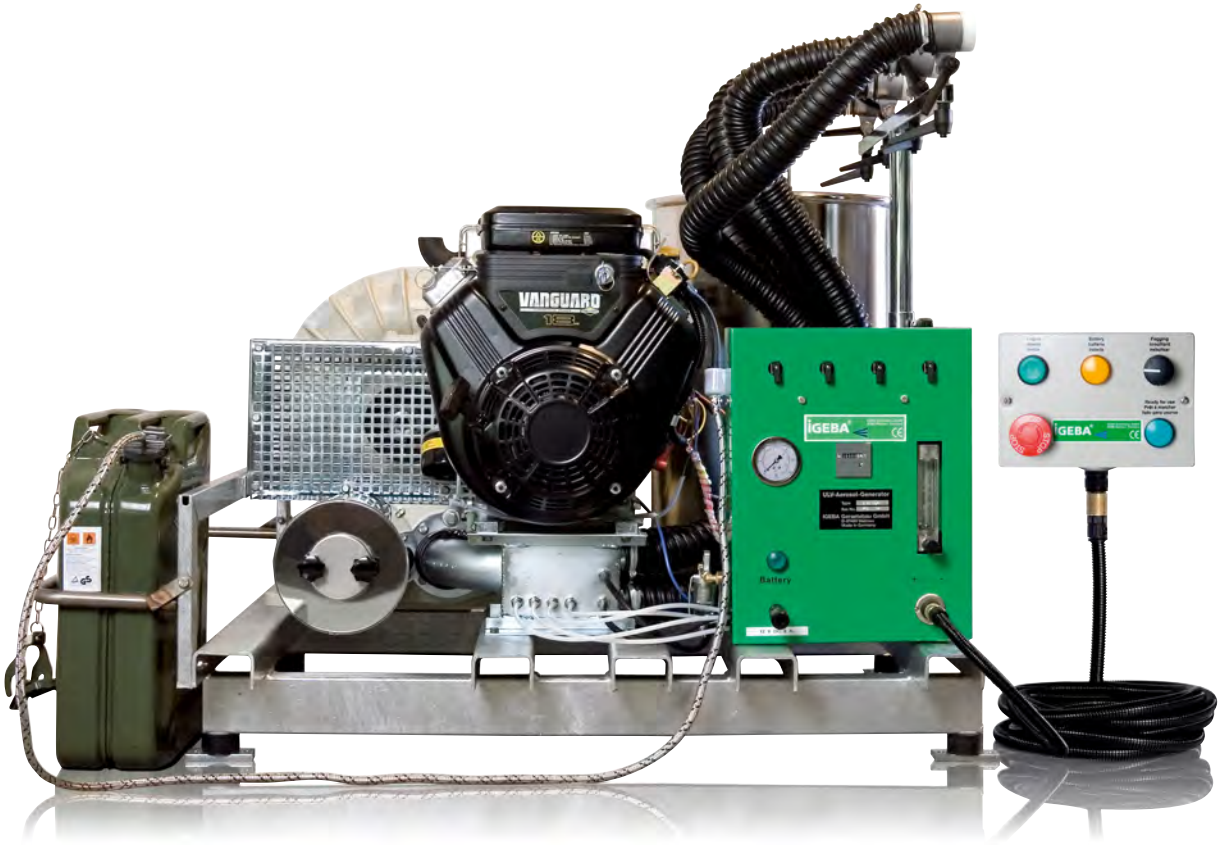
U 40 HD-M

Instruction manual



DIN EN ISO 9001:2008

iGEBA®

ULV Aerosol Generator

Made in Germany

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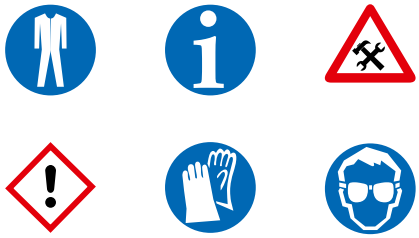

Sicherheitshinweise für ULV Aerosol Generatoren

Safety instructions for ULV Aerosol Generators

IGEBA®

First choice fogging equipment

Sehr geehrter Kunde,

wir beglückwünschen Sie zum Kauf eines IGEBA-Qualitätsproduktes und wünschen Ihnen viel Erfolg bei der Anwendung!

Zum besseren Verständnis der Betriebsanleitungen sind die im Text beschriebenen Teile des Gerätes mit einer in Klammern stehenden Positions-Nummer hinterlegt. Mit der Pos.-Nr. im Text und mit Hilfe der Explosionszeichnung ist eine eindeutige begriffliche Zuordnung in der vorliegenden Betriebsanleitung gegeben.

Bei Ersatzteilbestellungen unbedingt die Geräte Nr., die Positions-Nummer, die Teilebezeichnung und die Teile-Nummer aus der Ersatzteilliste angeben.

IGEBA Thermalnebelgeräte und ULV Aerosolgeneratoren werden ausschließlich in der Bundesrepublik Deutschland von der Firma IGEBA Geraetebau GmbH hergestellt. Original IGEBA-Erzeugnisse sind mit einem Hologramm gekennzeichnet.

Dear Customer,

Congratulations for the purchase of our IGEBA quality product and we wish you every success in the employment of this equipment.

For a better understanding of the Instruction Manuals parts of the unit described in the text of the Instruction Manual are often combined with an item number in brackets. By using the item no. combined with the explosion drawing all descriptions in the Instruction Manual become clear.

If you send us an order for spare parts, always mention the device no., item number, the part number and the spare parts name from the spare parts list.

IGEBA Fog Generators and ULV Aerosol Generators are solely manufactured in Germany by IGEBA Geraetebau GmbH. Original IGEBA products are marked with a hologram.

Bestimmungsgemäße Verwendung:

Mit den IGEBA ULV Aerosol Generatoren werden chemische Wirkstoffbrühen (Formulierungen) als feiner Aerosolnebel ausgebracht. Die Geräte sind ausschließlich für folgende Anwendungsgebiete bestimmt:

- Schädlingsbekämpfung
- Pflanzenschutz
- Vorratsschutz (Lebensmittel, Tabak, Baumwolle)
- Hygiene und Desinfektion

Jeder darüber hinausgehende Gebrauch gilt als nicht bestimmungsgemäß.
Die Betriebsanleitung gehört in die Hand des Bedieners, weil die Betriebsanleitung wichtige Sicherheitshinweise enthält. Die Weitergabe oder Veräußerung des Gerätes an Dritte darf nur zusammen mit dieser Betriebsanleitung erfolgen.

Restricted fields of application:

The IGEBA ULV Aerosol Generators are suitable for transforming chemical solutions (formulations) into finest aerosol fog. The units are exclusively restricted to the following fields of application:

- Pest and vector control
- Protection of crops
- Protection of stocks (foodstuff, tobacco, cotton)
- Hygiene und disinfection

All other applications are regarded as forbidden fields of application.
The owner of must give the Instruction Manual to the user, because of the safety instructions described in the Instruction Manual. If the owner sells the unit to another person, the owner has to guarantee that the Instruction Manual is attached to the unit.

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Das Gerät darf erst in Betrieb genommen werden, wenn der Bediener diese Betriebsanleitung sorgfältig gelesen und sich mit allen Einzelheiten insbesondere den Risiken und Sicherheitsmaßnahmen vertraut gemacht hat.

Bei Fehlbedienung und nicht bestimmungsgemäßer Verwendung des Gerätes drohen Gefahren für den Bediener und der Umwelt. Für hieraus resultierende Schäden haftet die Firma IGEBA nicht.

Before starting the unit, the user must read the Instruction Manual with due diligence. The user must be familiar with the above applications, especially with all risks and safety precautions in order to avoid damage.

Risks for persons and environment could arise out of faulty operation and out of forbidden fields of application. Damages due to faulty operation of the unit and usage in forbidden fields of application are consequently out of IGEBA's responsibility.

Hersteller und Vertrieb:

IGEBA Geraetebau GmbH
Heinrich-Nicolaus-Straße 15
87480 Weitnau I Germany

Telefon: +49 (0) 8375/92 00-0
Telefax: +49 (0) 8375/92 00-22
eMail: info@igeba.de
Internet: www.igeba.de

Die IGEBA Geraetebau GmbH behält sich das Recht vor, jederzeit und ohne Ankündigung das hier beschriebene Produkt gemäß dem technischen Fortschritt zu ändern.

Manufacturer and Distributor:

IGEBA Geraetebau GmbH
P,O,Box 6
D-87478 Weitnau I Germany

Telephone: +49(0) 8375/92 00-0
Fax: +49 (0) 8375/92 00-22
e.mail: info@igeba.de
Website: www.igeba.de

IGEBA Geraetebau GmbH reserves the right to modify the herein described product according to the technical progress at any time and without prior notice.

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Gewährleistung:

Für jedes gelieferte IGEBA-Erzeugnis leistet die Firma IGEBA Geraetebau GmbH im Rahmen der Vertrags- und Lieferbedingungen Gewähr für ordnungsgemäße Fertigung.
Diese Gewährleistung bezieht sich nicht auf solche Schäden, die durch normale Abnutzung, unsachgemäße Behandlung, fahrlässigen Gebrauch, Einbau von Nicht- Original-Ersatzteilen, ungenügender Pflege und/oder Nichtbeachtung dieser Betriebsanleitung entstehen.

Das Nebelgerät darf nur von entsprechend eingewiesenen Personen genutzt werden, andernfalls erlischt jede Gewährleistung entsprechend den Lieferbedingungen.

ULV Aerosol Generator Identifikation:

Auf dem Typenschild sind folgende Daten angegeben:
Herstellerangaben - Nebelgerätetyp – Seriennummer – Baujahr.

Warranty:

IGEBA Geraetebau GmbH guarantees the proper manufacturing for all delivered IGEBA products according to the General Terms and Conditions of Delivery.
The warranty does not apply for damages due to normal wear, improper handling, negligent use, installation of non-original spare parts, insufficient care and/or non-compliance with this instruction manual.

The fog generator may only be operated by trained and skilled personnel, otherwise any warranty expires according to the condition of delivery.

ULV Aerosol Generator identification:

The type plate includes the following data:
Manufacturer's data - fog generator model - serial number – year of construction.

Hinweise zur Betriebsanleitung:

Diese Betriebsanleitung ist für den Betreiber der Nebelgeräte Typenreihe ULV die Grundlage für den einwandfreien Betrieb.

Die Betriebsanleitung muss vom zuständigen Bedienpersonal gelesen, verstanden und beachtet werden. Nur mit Kenntnis dieser Betriebsanleitung können Fehler, Schäden und Verletzungen vermieden und ein störungsfreier Betrieb sichergestellt werden.

Die Betriebsanleitung in greifbarer Nähe des ULV - Gerätes aufbewahren und für das Bedien- und Wartungspersonal zugänglich halten. Für Schäden und Betriebsstörungen, die sich aus der Nichtbeachtung dieser Betriebsanleitung ergeben, übernimmt die IGEBA Geraetebau GmbH keine Haftung und keine Gewährleistungspflicht.

Notes on the instrucional manual:

This manual is for the user of the high-performance fog generator ULV essential for proper operation.

The instruction manual must be read, understood and observed by the responsible operating personnel. Only with knowledge of this instruction manual, mistakes, damages and injuries can be prevented and a proper operation can be guaranteed.

The instruction manual should be stored near to the ULV - Generator and has to be accessible for the operating and maintenance personnel.
IGEBA Geraetebau GmbH assumes no liability or any warranty for damages and malfunction due to non-observance of this instruction manual.

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Konformitätserklärung
Declaration of conformity

Der Hersteller
The manufacturer

IGEBA Geraetebau GmbH
Heinrich-Nicolaus-Strasse 15
87480 Weitnau I Germany

IGEBA Geraetebau GmbH
P.O.Box 6
D-87478 Weitnau I Germany

erklärt, dass im Sinne der EG-Richtlinien
declares, that in accordance to the EC-Standards

- **Maschinenrichtlinie / 2006/42/EG**
- Machines standard / 2006/42/EG

- **Niederspannungsrichtlinie / 2006/95EG**
- Low - voltage directive / 2006/95EG

- **Elektromagnetische Verträglichkeit / 2004/108EG**
- Electromagnetic compatibility / 2004/108EG

folgende Produkte in Übereinstimmung mit den oben genannten EG-Richtlinien hergestellt worden sind:
the following product-line is produced in accordance to the above-mentioned EC-Standards:

Art: ULV Aerosol Gerneratoren
Subject: ULV Aerosol Generators

Typ/ Typ/ Type: U 10 M - U 15 HD-M - U 40 HD-M - U 15 E - U 40 HD-E - Unipro5

und deren Varianten/
and their other versions/

Folgende Normen wurden angewandt/
The following standards are used/

DIN EN ISO 9001:2008

Norm/Standard: Titel/Title:

DIN EN 12100
Sicherheit von Maschinen
Safety of machines

DIN EN ESO 13857
Sicherheitsabstände
Safety distances

Eine technische Dokumentation mit Betriebsanleitung, Stromlaufplänen, Ersatzteillisten und Explosionszeichnungen ist vorhanden!
A technical documentation with manual, wiring diagrams, spare parts list and exploded view is available!

Achtung:

1) Der Betrieb von diesen Geräten darf nur von entsprechend unterwiesenen Personen vorgenommen werden.
2) Die Vernebelung von brennbaren Flüssigkeiten in geschlossenen Räumen ist absolut verboten. Hinweise in der Bedienungsanleitung.
3) Den Dosierhinweisen der Mittelhersteller ist Folge zu leisten.

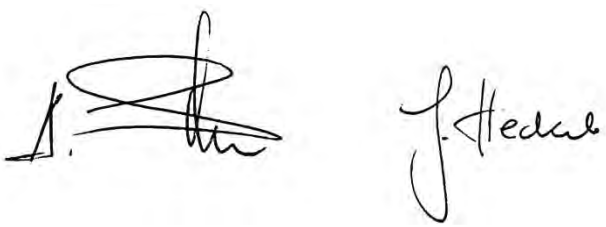
Attention:

1) The operation of these units has to be made only by well instructed people.
2) The fogging of flammable liquid in closed areas is absolutely forbidden. Advices in the manual.
3) The recommendations of the producers of the liquids are strictly obligatory

Autorisierte Person für die Zusammenstellung der Technischen Dokumente ist:
Carlos Jaramillo - IGEBA Geraetebau GmbH - Weitnau I Germany

Authorized Person for the assemble of technical documentation:
Carlos Jaramillo - IGEBA Geraetebau GmbH - Weitnau/Germany

IGEBA Geraetebau GmbH



Alberto Sabatini Joerg Heckel

DIN EN ISO 9001:2008

Sicherheitshinweise - Produkthaftung

Die ULV Gerneratoren nach dem Stand der Technik und den anerkannten sicherheitstechnischen Regeln gebaut. Dennoch können bei nicht sachgemäßer Verwendung Gefahren für Leib und Leben des Benutzers oder Dritten bzw. Beeinträchtigungen des Nebelgerätes und anderer Sachwerte entstehen.

Das ULV Gerät ist nur in technisch einwandfreiem Zustand sowie bestimmungsgemäß und unter Beachtung der Sicherheitshinweise sowie der Betriebsanleitung zu benutzen! Insbesondere Störungen, die die Sicherheit beeinträchtigen können, müssen umgehend beseitigt oder bei der Firma IGEBA Geraetebau GmbH gemeldet werden.

Das ULV Gerät ist ausschließlich zum Vernebeln geeigneter Wirkstoffflüssigkeiten bestimmt. Eine andere oder darüber hinausgehende Benutzung gilt als nicht bestimmungsgemäß.

Für hieraus resultierende Schäden haftet die Firma IGEBA Geraetebau GmbH nicht.

Das Risiko trägt allein der Anwender !!

Zur bestimmungsgemäßen Verwendung gehören auch das Beachten der Betriebsanleitung und die Einhaltung der Pflege- und Wartungsbedingungen.

Die Betriebsanleitung ständig am Einsatzort des Nebelgerätes griffbereit aufbewahren!

Ergänzend zur Betriebsanleitung sind die am Einsatzort allgemeingültigen gesetzlichen und sonstigen verbindlichen Regelungen zur Unfallverhütung und zum Umweltschutz zu beachten und anzuwenden!

Safety instructions - product liability

The ULV Generators employs state of the art technology and complies with accepted safety standards. However, inappropriate operation may cause danger to life and limb of the user or third parties or damage the fog generator and other assets.

The ULV Generators may only be used in proper technical condition as well as for its intended use and in compliance with safety notes and the instruction manual! In particular, malfunctions that may affect the safety must be repaired immediately or have to be reported to IGEBA Geraetebau GmbH.

The ULV Generators is exclusively intended for fogging suitable solutions. Another use is not intended.

IGEBA Geraetebau GmbH is not responsible for damages due to inappropriate use.

The user solely bears any risk !!

The intended use includes the observation of the instruction manual, care and maintenance terms.

The instruction manual needs to be ready to hand at the work location of the fog generator!

In addition to the instruction manual, the local regulations and other mandatory rules for accident prevention and environmental protection must be applied and observed!

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Das mit Tätigkeiten am Nebelgerät beauftragte Personal muss vor Arbeitsbeginn die Betriebsanleitung und besonders dieses Kapitel „Sicherheitshinweise“ lesen.

Any personnel working with the fog generator must read the instruction manual and, in particular, this chapter „Safety instructions“ prior to start of their work.

Keine Veränderungen, An- und Umbauten am Nebelgerät vornehmen, soweit diese nicht ausdrücklich in dieser Betriebsanleitung vorgesehen sind. Dies gilt auch für den Einbau und die Einstellung von Sicherheitseinrichtungen.

No modification or rebuilding is permitted unless it is clearly indicated in this instruction manual. This applies also for the mounting and set up of safety devices

Ersatzteile müssen den vom Hersteller festgelegten technischen Anforderungen entsprechen. Dies ist nur bei Original-IGEBA-Geraetebau GmbH Ersatzteilen gewährleistet

Spare parts must comply with technical requirement as specified by the manufacturer. This is only guaranteed with original spare parts from IGEBA-Geraetebau GmbH.

Nur geschultes, unterwiesenes und beauftragtes Personal einsetzen.
Zuständigkeiten des Personals für den Betrieb klar festlegen!

Only employ trained, instructed and appointed personnel. Define clearly the responsibilities of the personnel for the operation!

Sicherheitshinweise für den Betrieb:

Safety instructions for the operation:

Jede sicherheitsbedenkliche Arbeitsweise unterlassen. Bei Funktionsstörungen das Nebelgerät sofort stillsetzen und sichern! Störungen umgehend beseitigen lassen.
Ein- und Ausschaltvorgänge, Kontrollanzeigen gemäß Betriebsanleitung beachten!

Refrain from any risky operation method.
Stop and secure the fog generator in case of any malfunction! Malfunction must be repaired immediately.
Observe switch on and off procedures and control indicators according to the instruction manual!

Personen mit Herzschrittmachern dürfen das Gerät nicht bedienen/berühren.

Persons with cardiac pacemakers may not operate / touch the device.

Weitere und nicht erlaubte Handhabungen und Modifikation des Gerätes außerhalb der offiziellen Richtlinien:

Es dürfen keine Umbauten am Gerät vorgenommen werden ohne die technische Abklärung mit der Firma IGEBA Geraetebau GmbH und/oder deren Einweisung.

Das Gerät und die damit verbundenen Handhabungen dürfen nicht unter Alkohol-, Medikamenten-, oder Drogeneinfluss durchgeführt werden.

Es ist untersagt, bei laufendem oder abgekühltem Nebelgerät Gegenstände, Körperteile, Tiere etc. in die Öffnungen einzuführen oder an heiße Teile anzulehnen.

Other and not permitted applications and modifications of the unit beside the official guidelines:

No modifications of the unit are permitted without technical clarification with IGEBA Geraetebau GmbH and/or their advise.

The device must not be operated under the influence of alcohol, medicine or drugs.

Furthermore, objects, body parts, animals etc. must not be inserted in the openings or leaned on hot parts of the running or cooled unit.

Warn- und Sicherheitshinweise:

Arbeits- und Betriebsverfahren, die genau einzuhalten sind, um eine Gefährdung von Personen auszuschließen.

Explosionsgefahr / Lebensbedrohende Verletzungen

Arbeits- und Betriebsverfahren, die genau einzuhalten sind, um Beschädigungen oder Zerstörungen am Nebelgerät zu vermeiden.
Bedienungsanleitung lesen!

Technische oder anwendungstechnische Informationen, die der Bediener des Nebelgerätes besonders beachten muss.

Gehörschutz tragen!
Arbeiten ohne Gehörschutz an dem eingeschalteten Nebelgerät kann das Gehör schädigen.

Warning and Safety notes:

Operation procedures that need to be strictly observed to prevent risk and damage to persons.

Explosion hazards / life threatening injuries

Operating procedures that need to be strictly observed to prevent damages or destruction of the fog generator.
Read the instruction manual!

Technical information which needs to be particular observed by the user of the fog generator.

Wear ear protection!
The operation of the fog generator without ear protection may damage your hearing.

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Schutzmaske tragen!
Je nach ausgebrachtem Wirkstoff ist das Tragen einer Gesichtsmaske mit Wirkstofffilter erforderlich. Entsprechende Informationen sind dem beigelegtem Gefahrendatenblatt des Wirkstoffes zu entnehmen.

Wear respiratory protection!
A face mask with respective filter may be required depending on the applied active agent. Further information may be obtained from the attached data sheet of the active agent.

Schutzanzug tragen! Es muss ohne jegliche Ausnahme ein Schutzanzug getragen werden, sofern die Richtlinien und die Hinweise des Wirkstoffherstellers dies erfordern.

Wear protective clothing! Protective clothing must be worn without any exception if required by guidelines and notes of the manufacturer of the active agent

Schutzbrille tragen!

Wear protective goggles!

Bitte beachten Sie die Hinweise bei Wirkstoffen, die ätzende Verletzungen verursachen können, und treffen Sie alle notwendigen Maßnahmen.

Please observe the notes regarding active agents that may cause chemical burns and take all necessary measures

Es muss von Seiten des Benutzers gewährleistet sein, dass die verwendeten Mittel nicht eingenommen werden bzw. Körperkontakt entsteht, insbesondere von Kindern und Personen, die damit nicht vertraut sind.

The user must ensure that used substances will not be inhaled nor swallowed nor in contact with skin, in particular for children and persons who are not familiar with it.

Fangen Sie Wirkstoffrückstände in einem geeigneten Behälter auf und entsorgen Sie diese gemäß den Umweltbestimmungen.

Prepare an appropriate container to collect excessive solution and dispose it according to the environmental designation.

Personen mit Herzschrittmachern dürfen das Gerät nicht bedienen/berühren. (siehe Produkthaftung)

Persons with cardiac pacemakers may not operate / touch the device. (See product liability

Brandgefahr !

Fire hazard!

Es muss jederzeit ein Feuerlöscher griffbereit sein, um im Falle eines Brandes sofort erste Maßnahmen zu ergreifen.

A fire extinguisher must be in reach to take measures immediately in case of fire.

Es dürfen keine Gegenstände im Bereich der Maschine liegen oder stehen, die eine Stolpergefahr bewirken könnten.

In order to reduce the risk of stumbling, no objects may lay or stand in the vicinity of the machine.

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Es muss sich ein Erste-Hilfe-Kasten in unmittelbarer Nähe befinden, um bei Verletzungen die Erstversorgung zu gewährleisten.

A First-Aid-Kit must be in reach to ensure first aid in case of injuries.

Bei technischen Problemen, die in dieser Anleitung nicht angesprochen sind, steht Ihnen der Kundendienst (Telefon +49(0)8375/9200-0) zur Verfügung sowie Ihr persönlicher Händler vor Ort.

For technical problems that are not part of this manual, you may contact the customer service at +49(0)8375/9200-0 as well as your local distributor.

Sicherheitsmaßnahmen lesen:

Read Safety instructions:

1. Die mit der Bedienung des Gerätes betrauten Personen müssen sich vor der Inbetriebnahme des Gerätes mit den Sicherheitsmaßnahmen vertraut machen.
Lesen sie vor der Inbetriebnahme des Gerätes die komplette Betriebsanleitung.

1. Before first starting the unit the operator must be firm with the safety instructions. Only educated and authorized persons are allowed to work with the unit. Read this manual completely before operating the machine.

2. Nehmen sie keine Veränderungen am Gerät vor. Für einen sicheren Betrieb müssen alle Schutzabdeckungen montiert sein. Ziehen sie vor allen Wartungs- und Einstellarbeiten den Netzstecker.

2. Any modifications of the machine are permitted. All shrouds and guards have to be in place for a safe operation. Disconnect the mains before performing any service or maintenance.

3. Das Gerät darf nur in technisch einwandfreiem Zustand und von geschultem Personal betrieben, gewartet oder transportiert werden.

3. It is only allowed to run the machine in a technically perfect condition and proper training of the personnel involved in the operation, maintenance and transport.

4. Richten Sie den Luftstrom der Sprühköpfe keinesfalls direkt auf Körperteile, insbesondere das Gesicht. Tragen Sie während dem Betrieb sowie allen Befüll-, Wartungs-, Reinigungs- und Einstellarbeiten geeignete persönliche Schutzausrüstung (Schutzbrille, Schutzhandschuhe, Atemschutz, Gehörschutz, Schutzkleidung).

4. Do not direct the air blast from the nozzles directly at any part of your body, particularly the face. Always use appropriate PPE (protection goggles, protection gloves, respirator mask, ear protection) during operation, tank loading, maintenance, cleaning and calibration.

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5. Während der Behandlung und Einwirkzeit sind alle Zutrittsmöglichkeiten zu den behandelten Räumen mit Zutrittsverboten zu kennzeichnen und ggfs. zu verschließen. Verhindern sie insbesondere den Zutritt von Kindern und Unbefugten. Beachten sie ihre länderspezifischen Bestimmungen sowie die Auflagen des Wirkstoffherstellers.

5. Every possible access to the treated rooms has to be marked with a prohibition of entry during treatment and residence time, if necessary lock all treated rooms. Particularly prevent the access of children or unauthorized persons. Respect your country-specific regulations as well as the guidelines of the agent manufacturer.

6. Das Verdichtergehäuse sowie die Rohrführung werden bei längerem Betrieb heiß. Berühren sie keines dieser Teile, während dem Betrieb. Lassen sie diese Teile nach dem Abstellen einige Minuten abkühlen, bevor sie sie berühren.

6. Blower housing and tubing become hot during prolonged operation. Do not touch any of these parts while running, wait several minutes after stoppage, allowing these parts to cool down.

7. Betreiben sie die Maschine nicht ohne komplett montierten Luftfilter. Schmutz, Gegenstände oder Kleidungsstücke könnten angesaugt werden und das Gebläse zerstören bzw. Personen verletzen.

7. Do not operate the engine without completely installed blower intake air filter. Debris, objects or clothing can be sucked into the blower causing potential damage to the blower or injury to operators.

8. Bedienen Sie die Maschine nicht unter Alkohol- oder Drogeneinfluss.

8. Do not operate the machine under influence of alcohol or drugs.

9. Lassen Sie das Gerät vor dem Transport oder der Einlagerung abkühlen.

9. Let the machine cool down before transport or storage.

10. Stellen sie den Motor ab und warten sie ca. eine Minute, bevor sie den Deckel des Wirkstoffbehälters öffnen.

10. Switch of motor and wait about one minute, before opening the cover of the solution tank.

11. Es ist verboten in geschlossenen Räumen zu nebeln, in denen sich offene Flammen, Kerzenlicht, heiße Maschinen oder elektrische Geräte befinden. Es besteht Brandgefahr.

11. It is forbidden to fog into enclosed rooms where open flames, candle lights, hot engines or electrical appliances exist. There is fire danger.

12. Beachten sie die Dosierhinweise, insbesondere beim Nebeln in geschlossenen Räumen. Nebeln sie nicht länger als erforderlich. Bei Wirkstoffen mit brennbaren Anteilen können zündfähige Gemische entstehen

12. Follow dosing recommendations, particularly when fogging indoors. Do not fog longer than necessary. Application of formulations with combustible fractions may lead to formation of an explosive mixture.

13. Vor dem Transport des Gerätes in geschlossenen Fahrzeugen unbedingt den Wirkstofftank entleeren.

13. Drain solution tank before transporting the unit in closed vehicles.

14. Beachten Sie die Angaben der Wirkstoffhersteller bezüglich Dosierung und notwendiger Schutzmaßnahmen. Verwenden Sie beim Befüllen immer den IGEBA Einfülltrichter mit Sieb. Falls Sie Wirkstoffbrühe verschütten, wischen Sie die Brühe ab. Entsorgen Sie Restemengen ordnungsgemäß. Befolgen Sie die rechtlichen Vorschriften hinsichtlich Lagerung und Entsorgung von Wirkstoffen.

14. Comply with the specifications of manufacturers regarding safety instructions and dosage of formulations. Do not spill solution, when filling the solution tank. Use the IGEBA funnel with strainer. In case of spilling solution, use a dry cloth and clean residual solution from the unit. Store and depose residual formulations carefully according to legal regulations.

15. Tragen Sie beim Arbeiten mit dem Gerät immer einen geeigneten Gehörschutz. Das Gerät entwickelt einen Schallpegel von mehr als 90 dBA.

15. Wear suitable ear protectors when operating the unit. The noise level of the unit exceeds 90 dBA.

16. Das Gerät muss auf einem waagerechten, festen Untergrund stehen. Bremse betätigen.

16. The unit must stand horizontal and stable on a rigid base. Please adduct the break.

17. Nie Nebeln, wenn das Gerät nicht einwandfrei funktioniert.

17. Do not fog if the unit does not work properly.

18. Jegliches Umbauen des Gerätes ist verboten. Verwenden Sie nur Originalersatzteile und Originalzubehör der Firma IGEBA.

