FORKLIFT MAINTENANCE? CHECK!

FORKLIFT MAINTENANCE? CHECK!

PREPARATION AND CLEANING

SEE P8 FOR MORE EXPLANATION

- ☐ Protect yourself and wear appropriate clothing
- ☐ Look at the machine. Check for damage, leaks, etc.
- ☐ Clean up the operator's compartment
- ☐ Clean the machine with steam or compressed air
- ☐ Clean the safety symbols and decals
- ☐ Clean the electronics

THE ENGINE (ONLY FOR ENGINE-POWERED FORKLIFTS)

SEE P10 FOR MORE EXPLANATION

▶ Minor maintenance – every 250 hours of use

- ☐ Remove filler caps to release excess pressure
- ☐ Change the engine oil and oil filter
- ☐ Fill up your coolant
- ☐ Add antifreeze to your coolant if necessary
- ☐ Clean the engine cooling system
- ☐ Clean or change the air filter
- ☐ Inspect the drive or fan belt for damage and tension
- ☐ Check the fuses in the fuse box
- ☐ Check the hoses for any leaks
- ☐ Refuelling petrol and check for leaks
- ☐ Add AdBlue
- ☐ Bleed the fuel system
- ☐ Refuelling LPG and check for leaks
- ☐ Tighten the cylinder head bolts
- ☐ Adjust engine idle speed and ignition timing
- ☐ Check the meters and warning lights
- ☐ Listen to the engine for irregularities
- ☐ Check the colour of the exhaust gases

▶ Intermediate maintenance – every 500 hours of use

- ☐ Change the fuel filter or clean the LPG filter
- ☐ Check and adjust valve clearance if necessary
- ☐ Replace the spark plugs for gas and petrol machines
- ☐ Drain the water separator and clean the radiator
- ☐ Clean the radiator exterior and replace the fuel filter
- ☐ Make sure you replace the points, the condenser and the set timing

▶ Major maintenance – every 2,000 hours of use

- ☐ Replace the coolant
- ☐ Check and replace fuel filter, fuel strainer element and water separator
- ☐ Replace the distribution belt and other seals such as the gasket seal
- ☐ Clean or replace the interior ventilation filter
- ☐ Torque the engine head bolts and manifold nuts

THE BATTERY OF AN ENGINE-POWERED FORKLIFT

SEE P15 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- ☐ Is the battery clean? Are the connectors damaged, burned or oxidised?

ELECTRIC MOTORS: TRACTION AND PUMP MOTORS (ONLY FOR ELECTRIC FORKLIFTS)

SEE P16 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- ☐ Listen to the motor for irregularities
- ☐ Check the brushes and springs
- ☐ Check the thickness and surface of the commutator

Major maintenance – every 2,000 hours of use

- ☐ Adjust the motor current
- ☐ Check the clearance of the bearings
- ☐ Are the power cables and connectors still in good condition?

SEE P17 FOR MORE EXPLANATION

THE BATTERY AND CHARGER OF AN ELECTRIC FORKLIFT

Weekly maintenance tasks

- ☐ Clean the battery
- ☐ After charging, top up the cells with demineralised water
- ☐ Check the electrolyte levels
- ☐ Perform an equalisation charge

Minor maintenance – every 250 hours of use

The battery

- ☐ Replace the battery if damaged
- ☐ Check the temperature of the connections
- ☐ Tighten loose battery bolts
- ☐ Maintain oxidised battery bolts
- ☐ Check the connectors and cables for damage, burning or corrosion
- ☐ Clean the top of the battery housing
- ☐ Measure the gravity of the electrolyte
- ☐ Secure the hood latch
- ☐ Wash your hands

The charger

- ☐ Inspect cables, micro-switches and connectors for wear and damage
- ☐ Inspect AC and DC fuses
- ☐ Clean and ventilate charger cabinet
- ☐ Blow out circuit boards with high pressure air

Intermediate maintenance – every 500 hours of use

These tasks should be performed every 3 to 6 months.

- ☐ Clean the battery thoroughly with a steamer and dust off the interior of the charger and all power connections

TYRES

SEE P20 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Is there any damage to the tyres or deformation of the wheels?
- [ ] Increase the tyre pressure of your pneumatic tyres
- [ ] Inspect the treads for excessive tread wear
- [ ] Tighten wheel and hub nuts properly and evenly

Major maintenance – every 2,000 hours of use

- [ ] Replace the wheel bearing grease

MAST & FORKS

SEE P22 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Tighten loose nuts and bolts
- [ ] Clean the mast and lubricate if necessary
- [ ] Lubricate all lubrication points of the frame via the lubrication nipples
- [ ] Visually check the mast and load protector for deformation
- [ ] Check the operation of the mast by using the lifting and tilting levers
- [ ] Check the attachment of the shock absorber
- [ ] Lubricate the chain

Intermediate maintenance – every 500 hours of use

- [ ] Check the mast chains and pulleys for wear
- [ ] Check the chain tension
- [ ] Check the clearance of the chain when the fork carriage has reached its maximum free lift height

Major maintenance – every 2,000 hours of use

- [ ] Inspect the wear, cracks and thickness of the forks (and especially their fixing on the carriage)

THE CHASSIS

SEE P24 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Tighten loose nuts and bolts
- [ ] Lubricate all lubrication points of the drive and steering wheels and the lubrication nipples
- [ ] Check the level of transmission and differential oil
- [ ] Check the steering and transmission
- [ ] Replace the transmission filter
- [ ] Check if any of the warning lights are showing

Major maintenance – every 2,000 hours of use

- [ ] Check the suspension rubber for hardening
- [ ] Replace the transmission filter and oil

THE HYDRAULICS

SEE P26 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Check the hoses for leaks
- [ ] Check the hydraulics for leaks and replace seals if necessary
- [ ] Check the level and cleanliness of the hydraulic oil. Add oil if necessary

Intermediate maintenance – every 500 hours of use

- [ ] Inspect the tilt and lift cylinders visually
- [ ] Inspect the hydraulic pump for leaks
- [ ] Replace the hydraulic filter

Major maintenance – every 2,000 hours of use

- [ ] Are all fittings and couplings still firmly attached?
- [ ] Does the pump have enough pressure?
- [ ] Change the hydraulic oil

THE BRAKES

SEE P28 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Check if the brake pedal and handbrake work and return properly
- [ ] Top up the brake fluid
- [ ] Blow out brake dust and clean the brakes

Intermediate maintenance – every 500 hours of use

- [ ] Check the brake pedal and hand brake
- [ ] Are the pipes, rods, cables, wheel brake cylinders (brake booster) and the main brake pump operating properly?

