowel was shipped with a wet charged battery. This battery may need to be charged for a brief period of time as per the manufacturer instructions.

CAUTION

Use all safety precautions specified by the battery manufacturer when working with the battery. Reference the safety section of this manual for additional information.

To install the battery on the trowel, make sure that the battery is well seated in the battery box. Connect the positive cable to the positive terminal on the battery first, then connect the negative cable to the negative terminal. Close the plastic battery box cover and secure the battery box.

The following section is intended as a basic guide to the ride-on trowel operation, and is not to be considered a complete guide to concrete finishing. It is strongly suggested that all operators (experienced and novice) read "Slabs on Grade" published by the American Concrete Institute, Detroit Michigan.

DO NOT use your ride-on power trowel until this section is thoroughly understood.

CAUTION

Failure to understand the operation of the trowel could result in severe damage to the machine or personal injury.

ENGINE OIL LEVEL

ALWAYS check engine oil before each use.

1. Pull the engine oil dipstick (Figure 6) from its holder.
2. Determine if engine oil is low.

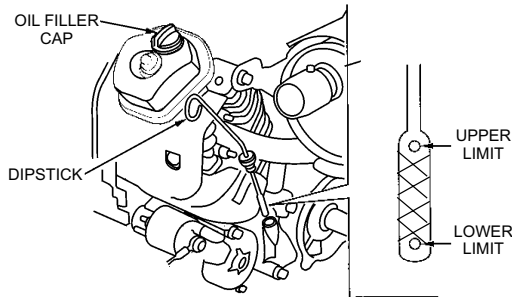


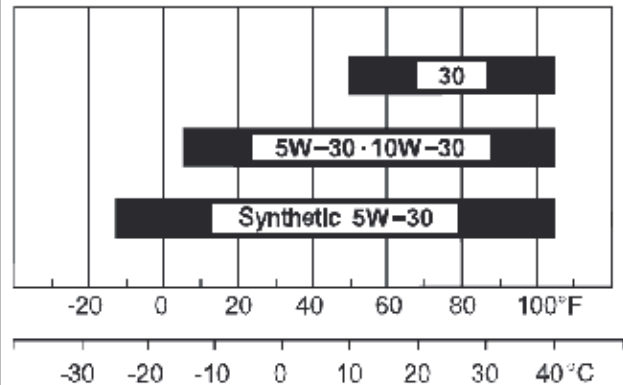
Figure 6. Engine Oil Dipstick

NOTICE

To prevent extensive engine wear or damage, **ALWAYS** maintain the proper oil level in the crankcase. **NEVER** operate the engine with the oil level beyond the upper or lower limits on the dipstick.

3. If engine oil is low, remove oil filler cap, and add correct amount of engine oil to bring oil level to a normal safe level. Use oil as recommended in Table 4.

Table 4. Recommended Viscosity Grades



AMBIENT TEMPERATURE

GEARBOX OIL LEVEL

JTNS20TCSL

1. Check the gearbox oil level in both gearboxes by removing the level plug and ensuring that the oil is at the correct level. See Figure 7.
2. Fill the gearbox just to the level of the fill plug. The gearbox oil level capacity is 28 oz. (828 ml). Fill gearbox with ISO-VG640 oil if necessary.

JTNSW20TCSL

1. Check the gearbox oil in both gearboxes by looking at the sight glass on the side of gearbox. Proper oil level is at center of sight glass. See Figure 7.
2. Fill the gearbox just to the center of sight glass if necessary. Oil capacity is approximately 25 oz. (750 ml).

NOTICE

Gearbox oil capacity is approximately 28 oz. (828 ml) for **JTNS20TCSL** and 25 oz. (750 ml) for **JTNSW20TCSL** when empty.

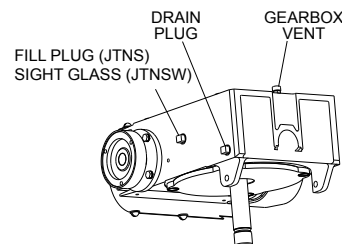



Figure 7. Gearbox Oil Plugs/Sight Glass

FUEL CHECK

DANGER

 Handle fuel safely. Motor fuels are highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the ride-on trowel if the engine is hot or running. **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up and the area surrounding the engine is dry.

Remove fuel cap from fuel tank (Figure 8) and visually inspect fuel level. Determine if the engine fuel is low. If fuel level is low, fill with unleaded gasoline.

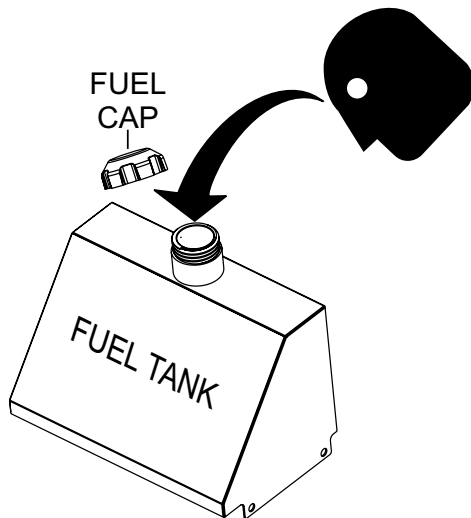


Figure 8. Fuel Gauge

V-BELT

Visually examine the V-belt (Figure 9) 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

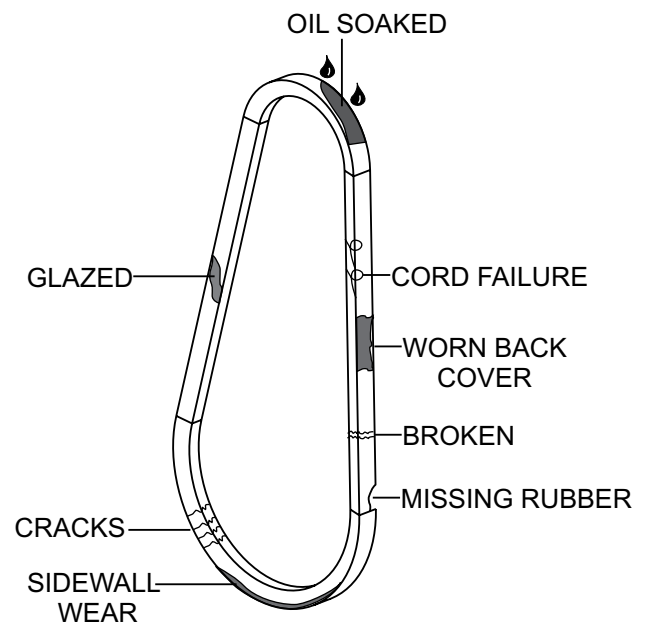


Figure 9. Drive Belt Inspection

IMPORTANT INFORMATION BEFORE YOU START

1. This ride-on trowel is equipped with a safety stop switch. This switch is located beneath the seat assembly. Remember the engine will not start unless an operator is sitting in the operator's seat. The weight of an operator depresses an electrical switch which will allow the engine to start.

WARNING

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

2. The safety stop switch should be used to stop the engine after every use. Doing this will verify the switch is working properly thus providing safety for the operator. Remember to turn the key to the "OFF" position after stopping the machine. Not doing so will drain the battery.
3. The right foot pedal (Figure 10) controls blade and engine speed. The position of the foot pedal determines the blade speed. Slow blade speed is obtained by slightly depressing the pedal. Maximum blade speed is obtained by fully depressing the pedal.

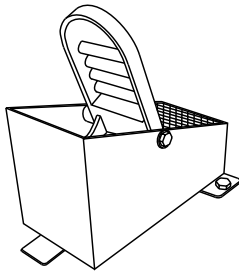


Figure 10. Blade Speed Control Foot Pedal

STARTING THE ENGINE

1. With one foot on the ground and the other foot placed on the trowel's platform, grab the frame near the seat and lift yourself onto the trowel. Sit in the operator's seat and ensure the control handles, foot pedal and control panel items can be comfortably accessed.
2. When starting a cold engine, pull the choke knob, (Figure 11) out to the closed position. In warm weather or when the engine is warm, the unit can be started with choke halfway or completely open.

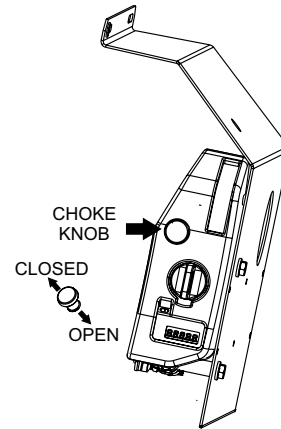


Figure 11. Choke Knob

3. Keep your foot OFF the blade speed control pedal and in all circumstances, start the engine at idle (without touching the pedal).
4. Insert the ignition key into the ignition switch.
5. Turn the ignition key (Figure 12) clockwise and listen for the engine to start. Once the engine starts release ignition key.
6. If the engine fails to start in this manner, consult the engine owner's manual supplied with the trowel.
7. Test the safety stop switch by standing up briefly. The switch under the seat should cause the engine to stop. If the switch fails to shut down the engine, turn off the engine with the key switch and repair the safety stop switch. See the Troubleshooting section for possible causes.

