Holzfforma®

for the working man

THE HOLZFFORMA * & FF &RQFUHWH &WWU

THE HOLZFFORMA

($

3RD GENERATION OF MACHINERY

1 K G T TDUTPWV Z QQ] VD U dQXVRZGYG] COO 2
: QG NTGf VU Y LTOIQ HLN WGXTU X YOOY LTCQL W G HbU Y 2
6 W O S L W b VLWTOO S L 13
5 Y W TbNL _ RD [UIGRc TbL QWZJO 16
5 Y W TbNL _ RD [UIGRc TbL QWZJO TGU XUI L X ODY L Y O QDL X SJR 17
' RS GNTb L U Y WNTbL _ RO [UIGRc T b. QWJD 18
3 UTY GI UK_ OV TDQG XN G ' OPY U 20
4 G YML TO LQROTUI LUU WL STf 21
4 GXGMOI GTCL/ . GS L T GY WNL U J U _ RO [UIGRc TLUU QWZ G 24
9 UVRCI U 25
. GVWGI Q GY UVRCI US 6 ZXQI U X YTUGQG SUYU WY 28
8 OXY L SI U NZK_ TLUU [CRcY WY 30
4 GXYWU P QQG W HWe Y UG W 31
8 I L ^G N GXQJGTCf 33
. GSLTG QROTUI LUU WL STf 34
4 GVWGI Rf e ' Gf YLRLMQG 35
< WGTL TCL Z YX W XMPG 35
: QG NTGf VU Y L\HXRZMOI GTO eO Y L \ T^IDX Q U S Z ZZ \ U K 36
3 OTOSON GQf CNTU X, GG YGQML O N HWGTO L VUI W IMK LTCP 37
) GM T b QUS VRL QZe ' CL 38
9 L \ T^D XQD L K GB I T 38
: QG NTGf VU W LUSTYZ 40
: XYWGTL TCL UY\ U KUI 40
8 L W Y O [OXQUGHY Y XOf , 8 40

Y GGMGUGb L nUQZMGHRQ

6 UR_ UdL cXMGXGUdSGHJ, HYUbb pAU UOROnMOSPMcXnO
bcXUQGGHcXYdHTTdL KQMRGL dpKPMGb
Holzforma.

Da TTdL KQMRGL GbnRUJGNUYUnRHTUcX nMOSHTUGSNdPWQGbcx THxHTURUUGP nMWGNUQKYdaG aGHGMcXZGnYUSbcXx HTdGXUQKOGbcx MSpVMUUGbcXMHTOe KGGHcXYaG KUb cYGPMGUSXf dGnRGYc cXL bdNSbMTd, HYUbb B b GbnRQKUdUnRHb dGTTbnSaQMWaGYUS KOSUURO GbcXMMHYYMdHTTUpMGbdnMGYc cXHTOS.

GpMOdNTGGTUdHTOdnMWXd dMTcXOnRHTUBaGendUaGMWaGYG, nMXOSbaGXdSPMGMTcXf, KOBaGendSZ dKOPpVZcRO HnVdMWdKYdHTTUb HGGuYZ cGbnYdbZe KdSMGTOe.

Kapitel 1 Allgemeine Informationen

1.1 Einführung

Diese Betriebsanleitung ist für den Holzfforma VLXY UT TJWG HJ YG LTGKK GRc TL PQ_WOGSNHUWXGG SO IXL\SG_OTOZXYWUPXY!; VUdYUSZVWG IGTGIX LONSLTLTCf QUVSBRQXG]**O** VUXY GQ OVU[U VSL, YLTOQL O UH UZKMIGTCe Sb KUBRM THUXYGIOY NG XUHJP

6 UdYUSZUYTUX CLYsTUZQGNGTCP O WOTKQZU I TKTG:P TXO Y WQQQ.]V U dQXVR ZG YG]QLCSLUZYHbYc VWWKafIRLTb QQGQQL VWL YTIN O O

Kapitel 2 Sicherheitsvorschriften und persönliche Schutzausrüstung

2.1 Sicherheitsvorschriften

9UVROITKBCPYUVROI TCf XSLX ONHLTN QG:O SU Y UTUWU SGX KG

6WOILKLITKDPYXCL KLQUSVWLXXCUTTUUU QRGVGTG

6WOILKLITKDPYXCL WZTUP YUVROI TUP VU SVb

6UKXULK QTLTCL KRf VUK G OIUKb NGVU WbP QW:G

4GYfM TCf JG PGQKR f WLSTf

8TfYc VZXQUIZe WQUfYZQ

2.2 Persönliche Schutzausrüstung

ПОРЕДУПРЕЖДЕНИЕ

6 WLKZ WLMK LTO LU HUVGX TXY O TLX^GXYTUUU XRZ^ G OY WSb KRf Re K L PGY GM LYf MgRUUU S G Y L VRcOUQU ZL W eS

УКАЗАНИЕ

6 WLKZ WLMK LTO LU IUNSUM TXY O VUI W MKLTCf ZXY W U PGXRY H U U Y KRLc T bQ UVSBQ Y Ze\'O

Kapitel 3 Technische Daten

1USV GCf Holzfforma VUXY UT TJWG HJ YG LTGKK GRc TL PQ_WOGSNHUWXGG SO IXL\SG_OTOZXYWUPXY!; VUdYUSZVWG IGTGIX LONSLTLTCf QUVSBRQXG]**O** VUXY GQ OVU[U VSL, YLTOQL O UH UZKMIGTCe Sb KUBRM THUXYGIOY NG XUHJP

6 UdYUSZUYTUX CLYsTUZQGNGTCP O WOTKQZU I TKTG:P TXO Y WQQQ.]V U dQXVR ZG YG]QLCSLUZYHbYc VWWKafIRLTb QQGQQL VWL YTIN O O

Kapitel 4 Vor der Inbetriebnahme

4.1 Montage

6 WQV GUML XG HGV NCI TU-U WLNTbS ZX WUPXY U S TL U\HU K OUS WOTO SYG U X UbHS L bW VW IKUXYU WMTUX Y QYQ WGHU YG V WQNIUKOYXf X U^LTc Ib XU QPUXQ U Wde XIWG 'L TCf G H W GTNJO U Y WTLUNQWZ G

6 LWLK VLW bS I I UKUS I dQX VZGGYG]Ce I TCSG YLRcTU WU ^ LYX I XL W QU UKXY U VU dQX YPZG Y G]QQQX U \ WQGGY LJU I TGK LMTUS SLXY LKRf V U X R L K ZeCKL J**U** Rc NUI GTCf 4 LXUHRe KLTCL S LWHLN UG XUXYO SUML YHbYc UVG XbS KRf MO TNO

8 UHRe KGYc KLP XI Ze' CL I KGTTUP XWGTL VW IGGRG YL\ TCQD H L N U V G X TTG X/SWCQW VWU[XUe NUI, [UTK U XU] CGRcTUJ U XWG UI GTCf, UWGTU VU U\ W TGL Y W Z K KGWQZ JZO W L MTKOLP

+Rf W G H KGYXBLP I ,I W VL PXQU S 8 Ue NL UHf NGYLRcTUP f I Rf LYXf K OLWQ YIG2009/104/EC – H L NVGX TXYc ON G 'O WKGJ W bf UVLW G YUU WW QQXV RGZY]G COSO SG_ OT OGJW JG YI U

1GMKbP, QY U V WZ QGXL QW G H UXY L SUY ZX Y W U IBSXIY LW b L, KURMLT VWUPY COT XWZQXGM VUI UVW XGS VWGI CRc TUJU U WG L TCf X

Z X Y W UUUS XZ YWWUKGI] GCRO K VWUZUU
XVL] ORGDX Y GRD H UWWUP Y O
X V L] O G R GQTZbWPX^LLTGHZ

4 L XIUL W LT TURL YTO LRO] GGW G H UX Y L
S U Y U Z PXXYIWW STL K UVZX Q GX6-YN G
O XGRe ^LTO IS RO] X Y G LW6 RLY
VW\UUKf ' O\ U-HZ^LTO L VUK TGKNUW SU

+LY O W X YUUTWD LRO] GGMCI UYTb L
KURMTb TG\UKOYc X TGHLNUVGXTUS
WGX XUf TOO

, XRO SUYU ZYWUPXYI U TL
O XURcN Z LfY DXJU XRL K Z LWXJY G I O Y c
Y G; Q Y UH U TTUL V WKDX Y GRfIR U
VUYL T] OGRc TUP UVGXTUXYO
6 W IKU\ W TGO bY SUY Z XWUPXYI U U Y
TLXGTQ O UTOWUI GTTUJU
O XURcN UGTCf

6 URc NIUGYLR cTL X LUYI L Y XLYT TUXYc
N GTL X ^ GTXbLYXRZ ^ GGRIO UVG XU X ,Y O
Z JW MGe ' OL KWZJOS R O] GRSI H Q \
O S Z ' L X Y I Z

3 U Y U Z X Y IWUWRGXNYGI L Y X
VL WKGI G bY CRO KGI GYc TGWU GY
Y Rc QU Y IS RO] SI QUY Wb L \UWU_U
NTGQUSb XK GI TU PSUKLRce OUHZ^ LTb
U IW GL'TO eX TLP- UHf NGYLRc TU
WCRUWO bY WZQUI UKXYI U VU
dQX YRZ G Y G] O O

6 WO S TL TO LS U Y U Z X YIW U P X Y
I b W G HbGGé ' O\ XCRc T bP _ ZS
SUWL Y Hb Yc U IWL S TO LUWGTO ^ TLU
Q G Q J U X Z RKTG SWOXYYQKQ
SLXYTb S O TUWS G S O

2 O], GW G H e' YOGL X
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UYKU\ T Z_ O S, ON KWUI b S CO I
\ U W U _ L S [O N O ^ L X Q QCCS X U X Y U f T
9 UY QU SZ U XUXY UTO eNKU WI cf TL
XRLKZ L YTGWY JG bY X, K UBM L T
U H W GcXf ON YGXU L Y U GS IWG^Z
S UWL Y RO UT W G H Uc Y XGMYO S
GUWL JGY S

9 URcQU KRf RO] X OS VRGTYOW UGT Tb S
Q G W K OSGZR YOYWS X O LXSYG
NGMOJGTCf KGT TJUU Z YWU PXYI G
JL T L WOWZL Y TL NTG^O YRc TU L
dRL Q YXSWGJTO YUL VURL) RCf TO L
dRL Q YXSWGJTO YUJU VURf TG
U IKLR c TLb Y Qb QGWK QIXY SZRf YUW IU
TL I UNS UM TU CKQRe ^O bY VURTUXYce
) U O N IMGETO LW XQQJI KRf N KWW Uc f
Q SIV GCf Holzfforma W QU SL TKZL Y
U H W GcX fON YGJUTX ZcY G] O QP
RL^G L SZ IW G ^OXO JNUYU IOYL Re
Q G W K OSGZRXNY U W G
. GWW ' L G LXYf WG H U Y GXY
S U YZXU Y WXM EP S VUX IB

Z VU Y WRL TCf GRQJUURf RLQG WIX Y
XTO M G e ' OXQJ W U X Y c QW IORGQ]
TGW QNCQJU

6 W COLHRGJUVW fOYT b VUJUKT b\
Z XURCf \ (X TL J RL K ZW JGGT T P I L YW
U RMUMOYc WU I LK LTO LW G H-U Y
MdHbuedHFGf dMGXTCMXc HBcXaGXYTdUU
dRZYaG!

3 UYUZ X WPXYI U VW L TKG TG ^ TLU
YURcQJ KRf G H W GTN CU Y WJLPN
W LQN 5 TU TL WW JDK TU KRf W L N Q O
K W L I L X O T bK LOWRLO f T T b \
VW IKS L YI U

' XHLXY UGf Vb Rc ^ WN b ^ G TPU
I WL KTG KRf N KW Uc f jMCH KQdbS
dRYZaG HBL pMXaGYc aGXfdcXY

6 WOS L TL TCL SUYUZ XW PX YG KRf
K WZ O] L RL PTL KUVZXQG MXf YGQ QGQ
dY US UWL Y WW IQLXY QQ TLX^ GXYTb S
XRZ ^ fGS CRO Q VUI W IMK LTO e
ZXY WPXM G
. GWW ' L LTU I TU XYc O N S L T LIT O f
QUTX YZXQ De ZX Y WPXM G- dY US UWL Y
U Y W O JRGc WT IXQGN Gc YK f GT
H L NVGJ XU X Y 1QUS VGTCf Holzfforma
OXORe ^ G bY Re H Z UYI LYXYI L TTUXYc NG
Y W IS b O SG Y IQWRc T bP Z L W H
I XRL KXY I CL VWOS L TL TCf TL
K U V Z ' L T TTGI \ X T b \ Z XXWW U P

/ X URcN UGYc YURcQU U Y WTLbLNQWZ O
CRO WW TGKRLM TU X ,Y KOWZ ' LT Tb L
Q U S V G FHQzffoPma, RCHU GTG R U J O ^
T b LVU XI U O SL \TO ^ L X Q O S
\ G QQ Y LXW QG S 8 I UWWUXGS O
VWUXcH GJ U H W GbY X fQ
X V] OGRO N OIVGT TUS Z K GRL W Z
6 WO S.Tf Yc G MGN IOTU-U Y LWT b L QWZJO
CRO VW TGKRLM TUXYO YURcQJ I b XU QJU
Q G ^ LQG Y) W U YTOS XRZ ^ G L
X Z ' L X Y I Z L XT U XYGc T L X \ ' G X Y T b
X R ^ IG CRO VJI W IMKLTCf
S U Y U Z XXYWG U P

1 US VGTCf Holzfforma W QUS L TKZL Y
VWOS L TL TCL UWQJOTGRc Tb \
G HGW OTU UYWLNTb \ QWZ LJI
Holzfforma
5 TO VU XI U O SGWG Q Y LXYWQGS
UVY O SRGJTVU K \ f YKKR fZ X Y W U GP X Y
O X UWUL Y WZe Y Y WHUI GTCf S
VURcN UG YRL

4 L WOS L Tf Yc SUPQZ I b XUQJU U
KGI RL TCf KR f U ^ XYQD Z X Y W U P X Y I G
8 CRc TGf XWZf I UKb SUWL YVU I W LQKbY
K L YRGJZXY W IMYPG

. GWW ' L G L Y Xb Yc ZYWUPXYI U
I U K f T U P XPY W Z L



. GVWL ‘ GL YX f WDS L
T fYc VDRc Tb L KOXQD
Y L WUKXPGI Tb L, XVGXG
Y ER c5TL,
KL WI UWLM ZO LCRO
O T b L HNGZ Y bDIX Y W Z
SL TYb – dvMGKTdvMYc
nVdvPZGd=TGI cXGdcVMdvPRc=TdvX
rpMGBvGI) VW U MUDURUM
TU XcYW IGTU S.WTUS Z
X a L S^ZG X Y QW] QaDX
V R Z G Y GG]HDVDDGTNU
UYW INT b\ KO XDUI, NZ Idf
VCRc TUJU KOXQG X KURU
Y UHW GTNSONZHc fSO
VWD WLNQL S UZY
N XBY YWc I SGYL W GBLG
DYU XVU X U HZXLYGJW X
X OTUP W INQL, ^YUS UMLY
VWD L XO QI UN TDGTUI L
TO eTL QJTY VRO ZLSb \
^ W L N I b ^ G P XTUb U V G
WL GLY OTb\ XOR U HGW
T bP Z K G ZX Y W UGP X Y

Общие правила техники безопасности

6 UR dNUI GYc Xf UKL MKU PDUXTG LT OSL
XUURGX TU VW LVKXGTOf S



5 KL MK GKURM TG Hb Yc
VW QY OTPUP OTL SL_ G bY
VWD WGHUML 7LQUSLTKZ
LYXf VRUYTU
VW BLJG é Gf UKL MKG-
QUS H TDL NTU G TL WG HJ
^ O P.G R G Y

6 WD WLN Q XGRO W QU SLTKZL YfX
N G.OYTGf U IKL MKG.O NY W ZLK
I UXVRGS LTf L SLUUS G YWDGRG
(TGVWDS L,WD NQ MO CRO LU TL X Y UURJQ
\ R U V Q G ƒULTSOXPZ ^QG IL O N
XOTY L Y OXQLUU I URU TQG- dvMGKTdvMYc
bdcNdvMGKTdvMYc bdcXRGdcYMdvGc vOXQPW TGI!

4 G KLL MKL T LKU R M TbUYc PXR L K U
JUW ^ O SG LWD GBUI (UVCRQD
YUVRCI U SGXRU O Y V

4 L TUXO bY U IWLSf W G Hb UJKL MKZ
QJY U W SSU BIG Hb N G] DXW c X f N G
VUKI CM T b KL YGRO GJWL JG Y-G_ G W [
JGRXYZQO ZQ QV LTOf -ROT T b
I URU Xk XI f NGYc O NGQ LWVOYc YGQ
^ Y Ub-HUTO TG U KRDXBc UI L W \V ER^



4 U X GdXBLµGMYBbdL
cXGRdvMDc TL X QdJNRL P
WQ[R LT TUP VUKU_ I UP O
TUXQBS O XU XYGR dTUP
I XYGI QJU P

ОСТОРОЖНО! ПРЕДУПРЕЖДЕНИЕ



) UO N INKGTO LYWGI SO
W LJGTOf JRG NX IBKZL Y
TUXO bY RU YU WDRLJG
e ‘ O LN G ‘ OTbL U ^ QIO
X U UULYX IYO CX U X Y G T
K GMYUS EN 166
8 PLK OYc NGVWGI CRc Tb S
VURUML TO L SN G ‘ OTbX\
U ^ QJ U

4 UXO bY N GO YZe SGX ZO X R L K O Yc N G
L L VRU Yb S WV BLJGTO L S G O YGf
S GXQGTL f I Rf LYXf KUXYGYU^TUP
NG OY EKRf J KBN

6 W O U V G XZT_UDX-HYGO V G QBSG e ‘
I TO NWL K SLYGS O TUXO bY N GO YZe
Q G X Q Z

) UI WLSf WG H bf SLUZY UH-WG N GYc X
V b R(dTGWV O SWL
Q W ORRY GL XFGSG Y L VRO N
WGN WL NGL SLUJU VWLKS L YG, OXVGWLTOf O
Kb S– dvMGKTdvMYc,dXRf sNQdvMWsrf!

6 WD U HGNUI GTO OVb RO IX LKG
X R L K ZTLUXY dvMRBsNBµvOHYZe sNBGKQZ

6 WD I U N SVTDUS I UNTO TQJI LTO OYGW IU
O R O K(bTSQGW O S,VL W O
WL NQL STJUJ RKUPT b \S G Y L VRUD G
XRL K Z LTM X OpWXVQWBNdvMW

6 UR dN UG bY Xf OTK OI O K ZRG TSb O
X W L IKQX SsNBGµvOHb dXRYZeG, T G V SWL QW
H L W_ZS O



6 UR dN UG bY Xf WV U
T bS OW G H U ^ O S O
VL W GYQG SD ON ONTUXU
XYUPQJJU SG Y L VRGD G
(TGV W QW SO NQJMO

1 USVGTOf Holzfforma VWLKRGJGLY_ OW
UQ OQP X X U W TYQ BWLL IK X Y
OTK OI OK ZRe TU PN G O bY

Требования к рабочему месту

5 Hf NG YRc TU Ib QRe ^ OcYK IQJGYLRc

6 LW TU X ©ZY X Y W UUPYXBvQJN G
Y W ZGHZ eWZQ U QZY ƒ G H MT GN O
U Y WTU RQWZJ GWVGI RLT G NKGG
JUW ^ O PRZ_ O YRc– I X VW TZ UY
Y EG

4 L KU YGXOI G bY Xf K UJU W^ O K L Y EL P
GJW JLG Gf I U XH IT TJXY QKU
V U IWT U X YF DZ _ O Y dvMGKTdvMYc
dvMdvG

4 OI Q LUS X PY ZG LTL VL W UN Oc Y
S U Y U Z X Y W U PX XTGI RLT XT fSZ
G HGW OTU U Y WTLbSN QWZJUS–
dvMGKTdvMYc nVdvPZGdQD

4 GY WTBVUWYT b\ X WKX YG:
VWLKU WGTO bY S U Y U Z X YI WJW UJ YP X Y
UWWJQ Kb I GTOf UI W WLKLTOf O
Z Y^Q OVRO I G



E[dTENOT^pAYSUb^sGRTU
rRrKOUddAVRGSUbTHdrYXf –
KL VWGYcXf TGHL NVGX
TUS VWGX XUf TO OUY
UYOV Y UU UJT f– TL VWU
ROI GYc YUVROI U– TL
QVOYc

6L WK NVAV KGQUP Y VROI U S
dbaGRe^pOYc,d[s^OaGYdRc

4L N VAV KGR fYc Y VROI US VUQG
KI OJGYLRc TL U\RGKOYXf VURTUX Ye –
Y VROI U S UWL YVL VROYc X f f
daGXTdcYc^dAGAG

) U O NLWGTO LW G NbNUOV GTOf
YUVROI GUYOV^bI GYc NGS UQHGQG
U XUW WJTU ^YUHb ON^bYU 7TUL
KGI RLTO L\UTOMGRU X S LKRLTTU

. GVVGI OZ W U OUKO Y Y Bc OU I
\UW UU VWU L YVOI GLSb\ S L X Y G \
, XROY VROI U Hb RU W BO V
T L S L K R LU^OXUYc
S U Y U Z X Y W UXRLXKYO V cf N G Y L S
^Y UbHVUVROI U TL VUVGRU TGUKLMKZ I
V W U Y O I T U S X R Z ^ G L U K L M K Z
T L S L K R L XT S TLUOY c

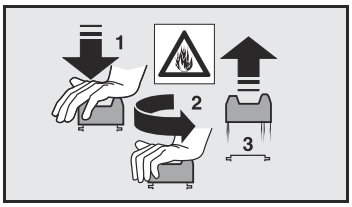
4 GHRU Q KI OJGYLRf SUWL Y
X Q G V R O I G Y c X fU X bJRHdL XOY
I U Q WOQZ VeMV YGUW G6 W O
VW VO bY I GTO OV BO H IT N TOUS
X Z ‘ L X Y I Z L Y bYaV KGUXUTWUTOf
(RUQKI OJGYLR f XLRZL YWL JZf VTU
U O GYc UY Vb RO



8 RL KO Y N GIL VSL Y OT U
X Y c e OEZW L ^ Q G \
Y VROI G KI OJG YRc I
N G V Z X-QbaGXGbcYc
JdRf XVAGNTO bcXFbJOYdVGL
daVddd!

7 G RO 7Tb L G H W GTN OU bNTVdL
Z X YURPX YG S UUZ YHb Yc UXTG LT b
W GT NS OQ bV_ QGS O Y VROI TUJU HGQG

KpVbuWGCYdVRGHTdUJdaGGcX
6aGRUEaYHbWS3aGYdopVbS



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YUV RO I G
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VUI W WK LTOe Q bV_ Q QD ZYL ^ IQ

6 UXRL N VAV GI Q OUVROI US Y ‘ G YRc TU
NGQ bV Yc H G FTLUYT bP N G bV VOV _ QOD
YUV RO I TUJU H GQG

B[dTDdaGf kpVbuWGCYdVRGHTdUJdaGGcX



6 UXRL N VAV KGQ OY VROI
I US SG XDS GRc TU
VRUYTU NGI OTYOYc I OT
YUI Ze OV _ OZ H GQG

(RGJUKG fW dY SZ X DMG LXYf
UVG XU XcYU YOT^ O GTOf N SQ GI GQG
O N NOGI W G]KO QJGYLRf QGQ
XRLKX YOL, UVG XUXYc I b Y KGTOf
YUV RO I G

6pVASMGHTdJdaVbVASNTdaLyZXpVOOPXYdJ
nVdpVb urVOTQdrRf

/ X W GTbL UUY W _ V O T K L R f
U H LVXc O G e Y Y U ^ T U L IOWLG ‘ L T
G HGW OTU U Y W L N O WJZU X
G B GTNb S T G V SORLSTH L N
W KGORGc T U J Y UWPL I U J H OTLO–f
V W O T L U H \ U K O S U X Y O U Y K G Y c T G
V W U IQLZXVL] ORGD N O WG TUTS Z
K OBL VZ

6pVASMGHTdJdaVbVASNTdaLyZXpVOOPXYdJ

ubf6aVAGBpVASMGHTdJdaVbVASNTdax kpVbuWGCYdVRGdaS

’ H W G TNLO U Y WdL NVZJO K UBVMT b
Hb Yc K UVZ LT bKRf I b VUR TLTO O S O
WLNQOI W ZT^Ze .GVW ‘L G L Y X
VWOSLTf Yc KVZJO L G H W G N O I T b L
OTX Y W ZYNb L OK U V UOPLTR c T b L
Z X Y W U P XaVAGKGbcYc HcXaGYNTdaU
rRZYaGf!

’ H W G TNLO U Y WdL NVZJO WV JQKTb
KRf WGNRO 7Tb\ SGYL WOGRU: UHWGYOYc
I TO SSTO L TG SG YQD W OZ U Y WTb\N
OVZ UI

1 GQ WGI ORU QUS VGTOf Holzfforma
WLQ SIL TK Z L YR G TMZ e W L N Q Z



8 U Re KGYc I TL_ TO P
KOGS L YWGHWGNOI TU
U Y WTLUN OVZ G



+O SIL YbW _ VOTK LRc
TUJU U Y L W XfY O
G HGW OTU U YWL NTUJU
OVZ GOI GRG GH W G TNJO
U Y WTLUN Z X Y W UGP X Y
K UBVM T bKU I VG KGYc

6 WULL W © Y_ ØTK LRc TU LU YLWXY O L
TG TGRO ^ O YU W LWK LTO P4 L
O X VRuN U I G Y bV GGINTO U YNWb L
QWZJO X VU W LWK LT Tb S _ VOTK LRc T IS
UY L W X Y -Ò dWXKTdWXc HTcXVaGXVRTdWU
cXRYZVaGI!



+ UVZ XCOS U L
^ O PU U HUW U Y GHWG
N OTU U YNWWU U QWZ G
KURMTU Hb Yc WG Tb S
SGCXCOSGRc TUSZ
^ O PZ U H U W U U Y ØT
KLRf GHWGNCI TU
UYWLNTUJU Z YX VPXY I G
CRO WL b _ G Y LJU-
XS WGNK LR« 9L\ TO L
X QL \ G W YGWQXQY O Q O }

6 L WK Z YX GBU QUP WU L W Q Y
CX VR N UGT T b G H W GTN CUWY NT bL
QWZ Q TG TGRO ^ LOY W LOT CXRU
O TNJX X L W KTO Q GVURX Q TJUXXGY
Z XY GBUXYc XLWKL ^ TO G VJ W WK LTCf
CRO Z Y W QXLYSZLTY U WW CTQQD
VL WJW LG O NL SLTO L| I L Y GO
I U N SWTb L VJ W WK LTCf
_ VOTK LRc TUJU U YLWXY O

4 OI QU IS XRZ^GL TL CX VRc N UG Y
WGX Y W GI X Q LfX W GQXW _UCI _ O LfX
CRO O NJTZ Y L G H W GTN CU YNTWbL
QWZJO

4 ON QQG L XY I LT Tb L RD H OL
KUV Z LT T b GH W G NJO U Y WbL N
QWZ Q XGRS GNT bS TGVb RL TCL S SU ZY
I CH W CI GY XJ U I W LfSWL NQD QQD L
I CH W GQ SJUZ YX Y G YW O TJUP
YUWS UWL TCf dY O GHWGNCI TU
UYWLNTb \ KO XUQ XGRS GNTb S
TGVb RL TCL S CRO N XY W IGTCf O I
WGN W L NJWXGXVRTdWXc dTJWXGXVRTdWP
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6 UXYUf TTU CRO VL WCUKO L XQD

I O H WZe' WCL GHW G NJTO U Y WbL N
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X IBKZL Y TL SLKRLT TU N GLSTO Y

7 O Y UG Y G HQN OTU UYWLNTb L QWZJO
X GRS GNTb S TGVb RL TCL S
NGVW 'L G LXYf

4 L QXVURc NJ U G Y G HQN OTU
U Y WTb \ NQWZ JO ZQV _ O L TG N L IBe –
VU W LWK LT Tb L G WGNCI TU UYWLNTb L
Q WQZS UZ YVURU S GXY – dWXKTdWXc
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6 W QX V U NRUcG T QGCH WQGTU
U Y WTb \ NQWZ UJ TG UX TU L
X QY L Y IQXQUP XSURb XU IRe KG Y XW Q
O \ JUK TUXYO

dTJWXGXVRTdWXc dTJWXGXVRTdWXc dTJWXGXVRTdWP

5 XSUYWL Yc _ ØTK LRc GH W G NJTU-O
U Y WTLUNJ Z YWUPXY I G IL
dQX V RGZY OI VG WG H W GTN CU Y YWULLN
Z XY WPXY U X U/WL WK LT T IS
_ VOTK LRL S- dWXKTdWXc HTcXVaGXVRTdWU
cXRYZVaGI!

6 W QW O STLLTO QGRS GNTb \
G H W GTN CU LNWb \ QWZJU
X URHe KG Y Z GNGT TU LX Y WRQL U P
TGVW IGRL TCL I W 'GL TCf

: X YGTU I O Y VL WK Te e TG M STZ e
_ G P H JN G Y YGT IBZU UYQ G NTGGf MTUP
HURY– VWU LWTZYc GHWGNCI TU
U Y WTLRNQWZJ WZ^TZ e W QX Y U S
I b VURTOYc I QNZGRc Tb P QUTY WRc
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XpWXGXVRTdWXc dTJWXGXVRTdWXc dTJWXGXVRTdWP

' HWGN OTU U Y TWbL NJ ZJO \ W TG Y c I
XZ\ U S S L X Y L V W O V R e X U I U P
YL S VL WG YWZ TGVWJ TU PJU L W TU X, Y O
VW OJU X YTJTJP Y L YBL W G Y -Z W L
dWXKTdWXc nJURuRuSQQD QWXYWXQGEaGTGI!