Major maintenance – every 2,000 hours of use

- [ ] Change the brake fluid
- [ ] Check the brake pads and brake drums for wear

LIGHTS, SEAT BELT AND OTHER ACCESSORIES

SEE P29 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Are all the lights functioning as they should be?
- [ ] Check the horn and back-up alarm
- [ ] Does the key switch shows any abnormalities?
- [ ] Inspect the seat belt

Major maintenance – every 2,000 hours of use

- [ ] Refill the A/C station

PAINTING & DECALS

SEE P30 FOR MORE EXPLANATION

Minor maintenance – every 250 hours of use

- [ ] Ensure all decals are in the right place, visible and legible

Major maintenance – every 2,000 hours of use

- [ ] Repaint your machine

FORKLIFT MAINTENANCE? CHECK!

You want your forklift operating in optimum condition for as long as possible. This means it's important to **maintain all parts frequently and thoroughly**.

Stop the engine and remove the key from the ignition, put the inhibitor switch in the off position and unbuckle your seat belt—it's time to introduce you to the ultimate forklift maintenance checklist!

In this guide, you'll also find tables containing the workshop supplies and safety equipment you'll need to perform your forklift maintenance. Don't see what you need? Check the TVH catalogue—you'll find there are many more products available.

ALL YOUR MAINTENANCE NEEDS ON A SINGLE HANDY CHECKLIST

New forklifts need to be serviced every **250 hours of use** (minor maintenance). Safety checks should be done every **3–6 months or every 500 hours of use** (intermediate maintenance), and after **2,000 hours of use, or at the latest 1 year after previous maintenance**, it's time for major maintenance.

All minor maintenance tasks are **repeated** during intermediate maintenance, and major maintenance includes them all again. You can use this forklift inspection checklist to manage the maintenance schedule for **electric as well as engine-powered forklifts**. If you are servicing an electric forklift, the maintenance intervals vary because there are fewer moving parts.

We can assure you that **regular servicing saves you time and money** in the long run. Routine servicing reduces breakdowns and damage, and results in fewer safety issues. Be aware, these are general guidelines, always take into account the manufacturer's guidelines in the service manual of your machine.

All maintenance tasks in this checklist are divided according to the main forklift parts:


Preparation and cleaning


The engine (only for engine-powered forklifts)


The battery of an engine-powered forklift


Electric motors: traction and pump motors (only for electric forklifts)


The battery and charger of an electric forklift


Tyres


Mast & forks


The chassis


The hydraulics


The brakes


Lights, seat belt and other accessories


Painting & decals

PREPARATION AND CLEANING

☐ *First things first, you need to **protect yourself. Wear appropriate clothing.** Make sure you have the right PPE gear to use—read the article '7 types of personal protective equipment (PPE) to guarantee your safety'. Do you use a scissor lift? Always use a falling harness.*

Bump cap

REF 140TA8679

Safety spectacles

REF 165TA3781

Honeywell

Earplugs

REF 143TA7080

Honeywell

Disposable dust mask

REF 143TA7039

Honeywell

WorkEasy gloves - Size: 10

REF 143TA6977

Honeywell

Safety shoes - Size EU: 43 - Size UK: 8 ½

REF 165TA9746

Beta

Beta Utensili S.p.A. Authorized Dealer

Yellow high-visibility safety jacket - Size: XL

REF 123TA5548

Fall protection kit - Size: M/L

REF 165TA9747

MILLER

by Honeywell

☐ *Now take some time to **look at your machine** closely. Is there any **structural damage** to the forklift? Are there cracks, bursting, rust or cracked welds in the body? Or has any fuel, oil, coolants, or battery acid leaked? Are the cabin and the counterweight attached correctly? Replace broken parts.*

Weld crack detection set - 3 x 500 ml

REF 107TA7472

CRC

Set thread taps - M3-M20

REF 142TA7893

RUKO

Angle grinder

REF 165TA4766

DEWALT

Sanding disc - 125 x 22

REF 165TA9749

KLINGSPOR

Universal body filler - 1815 g

REF 165TA9748

TEROSON

Rechargeable led worklight

REF 164TA9699

☐ *Ensure the **operator's compartment is clean** and free of debris.*

Document case - A4

REF 126TA6065

Multi-organiser

REF 151TA3834

☐ *Next, carefully cover any components of the forklift that are sensitive to moisture, then **clean the machine with steam or compressed air** (max 205 kPa). Do not use flammable liquids.*

Hose reel for air or water - 10 m

REF 131TA6994

ZECA

Blowgun - Airpress - 25 cm

REF 165TA9842

Dust free 360 - 250 ml - 420 kPa

REF 165TA1239

CRC

☐ ***Safety symbols and decals** should be cleaned using a damp cloth and a mild soap solution.*

Premium quality hand soap - 3 l

REF 139TA2787

TOTAL SOURCE

Rags - 10 kg

REF 165TA3794

White cleaning tissue - 2 rolls

REF 106TA6744

TOTAL SOURCE

☐ ***Remove dust from the electronics**. Never use water to clean electronics! Clean them with an air-pressure system electronics cleaner.*

QD-contact Cleaner - 500 ml

REF 165TA1235

CRC

Dust Cleaner - 400 ml

REF 165TA2340

CRC

Compressor H 260-10 - Airpress

REF 165TA9845

Hose reel for air or water - 10 m

REF 131TA6994

ZECA

Blowgun - Airpress - 25 cm

REF 165TA9842

THE ENGINE (ONLY FOR ENGINE-POWERED FORKLIFTS)

The engine is one of the most expensive parts of your forklift. Regular maintenance will keep it running smoothly for longer. This guide explains how to maintain your forklift's engine, with different maintenance tasks scheduled after 250 hours of use, 500 hours of use and 2,000 hours of use. We've also included some handy items from our catalogue, so you can be sure to have all the workshop supplies you need to perform your forklift maintenance.

