

Black Hawk BH4-21 FIRE PUMP



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SAFETY SYMBOLS



This manual identifies potential hazards and includes safety messages identified by a safety warning symbol indicating a hazard that may cause serious injury or death if you don't follow the recommended precautions. This manual uses two more words to highlight information:

IMPORTANT: special information worth full attention.

NOTE: highlighted general information.

1. INTRODUCTION

Please read the manual before operating your BH4 fire pump to be aware of the necessary instructions for use, service and maintenance. If you need technical assistance, parts or additional information, please contact our customer service.

This equipment is designed to work in any external conditions of temperature, wind or rain. However, it must be operated by qualified personnel with experience extinguishing wildland fires.

customer.service@vallfirest.com | Tel. (+34) 93 867 87 79.

2. SAFETY INFORMATION

2.1. PRECAUTIONS

READ THE MANUAL FOR THE ENGINE FIRST

Before continuing, read the manufacturer's manual for the engine. It has very important safety information you must read, understand and follow to protect yourself and the equipment from damages as well as specific information on how to adequately use and care for the engine.

NOTE: The engine manual is included in the BH4 fire pump box along with this manual.

READ THIS MANUAL BEFORE OPERATING YOUR FIRE PUMP

Improper use of the VFT BH4 fire pump may cause serious injury and damage to the operator. All operators must be familiar with the device and its capabilities before trying to operate the equipment in an emergency situation.

2.2. WARNINGS

1. Always use protection for your eyes and ears as well as gloves to protect your hands when operating the fire pump.
2. Do not operate if you are mentally or physically fatigued.
3. Always inspect the hoses to prevent injury due to an explosion.
4. Use only pipes, hoses and accessories of the same or higher maximum pressure classification as the pump, as shown below, or in accordance with the maximum pressure for which the system was designed, whichever is lower.
5. Do not make any changes and/or modifications to the fire pump. Any modification of this kind not only voids the pump warranty but may make the unit hazardous for anyone operating the pump.
6. Do not operate the pump above the maximum nominal pressure.
7. Always operate the unit at a lower pressure than required for enhanced operator and equipment safety.
8. Slowly close the valves and use slow-close valves whenever possible to avoid any danger for other line operators.
9. Bleed all pressure from the system before doing any service work on the pump.
10. Never operate the pump in a closed or confined area. The exhaust fumes contain carbon monoxide which is toxic for humans. Avoid inhaling exhaust fumes.
11. Fill the fuel tank with care. Gas and diesel are inflammable and the fumes from the gas may explode. Refuel in a well-ventilated area with the engine off.
12. Stay alert and never touch any part of the exhaust system on the engine while the engine is running. Always wait long enough after stopping the unit to adequately cool the muffler and surrounding parts.
13. For safety reasons, do not pump corrosive or inflammable liquids such as gasoline or acids. Do not pump chemical solutions or caustic liquids such as used oil, wine or milk.
14. This fire pump is specifically intended for firefighting. A safety distance must be kept between the person operating the fire pump and everyone nearby. Do not use the fire pump for any purpose other than as specified in this manual.
15. Do not shoot water at any person with the fire pump as this could cause serious injury. It is not intended for recreation. It is only intended for professional use.
16. To operate the fire pump, make sure you have enough light either from the natural environment or artificial light outside the fire pump (minimum 5 Lux).
17. In the event of an accident, contact the official medical emergency service in your area.



2.3. PREVENTING DAMAGE TO THE EQUIPMENT

The following recommendations will help prevent damage to your equipment:

1. Rinse the pump with clean water if the pump has been used to pump salt water, dirty water with a high mineral content, water which contains residue or foam-injected water. Check to make sure all residue is removed before using the pump again.

2. Always vacuum water with a suction hose filter that prevents the entry of particles which can damage the pump.

3. Drain all the water from the pump, collectors and priming circuit. You can also pour a little anti-freeze into the pump and have it circulate through the pump and priming system. (see point 6.1.)

4. Let the engine heat up before using the unit at maximum performance. (see point 4.6.)

5. Always use lead-free gas at the octane recommended by the manufacturer. (see point 4.3.)

6. Pumps must not be operated without discharging water. Operate the pump so it does not overheat and cause damage to the inside.

7. Make sure to correctly fill the pump before starting it and avoid closing the water discharge when the pump is on.

8. Use replacement parts supplied by Vallfirest to avoid damage and/or loss of the warranty covering this product.

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IMPORTANT



Always use aluminum thread protectors for pump impulsion and suction to prevent damage to the pump threads during hose connection and disconnection operations.

Do not operate the pump without water; prime the pump before starting the engine. Pumps must not be operated without water or without discharging water. Operate the pump so it does not overheat and cause damage to the seal or the inside.

Check that the strainer foot valve does not touch the bottom of the water source and is not too close to the surface. This will prevent obstruction in the valve and air suction. Use a buoy to be sure of the hose suction depth.

Suctioning sand and other residue causes serious damages inside the pump. If a clean water source cannot be guaranteed, use an additional mesh filter for the strainer foot valve.

3. GENERAL DESCRIPTION

3.1. BH4-21 FIRE PUMP

The BH4 fire pump is part of the vft Black Hawk portable motor pump line. It combines a highly reliable HONDA GXH630 21HP OHV engine with the vft Speed Inserter and VFT_4SP Pump for excellent work capacity and performance with a great flow rate.

This combination has the capacity for long-distance hose laying in series or in parallel without compromising performance.

This Honda engine is equipped with an easy-to-access air filter, oil level sensor and battery-powered starter system.

It has a quick coupling system for the VFT_4SP pump to be replaced as quickly as possible in the event of a breakdown. This is the same pump as used in BP4 and BH4-13 fire pumps which allows better replacement part stock management.

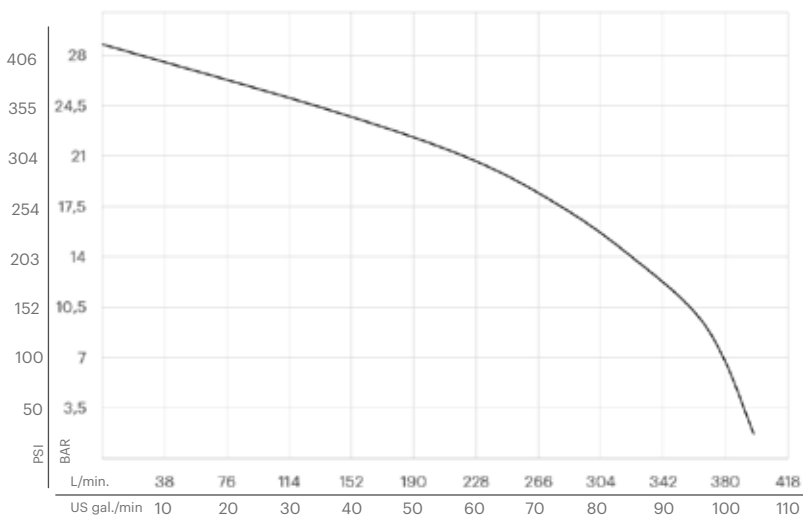


Noise level: 100db

3.2. SPECIFICATIONS AND PERFORMANCE

General specifications BH4-21

Engine	Honda GXH630
Centrifugal pump	4-stage VFT
Weight	86kg (dry)
Dimensions	Length: 83 cm. Width: 49,5 cm. Height: 48



BH4-21 Performance Data

Maximum flow rate	390 l/min
Maximum pressure	28 bar
Max. gauge height	285 mH ₂ O

* The performance data are subject to change without prior notice.

