

SAE CHICAGO SECTION **NEWS**

VOL. 53

NO. 6

OCTOBER, 1985



**CATERPILLAR WHEEL LOADERS — 916, 926
(CHICAGO SECTION)**



**CATERPILLAR INTEGRATED TOOL CARRIERS
(FOX VALLEY DIVISION)**



**We steer everything on wheels.
(Almost.)**

© TRW Inc., 1985

TRW is the name and mark of TRW Inc.

With a few small exceptions, a company called TRW builds steering systems for everything on wheels. From garden tractors to mammoth earth movers, we can supply your needs.

We were a pioneer in power steering. We introduced the first passenger car rack and pinion system in North America. In truck gears, we've achieved the highest output torque-to-weight ratio in the industry.

And we're gearing up for our future advances: in lighter steering components, more cost-effective products, better ways to make our quality work for you.

For innovation in steering. Turn to us. Worldwide.



**Automotive
Worldwide Sector**

SAE CHICAGO SECTION NEWS

Published by CHICAGO SECTION, SOCIETY OF AUTOMOTIVE ENGINEERS

VOL.53

OCTOBER, 1985

NO. 6

GOVERNING BOARD CHICAGO SECTION — 1985-1986

EXECUTIVE COMMITTEE

C.F. Cervenka (Consultant)	Chairman.....	(312) - 968-0459
M.P. Thompson (Allis-Chalmers)	Past Chairman.....	(312) - 339-3300
K.C. Wolfgram (Caterpillar Tractor Co.)	Vice Chairman.....	(312) - 859-5125
M.R. Fernandez (Fram-Allied Corp.)	Treasurer.....	(312) - 349-9483
J.A. Damusis (Dana Corp.)	Secretary.....	(312) - 960-4200

DIVISION VICE-CHAIRMEN

J.D. Carlson (Elgin Sweeper Co.)	Fox Valley.....	(312) - 741-5370
S.J. Borden (Allied Corp.)	Michiana.....	(219) - 237-5635

ACTIVITIES VICE-CHAIRMEN

A.W. Vering (CR Industries)	Membership.....	(312) - 379-2500
W.J. Farrell (CR Industries)	Manufacturing & Materials.....	(312) - 742-7840
D.B. Lohbauer (Motorola, Inc.)	Farm, Const., Ind. Machinery.....	(312) - 590-5092
J.A. Den Besten (International Harvester Co.)	Power Plants.....	(312) - 836-3953
R.J. Kozerski (Dana Corp.)	Parts & Accessories.....	(312) - 960-4200
G.F. Raab (NTN Bearing Corp.)	Transportation Equipment.....	(312) - 298-7500
R.L. Jenks (Motorola, Inc.)	Advanced Technology.....	(312) - 397-8000
T.O. Wagner (Amoco Oil Co.)	Fuels & Lubricants.....	(312) - 420-5111
G.A. Loebbaka (Caterpillar Tractor Co.)	Student Activities.....	(312) - 859-4845

CHAIRMEN STANDING COMMITTEES

G.R. Bailey (Bailey Marketing, Inc.)	Editor.....	(815) - 455-5064
F. Egberts (Case-International)	Advertising.....	(312) - 887-2129
R. Blank (Rolf Blank Public Relations)	Public Relations.....	(312) - 938-0002
F. Blatz (Auto Research Labs, Inc.)	Plant Representatives.....	(312) - 563-0900
H.R. Cernota (Consultant)	Member Involvement.....	(312) - 863-4353
O.F. Genz (Hydro-Components R & D)	Engineering Resources.....	(312) - 678-7670
H. Yano (Caterpillar Tractor Co.)	Arrangements.....	(312) - 859-5119
G.W. Riebe (Arco Petroleum Products)	Reception.....	(312) - 210-3557
A.E. Kluge (Caterpillar Tractor Co.)	Photographer.....	(312) - 859-4786
A.H. Bertram (Caterpillar Tractor Co.)	Long Range Planning.....	(312) - 859-5106
D.G. Lytle	Long Range Planning.....	(312) - 537-2730
C.F. Nelson (Consultant)	Long Range Planning.....	(312) - 355-0372

NATIONAL NOMINATING COMMITTEE

H.A. Weatherhead (H.A. Weatherhead Assoc.)	Delegate.....	(312) - 251-0529
R.T. Bennett (Case-International)	1st Alternate.....	(312) - 887-2078
C.F. Cervenka (Consultant)	2nd Alternate.....	(312) - 968-0459

