



NEW CRITICAL INSTRUCTIONS. MUST READ!

HHN Ride-On Trowel

MULTIQUIP® Cross Shaft and Drive Pulley Installation Instructions

The following instructions are intended to assist the user in the installation of a cross shaft and/or drive pulley. Please read all instructions before installation.

REQUIRED TOOLS

- Hammer
- Torque wrench
- 3/8" ratchet
- 3/8", 7/16", 1/2", 3/4", 9/16", 5/8", 15/16", 13mm sockets
- 3/16" and 1/4" Allen sockets
- Open/box-end wrenches
- Misc. pry bars
- CV joint grease
- Grease gun with multipurpose grease
- 2" x 4" wood block
- Forklift/hoist
- Clutch puller
- Heavy-duty jack stands
- Scotch-brite pad
- Brake cleaner

PARTS

Verify that all parts are accounted for. See Figure 1 and Table 1.

Table 1. Cross Shaft and Drive Pulley Kits				
Item	Qty.	Part No.	Description	Remarks
A	1	30108	Cross Shaft Assy. Service Kit	Includes items 1–6
B	1	23363-2S	Lower Pulley Assy.	Includes items 4–7
1	1	30103	Cross Shaft Assy.	
2	1	30107	Screw, FHCS, 3/8-16 x 1.25 LH Thread	
3	1	30110	Spacer, CSK Ø1.375 Ø0.391 x 0.281	No longer required
4	1	19379-014	Loctite™ 271	Red
5	1	32434	Retaining Compound, Loctite™ 609	
6	1	32441	Primer, Loctite™ 7649	
7	1	23363-2	Pulley, Lower	
8	1	23436	Alignment Gauge	
9	1	23415	Sleeve, Alignment Gauge	
10	A/R	11773	Shims	0.031 Thickness
11	1	1477	Loctite™ 242	Blue
12	1	23433	Coupler, CV Joint	

NOTICE

The coupler (Item 12, P/N 23433) is intended to replace the existing coupler. This new, improved coupler will help minimize vibrations and run-out of the rotating assembly.

WORK SAFELY!

Only a **qualified service technician** with proper training should perform this installation. Follow all shop safety rules when performing this installation.

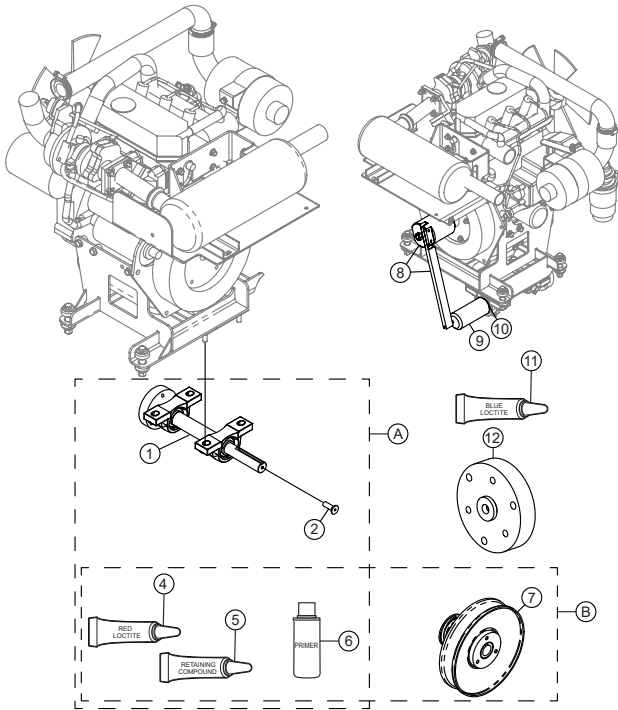


Figure 1. Cross Shaft and Drive Pulley Kits

LIFTING THE TROWEL

1. Attach one end of a lifting strap or chain around the lift loops on each side of the trowel. Attach the other end of the lifting strap or chain to the lifting device (Figure 2).