▶ Minor maintenance – every 250 hours of use

☐ ***Remove filler caps*** *(coolant, oil or fuel tank) carefully—watch out for the excess hot pressure that will be released.*

☐ ***Change the engine oil and the oil filter.*** *Keeping fluid at the right levels keeps the engine healthy. It's important to make sure you have the correct oil for your machine.*

1. Drain the oil.
2. It's best to check the oil level before starting the engine. If you check it when the engine is warm, wait three minutes after turning the engine off.
3. Top up the oil if the level has fallen below the 'LOW' mark. Add oil until the level reaches the 'FULL' mark.

Are you searching for a specific engine oil for your machine?
Contact your TVH sales department. Submit the make and type of your machine or the brand and type of oil you currently use. Our technically trained staff will help you find what you are looking for.

TOTAL

☐ ***Now fill up the coolant.*** *Always allow the engine to cool before you inspect the coolant level. You only need to top it up if the level has fallen below the 'LOW' mark. Top up until the level reaches the 'FULL' mark. If the engine coolant tank is empty, be sure to check the coolant level in the radiator. If you use LLC (Long Life Coolant), you need to replace it every two years. Depending on the temperatures your forklift is subjected to, you may need to add a larger amount of* ***antifreeze****.*

1. Remove the radiator cap. Watch out for the hot pressure that will be released. Loosen the drain tap of the radiator and the cylinder block. Drain the coolant.
2. Rinse the radiator and cylinder block with clean water and allow them to empty completely. In the meantime, also check the rubber seal for the drain tap.
3. Tighten the drain tap of the radiator and the cylinder block.
4. Pour the required quantity of coolant into the radiator filler opening and fill with pure water.

Check the dilution ratio to see how much antifreeze to use:

Classic - G11		**With corrosion inhibitors - G12+**	
Quantity of antifreeze	Protects in temperatures as low as	Quantity of antifreeze	Protects in temperatures as low as
20%	- 10 °C	33%	- 20 °C
30%	- 15 °C	40%	- 26 °C
50%	- 36 °C	50%	- 37 °C
		68%	- 69 °C

Ready-to-use classic coolant - G11 - 5 l

REF 107TA1691

TOTAL SOURCE

Ready-to-use coolant with corrosion inhibitors - G12+ - 5 l

REF 139TA5995

TOTAL SOURCE

Antifreeze classic - G11 - 10 l

REF 107TA1692

TOTAL SOURCE

Antifreeze with corrosion inhibitors - G12+ - 10 l

REF 140TA9059

TOTAL SOURCE

Tester case: 3 testers for antifreeze or battery acid

REF 107TA1689

Adjustable oil filter wrench

REF 125TA6872

Beta

Beta Utensili S.p.A. Authorized Dealer

☐ *Next, **clean the engine cooling system**. Use compressed air to remove dust and debris from the radiator core. Work carefully—you don't want to damage the radiator fins.*

☐ ***Check the air filter**—always follow the service instructions supplied by the engine's manufacturer. Only replace the filter when the restriction level has reached the maximum recommended by the engine or equipment manufacturer. When replacing of the filter is needed, always replace both inner and outer air filter. You also need to inspect the entire air-cleaning system. Make sure that inlet and outlet connections are in good condition, replace rubber connectors if necessary, and reset the service inhibitor. There is also a filter for the ventilation in the cabin, replacing this filter is only necessary during major maintenance.*

☐ ***Inspect the fan belt** (also called the drive belt) for cracks or splits and visually check the pulleys. If the belt is damaged, it needs to be replaced immediately. You can check the tension of the belt by pushing against it. The tension is set correctly if you can twist the belt 45° and not more.*

☐ ***Check the fuses in the fuse box.** If no light comes on, and an electrical part of the forklift does not work, the fuse may have blown. Replace it. Use a fuse with the same current rating as the fuse that has blown.*

Oil spill kit - 20 l

REF 165TA1315

☐ ***Check the water pump and hoses for leaks.** This is very important, but people often forget this crucial step. If leaks occur, reparation is required.*

☐ ***Refuel the forklift.** Stop the engine before refuelling. Only refuel at specially designated locations, preferably in the open air or in a well-ventilated area. Do not fill the tank to the ridge. Fuel expands when it's warm. A tank that is too full can overflow, so you need to pay attention.*

1. Remove the filler cap.
2. Select the correct fuel (see symbol) and fill the tank slowly.
3. Close the tank again with the filler cap.
4. Inspect the spark plugs and its cables, the distributor point, cap and rotor.

A fuel leak can cause an explosion or fire. If you smell fuel, you must immediately check whether there is a leak in the tank, the filler cap, the filler opening or the drain plug. Fuel leaks are dangerous, so never try to repair this yourself. It is also important to use high-quality fuel for modern engines, especially for common-rail engines.

