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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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September 23, 2004

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ASTM D02.B0.03 L-37 Surveillance Panel

Members and Guests:

Attached for your review and comment are the unconfirmed minutes of the September 21st, 2004 L-37 Surveillance Panel Teleconference Call.

Please direct any corrections or comments to my attention.

Sincerely,

Donald T. Bartlett, Chairman
L-37 Surveillance Panel

Attachments

Report of Conference Call
L-37 Surveillance Panel
September 21, 2004, 1:30 p.m. EDT

The meeting was brought to order at 1:45. There was an error with respect to the participation code (one digit missing). The chairman apologized and commended the participating members for their resourcefulness in getting connected to the call. With that said, the panel made the decision to proceed with discussions and motion approvals with the understanding that there may be a voting member that was not present/successful in making the connection to the teleconference. That being the case, we ask that the members review the minutes and comment to the chairman if they would have a negative vote to cast on any of the noted motions. We would then call another teleconference call to regroup. Comments are open until Tuesday, the 28th.

I. Attendees: The panel meeting attendees were:

ASTM TMC:	Don Lind,
Ethyl Corp:	Cory Koglin,
Lubrizol Corp:	Don Bartlett,
PARC	Dale Smith,
SwRI	Brian Koehler,
Dana Corp:	Ken Okamuro,
Exxon Mobil	Bill Sullivan,
Lubrizol Corp	Chris Schenkenberger,
Lubrizol Corp	Rob Slocum,
SwRI:	Hector De Le Fuente,
Lubrizol Corp	Jerry Gropp

II. Agenda:

1. Review the four lab results of TMC 127 on new non-lubrited hardware V1L351/P4T771
2. Review/adopt targets for LT1-1 (TMC 152) and LT2-1 (TMC 153) for lubrited hardware batch P4L626A/V1L686 only;
3. Proposal to modify D6121, Section 6.2.8.
4. Add a statement in LTMS requiring that reference testing be performed alternating between lubrited and non-lubrited hardware.
5. Consider Changing/clarifying the data dictionary and report form 4 (Lost Time and Comments Sheet) adding column "Test Phase" designation as requested by an industry participant.
6. With respect to the semi-annual gear rating workshops: Consider using the RLMS pinions instead of laboratory provided pinions and other requests from the Gear Rating TF.

III. Action Items:

- o The panel determined that there was appropriate discrimination in the TMC 127 test runs and gave approval for the labs to commence with the next round of testing on TMC 151-3. Targeted completion date is October 1st and a teleconference call has been scheduled for Tuesday, October 5th, 2004 at 2:00 p.m. EDT.
- o The TMC will document the change to section 6.2.8 action through an information letter.
- o A request by the Gear Rating TF to use the RL TMS pinions in the semi annual rating workshops was approved by the panel with requirements. See meeting summary section for all of the details.
- o A request by the Gear Rating TF to determine if it is still necessary to rate the rings at the workshops was reviewed and determined that it is still required. See meeting summary section for all of the details.
- o The chairman will contact the ASTM Gear Rating TF Chairman, Art Sanchez, to discuss and seek clarification on the other issues noted in their minutes.

IV. Motions:

- o Mr. Lind motioned, second by Mr. Smith: We accept the targets/bands (with the standard deviation value of .4944 for rippling for both oils) for TMC 152 and 153 on lubrited hardware batch **P4L626A/V1L686** with an effective date of 9/21/04. The targets/bands are for only L-37 Standard tests (not for Low Temperature Canadian).
- o Mr. Koehler motioned, second by Mr. Koglin, that section 6.2.8 be modified specifying a driveshaft thickness of 0.095 ± 0.005 inches.
- o Mr. Sullivan motioned, second by Mr. Smith: Require that in the process of referencing the L-37 stand, the labs are required to alternate between lubrited and non-lubrited hardware. The TMC will determine if the documentation belongs appropriately in the D6121 standard, LTMS, or both.

V. Summary of Panel Discussion, Consensus and Motions:

- **Review of TMC 127 tests on new non-lubrited hardware V1L351/P4T771:**

As directed (see motion # 4 from the September 25th 2004 panel meeting), we reviewed the results of the 4-lab tests to determine if there was discrimination before we proceed forward to the next step of testing on TMC 151-3. The data is included as Attachment 1.

Mr. Lind reported that TMC 127 has been run 88 times across all of the gear batches, failing 76 times. As for failure rates by distress, we have had 5 wear, 25 pitting/spalling, 46 rippling, and 64 ridging. He also reported that he saw data where ring distress was more severe than pinion distress, similar to what we see with this hardware batch. As can be seen by the data, all tests failed on pinion ridging and 3 of the four failed on rippling. Two tests failed on ring ridging. The panel determined that there was appropriate discrimination and gave approval for the labs to commence with the next round of testing on TMC 151-3. Targeted completion date is October 1st.

A teleconference call to review the TMC 151-3 testing has been set up as follows:

Tuesday, October 5th, at 02:00 p.m. EDT. Call in 1-608-250-0194, participation # 324160.

- **Review/adopt Targets for LT1-1 (TMC 152) and LT2-1 (TMC 153) for Lubrited Hardware Batch P4L626A/V1L686 Only:**

This is an action item stemming from the September 24th, 2004 panel meeting. The data was reviewed and is included as **Attachment 2**. TMC has changed the oil code identification as follows: LT1-1 is TMC 152 and LT2-1 is TMC 153.

Mr. Lind reported that the targets (as the normal process) currently represent the pooled standard deviation across all oils in the industry and will be re-calculated after 15 tests.

He also commented that he received a call from the chairman to discuss a recommendation of changing the standard deviation for rippling for 152 to allow a maximum rating for ridging to include a rating of 10 (especially since two of the 8 tests were rated a 10). Presently, a standard deviation of 0.4616 yielded a 9.97 maximum allowed rippling value, yielding a fail rate 2/8 tests. The TMC proposal of changing the standard deviation value to 0.4944 for both 152 and 153 allows rippling values of 8, 9, & 10 for 152 and rippling values for 153 from 5 through 9. For both oils, the fail rate is 12 percent based on the 8 tests for each oil.

Mr. Lind motioned, second by Mr. Smith: We accept the targets/bands (with the standard deviation value of .4944 for rippling for both oils) for TMC 152 and 153 on lubrited hardware batch **P4L626A/V1L686** with an effective date of 9/21/04. The targets/bands are for only L-37 Standard tests (not for Low Temperature Canadian).

The vote was 6 in favor, none opposed, and no abstentions, passing unanimously. The TMC will document the action through a TMC memorandum. Mr. Lind reminded the labs that when they call the TMC for a reference oil assignment that the labs will be required to declare the hardware batch code being used and the test hardware type of lubrited or non-lubrited.

- **Proposal to modify D6121, Section 6.2.8:**

The panel reviewed the section which currently states/requires a driveshaft of 0.094-inch wall thickness with no tolerance specified. The chairman reported that the labs (through actions of the L-42-1 TF) have determined that the tube steel available is 0.095. The next closest tubing steel available is 0.083 or 1.09.

To be technically correct, to reflect what labs are actually using, and to be consistent with the L-42/L-42-1, Mr. Koehler motioned, second by Mr. Koglin, that section 6.2.8 be modified specifying a driveshaft thickness of 0.095 ± 0.005 inches. The vote was 5 in favor, none opposed, and 1 abstention. The TMC will document the action through an information letter.

- **Add a statement in LTMS requiring that reference testing be performed alternating between lubricated and non-lubricated hardware:**

At this point in the call, Mr. Sullivan joined the meeting. Mr. Sullivan was briefed and agreed with the motions and actions taken by the panel up to this point.

Currently we are control charting lubricated and non-lubricated hardware separately. While it has generally been a 'gentleman's agreement' by the laboratories to alternate the hardware type between referencing, there were a few instances where this was not happening and the panel request had previously only been documented in the minutes. To be consistent, Mr. Sullivan motioned, second by Mr. Smith: Require that in the process of referencing the L-37 stand, the labs will alternate between lubricated and non-lubricated hardware. The TMC will determine if the documentation belongs appropriately in the D6121 standard, LTMS, or both. The vote was 5 in favor, none opposed, and 2 abstentions.

- **Consider Changing/clarifying the data dictionary and report form 4 (Lost Time and Comments Sheet) adding column "Test Phase" designation as requested by an industry participant.** This item was not discussed/deferred to the future as there are clarification issues needing worked out for consistency.
- **With respect to the semi-annual gear rating workshops: Consider using the RL TMS pinions instead of laboratory provided pinions and other requests from the Gear Rating TF:**

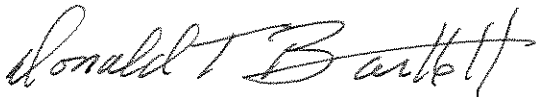
The minutes from the ASTM Rating Workshop and TF meeting of July 20-22, 2004 were just received and many had not had the time to read and comment. Mr. Lind brought the following requests by the rating group to the panel:

- A request to use the RL TMS pinions in the workshop instead of assigning the responsibility to different labs to bring the hardware (at times, not the best examples of hardware being brought due to circumstances beyond the control of the lab). After discussion, panel consensus was that this would be a good idea to incorporate because :
 - It provides an opportunity to generate more repeatability data on the RL TMS pinions.
 - It will be a good thing for us to do.
 - Note: Will not count as data for rater calibration.
 - We will still require 10 pinions to be rated plus the 3 calibration pinions.
 - We want/allow flexibility/option for a lab, TMC, or panel to include other representatives of hardware issues/pinions to meet some specific need for the industry. The request would run through the TMC to co-ordinate.

