

4-15-2013

Edged in Stone v. Northwest Power Systems, LLC Clerk's Record v. 2 Dckt. 40463

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204

IN THE
SUPREME COURT
OF THE
STATE OF IDAHO

LAW CLERK

EDGED IN STONE, INC. an Idaho Corporation

Plaintiff-Appellant

vs.

NORTHWEST POWER SYSTEMS, LLC, an Idaho
limited liability company

Defendant-Respondent

CATERPILLAR, INC. A Delaware Corp.
PERKINS ENGINES, INC., a Maryland Corporation

Hon. Mitchell W. Brown District Judge

Appealed from the District Court of the Sixth
Judicial District of the State of Idaho, in and for
Bannock County.

Bryan N. Henrie

May, Rammell and Thompson, Chtd

Attorney For Appellant

Reed W. Larsen

Cooper and Larsen, Chartered

Attorney For Respondent

Filed this 2012 day of APR 15 2013

Clerk

Deputy

Supreme Court Court of Appeals
Released on ATE by

410463

IN THE DISTRICT COURT OF THE SIXTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF BANNOCK

EDGED IN STONE, INC., an Idaho)
corporation,)
)
)
Plaintiff-Appellant,)
)
v.)
)
NORTHWEST POWER SYSTEMS, LLC, an)
Idaho limited liability company,)
)
Defendant-Respondent,)
And)
)
CATERPILLAR, INC., A Delaware)
Corporation, PERKINS ENGINES, INC., a)
Maryland corporation and wholly owned)
subsidiary of CATERPILLAR, INC.)
)
Defendants.)
)
_____)

Supreme Court No. 40463-2012

Volume II

CLERK'S RECORD

Appeal from the District Court of the Sixth Judicial District of the State of
Idaho, in and for the County of Bannock.

Before **HONORABLE Mitchell W. Brown** District Judge.

For Appellant:

Bryan N. Henrie
MAY, RAMMELL AND THOMPSON, CHTD
P.O. Box 370
Pocatello, Idaho 83204

For Respondent:

Reed W. Larsen
COOPER AND LARSEN, Chartered
P.O. Box 4229
Pocatello, Idaho 83205-4229

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VOLUME III

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
11/30/2010	NCOC	NOELIA	Clerk's	Mitchell Brown
	COMP	NOELIA	Complaint Filed	Mitchell Brown
	SMIS	NOELIA	Summons Issued	Mitchell Brown
	FLIS	NOELIA	Family Law Information Sheet Filed	Mitchell Brown
		NOELIA	Filing: A - All initial civil case filings of any type not listed in categories B-H, or the other A listings below Paid by: Aaron N. Thompson Receipt number: 0040597 Dated: 11/30/2010 Amount: \$88.00 (Check) For:	Mitchell Brown
	ATTR	LINDA	Plaintiff: Edged in Stone, Inc Attorney Retained Aaron Neil Thompson	Mitchell Brown
1/7/2011		CAMILLE	Return of service - srvd on Caterpillar, Inc on 1-4-2011 (summons and complaint)	Mitchell Brown
1/10/2011		CAMILLE	Affidavit of Service; srvd on Perkins Engines Inc on 1-6-2011	Mitchell Brown
2/14/2011		CAMILLE	Order for submission of informaiton for scheduling order; court will set this matter for trial: s/ Judge Brown 2-18-2011	Mitchell Brown
2/15/2011		NOELIA	Filing: I1 - Initial Appearance by persons other than the plaintiff or petitioner Paid by: Kevin J. Scanlan Receipt number: 0005176 Dated: 2/15/2011 Amount: \$58.00 (Check) For: Caterpillar, Inc (defendant) and Perkins Engines, Inc. (defendant)	Mitchell Brown
		CAMILLE	Answer to complaint and Demand for Jury Trial; aty Kevin Scanlan for def	Mitchell Brown
	ATTR	CAMILLE	Defendant: Caterpillar, Inc Attorney Retained Kevin J Scanlan	Mitchell Brown
	ATTR	CAMILLE	Defendant: Perkins Engines, Inc. Attorney Retained Kevin J Scanlan	Mitchell Brown
3/4/2011		CAMILLE	Stipulation RE: Order for submission of information for scheduling order; aty Bryan Henrie	Mitchell Brown
3/17/2011		CAMILLE	Notice of service - Polaintiffs First set of Interrog and requests for Production ; aty Aaron Thompson	Mitchell Brown
3/18/2011		CAMILLE	Scheduling Order, Notice of Trial setting and initial pretrial order; s/ Judge Brown 3-18-2011	Mitchell Brown
	HRSC	CAMILLE	Hearing Scheduled (Jury Trial 01/17/2012 09:00 AM)	Mitchell Brown
	HRSC	CAMILLE	Hearing Scheduled (Jury Trial 04/17/2012 09:00 AM) Alternative trial setting	Mitchell Brown
3/24/2011		CAMILLE	Motion to disqualify potential alternate judge; aty Kevin Scanlan for def	Mitchell Brown
4/1/2011		CAMILLE	Motion to disqualify potential alternate judge; aty Bryan Nickels for def	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
4/6/2011		CAMILLE	Order granting motion to disqualify potential alternate judge: s/ Judge Brown 4-6-2011	Mitchell Brown
4/25/2011		CAMILLE	Affidavit of service - srvd on Northwest Power Systems on 4-19-2011	Mitchell Brown
		CAMILLE	Affidavit of service - srvd on Lisa Pratt on 4-20-2011	Mitchell Brown
5/16/2011		CAMILLE	Amended Notice of service - Responses to Plaintiff First set of Interrog Responses to Plaintiffs First set of Requests for Production of documentsand Responses to Plaintiffs First set of req for admissions and this notice ; aty Bryan Nickels for def	Mitchell Brown
5/23/2011		CAMILLE	Notice of service - Defendants Perkins and Caterpillars first set of interrog to plntf Defs Perkins and Caterpillars first set of requests for production of document to plntf and defs Perkins and Caterpillars first set of req for admission to plaintiff: aty Kevin Scanlan for def	Mitchell Brown
6/3/2011	AMCO	CAMILLE	Amended Complaint Filed; and demand for Jury Trial; aty Aaron Thompson	Mitchell Brown
		CAMILLE	Amended Summons issued	Mitchell Brown
6/22/2011		CAMILLE	Notice of service of plaintiffs response to defendants Perkins and Caterpillars first set of requests for admission to plaintiff: aty Bryan Henrie	Mitchell Brown
6/24/2011		CAMILLE	Affidavit of service - srvd on Caterpillar, Inc on 6-21-2011	Mitchell Brown
6/27/2011	AFFD	CAMILLE	Affidavit of service - srvd on Caterpillar, Inc on 6-21-2011	Mitchell Brown
6/30/2011		NOELIA	Filing: I1 - Initial Appearance by persons other than the plaintiff or petitioner Paid by: Reed Larsen Receipt number: 0022679 Dated: 6/30/2011 Amount: \$58.00 (Check) For: Northwest Power Systems, LLC	Mitchell Brown
	NOAP	CAMILLE	Notice Of Appearance; aty Reed Larsen	Mitchell Brown
	ATTR	CAMILLE	Defendant: Northwest Power Attorney Retained Reed W Larsen	Mitchell Brown
7/1/2011		CAMILLE	Affidavit of Bryan Henrie; aty Bryan Henrie	Mitchell Brown
7/6/2011		CAMILLE	Affidavit of service - srvd on Nancy Grueninger on 6-27-2011	Mitchell Brown
7/11/2011		CAMILLE	Motion for leave of court to filed second amended complaint and to concurrently dismiss the first amended complaint; aty BryanHenrie	Mitchell Brown
7/13/2011		CAMILLE	Notice of hearing; set for Defs Motion for leave of court to file second Amended Complaint and to councurrently dismiss the first Amended Complaintf: set for 8-5-2011 @ 2pm: aty Bryan Zollinger	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User	Judge
7/29/2011	HRSC	BRANDY	Hearing Scheduled (Motion 08/05/2011 02:00 PM)
8/5/2011	HRHD	SHAREE	Hearing result for Motion scheduled on 08/05/2011 02:00 PM: Hearing Held
	MEOR	SHAREE	Minute Entry and Order [PLAINTIFF'S Motion to Amend Complaint GRANTED Nunc Pro Tunc (6/3/2011) - Defendant's shall file Objection and/or Answer Amended Complaint on or before August 29, 2011. /s/ J Brown 8/5/2011
8/15/2011	TRAN	SHERRILL	Transcript Filed of Motn to File 2nd Amended Complaint held 8/5/11 - to all counsel
8/23/2011		CAMILLE	Defendants Objection to minute entry and order RE: Plaintiffs motion for leave of court to file second amended complaint and to concurrently dismiss the first Amended Complaint: aty Kevin Scanlan for def
		CAMILLE	Notice of hearing; set for Defs Objection on 9-16-2011 @ 11am:
8/24/2011	HRSC	CAMILLE	Hearing Scheduled (Hearing Scheduled 09/16/2011 11:00 AM)
9/12/2011		CAMILLE	Plaintiffs response to defendants objection to minute entry and order re: Plaintiffs Motion for leave of ourt to file second amended complaint and to concurrently dismiss the first Amended Complaint: aty Bryan Henrie
9/16/2011	DCHH	BRANDY	Hearing result for Hearing Scheduled scheduled on 09/16/2011 11:00 AM: District Court Hearing Held Court Reporter: none Number of Transcript Pages for this hearing estimated:
	HRVC	BRANDY	Hearing result for Jury Trial scheduled on 04/17/2012 09:00 AM: Hearing Vacated Alternative trial setting
	HRVC	BRANDY	Hearing result for Jury Trial scheduled on 01/17/2012 09:00 AM: Hearing Vacated
	HRSC	BRANDY	Hearing Scheduled (Further Proceedings 10/07/2011 09:00 AM)
9/19/2011		CAMILLE	Amended Complaint and Demand for Jury Trial; aty Aaron Thompson for plntf
		CAMILLE	Another Summons; (3) aty AaronThompson for plntf
9/22/2011		CAMILLE	Motion to dismiss and memorandum in support , or alternatively motion to strike; aty Kevin Scanlan for def

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
9/28/2011		CAMILLE	Minute Entry and Order; Court again GRANTED the plntfs motion to amend complaint ; hearing set for 10-7-2011 @ 9am: s/ Judge Brown 9-28-2011	Mitchell Brown
9/29/2011		CAMILLE	Notice of service - Plntfs Response to Defs Perkins and Caterpillars first set of Interrog to plntfss: aty Aaron Thompson	Mitchell Brown
		CAMILLE	Notice of service - Plntfs Response to defendants Perkins and Caterpillar first set of requests for production of documents to plntf: aty Aaron Thompson	Mitchell Brown
9/30/2011		CAMILLE	Notice of hearing; set for 11-4-2011 @ 10am: aty Kevin Seanlan for defs	Mitchell Brown
10/5/2011		CAMILLE	Response to Defendants motion to dismiss/ strike; aty Aaron Thompson	Mitchell Brown
		CAMILLE	Defns Northwest Power systems LLC's Motion to join in motion to dismiss; aty Reed Larsen	Mitchell Brown
10/6/2011	HRSC	CAMILLE	Hearing Scheduled (Motion 11/04/2011 10:00 AM)	Mitchell Brown
		CAMILLE	Joint Request for Trial setting; aty Kevin Scanlan for def	Mitchell Brown
10/7/2011	INHD	BRANDY	Hearing result for Further Proceedings scheduled on 10/07/2011 09:00 AM: Interim Hearing Held	Mitchell Brown
10/11/2011		CAMILLE	Minute Entry and Order and Order for Jury Trial and Scheduling Order; s/ Judge Brown 10-9-2011	Mitchell Brown
	HRSC	BRANDY	Hearing Scheduled (Jury Trial 10/09/2012 09:00 AM)	Mitchell Brown
11/1/2011		BRANDY	Reply in support of motion to dismiss and memorandum in support or alternatively motion to strike; Kevin Scanlan aty	Mitchell Brown
11/4/2011	DCHH	BRANDY	Hearing result for Motion scheduled on 11/04/2011 10:00 AM: District Court Hearing Held Court Reporter: none Number of Transcript Pages for this hearing estimated:	Mitchell Brown
11/8/2011		CAMILLE	Minute Entry and Order; Court GRANTED defns Caterpillar and perkins motion to dismiss plaintiffs claim : s/ Judge Brown 11-8-2011	Mitchell Brown
		CAMILLE	Judgment of Dismissal; (Counts II, III, and IV are dismissed with prej as against any and all claims against def Northwest Power systems LLC: s/ Judge Brown 11-7-2011	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
11/9/2011		CAMILLE	Judgment of dismissal; (plntfs first Breach of contract claim (Amended complaint 57-60) and Breach fo implied covenant of good faith dealing claim (Amended Complaint 61-65 as against defs Caterpillar inc. and Perkins Engines Inc. are hereby dismissed with prej: s/ Judge Brown 11-9-2011	Mitchell Brown
11/17/2011		CAMILLE	Affidavit of Steven D Di Saia in support of defendants Caterpillar, Inc. and Perkins Engines, Inc's Motion for limited admission of non resident attorney to practice Pro Hac Vice: aty Steven D. Di Saia for defs	Mitchell Brown
		CAMILLE	Defendants Caterpillar, Inc and Perkins engines, inc's motion for limited admission of non resident attorney Steven Di Saia to Practive Pro Hac Vice; aty Steven Di Saia for Defs	Mitchell Brown
		CAMILLE	Defendants Caterpillar, Inc and Perkins engines, Inc's Motion for limited admission of non resident attorney Daniel W Bir to practive pro hac vice: aty Steven Di Saia for defs	Mitchell Brown
		CAMILLE	Affidavit of DANiel W Bir in support of defs caterpillar, Inc and Perkins engines, Inc's motion for limited admission of non resident attorney to practive pro hac vice:	Mitchell Brown
11/18/2011		KROMRIEL	Miscellaneous Payment: For Making Copy Of Any File Or Record By The Clerk, Per Page Paid by: Teton Delivery Receipt number: 0040288 Dated: 11/18/2011 Amount: \$20.00 (Cash)	Mitchell Brown
		CAMILLE	Order authorizing limited admission of non resident attorney Daniel W Bir to practice pr hac vice: s/ Judge Brown 11-18-2011	Mitchell Brown
		CAMILLE	Order authorizing limited admission of non resident attorney Steven Di Saia to practice pro hac vice: s/ Judge Brown 11-18-2011	Mitchell Brown
11/21/2011		CAMILLE	Answer to amended complaint and demand for jury trial; aty Kevin Scanlan for Def. Caterpillar, Inc and Perkins Engines, Inc	Mitchell Brown
11/30/2011		CAMILLE	Notice of service - Defendants Perkins and Caterpillars second set of interrog and requests for productio nof documents to plntf: aty Kevin Scanlan for def	Mitchell Brown
12/29/2011		CAMILLE	Defendants Caterpillar, Inc and Perkins engines, inc's motion to compel and Memorandum in support; aty Kevin Scanlan for def	Mitchell Brown
		CAMILLE	Affidavit of counsel in support of defs Caterpillar, inc. and Perkins engines, inc motion to compel: aty Kevin Scanlan for defs	Mitchell Brown
1/18/2012		CAMILLE	Notice of substitution of counsel; aty Kevin Scanlan for Def.	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User	Judge	
1/25/2012		CAMILLE	notice of service - Plntfs response to defs Perkins and Caterpillars second set of Interrog and requests for production of documents and this notice: aty Aaron Thompson	Mitchell Brown
		CAMILLE	notice of service - Plntfs First supplemental response to defendants Perkins and Caterpillars First set of requests for production of documents to plaintiff: aty Aaron Thompson	Mitchell Brown
		CAMILLE	notice of service - Plntfs first supplemental response to defs Perkins and Caterpillars first set of Interrog to plntf: aty Aaron Thompson	Mitchell Brown
2/6/2012		CAMILLE	Notice of Deposito of Preston George on 2-15-2012 @ 10am: aty Kevin Scanlan for def	Mitchell Brown
		CAMILLE	Notice of Deposition of Danelle George on 25-16-2012 @ 10am:	Mitchell Brown
2/10/2012		CAMILLE	Notice of service - First Supplemental Responses Plaintiffs first set of requests for production of documents: aty Kevin Scanlan	Mitchell Brown
3/6/2012		CAMILLE	Notice of deposition of Scott Webb on 4-5-2012 @ 9:30am: aty Reed Larsen	Mitchell Brown
3/30/2012		CAMILLE	Return of service - srvd on Scott Webb on 3-12-2012: (Subpoena)	Mitchell Brown
4/10/2012		CAMILLE	Notice of service - Plaintiffs Supplemental Discovery Responses: and this Notice: aty Aaron Thompson	Mitchell Brown
5/7/2012		CAMILLE	Stipulation for dismissal withpre of caterpillarr Inc.; aty Bryan Nickels for def	Mitchell Brown
		CAMILLE	Order of dismissal with prej; for Caterpillar Inc: s/ Judge Brown 5-7-2012	Mitchell Brown
5/10/2012		CAMILLE	Notice of Depositon of Mark Adams: aty Aaron Thompson	Mitchell Brown
5/14/2012		CAMILLE	Notice of service - Plntfs second set of Interrog and requests for production to def Perkins Engines, Inc: aty Aaron Thompson	Mitchell Brown
5/16/2012		CAMILLE	Notice of rule 30b6 deposition of Edged in Stone, Inc: 5-24-2012: aty Kevin Scanlan for def	Mitchell Brown
		CAMILLE	Notice of rule 30b 6 deposition of Changing Seasons, Inc: aty Kevin Scanlan for def	Mitchell Brown
		CAMILLE	Notice of Deposition of Danielle George on 5-24-2012 @ 2pm: aty Kevin Scanlan for def	Mitchell Brown
		CAMILLE	Notice of Deposition of Preston George on 5-24-2012 @ 10am: aty Kevin Scanlan for def	Mitchell Brown
3/11/2012		CAMILLE	Plaintiffs expert witness disclosures; aty Bryan Henrie	Mitchell Brown
7/5/2012		CAMILLE	Affidavit of Reed Larsen in support of Defendant Northwest Power Systems, LLC's Motin for Summary Judgment; aty Reed Larsen	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
7/5/2012		CAMILLE	Defendant Northwest Power systems, LLC's Motion for Summary Judgment; aty Reed larsen	Mitchell Brown
		CAMILLE	Memorandum in support of Defendant Northwest Power Systems, LLC's Motion for Summary Judgment; aty Reed Larsen	Mitchell Brown
		CAMILLE	Notice of hearing; set for 8-3-2012 @ 9:30 am: aty Reed Larsen	Mitchell Brown
	HRSC	CAMILLE	Hearing Scheduled (Motion for Summary Judgment 08/03/2012 09:30 AM)	Mitchell Brown
7/18/2012		CAMILLE	Stipulation for dismissal with prej of Perkins Engines, Inc: aty Kevin Scanlan for def Perkins	Mitchell Brown
7/20/2012		CAMILLE	Order re: Stipulation for dismissal with prej of Perkins Engines, Inc: s/ Judge Brown 7-20-2012	Mitchell Brown
		CAMILLE	Response to defendant Northwest Power Systems, LLC's Motion for summary judgment; aty aty Bryan Henrie	Mitchell Brown
		CAMILLE	Answering Brief in opposition to defendant Northwest Power systems, LLC's Motion for summary Judgment: ayt Bryan Henrie	Mitchell Brown
7/26/2012		CAMILLE	Defendant Northwest Power systems, LLC's fact and expert witness disclosures; aty Reed Larsen	Mitchell Brown
		CAMILLE	Reply Memorandum in support of defendant Northwest Power systems, LLC's motion for summary judgment; aty Reed Larsen	Mitchell Brown
8/3/2012	HRHD	BRANDY	Hearing result for Motion for Summary Judgment scheduled on 08/03/2012 09:30 AM: Hearing Held	Mitchell Brown
8/6/2012		CAMILLE	Objection to Order RE: Stipulation for dismissal with prej of Perkins Engines, Inc and Motion to set aside order; aty Reed Larsen	Mitchell Brown
8/10/2012		CAMILLE	Notice of hearing; set for Motion to set aside Order, 8-17-2012 @ 10 am	Mitchell Brown
8/13/2012		CAMILLE	Minute Entry and Order; Court will GRANT summary judgment in favor of Northwest Power Systems and will Dismiss Edged in Stoness claims for breach of warranty and negligence against Northwest Poser Systems; s/ Judge Brown 8-10-2012	Mitchell Brown
3/14/2012	HRSC	CAMILLE	Hearing Scheduled (Motion 08/17/2012 10:00 AM)	Mitchell Brown
3/16/2012		CAMILLE	Motion in limine; aty Reed Larsen	Mitchell Brown
		CAMILLE	Notice vacating hearing; set for for 8-17-2012 @ 10am:	Mitchell Brown
3/17/2012		CAMILLE	Notice vacating hearing; aty Reed Larsen	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
8/17/2012		CAMILLE	Notice of hearing; set for Def Northwest Power Systems, LLC Motion in Limine on 9-7-2012 @ 9:30 am: aty Reed Larsen	Mitchell Brown
8/20/2012		CAMILLE	Amended Stipulation for dismissal with prej. of Perkins Engines, Inc: all attys s/	Mitchell Brown
8/21/2012		CAMILLE	Order RE: Amended Stipulation for dismissal with prej of Perkins Engines, Inc: s/ Judge Brown 8-20-2012	Mitchell Brown
8/31/2012	HRSC	CAMILLE	Hearing Scheduled (Motion 09/07/2012 09:30 AM)	Mitchell Brown
9/6/2012		CAMILLE	Order on Northwest Power wystems, LLC Motion for Summary Judgment; Court hereby announces that it is GRANTING NWPS Motion for Summary Judgment: s/ Judge Brown 9-6-2012	Mitchell Brown
		CAMILLE	Notice vacating hearing; set for 9-7-2012	Mitchell Brown
9/7/2012		CAMILLE	Notice vacating Hearing; (Motion for Summary Judgment on 9-7-2012 @ 9:30 am) aty Reed Larsen	Mitchell Brown
9/14/2012		CAMILLE	Memorandum Decision and Order on Northwest Power systems, LLC's Motion for summary Judgment; s/ Judge Brown 9-14-2012	Mitchell Brown
9/21/2012		CAMILLE	Affidavit of Reed Larsen in support of Defendant Northwest Power Systems LLC's Memorandum of costs and attorney fees: aty Reed Larsen	Mitchell Brown
		CAMILLE	Defendant Northwest Power systems, LLC's Memorandum of costs and attorney fees: aty Reed Larsen	Mitchell Brown
9/24/2012		CAMILLE	Judgment dismissal; plntfs claims against def Northwest Power Systems, LLC are dismissed : s/ Judge Brown 9-21-2012	Mitchell Brown
	DSBT	CAMILLE	Dismissed Before Trial Or Hearing	Mitchell Brown
	CSTS	CAMILLE	Case Status Changed: Closed	Mitchell Brown
10/16/2012		CAMILLE	Request for entry of judgment; aty Reed Larsen	Mitchell Brown
10/19/2012		CAMILLE	Judgment; Judgem against the plaintiff for \$16,685.63: s/ Judge Brown 10-19-2012	Mitchell Brown
10/25/2012		DCANO	Miscellaneous Payment: For Making Copy Of Any File Or Record By The Clerk, Per Page Paid by: Cooper & Larsen Receipt number: 0037608 Dated: 10/25/2012 Amount: \$1.00 (Check)	Mitchell Brown
10/26/2012		DCANO	Filing: L4 - Appeal, Civil appeal or cross-appeal to Supreme Court Paid by: May, Rammell & Thompson Receipt number: 0038278 Dated: 11/1/2012 Amount: \$109.00 (Check) For: Edged in Stone, Inc (plaintiff)	Mitchell Brown
	APSC	DCANO	Appealed To The Supreme Court	Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User	Judge
10/26/2012		DCANO	NOTICE OF APPEAL; Bryan N. Henrie, Attorney for Edged In Stone, Inc.
		DCANO	Received check # 10332 for \$100.00 for deposit of Clerk's Record on 10-26-12.
11/1/2012		DCANO	CLERK'S CERTIFICATE OF APPEAL: Signed and Mailed to SC and Counsel on 11-1-12.
12/4/2012		DCANO	IDAHO SUPREME COURT; Notice of Appeal received in SC on 11-5-12. Docket Number 40463-2012. The Clerk's Record and Reporter's Transcript due on or before 1-17-13. (12-13-12 5 weeks prior) The following transcripts shall be lodged: Motion for Summary Judgment 8-3-12.
12/11/2012		DCANO	NOTICE OF LODGING: By Rodney M. Felshaw on 12-11-12.
		DCANO	REPORTER'S TRANSCRIPTS received in Court Records on 12-11-12. Summary Judgment hearing beofre the court on August 13-2012.
12/31/2012	MISC	DCANO	IDAHO SUPREME COURT; received Clerk's Cert. on 12-10-12. Please carefully examine the Title and the Cert. and advis the Dist. Court Clerk of any correct. The Title in the Cert. must appear on all documents.
1/24/2013	MISC	DCANO	CLERK'S RECORD received in Court Records on 1-24-13.
	MISC	DCANO	SENT LETTER TO COUNSEL FOR COST OF CLERK'S RECORD ON 1-24-13.
2/5/2013	MISC	DCANO	IDAHO SUPREME COURT: Received copy of letter for balance of Clerk's Record.
2/26/2013	MISC	DCANO	IDAHO SUPREME COURT; Order Conditionally Dismissing Appeal. The Appellant having failed to pay the necessary fee for prepration of the Clerk's Record on Appeal hereby this appeal will be conditionally dismissed. Counsel has 21 days from 2-19-13 to pay the fee.
3/12/2013	MISC	DCANO	Received check from May Rammell and Thompson for \$764.80 balance of Clerk's Record.
	MISC	DCANO	CLERK'S RECORD AND REPORTER'S TRANSCRIPTS MAILED TO COUNSEL: Bryan N. Henrie and Reed W. Larson on 3-12-13. Due in Supreme Court on 4-9-13. (Faxed and Mailed Notice to Klondy on 3-12-13)
3/15/2013		DCANO	Defendant/Respondent Northwest Power Systems LLC'S Objection to Clerk's Record: Reed W. Larsen; Attorney for Northwest Power Systems.

Date: 4/2/2013

User: DCANO

Time: 12:42 PM

ROA Report

Page 10 of 10

Case: CV-2010-0004923-OC Current Judge: Mitchell Brown

Edged in Stone, Inc vs. Caterpillar, Inc, etal.

Edged in Stone, Inc vs. Caterpillar, Inc, Perkins Engines, Inc., Northwest Power

Date	Code	User		Judge
4/2/2013	MISC	DCANO	Karel/Supreme Court called and approved additional documents for the Defendant/Respdent Northwest Power Systems LLC'S Objection to Clerk's Record on 4-2-13. (New Table of Contents, Index, ROA was sent to Counsel on 4-2-13 and Clerk's Record for Supreme Court updated on 4-2-13)	Mitchell Brown

Operation and Maintenance Manual

400C Series



Models HB, HD, HH, HL, HN,
HP and HR
SEBU 7992-01



Operation and Maintenance Manual

400 Industrial Engine

HB (Engine)
HD (Engine)
HH (Engine)
HL (Engine)
HN (Engine)
HP (Engine)
HR (Engine)

Important Safety Information

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

The hazards are identified by the "Safety Alert Symbol" and followed by a "Signal Word" such as "DANGER", "WARNING" or "CAUTION". The Safety Alert "WARNING" label is shown below.



The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

Operations that may cause product damage are identified by "NOTICE" labels on the product and in this publication.

Perkins cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by Perkins is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job. Perkins dealers have the most current information available.



When replacement parts are required for this product Perkins recommends using Perkins replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material.

Failure to heed this warning can lead to premature failures, product damage, personal injury or death.

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Foreword

Literature Information

This manual contains safety, operation instructions, lubrication and maintenance information. This manual should be stored in or near the engine area in a literature holder or literature storage area. Read, study and keep it with the literature and engine information.

English is the primary language for all Perkins publications. The English used facilitates translation and consistency.

Some photographs or illustrations in this manual show details or attachments that may be different from your engine. Guards and covers may have been removed for illustrative purposes. Continuing improvement and advancement of product design may have caused changes to your engine which are not included in this manual. Whenever a question arises regarding your engine, or this manual, please consult with your Perkins dealer or your Perkins distributor for the latest available information.

Safety

This safety section lists basic safety precautions. In addition, this section identifies hazardous, warning situations. Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance and repair on this product.

Operation

Operating techniques outlined in this manual are basic. They assist with developing the skills and techniques required to operate the engine more efficiently and economically. Skill and techniques develop as the operator gains knowledge of the engine and its capabilities.

The operation section is a reference for operators. Photographs and illustrations guide the operator through procedures of inspecting, starting, operating and stopping the engine. This section also includes a discussion of electronic diagnostic information.

Maintenance

The maintenance section is a guide to engine care. The illustrated, step-by-step instructions are grouped by service hours and/or calendar time maintenance intervals. Items in the maintenance schedule are referenced to detailed instructions that follow.

Recommended service should be performed at the appropriate intervals as indicated in the Maintenance Interval Schedule. The actual operating environment of the engine also governs the Maintenance Interval Schedule. Therefore, under extremely severe, dusty, wet or freezing cold operating conditions, more frequent lubrication and maintenance than is specified in the Maintenance Interval Schedule may be necessary.

The maintenance schedule items are organized for a preventive maintenance management program. If the preventive maintenance program is followed, a periodic tune-up is not required. The implementation of a preventive maintenance management program should minimize operating costs through cost avoidances resulting from reductions in unscheduled downtime and failures.

Maintenance Intervals

Perform maintenance on items at multiples of the original requirement. We recommend that the maintenance schedules be reproduced and displayed near the engine as a convenient reminder. We also recommend that a maintenance record be maintained as part of the engine's permanent record.

Your authorized Perkins dealer or your Perkins distributor can assist you in adjusting your maintenance schedule to meet the needs of your operating environment.

Overhaul

Major engine overhaul details are not covered in the Operation and Maintenance Manual except for the interval and the maintenance items in that interval. Major repairs should only be carried out by Perkins authorized personnel. Your Perkins dealer or your Perkins distributor offers a variety of options regarding overhaul programs. If you experience a major engine failure, there are also numerous after failure overhaul options available. Consult with your Perkins dealer or your Perkins distributor for information regarding these options.

California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

Safety Section

i02203039

General Hazard Information



Illustration 1

g00104545

Attach a "Do Not Operate" warning tag or a similar warning tag to the start switch or to the controls before you service the equipment or before you repair the equipment.



Illustration 2

g00702020

Wear a hard hat, protective glasses, and other protective equipment, as required.

Do not wear loose clothing or jewelry that can snag on controls or on other parts of the engine.

Make sure that all protective guards and all covers are secured in place on the engine.

Keep the engine free from foreign material. Remove debris, oil, tools, and other items from the deck, from walkways, and from steps.

Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.

Obey all local regulations for the disposal of liquids.

Use all cleaning solutions with care. Report all necessary repairs.

Do not allow unauthorized personnel on the equipment.

Note: Ensure that the power supply is disconnected before you work on the bus bar or the glow plugs.

Unless you are instructed otherwise, perform maintenance on the engine with the equipment in the servicing position. Refer to the OEM information for the procedure for placing the equipment in the servicing position.

Pressure Air and Water

Pressurized air and/or water can cause debris and/or hot water to be blown out. This could result in personal injury.

When pressurized air and/or water is used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi). The maximum water pressure for cleaning purposes must be below 275 kPa (40 psi).

Fluid Penetration

Pressure can be trapped in the hydraulic circuit long after the engine has been stopped. The pressure can cause hydraulic fluid or items such as pipe plugs to escape rapidly if the pressure is not relieved correctly.

Do not remove any hydraulic components or parts until pressure has been relieved or personal injury may occur. Do not disassemble any hydraulic components or parts until pressure has been relieved or personal injury may occur. Refer to the OEM information for any procedures that are required to relieve the hydraulic pressure.



Illustration 3

g00687600

Always use a board or cardboard when you check for a leak. Leaking fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Containing Fluid Spillage

Care must be taken in order to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the engine. Make provision to collect the fluid with a suitable container before any compartment is opened or before any component is disassembled.

- Only use the tools that are suitable for collecting fluids and equipment that is suitable for collecting fluids.
- Only use the tools that are suitable for containing fluids and equipment that is suitable for containing fluids.

Obey all local regulations for the disposal of liquids.

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Burn Prevention

Do not touch any part of an operating engine. Allow the engine to cool before any maintenance is performed on the engine. Relieve all pressure in the air system, in the hydraulic system, in the lubrication system, in the fuel system, or in the cooling system before any lines, fittings or related items are disconnected.

Coolant

When the engine is at operating temperature, the engine coolant is hot. The coolant is also under pressure. The radiator and all lines to the heaters or to the engine contain hot coolant.

Any contact with hot coolant or with steam can cause severe burns. Allow cooling system components to cool before the cooling system is drained.

Check the coolant level after the engine has stopped and the engine has been allowed to cool.

Ensure that the filler cap is cool before removing the filler cap. The filler cap must be cool enough to touch with a bare hand. Remove the filler cap slowly in order to relieve pressure.

Cooling system conditioner contains alkali. Alkali can cause personal injury. Do not allow alkali to contact the skin, the eyes, or the mouth.

Oils

Hot oil and hot lubricating components can cause personal injury. Do not allow hot oil to contact the skin. Also, do not allow hot components to contact the skin.

Batteries

Electrolyte is an acid. Electrolyte can cause personal injury. Do not allow electrolyte to contact the skin or the eyes. Always wear protective glasses for servicing batteries. Wash hands after touching the batteries and connectors. Use of gloves is recommended.

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Fire Prevention and Explosion Prevention



All fuels, most lubricants, and some coolant mixtures are flammable.

Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire. Fire may cause personal injury and property damage.

A flash fire may result if the covers for the engine crankcase are removed within fifteen minutes after an emergency shutdown.

Determine whether the engine will be operated in an environment that allows combustible gases to be drawn into the air inlet system. These gases could cause the engine to overspeed. Personal injury, property damage, or engine damage could result.

If the application involves the presence of combustible gases, consult your Perkins dealer and/or your Perkins distributor for additional information about suitable protection devices.

Remove all flammable combustible materials or conductive materials such as fuel, oil, and debris from the engine. Do not allow any flammable combustible materials or conductive materials to accumulate on the engine.

Store fuels and lubricants in correctly marked containers away from unauthorized persons. Store oily rags and any flammable materials in protective containers. Do not smoke in areas that are used for storing flammable materials.

Do not expose the engine to any flame.

Exhaust shields (if equipped) protect hot exhaust components from oil or fuel spray in case of a line, a tube, or a seal failure. Exhaust shields must be installed correctly.

Do not weld on lines or tanks that contain flammable fluids. Do not flame cut lines or tanks that contain flammable fluid. Clean any such lines or tanks thoroughly with a nonflammable solvent prior to welding or flame cutting.

Wiring must be kept in good condition. All electrical wires must be correctly routed and securely attached. Check all electrical wires daily. Repair any wires that are loose or frayed before you operate the engine. Clean all electrical connections and tighten all electrical connections.

Eliminate all wiring that is unattached or unnecessary. Do not use any wires or cables that are smaller than the recommended gauge. Do not bypass any fuses and/or circuit breakers.

Arcing or sparking could cause a fire. Secure connections, recommended wiring, and correctly maintained battery cables will help to prevent arcing or sparking.

Inspect all lines and hoses for wear or for deterioration. The hoses must be correctly routed. The lines and hoses must have adequate support and secure clamps. Tighten all connections to the recommended torque. Leaks can cause fires.

Oil filters and fuel filters must be correctly installed. The filter housings must be tightened to the correct torque.



Illustration 5

g00704059

Use caution when you are refueling an engine. Do not smoke while you are refueling an engine. Do not refuel an engine near open flames or sparks. Always stop the engine before refueling.



Illustration 6

g00704135

Gases from a battery can explode. Keep any open flames or sparks away from the top of a battery. Do not smoke in battery charging areas.

Never check the battery charge by placing a metal object across the terminal posts. Use a voltmeter or a hydrometer.

Incorrect jumper cable connections can cause an explosion that can result in injury. Refer to the Operation Section of this manual for specific instructions.

Do not charge a frozen battery. This may cause an explosion.

The batteries must be kept clean. The covers (if equipped) must be kept on the cells. Use the recommended cables, connections, and battery box covers when the engine is operated.

Fire Extinguisher

Make sure that a fire extinguisher is available. Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instruction plate.

Lines, Tubes and Hoses

Do not bend high pressure lines. Do not strike high pressure lines. Do not install any lines that are bent or damaged.

Repair any lines that are loose or damaged. Leaks can cause fires. Consult your Perkins dealer or your Perkins distributor for repair or for replacement parts.

Check lines, tubes and hoses carefully. Do not use your bare hand to check for leaks. Use a board or cardboard to check for leaks. Tighten all connections to the recommended torque.

Replace the parts if any of the following conditions are present:

- End fittings are damaged or leaking.
- Outer coverings are chafed or cut.
- Wires are exposed.
- Outer coverings are ballooning.
- Flexible part of the hoses are kinked.
- Outer covers have embedded armoring.
- End fittings are displaced.

Make sure that all clamps, guards, and heat shields are installed correctly. During engine operation, this will help to prevent vibration, rubbing against other parts, and excessive heat.

i02143194

Crushing Prevention and Cutting Prevention

Support the component correctly when work beneath the component is performed.

Unless other maintenance instructions are provided, never attempt adjustments while the engine is running.

Stay clear of all rotating parts and of all moving parts. Leave the guards in place until maintenance is performed. After the maintenance is performed, reinstall the guards.

Keep objects away from moving fan blades. The fan blades will throw objects or cut objects.

When objects are struck, wear protective glasses in order to avoid injury to the eyes.

Chips or other debris may fly off objects when objects are struck. Before objects are struck, ensure that no one will be injured by flying debris.

i02157341

Before Starting Engine

NOTICE

For initial start-up of a new or rebuilt engine, and for start-up of an engine that has been serviced, make provision to shut the engine off should an overspeed occur. This may be accomplished by shutting off the air and/or fuel supply to the engine.

Overspeed shutdown should occur automatically. If automatic shutdown does not occur, press the emergency stop button in order to cut the fuel and/or air to the engine.

Inspect the engine for potential hazards.

Before starting the engine, ensure that no one is on, underneath, or close to the engine. Ensure that the area is free of personnel.

If equipped, ensure that the lighting system for the engine is suitable for the conditions. Ensure that all lights work correctly, if equipped.

All protective guards and all protective covers must be installed if the engine must be started in order to perform service procedures. To help prevent an accident that is caused by parts in rotation, work around the parts carefully.

Do not bypass the automatic shutoff circuits. Do not disable the automatic shutoff circuits. The circuits are provided in order to help prevent personal injury. The circuits are also provided in order to help prevent engine damage.

See the Service Manual for repairs and for adjustments.

i02157354

Engine Starting

WARNING

Do not use aerosol types of starting aids such as ether. Such use could result in an explosion and personal injury.

If a warning tag is attached to the engine start switch or to the controls, DO NOT start the engine or move the controls. Consult with the person that attached the warning tag before the engine is started.

All protective guards and all protective covers must be installed if the engine must be started in order to perform service procedures. To help prevent an accident that is caused by parts in rotation, work around the parts carefully.

Start the engine from the operator's compartment or from the engine start switch.

Always start the engine according to the procedure that is described in the Operation and Maintenance Manual, "Engine Starting" topic in the Operation Section. Knowing the correct procedure will help to prevent major damage to the engine components. Knowing the procedure will also help to prevent personal injury.

To ensure that the jacket water heater (if equipped) and/or the lube oil heater (if equipped) is working correctly, check the water temperature gauge and the oil temperature gauge during the heater operation.

Engine exhaust contains products of combustion which can be harmful to your health. Always start the engine and operate the engine in a well ventilated area. If the engine is started in an enclosed area, vent the engine exhaust to the outside.

Note: The engine is equipped with an automatic device for cold starting for normal conditions of operation. If the engine will be operated in very cold conditions, then an extra cold starting aid may be required. Normally, the engine will be equipped with the correct type of starting aid for your region of operation.

The 400 Series engines are equipped with a glow plug starting aid in each individual cylinder that heats the intake air in order to improve starting.

i02157368

Engine Stopping

To avoid overheating of the engine and accelerated wear of the engine components, stop the engine according to this Operation and Maintenance Manual, "Engine Stopping" topic (Operation Section).

Use the Emergency Stop Button (if equipped) ONLY in an emergency situation. DO NOT use the Emergency Stop Button for normal engine stopping. After an emergency stop, DO NOT start the engine until the problem that caused the emergency stop has been corrected.

On the initial start-up of a new engine or an engine that has been serviced, make provisions to stop the engine if an overspeed condition occurs. This may be accomplished by shutting off the fuel supply and/or the air supply to the engine.

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Electrical System

Never disconnect any charging unit circuit or battery circuit cable from the battery when the charging unit is operating. A spark can cause the combustible gases that are produced by some batteries to ignite.

To help prevent sparks from igniting combustible gases that are produced by some batteries, the negative “-” jump start cable should be connected last from the external power source to the negative “-” terminal of the starting motor. If the starting motor is not equipped with a negative “-” terminal, connect the jump start cable to the engine block.

Check the electrical wires daily for wires that are loose or frayed. Tighten all loose electrical wires before the engine is started. Repair all frayed electrical wires before the engine is started. See the Operation and Maintenance Manual for specific starting instructions.

Grounding Practices

Correct grounding for the engine electrical system is necessary for optimum engine performance and reliability. Incorrect grounding will result in uncontrolled electrical circuit paths and in unreliable electrical circuit paths.

Uncontrolled electrical circuit paths can result in damage to main bearings, to crankshaft bearing journal surfaces, and to aluminum components.

Engines that are installed without engine-to-frame ground straps can be damaged by electrical discharge.

To ensure that the engine and the engine electrical systems function correctly, an engine-to-frame ground strap with a direct path to the battery must be used. This path may be provided by way of a direct engine ground to the frame.

All grounds should be tight and free of corrosion. The engine alternator must be grounded to the negative “-” battery terminal with a wire that is adequate to handle the full charging current of the alternator.

Product Information Section

Model Views

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Model View Illustrations

The following model views show typical features of the 400 series engines. Due to individual applications, your engine may appear different from the illustrations.

Note: Individual components are detailed on the 404C-22T turbocharged engine only.

