

FEUER- LÖSCHTECHNIK FIRE FIGHTING

BEDIENUNGS- UND WARTUNGSANLEITUNG OPERATION AND MAINTENANCE MANUAL

*ISTRUZIONI PER L'USO E LA MANUTENZIONE
INSTRUCTIONS DE SERVICE ET DE MAINTENANCE
INSTRUCCIONES DE SERVICIO Y MANTENIMIENTO
INSTRUKCJA OBSŁUGI I KONSERWACJI
РУКОВОДСТВО ПО ОБСЛУЖИВАНИЮ И ТЕХУХОДУ*

Feuerlöschtechnik *Fire Fighting*



Portable Fire Fighting Unit

model ZL 500 H

Specifications as per Acknowledgement of Order

Order No.:

Contract No.:

PF Pumpen und Feuerlöschtechnik GmbH
Zeichensteig 225
D-09477 Jöhstadt

Telefon: (0049 37343) 810
Telefax: (0049 37343) 81287
E-Mail: info@johstadt.com

1.0 General information

This manual provides information for the safe and correct operation of the portable fire fighting unit ZL 500 H and to assure long life and troublefree working of the unit. The design of fire fighting unit is in conformity with DIN 14410 standards.

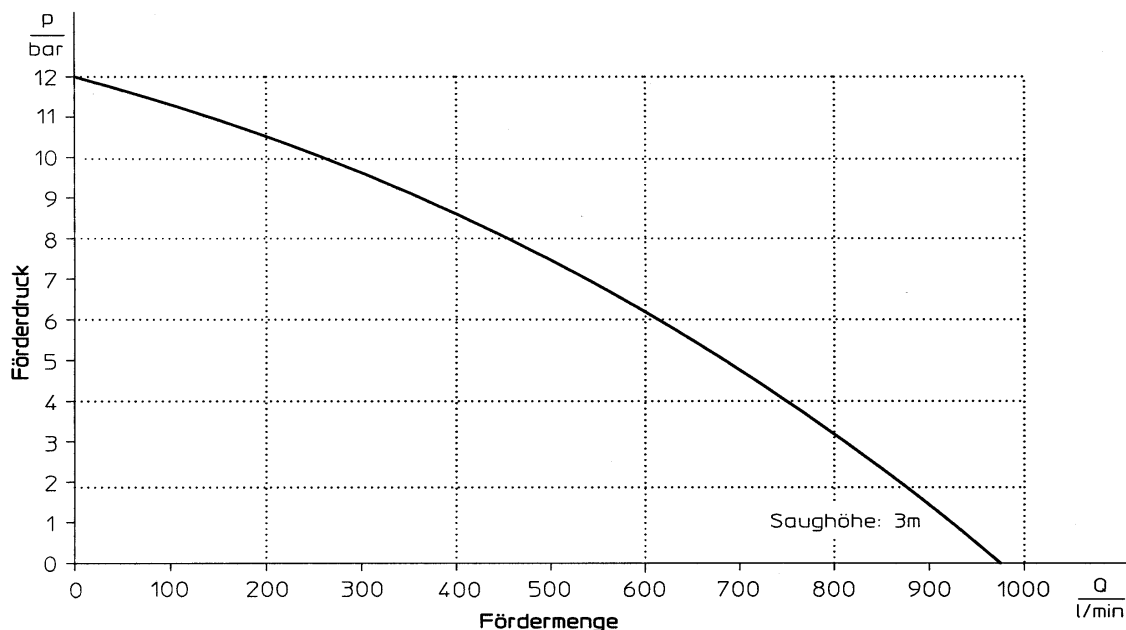
For details concerning the engine consult the manual supplied by the engine manufacturer. A stand-by fire fighting unit has to be in constant state of readiness. Only by scrupulously observing all instructions for its use and maintenance is it possible to meet these requirements and to get the unit into operation with optimum speed.

Apart from fire fighting the unit can also be used to pump polluted liquids.

1.1 Specifications

Flow rate:	500 l/min
rated pressure:	6 bar
rated motor speed:	2925 rpm
geodetic head:	3 m
max. pressure:	11 bar
max. performance:	960 l/min
max. suction lift :	7,5 m

1.2 Performance diagram



2.0 Safety

In this manual, the fundamental rules for installation, operation and maintenance are listed.

The operators have to be properly instructed to cope with any emergency.



2.1 Safety rules for the operator

To avoid potential hazards to people these rules have to be carefully observed.

1. Wear protective clothing as mandatory for fire fighting.
2. Do not touch rotating or hot parts (e. g. exhaust, cylinder)
3. Do not remove any safety device.
4. Do not run the engine in closed rooms (to avoid inhaling exhaust fumes).
5. Top up the fuel tank only when the engine is stopped and has cooled off, fuel might get spilled onto hot parts.
6. Open the head valve gradually to avoid backlash by the pressure hose.
7. Take care when filling the delivery hose. Vent it (Otherwise the hose might burst and harm the operator).
8. Position the unit so that neither exhaust nor the engine heat can start a fire.
9. Repairs and maintenance work should be carried out by qualified personnel in compliance with the operating instructions for pump and engine.

3.0 Description

3.1 Pump

Single stage centrifugal pump made of sea waterproof aluminium and thus suitable for pumping also brine or polluted water.

The pump is directly flanged to the engine. Shaft sealing is by way of a maintenance-free slip-ring seal.

The suction port has a B-type tight coupling as per DIN 14306 and a strainer basket as per DIN 14423. The head port has a self closing B-type head valve as per DIN 14381 and a B-type tight coupling as per DIN 14308. When draining the delivery hoses over the pump, open the valve completely by pulling the lateral locking pin to avoid backkick of the valve disk.

The pressure meter as per DIN 14421 reads the pressures on the intake and delivery sides.

3.2 Venting

Until the pump draws water, the centrifugal pump and the suction hose are vented by a hand piston pump. The piston pump provides the vacuum for venting. Close the air cock in vent tube, if the pump generates pressure.

3.3 Engine

The pump is driven by an air cooled four-stroke two-cylinder Combustion engine, yielding 18 HP at 3600 rpm.

A flyweight governor maintains a constant engine speed in accordance with the setting of the throttle lever. The tank, located above the engine will hold 8.5 liters of unleaded standard type petrol. The capacity of the oil tank is 1.7 l. (15 W-40 multigrade oil).

3.4 Carrying frame

The carrying frame is made of powder coated sectional steel. Dimensions as per DIN 14410. Four hinged handles facilitate the handling of the unit. On the frame front there is a socket for recharging the battery.

3.5 Meters, signals and controls

- | | |
|------------------------------|---|
| 1. Throttle lever: | „Open“ for high speed
„Closed“ for low speed |
| 2. Choke: | The choke closes the air valve of the carburettor to provide a rich gas mixture (Pull starter for cold start) |
| 3. Hand piston pump: | Actuate for venting the suction hose. |
| 4. Main switch: | In „0“ position ignition is de-activated and engine stops. In „1“ position the ignition is switched on, the oil warning lamp is on. Engine can be started by push button or pull starter. |
| 5. Starter button: | With the main switch on, the engine can be started by push-button. |
| 6. Pressure meter: | Combined pressure/vacuum meter. During the priming cycle the suction head is measured, during operation, the delivery pressure. |
| 7. Oil warning lamp: | When the main switch is turned on the red oil warning lamp goes on. When the engine starts firing the signal will go out. If the light stays on while the engine is running, stop the engine immediately and check the oil level. |
| 8. Fuel stop cock: | To prevent the flooding of the carburettor float chamber close the fuel stop cock in the case of long idle periods. |
| 9. Air cock in venting tube: | Close the air cock if the pump generate pressure. The cock prevent water from entering the piston pump and prevent air from entering the suction hose. |
| 10. Drain cock: | After use, especially if temperatures below zero are to be expected, the pump has to be drained. |
| 11. Pull starter: | For starting with starter cord. |

4.0 Modes of operation

Provided the pump ist regularly checked after use it will not benecessary to check fuel and oil tank prior to operation.

4.1 Starting

Start operation in this sequence:

1. Position the pump as near as possible to the water withdrawal point.
2. The pump should not be tilted more than 20°.
3. Remove dummy couplings.
4. Connect the hoses.
5. Close drain cock.
6. Open venting valve.
7. Slightly open head valve.
8. Open fuel cock.
9. Turn on main switch.
10. Cold start: Pull the choke
Hot start: No choke needed
11. Put throttle on part load.
12. Push „Starter“ button until engine fires. Should the engine not start within 15 seconds, interrupt starting process, to avoid overloading the battery and overheating the starter.



Pull starter: Pull starter cord until you feel a resistance and then yank the starter cord. This way backlash is avoided. Let the starter cord rewind slowly and repeat the process.

13. As soon as engine fires regularly rewind the cord.



14. Do not run pump dry for more than 2 or 3 minutes. Otherwise the slipping seal for the pump shaft might get overheated.

4.2. Priming

1. Use basket and check valve.
2. Secure the suction line with a rope (if necessary also secure the valve).
3. Immerse basket completely in water but take care not to drop it into mud or sand.
4. Make sure the rise of the suction line is continuous.
5. Suction hose must not loop above suction port. (Airlock!).
6. Open air cock in air vent tube.
7. Actuate hand priming pump.
8. Run engine at low speed.
9. Watch vacuum meter (Build-up of vacuum).
10. After some time the pump generate pressure.
11. When the vacuum meter registers a constant vacuum close the air cock in air vent tube.
12. Gradually open head valve.
13. Set throttle to required head pressure.

4.3 Hydrants

When the pump draws the water from the water mains (hydrant) or from another pump no priming is required. Proceed as follows:

1. Close venting air cock.
2. Turn on hydrant.



3. Feed pressure should be more than 1 bar. Otherwise the hose on the suction side might collapse and the water flow be interrupted.



4. The feed pressure must not exceed 12 bar (if necessary install pressure-reducing valve).
5. Start engine (see above).
6. Gradually open head valve.
7. Gradually fill hose lines.
8. Set engine speed to the required head pressure.

4.4 Operating practice

Occasional checking of pressure meter and pump operation is necessary.

1. Oil warning light should not be on.
(Otherwise stop engine and check oil level).
2. Pressure reading should remain constant. (In case of a pressure drop check basket and suction line which might be clogged or leaking).
3. When opening the throttle, pressure should rise. Otherwise there might be cavitation. In case of cavitation the pump runs noisier and might get damaged.
(Cavitation may be caused by a clogged suction line, or in case of draining operation, if suction line is too long and pressure too low).
4. Do not top up fuel tank when engine is running. Fire hazard!
(Cool engine by putting it first in idling mode and then stopping it altogether).
5. Pump should not be working over a longer period with closed delivery end.
Water would get excessively hot. (If a longer interruption of the delivery is unavoidable, open the drain cock in order to provide fresh water to the pump).

5. Ending the operation

1. Throttle down the engine and let engine cool for about two minutes.
2. Put main switch into „OFF“ position (Ignition off).
3. In case the hose lines are still under pressure open the head valve.
(Open valve beyond the position of the locking pin).
4. Drain pump and hoses.
5. Disconnect hoses.
6. Check seals.
7. Fix dummy couplings.
8. Preparation for next operation:

Dry run test.

- Fix dummy coupling on suction port.
 - Remove dummy coupling from head port.
 - Close drain cock.
 - Open venting air cock.
 - Close head valve (pressure valve).
 - Actuate hand priming pump.
 - Vacuum must not drop more than 0.1 bar during 1 minute.
9. Top up fuel.
 10. Close fuel cock
 11. Check oil level.
 12. Check liquid level of battery.
 13. Check and clean air filters.
 14. Clean engine and pump.
 15. Check for damaged or loose parts.
 16. Carry out periodic inspections.
 17. Store pump in clean and dry place.

6. Antifreeze precautions

If the pump has been properly drained and stored in a frost-proof place no further measures are required.

Otherwise take the following precautions:

1. Pour about 0.5 l antifreeze into the suction port of the pump.
2. Fix dummy couplings.
3. Actuate hand priming pump up to fluid run out.

After the frost period the antifreeze can be drained through the drain valve for re-use.

7. Maintenance

Carry out maintenance as per instructions of the engine manufacturer. If the unit runs for less than 50 hours in twelve months, change the oil on a yearly basis.

