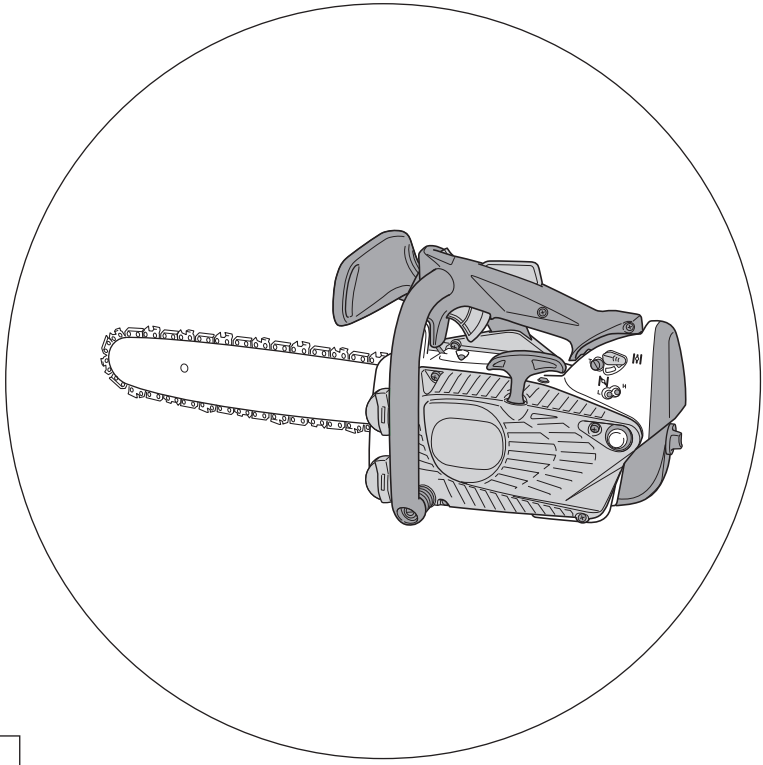
HiKOKI

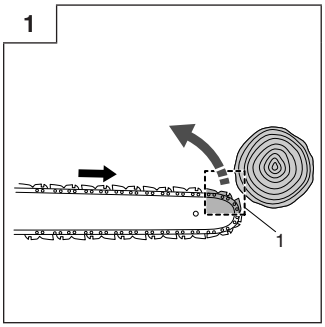
油锯
Chain Saw

CS 33EDT

使用说明书
Handling instructions



使用前务请详加阅读
Read through carefully and understand these instructions before use.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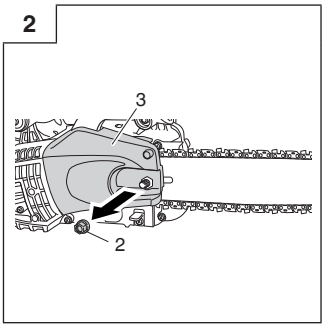
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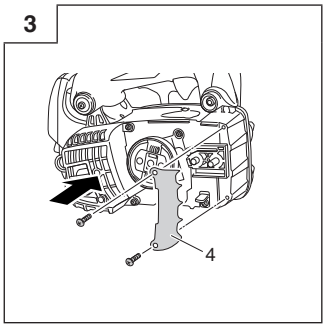
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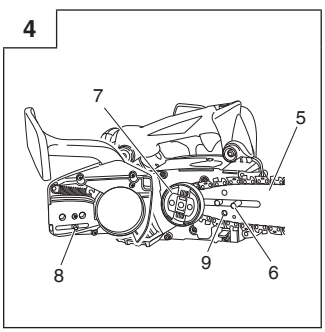
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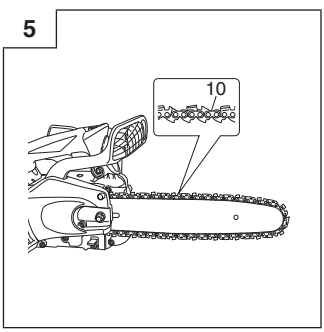
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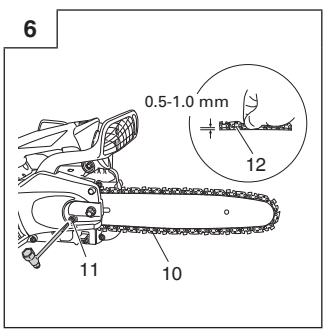
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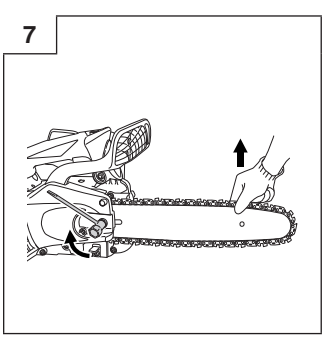
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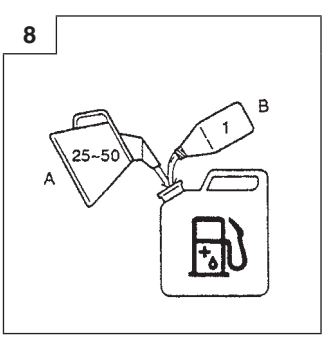
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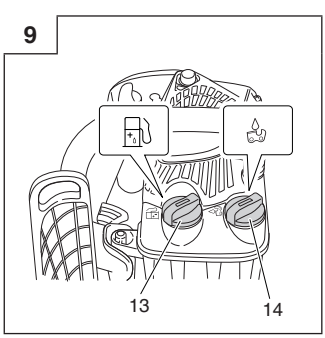
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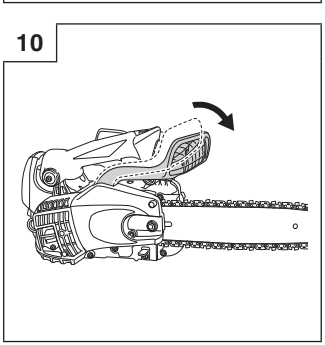
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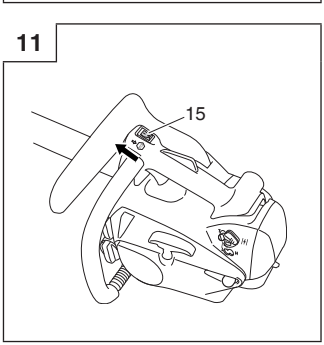
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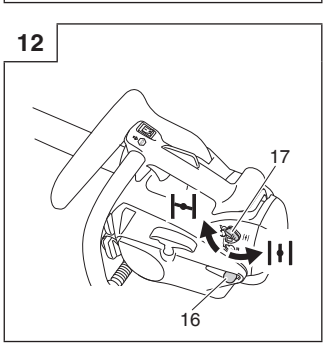
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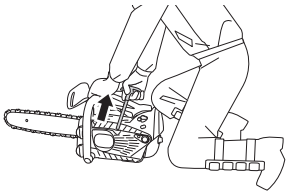

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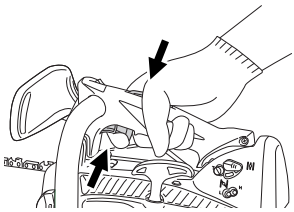

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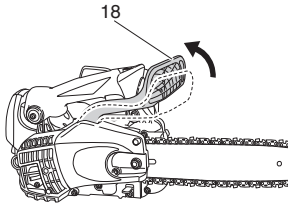

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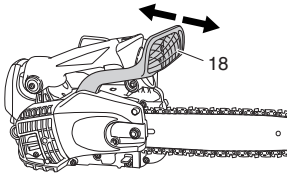

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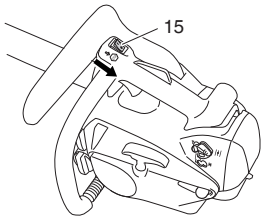

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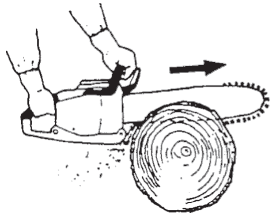

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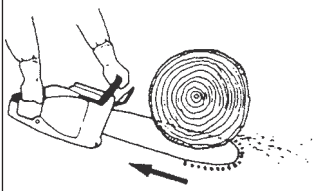

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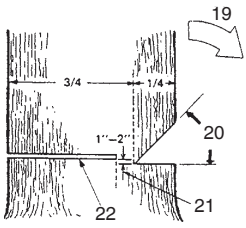

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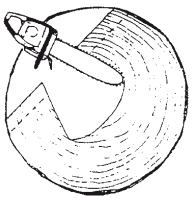

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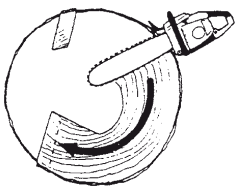

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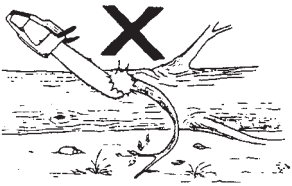

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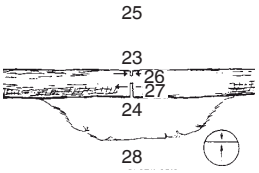

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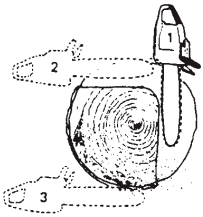

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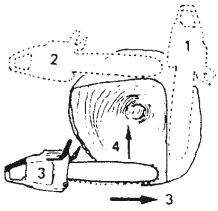

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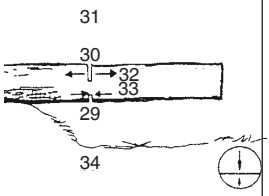

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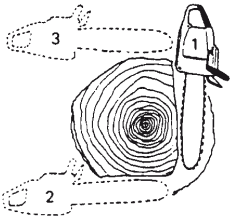

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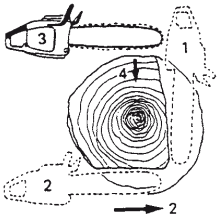

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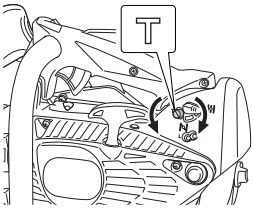

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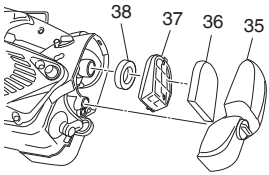

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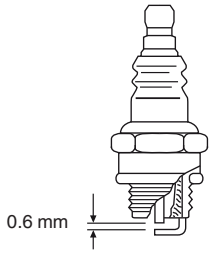

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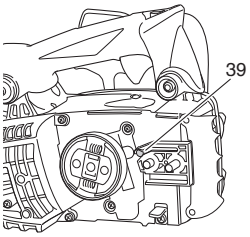

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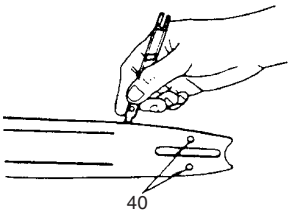

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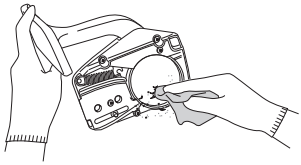

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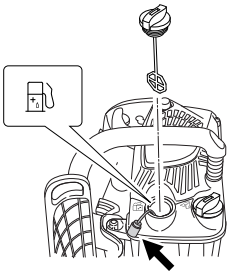

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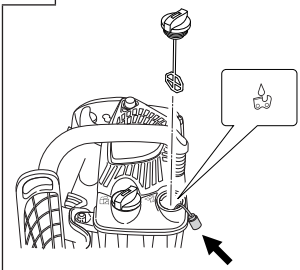

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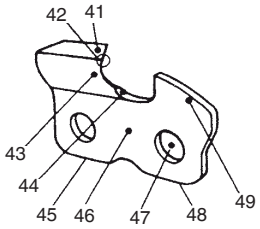

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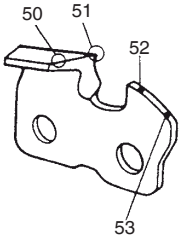