5 Hf NG YRc TU VWL K UVWGTf Yc
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VWL K SLYGS O

TGdpWXK\dWVZXGdS

6 WUL L W O Y dQX VRZG Y G JTOTdZ
H L NWGJXU XcYG H W GTN JQY WNTUJU
Z XWUP XIYG– U WGY OcY I TD S TGD L TG
XU UIYXYI Ze ' Ze JRGI Z I
W Z JQUKXY I L VU dQ X Y EZ GGYO O

&¶ 6 W UL W © YU VRCI TZe XO X Y L TSGZ
JL VBL Y OTUXYc UXUH I T TU
I CKOS bL K LYGRO TGVWOS LW
N SUQH GG _ RGT JU b L
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T G XXUY U R c SU YZU Z X YIVX U P X Y
WZ^ Tb S YUVRCI T bS T QXUXUS 6 WO
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WL SUTY KCRL WZ

&¶ 6 W UL W © YW JDJK TUXYc
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(TGVWGI RL TO L IWG L TCf
VW UTU Xc YQWL VRL TCf

&¶ 6 W UL W © YW U^TUXYc QWL VRL TCf
N G OYb – VW OL VW UTU S
Q W L V R IN TGO O Y b JQCWcWX G Q
XVL] O RBGN O YWGU TJS Z K GBL WZ

&¶ 7 b^ GfGCQXLRL VGYUW (G XY UUW
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RLJQU VL VWS L 'GYcXf – Wb^GJ
GCQX IERLW G YGUkUMRMLT VU K
K LPX YO L SVWZ MDTb
XG SUXY UYLR cUTI U NWVG G aYX f
TG GK I UMRUMLTO L\URUXY UU
\U KG

&¶ 1 U S FHCDW U I G T T b P
VLWL CGe^GYLRc/
Q U S TFOOW U I G T T b P/ W b^G J
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RLJQU Z YX GGI RCI G aYX I
V U N O SDTQeP CRCOO

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Q TDY G TQUXU TG CITU^TO QVGW IUU K G
N GQJGTCf – WO TL VRUYTU
XO K' LS TGQ TL ^TO Q ILUNSUM TU
CXQ WUH W G GTQL, CXQ W SUJ ZY
I UXV RBS LTCYc
Y VRCI UI U NZK_ TeZ XSLX c f
dWGKTdcYc ndWGPdG

&¶ 4 LI TUXO aYQG Q CRO HCIN STLTCf
I dRLSLTYb ZWGI RLTCf O
H L N U V G X T U X Y O

&¶ 7Z Cf WOD KURMTb Hb Yc^O Y% SOO
X ZCSO U^O 'TbTS O UY S G X R G O
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&¶ 5 HLXVL ^OYc KUXYGY UTPUL
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W LGN

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VU S.' L TCf\

9UR QU TG WUI TU PVUI L WTUXY,O
X IE K GcY GZ X' U P I^UBYce VURUML TCf
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NLS R CTO QOG GRH QU VW L K S L Y U I G
Y GMQ TL K UR NUT TG U K C@XY I
W G N W L N L

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U Y WTURNQW JZS UML Y X YGN ZNL TG GYc
I WG ' GaYX f

8 SUYUZ XWUP XI U SWGHUYGL Y YURcQU
U K TO^LRUI LQ f UXY UUW TO S RD] G
NGWW 'L LTU TG UKOYcX f I W G H U ^ L P
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+ I QJG YRc TL N G ZQGGYc O NWZQD-
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WZQU I UKXY L VU dQXV RGY (GOO

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G XQLRLWGY U WGGMGN IDTU U WLNTUP
Q ZU VW ULRMGL YI W 'GG aYX L ' L
TLQ U WULL IWL Sf fdWGKTdcYc tpWGIS
npWO dGEpWQdUFFdaSHa5HaRLnQYZdG

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' HWGN IDTU U Y YWULLZX WPXY U
K UBMTU CXVURc NUI G aYX fY BcQU KR f
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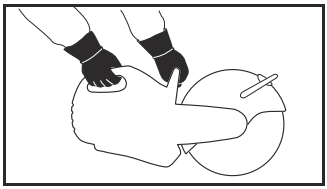

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KLP XI ZLYYGQML OKRf RLI _ LP + Rf
TG KM TUU ZWGI RLTCf VRU YU
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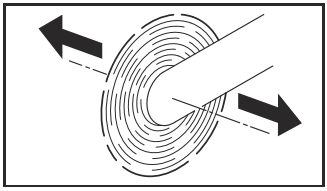

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U Y WTU NQWZUL VLWLSL ' G L YfXI
TGVW KGRL TOQ Z Q GTTNUS XWL RQUP,
I UNTOQEL Y XCRG X U VWUQDKb I Ge ' OS
I U N K L P X Y TGQ LZSX Y W U P X Y I U

5 HWGH GbY G L SL O NURO LK UBM TU
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X IE K Z LI X' UK GVU IKU K @ QNGJU V Q L
– TO I Q LS XRZ ^ G IL TGUH UUW

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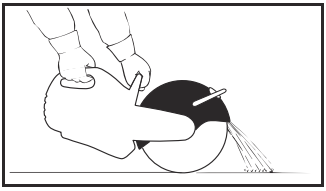
+ [illegible]



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7 [illegible]



6 [illegible]

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HdLKQMdMYc V W O WGHUYL X
S U Y UWZ XJ PM S IOHR (ON
WG H U Y GJuJ SU YZLPWU PXY G-
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, X RO SUYUZXYWUPXYI U VU IKL VRUX c
TLTGKRLM GLP TGJWZ KJL(TGVWO S L W
I UNKL PXY O eXCRb I W LZNRYc G Y L
ZKG VWCRO VGKLTCf , YU VLW IK
KGR cLTP_L PdQ XWZ G Y G] O L P
U IHNGYLRcTU VWUI LWOYc HLNUVGXTUL
dQXVRZG Y G]TCTUJLX U XfYTCL
Z X Y W UGP XX\S Y GJVL W G NRK L
« 6 LWL KNGV ZQX(SJ 5 XUH U LTCS GTCL
XRL K IZY U HGWY OcY TGJL WLSYO TU XcY
Y U V R O I TCKU YP L XJOb XJY W TCUXYc
N G OYTb\ ZXY WPKJ Y . GVW 'L G LXYf
WGHUYGYc X SUYU ZXYWUPXYI GS Q
QUY UbW TL TG UKf YX fI HLNUV QX TU S
d Q X V R Z G Y G] O U T TCOO S)X U X Y U f T
X \STCOYL RcTb\ XRZ ^ G f\ U YKOW GJXQ
XVL] O RBGN O WGJU TJS Z K GPLWZ

4 L W KBUYGYc I VURUML TCOONGVZXQG- I
dYUS VURUML TO OW ^ GJG
GQXLRL WGYUW GJOXRU U HWJU WI
KI QJGYL RF TL W JZROVZLY K

. GVWL ' GL Yf VWOOGXG JY X fQ
I WG Ge ' LSZ X GHWGNOI TU
U Y WTUNS Z Q W ZQJJXP RWOZ K W Z J U P
^GXYce Y BGJ

5 XS UYWLYc SLXYU WGHUYb 4 L
KUVZ XGJYc I UNTOOTUI LTCf UVGXT b\
X O Y Z GI] W PZRN c Y G Y L V U I W L M K L T O f
Y WH UWV LUJ IKI OdRLQVWO^LXOD\
QCHLRLP

DQX VRZG Y Gf] OZ YX WPXYI G W KUS X
RLJQ UUX VRGS LT fe ' OS OX f
SGY L WRCJGS O JU VA^ O S QJGNSGJ
N VGW 'L G LXY

4 L I WLNGYc UYWL NTUP QWZJ I YWZHb,
H U ^ QJ OTRO XJU U J U S L Y BCRI EJ G
KWZJOL LS QJXYQ LXROTLYZI LW TL TJXYO
I YUS ^YUUTOTL XJU IKVWGYQBOOL= RCHU
RL Y Z ^ OPRO IU X/ RG STfe ' O L IK
I L ' L XYI G

4 L UXYGI RF Yc KI QJG YRc W G H Uc YHJGNY
VWO SX UWG 6 WLMKL ^LS UXYGI OYc
Z X/ W KMPU HL NVWOX S U Y(TGGW O S L W
I U I W SJf VL VWb I U I WG H U,Y L
I b ORe ^ OcYKI QJGYL Rc

6 WL NK L ^ IS V UX/ I OYc GHWG NI T U
U Y WTULNZ YX WPX Y I U TG N L S R e

&¶) b ORe ^ O JY KI QJG YRc

&¶ + UMKGYc Xf UXY CBU I OD G HGWN OTU
U YLWTUUJ QJWG ORO V YZ L S
UXY WUM TUJU VW O XQTJI LTCf Q

YI LWKUP VJI L WTU X Y TGJWOS L W
QH L YTUJ PVRO LY N G YSJJW N © Y
GHWGNOI TU UYWLNTUP QWZJ K UL JU
VURTUP UXYGTU I OD



> G L W I UL WYc GHWG
NOI TU UYWLNTUP QWZJ–
G H W GTN CU LYNTWU P
Q JW TL SL KRLT TU N GJL
TO JY LXRO UHTGWZ NIT b
YWL ' OTb OXQWOI RL TCf
ORO KWZ Ø L VJI W LMKL
TCf (TGVW OLSW
VL WJWL ƒ WO VJI WLM
K LTOO X Z ' L XZYL Y
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6 W ONS LTL TO Ø G WYGWQXYO Q WOL N Q
(TGVWOS LW X HBcTCf I GHWG] Of,
X TOML TCL S U 'TUXY QW L NVGW L Q WcG Y O Y
W G H UOZ XWGTO JY W O THO
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>G L I XLJU IUNTO Ge ' O L IUI WLSf
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U Y KGJO IYf JOI GTCL



5 VG XJUX JY VWO U MGY
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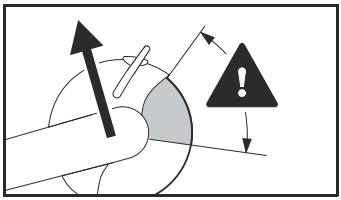

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&¶ NGORO TCI GLY I WGNWLNL– VWLMK L
I XLJU, I I L WTL P^LYI L WOY

&¶ WLN QJYUU WNS) Yf X W L RcZG Y L
Y WTCf U YI L Wb P W LSKLY

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&¶ 7 GHUYGYc U HKZ S TGTU WOSLT f f
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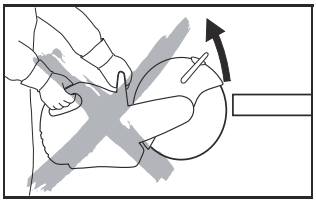

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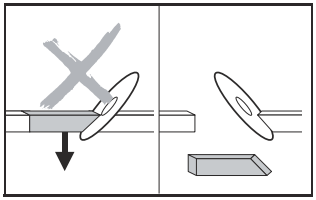

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N G SKBf Yc I W GL TO LG MG N TOU
U Y WTLUN QWZ G

&¶ 6 UXYU f T T UOWb^G Y c
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W G LNNGV S UU VWLKS L Y QRO
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N G QTBHOQBO eGHWG N T U
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5 H W G bIIGYSb P VW IKS L Y
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&¶ VUK KLWWOI GYc Y Q ^ YUHb W G N W L N
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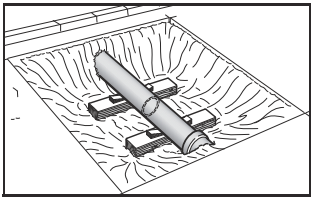

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– S G Y LQRY SUWL YU YUBUYc Xf

&¶ 6 WO WOS L TL TO QG H W GTN O
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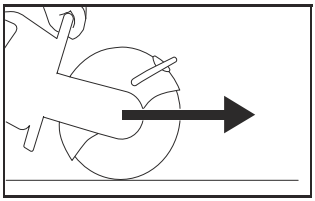

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VUR N UG YRL I VL W L K

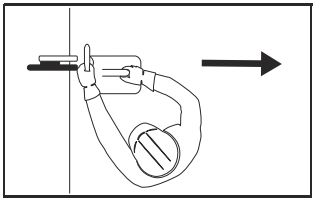
FfBGfUnG- aBpWBGNGHcfGI pWbNGG



' H W G TNLO U Y TWULPN
QWZJ II U K OcY I W G N W L N
VWf SU TL VL W QG O
I GYc O TL VUK I L VUG Y
H UUQUP TGJWZ NL



4 L VW U UQUKO Y _ RO[U
I GTO LORO U H K QZW
X H U Q Z



8 R LKO Y NG Y S. ^Y U HIb
WGX_ QWL T b P K OVG N T VU UWU Y G
G HQN OTU UWL NTUJU QWZJG TL VUVGRO
^ QX Y OY EG + UR MUTHb Yc U H LVX^ L TU

KU X YUGTYUL XI U HKTUL
VW U X TYXWYG IU X U THTU X Y O
Y WHZL Y JK KUX Y G TYUUS^L X YKBf
W G HbU YQUYRUI GT G O TXGR Z ^ G P
VGKLTCf U Y W TI TUGP^G X Y O

6 WO WGHUYL TL TGGRUTf YcXf X GBcTU
I V LWL KO TCI Q LUS XRZ ^ G TIL
XGRUT fYc X TG KG MG N TCU U WL NTb S
QWZJUS, UXU HTL TJ L XRO N G ' O Y G
UYI L KLTGI I LW

4 L K L MG aY OT XWZS LTY I b _ L VRL ^ G

' H VGN OTU U WLNTUL ZYX W XWPU
OK VJR dN UGYc YURcQU KRf G H W GTN Ø
WLNQD 4 L O XURcNUI G Y c Z X Y W U P X Y I U I
QG ^ LYXL Vb ^ GIG CRO KRf
UYHWGXb I GTCf VWL HSL YUI

4 L TGVCOS G aY TG CHWG N TCU U Y WUL N
Z X Y W UUP X Y

8 TG^GRG UVW KLRO aY TGVW XGRL TCL
WLN QCOFD_c N G Y LVSKI LX Y O
GHW G INTCf U Y WULZNXWUP XI YU
6 UXRL TG ^ RBG WLNQD I b H WTGU L
TGVW XGRL TO LH IR c L TL O N SfLYc 4 O
I QULS XRZ ^ G TIL NGYGRQDI G aY O TL
N G IHGSYc Z X Y W UUPI XTGKW L-N
O N HGEYc WLNQUJU UV ZCXTGCf
Z X Y W UGPI XTGKW L-NdvMGKFbdYc
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' H VGN OTU U WLNTb L Q WCZX
GRS G TNb S TGVb RL TCLS WO
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VW ULL W ©GHWG N TCU U Y WUPJNWZJ X
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T L U\HK KS UX Y XO G Y Yc^ ERf dYU J U
VW U QLXY OTL WVUKUR XO YRc T eZ
WLN QCZH W TGTNJOS G Y L W RQG
TGVWOS LW VLX^GTCOG; JGNJHL YUTG CRO
G JXG RcYG

) QUT] L W L N GHWY G INTCf U Y WULLN
Z X Y W UUPHXBfYc L TL
VUKKL WO I G L Y X W G N W L N L

G H W GTN J CU LYNWbS QWZJUS
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I LXZ X Y W U P XdvMGKFbdYc nVdvMqWO
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Tb SO^GXYC] GSO
S G Y L WRCO G

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K L YRG ƒ LTNGYGRQDI G aY 4 L
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VL WSb^QD CRO TLKUVCRb (TGVWOS L W
S URUYQUS

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Q WWU XGRSG TNb S TGV bRL TO L S
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TGVW O SWLCX VJR dN UGYc _YZ] LW
Holzfforma KRf VU KRPe ^ LTCf I U Ik

' H WGN OTU U Y WbL NWZJUO TG UX TUI L
OK Q XYX LTTUP X S U R b IONKIGS U X Y O
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W L N, GBCBU Y BcQU KRf I RGVTU P
W L N Q O

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Holzfforma KRf VU KRPe ^ LTCf I U Ik

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Y U R c Q U X Z \ Z e WTG IS QI ZQQG F W O
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QWZ JUI UTO YL W e Y W MZ^ Z e
XVU XHTU XcYON G V Zd Y K) XRZ^ G L
L XRO G HGNCI TU UYWL NTb L Q ZWO TG
U XUI L XOTY L Y OXQLLPXSURb I
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I UKb I YW Z H-G ZX GBO LWL NQD TL
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VURCS LWTb L G H W GTN J CU LYNWbL
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TBdvRBdvWGG

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(URL LKRO MRc TUL VURcNUI GTO L
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5 H LVW TDfY G VW KURMO YRc TUXYc
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+ RO MRc TUXYc VRcN UGTCf
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&¶ TON Q OTG W Z M T b \ Y LZW L W G Y

&¶ H UR c _O \Z XRO PWV ONI GIG Y L
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(TGVWOS L,WNZK VGRc] LI
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SL KJ OT XQUL UHX IB KUI GTOL

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; O YBGHolzfforma W QU SLTKZL YWUWZ^
O Y VW UL KLTO LWGHUY VU
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6 WOSLTf PYL YURc QU
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I UNTOCT U I LCT T L X ^ TbX X R^ZL I
CRO VUI WL MKL TOf ZXYWU PRY G 6 W O
I UNTOQ TI LTOO I UWUXU I UHWGYO Y b XQ
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; OWSGHolzfforma WLQ SLTK Z L Y
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^ G YLP [O WbSHolzfforma DYONGV^ G X
YO
UVY O SRGTU XURGXU I GT b UVX I UCS
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I XLJK GU HN G PX b TbXYGTbIWOYL

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\ U K G

+ I QJG YRc VW Ob Y f T ZXUS _ YLQLVWL
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V ZQXLUUU Z'X VWPXYI GY BcQU I Y S
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YL \ UHPRZWOI GTO LO TL \ WGTOYL
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YUV RQ G

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H G Q G

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KUVZ ‘ LT T b [O VSU PIolzfforma XL ^
O
N G M O J G T O f ƒO X S XQLQ L \
KGT T b'

6 WU L WcY LNGVGRc T bP Q G RbL
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VWO XL KOTL TOL

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8 U X YTIO LGTY OCH YG] O UT b \
dRL SLTY U U GNb I GLY IROf TCL TG
V U I L KQL Z XW U YPXG V WOBWG] O O
ƒ 1 U T YOWZBYRL W L J TZUR f W
GTY OCHWG] OTUT b dRL SLTYb



' HWG N OTU U Y Y b L N
Q WZO XUR N UG Y
YUR QU X I U K P

+ R f XNb f GTCf Vb RO QG HGN OTU
U Y WTUSNZ Q ZNZ XRLKZL Y VU KG GYc
I U K Z I Q B^LXY L SOTO SZS1 R SOT
> Y Ub H L XTOMG Y SU TU XcWL NG Q
G H W GTN CU N WTU S ZNZ Z XRLKZL Y
VUKG GYc I U K Z
Q U R O ^IL SX GY Q X O4SRZ SS O T

G HGN OTU U Y WTLUU QW JG KR f
Z K G R L TGDR O V _ L P I U K b X R L K Z L Y
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X OZTK H L NUKb XWGH U ^ O S
^ OR US U HW U N Y U

&¶ 6 U K U K I U K TG GJW JG N Y KR f
I XL \ IO K I U K U XG N L TCf

&¶ 7 L N L W ZGW KR f I U K VU K
KG R L TO L S10 R KR f X f Nb I GTCf
Vb RO

&¶ : XY GG R CI G S b P TG
TGW GR e ' L PY L R L M Q I L U K TU P
W L N L ZVG KR f X f Nb I GTCf Vb RO

F b W O O X U R N d a G T W O a G b W G N G H T U d b W N E b x N Q Z d H E G d b X G d e .

N O X Q X O W d e . H T U P O X S U R b d X R d Q Z e Y
e . b N U R T f N c O Z Y Z e N G O d U . R G W Y Z e p W N G Y Z
– e 3 N E N O X O S b X W O d b N O d Y W Q U T O Y Q Z O W E H T U d U
N O X U R T E . H T G f

' H WGN OTU U W L N T b L Q W Z O TG U X TU I L
O X Q Z X X I L T TU P X S U R b I N I G O X O S U X Y O
U Y Q U T X Y Z W Z Q N T U J U O X V R T L T C f
W L N I G O B U Y E c Q J K R f I R G M T U P
W L N Q O

A G b W G N G H T U d b W N E b x N Q Z d O H E G d b X G d e .

N O X Q X O W d e . H T U P O X S U R b , N W O d b Q K G E b x .
T U R b N Q J K R f O Z d b P p W N G O

6 W O Z \ K P W L N X G R L K Z L Y T U X O Y c
X U U L Y X Y Z e Ze Vb R L N G Y Z e
S G X Q Z

6 W O U I S N U M T U S I U N T O Q T U I L T O O Y G W U I
O R O K b S Q (T G W O S L) W V W O
W L N I S S T J U U X R U P b \ S G Y L W R L O D G
X R L K Z L T M X O p W K X W Q W G M q W V

A G b W G N G H T U d b W N E b x N Q Z d O H E G d b X G d e .

N O X Q X O W d e . H T U P O X S U R b , N W O d b Q K G E b x .
T U R b N Q J K R f O Z d b P p W N G O

' H WGN OTU U Y Y b L N
Q WZO XUR N UG Y
YUR QU X I U K P

+ R f XNb f GTCf Vb RO QG HGN OTU
U Y WTUSNZ Q ZNZ XRLKZL Y VU KG GYc
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X OZTK H L NUKb XWGH U ^ O S
^ OR US U HW U N Y U

&¶ 6 U K U K I U K TG GJW JG N Y KR f
I XL \ IO K I U K U XG N L TCf

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&¶ : XY GG R CI G S b P TG
TGW GR e ' L PY L R L M Q I L U K TU P
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N O X Q X O W d e . H T U P O X S U R b d G b W G N G H T U d b W N E b x N Q Z d H E G d b X G d e .
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N O X Q X O W d e . H T U P O X S U R b d G b W G N G H T U d b W N E b x N Q Z d H E G d b X G d e .

F a G b W G N G H T U d b W N E b x N W O d b Q K G E b x N Q Y b

&¶ T L U X P f Y G c I V U b R S O

&¶ H R U O O W U I G Y c U Y U Y O b G G T C f
O X S L ' L T C f ,

&¶ N G I O G Y c U Y I C H W G J C O O

G T N W O N G T T E b x N U a G W O

6 W O U H W G H U Y Q L Y W L ' O T , Z 8 R Z H R L T O P O
Y K I G M T G V U X R L K U G Y E c T U X c Y
W G N L K R O Y P c T b \ W L N I U 6 U P L K T O P
W G N L K R O Y P c T b P W L N X R L K Z L Y
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G H G N W O T U U Y W N T U P Q W Z J O ^ Y U H b
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X U H U N W S X U X Y K G f U V L W G Y G U W

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ZK LWWCI G e 'Ze UY W LLSK6P d RL SLTY
. GY L SdY OVL WSb ^OD XRLK Z L Y
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6 L WK U QT^ G YRcT bS UYKLRLTO IS
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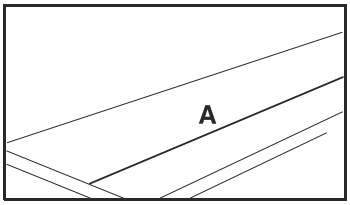

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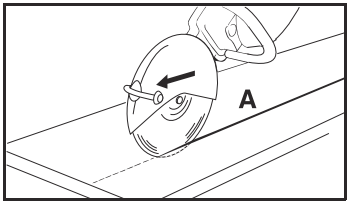

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UVL WGj Oe TL KURMTG WLI b_ G Y
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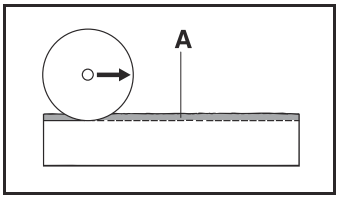

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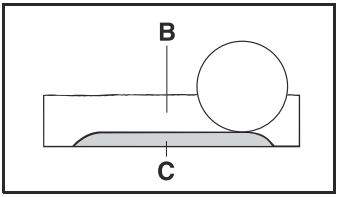

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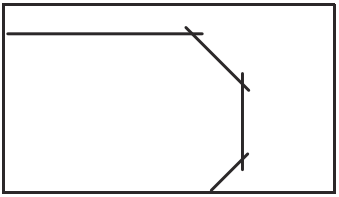

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- . G[OQ X O W UY VWM cQ W Z b L O
V U R b L VSW K IGK YIO H WJOG,O
X Q UbNRL TfOO XQ G Y b I G T O f
- 6 W O T O S G Y c I U I T O S G T O L S L X Y U
VGK L TOf OI L X U YWL N G LUSU
dRLS LTYG

5 WWKL LeaY OU H TGN^ C Y
WNGK L R O Y L R c T Z e/ WO D TdO Ye J S
O N HdGcYG WO W U IfGUTXOHT TU
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W G LNWG

- 5 WWKL LeaY VU WK KQ
W G LNRO YRLc T\bWG N W L N U

-) b _ RO [ZP Y LW G N K L R O Y L R c T Z e
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- : J BZ H C YW G N K L R O Y_ LUR c T b P
I KURc TGWW GRf e ' LJU VG N-G
XU Re K GYc WLQ SL TK UGT TeZ
JRZ H TCZ WGNWL N NG GK C W G UHO P
VW O L fS I T VL W QG_ C I G Y G
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U Y WTU RQWZJ K Rf TL HURc_ U P
QUW WQZW TGWW GRL TC f – VW O
TL U H K OS UX Y O X YRG Yc
TL H Bc_ O L VL W Sb ^ QD QUVUW L
ZK LWW C I Ge YUYWLNGLSZe ^ GXYc I
L L VURUWL TO O6 UXRL V BRL K TLJU
N WRGTOWU GTTUU
W G LNRO YRc TUU W GNWL NGdY O
VL WLSb ^ QD XRUS GYc

5 H W GLN P X Y fN GO X O Y TG W WZU J U
K G S L Y W Wb O S X O S R c T
I U N S U T U R Z T O b W L N G T O f
G W W G N TO U Y W U L N U Z Q W

- . G ' O Y c O Y W Z H Z U Y Q U R L H G T O P
X Q U R c M L X Q N G N G T O f

- 5 H W G Y O Y c I T O S G T O L TG I L X
TG fW L T O L O V G K L T O L U Y W L N UB L S
^ G X Y O

- 5 WWKL LeaY OTG S Y L Oc Y
T G V W G OR L W T G N G W L N

- 5 WWKL LeaY V XUB K UG Y R L c T U X Y c
W GNWL N I U

8 TG ^ RG V R G T O W U G aY V U Y U S
W G H U Y W Z U W U Q W U b V U R T O Yc
T L X B c Q W U G N R K O L R c T \ W L N U
I G M T L W W G O B T B P V U W K Q

- 6 U I L W T Z Y c N G ' O Y Z Q N G K T L S Z
Z V U W Z

- 4 G C O T G aY I X L J K X G O N Z G H U Y G Y
I L W T L P ^ L M L W Yc e G H W G T N O
U Y W L N T U U Q W Z J G

- 6 W U M U O V U R Z e M T O M T e e
X Y U T W Z W L N G aY I L W T L P
^ L M L W c Y G H W G N O T U U Y W U L N
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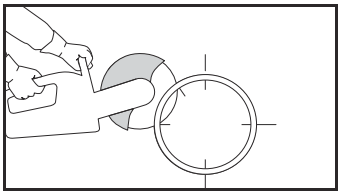

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  XRZ ^ G TL W L NcG YK TUL
  VU RL KTLJU W G N W'LYWUGH
  U HXLV^ OcYTGKLM TUL ZK LWWGTO L
  U Y W LSNUGP GXY OY WHb

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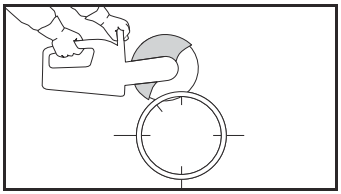

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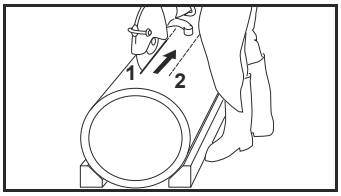
  (VW ORH5 % U H a L SY GW WZ H

Ed tUuTEGf tpWZbG- dbupWbNGYc
yZURZ5RbTGL

) GM TU XUHRe KG bY U W K UD
WGN KRAO YRc T b W G LNNW (1 – 4 :

- 8 TG ^ RG GW WL N G Y WK T U
  K UXY Z Y6 N Tb



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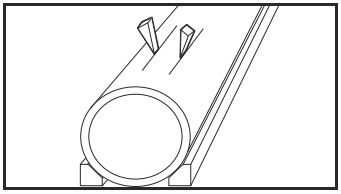

- / X V U Rc N U I G Y c Q R O T c f O O R O
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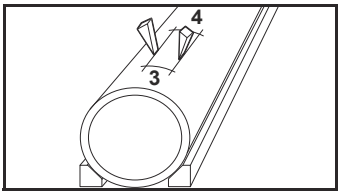
  VUX b I b VR TLTCf WGNWL N U
  RU SGYc



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  I ZJRZHRL TO Q CN NG VWOSLTLTCf
  QROT dI, VLW LbS^L Q I
  VW ON U K G TO Q G GX GR \c I P_ O \
  WGNWL NIU- U WL N GSZe ^GXYc
  XRU S G Y

GTpWZbNTbdL_u/RKQpdbaGRbTbdL
KQWZJO

6 WO W GUWL G WGN OTU- U Y WTLbN
QWZ O VU IKL WG eX fH HBc_ O S
TGJWZNQG;SUXU HTLTJ VW OWLNQL H L N
Z VUWG

6 UdYU S ZO XU BNJ IGYc YJRcQU
G HGN OTb L W GW8RUI U^Tb L QWZ O
K U V Z ' LbTL T QX UYUL Y YKL T T U
SGW Q UO GW T b KRf VW OLSLTCf TG
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EN 12413 (VURCSL W 8 U IRe KG bY
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X U I S LTX YX O NTbLSXOY
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I b X U Q YLX Y G I TTf P O T X Y W Z S L T Y
H L NWZ LTPU X U UL Y XY Ze ' O P
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KI QJG YRL PGHWGNCI T U U Y W\L N T
Z X Y W U P X Y I