7.1 After each operation

Carry out the instruction as per paragraph 5 „Stopping operation“ and, where applicable, Par. 6 „Antifreeze measures“.

If the oil warning light stays off, the electric starter does not work, or the battery is not re-charged after the main switch is turned on, check the F 1 fuse.

The 16 A fuse is located in the power connector near the starter.

7.2 Monthly maintenance

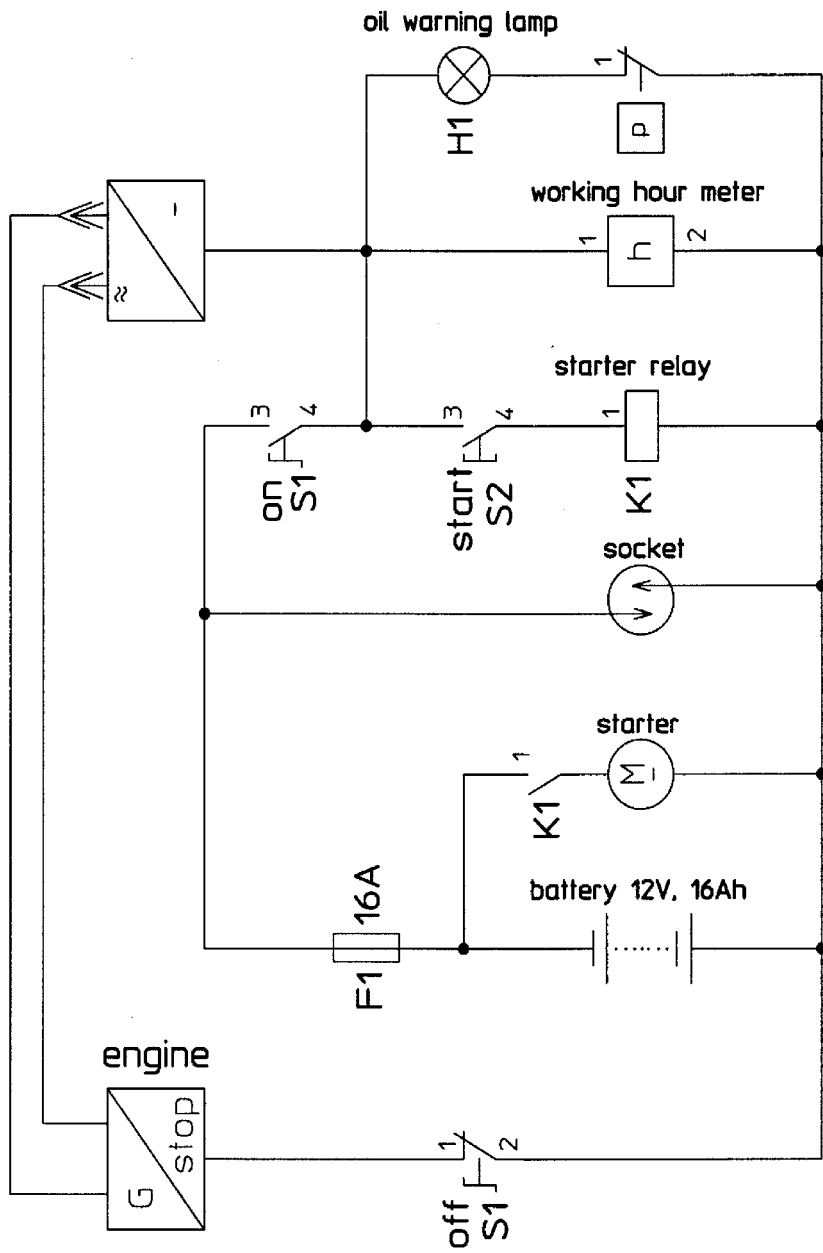
Test run the engine once a month and check:

1. The functioning of the starting process.
2. Keep the pump working at half-throttle for about 15 min.
For that purpose connect the pump to the water supply to avoid dry running.
3. Dry priming test.
4. Check fuel filter for cleanliness.
5. Re-charge starter battery, if necessary.
6. Check if the stop valve in the venting system works freely.
7. Check oil level of engine, and the fuel tank.

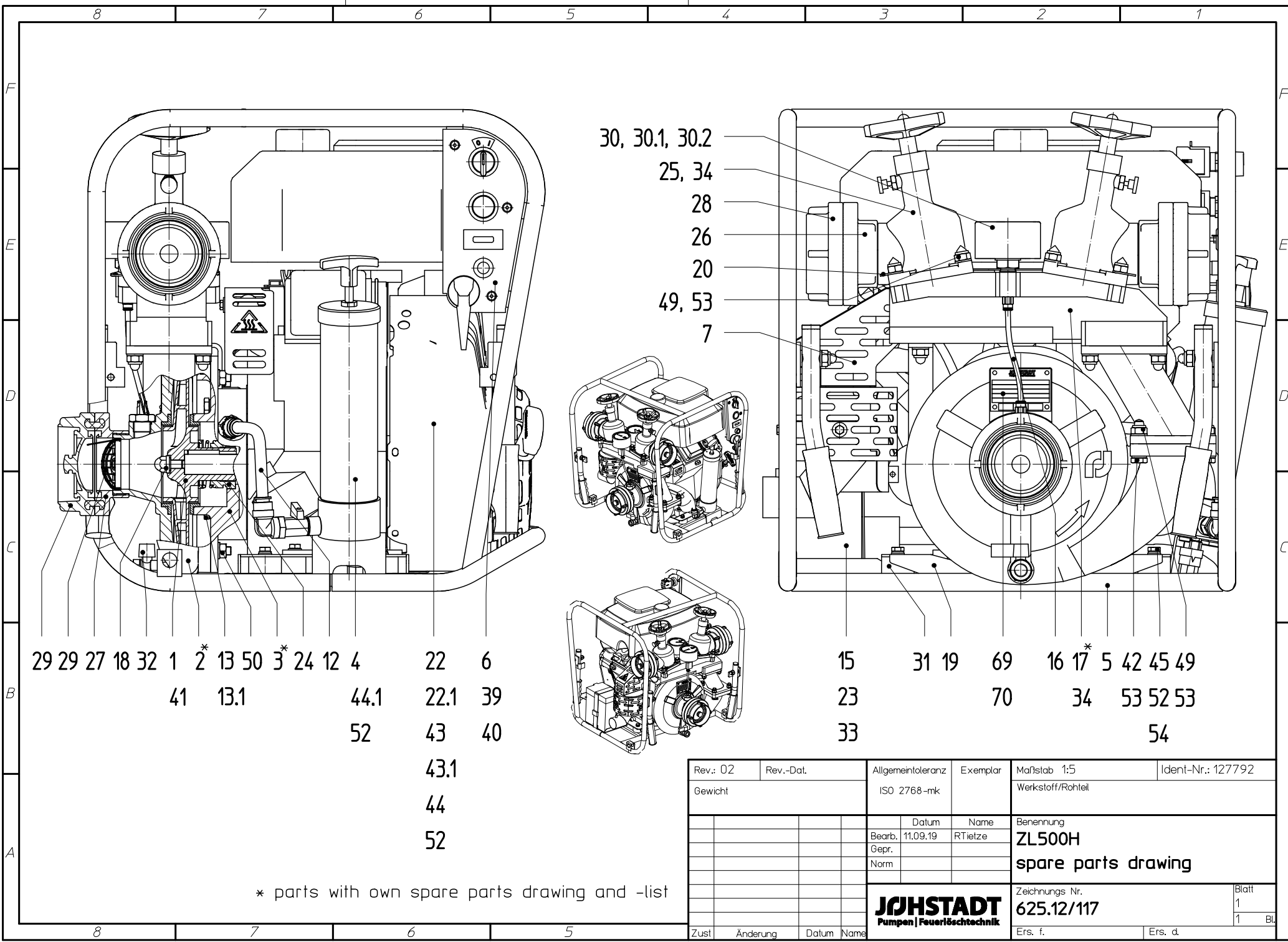
7.3 Yearly maintenance

In addition to the above:

1. Check starter battery. During the starting-up cycle the voltage should not drop below 9 V.
Otherwise exchange battery.
2. Change engine oil.
3. Clean air filter.
4. Clean plugs and check the gap (0.76 mm).
5. For further maintenance measures consult the maintenance instructions of the engine manufacturer.



Stromlaufplan
ZL 500 H



- 29 29 27 18 32 1 2* 13 50 3* 24 12 4 22 6
- 41 13.1 44.1 22.1 39
- 52 43 40
- 43.1
- 44
- 52

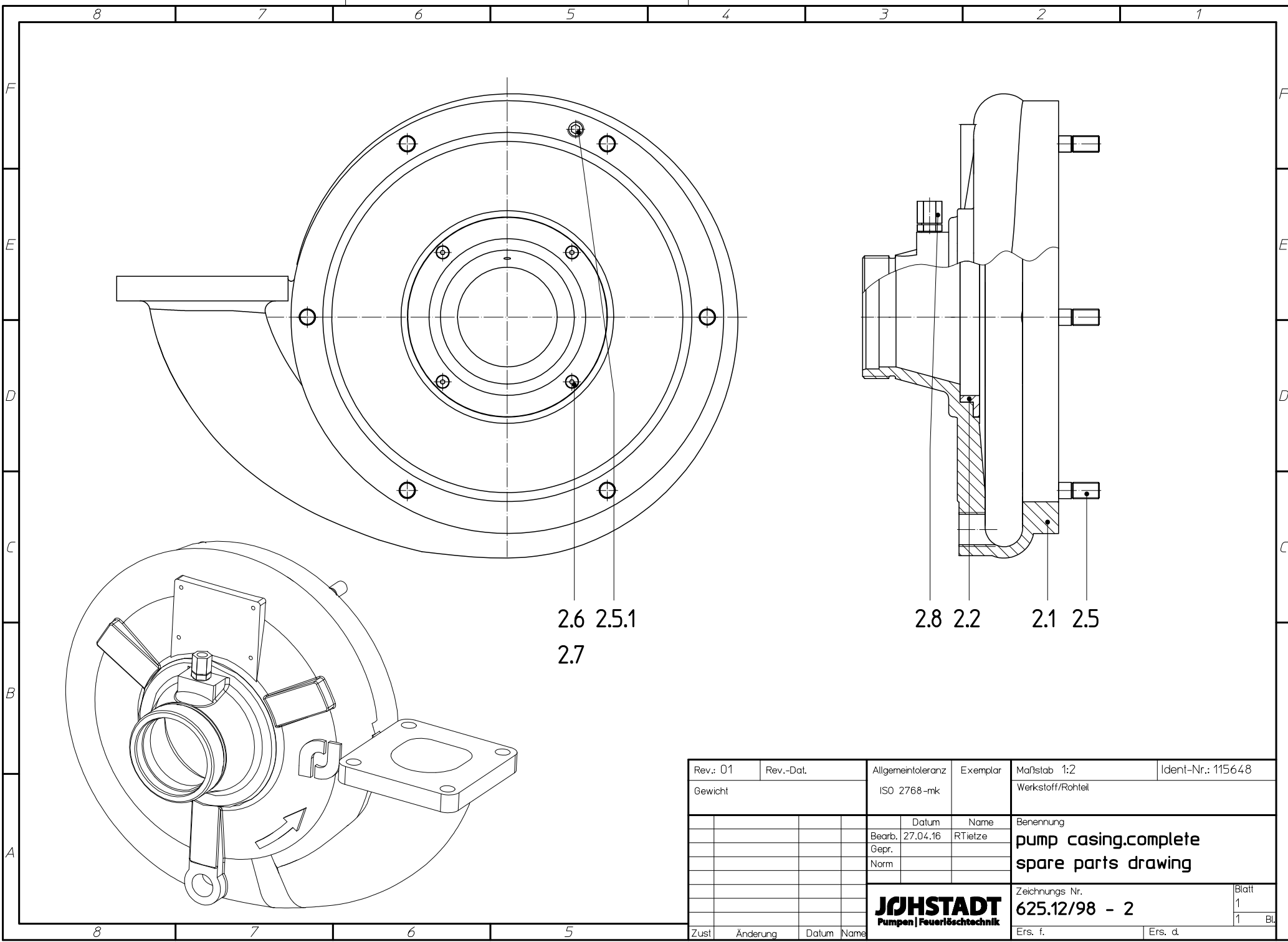
- 30, 30.1, 30.2
- 25, 34
- 28
- 26
- 20
- 49, 53
- 7