3.3. SERIAL NUMBER

If you need technical assistance, parts or additional information, please contact our VALLFIREST Customer Service (customer.service@vallfirest.com // Tel.: +34 938678779). Have the model and serial number for your product with you.

The following image shows the location of the model and serial number on the product.

vft vallfirest Mfg. Date

Model

Serial n°

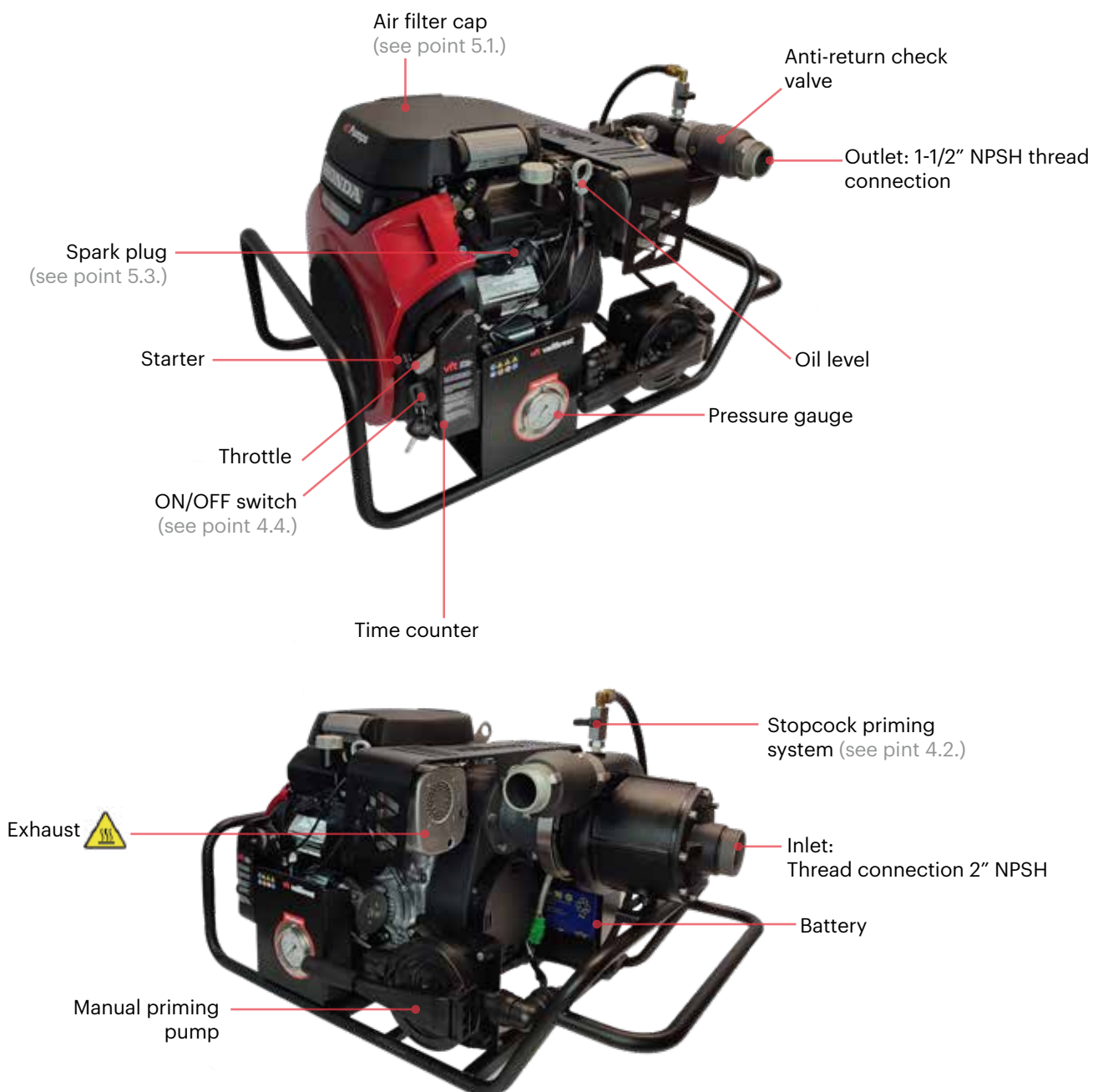
Weight Power Max Pressure Max Flow

C/ Ignasi Barraquer 4-6
08460, Sta. M. de Palautordera (Spain) Made in EU

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3.4. PART IDENTIFICATION



4. INSTRUCTIONS FOR USE

4.1. INITIAL CHECKS


Before using the fire pump, follow this check procedure:

1. When you receive and unbox your BH4 fire pump, visually inspect the product and make sure there is no damage. Contact your Vallfirest representative or customer service if you see any imperfections:
customer.service@vallfirest.com | Tel. (+34) 93 867 87 79.
2. Before the first use, prepare the engine which comes dry (no oil and no fuel). With each successive use, you must verify the following levels and fill as necessary before operating:
 - Engine fuel level.
 - Engine oil level.

3. Check that all suction and discharge hoses are structurally firm and show no leakage.

4. Inspect all safety characteristics and make sure they are in good conditions before using the pump.
(see point 2.).


5. Each time you plan on using the fire pump, check that it was not damaged during prior use. Remember that damaged equipment may expose you to safety risks.

 **IMPORTANT:** Check the oil level before starting the engine. Check the engine manual for the type of oil and priming instructions.



NOTE: The engine manual is included in the BH4 fire pump box along with this manual.

4.2. PRIMING AND WATER SUCTION

 **IMPORTANT:** DO NOT OPERATE THE PUMP WITHOUT WATER; PRIME THE PUMP CORRECTLY BEFORE STARTING THE ENGINE.

1. Connect the strainer foot valve into the suction hose.
2. Fill the suction hose with water.
3. Check that the strainer foot valve does not touch the bottom of the tank and is not too close to the surface. This will prevent obstruction in the valve and air suction.
4. Connect the suction hose to the pump and check that it is well-adjusted.

5. Open the priming system stopcock and pump until water comes out of the hole.

6. Close the stopcock.

7. Connect the discharge/attack hose.

IMPORTANT



Suctioning sand and other residue causes serious damages inside the pump. If a clean water source cannot be guaranteed, use an additional mesh filter for the strainer foot valve.

4.3. FUEL FILLING

1. The fuel tank is external to the fire pump.
(see point 4.6.1).

Use 86 octane gasoline or a higher octane gasoline. No oil blend is required in the fuel tank.

3. When priming the fuel tank, make sure the engine is off.

4. If a spill occurs, clean the entire unit, particularly the area of the spill and start the engine (dry and clean) far from the spill area.

5. Use a funnel with a sieve when priming to keep dirt out of the tank.

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⚠ IMPORTANT

Gasoline is extremely inflammable and explosive. Carry out these operations in a well-ventilated location with the engine off. Do not smoke and do not provoke flames or sparks where gasoline is stored or when refueling.

4.4. START UP

4.4.1. Cold Start

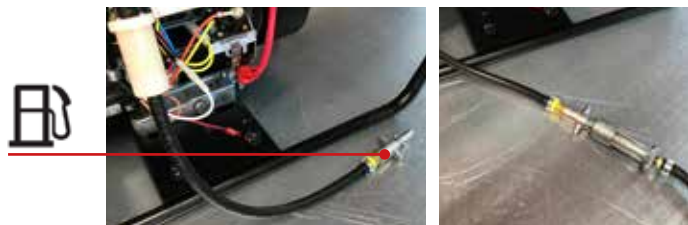
See instructions on FUEL FILLING above: (see point 4.3.)

