STEAMVAC INTERNATIONAL PTY LTD

Another Quiet Achiever

Truck Mount

INSTRUCTION MANUAL

CONTENTS

CONGRATULATIONS

Thank you For Your Purchase

Congratulations on purchasing your new SteamVac carpet cleaning machine and or equipment.

With proper maintenance your new equipment will provide many years of reliable, trouble free operation. Although the equipment may first look complex, it is relatively simple to use and maintain.

This manual has been designed to familiarise you with your new SteamVac equipment, and to provide you with service, maintenance and operating advice, that will assist you to achieve all the benefits of maximum operating performance. It has also been prepared with the intention of acquainting users of SteamVac equipment with some of the design principals that have been adopted to ensure that, by world standards, SteamVac equipment is the most efficient and most reliable cleaning equipment on the market today.

Once again Congratulations on your purchase and good luck with your operations.

INTERNATIONAL PTY LTD
STEAMVAC
INTERNATIONAL PTY LTD

Another Quiet Achiever

SPECIFICATIONS

BOSS 500 EFI

	Console	150LTR Waste Tank
Length:	860 mm	500mm
Width:	550mm	400mm
Height:	965mm	925mm

Features

- World wide patented design.
- 25 HP EFI V-Twin air cooled Kohler motor.
- Hawk pump 1800 AMX working pressure.
- Hot Vapour heat exchange system giving you 100ºc in under 10 minutes.
- 3.6 Roots Blower - 15" HG CFM 300+
- 150L Stainless steel waste tank with 240V pump.
- Powder coated hammer tone finish steel frame.
- Low oil and water shut off.
- Can be pumped to vehicle fuel supply.
- National dealer network for servicing.
- FEWER PARTS THAN ANY COMPARABLE UNIT.

BOSS 590 EFI

	Console	150TR Wate Tank
Length:	860mm	500mm
Width:	550mm	400mm
Height:	965mm	925mm

Features

- World wide patented design.
- 29 HP EFI V-Twin air cooled Kohler motor.
- Hawk pump 2800 PSI working pressure.
- Hot Vapour heat exchange system giving you 100ºc in under 10 minutes.
- 3.6 Roots Blower - 15" HG CFM 300+
- 150 CTR waste tank with 240V waste pump.
- Powder coated hammer tone finish steel frame.
- Low oil and water shut off.
- Can be pumped to vehicle fuel supply.
- National dealer network for servicing.
- FEWER PARTS THAN ANY COMPARABLE UNIT.

BOSS 600 HYBRID EFI SYSTEM

Length:	**1140mm**
Width:	**550mm**
Hight:	**915mm**

Features

- World wide patented design.
- 29 HP EFI Kohler motor
- Hot Vapour heat exchange system giving you Truck Mount heat from your portable 100ºC in under ten minutes.
- 3.6 Roots Blower giving you Truck mount suction! 15" HG CFM 300+
- 12 KVA generator with key start-work anywhere, anytime!
- Powder coated hammer tone finish steel frame.
- 4 safety switch power outlets.
- Low oil warning and water shut off.
- Portable can be easily removed from Van/ trailer for the hard to access jobs.
- Can be pumped to vehicle fuel supply.
- National dealer network for servicing.

BOSS 650 EFI

	Console	200LTR Wate Tank
Length:	1140mm	800mm
Width:	550mm	400mm
Height:	915mm	925mm

Features

- 0-100ºc in less than 10 minutes
- Full 5 year warranty on heat exchanger.
- 2 year warranty on Kohler Engine.
- 12 month warranty on all other parts.
- Engine 29 HP V-Twin Kohler EFI air cooled.
- Pump Hawk 2600 PSI working pressure.
- Blower 4007 Roots Blower 15" HG CFM 450+
- Hot Vapour heat exchange system giving you 100ºc in under 10 minutes.
- 200LTR Stainless steel waste tank with 240V waste pump.

BOSS 500 & 590 EFI

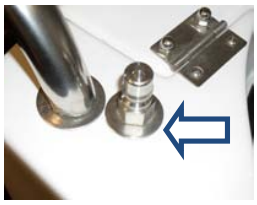
BOSS 650 EFI


BOSS 650
HOT VAPOUR
Temp Gauge
Vacuum Gauge
Pressure Gauge
Pressure Control
Solution Outlet
Blower Lubrication Valve
Engine Oil Drain
Hour Meter
Throttle Control
Ignition
Waste Switch
Engine Warning
Low oil Warning
Engine Exhaust

BOSS 600 EFI HYBRID

HYBRID SYSTEM SETUP DIRECTIONS

Connect water to male coupler on portable.



Connect water to rear of heat exchanger.

Connect vac hose from portable dome to your cleaning tool.

Connect vac hose from booster port on portable to the blower port on the Hybrid.

Connect solution hose from portable to the top of heat exchanger.

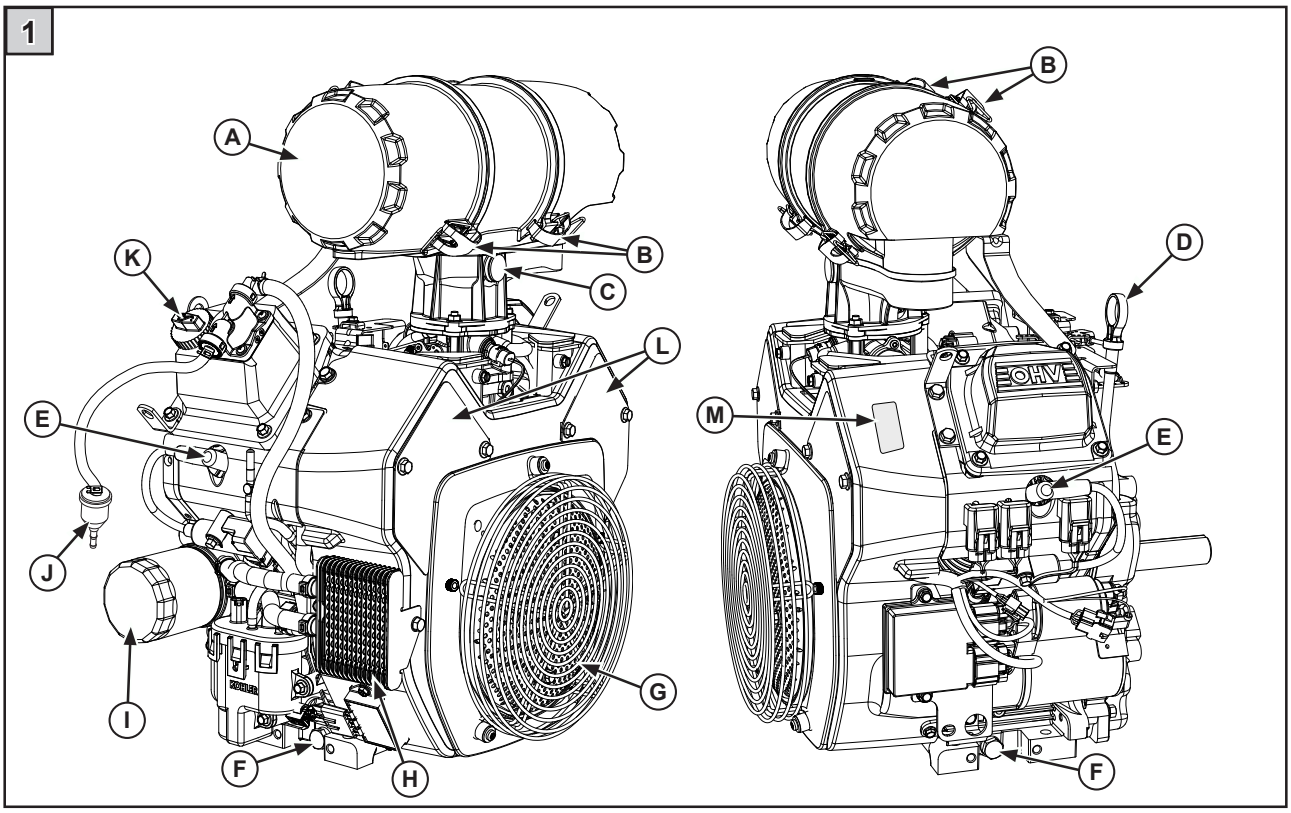
Connect power leads from portable to the power outlets on the rear of the Hybrid.

Connect solution hose from this outlet and run to cleaning tool.

KOHLER® Command PRO®

ECH630-ECH749

Horizontal Crankshaft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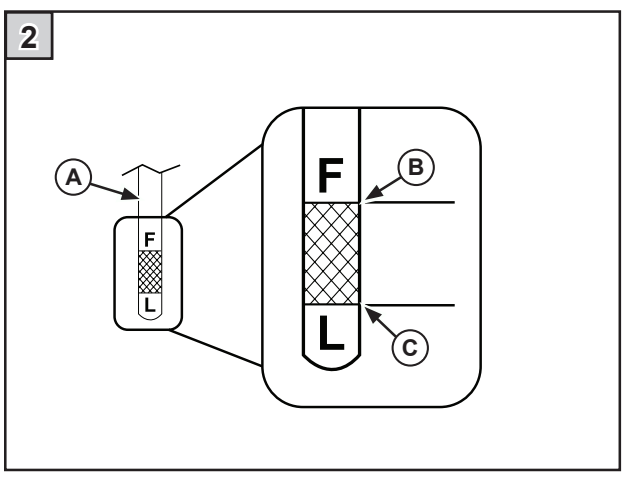
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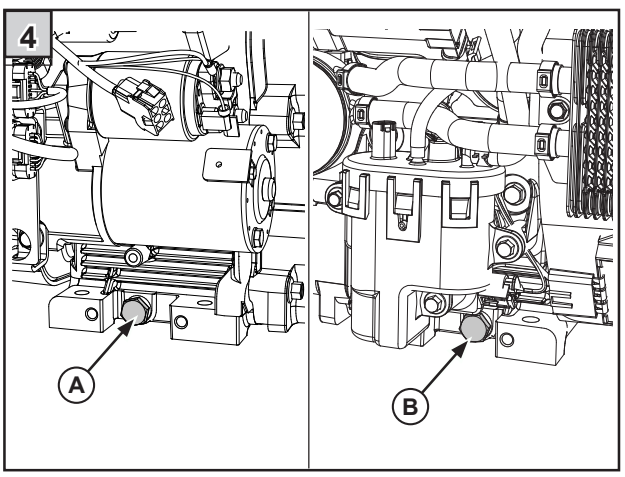
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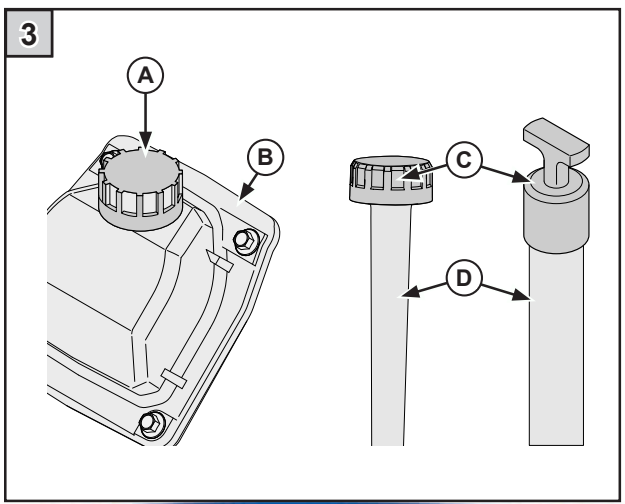
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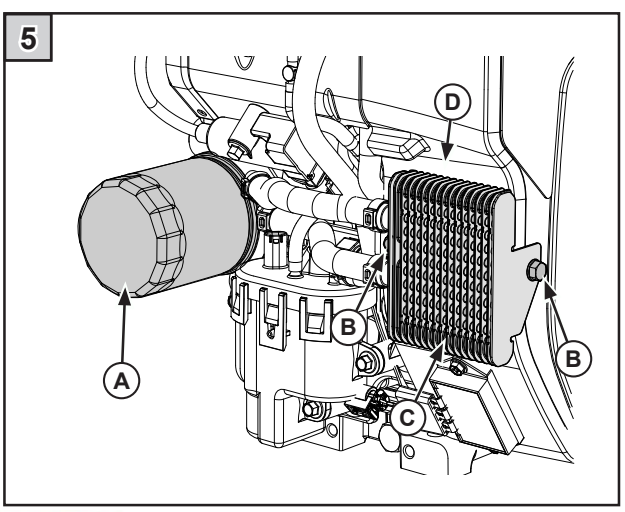
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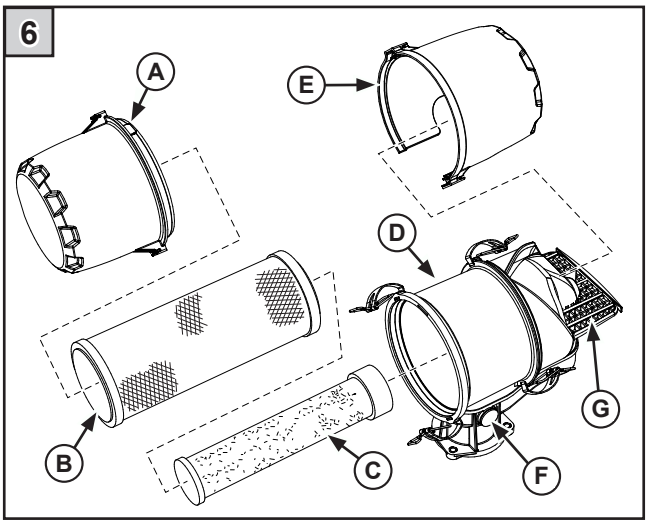

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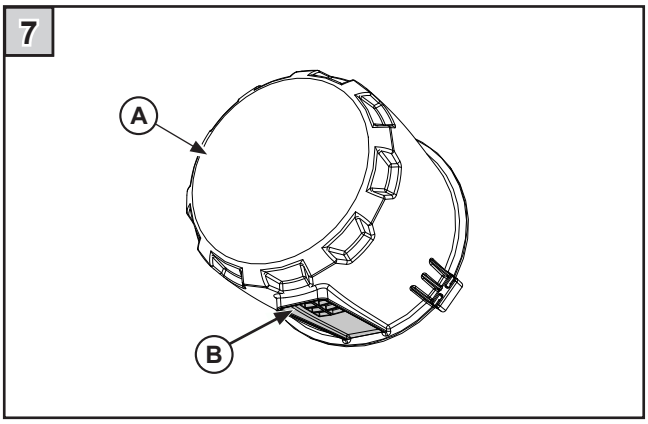

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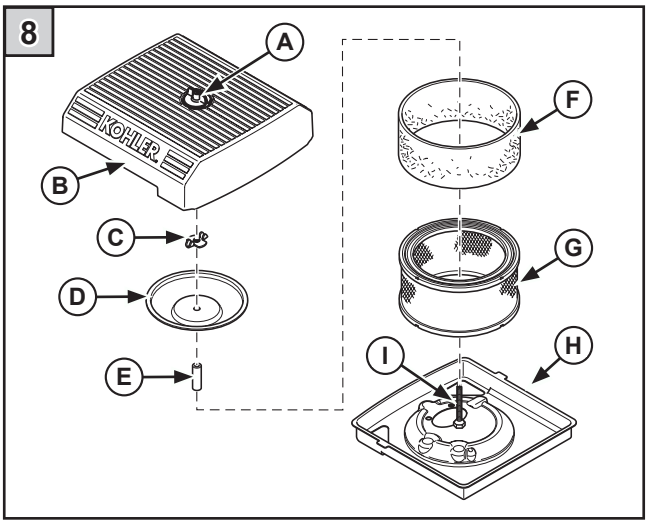

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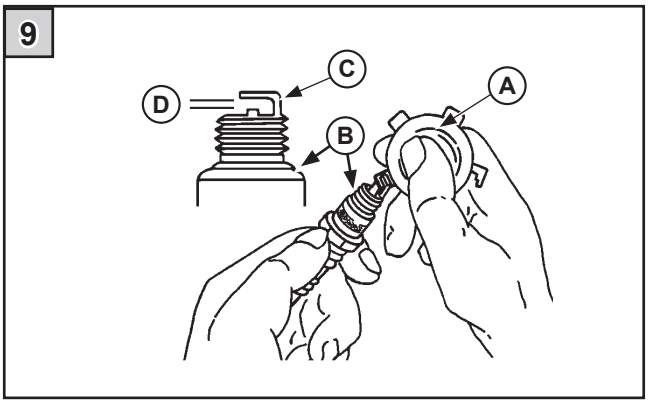