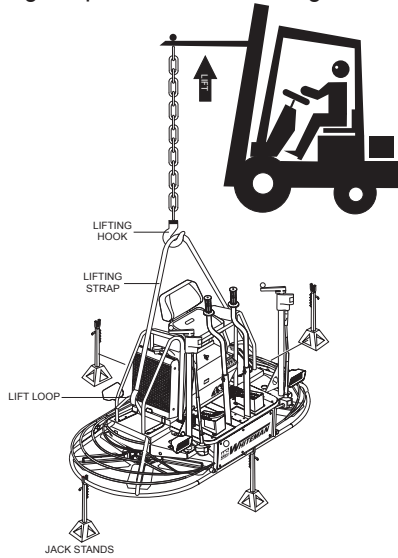


Figure 2. Lifting the Trowel

2. Place the trowel on heavy-duty jack stands.

CAUTION

Trowel blades are sharp. Keep clear of blades while performing procedure. It is recommended that trowel blades are removed to prevent injury.

BATTERY REMOVAL (HHN-34TVD ONLY)

1. Disconnect both battery cables from the battery. Remove splash pan from battery tray and trowel frame. Set pan aside in a clean, safe place. See Figure 3.

NOTICE

If trowel blades have not been removed, they must be pitched flat in order to allow removal of splash pan.

2. Remove battery tray from frame. Set battery tray and mounting hardware aside in a clean, safe place.

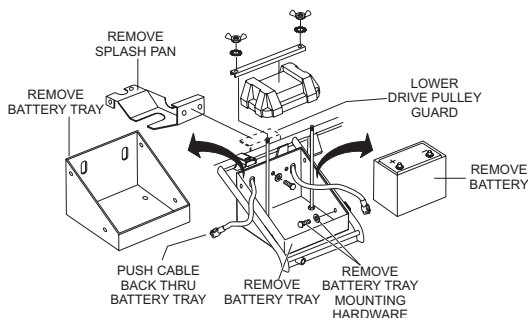


Figure 3. Battery Removal (HHN 34TVD)

BATTERY REMOVAL (HHN-31V ONLY)

Refer to Figure 4.

1. Disconnect both battery cables from the battery.
2. Locate fuel pump attached to the backside of the battery box. Disconnect the fuel line from the fuel tank. Remove fuel pump from battery box. Set pump aside in a clean, safe place.
3. Remove battery tray and splash pan from frame. Set battery tray, splash pan, and mounting hardware aside in a clean, safe place.

NOTICE

If trowel blades have not been removed, they must be pitched flat in order to allow removal of splash pan.

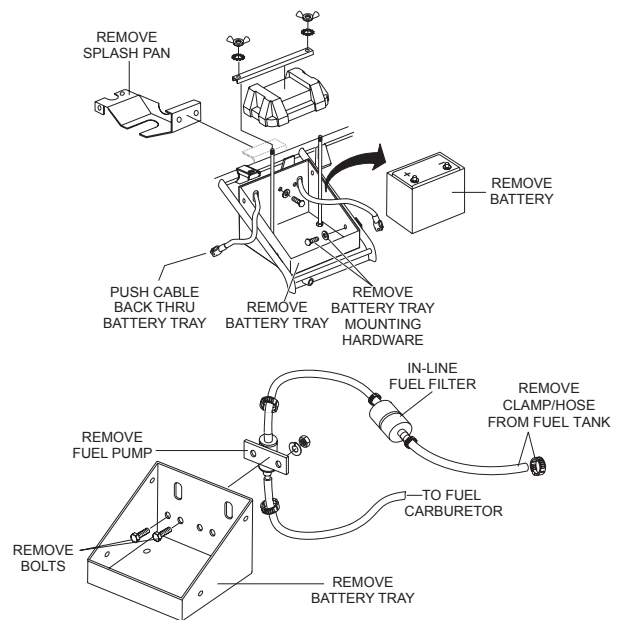


Figure 4. Battery Removal (HHN 31V)

FUEL TANK REMOVAL (OPTIONAL)

Refer to Figure 5.