Address all Correspondence to S.A.E. Chicago Section Office.
330 E. Roosevelt Road, Lombard, IL 60148 • Phone: (312) 629-6363

FELCOPY[®]

FEL-PRO HEAVY DUTY CYLINDER HEAD GASKETS

SAE The Engineering
Resource For
Advancing Mobility

SAE TECHNICAL PAPER SERIES

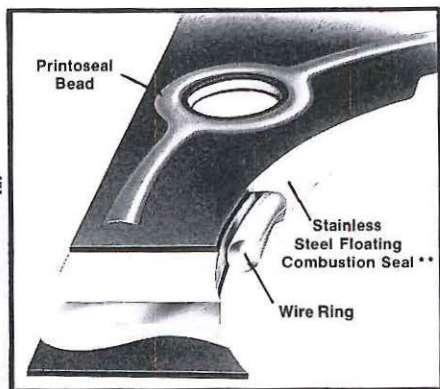
SAE Technical Paper Series

840188

Designing and Testing Cylinder Head Gaskets for High Performance Sealing

Daniel E. Czernik

Fel-Pro Inc./Felt Products Mfg. Co.



International Congress
& Exposition
Detroit, Michigan
February 27-March 2, 1984

Felcopy technology forms
the basis for two heavy-duty,
problem-solving gaskets:
PermaTorque/Blue[®] and
Printoseal[®].*

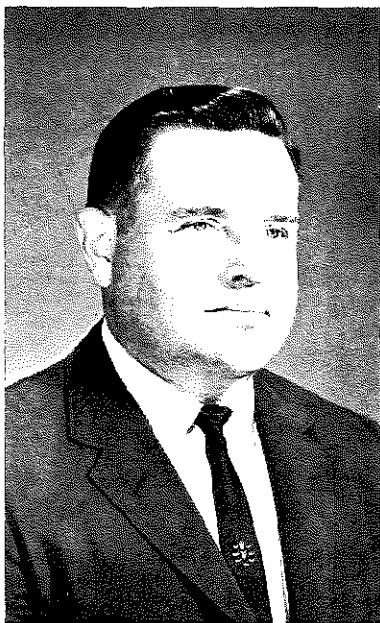
**Write FEL-PRO For Complete Technical
Information On All Your Gasketing Requirements
and A Number of SAE Papers By FEL-PRO's
Product Engineering Group.**

**U.S. Patent No. 3,565,449

*Printoseal process
under license from
Dowty Seals, Ltd. Great Britain
U.S. Patent No. 3,477,867.



Fel-Pro Incorporated
7450 N. McCormick Blvd.
Box C 1103, Dept. CSAE-585
Skokie, Illinois 60076



CHICAGO SECTION Chairman's Message



Planning for the 1985-86 Section and Division meetings was started early in the year and will continue into the season.

In addition to our regular meetings, the Chicago Section will host the SAE National Truck and Bus Meeting December 9 thru 12, 1985. Your Section officers and governing board members have been participating on the National general committee in areas for which the Chicago Section is responsible.

As the meeting date approaches, the committee chairmen will need your assistance. Your help will be greatly appreciated for whatever time you can give. For additional information, call Rey Barkstrom at the SAE office in Lombard, Illinois (629-6363).

CHICAGO SECTION CHAIRMAN

C. F. Cervenka

C. F. CERVENKA

Find a way to meet diesel engine designers' needs for more efficient, smaller fuel injection nozzles.

STANADYNE INNOVATED THE WAY:

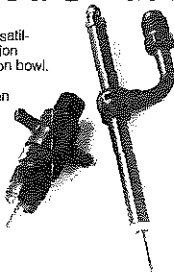
Typical nozzle spray pattern.

A Revolutionary 9.5mm Nozzle Plus Our Unconventional Conventionals.

Only 9.5mm in diameter, our unique Pencil Nozzle™ is smaller and provides more engine design versatility than conventional types. This small size affords better engine cooling; variable inlet configurations and body lengths make it adaptable to numerous engine configurations. It has been proved on over 50 different engine models.

Now, a new 5.4mm diameter Slim Tip model designed especially for small, high speed D.I. engines is available. Benefits to engine designers include:

- Improved versatility in tip location vs. combustion bowl.
- Allows more metal between valves, or larger valves.
- Compression seal at tip shoulder aids air-cooled installations.