18. A reconstruction of the unit without written permission of IGEBA is not allowed. Use only original spare parts and accessories from IGEBA.

19. Lagern Sie Wirkstoffe und das Gerät so, dass es vor dem Zugriff von Kindern und unbefugten Personen sicher ist.

19. Store formulations, fuel and the unit itself at places where they are not accessible to children and other unauthorized persons.

20. Um ungewollte chemische Reaktionen, beim Mischen von unterschiedlichen Wirkstoffen, zu vermeiden, müssen die Vorgaben der Wirkstoffhersteller befolgt werden.

20. To avoid chemical reaction when mixing different agents, respect the instructions of the agent manufacturers.

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Sicherheitshinweise für ULV Aerosol Generatoren

Safety instructions for ULV Aerosol Generators

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Operating Instructions

IGEBA ULV Aerosol - Generators
U 20 HD-M / U 40 HD-M

Summary Page

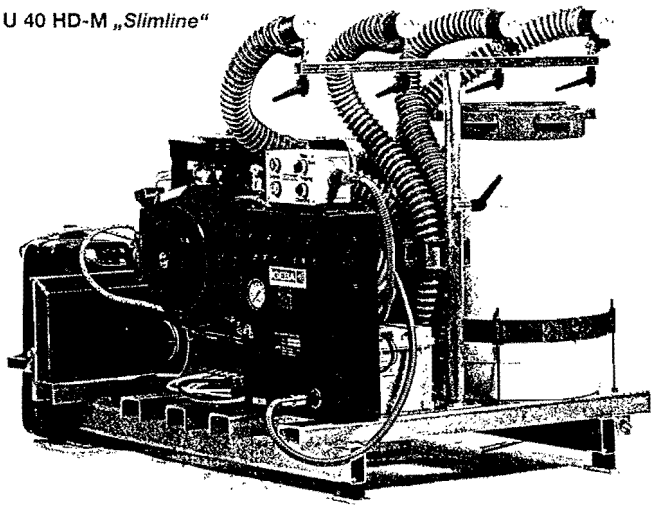
01/1997

1. Arbeitsweise der IGEBA ULV Aerosolgeneratoren/ Operating principle of IGEBA ULV Aerosol-Generators

Alle 4 Basisgeräte (U 10/15/20/40 HD-M) arbeiten nach demselben Prinzip.
Ein Antriebsmotor (E-Motor oder Verbrennungsmotor) treibt über 2 Keilriemen einen Luftverdichter an. Der Luftverdichter arbeitet nach dem Seitenkanalprinzip und ist ein- oder zweistufig ausgeführt. Die Charakteristik dieser Bauart harmoniert gut mit der Auslegung der Zerstäuber- bzw. Aerosoldüsen, d.h. es wird bei relativ geringem Luftdurchsatz (ca. 1,5 m³ pro Minute und Düse) ein Verdichtungsverhältnis von ca. 1,3 - 1,35 erzeugt. Dies ist vorteilhaft im Hinblick auf kleine Düsenquerschnitte.
Die Aerosoldüse ist zweistufig ausgeführt. In der ersten Stufe wird der koaxial zugeführte Flüssigkeitstrahl von dem zentripetal einströmenden Luftstrahl bei hoher Geschwindigkeit (ca. 200 m/sec) zerrissen. Am Ende eines kurzen, konisch erweiterten Diffusors, tritt nochmals verdichtete Luft zentripetal hinzu, deren Drall dem der ersten Stufe entgegengerichtet ist, mit dem Effekt, daß eine gewisse Bündelung des zentralen Strahls aus der ersten Stufe stattfindet.
Der Tröpfchenstrahl verläßt also die Düse, ohne die Innenfläche des Diffusors berührt zu haben; das ist vorteilhaft bei der Ausbringung von Pulvern.
Die Kontrolle der Flüssigkeitsmenge erfolgt über eine durchsichtige Röhre mit Schwimmer und Skala, die die Durchflußmenge in l/h anzeigt. Ein Regelventil ermöglicht eine stufenlos regelbare Ausbringung von 0 l/h bis Maximum, bzw. 10 % des Max. - Max (U 20/40 HD-M). Bei den Geräten U 10/U 15 M sind zur Ausbringdosierung Dosierdüsen mit unterschiedlichen Bohrungen eingebaut.

For all four basic units (U 10/15/20/40 HD-M) the operating principle is identical.
A drive belt unit (electric motor or combustion engine) works the side channel blower by 2 V-belts.
The air compressor operates on the principle of the side channel blower and is a one or two-stage construction and well matched to the solution nozzle. It produces a comparatively small air throughput at a high compression ratio (1.3-1.35). This is an advantage considering the narrow nozzle bores.
The solution nozzle, better called atomizer, is working in two stages.
The first step breaks up the liquid at a high velocity (abt. 200 m/sec). At the end of a short conical diffuser compressed air enters again which is acting in opposite direction and provides for a still better break up of the droplets.
The stream of droplets is dispersed without touching the inner surface of the solution nozzle. This is highly important applying wettable powders.
The control of the throughput is due to a transparent meter with a floating body and scale, which gives the throughput in l/h. A regulating valve permits an infinitely variable output from 0 l/h to maximum, resp. 10 % of maximum to maximum (U 20/40 HD-M).
With U 10/15 M an output dosage through dosage nozzles with different diameters is installed.

U 40 HD-M *„Slimline"*



2. Technical specifications

		U 20 HD-M	U 40 HD-M
a)	Engine type	One-cylinder IC-series, 4-stroke engine with Lo-Tone muffler-system	Twin-cylinder IC-series, 4-stroke engine with Lo-Tone muffler-system
	Displacement	400 ccm	694 ccm
	Performance	8 kW (11 HP) at 3.600 rpm	13 kW (18 HP) at 3.600 rpm
	Ignition system	electronic magnetron-system	electronic magnetron-system
	Starter	electric 12 V	electric 12 V
	Generator	12 V DC, 8,5 A	2x12 DC, 5-8,5 A
	Battery	12 V, 36 Ah	12 V, 36 Ah
	Fuel tank capacity	5 litres	20 litres
	Fuel	petrol or unleaded fuel min. 90 octane	petrol or unleaded fuel min. 90 octane
	Fuel consumption	approx. 2,5 l/h	approx. 4,5 l/h
b)	Compressor type	side channel, dry running	side channel, dry running
	Discharge rate	3 m³/min	6 m³/min
	Compression ratio	1,3 (300 mbar absolute) max. 1,4	1,3 (300 mbar absolute) max. 1,4
	Drive	2 V-belts and centrifugal clutch	2 V-belts and centrifugal clutch
c)	ULV-nozzles	double twist	double twist
	Number of nozzles	2, individually adjustable	4, individually adjustable
	Material	reinforced polyamide	reinforced polyamide
	Output	max. 30 l/h (water)	max. 60 l/h (water)
d)	Control system and solution tank	standard model, equipped with: - flow meter, 4-40 l/h - 2 solution taps - 1 flow control valve, adjustable to control the output - solution tank 50 l	standard model, equipped with: - flow meter, 6-60 l/h - 4 solution taps - 1 flow control valve, adjustable to control the output - solution tank 50 l
e)	Dimensions and weight	length 110 cm height 80 cm width 100 cm weight approx. 185 kg	length 110 cm height 80 cm width 100 cm weight approx. 216 kg

	U 20 HD-M	U 40 HD-M
f) **Standard accessories**		
1 solution funnel with strainer	x	x
1 fuel funnel with strainer	x	
2 V-belts for spare	x	x
1 operation manual with spare parts list	x	x
1 battery 12 V 36 A	x	x
g) **Optionals**		
1 long spray hose up to max. 10 m length, with couplings for both hoses (air and solution)	x	x
1 pressure gauge 0-0,6 bar (0-10 psi) to control the pressure in the solution tank	x	x
1 pressure gauge to control the pressure produced by the spray nozzles 0-0,5 bar (0-7 psi) below atmospheric pressure	x	x
1 mixing device with 12 V DC motor for the solution tank, i.e. when using wettable powders for standard 50 l tank	x	x

3 Instruction manual

Pay absolute attention to the following points:

1. Wear ear protection when operating the unit!

2. Fit all protective devices back to unit after repair.

3. Do not spill fuel over the unit, especially when the unit is still hot.

4. Smoking and open flame are prohibited while handling with fuel! Always observe the regulations concerning safety precautions for the use of petrol driven equipment!

5. Do not fog if the unit does not run perfectly, i.e. if engine r.p.m. are evidently too low.

6. Always wear protective clothing and mask with suitable filter against organic gases and dissolvents when fogging closed spaces!
   Never fog rooms unattendedly, pay attention to the max.dosing volume on page 7.

7. Before every transportation or during driving without fogging, close solenoid valve by turning the switch (244) in vertical position.

8. Never fill up solution tank to the level where air line (16, 18) from compressor is connected to the tank!

3.1 Readying the unit for use

Unit is delivered with a 12 V battery; when leaving the factory the battery is fully charged. Turn the key-operated switch (211): the pilot lamp (215) must be on.
If not: battery is low!

Now one has 2 possibilities to make the engine running:

a) connect the battery to a charger for some hours to get a full battery or
b) try to start the engine by a rope and the recoil starter, adjust choke flap and do not forget to open it after the engine is running properly!

Before starting fill up 1 or 2 gasoline tanks (167) with low grade gasoline and put them into the holding device (136). Take the fuel suction hose (162) and tighten the special lid (164) on one tank (167). Check the small hole on top of the lid (164).

Connect remote control (230) and control box (200) by the cable (260), screw on the fixing nuts carefully.

Assemble the 2 or 4 aerosol nozzles on the bar.

3.2 Starting the unit

a) Starting of the engine

(if engine is cold)
- close choke flap (U 20)
- pull ring out until stop (U 40) and turn key-operated switch into position „run".
- at remote control push button I (248), until engine starts running
- then move choke flap slowly back into „open"-position.

(if engine is warm)
- press only starter button (248) until engine starts running.

b) Fogging

- open nozzles 1 - 4 (U 40) or 1 - 2 (U 20) by turning handles of the taps (64) in vertical position.
- check if cover (5) on the solution tank (1) is tightened, and the clamping ring (4) is in the correct position together with the sealing ring (3)
- turn switch „fogging" (244) into position „start"
- turn dosage needle of the flow meter (57) to the desired throughput (clockwise to decrease - anticlockwise to increase output).

c) Stop fogging

- turn switch (244) anticlockwise to central position and solenoid valve (55) is closed.
  If you want to interrupt 1 or more nozzles (101), i.e. to fog by only one atomizer nozzle, turn the corresponding ball tap (64) on the front of the green box clockwise to horizontal position. Keep the solenoid valve (55) open.

d) Stop engine

- remote control: press red button until engine has stopped or turn key-operated switch (211) to position „stop".

Notice:
If engine stops for any reason, solenoid valve (55) will close automatically at the same moment, when charge lamp (239) at the remote control goes off . After restart the solenoid valve (55) will open automatically when charge lamp (239) is on, under the condition that switch (244) is in „start" position.

3.3 Metering the throughput of different media

All units are supplied with a flow meter as described before. For pesticide mixtures containing min. 80 % water the scale can be considered as accurate (fluctuating abt. 10 %).

For oil based formulations one has to meter the throughput as follows:

Fill solution tank to the extent that the scale can be read. Fog a certain quantity, e.g. 5 litres at constant reading of the regulating valve and measure the time needed.

For example: 5 l in 10 minutes = (5 l x 60 min) : (10 min x h) = 30 l/h

If the scale was set at 50 l/h, this value represents now 30 l/h with the measured medium:

Take the same procedure and check again and you will find that it is a question of a linear shifting of the scale, e.g.

Water		Oil
60 l/h	-	36 l/h
50 l/h	-	30 l/h
40 l/h	-	24 l/h
30 l/h	-	18 l/h
20 l/h	-	12 l/h
10 l/h	-	6 l/h

Please follow the instructions of the engine manufacturer with regard to servicing and changing engine oil.

The blower is free from any service except to keep the air filter (89) clean. **Do not ever run the blower without air filter!**

Always check tension on V-belts (156) and adjust if necessary!

The instructions should be read carefully before operation of the blower. If strict notice is given to these instructions the blower will operate faultlessly for years.

3.4 Fogging in enclosed spaces

When fogging in rooms, stables, halls etc., there is a general danger of producing an explosive mixture, if operator does not watch the maximum output per volume.

The dosage of combustible parts of the total fog mixture is not allowed to exceed the following maximal rates per 1.000 m³ in the below chart:

a) Fog additives:

Diesel or Kerosene	3,0 l/1.000 m³
Glycerine	2,5 l/1.000 m³
Ekomist	2,0 l/1.000 m³
Erthylenglycole	2,0 l/1.000 m³
Diethylenglycole	2,0 l/1.000 m³
VK 2 - Spezial	2,0 l/1.000 m³
VK 1	1,5 l/1.000 m³
Nevolin/Nevocol	1,5 l/1.000 m³

b) Fuel, white oils:

Vegetable oil	2,5 l/1.000 m³
Diesel-/heating oil	2,0 l/1.000 m³
Petroleum	2,0 l/1.000 m³
Petropal (Czech)	2,0 l/1.000 m³
Shell Risella 15	1,5 l/1.000 m³

These rates are far enough to the limits of inflammability. On the other hand, they are much higher than usually used in limited spaces. Oil based formulations are usually dosed 1 l per 1.000 m³.

3.5 Powder fogging

Mixtures made of liquid components can be fogged immediately after start of engine.

Mixtures made of liquid components and wettable powders must be well mixed before fogging. Please proceed as follows:

- start engine;
- start mixing device (option) by pushing the tumbler switch (marked „Mixer") to above mixer will agitate;
- wait 3 - 8 minutes to get a homogene mixture;
- start foggine.

Please note:
As mentioned above, the solution tank is under pressure (approx. 0,3 bar or 4,5 psi). Therefore, do not open the cover when tank is under pressure.

4. Cleaning of solution tank

If funnels with strainer are used to fill solution and petrol tank and no coarse particles enter the tanks, hardly any cleaning or servicing is necessary and limited to

- checking the tension of the V-belts (156)
- checking the condition of the air filters (89)
  (engine, blower)
- checking the solution filter (46)

4.1 Cleaning of solution tank

After every operation empty solution tank. Slightly tilting the unit to get the lowest point at the outlet socket (22). The tank can easily and fast be emptied by turning the tap handle (28) parallel to outlet hose (32).

When opening the solution tank, do not lose the ring gasket!

After cleaning do not leave any medium inside the tank!

4.2 Cleaning of the pipe system

If the solution tank is run empty, the pipe system will be blown empty as well. If one or more nozzles were closed during operation, open all stop-taps in case some solution was left inside. Keep taps open until no more solution is emitted.

If wettable powders have been applied, please flush the system, keeping the unit running!

The filter (46) can be checked from outside as long as the glass cover is transparent. If not, dismantle and unscrew filter strainer (46), wash out and blow clean with compressed air. Before screwing back, check gasket if clean and for correct seat. Tighten butterfly nut firm, but only by hand.

GENERAL REMARKS
Side channel blowers are designed for conveying air as well as for generating pressure and vacuum. If the conveyed medium contains solid particles or other pollutions, they are to be removed by installing a filter on the intake side. Attention should be given to careful and regular cleaning or replacement of clogged filters, otherwise the performance cannot be guaranteed.

Operation

If the rating current embossed on the rating plate is being exceeded during operation, please check the system's resistance - which may be too high because of a clogged filter, blocked or reduced pipe work, etc.. Any deficiencies should be remedied immediately.

Maintenance

The side channel blowers are equipped with sealed groove ball bearings which do not need lubrication. The grease filling is sufficient for the whole service life of the bearings.

Spare parts list

When ordering spare parts, please, state serial number of the unit, type and part No. As per the following list and drawing.

4.3 Cleaning of air filter (side channel blower

The life time of the blower depends entirely on the cleanliness of the filter.

To check and clean loosen both knurled nuts and pull off housing. Pull off filter and blow clean from outside parallel to the folds of the paper filter. Finally blow from the inside to the outside. Filters with holes must be replaced.

Please remember that even small solid particles, e.g. sand can damage the blower or lead to blockage of the rotor resulting in an expensive repair.

4.4 Cleaning of air filter (engine)

Please follow the instructions of the manufacturer.

5 Fault finding and trouble shooting

5.1 Engine

Please follow the instructions of the manufacturer.

5.2 Air compressor (blower) (80)

The blower is maintenance-free and completely oil-free. The easy-running can be checked when engine is switched off. Pull belt drive back- and forward. This is easily done as the engine is separated from belt drive or rotor by a centrifugal clutch (152).

If the belt is blocked, the following could have happened:

a) the centrifugal clutch is damaged or
b) the rotor stuck.

To identify the part, please proceed as follows:

a) Please use rope start supplied with unit. If engine with belt drive and blower can be moved, the clutch is damaged. The clutch can only be replaced but never repaired.

b) If nothing can be moved, the rotor got stuck. Either the bearings (2x30) are damaged or the rotor (3) is in contact with the blower housing.

In either case the repair is rather complicated and special tools are needed. Possibly the housings (1,2) or the rotor (3) need to be worked over.

We would recommend to replace the blower.

5.3 V-belt drive

If the belt slips please try to increase the tension by turning the pressure screw at the left rear baseplate of the engine. If this measure does not help, replace both V-belts as follows:

- loosen pressure screw (326)
- loosen all 4 screws (325) of engine base
- push engine towards blower
- take off V-belts (156)
- fit new V-belts
- push engine back to position and tighten screws (325) slightly and at the same time
- align engine that V-belt pulley and blower are almost parallel
- tighten pressure screws (326) to get necessary tension of the V-belts (156)
- firmly tighten all 4 screws (325) of engine base

5.4 System of solution flow

5.4.1 Throughput too low

Following reasons are possible:

a) The system does not permit a larger throughput: clean filter (see 4.2)

b) The diameter of the solenoid valve (55) has narrowed due to an expansion of the gasket of the core or got out of position. Unscrew coil (4 screws) and check gasket and if necessary replace.

c) Pressure in the solution tank is too low: proceed as follows: unscrew cover (5) and mount instead test gauge (11-33 000.00). Start unit and check pressure. Set value: 0,25 - 0,3 mbar = similar to the gauge at the control box. If pressure is too low, take off cover, check tank gasket, replace carefully and fit cover back to solution tank. Check flexible hose connection from blower outlet to solution tank.

d) To check the low pressure at the nozzles pull off one hose at the solution tap and connect hose to a low pressure gauge. Set value: -0,3 bar or 0,7 bar absolute. If considerable changes are found, please check those hoses with too low pressure at the aerosol nozzle. Unscrew hose clamp and pull off air hose. Check aerosol nozzle for free passage as well.

5.4.2 No flow of solution

- check solution filter (46)
- check regulating taps (64)
- check solenoid valve for free passage (55)
- check if bore for suction at the bottom of the tank is free
- check solution tank pressure and tank gasket (3)

English

Warning notes and safety regulations for lead-acid batteries

Follow information about the battery, in the instructions for use and instructions for operating the vehicle.

Wear eye protection

Keep children away from acid and batteries.

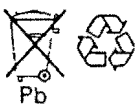
Explosion hazard:
- A highly-explosive oxyhydrogen gas mixture occurs when charging batteries, therefore:

Fires, sparks, naked lights and smoking are prohibited:
- Avoid causing sparks when dealing with cables and electrical equipment, and beware of electrostatic discharges.
- Avoid short-circuits.

Corrosive hazard:
- Battery acid is highly corrosive, therefore:
- Wear protective gloves and eye protection.
- Do not tilt battery, acid can escape from the degassing openings or vents.

First aid:
- Rinse off acid splashed in the eyes immediately for several minutes with clear water. Then consult a doctor immediately.
- Neutralize acid splash on skin or clothes immediately with acid neutralizer (soda) or soap suds and rinse with plenty of water.
- If acid is consumed, consult a doctor immediately.

Warning note:
- Do not place batteries in direct daylight without protection.
- Discharged batteries can freeze up, therefore store in an area free from frost.



Disposal:
- Hand in old batteries at a collection point.
  The notes listed under item 1 are to be followed for transport.
  Never dispose of old batteries as domestic waste.

1. Storage and transport
   - Store dry and cool. Unfilled batteries have a very long shelf life.
   - Recharge filled batteries when the acid density falls below 1.21 kg/l (1.18 in the case of electrolyte 1.23).
   - Store and transport batteries upright and steady to avoid acid spillage.
   - Only remove protective cap from positive post when connected in the vehicle and place on the pole of the battery which has been replaced to avoid short-circuits.

2. Commissioning
   - Batteries supplied filled are ready for operation.
   - Fill batteries supplied unfilled with sulphuric acid in accordance with VDE 0510 of density 1.28 kg/l (for tropical countries 1.23 kg/l) up to the max. acid level mark or 15 mm above the upper edge of the plates:
   - Battery and acid temperature should be above 10°C if at all possible.
   - After 15 min. slightly tilt filled battery several times and top up acid if required.
   - Lock in sealing plug securely, wipe off any acid splash.
   - If starting performance is inadequate – recharge (see item 4).

3. Installation in the vehicle
   - Switch off engine and all electrical equipment.
   - Avoid short-circuits for example by tools.
   - When removing, first disconnect the negative post.
   - Remove foreign bodies from the battery carrier and clamp battery tightly after installation.
   - Clean terminal posts and clamps and other fixings and lubricate slightly with battery grease.
   - When installing, first connect positive post and check post clamps for firm seating.
   - Put on attachment parts such as post covers, degassing reservoir, elbow, hose connection, and clampholders from the battery which has been replaced.
   - If venting tubes have been fitted, place these tubes in the venting holes again.
   - If only one venting tube has been fitted, the opposite venting hole has to be closed up with a vent plug. This vent plug has been cast on to the red cap for the positive terminal. Remove this vent plug, and close up the open lateral borehole on the housing cover. This vent plug is not required for batteries without lateral boreholes.
   - Leave at least one gas outlet open!
     This applies also to the return of old batteries.
   - Elbow and plugs are available under item no. 1183386002 and 1180522002, if required.

4. Charging
   - Remove battery from the vehicle and be sure to disconnect the battery cables.
   - Ensure adequate ventilation.
   - Only use suitable direct current chargers.
   - Connect positive pole of the battery to the positive output of the charger. Connect negative post appropriately.
   - Only switch on charger after connection to the battery and switch off the charger first after charging.
   - Charging current recommendation: 1/10 amperes of the battery capacity Ah.
   - If the acid temperature exceeds 55°C, interrupt charging.
   - The battery is fully charged when the acid density and the charging voltage have stopped rising for 2 hours.
   - Check acid level and if required top up with distilled water. Never top up acid.

5. Maintenance
   - Keep battery dry and clean.
   - Check acid level regularly and replenish with distilled water. (In the event of considerable water consumption, have the alternator voltage regulator checked)
   - Do not use any so-called improving agents.
   - If the acid density is below 1.21 kg/l (1.18 in the case of electrolyte 1.23), recharge battery.

6. Jump starting
   - Only use standard jump leads in accordance with DIN 72553 and follow their operating instructions.
   - Only use batteries of the same nominal voltage.
   - Switch off both vehicle engines
   - First connect the two positive posts. Then connect the negative post of the vehicle providing charging assistance. Then connect the negative crocodile clip to a bare metallic point on the vehicle requiring assistance remote from the battery. (Follow the vehicle providing assistance, then start the engine of the vehicle requiring assistance for a maximum of 15 sec.
   - Disconnect cables in reverse sequence.

7. Taking batteries out of service
   - Charge battery, store in a cool place and if the battery is to remain in the vehicle, disconnect negative terminal.
   - Check battery state of charge regularly and correct by recharging, if required. (See item 4).

8. Warranty

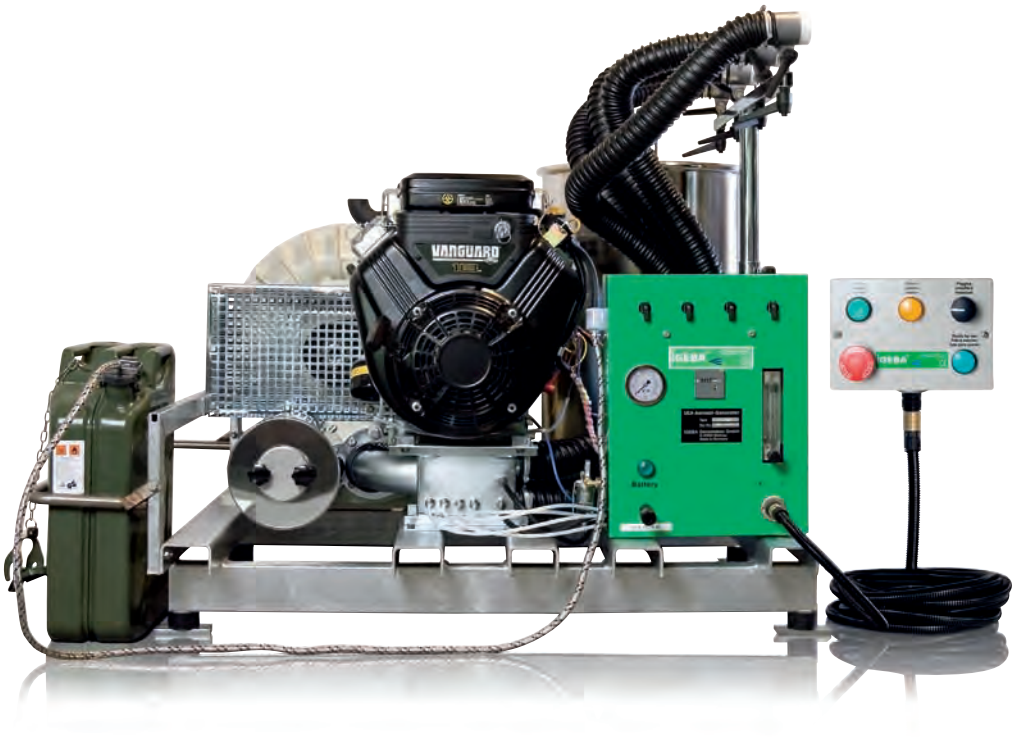
We accept warranty for material and manufacturing defects which occur within the applicable warranty period. Normal wear and tear, damage due improper use, failure caused by external damage, and damage caused by opening the battery shall be expressly excluded from the warranty. Valid warranty claims are usually met by providing a similar battery. Cancellation sale and reduction of the purchase price shall be excluded, unless the replacement delivery does not remedy the defect.

Warranty services can be demanded only after presentation of th battery subject to complaint and of the receipt.