1. Place fuel shut-off valve on fuel tank to the OFF position.
2. Disconnect fuel lines from the fuel tank.
3. On HHN-34TVD models, either plug return port (to prevent leaking) on fuel tank or pour fuel into a fuel safety container.
4. Remove fuel tank from frame. Set fuel tank aside in a clean, safe place.
5. Retain mounting hardware for later use.

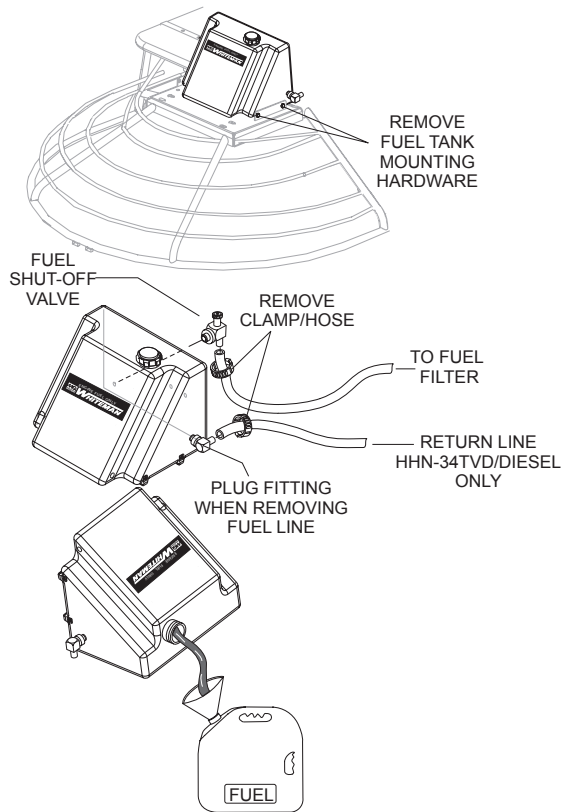


Figure 5. Fuel Tank Removal

BELT GUARD REMOVAL (OPTIONAL)

NOTICE

The front panel of the trowel can be removed to allow easier access for the removal of the belt guard.

1. Remove the retaining hardware that secures the left belt guard panel. Remove panel and set aside with mounting hardware in a clean, safe place. See Figure 6.
2. Remove rear belt guard panel. Set rear belt guard panel and mounting hardware aside in a clean, safe place.

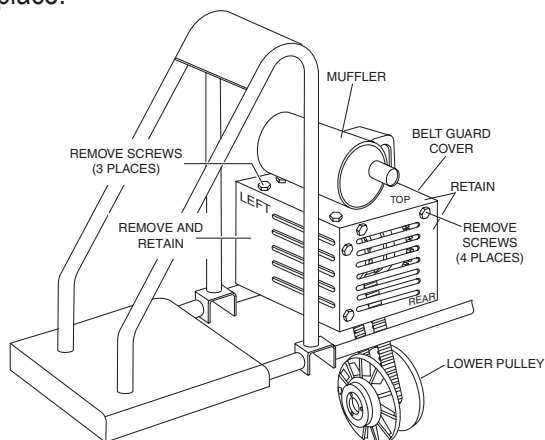


Figure 6. Belt Guard Removal

UPPER CVT PULLEY REMOVAL

Refer to Figure 7.

NOTICE

Figure 7 shows the view from the rear of the trowel.

1. Remove the clutch retaining screw and step washer that secure the clutch/pulley assembly to the engine shaft.
2. Pull clutch assembly off engine shaft. Puller (P/N 23678) may be required to remove clutch.

CV AXLE ASSEMBLY (LEFT-SIDE) REMOVAL

Refer to Figure 7.

NOTICE

Spider assemblies must be locked to the frame with a chain in order to prevent clutch rotation.

1. Starting at the left-side gearbox, use a 1/4" Allen wrench to remove the 3 bolts that secure the CV axle to the left-side gearbox.
2. Next, use a 1/4" Allen wrench to remove the 3 bolts that secure the CV axle to the lower drive pulley coupler.

NOTICE

Note that the 3 bolts securing the CV axle to the coupler are shorter than those securing the CV axle to the gearbox. Remember bolt orientation for reassembly.

