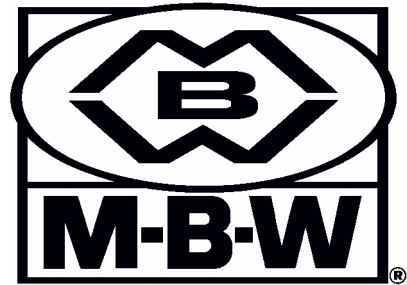


OPERATOR'S SAFETY AND SERVICE MANUAL



GPR65, GPR68 & GPR77

This manual covers the following serial numbers
and higher for each model listed:

GPR65.....	650001
GPR68.....	680001
GPR77.....	770010



REVERSIBLE PLATES

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WARNING



CALIFORNIA PROPOSITION 65 WARNING

Engine exhaust and some of its constituents are known in the state of California to cause cancer, birth defects, and other reproductive harm.

SAFETY INFORMATION

Introduction



This Safety Alert Symbol is used to call attention to items or operations which may be dangerous to those operating or working with this equipment. The symbol can be found throughout this manual and on the unit. Please read these warnings and cautions, along with all decals, carefully before attempting to operate the unit. Make sure every individual who operates or works with this equipment is familiar with all safety precautions.

WARNING

GENERAL WARNING. Indicates information important to the proper operation of the equipment. Failure to observe may result in damage to the equipment and/or severe bodily injury or death.

CAUTION

GENERAL CAUTION. Indicates information important to the proper operation of the equipment. Failure to observe may result in damage to the equipment.

Safety Precautions



LETHAL EXHAUST GAS: An internal combustion engine discharges carbon monoxide, a poisonous, odorless, invisible gas. Death or serious illness may result if inhaled. Operate only in an area with proper ventilation. **NEVER OPERATE IN A CONFINED AREA!**



DANGEROUS FUELS: Use extreme caution when storing, handling and using fuels, as they are highly volatile and explosive in vapor state. Do not add fuel while engine is running. Stop and cool the engine before adding fuel. **DO NOT SMOKE!**



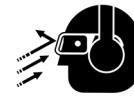
SAFETY GUARDS: It is the owner's responsibility to ensure that all guards and shields are in place and in working order.



IGNITION SYSTEMS: Breakerless, magneto, and battery ignition systems can cause severe electrical shocks. Avoid contacting these units or their wiring.



SAFE DRESS: Do not wear loose clothing, rings, wristwatches, etc. near machinery.



NOISE PROTECTION: Wear OSHA specified hearing protection devices.



EYE PROTECTION: Wear OSHA specified eye shields, safety glasses, and sweat bands.



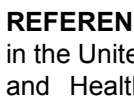
FOOT PROTECTION: Wear OSHA specified steel-tipped safety shoes.



HEAD PROTECTION: Wear OSHA specified safety helmets.



DUST PROTECTION: Wear OSHA specified dust mask or respirator.



OPERATOR: Keep children and bystanders off and away from the equipment.

REFERENCES: For details on safety rules and regulations in the United States, contact your local Occupational Safety and Health Administration (OSHA) office. Equipment operated in other countries must be operated and serviced in accordance and compliance with any and all safety requirements of that country. The publication of these safety precautions is done for your information. MBW does not by the publication of these precautions, imply or in any way represent that these are the sum of all dangers present near MBW equipment. If you are operating MBW equipment, it is your responsibility to insure that such operation is in full accordance with all applicable safety requirements and codes. All requirements of the United States Federal Occupational Safety and Health Administration Act must be met when operated in areas that are under the jurisdiction of that United States Department.

Safety Decals

Carefully read and follow all safety decals. Keep them in good condition. If decals become damaged, replace as required. If repainting the unit, replace all decals. Decals are available from authorized MBW distributors. Order the decal set listed on the following page(s).

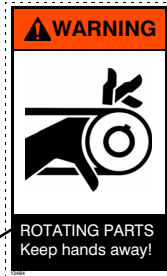
GPR65 & GPR68



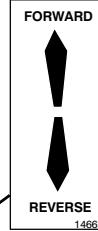
#15843 Diesel only



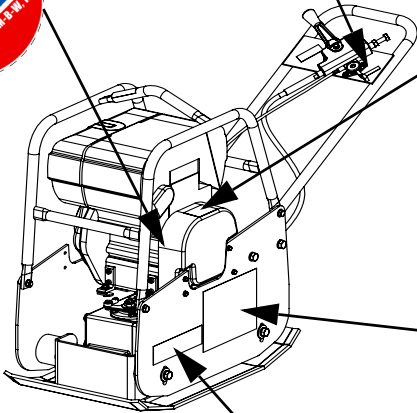
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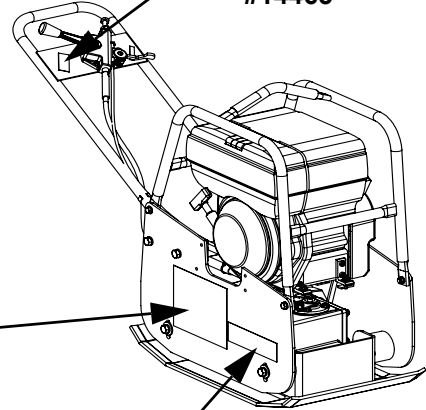
#13484



#14465



#15874 (not included in kit)



GPR65

OR

GPR68

#16993 (not included in kit)

#16994 (not included in kit)

GASOLINE PLATE OPERATING INSTRUCTIONS

1. Check engine oil level.
2. Open fuel valve.
3. Choke engine. A warm engine may not need to be choked.
4. Open throttle part way.
5. Pull starter rope.
6. After starting: open choke, return throttle to idle position.
7. During operation, when excessive kickback is noticed, maximum compaction has been reached.
8. To stop, return throttle to the idle position, use engine stop switch, close fuel valve.

UNLEADED GASOLINE

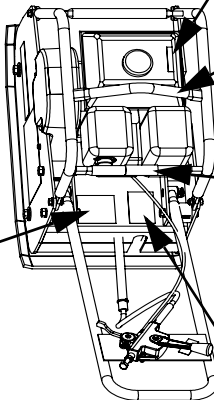
#13481 Gas only

CAUTION

Machine may fall and cause injury or damage if lifted improperly. Lift by roll cage only.

GPR65/68: Gas = 330 lbs (149 kg) Diesel = 360 lbs (163 kg)	GPR77: Gas = 397 lbs (180 kg) Diesel = 399 lbs (181 kg)
---	--

#17287



WARNING

OPERATION OF THIS EQUIPMENT MAY CREATE SPARKS THAT CAN START FIRES AROUND DRY VEGETATION. A SPARK ARRESTER MAY BE REQUIRED. THE OPERATOR SHOULD CONTACT LOCAL FIRE AGENCIES FOR LAWS OR REGULATIONS RELATING TO FIRE PREVENTION.

OR #15866 Gas only

#19791

DIESEL PLATE OPERATING INSTRUCTIONS

1. Check engine oil level.
2. Check fuel level.
3. Set engine speed control in the middle position.
4. Move decompression lever (if equipped) to the up position. (Located on top of the engine)
5. Use key (if equipped) or starting handle to start engine (Refer to engine instruction book for proper "Manual Starting" procedure.)
6. After starting return engine speed control to the idle position and allow engine to reach operation temperature.
7. During operation run engine at full throttle, when excessive kickback is noticed maximum compaction has been reached.
8. To stop, return throttle to the idle position and allow engine to idle for one minute then move control to stop position.

#15832 Diesel only

CAUTION

- Read the Operating Instructions before operating this piece of equipment.
- Keep unauthorized and untrained people away from this equipment.
- ROTATING & MOVING PARTS!** Make sure all guards and safety devices are in place.
- Wear approved hearing protection, foot protection, eye protection and head protection.
- SHUT OFF** the motor before servicing or cleaning.
- DO NOT RUN** in an enclosed area. The engine produces carbon monoxide, a **POISONOUS GAS**.

Failure to comply could result in serious bodily injury.

#13483

Safety Decals #16031

GPR77

CAUTION

Machine may fall and cause injury or damage if lifted improperly. Lift by rollcage only.

GPR65/68:	GPR77:
Gas = 330 lbs (149 kg)	Gas = 397 lbs (180 kg)
Diesel = 360 lbs (163 kg)	Diesel = 399 lbs (181 kg)



#15843 Diesel
#17449 Gasoline



#12500

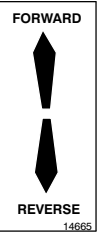
ENGINE OIL DRAIN

#15845

WARNING

ROTATING PARTS can crush and cut. Keep hands away!

#12573



#14665

WARNING

OPERATION OF THIS EQUIPMENT MAY CREATE SPARKS THAT CAN START FIRES AROUND DRY VEGETATION. A SPARK ARRESTER MAY BE REQUIRED. THE OPERATOR SHOULD CONTACT LOCAL FIRE AGENCIES FOR LAWS OR REGULATIONS RELATING TO FIRE PREVENTION

#19791



#19133



#19131

GASOLINE PLATE OPERATING INSTRUCTIONS

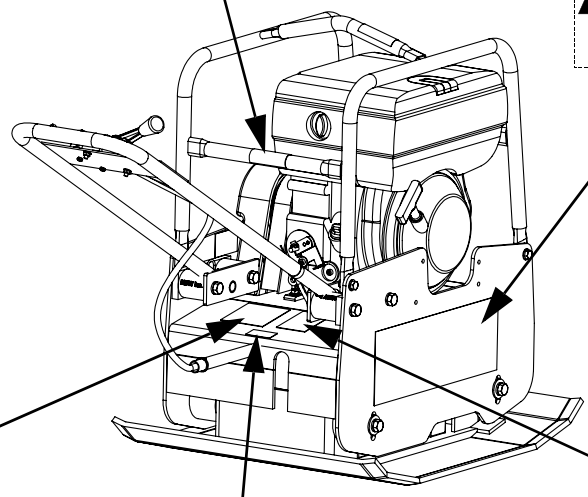
1. Check engine oil level.
2. Open fuel valve.
3. Choke engine. A warm engine may not need to be choked.
4. Open throttle part way.
5. Pull starter rope.
6. After starting: open choke, return throttle to idle position.
7. During operation, when excessive kickback is noticed, maximum compaction has been reached.
8. To stop, return throttle to the idle position, use engine stop switch, close fuel valve.