1. Connect the discharge or pressure hose to the pump.

2. Connect the suction hose.

3. Prime the pump (see point 4.2.)

4. Connect the external fuel tank with the fire pump quick connector.



5. Place the choke switch in the "open" position.



6. Place the throttle at 1/3 the way.



7. Place the electrical switch in the "ON" position.



8. Turn the starter button to turn on the engine.



9. Place the choke switch in the "closed" position once the engine has started.



10. Let the engine heat up a few minutes before increasing the speed.



⚠ **IMPORTANT:** Read the Honda engine user manual for more information on starting.

4.4.2. Hot Start

Follow the cold start instructions, keeping the choke in the closed position.

4.4.3. Other Starting Conditions

Check the Honda engine manual for more details on starting. You may check the troubleshooting section in the engine manual included in the fire pump box.

4.5. TURNING OFF THE ENGINE

1. Move the throttle to the idling position (minimum speed).
2. Maintain this speed for at least 1 minute to cool the engine.
3. Cut off the ignition by positioning the electrical switch to "OFF".
4. Disconnect the fuel line quick connector.
5. After removing the suction hose and discharge hose, drain the pump.

4.6. PERFORMANCE AND ENGINE LIFE

Although this pump unit is capable of high performance for long periods of time when required, operating at a low speed when possible is recommended as this will greatly extend the useful life of the engine. For maximum engine life, use the throttle at 25-75%.

4. Disconnect the fuel line quick connector.
4. Disconnect the fuel line quick connector.

The BH4-21 fire pump consumes 6.0 L/h.

Operating hours:

- 12 L tank: 2 h (75% performance).
- 25 L tank: 4 h (75% performance).

NOTE: Operating hours are provided for guidance; consumption may vary based on external conditions.

Always use ISO 13591 certified tanks and fuel lines.

⚠ IMPORTANT: Combustion engines may lose performance if operated at very high heights. Ask the manufacturer for more information if necessary.



4.7. CARBURETOR ADJUSTMENT

Check the engine user manual for adjustments to the carburetor.

4.8. OPERATING CONDITIONS WITHOUT WATER DISCHARGE

Operating the pump without discharging water for long periods (for example, due to a twisted hose because of nozzle changes or when closing valves to add hoses) will cause overheating and possible damage to the pump.

Turn off the pump engine for extended operation without water discharge. Turn off the engine completely in situations of dry operation or pump priming loss.

Closing the valves or choking the hoses will create high pressure in the system and increase the engine revolutions.

Move the throttle to the minimum position (slow) whenever possible for operations without water discharge.

⚠ IMPORTANT: DO NOT OPERATE THE PUMP WITHOUT WATER; PRIME THE PUMP CORRECTLY BEFORE STARTING THE ENGINE.

4.9. OPERATING IN A COLD CLIMATE

The pump may operate at below-zero temperatures if certain precautions are taken to prevent the formation of ice in the pump.

1. After priming the pump, the unit must operate at low-speed for a short period of time to allow all components to heat up before continuing with the remaining operational procedures.

2. Unless a heater is available, drain the pump of all water if not used for a prolonged period.

Disassemble the pump, incline it and rotate the shaft manually to ensure all the water comes out of the inside.

3. You can also pour a little anti-freeze into the pump and have it circulate through the pump and priming system.

5. MAINTENANCE

5.1. AIR FILTER CLEANING

Under normal operating conditions, the air filter must be cleaned daily. However, more frequent cleaning is recommended in extremely dirty conditions. To clean the air filter: Loosen the cover hooks and remove the nut pressuring the air filter. Remove the foam filter. Clean it with a brush and then wash in mineral alcohol until completely clean. Squeeze to get all the remaining liquid out. Reinstall.

IMPORTANT

Dirt entering the engine through the carburetor is one of the biggest causes of engine wear; therefore, it is very important to regularly check the air filter.



5.2. COOLING THE ENGINE

This engine is air-cooled. Keep the air inlet screen on the engine free of dirt. Make sure it is protected from obstruction by grass, leaves, branches, etc.



5.3. SPARK PLUG


Replace spark plugs every 100 hours of operation or every year. A dirty, carbonized or misadjusted spark plug will make it difficult to start and harm engine performance.

NOTE: Check the Honda engine manual for spare spark plugs and other components.

NOTE: The engine manual is included in the BH4 fire pump box along with this manual.

Original part reference: ZFR5F (NGK)
FR2A (NGK)

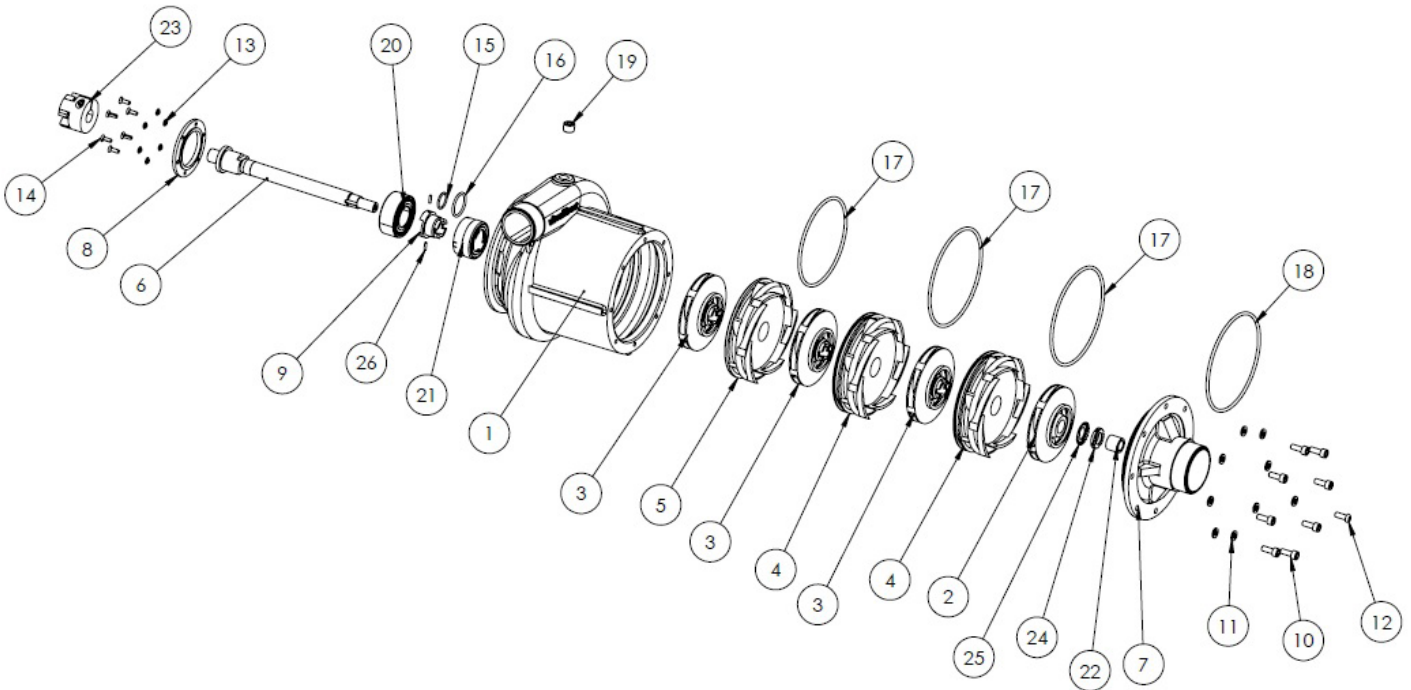


IMPORTANT:  Read the Honda engine user manual for more information on maintenance services.