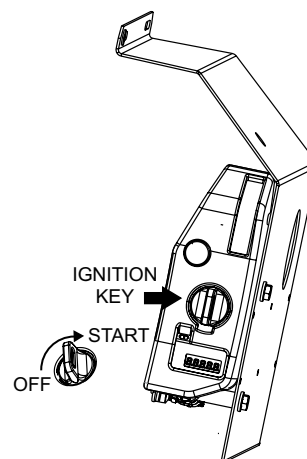


Figure 12. Ignition Key

8. Let the engine idle for 3-5 minutes. If choke is applied, push the choke to the open position as soon as the engine will run smoothly.

Steering

Two control levers located in front of the operator's seat provide directional control for the MQS JTNS20-SERIES Ride-On Power Trowel. Table 5 illustrates the various directional positions of the joysticks and their effect on the ride-on trowel.

1. Push both the left and right control levers forward. See Figure 13.

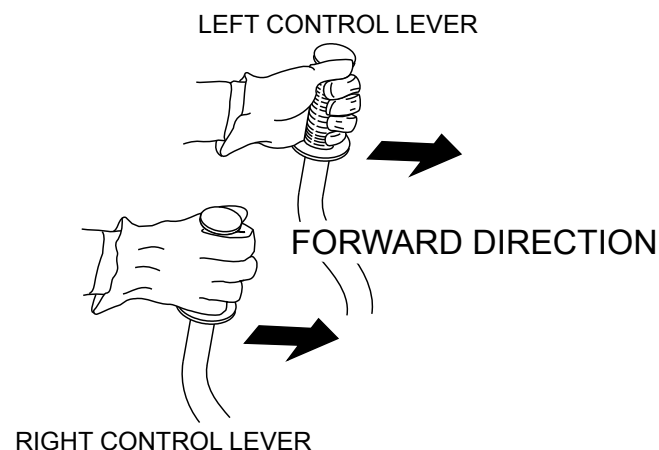


Figure 13. Left and Right Control Levers

2. With your right foot quickly depress the right foot pedal halfway. Notice that the ride-on power trowel begins to move in a forward direction. Return both joystick controls to their neutral position to stop forward movement, then remove your right foot from the right foot pedal.
3. Practice holding the machine in one place as you increase blade speed. When about 75% of maximum blade speed has been reached, the blades will be moving at proper finishing speed. The machine may be difficult to keep in one place. Trying to keep the ride-on trowel stationary is a good practice for operation.
4. Practice maneuvering the ride-on trowel using the information listed in Table 5. Try to practice controlled motions as if you were finishing a slab of concrete. Practice edging and covering a large area.
5. Try adjusting the pitch of the blades. This can be done with the ride-on trowel stopped or while the trowel is moving, whatever feels comfortable. Test the operation of optional equipment like retardant spray and lights if equipped.

6. Pull both the left and right joysticks backward and repeat steps 3 through 5 while substituting the word reverse for forward.

Table 5. Control Lever Directional Positioning

CONTROL JOYSTICK & DIRECTION	RESULT
Move LEFT Joystick FORWARD ↑	Causes only the left side of the ride-on trowel to move forward.
Move LEFT Joystick BACKWARD ↓	Causes only the left side of the ride-on trowel to move backward.
Move RIGHT Joystick FORWARD ↑	Causes only the right side of the ride-on trowel to move forward.
Move RIGHT Joystick BACKWARD ↓	Causes only the right side of the ride-on trowel to move backward.
Move BOTH Joysticks FORWARD ↑ ↑	Causes the ride-on trowel to move forward in a straight line.
Move BOTH Joysticks BACKWARD ↓ ↓	Causes the ride-on trowel to move backward in a straight line.
Move BOTH Joysticks to the RIGHT → →	Causes the ride-on trowel to move to the right.
Move BOTH Joysticks to the LEFT ← ←	Causes the ride-on trowel to move to the left.

CAUTION

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

MAINTENANCE

Table 6. 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 7. Trowel Maintenance Schedule

Check Item	OPERATION	DAILY	Periodic Maintenance Interval			
			Every 25 Hrs	Every 50 Hrs	Every 100-125 Hrs	Every 500 Hrs
Relube arms, thrust collar, steering linkage	Grease			X		
Remove clean, reinstall, and relube arms, and thrust collar	Clean				X	
Check and replace if necessary, arm bushings and thrust collar bushings.	Check			X		
Check blades for excessive wear or damage and replaces if necessary.	Check	X				
Adjust blade speed if necessary.	Check					X
Gearbox lubricant)	Replace				1st time	X
Drive Belt	Check		X			
Fastners	Check	X				

When performing any maintenance on the trowel or engine, follow all safety messages and rules for safe operation stated at the beginning of this manual

At the front of this manual there is a “Daily Pre-Operation Checklist”. Make copies of this checklist and use it on a daily basis.

WARNING



Accidental starts can cause severe injury or death.



ALWAYS place the ON/OFF switch in the OFF position.



Disconnect and ground spark plug leads and disconnect negative battery cable from battery before servicing.

WARNING



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

CAUTION



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

Air Cleaner

Thoroughly remove dirt and oil from the engine and control area. Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.

1. Release the latch tabs (Figure 14) on each side of the air cleaner cover, and remove cover.

NOTICE

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

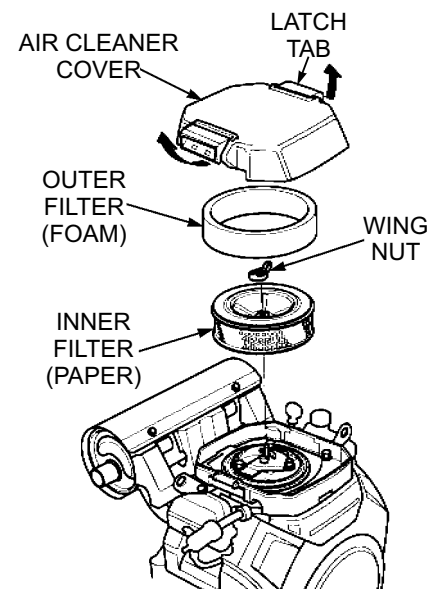


Figure 14. Air Filter Components

2. Remove wing nut.
3. Remove outer foam filter
4. Remove inner paper filter
5. Inspect both air filter elements, replace them if necessary.

Drive Belts

Visually examine both drive belts in accordance with Figure 9 and determine if it is full of tiny cracks, frayed, has pieces of rubber missing, is peeling or otherwise damaged.

CAUTION



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

6. To clean the paper air filter (Figure 15), tap the filter element several times on a hard surface to remove dirt, or blow compressed air (not to exceed 30 psi (207 kPa, 2.1 kgf/cm²) through the filter element from the air cleaner case side.

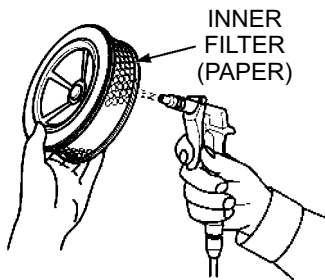


Figure 15. Cleaning Inner Paper Filter

7. **NEVER!** try to brush off dirt; brushing will force dirt into the fibers. If the paper element is excessively dirt, replace element.
8. Clean the foam air filter element in warm soapy water, rinse and allow to dry thoroughly. Or clean with a nonflammable solvent and allow to dry. **DO NOT** pour any type of oil into the foam element.
9. Wipe dirt from the inside of the air cleaner body and cover, using a moist cloth. Be careful not to let any dirt or debris to enter the air chamber that leads to the carburetor.
10. Reinstall the foam air filter element to the air cleaner cover, then reinstall the paper air filter element and cover to the air cleaner case. Securely latch the hook tabs onto the air cleaner cover.

CAUTION

Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed will cause engine damage due to overheating.

Changing Engine Oil (100 Hours)

1. Drain the engine oil when the oil is warm as shown in
2. Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container.

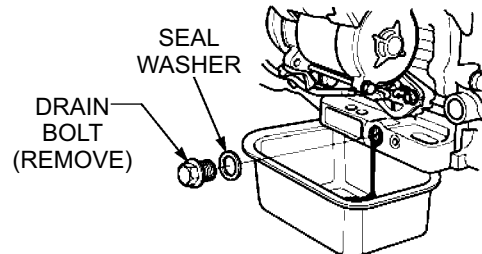


Figure 16. Draining Engine Oil

3. Reinstall drain bolt with sealing washer and tighten securely.
4. Replace engine oil with recommended type oil as listed in Table 4. For engine oil capacity, see Table 1. **DO NOT** over fill.