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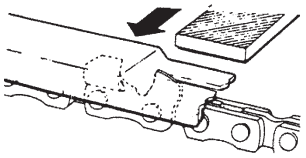

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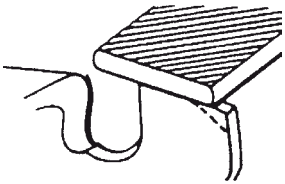

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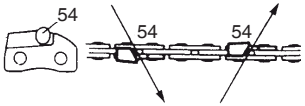

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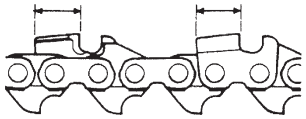

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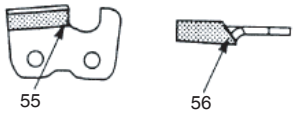


标志的含义

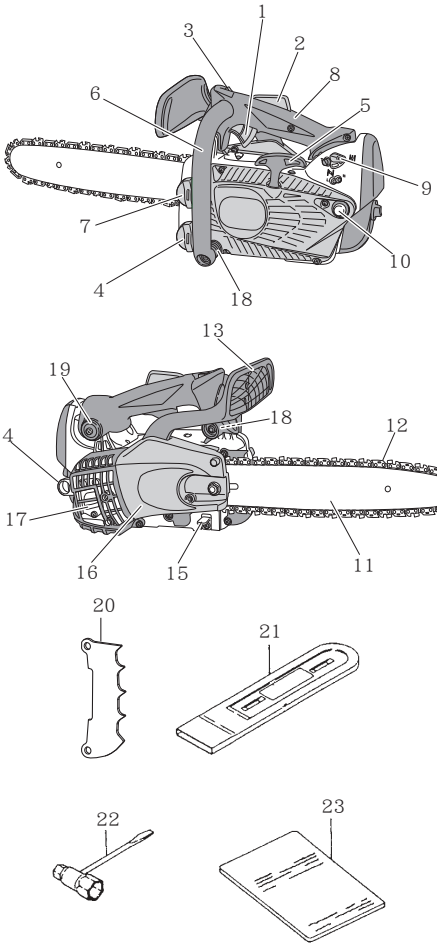
注：某些装置未附带此类标志。

	标志 ⚠警告 以下显示的是本机器中使用的标志。使用前请一定确保已充分了解各标志的含义。		
	阅读、完全理解并遵守以下安全预防措施和警告是十分重要的。疏忽大意或对本装置使用不当可能导致严重的人身伤害或死亡。	I	开启/启动
	请仔细阅读、理解并遵守本手册以及本装置中的警告及指示。		关闭/停止
	使用本装置时请务必配戴眼、头及耳防护设备。		急停
	警告，反弹危险。注意导板可能突然意外向上和 / 或向后移动。		燃油混合物
	禁止单手操作。锯切时，用双手紧握油锯，拇指紧扣住前部手柄。		链油加注
	此锯是专为林业公司而设计，因此只应由受过培训的操作员在森林中从事非地面工作时使用。	T	化油器调整 – 怠速
	在使用时应穿上脚部、腿部、手部和前臂等防护服，这一点非常重要。	L	化油器调整 – 低速混合物
	锯链制动器	H	化油器调整 – 高速混合物
	阻气门 – 运行位置（打开）		高温表面
	阻气门 – 阻气位置（关闭）		

目录

零件名称

1. 节流阀开关：操作者用手指启动的设备，用于控制发动机速度。
2. 节流阀开关锁：防止节流阀开关出现操作意外的设备，手动松开后无效。
3. 点火开关：使发动机启动或停止的设备。
4. 油箱盖：用于封盖油箱。
5. 手拉启动器：拉动手柄启动发动机。
6. 前部手柄：位于或朝向发动机罩的支撑手柄。
7. 燃料箱盖：用于封盖燃料箱。
8. 后手柄：位于发动机机架顶部的支撑手柄。
9. 阻气门操作杆：用于增加化油器内燃料 / 空气混合的设备，以协助启动。
10. 起动泵；供应额外燃料的设备，可促进起动。
11. 导板：支撑和引导油锯的部件。
12. 油锯：用作锯切工具的链条。
13. 锯链制动器（前部护手装置）：用于停止或锁定链条的设备。
14. 连接点：使用安全带、扣或绳将工具悬挂在此部位。
15. 链锯止链销：用于油锯制动的设备。
16. 侧盖板：导板、锯链条、离合器和锯齿保护盖，在使用链锯时提供保护。
17. 消音器：降低发动机排气噪音，指引排气。
18. 减震弹簧：减轻传递到操作员手部的震动。
19. 减震橡胶：减轻传递到操作员手部的震动。
20. 防滑齿（选购件）：锯切树木或圆木时作为支点的设备。
21. 导板盖：在本装置闲置时，用于封盖导板和油锯的设备。
22. 组合箱扳手：用于拆卸或安装火花塞以及绷紧油锯的工具。
23. 使用说明书：本装置随附。操作前阅读，并留存备用，以学习正确安全的操作技巧。



警告及安全指示

操作者安全

⚠警告

此链锯（CS33EDT）专为树木养护和病虫害防治而设计。只有受过树木养护和病虫害防治培训的人员方可使用此锯。使用时应遵循相关专业组织提供的所有文字说明、操作步骤和建议。否则，可能造成严重的意外风险。在森林中使用锯时，我们建议务必使用升降平台。用绳子从上面滑下的方法非常危险，需受过特殊培训。操作员必须受过安全装置使用、工作和攀爬技能等方面的培训并熟练掌握。操作员和锯都务必使用固定装置。

- ○ 务必戴上手套以减轻震动效果。
- ○ 请务必配戴安全面罩或护目镜。
- ○ 锉利链条时必须配戴手套。
- ○ 使用油锯时，务必穿戴安全保护设备，如外套、长裤、手套、头盔、有钢趾帽和防滑鞋底的靴子。在树上作业时，安全靴必须适于攀爬。请勿穿着宽松衣物、配戴珠宝、短裤、拖鞋或光脚进行操作。
  扎紧头发并使其高于肩部。
- ○ 在您疲惫、生病、饮酒后、服用药物或正接受医疗诊治过程中请勿操作此工具。
- ○ 切勿让儿童或无操作经验的人员操作此机器。
- ○ 配戴听力保护装置。请随时注意周围的情况。
  注意任何可能造成问题的旁观者。
  关闭发动机后请立即拆下安全装置。
- ○ 配戴头部保护装置。
- ○ 切勿在封闭的房间或建筑物中开启或运转发动机。
  吸入废气可能会导致死亡。
- ○ 为保护您的呼吸系统，在锯屑散发链条油雾和粉尘时请配戴防护面罩。
- ○ 保持手柄清洁，无机油及燃料附着。
- ○ 手部应远离锯切设备。
- ○ 请勿抓住或握住本装置的锯切设备。
- ○ 当关闭装置时，请确保锯切配件在装置关闭前停止转动。
- ○ 长时间操作后，请进行适时的休息以防止由于振动而可能产生的手臂振动综合症（HAVS）。
- ○ 操作者必须遵守锯切区域的当地规定。

⚠警告

- ○ 防振系统无法保证您不患手臂振动综合症或腕管综合症。
  因此，长期连续及定期使用者应该密切关注其手臂及手指的健康情况。如果出现以上任何症状，请立即找医生咨询。
- ○ 长期或持续暴露在高分贝噪音下会致使永久性听力损害。操作装置 / 机器时，务必配戴合格的听力保护装置。
- ○ 如果您正使用例如起搏器等电气 / 电子设备，在进行任何动力设备的操作前请向医生及产品制造商咨询。

装置 / 机器安全

- ○ 每次使用前请检查整个装置 / 机器。更换破损的部件。检查是否有燃料泄漏并确保所有固定件都牢固固定到位。
- ○ 请务必在使用本装置 / 机器前更换有裂纹、有缺损或已损坏的部件。
- ○ 确保侧盖板已牢固安装到位。
- ○ 调整化油器时请让其他人员远离。
- ○ 本装置 / 机器只能使用制造商推荐的配件。
- ○ 切勿让链条碰撞到任何障碍物。如果链条碰到障碍物，必须停止机器并仔细检查。
- ○ 确保自动加油器正在作业。仅在油箱中添加清洁的机油。切勿让链条无机油时在导板上运转。
- ○ 除了操作者手册 / 使用说明书中所列的物品外，任何油锯维修均必须由合格的油锯维修人员进行。（例如，如果使用错误工具拆卸飞轮或使用错误工具固定飞轮以拆卸离合器，可能会导致飞轮遭到结构性损坏并从而使飞轮破裂。）

⚠警告

- ○ 切勿以任何方式改装本装置 / 机器。请勿使用本装置 / 机器进行其设计之外的操作。
- ○ 未穿着任何安全装置或安装装置有缺陷时，切勿使用油锯。否则可能导致严重人身伤害。
- ○ 使用未经认可的非制造商推荐的导板 / 链条时，会有很大风险发生人身意外或伤害。

燃料安全

- ○ 请在室外且无火花或火焰处混合及倾注燃料。
- ○ 请使用允许的容器存放燃料。
- ○ 在燃料、装置 / 机器附近或正在使用装置 / 机器时请勿吸烟或允许他人吸烟。
- ○ 启动发动机前请擦去所有喷溅出的燃料。
- ○ 启动发动机前，请将其移动到距离添加燃料地点至少3米的距离。
- ○ 取下燃料箱盖前请让发动机停止运转并冷却几分钟。
- ○ 将本装置 / 机器存放起来前请清空燃料箱。建议每次使用后都要清空燃料。如果箱内有燃料残留，存放时一定保证燃料不要泄漏。
- ○ 将装置 / 机器及燃料存放在燃料蒸汽无法接触到热水器、电动机或开关、火炉等有火花或明火的地方。

⚠警告
燃料极易点燃、爆炸或吸入烟尘，所以在处理或添加燃料时一定要特别注意。

锯切安全
○ 请勿锯切木头或木制品以外的其他物体。
○ 为保护您的呼吸系统，在锯切喷洒了杀虫剂的木头时请配戴喷雾防护面罩。
○ 使儿童、动物、旁观者及协助者等其他人员远离危险区域。如果有人靠近，请立即关闭发动机。
○ 用右手紧抓住后部手柄，左手紧抓住前部手柄，以固定本装置 / 机器。
○ 保持步伐稳固及平衡。请勿过度伸展。
○ 发动机运转时，保持身体任何部位远离消音器及锯切配件。
○ 始终保持导板 / 链条位于腰部以下。
○ 砍伐树木前，操作者必须先熟悉油锯的用锯技巧。
○ 务必事先安排好树木倒下时的跑离路线。
○ 锯切时，用双手紧握油锯，拇指紧扣住前部手柄，双脚和身体保持平衡站立。
○ 锯切时，请站在油锯的一侧，切勿站在正后方。
○ 如果装配了防滑齿，请将其一面对着树木，以免油锯突然锯入树木中。
○ 要结束锯切时，准备好在本装置锯空时将其举起，以免其穿过而锯到腿、脚或身体，或碰到障碍物。
○ 警惕发生反弹（油锯反弹碰到操作者）。切勿用导板的前端进行锯切。
○ 当更换工作地点时，请确保关闭机器且所有锯切配件停止运转。
○ 当机器正在运转时，切勿将其置于地面上。
○ 在清理碎片或除去锯切配件上的青草前，一定确保发动机已关闭且任何锯切配件已完全停止转动。
○ 操作任何动力设备时，请务必携带急救箱。
○ 切勿在封闭的房间、建筑物内和 / 或可燃性液体附近开启或运转发动机。吸入废气可能会导致死亡。

保养安全
○ 请依照推荐的步骤保养本装置 / 机器。
○ 除进行化油器调整外，在进行保养前请断开火花塞的连接。
○ 调整化油器时请让其他人员远离。
○ 请仅使用制造商推荐的正品HiKOKI替换部件。