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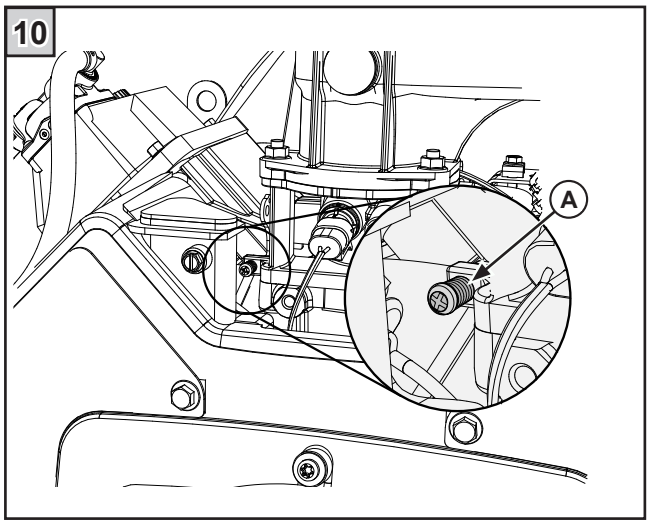

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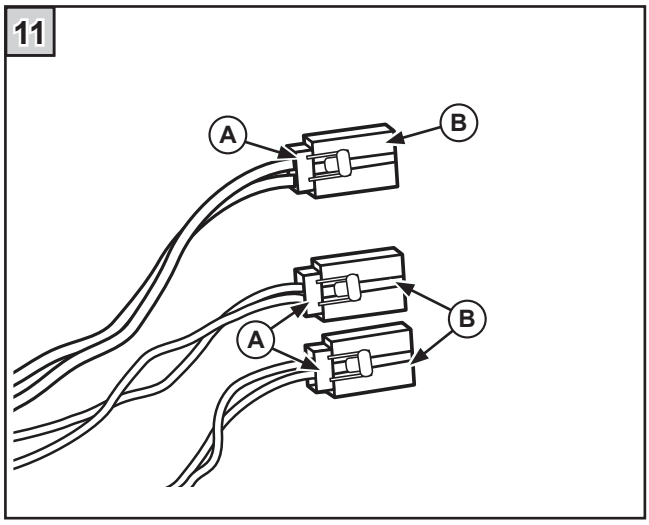

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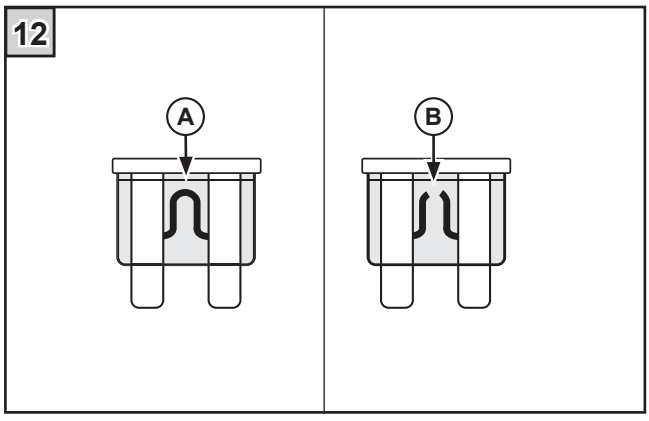


CALIFORNIA PROPOSITION 65 WARNING

Engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

SAFETY PRECAUTIONS

To ensure safe operation, please read the following statements and understand their meaning. Also refer to your equipment manufacturer's manual for other important safety information. This manual contains safety precautions which are explained below.
Please read carefully:

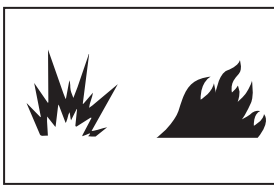
⚠ WARNING
Warning is used to indicate the presence of a hazard that can cause severe personal injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION
Caution is used to indicate the presence of a hazard that will or can cause minor persona; injury or property damage if the caution is ignored.

NOTE
Note is used to notify people of installation, operation, or maintenance information that is important but not hazard-related.

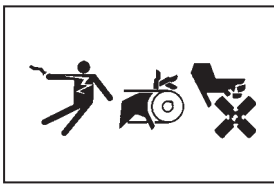
For Your Safety!

These precautions should be followed at all times. Failure to follow these precautions could result in injury to yourself and others.



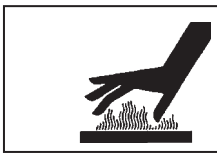
⚠ WARNING
Explosive Fuel can cause fires and severe burns.
Do not fill the fuel tank while the engine is hot or running.

Explosive Fuel!
Gasoline is extremely flammable and its vapours can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes into contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.



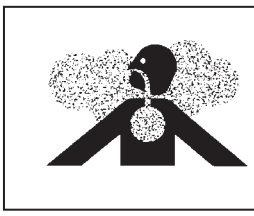
⚠ WARNING
Accidental Starts can cause severe injury or death.
Disconnect and ground spark plug lead(s) before servicing.

Accidental Starts!
Disabling engine. Accidental starting can cause severe injury or death. Before working on the engine or equipment, disable the engine as follows: 1) Disconnect the spark plug lead(s). 2) Disconnect negative(-) battery cable from battery.



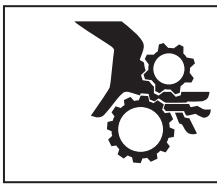
⚠ WARNING
Hot Parts can cause severe burns.
Do not touch engine while operating or just after stopping.

Hot Parts!
Engine Components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine with heat shields or guards removed.



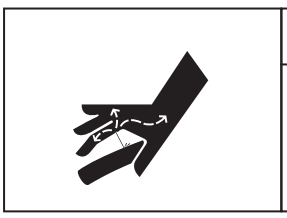
⚠ WARNING
Carbon Monoxide can cause severe nausea, fainting or death.
Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.

Lethal Exhaust Gases!
Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odourless, colourless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.



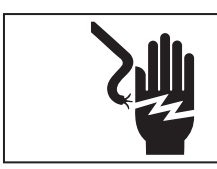
⚠ WARNING
Rotating Parts can cause severe injury.
Stay away while engine is in operation.

Rotating Parts!
Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate the engine with covers, shrouds, or guards removed.



⚠ WARNING
High Pressure Fluids can puncture skin and cause severe injury or death.
Do not work on fuel systems without proper training or safety equipment.

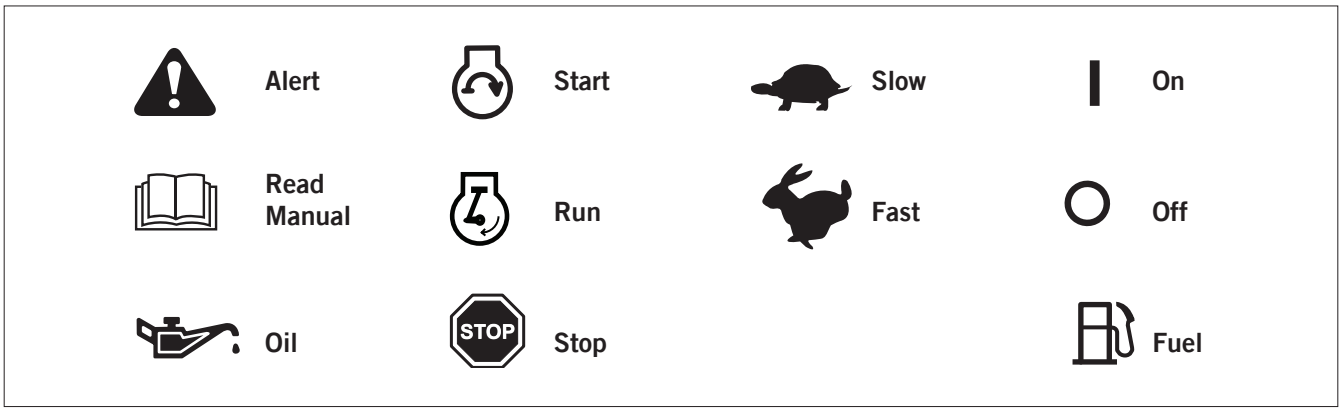
High Pressure Fluid Puncture!
Fuel system is to be serviced only by properly trained personnel wearing protective safety equipment.
Fluid puncture injuries are highly toxic and hazardous.
If injury occurs, seek immediate medical attention.



⚠ WARNING
Electrical Shock can cause injury.
Do not touch wires while engine is running.

Electric Shock!
Never touch electrical wires or components while the engine is running. They can be sources of electrical shock.

SYMBOLS ASSOCIATED WITH THIS PRODUCT



Congratulations on your purchase of a Kohler Engine. Every part, every component, every system on a Kohler engine is guided by our exclusive Performance Engineering Philosophy.

- To operate on the leading edge of innovation.
- To push the boundaries of cleaner, more efficient engines.
- To manufacture the highest performing, most reliable engines on the market.

You can rest assured that your Kohler Engine will provide maximum power and reliability in all operating conditions. Also, Kohler engines are backed by a worldwide network of over 10,000 distributors and dealers. For more information on Kohler Engines or to find a Kohler Service Centre, visit KohlerEngines.com

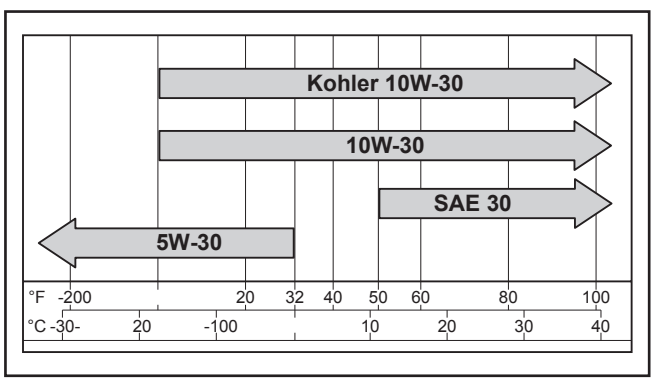
To keep your engine in top operating conditions, follow the maintenance procedures in this manual.

Oil Recommendations

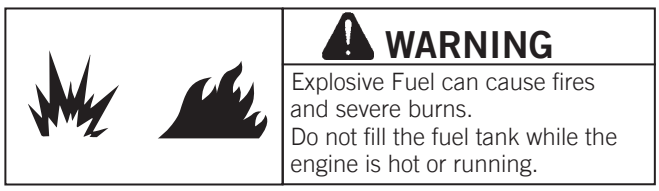
Using the proper type and weight of oil in the crankcase is extremely important. So is checking oil daily and changing oil regularly. Failure to use the correct oil, or using dirty oil, causes premature engine wear and failure.

Oil Type

Use high quality detergent oil of API (Ameriacn Petroleum Institute) service class SJ or higher. Select the viscosity based on the air temperature at the time of operation as shown in the **Recommended Viscosity Grades** table.



Fuel Recommendations



Gasoline is extremely flammable and its vapours can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes into contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.

General Fuel Recommendations

Purchase gasoline in small quantities and store in clean, approved containers. Use a container with a capacity of two gallons or less with a pouring spout is recommended, as it is easier to handle and helps eliminate spillage during refuelling. To minimize gum deposits in fuel system, do not use gasoline left over from previous seasons. Do not add oil to the gasoline. Do not overfill the fuel tank. Leave room for the fuel to expand.

Fuel Type

For best results use only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 (R+M)/2 or higher. In countries using the Research Octane Number (RON), it should be 90 octane minimum. Leaded gasoline is not recommended and must not be used on EFI engines or on other models where exhaust emissions are regulated.

Gasoline/Alcohol blends

Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is approved as a fuel for Kohler engines. Other gasoline/ alcohol blends including E20 and E85 are not to be used and not approved. Any failure resulting from use of these fuels will not be warranted.

Gasoline/Ether blends

Methyl Tertiary butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved as a fuel for Kohler engines. Other gasoline/ether blends are not approved.

Operating Instructions

Also read the instructions of equipment this engine powers

Check Oil Level

See figures 1, 2 and 3

The importance of checking and maintaining the proper oil level in the crankcase cannot be overemphasised.

Check oil **BEFORE EACH USE** as follows:

1. Make sure the engine is stopped, level, and cool so the oil has had time to drain into the sump.

2. Clean the area around the dipstick (D) to keep dirt and debris out of the engine. See figure 1.

3. Remove the dipstick (D); wipe off oil.

4. Reinsert the dipstick (D). Push or screw on the dipstick in all the way.

5. Remove dipstick (D) again and check oil level. Oil should be up to, but not over F or Full mark (B) on dipstick. See figure 2.

6. If oil level is low, add the correct type of oil up to the F or Full mark (B) on dipstick. Remove the fill cap (A) or the dipstick (C) to fill the crankcase with new oil of a proper type. Recheck oil level before adding more oil. Always check the oil level with the dipstick before adding more. See figures 2 & 3

7. Reinstall the oil fill cap and dipstick securely.

NOTE: To prevent extensive engine wear or damage, always maintain proper oil level in crankcase. Never operate engine with oil level below the L or Low mark(C), or over the F or Full mark (B) on dipstick. See figure 2.

Check Cooling Areas

See figure 1

To ensure proper cooling, make sure the fixed guard (G), oil cooler (some models) (H), and other external surfaces of the engine are kept clean **at all times.**

Check Air Cleaner

See figure 1

This engine is equipped with heavy-duty (shown) air cleaner, flat style air cleaner, or special air cleaner supplied by equipment manufacturer.

Check the air cleaner (A) daily or before starting the engine for a buildup of dirt and debris. Keep the area in and around the air cleaner clean. Also check for loose or damaged components. Replace all worn or damaged air cleaner components.

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

Pre-Start Checklist

1. Check oil level; if low add oil. Do not overfill.

NOTE: Engines are shipped without oil. Do not start engine with low or no oil. This will cause damage to the engine and will not be covered under warranty.

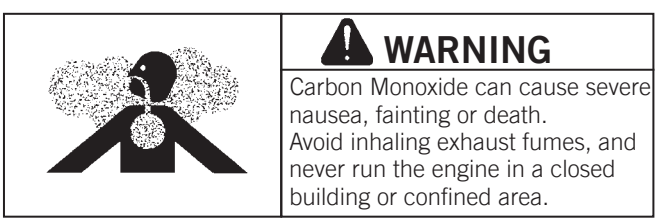
2. Check fuel level; if low add fuel. Do not overfill.

3. Check cooling areas, air intake areas, and external surfaces of engine. make sure they are clean and unobstructed.

4. Check the air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.

5. Check that any clutches or transmissions are disengaged or placed in neutral. This is especially important on equipment with hydrostatic drive. The shift lever must be in neutral to prevent resistance which could keep the engine from starting.

Starting



Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odourless, colourless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area

1. Place the throttle control midway between the **SLOW** and **FAST** positions.

2. Start the engine by activating the key switch. Release the switch as soon as the engine starts.

NOTE: Do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start, allow a 60 second cool down period between starting attempts. Failure to follow these guidelines can damage the starter motor.

NOTE: Upon start-up, a metallic ticking may occur. This is caused by hydraulic lifter leakdown during storage. The noise will normally cease in the first minute. If the noise continues, run the engine at mid-throttle for 20 minutes. If noise persists, take the engine to your Kohler Engine Service Centre.

NOTE: If the stater cranks the engine but does not start the engine, the engine rotation must be allowed to come to a complete stop before attempting to restart the engine. If the starter is engaged while the flywheel is rotating, the starter pinion and flywheel ring gear may crash, resulting in damage to the starer.

If the starter does not turn the engine over, shut off starter immediately. Do not make further attempts to start the engine until the condition is corrected. Do not jump start using another battery. Refer to **Battery**. See your Kohler Engine service Centre to service assistance.

Stopping

1. Remove the load by disengaging all PTO driven attachments.

2. Move the throttle to the slow or idle position; turn key **OFF** to stop engine.

Battery

A 12 volt battery is used. Refer to the operating instructions of the equipment this engine powers for specific battery requirements.

If the battery charge is not sufficient to crank the engine, recharge the battery. Follow the battery manufacture's instructions.