- A request to determine if it is still necessary to rate the rings at the workshops. The consensus from the panel were as follows:
 - Along with the pinion, the ring is an LRI pass/fail requirement.
 - The workshops are funded by representative companies that are taking parts in for LRI approvals; therefore, it is good that the raters continue rating the rings. It is consistent.
 - This has been a standing request by the panel and we would like it to continue.
 - We will still require 10 rings to be rated plus the 3 calibration rings.
- The chairman will contact the ASTM Gear Rating TF Chairman, Mr. Sanchez and Co-Chairman Mr. Radonich, to discuss and seek clarification on the other issues noted in their minutes.

Being no further business to discuss and noting that the L-33-1 panel had an issue to address, Mr. Koglin motioned, second by Ms. Vettel, to adjourn the L-37 meeting at 2:33 p.m.

Respectfully submitted,



Donald T. Bartlett,
L-37 Surveillance Panel Chairman

TMC 127 tests
 VIL 351 / P4T771

TESTKEY	Lab	Std	OIL	PINBAT	RINGBAT	DTCOMP	PWEAR	PRIDG	PRIPP	PSPIT	RWEAR	RRIDG	RRIPP	RSPIT	Match#	LPCRAT	FPCRAT
45997	B	191	127	V1L351	P4T771	20040905	6	6	9	9.9	6	5	10	9.9	2	0	
49553	A	2	127	V1L351	P4T771	20040909	5	3	7	9.9	5	4	9	9.9	0	0	
44307	D	3A	127	V1L351	P4T771	20040919	7	6	5	9.8	7	8	9	10	1	0	
44288	E	2	127	V1L351	P4T771	20040920	6	7	7	9.9	7	8	9	9.9	1	0	

Attachment	1
Page	1 of 1
Reference	A-37

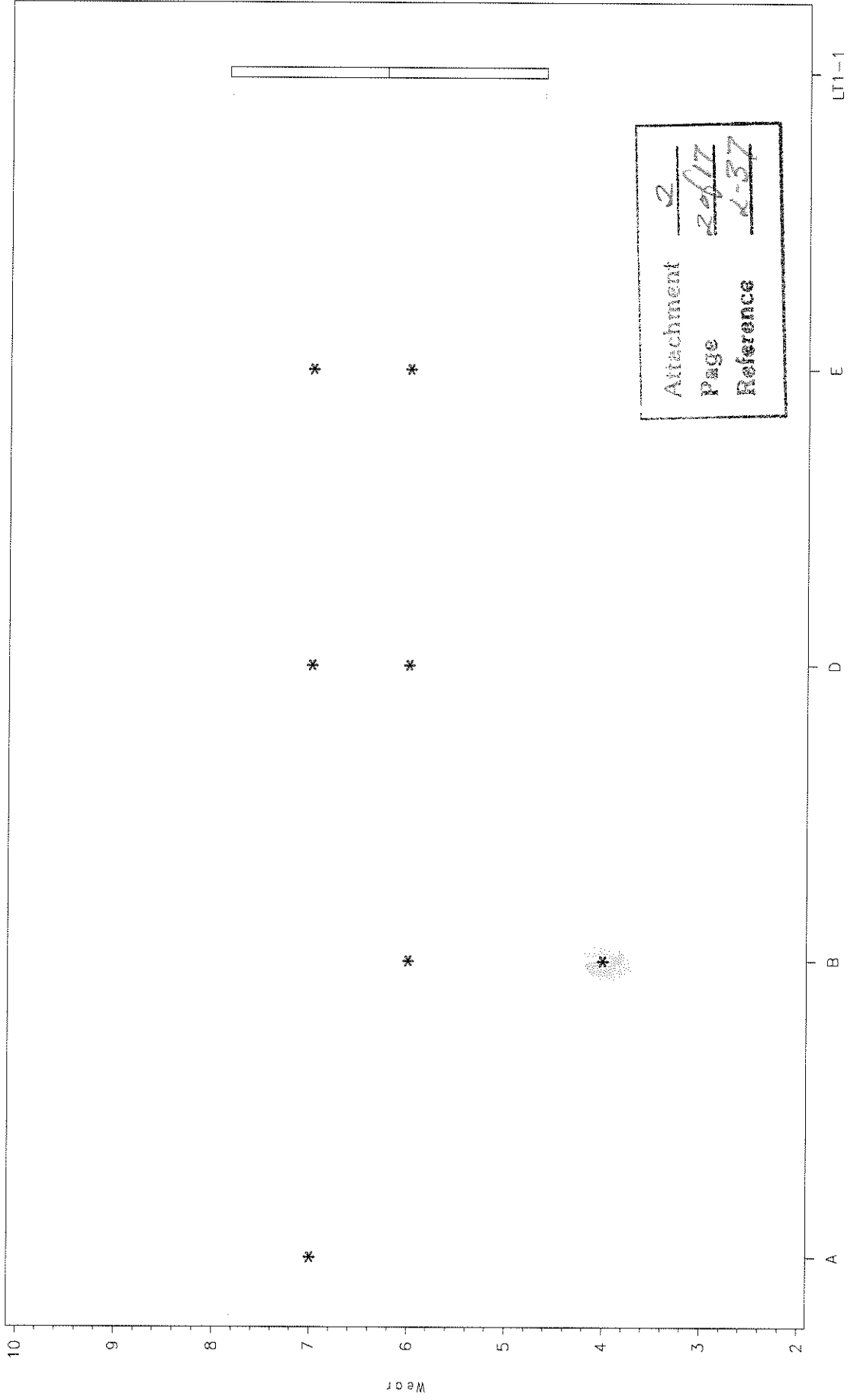
LT1-1 & LT2-1 MATRIX
 STANDARD - VIL686 / P4L626A

CMIR	LAB OIL	Test_Type	PINBAT	RINGBAT	DTCOMP	P_WEAR	P_RIDG	P_RIPP	P_SPIT	R_WEAR	R_RIDG	R_RIPP	R_SPIT	
52415	D	LT1-1	STANDARD	V1L686	P4L626A	20040713	7	6	10	9.5	8	7	10	9.9
52416	D	LT1-1	STANDARD	V1L686	P4L626A	20040723	6	6	10	8	9	7	10	10
52394	B	LT1-1	STANDARD	V1L686	P4L626A	20040705	6	7	9	9.6	6	8	9	9.9
52395	B	LT1-1	STANDARD	V1L686	P4L626A	20040707	4	3	9	6	5	4	9	9.6
52098	E	LT1-1	STANDARD	V1L686	P4L626A	20040718	6	5	9	9.7	7	6	9	9.9
52099	E	LT1-1	STANDARD	V1L686	P4L626A	20040725	7	7	9	9.9	7	8	9	9.9
52385	A	LT1-1	STANDARD	V1L686	P4L626A	20040707	7	7	9	9.6	7	7	9	9.9
52386	A	LT1-1	STANDARD	V1L686	P4L626A	20040713	7	7	8	9.7	7	7	8	9.9
52090	D	LT2-1	STANDARD	V1L686	P4L626A	20040715	7	6	8	9.5	8	7	10	9.8
52421	D	LT2-1	STANDARD	V1L686	P4L626A	20040727	7	6	9	9.3	8	7	10	10
52399	B	LT2-1	STANDARD	V1L686	P4L626A	20040710	7	6	8	9.7	7	7	9	9.9
52400	B	LT2-1	STANDARD	V1L686	P4L626A	20040711	6	6	8	9.7	6	5	10	9.9
52410	E	LT2-1	STANDARD	V1L686	P4L626A	20040722	7	8	8	9.9	7	9	9	9.9
52411	E	LT2-1	STANDARD	V1L686	P4L626A	20040723	7	7	8	2	7	9	9	9.9
52389	A	LT2-1	STANDARD	V1L686	P4L626A	20040711	7	8	7	9.9	7	9	9	9.9
52390	A	LT2-1	STANDARD	V1L686	P4L626A	20040712	7	7	6	9.9	7	9	10	9.9

Attachment	R
Page	1 of 17
Reference	6-37

L-37 Lubricated Hardware (Pinion Batch V1L686/P4L626A)
 Reference Oil LT1-1
 Test Target Data Set and Shewart Severity Limits

Pinion Weqr (Industry Pooled S.D. = 0.905)