5 TOCSLe YTL OS LT TJL VWLI UX UKTU L
Q G XYL U

TpWGTDXVbpWWQpWbkGBeAO\pWGTBbuTGbuTBG
cXGRGQ6L

&¶ 6 WO Y WTBV UWY OUWQL O \ W TbLTO O
TG XRGKL GHW G INTO U WLNTb L
QWZ O TL KURM T5 VU IKL WG bY X f
T L V U X W L KTN S ZU TN K L P X Y I O e
X U R T L ^ T b \ BRZO^OLTPb S
Y WRU b S TGJW ZGN S

&¶ / NH L J GLPY U R ^ CO UZI K G W U I

&¶ . GVGXTbL G HGNCI TbL
W XSVCRUI U^TbL QWZJO \WGTO Y IL
X Z \ USSL X YOL VI IU N SMUUI XQY
VW QWIGTU S WTUP Y L XSLW G Y Z W L
U WUQTGRcTU PZVG QI QL

&¶ ' H W G NTUO U Y YWdL NWZJO
N QWL' G L Y XW TGO Y W K US X
GJW X XQI TbSO MO KQUXYf S O

&¶ ' H W G NTNQ WGX VZRUI U ^TbL
QWZ QO \WGTO Y L I VUKI LWGf
I UNKL P X YSe S U UWG

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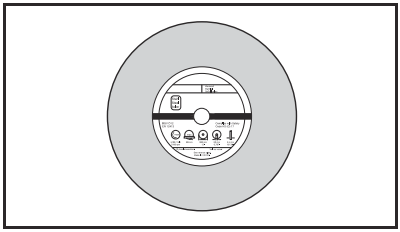

8 L W:O O

&¶ K R f X Z \ WWQSJL T LQT

&¶ KRf IRGM TJJU VW QLSJLTQf

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V W QTSJ I O L G HI TWJG YWNLNTb \
Q ZJJUI TG UXTJI L XQT YLYO LXQQ\ XSJR
JGWGTY O WNYZdQJTU S QTU L
VJRc NIJGTO LO VJ SJJGL YO N IWGEYc
Ho XYWb P O TNJX)HI UWJHRL J^ G LXYf
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&¶ TGdY QLYQL

&¶ T G Z V G Q JGHRQQL] GY X
WLQ SJLTK GQf S O VJ
d Q X V R Z G Y G] O

' HWGN QTU U Y YWdL NWZJO TG UX TJI L
XQTY LQ^LXQQ\ XS U IBG YQQHolzfforma
, I
N G I QSXU XQYJ YQX VJRT L T,O J U K f Y X f
KRf WLN Q XBL KZe' O\ SGY L WRQJG

&¶ GX[G BY

&¶ H L Y U T

&¶ QQSLTc

&¶ Y W Z E I NQJI QJJU ^ ZJZTG

&¶ ' HWGNCI TJ UYWLNTb L QWZJO TG
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Holzfforma TL JU KYX fKRf WG N Q O
ML RLNTUKU YQM Tb\ WLRcXJI

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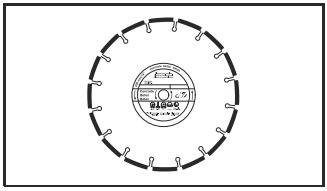

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&¶ TGdYOQ LQX

&¶ TG ZVG OI QL Y GREJ G X WQUSLTK G]fCSO VU d Q X V R ZOGY G]

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&¶ G X GRcYG

&¶ H L YTU

&¶ OGS LT ¢ YI L Wb L JUWT bL VUWU Ks ,

&¶ G HGN OTb P H L YTU

&¶ XI LMO PH L YTU

&¶ J RBTf T bP Q OWQY

&¶ JROT f Tb L Y W Z H

&¶ Q U OR2 ^ Z J Z T

4 L W G NNWc YKWZ OL SG Y L WRb9-G dvMGKFDvYc HBcXsGYHDuvUcXRYZsGI!

4 O QKG TL O XURcNU G dY GRS GTNbL UY WNT bL QWZ OX VU Wb Y OS VU HUQ SG YGQQ QUTO NG XWLI Ge YI W G N WCL N L S U JZY V W O MO X U ^ lc TX RBc TU P U H WTG RUYKG^ L– dvMGKFDvYc HBcXsGYHDuvUcXRYZsGI!

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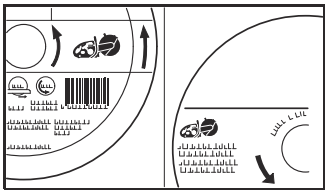

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&¶ (Z Qb \ G W G QONZ le WU XUI TZ e U HRGX Y W O STLTOf G H W GTN O U YLWT UU Q ZWG

&¶ > OXRG \ G WQXGL W e YXQBG X X SU TUXY QG HQNCI TU UWL NTUU QWZ G XGRSGNTb S TGVb RLTO L S SGWQCHolzfforma

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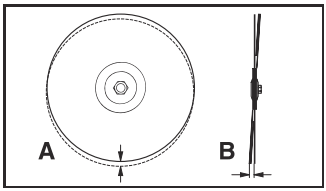
/ X WGI T bL UVU W _ VOTKLRf G H W GTN OU LNWUU QWZ GfI Rf e YX f TLU HU K QUB WL KVUXb RQ U P KRO YRc TUU XWUQG XRZMHb O d[[LQ YI OU PW G HbLGYHQN OTU U Y WTUUN QWZ G XGRSGNTb S TGV bRLTOL S

6 WOSLTLTOL G MG N OU U Y WTUUN QWZ G TG G H W GTN OU Y WUSN Z X Y W UL PXXTY QXWG T bS OUVUW SO _ VOTK LR f SUML Y WQI LXYO Q WGK ORBTUS Z O Y U WM JS Z H OTIO e



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5 Y EUTL T Q UYKUVZXQG TG YUWY LI UL H OTICL(B V W O NUQ XWOb _ LTOe Y W RUI UP TGJWZNQO OVUf I RLTO e _ O WQQI WUV ORUI W QW L N Q

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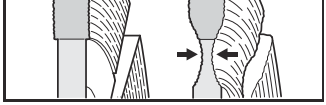

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I U NOQTZ Y c ^ SVLWTP O TNU X
XLW K^TO G- VW TDTQUI LTO L
GHW G INTO U Y TWUIUNQW JZG I ' L H TL c
SUM TUW GVQNTG Y V IX I YRU P bVRO-
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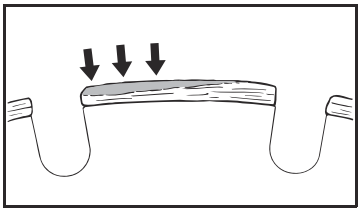

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XLJSLTY U DY U TGRLY UXL K G LTG
G R S G N G \ I YX G QNS G TYRZLW
X L J STYLb

4 G WKVJTG WLM ZO\ QWUS QG SUM L Y
UHW G INbUG YXf O NGN

&¶ V W O ^ W L NTUbY^I G WV K U S
W G LNNW S S SG Y L WRLO G
TGVW CLSV WO WLNQL JWGTO Y G

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TGVW CLSV WO^ WNSLWTU S
TGVUWTUS ZX QBOQ

4 G WKVJTG WLM ZO\ QWUS QG
Z XRQJ G L YO H W G] XJTQMGLY
WLMZ' Ze XVU XHTUXYc O I b Nb I GLY
O XW U WGHNJ GTO L

6 W QVUf I RLTO OVLW b \ VW CTGQJI
TGWUXYG TG WLMZ' O \QW SKQG
GHW G INTO U Y TWULRQYZJ X GRS GNT bS
TGV bRLTO IS TL U\HUK O ISTL SLKRLT TU
" NGYU ^ Q' Y KRf dY UU VW U IQUXY O

Q QWQJI W SLT T eZ WGNWL NZQ
G H W GTNUOS G Y QGRG TGVW O SWL
VL X ^TG Q GW W O JUUYHUL YTGCRO
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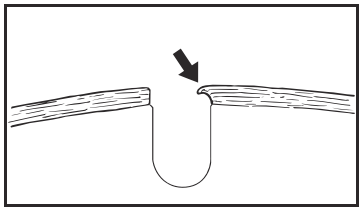
Q WS QG



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VU RL KTO LS UZYW G NUSO YXf
I X R L K QY L TGN O Y L R c T U J U
YLV RJI b K LRL TQf – UX TJI TUL VURUYTU
W XGQRf L YXf O YLW L YXI U eY I LWKU XcY
– dYUSUML YWVQI LXY QQKL [UWSG] Of S
f I TU WGXVU TNG GLSb S VU QG ^ TLO e
G H W GTN CU LNNWUUU QWZ G
6 WLQWGY O YdQXV RGZYG] Oe G HGN OTU
U Y WTLUN QWZJG- dMGXTdMYc
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Cbu]bWcbh	fgUbWcbh	fgUbWcbh]bWUhYa]bWUhYa
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8 ORcTb P CNTUX TG XYUWUTG X USLTYG	' HWGNCI TU UYW NTUP QWZJ QG'GL YXf	/ X VURcNUG Y TU b P G HGNV OTU UYWLN T U E2 W Z J
. GJW NTLT b L Q WSUQ ZI UK W G NWG U X ZXY O LW WZ' L P XVUX UTHUXY O QWZJG O XWO U HGNWI GTCL	' HWGN OTU U Y WUE QWZ JNGYZ VZRXf TGW XY TG WLWZ' O \ QW SUQ GG HGN OTU U Y WTb \NQWZ UI KRf Q SLT Tb \ VUW IK	' H W G NTLO U UNTWU FQWZJ KRf QSSLT Tb VU W UNKG Y U^ QZ Y L S QWG Y QWUSLT TUP WLNQDG MG N TCUJU SGYLWDGRG GHWGNCI TU UYWLNTUP QWZJ KRf G X [@Y QWGSLTO Y TU b S
6 RU \ G W WZ ' GI XVU XH TU XcY IXU Q G f X Yfc VODNX G X LTYS L	' HWGN OTU U Y WUE QWZ J WG GL YfXI TLWW GORcTUS TGW IGRLTOO	' H W G NTO U NTWULP QWZJ X S TY OUWGYc I VW IGORc TUS T G V MRG TODWG ' LTO f
8 QURb ORO Y W L TOb U XU TUS VURUYTL O XJSLTYL	6 LWLJWZNQG	/ XVURcNUI GYc TU b P G HGN OTU UYWLN T U E2 W Z J
/ NTUX LWKL ^TOQG	7 L NG TLWGI ORcTUJU SGYLW ORG	4 U b P G H W GTN QWLNTU RQ WJ ZU HGW YOY d T O S G T OWG TN6 LYERQcTL XRUO CNWGNRO^Tb \ SGY WDGRUI

1 1USVGTO Holzfforma W QUSLTKZL YXLJ O @O NWOI GT TJUU K @LWG Holzfforma

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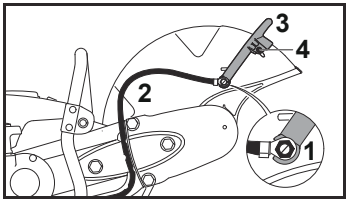
4 GN @LUKL" 6 UK_ OVTOQ X N GOY U PS UTYOWZ L XY TGI T ZWLTTLP XY WUTL

" 6 U K OVTOQXNG OYU "P, I N G I OSXU X Y O U Y Z X R U I O P VWO STLTOI, SUWLYSUTY OUWGYcXf Y @W L TG TGWZM TU PX Y WJTW

6 WO WZ ^TU PW L LN QN N @L L HRGJUW fOYTUJU WGX VURUWLTOI] LTY YGYf WLXY OW QU SLTKZLYX f I TZY WT TOP SUTY @W

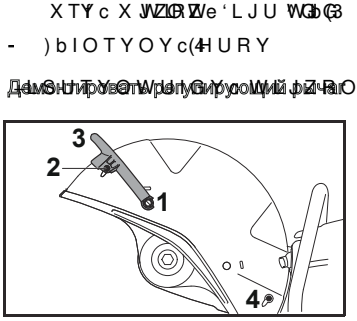


- 6 URb P I QITYb Q WOZYX VU S'Uce QU S HTOO W U I G T T U J U Q Re^ @W W O dY U S ^ L Y b TW g \ J W G T J G P Q Z TG I T Z Y W L T T L P X Y U W U T N G 'O Y b O N cIORNL ^ T GW IGRfe 'L P
-) U K fUTP_ R G (T J X U_ Y Z]WSU X TY c X JWZIGRWe 'L J U WGb(@
-) b I O T Y O Y c(4H U R Y

Дe\SUTPQWUeGYc\GTPWZbdUQIGRf nQJKGHO edJKb

KdUTaGVhUjK_UVTOQX (GC890)

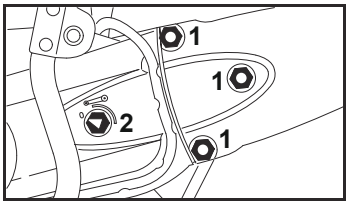
- +LS UTY QWU G Y GHW G INT@ U Y L WTU RQ WJ ZX S :X YGTU IQG' N GLSTG GHWG N IOU U Y WUJUN QWZ G



- 6 U R b P I QITYb Q WOZYX VU S'Uce QU S HTOO W U I G T T U J U Q@R^G O O N cRI SL X/ L X Z V PYUI T O L- S/ W O dY U S ^ L Y W \gJW TGTeZ JG PZQTG I T Z/ WT L PXY WJTU L N QG Yb O NRL ^c O NTG V W G I R fe 'L P
-) b Q W Z Y O Y c H U R Y

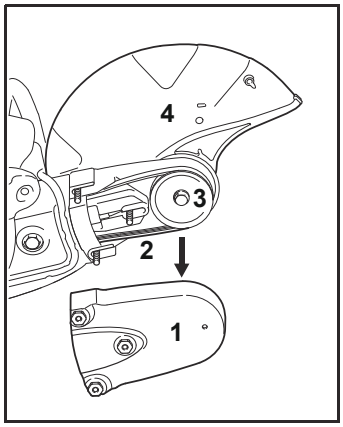
- 7 LJZROWZeRWb^(3J
  VUILZWTILWO XTfYc
- /NIRL^cNGZIRQ(4

5 XRTGYOTGYfMLTOf VUROQROTUIUJU
Wb^Tf



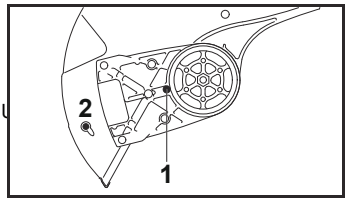
- +RfXTYfOTGYfMLTOf
  VUROQROTUIUJUWLSTfUVZXYOcY
  JGPOQ(– JGPOQ TL
  UYOTOGYUYWLGTXbVHURYUI
- 6WOUSJ'OZTOILWcXTGJRU
  QeR^GVUILWTZYcTGYfMTZe
  JGP(QZVWVUO^GXUUPXYWLRQO
  „ VOWR T/GUHUWUKYUG
  WORLJ=0TOf
- 5YIOYTOcYJPGQ(1 UYXVUGTWb\
  HURYUI – JGPOQ(NGWQVRLTb G
  WSLTTUPNG'OVUYZYLOW

Демонтируем рамку на заднюю

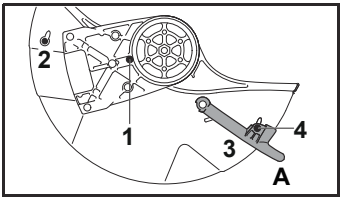


- :KGRYWSLTTZNeG'OZ(Y,
  VUORQOTUIPWSLT(c XTfYc X
  VLWKTLJWSLTTUJUQO(3G
- 8TfYc 6UK_OVTOQ"(4 NG'OYUP

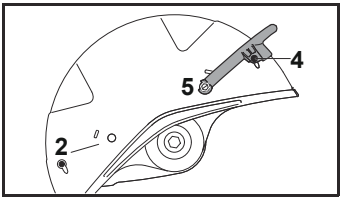
"6UK_OVTOQ"(4 NG'OYUP
для наружного монтажа



-)bQWYZOYZLUWTbHURY(1
- /NIRL^cNGZIRQ(2

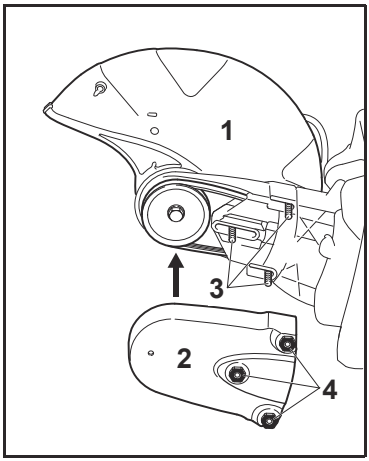


- .G'OYZVUILWZOZYNcGTTUL
  VURUMLTSOLWOXZTUQ
-)IOTYOYcOZXNGZUYWTbP
  HURY1
-)XYGIOYcNGJRZ_QZ
- 6LWSLXYOcYWLOZWRe'OP
  WbGI(IVURUMLATOL
-)IOTYOYcO NGYfTZYc HURY



- "6UK_OVTOQ"(4 NG'OYUP
  VUILTWZcYGQOSUHWUGHNbUS
  NGOYGTG\UKRGXcTG TGWZMTUP
  XYUUWTL
- >LYbWgWTGTeZJGPQZNYOX
  TGWGRfe'ZeNG'ObYO
  NGYfTZYc
- 1UWYOQPVZYXULYRbPIQ(TYX
  ZVRUYTLTOLS TG WLJZROWZe'L
  WbGJLNGWZYcOOKGTYZYc
  QUSHTOOWUTbGSQeRUS
-)XYGIOYcNGJRZ_QZ
-)IOTYOYcfOZNYcGYHURY

[illegible]



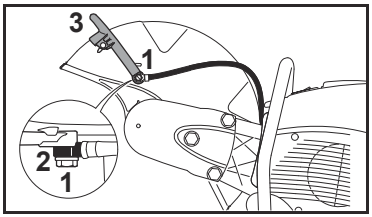
- 6 U K _ O V T NG CO X"U P Z XGTU I O Y TG TG WZU PX WW TL ƒ V W O d Y OOBOTVUU EMP L S L T c VWU I LXY O LW LNWL SLTTb P _ OOI

УКАЗАНИЕ

7 LS LT T P VW IOUK KURMLT RLJOU VL WSLL ' GYc Xf

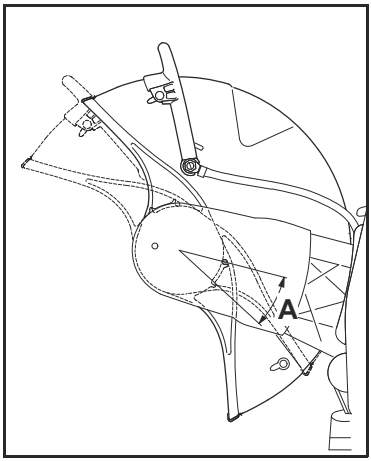
- : XY GU I O Y W KU \ WGTO YRc Tb P Q MZ \ W L ST LTUU VW IOU KG(2
- 7 GX VWTb L H URYb (I UVUW L X USL X Y cOXYJG PGSO(4 I VWLKU \ WGTO YRc TU SOUM ZL\ W SLT TUU WOI U KG
- 4 GI OTY OcYGP O(4 TGWGX VWTb L H URYb (– TL N GI JOI Gf

[illegible]



- + ROT Tb P VURb P IOTY WW KL Yc ^ LWLN _ Y Z]W TGI UKf TU S _ RGT JL– XRL K Oc YKG VURUML TOLS _ Y Z] L W G
- > LYb Wg \ JW TGTZ e JG PZ I I L X YIO TGWWGI R fe ' Ze NG 'OYb O N GI YZY c
- ? YZ] L WX K ROT Tb S V URb S I O YU S Z X GU I O Y TG WLJ ZROWZe ' LS Wb ^ GJL – N GOTY OcYVURb P I OTY O NGYf TZ Yc LJU X VUSU 'ce Q U S TOOW U ITGUTU ORe ^ G

[illegible]



- . G O YZ VUI LWT Zc KU Z VUW G I V LWg KO TG NKG K OVGN TU WLJ ZROW IUOO(' K URM LT UUWGTO ^ IOG Y X ZVUWT bS H URY IS

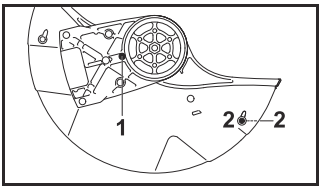
+ GRLL XS " 4 GYf ML TO LVURO ROTUI UUU WLST f

[illegible] (GC890)

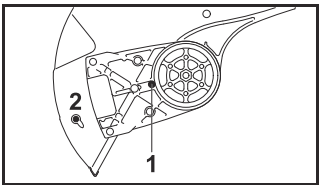
- + LSUTY O WGUY G H W GTN O UYWLNTUP OWZJ(XS : XYGTUI OG/ N SLTGG H W GTN OU Y WUUN Q W Z J G
- + LSUTY O WGUY VG YZW IOKR f VU KG^O I UKb
- + L SUTY O WGUY W JZRO Ze ' OP Wb ^ GJ
- 5 XRGHOYc T YG M L T O L VURO ROTUI UUU WLST f

- Демонтировать ременную защиту
- Демонтировать "Подшипник с защитой"
- Извлечь заглушку

"Подшипник с защитой" подготовить для внутреннего монтажа

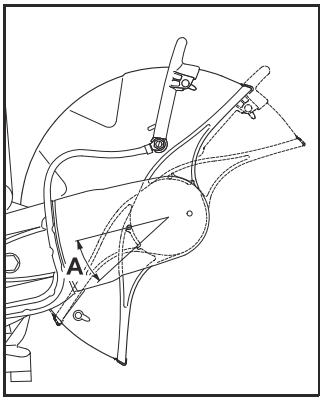


- Выкрутите упорные болты (1)
- Вставить обе заглушки (2) – также с обратной стороны



- Защиту повернуть в указанное положение (см. рисунок)
- Ввинтить и затянуть упорный болт (1)
- Смонтировать переводной рычаг
- Смонтировать "Подшипник с защитой" – защита на внутренней стороне
- Смонтировать ременную защиту
- Монтировать соединение для подачи воды

Проверить диапазон регулировки защиты

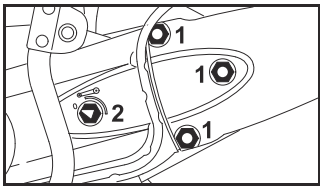


- Защиту повернуть до упора вперёд и назад – диапазон регулировки (A) должен ограничиваться упорным болтом

Далее см. "Натяжение поликлинового ремня".

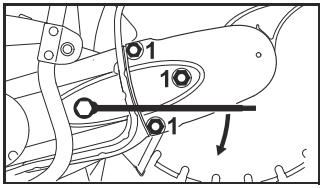
Натяжение клинового ремня

Данный агрегат оборудован автоматическим устройством натяжения ремня, действующим за счет натяжения пружины.



Перед натяжением поликлинового ремня шестигранные болты (1) должны быть ослаблены, а стрелка на натяжной гайке (2) должна указывать на **0**.

- в противном случае ослабить гайки (1) и натяжную гайку (2) с помощью комбинированного ключа повернуть против часовой стрелки – ок. 1/4 оборота, до упора = **0**



- Для натяжения поликлинового ремня, на натяжную гайку следует надеть комбинированный гаечный ключ, как показано на рисунке

ПРЕДУПРЕЖДЕНИЕ

Натяжная гайка подпружинена – надежно удерживать комбинированный ключ.

- Натяжную гайку поверните по часовой стрелке приблизительно на 1/8 оборота – на натяжную гайку начинает воздействовать усилие пружины
- Натяжную гайку повернуть по часовой стрелке на ок. 1/8 оборота далее – до упора

УКАЗАНИЕ

Не прикладывать усилия к комбинированному ключу, чтобы продолжить вращение.

В этом положении поликлиновой ремень натягивается автоматически под действием усилия пружины.

- Снять комбинированный ключ с натяжной гайки
- Гайки (1) затянуть на защите ремня

Подтягивание ремня с клиновыми рёбрами

Подтягивание производится без помощи стяжной гайки.

- Ослабить три гайки на защите ремня

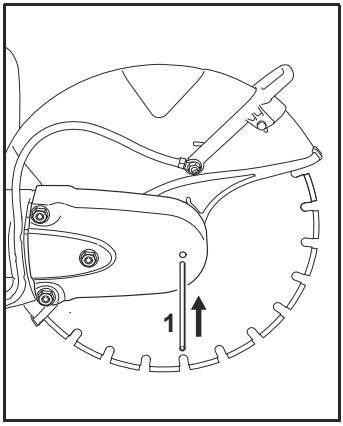
Поликлиновой ремень натягивается автоматически под действием усилия пружины

- Гайки снова затянуть

Насаживание / Замена отрезного шлифовального круга

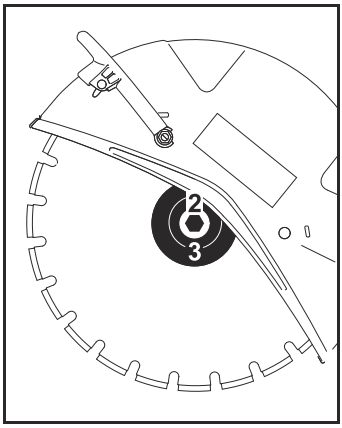
Установка и замена должны производиться только при остановленном двигателе – комбинированный переключатель установить в положение **STOP** или **0**.

Блокировка вала



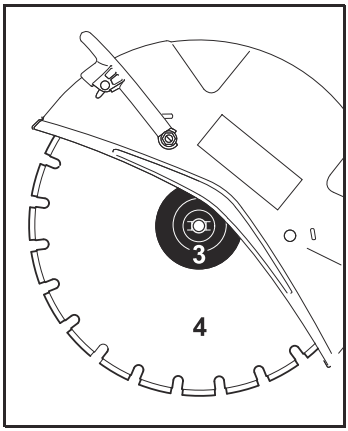
- Вставить стержень (1) в отверстие в ременной защите
- Вал с помощью комбинированного ключа поворачивать до тех пор, пока стержень (1) не войдет в одно из расположенных за ним отверстий

Демонтаж абразивно-отрезного круга



- При помощи комбинированного ключа ослабить и выкрутить шестигранный болт (2)
- Снять с вала переднюю нажимную шайбу (3) и абразивно-отрезной круг

Установка абразивно-отрезного круга



- Установить абразивно-отрезной круг (4)

ПРЕДУПРЕЖДЕНИЕ

При применении абразивно-отрезных кругов с алмазным напылением соблюдать указанное стрелкой направление вращения.

- Установить переднюю нажимную шайбу (3) – фиксирующие выступы передней нажимной шайбы (3) должны входить в пазы вала
- Ввинтить шестигранный болт и с помощью комбинированного ключа **затянуть до отказа** – при применении динамометрического ключа момент затяжки см. "Технические характеристики"
- Извлечь стержень из ременной защиты

ПРЕДУПРЕЖДЕНИЕ

Ни в коем случае не применяйте одновременно два абразивно-отрезных круга на основе искусственной смолы – **опасность повреждения и травмы!**

Топливо

Двигатель должен работать на топливной смеси из бензина и моторного масла.

УКАЗАНИЕ

Использование ненадлежащих эксплуатационных материалов или смеси с составом, не соответствующим инструкциям, может привести к серьезным повреждениям привода. Бензин или моторное масло более низкого качества могут повредить двигатель, уплотнительные кольца, трубопроводы и топливный бак.

Бензин

Применять только **марочный бензин** с минимальным октановым число 90 ROZ – содержащий или не содержащий тетраэтилсвинец.

Бензин с долей содержания этанола выше 10% может вызвать перебои в работе двигателей с карбюраторами, имеющими ручную регулировку, и поэтому не должен использоваться для таких двигателей.

При использовании бензина с содержанием этанола до 25% (E25) двигатели с системой M-Tronic развивают полную мощность.

Моторное масло

При самостоятельном смешивании топлива разрешается использовать только моторное масло для двухтактных двигателей Holzfforma и ли
другое высокоэффективное моторное масло JASO FB, JASO FC, JASO FD, ISO-L-EGB, ISO-L-EGC либо ISO-L-EGD.

Компания Holzfforma предписывает использование моторного масла для двухтактных двигателей Holzfforma HP
Ultra или равноценного высокоэффективного моторного масла, чтобы обеспечить соблюдение предельно допустимых выбросов в течение всего срока службы машины.

Соотношение компонентов смеси

у моторного масла для двухтактных двигателей Holzfforma1:50; 1:50 = 1 часть масла + 50 частей бензина

Примеры

Количество бензина вух-	Масло Holzfforma для д тактных двигателей 1:50	
л	л	(мл)
1	0,02	(20)
5	0,10	(100)
10	0,20	(200)
15	0,30	(300)
20	0,40	(400)
25	0,50	(500)

- В предназначенную для топлива канистру залить сначала моторное масло, а затем бензин и тщательно перемешать

Хранение топливной смеси

Хранить только в предназначенных для топлива резервуарах в безопасном, сухом и прохладном месте, защищать от света и солнечных лучей.

Топливная смесь стареет – запас смеси готовить только на несколько недель. Не хранить топливную смесь более 30 дней. Под действием света, солнечных лучей, низких или высоких температур топливная смесь быстрее теряет свои эксплуатационные характеристики.

- Перед заправкой тщательно встряхнуть канистру с топливной смесью

ПРЕДУПРЕЖДЕНИЕ

Давление в канистре может повыситься – открывать осторожно.