Operating

Angle of Operation

This engine will operate continuously at angles up to 25º in all directions for one minute or less. Oil levels must be at **F** or **FULL** mark on dipstick.

Refer to the operating instructions of the equipment this engine powers. Due to equipment design or application, there may be more stringent restrictions regarding the angle of operation.

NOTE: Do not operate this engine continuously at angles exceeding 25º in any direction, because engine damage could result from insufficient lubrication.

Cooling

See figure 1

WARNING

Hot Parts can cause severe burns. Do not touch engine while operating or just after stopping.

Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine with heat shields or guards removed.

To ensure proper cooling, amke sure the fixed guard (G), oil cooler (H) (some models), and other external surfaces of the engine are kept clean **at all times**.

NOTE: If debris builds up on the fixed guard (G), oil cooler (H) (some models), or other cooling areas, stop the engine immediately and clean. Operating the engine with blocked or dirty air intake and cooling areas can cause extensive damage due to overheating. Refer to **Clean Air Intake/ Cooling Areas.**

Engine Speed

NOTE: Do not tamper with the governor setting to increase the maximum engine speed. Overspeed is hazardous and will void the engine warranty. The maximum allowable high idle speed no load for these engines is 4200 RPM.

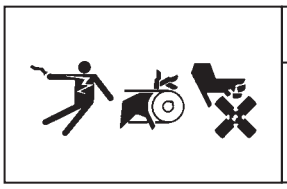
Oil Sentry™

Some engines are equipped with as optional Oil Sentry™ switch. This switch is designed to prevent the engine from starting in a low oil or no oil condition. The Oil Sentry™ may not shut down a running engine before damage occurs. In some applications this switch may activate a warning signal. Read your equipment manuals for more information.

NOTE: Make sure the oil level is checked **BEFORE EACH USE** and is maintained up to the **F** or **FULL** mark on the dipstick. This includes engines equipped with Oil Sentry™.

MAINTENANCE INSTRUCTIONS

Normal maintenance, replacement or repair of emission control devices and systems may be performed by any repair establishment or individual; however, **warranty repairs must be performed by a Kohler authorised service centre.**



WARNING

Accidental Starts can cause severe injury or death.
Disconnect and ground spark plug lead(s) before servicing.

Disabling engine. Accidental starting can cause severe injury or death. Before working on the engine or equipment, disable the engine as follows: 1) Disconnect the spark plug lead(s). 2) Disconnect negative (-) battery cable from battery.

Maintenance Schedule

These required maintenance procedures should be performed at the frequency stated in the table below. They should also be included as part of any seasonal tune-up.

FREQUENCY	MAINTENANCE REQUIRED
Daily or Before Starting Engine	Check oil level Fill fule tank Check air intake and cooling areas; clean as necessary[1] Check air cleaner for dirty[1], loose, or damaged parts
Ever 25 Hours	Check or replace precleaner (if equipped) clean as necessary[1.3]
Every 100 Hours	Change oil (more frequently under sever conditions) Replace element[1] (low-profile air cleaner models) Remove and clean shrouds and cooling areas[1] Check oil cooler fins, clean as necessary (if equipped)
Weekly or every 150 Hours	Check filter minder [4] Inspect air filter paper element and inlet screen area [4]
Every 200 Hours	Replace fuel filter[1] Change oil filter Clean, set gap or replace spark plug, and set gap.
Annually or Every 300 Hours	Replace heavy-duty air cleaner element and check inner element[1]
Annually or Every 500 Hours	Have starter serviced[2]

[1] Perform these maintenance procedures more frequently under extremely dusty, dirty conditions
[2] Have a Kholer Engine Service Dealer perform this service
[3] Low-profile air cleaner
[4] Heavy-duty air cleaner

Oil Disposal

Protect and respect the environment. Dispose of oil at your local recycling centre or municipal collection centre in accordance with local ordinances.

Change Oil

See figures 1,2,3 and 4

Change oil after every 100 hours of operation (more frequently under sever conditions). Refill with oil as specified in the Recommended Viscosity Grades table.

Change the oil while the engine is still warm. The oil will flow more freely and carry away more impurities. Make sure the engine is level when filling, checking, or changing the oil.

1. To keep dirt, debris, etc out of the engine, clean the area around the dipstick (D); remove the dipstick. See figure 1.

2. Remove the oil drain plug on the starter side(A) or the drain plug oil filter side (B). Allow ample time for complete drainage. See figure 4.

3. Reinstall the drain plug (A or B) and torque to **13.6 N·m (10 ft. lb.)**. See figure 4.

4. Remove the fill cap A or use the dipstick fill tube (D) to fill the crankcase with new oil of the proper type to the **F** or **FULL** mark (B) on the dipstick. Recheck oil level before adding more oil. See figures 2 and 3.

5. Reinstall the oil fill cap and dipstick securely.

Change Oil Filter

See figures 1,2,3,4, and 5

Replace the oil filter at least every other oil change (every 200 hours of operation). Always use a genuine Kohler oil filter. Replace the oil filter as follows:

1. To keep dirt, debris, etc., out of the engine, clean the area around the dipstick (D); remove the dipstick. See figure 1.

2. Remove the oil drain plug on the starter side (A) or the drain plug oil filter side (B). Allow ample time for complete drainage. See figure 4.

3. Reinstall the drain plug (A or B) and torque to **13.6 N·m (10 ft. lb.)**. See figure 4.

4. To keep dirt, debris, etc out of the engine, clean the area around the oil filter (A); remove the oil filter. See figure 5.

5. Wipe the surface where the oil filter mounts

6. Place a new replacement filter in a shallow pan with the open end up. Pour new oil, of the proper type, in through the threaded centre hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or two for the oil to be absorbed by the filter material.

7. Apply a this film of clean oil to the rubber gasket on the new filter.

8. Install the new oil filter to the filter adapter or oil cooler. Refer to instructions on the oil filter for proper installation.

9. Remove the fill cap (A) or use the dipstick fill tube (D) to fill the crankcase with new oil of the proper type to the **F** or **FULL** mark (B) on the dipstick. Recheck oil level before adding more oil. (Refer to **Check Oil Level**). See figures 2 and 3.

10. Reinstall the oil fill cap and dipstick securely.

11. Test run the engine to check for leaks. Stop the engine, allow a minute for the oil to drain down, and recheck the level on the dipstick. Verify the oil level is up to but not over the **F** or **FULL** mark (B) on the dipstick. See figure 2.

Service Oil Cooler (If Equipped)

See figure 5

Some engines are equipped with an optional oil cooler. Inspect and clean oil cooler **every 100 hours of operation** (more frequently under severe conditions). Oil cooler must be kept free of debris. Service the oil cooler as follows:

1. Remove the hardware (B), holding the oil cooler (C) to the blower housing(D).

2. Clean the inside of the cooler with a brush.

3. Reinstall the oil cooler (C) to the blower housing (D) securing with the mounting hardware (B).

Air Cleaner Service

Heavy-Duty Air Cleaner

See figures 1,6, and 7

Weekly and every 150 hours Check filter minder (F) (if equipped), perform inspection of the paper element (B) and inlet screen (G) area. See figure 6.

Annually or every 300 hours of operation (more often under extremely dirty or dusty conditions), replace the paper element and check the inner element. Follow these steps.

Do not wash the paper element and inner element or use compressed air, this will damage the elements. Replace dirty, bent or damaged elements with new genuine Kohler elements as required. Handle the new elements carefully; do not use if the sealing surfaces are bent or damaged.

1. Unhook the two retaining clips (B) on each end and remove the end caps from the air cleaner housing (D). See figures 1 and 6.

2. Check and clean the inlet screen (G) using a brush. See figure 6

3. Remove and inspect the air cleaner outer element (B). Replace if it seems dirty or is at the **annually or 300 hour** interval. See figure 6.

4. Remove and inspect the air cleaner inner element (C). Replace if it appears dirty or is at the **600 hour** interval. See figure 6.

5. Clean the area around the base of the inner element before removing it, so dirt does not get into the engine. See figure 6.

6. Check all parts for wear, cracks, or damage, and make sure ejector area (B) is clean. Replace any damaged components. See figure 7.

7. Install elements (B and C) and covers (A and E) in reverse order of removal. See figure 6.

8. Secure covers with clips (B). See figure 1.

Low-Profile Air Cleaner

See figure 8
Every two months or every 25 hours of operation wash or replace the precleaner (F). Wash precleaner in warm water and detergent. Rinse the precleaner thoroughly and squeeze out excess water (do not wring).
Allow precleaner to air dry.

Replace the air cleaner element (G) every 100 hours or annually. Do not wash the air cleaner inner element or use compressed air, this will damage the elements. Replace dirty, bent or damaged elements with new genuine Kohler elements as required. Handle the new air cleaner elements carefully; do not use if the sealing surfaces are bent or damaged.

1. Loosen the cover retaining knob (A) and remove cover (B).

2. Remove and inspect the precleaner (F) wash or replace as necessary.

3. Clean area around the air cleaner element (G) to prevent dirt and debris from entering the engine.

4. Remove and inspect the air cleaner element (G) replace as necessary.

6. Check the conditions of the rubber seal (E) on the air cleaner stud (I). Replace if the seal is worn, damaged, or questionable.

7. Reinstall the components in reverse order of removal.

Clean Air Intake/Cooling Areas

See figure 1
To ensure proper cooling, make sure the fixed guard (G), cooling fins, and other external surfaces of the engine are kept clean **at all times**.

Every **100 hours** of operation (more often under extremely dusty, dirty conditions), remove the blower housing and other cooling shrouds (L). Clean the cooling fins and external surfaces as necessary. Reinstall the blower housing and other cooling shrouds.

NOTE: Operating the engine with a blocked fixed guard, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage to overheating.

Ignition

EFI Engines incorporate a computer-controlled battery ignition system with individual coils. Other than periodically checking/replacing the spark plugs, no maintenance, timing, or adjustments are necessary or possible with this system.

Spark Plug

See figures 1 and 9
Every **200 hours** of operation, remove the spark plugs, check condition, and reset the gap or replace with new plugs as necessary. The standard spark plug is a Champion® RC12YC (Kohler Part No. 12 123 02-S). RFI complient engines use a Champion® XC12YC (Kohler Part No. 25 132 14-S) spark plug.
A high-performance spark plug, Champion® Platinum 3071 (used on Pro series engines, Kohler Part No. 25 132 12-S) is also available. Equivalent alternative brand plugs can also be used.

1. Before removing the spark plugs (E), clean the area round the base of the plug to keep dirt and debris out of the engine. See figure 1.

2. Remove the plugs (E) and check it's condition. Replace the plugs if worn or reuse is questionable. See figure 1.

NOTE: Do not clean the spark plug using abrasive grit. Some grit could remain in the spark plug and enter the engine, causing extensive wear and damage.

3. Check the gap (D) using a wire feeler gauge (A). Adjust the gap to **0.76 mm (0.030 in.)** by carefully bending the ground electrode (C). See figure 9.

4. Reinstall the spark plug (E) into the cylinder head. Torque the spark plugs to **24.4-29.8 N·m (18-22 ft. lb.)**. See figure 1

Battery Charging

Follow all of the battery warnings and safety guidelines and procedures provided by the battery manufacturer and equipment manufacturer.

Jump starting

Follow all safety guidelines and procedures provided by the battery manufacturer and/ or original equipment manufacturer (OEM)> Failure to follow proper procedures may result in serious personal injury and/or non-warrantable damage to the engine's Electronic Fuel Injection (EFI) components.

Fuel System

See figure 1

WARNING

High Pressure Fluids can puncture skin and cause severe injury or death.
Do not work on fuel systems without proper training or safety equipment.

General

The precision components inside the fuel pump module are not serviceable. DO NOT attempt to open the fuel pump module. Damage to the components will result and the warranty will be void. Because the fuel pump module is not serviceable, the engines are equipped with a special 10-micron EFI fuel filter (J) to prevent harmful contamination from entering the module.

If there are two filters in the system, the one before the lift pump will be a standard 51-57 micron filter, and the one after the lift pump will be the special 10-micron filter. Be sure to use an approved 10-micron filter for replacement.

Service

Periodically inspect the filter and replace every 200 operating hours or more frequently under extremely dusty or dirty conditions. Use only a genuine Kohler filter (Kohler Part No. 25 050 42-S) and install it according to the directional arrows. Failure to use the proper filter can result in engine damage and void the warranty.

Fuel Line

These engines use low permeation related fuel lines, certified to comply with California and U.S. EPA evaporative emission requirements. Fuel lines that do not meet these requirements may not be used. Order replacement hose through a Kohler Service Centre.

A high pressure fuel line runs between the high pressure pumps and the injectors. The special fuel line, capable of withstanding the high pressure of the EFI fuel system meets SAE R9 specifications. If fuel line must be replaced, See your Kohler Engine Service Centre.

Electronic Fuel Injection (EFI) System

The EFI system is a complete, electronically- controlled, fuel management system, designed to deliver a precisely controlled fuel flow under all operating conditions. The electronic control unit (ECU), the brain of the system, automatically adjusts fuel delivery and ignition timing based upon load, speed, operating temperature, and exhaust emission levels. The low idle speed is the only manual adjustment possible. The ECU continuously monitors operation of the EFI system. If it detects a problem or fault within the system, it will illuminate the Malfunction Indicator Light (MIL) (if so equipped). This is a signal that normal, programmed operation has been affected, and service by an authorised Kohler Engine Service Centre is required. In most cases a MIL light may be added to an engine, see **Parts Ordering**.

Troubleshooting

If the MIL comes on, or the engine becomes hard to start, runs roughly, or stalls at low idle speed, initial checks should be made in the following areas:

- Check that the fuel tank is filled with clean, fresh gasoline, and shut-off valve (if so equipped) is opened completely.
- Check that the fuel tank vent cap is not blocked and it is operating properly (non-California models).
- Check that the air cleaner element and precleaner are clean and all components are properly secured. Clean or replace as necessary.
- Check that the proper fuel filter is being used, and it is clean and unobstructed. Replace filter(s) **only** with genuine Kohler parts.
- Check that all connections to sensors, ECU, and fuel injectors are properly secured.
- Check that there is 12 volt battery being used and is fully charged.
- Check that fuses are not burnt out. If so then replace.

If these checks do not correct the problem, or the MIL remains on, further diagnosis and servicing by an authorised Kohler Engine Centre is necessary.

Adjustment - Throttle Body

See figure 10

Low idle speed (RPM) is the only adjustment that can be made. All other fuel calibrations are controlled by the ECU. The standard low idle speed is **1500 RPM** (± 75 RPM).

NOTE: The actual low idle speed depends on the application- refer to equipment manufacturer's recommendations.

When an EFI engine is started cold, the ECU will briefly set a higher (200-400 RPM) low idle speed, similar to a fast idle. Do not attempt to preform any readjustment during this warm-up period.

If adjustment is to be made the engine must be at operating temperature, air cleaner in place, and check engine light must be off (no fault codes present).

1. Start the engine and run at half throttle for 5 to 10 minutes to warm up.

2. Place the throttle control into the idle or slow position.

3. Turn the low idle speed adjusting screw (A) in or out and check RPM with a tachometer.

Fuse replacement

See figure 11 and 12

This engine has three (3) blade type automotive fuses. Replacement fuses must have the same rating as the blown fuse. Use the fuse chart below to determine the correct fuse. See figure 14.

WIRE COLOUR	FUSE RATING
2 Purple wires	30-amp Fuse
1 Red wire with Back stripe 1 Rd Wire with White stripe	10-amp Fuse
2 Red wires	10-amp Fuse

Figure 14. Fuse Rating Chart

To replace a fuse:

1. Shut engine off and remove key.

2. Locate the fuse holders (A). See figure 11.

3. Remove the fuse cover (B) and pull out fuse. See figure 11.

4. Inspect the fuse for a solid fusible Link (A) or a broken fusible link (B). Replace the fuse if the fusible link is broken (B). If you are not sure if the fusible link is broken, replace the fuse. See figure 12.

5. Insert the fuse into the fuse holder (A) until it is seated properly. Install the fuse cover (B). See figure 11.

Additional Electrical Information

The yellow accessory wire on the original Kohler Engine Key switch can not draw more than 2-amps. A relay may be used in order to use a higher drawing accessory. Contact a Kohler Engines application specialist for further instructions. A current draw of more than 2-amps will cause damage to the ECU, Fuel Pump Module, or other electrical system components and will void the warranty.