☐ *For modern engines: **add AdBlue to the AdBlue tank**, to make your emissions cleaner. Be careful: AdBlue crystallises on contact with oxygen. It's ideal to add the entire bottle to the tank in one go.*

AdBlue - 10 l

REF 165TA2827

TOTAL

Rotary pump for AdBlue

REF 165TA9750

PRESSOL

☐ ***Bleed the fuel system.** Open the bonnet and use the vent pump to bleed the fuel system while the fuel tank is empty, or the system is being maintained. This maintenance must only be performed by specially trained people.*

☐ ***Ensure the LPG is full.** To change gas bottles: close the LPG bottles, close the safety valve tightly, and always fit the protective caps during storage and when transporting LPG bottles. Only allow trained staff to work on your LPG tank. Maintenance on an LPG tank should be performed in the open air or in a well-ventilated area. Wear the appropriate PPE, covering the arms and hands in particular. If you are using a bulk gas supply, then only use bottles recommended by your gas supplier. All filling must be done in accordance with your gas supplier's instructions and procedures.*

- Make sure the propane tank is properly mounted and secured.
- Check for any leaks or damage to the tank—look for white frost or a funky smell. You might also hear a hissing noise if there's a leak. There are 2 possible solutions: the connection is loose and has to be tightened or the seal has to be replaced.
- The pressure relief valve should be pointing up—this ensures the tank is properly aligned with the truck; it prevents spraying accidents and also makes sure most of the LPG gets used up.

Chemical protection gloves - Size: 10

REF 143TA7024

Honeywell

Work jacket - Size: L

REF 140TA4389

Beta

Beta Utensili S.p.A. Authorized Dealer

☐ ***Tighten the cylinder head bolts.** For instructions, check the service manual for your machine and the engine make.*

Set of 9 combination wrenches - 8-19 mm

REF 143TA3825

Beta

Beta Utensili S.p.A. Authorized Dealer

Set of 7 double open end wrenches 6x7 - 18x19 mm

REF 127TA4180

Beta

Beta Utensili S.p.A. Authorized Dealer

13 hexagon sockets and 5 accessories

REF 127TA6963

Beta

Beta Utensili S.p.A. Authorized Dealer

- ☐ ***Adjust the engine idle speed and ignition timing.*** *Follow the recommendations for your machine.*

- ☐ ***Check the meters and warning lights*** *to make sure they're all working properly. When starting the engine all lights go on, after a few seconds all lights should go off. If some lights are still working, have a look at the service manual of your machine.*

- ☐ *You also need to* ***check if the engine is making abnormal noises*** *or vibrating abnormally. This check should be performed after the engine has warmed up. If abnormalities occur, further inspection is required. Do not hesitate to contact a professional repair service.*

- ☐ ***Check the colour of the exhaust gases.*** *They should be grey, not black or white. If they are black or white, again further inspection by a professional repair service is needed.*

▶ Intermediate maintenance – every 500 hours of use

- ☐ ***Repeat*** *all minor maintenance tasks.*

- ☐ ***Change*** ***the fuel filter.*** *If you use diesel, also replace the prefilter, or if you use LPG, replace the LPG filter.*

- ☐ ***Check valve clearance*** *and adjust if necessary. This is another important task people often forget to check. This should be done after tightening the cylinder head bolts.*

- ☐ ***Replace the spark plugs for gas and petrol machines.*** *Check that the spark plugs are working. You should also check the rubber cables for cracks. And for older machines, check the rotary cap for damage and make sure it isn't showing condensation. If there is, replace the rotary cap.*

- ☐ ***Drain the water separator in diesel trucks and clean the radiator.***

- ☐ ***Clean the radiator exterior and replace the fuel filter.***

- ☐ *Make sure you also* ***replace the points, the condenser, and the set timing.***

▶ Major maintenance – every 2,000 hours of use

- ☐ ***Repeat*** *all minor and intermediate maintenance tasks.*

- ☐ ***Replace the coolant:*** *drain the radiator and fill up with the right coolant that you also used during the minor maintenance.*

- ☐ ***Check and replace the fuel filter,*** *fuel strainer element and the water separator for diesel trucks.*

- ☐ ***Replace the distribution belt,*** *the tensioner and other seals such as the crankshaft seal. Tip: write down the date when the belt has been replaced so you'll have a record.*

☐ ***Clean or replace the interior ventilation filter.***

☐ ***Torque the engine head bolts and manifold nuts.*** *Particularly for older engines, check the machine's service manual to see how much these should be tightened.*

Torque wrench - 20-100Nm ½'

REF 165TA9788

Beta

*Make sure you always **use new lashing straps**, and other small materials, when installing a new engine.*

Toolbox - 145 pieces

REF 164TA6003

Beta

Screwdriver bits set - 31 pieces

REF 142TA2145

Beta

Webbing sling - 2 tonnes, 1 m

REF 134TA8289

Maintenance spray kit - 4 x 500 ml: high-speed chain oil, white lithium grease, 5-56+ PTFE and industrial degreaser

REF 165TA1254

CRC

Safety knife - Secumax 350

REF 165TA7458

martor

THE BATTERY OF AN ENGINE-POWERED FORKLIFT

The starter battery in your engine-powered forklift should be checked when doing minor maintenance, **every 250 hours of use**. In principle, there is no need to charge a starting battery. However, if the starting battery goes flat, this indicates a fault with the alternator or electric circuit.

☐ ***Is the battery clean?*** *Are the connectors damaged, burned or oxidised? And is the battery fixed in place correctly? Clean the battery connectors and pins. After putting the connectors back in place, make sure they are tightened.*

Battery brush (to be fitted on a drill)

REF 152TA2060

Battery cleaner spray with acid indicator - 400 ml

REF 107TA7662

TOTAL SOURCE®

Manual pole and battery bolt reamer

REF 145TA2211

ELECTRIC MOTORS: TRACTION AND PUMP MOTORS
(ONLY FOR ELECTRIC FORKLIFTS)

Electric motors that power electric forklifts also need to be looked after. For AC motors, you only need to check the power cables during major maintenance. For DC motors, follow this maintenance schedule:

▶ Minor maintenance – every 250 hours of use

- ☐ ***Listen to the motor.*** *If the motor sounds odd, it could indicate that the bearings are damaged. Do you see sparks? This can mean the carbon brushes have a defect. If this is the case, reparation by a professional repair service is necessary.*

- ☐ ***Check the brushes and springs.*** *Replace them if necessary and blow out the carbon dust.*

- ☐ ***Check the thickness of the commutator*** *and check the surface for any abnormalities on the segments. Is there any change of colour or does anything look odd? Is the wear even across the surface? Contact a professional repair service to look into it.*

▶ Major maintenance – every 2,000 hours of use

- ☐ ***Adjust the motor current.*** *Have a look in the machine's service manual to know how.*

- ☐ *Disassemble the motor and* ***check the clearance of the bearings****. Replace if necessary.*

- ☐ ***Are the power cables still in good condition?*** *Are the connectors in good condition? Make sure no parts have burned or been melted. If so, replace the items.*

THE BATTERY AND CHARGER OF AN ELECTRIC FORKLIFT

The batteries and chargers in electric forklifts need to be kept in top condition to keep your machine running. This section of the forklift maintenance checklist includes tasks that should be carried out on a weekly basis—and a quick reference to the workshop supplies you'll need for these tasks.

