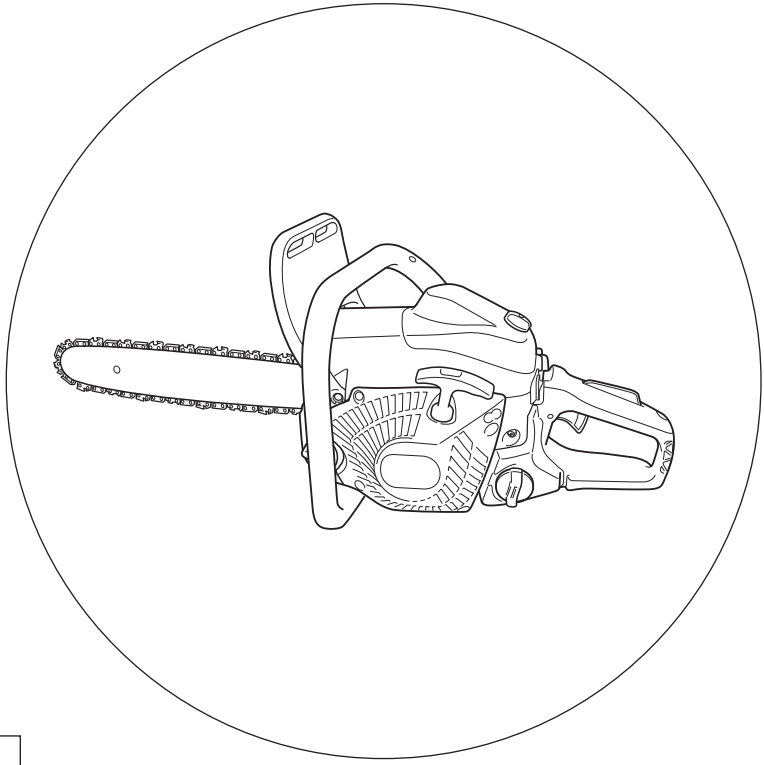
HiKOKI

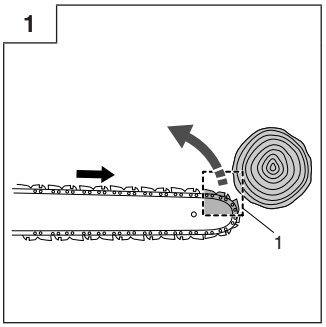
油锯
Chain Saw

CS 51EA

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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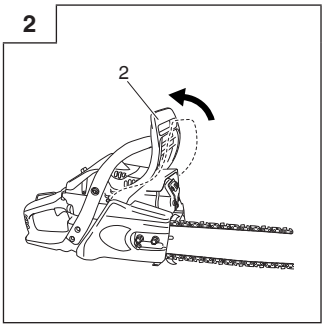
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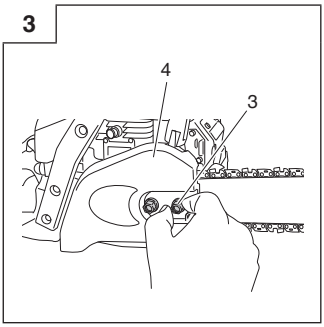
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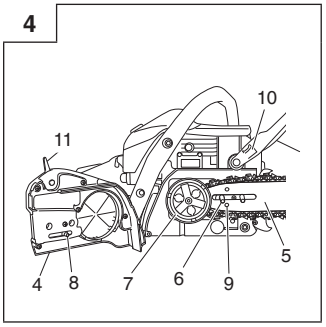
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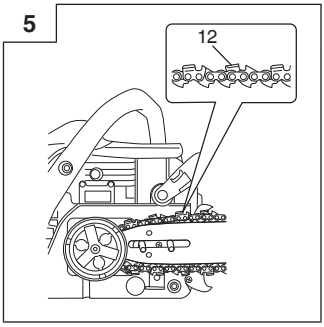
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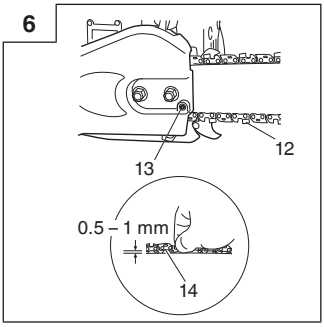
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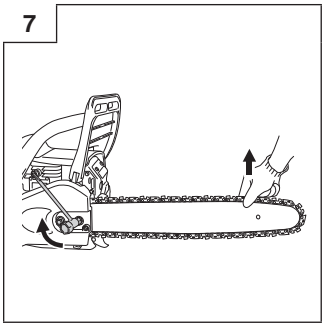
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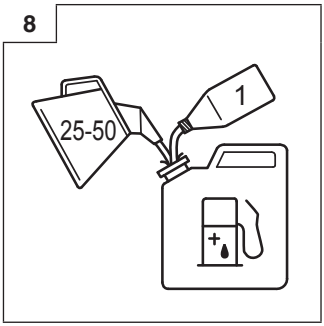
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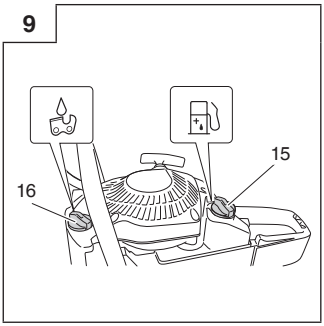
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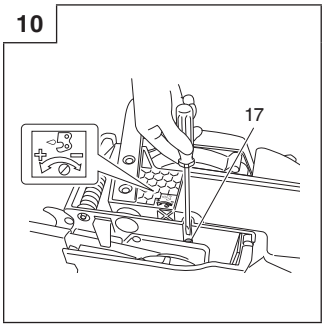
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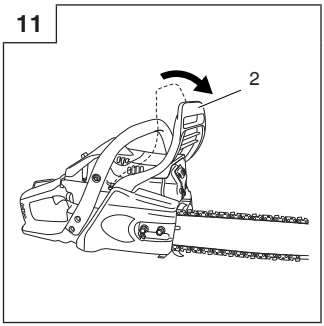
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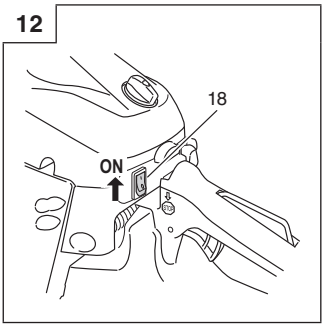
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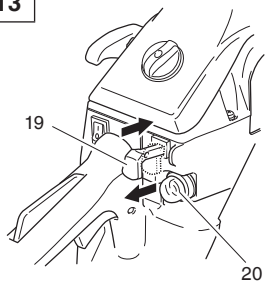