TROUBLESHOOTING

When troubles occur, be sure to check the simple causes which, at first, amy seem too obvious to be considered. For example, a startling problem could be caused by an empty fuel tank. Some common causes of engine troubles are listed in the following table.

Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Have your Kohler Engine Service Centre do this work.

	Possible Causes									
Problem	No Fuel	Improper Fuel	Blocked Fuel Line/ System	Low Battery Voltage	Broken Fusible Link	Dirty Fixed Guard	Incorrect Oil Level	Engine Overload	Dirty Air Cleaner	Faulty Spark Plug
Will not Start	●	●	●	●	●		●	●	●	●
Hard Starting	●	●	●	●			●	●	●	●
Stop Suddenly	●		●			●	●	●	●	
Lacks Power		●	●			●	●	●	●	●
Operates Erratically		●	●			●		●	●	●
Knocks or Pings		●				●		●		●
Skips or Misfires		●	●			●			●	●
Backfires			●					●	●	●
Overheats			●			●	●	●	●	
High Fuel Con- sumption								●	●	●

Storage

See Figure 1

If the engine will be out of service for two months or more, follow these storage procedures:

1. Clean the exterior surfaces of the engine. Avoid spraying water at the wiring harness or any of the electrical components.

2. Change the oil and filter while the engine is still warm from operation. Refer to change Oil and Filter.

3. The fuel system must be completely emptied, or the gasoline must be treated with a fuel stabilizer to prevent deterioration. If you choose to use a fuel stabilizer, follow the manufacturers recommendations, and add the correct amount for the capacity of the fuel system.

4. Fill the fuel tank with clean, fresh gasoline. Run the engine for 2-3 minutes to get stabilized fuel into the fuel system. Close fuel shut off valve (if equipped) when unit is being stored or transported. To empty the system, run the engine until the tank and fuel system are empty.

5. Remove the spark plugs. Add one tablespoon of engine oil into each spark plug hole. Install plugs, but do not connect the plug leads. Crank the engine two or three revolutions.

6. Disconnect the negative (-) battery cable or use a Battery Minder trickle charger while the unit is in storage.

7. Store the engine in a clean, dry place.

Repairs

Repair information is available in Kohler Engine service manuals which are available at KohlerEngines.com, or at Kohler Service Centres. Major repairs generally require the services of a trained mechanic and the use of specialised tools and equipment. Kohler Service Centres have the facilities, training, and genuine Kohler replacement parts necessary to perform these services.

For the nearest sales and service location, visit our Web site at KohlerEngines.com, or in the U.S and Canada call 1-800-544-2444

Parts Ordering

The engine model, specification, and serial numbers are required when ordering replacement parts from your Kohler Service Centre. These numbers are found on the identification plate which is affixed to the engine shrouding. Including letter suffixes if there are any. Refer to **Engine Identification Numbers**.

Always insist on genuine Kohler replacement parts, as they adhere to strict standards for fit, reliability, and performance. Visit KohlerEngines.com or your Kohler Service Centre.

Engine Identification

ENGINE IDENTIFICATION NUMBERS

See figure 1

Engine identification numbers will appear on the engine data tag (M). See figure 1.

When ordering parts, or in any communication concerning this engine, always give the model name, specification number, and serial number - including any letter suffixes.

Emission Compliance

The Emission Compliance Period referred to on the Emission Control or Air Index label indicates the number of operating hours for which the engine has been shown to meet Federal and CARB emission requirements. The following table provides the Engine Compliance Period (in hours) associated with the category descriptor which may be found on the certification label.

Emission Compliance Period	
EPA	Catagory A: 1000 hours
CARB	Extended: 500 hours

Refer to certification label for engine displacement. Exhaust Emission Control System for models ECH630, WCH650, ECH680, ECH730, ECH740, ECH749 is EM, O2S, ECM, MPI for U.S EPA, California, and Europe.

Specifications							
Model		**ECH630**	**ECH650**	**ECH680**	**ECH730**	**ECH740**	**ECH749**
Bore	mm (in.)	80 (3.2)			83 (3.3)		
Stroke	mm (in.)	69 (2.72)			69 (2.72)		
Displacement	cm^3 ($in.^3$)	694 (42.4)	694 (42.4)	694 (42.4)	747 (45.6)	747 (45.6)	747 (45.6)
***Gross Power (@ 3600 RPM)**	kW (HP)	14.1 (19)*	15.7 (21)*	17.2 (23)*	18.6 (25)*	20.1 (27)*	21.6 (29)*
Net Power (@ 3600 RPM)	kW (HP)	13.8** (18.6)**	14.6** (19.6)**	15.4** (20.7)**	16.2 (21.7)	17.4 (23.3)	17.9 (24.0)
Peak Torque (min)	N.m (ft.lb.)	42.8** (31.6)**	44.3** (32.7)**	46.8** (34.5)**	49.1 (36.2)	50.7 (37.4)	50.8 (37.5)
Compression Ratio		8.8:1			9.1:1		
Weight	Kg (lbs)	46 (102)					
Oil Capacity	L (U.S. qt.)	1.9 (2)			1.9 (2)		
Exhaust Emission Control System		EM, O2S, ECM, MPI for U.S. EPA, California and Europe					

*Horsepower ratings exceed Society of Automotive Engineers Small Engine Test Code J1940. Actual engine horsepower is lower and affected by, but not limited to, accessories (air cleaner, exhaust, charging, cooling, fuel pump, etc.), application, engine speed and ambient operating conditions (temperature, humidity, and altitude). Kohler reserves the right to change product specifications, designs, and equipment without notice and without incurring obligation.

** Based on preliminary information.

LIMITED 3 YEAR COMMAND ENGINE WARRANTY

Kohler Co. warrants to the original consumer that each new COMMAND engine sold by Kohler Co. will be free from manufacturing defects in materials or workmanship in normal service for a period of three (3) years from date of purchase, provided it is operated and maintained in accordance with Kohler Co.'s instructions and manuals.

Our obligation under this warranty is expressly limited, at our option, to the replacement or repair at Kohler Co., Kohler, Wisconsin 53044, or at a service facility designated by us of such parts as inspection shall disclose to have been defective.

EXCLUSIONS:
Mufflers on engines used commercially (non-residential) are warranted for one (1) year from date of purchase, except catalytic mufflers, which are warranted for three (3) years.

This warranty does not apply to defects caused by casualty or unreasonable use, including faulty repairs by others and failure to provide reasonable and necessary maintenance.

The following items are not covered by this warranty:

Engine accessories such as fuel tanks, clutches, transmissions, power-drive assemblies, and batteries, unless supplied or installed by Kohler Co. These are subject to the warranties, if any, of their manufacturers.

KOHLER CO. AND/OR THE SELLER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, including but not limited to labor costs or transportation charges in connection with the repair or replacement of defective parts.

IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. We make no other express warranty, nor is any one authorized to make any on our behalf.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

TO OBTAIN WARRANTY SERVICE:
Purchaser must bring the engine to an authorized Kohler service facility. To locate the nearest facility, visit our website, www.KohlerEngines.com, and click on SERVICE and DEALER LOCATOR to use the locator function, consult your Yellow Pages or telephone 1-800-544-2444.

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

KOHLER CO.
FEDERAL AND CALIFORNIA EMISSION CONTROL SYSTEMS
LIMITED WARRANTY
SMALL OFF-ROAD AND CLASS 1 LSI ENGINES

The U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Kohler Co. are pleased to explain the 2011 and later Federal and California Emission Control Systems Warranty on your off-road equipment engine. "Emissions" means both exhaust and evaporative emissions. For California, small off-road engines, and Class 1 LSI (Large Spark Ignited engines at or below 1.0 liter) must be designed, built and equipped to meet the state's stringent anti-smog standards. In other states, engines must be designed, built and equipped, to meet the U.S. EPA regulations for small non-road engines. The engine must be free from defects in materials and workmanship which cause it to fail to conform with U.S. EPA standards for the first three years of engine use from the date of sale to the ultimate purchaser. Kohler Co. must warrant the emission control system on the engine for the period of time listed above, provided there has been no abuse, neglect or improper maintenance.

The emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included are the hoses, belts and connectors and other emission related assemblies.

Where a warrantable condition exists, Kohler Co. will repair the engine at no cost, including diagnosis (if the diagnostic work is performed at an authorized dealer), parts and labor.

MANUFACTURER'S WARRANTY COVERAGE
Small off-road engines and Class 1 LSI engines are warranted for three years in California and other states. If any emission related part on the engine is defective, the part will be repaired or replaced by Kohler Co. free of charge.

OWNER'S WARRANTY RESPONSIBILITIES

(a) The engine owner is responsible for the performance of the required maintenance listed in the owner's manual. Kohler Co. recommends that you retain all receipts covering maintenance on the engine, but Kohler Co. cannot deny warranty solely for the lack of receipts or for your failure to assure that all scheduled maintenance was performed.

(b) Be aware, however, that Kohler Co. may deny warranty coverage if the engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

(c) For warranty repairs, the engine must be presented to a Kohler Co. service center as soon as a problem exists. Call 1-800-544-2444 or access our web site at: www.kohlerengines.com, for the names of the nearest service centers. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding warranty rights and responsibilities, you should contact Kohler Co. at 1-920-457-4441 and ask for an Engine Service representative.

COVERAGE
Kohler Co. warrants to the ultimate purchaser and each subsequent purchaser that the engine will be designed, built and equipped, at the time of sale, to meet all applicable regulations. Kohler Co. also warrants to the initial purchaser and each subsequent purchaser, that the engine is free from defects in materials and workmanship which cause the engine to fail to conform with applicable regulations for a period of three years.

Small off-road engines and Class 1 LSI engines are warranted for three years in California. EPA requires manufacturers to warrant engines for three years in all other states. These warranty periods will begin on the date the engine is purchased by the initial purchaser. If any emission related part on the engine is defective, the part will be replaced by Kohler Co. at no cost to the owner. Kohler Co. is liable for damages to other engine components caused by the failure of a warranted part still under warranty.

Kohler Co. shall remedy warranty defects at any authorized Kohler Co. engine dealer or warranty station. Warranty repair work done at an authorized dealer or warranty station shall be free of charge to the owner if such work determines that a warranted part is defective.

Continued on next page.

Listed below are the parts covered by the Federal and California Emission Control Systems Warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part. The warranted parts include the following if they were present in the engine purchased:

- Oxygen sensor (if equipped)
- Intake manifold (if equipped)
- Exhaust manifold (if equipped)
- Catalytic muffler (if equipped)
- Thermal reactor muffler (if equipped)
- Fuel lines, fuel line fittings and clamps (if equipped)
- Spark advance module (if equipped)
- Crankcase breather
- Air Injection System (if equipped)
  - Air pump or pulse valve assembly (if equipped)
  - Control/distribution valve (if equipped)
  - Distribution manifold (if equipped)
  - Air hoses (if equipped)
  - Vacuum lines (if equipped)
- Ignition module(s) with high tension lead
- Gaseous fuel regulator (if equipped)
- Electronic control unit (if equipped)
- Carburetor or fuel injection system
- Fuel metering valve (if equipped)
- Air filter, fuel filter, and spark plugs (only to first scheduled replacement point)
- Evaporative System (if equipped)
  - Canister (if equipped)
  - Canister filter (if equipped)
  - Vapor hose (if equipped)
  - Orifice connector (if equipped)
  - Fuel tank (if equipped)
  - Fuel cap (if equipped)
  - Primer bulb canister (if equipped)

LIMITATIONS

This Emission Control Systems Warranty shall not cover any of the following:

(a) repair or replacement required because of misuse or neglect, improper maintenance, repairs improperly performed or replacements not conforming to Kohler Co. specifications that adversely affect performance and/or durability and alterations or modifications not recommended or approved in writing by Kohler Co.,

(b) replacement of parts and other services and adjustments necessary for required maintenance at and after the first scheduled replacement point,

(c) consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.,

(d) diagnosis and inspection fees that do not result in eligible warranty service being performed, and

(e) any add-on or modified part, or malfunction of authorized parts due to the use of add-on or modified parts.

MAINTENANCE AND REPAIR REQUIREMENTS

The owner is responsible for the proper use and maintenance of the engine. Kohler Co. recommends that all receipts and records covering the performance of regular maintenance be retained in case questions arise. If the engine is resold during the warranty period, the maintenance records should be transferred to each subsequent owner. Kohler Co. reserves the right to deny warranty coverage if the engine has not been properly maintained; however, Kohler Co. may not deny warranty repairs solely because of the lack of repair maintenance or failure to keep maintenance records.

Normal maintenance, replacement or repair of emission control devices and systems may be performed by any repair establishment or individual; however, **warranty repairs must be performed by a Kohler authorized service center**. Any replacement part or service that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the engine manufacturer.

KOHLER ENGINES

FORM NO.:	24 590 16 Rev. A
ISSUED:	10/10
REVISED:	11/10

FOR SALES AND SERVICE INFORMATION
IN U.S. AND CANADA, CALL **1-800-544-2444**

KohlerEngines.com

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

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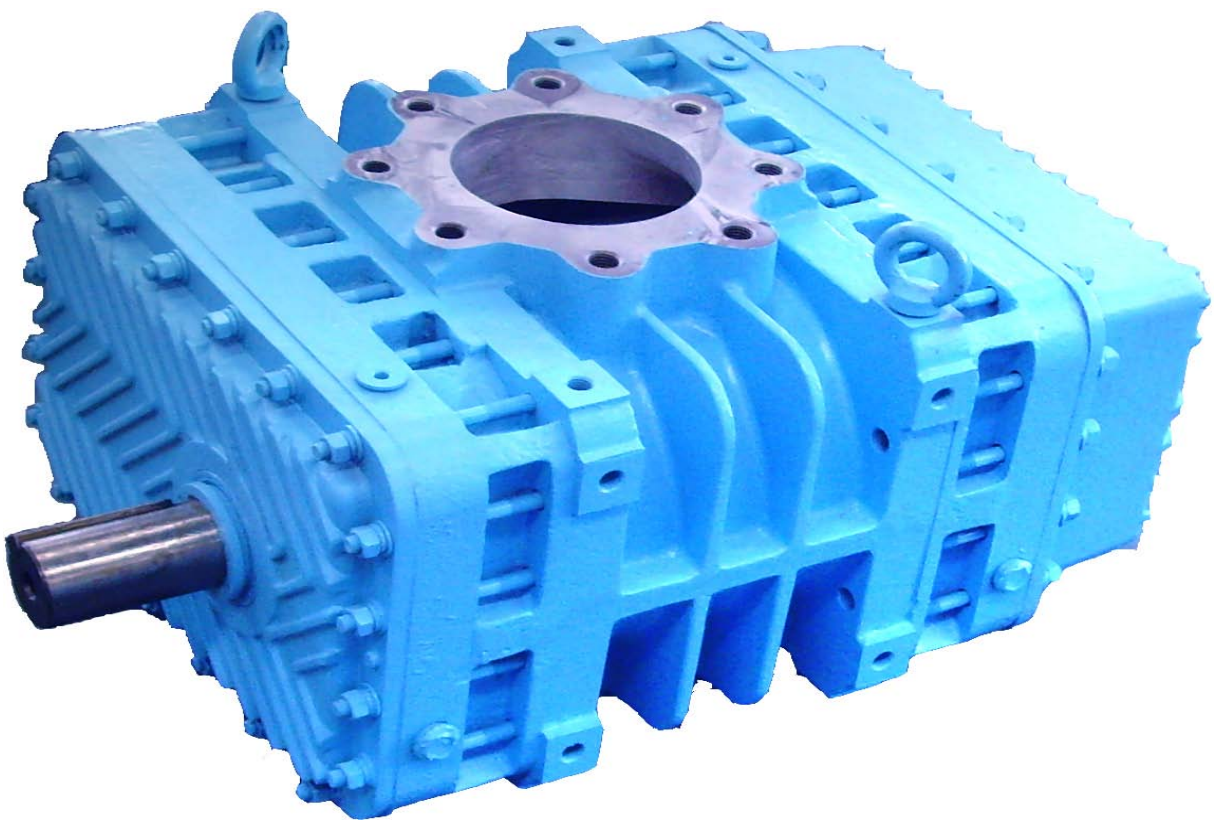
Rotary Blower