OR #15866 Gas only

DIESEL PLATE OPERATING INSTRUCTIONS

1. Check engine oil level.
2. Check fuel level.
3. Set engine speed control in the middle position.
4. Move decompression lever (if equipped) to the up position. (Located on top of the engine)
5. Use key (if equipped) or starting handle to start engine (Refer to engine instruction book for proper "Manual Starting" procedure.)
6. After starting return engine speed control to the idle position and allow engine to reach operation temperature.
7. During operation run engine at full throttle, when excessive kickback is noticed maximum compaction has been reached.
8. To stop, return throttle to the idle position and allow engine to idle for one minute then move control to stop position.

#15832 Diesel only



ENGINE OIL DRAIN

#15845

CAUTION

Read the Operating Instructions before operating this piece of equipment.

Keep unauthorized and untrained people away from this equipment.

ROTATING & MOVING PARTS! Make sure all guards and safety devices are in place.

Wear approved hearing protection, foot protection, eye protection and head protection.

SHUT OFF the motor before servicing or cleaning.

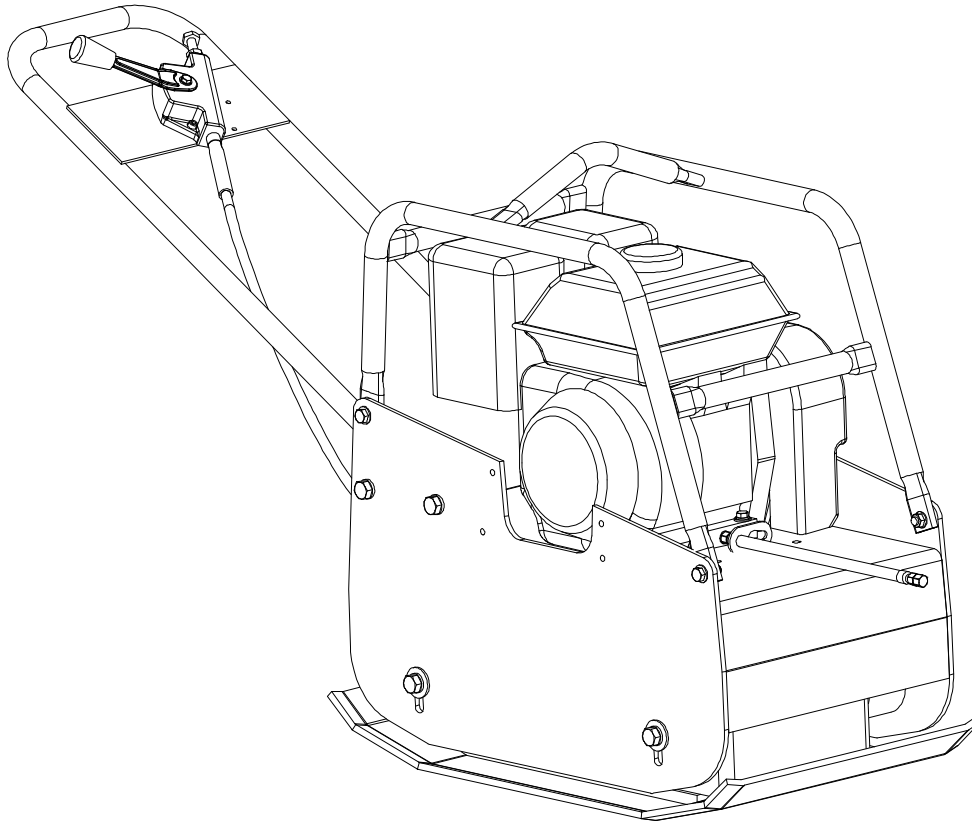
DO NOT RUN in an enclosed area. The engine produces carbon monoxide, a **POISONOUS GAS**.

Failure to comply could result in serious bodily injury.

#13483

Safety Decal Set #16031

SPECIFICATIONS



	GPR65	GPR68	GPR77
Centrifugal Force	6000 lbf (27 kN)		7775 lbf (34 kN)
Exciter vpm	4400 vpm		4700 vpm
Width & Length	15 in x 26.3 in (381mm x 668mm)	18 in x 26.3 in (457 mm x 668 mm)	22 in x 26.3 in (559 mm x 668 mm)
Travel Speed	92 ft./min. (28 m/min.)	88 ft./min. (27 m/min.)	86 ft./min. (26 m/min.)
Compaction Depth	Up to 22 in (56 cm) See Note Below		
Compaction Area	6900 sq. ft./hr (640 sq. m/hr)	7920 sq. ft./hr (736 sq. m/hr)	9460 sq. ft./hr (879 sq. m/hr)
Operating Weight	Honda - 325 lbs (147 kg) Hatz-365 lbs (165 kg)	Honda - 330 lbs (150 kg) Robin - 330lbs (150 kg) Hatz- 370 lbs (168 kg)	Honda - 397 lbs (180 kg) Hatz- 399 lbs (181 kg)
Engine Speed	Honda 3400 RPM Hatz 3600 RPM		
Engine	Honda GX160 Hatz 1B20	Honda GX160 Hatz 1B20 ROBIN EX17	Honda GX270 Hatz 1B20

Specifications subject to change without notice

Compaction depth: Clean sand & optimum moisture.
MBW recommends that lifts not exceed 12" (31 cm)

OPERATION

Introduction

MBW equipment is intended for use in very severe applications. They are powered by four cycle engines and are available in different sizes and a selection of engines.

This parts manual contains only standard parts. Variations of these parts as well as other special parts are not included. Contact your local MBW distributor for assistance in identifying parts not included in this manual.

Before Starting & Operating

- **REMEMBER!** It is the owner's responsibility to communicate information on the safe use and proper operation of this unit to the operators.
- Review ALL of the Safety Precautions listed on page 1 of this manual.
- Familiarize yourself with the operation of the machine and confirm that all controls function properly.
- Know how to STOP the machine in case of an emergency.
- Make sure hands, feet, and clothing are at a safe distance from any moving parts.
- **OIL LEVEL** - Check the oil level in the engine. For more information see "Lubrication" under the respective engine's "Owners Manual" or the Maintenance section of this manual.
- **AIR CLEANER** - Check to ensure element is in good condition and properly installed.
- **FUEL SUPPLY** - The engines on MBW equipment require an automotive grade of clean, fresh, unleaded gasoline.
- **FUEL FILTER** - If clogged or damaged, replace.

Starting Engine

Gasoline Engine-

1. Open fuel valve.
2. Turn engine switch to "ON".
3. Set throttle to idle.
4. Choke engine if necessary (you may not need to choke a warm engine).
5. Pull starter rope repeatedly until engine starts.
6. Move choke lever to open position.

7. Allow engine to warm up for one or two minutes.

Diesel Engine-

1. When starting the engine, the THROTTLE LEVER ON THE HANDLE MUST BE IN AN IDLE POSITION.
2. The engine has an automatic decompression system, however it is recommended to slowly pull the starter rope until you feel a slight resistance. Let the starter rope recoil completely and then pull the starter rope quickly, do not jerk the starter handle, until the engine starts.
3. Let the starter rope recoil completely and pull the starter rope quickly to start the engine.
4. After the engine starts make sure the throttle lever is in the idle position.
5. Let the engine warm up in the idle position for one or two minutes.

Operating

1. After the engine warms up, fully open the throttle.
2. Never leave the compactor idling unattended. The MBW Reversible plate compactor is designed to move without operator application of the control lever.
3. The number of passes needed to reach the compaction level desired will depend on soil type and moisture content. Maximum compaction of the soil has been reached when excessive kickback is noticed in the compactor.

Stopping Engine

1. Move throttle to idle position.
2. Let engine idle for one or two minutes.
3. Turn switch on engine to "STOP" position (throttle stop position on diesel engines). For detailed instructions refer to the Engine Manual.
4. Turn off fuel valve.



Always stop the engine before:

Adding fuel.

Leaving the equipment unattended for any amount of time.

Before making any repairs or adjustments to the machine.

MAINTENANCE



WARNING



Always exercise the stopping procedure before servicing or lubricating the unit.

After servicing the unit, replace and fasten all guards, shields, and covers to their original positions before resuming operation.



CAUTION



Always verify fluid levels and check for leaks after changing fluids.

Collect and dispose of all hazardous materials according to local legislation. Do not drain oil onto ground, into open streams, or down sewage drains.

Maintenance Schedule

SYSTEM	MAINTENANCE	EACH USE	EVERY 50 HOURS	EVERY 500 HOURS	YEARLY
Engine	Refer to engine operator/owner manual	X			
Exciter	Check oil level		X		
	Check for oil leaks	X			
	Change oil			X	X
	Tighten Bolts ¹		X		X
Hardware	Check and tighten as needed ¹		X		X
Shockmounts	Check for cracks or tears		X		X

1. Check all hardware after the first 5 hours of use, then follow the maintenance schedule.

Fluid Levels

SYSTEM	FLUID VOLUME	RECOMMENDED OIL
Exciter	15 oz	MBW Ground Pounder® Exciter Oil ¹
Engine	Refer to engine operator/owner manual	

1. MBW #01058---- 6-Pack (8 oz bottles)
MBW #17320---- 1 quart (32 oz)

Engine Maintenance

Refer to the engine owner's manual for maintenance intervals and procedures.

Engine Speed

- The Honda engine should be set to an operating speed of 3400 rpm. The Hatz engine should be set to 3600 rpm. Check the engine owner's manual for the procedure on setting the operating speed.
- The idle speed must not exceed 1800 rpm. If the idle speed is higher, the clutch may not disengage. Check the engine owner's manual for the procedure on setting the idle speed.

Belt Adjustment

- Remove the Beltguard
- Loosen (don't remove) the (4) 1/2" hex head capscrews securing the engine deck to the baseplate.
- Re-tension the belt by lifting the engine deck to provide 3/8 - 1/2 inch of "play" on one side of the belt.
- Retighten the (4) 1/2" hex head capscrews.
- Reinstall the beltguard.

Exciter Oil Change Procedure

- Let the machine cool.
- Clean all visible debris from the machine before servicing

3. Remove the (4) 1/2" hex head cap screws securing the engine deck to the baseplate.
4. Remove the (4) 1/4" hex head cap screws securing the beltguard to the side plate on the engine deck and remove the beltguard and belt.
5. Now is a good time to inspect and consider replacing the v-belt.
6. Disconnect the shifter lever/cable from the handle assembly by removing the (2) 1/4" bolts and nuts securing the lever to the handle.
7. Lift the engine deck and handle assembly off of the exciter assembly.
8. Now is a good time to inspect and consider replacing the shock mounts.
9. Locate the drain plug to the left of the pulley and tilt the exciter subassembly toward a drain pan to aid in the removal of all used oil and particles.