注意
请勿拆解手拉启动器。否则可能由于弹簧的反作用力而导致人身伤害。

⚠警告
维护不当可能导致发动机严重损坏或严重人身伤害。

运输及存放
○ 请用手搬运本装置 / 机器，并确保发动机已停止运转且消音器远离您的身体。
○ 在存放本装置 / 机器或将其装入车内运输前，请待发动机冷却后清空燃料箱并进行固定。
○ 将本装置 / 机器存放起来前请清空燃料箱。建议每次使用后都要清空燃料。如果箱内有燃料残留，存放时一定保证燃料不要泄漏。
○ 请将装置 / 机器存放于儿童无法触及的地方。
○ 请仔细清洁保养本装置并将其存放在干燥的地方。
○ 运输或存放时请确保点火开关已关闭。
○ 在运输或存放时，请用导板罩盖住链条。

如发生本手册中未提及的情况，请小心并用常规处理方法处理。如需帮助，请联系HiKOKI经销商。请特别注意以下警示语言：

⚠警告
表示如果不遵守本指示可能会导致严重的人身伤害或死亡。

注意
表示如果不遵守本指示可能会导致人身伤害或设备损毁。

注
关于正确运行及使用方法的有用信息。

⚠警告
反弹危险（图 1）
使用油锯作业时，最严重的危险之一就是可能发生反弹。当导板的上端触碰到物体，或当木头包住油锯并使其夹在锯口中时，可能发生反弹。某些情况下，头端的触碰会发出火花并快速弹回，将导板弹到您身上。油锯的导板头端被夹住时，也可能使油锯快速弹回到您身上。所有这些发作用力都可能使您对油锯失去控制力，从而导致严重的人身伤害。即使您的油锯设计中已包含安全保护装置，您也不应该仅依赖这些安全功能。请随时掌握导板头端的位置。如果导板的反弹区域（1）触碰到物体，则会发生反弹。请勿使用这一区域。油锯夹住引起的反弹是由于锯口将要锯穿时导板的上端被夹住。盯住锯口，确保锯穿时会断开。发动机运转时，务必用右手紧抓住后部手柄，左手紧抓住前部手柄，双手的拇指和手指环扣住手柄，以保持对发动机的控制。作业期间，请务必用双手抓住油锯，并以较高的发动机速度锯切。

规格

○ 型号名称中的“CS”是指 Chain saw（链锯）

型号	CS33EDT（30）	CS33EDT（35）
装置类型	油锯，便携式	
发动机尺寸（厘米^3）	32.2	
火花塞	NGK BPMR-7A	
燃料箱容积（厘米^3）	290	
链条油箱容积（厘米^3）	180	
净重（公斤）（无导板和链条）	3.4	
导板长度（毫米）	300	350
链条间距（毫米）	9.53	
链条规格（毫米）	1.27	
声压级 LpA（dB (A)）依据ISO 22868		
等效	100	
不确定	3	
声功率级 LwA (dB (A)) 依据ISO 22868		
测量	109	
不确定	3	
声功率级 LwA (dB (A)) 依据2000/14/EC		
测量	113	
保证	116	
振动级（m/s^2）依据ISO 22867		
前部手柄	4.4	
后部手柄	6.1	
不确定	0.8	
最大发动机功率 依据ISO 7293（kW）	1.3/9300	
最大发动机速度（分钟$^{-1}$）	12000	
怠速发动机速度（分钟$^{-1}$）	3000	
专用燃料消耗（g/kWh）	567	
链条类型	91VG045 (Oregon)	91VG052 (Oregon)
最大链条速度（米 / 秒）	22.9	
链齿（齿数）	6	

注

依照ISO 22868/22867，相等的噪音等级 / 振动级是由在以下时间分布的不同工作条件下总的噪音等级 / 振动级的时间加权能量计算得出的：1/3 怠速、1/3 全速、1/3 空转速度。

* 所有数据如有更改，恕不另行通知。

组装程序

⚠ 警告

未紧固侧盖板、导板和链条时，切勿尝试启动发动机。

1. 朝着前部手柄方向拉动锯链制动器（18），以检查锯链制动器是否松开。（图 15）
2. 取下导板紧固螺母（2）。取下侧盖板（3）。（图 2）
   * 如果要安装防滑齿（4），请用两个螺丝将防滑齿（4）安装到本装置上。（图 3）
3. 将导板（5）安装到螺栓（6）上，然后将其推向链齿（7）。（图 4）
4. 确保油锯（10）的方向如图正确放置，然后将链条对准到链齿上。（图 5）
5. 将链条传动链环导入导板四周的导报槽中。

6. 将侧盖板（3）安装到螺栓（6）上。
确保油锯张力调节螺栓（8）的轮毂插入导板（9）的孔中。（图 4）
然后用手拧紧导板紧固螺母（2），让链条导板一头可以上下任意移动。（图 2）
7. 举起导板一端，然后顺时针拧张力调节螺栓（11）拉紧锯链条（10）。若要检查张力是否合适，轻轻提起链条，导板和传动链环（12）边缘必须有约0.5－1.0 mm的间隙。（图 6，7）

注意

合适的张力极其重要

8. 举起导板一端，然后用组合箱扳手拧紧导板紧固螺母。（图 7）
9. 新链条会拉长，因此请在锯切几次后调整链条，并在第一次锯切半小时后仔细观察链条张力。

注

经常检查链条张力，以使油锯保持最佳性能和使用寿命。

注意

○ 当链条过紧时，导板和链条的磨损将会很快。相反，如果链条过松时，可能会脱出导板的槽。
○ 接触链条时必须配戴手套。

⚠警告

操作期间，用双手紧抓住油锯。单手操作可能会导致严重受伤。

操作程序

燃料（图 8）

⚠警告

○ 本油锯配备有一个二冲程发动机。请使用混入机油的燃料运行发动机。在填充燃料或处理燃料时请保持良好的通风。
○ 燃料中含有高可燃性成分，如果吸入或喷溅到身体上可能导致严重的人身伤害。处理燃料时请一定要十分小心。在建筑物内处理燃料时，请一定要保持良好的通风。

燃料

○ 请一定使用正规牌子的辛烷值为 89 的无铅汽油。
○ 请使用正品二冲程机油或以 25:1 至 50:1 比例混合的机油，使用前请参阅机油瓶上的比例说明或咨询HiKOKI经销商。
○ 如果无法获得正品机油，可使用标签上标明含有抗氧化剂的应用于气冷式二冲程发动机的高品质机油（JASO FC GRADE OIL 或 ISO EGC GRADE）。请勿使用 BIA 或 TCW（二冲程水冷型）混合机油。
○ 切勿使用多级机油（10 W / 30）或废弃机油。
○ 一定要在单独的清洁容器中混合燃料和机油。

首先添加需要使用的汽油量的一半。
然后加入全部需使用的机油。混合（摇匀）燃料混合物。再将剩余的一半燃料加入。
在注入燃料箱前请彻底混合（摇匀）燃料混合物。

添加燃料

⚠警告（图 9）

○ 添加燃料前请一定关闭发动机并让其冷却几分钟。
○ 切勿在加油点附近吸烟或使用明火或产生火星。
○ 添加燃料时，慢慢打开燃料箱（13）以防止出现过压现象。
○ 添加完成后拧紧燃料箱盖。
○ 启动机器前，一定要将本装置移到距离添加燃料地点至少 3 米以外的地方。
○ 如果燃料喷溅到衣物上，请立即用肥皂进行清洗。
○ 添加燃料后一定要检查是否有燃料泄漏。

在添加燃料前请仔细清洁燃料箱盖区域，以确保无尘土落入燃料箱内。在添加燃料前请摇晃容器以确保燃料混合均匀。

链条油（图9）

缓慢地打开油箱（14），添加链条油。务必使用优质链条油。发动机运转时，链条油会自动流出。
每次加油时，向油箱 (14) 中加满链条油。

注

将燃料（13）或链条油（14）倒入油箱中之前，将本装置的油箱盖打开放好。（图 9）

启动冷发动机（图 10－15）

注意

启动前，确保导板 / 链条未接触任何物体。

1. 确保锯链制动器已接合。（图 10）
2. 将点火开关（15）设置为 ON（开）位置。（图 11）
3. 推动起动泵 (16)约十次，使燃料从起动泵流入化油器。（图 12）
4. 转动阻气门操作杆（17）至阻气位置（图 12）。这样就可自动将节流阀锁定在启动位置了。
5. 迅速拉动手拉启动器，请小心握紧手柄使其无法弹回。（图 13）
6. 听到第一声点火后，将阻气门操作杆回复到运行位置。（图 12）
7. 再次以前述方式迅速拉动手拉启动器。（图 13）

注

如果发动机没有启动，请重复步骤4至7。

8. 一旦发动机启动，完全拉起油门扳机然后立即松开。（图 14）接下来，半油门脱开。

9. 确保锯链制动器处于松开状态。（图 15）
在发动机承受任何负载前，让其有 2-3 分钟的时间进行预热。切勿让发动机空载高速运转，否则会缩短发动机使用寿命。

启动暖发送机

对于冷发动机，只使用启动过程的1、2、7和9。如果发动机不启动，使用与冷发动机相同的启动过程。

链条润滑测试

检查链条油是否正确流注。当锯链条开始旋转时，将导板端头指向一个齿柱，拉动油门扳机以执行高速运转约10秒。如果链条油喷注到齿柱上，则说明其正确流注。（图 16）

锯链制动器运转（图17）

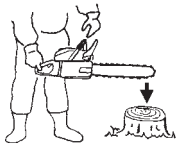
锯链制动器（18）用于处理紧急情况，如反弹。使用前请检查确认其工作正常。

使用制动器时，将前部扶手移向导板。锯链制动器操作期间，即使已拉动油门扳机，发动机的速度也不会增加，链条不会转动。若要松开制动器，请上拉前部扶手。

确认方法：

1）关闭发动机。

2）水平抓住油锯，松开前部手柄上的手，将导板的尖端触碰一个树桩或一块木头，然后确认制动器运转功能。作业高度因导板尺寸而异。



如果制动器无效，请要求我们的经销商进行检查维修。如果在使用制动器时发动机仍以高速运转，则离合器会过热而引发事故。

作业期间使用制动器时，请立即松开油门扳机以停止发动机。

⚠警告

请勿在发动机运转时携带机器。

停止（图 18）

降低发动机转速，然后将点火开关推到停止位置（15）。

⚠警告

消音器在发动机停止后温度仍很高，因此请勿将机器放置在有易燃物品（如干草）的地方。

注

如果发送机不停止，可通过将阻气门操作杆转到阻气位置强行让发动机停止。在重新启动发动机前，让我们的经销商进行修理。

⚠警告

○ 请勿过度伸展身体或在肩部以上高度锯切。

○ 砍伐时要极其小心，切勿在鼻子高度或肩部以上高度进行锯切。

链锯止链销

链锯止链销位于链条稍下方的动力头上，以进一步防止链条断裂而击打到油锯使用者。

⚠警告

锯切时，切勿与链条站在一条直线上。

砍伐、截枝和造材锯切的基本技巧

下列信息是木头锯切技巧的概述。

⚠警告

○ 此信息不涵盖所有特殊情况，各种情况可能因地形、植被、木头类型、树木的形状和大小等而异。有关您所在地区特殊伐木问题的意见，请咨询您的服务经销商、林业部门或当地林业学校。这会让您的工作更加高效安全。

○ 请勿在不利天气条件下锯切，如浓雾、大雨、严寒、大风等。
不利天气通常会使工作更加吃力，并使工作条件更加危险（如地面湿滑）。
大风会使树木倒向意外的方向，造成财物损坏或人身伤害。

注意

切勿用油锯撬动物体或其他设计之外的目的。

⚠警告

○ 避免被障碍物绊倒，如树桩、树根、石头、树枝和倒下的树木。注意观察是否有洞坑和沟壑。在斜坡或崎岖地面上作业时，请保持十分谨慎。
从一个作业地点转移到另一作业地点时，关闭油锯电源。
锯切时，节流阀务必完全打开。如果链条转动太慢，则很容易卡住，使油锯发生扭转。

○ 切勿单手使用油锯。
否则无法很好地控制油锯，并可能失去控制，严重伤害自己。
将油锯保持离自己身体较近的位置，以加强控制并减少张力。
使用油锯的下端锯切时，反作用力会将油锯从您的一边拉向正在锯切的木头。
油锯会控制进给速度，锯屑会直冲向您。（图 19）