- Small frontal area reduces heat input.
- We also offer conventional nozzles and holders in 21mm and 17mm sizes; hole or pintle type. Whatever your diesel injection system requirements, we welcome the opportunity to help optimize your engine designs. Stanadyne Diesel Systems Group, P.O. Box 1440, Hartford, CT 06143 U.S.A. Phone: (203) 525-0821.

Stanadyne diesel systems

BUILDING A BETTER BRAKE SYSTEM WITH

MICO Hydraulic Brake Systems and Components

MICO is meeting today's hydraulic fluid power needs with innovative ideas . . . answering the challenges of adverse environmental conditions . . . filling the demands for complete brake systems and simplicity of design with MICO's full range of hydraulic brake products.

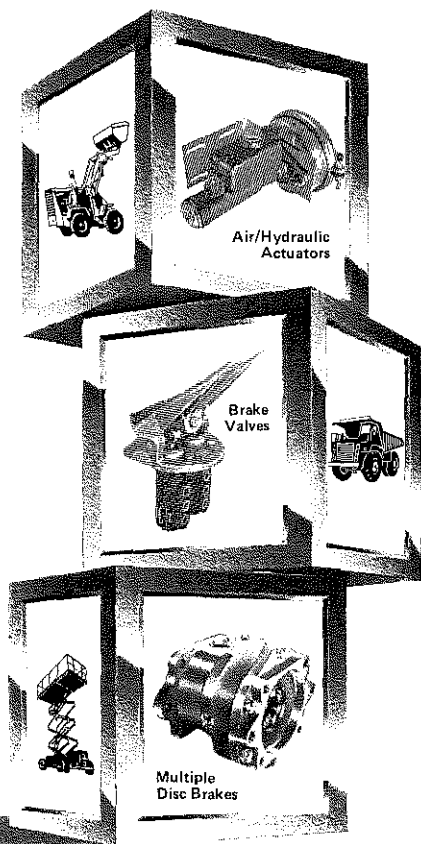
Call us, we're listening.



1911 Lee Boulevard, P.O. Box 2118, Dept. N-33, North Mankato, Minnesota U.S.A. 56002-2118
Phone: (507) 625-6426 TELEX 910-565-2444

MICO WEST

701 East Francis Street, P.O. Box 9058, Dept. N-33, Ontario, California U.S.A. 91762-9058
Phone: (714) 947-4077 TELEX 510-600-0132



FOX VALLEY DIVISION
SAE Chicago Section
TUESDAY, OCTOBER 15, 1985
CATERPILLAR IT28 AND IT18
INTEGRATED TOOL CARRIERS
BY
BOB BRIGGS

The small wheel type loader has seen its application range extended such that it is now one of the most versatile machines in our industry. However, its effectiveness in tasks other than bucket loading is limited.

BOB BRIGGS graduated from Newcastle Upon Tyne Polytechnic, England, in 1972 with a BSc(Hons) in Mechanical Engineering. He began his employment with Caterpillar Tractor Company Ltd. at Newcastle in 1966 as a co-op student and was appointed Design Engineer upon graduation. In 1974, he obtained an MBA from Newcastle Polytechnic Management Center. He is currently Project Engineer for the IT28 and IT18 Integrated Tool Carriers.

DOUGLAS W. TOYNTON is a Hydraulic Design Specialist at Elgin Sweeper Company. Prior to joining Sweeper in November 1984, he was a Senior Engineering Technician for Fluid Power Systems. Doug received an Associate of Science Degree in Fluid Power from Gateway Technical Institute, Kenosha, Wisconsin, in 1979.

SPEAKER



BOB BRIGGS

CHAIRMAN



DOUGLAS TOYNTON

SARATOGA HOTEL

Route 31 & I-5

North Aurora, IL

5:30 P.M. Social Half Hour
6:00 P.M. Dinner
7:00 P.M. Tech. Session

MEETING SPONSORS

FEL-PRO
MICO, INC.

STUDENT SUPPORT:
Hydro-Components R & D Inc.