⚠ WARNING ⚠

Danger exciter oil can be scalding hot! Allow exciter to cool down before draining. Collect all oil drained and dispose of according to local legislation.

10. Using a drain pan to catch the used exciter oil, remove the socket head pipe plug and drain the oil. (Examine the oil for metal chips as their presence may indicate future problems.)
11. Tip the exciter subassembly away from the drain pan and fill the exciter subassembly through the pipe plug opening. Use only MBW® Exciter Oil. (Oil can be purchased from your local MBW distributor).
12. Reinstall the socket head pipe plug using sealant.

13. Assemble the engine deck and handle assembly to baseplate. (Do not tighten bolts)
14. Reconnect the shifter/shifter cable assembly to the handle assembly.
15. Reinstall the belt and set tension per belt adjustment procedure.
16. Start the engine and test the shifter for proper plate motion. Stop engine.
17. Recheck the belt tension.
18. Reinstall the beltguard.

Checking the Shifter Cable

Refer to Figure 1 Shifter Cable, page 7.

1. Clean all visible debris from the machine before servicing.
2. Remove the (4) 1/2" hex head capscrews securing the engine deck to the baseplate.
3. Remove the (4) 1/4" hex head capscrews securing the beltguard to the side plate on the engine deck and remove the beltguard and the belt.
4. Disconnect the shifter handle from the handle by removing the (2) 1/4" socket head capscrews.
5. Separate the engine deck and the baseplate.
6. Push the shifter lever (item #8) into the forward position and hold.
7. Turn the exciter pulley counterclockwise and feel for resistance.
8. Repeat steps 6 & 7 for the reverse position.
9. Repeat steps 6, 7 and 8.

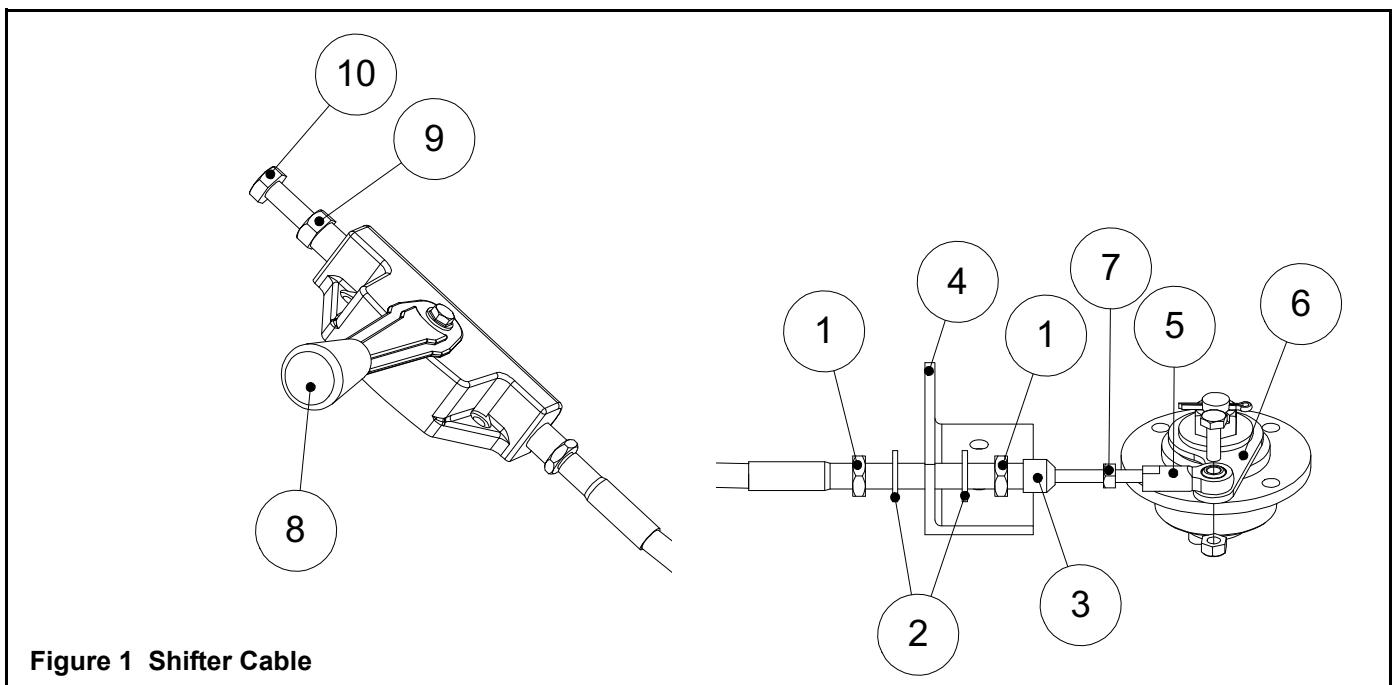


Figure 1 Shifter Cable

10. If the cable has been properly adjusted, and no resistance is noticed, Skip to step 20.
11. Loosen the 10mm jam nut (item #9) on the shifter housing.
12. Loosen the 10mm hex bolt (item #10) on the shifter housing approximately 1/4".
13. Loosen both hex nuts (item #1) securing the shifter cable to the angle bracket (item #4).
14. Move the shifter lever (item #8) to the reverse position and hold.
15. Move the actuator arm (item #6) all the way forward, and then back off slightly.
16. Retighten the hex nuts (item #1) to the angle bracket (item #4).
17. Move the shift lever (item #8) to the forward position.
18. Tighten the 10mm hex bolt (item #10) on the shifter housing until resistance against the shifter lever (item#8) is noticed then loosen slightly.
19. Tighten the 10mm jam nut (item #9).
20. Repeat steps 6-9. If the cable has been properly adjusted and resistance is still noticed, the lever and cable may need to be replaced.
21. Reconnect the engine deck to the baseplate using the capscrews removed in step 3. (Do not tighten the bolts.)
22. Secure the shifter lever to the handle using the capscrews removed in step 4.
23. Reinstall the belt and adjust tension (Refer to Belt Adjustment, page 6.).
24. Reinstall the beltguard.

SERVICE

Assembly and disassembly should be performed by a service technician who has been factory trained on MBW equipment. The unit should be clean and free of debris. Pressure washing before disassembly is recommended.

- Prior to assembly, wash all parts in a suitable cleaner or solvent.
- Check moving parts for wear and failure. Refer to the Replacement section in this manual for tolerance and replacement cycles.
- All shafts and housings should be oiled prior to pressing bearings. Also, ensure that the bearings are pressed square and are seated properly.
- All bearings should be replaced when rebuilding any exciter or gearbox.
- All gaskets and seals should be replaced after any disassembly.

Torque Chart

SIZE	GRADE 2	GRADE 5	GRADE 8
1/4-20	49 in·lbs	76 in·lbs	9 ft·lbs
1/4-28	56 in·lbs	87 in·lbs	10 ft·lbs
5/16-18	8 ft·lbs	13 ft·lbs	18 ft·lbs
5/16-24	9 ft·lbs	14 ft·lbs	20 ft·lbs
3/8-16	15 ft·lbs	23 ft·lbs	33 ft·lbs
3/8-24	17 ft·lbs	26 ft·lbs	37 ft·lbs
7/16-14	24 ft·lbs	37 ft·lbs	52 ft·lbs
7/16-20	27 ft·lbs	41 ft·lbs	58 ft·lbs
1/2-13	37 ft·lbs	57 ft·lbs	80 ft·lbs
1/2-20	41 ft·lbs	64 ft·lbs	90 ft·lbs
9/16-12	53 ft·lbs	82 ft·lbs	115 ft·lbs
5/8-11	73 ft·lbs	112 ft·lbs	159 ft·lbs
5/8-18	83 ft·lbs	112 ft·lbs	180 ft·lbs
3/4-16	144 ft·lbs	200 ft·lbs	315 ft·lbs
1-8	188 ft·lbs	483 ft·lbs	682 ft·lbs
1-14	210 ft·lbs	541 ft·lbs	764 ft·lbs
1-1/2-6	652 ft·lbs	1462 ft·lbs	2371 ft·lbs
M 6	3 ft·lbs	4 ft·lbs	7 ft·lbs
M 8	6 ft·lbs	10 ft·lbs	18 ft·lbs
M 10	10 ft·lbs	20 ft·lbs	30 ft·lbs
CONVERSIONS			
in·lbs x 0.083 = ft·lbs			
ft·lbs x 12 = in·lbs			
ft·lbs x 0.1383 = kg·m			
ft·lbs x 1.3558 = N·m			

Replacing Shifter Cable Assembly

Refer to Figure 1 Shifter Cable, page 7.

1. Unbolt and remove the ball joint (item #5).
2. Remove the jam nut (item #7), dust seal (item #3), hex nuts (item #1) and washers (item #2).
3. Slide the shifter cable out of the angle bracket (item #4).
4. Unbolt the shifter assembly (item #8) from the handle and remove from the compactor.
5. Install the new shifter assembly.
6. Remove all necessary parts from the cable end and slide it through the engine deck and angle bracket (item #4).
7. Install the washer (item #2), hex nuts (item #1), dust seal (item #3), jam nut (item #7) and ball joint (item #5) onto the cable.
8. Bolt the ball joint (item #5) to the actuator arm (item #6).
9. Before tightening the two hex nuts (item #1) to the angle bracket, adjust the cable (See Checking the Shifter Cable, page 7).

Gas Engine Removal

Refer to Honda Main Assembly, page 22.

1. Let the machine cool and clean all visible debris from the machine before disassembly.
2. Remove the (4) 3/8" flanged capscrews securing the rollcage to the engine deck and remove the rollcage.
3. If equipped with throttle cable, remove the air cleaner cover and air filter.
4. Remove throttle cable from engine. Be careful not to loose throttle cable clamp.
5. Remove the (4) 1/4" hex head capscrews securing the beltguard to the side plate on the engine deck and remove the beltguard and belt.
6. Now is a good time to inspect and consider replacing the v-belt.
7. Remove the (4) hex head capscrews securing the engine to the engine deck and remove the engine.

Diesel Engine Removal

Refer to Diesel Main Assembly, page 24.

1. Let the machine cool and clean all visible debris from the machine before disassembly.

2. Remove the (4) 3/8" flanged capscrews securing the rollcage to the engine deck and remove the rollcage.
3. Remove throttle cable from engine. Be careful not to loose throttle cable clamp.
4. Remove the (4) 1/4" hex head capscrews securing the beltguard to the side plate on the engine deck and remove the beltguard and belt.
5. Now is a good time to inspect and consider replacing the v-belt.
6. Remove the (4) hex head capscrews securing the engine to the engine deck and remove the engine.