- Периодически тщательно очищать топливный бак и канистру

Остатки топлива и жидкость, использованную для очистки, утилизировать согласно предписаниям и без ущерба для окружающей среды!

Заправка топливом

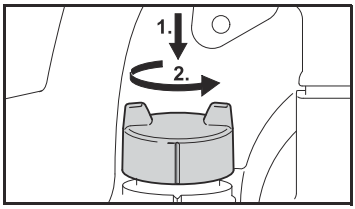
Подготовка агрегата

- Перед заправкой топливом очистить крышку бака и прилегающую поверхность, чтобы в бак не попала грязь
- Агрегат расположить таким образом, чтобы крышка бака была направлена вверх

ПРЕДУПРЕЖДЕНИЕ

Ни в коем случае не открывайте крышку топливного бака с байонентным затвором при помощи инструмента. Это может привести к повреждению крышки и утечке топлива.

Открыть крышку топливного бака

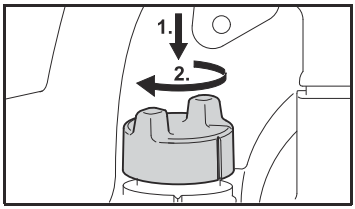


- Крышку отжать рукой вниз до упора, повернуть против часовой стрелки (около 1/8 оборота) и снять.

Заправка топлива

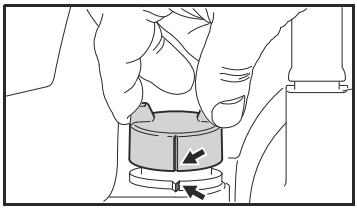
Во время заправки не разливать топливо и бак не заполнять до краёв. Компания Holzfforma рекомендует систему заправки для топлива Holzfforma (специальные принадлежн ости).

Закрыть крышку топливного бака



- Установить крышку и поворачивать до тех пор, пока она не войдет в байонетное крепление
- Крышку отжать рукой вниз до упора и повернуть по часовой стрелке (около 1/8 оборота) до её фиксации.

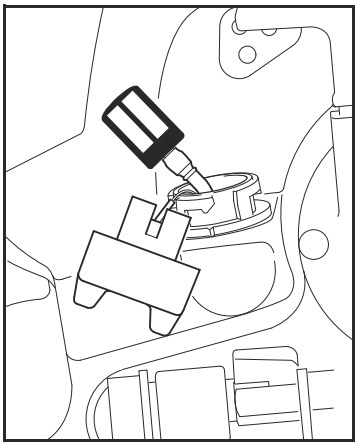
Проверить фиксацию



- Взяться за крышку бака – крышка зафиксирована правильно, если ее нельзя снять и маркировка (стрелки) на крышке и топливном баке совпадают

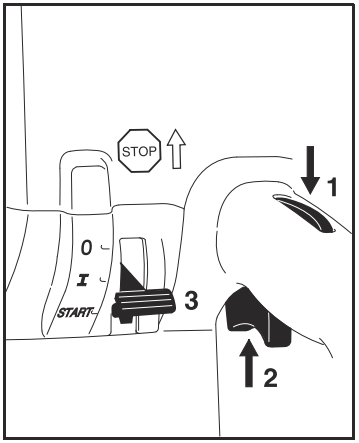
Если крышка снимается или не совпадают метки, снова закрыть крышку – см. раздел "Закрыть крышку" и раздел "Проверить фиксацию".

Всасывающую топливную головку следует заменять ежегодно

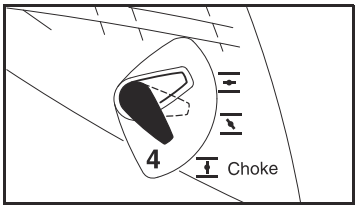


- Опустошить топливный бак
- Всасывающую головку для топлива вынуть крючком из бака и снять со шланга
- В шланг установить новую всасывающую головку
- Всасывающую головку вложить снова в бак

Пуск / остановка мотора



- Соблюдать правила по технике безопасности – см. раздел "Указания относительно техники безопасности и техника работы"
- Одновременно нажать стопор рычага газа (1) и рычаг газа (2)
- Оба рычага удерживать нажатыми
- Комбинированный переключатель (3) сместите в положение **START** и также удерживайте нажатым
- Попеременно отпустить рычаг газа, комбинированный рычаг и стопор рычага газа = **положение газа запуска**

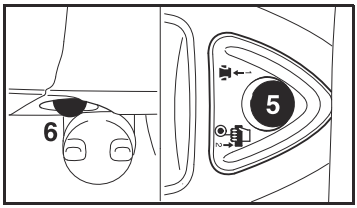


- Отрегулировать рычаг воздушной заслонки (4) в зависимости от температуры двигателя

При **холодном** двигателе

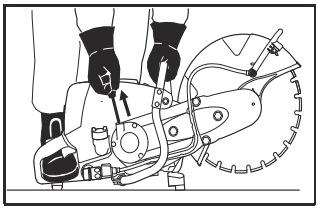
При **прогретом** двигателе (в том числе и если двигатель уже работает, но еще не прогрелся, или если прогретый двигатель был остановлен менее чем на 5 минут)

При **разогретом** двигателе (если разогретый двигатель был остановлен более чем на 5 минут)



- Перед каждым пуском двигателя нажмите кнопку (5) клапана декомпрессии
- Сильфон (6) ручного топливного насоса сжать 7-10 раз – даже в том случае, если он еще заполнен топливом

Пуск

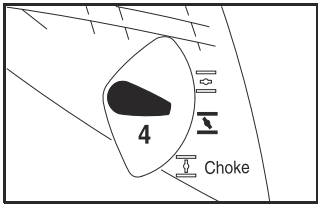


- Абразивно-отрезное устройство надежно установить на земле – абразивно-отрезной круг не должен соприкасаться с землей или какими-либо предметами – в зоне поворота абразивно-отрезного устройства не должны находиться посторонние лица
- Занять устойчивое положение
- Абразивно-отрезное устройство левой рукой прочно прижать к земле – большой палец под трубчатой ручкой
- Правую ногу вставить в заднюю рукоятку
- Правой рукой медленно вытянуть пусковую рукоятку до упора – затем резко протянуть– пусковой тросик не вытаскивать до конца

УКАЗАНИЕ

Не следует допускать быстрого возврата пусковой рукоятки в исходное положение – **опасность разрыва!** Отводить назад против направления вытягивания, с тем чтобы тросик мог правильно наматываться.

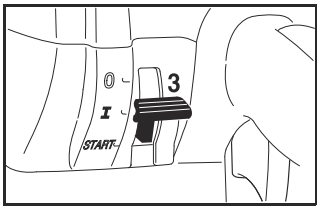
После первого срабатывания зажигания



- Рычаг воздушной заслонки (4) установить на – перед каждой последующей попыткой запуска следует нажимать кнопку клапана декомпрессии и продолжать запуск

Как только двигатель заработает

- Нажмите рычаг газа, а двигатель прогрейте на полном газу в течение приблизительно 30 секунд.
- После фазы прогревания – рычаг воздушной заслонки установить на

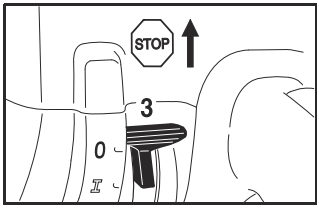


- При нажатии на рычаг газа комбинированный переключатель (3) переходит в нормальное положение I.

При правильно отрегулированном карбюраторе абразивно-отрезной круг не должен вращаться на холостом ходу двигателя.

Абразивно-отрезное устройство готово к работе.

остановить двигатель



- Комбинированный переключатель (3) установить в положение **STOP** или **0**

Дальнейшие указания для запуска

Если двигатель не запускается

После первого зажигания двигателя комбинированный рычаг не был установлен своевременно в положение , двигатель "захлебнулся".

- Комбинированный рычаг установить в положение **START = позиция газа запуска**
- Рычаг воздушной заслонки установить в положение = теплый запуск – в том числе и при холодном двигателе

- Пусковой тросик протяните 10-20 раз – для вентиляции камеры сгорания
- Заново повторить запуск мотора

Топливо в топливном баке было полностью израсходовано

- Заправка топлива
- Сильфон ручного топливного насоса следует сжать 7-10 раз – даже в том случае, если сильфон еще заполнен топливом
- Отрегулировать рычаг воздушной заслонки в зависимости от температуры двигателя
- Заново повторить запуск мотора

Система воздушного фильтра

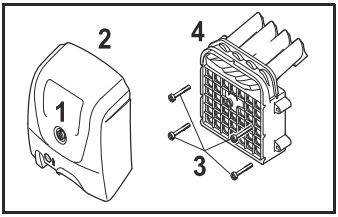
Базовая информация

Срок службы фильтров составляет в среднем более одного года. Крышку фильтра не демонтировать и воздушный фильтр не заменять до тех пор, пока не станет заметным явное снижение мощности мотора.

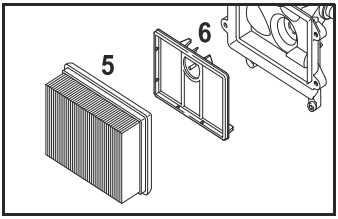
В системе воздушных фильтров длительного срока службы с предварительной циклонной сепарацией загрязненный воздух всасывается и целенаправленно завихряется – в результате чего грубые и тяжелые частицы отбрасываются наружу и удаляются. В систему воздушных фильтров попадает лишь предварительно очищенный воздух – благодаря этому обеспечивается чрезвычайно длительный срок службы.

Замена воздушного фильтра

Только при заметном падении мощности.



- Ослабить резьбовую заглушку (1) крышки фильтра
- Снять крышку фильтра (2)
- Окружающую поверхность фильтра и внутреннюю сторону очистить от грубого мусора
- Выкрутить болты (3)
- Вынуть корпус фильтра (4)



- Главный фильтр (5) вынуть из корпуса фильтра
- Рычаг клапана запуска установить в положении
- Дополнительный фильтр (6) снять со дна фильтра – не позволять чтобы грязь попадала в область всасывания

- Очистить пространство фильтра
- Новый главный фильтр и новый дополнительный фильтр с остальными компонентами фильтра снова монтировать
- Установить крышку фильтра
- Затянуть резьбовые заглушки

Применять только высококачественные воздушные фильтры, чтобы предохранить мотор от попадания в него абразивной пыли.

Holzfforma рекомендует применение только оригинальных воздушных фильтров марки Holzfforma. Высокий стандарт качества этих деталей обеспечивает бесперебойную эксплуатацию, длительный срок службы привода и чрезвычайно длительный срок службы фильтров.

Настройка карбюратора

Базовая информация

Система зажигания данного абразивно-отрезного устройства оборудована электронным ограничителем частоты вращения. Частота вращения не должна превышать заданное максимальное значение.

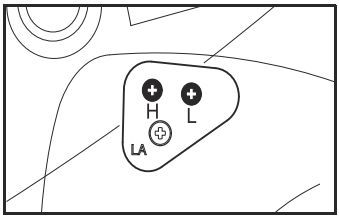
Карбюратор поставляется с завода со стандартной регулировкой.

Карбюратор отрегулирован таким образом, чтобы во всех режимах эксплуатации к двигателю поступала оптимальная топливовоздушная смесь.

Подготовка устройства

- Выключить двигатель
- Проверить воздушный фильтр – при необходимости очистить или заменить

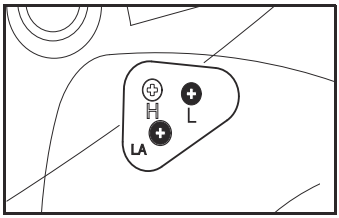
Стандартная регулировка



- Главный регулировочный болт (H) повернуть против часовой стрелки до упора – макс. 3/4 оборота
- Регулировочный болт холостого хода (L) повернуть по часовой стрелке до упора – затем повернуть против часовой стрелки на 3/4 оборота

Регулировка холостого хода

- Выполнить стандартную регулировку
- Запустить и прогреть двигатель



Двигатель работает на холостом ходу

- Упорный винт холостого хода (LA) поворачивать по часовой стрелке до тех пор, пока

абразивно-отрезной круг не начнет двигаться – затем повернуть назад на 1 оборот

Абразивно-отрезной круг вращается на холостом ходу

- Упорный винт холостого хода (LA) повернуть против часовой стрелки, пока абразивно-отрезной круг не остановится – затем повернуть в том же направлении на 1/4 оборота
- Если абразивно-отрезной круг продолжает вращаться на холостом ходу, повернуть упорный винт холостого хода (LA) еще на 1/4 оборота против часовой стрелки

ПРЕДУПРЕЖДЕНИЕ

Если абразивно-отрезной круг после выполненной регулировки не останавливается на холостом ходу, следует отдать абразивно-отрезное устройство в ремонт специализированному дилеру.

Число оборотов в режиме холостой ход нерегулярно; плохое ускорение (несмотря на изменение регулировки упорного болта холостого хода)

Регулировка режима холостого хода на сильно обедненную горючую смесь.

- Повернуть регулировочный болт холостого хода (L) против часовой стрелки приблизительно на 1/4 оборота, чтобы обеспечить равномерную работу и оптимальное ускорение двигателя – максимум до упора.

Число оборотов двигателя на холостом ходу недостаточно эффективно регулируется в сторону увеличения частоты оборотов с помощью упорного винта холостого хода (LA); при изменении режима с частичной нагрузки на холостой ход агрегат выключается

Регулировка режима холостого хода на сильно обогащенную горючую смесь.

- Повернуть регулировочный болт холостого хода (L) по часовой стрелке прибл. на 1/4 оборота

После каждой корректировки регулировочного болта холостого хода (L) чаще всего необходимо также и изменение регулировки упорного винта холостого хода (LA).

Корректировка регулировки карбюратора при работе на большой высоте

При недостаточной мощности двигателя может потребоваться незначительная корректировка регулировки.

- Выполнить стандартную регулировку
- Прогреть в работе двигатель
- Главный регулировочный болт (H) слегка повернуть по часовой стрелке (обеднить топливную смесь) – максимум до упора

УКАЗАНИЕ

После возвращения с большой высоты восстановить стандартную регулировку карбюратора.

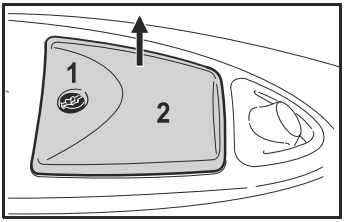
При регулировке на слишком обедненную смесь существует опасность повреждения приводного механизма вследствие недостатка смазочного материала и перегрева.

Свеча зажигания

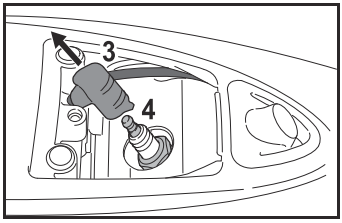
- При недостаточной мощности двигателя, при плохом запуске или перебоях на холостом ходу в первую очередь следует проверить свечу зажигания.
- Замените свечу зажигания после приблизительно 100 часов работы – при сильно обгоревших электродах уже раньше – применяйте только допущенные фирмой Holzfforma свечи зажигания с защитой от помех – см. "Технические данные".

Демонтаж свечи зажигания

- Остановить двигатель – выключатель остановки установить в положение **STOP** или **0**

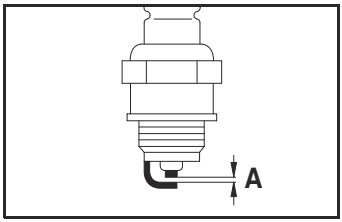


- Выкрутить болт (1) и снять колпачок (2) – болт (1) невыпадающий болт закреплен в колпачке (2)



- Снять штекер провода зажигания (3)
- Выкрутить свечу зажигания (4)

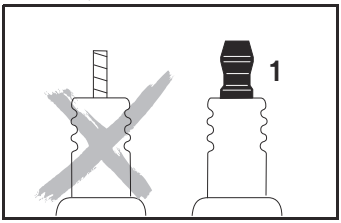
Проверить свечу зажигания



- Очистите загрязненную свечу зажигания
- Проверить расстояние между электродами (A) и, если необходимо, отрегулировать, значение расстояния – см. раздел "Технические характеристики"
- Устраните причины загрязнения свечи зажигания.

Возможные причины загрязнения:

- избыток моторного масла в топливе,
- загрязненный воздушный фильтр,
- неблагоприятные условия эксплуатации.



ПРЕДУПРЕЖДЕНИЕ

При неплотно затянутой контактной гайке (1) или при ее отсутствии могут возникать искры. При проведении работ в легковоспламеняемой или взрывоопасной среде может возникнуть угроза пожара или взрыва. Люди могут получить тяжелые травмы или понести материальный ущерб.

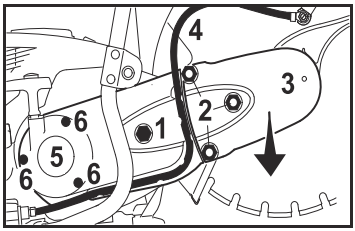
- использовать свечи зажигания с помехоподавляющим резистором с закрепленной контактной гайкой

Монтаж свечи зажигания

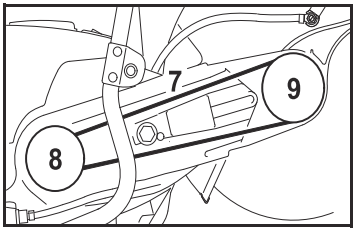
- Вручную установить свечу зажигания и ввинтить
- Свечу зажигания снять с помощью комбинированного ключа

- Контактный наконечник провода зажигания прочно прижать на свече зажигания
- Установить колпачок контактного наконечника провода зажигания и зафиксировать болтами

Замена клинового ремня



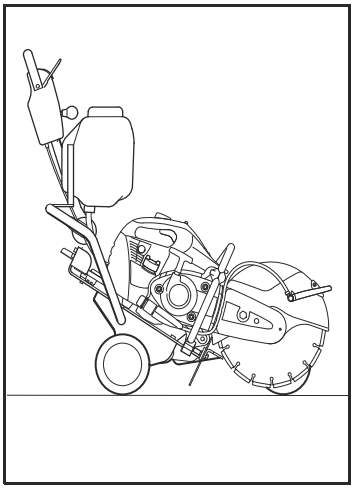
- Стрелка на натяжной гайке (1) должна указывать на **0** – для этого натяжную гайку(1) комбинированным ключом повернуть против часовой стрелки – прибл. на 1/4 оборота, до прилегания = **0**
- Гайки (2) отвинтить с распорного пальца
- Удалить ременную защиту (3), поликлиновой ремень снять с переднего ременного шкива
- Снять "Подшипник с защитой"
- Извлечь шланг (4) из направляющей крышки стартера (5)
- Выкрутить болты (6) крышки стартера
- Снять крышку стартера
- Поврежденный поликлиновой ремень извлечь из соединительного элемента



- Новый поликлиновой ремень (7) аккуратно уложить в соединительный элемент и ременный шкив (8) на приводе
- Смонтировать крышку стартера
- "Подшипник с защитой" установить на присоединительную деталь
- Поликлиновой ремень вложить в ременный шкив (9)
- Установить защиту ремня
- Шпильку в подшипнике с гайками в защите ремня привести к кожуху
- Закрутить гайки на шпильке – пока не затягивать
- Шланг вложить в направляющую крышки стартера

Далее см. "Натяжение поликлинового ремня".

Направляющая тележка



Абразивно-отрезное устройство может монтироваться на направляющей тележке Holzfforma FW 20 (специальные принадлежности) всего лишь в несколько приемов.

Направляющая тележка упрощает

- ремонт повреждений дорожного полотна,
- нанесение маркировки на дорожном полотне,
- разрезание стыков.

Хранение устройства

При перерывах в работе более 3 месяцев

- Топливный бак опустошить на хорошо проветриваемом месте и очистить
- Топливо удаляйте согласно предписаниям и без ущерба окружающей среде
- Опустошить полностью карбюратор, в противном случае может произойти склеивание мембран в карбюраторе
- Снять абразивно-отрезные диски
- Устройство основательно почистить, особенно рёбра цилиндра
- Устройство хранить в сухом и безопасном месте. Защитить от неправомочного пользования (например, детьми).

Указания по техобслуживанию и техническому уходу

Данные относятся к нормальным условиям эксплуатации. В сложных условиях (высокая запыленность и т.п.) и при более длительной ежедневной работе указанные интервалы следует соответственно сократить.		перед началом работы	по окончании работы или ежедневно	после каждой заправки бака	еженедельно	ежемесячно	ежегодно	при неполадках	при повреждении	по необходимости
Машина в сборе	Визуальный контроль (состояние, герметичность)	X		X						
	Очистить		X							
Элементы управления	Проверка работоспособности	X		X						
Ручной топливоподкачивающий насос (если имеется)	Проверить	X								
	Ремонт дилером[1)]								X	
Всасывающая головка в топливном баке	Проверить							X		
	Заменить						X		X	X
Топливный бак	Очистить					X				
Поликлиновой ремень	Очистка / дополнительное натяжение					X				X
	Заменить								X	X
Воздушный фильтр (все компоненты фильтра)	Замена	**Только при заметном снижении мощности двигателя**								
шлицы для всасывания охлаждающего воздуха	Очистить		X							
Ребра цилиндра	Очистка производится дилером[1)]						X			
Подсоединение для подачи воды	Проверить	X						X		
	Ремонт производится специализированным дилером[1)]								X	
Карбюратор	Проверка холостого хода – абразивно-отрезной круг не должен вращаться	X		X						
	Дополнительная регулировка холостого хода									X
Свеча зажигания	Регулировка зазора между электродами							X		
	Замена после 100 часов работы									

Данные относятся к нормальным условиям эксплуатации. В сложных условиях (высокая запыленность и т.п.) и при более длительной ежедневной работе указанные интервалы следует соответственно сократить.		перед началом работы	по окончании работы или ежедневно	после каждой заправки бака	еженедельно	ежемесячно	ежегодно	при неполадках	при повреждении	по необходимости
Доступные болты и гайки (кроме регулировочных винтов)	Затянуть		X							X
Противовибрационные элементы	Проверить	X						X		X
	Замена дилером[1)]								X	
Абразивно-отрезной круг	Проверить	X		X						
	Заменить								X	X
Опора/хомутик/резиновый амортизатор (нижняя сторона агрегата)	Проверить		X							
	Заменить								X	X
Наклейка с предупреждением по технике безопасности	Заменить								X	

[1)] Компания Holzfforma рекомендует специализированного дилера Holzfforma.

Минимизация износа, а также избежание повреждений

Соблюдение заданных величин, указанных в данной инструкции по эксплуатации, поможет избежать преждевременный износ и повреждение устройства.

Эксплуатация, техническое обслуживание и хранение устройства должны осуществляться так тщательно, как это описано в данной инструкции по эксплуатации.

За все повреждения, которые были вызваны несоблюдением указаний относительно техники безопасности, работы и технического обслуживания, ответственность несёт сам пользователь. Это особенно актуально для таких случаев:

- Внесение изменений в продукте, которые не разрешены фирмой Holzfforma,
- Применение инструментов либо принадлежностей, которые не допускаются к использованию с данным устройством, не подходят либо имеют низкое качество,
- Пользование устройством не по назначению,
- Устройство было использовано для спортивных мероприятий и соревнований,
- Повреждение вследствие эксплуатации устройства с дефектными комплектующими.

Работы по техническому обслуживанию

Все работы, перечисленные в разделе "Указания по техническому обслуживанию и уходу" должны проводиться регулярно. В случае если данные работы по техническому обслуживанию не могут быть выполнены самим пользователем, необходимо обратиться к специализированному дилеру.

Фирма Holzfforma рекомендует поручить проведение работ по техобслуживанию и ремонту только специализированному дилеру фирмы Holzfforma. Специализированные дилеры фирмы Holzfforma посещают регулярно
курсы по повышению квалификации и в их распоряжении предоставляется техническая информация.

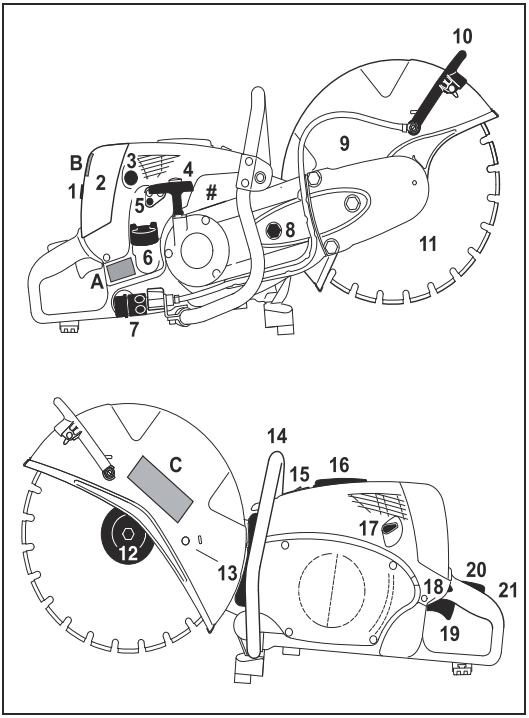
Если данные работы не проводятся либо выполняются не надлежащим образом, то могут возникнуть повреждения, за которые отвечает сам пользователь. К ним относятся, среди прочего:

- Повреждение приводного механизма вследствие несвоевременного или недостаточного обслуживания (например, воздушный и топливный фильтры), неправильная настройка карбюратора или недостаточная очистка системы охлаждающего воздуха (всасывающие шлицы, ребра цилиндра),
- Коррозия и другие повреждения как следствие неправильного хранения
- Повреждения устройства вследствие применения запасных частей низкого качества

Быстроизнашивающиеся детали

Некоторые детали мотоустройства, даже при применении их по назначению, подвержены нормальному износу и должны своевременно заменяться, в зависимости от вида и продолжительности их использования. К этому относятся, среди прочего:

- муфта, клиновой ремень
- отрезные шлифовальные круги (любого вида)
- фильтры (воздушный, топливный)
- пусковое устройство
- свеча зажигания
- демпфирующие элементы вибрационной системы



GC890

1 Резьбовая пробка
2 Крышка фильтра
3 Ручной топливоподкачивающий насос
4 Ручка стартера
5 Регулировочные винты карбюратора
6 Замок бака
7 Подсоединение для подачи воды
8 Натяжная гайка
9 Защита
10 Регулирующий рычаг
11 Абразивно-отрезной круг
12 Передний нажимной диск
13 Глушитель
14 Трубчатая рукоятка
15 Декомпрессионный клапан
16 Колпачок для контактного наконечника свечи зажигания
17 Рычаг воздушной заслонки
18 Комбинированный рычаг
19 Рычаг акселератора
20 Фиксатор рычага акселератора
21 Задняя рукоятка
Заводской номер
A Наклейка с предупреждением по технике безопасности
B Наклейка с предупреждением по технике безопасности
C Наклейка с предупреждением по технике безопасности

Технические данные

Двигатель

Одноцилиндровый двухтактный двигатель Holzfforma

GC890

Рабочий объём:	98,5 см^3
Внутренний диаметр цилиндра:	56 мм
Ход поршня:	40 мм
Мощность согласно ISO 7293:	5,0 кВт (6,8 лс) при 9300 об/мин
Число оборотов двигателя на холостом ходу:	2200 об/мин
Макс. число оборото в шпинделя ISO 19432:	4290 об/мин

Система зажигания

Магнето с электронным управлением

Свеча зажигания (с защитой от помех):	Bosch WSR 6 F, NGK BPMR 7 A
Зазор между электродами:	0,5 мм

Топливная система

Работающий независимо от положения мембранный карбюратор со встроенным топливным насосом

Объем топливного бака: 1200 см^3 (1,2 л)

Воздушный фильтр

Главный фильтр (бумажный фильтр) и флокированный дополнительный фильтр из металлической ткани

Вес

не заправленный, без абразивно-отрезного круга, с подводом воды

GC890 12,7 кг

Абразивно-отрезные круги

Предусмотренное максимально допустимое рабочее число оборотов абразивно-отрезного круга не должно превышать или быть равным максимальному числу оборотов шпинделя используемого абразивно-отрезного устройства.

Абразивно-отрезные круги (GC890)

Наружный диаметр:	400 мм
Макс. толщина	4,8 мм
Диаметр отверстия / диаметр шпинделя:	20 мм
Момент затяжки:	30 Нм

Абразивно-отрезные круги на основе синтетических смол

Минимальный наружный диаметр нажимных дисков:[1) 2)]	103 мм
Максимальная глубина резки:[3)]	145 мм

1) Для Японии 140 мм

2) Для Австралии 140 мм

3) При использовании нажимных шайб с внешним диаметром 140 мм максимальная глубина реза сокращается до 130 мм

Абразивно-отрезные круги с алмазным напылением

Минимальный наружный диаметр нажимных дисков:[1)]	103 мм
Максимальная глубина резки:[3)]	145 мм

1) Для Японии 140 мм

3) При использовании нажимных шайб с внешним диаметром 140 мм максимальная глубина реза сокращается до 130 мм

Уровень звукового давления L_{peq} согласно ISO 19432

GC890:	101 дБ(A)

Уровень постоянного звукового давления L_w согласно ISO 19432

GC890:	114 дБ(A)

Величина вибрации $a_{hv,eq}$ согласно ISO 19432

	Рукоятка слева:	Рукоятка справа:
GC890:	6,5 м/с2	3,9 m/c2

Для уровня звукового давления и уровня звуковой мощности коэффициент K-согласно RL 2006/42/EG = 2,0 дБ(A); для значения уровня вибрации коэффициент K-согласно RL 2006/42/EG = 2,0 м/с^2.

Показатель выброса выхлопных газов

Показатель выброса CO_2 измерен в процессе стандартных испытаний на типичном двигателе в лабораторных условиях и не является конкретной или косвенной гарантией эксплуатационных характеристик определенного двигателя.

Использование по назначению и техническое обслуживание в соответствии с описанием в данной инструкции по эксплуатации обеспечивают выполнение действующих требований по выбросу выхлопных газов. В случае изменений на двигателе разрешение на эксплуатацию теряет силу.

Установленный срок службы

Полный установленный срок службы составляет до 30 лет.

Установленный срок службы предполагает соответствующие и своевременные обслуживание и уход согласно руководству по эксплуатации.

Указания по ремонту

Пользователи данного устройства могут осуществлять только те работы по техническому обслуживанию и уходу, которые описаны в данной инструкции по эксплуатации. Остальные виды ремонтных работ могу осуществлять только специализированные дилеры.

Фирма Holzfforma рекомендует поруч ить проведение работ по техобслуживанию и ремонту только специализированному дилеру фирмы Holzfforma. Специализированные дил еры фирмы Holzfforma посещают рег улярно
курсы по повышению квалификации и в их распоряжении предоставляется техническая информация.

При ремонте монтировать только те комплектующие, которые допущены компанией Holzfforma для данного моторизированного устройства либо технически равноценные комплектующие. Применяйте только высококачественные запасные части. Иначе существует опасность возникновения несчастных случаев или повреждения устройства.

Фирма Holzfforma рекомендует использовать оригинальные запасные части фирмы Holzfforma.

Устранение отходов

При утилизации следует соблюдать специфические для страны нормы по утилизации отходов.



Продукты компании Holzfforma не являются бытовыми отходами. Продукт Holzfforma, аккумулятор, принадлежность и упаковка подлежат не загрязняющей окружающую среду повторной переработке.

Актуальную информацию относительно утилизации можно получить у специализированного дилера Holzfforma.

Сертификат соответствия ЕС

Zhejiang Farmertec Power Technology Co.,Ltd

заявляет под собственную ответственность, что

устройство:	абразивно-отрезное устройство
заводская марка:	Holzfforma
тип:	GC890
объем цилиндра:	98,5 см^3

звуковой мощности

GC890: 116 дБ(A)

Гарантированный уровень звуковой мощности

GC890: 118 дБ(A)

Contents

Guide to Using this Manual
Safety Precautions and Working Technique 43
Sample Application 59
Abrasive Cutting Wheels 66
Composite Cutting Wheels 66
Diamond Cutting Wheels 67
Assembling the Cast Arm and Guar 69
Tensioning the Ribbed V-belt 72
Mounting an Abrasive Cutting Wheel
Fuel
Fueling
Starting / Stopping the Engine
Air Filter System
Engine Management
Adjusting the Carburetor
Spark Arresting Screen in Muffler
Spark Plug
Replacing the V belt
Cut-off Machine Cart
Storing the Machine
Maintenance and Care
Main Parts
Specifications
Maintenance and Repairs
Disposal
Warranty

Allow only persons who fully understand this manual to operate your cut-off machine.

To receive maximum performance and satisfaction from your Holzfforma Cutquik
cut-off machine, it is important that you read, understand and follow the safety precautions and the operating and maintenance instructions in the chapter "Safety Precautions and Working Techniques" before using it.

Contact your Holzfformadealer or the Holzfforma distributor for your area if you do not
understand any of the instructions in this manual.

WARNING

Because this cut-off machine is a high-speed cutting tool, some special safety precautions must be observed to reduce the risk of personal injury. Careless or improper use may cause serious or even fatal injury.

Guide to Using this Manual

Pictograms

The meanings of the pictograms attached to or embossed on the machine are explained in this manual.

The following pictograms are on your machine.



Fuel tank for gasoline and engine oil mixture



Press to operate decom pression valve



Press to operate manual fuel pump



Water attachment, flow control



Tensioning nut for engag ing drive belt



Pull starter grip

Symbols in Text

Many operating and safety instructions are supported by illustrations.

The individual steps or procedures described in the manual may be shown in different ways:

- A bullet indicates a step or procedure.

A description of a step or procedure that refers directly to an illustration may contain item numbers that appear in the illustration. For example:

/ Remove the screw (1)

/ Pull the spark arresting screen (2) upwards out of the muffler

In addition to the operating instructions, this manual may contain paragraphs that require your special attention. Such paragraphs are indicated with the symbols and signal words described below:

DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

NOTICE

Indicates a risk of property damage, including damage to the machine or its individual components.

Engineering Improvements

Holzfforma's philosophy is to continually

improve all of its products. As a result, engineering changes and improvements are made from time to time. Therefore, some changes, modifications and improvements may not be covered in this manual. If the operating characteristics or the appearance of your machine differs from those described in this manual, please contact your Holzfforma dealer or the Holzfforma
distributor for your area for assistance.

Safety Precautions and Working Techniques



The use of any cut-off machine may be hazard ous. Because this cut-off machine is a high-speed cutting tool that often cre ates sparks during the cutting process, special safety precautions must be observed to reduce the risk of personal injury and fire.



It is important that you read, fully understand and observe the following safety precautions and warnings. Read the instruction manual and the safety precautions periodically.

WARNING

Careless or improper use of any cut-off machine may cause serious or fatal injury.

Have your Holzfforma dealer show you how to operate your cut-off machine. Observe all applicable national, state and local laws, safety regulations, standards and ordinances.

WARNING

Your cut-off machine is for professional use only. Do not lend or rent your cut-off machine without the instruction manual. Be sure that anyone using it understands the information contained in this manual.

A first-time operator should obtain practical instruction before using the machine. Employers should establish a training program for operators of gasoline-powered, hand-held, portable cut-off machines to assure safe operation of these machines and proper choice of cutting attachments.

WARNING

Use your cut-off machine only for authorized uses. For instance, it is not suitable for cutting wood or plastic or wooden or plastic objects. Unauthorized uses may result in death, serious personal injury or property damage, including damage to the machine.

WARNING

Minors should never be allowed to use a cut-off machine. Bystanders, especially children, and animals should not be allowed in the area where a cut-off machine is in use. Never let the cut-off machine run unattended.

See the appropriate section of your instruction manual for a description of the controls and function of the parts of your cut-off machine.

Safe use of a cut-off machine involves

1. the operator;
2. the power tool; and
3. the use of the power tool.

THE OPERATOR

Physical Condition

You must be in good physical condition and mental health and not under the influence of any substance (drugs, alcohol, or medications, etc.) which might impair vision, balance, dexterity or judgment. Do not operate a cut-off machine when you are fatigued. Be alert – if you get tired while operating your cut-off machine, take a break; fatigue may result in loss of control. Working with any cut-off machine can be strenuous. If you have any condition that might be aggravated by strenuous work, check with your physician before operating a cut-off machine.

WARNING

Prolonged use of cut-off machines (or other machines) exposing the operator to vibration may produce whitefinger disease (Raynaud's phenomenon) or carpal tunnel syndrome. These conditions reduce the hand's ability to feel and regulate temperature, produce numbness and burning sensations and can cause nerve and circulation damage and tissue necrosis. All factors which contribute to whitefinger disease are not known, but cold weather, smoking and diseases or physical conditions that affect blood vessels and blood transport, as well as high vibration levels and long periods of exposure to vibration, are frequently cited as factors in the development of whitefinger disease. In order to reduce the risk of whitefinger disease and carpal tunnel syndrome, please observe the following precautions:

- Your cut-off machine is equipped with an anti-vibration ("AV") system designed to reduce the transmission of vibration created by the machine to the operator's hands.
- Keep the AV system well maintained and in good condition. A cut-off machine with loose components or with damaged or worn AV elements will tend to have higher vibration levels. Replace immediately any part of the system that is damaged or worn.
- Wear gloves and keep your hands warm.
- Maintain a firm grip at all times, but do not squeeze the handles with constant, excessive pressure. Take frequent breaks.

These precautions do not guarantee that you will not sustain whitefinger disease or carpal tunnel syndrome. Therefore, continual and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice immediately.

WARNING

The ignition system of your cut-off machine produces a low intensity magnetic field. This field may interfere with some pacemakers. To reduce the risk of serious or fatal injury, persons with a pacemaker should consult their physician and the pacemaker manufacturer before operating this tool.

Proper Clothing

WARNING

To reduce the risk of injury, the operator should wear proper protective apparel.



Clothing must be sturdy and snug-fitting, but allow complete freedom of movement. Avoid loose-fitting jackets, scarfs, neckties, jewelry, flared or cuffed pants, uncon fined long hair or anything that could become caught on any obstacles or moving parts of the machine. Wear overalls or long pants to protect your legs. Do not wear shorts.

WARNING

When cutting metal, including rebar and other metals embedded in concrete or other materials, a cut-off machine generates sparks that can ignite clothing and other flammable materials. Most fabrics used in clothing are flammable – even flame-retardant fabrics will ignite at higher temperatures. To reduce the risk of burn injury, Holzfforma recommends wearing clothing made of leather, wool, flame-retardant-treated cotton or a tightly woven, heavier cotton such as denim. Some flame-retardant synthetic fabrics may also be suitable, but others, such as polyester, nylon, rayon and acetate can melt during a fire into a tar-like matter that burns into the skin. Check the clothing manufacturer's instructions. Keep clothing free of oil, fuel, grease and other flammable substances.



Always wear heavy-duty work gloves (e.g. made of leather or other wear-resistant material) when handling the cut-off machine. Heavy-duty, non-slip gloves improve your grip and help to protect your hands.



Good footing is important in cut-off machine work. Wear sturdy boots with non-slip soles. Steel-toed safety boots are recommended.

WARNING

Loose objects may be thrown toward the operator by the cutting wheel.



To reduce the risk of injury to your eyes, never operate a cut-off machine unless wearing goggles or close-fitting protective glasses with adequate top and side protection that are impact-rated and marked as complying with ANSI Z87 "+". Proper eye protection is a must.

Wear an approved safety hard hat to protect your head.

Cut-off machine noise may damage your hearing. Always wear sound barriers (ear plugs or ear muffs) to help protect your hearing. Regular users should have their hearing checked regularly.

WARNING



To reduce the risk of seri ous or fatal respiratory disease or other illness, the operator and any bystanders should always wear a respirator that is approved by NIOSH for the material being cut and appropriate for worksite-specific con ditions anytime wet cutting at the flow rate recommended in this instruction manual is not utilized or cannot be con firmed. The respirator must have an Assigned Protection Factor suffi cient to provide the level of respiratory protection needed for the material being cut and worksite-specific conditions.

Even if wet cutting at the recommended flow rate, an operator who is working with the machine for more than two hours in one day, along with any bystanders, should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions.

Consult your employer for information relating to the respirator needed for the material you are cutting and your

worksite-specific conditions. Your employer is likely to have in place an OSHA-required respiratory protection program and can provide information regarding the type and level of respiratory protection needed for your worksite.

For additional details and warnings on this subject, see information under “Working Conditions” in this instruction manual.

THE POWER TOOL

For illustrations and definitions of the parts of the cut-off machine, see the chapter "Main Parts."

WARNING

Never modify a cut-off machine in any way. Only Holzfforma branded parts and
cutting attachments expressly approved by Holzfformafor use with the specific Ho lzfforma cut-off machine models are recommended. Although certain other parts or attachments may be useable, their use may be extremely dangerous.

Abrasive Cutting Wheels

WARNING

Before mounting the cutting wheel, make sure that the maximum operating wheel speed is above or equal to the spindle speed of your cut-off machine as provided in the specifications of this manual. A wheel that is not rated for the maximum spindle speed of the cut-off

machine may shatter or break and poses a threat of serious or fatal injury to the operator and other nearby persons.

WARNING

Never use a reducer bushing inserted into the wheel to reduce the diameter of the arbor hole. It may slip out of place, causing out-of-roundness, vibration, wheel breakage or loss of control, resulting in the possibility of severe or fatal injury.

WARNING

Wheels that are not Holzfformabranded may be more likely to wobble, shatter, break and/or create other hazards, such as
increased reactive forces. Use only wheels with approved RPM ratings. Read and follow any additional safety precautions that accompany the wheel.

WARNING



Never use circular saw blades, carbide tipped blades, rescue blades, wood-cutting blades or toothed blades of any nature on your cut-off machine. They can cause severe personal injury from blade contact, thrown objects and/or reactive forces, including kickback. See the section "Reactive Forces" in this instruction manual. Your Holzfforma dealer stocks Holzfforma branded abrasive cutting wheels suitable for the many authorized applications of this cut-off machine.

WARNING

Using the wrong abrasive cutting wheel or cutting material for which the wheel was not designed may cause the wheel to wobble, shatter, break or increase reactive forces, causing serious or fatal injury. See below and the section "Reactive Forces" in this instruction manual.

Cutting unauthorized materials, such as wood or plastic, or using wheels that are not rated for the material being cut, can result in severe personal injury or death from wheel breakage, reactive forces or loss of control.

Composite Cutting Wheels

Free-hand cutting with composite cutting wheels can subject the wheels to particularly high bending and compression stress, which can increase the possibility of wheel breakage. Avoid side loading the cutting wheel and always use proper working technique. See the chapter "Sample Applications" in this instruction manual.

WARNING



Inspect the composite cutting wheel frequently and replace immediately if it is cracked or warped. Cracked or warped wheels may shatter or break and cause serious or fatal personal injury. Out-of-round or unbalanced wheels increase vibration, reduce the service life of the cut-off machine and may result in loss of control.

Composite cutting wheels are heat sensitive. Always store your cut-off machine in a place where a composite cutting wheel is not exposed to direct sunlight or other sources of heat. Store spare composite cutting wheels flat on a level surface in a dry place where there is no risk of frost damage. Failure to follow these directions may cause the wheel to shatter or crack in use, causing serious or fatal injury.

Only use the abrasive wheel approved for the type of material to be cut. There are different types of abrasive wheels, each specially marked. With respect to Holzfforma composite wheels, for example:

1. Stone
   Also can be used for cutting concrete, masonry, reinforced concrete and brick.
2. Steel
   Can be used for cutting all ferrous metal.
3. Asphalt
   Also can be used for cutting aggregate concrete.
4. Ductile iron
   Also can be used for cutting certain grades of cast iron (SG 17 24), bronze and copper.

Diamond Cutting Wheels

WARNING

Some diamond cutting wheels that are not Holzfforma branded utilize poor quality steel cores are not properly hardened or tensioned or have other design or manufacturing defects that can result in wheel breakage thrown segments and other safety issues including wheel wobble Wheels that wobble during use can result in reactive forces and present other safety issues that could result in loss of control and severe personal injury or death Wobbling for example can lead to a severe binding of the wheel in the cut that under certain circumstances can then result in serio us or fatal injury from kickback or other reactive forces See the section Reactive Forces including Kickback in this instruction manual

Never use a wheel that wobbles or that has ever wobbled. Even though such a wheel may temporarily cease to wobble, e.g., if run without load, it will always be prone to wobble again under certain conditions. Replace it immediately before further use of the cut-off machine.

Diamond cutting wheels generally have a better cutting performance than composite cutting wheels. Diamond cutting wheels have steel cores and cutting segments embedded with diamonds attached to their outer edges.

Properly rated diamond cutting wheels can be used for cutting concrete, asphalt, natural stone, clay pipe, brick and the like. Holzfforma also offers diamond
cutting wheels for cutting ductile iron and some structural steel. They are not, however, suitable for cutting all metals or other materials, including wood or plastic. See the chapter "Diamond Cutting Wheels" in this instruction manual for more details regarding the type of materials that can be cut with properly rated Holzfforma diamond cutting

WARNING

Wet or dry cutting is possible with the appropriate diamond cutting wheel. A water attachment kit is mounted on your Holzfforma cut-off machine. Wet cutting

reduces dust and reactive forces and is recommended whenever possible. See the chapter "Sample Applications" in this instruction manual.

WARNING

Do not remount a used diamond cutting wheel without first inspecting it for under-cutting, flatness, core fatigue or damage, segment damage or loss, signs of overheating (discoloration) and possible arbor hole damage. See the chapter "Diamond Cutting Wheels." Check the wheel for cracks and make sure that no pieces have broken off the wheel before use. Never use any wheel, diamond or composite, that has been damaged.

Always mount the diamond cutting wheel so that the arrow on the wheel points in the direction of the rotation of the spindle.

THE USE OF THE POWER TOOL

Transporting the Holzfforma GC890

WARNING

To reduce the risk of injury from unintended activation and/or contact with a moving wheel, always shut off the engine before putting the machine down or carrying it. The abrasive cutting wheel continues to rotate (coast down) for a few seconds after the throttle trigger is released (flywheel effect). If faster stoppage time is required, bring the wheel to a stop by lightly contacting the bottom of the wheel with a hard surface. Carrying a cut-off machine with the wheel turning or the engine running is extremely dangerous. Contact with a moving wheel, even if the engine is turned off, can result in severe personal injury or death, and accidental

acceleration of the engine can cause the wheel to rotate if the engine is still running.

Avoid touching the hot muffler or allowing it to touch you.

WARNING

Always protect the cutting wheel from accidentally hitting the ground or any other objects, which can increase the risk of serious personal injury or death from a shattered composite cutting wheel, from loss of diamond cutting wheel segments or from loss of control.

Transporting by hand: When carrying your cut-off machine by hand, the engine must be shut off and the rotating wheel stopped, and the cut-off machine must be correctly positioned. Grip the front handle and place the muffler at the side away from the body with the cutting attachment to the rear.

Transporting by vehicle: Properly secure your cut-off machine to prevent turnover, fuel spillage and damage to the cut-off machine. Never transport your cut-off machine with a cutting wheel mounted. A wheel damaged during transportation can cause serious personal injury or death.

Fuel

Your Holzfforma cut-off machine uses an oil- gasoline mixture for fuel. See the

chapter "Fuel" in this instruction manual.

WARNING



Gasoline is an extremely flammable fuel. If spilled and ignited by a spark or other ignition source, it can cause fire and seri ous burn injury or property damage. Use extreme caution when handling gasoline or an oil-gasoline fuel mix. Do not smoke or bring any fire or flame near the fuel or the power tool. Do not remove the fuel filler cap or attempt to refuel near any ignition source. Note that combustible fuel vapor may escape from the fuel system or gas can during fueling operations.

WARNING

Dust or other debris may collect on the powerhead, especially around the carburetor, and may absorb gasoline, resulting in a risk of fire. Clean dust and debris from the powerhead regularly.

Fueling Instructions

WARNING

To reduce the risk of personal injury and property damage, fuel your cut-off machine in well-ventilated areas, outdoors. Always shut off the engine and allow the machine to cool before refueling. Never remove the fuel cap near any ignition source.

Under certain conditions, gasoline vapor pressure may build up inside the fuel tank depending on the fuel used, weather conditions and the condition of the tank venting system. In order to reduce the risk of burns and other personal injury from escaping gas vapor and fumes, allow the machine to cool adequately before opening the cap. Do not smoke or open the fuel tank in the vicinity of any ignition source. Remove the fuel filler cap slowly and as described in this instruction manual to allow any residual pressure in the tank to release gradually. Never remove the fuel filler cap while the engine is still hot or running.

Select bare ground for fueling and move at least 10 feet (3 m) from the fueling spot before starting the engine. Wipe off any spilled fuel before starting your machine. If gasoline has spilled or contaminated your clothing, change clothes before starting the power tool, resuming work or approaching an ignition source.

Always use fuels blended for the season and conditions in which you are cutting. Avoid the use of winter blend fuels in summer weather conditions. Use fresh fuel of good quality and at least 89 octane.

WARNING



Check for fuel leakage while refueling and during operation. If fuel leakage is found, do not start or run the machine until the leak is fixed and any leaked fuel has been wiped away. Take care not to get fuel on your clothing. If this happens, change your clothing immediately. Always move at least 10 feet (3 m) from the fueling spot before starting the engine.

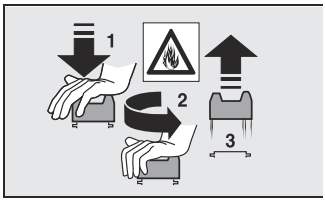
WARNING

If fuel is spilled on clothes, especially trousers, it is very important to change clothes immediately. Do not rely upon evaporation. Flammable quantities of fuel may remain on clothes after a spill for longer than expected. Cutting metal or other materials capable of creating sparks with a cut-off machine when clothes are contaminated with fuel or gasoline is extremely dangerous, as the operator's clothes might catch fire and cause serious or fatal injury. Do not approach any ignition source with clothes contaminated by fuel.

WARNING

An improperly installed fuel cap can come off and spill quantities of fuel.

Fuel Filler Cap



Never use a tool to open or close the fuel filler cap, as this could damage the cap and cause fuel leakage or spillage.

The fuel filler cap must be securely closed after refuelling.

WARNING

Never attempt to force the fuel cap open by using a tool. It may damage the cap and allow fuel to leak.

WARNING

Before use, make sure that the fuel cap has been securely and properly installed and any spilled fuel wiped away. Check for fuel leakage while refueling and during operation. If a fuel leak is suspected, do not start or run the machine until the leak is fixed and all leaked fuel has been wiped away.

Before Starting

For wheel installation, follow the procedure described in the chapter "Mounting an Abrasive Cutting Wheel" in this instruction manual.

WARNING

Check the fuel system for leaks, especially the visible parts, e.g., fuel tank, filler cap, hose connections and manual fuel pump. To reduce the risk of personal injury or property damage from fire, do not start the engine if there are fuel leaks or the fuel system is damaged. Have the machine repaired by an authorized Holzfforma servicing dealer before using it.

WARNING

Never operate a cut-off machine if it is damaged, improperly adjusted or maintained, or not completely and properly assembled. Check that the machine is ready for safe operation.

Keep the handles dry, clean and free of oil and fuel.

WARNING

Before operation of your cut-off machine, be sure the controls (e.g. throttle trigger, throttle trigger lockout, stop switch) and the safety devices are working properly, the carburetor idle and maximum speed settings are correctly adjusted, the wheel is properly mounted, and the wheel guard is properly positioned and securely fastened to your unit. All wheels should be carefully inspected for damage before mounting. Never mount or use an abrasive cutting wheel that is cracked or otherwise damaged.



Adjust the wheel guard so that sparks, dust and cut material are deflected away from the operator, and cannot reach flam mable surroundings or materials. See the sec tion "Operating Instructions" in this instruction manual. Never direct sparks or cutting debris toward flammable materials or toward the operator.

WARNING

Check that the spark plug boot is securely mounted on the spark plug – a loose boot may cause arcing that could ignite combustible fumes or spilled fuel and cause a fire.

Proper tensioning of the ribbed V-belt is important. In order to avoid an incorrect setting, the tensioning procedure must be followed as described in the chapter "Tensioning the ribbed V-belt" in this manual. Always make sure the hexagonal collar nuts for the cast arm are tightened securely.

Check ribbed belt tension after one hour of operation and correct if necessary.

Starting



WARNING

Your cut-off machine is a one-person tool. Do not allow other persons to be near a running cut-off machine. Start and operate your cut-off machine without assistance. Follow the specific starting instructions, found in the chapter "Starting/Stopping the Engine" in this instruction manual.

Do not drop start the cut-off machine. Drop starting means pushing the machine away from the operator, or allowing it to drop toward the ground, while pulling on the starter grip. This method is very dangerous because you may lose control of the cut-off machine.

Instead, to start the cut-off machine place it on firm ground or other solid surface in an open area and hold it securely to the ground or surface. Maintain good balance and secure footing.
Be absolutely sure that the cutting wheel is clear of you and all other obstructions and objects, including the ground or surface on which the machine is being started. When the engine starts, engine speed will be fast enough for the clutch to engage the belt pulley and turn the wheel. Never attempt to start the cut-off machine when the abrasive cutting wheel is in a cut.

Once the engine has started, immediately blip the throttle trigger, which should release the slide control to the run position and allow the engine to slow down to idle. The abrasive cutting wheel should not rotate when the engine is idling. If the wheel does turn, adjust the carburetor to set the proper idle speed. See the chapter "Adjusting the Carburetor" in this instruction manual.

If you cannot adjust the carburetor to the proper idle speed, shut the machine off and take it to an authorized Holzfforma servicing dealer for repair before using the cut-off machine. For complete starting information, see the chapter "Starting/Stopping the Engine" in this instruction manual.

WARNING

When you pull the starter grip, do not wrap the starter rope around your hand. Do not allow the grip to snap back, but guide the starter rope slowly back to permit the rope to rewind properly. Failure to follow this procedure may result in injuries to hand or fingers and may damage the starter mechanism.

Important Adjustments

At correct idle speed, the wheel should not turn. For directions on adjusting idle speed, see the chapter "Adjusting the Carburetor" in this manual.

WARNING

Do not use a cut-off machine with the idle speed incorrectly adjusted. The rotating wheel may cause injury. If you cannot obtain the correct setting, have your Holzfforma dealer check your cut-off
machine and make proper adjustments or repairs.

Working Conditions

Operate the cut-off machine under good visibility and daylight conditions only.

Wearing hearing protection reduces sound perception. Be alert not to miss voice or other audible signals from co-workers or supervisors. Keep within calling distance to other persons who may assist in case of emergency.

WARNING



As soon as the engine is running, this machine generates toxic exhaust fumes containing chemi cals, such as unburned hydrocarbons (including benzene) and carbon monoxide, that are known to cause respira tory problems, cancer, birth defects, or other reproductive harm, and other injuries. Some of the gases (e.g. carbon monoxide) may be color less and odorless and can cause asphyxiation and death very quickly. To reduce the risk of seri ous or fatal injury/illness from inhaling toxic fumes, never run the machine indoors or in poorly venti lated locations. Ensure proper ventilation when working in trenches or other confined areas.

WARNING

Use of this product to cut masonry, concrete, metal and other materials can generate dust and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, kidney disease, cancer, birth defects or other reproductive harm, and other injuries. If you are unfamiliar with the risks associated with the material being cut, review the applicable material safety data sheet and/or consult your employer, the material

manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, and other injuries. Control dust and fumes at the source where possible.

In this regard, use engineering controls, good work practices and follow the recommendations of the material manufacturer/supplier, OSHA/NIOSH, and occupational and trade associations.

WARNING

Cutting masonry, concrete and other materials with silica in their composition may produce dust containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Inhalation of airborne crystalline silica can cause serious or fatal injury or illness, such as kidney disease and respiratory diseases, including silicosis and lung cancer. California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. OSHA has established a maximum permissible exposure limit for crystalline silica. When cutting materials that may contain crystalline silica, always follow the recommended engineering controls and respiratory precautions described in this instruction manual.

WARNING



A water attachment kit is provided with your cut-off machine and should be used to reduce dust whenever wet cutting is feasible. To reduce the risk of serious or perma nent injury to the operator or any bystanders from exposure to potentially harmful dust, the water flow rate to the abrasive wheel should be at least 20 fl. oz. (0.6 liters) per minute.

WARNING

Inhalation of airborne crystalline silica can cause serious or fatal injury or illness, such as kidney disease and respiratory diseases, including silicosis and lung cancer. To reduce the risk of serious or fatal illness, including kidney disease, respiratory disease and cancer, the operator and any bystanders should always wear a respirator that is approved by NIOSH for the material being cut and appropriate for worksite-specific conditions if wet cutting at the flow rate recommended in this instruction manual is not utilized or cannot be confirmed. The respirator must have an Assigned Protection Factor sufficient to provide the level of respiratory protection needed for the material being cut and worksite-specific conditions.

Even if wet cutting at the recommended flow rate, an operator who is working with the machine for more than two

hours in one day, along with any bystanders, should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions.

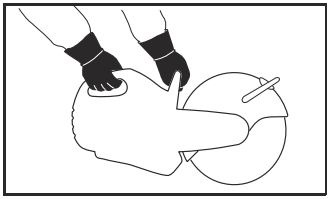
Consult your employer for information relating to the respirator needed for the material you are cutting and your worksite-specific conditions. Your employer is likely to have in place an OSHA-required respiratory protection program and can provide information regarding the type and level of respiratory protection needed for your worksite. Information also is available from OSHA at www.OSHA.gov.

See the section on “Respiratory Protection” in the chapter “Sample Applications” in this instruction manual.

Consult and follow any federal, state or local laws or regulations with respect to dry and wet cutting, including any requirements for engineering controls, work practices and respiratory protection to reduce exposure to respirable crystalline silica or other potentially harmful substances.

⚠ WARNING

Breathing asbestos dust is dangerous and can cause severe or fatal injury, respiratory illness or cancer, including mesothelioma. The use and disposal of asbestos-containing products are strictly regulated by OSHA and the Environmental Protection Agency. Do not use your cut-off machine to cut or disturb asbestos, asbestos-containing products, or products such as pipes which are wrapped or covered with asbestos-containing insulation or material. If you have any reason to believe that you might be cutting asbestos containing-material, or if you cannot be sure, stop work and immediately contact your employer or a local OSHA or EPA representative.



Your Holzfforma cut-off machine is designed for hand-held use or operation on a cut-off machine cart, see the chapter "Cut-off Machine Cart" in this instruction manual.

⚠ WARNING

Cutting with your cut-off machine resting on the ground or other surface can cause excessive wear to the bracket designed to protect the bottom of the tank housing. Loss of fuel and property damage or severe personal injury or death from fire may result. Replace damaged or badly worn brackets immediately.

⚠ WARNING

Grip: Never use the cut-off machine with one hand. Always hold the cut-off machine firmly with both hands when the engine is running. Place your left hand on the front handle and your right hand on the rear handle and throttle trigger. Left-handed users also must follow this instruction in order to reduce the risk of severe or fatal personal injury from

kickback and/or loss of control. Using the machine "left-handed" positions your body in the plane of the abrasive cutting wheel and increases the risk that you will be struck by the moving wheel if kickback occurs.

Wrap your fingers tightly around the handles, keeping the handles cradled between your thumbs and forefingers. Make sure the cut-off machine’s handles and grip are in good condition and free of moisture, pitch, oil, fuel mix or grease.

Never touch a rotating wheel with your hand or any part of your body or allow it to touch you.

⚠ WARNING

Clear the area where you are working. Avoid stumbling on obstacles and be alert for ditches or other irregularities and impediments. Be extremely cautious when working on slopes or rocky or uneven ground. Take extreme care in wet and freezing weather (rain, snow, ice).

⚠ WARNING

Never operate the cut-off machine with the starting-throttle lock engaged as this does not permit proper control of the speed of the unit and may lead to serious injury.

WARNING



Sparks from cutting metal can burn the operator or cause clothing or other objects or materials to catch fire. Direct sparks away from the operator and any flammable sur roundings. Never cut metal while standing on a flammable surface, such as wood or tar paper. Where there is a risk of fire, work with a fire watch and have appropri ate fire extinguishing equipment readily availa ble. Do not use the cut-off machine if you cannot direct sparks away from flammable substances or the operator.

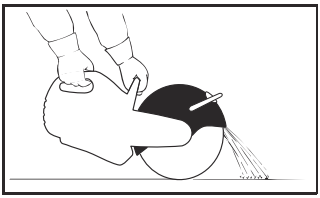
WARNING

To reduce the risk of severe personal injury or death from fire, exlosion or other event, do not cut into any pipe, drum or other container without first ensuring that it does not contain a volatile or flammable substance and is not pressurized.

WARNING

When cutting into existing walls, floors or similar structures, be alert for hidden hazards such as electrical cables, water and gas pipes and flammable or pressurized materials, substances and structures. Make sure that power, water and gas have been shut off and pipes drained before starting to cut.

Operating Instructions



WARNING

The wheel guard on your cut-off machine is adjustable. It is extremely important that the wheel guard is in place and adjusted properly for the type of work you are doing, your stance and your work position. The guard should always be adjusted so that the user is not endangered by particles of the material being cut, sparks or pieces of damaged wheels, either directly or by ricochet. Failure to follow this instruction could result in serious or fatal injury.

WARNING

Your cut-off machine is equipped with a wheel guard limit stop that restricts the positioning of the wheel guard. To reduce the risk of injury from wheel contact and/or reactive forces and to avoid damaging the guarding system, never attempt to pull the adjusting lever past the limit stop.

WARNING

To reduce the risk of severe injury or death, always shut off the machine and allow the wheel to stop before attempting to adjust the guard. After shutting off the machine, the wheel will continue to rotate for a few seconds (flywheel effect). Never attempt to adjust the guard while the engine is running or the wheel is still rotating.

WARNING

Always check the wheel before use and after unintentionally striking any object; check it frequently during use when the engine is turned off. Look for cracks and other damage, such as cracked, missing or broken segments on a diamond cutting wheel. Make sure that the wheel is undamaged and in good condition, that it is not cracked, that no pieces have broken off and that no segments are loose, missing or damaged. See the sections "Abrasive Cutting Wheels" and "Reactive Forces" in this manual. Check the wheel guard for cracks or other damage. If you discover any breaks, cracks or other damage, mount a new guard before further use.

WARNING

It is essential to determine the exact direction of the cut before applying the abrasive cutting wheel to the workpiece. Wheels are constructed for radial pressure only. To reduce the risk of wheel breakage and severe personal injury or death, avoid putting lateral pressure (side loading) on the wheel. Hold the cut-off machine steady. Work along a straight cutting line. To reduce the risk of serious or fatal injury, do not attempt to correct the position or direction of a cut by tilting or twisting the machine or cutting wheel, as this may produce a high torsional load on the abrasive cutting wheel and may cause it to bind, break or shatter. If corrections

are necessary, always lift the machine and reposition the cutting wheel, taking care to ensure that it is not wedged, tilted, twisted or side loaded. Attempting to change the position or direction of a cut while the wheel is in the cut can bind the wheel. This can lead to kickback, other reactive forces or a shattered composite cutting wheel, which could result in severe or fatal personal injury. See the section "Reactive Forces" in this manual.

⚠ WARNING

Use your cut-off machine for cutting only. It is not designed for prying, shoveling or moving any objects.

Do not use abrasive cutting wheels for rough grinding using the sides of the wheel. Large bending stresses occur during such work, which may result in reactive forces, including kickback, or cause the wheel to shatter or break, resulting in serious or fatal injury.

⚠ WARNING

To reduce the risk of injury from damaged abrasive cutting wheels:

1. Do not use a wheel on your machine that has a rated operating speed lower than the maximum operating speed of you machine's spindle, as specified in this instruction manual.
2. Do not use a wheel that has been dropped or damaged.
3. Run each new wheel immediately after installation for approximately one minute at maximum speed without cutting, making sure to keep bystanders away. If the wheel wobbles or otherwise shows operational problems, do not use it.
4. Do not cut any material for which the wheel is not authorized.
5. Do not grind using the sides of the wheel.
6. Do not twist, thrust, knock or drop the machine. This can cause damage to the wheel.
7. Do not transport the cut-off machine with the cutting wheel mounted.

To achieve a clean and efficient cut, maintain a firm grip and apply the cutting wheel to the workpiece, allowing the cutting wheel to engage the material naturally. Don't force or jam the cutting wheel into the workpiece.

When cutting with the bottom of the abrasive wheel,
the machine will have a natural tendency to move away from the operator. Slowly pulling the machine back through the cut or kerf toward the operator and then allowing it to move forward again will improve cutting performance.
Insert the wheel into the material only as deep as necessary to make the cut. To reduce the amount of dust created, do not cut all the way through stone, concrete and similar materials – leave a thin layer of material uncut. This layer can be easily broken afterwards using a hammer or other appropriate tool. Always wear properly rated eye protection when breaking any uncut piece or layer. Do not cock, jam or wedge the wheel in the cut, as this may result in reactive forces or a damaged or broken wheel and the possibility of severe or fatal personal injury.

Release the pressure on the cut-off machine as you reach the end of the cut. Too much pressure may cause the operator to lose control of the cut-off machine when the abrasive cutting wheel completes the cut. The abrasive cutting wheel may contact the operator or strike some foreign object and break or shatter.

Always shut off the engine and be sure the wheel has stopped rotating before setting the cut-off machine down.

If a cut-off machine cart is used, sweep debris from the path of the wheels, as debris under one of the cart's wheels may cause flexing of the abrasive wheel. This could result in high frictional forces and thus greatly reduce the engine power available for the actual cutting work. It could also damage the abrasive wheel.

Holzfforma recommends the use of the cart for longer cuts in a straight line.

Reactive Forces Including Kickback

⚠ WARNING



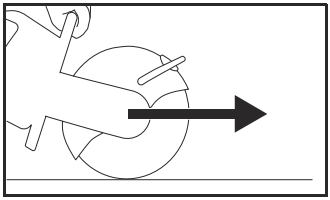
Reactive forces may occur at any time the cut ting wheel on a cut-off machine is rotating.

The powerful forces used to cut through a workpiece can be reversed and work against the operator. If the wheel is slowed or stopped sufficiently by frictional contact with any solid object or by a pinch or binding, reactive forces

can occur instantly and may result in the operator losing control of the cut-off machine, which, in turn, may result in serious or fatal injury. An understanding of the causes of these reactive forces will help you avoid them and loss of control.

Reactive forces are exerted in a direction opposite to the direction in which the wheel is moving at the point of contact or of the pinching/binding. If the wheel is slowed by frictional contact with a solid object, the resulting reactive forces are normally moderate and readily controllable by an operator who is holding the machine properly. If, however, the wheel is abruptly slowed or stopped by a severe pinch or bind, the reactive forces may be substantially greater. The greater the force generated, the more difficult it will be for the operator to control the cut-off machine. Loss of control can result in severe personal injury or death.

Pull-away, Climbing, Pinching and Rotational Kickback Forces

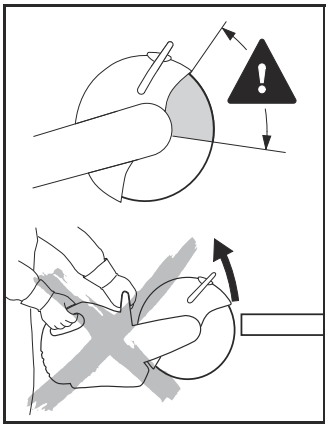


The most common reactive forces are pull-away and climbing. If the contact is at the bottom of the wheel, a cut-off machine will try to pull away from the operator (pull-away). If the contact is at the front of the wheel, the wheel may attempt to climb the object being cut (climbing).
Pinching occurs when the piece being cut closes on the wheel. A severe binding may also occur if the wheel is substantially sideloaded in the cut or if an improper or damaged diamond cutting wheel begins or ceases to wobble in the kerf. The location of the pinch or bind on the wheel will determine the direction the machine will move in response to any reactive force that is generated – push back from the top of the wheel, pull away from areas below the upper quadrant of the wheel.

However, if the wheel is severely pinched or bound in the upper quadrant at the front of the wheel, the wheel may be instantly thrown up and back towards the operator with significant force in a rotational kickback motion. Such kickback situations can and always should be avoided.

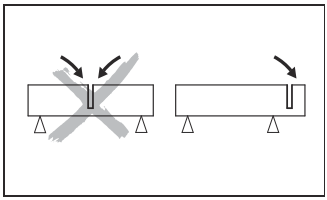
Pinching or binding of the wheel can be prevented by proper support of the workpiece (see below), proper working technique (e.g., not side loading the wheel and standing outside the plane of the wheel) and by the use of properly designed, manufactured and maintained wheels that do not wobble or have friction-generating abrasive material on their sides.

Reducing the Risk of Kickback Injury



WARNING

To reduce the risk of kickback injury, avoid cutting with the upper quadrant of the wheel (illustrated above) whenever possible. Be especially cautious for a pinching or binding of the wheel in this area, which can cause severe reactive forces in a rotational kickback motion.

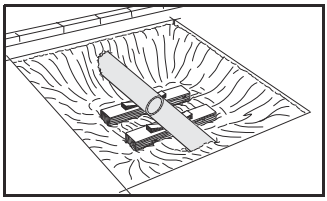


Avoid wedging action. The severed part of a workpiece must fall free and not wedge, bind or clamp the abrasive cutting wheel.

Be alert to potential movement of the workpiece or anything else that could cause the cut to close and pinch, bind or clamp the wheel. In order to reduce the risk of pinching, binding or clamping, support the workpiece in such a way that the cut remains open during the cutting process and when the cut is finished (see illustration). Never make a cut that results in a binding of the wheel. If you cannot properly support the workpiece, do not use a cutting-off machine to make the cut; select another tool or method.

Where there is a possibility of a pinch, you should leave an uncut portion of the workpiece that prevents the cut from closing and pinching the wheel, which can later be broken manually using a hammer or other appropriate tool. If you are making a complete cut, make sure that the final, separating cut is made at the top of the workpiece using the bottom of the wheel, with the guard of the machine pushed fully forward to the forward stop position. In this way, if there is any residual pinching, it will be at the bottom of the wheel, where it may result in pull-away, but not in kickback. Be alert for pull-away.

Objects to be cut always must be properly supported and must be secured against pinching, rolling away, slipping or vibration.



Support an exposed pipe in a trench so that it is stable and will not "sag" or "drop." If the ends of the pipe are firmly in the ground, the ground may act as a support where the pipe emerges into the open. Additional support will be needed closer to the cut, however, to prevent sagging (see illustration).

Be alert for pipe that is under stress that may cause it to shift when cut; pipe in the ground may be under stress because of uneven pipe bed surfaces. The release of stress or tension in the pipe can propel the cut-off machine, causing loss of control and resulting in severe personal injury or death. It also can cause a binding or pinching of the abrasive cutting wheel, which could result in reactive forces, including kickback.

Make sure any section of pipe to be removed is also properly supported and will not shift. After the first cut, you may need to move the supports or add additional support for the second cut so that both sides of that cut are fully supported, including the section to be removed.

Always pay attention in subgrade/subsurface work areas – supporting material can crumble or slide away, causing the pipe to sag and pinch the wheel.

WARNING

Be particularly alert when cutting a workpiece such as a pipe with a bell end or when cutting out a section of pipe in a trench that, if not properly supported, can sag or drop upon completion of the cut, creating a pinch or bind. Without proper support, a pipe with a bell end laying on the ground will tend to create a ramp effect that will cause the pipe to sag or drop as the pipe is cut. If the pinch or bind occurs in the upper quadrant of the abrasive cutting wheel, kickback can result.

WARNING

Use wet-cutting whenever feasible. Water can act as a lubricant in a pinch situation and can reduce both the likelihood of reactive forces occurring and the energy of any such forces if they do occur, making it easier to maintain control of the machine.

WARNING

Only Holzfforma branded cutting attachments are recommended. Use of certain non-Holzfforma branded wheels may be extremely dangerous. Many substandard diamond cutting wheels are available in the market. If they are not manufactured with the proper quality materials in their core, if they are not properly hardened or tensioned, or if other design or manufacturing problems exist, they may begin to wobble during use, lose segments or exhibit other operational problems that can substantially increase the risk of personal injury or death from reactive forces, thrown segments or loss of

control. If a diamond cutting wheel begins or ceases to wobble within the cut, the change in the behavior of the wheel may cause a severe binding that can lead to loss of control and/or kickback. If the wheel you are using begins to wobble or has ever wobbled, discard it immediately. Although such a wheel may temporarily cease to wobble, e.g., if run without load, it will always be prone to wobble again. A wheel that wobbles is extremely dangerous.

WARNING

Some non-Holzfforma branded diamond
cutting wheels are manufactured with abrasive material on their sides. Do not use such wheels, since the abrasive material increases frictional forces and will lead to substantially increased reactive forces in a pinch or side loading situation.

WARNING

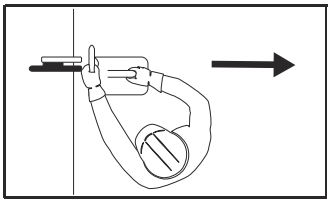
Never use chipped abrasive cutting wheels, wheels with missing or damaged segments, or circular saw blades, carbide-tipped blades, rescue blades or wood-cutting or toothed blades of any nature on a cut-off machine. The use of such wheels or blades will greatly increase the risk of loss of control and severe personal injury or death from reactive forces, since the chipped or damaged section of an abrasive cutting wheel or the teeth of a saw blade may catch in the material being cut and generate substantially greater reactive forces, including rotational kickback.

Cut-off machines are designed for use with abrasive cutting wheels in good condition only. Machines designed for use with wood-cutting or other toothed blades use different types of guarding systems that provide the protection necessary for those types of blades. Machines, such as a cut-off machine, that are designed for use with abrasive cutting wheels require a different guarding system, which is not designed to provide protection against all dangers presented by circular saw blades, carbide-tipped blades, rescue blades or wood-cutting or toothed blades of any nature.

WARNING

To reduce the risk of injury from loss of control from reactive forces, including kickback, when cutting:

1. Hold the cut-off machine firmly with both hands, left hand on the front handle, right hand on the rear handle.
2. Maintain good balance and footing at all times. Never cut while standing on a ladder or other unsecure platform.



3. Position the cut-off machine in such a way that your body is clear of the cutting attachment and outside the plane of the cutting attachment. That means the operator must avoid standing in direct line with the wheel (see illustration). Never bend over the cutting attachment or position your head and upper body forward of the front handle. Ensure sufficient freedom of movement, especially in trenches. Make sure there is sufficient space for the user and the fall of the severed portion of the workpiece.
4. Holzfforma recommends using only Holzfforma branded abrasive cutting wheels properly rated for the material to be cut.
5. Never use circular saw blades, carbide-tipped blades ot toothed blades of any nature. Their use increases the risk of injury from blade contact, thrown tips and reactive forces, including kickback.
6. Never work with a diamond cutting wheel that wobbles or that has ever wobbled or that is manufactured with abrasive material on its sides.
7. Do not cut wood, plastic or any other material for which the abrasive cutting wheel is not authorized.

8. Begin cutting and continue cutting at full throttle.
9. Do not overreach.
10. Never cut above shoulder height.
11. Never sideload, jam or twist a wheel in the cut.
12. Use your cut-off machine for cutting only. It is not designed for prying or shoveling away any objects.
13. Be especially alert for reactive forces, including kickback, when cutting with the front and upper quadrant of the wheel. Never pull the top of the wheel guard back beyond the limit stop.
14. Be alert to shifting of the workpiece or anything that could cause the cut to close and pinch the wheel, especially in the upper quadrant. Support the workpiece in such a way that the cut remains open. Never make a cut that results in a binding, pinching or clamping of the wheel. Finish a separating cut in the top portion of the workpiece using the bottom section of the wheel and the guard adjusted fully forward covering the top of the wheel.
15. Use wet-cutting whenever feasible. In a pinch situation the water can act as a lubricant and reduce the energy of reactive forces. It also helps control dust.
16. Release the pressure on the cut-off machine as you reach the end of the cut. Too much pressure may cause the operator to lose control of the cut-off machine when the abrasive wheel completes the cut. The abrasive wheel may contact the operator or strike some foreign object and shatter.
17. Use extreme caution when reentering a cut and do not twist the wheel in the cut, turn it at an angle or jam it into the cut as this may result in a binding or pinching of the wheel.

Gyroscopic Forces

Be alert for gyroscopic forces that are caused by the rapid spinning of the cut-off wheel. These forces result in opposition to directional change, e.g., when the operator attempts to move the machine in a sideways direction, and can result in loss of control.

Maintenance, Repair and Storage of the Cut-Off Machine

Never operate a cut-off machine that is damaged, improperly adjusted or not completely or properly assembled. Follow the maintenance and repair instructions in the appropriate sections of this instruction manual.

⚠ WARNING

Holzfforma recommends the use of only

Holzfforma replacement parts for maintenance and repair. Use of parts manufactured by others may be extremely dangerous and could result in serious or fatal injury.

⚠ WARNING

Always shut off the machine and make sure that the wheel is stopped before doing any maintenance or repair work or cleaning the cut-off machine. When the machine is shut off, the wheel continues to rotate for a few seconds. Do not attempt any maintenance or repair work not described in this manual as appropriate for users. Holzfforma recommends that you have all other work performed at your authorized Holzfforma servicing dealer.

Clean off dust and other cutting debris after finishing work. Check and, if necessary, tighten all nuts, bolts and screws except the carburetor adjustment screws after each use.

Do not clean your machine with a pressure washer. The solid jet of water may damage the machine or its components.

⚠ WARNING

Never test the ignition system with the spark plug boot removed from the spark plug or with an unseated spark plug, since uncontained sparking may cause a fire.

⚠ WARNING

To reduce the risk of fire and burn injury or property damage, use only spark plugs authorized by Holzfforma. Always

press the spark plug boot snugly onto the spark plug terminal of the proper size. A loose connection between the spark plug terminal and the ignition wire connector in the boot may create arcing that could ignite combustible fumes and

cause a fire. Keep the spark plug clean, and make sure the ignition lead is in good condition. Do not use a spark plug with a detachable SAE adapter terminal. Arcing may occur that could ignite combustible fumes and cause a fire. This can result in serious injuries or damage to property.

WARNING

Do not operate your cut-off machine if the muffler is damaged, missing or modified. An improperly maintained muffler will increase the risk of fire and hearing loss. Never touch a hot muffler or spill fuel or other flammable liquid over it. Your muffler is equipped with a spark-arresting screen to reduce the risk of fire. Never operate your cut-off machine if the screen is missing or damaged.

WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester is required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

In California, it is a violation of § 4442 or § 4443 of the Public Resources Code to use or operate gasoline-powered tools on forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a complying spark arrester that is maintained in effective working order. The owner/operator of this product is responsible for properly maintaining the spark arrester. Other states or governmental entities/agencies, such as the U.S. Forest Service, may have similar or additional requirements. Contact your local fire agency or forest service for the laws or regulations relating to fire protection requirements. Even if the spark arrester is in place, it may not be advisable to use gasoline-powered equipment, including cut-off machines, in hot, dry conditions or around dry vegetation or brush. Contact your local fire authorities or the U.S. Forest Service if you have any question about whether conditions are suitable for the use of a cut-off machine.

For any maintenance please refer to the maintenance chart and to the warranty statement near the end of this manual.

Do not store a cut-off machine with a wheel mounted on the machine. Store the cut-off machine in a high or locked place, out of reach and inaccessible to children.

Empty the fuel tank before storing your cut-off machine for longer than a few days. Store fuel only in correctly labeled and approved containers. Avoid direct skin contact and do not inhale the gas vapors. Dispose of fuel in accordance with all applicable laws and regulations.

Sample Applications

Water Connection

- A water attachment kit is mounted on the machine for use with all types of water supply.
- A pressurized 2.6 gallon (10 liter) water tank also is available from Holzfforma for wet cutting.
- A water tank for mounting on the Cutquik cart is also available for wet cutting.

For proper dust suppression, always ensure that you have sufficient water pressure to produce the recommended flow rate of 20 fluid ounces per minute (0.6 liters/minute), regardless of the water source.

The pressure and flow rate available from the water source will affect the actual amount of water available for dust suppression when wet cutting with your cut-off machine. For example, when using a pressurized or gravity-fed water tank, water pressure will decrease as the water level in the tank decreases. Holzfforma recommends using the highest water flow setting on your cut-off
machine whenever possible. The water flow rate can be set with the shut-off valve. The highest flow setting is established by opening the shut-off valve completely without restricting the flow. Maintain pressure by re-filling gravity-fed tanks and re-pressurizing pressurized tanks periodically.

If the operator cannot achieve and maintain a sufficient flow rate using the highest flow setting on the cut-off machine, connect the cut-off machine to a water source with sufficient pressure to deliver at least 20 fluid ounces (0.6 liters) of water per minute.

Inhalation of airborne crystalline silica can cause serious or fatal injury or illness, such as kidney disease and respiratory diseases, including silicosis and lung cancer. To reduce the risk of serious or fatal respiratory disease or other illness when a source of water with adequate pressure is unavailable, when the water flow cannot be confirmed or when worksite conditions do not allow use of 20 fluid ounces per minute, the operator and any bystanders should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions. The respirator must have an Assigned Protection Factor sufficient to provide the level of respiratory protection needed for the material being cut and appropriate for worksite-specific conditions.

Wet Cutting with Diamond Cutting Wheels

Holzfforma diamond cutting wheels are suitable for wet cutting.
Wet cut whenever feasible. It increases the service life of diamond wheels, reduces reactive forces and will help control dust.
The cutting wheel must be supplied with at least 20 fl. oz. (0.6 liters) of water per minute for proper dust suppression. To reduce the risk of serious or fatal respiratory disease or other illness when this flow rate cannot be achieved, maintained or confirmed, the operator and any bystanders should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions. The respirator must have an Assigned Protection Factor sufficient to provide the level of respiratory protection needed for the material being cut and worksite-specific conditions.

Even if wet cutting at the recommended flow rate, an operator who is working with the machine for more than two hours in one day, along with any bystanders, should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions.

Consult your employer for information regarding the material you are cutting and your worksite conditions. Your employer is likely to have in place an OSHA-required respiratory protection program and can provide information regarding the type and level of

respiratory protection needed for your worksite. Information is also available from OSHA at www.OSHA.gov.

Before wet cutting, make sure water will not damage the floor, building or other property, the material being cut or any surrounding objects. Make sure that "run-off" will not cause any type of environmental damage or come into contact with electrical sources.

⚠ WARNING
Holzfforma recommends the use of only
Holzfforma-branded cutting wheels on your cut-off machine. Use of non-Holzfforma
cutting wheels may be extremely dangerous. See the chapter "Reducing the Risk of Kickback Injury" in this

⚠ WARNING

To reduce the risk of electrocution to you or bystanders, do not allow water or sludge to contact live electric wires or other electrical power sources.

Composite Cutting Wheels for Wet or Dry Cutting

Composite Cutting Wheels Designed for Dry Cutting

⚠ WARNING

To reduce the risk of injury from wheel breakage, never use water with a composite wheel that is not specifically designed for wet cutting.

Composite Cutting Wheels Designed for Wet Cutting

Wet cut whenever feasible. It reduces reactive forces and will help control dust.

The cutting wheel must be supplied with at least 20 fl. oz. (0.6 liters) of water per minute for proper dust suppression. To reduce the risk of serious or fatal respiratory disease or other illness when this flow rate cannot be achieved, maintained or confirmed, the operator and any bystanders should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions. The respirator must have an Assigned Protection Factor sufficient to provide the level of respiratory protection needed for worksite-specific conditions and the material being cut.

Even if wet cutting at the recommended flow rate, an operator who is working with the machine for more than two hours in one day, along with any bystanders, should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions.

Consult your employer for information regarding worksite conditions and the material being cut. Your employer is likely to have in place an OSHA-required respiratory protection program and can provide information regarding the type and level of respiratory protection needed for your worksite. Information is also available from OSHA at www.OSHA.gov.

Before wet cutting, make sure water will not damage the floor, building or other property, the material being cut or any surrounding objects. Make sure that "run-off" will not cause any type of environmental damage or come into contact with electrical sources.

⚠ WARNING

Holzfforma recommends the use of only
Holzfforma-branded cutting wheels on your cut-off machine. Use of non-Holzfforma
cutting wheels may be extremely dangerous. See the chapter "Reducing the Risk of Kickback Injury" in this

⚠ WARNING

To reduce the risk of electrocution to you or bystanders, do not allow water or sludge to contact live electric wires or other electrical power sources.

⚠ WARNING

To reduce the risk of injury from wheel breakage when wet cutting with any composite wheel:

1. Make certain water does not flow on a wheel that is not running, since the wheel will absorb water, which will affect wheel balance.
2. Be certain water is applied to both sides of wheel, since uneven distribution can cause "one sided" wear.
3. After finishing work, run the cutting wheel at normal operating speed for about 3 to 6 seconds without water so that the remaining water is flung off.

Respiratory Protection

⚠ WARNING

The cutting wheel must be supplied with at least 20 fl. oz. (0.6 liters) of water per minute for proper dust suppression.

Inhalation of airborne crystalline silica can cause serious or fatal injury or illness, such as kidney disease and respiratory diseases, including silicosis and lung cancer.

To reduce the risk of serious or fatal respiratory disease or other illness when this flow rate cannot be achieved, maintained or confirmed, the operator and any bystanders should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions. The respirator must have an Assigned Protection Factor sufficient to provide the level of respiratory protection needed for worksite-specific conditions and the material being cut.

Even if wet cutting at the recommended flow rate, an operator who is working with the machine for more than two hours in one day, along with any bystanders, should always wear a NIOSH-approved respirator that is rated for the material being cut and appropriate for worksite-specific conditions.

Points to be Noted with Diamond and Composite Cutting Wheels

Object to be cut

&¶ Must be fully supported;

&¶ Must be secured so that it cannot roll or slip away; and

&¶ Must be protected against vibration and movement.

The cutting sequence

There are many ways to cut materials and objects with a cut-off machine. The operator and/or his supervisor, with knowledge of the job site conditions and requirements, always must exercise good judgment and discretion in determining how to safely complete a cutting task. The methods described in the following sections, while constituting proven techniques, are illustrative only and are not meant to substitute for the judgment of the experienced workmen with direct knowledge of on-site conditions.

However, the cutting sequence is important. The last cut must always be made in such a way that the cutting wheel cannot become pinched, bound or clamped and so that the operator, co-workers and bystanders are not at risk of being injured by a falling part that has been cut off or out, or by cutting debris or sparks.

Leave small sections of uncut material to hold the part being severed in position. These sections can later be broken through manually, using a hammer or other appropriate tool. Always continue to wear appropriate eye protection when finishing a cut by breaking it manually.

A number of points must be decided before the part is finally severed:

&¶ How heavy is the part?

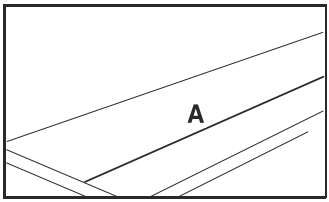
&¶ In which direction can it move or fall after being severed?

&¶ Is it under tension?

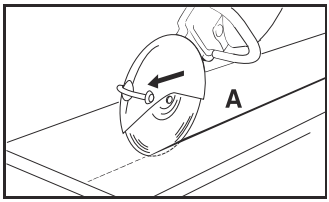
&¶ Is it properly supported to prevent pinching or binding of the wheel?

The operator, co-workers and bystanders must not be put at risk of injury when the part is broken off or falls.

Cutting in several passes



- Mark cutting line (A).



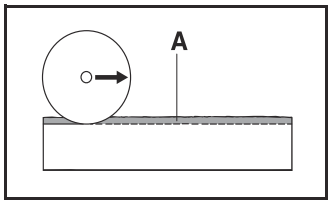
- Work along the cutting line. If corrections are necessary, always lift the machine and reposition the cutting wheel, taking care to ensure that it is not wedged, tilted, twisted or side loaded. Attempting to change the position or direction of a cut while the wheel is in the cut can bind the wheel. This can lead to kickback, other reactive forces or a shattered composite cutting wheel, which could result in severe or fatal personal injury.The cutting depth per pass should not exceed 2" to 2 1/2" (5 to 6 cm). Thicker material must be cut in several passes.

The maximum cutting depth for abrasive cutting wheels with a 16" diameter is 5.6 in. (145 mm).

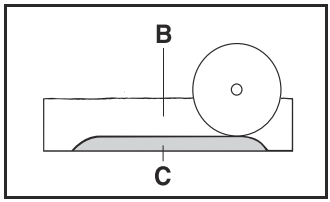
The maximum cutting depth for abrasive cutting wheels with a 14" diameter is 4.9 in. (125 mm).

Cutting Slabs

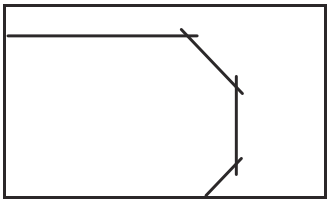
- Secure the slab (e. g. on a non-slip surface, sandbed) and mark the cutting line.



- Cut a shallow guiding groove (A) along the marked line.

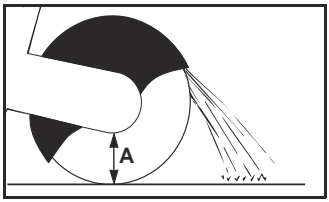


- Cut deeper into the parting cut (B).
- Leave a section (C) of uncut material.
- Cut through the slab at the ends so the material does not chip.
- Break the slab manually using a hammer or other appropriate tool. Always continue to wear appropriate eye protection when finishing any cut by breaking it manually.



- Curves must be cut in several straight passes, taking care to ensure that the cutting wheel does not become wedged. Do not attempt to correct the position or direction of a cut by tilting or twisting the machine or cutting wheel. If corrections are necessary, always lift the machine and reposition the cutting wheel, taking care to ensure that it is not wedged, tilted, twisted or side loaded.

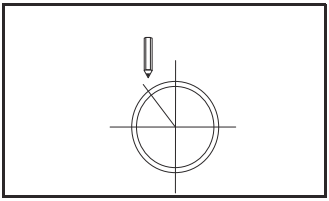
Cutting Pipes or Other Round, Hollow Bodies



The procedure is dependent on the outer diameter of the object being cut, the maximum possible cutting depth of the abrasive cutting wheel (A), and whether the pipe or other body can be rolled during the cutting process. The maximum cutting depth for abrasive

cutting wheels with a 14" diameter is 4.9 in. (125 mm). For cutting wheels with a 16" diameter, it is 5.6 in. (145 mm).

- Secure and support pipes and other round, hollow bodies against sagging, slipping, dropping, moving, rolling or vibrating.
- Determine the sequence of the cuts.
- Determine the weight, tension and the likely direction of fall of the part to be severed.

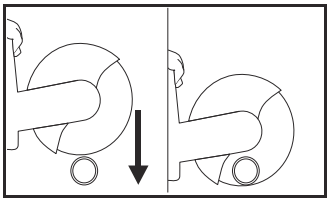


- Determine and mark the cutting line; avoid rebar and other metal reinforcement to the extent possible, especially in the direction of the severing cut.
- Determine and mark the direction of the cut.
- Cut a shallow guide groove along the line marked.
- Make cuts progressively deeper along the guide groove. Observe the recommended cutting depth for each pass. If corrections are necessary, always lift the machine and reposition the cutting wheel, taking care to ensure that it is not wedged, tilted, twisted or side loaded. Attempting to change the position or direction of a cut while the wheel is in the cut can bind the

wheel. This can lead to kickback, other reactive forces or a shattered composite cutting wheel, which could result in severe or fatal personal injury.

- If necessary, leave small sections that hold the part that is to be separated in position. Break these sections manually with a hammer or other appropriate tool after making the last cut.

If the outer diameter of the pipe or other round, hollow body is smaller than the maximum cutting depth of the wheel:



- Make one cut from the top to the bottom of the pipe.

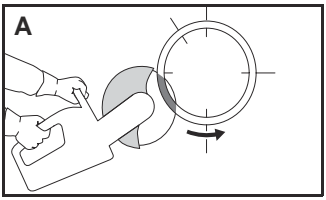
If the outer diameter of the pipe or other round, hollow body is greater than the maximum cutting depth of the wheel:

Plan first, then cut. The sequence shown in this manual is illustrative and not meant to substitute for the judgment of the experienced workmen with actual knowledge of on-site conditions. However, the last cut must always be made in such a way that the cutting wheel cannot become pinched, bound or clamped and so that the operator, co-workers and bystanders are not at risk of being injured by a falling part that has been cut off or out, by cutting debris or sparks. Generally, this should be in the

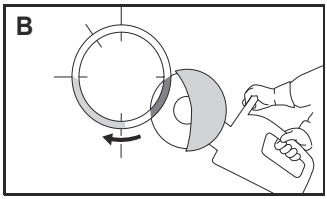
top portion of the pipe using the bottom section of the cutting wheel with the guard covering the top of the wheel.

If the pipe is in-ground or otherwise cannot be rolled:

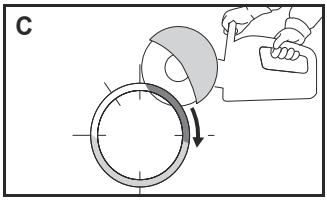
- Support the pipe and chock it if necessary to prevent it from rolling, moving or vibrating.
- Rotate the guard to the rear limit stop.



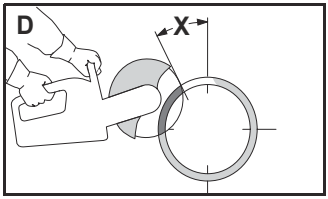
- To reduce the risk of pinching or binding and kickback, start cutting in the lower section of the pipe. Illustration A.



- Use the front and upper part of the abrasive wheel for cutting the opposite lower side. Make sure that the cut at the bottom is complete. Illustration B.

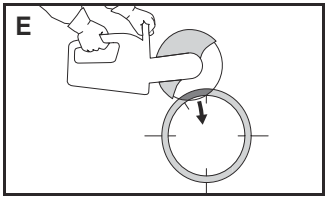


- Next, make a cut from the top half of the pipe down, connecting with the cut from the lower half. Illustration C. Do not attempt to twist or bend the machine or wheel to join the two cuts.



- Make a cut in the marked area shown above, leaving uncut the section labeled "X" in the illustration. Connect the cut with the cut in the lower half. Do not attempt to twist or bend the machine or wheel to join the two cuts. To keep the pipe from pinching, binding or clamping, do not cut into the area labeled "X." Illustration D.

Only make the final top cut once all bottom and lateral cuts have been completed and connect with one another.



- Always make the final separating cut from the top (approx. 15 % of the pipe circumference). Illustration E. If the workpiece is properly supported, it should not pinch when the cut is completed. If there is any residual pinching, however, it will be at the bottom of the wheel, where it may result in pull-away, but not in kickback. Be alert for pull-away.

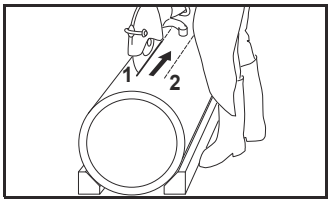
If the pipe can be rolled:

- Use only the bottom of the abrasive cutting wheel to make an initial partial cut with the guard of the machine pushed fully forward to the limit stop, covering the top of the wheel.
- Roll the pipe, resecure and support it. Make another partial cut using the bottom of the wheel and the guard covering the top of the wheel.
- Repeat this process until the cut is complete.
- Be alert to bell ends or any other feature of the pipe that could cause the cut to close on the wheel if the pipe is not properly supported and secured. Bell ended pipes, even when lying on level ground, can create a ramp effect that may cause the pipe to sag or drop when cut, pinching, binding or clamping the

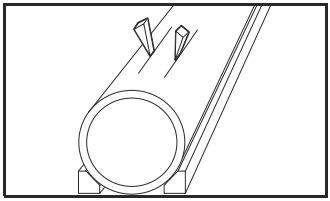
  cutting wheel and resulting in severe kickback or other reactive force.

Cutting Recesses in Pipe

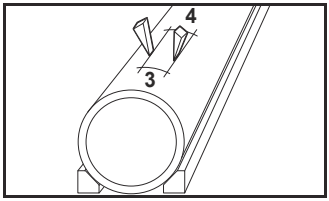
The sequence of cuts (in the illustrations below, 1 to 4) is recommended:



- Always make severing cuts so that the abrasive cutting wheel is not pinched, bound or clamped.



- Use wedges and/or leave sections of pipe to be manually broken out after cutting. Always continue to wear appropriate eye protection when finishing a cut by breaking it manually.



- If the severed part remains in the recess after cutting, do not make any further cuts – break the part out manually, using a hammer or other appropriate tool. Always continue to wear appropriate eye protection when finishing a cut by breaking it manually.

Abrasive Cutting Wheels

Abrasive cutting wheels are exposed to high loads, especially during hand-held cutting.

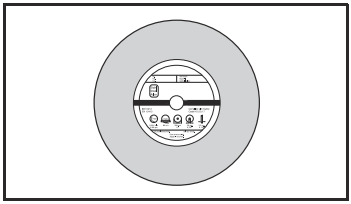
Only use abrasive cutting wheels that comply with ANSI B 7.1 for hand-held machines and are labeled accordingly. Note that the maximum permissible speed of the cutting wheel must be higher than the maximum spindle speed listed on the wheel guard label.

The abrasive cutting wheels that have been developed for Holzfforma for use on
cut-off machines are of high quality and tailored to the intended uses as well as the engine specifications and performance of this cut-off machine. Use of other wheels on your cut-off machine can be extremely dangerous and may result in severe personal injury or death.

Transport and storage

- &¶ Do not expose composite cutting wheels to direct sunshine or other thermal stresses during transport and storage.
- &¶ Avoid jolts and impacts.
- &¶ Stack composite cutting wheels flat on a level surface in the original packaging in a dry place where the temperature is as constant as possible.
- &¶ Do not store composite cutting wheels in the vicinity of aggressive fluids or chemicals.
- &¶ Store composite cutting wheels in a frost-free place.
- &¶ Do not transport a cut-off machine with a abrasive cutting wheel mounted, whether composite or diamond.

Composite Cutting Wheels



Types:

- &¶ for dry applications
- &¶ for wet applications

Economic benefit is improved and premature wear can be avoided by choosing and using the correct composite cutting wheel. The short name (e.g. "asphalt", "concrete")

- &¶ on the label and
- &¶ on the packaging (table with recommended uses)

can help to ensure the correct choice.

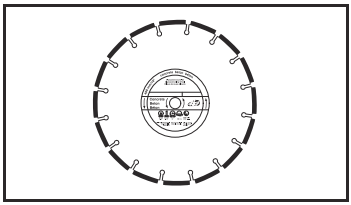
Holzfforma composite cutting wheels

are
suitable, depending on the version, for cutting the following materials:

- &¶ Asphalt
- &¶ Concrete
- &¶ Stone
- &¶ Ductile cast pipes
- &¶ wheels cannot be used to cut Steel; Holzfforma composite cutting railway tracks.

Do not cut any other materials with your composite cutting wheel. Always use a composite cutting wheel rated for the material you are cutting. Cut-off machines are not suitable for cutting certain metals and other substances, including wood and plastic.

Diamond Cutting Wheels



Holzfforma diamond cutting wheels are suitable for wet cutting.

To reduce the risk of severe personal injury or death, always use a diamond cutting wheel that is properly rated for the material to be cut.

All Holzfforma-branded diamond cutting

wheels can be used on your cut-off machine. Never use wheels that wobble or that ever have wobbled, wheels with abrasive material on their sides, or wheels not rated for the material you are cutting. Never use chipped or damaged abrasive cutting wheels, circular saw blades, carbide-tipped blades, rescue blades or wood cutting tooth blades of any nature. Use of such wheels can increase the risk of severe personal injury from increased reactive forces, loss of control or other causes. The designation on the wheel's label or packaging can help to ensure the correct choice of a cutting wheel.

Holzfforma offers diamond cutting

wheels
that are suitable for cutting the following materials:

- Asphalt
- Concrete
- Stone (hard rock)
- Abrasive concrete
- Green concrete
- Clay bricks
- Clay pipes
- Ductile iron
- Structural steel up to 10 mm thick

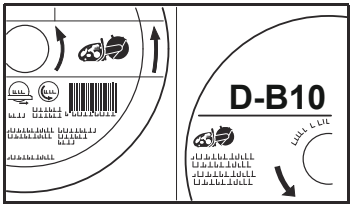
Do not cut any other materials with your diamond cutting wheel. Always use a diamond cutting wheel rated for the type of material you are cutting. Cut-off machines are not suitable for cutting certain metals and other substances, including wood and plastic.

WARNING

Never use diamond cutting wheels with abrasive material on their sides, since in a pinch or bind situation, they can increase frictional forces and result in extreme kickback, increasing the risk of severe or fatal injury.

Non-Holzfforma branded wheels may have
design or manufacturing flaws that make their use extremely dangerous. Holzfforma
recommends the use of only properly rated, Holzfforma-branded cutting wheels.

Short names



The short name on a diamond cutting wheel is a combination of letters and numerals with up to four digits:

- The letters indicate the authorized use for the diamond cutting wheel.
- The numerals indicate the performance class of the Holzfforma diamond cutting wheel.

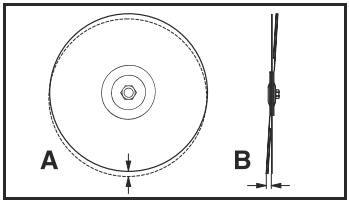
Letter	Authorized use
D-A	Asphalt
D-B	Concrete
BA	Concrete, Asphalt
SB*	Rock, Concrete
D-G	Ductile iron

(*) also can be used for structural steel up to 10 mm thick and ductile iron – not suitable for continuous cutting of such materials

Radial and axial run-out

A correctly mounted spindle bearing on the cut-off machine is essential for normal service life and efficient operation of the abrasive cutting wheel.

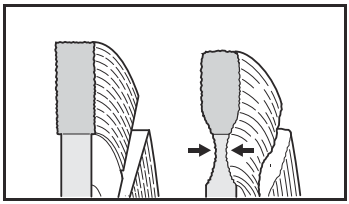
Using an abrasive cutting wheel on a cut-off machine with an improper, worn or damaged spindle bearing can lead to axial and radial run-out.



Excessive radial run-out (**A**) overloads individual diamond segments and causes them to overheat. This can lead to stress cracking in the wheel core or to softening of individual segments. The result can be broken segments that increase the risk of personal injury.

Axial run-out or spindle wobble (**B**) also results in higher thermal stresses and wider cuts.

Undercut



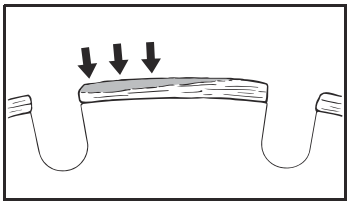
Undercutting is a wearing away of the steel core of the wheel at or just below the diamond segments. When cutting road surfaces, do not cut through into the more abrasive ballast (gravel, crushed rock) below the paved surface,

as indicated by a light colored dust. Doing so can cause undercutting. If undercutting can be detected upon visual inspection, replace the wheel.

WARNING

Undercutting can result in wheel breakage and/or thrown segments, which can lead to severe personal injury or death to the operator or bystanders. Immediately replace a diamond cutting wheel if undercutting is visible.

Built-up edges, dressing



Built-up edges are identified by a pale grey deposit on the top of the diamond segments that clogs and blunts the segments.

Built-up edges can form:

&¶ when cutting extremely hard material, such as granite,

&¶ as a result of incorrect handling, such as applying excessive feed force.

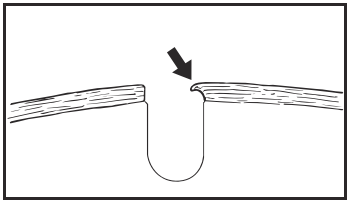
Built-up edges increase vibration, reduce cutting performance and cause sparking.

Diamond cutting wheels must be "dressed" at the first sign of built-up edges. To dress a diamond cutting

wheel, briefly cut a more abrasive material, such as sandstone, aerated concrete or asphalt.

Wet cutting helps prevent the formation of built-up edges.

Blunt segments



If you continue to use a diamond cutting wheel with blunt segments, the segments may soften as a result of excessive heat build-up. The wheel core will also overheat and lose its mechanical strength or tensioning. This can lead to stress cracks in the wheel or its segments and/or wheel wobble.

WARNING

Diamond cutting wheels that wobble or have built-up edges or blunt segments may break apart, throw off segments during use or lead to significant reactive forces, causing serious or fatal injury. Replace them immediately.

Troubleshooting

Cutting wheel

Problem	Likely Cause	Possible Remedy
Frayed edges or tears, cut wanders out of line, increased wear at the sides of the segments	Radial or axial run-out	Replace the spindle bearing; consult an authorized servicing dealer before use
	Cutting wheel wobbles	Use a new cutting wheel
Frayed edges, cut wanders out of line, lit tle or no cutting performance, sparking	Cutting wheel is blunt; built-up edges on cut ting wheels for stone	Dress the cutting wheel for stone by briefly cutting in abrasive material; replace with a new cutting wheel
Poor cutting performance, high level of segment wear	Cutting wheel rotates in the wrong direction or the cutting wheel is worn out	Mount the cutting wheel in correct direc tion of rotation; replace the cutting wheel if it is worn out
Chipping or cracking in the wheel core and segments	Overload	Replace immediately with a new cutting wheel
Undercutting	Cutting material for which the wheel is not rated	Use a new cutting wheel

Assembling the Cast Arm and Guard

The "support with guard" is mounted on the inboard side by the manufacturer.

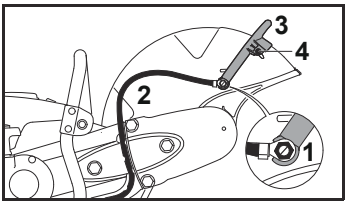
The "support with guard" can also be mounted on the outboard side depending on requirements.

Assembly on the inboard side is recommended for freehand cutting on account of the better balance.

Outboard mounting (GC890)

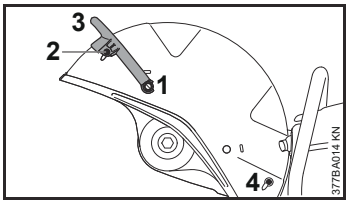
- Disassemble the abrasive wheel (see “Fitting / replacing an abrasive wheel”)

Removing the water attachment



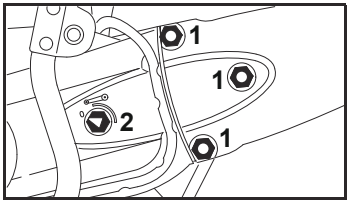
- Unscrew the banjo bolt (1) with the combination wrench – in the process, remove the square nut from the inside of the guard from the guide
- Remove the water hose (2) with connector from the adjusting lever (3)
- Unscrew the screw (4)

Removing the adjusting lever



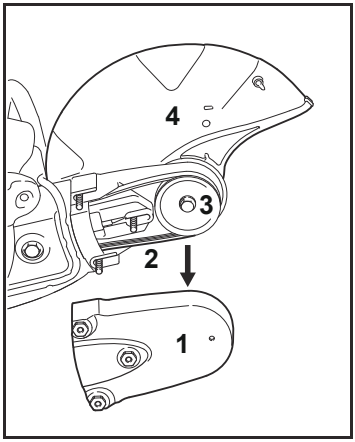
- Unscrew the banjo bolt (1) with the combination wrench and remove it together with the seal – in the process, remove the square nut from the inside of the guard from the guide
- Unscrew the screw (2)
- Turn the adjusting lever (3) upwards and remove
- Remove the sealing plug (4)

Slackening the V-belt



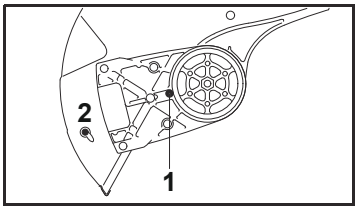
- To relax the poly V-belt, loosen the nuts (1) – do not unscrew the nuts (1) from the studs
- Turn the tensioning nut (2) counterclockwise with the combination wrench – approx. 1/4 turn, as far as it will go = **0**
- Unscrew nuts (1) from the studs – nuts (1) are fastened to the belt guard so that they are secured against loss

Removing the V-belt guard

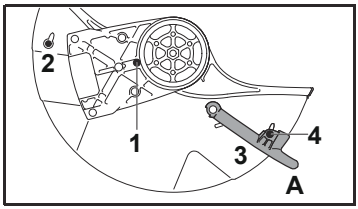


- Pull the V-belt guard (1) off and remove the V-belt (2) from the front pulley (3)
- Remove the "support and guard" (4)

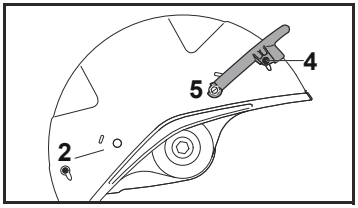
Preparing the "support with guard" for outboard mounting



- Unscrew the stop pin (1)
- Remove the sealing plug (2)

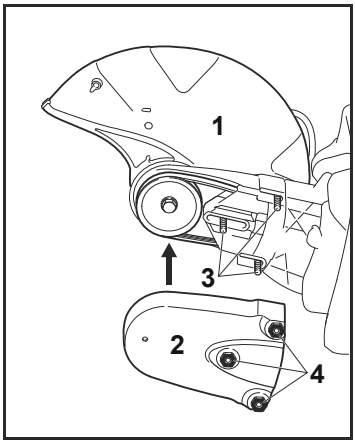


- Turn the guard so that it is in the position shown (see picture)
- Screw in and tighten the stop pin (1)
- Insert the sealing plug (2)
- Move the adjusting lever (3) to position A
- Insert and tighten the screw (4)



- Turn the "support with guard" so that the guard is on the outboard side
- Insert the square nut into the guide in the guard and hold it in place
- Screw in the shorter banjo bolt (5) and washer at the adjusting lever and tighten up with the combination wrench
- Insert the sealing plug (2)
- Insert and tighten the screw (4)

Mounting "support with guard" – guard on the outboard side



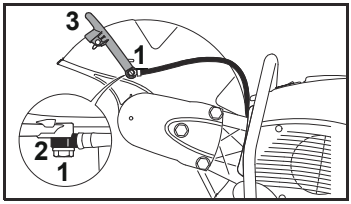
- Fit the "support with guard" (1) on the outboard side of the cast arm - at the same time, guide the V-belt over the belt pulley

NOTICE

The belt action must run smoothly.

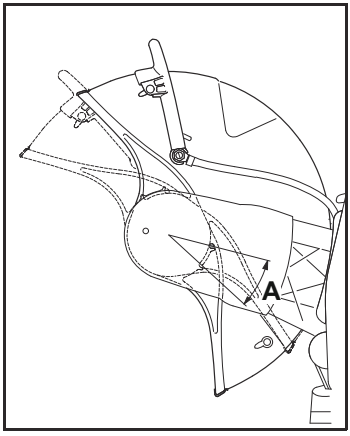
- Position the V-belt guard (2)
- Align studs (3) in support with nuts (4) in the V-belt guard
- Screw nuts (4) onto studs (3) – do not tighten them yet

Connecting the water connection



- Insert the longer banjo bolt (1) through the connector (2) of the water attachment – observe the position of the connector
- Insert the square nut into the guide in the guard and hold it in place
- Fit the support with the longer banjo bolt on the adjusting lever (3) – screw in the banjo bolt and tighten with the combination wrench

Checking the adjustment range of the guard



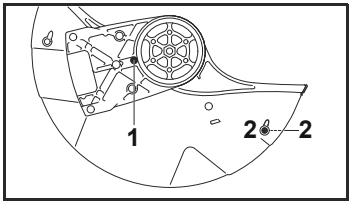
- Rotate the guard forwards and backwards as far as possible – adjustment range (A) must be limited by the stop pin

Continue as described in the chapter “Tensioning the V-belt”.

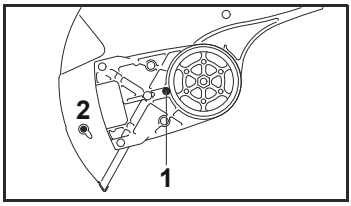
Inboard mounting (GC890)

- Disassemble the abrasive wheel (see “Fitting / replacing an abrasive wheel”)
- Remove the water attachment
- Remove the adjusting lever
- Slacken the V-belt
- Remove the V-belt guard
- Remove "support with guard"
- Remove the sealing plug

Preparing the "support with guard" for inboard mounting

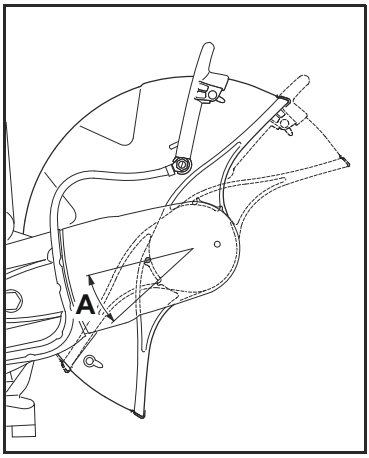


- Unscrew the stop pin (1)
- Insert both sealing plugs (2) – on the opposite side as well



- Turn the guard so that it is in the position shown (see picture)
- Screw in and tighten the stop pin (1)
- Install the adjusting lever
- Mount "support with guard" – guard on the inboard side
- Install the V-belt guard
- Connect the water connection

Checking the adjustment range of the guard

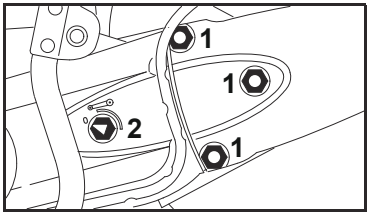


- Rotate the guard forwards and backwards as far as possible – adjustment range (A) must be limited by the stop pin

Continue as described in the chapter “Tensioning the V-belt”.

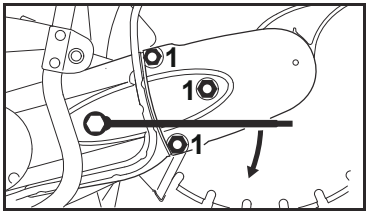
Tensioning the Ribbed V-belt

This machine is equipped with an automatic spring-action V-belt tensioning device.



Prior to tensioning of the ribbed V-belt, the nuts (1) must be loosened and the arrow on the tensioning nut (2) must point to **0**.

- otherwise loosen the nuts (1) and the tensioning nut (2) with the combination wrench counterclockwise – approx. 1/4 turn, as far as possible = **0**



- to tighten the ribbed V-belt, fit the combination wrench over the tensioning nut as illustrated

WARNING

The tensioning nut is spring-loaded – hold the combination wrench securely.

- Turn the tensioning nut clockwise approx. 1/8 turn – the tensioning nut will be engaged by the spring
- Continue turning approx. 1/8 turn – up to the stop

NOTICE

Do not turn the combination wrench further by force.

The V-belt is automatically tensioned by the force of the spring in this position.

- Remove the combination wrench from the tensioning nut
- Tighten nuts (1) on the V-belt guard

Retensioning the V-belt

The V-belt is retensioned without the aid of the tensioning nut.

- Unscrew the three nuts on the V-belt guard

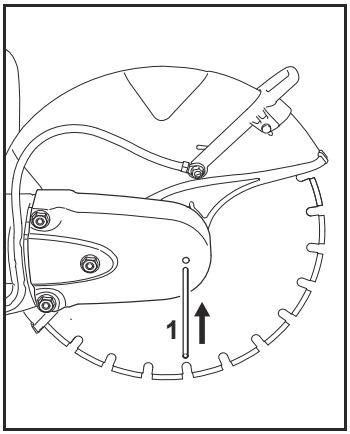
The V belt is automatically tensioned by the force of the spring.

- Retighten the nuts

Mounting an Abrasive Cutting Wheel

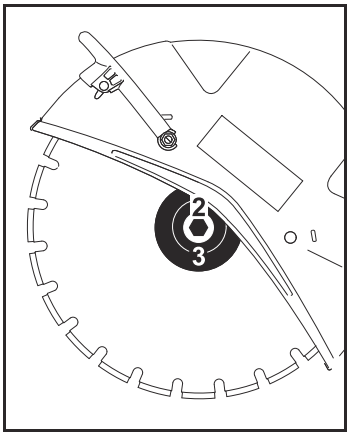
The engine must be switched off for fitting or replacement – set Master Control lever to **STOP** or **0**.

Blocking the shaft



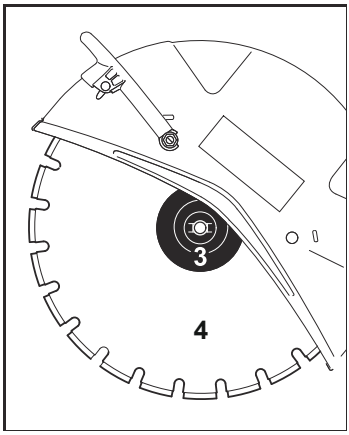
- Slide the locking pin (1) through the bore in the V-belt guard
- Turn the shaft with the combination wrench until the locking pin (1) engages in a bore behind the guard

Removing an abrasive wheel



- Use the combination wrench to loosen and remove the hexagon head screw (2)
- Remove the front thrust washer (3) from the shaft together with the abrasive wheel

Fitting an abrasive wheel



- Fit the new abrasive wheel (4)

WARNING

Note the arrows indicating the direction of rotation on diamond abrasive wheels.

- Fit the front thrust washer (3). The catches of the front thrust washer (3) must engage in the shaft grooves.
- Screw in the hexagon bolt and **tighten it** with the combination wrench – if using a torque wrench, refer to the "Specifications" for the tightening torque
- Draw the locking pin out of the V-belt guard

WARNING

Never use two abrasive wheels at the same time. The uneven wear creates a **risk of breaking and an injury hazard!**

Fuel

This engine is certified to operate on unleaded gasoline and the Holzfforma two-
stroke engine oil at a mix ratio of 50:1.

Your engine requires a mixture of fresh, high-quality gasoline and two-stroke air cooled engine oil. Operators who are not using Holzfforma fuel should never use fuel
that has been stored for more than thirty (30) days.

Use mid-grade unleaded gasoline with a minimum octane rating of 89 ((R+M)/2) and no more than 10% ethanol content.

NOTICE

Fuel with an octane rating below 89 may increase engine temperatures. This, in turn, increases the risk of piston seizure and damage to the engine.

The chemical composition of the fuel is also important. Some fuel additives not only detrimentally affect elastomers (carburetor diaphragms, oil seals, fuel lines, etc.), but magnesium castings and catalytic converters as well. This could cause running problems or damage the engine. For this reason Holzfforma recommends that you use only Holzfforma fuel or another quality unleaded gasoline.

NOTICE

Gasoline with an ethanol content of more than 10% can cause running problems and major damage in engines and should not be used.

The ethanol content in gasoline affects engine speed – it may be necessary to readjust the carburetor if you use fuels with different ethanol contents.

WARNING

To reduce the risk of personal injury from loss of control and/or contact with the running wheel, do not use your unit with an incorrect idle adjustment. When the idle speed is properly adjusted, the wheel should not move while the machine is idling.

If your cut-off machine's idle speed is incorrectly adjusted, have your authorized Holzfforma servicing dealer check your machine and make the proper adjustments and repairs.

The idle speed and maximum speed of the engine change if you switch to a fuel with a much higher or lower ethanol content.

This problem can be avoided by always using fuel with the same ethanol content, which should never exceed 10%.

To ensure the maximum performance of your Holzfforma engine, use a fresh, high
quality 2-cycle engine oil. To help your engine run cleaner and reduce harmful carbon deposits, Holzfforma recommends
using Holzfforma HP Ultra 2-cycle engine oil
or ask your dealer for an equivalent, fully synthetic 2-cycle engine oil if you are not using Holzfforma.

We recommend using Holzfforma

or a fresh, high quality gasoline of at least 89 octane and Holzfforma HP Ultra oil.

Holzfforma Fuel

Holzfforma recommends the use of Holzfforma Fuel. Holzfforma Fuel has a high octane rating and ensures that you always use the right gasoline/oil mix ratio. It also contains no ethanol.

Holzfforma Fuel uses Holzfforma HP Ultra two-stroke engine oil suited for high performance engines.

If not using Holzfforma, use only Holzfforma two-stroke engine oil or equivalent high-quality two-stroke engine oils that are designed for use in air cooled two-cycle engines.

Do not use NMMA or TCW rated (two-stroke water cooled) mix oils or other mix oils that state they are for use in both water cooled and air cooled engines (e.g., outboard motors, snowmobiles, chain saws, mopeds, etc.).

WARNING

Take care when handling gasoline. It is extremely flammable. Avoid direct contact with the skin and avoid inhaling fuel vapor. Transport and store fuel only in approved containers. When filling at the pump, remove the fuel container from your vehicle and place it on the ground before filling. To reduce the risk of sparks from static discharge and resulting fire and/or explosion, do not fill fuel containers that are sitting in or on a vehicle or trailer.

The container should be kept tightly closed in order to limit the amount of moisture that gets into the mixture.

The machine's fuel tank should be cleaned as necessary.

Fuel mix ages

If not using Holzfforma, only mix sufficient fuel for a few days of work, not to exceed 30 days of storage. Store in approved fuel-containers only. When mixing, pour oil into the container first, and then add gasoline. Close the container and shake it by hand to ensure the proper mix of oil and gasoline.

WARNING

Shaking fuel can cause pressure to build in the fuel container. To reduce the risk of fire and severe personal injury or property damage from fuel spraying, allow the fuel container to sit for several minutes before opening. Open the container slowly to release any residual pressures. Never open the fuel container in the vicinity of any ignition source. Read and follow all warnings and instructions that accompany your fuel container.

Gasoline US gal.	Oil (Holzfforma 50:1 or equiva lent high-quality oils) US fl.oz.
1	2.6
2 1/2	6.4
5	12.8

Dispose of empty mixing-oil containers only at authorized disposal locations.

Fueling



Before fueling, clean the fuel filler cap and the area around it so that dirt does not fall into the fuel tank. Dirt in the tank can contribute to poor running performance and engine failure.

WARNING

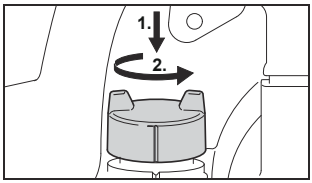
To avoid the risk of fire or other injuries due to escaping gasoline vapors, open the fuel filler cap carefully so that any pressure in the tank can escape slowly.

WARNING

Never use a tool to open the fuel cap. This could damage the cap and cause a fuel leak.

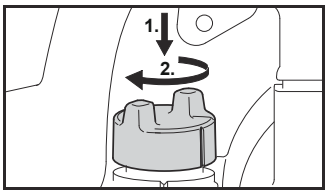
Do not spill fuel and do not fill the tank to the brim.

Opening the fuel filler cap



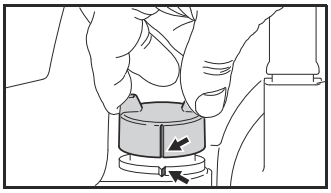
Press the cap down with your hand as far as possible, turn it counterclockwise (approx. 1/8 turn) and remove it.

Closing the fuel filler cap



- Insert the cap and turn it until it engages in the mount
- Press the cap down with your hand and turn it clockwise (approx. 1/8 turn) until it engages completely and seals the tank. Check the cap for tightness

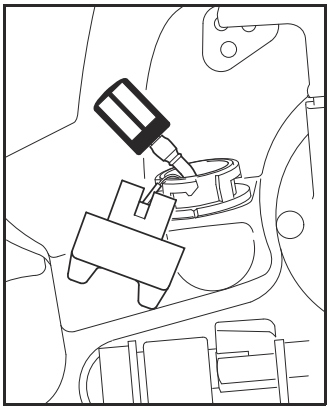
Checking the installation of the fuel filler cap



- Grip the cap – the cap is closed properly if it cannot be removed and the markings (arrows) on the cap and fuel tank are aligned

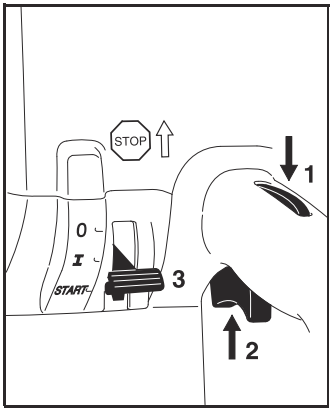
If the cap can be removed or the markings do not align, close the cap again – see the section "Closing the fuel filler cap" in this instruction manual.

Change the fuel pickup body every year

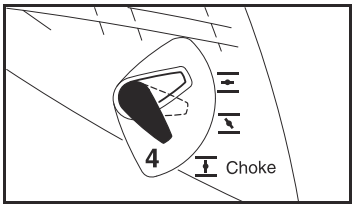


- Drain the fuel tank and allow it to air out
- Pull the fuel pickup body out of the tank with a wire hook or other suitable tool and disconnect it from the hose
- Connect a new fuel pickup body to the hose
- Return the fuel pickup body to the tank

Starting / Stopping the Engine



- Note the safety instructions. Refer to the chapter headed "Safety precautions and working techniques".
- Press throttle trigger lockout (1) and throttle trigger (2) simultaneously
- Hold both triggers down
- Move the master control lever (3) to **START** and hold it in position too
- Release the throttle trigger, master control lever and throttle trigger lockout in succession = **starting throttle position**

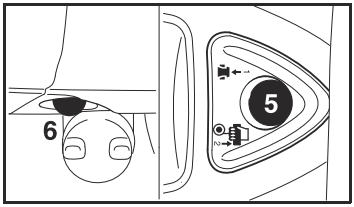


- Set the choke (4) according to the engine temperature

If engine is **cold**

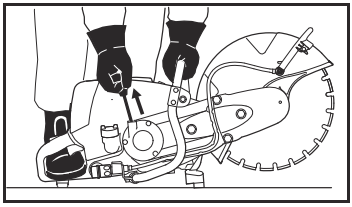
if the engine is **warm** (even if the engine is already running but is still cold or if the warm engine was shut off for less than 5 min)

if the engine is **hot** (if the hot engine was switched off for longer than 5 min)



- Press the button (5) of the decompression valve before each starting procedure
- Press the bulb (6) of the manual fuel pump 7 10 times – even when the bulb is still filled with fuel

Starting

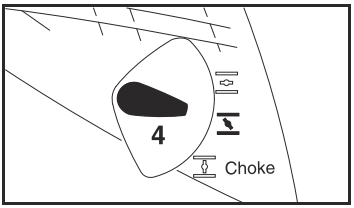


- Place the cut-off machine carefully on the ground, ensuring that the abrasive wheel cannot touch the ground or any objects. There must not be anyone within the swivel range of the cut-off machine
- Make sure you have a firm footing
- Press the cut-off machine firmly against the ground, holding the handle with your left hand, thumb wrapped round the handle
- Place your right foot into the rear handle
- Pull the starter grip slowly with your right hand until you feel it engage – then give it a brisk strong pull – do not pull out the starter rope all the way

NOTICE

Do not let the starter grip snap back – **it may break!** Guide it back into the housing in the opposite direction so that it can rewind properly.

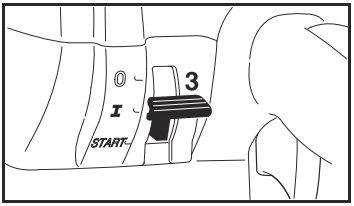
When the engine has turned over for the first time



- Set choke lever (4) to – press the button of the decompression valve again before each starting attempt and continue cranking

Once the engine is running

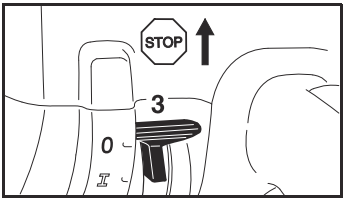
- Squeeze throttle trigger fully and let engine run at full throttle for approx. 30 s
- When it has warmed up, set the choke lever to



- The master control lever (3) moves to the normal position I when the throttle trigger is squeezed

If the carburetor has been set correctly, the abrasive wheel should not rotate when the engine is idling. The cut-off machine is now ready for use.

Switching off the engine



- Slide the master control lever (3) to **STOP** or **0**

Additional hints on starting

If the engine does not start

The choke lever was not returned to in time after the engine turned over for the first time.

- Move the master control lever to **START = starting throttle position**
- Set the choke lever to = warm start, even if the engine is cold
- Pull the starter rope through 10 20 times to ventilate the combustion chamber
- Restart the engine

If the tank has been drained completely

- Refueling
- Press the manual fuel pump bulb 7 10 times – even if it is full of fuel
- Set the choke lever in accordance with the engine temperature
- Restart the engine

Air Filter System

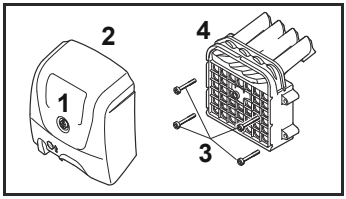
Basic information

The average filter life is more than 1 year. Do not dismantle the filter cover or fit a new air filter unless there is a noticeable loss of engine power.

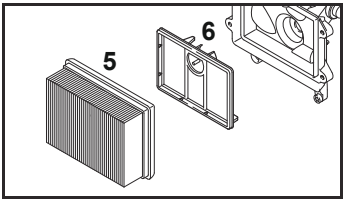
In the long-life air filter system with the cyclone pre-separation system, dirty air is drawn in and deliberately rotated. The larger and heavier particles carried in the air are thus expelled and extracted. Only pre-cleaned air enters the air filter system and the result is extremely long filter life.

Replacing the air filter

Only if there is a noticeable loss of engine power



- Remove the locking screw (1) on the filter cover
- Remove the filter cover (2)
- Remove all coarse dirt from the area around the filter and the inside of the filter cover
- Remove screws (3)
- Remove filter housing (4)



- Pull main filter (5) out of the filter housing
- Set choke lever to
- Remove the auxiliary filter (6) from filter base – ensuring that dirt does not enter the intake area
- Clean the filter area
- Remount main filter and new auxiliary filter with the remaining filter components
- Refit filter cover
- Tighten down the locking screw

Always use original Holzfformaair filters. The high quality of these parts will ensure
trouble free operation, a long service life for the engine and extremely long filter life.

Engine Management

Exhaust emissions are controlled by the design of the engine and components (e.g. carburation, ignition, timing and valve or port timing).

Adjusting the Carburetor

Basic information

The ignition system of this cut-off machine is equipped with an electronic maximum speed limiter. The maximum speed cannot be increased beyond a specified limit.

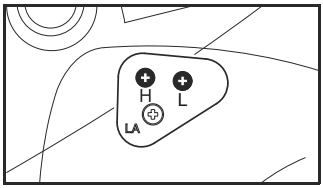
The carburetor is equipped with a factory-installed standard setting.

The carburetor has been adjusted for optimum performance and fuel efficiency in all operating states.

Preparing the machine

- Switching off the engine
- Check the air filter – clean or replace it if necessary
- Check the spark arresting screen in the muffler (present only in some countries) – clean or replace it if necessary

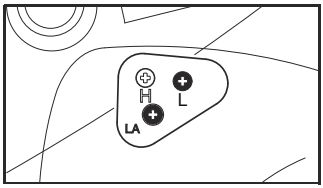
Standard setting



- Turn the high speed adjusting screw (H) counterclockwise as far as possible (max. 3/4 turn)
- Turn the low speed adjusting screw (L) clockwise as far as possible – then turn it 3/4 turn counterclockwise

Setting the idle speed

- Make standard setting
- Start engine and let it warm up



Engine stops when idling

- Turn the idle speed adjusting screw (LA) clockwise until the abrasive wheel begins to rotate – then turn it back 1 turn

Abrasive wheel runs when idling

- Turn the idle speed screw (LA) counterclockwise until the abrasive wheel stops running – then turn another full turn in the same direction

⚠ WARNING

If the abrasive wheel continues to keep rotating in idle even after adjustment, have the cut-off machine checked by a servicing dealer.

Speed erratic when idling; poor acceleration (despite adjustment to LA setting)

The idle setting is too lean.

- Turn the low speed adjusting screw (L) approx. 1/4 turn counterclockwise until the engine runs and accelerates smoothly – max. up to the stop

Idle speed cannot be increased sufficiently via the idle speed adjusting screw (LA), engine stops when changing from part-load to idle speed

The idle setting is too rich.

- Turn low speed adjusting screw (L) approx. 1/4 turn clockwise.

Whenever the low speed adjusting screw (L) has been adjusted, it is usually also necessary to readjust the idle speed adjusting screw (LA).

Correcting the carburetor setting for use at high altitudes

The setting may have to be marginally corrected if engine performance is unsatisfactory at high altitudes:

- Make standard setting
- Let the engine warm up
- Turn the high speed adjusting screw (H) slightly clockwise (leaner) – max. up to the stop

NOTICE

After descending from a high altitude, restore the carburetor setting to the standard setting.

If you make the setting too lean it will increase the risk of engine damage through lack of lubrication and overheating.

Spark Arresting Screen in Muffler

In some countries, the mufflers are fitted with a spark arresting screen.

- If engine performance deteriorates, check the spark arresting screen in the muffler.

WARNING

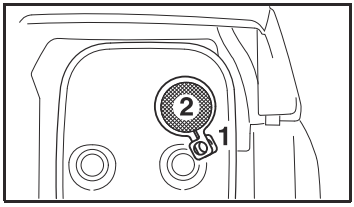
Wait until engine has cooled completely before performing the following operations.

Versions

There are two different spark arresting screen versions in the muffler.

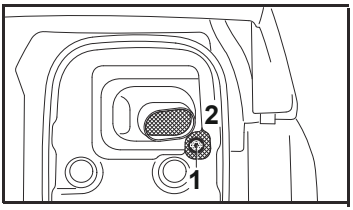
- &¶ Spark arresting screen fastened with clip
- &¶ Spark arresting screen fastened with screw

Spark arresting screen fastened with clip



- Use a suitable tool to squeeze ends of clip (1) together and then lift the clip away
- Remove the spark arresting screen (2) from the muffler
- Clean the soiled spark arresting screen
- If the screen is damaged or heavily carbonized, fit a new one
- Refit the spark arresting screen in reverse order of steps

Spark arresting screen fastened with screw



- Undo screw (1)
- Pull out spark arresting screen (2) with a suitable tool
- Clean the soiled spark arresting screen
- If the screen is damaged or heavily carbonized, fit a new one
- Refit the spark arresting screen in reverse order of steps

Spark Plug

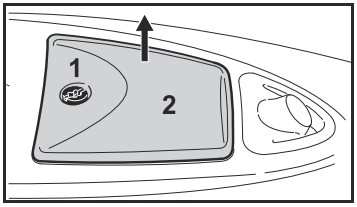
If there is a loss of engine power, the machine is difficult to start or runs poorly at idle, first check the spark plug.

Install a new spark plug after approximately 100 operating hours or earlier if the electrodes are eroded/corroded.

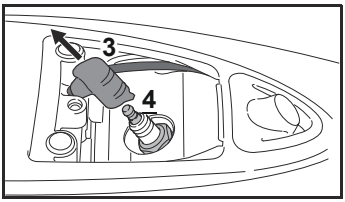
The wrong fuel mix (too much engine oil in the gasoline), a dirty air filter and unfavorable running conditions (mostly at part throttle etc.) affect the condition of the spark plug. These factors cause deposits to form on the insulator nose, which may degrade performance.

Removing the spark plug

- Switch off the engine – move stop switch to **STOP** or **0**

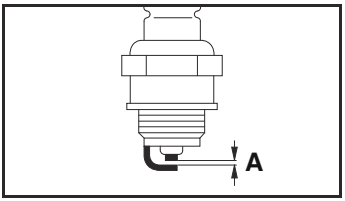


- Unscrew the screw (1) and remove cap (2) – screw (1) is secured in the cap (2) to prevent loss



- Remove the spark plug boot (3).
- Unscrew the spark plug (4).

Checking the spark plug



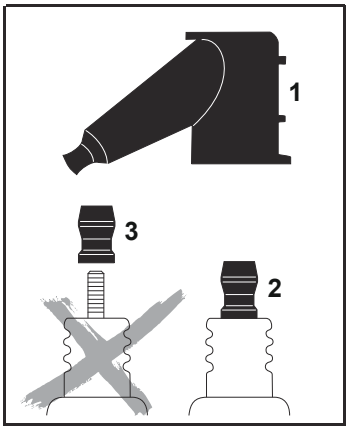
- Clean the spark plug if it is dirty
- Check the electrode gap (A) and readjust if necessary – see "Specifications"
- Use only resistor type spark plugs of the approved range. See the chapter "Specifications" in this instruction manual

Correct the problems that have caused fouling of the spark plug:

&¶ too much oil in fuel mix;

&¶ dirty air filter; or

&¶ unfavorable running conditions, e.g. operating at part throttle.



WARNING

To reduce the risk of fire and burn injury, use only spark plugs authorized by Holzfforma. Always press the spark plug
boot (1) firmly and securely onto the spark plug terminal (2).

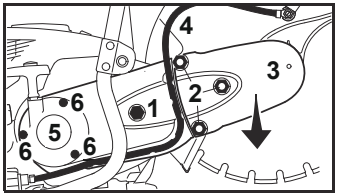
Do not use a spark plug with a detachable SAE adapter terminal (3). Arcing may occur that could ignite combustible fumes and cause a fire. This can result in serious injuries or damage to property.

- Only use resistor type spark plugs with solid, non-threaded terminals

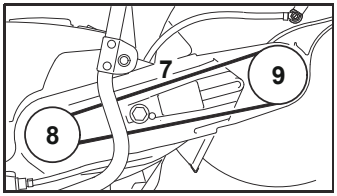
Installing the spark plug

- Check the electrode gap of the spark plug and adjust it as necessary. See specifications
- Install the spark plug by hand and screw it in
- Tighten the spark plug with an appropriately sized combination wrench
- Press the spark plug boot firmly onto the spark plug
- Position the cap for the spark plug boot and screw it down securely

Replacing the V belt



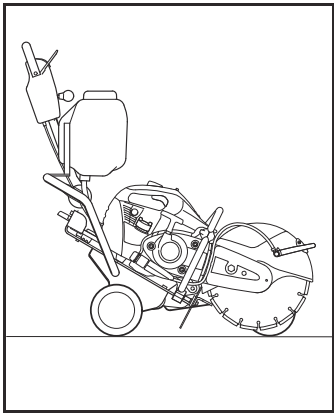
- The arrow on the tensioning nut (1) must point to **0** – to this end, turn the tensioning nut (1) with the combination wrench counterclockwise – approx. 1/4 turn, as far as possible = **0**
- Unscrew the nuts (2) from the studs
- Remove the V-belt guard (3) and remove the V-belt from the front pulley
- Remove the "support with guard".
- Remove the hose (4) from the guide of the starter cover (5)
- Remove the screws (6) from the starter cover
- Remove the starter cover
- Remove the defective V-belt from the cast arm



- Carefully fit a new poly V-belt (7) in the cast arm and insert it in the front poly V-belt pulley (8) on the engine
- Fit the starter cover
- Position the "support with guard" against the cast arm
- Fit the poly V-belt in the front poly V-belt pulley (9)
- Position belt guard
- Align the studs in the support with the nuts in the V-belt guard
- Screw the nuts onto the studs – do not tighten them yet
- Place hose in the guide of the starter cover

Continue as described in the chapter “Tensioning the V-belt”.

Cut-off Machine Cart



The cut-off machine can be mounted on the Holzfforma cut-off machine cart FW 20
(special accessory) in a few easy steps.

The cut-off machine cart makes it easier to

&¶ repair damaged roadways

&¶ apply roadway markings

&¶ cut expansion joints

Storing the Machine

If the machine is to remain out of use for 3 months or more:

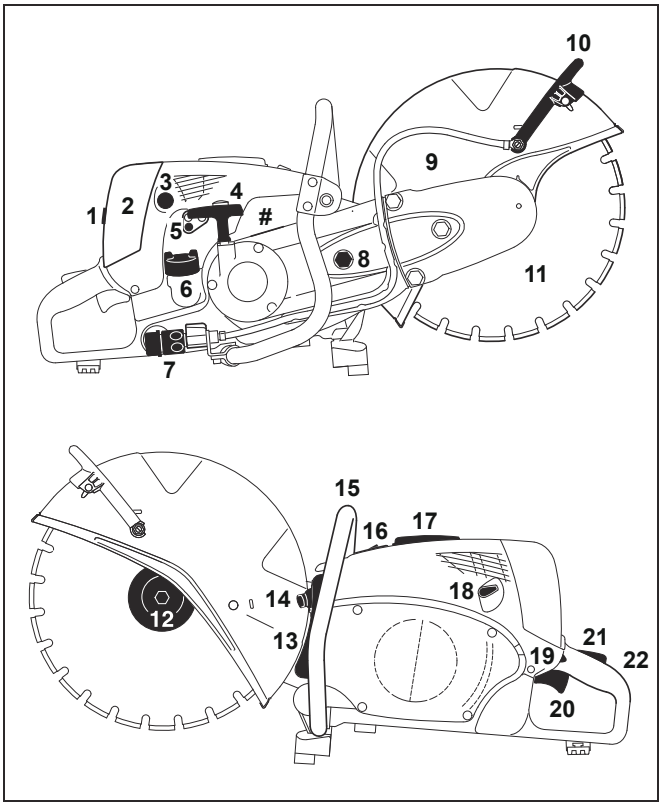
- Drain and clean the fuel tank in a well ventilated place
- Dispose of fuel in accordance with all applicable laws and regulations
- Run the engine until the carburetor is dry to help prevent the carburetor diaphragms from sticking together
- Remove the abrasive cutting wheel
- Thoroughly clean the machine
- Store the machine in a secure and dry place. Protect it against unauthorized use (e. g., by children)

The following maintenance intervals apply in normal operating conditions. The specified intervals must be shortened accordingly when working for longer than normal or under difficult cutting conditions (extensive dust, etc.).		Before starting work	At the end of work and/or daily	Whenever tank is refilled	Weekly	Monthly	Yearly	If faulty	If damaged	As required
Complete machine	Visual inspection (condition, leaks)	X		X						
	Clean		X							
Operating elements	Function tests	X		X						
Manual fuel pump (if present)	Check	X								
	Have repaired by a specialist dealer[1)]								X	
Fuel pickup body in fuel tank	Check							X		
	Replace						X		X	X
Fuel tank	Clean					X				
Poly V-belt	Clean / retension					X				X
	Replace								X	X
Air filter (all filter components)	Change	**Only if there is a noticeable loss of engine power**								
Cooling air intake slits	Clean		X							
Cylinder fins	Have them cleaned by a servicing dealer [1)]						X			
Spark arresting screen[2)] in muffler	Check		X							
	Clean or replace									X
Water attachment	Check	X						X		
	Have them maintained by a servicing dealer[1)]								X	
Carburetor	Check idle adjustment – abrasive wheel must not rotate	X		X						
	Readjust idle speed									X
Spark plug	Adjust electrode gap							X		
	Replace after 100 hours operation									
All accessible screws, nuts and bolts (not adjusting screws)	Retighten		X							X

The following maintenance intervals apply in normal operating conditions. The specified intervals must be shortened accordingly when working for longer than normal or under difficult cutting conditions (extensive dust, etc.).		Before starting work	At the end of work and/or daily	Whenever tank is refilled	Weekly	Monthly	Yearly	If faulty	If damaged	As required
Anti-vibration elements	Check	X						X		X
	Have them replaced by a servicing dealer[1)]								X	
Abrasive wheel	Check	X		X						
	Replace								X	X
Supports / bars / rubber buffers (under neath the machine)	Check		X							
	Replace								X	X
Safety information label	Replace								X	

1) Holzfforma recommends Holzfforma

2) servicing dealers present only in some countries



GC890

1 Fastener
2 Filter Cover
3 Manual Fuel Pump
4 Starter Grip
5 Carburetor Adjusting Screws
6 Fuel Filler Cap
7 Water Attachment
8 Tensioning Nut
9 Guard
10 Adjusting Lever
11 Abrasive Wheel
12 Front Thrust Washer
13 Muffler
14 Spark Arresting Screen
15 Front Handle
16 Decompression Valve
17 Cap for Spark Plug Boot
18 Choke Lever
19 Control Lever
20 Throttle Trigger
21 Throttle Trigger Lockout
22 Rear Handle
Serial Number

Definitions

1 **Fastener**
For removing filter cover to permit filter to be cleaned.

2 **Filter Cover**
Covers and protects the air filter element.

3 **Manual Fuel Pump**
Provides additional fuel feed for a cold start.

4 **Starter Grip**
The grip of the pull starter, for starting the engine.

5 **Carburetor Adjusting Screws**
For tuning the carburetor.

6 **Fuel Filler Cap**
For closing the fuel tank.

7 **Water Attachment**
For connection of water supply for wet cutting.

8 **Tensioning Nut**
For tensioning the ribbed belt.

9 **Guard**
Guards the wheel and deflects sparks, dust, cutting debris or wheel fragments.

10 **Adjusting Lever**
To adjust the wheel guard in a way that sparks, dust, cutting debris or wheel fragments are directed away from the operator.

11 **Abrasive Wheel**
Can either be a composite abrasive wheel or a diamond abrasive wheel.

12 **Front Thrust Washer**
Distributes clamping pressure of mounting nut evenly over cutting wheel.

13 **Muffler**
Reduces engine exhaust noises and diverts exhaust gases away from operator.

14 **Spark Arresting Screen**
Designed to reduce the risk of fire.

15 **Front Handle**
Handlebar for the left hand of the power tool.

16 **Decompression Valve**
Releases compression pressure to make engine starting easier - when activated.

17 **Cap for Spark Plug Boot**
The Spark Plug Boot connects the spark plug with the ignition lead.

18 **Choke Lever**
Eases engine starting by enriching mixture.

19 **Control Lever**
For starting throttle, run and stop. Keeps the throttle partially open during starting and switches off the ignition to stop the engine.

20 **Throttle Trigger**
Controls the speed of the engine.

21 **Throttle Trigger Lockout**
Must be depressed before the throttle trigger can be activated.

22 **Rear Handle**
The support handle for the right hand.

Clutch
Couples engine to the belt pulley when engine is accelerated beyond idle speed. (Not illustrated)

Belt Pulley
The wheel that drives the ribbed belt and the abrasive wheel. (Not illustrated)

Anti-Vibration System
The anti-vibration system includes a number of anti-vibration elements designed to reduce the transmission of vibrations created by the engine to the operator's hands. (not illustrated)

Specifications

CARB

The Emission Compliance Period used on the CARB-Air Index Label indicates the terms:

Extended = 300 hours

Intermediate = 125 hours

Moderate = 50 hours

Engine

GC890

Displacement:	6.0 cu. in. (98.5 cm^3)
Cylinder bore:	2.2 in. (56 mm)
Piston stroke:	1.57 in. (40 mm)
Engine power according to ISO 7293:	6.7 hp (5.0 kW) at 9300 rpm
Idle speed:	2200 rpm
Max. spindle speed:	4600 rpm

Ignition system

Electronic magneto ignition

Spark plug (suppressed):	Bosch WSR 6 F, NGK BPMR 7 A
Electrode gap:	0.02 in. (0.5 mm)

Fuel system

All-position diaphragm carburetor with integral fuel pump

Fuel tank capacity:	40.6 oz (1.2 l)

Air filter

Main filter (paper filter) and flocked wire mesh auxiliary filter

Weight

without fuel, without abrasive wheel, with water attachment

GC890:	28.0 lbs (12.7 kg)

Abrasive wheels

The quoted maximum permissible operating speed of the abrasive wheel must be greater than or equal to the maximum spindle speed of the cut-off machine used.

Abrasive wheels (GC890)

Outside diameter:	16 in. (400 mm)
Max. thickness:	0.189 in. (4.8 mm)
Bore diameter/spindle diameter:	0.787 in. (20 mm)
Tightening torque:	22 lbf ft (30 Nm)

Composite resin abrasive wheels

Minimum outside diameter of thrust washers:	4.06 in. (103 mm)
Max. depth of cut:	5.6 in. (145 mm)

Diamond abrasive wheels

Minimum outside diameter of thrust washers:	4.06 in. (103 mm)
Max. depth of cut:	5.6 in. (145 mm)

Maintenance and Repairs

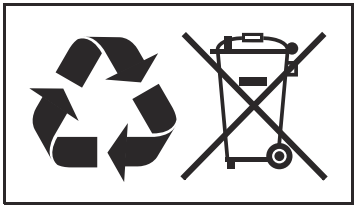
Users of this unit should carry out only the maintenance operations described in this manual. Holzfforma recommends that other repair work be performed only by authorized Holzfforma servicing dealers
using genuine Holzfforma

replacement p arts.

For repairs of any component of this unit's air emissions control system, please refer to the air emissions systems warranty in this manual.

Disposal

Observe all country-specific waste disposal rules and regulations.



Holzfformaproducts should be disposed of in approved disposal sites for recycling.

Contact your authorized Holzfforma servicing dealer for the latest information on waste disposal.

Warranty Period

The warranty period will begin on the date the utility equipment engine is purchased by the initial purchaser. Product registration is recommended, so that Holzfforma has a means to contact
you if there ever is a need to communicate repair or recall information about your product, but it is not required in order to obtain warranty service.

If any emission-related part on your engine is defective, the part will be replaced by Holzfforma Incorporated at no
cost to the owner. Any warranted part which is not scheduled for replacement as required maintenance, or which is scheduled only for regular inspection to the effect of "repair or replace as necessary" will be warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance will be warranted for the period of time up to the first scheduled replacement point for that part.

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