RESERVATIONS REQUIRED

For reservations call JoAnn at 859-5116
Deadline: Noon Monday, Oct. 11, 1985
Give Name and Company

MEAL PRICE

Member	\$11.00
Non-Member	\$13.00
College Student	\$ 6.00

SPEAKER



ROBERT E. MOSS

SPEAKER



O. ALBERT SCHEFFLER

NEW CATERPILLAR WHEEL LOADERS — 916

BY

ROBERT E. MOSS

AND

O. ALBERT SCHEFFLER

Two new Caterpillar Wheel Loaders have been developed in the 1.5 and 2 categories. The 916 and 926 wheel loader introduction is a continuation to the 900 series line. These machines were designed to provide higher bucket control linkage, and to meet worldwide manufacturing and marketing requirements.

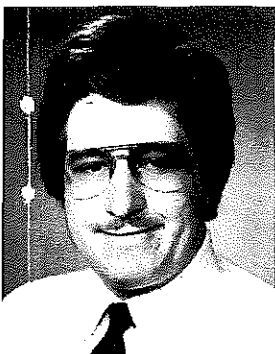
ROBERT E. MOSS graduated in 1966 with a Bachelor of Science in Engineering and a Master of Engineering (Agricultural) from Cornell University. In June of 1968, he joined Caterpillar Tractor Co. in the technical training program. In July of 1968, he was assigned to the Engineering Department to work on various projects on track-type loaders, wheel loaders, and skidders. He is presently a Project Engineer on Wheel Loaders. He is a registered professional engineer in Illinois.

O. ALBERT SCHEFFLER is a graduate of the State University of New York at Binghamton with a Bachelor of Science in Mechanical Engineering. He joined Caterpillar Tractor Co. in 1968 and worked primarily on wheel loader chassis design. Currently he is Project Engineer on 916 and 926 Wheel Loaders and is a registered professional engineer in Illinois.

DAVID B. LOHBAUER is a design engineer at Motorola—Centralized Systems Group. He holds a BSME degree from the University of Illinois.

ELMHURST COUNTRY CLUB
WOOD DALE ROAD
BETWEEN LAKE STREET (ROUTE #20)

CHAIRMAN



DAVID B. LOHBAUER

, 926

0 cubic yard bucket capacity
the updating of the Caterpil-
breakout force, simplified
g requirements.

engineering, and in 1967, with a
1967, he began working at
he moved to the Aurora En-
compactors, and wheel load-
ed professional engineer in

k at Buffalo, with a Bachelor
May of 1957, and has work-
ee, responsible for the 916

Fixed Network Equipment

AND
IRVING PARK ROAD (ROUTE #19)
5:30 P.M. Social Half-Hour
"ATTITUDE ADJUSTMENT HOUR"
6:00 P.M. Dinner
7:00 P.M. Technical Session

MEETING SPONSORS:

BARNES & REINEKE
CHAMPION LABORATORIES
I T W FASTEX
STANADYNE
SOUTHCO FASTENERS, INC.

PRICES
\$11.00 - Members
13.00 - Non-Members
6.00 - College Students

Dinner Reservations Required
Single Table Reservations Restricted to 8 people.
Contact your plant representative.

OR
Chicago Section Office
(312) 629-6363

MICHIANA DIVISION
SAE Chicago Section
TUESDAY, OCTOBER 15, 1985

ETHANOL FUEL
AND
THE SOUTH BEND ETHANOL PLANT
BY

LAWRENCE J. RUSSO, JR.

The New Energy Co. Ethanol Plant has been producing ethanol for a year now. The reasons for producing fuel alcohol along with a description of the ethanol process and a discussion of the construction of the plant and its performance will be presented.

LAWRENCE J. RUSSO, JR.

CHAIRMAN



KEITH H. FULMER

LAWRENCE RUSSO is Production Superintendent at the New Energy Co. Ethanol Plant and is responsible for the day to day operations of the Distillation, Drying, Cooling, De-watering, Evaporation and Utility areas of the plant. He has previously been involved with start-up of 5 Fermentation/Purification Biotechnology plants. Lawrence has a BChE from the University of Dayton and an MSBA from IUSB.

KEITH FULMER is a Staff Engineer in Advanced Engineering at Allied Automotive in South Bend. He has a BSME from Purdue and has been with Allied/Bendix for 26 years. Keith has 26 patents in the brake actuation field and is a 26 year SAE member.

Meeting Location

HANS HAUS
2803 S. Michigan
South Bend, IN

Tour at New Energy Co.
Ethanol Plant
3201 W. Calvert

5:00 P.M.—Tour
6:15 P.M.—Social Period
6:45 P.M.—Dinner
7:45 P.M.—Technical Presentation

Student Support:
Hydro-Components R & D Inc.