When performing any maintenance on

5. Clean the foam air filter element in warm soapy water, rinse and allow to dry thoroughly. Or clean with a

Oil Filter (200 Hours)

1. Replace the engine oil filter (Figure 17) every 200 hours.

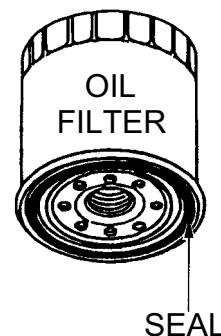


Figure 17. Oil Filter

2. Be sure to coat the seal of the new oil filter with clean engine oil.

Oil And Fuel Lines

- Check the oil and fuel lines and connections regularly for leaks or damage. Repair or replace as necessary.
- Replace the oil and fuel lines every two years to maintain the line's performance and flexibility.

Fuel Filter (200 Hours)

1. Replace the engine fuel filter (Figure 18) every 200 hours.

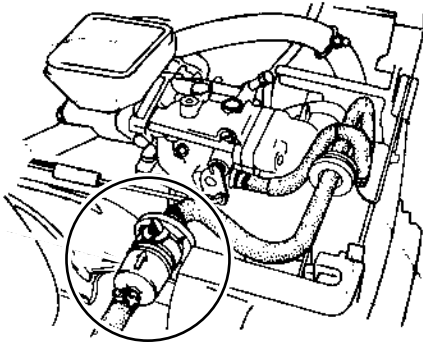


Figure 18. Honda Fuel Filter

FUEL FILTER CHANGE

1. Replace the engine fuel filter (Figure 19) every year or 300 hours.

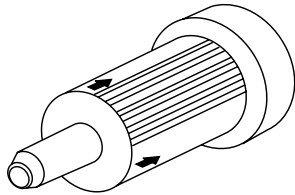


Figure 19. Fuel Filter

SPARK PLUG ADJUSTMENT

1. Make sure the engine is cool before servicing the spark plugs.
2. Disconnect the spark plug caps. Check for dirt and remove any dirt from around the spark plug area.
3. Remove the spark plugs with a 5/8-inch spark plug wrench.
4. If the spark plugs are damaged, the sealing washer is in poor condition, or if the electrode is worn, replace the spark plugs.
5. Measure the spark plug electrode gap () with a wire-type feeler gauge. If needed, adjust the gap to 0.7 - 0.8 mm (0.028 - 0.031 in), by carefully bending the side electrode.

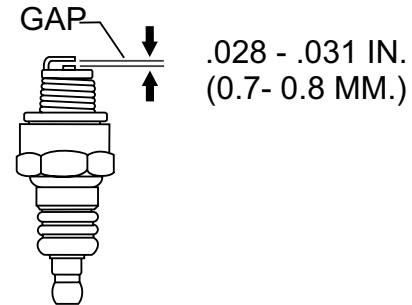


Figure 20. Spark Plug Gap Adjustment

6. Install the spark plug carefully, by hand, to avoid cross threading.
7. After the spark plug is seated, tighten with a 5/8-inch spark plug wrench to compress the sealing washer.
8. When installing a new spark plug, tighten 1/2 turn, after the spark plug seats, to compress the washer.
9. When reinstalling the original spark plug, tighten 1/8 1/4 turn after the spark plug seats to compress the washer.
10. Reattach the spark plug caps

ENGINE TUNE-UP ENGINE

See your engine manual for specific information on tuning up your engine, checking and gapping the spark plugs, etc.

NOTICE

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

LONG TERM STORAGE

- Drain the fuel tank completely, or add STA-BIL to the fuel.
- Remove spark plug and pour a few drops of motor oil into cylinder. Crank engine 3 to 4 times so that oil reaches all internal parts.
- Clean exterior with a cloth soaked in clean oil.
- Remove the battery.
- Store unit covered with plastic sheet in moisture and dust-free location out of direct sunlight.

CAUTION

NEVER store the ride-on trowel with fuel in the tank for any extended period of time. Always clean up spilled fuel immediately.

CHECKING THE DRIVE BELT

The drive belt needs to be replaced as soon as it starts to show signs of wear. **NEVER** use a defective drive belt under any circumstances. Indications of excessive belt wear are fraying, squealing when in use, a belt that emit smoke or a burning rubber smell when in use.

Under normal operating conditions, a drive belt may last approximately 6 months. If your trowel is not reaching this kind of life span for drive belt wear, check the drive belt for proper pulley alignment and spacing.

BELT GUARD REMOVAL

1. To gain access to the drive belts for inspection, remove the 3 screws that secure the drive belt guard (Figure 21) to the frame.

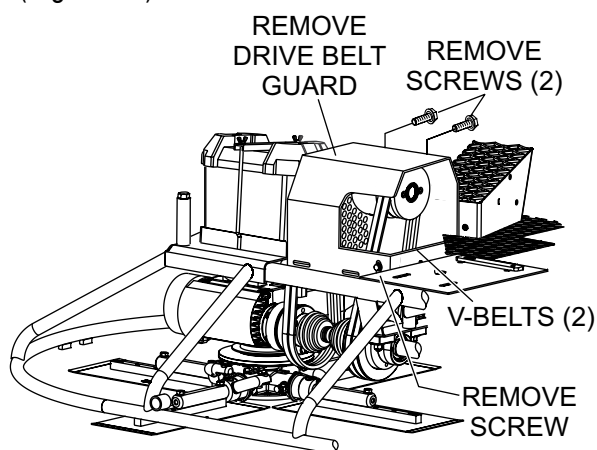


Figure 21. Drive Belt Guard Removal

2. Once the belt guard has been removed visually inspect both drive belts (Figure 22) for signs of damage or excessive wear. If either drive belt is worn or damaged, replace both drive belts.

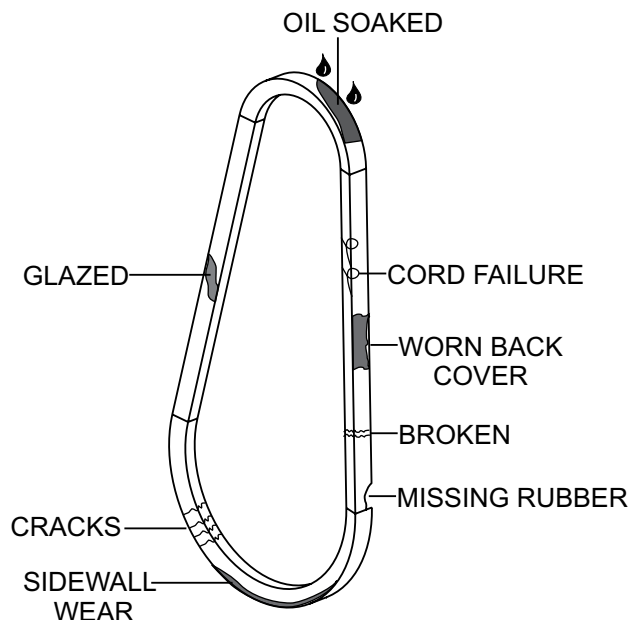


Figure 22. Drive Belt Inspection

3. Check to ensure that the each belt is tensioned correctly.
4. Finally make sure that the lower drive pulley is aligned properly.

WARNING



DO NOT attempt to insert hands or tools into the belt area while the engine is running. **NEVER** run the engine with the safety guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent bodily injury.

WARNING



DO NOT remove the drive belt guard cover until the muffler has cooled. Allow the entire trowel to cool down before performing this procedure.

SPARE DRIVE BELT REMOVAL (USING REPLACEMENT DRIVE BELT)

The MQSJTN20-Series Ride-On Power Trowel is equipped with two replacement (spare) drive belts, which are mounted inside the drive belt guard. **ALWAYS** make sure that there are two spare drive belts installed inside the drive belt guard before the trowel is placed onto a slab to finish concrete.

In the event of a drive belt failure, the replacement (spare) drive belts can be used for quick replacement at the job site for continued trowel operation.

1. To replace the existing drive belts with the spare drive belts, remove the 3 bolts (Figure 21) that secure the drive belt guard to the frame.
2. Position the drive belt guard in a manner to gain access to the spare belt holder.
3. Remove the nut and flat washer (Figure 23) that secure the spare belt holder to the drive belt guard.