U-40 M mit 50-75 l. Tank

U-40 M with 50-75 l. tank

Liste Ersatzteile | Spare parts list



DIN EN ISO 9001:2008

iGEBA®

ULV Aerosol Kaltnebelgerät

ULV Aerosol Generator

Ersatzteilliste für U 40 HD M (50/75 Liter Edelstahl) ab Ger. Nr. 65670

Spare parts list for U 40 HD M (50/75 Liter Stainless steel) from ser. no. 65670

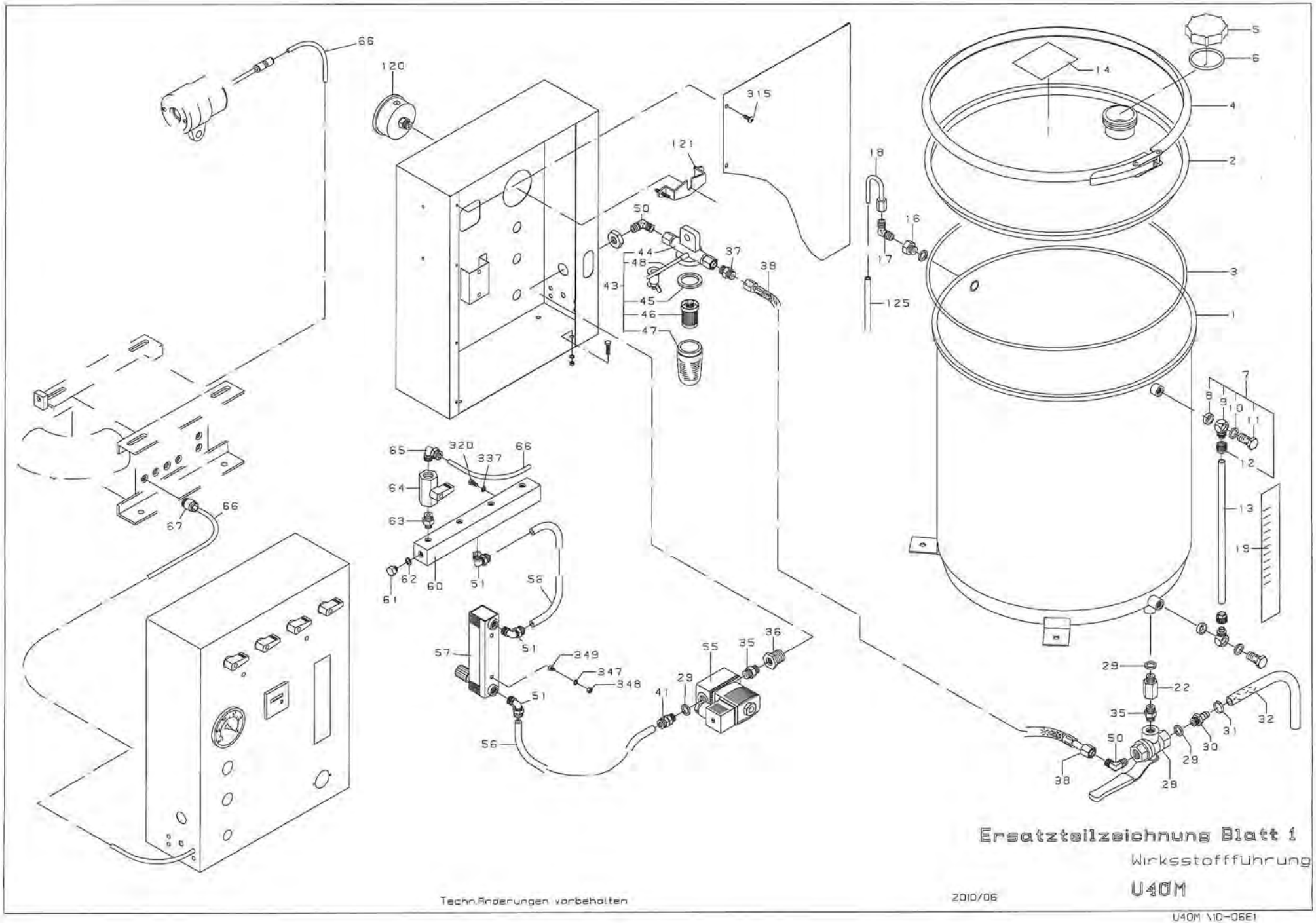
Bei Ersatzteilbestellungen bitte ***Pos.Nr./Teilebezeichnung, Teile-Nr. und Geräte-Nr.*** angeben!
In case of orders please give ***Pos.No., part name, part number and serial number!***

Pos.Nr Jll. Nr.	**Teilebezeichnung / Partname**	**Teile-Nr. / Part-No.**
-	**Wirkstoffbehälter, vollst., bestehend aus / Solution tank, cpl., consisting of: POS. 1 - 14 / 19**	**50 Liter**.....94-01 000.00 **75 Liter**.....94-01 005.00
1	Wirkstoffbehälter / Solution tank	**50 Liter**.....94-01 100.00 **75 Liter**.....94-01 110.00
2	Behälterdeckel / Tank lid	94-01 251.00
3	Dichtring / Gasket	94-01 000.04
4	Spannring /Clamping ring	94-01 000.02
5	Wirkstoffdeckel (klein) / Cover	8-01 205.01
6	O-Ring / O-ring	Ø 43 x 3
7	Schwenkverschraubung, vollst. bestehend aus/ Swivelling scew fitting,cpl. consisting of **POS. 8 -12**	326 638
8	Distanzring / Spacer	252 928
9	Ringstück / Ring connection	303 430
10	Dichtring / Gasket	252 926
11	Hohlschraube / Hollow screw	304 230
12	Überwurfmutter / Nut of tube	250 010
13	Teflonschlauch / Teflon hose	**50 Liter**.....94-01 000.03 **75 Liter**.....94-01 110.03
14	Hinweisschild / Label	94-01 200.01
16	Reduzierstück / Reducing piece	250 757
17	Winkel - Einschraubverschraubung / Angle screwed in connection	109 06 13
18	Rohrbogen / Tube bend	90-06 400.01
19	Literskala / Level scale	**50 Liter**.....94-01 000.01 **75 Liter**.....94-01 110.02
22	Verbindungsstück / Adapter	13-07 105.01
28	Wirkstoffhahn / Solution tap	11-07 101.01
29	Dichtring / Gasket	DIN 7603 A 13,5 x 18 Cu
30	Einschraubtülle / Hose nipple	250 194
31	Schlauchschelle / Clamp	Ø 11 - 19
32	Schlauch / Hose	94-07 000.06
35	Doppelnippel / Double fitting	250 357
36	Schottverschraubung / Bulk head stutting box	117 00 13
37	Doppelverschraubung / Double screwing	106 08 00
38	Wirkstoffleitung / Solution line	94-07 200.00
41	Gerade Einschraubverschraubung / Straight insert screwing	1510-8/6-1/4
43	Wirkstofffilter, vollständig; Maschenweite 0,2mm / Solution filter, complete; mash width 0,2mm **best. aus Pos 44-48**	11-07 601.00
44	Filtergehäuse / Filter housing	11.07 601.01
45	Dichtung / Gasket	11.07 600.02
46	Filter / Filter	11-07 600.03
47	Glastopf / Glass cup	11.07 600.04
48	Klammer / Clamp	11.07 600.05
50	Winkeleinschraubverschraubung / Angle insert screwing	109 08 13
51	Winkeleinschraubverschraubung / Angle insert screwing	1500-8/6-1/4
55	Magnetventil, vollst. /Solenoid valve, cpl. **Einzelteile Seite ...**	94-09 301.00
56	Wirkstoffleitung / Solution line	94-07 301.01
57	Durchflußmesser / Flow meter	94-07 501.00
60	Verteiler bei Durchflußmesser / Distributor	94-07 000.04
61	Verschlußstopfen / Filter plug	DIN 910- M10x1 MS
62	Dichtring / Gasket	DIN7603 A10 x13,5 Cu
63	Reduziernippel / Reducing nipple	250 554
64	Wirkstoffhahn / Solution tap,	11-02 301.00
65	Winkelverschraubung / Angle insert screwing	1500-6/4-¼
66	Wirkstoffleitung / Solution line	94-07 000.01
67	Gerade-Verschraubung / Straight insert screwing	1014 d7-R1/4

Pos.Nr Ill. Nr.	Teilebezeichnung / Partname	Teile-Nr. / Part-No.
-	**Gebläse mit Ansaugfilter; bestehend aus:** **Blower with intake filter / consisting of: POS. 80 - 92**	
80	Seitenkanalverdichter / Side channel blower	94-04 100.00
81	Keilriemenscheibe, vollständig / V-belt pulley	95-04 301.00
82	Keilriemenscheibe / V-belt pulley Ø112	95-04 301.01
83	Spannbuchse / Spring collet	95-04 301.02
84	Gewindestift / Setscrew	7/16"
85	Paßfeder / Feather key	DIN6885 A10x8x45
88	Zentrierstange / Centering bar	94-04 000.01
89	Filtereinsatz / Filter cartridge	11-12 000.01
90	Haube / Hood	94-04 200.00
91	Spanndeckel / Cover	90-04 000.02
92	Sterngriff / Star handle	94-04 000.02
95	Flansch / Flange	94-06 300.00
96	Schlauchschelle Ø70/ Clamp Ø70	94-06 000.07
97	Luftschlauch Ø70 / Air hose Ø 70	94-06 000.06
98	Verteilerkasten / Distributor box	94-06 100.00
99	Luftschlauch Ø50 / Air hose Ø50	94-06 000.01
100	Schlauchschelle Ø50 / Clamp Ø50	96-06 000.01
101	Sprühkopf, vollständig; bestehend aus: Spray nozzle, complete; consisting of: **POS. 102 - 109**	94-06 200.00
102	Zerstäuberhalter / Nozzle holder	94-06 200.01
103	Zerstäuberblende / Nozzle screen	94-06 200.02
104	Zerstäuberdüse / Atomizer inkl. / incl. Pos 106	94-06 200.06
105	Diffusor / Diffusor	94-06 200.04
106	Senkschraube / Countersunk head screw	770 3035
107		
108	Schraubkupplung / Coupling	1580 -6-4
109	Schlauchstück / Hose	94-06 200.05
112	Augenschraube, vollständig / Screw, complete	94-06 600.00
113	Klemmhebel / Clamping lever	94-06 000.05
115	Ständerunterteil / Support base	94-06 400.00
116	Ständeroberteil / Support T-shaped	94-06 450.00
117	Schlauchhalter / Hose support	94-06 400.03
120	Druckmanometer / Manometer	94-06 700.01
121	Haltebügel	94-06 700.03
122	Druckschlauch / Pressure tubing	94-06 500.02
123	Y-Verbindungsstück / Y-Connection piece	94-06 500.10
124	Druckschlauch / Pressure tubing	94-06 500.01
125	Druckschlauch / Pressure tubing	94-06 500.05
126	Einschraubtülle / Hose nipple	250 170
127	Druckschlauch / Pressure line	94-06 000 08
128	Winkeltülle / Angle insert screwing	94-06 500.06
130	Rahmen / Frame	94-03 100.00
131	Gummipuffer / Rubber buffer	94-03 000.04
132	Platte / Plate	94-03 000.01
135	Halterahmen /	97-02 100.00
136	Bügel für Kanister / Clip for can	94-02 301.00
137	Sechskantmutter / Hexagon nut	DIN 985 M8
	Riemenschutz vollst. consisting of: **POS. 140 - 146**	**97-02 200.00**
140	U-Schiene unten	97-02 200.01
141	U-Schiene oben	97-02 200.02
142	U-Schiene rechts	97-02 200.03
143	U-Schiene links	97-02-200.04
144	Lochblech vorne (Motorseitig)	97-02 200.05
145	Lochblech hinten (Gebläseseitig)	97-02 200.06
146	Sicherungsschrauben	M6x20 90/100

Pos.Nr Ill. Nr.	Teilebezeichnung / Partname	Teile-Nr. / Part-No.
-	**Antrieb / Drive:**	
150	Motor, vollständig / Engine, complete (18HP) Modell 350447 bestehend aus / consisting of: **POS. 150/1 - 150/10**	94-05 101.00
150/1	Abgasschalldämpfer / Muffler	691562
150/2	Schutzkorb / Guard Muffler	691571
150/3	Abgasumlenkung / Deflector-Muffler	495518
150/4	Schraube / Screw	805849
150/5	Schraube / Screw	805448
150/6	Dichtungen für Flansch / Gasket-Exhaust	691613
150/7	Sicherungshalter / Fuse box	52-06 201.50
150/8	Flachsicherung / Fuse 5 Amp	52-06 201.53
150/9	Schutzblech / Head deflector shield	94-05 101 01
150/10	Schutzbügel /	94-05 101 10
151	Distanzring / Spacer ring	94-05 000.02
152	Kupplung / Clutch	94-05 200.00
153	Paßfeder / Feather key	6,3 x 6,3 x 40
154	Scheibe / Disk	94-05 000.03
155	Sechskantschraube / Hexagon screw	3/8 - 24 UNF
156	Keilriemen / V-belt	94-05 000 04
157		
158	Zwischenstück / Transition piece	94-05 000.05
159		
160	Kraftstoffsaugleitung, vollständig / Gasoline suction line, complete	94-05 400.00
161	Schlauch / Tube	94-05 400.01
162	Schlauch / Tube	94-05 400.02
163	Saugkörper / Suction body	94-05 400.03
164	Tankverschluß / Tank cap	94-05 410.00
165	Schlauchschelle / Clamp	Ø 11 - 19
167	Kraftstoffkanister, vollständig / Gasoline tank, complete	94-05 500.00
170	Winkelverschraubung / Angle insert screwing	R3/8“ x R3/8“
171	Rohr / Pipe	R3/8“ x 165mm
172	Muffe / Bushing	R3/8“
173	Verschlußstopfen / Filter plug	R3/8“
180	Batterie / Battery	94-09 005.01
181	Polklemme "plus" / Pole binder "plus"	94-09 005.02
182	Polklemme "minus" / Pole binder "minus"	94-09 005.03
183	Pluspolabdeckung / Pole covering "plus"	94-09 005.04
184	Batteriehalterung / Battery holder	94-09 500.00
185	Befestigungswinkel / Fastening link	94-09 000.04
200	Schaltkasten für Durchflußmesser / Housing for flow meter	94-09 400.00
202	Deckel / Cover	94-09 000.03
203	Druckschalter / Manometric switch	94-09 060.00
204	Halterung / Bracket	94-09 000.05
205		
206		
207	KFZ-Stecker / Plug	22-09 150.01
208		
209	Betriebsstundenzähler / Running hour meter	94-09 070.00
211		
212		
214	Kabel / Cable	94-09 010.01
215	Kontrolleuchte, vollst. / Pilot lamp, cpl.	94-09 030.00
216		
217		
218	Glühbirne / Bulb	94-09 030.03
222	Steckdose, vollst. / Socket, cpl.	94-09 000.10
223	Steckdose mit Kabel / Socket with cable	94-09 040.00
224	Zylinderschraube / Pan head screw	DIN 84 M3 x 10
225	Mutter / Nut	DIN 934 M3

226	Federring / Spring washer	DIN 127 B3
Pos.Nr Ill. Nr.	**Teilebezeichnung / Partname**	**Teile-Nr. / Part-No.**
229	Fernbedienung vollst. **mit Kabel** / Remote control cpl. **with cable** bestehend aus / consisting of : **POS 231 - 267**	293-09 600.00
230	Fernbedienung vollst. **ohne Kabel** / Remote control cpl. **with out** cable bestehend aus / consisting of : **POS 231 - 259**	293-09 650.00
231	Gehäuse / Housing	193-09 601.01
232	Deckel / Cover	193-09 601.02
235	Stop Taster, vollst./ Cut-off button, cpl.	293-09 650 70
240	Drehknopf, vollst. / Turn switch, cpl.	293-09 650.50
246	Kontrolleuchte, vollst. grün / Pilot lamp, cpl. green	293-09 650.80
250	Kontrolleuchte, vollst. gelb / Pilot lamp, cpl.yellow	293-09 650.90
254	Drucktaster "Start", vollst. / Press button switch "Start", cpl.	293-09 650.60
259	Steckdose 12-polig mit Kabel / Socket 12-pole with cabel	94-09 610.00
267	Kabel mit Stecker (5m) / Cable with plug (5m)	94-09 620.00
290	Typenschild / Rating plate	94-00 000.01
291	Schild "IGEBA" / Label "IGEBA"	
294	Schild "Batterie" / Label "Battery"	
300	Schild "12 V DC" / Label "12 V DC"	
301	Schild "+ / -" / Label "+ / -"	
315	Blechschraube / Tapping screw	B4,8 x 9,5 DIN 7981
318	Sechskantschraube / Hexagon screw	DIN933 M5x20
320	Sechskantschraube / Hexagon screw	DIN933 M6x10
321	Sechskantschraube / Hexagon screw	DIN 933 M6x16
322	Sechskantschraube / Hexagon screw	DIN 933 M6x35
323	Sechskantschraube / Hexagon screw	DIN933 M8x20
324	Sechskantschraube / Hexagon screw	DIN933 M8x25
325	Sechskantschraube / Hexagon screw	DIN933 M8x35
326	Sechskantschraube / Hexagon screw	DIN933 M8x55
328	Sechskantschraube / Hexagon screw	DIN933 M10x16
330	Sechskantschraube / Hexagon screw	DIN933 M12x35
331	Sechskantmutter / Hexagon nut	DIN934 M5
332	Sechskantmutter / Hexagon nut	DIN934 M6
333	Sechskantmutter / Hexagon nut	DIN934 M8
334	Sechskantmutter / Hexagon nut	DIN934 M10
335	Sechskantmutter / Hexagon nut	DIN934 M12
336	Federring / Spring washer	DIN127 B5
337	Federring / Spring washer	DIN127 B6
338	Federring / Spring washer	DIN127 B8
339	Federring / Spring washer	DIN127 B10
340	Federring / Spring washer	DIN127 B12
342	Unterlegscheibe / Disc	DIN125 B4,3
344	Unterlegscheibe / Disc	DIN125 B8,4
345	Unterlegscheibe / Disc	DIN125 B10,5
346	Unterlegscheibe / Disc	DIN125 B13
347	Federring / Spring washer	DIN 127 B4
348	Sechskantmutter / Hexagon nut	DIN 934 M4
349	Linsenkopfschraube / Oval head screw	DIN 7985 M4 x 10
351	Linsenkopfschraube / Oval head screw	DIN 7985 M5 x 8
352	Linsenkopfschraube / Oval head screw	DIN 7985 M5 x 12
357	Innensechskantschraube / Hexagon socket screw	DIN 912 M8 x 45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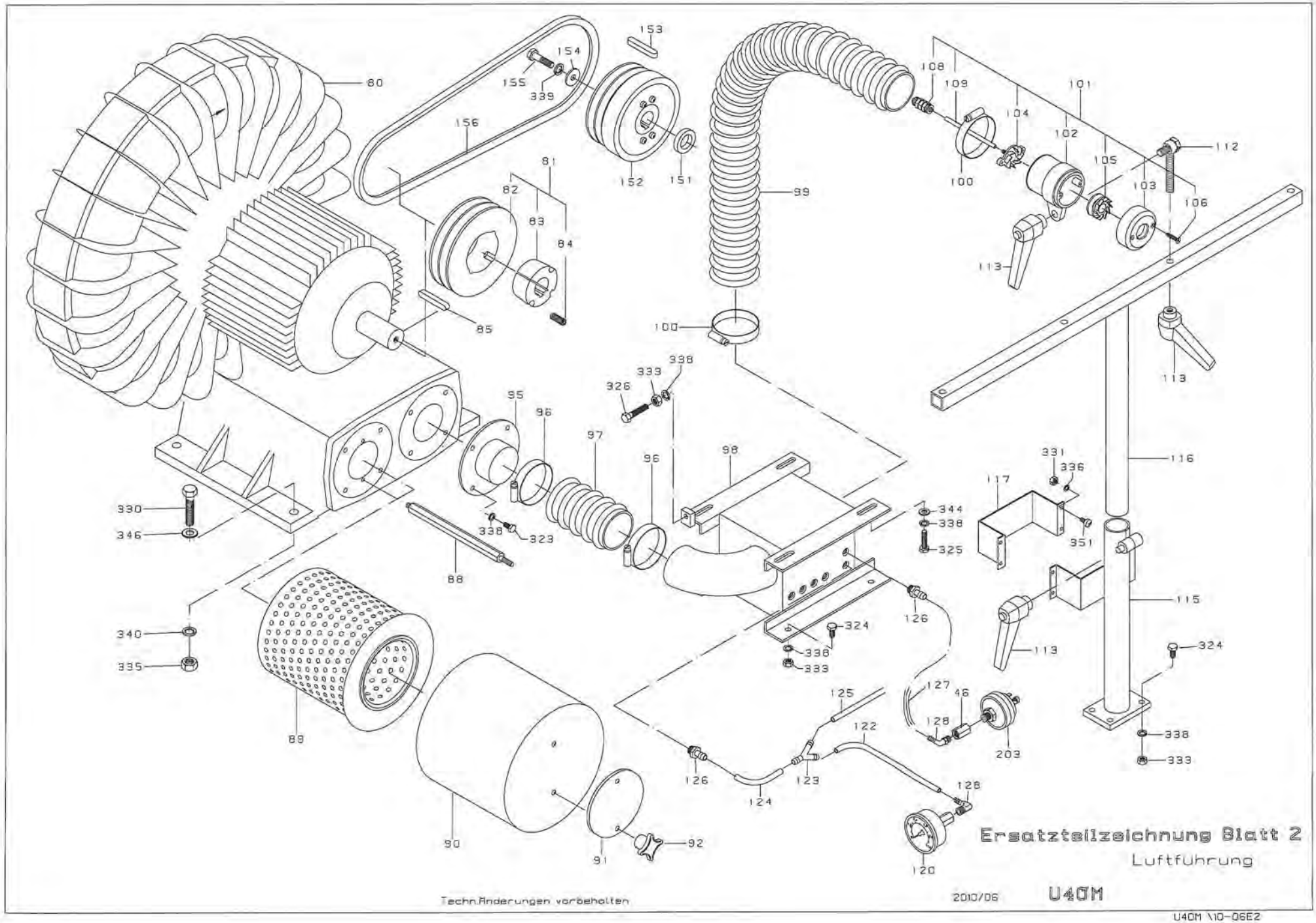
Ersatzteilzeichnung Blatt 1
Wirksstoffführung
U40M
Techn.Änderungen vorbehalten
2010/06
U40M \10-06E1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Ersatzteilzeichnung Blatt 2
Luftführung
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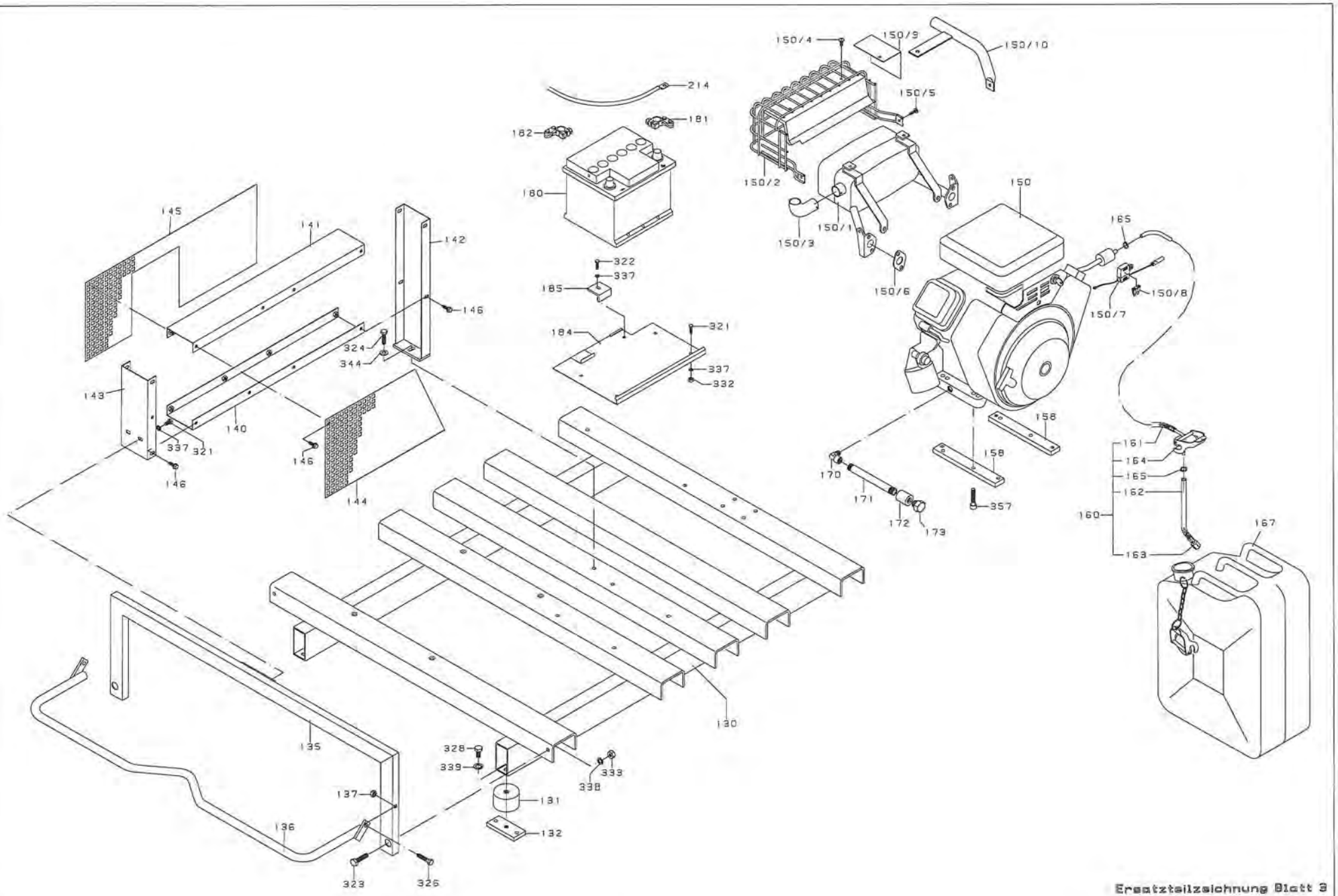
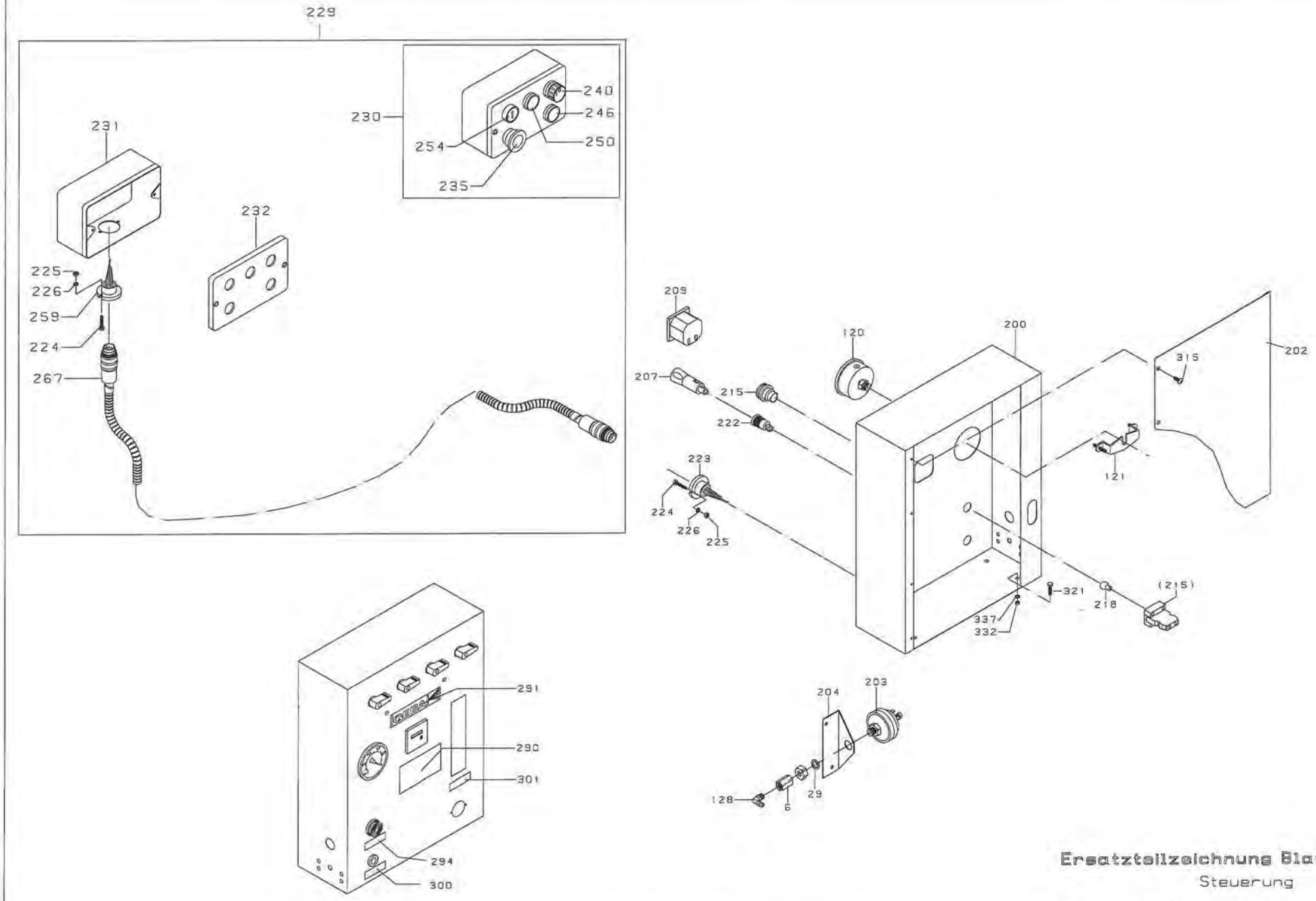
2010/06
U40M
U40M \10-06E2



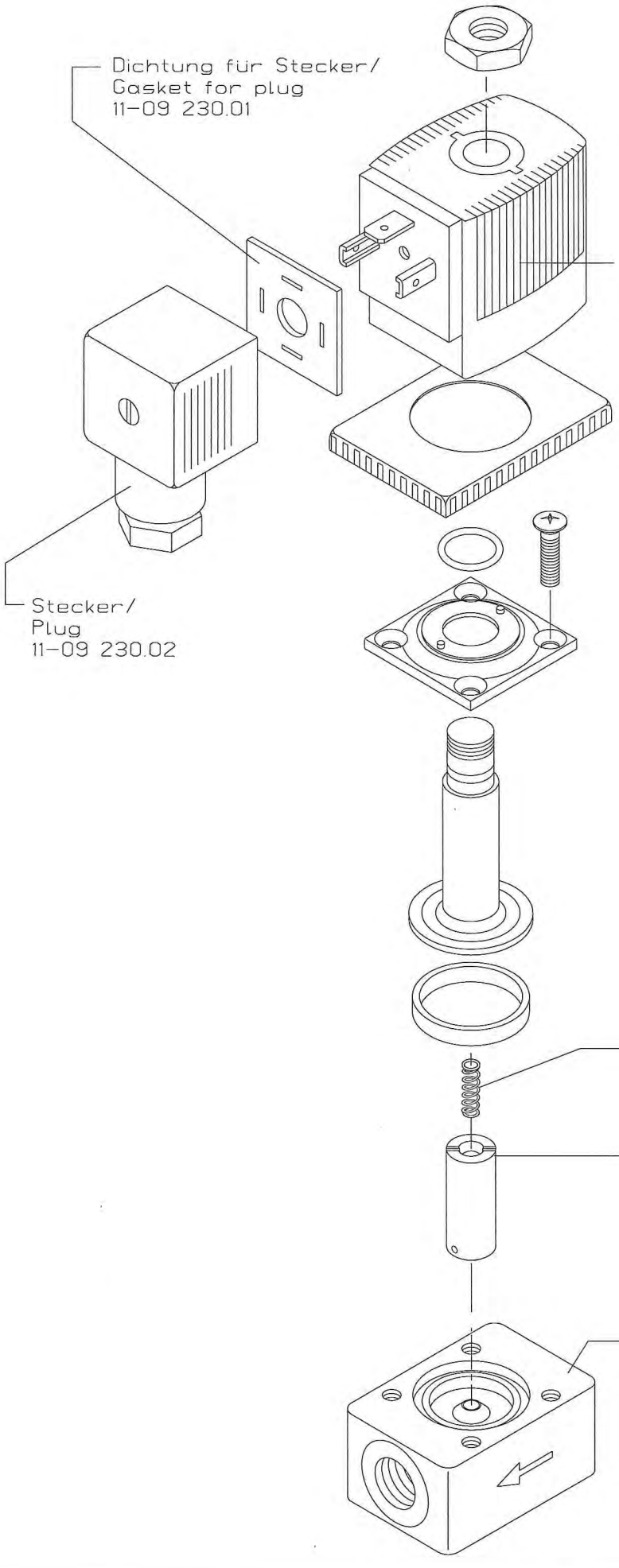
Ersatzteilzeichnung Blatt 3

Rahmen / Motor



Ersatzteilzeichnung Blatt 4

Steuerung



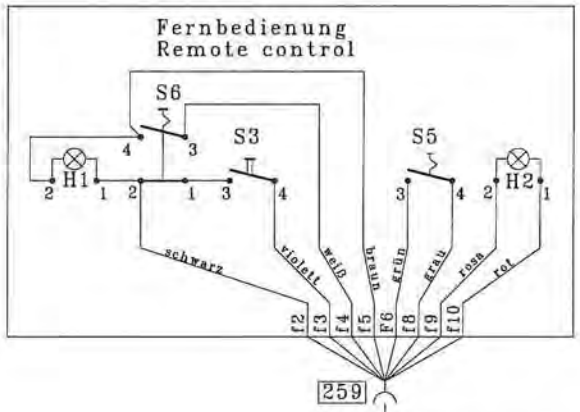
Verwendungsbereich CAD00169
Zul. Abweichung DIN ISO 2768 TI- mK
Oberfläche
Maßstab 1:1
Gewicht
Werkstoff, Halbzeug
Rohteil-Nr.
Modell- oder Gesenk-Nr.
Benennung
Wirkstoffvent. 12 V Teflon
Solenoid valve cpl. 12 V Teflon
Zeichnungsnummer 94 09 301 00
Blatt 1 Bl.
Name Datum
Bearb. 05.10.98 Schneider
Gepr.
Norm
Igeba Gerätebau
87480 Weitnau
Zust. Änderung Datum Name Urspr. Ers. f.: Ers. d.:

S1 Schlüsselschalter – Key switch
S2 Steckdose – Socket 12 V DC 222
S3 Motor start – Engine start 254

S5 Nebel Ein-Aus – Fogging On-Off 240
S6 Not-Aus – Emergency stop 235

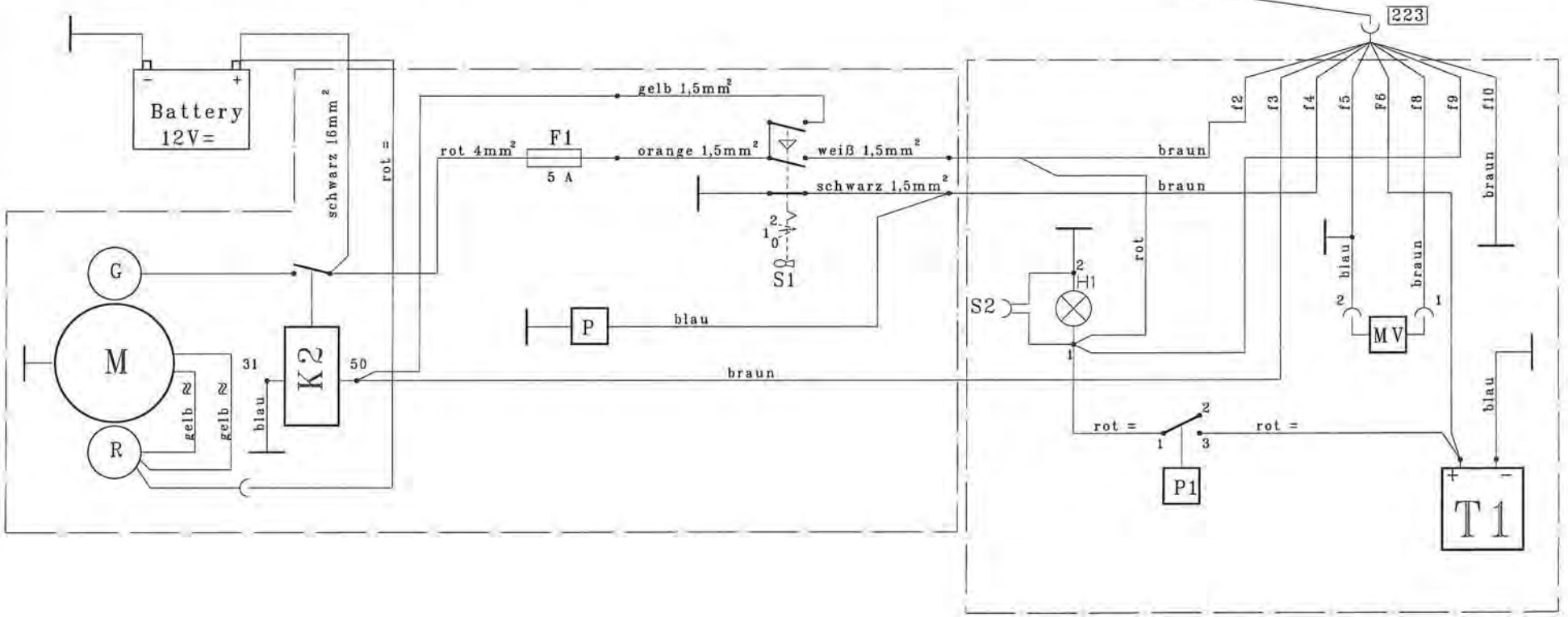
H1 Batterykontrolle – Battery 215
H2 Ladekontrolle – Charging 246
T1 Betriebsstundenzähler – Running hour meter 209
K2 Magnetschalter – Starter switch
G Anlasser – Starter
M Motor – Engine 150

F1 Sicherung – Fuse 206
MV Wirkstoffventil – Solution valve 55
P1 Druckschalter – Manometric switch 203
P Öldruckschalter – Switch-Oil Pressure
R Generator Regler – Generator Controller



blau – blue – bleu – azur
schwarz – black – noir – negro
rot – red – rouge – rojo
grün – green – vert – verde
braun – brown – brun – pardo
grau – grey – gris – gris
weiß – withe – blanc
gelb – yellow – jaune
violett – violet
rosa – pink – rose – rose
orange – orange – orange – narja

≈ Wechselstrom – AC
= Gleichstrom – DC



Stromlaufplan U40HD/M
Wiring diagram

2010/06
10-06-STPIC

Service Schedule IGEBA U/M-HD

RUNNING IN: Change Engine Oil after 5 hours operations

WHEN IN USE:

	or every	Daily (5 hours)	Weekly (50 hours)	Monthly (100 hours)	Ouarterly (300 hours)
ENGINE					
* Check Engine Oil		X	O	O	O
* Change Engine Oil		O	X	O	O
AIR CLEANER					
* Clean&Oil Foam Pre-Cleaner (oz)		O	X	O	O
* Air filter clean with detergent and water		O	O	X	O
* Clean cooling system		O	O	X	O
FUEL FILTER					
* replace		O	O	O	X
SPARK PLUG					
* Clean&regap to 0,75 mm or 0,030		O	O	X	O
* Decarbonize		O	O	O	X
BLOWER AIR INTAKE					
* Clean filter		O	X	O	O

X= neccessary O= not neccessary

Clean the machine externally according to dirt!

RECOMMENDED LUBRICANTS:

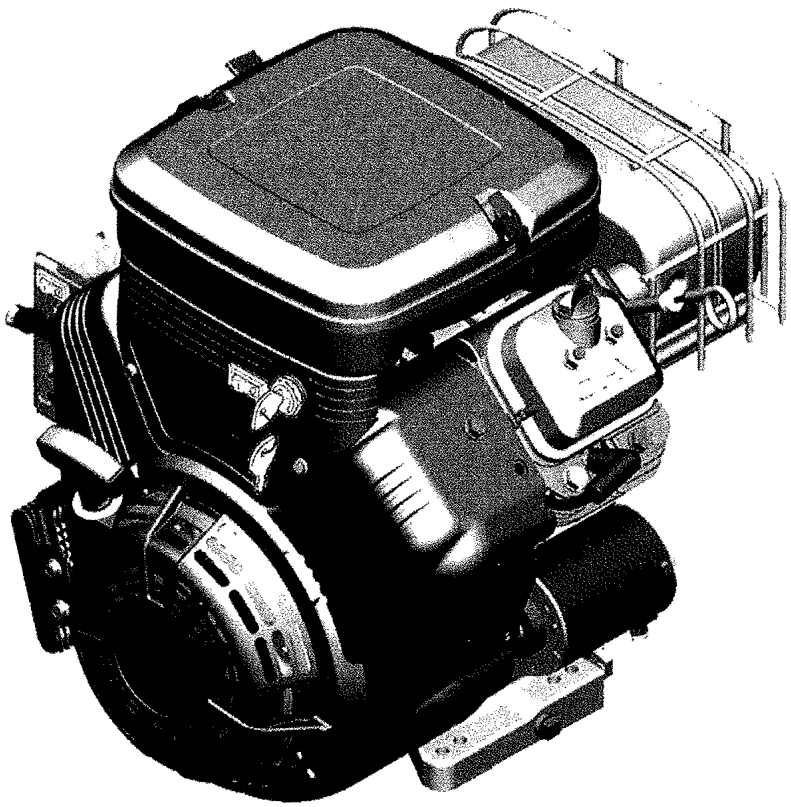
Use SAE 10W-30/10W-40 or SAE 30 oil for engine

BRIGGS&STRATTON

COMMERCIAL POWER

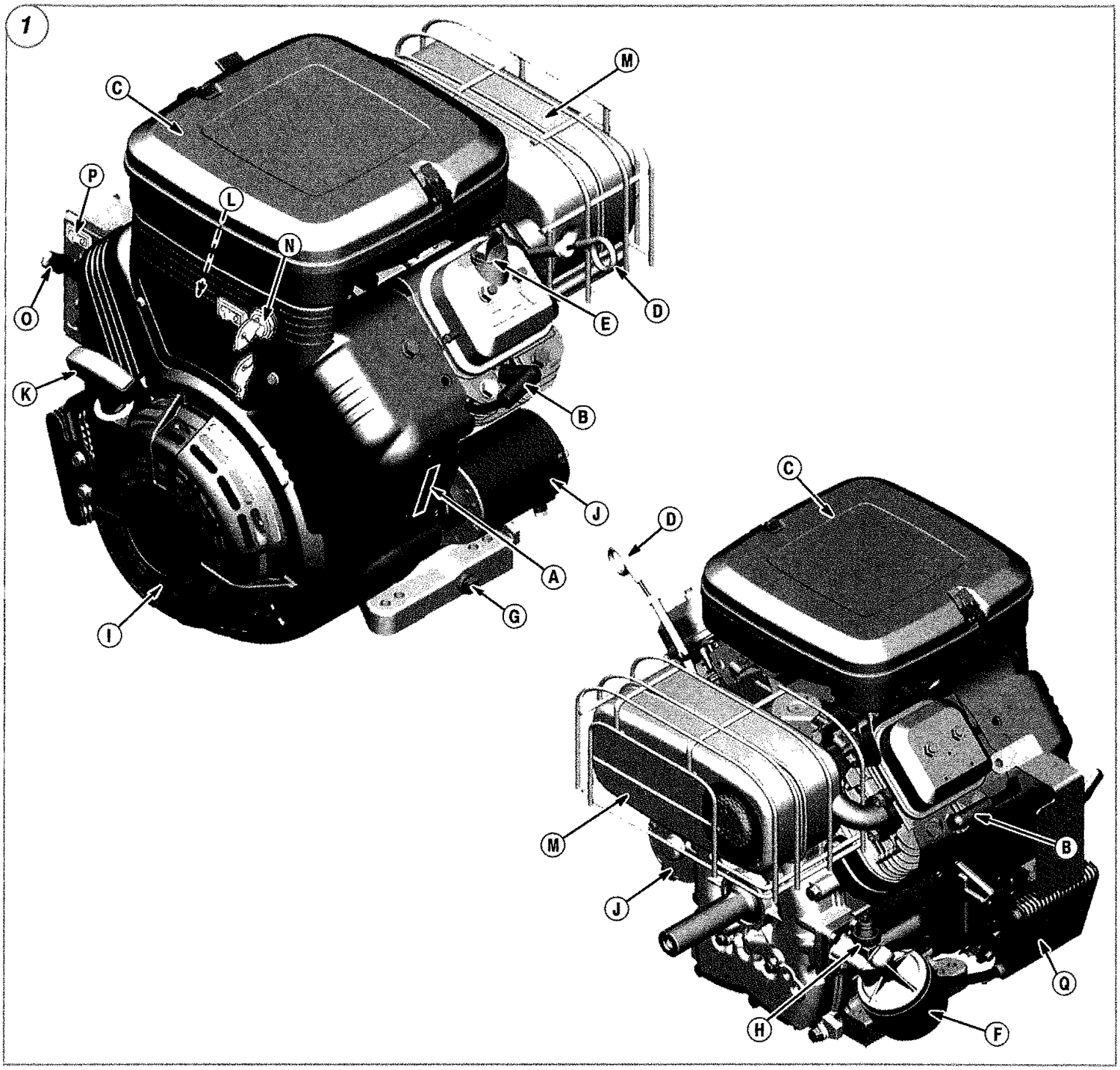
(en) Operator's Manual
(da) Betjeningsvejledning
(de) Bedienungsanleitung
(el) Εγχειρίδιο Χρήσης
(es) Manual del Operario
(fi) Käyttäjän käsikirja
(fr) Manuel de l'opérateur
(it) Manuale dell'Operatore
(nl) Gebruiksaanwijzing
(no) Brukerhåndbok
(pt) Manual do Operador
(sv) Instruktionsbok

Model 290000	**Vanguard™ Gaseous**	**Model 350000**	**Vanguard™ Gaseous**
Model 300000	**Vanguard™ Gaseous**	**Model 380000**	**Vanguard™ Gaseous**



Form No. 278389**WST** -

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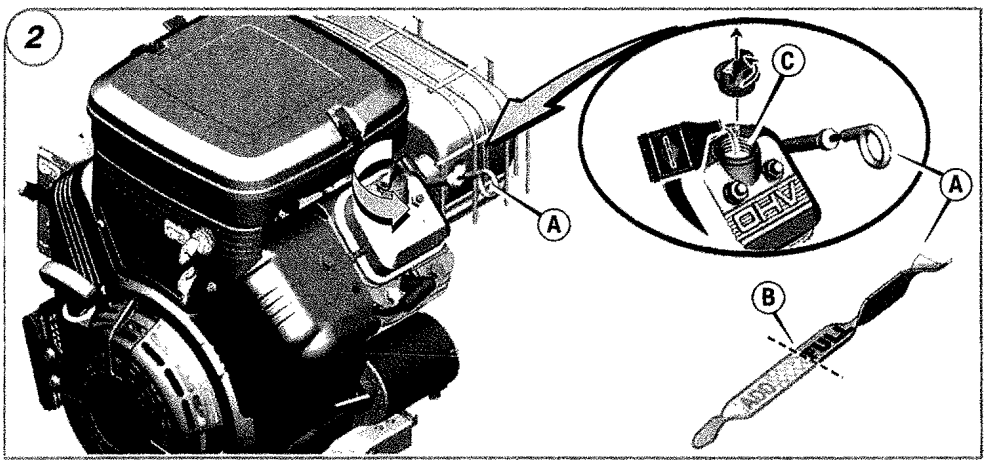
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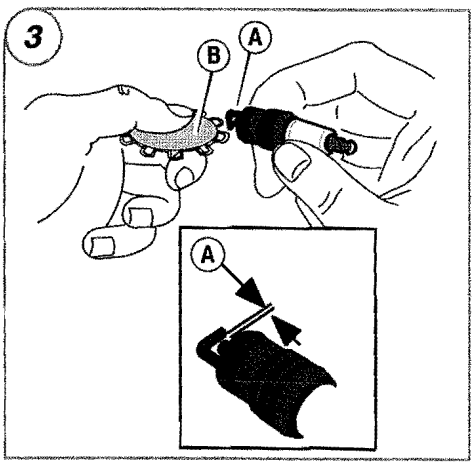
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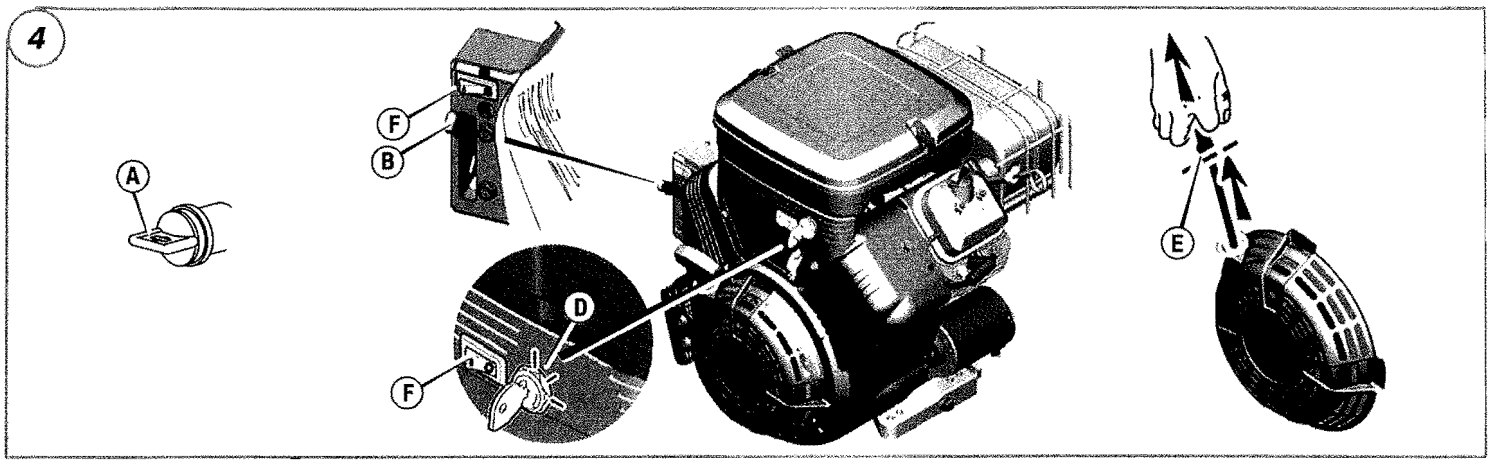
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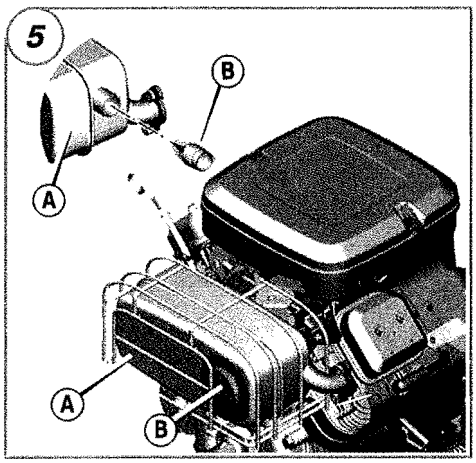
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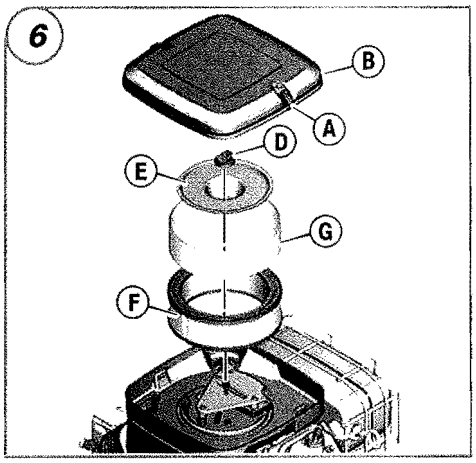
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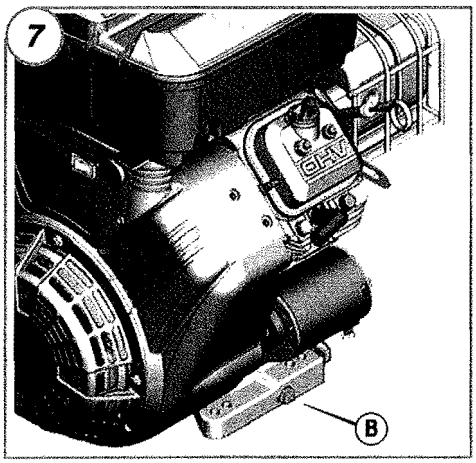
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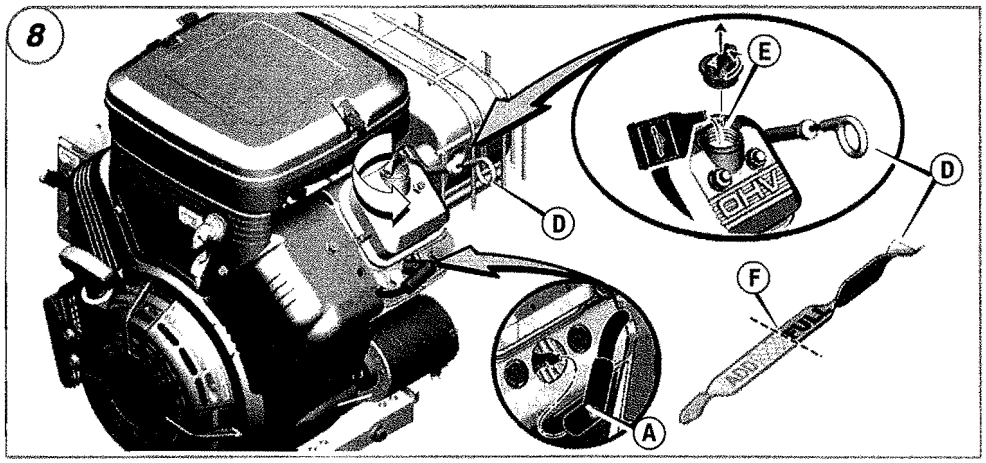
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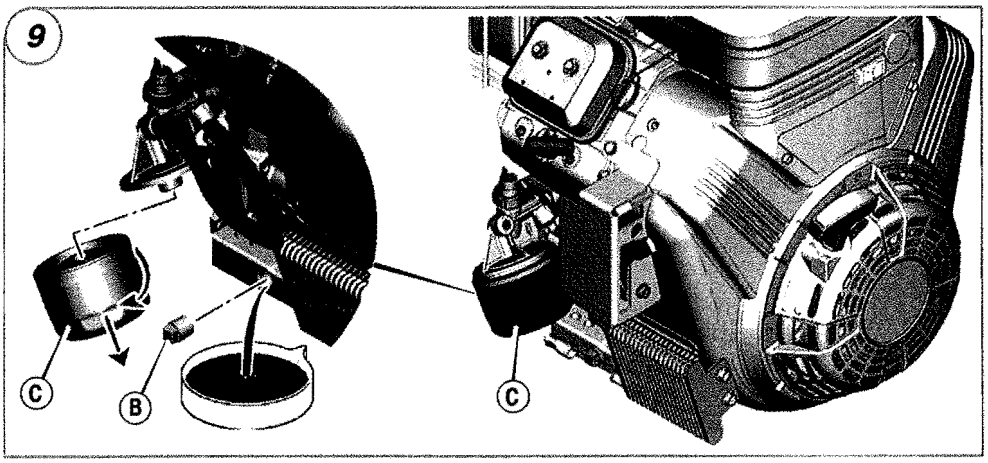
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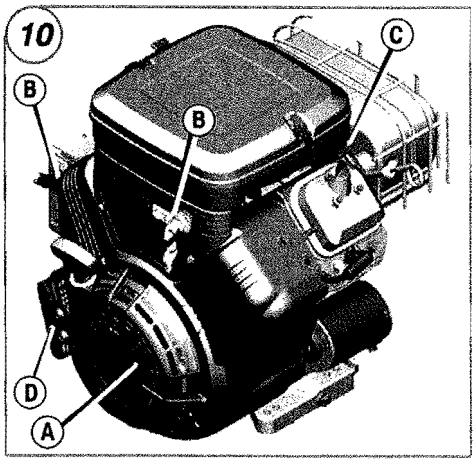
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General Information

For replacement parts or technical assistance, record below the engine model, type, and code numbers along with the date of purchase. These numbers are located on your engine (see the ***Features and Controls*** page).

Date of purchase: _____
MM/DD/YYYY

Engine model: _____
Model: Type: Code:

Engine Power Rating Information

The gross power rating for individual gas engine models is labeled in accordance with SAE (Society of Automotive Engineers) code J1940 (Small Engine Power & Torque Rating Procedure), and rating performance has been obtained and corrected in accordance with SAE J1995 (Revision 2002-05). Torque values are derived at 3060 RPM; horsepower values are derived at 3600 RPM. Actual gross engine power will be lower and is affected by, among other things, ambient operating conditions and engine-to-engine variability. Given both the wide array of products on which engines are placed and the variety of environmental issues applicable to operating the equipment, the gas engine will not develop the rated gross power when used in a given piece of power equipment (actual "on-site" or net power). This difference is due to a variety of factors including, but not limited to, accessories (air cleaner, exhaust, charging, cooling, carburetor, fuel pump, etc.), application limitations, ambient operating conditions (temperature, humidity, altitude), and engine-to-engine variability. Due to manufacturing and capacity limitations, Briggs & Stratton may substitute an engine of higher rated power for this Series engine.

Operator Safety

SAFETY AND CONTROL SYMBOLS

The safety alert symbol ⚠ is used to identify safety information about hazards that can result in personal injury. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

⚠ **DANGER** indicates a hazard which, if not avoided, **will result in death or serious injury.**

⚠ **WARNING** indicates a hazard which, if not avoided, **could result in death or serious injury.**

⚠ **CAUTION** indicates a hazard which, if not avoided, **might result in minor or moderate injury.**

CAUTION, when used **without** the alert symbol, indicates a situation that **could result in damage to the product.**

⚠ **WARNING**

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

⚠ **WARNING**

Briggs & Stratton does not approve or authorize the use of these engines on 3-wheel All Terrain Vehicles (ATVs), motor bikes, fun/recreational go-karts, aircraft products, or vehicles intended for use in competitive events. Use of these engines in such applications could result in property damage, serious injury (including paralysis), or even death.

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.

⚠ **WARNING**

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

When Adding Fuel
- Fill fuel tank outdoors or in well-ventilated area.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

When Starting Engine
- Ensure that spark plug, muffler, and air cleaner (if equipped) are in place and secured.
- Do not crank engine with spark plug removed.

When Operating Equipment
- Never start or run the engine with the air cleaner assembly (if equipped) or the air filter (if equipped) removed.

When Transporting Equipment
- On Natural/Liquid Petroleum (LP) Gas engines, transport with fuel cylinder empty or valve closed, or fuel tank disconnected.

When Storing Equipment With Fuel In Tank
- Store away from furnaces, stoves, water heaters or other appliances that have a pilot light or other ignition source because they can ignite gaseous vapors.

⚠ **WARNING**

Starting engine creates sparking.
Sparking can ignite nearby flammable gases.
Explosion and fire could result.

- If there is natural or LP gas leakage in area, do not start engine.
- Do not use pressurized starting fluids because vapors are flammable.

⚠ **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.

⚠ **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.

WARNING

Gaseous fuels are extremely flammable and readily form explosive air-vapor mixtures at ambient temperatures.

- **Do not** start the engine.
- **Do not** actuate any electrical switches.
- **Do not** use a phone in the vicinity.
- Evacuate the area.
- Contact the gas supplier or fire department.

WARNING

Wear eye protection when doing repair work.

Frostbite can result from skin/eye contact with leaking LP liquid.

- Installation, adjustment and repair work should be done by a qualified technician.
- Regularly check flexible supply line. Make sure they are in good condition. Replace damaged or leaking components.

WARNING

Missing or inoperative "fuel lock-off" valve can cause a fire or explosion.

- **Do not** operate the equipment if the "fuel lock-off" valve is missing or inoperative.

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
D. Dipstick
E. Oil Fill
F. Oil Filter
G. Oil Drain Plug
H. Oil Pressure Sensor
I. Finger Guard / Rotating Screen
J. Electric Starter
K. Rewind Starter (optional)
L. LPG/NG Mixer
M. Muffler
N. Starter Switch *
O. Throttle Control *
P. Stop Switch (optional) *
Q. Oil Cooler (optional)

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

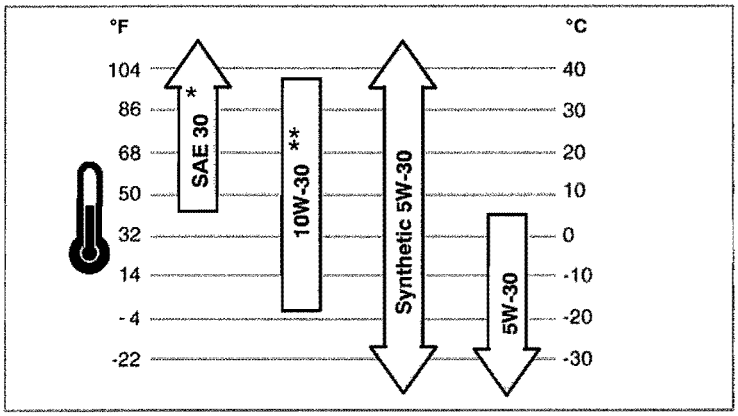
Operation

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.
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

WARNING

Missing or inoperative "fuel lock-off" valve can cause a fire or explosion.