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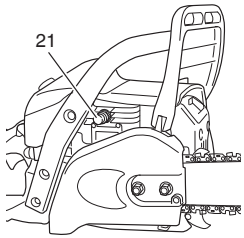

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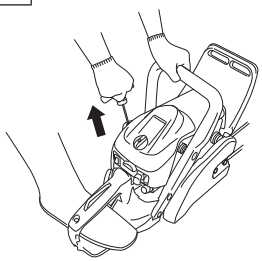

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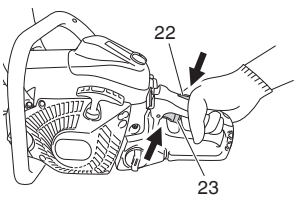

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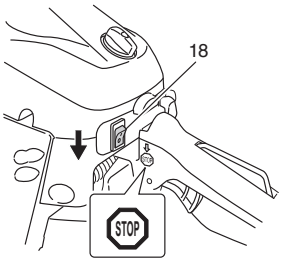

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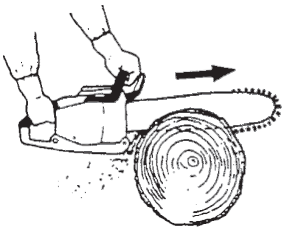

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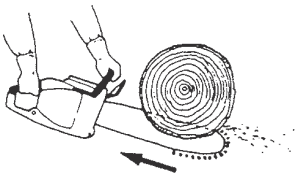

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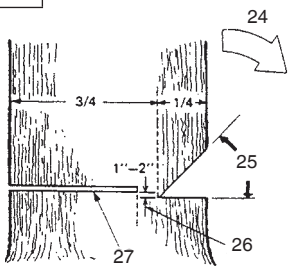

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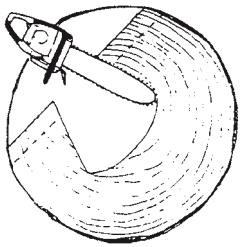

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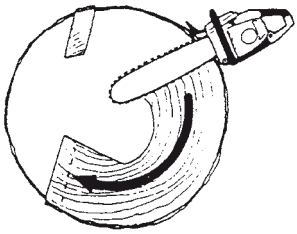

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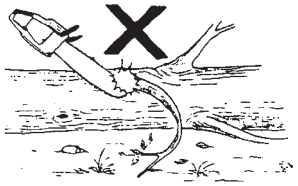

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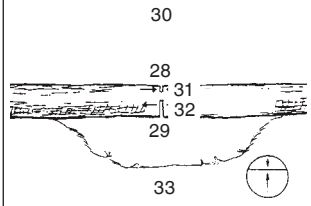

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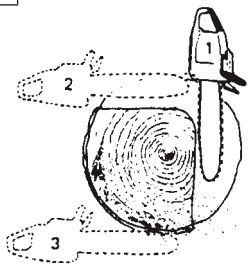

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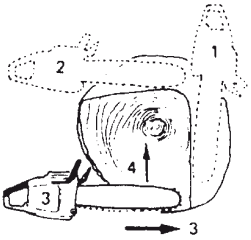

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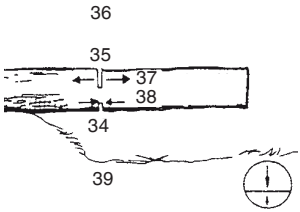

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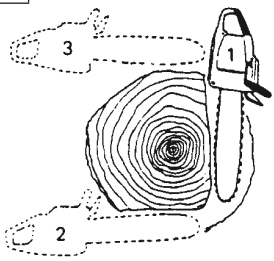

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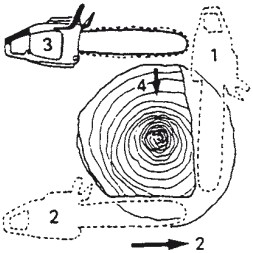

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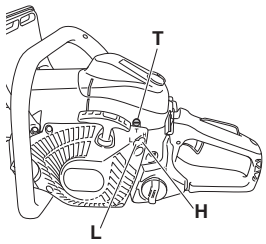

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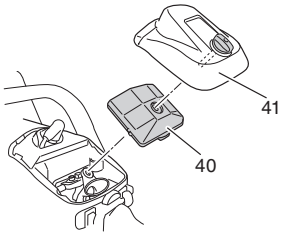

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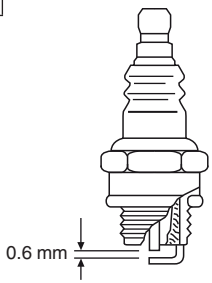

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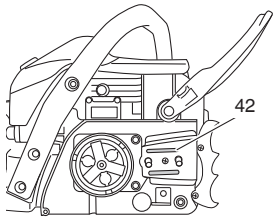

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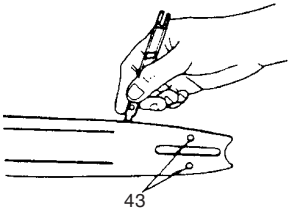

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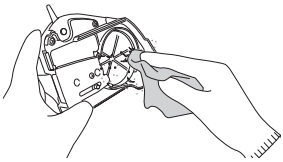

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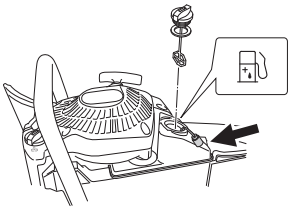