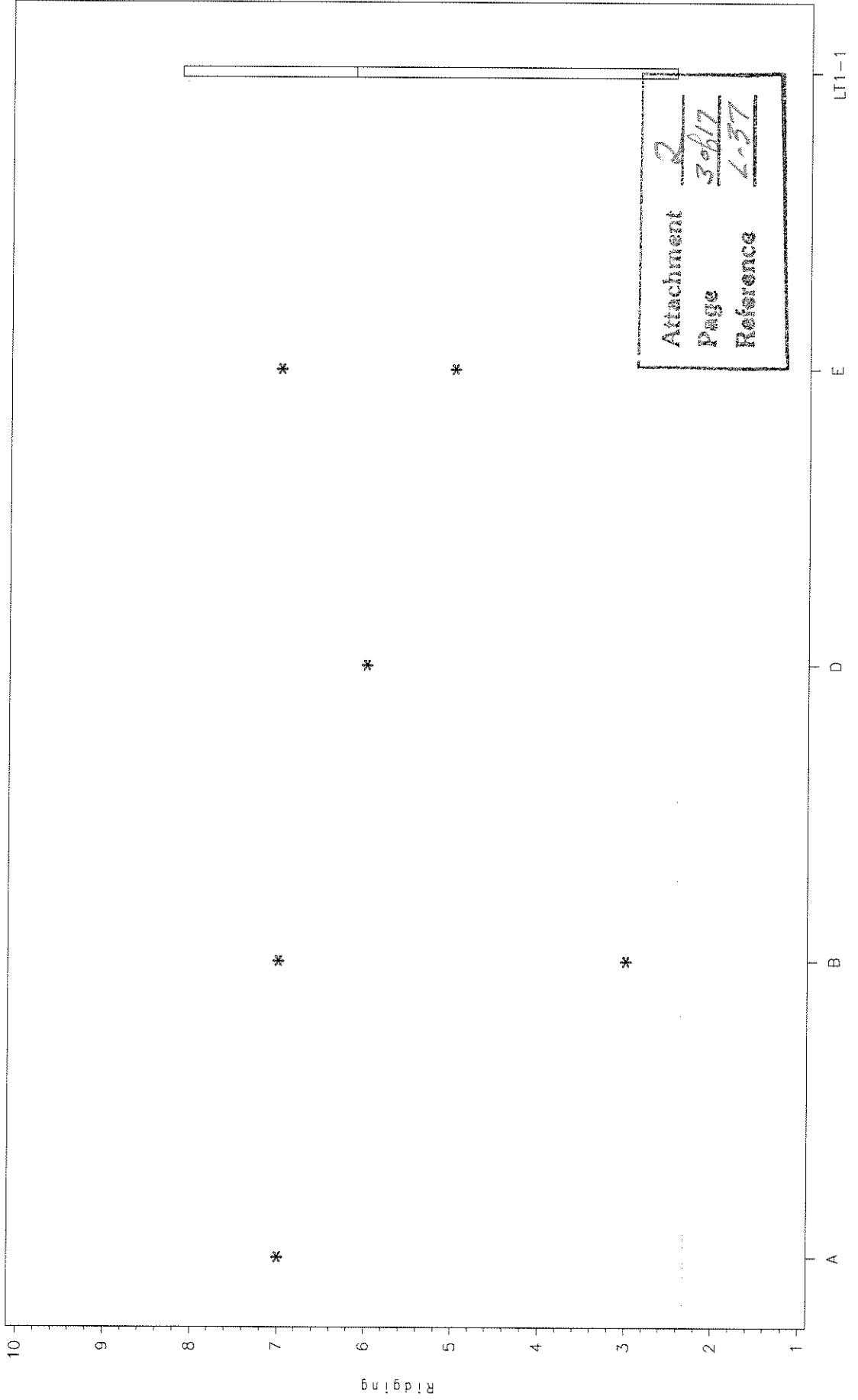


Attachment 2
 Page 2 of 17
 Reference L-37

Data Group

L-37 Lubricated Hardware Pinion Batch V1L686/P4L626A
Reference Oil LT1-1
Test Target Data Set and Shewart Severity Limits

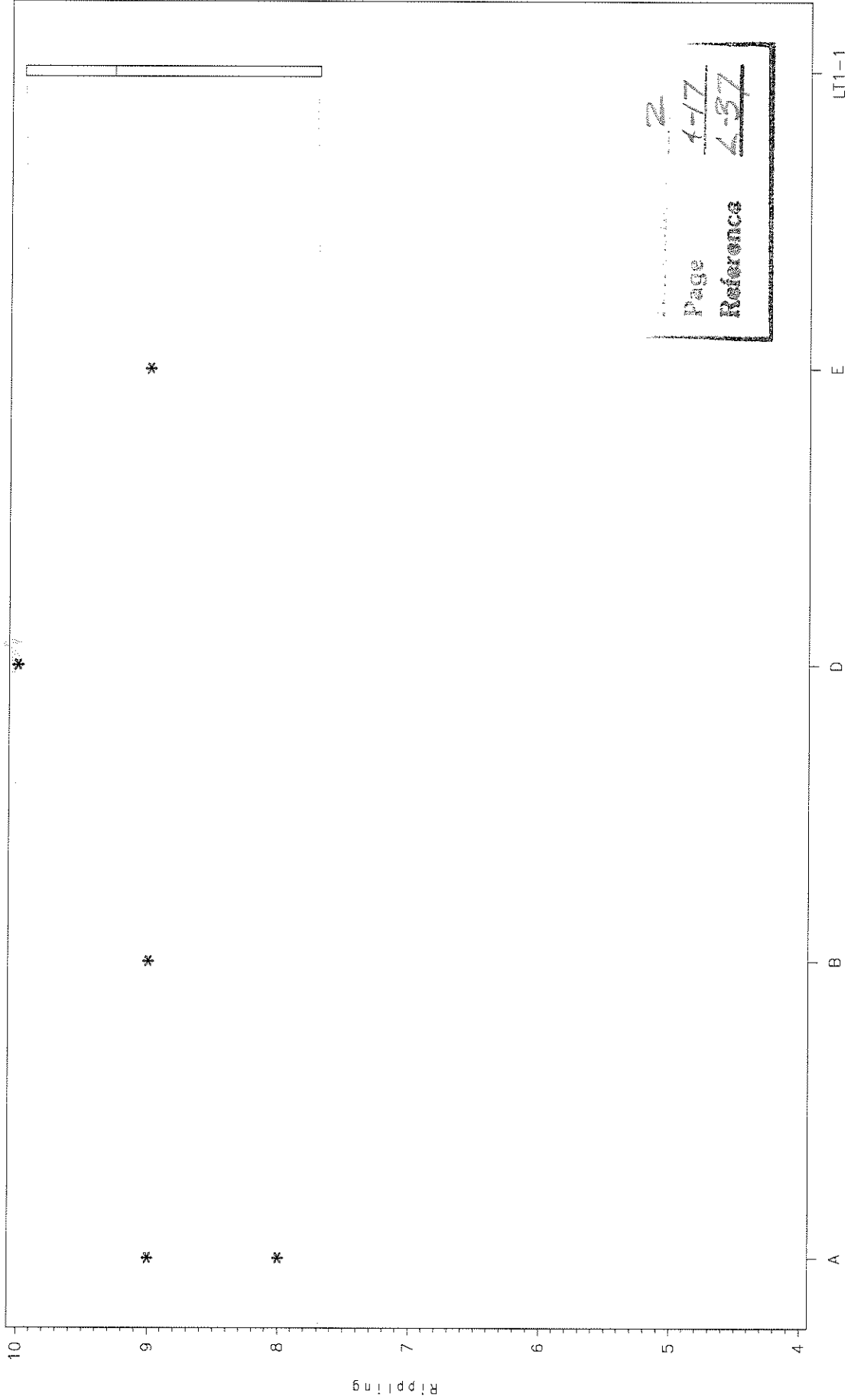
Pinion Ridging Industry Pooled S.D. = 0.3430



Data Group

L-37 Lubricated Hardware, Pinion Batch V1L686/P4L626A
Reference Oil LT1-1
Test Target Data Set and Shewart Severity Limits

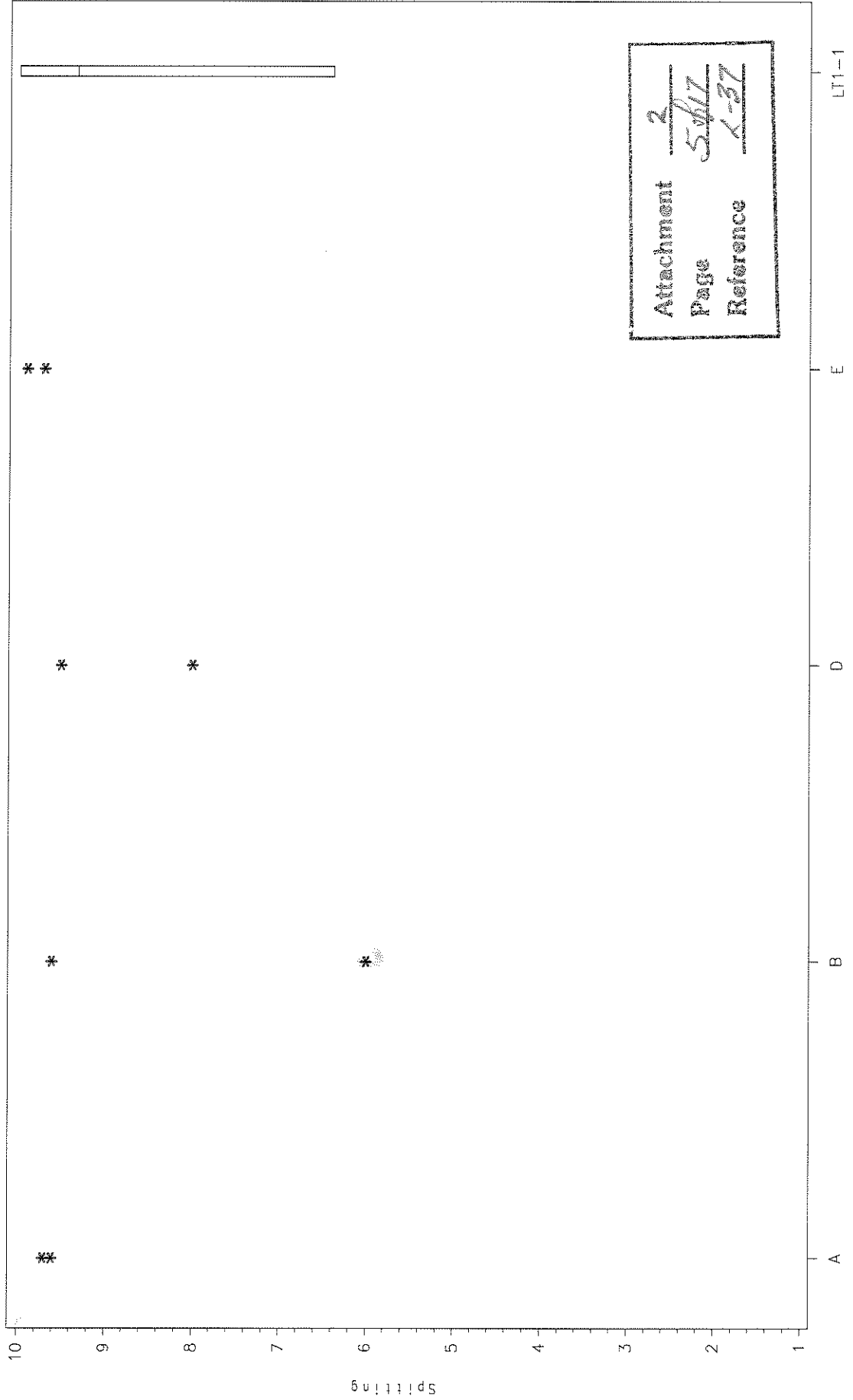
Pinion Rippling, Industry Pooled S.D. = 0.4616