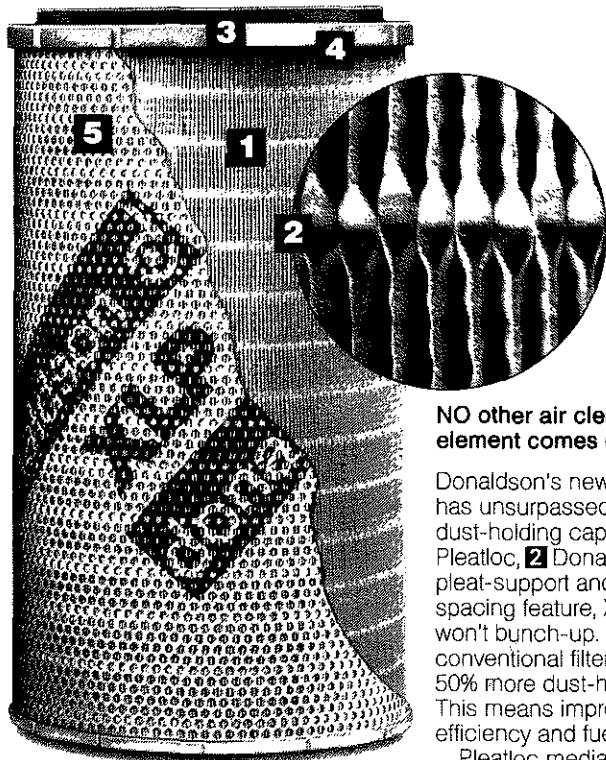
Reservations:
Anthony Metoyer
Clark Equipment
(616)697-4221 or (616)697-4021

Deadline: 4:00 P.M. EST
Thursday, October 10, 1985

	Prices	Member
\$8.00		
\$8.50		Non-Member

HERE'S HOW NEW PLEATLOC* ELEMENTS CAN CUT COSTS

*Patent Pending



NO other air cleaner element comes close

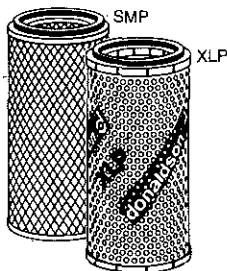
Donaldson's new **1** XLP element has unsurpassed efficiency and dust-holding capacity. With Pleatloc, **2** Donaldson's new pleat-support and positive-spacing feature, XLP media won't bunch-up. It will outlive any conventional filter, providing up to 50% more dust-holding capacity. This means improved engine efficiency and fuel economy.

Pleatloc media life is so improved that we had to beef up

everything else in the element. A new **3** urethane gasket material won't harden or crack. Heavy gauge end caps **4** are corrosion resistant. The **5** outer metal liner is completely galvanized and epoxy-coated for added corrosion resistance. The new XLP gives you better engine protection and lowest filter costs per mile or hour, when you use its full life by measuring intake restriction. Come in and see the Donaldson Pleatloc breakthrough.

For scheduled maintenance, use Donaldson's new SMP[™] element

The same superior Pleatloc protection of the XLP, in lower-cost unit for scheduled maintenance.



donaldson

**ANNOUNCING THE FIRST EVER SAE CHICAGO SECTION
MINI-TRUCK PULL COMPETITION**

Wednesday, December 11, 1985 at noon.

Main lobby of the O'Hare Hyatt Regency Hotel

This competition is open only to student members of SAE

Advance registration is required.

Please mail coupon below, postmark no later than Nov. 16, 1985.

A \$5.00 fee must be included with the registration.

This fee will be refunded at the competition on proof of SAE student membership. If contestant is not a member then the \$5.00 fee will be used to pay the first year's membership. Note: Membership is open to any college student enrolled full or part-time.

A mini-truck pull is a competition among stomper 4 x 4 (TM) and stomper semi 10WD (TM) toy trucks. A weighted sled will be provided to be pulled by the trucks.

Trophies and cash prizes of \$50.00 - First — \$25.00 Second — \$10.00 Third, will be awarded in each of six classes. Each class winner will also receive a ticket to the banquet on Wednesday, December 11, 1985, at 7:00 p.m.