5.4. PUMP DISASSEMBLY INSTRUCTIONS

NOTE: See section 8.2 to find the references for each component when ordering spare parts. See point 5.5 to find out about the special tools described in each operation.



⚠ IMPORTANT: Pump maintenance operations shall only be done by specialist personnel.

1. Remove the 6 screws (14) and remove the bearing cover (8).
2. Remove the screw (12) from the end of the shaft suction (6).
3. Remove the 8 screws (10) from the suction cover (7) and remove it by pulling towards the outside horizontally.
4. Using a small screw driver (or extractor), remove the safety washer tongue (25) from the shaft nut (24).
5. Remove the shaft nut (24) (use the "tool for KM nut") and remove the lock washer (25).
6. Remove the first impeller (2).
7. Press the shaft (6) through the pump:
 - a. Support the pump (use the "Pump body support").
 - b. Protect the small end of the shaft (use the "Shaft protector").
 - c. Press the shaft completely down (use the "Tool for shaft removal").

The bearing (20) and transmission bushing (9) must come out of the shaft assembled together.

8. The internal components (3, 4 and 5) can now be pressed down from the end:

Reverse the pump (use the "Pump body support").

Please remember that inner parts must be guided during this task (use the "Tool for removing impellers and distributors").

It's best to use a manual press as the components can be felt through the inner edge of the pump body.

9. Remove the seal (21) by inverting the pump (use the "Pump body support").

By pressing from the inside of the pump body (use the "Tool for assembling the mechanical seal").

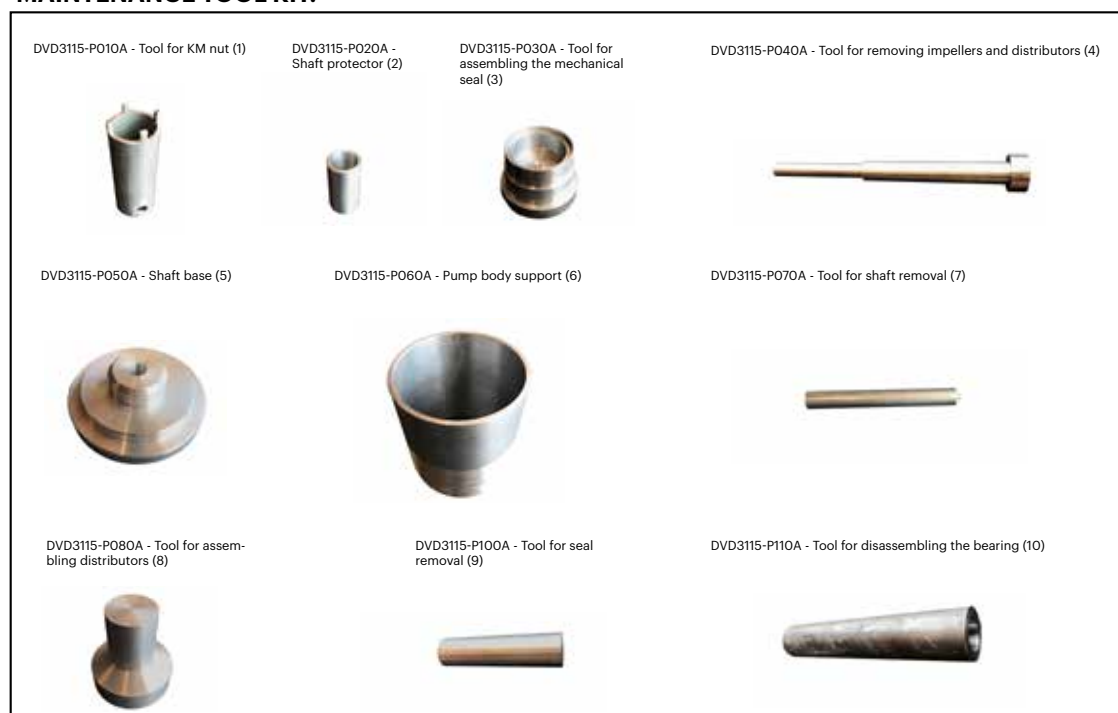
⚠ IMPORTANT: Not following this procedure correctly can cause damage to the inner pump components.

NOTE 1: If the seal is going to be re-used, protect the seal as it leaves the body. If it falls down on a hard surface, it can be damaged.

NOTE 2: When requesting spare parts, please indicate the model and serial number. (see point 3.3.).

5.5. PUMP ASSEMBLE INSTRUCTIONS

MAINTENANCE TOOL KIT:



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⚠ IMPORTANT: Check that there are no remains of sand or other residue in any part; otherwise, it could cause serious damage to the pump. Inspect all components for wear, damage or corrosion and replace if necessary. Always use new o’rings.

1. Place the pump body (1) on a smooth surface or (use the “Shaft assembly base”) to protect the body from damage. Then, press the mechanical seal (21) into the body using the press (use the “Tool for assembling the mechanical seal”).

2a. Place the bearing (20) in the position over the shaft (6) using the press (use the “Tool for assembling the bearing”).

2b. Install the transmission bushing (9) in the shaft with the o-rings (15 and 16). The sides of the transmission bushing must touch the inner bearing track and fit with the flat sides of the shaft.

3. Press the shaft sub-ensemble to fit the bearing (20) into the pump body housing. Make sure the transmission bushing plugs (26) fit in the seal grooves (use the “Shaft assembly base”). Install the bearing cover (8) with the 6 retention screws and washers (13 and 14).

4. Insert the first impeller (3) into the shaft, making sure it fits into the transmission bushing grooves.

5. Use grease to hold the o’ring (17) in the groove in the distributor (5) and carefully install it on the impeller.

6. Place the second impeller (3) in the shaft, making sure it is coupled to the impeller already installed.

7. Install the o’rings (17) in the distributors (4) and lubricate with grease.

8. Place the distributor (4) in the pump body hole (use the “Tool for Assembling Distributors”), and manually press to apply short pressure until the distributor is pressed through the first section. (This can be felt when the free distributor falls to the next level).

Repeat with the rest of the distributors and impellers.

9. Insert the safety washer (25), placing the shaft hook tongue in the groove in the shaft thread.

10. Screw the locknut (24) onto the shaft and tighten securely until the groove in the nut lines up with a tongue on the safety washer (use the “Tool for KM Nut”). Push the tongue into the nut groove to fix it in place.

11. Install the o’ring (18) on the pump cover (7). Use the press to press the suction cover until it makes contact on the final distributor. A small space between the pump body and cover is normal.

12. Install 8 safety washers and screws (10 and 11) and tighten evenly by hand.

13. Install the screw (12) in the shaft thread.

14. Tighten the 8 screws on the cover.

15. Install the transmission coupling (23) on the opposite end of the pump shaft and tighten the screw forcefully.

6. STORING THE FIRE PUMP


Do the following to prepare the fire pump for storage:

1. Disassemble and rinse the pump with clean water. Check that all residue is removed and drain all water from the inside. Turn the shaft manually to help the water come out.
2. Disconnect the fuel line.