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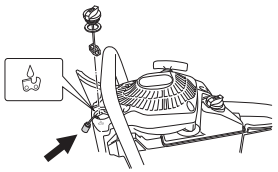

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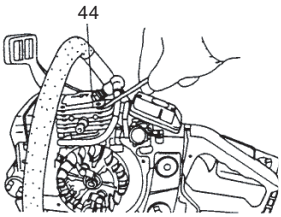

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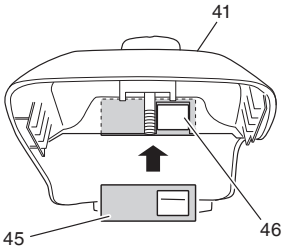

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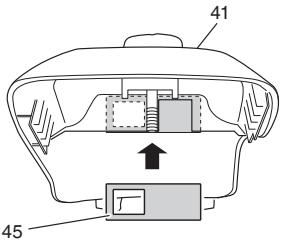

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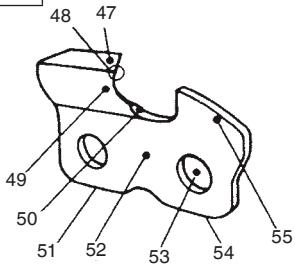

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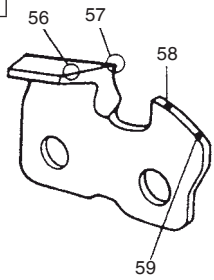

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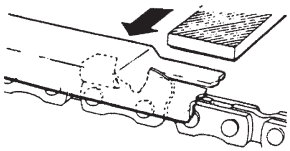

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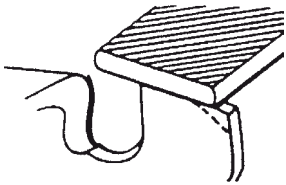

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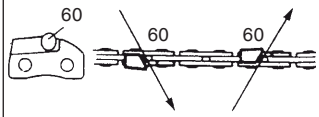

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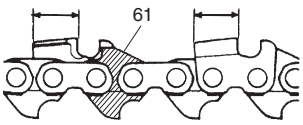

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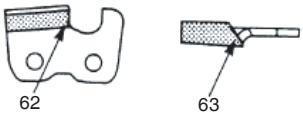


标志的含义

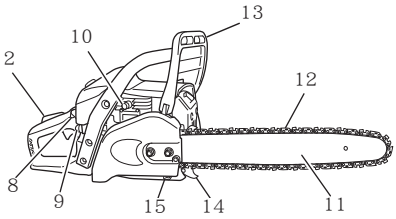
注：某些装置未附带此类标志。

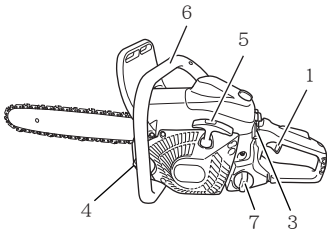
	标志 ⚠警告 以下显示的是本机器中使用的标志。使用前请一定确保已充分了解各标志的含义。		
	阅读，完全理解并遵守以下安全预防措施和警告是十分重要的。疏忽大意或对本装置使用不当可能导致严重的人身伤害或死亡。		急停
	请仔细阅读，理解并遵守本手册以及本装置中的警告及指示。		燃油混合物
	使用本装置时请务必配戴眼，头及耳防护设备。		链油加注
	警告，反弹危险。注意导板可能突然意外向上和 / 或向后移动。	T	化油器调整 － 怠速
	禁止单手操作。锯切时，用双手紧握油锯，拇指紧扣住前部手柄。	L	化油器调整 － 低速混合物
	锯链制动器	H	化油器调整 － 高速混合物
	阻气门		油泵调整
	开启/启动		起动泵
	关闭/停止		泄压阀

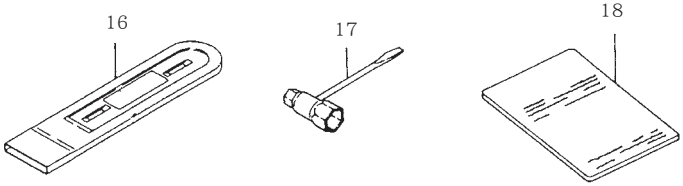
目录

零件名称

1. 节流阀杆：操作者用手指启动的设备，用于控制发动机速度。
2. 节流阀杆锁：防止节流阀杆出现操作意外的设备，手动松开后无效。
3. 停止开关：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. 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。
9. 起动泵；供应额外燃料的设备，可促进起动。
10. 泄压阀：该装置减小压缩压力，以便于启动。
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. 防滑齿：锯切树木或圆木时作为支点的设备。
15. 链锯止链销：用于油锯制动的设备。
16. 导板盖：在本装置闲置时，用于封盖导板和油锯的设备。
17. 组合箱扳手：用于拆卸或安装火花塞以及绷紧油锯的工具。
18. 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

○ 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，以及眼睛，耳朵和腿的保护装备。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，用双手紧握机器，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停止开关已关闭。
○ 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。

遵循制造商关于油锯的打磨和维护指导说明。维护不善可能增加反冲的可能性。

规格

○ 型号名称中的“CS”是指 Chain saw（油锯）

型号	CS51EA (40S)	CS51EA (45S)	CS51EA (50S)
装置类型	油锯，便携式		
发动机尺寸（厘米^3）	50.1		
火花塞	NGK BPM-7A		
燃料箱容积（厘米^3）	530		
链条油箱容积（厘米^3）	270		
净重（公斤） （无导板和链条）	5.1		
链条间距（毫米）	8.26		
链条规格（毫米）	1.27		
声压级 LpA（dB (A)）依据ISO 22868 等效 不确定	 104 1		
声功率级 LwA (dB (A)) 依据ISO 22868 测量 不确定 声功率级 LwA (dB (A)) 依据2000/14/EC 测量 保证	 113 2 114 117		
振动级（m/s^2）依据ISO 22867 前部手柄 后部手柄 不确定	 3.3 2.7 0.8		
导板长度（毫米）	400	450	500
链条类型	95VPX (Oregon)		20BPX (Oregon)
最大发动机功率 依据ISO 7293(kW)	2.5		
最大发动机速度（分钟$^{-1}$）	13500		
怠速发动机速度（分钟$^{-1}$）	3000		
发动机功率最大时的专用燃料消耗 （g/kWh）	439		
最大链条速度（米 / 秒）	26.0		
链齿（齿数）	7		