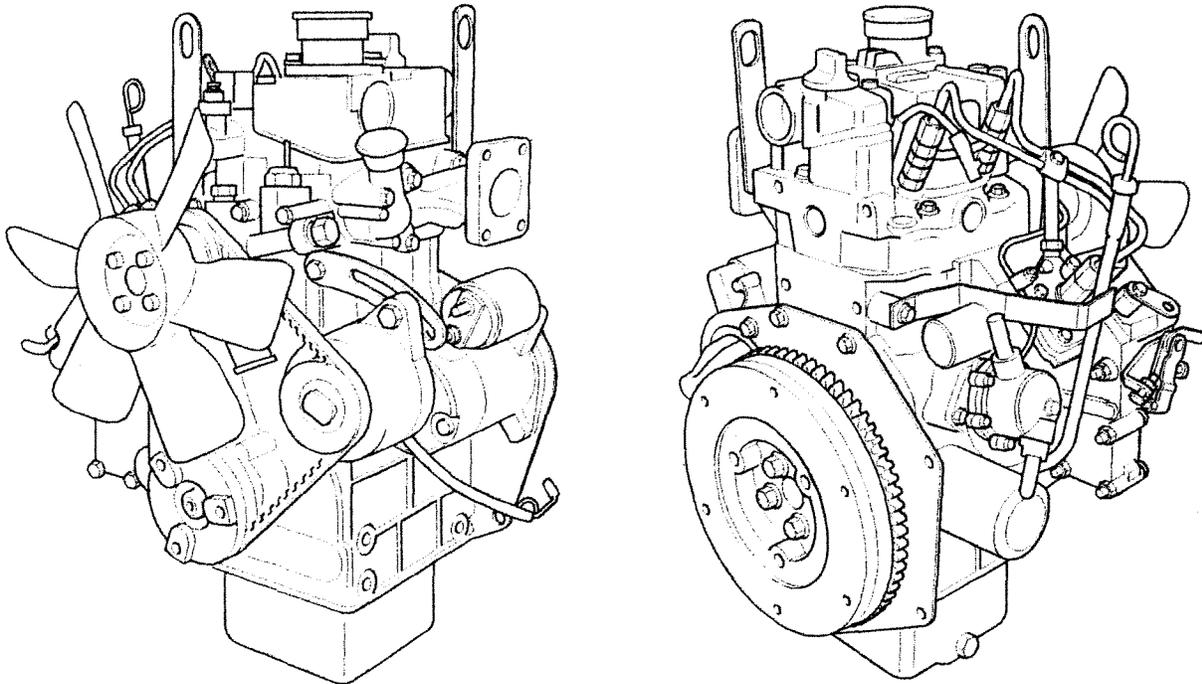


Illustration 7

Typical view of the 402C-05 engine

g01109207

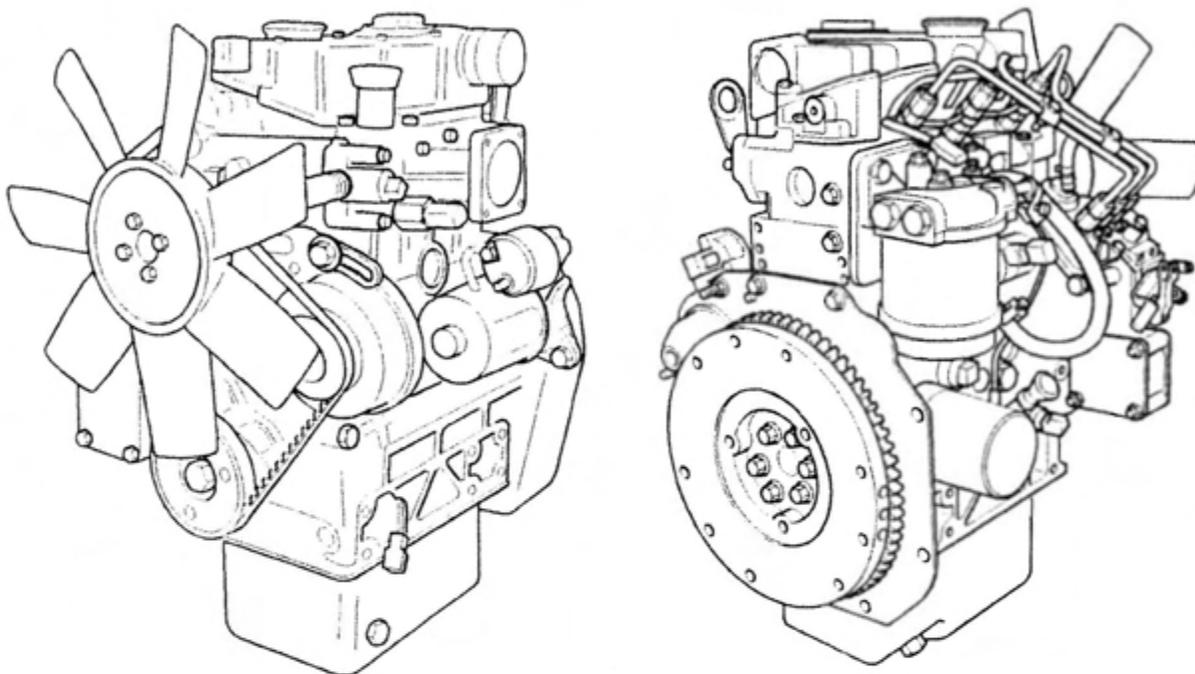


Illustration 8
Typical view of the 403C-11 engine

g01109212

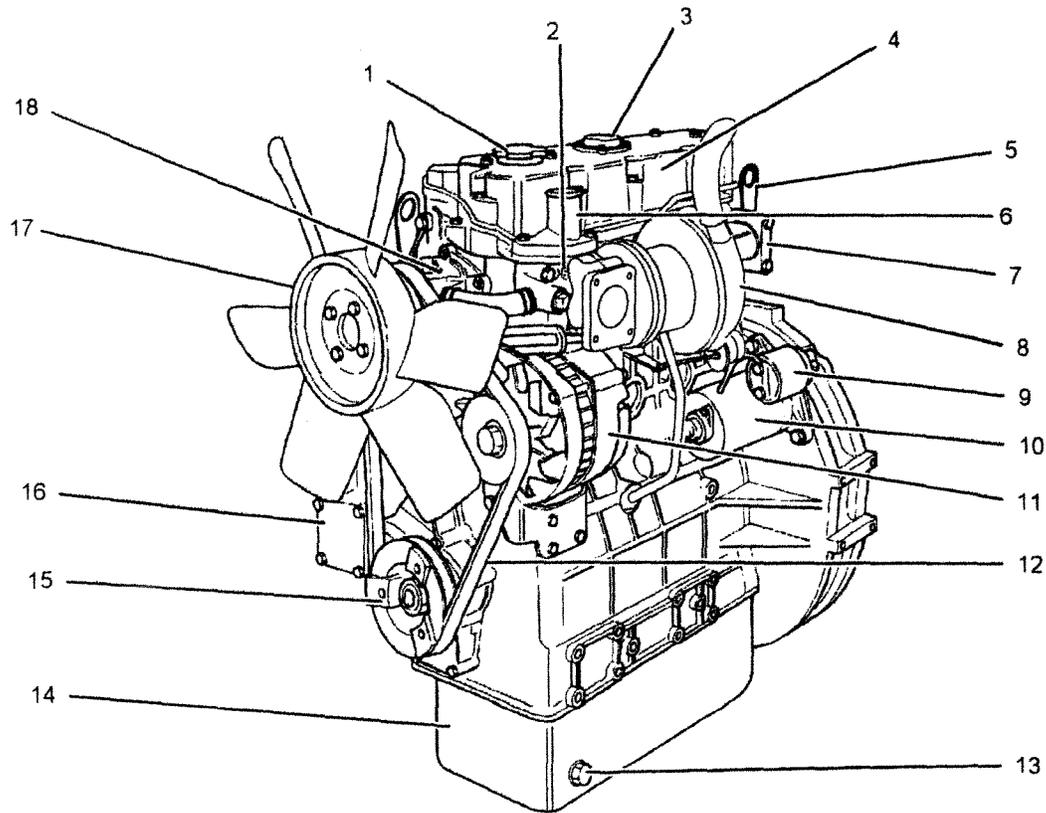


Illustration 9

g01097209

Front and left side view of the 404C-22T Engine

- | | | |
|---|------------------------------|--|
| (1) Engine oil filler cap | (7) Exhaust manifold | (13) Engine oil drain plug |
| (2) Coolant temperature switch | (8) Turbocharger | (14) Engine oil pan |
| (3) Crankcase breather | (9) Starting motor solenoid | (15) Crankshaft pulley |
| (4) Valve mechanism cover | (10) Electric starting motor | (16) Cover plate for the accessory drive |
| (5) Lifting eye | (11) Alternator | (17) Cooling fan |
| (6) Water temperature regulator housing | (12) Fan drive belt | (18) Water pump |

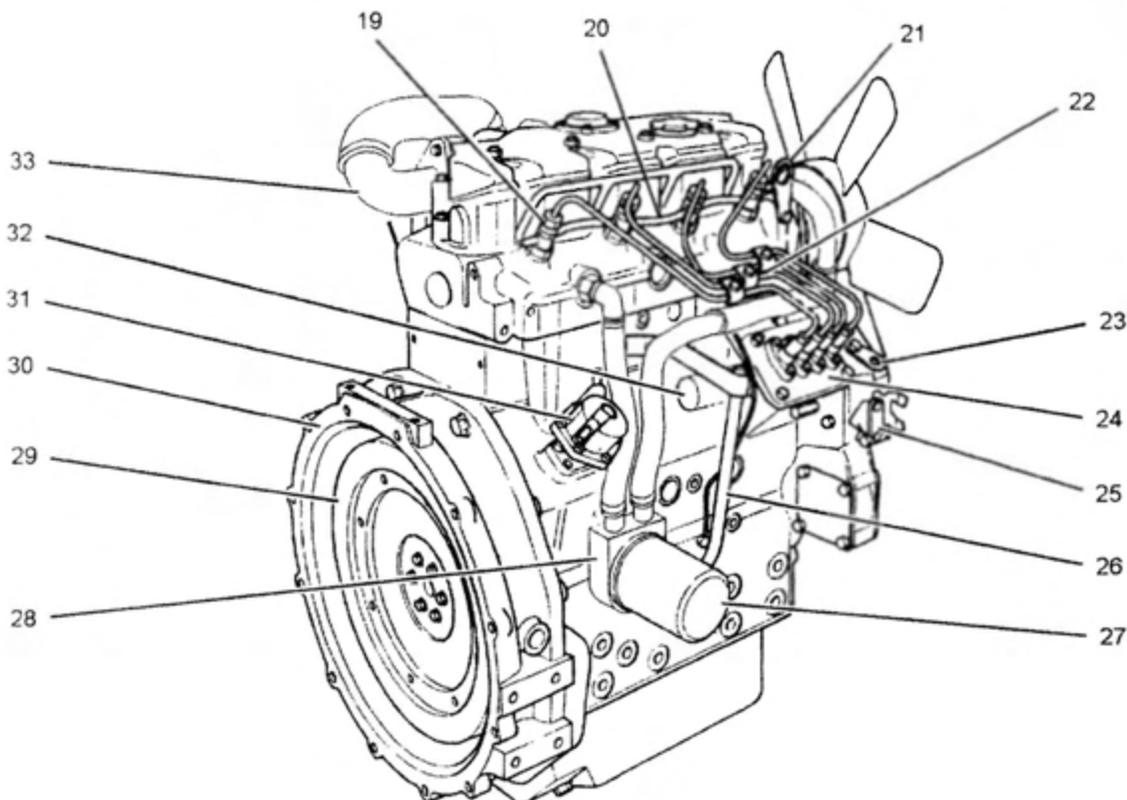


Illustration 10

g01097214

Rear and right side view of the 404C-22T Engine

- (19) Fuel injector
- (20) Fuel return line
- (21) Lifting eye
- (22) Fuel injection lines
- (23) Mechanical fuel shutoff

- (24) Fuel injection pump
- (25) Fuel control lever
- (26) Engine oil level gauge
- (27) Engine oil filter
- (28) Engine oil cooler

- (29) Flywheel
- (30) Flywheel housing
- (31) Fuel transfer pump
- (32) Fuel shutoff solenoid
- (33) Air inlet elbow

i02131972

Engine Description

The 400 series engines are diesel engines that are controlled with a mechanically actuated fuel injection pump. The engine cylinders are arranged in-line.

The cylinder head assembly has one inlet valve and one exhaust valve for each cylinder. Each cylinder valve has a single valve spring.

The pistons have two compression rings and an oil control ring. It is important to ensure the correct piston height so that the piston does not contact the cylinder head. The correct piston height also ensures efficient combustion of fuel that is necessary in order to conform to requirements for emissions.

The crankshaft for a two cylinder engine has two main bearing journals. The crankshaft for a three cylinder engine has four main bearing journals. The crankshaft for a four cylinder engine has five main bearing journals. End play is controlled by the thrust washers that are located on the rear main bearing.

The timing gears are stamped with timing marks in order to ensure the correct assembly of the gears. When the No. 1 piston is at top center compression stroke, the teeth that are stamped on the crankshaft gear and the camshaft gear will be in alignment with the idler gear.

The crankshaft gear turns the idler gear which then turns the camshaft gear and the gear for the engine oil pump.

The fuel injection pump is mounted in the cylinder block. The fuel injection pump is operated by lobes on the camshaft. The fuel transfer pump is located on the right hand side of the cylinder block. The fuel transfer pump is also operated by lobes on the camshaft.

The fuel injection pump conforms to requirements for emissions. Adjustments to the fuel injection pump timing and high idle should only be made by trained personnel. The fuel injection pumps have mechanical governors that control the engine rpm.

A gerotor oil pump is located in the center of the idler gear. The engine oil pump sends lubricating oil to the main oil gallery through a pressure relief valve and an engine oil filter. The rocker arms receive pressurized oil through an externally located oil line that runs from the main oil gallery to the cylinder head.

Coolant from the bottom of the radiator passes through the belt driven centrifugal water pump. The coolant is cooled by the radiator and the temperature is regulated by a water temperature regulator.

Engine efficiency, efficiency of emission controls, and engine performance depend on adherence to correct operation and maintenance recommendations. Engine performance and efficiency also depend on the use of recommended fuels, lubrication oils, and coolants. Refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" for more information on maintenance items.

Engine Specifications

Note: The front end of the engine is opposite the flywheel end of the engine. The left and the right side of the engine are determined from the flywheel end. The No. 1 cylinder is the front cylinder.

402C-05 Engine

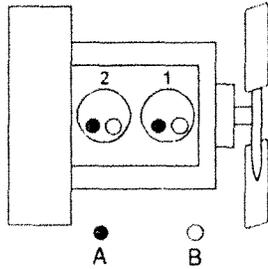


Illustration 11

g01108476

(A) Exhaust valves
 (B) Inlet valves

Table 1

402C-05 Engine Specifications	
Maximum Operating Speed (rpm)	3600 rpm
Cylinders and Arrangement	In-Line two cylinder
Bore	67 mm (2.64 inch)
Stroke	72 mm (2.83 inch)
Displacement	0.507 L (30.939 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	23.5:1
Firing Order	1-2
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

(1) Naturally Aspirated

403C-07 Engine

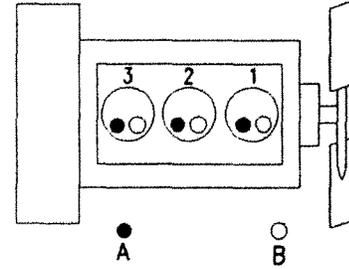


Illustration 12

g00852304

(A) Exhaust valves
 (B) Inlet valves

Table 2

403C-07 Engine Specifications	
Maximum Operating Speed (rpm)	3600 rpm
Cylinders and Arrangement	In-Line three cylinder
Bore	67 mm (2.64 inch)
Stroke	72 mm (2.83 inch)
Displacement	0.762 L (46.500 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	23.5:1
Firing Order	1-2-3
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

(1) Naturally Aspirated

403C-11 Engine

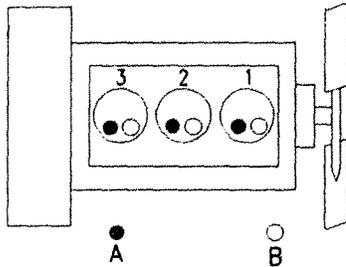


Illustration 13

g00852304

(A) Exhaust valves
(B) Inlet valves

Table 3

403C-11 Engine Specifications	
Maximum Operating Speed (rpm)	3600 rpm
Cylinders and Arrangement	In-Line three cylinder
Bore	77 mm (3.03 inch)
Stroke	81 mm (3.19 inch)
Displacement	1.131 L (69.018 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	23:1
Firing Order	1-2-3
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

(1) Naturally Aspirated

403C-15 Engine

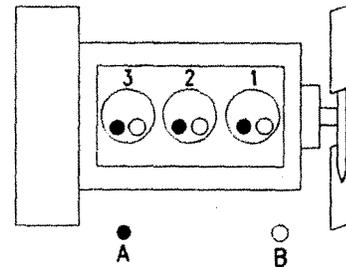


Illustration 14

g00852304

(A) Exhaust valves
(B) Inlet valves

Table 4

403C-15 Engine Specifications	
Maximum Operating Speed (rpm)	3000 rpm
Cylinders and Arrangement	In-Line three cylinder
Bore	84 mm (3.31 inch)
Stroke	90 mm (3.54 inch)
Displacement	1.496 L (91.291 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	22.5:1
Firing Order	1-2-3
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

(1) Naturally Aspirated

404C-15 Engine

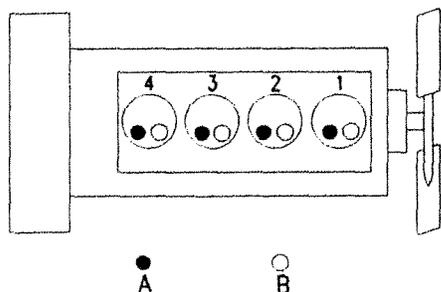


Illustration 15

g00296424

- (A) Exhaust valves
- (B) Inlet valves

Table 5

404C-15 Engine Specifications	
Maximum Operating Speed (rpm)	3000 rpm
Cylinders and Arrangement	In-Line four cylinder
Bore	77 mm (3.03 inch)
Stroke	81 mm (3.19 inch)
Displacement	1.508 L (92.024 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	23.5:1
Firing Order	1-3-4-2
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

⁽¹⁾ Naturally Aspirated

404C-22 Engine

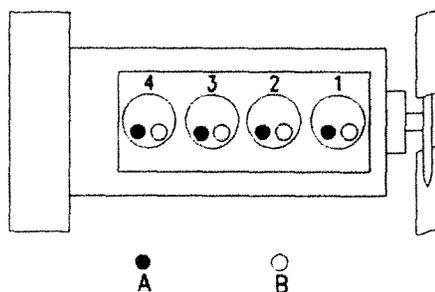


Illustration 16

g00296424

- (A) Exhaust valves
- (B) Inlet valves

Table 6

404C-22 Engine Specifications	
Maximum Operating Speed (rpm)	3000 rpm
Cylinders and Arrangement	In-Line four cylinder
Bore	84.0 mm (3.31 inch)
Stroke	100.0 mm (3.94 inch)
Displacement	2.216 L (135.229 in ³)
Aspiration	NA ⁽¹⁾
Compression Ratio	23.3:1
Firing Order	1-3-4-2
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

⁽¹⁾ Naturally Aspirated

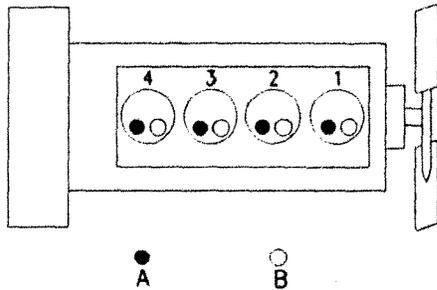
404C-22T Engine

Illustration 17

g00296424

(A) Exhaust valves
(B) Inlet valves

Table 7

404C-22T Engine Specifications	
Maximum Operating Speed (rpm)	3000 rpm
Cylinders and Arrangement	In-Line four cylinder
Bore	84.0 mm (3.31 inch)
Stroke	100.0 mm (3.94 inch)
Displacement	2.216 L (135.229 in ³)
Aspiration	T ⁽¹⁾
Compression Ratio	23.3:1
Firing Order	1-3-4-2
Rotation that is viewed from the flywheel	Counterclockwise
Valve Lash Setting (Inlet)	0.20 mm (0.008 inch)
Valve Lash Setting (Exhaust)	0.20 mm (0.008 inch)

(1) Turbocharged

Product Identification Information

The following information is stamped on the Serial Number Plate: Engine serial number, Model, and Arrangement number.

i02216958

i02164876

Engine Identification

Reference Numbers

Perkins engines are identified by a serial number. This number is shown on a serial number plate that is mounted above the fuel injection pump on the right hand side of the engine block.

Information for the following items may be needed to order parts. Locate the information for your engine. Record the information in the appropriate space. Make a copy of this list for a record. Keep the information for future reference.

An example of an engine number is HHU000001J.

HH _____ Type of engine

U _____ Built in the United Kingdom

Engines that are built in Japan will have a (J).

Engines that are built in North America will have a (N).

000001 _____ Engine Serial Number

J _____ Year of Manufacture

Perkins dealers or Perkins distributors need all of these numbers in order to determine the components that were included with the engine. This permits accurate identification of replacement part numbers.

Record for Reference

Engine Model _____

Engine Serial number _____

Engine Low Idle rpm _____

Engine Full Load rpm _____

Primary Fuel Filter _____

Water Separator Element _____

Secondary Fuel Filter Element _____

Lubrication Oil Filter Element _____

Auxiliary Oil Filter Element _____

Total Lubrication System Capacity _____

Total Cooling System Capacity _____

Air Cleaner Element _____

Fan Drive Belt _____

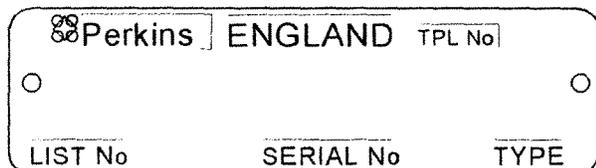
Alternator Belt _____

i02157258

i02166528

Serial Number Plate

Emissions Certification Film



A typical example is shown.

Illustration 18

g01094203

Typical serial number plate

The Serial Number Plate is located above the fuel injection pump on the right side of the cylinder block.

IMPORTANT ENGINE INFORMATION	
	PERKINS SHIBAURA ENGINES LTD.
ENGINE FAMILY :	
ENGINE TYPE :	DISPL :
ADVERTISED POWER :	Kw at rpm
THIS ENGINE CONFORMS TO U.S. EPA AND CALIFORNIA REGULATIONS FOR OFF-ROAD COMPRESSION-IGNITION ENGINES, DIESEL FUEL ONLY	
INLET/EXH.VALVE CLEARANCE : 0.2mm COLD	
LOW IDLE :	rpm
ADJUST IDLE SPEED WITH ENGINE AT NORMAL OPERATING TEMPERATURE, ACCESSORIES OFF, AND TRANSMISSION IN NEUTRAL.	
TUNE-UP BY AUTHORISED SHOP ONLY.	
EC NRMM No.:	

Illustration 19

g01098670

Operation Section

Lifting and Storage

Engine Lifting

i02164186

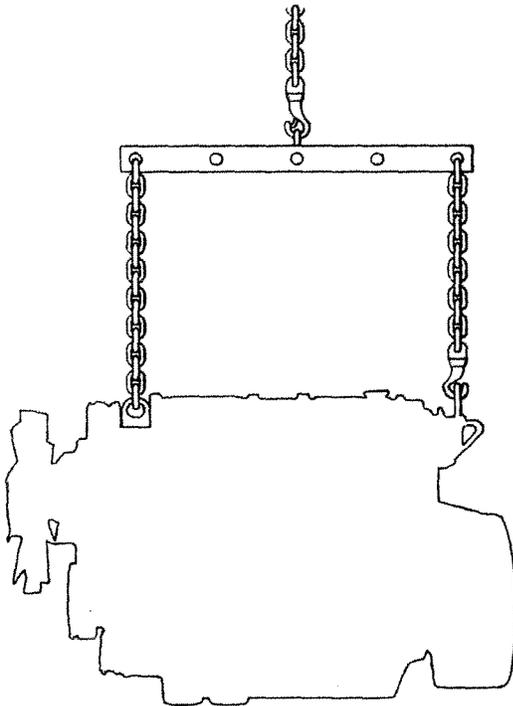


Illustration 20

g01097527

NOTICE

Never bend the eyebolts and the brackets. Only load the eyebolts and the brackets under tension. Remember that the capacity of an eyebolt is less as the angle between the supporting members and the object becomes less than 90 degrees.

When it is necessary to remove a component at an angle, only use a link bracket that is properly rated for the weight.

Use a hoist to remove heavy components. Use an adjustable lifting beam to lift the engine. All supporting members (chains and cables) should be parallel to each other. The chains and cables should be perpendicular to the top of the object that is being lifted.

Some removals require lifting the fixtures in order to obtain correct balance and safety.

To remove the engine ONLY, use the lifting eyes that are on the engine.

Lifting eyes are designed and installed for specific engine arrangements. Alterations to the lifting eyes and/or the engine make the lifting eyes and the lifting fixtures obsolete. If alterations are made, ensure that correct lifting devices are provided. Consult your Perkins dealer or your Perkins distributor for information regarding fixtures for correct engine lifting.

i02134814

Engine Storage

If the engine will not be started for several weeks, the lubricating oil will drain from the cylinder walls and from the piston rings. Rust can form on the cylinder walls. Rust on the cylinder walls will cause increased engine wear and a reduction in engine service life.

Lubrication System

To help prevent excessive engine wear, use the following guidelines:

Complete all of the lubrication recommendations that are listed in this Operation and Maintenance Manual, "Maintenance Interval Schedule" (Maintenance Section).

If an engine is out of operation and if use of the engine is not planned, special precautions should be made. If the engine will be stored for more than one month, a complete protection procedure is recommended.

Use the following guidelines :

- Completely clean the outside of the engine.
- Drain the fuel system completely and refill the system with preservative fuel. 1772204 POWERPART Lay-Up 1 can be mixed with the normal fuel in order to change the fuel into preservative fuel.
- If preservative fuel is not available, the fuel system can be filled with normal fuel. This fuel must be discarded at the end of the storage period together with the fuel filter elements.
- Operate the engine until the engine reaches normal operating temperature. Stop any leaks from fuel, lubricating oil or air systems. Stop the engine and drain the lubricating oil from the oil pan.

- Renew the canister(s) of the lubricating oil filter.
- Fill the oil pan to the Full Mark on the engine oil level gauge with new, clean lubricating oil. Add 1762811 POWERPART Lay-Up 2 to the oil in order to protect the engine against corrosion. If 1762811 POWERPART Lay-Up 2 is not available, use a preservative of the correct specification instead of the lubricating oil. If a preservative is used, this must be drained completely at the end of the storage period and the oil pan must be refilled to the correct level with normal lubricating oil.

Cooling System

To help prevent excessive engine wear, use the following guidelines:

NOTICE

Do not drain the coolant while the engine is still hot and the system is under pressure because dangerous hot coolant can be discharged.

If freezing temperatures are expected, check the cooling system for adequate protection against freezing. Refer to this Operation and Maintenance Manual, "Fluid Recommendations" (Maintenance Section).

NOTICE

To prevent frost damage, ensure that all the coolant is removed from the engine. This is important if the system is drained after it has been flushed with water, or if an antifreeze solution too weak to protect the system from frost has been used.

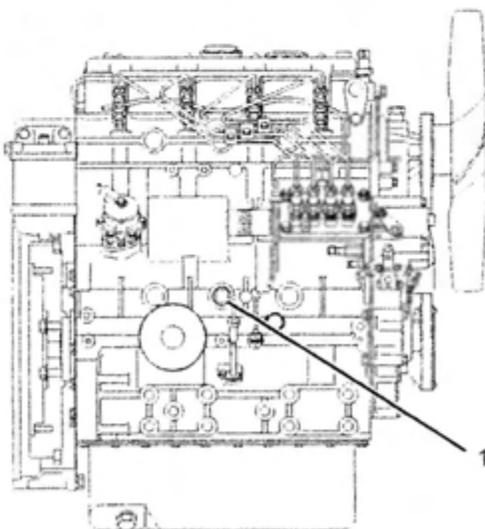


Illustration 21

g01087295

Typical example

1. Ensure that the vehicle is on level ground.
 2. Remove the filler cap of the cooling system.
 3. Remove the drain plug (1) from the side of the cylinder block in order to drain the engine. Ensure that the drain hole is not restricted.
 4. Open the tap or remove the drain plug at the bottom of the radiator in order to drain the radiator. If the radiator does not have a tap or a drain plug, disconnect the hose at the bottom of the radiator.
 5. Flush the cooling system with clean water.
 6. Fit the drain plugs and the filler cap. Close the tap or connect the radiator hose.
 7. Fill the cooling system with an approved antifreeze mixture because this gives protection against corrosion.
- Note:** Certain corrosion inhibitors could cause damage to some engine components. Contact the Service Department of Perkins for advice.
8. Operate the engine for a short period in order to circulate the lubricating oil and the coolant in the engine.
 9. Disconnect the battery. Put the battery into safe storage in a fully charged condition. Before the battery is put into storage, protect the terminals against corrosion. 1734115 POWERPART Lay-Up 3 can be used on the terminals.
 10. Clean the crankcase breather if one is installed. Seal the end of the pipe.
 11. Remove the fuel injectors and spray 1762811 POWERPART Lay-Up 2 for one or two seconds into each cylinder bore with the piston at BDC.
 12. Slowly rotate the crankshaft for one complete revolution and then replace the fuel injectors.

Induction System

- Remove the air filter assembly. If necessary, remove the pipes that are installed between the air filter assembly and the turbocharger. Spray 1762811 POWERPART Lay-Up 2 into the turbocharger. The duration of the spray is printed on the container. Seal the turbocharger with waterproof tape.

Exhaust System

- Remove the exhaust pipe. Spray 1762811 POWERPART Lay-Up 2 into the turbocharger. The duration of the spray is printed on the container. Seal the turbocharger with waterproof tape.

General Items

- If the lubricating oil filler is installed on the valve mechanism cover, remove the filler cap. If the lubricating oil filler cap is not installed on the valve mechanism cover, remove the valve mechanism cover. Spray 1762811 POWERPART Lay-Up 2 around the rocker shaft assembly. Replace the filler cap or the valve mechanism cover.
- Seal the vent of the fuel tank or the fuel filler cap with waterproof tape.
- Remove the alternator drive belts and put the drive belts into storage.
- In order to prevent corrosion, spray the engine with 1734115 POWERPART Lay-Up 3. Do not spray the area inside the alternator.

When the engine protection has been completed in accordance with these instructions, this ensures that no corrosion will occur. Perkins are not responsible for damage which may occur when an engine is in storage after a period in service.

Your Perkins dealer or your Perkins distributor can assist in preparing the engine for extended storage periods.

Gauges and Indicators

i02216960

Gauges and Indicators

Your engine may not have the same gauges or all of the gauges that are described. For more information about the gauge package, see the OEM information.

Gauges provide indications of engine performance. Ensure that the gauges are in good working order. Determine the normal operating range by observing the gauges over a period of time.

Noticeable changes in gauge readings indicate potential gauge or engine problems. Problems may also be indicated by gauge readings that change even if the readings are within specifications. Determine and correct the cause of any significant change in the readings. Consult your Perkins dealer or your Perkins distributor for assistance.

NOTICE

If no oil pressure is indicated, STOP the engine. If maximum coolant temperature is exceeded, STOP the engine. Engine damage can result.



Engine Oil Pressure – The oil pressure should be greatest after a cold engine is started. The typical engine oil pressure with SAE10W30 is 207 to 413 kPa (30 to 60 psi) at rated rpm.

A lower oil pressure is normal at low idle. If the load is stable and the gauge reading changes, perform the following procedure:

1. Remove the load.
2. Reduce engine speed to low idle.
3. Check and maintain the oil level.



Jacket Water Coolant Temperature – Typical temperature range is 71 to 96°C (160 to 205°F). The maximum allowable temperature with the pressurized cooling system at 90 kPa (13 psi) is 110°C (230°F). Higher temperatures may occur under certain conditions. The water temperature reading may vary according to load. The reading should never exceed the boiling point for the pressurized system that is being used.

If the engine is operating above the normal range and steam becomes apparent, perform the following procedure:

1. Reduce the load and the engine rpm.
2. Inspect the cooling system for leaks.
3. Determine if the engine must be shut down immediately or if the engine can be cooled by reducing the load.



Tachometer – This gauge indicates engine speed (rpm). When the throttle control lever is moved to the full throttle position without load, the engine is running at high idle. The engine is running at the full load rpm when the throttle control lever is at the full throttle position with maximum rated load.

NOTICE

To help prevent engine damage, never exceed the high idle rpm. Overspeeding can result in serious damage to the engine. The engine can be operated at high idle without damage, but should never be allowed to exceed high idle rpm.



Ammeter – This gauge indicates the amount of charge or discharge in the battery charging circuit. Operation of the indicator should be to the right side of "0" (zero).



Fuel Level – This gauge indicates the fuel level in the fuel tank. The fuel level gauge operates when the "START/STOP" switch is in the "ON" position.



Service Hour Meter – The gauge indicates operating time of the engine.

Features and Controls

i02224052

Fuel Shutoff

The fuel shutoff solenoid is located on the governor or the fuel shutoff solenoid is located on the fuel injection pump. When the fuel shutoff solenoid is activated, the solenoid moves the fuel rack "OFF". The fuel shutoff solenoid moves the fuel rack directly or the fuel shutoff solenoid moves the fuel rack through the governor.

Engine Starting

i02194223

Before Starting Engine

Before the engine is started, perform the required daily maintenance and any other periodic maintenance that is due. Refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" for more information.

- For the maximum service life of the engine, make a thorough inspection within the engine compartment before the engine is started. Look for the following items: oil leaks, coolant leaks, loose bolts, and excessive dirt and/or grease. Remove any excess dirt and/or grease buildup. Repair any faults that were identified during the inspection.
- Inspect the cooling system hoses for cracks and for loose clamps.
- Inspect the alternator and accessory drive belts for cracks, breaks, and other damage.
- Inspect the wiring for loose connections and for worn wires or frayed wires.
- Check the fuel supply. Drain water from the water separator (if equipped). Open the fuel supply valve (if equipped).

NOTICE

All valves in the fuel return line must be open before and during engine operation to help prevent high fuel pressure. High fuel pressure may cause filter housing failure or other damage.

If the engine has not been started for several weeks, fuel may have drained from the fuel system. Air may have entered the filter housing. Also, when fuel filters have been changed, some air pockets will be trapped in the engine. In these instances, prime the fuel system. Refer to the Operation and Maintenance Manual, "Fuel System - Prime" for more information on priming the fuel system.

WARNING

Engine exhaust contains products of combustion which may be harmful to your health. Always start and operate the engine in a well ventilated area and, if in an enclosed area, vent the exhaust to the outside.

- Do not start the engine or move any of the controls if there is a "DO NOT OPERATE" warning tag or similar warning tag attached to the start switch or to the controls.
- Ensure that the areas around the rotating parts are clear.
- All of the guards must be put in place. Check for damaged guards or for missing guards. Repair any damaged guards. Replace damaged guards and/or missing guards.
- Disconnect any battery chargers that are not protected against the high current drain that is created when the electric starting motor is engaged. Check electrical cables and check the battery for poor connections and for corrosion.
- Reset all of the shutoffs or alarm components (if equipped).
- Check the engine lubrication oil level. Maintain the oil level between the "ADD" mark and the "FULL" mark on the engine oil level gauge.
- Check the coolant level. Observe the coolant level in the header tank (if equipped). Maintain the coolant level to the "FULL" mark on the header tank.
- If the engine is not equipped with a header tank maintain the coolant level within 13 mm (0.5 inch) of the bottom of the filler pipe. If the engine is equipped with a sight glass, maintain the coolant level in the sight glass.
- Observe the air cleaner service indicator (if equipped). Service the air cleaner when the yellow diaphragm enters the red zone, or when the red piston locks in the visible position.
- Ensure that any equipment that is driven by the engine has been disengaged from the engine. Minimize electrical loads or remove any electrical loads.

i02135610

Starting the Engine

WARNING

Do not use aerosol types of starting aids such as ether. Such use could result in an explosion and personal injury.

Refer to the OEM manual for your type of controls. Use the following procedure to start the engine.

1. Move the throttle lever to the full throttle position before you start the engine.

NOTICE

Do not operate the glow plugs for more than 60 seconds at one time. Damage to the glow plugs could occur.

2. Turn the engine start switch to the HEAT position. Hold the engine start switch in the HEAT position for 6 seconds until the glow plug indicator light illuminates. This will activate the glow plugs and aid in the starting of the engine.

NOTICE

Do not crank the engine for more than 30 seconds. Allow the electric starting motor to cool for two minutes before cranking the engine again.

3. While the glow plug indicator light is illuminated, turn the engine start switch to the START position and crank the engine.
4. When the engine starts, release the engine start switch.
5. Slowly move the throttle lever to the low idle position and allow the engine to idle. Refer to the Operation and Maintenance Manual, "After Starting Engine" topic.

Note: If the glow plug indicator light illuminates rapidly for 2 to 3 seconds, or if the glow plug indicator light fails to illuminate, a malfunction exists in the cold start system. Do not use ether or other starting fluids to start the engine.

6. If the engine does not start, release the engine start switch and allow the electric starting motor to cool. Then, repeat steps 2 through step 5.
7. Turn the engine start switch to the OFF position in order to stop the engine.

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Starting with Jump Start Cables

 **WARNING**

Improper jump start cable connections can cause an explosion resulting in personal injury.

Prevent sparks near the batteries. Sparks could cause vapors to explode. Do not allow jump start cable ends to contact each other or the engine.

Note: If it is possible, first diagnose the reason for the starting failure. Make any necessary repairs. If the engine will not start only due to the condition of the battery, either charge the battery, or start the engine with jump start cables. The condition of the battery can be rechecked after the engine has been switched OFF.

NOTICE

Using a battery source with the same voltage as the electric starting motor. Use ONLY equal voltage for jump starting. The use of higher voltage will damage the electrical system.

Do not reverse the battery cables. The alternator can be damaged. Attach ground cable last and remove first.

When using an external electrical source to start the engine, turn the generator set control switch to the "OFF" position. Turn all electrical accessories OFF before attaching the jump start cables.

Ensure that the main power switch is in the OFF position before attaching the jump start cables to the engine being started.

1. Turn the start switch to the OFF position. Turn off all the engine's accessories.
2. Connect one positive end of the jump start cable to the positive cable terminal of the discharged battery. Connect the other positive end of the jump start cable to the positive cable terminal of the electrical source.

3. Connect one negative end of the jump start cable to the negative cable terminal of the electrical source. Connect the other negative end of the jump start cable to the engine block or to the chassis ground. This procedure helps to prevent potential sparks from igniting the combustible gases that are produced by some batteries.
4. Start the engine.
5. Immediately after the stalled engine is started, disconnect the jump start cables in reverse order.

After jump starting, the alternator may not be able to fully recharge batteries that are severely discharged. The batteries must be replaced or charged to the correct voltage with a battery charger after the engine is stopped. Many batteries which are considered unusable are still rechargeable. Refer to Operation and Maintenance Manual, "Battery - Replace" and Testing and Adjusting Manual, "Battery - Test".

i01903609

After Starting Engine

Note: In temperatures from 0 to 60°C (32 to 140°F), the warm-up time is approximately three minutes. In temperatures below 0°C (32°F), additional warm-up time may be required.

When the engine idles during warm-up, observe the following conditions:

- Check for any fluid or for any air leaks at idle rpm and at one-half full rpm (no load on the engine) before operating the engine under load. This is not possible in some applications.
- Operate the engine at low idle until all systems achieve operating temperatures. Check all gauges during the warm-up period.

Note: Gauge readings should be observed and the data should be recorded frequently while the engine is operating. Comparing the data over time will help to determine normal readings for each gauge. Comparing data over time will also help detect abnormal operating developments. Significant changes in the readings should be investigated.

Engine Operation

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i02176671

Engine Operation

Correct operation and maintenance are key factors in obtaining the maximum life and economy of the engine. If the directions in the Operation and Maintenance Manual are followed, costs can be minimized and engine service life can be maximized.

The engine can be operated at the rated rpm after the engine reaches operating temperature. The engine will reach normal operating temperature sooner during a low engine speed (rpm) and during a low power demand. This procedure is more effective than idling the engine at no load. The engine should reach operating temperature in a few minutes.

Gauge readings should be observed and the data should be recorded frequently while the engine is operating. Comparing the data over time will help to determine normal readings for each gauge. Comparing data over time will also help detect abnormal operating developments. Significant changes in the readings should be investigated.

Fuel Conservation Practices

The efficiency of the engine can affect the fuel economy. Perkins design and technology in manufacturing provides maximum fuel efficiency in all applications. Follow the recommended procedures in order to attain optimum performance for the life of the engine.

- Avoid spilling fuel.

Fuel expands when the fuel is warmed up. The fuel may overflow from the fuel tank. Inspect fuel lines for leaks. Repair the fuel lines, as needed.

- Be aware of the properties of the different fuels. Use only the recommended fuels.
- Avoid unnecessary idling.

Shut off the engine rather than idle for long periods of time.

- Observe the service indicator frequently. Keep the air cleaner elements clean.
- Maintain a good electrical system.

One damaged battery cell will overwork the alternator. This will consume excess power and excess fuel.

- Ensure that the drive belts are correctly adjusted. The drive belts should be in good condition.
- Ensure that all of the connections of the hoses are tight. The connections should not leak.
- Ensure that the driven equipment is in good working order.
- Cold engines consume excess fuel. Utilize heat from the jacket water system and the exhaust system, when possible. Keep cooling system components clean and keep cooling system components in good repair. Never operate the engine without water temperature regulators. All of these items will help maintain operating temperatures.

Engine Stopping

i02176672

Stopping the Engine

i01935195

NOTICE

Stopping the engine immediately after it has been working under load, can result in overheating and accelerated wear of the engine components.

Avoid accelerating the engine prior to shutting it down.

Avoiding hot engine shutdowns will maximize turbocharger shaft and bearing life.

Note: Individual applications will have different control systems. Ensure that the shutoff procedures are understood. Use the following general guidelines in order to stop the engine.

1. Remove the load from the engine. Reduce the engine speed (rpm) to low idle. Perform this procedure for five to six minutes in order to cool the engine.
2. Stop the engine after the cool down period according to the shutoff system on the engine and turn the ignition key switch to the OFF position. If necessary, refer to the instructions that are provided by the OEM.

i01903586

Emergency Stopping

NOTICE

Emergency shutoff controls are for EMERGENCY use ONLY. DO NOT use emergency shutoff devices or controls for normal stopping procedure.

The OEM may have equipped the application with an emergency stop button. For more information about the emergency stop button, refer to the OEM information.

Ensure that any components for the external system that support the engine operation are secured after the engine is stopped.

After Stopping Engine

Note: Before you check the engine oil, do not operate the engine for at least 10 minutes in order to allow the engine oil to return to the oil pan.

- Check the crankcase oil level. Maintain the oil level between the "MIN" mark and the "MAX" mark on the engine oil level gauge.
- If necessary, perform minor adjustments. Repair any leaks and tighten any loose bolts.
- If the engine is equipped with a service hour meter, note the reading. Perform the maintenance that is in the Operation and Maintenance Manual, "Maintenance Interval Schedule".
- Fill the fuel tank in order to help prevent accumulation of moisture in the fuel. Do not overfill the fuel tank.

NOTICE

Only use antifreeze/coolant mixtures recommended in the Coolant Specifications that are in the Operation and Maintenance Manual. Failure to do so can cause engine damage.

- Allow the engine to cool. Check the coolant level.
- If freezing temperatures are expected, check the coolant for correct antifreeze protection. The cooling system must be protected against freezing to the lowest expected outside temperature. Add the correct coolant/water mixture, if necessary.
- Perform all required periodic maintenance on all driven equipment. This maintenance is outlined in the instructions from the OEM.

Cold Weather Operation

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Cold Weather Operation

Perkins Diesel Engines can operate effectively in cold weather. During cold weather, the starting and the operation of the diesel engine is dependent on the following items:

- The type of fuel that is used
- The viscosity of the engine oil
- The operation of the glow plugs or the operation of the air inlet heater
- Optional Cold starting aid

The purpose of this section will cover the following information:

- Explain potential problems that are caused by cold weather operation.
- Suggest steps which can be taken in order to minimize starting problems and operating problems when the ambient air temperature is colder than 0 to -55 °C (32 to -67 °F).

The operation and maintenance of an engine in freezing temperatures is complex. This is because of the following conditions: the unlimited differences in weather conditions, engine applications, and the supplies that are available in your area. These factors and recommendations from your Perkins dealer or your Perkins distributor are based on past proven practices. The information that is contained in this section should be combined in order to provide guidelines for cold weather operations.