Data Group

L-37 Lubrified Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT1-1
 Test Target Data Set and Shewart Severity Limits

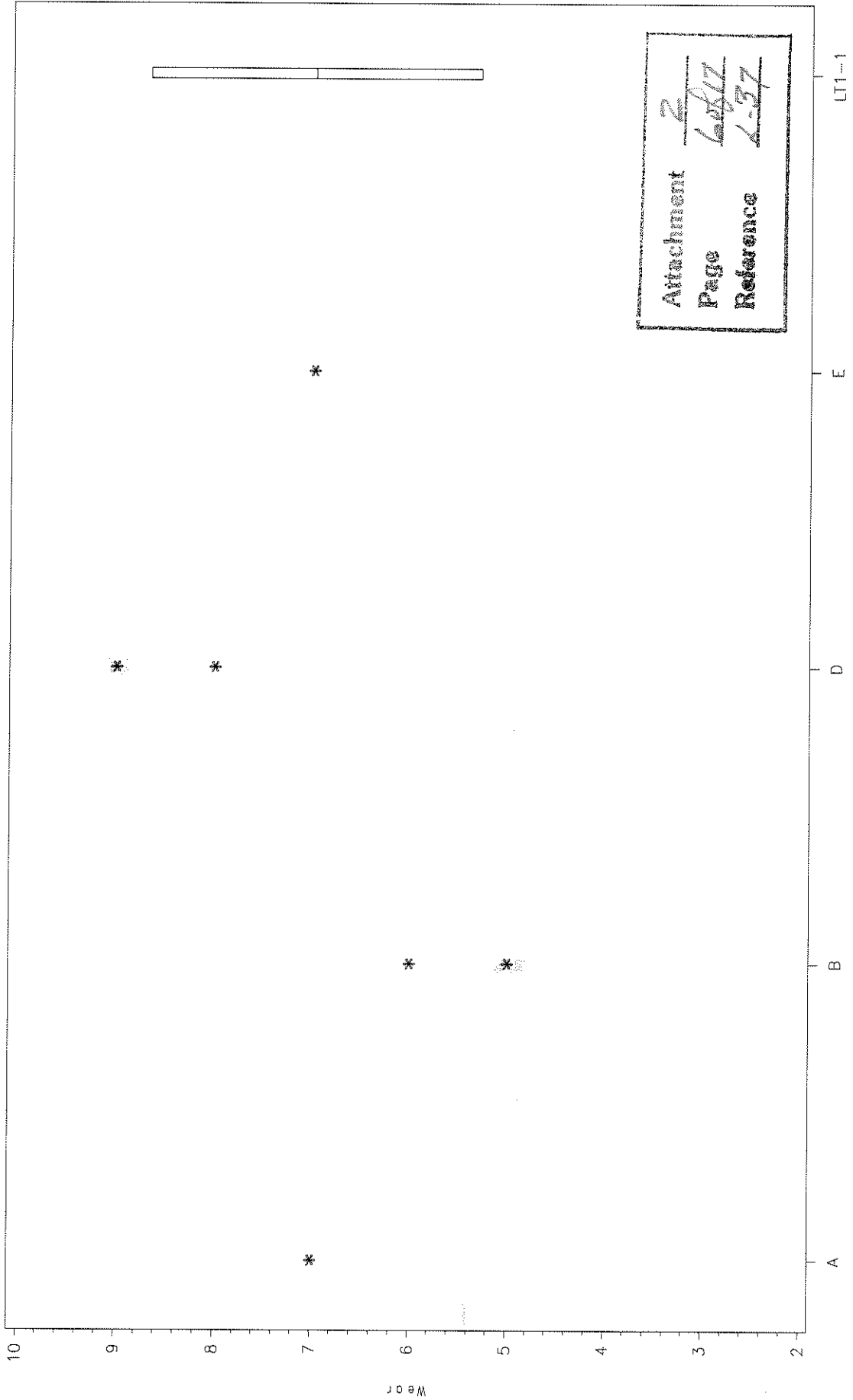
Pinion Spitting, Industry Pooled S.D. = 0.6976



Attachment 2
 Page 5/17
 Reference L-37

L-37 Lubricated Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT1-1
 Test Target Data Set and Shewart Severity Limits

Ring Wear, Industry Pooled S.D. = 0.9392

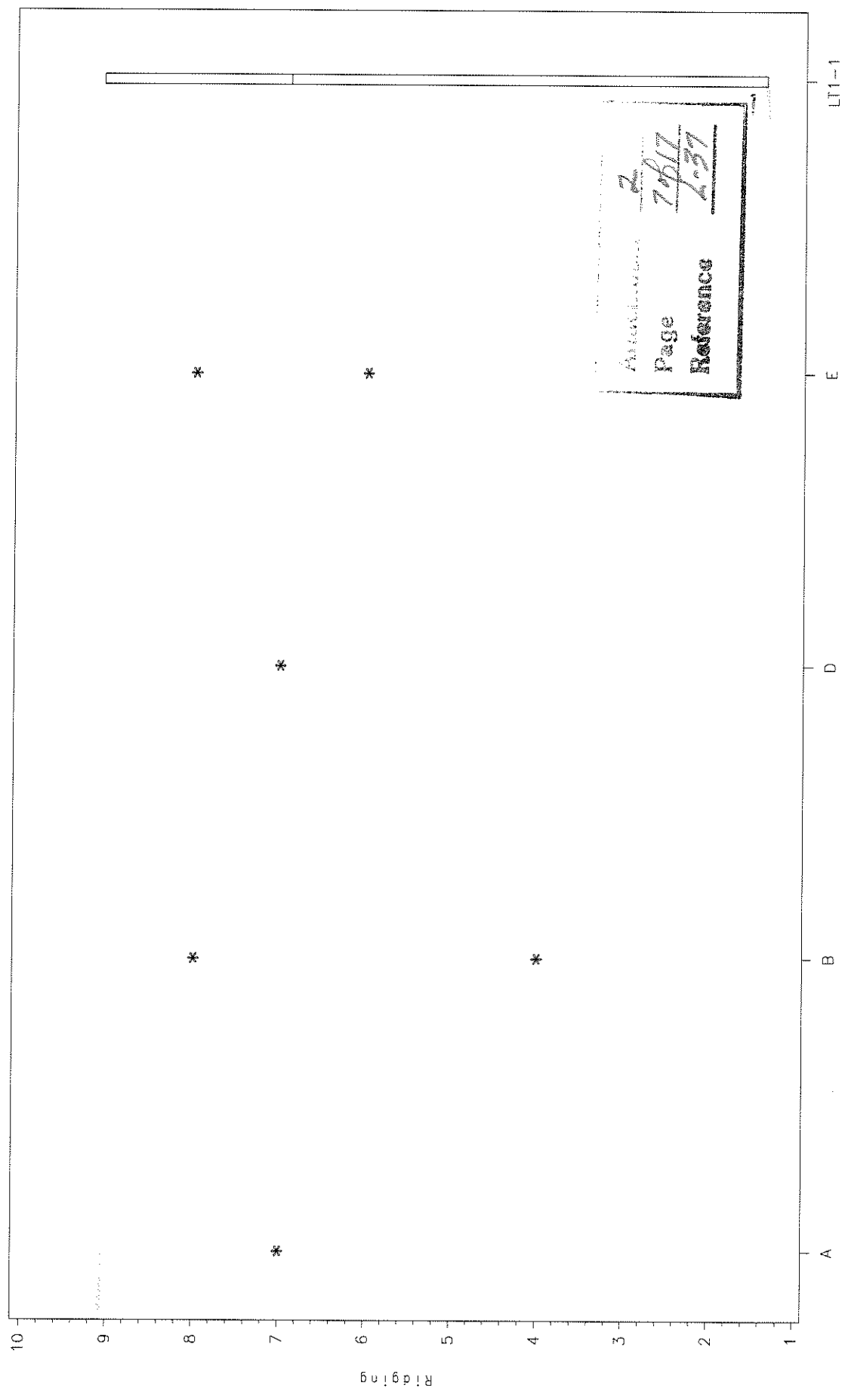


Attachment 2
 Page 6 of 17
 Reference 4-37

Data Group

L-37 Lubrified Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT1-1
 Test Target Data Set and Shewart Severity Limits