▸ Weekly maintenance tasks

Charge the battery first, then disconnect it from the truck before carrying out maintenance.

☐ ***A battery should always be clean!*** *Clean it with a specialised battery cleaner that neutralises the acid. Also, check the battery cases for residues and corrosion, and clean if necessary.*

Battery cleaner spray with acid indicator - 400 ml

REF 107TA7662

TOTAL SOURCE

Rubber gloves - Size: L

REF 140TA2063

Apron

REF 165TA9769

Safety goggles

REF 143TA7061

Honeywell

Rags - 10 kg

REF 165TA3794

☐ ***Top up the cells with demineralised water*** *as necessary.*

Demineralised water - 25 l

REF 106TA8676

Hydrofill: filling system

REF 164TA7951

Hydropure: deionizer system

REF 127TA3874

ENERGIC Plus

Battery filler can - 2 l

REF 131TA6367

ZECA

Water reservoir - 20 l

REF 106TA8937

☐ ***Check the electrolyte levels.*** *Your safety is important, so always wear PPE when checking electrolytes. Electrolytes allow energy to flow between the forklift and battery. If they aren't at the right levels, your forklift's performance will suffer (or it just won't run).*

Face shield

REF 143TA7065

Honeywell

Tester case

REF 107TA1689

Battery service box

REF 139TA3242

Beta Beta Utensili S.p.A. Authorized Dealer TOTAL SOURCE

AQ steam

REF 115TA4701

ENERGIC Plus

Digital density meter

REF 164TA9799

Battery acid tester

REF 152TA2209

☐ ***Perform an equalisation charge**, leaving sufficient cooling time.*

▶ Minor maintenance – every 250 hours of use

Keep your electric battery in shape by performing these tasks once a month. Make sure you give your batteries a thorough and detailed examination each time.

☐ ***Is the battery damaged?** Check the case for cracks and also look for bare cables, leakages and split insulation.*

☐ ***Check the temperature of the connections** with a thermal imager. If you find a problem, perform the necessary maintenance and repairs.*

☐ ***Tighten any loose battery bolts.** Typically a torque of 25 Nm is recommended.*

☐ ***Look for signs of corrosion on the bolts.** Maintain oxidised battery bolts as follows:*

1. If white powder forms on the bolts – Clean using rags and a battery cleaner, then spray and lubricate the bolts with Vaseline.
2. If the bolts are rusted – Brush off the rust with a wire brush or sandpaper. Connect the bolts properly and lubricate them with Vaseline. When disconnecting, remove the negative (-) bolt first. When reconnecting, replace the positive (+) bolt first.

Battery grease - 20 ml

REF 106TA8991

Battery brush (to be fitted on a drill)

REF 152TA2060

Battery cleaner spray with acid indicator - 400 ml

REF 107TA7662

TOTAL SOURCE

½" Digital Torque Adapter

REF 165TA9798

FORCE PROFESSIONAL TOOLS

Thermal imager

REF 165TA9840

FLUKE

- ☐ ***Check the connectors and cables for damage, burning or corrosion.*** *If necessary, clean them. When putting the connectors back, make sure they are tightened with the torque recommended in the service manual.*

- ☐ ***Clean the top of the battery housing*** *with an acid-neutralising degreaser.*

- ☐ ***Measure the specific gravity of the electrolyte*** *with a hydrometer. If the relative gravity differs from one cell to the other, your battery may require equalisation charging.*

- ☐ ***The hood latch should be secure****—you don't want the hood to fly open and cause an accident. It's important to keep the hood secured to prevent debris/damage to the engine and all the other parts.*

- ☐ *Don't forget to throw your gloves into the trash after carrying out the maintenance on your battery and* ***wash your hands*** *because the battery acid is very harmful.*

Universal protect cream - 250 ml

REF 144TA8810

DREUMEX

Hand cleaner Special - 2.8 kg

REF 144TA8802

DREUMEX

Reconditioning cream - 250 ml

REF 144TA8807

DREUMEX

You must also maintain the charger:

- ☐ ***Inspect cables, micro-switches and connectors for wear and damage.*** *Make sure no cables are frayed. Replace them if necessary.*

Contact cleaner - 400 ml

REF 144TA6119

TOTAL SOURCE

- ☐ ***Inspect the AC and DC fuses.*** *Replace them if necessary.*

- ☐ ***Clean and ventilate the charger cabinet.***

- ☐ ***Blow out circuit boards with high pressure air to remove dust.***

▶ Intermediate maintenance – every 500 hours of use

Perform these maintenance tasks every 3 to 6 months to keep your electric forklift functioning at its best.

- ☐ ***Clean the battery thoroughly.*** *This should be done manually or using a steam cleaner and a neutralising/ degreasing agent. When you clean your battery frequently, you prevent corrosion that is caused by evaporated acid. Also, dust off the interior of the charger and all power connections. Don't allow the charger to get wet.*

For more information about battery maintenance, check out this 'Professional battery maintenance and reconditioning' brochure.