Hints for Cold Weather Operation

- If the engine will start, operate the engine until a minimum operating temperature of 71 °C (160 °F) is achieved. Achieving operating temperature will help prevent the intake valves and exhaust valves from sticking.
- The cooling system and the lubrication system for the engine do not lose heat immediately upon shutdown. This means that an engine can be shut down for a few hours and the engine can still have the ability to start readily. If the engine is shut down for at least eight hours, the engine should be considered cooled to outside temperature.

- Install the correct lubricant in each compartment before the beginning of cold weather.
- Check all rubber parts (hoses, fan drive belts, etc) weekly.
- Check all electrical wiring and connections for any fraying or damaged insulation.
- Keep all batteries fully charged and warm.
- Fill the fuel tank at the end of each shift.
- Check the air cleaners and the air intake daily. Check the air intake more often when you operate in snow.

WARNING

Personal injury or property damage can result from alcohol or starting fluids.

Alcohol or starting fluids are highly flammable and toxic and if improperly stored could result in injury or property damage.

WARNING

Do not use aerosol types of starting aids such as ether. Such use could result in an explosion and personal injury.

- For jump starting with cables in cold weather, refer to the Operation and Maintenance Manual, "Starting with Jump Start Cables." for instructions.

Viscosity of the Engine Lubrication Oil

Correct engine oil viscosity is essential. Oil viscosity affects the amount of torque that is needed to crank the engine. Refer to this Operation and Maintenance Manual, "Fluid Recommendations" for the recommended viscosity of oil.

Recommendations for the Coolant

Provide cooling system protection for the lowest expected outside temperature. Refer to this Operation and Maintenance Manual, "Fluid Recommendations" for the recommended coolant mixture.

In cold weather, check the coolant often for the correct glycol concentration in order to ensure adequate freeze protection.

Engine Block Heaters

Engine block heaters (if equipped) heat the engine jacket water that surrounds the combustion chambers. This provides the following functions:

- Startability is improved.
- Warm up time is reduced.

An electric block heater can be activated once the engine is stopped. An effective block heater is typically a 1250/1500 W unit. Consult your Perkins dealer or your Perkins distributor for more information.

Idling the Engine

When idling after the engine is started in cold weather, increase the engine rpm from 1000 to 1200 rpm. This will warm up the engine more quickly. Maintaining an elevated low idle speed for extended periods will be easier with the installation of a hand throttle. The engine should not be "raced" in order to speed up the warm up process.

While the engine is idling, the application of a light load (parasitic load) will assist in maintaining the minimum operating temperature. The minimum operating temperature is 71 °C (160 °F).

Recommendations for Coolant Warm Up

Warm up an engine that has cooled below normal operating temperatures due to inactivity. This should be performed before the engine is returned to full operation. During operation in very cold temperature conditions, damage to engine valve mechanisms can result from engine operation for short intervals. This can happen if the engine is started and the engine is stopped many times without being operated in order to warm up completely.

When the engine is operated below normal operating temperatures, fuel and oil are not completely burned in the combustion chamber. This fuel and oil causes soft carbon deposits to form on the valve stems. Generally, the deposits do not cause problems and the deposits are burned off during operation at normal engine operating temperatures.

When the engine is started and the engine is stopped many times without being operated in order to warm up completely, the carbon deposits become thicker. This will cause the following problems:

- Free operation of the valves is prevented.
- Valves become stuck.

- Pushrods are bent.
- Other damage to valve train components can result.

For this reason, when the engine is started, the engine must be operated until the coolant temperature is 71 °C (160 °F) minimum. Carbon deposits on the valve stems will be kept at a minimum and the free operation of the valves and the valve components will be maintained.

In addition, the engine must be thoroughly warmed in order to keep other engine parts in better condition and the service life of the engine will be generally extended. Lubrication will be improved. There will be less acid and less sludge in the oil. This will provide longer service life for the engine bearings, the piston rings, and other parts. However, limit unnecessary idle time to ten minutes in order to reduce wear and unnecessary fuel consumption.

Purge Valve and Insulated Heater Lines

The engine is equipped with a water temperature regulator in order to allow the engine to reach the correct operating temperature quickly. The water temperature regulator remains in the closed position until the jacket water coolant temperature has reached the engine's operating temperature. The jacket water circulates from the top of the cylinder block, to the water temperature regulator housing, and back to the bottom of the cylinder block via the bypass. The water temperature regulator allows some flow of water and/or air to pass through the water temperature regulator in order to ensure a continuous flow of coolant within the cylinder block. This is achieved via a small "jiggle" valve in the water temperature regulator. The water temperature regulator moves to the open position when the jacket water coolant temperature has reached the correct operating temperature. The water temperature regulator moves to the open position in order to allow the passage of the coolant through the radiator to dissipate excess heat.

The above procedure is good for normal engine operating conditions in temperate climates. During periods of operations in a cold climate with a light engine load, the coolant must bypass the radiator in order to help prevent excessive cooling of the engine. Coolant that passes through the radiator must be minimized in order to maintain the engine operating temperature in cold weather.

Excessive cooling of the engine can be prevented by a valve that allows unnecessary coolant flow to be diverted from the water temperature regulator and back to the bottom of the engine block without passing through the radiator.

Note: Perkins discourages the use of all airflow restriction devices such as radiator shutters. Restriction of the airflow can result in the following: high exhaust temperatures, power loss, excessive fan usage, and reduction in fuel economy.

Cab heater lines for very cold weather are also beneficial. These lines provide more available heat from the coolant to the cab. The feed from the engine and the return lines from the cab should be insulated in order to reduce heat loss to the outside air.

Insulating the Air Inlet and Engine Compartment

When temperatures below $-18\text{ }^{\circ}\text{C}$ ($-0\text{ }^{\circ}\text{F}$) will be frequently encountered, an air cleaner inlet that is located in the engine compartment may be specified. An air cleaner that is located in the engine compartment may also minimize the entry of snow into the air cleaner. Also, heat that is rejected by the engine helps to warm the intake air.

Additional heat can be retained around the engine by insulating the engine compartment.

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Fuel and the Effect from Cold Weather

Note: Only use grades of fuel that are recommended by Perkins. Refer to this Operation and Maintenance Manual, "Fluid Recommendations".

The following fuels can be used for the Perkins 400 Series engine.

- Group 1
- Group 2
- Group 3
- Special Fuels

Perkins prefer only Group 1 and Group 2 fuels for use in 400 Series engines. Group 3 fuels include Low Temperature Fuels and Aviation Kerosene Fuels.

Note: Group 3 fuels reduce the life of the engine. The use of Group 3 fuels is not covered by the Perkins warranty.

Special fuels include Biofuel.

Group 1 fuels are the preferred Group of Fuels for general use by Perkins. Group 1 fuels maximize engine life and engine performance. Group 1 fuels are usually less available than Group 2 fuels. Frequently, Group 1 fuels are not available in colder climates during the winter.

Note: Group 2 fuels must have a maximum wear scar of 650 micrometers (HFRR to ISO 12156-1).

Group 2 fuels are considered acceptable for issues of warranty. This group of fuels may reduce the life of the engine, the engine's maximum power, and the engine's fuel efficiency.

When Group 2 diesel fuels are used the following components provide a means of minimizing problems in cold weather:

- Glow plugs (if equipped)
- Engine coolant heaters, which may be an OEM option
- Fuel heaters, which may be an OEM option
- Fuel line insulation, which may be an OEM option

There are three major differences between Group 1 fuels and Group 2 fuels. Group 1 fuels have the following different characteristics to Group 2 fuels.

- A lower cloud point
- A lower pour point
- A higher rating of kJ (BTU) per unit volume of fuel

The cloud point is the temperature when a cloud of wax crystals begins to form in the fuel. These crystals can cause the fuel filters to plug. The pour point is the temperature when diesel fuel will thicken. The diesel fuel becomes more resistant to flow through fuel pumps and through the fuel lines.

Be aware of these values when diesel fuel is purchased. Consider the average ambient air temperature for the engine's application. Engines that are fueled in one climate may not operate well if the engines are moved to another climate. Problems can result due to changes in temperature.

Before troubleshooting for low power or for poor performance in the winter, check the type of fuel that is being used.

Low temperature fuels may be available for engine operation at temperatures below $0\text{ }^{\circ}\text{C}$ ($32\text{ }^{\circ}\text{F}$). These fuels limit the formation of wax in the fuel at low temperatures. Wax in the fuel may prevent the flow of the fuel through the fuel filters.

For more information on cold weather operation, refer to the Operation and Maintenance Manual, "Cold Weather Operation and Fuel Related Components in Cold Weather".

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Fuel Related Components in Cold Weather

Fuel Tanks

Condensation can form in partially filled fuel tanks. Top off the fuel tanks after you operate the engine.

Fuel tanks should contain some provision for draining water and sediment from the bottom of the tanks. Some fuel tanks use supply pipes that allow water and sediment to settle below the end of the fuel supply pipe.

Some fuel tanks use supply lines that take fuel directly from the bottom of the tank. If the engine is equipped with this system, regular maintenance of the fuel system filter is important.

Drain the water and sediment from any fuel storage tank at the following intervals: weekly, oil changes, and refueling of the fuel tank. This will help prevent water and/or sediment from being pumped from the fuel storage tank and into the engine fuel tank.

Fuel Filters

It is possible that a primary fuel filter is installed between the fuel tank and the engine fuel inlet. After you change the fuel filter, always prime the fuel system in order to remove air bubbles from the fuel system. Refer to the Operation and Maintenance Manual in the Maintenance Section for more information on priming the fuel system.

The micron rating and the location of a primary fuel filter is important in cold weather operation. The primary fuel filter and the fuel supply line are the most common components that are affected by cold fuel.

Fuel Heaters

Note: The OEM may equip the application with fuel heaters. If this is the case, disconnect an electric type of fuel heater in warm weather in order to prevent overheating of the fuel. If the type of fuel heater is a heat exchanger, the OEM should have included a bypass for warm weather. Ensure that the bypass is operational during warm weather in order to prevent overheating of the fuel.

For more information about fuel heaters (if equipped), refer to the OEM information.

Maintenance Section

Refill Capacities

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Refill Capacities

Lubrication System

The refill capacities for the engine crankcase reflect the approximate capacity of the crankcase or sump plus standard oil filters. Auxiliary oil filter systems will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter. Refer to the Operation and Maintenance Manual, "Maintenance Section" for more information on Lubricant Specifications.

402C-05 Engine

Table 8

402C-05 Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	1.61 L (1.7 qt)	2.01 L (2.1 qt)
Total Lubrication System ⁽²⁾		

- (1) These values are the approximate capacities for the crankcase oil sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

403C-07 Engine

Table 9

403C-07 Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	2.35 L (2.5 qt)	3.05 L (3.2 qt)
Total Lubrication System ⁽²⁾		

- (1) These values are the approximate capacities for the crankcase oil sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

403C-11 Engine

Table 10

403C-11 Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	3.4 L (3.6 qt)	4.9 L (5.2 qt)
Total Lubrication System ⁽²⁾		

- (1) These values are the approximate capacities for the crankcase oil sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

403C-15 Engine

Table 11

403C-15 Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	4.5 L (4.8 qt)	6 L (6.3 qt)
Total Lubrication System ⁽²⁾		

- (1) These values are the approximate capacities for the crankcase oil sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

404C-15 Engine

Table 12

404C-15 Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	4.1 L (4.3 qt)	6.5 L (6.9 qt)
Total Lubrication System ⁽²⁾		

- (1) These values are the approximate capacities for the crankcase oil sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

404C-22 and 404C-22T Engine

Table 13

404C-22 and 404C-22T Engine Refill Capacities		
Compartment or System	Minimum	Maximum
Crankcase Oil Sump ⁽¹⁾	8.9 L (9.4 qt)	10.6 L (11.2 qt)
Total Lubrication System ⁽²⁾		

- (1) More than one style of sump may be used on these engines. Use these values to estimate the refill capacity. Use the engine oil level gauge to fill the engine to the correct oil level. Record the result in this table. These values are the approximate capacities for the Crankcase Oil Sump which includes the standard factory installed oil filters. Engines with auxiliary oil filters will require additional oil. Refer to the OEM specifications for the capacity of the auxiliary oil filter.
- (2) The Total Lubrication System includes the capacity for the Crankcase Oil Sump plus the capacity of factory installed oil filters and other filters added to the lubrication system. Enter the value for the capacity of the Total Lubrication System in this row.

Cooling System

To maintain the cooling system, the Total Cooling System capacity must be known. The approximate capacity is for the engine cooling system. External System capacities will vary among applications. Refer to the OEM specifications for the External System capacity. This capacity information will be needed in order to determine the amount of coolant/antifreeze that is required for the Total Cooling System.

402C-05 Engine

Table 14

402C-05 Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	1.1	1.2
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity of the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

403C-07 Engine

Table 15

403C-07 Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	1.2	1.3
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity of the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

403C-11 Engine

Table 16

403C-11 Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	1.9	2.0
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity of the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

403C-15 Engine

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Table 17

403C-15 Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	2.6	2.7
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity of the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

404C-15 Engine

Table 18

404C-15 Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	2.4	2.5
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity of the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

404C-22 and 404C-22T Engine

Table 19

404C-22 and 404C-22T Engine Refill Capacities		
Compartment or System	Liters	Quarts
Engine Only	3.6	3.8
External System Per OEM ⁽¹⁾		
Total Cooling System ⁽²⁾		

- (1) The External System includes a radiator or an expansion tank with the following components: heat exchanger and piping. Refer to the OEM specifications. Enter the value for the capacity of the External System in this row.
- (2) The Total Cooling System capacity includes the capacity for the Engine plus the External System. Enter the value for the capacity of the Total Cooling System in this row.

Fluid Recommendations

General Lubricant Information

Because of government regulations regarding the certification of exhaust emissions from the engine, the lubricant recommendations must be followed.

Engine Manufacturers Association (EMA) Oils

The "Engine Manufacturers Association Recommended Guideline on Diesel Engine Oil" is recognized by Perkins. For detailed information about this guideline, see the latest edition of EMA publication, "EMA DHD -1".

API Oils

The Engine Oil Licensing and Certification System by the American Petroleum Institute (API) is recognized by Perkins. For detailed information about this system, see the latest edition of the "API publication No. 1509". Engine oils that bear the API symbol are authorized by API.

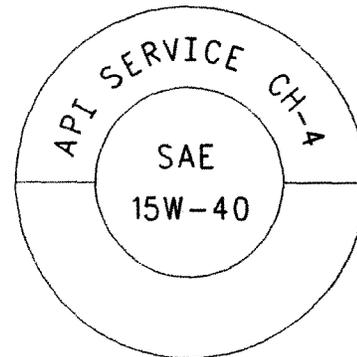


Illustration 22

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Typical API symbol

Diesel engine oils CC, CD, CD-2, and CE have not been API authorized classifications since 1 January 1996. Table 20 summarizes the status of the classifications.

Table 20

API Classifications	
Current	Obsolete
CF-4, CG-4, CH-4	CE
CF	CC, CD
CF-2 ⁽¹⁾	CD-2 ⁽¹⁾

⁽¹⁾ The classifications CD-2 and American Petroleum Institute CF-2 are for two-cycle diesel engines. Perkins does not sell engines that utilize CD-2 and API CF-2 oils.

Terminology

Certain abbreviations follow the nomenclature of "SAE J754". Some classifications follow "SAE J183" abbreviations, and some classifications follow the "EMA Recommended Guideline on Diesel Engine Oil". In addition to Perkins definitions, there are other definitions that will be of assistance in purchasing lubricants. Recommended oil viscosities can be found in this publication, "Fluid Recommendations/Engine Oil" topic (Maintenance Section).

Engine Oil

Commercial Oils

The performance of commercial diesel engine oils is based on American Petroleum Institute (API) classifications. These API classifications are developed in order to provide commercial lubricants for a broad range of diesel engines that operate at various conditions.

Only use commercial oils that meet the following classifications:

- EMA DHD-1 multigrade oil (preferred oil)
- API CH-4 multigrade oil (preferred oil)
- ACEAE5

In order to make the correct choice of a commercial oil, refer to the following explanations:

EMA DHD-1 – The Engine Manufacturers Association (EMA) has developed lubricant recommendations as an alternative to the API oil classification system. DHD-1 is a Recommended Guideline that defines a level of oil performance for these types of diesel engines: high speed, four stroke cycle, heavy-duty, and light duty. DHD-1 oils may be used in Perkins engines when the following oils are recommended: API CH-4, API CG-4, and API CF-4. DHD-1 oils are intended to provide superior performance in comparison to API CG-4 and API CF-4.

DHD-1 oils will meet the needs of high performance Perkins diesel engines that are operating in many applications. The tests and the test limits that are used to define DHD-1 are similar to the new API CH-4 classification. Therefore, these oils will also meet the requirements for diesel engines that require low emissions. DHD-1 oils are designed to control the harmful effects of soot with improved wear resistance and improved resistance to plugging of the oil filter. These oils will also provide superior piston deposit control for engines with either two-piece steel pistons or aluminum pistons.

All DHD-1 oils must complete a full test program with the base stock and with the viscosity grade of the finished commercial oil. The use of "API Base Oil Interchange Guidelines" are not appropriate for DHD-1 oils. This feature reduces the variation in performance that can occur when base stocks are changed in commercial oil formulations.

DHD-1 oils are recommended for use in extended oil change interval programs that optimize the life of the oil. These oil change interval programs are based on oil analysis. DHD-1 oils are recommended for conditions that demand a premium oil. Your Perkins dealer or your Perkins distributor has the specific guidelines for optimizing oil change intervals.

API CH-4 – API CH-4 oils were developed in order to meet the requirements of the new high performance diesel engines. Also, the oil was designed to meet the requirements of the low emissions diesel engines. API CH-4 oils are also acceptable for use in older diesel engines and in diesel engines that use high sulfur diesel fuel. API CH-4 oils may be used in Perkins engines that use API CG-4 and API CF-4 oils. API CH-4 oils will generally exceed the performance of API CG-4 oils in the following criteria: deposits on pistons, control of oil consumption, wear of piston rings, valve train wear, viscosity control, and corrosion.

Three new engine tests were developed for the API CH-4 oil. The first test specifically evaluates deposits on pistons for engines with the two-piece steel piston. This test (piston deposit) also measures the control of oil consumption. A second test is conducted with moderate oil soot. The second test measures the following criteria: wear of piston rings, wear of cylinder liners, and resistance to corrosion. A third new test measures the following characteristics with high levels of soot in the oil: wear of the valve train, resistance of the oil in plugging the oil filter, and control of sludge.

In addition to the new tests, API CH-4 oils have tougher limits for viscosity control in applications that generate high soot. The oils also have improved oxidation resistance. API CH-4 oils must pass an additional test (piston deposit) for engines that use aluminum pistons (single piece). Oil performance is also established for engines that operate in areas with high sulfur diesel fuel.

All of these improvements allow the API CH-4 oil to achieve optimum oil change intervals. API CH-4 oils are recommended for use in extended oil change intervals. API CH-4 oils are recommended for conditions that demand a premium oil. Your Perkins dealer or your Perkins distributor has specific guidelines for optimizing oil change intervals.

Some commercial oils that meet the API classifications may require reduced oil change intervals. To determine the oil change interval, closely monitor the condition of the oil and perform a wear metal analysis.

NOTICE

Failure to follow these oil recommendations can cause shortened engine service life due to deposits and/or excessive wear.

Total Base Number (TBN) and Fuel Sulfur Levels for Direct Injection (DI) Diesel Engines

The Total Base Number (TBN) for an oil depends on the fuel sulfur level. For direct injection engines that use distillate fuel, the minimum TBN of the new oil must be 10 times the fuel sulfur level. The TBN is defined by "ASTM D2896". The minimum TBN of the oil is 5 regardless of fuel sulfur level. Illustration 23 demonstrates the TBN.

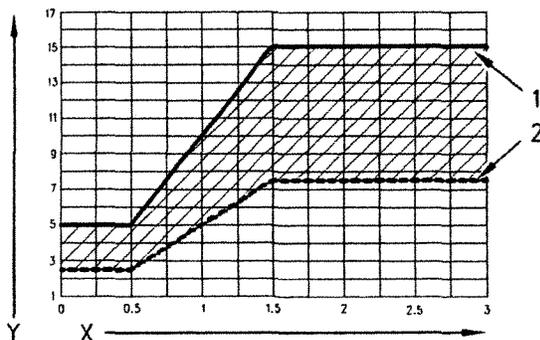


Illustration 23

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- (Y) TBN by "ASTM D2896"
- (X) Percentage of fuel sulfur by weight
- (1) TBN of new oil
- (2) Change the oil when the TBN deteriorates to 50 percent of the original TBN.

Use the following guidelines for fuel sulfur levels that exceed 1.5 percent:

- Choose an oil with the highest TBN that meets one of these classifications: EMA DHD-1 and API CH-4.
- Reduce the oil change interval. Base the oil change interval on the oil analysis. Ensure that the oil analysis includes the condition of the oil and a wear metal analysis.

Excessive piston deposits can be produced by an oil with a high TBN. These deposits can lead to a loss of control of the oil consumption and to the polishing of the cylinder bore.

NOTICE

Operating Direct Injection (DI) diesel engines with fuel sulphur levels over 0.5 percent will require shortened oil change intervals in order to help maintain adequate wear protection.

Table 21

Percentage of Sulfur in the fuel	Oil change interval
Lower than 0.5	Normal
0.5 to 1.0	0.75 of normal
Greater than 1.0	0.50 of normal

Lubricant Viscosity Recommendations for Direct Injection (DI) Diesel Engines

The correct SAE viscosity grade of oil is determined by the minimum ambient temperature during cold engine start-up, and the maximum ambient temperature during engine operation.

Refer to Table 22 (minimum temperature) in order to determine the required oil viscosity for starting a cold engine.

Refer to Table 22 (maximum temperature) in order to select the oil viscosity for engine operation at the highest ambient temperature that is anticipated.

Generally, use the highest oil viscosity that is available to meet the requirement for the temperature at start-up.

Table 22

Engine Oil Viscosity		
EMA LRG-1 API CH-4 Viscosity Grade	Ambient Temperature	
	Minimum	Maximum
SAE 0W20	-40 °C (-40 °F)	10 °C (50 °F)
SAE 0W30	-40 °C (-40 °F)	30 °C (86 °F)
SAE 0W40	-40 °C (-40 °F)	40 °C (104 °F)
SAE 5W30	-30 °C (-22 °F)	30 °C (86 °F)
SAE 5W40	-30 °C (-22 °F)	40 °C (104 °F)
SAE 10W30	-20 °C (-4 °F)	40 °C (104 °F)
SAE 15W40	-10 °C (14 °F)	50 °C (122 °F)

Synthetic Base Stock Oils

Synthetic base oils are acceptable for use in these engines if these oils meet the performance requirements that are specified for the engine.

Synthetic base oils generally perform better than conventional oils in the following two areas:

- Synthetic base oils have improved flow at low temperatures especially in arctic conditions.
- Synthetic base oils have improved oxidation stability especially at high operating temperatures.

Some synthetic base oils have performance characteristics that enhance the service life of the oil. Perkins does not recommend the automatic extending of the oil change intervals for any type of oil.

Re-refined Base Stock Oils

Re-refined base stock oils are acceptable for use in Perkins engines if these oils meet the performance requirements that are specified by Perkins. Re-refined base stock oils can be used exclusively in finished oil or in a combination with new base stock oils. The US military specifications and the specifications of other heavy equipment manufacturers also allow the use of re-refined base stock oils that meet the same criteria.

The process that is used to make re-refined base stock oil should adequately remove all wear metals that are in the used oil and all the additives that are in the used oil. The process that is used to make re-refined base stock oil generally involves the process of vacuum distillation and hydrotreating the used oil. Filtering is adequate for the production of high quality, re-refined base stock oil.

Lubricants for Cold Weather

When an engine is started and an engine is operated in ambient temperatures below -20 °C (-4 °F), use multigrade oils that are capable of flowing in low temperatures.

These oils have lubricant viscosity grades of SAE 0W or SAE 5W.

When an engine is started and operated in ambient temperatures below -30 °C (-22 °F), use a synthetic base stock multigrade oil with an 0W viscosity grade or with a 5W viscosity grade. Use an oil with a pour point that is lower than -50 °C (-58 °F).

The number of acceptable lubricants is limited in cold weather conditions. Perkins recommends the following lubricants for use in cold weather conditions:

First Choice – Use oil with an EMA DHD-1 Recommended Guideline. Use a CH-4 oil that has an API license. The oil should be either SAE 0W20, SAE 0W30, SAE 0W40, SAE 5W30, or SAE 5W40 lubricant viscosity grade.

Second Choice – Use an oil that has a CH-4 additive package. Although the oil has not been tested for the requirements of the API license, the oil must be either SAE 0W20, SAE 0W30, SAE 0W40, SAE 5W30, or SAE 5W40.

NOTICE

Shortened engine service life could result if second choice oils are used.

Aftermarket Oil Additives

Perkins does not recommend the use of aftermarket additives in oil. It is not necessary to use aftermarket additives in order to achieve the engine's maximum service life or rated performance. Fully formulated, finished oils consist of base oils and of commercial additive packages. These additive packages are blended into the base oils at precise percentages in order to help provide finished oils with performance characteristics that meet industry standards.

There are no industry standard tests that evaluate the performance or the compatibility of aftermarket additives in finished oil. Aftermarket additives may not be compatible with the finished oil's additive package, which could lower the performance of the finished oil. The aftermarket additive could fail to mix with the finished oil. This could produce sludge in the crankcase. Perkins discourages the use of aftermarket additives in finished oils.

To achieve the best performance from a Perkins engine, conform to the following guidelines:

- Select the correct oil, or a commercial oil that meets the "EMA Recommended Guideline on Diesel Engine Oil" or the recommended API classification.
- See the appropriate "Lubricant Viscosities" table in order to find the correct oil viscosity grade for your engine.
- At the specified interval, service the engine. Use new oil and install a new oil filter.
- Perform maintenance at the intervals that are specified in the Operation and Maintenance Manual, "Maintenance Interval Schedule".

S·O·S Oil analysis

Some engines may be equipped with an oil sampling valve. If S·O·S oil analysis is required the oil sampling valve is used to obtain samples of the engine oil. The S·O·S oil analysis will complement the preventive maintenance program.

The S·O·S oil analysis is a diagnostic tool that is used to determine oil performance and component wear rates. Contamination can be identified and measured through the use of the S·O·S oil analysis. The S·O·S oil analysis includes the following tests:

- The Wear Rate Analysis monitors the wear of the engine's metals. The amount of wear metal and type of wear metal that is in the oil is analyzed. The increase in the rate of engine wear metal in the oil is as important as the quantity of engine wear metal in the oil.
- Tests are conducted in order to detect contamination of the oil by water, glycol or fuel.
- The Oil Condition Analysis determines the loss of the oil's lubricating properties. An infrared analysis is used to compare the properties of new oil to the properties of the used oil sample. This analysis allows technicians to determine the amount of deterioration of the oil during use. This analysis also allows technicians to verify the performance of the oil according to the specification during the entire oil change interval.

Fuel Specifications

Fuel Recommendations

To get the correct power and performance from the engine, use a fuel of the correct quality. The recommended fuel specification for Perkins engines is shown below:

- Cetane number _____ 45 minimum

- Viscosity _____ 2,0 to 4.5 cSt at 40 °C (104 °F)
- Density _____ 0.835 to 0.855 Kg/liter
- Sulfur _____ 0.2% of mass, maximum
- Distillation _____ 85% at 350 °C (662 °F)
- Lubricity _____ 460 micrometers maximum wear scar on "ISO 12156 - 1"

Cetane number

This indicates the properties of ignition of the fuel. Fuel with a low cetane number can be the root cause of problems during cold start. This will affect combustion.

Viscosity

This is the resistance to flow of a fluid. If this resistance is outside the limits, the engine and the engine starting performance in particular can be affected.

Sulfur

High sulfur content of the fuel is not normally found in Europe, North America or Australasia. This can cause engine wear. When only high sulfur fuels are available, it will be necessary that high alkaline lubricating oil is used in the engine or that the lubricating oil change interval is reduced.

Distillation

This is an indication of the mixture of different hydrocarbons in the fuel. A high ratio of light weight hydrocarbons can affect the characteristics of combustion.

Lubricity

This is the capability of the fuel to prevent pump wear.

Diesel engines have the ability to burn a wide variety of fuels. These fuels are divided into four general groups:

- Group 1 (preferred fuels)
- Group 2 (permissible fuels)
- Group 3 (aviation kerosene fuels)
- Other fuels

Group 1 (preferred fuels): Specification

"DERV to EN590"

Note: Only use Arctic fuels when the temperature is below 0 °C (32 °F). Do not use Arctic fuels when the ambient temperature is above 0 °C (32 °F). To ensure that the time period between cranking the engine and first fire is kept to a minimum, only use fuel of the correct viscosity and at the correct temperature.

Gas oil to "BS2869 Class A2"

"ASTM D975 - 91 Class 2D" This can only be used if the fuel has the correct specification of lubricity.

"JIS K2204 (1992) Grades 1,2,3 and Special Grade 3" This can only be used if the fuel has the correct specification of lubricity.

Note: If low sulfur or low sulfur aromatic fuels are used, then fuel additives can be used to increase lubricity.

Group 2 (permissible fuels): Specification

These fuel specifications are considered acceptable for issues of warranty. However, these fuels may reduce the life of the engine, the engine's maximum power and the engine's fuel efficiency.

"ASTM D975 - 91 Class 1D"

"JP7, Mil T38219"

"NATO F63"

NOTICE

These fuels should have a wear scar value of 650 micrometers maximum *HFRR to ISO 12156 - 1.*

Group 3 (aviation kerosene fuels): Specification

Performance of the engine may be reduced if these fuels are used. To enable group 3 (aviation kerosene fuels) to be used, 5% spindle oil must be added. The fuel injection pump will not be covered by a warranty, even when additives are included.

"JP5 MIL T5624 (Avcat FSII, NATO F44)"

"JP8 T83133 (Avtur FSII, NATO F34)"

"Jet A"

"Jet A1, NATO F35, XF63"

Low temperature fuels

Special fuels for use in cold weather may be available for engine operation at temperatures below 0 °C (32 °F). These fuels limit the formation of wax in the fuel oil at low temperatures. If wax forms in the fuel oil, this could stop the flow of fuel oil through the filter.

Note: These fuels that lack lubricity may cause the following problems:

- Low engine power
- Difficult starting in hot conditions or in cold conditions
- White smoke
- Deterioration of emissions and misfire at certain operating conditions

Biofuel: Specification

Biofuel: A 5% mix of RME to EN14214 in conventional fuel is permitted.

NOTICE

Water emulsion fuels: These fuels are not permitted

Refer to the following fuel specifications for North America.

The preferred fuels provide maximum engine service life and performance. The preferred fuels are distillate fuels. These fuels are commonly called diesel fuel or gas oil.

The permissible fuels are crude oils or blended fuels. Use of these fuels can result in higher maintenance costs and in reduced engine service life.

Diesel fuels that meet the specifications in Table 23 will help to provide maximum engine service life and performance. In North America, diesel fuel that is identified as No. 2-D in "ASTM D975" generally meets the specifications. Table 23 is for diesel fuels that are distilled from crude oil. Diesel fuels from other sources could exhibit detrimental properties that are not defined or controlled by this specification.

Table 23

Perkins Specifications for Distillate Diesel Fuel		
Specifications	Requirements	ASTM Test
Aromatics	35% maximum	"D1319"
Ash	0.02% maximum (weight)	"D482"

(continued)

(Table 23, contd)

Carbon Residue on 10% Bottoms	0.35% maximum (weight)	"D524"
Cetane Number	40 minimum (DI engines)	"D613"
Cloud Point	The cloud point must not exceed the lowest expected ambient temperature.	-
Copper Strip Corrosion	No. 3 maximum	"D130"
Distillation	10% at 282 °C (540 °F) maximum	"D86"
	90% at 360 °C (680 °F) maximum	
Flash Point	legal limit	"D93"
API Gravity	30 minimum	"D287"
	45 maximum	
Pour Point	6 °C (10 °F) minimum below ambient temperature	"D97"
Sulfur ⁽¹⁾	0.2% maximum	"D3605" or "D1552"
Kinematic Viscosity ⁽²⁾	2.0 cSt minimum and 4.5 cSt maximum at 40 °C (104 °F)	"D445"
Water and Sediment	0.1% maximum	"D1796"
Water	0.1% maximum	"D1744"
Sediment	0.05% maximum (weight)	"D473"

(continued)

(Table 23, contd)

Gum and Resins ⁽³⁾	10 mg per 100 mL maximum	"D381"
Lubricity ⁽⁴⁾	0.38 mm (0.015 inch) maximum at 25 °C (77 °F)	"D6079"

- (1) Perkins fuel systems and engine components can operate on high sulfur fuels. Fuel sulfur levels affect exhaust emissions. High sulfur fuels also increase the potential for corrosion of internal components. Fuel sulfur levels above 0.5 percent may significantly shorten the oil change interval. For additional information, see this publication, "Fluid Recommendations/Engine Oil" topic (Maintenance Section).
- (2) The values of the fuel viscosity are the values as the fuel is delivered to the fuel injection pumps. If a fuel with a low viscosity is used, cooling of the fuel may be required to maintain a 1.4 cSt viscosity at the fuel injection pump. Fuels with a high viscosity might require fuel heaters in order to bring down the viscosity to a 20 cSt viscosity.
- (3) Follow the test conditions and procedures for gasoline (motor).
- (4) The lubricity of a fuel is a concern with low sulfur fuel. To determine the lubricity of the fuel, use either the "ASTM D6078 Scuffing Load Wear Test (SBOCLE)" or the "ASTM D6079 High Frequency Reciprocating Rig (HFRR)" test. If the lubricity of a fuel does not meet the minimum requirements, consult your fuel supplier. Do not treat the fuel without consulting the fuel supplier. Some additives are not compatible. These additives can cause problems in the fuel system.

NOTICE

Operating with fuels that do not meet the Perkins recommendations can cause the following effects: Starting difficulty, poor combustion, deposits in the fuel injectors, reduced service life of the fuel system, deposits in the combustion chamber, and reduced service life of the engine.

NOTICE

Heavy Fuel Oil (HFO), Residual fuel, or Blended fuel must NOT be used in Perkins diesel engines. Severe component wear and component failures will result if HFO type fuels are used in engines that are configured to use distillate fuel.

In extreme cold ambient conditions, you may use the distillate fuels that are specified in Table 24. However, the fuel that is selected must meet the requirements that are specified in Table 23. These fuels are intended to be used in operating temperatures that are down to -54 °C (-65 °F).

Table 24

Distillate Fuels ⁽¹⁾	
Specification	Grade
"MIL-T-5624R"	JP-5
"ASTM D1655"	Jet-A-1
"MIL-T-83133D"	JP-8

⁽¹⁾ The fuels that are listed in this Table may not meet the requirements that are specified in the "Perkins Specifications for Distillate Diesel Fuel" Table. Consult the supplier for the recommended additives in order to maintain the correct fuel lubricity.

These fuels are lighter than the No. 2 grades of fuel. The cetane number of the fuels in Table 24 must be at least 40. If the viscosity is below 1.4 cSt at 38 °C (100 °F), use the fuel only in temperatures below 0 °C (32 °F). Do not use any fuels with a viscosity of less than 1.2 cSt at 38 °C (100 °F). Fuel cooling may be required in order to maintain the minimum viscosity of 1.4 cSt at the fuel injection pump.

There are many other diesel fuel specifications that are published by governments and by technological societies. Usually, those specifications do not review all the requirements that are addressed in this specification. To ensure optimum engine performance, a complete fuel analysis should be obtained before engine operation. The fuel analysis should include all of the properties that are listed in Table 23.

Cooling System Specifications

General Coolant Information

NOTICE

Never add coolant to an overheated engine. Engine damage could result. Allow the engine to cool first.

NOTICE

If the engine is to be stored in, or shipped to an area with below freezing temperatures, the cooling system must be either protected to the lowest outside temperature or drained completely to prevent damage.

NOTICE

Frequently check the specific gravity of the coolant for proper freeze protection or for anti-boil protection.

Clean the cooling system for the following reasons:

- Contamination of the cooling system
- Overheating of the engine
- Foaming of the coolant

NOTICE

Never operate an engine without water temperature regulators in the cooling system. Water temperature regulators help to maintain the engine coolant at the proper operating temperature. Cooling system problems can develop without water temperature regulators.

Many engine failures are related to the cooling system. The following problems are related to cooling system failures: Overheating, leakage of the water pump, and plugged radiators or heat exchangers.

These failures can be avoided with correct cooling system maintenance. Cooling system maintenance is as important as maintenance of the fuel system and the lubrication system. Quality of the coolant is as important as the quality of the fuel and the lubricating oil.

Coolant is normally composed of three elements: Water, additives, and glycol.

Water

Water is used in the cooling system in order to transfer heat.

Distilled water or deionized water is recommended for use in engine cooling systems.

DO NOT use the following types of water in cooling systems: Hard water, softened water that has been conditioned with salt, and sea water.

If distilled water or deionized water is not available, use water with the properties that are listed in Table 25.

Table 25

Perkins Minimum Acceptable Water Requirements	
Property	Maximum Limit
Chloride (Cl)	40 mg/L
Sulfate (SO ₄)	100 mg/L
Total Hardness	170 mg/L
Total Solids	340 mg/L
Acidity	pH of 5.5 to 9.0

For a water analysis, consult one of the following sources:

- Local water utility company
- Agricultural agent
- Independent laboratory

Additives

Additives help to protect the metal surfaces of the cooling system. A lack of coolant additives or insufficient amounts of additives enable the following conditions to occur:

- Corrosion
- Formation of mineral deposits
- Rust
- Scale
- Foaming of the coolant

Many additives are depleted during engine operation. These additives must be replaced periodically.

Additives must be added at the correct concentration. Overconcentration of additives can cause the inhibitors to drop out-of-solution. The deposits can enable the following problems to occur:

- Formation of gel compounds
- Reduction of heat transfer
- Leakage of the water pump seal
- Plugging of radiators, coolers, and small passages

Glycol

Glycol in the coolant helps to provide protection against the following conditions:

- Boiling
- Freezing
- Cavitation of the water pump

For optimum performance, Perkins recommends a 1:1 mixture of a water/glycol solution.

Note: Use a mixture that will provide protection against the lowest ambient temperature.

Note: 100 percent pure glycol will freeze at a temperature of $-23\text{ }^{\circ}\text{C}$ ($-9\text{ }^{\circ}\text{F}$).

Most conventional coolant/antifreezes use ethylene glycol. Propylene glycol may also be used. In a 1:1 mixture with water, ethylene and propylene glycol provide similar protection against freezing and boiling. See Tables 26 and 27.

Table 26

Ethylene Glycol		
Concentration	Freeze Protection	Boil Protection
50 Percent	$-36\text{ }^{\circ}\text{C}$ ($-33\text{ }^{\circ}\text{F}$)	$106\text{ }^{\circ}\text{C}$ ($223\text{ }^{\circ}\text{F}$)
60 Percent	$-51\text{ }^{\circ}\text{C}$ ($-60\text{ }^{\circ}\text{F}$)	$111\text{ }^{\circ}\text{C}$ ($232\text{ }^{\circ}\text{F}$)

NOTICE

Do not use propylene glycol in concentrations that exceed 50 percent glycol because of propylene glycol's reduced heat transfer capability. Use ethylene glycol in conditions that require additional protection against boiling or freezing.

Table 27

Propylene Glycol		
Concentration	Freeze Protection	Anti-Boil Protection
50 Percent	$-29\text{ }^{\circ}\text{C}$ ($-20\text{ }^{\circ}\text{F}$)	$106\text{ }^{\circ}\text{C}$ ($223\text{ }^{\circ}\text{F}$)

To check the concentration of glycol in the coolant, measure the specific gravity of the coolant.

Coolant Recommendations

The following two coolants are used in Perkins diesel engines:

Preferred – Perkins Extended Life Coolant (ELC)

Acceptable – A commercial heavy-duty coolant/antifreeze that meets "ASTM D4985" specifications

NOTICE

Do not use a commercial coolant/antifreeze that only meets the ASTM D3306 specification. This type of coolant/antifreeze is made for light automotive applications.

Perkins recommends a 1:1 mixture of water and glycol. This mixture of water and glycol will provide optimum heavy-duty performance as a coolant/antifreeze. This ratio may be increased to 1:2 water to glycol if extra freezing protection is required.

Note: A commercial heavy-duty coolant/antifreeze that meets "ASTM D4985" specifications MAY require a treatment with an SCA at the initial fill. Read the label or the instructions that are provided by the OEM of the product.

In stationary engine applications and marine engine applications that do not require anti-boil protection or freeze protection, a mixture of SCA and water is acceptable. Perkins recommends a six percent to eight percent concentration of SCA in those cooling systems. Distilled water or deionized water is preferred. Water which has the recommended properties may be used.

Engines that are operating in an ambient temperature above 43 °C (109.4 °F) must use SCA and water. Engines that operate in an ambient temperature above 43 °C (109.4 °F) and below 0 °C (32 °F) due to seasonal variations consult your Perkins dealer or your Perkins distributor for the correct level of protection.

Table 28

Coolant Service Life	
Coolant Type	Service Life
Perkins ELC	12,000 Service Hours or Six Years
Commercial Heavy-Duty Coolant/Antifreeze that meets "ASTM D4985"	3000 Service Hours or Two Years
Perkins POWERPART SCA	3000 Service Hours or Two Years
Commercial SCA and Water	3000 Service Hours or Two Years

Extended Life Coolant (ELC)

Perkins provides Extended Life Coolant (ELC) for use in the following applications:

- Heavy-duty spark ignited gas engines
- Heavy-duty diesel engines
- Automotive applications

The anti-corrosion package for ELC is different from the anti-corrosion package for other coolants. ELC is an ethylene glycol base coolant. However, ELC contains organic corrosion inhibitors and antifoam agents with low amounts of nitrite. Perkins ELC has been formulated with the correct amount of these additives in order to provide superior corrosion protection for all metals in engine cooling systems.

ELC extends the service life of the coolant to 12000 service hours or six years. ELC does not require a frequent addition of a Supplemental Coolant Additive (SCA). An Extender is the only additional maintenance that is needed at 6000 service hours or one half of the ELC service life.

ELC is available in a 1:1 premixed cooling solution with distilled water. The Premixed ELC provides freeze protection to -36 °C (-33 °F). The Premixed ELC is recommended for the initial fill of the cooling system. The Premixed ELC is also recommended for topping off the cooling system.

ELC Concentrate is also available. ELC Concentrate can be used to lower the freezing point to -51 °C (-60 °F) for arctic conditions.

Containers of several sizes are available. Consult your Perkins dealer or your Perkins distributor for the part numbers.

ELC Cooling System Maintenance

Correct additions to the Extended Life Coolant

NOTICE

Use only Perkins products for pre-mixed or concentrated coolants.

Use only Perkins Extender with Extended Life Coolant.

Mixing Extended Life Coolant with other products reduces the Extended Life Coolant service life. Failure to follow the recommendations can reduce cooling system components life unless appropriate corrective action is performed.

In order to maintain the correct balance between the antifreeze and the additives, you must maintain the recommended concentration of Extended Life Coolant (ELC). Lowering the proportion of antifreeze lowers the proportion of additive. This will lower the ability of the coolant to protect the system from pitting, from cavitation, from erosion, and from deposits.

NOTICE

Do not use a conventional coolant to top-off a cooling system that is filled with Extended Life Coolant (ELC).

Do not use standard supplemental coolant additive (SCA). Only use ELC Extender in cooling systems that are filled with ELC.

Perkins ELC Extender

ELC Extender is added to the cooling system halfway through the ELC service life. Treat the cooling system with ELC Extender at 6000 hours or three years. Use Table 29 in order to determine the correct amount of ELC Extender that is required.

Containers of several sizes are available. Consult your Perkins dealer or your Perkins distributor for the part numbers.

Use the formula in Table 29 to determine the correct amount of ELC Extender for your cooling system. Refer to Operation and Maintenance Manual, "Refill Capacities" in order to determine the capacity of the cooling system.

