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100 Barr Harbor Drive ■ West Conshohocken, PA 19428-2959

Telephone: 610-832-9500 ■ Fax: 610-832-9555 ■ e-mail: [service@astm.org](mailto:service@astm.org) ■ Website: [www.astm.org](http://www.astm.org)**Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

*Chairman:* N DAVID SMITH, North Carolina Dept Of Agric, 2 West Edenton St, PO Box 27647, Raleigh, NC 27611, (919) 733-3313, FAX:919-715-0524, Email: [david\\_smith@ncdamail.agr.state.nc.us](mailto:david_smith@ncdamail.agr.state.nc.us)

*First Vice Chairman:* SUSAN E. LITKA, UOP Research Center, 50 East Algonquin Road, PO Box 5016, Des Plaines, IL 60017-5016, (847) 391-3390, FAX: 847-391-3330

*Second Vice Chairman:* KURT H. STRAUSS, 69 Brookside Rd, Portland, ME 04103, (207) 773-4380, FAX: 207-775-6214

*Secretary:* KENNETH O. HENDERSON, Cannon Instrument Co, PO Box 16, State College, PA 16804-0016, (814) 353-8000, FAX: 814-353-8007, Email: [kenohenderson@worldnet.att.net](mailto:kenohenderson@worldnet.att.net)

*Assistant Secretary:* W JAMES BOVER, EXXON Biomedical Sciences, Mettlers Rd Cn2350, East Millstone, NJ 08875-2350, (732) 873-6318, FAX: 732-873-6009, Email: [mailto:james.bover@ere.exxon.sprint.com](mailto:mailto:james.bover@ere.exxon.sprint.com)

*Staff Manager:* EARL R. SULLIVAN, (610) 832-9709, Email: [esulliva@astm.org](mailto:esulliva@astm.org)

November 5, 2012

TO: Mack HTCT (D5579) S. P. Membership and Mailing List

SUBJECT: Mack HTCT SP Meeting Minutes, May 09, 2012, Troy ,MI

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**Call to order:**

Brian Koehler, the chairman of the Mack High Temperature Cyclic Test ASTM Surveillance Panel, called the meeting to order at 11:00 a.m. Eastern time.

**Chairman's Comments:**

The chairman sent out a meeting announcement in advance. See attachment 1.

**Membership:**

A sign in sheet was passed around. It can be found as attachment 2.

**Six Month Test Status report from the TMC:**

Please go to the TMC's web location to view the Mack HTCD status report dated May 09, 2012.

**Mack HTCD Being Dropped from SAE J2360:**

The panel discussed the SAE J2360 deletion of the Mack HTCD. It was determined that the TMC would continue to monitor the test as long as labs were registering the test stands. SwRI stated that it would continue to keep one stand referenced and available as long as customer interest was present. This would be revisited each year. The ASTM S.P. would remain active as needed.

**Range Clutch Synchronizer Components Change:**

Please see attachment 3, presented by the Chairman. Volvo had announced a change to three synchronizer test parts. The revised parts must be used as a set. The attachment includes a statement by Tom Bryson of Volvo. The modification was discussed. SwRI had enough of the older style parts to run for about 8 months. The following action items were agreed on: 1. That SwRI should reference its stand in June using the older style parts and oil 155-1. 2. That SwRI should seek out sponsorship for one hardware approval type test on the fail oil and one on the category reference oil (older 155 blend) using the new synchronizer parts. The Lubrizol Corporation agreed to sponsor one of those test. NOTE: Post meeting, Chevron agreed to sponsor the second test. Both tests were run and will be discussed at the November 7, 2012 meeting.

**Old Business:**

There was no old business to be discussed.

**New Business:**

The 155-1 oil re-blend was discussed. The TMC was given the OK to calculate acceptability ranges for the new oil. See TMC memo 12-014 issued on May 21, 2012.

**Next Meeting:**

The next meeting will be at the call of the chairman.

**Adjournment:**

Meeting was completed at 11:52 am.