注

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前部护手板（2），以检查锯链制动器是否松开。（图 2）
2. 取下导板紧固螺母（3）。取下侧盖板（4）。（图 3）
3. 将导板（5）安装到螺栓（6）上，然后将其推向链齿（7）。
4. 确保油锯（12）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（4）安装到螺栓（6）上。
   到位。确保油锯张力调节螺栓（8）的轮毂插入导板的孔（9）中。（图 4）
   侧面机壳上的制动杆（11）必须放入前部护手板侧面上的凹槽（10）。
   然后用手拧紧导板紧固螺母（3），让导板一头可以上下任意移动。（图 3）
7. 举起导板一端，然后顺时针拧张力调节螺栓（13）拉紧链条（12）。若要检查张力是否合适，轻轻提起链条，导板和传动链环边缘必须有约0.5－1.0 mm的间隙（14）。（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。再将剩余的一半汽油加入。
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。
○ 添加燃料时，慢慢打开燃料箱（15）以防止出现过压现象。
○ 添加完成后拧紧燃料盖。
○ 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）

添加链条油（16）。务必使用优质链条油。发动机运转时，链条油会自动流出。

注

将燃料（15）或链条油（16）倒入油箱中之前，将本装置的油箱盖打开放好。（图 9）

调整链条油供应

通过润滑系统供应的链条油量在工厂已调整至最大量。根据运行条件调整油量。
逆时针转动调节螺丝（17）时增加油量，顺时针转动时减少油量。（图 10）

锯链制动器运转（图 2, 11）

锯链制动器用于处理紧急情况，如反弹。

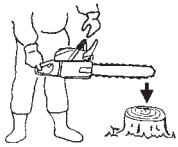
使用制动器时，将前部护手板移向导板。锯链制动器操作期间，即使已拉动节流阀杆，发动机的速度也不会增加，链条不会转动。若要松开制动器，请朝着前部手柄方向拉动前部护手板。

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，请立即松开节流阀杆以减慢发动机转速。

锯链制动器有效确认方法：

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。

启动（图 11－16）

注意

启动前，确保锯链制动器已接合，且导板 / 链条未接触任何物体。（图 11）

1. 将点火开关（18）设置为 ON（开）位置。（图 12）
   *推几次起动泵（20），使燃料从起动球流入化油器。（图 13）
2. 将拉气门操作杆（19）至阻气位置（图 13）。这样可自动锁定在半油门位置。
3. 推泄压阀（21）。
   一旦发动机启动，阀（21）将自动恢复原位（图 14）。
4. 迅速拉动手拉启动器，请小心握紧手柄使其无法弹回。（图 15）
5. 听到第一声点火后，将阻气门杆（19）完全推入。（图 13）
6. 推泄压阀。
7. 再次以前述方式迅速拉动手拉启动器。（图 15）

注

如果发动机没有启动，请重复步骤2至7。

8. 一旦发动机启动，完全拉起油门杆（22）使其锁定（23），然后立即松开。（图 16）接下来，半油门脱开。
   朝着前部手柄方向拉动前部护手板（2），以松开锯链制动器。
   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，以免缩短发动机使用寿命。

⚠ 警告

请勿在发动机运转时携带机器。

停止（图 17）

降低发动机转速，然后将点火开关推到停止位置（18）。

⚠ 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，关闭发动机。
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 18）

○ 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 19）
○ 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，请立即松开节流阀杆。
如果在使用链条卡住时节流阀杆仍以高速运转，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 20）

24.砍伐方向
25.槽口开口角度最小45°
26.节点
27.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 21）
如图 22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 23）

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 24）

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

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 25）
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 26）

⚠ 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 27）

34.减压锯口
35.横锯口
36.底部压力
37.侧面张力
38.侧面压力
39.两个锯口的相对深度

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 28）

⚠ 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 29）

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 30）

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
切勿接触高速调整 (H) 和低速调整(L)。
它们仅供HiKOKI经销商操作。
如果您转动它们，可能会造成机器严重损坏。

空气过滤器（图 31）
空气过滤器（40）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。
取下空气过滤器盖（41）及滤芯（40）。
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 32）
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33）
可能时即清洁链条加油器口（42）。

导板（图 34）
使用本机器前，用专用工具（选购件）清洁链条槽和加油器口（43）。

侧盖板（图 35）
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 36）
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37）
取下链条油过滤器并在溶剂中彻底清洗。

清洁气缸散热片（图 38）
如果有木片夹在气缸散热片（44）中间，发动机可能会过热而导致输出功率过低。为避免发生此种情况，请一定要保持气缸散热片及风扇箱清洁。

防结冰系统（图 39，40）
在冬季使用本机时，此系统可防止汽化器结冰。

1. 需要使用防结冰系统时，卸下滤气器盖（41）。从滤气器盖内侧抽出闸门（45），重新装上时转动一半，使其处于冬季位置（图 39）
   这样可使热气从气缸一侧经过开口（46）流到汽化器仓室。

注

当冬季结束，汽化器不会结冰时，务必将闸门重新安装在正常位置。（图 40）

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41，42）
⚠ 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。

47.顶板
48.切割角
49.侧板
50.齿槽
51.齿跟
52.底板
53.铆钉孔
54.齿尖
55.深度规
56.顶板的正确角度（角度因链条类型而异）
57.略突的“弯钩”或点（非凿链条的弯角）
58.深度规顶部的正确高度低于顶板
59.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 43）
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 44）

锉利锯片的概述
从内到外，锉利链条一侧的锯片（60）。仅向前锉。（图 45）
5）保持所有锯片长度相同。（图 46）
6）锉利至不会损坏锯片锯缘（侧板（62）和顶板（63））。（图 47）