Exciter Removal

1. Let the machine cool and clean all visible debris from machine before disassembly.
2. Remove the (4) 1/4" hex head capscrews securing the beltguard to the side plate on the engine deck and remove the beltguard and belt.
3. Now is a good time to inspect and consider replacing the v-belt.
4. Remove the (4) 1/2" hex head capscrews securing the engine deck to the base plate.
5. Disconnect the shifter lever from the handle by removing the (2) 1/4" socket head capscrews.
6. Separate the engine deck and base plate.
7. Disconnect the shifter cable from the actuator assembly and exciter housing by removing the 1/4" bolt and jam nut securing the ball joint to the actuator lever and removing the (2) hex head capscrews securing the angle bracket to the exciter assembly. (Refer to Figure 1 Shifter Cable, page 7..)
8. Now is a good time to inspect and consider replacing the shock mounts.
9. Remove the (6) hex nuts and washers securing the exciter assembly to the base plate and remove the exciter.

Exciter Disassembly

Refer to Exciter Assembly, page 20.



Collect and dispose of all hazardous materials according to local legislation.

1. Clean the housing and drain the oil as described in the EXCITER OIL CHANGE PROCEDURE section of this manual.
2. Remove the screw (item #32) securing the washer (item #23) to the input shaft (item #25) and remove the washer.

3. Remove the pulley (item #26) and key (item #4 or #28).
4. Remove the (2) 5/16" flanged capscrews (item #31) securing the stone guard to the housing and remove the stone guard (item #27).
5. Remove the (4) flanged cap screws (item #31) securing the actuator assembly (item #22) and separate it from the housing.
6. Orient the exciter so the cover is facing up.
7. Remove all (10) 5/16" flanged capscrews (items #34) securing the cover to the housing.
8. Tap on the housing handles to loosen the cover and separate it from the housing.



All internal components are attached to the cover, so lift straight up!

9. Place the cover on the work surface with the shafts oriented up.
10. Remove the cover gasket (item #13).
11. Remove the 5/16" flanged capscrew (item #33) securing the shifter assembly (item #24) to the cover and remove the shifter assembly.
12. Remove all (4) exciter weights (items #14, #19 and #20).

NOTE: It may be necessary to heat the bolts (item #10) to loosen the bond.

13. Remove the (2) large retaining rings (item #1) from the exciter cover.
14. Invert the cover and place in a vise with the shafts hanging freely and the cover laying flat.
15. Remove the (2) 5/16" capscrews and brass washers (items #30 and #35) from the bearing access holes in the cover.
16. Use a 1/4" pin punch at least 2" long through the access holes to press the bearings and shafts out of the cover.



Alternate between the two access holes evenly to prevent damage to the cover and bearings during removal. Have an assistant hold the shafts during removal to prevent dropping them.

17. Remove the (2) large retaining rings (item #1) from the housing.
18. Remove the four (4) 5/16" capscrews and brass washers (items #30 and #35) from the bearing access holes in the housing.

19. Use a 1/4" pin punch at least 2" long through the access holes to press the bearings shafts out of the housing.



CAUTION



Alternate between the two access holes evenly to prevent damage to the housing and bearings during removal. Have an assistant hold the bearings during removal to prevent dropping them.

20. Remove the oil seal (item #7) from the exciter cover.
21. Remove the breather pin (item #29), felt filter (item #2), and the retaining ring (item #3) from the cover.
22. Remove all four small retaining rings (item #9) from the shafts.
23. Press the bearings (items #6 and #8) off of both ends of each shaft.
24. Clean the shafts and remove both gears and the key (items #4 #15 and #16).
25. Press the bearing (item #18) out of the gear (item #16).
26. Clean and inspect the bearings, housing, cover, gears and shafts. Replace parts as needed.

NOTE: Bearings, gears and exciter weights should be replaced as complete sets.

Actuator Disassembly

Refer to Actuator Assembly, page 16.

1. Remove the cotter pin (item #11).
2. Unscrew the castle nut (item #12) halfway.
3. Tap the top of the castle nut and actuator shaft (item #8) to release the taper lock.
4. Remove the castle nut.
5. Remove the actuator shaft (item #8) from the assembly.
6. Remove the key (item #1), belleville washer (item #2), and the thrust bearing (item #9). from the actuator.
7. Remove the washer (item #13) and actuator arm (item #7).
8. Remove the o-ring (item #3) and actuator bushing (item #6).
9. Remove the last two o-rings and the spiral pin (item #10).
10. Clean and inspect all parts.

Shifter Disassembly

Refer to Shifter Assembly, page 18.

1. Slide the shaft (item #4) out of the shifting yoke (item #1).
2. Tip the yoke and catch the detent balls (item #2) when they fall out.
3. Drive the spiral pins (item #5) out with a small punch.
4. Remove the springs (item #3).
5. Clean and inspect all parts.

Shifter Assembly

Refer to Shifter Assembly, page 18.

1. Insert the shaft (item #4) into the shifting yoke (item #1). Position the hole in the shaft the same way as shown in the illustration.
2. Insert both detent balls (item #2) into the shifting yoke.
3. Insert the springs (item #3) into the shifting yoke behind each detent ball.
4. Compress the springs and insert the spiral pins (item #5).

Actuator Assembly

Refer to Actuator Assembly, page 16.

1. Install the (2) o-rings (items #4 and #3) onto the actuator cover (item #5).
2. Assemble the thrust bearing (item #9), belleville washer (item #2), and the key (item #1) onto the actuator shaft (item #8). NOTE: Belleville washer to be installed with the cupped face up!
3. Insert the actuator into the cover.
4. Assemble the actuator bushing (item #6) onto the actuator through the top of the cover.
5. Assemble the o-ring (item #3) onto the bushing.
6. Assemble the actuator arm (item #7) and the spiral pin (item #10) to the bushing. NOTE: Orientation of the arm is important! Use the figure as an installation guide.
7. Apply a bead of silicone sealant to the actuator arm around the actuator.
8. Assemble the washer (item #13) and castle nut (item #12) to the actuator.
9. Tighten the castle nut and install the cotter pin (item #11).

Exciter Assembly

Refer to Actuator Assembly, page 16.

1. Press the cylindrical bearings (item #6) into the exciter housing (item #11).
2. Install two large retaining rings (item #1) into the housing.
3. Press the spherical bearings (item #8) onto the shafts.



CAUTION



Be sure to press the bearings onto the correct ends of the shafts! They need to go on the end of the input shaft (item #25) with the pulley keyway, and on the end of the idler shaft (item #17) with the larger hole.

4. Install two small retaining rings (item #9).
5. Press the breather pin (item #29) into the cover (item #12) leaving 3/16" to 1/4" of the pin protruding beyond the inside of the cover, and replace the felt filter (item #2) and the retaining ring (item #3).
6. Press the input shaft (item #25) into the cover by pressing on the bearing outer race only, and install the large snap ring (item #1).



CAUTION



Apply high strength thread locker to the threads in the shaft only! Correct weight placement is CRITICAL! Refer to the figures on page 12 and page 20 to ensure proper orientation and placement.

7. Bolt the lower weight (item #14) to the input shaft using capscrew (item #10) by **applying high strength thread locker to the threads in the shaft only, torque to 100 ft./lb.!**
8. Install key (item #4) to the input shaft using medium strength loctite.
9. Press on gear (item #15) with the timing mark up using medium strength loctite.
10. Repeat step #7 for the upper weight (item #14).
11. Repeat step #6 for the idler shaft (item #17).
12. Bolt the lower weight (item #20) to the idler shaft using capscrew (item #10) by **applying high strength thread locker to the threads in the shaft only, torque to 100 ft./lb.!**
13. Press the slide bushing (item #18) centered into the gear (item #16).
14. Lightly oil the idler shaft and slide on the gear with the timing mark up.
15. Repeat step #12 for the upper weight (item #19).

16. Support the shafts by the weights and press on the inner races of the cylindrical bearings (item #6).
17. Install two small retaining rings (item #9).
18. Bolt the shifter assembly (item #24) to the cover using flanged capscrew (item #33) and medium strength loctite applied to only the screw threads.
19. Align the timing marks on the gears and hold all shafts vertical.
20. Set the new gasket (item #13) on the cover.
21. Place the housing on top of the cover being sure to smoothly insert the shafts into the housing.
22. Carefully turn over the entire exciter so the cover is facing up.
23. Bolt the cover to the housing using flanged capscrews (items #34).
24. Reassemble all bearing access hole capscrews (item #30) and brass washers (item #35) using liquid gasket maker sealant.
25. Lightly lubricate the sealing lip of the new oil seal (item #7) and press it into the cover.
26. Install the stone guard (item #27) on the cover using flanged capscrew (item #31) and apply thread sealant to the threads.
27. Install the key (item #4 or #28) and the pulley (item #26) using the washer (item #23) and bolt (item #32) to secure them to the input shaft. Use medium strength loctite on the capscrew threads.
28. Bolt the actuator assembly (item #22) to the exciter housing using capscrews (item #31).
29. Add oil to the exciter per the fluid level chart on page 6 and install the pipe plug (item #36) (see Exciter Oil Change Procedure, page 6).
30. Reassemble the bottom plate, roll cage, engine and shifter cable by referring to the disassembly instructions on page 9.
31. Check the shifter cable assembly for proper adjustment (see Checking the Shifter Cable, page 7).

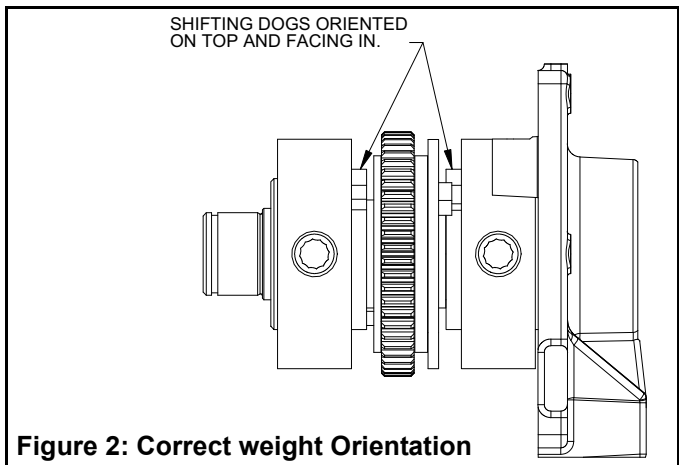


Figure 2: Correct weight Orientation

Parts Replacement Cycles and Tolerances

Bearings	Replace anytime a bearing is rough, binding, discolored or removed from housing or shaft.
Clutch	Replace clutch if it does not disengage below 1800 rpm.
Engine Components	Refer to your engine manufacturer's Owner's Manual.
Hardware	Replace any worn or damaged hardware as needed. Replacement hardware should be grade 5 and zinc plated unless otherwise specified.
Safety Decals	Replace if they become damaged or illegible.
Seals & Gaskets	Replace if a leak is detected and at every overhaul or tear down.
V-Belts	Replace if cracked, torn, or stretched to the point the belt won't tension properly.