- 15 31 19 69 16 17* 5 42 45 49
- 23 70 34 53 52 53
- 33 54

* parts with own spare parts drawing and -list

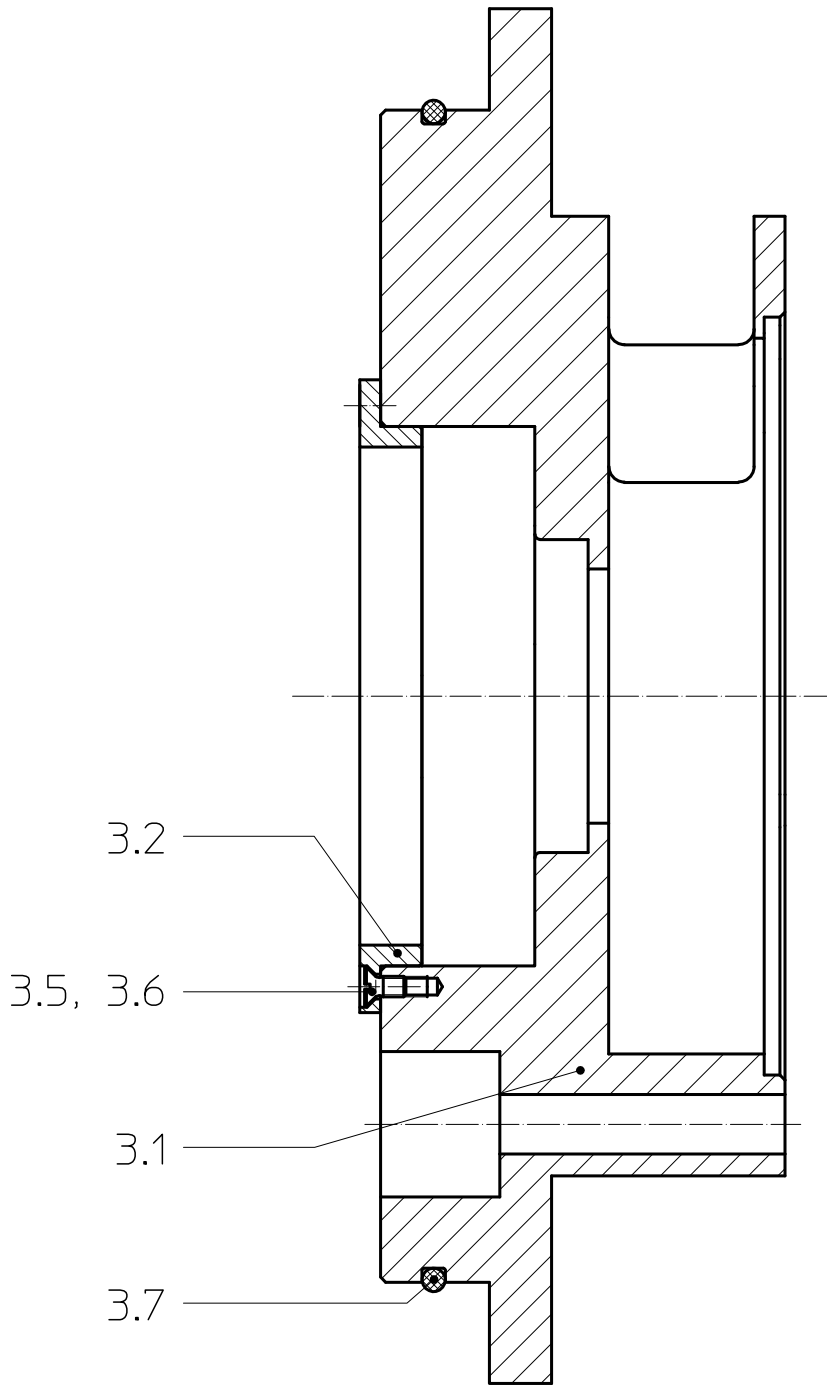
Rev.: 02	Rev.-Dat.	Allgemeintoleranz	Exemplar	Maßstab 1:5	Ident-Nr.: 127792
Gewicht		ISO 2768-mk		Werkstoff/Rohteil	
		Datum	Name	Benennung	
		Bearb. 11.09.19	RTielze	ZL500H	
		Gepr.		spare parts drawing	
		Norm		Zeichnungs Nr.	
				625.12/117	
Zust	Änderung	Datum	Name	Ers. f.	Ers. d.
					Blatt
					1
					1 Bl.



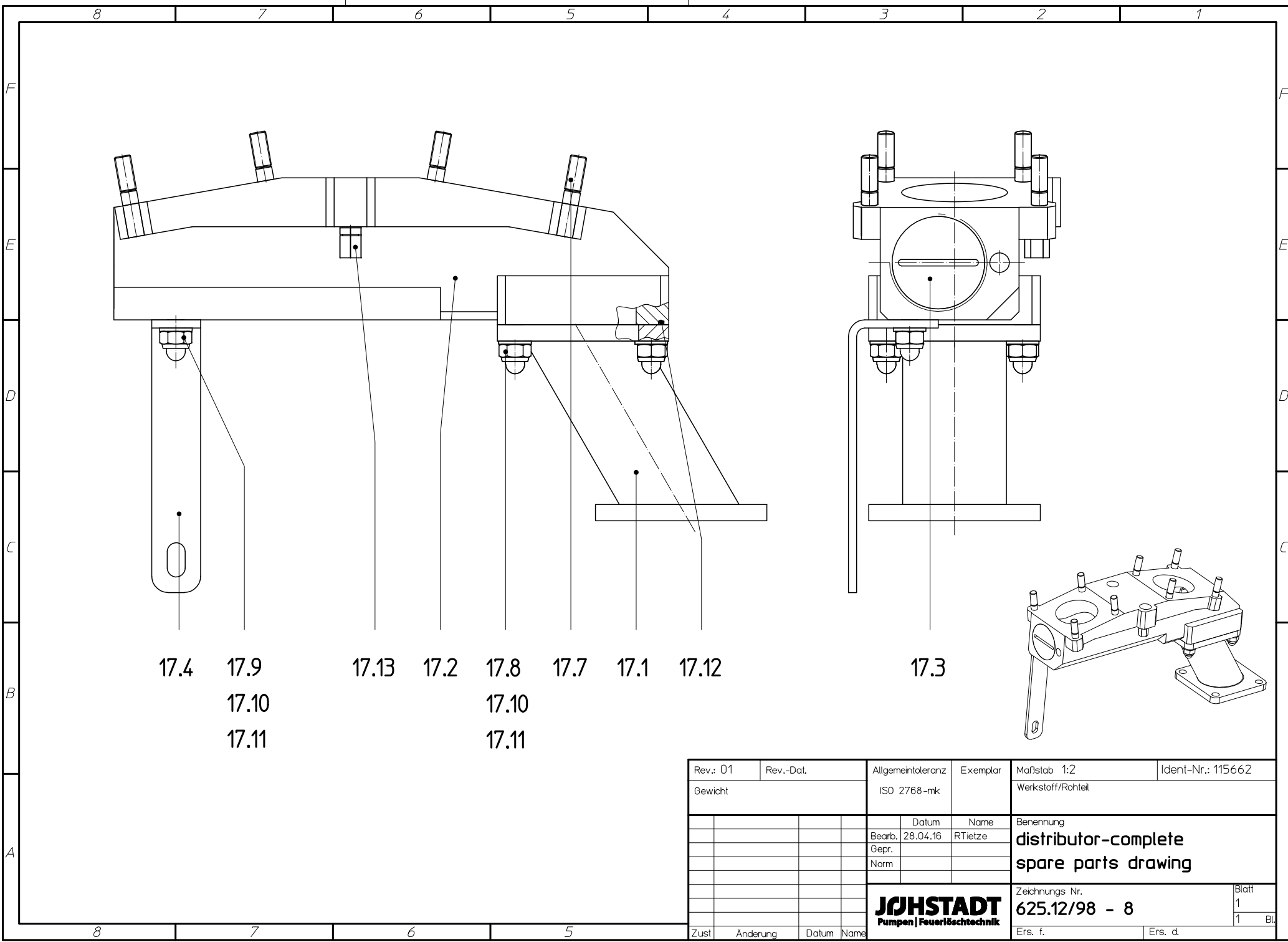


Rev.: 01	Rev.-Dat.	Allgemeintoleranz	Exemplar	Maßstab 1:2	Ident-Nr.: 115648
Gewicht		ISO 2768-mk		Werkstoff/Rohteil	
		Datum	Name	Benennung	
		Bearb. 27.04.16	RTielze	pump casing.complete	
		Gepr.		spare parts drawing	
		Norm			
				Zeichnungs Nr.	Blatt
				625.12/98 - 2	1
				Ers. f.	Ers. d.
Zust	Änderung	Datum	Name	Blatt	
				1 Bl.	

JÖHSTADT
Pumpen | Feuerlöschtechnik



Rev.: 01		Rev.-Dat. 15.07.03		Allgemeintoleranz		Exemplar		Maßstab		Ident-Nr.: 61308	
Gewicht				ISO 2768 -mk				Werkstoff/Rohteil			
								Gehäusedeckel-vollst.			
				Datum		Name		Benennung			
				Bearb. 15.07.03		R.Tietze		housing cover-complete			
				Gepr.				Ersatzteile/spare parts			
				Norm							
				JÖHSTADT Pumpen Feuerlöschtechnik				Zeichnungs Nr.		Blatt	
								625.12/... - 3		1	
								Ers. f.		Ers. d.	
Zust	Änderung	Datum	Name					1		Bl.	



17.4 17.9 17.13 17.2 17.8 17.7 17.1 17.12
 17.10
 17.11 17.10
 17.11

17.3

Rev.: 01	Rev.-Dat.	Allgemeintoleranz	Exemplar	Maßstab 1:2	Ident-Nr.: 115662
Gewicht		ISO 2768-mk		Werkstoff/Rohteil	
		Datum	Name	Benennung	
		Bearb. 28.04.16	RTielze	distributor-complete	
		Gepr.		spare parts drawing	
		Norm		Zeichnungs Nr.	
				625.12/98 - 8	
				Ers. f.	Ers. d.
Zust	Änderung	Datum	Name	Blatt	
				1	
				1 Bl.	