注

请勿锉或改动缓冲器传动杆（61）的顶端。（图 46）

锉利油锯链条的锉利角度

	1. 部件编号	95VPX/20BPX
	2. 间距	0.325"
	3. 深度规设置	0.025"
	4. 侧板锉角	85°
	5. 顶板角度	30°
	6. 锉利引导角度	100°

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。

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。
○ 清洁空气过滤器。

每周保养

○ 检查反冲启动器，特别是线束。
○ 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。
○ 清洁气缸的散热片，检查反冲启动器处的空气吸入是否被阻塞。

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。
○ 清洁风扇及风扇周围。

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	链条编号
型号 OREGON	160MLBK041	400 毫米 (16″)	95VPX-66
	180MLBK041	450 毫米 (18″)	95VPX-72
	200PXBK041	500 毫米 (20″)	20BPX-78

MEANINGS OF SYMBOLS

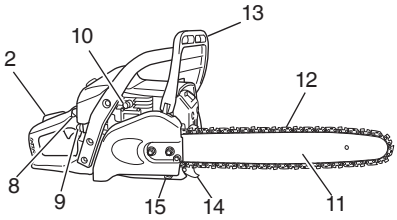
NOTE: Some units do not carry them.

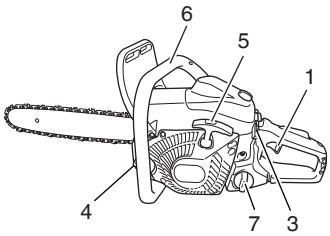
	Symbols ⚠ **WARNING** The following show symbols used for the machine. Be sure that you understand their meaning before use.		
	It is important that you read, fully understand and observe the following safety precautions and warnings. Careless or improper use of the unit may cause serious or fatal injury.		Emergency stop
	Read, understand and follow all warnings and instructions in this manual and on the unit.		Fuel and oil mixture
	Always wear eye, head and ear protectors when using this unit.		Chain oil fill
	Warning, kickback danger. Be careful of possible sudden and accidental upward and/or backward motion of the guide bar.	T	Carburetor adjustment - Idle speed
	One-handed usage not permitted. While cutting, hold saw firmly with both hands with thumb firmly locked around front handle.	L	Carburetor adjustment - Low speed mixture
	Chain brake	H	Carburetor adjustment - High speed mixture
	Choke		Oil pump adjustment
	On/Start		Priming pump
	Off/Stop		Decompression valve

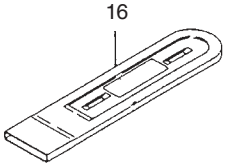
Contents

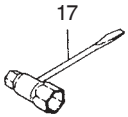
WHAT IS WHAT?

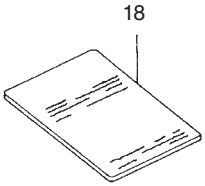
1. Throttle lever: Device activated by the operator's finger, for controlling the engine speed.
2. Throttle lever lockout: Device that prevents the accidental operation of the throttle lever until manually released.
3. Stop switch: Device for allowing the engine to be started or stopped.
4. Oil tank 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. Choke lever: Device for enriching the fuel/air mixture in the carburetor, to aid starting.
9. Priming pump; Device for supplying extra fuel, to aid starting.
10. Decompression valve: Device for reducing the compression pressure 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. Spiked bumper: Device for acting as a pivot when in contact with a tree or log.
15. Chain catcher: Device for restraining the saw chain.
16. Guide bar cover: Device for covering the guide bar and saw chain when the unit is not being used.
17. Combi box spanner: The tool for removing or installing a spark plug and tensioning the saw chain.
18. Handling instructions: Included with unit. Read before operation and keep for future reference to learn proper, safe techniques.











WARNINGS AND SAFETY INSTRUCTIONS

Operator safety

- 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, and eye, ear and leg protection equipment 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

- Antivibration 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 the unit/machine 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 stop 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. Follow manufacturer's sharpening and maintenance instructions for the saw chain. The lack of this maintenance may increase the possibility of kickback.

SPECIFICATIONS

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

Model	CS51EA (40S)	CS51EA (45S)	CS51EA (50S)
Type of equipment	Chain saw, portable		
Engine Size (cm^3)	50.1		
Spark Plug	NGK BPM-7A		
Fuel Tank Capacity (cm^3)	530		
Chain Oil Tank Capacity (cm^3)	270		
Dry Weight (kg) (Without guide bar and chain)	5.1		
Chain pitch (mm)	8.26		
Chain gauge (mm)	1.27		
Sound pressure level LpA (dB (A)) by ISO 22868 Equivalent Uncertainty	 104 1		
Sound power level LwA (dB (A)) by ISO 22868 Measured Uncertainty Sound power level LwA (dB (A)) by 2000/14/EC Measured Guaranteed	 113 2 114 117		
Vibration level (m/s^2) by ISO 22867 Front handle Rear handle Uncertainty	 3.3 2.7 0.8		
Guide bar length (mm)	400	450	500
Type of chain	95VPX (Oregon)		20BPX (Oregon)
Max. engine power by ISO 7293 (kW)	2.5		
Max. engine speed (min^{-1})	13500		
Idle engine speed (min^{-1})	3000		
Specific fuel consumption at maximum engine power (g/kWh)	439		
Max. chain speed (m/sec)	26.0		
Sprocket (number of teeth)	7		

NOTE: Equivalent noise level/vibration levels 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 front hand guard (2) toward the front handle to check that the chain brake is disengaged. (**Fig. 2**)
2. Remove guide bar clamp nuts (3). Remove the side case (4). (**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.
4. Confirm the direction of saw chain (12) 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 (4) onto the bolts (6).
   Make sure that the boss of chain tension adjust bolt (8) fits into the hole (9) of the bar. (**Fig. 4**)
   The brake lever (11) of the side case must fit the groove (10) on the side of the front hand guard.
   Then tighten the guide bar clamp nuts (3) by hand that allows the guide bar end to move up and down easily. (**Fig. 3**)
7. Raise the bar end, and tighten the chain (12) by turning the tension adjustment bolt (13) clockwise. To check proper tension, lightly lift up the center of chain and there should be about 0.5 – 1.0 mm clearance (14) between bar and edge of drive link. (**Fig. 6, 7**)

CAUTION
PROPER TENSION IS EXTREMELY IMPORTANT

8. Raise the bar end and securely tighten the guide bar clamp nuts 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 before refueling.
- Slowly open the fuel tank (15), when filling up with fuel, so that possible overpressure disappears.
- Tighten the fuel 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.