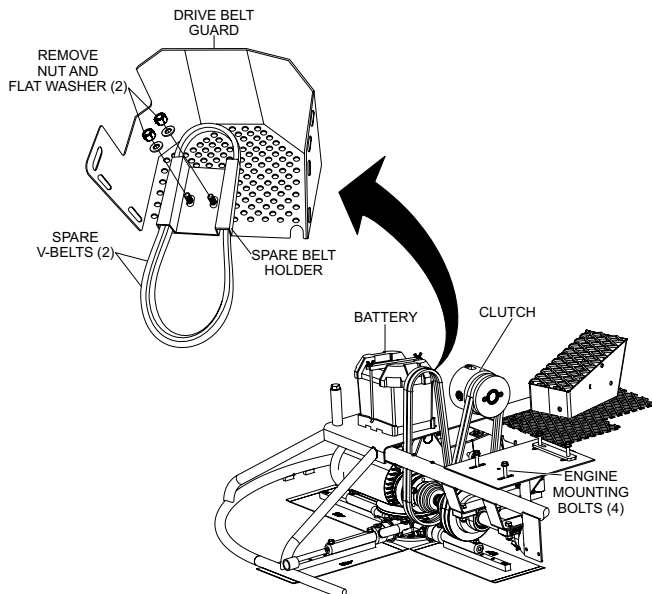


Figure 23. Spare Belt Removal

4. Lift spare belt holder and free drive belts.
5. Take care not to contaminate the replacement drive belts with grease or dirt.
6. Remove existing drive belt from clutch and lower drive pulley, by cutting belt.

7. Ensure all remnants of old drive belt have been removed from the sheaves/grooves of the clutch and lower pulley.
8. Next loosen the four engine mounting bolts and slide the engine toward the rear of the trowel. Slide the first belt over the clutch and place it on the upper drive pulley, then pull it down and place it on the lower drive pulley. Repeat this procedure for the second belt.

NOTICE

To reinstall a new set of spare V-belts onto the spare belt carrier, it will be necessary to disassemble the CV-joint from the left-side gearbox coupler.

SPARE DRIVE BELT INSTALLATION

CV-joint Assembly Removal (Left-Side)

After the replacement (spare) belts have been installed onto the clutch and lower pulley, it will be necessary to install a new set of spare drive belts onto the spare belt holder.

Perform the procedure shown below to install new drive belts back onto the spare belt holder:

1. If necessary, place the trowel on suitable supports (jack-stands) and observe all safety precautions.
2. Starting at the left-side gearbox, use a 1/4" allen wrench and remove the 3 bolts and lock washers that secure the CV-joint (Figure 24) to the left-side gearbox. Retain mounting hardware for later use.

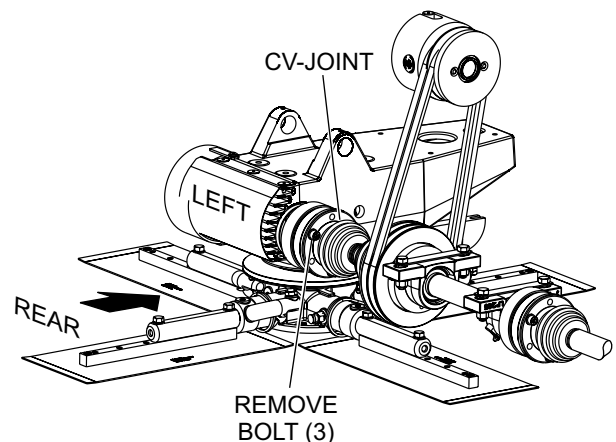


Figure 24. Disconnecting CV-Joint

- Once the CV-joint has been separated from the left-side gearbox coupler, push the CV-joint inward so that a gap (Figure 25) exist between the coupler and the CV-joint.

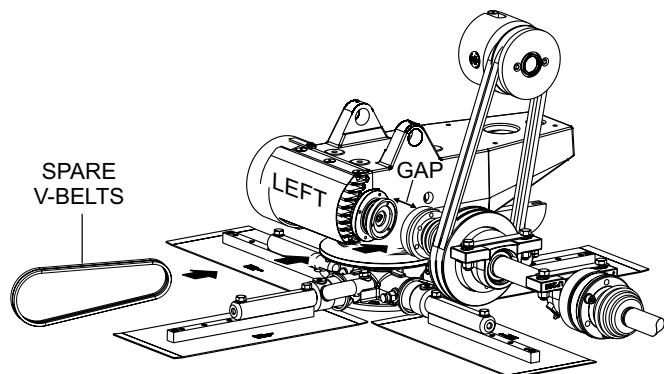


Figure 25. Spare Drive Belt Routing

- Slide the replacement belts between the gap (Figure 25) that exists between the left-side gearbox and the CV-joint.
- Place both spare drive belts into the spare drive belt holder, as shown in Figure 26. Reattach spare belt holder back onto fuel tank.

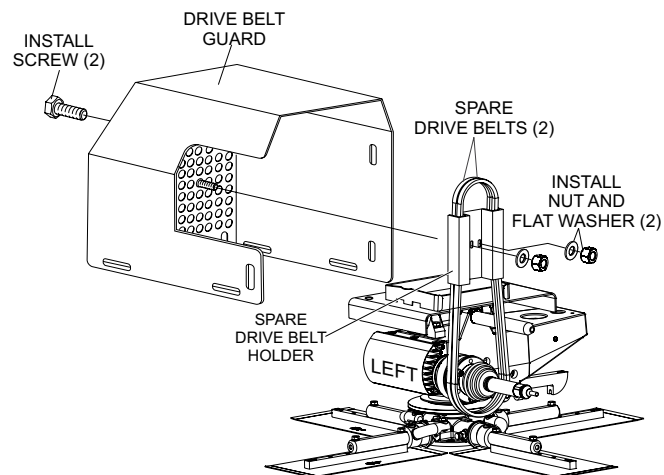


Figure 26. Attaching Spare Drive Belt Holder

- Apply a thin coat of RVT silicone to mating surfaces of the CV-joint (Figure 27) and left-side gearbox coupler.

APPLY SILICONE
TO CV-JOINT
MATING SURFACES



Figure 27. Applying RTF Silicone

- Reconnect the CV-joint to the left-side gearbox coupler.
- Re-install drive belt guard onto frame. Secure with bolts (3) and associated hardware.

BLADE PITCH

Matching Blade Pitch for Both Sets of Blades

Sometimes it may be necessary to match blade pitch between the two sets of blades. There are some signs that this may be necessary. For example, the differences in pitch could cause a noticeable difference in finish quality between the two sets of blades, or, the difference in blade pitch could make the machine difficult to control. This is due to the surface area in contact with the concrete (the blade set with the greater contact area tends to stick to the concrete more).

Single Pitch

On a Single Pitch trowel each spider assembly can be pitched individually, forcing the operator to constantly make adjustments on each pitch tower.

Twin Pitch™

Trowels equipped with Twin Pitch™ Controls may need to have blade pitch between the two sets of blades "synchronized". If the blades need to be synchronized this is easily accomplished by performing the following. Refer to Figure 28.

- Lift the pitch adjustment handle on either side. Once lifted, that side is now disconnected from the Twin Pitch system.

2. Adjust to match the opposite side.
3. When adjusted, lower the handle to Twin Pitch operating position.

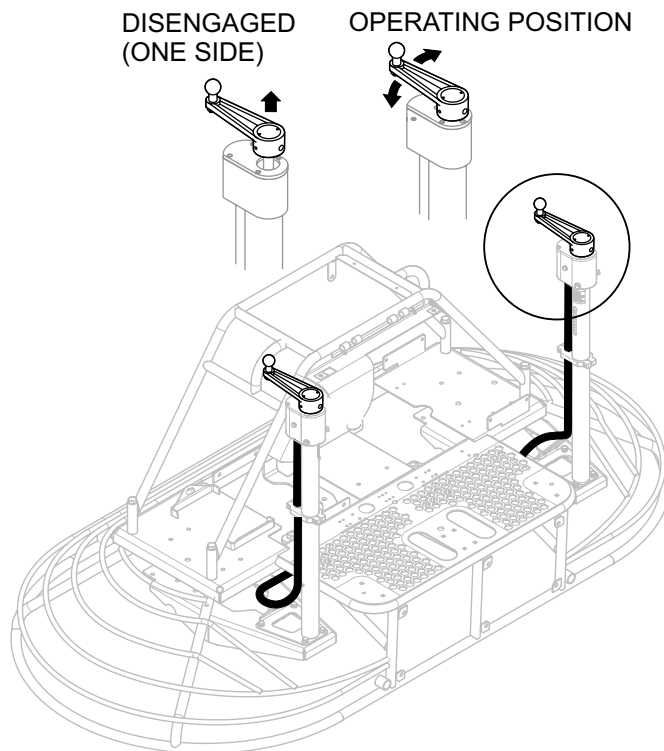


Figure 28. Pitch Towers

Blade Pitch Adjustment Procedure

Maintenance adjustment of blade pitch is made by adjusting a bolt (Figure 29) on the arm of the trowel blade finger. This bolt is the contact point of the trowel arm to the lower wear plate on the thrust collar. The goal of adjustment is to promote consistent blade pitch and finishing quality.

Look for the following indications if blades are wearing unevenly. If so, adjustment may be necessary.

- Is 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, does the trowel guard ring “rock up and down” relative to the ground?
- Do the pitch control towers rock back and forth?