For complete details contact section office — (312)-629-6363

SAE Chicago Section Mini-Truck Pull Competition Registration Form

Please Include \$5.00 Entry Fee

Name: _____

Address: _____

Phone: _____

School: _____

Mail To: Pull

**SAE Chicago Section Office
330 E. Roosevelt Road
Lombard, IL 60148
Phone (312)-629-6363**



CHICAGO TO HOST TRUCK & BUS MEETING

For the first time ever Chicago will have the opportunity to host SAE's Truck & Bus Meeting this year. The meeting will be held December 9-12 in the Hyatt Regency O'Hare. The Rosemont-O'Hare Exposition Center adjacent to the hotel will be the site of the accompanying exposition—a show that is expected to equal or surpass last year's record event in Dearborn.

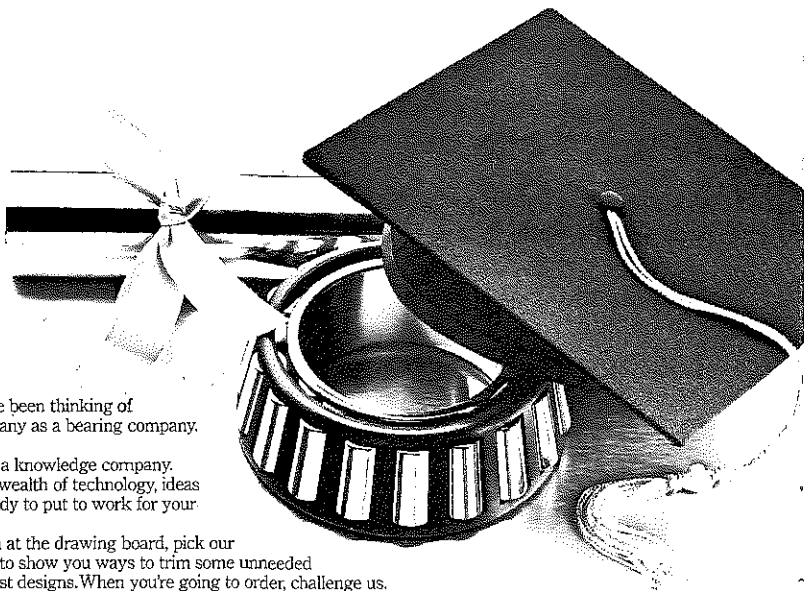
Meeting General Chairman Donald D. Lennox, Chairman and Chief Executive Officer, International Harvester Co., declared that this year's theme, "Highway to Excellence," recognizes "the effort of designers and engineers involved in all aspects of the truck industry to develop and maintain quality vehicles."

As always the Truck & Bus Banquet on Wednesday evening, December 11, will be a highlight of the meeting. This year the featured speaker will be General Motors' President and Chief Operating Officer F. James McDonald.

The meeting will also feature an opening keynote address, a top management "blue ribbon" panel, a Chief Engineers' panel, and tours to Chicago-area facilities, all in addition to a full schedule of technical sessions.

For more information on the 1985 SAE Truck & Bus Meeting, contact Laura Feix-Baker at 412/776-4841.

IT'S NOT JUST WHAT WE MAKE. IT'S WHAT WE KNOW.



FOR YEARS, you've been thinking of
The Timken Company as a bearing company.
Or a steel company.

Now think of us as a knowledge company.

A company with a wealth of technology, ideas
and skills that we're ready to put to work for your
company right now.

When you sit down at the drawing board, pick our
brains. We may be able to show you ways to trim some unneeded
weight from your newest designs. When you're going to order, challenge us.
We'll share ideas for streamlining the way you buy from us.

When you're setting up production, call us in. We'll show your people a few
special tricks we've learned that may save you time and money.

The Timken Company. The knowledge company. Put us to the test. We think
we'll pass with flying colors.

The Timken Company, Canton, Ohio 44706.

TIMKEN®
REGISTERED TRADEMARK

UNITED AIR CLEANER AND THE U.S. HUMMER



The U. S. Military's newest vehicle, known as the HUMMER, is intended to replace the Jeep.

United Air Cleaner Company supplies the air cleaner used on the HUMMER vehicle which is made by the AM General Division of LTV Aerospace and Defense Company.

The vehicle demands quality and performance. With confidence, you can count on United Air Cleaner to furnish you with a product that will meet **your** quality and design requirements.

Contact United Air Cleaner for your needs.