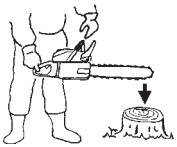
Chain oil (Fig. 9)
Fill up with chain oil (16). Always use good quality chain oil. When the engine is running, the chain oil is automatically discharged.

NOTE
When pouring fuel (15) or chain oil (16) into the tank, place the unit with cap side up. (**Fig. 9**)

ADJUSTMENT OF CHAIN OIL SUPPLY
The chain oil quantity discharged through the lubrication system is adjusted to the maximum in the factory. Adjust the quantity in accordance with the operating condition.
Turn the adjusting screw (17) counterclockwise to increase the quantity and turn it clockwise to decrease the quantity. (**Fig. 10**)

Chain brake operation (Fig. 2, 11)
Chain brake is designed to activate in an emergency such as kick-back action.
Application of brake is made by moving the front hand guard towards the bar. During the chain brake operation, even if the throttle lever is pulled, the engine speed does not increase and the chain does not turn. To release the brake, pull the front hand guard toward the front handle.
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 lever to slow down the engine.

How to confirm the activation of the chain brake
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.

Starting (Fig. 11 – 16)

CAUTION
Before starting, make sure chain brake is engaged and that the bar/chain does not touch anything. (**Fig. 11**)

1. Set ignition switch (18) to ON position. (**Fig. 12**)
   *Push priming pump (20) several times so that fuel flows through bulb into carburetor. (**Fig. 13**)
2. Pull the choke lever (19) to choked position (**Fig. 13**).
   This will automatically lock to the half-throttle .
3. Push the decompression valve (21).
   The valve (21) will automatically return to the original position once the engine has started (**Fig. 14**).
4. Pull recoil starter briskly, taking care to keep the handle in your grasp and not allowing it to snap back. (**Fig. 15**)
5. When you hear first ignition, return the choke lever (19) all the way in. (**Fig. 13**)
6. Push the decompression valve.

7. Pull recoil starter briskly again in the aforementioned manner. (**Fig. 15**)

NOTE

If engine does not start, repeat procedures from 2 to 7.

8. As soon as engine start, pull throttle lever (23) full once with throttle lever lockout (22) and release immediately. (**Fig. 16**) Then half-throttle is disengaged.
   Pull the front hand guard (2) toward the front handle to disengage the chain brake.
   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 avoid shortening the life of the engine.

⚠ WARNING

Do not carry the machine with the engine running.

Stopping (Fig. 17)

Decrease engine speed, and push ignition switch (18) to stop position.

⚠ 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 engine 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. 18**)
- 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. 19**)
- 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 lever. If the throttle lever 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. 20**)

24. Felling direction
25. 45° minimum notch opening
26. Hinge
27. 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. 21**) Complete the felling cut by sawing around the trunk as in the **Fig. 22**.

⚠ 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. 23**)

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. 24**)

28. Relieving cut
29. Cross cut
30. Pressure on top
31. Pressure side
32. Tension side
33. 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. 25**)
If the log is lying on the ground make a boring cut to avoid cutting into the ground. Finish with a bottom cut. (**Fig. 26**)

⚠ **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. 27**)

34. Relieving cut
35. Cross cut
36. Pressure on bottom
37. Tension side
38. Pressure side
39. 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. 28**)

⚠ **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. 29**)

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. 30)
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
Do not touch the High speed adjustment (H) and the Low speed adjustment (L).
Those are only for HiKOKI dealer.
If you rotate them, It will cause a serious damage to the machine.

Air filter (Fig. 31)
The air filter (40) 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.
Remove the air filter cover (41) and the filter (40).
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. 32)
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. 33)
Clean the chain oiler port (42) whenever possible.

Guide bar (Fig. 34)
Before using the machine, clean the groove and oiler port (43) in the bar with the special gauge offered as an optional accessory.

Side case (Fig. 35)
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. 36)
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. 37)
Remove the oil filter and thoroughly wash it in solvent.

Cleaning the cylinder fins (Fig. 38)
When wood chips are caught between cylinder fins (44), the engine may overheat, resulting in lower output. To avoid this, always keep cylinder fins and fan case clean.

Icing protection system (Fig. 39, 40)
This system is to protect carburetor from icing when the unit is operated in winter time.

1. When you need icing system work, remove air filter cover (41). Pull out the shutter (45) from inside the air filter cover and reinstall it in winter time position by turning half-way. (**Fig. 39**) This will allow heated air to flow from cylinder side to carburetor cabin through the opening (46).

NOTE
When winter time has been over and carburetor will not suffer from icing, make sure that the shutter is reinstalled in ordinary position (**Fig. 40**).

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. 41, 42)

⚠ 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.

47. Top plate
48. Cutting corner
49. Side plate
50. Gullet
51. Heel
52. Chassis
53. Rivet hole
54. Toe
55. Depth gauge
56. Correct angle on top plate (degree of angle depends on chain type)
57. Slightly protruding “hook” or point (curve on non-chisel chain)
58. Top of depth gauge at correct height below top plate
59. 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. 43**)
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. 44**)

GENERAL INSTRUCTIONS FOR FILING CUTTERS
File (60) cutter on one side of the chain from the inside out. File on forward stroke only. (**Fig. 45**)
5) Keep all cutters the same length. (**Fig. 46**)
6) File enough to remove any damage to cutting edges (side plate (62) and top plate (63)) of cutter. (**Fig. 47**)

NOTE
Do not file or alter the tops of bumper drive links (61). (**Fig. 46**).