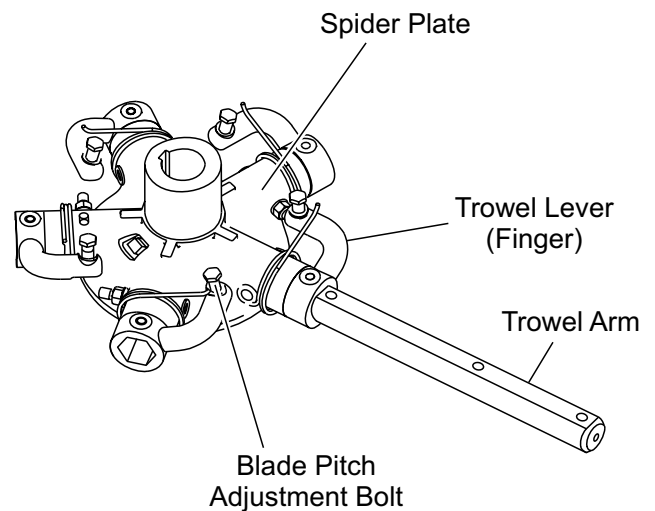


Figure 29. Blade Pitch Adjustment Bolt

The easiest and most consistent way to make adjustments on the trowel arm fingers is to use the Trowel Arm Adjustment Fixture (P/N 9177). It comes with all the hardware necessary to properly accomplish this maintenance and instructions on how to utilize this tool.

If a trowel arm adjustment fixture is not available and immediate adjustment is necessary, temporary field adjustment can be made if you can see or feel which blade is pulling harder by adjusting the bolt that corresponds to that blade.

A better way to determine which blades need adjustment is to place the machine on a known FLAT surface (steel metal plate) and pitch the blades as flat as possible. Look at the adjustment bolts. They should all barely make contact with the lower wear plate on the spider. If you can see that one of them is not making contact, some adjustment will be necessary.

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. See the following sections.

Changing Blades

It is recommended that ALL the blades on the entire machine 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.

1. Place the machine on a flat, level surface. Adjust the blade pitch control to make the blades as flat as possible. Note the blade orientation on the trowel arm. This is important for ride-on trowels as the two sets of blades counter-rotate. Lift the machine up, placing blocks under the main guard ring to support it.
2. Remove the bolts and lock washers on the trowel arm, and then remove the blade.
3. Scrape all concrete and debris from the trowel arm. This is important to properly seat the new blade.
4. Install the new blade, maintaining the proper orientation for direction of rotation.
5. Reinstall the bolts and lock washers.
6. Repeat steps 2-5 for all remaining blades.

Clean-Up

Never allow concrete to harden on the power trowel. Immediately after use wash any concrete off the trowel with water, be careful not to spray a hot engine or muffler. An old paint brush or broom may help loosen any concrete that has started to harden.

Trowel Arm Adjustment Procedure

NOTICE

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

A level, clean area to test the trowel prior to and after adjustment is essential. Any unlevel spots in the floor or debris under the trowel blades will give an incorrect

perception of adjustment. Ideally, a 5' x 5' three-quarter inch thick flat steel plate should be used for testing.

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

Figure 30 illustrates "worn spider bushings or bent trowel arms". Check to see that adjustment bolt is barely touching (0.10" max. clearance) lower wear plate. All alignment bolts should be spaced the same distance from the lower wear plate.

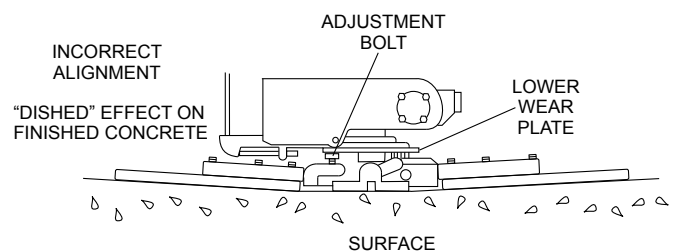


Figure 30. Worn Arm Bushings

Figure 31 illustrates the "correct alignment" for a spider plate (as shipped from the factory).

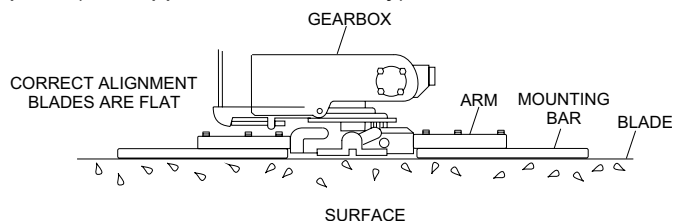


Figure 31. Correct Spider Plate Alignment

2. Start engine, and bring trowel blades up to full speed and look for the following conditions:
 - Does the trowel have a perceived rolling or bouncing motion?
 - Does the guard ring "rock up and down" relative to the ground?

Trowel Arm Removal

1. Each trowel arm is held in place at the spider plate by a hex head bolt (with zerk grease fitting). Remove the hex head bolt/zerk grease fitting from the spider plate. (Figure 32)
2. Remove the trowel arm from the spider plate.

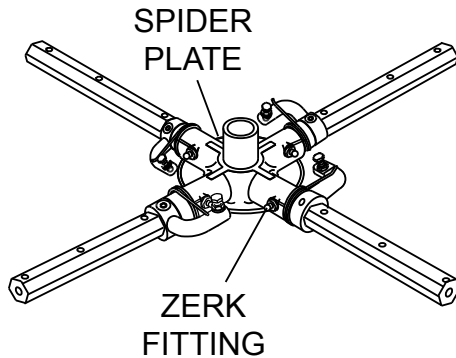


Figure 32. Removing Zerk Grease Fitting

3. Should the trowel arm inserts (bronze bushing) come out with the trowel arm, remove the bushing from the trowel arm and set aside in a safe place. If the bushing is retained inside the spider plate, carefully remove the bushing.
4. Examine the bronze trowel arm bushing insert (Figure 33), clean if necessary. Replace bushing if out-of-round or worn.

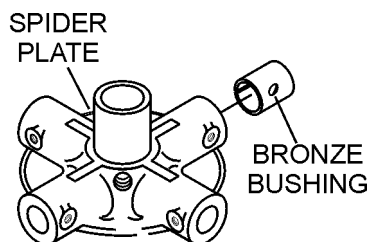


Figure 33. Bronze Bushings

Trowel Blade Removal

1. Remove the trowel blades from the trowel arm by removing the three hex head bolts (Figure 34) from the trowel arm. Set blades aside.

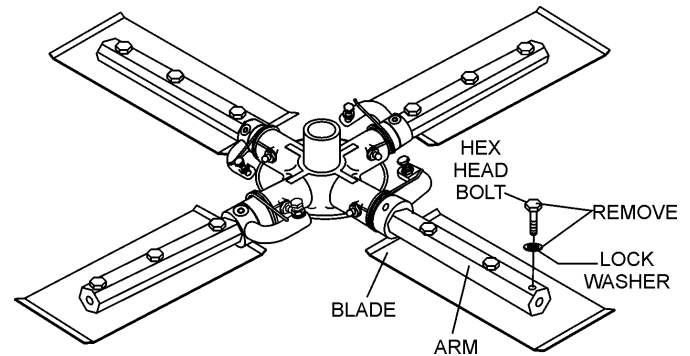


Figure 34. Trowel Blades

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

Checking Trowel Arm Straightness

Trowel arms 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, refer to Figure 35 and Figure 36.

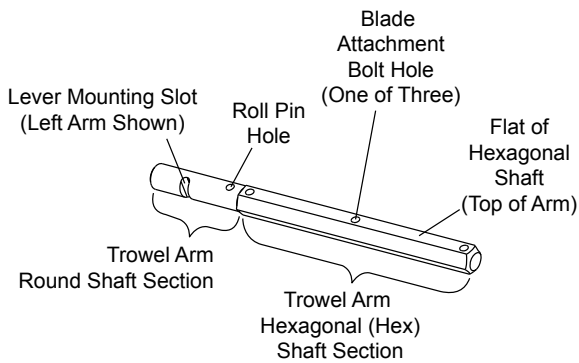


Figure 35. Trowel Arm

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.
2. Check each of the six sides of the trowel arm (hex section). A feeler gauge of .004" (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 36) .