Submitted by:



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Brian Koehler  
Mack HTCT Surveillance Panel Chairman  
Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238-5166

clm  
Attachments

## Koehler, Brian P.

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**From:** Koehler, Brian P.  
**Sent:** Thursday, May 03, 2012 5:01 PM  
**To:** 'Hamilton, Larry'; 'Allan Comfort'; 'Allison Athey'; 'Angela Trader'; 'Brosnan, Bridget'; 'Bruce McGlone'; 'Bubonic, Brad'; 'Dharte, John'; 'dml@astmtmc.cmu.edu'; 'Don Bell'; 'fmf@astmtmc.cmu.edu'; 'Greene, Galen'; 'Gropp, Jerrold'; 'Higuchi, Samuel'; 'Inc William Sullivan'; 'Jack Zakarian'; 'Jack Zakarian'; 'Jeff Clark (jac@astmtmc.cmu.edu)'; 'Joe Bradfield'; 'John Huron'; 'Khaled Zreik'; 'Lu, WenTong'; 'NON-LZ DALE SMITH'; 'Jackson, Matt'; 'Paula Vettel'; 'Percy Kanga'; 'Rachel Agusti'; 'Robert Sullivan'; 'Scott Parke'; 'Scott Sackschewsky'; 'Stephen Eliot'; 'thelmaemarougy@eaton.com'; 'Thomas.Gottwald@AftonChemical.com'; 'Tom Bryson'; 'Tom Malony'; 'Venhoff, Wes'; 'Wendy Grubbs  
**Cc:** Thorpe, Ryan L.  
**Subject:** Mack HTCD Agenda for May ASTM Meetings  
**Attachments:** Mack service bulletin.pdf

Please be aware that the Mack HTCD S.P. will meet May 9<sup>th</sup> at 11:00 am at Automation Alley in Troy Michigan.

The main topics of discussion will be:

1. The Mack HTCD being dropped from SAE J 2360.
2. A Range Clutch Synchronizer Components change.

Concerning the synchronizer change: Please see the attached Mack service bulletin. The tooth design on the three major associated items has been changed. These parts have not yet been used for referenced testing. These parts will need to be used in the next 6 to 8 months as industry supply dictates. Mr. Tom Bryson has made the following comments:

“The change to the clutch teeth on the sliding clutch will have an effect on keeping the clutch teeth engaged after the synchronizing is completed and teeth engaged during a shift. Care must be taken to use the new low range hub and new high range gear (compare current to new part numbers in the Service Bulletin) with the new range clutch. After switch to new part numbers, the parts can be reused as is currently done. Since the new parts do not affect the synchronizing action, the test severity should not be affected. The shift times might be slightly longer as the clutch moves away from the hub (or gear) when the shift begins, and will be offset roughly the same time after the synchronizing is complete and the teeth engage into the gear (or hub) due to faster engagement. Thanks, Tom”

Please study this and be prepared to comment concerning the new design implementation into our test.

Please let me know if you have other topics to discuss.

Regards,  
Brian P. Koehler  
Principal Engineer  
Southwest Research Institute  
P.O. Drawer 28510, Zip: 78228-0510  
9503 West Commerce, Zip: 78227  
San Antonio, TX USA  
Building 209  
Tel: 210-522-3588  
Fax: 210-684-7523  
Cell: 210-213-2761

## CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: 5-9-12

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
	Athey, Allison	Non-Voting	Volvo Powertrain 13302 Pennsylvania Ave. Hagerstown, MD 21742	(301) 573-5684		<a href="mailto:allison.athey@volvo.com">allison.athey@volvo.com</a>
	Bell, Don	Non-Voting	Afton Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-6332	(804) 788-6243	<a href="mailto:don.bell@aftonchemical.com">don.bell@aftonchemical.com</a>
BD	<del>Brosnan, Bridget</del> Dworick	Non-Voting	RDTA-DP/MS 110, US Army TARDEC 6501 E. Eleven Mile Rd. Warren, MI 48307	(586) 574-4221 282	(586) 574-4244 282	<del>bridget.brosnan@us.army.mil</del> <a href="mailto:bridget.dwornick@us.army.mil">bridget.dwornick@us.army.mil</a>
	Bryson, Tom	Voting	Mack Trucks, Inc. 13302 Pennsylvania Avenue Hagerstown, MD 21740	(301) 790-5454	(301) 790-6744	
A.C.	Comfort, Allen	Voting	USArmy TACOM RDTA-DP/MS 110 6501 E. 11 Mile Warren, MI 48307	(586) 574-4225 282	(586) 574-4244 282	<del>allen.e.comfort@us.army.mil</del> <a href="mailto:allen.s.comfort.civ@mail.mil">allen.s.comfort.civ@mail.mil</a>
	Dharte, John	Voting	AAM 1 Dauch Drive Detroit, MI 48211	(313) 758-4687	(313) 758-4237	<a href="mailto:DharteJ@aam.com">DharteJ@aam.com</a>
LWE	Eliot, Steve	Non-Voting	ExxonMobil 18486 Lanier Island Sq. Leesburg, VA 20176	(703) 669-9916	(703) 669-9917	<del>Stephen.W.Eliot.com</del> <a href="mailto:Stephen.w.eliot@exxonmobil.com">Stephen.w.eliot@exxonmobil.com</a>
	Graziano, Rick	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2058		<del>rgg@lubrizol.com</del>
	Greene, Galen	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2394		<a href="mailto:ggre@lubrizol.com">ggre@lubrizol.com</a>
JLH	Gropp, Jerry	Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-1223	(440) 347-1555	<a href="mailto:jlg@lubrizol.com">jlg@lubrizol.com</a>
	Haire, Mike	Voting	Chevron Global Lubricants	(510) 242-2740		<a href="mailto:mhaire@chevron.com">mhaire@chevron.com</a>
LDH	Hamilton, Larry	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2326		<a href="mailto:LDHA@lubrizol.com">LDHA@lubrizol.com</a>
SH	Higuchi, Sam	Voting	Afton Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-5375	(804) 788-6358	<a href="mailto:samucl.higuchi@aftonchemical.com">samucl.higuchi@aftonchemical.com</a>
	Huron, John	Non-Voting	Chevron Oronite Company 4502 Centerview Drive, Suite 210 San Antonio, TX 78228	(210) 731-5609	(210) 731-5699	<a href="mailto:huro@chevrontexaco.com">huro@chevrontexaco.com</a>

## CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: \_\_\_\_\_

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
<i>PRK</i>	Kanga, Percy	Non-Voting	ExxonMobil Research & Engineering <i>600 Billingsport Rd. Paulsboro, NJ. 08003</i>	(856) 224-2094	(856) 224-3313	<a href="mailto:percy.r.kanga@exxonmobil.com">percy.r.kanga@exxonmobil.com</a>
<i>WAK</i>	Kearney, Bill	Non-Voting	Afton Chemical Corporation 2000 Town Center, Suite 1160 Southfield, MI 48075	(248) 380-7596		<a href="mailto:bill.kearney@aftonchemical.com">bill.kearney@aftonchemical.com</a>
	Koehler, Brian	Voting	Southwest Research Institute 6220 Culebra Road San Antonio, TX 78238-5166	(210) 522-3588	(210) 680-1777	<a href="mailto:bkoehler@swri.org">bkoehler@swri.org</a>
<i>Prof from list</i> →	<del>Koglin, Cory</del>	<del>Voting</del>	<del>Afton Chemical Corporation 500 Spring Street Richmond, VA 23218</del>	<del>(804) 788-5303</del>	<del>(804) 788-6358</del>	<del><a href="mailto:Cory.koglin@aftonchemical.com">Cory.koglin@aftonchemical.com</a></del>
	Layton, Kevin	Non-Voting	Afton Chemical Corporation 500 Spring Street Richmond, VA 23218	(804) 788-5363	(804) 788-6358	
	Lind, Don	Voting	ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206	(412) 365-1034	(412) 365-1047	<a href="mailto:dml@astmtmc.cmu.edu">dml@astmtmc.cmu.edu</a>
	Lu, WenTong	Non-Voting	Research Institute of Petroleum Processing (RIPP) No.18, XueYuan Road PO Box 914-19 Beijing 100083 P.R.China	011-86-10-8236-8743	011-86-10-6231-1290	<a href="mailto:luwt@ripp-sinopec.com">luwt@ripp-sinopec.com</a>
	Marougy, Thelma	Voting	Eaton Corporation 26201 Northwestern Highway Southfield, MI 48037	(248) 354-6985	(248) 354-2739	<a href="mailto:thelmaemarougy@eaton.com">thelmaemarougy@eaton.com</a>
<i>BM</i>	McGlone, Bruce	Voting	<del>Meritor</del> 2135 West Maple Troy, MI 48084	(248) 435-9929	<del>(248) 435-6602</del> 248.435.6602	<del><a href="mailto:mechlntbr@meritorauto.com">mechlntbr@meritorauto.com</a></del> <a href="mailto:Bruce.McGlone@Meritor.com">Bruce.McGlone@Meritor.com</a>
<i>SS</i>	Parke, Scott	Voting	ASTM TMC	(412) 365-1036		<a href="mailto:SDP@ASTMTMC.CMU.EDU">SDP@ASTMTMC.CMU.EDU</a>
<i>JS</i>	Smith, Dale	Voting	<del>PARC Technical Services, Inc.</del> <del>100 William Pitt Way</del> <del>Pittsburgh, PA 15238</del> <i>3404 Spring Rd San Antonio, TX 78227</i>	<del>(412) 423-1120</del> <i>412-855-6854</i>	<del>(412) 826-5444</del>	<del><a href="mailto:dale.smith@intertek.com">dale.smith@intertek.com</a></del>
	Song, HaiQing	Non-Voting	Research Institute of Petroleum Processing (RIPP) No.18, XueYuan Road PO Box 914-19 Beijing 100083 P.R.China	011-86-10-8236-8182	011-86-10-6231-1290	<a href="mailto:songhq@ripp-sinopec.com">songhq@ripp-sinopec.com</a>
<i>WVE</i>	Venhoff, Wes	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd.	(440) 347-4879		<a href="mailto:WVE@lubrizol.com">WVE@lubrizol.com</a>