○ 使用油锯的上端锯切时，反作用力会将油锯从正在锯切的木头一边推向您。（图 20）

○ 如果油锯被推的过远而开始用导板的前端进行锯切，则存在反弹的风险。
最安全的锯切方法是用油锯的下端进行锯切。用上端进行锯切会使您更难控制油锯，并增加反弹的风险。

○ 如果链条被卡住，请立即松开节流阀扳机。
如果在使用链条卡住时节流阀扳机仍以高速运转，则离合器会过热而引发事故。

注

务必将防滑齿的一面对着树木，以免油锯突然锯入树木中。

砍伐

砍伐不仅仅是砍倒一颗树。您还必须使其倒在离理想位置尽可能近的地方，而又不损坏树木或其他物体。砍伐树木前，请仔细考虑可能影响理想方向的所有因素，如：
树木的角度。树冠的形状。树冠上的积雪。
风力风向。树木四周的障碍物（如其他树木、电线、道路、建筑物等）。

⚠警告

○ 务必观察树木的整体条件。查看树干是否有腐烂的地方使其更容易断裂，并在预计时间前开始倒下。
○ 查看是否有干枯树枝，这可能会在作业时断裂而打到您。
砍伐时，务必让动物和人离开至少树木长度的两倍距离远。清除树木四周的灌木和树枝。
准备好远离树木倒下方向的退离路线。

砍伐树木的常规步骤

通常砍伐包括两步主要锯切操作，锯切槽口和锯切砍伐锯口。开始时，在朝向树木倒伏方向的一侧锯切出一个高位槽口。锯切低位锯口时，观察锯痕，以免锯入树干太深。槽口深度必须足以锯切出足够宽度和倒伏力的节点。槽口开口宽度必须足以尽可能引导树木倒伏的方向。在树木另一侧高于槽口3-5 cm的位置，锯切出砍伐锯口。（图 21）

19.砍伐方向
20.槽口开口角度最小45°
21.节点
22.砍伐锯口

切勿将树干完全锯穿。务必留有节点。
节点可以引导树木的倒伏。如果树干被完全锯穿，将无法控制倒伏方向。
树木变得不平稳并开始晃动之前，在锯口插入一块楔块或砍伐杆。如果您对倒伏方向的判断出现错误，这可以防止导板夹在锯口中。在推倒树木前，确保没有人进入树木倒伏的范围内。

砍伐锯切，树干直径大于导板长度的两倍

锯切一个大而宽的槽口。然后在槽口中央锯出一个凹槽。务必在锯口的两侧各留一个节点。（图 22）
如图 23所示，沿树干圆周进行锯切，完成砍伐锯切。

⚠警告

这些方法极其危险，因为需要使用导板头端而可能导致反弹。
仅受过正规培训的专业人员才能尝试这些技巧。

截枝

截枝是指截下伐倒树木的树枝。

⚠警告

大多数反弹发生在截枝时。
切勿使用导板的前端。保持高度谨慎，避免用导板的头端触碰圆木、其他树枝或物体。请务必注意有弹力的树枝。它们可能会弹回到您身上，使您失去控制，从而导致受伤。（图 24）

站在树干的左侧。保持双脚站立稳固，将油锯放在树干上。将油锯保持在离自己身体较近的位置，使您可以完全控制它。与油锯保持合适的距离。仅在树干位于您和油锯之间时移动。注意有弹力的树枝反弹。

截锯粗树枝

截锯粗树枝时，导板可能很容易被夹住。有张力的树枝通常会折断，因此逐步小心地锯切难处理的树枝。采用的原则与横锯相同。事先考虑好并意识到所有动作的可能后果。

横锯 / 造材

开始锯穿圆木之前，请想到将会发生什么。密切注意圆木中的张力，以不会导致导板会被夹住的方式将其锯穿。

横锯圆木，顶部压力

站稳。开始时在顶部锯切。请勿锯入太深，圆木直径的1 / 3足够。在底部完成锯切。
上下的锯口必须穿透。（图 25）

23.减压锯口
24.横锯口
25.顶部压力
26.侧面压力
27.侧面张力
28.两个锯口的相对深度

直径大于导板长度的粗圆木

开始时在圆木的另一侧进行锯切。将油锯拉向自己，然后重复前一步。（图 26）
如果圆木放置在地面上，请进行钻孔锯切，以免锯入地面。在底部完成锯切。（图 27）

⚠警告

反弹危险
如果您未受过正规培训，请勿尝试钻孔锯切。钻孔锯切需要使用导板头端，可能导致反弹。

横锯圆木，底部压力
开始时在底部锯切。锯口的深度必须为圆木直径的1 / 3左右。
在顶部完成锯切。上下的锯口必须穿透。（图 28）

29.减压锯口
30.横锯口
31.底部压力
32.侧面张力
33.侧面压力
34.两个锯口的相对深度

直径大于导板长度的粗圆木
开始时在圆木的另一侧进行锯切。将油锯拉向自己，然后重复前一步。如果圆木靠近地面，请进行钻孔锯切。在顶部完成锯切。（图 29）

⚠ 警告
反弹危险
如果您未受过正规培训，请勿尝试钻孔锯切。钻孔锯切需要使用导板头端，可能导致反弹。（图 30）

如果油锯卡住
停止发动机。用一根粗树枝或杆作为杠杆，抬起圆木或改变其位置。请勿尝试拉出油锯。否则，可能会使手柄变形，或在油锯突然松开时被其伤害。

保养

可由任何非公路用发动机维修机构或个人进行保养、更换或维修排气控制装置及系统。

化油器调整（图 31）

⚠ 警告
侧盖板未完成组装前切勿启动发动机。
否则离合器可能松动，从而导致人身伤害。

燃料与空气在化油器中混合。在做发动机的出厂调试时，化油器已调整完成。根据您工作地点的气候或海拔高度，可能需要进一步的调整。化油器有一个调整可能性：
T = 怠速调整螺丝。

怠速调整（T）
检查空气过滤器是否清洁。如果怠速正确，则锯切配件不应旋转。如果需要进行调整，请在发动机运转时将T型螺丝关闭（顺时针），直至锯切配件开始转动。打开（逆时针）T 型螺丝直至锯切配件停止转动。当发动机在低于锯切配件开始转动的所有位置都能平稳运转时，发动机即达到了正确怠速。
如果怠速调整完成后锯切配件仍然转动，请联系HiKOKI经销商。

⚠ 警告
当发动机处于待机状态时，锯切配件在任何情况下都不应该转动。

注
在具有严格废物排放规定的地区销售的某些型号没有高速和低速化油器调整功能。这些调整功能会使发动机运转时的废物排放超出标准限值。这些型号的唯一化油器调整功能是怠速调整。

如果您对这种类型的调整功能不熟悉，请寻求HiKOKI经销商的帮助。

空气过滤器（图 32）
空气过滤器（37）和清洁海绵（36）、（38）必须保持清洁无尘土，以防止发生以下情况：
○ 化油器故障。
○ 启动故障。
○ 发动机动力降低。
○ 发动机部件不必要的磨损。
○ 燃料消耗异常。
应每天清洁空气过滤器，尤其在尘土多处工作时更应时常清洁。

清洁空气过滤器
取下空气过滤器盖（35）及清洁海绵（36）。将空气过滤器（37）逆时针转动 20° 后卸下。接下来，卸下清洁海绵(38)。
用温的肥皂水清洗。重新安装前，请检查滤芯是否已干。经过一段时间使用后，空气过滤器可能无法完全清洁干净。因此，需要定期进行更换。损毁的滤芯必须随时更换。

火花塞（图 33）
火花塞的状况受以下条件影响：
○ 不正确的化油器设置。
○ 错误的燃料混合物（汽油中含有过多机油）。
○ 空气过滤器脏污。
○ 艰难的运转条件（如天气寒冷）。
造成火花塞电极上聚集污物的几个条件可能会导致故障和启动困难。如果发动机的动力低、无法启动或怠速下运转不良，请首先检查火花塞。如果火花塞脏污，请对其进行清洁并检查电极间距。如果需要，可重新调整。正确的间距为 0.6 毫米。火花塞在工作了 100 小时后应进行更换，或者当电极严重磨损时应提早更换。

注
在某些地区，当地法律要求使用附有电阻器的火花塞来阻止产生点火信号。如果本机器原本配备附有电阻器的火花塞，那么请使用相同类型的火花塞进行更换。

加油器口（图34）
可能时即清洁链条加油器口（39）。

导板（图 35）
使用本机器前，用专用工具（选购件）清洁链条槽和加油器口（40）。

侧盖板（图 36）
务必保持侧盖板和驱动区域没有锯屑和碎片。由于某些树木内含的酸浓度很高，请定期在这一区域添加油脂以免腐蚀。

燃料过滤器（图 37）
从燃料箱取下燃料过滤器并在溶剂中彻底清洗。清洗结束后，将过滤器完全推入燃料箱内。
注
如果过滤器上聚集了过多灰尘而变硬，请进行更换。

链条油过滤器（图 38）
取下链条油过滤器并在溶剂中彻底清洗。
然后，将过滤器完全推入油箱。
注
如果过滤器由于灰尘而变硬，应更换它。

长期存放注意事项
将燃料箱内的燃料排干净。启动发动机并让其运转直至停止。对于使用中造成的损坏进行维修。用一块干布或高压风管清洁本装置。将几滴二冲程发动机机油通过火花塞孔注入气缸内，然后让发动机运转数次将机油排出。
盖住本装置并存放在干燥的地方。

链条锉利
锯片部件（图 39、40）

⚠警告
○ 锉利链条时必须配戴手套。
○ 务必磨圆前缘，减少反弹或支撑板破裂的风险。

41.顶板
42.作业角
43.侧板
44.齿槽
45.齿跟
46.底板
47.铆钉孔
48.齿尖
49.深度规
50.顶板的正确角度（角度因链条类型而异）
51.略突的“弯钩”或点（非凿链条的弯角）
52.深度规顶部的正确高度低于顶板
53.深度规的前缘磨圆

用锉刀锉低深度规
1）如果用锉刀锉利锯片，请检查并锉低深度。
2）每锉三次后，检查深度规。
3）将深度规工具放在锯片上。如果深度规突出，请将其锉到与工具顶部齐平。务必从链条内部开始锉向外侧的锯片。（图 41）
4）用完深度规工具后，磨圆前缘，保持深度规的原始形状。务必按照油锯保养或操作者手册中的建议设置深度规。（图 42）

锉利锯片的概述
从内到外，锉利链条一侧的锯片（54）。仅向前锉。（图 43）
5）保持所有锯片长度相同。（图 44）
6）锉利至不会损坏锯片锯缘（侧板（55）和顶板（56））。（图 45）

锉利油锯链条的锉利角度

	1. 部件编号	91VG
	2. 间距	3/8"
	3. 深度规设置	0.025"
	4. 侧板锉角	80°
	5. 顶板角度	30°
	6. 锉利引导角度	90°

保养安排
以下向您提供一些基本的保养说明。如需了解更多信息，请联系HiKOKI经销商。

使用前的检查和维修
○ 检查防震橡胶部件是否剥落、老化或损坏，以及它们的固定件是否松动或损坏。
○ 检查防震弹簧是否损坏，以及它们的固定件是否松动或损坏。
○ 检查前后手柄是否变形或损坏。
○ 检查前后手柄的固定件是否完全拧紧及是否损坏。
○ 检查每个部件使用的螺栓、螺母等是否完全拧紧及是否损坏。

日常保养
○ 清洁装置的外表面。
○ 清洁链条油过滤器口。
○ 清洁导板的链条槽和链条油过滤器口。
○ 清除侧盖板上的锯屑。
○ 检查油锯链条是否锋利。
○ 检查导板的螺母是否完全拧紧。
○ 确保链条传送罩无损坏且装配牢固。
○ 检查螺母及螺丝是否已完全拧紧。
○ 检查导板的头端。当导板头端磨损时，请更换新导板。
○ 检查锯链制动器的闸带。当出现磨损时，请更换新制动器。

每周保养

○ 检查反冲起动器，特别是线束及回弹弹簧。
○ 清洁火花塞的外表面。
○ 取下火花塞，检查电极间距。将其调整为 0.6 毫米，或更换火花塞。
○ 确认反冲起动器位置的进气口没有被堵塞。
○ 清洁空气过滤器。

每月保养

○ 用汽油清洗燃料箱，并清洁燃料过滤器。
○ 清洁链条油过滤器。
○ 清洁化油器的外表面及其周围。

季度维护

○ 清洁圆筒上的散热片。
○ 清洁风扇及其四周空间。
○ 清洁碳消声器。

注意

只应由HiKOKI维修服务中心来清洁圆筒散热片、风扇和消声器。

注

向最近的经销商订购部件时，请使用本说明书部件细目部分所示的部件编号。

	导板编号	长度型号	喷嘴-类型	链条编号 (OREGON)
型号	PO12-50CR	12″	链齿	91VG045
E&S	PO14-50CR	14″	链齿	91VG052

MEANINGS OF SYMBOLS

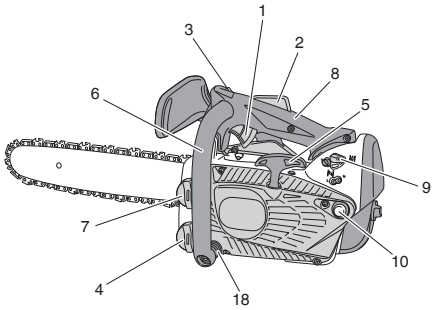
NOTE: Some units do not carry them.