3. Remove CV axle assembly. Set CV axle assembly and mounting hardware aside in a clean, safe place.

CV AXLE ASSEMBLY (RIGHT-SIDE) REMOVAL

Refer to Figure 7.

NOTICE

Disconnecting the right-side CV axle assembly from the gearbox is optional. Inspect rubber boots for damage or dirt. If CV axle is in good condition, it is not necessary to remove it from the gearbox. **Removal of the bolts securing CV axle to the cross shaft coupler is mandatory.**

1. Remove the 3 bolts that secure the CV axle to the right-side gearbox (optional).
2. Remove the 3 bolts that secure the CV axle to the cross shaft coupler.
3. Remove CV axle assembly (optional). Set CV axle assembly and mounting hardware aside in a clean, safe place.

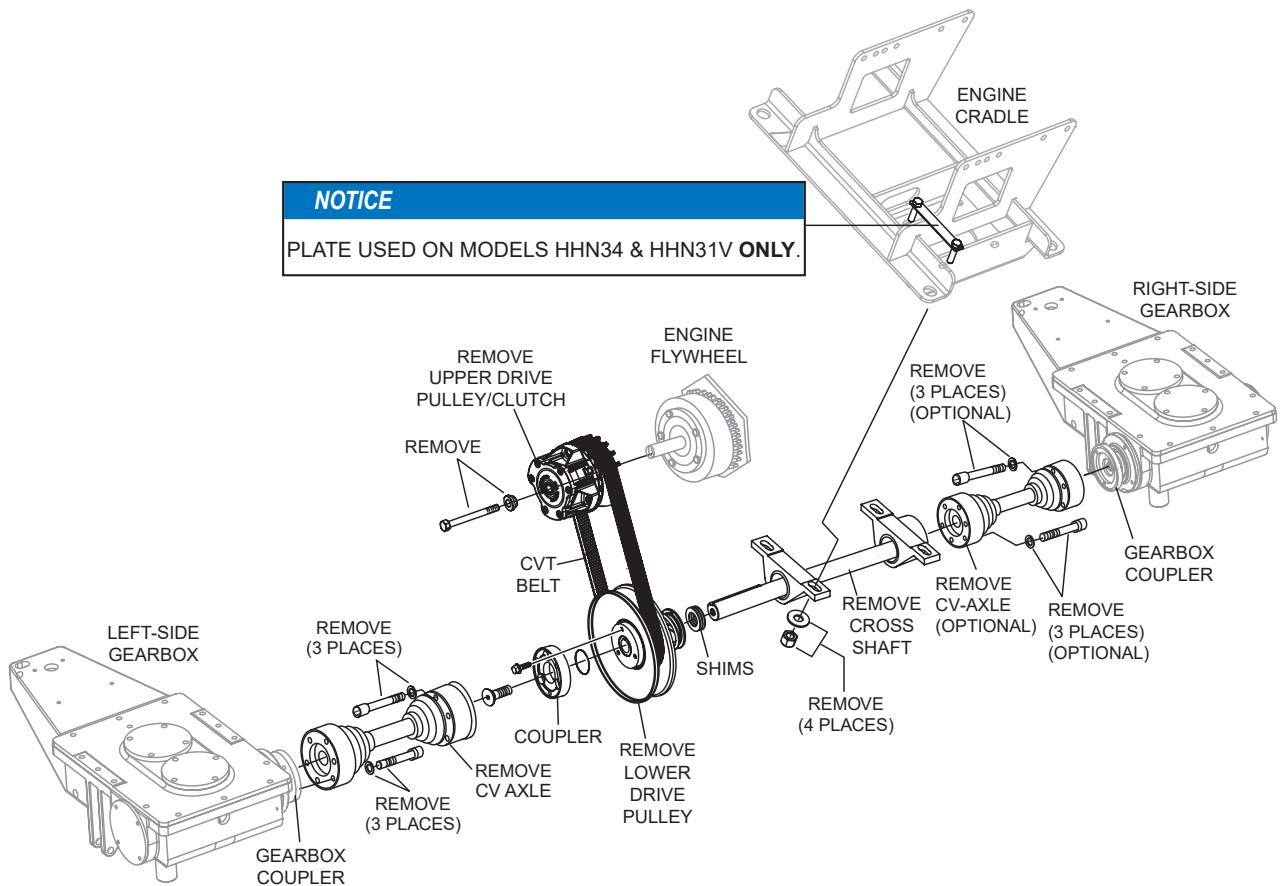


Figure 7. Drive Assembly Removal

CROSS SHAFT/LOWER PULLEY REMOVAL

1. Using a 3/8" ratchet with a 9/16" socket, remove the 4 nuts and washers that secure the cross shaft bearing blocks to the engine cradle.
2. Remove cross shaft and lower pulley assembly. Discard item that will be replaced (either cross shaft or lower pulley or both, as required). Retain all other parts.