Service Manual

Models: MB3006, MB4007



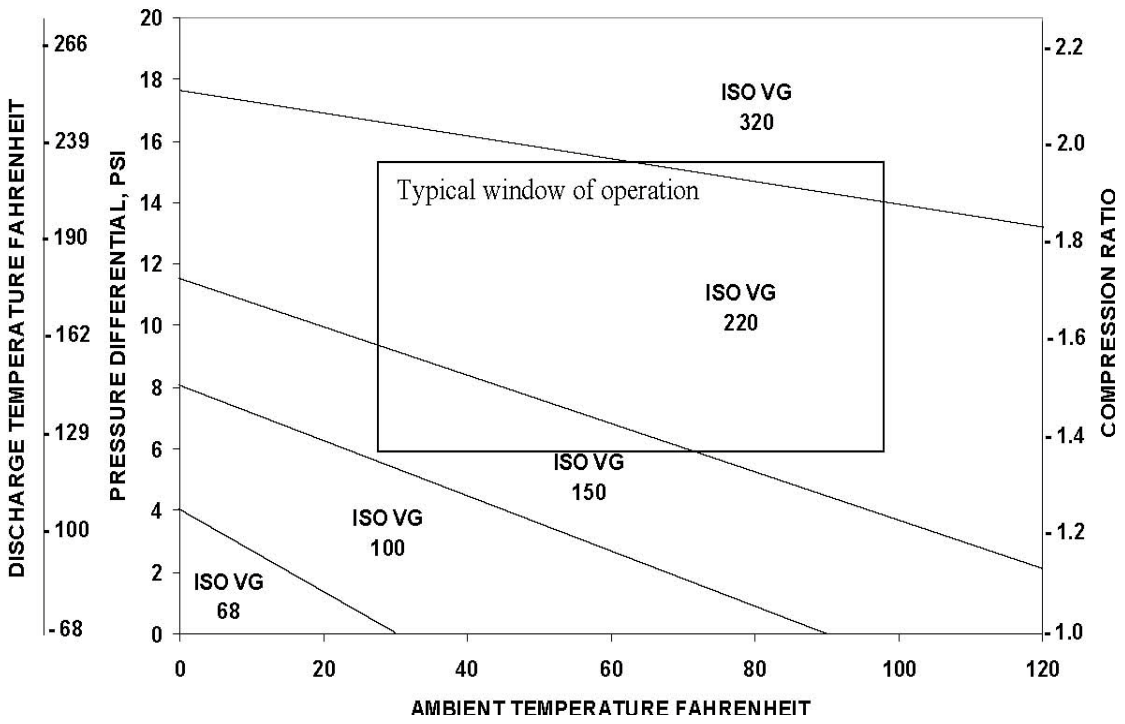
Oil Capacities

Model		MB3006	MB4007
Drive end	Vertical	157 ml	414 ml
Gear end		260 ml	828 ml

Recommended lubricant

Use the recommended grade and viscosity of industrial type, non-detergent, rust inhibiting, anti-foaming oil (Reference Chart 1 below). The correct oil depends on the range of ambient temperatures as well as the range of discharged temperatures.

Recommended Viscosity



Synthetic lubricants are highly recommended over mineral lubricants: synthetics last up to 4 times longer; and a single viscosity can cover a broader temperature range.

Regular Maintenance Schedule

Period	Work to be done
1-24 hours after 1st startup	Check oil level frequently; Check belt tension; Record baseline data
100-200 hours after 1st startup	Change lubricating oil
Monthly	Check oil level*
1,500-2,000 hours*	Change oil (mineral)
6,000-8,000 hours*	Change oil (synthetic)

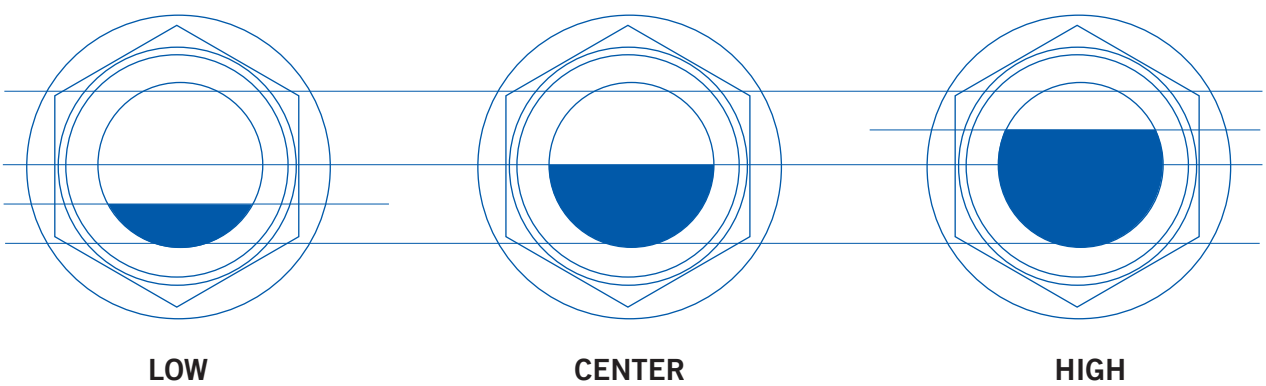
* The maintenance period can vary depending on the service and environmental conditions. The oil should be changed at least once a year, even if the blower is not operated.

Oil Sight Glasses

Stop the rotary blower before checking the oil level. Use the sight glasses to determine the oil level as instructed below.

Check oil level on both sides of each end as the rotary blower can be off level. An oil level 1/4" below the center line is in DANGER of failure; an oil level 1/8" below the centerline indicated the oil level is low.

Note: Oil level should be between the center line and 1/8"above centre line; if the oil level is more than ¼" above the centerline, there is a risk of oil leakage.



Oil level sight glass

To check the lubricating oil level:

1. Stop the rotary blower
2. Check the lubrication oil level at all oil level sight glasses.

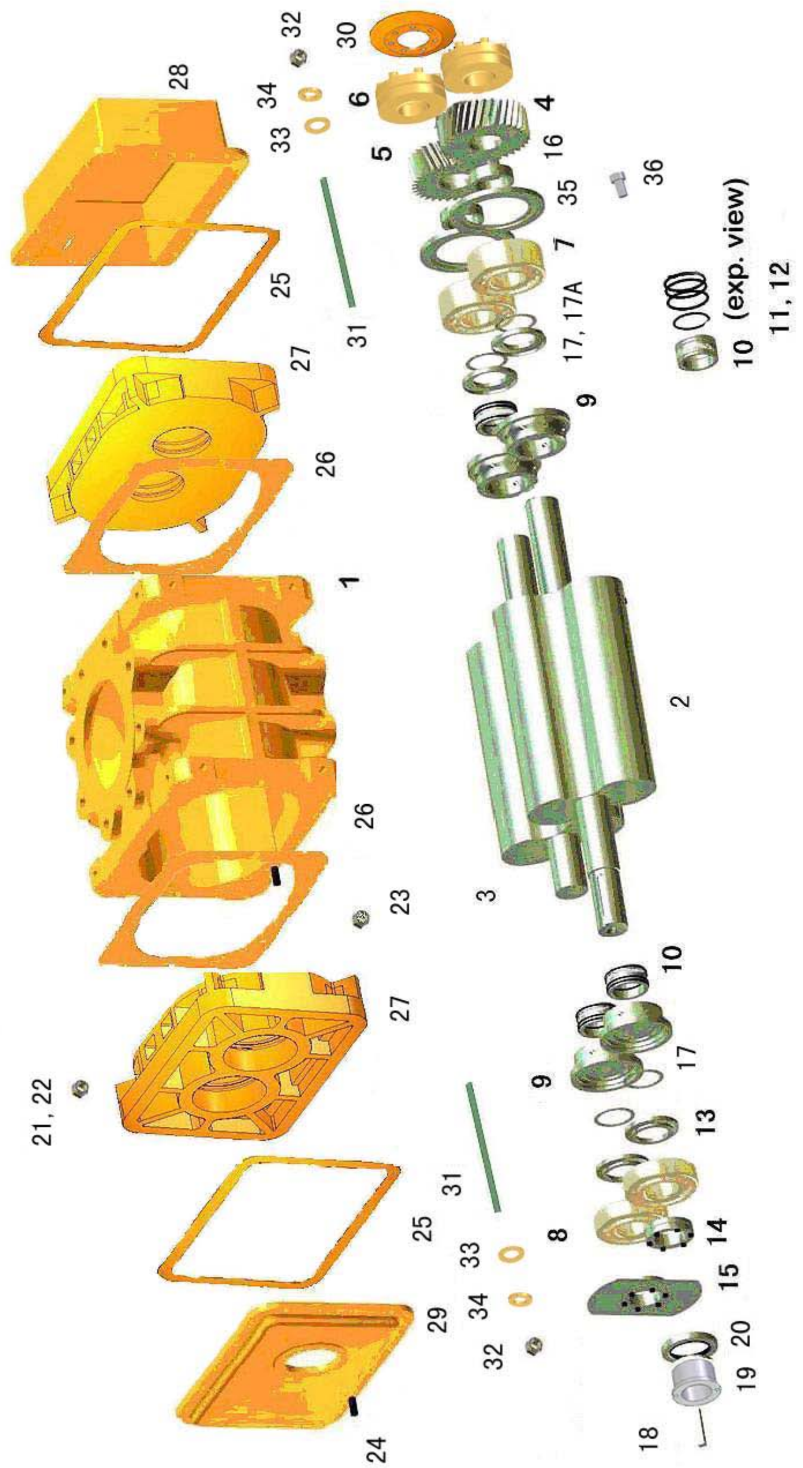
To initially fill the lubricating oil

1. Stop the rotary blower and lock -out the power source to prevent a restart.
2. Unscrew the fill plug on top of the unit
3. Pour the indicated amount of oil into the port and look at the new oil level in the sight glasses.
4. Fill with lubricating oil to the correct height.

Changing the oil

Change the oil when the following situations occur:

- Change oil after approximately 150 hours of service
- Change oil after approximately 1500-2500 service hours of mineral lubricants, and approximately 6000-8000 service hours for synthetic lubricants.
- Change at least once annually.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MODEL: MB3006 PARTS LIST

All Configurations

Item	QTY	Part Number	Description	Material
1	1	MB3006-0101	Impeller Case	Gray Iron
2	1	MB3006-0500	Drive Rotor	Ductile Iron
3	1	MB3006-0600	Driven Rotor	Ductile Iron
4	1	ZG-1102-50	Drive Helical Gear	Alloy Steel
5	1	ZG-1101-50	Driven Helical Gear	Alloy Steel
6	2	MB30101	Locking Assembly (Z7B 36x72)	Steel
7	2	MB30102	Ball Bearing (6306)	Steel
8	2	MB30103	Roller Bearing (NJ306E/C3)	Steel
9	4	ZG-1012-50	Ring Seal Stator Insert	Gray Iron
10	4	ZG-1011A-50	Ring Seal Rotor Sleeve	Steel
11	5	MB30104	O-Ring (30x2.65) (IDXCS)	Viton
12	12	ZG-1013-50	Piston Ring	Alloy Iron
13	4	ZG-1106A-50	Oil Slinger	Steel
14	1	ZG-50-SJT	Lock Sleeve Assembly	Steel
15	1	ZG-50-SYP	Oil Flinger Assembly	Steel
16	2	ZG-0202-50	Gear Spacer	Steel
17	8	ZG-1202-50	Bearing Shim (0.5, 0.2mm)	Steel
17A	8	ZG-1202-50	Bearing Shim (0.1, 0.05mm)	Steel
18	1	MB30105	Key (C8x63)	Steel
19	1	ZG-1021-50	Wear Ring	Steel
20	1	MB30106	Lip Seal (45x65x7)	Viton
21	4	MB30107	Plug (M16x1.5)	Steel
22	2	MB30108	Magnetic Plug (M16x1.5)	Steel
23	2	MB30109	Sight Glass (M16x1.5)	Steel
24	6	MB30111	Dowel Pin (B8x28)	Steel
25	2	ZG-1205A-50	Cover Gasket	
26	1	ZG-1201-50	Cylinder Shim (0.1mm)	Fish paper
27	2	ZG-0201A-50	Endplate	Gray Iron
28	1	ZG-0311A-50	Gear Oil Cover	Aluminium
29	1	ZG-0411A-50	Drive Side Oil Cover	Aluminium
30	N/A	N/A	N/A	N/A
31	24	MB30113	Stud Bolt (M8x90)	Steel
32	24	MB30114	Nut (M8)	Steel
33	24	MB30115	Washer 8	Steel
34	24	MB30116	Lock Washer 8	Alloy Steel
35	2	ZG-0202-50	Bearing Clamp Plate	Steel
36	8	MB30112	Socket Head Screw M6x12	Steel

MODEL: MB4007 PARTS LIST

All Configurations

Item	QTY	Part Number	Description	Material
1	1	M4506-0101	Impeller Case	Gray Iron
2	1	M4506-0500	Drive Rotor	Ductile Iron
3	1	M4506-0600	Driven Rotor	Ductile Iron
4	1	M45-1102	Drive Helical Gear	Alloy Steel
5	1	M45-1101	Driven Helical Gear	Alloy Steel
6	2	MB45101	Locking Assembly (Z7B 55x100)	Steel
7	2	MB45102	Angular Contact Ball Bearing (3309)	Steel
8	2	MB45103	Roller Bearing, (NJ309E/C3)	Steel
9	4	M45-1012A	Ring Seal Stator Insert	Gray Iron
10	4	M45-1011B	Ring Seal Rotor Sleeve	Steel
11	5	MB45104	O-Ring (45x2.65) (IDXCS)	Viton
12	12	M45-1013	Piston Ring	Alloy Iron
13	4	M45-1106B	Oil Slinger	Steel
14	1	M45-SJT	Lock Sleeve Assembly	Steel
15	2	M45-SYP	Oil Flinger Assembly	Steel
16	2	M45-0202	Gear Spacer	Steel
17	8	M45-1202A	Bearing Shim (0.5, 0.2mm)	Steel
17A	8	M45-1202A	Bearing Shim (0.1, 0.05mm)	Steel
18	1	MB45105	Key (C12x70)	Steel
19	1	M45-1021B	Wear Ring	Steel
20	1	MB45106	Lip Seal (55x75x8)	Viton
21	4	MB45107	Plug (M20x1.5)	Steel
22	2	MB45108	Plug Magnetic (M20x1.5)	Steel
23	2	MB45109	Sight Glass (M20x1.5)	Steel
24	6	MB45111	Dowel Pin (B12x40)	Steel
25	2	M45-1205A	Cover Gasket	
26	1	M45-0201A	Cylinder Shim (0.1mm)	Fish paper
27	2	M45-0201B	Endplate	Gray Iron
28	1	M45-0311A	Gear Oil Cover	Aluminium
29	1	M45-0411A	Drive Side Oil Cover	Aluminium
30	1	M45-1107A	Oil Flinger (Gear Side)	Steel
31	24	MB45113	Stud Bolt (M10x110)	Steel
32	24	MB45114	Nut (M10)	Steel
33	24	MB45115	Washer 10	Steel
34	24	MB45116	Lock Washer 10	Alloy Steel
35	2	M45-0202	Bearing Clamp Plate	Steel
36	8	MB45112	Socket Head Screw (M8x12)	Steel

MAINTENANCE SCHEDULE SHEET

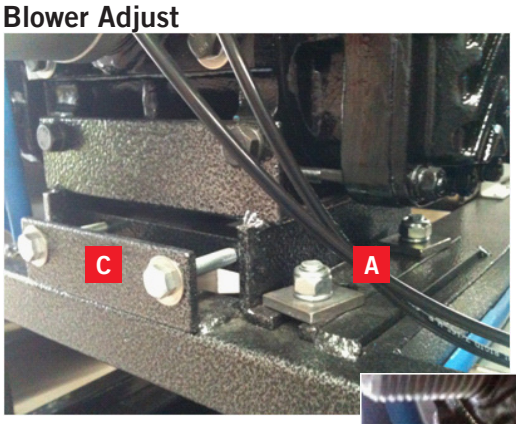
Rotary blower:	**Serial Number:**

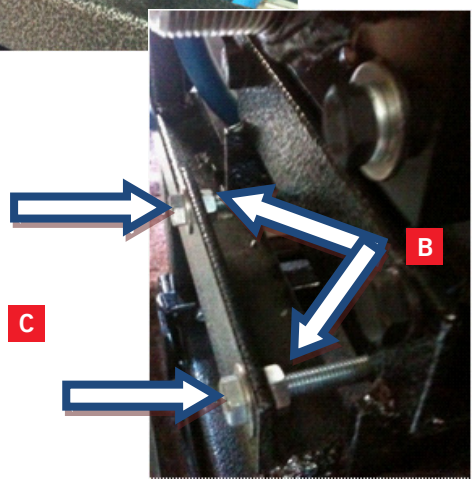
Date	Description of work	Service hours	Signature

500, 590 & 650 BLOWER & PUMP BELT TENSION & REPLACEMENT INSTRUCTIONS

These instructions will help maintain a good level of tension on your Blower & Pump belts, or if needed to replace them

Blower Adjust





A

First step is to release the four blower feet nuts, there are two on each side of the blower. Simply crack the seal on the nylock nuts so that the blower can move freely when levered.