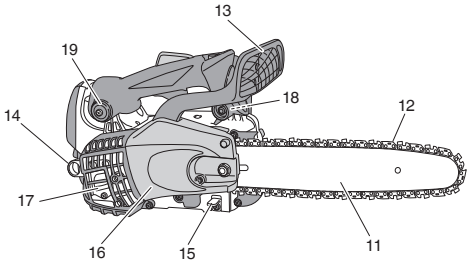
	Symbols ⚠ **WARNING** The following show symbols used for the machine. Be sure that you understand their meaning before use.		
	It is important that you read, fully understand and observe the following safety precautions and warnings. Careless or improper use of the unit may cause serious or fatal injury.		On/Start
	Read, understand and follow all warnings and instructions in this manual and on the unit.		Off/Stop
	Always wear eye, head and ear protectors when using this unit.		Emergency stop
	Warning, kickback danger. Be careful of possible sudden and accidental upward and/or backward motion of the guide bar.		Fuel and oil mixture
	One-handed usage not permitted. While cutting, hold saw firmly with both hands with thumb firmly locked around front handle.		Chain oil fill
	The saw is specially designed for tree service and therefore shall be used by trained operators only, in off-ground work in trees.	T	Carburetor adjustment - Idle speed
	It is important that you wear the protective clothing for feet, legs, hands and fore-arms.	L	Carburetor adjustment - Low speed mixture
	Chain brake	H	Carburetor adjustment - High speed mixture
	Choke - Run position (Open)		Hot surface
	Choke - Choked position (Closed)		

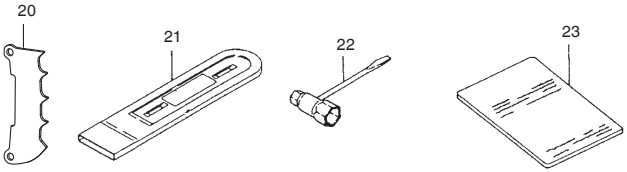
Contents

WHAT IS WHAT?

1. Throttle trigger: Device activated by the operator's finger, for controlling the engine speed.
2. Throttle trigger lockout: Device that prevents the accidental operation of the throttle trigger until manually released.
3. Ignition switch: Device for allowing the engine to be started or stopped.
4. Oil tank cap: For closing the oil tank.
5. Recoil starter: Pull handle to start the engine.
6. Front handle: Support handle located at or towards the front of the engine housing.
7. Fuel tank cap: For closing the fuel tank.
8. Rear handle: Support handle located on the top of the engine housing.
9. Choke lever: Device for enriching the fuel/air mixture in the carburetor, to aid starting.
10. Priming pump; Device for supplying extra fuel, to aid starting.
11. Guide bar: The part that supports and guides the saw chain.
12. Saw chain: Chain, serving as a cutting tool.
13. Chain brake (Front hand guard): Device for stopping or locking the chain.
14. Attachment point: The part for suspending the unit by using a safety strap, carabineer or rope.
15. Chain catcher: device for restraining the saw chain.
16. Side case: Protective cover to the guide bar, saw chain, clutch and sprocket when the chain saw is in use.
17. Muffler: Reduces engine exhaust noise and directs the exhaust gases.
18. Anti-vibration spring: Reduce the transmission of vibrations to the operator's hands.
19. Anti-vibration rubber: Reduce the transmission of vibrations to the operator's hands.
20. Spiked bumper (optional): Device for acting as a pivot when in contact with a tree or log.
21. Guide bar cover: Device for covering the guide bar and saw chain when the unit is not being used.
22. Combi box spanner: The tool for removing or installing a spark plug and tensioning the saw chain.
23. Handling instructions: Included with unit. Read before operation and keep for future reference to learn proper, safe techniques.







WARNINGS AND SAFETY INSTRUCTIONS

Operator safety

⚠ WARNING

This chain saw (CS33EDT) is designed especially for tree care and surgery. Only persons trained in tree care and surgery may use this saw. Observe all literature, procedures and recommendations from the relevant professional organization. Failure to do so constitutes a high accident risk. We recommend always using a rising platform for sawing in trees. Rappelling techniques are extremely dangerous and require special training. The operator must be trained in and familiar with the use of safety equipment and working and climbing techniques. Always use the restraining equipment for both the operator and the saw.

- Always use the gloves to reduce the effects of vibration
- Always wear a safety face shield or goggles.
- Gloves should be used when sharpening chain.
- Always wear safety protective equipment such as jacket, trousers, gloves, helmet, boots with steel toe-caps and non-slip soles whenever you use a chain saw. For working in trees the safety boots must be suitable for climbing techniques. Do not wear loose clothing, jewelry, short pants, sandals or go barefoot. Secure hair so it is above shoulder length.
- Do not operate this tool when you are tired, ill or under the influence of alcohol, drugs or medication.
- Never let a child or inexperienced person operate the machine.
- Wear hearing protection. Pay attention to your surroundings. Be aware of any bystanders who may be signaling a problem. Remove safety equipment immediately upon shutting off engine.
- Wear head protection.
- Never start or run the engine inside a closed room or building. Breathing exhaust fumes can kill.
- For respiratory protection, wear a protection mask while emitting the chain oil mist and dust from sawdust.
- Keep handles free of oil and fuel.
- Keep hands away from cutting equipment.
- Do not grab or hold the unit by the cutting equipment.
- When the unit turned off, make sure the cutting attachment has stopped before the unit is set down.
- When operation is prolonged, take a break from time to time so that you may avoid possible Hand-Arm Vibration Syndrome (HAVS) which is caused by vibration.
- The operator must obey the local regulations of cutting area.

⚠ WARNING

- Anti-vibration systems do not guarantee that you will not sustain Hand-Arm Vibration Syndrome or carpal tunnel syndrome. Therefore, continual end regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice immediately.
- Long or continuous exposure to high noise levels may cause permanent hearing impairment. Always wear approved hearing protection when operating a unit/machine.
- If you are using any medical electric/electronic devices such as a pacemaker, consult your physician as well as the device manufacturer prior to operating any power equipment.

Unit/machine safety

- Inspect the entire unit/machine before each use. Replace damaged parts. Check for fuel leaks and make sure all fasteners are in place and securely tightened.
- Replace parts that are cracked, chipped or damaged in any way before using the unit/machine.
- Make sure the side case is properly attached.
- Keep others away when making carburetor adjustments.
- Use only accessories as recommended for this unit/machine by the manufacturer.
- Never let the chain strike any obstacle. If the chain makes contact, the machine should be stopped and checked carefully.
- Make sure the automatic oiler is working. Keep the oil tank filled with clean oil. Never let chain run dry on the bar.
- All chain saw service, other than the items listed in the operator's/ owner's manual, should be performed by competent chain-saw service personnel. (For example, if improper tools are used to remove the flywheel or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur and could subsequently cause the flywheel to burst.)

⚠ WARNING

- Never modify the unit/machine in any way. Do not use your unit/machine for any job except that for which it is intended.
- Never use chain saw without any safety equipment or that has faulty safety equipment. It could result in serious personal injury.
- Using guide bar/chain other than recommended by the manufacturer which are not approved, could result in a high risk of personal accidents or injury.

Fuel safety

- Mix and pour fuel outdoors and where there are no sparks or flames.
- Use a container approved for fuel.
- Do not smoke or allow smoking near fuel or the unit/machine or while using the unit/machine.
- Wipe up all fuel spills before starting engine.
- Move at least 3 m away from fueling site before starting engine.
- Stop engine and let it cool for a few minutes before removing fuel tank cap.
- Empty the fuel tank before storing the unit/machine. It is recommended that the fuel be emptied after each use. If fuel is left in the tank, store so fuel will not leak.
- Store unit/machine and fuel in area where fuel vapors cannot reach sparks or open flames from water heaters, electric motors or switches, furnaces, etc.

⚠ WARNING

Fuel is easy to ignite or get explosion or inhale fumes, so that pay special attention when handling or filling fuel.

Cutting safety

- Do not cut any material other than wood or wooden objects.
- For respiratory protection, wear an aerosol protection mask when cutting the wood after insecticide has been applied.
- Keep others including children, animals, bystanders and helpers outside the hazard zone. Stop the engine immediately if you are approached.
- Hold the unit/machine firmly with the right hand on the rear handle and the left hand on the front handle.
- Keep firm footing and balance. Do not over-reach.
- Keep all parts of your body away from the muffler and cutting attachment when the engine is running.
- Keep Bar/Chain below waist level.
- Before felling a tree, the operator must be accustomed to the sawing techniques of the chain saw.
- Be sure to pre-plan a safe exit from a failing tree.
- While cutting, hold saw firmly with both hands with thumb firmly locked around front handle, and stand with feet well balanced and your body balanced.
- Stand to the side of the saw when cutting - never directly behind it.
- Always keep the spiked bumper face to a tree, because the chain may suddenly be drawn into a tree, if so equipped.
- When completing a cut, be ready to hold up the units as it breaks into clear, so it will not follow through and cut your legs, feet or body, or contact an obstruction.
- Be alert against kickback (when saw kicks up and back at operator). Never cut with the nose of the bar.
- When relocating to a new work area, be sure to shut off the machine and ensure that all cutting attachments are stopped.
- Never place the machine on the ground when running.
- Always ensure that the engine is shut off and any cutting attachments have completely stopped before clearing debris or removing grass from the cutting attachment.
- Always carry a first-aid kit when operating any power equipment.
- Never start or run the engine inside a closed room or building and/or near the inflammable liquid. Breathing exhaust fumes can kill.

Maintenance safety

- Maintain the unit/machine according to recommended procedures.
- Disconnect the spark plug before performing maintenance except for carburetor adjustments.
- Keep others away when making carburetor adjustments.
- Use only genuine HiKOKI replacement parts as recommended by the manufacturer.

CAUTION

Do not disassemble the recoil starter. You may get a possibility of personal injury with recoil spring.

⚠ WARNING

Improper maintenance could result in serious engine damage or in serious personal injury.

Transport and storage

- Carry the unit/machine by hand with the engine stopped and the muffler away from your body.
- Allow the engine to cool, empty the fuel tank, and secure the unit/machine before storing or transporting in a vehicle.
- Empty the fuel tank before storing the unit/machine. It is recommended that the fuel be emptied after each use. If fuel is left in the tank, store so fuel will not leak.
- Store unit/machine out of the reach of children.
- Clean and maintain the unit carefully and store it in a dry place.
- Make sure ignition switch is off when transporting or storing.
- When transporting or storage, cover chain with guide bar cover.