SHARPENING ANGLES FOR SHARPENING SAW CHAIN

	1. Part Number	95VPX/20BPX
	2. Pitch	0.325”
	3. Depth Gauge Setting	0.025"
	4. Side Plate Filing Angle	85°
	5. Top Plate Angle	30°
	6. File Guide Angle	100°

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

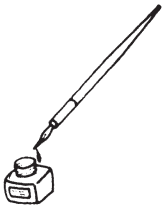
Daily maintenance
- ○ Clean the exterior of the unit.
- ○ Clean the chain oil filter port.
- ○ Clean the groove and oil filter port in the guide bar.
- ○ Clean the side case of saw dust.
- ○ Check that the saw chain is sharp.
- ○ Check that the bar nuts are sufficiently tightened.
- ○ Make sure that 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 guide 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.
- ○ Clean the air filter.

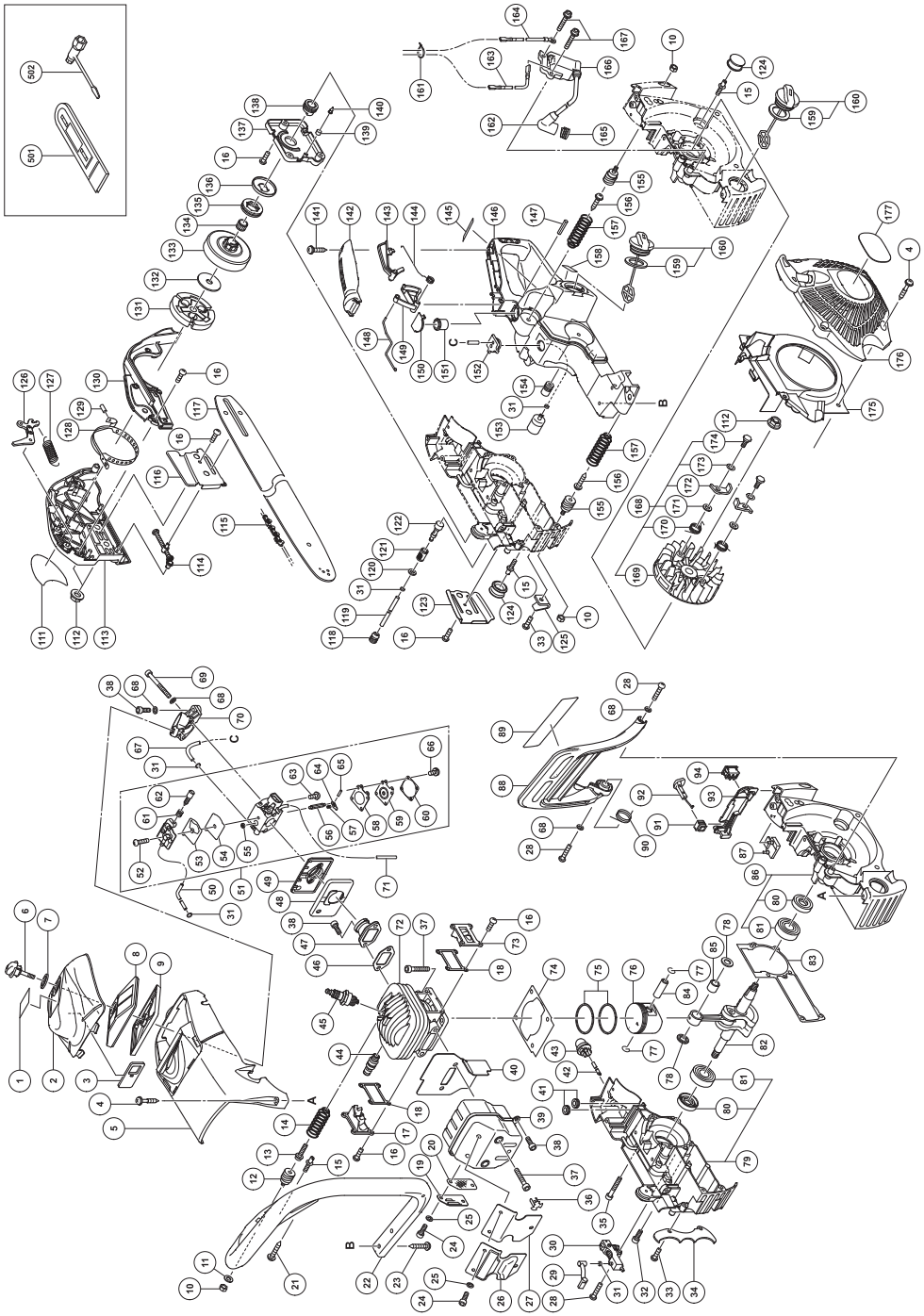
Weekly maintenance
- ○ Check the recoil starter, especially cord.
- ○ Clean the exterior of the spark plug.
- ○ Remove the spark plug and check the electrode gap. Adjust it to 0.6 mm or change the spark plug.
- ○ Clean the cooling fins on the cylinder and check that the air intake at the recoil starter is not clogged.

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.
- ○ Clean the fan and the space around it.

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	CHAIN NO.
MODEL NO. OREGON	160MLBK041 180MLBK041 200PXBK041	400mm (16”) 450mm (18”) 500mm (20”)	95VPX-66 95VPX-72 20BPX-78