Ersatzteilliste *Spare parts list*

 12.09.19 7:40
 owst / PF.SSTLB.ETL

Artikel	127792	ZL500H	625.12/117 (-) AL	
1	27207	LAUFRAD-VOLLST.	IMPELLER	1 Stück
2	115648	PUMPENGEHAEUSE-VOLLS	PUMP CASING-COMplete	1 Stück
2.1	67705	PUMPENGEHAEUSE	PUMP HOUSING	1 Stück
2.1.1	126459	VERSCHLUSSSCHRAUBE	SCREW PLUG	1 Stück
2.1.2	121201	REDUZIERSTUECK	REDUCER	1 Stück
2.2	17231	SCHLEIFRING	SLIP RING	1 Stück
2.5	1192	STIFTSCHRAUBE	STUD BOLT	6 Stück
2.5.1	73800	GEWINDESTIFT	THREATHED PIN	1 Stück
2.6	3038	ZAHNSCHEIBE	TOOTHED LOCK WASHER	4 Stück
2.7	2855	SENKSCRAUBE	FLAT HEAD SCREW	4 Stück
2.8	118253	STECKVERBINDER	CONNECTORS	1 Stück
3	88428	GEHAEUSEDECKEL-VOLLS	HOUSING COVER-COMplete	1 Stück
3.1	88427	GEHAEUSEDECKEL	HOUSING COVER	1 Stück
3.2	17418	WINKEL	ANGLE	1 Stück
3.3	17231	SCHLEIFRING	SLIP RING	1 Stück
3.5	3038	ZAHNSCHEIBE	TOOTHED LOCK WASHER	4 Stück
3.6	2855	SENKSCRAUBE	FLAT HEAD SCREW	4 Stück
3.7	17151	RUNDRING	O-RING	1 Stück
3.8	12172	ZYLINDERSCHRAUBE	CYLINDER HEAD SCREW	2 Stück
4	75441	ENTLUEFTUNGSPUMPE	VACUMAT	1 Stück
5	128425	TRAGGESTELL	CARRY FRAME	1 Stück
6	128429	BEDIENTAFEL	PANEL	1 Stück
7	127821	AUSPUFF-VOLLST.	EXHAUST-COMplete	1 Stück
12	125745	ENTLUEFTUNGSLEITUNG	VENT LINE	1 Stück
12.1	123792	STECKVERBINDER	CONNECTORS	1 Stück
12.2	123793	STECKVERBINDER	CONNECTORS	1 Stück
12.3	120163	PA-ROHR	PIPE	0,4 m
13	64388	SECHSKANTSCHRAUBE	HEXAGONAL SCREW	4 Stück
13.1	116535	DICHTSCHEIBE	SEALING WASHER	5 Stück
15	64389	BATTERIEUNTERLAGE	BATTERY PAD	1 Stück
16	118259	PA-ROHR	PIPE	0,3 m
17	115662	VERTEILERSTUECK-VOLL	DISTRIBUTOR-COMplete	1 Stück
17.1	115666	ZWISCHENSTUECK	INTERMEDIATE PIECE	1 Stück
17.2	115667	VERTEILERSTUECK	DISTRIBUTOR	1 Stück
17.3	115668	VERSCHLUSSSTOPFEN	SCREW PLUG	1 Stück
17.4	115669	STUETZE	HOLDER	1 Stück
17.7	1141	STIFTSCHRAUBE	STUD BOLT	8 Stück
17.8	1192	STIFTSCHRAUBE	STUD BOLT	4 Stück
17.9	64368	STIFTSCHRAUBE	STUD BOLT	1 Stück
17.10	11187	SECHSKANT-HUTMUTTER-	HEXAGON CUP NUT	5 Stück
17.11	771	SCHEIBE	WASHER	5 Stück
17.12	6433	RUNDRING	O-RING	1 Stück
17.13	118253	STECKVERBINDER	CONNECTORS	1 Stück
18	17232	LAUFRADSCHRAUBE	IMPELLER SCREW	1 Stück
19	115696	MOTORTRAEGER	MOTOR SUPPORT	1 Stück
20	2878	HALTBLECH	RETAINING PLATE	3 Stück
21	68976	KURZBEDIENANWEISUNG	SHORT MANUAL	1 Stück
22	16828	MOTOR	ENGINE	1 Stück

22.1	50314	WINKEL	MOUNTING ANGLE	1 Stück
23	17960	EL-STARTERBATTERIE	BATTERY	1 Stück
24	53700	GLEITRINGDICHTUNG	MECHANICAL SEAL	1 Stück
25	2904	B-DRUCKVENTIL	PRESSURE VALVE, TYPE B	2 Stück
26	1113	FESTKUPPLUNG	COUPLING STORZ B	2 Stück
27	3518	FESTKUPPLUNG	COUPLING	1 Stück
28	1111	BLINDKUPPLUNG-M.KETT	BLIND CAP WITH CHAIN	3 Stück
29	17152	SIEB	SIEV	1 Stück
30	1117	DRUCKMESSGERAET	PRESSURE GAUGE	1 Stück
30.1	1118	DRUCKMESSGERAET	PRESSURE GAUGE	1 Stück
30.2	990	DICHTUNG	SEAL	2 Stück
31	16979	GUMMI-METALL-PUFFER	DAMPING BUFFER	4 Stück
32	55477	KUGELHAHN	BALL VALVE	1 Stück
33	115645	SPANNGURT	STRAP	1 Stück
34	6433	RUNDRING	O-RING	3 Stück
39	122471	EL-STECKER-DOSE-MAGC	PLUG-SOCKET-MAGCODE	1 Stück
40	122472	EL-STECKER-CLIP-MAGC	PLUG-CLIP-MAGCODE	1 Stück
41	29726	PASSFEDER	FEATHER	1 Stück
42	15374	SECHSKANTSCHRAUBE	HEXAGONAL HEAD SCREW	4 Stück
43	6677	SECHSKANTSCHRAUBE	HEXAGON SCREW	2 Stück
43.1	4211	SECHSKANTSCHRAUBE	HEXAGON HEAD SCREW	2 Stück
44	29525	SECHSKANTMUTTER-M.KL	HEXAGONAL NUT	4 Stück
44.1	18098	ZYLINDERSCHRAUBE	CYLINDER HEAD SCREW	3 Stück
45	3586	SECHSKANTSCHRAUBE	HEXAGONAL SCREW	8 Stück
49	11187	SECHSKANT-HUTMUTTER-	HEXAGON CUP NUT	12 Stück
50	429	SECHSKANTMUTTER	HEXAGON NUT	6 Stück
52	2293	SCHEIBE	WASHER	19 Stück
53	771	SCHEIBE	WASHER	19 Stück
54	770	FEDERRING	SPRING RING	8 Stück
69	72223	TYPENSCHILD	DATA PLATE	1 Stück
70	11319	HALBRUNDKERBNAGEL	HEAD GROOVED PIN	4 Stück



COMMERCIAL POWER



- (en) *Operator's Manual*
- (da) *Betjeningsvejledning*
- (de) *Bedienungsanleitung*
- (el) *Εγχειρίδιο Χρήσης*
- (es) *Manual del Operario*
- (fi) *Käyttäjän käsikirja*
- (fr) *Manuel de l'opérateur*
- (it) *Manuale dell'Operatore*
- (nl) *Gebruiksaanwijzing*
- (no) *Brukerhåndbok*
- (pt) *Manual do Operador*
- (sv) *Instruktionsbok*

Model 290000

Vanguard™
Gasoline

Model 350000

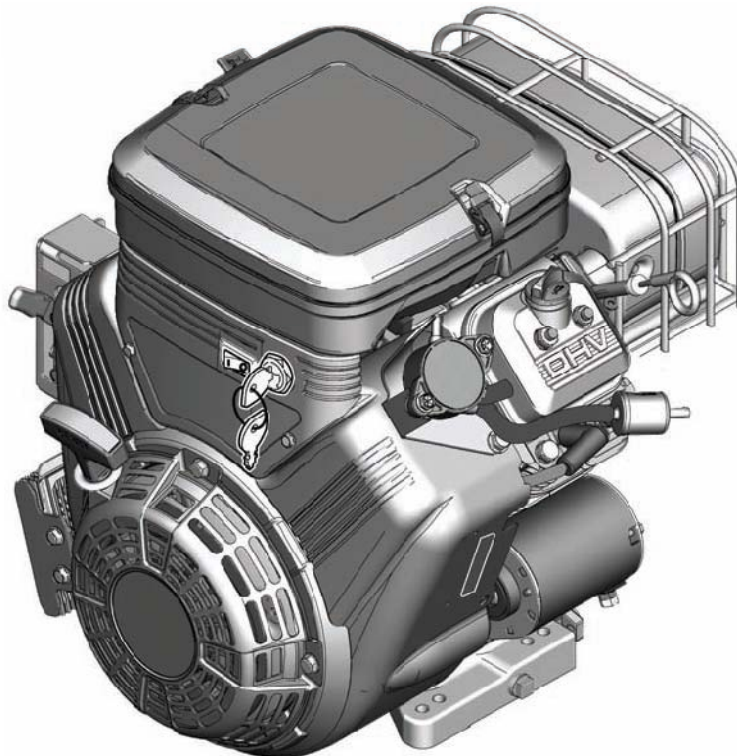
Vanguard™
Gasoline

Model 300000

Vanguard™
Gasoline

Model 380000

Vanguard™
Gasoline



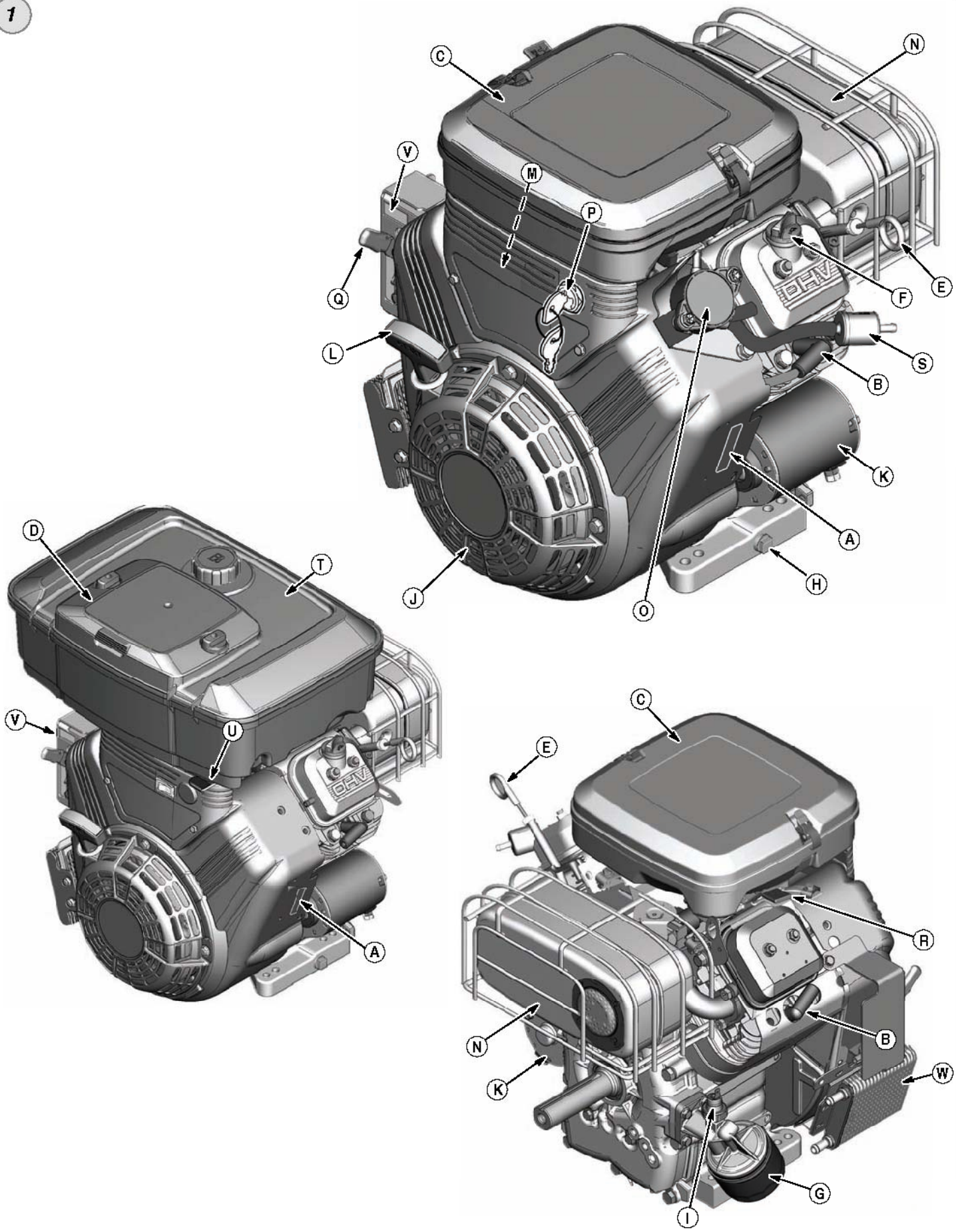
Briggs & Stratton is a registered trademark of Briggs & Stratton Corporation