- **Do not** operate the equipment if the "fuel lock-off" valve is missing or inoperative.

Fuel must meet these requirements:

- Use clean, dry fuel, free of moisture or any particulate material. Using fuels outside the following recommended values may cause performance problems.
- In engines set up to run on LPG, commercial grade HD5 LPG is recommended. Recommended fuel composition is fuel with a minimum fuel energy of 2500 BTU's/ft^3 with maximum propylene content of 5% and butane and heavier gas content of 2.5% and minimum propane content of 90%.

NG or LPG engines are certified to operate on natural or liquid propane gas. The emissions control system for this engine is EM (Engine Modifications).

WARNING: The equipment on which this engine is mounted is equipped with an automatic safety gas "fuel lock-off" valve. Do not operate the equipment if the "fuel lock-off" valve is missing or inoperative.

How To Add Fuel

WARNING

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

When Adding Fuel

- Fill fuel tank outdoors or in well-ventilated area.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

For information on refueling natural or LP gas engines, read the operating instructions supplied by the equipment manufacturer.

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

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

When Starting Engine

- Ensure that spark plug, muffler, and air cleaner are in place and secured.
- Do not crank engine with spark plug removed.

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. **Rewind Start:** Turn the key switch (**D**), if equipped, to the run position.

7. **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.

8. **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.

How To Stop The Engine - *Figure* (4)

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
• Change oil
Every 8 Hours or Daily
• Check engine oil level
• Clean area around muffler and controls
Every 100 Hours or Annually
• 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
• Change air 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.

How To Replace The Spark Plug - *Figure* (3)

Check the gap (**A**, Figure 3) 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* (5)

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.

Inspect the muffler (**A**, Figure 5) for cracks, corrosion, or other damage. Remove the spark arrester (**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* (7) (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 7). 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* ⑥

WARNING

Gaseous 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.

See the ***Maintenance Chart*** for service requirements.

1. Open the latches (**A**) and remove the cover (**B**). See Figure 6.
2. Remove the nut (**D**) and the retainer (**E**)..
3. Remove the air filter (**F**).
4. Remove the pre-cleaner (**G**), if equipped, from the air filter.
5. 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.
6. Wash the pre-cleaner in liquid detergent and water. Then allow it to thoroughly air dry. **Do not** oil the pre-cleaner.
7. Assemble the dry pre-cleaner to the air filter.
8. Install the air filter and secure with retainer and nut.
9. Install and secure the cover.

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

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

When Storing 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 gaseous vapors.

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	2.598 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	300000
Displacement	29.23 ci (479 cc)
Bore	2.677 in (68 mm)
Stroke	2.598 in (66 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 - except model 380000	394018
Air Filter - model 380000	692519
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
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.

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

FORM MS-2263-08/25/2007
REPLACES FORM MS-2263-08/24/2006
FILE IN SECT. 2 OF SERVICE MANUAL

350400

Illustrated Parts List

Model Series

350400

TYPE NUMBERS
0001 through 1421.

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BRIGGS & STRATTON ®

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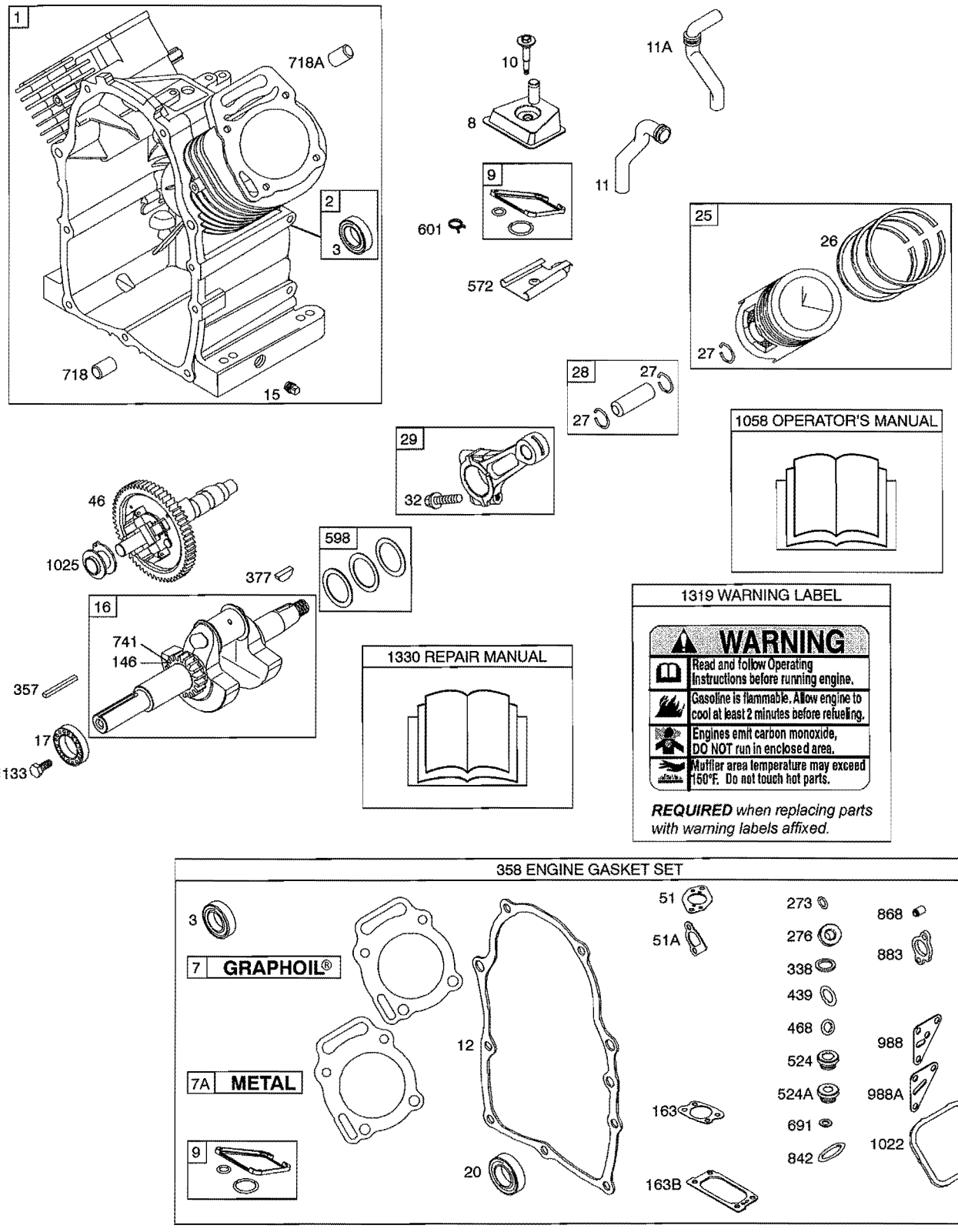
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WARNING
Read and follow Operating Instructions before running engine.
Gasoline is flammable. Allow engine to cool at least 2 minutes before refueling.
Engines emit carbon monoxide, DO NOT run in enclosed area.
Muffler area temperature may exceed 150°F. Do not touch hot parts.
REQUIRED when replacing parts with warning labels affixed.
358 ENGINE GASKET SET
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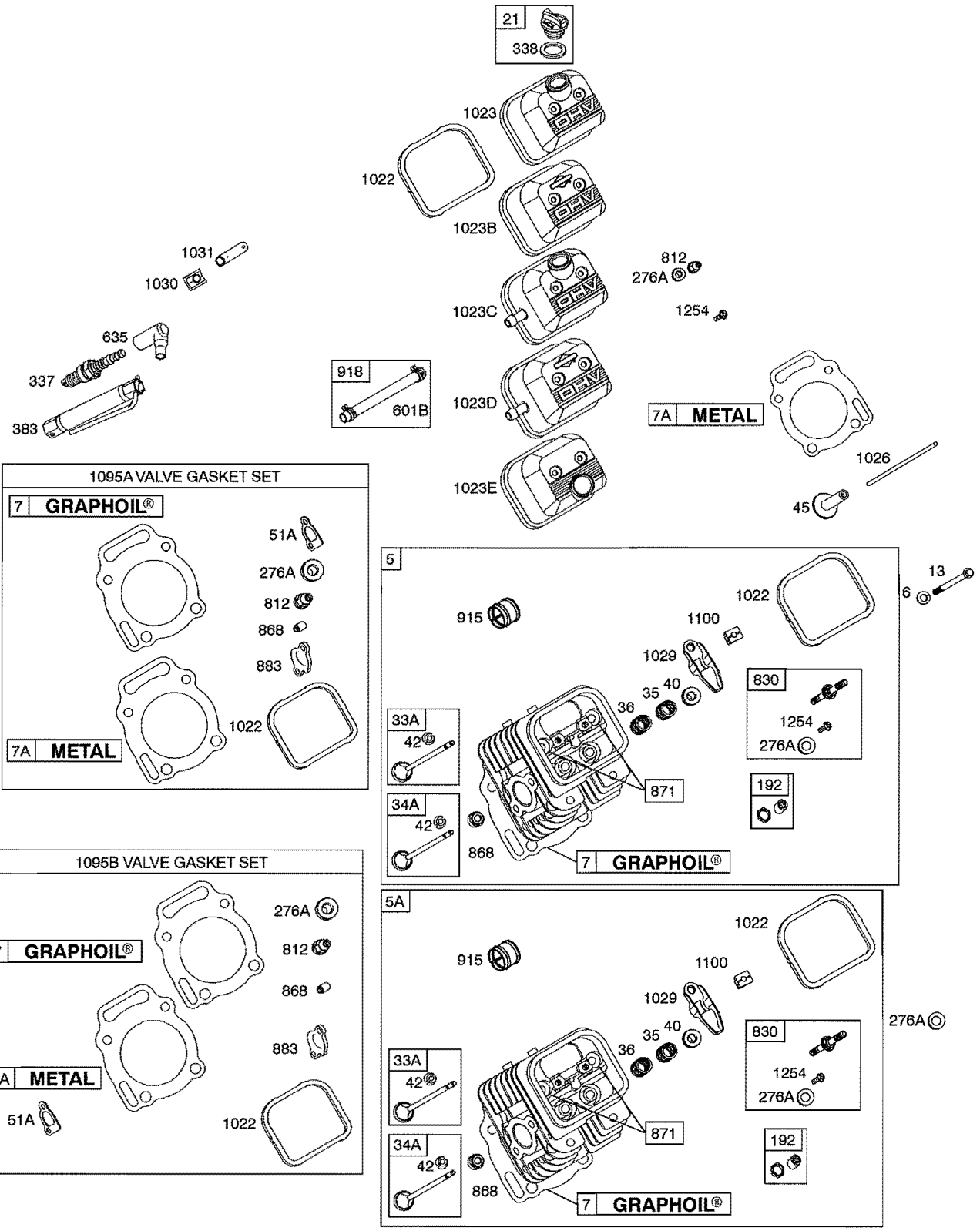
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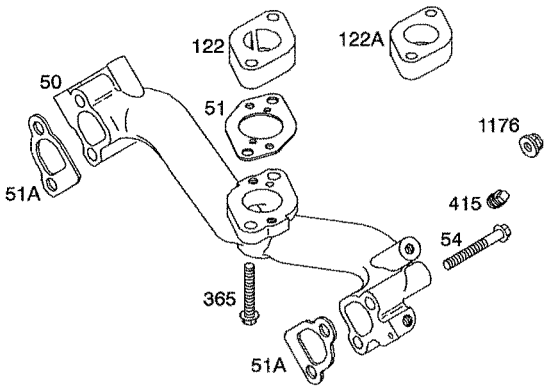
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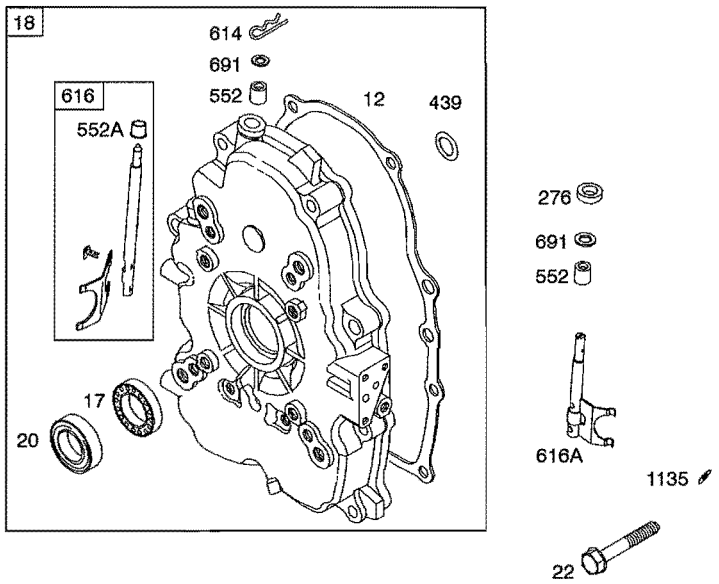
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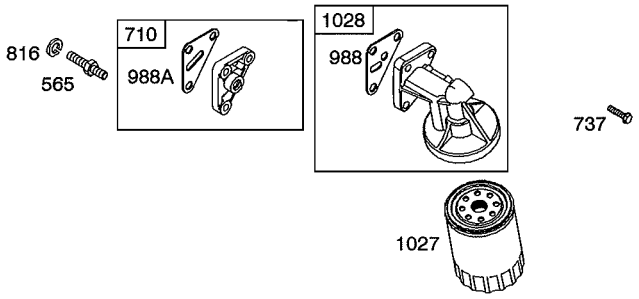
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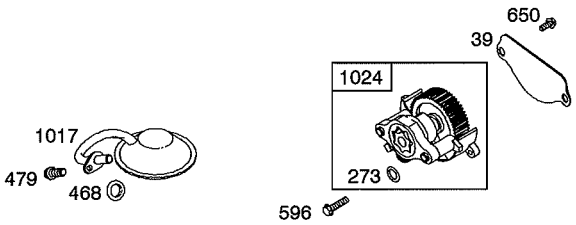
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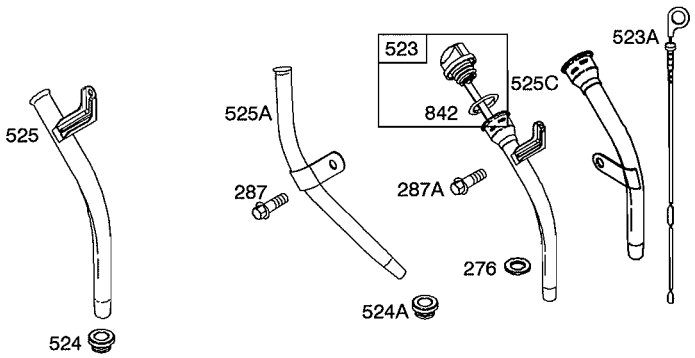
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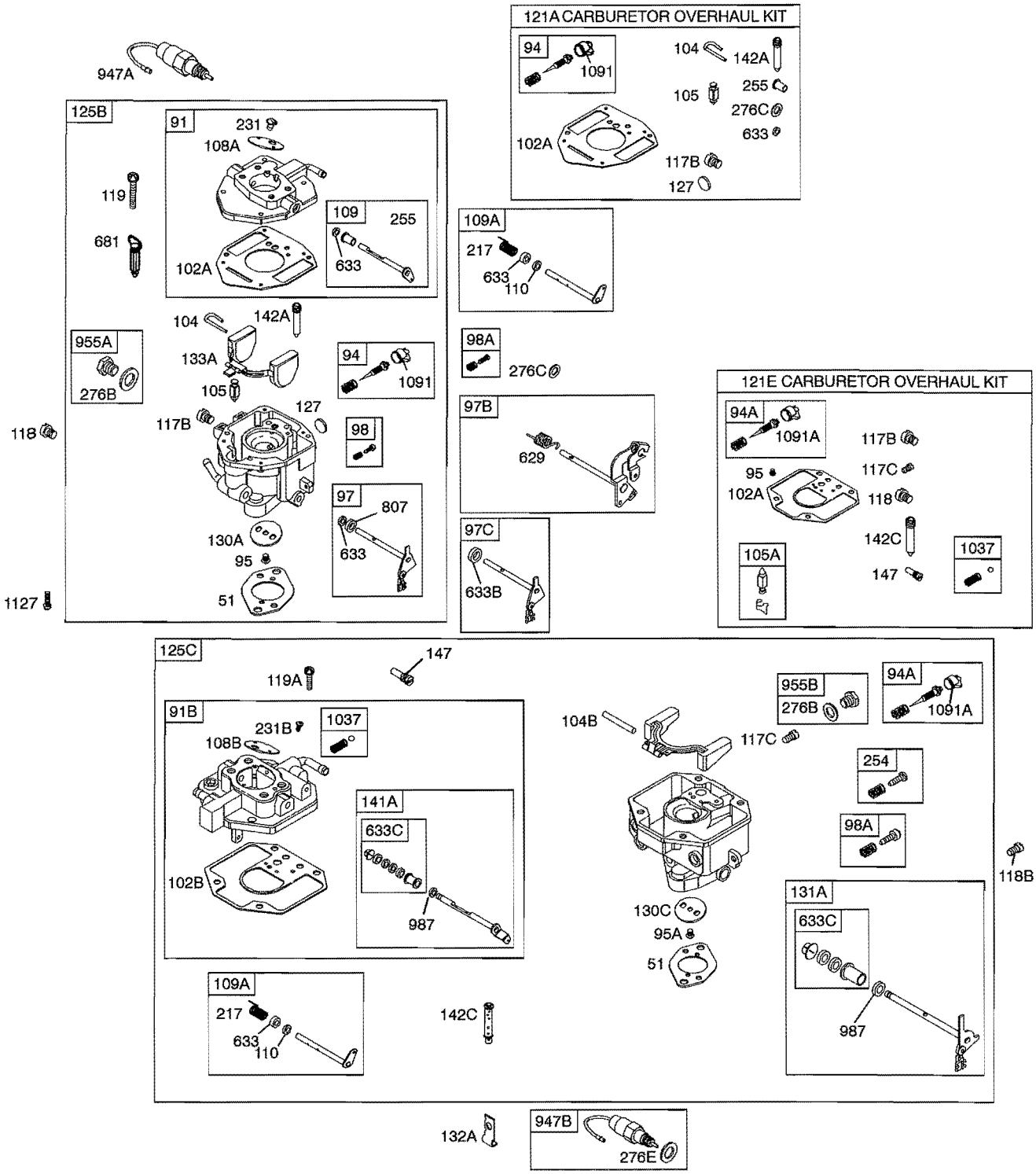
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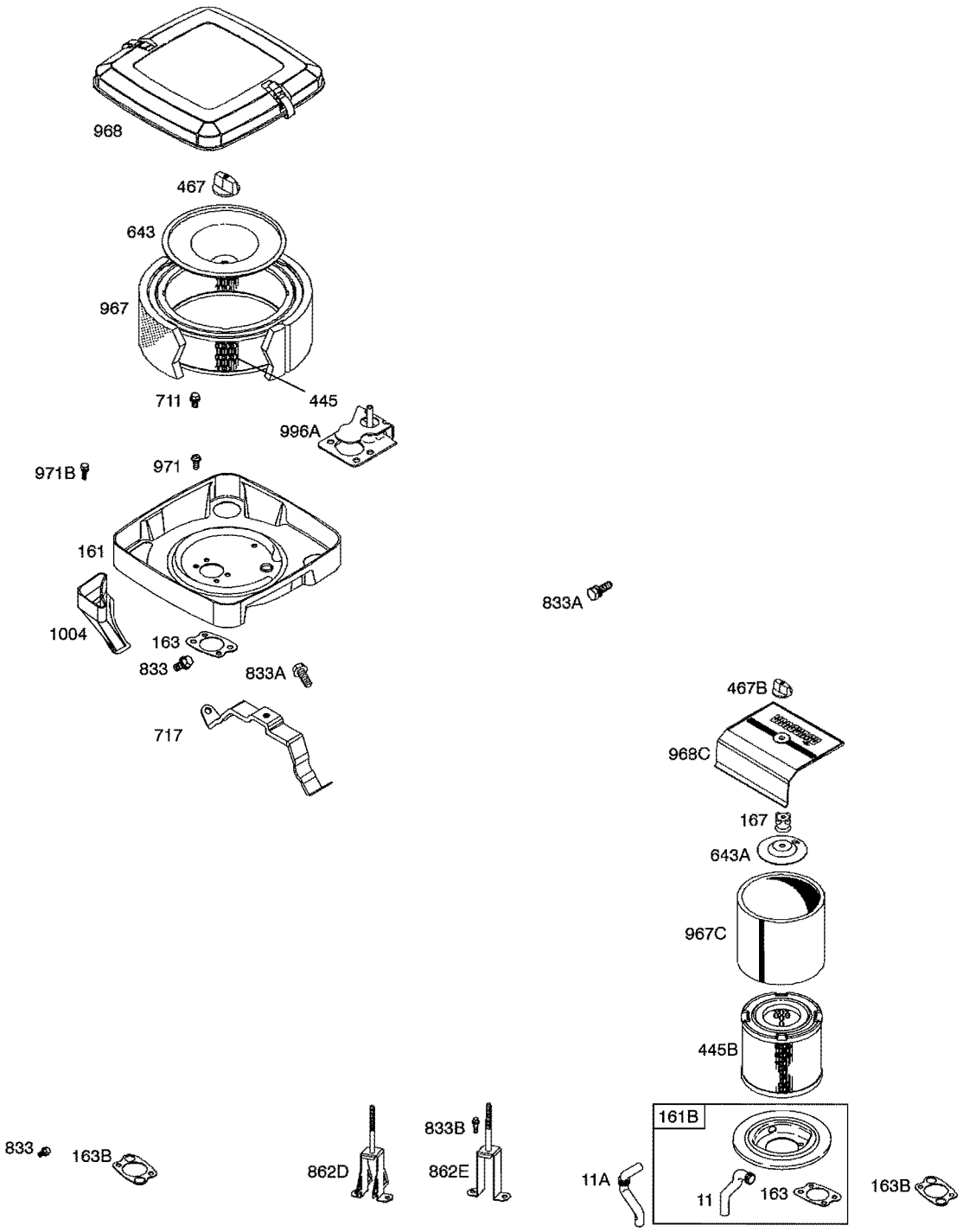
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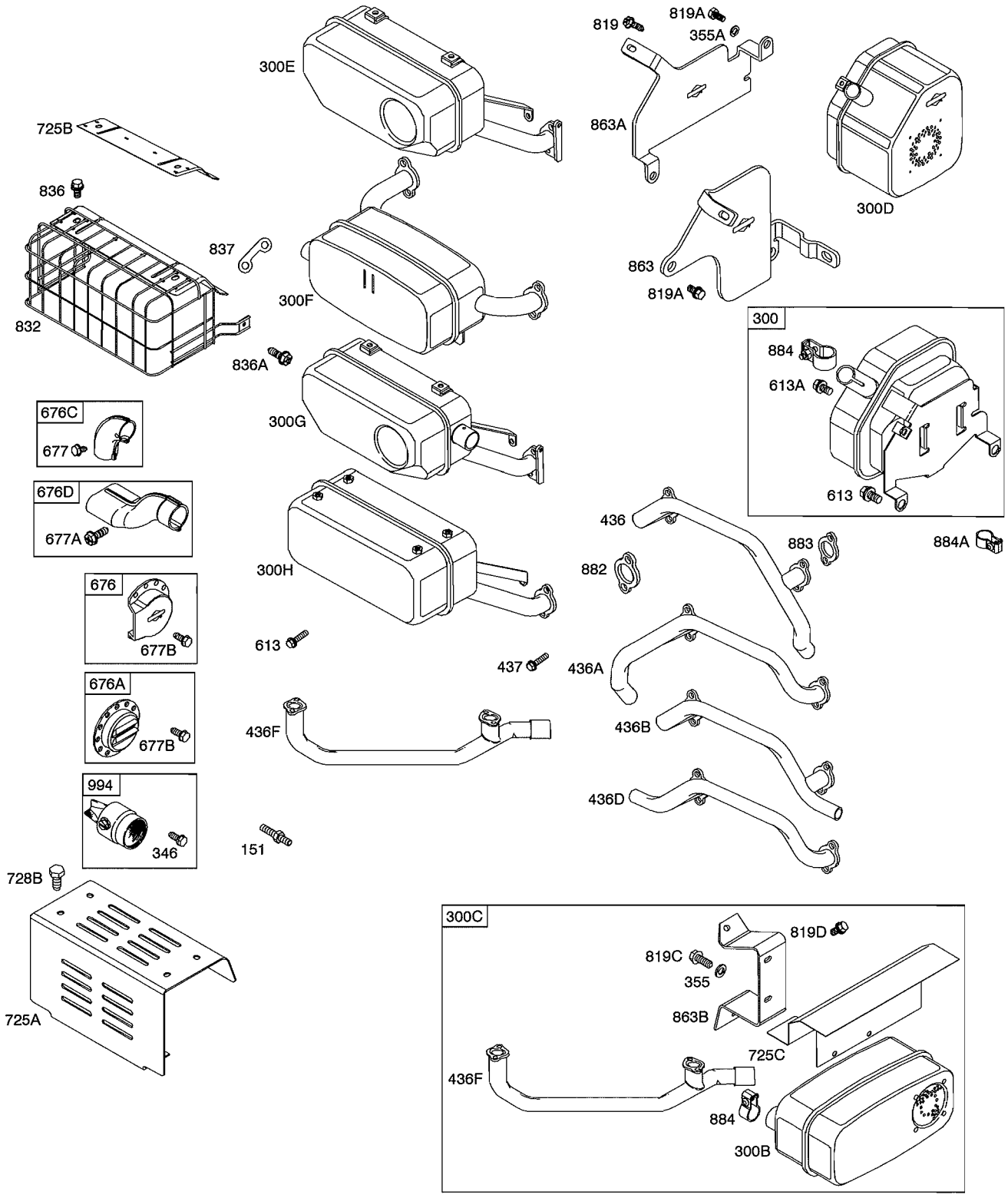
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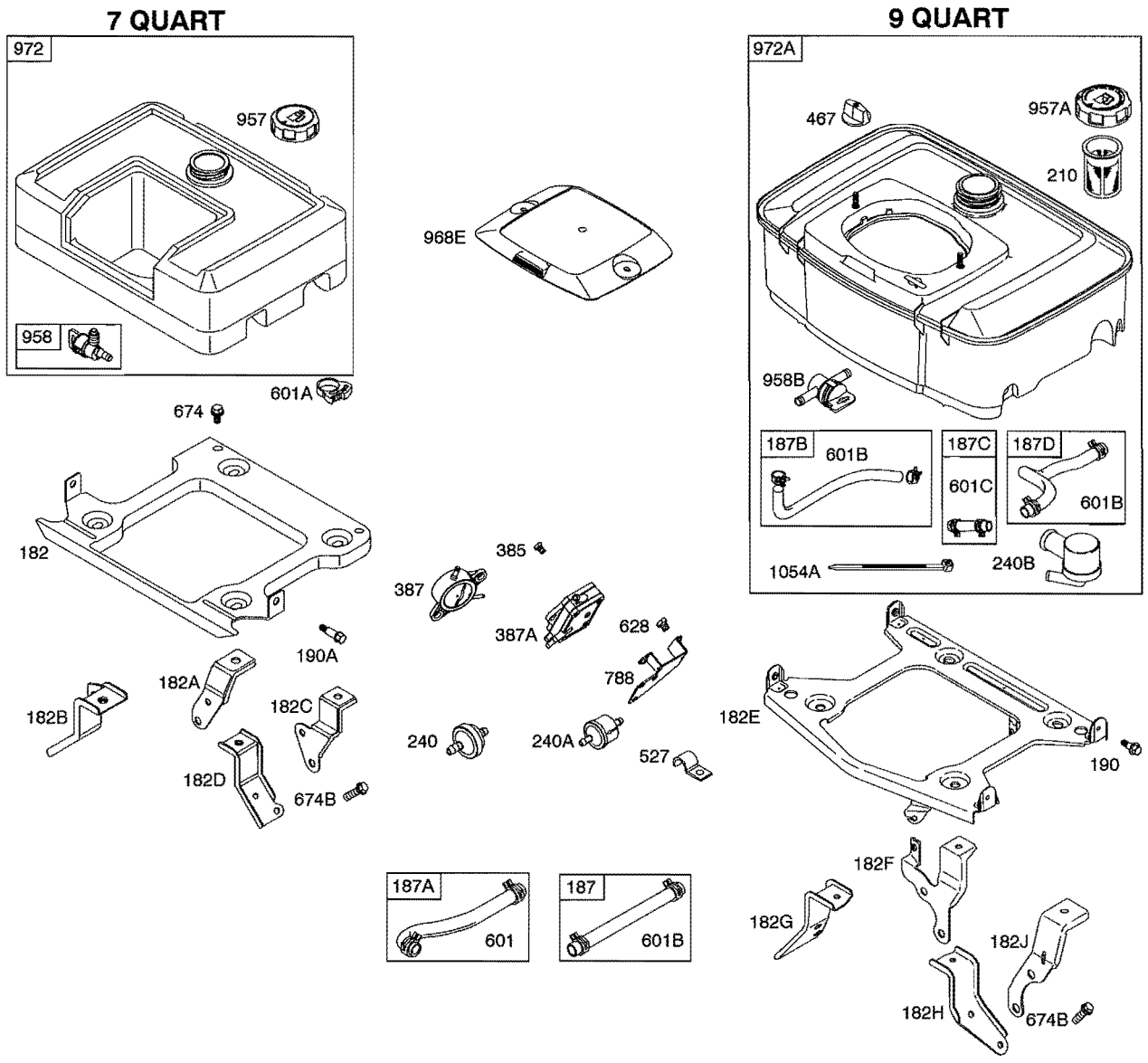
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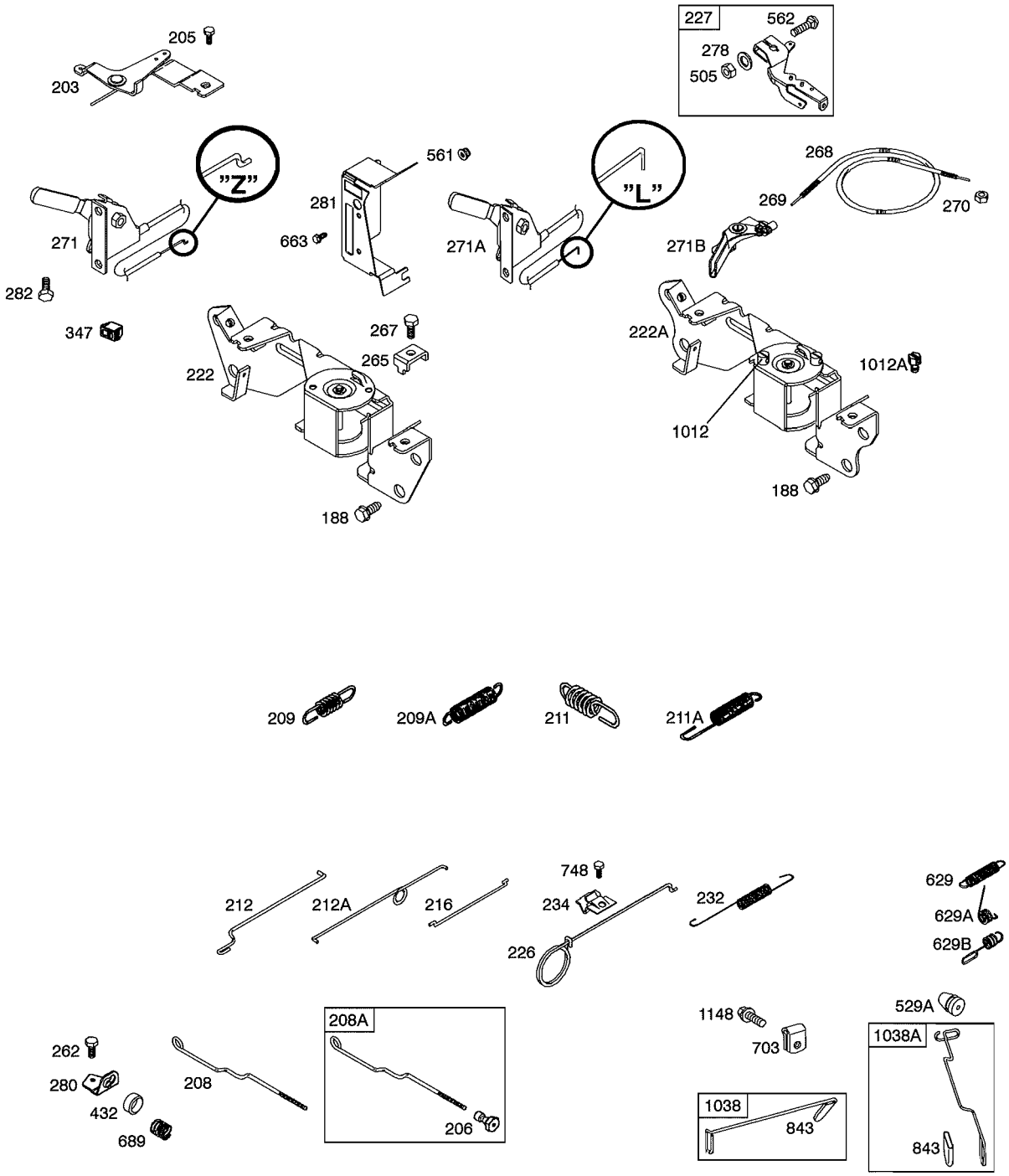
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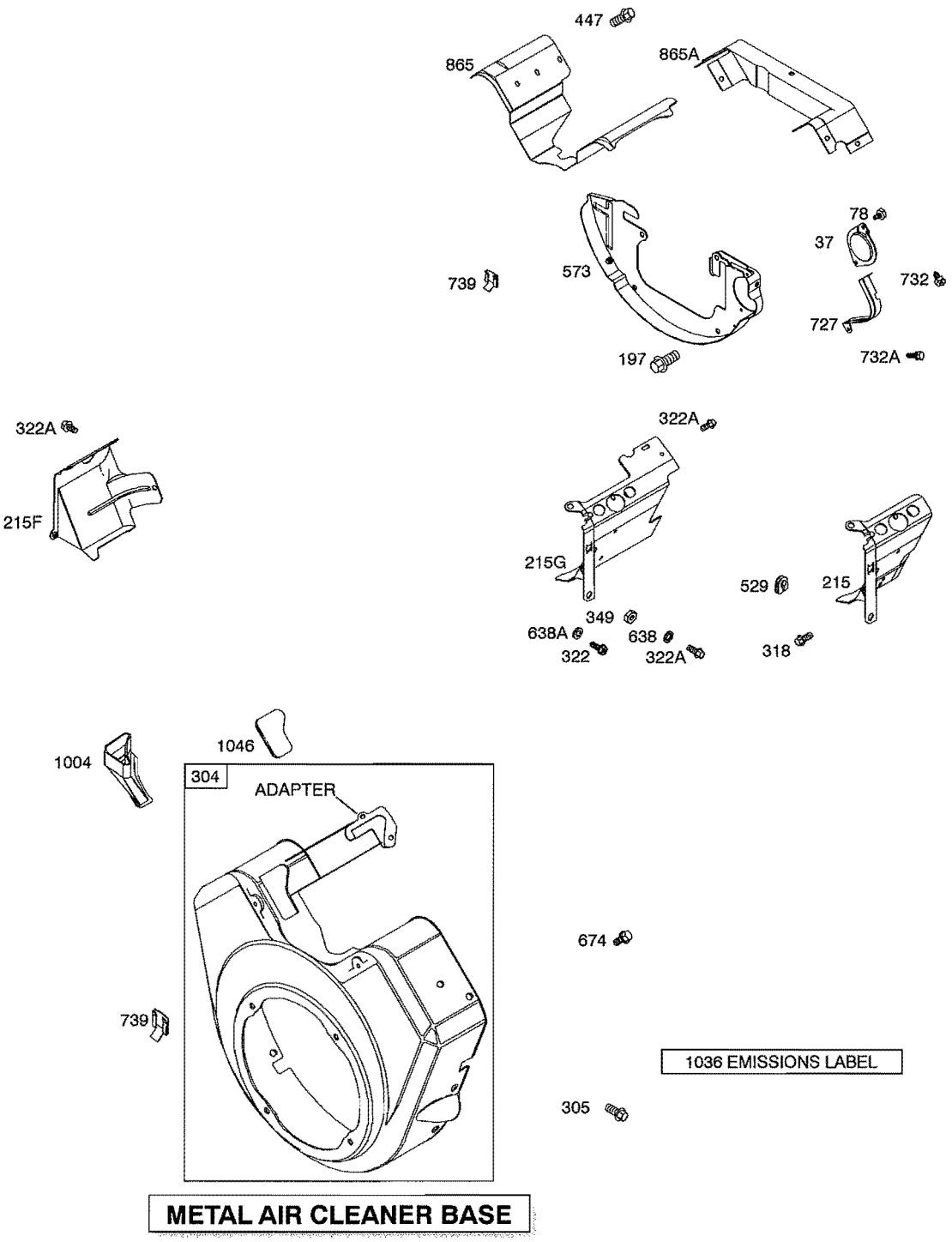
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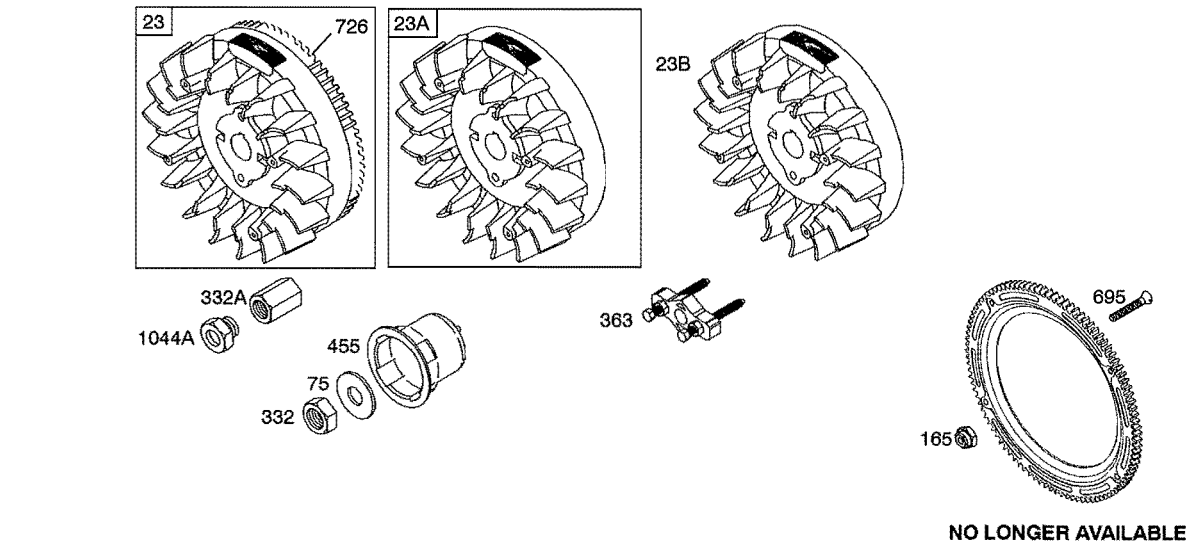