Ring Ridging, Industry Pooled S.D. = 0.5198



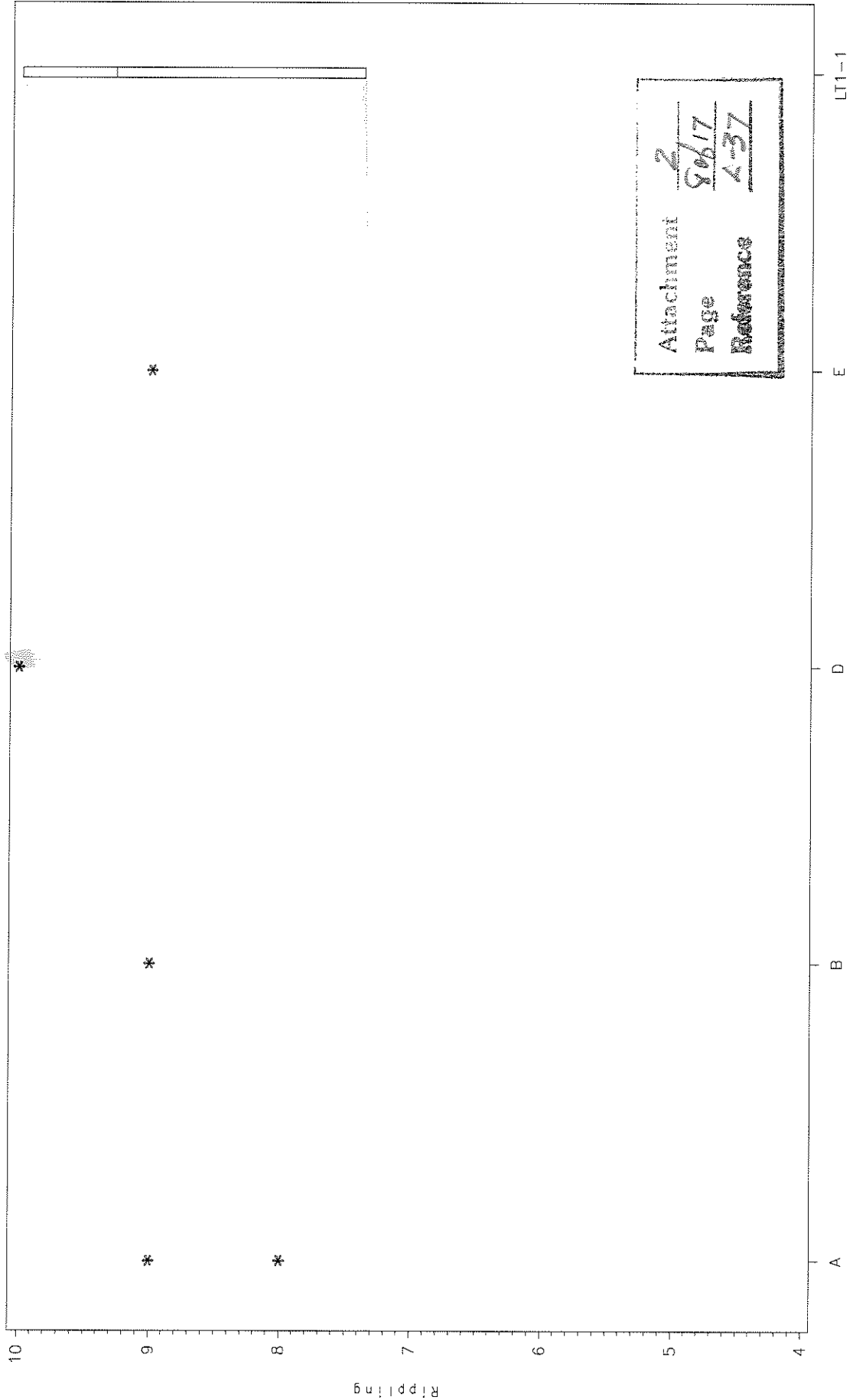
Data Group

LT1-1

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
Reference Oil LT1-1

Test Target Data Set and Shewart Severity Limits

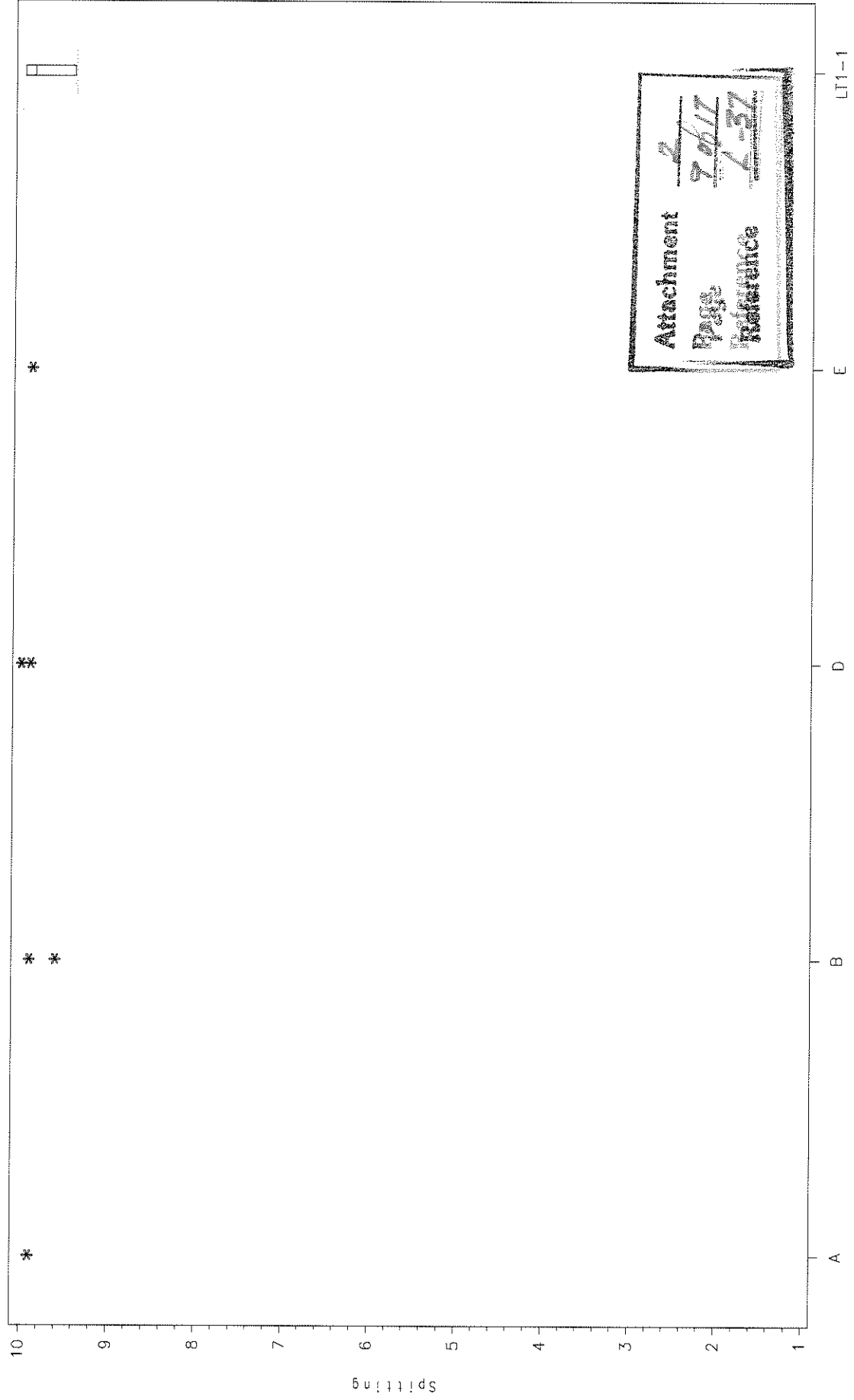
Ring Rippling, Industry Pooled S.D. = 0.5240



Attachment 2
Page 80617
Reference A-37

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT1-1
 Test Target Data Set and Shewart Severity Limits