Table 29

Formula For Adding ELC Extender To ELC	
$V \times 0.02 = X$	
V is the total capacity of the cooling system.	
X is the amount of ELC Extender that is required.	

Table 30 is an example for using the formula that is in Table 29.

Table 30

Example Of The Equation For Adding ELC Extender To ELC		
Total Volume of the Cooling System (V)	Multiplication Factor	Amount of ELC Extender that is Required (X)
9 L (2.4 US gal)	× 0.02	0.18 L (0.05 US gal) or (6 fl oz)

NOTICE

When using Perkins ELC, do not use standard SCA's or SCA filters.

ELC Cooling System Cleaning

Note: If the cooling system is already using ELC, cleaning agents are not required to be used at the specified coolant change interval. Cleaning agents are only required if the system has been contaminated by the addition of some other type of coolant or by cooling system damage.

Clean water is the only cleaning agent that is required when ELC is drained from the cooling system.

After the cooling system is drained and after the cooling system is refilled, operate the engine while the cooling system filler cap is removed. Operate the engine until the coolant level reaches the normal operating temperature and until the coolant level stabilizes. As needed, add the coolant mixture in order to fill the system to the specified level.

Changing to Perkins ELC

To change from heavy-duty coolant/antifreeze to the Perkins ELC, perform the following steps:

NOTICE

Care must be taken to ensure that all fluids are contained during performance of inspection, maintenance, testing, adjusting and the repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

1. Drain the coolant into a suitable container.
2. Dispose of the coolant according to local regulations.
3. Flush the system with clean water in order to remove any debris.
4. Use Perkins cleaner to clean the system. Follow the instruction on the label.
5. Drain the cleaner into a suitable container. Flush the cooling system with clean water.
6. Fill the cooling system with clean water and operate the engine until the engine is warmed to 49° to 66°C (120° to 150°F).

NOTICE

Incorrect or incomplete flushing of the cooling system can result in damage to copper and other metal components.

To avoid damage to the cooling system, make sure to completely flush the cooling system with clear water. Continue to flush the system until all the signs of the cleaning agent are gone.

7. Drain the cooling system into a suitable container and flush the cooling system with clean water.

Note: The cooling system cleaner must be thoroughly flushed from the cooling system. Cooling system cleaner that is left in the system will contaminate the coolant. The cleaner may also corrode the cooling system.

8. Repeat Steps 6 and 7 until the system is completely clean.
9. Fill the cooling system with the Perkins Premixed ELC.

ELC Cooling System Contamination

NOTICE

Mixing ELC with other products reduces the effectiveness of the ELC and shortens the ELC service life. Use only Perkins Products for premixed or concentrate coolants. Use only Perkins ELC extender with Perkins ELC. Failure to follow these recommendations can result in shortened cooling system component life.

ELC cooling systems can withstand contamination to a maximum of ten percent of conventional heavy-duty coolant/antifreeze or SCA. If the contamination exceeds ten percent of the total system capacity, perform ONE of the following procedures:

- Drain the cooling system into a suitable container. Dispose of the coolant according to local regulations. Flush the system with clean water. Fill the system with the Perkins ELC.
- Drain a portion of the cooling system into a suitable container according to local regulations. Then, fill the cooling system with premixed ELC. This should lower the contamination to less than 10 percent.
- Maintain the system as a conventional Heavy-Duty Coolant. Treat the system with an SCA. Change the coolant at the interval that is recommended for the conventional Heavy-Duty Coolant.

Commercial Heavy-Duty Coolant/Antifreeze and SCA

NOTICE

Commercial Heavy-Duty Coolant which contains Amine as part of the corrosion protection system must not be used.

NOTICE

Never operate an engine without water temperature regulators in the cooling system. Water temperature regulators help to maintain the engine coolant at the correct operating temperature. Cooling system problems can develop without water temperature regulators.

Check the coolant/antifreeze (glycol concentration) in order to ensure adequate protection against boiling or freezing. Perkins recommends the use of a refractometer for checking the glycol concentration.

Perkins engine cooling systems should be tested at 500 hour intervals for the concentration of Supplemental Coolant Additive (SCA).

Additions of SCA are based on the results of the test. An SCA that is liquid may be needed at 500 hour intervals.

Refer to Table 31 for part numbers and for quantities of SCA.

Table 31

Perkins Liquid SCA	
Part Number	Quantity
21825755	.

Adding the SCA to Heavy-Duty Coolant at the Initial Fill

Commercial heavy-duty coolant/antifreeze that meets "ASTM D4985" specifications MAY require an addition of SCA at the initial fill. Read the label or the instructions that are provided by the OEM of the product.

Use the equation that is in Table 32 to determine the amount of Perkins SCA that is required when the cooling system is initially filled.

Table 32

Equation For Adding The SCA To The Heavy-Duty Coolant At The Initial Fill
$V \times 0.045 = X$
V is the total volume of the cooling system.
X is the amount of SCA that is required.

Table 33 is an example for using the equation that is in Table 32.

Table 33

Example Of The Equation For Adding The SCA To The Heavy-Duty Coolant At The Initial Fill		
Total Volume of the Cooling System (V)	Multiplication Factor	Amount of SCA that is Required (X)
15 L (4 US gal)	× 0.045	0.7 L (24 oz)

Adding The SCA to The Heavy-Duty Coolant For Maintenance

Heavy-duty coolant/antifreeze of all types REQUIRE periodic additions of an SCA.

Test the coolant/antifreeze periodically for the concentration of SCA. For the interval, refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" (Maintenance Section). Test the concentration of SCA.

Additions of SCA are based on the results of the test. The size of the cooling system determines the amount of SCA that is needed.

Use the equation that is in Table 34 to determine the amount of Perkins SCA that is required, if necessary:

Table 34

Equation For Adding The SCA To The Heavy-Duty Coolant For Maintenance
$V \times 0.014 = X$
V is the total volume of the cooling system.
X is the amount of SCA that is required.

Table 35 is an example for using the equation that is in Table 34.

Table 35

Example Of The Equation For Adding The SCA To The Heavy-Duty Coolant For Maintenance		
Total Volume of the Cooling System (V)	Multiplication Factor	Amount of SCA that is Required (X)
15 L (4 US gal)	× 0.014	0.2 L (7 oz)

Cleaning the System of Heavy-Duty Coolant/Antifreeze

Perkins cooling system cleaners are designed to clean the cooling system of harmful scale and corrosion. Perkins cooling system cleaners dissolve mineral scale, corrosion products, light oil contamination and sludge.

- Clean the cooling system after used coolant is drained or before the cooling system is filled with new coolant.
- Clean the cooling system whenever the coolant is contaminated or whenever the coolant is foaming.

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Maintenance Interval Schedule

Ensure that the Safety Information, Warnings, and Instructions are read and understood before operation or maintenance procedures are performed.

Note: The frequency that the engine oil is changed will be affected if the load factor for the engine is greater than 40 percent. Consult your Perkins dealer or your Perkins distributor if assistance is required to calculate the load factor for your engine.

Before each consecutive interval is performed, all of the maintenance requirements from the previous interval must also be performed.

When Required

Battery - Replace	53
Battery or Battery Cable - Disconnect	54
Engine - Clean	60
Engine Air Cleaner Element (Single Element) - Inspect/Replace	60
Fuel System - Prime	65
Severe Service Application - Check	72

Daily

Cooling System Coolant Level - Check	58
Driven Equipment - Check	60
Engine Air Cleaner Service Indicator - Inspect	60
Engine Oil Level - Check	62
Fuel System Primary Filter/Water Separator - Drain	69
Walk-Around Inspection	74

Every 50 Service Hours or Weekly

Fuel Tank Water and Sediment - Drain	70
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Every 250 Service Hours or 6 Months

Alternator and Fan Belts - Inspect/Adjust	52
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Every 500 Service Hours

Fuel System Filter - Replace	67
------------------------------------	----

Every 500 Service Hours or 1 Year

Battery Electrolyte Level - Check	54
Cooling System Supplemental Coolant Additive (SCA) - Test/Add	59
Engine Air Cleaner Element (Single Element) - Inspect/Replace	60
Engine Oil and Filter - Change	62
Hoses and Clamps - Inspect/Replace	70
Radiator - Clean	71

Every 1000 Service Hours

Alternator and Fan Belts - Replace	53
Engine Valve Lash - Inspect/Adjust	64
Turbocharger - Inspect	73

Every 2000 Service Hours

Alternator - Inspect	52
Engine Crankcase Breather - Replace	61
Engine Mounts - Inspect	62
Starting Motor - Inspect	73

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i02176674

Alternator - Inspect

Perkins recommends a scheduled inspection of the alternator. Inspect the alternator for loose connections and correct battery charging. Inspect the ammeter (if equipped) during engine operation in order to ensure correct battery performance and/or correct performance of the electrical system. Make repairs, as required.

Check the alternator and the battery charger for correct operation. If the batteries are correctly charged, the ammeter reading should be very near zero. All batteries should be kept charged. The batteries should be kept warm because temperature affects the cranking power. If the battery is too cold, the battery will not crank the engine. When the engine is not run for long periods of time or if the engine is run for short periods, the batteries may not fully charge. A battery with a low charge will freeze more easily than a battery with a full charge.

i02166535

Alternator and Fan Belts - Inspect/Adjust

Inspection

To maximize the engine performance, inspect the belts for wear and for cracking. Replace belts that are worn or damaged.

For applications that require multiple drive belts, replace the belts in matched sets. Replacing only one belt of a matched set will cause the new belt to carry more load because the older belt is stretched. The additional load on the new belt could cause the new belt to break.

If the belts are too loose, vibration causes unnecessary wear on the belts and pulleys. Loose belts may slip enough to cause overheating.

To accurately check the belt tension, a suitable gauge should be used.

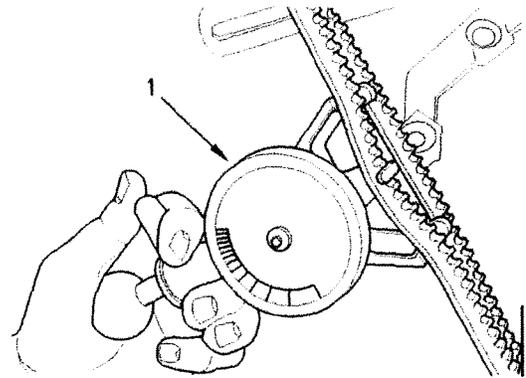


Illustration 24

g01003936

Typical example

(1) Burroughs Gauge

Install the gauge (1) at the center of the belt between the alternator and the crankshaft pulley and check the belt tension. The correct tension for a new belt is 400 N (90 lb) to 489 N (110 lb). The correct tension for a used belt that has been in operation for 30 minutes or more at the rated speed is 267 N (60 lb) to 356 N (80 lb).

If twin belts are installed, check and adjust the tension on both belts.

Adjustment

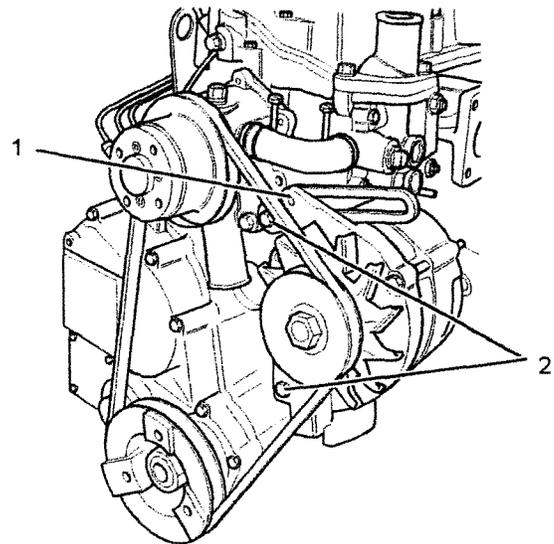


Illustration 25

g01091158

Typical example

(1) Adjusting bolt
(2) Mounting bolts

1. Loosen the mounting bolts (2) and the adjusting bolt (1).

2. Move the alternator in order to increase or decrease the belt tension.
3. Tighten the adjusting bolt (1). Tighten the mounting bolts (2). Refer to the Specifications Manual for the correct torque settings.

i02166560

Alternator and Fan Belts - Replace

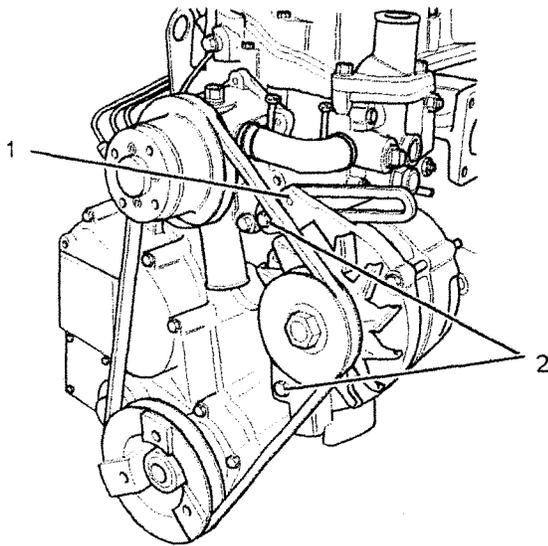


Illustration 26

g01091158

Typical example

- (1) Adjusting bolt
(2) Mounting bolts

For applications that require multiple drive belts, replace the belts in matched sets. Replacing only one belt of a matched set will cause the new belt to carry more load because the older belt is stretched. The additional load on the new belt could cause the new belt to break.

Note: When new belts are installed, check the belt tension again after 20 hours of engine operation.

Refer to the Disassembly and Assembly Manual for the installation procedure and the removal procedure for the belt.

i02150857

Battery - Replace

⚠ WARNING

Batteries give off combustible gases which can explode. A spark can cause the combustible gases to ignite. This can result in severe personal injury or death.

Ensure proper ventilation for batteries that are in an enclosure. Follow the proper procedures in order to help prevent electrical arcs and/or sparks near batteries. Do not smoke when batteries are serviced.

⚠ WARNING

The battery cables or the batteries should not be removed with the battery cover in place. The battery cover should be removed before any servicing is attempted.

Removing the battery cables or the batteries with the cover in place may cause a battery explosion resulting in personal injury.

1. Switch the engine to the OFF position. Remove all electrical loads.
2. Turn off any battery chargers. Disconnect any battery chargers.
3. The NEGATIVE "-" cable connects the NEGATIVE "-" battery terminal to the NEGATIVE "-" terminal on the starting motor. Disconnect the cable from the NEGATIVE "-" battery terminal.
4. The POSITIVE "+" cable connects the POSITIVE "+" battery terminal to the POSITIVE "+" terminal on the starting motor. Disconnect the cable from the POSITIVE "+" battery terminal.

Note: Always recycle a battery. Never discard a battery. Return used batteries to an appropriate recycling facility.

5. Remove the used battery.
6. Install the new battery.

Note: Before the cables are connected, ensure that the engine start switch is OFF.

7. Connect the cable from the starting motor to the POSITIVE "+" battery terminal.

8. Connect the cable from the NEGATIVE "-" terminal on the starting motor to the NEGATIVE "-" battery terminal.

i02177936

Battery Electrolyte Level - Check

When the engine is not run for long periods of time or when the engine is run for short periods, the batteries may not fully recharge. Ensure a full charge in order to help prevent the battery from freezing. If batteries are correctly charged, ammeter reading should be very near zero.

WARNING

All lead-acid batteries contain sulfuric acid which can burn the skin and clothing. Always wear a face shield and protective clothing when working on or near batteries.

1. Remove the filler caps. Maintain the electrolyte level to the "FULL" mark on the battery.

If the addition of water is necessary, use distilled water. If distilled water is not available use clean water that is low in minerals. Do not use artificially softened water.

2. Check the condition of the electrolyte with a suitable battery tester.
3. Keep the batteries clean.

Clean the battery case with one of the following cleaning solutions:

- A mixture of 0.1 kg (0.2 lb) of baking soda and 1 L (1 qt) of clean water
- A mixture of 0.1 L (0.11 qt) of ammonia and 1 L (1 qt) of clean water

Thoroughly rinse the battery case with clean water.

Use a fine grade of sandpaper to clean the terminals and the cable clamps. Clean the items until the surfaces are bright or shiny. **DO NOT** remove material excessively. Excessive removal of material can cause the clamps to not fit correctly. Coat the clamps and the terminals with a suitable silicone lubricant or petroleum jelly.

i02150865

Battery or Battery Cable - Disconnect

WARNING

The battery cables or the batteries should not be removed with the battery cover in place. The battery cover should be removed before any servicing is attempted.

Removing the battery cables or the batteries with the cover in place may cause a battery explosion resulting in personal injury.

1. Turn the start switch to the OFF position. Turn the ignition switch (if equipped) to the OFF position and remove the key and all electrical loads.
2. Disconnect the negative battery terminal at the battery that goes to the start switch. Ensure that the cable cannot contact the terminal. When four 12 volt batteries are involved, the negative side of two batteries must be disconnected.
3. Tape the leads in order to help prevent accidental starting.
4. Proceed with necessary system repairs. Reverse the steps in order to reconnect all of the cables.

i02158047

Cooling System Coolant (Commercial Heavy-Duty) - Change

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to Local regulations and mandates.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Clean the cooling system and flush the cooling system before the recommended maintenance interval if the following conditions exist:

- The engine overheats frequently.
- Foaming is observed.
- The oil has entered the cooling system and the coolant is contaminated.
- The fuel has entered the cooling system and the coolant is contaminated.

Note: When the cooling system is cleaned, only clean water is needed.

Note: Inspect the water pump and the water temperature regulator after the cooling system has been drained. This is a good opportunity to replace the water pump, the water temperature regulator and the hoses, if necessary.

Drain

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

1. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap.

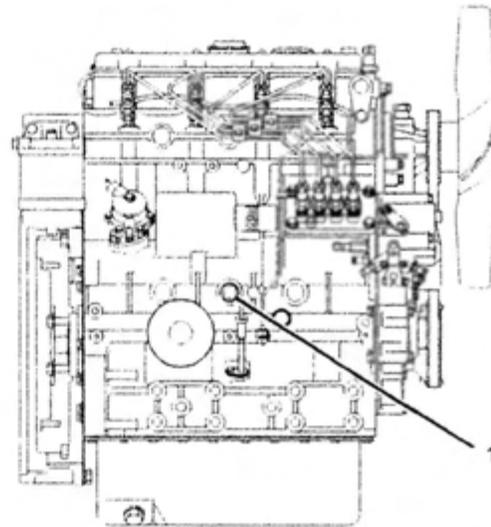


Illustration 27

g01087295

Typical example

2. Open the drain cock or remove the drain plug (1) on the engine. Open the drain cock or remove the drain plug on the radiator.

Allow the coolant to drain.

NOTICE

Dispose of used engine coolant or recycle. Various methods have been proposed to reclaim used coolant for reuse in engine cooling systems. The full distillation procedure is the only method acceptable by Perkins to reclaim the coolant.

For information regarding the disposal and the recycling of used coolant, consult your Perkins dealer or your Perkins distributor.

Flush

1. Flush the cooling system with clean water in order to remove any debris.
2. Close the drain cock or install the drain plug in the engine. Close the drain cock or install the drain plug on the radiator.

NOTICE

Do not fill the cooling system faster than 5 L (1.3 US gal) per minute to avoid air locks.

Cooling system air locks may result in engine damage.

3. Fill the cooling system with clean water. Install the cooling system filler cap.

4. Start and run the engine at low idle until the temperature reaches 49 to 66 °C (120 to 150 °F).
5. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap. Open the drain cock or remove the drain plug on the engine. Open the drain cock or remove the drain plug on the radiator. Allow the water to drain. Flush the cooling system with clean water.

Fill

1. Close the drain cock or install the drain plug on the engine. Close the drain cock or install the drain plug on the radiator.

NOTICE

Do not fill the cooling system faster than 5 L (1.3 US gal) per minute to avoid air locks.

Cooling system air locks may result in engine damage.

2. Fill the cooling system with Commercial Heavy-Duty Coolant. Add Supplemental Coolant Additive to the coolant. For the correct amount, refer to the Operation and Maintenance Manual, "Fluid Recommendations" topic (Maintenance Section) for more information on cooling system specifications. Do not install the cooling system filler cap.
3. Start and run the engine at low idle. Increase the engine rpm to high idle. Run the engine at high idle for one minute in order to purge the air from the cavities of the engine block. Stop the engine.
4. Check the coolant level. Maintain the coolant level within 13 mm (0.5 inch) below the bottom of the pipe for filling. Maintain the coolant level in the expansion bottle (if equipped) at the correct level.
5. Clean the cooling system filler cap. Inspect the gasket that is on the cooling system filler cap. If the gasket that is on the cooling system filler cap is damaged, discard the old cooling system filler cap and install a new cooling system filler cap. If the gasket that is on the cooling system filler cap is not damaged, use a suitable pressurizing pump in order to pressure test the cooling system filler cap. The correct pressure for the cooling system filler cap is stamped on the face of the cooling system filler cap. If the cooling system filler cap does not retain the correct pressure, install a new cooling system filler cap.
6. Start the engine. Inspect the cooling system for leaks and for correct operating temperature.

i02150871

Cooling System Coolant (ELC) - Change

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to Local regulations and mandates.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Clean the cooling system and flush the cooling system before the recommended maintenance interval if the following conditions exist:

- The engine overheats frequently.
- Foaming is observed.
- The oil has entered the cooling system and the coolant is contaminated.
- The fuel has entered the cooling system and the coolant is contaminated.

Note: When the cooling system is cleaned, only clean water is needed when the ELC is drained and replaced.

Note: Inspect the water pump and the water temperature regulator after the cooling system has been drained. This is a good opportunity to replace the water pump, the water temperature regulator and the hoses, if necessary.

Drain

WARNING

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

1. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap.

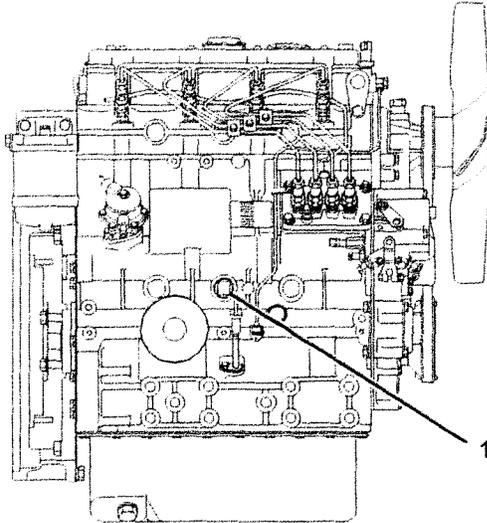


Illustration 28

g01087295

Typical example

2. Open the drain cock or remove the drain plug (1) on the engine. Open the drain cock or remove the drain plug on the radiator.

Allow the coolant to drain.

NOTICE

Dispose of used engine coolant or recycle. Various methods have been proposed to reclaim used coolant for reuse in engine cooling systems. The full distillation procedure is the only method acceptable by Perkins to reclaim the coolant.

For information regarding the disposal and the recycling of used coolant, consult your Perkins dealer or your Perkins distributor.

Flush

1. Flush the cooling system with clean water in order to remove any debris.
2. Close the drain cock or install the drain plug in the engine. Close the drain cock or install the drain plug on the radiator.

NOTICE

Do not fill the cooling system faster than 5 L (1.3 US gal) per minute to avoid air locks.

Cooling system air locks may result in engine damage.

3. Fill the cooling system with clean water. Install the cooling system filler cap.

4. Start and run the engine at low idle until the temperature reaches 49 to 66 °C (120 to 150 °F).

5. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap. Open the drain cock or remove the drain plug on the engine. Open the drain cock or remove the drain plug on the radiator. Allow the water to drain. Flush the cooling system with clean water.

Fill

1. Close the drain cock or install the drain plug on the engine. Close the drain cock or install the drain plug on the radiator.

NOTICE

Do not fill the cooling system faster than 5 L (1.3 US gal) per minute to avoid air locks.

Cooling system air locks may result in engine damage.

2. Fill the cooling system with Extended Life Coolant (ELC). Refer to the Operation and Maintenance Manual, "Fluid Recommendations" topic (Maintenance Section) for more information on cooling system specifications. Do not install the cooling system filler cap.
3. Start and run the engine at low idle. Increase the engine rpm to high idle. Run the engine at high idle for one minute in order to purge the air from the cavities of the engine block. Stop the engine.
4. Check the coolant level. Maintain the coolant level within 13 mm (0.5 inch) below the bottom of the pipe for filling. Maintain the coolant level in the expansion bottle (if equipped) at the correct level.
5. Clean the cooling system filler cap. Inspect the gasket that is on the cooling system filler cap. If the gasket that is on the cooling system filler cap is damaged, discard the old cooling system filler cap and install a new cooling system filler cap. If the gasket that is on the cooling system filler cap is not damaged, use a suitable pressurizing pump in order to pressure test the cooling system filler cap. The correct pressure for the cooling system filler cap is stamped on the face of the cooling system filler cap. If the cooling system filler cap does not retain the correct pressure, install a new cooling system filler cap.
6. Start the engine. Inspect the cooling system for leaks and for correct operating temperature.

i02151264

Cooling System Coolant Extender (ELC) - Add

The Perkins Extended Life Coolant (ELC) does not need the frequent addition of Supplemental Coolant Additives (SCA) that are associated with conventional coolants. The Extender only needs to be added once.

Check the cooling system only when the engine is stopped and cool.

1. Loosen the cooling system filler cap slowly in order to relieve pressure. Remove the cooling system filler cap.
2. It may be necessary to drain enough coolant from the cooling system in order to add the Extender.
3. Add Extender according to the requirements for your engine's cooling system capacity. Refer to this Operation and Maintenance Manual, "Refill Capacities" in the Maintenance Section for the capacity of the cooling system for your engine. Refer to this Operation and Maintenance Manual, "Fluid Recommendations" information for the Perkins ELC Extender.
4. Clean the cooling system filler cap. Inspect the gasket of the cooling system filler cap. If the gasket is damaged then replace the cooling system filler cap. Install the cooling system filler cap.

i02151299

Cooling System Coolant Level - Check

Engines With a Coolant Recovery Tank

Note: The cooling system may not have been provided by Perkins. The procedure that follows is for typical cooling systems. Refer to the OEM information for the correct procedures.

Check the coolant level when the engine is stopped and cool.

1. Observe the coolant level in the coolant recovery tank. Maintain the coolant level to "COLD FULL" mark on the coolant recovery tank.

WARNING

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

2. Loosen filler cap slowly in order to relieve any pressure. Remove the filler cap.
3. Pour the correct coolant mixture into the tank. Refer to the Operation and Maintenance Manual, "Refill Capacities and Recommendations" for information on the correct mixture and type of coolant. Refer to the Operation and Maintenance Manual, "Refill Capacities and Recommendations" for the cooling system capacity. Do not fill the coolant recovery tank above "COLD FULL" mark.

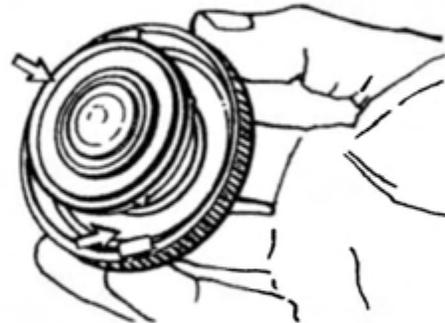


Illustration 29

g00103639

4. Clean filler cap and the receptacle. Reinstall the filler cap and inspect the cooling system for leaks.

Note: The coolant will expand as the coolant heats up during normal engine operation. The additional volume will be forced into the coolant recovery tank during engine operation. When the engine is stopped and cool, the coolant will return to the engine.

Engines Without a Coolant Recovery Tank

Check the coolant level when the engine is stopped and cool.

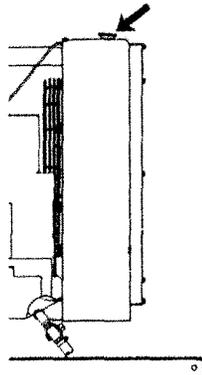


Illustration 30

g00285520

Cooling system filler cap

WARNING

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

1. Remove the cooling system filler cap slowly in order to relieve pressure.
2. Maintain the coolant level within 13 mm (0.5 inch) of the bottom of the filler pipe. If the engine is equipped with a sight glass, maintain the coolant level to the correct level in the sight glass.
3. Clean the cooling system filler cap and check the condition of the filler cap gaskets. Replace the cooling system filler cap if the filler cap gaskets are damaged. Reinstall the cooling system filler cap.
4. Inspect the cooling system for leaks.

i02151305

Cooling System Supplemental Coolant Additive (SCA) - Test/Add

WARNING

Cooling system coolant additive contains alkali. To help prevent personal injury, avoid contact with the skin and the eyes. Do not drink cooling system coolant additive.

Test for SCA Concentration

Heavy-Duty Coolant/Antifreeze and SCA

NOTICE

Do not exceed the recommended six percent supplemental coolant additive concentration.

Use a Coolant Conditioner Test Kit in order to check the concentration of the SCA.

Add the SCA, If Necessary

NOTICE

Do not exceed the recommended amount of supplemental coolant additive concentration. Excessive supplemental coolant additive concentration can form deposits on the higher temperature surfaces of the cooling system, reducing the engine's heat transfer characteristics. Reduced heat transfer could cause cracking of the cylinder head and other high temperature components. Excessive supplemental coolant additive concentration could also result in radiator tube blockage, overheating, and/or accelerated water pump seal wear. Never use both liquid supplemental coolant additive and the spin-on element (if equipped) at the same time. The use of those additives together could result in supplemental coolant additive concentration exceeding the recommended maximum.

WARNING

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

1. Slowly loosen the cooling system filler cap in order to relieve the pressure. Remove the cooling system filler cap.

Note: Always discard drained fluids according to local regulations.

2. If necessary, drain some coolant from the cooling system into a suitable container in order to allow space for the extra SCA.
3. Add the correct amount of SCA. Refer to the Operation and Maintenance Manual, "Refill Capacities and Recommendations" for more information on SCA requirements.

4. Clean the cooling system filler cap. Inspect the gaskets of the cooling system filler cap. If the gaskets are damaged, replace the old cooling system filler cap with a new cooling system filler cap. Install the cooling system filler cap.

i02151646

Driven Equipment - Check

Refer to the OEM specifications for more information on the following maintenance recommendations for the driven equipment:

- Inspection
- Adjustment
- Lubrication
- Other maintenance recommendations

Perform any maintenance for the driven equipment which is recommended by the OEM.

i01936072

Engine - Clean

WARNING

Personal injury or death can result from high voltage.

Moisture can create paths of electrical conductivity.

Make sure that the electrical system is OFF. Lock out the starting controls and tag the controls "DO NOT OPERATE".

NOTICE

Accumulated grease and oil on an engine is a fire hazard. Keep the engine clean. Remove debris and fluid spills whenever a significant quantity accumulates on the engine.

Periodic cleaning of the engine is recommended. Steam cleaning the engine will remove accumulated oil and grease. A clean engine provides the following benefits:

- Easy detection of fluid leaks
- Maximum heat transfer characteristics

- Ease of maintenance

Note: Caution must be used in order to prevent electrical components from being damaged by excessive water when the engine is cleaned. Pressure washers and steam cleaners should not be directed at any electrical connectors or the junction of cables into the rear of the connectors. Avoid electrical components such as the alternator, and the starter. Protect the fuel injection pump from fluids in order to wash the engine.

i02152042

Engine Air Cleaner Element (Single Element) - Inspect/Replace

Refer to Operation and Maintenance Manual, "Engine Air Cleaner Service Indicator-Inspect".

NOTICE

Never run the engine without an air cleaner element installed. Never run the engine with a damaged air cleaner element. Do not use air cleaner elements with damaged pleats, gaskets or seals. Dirt entering the engine causes premature wear and damage to engine components. Air cleaner elements help to prevent air-borne debris from entering the air inlet.

NOTICE

Never service the air cleaner element with the engine running since this will allow dirt to enter the engine.

A wide variety of air cleaners may be installed for use with this engine. Consult the OEM information for the correct procedure to replace the air cleaner.

i01936073

Engine Air Cleaner Service Indicator - Inspect

Some engines may be equipped with a different service indicator.

Some engines are equipped with a differential gauge for inlet air pressure. The differential gauge for inlet air pressure displays the difference in the pressure that is measured before the air cleaner element and the pressure that is measured after the air cleaner element. As the air cleaner element becomes dirty, the pressure differential rises. If your engine is equipped with a different type of service indicator, follow the OEM recommendations in order to service the air cleaner service indicator.

The service indicator may be mounted on the air cleaner element or in a remote location.

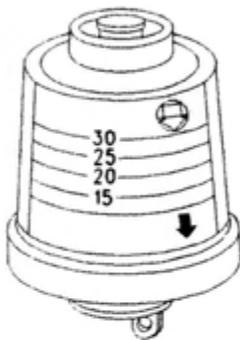


Illustration 31

g00103777

Typical service indicator

Observe the service indicator. The air cleaner element should be cleaned or the air cleaner element should be replaced when one of the following conditions occur:

- The yellow diaphragm enters the red zone.
- The red piston locks in the visible position.

Test the Service Indicator

Service indicators are important instruments.

- Check for ease of resetting. The service indicator should reset in less than three pushes.
- Check the movement of the yellow core when the engine is accelerated to the engine rated speed. The yellow core should latch approximately at the greatest vacuum that is attained.

If the service indicator does not reset easily, or if the yellow core does not latch at the greatest vacuum, the service indicator should be replaced. If the new service indicator will not reset, the hole for the service indicator may be restricted.

The service indicator may need to be replaced frequently in environments that are severely dusty.

Engine Crankcase Breather - Replace

i02169560

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

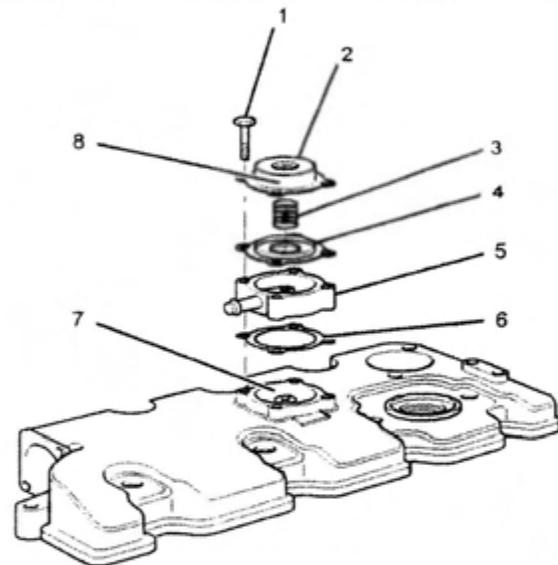


Illustration 32

g01118844

Typical example

- (1) Screws for the breather cover
- (2) Breather cover
- (3) Spring
- (4) Diaphragm and plate
- (5) Spacer for turbocharged engines only
- (6) Joint for turbocharged engines only
- (7) Cavity
- (8) Vent hole

1. Loosen the screws (1) and remove the breather cover (2) from the valve mechanism cover.
2. Remove the spring (3). Remove the diaphragm and plate (4).
3. For turbocharged engines, remove the spacer (5) and the joint (6).
4. Clean the vent hole (8) and the cavity (7) in the valve mechanism cover.

NOTICE

Make sure that the components of the breather assembly are installed correctly. Engine damage may occur if the breather assembly is not working correctly.

5. For turbocharged engines, install a new joint (6) and the spacer (5).
6. Install a new diaphragm and plate (4) for the breather assembly into the cavity (7) of the valve mechanism cover or the spacer (5) for turbocharged engines.
7. Install a new spring (3).
8. Install the breather cover (2) and the four screws (1). Tighten the screws.

i02177938

Engine Mounts - Inspect

Note: The engine mounts may not have been supplied for this installation by Perkins. Refer to the OEM information for further information on the engine mounts and the correct bolt torque.

Inspect the engine mounts for deterioration and for correct bolt torque. Engine vibration can be caused by the following conditions:

- Incorrect mounting of the engine
- Deterioration of the engine mounts

Any engine mount that shows deterioration should be replaced. Refer to the OEM information for the recommended torques.

i02153660

Engine Oil Level - Check

WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

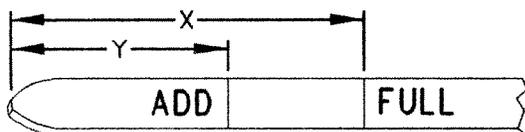


Illustration 33

g00110310

(Y) "ADD" mark. (X) "FULL" mark.

NOTICE

Perform this maintenance with the engine stopped.

1. Maintain the oil level between "ADD" mark (Y) and "FULL" mark (X) on oil level gauge (1). Do not fill the crankcase above "FULL" mark (X).

NOTICE

Operating your engine when the oil level is above the "FULL" mark could cause your crankshaft to dip into the oil. The air bubbles created from the crankshaft dipping into the oil reduces the oil's lubricating characteristics and could result in the loss of power.

2. Remove the oil filler cap and add oil, if necessary. Clean the oil filler cap. Install the oil filler cap.

i02153662

Engine Oil and Filter - Change

WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Do not drain the oil when the engine is cold. As the oil cools, suspended waste particles settle on the bottom of the oil pan. The waste particles are not removed with the draining cold oil. Drain the crankcase with the engine stopped. Drain the crankcase with the oil warm. This draining method allows the waste particles that are suspended in the oil to be drained correctly.

Failure to follow this recommended procedure will cause the waste particles to be recirculated through the engine lubrication system with the new oil.

Drain the Engine Oil

After the engine has been run at the normal operating temperature, stop the engine. Use one of the following methods to drain the engine crankcase oil:

- If the engine is equipped with a drain valve, turn the drain valve knob counterclockwise in order to drain the oil. After the oil has drained, turn the drain valve knob clockwise in order to close the drain valve.
- If the engine is not equipped with a drain valve, remove the oil drain plug in order to allow the oil to drain. After the oil has drained, the oil drain plug should be cleaned and installed.

Replace the Oil Filter

NOTICE

Perkins oil filters are built to Perkins specifications. Use of an oil filter not recommended by Perkins could result in severe engine damage to the engine bearings, crankshaft, etc., as a result of the larger waste particles from unfiltered oil entering the engine lubricating system. Only use oil filters recommended by Perkins.

1. Remove the oil filter with a suitable tool.

Note: The following actions can be carried out as part of the preventive maintenance program.

2. Cut the oil filter open with a suitable tool. Break apart the pleats and inspect the oil filter for metal debris. An excessive amount of metal debris in the oil filter may indicate early wear or a pending failure.

Use a magnet to differentiate between the ferrous metals and the nonferrous metals that are found in the oil filter element. Ferrous metals may indicate wear on the steel and cast iron parts of the engine.

Nonferrous metals may indicate wear on the aluminum parts, brass parts or bronze parts of the engine. Parts that may be affected include the following items: main bearings, rod bearings, turbocharger bearings, and cylinder heads.

Due to normal wear and friction, it is not uncommon to find small amounts of debris in the oil filter. Consult your Perkins dealer or your Perkins distributor in order to arrange for a further analysis if an excessive amount of debris is found in the oil filter.

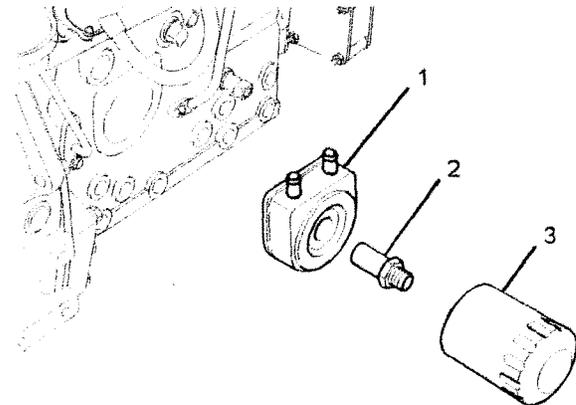


Illustration 34

g01091799

- (1) Modine cooler
- (2) Adapter
- (3) Oil filter

Note: The Modine cooler (1) and the adapter (2) are installed to the 404C-22T engine only.

3. Clean the sealing surface of the cylinder block or the Modine cooler (1).
4. Apply clean engine oil to the new oil filter seal (3).

NOTICE

Do not fill the oil filters with oil before installing them. This oil would not be filtered and could be contaminated. Contaminated oil can cause accelerated wear to engine components.

5. Install the oil filter. Tighten the oil filter until the oil filter seal contacts the cylinder block or the Modine cooler. Tighten the oil filter by hand according to the instructions that are shown on the oil filter. Do not overtighten the oil filter.

Fill the Engine Crankcase

1. Remove the oil filler cap. Refer to the Operation and Maintenance Manual for more information on lubricant specifications. Fill the crankcase with the correct amount of oil. Refer to the Operation and Maintenance Manual for more information on refill capacities.

NOTICE

If equipped with an auxiliary oil filter system or a remote oil filter system, follow the OEM or filter manufacturer's recommendations. Under filling or overfilling the crankcase with oil can cause engine damage.

NOTICE

To prevent crankshaft bearing damage, crank the engine with the fuel OFF. This will fill the oil filters before starting the engine. Do not crank the engine for more than 30 seconds.

2. Start the engine and run the engine at "LOW IDLE" for two minutes. Perform this procedure in order to ensure that the lubrication system has oil and that the oil filters are filled. Inspect the oil filter for oil leaks.
3. Stop the engine and allow the oil to drain back to the sump for a minimum of ten minutes.

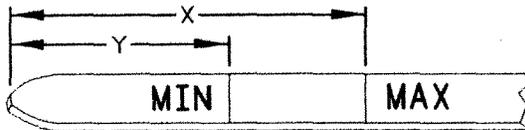


Illustration 35

g00986928

4. Remove the oil level gauge in order to check the oil level. Maintain the oil level between the "MIN" and "MAX" marks on the oil level gauge.

i02171102

Engine Valve Lash - Inspect/Adjust

This maintenance is recommended by Perkins as part of a lubrication and preventive maintenance schedule in order to help provide maximum engine life.

NOTICE

Only qualified service personnel should perform this maintenance. Refer to the Service Manual or your authorized Perkins dealer or your Perkins distributor for the complete valve lash adjustment procedure.

Operation of Perkins engines with incorrect valve lash can reduce engine efficiency, and also reduce engine component life.

WARNING

Ensure that the engine can not be started while this maintenance is being performed. To help prevent possible injury, do not use the starting motor to turn the flywheel.

Hot engine components can cause burns. Allow additional time for the engine to cool before measuring/adjusting valve lash clearance.

Ensure that the engine is stopped before measuring the valve lash. The engine valve lash can be inspected and adjusted when the temperature of the engine is hot or cold.

Refer to Systems Operation/Testing and Adjusting, "Engine Valve Lash - Inspect/Adjust" for more information.

i02154268

Fuel Injector - Test/Change

WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire.

WARNING

Make sure that you wear eye protection at all times during testing. When fuel injection nozzles are tested, test fluids travel through the orifices of the nozzle tip with high pressure. Under this amount of pressure, the test fluid can pierce the skin and cause serious injury to the operator. Always keep the tip of the fuel injection nozzle pointed away from the operator and into the fuel collector and extension.

NOTICE

Do not allow dirt to enter the fuel system. Thoroughly clean the area around a fuel system component that will be disconnected. Fit a suitable cover over disconnected fuel system component.

Regular maintenance of the fuel injectors is recommended by Perkins. The fuel injectors must be removed and tested by an authorized agent. The fuel injectors should not be cleaned as cleaning with incorrect tools can damage the nozzle. The fuel injectors should be renewed only if a fault with the fuel injectors occurs. Some of the problems that may indicate that new fuel injectors are needed are listed below:

- The engine will not start or the engine is difficult to start.
- Not enough power
- The engine misfires or the engine runs erratically.
- High fuel consumption
- Black exhaust smoke
- The engine knocks or there is vibration in the engine.
- Excessive engine temperature

For further information on the removal and the installation of the fuel injectors, refer to the Disassembly and Assembly manual.

For further information on the testing of fuel injectors, refer to the Testing and Adjusting manual.

Identification of a suspect Fuel Injector

WARNING

Work carefully around an engine that is running. Engine parts that are hot, or parts that are moving, can cause personal injury.

NOTICE

If your skin comes into contact with high pressure fuel, obtain medical assistance immediately.

NOTICE

If a fuel injector is suspected of operating outside of normal parameters it should be removed by a qualified technician. The suspect fuel injector should be taken to an authorised agent for inspection.

Operate the engine at a fast idle speed in order to identify the faulty fuel injector. Individually loosen and tighten the union nut for the high pressure pipe to each fuel injector. Do not loosen the union nut more than half a turn. There will be little effect on the engine speed when the union nut to the faulty fuel injector is loosened.

Consult your authorized Perkins dealer or your Perkins distributor for further assistance.

02153676

Fuel System - Prime

If air enters the fuel system, the air must be purged from the fuel system before the engine can be started. Air can enter the fuel system when the following events occur:

- The fuel tank is empty or the fuel tank has been partially drained.
- The low pressure fuel lines are disconnected.
- A leak exists in the low pressure fuel system.
- The fuel filter is replaced.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

There are two types of fuel filter that may be installed on these engines. The procedure to prime the fuel system will depend on the type of filter that is installed on the engine and the type of connector that is installed on the fuel injection pump. Both types of filter and connections are shown.

Use the following procedure in order to prime the fuel system:

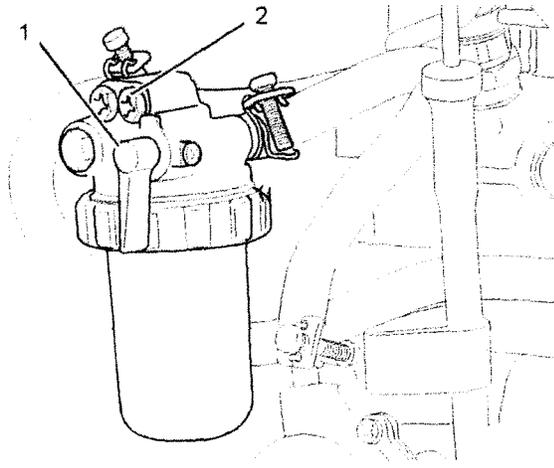


Illustration 36
Fuel filter with element
(1) Fuel valve
(2) Vent screw

g01122124

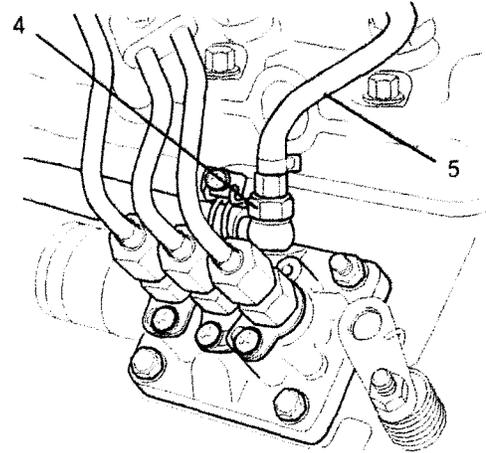


Illustration 38
Connector that is installed on 2 and 3 cylinder engines
(4) Connector bolt
(5) Fuel return hose for the injector

g01122126

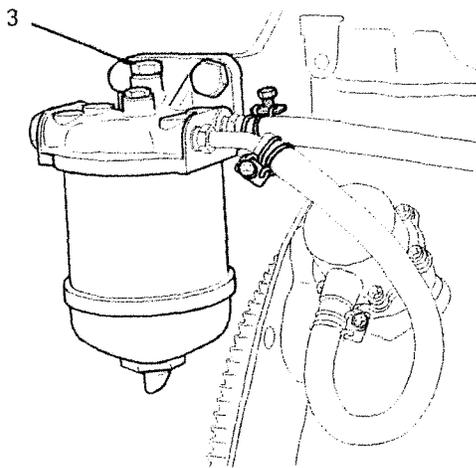


Illustration 37
Fuel filter with canister
(3) Vent screw

g01122125

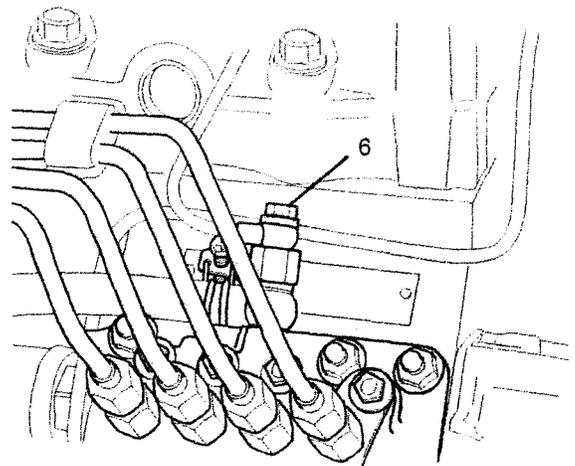


Illustration 39
Connector that is installed on 4 cylinder engines
(6) Connector bolt

g01122127

1. Ensure that the fuel valve (1) for the fuel filter that has an element is in the ON position. The fuel valve for the fuel filter that has a canister may be located away from the engine. Refer to the OEM information for further details.
2. Loosen the vent screw (2) or (3).
3. Operate the hand primer. When fuel free from air flows from the vent screw tighten the vent screw.

4. Loosen the connector (4) or (6) at the fuel injection pump.

Note: For illustration 38, the fuel return hose (5) may need to be removed at the fuel injection pump.

5. Operate the hand primer. When fuel free from air flows from the connector tighten the connector bolt.

6. Try to start the engine.

Note: Do not operate the starting motor for more than 15 seconds. If the engine does not start after 15 seconds, stop and wait for 30 seconds before trying again.

i02154450

Fuel System Filter - Replace

WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. To help prevent possible injury, turn the start switch off when changing fuel filters or water separator elements. Clean up fuel spills immediately.

NOTICE

Do not allow dirt to enter the fuel system. Thoroughly clean the area around a fuel system component that will be disconnected. Fit a suitable cover over disconnected fuel system component.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

Fuel Filter With Canister

1. Close the fuel supply valve.

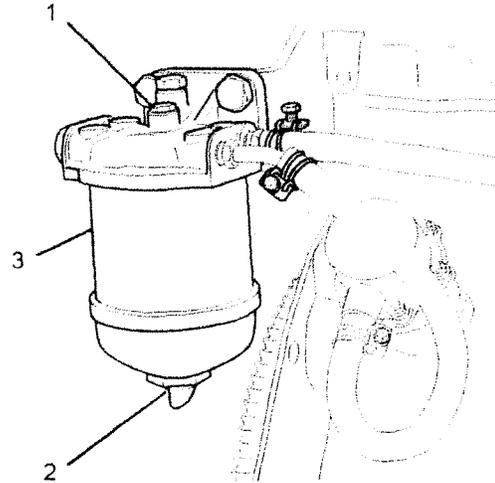


Illustration 40

g01122129

2. Clean the outside of the fuel filter assembly.
3. Open the fuel drain (2) in the bottom of the filter assembly, if equipped. Drain the fuel into a suitable container.
4. Loosen the setscrew (1).
5. Remove the canister (3).

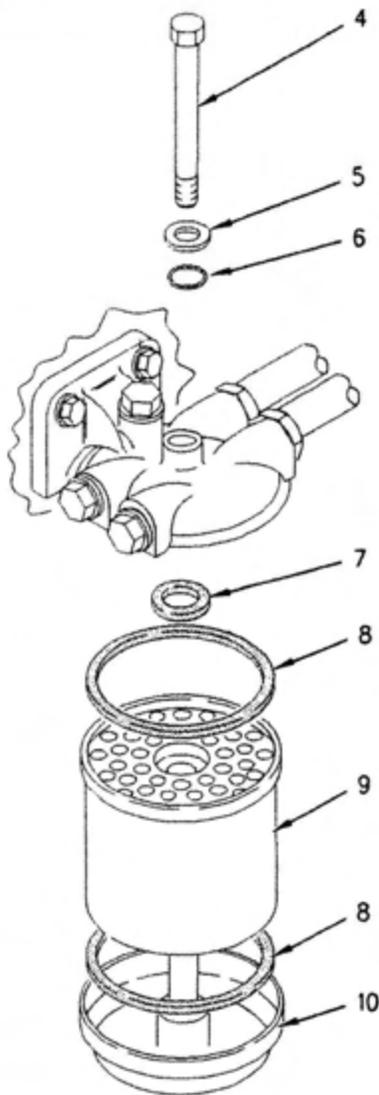


Illustration 41

g00917937

6. Assemble the following items: seals (8), seal (7), canister (9), and base (10). Place washer (5) and seal (6) on setscrew (4).

7. Fasten the assembly to the fuel filter base with setscrew (4).

The fuel system will need to be primed after the new filter is installed. Refer to this Operation and Maintenance Manual, "Fuel System - Prime".

Fuel Filter With Element

1. Close the fuel supply valve (1).

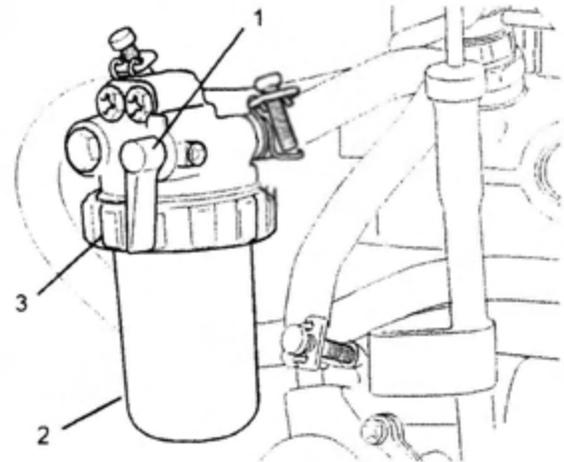


Illustration 42

g01122130

2. Clean the outside of the fuel filter assembly.

3. Loosen the locking ring (3).

4. Remove the casing for the filter (2) and the element.

i02177959

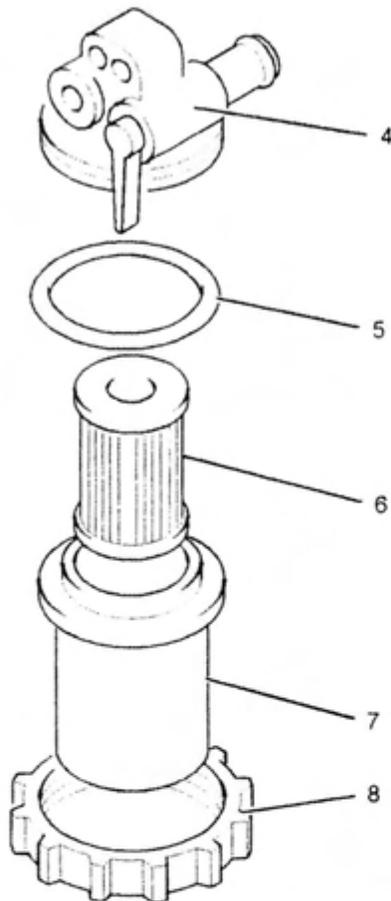


Illustration 43

g01122131

5. Assemble the following items: seal (5), filter element (6) and casing (7).
6. Install the assembled items to the filter head (4).
7. Install the locking ring (8) to the filter head. Rotate the locking ring in order to lock the assembly.

The fuel system will need to be primed after the new filter is installed. Refer to this Operation and Maintenance Manual, "Fuel System - Prime".

Fuel System Primary Filter/Water Separator - Drain

⚠ WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. To help prevent possible injury, turn the start switch off when changing fuel filters or water separator elements. Clean up fuel spills immediately.

NOTICE

The water separator is not a filter. The water separator separates water from the fuel. The engine should never be allowed to run with the water separator more than half full. Engine damage may result.

The fuel filter/water separator (if equipped) is not usually supplied by Perkins. The following text describes a typical fuel filter/water separator. Refer to the OEM information for further information on the fuel filter/water separator.

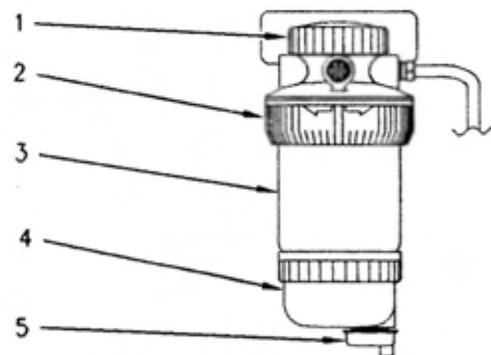


Illustration 44

g00741109

- (1) Cap
- (2) Locking ring
- (3) Element
- (4) Water separator bowl
- (5) Drain

1. Open drain (5). Catch the draining water in a suitable container. Dispose of the drained water correctly.
2. Close drain (5).

NOTICE

The water separator is under suction during normal engine operation. Ensure that the drain valve is tightened securely to help prevent air from entering the fuel system.

i01938468

Fuel Tank Water and Sediment - Drain

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

Fuel Tank

Fuel quality is critical to the performance and to the service life of the engine. Water in the fuel can cause excessive wear to the fuel system. Condensation occurs during the heating and cooling of fuel. The condensation occurs as the fuel passes through the fuel system and the fuel returns to the fuel tank. This causes water to accumulate in fuel tanks. Draining the fuel tank regularly and obtaining fuel from reliable sources can help to eliminate water in the fuel.

Drain the Water and the Sediment

Fuel tanks should contain some provision for draining water and draining sediment from the bottom of the fuel tanks.

Open the drain valve on the bottom of the fuel tank in order to drain the water and the sediment. Close the drain valve.

Check the fuel daily. Drain the water and sediment from the fuel tank after operating the engine or drain the water and sediment from the fuel tank after the fuel tank has been filled. Allow five to ten minutes before performing this procedure.

Fill the fuel tank after operating the engine in order to drive out moist air. This will help prevent condensation. Do not fill the tank to the top. The fuel expands as the fuel gets warm. The tank may overflow.

Some fuel tanks use supply pipes that allow water and sediment to settle below the end of the fuel supply pipe. Some fuel tanks use supply lines that take fuel directly from the bottom of the tank. If the engine is equipped with this system, regular maintenance of the fuel system filter is important.

Fuel Storage Tanks

Drain the water and the sediment from the fuel storage tank during the following conditions:

- Weekly
- Oil change
- Refill of the tank

This will help prevent water or sediment from being pumped from the storage tank into the engine fuel tank.

If a bulk storage tank has been refilled or moved recently, allow adequate time for the sediment to settle before filling the engine fuel tank. Internal baffles in the bulk storage tank will also help trap sediment. Filtering fuel that is pumped from the storage tank helps to ensure the quality of the fuel. When possible, water separators should be used.

i02169460

Hoses and Clamps - Inspect/Replace

Inspect all hoses for leaks that are caused by the following conditions:

- Cracking
- Softness
- Loose clamps

Replace hoses that are cracked or soft. Tighten any loose clamps.

NOTICE

Do not bend or strike high pressure lines. Do not install bent or damaged lines, tubes or hoses. Repair any loose or damaged fuel and oil lines, tubes and hoses. Leaks can cause fires. Inspect all lines, tubes and hoses carefully. Tighten all connections to the recommended torque.

Check for the following conditions:

- End fittings that are damaged or leaking
- Outer covering that is chafed or cut
- Exposed wire that is used for reinforcement
- Outer covering that is ballooning locally

- Flexible part of the hose that is kinked or crushed
- Armoring that is embedded in the outer covering

A constant torque hose clamp can be used in place of any standard hose clamp. Ensure that the constant torque hose clamp is the same size as the standard clamp.

Due to extreme temperature changes, the hose will harden. Hardening of the hoses will cause hose clamps to loosen. This can result in leaks. A constant torque hose clamp will help to prevent loose hose clamps.

Each installation application can be different. The differences depend on the following factors:

- Type of hose
- Type of fitting material
- Anticipated expansion and contraction of the hose
- Anticipated expansion and contraction of the fittings

Replace the Hoses and the Clamps

Refer to the OEM information for further information on removing and replacing fuel hoses (if equipped).

The coolant system and the hoses for the coolant system are not usually supplied by Perkins. The following text describes a typical method of replacing coolant hoses. Refer to the OEM information for further information on the coolant system and the hoses for the coolant system.

WARNING

Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.

1. Stop the engine. Allow the engine to cool.
2. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap.

Note: Drain the coolant into a suitable, clean container. The coolant can be reused.

3. Drain the coolant from the cooling system to a level that is below the hose that is being replaced.

4. Remove the hose clamps.
5. Disconnect the old hose.
6. Replace the old hose with a new hose.
7. Install the hose clamps with a torque wrench.

Note: For the correct coolant, see this Operation and Maintenance Manual, "Fluid Recommendations".

8. Refill the cooling system. Refer to the OEM information for further information on refilling the cooling system.
9. Clean the cooling system filler cap. Inspect the cooling system filler cap's seals. Replace the cooling system filler cap if the seals are damaged. Install the cooling system filler cap.
10. Start the engine. Inspect the cooling system for leaks.

i01907732

Radiator - Clean

The radiator is not usually supplied by Perkins. The following text describes a typical cleaning procedure for the radiator. Refer to the OEM information for further information on cleaning the radiator.

Note: Adjust the frequency of cleaning according to the effects of the operating environment.

Inspect the radiator for these items: Damaged fins, corrosion, dirt, grease, insects, leaves, oil, and other debris. Clean the radiator, if necessary.

WARNING

Personal injury can result from air pressure.

Personal injury can result without following proper procedure. When using pressure air, wear a protective face shield and protective clothing.

Maximum air pressure at the nozzle must be less than 205 kPa (30 psi) for cleaning purposes.

Pressurized air is the preferred method for removing loose debris. Direct the air in the opposite direction to the fan's air flow. Hold the nozzle approximately 6 mm (0.25 inch) away from the radiator fins. Slowly move the air nozzle in a direction that is parallel with the radiator tube assembly. This will remove debris that is between the tubes.

Pressurized water may also be used for cleaning. The maximum water pressure for cleaning purposes must be less than 275 kPa (40 psi). Use pressurized water in order to soften mud. Clean the core from both sides.

Use a degreaser and steam for removal of oil and grease. Clean both sides of the core. Wash the core with detergent and hot water. Thoroughly rinse the core with clean water.

If the radiator is blocked internally, refer to the OEM Manual for information regarding flushing the cooling system.

After cleaning, start the engine and accelerate the engine to high idle rpm. This will help in the removal of debris and the drying of the core. Stop the engine. Use a light bulb behind the core in order to inspect the core for cleanliness. Repeat the cleaning, if necessary.

Inspect the fins for damage. Bent fins may be opened with a "comb". Inspect these items for good condition: Welds, mounting brackets, air lines, connections, clamps, and seals. Make repairs, if necessary.

i02176881

Severe Service Application - Check

Severe service is the application of an engine that exceeds the current published standards for that engine. Perkins maintains standards for the following engine parameters:

- Performance such as power range, speed range, and fuel consumption
- Fuel quality
- Operational Altitude
- Maintenance intervals
- Oil selection and maintenance
- Coolant type and maintenance
- Environmental qualities
- Installation

Refer to the standards for the engine or consult your Perkins dealer or your Perkins distributor in order to determine if the engine is operating within the defined parameters.

Severe service operation can accelerate component wear. Engines that operate under severe conditions may need more frequent maintenance intervals in order to ensure maximum reliability and retention of full service life.

Due to individual applications, it is not possible to identify all of the factors which can contribute to severe service operation. Consult your Perkins dealer or your Perkins distributor for the unique maintenance that is necessary for the engine.

The operating environment, incorrect operating procedures and incorrect maintenance procedures can be factors which contribute to a severe service application.

Environmental Factors

Ambient temperatures – The engine may be exposed to extended operation in extremely cold environments or hot environments. Valve components can be damaged by carbon buildup if the engine is frequently started and stopped in very cold temperatures. Extremely hot intake air reduces engine performance.

Quality of the air – The engine may be exposed to extended operation in an environment that is dirty or dusty, unless the equipment is cleaned regularly. Mud, dirt and dust can encase components. Maintenance can be very difficult. The buildup can contain corrosive chemicals.

Buildup – Compounds, elements, corrosive chemicals and salt can damage some components.

Altitude – Problems can arise when the engine is operated at altitudes that are higher than the intended settings for that application. Necessary adjustments should be made.

Incorrect Operating Procedures

- Extended operation at low idle
- Frequent hot shutdowns
- Operating at excessive loads
- Operating at excessive speeds
- Operating outside the intended application

Incorrect Maintenance Procedures

- Extending the maintenance intervals
- Failure to use recommended fuel, lubricants and coolant/antifreeze

i02177969

Starting Motor - Inspect

Perkins recommends a scheduled inspection of the starting motor. If the starting motor fails, the engine may not start in an emergency situation.

Check the starting motor for correct operation. Check the electrical connections and clean the electrical connections. Refer to the Systems Operation, Testing and Adjusting Manual, "Electric Starting System - Test" for more information on the checking procedure and for specifications or consult your Perkins dealer or your Perkins distributor for assistance.

i02184788

Turbocharger - Inspect (If Equipped)

A regular visual inspection of the turbocharger is recommended. Any fumes from the crankcase are filtered through the air inlet system. Therefore, by-products from oil and from combustion can collect in the turbocharger compressor housing. Over time, this buildup can contribute to loss of engine power, increased black smoke and overall loss of engine efficiency.

If the turbocharger fails during engine operation, damage to the turbocharger compressor wheel and/or to the engine may occur. Damage to the turbocharger compressor wheel can cause additional damage to the pistons, the valves, and the cylinder head.

NOTICE

Turbocharger bearing failures can cause large quantities of oil to enter the air intake and exhaust systems. Loss of engine lubricant can result in serious engine damage.

Minor leakage of oil into a turbocharger under extended low idle operation should not cause problems as long as a turbocharger bearing failure has not occurred.

When a turbocharger bearing failure is accompanied by a significant engine performance loss (exhaust smoke or engine rpm up at no load), do not continue engine operation until the turbocharger is renewed.

A visual inspection of the turbocharger can minimize unscheduled downtime. A visual inspection of the turbocharger can also reduce the chance for potential damage to other engine parts.

Removal and Installation

Note: The turbochargers that are supplied are nonserviceable.

For options regarding the removal, installation, and replacement, consult your Perkins dealer or your Perkins distributor. Refer to the Disassembly and Assembly Manual, "Turbocharger - Remove and Turbocharger - Install" for further information.

Inspecting

NOTICE

The compressor housing for the turbocharger must not be removed from the turbocharger for cleaning.

The actuator linkage is connected to the compressor housing. If the actuator linkage is moved or disturbed the engine may not comply with emissions legislation.

1. Remove the pipe from the turbocharger exhaust outlet and remove the air intake pipe to the turbocharger. Visually inspect the piping for the presence of oil. Clean the interior of the pipes in order to prevent dirt from entering during reassembly.
2. Check for the presence of oil. If oil is leaking from the back side of the compressor wheel, there is a possibility of a failed turbocharger oil seal.

The presence of oil may be the result of extended engine operation at low idle. The presence of oil may also be the result of a restriction of the line for the intake air (clogged air filters), which causes the turbocharger to slobber.

3. Inspect the bore of the housing of the turbine outlet for corrosion.
4. Fasten the air intake pipe and the exhaust outlet pipe to the turbocharger housing.

i02177973

Walk-Around Inspection

Inspect the Engine for Leaks and for Loose Connections

A walk-around inspection should only take a few minutes. When the time is taken to perform these checks, costly repairs and accidents can be avoided.

For maximum engine service life, make a thorough inspection of the engine compartment before starting the engine. Look for items such as oil leaks or coolant leaks, loose bolts, worn belts, loose connections and trash buildup. Make repairs, as needed:

- The guards must be in the correct place. Repair damaged guards or replace missing guards.
- Wipe all caps and plugs before the engine is serviced in order to reduce the chance of system contamination.

NOTICE

For any type of leak (coolant, lube, or fuel) clean up the fluid. If leaking is observed, find the source and correct the leak. If leaking is suspected, check the fluid levels more often than recommended until the leak is found or fixed, or until the suspicion of a leak is proved to be unwarranted.

NOTICE

Accumulated grease and/or oil on an engine is a fire hazard. Remove the accumulated grease and oil. Refer to this Operation and Maintenance Manual, "Engine - Clean" for more information.

- Ensure that the cooling system hoses are correctly clamped and that the cooling system hoses are tight. Check for leaks. Check the condition of all pipes.
- Inspect the water pump for coolant leaks.

Note: The water pump seal is lubricated by the coolant in the cooling system. It is normal for a small amount of leakage to occur as the engine cools down and the parts contract.

Excessive coolant leakage may indicate the need to replace the water pump seal. For the removal of the water pump and the installation of water pump and/or seal, refer to the Disassembly and Assembly Manual, "Water Pump - Remove and Install" for more information or consult your Perkins dealer or your Perkins distributor.

- Inspect the lubrication system for leaks at the front crankshaft seal, the rear crankshaft seal, the oil pan, the oil filters and the rocker cover.
- Inspect the fuel system for leaks. Look for loose fuel line clamps and/or tie-wraps.
- Inspect the piping for the air intake system and the elbows for cracks and for loose clamps. Ensure that hoses and tubes are not contacting other hoses, tubes, wiring harnesses, etc.
- Inspect the alternator belts and any accessory drive belts for cracks, breaks or other damage.

Belts for multiple groove pulleys must be replaced as matched sets. If only one belt is replaced, the belt will carry more load than the belts that are not replaced. The older belts are stretched. The additional load on the new belt could cause the belt to break.

- Drain the water and the sediment from the fuel tank on a daily basis in order to ensure that only clean fuel enters the fuel system.
- Inspect the wiring and the wiring harnesses for loose connections and for worn wires or frayed wires.
- Inspect the ground strap for a good connection and for good condition.
- Disconnect any battery chargers that are not protected against the current drain of the starting motor. Check the condition and the electrolyte level of the batteries, unless the engine is equipped with a maintenance free battery.
- Check the condition of the gauges. Replace any gauges that are cracked. Replace any gauge that can not be calibrated.

i01907756

Water Pump - Inspect

A failed water pump may cause severe engine overheating problems that could result in the following conditions:

- Cracks in the cylinder head
- A piston seizure
- Other potential damage to the engine

Note: The water pump seal is lubricated by the coolant in the cooling system. It is normal for a small amount of leakage to occur as the engine cools down and parts contract.

Visually inspect the water pump for leaks. Renew the water pump seal or the water pump if there is an excessive leakage of coolant. Refer to the Disassembly and Assembly Manual, "Water Pump - Remove and Install" for the disassembly and assembly procedure.

Warranty Section

Warranty Information

i01903596

Emissions Warranty Information

This engine may be certified to comply with exhaust emission standards and gaseous emission standards that are prescribed by the law at the time of manufacture, and this engine may be covered by an Emissions Warranty. Consult your authorized Perkins dealer or your authorized Perkins distributor in order to determine if your engine is emissions certified and if your engine is subject to an Emissions Warranty.

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Product and Dealer Information

Note: For product identification plate locations, see the section "Product Identification Information" in the Operation and Maintenance Manual.

Delivery Date: _____

Product Information

Model: _____

Product Identification Number: _____

Engine Serial Number: _____

Transmission Serial Number: _____

Generator Serial Number: _____

Attachment Serial Numbers: _____

Attachment Information: _____

Customer Equipment Number: _____

Dealer Equipment Number: _____

Dealer Information

Name: _____ Branch: _____

Address: _____

	<u>Dealer Contact</u>	<u>Phone Number</u>	<u>Hours</u>
Sales:	_____	_____	_____
Parts:	_____	_____	_____
Service:	_____	_____	_____

Asia

Perkins Engines (Asia Pacific) Pte Ltd
7 Tractor Road
Singapore 627968
Telephone +65 6828 7469
Fax +65 6828 7414

Europe, Middle East and Africa

Perkins Engines Company Limited
Peterborough PE1 5NA
United Kingdom
Telephone +44 (0)1733 583000
Fax +44 (0)1733 582240

North America

Perkins Engines Inc
N4 AC 6160
PO Box 610
Mossville, IL 61552-0610, USA
1-888-PERK-ENG
Telephone +1 309 578 7364
Fax +1 309 578 7329

Latin America

Perkins Motores do Brasil Ltda
Rua Alexandre Dumas, 1711 Ed. Birman 11, 9º andar
Chácara Santo Antonio
São Paulo / SP - Brasil
Cep: 04717-004
Telephone +55 11 2109 2038
Fax +55 11 2109 2089



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All information in this document is substantially correct at time of printing and may be altered subsequently by the company

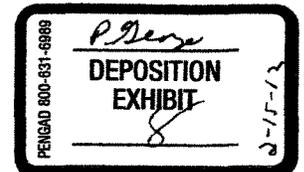
Location: I Work Under 20555 Bq. 01 Q'n Dt: 20JUL2006
 Auto by Phone: 203-681-0004 Inv 20555 Els Dt: 20SEP2008
 WARRANTY Slp'n 2
 S: PUMP IN STORE Cust No. 263900 S
 I: 050 REINFOR ST Part-Ord. H
 L P-% 27.5 L-% 0.0 I
 D: CHANTREK, 10 00202 P
 O.A. # 105-02-0000 Stock # 00020295 Farm Plan #
 Make Model PIN Number Equipment Meter MC SFR
 NISC 5250X 1269 415.0 S
 Part Cls-FC Lbr Cls-QWR Price Cd-L Part Tr-0209 Lbr Tr-N001

Item Nos/Ord Bk-Ord Ship Description/Comments RATE EXTENSION

HYD PUMP WEAK (TEEN ALLEN)						
1	1	ZZ2420619	HYD,FLTR,BY	65.30	61.84	
2	2	ZZ2435059	CAP,FUELGAD	42.59	61.47	
1	1	ZZ2414691	HYD PUMP	405.54	294.02	
.55	07-28	R/T	00163 REPAIR	80.00	76.00	
2.30	07-28	R/T	00163 PATHFINDER	.00	.00	
1.32	09-04	R/T	00163 REPAIR	60.00	105.60	
1	09-22	1	SHOP SUPPLIES	2.49	2.49	
SFG # 01	TOTAL =	417.33 P	2.27 1H	181.60 L	2.49 H	601.42 T

```

*****
* Taxable Parts                .00 *
* Non-Taxable Parts           417.33 *
* Intal Labor                  181.60 *
* Non-Taxable                  181.60 *
* Misc Charges                  2.49 *
*                               *
* Sales Tax                     .00 *
*                               *
* TOTAL DUE )                   601.42 *
*****
    
```



SEP 15 2000

Date: _____



Vendor Name & Address: Compact Power Services, LLC 225 North Park Drive Rock Hill, SC 29730 Phone # 803-324-0000		Equipment Information: Model # _____ Serial # _____ Hour Meter Reading: _____ In Service Date: _____ Repair Date: _____ Type of Warranty: (circle one) <input type="checkbox"/> Whole Good <input type="checkbox"/> Part <input type="checkbox"/> Other (explain) _____ Merit Authorization No _____
Customer Name & Address: _____ _____ Phone # _____		

Part	Description	Est. Price	Actual Price
1	Oil Filter	7.95	10.00
2	Oil Pan Gasket	12.95	17.00
3	Oil Pan	37.50	38.00
4	Labor	133.17	33.00
Total Time Required to Complete this Repair		Total Hours 1.5	Total Price 108.00

Total of Claim \$108.00

Describe the conditions found and reason for this repair:
 Oil filter, oil pan gasket, oil pan

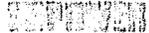
Describe the work done to complete this repair:
 Replaced oil filter, oil pan gasket, oil pan

Customer Signature: _____

Factory Use Below

Approved by Dealer/Manufacturer	Date	Approved by Customer	Date
---------------------------------	------	----------------------	------

Compact Power Services - 803-324-0000 - Fax 803-640-4457
 Address: 225 North Park Drive
 Rock Hill, SC 29730



Routine Maintenance Replacement Parts

The following parts should be replaced during normal use. Contact your dealer for more information. Replacing a part by itself may not solve the problem. Please see the Troubleshooting section.

Part Name	Part Number
Front Wheel Hub	215051-0100
Front Tire (18" x 2.125)	1078024-0100
Engine Oil (10W-40)	1420013-0001
Engine Oil Filter	2030014-0100
Ignition Coil	1420014-0100 1001400-0100
Spark Plug (Iridium)	1010016-0100
Chain for Motor (16400)	1110012-0100
Roller for Motor (16400)	1110013-0100
Engine Oil (10W-40)	1420013-0001
Special Tools	Part Number
Oil Drain Plug Wrench	200001
18" x 2.125" Tire Pump	1078024

ROCKYMOUNTAIN MACHINERY
 P. O. BOX 159
 Blackfoot, ID 83221
 Phone: 208-785-0520 • 800-782-0520

Service Invoice



JOHN DEERE

INVOICE DATE	BRANCH	INVOICE NO.
15JUN09	01	22739

SOLD TO:

EDGED IN STONE
 880 REDMAN ST

CHUBBUCK, ID 83202

John

PAGE	1
SALE TYPE	OTHER
CUSTOMER NO.	265900

S
H
I
P

T
O

PURCHASE ORDER NO.	PHONE NUMBER	WORK ORDER NO.	SEG.	DATE OPENED	SALES PRM
	208-681-2354	22739	01	05MAY09	
MAKE	MODEL	SERIAL NO.	EQUIP. NO.	METER	AUTHORIZED BY
MISC	BOXER	0001269	LOADER	608.0	

DESCRIPTION	AMOUNT
INTERNAL ENGINE NOISE (TECH TOM)	
JOSE - AFTER BRINGING IT INTO SHOP, I REMOVED ALL SHIELDING AROUND FRONT OF ENGINE. WE THEN WERE TOLD TO REMOVED FILTER AND CHECK FILTER ELEMENT. I FOUND SOME METAL IN IT. I LATER SENT FILTER ELEMENT TO PERKINS DEALER TO GET CHECKED. TOM LATER TOOK OVER AND REMOVED VALVE COVER. AND CHECKED FOR ANY VISIBLE DAMAGE. NONE WAS NOTICABLE.	
WHEN I DROVE OUT TO LOCATION OF BOXER, I REMOVED REAR SHIELDS AND DISCONNECTED HYDRAULIC PUMP. IT WOULD STILL MAKE THAT NOISE, AND TALKING WITH COSTUMER THE NOISE WAS SOMETHING THAT OCCURED ALL OF A SUDDEN, BUT DIDN'T SEEM TO AFFECT THE PERFORMANCE OF BOXER, STILL THEY DISCONTINUE USE. I TALKED WITH PERKINS DEALER AND TOLD THEM ALL OF THE INFO THAT I HAD.	
LATER WE WERE TOLD THAT THIS HAD TO GO TO A PERKINS DEALER, SO TOM AND I PUT ALL SHIELDS BACK ON.	
*****2.25% /MONTH OR 27% /YEAR WILL BE ADDED TO ALL WORK NOT PAID IN FULL AT THE TIME OF DELIVERY. LATE FEE OF \$50.00/ MONTH AND ANY COLLECTION COSTS WILL ALSO BE ADDED. I CERTIFY THAT THIS REPAIR WAS DONE ON FARM MACHINERY.*****	
1 WIX51348 OIL FILTER	6.69
** TOTAL LABOR **	538.90
1 OUTBOUND FREIGHT	8.00
FRT.CHARGE TO SHIP BAD FILTER TO WA.	
1 SHOP SUPPLIES	13.85
>>...> SEG# 01 PRT 6.69 LAB 538.90 MSC 21.85 TOTAL	567.44

P. Gene
 DEPOSITION
 EXHIBIT
9

HOLD INVOICE
 PLEASE PAY THE FULL AMOUNT
 OF INVOICE WITHIN 10 DAYS
 FROM THE INVOICE DATE
 THANK YOU

DESCRIPTION	AMOUNT
TOTAL PARTS	6.69
TOTAL LABOR	538.90
MISC. CHARGES	21.85
SALES TAX	1.23
PLEASE PAY THIS TOTAL →	568.67

LF-1152

CUSTOMER COPY

EDGED 92

Location: 1 Work Order: 22709 Ser: 01 Opn Dt: 05/01/09
 Auto by: Phone: 207-631-2024 Inv: 22709 Crs Dt: 05/02/09
 OTHER Sign
 R: BOSTON IN STONE Cast No.: 205900 S
 Q: 000 DEERMAN ST Part-Ord: H
 L: P-1 0.0 L-2 0.0 I
 D: FRANKLIN, ID 83207 P
 O/L # 104-01-0000 Stock# 00000000 Farm Plan#
 Make Model PIN Number Equipment Meter HL SFR
 BOSS DOZER 0201289 LOADER 600.0 H 5
 Ent Crs-FC Lbr Crs-ALL Price Cd-L Prt Tr-0101 Lbr Tr-N001

Item Hrs/Ord Bk-Ord Ship Description/Comments RATE EXTENSION

SPD UD N/A
 INTERNAL ENGINE NOISE (TECH TOM)

JUDY- AFTER BRINGING IT INTO SHOP, I REMOVED ALL SHIELDING
 AROUND FRONT OF ENGINE, WE THEN WERE TOLD TO REMOVE FILTER
 AND CHECK FILTER ELEMENT. I FOUND SOME METAL IN IT. I LATER
 SENT FILTER ELEMENT TO PERKINS DEALER TO GET CHECKED. TOM
 LATER TOOK OVER AND REMOVED VALVE COVER, AND CHECKED FOR ANY
 VISIBLE DAMAGE, NONE WAS NOTICABLE.

WHEN I ENGINE OUT TO LOCATION OF DOZER, I REMOVED REAR
 SHIELDS AND DISCONNECTED HYDRAULIC PUMP, IT WOULD STILL MAKE
 THAT NOISE, AND TALKING WITH CUSTOMER THE NOISE WAS SOMETHING
 THAT SOUNDED ALL OF A SUDDEN, BUT DIDN'T SEEM TO AFFECT THE
 PERFORMANCE OF DOZER, STILL THEY DISCONTINUE USE. I TALKED
 WITH PERKINS DEALER AND TOLD THEM ALL OF THE INFO THAT I
 HAD.

LATER WE WERE TOLD THAT THIS HAD TO GO TO A PERKINS
 DEALER, SO TOM AND I PUT ALL SHIELDS BACK ON.

*****25% /MONTH OR 27% /YEAR WILL BE ADDED TO ALL WORK
 NOT PAID IN FULL AT THE TIME OF DELIVERY. LATE FEE OF
 \$50.00/ MONTH AND ANY COLLECTION COSTS WILL ALSO BE ADDED.

I CERTIFY THAT THIS REPAIR WAS DONE ON FARM MACHINERY.*****

QTY	DATE	TIME	DESCRIPTION	RATE	EXTENSION
1	05-13	1	WYX51340 OIL FILTER	6.69	6.69
1.68	05-07	R/T	00190 REPAIR	85.00	142.80
.78	05-07	R/T	00190 REPAIR	85.00	66.30
.11	05-11	R/T	00110 REPAIR	85.00	9.35
1.01	05-11	R/T	00110 REPAIR	85.00	85.85
.40	05-13	R/T	00110 REPAIR	85.00	40.80
.40	05-14	R/T	00110 REPAIR	85.00	34.00
.74	05-13	R/T	00190 REPAIR	85.00	62.90
1.14	05-14	R/T	00190 REPAIR	85.00	96.90
1	05-13	1	OUTBOUND FREIGHT	8.00	8.00
FRY. CHARGE TO SHOP AND FILTER TO WA.					
1	05-14	1	SHOP SUPPLIES	13.85	13.85
QTY # 01	TOTAL =		6.69 P 6.34 LH 508.90 L	21.85 H	587.44 T
Estimated	TOTNL =		.00 P 6.34 LH 508.90 L	.00 H	508.90 T

RENTAL AGREEMENT

1074128

Name	LESSEE <i>Richard Greene</i>	DATE	RENTAL TERM ▶ <i>12/1/9</i>	BEGINS ON	ENDS ON	
Street or RFD	<i>2400 N. 1st Ave</i>	BRANCH/REGION	ACCOUNT NO.	<i>Do NOT write in shaded areas. For Office use only.</i>		
City, State ZIP Code	<i>Rock Hill</i>	LESSOR NAME AND ADDRESS			NUMBER OF MONTHS	
Telephone Number	<i>601-2354</i>	<i>Km C</i>			APPLIED DATE	
Contact		<i>J. Green</i>			PAYMENTS APPLIED	
Rental Rate	Tax	Service Charge	TOTAL RENTAL RATE			
\$	+	\$	+	\$	Per <input type="checkbox"/> Hour <input type="checkbox"/> Day <input type="checkbox"/> Week <input type="checkbox"/> Month	
Minimum RENTAL PERIOD Guaranteed by Lessee		Minimum RENTAL AMOUNT Guaranteed by Lessee		Rentals are payable in advance of use of equipment. Weekly Rental - one week's rent in advance. Hourly and Daily Rental - entire amount in advance. Monthly Rental - one month's rent in advance.		
<i>1 month</i>		<i>\$ worth of rent</i>				
EQUIPMENT WILL BE USED AT: (County)			(City)	(State)		
			◀ Lessee will not remove the Equipment from this location without written permission from Lessor.			
Document Reference No.	Qty.	Model	Size & Description of Equipment (Give Product Identification/Serial No.)	Hour Meter Reading	Present Value	%
	<i>1</i>		<i>520 DY Power</i>	<i>290</i>	<i>2400.00</i>	
			<i>S/N 2247</i>			
					<i>2400</i>	TOTAL VALUE PRESENT

RENTAL AGREEMENT

The above-named Lessor hereby leases to the above-named Lessee the equipment listed herein ("Equipment") for the term and with the rental payments set out above. Rental payments shall be made to Lessor at his address shown above. Lessee will pay the cost of transporting the Equipment from Lessor's place of business and returning it thereto. Such transportation shall take place during the term hereof.

It is contemplated that the Equipment will be operated for not more than _____ hours in any one day; _____ hours in any one week; _____ hours in any one month, and Lessee agrees that he will pay additional rental prorated at the applicable daily, weekly or monthly rate for each hour the Equipment is used in excess of such time. The additional rent for excess hours shall be paid at the time the Equipment is returned or, if the Equipment is leased for more than thirty days, on the first day of the month following such use. If there is an hour meter furnished, Lessee agrees to keep it connected to the Equipment and in good working condition at all times and it is to be used as the conclusive basis of the number of hours of operation. If Lessee fails to return the Equipment promptly at the end of the term, additional rental shall be payable for each day prorated at one and one-half times the normal rental.

Lessee shall indemnify Lessor against all loss or damage to the Equipment while it is out of Lessor's possession, and the amount of any such loss or damage shall be based on the value shown above. Damage to the Equipment, other than a total loss, shall not abate or excuse the making of prescribed rental payments.

Lessee agrees to use and care for the Equipment in a careful and prudent manner, to pay all operation and maintenance expenses while the Equipment is out of the possession of Lessor, and to make, at his expense, any and all repairs. The Equipment shall be returned to Lessor in as good condition as received, reasonable wear and tear excepted. If, upon its return to Lessor, the Equipment is not in such good condition, Lessor may repair it and Lessee will pay the cost of any such repairs at Lessor's regular shop rates.

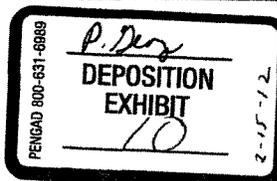
Lessee assumes all risk and liability for and shall hold Lessor and its assigns harmless from all damages for injuries or death to persons and property arising out of the use, possession or transportation of the Equipment. Lessee, at his own expense will carry public liability insurance with minimum liability limits in the amount of \$100,000 per person and \$300,000 per occurrence for bodily injury, including death, and in the minimum amount of \$50,000 per occurrence for property damage. Neither Lessor, its assigns, the wholesale distributor, nor the Manufacturer shall be liable for any incidental or consequential damages which may result from any failure or use of the Equipment.

Upon expiration of the term of this Rental Agreement or at any time during such term, Lessee may elect to purchase the Equipment for the "Total Present Value" shown above, and may apply to such purchase price _____ % of all rentals theretofore paid. Such election shall be evidenced by execution of a purchase order form supplied by Lessor, together with payment of the remainder of the purchase price in cash or settlement for the Equipment in some other manner agreed to by the parties.

THIS RENTAL AGREEMENT IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET OUT ON THE REVERSE SIDE HEREOF WHICH ARE HEREBY MADE A PART HEREOF.

LESSEE (Customer) 	LESSOR (Dealer) BY _____
-----------------------	-----------------------------

CUSTOMER COPY



RENTAL AGREEMENT

1109678

Name	LESSEE EDGED IN STONE (EIS)	DATE 16 April 2010	RENTAL TERM 16 April 2010	BEGINS ON 16 April 2010	ENDS ON	
Street - RFD		BRANCH/REGION Reno	ACCOUNT NO. 07-0140	Do NOT write in shaded areas. For Office use only.		
City, State ZIP Code	POCAHELLO NV 89202	LESSOR NAME AND ADDRESS TRUCK MOUNTED / ML (B) (RUC)		NUMBER OF MONTHS		
Telephone Number	208.904.3297	P.O. Box 159		APPLIED DATE		
Contact	TRUCK MOUNTED 661-2554	BLACKFOOT IDAHO 83221		PAYMENTS APPLIED		
Rental Rate	Tax	Service Charge	TOTAL RENTAL RATE			
\$ 1000 per hour for the use of the equipment and all charges @ \$ 2.00 per hour			= \$ 1000 - Per <input type="checkbox"/> Hour <input type="checkbox"/> Day <input type="checkbox"/> Week <input checked="" type="checkbox"/> Month			
Minimum RENTAL PERIOD Guaranteed by Lessee	Minimum RENTAL AMOUNT Guaranteed by Lessor		Rentals are payable in advance of use of equipment: Weekly Rental and week's rent in advance Hourly and Daily Rental - amount in advance Monthly Rental - one month's rent in advance			
EQUIPMENT WILL BE USED AT: (County)		(City)	(State)			
Lessee will not remove the Equipment from this location without written permission from Lessor.						
Document Reference No.	Qty.	Model	Size & Description of Equipment (Give Product Identification/Serial No.)	Hour Meter Reading	Present Value	%
	1	USED	Box 526 DX		23,998	
			SN# 2347	145		
NOTE: Client has agreed to have RUC handle repair service intervals (not daily) AND THEN (EIS) will pay accordingly. EIS ALSO will pay all repairs to unit as they come occur and as deemed by RUC. RUC charge will be functional. Any + all RENT may be applied as part of the total lease down payment IF purchased. EIS will remain unit in comprehensive way.						
					TOTAL VALUE PRESENT	

RENTAL AGREEMENT

The above-named Lessor hereby leases to the above-named Lessee the equipment listed herein ("Equipment") for the term and with the rental payments set out above. Rental payments shall be made to lessor at his address shown above. Lessee will pay the cost of transporting the Equipment from Lessor's place of business and returning it thereto. Such transportation shall take place during the term hereof.

It is contemplated that the Equipment will be operated for not more than _____ hours in any one day; _____ hours in any one week; 100 hours in any one month, and Lessee agrees that he will pay additional rental prorated at the applicable daily, weekly or monthly rate for each hour the Equipment is used in excess of such time. The additional rent for excess hours shall be paid at the time the Equipment is returned or, if the Equipment is leased for more than thirty days, on the first day of the month following such use. If there is an hour meter furnished, Lessee agrees to keep it connected to the Equipment and in good working condition at all times and it is to be used as the conclusive basis of the number of hours of operation. If Lessee fails to return the Equipment promptly at the end of the term, additional rental shall be payable for each day prorated at one and one-half times the normal rental.

Lessee shall indemnify Lessor against all loss or damage to the Equipment while it is out of Lessor's possession, and the amount of any such loss or damage shall be based on the value shown above. Damage to the Equipment, other than a total loss, shall not abate or excuse the making of prescribed rental payments.

Lessee agrees to use and care for the Equipment in a careful and prudent manner, to pay all operation and maintenance expenses while the Equipment is out of the possession of Lessor, and to make, at his expense, any and all repairs. The Equipment shall be returned to Lessor in as good condition as received, reasonable wear and tear excepted. If, upon its return to Lessor, the Equipment is not in such good condition, Lessor may repair it and Lessee will pay the cost of any such repairs at Lessor's regular shop rates.

Lessee assumes all risk and liability for and shall hold Lessor and its assigns harmless from all damages for injuries or death to persons and property arising out of the use, possession or transportation of the Equipment. Lessee, at his own expense will carry public liability insurance with minimum liability limits in the amount of \$100,000 per person and \$300,000 per occurrence for bodily injury, including death, and in the minimum amount of \$50,000 per occurrence for property damage. Neither Lessor, its assigns, the wholesale distributor, nor the Manufacturer shall be liable for any incidental or consequential damages which may result from any failure or use of the Equipment.

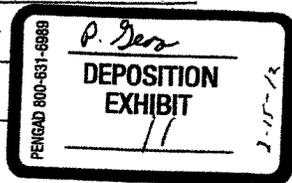
Upon expiration of the term of this Rental Agreement or at any time during such term, Lessee may elect to purchase the Equipment for the "Total Present Value" shown above, and may apply to such purchase price _____ % of all rentals theretofore paid. Such election shall be evidenced by execution of a purchase order form supplied by Lessor, together with payment of the remainder of the purchase price in cash or settlement for the Equipment in some other manner agreed to by the parties.

THIS RENTAL AGREEMENT IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET OUT ON THE REVERSE SIDE HEREOF WHICH ARE HEREBY MADE A PART HEREOF.

LESSEE (Customer)

 George (EIS)

LESSOR (Dealer)
 TRUC
 BY



RENTAL AGREEMENT

1100678

DATE	16 April 2010	DATE	16 April 2010
TO	EDGEON STORE (EIS)	LESSOR	RMC
FROM	POCATELLO IDAHO 83202	PHONE NO.	07-0140
ATTENTION	208.904.3297	ADDRESS	Rocky Mountain Mach. Co. (RMC)
CONTACT	FREDAS GEORGE CBI. 2354	ADDRESS	P.O. Box 151
		ADDRESS	Blackfoot IDAHO 83221

Monthly RENTAL AMOUNT (Estimated by Lessor) \$ 91000

4 Lessee not returning the Equipment in the time specified without permission from Lessor

Quantity	Model	Size & Description of Equipment (Make, Model, Identification No.)	Hour Meter Reading	Present Value	FA
1	USED	Box 526 DX S/N# 2247	145	23,993	

NOTE: Client has agreed to have RMC handle regular service intervals (not daily) AND they (EIS) will pay accordingly. EIS also will pay all repairs to unit as they may occur AND AS DEEMED BY RMC. RMC brings unit fully functional. Any + All REPAIR may be applied AS part or in whole for down payment if purchased. EIS will insure unit in Comprehensive way.

RENTAL AGREEMENT

The above named lessee hereby leases to the above named lessor the equipment listed herein ("Equipment") for the term and with the rental payments set out above. Rental payments shall be made to Lessor at the address shown above. Lessee will pay the cost of transporting the Equipment from Lessor's place of business and returning it thereon. Such transportation shall take place during the term hereof.

It is understood that the Equipment will be operated for not more than _____ hours in any one day, _____ hours in any one week, 160 hours in any one month, and in no event shall be paid of the time the Equipment is returned or, if the Equipment is leased for more than thirty days, on the first day of the month following such use. If the Lessor has a meter installed, Lessee agrees to keep it connected to the Equipment and in good working condition at all times and it is to be used as one would use a meter of the number of hours of operation. If Lessee fails to return the Equipment promptly at the end of the term, additional rental shall be payable for each day past the end of the term or half times the agreed rental.

Lessee shall indemnify Lessor against all loss or damage to the Equipment while it is out of Lessor's possession, and the amount of any such loss or damage shall be based on the replacement value of the Equipment, other than a total loss, shall not exceed or exceed the amount of prescribed rental payments.

Lessee shall be held liable for the Equipment in a careful and prudent manner, to pay all operating and maintenance expenses while the Equipment is out of the possession of Lessor, and to make, at his expense, any and all repairs. The Equipment shall be returned to Lessor in as good condition as received, reasonable wear and tear excepted, if, at any time during the term of the lease, the Equipment is not in such good condition, Lessor may require it and Lessee will pay the cost of any such repairs at Lessor's option, plus freight.

Lessee shall be held liable for and shall hold Lessor and its agents harmless from all damages for injury or death to persons and property arising out of the use of the Equipment. Lessee, at his own expense will carry public liability insurance with minimum liability limits in the amount of \$100,000 per person and \$200,000 per occurrence for bodily injury, including death, and in the minimum amount of \$50,000 per occurrence for property damage. Neither Lessor, in design, the design of the equipment, nor the Manufacturer shall be liable for any incidental or consequential damages which may result from any failure or use of the Equipment.

At the expiration of the term of this Rental Agreement or at any time during such term, Lessee may elect to purchase the Equipment for the "Total Present Value" shown above, and may apply to such purchase price _____ % of all rentals theretofore paid. Such election shall be evidenced by execution of a purchase order form supplied by Lessor, together with payment of the remainder of the purchase price in cash or settlement for the Equipment in some other manner agreed to by the parties.

THIS RENTAL AGREEMENT IS SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET OUT ON THE REVERSE SIDE HEREOF WHICH ARE HEREBY MADE A PART HEREOF.

DATE	16 April 2010	LESSOR	RMC
SIGNED BY	George (EIS)	SIGNED BY	[Signature]

PHONE: 13062600
PHONE: 18155

AM PICK UP
STORE: UT
CUST #: 200900

PHONE: 1
PHONE: 17

SOLD TO: ORDER #: 198023 SHIP TO:
EDGED IN STONE TYPE: CASH EDGED IN STONE
3000 W. HIGHWAY 30
P.O. :

*ent
10/13*

PODRIELLO 10 83284

PHONE: 208-631-2354

PIEC PART	DESCRIPTION	QTY	UNIT	SHIP	WG	GR NET	LIST	EXTENSION
3010809	PIN 1X2.0	4	IN STOCK				31.99	127.96
3010896	PIN 1X2.25	2	IN STOCK				18.84	37.68
3014222	CLIP LEFT	4	IN STOCK				11.49	45.96
3014221	CLIP RIGHT	2	IN STOCK				11.49	22.98
INBOUND FREIGHT	MISC	1					15.00	15.00

*Layne-
785-0520*

OFFICE # 364-3207

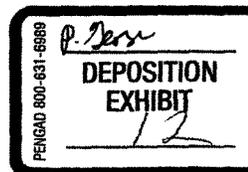
177 PRESTON 10 1-09 SNIP BOOKKEEPER

WILL SEND CHECK 10-2-09 LN

SHIP VIA:

PLEASE SHIP TO: ROCKY MOUNTAIN MACH
P.O. BOX 159
BLACKFOOT 15400
83221

REG NONTAXABLE:
MISC NONTAXABLE: 15.00
REG TAXABLE: 234.08
MISC TAXABLE:
TAX: 14.07
TOTAL: 264.15



Northwest Power Systems



Service Call Report

Customer Information

Boxer

Account Name: <i>Edges in Stone</i>	Contact: <i>Scott Webb</i>	Date of Call: <i>2/20/2009</i>
Location: <i>Pacificella Tule</i>		
Voice Phone:	Cell Phone:	Fax:
Start Mileage:	End Mileage:	Travel Time:
		On-Site Time:

Generator Information

Make:	Model:	Specification:
Serial #:		Hour Reading:

Engine Information

Make: <i>Perkins</i>	Model: <i>HH35118</i>	Specification:
Serial #: <i>202089N</i>		Hour Reading: <i>608-3</i>

Equipment Problem Reported

<i>knocking</i>

Parts Used

<i>(1) Perkins model # HH35118 403C-11 IOPW Serial # N20A140P</i>

Repairs Made

<i>Found engine to have dirt entry into air manifold. Engine knocking. Took compression readings all cylinders below rebuilt specs. Removed valve cover, rocker assy removed cyl head. Engine has been cluttered by dirt entry into engine and #3 rod big is bent. Draw piston to bottom of cyl and turn crank to slight up position and piston can be pushed back down. Dusting in cyl walls as shown by pictures. This is a maintenance issue not a warranty issue. Customer requested new engine replacement.</i>
<i>UNIT IN AUTO? Installed new engine and tested.</i>

Standard Service Hours

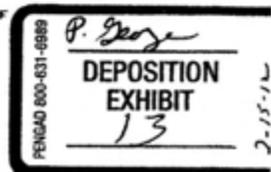
Service labor performed outside standard service hours of Monday thru Friday 8:00 a.m. to 5:00 p.m. or service labor performed on holidays will be billed at 1.5 times the normal labor rate.

I acknowledge the technician was on site from _____ m to _____ m. (initial)

I acknowledge the above information and work performed.

Contact Name:	Signature:	Date:
---------------	------------	-------

ANY ADDITIONAL REPAIRS, PARTS, SERVICES OR LABOR THAT IS REQUIRED BUT NOT SPECIFICALLY LISTED MAY BE BILLED SEPARATELY. ANY LOSS OF TIME OR MILEAGE COSTS DUE TO UNAVAILABILITY OF EQUIPMENT FOR SCHEDULED SERVICES WILL BE CHARGED AT NORTHWEST POWER SYSTEMS PREVAILING RATES.



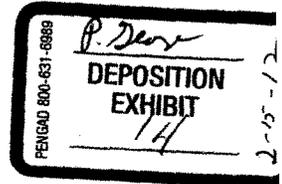
Northwest Power Systems

10686 W. Pattie St.
Boise, ID 83713

Statement

Date
4/30/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204



		Amount Due	Amount Enc.		
		\$11,243.68			
Date	Transaction	Amount	Balance		
05/28/2009	INV #1571. Due 06/27/2009. Orig. Amount \$4,385.18.	2,310.18	2,310.18		
06/30/2009	INV #1571 S JUN. Due 06/30/2009. Orig. Amount \$110.00.	110.00	2,420.18		
06/30/2009	INV #1571 FC 06. Due 06/30/2009. Orig. Amount \$65.78.	65.78	2,485.96		
07/31/2009	INV #1571 S JUL. Due 07/31/2009. Orig. Amount \$155.00.	155.00	2,640.96		
07/31/2009	INV #1571 FC 07. Due 07/31/2009. Orig. Amount \$65.78.	65.78	2,706.74		
08/30/2009	INV #1571 FC 08. Due 08/30/2009. Orig. Amount \$65.78.	65.78	2,772.52		
08/30/2009	INV #1571 S AUG. Due 08/30/2009. Orig. Amount \$155.00.	155.00	2,927.52		
09/30/2009	INV #1571 FC 09. Due 09/30/2009. Orig. Amount \$65.78.	65.78	2,993.30		
09/30/2009	INV #1571 S SEP. Due 09/30/2009. Orig. Amount \$150.00.	150.00	3,143.30		
10/31/2009	INV #1571 FC 10. Due 10/31/2009. Orig. Amount \$65.78.	65.78	3,209.08		
10/31/2009	INV #1571 S OCT. Due 10/31/2009. Orig. Amount \$155.00.	155.00	3,364.08		
11/01/2009	INV #1571 S ADJ. Due 11/01/2009. Orig. Amount \$615.00.	615.00	3,979.08		
11/30/2009	INV #1571 S NOV. Due 11/30/2009. Orig. Amount \$300.00.	300.00	4,279.08		
11/30/2009	INV #FC 38. Due 11/30/2009. Orig. Amount \$65.78. Invoice	65.78	4,344.86		
12/31/2009	INV #S 12/09. Due 12/31/2009. Orig. Amount \$310.00.	310.00	4,654.86		
12/31/2009	INV #FC 43. Due 12/31/2009. Orig. Amount \$97.16. Invoice	97.16	4,752.02		
01/31/2010	INV #S 01/10. Due 01/31/2010. Orig. Amount \$310.00.	310.00	5,062.02		
01/31/2010	INV #FC 47. Due 01/31/2010. Orig. Amount \$70.18. Invoice	70.18	5,132.20		
02/28/2010	INV #S 02/10. Due 02/28/2010. Orig. Amount \$280.00.	280.00	5,412.20		
02/28/2010	INV #FC 48. Due 02/28/2010. Orig. Amount \$67.65. Invoice	67.65	5,479.85		
03/31/2010	INV #S 03/10. Due 03/31/2010. Orig. Amount \$310.00.	310.00	5,789.85		
03/31/2010	INV #FC 49. Due 03/31/2010. Orig. Amount \$79.20. Invoice	79.20	5,869.05		
04/30/2010	INV #S 04/10. Due 04/30/2010. Orig. Amount \$300.00.	300.00	6,169.05		
04/30/2010	INV #FC 50. Due 04/30/2010. Orig. Amount \$81.20. Invoice	81.20	6,250.25		
05/31/2010	INV #S 05/10. Due 05/31/2010. Orig. Amount \$310.00.	310.00	6,560.25		
05/31/2010	INV #FC 52. Due 05/31/2010. Orig. Amount \$88.53. Invoice	88.53	6,648.78		
06/30/2010	INV #S 06/10. Due 06/30/2010. Orig. Amount \$300.00.	300.00	6,948.78		
06/30/2010	INV #FC 54. Due 06/30/2010. Orig. Amount \$90.23. Invoice	90.23	7,039.01		
07/31/2010	INV #S 07/10. Due 07/31/2010. Orig. Amount \$310.00.	310.00	7,349.01		
07/31/2010	INV #FC 55. Due 07/31/2010. Orig. Amount \$97.86. Invoice	97.86	7,446.87		
08/31/2010	INV #S 08/10. Due 08/31/2010. Orig. Amount \$310.00.	310.00	7,756.87		
08/31/2010	INV #FC 56. Due 08/31/2010. Orig. Amount \$102.60. Invoice	102.60	7,859.47		
09/30/2010	INV #S 09/10. Due 09/30/2010. Orig. Amount \$300.00.	300.00	8,159.47		
09/30/2010	INV #FC 57. Due 09/30/2010. Orig. Amount \$103.85. Invoice	103.85	8,263.32		
CURRENT	1-30 DAYS PAST DUE	31-60 DAYS PAST DUE	61-90 DAYS PAST DUE	OVER 90 DAYS PAST DUE	Amount Due
435.23	445.02	0.00	834.04	9,529.39	\$11,243.68

Northwest Power Systems

10686 W. Pattie St.
Boise, ID 83713

Statement

Date
4/30/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

		Amount Due	Amount Enc.		
		\$11,243.68			
Date	Transaction	Amount	Balance		
10/31/2010	INV #S 10/10. Due 10/31/2010. Orig. Amount \$310.00.	310.00	8,573.32		
10/31/2010	INV #FC 58. Due 10/31/2010. Orig. Amount \$111.93. Invoice	111.93	8,685.25		
11/30/2010	INV #S 11/10. Due 11/30/2010. Orig. Amount \$300.00.	300.00	8,985.25		
11/30/2010	INV #FC 61. Due 11/30/2010. Orig. Amount \$112.88. Invoice	112.88	9,098.13		
12/31/2010	INV #S 12/10. Due 12/31/2010. Orig. Amount \$310.00.	310.00	9,408.13		
12/31/2010	INV #FC 62. Due 12/31/2010. Orig. Amount \$121.26. Invoice	121.26	9,529.39		
01/31/2011	INV #S 01/11. Due 01/31/2011. Orig. Amount \$310.00.	310.00	9,839.39		
01/31/2011	INV #FC 63. Due 01/31/2011. Orig. Amount \$126.00. Invoice	126.00	9,965.39		
2/28/2011	INV #S 02/11. Due 02/28/2011. Orig. Amount \$280.00.	280.00	10,245.39		
2/28/2011	INV #FC 64. Due 02/28/2011. Orig. Amount \$118.04. Invoice	118.04	10,363.43		
03/31/2011	INV #S 03/11. Due 03/31/2011. Orig. Amount \$310.00.	310.00	10,673.43		
03/31/2011	INV #FC 65. Due 03/31/2011. Orig. Amount \$135.02. Invoice	135.02	10,808.45		
04/30/2011	INV #S 04/11. Due 04/30/2011. Orig. Amount \$300.00.	300.00	11,108.45		
04/30/2011	INV #FC 66. Due 04/30/2011. Orig. Amount \$135.23. Invoice	135.23	11,243.68		
CURRENT					
	1-30 DAYS PAST DUE				
	31-60 DAYS PAST DUE				
	61-90 DAYS PAST DUE				
	OVER 90 DAYS PAST DUE				
	Amount Due				
435.23	445.02	0.00	834.04	9,529.39	\$11,243.68



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Phone (208) 378-6562
Fax (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Date	Invoice #
5/28/2009	1571

Bill To
Edged in Stone Preston 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Account #	Ship Date	Project
			Nct 30		5/28/2009	
Item	Qty	Description			Rate	Amount
Inspection/Repair	1	Inspect Unit, Evaluate and Repair replaced failed engine			1,000.00	1,000.00
Parts	1	Perkins Engine Model HH35t18 403C-11 IOPW Serial # N204140P			3,000.00	3,000.00T
Parts	1	1 Barb38 X 6FJIC			2.29	2.29T
Parts	2	2' 3/8 200PSI Pushloc hose			1.79	3.58T
Parts	1	Barb 3/8 X 1/4 MPT			3.01	3.01T
Parts	1	Cap 1/4 pipe Brass			1.47	1.47T
Parts	1	6MJ X 1/4 BSPP 90EL			12.77	12.77T
Parts	1	MJ-MMADJ 90 Elbo Metric			32.17	32.17
Parts	1	1/2 pipe cap			3.83	3.83
Parts	1	PM-08-08 Barb 1/2 X 1/2 pipe			4.13	4.13
Parts	1	JF-08-08 Barb 1/2 X 1/2 Female JIC			5.01	5.01
Parts	1	1' 1/2 pushloc hose			3.40	3.40
Parts	1	Battery hold down			7.13	7.13
Freight	1	Inbound freight			125.00	125.00
		State Sales Tax			6.00%	181.39

**Please update your records
with our new office phone
208-378-6562. THANK YOU!**

*A finance charge of 1.5% per month, but not to exceed
the highest amount lawfully allowed by contract
in the state of Idaho, will be made on all past due accounts.*

Total \$4,385.18

Balance Due \$4,385.18



**Northwest Power
Systems**

10686 W. Partle St.
Boise, ID 83713

Office (208) 378-6562
(206) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 FC 06	6/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	6/30/2009	

Item	Qty	Description	Rate	Amount
Finance Charge		Finance Charge on 1751	65.7777	65.78
		State Sales Tax	6.00%	0.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total \$65.78

Balance Due \$65.78



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Phone (208) 378-6562
(208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S JUN	6/30/2009

Bill To
Edged In Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	6/30/2009	

Item	Qty	Description	Rate	Amount
Storage	22	June 8 thru June 30 2009	5.00	110.00
		State Sales Tax	6.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$110.00
	Balance Due	\$110.00



**Northwest Power
Systems**

10686 W. Paulte St.
Boise, ID 83713

Phone (208) 378-6562
(208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 FC 07	7/31/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	7/31/2009	

Item	Qty	Description	Rate	Amount
Finance Charge		Finance Charge on 1571	65.78	65.78
		State Sales Tax	6.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$65.78
	Balance Due	\$65.78



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Phone (208) 378-6562
Fax (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S JUL	7/31/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
			Due on receipt	7/31/2009	
Item	Qty	Description		Rate	Amount
Storage	31	July 1 thru July 31 2009		5.00	155.00
		State Sales Tax		6.00%	0.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total	\$155.00
Balance Due	\$155.00



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Phone (208) 378-6562
Fax (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S AUG	8/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
			Due on receipt	8/12/2009	
Item	Qty	Description		Rate	Amount
Storage	31	August 1 thru August 31		5.00	155.00
		State Sales Tax		6.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$155.00
	Balance Due	\$155.00



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Ice (208) 378-6562
I (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 FC 08	8/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
			Due on receipt	8/30/2010	
Item	Qty	Description		Rate	Amount
Finance Charge		Finance Charges		65.78	65.78
		State Sales Tax		6.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$65.78
	Balance Due	\$65.78



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Ice (208) 378-6562
1 (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S SEP	9/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
Item	Qty	Description		Rate	Amount
Storage	30	Daily Storage State Sales Tax		5.00 6.00%	150.00 0.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total \$150.00

Balance Due \$150.00



**Northwest & Jwer
Systems**

10686 W. Pattie St.
Boise, ID 83713

ce (208) 378-6562
(208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 FC 09	9/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	9/30/2009	

Item	Qty	Description	Rate	Amount
Finance Charge		Finance Charges	65.78	65.78
		State Sales Tax	8.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$65.78
	Balance Due	\$65.78



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Ice (208) 378-6562
T (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S OCT	10/31/2009

Bill To
Edged In Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
			Due on receipt	10/31/2009	
Item	Qty	Description		Rate	Amount
Storage	31	Daily Storage		5.00	155.00
		State Sales Tax		6.00%	0.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total	\$155.00
Balance Due	\$155.00



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

ice (208) 378-6562
1 (208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 FC 10	10/31/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	10/31/2009	

Item	Qty	Description	Rate	Amount
Finance Charge		Finance Charges	65.78	65.78
		State Sales Tax	6.00%	0.00

<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>	Total	\$65.78
	Balance Due	\$65.78



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

☎ (208) 378-6562
(208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S ADJ	11/1/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.	P.O. No.	Terms	Ship Date	Project
		Due on receipt	11/1/2009	

Item	Qty	Description	Rate	Amount
Storage	123	Off Site Daily Storage Adjustment for July, Aug, Sept & Oct 2009	5.00	615.00
		State Sales Tax	6.00%	0.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total	\$615.00
Balance Due	\$615.00



**Northwest Tower
Systems**

16686 W. Pattie St.
Boise, ID 83713

(208) 378-6562
208) 890-7451

Accounting Fax (208) 376-1687
Service & Repair (208) 761-3714

Invoice

Invoice #	Date
1571 S NOV	11/30/2009

Bill To
Edged in Stone Preston George 3550 Hwy 30 W Pocatello Idaho 83204

Ship To

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Ship Date	Project
			Due on receipt	11/30/2009	
Item	Qty	Description	Rate	Amount	
Storage	30	Off Site Daily Storage State Sales Tax	10.00 6.00%	300.00 0.00	

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Total \$300.00

Balance Due \$300.00



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Invoice

Invoice # 100-2819
Date: 05/04/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		65.78	65.78
Total				\$65.78
Balance Due				\$65.78

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # S-2708
Date 5/17/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Northwest Power Systems

10686 W. Pattie St.
 Boise, ID 83713

Credit Memo

Date	Credit No.
12/31/2009	1571 CR

Edged in Stone
 Preston George
 3550 Hwy 30 W
 Pocatello Idaho 83204

Description	Qty	Rate	Amount
Remove Engine	1	500.00	500.00
Perkins Engine Returned	-1	3,000.00	-3,000.00
10% Restocking Fee	1	300.00	300.00
Outbound Freight	1	125.00	125.00
Subtotal			\$-2,075.00
Sales Tax (6.0%)			\$0.00
Total			\$-2,075.00
Invoices			\$0.00
Balance Credit			\$-2,075.00



**Northwest Power
Systems**

10686 W. Patte St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 4,385.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009		97.16	97.16
Total				\$97.16
Balance Due				\$97.16

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

Northwest Power Systems

10686 W. Pattie St.
Boise, ID 83713

Statement

Date
12/31/2009

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

		Amount Due	Amount Enc.		
		\$4,752.02			
Date	Transaction	Amount	Balance		
05/28/2009	INV #1571. Due 06/27/2009. Orig. Amount \$4,385.18.	2,310.18	2,310.18		
06/30/2009	INV #1571 S JUN. Due 06/30/2009. Orig. Amount \$110.00.	110.00	2,420.18		
06/30/2009	INV #1571 FC 06. Due 06/30/2009. Orig. Amount \$65.78.	65.78	2,485.96		
07/31/2009	INV #1571 S JUL. Due 07/31/2009. Orig. Amount \$155.00.	155.00	2,640.96		
07/31/2009	INV #1571 FC 07. Due 07/31/2009. Orig. Amount \$65.78.	65.78	2,706.74		
08/30/2009	INV #1571 FC 08. Due 08/30/2009. Orig. Amount \$65.78.	65.78	2,772.52		
08/30/2009	INV #1571 S AUG. Due 08/30/2009. Orig. Amount \$155.00.	155.00	2,927.52		
09/30/2009	INV #1571 FC 09. Due 09/30/2009. Orig. Amount \$65.78.	65.78	2,993.30		
09/30/2009	INV #1571 S SEP. Due 09/30/2009. Orig. Amount \$150.00.	150.00	3,143.30		
10/31/2009	INV #1571 FC 10. Due 10/31/2009. Orig. Amount \$65.78.	65.78	3,209.08		
10/31/2009	INV #1571 S OCT. Due 10/31/2009. Orig. Amount \$155.00.	155.00	3,364.08		
11/01/2009	INV #1571 S ADJ. Due 11/01/2009. Orig. Amount \$615.00.	615.00	3,979.08		
11/30/2009	INV #1571 S NOV. Due 11/30/2009. Orig. Amount \$300.00.	300.00	4,279.08		
11/30/2009	INV #FC 38. Due 11/30/2009. Orig. Amount \$65.78. Invoice	65.78	4,344.86		
12/31/2009	INV #S 12/09. Due 12/31/2009. Orig. Amount \$310.00.	310.00	4,654.86		
12/31/2009	INV #FC 43. Due 12/31/2009. Orig. Amount \$97.16. Invoice	97.16	4,752.02		
CURRENT	1-30 DAYS PAST DUE	31-60 DAYS PAST DUE	61-90 DAYS PAST DUE	OVER 90 DAYS PAST DUE	Amount Due
407.16	0.00	980.78	220.78	3,143.30	\$4,752.02



**Northwest Power
Systems**

10686 W. Patti St.
Boise, ID 83713

Invoice

Invoice # 5104720
Date 1/22/10

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
Total				\$310.00
Balance Due				\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009		70.18	70.18
Total				\$70.18
Balance Due				\$70.18

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 502419
Date 10/28/01

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
28	Off Site Daily Storage		10.00	280.00
	State Sales Tax		6.00%	0.00
			Total	\$280.00
			Balance Due	\$280.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 5348
Date 2/28/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 09/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009 Invoice #S 01/10 for 310.00 on 01/31/2010		67.65	67.65
<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>			Total	\$67.65
			Balance Due	\$67.65



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

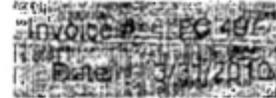
A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		79.20	79.20
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
			Total	\$79.20
			Balance Due	\$79.20

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Patti St.
Boise, ID 83713

Invoice

Invoice # 5-04110
Date 4/30/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
30	Off Site Daily Storage		10.00	300.00
	State Sales Tax		6.00%	0.00
			Total	\$300.00
			Balance Due	\$300.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Invoice

Invoice # 10050
Date 4/30/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		81.20	81.20
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 815.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
Total				\$81.20
Balance Due				\$81.20

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 509119
Date 8/19/03

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
Total				\$310.00
Balance Due				\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest
Power
Systems**
10686 W. Pattle St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009 Invoice #S 01/10 for 310.00 on 01/31/2010 Invoice #S 02/10 for 280.00 on 02/28/2010 Invoice #S 03/10 for 310.00 on 03/31/2010 Invoice #S 04/10 for 300.00 on 04/30/2010		88.53	88.53
<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>				Total 888.53 Balance Due 888.53



**Northwest Power
Systems**
10686 W. Pattle St.
Boise, ID 83713

Invoice

Invoice # 508710
Date 05/04/11

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
			Due on receipt	
Qty	Description		Rate	Amount
30	Off Site Daily Storage		10.00	300.00
	State Sales Tax		6.00%	0.00
Total				\$300.00
Balance Due				\$300.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # FC 5
Date 5/10/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		90.23	90.23
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
			Total	90.23
			Balance Due	90.23

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # S07710
Date 03/14/10

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
Total				\$310.00
Balance Due				\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Pattle St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 08/30/2009 Invoice #1571 FC 08 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009 Invoice #S 01/10 for 310.00 on 01/31/2010 Invoice #S 02/10 for 280.00 on 02/28/2010 Invoice #S 03/10 for 310.00 on 03/31/2010 Invoice #S 04/10 for 300.00 on 04/30/2010 Invoice #S 05/10 for 310.00 on 05/31/2010 Invoice #S 06/10 for 300.00 on 06/30/2010		97.86	97.86
<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>			Total	\$97.86
			Balance Due	\$97.86



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Pattie St.
Boise, ID 83713

Invoice

INVOICE # FC 56
Date: 9/8/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		102.60	102.60
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
			Total	\$102.60
			Balance Due	\$102.60

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # S-09/10
Date 09/20/10

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
30	Off Site Daily Storage		10.00	300.00
	State Sales Tax		6.00%	0.00
Total				\$300.00
Balance Due				\$300.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



Northwest Power Systems

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009 Invoice #S 01/10 for 310.00 on 01/31/2010 Invoice #S 02/10 for 280.00 on 02/28/2010 Invoice #S 03/10 for 310.00 on 03/31/2010 Invoice #S 04/10 for 300.00 on 04/30/2010 Invoice #S 05/10 for 310.00 on 05/31/2010 Invoice #S 06/10 for 300.00 on 06/30/2010 Invoice #S 07/10 for 310.00 on 07/31/2010 Invoice #S 08/10 for 310.00 on 08/31/2010		103.85	103.85
<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>			Total	\$103.85
			Balance Due	\$103.85



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 510710
Date 10/31/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattle St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P. O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance Invoice #1571 for 2,310.18 on 05/28/2009 Invoice #1571 S JUN for 110.00 on 06/30/2009 Invoice #1571 FC 06 for 65.78 on 06/30/2009 Invoice #1571 S JUL for 155.00 on 07/31/2009 Invoice #1571 FC 07 for 65.78 on 07/31/2009 Invoice #1571 FC 08 for 65.78 on 08/30/2009 Invoice #1571 S AUG for 155.00 on 08/30/2009 Invoice #1571 FC 09 for 65.78 on 09/30/2009 Invoice #1571 S SEP for 150.00 on 09/30/2009 Invoice #1571 FC 10 for 65.78 on 10/31/2009 Invoice #1571 S OCT for 155.00 on 10/31/2009 Invoice #1571 S ADJ for 615.00 on 11/01/2009 Invoice #1571 S NOV for 300.00 on 11/30/2009 Invoice #S 12/09 for 310.00 on 12/31/2009 Invoice #S 01/10 for 310.00 on 01/31/2010 Invoice #S 02/10 for 280.00 on 02/28/2010 Invoice #S 03/10 for 310.00 on 03/31/2010 Invoice #S 04/10 for 300.00 on 04/30/2010 Invoice #S 05/10 for 310.00 on 05/31/2010 Invoice #S 06/10 for 300.00 on 06/30/2010 Invoice #S 07/10 for 310.00 on 07/31/2010 Invoice #S 08/10 for 310.00 on 08/31/2010 Invoice #S 09/10 for 300.00 on 09/30/2010		111.93	111.93
<i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i>			Total	\$111.93
			Balance Due	\$111.93



**Northwest Power
Systems**
10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 511410
Date 05/30/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
30	Off Site Daily Storage		10.00	300.00
	State Sales Tax		6.00%	0.00
			Total	\$300.00
			Balance Due	\$300.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # FC 07
Date 10/20/10

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		112.88	112.88
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 66.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
			Total	112.88
			Balance Due	112.88

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
Total				\$310.00
Balance Due				\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 440-62
Date: 12/31/2010

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		121.26	121.26
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
	Invoice #S 11/10 for 300.00 on 11/30/2010			
<p><i>A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.</i></p>			Total	\$121.26
			Balance Due	\$121.26



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 60101
Date 7/31/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Daily Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		126.00	126.00
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
	Invoice #S 11/10 for 300.00 on 11/30/2010			
	Invoice #S 12/10 for 310.00 on 12/31/2010			
			Total	\$126.00
			Balance Due	\$126.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # S-37/11
Date 3/26/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
28	Off Site Daily Storage		10.00	280.00
	State Sales Tax		6.00%	0.00
Total				\$280.00
Balance Due				\$280.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice



Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		118.04	118.04
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 08/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
	Invoice #S 11/10 for 300.00 on 11/30/2010			
	Invoice #S 12/10 for 310.00 on 12/31/2010			
	Invoice #S 01/11 for 310.00 on 01/31/2011			
			Total	\$118.04
			Balance Due	\$118.04

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 5-0211
Date 3/21/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
31	Off Site Dally Storage		10.00	310.00
	State Sales Tax		6.00%	0.00
			Total	\$310.00
			Balance Due	\$310.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**
10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # 3032011
Date 3/3/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		135.02	135.02
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
	Invoice #S 11/10 for 300.00 on 11/30/2010			
	Invoice #S 12/10 for 310.00 on 12/31/2010			
	Invoice #S 01/11 for 310.00 on 01/31/2011			
	Invoice #S 02/11 for 280.00 on 02/28/2011			
			Total	\$135.02
			Balance Due	\$135.02

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # S-04/11
Date: 4/30/2011

Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
30	Off Site Daily Storage		10.00	300.00
	State Sales Tax		6.00%	0.00
			Total	\$300.00
			Balance Due	\$300.00

A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.



**Northwest Power
Systems**

10686 W. Pattie St.
Boise, ID 83713

Invoice

Invoice # FB-95
Date 4/30/2011

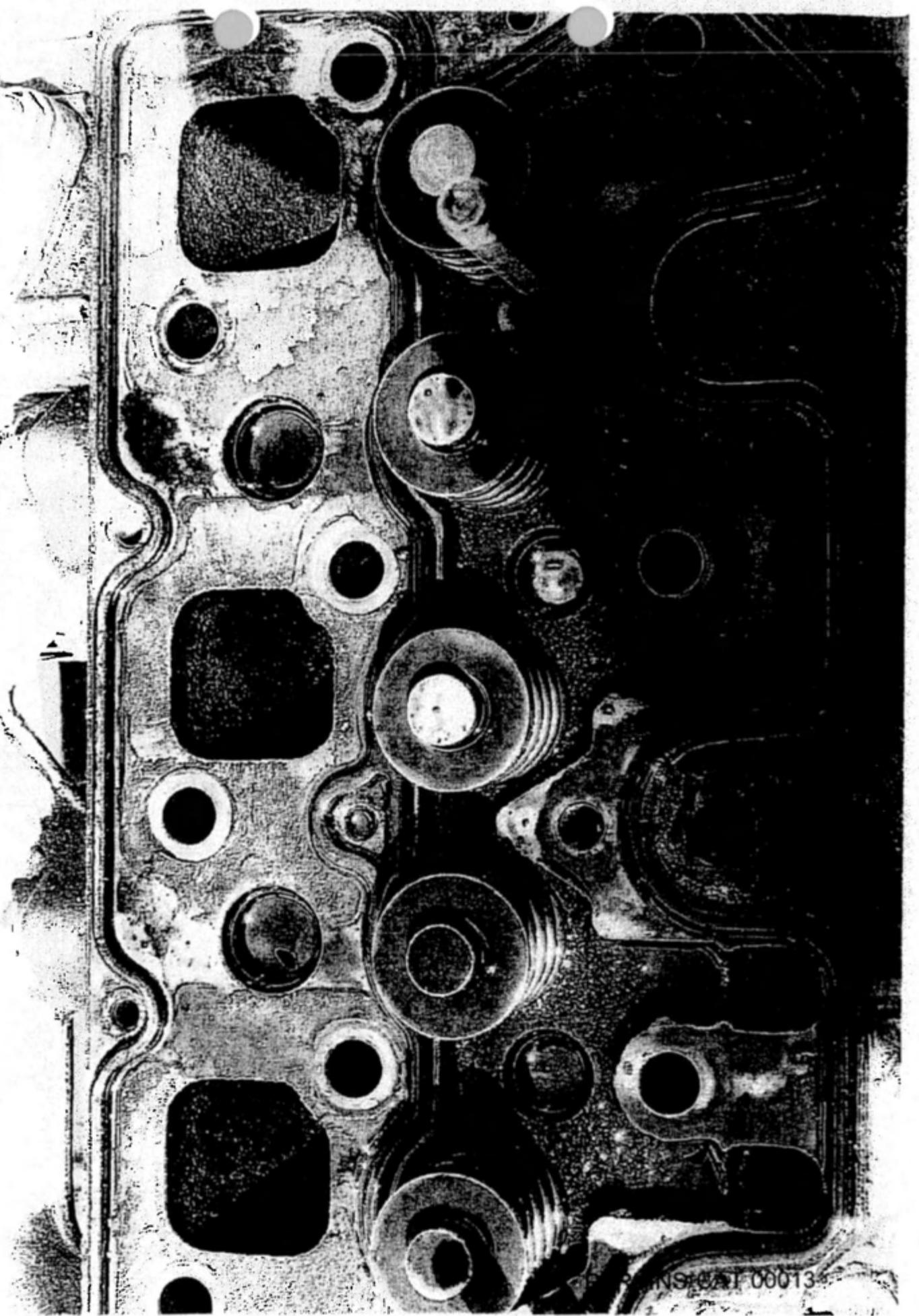
Edged in Stone
Preston George
3550 Hwy 30 W
Pocatello Idaho 83204

Fax (208) 376-1687
Office (208) 378-6562
accounting@northwestpowersystems.com

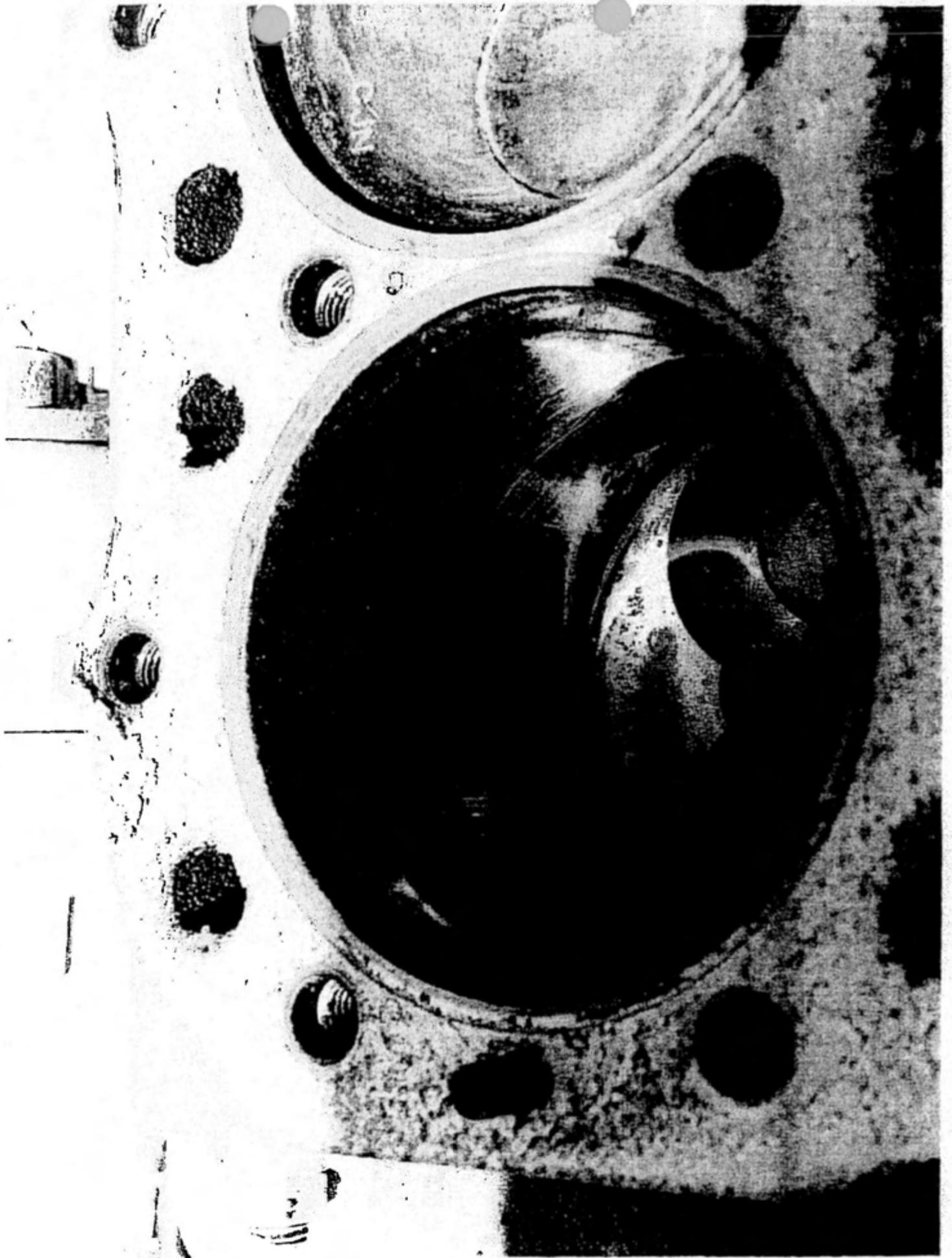
Due to the volatile nature of the petroleum market, freight charges given at the time of bid are an estimate only. Actual freight costs are reflected on this invoice.		P.O. No.	Terms	Project
Qty	Description		Rate	Amount
	Finance Charges on Overdue Balance		135.23	135.23
	Invoice #1571 for 2,310.18 on 05/28/2009			
	Invoice #1571 S JUN for 110.00 on 06/30/2009			
	Invoice #1571 FC 06 for 65.78 on 06/30/2009			
	Invoice #1571 S JUL for 155.00 on 07/31/2009			
	Invoice #1571 FC 07 for 65.78 on 07/31/2009			
	Invoice #1571 FC 08 for 65.78 on 08/30/2009			
	Invoice #1571 S AUG for 155.00 on 08/30/2009			
	Invoice #1571 FC 09 for 65.78 on 09/30/2009			
	Invoice #1571 S SEP for 150.00 on 09/30/2009			
	Invoice #1571 FC 10 for 65.78 on 10/31/2009			
	Invoice #1571 S OCT for 155.00 on 10/31/2009			
	Invoice #1571 S ADJ for 615.00 on 11/01/2009			
	Invoice #1571 S NOV for 300.00 on 11/30/2009			
	Invoice #S 12/09 for 310.00 on 12/31/2009			
	Invoice #S 01/10 for 310.00 on 01/31/2010			
	Invoice #S 02/10 for 280.00 on 02/28/2010			
	Invoice #S 03/10 for 310.00 on 03/31/2010			
	Invoice #S 04/10 for 300.00 on 04/30/2010			
	Invoice #S 05/10 for 310.00 on 05/31/2010			
	Invoice #S 06/10 for 300.00 on 06/30/2010			
	Invoice #S 07/10 for 310.00 on 07/31/2010			
	Invoice #S 08/10 for 310.00 on 08/31/2010			
	Invoice #S 09/10 for 300.00 on 09/30/2010			
	Invoice #S 10/10 for 310.00 on 10/31/2010			
	Invoice #S 11/10 for 300.00 on 11/30/2010			
	Invoice #S 12/10 for 310.00 on 12/31/2010			
	Invoice #S 01/11 for 310.00 on 01/31/2011			
	Invoice #S 02/11 for 280.00 on 02/28/2011			
	Invoice #S 03/11 for 310.00 on 03/31/2011			
			Total	\$135.23
			Balance Due	\$135.23

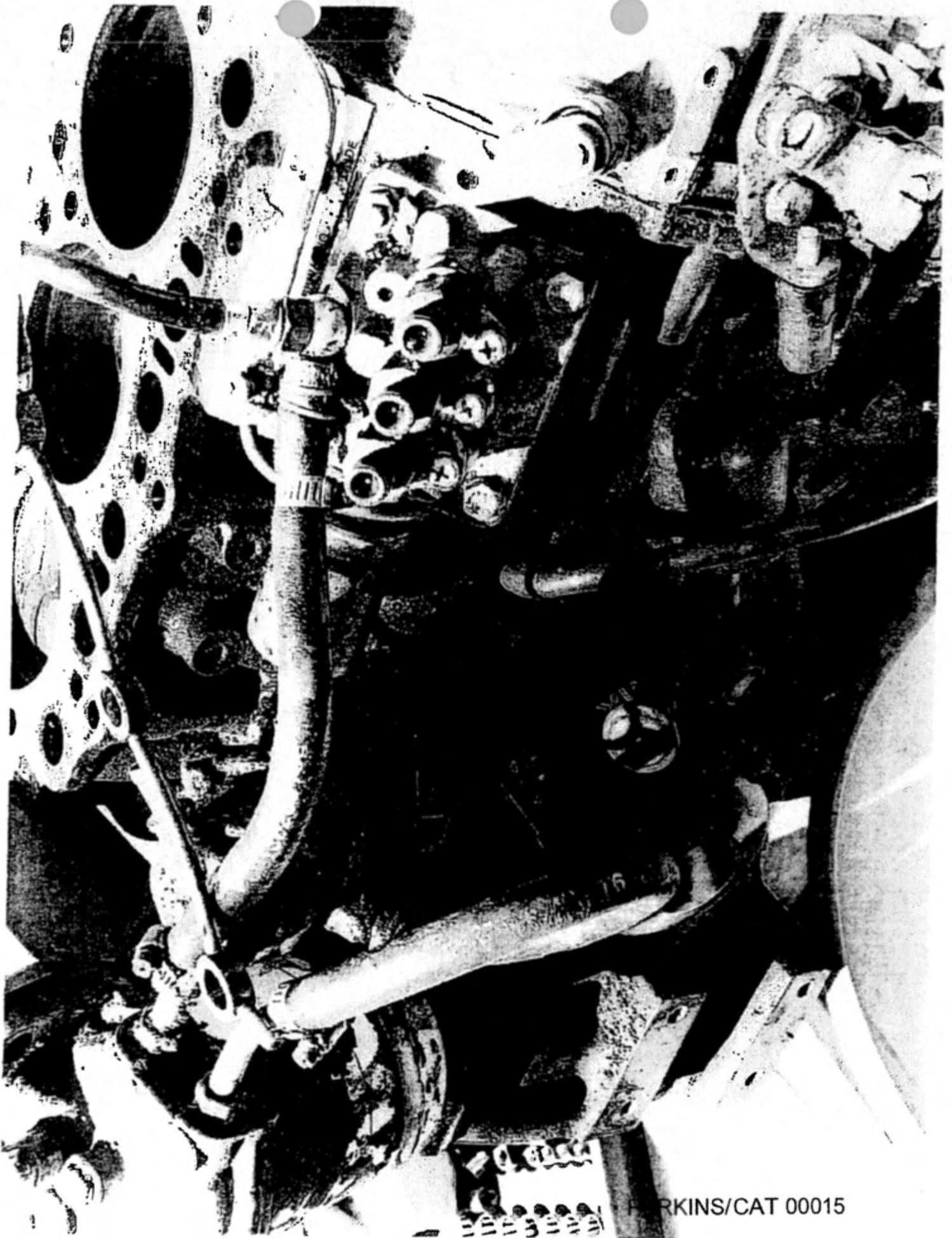
A finance charge of 2.25% per month or a late fee of \$50.00, whichever is greater, will be made on all past due accounts. Additional collection and legal fees will be added if necessary.

2-15-12
DEPOSITION
EXHIBIT
FENGAD 800-631-692



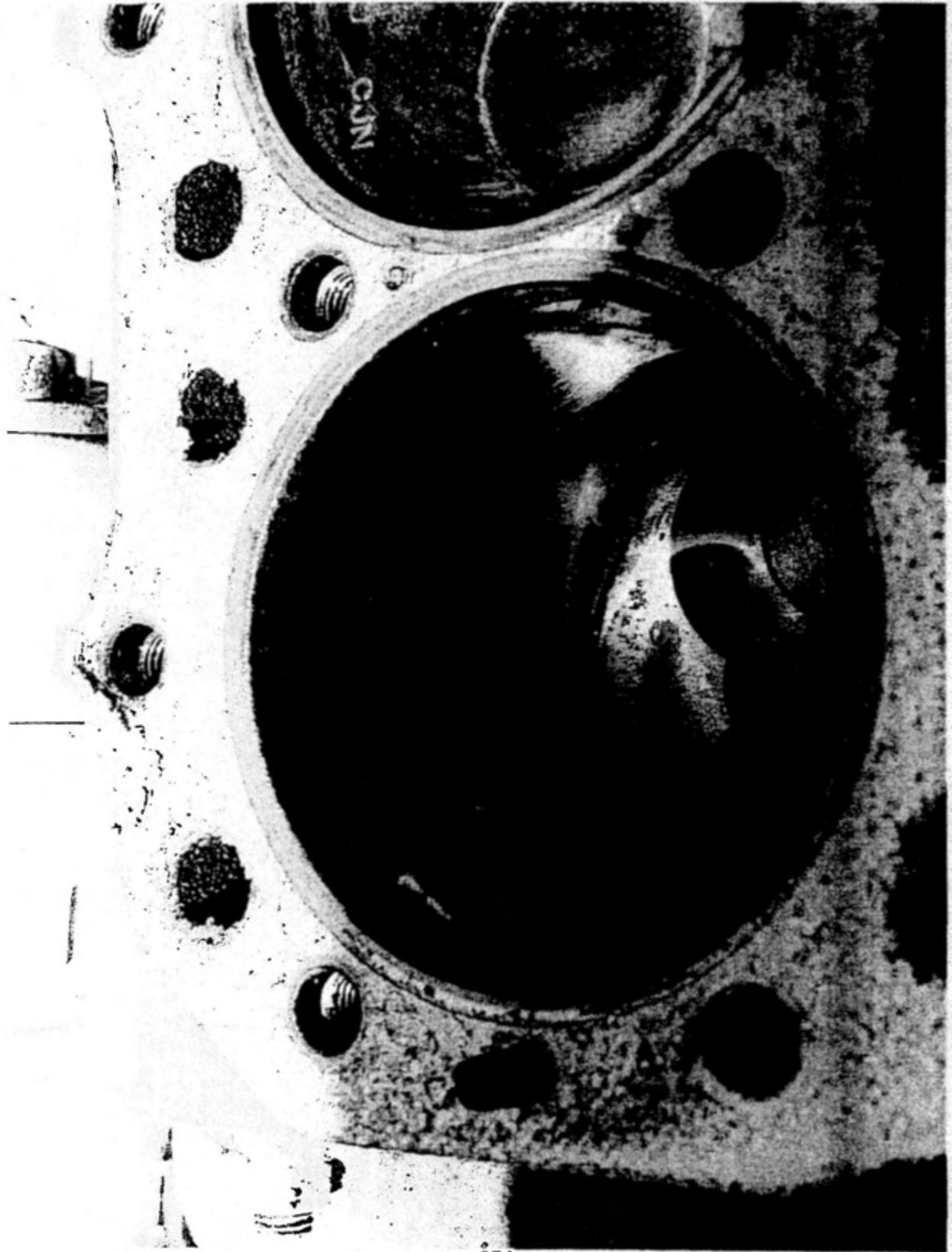
INSPECTION 00013

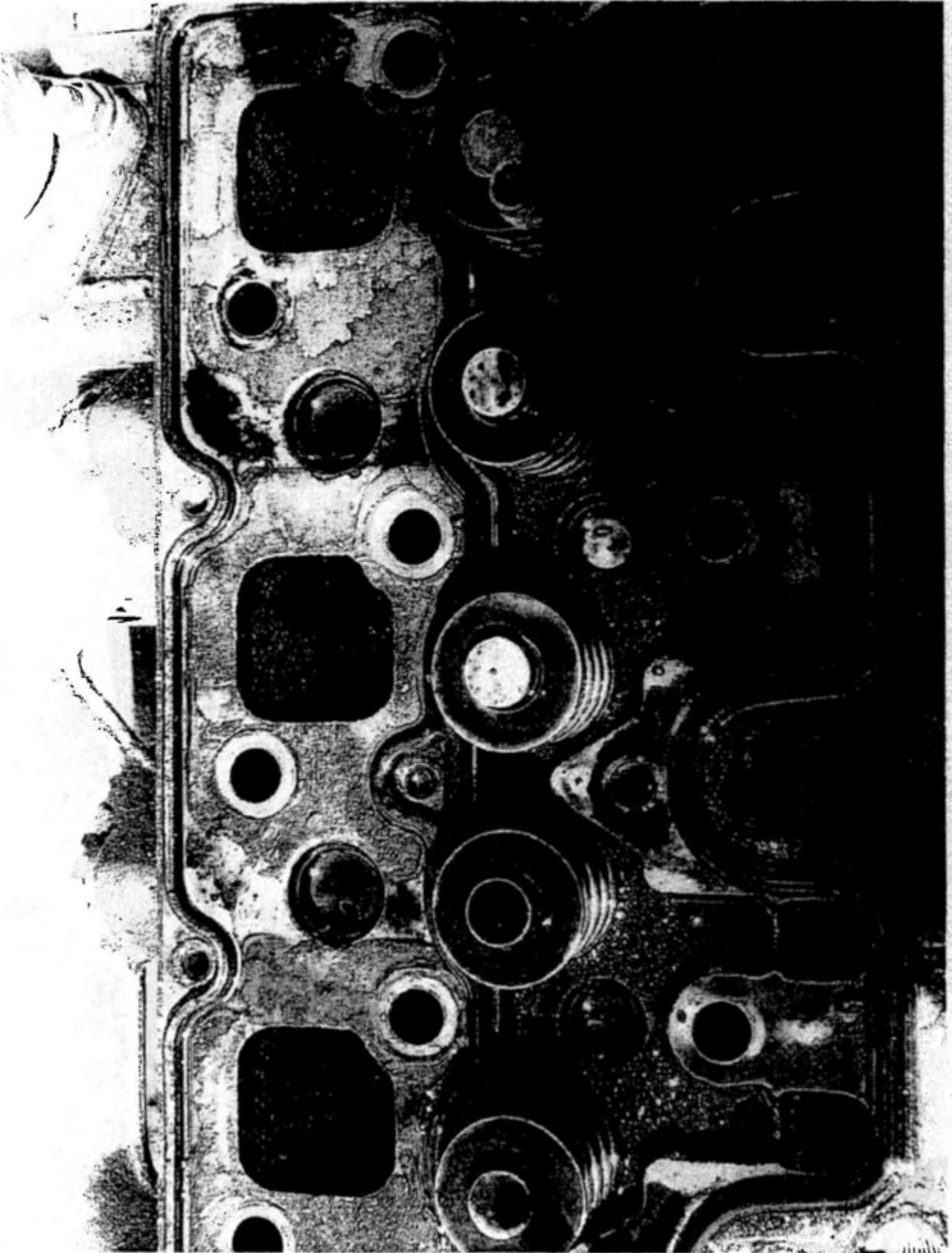






PERKINS/CAT 00016





PERKINS/CAT 00018

08/19/2000 12:20 FAX 2089043297

CHANGING SEASONS

0001



FAX TRANSMITTAL FORM

To

From

Preston George

Company Name:

Northwest Power Systems

Phone: 208-904-3297

Phone Number:

Fax: 208-904-3297

Fax Number:

Date sent:

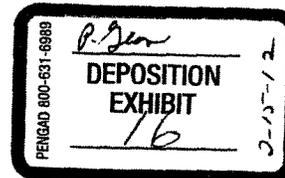
Time sent:

Number of pages including cover page:

Message:

3350 West Hwy 30
Pocatello, ID 83201

Phone: 208-904-3297
Fax: 208-904-3297



Not not for

Ex.

08.10.2000 12:20 FAX 3090043287

CHANGING SEASONS

7/003

you can understand that I just want an engine warranty that I am due. I want compact power to stand behind the product they sell

Preston George Edged in Stone Inc

A handwritten signature in cursive script, appearing to read "P. Edged", written in dark ink.

Edged in Stone Inc.
3550 W. Hwy 30
Pocatello, Idaho 83210
208-904-3297

Northwest Power Systems
Boise Idaho

Dear Sir:

This letter is in regards to the Boxer mini skid steer that you replaced the Perkins diesel engine on this spring. I would like to request that before we pick it up that you would write me a letter describing why you think that the engine failed due to dust contamination.

I brought you the machine with the understanding that the engine would be covered under warranty. The machine only has approximately 600 hrs and I have had it less than three years which would have made it eligible for the manufacture to cover the parts and labor under the warranty. It is my understanding that neither Compact Power (the boxer manufacture) or Perkins will cover the warranty to any extent.

Perkins will not stand the warranty due to the fact that they say there should be a dual filter system on the machine. This would constitute the failure of the engine as an engineering flaw on the part of Compact Power. Compact power states that the machine was built and tested as is and the machine should be covered by Perkins.

I understand that you are a very experienced and trained mechanic. I also know that diesel engines last longer than 600 hrs. We have never lost a diesel engine and I have owned several tractors, trucks, skid loaders, and pickups that have diesel engines, in fact currently I own eight vehicles that have diesel engines in them. We have a good maintenance program and change oils, grease, and change filters on a regular basis. Why did this engine fail?

Since I have owned this machine we have constantly had problems with it. We replaced the tracks @ less than 400 hrs, lost the hydraulic pump @ 350 hrs, the gauges fell apart, the muffler fell off, the radiator bolts fell out, the water pump leaked, the fuel filter assembly fell off the battery went bad, we have had wiring problems, unless kept inside the key switch fills with water and freezes during the winter, the levers that control the hydraulics have broken, the hydraulic cylinders that control the track width have pushed completely out past the stops so the entire track system falls off, the implement mount s were built so weak that they are worn out, flex and crack and have had to be replaced, the front cast mount plate has been replaced twice because it breaks in half.

I'm sure that s not all the problems that I've had but close and I paid more for this machine because I was supposed to be the best and their service was supposed to be so good. I have had the worst experience with Compact Power. Their service is awful and they won't stand behind anything, it seems that it is always someone else's problem. The machine is under built for the power they put in it and they use substandard parts. It is broken down more than it runs at this point it has cost me more money that it is worth because during our working season of April thru November it is always broken down and parts always take at the very least 3 weeks to get if not more.

I would like to know how you know for sure, 100% that the engine failed due to being dusted. There is not a possibility that it could have failed due to something else? I understand that a dust will wear out an engine, but this engine definitely could have failed. I don't believe that any one could say for sure 100% that it failed because of one thing or another if so I would like proof. Where is the air filter that came out of the machine when you got it? I also want the old engine to have it reevaluated by another mechanic. When I have this information I will gladly pay you what I owe you if any. Until then I'm sure

If you are operating this engine in a dusty environment, air filters should be cleaned daily. The dustier the operation environment the more often the air filter should be changed. A dual air filter arrangement will help lengthen the interval but that does not change the fact that regular daily maintenance has to be done. That is the owner responsibility.

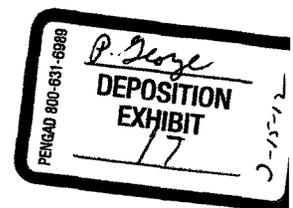
you can understand that I just want an engine warranty that I am due. I want compact power to stand behind the product they sell.

Preston George Edged in Stone Inc.



Edged In Stone Payroll

8935	Abel Ortiz	515.79
8937	Deven Duffin	662.66
8938	Fernando Ponce	776.57
8939	Jared Barthlome	415.04
8940	Joseph P George	1419.60
8941	Juan Cano	839.46
8942	Kelly Saiz	1146.55
8943	Marin Giesbrecht	366.57
8944	Paula Whisner	248.75
8945	Phillip Pena	1026.04
8946	Rafael Villa	600.35
8947	Ramiro Mendez	600.35
8948	Eddie Card	425.60
8949	Jose Ortiz	839.46
8950	Bill George	1500.00
8953	Chris Fletcher	1225.10
8955	Austin George	393.00



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Changing Seasons Payroll

2219	Josh Craig	338.38
2220	Trish Davis	1075.15
2221	Susan Merrill	302.53
2222	Kelly Saiz	176.90
2223	Rebecca Snyder	262.36
2224	Jennalee Waldram	49.86
2225	Ronald Whisner	128.72
2226	Cody Davis	664.40

Edged In Stone

Check Number	Name	Amount
8828	Bill George	1500.00
8827	Eddie Card	540.08
8809	Joel Nieto	548.50
8810	Jose Ortiz	910.00
8811	Austin George	262.00
8812	Braydon Johnson	640.15
8813	Cesar Guevara	654.85
8814	Chris Fletcher	1157.29
8815	Devin Duffin	736.62
8816	Fernando Ponce	794.91
8817	Joe Hughes	267.67
8818	Joseph P. George	1419.60
8819	Juan Cano	954.82
8820	Kelly Saiz	1146.55
8821	Michael Mathie	71.62
8822	Paula Whisner	326.41
8823	Phillip Pena	1168.29
8824	Tali Portillo	272.74
8825	Tyler Berrett	423.36
8826	Wendy Webb	687.62

8832	Jared Barthlome	480.59
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Changing Seasons

2119	Josh Craig	369.65
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2120	Trish Davis	829.11
------	-------------	--------

2121	Marin Giesbrecht	376.17
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2122	Susan Merrill	292.41
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2123	Kelly Saiz	200.30
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2124	Rebecca Synder	240.56
------	----------------	--------

2125	Jenalee Waldram	462.68
------	-----------------	--------

2126	Ronald Whisner	331.60
------	----------------	--------

2127	Wendy Webb	238.86
------	------------	--------

2131	Cheri Craig	886.56
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Preston George Set status here aedwardson amfalla aubrick bill cassieclarke cc1403 ched.thomas Katie Bum kendra.heaney margie

Options Add Contact

Invite a friend Give Gmail to:

Send invite 50 left

Preview Invite

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Edged in Stone & Changing Seasons payroll

Preston George to Karen

show details Sep 10

Reply

New window Print all

Karen, Here is September 11th payroll. I still need to do 4 more payroll checks tomorrow afternoon. I will fax them over as soon as I have them done.

Thank you, Marlin 716-3174

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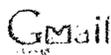
8967 Cesar Guevara 345.14
8968 Chris Fletcher 1056.60
8969 Deven Duffin 641.64
8970 Fernando Ponce 692.13
8971 Joseph George 1419.60
8972 Kelly Saiz 1135.95
8973 Paula Whisner 340.27
8974 Phillip Pena 976.89
8975 Eddie Card 53.16
8976 Bill George 575.59

Changing Seasons Payroll:

2252 Josh Craig 563.71
2253 Trish Davis 720.80
2254 Marin Giesbrecht 508.12
2255 Susan Merrill 283.75
2256 Kelly Saiz 37.54
2257 Rebecca Synder 317.59
2258 Rebecca Synder 50.00

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changingseasons09@gmail.com



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- 6 more

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Tasks

Chat

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Preston George

Sat status here

sedwardson

emilias

automick

bill

cateledjerke

oct1403

chad.thomas

Katie Burn

kendra.heaney

mergie

Options Add Contact

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Bank of America @ - www.BankofAmerica.com - Changing the Way Overdraft Fees Work See How We're Helping

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September 25th payroll

From: Preston George <changingseasons09@gmail.com>
 To: Karen Hammond <khammond@bankofcommerce.org>
 Date: Fri, Sep 25, 2009 at 10:43 AM
 Subject: September 25th payroll
 Mailed by: gmail.com

hide details Sep 25 Reply

New window Print all Collapse all Forward all

Let me know if you need anything else. Thanks, Martin

Sept 25 payroll.docx 13K View as HTML Open as a Google document Download

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Karen Hammond to me

show details Sep 25 Reply

Thanks! Do you know if there are other deposits that will be made in the near future? Have a great weekend! Karen

Reply Forward

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Better Remote | Easy to Use & Affordable | Merchant & Home www.Diebold.com

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ADT® Bank Sec Help Secure Your Extensive Security www.adtbusiness.com

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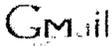
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EIS Payroll

9013 Bill George 1200.00
9011 Chris Fletcher 1125.34
9012 Fernando Ponce 736.89
9007 Eddy Card 633.68
8998 Devin Duffin 675.51
9000 Juan Cano 839.47
9001 Kelly L Saiz 1146.55
9002 Marin Giesbrecht 439.78
9003 Paula Whisner 390.21
9004 Phillip Pena 1074.72
9005 Rafael Villa 536.26
9006 Ramiro Mendez 464.05

Changing Seasons

2276 Cody Davis 61.68
2275 Rebecca Synder 198.30
2274 Susan Merrill 330.47
2273 Trish Davis 953.07
2271 Jared Barthcome 71.18



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Options Add Contact

Invite a friend Give Gmail to:

Send me 100 MB

Preserve drafts

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October payroll

from Preston George <changingseasons09@gmail.com> to Karen Hammond <khammond@bankofcommerce.org> date Thu, Oct 8, 2009 at 1:18 PM subject October payroll mailed-by gmail.com

hide details Oct 8

Reply

New window Print

Karen, Sorry I didn't attach the file last time!

Thanks, Marin

Payroll Oct 6.docx 11K View as HTML Open as a Google document Download

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No

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9023 Chris Fletcher 910.14
9024 Devin Duffin 422.28
9025 Fernando Ponce 751.84
9027 Phillip Pena 383.48
9028 Rafael Villa 398.11
9029 Ramiro Mendez 398.21
9030 Eddie Card 424.00
9032 Paula Whisner 353.11
9034 Kendra Heaney 100.00
9035 Juan Cano 702.32
9036 Fernando Ponce 650.00
9037 Kelly L Saiz 1227.55

Total: 6721.04

Changing Seasons

2280 Jared Barthcome 32.90
2281 Josh Craig 559.91
2282 Trish Davis 882.42
2283 Marin Giesbrecht 512.36
2285 Rebecca Synder 291.85
2286 Susan Merrill 271.56

Total: 2551.00

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Travel
Work
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Preston George

Set status here
sedwardson
amfalls
subrick
bill
casaieclarke
cct1403
chad.thomas
Katie Burn
kendra.heaney
margie

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Give Gmail to:

Send invite 50 left

Preview invite

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October 6th Payroll

from Preston George <changigseasons00@gmail.com>
to amfalls@barkofcommerce.org
date Thu, Oct 8, 2009 at 1:17 PM
subject October 6th Payroll
mailed-by gmail.com

hide details Oct 8

Reply

New window
Print all
Collapse all
Forward all

Annette,
Here is the payroll list. Let me know if you have any questions. I will be out of town for the weekend, but you can get me on my cell: 716-3174.

Thanks, Marin

Payroll Oct 6.docx
11K View as HTML Open as a Google document Download

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American fails to me

show details Oct 8

Reply

10/8/09

Marin,

I got the payroll fax.

Thanks,

Annette

View contact

Reply Forward

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EIS Payroll

9023 Chris Fletcher 910.14

9024 Devin Duffin 422.28

9025 Fernando Ponce 751.84

9027 Phillip Pena 383.48

9028 Rafael Villa 398.11

9029 Ramiro Mendez 398.21

9030 Eddie Card 424.00

9032 Paula Whisner 353.11

9034 Kendra Heaney 100.00

9035 Juan Cano 702.32

9036 Fernando Ponce 650.00

9037 Kelly L Saiz 1227.55

Total: 6721.04

Changing Seasons

2280 Jared Barthcome 32.90

2281 Josh Craig 559.91

2282 Trish Davis 882.42

2283 Marin Giesbrecht 512.36

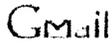
2285 Rebecca Synder 291.85

2286 Susan Merrill 271.56

Total: 2551.00

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cc1403
chad.thomas
Katie Burn
kendra.heaney
margie

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Invite a friend
Give Gmail to:

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October payroll

from Preston George <changingseasons09@gmail.com>
to Karen Hammond <khammond@bankofcommerce.org>
date Thu, Oct 8, 2009 at 1:18 PM
subject October payroll
mailto:gmali.com

Hide details Oct 8

Reply

New window
Print all

Karen,
Sorry I didn't attach the file last time!

Thanks,
Marn

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About 1

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EIS Payroll

9023 Chris Fletcher 910.14
9024 Devin Duffin 422.28
9025 Fernando Ponce 751.84
9027 Phillip Pena 383.48
9028 Rafael Villa 398.11
9029 Ramiro Mendez 398.21
9030 Eddie Card 424.00
9032 Paula Whisner 353.11
9034 Kendra Heaney 100.00
9035 Juan Cano 702.32
9036 Fernando Ponce 650.00
9037 Kelly L Saiz 1227.55

Total: 6721.04

Changing Seasons

2280 Jared Barthcome 32.90
2281 Josh Craig 559.91
2282 Trish Davis 882.42
2283 Marin Giesbrecht 512.36
2285 Rebecca Synder 291.85
2286 Susan Merrill 271.56

Total: 2551.00

Copy

Form **1120S**
Department of the Treasury
Internal Revenue Service (77)

U.S. Income Tax Return for an S Corporation

Do not file this form unless the corporation has filed Form 2553 to elect to be an S corporation.

OMB No. 1545-0040
2006

For calendar year 2006, or tax year beginning _____, and ending _____

A Effective date of S election 07/14/2006	Use the IRS label. Otherwise, print or type.	Name EDGED IN STONE, INC	C Employer identification number 20-4974753
B Business activity code number (see instructions) 238900		Number, street, and room or suite no. If a P.O. box, see instructions. 880 REDMAN ST	D Date incorporated 07/03/2006
		City or town, state, and ZIP code CHUBBUCK, ID 83202	E Total assets (see instructions) \$ 87,406.

F Check if: (1) Initial return (2) Final return (3) Name change (4) Address change (5) Amended return

G Enter the number of shareholders in the corporation at end of the tax year 2

H Check if Schedule M-3 is required (attach Schedule M-3)

Caution: Include only trade or business income and expenses on lines 1a through 21. See the instructions for more information.

Income		Deductions (See instructions for limitations)		Tax and Payments	
1 a	Gross receipts or sales	212,694	b Less returns and allowances	1c	212,694
2	Cost of goods sold (Schedule A, line 8)			2	96,916
3	Gross profit. Subtract line 2 from line 1c			3	115,778
4	Net gain (loss) from Form 4797, Part II, line 17 (attach Form 4797)			4	
5	Other income (loss) (attach statement)			5	
6	Total income (loss). Add lines 3 through 5			6	115,778
7	Compensation of officers			7	9,000
8	Salaries and wages (less employment credits)			8	55,747
9	Repairs and maintenance			9	4,672
10	Bad debts			10	
11	Rents			11	1,200
12	Taxes and licenses			12	
13	Interest			13	2,711
14	Depreciation not claimed on Schedule A or elsewhere on return (attach Form 4562)			14	12,279
15	Depletion (Do not deduct oil and gas depletion.)			15	
16	Advertising			16	253
17	Pension, profit-sharing, etc., plans			17	
18	Employee benefit programs			18	
19	Other deductions (attach statement)		STATEMENT 1	19	27,047
20	Total deductions. Add lines 7 through 19			20	112,909
21	Ordinary business income (loss). Subtract line 20 from line 6			21	2,869
22 a	Excess net passive income or LIFO recapture tax (see instructions)	22a		22c	
b	Tax from Schedule D (Form 1120S)	22b			
c	Add lines 22a and 22b				
23 a	2006 estimated tax payments and 2005 overpayment credited to 2006	23a		23e	
b	Tax deposited with Form 7004	23b			
c	Credit for federal tax paid on fuels (attach Form 4136)	23c			
d	Credit for federal telephone excise tax paid (attach Form 8913)	23d			
e	Add lines 23a through 23d				
24	Estimated tax penalty (see instructions). Check if Form 2220 is attached <input type="checkbox"/>			24	
25	Amount owed. If line 23e is smaller than the total of lines 22c and 24, enter amount owed			25	
26	Overpayment. If line 23e is larger than the total of lines 22c and 24, enter amount overpaid			26	
27	Enter amount from line 26 Credited to 2007 estimated tax <input type="checkbox"/> Refunded <input type="checkbox"/>			27	

800-831-8989
P. Deane
DEPOSITION EXHIBIT
2-15-12

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than taxpayer) is based on all information of which preparer has any knowledge.

Sign Here

Signature of officer	Date	Title
<i>William J. Anty</i>	06/19/07	PRESIDENT

May the IRS discuss this return with the preparer shown below (see instructions)? Yes No

Paid Preparer's Use Only	Preparer's signature	Date	Check if self-employed <input type="checkbox"/>	Preparer's SSN or PTIN
	Firm's name (or yours if self-employed), address, and ZIP code		EIN	Phone no.
	<i>William J. Anty</i>	06/19/07		P00031329
	DEATON & COMPANY, CHARTERED 215 N 9TH, SUITE A POCATELLO, ID 83201			82-0338741 208-232-5825

JWA For Privacy Act and Paperwork Reduction Act Notice, see the separate instructions. Form 1120S (2006)

Schedule A Cost of Goods Sold (see instructions)

1	Inventory at beginning of year	1	
2	Purchases	2	91,571.
3	Cost of labor	3	5,345.
4	Additional section 263A costs (attach statement)	4	
5	Other costs (attach statement)	5	
6	Total. Add lines 1 through 5	6	96,916.
7	Inventory at end of year	7	
8	Cost of goods sold. Subtract line 7 from line 6. Enter here and on page 1, line 2	8	96,916.

9a Check all methods used for valuing closing inventory: (i) Cost as described in Regulations section 1.471-3
 (ii) Lower of cost or market as described in Regulations section 1.471-4
 (iii) Other (Specify method used and attach explanation) _____

b Check if there was a writedown of subnormal goods as described in Regulations section 1.471-2(c)

c Check if the LIFO inventory method was adopted this tax year for any goods (if checked, attach Form 970)

d If the LIFO inventory method was used for this tax year, enter percentage (or amounts) of closing inventory computed under LIFO 9d _____

e If property is produced or acquired for resale, do the rules of Section 263A apply to the corporation? Yes No

f Was there any change in determining quantities, cost, or valuations between opening and closing inventory? Yes No
 If "Yes," attach explanation.

Schedule B Other Information (see instructions)

	Yes	No
1 Check method of accounting: (a) <input checked="" type="checkbox"/> Cash (b) <input type="checkbox"/> Accrual (c) <input type="checkbox"/> Other (specify) _____		
2 See the instructions and enter the: (a) Business activity LANDSCAPING (b) Product or service LANDSCAPING		
3 At the end of the tax year, did the corporation own, directly or indirectly, 50% or more of the voting stock of a domestic corporation? (For rules of attribution, see section 267(c).) If "Yes," attach a statement showing: (a) name and employer identification number (EIN), (b) percentage owned, and (c) if 100% owned, was a QSUB election made?		X
4 Was the corporation a member of a controlled group subject to the provisions of section 1561?		X
5 Has this corporation filed, or is it required to file, a return under section 6111 to provide information on any reportable transaction?		X
6 Check this box if the corporation issued publicly offered debt instruments with original issue discount. If checked, the corporation may have to file Form 8281, Information Return for Publicly Offered Original Issue Discount Instruments.		<input type="checkbox"/>
7 If the corporation: (a) was a C corporation before it elected to be an S corporation or the corporation acquired an asset with a basis determined by reference to its basis (or the basis of any other property) in the hands of a C corporation and (b) has net unrealized built-in gain (defined in section 1374(d)(1)) in excess of the net recognized built-in gain from prior years, enter the net unrealized built-in gain reduced by net recognized built-in gain from prior years _____ \$ _____		
8 Enter the accumulated earnings and profits of the corporation at the end of the tax year _____ \$ _____		
9 Are the corporation's total receipts (see instructions) for the tax year and its total assets at the end of the tax year less than \$250,000? If "Yes," the corporation is not required to complete Schedules L and M-1	X	

Note: If the corporation, at any time during the tax year, had assets or operated a business in a foreign country or U.S. possession, it may be required to attach Schedule N (Form 1120), Foreign Operations of U.S. Corporations, to this return. See Schedule N for details.

Schedule K Shareholders' Pro Rata Share Items

	Total amount
1 Ordinary business income (loss) (page 1, line 21)	2,869.
2 Net rental real estate income (loss) (attach Form 8825)	
3a Other gross rental income (loss)	
3b Expenses from other rental activities (attach statement)	
3c Other net rental income (loss). Subtract line 3b from line 3a	
4 Interest income	
5 Dividends: a Ordinary dividends	
b Qualified dividends	
6 Royalties	
7 Net short-term capital gain (loss) (attach Schedule D (Form 1120S))	
8a Net long-term capital gain (loss) (attach Schedule D (Form 1120S))	
b Collectibles (28%) gain (loss)	
c Unrecaptured section 1250 gain (attach statement)	
9 Net section 1231 gain (loss) (attach Form 4797)	
10 Other income (loss) (see instructions) Type _____	

JWA

Form 1120S (2006)

517711
12-28-06

Schedule L Balance Sheets per Books		Beginning of tax year		End of tax year	
Assets		(a)	(b)	(c)	(d)
1	Cash				
2 a	Trade notes and accounts receivable				
b	Less allowance for bad debts				
3	Inventories				
4	U.S. Government obligations				
5	Tax-exempt securities				
6	Other current assets (att. stmt.)				
7	Loans to shareholders				
8	Mortgage and real estate loans				
9	Other investments (att. stmt.)				
10 a	Buildings and other depreciable assets				
b	Less accumulated depreciation				
11 a	Depletable assets				
b	Less accumulated depletion				
12	Land (net of any amortization)				
13 a	Intangible assets (amortizable only)				
b	Less accumulated amortization				
14	Other assets (att. stmt.)				
15	Total assets				
Liabilities and Shareholders' Equity					
16	Accounts payable				
17	Mortgages, notes, bonds payable in less than 1 year				
18	Other current liabilities (att. stmt.)				
19	Loans from shareholders				
20	Mortgages, notes, bonds payable in 1 year or more				
21	Other liabilities (att. stmt.)				
22	Capital stock				
23	Additional paid-in capital				
24	Retained earnings				
25	Adjustments to shareholders' equity (att. stmt.)				
26	Less cost of treasury stock				
27	Total liabilities and shareholders' equity				

Schedule M-1 Reconciliation of Income (Loss) per Books With Income (Loss) per Return
 Note: Schedule M-3 required instead of Schedule M-1 if total assets are \$10 million or more - see instructions

1	Net income (loss) per books	5	Income recorded on books this year not included on Schedule K, lines 1 through 10 (Itemize):
2	Income included on Schedule K, lines 1, 2, 3c, 4, 5a, 6, 7, 8a, 9, and 10, not recorded on books this year (Itemize):	a	Tax-exempt interest \$
3	Expenses recorded on books this year not included on Schedule K, lines 1 through 12 and 14f (Itemize):	6	Deductions included on Schedule K, lines 1 through 12 and 14f, not charged against book income this year (Itemize):
a	Depreciation \$	a	Depreciation \$
b	Travel and entertainment \$	7	Add lines 5 and 6
4	Add lines 1 through 3	8	Income (loss) (Schedule K, line 18; Line 4 less line 7)

Schedule M-2 Analysis of Accumulated Adjustments Account, Other Adjustments Account, and Shareholders' Undistributed Taxable Income Previously Taxed (see instructions)

	(a) Accumulated adjustments account	(b) Other adjustments account	(c) Shareholders' undistributed taxable income previously taxed
1	Balance at beginning of tax year		
2	Ordinary income from page 1, line 21	2,869.	
3	Other additions		
4	Loss from page 1, line 21		
5	Other reductions STATEMENT 3	969.	
6	Combine lines 1 through 5	1,900.	
7	Distributions other than dividend distributions		
8	Balance at end of tax year, Subtract line 7 from line 6	1,900.	

Form 4562

Department of the Treasury Internal Revenue Service

Depreciation and Amortization (Including Information on Listed Property) OTHER

See separate instructions. Attach to your tax return.

OMB No. 1545-0172

2006

Attachment Sequence No. 67

EDGED IN STONE, INC

OTHER DEPRECIATION

20-4974753

Part I Election To Expense Certain Property Under Section 179 Note: If you have any listed property, complete Part V before you complete Part I.

Table with 5 columns: Line number, Description, and Amount. Includes lines 1-13 for Section 179 election details.

Note: Do not use Part II or Part III below for listed property. Instead, use Part V.

Part II Special Depreciation Allowance and Other Depreciation (Do not include listed property.)

Table with 2 columns: Line number and Description. Includes lines 14-16 for special depreciation allowance.

Part III MACRS Depreciation (Do not include listed property.) (See instructions.)

Section A

Table with 2 columns: Line number and Amount. Includes line 17 for MACRS deductions and line 18 for general asset accounts.

Section B - Assets Placed in Service During 2006 Tax Year Using the General Depreciation System

Table with 7 columns: Classification of property, Month and year placed in service, Basis for depreciation, Recovery period, Convention, Method, and Depreciation deduction. Includes rows 19a-i for various property types.

Section C - Assets Placed in Service During 2006 Tax Year Using the Alternative Depreciation System

Table with 5 columns: Line number, Class life, Month and year placed in service, Recovery period, and Method. Includes rows 20a-c for class life options.

Part IV Summary (see instructions)

Table with 2 columns: Line number and Amount. Includes lines 21-23 for summary totals and section 263A costs.

518251 10-17-06 LHA For Paperwork Reduction Act Notice, see separate instructions. Form 4562 (2006)

Part V Listed Property (Include automobiles, certain other vehicles, cellular telephones, certain computers, and property used for entertainment, recreation, or amusement.)
 Note: For any vehicle for which you are using the standard mileage rate or deducting lease expense, complete only 24a, 24b, columns (a) through (c) of Section A, all of Section B, and Section C if applicable.

Section A - Depreciation and Other Information (Caution: See the instructions for limits for passenger automobiles.)

24a Do you have evidence to support the business/investment use claimed? Yes No 24b If "Yes," is the evidence written? Yes No

(a) Type of property (list vehicles first)	(b) Date placed in service	(c) Business/ investment use percentage	(d) Cost or other basis	(e) Basis for depreciation (business/investment use only)	(f) Recovery period	(g) Method/ Convention	(h) Depreciation deduction	(i) Elected section 179 cost
25 Special allowance for qualified New York Liberty or Gulf Opportunity Zone property placed in service during the tax year and used more than 50% in a qualified business use								25
26 Property used more than 50% in a qualified business use:								
2006 DODGE		%						
2500 SLT QUAD		%						
CAB	08/29/06	60.00 %	38,216.	22,930.500	5.00	200DB-HY	4,586.	
27 Property used 50% or less in a qualified business use:								
		%				SL -		
		%				SL -		
		%				SL -		
28 Add amounts in column (h), lines 25 through 27. Enter here and on line 21, page 1							28	4,586.
29 Add amounts in column (i), line 26. Enter here and on line 7, page 1							29	

Section B - Information on Use of Vehicles

Complete this section for vehicles used by a sole proprietor, partner, or other "more than 5% owner," or related person. If you provided vehicles to your employees, first answer the questions in Section C to see if you meet an exception to completing this section for those vehicles.

	(a) Vehicle		(b) Vehicle		(c) Vehicle		(d) Vehicle		(e) Vehicle		(f) Vehicle	
	Yes	No										
30 Total business/investment miles driven during the year (do not include commuting miles)												
31 Total commuting miles driven during the year												
32 Total other personal (noncommuting) miles driven												
33 Total miles driven during the year. Add lines 30 through 32												
34 Was the vehicle available for personal use during off-duty hours?												
35 Was the vehicle used primarily by a more than 5% owner or related person?												
36 Is another vehicle available for personal use?												