4. Using a 3/8" ratchet with a 9/16" socket, install *new* cross shaft assembly (Figure 9), P/N 30103, with existing hardware (four 3/8-16 nyloc nuts and four 3/8" flat washers) onto engine cradle.
5. Torque cross shaft mounting screws to 30 lbf·ft (40 N·m).

CROSS SHAFT INSTALLATION

1. Remove dust cap located on top of bearing (Figure 8).

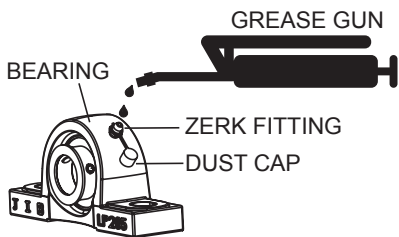


Figure 8. Bearing Lubrication

2. Using a grease gun, grease both bearings. Use multipurpose grade grease.
3. Reinstall dust cap to prevent contamination of the bearing.

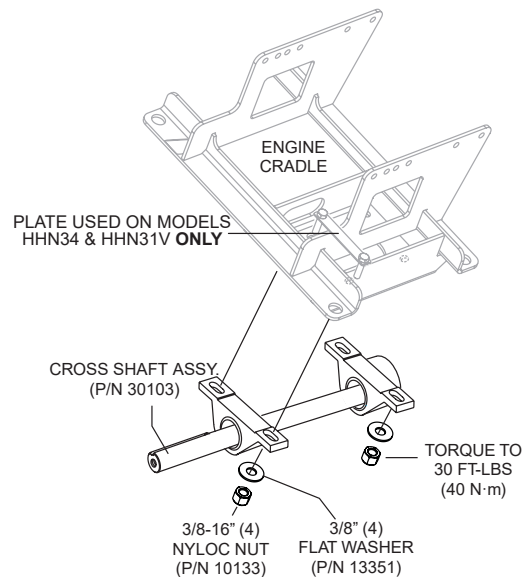


Figure 9. Cross Shaft Installation

CROSS SHAFT ALIGNMENT

Refer to Figure 10.

1. Install gauge sleeve onto cross shaft.
2. Install gauge body onto stub shaft. Torque alignment bolt to 20 lbf-ft (27.1 N·m).
3. Measure the distance between the gauge pin and gauge sleeve with a feeler gauge. This distance is an indication of the number of shims that will be required.

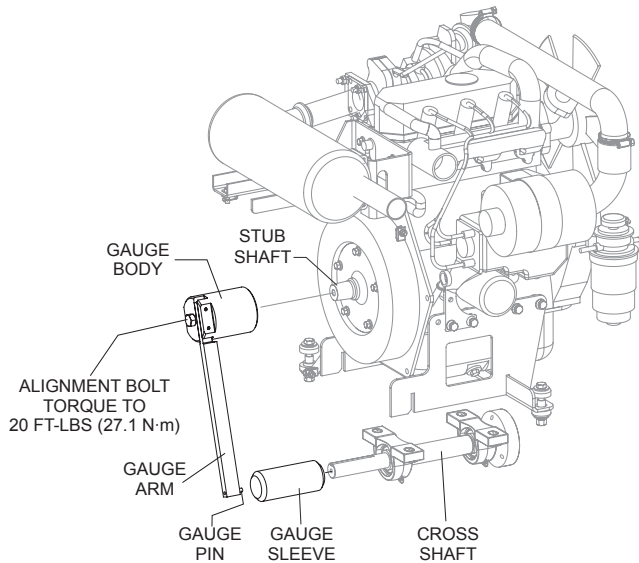


Figure 10. Cross Shaft Alignment

4. Rotate gauge arm and remove gauge sleeve. Install shims as required.
5. Reinstall gauge sleeve onto cross shaft. Insert 0.032" feeler gauge (Figure 11) between gauge pin and gauge sleeve.