B

Release the two lock nuts on the inside of the adjustment bolts, un-tighten roughly half way so that you can slide the blower back and forth

C

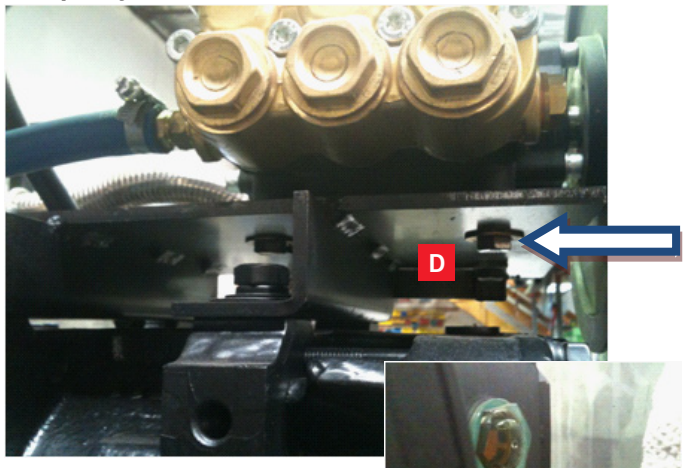
Use these adjusting bolts to tension the blower belts or to release the blower for belt replacement.

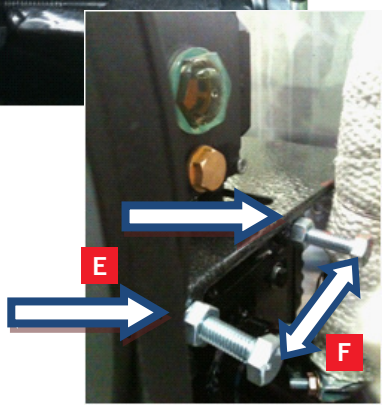
Tighten bolts clockwise to tension blower belts. (Make sure when tensioning belts, blower feet should be at equal distance from edge of frame.) Re-Tension Belts with 5-10mm deflection.

Or to loosen the blower release the bolts anti-clockwise and lever blower towards other side of machine this will slacken off the belts for easy replacement.

*Make sure you re-tighten lock nuts (B) after adjustment is complete to lock blower in place and also re-tighten blower feet bolts (A)

Pump Adjust





D

To adjust the Pump you will need to release the four Pump feet nuts, there are two on each side of the Pump. Simply crack the seal on the bolt heads so that the pump can move freely

E

Release the two lock nuts on the inside of the adjustment bolts, un-tighten roughly half way so that you can slide the Pump back and forth

F

Use these adjusting bolts to tension the Pump belts or to release the Pump for belt replacement.

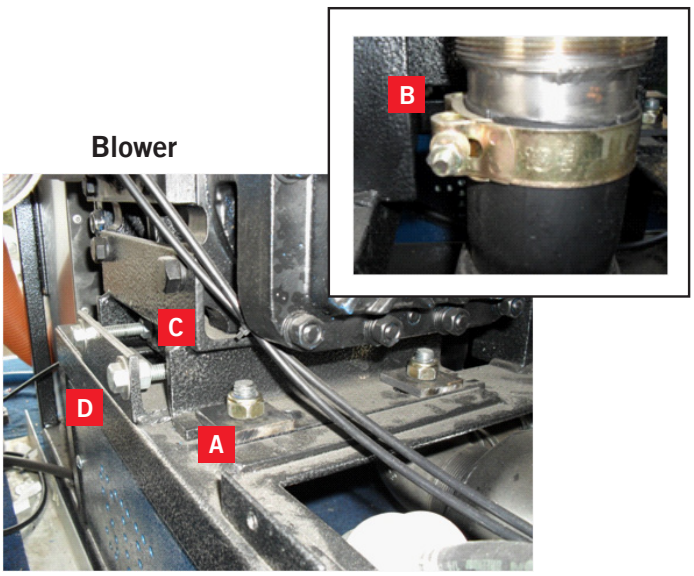
Tighten bolts clockwise to tension Pump belts.
(Make sure when tensioning belts, Pump feet should be at equal distance from edge of frame.) Re-Tension Belts with 5-10mm deflection.

Or to loosen the Pump release the bolts anti-clockwise and lever pump towards other side of machine this will slacken off the belts for easy replacement.

HYBRID SYSTEM BLOWER BELT TENSION AND REPLACEMENT INSTRUCTIONS

The following instructions will help you to maintain a good level of tension on your Blower Belts, and if needed to replace them.

Blower



A

First step is to release the four blower feet nuts. Simply crack the seal on the nylock nuts so that the blower can move freely when levered.

B

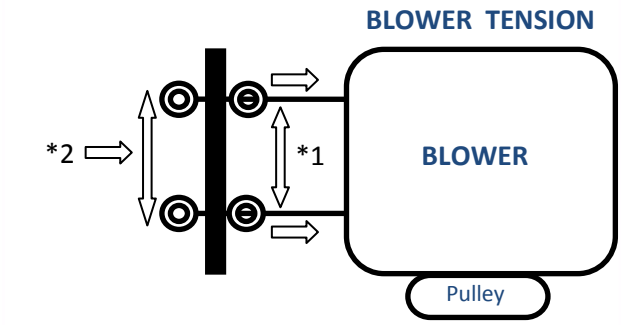
Next you will need to un-tighten the hose clamp on the blower exhaust to allow for movement.

C

Release these two lock nuts back towards the blower so that the blower has room to travel when adjusting.

D

Use these adjusting bolts to tension the blower belts or to release the blower for belt replacement. Refer to diagram below for adjustment. Re-Tension Belts with 5-10mm deflection.

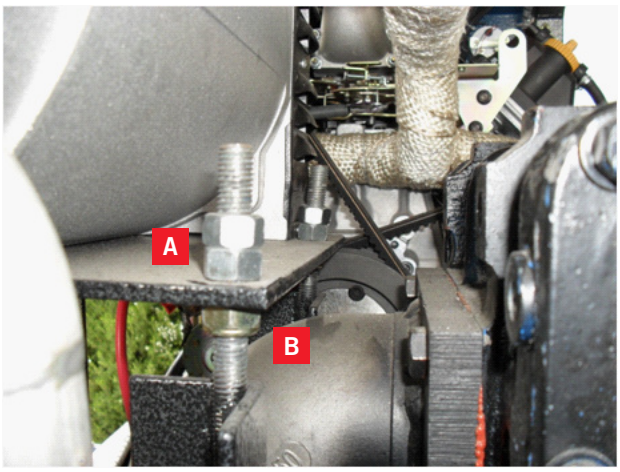


*1 - Back nuts off to allow Blower room to move.

*2 - Tighten nuts clockwise to tension blower belts. (Make sure when tensioning belts, blower feet should be at equal distance from edge of frame.

*3 - Re-tighten *1 nuts and lock back into place

Generator

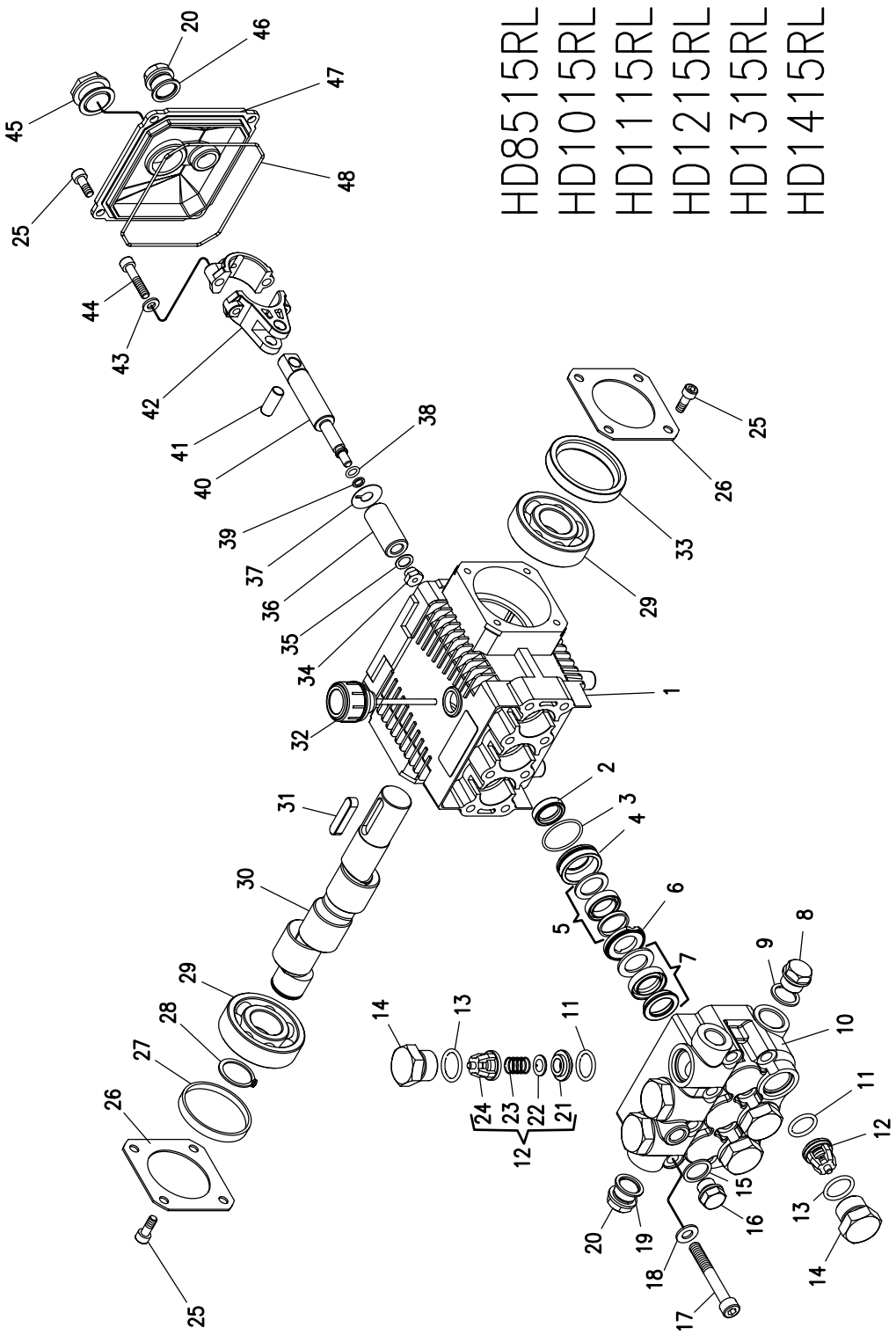


A

To tension or release the generator the first step is to release the lock nuts “A”. Release both nuts up on the thread to allow for travel room.

B

Next you need to use the Nylock nut “B” to tension the generator, if you tighten the nylock nut “B” it will raise the generator giving you more tension on the belt, if you un-tighten the nylock nut it will drop the generator and loosen of the belt. Once you have the desired position re-tighten lock nuts “A”. Re-Tension Belts with 10mm deflection.


HD8515RL
HD1015RL
HD1115RL
HD1215RL
HD1315RL
HD1415RL

Caratteristiche Tecniche

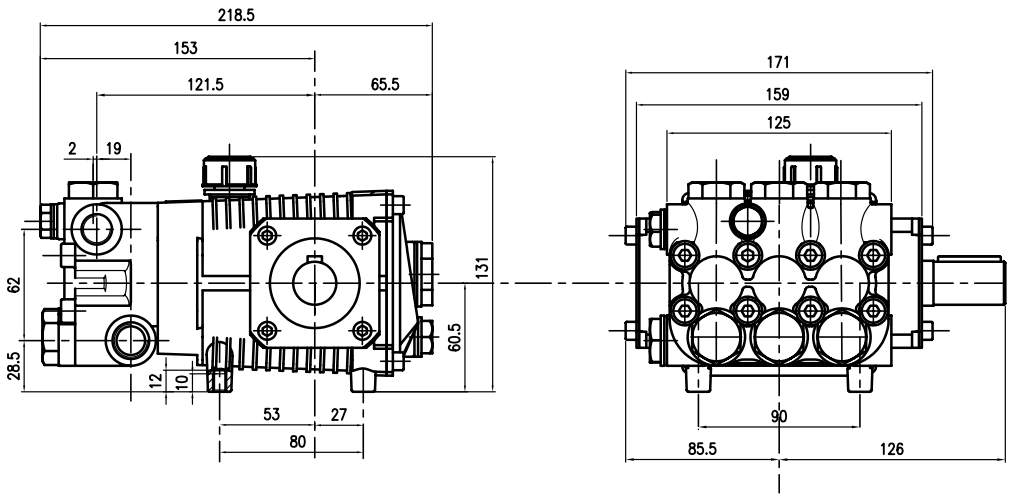
HAWK HD SERIES

Technical Characteristics

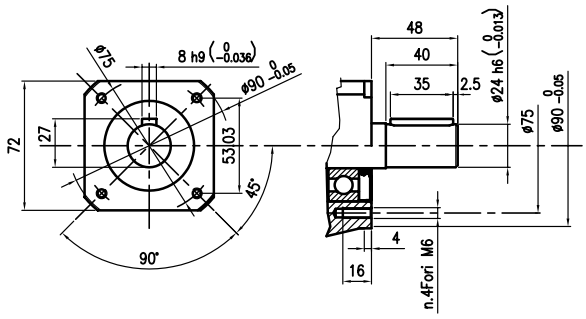
Pump Pompe Pumpen Pompa	Pressure Pression Druck Pressione		Volume Débit Leistung Portata		RPM tours/min u.p.m. giri/min	Required HP Puissance HP Leistung HP Potenza HP	Inlet port Entrée Eingang Aspirazione	Outlet Sortie Ausgang Mandata
	bar	PSI	l/min	GPM				
HD8515	150	2200	8.5	2.2	1450	3.2	G 1/2	G 3/8
HD1015	150	2200	10.0	2.6	1450	3.8	G 1/2	G 3/8
HD1115	150	2200	11.0	2.9	1450	4.4	G 1/2	G 3/8
HD1215	150	2200	12.0	3.1	1450	4.6	G 1/2	G 3/8
HD1315	150	2200	13.0	3.4	1450	4.9	G 1/2	G 3/8
HD1415	150	2200	14.0	3.7	1450	5.4	G 1/2	G 3/8