## CYCLIC DURABILITY SURVEILLANCE PANEL

Meeting Date: \_\_\_\_\_

Initials	Name	Voting Status	Company Name & Address	Telephone	Fax	Email
			Wickliffe, OH 44092			
	Whitticar, David	Non-Voting	The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092	(440) 347-2587	(440) 347-1555	<a href="mailto:David.Whitticar@lubrizol.com">David.Whitticar@lubrizol.com</a>
	Xie, JingChun	Non-Voting	Lanzhou Lube Oil R&D Institute No. 369 YuMen Street XiGu District Lanzhou 730060 GanSu Province			

CRO O'Brien, Cheryl NV General Motors Company 248-343-7347 Cheryl.obriene@gm.com  
Pontiac, MI #8

K-Z Khaled Zreik V General Motors 248-977-9214 Khaled.Zreik@gm.com  
Pontiac, MI #

IL Gottwald, Thomas V Afton Chemical 804-788-5230 thomas.gottwald@aftonchemical.com  
Richmond, VA

JAZ Jack Zakarian NV Chevron jeza@chevron.com  
Research

AT Angela Trader NV Intertek Automotive 210 7061533 angela.trader@inte-tek.com  
Research

TPM Troy P Muransky Alternate Meritor 248 435-1409 Troy.muransky@meritor.com  
V

**From:** Bryson Thomas [<mailto:thomas.bryson@volvo.com>]

**Sent:** Wednesday, November 09, 2011 2:17 PM

**To:** Koehler, Brian P.

**Cc:** Athey Allison

**Subject:** FW: Mack part change

The change to the clutch teeth on the sliding clutch will have an effect on keeping the clutch teeth engaged after the synchronizing is completed and teeth engaged during a shift. Care must be taken to use the new low range hub and new high range gear (compare current to new part numbers in the Service Bulletin) with the new range clutch. After switch to new part numbers, the parts can be reused as is currently done. Since the new parts do not affect the synchronizing action, the test severity should not be affected. The shift times might be slightly longer as the clutch moves away from the hub (or gear) when the shift begins, and will be offset roughly the same time after the synchronizing is complete and the teeth engage into the gear (or hub) due to faster engagement. Thanks, Tom



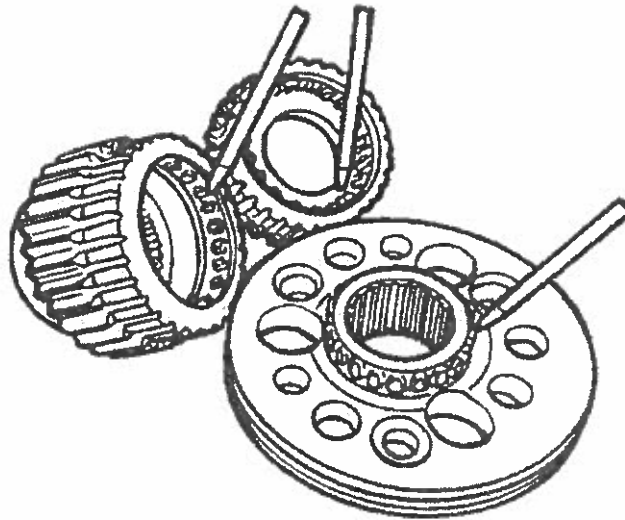
Date	Group	No.	Release	Page
7.2011	431	003	01	1(4)

Revised Range Clutch/Synchronizer  
Components

T200, T300

## FSB 431-003, Range Clutch Synchronizer Components

(July 2011)

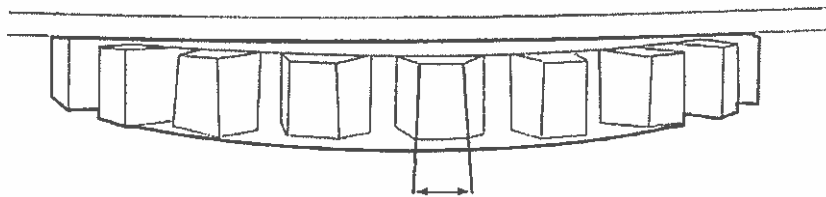


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The T200/T300 range synchronizer clutch material and tooth design have been changed to improve durability and resist disengagement. A more robust material is now used. Also there is an increase in the dove-tail cut of the clutching teeth in both the synchronizer clutch and mating hi range gear and lo range hub. The new range synchronizer clutch and mating gears were incorporated into production on 05/23/2011, beginning with transmission serial number 3772. The part number for the new range synchronizer clutch is 21636360.