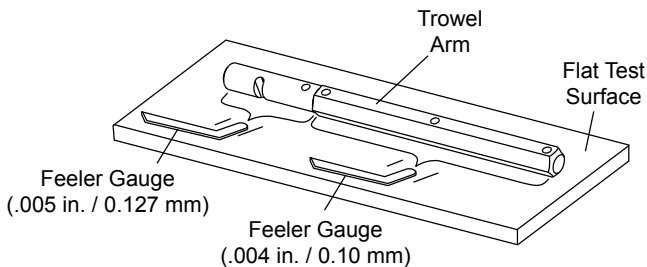


Figure 36. Checking Trowel Arm Flatness

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 of .005" (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 Adjustment

1. Locate the trowel arm adjustment tool (Figure 37) P/N 9177.

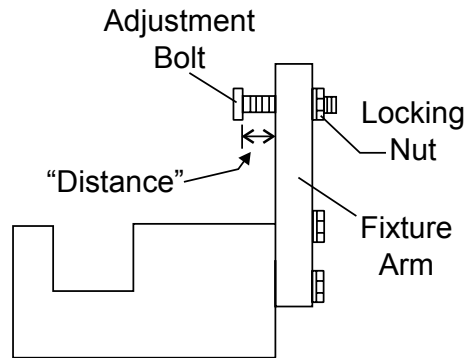


Figure 37. Trowel Arm Adjustment Tool (Side View)

2. Ensure the fixture arm is in the proper setting (up or down) for your trowel arm rotation as shown in Figure 38.

NOTICE

Arms with **clock-wise** blade rotation use the fixture arm in the UP position (A in Figure 38). Arms with **counter clock-wise** blade rotation use the fixture with the fixture arm in the DOWN position. (B in Figure 38).

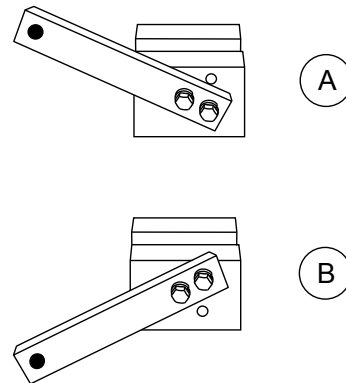


Figure 38. Trowel Arm Adjustment Setup

3. Shown in Figure 39 is the adjustment fixture with a trowel arm inserted. As each trowel arm is locked into the fixture, the arm bolt is adjusted to where it contacts a stop on the fixture. This will consistently adjust all of the trowel arms, keeping the finisher as flat and evenly pitched as possible.
4. Unscrew the locking bolts on the adjustment tool and place the trowel arm into the fixture channel as shown

in Figure 39. 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.

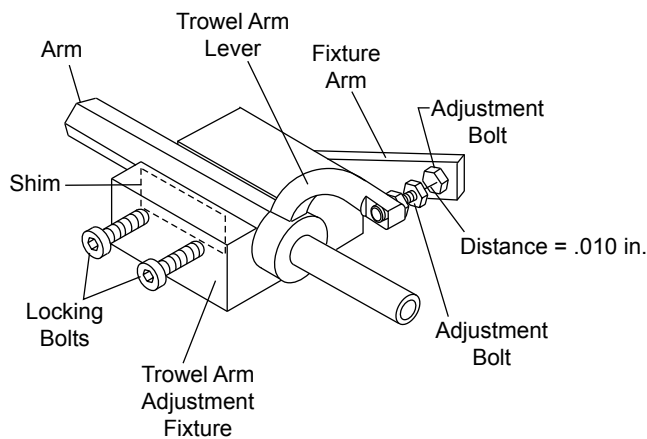


Figure 39. Trowel Arm Adjustment Fixture Components

5. Use an allen wrench to tighten the locking bolts securing the trowel arm in place.
6. Adjust the bolt "distance" shown in Figure 39 to match one of the arms. The other arms will be adjusted to match this distance.
7. 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.
8. Once the correct adjustment is made, tighten the lock nut on the trowel arm to lock in place.
9. Loosen locking nuts on the adjustment fixture, and remove trowel arm.
10. Repeat steps for the remaining trowel arms

Reassembly

1. Clean and examine the upper/lower wear plates and thrust collar. Examine the entire spider assembly. Wire brush any concrete or rust build-up. If any of the spider components are found to be damaged or out of round, replace them.
2. Make sure that the bronze trowel arm bushing is not damage or out of round. Clean the bushing if necessary. If the bronze bushing is 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. Re-install the blades onto the trowel arms.
9. Install stabilizer ring onto spider assembly.
10. Lubricate all grease points (zerk fittings) with premium "Lithium 12" based grease, conforming to NLG1 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.

WARNING



Lifting/Crush Hazard. **DO NOT** lift trowel with pans attached.

WARNING

ALWAYS install pans either on the work area or on an area that is next to and level with the work area. **DO NOT** lift the trowel when the pans are attached.

Refer to Figure 40 when installing pans onto finisher blades.

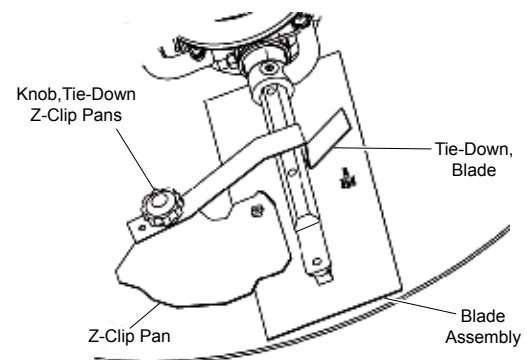


Figure 40. Z-Clip Finisher Pan Instructions

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 40.
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.

DECOMMISSIONING TROWEL/COMPONENTS

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), the following procedure must take place:

1. Drain all fluids completely. These may include oil, gasoline, hydraulic oil and antifreeze. Dispose of properly in accordance with local and governmental regulations. Never pour on ground or dump down drains or sewers.
2. Remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid, (Reference Setup Section).
3. The remainder can be brought to a salvage yard or metal reclamation facility for further dismantling.