Dimensioni d' ingombro

Overall dimensions



HD8515–HD1015–HD1115–HD1215–HD1315–HD1415



Lubrificazione: Olio SAE 20/40W
Capacità 0.4 Litri

Lubrication: SAE 20/40W Oil
Capacity 0.4 Litri

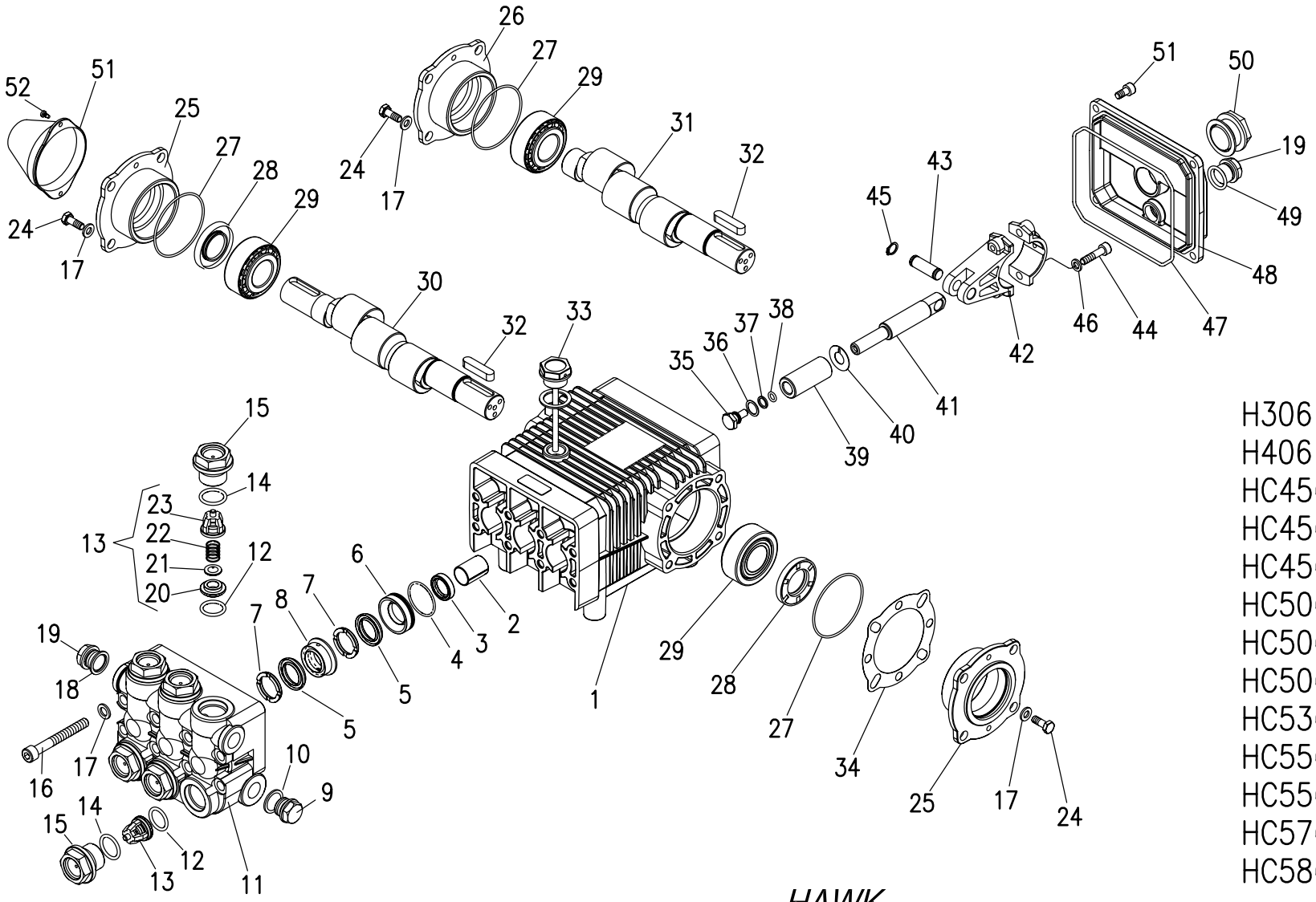
SPARE PARTS LIST **HAWK HD PUMPS SERIES** ***LISTA RICAMBI***

Pos. Item	*Codice* Part Number	Description	*Descrizione*	*Q.tà/Pompa* Q.ty/Pump	HD8515RL	HD1015RL	HD1115RL	HD1215RL	HD1315RL	HD1415RL
1	0202.92	Crankcase	*Carter*	1						
***2**	0001.05	Plunger oil seal	*Anello radiale*	3						
***3**	0601.81	"O" Ring Ø1.78x28,30	*"O" Ring Ø1.78x28,30*	3						
***4**	1201.41	Pressure ring 18mm	*Pressore Ø18*	3						
***5**	0002.51	"U" seal, dia.18mm	*Anello tenuta "U" Ø18*	3						
***6**	0300.63	Intermed. ring 18mm	*Diffusore Interm. Ø18*	3						
***7**	0002.50	"U" seal, dia.18mm	*Anello tenuta "U" Ø18*	3						
***8**	1601.20	Brass plug G1/2	*Tappo G1/2*	1						
***9**	0603.07	Copper washer 1/2	*Guarnizione rame G1/2*	1						
***10**	1602.28	Manifold housing	*Testata*	1						
***11**	0601.55	"O" Ring Ø1.78x15.54	*"O" Ring Ø1.78x15.54*	6						
***12**	3604.73	Valve assembly	*Valvola premontata*	6						
***13**	0601.22	"O" Ring Ø2.62x18.77	*"O" Ring Ø2.62x18.77*	6						
***14**	1601.47	Valve plug	*Tappo valvola*	6						
***15**	0603.08	Copper washer 1/4	*Guarnizione rame G1/4*	1	■	■	■	■	■	■
***16**	1601.21	Brass plug G1/4	*Tappo G1/4*	1						
17	1801.18	Manifold stud bolt	*Vite M8x60*	8						
18	1400.01	Washer	*Rosetta Ø8.5*	8						
***19**	0603.06	Copper washer 3/8	*Guarnizione rame G3/8*	1						
***20**	1601.17	Brass plug G3/8	*Tappo G3/8*	2						
21	1503.28	Valve seat	*Sede valvola*	6						
22	1202.00	Valve plate	*Piattello valvola*	6						
23	0900.30	Valve spring	*Molla valvola*	6						
24	0604.10	Valve cage	*Gabbia valvola*	6						
25	1801.12	Screw	*Vite M6x16*	12						
26	0203.18	Bearing cover	*Coperchio cuscinetto*	2						
27	0205.02	Bearing seal	*Cappellotto cuscinetto*	1						
28	1500.03	Snap ring	*Anello Ø25*	1						
29	0213.00	Ball bearing	*Cuscinetto a sfere*	2						
30	0006.05	Crankshaft	*Albero eccentrico*	1						■
	0006.06	Crankshaft	*Albero eccentrico*	1	■					
	0006.08	Crankshaft	*Albero eccentrico*	1		■				
	0006.10	Crankshaft	*Albero eccentrico*	1			■			
	0006.11	Crankshaft	*Albero eccentrico*	1				■		
	0006.12	Crankshaft	*Albero eccentrico*	1					■	
31	0206.04	Crankshaft key	*Chiavetta*	1						
32	1600.12	Oil dip stick	*Tappo livello olio*	1						
33	0001.10	Crankshaft seal	*Anello radiale*	1						
***34**	0302.11	Plunger nut	*Dado pistone*	3						
***35**	1400.06	Copper spacer	*Rosetta Ø 9,2/13,5x0,5*	3						
***36**	1200.22	Plunger 18mm	*Pistone Ø18*	3						
***37**	1400.27	Copper spacer	*Rosetta rame*	3						
***38**	0601.30	"O" Ring Ø1.78x5.28	*"O" Ring Ø1.78x5.28*	3						
***39**	0009.13	Teflon ring	*Anello antiestrusione*	3	■	■	■	■	■	■
***40**	0003.20	Plunger rod	*Asta pistone*	3						
***41**	1502.04	Connecting rod pin	*Spinotto*	3						
***42**	0100.08	Connecting rod	*Biella completa*	3						
***43**	1401.02	Spring washer	*Rosetta elastica Ø6*	6						
***44**	1801.32	Connecting rod screw	*Vite M6x30*	6						
45	0700.05	Sight glass	*Spia livello olio G3/4*	1						
46	0603.02	Gasket	*Guarnizione G3/8*	1						
47	0203.52	Crankcase cover	*Coperchio*	1						
48	0601.04	"O" Ring Ø2.62x107.62	*"O" Ring Ø2.62x107.62*	1						

	Part available in kit only / ***Particolare disponibile solo in kit***
*	**Part available in kit also** / ***Particolare disponibile anche in kit***

SPARE PARTS KIT — *KIT RICAMBI*

Posizioni *Item*	Part Number & Description	*Codice e Descrizione*	*Q.tà/Pompa* Q.ty/Pump	HD8515RL	HD1015RL	HD1115RL	HD1215RL	HD1315RL	HD1415RL
3- 5- 7	2600.44 Plunger Seals 18 mm	*2600.44* *Guarnizioni pistone Ø18*	1	■	■	■	■	■	■
3- 4- 5- 6- 7	2600.43 Complete seal Packing 18 mm	*2600.43* *Pacco completo* *Guarnizioni pistone Ø18*	3						
34- 36- 37- 38 39	2614.05 Plunger 18 mm	*2614.05* *Pistone Ø18*	3						
11- 12- 13	2600.28 Complete Valve	*2600.28* *Valvola completa*	1						
2	2608.26 Plunger oil Seals	*2608.26* *Anelli tenuta olio Asta*	1						
3- 4- 5- 6- 7- 8- 9 10- 11- 12- 13 14- 15- 16- 19 20	2612.39 Complete Manifold	*2612.39* *Testata completa*	1						
38- 39- 40- 41 42- 43- 44	3100.20 Conn.rod-plun.rod assy (HD)	*3100.20* *Premontato biella-asta HD*	3						



H306
H406
HC456
HC456I
HC456SI
HC506
HC506I
HC506SI
HC536
HC556
HC556I
HC576I
HC586

HAWK

Pompe MT–MTI serie 2008

MT–MTI pumps 2008 series

Caratteristiche Tecniche

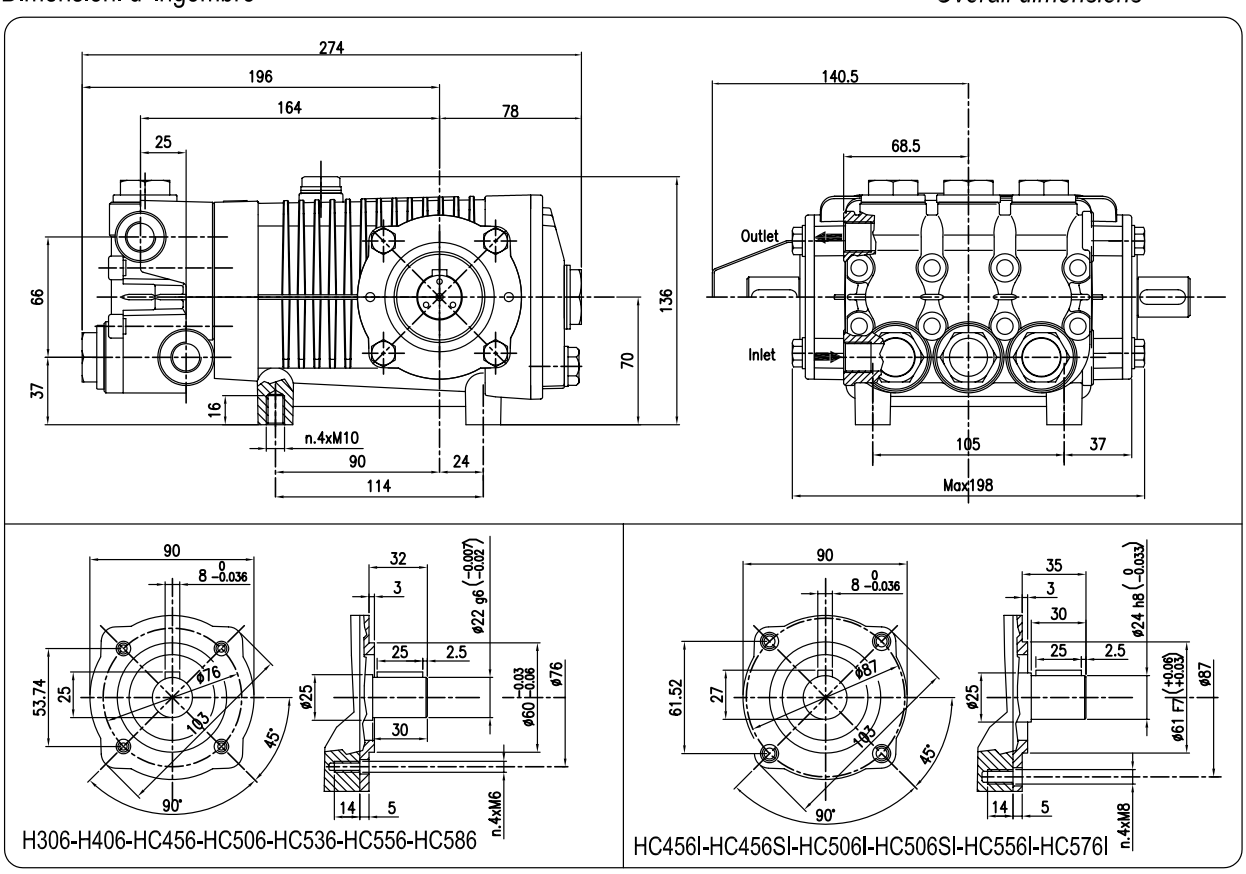
MT Serie 2008 Series

Technical Characteristics

Pump Pompe Pumpen Pompa	Pressure Pression Druck Pressione		Volume Débit Leistung Portata		RPM tours/min u.p.m. giri/min	Required HP Puissance HP Leistung HP Potenza HP	Inlet port Entrée Eingang Aspirazione	Outlet Sortie Ausgang Mandata	Weight Kg Poids Kg Gewicht Kg Peso Kg
	bar	PSI	l/min	GPM					
H306	200	3000	12.5		1000	6.4	G 3/8	G 3/8	10
				4.0	1200	7.7			
H406	200	3000	15.0		1000	7.7	G 3/8	G 3/8	10
				4.8	1200	9.2			
HC456–HC456I	200	3000	12.5		1450	6.4	G 3/8	G 3/8	10
				4.0	1725	7.7			
HC456SI	200	3000	12.5		1450	6.4	G 1/2	G 3/8	10
				4.0	1725	7.7			
HC506–HC506I	200	3000	15.0		1450	7.7	G 3/8	G 3/8	10
				4.7	1725	9.2			
HC506SI	200	3000	15.0		1450	7.7	G 1/2	G 3/8	10
				4.7	1725	9.2			
HC536	200	3000	16		1450	8.2	G 1/2	G 3/8	10
				5.0	1725	9.7			
HC556–HC556I	200	3000	18		1450	9.2	G 1/2	G 3/8	10
				5.6	1725	11.0			
HC576I	200	3000	21		1450	10.7	G 1/2	G 3/8	10
				6.5	1725	12.7			
HC586	200	3000	21.5		1450	11.0	G 1/2	G 3/8	10
				6.75	1725	13.1			

Dimensioni d' ingombro

Overall dimensions



Lubrificazione: Olio SAE 20/40W
Capacità 0.7 Litri

Lubrication: SAE 20/40W Oil
Capacity 0.7 Litri

PARTS LIST **MT pumps 2008 series**

Item	Part Number	Description	Q.ty by Pump	H306	H306RL	H406	H406RL	HC456	HC456RL	HC456IRL	HC456SIRL	HC506	HC506RL	HC506IRL	HC506SIRL	HC536RL	HC556	HC556IRL	HC576IRL	HC586RL
1	0202.31	Crankcase	1	◆	◆	◆	◆	◆	◆			◆	◆			◆	◆			◆
	0202.30	Crankcase	1							◆	◆			◆	◆			◆	◆	
2	0602.01	Plunger guide	3																	
***3**	0001.03	Plunger oil seal	3																	
***4**	0601.07	"O" Ring Ø1.78x31.47	3																	
***5**	0002.05	"V" seal, dia.20mm	6	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
***6**	1201.04	Pressure ring 20mm	3																	
***7**	0300.09	Support ring 20mm	6																	
***8**	0300.08	Intermed. ring 20mm	3																	
***9**	1601.17	Brass plug G3/8	1	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆						
	1601.20	Brass plug G1/2	1								◆				◆	◆	◆	◆	◆	◆
***10**	0603.06	Copper washer	1	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆						
	0603.07	Copper washer	1								◆				◆	◆	◆	◆	◆	◆
***11**	1602.04	Manifold housing	1	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆						
	1602.05	Manifold housing	1								◆				◆	◆	◆	◆	◆	◆
***12**	0601.19	"O" Ring Ø2.62x17.13	6																	
***13**	3604.70	Valve assembly	6																	
***14**	0601.65	"O" Ring Ø2.62x20.29	6	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
***15**	1601.30	Valve plug	6																	
16	1801.04	Manifold stud bolt	8																	
17	1400.01	Washer	→	8	8	8	8	8	8	16	16	8	8	16	16	8	8	16	16	8
	1400.02	Washer	8	◆	◆	◆	◆	◆	◆			◆	◆			◆	◆			◆
***18**	0603.06	Copper washer	1																	
***19**	1601.17	Brass plug G3/8	2																	
20	1503.18	Valve seat	6	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
21	1202.00	Valve plate	6																	
22	0900.30	Valve spring	6																	
23	0604.05	Valve cage	6																	
24	1802.07	Hexagonal screw	8	◆	◆	◆	◆	◆	◆			◆	◆			◆	◆			◆
	1801.19	Hexagonal screw	8							◆	◆			◆	◆			◆	◆	
25	0500.47	Bearing housing	→	2	1	2	1	2	1			2	1			1	2			1
	0500.60	Bearing housing								1	1			1	1			1	1	
26	0500.48	Closed bearing housing	1		◆		◆		◆				◆			◆				◆
	0500.61	Closed bearing housing	1							◆	◆			◆	◆			◆	◆	
27	0601.63	"O" Ring Ø1.78x60,05	2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
28	0001.02	Crankshaft seal	→	2	1	2	1	2	1	1	1	2	1	1	1	1	2	1	1	1
29	0200.06	Roller bearing	2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
30	0004.01	Double-ended shaft	1			◆														
	0004.04	" " "	1									◆								
	0004.07	" " "	1	◆													◆			
	0004.08	" " "	1					◆												
31	0004.06	Single - ended shaft	1										◆							
	0004.10	" " "	1						◆											
	0004.11	" " "	1				◆													◆
	0004.12	" " "	1		◆															
	0004.50	" " "	1															◆		
	0004.56	" " "	1							◆	◆									
	0004.57	" " "	1											◆	◆					
	0004.79	" " "	1													◆				
	0004.82	" " "	1																◆	
32	0206.00	Crankshaft key	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
33	1600.02	Oil dip stick	1																	