TYRES

▶ Minor maintenance – every 250 hours of use

☐ ***Is there any damage to the tyres or have the wheels become deformed?*** *For your safety, replace damaged pneumatic tyres immediately. It's very dangerous to drive with damaged tyres, especially when carrying heavy loads.*

Universal lift truck jack - 4 t

REF 107TA8185

☐ ***Check the tyre pressure of your pneumatic tyres*** *and make sure to refill it at the correct pressure (see table below). Underinflated tyres increase the risk of your forklift toppling over, while overinflated tyres are stiff and have less resistance to hits. Check the valves for leaks. If there are leaks, replace the valve.*

Tyre pressure table *			
		Inflation pressure	
Tyre size	PR (ply rating)	Bar	PSI
4.00-8	8	9	131
	10	10	145
5.00-8	8	8,25	120
	10	10	145
18x7-8	14	9	131
	16	10	145
6.00-9	10	8,5	123
	12	10	145
21x8-9	14	9	131
	16	10	145
6.50-10	10	8	116
	12	9	131
23x9-10	16	8	116
	18	9	131
7.00-12	12	8,5	123
	14	9	131
23x10-12	12	7	102
27x10-12	14	7	102
8.25-15	14	8	116
	16	9,25	134
28x9-15 (8.15-15)	14	9,5	138
	16	10	145
250-15	16	8,25	120
	18	9,5	138
300-15	18	8,5	123
	20	9	131
900-20	14	9	131
10.00-20	18	8,9	129
	20	10	145
12.00-20	20	8,25	120
	24	9,5	138

* Please contact us if your tyre size and/or PR isn't in the list to get the corresponding tyre pressure. Also, this list is for your reference, only. Always use the manufacturer's recommended values.

☐ ***Inspect the treads for excessive wear.*** *Make sure to replace your worn tyres before they fail.*

1. You can use your pneumatic tyres until the tread pattern has been worn away. Wearing beyond the tread pattern represents a safety hazard which can lead to unexpected tyre failure, as well as potential damage to your forklift.
2. Solid and press-on tyres also have a tread pattern but are not completely worn out when the tread pattern is completely gone. You can use a tyre cutter to cut a new pattern in the tyre tread. And you can keep repeating this process until you reach the '60J' line for solid tyres. Press-on tyres don't have this 60J line and should be replaced when 30% of the original tread rubber has been worn off.

Rubber tyre regroover

REF 107TA5313

☐ ***Check if the wheel-hub bearing shows any clearance.*** *Tighten wheel and hub nuts properly and evenly, in correct sequence, to the recommended torque setting. Only do this after your machine has completed at least 250 operating hours. Wheel bolts must be tightened with a torque wrench. Normally, this is different for every machine, so check your machine's manual. Remember to tighten the hub nuts with equal force.*

Sockets set

REF 165TA3777

Beta

Beta Utensili S.p.A. Authorized Dealer

18V XR Brushless Impact wrench - 950 Nm

REF 165TA4754

DEWALT

Loose wheel nut indicator

REF 116TA6254

Penetrating oil - 400 ml

REF 105TA4646

TOTAL SOURCE

Threadlocking adhesive - 50 ml

REF 107TA8523

LOCTITE

Torque wrench 60-330 Nm ½"

REF 143TA3799

Beta

Beta Utensili S.p.A. Authorized Dealer

▶ Major maintenance – every 2,000 hours of use

☐ ***Replace the wheel bearing grease.***

Multipurpose lithium grease - 400 g

REF 165TA3769

Want to know more about the maintenance of forklift tyres? Read this 'Tyre and track guide'.

MAST & FORKS

▶ Minor maintenance – every 250 hours of use

☐ ***Check all nuts and bolts*** *on the mast and attachments regularly and tighten any that are loose.*

Security check paint marker
- yellow

REF 165TA9841

Markal

☐ ***Clean the mast and lubricate it if necessary for your machine.***

Brake cleaner - 500 ml

REF 134TA3719

TOTAL SOURCE

White lubricant spray - 400 ml

REF 107TA8448

TOTAL SOURCE

☐ ***Lubricate all lubrication points*** *of the frame via the lubrication nipples. Clean the lubrication nipples before use and wipe off excess lubricant afterwards. Want to be more efficient? Use a quick coupler.*

Industrial grease gun - M10 x 1

REF 138TA6594

PRESSOL

Grease gun 18V XR Li-Ion

REF 165TA4760

DEWALT

Multipurpose lithium grease
- 400 g

REF 165TA3769

Quick grease coupler

REF 165TA9799

☐ ***Visually check the mast and load protector,*** *look out for any deformation. Have a look in the service manual for the necessary actions when deformation occurs.*

☐ ***Check the operation of the mast*** *by using the lifting and tilting levers and inspect the lift and tilt cylinders. Is there any excessive play in the carriage (sideshift) of the truck? Adjust the mast support and tilt cylinder pins if necessary.*

☐ ***Is the shock absorber still attached properly?*** *If not, attach correctly.*

☐ ***Lubricate the chain using chain spray.***

Chain spray - 400 ml

REF 105TA4644

TOTAL SOURCE

▶ Intermediate maintenance – every 500 hours of use

Now you'll maintain the chains for your forklift.

☐ ***Are the mast chains and pulleys all intact?*** *Chains with more than 2% wear need to be replaced. Also check the hinge bolts. Are they seated in the link openings? If not, the bolt may be broken. If that is the case, replace the chain.*

☐ ***Check the chain tension.*** *Lift the carriage 40 cm so that the chains are under tension. The tension should be even. Use the specially-designed chain measuring rule. Replace the chain, if the measured values fall outside of recommended tolerances.*

Chain wear gauge

REF 143TA3828

☐ ***Chains must display 5 mm clearance*** *when the fork carriage has reached its maximum free lift height. If not, adjust the chains by using the recommendations in the service manual.*

▶ Major maintenance – every 2,000 hours of use

☐ ***It's time to take care of the forks on your forklift.***

- Deformed or damaged forks? Throw them away immediately. Forks should be replaced as soon as the flat (horizontal) part is 10% worn. The thickness of the heel must be at minimum 90% of the fork thickness (in the vertical part). Measuring the fork thickness can be done with a fork thickness gauge. Please note: forks have a left and right side, most of the times this is indicated on the fork itself.
- The heel, upper and lower hooks and their fixing to the vertical part of the fork must not have any cracks. The tops of both forks must be at the same level. The fork lock must also work correctly. If this is not the case, replace the forks or locks.
- There must not be any excess play between the carriage and the hooks, and the forks should be parallel. If this is not the case, replace the forks.
- Do you want more information about inspecting your forks? Read the blog post 'Inspect your lift truck forks to increase your safety'.