WIRING DIAGRAM COMPONENT LOCATOR

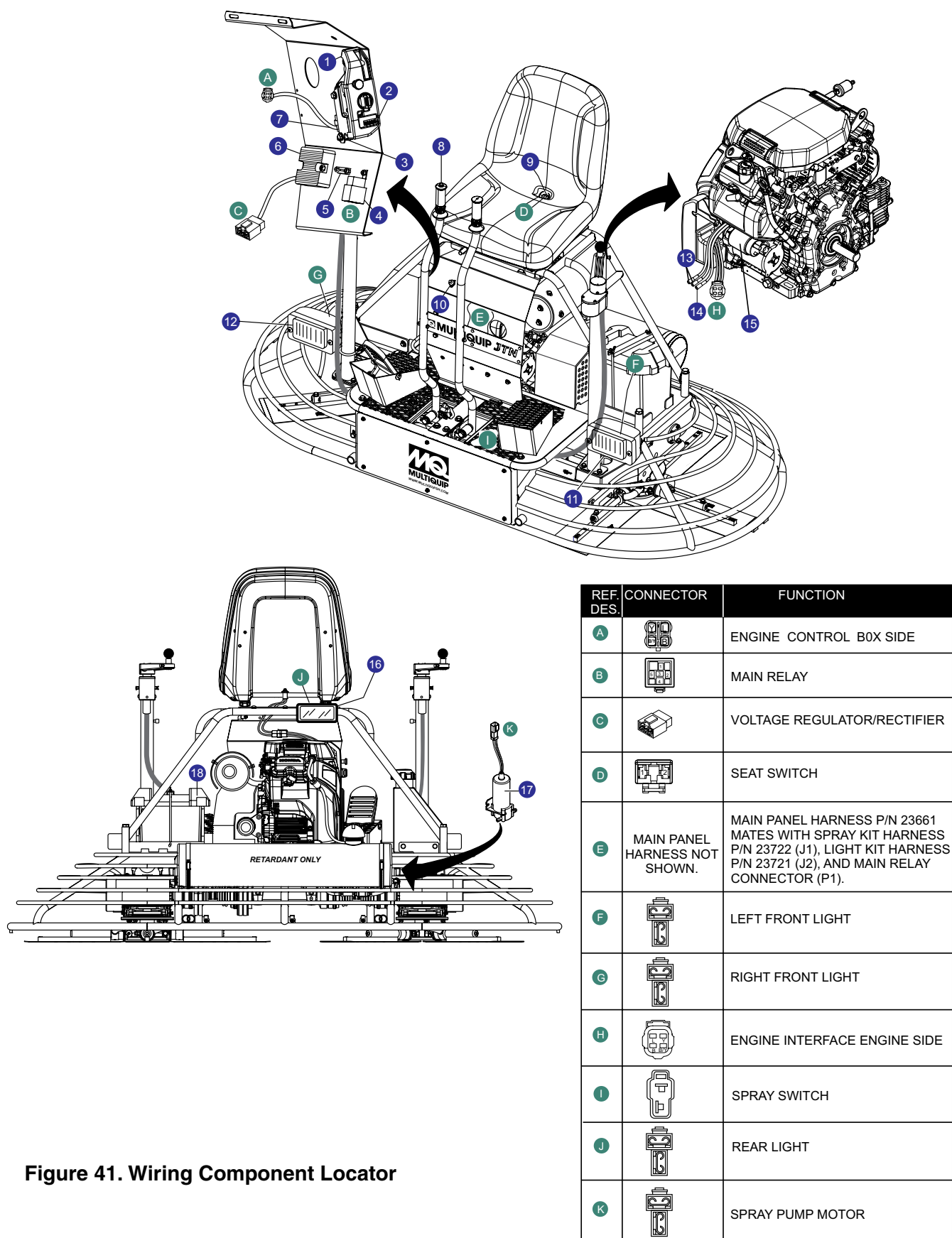


Figure 41. Wiring Component Locator

WIRING DIAGRAM

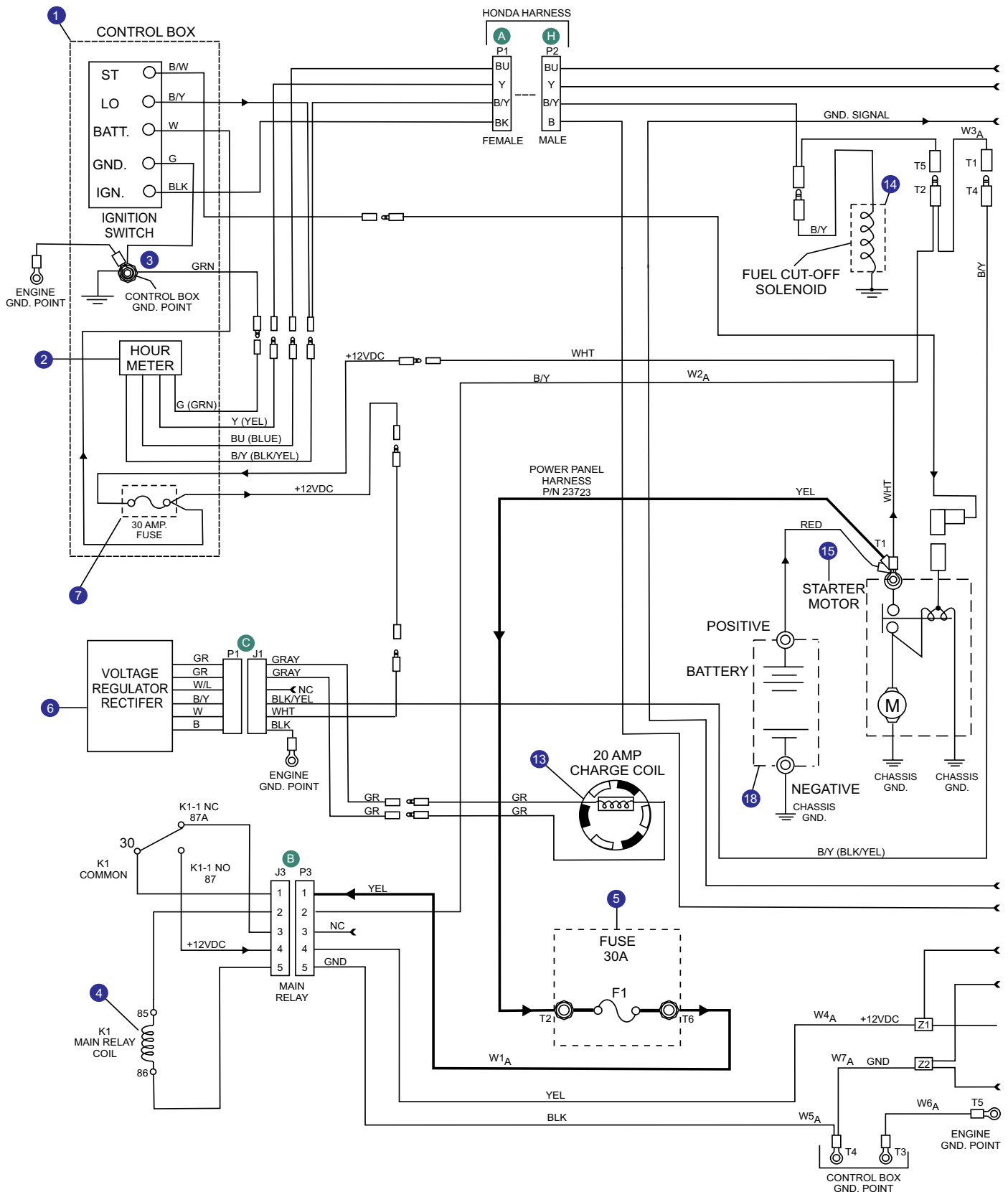
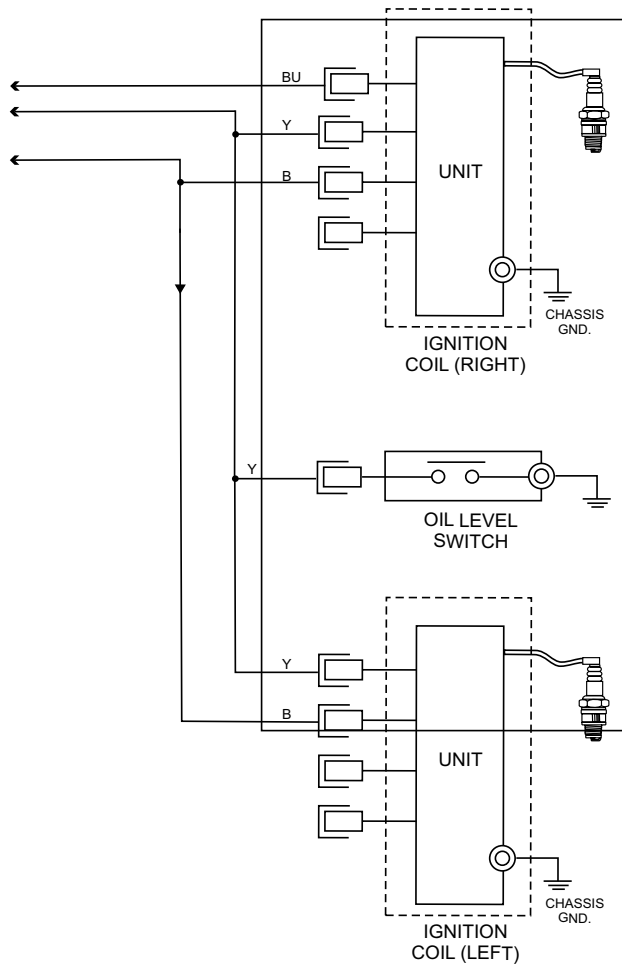