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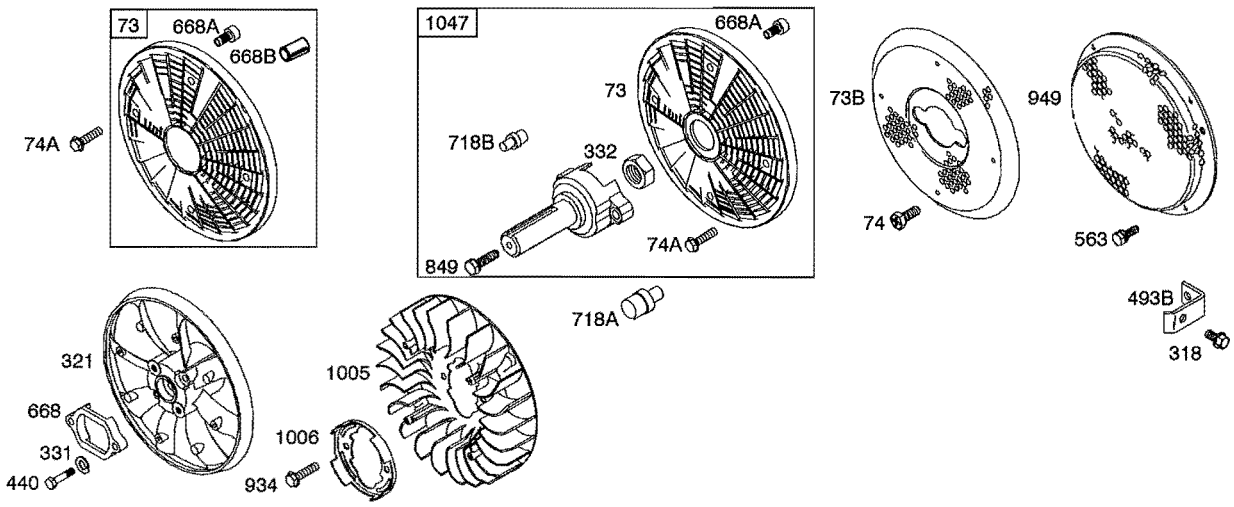

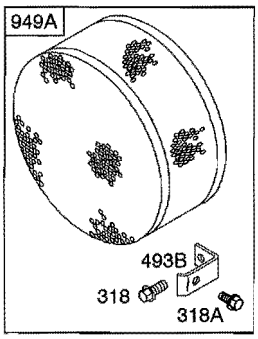
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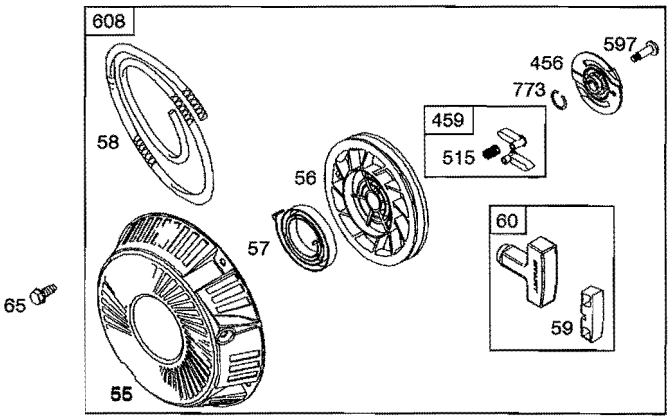
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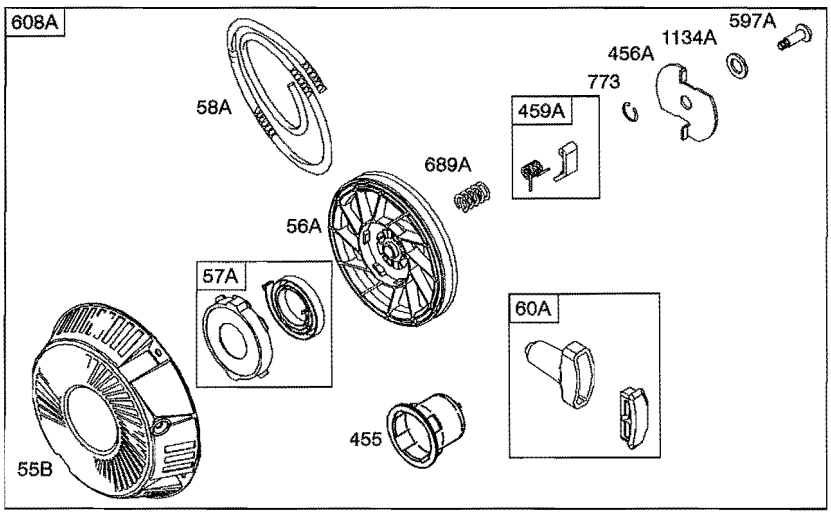
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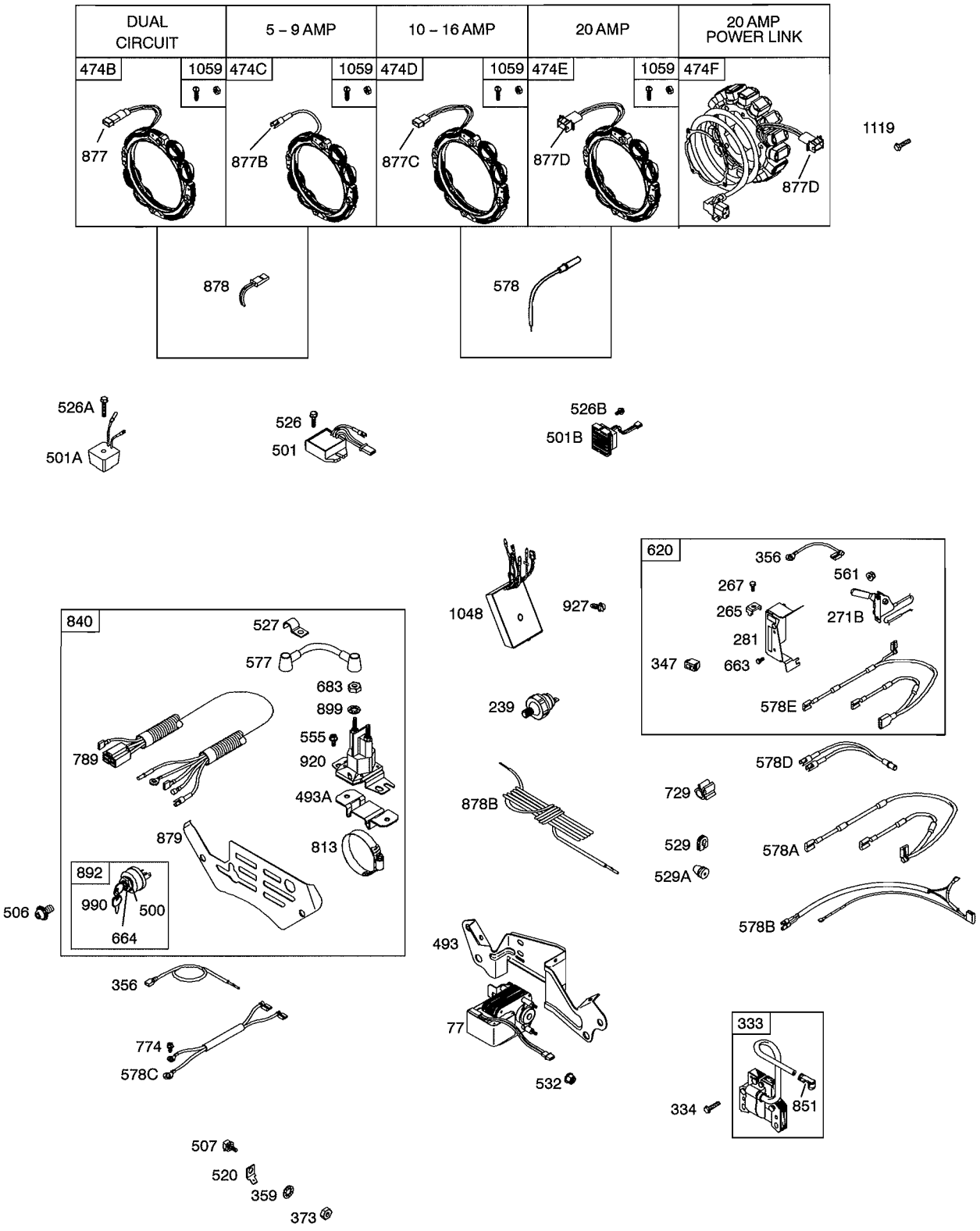
DUAL CIRCUIT
5 – 9 AMP
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20 AMP
20 AMP POWER LINK
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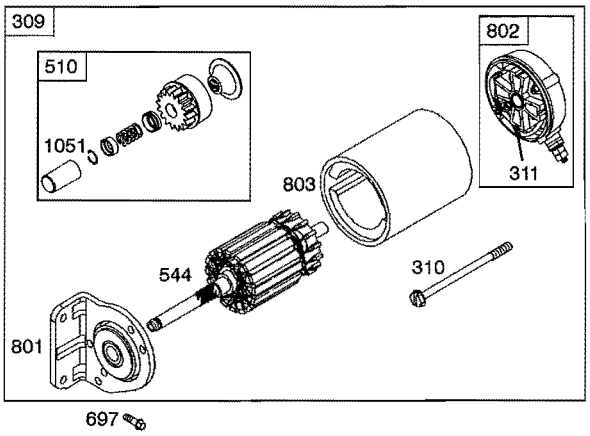
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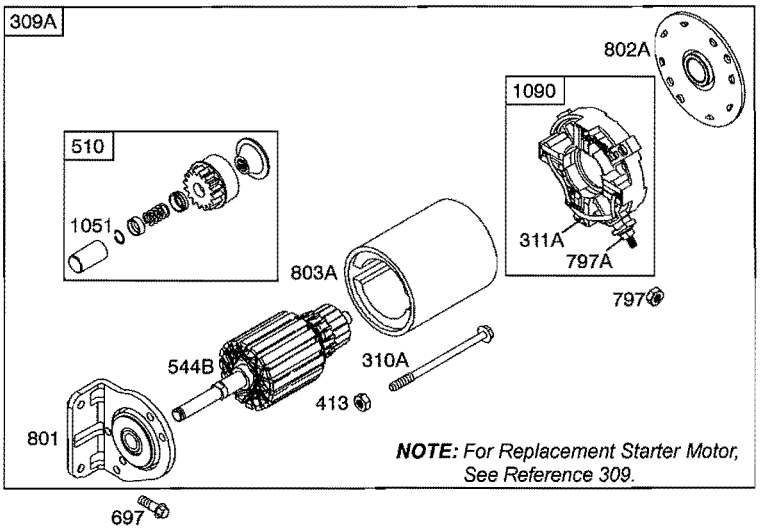
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NOTE: For Replacement Starter Motor, See Reference 309.
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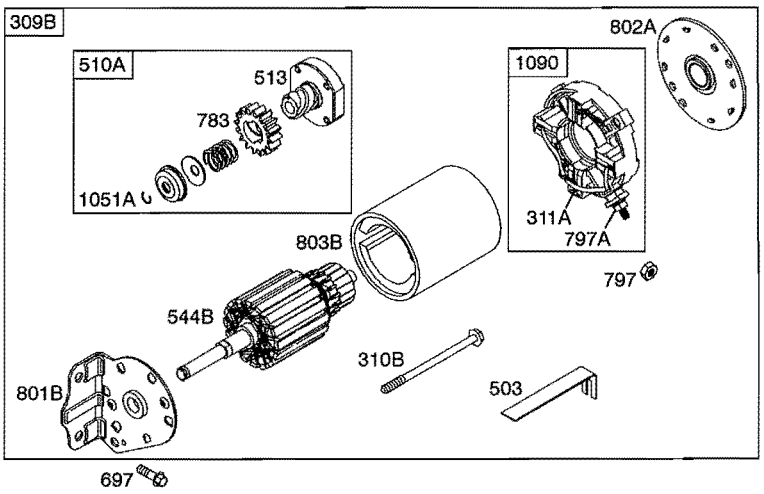
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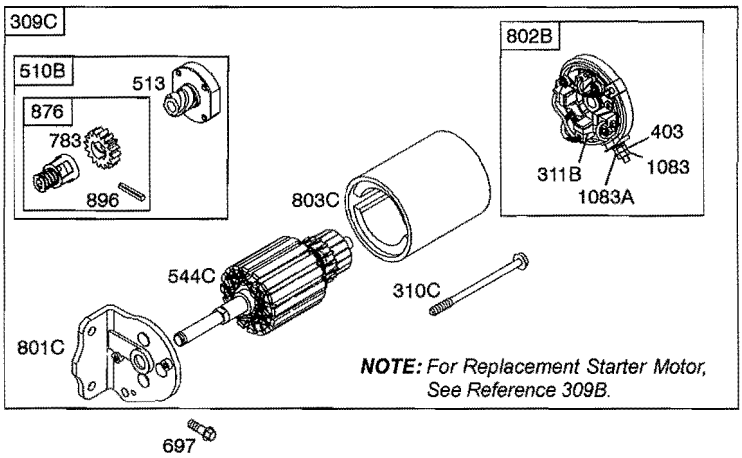
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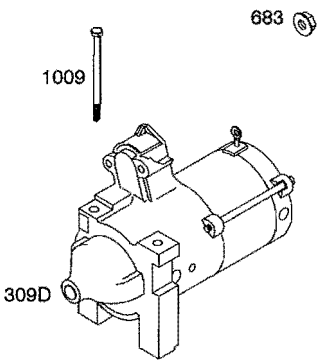
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REF. NO.	PART NO.	DESCRIPTION
1	**692544**	Cylinder Assembly (Used After Code Date 97043000). ------ **Note** ------ **690903** Cylinder Assembly (Used Before Code Date 97050100). **841146** Cylinder Assembly Used on Type No(s). 1268, 1312. **841562** Cylinder Assembly Used on Type No(s). 1416.
2	**808534**	Kit-Bushing/Seal (Magneto Side) (Used After Code Date 97043000). ------ **Note** ------ **807687** Kit-Bushing/Seal (Magneto Side) (Used Before Code Date 97050100).
3	**805101S**	Seal-Oil (Magneto Side)
5	**809185**	Head-Cylinder (Cylinder 1)
5A	**809186**	Head-Cylinder (Cylinder 2)
6	**805193**	Washer (Cylinder Head) (Used Before Code Date 94050100).
7	**690888**	Gasket-Cylinder Head (Graphoil) (Used After Code Date 96033100).
7A	**805653S**	Gasket-Cylinder Head (Metal) (Used Before Code Date 96040100).
8	**808984**	Breather Assembly
9	**809094**	Gasket-Breather
10	**690751**	Screw (Breather Assembly)
11	**691556**	Tube-Breather
11A	**806083S**	Tube-Breather
12	**842589**	Gasket-Crankcase
13	**692059**	Screw (Cylinder Head)
15	**690946**	Plug-Oil Drain
16	**809842**	Crankshaft (Used After Code Date 97043000). ------ **Note** ------ **807778** Crankshaft (Used Before Code Date 97050100). **809804** Crankshaft (Used After Code Date 03043000). Used on Type No(s). 1077, 1080, 1110, 1377. **692170** Crankshaft (Used After Code Date 97043000 and Before Code Date 03050100). Used on Type No(s). 1077, 1080, 1110, 1172, 1276, 1377. **807777** Crankshaft (Used Before Code Date 97050100). Used on Type No(s). 0077, 0080, 1077, 1080, 1172, 1175. **807779** Crankshaft (Used Before Code Date 97050100). Used on Type No(s). 0113, 0157, 1113, 1157. **692173** Crankshaft (Used After Code Date 97043000). Used on Type No(s). 1003, 1005, 1011, 1042, 1052, 1078, 1081, 1085, 1105, 1113, 1120, 1121, 1123, 1125, 1129, 1131, 1132, 1150, 1156, 1160, 1167, 1190, 1194, 1203, 1213, 1222, 1227, 1277, 1284, 1378, 1398, 1399, 1401.
		807780 Crankshaft (Used Before Code Date 97050100). Used on Type No(s). 0003, 0004, 0005, 0006, 0012, 0042, 0052, 0078, 0081, 0082, 0121, 0125, 0129, 0130, 0131, 0132, 0150, 0155, 0160, 0167, 1003, 1004, 1005, 1006, 1011, 1042, 1052, 1078, 1081, 1085, 1121, 1122, 1123, 1125, 1127, 1129, 1131, 1132, 1150, 1156, 1159, 1160, 1167, 1190, 1194, 1203, 1213, 1222, 1227.

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121
Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

2263-17 **Assemblies include all parts shown in frames.** **08/25/2007**

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REF. NO.	PART NO.	DESCRIPTION
		692175 Crankshaft (Used After Code Date 97043000). Used on Type No(s). 1115.
		808005 Crankshaft (Used Before Code Date 97050100). Used on Type No(s). 0115, 1115.
		809821 Crankshaft (Used After Code Date 03043000). Used on Type No(s). 1137, 1138, 1151, 1152, 1162.
		809820 Crankshaft (Used Before Code Date 03050100). Used on Type No(s). 1137, 1138, 1151, 1152, 1162.
		692177 Crankshaft (Used After Code Date 97043000). Used on Type No(s). 1174.
		809806 Crankshaft Used on Type No(s). 1269, 1308, 1313, 1316, 1317, 1318, 1319, 1332, 1333, 1334, 1416, 1421.
		809833 Crankshaft (Used After Code Date 03043000). Used on Type No(s). 1087.
		809834 Crankshaft (Used Before Code Date 03050100). Used on Type No(s). 1087.
		809842 Crankshaft Used on Type No(s). 1268, 1309.
		808824 Crankshaft Used on Type No(s). 1266.
		809807 Crankshaft Used on Type No(s). 1157.
		809836 Crankshaft (Used After Code Date 03043000). Used on Type No(s). 1116.
		692089 Crankshaft (Used Before Code Date 03050100). Used on Type No(s). 1116.
17	690752	Bearing-Ball
18	808847	Cover-Crankcase
		------ **Note** ------
		808850 Cover-Crankcase Used on Type No(s). 0155, 1155, 1174.
		808508 Cover-Crankcase Used on Type No(s). 0081, 0082, 0083, 0151, 0152, 1009, 1012, 1081, 1105, 1120, 1151, 1152, 1209, 1222, 1227, 1276, 1277, 1399.
20	805049	Seal-Oil (PTO Side)
21	809500	Cap-Oil Fill
22	807362	Screw (Crankcase Cover/Sump)
23	808768	Flywheel (Steel Ring Gear)
		------ **Note** ------
		808772 Flywheel (Steel Ring Gear) Used on Type No(s). 1009, 1012, 1028, 1029, 1057, 1108, 1241, 1276, 1282, 1288, 1299.
		808776 Flywheel (Steel Ring Gear) Used on Type No(s). 1277, 1296, 1300, 1399, 1412.
		841169 Flywheel Used on Type No(s). 1415, 1416.
23A	690921	Flywheel
23B	690922	Flywheel (Rewind Starter)
25	808326	Piston Assembly (Standard)
		------ **Note** ------
		808337 Piston Assembly (.020" Oversize)
26	807889	Ring Set (Standard)
		------ **Note** ------
		807995 Ring Set (.020" Oversize)
27	690683	Lock-Piston Pin
28	807886	Pin-Piston (Standard)
29	807900S	Rod-Connecting (Standard)
		------ **Note** ------
		807803 Rod-Connecting (.020" Undersize)
32	690698	Screw (Connecting Rod)
33A	807681	Valve-Exhaust
34A	807680	Valve-Intake
35	692084	Spring-Valve (Intake)
36	692084	Spring-Valve (Exhaust)
37	841309	Guard-Flywheel
39	690745	Deflecter-Oil
40	692058	Retainer-Valve
42	807683	Keeper-Valve
45	690977	Tappet-Valve
46	691557	Camshaft
		------ **Note** ------
		692157 Camshaft Used on Type No(s). 0081, 0082, 0083, 0151, 0152, 1009, 1012, 1081, 1105, 1120, 1151, 1152, 1209, 1222, 1227, 1276, 1277, 1399.
		842064 Camshaft Used on Type No(s). 0137, 0138, 0162, 1137, 1138, 1162, 1401.
50	690754	Manifold-Intake
		------ **Note** ------
		692124 Manifold-Intake Used on Type No(s). 1206.
51	691694	Gasket-Intake (Manifold To Carburetor)

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121
Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

2263-18 **Assemblies include all parts shown in frames.** **08/25/2007**

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REF. NO.	PART NO.	DESCRIPTION
51A	692035	Gasket–Intake (Manifold to Head)
54	690676	Screw (Intake Manifold)
55	691568	Housing–Rewind Starter
55B	492193	Housing–Rewind Starter
56	692085	Pulley–Starter
56A	280918	Pulley–Starter
57	692086	Spring–Rewind Starter
57A	492194	Spring–Rewind Starter
58	66574	Rope–Starter (Cut To Required Length)
58A	695002	Rope–Starter (Cut To Required Length)
59	805957	Insert–Grip
59A	490652	Insert–Grip
60	808167	Grip–Starter Rope
60A	490652	Grip–Starter Rope
65	691982	Screw (Rewind Starter)
73	494439	Screen–Rotating (8 9/32" Diameter)
73B	690478	Screen–Rotating (9 3/32" Diameter)
74	691655	Screw (Rotating Screen)
74A	691647	Screw (Rotating Screen)
75	691490	Washer (Flywheel)
77	690819	Motor–Servo
78	690688	Screw (Flywheel Guard)
91	809208	Body–Upper Carburetor Used on Type No(s). 1331, 1332.
91B	807929	Body–Upper Carburetor
94	808399	Kit–Idle Mixture Used on Type No(s). 1318, 1319, 1331, 1333, 1421.
94A	808259	Kit–Idle Mixture (Used After Code Date 94123100).
		------ **Note** ------
		494923 Kit–Idle Mixture (Used Before Code Date 95010100).
95	690718	Screw (Throttle Valve)
95A	94635	Screw (Throttle Valve)
97	809007	Shaft–Throttle Used on Type No(s). 1331.
97B	809062	Shaft–Throttle (Used After Code Date 00071100).
97C	808397	Shaft–Throttle (Used Before Code Date 00071200).
98	808177	Kit–Idle Speed
98A	807923	Kit–Idle Speed
		------ **Note** ------
		808981 Kit–Idle Speed Used on Type No(s). 1331.
102A	692077	Gasket–Carburetor Body
102B	272460	Gasket–Carburetor Body
104	690723	Pin–Float Hinge
104B	231784	Pin–Float Hinge
105	807925	Valve–Float Needle
		------ **Note** ------
		808798 Valve–Float Needle Used on Type No(s). 1410.
105A	805620	Valve–Float Needle Used on Type No(s). 1057, 1065, 1066, 1067, 1085, 1096, 1109, 1125, 1162, 1185, 1186, 1190, 1194, 1201, 1220, 1234, 1250, 1254, 1256, 1263, 1268, 1269, 1289, 1296, 1300, 1313, 1365, 1366, 1396, 1401, 1412.
108A	806134	Valve–Choke
		------ **Note** ------
		690719 Valve–Choke Used on Type No(s). 1331.
108B	224535	Valve–Choke
109	808398	Shaft–Choke
109A	809096	Shaft–Choke Used on Type No(s). 1331.
110	806861	Washer (Choke Shaft)
117B	231660	Jet–Main (Standard)
		------ **Note** ------
		808406 Jet–Main (Standard) Used on Type No(s). 1331.
117C	806126	Jet–Main (Standard)
		------ **Note** ------
		231829 Jet–Main (Standard) Used on Type No(s). 0002, 0004, 0006, 0008, 0027, 0040, 0048, 0055, 0058, 0068, 0070, 0076, 0120, 0123, 0125, 0137, 0138.
118	809685	Jet–Main (High Altitude)
		------ **Note** ------
		809442 Jet–Main (High Altitude) Used on Type No(s). 1331.
118B	231669	Jet–Main (High Altitude)
		------ **Note** ------
		231806 Jet–Main (High Altitude) Used on Type No(s). 0002, 0004, 0006, 0008, 0027, 0040, 0048, 0055, 0058, 0068, 0070, 0076, 0120, 0123, 0125, 0137, 0138.
119	690720	Screw (Upper To Lower Carburetor Body)
119A	94634	Screw (Upper To Lower Carburetor Body)

Engine Gasket Set–Reference 358
Carburetor Overhaul Kit–Reference 121

Carburetor Gasket Set–Reference 977
Valve Gasket Set–Reference 1095

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REF. NO.	PART NO.	DESCRIPTION
121A	**842881**	Kit-Carburetor Overhaul (Used After Code Date 95073100).
121E	**808274**	Kit-Carburetor Overhaul (Used Before Code Date 95080100). ------ **Note** ------ **808083** Kit-Carburetor Overhaul (Used Before Code Date 95010100). Used on Type No(s). 0002, 0004, 0006, 0008, 0027, 0040, 0048, 0055, 0058, 0068, 0070, 0076, 0120, 0123, 0125, 0137, 0138.
122	**690691**	Spacer-Carburetor Used on Type No(s). 1331, 1332.
122A	**690747**	Spacer-Carburetor
125B	**809019**	Carburetor (Gravity Feed) ------ **Note** ------ **809017** Carburetor (Nikki Carburetor) (Replaces Mikuni Carburetor) (Also Order Ref. No. 947A, Part No.692094, Solenoid-Fuel) Used on Type No(s). 0064, 0075, 0079, 0158, 0163, 0166, 1005, 1012, 1013, 1026, 1029, 1042, 1046, 1047, 1064, 1075, 1077, 1078, 1079, 1080, 1081, 1084, 1086, 1087, 1100, 1102, 1108, 1109, 1111, 1116, 1118, 1139, 1145, 1156, 1174, 1195, 1198, 1206, 1209, 1225, 1241, 1243, 1244, 1246, 1253, 1264, 1273, 1274, 1275, 1279, 1282, 1283, 1284, 1290, 1294, 1299, 1302, 1308, 1312, 1315, 1316, 1317, 1318, 1375, 1377, 1378, 1397, 1399, 1402, 1409, 1410, 1416, 1421. **809217** Carburetor (Includes Solenoid) Used on Type No(s). 1331, 1332. **842736** Carburetor (Includes Solenoid) Used on Type No(s). 1410.
125C		Carburetor (For Replacement, Order Reference 125B)
127	**690727**	Plug-Welch
130A	**690726**	Valve-Throttle Used on Type No(s). 1331.
130C	**806132**	Valve-Throttle (Used After Code Date 94123100). ------ **Note** ------ **224533** Valve-Throttle (Used Before Code Date 95010100).
131A	**807924**	Kit-Throttle Shaft
132A	**690863**	Stop-Throttle ------ **Note** ------ **692155** Stop-Throttle Used on Type No(s). 1145.
133A	**806961**	Float-Carburetor
141A	**807928**	Kit-Choke Shaft
142A	**806128**	Nozzle-Carburetor (Standard) ------ **Note** ------ **690725** Nozzle-Carburetor (Standard) Used on Type No(s). 1331.
142C	**231782**	Nozzle-Carburetor (Standard)
146	**691639**	Key-Timing
147	**231783**	Jet-Pilot
151	**841185**	Stud (Exhaust Manifold)
161	**691561**	Base-Air Cleaner ------ **Note** ------ **842830** Base-Air Cleaner Used on Type No(s). 0127, 0136, 0145, 0169, 1109, 1136, 1145, 1246, 1275, 1280, 1299, 1308, 1315, 1316, 1333.
161B	**808414**	Base-Air Cleaner
163	**692081**	Gasket-Air Cleaner
163B	**692052**	Gasket-Air Cleaner
165	**693148**	Nut (Ring Gear)
167	**692297**	Seal-Air Cleaner Nut
182	**492317**	Bracket-Fuel Tank
182A	**690778**	Bracket-Fuel Tank
182B	**690779**	Bracket-Fuel Tank
182C	**690780**	Bracket-Fuel Tank
182D	**690781**	Bracket-Fuel Tank
182E	**841601**	Bracket-Fuel Tank
182F	**691520**	Bracket-Fuel Tank
182G	**841600**	Bracket-Fuel Tank
182H	**691524**	Bracket-Fuel Tank
182J	**691525**	Bracket-Fuel Tank
187	**791766**	Line-Fuel (Cut To Required Length) **809499** Line-Fuel (Cut To Required Length) Used on Type No(s). 1111.
187A	**791801**	Line-Fuel (Molded)
187B	**692107**	Line-Fuel
187C	**692106**	Line-Fuel
187D	**692108**	Line-Fuel
188	**692056**	Screw (Control Bracket) (14mm Bracket) ------ **Note** ------ **692062** Screw (Control Bracket) (18mm Bracket)
190	**692199**	Screw (Fuel Tank)
190A	**94536**	Screw (Fuel Tank)
192	**807623**	Adjuster-Rocker Arm
197	**807163**	Screw (Back Plate)

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121

Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

REF. NO.	PART NO.	DESCRIPTION
203	**690923**	Crank-Bell
205	**692083**	Screw (Bell Crank)
206	**691244**	Nut-Governor Adjusting (Used After Code Date 96033100).
208	**691549**	Rod-Governor Control (Used After Code Date 96033100).
208A	**808453**	Rod-Governor Control (Used After Code Date 94113000 and Before Code Date 96040100).
209	**692070**	Spring-Governor (Red)
		------ **Note** ------
		691506 Spring-Governor (Yellow) Used on Type No(s). 0042, 0052, 0078, 0160, 1011, 1042, 1052, 1078, 1160, 1284, 1378, 1398, 1410.
		691507 Spring-Governor (Brown) Used on Type No(s). 0026, 1026, 1029, 1405, 1409, 1414, 1416, 1421.
		690710 Spring-Governor (Main) Used on Type No(s). 0124, 0133, 1133, 1170, 1176, 1189, 1251, 1261, 1294.
		692071 Spring-Governor (White) Used on Type No(s). 0064, 0084, 0169, 1028, 1064, 1084, 1108, 1109, 1145, 1173, 1273, 1279, 1280, 1306, 1333, 1397.
		691508 Spring-Governor (Blue) Used on Type No(s). 0115, 0158, 1115, 1116, 1158, 1169, 1198, 1204, 1224, 1225, 1253, 1266, 1269, 1274, 1275, 1308, 1311, 1315, 1318, 1402.
		692072 Spring-Governor (Purple) Used on Type No(s). 1246, 1256, 1263.
		690716 Spring-Governor (Green) Used on Type No(s). 0027, 0048, 0080, 0086, 0113, 0153, 0157, 1027, 1080, 1086, 1110, 1113, 1153, 1157, 1230, 1241, 1415.
		805630 Spring-Governor (Black) Used on Type No(s). 0137, 0138, 0162, 1137, 1138, 1162.
		806507 Spring-Governor (Black) Used on Type No(s). 1282.
		806872 Spring-Governor (Orange) Used on Type No(s). 1259, 1331, 1332.
209A	**690709**	Spring-Governor (Main) Used on Type No(s). 0003, 0004, 0005, 0006, 0012, 0121, 0125, 0129, 0130, 0131, 0132, 0150, 0155, 0167, 1003, 1004, 1005, 1006, 1085, 1113, 1121, 1122, 1123, 1125, 1127, 1129, 1131, 1132, 1150, 1155, 1156, 1159, 1167, 1174, 1190, 1194, 1203, 1213, 1292.
210	**691370**	Strainer-Fuel
211	**692069**	Spring-Governed Idle
		------ **Note** ------
		692068 Spring-Governed Idle Used on Type No(s). 0042, 0052, 0078, 0137, 0138, 0160, 0162, 1011, 1042, 1052, 1078, 1116, 1137, 1138, 1160, 1162, 1259, 1284, 1331, 1378, 1398, 1401, 1410.
		691505 Spring-Governed Idle Used on Type No(s). 0026, 0086, 1026, 1029, 1086, 1108, 1241, 1416.
		691553 Spring-Governed Idle Used on Type No(s). 1169, 1173, 1224, 1225, 1273, 1274, 1282, 1294, 1299, 1306.
		806868 Spring-Governed Idle Used on Type No(s). 1259, 1331, 1332.

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121
Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

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REF. NO.	PART NO.	DESCRIPTION
211A	**690707**	Spring–Governed Idle Used on Type No(s). 0003, 0004, 0005, 0006, 0012, 0121, 0125, 0129, 0130, 0131, 0132, 0150, 0155, 0167, 1003, 1004, 1005, 1006, 1085, 1113, 1121, 1122, 1123, 1125, 1127, 1129, 1131, 1132, 1150, 1155, 1156, 1159, 1167, 1174, 1190, 1194, 1203, 1213, 1292.
212	**690712**	Link–Throttle
212A	**691519**	Link–Throttle
215	**841183**	Guide–Air (Cylinder 1) (Non Ducted) ------- **Note** ------- **841317** Guide–Air (Cylinder 1) Used on Type No(s). 1013, 1084, 1111, 1116, 1118, 1139, 1195, 1198, 1206, 1244, 1311, 1317, 1318, 1402, 1405, 1409, 1414, 1421. **841316** Guide–Air (Cylinder 2) Used on Type No(s). 1010, 1013, 1084, 1111, 1116, 1118, 1139, 1158, 1195, 1198, 1206, 1217, 1244, 1311, 1317, 1318, 1402, 1405, 1409, 1414, 1421.
215F	**841182**	Guide–Air (Cylinder 2) (Non Ducted)
215G	**692805**	Guide–Air (Cylinder 2) (Non Ducted)
216	**690705**	Link–Choke
217	**806862**	Spring–Choke Return
222	**808454**	Bracket–Control (Used With Control Lever And/Or Wire With "Z" Formed End)
222A	**690918**	Bracket–Control (Used With Control Lever And/Or Wire With "L" Formed End)
226	**692075**	Rod–Hand Choke
227	**690236**	Lever–Governor Control
231	**690718**	Screw (Choke Valve)
231B	**94457**	Screw (Choke Valve)
232	**692073**	Spring–Governor Link
234	**691723**	Clip–Control Rod
239	**690233**	Switch–Oil Pressure (Lower) ------- **Note** ------- **491657**s Switch–Oil Pressure (Normally Closed)
240	**394358S**	Filter–Fuel ------- **Note** ------- **298090**s Filter–Fuel Used on Type No(s). 0137, 0138, 0151, 0152, 0162, 1137, 1138, 1151, 1152, 1162, 1398, 1401.
240A	**691035**	Filter–Fuel
240B	**808116S**	Filter–Fuel
254	**807921**	Drain–Carburetor Bowl
255	**690721**	Bushing–Choke Shaft
262	**692083**	Screw (Rod Bracket)
265	**691024**	Clamp–Casing
267	**692083**	Screw (Casing Clamp)
268	**691025**	Casing–Control Wire (Cut To Required Length)
269	**691026**	Wire–Control (Cut To Required Length)
270	**691027**	Nut (Control Wire Casing)
271	**692541**	Lever–Control (Cable Wire With "Z" Formed End)
271A	**692105**	Lever–Control (Cable Wire With "L" Formed End)
271B	**691028**	Lever–Control
273	**690681**	Seal–O Ring (Oil Pump)
276	**690704**	Washer–Sealing (Govenor Crank)
276A	**807085**	Washer–Sealing (Head)(Rocker Cover) (Used After Code Date 01120200). ------- **Note** ------- **691766** Washer– Sealing (Head)(Rocker Cover) (Used Before Code Date 01120300).
276B	**690724**	Washer–Sealing (Carburetor Plug)
276C	**806137**	Washer–Sealing (Solenoid)
276E	**692343**	Washer–Sealing (Solenoid)
278	**842122**	Washer (Governor Control Lever)
280	**691526**	Bracket–Rod
281	**690742**	Panel–Control
282	**692083**	Screw (Control Lever)
287	**692062**	Screw (Dipstick Tube)
287A	**806660**	Screw (Dipstick Tube) Used on Type No(s). 1195.
300		Muffler (For Replacement Muffler, Use **692099**)
300B	**498984S**	Muffler (High On The Side)
300C	**807752**	Muffler (High On The Side)
300D	**692099**	Muffler (Lo Mount) (Starter Motor Side Or Oil Filter Side)
300E	**690906**	Muffler (Hi Mount) (Starter Side Exit)
300F	**690931**	Muffler (Hi Mount) (Starter Side Exit)
300G	**691562**	Muffler (Hi Mount) (Oil Filter Side Exit)
300H	**807831**	Muffler (Hi Mount) (Starter Side Exit)

Engine Gasket Set–Reference 358
Carburetor Overhaul Kit–Reference 121

Carburetor Gasket Set–Reference 977
Valve Gasket Set–Reference 1095

2263–22 **Assemblies include all parts shown in frames.** **08/25/2007**

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REF. NO.	PART NO.	DESCRIPTION
304	690929	Housing-Blower (Black)
		------ **Note** ------
		690930 Housing-Blower (Red)
305	841233	Screw (Blower Housing) (6mm)
		------ **Note** ------
		692056 Screw (Blower Housing) (14mm)
309	691564	Motor-Starter (Steel Ring Gear Only)
309A		Motor-Starter (For Replacement Starter Motor, Order Reference 309)
309B	499521	Motor-Starter (Aluminum Ring Gear)
309C		Motor-Starter (Services Aluminum Ring Gear Only) (For Replacement See Reference 309B)
309D	808817	Motor-Starter Used on Type No(s). 1268, 1312.
310	496880	Screw (Starter Motor) (4 1/4" Long)
310A	690323	Screw (Starter Motor) (4 7/16" Long)
310B	691263	Screw (Starter Motor) (4 13/16" Long)
310C	692329	Screw (Starter Motor) (5-3/8" Long)
311	496887	Brush Set
311A	497608	Brush Set
311B	490311	Brush Set (4 9/16" Housing Length)
318	690932	Screw (Mounting Bracket)
318A	691982	Screw (Mounting Bracket)
321	690379	Fan-Booster
322	841233	Screw (Cylinder Head Cover)
322A	692067	Screw (Cylinder Head Cover)
331	691075	Washer (Booster Fan)
332	690887	Nut (Flywheel)
332A	805744	Nut (Flywheel)
333	492341	Armature-Magneto
334	692066	Screw (Magneto Armature)
337	491055S	Plug-Spark
		------ **Note** ------
		496018S Plug-Spark Used on Type No(s). 0010, 0115, 0163, 1010, 1115, 1116, 1163, 1170, 1176, 1331, 1332.
		792015 Plug-Spark Used on Type No(s). 1001, 1005, 1009, 1013, 1026, 1042, 1046, 1047, 1065, 1066, 1067, 1079, 1085, 1087, 1096, 1105, 1113, 1120, 1125, 1145, 1156, 1157, 1174, 1185, 1186, 1194, 1234, 1243, 1246, 1247, 1250, 1251, 1253, 1254, 1256, 1261, 1263, 1266, 1268, 1269, 1275, 1283, 1288, 1289, 1290, 1292, 1296, 1300, 1302, 1308, 1309, 1311, 1312, 1315, 1317, 1318, 1319, 1331, 1333, 1365, 1366, 1375, 1377, 1378, 1396, 1399, 1400, 1401, 1402, 1405, 1409, 1410, 1413, 1414, 1421.
338	691312	Gasket-Dipstick (Dipstick Gasket)
346	690661	Screw (Spark Arrestor)
347	691995	Switch-Rocker
349	690238	Nut (Cylinder Head Cover)
355	842122	Washer (Muffler Bracket)
355A	690944	Washer (Muffler Bracket)
356	690796	Wire-Stop
357	691483	Key-Drive Pulley
358	841188	Gasket Set-Engine (Used After Code Date 01120200).
		------ **Note** ------
		808389 Gasket Set-Engine (Used Before Code Date 01120300).
359	691077	Washer (Ground Terminal)
363	19203	Puller-Flywheel
365	690711	Screw (Carburetor)
373	691612	Nut (Ground Terminal)
377	808095	Key-Woodruff
383	19374S	Wrench-Spark Plug
		------ **Note** ------
		19576s Wrench-Spark Plug Used on Type No(s). 1157, 1243, 1253, 1266, 1275, 1290, 1308, 1309, 1311, 1318, 1399, 1402, 1405, 1410, 1413.
385	807084	Screw (Fuel Pump)
387	808656	Pump-Fuel
387A	808969	Pump-Fuel
403	690288	Washer (End Cap)
413	693587	Nut (Starter Motor)
415	690283	Plug (Intake Manifold)
432	691509	Cap-Spring
436	692061	Manifold-Exhaust (Lo Mount) (Oil Filter Side)
436A	691499	Manifold-Exhaust (Lo Mount) (Starter Motor Side)

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121
Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

2263-23 **Assemblies include all parts shown in frames.** **08/25/2007**

REF. NO.	PART NO.	DESCRIPTION
526	692067	Screw (Regulator) (10-16 Amp Regulated)
526A	690717	Screw (Regulator) (5 To 9 Amp Regulated)
526B	691547	Screw (Regulator) (20 Amp)
527	690423	Clamp-Tube
529	690744	Grommet
529A	691527	Grommet
		------- **Note** -------
		805783 Grommet (Breather Extension)
532	691115	Nut (Mounting Bracket)
544		Armature-Starter (Service With **691564** Starter Motor Only)
544B		Armature-Starter (Serviced By **499521** Starter Motor Only)
544C	490309	Armature-Starter (4 3/8" Housing Length)
552	690701	Bushing-Governor Crank (Output End)
552A	806686	Bushing-Governor Crank (Flanged)
555	692067	Screw (Starter Solonoid)
561	690713	Nut (Control Lever)
562	690239	Bolt (Governor Control Lever)
563	691982	Screw (Debris Screen Guard)
565	690682	Stud (Oil Filter Adapter)
572	690686	Baffle-Breather
573	841310	Plate-Back
		------- **Note** -------
		693045 Plate-Back Used on Type No(s). 1312.
		841314 Plate-Back Used on Type No(s). 1416.
577	690795	Cable-Starter
578	692306	Wire Assembly
578A	692319	Wire Assembly
578B	691377	Wire Assembly
578C	690809	Wire Assembly
578D	692961	Wire Assembly
578E	691999	Wire Assembly
596	691492	Screw (Oil Pump)
597	690876	Screw (Pawl Friction Plate)
597A	94463	Screw (Pawl Friction Plate)
598	807625	Shim-End Play (Crankshaft or Camshaft Bearing)
601	691038	Clamp-Hose
601A	691145	Clamp-Hose
601B	791850	Clamp-Hose
601C	691522	Clamp-Hose
608	692102	Starter-Rewind (Used After Code Date 93081500).
608A	808153	Starter-Rewind (Used Before Code Date 93081600).
613	692067	Screw (Muffler)
		------- **Note** -------
		692328 Screw (Muffler) Used on Type No(s). 1184, 1405, 1409, 1414, 1421.
		690297 Screw (Muffler) Used on Type No(s). 1154, 1158, 1246, 1311, 1315, 1318, 1402.
613A	841233	Screw (Muffler)
		------- **Note** -------
		690297 Screw (Muffler) (Used After Code Date 97012300).
		692198 Screw (Muffler) (Used Before Code Date 97012400).
614	691550	Pin-Cotter
616	806685	Crank-Governor (Used After Code Date 99072000).
616A	690899	Crank-Governor (Used Before Code Date 99072100).
620	494052	Panel-Speed Control
628	806660	Screw (Fuel Pump Bracket)
629	806717	Spring-Throttle Return
629A	806716	Spring-Throttle Return
629B	692088	Spring-Throttle Return Used on Type No(s). 0081, 0082, 0083, 1009, 1012, 1081, 1105, 1222, 1227, 1276, 1277, 1399.
633	•690722	Seal-Choke/Throttle Shaft
633B	806131	Seal-Choke/Throttle Shaft
633C	•808022	Seal-Choke/Throttle Shaft
635	692076	Boot-Spark Plug
638	691551	Washer (Cylinder Head Cover) (Internal Tooth Lockwasher) (Used Before Code Date 03110100).
638A	690706	Washer (Cylinder Head Cover) (Spring Lockwasher)
643	692079	Retainer-Air Filter
643A	690447	Retainer-Air Filter
650	692539	Screw (Oil Deflector)
663	692083	Screw (Control Panel)
664	691087	Nut (Key Switch)
668	690860	Spacer
668A	691500	Spacer
668B	691215	Spacer

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121
Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

2263-25 **Assemblies include all parts shown in frames.** 08/25/2007

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REF. NO.	PART NO.	DESCRIPTION
674	692056	Screw (Fuel Tank Bracket) (M8 x 14)
674B	692062	Screw (Fuel Tank Bracket) (M8 x 18)
676	393761	Deflector-Muffler
676A	397630	Deflector-Muffler
676C	495518	Deflector-Muffler
676D	808394	Deflector-Muffler
677	810079	Screw (Muffler Deflector)
677A	690688	Screw (Muffler Deflector)
677B	690661	Screw (Muffler Deflector)
681	808798	Kit-Needle/Seat
683	691029	Nut (Starter Solenoid)
689	691272	Spring-Friction (Governor Control Rod)
689A	262564	Spring-Friction (Rewind Starter)
691	690680	Seal-Governor Shaft
695	693149	Screw (Ring Gear)
697	692062	Screw (Drive Cap)
703	94484	Clip
710	807689	Cover-Oil Filter
711	841233	Screw (Carburetor Shield)
718	806469	Pin-Locating
718A	690760	Pin-Locating Used on Type No(s). 0118, 0124, 0158, 1118, 1158, 1195, 1217, 1311, 1318, 1402, 1409, 1414, 1421.
718B	690740	Pin-Locating Used on Type No(s). 0136, 0144, 1136, 1144, 1244, 1308, 1316.
725A	805702	Shield-Heat
725B	691498	Shield-Heat
725C	806102	Shield-Heat
726		Gear-Ring (Steel) (See Reference 23 for Service)
727	841313	Cover-Starter Drive
728B	691514	Screw (Heat Shield)
729	690586	Clip-Wire
732	690688	Screw (Starter Drive Cover)
732A	841233	Screw (Starter Drive Cover)
737	690679	Screw (Oil Filter Adapter)
739	690451	Clip-Debris
741	691530	Gear-Timing
748	692083	Screw (Control Rod Clip)
773	690875	Retainer
774	692067	Screw (Stop Wire)
783	695708	Gear-Pinion (Services Aluminum Ring Gear Only)
788	691559	Bracket-Fuel Pump
789	691996	Harness-Wiring
		------- **Note** ------
		691578 Harness-Wiring Used on Type No(s). 1009, 1012, 1057, 1241, 1264, 1276, 1288, 1299.
		841318 Harness-Wiring Used on Type No(s). 1268, 1312.
797	691029	Nut (Brush Retainer)
797A	693167	Nut (Brush Retainer)
801	808778	Cap-Drive
801B	691283	Cap-Drive
801C		Cap-Drive (For Replacement Starter Motor, Order Reference 309B)
802	496813	Cap-End
802A	691286	Cap-End
802B		Cap-End (For Replacement Starter Motor, Order Reference 309B)
803	690854	Housing-Starter (3 7/16" Housing Length)
803A	693547	Housing-Starter (3 13/16" Housing Length)
803B		Housing-Starter (Serviced By **499521** Starter Motor Only)
803C	494205	Housing-Starter (4 3/8" Housing Length)
		------- **Note** ------
		398892 Housing-Starter (4 9/16" Housing Length)
807	805557	Spacer-Throttle
812	Δ692055	Nut (Rocker Cover) (Used Before Code Date 01120300).
813	690635	Clamp
816	690706	Washer (Oil Filter Adapter)
819	692056	Screw (Muffler Bracket)
819A	690943	Screw (Muffler Bracket)
819C	692537	Screw (Muffler Bracket)
		------- **Note** ------
		692067 Screw (Muffler Bracket) Used on Type No(s). 1266, 1300, 1399, 1410, 1413.
819D	692062	Screw (Muffler Bracket)
830	809157	Stud-Rocker Arm (Used After Code Date 96033100).
		------- **Note** ------
		691497 Stud-Rocker Arm (Used Before Code Date 96040100).
832	691571	Guard-Muffler
833	841233	Screw (Air Cleaner Mounting Strap/Stud)
833A	690872	Screw (Air Cleaner Mounting Strap/Stud)
833B	691593	Screw (Air Cleaner Mounting Strap/Stud)
836	691514	Screw (Muffler Guard)
836A	692067	Screw (Muffler Guard)
837	808085	Spacer-Muffler (Includes 2)

Engine Gasket Set-Reference 358
Carburetor Overhaul Kit-Reference 121

Carburetor Gasket Set-Reference 977
Valve Gasket Set-Reference 1095

Assemblies include all parts shown in frames.