THE CHASSIS

▶ Minor maintenance – every 250 hours of use

☐ ***Check all nuts and bolts on the chassis****—you should do this on a regular basis—and tighten any that are loose.*

☐ ***Lubricate all lubrication points*** *such as ball bearings of drive and steering wheels, and the lubrication nipples.*

Industrial grease gun - M10 x 1

REF 138TA6594

PRESSOL

Grease gun 18V XR Li-Ion

REF 165TA4760

DEWALT

Standard oiler - 500 ml

REF 107TA7253

PRESSOL

Multipurpose extreme-pressure lithium/calcium grease - 400 g

REF 106TA6743

TOTAL

Quick grease coupler

REF 165TA9799

☐ *Ensure the gear lever is in neutral and the handbrake is on before carrying out the next check. Now it's time to* ***check the level of transmission and differential oil and lubricate the steering axle****. In most forklift models, the dipstick for the transmission oil is under the floor plate. Check the oil level on mechanical and hydrostatic transmissions when the engine is not running, but for automatic transmission, check it with the engine running and the truck stationary. Top up the oil if the level has fallen below the lowest mark. Fill until the level reaches the highest mark. (If you check the level with a cold engine, use the COLD mark on the dipstick. If you check the level with a hot engine, use the HOT mark on the dipstick.) Some manufacturers also use run-in oil that must be drained after 50 hours of use. After that, the normal differential oil can be used.*

Are you searching for a specific transmission oil or differential oil for your machine? Contact your TVH sales department. Submit the make and type of your machine or the brand and type of oil you currently use. Our technically trained staff will help you find what you are looking for.

TOTAL

☐ ***Are the steering and transmission working smoothly?*** *If not, check the steering components for mechanical damage. Replace the necessary parts if needed.*

☐ ***Replace the transmission filter.***

☐ ***Are any of the warning lights showing?*** *Depending on the warning light, check the operation of the relay, contacts, micro switches, control card, switches and wiring contacts. Replace any parts that aren't working correctly.*

If any parts are broken you will know this immediately. If this indicates a broken clutch, when replacing the clutch, do not forget to adjust the clutch release bearing as well.

Set bearing pullers

REF 143TA5869

▶ Major maintenance – every 2,000 hours of use

☐ ***Check the suspension rubber*** *on the front and rear axle. Has it hardened or is it showing cracks? Replace it.*

☐ ***Replace the transmission filter and oil.***

THE HYDRAULICS

▶ Minor maintenance – every 250 hours of use

☐ ***Are all visible hoses in good condition with no leaks?*** *If there are leaks, they need to be replaced.*

☐ ***Are there any leaks of other hydraulic components?*** *Check cylinders, valves, distributor, pumps, etc. If you find a leaking component, replace the seals.*

☐ ***Check the level and cleanliness of the hydraulic oil.*** *Add oil if necessary.*

1. The mast must be in fully lowered position before the hydraulic oil level is confirmed.
2. Check the oil level when the engine is off. Remove the filler cap slowly so that the excess pressure is released.
3. Make sure that the oil level reaches 'FULL' on the dipstick.

If the oil is not clean, the oil should be changed and the filter replaced.

Are you searching for a specific hydraulic oil for your machine?
Contact your TVH sales department. Submit the make and type of your machine or the brand and type of oil you currently use. Our technically trained staff will help you find what you are looking for.

TOTAL

Funnel set - Ø50-75-100-120 mm

REF 138TA8314

PRESSOL

Oil absorbing towels - 100 pieces

REF 107TA7236

Drain pan - 7 l

REF 123TA8419

Drain pan - 16 l

REF 165TA9843

Chemical protection gloves -
Size: 10

REF 143TA7024

Honeywell

▶ Intermediate maintenance – every 500 hours of use

☐ ***Carefully inspect the tilt and lift cylinders.*** *Are there any oil leaks? Are the cylinders firmly fastened? Is the chrome axle or the rubber protective seal damaged? Tighten if necessary and replace the necessary parts.*

☐ ***Inspect the hydraulic pump for leaks.*** *If leaks occur, reparation is necessary. Reparation should be done by a professional repair service.*

☐ ***Replace the hydraulic filter.***

▶ Major maintenance – every 2,000 hours of use

☐ ***Are all fittings and couplings still firmly attached?*** *If not, tighten them. If this doesn't work, replace them.*

☐ ***Does the pump have enough pressure?*** *Measure the pressure and adjust if necessary. You will find the necessary pressure in the service manual of your machine.*

General pressure measuring kit

REF 147TA5167

☐ ***Change the hydraulic oil.*** *Follow the recommendations in the machine's service manual.*

THE BRAKES

▶ Minor maintenance – every 250 hours of use

☐ ***Check if the brake pedal and handbrake work*** *and return properly. If not, adjust the brakes. Read how to do this in the service manual of your machine.*

☐ ***Has the level of brake fluid fallen below the 'LOW' mark?*** *This could indicate that the brakes are worn out or the brake system has a leak. Check the space between the floor and the depressed brake pedal. If everything is OK, top up the brake fluid. Only use suitable brake fluid—check your service manual. Dirt can impair the proper operation of the brakes. Make sure that no dirt gets into the reservoir. Are there any blockages and dirt in the cap's ventilation opening? Remove them.*

☐ ***Blow out brake dust and clean the brakes.***

Brake cleaner - 500 ml

REF 134TA3719

TOTAL SOURCE

Are you searching for a specific brake fluid for your machine?
Contact your TVH sales department. Submit the make and type of your machine or the brand and type of brake fluid you currently use. Our technically trained staff will help you find what you are looking for.