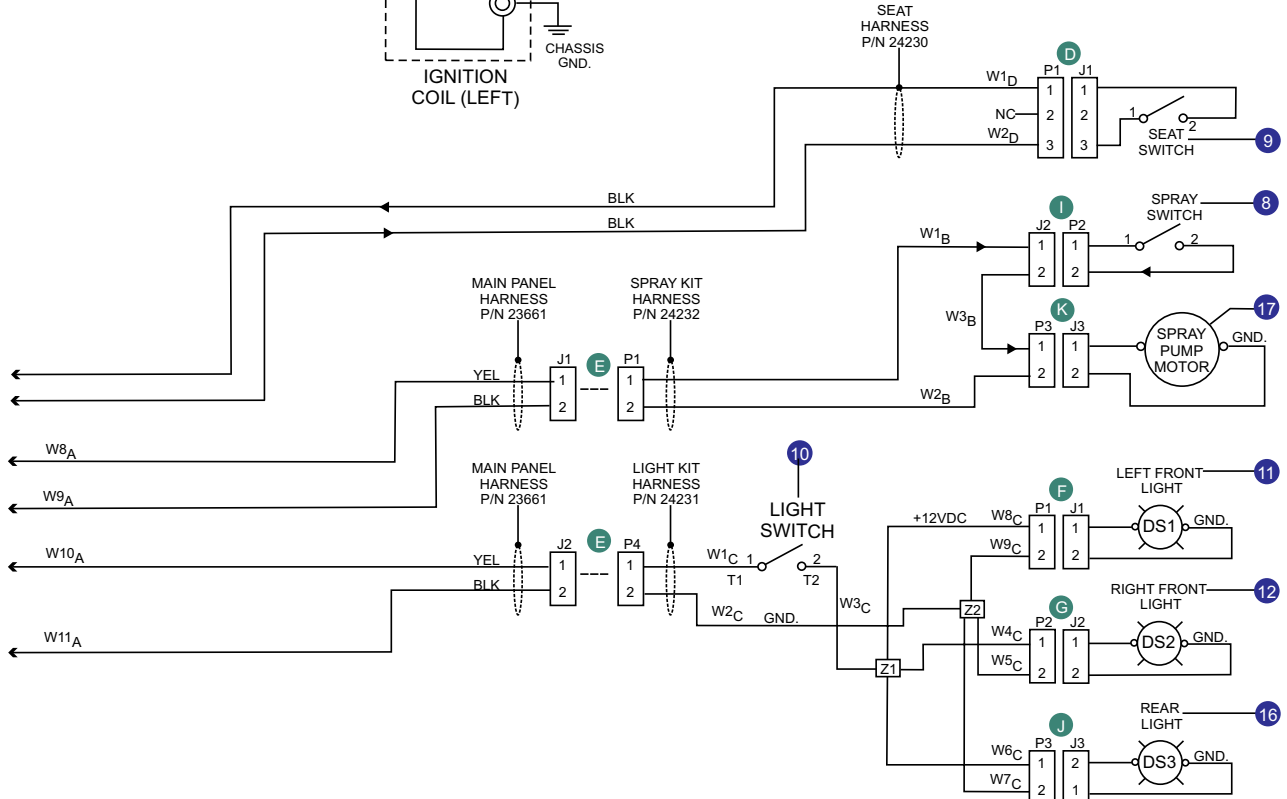
Figure 42. Wiring Diagram

WIRING DIAGRAM



HARNESS DWG.	WIRE REF.	COLOR BODY/STRIPE	WIRE GAGE
23661	W1A	RED	1.25 MM ²
	W2A	YELLOW/GREEN	1.25 MM ²
	W3A	YELLOW/GREEN	1.25 MM ²
	W4A	YELLOW	1.25 MM ²
	W5A	BLACK	1.25 MM ²
	W6A	BLACK	1.25 MM ²
	W7A	BLACK	1.25 MM ²
	W8A	YELLOW	1.25 MM ²
	W9A	BLACK	1.25 MM ²
	W10A	YELLOW	1.25 MM ²
	W11A	BLACK	1.25 MM ²
24232	W1B	YELLOW/GREEN	1.25 MM ²
	W2B	YELLOW/GREEN	1.25 MM ²
	W3B	BLACK	1.25 MM ²
24231	W1C	YELLOW/GREEN	1.25 MM ²
	W6C	BLACK	1.25 MM ²
	W3C	YELLOW/GREEN	1.25 MM ²
	W4C	YELLOW/GREEN	1.25 MM ²
	W5C	BLACK	1.25 MM ²
	W6C	YELLOW/GREEN	1.25 MM ²
	W7C	YELLOW/GREEN	1.25 MM ²
	W8C	YELLOW/GREEN	1.25 MM ²
	W9C	BLACK	1.25 MM ²
24230	W1D	BLACK	1.25 MM ²
	W2D	BLACK	1.25 MM ²

COMBINATION SWITCH CONTINUITY					
	IG	E	BAT	LO	ST
OFF					
ON	○	○	○	○	○
ST	○	○	○	○	○



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.
Difficult to start, fuel is available, and spark is present at the spark plug.	Oil pressure alarm lamp blinks upon starting? (if applicable)	Check automatic shutdown circuit, "oil sensor". (if applicable)
	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
Difficult to start, fuel is available, spark is present and compression is normal.	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
Difficult to start, fuel is available, spark is present and compression is low.	Choke open?	Close choke.
	Suction/exhaust valve stuck or protruded?	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.
No fuel present at carburetor.	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
	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 key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery.
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Ride-On Mechanical Trowel)		
Symptom	Possible Problem	Solution
Engine running rough or not at all.	Stop switch malfunction?	Make sure that the stop switch is functioning when the operator is seated. Replace switch if necessary.
	Fuel?	Look at the fuel system. Make sure there is fuel being supplied to the engine. Check to ensure that the fuel filter is not clogged.
	Ignition?	Check to ensure that the ignition switch has power and is functioning correctly.
Safety stop switch not functioning.	Bad contacts?	Replace switch.
	Loose wire connections?	Check wiring. Replace as necessary.
	Other problems?	Consult engine manufacturer's manual.
Trowel bounces, rolls concrete, or makes uneven swirls in concrete.	Blades?	Make sure blades are in good condition, not excessively worn. Finish blades should measure no less than 2 inches (50mm) from the blade bar to the trailing edge, combo blades should measure no less than 3.5 inches (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 Department).
	Bent trowel arms?	Check the spider assembly for bent trowel arms. If one of the arms is even slightly bent, replace it immediately.
	Trowel arm bushings?	Check the trowel arm bushings for tightness. This can be done by moving the trowel arms up and down. If there is more than 1/8 inch (3.2 mm) of travel at the tip of the arm, the bushings should be replaced. All bushings should be replaced at the same time.
	Thrust collar?	Check the flatness of the thrust collar by rotating it on the spider. If it varies by more than 0.02 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 1/16 inch (1.6 mm) - as measured at the thrust collar O.D., replace the bushing in the thrust collar.
	Thrust bearing worn?	Check the thrust bearing to see that it is spinning freely. Replace if necessary.
Machine has a perceptible rolling motion while running.	Main shaft?	The main output shaft of the gearbox assembly should be checked for straightness. The main shaft must run straight and cannot be more than 0.003 inch (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.

TROUBLESHOOTING

Troubleshooting (Ride-On Mechanical Trowel) - continued

Symptom	Possible Problem	Solution
Lights (optional) not working.	Wiring?	Check all electrical connections in the lighting circuit. Verify wiring is in good condition with no shorts. Replace defective wiring or components immediately.
	Lights?	If +12VDC is present at light fixture connector when light switch is activated and light does not turn on, replace light bulb.
	Bad switch?	Check the continuity of light switch. Replace light switch if defective.
	Bad fuse?	Check fuse. Replace fuse if defective.
Retardant spray (optional) not working.	Retardant?	Check retardant level in tank. Fill tank as required.
	Wiring?	Check all electrical connections in the spray pump circuit. Verify wiring is in good condition with no shorts. Replace defective wiring or components immediately.
	Bad switch?	Check the continuity of both left and right spray switches (palm handles). Replace spray switch if defective..
	Bad spray pump?	If +12VDC is present at pump connector when spray switch is activated and pump does not operate, replace spray pump.
	Bad fuse?	Check fuse. Replace fuse if defective.
Steering is unresponsive.	Blade speed out of adjustment?	See section on blade speed adjustment.
	Steering linkage out of adjustment?	Adjust the connecting linkage found at the base of the handle. Contact your MQ field service manager for instructions.
	Worn components?	Check for wear of steering bearings and linkage components. Replace if necessary.
Operating position is uncomfortable.	Seat adjusted for operator?	Adjust seat with lever located on the front of the seat.
Power head on Electric Pitch (optional) not working.	Broken or loose parts?	If the motor runs and the pitch is not affected, parts inside the power head may be loose or broken. Return power head to dealer for service.
	Wiring?	Check all electrical connections and wiring. Check the continuity at the power head unit. Verify that there is voltage present at the power head switch with the key switch in the "on" position.
	Switch?	Check the continuity of the switch. If switch is malfunctioning, replace immediately.
Linkage on Twin Pitch not working.	Crank handles?	Make sure that both crank handles are pushed down as far as possible to ensure that the linkage is engaged.
	Broken part?	Replace all broken parts immediately.
Clutch slipping or sluggish response to engine speed change.	Worn belts?	Replace belt.
	Clutch out of adjustment?	Adjust per instructions in maintenance section of this manual.
	Worn or defective 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

[illegible]



EC Declaration Of Conformity

This Declaration Of Conformity is issued under the sole responsibility of the manufacturer

Manufacturer: **MULTIQUIP MQ (SHANGHAI) CO.,LTD**

Address: **No1355, Hengcang Road,
Jiading District,
Shanghai, China**

Telephone: **+86-21-59512076**

Website: **www.multiquipsh.com.cn**

Email: **xshi@multiquip.com**

Authorized EU Representative to compile the technical file on behalf of manufacturer

Name: **Kevin Cassell**

Address: **Unit 2, Northpoint Industrial Estate Globe Lane, Dukinfield, Cheshire SK16
4UJ**

Object of Declaration

Product name: **Ride-On Trowel**

Models/Types: **JTNS Series**

The object of the declaration described above is in conformity with the relevant Community

Harmonization Directives:

2006/42/EC Machinery Directive

and are in conformity with the following harmonized standards:

EN ISO 12100: 2010 Safety of machinery - General principles for design - Risk
assessment and risk reduction.


EN 12649: 2008+A1: 2011 Concrete compactors and smoothing machines-Safety

Year of CE marking: **2013**

Signed for and on behalf of:

Company: **MULTIQUIP MQ (SHANGHAI) CO.,LTD**

General Manager:


Mr. Shi xiwen

Place & Date: **Shanghai, 5th May, 2013**



OPERATION MANUAL

HERE'S HOW TO GET HELP

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

CHINA

MQ Shanghai, China

No. 1355 Heng Cang Road
Ma Lu Town Jia Ding District
Shanghai, China 201818

Tel. 011 86 21 59512076
Fax 011 86 21 59512336

Contact: Xiwen Shi
xshi@multiquip.com

© COPYRIGHT 2013, MULTIQUIP INC.

Multiquip Inc, the MQ logo are registered trademarks of Multiquip Inc. and may not be used, reproduced, or altered without written permission. All other trademarks are the property of their respective owners and used with permission.

This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations, descriptions, references and technical data contained in this manual are for guidance only and may not be considered as binding. Multiquip Inc. reserves the right to discontinue or change specifications, design or the information published in this publication at any time without notice and without incurring any obligations.

Your Local Dealer is:



PN: 22904