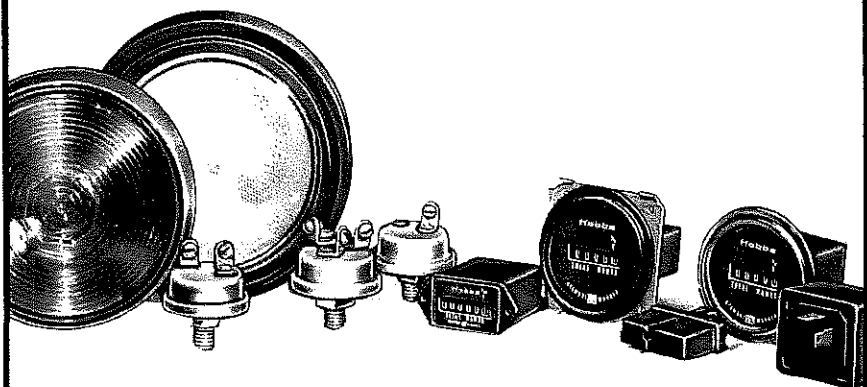
United Air Cleaner Co.

UNITED AIR CLEANER
A UNIT OF DOLLINGER
A FILTRONA COMPANY
9705 South Cottage Grove Avenue
Chicago, Illinois 60628
Phone (312) 734-5000
Over 50 years in the air cleaner business.

SAE-CHICAGO SECTION

1985-1986 Meeting Dates

Date	Group	Subject
1985		
10-8	Chicago	Caterpillar Wheel Loader
10-15	Fox Valley	Caterpillar Integrated Tool Carrier
10-15	Michiana	New Energy Ethanol Plant
11-12	Chicago	Power Plants
11-19	Fox Valley	Epcot Center
11-19	Michiana	U.S. Military Vehicle - Hummer
12-9 to 12-12	Chicago	SAE - National Truck & Bus Meeting
1986		
1-14	Chicago	Manufacturing & Materials
2-11	Chicago	Parts & Accessories
2-18	Fox Valley	Harley-Davidson V-2 Engine
2-18	Michiana	Anti-Lock
3-11	Chicago	Transportation Equipment
3-18	Fox Valley	Lubricants (Gear Oils)
3-18	Michiana	LECO
4-15	Chicago	Fuels and Lubricants
4-22	Fox Valley	Engine Vibration Dampening
4-22	Michiana	East Race
5-13	Chicago	Advanced Technology



When machines talk, the language they use is Hobbs.

Hour meters. Pressure and vacuum switches. Snap-action switches. Cold weather starting devices. Buzzers. Flashers. Halogen headlamps. Shock-resistant headlamps. Warning lights. Whatever machines need to call for help or perform more efficiently. Hobbs makes them better than anyone.

Hobbs is a prime supplier to the powered equipment industry. Anywhere something turns, spins or moves, Hobbs has a product to help it run better. Call or write today for our complete line of products. Hobbs Division, Stewart-Warner Corporation, Yale Blvd. and Ash St., Springfield, Illinois 62705. Call 217/753-7600.

Represented by: Ziegenbein Associates, Inc.
200 Bishop's Way, Brookfield, WI 53005

Hobbs, Communication between machine and man.

SYMBOL OF



EXCELLENCE

Hobbs Division
STEWART-WARNER
CORPORATION

RETURN POSTAGE GUARANTEED

SAE

CHICAGO SECTION

330 E. ROOSEVELT ROAD
LOMBARD, ILLINOIS 60148

Non-Profit
Organization
U.S. POSTAGE
PAID
LOMBARD, ILL.
Permit No. 296

PRECISION GEARS

for the manufacturer of

- Locomotives
- Final Drives
- Turbo-Chargers
- Strip Mining Trucks
- Tanks
- Radar Antennas
- Printing Presses
- Machine Tools
- Your Special Needs

If you are seeking a reliable and competitively-priced source for AGMA Class (10) through (12) spur and helical gears to 48", consider Overton. Over 3 decades of service to the quality-conscious gear specifier.

Also offering excellent prices on commercial grade gears of all types in AGMA Class (7) through (9) for the manufacturer of lawn mowers, water pumps, snowmobiles, golf carts, air compressors, etc.

Write or phone for full information.
Or send a print for a quotation.

Overton
Gear and Tool Corporation
530 Westgate Drive • Addison, Illinois 60101
312/543-9570 TELEX 72-8479