If situations occur which are not covered in this manual, take care and use common sense. Contact HiKOKI dealer if you need assistance. Pay special attention to statements preceded by the following words:

⚠ WARNING

Indicates a strong possibility of severe personal injury or loss of life, if instructions are not followed.

CAUTION

Indicates a possibility of personal injury or equipment damage, if instructions are not followed.

NOTE

Helpful information for correct function and use.

⚠ WARNING

KICKBACK DANGER (Fig. 1)

One of the most severe dangers when working with a chain saw is the possibility of kickback. Kickback may occur when the upper tip of the guide bar touches an object, or when the wood closes in and pinches the saw chain in the cut. Tip contact in some cases may cause a lightning fast reverse reaction, kicking the guide bar up and back toward you. Pinching the saw chain along the top of the guide bar may also push the guide bar rapidly back towards you. Either of these reactions may cause you to lose control of the saw which could result in serious personal injury. Even though your saw has safety built into its design, you should not rely on these safety features exclusively. Know where your bar tip is at all times. Kickback does occur if you allow the kickback zone (1) of the bar to touch an object. Do not use that area. Kickback from pinching is caused by a cut closing and pinching the upper side of the guide bar. Study your cut and make sure it will open as you cut through. Maintain control when the engine is running by always keeping a firm grip on the saw with your right hand on the rear handle, your left hand on the front handle and your thumbs and fingers encircling the handles. Always hold the saw with both hands during operation and cut at high engine speed.

SPECIFICATIONS

○ Code "CS" of model name means "Chain saw"

Model	CS33EDT (30)	CS33EDT (35)
Type of equipment	Chain saw, portable	
Engine Size (cm^3)	32.2	
Spark Plug	NGK BPMR-7A	
Fuel Tank Capacity (cm^3)	290	
Chain Oil Tank Capacity (cm^3)	180	
Dry Weight (kg) (Without guide bar and chain)	3.4	
Guide bar length (mm)	300	350
Chain pitch (mm)	9.53	
Chain gauge (mm)	1.27	
Sound pressure level LpA (dB (A)) by ISO 22868 Equivalent Uncertainty	 100 3	
Sound power level LwA (dB (A)) by ISO 22868 Measured Uncertainty Sound power level LwA (dB (A)) by 2000/14/EC Measured Guaranteed	 109 3 113 116	
Vibration level (m/s^2) by ISO 22867 Front handle Rear handle Uncertainty	 4.4 6.1 0.8	
Max. engine power by ISO 7293 (kW)	1.3/9300	
Max. engine speed (min^{-1})	12000	
Idle engine speed (min^{-1})	3000	
Specific fuel consumption (g/kWh)	567	
Type of chain	91VG045 (Oregon)	91VG052 (Oregon)
Max. chain speed (m/sec)	22.9	
Sprocket (number of teeth)	6	

NOTE: Equivalent noise level/vibration levels by ISO 22868/22867 are calculated as the time-weighted energy total for noise/vibration levels under various working conditions with the following time distribution: 1/3 idle, 1/3 full, 1/3 racing speed.
*All data subject to change without notice.

ASSEMBLY PROCEDURES

⚠ **WARNING**
Never try to start engine without side case, bar and chain securely fastened.

1. Pull the chain brake (18) toward the front handle to check that the brake is disengaged. (**Fig. 15**).
2. Remove guide bar clamp nut (2). Remove the side case (3) (**Fig. 2**)
   * In case of installing the spiked bumper (4), install the spiked bumper (4) to the unit with two screws. (**Fig. 3**)
3. Install the guide bar (5) onto the bolts (6), then push it toward the sprocket (7) as far as it will go. (**Fig. 4**)
4. Confirm the direction of saw chain (10) is correct as in the figure, and align the chain on the sprocket. (**Fig. 5**)
5. Guide the chain drive links into the bar groove all around the bar.
6. Install the side case (3) onto the bolts (6).
   Make sure that the boss of chain tension adjust bolt (8) fits into the hole of the bar (9). (**Fig. 4**)
   Then tighten the guide bar clamp nut (2) by hand that allows the chain bar end to move up and down easily. (**Fig. 2**)
7. Raise the bar end, and tighten the saw chain (10) by turning the tension adjustment bolt (11) clockwise. To check proper tension, lightly lift up the center of chain and there should be about 0.5 – 1.0 mm clearance between bar and edge of drive link (12). (**Fig. 6, 7**)

CAUTION
PROPER TENSION IS EXTREMELY IMPORTANT

8. Raise the bar end, and securely tighten the guide bar clamp nut with the combi box spanner. (**Fig. 7**)
9. A new chain will stretch so adjust the chain after a few cuts and watch chain tension carefully for the first half hour of cutting.

NOTE
Check the chain tension frequently for optimum performance and durability.

CAUTION
○ When the chain is excessively tightened, the bar and chain will be damaged rapidly. Conversely, when the chain is excessively loosened, it may get out of the groove in the bar.
○ Always wear gloves when touching the chain.

⚠ **WARNING**
During operation, hold chain saw firmly with both hands. A single hand operation may cause serious injury.

OPERATING PROCEDURES

Fuel (Fig. 8)

⚠ WARNING

- The chain saw is equipped with a two-stroke engine. Always run the engine on fuel, which is mixed with oil. Provide good ventilation, when fueling or handling fuel.
- Fuel contains highly flammable and it is possible to get the serious personal injury when inhaling or spilling on your body. Always pay attention when handling fuel. Always have good ventilation when handling fuel inside building.

Fuel

- Always use branded 89 octane unleaded gasoline.
- Use genuine two-cycle oil or use a mix between 25:1 to 50:1, please consult the oil bottle for the ratio or HiKOKI dealer.
- If genuine oil is not available, use an anti-oxidant added quality oil expressly labeled for air-cooled 2-cycle engine use (JASO FC GRADE OIL or ISO EGC GRADE). Do not use BIA or TCW (2-stroke water-cooling type) mixed oil.
- Never use multi-grade oil (10 W/30) or waste oil.
- Always mix fuel and oil in a separate clean container.

Always start by filling half the amount of gasoline, which is to be used. Then add the whole amount of oil. Mix (shake) the fuel mixture. Add the remaining amount of gasoline.
Mix (shake) the fuel-mix thoroughly before filling the fuel tank.

Fueling

⚠ WARNING (Fig. 9)

- Always shut off the engine and let it cool for a few minutes before refueling.
- Do not smoke or bring flames or sparks near the fueling site.
- Slowly open the fuel tank (13), when filling up with fuel, so that possible overpressure disappears.
- Tighten the fuel tank cap carefully, after fueling.
- Always move the unit at least 3 m from the fueling area before starting.
- Always wash any spilled fuel from clothing immediately with soap.
- Be sure to check any fuel leaking after refueling.

Before fueling, clean the tank cap area carefully, to ensure that no dirt falls into the tank. Make sure that the fuel is well mixed by shaking the container, before fueling.

Chain oil (Fig. 9)

Slowly open the oil tank (14), and fill up with chain oil. Always use good quality chain oil. When the engine is running, the chain oil is automatically discharged.
Fill up the oil tank (14) with chain oil every time when refueling.

NOTE

When pouring fuel (13) or chain oil (14) into the tank, place the unit with cap side up. (**Fig. 9**)

Starting the cold engine (Fig. 10–15)

CAUTION

Before starting, make sure that the bar/chain does not touch anything.

1. Make sure chain brake is engaged. (**Fig. 10**)
2. Set ignition switch (15) to ON position (**Fig. 11**).
3. Push priming pump (16) about ten times so that fuel flows through priming pump into carburetor. (**Fig. 12**)
4. Turn the choke lever (17) to choked position (**Fig. 12**). This will automatically lock the throttle in starting position.
5. Pull recoil starter briskly, taking care to keep the handle in your grasp and not allowing it to snap back. (**Fig. 13**)
6. When you hear first ignition, return the choke lever to run position. (**Fig. 12**)
7. Pull recoil starter briskly again in the aforementioned manner. (**Fig. 13**)

NOTE

If engine does not start, repeat procedures from 4 to 7.

8. As soon as engine start, pull throttle trigger full once and release immediately. (**Fig. 14**)
   Then half-throttle is disengaged.
9. Make sure chain brake is disengaged. (**Fig. 15**)
   Allow the engine about 2-3 minutes to warm up before subjecting it to any load.
   Do not run the engine at high speed without the load to shorten the longevity of the engine.

Starting the warm engine

Use only 1, 2, 7, and 9 of the starting procedure for a cold engine.
If the engine does not start, use the same starting procedure as for a cold engine.

Chain lubrication test

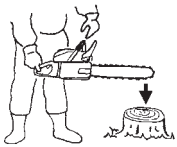
Check that chain oil is discharged properly. When the saw chain starts to revolve, point the head of the guide bar to a stump, etc., and pull the throttle trigger to perform high-speed operation for around 10 seconds. If chain oil is sprayed over the stump, it is discharged properly. (**Fig. 16**)

Chain brake operation (Fig. 17)

Chain brake (18), is designed to activate in an emergency such as kick-back action. Please check to verify that it works properly before use.
Application of brake is made by moving the front hand guard towards the bar. During the chain brake operation, even if the throttle trigger is pulled, the engine speed does not increase and the chain does not turn. To release the brake, pull up the front hand guard.

How to confirm:

1) Turn off the engine.
2) Holding the chain saw horizontally, release your hand from the front handle, hit the tip of the guide bar to a stump or a piece of wood, and confirm brake operation. Operating level varies by bar size.



In case the brake is not effective, ask our dealer for inspection and repairs. If the engine keeps rotating at high speed with the brake engaged, the clutch will overheat causing trouble.
When the brake engages during operation, immediately release the throttle trigger to stop the engine.

⚠ WARNING

Do not carry the machine with the engine running.

Stopping (Fig. 18)

Decrease engine speed, and push ignition switch (15) to stop position.

⚠ WARNING

Do not put the machine where there are flammable materials such as dried grass, since the muffler is still hot after the engine has stopped.

NOTE

If the engine does not stop, it can be forced to stop by rotating the choke lever to the choked position.
Before restarting the engine, ask our dealer for repairs.

⚠ WARNING

- Do not overreach or cut above shoulder height.
- Use extra caution when felling, and do not use the saw in a nose-high position or above shoulder height.

CHAIN CATCHER

The chain catcher is located on the power head just below the chain to further prevent the possibility of a broken chain striking the chain saw user.

⚠ WARNING

Do not stand in-line with chain when cutting.

BASIC TECHNIQUES FOR MAKING FELLING, LIMBING AND BUCKING CUTS
The intention of the following information is to provide you with the general introduction to wood cutting techniques.

⚠ WARNING

- This information does not cover all specific situations, which may depend on differences in terrain, vegetation, kind of wood, form and size of trees, etc. Consult your servicing dealer, forestry agent or local forestry schools for advice on specific woodcutting problems in your area. This will make your work more efficient and safer.

○ Avoid cutting in adverse weather conditions, such as dense fog, heavy rain, bitter cold, high winds, etc.
Adverse weather is often tiring to work in and creates potentially dangerous conditions such as slippery ground.
High winds may force the tree to fall in an unexpected direction causing property damage or personal injury.

CAUTION

Never use a chain saw to pry or for any purpose for which it is not intended.

⚠ WARNING

○ Avoid stumbling on obstacles such as stumps, roots, rocks, branches and fallen trees. Watch out for holes and ditches. Be extremely cautious when working on slopes or uneven ground.
Shut off the saw when moving from one work place to another.
Always cut at wide open throttle. A slow moving chain can easily catch and force the saw to jerk.

○ Never use the saw with only one hand.
You cannot control the saw properly and you may lose control and injure yourself severely.
Keep the saw body close to your body to improve control and reduce strain.
When cutting with the bottom part of the chain the reactive force will pull the saw away from you towards the wood you are cutting. The saw will control the feeding speed and sawdust will be directed towards you. (**Fig. 19**)

○ When cutting with the upper part of the chain the reactive force will push the saw towards you and away from the wood you are cutting. (**Fig. 20**)

○ There is a risk of kickback if the saw is pushed far enough so that you begin to cut with the nose of the bar.
The safest cutting method is to cut with the bottom part of the chain. Sawing with the upper part makes it much more difficult to control the saw and increases the risk of kickback.