TOTAL

▶ Intermediate maintenance – every 500 hours of use

☐ ***Check the brake pedal and handbrake*** *for excess movement, abnormal resistance or impedance. If there is, check the service manual to bleed the oil circuit.*

☐ ***Are the pipes, rods, cables, wheel brake cylinders (brake booster) and the main brake pump operating properly?*** *If not, replace.*

▶ Major maintenance – every 2,000 hours of use

☐ ***Change the brake fluid.*** *Have a look in the service manual to know how.*

☐ ***Check the brake pads and brake drums for wear.*** *Look at the spaces between the pads and the drum.*

In case of excessive wear, replace the brake pads and drums. After 5,000–7,000 operating hours, you should definitely replace them.

LIGHTS, SEAT BELT AND OTHER ACCESSORIES

▶ Minor maintenance – every 250 hours of use

☐ ***Check the front and rear lights, traffic lights, direction indicators, flashing beacons and warning lights.*** *Are all the lights functioning as they should be? If not, inspect the wires and repair or replace the lights.*

Want to know more about the lights you need? Read 'What lighting does your forklift need'.

Insulated combination hand tools - 15 pieces

REF 165TA3743

FORCE PROFESSIONAL TOOLS

☐ ***Do the horn and back-up alarm work*** *and have no loose parts? If they are not functioning as they should. Check if the power is interrupted or replace the items.*

☐ ***Does the key switch shows any abnormalities?*** *If it does, replace it.*

☐ ***Check the condition of the seat belt****, the proper operation of the fastening and securing of the anchor points to the lift truck or seat. Replace the seat belt as soon as you notice any damage or wear. Always replace the belt every three years or every 4,800 operating hours (or earlier). Also, always check that the belt locking mechanism is working.*

▶ Major maintenance – every 2,000 hours of use

☐ ***Refill the A/C station.*** *First remove all the gas, rinse (only when there are defects), check for leaks by adding a liquid that can be detected by means of UV light and refill with the correct amount of gas. Be aware: sometimes the amount of gas can decrease over time, so always check the amount that must be added and refill correctly.*

PAINTING & DECALS

▶ Minor maintenance – every 250 hours of use

☐ ***Check if all the decals are in the right place*** *and visible. Is the load diagram present? And the CE plate? Replace damaged and illegible labels.*

Kit of safety decals for forklifts

REF 121TA1386

Kit of universal safety decals

REF 140TA8771 - Dutch
REF 138TA3892 - German
REF 140TA8772 - English
REF 165TA4725 - Italian
REF 165TA4724 - French

Go to our 'Labels & decals' catalogue to see all labels and decals.

▶ Major maintenance – every 2,000 hours of use

☐ ***Repainting your machine*** *will make it more resistant to weather conditions.*

1. Prepare the machine by sanding and removing dents & holes.

Sanding paper with velcro - PS 22 K 125x70 mm - grain 100

REF 165TA9844

Plastic filler - 759 g

REF 165TA9768

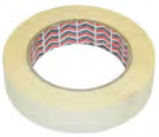
TEROSON

2. Clean the forklift and degrease the surfaces. Cover any parts that you can't remove with masking tape.

Degreasing soap - 26 kg

REF 165TA7474

BONDERITE



Masking tape - 25 mm

REF 107TA7412

3. Protect yourself and your workplace with the right PPE. You need a spray coverall and gloves for spatters and a gas mask with carbon filters to avoid inhaling solvents. You also need earplugs for solvents.

Disposable coverall - Size: L-XL

REF 143TA6964

Honeywell

Box with 100 powdered nitrile gloves

REF 143TA7015

Honeywell

Gas and vapour mask

REF 122TA7464

Earplugs

REF 143TA7080

Honeywell

4. Choose the right paint—it should have a high covering capacity and dry fast. Choose a paint tin or spray can for small touch ups. Are you going to brush, roll or spray the paint? Spraying will provide the most professional finish. Brushing or rolling is recommended for a quick touch-up or if there is no spray cabin with ventilation system available. Check the table below for the tools you'll need.

Have a look in our 'Paint & accessories' catalogue
and find all paints sorted by make for all types of machines.
You can order your paint via MyTotalSource or contact your sales advisor.

TOTAL SOURCE

Synthetic thinner - 5 l

REF 107TA7394

Paint rollers - 2 pieces

REF 136TA1290

Spray gun - Spray jet: 1,7 mm

REF 107TA7409

5. Paint in regular and smooth movements. Be sure to observe drying times and make sure the space you're working in has enough ventilation.

6. Add anti-skid surface to the steps of your forklift for extra safety.

Self-adhesive antiskid rolls -
18 m x 610 mm

REF 144TA6203

7. Want to know more about painting your forklift? Read this 6-step plan in the article 'Make your machine shine again! Repaint your machine and renew its decals'.

YOUR FORKLIFT MAINTENANCE IS NOW COMPLETE.

These are general guidelines for maintaining different forklifts. Maintenance tasks can vary between different forklift makes, so you should always check the service manual for your particular machine to ensure all tasks have been carried out correctly.

Now that you've done that...

Your forklift is running again.
It's time to get back to work.

Is that all you need to know?

As a forklift operator, you should also perform daily maintenance tasks, on top of the scheduled maintenance servicing. It is recommended that you check your machine daily, before operating it. You should visually inspect for obvious leaks, damage and check the condition of the tyres. Before you operate the forklift, also check the safety lights, service, parking brakes, horn and steering. Then, check the mast operation by raising and lowering the forks, both with and without a load. Lastly, check the levels of engine oil, fuel, radiator water and hydraulic fluid.

Once all is in order, you can begin your workday.

TVH offers all products stated in this checklist via their corresponding reference. Should you require an alternative (dimensions, capacity ...) or related product, don't hesitate to contact us.

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