NOTICE

The gauge sleeve must be held and pressed firmly against the cross shaft bearing when using a feeler gauge to provide the most accurate measurement.

6. If 0.032" feeler gauge fits between gauge pin and gauge sleeve, re-shim until feeler gauge will not pass between gauge pin and gauge sleeve.

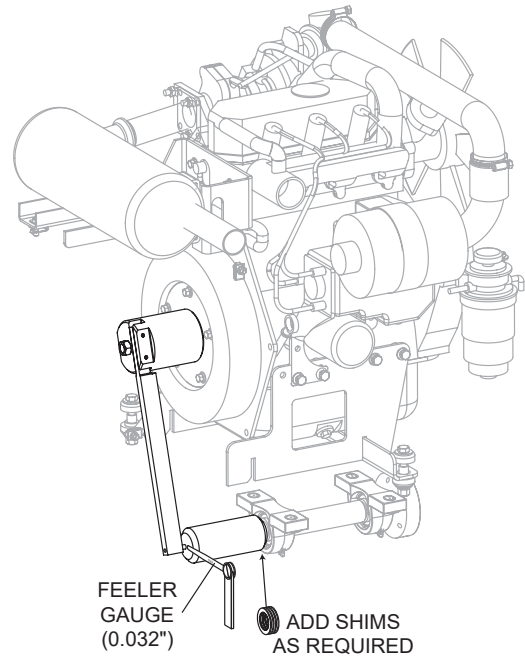


Figure 11. Shimming

LOWER PULLEY (CVT) INSTALLATION

Refer to Figure 12.

1. Clean the cross shaft and lower pulley with brake cleaner.
2. Apply primer (Loctite 7649, P/N 32441) to the cross shaft and key way in the shaded area shown in Figure 12.
3. Using retaining compound (P/N 32434), apply to cross shaft and key way until coverage is complete with a minimum coating thickness of 1/16 of an inch.
4. Mount lower pulley (P/N 23363-2) and key onto cross shaft.

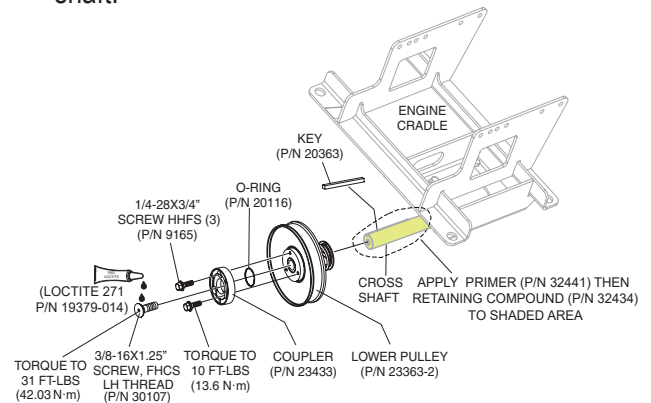


Figure 12. Lower Pulley Installation

- Inspect the existing coupler. If it has a raised area as shown in Figure 13, retain the coupler and continue to the next step. If it does not have a raised area as shown, discard the coupler and use the new, improved coupler (P/N 23433) for the next step.