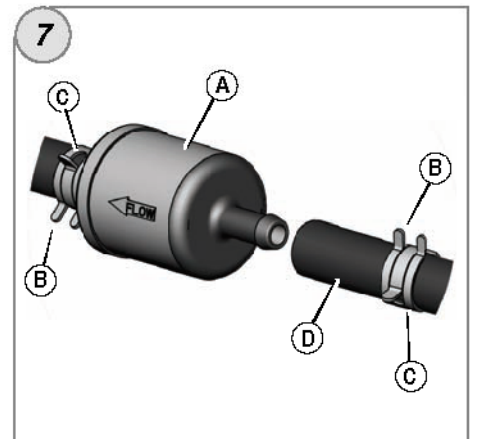
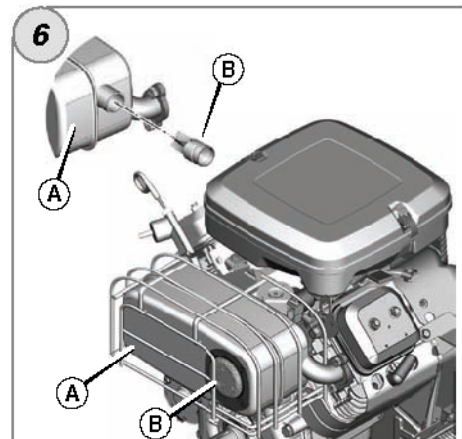
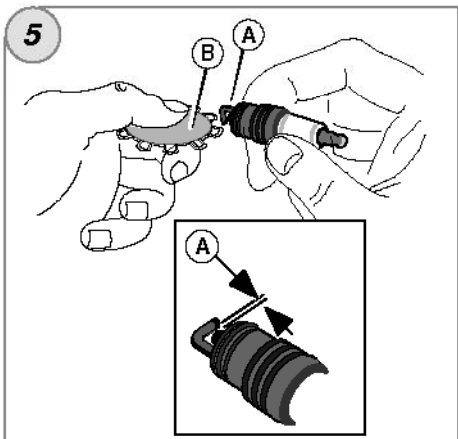
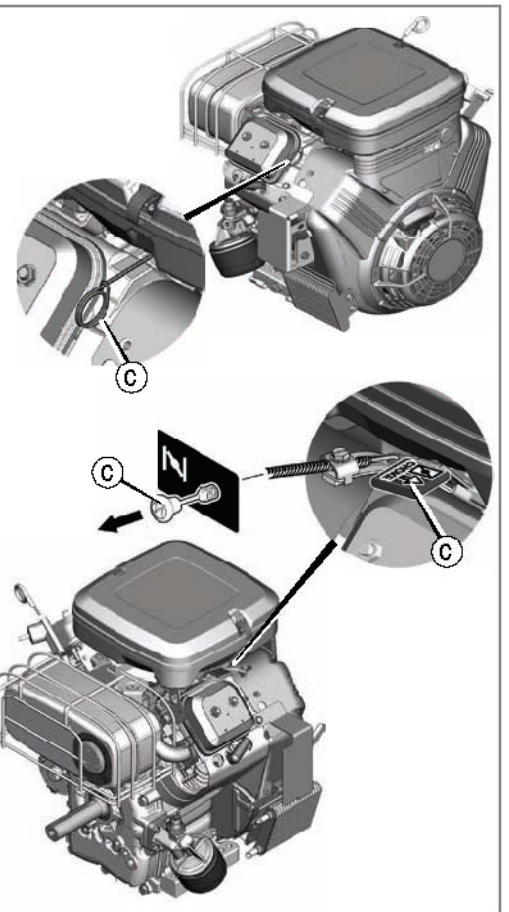
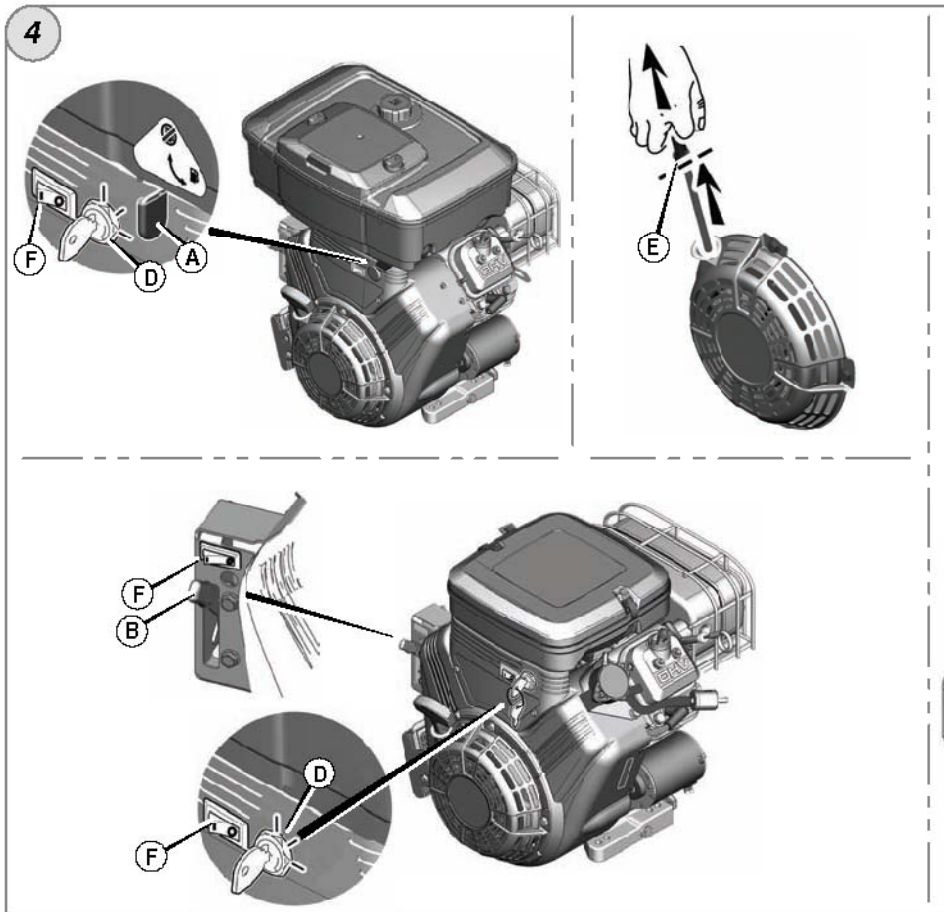
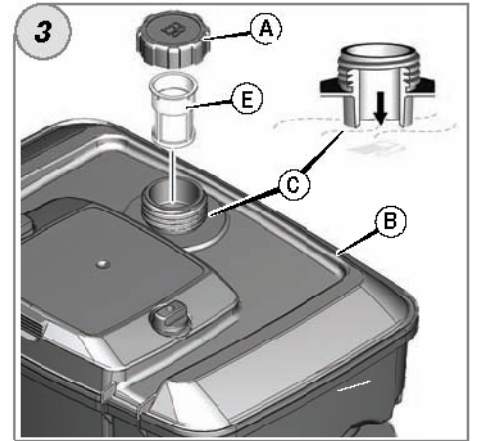
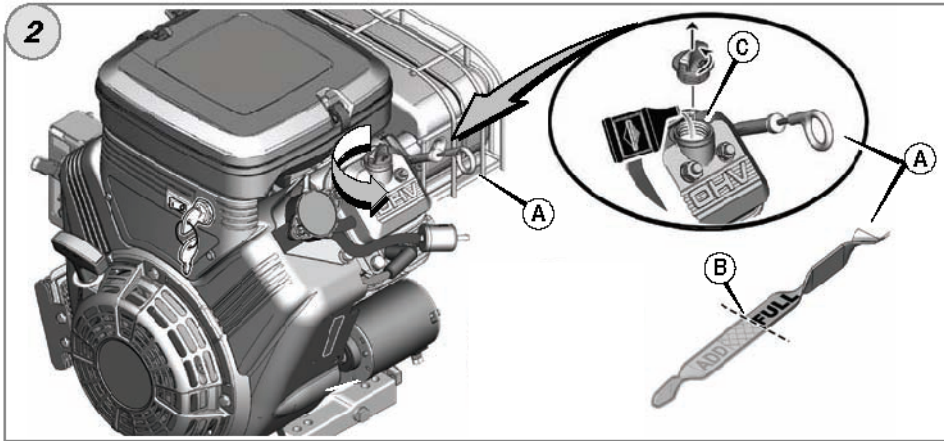
© 2008 Briggs & Stratton Corporation, Milwaukee, WI, USA. All rights reserved.

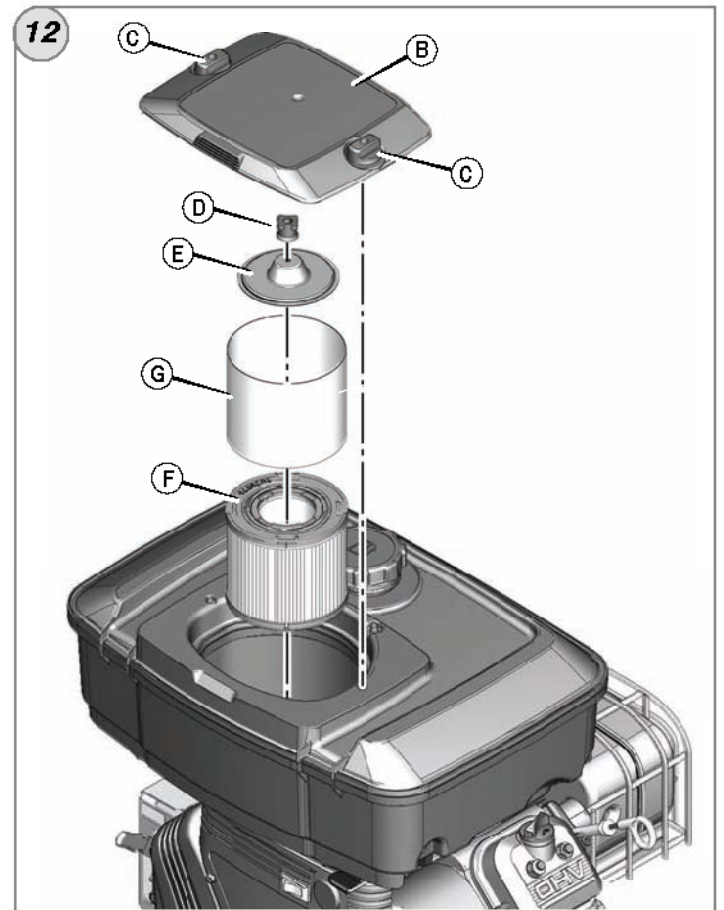
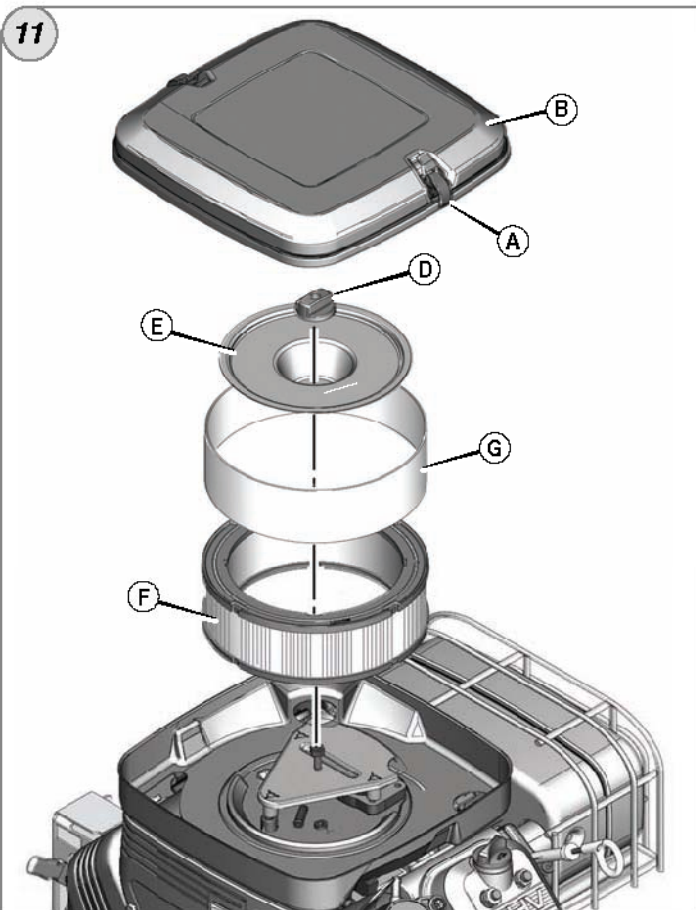
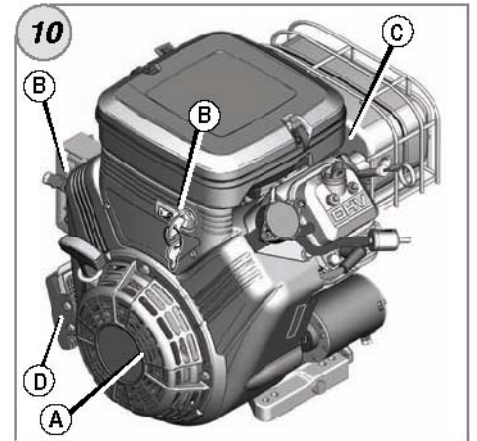
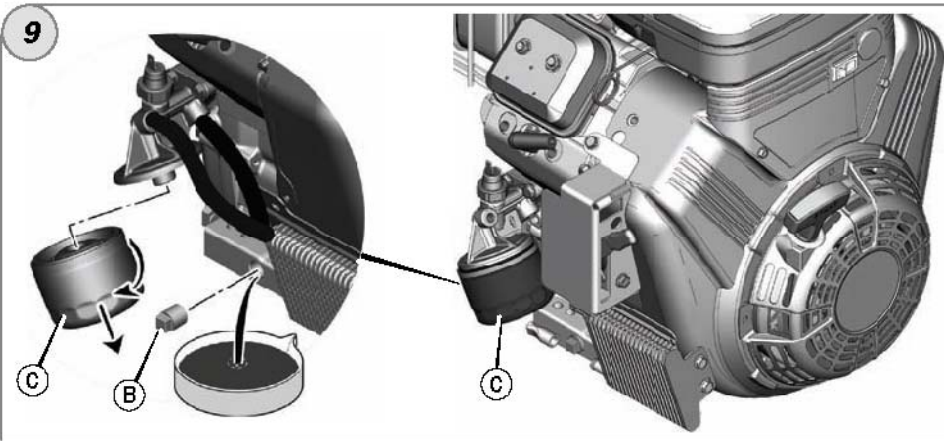
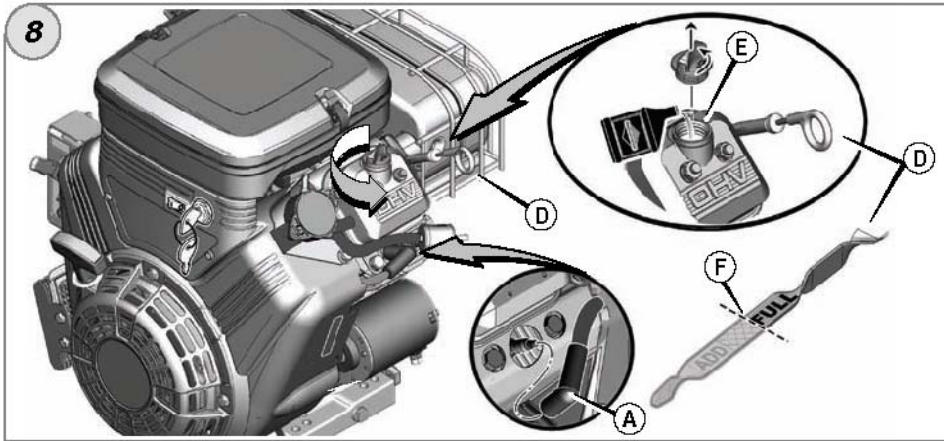
Form No. 277106WST A