Section C - Questions for Employers Who Provide Vehicles for Use by Their Employees

Answer these questions to determine if you meet an exception to completing Section B for vehicles used by employees who are not more than 5% owners or related persons.

	Yes	No
37 Do you maintain a written policy statement that prohibits all personal use of vehicles, including commuting, by your employees?		
38 Do you maintain a written policy statement that prohibits personal use of vehicles, except commuting, by your employees? See the instructions for vehicles used by corporate officers, directors, or 1% or more owners		
39 Do you treat all use of vehicles by employees as personal use?		
40 Do you provide more than five vehicles to your employees, obtain information from your employees about the use of the vehicles, and retain the information received?		
41 Do you meet the requirements concerning qualified automobile demonstration use? Note: If your answer to 37, 38, 39, 40, or 41 is "Yes," do not complete Section B for the covered vehicles.		

Part VI Amortization

(a) Description of costs	(b) Date amortization begins	(c) Amortizable amount	(d) Code section	(e) Amortization period or percentage	(f) Amortization for this year
42 Amortization of costs that begins during your 2006 tax year:					
43 Amortization of costs that began before your 2006 tax year					43
44 Total. Add amounts in column (f). See the instructions for where to report					44

2008 DEPRECIATION AND AMORTIZATION REPORT
OTHER DEPRECIATION

OTHER

Asset No.	Description	Date Acquired	Method	Life	Una. No.	Unadjusted Cost Or Basis	Bus % Excl.	Reduction in Basis	Basis For Depreciation	Accumulated Depreciation	Current Sec 179	Current Year Deduction
1	CURB MACHINE	010103	200DB	7.00	17	6,500.			6,500.	3,658.		406.
2	EDEGGER TRENCHER	010103	200DB	7.00	17	3,000.			3,000.	1,689.		187.
3	CEMENT MIXER	010103	200DB	7.00	17	3,500.			3,500.	1,969.		219.
4	CURB TRAILER	010103	200DB	7.00	17	3,000.			3,000.	1,689.		187.
5	MISC TOOLS	010103	200DB	5.00	17	1,000.			1,000.	712.		58.
6	2002 CHEVY TRUCK	052303	200DB	5.00	17	39,036.			39,036.	20,390.		3,729.
7	2001 DODGE EXT CAB PICKUP	062503	200DB	5.00	17	25,936.			25,936.	15,150.		2,157.
8	CURB MACHINE	022106	200DB	7.00	19C	3,200.			3,200.	3,200.		0.
9	CARGO TRAILER	022106	200DB	7.00	19C	1,200.			1,200.	1,200.		0.
10	1985 GMC DUMPTRUCK	051106	200DB	5.00	19B	9,511.			9,511.	1,902.		0.
11	CONCRETE STAMPS & ROLLERS	010103	200DB	7.00	17	12,000.			12,000.	6,753.		750.
12	2005 DODGE 2500 6LT QUAD CAB	082906	200DB	5.00	21	38,216.	4000		38,216.			7,543.
	LESS EXCLUSION					-15,286.			-15,286.			-3,057.
	TOTAL OTHER DEPRECIATION					130,813.			130,813.	58,312.		12,279.
	CURRENT YEAR ACTIVITY											
	BEGINNING BALANCE					93,972.		0.	93,972.	52,010.		
	ACQUISITIONS					52,127.		0.	52,127.	8,302.		

628102
07-28-08

(D) - Asset disposed

* ITC, Section 179, Salvage, Bonus, Commercial Revitalization Deduction, GO Zone

FORM 1120S OTHER DEDUCTIONS STATEMENT 1

DESCRIPTION	AMOUNT
ACCOUNTING	200.
BANK CHARGES	1,744.
PHONES/INTERNET/POWER	2,011.
DUMPSTER RENTAL	71.
SMALL EQUIPMENT	2,792.
FUEL	1,810.
INSURANCE	3,203.
LICENSES	744.
MISC	1,250.
PARTS	2,044.
REIMBURSED EXPENSES	3,871.
SUPPLIES	6,338.
MEALS AND ENTERTAINMENT	969.
TOTAL TO FORM 1120S, PAGE 1, LINE 19	27,047.

SCHEDULE K NONDEDUCTIBLE EXPENSES STATEMENT 2

DESCRIPTION	AMOUNT
EXCLUDED MEALS AND ENTERTAINMENT EXPENSES	969.
TOTAL TO SCHEDULE K, LINE 16C	969.

SCHEDULE M-2 ACCUMULATED ADJUSTMENTS ACCOUNT- OTHER REDUCTIONS STATEMENT 3

DESCRIPTION	AMOUNT
NONDEDUCTIBLE EXPENSES	969.
TOTAL TO SCHEDULE M-2, LINE 5 - COLUMN (A)	969.

ALTERNATIVE MINIMUM TAX DEPRECIATION REPORT

Asset No.	Description	Date Acquired	AMT Method	AMT Life	AMT Cost Or Basis	AMT Accumulated	Regular Depreciation	AMT Depreciation	AMT Adjustment
1	CURE MACHINE	010103	150DB	7.00	6,500.	2,917.	406.	398.	8.
2	BRIDGE TRONCHER	010103	150DB	7.00	3,000.	1,346.	189.	184.	5.
3	CEMENT MIXER	010103	150DB	7.00	3,500.	1,571.	219.	215.	4.
4	CURE TRAILER	010103	150DB	7.00	3,000.	1,346.	187.	184.	3.
5	MISC TOOLS	010103	150DB	5.00	1,000.	584.	58.	83.	-25.
6	2002 CHEVY TRUCK	052806	150DB	5.00	39,036.	22,778.	3,729.	3,252.	478.
7	2001 DODGE EXT CAB PICKUP	062503	150DB	5.00	25,936.	15,134.	2,157.	2,161.	-4.
8	CURE MACHINE	022106	150DB	7.00	3,200.	1,100.	0.	843.	-343.
9	CARGO TRAILER	022106	150DB	7.00	1,200.	0.	0.	129.	-129.
10	1995 GMC DUMP TRUCK	031406	150DB	7.00	3,511.	1,427.	0.	0.	0.
11	CONCRETE STAMPS & ROLLERS	010103	150DB	7.00	12,000.	5,385.	750.	735.	15.
12	2006 DODGE 2500 SET QUAD CAB	082906	150DB	5.00	38,216.	0.	14,586.	3,440.	14,461.
	TOTALS				146,009.	52,488.	112,279.	10,124.	1,055.
	MACRS AMT ADJUSTMENT							1,155.	

E28104
09-01-08

Schedule K-1
(Form 1120S)

2006

Final K-1 Amended K-1 OMB No. 1545-0130

Department of the Treasury
Internal Revenue Service

For calendar year 2006, or tax
year beginning _____
ending _____

Shareholder's Share of Income, Deductions,
Credits, etc. See separate instructions.

Part I Information About the Corporation		Part III Shareholder's Share of Current Year Income, Deductions, Credits, and Other Items	
A Corporation's employer identification number 20-4974753		1 Ordinary business income (loss) 1,435.	13 Credits
B Corporation's name, address, city, state, and ZIP code EDGED IN STONE, INC 880 REDMAN ST CHUBBUCK, ID 83202		2 Net rental real estate income (loss)	
C IRS Center where corporation filed return OGDEN, UT		3 Other net rental income (loss)	
D <input type="checkbox"/> Tax shelter registration number, if any		4 Interest income	
E <input type="checkbox"/> Check if Form 8271 is attached		5a Ordinary dividends	
		5b Qualified dividends	14 Foreign transactions
		6 Royalties	
		7 Net short-term capital gain (loss)	
		8a Net long-term capital gain (loss)	
		8b Collectibles (28%) gain (loss)	
		8c Unrecaptured sec. 1250 gain	
		9 Net section 1231 gain (loss)	
F Shareholder's identifying number 518-13-8476		10 Other income (loss)	15 Alternative min tax (AMT) items A 578.
G Shareholder's name, address, city, state and ZIP code JOSEPH PRESTON GEORGE 880 REDMAN ST CHUBBUCK, ID 83202			
H Shareholder's percentage of stock ownership for tax year 50.000000%			
For IRS Use Only		11 Section 179 deduction	16 Items affecting shareholder basis C* 485.
		12 Other deductions	
			17 Other information

*See attached statement for additional information.

611271
12-28-06

JWA For Privacy Act and Paperwork Reduction Act Notice, see instructions for Form 1120S.

Schedule K-1 (Form 1120S) 2006

8

SHAREHOLDER NUMBER 1

14340619 784236 7819A

2006.05050 EDGED IN STONE, INC

7819A 1

SCHEDULE K-1

NONDEDUCTIBLE EXPENSES, BOX 16, CODE C

DESCRIPTION	AMOUNT	SHAREHOLDER FILING INSTRUCTIONS
EXCLUDED MEALS AND ENTERTAINMENT EXPENSES		485. SEE FORM 1040 INSTRUCTIONS

Schedule K-1
(Form 1120S)

2006

Final K-1 Amended K-1 OM9 No. 1545-0130

Department of the Treasury
Internal Revenue Service

For calendar year 2006, or tax
year beginning _____
ending _____

**Shareholder's Share of Income, Deductions,
Credits, etc.** ▶ See separate instructions.

Part I Information About the Corporation		Part III Shareholder's Share of Current Year Income, Deductions, Credits, and Other Items	
A Corporation's employer identification number 20-4974753		1 Ordinary business income (loss) 1,434.	13 Credits
B Corporation's name, address, city, state, and ZIP code EDGED IN STONE, INC 880 REDMAN ST CHUBBUCK, ID 83202		2 Net rental real estate income (loss)	
C IRS Center where corporation filed return OGDEN, UT		3 Other net rental income (loss)	
D <input type="checkbox"/> Tax shelter registration number, if any _____		4 Interest income	
E <input type="checkbox"/> Check if Form 8271 is attached		5a Ordinary dividends	
F Shareholder's identifying number 519-19-1105		5b Qualified dividends	14 Foreign transactions
G Shareholder's name, address, city, state and ZIP code DANIELLE R. GEORGE 880 REDMAN ST CHUBBUCK, ID 83202		6 Royalties	
H Shareholder's percentage of stock ownership for tax year 50.000000%		7 Net short-term capital gain (loss)	
For IRS Use Only		8a Net long-term capital gain (loss)	
		8b Collectibles (28%) gain (loss)	
		8c Unrecaptured sec 1250 gain	
		9 Net section 1231 gain (loss)	
		10 Other income (loss)	15 Alternative min tax (AMT) items A 577.
		11 Section 179 deduction	16 Items affecting shareholder basis C* 484.
		12 Other deductions	
			17 Other information

*See attached statement for additional information.

611271 12-29-06 JWA For Privacy Act and Paperwork Reduction Act Notice, see Instructions for Form 1120S.

Schedule K-1 (Form 1120S) 2006

10

SHAREHOLDER NUMBER 2

14340619 784236 7819A

2006.05050 EDGED IN STONE, INC

7819A 1

SCHEDULE K-1

NONDEDUCTIBLE EXPENSES, BOX 16, CODE C

DESCRIPTION	AMOUNT	SHAREHOLDER FILING INSTRUCTIONS
EXCLUDED MEALS AND ENTERTAINMENT EXPENSES		484. SEE FORM 1040 INSTRUCTIONS

36. Net business income subject to apportionment. Enter the amount from line 35.	36	2,869.
37. Corporations with all activity in Idaho enter 100%. Multistate/multinational corporations complete and attach Form 42. Enter the apportionment factor from Form 42, Part I, line 21.	37	100.0000 %
38. Net business income apportioned to Idaho. Multiply line 36 by the percent on line 37.	38	2,869.
39. Income allocated to Idaho. See instructions.	39	
40. Idaho compensation of individual officers, directors, and shareholders not reported to Idaho.	40	
41. S corporation income reported to Idaho on shareholders' income tax returns.	41	2,869.
42. Idaho taxable income. Add lines 38 through 40, and subtract line 41.	42	0.
43. Idaho income tax. Multiply line 42 by 7.6%.	43	0.

CREDITS

44. Credit for contributions to Idaho educational entities.	44	
45. Credit for contributions to Idaho youth and rehabilitation facilities.	45	
46. Total business income tax credits from Form 44, Part I, line 14. Attach Form 44.	46	
47. Total credits. Add lines 44 through 46.	47	
48. Subtract line 47 from line 43. If line 47 is greater than line 43, enter zero.	48	

OTHER TAXES

49. Minimum tax. See instructions if the S corporation owes federal tax.	49	20.
50. Permanent building fund tax. See instructions.	50	
51. Total tax from recapture of income tax credits from Form 44, Part II, line 10. Attach Form 44.	51	
52. Fuels tax due. Attach Form 75.	52	
53. Sales/Use tax due on mail order, Internet, and other nontaxed purchases.	53	
54. Tax from recapture of qualified investment exemption (QIE). Attach Form 49ER.	54	
55. Total tax. Add lines 48 through 54.	55	20.
56. Underpayment interest. Attach Form 41ESR.	56	
57. Add line 55 and line 56.	57	20.

PAYMENTS and OTHER CREDITS

58. Estimated tax payments.	58	
59. Special fuels tax refund _____ Gasoline tax refund _____ Attach Form 75.	59	
60. Total payments and other credits. Add line 58 and line 59.	60	

If line 57 is more than line 60, GO TO LINE 61. If line 57 is less than line 60, GO TO LINE 64.

REFUND or PAYMENT DUE

61. Tax Due. Subtract line 60 from line 57.	61	20.
62. Penalty • _____ Interest from due date • _____ Enter total.	62	

63. TOTAL DUE. Add line 61 and line 62. 20.

64. Overpayment. Subtract line 57 from line 60. 54

65. REFUND. Amount of line 64 you want refunded to you.

66. ESTIMATED TAX. Amount to credit to your 2007 estimated tax. Subtract line 65 from line 64. 66

AMENDED RETURN ONLY. Complete this section to determine your tax due or refund.

67. Total tax due (line 63) or overpayment (line 64) on this return.	67	
68. Refund from original return plus additional refunds.	68	
69. Tax paid with original return plus additional tax paid.	69	
70. Amended tax due or refund. Add lines 67 and 68, and subtract line 69.	70	

Within 180 days of receiving this return, the Idaho State Tax Commission may discuss this return with the paid preparer identified below.
Under penalties of perjury, I declare that to the best of my knowledge and belief this return is true, correct and complete.

SIGN HERE	Signature of officer	Date
	<i>William J. Curtis</i>	06/19/07
	Title	Phone number
	PRESIDENT	
Paid preparer's signature		Preparer's EIN, SSN, or PTIN
<i>William J. Curtis</i>		82-0338741
Address and phone number		
DEATON & COMPANY, CHARTERED 215 N 9TH, SUITE A POCATELLO, ID 83201 208-232-5825		



6 2 3 2 0 9

CCH

IDAHO SCHEDULE K-1 EQUIVALENT	Shareholder's Information For Calendar Year 2006, or Fiscal Year Beginning _____, and Ending _____	2006
Shareholder Name, Address and Zip Code JOSEPH PRESTON GEORGE 880 REDMAN ST CHUBBUCK, ID 83202		Shareholder Number <u>1</u> Shareholder ID Number <u>518-13-8476</u>
S Corporation Name, Address and Zip Code EDGED IN STONE, INC 880 REDMAN ST CHUBBUCK, ID 83202		Resident <input checked="" type="checkbox"/> Nonresident <input type="checkbox"/> S Corporation Identifying Number <u>20-4974753</u> Idaho Apportionment Percentage <u>100.0000%</u> Shareholder's Percentage of Income or Loss ... <u>50.000000%</u>

Modifications of Apportionable Income

Additions to apportionable income

Deductions from apportionable income

Idaho Tax Credits/Recapture

Credit for contributions to educational entities

Idaho investment tax credit

Credit for contributions to youth & rehabilitation facilities

Credit for production equipment using post-consumer waste

Promoter-sponsored event credit

Credit for qualifying new employees

Recapture of investment tax credit

Credit for research activities

Broadband equipment investment credit

Corporate headquarters investment tax credit

Corporate headquarters real property improve tax credit

Corporate headquarters new jobs tax credit

Small employer investment tax credit

Small employer real property improvement tax credit

Small employer new jobs tax credit

Special Capital Gains Items

Gain on sale of real property held for at least 18 months

Gain on sale of tangible personal property

Gain on sale of cattle and horses held for at least 2 years

Gain on sale of other livestock held for at least 1 year

Gain on sale of timber held for at least 2 years

A copy of federal schedule K-1 must be attached to the Idaho income tax returns.

548591
05-01-06

CCH

IDAHO SCHEDULE K-1 EQUIVALENT	Shareholder's Information For Calendar Year 2006, or Fiscal Year , and Ending	2006
Shareholder Name, Address and Zip Code DANIELLE R. GEORGE 880 REDMAN ST CHUBBUCK, ID 83202		Shareholder Number <u>2</u> Shareholder ID Number <u>519-19-1105</u>
S Corporation Name, Address and Zip Code EDGED IN STONE, INC 880 REDMAN ST CHUBBUCK, ID 83202		Resident <input checked="" type="checkbox"/> Nonresident <input type="checkbox"/>
		S Corporation Identifying Number <u>20-4974753</u> Idaho Apportionment Percentage <u>100.0000%</u> Shareholder's Percentage of Income or Loss ... <u>50.000000%</u>

Modifications of Apportionable Income

Additions to apportionable income

Deductions from apportionable income

Idaho Tax Credits/Recapture

Credit for contributions to educational entities

Idaho investment tax credit

Credit for contributions to youth & rehabilitation facilities

Credit for production equipment using post-consumer waste

Promoter-sponsored event credit

Credit for qualifying new employees

Recapture of investment tax credit

Credit for research activities

Broadband equipment investment credit

Corporate headquarters investment tax credit

Corporate headquarters real property improve tax credit

Corporate headquarters new jobs tax credit

Small employer investment tax credit

Small employer real property improvement tax credit

Small employer new jobs tax credit

Special Capital Gains Items

Gain on sale of real property held for at least 18 months

Gain on sale of tangible personal property

Gain on sale of cattle and horses held for at least 2 years

Gain on sale of other livestock held for at least 1 year

Gain on sale of timber held for at least 2 years

A copy of federal schedule K-1 must be attached to the Idaho income tax returns.

E4B591
05-01-06

Form **1120S**

U.S. Income Tax Return for an S Corporation

Do not file this form unless the corporation has filed or is attaching Form 2553 to elect to be an S corporation.

Copy
OMB No. 1545-0047

2007

Department of the Treasury
Internal Revenue Service

For calendar year 2007, or tax year beginning _____, and ending _____

A S election effective date 07/14/2006	Use the IRS label. Otherwise, print or type.	Name EDGED IN STONE, INC	D Employer identification number 20-4974753
B Business activity code number (see instructions) 238900		Number, street, and room or suite no. if a P.O. box, see instructions. 880 REDMAN ST	E Date incorporated 07/03/2006
C Check if Sch. M-3 attached <input type="checkbox"/>		City or town, state, and ZIP code CHUBBUCK, ID 83202	F Total assets (see instructions) \$ 128,967.

G Is the corporation electing to be an S corporation beginning with this tax year? Yes No If "Yes," attach Form 2553 if not already filed

H Check if: (1) Final return (2) Name change (3) Address change (4) Amended return (5) S election termination or revocation

I Enter the number of shareholders in the corporation at end of the tax year ▶ 2

Caution: Include only trade or business income and expenses on lines 1a through 21. See the instructions for more information.

Income	1	Gross receipts or sales	632,907	b	Less returns and allowances		c Bal	▶	1c	632,907.	
	2	Cost of goods sold (Schedule A, line 8)							2	317,431.	
	3	Gross profit. Subtract line 2 from line 1c							3	315,476.	
	4	Net gain (loss) from Form 4797, Part II, line 17 (attach Form 4797)							4		
	5	Other income (loss) (attach statement)							5		
	6	Total income (loss). Add lines 3 through 5							▶	6	315,476.
Deductions (See instructions for limitations)	7	Compensation of officers							7	13,000.	
	8	Salaries and wages (less employment credits)							8	168,843.	
	9	Repairs and maintenance							9	47,150.	
	10	Bad debts							10		
	11	Rents							11	5,200.	
	12	Taxes and licenses							12		
	13	Interest							13	11,161.	
	14	Depreciation not claimed on Schedule A or elsewhere on return (attach Form 4562)							14	33,692.	
	15	Depletion (Do not deduct oil and gas depletion.)							15		
	16	Advertising							16	5,751.	
	17	Pension, profit-sharing, etc., plans							17		
	18	Employee benefit programs							18		
	19	Other deductions (attach statement)					STATEMENT 1		19	65,657.	
	20	Total deductions. Add lines 7 through 19							▶	20	350,454.
	21	Ordinary business income (loss). Subtract line 20 from line 6								21	-34,978.
Tax and Payments	22 a	Excess net passive income or LIFO recapture tax (see instructions)		22a					22c		
	b	Tax from Schedule D (Form 1120S)		22b							
	c	Add lines 22a and 22b									
	23 a	2007 estimated tax payments and 2006 overpayment credited to 2007		23a					23d		
	b	Tax deposited with Form 7004		23b							
	c	Credit for federal tax paid on fuels (attach Form 4136)		23c							
	d	Add lines 23a through 23c									
24	Estimated tax penalty (see instructions). Check if Form 2220 is attached							▶ <input type="checkbox"/>	24		
25	Amount owed. If line 23d is smaller than the total of lines 22c and 24, enter amount owed								25		
26	Overpayment. If line 23d is larger than the total of lines 22c and 24, enter amount overpaid								26		
27	Enter amount from line 26 Credited to 2008 estimated tax							▶	Refunded	▶ 27	

P. J. Jorg
DEPOSITION
EXHIBIT
19

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than taxpayer) is based on all information of which preparer has any knowledge.

Sign Here Signature of officer _____ Date _____ Title **PRESIDENT**

May the IRS discuss this return with the preparer shown below (see instr. 7)? Yes No

Paid Preparer's Use Only

Preparer's signature: *William J. Armstrong, cfo* Date: 08/27/08

Check if self-employed

Preparer's SSN or PTIN: P00031329

Firm's name (or yours if self-employed), address, and ZIP code: **DEATON & COMPANY CHARTERED**
215 N 9TH, SUITE A
POCATELLO, ID 83201

EIN: 82-0338741

Phone no.: 208-232-5825

JWA For Privacy Act and Paperwork Reduction Act Notice, see separate instructions. Form 1120S (2007)

Schedule A Cost of Goods Sold (see instructions)

1	Inventory at beginning of year	1	
2	Purchases	2	292,772.
3	Cost of labor	3	24,659.
4	Additional section 263A costs (attach statement)	4	
5	Other costs (attach statement)	5	
6	Total. Add lines 1 through 5	6	317,431.
7	Inventory at end of year	7	
8	Cost of goods sold. Subtract line 7 from line 6. Enter here and on page 1, line 2	8	317,431.

9a Check all methods used for valuing closing inventory: (i) Cost as described in Regulations section 1.471-3
(ii) Lower of cost or market as described in Regulations section 1.471-4
(iii) Other (Specify method used and attach explanation) _____

b Check if there was a writedown of subnormal goods as described in Regulations section 1.471-2(c)

c Check if the LIFO inventory method was adopted this tax year for any goods (if checked, attach Form 970)

d If the LIFO inventory method was used for this tax year, enter percentage (or amounts) of closing inventory computed under LIFO

e If property is produced or acquired for resale, do the rules of Section 263A apply to the corporation? Yes No

f Was there any change in determining quantities, cost, or valuations between opening and closing inventory? Yes No
If "Yes," attach explanation.

Schedule B Other Information (see instructions)

	Yes	No
1 Check accounting method: (a) <input checked="" type="checkbox"/> Cash (b) <input type="checkbox"/> Accrual (c) <input type="checkbox"/> Other (specify) _____		
2 See the instructions and enter the: (a) Business activity ▶ LANDSCAPING (b) Product or service ▶ LANDSCAPING		
3 At the end of the tax year, did the corporation own, directly or indirectly, 50% or more of the voting stock of a domestic corporation? (For rules of attribution, see section 267(c).) If "Yes," attach a statement showing: (a) name and employer identification number (EIN), (b) percentage owned, and (c) if 100% owned, was a QSub election made?		X
4 Has this corporation filed, or is it required to file, a return under section 6111 to provide information on any reportable transaction?		X
5 Check this box if the corporation issued publicly offered debt instruments with original issue discount. If checked, the corporation may have to file Form 8281, Information Return for Publicly Offered Original Issue Discount Instruments. <input type="checkbox"/>		
6 If the corporation: (a) was a C corporation before it elected to be an S corporation or the corporation acquired an asset with a basis determined by reference to its basis (or the basis of any other property) in the hands of a C corporation and (b) has net unrealized built-in gain (defined in section 1374(d)(1)) in excess of the net recognized built-in gain from prior years, enter the net unrealized built-in gain reduced by net recognized built-in gain from prior years <input type="text" value="\$"/>		
7 Enter the accumulated earnings and profits of the corporation at the end of the tax year <input type="text" value="\$"/>		
8 Are the corporation's total receipts (see instructions) for the tax year and its total assets at the end of the tax year less than \$250,000? If "Yes," the corporation is not required to complete Schedules L and M-1 <input checked="" type="checkbox"/>		X

Schedule K Shareholders' Pro Rata Share Items

	Total amount
1 Ordinary business income (loss) (page 1, line 21)	1 -34,978.
2 Net rental real estate income (loss) (attach Form 8825)	2
3a Other gross rental income (loss) <input type="text" value="3a"/>	
b Expenses from other rental activities (attach statement) <input type="text" value="3b"/>	
c Other net rental income (loss). Subtract line 3b from line 3a <input type="text" value="3c"/>	
4 Interest income	4
5 Dividends: a Ordinary dividends <input type="text" value="5a"/>	
b Qualified dividends <input type="text" value="5b"/>	
6 Royalties	6
7 Net short-term capital gain (loss) (attach Schedule D (Form 1120S))	7
8a Net long-term capital gain (loss) (attach Schedule D (Form 1120S)) <input type="text" value="8a"/>	
b Collectibles (28%) gain (loss) <input type="text" value="8b"/>	
c Unrecaptured section 1250 gain (attach statement) <input type="text" value="8c"/>	
9 Net section 1231 gain (loss) (attach Form 4797)	9
10 Other income (loss) (see instructions) Type <input type="text" value="Type"/>	10

JWA

Form 1120S (2007)

711711
12-26-07

		Shareholders' Pro Rata Share Items (continued)	Total amount
Deductions	11	Section 179 deduction (attach Form 4562)	11
	12a	Contributions STATEMENT 2	12a 50.
	b	Investment interest expense	12b
	c	Section 59(e)(2) expenditures (1) Type (2) Amount	12c(2)
	d	Other deductions (see instructions) Type	12d
Credits	13a	Low-income housing credit (section 42(j)(5))	13a
	b	Low-income housing credit (other)	13b
	c	Qualified rehabilitation expenditures (rental real estate) (attach Form 3468)	13c
	d	Other rental real estate credits (see instructions) Type	13d
	e	Other rental credits (see instructions) Type	13e
	f	Credit for alcohol used as fuel (attach Form 6478)	13f
	g	Other credits (see instructions) Type	13g
Foreign Transactions	14a	Name of country or U.S. possession	
	b	Gross income from all sources	14b
	c	Gross income sourced at shareholder level Foreign gross income sourced at corporate level	14c
	d	Passive category	14d
	e	General category	14e
	f	Other (attach statement) Deductions allocated and apportioned at shareholder level	14f
	g	Interest expense	14g
	h	Other Deductions allocated and apportioned at corporate level to foreign source income	14h
	i	Passive category	14i
	j	General category	14j
	k	Other (attach statement) Other information	14k
	l	Total foreign taxes (check one): <input type="checkbox"/> Paid <input type="checkbox"/> Accrued	14l
	m	Reduction in taxes available for credit (attach statement)	14m
	n	Other foreign tax information (attach statement)	
Alternative Minimum Tax (AMT) Items	15a	Post-1986 depreciation adjustment	15a 2,303.
	b	Adjusted gain or loss	15b
	c	Depletion (other than oil and gas)	15c
	d	Oil, gas, and geothermal properties - gross income	15d
	e	Oil, gas, and geothermal properties - deductions	15e
	f	Other AMT items (attach statement)	15f
Items Affecting Shareholder Basis	16a	Tax-exempt interest income	16a
	b	Other tax-exempt income	16b
	c	Nondeductible expenses STATEMENT 3	16c 2,399.
	d	Property distributions	16d
	e	Repayment of loans from shareholders	16e
Other Information	17a	Investment income	17a
	b	Investment expenses	17b
	c	Dividend distributions paid from accumulated earnings and profits	17c
	d	Other items and amounts (attach statement)	
Reconciliation	18	Income/loss reconciliation. Combine the amounts on lines 1 through 10 in the far right column. From the result, subtract the sum of the amounts on lines 11 through 12d and 14l	18 -35,028.

JWA

Form 1120S (2007)

711721 12-26-07

Schedule L	Balance Sheets per Books	Beginning of tax year		End of tax year	
		(a)	(b)	(c)	(d)
Assets					
1	Cash		-14,332.		-3,685.
2 a	Trade notes and accounts receivable	8,000.			
b	Less allowance for bad debts		8,000.		
3	Inventories				
4	U.S. Government obligations				
5	Tax-exempt securities				
6	Other current assets (att. stmt.)				
7	Loans to shareholders		18,230.		10,448.
8	Mortgage and real estate loans				
9	Other investments (att. stmt.)				
10 a	Buildings and other depreciable assets	146,099.		226,487.	
b	Less accumulated depreciation	70,591.	75,508.	104,283.	122,204.
11 a	Depletable assets				
b	Less accumulated depletion				
12	Land (net of any amortization)				
13 a	Intangible assets (amortizable only)				
b	Less accumulated amortization				
14	Other assets (att. stmt.)				
15	Total assets		87,406.		128,967.
Liabilities and Shareholders' Equity					
16	Accounts payable				
17	Mortgages, notes, bonds payable in less than 1 year		31,440.		50,951.
18	Other current liabilities (att. stmt.)	STATEMENT 5			1,560.
19	Loans from shareholders				45,490.
20	Mortgages, notes, bonds payable in 1 year or more		54,066.		66,493.
21	Other liabilities (att. stmt.)				
22	Capital stock				
23	Additional paid-in capital				
24	Retained earnings	STATEMENT 6	1,900.		-35,527.
25	Adjustments to shareholders' equity (att. stmt.)				
26	Less cost of treasury stock				
27	Total liabilities and shareholders' equity		87,406.		128,967.

Schedule M-1 Reconciliation of Income (Loss) per Books With Income (Loss) per Return

Note: Schedule M-3 required instead of Schedule M-1 if total assets are \$10 million or more - see instructions

1	Net income (loss) per books	-37,427.	5	Income recorded on books this year not included on Schedule K, lines 1 through 10 (itemize): a Tax-exempt interest \$ _____	
2	Income included on Schedule K, lines 1, 2, 3c, 4, 5a, 6, 7, 8a, 9, and 10, not recorded on books this year (itemize): _____		6	Deductions included on Schedule K, lines 1 through 12 and 14i, not charged against book income this year (itemize): a Depreciation \$ _____	
3	Expenses recorded on books this year not included on Schedule K, lines 1 through 12 and 14i (itemize): a Depreciation \$ _____ b Travel and entertainment \$ 2,399.	2,399.	7	Add lines 5 and 6	
4	Add lines 1 through 3	-35,028.	8	Income (loss) (Schedule K, line 18). Line 4 less line 7	-35,028.

Schedule M-2 Analysis of Accumulated Adjustments Account, Other Adjustments Account, and Shareholders' Undistributed Taxable Income Previously Taxed (see instructions)

	(a) Accumulated adjustments account	(b) Other adjustments account	(c) Shareholders' undistributed taxable income previously taxed
1	Balance at beginning of tax year	1,900.	
2	Ordinary income from page 1, line 21		
3	Other additions		
4	Loss from page 1, line 21	(34,978.)	
5	Other reductions STATEMENT 4	(2,449.)	
6	Combine lines 1 through 5	-35,527.	
7	Distributions other than dividend distributions		
8	Balance at end of tax year. Subtract line 7 from line 6	-35,527.	

Depreciation and Amortization
(Including Information on Listed Property) **OTHER**

▶ See separate instructions. ▶ Attach to your tax return.

EDGED IN STONE, INC

OTHER DEPRECIATION

Identifying number
20-4974753

Part I Election To Expense Certain Property Under Section 179 Note: If you have any listed property, complete Part V before you complete Part I.

1	Maximum amount. See the instructions for a higher limit for certain businesses	1	125,000.
2	Total cost of section 179 property placed in service (see instructions)	2	
3	Threshold cost of section 179 property before reduction in limitation	3	500,000.
4	Reduction in limitation. Subtract line 3 from line 2. If zero or less, enter -0-	4	
5	Dollar limitation for tax year. Subtract line 4 from line 1. If zero or less, enter -0-. If married filing separately, see instructions	5	
6	(a) Description of property	(b) Cost (business use only)	(c) Elected cost
7	Listed property. Enter the amount from line 29	7	
8	Total elected cost of section 179 property. Add amounts in column (c), lines 6 and 7	8	
9	Tentative deduction. Enter the smaller of line 5 or line 8	9	
10	Carryover of disallowed deduction from line 13 of your 2006 Form 4562	10	
11	Business income limitation. Enter the smaller of business income (not less than zero) or line 5	11	
12	Section 179 expense deduction. Add lines 9 and 10, but do not enter more than line 11	12	
13	Carryover of disallowed deduction to 2008. Add lines 9 and 10, less line 12	13	

Note: Do not use Part II or Part III below for listed property. Instead, use Part V.

Part II Special Depreciation Allowance and Other Depreciation (Do not include listed property.)

14	Special allowance for qualified New York Liberty or Gulf Opportunity Zone property (other than listed property) and cellulosic biomass ethanol plant property placed in service during the tax year	14	
15	Property subject to section 168(f)(1) election	15	
16	Other depreciation (including ACRS)	16	

Part III MACRS Depreciation (Do not include listed property.) (See instructions.)

Section A

17	MACRS deductions for assets placed in service in tax years beginning before 2007	17	22,653.
18	If you are electing to group any assets placed in service during the tax year into one or more general asset accounts, check here		<input type="checkbox"/>

Section B - Assets Placed in Service During 2007 Tax Year Using the General Depreciation System

(a) Classification of property	(b) Month and year placed in service	(c) Basis for depreciation (business/investment use only - see instructions)	(d) Recovery period	(e) Convention	(f) Method	(g) Depreciation deduction
19a	3-year property					
b	5-year property					
c	7-year property					
d	10-year property	65,158.	10 YRS.	HY	SL	3,259.
e	15-year property					
f	20-year property					
g	25-year property		25 yrs.		S/L	
h	Residential rental property	/	27.5 yrs.	MM	S/L	
i	Nonresidential real property	/	39 yrs.	MM	S/L	

Section C - Assets Placed in Service During 2007 Tax Year Using the Alternative Depreciation System

20a	Class life				S/L	
b	12-year		12 yrs.		S/L	
c	40-year	/	40 yrs.	MM	S/L	

Part IV Summary (see instructions)

21	Listed property. Enter amount from line 28	21	7,780.
22	Total. Add amounts from line 12, lines 14 through 17, lines 19 and 20 in column (g), and line 21. Enter here and on the appropriate lines of your return. Partnerships and S corporations - see instr.	22	33,692.
23	For assets shown above and placed in service during the current year, enter the portion of the basis attributable to section 263A costs	23	

Part V Listed Property (Include automobiles, certain other vehicles, cellular telephones, certain computers, and property used for entertainment, recreation, or amusement.)

Note: For any vehicle for which you are using the standard mileage rate or deducting lease expense, complete only 24a, 24b, columns (a) through (c) of Section A, all of Section B, and Section C if applicable.

Section A - Depreciation and Other Information (Caution: See the instructions for limits for passenger automobiles.)

24a Do you have evidence to support the business/investment use claimed? [X] Yes [] No 24b If "Yes," is the evidence written? [X] Yes [] No

Table with columns (a) Type of property, (b) Date placed in service, (c) Business/investment use percentage, (d) Cost or other basis, (e) Basis for depreciation, (f) Recovery period, (g) Method/Convention, (h) Depreciation deduction, (i) Elected section 179 cost. Includes rows 25-29.

Section B - Information on Use of Vehicles

Complete this section for vehicles used by a sole proprietor, partner, or other "more than 5% owner," or related person. If you provided vehicles to your employees, first answer the questions in Section C to see if you meet an exception to completing this section for those vehicles.

Table with columns (a) through (f) Vehicle. Rows 30-36 covering business/investment miles, commuting miles, personal miles, and availability for personal use.

Section C - Questions for Employers Who Provide Vehicles for Use by Their Employees

Answer these questions to determine if you meet an exception to completing Section B for vehicles used by employees who are not more than 5% owners or related persons.

Table with questions 37-41 regarding written policy statements and employee use of vehicles, with Yes/No columns.

Part VI Amortization

Table with columns (a) Description of costs, (b) Date amortization begins, (c) Amortizable amount, (d) Code section, (e) Amortization period or percentage, (f) Amortization for this year. Includes rows 42-44.

2007 DEPRECIATION AND AMORTIZATION REPORT
OTHER DEPRECIATION

OTHER

Asset No.	Description	Date Acquired	Method	Life	Line No.	Unadjusted Cost Or Basis	Bus % Excl	Reduction In Basis	Basis For Depreciation	Accumulated Depreciation	Current Sec 179	Current Year Deduction
1	CURB MACHINE	010103	200DB	7.00	17	6,500.			6,500.	4,064.		696.
2	BEDEDGER TRENCHER	010103	200DB	7.00	17	3,000.			3,000.	1,876.		321.
3	CEMENT MIXER	010103	200DB	7.00	17	3,500.			3,500.	2,188.		375.
4	CURB TRAILER	010103	200DB	7.00	17	3,000.			3,000.	1,876.		321.
5	MISC TOOLS	010103	200DB	5.00	17	1,000.			1,000.	770.		153.
6	2002 CHEVY TRUCK	052803	200DB	5.00	17	39,036.			39,036.	24,119.		9,945.
	2001 DODGE EXT CAB											
7	PICKUP	062503	200DB	5.00	17	25,936.			25,936.	17,307.		5,753.
8	CURB MACHINE	022106	200DB	7.00	17	3,200.			3,200.	3,200.		0.
9	CARGO TRAILER	022106	200DB	7.00	17	1,200.			1,200.	1,200.		0.
10	1985 GMC DUMPTRUCK	061406	200DB	5.00	17	9,511.			9,511.			3,804.
	CONCRETE STAMPS &											
11	ROLLERS	010103	200DB	7.00	17	12,000.			12,000.	7,503.		1,285.
	2006 DODGE 2500 SLT											
12	QUAD CAB	082906	200DB	5.00	21	38,216.	4000		38,216.	7,643.		12,230.
	LESS EXCLUSION					-15,286.			-15,286.	-3,057.		-4,892.
13	OFFICE DESK	011907	SL	10.00	19D	1,918.			1,918.			96.
14	HYDROSEEDER TRUCKS	012707	SL	10.00	19D	14,500.			14,500.			725.
15	RAIN GUTTER MACHINE	022707	SL	10.00	19D	7,415.			7,415.			371.
16	BOXER SKID STEER	030507	SL	10.00	19D	40,000.			40,000.			2,000.
17	LITTLE BEAVER	031707	SL	10.00	19D	1,325.			1,325.			67.

728102
04-27-07

(D) - Asset disposed

* ITC, Section 179, Salvage, Bonus, Commercial Revitalization Deduction, GO Zone

2007 DEPRECIATION AND AMORTIZATION REPORT
OTHER DEPRECIATION

OTHER

Asset No.	Description	Date Acquired	Method	Life	Line No.	Unadjusted Cost Or Basis	Bus % Excl	Reduction In Basis	Basis For Depreciation	Accumulated Depreciation	Current Sec 179	Current Year Deduction
185	TH WHEEL TRAILER	010307	SL	10.00	21	15,230.	.4200		15,230.			762.
	LESS EXCLUSION					-6,397.			-6,397.			-320.
	* TOTAL OTHER DEPRECIATION					204,804.			204,804.	68,689.		33,692.
	CURRENT YEAR ACTIVITY											
	BEGINNING BALANCE					146,099.		0.	146,099.	71,746.		
	ACQUISITIONS					80,388.		0.	80,388.	0.		
	DISPOSITIONS					0.		0.	0.	0.		
	ENDING BALANCE					226,487.		0.	226,487.	71,746.		

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728102
04-27-07

(D) - Asset disposed

* ITC, Section 179, Salvage, Bonus, Commercial Revitalization Deduction, GO Zone

FORM 1120S OTHER DEDUCTIONS STATEMENT 1

DESCRIPTION	AMOUNT
ACCOUNTING	863.
BANK CHARGES	6,353.
PHONES/INTERNET/POWER	6,008.
WASTE DISPOSAL	103.
SMALL EQUIPMENT	11,758.
FUEL	15,888.
INSURANCE	6,942.
LICENSES	861.
MISC	253.
PARTS	6,024.
SHOP UTILITIES	1,013.
WEED MAT	883.
BUSINESS EXPENSE	1,183.
MAINTENANCE	699.
WORKERS COMP	4,426.
MEALS AND ENTERTAINMENT	2,400.
TOTAL TO FORM 1120S, PAGE 1, LINE 19	65,657.

SCHEDULE K CHARITABLE CONTRIBUTIONS STATEMENT 2

DESCRIPTION	50% LIMIT	30% LIMIT	20% LIMIT
	50.		
TOTALS TO SCHEDULE K, LINE 12A	50.		

SCHEDULE K NONDEDUCTIBLE EXPENSES STATEMENT 3

DESCRIPTION	AMOUNT
EXCLUDED MEALS AND ENTERTAINMENT EXPENSES	2,399.
TOTAL TO SCHEDULE K, LINE 16C	2,399.

SCHEDULE M-2 ACCUMULATED ADJUSTMENTS ACCOUNT- OTHER REDUCTIONS STATEMENT 4

DESCRIPTION	AMOUNT
CHARITABLE CONTRIBUTIONS	50.
NONDEDUCTIBLE EXPENSES	2,399.
TOTAL TO SCHEDULE M-2, LINE 5 - COLUMN (A)	2,449.

SCHEDULE L OTHER CURRENT LIABILITIES STATEMENT 5

DESCRIPTION	BEGINNING OF TAX YEAR	END OF TAX YEAR
PAYROLL TAXES		1,560.
TOTAL TO SCHEDULE L, LINE 18		1,560.

SCHEDULE L ANALYSIS OF TOTAL RETAINED EARNINGS PER BOOKS STATEMENT 6

DESCRIPTION	AMOUNT
BALANCE AT BEGINNING OF YEAR	1,900.
NET INCOME PER BOOKS	-37,427.
DISTRIBUTIONS	0.
OTHER INCREASES (DECREASES)	
BALANCE AT END OF YEAR - SCHEDULE L, LINE 24, COLUMN (D)	-35,527.

FORM 4562, PART V LISTED PROPERTY INFORMATION-MORE THAN 50% STATEMENT 7

(A) DESCRIPTION	(B) DATE	(C) BUS. %	(D) COST	(E) BASIS	(F) LIFE	(G) MTH/CV	(H) DEDUCTION	(I) 179 ELECTED
(J) AUTO NO	(K) TOTAL MILES	(L) BUSINESS MILES	(M) COMMUTING MILES	(N) PERSONAL MILES	(O) WAS VEH. AVAIL.? Y N	(P) > 5% OWNER? Y N	(Q) ANOTHER VEH. AVAILABLE? Y N	
2006 DODGE 2500 SLT QUAD CAB	08/29/06	60.00	38,216.	22,930.	5.00	200DB-HY	7,338.	
5TH WHEEL TRAILER	01/03/07	58.00	15,230.	8,833.	10.0	SL -HY	442.	
TOTAL TO FORM 4562, PART V, LINE 26							7,780.	