○ In case the chain locked, immediately release the throttle trigger. If the throttle trigger keeps rotating at high speed with the chain locked, the clutch will overheat causing trouble.

NOTE

Always keep the spiked bumper face to a tree, because the chain may suddenly be drawn into a tree.

FELLING

Felling is more than cutting down a tree. You must also bring it down as near to an intended place as possible without damaging the tree or anything else.
Before felling a tree, carefully consider all conditions which may effect the intended direction, such as:
Angle of the tree. Shape of the crown. Snow load on the crown.
Wind conditions. Obstacles within tree range (e.g., other trees, power lines, roads, buildings, etc.).

⚠ WARNING

○ Always observe the general conditions of the tree. Look for decay and rot in the trunk which will make it more likely to snap and start to fall before you expect it.

○ Look for dry branches, which may break and hit you when you are working.
Always keep animals and people at least twice the tree length away while felling. Clear away shrubs and branches from around the tree.
Prepare a path of retreat away from the felling direction.

BASIC RULES FOR FELLING TREES

Normally the felling consists of two main cutting operations, notching and making the felling cut. Start making the upper notch cut on the side of the tree facing the feeling direction. Look through the kerf as you saw the lower cut so you do not saw too deep into the trunk. The notch should be deep enough to create a hinge of sufficient width and strength. The notch opening should be wide enough to direct the fall of the tree as long as possible. Saw the felling cut from the other side of the tree between one and two inches (3–5 cm) above the edge of the notch. (**Fig. 21**)

19. Felling direction
20. 45° minimum notch opening
21. Hinge
22. Felling cut

Never saw completely through the trunk. Always leave a hinge.
The hinge guides the tree. If the trunk is completely cut through, you lose control over the felling direction.
Insert a wedge or a felling lever in the cut well before the tree becomes unstable and starts to move. This will prevent the guide bar from binding in the felling cut if you have misjudged the falling direction. Make sure no people have come into the range of the falling tree before you push it over.

FELLING CUT, TRUNK DIAMETER MORE THAN TWICE GUIDE BAR LENGTH

Cut a large, wide notch. Then cut a recess into the center of the notch. Always leave a hinge on both sides of the center cut. (**Fig. 22**)
Complete the felling cut by sawing around the trunk as in the **Fig. 23**.

⚠ WARNING

These methods are extremely dangerous because they involve the use of the nose of guide bar and can result in kickback.
Only properly trained professionals should attempt these techniques.

LIMBING

Limbing is removing the branches from a feller tree.

⚠ WARNING

A majority of kickback accidents occur during limbing.
Do not use the nose of the guide bar. Be extremely cautious and avoid contacting the log, other limbs or objects with the nose of the guide bar. Be extremely cautious of limbs under tension. They can spring back towards you and cause loss of control resulting in injury. (**Fig. 24**)

Stand on the left side of the trunk. Maintain a secure footing and rest the saw on the trunk. Hold the saw close to you so that you are in full control of it. Keep well away from the chain. Move only when the trunk is between you and the chain. Watch out for spring back of limbs under tension.

LIMBING THICK BRANCHES

When limbing thick branches, the guide bar may get pinched easily. Branches under tension often snap up, so cut troublesome branches in small steps. Apply the same principles as for cross cutting. Think ahead and be aware of the possible consequences of all your actions.

CROSS CUTTING/BUCKING

Before starting to cut through the log, try to imagine what is going to happen. Look out for stresses in the log and cut through it in such a manner that the guide bar will not get pinched.

CROSS CUTTING LOGS, PRESSURE ON TOP

Take a firm stance. Begin with an upper cut. Do not cut too deeply, about 1/3 of the log diameter is enough. Finish with a bottom cut.
The saw cuts should meet. (**Fig. 25**)

23. Relieving cut
24. Cross cut
25. Pressure on top
26. Pressure side
27. Tension side
28. Relative depth of saw cuts

THICK LOG, LARGER THAN GUIDE BAR LENGTH

Begin by cutting on the opposite side of the log. Pull the saw towards you, followed by previous procedure. (**Fig. 26**)
If the log is lying on the ground make a boring cut to avoid cutting into the ground. Finish with a bottom cut. (**Fig. 27**)

⚠ WARNING

KICKBACK DANGER

Do not attempt a boring cut if you are not properly trained. A boring cut involves the use of the nose of the guide bar and can result in kickback.

CROSS CUTTING LOGS, PRESSURE ON BOTTOM

Take a firm stance. Begin with a bottom cut. The depth of the cut should be about 1/3 of the log diameter.
Finish with an upper cut. The saw cuts should meet. (**Fig. 28**)

29. Relieving cut
30. Cross cut
31. Pressure on bottom

32. Tension side
33. Pressure side
34. Relative depth of saw cuts

THICK LOG, LARGER THAN GUIDE BAR LENGTH
Begin by cutting on the opposite side of the log. Pull the saw towards you, followed by previous procedure. Make a boring cut if the log is close to the ground. Finish with a top cut. (**Fig. 29**)

⚠ WARNING
KICKBACK DANGER
Do not attempt a boring cut if you are not properly trained. A boring cut involves the use of the nose of the guide bar and can result in kickback. (**Fig. 30**)

IF THE SAW GETS STUCK
Stop the engine. Raise the log or change its position, using a thick branch or pole as a lever. Do not try to pull the saw free. If you do, you can deform the handle or be injured by the saw chain if the saw is suddenly released.

MAINTENANCE

MAINTENANCE, REPLACEMENT OR REPAIR OF THE EMISSION CONTROL DEVICES AND SYSTEM MAY BE PERFORMED BY ANY NON-ROAD ENGINE REPAIR ESTABLISHMENT OR INDIVIDUAL.

Carburetor adjustment (Fig. 31)

⚠ WARNING
Never start the engine without the complete side case.
Otherwise the clutch can come loose and cause personal injuries.

In the carburetor, fuel is mixed with air. When the engine is test run at the factory, the carburetor is adjusted. A further adjustment may be required, according to climate and altitude. The carburetor has one adjustment possibility:
T = Idle speed adjustment screw.

Idle speed adjustment (T)
Check that the air filter is clean. When the idle speed is correct, the cutting attachment will not rotate. If adjustment is required, close (clockwise) the T-screw, with the engine running, until the cutting attachment starts to rotate. Open (counter-clockwise) the screw until the cutting attachment stops. You have reached the correct idle speed when the engine runs smoothly in all positions well below the rpm when the cutting attachment starts to rotate.
If the cutting attachment still rotates after idle speed adjustment, contact HiKOKI dealer.

⚠ WARNING
When the engine is idling the cutting attachment must under no circumstances rotate.

NOTE
Some models sold in areas with strict exhaust emission regulation do not have high and low speed carburetor adjustments. Such adjustments may allow the engine to be operated outside of their emission compliance limits. For these models, the only carburetor adjustment is idle speed.

If you are not familiar with this type of adjustment, please ask for assistance from your HiKOKI dealer.

Air filter (Fig. 32)
The air filter (37) and cleaner sponge (36), (38) must be cleaned from dust and dirt in order to avoid:
- ○ Carburetor malfunctions.
- ○ Starting problems.
- ○ Engine power reduction.
- ○ Unnecessary wear on the engine parts.
- ○ Abnormal fuel consumption.

Clean the air filter daily or more often if working in exceptionally dusty areas.

Cleaning the air filter
Remove the air filter cover (35) and the cleaner sponge (36). Turn the air filter (37) 20° counter-clockwise and remove. Then remove the cleaner sponge (38).
Rinse them in warm soap suds. Check that the filter is dry before reassembly. An air filter that has been used for some time cannot be cleaned completely. Therefore, it must regularly be replaced with a new one. A damaged filter must always be replaced.

Spark plug (Fig. 33)
The spark plug condition is influenced by:
- ○ An incorrect carburetor setting.
- ○ Wrong fuel mixture (too much oil in the gasoline)
- ○ A dirty air filter.
- ○ Hard running conditions (such as cold weather).

These factors cause deposits on the spark plug electrodes, which may result in malfunction and starting difficulties. If the engine is low on power, difficult to start or runs poorly at idling speed, always check the spark plug first. If the spark plug is dirty, clean it and check the electrode gap. Readjust if necessary. The correct gap is 0.6 mm. The spark plug should be replaced after about 100 operation hours or earlier if the electrodes are badly eroded.

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

Oiler port (Fig. 34)
Clean the chain oiler port (39) whenever possible.

Guide bar (Fig. 35)
Before using the machine, clean the groove and oiler port (40) in the bar with the special gauge offered as an optional accessory.

Side case (Fig. 36)
Always keep the side case and drive area clean of saw dust and debris. Periodically apply oil or grease to this area to protect from corrosion as some trees contain high levels of acid.

Fuel filter (Fig. 37)
Remove the fuel filter from the fuel tank and thoroughly wash it in solvent. After that, push the filter into the tank completely.

NOTE
If the filter is hard due to dust and dirt, replace it.

Chain oil filter (Fig. 38)
Remove the oil filter and thoroughly wash it in solvent.
After that, push the filter into the tank completely.

NOTE
If the filter is hard due to dust and dirt, replace it.

For long-term storage
Drain all fuel from the fuel tank. Start and let engine run until it stops. Repair any damage which has resulted from use. Clean the unit with a clean rag, or the use of high pressure air hose. Put a few drops of two-cycle engine oil into the cylinder through the spark plug hole, and spin the engine over several times to distribute oil.
Cover the unit and store it in a dry area.

CHAIN SHARPENING
Parts of a cutter (Fig. 39, 40)

⚠ WARNING
- ○ Gloves should be used when sharpening chain.
- ○ Be sure to round off the front edge to reduce the chance of kickback or tie-strap breakage.

41. Top plate
42. Working corner
43. Side plate
44. Gullet
45. Heel
46. Chassis
47. Rivet hole
48. Toe
49. Depth gauge
50. Correct angle on top plate (degree of angle depends on chain type)
51. Slightly protruding “hook” or point (curve on non-chisel chain)
52. Top of depth gauge at correct height below top plate
53. Front of depth gauge rounded off

LOWERING DEPTH GAUGES WITH A FILE
1) If you sharpen your cutters with a file holder, check and lower the depth.
2) Check depth gauges every third sharpening.
3) Place depth gauge tool on cutter. If depth gauge projects, file it level with the top of the tool. Always file from the inside of the chain toward an outside cutter. (**Fig. 41**)

4) Round off front corner to maintain original shape of depth gauge after using depth gauge tool. Always follow the recommended depth gauge setting found in the maintenance or operator manual for your saw. (**Fig. 42**)

GENERAL INSTRUCTIONS FOR FILING CUTTERS

File (54) cutter on one side of the chain from the inside out. File on forward stroke only. (**Fig. 43**)

5) Keep all cutters the same length. (**Fig. 44**)
6) File enough to remove any damage to cutting edges (side plate (55) and top plate (56)) of cutter. (**Fig. 45**)

SHARPENING ANGLES FOR SHARPENING SAW CHAIN

	1. Part Number	91VG
	2. Pitch	3/8"
	3. Depth Gauge Setting	0.025"
	4. Side Plate Filing Angle	80°
	5. Top Plate Angle	30°
	6. File Guide Angle	90°

Maintenance schedule

Below you will find some general maintenance instructions. For further information please contact HiKOKI dealer.

Inspection and service before use

- ○ Check that no peel-off, degradation, or damage is observed in the Anti-vibration rubber members, and no loosening or damage is observed in their fixtures.
- ○ Check that no damage is observed in the Anti-vibration springs, and no loosening or damage is observed in their fixtures.
- ○ Check that no deformation or damage is observed in the front and rear handles.
- ○ Check that the fixtures for front and rear handles are sufficiently tightened and free of damage.
- ○ Check that bolts, nuts, etc. used for each part are sufficiently tightened and free of damage.