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REPLACEMENT PARTS

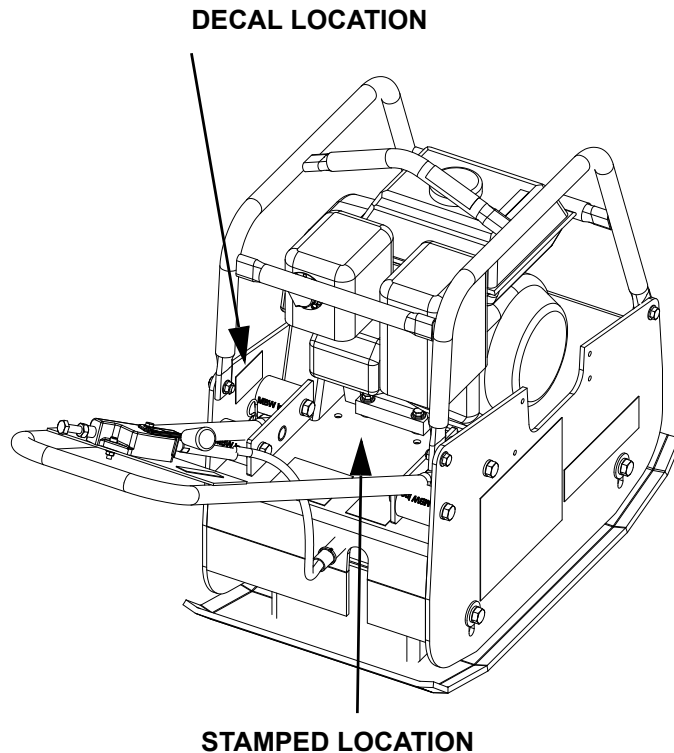
The warranty is stated in this book on page 28. Failure to return the Warranty Registration Card renders the warranty null and void.

MBW has established a network of reputable distributors/dealers with trained mechanics and full facilities for maintenance and rebuilding, and to carry an adequate parts stock in all areas of the country. Their sales engineers are available for professional consultation. If you cannot locate an MBW distributor in your area, contact MBW or one of our Sales Branches listed below.

When ordering replacement parts, be sure to have the following information available:

- Model and Serial Number of machine when ordering MBW parts
- Model and Serial Number of engine when ordering engine parts
- Part Number, Description, and Quantity
- Company Name, Address, Zip Code, and Purchase Order Number
- Preferred method of shipping

REMEMBER - You own the best! If repairs are needed, use only MBW parts purchased from authorized MBW distributors.



The unit's serial number can be found in the following locations:

- Decal applied to side plate of engine deck, behind engine.
- Stamped into deck, behind engine.

Write Model Number here

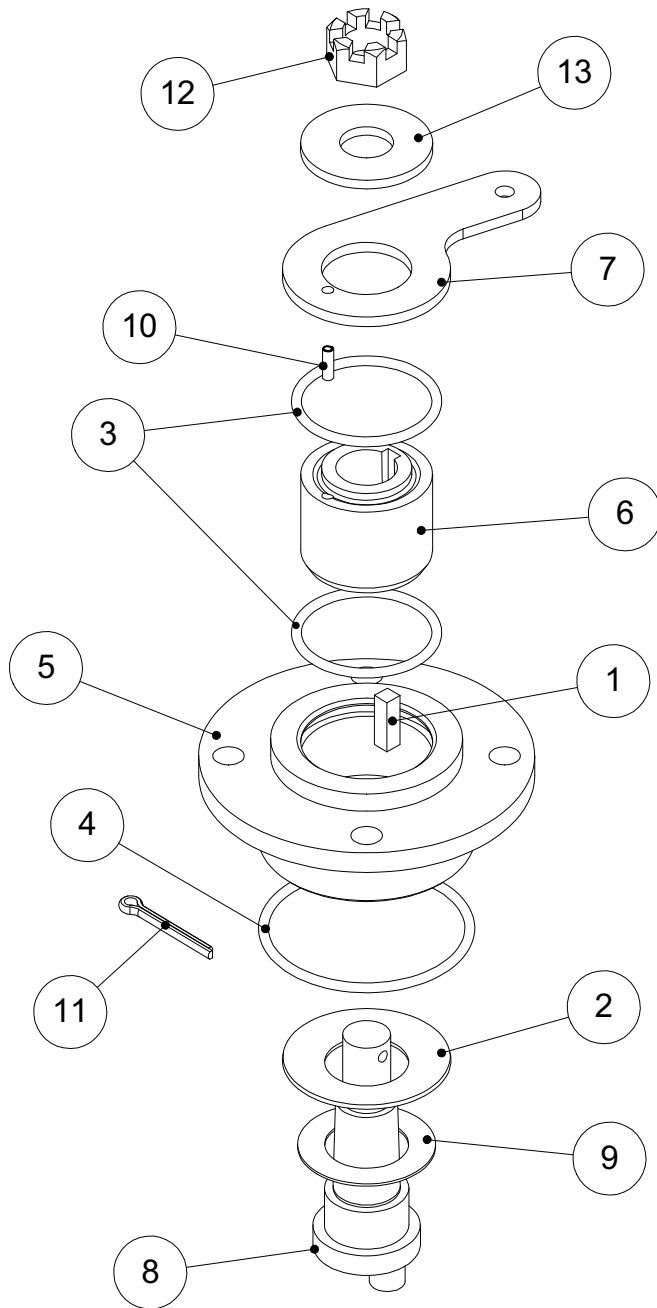
Write Serial Number here

Contact Information

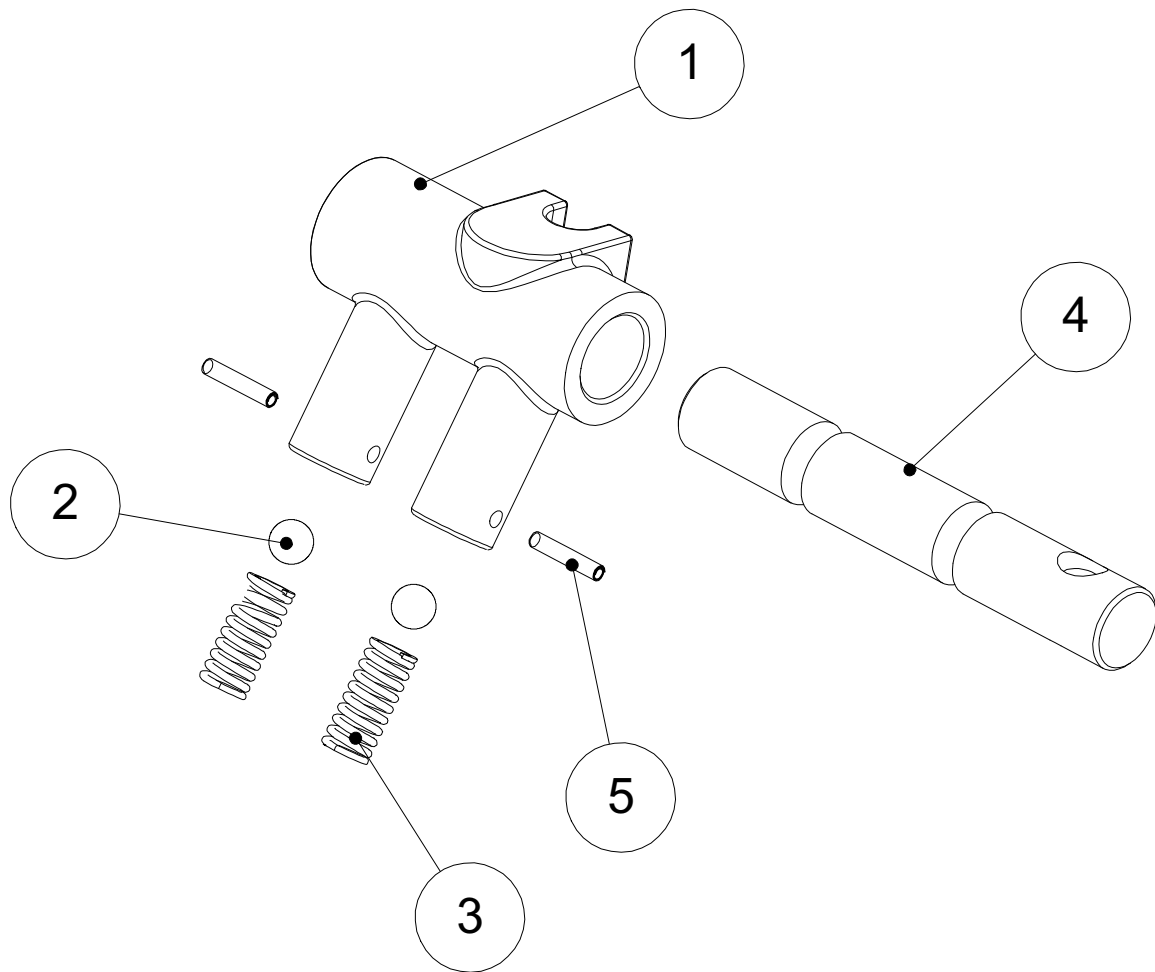
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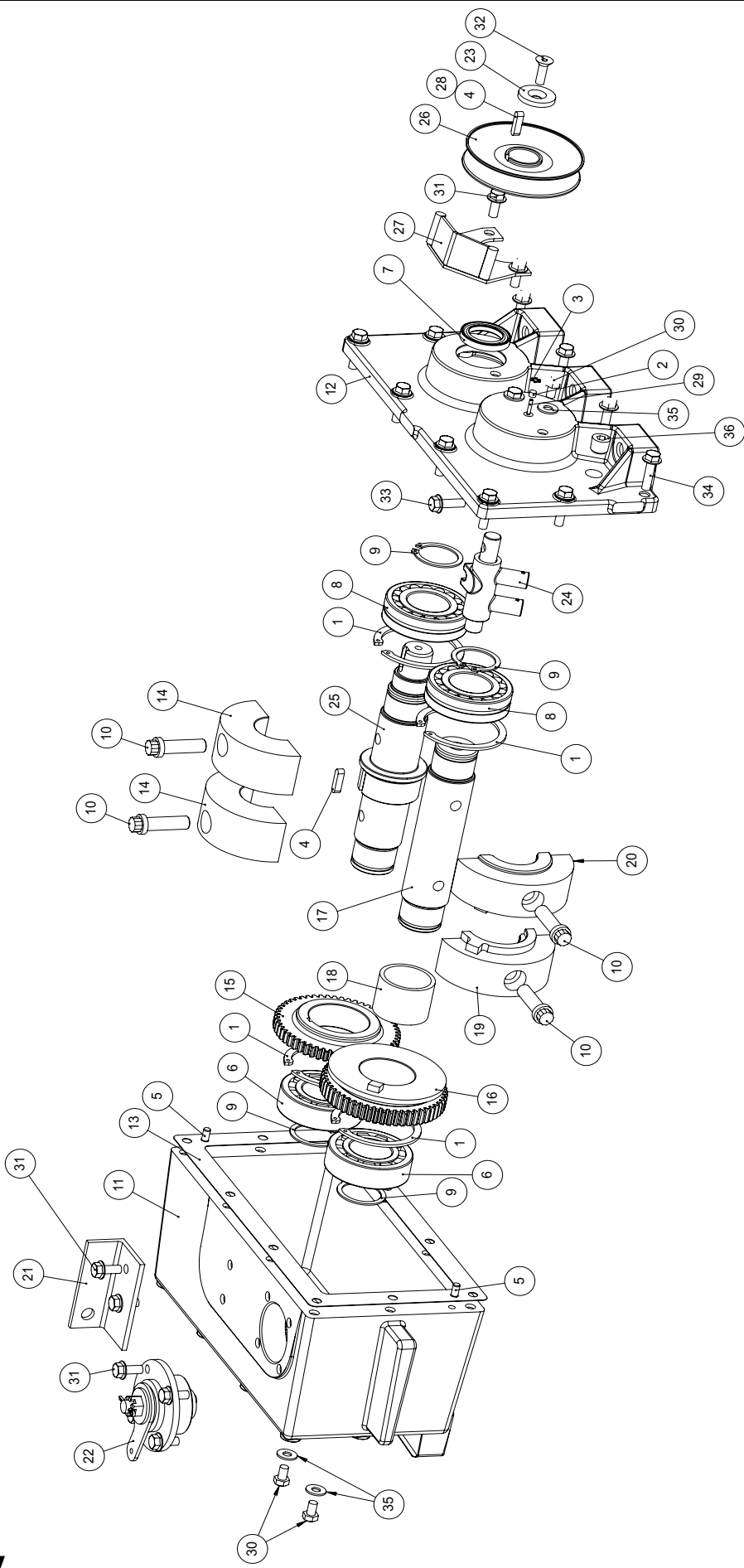
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Actuator Assembly