ITEM NO.	PART NAME	Q'TY
1	START LABEL	1
2	CLEANER COVER (C51)	1
3	SHUTTER PLATE	1
4	COVER SET BOLT	7
5	CYLINDER COVER (C51)	1
6	CLEANER KNOB	1
7	KNOB PACKING	1
8	CLEANER ELEMENT (B)	1
9	CLEANER ELEMENT (A)	1
10	NUT M6	3
11	BOLT WASHER M6	1
12	SPRING HOLDER	1
13	HEX. SOCKET HD. BOLT (W/FLANGE) M6 × 20	1
14	ANTIVIBRATION SPRING	1
15	DAMPER SET BOLT	3
16	SEAL LOCK SCREW M4 × 10	18
17	SCAVENGING COVER (B)	1
18	COVER PACKING (C51)	2
19	EXHAUST PIPE (C51)	1
20	MUFFLER GAUZE (C51)	1
21	TAPPING SCREW (W/FLANGE) D5 × 25	2
22	FRONT HANDLE	1
23	TAPPING SCREW (W/FLANGE) D5 × 20	2
24	HEX. SOCKET HD. BOLT M4 × 10	5
25	BOLT WASHER M4	5
26	MUFFLER PROTECTOR	1
27	MUFFLER PROTECTOR PACKING	1
28	MACHINE SCREW M4 × 16	3
29	OIL PIPE (CS40)	1
30	OIL PUMP	1
31	CLIP	4
32	SEAL LOCK HEX. SOCKET HD. BOLT M5 × 30	4
33	SEA LOCK SCREW M5 × 12	3
34	SPIKE	1
35	SEAL LOCK HEX. SOCKET HD. BOLT M5 × 45	2
36	MUFFLER CAP	2
37	HEX. SOCKET HD. BOLT M6 × 20	6
38	HEX. SOCKET HD. BOLT M5 × 12	5
39	MUFFLER (C51)	1
40	MUFFLER PACKING (C51)	1
41	GROMMET	2
42	FUEL PIPE 2.5 × 4 × 90	1
43	PRIMING PUMP COMP.	1
44	DECOMP.	1
45	SPARK PLUG BPMR7A	1
46	INTAKE PACKING (C51)	1
47	INTAKE (C51)	1
48	CAB. INSULATOR RUBBER	1
49	CARBURETOR INSULATOR (C51)	1
50	FUEL PIPE	1
51	CARBURETOR ASS'Y	1
52	SCREW	1
53	PUMP GASKET	1
54	PUMP DIAPHRAGM	1

ITEM NO.	PART NAME	Q'TY
55	INLET SCREEN	1
56	NEEDLE VALVE	1
57	VALVE SPRING	1
58	DIAPHRAGM PACKING-METERING	1
59	METERING DIAPHRAGM	1
60	DIAPHRAGM COVER-METERING	1
61	IDLE ADJUST SPRING	1
62	IDLE ADJUST SCREW	1
63	HINGE PIN SET SCREW	1
64	CONTROL LEVER	1
65	HINGE PIN	1
66	SET SCREW	1
67	FUEL PIPE	1
68	WASHER 5	5
69	HEX. SOCKET HD. BOLT M5 × 45	2
70	CLEANER SUPPORT (C51)	1
71	FUEL PIPE	1
72	CYLINDER	1
73	SCAVENGING COVER (A)	1
74	CYLINDER PACKING (C51)	1
75	PISTON RING	2
76	PISTON (44) M	1
77	CIR CLIP	2
78	PISTON PIN COLLAR (C51)	2
79	ENGINE CASE (B)	1
80	OIL SEAL	2
81	BALL BEARING 6202C3	2
82	CRANK SHAFT	1
83	CRANK CASE PACKING (C51)	1
84	PISTON PIN	1
85	NEEDLE BEARING (A)	1
86	ENGINE CASE (A)	1
87	REAR DAMPER (C51)	1
88	BRAKE HANDLE	1
89	CAUTION LABEL	1
90	BRAKE LEVER SPRING (B)	1
91	CHOKE ROD RUBBER	1
92	CHOKE BUTTON	1
93	OPERATIONAL PANEL	1
94	STOP SWITCH	1
111	NAME PLATE	1
112	FLANGE NUT M8	3
113	SIDE CASE SUB	1
114	CHAIN PULLER	1
115	SAW CHAIN	1
116	GUIDE PLATE (B)	1
117	BAR	1
118	OIL GROMMET (A)	1
119	FUEL PIPE	1
120	BOLT WASHER D5	1
121	OIL FILTER	1
122	OIL FILTER BODY	1
123	GUIDE PLATE (A)	1
124	DAMPER (C51)	2
125	CHAIN CATCHER	1
126	BRAKE LINK	1
127	BRAKE SPRING	1
128	BRAKE BAND	1
129	NEEDLE ROLLER D3	1

ITEM NO.	PART NAME	Q'TY
130	BRAKE LINK COVER	1
131	CLUTCH	1
132	CLUTCH WASHER (B)	1
133	CLUTCH HOUSING	1
134	NEEDLE BEARING	1
135	RIM SPROCKET	1
136	CLUTCH WASHER	1
137	OIL PUMP COVER (C51)	1
138	WORM	1
139	AIR VENT SPONGE	1
140	AIR VENT VALVE (B)	1
141	TAPPING SCREW (W/FLANGE) D4 × 16	1
142	REAR HANDLE GRIP	1
143	THROTTLE LEVER LOCKOUT	1
144	THROTTLE LEVER SPRING	1
145	NUMBER PLATE	1
146	REAR HANDLE	1
147	SPRING PIN 5 × 25	1
148	THROTTLE ROD	1
149	THROTTLE LEVER	1
150	AIR VALVE CAP	1
151	INNER CAP	1
152	GROMMET	1
153	PUMP FILTER BODY	1
154	FRONT DAMPER	1
155	SPRING HOLDER	2
156	FLANGED TAPPING SCREW D6	2
157	ANTIVIBRATION SPRING	2
158	TANK MARK LABEL	1
159	TANK CAP PACKING	2
160	FUEL TANK CAP ASS'Y	2
161	BAND	1
162	PLUG CAP	1
163	CORD (A)	1
164	CORD (B)	1
165	METAL FITTING OF PLUG CAP	1
166	IGNITION COIL	1
167	HEX. SOCKET HD. BOLT (W/FLANGE) M4 × 18	2
168	MAGNETO ASS'Y	1
169	MAGNETO ROTOR	1
170	STARTER PAWL SPRING	2
171	WASHER 0.8	2
172	STARTER PAWL	2
173	SHIM	2
174	STEP BOLT	2
175	AIR DEFLECTOR	1
176	RECOIL STARTER	1
177	BRAND LABEL	1
501	CHAIN COVER	1
502	COMBI BOX SPANNER	1

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