JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

Backpack Blowers
BP45LE and BP65LE

TM104119 MAY 2008

TECHNICAL MANUAL

JOHN DEERE

North American Version
Litho In U.s.a.

INTRODUCTION

Manual Description

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications and Information
- Identification Numbers
- Tools and Materials
- Component Location
- Schematics and Harnesses
- Theory of Operation
- Operation and Diagnostics
- Diagnostics
- Tests and Adjustments
- Repair
- Other

Note: Depending on the particular section or system being covered, not all of the above groups may be used.

The bleed tabs for the pages of each section will align with the sections listed on this page. Page numbering is consecutive from the beginning of the Safety section through the last section.

We appreciate your input on this manual. If you find any errors or want to comment on the layout of the manual please contact us.

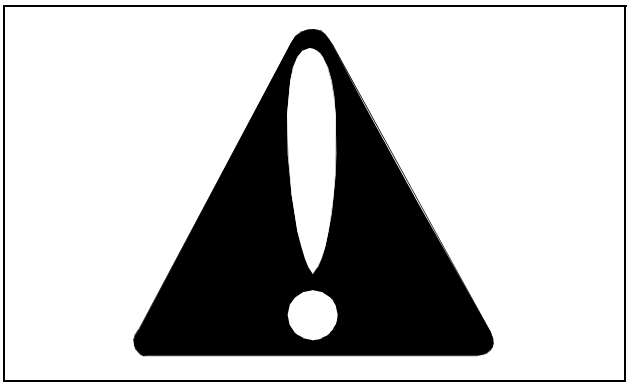
Safety

Specifications and Information

BP Blowers

Safety

Recognize Safety Information



MIF

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

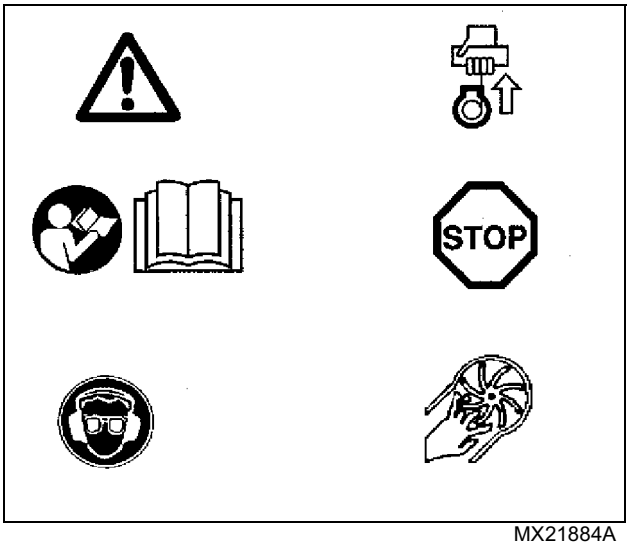
Follow recommended precautions and safe servicing practices.

Understand Signal Words

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

Replace Safety Signs



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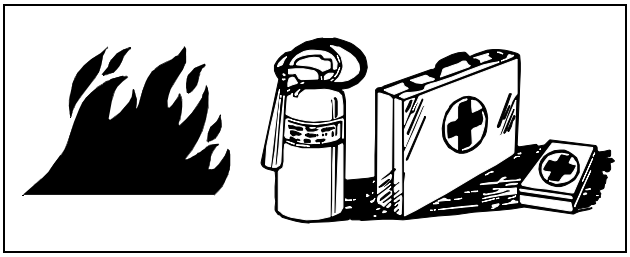
Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely - Avoid Fires

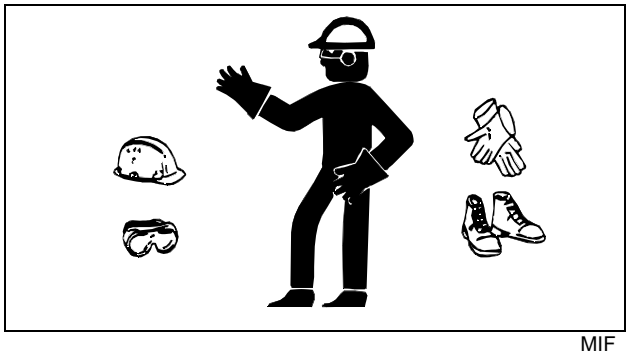
Be Prepared For Emergencies



MIF

- When you work around fuel, do not smoke or work near heaters or other fire hazards.
- Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.
- Make sure machine is clean of trash, grease, and debris.
- Do not store oily rags; they can ignite and burn spontaneously.
- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Wear Protective Clothing



MIF

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards. Use power tools only to loosen threaded parts and fasteners. For loosening and tightening hardware, use the correct size tools. **DO NOT** use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches. Use only service parts meeting John Deere specifications.

Work In Clean Area

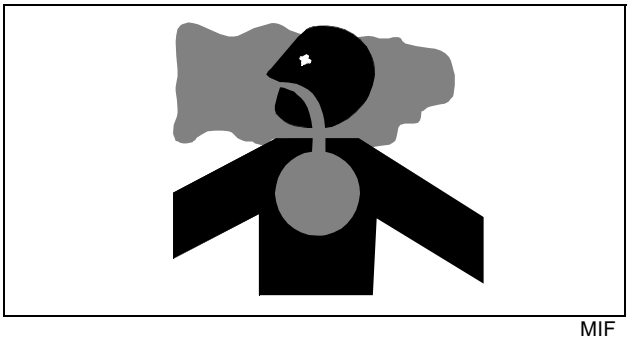
Before starting a job:

1. Clean work area and machine.
2. Make sure you have all necessary tools to do your job.
3. Have the right parts on hand.
4. Read all instructions thoroughly; do not attempt shortcuts.

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

Work In Ventilated Area



MIF

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

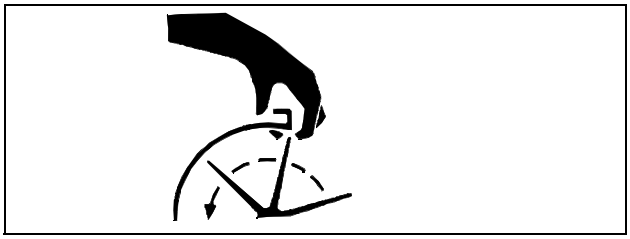
If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Warning: California Proposition 65 Warning

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

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Avoid Injury From Rotating Blades and Shafts



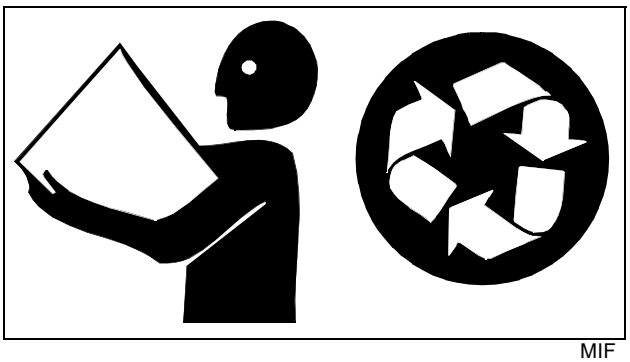
MIF

Keep hands and feet away while machine is running. Shut off power to service, lubricate or remove mower blades, augers or PTO shafts.

Dispose Of Waste Properly

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries. Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Do not pour waste onto the ground, down a drain, or into any water source. Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

Handle Chemical Products Safely



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Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

Live With Safety

MIF

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

SPECIFICATIONS AND INFORMATION TABLE OF CONTENTS

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SPECIFICATIONS AND INFORMATION TABLE OF CONTENTS

Fastener Torques

Torque Values

Metric Torque Values (Lubricated)

	Class 7		Class 8.8		Class 10.9	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6			9	6.6	13	9.6
M8	23	17	25	18.5	29	21.4
M10	44	33	51	38	61	45
• Use 80% of the value when tightening part is aluminum.						
• Use 60% of the value for 4T bolts and lock nuts.						

Metric Torque Values (Dry)

	Class 7		Class 8.8		Class 10.9	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6			11	8.1	17	12.5
M8	29	21	35	26	41	30
M10	59	44	67	49	80	59
• Use 80% of the value when tightening part is aluminum.						
• Use 60% of the value for 4T bolts and lock nuts.						

Inch Fastener Torque Values (Lubricated)

	Grade 2[1]		Grade 5.x		Grade 8.x	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
1/4	6.1	4.5	9.5	7	13.6	10
5/16	12.2	9	20	15	28	21
3/8	22	16	35	26	49	36
7/16	35	26	56	41	79	58

1. “Grade 2” applies for hex cap screws (not hex bolts) up to 152mm (6 in.) long.

Inch Fastener Torque Values (Dry)

	Grade 2[1]		Grade 5.x		Grade 8.x	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
1/4	7.4	5.5	12	9	17	12.5
5/16	15	11	24	18	35	26
3/8	27	20	45	33	62	46
7/16	43	32	70	52	102	75

1. “Grade 2” applies for hex cap screws (not hex bolts) up to 152mm (6 in.) long.

Gasket Sealant Application

Cleaning:

Clean both surfaces that will be joined using 100% isopropyl alcohol. Wipe excess off with a clean cloth. Cleaner/degreaser can be substituted for isopropyl alcohol.

How to Dispense/Apply/Assemble Gasket Sealants:

Dispense approximately 1 to 2 ounces of flexible form-in-place gasket on a clean sheet or table top. Avoid using excess amounts that may be exposed for long periods of time. This will help prevent contamination from surrounding atmosphere such as dust with metal content.

Using an ink roller or similar devise, apply to one surface of the joint by loading the roller from a plastic sheet and transferring the material in a thin film to the joint. The application should be the thinnest film possible, but providing complete coverage. This can be judged by the appearance of the joint once it is put together. Excessive amounts of will cause incorrect bearing end play, extend cure time, and will cause runoff of the material. A small bead or buildup at the joint is permissible and indicates good dispersion through the joint. Excess can be wiped from the joint. Joining should take place within three minutes after sealant application.

Apply proper cap screw torque and sequence as applicable. Allow a minimum of 30 minutes before air test or adding oil for test stand usage.

Disassembly:

Cured material can be removed with a wire brush or scraper. Chemical cleaners are available for customer use, should they be deemed necessary.

General Information

2-Cycle Engines

Caution: Avoid Injury! Gasoline is HIGHLY FLAMMABLE, handle it with care. DO NOT refuel machine while:

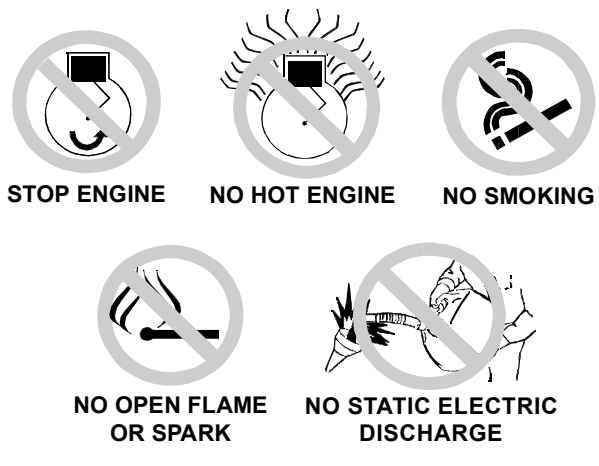
- **indoors, always fill gas tank outdoors;**
- **machine is near an open flame or sparks;**
- **engine is running, STOP engine;**
- **engine is hot, allow it to cool sufficiently first;**
- **smoking.**

Help prevent fires:

- **fill gas tank to bottom of filler neck only;**
- **be sure fill cap is tight after fueling;**
- **keep machine clean and in good repair-free of excess grease, oil, debris, and faulty or damaged parts;**
- **clean up any gas spills IMMEDIATELY;**
- **any storage of machines with gas left in tank should be in an area that is well ventilated to prevent possible igniting of fumes by an open flame or spark, this includes any appliance with a pilot light.**

To prevent fire or explosion caused by STATIC ELECTRIC DISCHARGE during fueling:

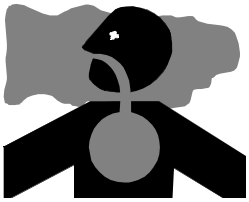
- **ONLY use a clean, approved POLYETHYLENE PLASTIC fuel container and funnel WITHOUT any metal screen or filter.**



To avoid engine damage:

Caution: Avoid Injury! California Proposition 65 Warning: Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Caution: Avoid Injury! DO NOT use METHANOL gasolines because METHANOL is harmful to the environment and to your health.



- **ONLY use fresh, clean, unleaded gasoline with an octane rating (anti-knock index) of 87 or higher.**
- Mix in John Deere Premium 2-Cycle Engine Oil or its equivalent using a 50:1 fuel/oil mixture (see 2-Cycle Gasoline Engine Oil in this section).
- If John Deere Premium 2-Cycle Engine Oil or its equivalent IS NOT being used, mix alternative 2-cycle engine oil to a 32:1 fuel/oil mixture (see 2-Cycle Gasoline Engine Oil in this section).

Use of alternative oxygenated, gasohol blended, unleaded gasoline is acceptable as long as:

- the ethyl or grain alcohol blends DO NOT exceed 10% by volume or
- methyl tertiary butyl ether (MTBE) blends DO NOT exceed 15% by volume.

Gasoline Storage

Important: Avoid Damage! Keep all dirt, scale, water or other foreign material out of gasoline.

Keep gasoline stored in a safe, protected area. Storage of gasoline in a clean, properly marked (“UNLEADED GASOLINE”) POLYETHYLENE PLASTIC container WITHOUT any metal screen or filter is recommended. DO NOT use de-icers to attempt to remove water from gasoline or depend on fuel filters to remove water from gasoline. Use a water separator installed in the storage tank outlet. BE SURE to properly discard unstable or contaminated gasoline. When storing machine or gasoline, it is recommended that you add **John Deere Gasoline Conditioner and Stabilizer (TY15977)** or an equivalent to the gasoline. BE SURE to follow directions on container and to properly discard empty container.

2-Cycle Gasoline Engine Oil

Note: John Deere fuel mix contains a fuel stabilizer and will stay fresh up to 30 days. Do not mix quantities larger than usable in a 30-day period.

This machine is powered by a 2-cycle engine and requires pre-mixing unleaded gasoline and 2-cycle engine oil. Premix the gasoline and engine oil thoroughly in a clean container approved for gasoline.

Use unleaded gasoline intended for automotive use with an octane rating of 87 or higher.

Important: Avoid Damage! Mix unleaded gasoline (87 or higher) and John Deere Premium 2-Cycle Engine Oil to a 50:1 ratio:)

- **50:1 ratio 3.8 L (1 U.S. gal) gasoline to 77 ml (2.6 oz) oil.**
- **50:1 ratio 4.5 L (1 Imperial gal) gasoline to 89 ml (3.0 oz) oil.**

If John Deere Premium 2-Cycle Engine Oil or its equivalent IS NOT being used mix unleaded gasoline (87 or higher) and alternative 2-cycle engine oil to a 32:1 ratio:

- **32:1 ratio 3.8 L (1 U.S. gal) gasoline to 119 ml (4.0 oz) oil.**
- **32:1 ratio 4.5 L (1 Imperial gal) gasoline to 142 ml (4.8 oz) oil.**

The engine on these models requires the use of John Deere Premium 2- Cycle Engine Oil.

The following John Deere oil is preferred:

- UP08138 (2.6 oz.)
- UP08140 (6.4 oz.)
- UP08127 (16 oz.)

This oil contains stabilizers. This oil meets and exceeds ISO L-EGD, JASO FC and API TC specifications.

The engine was designed to reach its optimal performance output, maximum endurance, and minimum preventive maintenance by using this oil.

Important: Avoid Damage! Do not use automotive oil, 2-cycle outboard oil or any 2-cycle oil that does not meet or exceed ISO L-EGD, JASO FC and API TC specifications.

Do not use pre-mixed gasoline from fuel service stations intended for use in mopeds, motorcycles, etc.

If John Deere Premium 2-Cycle Oil is not available at your dealership, use any brand of premium 2-cycle engine oil classified as grade ISO-L-EGD, or JASO-FC, or API TC.

Using any other oil will shorten the engine life and increase the required maintenance. The warranty might also be voided by using a lower quality oil.

Alternative Lubricants

Important: Avoid Damage! Use of alternative lubricants could cause reduced life of the component or void the warranty.

Conditions in certain geographical areas outside the United States and Canada may require different lubricant recommendations than the ones printed in this technical manual or the operator's manual. Consult with your John Deere Dealer, or Sales Branch, to obtain the alternative lubricant recommendations.

Synthetic Lubricants

Synthetic lubricants may be used in John Deere equipment if they meet the applicable performance requirements (industry classification and/or military specification) as shown in this manual.

The recommended air temperature limits and service or lubricant change intervals should be maintained as shown in the operator's manual, unless otherwise stated on lubricant label.

In general, avoid mixing different brands, grades or types of lubricants. Manufacturers blend additives in their lubricants to meet certain specifications and performance requirements. Mixing different lubricants can interfere with the proper functioning of these additives and lubricant properties which will downgrade their intended specified performance.

Mixing Of Lubricants

In general, avoid mixing different brands, grades or types of lubricants. Manufacturers blend additives in their lubricants to meet certain specifications and performance requirements. Mixing different lubricants can interfere with the proper functioning of these additives and lubricant properties which will downgrade their intended specified performance.

John Deere Dealers: You may want to cross-reference the following publications to recommend the proper oil filter for your customers:

- Module DX, FILT in JDS-G135;
- Section 540, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide;
- Lawn & Grounds Care Tune-Up Guide PI672.

Product Identification

Product Identification Number

When ordering parts or submitting a warranty claim, it is IMPORTANT that the machine product identification numbers and serial number are included. The identification is located on the housing near the air outlet.

MODEL: BP45LE or BP65LE

If you need to contact an Authorized Service Center for information on servicing, always provide the product model, serial number and UT number.

You should record the information in the spaces provided below.

DATE OF PURCHASE:

_____

DEALER NAME:

_____

DEALER PHONE:

_____

MODEL:

BP45LE or BP65LE_____

UT NUMBER:

UT 2 6 5 2 1 or UT 2 6 5 2 2_____

PRODUCT SERIAL NUMBER:

_____

BACKPACK BLOWERS TABLE OF CONTENTS

Backpack Blowers

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BACKPACK BLOWERS TABLE OF CONTENTS

BACKPACK BLOWERS SPECIFICATIONS

Specifications

Specifications

BP45LE:

Engine Type	Forced Air Cooled 2-Stroke Gasoline Engine
Cylinder Displacement	45.4 cc
Cylinder Bore	42.5 mm
Stroke	32 mm
Engine Idle rpm	2500-3000 rpm
Maximum Speed rpm	7500 rpm
Fuel Tank Capacity	1.5 L (3.2 US pints)
Weight (with tubes, without fuel)	9.5 kg (21 lb)

BP65LE:

Engine Type	Forced Air Cooled 2-Stroke Gasoline Engine
Cylinder Displacement	64.7 cc
Cylinder Bore	48.5 mm
Stroke	35 mm
Engine Idle rpm	2500-3000 rpm
Maximum Speed rpm	7000 rpm
Fuel Tank Capacity	2.0 L (4.2 US pints)
Weight (with tubes, without fuel)	9.7 kg (21.4 lb)

General Specifications:

Fuel / Oil Mixture - John Deere Premium 2-Cycle Engine Oil or equivalent	50 : 1
Ignition System	CDI
Starting System	Recoil Starter
Air Filter	Dry Type (Paper Element)
Spark Plug	NGK BPMR7A-9
Spark Plug Gap	0.85 mm (0.33 in.)
Ignition Coil Air Gap	0.3-0.5 mm (0.012-0.019 in.)

Engine Repair Specifications

Service Limits:

Cylinder Bore - BP45LE	43.5 mm (1.71 in.)
Cylinder Bore - BP65LE	48.6 mm (1.91 in.)
Piston / Cylinder Clearance	0.15 mm (0.0059 in.)
Piston Ring Groove Clearance - Top Ring	0.22 mm (0.0087 in.)
Piston Ring Groove Clearance - Second Ring	0.19 mm (0.0075 in.)
Piston Ring End Gap - Both Rings	0.7 mm (0.028 in.)

Tightening Torques

Specifications:

Carburetor/Air Cleaner Mounting Screws . . . . . 3.7 N•m (33 lb-in.)
Carburetor Insulator Mounting Screws (a). . . . . 3.7 N•m (33 lb-in.)
Carburetor Throttle Valve to Carburetor Body . . . . . 0.8 N•m (7 lb-in.)
Muffler Mounting Bolts . . . . . 7.9 N•m (70 lb-in.)
Muffler Stay Mounting Bolt . . . . . 3.7 N•m (33 lb-in.)
Spark Plug. . . . . 14 N•m (124 lb-in.)
Inner Engine Shroud Mounting Screw . . . . . 3.7 N•m (33 lb-in.)
Engine to Inner Blower Housing Screws . . . . . 4.8-6.9 N•m (43-61 lb-in.)
Blower Fan to Flywheel . . . . . 8.3-8.6 N•m (73-86 lb-in.)
Blower Housing Socket Head Screws (at elbow) . . . . . 2.9-4.4 N•m (26-39 lb-in.)
Cylinder Mounting Bolts . . . . . 3.7 N•m (33 lb-in.)
Cylinder Plate Screws . . . . . 2.2 N•m (19 lb-in.)
Recoil Starter Mounting Screws (a) . . . . . 2.2 N•m (19 lb-in.)
Ignition Coil Mounting Bolts . . . . . 2.2 N•m (19 lb-in.)
Flywheel Nut . . . . . .27 N•m (20 lb-ft)
Crankcase Screws/Bolts . . . . . 3.7 N•m (33 lb-in.)
Starting Pulley/Starting Pulley Nut . . . . . 8.8 N•m (78 lb-in.)

Blower Fan Mounting Screws (a) . . . . . 8.3-8.6 N•m (73-86 lb.-in.)

(a.) Use 242 LOCTITE® Thread Locking Compound

Other Materials

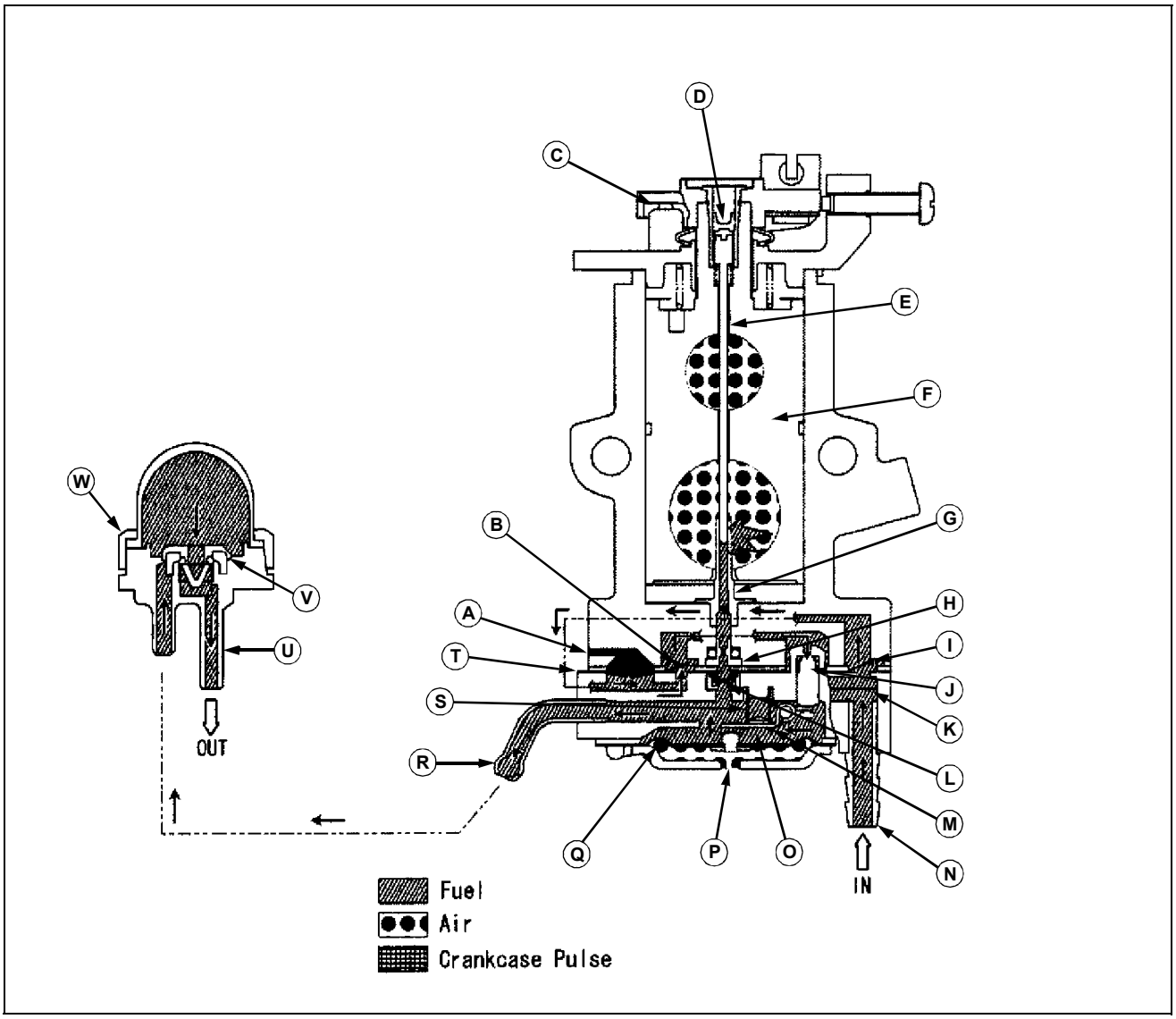
Other Material

Part No.	Part Name	Part Use
PM37418/ PM37477 LOCTITE 242	Thread Lock and Sealer (Medium Strength)	Nuts, Bolts and Screws, General Purpose
PM37421/ PM38654 LOCTITE 271	Thread Lock and Sealer (High Strength	High Strength Bolts and Studs
PM38652 LOCTITE 620	Loctite Retaining Compound (High Temperature)	Items located around exhaust system.
TY24810 or TY24811	Never-Seez Lubricant	Nuts and Bolts

LOCTITE® is a registered trademark of the LOCTITE Corp.

Theory of Operation

Carburetor and Fuel System



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A- Crankcase Pulse Passage
B- Outlet Check Valve
C- Lead Cam
D- Plug
E- Idle Needle Pin
F- Throttle Valve
G- Main Nozzle
H- Main Jet
I- Inlet Check Valve
J- Needle Valve
K- Inlet Screen
L- Main Check Valve
M- Control Lever
N- Fuel Inlet
O- Metering Chamber
P- Air Vent
Q- Main Diaphragm
R- Drain Fitting
S- Valve Spring
T- Fuel Pump Diaphragm
U- Overflow Pipe
V- Priming Pump Check
W- Priming Pump