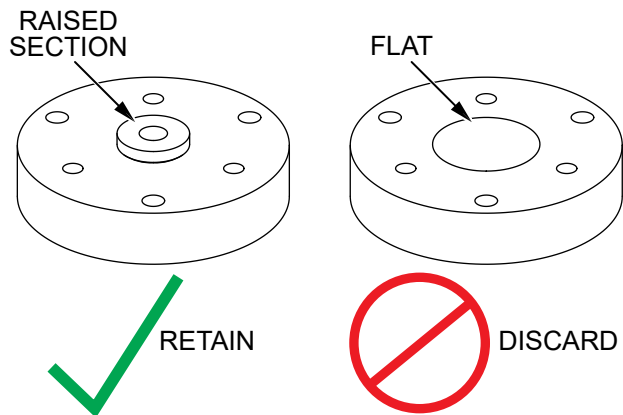


Figure 13. Existing Coupler Inspection

NOTICE

When changing to the new coupler, the spacer (P/N 30110) is no longer required.

- Mount coupler (P/N 23433) onto lower pulley with O-ring placed between lower pulley and coupler.
- Secure coupler with 1/4-28 × 3/4" screws.
- Clean the threads of 3/8-16 × 1.25" LH thread retaining screw (P/N 30107) with brake cleaner. Apply primer (Loctite 7649, P/N 32441), then apply red loctite (P/N 19379-014) to the threads.
- Insert 3/8-16 × 1.25" LH thread retaining screw (P/N 30107) into cross shaft.
- Once lower pulley has been mounted to shaft, wipe away any and all retaining compound.

NOTICE

It is extremely important that this unit **must not** be run for a period of at least 24 hours. The retaining compound needs to cross link and become completely cured during this time period.

NOTICE

Before mounting screws can be torqued, the right-side CV axle assembly must be reinstalled/reconnected (if applicable). See "CV Axle Reinstallation/Reconnection" section.

- Torque 1/4-28 × 3/4" screws (3) to 10 lbf-ft (13.6 N·m).

- Torque 3/8-16 × 1.25" LH thread retaining screw to 31 lbf-ft (42.03 N·m).
- Place the new CVT belt (P/N 23365) over the lower pulley. Do not attempt to squeeze the belt into the pulley groove yet.
- Reconnect left-side CV axle assembly. See "CV Axle Reinstallation/Reconnection" section.

CV AXLE REINSTALLATION/RECONNECTION

- Before installing the CV axle assembly, ensure rubber boots are not cracked or worn (Figure 14). If boots are damaged, replace immediately.

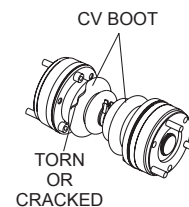


Figure 14. CV Boot Inspection

- If CV axle assembly is dirty or covered with debris, clean with a mild soap or solvent.
- If necessary, grease CV axle as required.
- Apply a thin coat of RTV silicone (Figure 15) to mating surfaces of CV axle assembly.

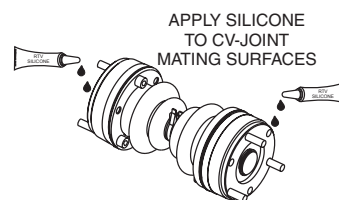


Figure 15. Applying RTV Silicone

- Connect right-side CV axle assembly to right-side gearbox coupler (if applicable) and cross shaft coupler. Connect left-side CV axle assembly to lower pulley coupler and left-side gearbox coupler.
- Torque all coupler mounting hardware to 12 lbf-ft (16.3 N·m).

PARTIAL REASSEMBLY/LOWERING TROWEL

The trowel must be lowered back to the ground prior to fully installing the belt and upper pulley assembly.

1. Before lowering trowel back onto the ground, reinstall splash pan, battery tray, and battery. For HHN-31V models, be sure to install fuel pump. Reference Figure 3 and Figure 4.
2. Lower trowel onto the ground. Follow all heavy lifting safety precautions.

LOWER PULLEY BELT INSTALLATION

1. With the CVT belt placed over the lower pulley, squeeze the belt (Figure 16) and pull the belt upwards and towards the rear of the trowel. This will spread open the faces of the lower drive pulley.