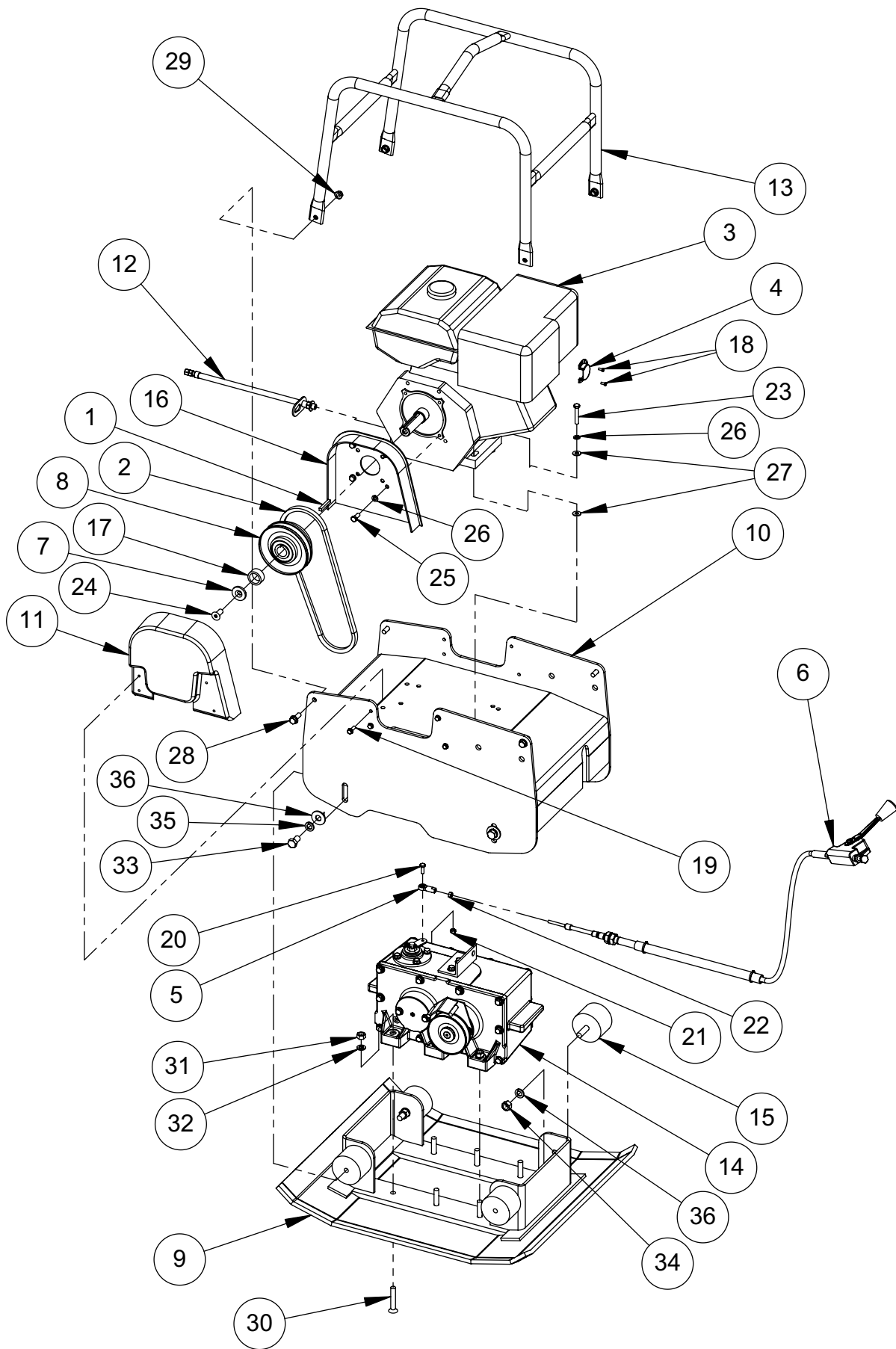


Shifter Assembly



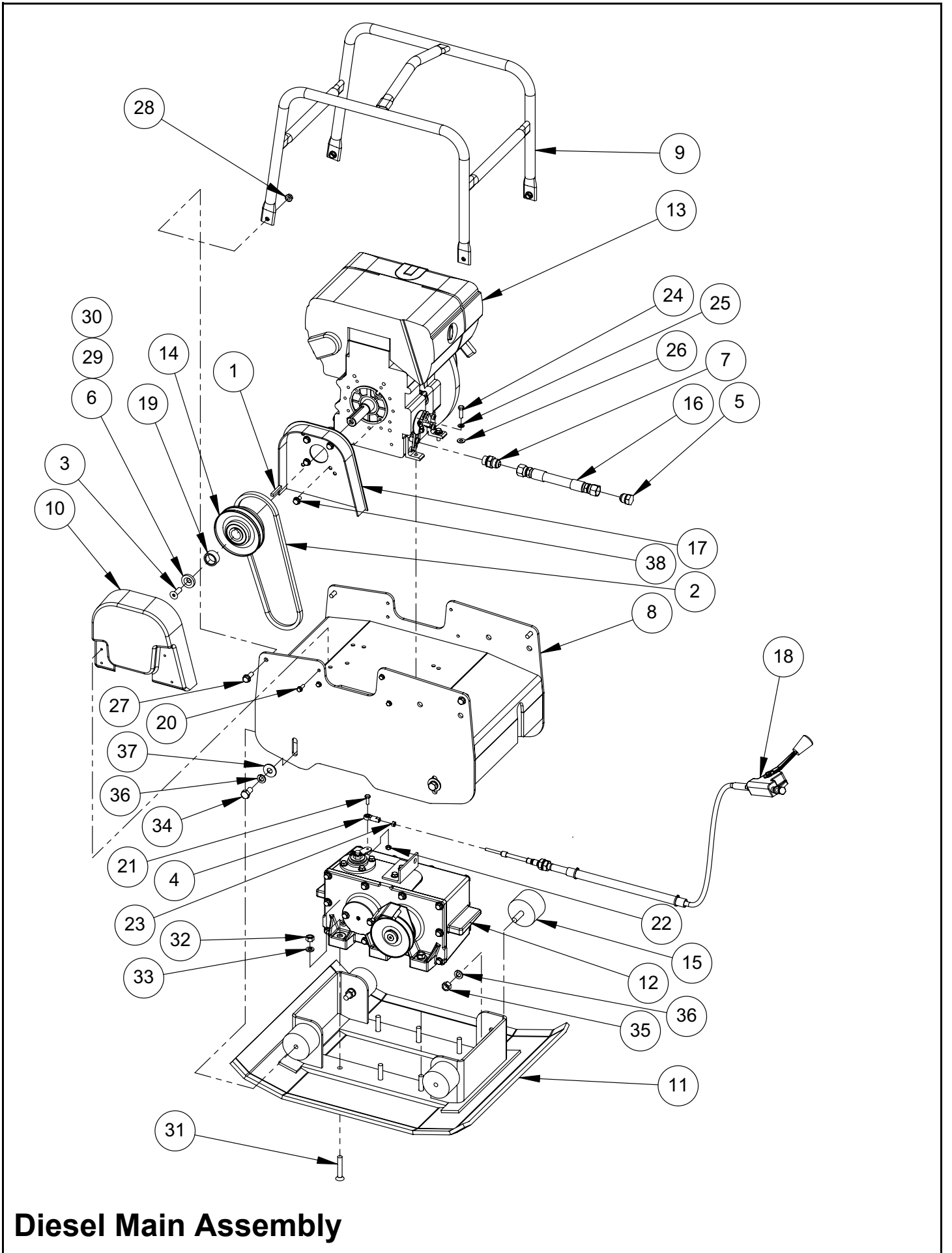
Exciter Assembly

ITEM	PART NO.	DESCRIPTION	GPR65/68	GPR77H	GPR77D
1.	01000	RETAINING RING, INT. 5000-315	4	4	4
2.	01072	FILTER, FELT	1	1	1
3.	01191	RETAINING RING, INTERNAL	1	1	1
4.	06335	KEY, 1/4 SQ X 1 RD ENDS	2	1	1
5.	07203	PIN,DOWEL 1/4 X 1/2	2	2	2
6.	07456	BEARING, ROLLER 80 X 40	2	2	2
7.	07457	SEAL, OIL	1	1	1
8.	07458	BEARING, SPHERICAL ROLLER	2	2	2
9.	07469	RETAINING RING, EXT. 5108-156	4	4	4
10.	08799	FERRY CAP SCREW , 1/2-13 X 1-3/4	4	4	4
11.	14067	HOUSING, EXCITER GPR MACH'D	1	1	1
12.	14068	COVER, EXCITER HSN'G MACH	1	1	1
13.	14395	GASKET, GPR HOUS'G COVER	1	1	1
14.	14399	WEIGHT, DRIVING EXCITER	2		
	19114	WEIGHT, DRIVING EXCITER		2	2
15.	14403	GEAR, DRIVE EXCITER	1	1	1
16.	14404	GEAR, DRIVEN EXCITER	1	1	1
17.	14405	SHAFT, DRIVEN EXCITER	1	1	1
18.	14411	BUSHING, SLIDE	1	1	1
19.	14416	WEIGHT, RHT EXCITER DRIVEN	1		
	19110	WEIGHT, RHT EXCITER DRIVEN		1	1
20.	14417	WEIGHT, LFT EXCITER DRIVEN	1		
	19112	WEIGHT, LFT EXCITER DRIVEN		1	1
21.	14424	MOUNT, SHIFT CABLE	1	1	1
22.	14430	ASSEMBLY, ACTUATOR	1	1	1
23.	14993	WASHER, COUNTERSUNK	1	1	1
24.	15060	ASSEMBLY, SHIFTER	1	1	1
25.	17024	SHAFT, EXCITER	1		
	19109	SHAFT, EXCITER		1	1
26.	17025	PULLEY	1		
	19118	PULLEY, 3.4 OVER A-BELT		1	
	19132	PULLEY, 4.0 OVER A-BELT			1
27.	17083	GUARD, STONE	1		
	19115	GUARD, STONE		1	1
28.	19135	KEY, 1/4 SQ X 3/4 lg.	1	1	1
29.	F0205SP	PIN, SPIROL 1/8 X 5/8 RD	1	1	1
30.	F051804HCS	HHCS, 5/16-18 X 1/2 GR5 ZP	6	6	6
31.	F051806FWS	FWLS, 5/16-18 X 3/4 ZP	8	8	8
32.	F051808FSS	FHSS, 5/16-18 X 1 ZP	1	1	1
33.	F051808FWS	FWLS, 5/16-18 X 1 ZP	1	1	1
34.	F051810FWS	FWLS, 5/16-18 X 1-1/4 ZP	10	10	10
35.	F05BFW	WASHER, 21/64 X 3/4 X .064 BRASS	6	6	6
36.	F0618SPP	PLUG, PIPE 3/8-18 NPT	1	1	1



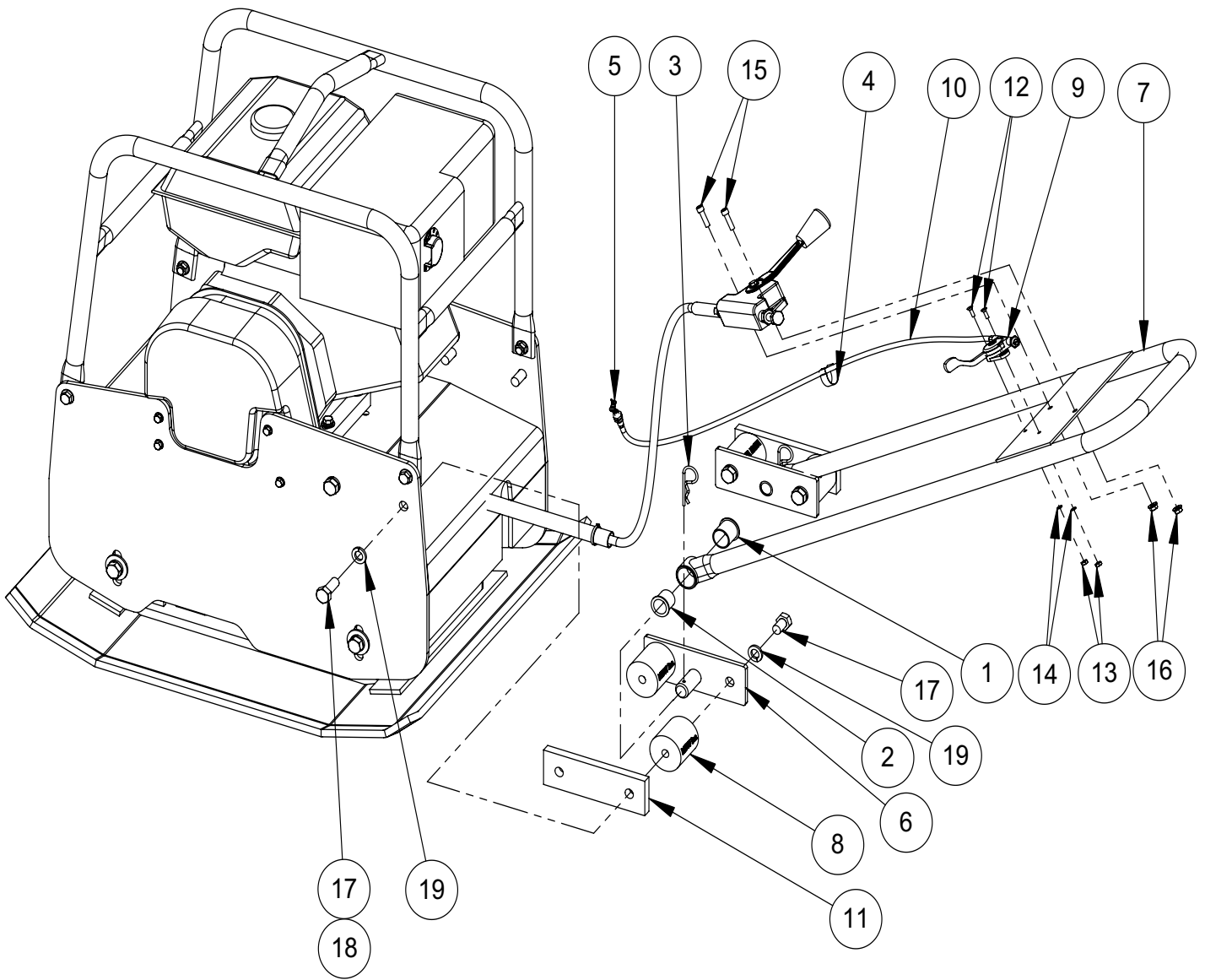
Honda Main Assembly

ITEM	PART NO.	DESCRIPTION	GPR65	GPR68	GPR68R	GPR77
1.	00032 00808	KEY, 3/16" SQUARE x 1-5/8" LONG KEY, 1/4" SQUARE x 1-3/4" LONG	1	1	1	1