3. Start the engine and let it run until it stops to use up all the fuel in the carburetor and prevent the formation of deposits due to fuel evaporation.

4. Remove the spark plug and pour approximately 1/4 cup of engine oil into the cylinder. Install the spark plug.

5. Pull the engine choke rope a couple of times to distribute the oil throughout the cylinder. This will cover the entire cylinder wall with oil and won't allow oxide formation during the storage period.

 **IMPORTANT:** Read the Honda engine user manual for more information on storage and maintenance.



6.1. WINTER STORAGE

1. Verify that all pump ends, nozzles and hoses are completely drained.

2. Disassemble the pump and rotate in all directions to remove all the water inside. Turn the shaft manually to help the water come out.

3. Add a cup (1/4 liter) of anti-freeze through the pump drive.

4. Disconnect the fuel line. Run the engine until there is no fuel in the carburetor.

5. Store hoses in a dry place free of rodents.

NOTE: The pump must be protected from freezing (see warranty).

7. TROUBLESHOOTING

CAUSE	RECOMMENDATION
ENGINE START FAILURE	
Choke key in "OFF"	Place in the "ON/RUN" position.
No fuel in the tank	Fill the fuel tank (see point 4.3).
Fuel line disconnected or obstructed	Check the fuel line connection(see point 4.4.).
Obstructed fuel line filter.	Check and clean the fuel filter.
Flooded engine	Turn the ignition key and try to start the engine until you hear the first explosions, then turn the key to stop (see point 4.4.).
Worn or dirty spark plug	Install the spark plug (see point 5.3.).
Broken spark plug (broken or cracked porcelain, broken electrodes).	Install the spark plug (see point 5.3.).
Wire from the magneto in poor conditions or disconnected from the spark plug	Replace the wire or connect it to the spark plug.
A lack of oil in the engine	Check the oil level. Check the engine manual.
Inoperative magneto (no spark)	Contact the manufacturer or nearest authorized representative.
Discharged battery	Check the battery charge level with a voltage meter.
ENGINE DIFFICULT TO START	
Water in the fuel	Drain the fuel and replace (see point 4.3.).
Weak spark in the spark plug	Contact the manufacturer or nearest authorized representative.
Flooded engine	If flooded after several attempts to start, follow the instructions indicated in the previous section (see point 4.4.).
THE ENGINE LOSES POWER	
Obstructed air filter	Clean the air filter (see point 5.1.).
Obstructed muffler	Clean all carbon from the muffler. Check the engine manual.
Poor compression	Contact the manufacturer or nearest authorized representative.
Fuel line filter obstructed	Disassemble and clean or replace the fuel filter. See the manual from the engine.
THE ENGINE IS OVER-HEATING	
A lack of oil in the engine	Check the oil level. Check the engine manual.
Obstructed air flow	Clean the air inlet protective screen.
Obstructed or blocked pump	Remove the pump and make sure the shaft properly rotates manually.
Damaged cylinder or engine piston	Contact the nearest authorized representative.

CAUSE**RECOMMENDATION****FAILURE IN THE PRESSURE GAUGE**

Obstructed pressure gauge line

Disassemble the pump duct from the pressure gauge and clean the circuit of any residue.

FAILURE IN THE PRIMING SYSTEM

Anti-return valve to drive the obstructed pump

Disassemble and check the valve and proper spring operation. Check for leakage.

Leaks in the tube and connections for the priming system

Check the duct and conditions of the connections. Replace the Teflon on the threads.

Leakage in the system

Try to find the part with the problem by isolating each component in the system.

Visually check whether there is any leaking in the suction hose.

Check whether the aspiration suction hose is in good condition.

Check whether the suction outlet/inlet is properly connected to the pump.

Check if all valves are closed.

Check the pump inlet/outlet thread connections.

PUMP PERFORMANCE PROBLEMS

Obstruction

Make sure the hoses and valves are not obstructed by any residue. Remove any obstructions.

Pump power problems

Visually check the engine and make sure everything is in good conditions.

Check the engine manual that came with the fire pump.

Replace the bearing or complete transmission coupling.

Check the fire pump transmission coupling conditions.

Air trapped in the suction line water source is lower than the pump.

Make sure NO part of the suction hose is higher than the pump inlet if the

Water restrictions in the pump inlet

Check the suction strainer foot valve. If full of dirt, clean.

Make sure the water inlet is not blocked by residue.

If the suction hose is not made by Vallfirest, make sure the diameter is not too restrictive for the water pump requirements.

Breakage or friction due to pump wear

Replace the pump. Repair the pump, replacing the damaged components (see point 5.4 and 5.5.).

PUMP CAVITATION

Too much difference in height between the pump and water source

If the suction hose is not made by Vallfirest, check the inside diameter.


Move the fire pump closer to the external water source.

Water temperature

Make sure the temperature of the water source is no lower than 35°C.

Restrictions and obstructions

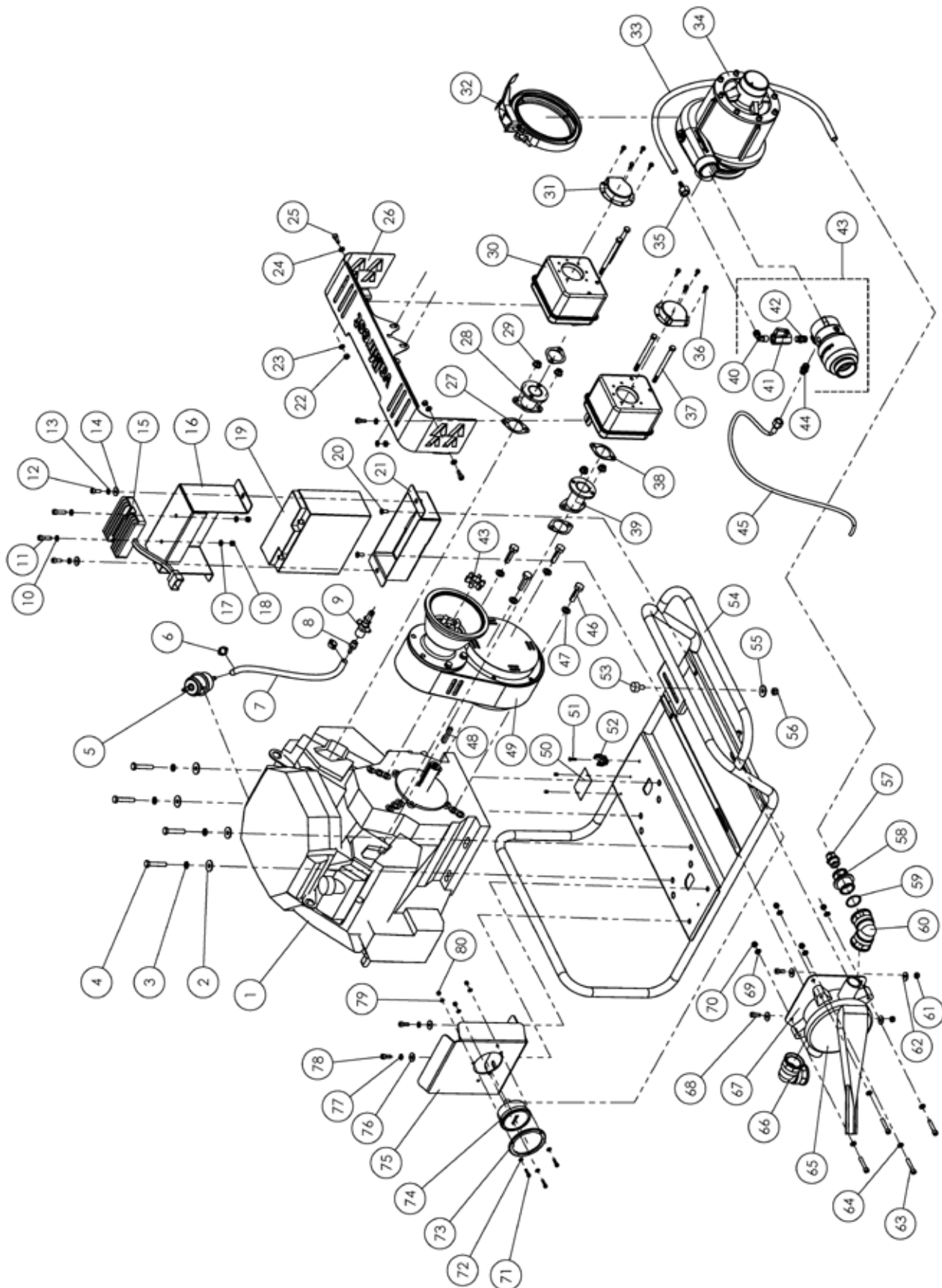
Check the depth of the water source. The filter must not be in contact with the bottom of the water source. Correct if necessary.