English	Dansk	Deutsch	Ελληνικά	Español	Suomi	Français	Italiano	Nederlands	Norsk	Português	Svenska
en	da	de	el	es	fi	fr	it	nl	no	pt	sv

1









WARNING

Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go.
Broken bones, fractures, bruises or sprains could result.

- When starting engine, pull the starter cord slowly until resistance is felt and then pull rapidly to avoid kickback.
- Remove all external equipment/engine loads before starting engine.
- Direct-coupled equipment components such as, but not limited to, blades, impellers, pulleys, sprockets, etc., must be securely attached.



WARNING

Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories.
Traumatic amputation or severe laceration can result.

- Operate equipment with guards in place.
- Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawstrings or items that could become caught.



WARNING

Running engines produce heat. Engine parts, especially muffler, become extremely hot.
Severe thermal burns can occur on contact.
Combustible debris, such as leaves, grass, brush, etc. can catch fire.

- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated debris from muffler area and cylinder area.
- Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.



WARNING

Unintentional sparking can result in fire or electric shock.
Unintentional start-up can result in entanglement, traumatic amputation, or laceration.
Fire hazard



Before performing adjustments or repairs:

- Disconnect the spark plug wire and keep it away from the spark plug.
- Disconnect battery at negative terminal (only engines with electric start.)
- Use only correct tools.
- Do not tamper with governor spring, links or other parts to increase engine speed.
- Replacement parts must be the same and installed in the same position as the original parts.
- Do not strike the flywheel with a hammer or hard object because the flywheel may later shatter during operation.

When testing for spark:

- Use approved spark plug tester.
- Do not check for spark with spark plug removed.

Features and Controls

Compare the illustration **1** with your engine to familiarize yourself with the location of various features and controls.

- A. Engine Identification
Model Type Code
- B. Spark Plug
- C. Air Cleaner (without Fuel Tank)
- D. Air Cleaner, (with Fuel Tank)
- E. Dipstick
- F. Oil Fill
- G. Oil Filter
- H. Oil Drain Plug
- I. Oil Pressure Sensor
- J. Finger Guard / Rotating Screen
- K. Electric Starter
- L. Rewind Starter (optional)
- M. Carburetor
- N. Muffler
- O. Fuel Pump
- P. Starter Switch *
- Q. Throttle Control *
- R. Choke Control *
- S. Fuel Filter (optional)
- T. Fuel Tank (optional)
- U. Fuel Shut Off (optional) *
- V. Stop Switch (optional) *
- W. Oil Cooler (optional)

* Some engines and equipment have remote controls. See the equipment manual for location and operation of remote controls.

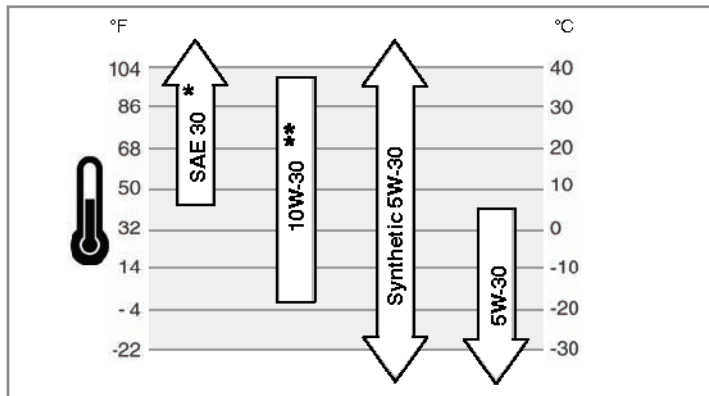
Operation

Oil capacity (see the **Specifications** section)

Oil Recommendations

We recommend the use of Briggs & Stratton Warranty Certified oils for best performance. Other high-quality detergent oils are acceptable if classified for service SF, SG, SH, SJ or higher. Do not use special additives.

Outdoor temperatures determine the proper oil viscosity for the engine. Use the chart to select the best viscosity for the outdoor temperature range expected.



* Below 40°F (4°C) the use of SAE 30 will result in hard starting.

** Above 80°F (27°C) the use of 10W-30 may cause increased oil consumption. Check oil level more frequently.

How To Check/Add Oil - Figure 2

Before adding or checking the oil

- Place engine level.
 - Clean the oil fill area of any debris.
1. Remove the dipstick (A) and wipe with a clean cloth (Figure 2).
 2. Fully insert the dipstick.

en

3. Remove the dipstick and check the oil level. It should be at the FULL mark (B) on the dipstick.
4. If low, add oil slowly into the engine oil fill (C). **Do not overfill.** After adding oil, wait one minute and then recheck the oil level.
5. Fully insert the dipstick.

Oil Pressure

If the oil pressure is too low, a pressure switch (if equipped) will either stop the engine or activate a warning device on the equipment. If this occurs, stop the engine and check the oil level with the dipstick.

If the oil level is below the ADD mark, add oil until it reaches the FULL mark. Start the engine and check for proper pressure before continuing to operate.

If the oil level is between the ADD and FULL marks, **do not start** the engine. Contact an Authorized Briggs & Stratton Dealer to have the oil pressure problem corrected.

Fuel Recommendations

Fuel must meet these requirements:

- Clean, fresh, unleaded gasoline.
- A minimum of 87 octane/87 AKI (91 RON). High altitude use, see below.
- Gasoline with up to 10% ethanol (gasohol) or up to 15% MTBE (methyl tertiary butyl ether) is acceptable.

CAUTION: Do not use unapproved gasolines, such as E85. Do not mix oil in gasoline or modify the engine to run on alternate fuels. This will damage the engine components and void the engine warranty.

To protect the fuel system from gum formation, mix a fuel stabilizer into the fuel. See **Storage**. All fuel is not the same. If starting or performance problems occur, change fuel providers or change brands. This engine is certified to operate on gasoline. The emissions control system for this engine is EM (Engine Modifications).

High Altitude

At altitudes over 5,000 feet (1524 meters), a minimum 85 octane/85 AKI (89 RON) gasoline is acceptable. To remain emissions compliant, high altitude adjustment is required. Operation without this adjustment will cause decreased performance, increased fuel consumption, and increased emissions. See a Briggs & Stratton Authorized Dealer for high altitude adjustment information.

Operation of the engine at altitudes below 2,500 feet (762 meters) with the high altitude kit is not recommended.

How To Add Fuel - Figure 3



WARNING



Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

When Adding Fuel

- Turn engine off and let engine cool at least 2 minutes before removing the fuel cap.
 - Fill fuel tank outdoors or in well-ventilated area.
 - Do not overfill fuel tank. Fill tank to approximately 1.5 inches (38 mm) below top of neck to allow for fuel expansion.
 - Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
 - Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.
 - If fuel spills, wait until it evaporates before starting engine.
1. Clean the fuel cap area of dirt and debris. Remove the fuel cap (A) (Figure 3).
 2. Fill the fuel tank (B) with gasoline. To allow for expansion of the gasoline, do not fill above the bottom of the fuel tank neck (C).
 3. Reinstall the fuel cap.

How To Start The Engine - Figure 4



WARNING



Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go. Broken bones, fractures, bruises or sprains could result.

- When starting engine, pull the starter cord slowly until resistance is felt and then pull rapidly to avoid kickback.



WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

When Starting Engine

- Ensure that spark plug, muffler, fuel cap and air cleaner are in place and secured.
- Do not crank engine with spark plug removed.
- If engine floods, set choke (if equipped) to open/run position, move throttle (if equipped) to fast position and crank until engine starts.






WARNING

Engines give off carbon monoxide, an odorless, colorless, poison gas. Breathing carbon monoxide can cause nausea, fainting or death.

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even if doors or windows are open.

CAUTION: This engine was shipped from Briggs & Stratton without oil. Before you start the engine, make sure you add oil according to the instructions in this manual. If you start the engine without oil, it will be damaged beyond repair and will not be covered under warranty.

Note: Some engines and equipment have remote controls. See the equipment manual for location and operation of remote controls.

1. Check the oil level. See the **How To Check/Add Oil** section.
2. Make sure equipment drive controls, if equipped, are disengaged.
3. Turn the fuel shut-off valve (A), if equipped, to the on position (Figure 4).
4. Push the stop switch (F), if equipped, to the on position.
5. Move the throttle control (B) to the fast  position. Operate the engine in the fast  position.
6. Move the choke control (C) to the choke  position.

Note: Choke is usually unnecessary when restarting a warm engine.

7. **Rewind Start:** Turn the key switch (D), if equipped, to the run position.
8. **Rewind Start:** Firmly hold the starter cord handle (E). Pull the starter cord handle slowly until resistance is felt, then pull rapidly.

Note: If the engine does not start after three attempts, go to **BRIGGSandSTRATTON.COM** or call **1-800-233-3723** (in USA).




WARNING: Rapid retraction of the starter cord (kickback) will pull your hand and arm toward the engine faster than you can let go. Broken bones, fractures, bruises or sprains could result. When starting engine, pull the starter cord slowly until resistance is felt and then pull rapidly to avoid kickback.

9. **Electric Start:** Turn the electric start switch (D) to the on/start position.

Note: If the engine does not start after three attempts, go to **BRIGGSandSTRATTON.COM** or call **1-800-233-3723** (in USA).

CAUTION: To extend the life of the starter, use short starting cycles (five seconds maximum). Wait one minute between starting cycles.