2.	01185 05831	V-BELT, (A-33) V-BELT, (A-35)	1	1	1	1
3.	01444 15674	ENGINE, HONDA, GX160 ENGINE, HONDA, GX270	1	1		1
4.	17370 07636	ENGINE, ROBIN, EX17 EXHAUST DEFLECTOR	1	1	1	
5.	14429	ROD END, 1/4-28	1	1	1	1
6.	18110	SHIFTER & CABLE ASSEMBLY (Order 18109 for sleeve only)	1	1	1	1
7.	14993 14992	WASHER, COUNTERSUNK WASHER, COUNTERSUNK	1	1	1	1
8.	16105 19127	CLUTCH, CENTRIFUGAL CLUTCH, CENTRIFUGAL	1	1	1	1
9.	16849 16992	BASEPLATE (GPR65) BASEPLATE (GPR68)	1	1	1	
10.	19101 16852	BASEPLATE (GPR77) ENGINE DECK	1	1	1	1
11.	19105 16861	ENGINE DECK BELTGUARD	1	1	1	1
12.	16862 16975	BELTGUARD OIL DRAIN LINE, HONDA 5.5hp	1	1		1
	16974 18767	OIL DRAIN LINE, HONDA 8hp OIL DRAIN LINE			1	1
13.	16986 19119	ROLLCAGE ROLLCAGE	1	1	1	1
14.	17006 19108	EXCITER ASSEMBLY, CAST IRON EXCITER ASSEMBLY GPR77	1	1	1	1
15.	17117	SHOCKMOUNT, 2.95" OD x 2.17" LONG	4	4	4	4
16.	19124	EXTENSION, BELT GUARD				1
17.	19136	SPACER, CLUTCH, 1-3/8 OD x 5/8 LG				1
18.	F0203HTB	TAPPING BOLT, #8 x 3/8"	2	2		
19.	F042006FWS	FLANGE LOCKING SCREW, 1/4-20 x 3/4"	4	4	4	4
20.	F042006HCS	HEX HEAD CAP SCREW, 1/4-20 x 3/4"	1	1	1	1
21.	F0420HN	HEX NUT, 1/4-20	1	1	1	1
22.	F0428HN	HEX NUT, 1/4-28	1	1	1	1
23.	F051812HCS F051814HCS	HEX HEAD CAP SCREW, 5/16-18 X 1-1/2" HEX HEAD CAP SCREW, 5/16-18 X 1-3/4"	4	4	4	4
24.	F052408FSS F072008FSS	FLAT HEAD SOCKET SCREW, 5/16-24 X 1" FLAT HEAD SOCKET SCREW, 7/16-20 X 1"	1	1	1	1
25.	F052406HCS	HEX HEAD CAP SCREW, 5/16-24 X 3/4"				4
26.	F05LW	LOCK WASHER, 5/16"	4	4	4	8
27.	F05SW	WASHER, 5/16"	8	8	8	8
28.	F061608FWS	FLANGE LOCKING BOLT, 3/8-16 x 1"	4	4	4	4
29.	F0616FN	FLANGE LOCKNUT, 3/8-16	4	4	4	4
30.	F071420FSS	FLAT HEAD SOCKET SCREW, 7/16-14 x 2-1/2"	6	6	6	6
31.	F0714HN	HEX NUT, 7/16-14	6	6	6	6
32.	F07LW	LOCK WASHER, 7/16"	6	6	6	6
33.	F081307HCS	HEX HEAD CAP SCREW, 1/2-13 x 7/8"	4	4	4	4
34.	F0813ELN	ELASTIC LOCKNUT, 1/2-13	4	4	4	4
35.	F08LW	LOCK WASHER, 1/2"	4	4	4	4
36.	F08SW	WASHER, 1/2"	8	8	8	8
		SERVICE PARTS				
	14477 19511	SHIFTER, NO CABLE SHIFT HANDLE LEVER ONLY				
	20414	KIT, SHIFT CABLE				