 **IMPORTANT:** Some operations indicated in this section must be done only by specialist personnel.

8. EXPLODED VIEW AND PARTS LIST

8.1. GENERAL EXPLODED VIEW

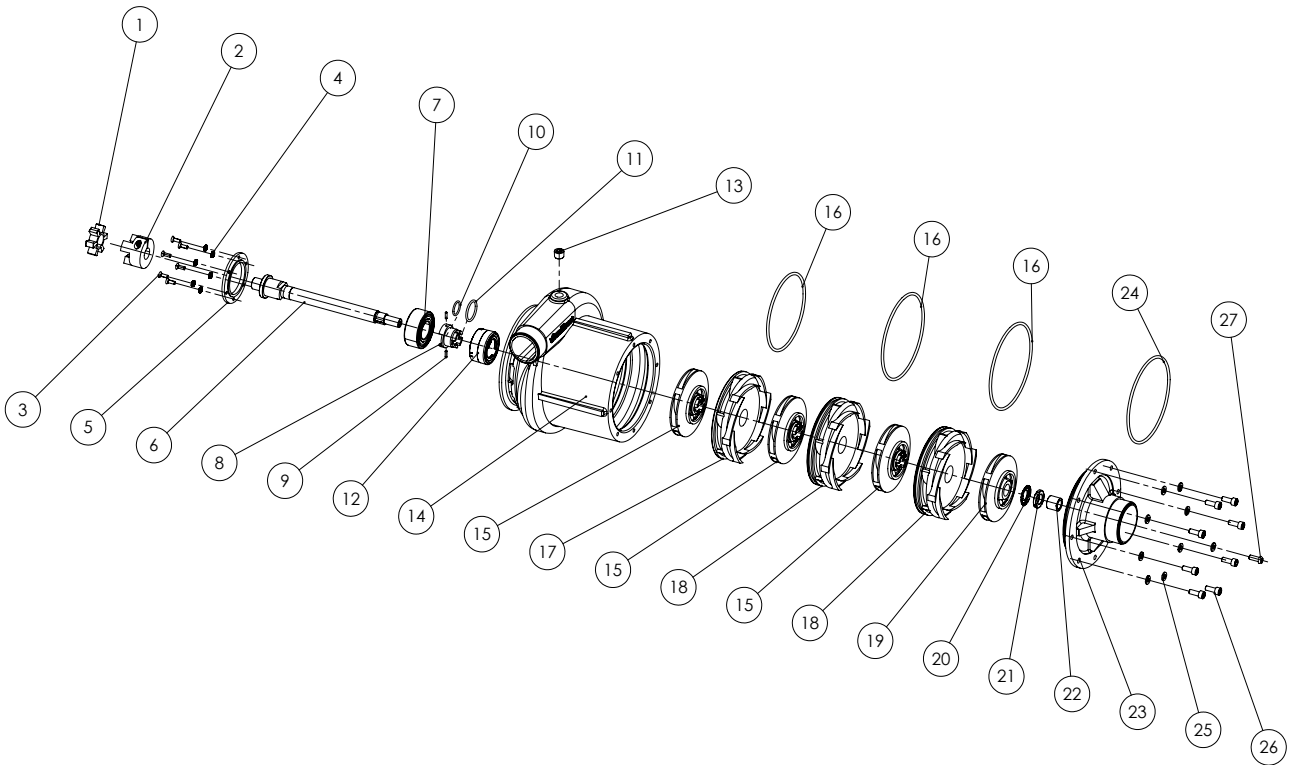
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Nº	REFERENCE	DESCRIPTION	QUANTITY
1	ZEZ2001-00005	Honda GX630 engine	1
2	ZEZ0205-00008	DIN9021 (A2) - M8 flat washer	4
3	ZEZ0209-00005	DIN127-B (A2) - M8 grower washer	4
4	ZEZ0201-00123	DIN933 (A2) - M8x45 hex bolt	4
5	ZEZXXXX-XXXXX	Honda GX630 fuel filter	1
6	ZEZ0801-00001	DIN 2393C 13_15 two-handle clamp	2
7	DED6002-00002	1/4" (BH4-21) fuel line hose	1
8	DED6002-00008	1/4" BSPT male junction - 1/4" hose	1
9	DED6002-00005	Mercury male fuel line connector	1
10	ZEZ0204-00007	DIN125 (A2) - M6 flat washer	2
11	ZEZXXXX-XXXXX	DIN912 (A2) - M6x25 Allen screw	2
12	ZEZ0202-00103	DIN912 (A2) - M6x16 Allen screw	2
13	ZEZ0209-00004	DIN127-B (A2) - M6 grower washer	2
14	ZEZ0205-00007	DIN9021 (A2) - M6 flat washer	2
15	ZEZXXXX-XXXXX	Honda GX630 voltage regulator	1
16	DVD3040-P030A	BH4 battery protection	1
17	ZEZ0204-00007	DIN125 (A2) - M6 flat washer	2
18	ZEZ0207-00005	DIN985 (A2) - M6 hex self-locking nut	2
19	ZEZ2301-00003	12V Honda GX630 battery	1
20	ZEZ0203-00054	DIN7991 (A2) - M6x16 countersunk Allen screw	2
21	DVD3040-P040A	BH4 battery support	1
22	ZEZ0206-00007	DIN934 (A2) - M6 hex nut	3
23	ZEZ0209-00004	DIN127-B (A2) - M6 grower washer	3
24	ZEZ0204-00007	DIN125 (A2) - M6 flat washer	3
25	ZEZ0202-00103	DIN912 (A2) - M6x16 Allen screw	3
26	DVD3443-P030A	BH4-23 exhaust protector	1
27	ZEZXXXX-XXXXX	Honda GX630 engine exhaust gasket	2
28	DVD3445-P020A	BH4-21 left manifold	1
29	ZEZXXXX-XXXXX	DIN6923 (A2) - Honda GX630 M8 hex nut with stub ends	2
30	ZEZ2003-00104	Vanguard individual exhaust	2
31	ZEZ2003-00105	Vanguard individual exhaust deflector	2
32	ZEZ3306-00003	vft Pumps clamp	1
33	ZEZ1202-00002	BLK (BH4-21) push-lock hose	1
34	DVD3040-AAA0A	VFT_4SP vft 4-stage pump	1
35	ZEZ1202-00004	1/4" T10 hose terminal	1
36	ZEZ0109-00001	DIN7504K (ZINC) 4.2x13 self-piercing hex bolt	8
37	ZEZ2003-00108	5_16 UNC Vanguard individual exhaust screw	4
38	ZEZ2003-00107	Vanguard individual exhaust gasket	2
39	DVD3445-P010A	BH4-21 right manifold	1
40	ZEZ1202-00006	1/4" BSPT elbow fitting x 10 Tube	1
41	ZEZ1202-00008	1/4" BSP F-F valve - vft Pumps check valve	1
42	ZEZ2505-00032	1/4" BSPT x 1_4 BSP M-M nipple	1
43	DVD3113-00001	Anti-return check valve	1
44	ZEZ2505-00032	1_4 BSPT x 1_4 BSP M-M nipple	1
45	DVDXXXX-XXXXX	BH4 21 pressure gauge minor connection tube set	1
46	ZEZ3309-00005	3_8-16 UNC .748 hex bolt	4
47	ZEZ0209-00006	DIN127-B (A2) - M10 grower washer	4
48	ZEZXXXX-XXXXX	6.3x6.3x43 retainer pin (Honda GX630)	1
49	DVD3050-AAA0A	vft Pumps speed increaser	1
50	ZEZ3310-00001	vft Pumps serial number plate (EC)	1
51	ZEZ0203-00018	DIN7991 (A2) - M4x16 countersunk Allen screw	1
52	ZEZ3306-00004	19 mm clamp	1
53	ZEZXXXX-XXXXX	M-T - M8 D25 H10 silentblock	1
54	DVD3440-P010A	BH4 tubular base	1