Ring Spitting, Industry Pooled S.D. = 0.3080

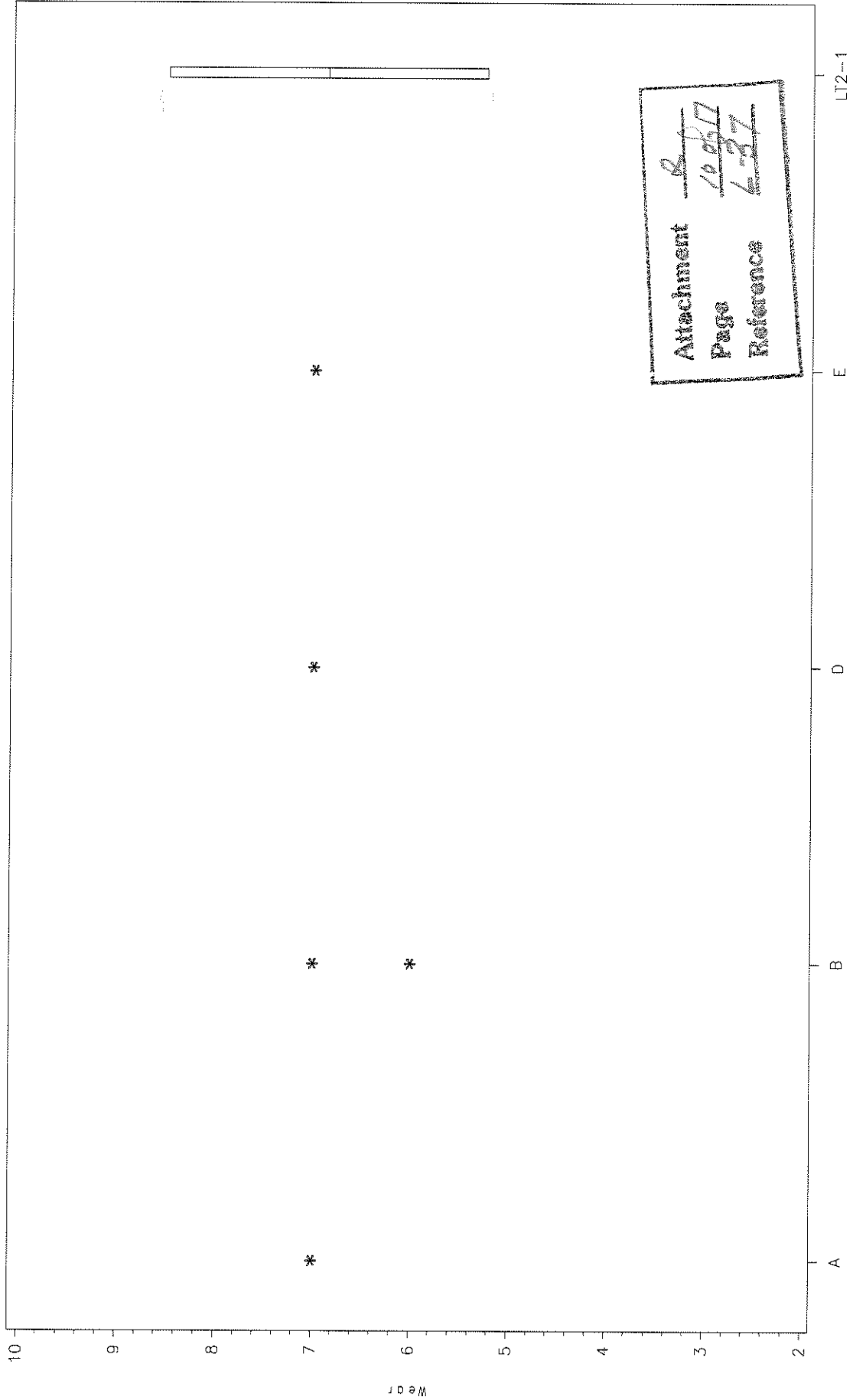


Data Group

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
Reference Oil LT2-1

Test Target Data Set and Shewart Severity Limits

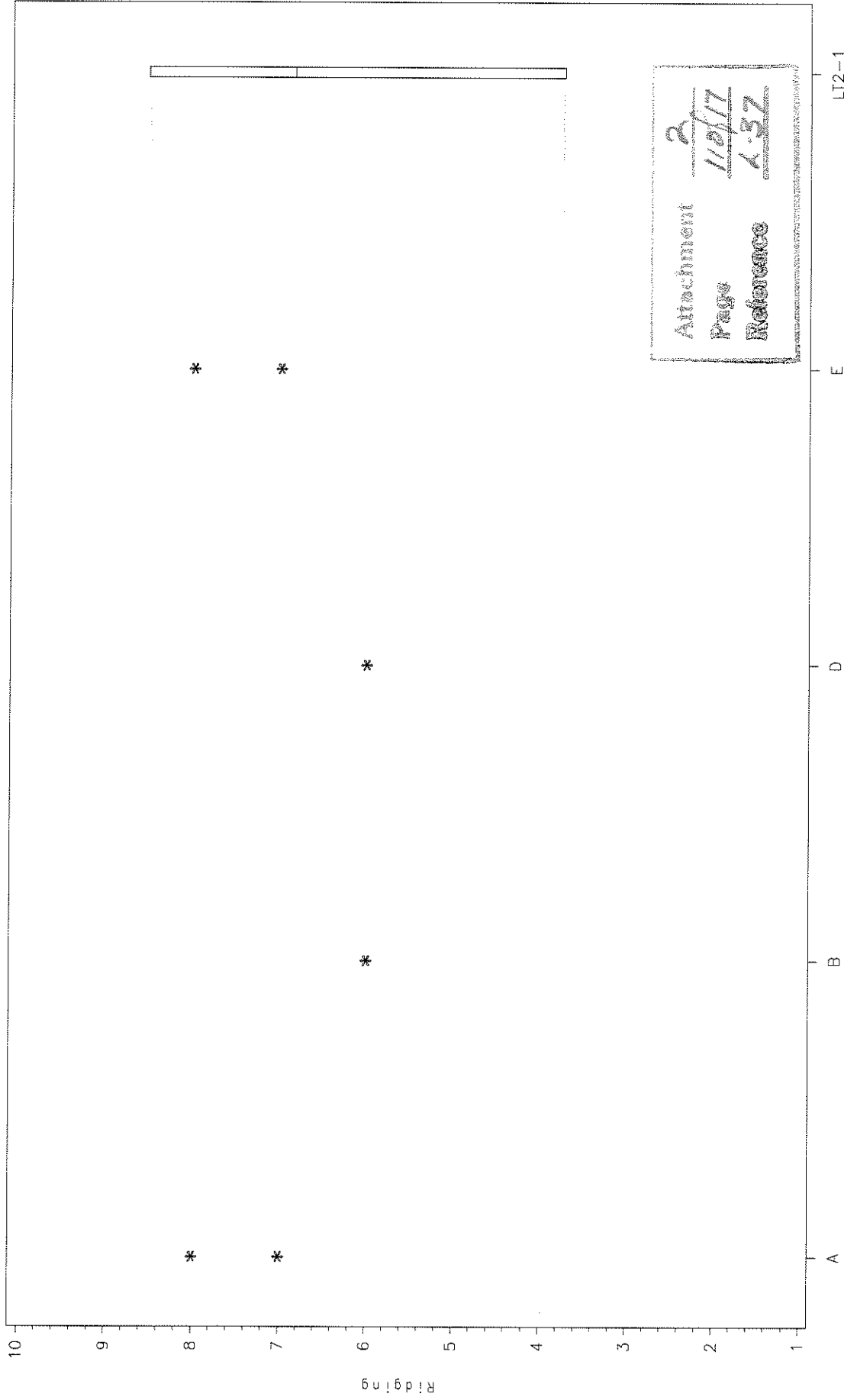
Pinion Wear, Industry Pooled S.D. = 0.905



Attachment 8-17
Page 10 of 17
Reference L-37

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1
 Test Target Data Set and Shewart Severity Limits

Pinion Ridging, Industry Pooled S.D. = 0.3430

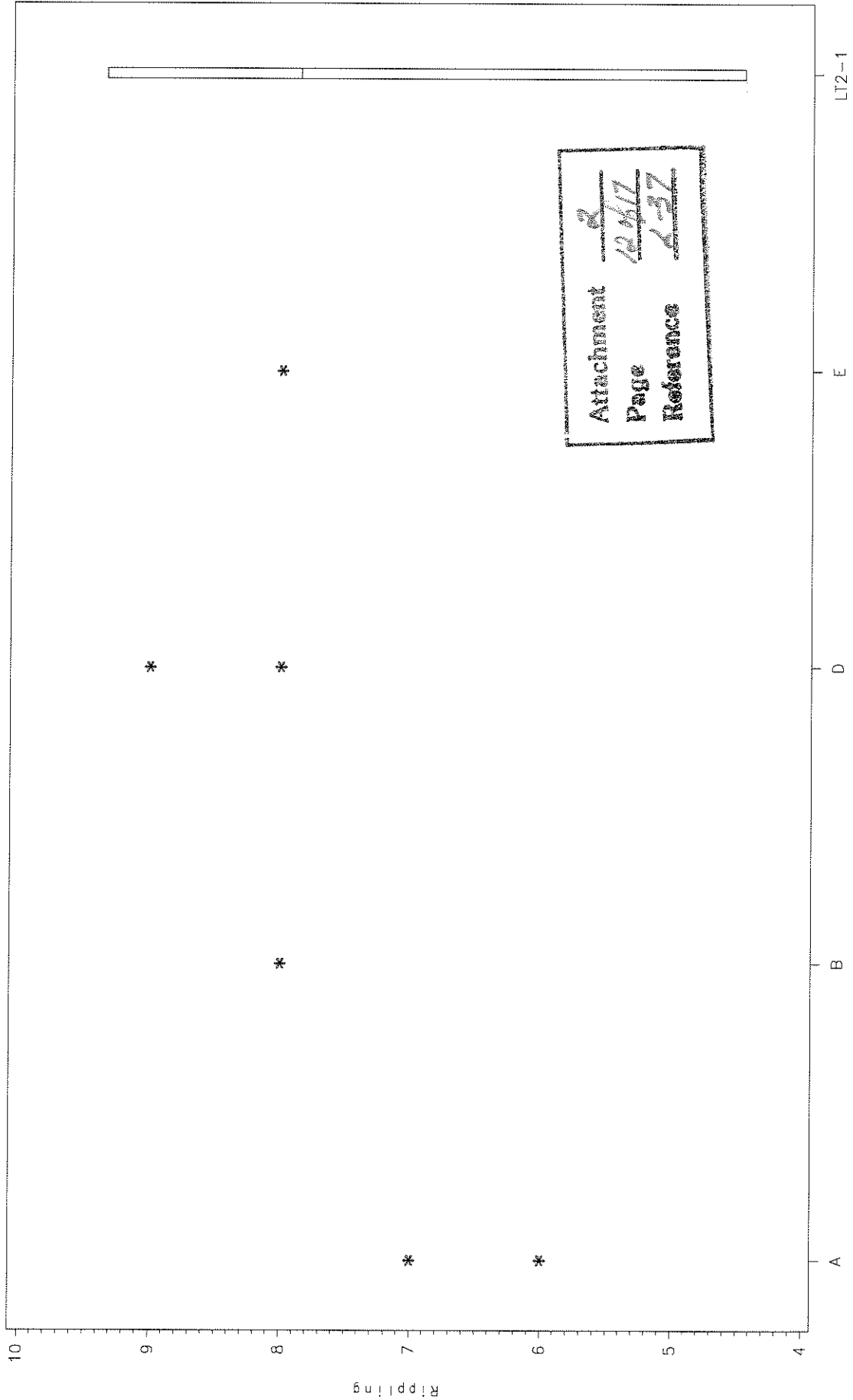


Attachment 2
 Page 10/17
 Reference L-37

Data Group

L-37 Lubricated Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1
 Test Target Data Set and Shewart Severity Limits

