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EA11003EN-00743[0]

| No. USA | VIN no. | HP data Bosch | HP data Bosch | HP data Bosch | KM (Mileage) | Engine no. | CP4 date | Customer complaint | Results of Pre- analysis | Further components for complaint | Comments activities from pre-analysis | Analysis Bosch | Analysis Bosch |
|------------|---|---|--|---|---|---|---|--|---|---|---|--|---|
| 10 | 3VWPL7AJ1AM | 02240709 | BPT1133 | 0007 | 28,756 | CJA010361 | 8/7/2009 C,C | Metal chips in fuel system | DTD - Metal wear in metering unit, pump chamber and screen | 1x change filter 1x fuel filter | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | Inappropriate fuel - 8D- report - 01/12/11 |
| 16 | 3VWTL7AJXAM | 04130210 | BPT0234 | without | 18,121 | CJA024847 | 2/16/10 S,C | Metal chips in fuel system | DTD - Metal wear in metering unit, pump chamber and screen | | | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/14/11 |
| 20 | 3VWPL7AJ7AM | 04170410 | BPT0468 | without | 7,375 | CJA056043 | 4/28/10 S,C | does not start- P0087- fuel system pressure too low | DTD - Metal wear in metering unit, pump chamber and screen | 4x Injektor | accompanying components are not analyzed because metal chips are in the system | Handover for analysis./ 8D report ~ 12/7/10 | 6D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 28 | 3VWRL7AJ9AM | 01040310 | BPT0267 | without | 8,084 | CJA046361 | 15/3/10 S,C | P0087- fuel system pressure too low | Plug of the HP pump broken- v.m DTD | 1x change filler 1x fuel filter | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 29 | 3VWPLBAJ3AM | 01080909 | BPT0250 | 0007 | 15,976 | CJA016478 | 9/17/09 C.C | P0087- fuel system pressure too low does not start - lamp on | DTD - Metal wear in metering unit, pump chamber and screen | 1x change filter 1x fuel filter | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 39 | SVWTL7AJ2AM | 04300310 | BPT0048 | without | 4,868 | CJA051563 | 4/8/10 S,C | P0087- fuel system pressure too low | DTD - Metal wear in metering unit, pump chamber and screen | 1x change filter 1x luel filter | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | |
| 50 | 3VWTL8AJ4AM | 01301009 | BPT0240 | 0007 | 787 | CJA025097 | 11/10/09 C,C | Metal chips in fuel system | no metering unit metal chips found, Filter checked - particles are suspected | 1x change filter 1x fuel filter | | Handover for analysis / 8D report - 12/7/10 | |
| 62 | 3VWRL7AJ2AM | 04190410 | BPT0430 | without | 3,112 | CJA056466 | 4/30/10 S,C | no output | no metering unit metal chips found, Filter checked - particles are suspected | 4x injectors | For further analysis the 4 injectors were given to Bosch | 8D report available about the injectors all OK 01/03/2011 | |
| 73 | SVWPL7AJ5AM | 02060210 | BPT0909 | without | 10.234 | CJA041107 | 2/17/10 S,C | Metal chips in fuel system | no metering unit metal chips found, Filter checked - particles are suspected | 1x change filter 1x fuel filter | | Handover for analysis / 8D report - 12/7/10 | No defect found - 8D report 03/25/11 |
| 81 | 3VWPL7AJ4AM | 04240909 | BPT0839 | 0007 | 15,542 | CJA019335 | 10/5/09 C.C | P0087- fuel system pressure too low does not start - lamp on | DTD - Metal wear in metering unit, pump chamber and screen | | | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 82a | 3VWRL7AJXAM | 04240609 | BPT0400 | 0007 | 15,293 | CJA005671 | 6/30/09 C,C | P0087- and metal chips in system | DTD - Metal wear in metering unit, pump chamber and screen | 1 | P0087 | Handover for analysis / 8D report - 12/7/10 | Deposits - inappropriate fuel -8D report - 01/12/11 |
| 83 | 3VWPL7AJ1AM | 02051109 | BPT1352 | 0007 | 2,931 | CJA026490 | 17/11/09 C.C | Does not start - electr. faul | DTD - Metal wear in metering unit, pump chamber and screen | | | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 84 | 3VWTL7AJXAM | 01090110 | BPT1242 | without | 12,389 | CJA035025 | 1/20/10 S.C | P0087- fuel system pressure too low -5 fault | no metering unit metal chips found, Filter checked - particles are suspected | | l = 2 | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 85 | 3VWAL8AJ4AM | 04110509 | BPT0798 | 0006 | 22,726 | CJA003401 | 5/27/09 C,C | does not start - lamp on | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 86 | WVWDM7AJ4AV | 01050110 | BPT1386 | without | 8,953 | CJA033742 | 1/14/10 S.C | P0087- fuel system pressure too low metal chips in the filter | DTD - Metal wear in metering unit, pump chamber and screen | | | Handover for analysis / BD report - 12/7/10 | 8D report-DTD accepted by Bosch - corrective measures de- ployed - 1/13/11 |
| 88 | 3VWAL7AJ7AM | 02280410 | BPT1037 | without | 23 | CJA056684 | 4/30/10 S,C | P0087- fuel system pressure too low | no metering unit metal chips found. Filter checked - particles are suspected | | | Handover for analysis / 8D report - 12/7/10 | No defect found - 8D report 01/25/11 |
| 89 | 3VWAL7AJ8AM | 01170909 | BPT1336 | 0007 | 20,922 | CJA017951 | 9/24/09 C.C | Metal chips in fuel system, P013B | DTD - Metal wear in metering unit, pump chamber and screen | | For further analysis the 4 injectors were given to Bosch | 8D report available about the injectors all OK 01/03/2011 | Deposits - inappropriate fuel -8D report - 01/12/11 |
| 90 | 3VWAL7AJXAM | 02151009 | BPT0930 | 0007 | 7,684 | CJA023120 | 10/27/09 C.C | no output | no metering unit metal chips found, Filter checked - particles are suspected | 4x injectors | Handover for analysis / 8D report - 12/7/10 | 8D report available about the injectors all OK 01/03/2011 | No defect found - HP pump - 8D report - 01/25/11 |
| | USA 10 16 20 28 29 39 50 62 73 81 82 83 83 83 83 83 83 83 83 83 83 83 83 83 | USAVIN no.103VWPL7AJTAM163VWPL7AJTAM163VWPL7AJTAM203VWPL7AJTAM283VWPL7AJTAM293VWPL7AJTAM393VWPL7AJAM393VWTL7AJZAM623VWPL7AJZAM623VWPL7AJAAM813VWPL7AJAAM823VWPL7AJAAM833VWPL7AJAAM843VWPL7AJAAM853VWAL8AJ4AM863VWAL7AJAAM | USA VIN no. HP data Bosch 10 3VWPL7AJTAM 02240709 16 3VWPL7AJTAM 04130210 20 3VWPL7AJTAM 04130210 20 3VWPL7AJTAM 04170410 28 3VWPL7AJTAM 01040310 29 3VWPL7AJAM 01060909 30 3VWPL7AJZAM 04300310 50 3VWPL7AJZAM 04300310 51 3VWPL7AJZAM 04300310 62 3VWPL7AJZAM 04300310 63 3VWPL7AJZAM 04300310 64 3VWPL7AJZAM 042060210 81 3VWPL7AJAAM 04240909 82a 3VWPL7AJAAM 04240609 83 3VWPL7AJAAM 02051109 84 3VWRL7AJAAM 01090110 85 3VWAL8AJAAM 011050110 86 3VWAL7AJAAM 02280410 89 3VWAL7AJBAM 01170909 | USAVIN no.HP data BoschHP data Bosch103VWPL7AJ1AM02240709BPT1133163VWTL7AJXAM04130210BPT0234203VWPL7AJ7AM04170410BPT0468283VWRL7AJ9AM01040310BPT0267293VWPLBAJ3AM01080909BPT0250393VWTL7AJ2AM04300310BPT0240623VWRL7AJ2AM04300310BPT0240623VWRL7AJ2AM04190410BPT0430633VWPL7AJ5AM02060210BPT0430643VWRL7AJ4AM04240909BPT0430813VWPL7AJ4AM04240609BPT040082a3VWRL7AJAAM02051108BPT1352843VWRL7AJXAM01090110BPT1242853VWAL8AJ4AM04110509BPT0798863VWAL7AJ7AM02280410BPT1336883VWAL7AJ7AM02280410BPT1336 | USA VIN no. HP data Bosch HP data Bosch HP data Bosch 10 3VWPL7AJTAM 02240709 BPT1133 0007 16 3VWTL7AJXAM 04130210 BPT0234 without 20 3VWPL7AJ7AM 04170410 BPT0267 without 28 3VWRL7AJ9AM 01040310 BPT0267 without 29 3VWRL7AJ2AM 01080909 BPT0267 without 50 3VWRL7AJ2AM 04300310 BPT0260 0007 62 3VWRL7AJ2AM 04300310 BPT0240 0007 62 3VWRL7AJ2AM 04300310 BPT0240 0007 62 3VWRL7AJ2AM 04190410 BPT0400 0007 63 3VWRL7AJ3AM 02060210 BPT0839 0007 64 3VWRL7AJ4AM 04240609 BPT0839 0007 63 3VWRL7AJ4AM 02051109 BPT1352 0007 64 3VWRL7AJAAM 01090110 BPT1242 without 65 < | USA VIN no. HP data Bosch HP data Bosch | USA VIN no. HP data Bosch HP data Bosch MP data Bosch MP data Bosch MM (Mileage) Engine no. 10 3VWPL7AJIAM 02240708 BPT1133 0007 28.756 CJA010361 16 3VWPL7AJXAM 04130210 BPT0234 without 18.121 CJA024847 20 3VWPL7AJ7AM 04170410 BPT0267 without 7.375 CJA0366043 28 3VWPL7AJ7AM 01040310 BPT0267 without 4.806 CJA046361 29 3VWPL8AJ3AM 01060909 BPT0260 0007 15.976 CJA016478 39 3VWTL7AJ2AM 04300310 BPT0240 0007 7.87 CJA025097 62 3VWRL7AJ2AM 04300310 BPT0240 0007 7.87 CJA025097 61 3VWRL7AJAAM 01301009 BPT0240 0007 7.87 CJA025097 62 3VWRL7AJAAM 04240909 BPT0350 0007 15.542 CJA01107 81 3VWPL7AJAAM <t< td=""><td>USA VIN no. HP data Basch HP data Basch HP data Basch KM (Mileage) Engine no. CP4 date 10 3VWPL7AJTAM 02240709 BPT1133 0007 28,756 CJA010361 87/2009 C.C 16 3VWPL7AJTAM 04130210 BPT0234 without 118,121 CJA024847 2/16/10 S.C 20 3VWPL7AJTAM 04170410 BPT0267 without 7.375 CJA058043 428/10 S.C 28 3VWPL7AJFAM 01040310 BPT0267 without 5.084 CJA046361 15/3/10 S.C 29 3VWPLBAJBAM 01060309 BPT0267 without 4.888 CJA051563 4/8/10 S.C 30 3VWPLBAJBAM 04300310 BPT0246 without 13.97 CJA051563 4/8/10 S.C 30 3VWPLFAJEAM 04300310 BPT0246 without 13.112 CJA05507 11/100 S.C 31 3VWPL7AJEAM 04190410 BPT0490 0007 15.542 CJA0141107 217/17 S.C 31<</td><td>URA VIN no. HP data Boech HP data Boech</td><td>URA URA no. UP data Boot Product Boot <</td><td>USA VIN no. Beeck Her alse Book Min age (Min age) Engine no. (CHA date CP4 date CURRENT CONDUCT Results of Pr- analysis Future components for companing 10 2VVPE7.X1/AM 02240709 BFT0294 without 18, 121 CUA01004 17/2008 C.C. Med chaps in the system DTD - Medial wear in motioning unit, pump chamber and scener 17.356 20 3VVPE7.X1/AM 04130210 BFT0294 without 18, 121 CUA026447 216/10.6,C. Medial chaps in the system DTD - Medial wear in motioning unit, pump chamber and scener 18.586/10.6 20 3VVPE7.X1/AM 0104330 BFT0297 without 8.686 CLA035631 159/10.6,C. Media chaps in the system DTD - Medial wear in motioning unit, pump chamber and scener 11.4 shape filter '1 the system 20 3VVPE7.X1/XAM 10104330 BFT0267 without 8.686 CLA035631 159/10.6,C. PD027- Medial wear in motioning Units chamber and scener 11.4 shape filter '1 the shape filter '1 th</td><td>UNA UNA NO UP data book UP data Monetary book Engine no Monetary Moneta</td><td>VIN VIN no. Matched Basel Matched Matched Basel Matched Matched Basel <</td></t<> | USA VIN no. HP data Basch HP data Basch HP data Basch KM (Mileage) Engine no. CP4 date 10 3VWPL7AJTAM 02240709 BPT1133 0007 28,756 CJA010361 87/2009 C.C 16 3VWPL7AJTAM 04130210 BPT0234 without 118,121 CJA024847 2/16/10 S.C 20 3VWPL7AJTAM 04170410 BPT0267 without 7.375 CJA058043 428/10 S.C 28 3VWPL7AJFAM 01040310 BPT0267 without 5.084 CJA046361 15/3/10 S.C 29 3VWPLBAJBAM 01060309 BPT0267 without 4.888 CJA051563 4/8/10 S.C 30 3VWPLBAJBAM 04300310 BPT0246 without 13.97 CJA051563 4/8/10 S.C 30 3VWPLFAJEAM 04300310 BPT0246 without 13.112 CJA05507 11/100 S.C 31 3VWPL7AJEAM 04190410 BPT0490 0007 15.542 CJA0141107 217/17 S.C 31< | URA VIN no. HP data Boech HP data Boech | URA URA no. UP data Boot Product Boot < | USA VIN no. Beeck Her alse Book Min age (Min age) Engine no. (CHA date CP4 date CURRENT CONDUCT Results of Pr- analysis Future components for companing 10 2VVPE7.X1/AM 02240709 BFT0294 without 18, 121 CUA01004 17/2008 C.C. 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INFORMATION Redacted PURSUANT TO THE FREEDOM OF

INFORMATION ACT (FOIA), 5 U.S.C. 552(B)(6)

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EA11003EN-00743[1]

| 19 | 91 | 3VWRL7AJ0AM | 04130210 | BPT0347 | ohne | 11.335 | CJA042927 | 2/26/10 S,C | P0087/P0088- fuel system pressure too low - 5 faults | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 8D report- DTD vaccepted by Bosch - corrective measures de- ployed - 1/14/11 |
|---------|-----|-------------|------------------|------------------|------------------|-----------|------------|--------------|--|--|--|--|---|---|
| 20 | 92 | WVWNM7AJ9AW | 01171009 | BPT0891 | 0007 | 20,902 | CJA023595 | 10/29/09 C,C | Metal chips in fuel system | no metering unit metal chips found. Filter checked - particles are suspected | 2x injectors | For further analysis the 2 injectors were given to Bosch | 8D report available about the injectors all OK 01/03/2011 | HP pump - no delect ventied - 8D report 1/25/2011 |
| Ser. no | No. | VIN no. | HP data Bosch | HP data Bosch | HP data Bosch | (Mileage) | Engine no. | CP4 date | Customer complaint | Results of Pre- analysis | Further components for complaint | Comments activities from pre-analysis | Analysis Bosch | Analysis Bosch |
| 21 | 93 | 3VWRL7AJ5AM | 02020909 | BPT0447 | 0007 | 19,355 | CJA015510 | 9/12/09 C.C | | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors 1x dis- tribution board 1x holder inline EFP | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | Deposits - inappropriate fuel-8D report - 01/12/11 |
| 22 | 94 | 3VWAL7AJ0AM | 01090509 | 8PT1015 | 0006 | 42,541 | CJA003123 | 5/25/09 C.C | Engine does not start | DTD - Metal wear in metering unit, pump chamber and screen | | | Handover for analysis / 8D report - 12/7/10 | Deposits - Inappro- priate fuel-8D report - 01/12/11 |
| 23 | 95 | 3VWRL7AJ3AM | 02190110 | BPT0056 | without | 9,280 | CJA037049 | 1/29/10 S,C | P0087- fuel system pressure too low does not start - lamp on | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | Deposits - inappropriate fuel-8D report - 01/12/11 |
| 24 | 96 | 3VWRL7AJ6AM | 01120509 | BPT1015 | 0006 | 38,984 | CJA003834 | 6/4/09 C.C | Does not start | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 8D report-DTD vaccepted by Bosch - corrective measures de- ployed - 1/14/11 |
| 25 | 97 | 3VWRL7AJ4AM | 01180909 | BPT1167 | 0007 | 10,156 | CJA018611 | 9/30/09 C.C | Starts poorly - metal chips in the filter | no metering unit metal chips found, Filter checked - particles are suspected | 1x change lilter 1x fuel filter | | Handover for analysis / 8D report - 12/7/10 | 8D report Corrosion deposits- fuel OK -02/01/11 |
| 26 | 98 | 3VWTL7AJ9AM | 01301009 | BPT0900 | 0007 | 5,882 | CJA025311 | 11/10/09 C,C | P0087- tuel system pressure too low | no metering unit metal chips found, Filter checked - particles are suspected | 4x injectors, 1x pressure control valve | Pressure control valve handed over to Bosch for analysis | Handover for analysis / 8D report - 12/7/10 | No detect found - 8D report - 03/25/11 |
| 27 | 100 | 3VWTLAJ1AM6 | 4260809 | BPT0311 | 0007 | 13,694 | CJA014411 | 9/7/09 C.C | P0087- luel system pressure too low | TWS - Metallabrieb im ZME - Pumpenraum -ohne ZME angeliefert | 1x change filter 1x fuel filter | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 12/7/10 | 6D report-DTD vaccepted by Bosch - corrective measures de- ployed - 1/14/11 |
| 28 | 104 | 3VWTL7AJ3AM | 1070809 | BPT0767 | 0007 | 38,082 | CJA011934 | 8/20/09 C.C | Dismantled by changing the engine - complaint unknown | no metal chips in metering unit found. FHP pump replacement through engine replacement | | | Handover for analysis / 8D report - 12/7/10 | No defect found - 8D report - 01/25/11 |
| 29 | 82 | 3VWTL7AJ6AM | 2021009 | BPT0345 | 0007 | 8,400 | CJA020853 | 10/13/09 C.C | Leakages | no metal chips at the metering unit screen and pump chamber found | | | Handover for analysis / 8D report - 1/5/11- | No defect found - 8D report - 01/25/11 |
| 30 | 99 | 3VWRL7AJ1AM | 2180310 | BPT0433 | without | 6,996 | CJA049352 | 3/29/10 S.C | Engine does not start - P0877 | DTD - Metal wear in metering unit, pump chamber and screen | 4x injectors | accompanying components are not analyzed because metal chips are in the system | Handover for analysis / 8D report - 1/5/11- | inappropriate fuel-8D report - 01/12/11 |
| 31 | 102 | 3VWAL7AJ8AM | 4030909 | BPT0849 | 0007 | 9,551 | CJA015659 | 9/12/09 C.C | Vibration and sounds | no metal chips at the metering unit screen and pump chamber found | | | Handover for analysis / 8D report - 1/5/11- | 8D report - no defect verified - 2/1/2011 |
| 32 | 105 | 3VWTL8AJ1AM | 1150909 | BPT0169 | 0007 | 16.311 | GJA017656 | 9/23/09 C.C | Engine does not start | DTD - Metal wear in metering unit, pump chamber and screen | | 14 | Handover for analysis / BD report - 1/5/11- | 1 |

starting from 1/1/2011

| 12 | 6 | 3VWRL7AJ1AM | 2020909 | BPT0143 | 0007 | 20,859 | CJA015246 | 9/11/09 G.C | P0087-Metal chips in fuel system | DTD - Metal wear in metering unit, pump chamber and screen | Handover for analysis / BD report - 2/9/11 |
|----|---|-------------|---------|---------|---------|--------|-----------|-------------|--|---|---|
| 12 | 7 | 3VWTL71K29M | 4140708 | BPT0836 | 0005 | 32,025 | CBE008173 | 7/23/08 | Check lamp on, metal chips | Braune Partikel im ZME Raum und Sieb erkennbar | Handover for analysis / 8D report - 2/9/12 |
| 12 | 8 | 3VWAL7AJ9AM | 4190410 | BPT0483 | without | | CJA056376 | 4/29/10 | Engine does not start. spark plug check light on P0087 Metal chips | DTD - Metal wear in metering unit, pump chamber and screen | Handover for analysis / 8D report - 2/9/13 |
| 12 | 9 | 3VWAL71K69M | 1160808 | BPT0464 | 0005 | 38,705 | CBE015576 | 9/9/08 C.C | Engine does not start again - metal chips in the filter | DTD - Metal wear in metering unit, pump chamber and screen | Handover for analysis / 8D report - 2/9/14 |
| 13 | 0 | WVWDM7AJ4AV | 4090410 | BPT0086 | without | 20,283 | CJA033742 | 1/14/10 S,C | | DTD - Metal wear in metering unit, pump chamber and screen | Handover for analysis / 8D report - 2/9/15 |
| 13 | 1 | WVWMM7AJOAV | 4251109 | BPT0898 | 0007 | 8,414 | CJA029969 | 12/7/09 S.C | Engine does not start again metal chips in the filter | no metal chips at the metering unit screen and pump chamber lound | Handover for analysis / 8D report - 2/9/16 |

EA1 1003 EN-014 13101 / A5 CR high-pressure pump CP4 failure key aspects

Metering unit (MU) - O-ring damaged

<u>Cause</u>: Bosch assembly error Only day of manufacture 10/05/2008 concerned <u>Measures</u>: Changeover of process order so that lubrication is ensured and turning assembly by hand (Nov. 07) Effectiveness: 100%

Intake valve continuously open due to particles

Cause: Various particles

Measures: Bosch cleanliness program with focuses on housing, MU, cylinder head, flange, assembly Regular Q meetings with BOSCH / VW / Audi







 Effectiveness:
 approx. 60% - considerable progress with residual contamination tests and internal BOSCH failures established

 Activities:
 Residual contamination test on 25 pumps and comparison with earlier test (May 08)

 Objective:
 How did the particle quantity, type, material etc. change? -> Approach for improving the reduction in particles to 200 µm (target middle 08)

Drivetrain damage

<u>Cause</u>: Roller sluggish or blocked causing roller / cam wear. In the end stages of damage it can cause turned tappets.

Measures: Establish / check run-in conditions in the vehicle and engine plants Introduce an intensified, new test program -> Failures RB internal (01/11/2008 / 02/05/2008) 100% visual inspection of roller support with technoscope instead of magnifier for μ metal splashes (02/04/2008) 100% straightedge rotation check of roller on blade μ elevations -> jams on the roller (04/01/2008)

Sensitized 100% visual inspection of roller / tappet assembly after friction coefficient test for circumferential marks (02/20/2008)

Effectiveness: approx. 60% - unclear cases 3 x cold test 2 current field early failures

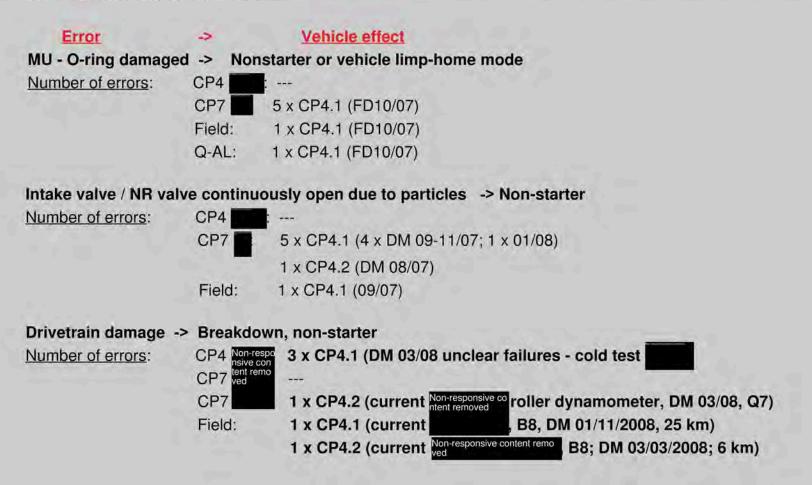
<u>Activities</u>: Optimize grinding process (embedded µ particle form Al2O3; industrial diamond) Optimize C3 coating process of roller support (major test ongoing) and roller end (frames)

EA11003EN.0147341/ A5 CR high-pressure pump CP4 major failures

Notes:

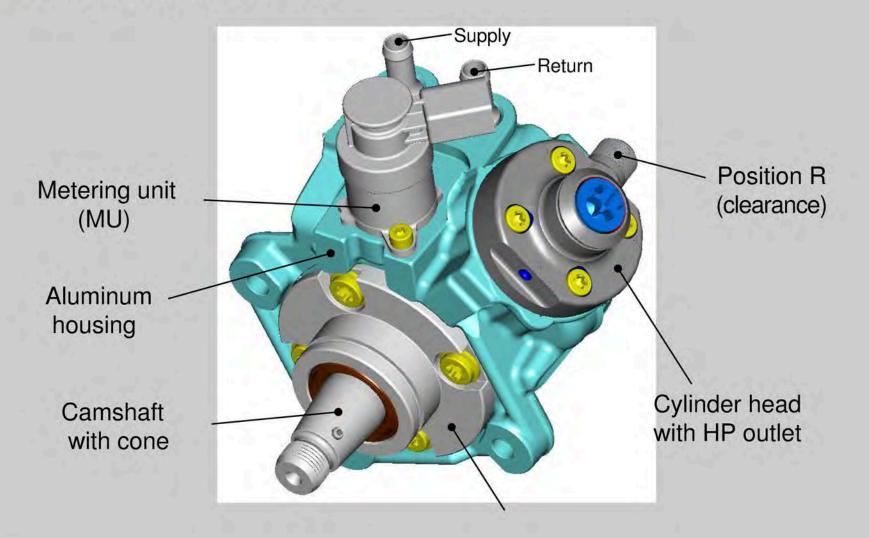
CP4.1 (single piston) for R4-TDI and CP4.2 (twin pistons) for V6-TDI (later V8- / V12-TDI with 1 CP4 per bank) DM = date of manufacture BOSCH

Audi





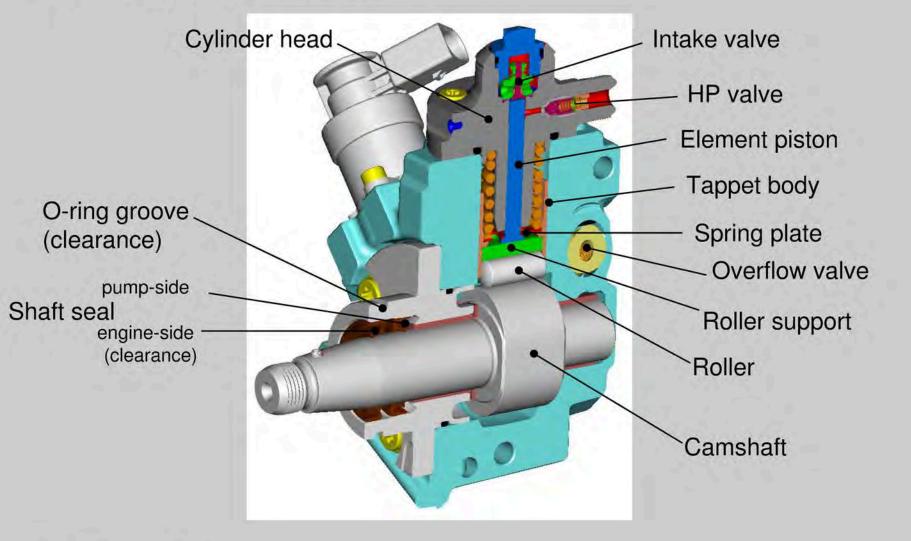
Technical information CP4.1





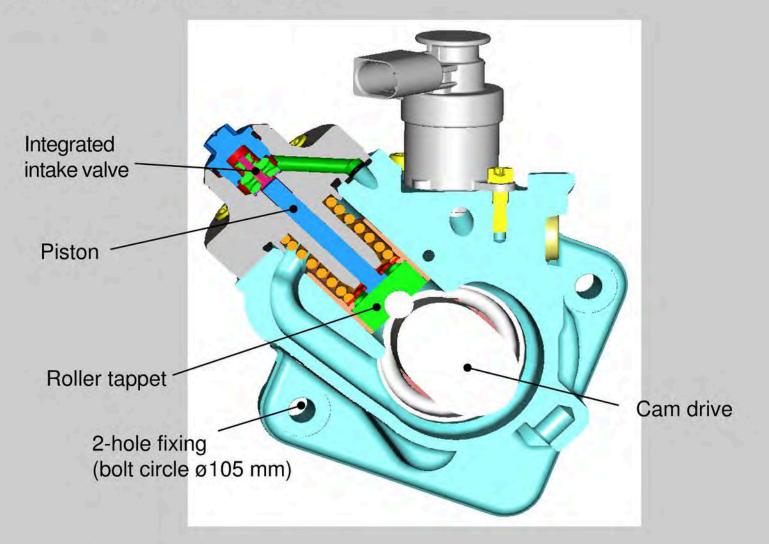


Technical information CP4.1





Technical information CP4.1



EA11003EN-01786[0] ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high pressure diesel fuel pump CP4



Failure situation V6 TDI field (CP4.2):

- Total 724 settlements (approx 80% drivetrain damage) - of which 403 settlements in

Causes / analyses:

Sluggishness of the roller in the roller support

- a) due to manufacturing deviations from Bosch (microgeometry) largely eliminated.
- b) particularly in connection with fuel peculiarities in specific markets.
- -> Robustness deficit of CP4 with regard to fuel qualities around the world.

Measures implemented:

| Straightedge check with glasses cleaning cloth | WK19/2008 |
|---|--------------------------------|
| Roller from new second supplier (defined texture = smoother surface) | WK20/2008 |
| Optimized C layer on roller support (approx. 80% effectiveness with regard to defects | WK23 / 2008 - Q monitoring (1) |
| | June 2008 |
| Further optimization (carbon holder for 2 systems) C layer roller support | WK16/2009 |
| C2 instead of C3 layer on roller end (avoid fusing) | WK21 / 2009 - Q observation (2 |
| Observation from date of manufacture of Bosch HP pump on type plate 6/1/2009 | June 2009 |

Planned measures:

Improved washing process before C coating of roller supportDec. 2009Camera system for 100% check of surface faults on roller support (subset from WK26/09) Late Jan. 2010Introduction of drivetrain anti-wear package (surface of roller, surface of roller support, play)July 2010

Further procedure:

1

Since 11/09/09 field task force for (Bosch-Audi) -> Determination of market-specific peculiarities. Initial findings:

- Striking features of fuel (FAME acidic) due to switch of fuel from B0 to B7 in mid-2009
- Damage symptoms in different than Non-responsive content removed (shaft seal worn, cam track smoothened, ...)
- Some C coating batches have high failure rates (compare production data history)
- Further detailed analyses are underway weekly task force meetings

EA11003EN-01788[0]

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Failure of high-pressure fuel pump - Non-responsive content removed Status from WK 23/09 to WK 45/09

3/26/2012

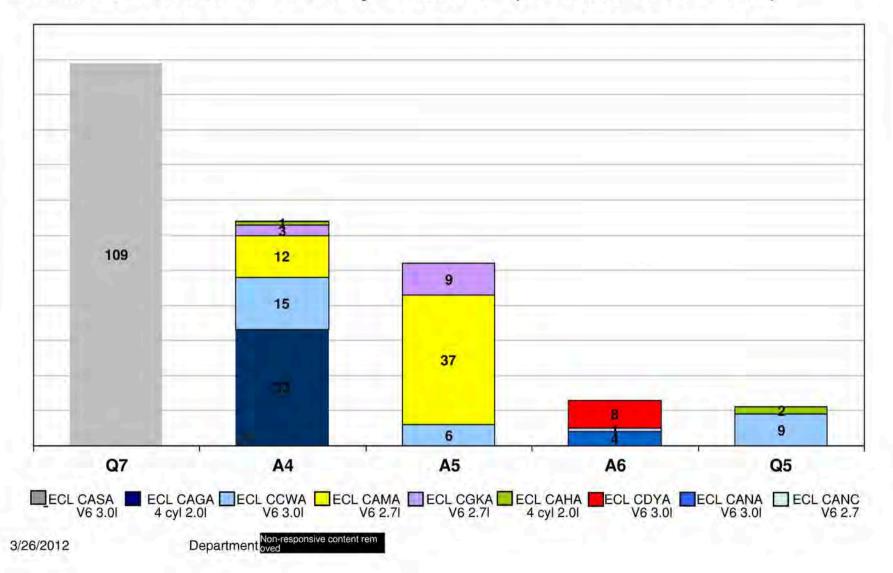


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EA11003EN-01788[1]

VOLKSWAGEN Non-responsive content remov

Failure of common rail high-pressure fuel pump

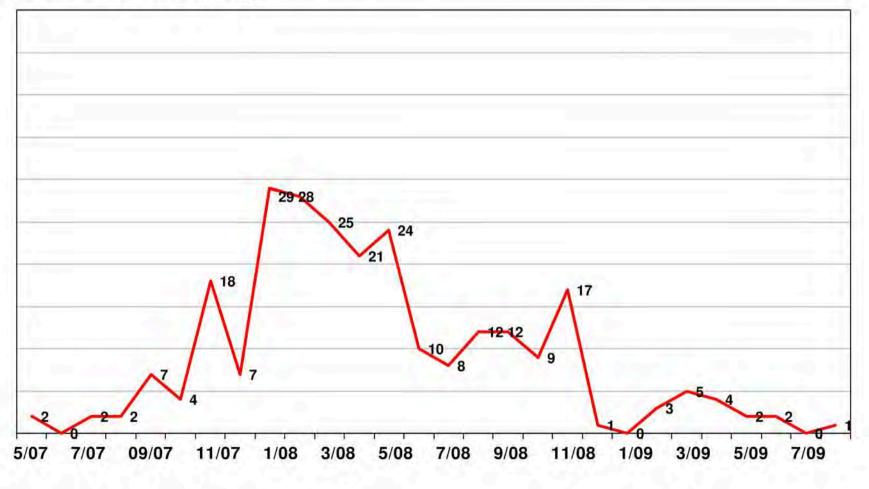


EA11003EN-01788[2]

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VOLKSWAGEN Non-responsive content remo

Failure of common rail high-pressure fuel pump - Non-responsive content rem Period from WK 25-45 - chart by date of manufacture of high-pressure fuel pump (WK 23/09 to WK 45/09)

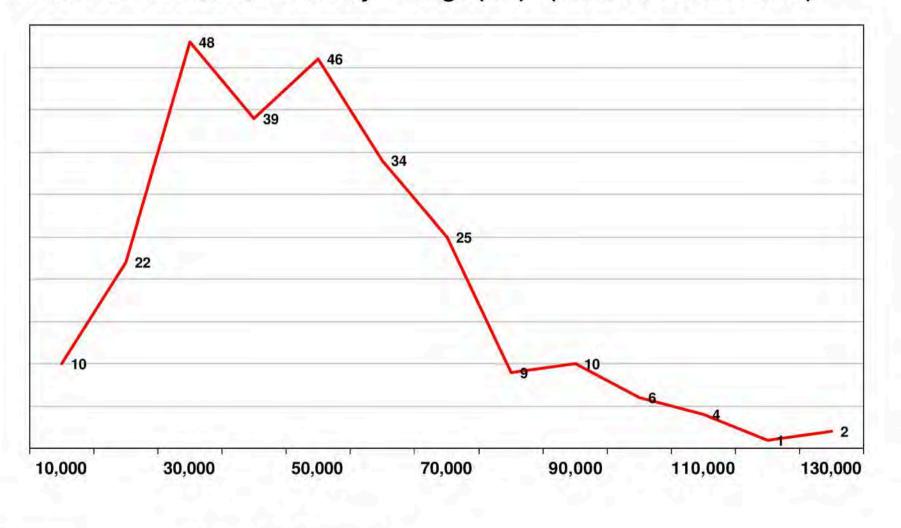


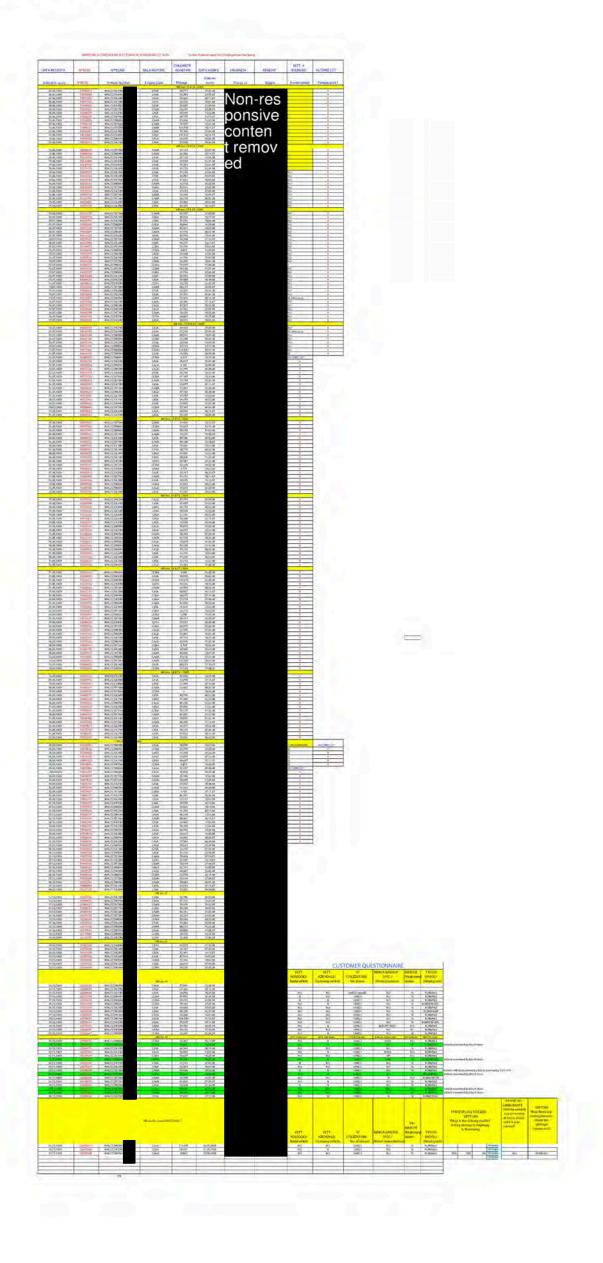
ENTIRE PAGE CONFIDENTIAL

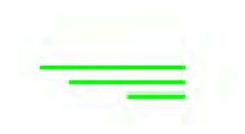
EA11003EN-01788[3]

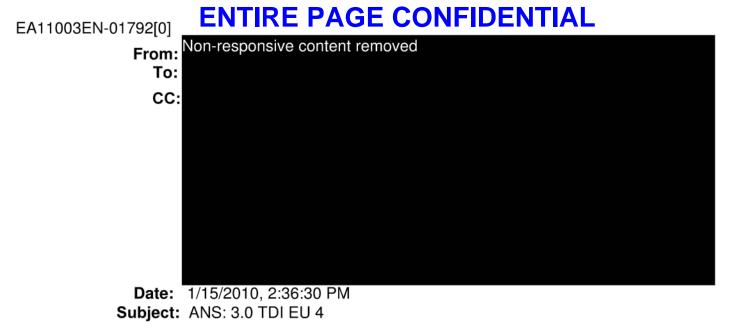
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Failure common rail high-pressure fuel pump --ed









Hello Non-responsive content remo

I understand your approach.

As a result of the catastrophic CoD development of the CP4.2 in RoW, we were not able to approve any new V6 TDI projects in RoW markets, as presented yesterday.

We are aware that this will result in discontinuation of the V6 TDI models in existing markets as a result of stricter emissions legislation. Due to the massive number of damage cases, however, and the expected failure rate, the current situation is no longer tenable as it stands.

Thank you for your understanding in this matter.

With best wishes

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Sitz/Domicile: Ingolstadt

Registergericht/Court of Registry: Local District Court Ingolstadt

HRB Nr./Commercial Register No.: 1

Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Martin Winterkorn Vorstand/ Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel

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|---|
| > >From: ^{Non-responsive content removed} |
| >Sent: Friday, January 15, 2010, 10:58 AM |
| Non-responsive content removed |
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| |
| Subject: 2.0 TDL ELL 4 |
| >Subject: 3.0 TDI EU 4 >Importance: High |
| > |
| > |
| >Hello t removed |
| > |
| |
| >I would like to ask you to check whether the above pump can still be used for all models for only |
| >Background: Since we are not blocking the models that are already in series, we would let the series of the se |
| continue to run as well if it weren't for the legal requirements for EU 4. |
| > It is not a new deployment of the 3.0 TDI in a market where it was not previously present. |
| > |
| >2) |
| >Since a transmission conversion is planned in the Q7, we cannot simply let things continue here. |
| Please check whether we could also use the pump for these markets which already received the 3.0 EU 3 with the old transmission in MY 10. |
| > |
| > |
| >Please provide feedback. |
| > |
| >Thank you. |
| > |
| > >Best regards |
| . |
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>Registergericht/Court of Registry: Local District Court Ingolstadt

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>Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Martin Winterkorn >Vorstand/ Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael

EA11003EN-01792[2]

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Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel >

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| EA11003EN-0 | 1793[0] ENTIRE PAGE CONFIDENTIAL |
|---------------------|---|
| From: To: CC: | Non-responsive content removed |
| Date: | 2/1/2010, 10:20:49 AM |
| Hello | Audi estimation of damage analysis in the minutes |

Audi estimation of damage analysis in for the minutes

Except for the hydrogen wear, the damage hypotheses proposed by Bosch have all been confirmed. The cams diagnosed with hydrogen wear were not actually caused by hydrogen wear, but instead probably through material fatigue with subsequent corrosion of the crack flanks.

The main damage hypotheses are:

1. Possibility of turned tappet when starting the system, which results in a high concentrated load on the roller in the roller support and in turn a standstill. The standstill of the roller is made more probable due to poor fuel quality (smaller lubrication gap). Adhesion wear then occurs on the cam and/or roller and ultimately results in failure of the system sooner or later.

2. Poor fuel quality that results in a sluggish/stopped roller.

3. Tribooxidation

Damage hypotheses 1, 2, and 3 are surely related to one another.

Best regards

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http://www.audi.com

Sitz/Domicile: Ingolstadt

Registergericht/Court of Registry: Local District Court Ingolstadt

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>From: Non-responsive content removed

>Sent: Tuesday, January 26, 2010, 6:21 PM Non-responsive content removed

>Subject: Please check the minutes, correct them as necessary, and send them to content removed thanks!

> >

>Audi estimation of damage analysis in the line of the diagnosed drivetrain parts do not demonstrate hydrogen wear, in the second control opinion, but instead tension crack corrosion and some damage due to material fatigue. Poor fuel results in a sluggish roller, which can in turn result in greater oscillation movement by the tappet, which in the worst case results in point contact between roller and camshaft.

Urgent,

>With best wishes

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>http://www.audi.com

>Sitz/Domicile: Ingolstadt

>Registergericht/Court of Registry: Local District Court Ingolstadt

>HRB Nr./Commercial Register No.: 1

>Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Martin Winterkorn >Vorstand/ Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel

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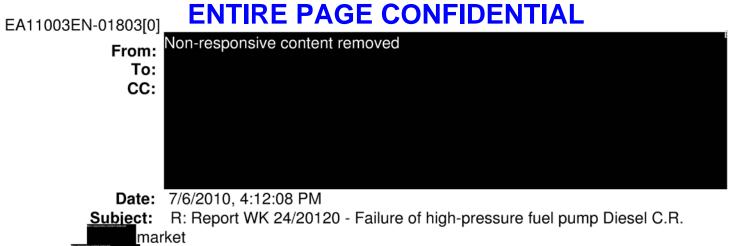
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| EA11003EN-01801[0] ENTIRE PAGE CONFIDENT | IAL |
|--|---|
| From: Non-responsive content removed To: CC: | |
| Date: 5/26/2010, 1:38:46 PM Subject: Findings CP4.1 Ved | |
| Attachments: Überblick Befundung Rücklieferung | Stand-2010-05-26.pdf |
| It's popped up in the R4-CR again - like with the V6, but in a weakened | form: |
| • The most cases of drivetrain damage up to 05/2008 (AWP 1) | |
| or 06/2009 (AWP 2) at the latest | Significant improvement from late 2008 failure 09/2009 !!! |
| And it's high time for the intake valve strainer. Hello | |
| Please send the information to | |
| Attention: Preliminary information!! | |
| Best regards | |
| From:Non-responsive content removed | |
| Sent:Wednesday, May 26, 2010, 2:06 PM | |
| Non-responsive content removed | |
| | |
| Subject: Repeat findings CP4 ^{Norcresponsive content rem} | |
| Dear Sirs, | |
| Please find attached the initial preliminary analysis results from the CP4 pumps sent back from Total: 139 pieces of which: 35 x CP4.1 (preliminary findings) 104 x CP4.2 (open) Mit froundlichen Grüßen / Rest regards | |
| Mit freundlichen Grüßen / Best regards | |
| Robert Bosch GmbH | |
| Non-responsive content remov ed | |
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Domicile: Stuttgart, Court of Registry: Local District Court Stuttgart, Commercial Register No. 14000; Chairman of the Supervisory Board: Hermann Scholl; Management: Franz Fehrenbach, Siegfried Dais; Bernd Bohr, Rudolf Colm, Volkmar Denner, Gerhard Kümmel, Wolfgang Malchow, Peter Marks, Peter Tyroller; Uwe Raschke



Dear

Regarding 4 cylinder cases without metal chips when removing N290, for each vehicles we had:

- Sporadic events of less power and glow system warning light on;
- P0087 fault in diagnosis protocol;

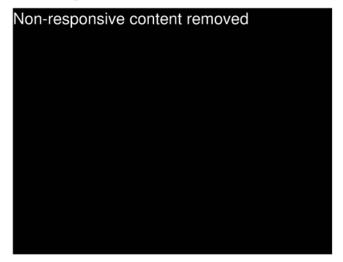
Furthermore, for 2 of these vehicles the Customer complained also a difficulty of engine start.

At the moment we have a positive feedback after high pressure pump replacement.

059 130 755 S Pumps:

As request we will send these pumps directly to Bosch.

Best Regards,



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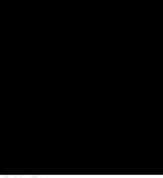
Inviato: sabato 3 luglio 2010 9.20

A:

Oggetto: I: Report WK 24/20120 - Failure of high-pressure fuel pump Diesel C.R.

market

Ciao



Grazie

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| Da: |
|--|
| Inviato: martedì 29 giugno 2010 15.52 |
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| |
| |
| Oggetto: Re: Report WK 24/20120 - Failure of high-pressure fuel pump Diesel C.R. market |
| |
| Dear ved |
| |
| 3. Which complaints and defect causes do the 4-cylinders without chips have in ??? 4 + 1 + 1 |
| pcs. |
| Is that: |
| * Rail pressure not OK ? |
| * Noises? |
| |

- * Non-starters?
- * etc. ?

4. When can we expect the report for WK25/2010 ?

5. Please continue to send us all 059 130 755 S pumps for our task force work (predecessor pump CP1H) that fail in the near future! Transport to increase like OK CP4.2 pumps. We have to do all we can to explain the increase from 04/2010 caused both by CP4 drivetrain damage and by CP4 deviation of rail pressure.

Best regards

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From: ^{Non-responsive content removed} Sent: Tuesday, June 22, 2010, 11:48 AM

Non-responsive content remov

Subject: R: Report WK 24/20120 - Failure of high-pressure fuel pump Diesel C.R. market

Good morning removed

Thank you for your note - I have corrected the error.

The next report will contain this correction. Total is with and without chips.

Regards

<< Oggetto OLE: Immagine (Bitmap Device Independent) >> < < File: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW24.2010_agg.xls >>

EA11003EN-01803[3]

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http://www.volkswagengroup.it

Da: Non-responsive content removed Inviato: martedì 22 giugno 2010 9.28 Non-responsive content removed

Oggetto: Re: Report WK 24/20120 - Failure of high-pressure fuel pump Diesel C.R. market

Dear d

Thank you for the regular information!

I noticed that the Totals line (light-blue field) only contains the drivetrain damage with chips. If this is intentional, I suggest you rename the line as "Total with chips". If not, then you should add all four lines together.

Thank you.

Best regards

From: Non-responsive content removed

EA11003EN-01803[4]

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Sent: Tuesday, June 22, 2010, 8:58 AM

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Subject: Report WK 24/20120 - Failure of high-pressure fuel pump Diesel C.R.

market

Hello,

Please find enclosed an update of our weekly report "High-pressure fuel pump failures" for the period WK 25/2009 to WK 22/2010.

33 failures occurred in our market in week 24.

Failure situation incl. WK 24/2010

<< Oggetto OLE: Immagine (Bitmap Device Independent) >> < File: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW24.2010.xls >> Regards

Non-responsive content removed http://www.volkswagengroup.it

| CC: Date: 7/26/2010, 11:56:45 AM Subject: Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Attachments: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls Bad! The 4-cylinder is increasing rapidly, in particular! RP1 for R4 !!!!!!!!! | 1003EN-01805[0] | ENTIRE PAGE CONFIDENTIAL |
|---|---|--|
| Date: 7/26/2010, 11:56:45 AM Subject: Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Attachments: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls Bad! The 4-cylinder is increasing rapidly, in particular! RP1 for R4 !!!!!!!!! Best regards ton-responsive content From: Non-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. | | Non-responsive content removed |
| Date: 7/26/2010, 11:56:45 AM Subject: Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Attachments: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls Bad! The 4-cylinder is increasing rapidly, in particular! RP1 for R4 !!!!!!!!! Best regards ton-responsive content From: Non-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. | | |
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| market Attachments:Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls Bad! The 4-cylinder is increasing rapidly, in particular! RP1 for R4 !!!!!!!!!! Best regards Von-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. | CC: | |
| Bad! The 4-cylinder is increasing rapidly, in particular! RP1 for R4 !!!!!!!!!! Best regards vor-responsive content emoved From: Non-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market | Date: | |
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| Non-responsive content emoved From: Non-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. | Date: Subject: Attachments: Bad! | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls |
| From: Non-responsive content removed Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. | Date: Subject: Attachments: Bad! | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls hocreasing rapidly, in particular! |
| Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. Market market | Date: Subject: Attachments:F Bad! The 4-cylinder is in | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls hocreasing rapidly, in particular! |
| Sent: Monday, July 26, 2010, 11:40 AM Non-responsive content removed Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. Market market | Date: Subject: Attachments: Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls hocreasing rapidly, in particular! |
| Subject: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market | Date: Subject: Attachments: Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! Best regards | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls ncreasing rapidly, in particular! |
| 사람 관계에 대해 전 이상 가지 않는 것 같은 것 같 | Date: Subject: Attachments: Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! Best regards Non-responsive content removed | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls ncreasing rapidly, in particular! |
| 사람 관계에 대해 전 이상 가지 않는 것 같은 것 같 | Date: Subject: Attachments:F Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! Best regards Non-responsive content removed | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls noreasing rapidly, in particular! |
| | Date: Subject: Attachments: Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! Best regards Non-responsive content removed From: Non-responsive content Sent: Monday, July | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls noreasing rapidly, in particular! |
| | Date: Subject: Attachments: Bad! The 4-cylinder is in RP1 for R4 !!!!!!!!!! Best regards Non-responsive content removed From: Non-responsive of Sent: Monday, July Non-responsive content Subject: Report W | Re: Report WK 29/20120 - Failure of high-pressure fuel pump Diesel C.R. market Report Ausfall Hochdruckpumpe Diesel CR - Stand KW29 2010.xls noreasing rapidly, in particular! |

EA11003EN-01805[1]

ENTIRE PAGE CONFIDENTIAL

Please find enclosed an update of our weekly report "High-pressure fuel pump failures" for the period WK 25/2009 to WK 29/2010.

47 failures occurred in our market in week 29.

Failure situation incl. WK 29/2010

6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 6/09 7/09 8/09 9/09 10/09 11/09 12/09 1/10 2/10 3/10 4/10 5/10 6/10 7/10 8/10 9/10 10/10 11/10 12/10 Total 6 cyl. engine with shavings 31 46 35 46 46 52 36 38 48 64 77 62 75 84 0 0 0 0 0 740 4 cyl. engine with shavings 1 8 7 8 12 13 12 13 13 20 29 30 33 52 0 0 0 0 0 251

6 cyl. engine without shavings 31 0 1 3 7 18 10 38 49 64 77 62 4 6 0 0 0 0 0 48 4 cyl. engine without shavings 31 0 0 0 0 4 1 38 7 64 77 62 1 1 0 0 0 0 0 48 Total 32 54 42 54 58 65 48 52 64 91 128 103 113 143 0 0 0 0 0 1047

Regards

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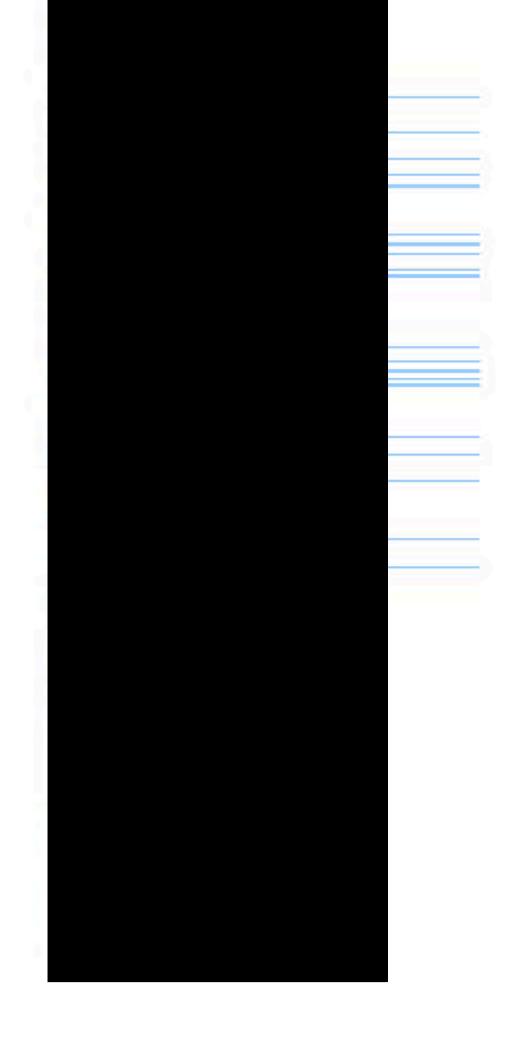
http://www.volkswagengroup.it

EA11003EN-01805[2]

EA11003EN-01806[0]







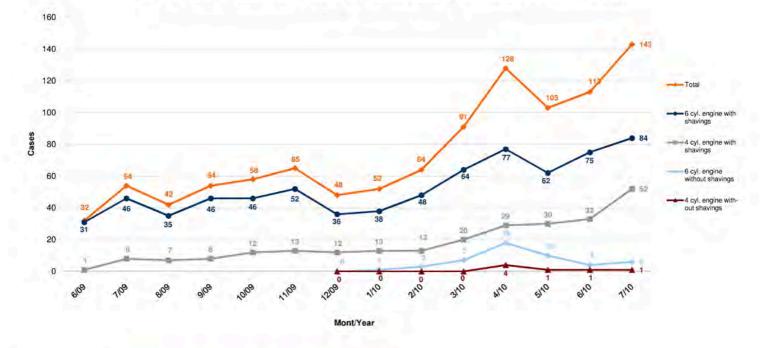
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EA11003EN-01806[2]

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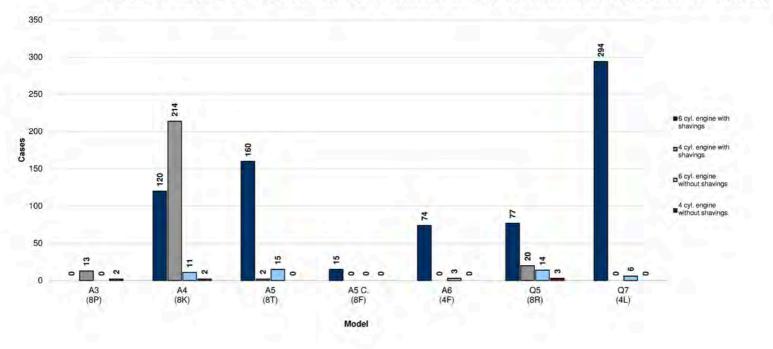
| | 6/09 | 7/09 | 8/09 | 9/09 | 10/09 | 11/09 | 12/09 | 1/10 | 2/10 | 3/10 | 4/10 | 5/10 | 6/10 | 7/10 | 8/10 | 9/10 | 10/10 | 11/10 | 12/10 | Total |
|--------------------------------|------|------|------|---------|--------|-----------------|-------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|
| 6 cyl. engine with shavings | 31 | 46 | 35 | 46 | 46 | 52 | 36 | 38 | 48 | 64 | 77 | 62 | 75 | 84 | 0 | 0 | 0 | 0 | 0 | 740 |
| 4 cyl. engine with shavings | 1 | 8 | 7 | 8 | 12 | 13 | 12 | 13 | 13 | 20 | 29 | 30 | 33 | 52 | 0 | 0 | 0 | 0 | 0 | 251 |
| 6 cyl. engine without shavings | | | | - | [l | · · · · · · · · | 0 | 1 | 3 | 7 | 18 | 10 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 49 |
| 4 cyl. engine without shavings | 10-1 | 1 | 1000 | 1 2 2 1 | 10.000 | | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| Total | 32 | 54 | 42 | 54 | 58 | 65 | 48 | 52 | 64 | 91 | 128 | 103 | 113 | 143 | 0 | 0 | 0 | Ū | 0 | 1047 |

Failure of high pressure pump Diesel CR - cases of damage per month (status 07/10 WK 29)



| | .A3 (8P) | A4 (8K) | A5 (8T) | A5 C. (8F) | A6 (4F) | Q5 (8R) | Q7 (4L) | Total |
|--------------------------------|-------------|------------|------------|---------------|------------|------------|------------|-------|
| 6 cyl. engine with shavings | 0 | 120 | 160 | 15 | 74 | 77 | 294 | 740 |
| 4 cyl. engine with shavings | 13 | 214 | 2 | 0 | 0 | 20 | 0 | 249 |
| 6 cyl. engine without shavings | 0 | 11 | 15 | 0 | 3 | 14 | 6 | 49 |
| 4 cyl. engine without shavings | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 7 |
| Total | 15 | 347 | 177 | 15 | 77 | 114 | 300 | 1045 |

Failure of diesel CR high-pressure fuel pump - cases of damage by model/engine type (status: 07/10 WK 29)





Let's please stop the unproductive mail correspondence on the CP4 failures with the large distribution list immediately, and check and coordinate our statements better in future. The task force for the CP4.1 failures, which consults the Audi colleagues regularly, has currently reached a status that can only conditionally confirm your statements after a detailed examination. We and AUDI are in the same place in the failure analysis and therefore support the same corrective measures that you are already familiar with as "anti-wear packages". The only difference is the implementation of the AWPs in the field, where across-the-board introduction starting with the AWP pump types is planned by 03/2011 for the CP4.1, due to the project variety and volume requirements in association with limited capacity on the Bosch side. We are regularly tracking this at Bosch, so it should not be conveyed to Bosch from a variety of instances.

The evaluation of the cases of damage in the **second** market carried out in AQUA confirms the effectiveness of the measures introduced so far. The failure figures have declined rapidly in manufacturing year 2010.

While it is correct that we have recorded a large number of failures in 2010, most of them are due to pumps with DM before the clean date To respond to this and if you want to prevent further failures with the old design status, you will have to request a field cleanup.

We hope to further improve the field situation through the anti-wear packages that have already been approved and scheduled, and are also working on further anti-wear measures together with Bosch, which are currently in the development and validation phase.

P.S. BOSCH has been intentionally left out of the e-mail distribution list.

Best wishes,

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From Non-responsive content removed

Sent: Thursday, October 07, 2010, 10:14 AM

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Subject: Re: IQIS:230003014652_QTS 3731540_Info.

... and even the has encountered (relatively late / 28,000 km) drivetrain damage cases with the CP4.1 (transverse installation MY10), without any indication of poor fuel quality.

Best regards

on-responsive content removed

From: Non-responsive content removed Sent: Wednesday, October 06, 2010, 5:11 PM Non-responsive content removed

Re: IQIS:230003014652_QTS 3731540_Info. Hello,

Please find attached information on the analysis of the CP4 pump

EA11003EN-01807[2]

ENTIRE PAGE CONFIDENTIAL

Fault scope

RB Part no. 0445.010.507

AUDI part no. 03L130755

SN: BPT 0260

DM: 10/16/2009

ML: 05

IQIS: 230003014652

Ref. no: IGG00006033-001

Customer ref. no. QTS 3731540

Engine no. CBAB 05204

Vehicle No.: WAUZZZ8P5AA

Mileage: 27,818 km

Failure country:

Description of problem

No specification from AUDI

RB analysis:

Roller support worn

No deposits or corrosion traces

Fuel analysis OK

EA11003EN-01807[3] Drivetrain damage

ENTIRE PAGE CONFIDENTIAL

Complaint was acknowledged as Bosch defect

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EA11003EN-01808[0]

ENTIRE PAGE CONFIDENTIAL

Status failures figures Bosch CP4

| Failure figures market MY 2008 - 2010 | | | | | | | | | | |
|---------------------------------------|----------|--------|---------------|----------|--------------------|--|--|--|--|--|
| a state and | Produced | Sales | Random sample | Failures | Failures pro 1,000 | | | | | |
| CP4.1 VW (4 cyl.) | 90,388 | 89,669 | 52,447 | 300 | 3.32 | | | | | |
| CP4.1 Audi (4 cyl.) | 74,228 | 73,146 | 48,517 | 339 | 4.58 | | | | | |

Status 07/2010

Failure figures market MY 2008 – 2010

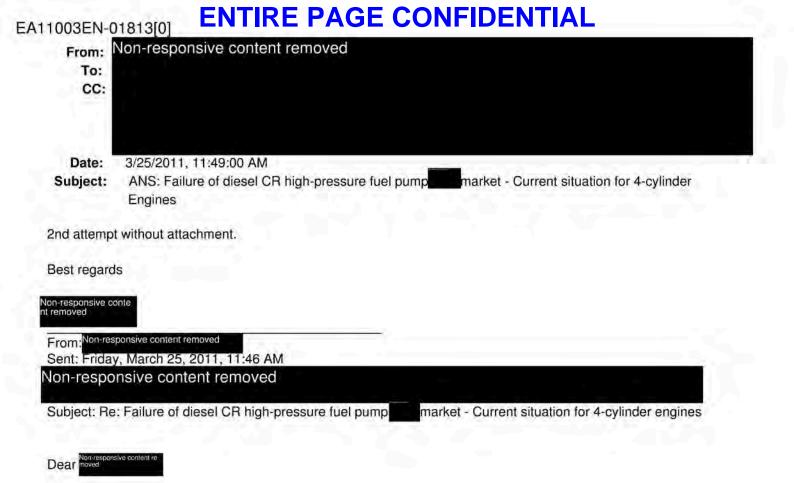
| | Failures MY 2008 | Failures MY 2009 | Failures MY 2010 |
|---------------------|------------------|------------------|------------------|
| CP4.1 VW (4 cyl.) | 87(52) | 178(116) | 35(19) |
| CP4.1 Audi (4 cyl.) | 73(58) | 241(199) | 24(7) |

in brackets = Number of cases of damage after plausibility check, costs > tensed

Status 07/2010

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The worldwide implementation of RP1+ and intake valve strainer is planned for next week (WK13).

But, confidential information for you: There is still conflict with Bosch about who is to pay the modification costs.

Bosch is threatening to not implement the change if VW/Audi does not pay the costs. This topic is being negotiated by top management.

It is beyond our sphere of influence.

Best regards

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|---|-------|------|-------|---------|---------|
| | | | | | |



Sitz/Domicile: Ingolstadt Registergericht/Court of Registry: Local District Court Ingolstadt HRB Nr./Commercial Register No.: 1

EA11003EN-01813[1] ENTIRE PAGE CONFIDENTIAL

From: Non-responsive content removed Sent: Wednesday, March 23, 2011, 9:48 AM Non-responsive content removed

Subject: I: Failure of diesel CR high-pressure fuel pump market - Current situation for 4cylinder engines

Hello Non-responsive content removed

Since early 2011, our damage quota for CR high-pressure fuel pumps has been reduced significantly; the workshop campaign is also ongoing for the 6-cylinder engines. Please let us know the current status of our 4-cylinder CR high-pressure fuel pumps (RP-1 package).

Has the RP1 measure been implemented in series production for the 4-cylinder? If so, from which vehicle no./date?

Are the high-pressure fuel pumps with RP1 still being shipped as CS part? If so, with which SP number? Can the parts be identified externally, or only through the SP number?

As attachment: e-mail from November 2010 on topic of 4-cyl. CR.

Thank you for your information,

With best wishes

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< Message: I: AWP variants CP4.1 >>

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| Inviato: mercole | dì 22 marzo 201 | 1015 | | |

Oggetto: Report WK 11/2011 - Failure of diesel CR high-pressure fuel pump market

Dear Sir/Madam,

Da:

Please find enclosed the update of our weekly report "High-pressure fuel pump failures" for the period WK 25/2009 to WK 11/2011.

In addition, 20 more failures have occurred or been reported in the market in Wk 11.

INFO: All vehicles that have been repaired with a new high-pressure fuel pump CP4.2 - RP 2 are listed in green or highlighted in the attached file "Report-Ausfall unter "Basis Daten" - (40 high-pressure fuel pumps).

Effective immediately, you will receive additional information with regard to the 23G7 recall campaign, with evaluation of the completed cases trough our warranty department. The completed cases have been processed through warranty and goodwill applications.

Failure situation incl. WK 11/2011

6/09 7/09 8/09 9/09 10/09 11/09 12/09 1/10 2/10 3/10 4/10 5/10 6/10 7/10 8/10 9/10 10/10 11/10 12/10 6 cyl. engine with shavings 31 46 35 46 46 52 36 39 48 64 77 62 75 104 75 84 99 95 75 4 cyl. engine with shavings 1 8 7 8 12 13 12 13 13 20 29 30 33 64 46 46 62 67 53 6 cyl. engine without shavings 0 1 3 7 18 10 4 6 2 8 14 17 24 4 cyl. engine without shavings 0 0 0 0 4 1 1 1 1 3 1 2 5 Total 32 54 42 54 58 65 48 53 64 91 128 103 113 175 124 141 176 181 157

EA11003EN-01813[3]

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1/11 2/11 3/11 4/11 5/11 6/11 7/11 8/11 9/11 10/11 11/11 12/11 1/12 2/12 3/12 4/12 5/12 6/12 7/12 Total

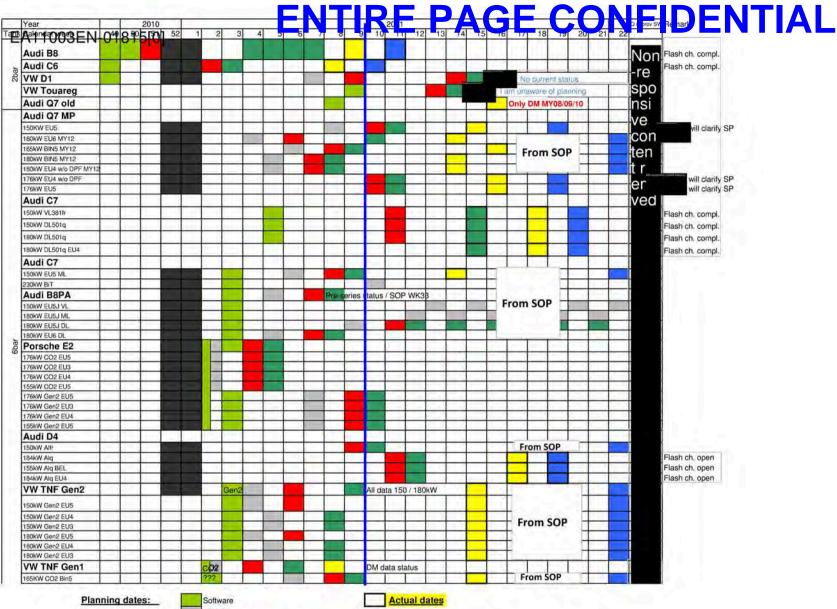
< OLE object: Picture (Device Independent Bitmap) >>

< File: Report Ausfall Hochdruckpumpe Diesel CR - Stand KW11.2011.zip >>

Regards,

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EGAS

Master Q release SOP Date with Product Safety on 6-bar tank system Approval from VW EG and GQ expected for 6-bar tank system

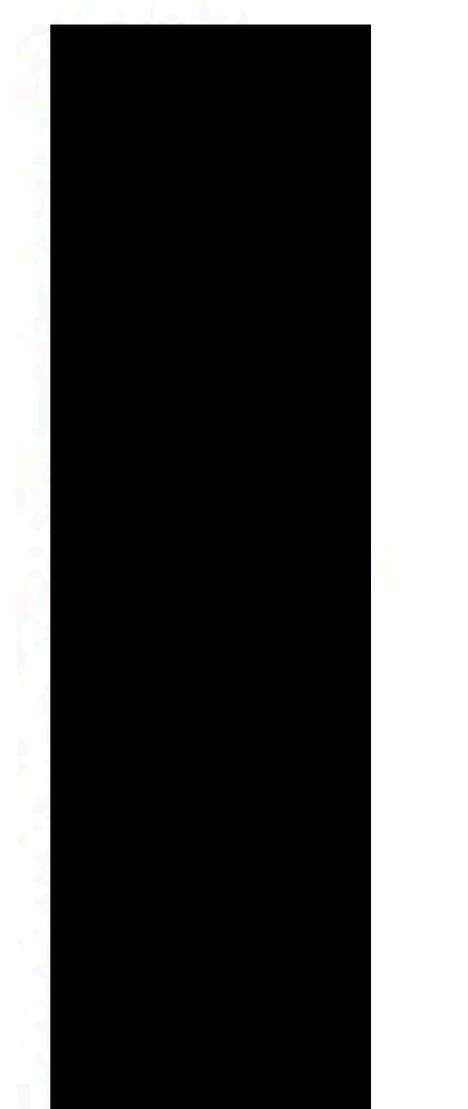
Premaster = Point of No Return

Approval from Porsche EG and GO expected for 6-bar tank system To Do: Get approval for Touareg, E2, and D1 for 2-bar tank system

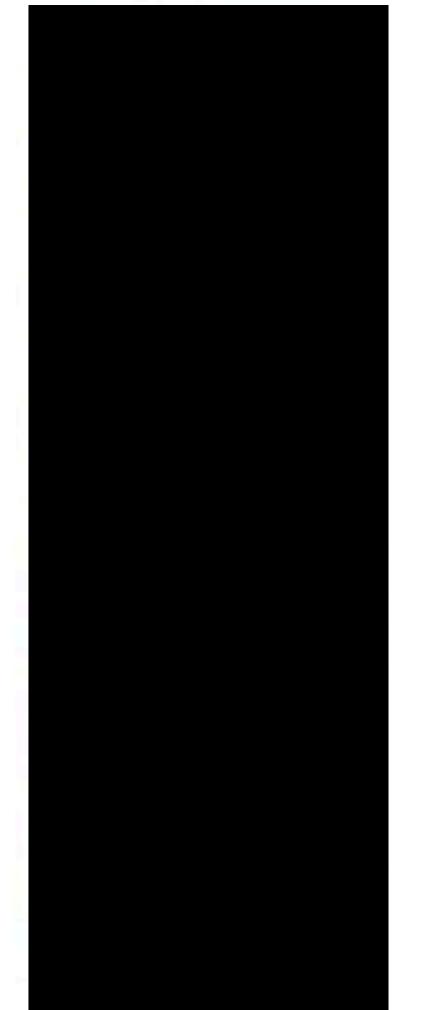
Quality responsibility for a Non-responsive con Quality responsibility vw tent removed Porsche via

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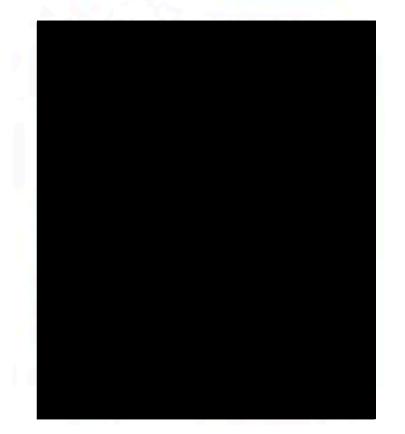




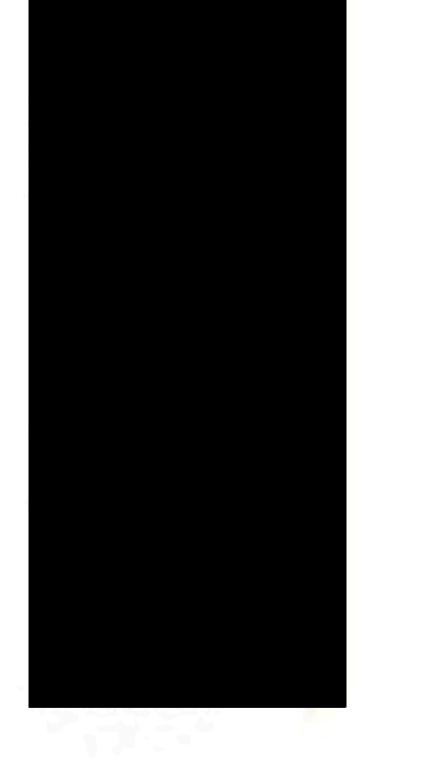


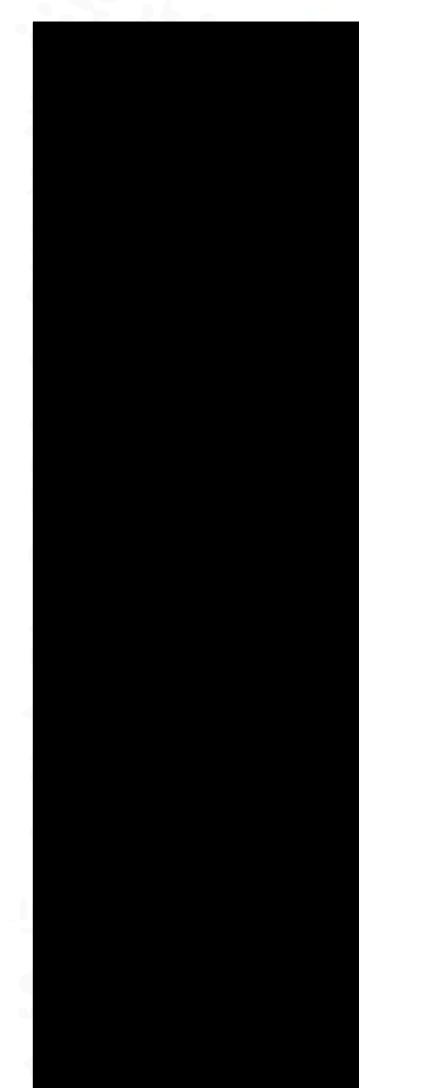


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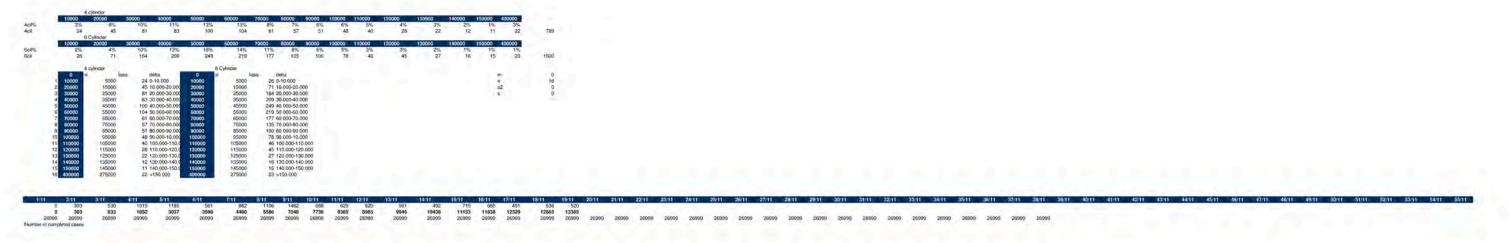




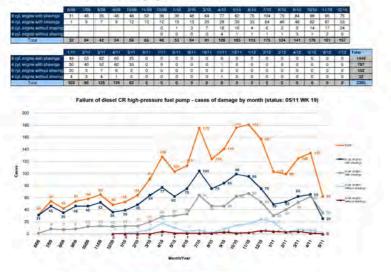


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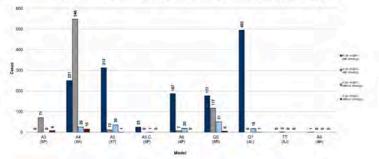


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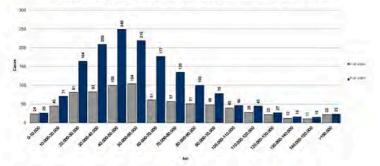


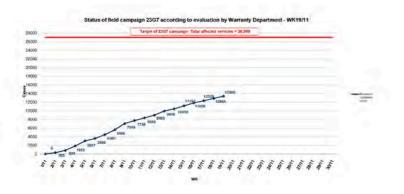
Failure of diesel CR high-pressure fuel pump - cases of damage by model/engine type (status: 05/11 WK 19)



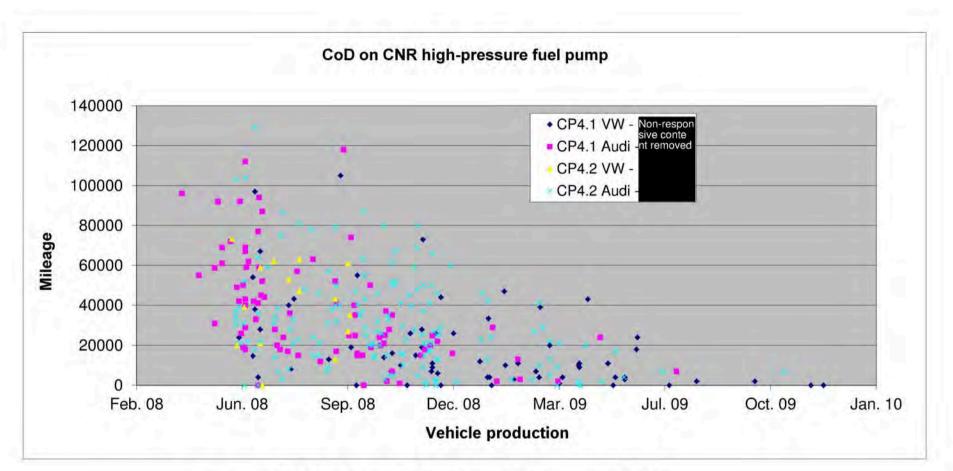


Failure of diesel CR high-pressure fuel pump - cases of damage by engine type/mileage (status: 05/11 WK 19)





EA11003EN-01832[0]



| | Produced | Sold | Random sample | Reported damage cases | per 1,000 vehicles |
|-----------------------|----------|--------|---------------|-----------------------|--------------------|
| CP4.1 VW Non-responsi | 86,081 | 72,115 | 44,659 | 66 | 0.77 |
| CP4.1 Aud emoved | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW I | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Audi | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

CP4.1 VW - II Damage cases by VIN / Engine no. WAR

Stand:Dec 09 02/04/2010 VW, market: ITALY MY 2009 - **1000,0005** from/to : 0 -CNR / Groups High-pressure fuel pump (2374)

EA189 Diesel Without PR numbers

| Produced Sold 86,081 72,115 | Random sample 5 44,659 | | | | | | | | | | |
|--------------------------------|---------------------------|--------------|--------------|------------------|--|------------------------------------|----------------------|--------|----------------------------------|------------------------|--------------------------|
| | | | Р | RODUCTION | | | | | | GEARBOX NUMBER | |
| VIN NO STP ID | ISO_CTRY BRAND | RGA_PLANT RY | | | PRODUCTION DATE | SALES DATE ENGINE CL | | | | GEARBOX PLANT | GEARBOX D, F |
| WVWZZZ13ZJ | Non- ^{vw} | 43 | 2009 | | 28.11.2008 13726M | 21.01.2009 CBDB | 314613 S | S | 11.11.2008 LQV | 309 K | 14.11.2008 |
| WVWZZZ13ZJ | V VV | 43 | 2009 | 200811 | 28.11.2008 13726M | 21.01.2009 CBDB | 314613 S | S | 11.11.2008 LQV | 309 K | 14.11.2008 |
| WVWZZZ1K2N | resp vw | 28 | 2009 | 200809 | 17.09.2008 5K146L | 29.10.2009 CBAB | 250191 S | С | 11.09.2008 KRM | P021285 K | 31.07.2008 |
| WVWZZZ1K2N | onsi vw | 28 | 2009 | 200810 | 29.10.2008 5K146L | 03.01.2009 CBAB | 264055 C | С | 09.10.2008 KRM | P010140 K | 21.10.2008 |
| WVWZZZ1K2J | vec | 28 | 2009 | 200812 | 18.12.2008 5K144K | 23.01.2009 CBDC | 211362 S | S | 11.12.2008 KQM | 597 K | 03.12.2008 |
| WVWZZZ1K2J | | 28 | 2009 | 200901 | 20.01.2009 5K134K | 17.02.2009 CBDC | 103213 P | P | 19.12.2008 KQM | 402 K | 15.12.2008 |
| WVWZZZ1KZN | | 28 | 2009 | 200901 | 21.01.2009 5K146L | 13.03.2009 CBAB | 293306 S | C P | 09.01.2009 KRM | P020138 K | 03.12.2008 |
| WVWZZZ1KZJ WVWZZZ1KZN | ntr vw | 28 28 | 2009 2009 | 200901 200902 | 23.01.2009 5K134K 13.02.2009 5K146M | 17.02.2009 CBDC 07.05.2009 CBAB | 104145 P 300525 S | C | 13.01.2009 KQM 03.02.2009 LQV | 147 K 495 K | 19.01.2009 20.01.2009 |
| WVWZZZ1KZI WVWZZZ1KZJ | | 28 | 2009 | 200902 | 06.03.2009 5K146M | 24.03.2009 CBAB | 107534 P | P | 18.02.2009 LQV | 890 K | 17.02.2009 |
| WVWZZZ1K2J | ed vw | 28 | 2009 | 200903 | 15.04.2009 5K144K | 30.04.2009 CBDC | 116439 P | P | 08.04.2009 KQM | 321 K | 06.04.2009 |
| WVWZZZ1K2J | VW | 28 | 2009 | 200904 | 16.04.2009 5K144K | 06.05.2009 CBDC | 116207 P | P | 08.04.2009 KQM | 223 K | 07.04.2009 |
| WVWZZZ1K2J | vw | 28 | 2009 | 200905 | 18.05.2009 5K146L | 12.06.2009 CBAB | 455728 S | s | 03.04.2009 KRM | P021118 K | 11.05.2009 |
| WVWZZZ1K2J | vw | 28 | 2009 | 200905 | 20.05.2009 5K124K | 12.06.2009 CBDC | 130592 P | P | 18.05.2009 KQM | 106 K | 08.12.2008 |
| WVWZZZ1K2N | VW | 11 | 2009 | 200810 | 20.10.2008 5K136L | 14.01.2009 CBAB | 136845 S | S | 01.10.2008 KRM | P010162 K | 29.09.2008 |
| WVWZZZ1KZN | VW | 11 | 2009 | 200810 | 21.10.2008 5K146L | 23.12.2008 CBAB | 139254 S | S | 07.10.2008 KRM | P010418 K | 06.10.2008 |
| WVWZZZ1K2N | VW | 11 | 2009 | 200811 | 04.11.2008 5K134K | 09.01.2009 CBDC | 311777 S | S | 03.11.2008 KQM | 1183 K | 08.10.2008 |
| WVWZZZ1KZN | VW | 11 | 2009 | 200811 | 27.11.2008 5K146M | 29.04.2009 CBAB | 147188 S | S | 03.11.2008 LQV | 17 K | 24.10.2008 |
| WVWZZZ1KZN | VW | 11 | 2009 | 200811 | 18.11.2008 5K146L | 12.01.2009 CBAB | 144526 S | S | 22.10.2008 KRM | P010082 K | 08.10.2008 |
| WVWZZZ1KZN | VW | 11 | 2009 | 200811 | 12.11.2008 5K134K | 18.03.2009 CBDC | 308785 S | S | 29.10.2008 KQM | 6057 K | 05.11.2008 |
| WVWZZZ1K2N | VW | 11 | 2009 | 200812 | 03.12.2008 5K144K | 23.03.2009 CBDC | 322783 S | S | 30.11.2008 KQM | 1117 K | 10.11.2008 |
| WVWZZZ1K2N | VW | 11 | 2009 | 200901 | 19.01.2009 5K146M | 18.03.2009 CBAB | 166632 S | S | 07.01.2009 LQV | 880 K | 12.12.2008 |
| WVWZZZ1K2J | VW | 11 | 2009 | 200903 | 10.03.2009 5K146M | 31.03.2009 CBAB | 183977 S | S | 04.03.2009 LQV | 1032 K | 02.03.2009 |
| WVWZZZ1K2N | VW | 28 | 2010 | 200905 | 29.05.2009 5K144K | 27.07.2009 CBDC | 131535 S | Р | 21.05.2009 KQM | 11 K | 08.12.2008 |
| WVWZZZ1K2N | VW | 28 | 2010 | 200905 | 29.05.2009 5K144K | 27.07.2009 CBDC | 131535 S | Р | 21.05.2009 KQM | 11 K | 08.12.2008 |
| WVWZZZ1K2J | VW | 28 | 2010 | 200906 | 09.06.2009 5K134K | 10.07.2009 CBDC | 133731 P | P | 02.06.2009 KQM | 13 K | 04.06.2009 |
| WVWZZZ1K2J | VW | 11 | 2010 | 200906 | 10.06.2009 5K143L | 31.07.2009 CBAB | 489635 S | S | 09.06.2009 LHD | P020476 K | 04.06.2009 |
| WVWZZZ1KZJ | VW | 11 | 2010 | 200907 | 10.07.2009 5K124K | 28.07.2009 CBDC | 337841 P | P S | 06.07.2009 KQM | 131 K | 06.07.2009 |
| WVWZZZ3CZJ WVWZZZ3CZN | VW VW | 15 15 | 2009 2009 | 200806 200806 | 18.06.2008 3C5296 13.06.2008 3C5192 | 23.07.2008 CBAB 19.01.2009 CBAB | 88410 S 88164 S | S | 12.06.2008 KQC 12.06.2008 KNS | 43 K P010649 K | 12.06.2008 09.04.2008 |
| WVWZZZ3CZN WVWZZZ3CZN | VW | 15 | 2009 | 200808 | 20.07.2008 3C5192 | 01.10.2008 CBAB | 94857 S | S | 26.06.2008 KNS | P010429 K | 30.06.2008 |
| WVWZZZ3CZ N | vw | 15 | 2009 | 200807 | 17.07.2008 3C5296 | 10.09.2008 CBAB | 99182 S | S | 07.07.2008 KQC | 1007 K | 08.07.2008 |
| WVWZZZ3C2J | vw | 15 | 2009 | 200809 | 02.09.2008 3C5196 | 13.10.2008 CBAB | 119152 S | s | 19.08.2008 KQC | 99 K | 26.08.2008 |
| WVWZZZ3C2J | vw | 15 | 2009 | 200809 | 12.09.2008 3C5192 | 13.10.2008 CBAB | 128009 S | s | 07.09.2008 KNS | P010014 K | 08.08.2008 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200809 | 18.09.2008 3C5292 | 17.10.2008 CBAB | 131307 S | S | 15.09.2008 KNS | P010305 K | 07.08.2008 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200811 | 07.11.2008 3C519M | 01.12.2008 CBAB | 146684 S | S | 29.10.2008 KNP | P020076 K | 23.10.2008 |
| WVWZZZ3CZ N | VW | 15 | 2009 | 200810 | 13.10.2008 3C5392 | 29.01.2009 CBAB | 135772 S | S | 29.09.2008 KNS | P021150 K | 01.10.2008 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200811 | 19.11.2008 3C5196 | 02.12.2008 CBAB | 153238 S | S | 14.11.2008 LQV | 1286 K | 05.11.2008 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200901 | 12.01.2009 3C5292 | 04.02.2009 CBAB | 159254 S | S | 02.12.2008 KNS | P010075 K | 05.05.2008 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200902 | 04.02.2009 3C5396 | 24.02.2009 CBAB | 174298 S | S | 02.02.2009 LQV | 101 K | 12.01.2009 |
| WVWZZZ3C2N | VW | 15 | 2009 | 200902 | 17.02.2009 3C5161 | 14.05.2009 CBDC | 167978 S | S | 05.02.2009 KJF | 490 K | 12.01.2009 |
| WVWZZZ3C2J | VW | 15 | 2009 | 200904 | 16.04.2009 3C5192 | 28.04.2009 CBAB | 457660 S | S | 07.04.2009 KNS | P020269 K | 02.04.2009 |
| WVWZZZ3C2J | VW | 28 | 2009 | 200806 | 13.06.2008 3C2192 | 26.06.2008 CBAB | 213909 S | С | 06.06.2008 KNS | P010027 K | 07.06.2008 |
| WVWZZZ3CZN WVWZZZ3CZJ | VW VW | 28 28 | 2009 2009 | 200806 200806 | 16.06.2008 3C2192 18.06.2008 3C2392 | 27.08.2008 CBAB | 215739 S 218072 C | C C | 11.06.2008 KNS | P010538 K P020495 K | 10.06.2008 12.06.2008 |
| WVWZZZ3CZN | VW | 28 | 2009 | 200808 | 19.03.2009 3C23X6 | 30.06.2008 CBAB 28.05.2009 CBBB | 200501 S | s | 16.06.2008 KNS 10.03.2009 LQT | 1277 K | 17.02.2009 |
| WVWZZZ3CZJ | vw | 28 | 2009 | 200904 | 24.04.2009 3C2392 | 11.05.2009 CBAB | 465588 S | s | 22.04.2009 KNS | P010487 K | 12.08.2008 |
| WVWZZZ3C2J | vw | 28 | 2010 | 200911 | 21.11.2009 3C212V | 19.12.2009 CAYC | 177341 P | P | 18.11.2009 MDM | 1943 K | 10.11.2009 |
| WVWZZZ3C2J | vw | 28 | 2010 | 200912 | 03.12.2009 3C23X6 | 11.01.2010 CBBB | 315618 S | S | 26.11.2009 LTD | 435 K | 20.11.2009 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200806 | 11.06.2008 5N1242 | 24.09.2008 CBAB | 211038 C | C | 30.05.2008 LMU | 64 K | 09.06.2008 |
| WVGZZZ5NZ J | VW | 20 | 2009 | 200806 | 11.06.2008 5N1243 | 30.06.2008 CBAB | 212593 C | C | 04.06.2008 JBG | 58428 S | 26.03.2008 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200807 | 15.07.2008 5N1142 | 30.10.2008 CBAB | 227558 C | С | 07.07.2008 LMU | 523 K | 30.06.2008 |
| WVGZZZ5NZ J | VW | 20 | 2009 | 200808 | 22.08.2008 5N1242 | 30.09.2008 CBAB | 239145 S | С | 20.08.2008 LMU | 105 K | 15.08.2008 |
| WVGZZZ5NZ J | VW | 20 | 2009 | 200811 | 18.11.2008 5N1242 | 22.12.2008 CBAB | 277545 C | С | 09.11.2008 LMU | 477 K | 07.11.2008 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200812 | 06.12.2008 5N1243 | 14.10.2009 CBAB | 284707 S | С | 28.11.2008 JBG | 243399 S | 11.10.2008 |
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| WVGZZZ5NZ N | VW | 20 | 2009 | 200812 | 06.12.2008 5N1252 | 05.02.2009 CBBB | 11884 S | С | 04.12.2008 LMU | 445 K | 20.11.2008 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200902 | 05.02.2009 5N1243 | 13.08.2009 CBAB | 297758 S | С | 23.01.2009 JBG | 248896 S | 19.11.2008 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200903 | 28.03.2009 5N1243 | 15.07.2009 CBAB | 199381 S | S | 26.03.2009 JBG | 245602 S | 17.12.2008 |
| WVGZZZ5NZ N | VW | 20 | 2009 | 200903 | 31.03.2009 5N1242 | 18.06.2009 CBAB | 199180 S | S | 26.03.2009 LMU | 141 K | 10.12.2008 |
| WVGZZZ5NZ J | VW | 20 | 2009 | 200905 | 13.05.2009 5N1142 | 17.06.2009 CBAB | 474662 S | S C | 11.05.2009 LMU | 381 K | 11.05.2009 |
| WVGZZZ5NZ N WVGZZZ5NZ J | VW VW | 11 | 2009 | 200805 200903 | 29.05.2008 5N1242 | 12.06.2008 CBAB | 207726 C | S | 20.05.2008 KVC | 149 K 99 K | 27.03.2008 |
| WVGZZZ5NZJ | VW | 11 20 | 2009 2010 | 200903 | 09.03.2009 5N1242 05.08.2009 5N1243 | 25.03.2009 CBAB 31.08.2009 CBAB | 184142 S 606641 S | S | 04.03.2009 LMU 23.07.2009 JBG | 235801 S | 02.03.2009 07.04.2009 |
| WVGZZZ5NZ J | VW | 20 | 2010 | 200908 | 03.12.2009 5N1242 | 30.12.2009 CBAB | 677573 S | S | 02.12.2009 JBG | 235801 S 371 K | 23.11.2009 |
| WVWZZZ6RZJ | vw | 42 | 2010 | 200909 | 29.09.2009 6R1314 | 03.11.2009 CAYA | 35017 S | s | 17.09.2009 KFK | 1538 K | 10.09.2009 |
| Total | | | | | | | | | | | |

Process execution File name Table Vehicle ident. no. CP4 Change date 02/04/2010 User Non-responsive content removed Frequency XLS - CSV (Tab-separated Excel-optimized)

Total P:86,081 V:72,115 S:44,659

Parameter page F - File only Expiration date 03/04/2010 Overwrite N - No

Parameter:

E-mail N - No Print N - No Header/footer 0 - Header and footer lines

Report format 232 - Damage cases per VIN / Engine no. WAR Number of ranks50 Sort sequence115 - Vehicle identification number

Data source S - Warranty data from SAGA is displayed General vehicle data BrandVW - VW

Model year 2009 | 2010 | 2011 Non-relevant vehicles 0 - Without Customer-relevant vehicles 2 - With

Employees vehicles 2 - With engine and gearbox Engine data Fuel D - Diesel

EA number 189 - EA189 | 189 - EA189 Dealers and market in general Market Damage data

CSNO 2374 - High-pressure fuel pump Paint summary Y - Cumulated

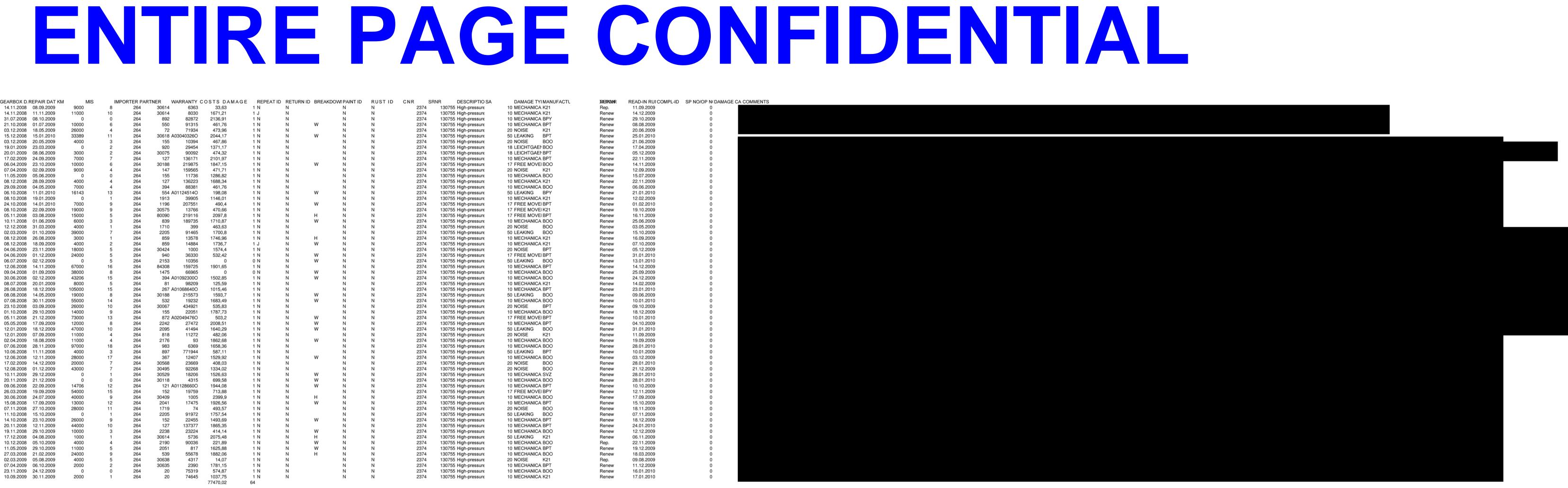
currency type GC - Group currency Application indicator A - Warranty / goodwill Exchange 1 - All

C cases0 - Only costs S number0 - Without Repeat repair 2 - With Field campaign 0 - Without

Breakdowns 2 - With

MIS from0 Natural Restitution2 - All applications (with and without natural restitution)

Paint/corrosion A - All Audi accessories2 - With



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| 003EN-01832[3] CP4.1 Audi - Italy | | | RE P | |
|---|--|---|--|---|
| Damage cases by VIN / Engine no. WAR Status:Dec. 09 02/04/2010 Audi, The American Status:Dec. 10 - MY 2009 - 2011, MIS from/to : 0 - CNR / Groups High-pressure fuel pump (2374) EA189 Diesel Without PR numbers | | | | |
| Dr. brief Dr. brief Dr. C. TUP Dr. C. TU | G 28.05.2008 KS 68.04.2008 24.10.2009 55000 17 G 12.04.2008 J.L0 L060539 K 66.04.2008 24.10.2009 55700 19 G 20.44.2008 J.L0 L060539 K 20.04.2008 20.02.000 167 G 0.50.52008 J.L0 L060535 K 60.50.2008 21.10.2009 45000 17 G 15.05.2008 J.K1 L060552 K 16.05.2008 17.11.2009 72000 17 G 15.05.2008 IST J.EE02/KL K 14.05.2008 10.07.2009 44000 13 G 13.05.2008 IST Y.TINULU K 22.05.2008 11.12009 112000 17 G 24.05.2008 IST Y.TINULU K 22.05.2008 44.0000 11 12.000 17 G 24.05.2008 IST Y.TINULU K 22.05.2008 44.0000 11 12.000 17 | PARTER PARTNER COSTS DAMAGE REFURN D RETURN D PANT D RUST D A N W N < | DAMAGE TYPE DAMAGE LOCATION 274 130755 High-pressure pump 10 274 130755 High-pressure pump 10 MECHANN 2 274 130755 High-pressure pump 10 MECHANN 2 Ers. 274 130755 High-pressure pump 10 < | READ-IN RUN_DATE COMPL-ID 28.01.2001 0 28.01.2001 0 28.01.2002 0 28.01.2003 0 28.01.2009 0 39.11.22009 0 39.11.22009 0 39.12.2009 0 39.12.2009 0 39.12.2009 0 29.01.2010 0 29.01.2010 0 29.01.2010 0 29.01.2010 0 29.01.2010 0 29.01.2009 0 29.01.2009 0 29.01.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 21.12.2009 0 22.11.2009 0 23.12.2009 0 24.02.2009 0 25.05.2009 |
| Process execution File name Table Vehicle ident. no. CP4 Change date 02/04/2010 Usei Frequency 1 - Once, immediate Output format XLS - CSV (Tab-separated Excel-optimized) Parameter page F - File only Expiration date 03/04/2010 Overwrite N - No | | | | |

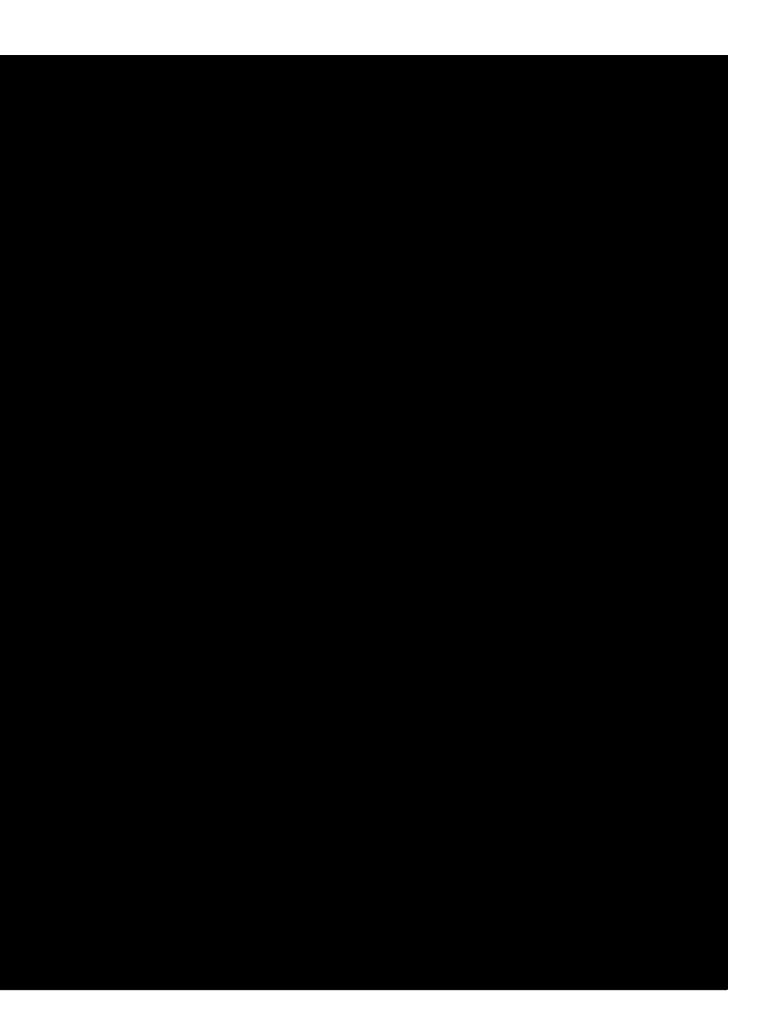
Expiration date 03/04/2010 Overwrite N - No E-mail N - No Print N - No Header/footer 0 - Header and footer lines Report format 232 - Damage cases per VIN / Engine no. WAR Number of ranks50 Sort sequence115 - Vehicle identification number Data source S - Warranty data from SAGA is displayed

General vehicle data BrandAU - Audi Model year 2009 | 2010 | 2011 Non-relevant vehicles 0 - Without Customer-relevant vehicles 2 - With Employees vehicles 2 - With

engine and gearbox Engine data Fuel D - Diesel EA number 189 - EA189 | 189 - EA189

EA number 189 - EA189 | 189 - EA189 Dealers and market in general Market Market Market Market Damage data CNR 2374 - High-pressure fuel pump Paint summary Y - Cumulated Breakdowns 2 - With Currency type WK - Group currency Application indicator A - Warranty / goodwill Exchange 1 - All C cases0 - Only costs S number0 - Without Repeat repair 2 - With Field campaign 0 - Without MIS from0 Natural Restitution2 - All applications (with and without natural restitution) Paint/corrosion A - All Audi accessories 2 - with

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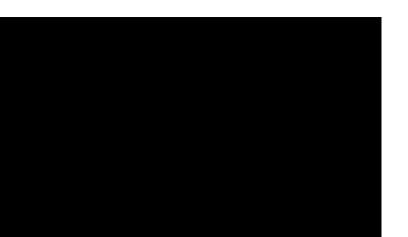
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ENTIRE PAGE CONFIDENTIAL EA11003EN-01832[5] CP4.1 Audi - Italy Damage cases by VIN / Engine no. WAR Status:Dec. 09 02/04/2010 Audi, mark MY 2009 - 2011, MIS from/to : 0 CNR / Groups High-pressure fuel pump (2374) EA189 Diesel Without PR numbers Produced Sold Random sample 1,562 1,310 667 VIN NO STP ID ISO_CTRY BRAND ORGA_PLANT RY WVGZZZ7L2 J Non-r VW WVGZZZ7L2 J Sive VW WVGZZZ7L2 J conte VW WVGZZZ7L2 N nt re VW WVGZZZ7L2 N Nove VW WVGZZZ7L2 N Nove VW WVGZZZ7L2 N VW 37 20 WVGZZZ7L2 N VW 37 20 WVGZZZ7L2 J VW 37 20 WVGZZZ7L2 J VW 37 20 WVGZZZ7L2 N VW 37 20 WVGZZZ7L2 J VW 37 20 WVGZZZ7L2 J VW 37 20 PRODUCTION MONTH VSALES MODE Engine PLAT Engine DLAT GEARBOX MURBER GEARBOX PLANT REPAR DATE MIN MPORTER PARTNER COSTS D-AMA GE REPEATID REPARTID R MANUFACTURERREPAIRNSADAMAGE TYPEDAMAGE LOCATIONREAD-IN RUN_DATE10MECHANICA/WWORenew03.02.201017SLUGGISH (5 BPTRenew12.09.200910MECHANICA/K21Renew07.10.200917SLUGGISH (5 BOTRenew21.01.200917SLUGGISH (5 BPTRenew27.11.200950LEAKINGBOORenew29.10.200810MECHANICA/BDORenew29.02.00910MECHANICA/BOORenew29.07.200910MECHANICA/BOORenew29.7.200910MECHANICA/BOORenew11.1200910MECHANICA/BOORenew15.07.200910MECHANICA/BOORenew15.07.200910MECHANICA/BOORenew15.11.200910MECHANICA/BOORenew15.11.200910MECHANICA/BOORenew16.11.200910MECHANICA/BOORenew16.11.200910MECHANICA/BOORenew16.11.200910MECHANICA/BOORenew16.11.200910MECHANICA/BOORenew29.08.2009 SRNR DESCRIPTION 374 130755 High-pressure 2374 130755 COMPL-ID SP NO/OP NO DAM/ Prin,562 S:1,310 RS:667 Parameter: Process execution File name Table Vehicle ident. no. CP4 Change date.02/04/2010 User Frequency 1 - Once, immediate Output format XLS - CSV (Tab-separated Excel-optimized) Parameter page F - File only Expiration date 03/04/2010 Overwrite N - No E-mail N - No Header/footer 0 - Header and footer lines Report format 232 - Damage cases per VIN / Engine no. WAR Number of ranks50 Sort sequence115 - Vehicle identification number Data source S - Warranty data from SAGA is displayed General vehicle data Brand/W - VW Model year 2009 | 2010 | 2011 Non-relevant vehicles 0 - Without Customer-relevant vehicles 2 - With Employees vehicles 2 - With engine and gearbox Engine data Fuel D - Diesel Displacement3 Displacement3 EA number 189 - EA189 | 189 - EA189 Dealers and market in general Market Damage data CNR 2374 - High-pressure fuel pump Paint summary Y - Cumulated Breakdowns 2 - With Currency type GC - Group currency Application indicator A - Warranty / goodwill Exchange 1 - All C cases0 - Only costs S number0 - Without Repeat repair 2 - With Field campaign 0 - Without MIS from0 Natural Restitution2 - All applications (with and without natural restitution) Paint/corrosion A - All Audi accessories 2 - with



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| VAUZZZ4F99N Non- AU VAUZZ24F89N resp AU VAUZZ24F19N resp AU VAUZZ24F19N onsi AU VAUZZ24F19N VAUZZ24F19N VAUZZ | PRODUCTION MONTH VSALES MODEL A_PLANT RY PRODUCTION DATE SALES DATE ENGINE CL 22 2009 200809 24.09.2008 4F50YL 06.05.2009 CDYA 22 2009 200809 26.09.2008 4F50YL 12.11.2008 CDYA 22 2009 200810 09.10.2008 4F20YL 26.06.2009 CDYA 22 2009 200810 09.10.2008 4F20YL 24.12.2008 CDYA 22 2009 200810 13.10.2008 4F40YL 24.12.2008 CDYA 22 2009 200810 13.10.2008 4FH0YL 27.02.2009 CDYA 22 2009 200810 14.10.2008 4FH0YL 27.02.2009 CDYA | 1974 G G 09.09.2008 KJC 4482322 Z 2443 G G 16.09.2008 KJC 4482692 Z 3417 G G 23.09.2008 KJC 4482692 Z 4174 G G 29.09.2008 KJC 4485803 Z 4255 G G 29.09.2008 KJC 4486363 Z 2241 G G 12.09.2008 KJD 4485785 Z | BOX PLANT REPAIR DATE KM MIS IMPORTER 19.09.2008 29.10.2009 55000 6 264 22.09.2008 01.09.2009 25000 10 264 29.09.2008 15.10.2009 20000 4 264 06.10.2008 20.11.2009 51258 11 264 07.10.2008 13.11.2009 80000 13 264 06.10.2008 25.05.2009 3000 3 264 | R PARTNER C O S T S D A M A G E REPEAT ID RETURN ID BR 1000 144586 3759,94 1 N N 1700 22350 3355,84 1 N N 1700 2205 1000 14010 10000 1000 1000 | W N N 2374 130755 F N N 2374 130755 F | MANUFACTURER F DESCRIPTION SA DAMAGE TYPE DAMAGE LOCAT tigh-pressure pump 10 MECHAN 2 Ren tigh-pressure pump 17 SLUGGIS BOO Ren tigh-pressure pump 10 MECHANI 2 Ren tigh-pressure pump 10 MECHANI 2 Ren tigh-pressure pump 50 LEAKING 2 Ren | ew 30.12.2009 0 ew 01.10.2009 0 ew 12.11.2009 0 ew 02.12.2009 0 ew 24.12.2009 0 ew 17.07.2009 0 | |
|--|---|---|---|--|--|---|---|--|
| WAUZZZ4F99N WO AU WAUZZ24F99N Onte AU WAUZZ24F9N emov AU WAUZZ24F9N emov AU WAUZZ24F9N emov AU WAUZZ24F9N emov AU WAUZZ24F9N AU AU WAUZZ24199D AU AU WAUZZ2419D AU AU WAUZZ24139D AU WAUZZ24139D WAUZZ24139D AU WAUZZ24139D <t< td=""><td>22 2009 200610 23.10.2008 4F50YL 29.12.2008 CCVA 22 2009 200610 24.10.2008 4F50YL 09.32.009 CCVA 22 2009 200610 31.10.2008 4F50YL 19.12.2008 CCVA 22 2009 200611 06.11.2008 4F50YL 29.11.2009 CCVA 22 2009 200611 06.11.2008 4F50YL 28.11.2008 CCVA 22 2009 200611 06.11.2008 4F50YL 28.11.2008 CCVA 22 2009 200611 06.11.2008 4F50YL 31.12.2008 CCVA 22 2009 200601 19.03.2009 4F20YL 28.03.2009 CCVA 22 2009 200603 19.03.2009 4F50YL 31.03.2009 CCVA 22 2009 200605 26.05.2008 4LB0PL 12.06.2008 CASA 37 2009 200605 26.05.2008 4LB0PL 12.06.2008 CASA 37 2009 200606 26.05.2008 4LB0PL 27.06.2008 CASA 37 2009 200606 26.05.2008 4LB0PL 27.06.2008 CASA 37 2009</td><td>5114 G G 06,10,2008 KJC 4489364 5619 G G 51,02008 KJC 4489749 6105 G G 15,10,2008 KJC 4489749 6608 G 17,10,2008 KJC 4489759 Z 6608 G 17,10,2008 KJC 4494075 Z 7966 G 23,10,2008 KJC 4494371 Z 17070 G 04,03,2009 KJC 4491750 Z 15082 G 11,03,2008 KJC 4511926 Z 15152 G 11,03,2009 KJC 4511926 Z 15434 G 19,03,2009 KJC 4513912 Z 15435 G 21,05,2008 14000 S 22055 G 21,05,2008 14079 S 32026 G 20,05,2008 14679 S 33772 S 33772 S 33392,G G 03,05,20</td><td>16.10.2008 25.05.2009 61423 7 264 18.10.2008 11.11.2009 52000 9 264 27.10.2008 04.07.2009 10000 6 264 27.10.2008 04.07.2009 10000 6 264 21.10.2008 12.10.2009 45000 11 264 20.11.2008 12.01.2009 45000 11 264 20.11.2008 12.01.2009 45000 7 264 03.03.2009 10.71.2009 29000 8 264 03.03.2009 17.11.2009 29000 8 264 03.03.2009 12.06.2009 0 1 264 03.03.2009 12.06.2009 0 1 264 26.03.2008 30.01.2009 31000 12 264 26.03.2008 30.06.2009 31000 12 264 26.03.2008 30.07.2009 31000 12 264 26.03.2008 30.06.2009 30000 13 264 18.05.2008 20.07.2009 31000 12 264</td></t<> <td>1422 A010523280 3348,86 1 N N 2038 1464 3382,99 1 N N 844 169876 3458,55 1 N N 944 169876 3458,55 1 N N 943 169876 3458,55 1 N N 968 3615 3563,37 1 N N 968 3615 3563,37 1 N N 254 52916 8259,98 1 N N 539 57786 3226,86 1 N N 755 165411 8237,67 1 N N 20167 1509 3308,58 1 N N 755 165411 8237,67 1 N N 865 83383 3505,81 1 N N 1728 901708 11525,1 1 N N 1728 901708 11525,1 1 N N 1728 901708 11525,1 1 N N 1992 19335 3068,24 1 N N 1996 196584 4904,2 1 N N 1196 196584 4904,2 1 N N 1196 196584 4904,2 1 N N 1196 196584 4904,2 1 N N 1204 195533 3851,83 1 N N 1196 196584 4904,2 1 N N 1203 19573 3253,26,66 1 N N 1196 196584 4904,2 1 N N 1204 195533 3951,83 1 N N 1205 197477 1 N N 1205 197477 1 N N 1205 1974 170,24 1 N N 1206 196593 1790,24 1 N N 1207 122852 119,22 1 J N 1215 979 3593,81 1 N N 1283 109513 3794,77 1 N N 1293 109513 3794,77 1N N 1294 192626 1447,82 1 J N 130450 660082 1447,82 1 J N 130450 66082 1447,82 1 J N 130450 66082 1447,82 1 J N 130450 66082 1447,82 1 J N 130450 66093 1790,24 1 N N 130450 66082 1447,82 1 J N 130450 66082 1447,82 1 J N 1423 109513 3794,77 1N N 1423 109513 3794,77 1N N 155 18240 356,609 1 N N 155 18240 356,609 1 N N 1656 11 1026 4033,66 1 N 103077 2852 119,28 1 N 103054 28870500 6416,64 1 N 103054 2887050 6416,64 1 N 103054 28870500 6416,64 1 N 103054 34589 4130,93 1 N 103054 34589 3150,22 1 N 103054 34589 110,83 1 N 103054 34589 110,83 1 N 103054 34589 3150,22 1 N 103054 34589 3150,22 1 N 103054 34589 110,83 1 N 103054 34589 310,93 1 N 103054 34589 310,93 1 N 103054 34589 310,25 1 N 103054 34589 3154,91 1 N 103054 34589 3154,91 1 N 103054 34589 3154,91 1 N 103054 34589 3154,91 1 N 103054 34580 3154,91 1 N 103054 34560 3763,55 1 N 10 N 1040 29865 3518,2 1 N 10 N 1059 6923</td> <td>H N N 2374 130755 W N N 2374</td> <td>tigh-pressure pump 17 SLUGGIS 2 Ren tigh-pressure pump 10 MECHANI 2 Ren tigh-pressure pump 10 MECHANI</td> <td>ew 02.10.2009 0 ew 03.02.2010 0 ew 03.02.2010 0 ew 14.08.2009 0 ew 31.12.2009 0 ew 25.10.2009 0 ew 25.10.2009 0 ew 25.10.2009 0 ew 30.12.2009 0 ew 04.09.2009 0 ew 05.09.2009 0 ew 05.09.2009 0 ew 06.10.2009 0 ew 02.10.2009 0 ew 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| Parameter. Process execution File name Table Vehicle ident. no. CP4 Change date 02/04/2010 User Frequency 1 - Once, immediate Output format XLS - CSV (Tab-separated Excel-optimized) Parameter page F - File only Expiration date 03/04/2010 Overwrite N - No E-mail N - No Header/footer 0 - Header and footer lines Report format 232 - Damage cases per VIN / Engine no. WAR Number of ranks50 Sort sequence115 - Vehicle identification number Data source S - Warranty data from SAGA is displayed General vehicle data BrandAU - Audi Model year 2009 2010 2011 Non-relevant vehicles 2 - With Employees vehicles 2 - With Employees vehicles 2 - With Engine and gearbox Engine data Fuel D - Diesel Displacement3 EA number 189 - EA189 189 - EA189 Damage data CNR 2374 - High-pressure fuel pump Paint summary Y - Cumulated Breakdowns 2 - With currency type GC - Group currency Application indicator A - Warranty / goodwill Exchange 1 - All C cases0 - Only costs S number 0 - Without Repeat repair 2 - With Field campaign 0 - Without Mis from0 Natural Restitution2 - All applications (with and without natural re Paint/corrosion A - All Audi accessories - With | | | | | | | | |

CONFIDENTIAL

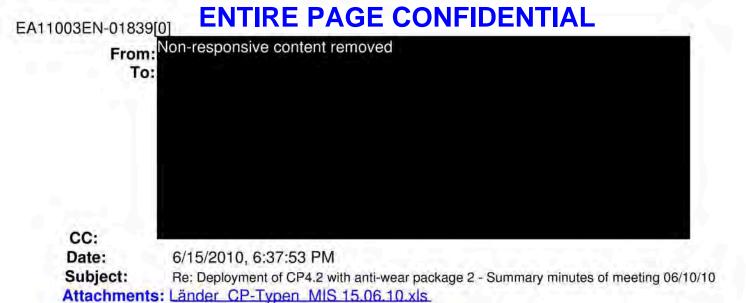


EA11003EN-01832[8]

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Hi all,

In my opinion, the deployment prioritization results from folders 2 and 3 of the attached file: Prio 1 = W36 --> Q7 --> Q5 --> A4 --> A5 --> A6

Best regards

Non-responsive conter

From: Non-responsive content removed Sent: Friday, June 11, 2010, 4:50 PM

Sent: Friday, June 11, 2010, 4:50 PM To:^{Non-responsive content removed}

Subject: Re: Deployment of CP4.2 with anti-wear package 2 - Summary minutes of meeting 06/10/10

Hello ent rem

We need a failure ranking for the deployment scenario, based on the vehicle models. Can you please create a list as basis for the prioritization (after WK36)?

Thank you!

With best wishes

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From Non-responsive content removed Sent: Friday, June 11, 2010, 11:31 AM Non-responsive content removed

Betreff: Deployment of CP4.2 with anti-wear package 2 - Summary minutes of meeting 06/10/10

see below

EA11003EN-01839[1]

ENTIRE PAGE CONFIDENTIAL

With best wishes



Summary minutes from meeting on 06/10/10:

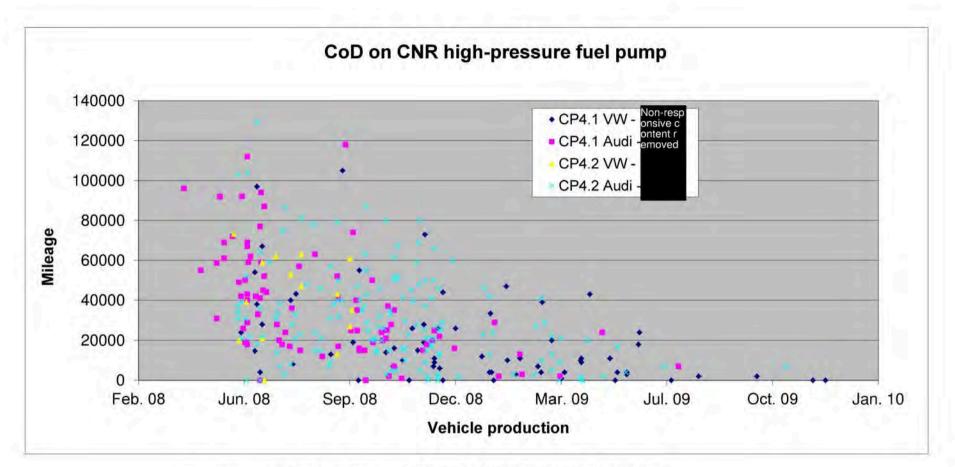
- * Contents of RP2:
- Swap inlet and return
- Robust flange
- C coated pump pistons
- OV with acoustic measures
- * Check effectiveness of acoustic measures by E WK20/10: OV effectiveness confirmed
- * Decision on use of C coating open * Confirm application neutrality (OV by E WK20, RP2 after
- test WK24) Initial trend
- statement: Measures are application-neutral
- * From WK20: Availability of test parts, retooling of GQ-VR, TE-ER and fleet vehicles
- * Procurement will get quotations for the line changes for V6 TDI Gen.1 and Gen.2 by WK23.
- * Quotation from Bosch expected by WK21: Quotation from Bosch committed for 06/11
- * Total scope will be presented at TOP Change Conference in June.
- * Lines for V6 TDI Gen.2 will be introduced at Change Conference WK23.
- * TOP Change conference presentation moved to July.

* The conversion scenario for the V6 TDI Gen.1 will be defined according to the following criteria:

- Failure rates by vehicle model
- Availability of series parts
- Quantities

A proposal is being developed by Non-responsive content removed

EA11003EN-01841[0]



| | Produced | Sold | Random sample | Reported damage cases | per 1,000 vehicles |
|------------------------|----------|--------|---------------|-----------------------|--------------------|
| CP4.1 VW Non-responsiv | 86,081 | 72,115 | 44,659 | 66 | 0.77 |
| CP4.1 Audoved | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Aud | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

CP4.1 VW -Damage cases by VIN / Engine no. WAR Status:Dec. 09.02/04/2010 VW, market: MY 2009 - 2011, MIS from/to : 0 -CNR / Groups High-pressure fuel pump (2374) EA189 Diesel Without PR numbers

Without PR numbers

Produced Sold Random sample 86,081 72,115 44,659 GEARBOX NUMBER ENGINE DATE GCL GEARBOX PLANT GEARBOX DAT VIN 309 K 309 K P021285 K P010140 K WVWZZZ132 J 11.11.2008 LQV 14.11.2008 11.11.2008 LQV 11.09.2008 KRM WVWZZZ1K2 N WVWZZZ1K2 J WVWZZZ1K2 N WVWZZZ1K2 J WVWZZZ1K2 J WVWZZZ1K2 J WVWZZZ1K2 J WVWZZZ3C J WVWZZZ3C N WVWZZZ3C N WVWZZZ3C J WVWZZZSNZ J WVWZZZSNZ J WVQZZZ5NZ J WVQZZZ5NZ J WVQZZZ5NZ J WVQZZZ5NZ N WVQZZZ5NZ J 14.11.2008 31.07.2008 21.10.2008 03.12.2008 15.12.2008 19.01.2009 20.01.2009 20.01.2009 06.04.2009 07.04.2009 08.12.2008 29.09.2008 06.10.2008 24.10.2008 24.10.2008 05.11.2008 10.11.2008 10.11.2008 12.12.2008 02.03.2009 08.12.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.10.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 08.12.2008 09.04.2009 06.07.2009 12.06.2008 09.04.2008 09.04.2008 05.05.2008 11.02008 05.05.2008 12.01.2009 02.04.2009 07.06.2008 12.06.2008 12.01.2009 02.04.2009 07.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 12.06.2008 10.06.20 11.09.2008 KRM 09.10.2008 KRM 11.12.2008 KQM 19.12.2008 KQM 09.01.2009 KRM 13.01.2009 KQM 03.02.2009 LQV 18.02.2009 KQM P010140 K 597 K 402 K P020138 K 147 K 495 K 890 K 321 K 223 K P021118 K 08.04.2009 KQM 08.04.2009 KQM 03.04.2009 KRM 18.05.2009 KQM 01.10.2008 KRM 07.10.2008 KRM 03.11.2008 LQV 22.10.2008 KQM 03.11.2008 LQV 22.10.2008 KQM 03.11.2009 KQM 29.10.2009 KQM 21.05.2009 LQV 21.05.2009 KQM 02.06.2009 KQM 02.06.2009 KQM 12.06.2008 KNS 26.06.2008 KNS 26.06.2008 KNS 15.09.2008 KNS 15.02.2009 LQV 02.12.2008 KNS 15.02.2009 LQV 05.02.2009 LQV 05.02.2009 KNS 14.11.2008 KNS 10.03.2009 LQT 22.04.2009 KNS 18.11.2009 MDM 106 K P010162 K P010418 K 1183 K 17 K 17 K P010082 K 6057 K 1117 K 880 K 1032 K 11 K 11 K 11 K 13 K P020476 K 131 K 43 K P010649 K P010429 K 1007 K 99 K P010014 K P010305 K P020076 K P021150 K 1286 K P010075 K 101 K 490 K P020269 K P010027 K P010538 K P020495 K 1277 K P010487 K 1943 K 435 K 64 K 58428 S 523 K 105 K 477 K 243399 S 245069 S 445 K 248896 S 245602 S 141 K 381 K 149 K 99 K 235801 S 1277 K 26.11.2009 LTD 30.05.2008 LMU 04.06.2008 JBG 07.07.2008 LMU 20.08.2008 LMU 09.11.2008 LMU 28.11.2008 JBG 27.11.2008 JBG 04.12.2008 LMU 23.01.2009 JBG 26.03.2009 JBG 26.03.2009 LMU 11.05.2009 LMU 20.05.2008 KVC 04.03.2009 LMU 23.07.2009 JBG 235801 S 371 K 677573 S 35017 S 02.12.2009 LMU VW 2010 200909 29.09.2009 6R1314 03.11.2009 CAYA 17.09.2009 KFK 1538 K 10.09.2009 42 Total P:86,081 S:72,115 Rs:44,659 Parameter: Process execution File name Table

Vehicle ident. no. CP4 02/04/2010 esponsive content removed 1 - Once, immediate XLS - CSV (Tab-separated Excel-optimized) pageF - File only 03/04/2010 N - No N - No N - No 0 - Header and footer lines 232 - Damage cases per VIN / Engine no. WAR 50 115 - Vehicle identification number S - Warranty data fro General vehicle data Brand VW - VW 2009 | 2010 | 2011 Non-relevant vehicles 0 Without Customer-relevant vehicles 2 With Employees vehicles 2 - With engine and gearbox Engine data D - Diesel 189 - EA189 | 189 - EA189 Dealers and market in general Market

Change date

Frequency

Output format

Parameter

Overwrite

Header/footer

Report format

Number of ranks

Sort sequence

Data source

Model year

EA number

E-mail

Print

Expiration date

User

| REPAIR DATE | | | w | ARRANTY A | PPLICATION N | 2 | | | | | | | | MANUFACT | URER REPAIR | |
|--------------------------------|----------------|--------------|-------------------|----------------|---------------------|---------------------|------------------|----------------|-----------|---------------|--------------|--------------|--|--|-------------------------|----|
| DATE 08 08.09.2009 | KM 9000 | MIS IMF 8 | PORTER PAP 264 | | C O S T S 6363 | | REPEAT ID 1 N | RETURN ID N | BREAKDOWN | PAINT ID N | RUST ID N | CNR 2374 | SRNR DESCRIPTION 130755 High-pressure | SA DAMAGE TYPE 10 MECHANICA K21 | DAMAGE LOCATION Rep. | RE |
| 08 11.11.2009 | 11000 | 10 | 264 | 30614 | 8030 | 1671,21 | 1 J | Ν | | N | N | 2374 | 130755 High-pressure | 10 MECHANICA K21 | Renew | |
| 08 08.10.2009 08 01.07.2009 | 0 10000 | 0 6 | 264 264 | 892 550 | 82872 91315 | 2136,91 461,76 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BPY 10 MECHANICA BPT | Renew Renew | |
| 08 18.05.2009 08 15.01.2010 | 26000 33389 | 4 11 | 264 264 | 72 | 71934 A03040326O | 473,96 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure | 20 NOISE K21 50 LEAKING BPT | Renew | |
| 08 20.05.2009 | 4000 | 3 | 264 | 155 | 1030403280 | 2044,17 467,86 | 1 N | N | vv | N | N | 2374 | 130755 High-pressure 130755 High-pressure | 20 NOISE BOO | Renew Renew | |
| 09 23.03.2009 09 08.06.2009 | 0 3000 | 2 | 264 264 | 920 30075 | 29454 90092 | 1371,17 474,32 | 1 N 1 N | N N | | N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 18 FREE MOVEI BOO 18 FREE MOVEI BPT | Renew Renew | |
| 09 24.09.2009 | 7000 | 7 | 264 | 127 | 136171 | 2101,97 | 1 N | N | | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BPT | Renew | |
| 09 23.10.2009 09 02.09.2009 | 10000 9000 | 6 4 | 264 264 | 30188 147 | 219875 159565 | 1847,15 471,71 | 1 N 1 N | N N | W | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 17 SLUGGISH (\$BOO 20 NOISE K21 | Renew Renew | |
| 09 05.06.2009 | 0 | 0 | 264 | 155 | 11736 | 1286,82 | 1 N | N | | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 08 28.09.2009 08 04.05.2009 | 4000 7000 | 4 | 264 264 | 127 394 | 136223 88381 | 1688,34 461,76 | 1 N 1 N | N N | | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA K21 10 MECHANICA BOO | Renew Renew | |
| 08 11.01.2010 | 16143 | 13 | 264 | 554 A | A01124514O | 198,08 | 1 N | Ν | w | N | N | 2374 | 130755 High-pressure | 50 LEAKING BPY | Renew | |
| 08 19.01.2009 08 14.01.2010 | 0 7000 | 1 9 | 264 264 | 1913 1196 | 39905 207551 | 1146,01 490,4 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA K21 17 SLUGGISH (\$BPT | Renew Renew | |
| 08 22.09.2009 | 19000 | 9 | 264 | 30575 | 13766 | 470,66 | 1 N | N | | N | N | 2374 | 130755 High-pressure | 17 SLUGGISH (K21 | Renew | |
| 08 03.08.2009 08 01.06.2009 | 15000 6000 | 5 3 | 264 264 | 80090 839 | 219116 189735 | 2097,8 1710,87 | 1 N 1 N | N N | H W | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 17 SLUGGISH (* BPT 10 MECHANICA BOO | Renew Renew | |
| 08 31.03.2009 | 4000 | 1 7 | 264 | 1710 | 399 | 463,63 | 1 N | N | | N | N N | 2374 | 130755 High-pressure | 20 NOISE BOO | Renew | |
| 09 01.10.2009 08 26.08.2009 | 39000 3000 | 1 | 264 264 | 2205 859 | 91465 13578 | 1700,8 1746,96 | 1 N 1 N | N | н | N | N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 50 LEAKING BOO 10 MECHANICA K21 | Renew Renew | |
| 08 18.09.2009 09 23.11.2009 | 4000 18000 | 2 5 | 264 264 | 859 30424 | 14884 1000 | 1736,7 1574,4 | 1 J 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA K21 20 NOISE BPT | Renew | |
| 09 01.12.2009 | 24000 | 5 | 264 | 940 | 36330 | 532,42 | 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure | 20 NOISE BPT 17 SLUGGISH (\$BPT | Renew Renew | |
| 09 02.12.2009 08 14.11.2009 | 0 67000 | 5 16 | 264 264 | 2153 84308 | 10356 159725 | 0 1901,65 | 0 N 1 N | N N | W | N | N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 50 LEAKING BOO 10 MECHANICA BPT | Renew Renew | |
| 08 01.09.2009 | 38000 | 8 | 264 | 1475 | 66965 | 0 | 0 N | N | w | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 08 02.12.2009 08 20.01.2009 | 43206 8000 | 15 5 | 264 264 | 394 A 81 | A01092300O 98209 | 1502,85 125,59 | 1 N 1 N | N N | W | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BOO 10 MECHANICA K21 | Renew Renew | |
| 08 18.12.2009 | 105000 | 15 | 264 | 267 A | A01068640O | 1015,46 | 1 N | Ν | | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BPT | Renew | |
| 08 14.05.2009 08 30.11.2009 | 19000 55000 | 8 14 | 264 264 | 30188 532 | 215573 19232 | 1593,7 1683,49 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 50 LEAKING BOO 10 MECHANICA BOO | Renew Renew | |
| 08 03.09.2009 | 26000 | 10 | 264 | 30067 | 434921 | 535,83 | 1 N | N | | N | N | 2374 | 130755 High-pressure | 20 NOISE BPT | Renew | |
| 08 29.10.2009 08 21.12.2009 | 14000 73000 | 9 13 | 264 264 | 155 872 A | 22051 A02049476O | 1787,73 503,2 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BOO 17 SLUGGISH (\$BPT | Renew Renew | |
| 08 17.09.2009 | 12000 | 8 | 264 | 2242 | 27472 | 2008,51 | 1 N | Ν | W | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BPT | Renew | |
| 09 18.12.2009 09 07.09.2009 | 47000 11000 | 10 4 | 264 264 | 2095 818 | 41494 11272 | 1640,29 482,06 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 50 LEAKING BOO 20 NOISE K21 | Renew Renew | |
| 09 18.08.2009 | 11000 | 4 | 264 | 2176 | 93 | 1862,68 | 1 N | N | w | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 08 28.11.2009 08 11.11.2008 | 97000 4000 | 18 3 | 264 264 | 983 897 | 6369 771944 | 1658,36 587,11 | 1 N 1 N | N N | | N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BOO 50 LEAKING BPT | Renew Renew | |
| 08 12.11.2009 | 28000 20000 | 17 7 | 264 264 | 367 | 12407 23669 | 1529,92 408,03 | 1 N 1 N | N | w | N | N N | 2374 2374 | 130755 High-pressure | 10 MECHANICA BOO 20 NOISE BOO | Renew | |
| 09 14.12.2009 08 01.12.2009 | 43000 | 7 | 264 | 30568 30495 | 92268 | 1334,02 | 1 N | N | | N | N | 2374 | 130755 High-pressure 130755 High-pressure | 20 NOISE BOO 20 NOISE BOO | Renew Renew | |
| 09 29.12.2009 09 21.12.2009 | 0 | 1 0 | 264 264 | 30529 30118 | 18206 4315 | 1526,63 699,58 | 1 N 1 N | N N | W W | N N | N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA SVZ 10 MECHANICA BOO | Renew Renew | |
| 08 22.09.2009 | 14706 | 12 | 264 | | 4313 A01128660O | 1944,08 | 1 N | N | Ŵ | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 08 19.09.2009 08 24.07.2009 | 54000 40000 | 15 9 | 264 264 | 152 30409 | 19759 1005 | 713,88 2399,9 | 1 N 1 N | N N | н | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 17 SLUGGISH (\$BPY 10 MECHANICA BOO | Renew Renew | |
| 08 17.09.2009 | 13000 | 12 | 264 | 2041 | 17475 | 1926,56 | 1 N | N | Ŵ | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 08 27.10.2009 08 15.10.2009 | 28000 0 | 11 1 | 264 264 | 1719 2205 | 74 91972 | 493,57 1757,54 | 1 N 1 N | N N | | N | N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 20 NOISE BOO 50 LEAKING BOO | Renew Renew | |
| 08 23.10.2009 | 26000 | 9 | 264 | 152 | 22455 | 1493,69 | 1 N | N | w | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BPT | Renew | |
| 08 12.11.2009 08 29.10.2009 | 44000 10000 | 10 3 | 264 264 | 127 2238 | 137377 23224 | 1865,35 414,14 | 1 N 1 N | N | w | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BPT 10 MECHANICA BOO | Renew Renew | |
| 08 04.08.2009 | 1000 | 1 | 264 | 30614 | 5736 | 2075,48 | 1 N | Ν | н | N | N | 2374 | 130755 High-pressure | 50 LEAKING K21 | Renew | |
| 08 05.10.2009 09 29.10.2009 | 4000 11000 | 4 5 | 264 264 | 2190 2051 | 90036 817 | 221,89 1625,88 | 1 N 1 N | N | W W | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 10 MECHANICA BOO 10 MECHANICA BPT | Rep. Renew | |
| 08 21.02.2009 | 24000 | 9 | 264 | 539 | 55678 | 1882,06 | 1 N | N | н | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 09 05.08.2009 09 06.10.2009 | 4000 2000 | 5 2 | 264 264 | 30638 30635 | 4317 2390 | 14,07 1781,15 | 1 N 1 N | N | | N N | N N | 2374 2374 | 130755 High-pressure 130755 High-pressure | 20 NOISE K21 10 MECHANICA BPT | Rep. Renew | |
| 09 24.12.2009 | 0 | 0 | 264 | 20 | 75319 | 574,87 | 1 N | N | | N | N | 2374 | 130755 High-pressure | 10 MECHANICA BOO | Renew | |
| 09 30.11.2009 | 2000 | 1 | 264 | 20 | 74645 | 1037,75 77470,02 | 1 N 64 | N | | Ν | N | 2374 | 130755 High-pressure | 10 MECHANICA K21 | Renew | |
| | | | | | | | | | | | | | | | | |

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11.09.2009 14.12.2009 29.10.2009 20.06.2009 25.01.2010 21.06.2009 25.01.2010 21.06.2009 22.11.2009 22.11.2009 15.07.2009 22.11.2009 06.06.2009 21.01.2010 12.02.2009 01.02.2010 19.10.2009 16.11.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 15.10.2009 25.09.2009 24.12.2009 24.12.2009 24.12.2009 24.12.2009 24.12.2009 14.02.2009 24.12.2009 24.12.2009 25.09.2009 24.12.2009 25.09.2009 24.12.2009 25.09.2009 24.12.2009 25.09.2009 24.12.2009 25.09.2009 24.12.2009 25.09.2009 25.09.2009 24.12.2009 25.09.2009 25.09.2009 25.09.2009 25.09.2009 25.09.2009 25.09.2009 25.09.2009 25.09.2009 25.00.2009 25.00.2009 25.00.2009 25.00.2009 26.01.2010 0.1.2010 01.0209 28.01.2010 21.12.2009 28.01.2010 21.12.2009 28.01.2010 21.12.2009 28.01.2010 21.12.2009 28.01.2010 21.12.2009 28.01.2010 21.12.2009 24.01.2010 21.12.2009 24.01.2010 21.12.2009 24.01.2010 21.12.2009 24.01.2010 21.12.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 25.02.2009 26.01.2010 27.12.2009 26.01.2010 27.12.2009 26.01.2010 27.12.2009 26.01.2010 27.12.2009 26.01.2010 27.12.2009 26.01.2010 27.12.2009

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EA11003EN-01841[3

CP4.1 VW Damage cases by VIN / Engine no. WAR Status:Dec. 0<u>9 02/04/</u>2010 VW, market: MY 2009 - 2011, MIS from/to : 0 -CNR / Groups High-pressure fuel pump (2374) EA189 Diesel Without PR numbers CEARBOX NUMBER CARBOX DURATIO EPCINE DO CARBOX DURATION EPCINE DO CARBOX DURATION M Systepsile 20.0.2.000 21.0.2.000 95000 LIDDOSSI X 10.4.0.2.000 21.0.2.000 95000 LIDDOSSI X 0.0.0.2.000 21.0.2.000 1.0.000 LIDDOSSI X 0.0.0.2.000 1.0.000 1.0.000 LIDDOSSI X 0.0.0.0.000 1.0.000 1.0.000 LIDDOSSI X 0.0.0.000 1.0.000 1.0.000 LID PRODUCTION MONTH SALES MODEL SALES MODEL ENGINE PLANT PRODUCTION DATE SALES ALTE ENGINE CL ENGINE PLANT PLANT 2009 20084 50.4.2008 8550C 21.8.2008 7.83.200 7.73.210 7.73.210 7.73.210 7.73.210 7.73.200 7.73.200 7.73.200 7.73.210 7.73.200 7.73.200 7.73.200 7.73.200 Produced Sold Random sample 58,461 51,898 35,787 ENGINE DATE GCL 28.03.2008 KSR 12.04.2008 JJG 28.04.2008 JJG 28.04.2008 JJG 02.05.2008 JJG 05.05.2008 JJG 15.05.2008 KSR 15.05.2008 KSR 19.05.2008 KSR 19.05.2008 KSR 19.05.2008 LAT 24.05.2008 LAT 31.05.2008 KXP 09.06.2008 KXP 09.06.2008 KXP 09.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 25.06.2008 KXP 25.06.2008 KXP 20.02.008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.06.2008 KXP 10.07.2008 LAT 13.06.2008 KXP 25.06.2008 KXP 20.02.008 KXP 10.07.2008 LAT 13.07.2008 LAT 13.07.2008 LAT 13.07.2008 LAT 13.07.2008 LAT 10.07.2008 LAT 10.07.2008 LAT 10.07.2008 LAT 10.07.2008 LAT 10.02.008 KXP 02.09.2008 LAA 12.09.2008 LAA 12.09.2008 LAA 13.07.2008 LAT 13.07.2008 LAA 12.09.2008 LAA 13.02.008 KXP 10.1.2008 LAA 13.02.008 LAA 12.09.2008 LAA 12.09.2008 LAA 12.09.2008 LAA 12.09.2008 LAA 13.02.008 LAA 12.09.2008 LAA 12.09.2008 LAA 13.02.008 LAA 13.02.008 LAA 13.02.008 LAA 14.02.008 LAA 15.09.2008 LAA 15.09.20 VIN STP ID ISO_CTRY BRAND ORGA_PLAN RY CP4 PLANT WANUZZZ8K49A0 Non-r WAUZZZ8K59A0 espor WAUZZZ8K99A0 sive WAUZZZ8K39A0 sive WAUZZ28K39A0 sive WAUZZ28K39A0 sive WAUZZ8K39A0 sive WAUZZ8K39A0 sive WAUZZ8K39A0 sive WAUZZ8K39A0 sive WAUZZ28K39A0 sive WAUZZ28K39A0 sive WAUZZ28K39A0 nt re WAUZZ28K49A0 move WAUZZZ8K99A WAUZZZ8K09A WAUZZZ8K39A WAUZZZ8K99A WAUZZZ8K49A WAUZZZ8K79A WAUZZZ8K79A WAUZZZ8K79A WAUZZZ8K39A WAUZZZ8K39A WAUZZZ8K39A WAUZZZ8K29A WAUZZZ8K29A WAUZZZ8K59A WAUZZZ8K59A WAUZZZ8K59A WAUZZZ8K59A WAUZZZ8K59A WAUZZZ8K59A WAUZZZ8K WAUZZZ8K69A, WAUZZZ8K69A, WAUZZZ8K49A, WAUZZ28K49A, WAUZZ28K9A, WAUZZ28K89A, WAUZZ28K89A, WAUZZ28K9A, WAUZZZ8K09 WAUZZZ8K89 WAUZZZ8K89) WAUZZZ8K69) WAUZZZ8K7 WAUZZZ8K79J WAUZZZ8K29J WAUZZZ8K29N0 WAUZZ28K9N0 TRUZZ28PS9N0 TRUZZ28PS9N0 WAUZZ28PS9N0 WAUZZ28PS9800 WAUZZ28PS9800 WAUZZ28PS9800 WAUZZ28P39900 WAUZZ28R39N0 WAUZZ28R39N0 WAUZZ28R39N0 WAUZZ28R39N0 WAUZZ8R39N0 WAUZZ8R39N0 WAUZZ8R39N0 WAUZZ8889N0 WAUZ28889N0 WAUZ2800 WAUZ2800 WAUZ2800 WAUZ2800 WAUZ2800 WAUZ800 Parameter: Process execution File name Table Vehicle ident. no. CP4 Change date 02/04/2010 User Frequency 1 - Once, immediate Output format XLS - CSV (Tab-separated Exc Parameter page F - File only Expiration date Overwrite

03/04/2010 N - No N - No N - No Header/footer 0 - Header and footer lines Report format 232 - Damage cases per VIN / Engine no. WAR Number of ranks 50 Sort sequence 115 - Vehicle identification number Data source S - Warranty data from SAGA is displayed General vehicle data Brand AU - Audi Model year 2009 | 2010 | 2011 Non-relevant vehicles Customer-relevant vehicles Employees vehicles 0 - Without 2 - With 2 - With engine and gearbox Engine data D - Diesel 189 - EA189 | 189 - EA189 Dealers and market in general Market Damage data CNR 2374 - High-pressure fuel pump Paint summary Y - Cumulated Breakdowns 2 - With currency type GC - Group currency Application indicator A - Warranty / goodwill 1 - All 0 - Only costs

E-mail

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EA number

Exchange

C cases

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0 - Without repeat repair 2 - With Field campaign 0 - Without MIS from Natural Restitution 2 - All applications (with and without natural restitution) Paint/corrosion A - All Audi accessories 2 - With

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|----------------------|---------------------|--------------------|------------|-----------|-----------|----------|---------|--------------|--|----------------------------|-------------------|----------------------|--------------------------|-----------------------------|---------------------|
| ARRANTY APP RTNER | LICATION NO | CoD | REPEAT ID | RETURN ID | BREAKDOWN | PAINT ID | RUST ID | CNR | SRNR DESCRIPTION S | MANUF/ A DAMAGE TYPE | ACTURER DAMAGE | REPAIR LOCATION F | CON READ-IN RUN_DATE | MPL-ID DAMAG SP NO/OP NO | E CAUSE COMMENTS |
| 845 | 65975 | 2302,55 | 1 N | N | w | N | Ν | 2374 | 130755 High-pressure pump | 10 MECHANIC | | | 08.11.2009 | 0 | Somment's |
| | 40193 01091407O | 2441,88 3448,7 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 10 MECHANIC | 2 | Renew | 29.01.2010 06.11.2009 | 0 | |
| 533 861 | 106792 44860 | 1979,23 1740,4 | 1 N 1 N | N N | H W | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 22.04.2009 13.03.2009 | 0 | |
| 845 940 | 66440 30559 | 2382,96 2506,42 | 1 N 1 N | N | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 17 SLUGGISH | 2 | Renew | 11.11.2009 04.12.2009 | 0 | |
| 152 615 | 24341 200509 | 2451,34 0 | 1 N 0 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump | 10 MECHANIC | - | | 31.12.2009 | 0 | |
| 615 | 200509 | 2332,41 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC | | | 04.09.2009 06.09.2009 | 0 | |
| 943 31013 A | 110426 02022686O | 2717,82 2372,31 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 10 MECHANIC | 2 | Renew | 05.12.2009 29.01.2010 | 0 | |
| 1958 928 | 1876 325624 | 2510,27 2685,68 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 25.11.2009 03.12.2009 | 0 | |
| 8744 | 37140 | 2413,77 | 1 N | N | | N | N | 2374 | 130755 High-pressure pump | 17 SLUGGISH | BPT | Renew | 26.06.2009 | 0 | |
| 367 40 | 7110 42637 | 2924,39 2536,68 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 17 SLUGGISH | 2 | Renew | 27.08.2009 12.10.2009 | 0 | |
| 30103 30050 | 26547 25079 | 894,13 565,05 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 50 LEAKING | 2 | Rep. Renew | 12.11.2009 03.11.2009 | 0 | |
| 1300 926 | 14387 36152 | 2245,42 1459,55 | 1 N 1 N | N | H W | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 17 SLUGGISH | 2 | Renew | 12.07.2009 12.10.2009 | 0 | |
| 844 | 171519 | 2637,16 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | - | Renew | 08.11.2009 | 0 | |
| 2019 918 | 26098 49712 | 3193,27 2329,35 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 09.01.2010 30.11.2009 | 0 | |
| 1425 867 | 33296 5464 | 2594,55 2471,3 | 1 N 1 N | N N | H W | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 18 FREE MOV 17 SLUGGISH | 2 2 | Renew Renew | 10.07.2009 16.11.2009 | 0 | |
| 859 1913 | 151163 42050 | 512,94 1642,58 | 1 N 1 N | N | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 10 MECHANIC | 2 | Renew | 12.03.2009 25.11.2009 | 0 | |
| 2171 | 2045 | 2765,69 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 50 LEAKING | 2 | Renew | 27.11.2009 | 0 | |
| 958 983 | 83732 5821 | 2889,57 2576,08 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 21.10.2009 28.10.2009 | 0 | |
| 1886 2244 | 33823 27439 | 2719,38 2160,86 | 1 N 1 N | N N | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 01.10.2009 22.01.2010 | 0 | |
| 532 1000 | 17108 139359 | 2981 2876,4 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 03.12.2009 25.06.2009 | 0 | |
| 30528 | 36636 | 2682,33 | 1 N | N | | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | | | 24.09.2009 | 0 | |
| 30068 30661 | 55035 583 | 2425,92 2658,18 | 1 N 1 N | NN | H W | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 11.04.2009 11.09.2009 | 0 | |
| 30134 30528 | 12468 36457 | 1988,33 634,66 | 1 N 1 N | N | W H | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 50 LEAKING | BPT 2 | Renew Renew | 01.07.2009 30.07.2009 | 0 | |
| 30072 1464 | 1894 1434 | 544,66 2446,54 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 50 LEAKING 10 MECHANIC | 2 | Renew | 30.01.2010 28.09.2009 | 0 | |
| 971 | 86848 | 1797,49 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | | _ | 27.10.2009 | 0 | |
| 550 1464 | 94090 1828 | 2169,06 2423,86 | 1 N 1 N | NN | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 18 FREE MOV 10 MECHANIC | 2 | Renew | 05.12.2009 28.09.2009 | 0 | |
| 1833 2205 | 26416 94435 | 1228,23 2332,17 | 1 N 1 N | N N | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 50 LEAKING | 2 | Renew | 09.01.2010 01.02.2010 | 0 | |
| 1127 | 571 | 825,09 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | - | | 14.12.2009 | 0 | |
| 1000 1000 | 141964 142912 | 2618,26 2895,65 | 1 N 1 J | NN | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 29.10.2009 29.10.2009 | 0 | |
| 875 844 | 26150 158596 | 535,13 2554,02 | 1 N 1 N | N N | w | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 20 NOISE 10 MECHANIC | 2 | Renew | 15.03.2009 03.03.2009 | 0 | |
| 1709 1366 | 90584 47820 | 592,04 2354,82 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 18 FREE MOV 10 MECHANIC | 2 | Renew | 30.09.2009 18.12.2009 | 0 | |
| 31004 | 84292 | 2627,53 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | | | 13.09.2009 | 0 | |
| 943 775 | 108060 52062 | 572,41 542,08 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 20 NOISE | 2 | Renew | 18.10.2009 06.11.2009 | 0 | |
| 80006 2147 | 47369 49218 | 2165,58 2139,63 | 1 N 1 N | N N | н | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 17 SLUGGISH | 2 | Renew | 07.05.2009 11.01.2010 | 0 | |
| 800 31019 | 13452 1094 | 536,82 543 | 1 N 1 N | NN | | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 50 LEAKING | 2 | Renew | 08.11.2009 17.01.2010 | 0 | |
| 782 23422 | 102396 32014 | 562,82 2715,97 | 1 N | N N | w | NN | N | 2374 2374 | 130755 High-pressure pump | 10 MECHANIC | 2 | | 11.09.2009 | 0 | |
| 80051 | 2435 | 2641,01 | 1 N 1 N | N | w | N | N | 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 10 MECHANIC | | Renew | 11.01.2010 16.09.2009 | 0 | |
| 30483 800 | 41059 13671 | 543,53 558,91 | 1 N 1 N | NN | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 20 NOISE 10 MECHANIC | 2 | Renew | 19.04.2009 08.11.2009 | 0 | |
| 2278 766 | 36138 42526 | 2309,18 532,4 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 07.10.2009 | 0 | |
| 766 | 43748 | 514,73 | 1 N | N | w | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | ~ | Derrow | 11.12.2009 | 0 | |
| 898 849 | 159315 44758 | 514,73 452,43 | 1 N 1 N | N | | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 20 NOISE | 2 | Renew | 09.10.2009 11.11.2009 | 0 | |
| 30048 957 | 712967 18329 | 543,45 404,28 | 1 N 1 N | N N | | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 20 NOISE 50 LEAKING | 2 | Renew Renew | 04.09.2009 20.08.2009 | 0 | |
| 541 | 53104 01070245O | 1867,1 2286,2 | 1 N 1 N | N | W H | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC | _ | | 02.09.2009 01.10.2009 | 0 | |
| 963 | 9483 | 484,91 | 1 N | N | | N | N | 2374 | 130755 High-pressure pump | 20 NOISE | 2 | Renew | 01.02.2009 | 0 | |
| 8815 30436 | 328015 15457 | 498,97 2094,24 | 1 N 1 N | N N | w | N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 11.01.2010 04.02.2010 | 0 | |
| 8097 384 | 171105 427130 | 630,27 501,48 | 1 N 1 N | N N | н | N N | N N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 17 SLUGGISH 10 MECHANIC | 2 | Renew | 31.01.2010 28.08.2009 | 0 | |
| 1000 878 | 143564 41729 | 2836,05 2389,81 | 1 N 1 N | N | w | N | N | 2374 2374 | 130755 High-pressure pump 130755 High-pressure pump | 10 MECHANIC 10 MECHANIC | | | 01.11.2009 04.10.2009 | 0 | |
| 0/0 | 6595 | 2389,81 | 1 N | N | ** | N | N | 2374 | 130755 High-pressure pump | 10 MECHANIC | | | 12.09.2009 | 0 | |

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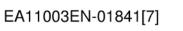
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|---|---|--------------------------------|---|--|--|--|--|---|---------------------------------------|--|--|--|---|---|--|---|
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| wvv22271200 wvv 97 909 vvv 97 909 900 15 944 944 97 909 900 15 944 944 97 900 900 15 944 944 97 900 9000 16 944 | | | _ | | P | RODUCTION DATE | SALES DATE ENGINE CI | | | | | | | | | TNER 293 A01 |
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| repeat repair 2 - With | | | | | | | | | | | | | | | | |
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| | Field campaign | 0 - Without | | | | | | | | | | | | | | |
| MIS from 0 | | | | | | | | | | | | | | | | |
| Natural Restitution 2 - All applications (with and without natural restitution) | Natural Restitution | | tions (with and without | natural resti | itution) | | | | | | | | | | | |
| Pain/corrosion A - All | | A - All | | | | | | | | | | | | | | |
| Audi accessories 2 - With | Audi accessories | 2 14545 | | | | | | | | | | | | | | |

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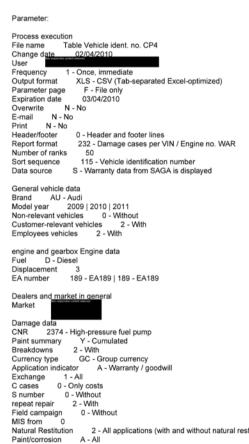
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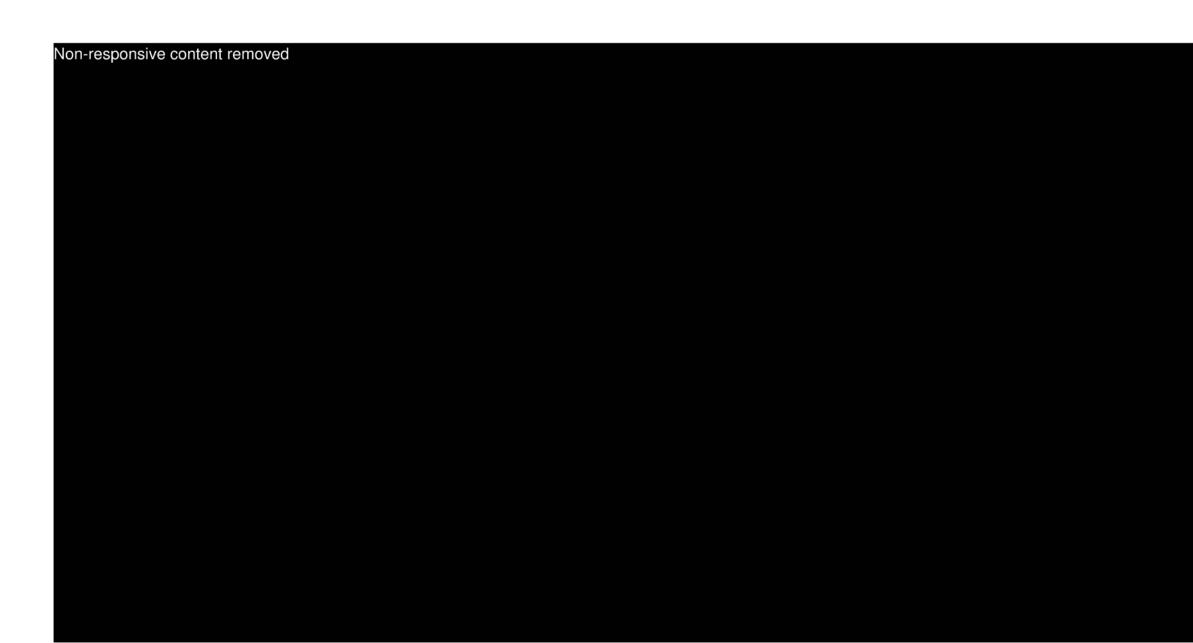






Paint/corrosion A - All Audi accessories 2 - With

without natural restitution)



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| Eng. type | | Pump no. (old) | Pump no. (new) | Engine type | Engine no. | Engine build dat | e Veh. type | Veh. date | VIN | Veh. date NSU | |
|-------------|----------|------------------|----------------|-------------|--------------|-------------------|------------------|----------------|--------------|------------------------|--|
| | 3.01 TDI | | | 6635 | CAS 107713 | 26.03.2010 | Tou NF / Cay N | F 04/02/2010 | WVGZZZ7PZBD | | |
| | 3.01 TDI | | | 6657 | CAS 107509 | 07/27/2010 | Q7 EU5 | 04/7/2010 | WAUAMD4L1AD | | |
| | 3.01 TDI | | | 6576 | CCW 082801 | 03/26/2010 | B8 | 04/08/2010 | WAUZZZ8T8AA | 3/12/2010 3/12/2010 | |
| | 3.01101 | | | 0370 | CCW 082801 | 03/20/2010 | Бо | 04/08/2010 | VVAUZZZOTOAA | 4/7/2010 | |
| | 3.01 TDI | | | 6655 | CCW 085283 | 03/26/2010 | B8 | 04/7/2010 | WAUZZZ8T6AA | 4/8/2010 | |
| | | | | | | | | | | 4/9/2010 | |
| | 2.71 TDI | | | 6650 | CGK 033491 | 03/26/2010 | B8 | | WAUZZZ8T0AA | 4/9/2010 | |
| | | 059 130 755 AH | 059 130 755 BB | | | | | | | 4/8/2010 | |
| VC TDI Cont | 2.71 TDI | 1010 1010 1010 | | 6653 | CGK 033396 | 03/26/2010 | B8 | | WAUZZZ8TXA/ | 4/12/2010 | |
| V6 TDI Gen1 | 3.01 TDI | | | 6655 | CCW 085520 | 03/27/2010 | B8 | 04/08/2010 | WAUZZZ8K1AA | 4/10/2010 | |
| | 3.01 TDI | | | 6655 | CCW 085520 | 03/30/2010 | | 04/08/2010 | WAUZZZ8R5AA | 111 | |
| | 3.01 TDI | | | 6418 | CDY 031917 | 03/29/2010 | | 04/12/2010 | WAUZZZ4F2AN | | |
| | 3.01 TDI | | | 6419 | CDY 033545 | 03/27/2010 | | 04/07/2010 | WAUZZZ4F1AN | | |
| | 2.71 TDI | | | 6336 | CAN 028351 | 03/26/2010 | C6 | 04/09/2010 | WAUZZZ4F5AN | | |
| | 2.71 TDI | | | 6337 | CAN 028480 | 03/26/2010 | | 04/08/2010 | WAUZZZ4F3AN | | |
| | 2.71 TDI | | | 6339 | CAN 028823 | 03/27/2010 | | 04/13/2010 | WAUZZZ4F4AN | 1.7 | |
| | 3.01 TDI | | | 6603 | CAT 009897 | 04/13/2010 | | 04/19/2010 | WA1VMBFE2AD | | |
| | | 059 130 755 AL | 059 130 755 BC | 6591 | CCM 004030 | 04/13/2010 | Q7 EU6 | 04/20/2010 | 4LAD | | |
| | 3.0I TDI | | | 6593 | CCL 001085 | 04/12/2010 | B8 EU6 | 04/22/2010 | WAUZZZ8K0AA | | |
| | 4.21 TDI | 057 130 755 S 05 | 7 130 755 AC | 8459 | CDS 000922 (| 04/12/2010 D4 | | 07/14/2010 | WAUZZZ4H6BN | | |
| | 4.21 TDI | 057 130 755 T 05 | 7 130 755 AD | 8457 | | Engine model disc | ontinued without | use of new pur | | | |
| | 4.21 TDI | | 057 130 755 AC | 8467 | CCF 003437 (| 06/03/2010 Q7 | | 07/08/2010 | WAUZZZ4L9BD | | |

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VIN NSU

12

--> CCW 083058 CP8 03/12/10 --> CCW 082987 CP8 03/12/10 --> CCW 085489 CP8 4/7/2010 --> CCW 085491 CP8 4/8/2010 --> CGK 033503 CP8 04/09/10 --> CGK 033504 CP8 04/09/10 --> CGK 033417 CP8 04/08/10 --> CGK 033419 CP8 04/12/10 --> CCW 085540 CP8 04/10/10

p to engine number CCW 085720, no NSU vehicle built

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|------------------------|---|
| | From: Non-responsive content removed |
| | To: |
| | CC: |
| | |
| | Date: 10/8/2010, 1:14:30 PM Subject: ANS: IQIS:230003014652_QTS 3731540_Info. |
| He | |
| | e will invite you to the next appointment and get you up to date on the latest information; this e-mail ping pong just |
| We fro co the | esn't make sense. don't have any problem with the current status after clean date in the customer service case - where did you get that m? Everything beyond that will be given to you as quickly as possible, but according to priority, beginning with the AWP untries does as a DIN 590 country, is not among them. Otherwise, please clarify with Q whether you really assume a same necessity. Until then, we will continue with the additional measures in CP4.1 development. gards |
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| Se | nt: Fri Oct 08 13:32:35 2010 |
| | bject: ANS: IQIS:230003014652_QTS 3731540_Info. |
| He | llo |
| | rry, but I'm not aware of any CP4.1 task force. |
| | d I'm not familiar with any coordination with Audi colleagues (QA) either. e fact is that I don't get information from you until asking several times (if at all); I just had to get that off my chest. |
| | the CP4.1 in the CP4.1 in the contract of the |
| Ca | n we offer him an AWP pump that will fit the "old series" in the field? am reading your lists correctly, then the 03L 130 755 A is not slated for RP1; does the lift fit at all? |
| Or | |
| | st regards |
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Subject:ANS: IQIS:230003014652_QTS 3731540_Info.

Hello

Let's please stop the unproductive mail correspondence on the CP4 failures with the large distribution list immediately, and check and coordinate our statements better in future. The task force for the CP4.1 failures, which consults the Audi colleagues regularly, has currently reached a status that can only conditionally confirm your statements after a detailed examination. We and AUDI are in the same place in the failure analysis and therefore support the same corrective measures that you are already familiar with as "anti-wear packages". The only difference is the implementation of the RP packages in the field, where across-the-board introduction is planned by 03/2011 for the CP4.1, due to the project variety and volume requirements in association with limited capacity on the Bosch side. We are regularly tracking this at Bosch, so it should not be conveyed to Bosch from a variety of instances.

The evaluation of the cases of damage in the market carried out in AQUA confirms the effectiveness of the measures introduced so far. The failure figures have declined rapidly in manufacturing year 2010. While it is correct that we have recorded a large number of failures in 2010, most of them are due to pumps with DM before the clean date To respond to this and if you want to prevent further failures with the old design status, you will have to request a field cleanup.

We hope to further improve the field situation through the anti-wear packages that have already been approved and scheduled, and are also working on further anti-wear measures together with Bosch, which are currently in the development and validation phase.

P.S. BOSCH has been intentionally left out of the e-mail distribution list.

Best wishes,

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From: Non-responsive content removed

Sent: Thursday, October 07, 2010, 10:14 AM

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Subject:Re: IQIS:230003014652_QTS 3731540_Info.

... and even **manufacture** has encountered (relatively late / 28,000 km) drivetrain damage cases with the CP4.1 (transverse installation MY10), <u>without</u> any indication of poor fuel quality.

Best regards

From:Non-responsive content removed Sent:Wednesday, October 06, 2010, 5:11 PM Non-responsive content removed

EA11003EN-01852[2] EN IN Non-responsive content removed

Subject:IQIS:230003014652_QTS 3731540_Info.

Hello,

Please find attached information on the analysis of the CP4 pump

Fault scope

RB Part no. 0445.010.507 AUDI part no. 03L130755 SN: BPT 0260 DM: 10/16/2009 ML: 05 IQIS: 230003014652 Ref. no: IGG000006033-001 Customer ref. no. QTS 3731540 Engine no. CBAB 05204 Vehicle No.: WAUZZZ8P5AA Mileage: 27,818 km Failure country:

Description of problem

No specification from AUDI

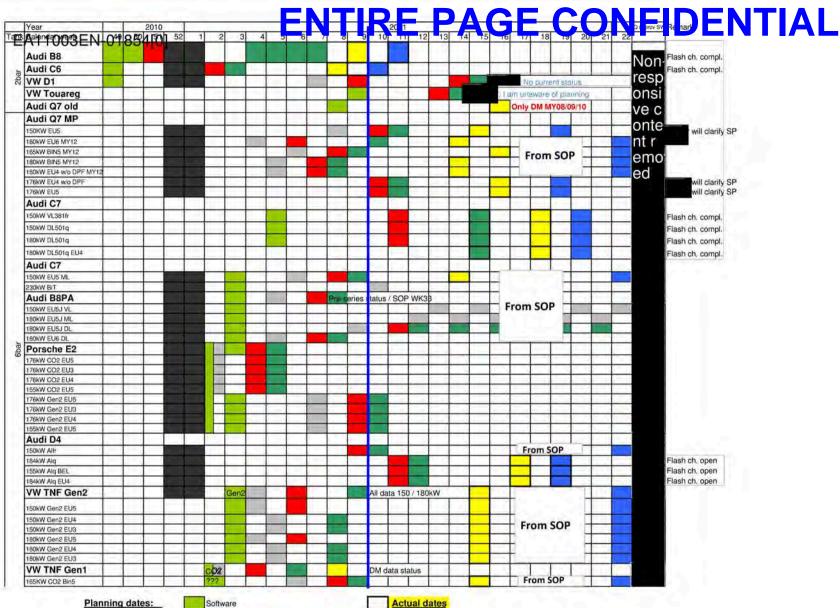
RB analysis:

Roller support worn No deposits or corrosion traces Fuel analysis OK

RB finding

Drivetrain damage Complaint was acknowledged as Bosch defect

Regards



Planning dates:

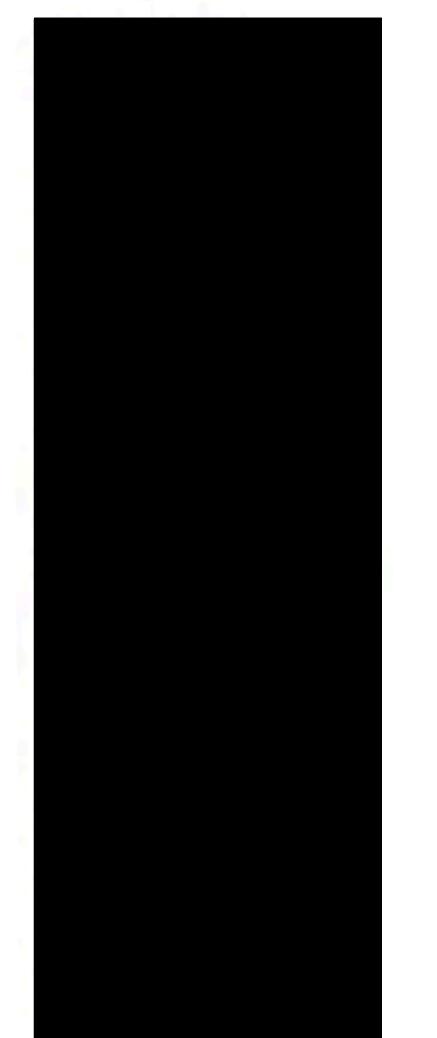
EGAS Premaster = Point of No Return Master

Q release SOP

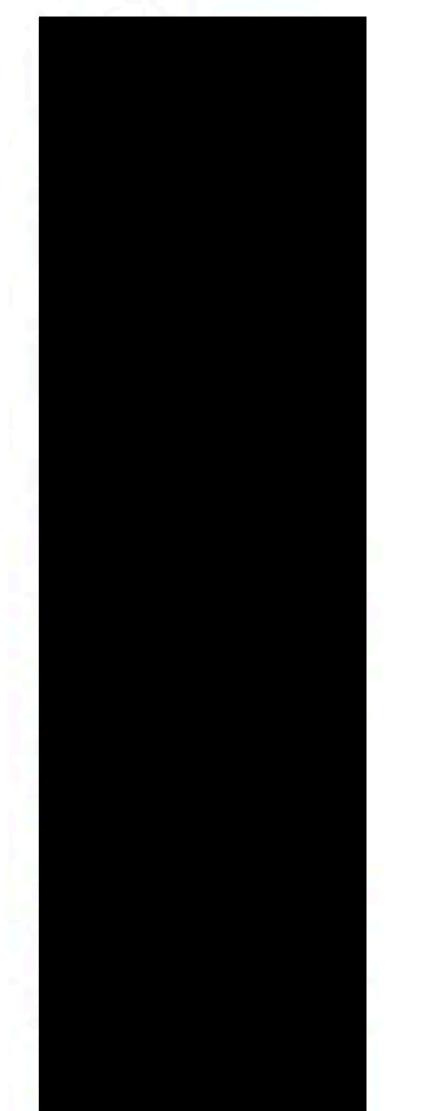
Date with Product Safety on 6-bar tank system Approval from VW EG and GQ expected for 6-bar tank system Approval from Porsche EG and GO expected for 6-bar tank system To Do: Get approval for Touareg, E2, and D1 for 2-bar tank system

Quality responsibility for acou Quality responsibility VW with Porsche via

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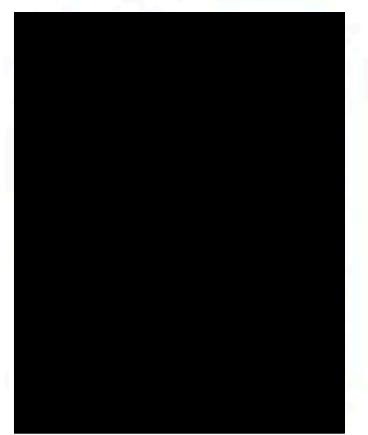


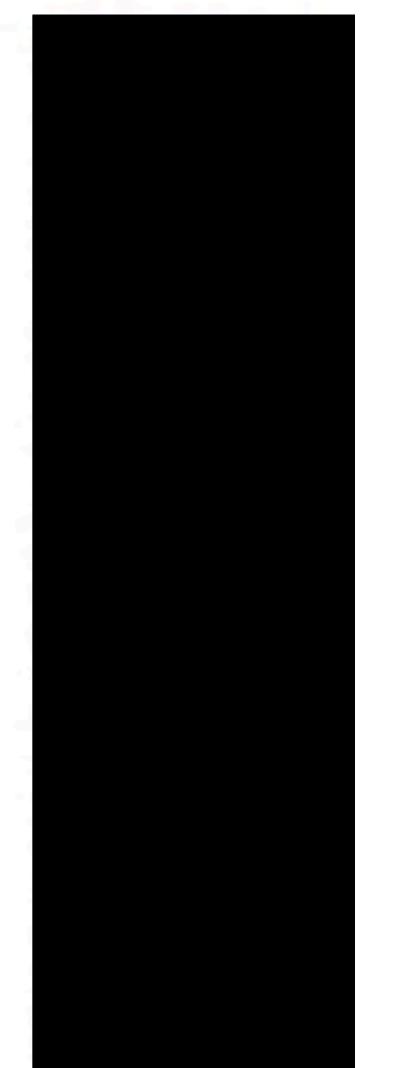


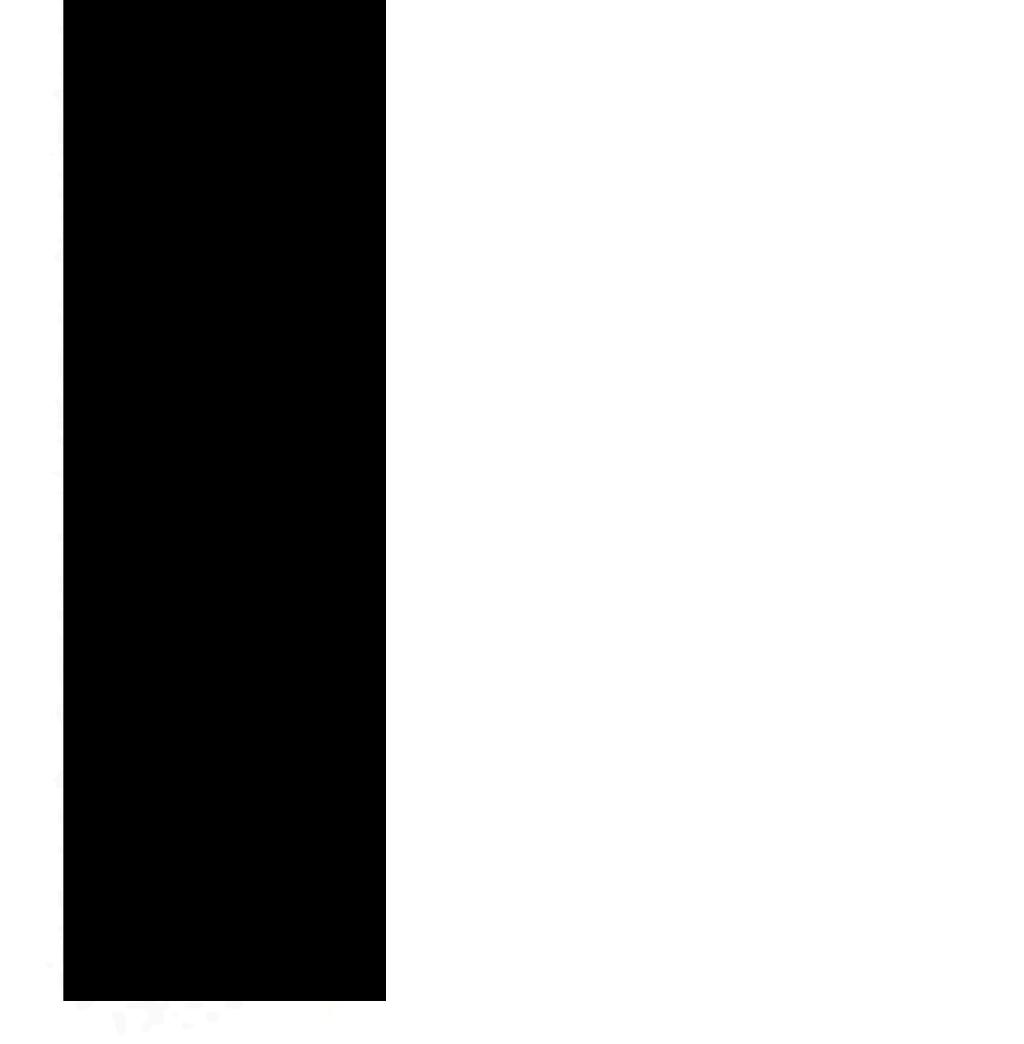


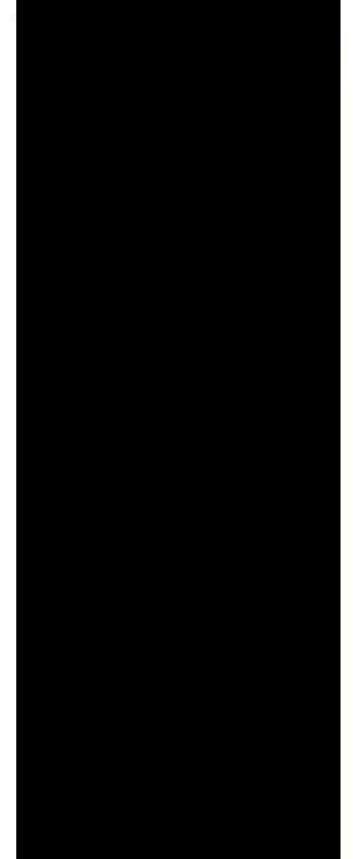


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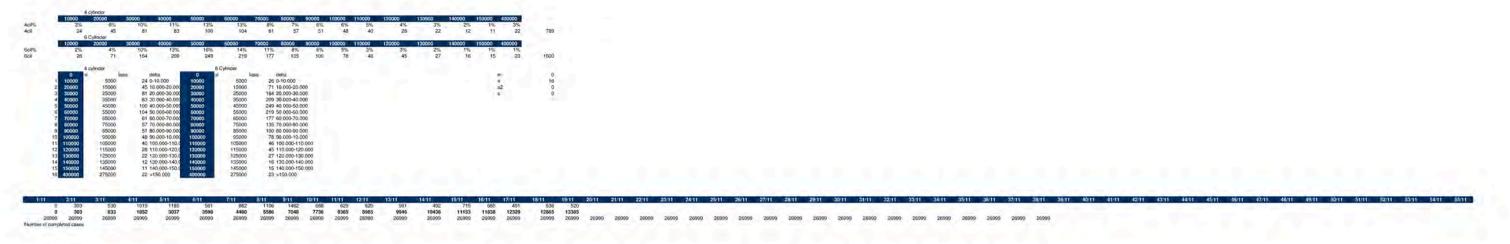




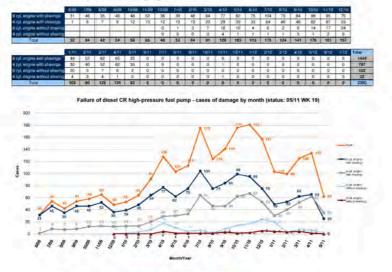
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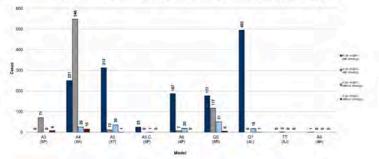


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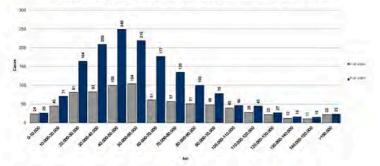


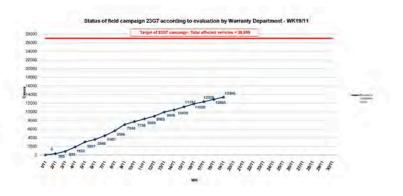
Failure of diesel CR high-pressure fuel pump - cases of damage by model/engine type (status: 05/11 WK 19)





Failure of diesel CR high-pressure fuel pump - cases of damage by engine type/mileage (status: 05/11 WK 19)





Message



to distribution list

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01.18.2008

of Your message dated Our department/reference Date

AUDI AG D-85045 Ingolstadt

Message No.4 Market launch A4 (B8) Limousine

This will give you a summary of the technical field complaints reported since market launch of Audi A4.

Based on mandatory reporting, any technical complaints are reported from the market.

Reported are all major complaints (each breakdown, serious complaints and complaints focuses ≥ 3), which were pre-analyzed by the field start-up team A4 [A4 FAT] and included in the fault remedy process. Status 3 or 4 - issues are reported only once.

Contents:

| Basic figures | Page 3 |
|--|---------|
| Overview of breakdowns | Page 4 |
| Top 5 Complaints per assembly | Page 5 |
| Processing of technical complaints focuses | Page 8 |
| Complaint focuses in detail | Page 9 |
| Evaluation of data memory entries | Page 18 |
| Processing of field damage parts | Page 20 |

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Message No. 4

Market launch A4 Limousine



Message No. 4

Market launch A4 Limousine



Message No. 4

Market launch A4 Limousine



Overview of breakdowns

(Number of cases of damage previous week in parentheses (...))

| ENGINE / GEARBOX | ELECTRICAL | Non-responsive content removed |
|--|------------|--------------------------------|
| 1 (1) x 2.0 liter TDI engine is running irregularly | | |
| High pressure fuel pump (HPP) without function, magnetic chip in the intake valve | | |
| Cleanliness program at Bosch company from VIN 8K8A009613 8K8N002914 | | |
| Mileage 350km Rental car from Euromobil FAT on-site analysis | | |
| Status: 3 | 3 | |

Message No. 4

Market launch A4 Limousine

| ENGINE / GEARBOX | ELECTRICAL | CHASSIS | COACHWORK |
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| | | | 1.1.1 |

Production Ingolstadt

L

N Production Neckarsulm

Status 0: Problem included Status 1: Analysis completed Status 2: Measure defined Status 3: Measure is being implemented Status 4: Measure is effective

Message No. 4

Market launch A4 Limousine



Top 5 technical complaints per assembly (Number of cases of damage last week in parenthesis ())

Changes to the previous week in blue.

| ENGINE / GEARBOX | ELECTRICAL | CHASSIS | COACHWORK | |
|--|----------------|-----------------|-----------|------|
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| 2 (1) x 2.0 liter TDI engine stops (thereof 1x breakdown) | Non-responsive | content removed | | |
| High pressure fuel pump (HPP) without function, magnetic chip in the intake valve | | | | |
| Cleanliness program at Bosch company from VIN 8K8A | | | | |
| 8K8N Status | | | | |
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EA11003EN-02024[6]

ENTIRE PAGE CONFIDENTIAL

Message No. 4

Market launch A4 Limousine

| ENGINE / GEARBOX | ELECTRICAL | CHASSIS | COACHWORK |
|--------------------|---------------|---------|-----------|
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Status 0: Problem included Status 1: Analysis completed Status 2: Measure defined Status 3: Measure is being implemented Status 4: Measure is effective

Audi

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Status as on 01.18.2008

EA11003EN-02024[7]

Message No. 4 Market launch A4 Limousine



Message No. 4

Market launch A4 Limousine



Complaint focuses in detail (Number of cases of damage previous week in parentheses (...), breakdowns in red) Changes to the previous week in blue.

ENGINE / GEARBOX

| Complaint / workshop - verification / CS measure | Status | Analysis / Cause / Measure | Resp. | Deadline |
|---|-------------------------|---|--|--------------------------------|
| Non-responsive content re | emoved | | Non-respon sive conte nt removed | WK 04/08 |
| | | | Non-respons ive content removed | WK 04/08 |
| | NOTING ACTIVITY OF MALE | verification / CS measure Non-responsive content removed | | Non-responsive content removed |

Message No. 4

Market launch A4 Limousine



Only engine / gearbox

| 2 | | Status | Analysis / Cause / Measure | Resp. | Deadline |
|----------|---|--------|--|--|----------|
| 2 (1) | Complaint: 2,01TDI: Engine stops or engine has no power (thereof 1x breakdown) Workshop observation: High pressure fuel pump (HPP) without function Customer measure: Replace HPP Affected plants: 2 x Ingolstadt | 3 | Analysis: Magnetic chip in the intake valve, known from CP7, DM 09.17.2007 Supplier by Bosch <u>Measures:</u> - Change to flush sequence during housing production - Optimized transport of the housing - Masking of MU hole after washing / up to assembly of MU - Suction of MU hole before mounting the MU - Analysis of evacuated particles to identify / eliminate the root causes since 12/07 from VIN 8K8A 8K8N <u>Further action:</u> Inspection of cleanliness program by Technical Audit of Supplier (TRL) | Non-responsi ve content r emoved | Done |
| 1 0) | Non-responsive content re | emoved | | Non-respo nsive con tent remo ved | WK 04/08 |

Message No. 4

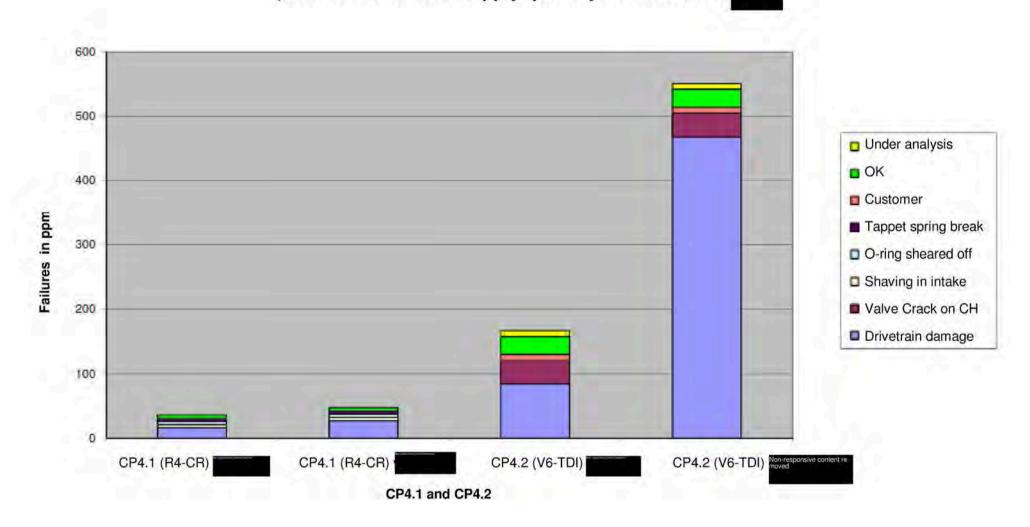
Market launch A4 Limousine



EA11003EN-02042[0]

ENTIRE PAGE CONFIDENTIAL

Field failures CP4 Audi in ppm (each based on total supply quantity from Bosch to



| error | ppm | | | | | | |
|---------------------|---------------|----------------|----------------|--|--|--|--|
| Pump type | CP4.1 (R4-CR) | CP4.2 (V6-TDI) | CP4.2 (V6-TDI) | | | | |
| Drivetrain damage | 16 | 27 | 84 | | | | |
| Crack on CH | 0 | 0 | 37 | | | | |
| Shavings in the | 5 | 5 | 0 | | | | |
| O-ring sheared off | 5 | 5 | 0 | | | | |
| Tappet spring break | 5 | 5 | 0 | | | | |
| Customer error | 0 | 0 | 9 | | | | |
| OK | 5 | 5 | 28 | | | | |
| under analysis | 0 | 0 | 9 | | | | |
| Total | 36 | 47 | 167 | | | | |

EA11003EN-02042[2]

| CP4.2 (V6-T | DI) worldwide |
|-------------|---------------|
| | 468 |
| | 37 |
| | 0 |
| | 0 |
| | 0 |
| | 9 |
| | 28 |
| | 9 |
| | 551 |

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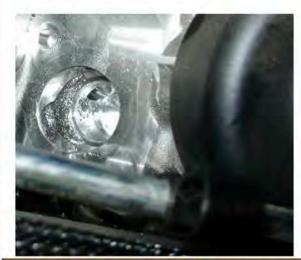
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Current information from the field



V6 TDI EU5 high-pressure fuel pump damage

| Complaint: | Vehicle has no power, stops, does not restart. Engine check lamp is on |
|-----------------------|---|
| Workshop observation: | Data entry of engine control unit Rail pressure control limit undershot. Injection system does not build up any rail pressure. Massive chip entry into the high pressure fuel pump and the fuel system. Change to the entire fuel system is required. |
| Cause: | "Low-viscosity or poorly lubricating" fuels, such as winter diesel in summer, high water content, etc., leads to lack of lubrication and thus, seizure between roller and the high- pressure fuel pump. |
| Measures: | Camera system for detection of elevations on the roller support after WK 26/09. Introduction of C2 instead of C3 coating on roller end from WK 21/09. Large-scale test of increased testing point for selecting borderline pumps through failure in the 3rd quarter 09 |
| Note: | Robustness increase of the pump CP4 is required for global fuel qualities. |



Parameters since becoming aware of the
problems:Cases of damage:394 CoDWarranty costs:Non-responsive conten
t removedBreakdown:305

Repeat repair:

Status:

Processing body:

11% Quality module V6/V8 TDI 1 CoD after last

measure

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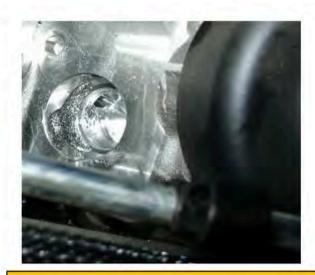
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Current information from the field



V6 TDI EU5 high-pressure fuel pump damage

| Vehicle has no power, stops, does not restart. Engine check light is on (100% breakdown). |
|--|
| Data entry of engine control unit Rail pressure control limit undershot. Injection system does not build up any rail pressure. Massive chip entry from the high pressure fuel pump into the fuel system. Change to the entire fuel system incl. tank is required. |
| Stiffness of the roller in the roller support due to production discrepancies. Critical fuel qualities in different markets worldwide, wherein the damaging fuel properties could not be detected analytically until now. Market is separately analyzed due to the current high failure rates with respect to fuel quality. |
| Optimized C coating of roller support from WK 16/09. Introduction of C2 instead of C3 coating on roller end from WK 21/09. Camera system for detection of surface defects on the roller support from WK 26/09 is being implemented. |
| Robustness increase of the pump CP4 is required for global fuel qualities. |
| |
| |



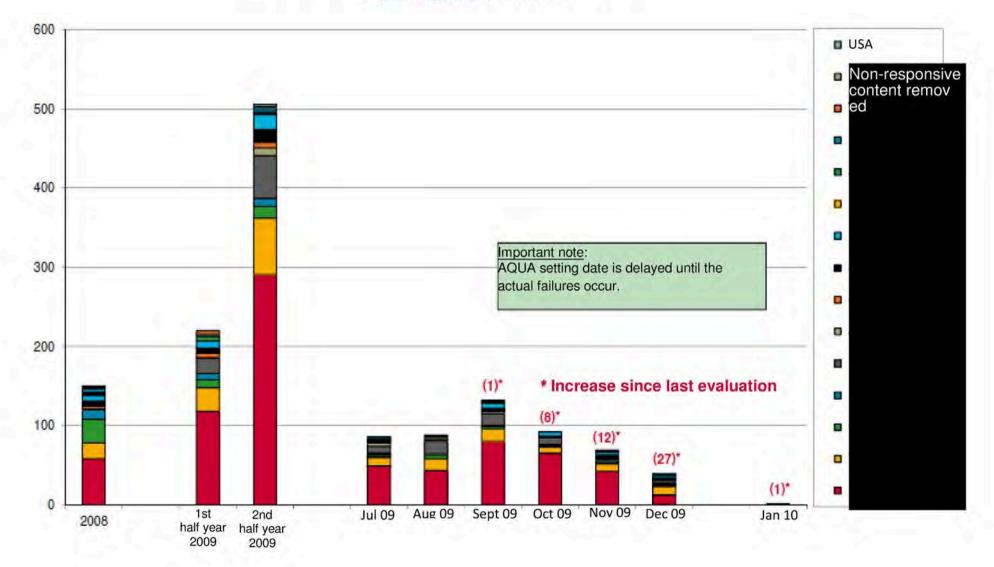
Parameters since becoming aware of the problems:

Cases of damage:609 CoDWarranty costs:Non-responsive cont
ent removedBreakdown:609Repeat repair:11%Processing body:Quality module
V6/V8 TDIStatus:3 CoD after last
measure, thereof 1x

EA11003EN-02089[0]

ENTIRE PAGE CONFIDENTIAL

Settlements for high-pressure fuel pump CP4.2 V6-TDI Audi (by setting date in AQUA)



EA11003EN-02089[1]

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Settlements for high-pressure fuel pumps CP4.2 Audi V6-TDI (by setting date in AQUA)

| | | | NEW ! | | | | | | | | |
|--------------|------|--------------------------------|--------------------------------|--------|--------|---------|--------|--------|--------|--------|-------|
| Country | 2008 | 1 st half year 2009 | 2 nd half year 2009 | Jul 09 | Aug 09 | Sept 09 | Oct 09 | Nov 09 | Dec 09 | Jan 10 | Total |
| Von rochonci | 58 | 118 | 291 | 49 | 43 | 80 | 65 | 42 | 12 | 0 | 467 |
| Non-responsi | 20 | 30 | 71 | 11 | 15 | 16 | 8 | 10 | 11 | 1 | 122 |
| ve content r | 1 | 19 | 54 | 9 | 16 | 15 | 9 | 1 | 4 | 0 | 74 |
| emoved | 30 | 10 | 15 | 3 | 5 | 3 | 2 | 0 | 2 | 0 | 55 |
| | 7 | 9 | 19 | 1 | 1 | 6 | 5 | 3 | 3 | 0 | 35 |
| | 12 | 8 | 10 | 2 | 1 | 1 | 1 | 3 | 2 | 0 | 30 |
| | 6 | 6 | 16 | 2 | 1 | 4 | 2 | 5 | 2 | 0 | 28 |
| | 4 | 6 | 7 | 2 | 3 | 0 | 0 | 2 | 0 | 0 | 17 |
| | 5 | 3 | 4 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 12 |
| | 2 | 6 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| | 0 | 1 | 10 | 4 | 1 | 3 | 0 | 1 | 1 | 0 | 11 |
| | 1 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 |
| | 2 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| USA | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 3 |
| Total | 150 | 220 | 506 | 86 | 88 | 132 | 92 | 69 | 39 | 1 | 877 |

* Increase since last evaluation from 12/18/09 (Status 1/11/2010):

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12

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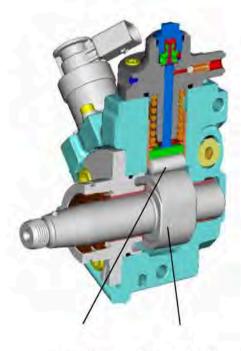
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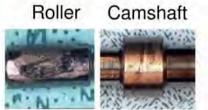
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Audi V6 TDI Drivetrain damage HPP CP4.2

High-pressure diesel pump in CR injection system 1,800 bar (EU5) from WK 45/2007





The "sensitive heart" of the pump is the drivetrain with:

- Roller
- Roller support
- Twin camshafts

The **roller** with its extremely smooth surface must over the <u>entire</u> service life and <u>at all operating conditions</u>:

- slide smoothly in the C coated roller support
- roll over a very smooth cam without slippage

If this is not achieved in all situation, a **drivetrain damage** can occur in case of:

- Stiffness of roller in the roller support due to manufacturing deviations (mostly eliminated)
- Critical fuel qualities in different markets Removed, wherein the damaging fuel properties could not be detected analytically until now

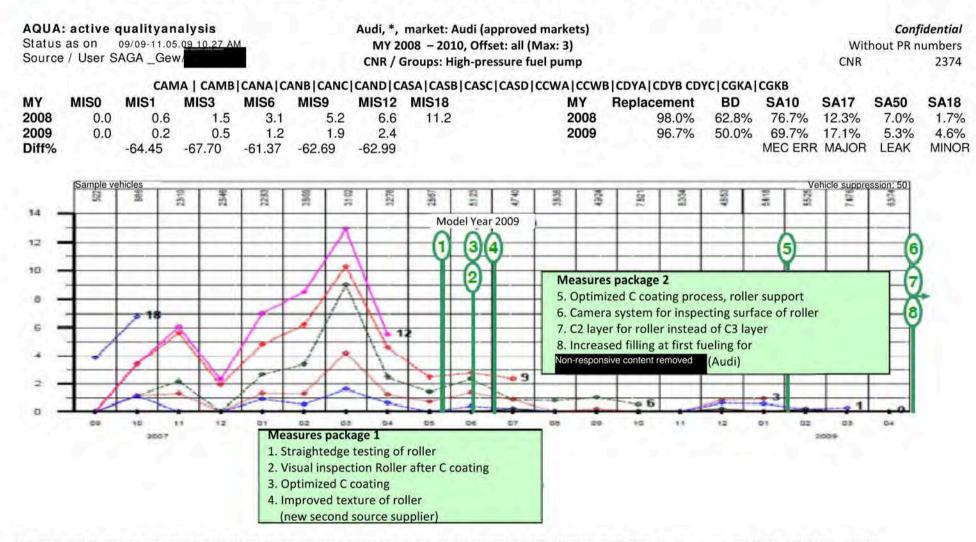
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EA11003EN-02091[2]

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Audi V6 TDI Drivetrain damage HPP CP4.2

Field situation worldwide: approx. 880 CoD (over 90% drivetrain damage)



Vehicle: 29,592+92,395+37,767=159,754; Sold: 29,424+89,879+26,899=146,202; UP: 21,115+67,808+22,991=111,914; MY: 2008+2009+2010= Total

CP42 AU all MKB V6 free 08-10

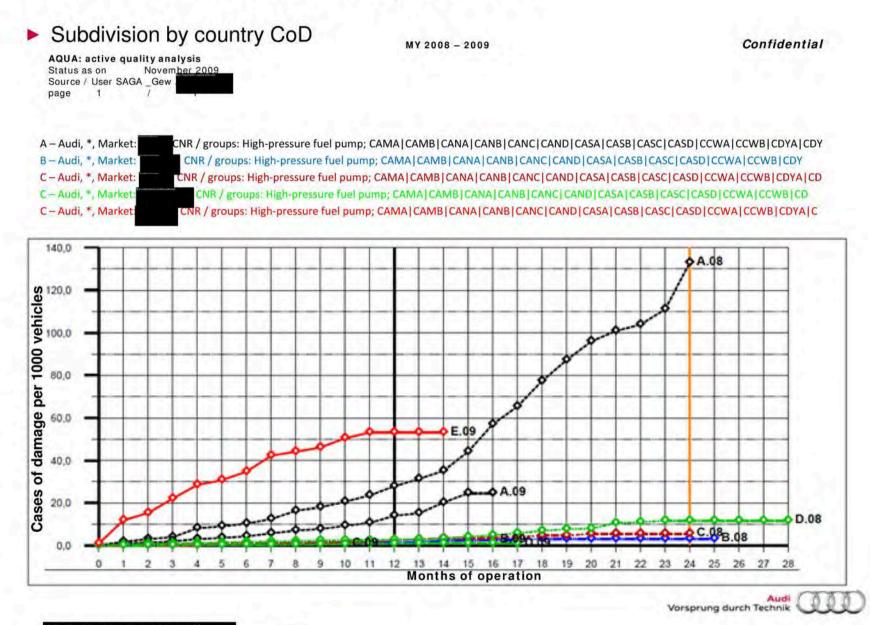
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Audi V6 TDI Drivetrain damage HPP CP4.2



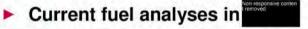
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Failures in other markets:

| Failure figure | s: |
|--|---------------------------|
| Non-responsi ve content r emoved | 50 |
| | 41 |
| | 29 |
| | 11 |
| | 9 |
| | 5 |
| | 4 |
| | Similar to first failures |
| | |





Diesel: Cetane number, sulfur, lubricity are particularly problematic; fuel is classified as not suitable for EU 4/5

- Safety factor against slip shows a strong dependence on
 - Viscosity and lubricity of the fuel
 - Clearance between roller roller support:
 - Roughness of roller
 - Form error roller support
 - Water content in fuel > 200 ppm



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Measures to increase the robustness

- Further development of wear-optimized C coating
- Optimization of texture and surface of roller support
- Optimization of component tolerances (clearance) roller roller support

According to present plans by Bosch SOP of these measures 07/2010



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Drivetrain damage high pressure diesel fuel pump CP4.2

Summary of activities:

- Current CoD: worldwide 877 settlements, of which 467 in ______- see Appendix (approximately 90% drivetrain damage)
- Findings by Task force
- Abnormalities of fuel (FAME acid) due to increase from about 3-5% to 7% biodiesel 2009 in
- Damage pattern of Italy different from enough + RoW (smoothened cam track, shaft seal worn, etc.)
- Individual C coated batches show high failure rates
- Failure hypotheses for market by Bosch :
- <u>Tribo-chemical wear</u>: Oxidation of camshaft → oxide discharge through roller → smoothening of camshaft → reduction in the coefficient of friction (contrary to target: high coefficient of friction roller / cam)
- Deposit formation through biodiesel: Deposits → increase in the coefficient of friction of roller / roller support → roller stiff in the roller support → slip of roller / cam → wear + material discharge
- Microorganisms in fuel: e.g. algae → acid through metabolites → corrosion on roller + camshaft → increase in coefficient of friction + surface damage → wear + fatigue of material
- Further measures:
 - Continuation of the detailed fuel and damage pump analysis
 - Review of all failure hypotheses / Ishikawa diagram
 - Test for reproduction of damage mechanism on test rig
 - Comparison of production parameters of CP4.2 (Q records) so far without evidence of damage-promoting deviations → further analyses of parameters that are not specified yet (especially C coating, component geometry)
- Current status with respect to implementation of anti-wear package (planned Launch SOP July 2010)
 Pump parts manufacture + survey. Initial test results with a critical fuel by end 01.10

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Audi Vorsprung durch Technik

Drivetrain damage high pressure diesel fuel pump CP4.2

TOP meeting Bosch- Audi on 02.12.2010 in Non-responsive conten

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ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high pressure diesel fuel pump CP4.2

Current field situation:

V6-TDI Audi

Worldwide 1,035 settlements / 526 thereof...

- MY08 632 pieces / 338 thereof = critical production period
- MY09 377 pieces / 180 thereof = after measures package 1
- MY10 26 pieces / 8 thereof = after measures package 2
- → See failure statistics with measures
- V8-TDI 1 case
- V12-TDI 2 cases
- Country-specific analyses of failed pumps and GOOD pumps Bosch
 - Drivetrain damage (factor is 10 times higher than no responsed)
 - Drivetrain damage oved
 - Drivetrain damage
- Failure hypothesis Bosch:
 - Possible turning of the tappet when starting the system, leading to a high point load on the roller in the roller support, and thus bringing it to standstill (especially CP4.2 twin pistons in the V6-TDI). Low-quality fuel (smaller lubrication gap) facilitates the roller in coming to standstill. Adhesive wear occurs at the cam and / or roller and thus, sooner or later to failure of the system.

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EA11003EN-02096[2]

02096[2] ENTIRE PAGE CONFIDENTIAL Drivetrain damage high pressure diesel fuel pump CP4.2

Continuation of failure hypotheses – Bosch:

- Iow-quality fuel, which leads to a stiff / stationary roller
- Tribological oxidation (corrosion)

Anti-wear package 1 (RP1):

- C2 coating of roller support instead of C3 coating for better surface roughness (Rv = 0.8 rather than 1.3 μm)
- C2 coating also prevents metal splashes
- Clearance reduction of roller / roller support by shifting tolerance range (18 40 µm instead of 24 46 µm)

Short testing and effectiveness of RP1:

- Basic testing of C2 coating due to use by competitors in 2010 is completed
- Short testing with Arctic diesel (was originally kerosene) → poorly lubricating, low-viscosity fuel by WK08/10 → Aim: Identify potential for improvement RP1
- Declaration of effectiveness is evaluated critically by QA Audi → Potential for improvement is probably not quantitatively measurable
- No measure against the main fault hypothesis "stiffness due to clogging" of the roller!!!

Readiness for production and launch date:

- Readiness for production Bosch from WK09/10 ensured
- Planned release by development + QA Bosch + Audi beginning WK09/10
- Serial deliveries by Bosch from WK10/10
- The first 400 pieces are scheduled in advance for use at customer



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Drivetrain damage high pressure diesel fuel

- Long-term testing RP1 for series € Quantitative potential for improvement (e.g. in ER hours, etc.)
 - Worst-case fuel VW Group / Bosch is defined → Testing from from WK08/10
 - Worst-case fuel VW Group / Bosch is defined → Testing from WK08/10
 - "Aged" diesel with biodiesel proportion of 20% (B20) → postponed to WK ??/??
- Anti-wear package 2 (RP2) still open
 - Possible objective: Avoidance of turned tappet by preventing "unguided resting position" in pump cam TDC or tappet anti-turning lock (twin piston V6 TDI significantly more critical than CP4.1 R4) → field situation CP4.2 (factor is 10 times higher than CP4.1) !!!
 - Engine including measurements have not been completed yet
 - <u>Critical</u>: any new design and construction components required (previous solutions for tappet antiturning lock have been discarded by Bosch, because strength is not sufficient = evidence of turned tappet)
- Fallback solution of high-pressure fuel pump CP1H or CP3 for fuel-critical EU4 markets:
 - Installation analyses N/EA-6 are done in V6 Gen 2.
 - Alternative: Reactivation of V6 1st generation with CP1H (was series status B8 with EU5 interim)
 - Requirement for QA due to insufficient effectiveness of RP1

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Drivetrain damage high pressure diesel fuel

■ Requirement by Bosch: → Integration of water separator in the diesel filter

- Water separator with vacuum option in the main failure models Q7 and Touareg from the beginning in series production
- Currently, there is no available water separator technology for breakdown diesel filters in Audi B / C 7series
- Diesel filter manufacturer, Bosch does not offer any water separation system
- For all European models, FIAT (expert on the domestic market) delivers water separator with sensors
 + display icon in the instrument cluster
- Warranty disclaimer by Bosch
 - Bosch rejects warranty for all markets, which do not have fuels according to European standard EN590 = rest of the world RoW (specified in TCD = technical customer documentation)
 - Audi currently supplies outside EU at its own risk
 - Diesel volume rising sharply due to opening up of world markets
 - The following growth markets Non-responsive content removed are classified as particularly fuel-critical
 - US warranty currently not questioned by Bosch

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ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 86,081 | 72,115 | 44,659 | 67 | 0.78 |
| CP4.1 Audi (4 cyl.) | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW (6 cyl.) | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Audi (6 cyl.) | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

Status 12/2009

Failure statistics market USA

| - x _1 - 1 | Produced | Sales | Random sample | Failures | Failures per 1000 |
|-------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 58,097 | 52,404 | 41,034 | 108 | 1.86 |

Status 12/2009

Failure statistics removed market

| 23 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | Produced | Sales | Random sample | Failures | Failures per 1000 |
|--|----------|---------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 249,966 | 219,348 | 183,737 | 19 | 0.08 |
| CP4.1 Audi (4 cyl.) | 151,640 | 143,838 | 128,026 | 53 | 0.35 |

Status 01/2010

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ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

| Failures figures for Henresponsive canter market | | | | | | | |
|--|----------|--------|---------------|----------|-------------------|--|--|
| | Produced | Sales | Random sample | Failures | Failures per 1000 | | |
| CP4.1 VW (4 cyl.) | 86,081 | 72,115 | 44,659 | 67 | 0.78 | | |
| CP4.1 Audi (4 cyl.) | 58,461 | 51,898 | 35,787 | 83 | 1.42 | | |
| CP4.2 VW (6 cyl.) | 1,562 | 1,310 | 667 | 16 | 10.24 | | |
| CP4.2 Audi (6 cyl.) | 15,386 | 13,727 | 8,998 | 153 | 9.94 | | |

Status 12/2009

Failure figures for USA market

| ALC: N.L | Produced | Sales | Random sample | Failures | Failures per 1000 |
|-------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 58,097 | 52,404 | 41,034 | 108 | 1.86 |

Status 12/2009

Failure figures for Wed Wed Content remo

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|---------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 249,966 | 219,348 | 183,737 | 19 | 0.08 |
| CP4.1 Audi (4 cyl.) | 151,640 | 143,838 | 128,026 | 53 | 0.35 |

Status 01/2010



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Status drivetrain damages Bosch CP4

General cause of CP4 drivetrain damage:

- Unacceptably high mixed friction between roller and roller support cause local contacts during operation.
- The C coating of the roller support is disrupted (wear and erosion of the C coating), the coefficient of friction between the roller and roller support increases.
- Stiffness of roller \Rightarrow wear \Rightarrow particle formation \Rightarrow drivetrain damage
- Intensification factors: Fuel With low viscosity, elevated spots on the roller (e.g. fusing) and in the roller support (e.g. metal splashes), surface of roller/ roller support

Failures figures for tempored market

Blending of aged biodiesel with fuel in the market leads to deposit formation and oxidation in the high-pressure fuel pump ⇒ tribochemical wear, deposits from algae and oxidation products, corrosion on the surface of camshaft and ⇒stiff roller
Further analyses of flow- and pressure conditions in tappet chambers are under progress, Effect of LP-cycle and tappet position when switching off the engine (critical against turning in the TDC position).



ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

- Introduction of anti-wear package 1 for CP4:
- <u>Task</u>

- Robustness increase of the drivetrain by increasing the lubricant film thickness between roller support hole and roller.

- Characteristics of the anti-wear package 1
- Reducing the roller support texture in combination with switchover to C2 coating on the roller support.
- Reduction of the clearance between roller support and roller by adjusting the center of tolerance and the tolerance range of roller support hole.
- Validation to WK 08/2010, then introduction into production as soon as possible.



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ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

Follow a HPP drivetrain damage:

- Chip formation in high-pressure fuel pump drivetrain
- Chips distributed through entire fuel system
- Malfunctions of HPP, PCV, RPS, injectors, PRV

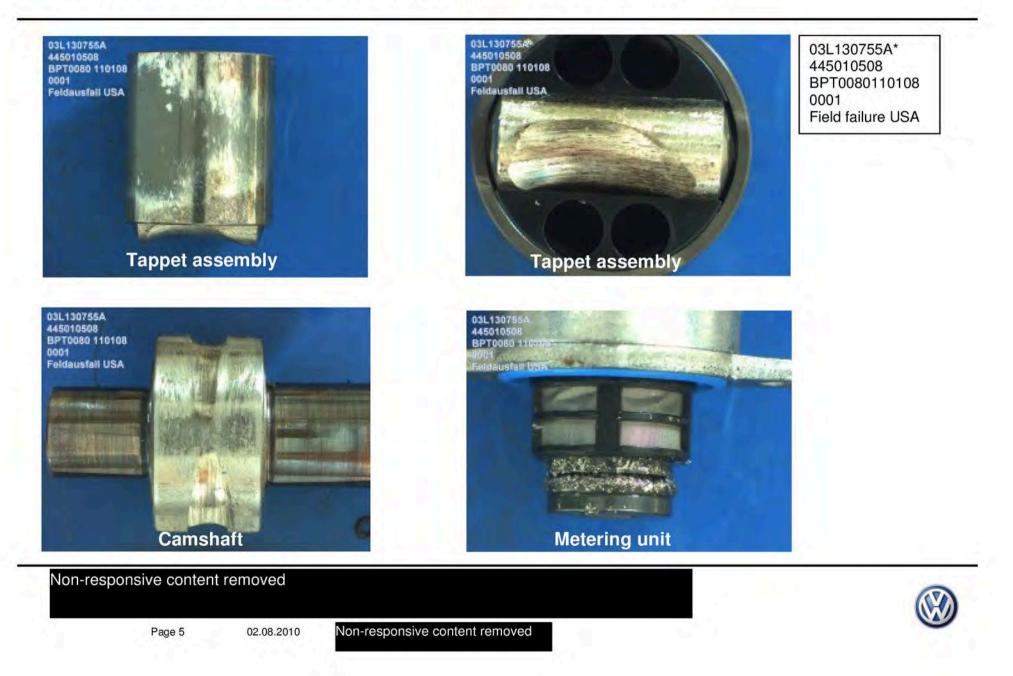
Repair effort:

Replacement of the entire injection system comprising:
 Fuel filter
 High-pressure fuel pump
 High-pressure lines
 Rail incl. rail pressure sensor and pressure control valve
 Injectors,
 fuel return line,
 fuel lines
 Cleaning of the fuel tank and flushing of the lines



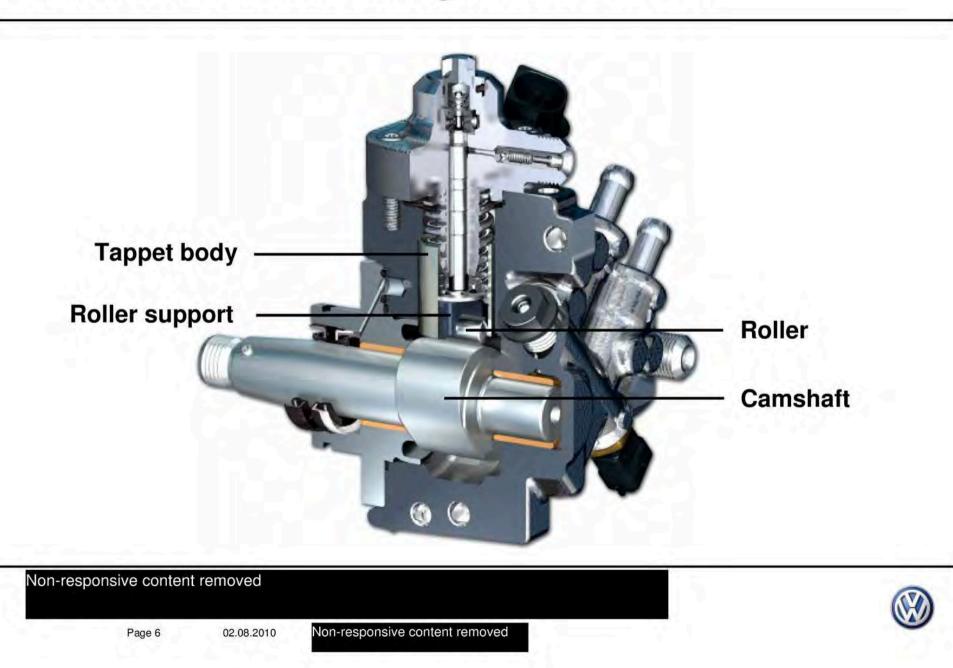
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Hello

Refer to the appendix for the revised status of the CP4 failures. The failure figures have been added of 4-cylinder and a cutaway view of CP4

It is striking that the failure rate of Audi is twice than that of VW for the 4-cylinder. The failure figures for all V6 (Audi and VW) are many times higher than for the 4-cylinder. All V6 and the Audi 4-cylinder come from the plant

Yours sincerely,



VOLKSWAGEN AG Sitz/Domicile: Wolfsburg Registergericht/Court of Registry: Local District Court Braunschweig HRB Nr./. Commercial Register No.: 100484 Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Ferdinand Piëch Vorstand/Board of Management: Martin Winterkorn (Vorsitzender/Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Horst Neumann, Hans Dieter Pötsch

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EA11003EN-02100[0]

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Status drivetrain damages Bosch CP4

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 86,081 | 72,115 | 44,659 | 67 | 0.78 |
| CP4.1 Audi (4 cyl.) | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW (6 cyl.) | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Audi (6 cyl.) | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

Status 12/2009

Failure figures for USA market

| MACTE. | Produced | Sales | Random sample | Failures | Failures per 1000 |
|-------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 58,097 | 52,404 | 41,034 | 108 | 1.86 |

Status 12/2009

Failure figures for Non-responsive contermarket

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|---------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 249,966 | 219,348 | 183,737 | 19 | 0.08 |
| CP4.1 Audi (4 cyl.) | 151,640 | 143,838 | 128,026 | 53 | 0.35 |

Status 01/2010



EA11003EN-02100[1]

ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

General cause of CP4 drivetrain damage:

- Unacceptably high mixed friction between roller and roller support cause local contacts during operation
- The C coating of the roller support is disrupted (wear and erosion of the C coating), the coefficient of friction between the roller and roller support increases.
- Stiffness of roller \Rightarrow wear \Rightarrow particle formation \Rightarrow drivetrain damage
- Intensification factors: Fuel With low viscosity, elevated spots on the roller (fusing) and on roller support (metal splashes); surface of roller/roller support

Failure hypothesis of market

- Blending of aged biodiesel with fuel in the market leads to deposit formation and oxidation in the high-pressure fuel pump ⇒ tribochemical wear, deposits from algae and oxidation products, corrosion on the surface of the camshaft and roller ⇒ stiff roller
- Further analyses of flow and pressure conditions in tappet chambers are under progress,

Effect of LP-cycle and tappet position when switching off the engine (critical against turning in the TDC position).

EA11003EN-02100[2]

ENTIRE PAGE CONFIDENTIAL

- Introduction of anti-wear package 1 for CP4:
- Task
- Robustness increase of the drivetrain by increasing the lubricant film thickness between roller support hole and roller.
- Characteristics of the anti-wear package 1
- Reducing the roller support texture in combination with switchover to C2 coating on the roller support.
- Reduction of the clearance between roller support and roller by adjusting the center of tolerance and the tolerance range of roller support hole.
- Validation to WK 08/2010, then introduction into series production as soon as possible.



EA11003EN-02100[3]

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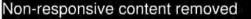
Status drivetrain damages Bosch CP4

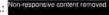
Following HPP drivetrain damage:

- Chip formation in high-pressure fuel pump drivetrain
- Chip formation distributed through entire fuel system
- Malfunctions of HPP, PCV, RPS, injectors, PRV

Repair effort:

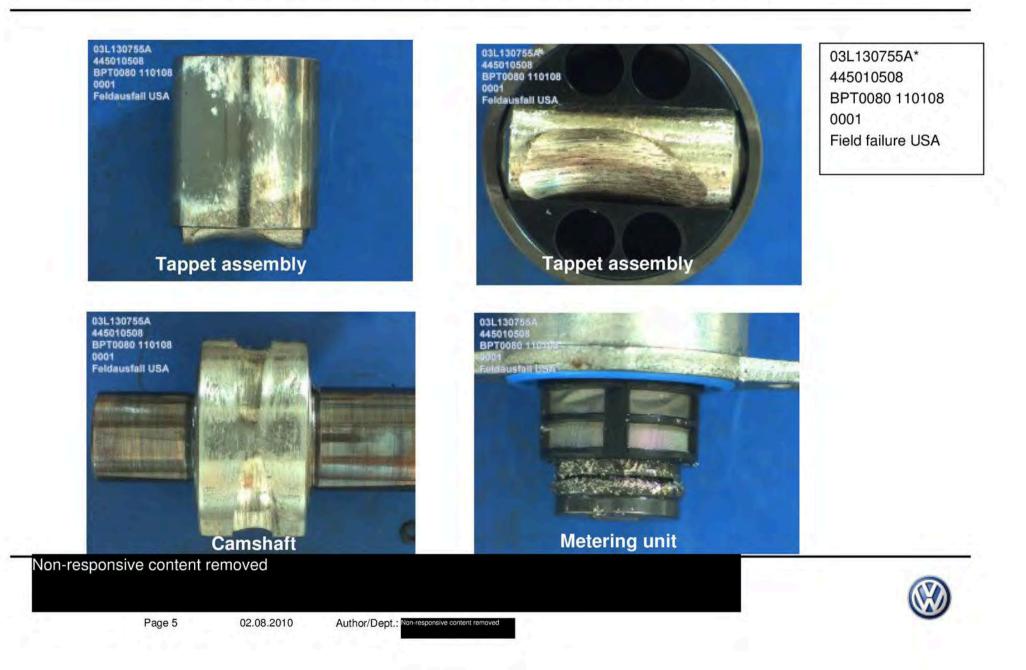
Replacement of the entire injection system comprising:
 Fuel filter
 High-pressure fuel pump
 High-pressure lines
 Rail, incl. rail pressure sensor and pressure control valve
 Injectors,
 Fuel return line,
 Fuel lines
 Cleaning of the fuel tank and flushing the lines





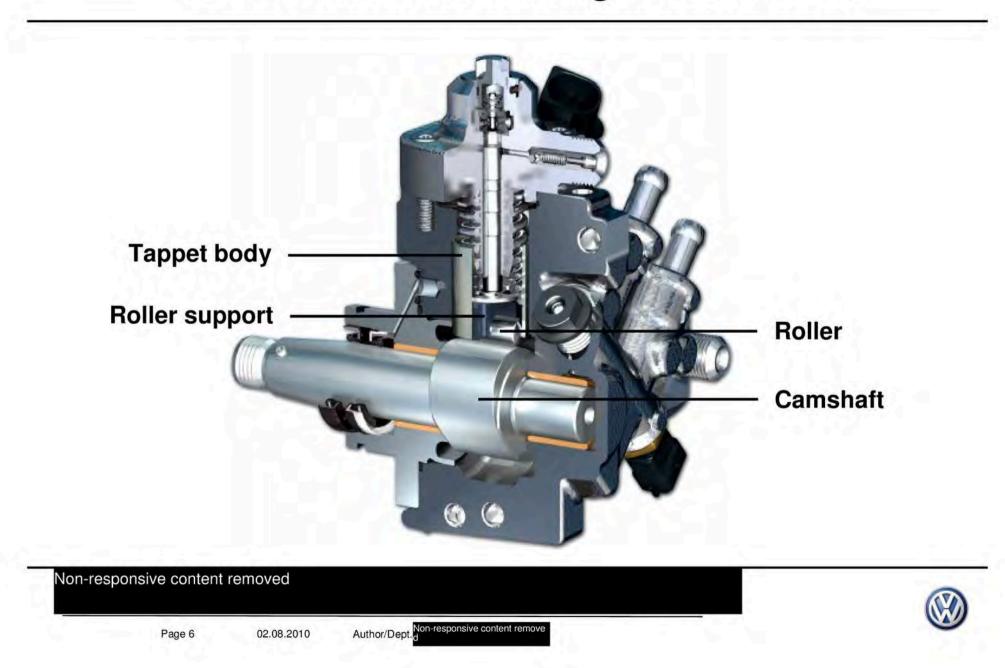
EA11003EN-02100[4]

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EA11003EN-02100[5]

ENTIRE PAGE CONFIDENTIAL



EA11003EN-02101[0]

ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

| Failures figu | res for Non-response | sive content removed | | | |
|-----------------------------------|----------------------|----------------------|---------------|----------|-------------------|
| | Produced | Sales | Random sample | Failures | Failures per 1000 |
| CP4.1 VW (4 cyl.) | 86,081 | 72,115 | 44,659 | 67 | 0.78 |
| CP4.1 Audi (4 cyl.) | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW (6 cyl.) | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Audi (6 cyl.) | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

Status 12/2009

Failure figures for USA market

| MACHAL | Produced | Sales | Random sample | Failures | Failures per 1000 |
|-------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 58,097 | 52,404 | 41,034 | 108 | 1.86 |

Status 12/2009

Failure figures for Non-responsive content removed

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|---------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 249,966 | 219,348 | 183,737 | 19 | 0.08 |
| CP4.1 Audi (4 cyl.) | 151,640 | 143,838 | 128,026 | 53 | 0.35 |

Status 01/2010

Non-responsive content removed



EA11003EN-02101[1]

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Status drivetrain damages Bosch CP4

General cause of CP4 drivetrain damage:

- Unacceptably high mixed friction between roller and roller support cause local contacts during operation
- The C coating of the roller support is disrupted (wear and erosion of the C coating), the coefficient of friction between the roller and roller support increases.
- Stiffness of roller \Rightarrow wear \Rightarrow particle formation \Rightarrow drivetrain damage
- Intensification factors: Fuel With low viscosity, elevated spots on the roller (fusing) and on roller support (metal splashes); surface of roller/roller support

Failure hypothesis of market

- Blending of aged biodiesel with fuel in the market leads to deposit formation and oxidation in the high-pressure fuel pump ⇒ tribochemical wear, deposits from algae and oxidation products, corrosion on the surface of the camshaft and roller ⇒ stiff roller
- Further analyses of flow and pressure conditions in tappet chambers are under progress,

Effect of LP-cycle and tappet position when switching off the engine (critical against turning in the TDC position).





EA11003EN-02101[2]

ENTIRE PAGE CONFIDENTIAL

- Introduction of anti-wear package 1 for CP4:
- Task
- Robustness increase of the drivetrain by increasing the lubricant film thickness between roller support hole and roller.
- Characteristics of the anti-wear package 1
- Reducing the roller support texture in combination with switchover to C2 coating on the roller support.
- Reduction of the clearance between roller support and roller by adjusting the center of tolerance and the tolerance range of roller support hole.
- Validation to WK 08/2010, then introduction into series production as soon as possible.



EA11003EN-02101[3]

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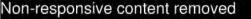
Status drivetrain damages Bosch CP4

Following HPP drivetrain damage:

- Chip formation in high-pressure fuel pump drivetrain
- Chip formation distributed through entire fuel system
- Malfunctions of HPP, PCV, RPS, injectors, PRV

Repair effort:

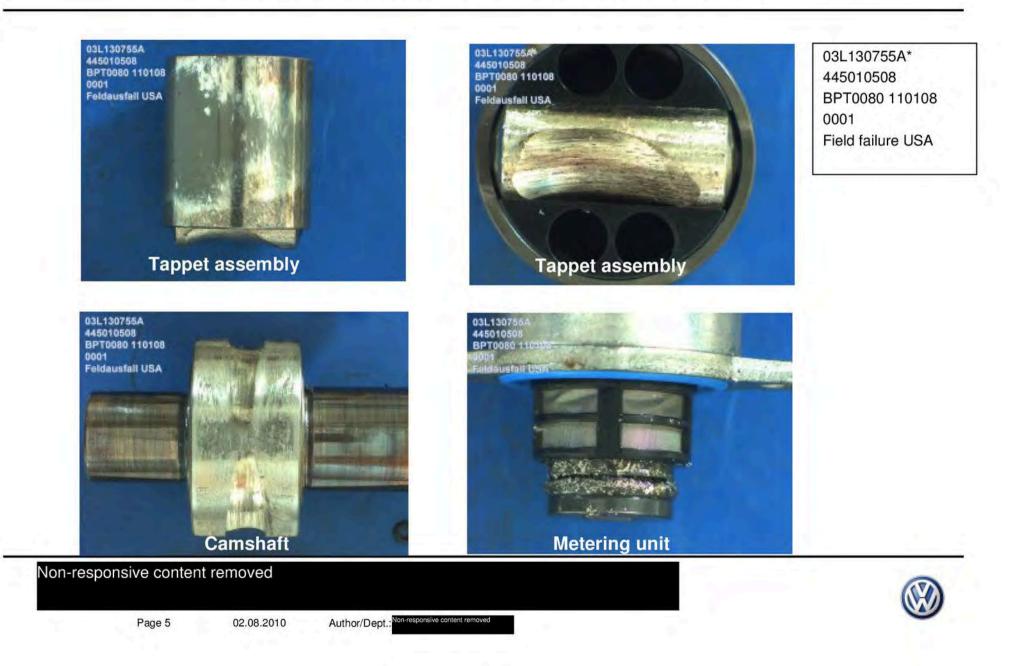
Replacement of the entire injection system comprising:
 Fuel filter
 High-pressure fuel pump
 High-pressure lines
 Rail, incl. rail pressure sensor and pressure control valve
 Injectors,
 Fuel return line,
 Fuel lines
 Cleaning of the fuel tank and flushing the lines



Author/Dept

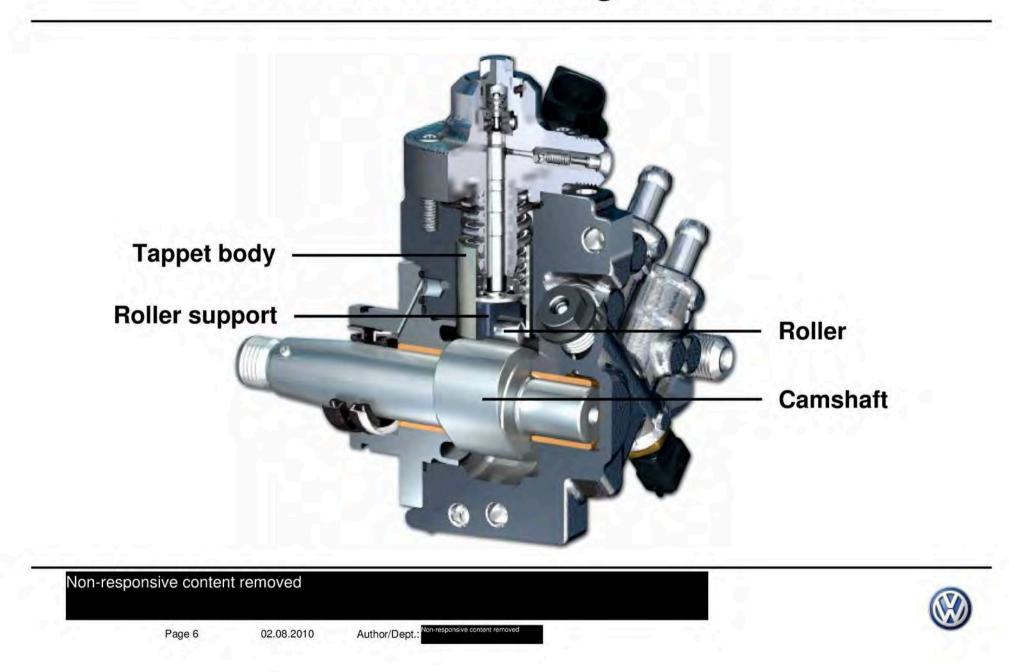
EA11003EN-02101[4]

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EA11003EN-02101[5]

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EA11003EN-02102[0]

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Audi Vorsprung durch Technik



Drivetrain damage high-pressure diesel fuel pump CP4.2 TOP meeting between Bosch and Audi on 02/12/2010 in Mon-responsive content r

EA11003EN-02102[1]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high-pressure diesel fuel pump CP4.2

Current field situation:

V6-TDI Audi - worldwide 1,035 settlements / 526

- of which
- MY08 632 units / 338^{Non-response} = critical production period
 - = after package of measures 1 (see slide 3) MY09 377 units / 180ved
 - after package of measures 2 (see Slide 3) 26 units /
- V8-TDI 1 case

MY10



The "sensitive heart" of the pump is the drivetrain with:

- Boller
- Roller support
- Twin camshaft

The roller with a very smooth surface must over the entire service life and at all operating conditions:

- glide smoothly in the C coated roller support
- roll over a very slippery cam without slippage

This is not achieved in all situations, drivetrain damage can occur in the case of the sluggishness in the roller support due to production and country-specific fuel impacts.

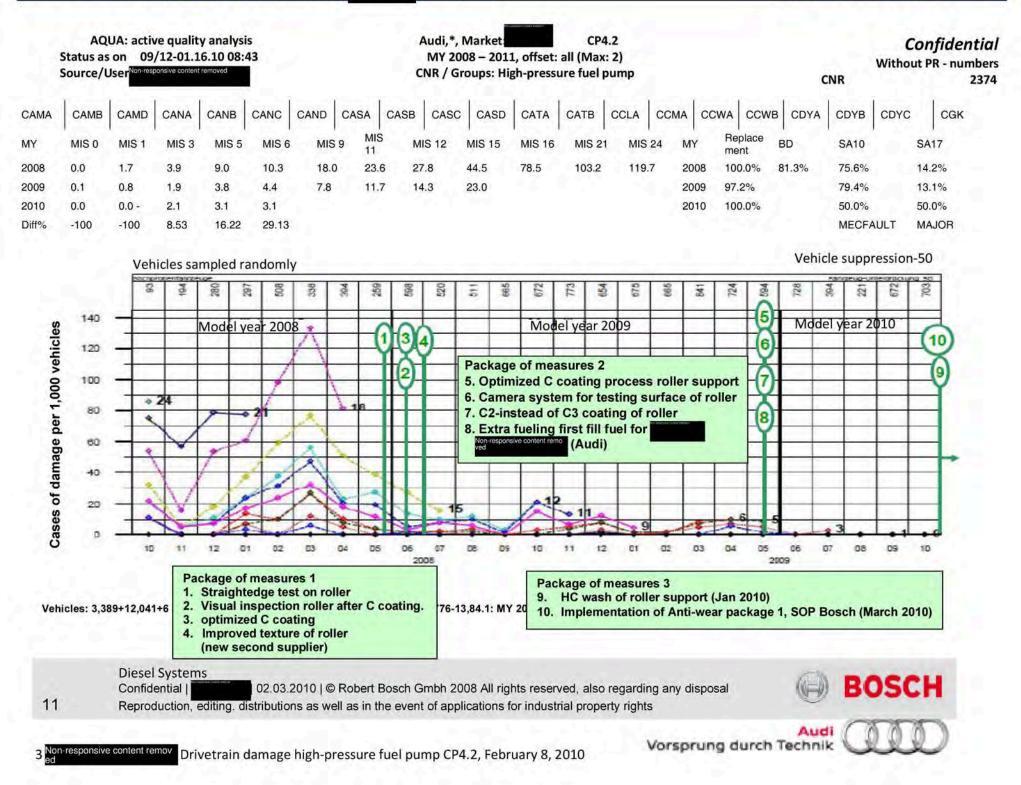
The field failure rate for the CP4.2 (V6-TDI) is several times greater than that of the CP4.1 (R4-CR).



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AUDI-CP4 field situation

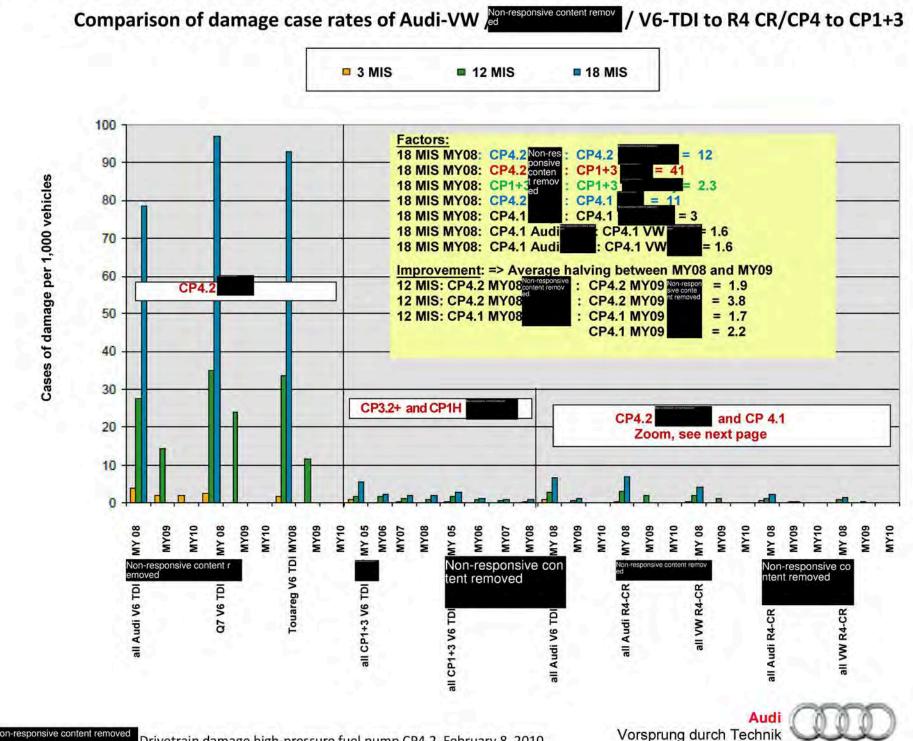
Status: 02.03.2010



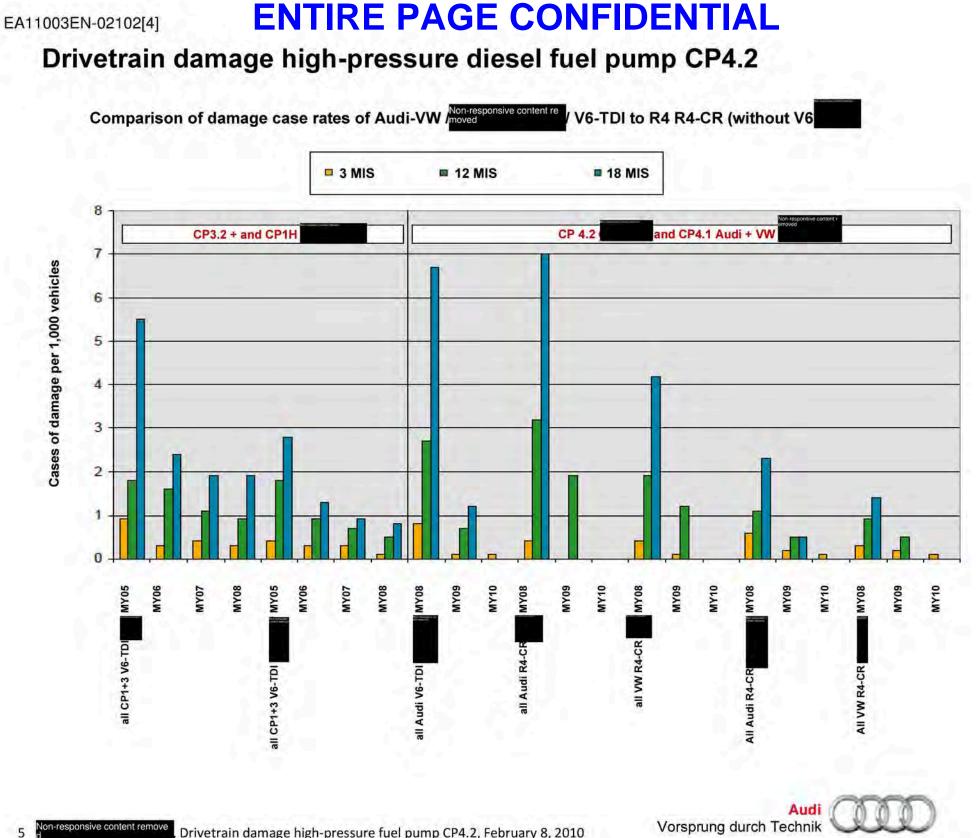
EA11003EN-02102[3]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high-pressure diesel fuel pump CP4.2



Drivetrain damage high-pressure fuel pump CP4.2, February 8, 2010



EA11003EN-02102[5]

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Anti-wear package 1 (RP1):

- C2 coating on roller support instead of C3 coating for better surface roughness (Rv = 0.8 instead of 1.3 µm)
- C2 coating also prevents metal splashes
- Play reduction between roller / roller support by offsetting the tolerance band (18 40 µm instead of 24 46)
- Bosch has specified extra costs of 0.40 €; no development costs.
- Brief test and efficiency of RP1:
 - Basic testing of C2 coating on account of use with competitors in 2010 has been concluded
 - Brief test with Arctic diesel (was originally kerosene) → poor lubrication, lower viscosity fuel up to WK 08/10 → <u>Target</u>: Establish potential for improvement - RP1
 - Efficiency statement: Potential for improvement cannot be evaluated at present.
 - <u>No</u> measure in view against new main error hypothesis in regarding "sluggishness due to the sticking" of the roller

Readiness for production and introduction date:

- Readiness for production Bosch from WK 09/10 ensured
- Planned approval by Development + QA Bosch + Audi start of WK 09/10
- Bosch series production deliveries from WK 10/10 for comprehensive implementation in all V-diesel in the Group
- First 400 parts initially planned for CS use



Vorsprung durch Techni

EA11003EN-02102[6]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high-pressure diesel fuel pump CP4.2

Long-term testing → RP1 quantitative potential for improvement (e.g. in Er hours, etc.)