N°	REFERENCE	DESCRIPTION	QUANTITY
55	ZEZ0205-00008	DIN9021 (A2) - M8 flat washer	1
56	ZEZ0207-00006	DIN985 (A2) - M8 hex self-locking nut	1
57	ZEZ2802-00018	M 1/2" pneumatic straight socket - 12 mm tube	1
58	ZEZ2411-00003	M-F PP reducer - M1" x H 1/2" - ARAG 245 2042	1
59	ZEZ2419-00003	PP 1" threaded o-ring gasket	1
60	ZEZ2406-00003	90 F-F 1" PP elbow - ARAG 120 2044	1
61	ZEZ0207-00005	DIN985 (A2) - M6 hex self-locking nut	2
62	ZEZ0205-00007	DIN9021 (A2) - M6 flat washer	4
63	ZEZ0202-00107	DIN 912 (A2) M6x35 Allen screw	4
64	ZEZ0204-00007	DIN125 (A2) - M6 flat washer	4
65	ZEZ1201-00001	Bilge pump	1
66	ZEZ2406-00003	90 F-F 1" PP elbow - ARAG 120 2044	1
67	DVD3445-P050A	BH4-21 priming pump support	1
68	ZEZ0202-00103	DIN912 (A2) - M6x16 Allen screw	2
69	ZZEZ0204-00007	DIN125 (A2) - M6 flat washer	4
70	ZEZ0207-00005	DIN985 (A2) - M6 hex self-locking nut	4
71	ZEZXXXX-XXXXX	DIN912 (A2) - M4x16 Allen screw	3
72	ZEZ0204-00005	DIN125 (A2) - M4 flat washer	3
73	ZEZ1607-00008	D63 horizontal pressure gauge panel outer ring	1
74	ZEZ1607-00002	1_4" PN40 double-scale horizontal pressure gauge	1
75	DVD3445-P040A	BH4-21 pressure gauge support	1
76	ZEZ0205-00007	DIN9021 (A2) - M6 flat washer	2
77	ZEZ0209-0000	DIN127-B (A2) - M6 grower washer	2
78	ZEZ0202-00103	DIN912 (A2) - M6x16 Allen screw	2
79	ZEZ0204-00005	DIN125 (A2) - M4 flat washer	3
80	ZEZ0207-00003	DIN985 (A2) - M4 hex self-locking nut	3