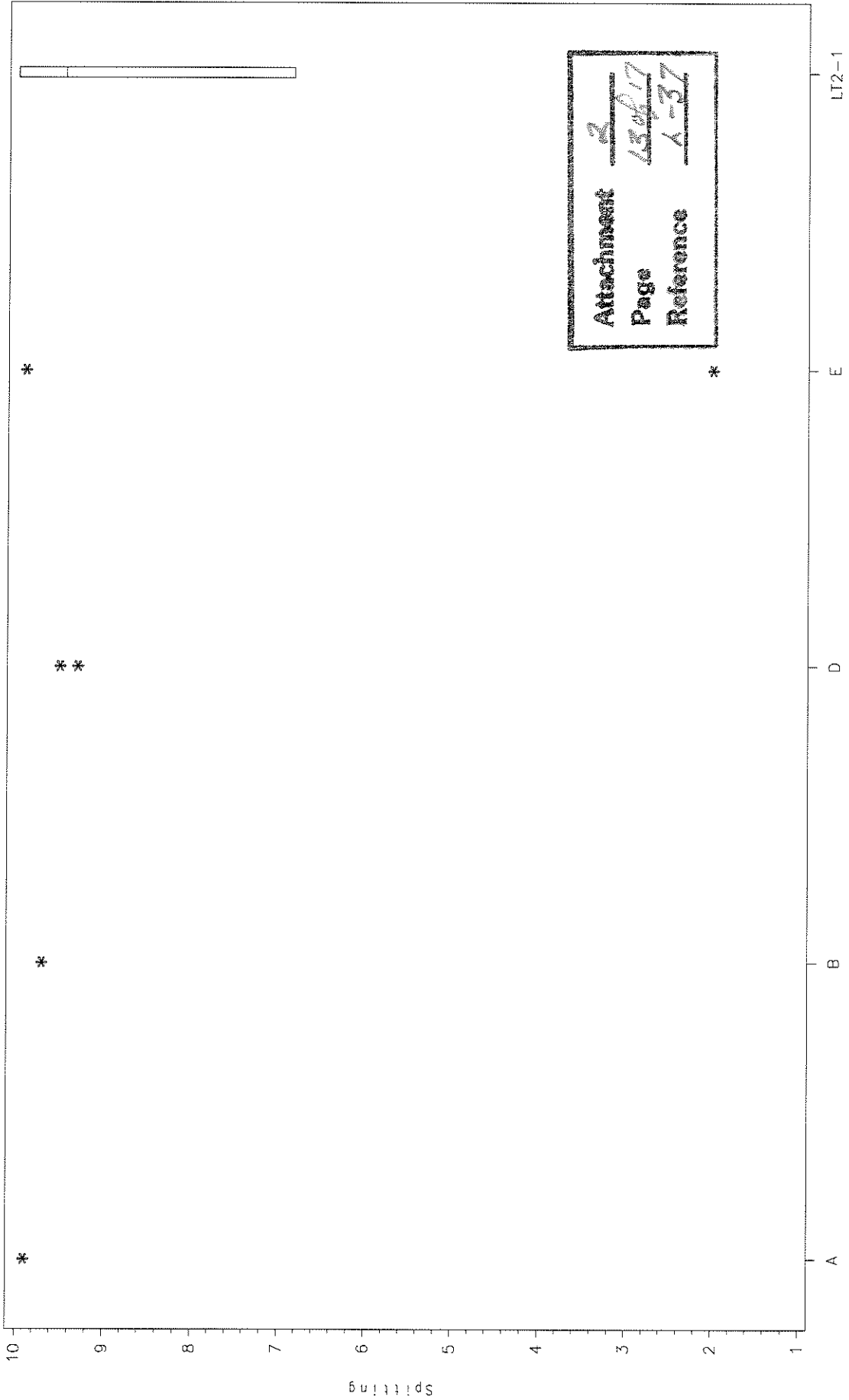
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Data Group

L-37 Lubricated Hardware, Pinion Batch V1L686/P4L626A
Reference Oil LT2-1
Test Target Data Set and Shewart Severity Limits

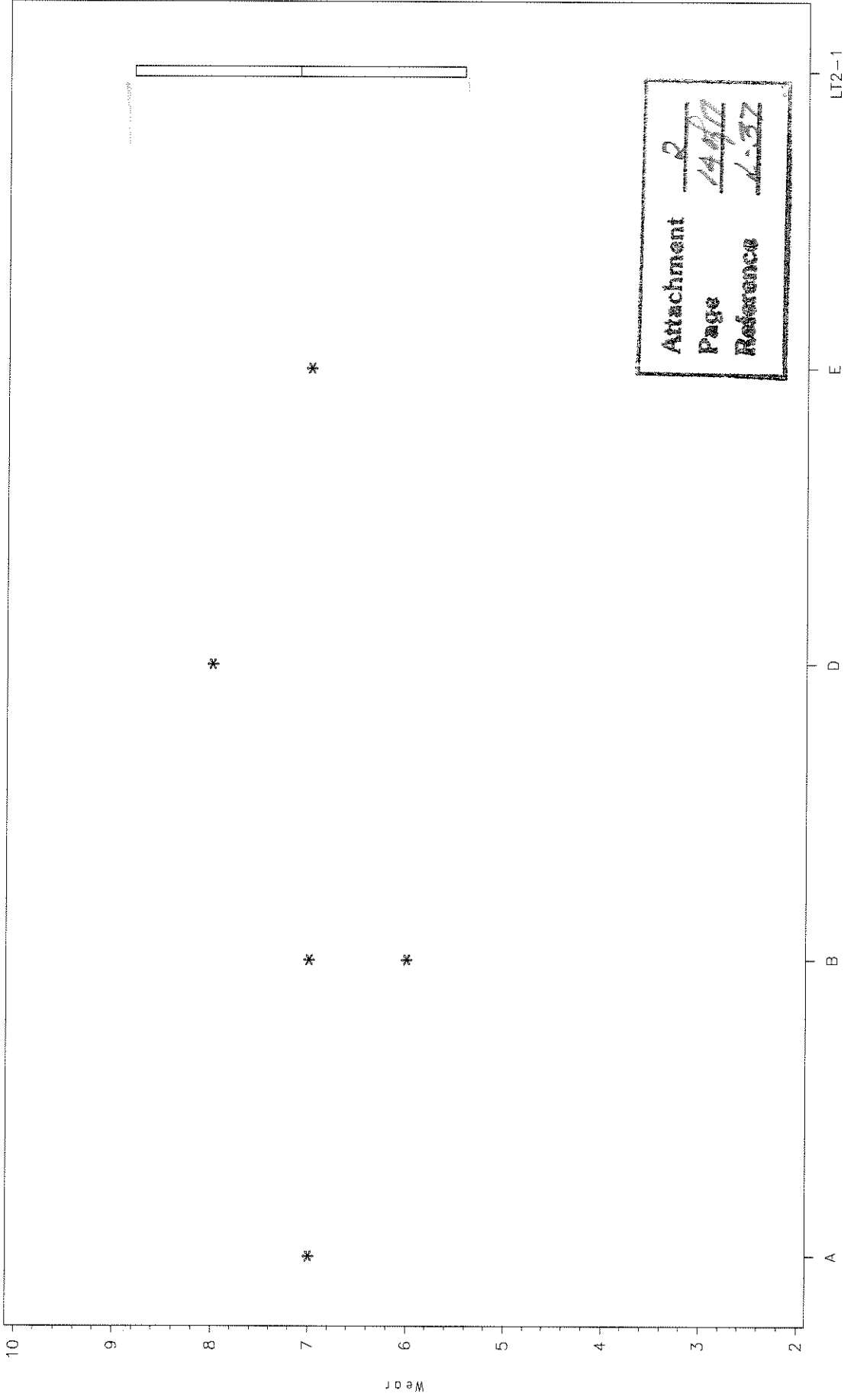
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Data Group

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1
 Test Target Data Set and Shewart Severity Limits

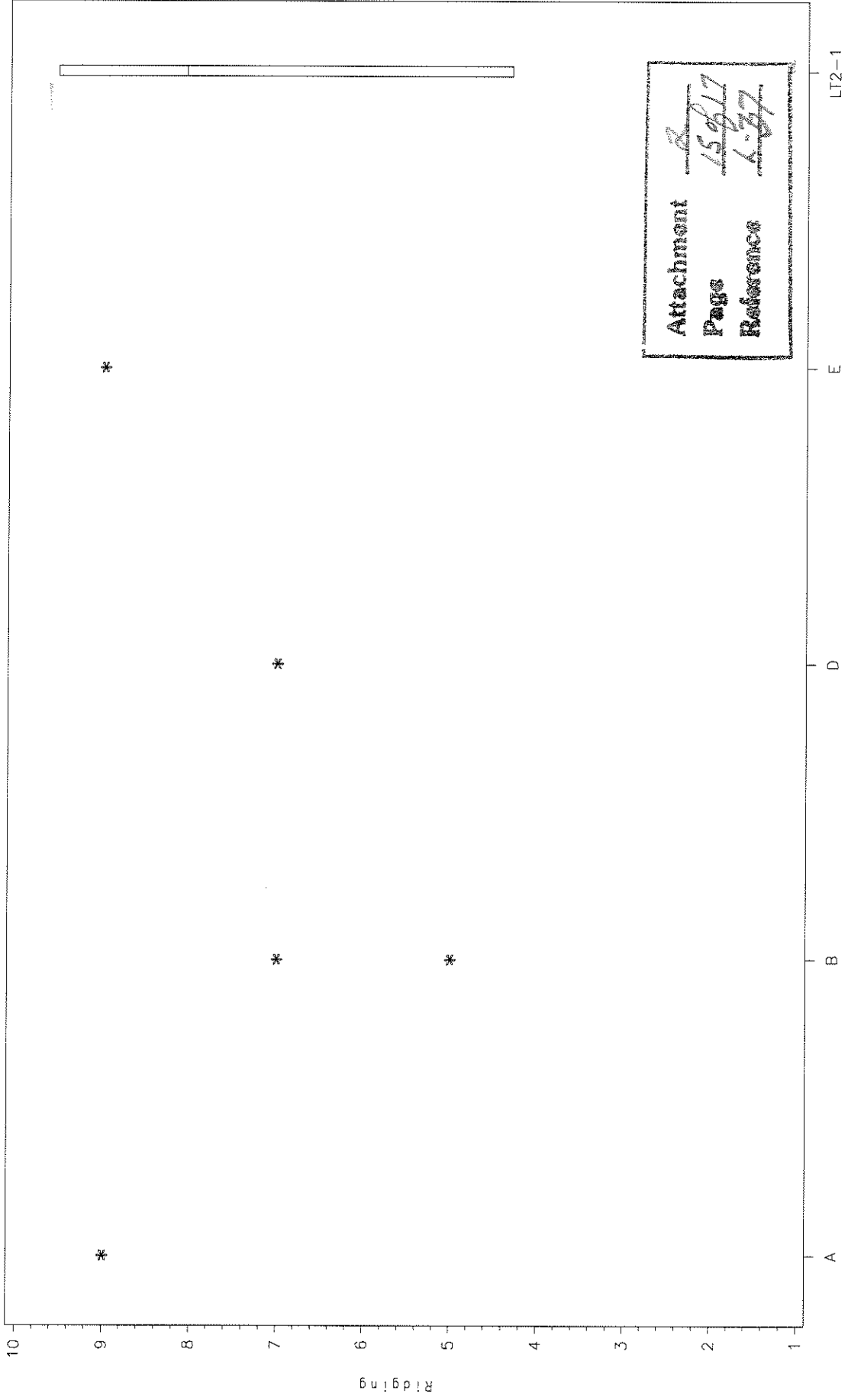
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Attachment 2
 Page 14 of 22
 Reference L-37