Diesel Main Assembly

ITEM	PART NO.	DESCRIPTION	GPR65	GPR68	GPR77
1.	00808	KEY, 1/4" SQUARE x 1-3/4" LG.			1
2.	01182	V-BELT, (A-34)	1	1	
3.	05831 06747	V-BELT, (A-35) SCS, M8 X 25MM	1	1	1
4.	F072010FSS 14429	FSS, 7/16-20 X 1-1/4 ROD END, 1/4-28 RH	1	1	1
5.	16523	FITTING, PLUG, HYDRAULIC	1	1	1
6.	16544	WASHER, COUNTERSUNK			1
7.	16578	FITTING, ADAPTOR, HYDRAULIC	1	1	1
8.	16852	ENGINE DECK	1	1	
9.	19105 16859	ENGINE DECK ROLLCAGE, COATED	1	1	1
10.	19119 16862	ROLLCAGE, COATED BELTGAURD	1	1	1
11.	16849 16992	BASEPLATE, GPR 65 BASEPLATE, GPR 68	1	1	
12.	19101 17006	BASEPLATE, GPR 77 EXCITER, CAST IRON	1	1	1
13.	19108 17064	EXCITER, CAST IRON HATZ, DIESEL	1	1	1
14.	19129 17065	HATZ, DIESEL, 1" STRAIGHT SHAFT CLUTCH, TAPER SHAFT	1	1	1
15.	19127 17117	CLUTCH, STRAIGHT SHAFT SHOCKMOUNT, 2.95 OD X 2.17 LONG	4	4	4
16.	18087	HOSE, 1/2 X 8.75	1	1	1
17.	18094	PLATE, GAURD, ENGINE, 1B20	1	1	
18.	19124 18110	EXTENSION, BELT GAURD SHIFTER CABLE ASM AND SLEEVE (Order 18109 for sleeve only)	1	1	1
19.	19136	SPACER, CLUTCH, 1-3/8 OD x 5/8 LG.			1
20.	F042006FWS	FWLS, 1/4-20 X 3/4 ZP	4	4	4
21.	F042006HCS	HHCS, 1/4-20 X 3/4 GR5 ZP	1	1	1
22.	F0420HN	NUT, HEX 1/4-20 ZP	1	1	1
23.	F0428HN	NUT, HEX 1/4-28 ZP	1	1	1
24.	F051808HCS	HHCS, 5/16-18 X 1 GR5 ZP	4	4	4
25.	F05LW	LOCKWASHER, 5/16 ZP	4	4	4
26.	F05SW	WASHER, 5/16 X 3/4 X 15ga ZP	4	4	4
27.	F061608FWS	FWLS, 3/8-16 X 1	4	4	4
28.	F0616FN	FLANGE WHIZ-LOCK NUT, 3/8-16	4	4	
29.	F06LW	LOCKWASHER, 3/8 ZP	1	1	
30.	F06SW	WASHER, 25/64 X 1 X 1/8 ZP	1	1	
31.	F071420FSS	FSS, 7/16-14 X 2-1/2"	6	6	
32.	F0714HN	NUT, HEX 7/16-14 ZP	6	6	
33.	F07LW	LOCKWASHER, 7/16 ZP	6	6	
34.	F081307HCS	HHCS, 1/2-13 X 7/8 GR5 ZP	4	4	
35.	F0813HN	NUT, HEX, 1/2-13, ZP	4	4	4
36.	F08LW	LOCKWASHER, 1/2 ZP	4	4	8
37.	F08SW	WASHER, 9/16 X 1-3/8 X 12ga ZP	4	4	4
38.	M10C016FWS	FWS, M10 X 16	2	2	
	M08C016FWS	FWS, M8 X 16			4
	14477	SHIFTER, NO CABLE			
	19511	SHIFT HANDLE LEVER ONLY			
	20414	KIT, SHIFT CABLE			
	H50426000	AIR FILTER HATZ DIESEL 1B20 & 1B30 (NOT SHOWN)			
	01635210	FUEL FILTER HATZ DIESEL (NOT SHOWN)			



Handle Assembly

WARRANTY

WHAT DOES THIS WARRANTY COVER? MBW, Incorporated (MBW) warrants each New Machine against defects in material and workmanship for a period of twelve (12) months. "New Machine" means a machine shipped directly from MBW or authorized MBW dealer to the end user. This warranty commences on the first day the machine is sold, assigned to a rental fleet, or otherwise put to first use.

MBW warrants each Demonstration Machine against defects in material and workmanship for a period of six (6) months. "Demonstration Machine" means a machine used by MBW or its agents for promotional purposes. This warranty commences on the first day the machine is sold, assigned to a rental fleet, or otherwise put to first use.

This warranty covers the labor cost for replacement or repair of parts, components, or equipment on New Machines or Demonstration Machines, and MBW shall pay labor costs at MBW's prevailing rate to affect the warranted repair or replacement. MBW reserves the right to adjust labor claims on a claim-by-claim basis.

This warranty covers the shipping cost of replacement parts, components, or equipment via common ground carriers from MBW to an authorized MBW dealer. Air freight is considered only in cases where ground transportation is not practical.

MAY THIS WARRANTY BE TRANSFERRED? This warranty is non-transferable and only applies to the original end user of a new machine or demonstration machine.

WHAT DOES THIS WARRANTY NOT COVER?

1. This warranty does not cover any Used Equipment. "Used Equipment" means any MBW machine or equipment that is not a New Machine or a Demonstration Machine. All Used Equipment is sold **AS IS/WHERE IS WITH ALL FAULTS**.

2. This warranty does not cover any New Machine, Demonstration Machine, or their equipment, parts, or components altered or modified in any way without MBW's prior written consent. This warranty does not cover the use of parts not specifically approved by MBW for use on MBW products. This warranty does not cover misuse, neglect, shipping damage, accidents, acts of God, the operation of any New Machine or Demonstration Machine in any way other than recommended by MBW in accordance with its specifications, or any other circumstances beyond MBW's control. This warranty does not cover any New Machine or Demonstration Machine repaired by anyone other than MBW factory branches or authorized MBW distributors.

3. This warranty does not cover, and MBW affirmatively disclaims, liability for any damage or injury resulting directly or indirectly from design, materials, or operation of a New Machine or Demonstration Machine or any other MBW product. MBW's liability with respect to any breach of warranty shall be limited to the provisions of this document and in no event shall exceed an amount equal to the purchase price of the New Machine or Demonstration Machine purchased from MBW.

4. This warranty does not cover engines, motors, and other assemblies or components produced by other manufacturers and used on a New Machine or Demonstration Machine, as said engines, motors, and other assemblies or components may have warranties provided by the manufacturer thereof. This warranty does not apply to consumable items, such as v-belts, filters, trowel and screed blades, seals, shock mounts, batteries, and the like, all of which are sold **AS IS/WHERE IS WITH ALL FAULTS**.

5. This warranty does not cover the cost of transportation and other expenses which may be connected with warranty service but not specifically mentioned herein.

6. This warranty does not cover any updates to any New Machine, Demonstration Machine, or any other MBW product. MBW reserves the right to improve or make product changes without incurring any obligation to update, refit, or install the same on New Machines or Demonstration Machines previously sold.

WHAT MUST YOU DO TO OBTAIN WARRANTY COVERAGE? Each New Machine or Demonstration Machine is accompanied by a Warranty Registration Card. You must sign, date, and return the Warranty Registration Card to the place of origin of the New Machine or Demonstration Machine, either to MBW, Inc. at P.O. Box 440, Slinger, Wisconsin 53086, MBW (UK), Ltd. at Units 2 & 3 Cochrane Street, Bolton BL3 6BN, United Kingdom or MBW FRANCE SARL at ZA D'Outreville, 5 Rue Jean Baptiste Neron, Bornel 60540 France, within ten (10) days after purchase, assignment to a rental fleet, or first use. This signed warranty card is the buyer's affirmation that he has read, understood, and accepted the warranty at the time of purchase. Failure to return the warranty card as specified herein renders the warranty null and void. In order to receive warranty coverage consideration, warranty claims must be submitted within thirty (30) days after the New Machine or Demonstration Machine fails. Warranty claims must be submitted to MBW, Inc., MBW (UK), Ltd. or MBW FRANCE SARL, and written authorization for the return of merchandise or parts under the warranty must be obtained before shipment to MBW.

WHAT WILL MBW DO? MBW's obligation under this warranty is limited to the replacement or repair of parts for a New Machine or Demonstration Machine at MBW factory branches or at authorized MBW distributors, and such replacement or repair is the exclusive remedy provided hereunder. Labor must be performed at an authorized MBW distributor. MBW reserves the right to inspect and render a final decision on each warranty case, and MBW's repair or replacement is solely within the discretion of MBW.

IT IS EXPRESSLY AGREED THAT THIS SHALL BE THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. UNDER NO CIRCUMSTANCES SHALL MBW BE LIABLE FOR ANY COSTS, LOSS, EXPENSE, DAMAGES, SPECIAL DAMAGES, INCIDENTAL DAMAGES, OR PUNITIVE DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM THE USE OF THE NEW MACHINE OR DEMONSTRATION MACHINE WHETHER BASED UPON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER LEGAL THEORY.

THE FOREGOING WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR USE, AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITY ON MBW'S PART. MBW NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME ON BEHALF OF MBW ANY OTHER LIABILITY OR WARRANTY IN CONNECTION WITH THE SALE OR SERVICE OF ANY NEW MACHINE, DEMONSTRATION MACHINE, OR ANY OTHER MBW PRODUCT.

EXTENDED RAMMER WARRANTY - MODELS R422, R442, R482 & R483.

This extended warranty commences on the last day of MBW's standard, one year, "limited warranty" and runs for an additional four years (48 months). This extended warranty is limited to part replacement and shipping costs of rammer **bellows and non-metallic slide bearings only**. This extended warranty does not cover labor, down time, or any other cost beyond that of component replacement and freight. This extended warranty is subject to all limitations set fourth in MBW's "limited warranty", above.

NOTES: