

Bruksanvisning



MIKASA MVC-serien vibratorplattor

1 Generell information

1.1 Introduktion

Denna bruksanvisning måste finnas tillgänglig på arbetsplatsen, så att den alltid finns tillgänglig för konsultation. Bruksanvisningen bör ses som en del av maskinen och måste sparas under hela maskinens livslängd. Om den skadas eller tappas bort kan en kopia rekvideras från generalagenten eller tillverkaren. För att säkerställa användarens säkerhet, maskinens funktionalitet och en lång maskinlivslängd måste instruktionerna i bruksanvisningen respekteras och följas, gällande lagar och regler avseende arbetssäkerhet måste naturligtvis också följas. Använd alltid skyddshjälm, hörselskydd, skyddsglasögon, skyddshandskar och skor med stålhätta.

Var vid all kontakt, med generalagenten eller MIKASA SANGYO CO. LTD., rörande maskinen beredd att uppges följande:

1. Maskinmodell
2. Tillverkningsnummer
3. Motorfabrikat och -modell
4. Användningstid, antal arbetstimmar

1.2 Rekommendation

Vid framtagandet av denna bruksanvisning har hänsyn tagits till alla justeringar och underhålls-åtgärder som hör till normalt underhåll.

Vi rekommenderar att inga reparationer eller åtgärder som inte finns upptagna i denna bruksanvisning genomförs utan att först konsultera generalagenten eller MIKASA SANGYO CO. LTD..

Alla åtgärder som innebär att delar måste monteras loss får bara utföras av kvalificerade personer.

1.3 Användningsintroduktion

Läs före användning noggrant igenom denna bruksanvisning så att du förstår maskinen, dess användning och felindikationer.

Maskinen får endast användas för de i denna bruksanvisning specificerade och förutsedda

ändamålen. Modifiera inte maskinen och bruka inte våld mot den, använd den heller inte för andra syften än de angivna.

MIKASA SANGYO CO., LTD. avsäger sig allt ansvar i fall då hänsyn inte tagits till de lagar som reglerar användning av denna typ av utrustning, speciellt: felaktig användning, eftersatt underhåll, av tillverkaren icke godkänd modifiering, undlåtenhet att helt eller delvis följa instruktionerna i denna bruksanvisning.



Det är inte tillåtet att utföra någon form av modifikation på maskinen.

1.4 Identifikation

Maskinen är märkt med uppgifter på en svart- och silverfärgad maskinskylt.

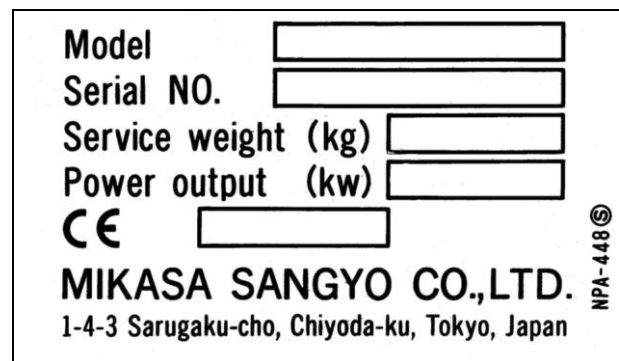


Fig. 1.1

Förklaring av beteckningarna på maskinskylden	
Model	Maskinmodell
Serial NO.	Tillverkningsnummer
Service weight	Vikt (kg)
Power output	Motorns effekt (kW)
CE	Tillverkningsår

1.5 Beskrivning

1.5.1 Tillämpning

Vibratorplattorna i MVC-serien är konstruerade och tillverkade av MIKASA SANGYO CO. LTD. för att användas vid packning av nylagd asfalt, grus, jord och liknande material. Vibratorplattan vibrerar underlaget så att det jämnas till och kompakteras. Kompaktionen sker genom att materialets porositet minskar då utrymmet mellan materialets partiklar minskar.

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Vibratorplattorna i MVC-serien är avsedda att användas för packningsarbeten vid t.ex. husbyggnation, vägbyggen och andra markarbeten. Exempel på tillämpningar är packning av underlag för t.ex. murar, gjutformar och fundament, för reparationsarbeten på gator, vägar och gångar och för markarbeten i parker och trädgårdar.

MIKASA SANGYO CO. LTD. fransäger sig allt ansvar för olyckor orsakade av felaktig användning av maskinen.

1.5.2 Konstruktion

MVC-seriens vibratorplattor är konstruerade så att en luftkyld bensinmotor vid ökat gaspådrag får en centrifugalkoppling att gripa in och via en kilrem överföra kraften från motorn till ett vibrationselement på maskinens bottenplatta. Vibrationselementet innehåller en kullagrad excenteraxel som när den roterar skapar vibrationer i bottenplattan. Vibrationerna ger i kombination med maskinens vikt en kompakterande kraft i bottenplattan.

1.5.3 Tekniska specifikationer

Tekniska data MVC-serien				
Modell	MVC-40HR	MVC-F60H VAS	MVC-F80 VAS	MVC-T90 VAS
Längd, inkl. handtag (mm)				
-utan vattentank	910	905	930	1050
- med vattentank	1025			
Bredd (mm)	295	350	450	500
Höjd, inkl. handtag (mm)	920	1000	1000	950
Bottenplattans dim.(LxB) (mm)	420x295	570x350	570x450	525x500
Vikt (kg) -utan vattentank	51			94
-med vattentank	57	78	90	104
Centrifugalkraft (kN)	7,2	10,1	13,7	15
Vibrationsfrekvens (Hz)	103	93	93	100
Ljudtrycksnivå, uppmätt (dB(A))	100	101	101	103
Hand och armvibrationer Ahv (m/s ²)	5,8	3,3	3,8	2,1
Arbets hastighet (m/min)	25			
Tillåten lutning (°)	~25	~25	~25	~25
Vattentankens volym (l)	9	11	13	13
Motormodell	GXR120UT	GX120	GX160	GX160
Kilrem	RPF3280	RPF3310	RPF3310	RPF3330
Olja i vibratorhus -typ	SAE 10W-30	SAE 10W-30	SAE 10W-30	SAE 10W-30
-mängd (l)	0,20	0,14	0,14	0,20

Tekniska data bensinmotorer				
Motormodell	GXR120	GX120	GX160	GX160
Fabrikat	Honda			
Effekt, maximal (kW)	2,3	2,6	3,6	3,6
Driftsvarvtal, motor (rpm)	3600	3600	3600	3600
Bränsletankens volym (l)	0,77	2,5	3,6	3,1
Bränsletyp	Blyfri bensin 95 oktan			
Oljemängd, vevhus (l)	0,40	0,60	0,60	0,63
Tändstift	NGK CR5-HSB	NGK BPR-6ES	NGK BPR-6ES	NGK BPR-6ES


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1.5.4 Ljudnivå

Ljudtrycksnivån är uppmätt i luften vid platsen för användarens öra (L_{PA}).

 **Långvarig exponering för ljudnivåer överskridande 85 dB(A) kan orsaka skador. Hörselskydd skall därför alltid användas.**

Ljudnivåmätning har utförts enligt 200014/EC vid packning av grus.

Värden för uppmätt ljudtrycksnivå står i tabell 1.5.3.

1.5.5 Hand och armvibrationer

Vibrationsvärde A_{hv} i m/s^2 för respektive modell står i tabell 1.5.3..

Anmärkning:

Vibrationsvärdet följer EU direktivet 2002/44/EC och värdet visas som ett tre-axligt min värde. Testbanan (gruskross) följer standarden EN500-4.

Ovanstående värden kan ändras om maskinen modifieras och/eller kraven ändras.

1.5.6 Designstandarder

MVC-serien är designad och tillverkad i enlighet med följande direktiv och standarder: 98/37/EC, 89/336/EEC, EN500-4, EN811 och EN349



CE-märket (EUROPEAN CONFORMITY) visar att maskinen är designad i överensstämmelse med EUs maskinbestämmelser och uppfyller direktiv: 98/37/CE.

1.6 Användning av denna bruksanvisning

Följande är en förklaring av de olika symboler som återfinns i denna bruksanvisning.

1.6.1 Information eller instruktion (◆)

Markerar information som är speciellt användbar för att säkerställa att maskinen fungerar på ett riktigt sätt. Används även vid risk för skador på maskin eller verktyg.

1.6.2 Säkerhetsvarning (Δ)

Varnar för situation som kan leda till kroppsskador för användaren eller tredje person.

1.6.3 Fara ()

Varnar för omedelbar fara eller potentiellt farlig situation som kan leda till kroppsskador eller död för användaren eller tredje person.

1.6.4 Referens till illustrationer

När texten refererar till en illustration, till exempel: "... (Fig.12.1-1)..." syftar -1 till den med 1 markerade delen av illustrationen 12.1. Vissa illustrationer finns i direkt anslutning till texten, andra återfinns på annan plats.

1.7 Generella säkerhetsanvisningar

Ha i åtanke att denna maskin är framtagen för att erbjuda både god prestanda och maximal säkerhet, men att det samtidigt är användaren som måste ta ansvar för säkerheten genom att, i alla delar av arbetet, uppvisa försiktighet och vidta nödvändiga åtgärder. Det är därför viktigt att kontrollera och säkerställa att:

1. **Ingen står framför maskinen då den är igång.**
2. **Allt arbete sker med skydden på plats och att skyddens funktion är bibehållen.**
3. **Maskinen hålls ren. Att hålla maskinen ren är en viktig säkerhetsfaktor.**
4. **Maskinen stängts av före rengöring eller borttagande av skydd (för underhåll eller byte av någon del).**
5. **Maskinen aldrig används på platser där det föreligger risk för brand eller explosion och heller aldrig i inomhus eller i underjordiska miljöer.**
6. **Belysningen är tillräcklig. Maskinen är konstruerad för att användas på arbetsplatser i dagsljus eller med artificiell belysning med en ljusstyrka om minst 500 Lux.**
7. **Användaren inte har ringar, klocka, armband eller slips. Erfarenhet visar att dessa och liknande objekt kan leda till skador. Se också till att kläderna hålls åtsittande så att inte t.ex. ärmar är lösa.**

- Håll långt hår uppsatt och använd rejäla skor med halksäker sula.
8. Skruvar, bultar och muttrar hålls åtdragna. med rätt åtdragningsmoment. Använd inte våld vid åtdragningen.
 9. Personlig skyddsutrustning i form av skyddsglasögon, handskar (i rätt storlek), hörselskydd (kåpa eller proppar) och hårnät (om så behövs) skall alltid används. I förekommande fall bör användaren dessutom vara försedd med skyddshjälm.
 10. Originalverktyg används.
 11. Händer och andra kroppsdelar hålls borta från maskinen när den är i drift. Se till att maskinen inte är igång då reparationer eller liknande åtgärder skall vidtas på maskinen.
 12. Endast kompetent personal (avseende kvalifikationer, ålder, träning och utbildning) som har läst bruksanvisningen, i detalj, arbetar med maskinen. Håll barn och djur borta från maskinen.
 13. Alla eventuella fel, av elektriskt eller av annat slag, måste kontrolleras av behörig person (elektriker, reparatör, auktoriserad handlare etc).
 14. Motorn stoppas före tankning eller oljepåfyllning.
 15. Tankning får endast ske i väl ventilerade utrymmen. Ha alltid i åtanke att bensin är extremt brandfarligt och kan explodera under vissa förhållanden.
 16. Eventuellt utspillt bränsle snarast åtgärdas.
 17. Tanklocket inte öppnas när motorn går eller är varm och ej heller i närheten av öppen eld, gnistalstrande apparat eller när någon röker.
 18. Ljuddämparen och andra varma delar inte berörs annat än då motorn är avstängd och har hunnit kallna.
 19. Allt arbete utförs lugnt och sansat. Olyckor och risker kan ofta undvikas genom gott omdöme och ett försiktigt handhavande.

1.8 Säkerhetskrav

MVC-serien är konstruerad i enlighet med gällande säkerhetsregler inom EU. Säkerhetskraven, enligt maskindirektiv 98/37, är ställda så att stor vikt läggs vid användarens säkerhet.

1.8.1 Skydd och säkerhetsanordningar






Maskinen är försedd med fasta skydd fixerade med bultar och skydd som förhindrar åtkomst av rörliga och farliga delar. Alla fasta skydd, kåpor och skärmar är konstruerade för att skydda användarna (underhållspersonal, tekniker, etc.) från skador orsakade av elektricitet och rörliga delar. Därför finns det inget skäl att använda maskinen om skydden har modifierats eller avlägsnats från den position för vilken de konstruerats.

△ Innan någon form av underhåll eller reparationer utförs på maskinen måste den vara avstängd. Tändhatten skall vara avlyft från tändstiftet för att förhindra ofrivillig start.

2 Användning


2.1 Lyft och transport

Då vibratorplattorna i MVC-serien är relativt tunga bör de lyftas på maskinell väg med t.ex. kran eller travers.




-  **Stäng av motorn innan maskinen lyfts.**
 - ◆ Dra åt tanklocket ordentligt och stäng bränslekranen för att förhindra bränsleläckage.
 - ◆ Töm motorn på bränsle inför långa transporter och då det finns risk för skakning, t.ex. på dåliga vägar.
 - ◆ Kontrollera att ingen del av maskinen är skadad eller sitter löst och att alla skruvar är åtdragna. Skydds- och lyftbågen samt vibrationsdämparnas infästning bör kontrolleras extra noga.
 - ◆ Lyft maskinen med hjälp av en lyftstropp som fixeras vid lyftbågen.
-  **Kontrollera att lyfthjälpmöden är avsedda och godkända för erforderlig vikt och lyftsätt.**
-  **Vid användning av ramper eller kajer är det viktigt att säkerställa att de förankrats riktigt på avsedda ställen.**
-  **Låt inga personer befinna sig i maskinens fallriktning eller på ställen där vederbörande riskerar att skadas av en maskin tappas vid lastning och lossning.**
 - ◆ Lyft inte onödigt högt.
-  **Vid transport på släp eller bilflak skall maskinen förankras väl så att den under inga omständigheter kan rulla, tippa eller tappas.**
- △ Om maskinen lyfts manuellt, var minst två om att lyfta den. Använd lyfthandtagen.

Vibratorplattorna i MVC-serien (ej MVC-40G samt MVC-50G) kan förses med hjultillsats (tillval). Med hjulens hjälp kan maskinen lätt förflyttas manuellt kortare sträckor.


2.2 Nödstopp

-  **Stoppa motorn genom att vrida motorströmbrytaren till läge "O" (Off).**
- △ Vid normal avstängning stoppas motorn genom att gasreglaget förs till sitt minläge, vrid motorströmbrytaren till läge "O" (Off) och stäng sedan bränslekranen (se motorns instruktionsbok)

2.3 Förberedelser inför start

1. Kontrollera att maskinen är rengjord. (Se 3.2 Rengöring).
 2. Kontrollera att ingen del av maskinen är skadad eller sitter löst och att alla skruvar är åtdragna.
 - △ Som en följd av maskinens vibrationer kan skruvar lossna och orsaka skador.
 3. Kontrollera oljenivån i motorn. (Se motorns instruktionsbok)
 4. Kontrollera att det inte är oljeläckage från vibratorm.
 5. Fyll bränsletanken med bensin (Se motorns instruktionsbok)
-  **Bensin är extremt brandfarligt och kan explodera under vissa förhållanden.**
 -  **Tanka endast i väl ventilerade utrymmen.**
 -  **Tanklocket får inte öppnas i närheten av öppen eld, gnistalstrande apparat eller när någon röker.**

2.4 Start av maskinen

-  **Var mycket försiktig vid start av motorn. När motorn startats börjar maskinen vibrera.**
- △ Läs även den separata instruktionsboken för motorn.
 1. Öppna bränslekranen.
 2. Stäng chokespjället. Om motorn är varm eller vid hög yttre temperatur, ställ chokereglaget på halvt eller helt öppet.
 3. För gasreglaget till ungefär halvgas.
 4. Vrid motorströmbrytaren till läge "I" (On).
 5. Starta genom att dra i starthandtaget på magnapullstarten. Dra först tills startmekanismen "greppar" därefter

kraftigt och snabbt. Följ med tillbaka med handtaget.

- ◆ Om handtaget släpps i utdraget läge kan magnapullstarten skadas.
- 6. När motorn startat, öppna choken gradvis.
- 7. Ställ gasreglaget på tomgång och låt sedan motorn gå på tomgång någon minut före belastning. Uppvärmning genom tomgångskörning är extra viktigt vid låg yttertemperatur.

2.5 Packning

1. Ställ motorn på fullgas genom att snabbt föra gasreglaget till fullgas. Vibratorn startas och maskinen börjar packa.
 - ◆ Bästa packningseffekt uppnås då motorn går på fullvarv.
 - ◆ Undvik att reglera gasreglaget långsamt. Maskinens centrifugalkoppling griper in vid ca 2300-2600 rpm och om motorn körs med varvtal nära detta intervall slirar kopplingen. Slirning leder till ökat slitage.
 - ◆ Lera och andra finkorniga material kan vara svårkörda, speciellt om vattenhalten är hög. Om maskinen går långsamt eller inte förflyttar sig alls kan lera ha fastnat under bottenplattan. Vänta då med att packa tills marken torkat upp.
 - ◆ Då maskinen körs på torrt material kan det damma. Att fukta marken något före packning brukar avhjälpa detta.
2. När packningen är klar, ställ motorn på tomgång genom att snabbt föra gasreglaget till tomgång. Vibratorn stoppas och maskinen slutar packa.
3. Låt motorn gå på tomgång några minuter före avstängning.
4. Stäng av maskinen genom att vrida motorströmbrytaren till läge "O" (Off).
5. Stäng bränslekranen.

3 Underhåll

3.1 Generellt underhåll

- ◆ Lämna aldrig maskinen oskyddad utomhus över natten. Se till att den förvaras i skydd undan svåra väderförhållanden.
- ◆ Använd alltid originalreservdelar.

3.2 Rengöring

Maskinen får **endast** rengöras då maskinen är avstängd.



Se till att motorn är avstängd och att motorströmbrytaren är i läge "O" (Off). Tändhatten skall vara avlyft från tändstiftet för att förhindra ofrivillig start.

- ◆ Rengör maskinen dagligen, efter avslutat arbete. Var extra noggrann med att rengöra bottenplattan, luftrenaren, filterinsatsen och området runt förgasaren. Se även motorns instruktionsbok.
- ◆ Använd inte rengöringsmedel eller smörjmedel som kan skada maskinen och de material den är gjord av.

3.3 Underhåll av transmission



Se till att motorn är avstängd och att motorströmbrytaren är i läge "O" (Off). Tändhatten skall vara avlyft från tändstiftet för att förhindra ofrivillig start.

3.3.1 Kontroll av kilrem och centrifugalkoppling

1. Ta loss remskyddet.
2. Kontrollera att kilremmen inte är skadad eller sliten. Om den är skadad eller sliten, byt enligt instruktionerna i 3.3.2 Byte av kilrem.
3. Kontrollera remspänningen. Remmen skall mellan remskivan och centrifugalkopplingen med handkraft gå att trycka inåt 10-15 mm.
 - ◆ För lös remspänning leder till dålig kraftöverföring och därmed sämre packning. Det förkortar även kilremmens livslängd.

4. Kontrollera centrifugalkopplingens utsida så att inga synliga skador eller förslitningar finns i remspåret. Rengör om nödvändigt.

3.3.2 Byte av kilrem

1. Ta loss remskyddet.
2. Sätt en svängd nyckel eller liknande vid den nedre remskivans fästbult.
3. Stoppa in en trasa eller annat tyg under kilremmen, på vänster sida uppe vid centrifugalkopplingen.
4. Vrid nyckeln medurs så att tyget kommer in mellan kilremmen och centrifugalkopplingen och får kilremmen att kränga av.
5. Sätt den nya kilremmen runt nedre remskivan.
- ◆ Välj alltid en kilrem med rätt längd och profil.
6. Lägg kilremmen mot centrifugalkopplingen på vänster sida.
7. Vrid nyckeln medurs så att kilremmen glider på centrifugalkopplingen.



Var noggrann vid byte av kilrem så att handen inte fastnar mellan kilremmen och remskivan eller centrifugalkopplingen. Använd alltid skyddshandskar.

3.3.3 Byte av centrifugalkoppling

Om centrifugalkopplingens belägg är slitna slirar kopplingen och kraftöverföringen fungerar då inte riktigt. Om beläggen är slitna eller centrifugalkopplingen skadad behöver den bytas.

1. Tag loss remmen enligt 3.3.2 Byte av kilrem
2. Lösgör centrifugalkopplingens fästbult från motoraxeln med hjälp av en förlängd nyckel och t.ex. en gummiklubba. Bulten lossas moturs.
3. Dra loss centrifugalkopplingen med en avdragare.
4. Pressa på den nya kopplingen på motoraxeln.

5. Dra åt fästbulten ordentligt med hjälp av t.ex. förlängd nyckel och gummiklubba.

3.4 Kontroll och byte av vibratorolja

1. Kontrollera att maskinen står på plant underlag och inte lutar.
2. Kontrollera att det är rent runt vibratorns oljeplugg och rengör om nödvändigt.
- ◆ Oljepluggen är rödmålad och belägen i anslutning till vibratorn.
- ◆ Om det kommer in smuts i vibratorn finns stor risk att lagren i vibratorn skär.
3. Lossa oljepluggen.
4. Kontrollera att oljenivån är riktig. Oljan skall nå upp till kanten, så att den nästan rinner över.
5. Fyll om nödvändigt på med ny olja. Använd motorolja SAE10W-30.
6. Sätt tillbaka oljepluggen. Var noga med att se till att ingen smuts kommer in i vibratorn och att pluggen inte är smutsig.
7. Dra åt pluggen ordentligt.
- ◆ Byt vibratorolja regelbundet. Töm vibratorn genom att lossa på oljepluggen och vinkla maskinen genom att stoppa under något på bottenplattans motsatta sida. Samla upp oljan i ett kärl och se till att den omhändertas enligt gällande lagstiftning.


3.5 Omhändertagande av restprodukter

Vid omhändertagande av restprodukter producerade av maskinen måste gällande lagstiftning beaktas.

3.6 Reparationer

Reservdelarna vid mekaniska reparationer måste vara originaldelar från MIKASA SANGYO CO. LTD och de får inte modifieras på något sätt.

3.7 Underhållsschema

 **VARNING!!!** Underhållsåtgärder får bara ske då motorn är avstängd och motorströmbrytaren är i läge "O" (Off). Tändhatten skall vara avlyft från tändstiftet för att förhindra ofrivillig start.

Åtgärd	8 h (dagligen)	Första 20 h	50 h	100 h	200 h	300 h	500 h
Rengöring av maskin (3.2)	A						
Kontroll och åtdragning av bultar	A						
Kontroll av ev. skadade eller lösa delar.	A						
Kontroll av motoroljenivå (M)	A						
Byte av motorolja (M)		A	R	H			
Läckagekontroll vibrator	A						
Kontroll av vibratoroljenivå (3.4)				A			
Byte av vibratorolja (3.4)					A		
Kontroll av luftrenare (M)	A						
Rengöring av filterinsats (M)			A ¹				
Kontroll av kilrem (3.3)					A		
Rengöring av bensinfilter (M)				H	R		
Rengöring/justering av tändstift (M)				H	R		
Rengöring av gnistsläckare (M)				H			
Kontroll/justering av ventilspel (M)						H ²	R ³
Rengöring av bränsletank (M)						H ²	
Kontroll och ev byte av bränsleslang (M)	Vartannat år						

M= Se instruktionsbok för motorn.

A= Alla modeller

H= Modeller med Honda-motor

R= Modeller med Robin-motor

1) Oftare om omgivningen varit smutsig

2) Åtgärdas av Hondaåterförsäljare. Får endast utföras om kunskap och erforderliga verktyg finns.

3) Åtgärdas av Robinåterförsäljare. Får endast utföras om kunskap och erforderliga verktyg finns.

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192 06 Sollentuna	Sollentuna					

INTRODUCTION

Thank you for purchasing a Honda engine! We want to help you to get the best results from your new engine and to operate it safely. This manual contains information on how to do that; please read it carefully before operating the engine. If a problem should arise, or if you have any questions about your engine, consult an authorized Honda servicing dealer.

All information in this publication is based on the latest product information available at the time of printing. Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.


This manual should be considered a permanent part of the engine and should remain with the engine if resold.

Review the instructions provided with the equipment powered by this engine for any additional information regarding engine startup, shutdown, operation, adjustments or any special maintenance instructions.




United States, Puerto Rico, and U.S. Virgin Islands:
We suggest you read the warranty policy to fully understand its coverage and your responsibilities of ownership. The warranty policy is a separate document that should have been given to you by your dealer.

SAFETY MESSAGES

Your safety and the safety of others are very important. We have provided important safety messages in this manual and on the engine. Please read these messages carefully.

A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety alert symbol  and one of three words, DANGER, WARNING, or CAUTION.

These signal words mean:


 DANGER	You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
 WARNING	You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
 CAUTION	You CAN be HURT if you don't follow instructions.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

DAMAGE PREVENTION MESSAGES

You will also see other important messages that are preceded by the word NOTICE.

This word means:

 NOTICE	Your engine, other property, or the environment can be damaged if you do not follow instructions.
---	---

This entire book is filled with important safety information –please read it carefully.

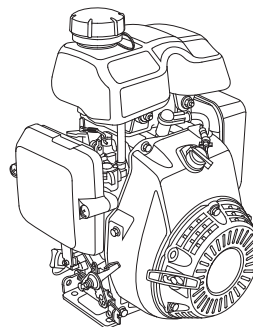
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37ZDJ601
00X37-ZDJ-6010

GXR120

HONDA

OWNER'S MANUAL MANUEL DE L'UTILISATEUR MANUAL DEL PROPIETARIO GXR120



WARNING:



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

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ENGLISH

FRANÇAIS

ESPAÑOL



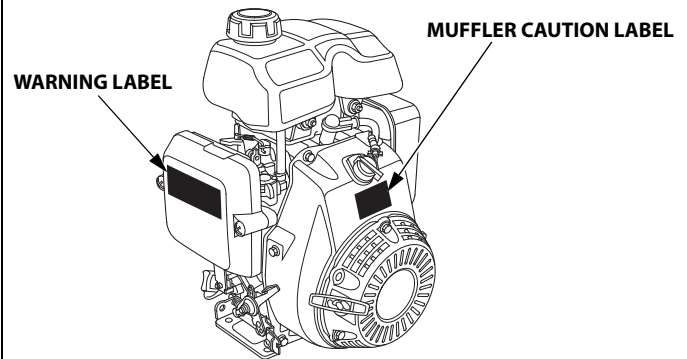
SAFETY INFORMATION

- Understand the operation of all controls and learn how to stop the engine quickly in case of emergency. Make sure the operator receives adequate instruction before operating the equipment.
- Do not allow children to operate the engine. Keep children and pets away from the area of operation.
- Your engine's exhaust contains poisonous carbon monoxide. Do not run the engine without adequate ventilation, and never run the engine indoors.
- The engine and exhaust become very hot during operation. Keep the engine at least 1 meter (3 feet) away from buildings and other equipment during operation. Keep flammable materials away, and do not place anything on the engine while it is running.

SAFETY LABEL LOCATION

This label warns you of potential hazards that can cause serious injury. Read it carefully.

If the label comes off or becomes hard to read, contact your servicing dealer for replacement.



WARNING LABEL	For EU	Except EU
<p>Honda Motor Co., Ltd.</p>	attached to product	supplied with product
<p>▲ WARNING Gasoline is highly flammable and explosive. Turn engine off and let cool before refueling. The engine emits toxic carbon monoxide. Do not run in an enclosed area. Read Owner's Manual before operation. Honda Motor Co., Ltd.</p>	supplied with product	attached to product
<p>▲ ATTENTION L'essence est très inflammable et explosive. Arrêter le moteur et le laisser refroidir avant de faire le plein d'essence. Le moteur produit les vapeurs nocives de monoxyde de carbone. Ne pas utiliser dans un local clos. Lire le manuel de propriétaire avant l'utilisation. Honda Motor Co., Ltd.</p>	supplied with product	supplied with product
MUFFLER CAUTION LABEL	For EU	Except EU
	not included	supplied with product
<p>▲ CAUTION HOT MUFFLER CAN BURN YOU. Stay away if engine has been running.</p>	supplied with product	attached to product
<p>▲ ATTENTION L'ÉCHAPPEMENT CHAUD PEUT VOUS BRÛLER. S'ÉLOIGNER QUAND LE MOTEUR FONCTIONNE.</p>	supplied with product	supplied with product



Gasoline is highly flammable and explosive. Stop the engine and let cool before refueling.



The engine emits toxic poisonous carbon monoxide gas. Do not run in an enclosed area.

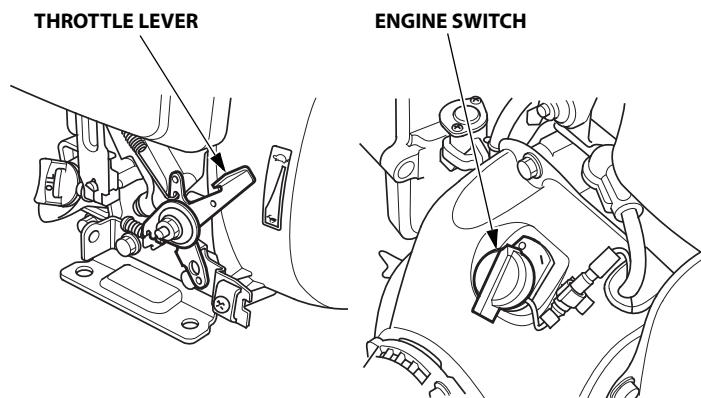
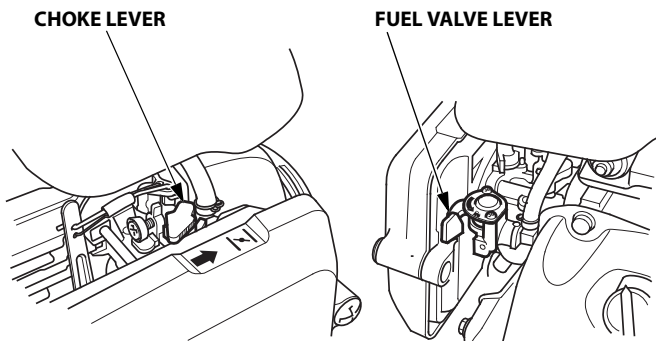
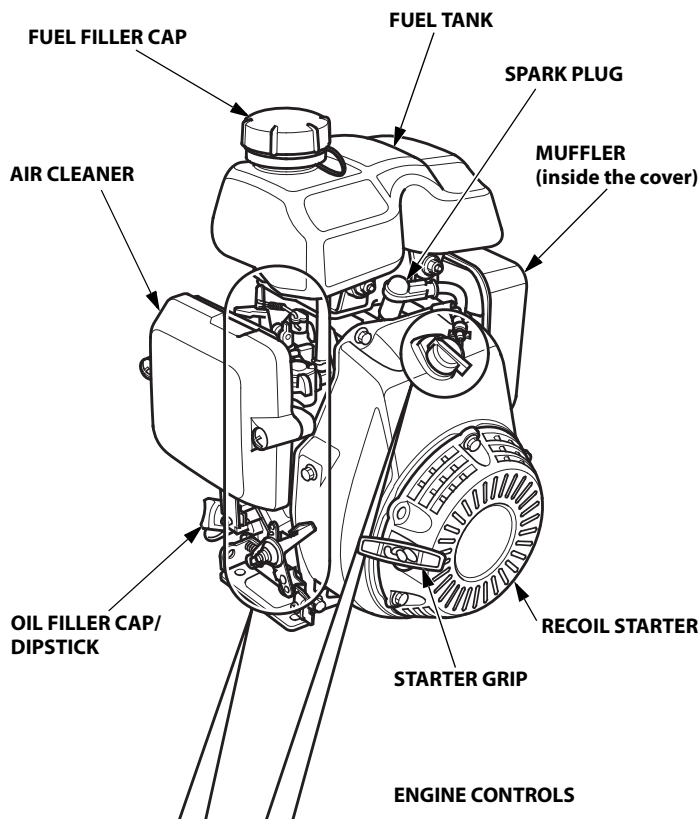


Read Owner's Manual before operation.



Hot muffler can burn you. Stay away if engine has been running.

COMPONENT & CONTROL LOCATIONS



FEATURES

Oil Alert® System (applicable types)

“Oil Alert is a registered trademark in the United States”

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert system will automatically stop the engine (the engine switch will remain in the ON position).

If the engine stops and will not restart, check the engine oil level (see page 8) before troubleshooting in other areas.

BEFORE OPERATION CHECKS

IS YOUR ENGINE READY TO GO?

For your safety, to ensure compliance with environmental regulations, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition. Be sure to take care of any problem you find, or have your servicing dealer correct it, before you operate the engine.

⚠ WARNING

Failure to properly maintain this engine, or failing to correct a problem before operation, could result in a significant malfunction.

Some malfunctions can cause serious injuries or death.

Always perform a pre-operation inspection before each operation and correct any problems.

Before beginning your pre-operation checks, be sure the engine is level and the engine switch is in the OFF position.

Always check the following items before you start the engine:

Check the General Condition of the Engine

1. Look around and underneath the engine for signs of oil or gasoline leaks.
2. Remove any excessive dirt or debris, especially around the muffler and recoil starter.
3. Look for signs of damage.
4. Check that all shields and covers are in place, and all nuts, bolts, and screws are tightened.

Check the Engine

1. Check the fuel level (see page 7). Starting with a full tank will help to eliminate or reduce operating interruptions for refueling.
2. Check the engine oil level (see page 8). Running the engine with a low oil level can cause engine damage.

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below safe limits. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.

3. Check the air filter element (see page 9). A dirty air filter element will restrict air flow to the carburetor, reducing engine performance.
4. Check the equipment powered by this engine.

Review the instructions provided with the equipment powered by this engine for any precautions and procedures that should be followed before engine startup.

OPERATION

SAFE OPERATING PRECAUTIONS

Before operating the engine for the first time, please review the *SAFETY INFORMATION* section on page 2 and the *BEFORE OPERATION CHECKS* on page 4.

Carbon Monoxide Hazards

For your safety, do not operate the engine in an enclosed area such as a garage. Your engine's exhaust contains poisonous carbon monoxide gas that can collect rapidly in an enclosed area and cause illness or death.

⚠ WARNING

Exhaust contains poisonous carbon monoxide gas that can build up to dangerous levels in closed areas.

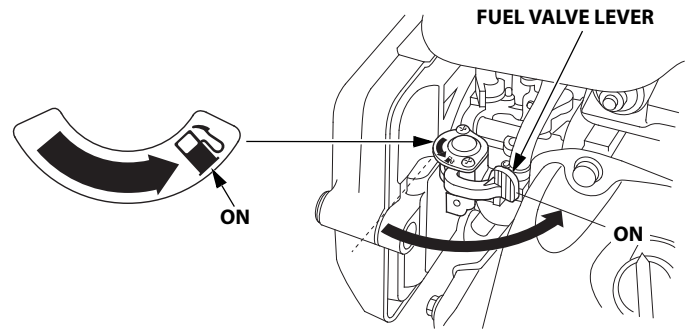
Breathing carbon monoxide can cause unconsciousness or death.

Never run the engine in a closed, or even partly closed area.

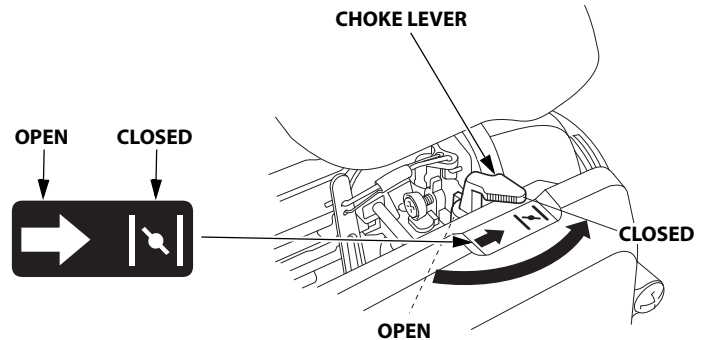
Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed with engine startup, shutdown or operation.

STARTING THE ENGINE

1. Move the fuel valve lever to the ON position.

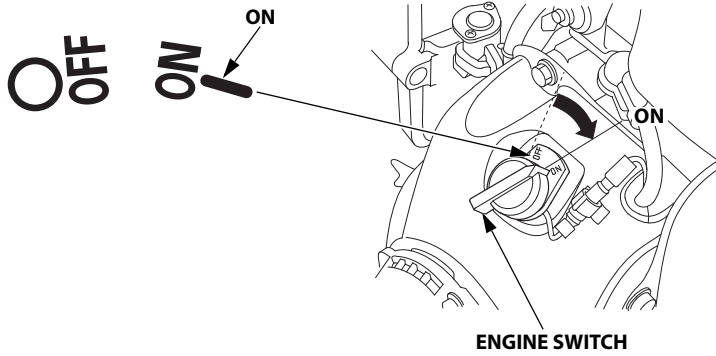


2. To start a cold engine, move the choke lever to the CLOSED position.

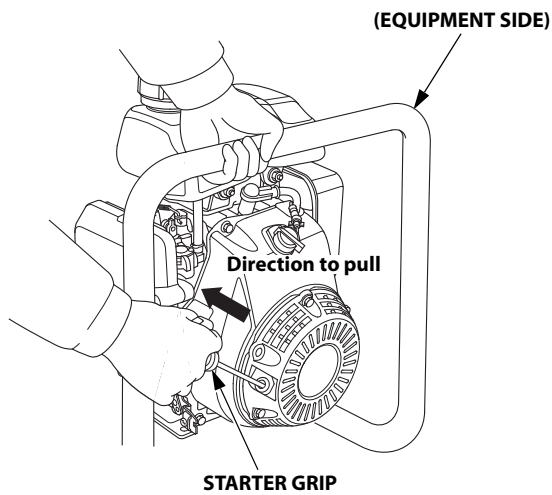


To restart a warm engine, leave the choke lever in the OPEN position.

- Turn the engine switch to the ON position.



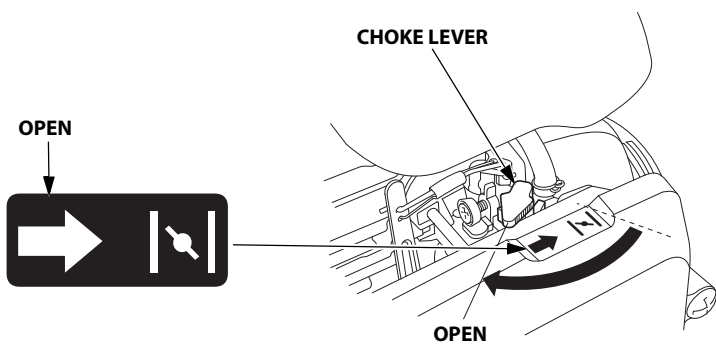
- Pull the starter grip lightly until you feel resistance, then pull briskly in the direction of the arrow as shown below. Return the starter grip gently.



NOTICE

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

- If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms up.

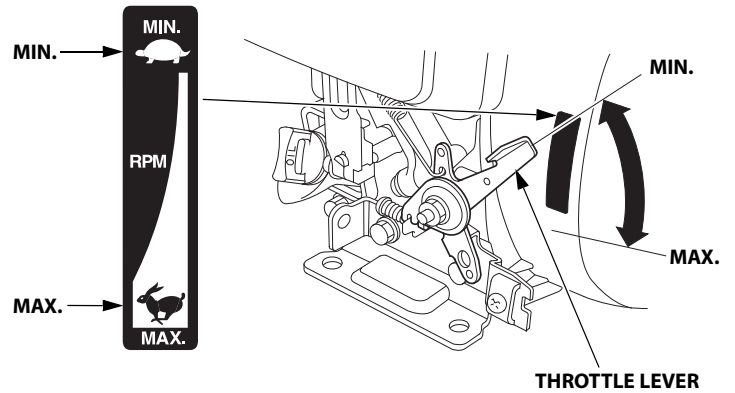


SETTING ENGINE SPEED

Position the throttle lever for the desired engine speed.

Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever shown here.

For engine speed recommendations, refer to the instructions provided with the equipment powered by this engine.

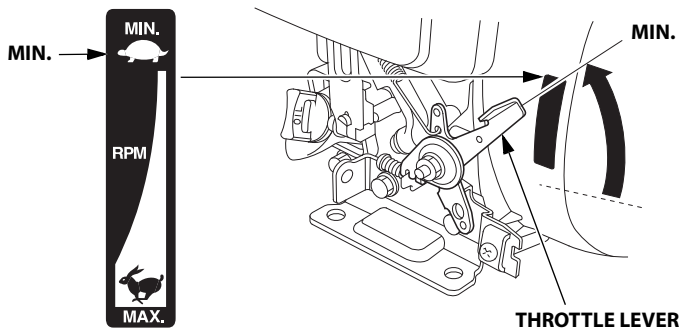


STOPPING THE ENGINE

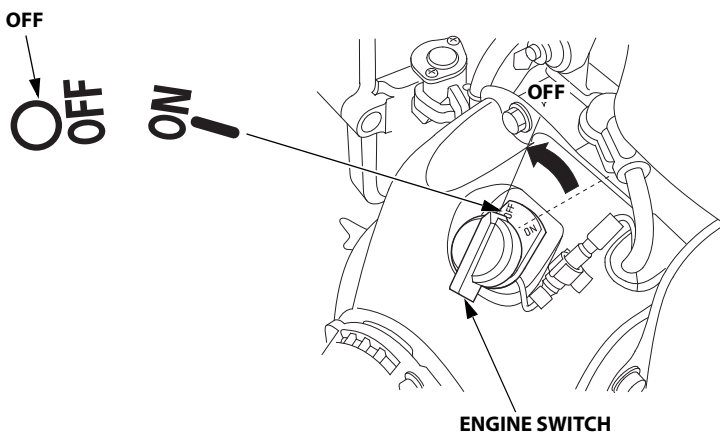
To stop the engine in an emergency, simply turn the engine switch to the OFF position. Under normal conditions, use the following procedure.

1. Move the throttle lever to the MIN. position.

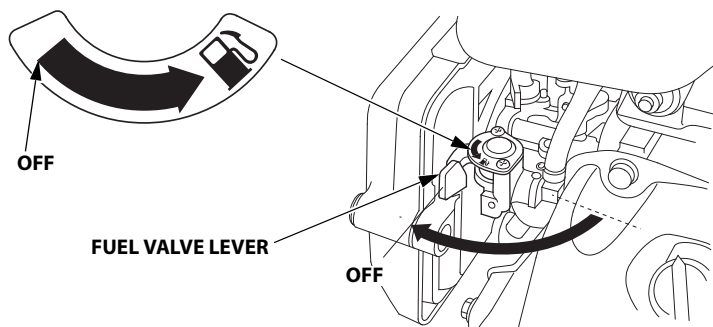
Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever shown here.



2. Turn the engine switch to the OFF position.



3. Turn the fuel valve lever to the OFF position.



SERVICING YOUR ENGINE

THE IMPORTANCE OF MAINTENANCE

Good maintenance is essential for safe, economical and trouble-free operation. It will also help reduce pollution.

⚠ WARNING

Failure to properly maintain this engine, or failing to correct a problem before operation, could result in a significant malfunction.

Some malfunctions can cause serious injuries or death.

Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a Honda technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your engine under severe conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your Honda servicing dealer for recommendations applicable to your individual needs and use.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any engine repair establishment or individual, using parts that are "certified" to EPA standards.

MAINTENANCE SAFETY

Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Improper maintenance can cause an unsafe condition.

Failure to properly follow maintenance instructions and precautions can cause serious injuries or death.

Always follow the procedures and precautions in this owner's manual.

SAFETY PRECAUTIONS

- Make sure the engine is off before you begin any maintenance or repairs. To prevent unintentional startup, disconnect the spark plug cap. This will eliminate several potential hazards:
 - **Carbon monoxide poisoning from engine exhaust.**
Operate outside, away from open windows or doors.
 - **Burns from hot parts.**
Let the engine and exhaust system cool before touching.
 - **Injury from moving parts.**
Do not run the engine unless instructed to do so.
- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a non-flammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks and flames away from all fuel related parts.

Remember that an authorized Honda servicing dealer knows your engine best and is fully equipped to maintain and repair it.

To ensure the best quality and reliability, use only new Honda Genuine parts or their equivalents for repair and replacement.

MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3) Perform at every indicated month or operating hour interval, whichever comes first.		Each use	First month or 20 hrs.	Every 3 months or 50 hrs.	Every 6 months or 100 hrs.	Every year or 300 hrs.	Refer to page
ITEM	Engine oil	Check level	o				8
		Change		o	o		
Air cleaner	Check	o					9
	Clean			o (1)			
	Replace					o (1)	
Spark plug	Check-adjust				o		10
	Replace					o	
Timing belt	Check	After every 500 hrs. (2) (4)					Shop manual
Spark arrester (applicable types)	Clean				o (5)		10
Idle speed	Check-adjust					o (2)	Shop manual
Valve clearance	Check-adjust					o (2)	Shop manual
Combustion chamber	Clean	After every 500 hrs. (2)					Shop manual
Fuel tank & filter	Clean				o (2)		Shop manual
Fuel tube	Check	Every 2 years (Replace if necessary) (2)					Shop manual

- (1) Service more frequently when used in dusty areas.
- (2) These items should be serviced by your servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.
- (3) For commercial use, log hours of operation to determine proper maintenance intervals.
- (4) Check that there is no crack and abnormal wear-out in the belt, and replace if it is abnormal.
- (5) In Europe and other countries where the machinery directive 2006/42/EC is enforced, this cleaning should be done by your servicing dealer.

Failure to follow this maintenance schedule could result in non-warrantable failures.

REFUELING

Recommended Fuel

Unleaded gasoline		
U.S.	Pump octane rating 86 or higher	
Except U.S.	Research octane rating 91 or higher	
	Pump octane rating 86 or higher	

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher (a research octane rating of 91 or higher). Refuel in a well ventilated area with the engine stopped. If the engine has been running, allow it to cool first. Never refuel the engine inside a building where gasoline fumes may reach flames or sparks.

You may use unleaded gasoline containing no more than 10% ethanol (E10) or 5% methanol by volume. In addition, methanol must contain cosolvents and corrosion inhibitors. Use of fuels with content of ethanol or methanol greater than shown above may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of the fuel system. Engine damage or performance problems that result from using a fuel with percentages of ethanol or methanol greater than shown above are not covered under the Warranty.

If your equipment will be used on an infrequent or intermittent basis, please refer to the "Fuel" section of the "STORING YOUR ENGINE" chapter (see page 11) for additional information regarding fuel deterioration.

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

⚠ WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when handling fuel.

- Stop the engine and let it cool before handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Keep away from your vehicle.
- Wipe up spills immediately.

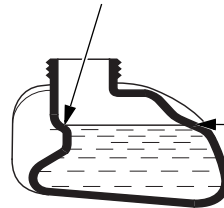
NOTICE

Fuel can damage paint and some types of plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under the Distributor's Limited Warranty.

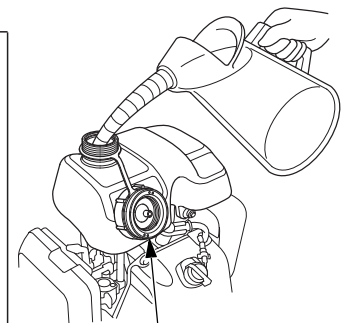
Never use gasoline that is stale, contaminated, or mixed with oil. Avoid getting dirt or water in the fuel tank.

1. With the engine stopped and on a level surface, remove the fuel filler cap and check the fuel level. Refill the tank if the fuel level is low.
2. Add fuel to the bottom of the fuel level mark of the fuel tank. Do not overfill. Wipe up spilled fuel before starting the engine.

FUEL LEVEL MARK



MAXIMUM FUEL LEVEL



FUEL FILLER CAP

- Refuel carefully to avoid spilling fuel. Do not fill the fuel tank completely. It may be necessary to lower the fuel level depending on operating conditions. After refueling, tighten the fuel filler cap securely.

Keep gasoline away from appliance pilot lights, barbecues, electric appliances, power tools, etc.

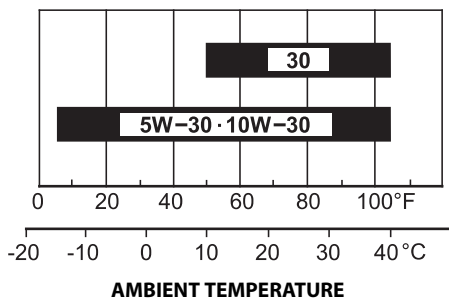
Spilled fuel is not only a fire hazard, it causes environmental damage. Wipe up spills immediately.

ENGINE OIL

Oil is a major factor affecting performance and service life. Use 4-stroke automotive detergent oil.

Recommended Oil

Use 4-stroke motor oil that meets or exceeds the requirements for API service category SJ or later (or equivalent). Always check the API service label on the oil container to be sure it includes the letters SJ or later (or equivalent).



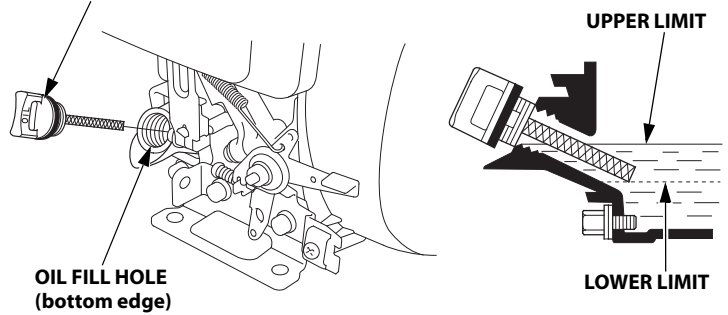
SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

Oil Level Check

Check the engine oil level with the engine stopped and in a level position.

- Remove the oil filler cap/dipstick and wipe it clean.
- Insert the oil filler cap/dipstick into the oil filler neck as shown, but do not screw it in, then remove it to check the oil level.
- If the oil level is near or below the lower limit mark on the dipstick, fill with the recommended oil (see page 8) to the upper limit mark (bottom edge of the oil fill hole). Do not overfill.
- Reinstall the oil filler cap/dipstick.

OIL FILLER CAP/DIPSTICK



NOTICE

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the Distributor's Limited Warranty.

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.

Oil Change

Drain the used oil when the engine is warm. Warm oil drains quickly and completely.

- Place a suitable container below the engine to catch the used oil, then remove the oil filler cap/dipstick, oil drain plug and sealing washer.
- Allow the used oil to drain completely, then reinstall the oil drain plug and a new sealing washer, and tighten the oil drain plug securely.

TORQUE: 18 N·m (13 lbf·ft, 1.8 kgf·m)

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash, pour it on the ground, or pour it down a drain.

- With the engine in a level position, fill with the recommended oil (see page 7) to the upper limit mark (bottom edge of the oil fill hole).

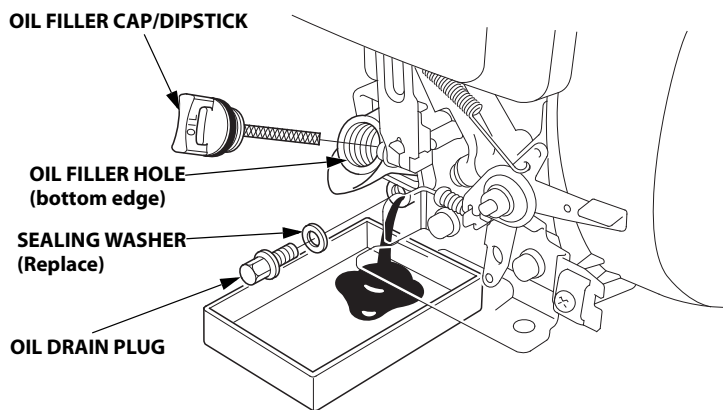
NOTICE

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the Distributor's Limited Warranty.

Engine oil capacity: 0.40 L (14 US oz, 0.35 Imp qt)

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, fill to the upper limit, and check the oil level regularly.

4. Install the oil filler cap/dipstick and tighten securely.



AIR CLEANER

A dirty air cleaner will restrict air flow to the carburetor, reducing engine performance. If you operate the engine in very dusty areas, clean the air filter more often than specified in the MAINTENANCE SCHEDULE.

NOTICE

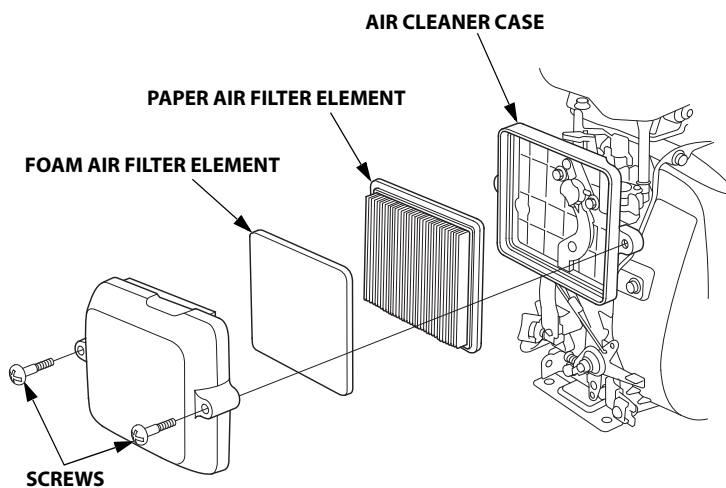
Operating the engine without an air filter element, or with a damaged air filter element, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by the Distributor's Limited Warranty.

Inspection

Remove the two screws and the air cleaner cover. Inspect the air filter elements. Clean or replace dirty air filter elements. Always replace damaged air filter elements.

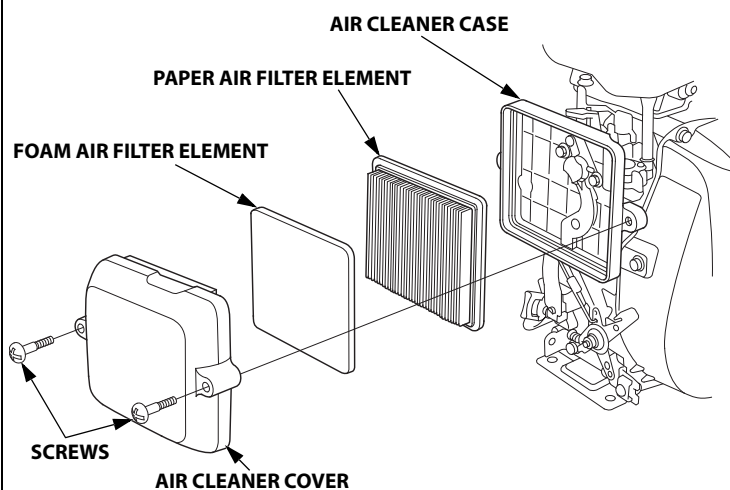
Refer to page 9 for instructions that apply to the air cleaner and filter service.

Reinstall the air filter elements and air cleaner cover.



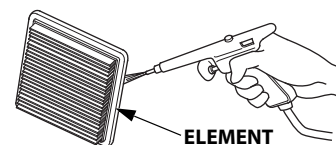
Cleaning

1. Remove two screws from the air cleaner cover, and remove the cover.
2. Remove the foam air filter element from the cover.
3. Remove the paper air filter element from the air cleaner case.



4. Inspect both air filter elements, and replace them if they are damaged. Always replace the paper air filter element at the scheduled interval (see page 7).
5. Clean the air filter elements if they are to be reused.

Paper air filter element: Tap the paper air filter element several times on a hard surface to remove dirt, or blow compressed air [not exceeding 207 kPa (2.1 kgf/cm², 30 psi)] through the filter element from the air cleaner case side. Never try to brush off dirt; brushing will force dirt into the fibers. Replace the paper air filter element if it is excessively dirty.



Foam air filter element: Clean in warm soapy water, rinse, and allow to dry thoroughly. Or clean in non-flammable solvent and allow to dry. Do not put oil on the foam air filter element.

6. Wipe dirt from the inside of the air cleaner case and cover using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
7. Place the foam air filter element to the air cleaner cover, then reinstall the paper air filter element and cover to the air cleaner case.
8. Install the air cleaner cover, and tighten the two screws securely.

SPARK PLUG

Recommended Spark Plugs: CR5HSB (NGK)
U16FSR-UB (DENSO)

The recommended spark plug has the correct heat range for normal engine operating temperatures.

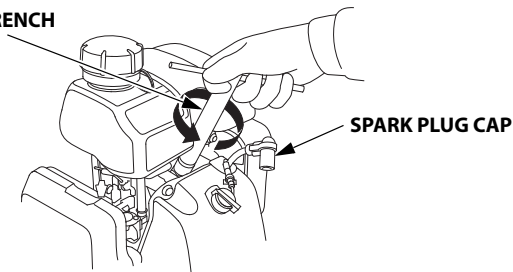
NOTICE

An incorrect spark plug can cause engine damage.

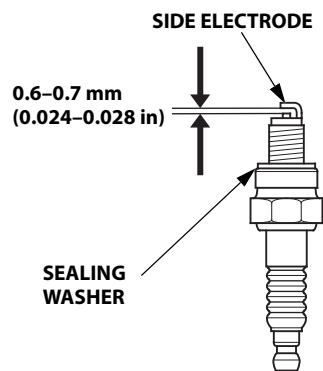
For good performance, the spark plug must be properly gapped and free of deposits.

1. Disconnect the spark plug cap, and remove any dirt from around the spark plug area.
2. Remove the spark plug with a 5/8-inch spark plug wrench.

SPARK PLUG WRENCH



3. Inspect the spark plug. Replace it if damaged or badly fouled, if the sealing washer is in poor condition, or if the electrode is worn.



4. Measure the spark plug electrode gap with a wire-type feeler gauge. Correct the gap, if necessary, by carefully bending the side electrode. The gap should be: 0.6-0.7 mm (0.024-0.028 in)
5. Install the spark plug carefully, by hand, to avoid cross-threading.
6. After the spark plug is seated, tighten with a 5/8-inch spark plug wrench to compress the sealing washer.
7. When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer.
8. When reinstalling a used spark plug, tighten 1/8-1/4 turn after the spark plug seats to compress the washer.

TORQUE: 12 N·m (9 lbf·ft, 1.2 kgf·m)

NOTICE

A loose spark plug can overheat and damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.

9. Attach the spark plug cap to the spark plug.

SPARK ARRESTER (optional equipment)

In Europe and other countries where the machinery directive 2006/42/EC is enforced, this cleaning should be done by your servicing dealer.

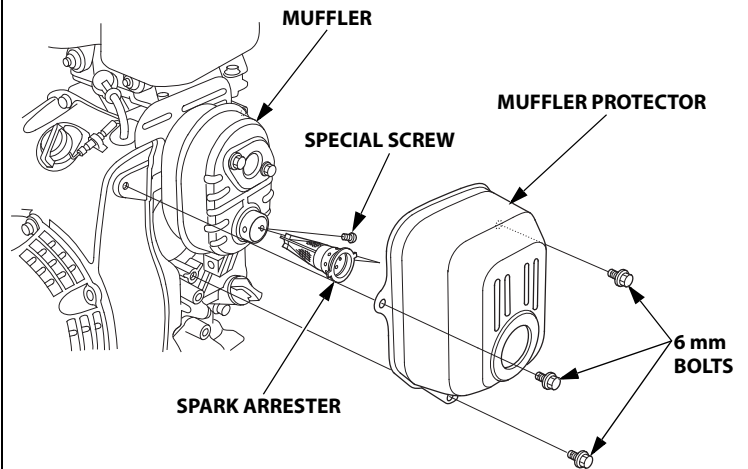
Your engine is not factory-equipped with a spark arrester. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. A spark arrester is available from authorized Honda servicing dealers.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

If the engine has been running, the muffler will be hot. Allow it to cool before servicing the spark arrester.

Spark Arrester Removal

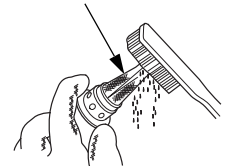
1. Remove the three 6 mm bolts from the muffler protector, and remove the muffler protector.
2. Remove the special screw from the spark arrester, and remove the spark arrester from the muffler.



Spark Arrester Cleaning & Inspection

1. Use a brush to remove carbon deposits from the spark arrester screen. Be careful not to damage the screen. Replace the spark arrester if it has breaks or holes.
2. Install the spark arrester and muffler protector in the reverse order of disassembly.

SPARK ARRESTER SCREEN



HELPFUL TIPS & SUGGESTIONS

STORING YOUR ENGINE

Storage Preparation

Proper storage preparation is essential for keeping your engine trouble-free and looking good. The following steps will help to keep rust and corrosion from impairing your engine's function and appearance, and will make the engine easier to start when you use it again.

Cleaning

If the engine has been running, allow it to cool for at least half an hour before cleaning. Clean all exterior surfaces, touch up any damaged paint, and coat other areas that may rust with a light film of oil.

NOTICE

Using a garden hose or pressure washing equipment can force water into the air cleaner or muffler opening. Water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder, causing damage.

Fuel

NOTICE

Depending on the region where you operate your equipment, fuel formulations may deteriorate and oxidize rapidly. Fuel deterioration and oxidation can occur in as little as 30 days and may cause damage to the carburetor and/or fuel system. Please check with your servicing dealer for local storage recommendations.

Gasoline will oxidize and deteriorate in storage. Deteriorated gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in your engine deteriorates during storage, you may need to have the carburetor and other fuel system components serviced or replaced.

The length of time that gasoline can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, your storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Fuel deterioration problems may occur within a few months, or even less if the gasoline was not fresh when you filled the fuel tank.

Fuel system damage or engine performance problems resulting from neglected storage preparation are not covered under the *Distributor's Limited Warranty*.

You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

Adding a Gasoline Stabilizer to Extend Fuel Storage Life

When adding a gasoline stabilizer, fill the fuel tank with fresh gasoline. If only partially filled, air in the tank will promote fuel deterioration during storage. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline.

1. Add gasoline stabilizer following the manufacturer's instructions.
2. After adding a gasoline stabilizer, run the engine outdoors for 10 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
3. Stop the engine.

Draining the Fuel Tank and Carburetor

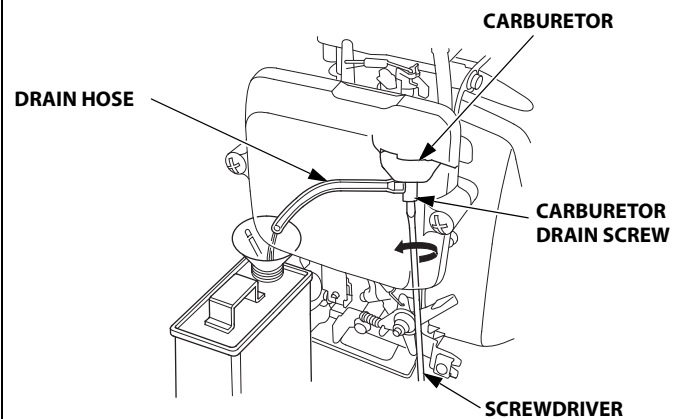
⚠ WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when handling fuel.

- Stop the engine and let it cool before handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Keep away from your vehicle.
- Wipe up spills immediately.

1. Place an approved gasoline container below the carburetor, and use a funnel to avoid spilling fuel.
2. Move the fuel valve lever to the ON position.
3. Loosen the carburetor drain screw, and drain the carburetor into an approved gasoline container. After draining is completed, tighten the carburetor drain screw securely.



Engine Oil

1. Change the engine oil (see page 8).
2. Remove the spark plug (see page 10).
3. Pour a teaspoon 5–10 cm³ (5–10 cc) of clean engine oil into the cylinder.
4. Pull the starter grip several times to distribute the oil in the cylinder.
5. Reinstall the spark plug.
6. Pull the starter grip slowly until resistance is felt. This will close the valves so moisture cannot enter the engine cylinder. Return the starter grip gently.

Storage Precautions

If your engine will be stored with gasoline in the fuel tank and carburetor, it is important to reduce the hazard of gasoline vapor ignition. Select a well ventilated storage area away from any appliance that operates with a flame, such as a furnace, water heater, or clothes dryer. Also avoid any area with a spark-producing electric motor, or where power tools are operated.

If possible, avoid storage areas with high humidity, because that promotes rust and corrosion.

Unless all fuel has been drained from the fuel tank, leave the fuel valve lever in the OFF position to reduce the possibility of fuel leakage.

Keep the engine level in storage. Tilting can cause fuel or oil leakage.

With the engine and exhaust system cool, cover the engine to keep out dust. A hot engine and exhaust system can ignite or melt some materials. Do not use a plastic sheet as a dust cover. A nonporous cover will trap moisture around the engine, promoting rust and corrosion.

Removal from Storage

Check your engine as described in the *BEFORE OPERATION CHECKS* section of this manual (see page 4).

If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, be sure it contains only fresh gasoline. Gasoline oxidizes and deteriorates over time, causing hard starting.

If the cylinder was coated with oil during storage preparation, the engine will smoke briefly at startup. This is normal.

TRANSPORTING

If the engine has been running, allow it to cool for at least 15 minutes before loading the engine-powered equipment on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials.

Keep the engine level when transporting to reduce the possibility of fuel leakage. Turn the fuel valve to the OFF position (see page 6).

TAKING CARE OF UNEXPECTED PROBLEMS

ENGINE WILL NOT START

Possible Cause	Correction
Fuel valve OFF.	Move lever to ON position.
Choke open.	Move lever to CLOSED position unless the engine is warm.
Engine switch OFF. (on the equipment)	Turn engine switch to ON position.
Engine oil level low (Oil Alert models).	Fill with the recommended oil to the proper level (p. 8).
Out of fuel.	Refuel (p. 7).
Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor (p. 11). Refuel with fresh gasoline (p. 7).
Spark plug faulty, fouled, or improperly gapped.	Gap or replace spark plug (p. 10).
Spark plug wet with fuel (flooded engine).	Dry and reinstall spark plug. Start engine with throttle lever in MAX. position, with choke lever in OPEN position.
Fuel filter restricted, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to your servicing dealer, or refer to shop manual.

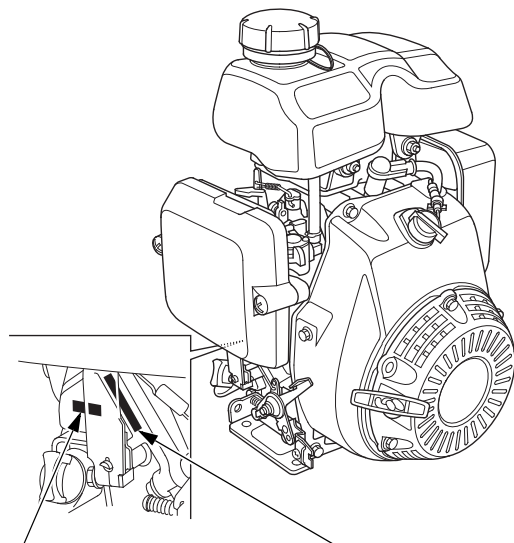
ENGINE LACKS POWER

Possible Cause	Correction
Filter element(s) restricted.	Clean or replace filter element(s) (p. 9).
Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor (p. 11). Refuel with fresh gasoline (P. 7).
Fuel filter restricted, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to your servicing dealer, or refer to shop manual.

TECHNICAL INFORMATION

Serial Number Location

Record the engine serial number, type and purchase date in the spaces below. You will need this information when ordering parts and when making technical or warranty inquiries.



Engine serial number: _____

Engine type: _____

Date Purchased: ____ / ____ / ____

Carburetor Modifications for High Altitude Operation

At high altitude, the standard carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug and cause hard starting. Operation at an altitude that differs from that at which this engine was certified, for extended periods of time, may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor. If you always operate your engine at altitudes above 610 meters (2,000 feet), have your servicing dealer perform this carburetor modification. This engine, when operated at high altitude with the carburetor modifications for high altitude use, will meet each emission standard throughout its useful life.

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 300 meter (1,000 feet) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

NOTICE

When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 610 meters (2,000 feet) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.

Emission Control System Information

Emission Control System Warranty

Your new Honda complies with both the U.S. EPA and State of California emission regulations. American Honda provides the same emission warranty coverage for Honda Power Equipment engines sold in all 50 states. In all areas of the United States, your Honda Power Equipment engine is designed, built, and equipped to meet the U.S. EPA and California Air Resources Board emission standard for spark ignited engines.

Warranty Coverage

Honda Power Equipment engines certified to CARB and EPA regulations are covered by this warranty to be free from defects in materials and workmanship that may keep it from meeting the applicable EPA and CARB emissions requirements for a minimum of 2 years or the length of the Honda Power Equipment Distributor's Limited Warranty, whichever is longer, from the original date of delivery to the retail purchaser. This warranty is transferable to each subsequent purchaser for the duration of the warranty period. Warranty repairs will be made without charge for diagnosis, parts, and labor. Information about how to make a warranty claim, as well as a description of how a claim can be made and/or how service can be provided, can be obtained by contacting an authorized Honda Power Equipment dealer or by contacting American Honda at the following:

Email: powerequipmentemissions@ahm.honda.com

Telephone: (888) 888-3139

The covered components include all components whose failure would increase an engine's emissions of any regulated pollutant or evaporative emissions. A list of specific components can be found in the separately included emissions warranty statement.

Specific warranty terms, coverage, limitations and manner of seeking warranty service are also set forth in the separately included emissions warranty statement. In addition, the emissions warranty statement can also be found on the Honda Power equipment website or at the following link:

<http://powerequipment.honda.com/support/warranty>

Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen are very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda utilizes appropriate air/fuel ratios and other emissions control systems to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons. Additionally, Honda fuel systems utilize components and control technologies to reduce evaporative emissions.

The U.S., California Clean Air Act, and Environment Canada

EPA, California, and Canadian regulations require all manufacturers to furnish written instructions describing the operation and maintenance of emission control systems.

The following instructions and procedures must be followed in order to keep the emissions from your Honda engine within the emission standards.

Tampering and Altering

NOTICE

Tampering is a violation of federal and California law.

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel, or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by your servicing dealer.

- Hard starting or stalling after starting.
- Rough idle.
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

Replacement Parts

The emissions control systems on your new Honda engine were designed, built, and certified to conform with EPA, California, and Canadian emissions regulations. We recommend the use of Honda Genuine parts whenever you have maintenance done.

These original-design replacement parts are manufactured to the same standards as the original parts, so you can be confident of their performance. Honda cannot deny coverage under the emission warranty solely for the use of non-Honda replacement parts or service performed at a location other than an authorized Honda dealership; you may use comparable EPA certified parts, and have service performed at non-Honda locations. However, the use of replacement parts that are not of the original design and quality may impair the effectiveness of your emissions control system.

A manufacturer of an aftermarket part assumes the responsibility that the part will not adversely affect emissions performance. The manufacturer or rebuilder of the part must certify that use of the part will not result in a failure of the engine to comply with emissions regulations.

Maintenance

As the power equipment engine owner, you are responsible for completing all required maintenance listed in your owner's manual. Honda recommends that you retain all receipts covering maintenance on your power equipment engine, but Honda cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure that all scheduled maintenance has been completed.

Follow the maintenance schedule on page 7. Remember that this schedule is based on the assumption that your engine will be used for its designed purpose. Sustained high-load or high-temperature operation, or use in dusty conditions, will require more frequent service.

Air Index

An Air Index Information label is applied to engines certified to an emission durability time period in accordance with the requirements of the California Air Resources Board.

The bar graph is intended to provide you, our customer, the ability to compare the emissions performance of available engines. The lower the Air Index, the less pollution.

The durability description is intended to provide you with information relating to the engine's emission durability period.

The descriptive term indicates the useful life period for the engine's emission control system. See your *Emission Control System Warranty* for additional information.

Descriptive Term	Applicable to Emission Durability Period
Moderate	50 hours (0–80 cc, inclusive) 125 hours (greater than 80 cc)
Intermediate	125 hours (0–80 cc, inclusive) 250 hours (greater than 80 cc)
Extended	300 hours (0–80 cc, inclusive) 500 hours (greater than 80 cc) 1,000 hours (225 cc and greater)

The Air Index Information hang tag/label must remain on the engine until it is sold. Remove the hang tag before operating the engine.

CONSUMER INFORMATION

Distributor/Dealer Locator Information

United States, Puerto Rico, and U.S. Virgin Islands:

Visit our website: www.honda-engines.com

Canada:

Call (888) 9HONDA9

or visit our website: www.honda.ca

For European Area:

Visit our website: <http://www.honda-engines-eu.com>

Australia:

Call (03) 9270 1348

or visit our website: www.hondampe.com.au

Customer Service Information

Servicing dealership personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your dealer does not solve to your satisfaction, please discuss it with the dealership's management. The Service Manager, General Manager, or Owner can help.

Almost all problems are solved in this way.

United States, Puerto Rico, and U.S. Virgin Islands:

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Regional Engine Distributor for your area.

If you are still dissatisfied after speaking with the Regional Engine Distributor, you may contact the Honda Office as shown.

All Other Areas:

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Office as shown.

«Honda's Office»

When you write or call, please provide this information:

- Equipment manufacturer's name and model number that the engine is mounted on
- Engine model, serial number, and type (see page 13)
- Name of dealer who sold the engine to you
- Name, address, and contact person of the dealer who services your engine
- Date of purchase
- Your name, address and telephone number
- A detailed description of the problem

United States, Puerto Rico, and U.S. Virgin Islands:

American Honda Motor Co., Inc.

Power Equipment Division

Customer Relations Office

4900 Marconi Drive

Alpharetta, GA 30005-8847

Or telephone:

(770) 497-6400

(888) 888-3139 Toll free

M-F 8:30am - 7:00pm ET

Canada:

Honda Canada, Inc.

Please visit www.honda.ca

for address information

Telephone: (888) 9HONDA9 Toll free

(888) 946-6329

Facsimile: (877) 939-0909 Toll free

Australia:

Honda Australia Motorcycle and Power Equipment Pty. Ltd.

1954-1956 Hume Highway

Campbellfield Victoria 3061

Telephone: (03) 9270 1111

Facsimile: (03) 9270 1133

For European Area:

Honda Motor Europe Logistics NV.

European Engine Center

<http://www.honda-engines-eu.com>

All Other Areas:

Please contact the Honda distributor in your area for assistance.

HONDA