Because of the increase in the dove-tail cut of the clutch teeth between the previous style range clutch and the current production range clutch, the range clutch, the mating high gear and the low gear hubs must be replaced as a set. If any one of the three previous style components is damaged, or when converting from the previous style to the new style range clutch/synchronizer, all three items must be replaced with the current components. For replacement information for these components refer to the appropriate transmission model's service manual or Service Manual "In-Chassis Synchronizer Removal Manual", 10-701.



W4065550

Clutch Teeth with Dove-tail Cut

## Contents

- "Range Clutch/Synchronizer Components", page 3

**Note:** Information is subject to change without notice.  
Illustrations are used for reference only and may differ slightly from the actual vehicle being serviced. However, key components addressed in this information are represented as accurately as possible.

## Range Clutch/Synchronizer Components

The rear compound main drive gear utilizing the thrust washer support system is no longer available for T2080B, T2080D, T2130, T2130B, T2180 and T2180B transmissions (refer to service bulletin "New Rear Compound Mainshaft and Main Drive Gear", SB-322-011). When installing the new range clutch/synchronizer assembly on one of these transmissions, it will be necessary to change the existing main drive gear to the new gear utilizing the ball bearing support. This also requires changing the Lo-range gear hub and mainshaft assembly. Refer to the following charts for a list of required parts.

### Synchronizer Service Kit

New Part Number	Description	Replaced Part Number
85132094	Synchronizer Service Kit	85115910

### Synchronizer Clutch Assembly Kit

New Part Number	Description	Replaced Part Number
21728520/320KB464	Synchronizer clutch assembly	320KB3147
		320KB3150

### Range Clutch/Synchronizer Individual Components

New Part Number	Description	Replaced Part Number
21636360/320KB463	Range clutch/synchronizer	320KB461A
		320KB459A

When installing the new range clutch/synchronizer assembly on a transmission, the following high range gear and low range hub are required

#### T2180A, T313LR21, T318LR21, T313-21, T318-21 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649209/751KB4177	High Range Gear	751KB4130

#### T2080B, T2080D, T2130, T2180, T2180B, T2110BL, T2130B, T310M, T310MLR, T313LR, T318LR, T318, T313 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649207/751KB4176	High Range Gear	751KB4123

#### T2110B, T310ME, T310ME21 Transmissions

New Part Number	Description	Replaced Part Number
21631781/84KC411	Low Range Hub	84KC47
21649204/751KB4175	High Range Gear	751KB4128A

#### T2080, T2090, T2090LR, T2090L, T2090R, T2090B, T2100, T309LR, T310 Transmissions

New Part Number	Description	Replaced Part Number
21631765/84KC410	Low Range Hub	84KC46
21633318/764KB4278	High Range Gear	764KB4270

**T309 Transmissions**

New Part Number	Description	Replaced Part Number
21631765/84KC410	Low Range Hub	84KC46
21633320/764KB4279	High Range Gear	764KB4277

Mack Trucks, Inc. engages in a comprehensive program of testing and evaluating to provide the best possible product. Mack Trucks, Inc. however, is not committed to, or liable for updating existing vehicles.

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<b>T309 TRANS</b>	
↘ 21636360	1
↘ 21631765	1
↘ 21633320	1
T310ME, T310ME21	
T2110B	
↘ 21636360	1
↘ 21631781	1
↘ 21649204	1
T2080, T2090, T310	
T2090LR, T2090L	
T2090R, T2090B	
T2100, T309R	
↘ 21636360	1
↘ 21631765	1
↘ 21633318	1
T2180A, T313LR21	
T318LR21, T313-21	
T318-21	
↘ 21636360	1
↘ 21631781	1
↘ 21649209	1
T2080B, T2080D, T2130	
T2180, T2180B, T2110BL	
T2130B, T310M, T310MLR	
T313LR, T318LR	
T318, T313	
↘ 21636360	1
↘ 21631781	1
↘ 21649207	1