Item	Part Number	Description	Q.ty by Pump	H306	H306RL	H406	H406RL	HC456	HC456RL	HC456IRL	HC456SIRL	HC506	HC506RL	HC506IRL	HC506SIRL	HC536RL	HC556	HC556IRL	HC576IRL	HC586RL
34	0301.02	Shim	1																	
***35**	1800.01	Plunger bolt	3																	
***36**	1400.12	Copper spacer	3																	
***37**	0601.03	"O" Ring Ø1.78x7.66	3																	
***38**	0009.04	Teflon ring	3																	
***39**	1200.10	Plunger 20mm	3																	
***40**	1400.15	Copper spacer	3																	
41	0003.01	Plunger rod	3																	
42	0100.01	Connecting rod	3	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
43	1502.01	Connecting rod pin	3																	
44	1801.05	Connecting rod screw	6																	
45	1500.01	Snap ring	6																	
46	1401.02	Spring washer	6																	
47	0601.88	"O" Ring Ø2,62x126,67	1																	
48	0203.53	Crankcase cover	1																	
49	0601.14	"O" Ring Ø1.78x14	1																	
50	0700.05	Sight glass, G3/4	1																	
51	1801.12	Cover screw	4																	
52	0205.03	Shaft protector	1	◆		◆		◆				◆					◆			
53	1804.03	Shaft protector Screw	2	◆		◆		◆				◆					◆			

in kit only

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Part available in kit also

SPARE PARTS KIT

Included Positions	Part Number & Description	Q.ty by Pump	H306	H306RL	H406	H406RL	HC456	HC456RL	HC456IRL	HC456SIRL	HC506	HC506RL	HC506IRL	HC506SIRL	HC536RL	HC556	HC556IRL	HC576IRL	HC586RL
4- 5- 7	2608.01 Plunger Seals 20mm	1																	
3- 4- 5- 6- 7- 8	2608.00 Complete Seals Packing 20mm	3																	
35- 36- 37- 38 39- 40	2608.02 Plunger 20mm	3	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
12- 13- 14	2600.08 Complete Valve	6																	
3	2608.03 Plunger oil Seals	1																	
4- 5- 6- 7- 8- 9 10- 11- 12- 13 14- 15- 18- 19	2608.13 Complete Manifold	1	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆						
	2608.14 Complete Manifold	1								◆				◆	◆	◆	◆	◆	◆

TRUCKMOUNT FILTER MAINTENANCE

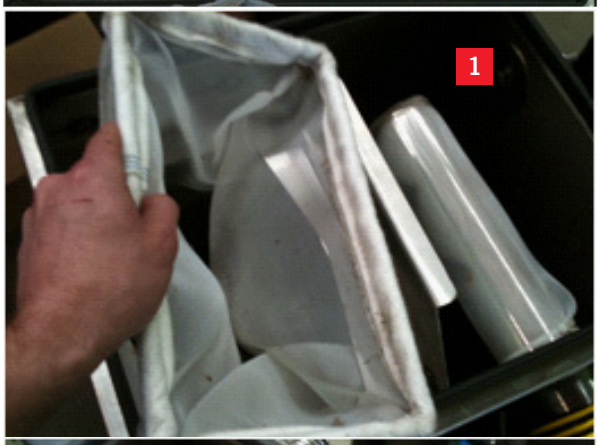
In order to ensure your Truckmount operates efficiently you must clean your waste tank filters on a regular basis. There are two filters in the waste tank.

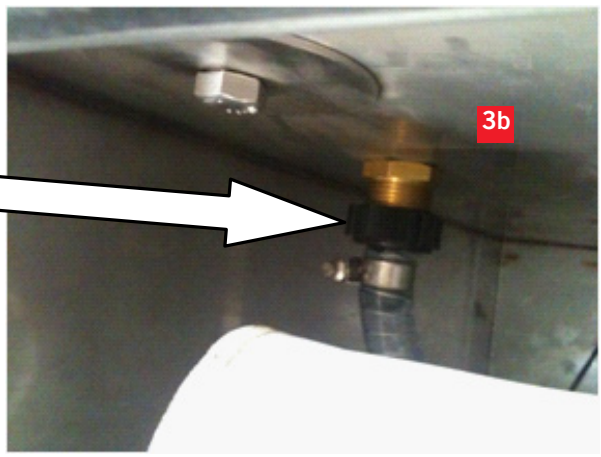
1 - Main Catch Filter
This is your main lint waste filter, you should clean this out after every days use.

2 - Blower Filter
This is your Blower filter, it is very important to keep this filter clean as it protects your blower entry from potential blockage or damage. If this filter is blocked or dirty you will notice a drop in vacuum recovery which will also put your engine under more load on start-up and operation, you should clean this out after every days use.

3 - Waste Pump Filter
To remove the waste filter you need to take the waste pump out. In order to do so you first need to unscrew the black fitting shown in diagram **"3b"** then you will be able to pull the entire waste pump assembly out and remove the filter bag to clean as well as rinse your waste pump.

Simply pull these filters out and clean them under a tap, after some use the filters will start to turn black, if you want to restore them to their original white appearance you may soak them in bleach and they will return to a white condition.





MAINTENANCE SCHEDULE

Pre Run Instructions
Ensure you are connected to water supply.

Connect all vacuum and solution hoses before starting unit.

Let machine run between 1800-2000rpm to warm up for 5 mins.

Engine oil and filter MUST be changed after first 50 hours of operation.

Set desired throttle speed and working pressure eg:
- Upholstery 150-200psi
- Carpets at around 500psi
- Tile and grout 500-1200psi
- Concrete 1200-2500psi

Daily
Engine-Check engine oil level. Fill to proper level.

Vacuum Pump-Spray WD-40 in lubrication cup at front of console for 5 seconds.

Water Pump-Check oil level. Fill to proper level.

Solution Inlet Tube Strainer-Check strainer for blockage, remove any debris.

Waste Tank Filter (in waste tank)- Clean filter, inspect, replace if damaged.

Vacuum Hoses- Wash out with clean water.

Automatic Waste Pump- Inspect and remove any debris or sediment.

Weekly
Vacuum Pump- Check oil level. Fill to proper level.

Water Pump Inlet Filter- Check for debris and clean.

Battery- Check for proper fluid level. Fill with distilled water only.

Engine- Check belt tightness.

100 Hours
High Pressure Hoses- Inspect for damage or impending damage.

Engine- Change oil filter.

Battery- Clean Battery terminal.

Engine- Service air cleaner elements

Engine- Check spark plugs for carbon deposits and proper gap.

200 Hours
Fuel Pump- Check hose connection.

500 Hours
Check and change belts if needed.

Replace pump oil.

Check blower oil.

IMPORTANT SAFETY INFORMATION

When using this machine, basic precautions must always be followed, including the following:
Read all instructions before using this machine

Read the operator's manual before installing or starting this unit. Failure to adhere to instructions could result in severe personal injury or could be fatal.

Operate this unit and equipment only in a well-ventilated area. Exhaust fumes contain carbon monoxide which is an odourless and deadly poison that can cause severe injury or fatality. DO NOT run this unit in an enclosed area. DO NOT operate this unit where the exhaust may enter any building doorway, window, vent, or opening of any type.

Unleaded petrol is extremely flammable and it's vapours can explode if ignited. Store unleaded petrol only in approved containers, in well-ventilated, unoccupied buildings away from sparks or flames. Never carry any unleaded petrol or flammable material in the vehicle. Fumes may accumulate inside the vehicle and ignite, causing an explosion.

DO NOT store any type of flammable material in the vehicle.

This unit must be operated with the vehicle or trailer doors open in order to ensure adequate engine ventilation.

DO NOT operate engine if unleaded petrol is spilled. Avoid creating any ignition until the unleaded petrol has been cleaned up. Never use unleaded petrol as a cleaning agent.

DO NOT place hands, feet, hair, or clothing near rotating or moving parts. Avoid any contact with moving parts! Rotating machinery can cause injury or fatality.

Never operate this unit without belt guards. The high speed moving parts, such as belts and pulley's, should be avoided while this unit is running. Severe injury, damage, or fatality may result.

DO NOT service this unit while it is running. The high-speed mechanical parts as well as high temperature components may result in severe injury or severed limbs.

DO NOT cut or slice any of the vehicle fuel lines during fuel line installation. This may result in fuel leaks and potentially dangerous conditions. There is no fuel solenoid shut off on this unit. Use only the provided abrasion resistant fuel hose for fuel lines. When traversing the vehicle floor with fuel lines, always use a bulkhead adapter. This will prevent leakage and ensure that the hose is not punctured by vehicle vibration abrasion.

DO NOT operate the unit without the water supply attached and turned on. The water pump and other vital components may be seriously damaged if this unit is permitted to operate dry without water.

DO NOT operate this unit without the filter installed in the waste tank. Keep your vehicle work area clean. Wands, stair tools, and other accessories must be securely fastened before driving the vehicle.

All high pressure hoses must be rated for 3000 PSI at 100ºC. Thermoplastic hoses do not meet these specifications and should not be used. Severe burns and injury may result if the hoses do not meet these requirements.

Make certain that you receive complete training by the distributor from whom you purchased this unit. This unit uses high pressure and temperature. Improper or irresponsible use may result in serious injury. Do not modify this unit in any manner. Improper or irresponsible use may result in serious injury or fatality.

Never touch electrical wires or components while the engine is running. They can be sources of electrical shock.

Engine components can get extremely hot from operation. To prevent severe burns, DO NOT touch these areas while the engine is running - or immediately after the engine is turned off.

DO NOT touch the exhaust system while this unit is running. Severe burns may result. Before servicing this unit, allow it to 'cool down'. This will prevent burns from occurring. Water under high pressure at high temperature can cause burns, severe personal injury, or fatality. Shut down machine, allow to cool down, and relieve system of all pressure before removing valves, plugs, fittings, filters and bolts.

Before disconnecting the negative (-) ground cable, make sure all switches are OFF. If ON, a spark will occur at the ground cable terminal which could cause an explosion if hydrogen gas or unleaded petrol vapours are present. When disconnecting the battery, ALWAYS disconnect the negative (-) terminal FIRST.

DO NOT smoke around the unit. Unleaded petrol fumes may accumulate and be ignited. The battery is also extremely flammable. This will prevent possible explosions.

DO NOT damage the vehicle in any manner during installation. When routing fuel lines DO NOT place the hose in any location where damage may occur to the hose or vehicle. Avoid any contact with moving parts, area of high temperature, brake lines, fuel lines, muffler, catalytic converter, or sharp objects.

Pre-Run Inspection

NOTE: Operation of this unit is simple. However, only trained personnel should proceed.

Operate this unit and equipment only in a well ventilated area. Exhaust fumes contain carbon monoxide which is an odourless and deadly poison that can cause severe injury or fatality. DO NOT operate this unit where the exhaust may enter any building doorway, window, vent, or opening of any type.

Check for Adequate Fuel

Check the fuel tank to be certain there is adequate fuel to complete the job.

Remove Tools From Vehicle

Remove any tools or hoses from the van which you will require.

Water Supply Connection

NOTE: Before connecting your water hose to the supply faucet, flush out the faucet until the water is free of any debris. Flush out any debris which may be in your water inlet hose.

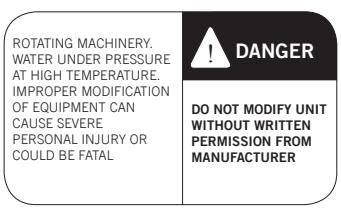
1. Connect the water supply hose to the water inlet quick-connect.

NOTE: Never use the waste pump outlet hose as a water inlet hose. Use only clean hoses for water inlet.

2. Turn the water supply faucet on. The water will fill the water box.

High Pressure Hoses

Before starting the unit, connect the pressure hose(s) to the outlet connection(s) at the front of the unit. Connect the cleaning tool(s) to the pressure hose(s).



Vacuum Hose

Connect the vacuum hose(s) to the vacuum inlet connection(s) at the front of the unit. Connect the other end of the vacuum hose(s) to the cleaning tool(s).

Shut Down & Daily Maintenance (Low Pressure)

1. Allow the unit to run for two minutes with the vacuum hose disconnected to remove moisture. Turn blower lube valve open for ten seconds. This will prevent corrosion due to moisture.
2. Set engine throttle at idle position and allow the water temperature to cool down, to bleed off residual hot water left in the system.
3. Turn off ignition switch
4. Disconnect all hoses and tools.
5. Drain waste tank.

5 YEAR CONDITIONAL WARRANTY

Steam Vac International Pty Ltd warrants the Sub Frame and Heat Exchanger against faulty workmanship or failure for a period of 5 years from date of purchase. Any defect must be notified to the Company in writing immediately and the equipment must not be used until such defect is rectified. The customer must wear all freight costs. This warranty shall not apply where the equipment has been abused or damaged by misuse or negligent handling, only structural or mechanical defaults.

Steam Vac International Pty Ltd warrants all items supplied by it to be free from defects in material or workmanship. In the event of a defect being disclosed in any item within 1 year of receipt by the customer, the Company will, if satisfied on it's examination that failure was due to defective material or workmanship, repair or replace the defective item, provided the purchaser gives the Company immediate written notice of such alleged defects. All accessories furnished by Steam Vac International Pty Ltd but manufactured by others, bears only that manufacturer's standard warranty. All defective items shall become the property of the company when replaced by the company. All freight costs must be worn by the customer.

Vacuum and Solution Hoses carry a 6 month warranty against faulty workmanship but kinks, cuts or damage caused by over heating of the solution hose shall be worn by the customer. This warranty shall not apply to any hose end connections. All freight costs must be worn by the customer.

CONDITIONS

1. No warranty on equipment or parts exposed to freezing temperatures, due to improper enclosed protection or improper heating.
2. No warranty on neglect of oil in Motor.
3. No warranty on neglect of oil in Pump.
4. No warranty on neglect of oil in Blower.
5. No warranty on abuse or damages to the Heating Exchanger.
6. This warranty does not extend to any item which in the judgement of the company shall have been repaired, altered, abused, neglected or used in any way so as to affect adversely it's stability or reliability.
7. It is agreed that in the event of breach of any warranty, liability of the seller shall be limited to repairing or replacing the non conforming goods.
8. The foregoing warranty is in lieu of and excludes all other warranties and conditions expressed or implied whether under common law, statute or otherwise, and every form of liability for loss or damage, direct or consequential, or for any accident resulting from defective material, faulty workmanship or otherwise is expressly excluded.
9. Items excluded by the warranty shall be normal service items that will need to be replaced from time to time eg. Belts, Bearings, Pump Seals etc.