L-37 Lubrited Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1
 Test Target Data Set and Shewart Severity Limits

Ring Ridging, Industry Pooled S.D. = 0.5198



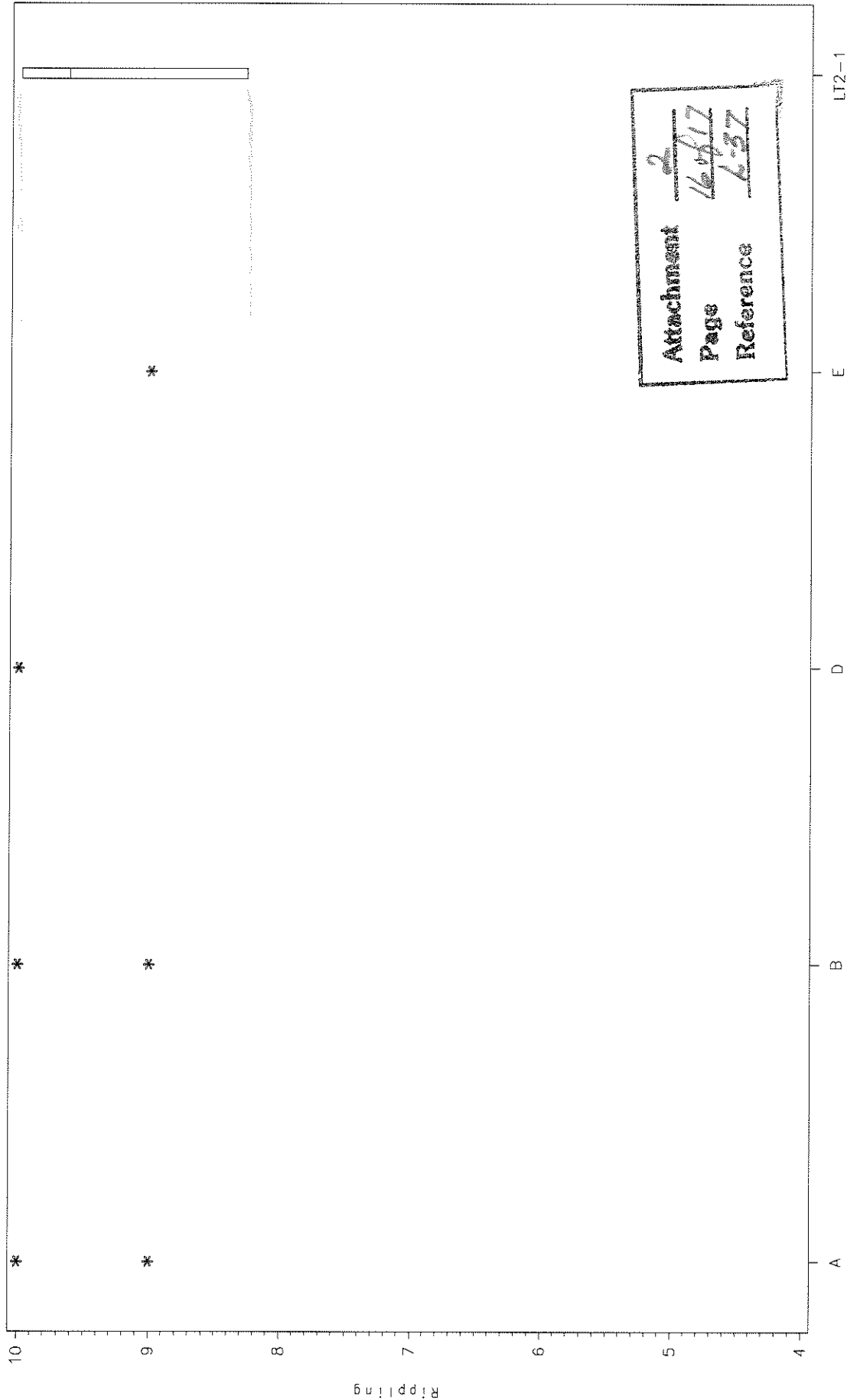
Attachment 15
 Page 15 of 17
 Reference 6-37

Data Group

L-37 Lubrified Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1

Test Target Data Set and Shewart Severity Limits

Ring Rippling, Industry Pooled S.D. = 0.5240

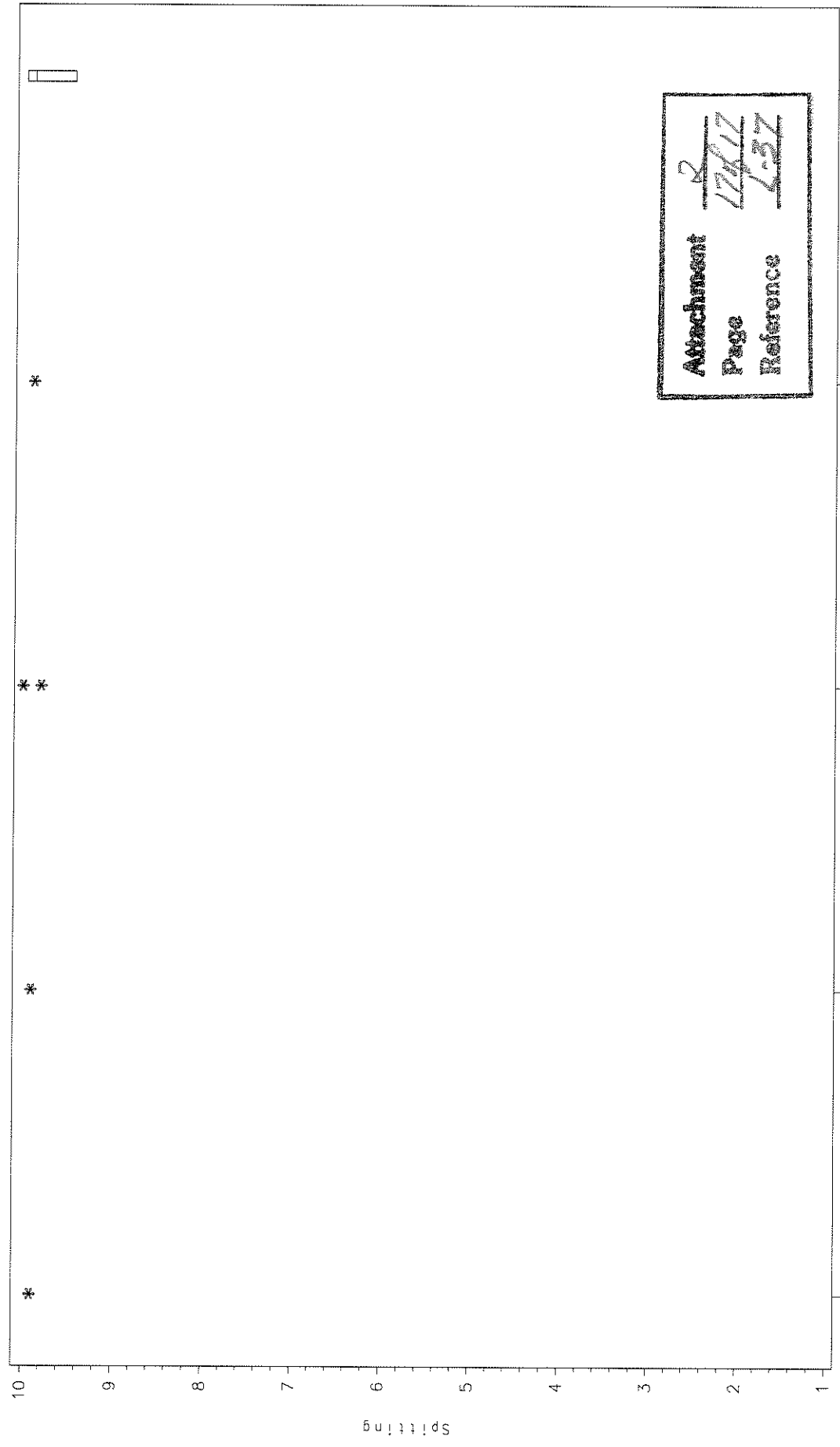


Attachment 2
 Page 16 of 17
 Reference L-37

Data Group

L-37 Lubricated Hardware, Pinion Batch V1L686/P4L626A
 Reference Oil LT2-1
 Test Target Data Set and Shewart Severity Limits

Ring Spitting, Industry Pooled S.D. = 0.3080



Attachment 2
 Page 17/17
 Reference L37

LT2-1

Data Group