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REF. NO.	PART NO.	DESCRIPTION
840	842828	Kit–Panel
842	690611	Seal–O Ring (Dipstick Tube)
843	691322	Sleeve–Lever
849	691088	Screw (Stub Shaft)
851	493880S	Terminal–Spark Plug
862	692153	Strap/Stud–Air Cleaner Mounting
862D	691565	Strap/Stud–Air Cleaner Mounting
862E	492133	Strap/Stud–Air Cleaner Mounting
863	691513	Bracket–Muffler (Lo Mount) (Oil Filter Side)
863A	690756	Bracket–Muffler (Lo Mount) (Starter Motor Side)
863B	806759	Bracket–Muffler
865	841312	Cover–Air Guide
865A	841319	Cover–Air Guide
		------ **Note** ------
		690908 Cover–Air Guide Used on Type No(s). 0124, 0139, 1111, 1139, 1206.
868	691963	Seal–Valve
871	692057	Bushing–Valve Guide
876	696539	Kit–Pinion Spring
877	393456	Wire/Connector–Alternator
877B	393537	Wire/Connector–Alternator
877C	399916	Wire/Connector–Alternator
877D	698092	Wire/Connector–Alternator
878	691237	Harness–Alternator Used on Type No(s). 1277.
878B	691362	Harness–Alternator
879	842829	Cover–Carburetor
882	692074	Flange–Exhaust
883	691613	Gasket–Exhaust
884	690898	Clamp–Muffler
884A	691956	Clamp–Muffler
892	692318	Switch–Key
896	691641	Pin–Drive Retainer
899	691077	Washer (Starter Solenoid)
915	691493	Liner–Port
918	393815	Hose–Vacuum (Cut To Required Length)
920	691656	Solenoid–Starter
927	691116	Screw (Electronic Governor Module)
934	691058	Screw (Fan Retainer)
947A	692094	Solenoid–Fuel
947B	807922	Solenoid–Fuel
949	690475	Guard–Debris Screen
949A	808226	Guard–Debris Screen
955A	807723	Plug–Carburetor (Jet)
955B	807927	Plug–Carburetor (Jet)
957	491367s	Cap–Fuel Tank
957A	493988s	Cap–Fuel Tank
958	698182	Valve–Fuel Shut Off
958B	692008	Valve–Fuel Shut Off
967	272490S	Filter–Pre Cleaner
967C	271794S	Filter–Pre Cleaner
968	699959	Cover–Air Cleaner (With Clips)
968C	691910	Cover–Air Cleaner
968E	691334	Cover–Air Cleaner
971	807084	Screw (Air Cleaner Base to Carburetor)
971B	692537	Screw (Air Cleaner Base to Carburetor)
972	492369	Tank–Fuel (7 Quart)
972A	690663	Tank–Fuel (9 Quart)
987	492172	Seal–Throttle Shaft
988	692063	Gasket–Oil Adapter
988A	690687	Gasket–Oil Adapter (Used With Reference 710 Only)
990	691959	Key Set
994	392390	Arrestor–Spark
		------ **Note** ------
		808361 Arrestor–Spark Used on Type No(s). 1289.
996A	691577	Shield–Carburetor
1004	690743	Duct–Air
1005	809441	Fan–Flywheel (Used After Code Date 00121200).
		------ **Note** ------
		690911 Fan–Flywheel (Used Before Code Date 00121300).
1006	690452	Retainer–Fan
1009	806474	Screw (Starter Motor)
1012	690592	Retainer–Link
1012A	691521	Retainer–Link
1017	690900	Screen–Oil Pump
1022	806039S	Gasket–Rocker Cover
1023	690758	Cover–Rocker
1023B	691494	Cover–Rocker
1023C	690910	Cover–Rocker (Cylinder 1) (With Fuel Pump) (Used After Code Date 98053100).
1023D	691558	Cover–Rocker (Cylinder 1) (With Fuel Pump) (Used Before Code Date 98060100).
1023E	691531	Cover–Rocker (Used On Engines Equipped With 9 Quart Fuel Tanks)
1024	693185	Pump–Oil
1025	690689	Spool–Governor
1026	691836	Rod–Push (Steel)
		------ **Note** ------
		691758 Rod–Push (Aluminum)
1027	842921	Filter–Oil
1028	808033	Adapter–Oil Filter (For Horizontal Mounted Oil Filter)
		------ **Note** ------
		808235 Adapter–Oil Filter
1029	807323	Arm–Rocker
1030	691496	Support–Rocker Arm (Used Before Code Date 96040100).
1031	690693	Shaft–Rocker Arm (Used Before Code Date 96040100).
1036		Label–Emissions (Available from a Briggs & Stratton Dealer)

Engine Gasket Set–Reference 358
Carburetor Overhaul Kit–Reference 121
Carburetor Gasket Set–Reference 977
Valve Gasket Set–Reference 1095

2263–27 **Assemblies include all parts shown in frames.** **08/25/2007**

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REF. NO.	PART NO.	DESCRIPTION
1037	807915	Ball–Choke Locator
1038	492374	Rod–Fuel Shut Off
1038A	691567	Rod–Fuel Shut Off
1044A	805756	Screw (Flywheel)
1046	692082	Plug–Blower Housing
1047	841580	Shaft–Stub
1048	690669	Module–Electronic Governor
1051	691124	Ring–Retaining
1051A	691265	Ring–Retaining
1054A	280275	Tie–Cable
1058	276343	Operator's Manual
1059	698516	Kit–Screw/Washer
1083	691626	Nut (End Cap)
1083A	690958	Nut (End Cap)
1090	691293	Retainer–Brush
1091	•691516	Cap–Limiter
1091A	•806054	Cap–Limiter
1095A	808391	Gasket Set–Valve (Used Before Code Date 01120300).
1095B	841191	Gasket Set–Valve (Used After Code Date 01120200).
1100	791959	Pivot–Rocker Arm
1119	691552	Screw (Alternator)
1127	94460	Screw (Float Bowl)
1133	690342	Screw (Crankshaft)
1134A	94464	Washer (Pawl Friction Plate)
1135	806497	Washer (Crankcase Cover/Sump)
1148	94504	Screw (Clip)
1176	842067	Nut (Exhaust Manifold)
1254	807084	Screw (Rocker Cover Stud) (Used After Code Date 01120200).
1319	794467	Label–Warning
1330	272144	Repair Manual
1346	492031	Valve–Oil Drain Shut Off Used on Type No(s). 1311, 1318, 1421.

Engine Gasket Set–Reference 358
Carburetor Overhaul Kit–Reference 121
Carburetor Gasket Set–Reference 977
Valve Gasket Set–Reference 1095

2263–28 **Assemblies include all parts shown in frames.** **08/25/2007**

Elektror

Seitenkanal-verdichter SD

(D) (A) Elektror-Seitenkanalverdichter – Betriebsanleitung und Ersatzteilliste

(GB) (IRL) Elektror-Side channel blower – Operating instructions and replacement parts list

(F) (B) (L) Elektror-Soufflante à canal latéral – Notice d'utilisation et liste des pièces détachés

(I) Elektror-Soffiante anulare a canale laterale – Istruzioni per l'uso ed elenco ricambi

(E) Elektror-Compresor de canal lateral – Instrucciones de servicio y lista de recambios

SD 2n-1, SD 3-1, SD 4n-1, SD 6-1, SD 600-1, SD 7-1, SD 8-1, SD 9-1

Elektror
KARL W. MÜLLER GMBH & CO.

Contents

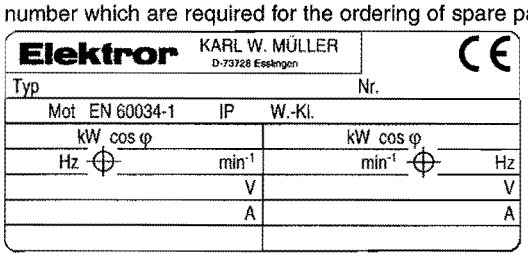
This instruction manual must be accessible to the operating personnel at any time. The present instruction manual has to be read carefully before installation or starting operation of the side-channel blower.
Subject to modifications. In case of doubt clarification with the manufacturer is required. This document is protected by copyright. It is not to be made accessible to third parties without our explicit written consent. Any form of duplication or recording and storage in electronic equipment is forbidden.

1 Technical data

The following data apply to the standard version. Your side-channel blower may differ from these data (see «rating plate»).

	SD 2n-1	SD 3-1	SD 4n-1	SD 6-1
Volumetric flow rate [m³/min]	1,55	0,75	3,4	5,6
Total pressure difference [Pa]	210	350	240	300
Max. permitted blower speed [rpm]	3430	3520	3400	3440
Power consumption at max. perm. speed [kw]	0,65	0,55	1,6	3,1
Weight [kg]	10,5	10,5	13,7	23,5
V-belt profile in accordance with DIN 7753	XPZ	XPZ	XPZ	XPZ
Number of grooves	1	1	1	2
	SD 600-1	**SD 7-1**	**SD 8-1**	**SD 9-1**
Volumetric flow rate [m³/min]	5,6	8,0	11,0	17,5
Total pressure difference [Pa]	300	400	380	350
Max. permitted blower speed [rpm]	3600	3500	3520	3520
Power consumption at max. perm. speed [kw]	3,5	6,5	8,0	13,5
Weight [kg]	25,5	43	64	76
V-belt profile in accordance with DIN 7753	XPZ	XPZ	XPZ	XPZ
Number of grooves	2	2	4	4

Rating plate
Details of electrical data can be found on the rating plate, which also includes the model identification number and serial number which are required for the ordering of spare parts.



2 Safety

Our side-channel blowers excel by a high degree of operating safety. As the side-channel blowers are rather high-powered machines, the safety instructions must be strictly adhered to in order to avoid injuries, damage to objects and to the machine itself.

2.1 Suction effect

Side-channel blowers produce a powerful suction effect.

Warning

Objects, items of clothing and also hair can be sucked into the intake port.
Danger of injury!
Do not stand near the intake opening during operation.
Never operate the side-channel blower with open intake port. The open intake port must be covered with a wire guard in accordance with DIN EN 294.
Do not reach into intake opening.

2.2 Blowing effect

Warning
Powerful blow-out at the discharge flange. Sucked-in objects may be ejected at very high speed (danger of injury).
Side-channel blowers are meant for conveying clean air only. The sucking-in of solid particles and other contaminants – which might be discharged – must be avoided at all times. These objects have to be withheld before entering into the side-channel blower by installing a filter.
The side-channel blower may never be operated with open discharge flange, and therefore has to be protected with a wire guard in accordance with DIN EN 294. Do not reach into the discharge opening.

2.3 Temperature

Warning
The side-channel blower housing heats up during operation. If the temperature exceeds +50° C, the side-channel blower must be protected by the operator against direct contact (danger of burning!).

2.4 Proper application

The side-channel blowers are designed for conveying clean air only.

Using them for
- aggressive
- poisonous
- explosive or
- very moist

media is not permitted.

The maximum permissible temperature of the conveyed medium for the standard version is –30° C to +40° C. Solid particles or contaminants must be withheld by a filter unit before entering the side-channel blower.

The maximum ambient temperature must not exceed +60° C, the minimum not below –20° C.

The side-channel blower cannot be operated in an explosive atmosphere.

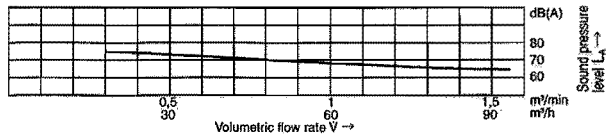
Special versions for applications not mentioned above are available on demand.

Remodelling and modifications of the side-channel blower are not allowed.

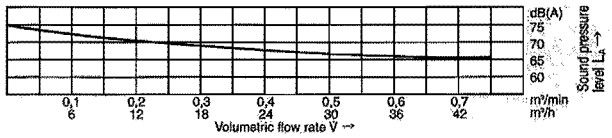
2.5 Generation of noise

The noise generated by the side-channel blower is not constant over the whole performance curve (see diagrams below).

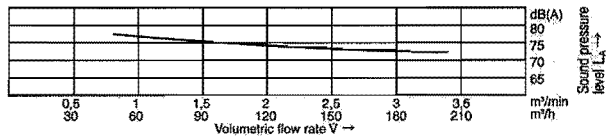
SD 2n-1



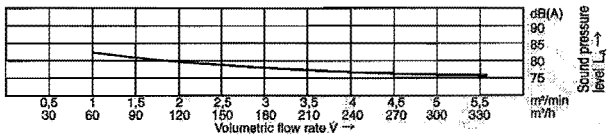
SD 3-1



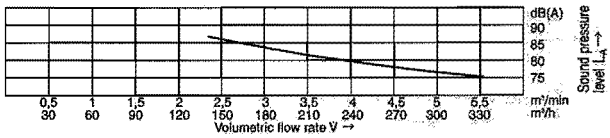
SD 4n-1



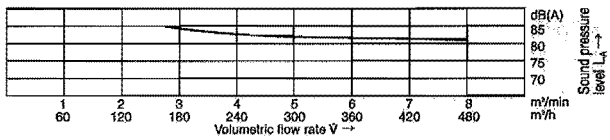
SD 6-1



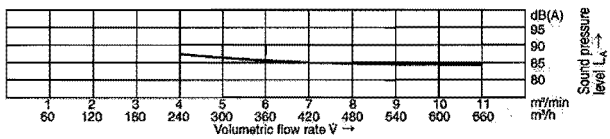
SD 600-1



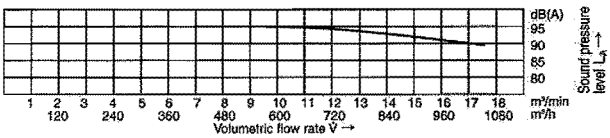
SD 7-1



SD 8-1



SD 9-1



In certain unfavourable cases a sound-absorbing device may be required (measurements by the operator are recommended).

Sound-absorbing measures are to be carried out by the operator so as not to exceed the legally permitted peak values at the work places near of the side-channel blower.

3 Installation

3.1 Transport

- Check all parts for damage during transport before installation and starting of operation.
- Do not store the side-channel blower unprotected in the open (protect against moisture).
- Attach hoist securely. Only use hoists and load suspension devices with sufficient load-carrying capacity.

3.2 Installation, assembly

- Install the side-channel blower in a horizontal position protected against the weather.
- Do not subject the blower to any vibrations or shocks.
- Bolt the side-channel blower on a solid and level base at the site of installation.
- Uncovered intake and discharge openings have to be protected by wire guards in accordance with DIN EN 294.
- Belt drive and dree rotating parts are to be covered with a belt guard in accordance with DIN EN 294.
- Ensure adequate motor cooling; max. ambient temperature +60° C

3.3 Electrical connection

Note!
The instructions of the relevant electric motor manufacturer should be observed. Connect in accordance with relevant local regulations. The work described in this section must only be carried out by an electrical specialist.

Checking direction of rotation

Start operation of the side-channel blower.
The direction of rotation of the impeller must correspond to the directional arrow on the housing. The flow direction of the air has to correspond to the directional arrows on the silencer housing as well.

4 V-belt drive

Note!
As a standard feature, the side-channel blowers have been fitted with V-belt pulleys for narrow V-belts in accordance with DIN 7753.
To avoid premature damage to the grooved ball bearings, the V-belt drives must be tensioned correctly. The V-belt drive must be dimensioned in accordance with the appropriate method of calculation applied by the respective V-belt manufacturer.

- The blower belt pulley must not be modified.
- The maximum permissible blower speed must not be exceeded (cf. table in section 1).
- The belt drive and free rotating parts are to be covered with a belt guard in accordance with DIN EN 294.
- Never operate the side-channel blower, if the protective guard is not attached and screwed on securely (danger of injury).

5 Maintenance

Note!
Repairs must be carried out by the manufacturer only. We cannot accept any liability for repairs carried out by third parties.

6 List of spare parts

When ordering please state

Note!

- ***Serial no. (rating plate)***
- ***Blower type (rating plate)***
- ***Part No. and/or item no. (spare parts list)***

7 EC Manufacturer Declaration

Elektror
KARL W. MÜLLER GMBH & CO.
Richard-Hirschmann-Strasse 12, D-73728 Esslingen/Neckar
Postfach 10 02 51, D-73702 Esslingen/Neckar

We certify on our sole responsibility that the product to which this certificate relates, is in conformity with the standards or standard-setting documents listed below.
If a modification of the unit(s) is made without our consent, this certificate becomes invalid.

Description of the machine:
Side-channel blower SD 2n-1, SD 4n-1
Side-channel blower SD 3-1
Side-channel blower SD 6-1, SD 600-1
Side-channel blower SD 7-1
Side-channel blower SD 8-1
Side-channel blower SD 9-1

Relevant regulations to which this machine corresponds:
EC machine directives (98/37/EC)

Source references of harmonised standards:
DIN EN 292, Safety of machines, basic terms, general configuration directives;
Part 1: Basic terminology, methodology
Part 2: Technical principles and specifications

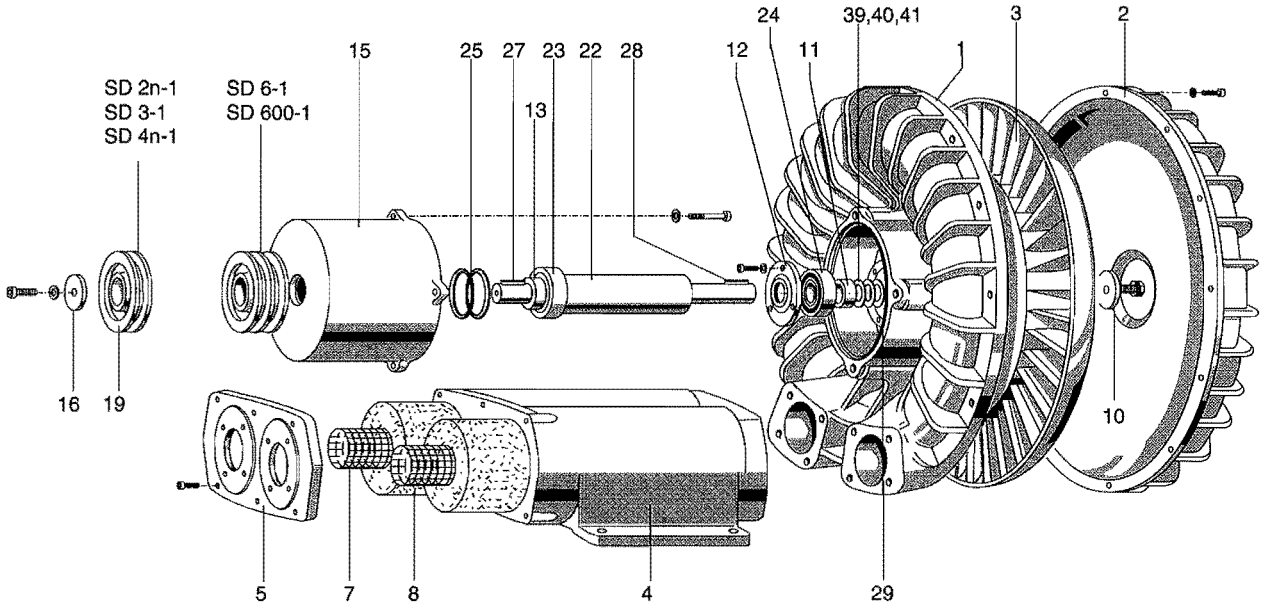
Starting operation of this machinery part is not allowed as long as it is not assembled into the main installation respectively not all necessary safety devices have been installed which fulfill the requirements of the EC directive for machines with regard to safety and health.

ppa. Luik (Director)
Esslingen, 31.05.1999

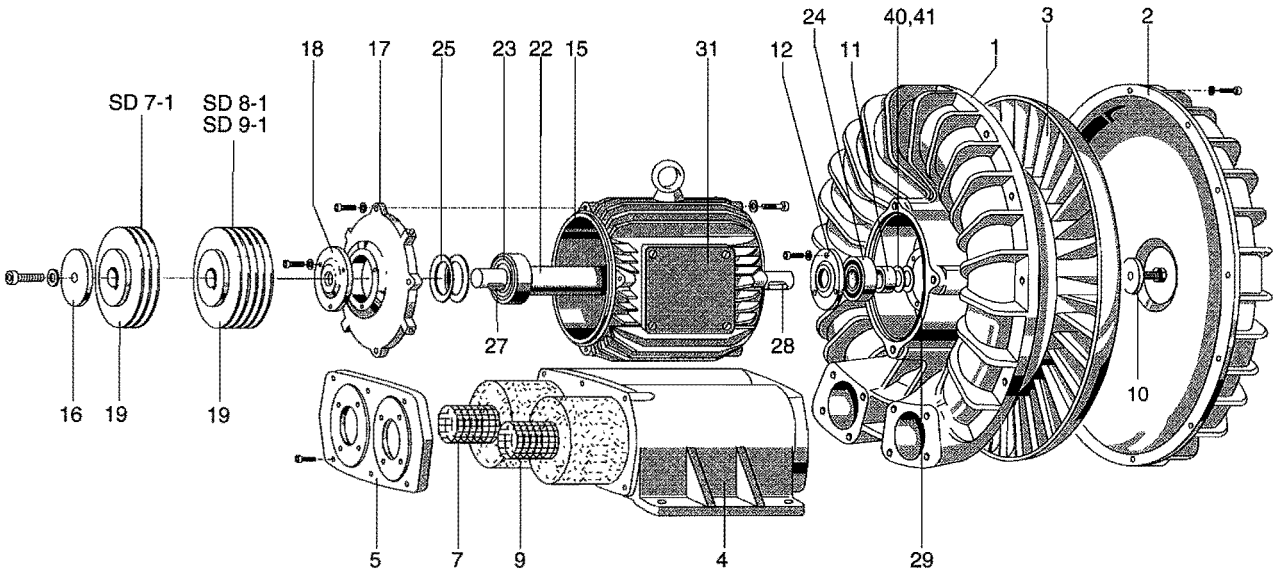
Item	Type	SD 2n-1	SD 3-1	SD 4n-1	SD 6-1	SD 600-1	SD 7-1	SD 8-1	SD 9-1
	Designation	**Part no.**	**Part no.**	**Part no.**	**Part no.**	**Part no.**	**Part no.**	**Part no.**	**Part no.**
1	Blower housing	005293	005273	001136	001922	001922	001931	001138	001296
2	Housing cover	002405	000500	001906	001925	001925	001929	001937	001949
3	Impeller	002407	005291	000851	000670	000862	000860	000746	001298
4	Silencer housing with base plate	002408	001128	401312	400839	400839	000747	000747	001299
5	Flange	000529	000945	001313	000557	000557	000944	000944	001300
6									
7	Wire mesh guard	000838	000838	000499	000671	000671	000748	000748	001301
8	Plastic foam	002406	000530	000476	000672	001511	000749	000749	002880
9									
10	Washer	002375	002375	004274	003511	002375	003833	003620	004262
11	Bush	002399	002399	002399	004214	004214	004215	004217	004219
12	Bearing cap	400799	400799	400799	400045	400045	001010	000831	001303
13	Bush	003175	003175	004128	003635	003635	004215	004217	004219
14									
15	Housing	007668	007668	001132	001133	001133	002053	004867	004867
16	Washer	002375	002375	002375	002375	003511	002375	003620	003620
17	Bearing endshield	–	–	–	–	–	001005	000331	000331
18	Bearing cap	–	–	–	–	400473	401248	410832	410832
19	V-belt pulley	000988	000988	000989	000986	000986	000986	000987	000987
20									
21									
22	Shaft	005277	005277	001034	006285	006285	006283	001032	006338
23	Ball bearing	000556	000556	000556	000588	000588	000979	000750	001306
24	Ball bearing	000587	000587	000556	000588	000588	000978	000750	000750
25	Dished spring	002373	002373	003154	003100	003100	003126	003140	003140
26									
27	Key	002772	002772	003088	002898	002898	002898	003502	003502
28	Key	003406	003406	003406	002414	002414	002896	003621	006675
29	Teflon radial shat seal	000157	000157	000157	000819	000819	000821	000820	001274
30									
31	cover plate	–	–	–	–	–	006734	006761	006761
32									
33									
34									
35									
36									
37									
38									
39	Spacer washer 0,05 mm thick	002382	002382	002382	003245	003245	–	–	–
40	Spacer washer 0.1 mm thick	003191	003191	003191	003246	003246	003674	003627	006689
41	Spacer washer 0.2 mm thick	002384	002384	002384	003247	003247	004198	003626	006690
42									

Explantation of symbols: X required, – not required

SD 2n-1, SD 3-1, SD 4n-1, SD 6-1 SD 600-1



SD 7-1, SD 8-1, SD 9-1



350400

REF. NO.	PART NO.	DESCRIPTION
436B	691501	Manifold–Exhaust (For Customer Supplied Muffler) (Oil Filter Side Exit)
436D	691502	Manifold–Exhaust (For Customer Supplied Muffler) (Starter Side Exit)
436F	805609	Manifold–Exhaust (High On The Side)
437	691902	Screw (Exhaust Manifold)
439	692154	Seal–O Ring (Crankcase Cover/Sump) (Used After Code Date 97043000). ------ **Note** ------ **805198** Seal–O Ring (Crankcase Cover/Sump) (Used Before Code Date 97050100).
440	690342	Screw (Booster Fan)
445	394018S	Filter–Air Cleaner Cartridge
445B	393957S	Filter–Air Cleaner Cartridge
447	841233	Screw (Air Guide Cover)
455	690864	Cup–Flywheel (Used After Code Date 93081500). ------ **Note** ------ **807881** Cup–Flywheel (Used Before Code Date 93081600).
456	691529	Plate–Pawl Friction
456A	224228	Plate–Pawl Friction
459	808166	Pawl–Ratchet
459A	492431	Pawl–Ratchet
467	691985	Knob–Air Cleaner
467B	691668	Knob–Air Cleaner
468	690690	Seal–O Ring (Oil Pump Screen)
474B	696459	Alternator (Dual Circuit) Used on Type No(s). 1277, 1399.
474C	696457	Alternator (5 To 9 Amp Regulated) Used on Type No(s). 0121, 1121, 1292, 1412.
474D	696458	Alternator (10–16 Amp Regulated)
474E	696579	Alternator (20 Amp) Used on Type No(s). 1009, 1012, 1028, 1029, 1057, 1108, 1241, 1264, 1276, 1282, 1288, 1299.
474F	841178	Alternator (20 Amp) Used on Type No(s). 1416.
479	807084	Screw (Oil Pump Screen)
493	691518	Bracket–Mounting
493A	691177	Bracket–Mounting (Solenoid)
493B	691503	Bracket–Mounting (Solenoid) Used on Type No(s). 0153, 1266.
500	691086	Washer (Key Switch)
501	691185	Regulator (10–16 Amp Regulated)
501A	691188	Regulator (5 To 9 Amp Regulated) Used on Type No(s). 0121, 1121, 1292, 1296, 1300, 1412.
501B	691573	Regulator (20 Amp) Used on Type No(s). 1009, 1012, 1028, 1029, 1057, 1108, 1241, 1264, 1276, 1282, 1288, 1299. ------ **Note** ------ **808877** Regulator Used on Type No(s). 1302. **841170** Regulator (20 Amp) Used on Type No(s). 1416.
503	691532	Strap–Starter
505	690238	Nut (Governor Control Lever)
506	690677	Screw (Carburetor Cover)
507	691972	Insulator
510	496881	Drive–Starter (Used With Steel Ring Gear)
510A	696541	Drive–Starter (Used With Aluminum Ring Gear)
510B	696540	Drive–Starter
513	692024	Clutch–Drive
515	691528	Spring–Pawl
520	691084	Terminal–Ground
523	692100	Dipstick (Used Before Code Date 98060100).
523A	693175	Dipstick (Used After Code Date 98053100).
524	★693172	Seal–Dipstick Tube (Used After Code Date 98053100).
524A	281370s	Seal–Dipstick Tube (Used Before Code Date 98060100).
525	693174	Tube–Dipstick (Standard) (Used After Code Date 98053100).
525A	693173	Tube–Dipstick (Used After Code Date 98053100). Used on Type No(s). 1081, 1105, 1109, 1111, 1139, 1206, 1299.
525C	690897	Tube–Dipstick (Used Before Code Date 98060100). ------ **Note** ------ **690907** Tube–Dipstick (Used Before Code Date 98060100). Used on Type No(s). 0115, 0124, 0139, 1105, 1111, 1115, 1139, 1206.

Engine Gasket Set–Reference 358
Carburetor Overhaul Kit–Reference 121
Carburetor Gasket Set–Reference 977
Valve Gasket Set–Reference 1095

2263–24 **Assemblies include all parts shown in frames.** **08/25/2007**

Service Schedule IGEBA U/M-HD

	before first operation	after first five hours of operation	after every use	Daily or every 8 hours	every 25 hours	Weekly or every 50 hours	Monthly or every 100 hours	Quarterly or every 300 hours	Anually
BATTERY									
* Fill battery with battery acid	X								
* Check level of battery acid								X [1]	
ENGINE									
* Check engine oil level				X					
* Change engine oil		X			X [5]		X		
* Clean area around muffler and controls				X					
* Check muffler and spark arrester							X		
* Check valve clearance							X [2]		X [7]
* Clean oil cooler fins								X [3]	
* Change gear reduction oil							X [6]		
ENGINE AIR FILTER									
* Clean&oil foam pre-cleaner (oz)					X [6]		X [3]		
* Clean air filter					X [5]		X [3]		
* Clean cooling system								X [3]	X [6]
* Change air filter							X [7]	X	
* Replace pre-cleaner									X [6]
FUEL FILTER									
* Replace fuel filter								X	X [6]
* Clean fuel filter						X [7]			
SPARK PLUG									
* Clean&regap to 0,75 mm or 0,030 inch							X		
* Decarbonize								X	
* Replace									X [6]
BLOWER AIR FILTER									
* Clean filter						X [3]			
SOLUTION FILTER									
* Rinse solution line and solution tank			X						
* Clean Solution Filter						X [4]			

Clean the machine externally according to dirt!

RECOMMENDED LUBRICANTS:

Use SAE 10W-30/10W-40 or SAE 30 oil for engine

[1]: Add distilled water if necessary
[2]: Not required unless engine performance problems are noticed
[3]: In dusty conditions or when airborne debris is present, clean more often
[4]: at least 50h, depending on the solution used, replace if necessary
[5]: Only 3,5hp and 13hp engines
[6]: Only 3,5hp engines
[7]: Only 13hp engines