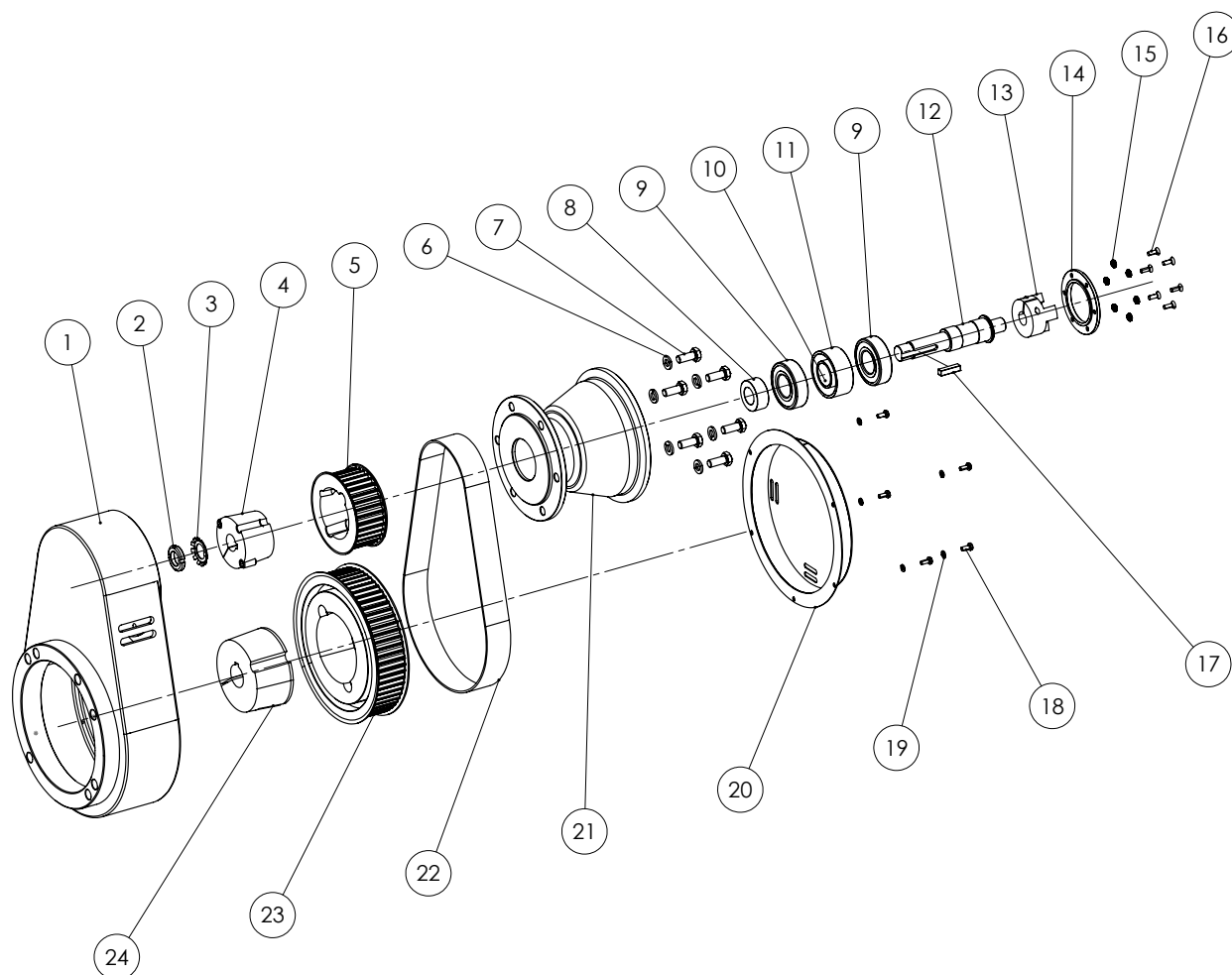
8.2. VFT4SP PUMP EXPLODED VIEW



N°	REFERENCE	DESCRIPTION	QUANTITY
1	ZEZ3308-00003.4	EKL 20-B transmission coupling elastomer 16 mm diameter	1
2	ZEZ3308-00003.2	EEKL 20B HYTREL transmission coupling end (white)	1
3	ZEZ0225-00060	DIN965 (A2) - M4x12 countersunk Phillips screw	6
4	ZEZ0223-00005	DIN6798-V (A2) - M4 V-shaped toothed washer	6
5	DVD3040-P070A	VFT_4SP pump bearing cover	1
6	DVD3040-P040A	VFT_4SP pump shaft	1
7	ZEZ3301-00002	3205 A-2ZTN9_MT33 double-row bearing	1
8	DVD3040-P080A	VFT_4SP pump shaft transmission bushing	1
9	ZEZ1103-00001	DIN6325 -D2.5 L10 cylinder locking pin	2
10	ZEZ0601-00005	17x1.8 o-ring gasket	1
11	ZEZ0601-00006	25x2.5 o-ring gasket	1
12	ZEZ3302-00002	4SP mechanical seal	1
13	ZEZ1328-00001	1/4" BSPT brass plug	1
14	DVD3040-P010A	VFT_4SP pump unit	1
15	DVD3040-P025A	VFT_4SP rear pump impeller	3
16	ZEZ0601-00007	105x3.5 o-ring gasket	3
17	DVD3040-P035A	VFT_4SP rear pump distributor	1
18	DVD3040-P030A	VFT_4SP front pump distributor	2
19	DVD3040-P025A	VFT_4SP front pump impeller	1
20	ZEZ3309-00002	MB2 washer (STAINLESS STEEL)	1
21	ZEZ3309-00001	KM2 right-threaded nut (STAINLESS STEEL)	1
22	ZEZ3303-00001	12x18x20 SELFOIL A bearing	1
23	DVD3040-P060A	VFT_4SP pump cover	1
24	ZEZ0601-00008	110x3.5 o-ring gasket	1
25	ZEZ0209-00004	DIN127-B (A2) - M6 grower washer	9
26	ZEZ0202-00103	DIN912 (A2) - M6x16 Allen screw	8
27	ZEZ0215-00035	ISO7380 (A2) - M6x10 round Allen screw	1

5.2. EXPLODED VIEW VFT SPEED INCREASER

EN



N°	REFERENCE	DESCRIPTION	QUANTITY
1	DVD3050-P010A	Increaser unit	1
2	ZEZ3309-00003	KM3 left-threaded nut	1
3	ZEZ3309-00004	MB3 washer	1
4	ZEZ3308-00007	1615-D19 mm taper lock conical bushing	1
5	ZEZ3308-00006	34-8M 30 TL-1615 toothed pulley	1
6	ZEZO209-00005	DIN127-B (A2) - M8 grower washer	6
7	ZEZO201-00117	DIN933 (A2) - M8x20 hex bolt	6
8	DVD3050-P070A	Type C increaser separator	1
9	ZEZ3301-00003	6205-2RS ball bearing	1
10	DVD3050-P050A	Type A increaser separator	1
11	DVD3050-P060A	Type B increaser separator	1
12	DVD3050-P040A	Increaser shaft	1
13	ZEZ3308-00003.1	EKL 20_B transmission coupling end - 15 mm diameter (engine)	1
14	DVD3050-P080A	Increaser bearing cover	1
15	ZEZO223-00005	DIN6798-V (A2) - M4 V-shaped toothed washer	6
16	ZEZO203-00018	DIN7991 (A2) - M4x16 countersunk Allen screw	6
17	ZEZ3308-00009	6x6x25 pin (increaser)	1
18	ZEZO216-00013	DIN7985 (A2) M4x10 Phillips screw	5
19	ZEZO209-00002	DIN127-B (A2) - M4 grower washer	5
20	DVD3050-P030A	Increaser cover	1
21	DVD3050-P020A	Increaser bell	1
22	ZEZ3308-00004	8M 720 timing belt 30 mm width	1
23	ZEZ3308-00005	64-8M 30 TL-2517 toothed pulley	1
24	ZEZ3308-00008	2517-D1" taper lock conical bushing	1

9. WARRANTY

9.1. COVER

Subject to the conditions, limitations and exceptions indicated below and in this manual, this warranty covers all material and manufacturing defects under normal conditions of use and service for the period established in the following table from the date of purchase.

Product	Time	Cover
with 2-stroke engine	1 year or 100 hours	Limited
with 4-stroke engine	2 years	Limited

9.2. SCOPE

Vallfirest Tecnologías Forestales will repair or replace any component at no cost deemed defective pursuant to the coverage defined above by any Vallfirest distributor or authorized representative. For repairs or replacements,

the customer must pay the shipping costs to the Vallfirest distributor or representative. The customer must provide the necessary information to analyze the causes of the non-conformity.

9.3. EXCEPTIONS

This warranty does not cover parts or accessories not supplied by Vallfirest Tecnologías Forestales or damages from using such parts or accessories. This warranty will not be valid for the VFT BH4 fire pump when the pump has been used in a manner considered by Vallfirest as unusual or unapproved.

Moreover, this warranty will not be valid on any VFT BH4 fire pump when:

1. The engine has been used without oil or with an inappropriate fuel blend.
2. The engine has been modified or altered for a higher revolution.
3. Damage is observed due to overheating because the cylinder heat dissipators are very dirty or because dirt enters the engine.
4. It simply needs a little fine tuning or an adjustment of the carburetor, spark plugs or minor repair.
5. It has been incorrectly repaired which affected the quality or reliability of the BH4 fire pump.
6. It has been subjected to abnormal uses. This is observed when the engine operates poorly because of abnormal use or under adverse conditions which shorten the useful life of the engine.
The warranty coverage is not applicable to the engines where normal use has ended the useful life of a part.

7. The result of the owner not following the operating instructions described in this manual.

8. The appropriate procedures for winter storage were not followed.

9. When there are damages in the pump caused by water suction with residue such as sand, rocks, leaves and branches, etc.

10. When there are damages to the pump due to poor pump priming or operation without water or without discharging water.

Vallfirest Tecnologías Forestales will not be liable for any damages such as a loss of the use of the product, a loss of time, inconvenience, fuel costs, telephone, travel, transport or accommodation, losses or damages to personal items or loss of credit (loss of profit).

This is the only explicit or implicit warranty granted by Vallfirest Tecnologías Forestales applicable to the VFT BH4 fire pump and Vallfirest does not authorize any person, firm, company or representative to grant any warranty or assume any other liability on behalf of Vallfirest Tecnologías Forestales.

NOTE: All the specifications are subject to change without notice.

If you need technical assistance, parts or additional information, please contact our customer service.

customer.service@vallfirest.com | Tel. (+34) 93 867 87 79.