10. As the engine warms up, move the choke control (C) to the run  position.

How To Stop The Engine - Figure 4



WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

- Do not choke the carburetor to stop engine.
1. With the throttle control (B) in the slow  position, turn the key switch (D) to the off position (Figure 4). Remove the key and keep in a safe place out of the reach of children.
 2. Push the stop switch (F) to the off position.
 3. After the engine stops, turn the fuel shut-off valve (A), if equipped, to the closed position.

Maintenance

Use only original equipment replacement parts. Other parts may not perform as well, may damage the unit, and may result in injury. In addition, use of other parts may void your warranty.

We recommend that you see any Briggs & Stratton Authorized Dealer for all maintenance and service of the engine and engine parts.

CAUTION: All the components used to build this engine must remain in place for proper operation.

Emissions Control

Maintenance, replacement, or repair of the emissions control devices and systems may be performed by any non-road engine repair establishment or individual.

However, to obtain "no charge" emissions control service, the work must be performed by a factory authorized dealer. See the Emissions Warranty.



WARNING

Unintentional sparking can result in fire or electric shock. Unintentional start-up can result in entanglement, traumatic amputation, or laceration. Fire hazard

Before performing adjustments or repairs:

- Disconnect the spark plug wire and keep it away from the spark plug.
- Use only correct tools.
- Do not tamper with governor spring, links or other parts to increase engine speed.
- Replacement parts must be the same and installed in the same position as the original parts.
- Do not strike the flywheel with a hammer or hard object because the flywheel may later shatter during operation.

When testing for spark:

- Use approved spark plug tester.
- Do not check for spark with spark plug removed.

Maintenance Chart

First 5 Hours
<ul style="list-style-type: none"> • Change oil
Every 8 Hours or Daily
<ul style="list-style-type: none"> • Check engine oil level • Clean area around muffler and controls
Every 100 Hours or Annually
<ul style="list-style-type: none"> • Clean air filter * • Clean pre-cleaner (if equipped) * • Change engine oil and filter • Replace spark plug • Check muffler and spark arrester • Check valve clearance **
Every 400 Hours or Annually
<ul style="list-style-type: none"> • Change air filter • Replace fuel filter • Clean air cooling system * • Clean oil cooler fins *

* In dusty conditions or when airborne debris is present, clean more often.

** Not required unless engine performance problems are noted.

Carburetor Adjustment

Never make adjustments to the carburetor. The carburetor was set at the factory to operate efficiently under most conditions. However, if adjustments are required, see a Briggs & Stratton Authorized Dealer for service.

CAUTION: The manufacturer of the equipment on which this engine is installed specifies the top speed at which the engine will be operated. **Do not exceed** this speed.

How To Replace The Spark Plug - Figure 5

Check the gap (A, Figure 5) with a wire gauge (B). If necessary, reset the gap. Install and tighten the spark plug to the recommended torque. For gap setting or torque, see the **Specifications** section.

Note: In some areas, local law requires using a resistor spark plug to suppress ignition signals. If this engine was originally equipped with a resistor spark plug, use the same type for replacement.

Inspect Muffler And Spark Arrester - Figure 6



WARNING



Running engines produce heat. Engine parts, especially muffler, become extremely hot.



Severe thermal burns can occur on contact.

Combustible debris, such as leaves, grass, brush, etc. can catch fire.

- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated debris from muffler area and cylinder area.
- Install and maintain in working order a spark arrestor before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.

Inspect the muffler (A, Figure 6) for cracks, corrosion, or other damage. Remove the spark arrestor (B), if equipped, and inspect for damage or carbon blockage. If replacement parts are required, make sure to use only original equipment replacement parts.



WARNING: Replacement parts must be the same and installed in the same position as the original parts or fire could result.

How To Change The Oil - Figure 8 9

CAUTION: Used oil is a hazardous waste product and must be disposed of properly. Do not discard with household waste. Check with your local authorities, service center, or dealer for safe disposal/recycling facilities.

Remove Oil

1. With engine off but still warm, disconnect the spark plug wire (A) and keep it away from the spark plug (Figure 8).
2. Remove the oil drain plug (B, Figure 9). Drain the oil into an approved container.
3. After the oil has drained, install and tighten the oil drain plug.

Change The Oil Filter (if equipped)

Some models are equipped with oil filter. For replacement intervals, see the **Maintenance** chart.

1. Drain the oil from the engine. See **Remove Oil** section.
2. Remove the oil filter (C) and dispose of properly. See Figure 9.
3. Before you install the new oil filter, lightly lubricate the oil filter gasket with fresh, clean oil.
4. Install the oil filter by hand until the gasket contacts the oil filter adapter, then tighten the oil filter 1/2 to 3/4 turns.
5. Add oil. See **Add Oil** section.
6. Start and run the engine. As the engine warms up, check for oil leaks.
7. Stop the engine and check the oil level. It should be at the FULL mark on the dipstick.

Add Oil

- Place engine level.
 - Clean the oil fill area of any debris.
 - See the **Specifications** section for oil capacity.
1. Remove the dipstick (D) and wipe with a clean cloth (Figure 8).
 2. Pour the oil slowly into the engine oil fill (E). **Do not overfill.** After adding oil, wait one minute and then check the oil level.
 3. Install and tighten the dipstick.
 4. Remove the dipstick and check the oil level. It should be at the FULL mark (F) on the dipstick.
 5. Install and tighten the dipstick.

How To Service The Air Filter - Figure 11 12



WARNING



Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.



- Never start or run the engine with the air cleaner assembly or the air filter removed.
- CAUTION:** Do not use pressurized air or solvents to clean the filter. Pressurized air can damage the filter and solvents will dissolve the filter.
- Two types of air filter systems are shown. See the **Maintenance Chart** for service requirements.
1. **Models without Fuel Tank:** Open the latches (A) and remove the cover (B). See Figure 11.
 2. **Models with Fuel Tank:** Remove the knob (C) and the cover (B). See Figure 12.
 3. Remove the nut (D) and the retainer (E). See Figure 11 and 12.
 4. Remove the air filter (F).
 5. Remove the pre-cleaner (G), if equipped, from the air filter.
 6. To loosen debris, gently tap the air filter on a hard surface. If the air filter is excessively dirty, replace with a new air filter.
 7. Wash the pre-cleaner in liquid detergent and water. Then allow it to thoroughly air dry. **Do not** oil the pre-cleaner.
 8. Assemble the dry pre-cleaner to the air filter.
 9. Install the air filter and secure with retainer and nut.
 10. Install and secure the cover.

How To Replace The Fuel Filter - Figure 7



WARNING



Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.



- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
 - Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.
 - Before replacing the fuel filter, drain the fuel tank or close the fuel shut-off valve.
 - Replacement parts must be the same and installed in the same position as the original parts.
 - If fuel spills, wait until it evaporates before starting engine.
1. Before replacing the fuel filter (A, Figure 7), if equipped, drain the fuel tank or close the fuel shut-off valve. Otherwise, fuel can leak out and cause a fire or explosion.
 2. Use pliers to squeeze tabs (B) on the clamps (C), then slide the clamps away from the fuel filter. Twist and pull the fuel lines (D) off the fuel filter.
 3. Check the fuel lines for cracks or leaks. Replace if necessary.
 4. Replace the fuel filter with an original equipment replacement filter.
 5. Secure the fuel lines with the clamps as shown.

Note: Engines equipped with a factory mounted fuel tank may have a fuel tank strainer (E), see Figure 3.

How To Clean The Air Cooling System - Figure 10



WARNING



Running engines produce heat. Engine parts, especially muffler, become extremely hot.



Severe thermal burns can occur on contact. Combustible debris, such as leaves, grass, brush, etc. can catch fire.

- Allow muffler, engine cylinder and fins to cool before touching.
 - Remove accumulated debris from muffler area and cylinder area.
- CAUTION:** Do not use water to clean the engine. Water could contaminate the fuel system. Use a brush or dry cloth to clean the engine.
- This is an air cooled engine. Dirt or debris can restrict air flow and cause the engine to overheat, resulting in poor performance and reduced engine life.
- Use a brush or dry cloth to remove debris from the finger guard/rotating screen (A). Keep linkage, springs and controls (B) clean. Keep the area around and behind the muffler (C) free of any combustible debris (Figure 10). Make sure that the oil cooler fins (D) are free of dirt and debris.

Storage



WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

When Storing Gasoline Or Equipment With Fuel In Tank

- Store away from furnaces, stoves, water heaters or other appliances that have pilot lights or other ignition sources because they can ignite gasoline vapors.

Fuel System

Fuel can become stale when stored over 30 days. Stale fuel causes acid and gum deposits to form in the fuel system or on essential carburetor parts. To keep fuel fresh,

use Briggs & Stratton FRESH START® fuel stabilizer, available as a liquid additive or a drip concentrate cartridge.

There is no need to drain gasoline from the engine if a fuel stabilizer is added according to instructions. Run the engine for 2 minutes to circulate the stabilizer throughout the fuel system. The engine and fuel can then be stored up to 24 months.

If gasoline in the engine has not been treated with a fuel stabilizer, it must be drained into an approved container. Run the engine until it stops from lack of fuel. The use of a fuel stabilizer in the storage container is recommended to maintain freshness.

Engine Oil

While the engine is still warm, change the engine oil.

Troubleshooting

Need Assistance? Go to BRIGGSandSTRATTON.COM or call 1-800-233-3723.

Specifications

Engine Specifications	
Model	290000
Displacement	29.23 ci (479 cc)
Bore	2.677 in (68 mm)
Stroke	2.538 in (66 mm)
Oil Capacity	46 - 48 oz (1.36 - 1.42 L)

Engine Specifications	
Model	300000
Displacement	29.23 ci (479 cc)
Bore	2.677 in (68 mm)
Stroke	2.538 in (66 mm)
Oil Capacity	46 - 48 oz (1.36 - 1.42 L)

Engine Specifications	
Model	350000
Displacement	34.78 ci (570 cc)
Bore	2.835 in (72 mm)
Stroke	2.756 in (70 mm)
Oil Capacity	46 - 48 oz (1.36 - 1.42 L)

Engine Specifications	
Model	380000
Displacement	38.26 ci (627 cc)
Bore	2.972 in (75.5 mm)
Stroke	2.756 in (70 mm)
Oil Capacity	46 - 48 oz (1.36 - 1.42 L)

Tune-up Specifications *	
Model	290000, 300000
Spark Plug Gap	0.030 in (0.76 mm)
Spark Plug Torque	180 lb-in (20 Nm)
Armature Air Gap	0.008 - 0.012 in (0.20 - 0.30 mm)
Intake Valve Clearance	0.004 - 0.006 in (0.10 - 0.15 mm)
Exhaust Valve Clearance	0.004 - 0.006 in (0.10 - 0.15 mm)

Tune-up Specifications *	
Model	350000, 380000
Spark Plug Gap	0.030 in (0.76 mm)
Spark Plug Torque	180 lb-in (20 Nm)
Armature Air Gap	0.008 - 0.012 in (0.20 - 0.30 mm)
Intake Valve Clearance	0.004 - 0.006 in (0.10 - 0.15 mm)
Exhaust Valve Clearance	0.004 - 0.006 in (0.10 - 0.15 mm)

* Engine power will decrease 3.5% for each 1,000 feet (300 meters) above sea level and 1% for each 10° F (5.6° C) above 77° F (25° C). The engine will operate satisfactorily at an angle up to 15°. Refer to the equipment operator's manual for safe allowable operating limits on slopes.

Common Service Parts

Service Part	Part Number
Air Filter - with fuel tank	393957
Air Filter - except model 380000	394018
Air Filter - model 380000	692519
Air Filter Pre-cleaner - with fuel tank	271794
Air Filter Pre-cleaner - except model 380000	272490
Air Filter Pre-cleaner - model 380000	692520
Oil - SAE 30	100028
Oil Filter - 6 cm long	492932
Oil Filter - 9 cm long	491056

Service Part	Part Number
Fuel Filter - with fuel tank	808116
Fuel Filter - with fuel pump	691035
Fuel Filter - without fuel pump	298090
Fuel Additive	5041
Resistor Spark Plug	491055
Long Life Platinum Spark Plug	5066
Spark Plug Wrench	19374
Spark Tester	19368

We recommend that you see any Briggs & Stratton Authorized Dealer for all maintenance and service of the engine and engine parts. Use only genuine Briggs & Stratton parts.