Daily maintenance

- ○ Clean the exterior of the unit.
- ○ Clean the chain oil filter port.
- ○ Clean the groove and oil filter port in the guide bar.
- ○ Clean the side case of saw dust.
- ○ Check that the saw chain is sharp.
- ○ Check that the bar nuts are sufficiently tightened.
- ○ Make sure that the chain transport guard is undamaged and that it can be securely fitted.
- ○ Check that nuts and screws are sufficiently tightened. Especially inspect the bolt of muffler and ensure that they are properly tightened before starting engine. Should any of the bolts be loose, retighten them immediately. Failure to do so could result in serious hazard.
- ○ Check the tip of the bar. Please exchange it for the new one when it is worn out.
- ○ Check the band of chain brake. Please exchange it for the new one when it is worn out.

Weekly maintenance

- ○ Check the recoil starter, especially cord and return spring.
- ○ Clean the exterior of the spark plug.
- ○ Remove the spark plug and check the electrode gap. Adjust it to 0.6 mm or change the spark plug.
- ○ Check that the air intake at the recoil starter is not clogged.
- ○ Clean the air filter.

Monthly maintenance

- ○ Rinse the fuel tank with gasoline, and clean fuel filter.
- ○ Clean chain oil filter.
- ○ Clean the exterior of the carburetor and the space around it.

Quarterly maintenance

- ○ Clean the cooling fins on the cylinder.
- ○ Clean the fan and the space around it.
- ○ Clean the muffler of carbon.

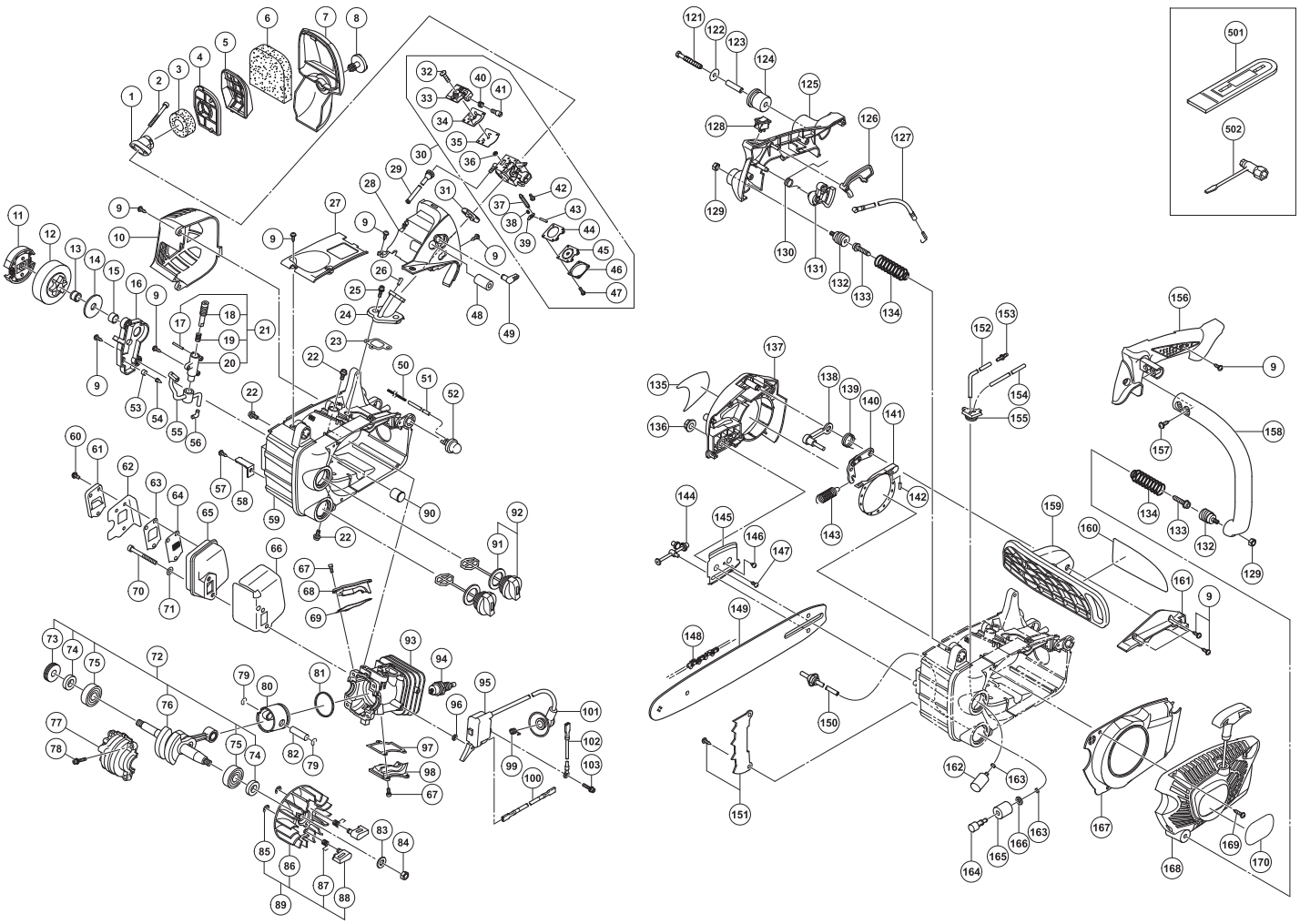
CAUTION

Cleaning of cylinder fins, fan and muffler shall be done by a HiKOKI Authorized Service Center.

NOTE

When ordering the parts to your nearest dealer, please use the item numbers showing on the parts breakdown section in this instruction.

	BAR NO.	LENGTH-TYPE	NOSE-TYPE	CHAIN NO. (OREGON)
MODEL NO. E&S	PO12-50CR PO14-50CR	12″ 14″	SPROCKET SPROCKET	91VG045 91VG052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Item No.	Part Name	Q'TY
1	AIR CLEANER BASE	1
2	HEX. SOCKET HD. BOLT M5 × 45	2
3	CLEANER SPONGE (B)	1
4	CLEANER ELEMENT A COMP.	1
5	CLEANER ELEMENT B COMP.	1
6	CLEANER SPONGE (A)	1
7	CLEANER COVER	1
8	CLEANER KNOB	1
9	TAPPING SCREW (W/FLANGE) D4 × 16	16
10	MUFFLER COVER	1
11	CLUTCH	1
12	CLUTCH HOUSING	1
13	NEEDLE BEARING (D)	1
14	CLUTCH WASHER	1
15	CRANK SHAFT COLLAR	1
16	OIL PUMP COVER	1
17	NEEDLE ROLLER 2.5 × 9.8	2
18	PUMP GEAR	1
19	PUMP GEAR SPRING	1
20	PUMP CASE	1
21	PUMP ASS'Y	1
22	SEAL LOCK BOLT M5 × 15	5
23	INTAKE PACKING	1
24	INTAKE	1
25	HEX. SOCKET HD. BOLT M4 × 12	2
26	PULSE GUIDE	1
27	ENGINE CASE COVER	1
28	CLEANER BODY	1
29	RUBBER PIPE	1
30	CARBURETOR ASS'Y	1
31	INLET MANIFOLD SPACER	1
32	SCREW	1
33	PUMP BODY	1
34	PUMP GASKET	1
35	PUMP DIAPHRAGM	1
36	INLET SCREEN	1
37	NEEDLE VALVE	1
38	VALVE SPRING	1
39	CONTROL LEVER	1
40	IDLE ADJUST SPRING	1
41	IDLE ADJUST SCREW	1
42	HINGE PIN SET SCREW	1
43	HINGE PIN	1
44	DIAPHRAGM PACKING	1
45	METERING DIAPHRAGM COMP.	1
46	DIAPHRAGM COVER	1
47	SET SCREW	4
48	IDOL SPONGE	1
49	CHOKE LEVER	1
50	PROTECTIVE COIL	1
51	FUEL PIPE	1
52	PRIMING PUMP COMP.	1
53	AIR VENT SPONGE	1
54	AIR VENT VALVE(B)	1
55	OIL PIPE	1
56	PIPE JOINT	1
57	FLANGED TAPPING SCREW D5 × 15	1
58	CHAIN CATCHER	1
59	ENGINE CASE ASS'Y	1
60	MACHINE SCREW (W/WASHERS) M4 × 10	3
61	EXHAUST PIPE	1
62	MUFFLER SPECIAL PACKING	1
63	GAUZE FIXING PLATE	1
64	MUFFLER GAUZE	1
65	MUFFLER	1
66	MUFFLER PACKING	1
67	HEX. SOCKET HD. BOLT M4 × 10	6
68	SCAVENGING COVER (B)	1
69	COVER PACKING (B)	1
70	HEX. SOCKET HD. BOLT M6	2
71	BOLT WASHER D6	2
72	CRANK WORM ASS'Y	1
73	WORM	1
74	OIL SEAL	2
75	BALL BEARING	2
76	CRANK SHAFT	1
77	CRANK CASE	1
78	HEX. SOCKET HD. BOLT (W/SP.WASHER) M5 × 20	4
79	CIR CLIP	2

Item No.	Part Name	Q'TY
80	PISTON	1
81	PISTON RING (XR1-1856)	1
82	PISTON PIN	1
83	BOLT WASHER D8	1
84	FLYWHEEL NUT	1
85	RETAINING RING D4	2
86	MAGNETO ROTOR (FLZ33C)	1
87	STARTER PAWL SPRING	2
88	STARTER PAWL	2
89	MAGNET SUB ASS'Y	1
90	INNER CAP	1
91	TANK CAP PACKING	2
92	FUEL TANK CAP ASS'Y	2
93	CYLINDER	1
94	SPARK PLUG BPMR7A	1
95	IGNITION COIL (FL33F)	1
96	WASHER	2
97	COVER PACKING (A)	1
98	SCAVENGING COVER (A)	1
99	METAL FITTING OF PLUG CAP	1
100	CORD (A)	1
101	SPARK PLUG CAP	1
102	CORD (B)	1
103	HEX. SOCKET HD. BOLT (W/WASHERS) M4 × 18	2
121	HEX. HD. TAPPING SCREW D5 × 40	1
122	WASHER 1.0	1
123	COLLAR 28.2	1
124	DAMPER	1
125	REAR HANDLE (B)	1
126	TRIGGER LOCKOUT	1
127	THROTTLE WIRE	1
128	STOP SWITCH	1
129	NUT M6	2
130	THROTTLE LEVER SPRING	1
131	THROTTLE LEVER	1
132	SPRING HOLDER	2
133	FLANGED TAPPING SCREW D6	2
134	ANTIVIBRATION SPRING	2
135	NAME PLATE	1
136	FLANGE NUT M8	1
137	SIDE CASE (VERMILION)	1
138	BRAKE SUPPORT PLATE	1
139	BRAKE LEVER SPRING	1
140	BRAKE LINK	1
141	BRAKE BAND	1
142	NEEDLE ROLLER D3	1
143	BRAKE SPRING	1
144	CHAIN PULLER	1
145	GUIDE PLATE (B)	1
146	TAPPING SCREW D3	1
147	TAPPING SCREW D4 × 10	1
148	SAW CHAIN	1
149	CHAIN BAR	1
150	SHIELD TUBE	1
151	SPIKE SET	1
152	FUEL PIPE L150	1
153	PIPE JOINT	1
154	FUEL PIPE L260	1
155	FUEL GROMMET	1
156	REAR HANDLE (A)	1
157	TAPPING SCREW (W/FLANGE) D5 × 16	2
158	FRONT HANDLE	1
159	BRAKE HANDLE	1
160	CAUTION LABEL	1
161	BRAKE LINK COVER (VERMILION)	1
162	PUMP FILTER BODY	1
163	CLIP	2
164	OIL FILTER BODY	1
165	OIL FILTER	1
166	BOLT WASHER D5	1
167	AIR DEFLECTOR	1
168	RECOIL STARTER (VERMILION)	1
169	TAPPING SCREW (W/FLANGE) D4 × 20	4
170	BRAND LABEL	1
501	CHAIN COVER	1
502	COMBI BOX SPANNER	1

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