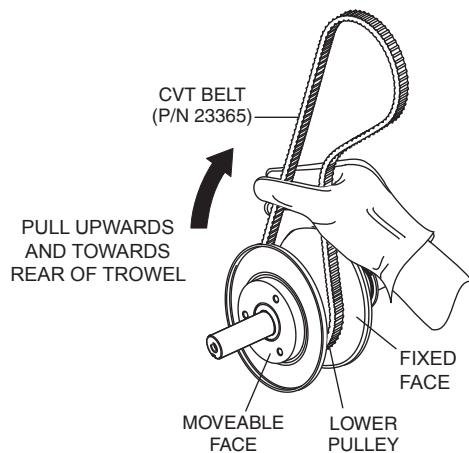


Figure 16. Holding Lower Pulley Open

UPPER PULLEY BELT INSTALLATION

1. While holding the clutch, place free end of CVT belt into upper pulley grooves.

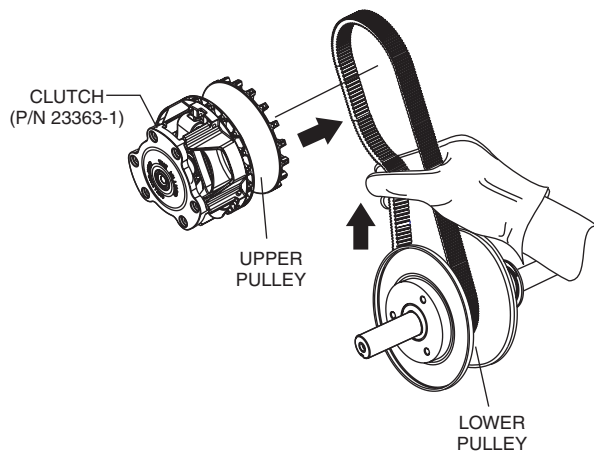


Figure 17. Upper Pulley Belt Installation

2. Once CVT belt has been placed into upper pulley grooves, mount clutch assembly onto stub shaft using 7/16-20 x 6.5" clutch retaining screw and 7/16" step washer. See Figure 18.

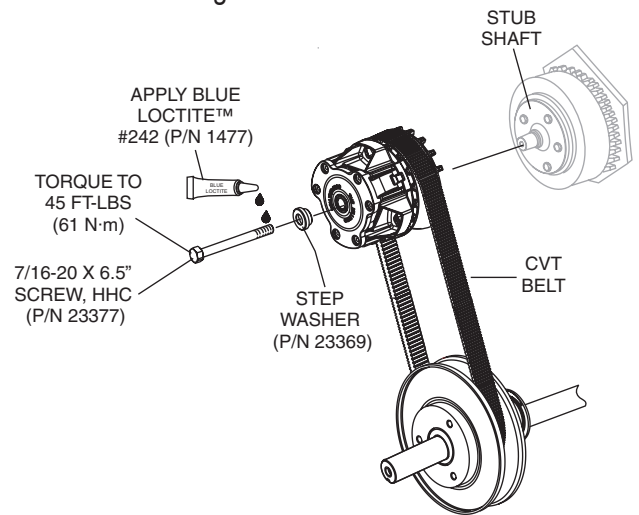


Figure 18. Installing Clutch Assembly

NOTICE

Wedge a 2 x 4 block of wood between flywheel and trowel frame to prevent flywheel rotation so clutch retaining screw can be fully tightened.

3. Clean the threads of the 7/16-20 x 6.5" clutch retaining screw with brake cleaner.
4. Apply primer (Loctite 7649, P/N 32441) then apply Blue Loctite™ #242 (P/N 1477) to clutch retaining screw and torque to 45 lbf-ft (61 N·m).

TROWEL REASSEMBLY

1. Reinstall fuel tank onto trowel frame using existing mounting hardware.
2. Reconnect fuel lines as referenced in Figure 5. Turn fuel shut-off valve to the ON position.
3. Reinstall front panel of trowel if previously removed.
4. Unlock spider assemblies.
5. Reconnect both battery cables to the battery; **RED** to the positive terminal, **BLACK** to the negative terminal.
6. Reinstall left-side belt guard panel and rear belt guard panel with existing hardware. Tighten all screws securely.

HHN CROSS SHAFT AND DRIVE PULLEY INSTRUCTIONS

HERE'S HOW TO GET HELP

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

UNITED STATES

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