LIMITED WARRANTY

Briggs & Stratton Corporation will repair or replace, free of charge, any part(s) of the engine that is defective in material or workmanship or both. Transportation charges on product submitted for repair or replacement under this warranty must be borne by purchaser. This warranty is effective for and is subject to the time periods and conditions stated below. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at BRIGGSandSTRATTON.COM, or by calling 1-800-233-3723, or as listed in the "Yellow Pages™".

There is no other expressed warranty. Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to one year from purchase, or to the extent permitted by law and all implied warranties are excluded. Liability for incidental or consequential damages are excluded to the extent exclusion is permitted by law. Some states or countries do not allow limitations on how long an implied warranty lasts, and some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and 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 and country to country.

STANDARD WARRANTY TERMS * ▲

Brand/Product Type	Consumer Use	Commercial Use
Vanguard™	2 years	2 years
Extended Life Series™, I/C® [®] , Intek™ I/C® [®] , Intek™ Pro	2 years	1 year
Snow Series MAX™ with Dura-Bore™ Cast Iron Sleeve	2 years	1 year
All Other Briggs & Stratton Engines	2 years	90 days

* These are our standard warranty terms, but occasionally there may be additional warranty coverage that was not determined at time of publication. For a listing of current warranty terms for your engine, go to BRIGGSandSTRATTON.COM or contact your Authorized Briggs & Stratton Service Dealer.

▲ Engines used on Home Standby Generator applications are warranted under consumer use only. This warranty does not apply to engines on equipment used for prime power in place of a utility. **Engines used in competitive racing or on commercial or rental tracks are not warranted.**

The warranty period begins on the date of purchase by the first retail consumer or commercial end user, and continues for the period of time stated in the table above. "Consumer use" means personal residential household use by a retail consumer. "Commercial use" means all other uses, including use for commercial, income producing or rental purposes. Once an engine has experienced commercial use, it shall thereafter be considered as a commercial use engine for purposes of this warranty.

No warranty registration is necessary to obtain warranty on Briggs & Stratton Products. Save your proof of purchase receipt. If you do not provide proof of the initial purchase date at the time warranty service is requested, the manufacturing date of the product will be used to determine the warranty period.

About Your Warranty

Briggs & Stratton welcomes warranty repair and apologizes to you for being inconvenienced. Any Authorized Service Dealer may perform warranty repairs. Most warranty repairs are handled routinely, but sometimes requests for warranty service may not be appropriate.

If a customer differs with the decision of the Service Dealer, an investigation will be made to determine whether the warranty applies. Ask the Service Dealer to submit all supporting facts to his Distributor or the Factory for review. If the Distributor or the Factory decides that the claim is justified, the customer will be fully reimbursed for those items that are defective. To avoid misunderstanding which might occur between the customer and the Dealer, listed below are some of the causes of engine failure that the warranty does not cover.

Normal wear: Engines, like all mechanical devices, need periodic parts service and replacement to perform well. Warranty will not cover repair when normal use has exhausted the life of a part or an engine. Warranty would not apply if engine damage occurred because of misuse, lack of routine maintenance, shipping, handling, warehousing or improper installation. Similarly, warranty is void if the serial number of the engine has been removed or the engine has been altered or modified.

Improper maintenance: The life of an engine depends upon the conditions under which it operates, and the care it receives. Some applications, such as tillers, pumps and rotary mowers, are very often used in dusty or dirty conditions, which can cause what appears to be premature wear. Such wear, when caused by dirt, dust, spark plug cleaning grit, or other abrasive material that has entered the engine because of improper maintenance, is not covered by warranty.

This warranty covers engine related defective material and/or workmanship only, and not replacement or refund of the equipment to which the engine may be mounted. Nor does the warranty extend to repairs required because of:

- 1 Problems caused by parts that are not original Briggs & Stratton parts.
- 2 Equipment controls or installations that prevent starting, cause unsatisfactory engine performance, or shorten engine life. (Contact equipment manufacturer.)
- 3 Leaking carburetors, clogged fuel pipes, sticking valves, or other damage, caused by using contaminated or stale fuel.

- 4 Parts which are scored or broken because an engine was operated with insufficient or contaminated lubricating oil, or an incorrect grade of lubricating oil (check and refill when necessary, and change at recommended intervals). OIL GARD may not shut down running engine. Engine damage may occur if oil level is not properly maintained.
- 5 Repair or adjustment of associated parts or assemblies such as clutches, transmissions, remote controls, etc., which are not manufactured by Briggs & Stratton.
- 6 Damage or wear to parts caused by dirt, which entered the engine because of improper air cleaner maintenance, re-assembly, or use of a non-original air cleaner element or cartridge. At recommended intervals, clean and/or replace the filter as stated in the Operator's Manual.
- 7 Parts damaged by over-speeding, or overheating caused by grass, debris, or dirt, which plugs or clogs the cooling fins, or flywheel area, or damage caused by operating the engine in a confined area without sufficient ventilation. Clean engine debris at recommended intervals as stated in the Operator's Manual.
- 8 Engine or equipment parts broken by excessive vibration caused by a loose engine mounting, loose cutter blades, unbalanced blades or loose or unbalanced impellers, improper attachment of equipment to engine crankshaft, over-speeding or other abuse in operation.
- 9 A bent or broken crankshaft, caused by striking a solid object with the cutter blade of a rotary lawn mower, or excessive v-belt tightness.
- 10 Routine tune-up or adjustment of the engine.
- 11 Engine or engine component failure, i.e., combustion chamber, valves, valve seats, valve guides, or burned starter motor windings, caused by the use of alternate fuels such as, liquified petroleum, natural gas, altered gasolines, etc.

Warranty service is available only through authorized service dealers by Briggs & Stratton Corporation. Locate your nearest Authorized Service Dealer in our dealer locator map on BRIGGSandSTRATTON.COM or by calling 1-800-233-3723, or as listed in the "Yellow Pages™".

Emissions Control System Warranty Statement

Briggs & Stratton Corporation (B&S), the California Air Resources Board (CARB) and the United States Environmental Protection Agency (U.S. EPA) Emissions Control System Warranty Statement (Owner's Defect Warranty Rights and Obligations)

California, United States and Canada Emissions Control Defects Warranty Statement

The California Air Resources Board (CARB), U.S. EPA and B&S are pleased to explain the Emissions Control System Warranty on your small off-road engine (SORE). In California, new small off-road engines model year 2006 and later must be designed, built and equipped to meet the State's stringent anti-smog standards. Elsewhere in the United States, new non-road, spark-ignition engines certified for model year 1997 and later must meet similar standards set forth by the U.S. EPA. B&S must warrant the emissions control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your small off-road engine.

Your emissions control system includes parts such as the carburetor, air cleaner, ignition system, fuel line, muffler and catalytic converter. Also included may be connectors and other emissions related assemblies.

Where a warrantable condition exists, B&S will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

Briggs & Stratton Emissions Control Defects Warranty Coverage

Small off-road engines are warranted relative to emissions control parts defects for a

period of two years, subject to provisions set forth below. If any covered part on your engine is defective, the part will be repaired or replaced by B&S.

Owner's Warranty Responsibilities

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your Operating and Maintenance Instructions. B&S recommends that you retain all your receipts covering maintenance on your small off-road engine, but B&S cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should however be aware that B&S may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine to an Authorized B&S Service Dealer as soon as a problem exists. The undisputed warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact a B&S Service Representative at (414) 259-5262.

The emissions warranty is a defects warranty. Defects are judged on normal engine performance. The warranty is not related to an in-use emissions test.

Briggs & Stratton Emissions Control Defects Warranty Provisions

The following are specific provisions relative to your Emissions Control Defects Warranty Coverage. It is in addition to the B&S engine warranty for non-regulated engines found in the Operating and Maintenance Instructions.

1. Warranted Parts

Coverage under this warranty extends only to the parts listed below (the emissions control systems parts) to the extent these parts were present on the engine purchased.

a. Fuel Metering System

- Cold start enrichment system (soft choke)
- Carburetor and internal parts
- Fuel pump
- Fuel line, fuel line fittings, clamps
- Fuel tank, cap and tether
- Carbon canister

b. Air Induction System

- Air cleaner
- Intake manifold
- Purge and vent line

c. Ignition System

- Spark plug(s)
- Magneto ignition system

d. Catalyst System

- Catalytic converter
- Exhaust manifold
- Air injection system or pulse valve

e. Miscellaneous Items Used in Above Systems

- Vacuum, temperature, position, time sensitive valves and switches
- Connectors and assemblies

2. Length of Coverage

B&S warrants to the initial owner and each subsequent purchaser that the Warranted Parts shall be free from defects in materials and workmanship which caused the

failure of the Warranted Parts for a period of two years from the date the engine is delivered to a retail purchaser.

3. No Charge

Repair or replacement of any Warranted Part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a Warranted Part is defective, if the diagnostic work is performed at an Authorized B&S Service Dealer. For emissions warranty service contact your nearest Authorized B&S Service Dealer as listed in the "Yellow Pages" under "Engines, Gasoline," "Gasoline Engines," "Lawn Mowers," or similar category.

4. Claims and Coverage Exclusions

Warranty claims shall be filed in accordance with the provisions of the B&S Engine Warranty Policy. Warranty coverage shall be excluded for failures of Warranted Parts which are not original B&S parts or because of abuse, neglect or improper maintenance as set forth in the B&S Engine Warranty Policy. B&S is not liable to cover failures of Warranted Parts caused by the use of add-on, non-original, or modified parts.

5. Maintenance

Any Warranted Part which is not scheduled for replacement as required maintenance or which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted as to defects for the warranty period. Any Warranted Part which is scheduled for replacement as required maintenance shall be warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any replacement part that is equivalent in performance and durability may be used in the performance of any maintenance or repairs. The owner is responsible for the performance of all required maintenance, as defined in the B&S Operating and Maintenance Instructions.

6. Consequential Coverage

Coverage hereunder shall extend to the failure of any engine components caused by the failure of any Warranted Part still under warranty.

Look For Relevant Emissions Durability Period and Air Index Information On Your Engine Emissions Label

Engines that are certified to meet the California Air Resources Board (CARB) Emissions Standard must display information regarding the Emissions Durability Period and the Air Index. Briggs & Stratton makes this information available to the consumer on our emissions labels. The engine emissions label will indicate certification information.

The **Emissions Durability Period** describes the number of hours of actual running time for which the engine is certified to be emissions compliant, assuming proper maintenance in accordance with the Operating & Maintenance Instructions. The following categories are used:

Moderate:

Engine is certified to be emissions compliant for 125 hours of actual engine running time.

Intermediate:

Engine is certified to be emissions compliant for 250 hours of actual engine running time.

Extended:

Engine is certified to be emissions compliant for 500 hours of actual engine running time. For example, a typical walk-behind lawn mower is used 20 to 25 hours per year. Therefore, the **Emissions Durability Period** of an engine with an **intermediate** rating would equate to 10 to 12 years.

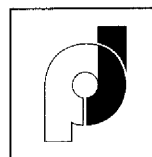
Briggs & Stratton engines are certified to meet the United States Environmental Protection Agency (USEPA) Phase 2 emissions standards. For Phase 2 certified engines, the Emissions Compliance Period referred to on the Emissions Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emissions requirements.

For engines less than 225 cc displacement.

Category C = 125 hours, Category B = 250 hours, Category A = 500 hours

For engines of 225 cc or more displacement.

Category C = 250 hours, Category B = 500 hours, Category A = 1000 hours



PF Pumpen und Feuerlöschtechnik GmbH
Zechensteig 225
D-09477 Jöhstadt
Telefon: 03 73 43/8 10
Telefax: 03 73 43/22 87
E-Mail: info@pfjoehstadt.de
Internet: http://www.pfjoehstadt.de

Declaration of conformity

as defined by the Directive Machinery 98/37/EG, Annex II A

Herewith we declare that the supplied pump unit model

Portable fire pump ZL 500 H

complies with the following provisions applying to it:

EC-Directive Machinery as amended by 98/37/EG.

Applied harmonized standards, in particular

EN 1028-1, EN 1028-2

EN 953

EN ISO 12100-1, EN ISO 12100-2

EN ISO 9905

EN 294

EN 60204-1

Applied national technical standards and specifications, in particular

DIN 14410

11.07.05