- Worst-case fuel VW Group / Bosch is defined → Testing from WK 12/10
- "Old" diesel with 20% portion of biodiesel (B20) → Test running since WK 05/10

Anti-wear package 2 (RP2) is still open

- Possible objective: Avoid turned tappets, sticking or differences between the CP4.2 and CP4.1
- Engine measurements R4 still not concluded → Deadline to be clarified
- <u>Critical</u>: may be necessary for new design and construction elements (no anti-turning lock today).

Fallback solution high-pressure fuel pump CP1H or CP3 (1,650 bar) for EU4 markets:

- ➔ Requirement of QA middle 2010 in the case of insufficient efficiency of RP1 + RP2
- → Field situation, (MIS18 / MY08): CP4.2 factor 41 greater than CP3+1!!!
- ➔ Implementation of CP1H or CP3 may have to be evaluated by N/EA-6 with regard to technical and timing factors.



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EA11003EN-02102[7]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high-pressure diesel fuel pump CP4.2

Bosch requirement: →Implementation of a water separator in the diesel filter

- Water separator with extraction capability in the main failure models Q7 and Touareg right from the start in series production (→efficiency towards Bosch recommendation must still be evaluated)
- Currently no available water separating technology for horizontal diesel filters in the Audi B / C7 series
- Diesel filter manufacturer Bosch does not provide a water separation system
- FIAT (connoisseur of the indigenous market) provides a water separator with sensor system and in some cases display symbol in the instrument cluster

Bosch warranty disclaimer

- Bosch rejects the warranty for all markets in the RoW which do not use fuels in compliance with the EN590 European standard (specified in the TCD = technical customer documentation); but even pumps from EN590 markets with traces of corrosion will not be recognized.
- Audi is currently supplying outside of the EU at its own risk
- U.S. warranty according to ASTM Bosch standard, no questions asked.
- The growth markets of Non-responsive content removed are classified as being particularly fuel critical.



8

EA11003EN-02104[0]

ENTIRE PAGE CONFIDENTIAL

Status drivetrain damages Bosch CP4

| Failures figu | Produced | Market Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|-----------------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 86,081 | 72,115 | 44,659 | 67 | 0.78 |
| CP4.1 Audi (4 cyl.) | 58,461 | 51,898 | 35,787 | 83 | 1.42 |
| CP4.2 VW (6 cyl.) | 1,562 | 1,310 | 667 | 16 | 10.24 |
| CP4.2 Audi (6 cyl.) | 15,386 | 13,727 | 8,998 | 153 | 9.94 |

Status 12/2009

Failure figures for USA market

| MCTK. | Produced | Sales | Random sample | Failures | Failures per 1000 |
|-------------------|----------|--------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 58,097 | 52,404 | 41,034 | 108 | 1.86 |

Status 12/2009

Failure figures for Non-responsive conten market

| | Produced | Sales | Random sample | Failures | Failures per 1000 |
|---------------------|----------|---------|---------------|----------|-------------------|
| CP4.1 VW (4 cyl.) | 249,966 | 219,348 | 183,737 | 19 | 0.08 |
| CP4.1 Audi (4 cyl.) | 151,640 | 143,838 | 128,026 | 53 | 0.35 |

Status 01/2010

Non-responsive content removed



EA11003EN-02104[1]

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Status drivetrain damages Bosch CP4

General cause of CP4 drivetrain damage:

- Unacceptably high mixed friction between roller and roller support cause local contacts during operation
- The C coating of the roller support is disrupted (wear and erosion of the C coating), the coefficient of friction between the roller and roller support increases.
- Stiffness of roller \Rightarrow wear \Rightarrow particle formation \Rightarrow drivetrain damage
- Intensification factors: Fuel With low viscosity, elevated spots on the roller (fusing) and on roller support (metal splashes); surface of roller/roller support

Failure hypothesis of market

- Blending of aged biodiesel with fuel in the market leads to deposit formation and oxidation in the high-pressure fuel pump ⇒ tribochemical wear, deposits from algae and oxidation products, corrosion on the surface of the camshaft and roller ⇒ stiff roller
- Further analyses of flow and pressure conditions in tappet chambers are under progress,

Effect of LP-cycle and tappet position when switching off the engine (critical against turning in the TDC position).





EA11003EN-02104[2]

ENTIRE PAGE CONFIDENTIAL

- Introduction of anti-wear package 1 for CP4:
- Task
- Robustness increase of the drivetrain by increasing the lubricant film thickness between roller support hole and roller.
- Characteristics of the anti-wear package 1
- Reducing the roller support texture in combination with switchover to C2 coating on the roller support.
- Reduction of the clearance between roller support and roller by adjusting the center of tolerance and the tolerance range of roller support hole.
- Validation to WK 08/2010, then introduction into series production as soon as possible.



EA11003EN-02104[3]

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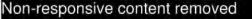
Status drivetrain damages Bosch CP4

Following HPP drivetrain damage:

- Chip formation in high-pressure fuel pump drivetrain
- Chip formation distributed through entire fuel system
- Malfunctions of HPP, PCV, RPS, injectors, PRV

Repair effort:

Replacement of the entire injection system comprising:
 Fuel filter
 High-pressure fuel pump
 High-pressure lines
 Rail, incl. rail pressure sensor and pressure control valve
 Injectors,
 Fuel return line,
 Fuel lines
 Cleaning of the fuel tank and flushing the lines

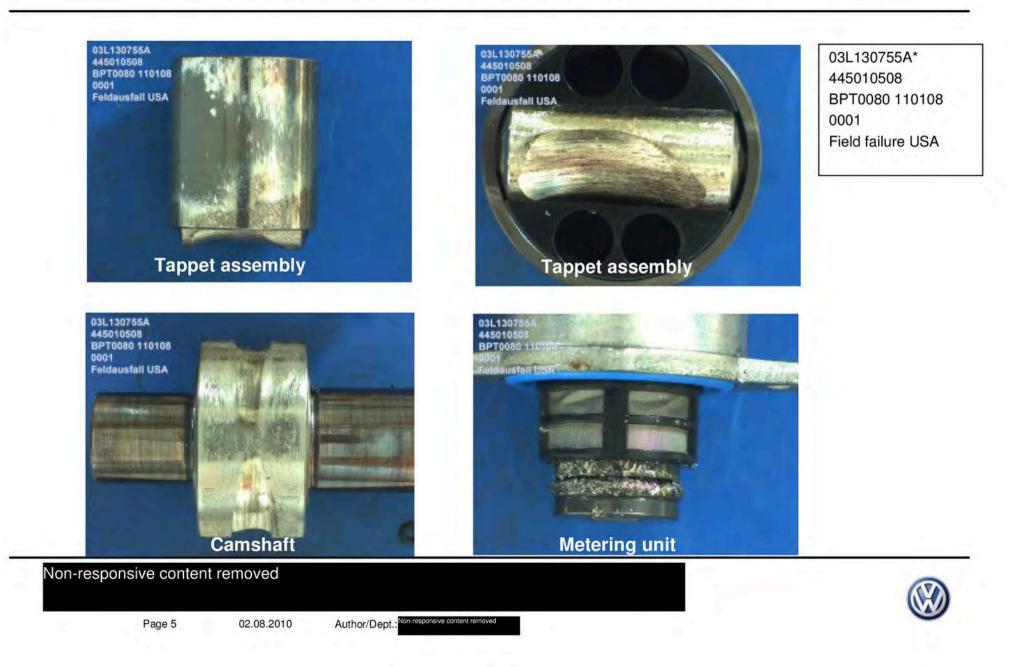


Author/Dept

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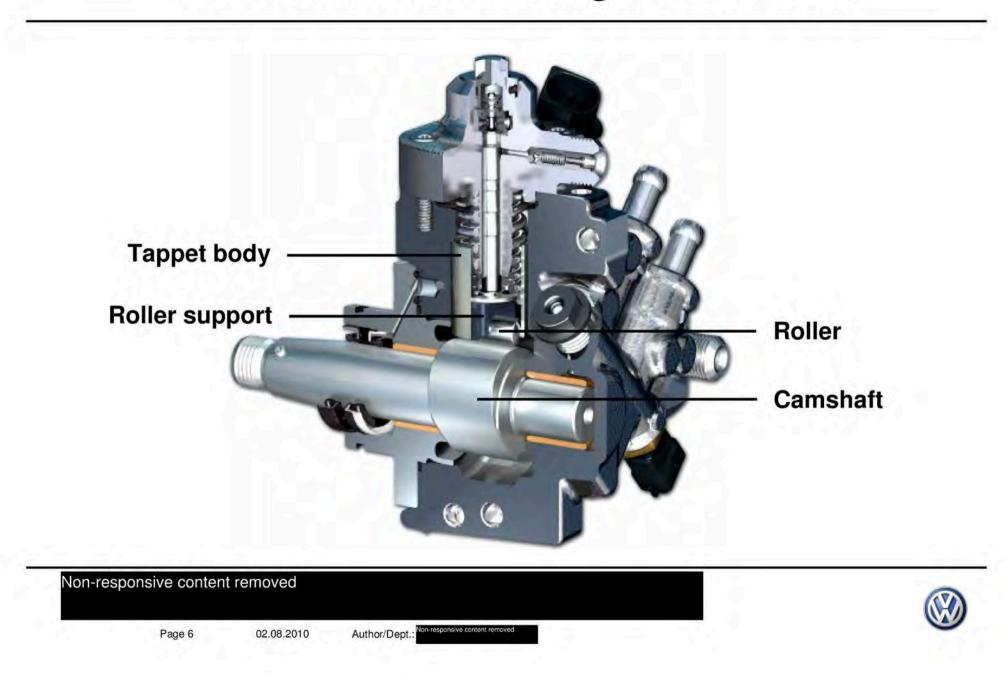
Status drivetrain damages Bosch CP4



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Status drivetrain damages Bosch CP4



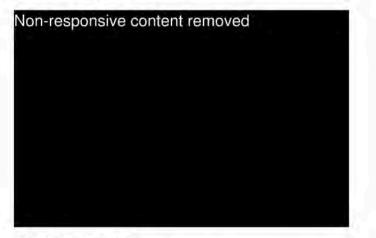


The production-related failures primarily concern MY 08 (see also our document from the TOP meeting Audi / Bosch on 02.12.10)

For this reason, we currently do not grant NEW approvals for V6 TDI concepts in ROW markets. This primarily affects the EU4 without DPF versions of Q5, Q7 and B8.

Please give your feedback on whether you also want to position yourself like that.

With kind regards,



Domicile: Ingolstadt

Court of Registry: Local District Court Ingolstadt

Commercial Register No.: 1

Chairman of the Supervisory Board: Martin Winterkorn

Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel

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EA11003EN-02113[0]

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Audi Vorsprung durch Technik



Drivetrain damage high-pressure diesel fuel pump CP4.2 TOP meeting between Bosch and Audi on 02/12/2010 in Ved

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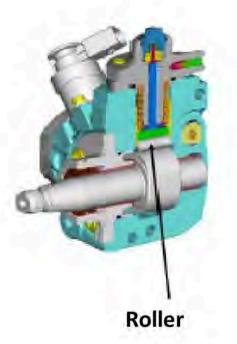
ENTIRE PAGE CONFIDENTIAL

Drivetrain damage high-pressure diesel fuel pump CP4.2

Current field situation:

V6-TDI Audi – worldwide 1035 settlements / 526

- of which ...
- MY08 632 units / 338 Non-responsive c = critical production period
- MY09 377 units / 180 emoved = after package of measures 1 (see slide 3)
- MY10 26 units / 8 = after package of measures 2 (see Slide 3)
- V8-TDI 1 case
- V12-TDI 2 cases in Montree



The "sensitive heart" of the pump is the drivetrain with:

- Roller
- Roller support
- Twin camshaft

The **roller** with a very smooth surface must over the <u>entire service life</u> and <u>at all</u> <u>operating conditions</u>:

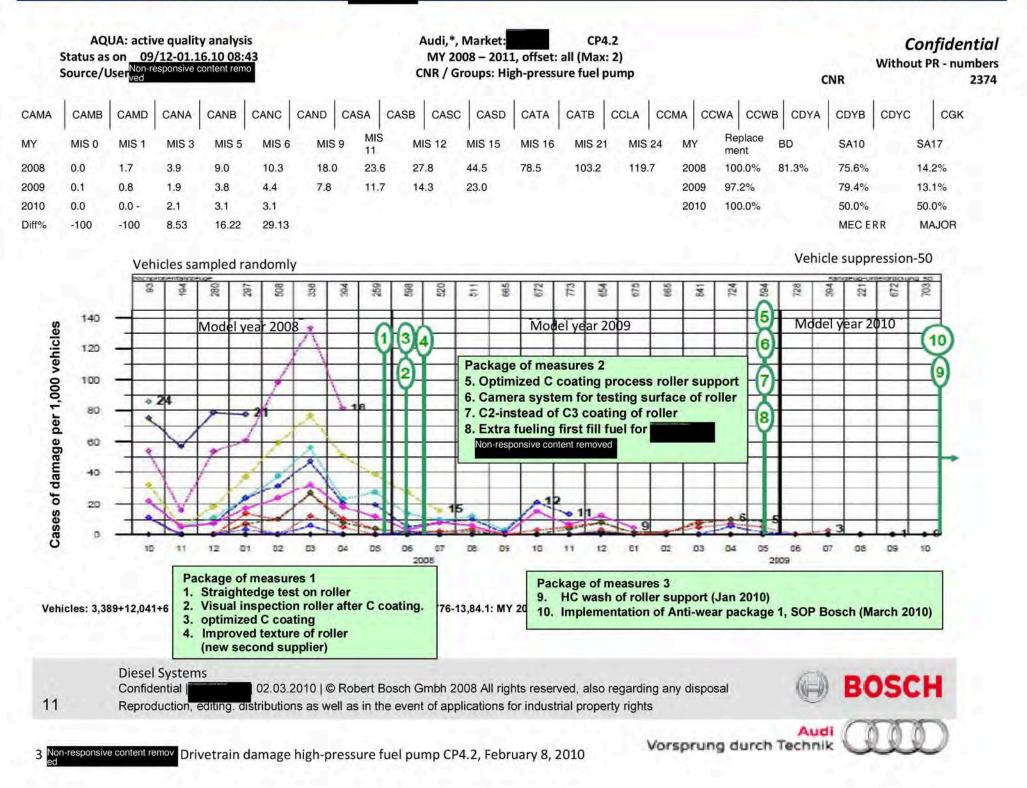
- glide smoothly in the C coated roller support
- roll over a very slippery cam without slippage

This is not achieved in all situations, **drivetrain damage** can occur in the case of the **sluggishness** in the roller support due to production and country-specific fuel impacts.

The field failure rate for the CP4.2 (V6-TDI) is several times greater than that of the CP4.1 (R4-CR).

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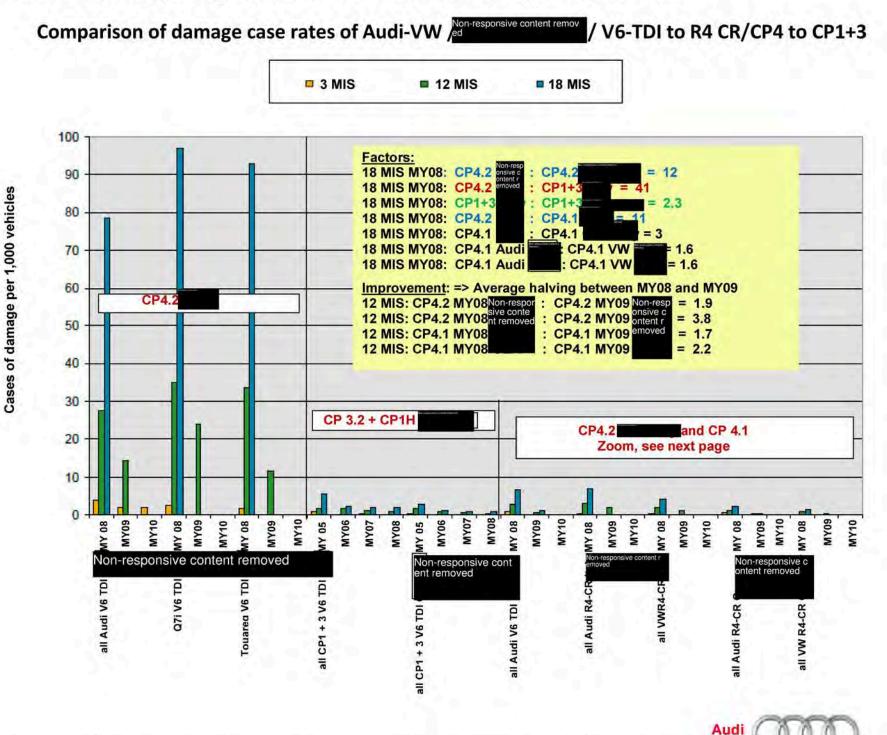
AUDI-CP4 field situation Content removed



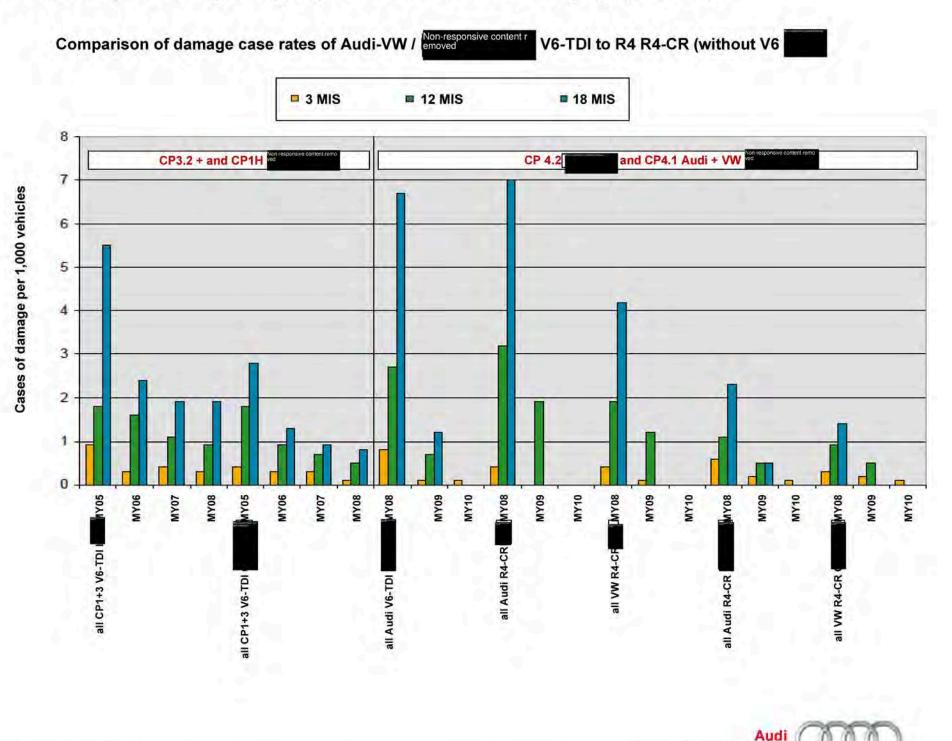
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Drivetrain damage high-pressure diesel fuel pump CP4.2



Drivetrain damage high-pressure diesel fuel pump CP4.2



Non-responsive content remov Drivet

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EA11003EN-02113[5]

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Anti-wear package 1 (RP1):

- C2 coating on roller support instead of C3 coating for better surface roughness (Rv = 0.8 instead of 1.3 µm)
- C2 coating also prevents metal splashes
- Play reduction between roller / roller support by offsetting the tolerance band (18 40 µm instead of 24 46)
- Bosch has specified extra costs of no development costs.
- Brief test and efficiency of RP1:
 - Basic testing of C2 coating on account of use with competitors in 2010 has been concluded
 - Brief test with Arctic diesel (was originally kerosene) → poor lubrication, lower viscosity fuel up to WK 08/10 → <u>Target</u>: Establish potential for improvement - RP1
 - Efficiency statement: Potential for improvement cannot be evaluated at present.
 - <u>No</u> measure in view against new main error hypothesis in regarding "sluggishness due to the sticking" of the roller

Readiness for production and introduction date:

- Readiness for production Bosch from WK 09/10 ensured
- Planned approval by Development + QA Bosch + Audi start of WK 09/10
- Bosch series production deliveries from WK 10/10 for comprehensive implementation in all V-diesel in the Group
- First 400 parts initially planned for CS use



EA11003EN-02113[6]

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Long-term testing → RP1 quantitative potential for improvement (e.g. in Er hours, etc.)

- Worst-case fuel VW Group / Bosch is defined → Testing from WK 12/10
- "Old" diesel with 20% portion of biodiesel (B20) → Test running since WK 05/10

Anti-wear package 2 (RP2) is still open

- Possible objective: Avoid turned tappets, sticking or differences between the CP4.2 and CP4.1
- Engine measurements R4 still not concluded → Deadline to be clarified
- <u>Critical</u>: may be necessary for new design and construction elements (no anti-turning lock today).

Fallback solution high-pressure fuel pump CP1H or CP3 (1,650 bar) for EU4 markets:

- ➔ Requirement of QA middle 2010 in the case of insufficient efficiency of RP1 + RP2
- → Field situation, MIS18 / MY08): CP4.2 factor 41 greater than CP3+1!!!
- Implementation of CP1H or CP3 may have to be evaluated by N/EA-6 with regard to technical and timing factors.



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Drivetrain damage high-pressure diesel fuel pump CP4.2

Bosch requirement: →Implementation of a water separator in the diesel filter

- Water separator with extraction capability in the main failure models Q7 and Touareg right from the start in series production (→efficiency towards Bosch recommendation must still be evaluated)
- Currently no available water separating technology for horizontal diesel filters in the Audi B / C7 series
- Diesel filter manufacturer Bosch does not provide a water separation system
- FIAT (connoisseur of the indigenous market) provides a water separator with sensor system and in some cases display symbol in the instrument cluster

Bosch warranty disclaimer

- Bosch rejects the warranty for all markets in the RoW which do not use fuels in compliance with the EN590 European standard (specified in the TCD = technical customer documentation); but even pumps from EN590 markets with traces of corrosion will not be recognized.
- Audi is currently supplying outside of the EU at its own risk
- U.S. warranty according to ASTM Bosch standard, no questions asked.
- The growth markets of Non-responsive content removed are classified as being particularly fuel critical.



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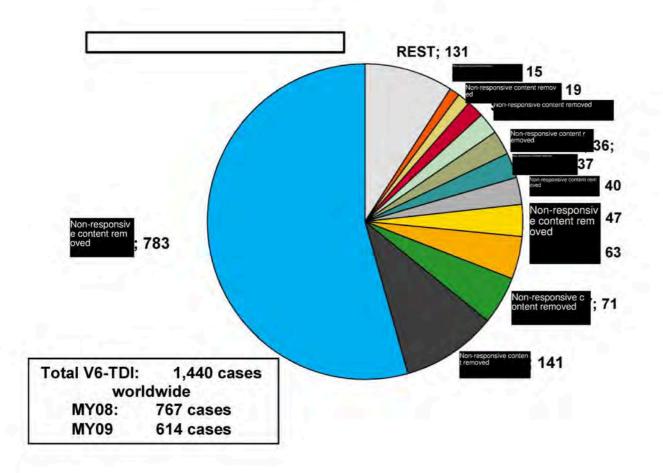
| Country | Total until 1/11/2010 | Total 2/7/2010 | Total 3/7/2010 | Total 4/11/2010 | Total 5/9/2010 | 4 weeks Increase 1/11-2/7/10 | 4 weeks Increase 2/7-3/7/10 | 5 weeks Increase 3/7-4/11/10 | 4 weeks Increase 4/11-5/9/1 |
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| | | | | 1 | 1 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| | 1 | 1 | 1/2 - 1 | 1.1.1.1 | 1 | Ó | 0 | 0 | 0 |
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| | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 2 | 0 |
| | 4 | 4 | 4 | 4 | 4 | 0 | | 1 | 0 |
| (| 2 | 2 | 3 | 4 | 4 | 0 | 0 | 0 | 0 |
| | 4 | 4 | 4 | 5 | 5 | 0 | 0 | 0 | 0 |
| | 5 | 5 | 5 | 5 | 5 | 0 | 0 | 1 | 0 |
| | 6 | 6 | 6 | 6 | 6 | 1 | 0 | 3 | 0 |
| | 3 | 3 | 3 | 5 | 6 | 0 | 0 | 4 | 1 |
| | 7 | 7 | 7 | 7 | 7 | 0 | 0 | 0 | 0 |
| | 4 | 5 | 5 | 8 | 9 | 0 | 0 | 0 | 1 |
| | 7 | 7 | 7 | 8 | 9 | 0 | 0 | 0 | 1 |
| | 9 | 9 | 10 | 10 | 10 | 0 | 0 | 1 | 0 |
| | 5 | 5 | 5 | 9 | 10 | 1 | 0 | 2 | 1 |
| | 9 | 10 | 11 | 11 | 11 | 0 | 1 | 0 | 0 |
| | 9 | 9 | 10 | 12 | 12 | 0 | 1 | 2 | 0 |
| | 9 | 10 | 10 | 12 | 15 | 1 | 1 | 0 | 3 |
| | 11 | 13 | 16 | 18 | 19 | 2 | 3 | 2 | 1 |
| | 19 | 20 | 21 | 24 | 25 | 1 | 1 | 3 | 1 |
| | 29 | 30 | 32 | 32 | 32 | 0 | 0 | 2 | 0 |
| | 29 | 31 | 32 | 35 | 36 | 1 | 2 | 0 | 1 |
| | 29 | 29 | 29 | 31 | 37 | 2 | 1 | 3 | 6 |
| | 40 | 40 | 40 | 40 | 40 | 2 | 3 | 9 | 0 |
| | 28 | 30 | 33 | 42 | 47 | 0 | 0 | 0 | 5 |
| | 50 | 54 | 58 | 60 | 63 | 4 | 4 | 2 | 3 |
| | 49 | 56 | 64 | 70 | 71 | 7 | 8 | 6 | 1 |
| | 86 | 96 | 107 | 131 | 141 | 10 | 11 | 24 | 10 |
| | 496 | 544 | 627 | 705 | 783 | 48 | 83 | 78 | 78 |
| | 974 | 1,057 | 1,179 | 1,325 | 1,440 | 83 | 122 | 146 | 115 |

| otal | 1,440 |
|-------------------------------|-------|
| | 783 |
| | 141 |
| | 71 |
| | 63 |
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| | MY08 | | MYO | 9 | MY10 | | |
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| | | 40 | | 20 | | 4 | 1 |
| | | 42 | | 98 | | 9 | 1 |
| | | 383 | | 246 | | 11 | 1 |
| | | 694 | | 470 | | 35 | Г |

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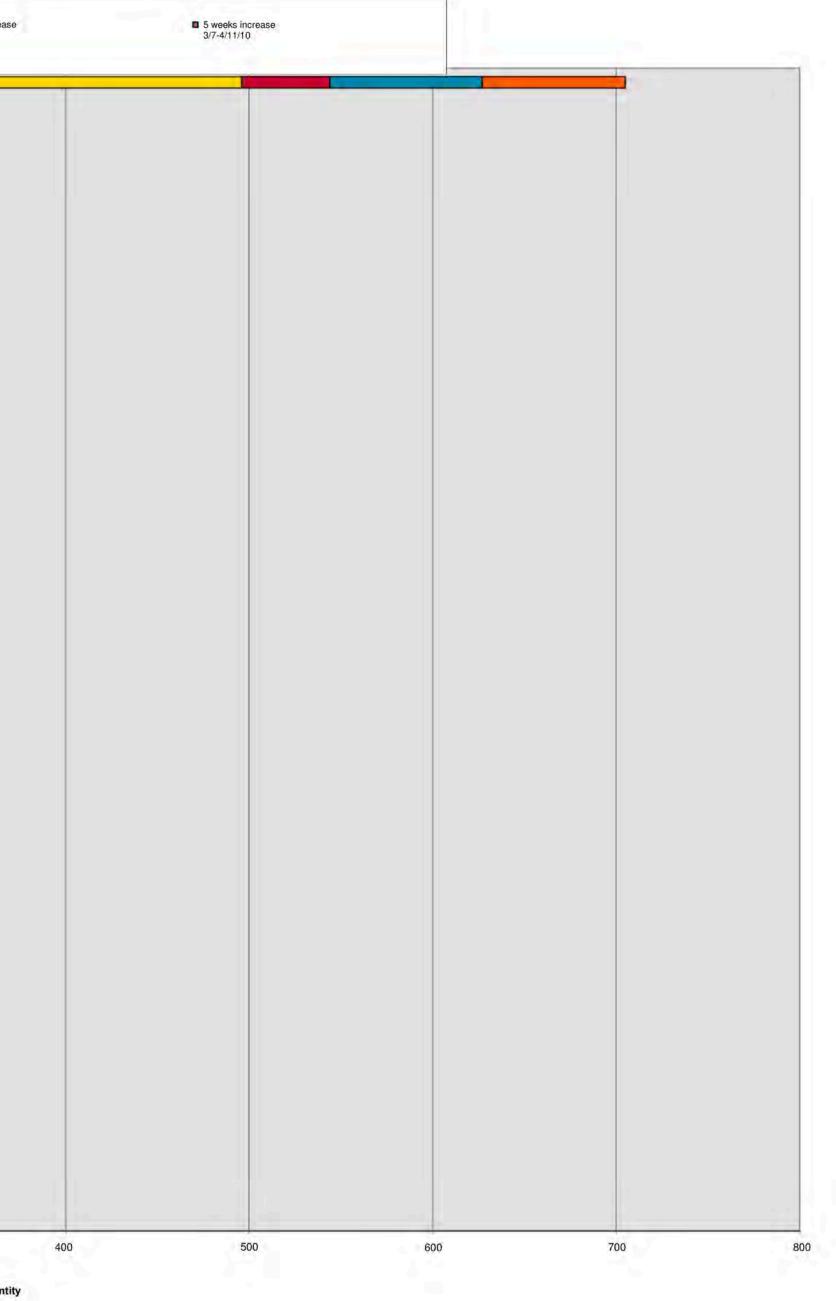
CP4.2 Audi V6-TDI pump replacement worldwide

| | Total until 1/11/10 | 4 weeks increase 1/11-2/7/10 | ■ 4 wee 2/7-3/ |
|---------------------------------------|------------------------|---------------------------------|-------------------|
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| 0 | 100 | 200 | 300 |

Country of failure

Quantity

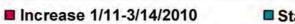




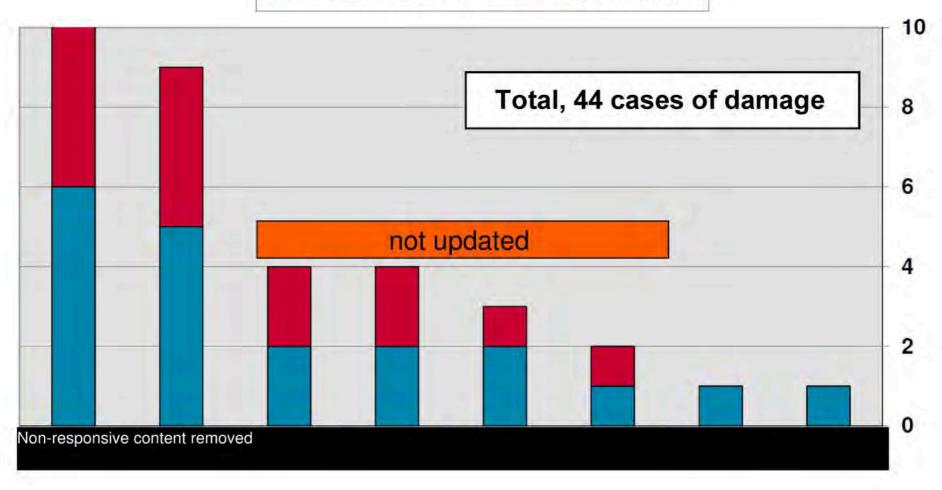
EA11003EN-02117[3]

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Failures MY 2010 only



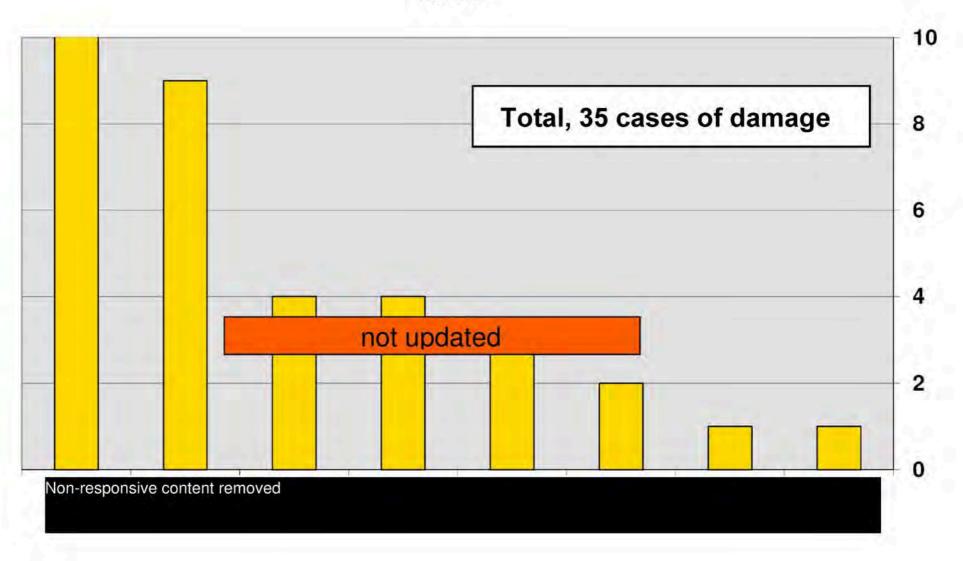
Status 1/11/2010



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MY10



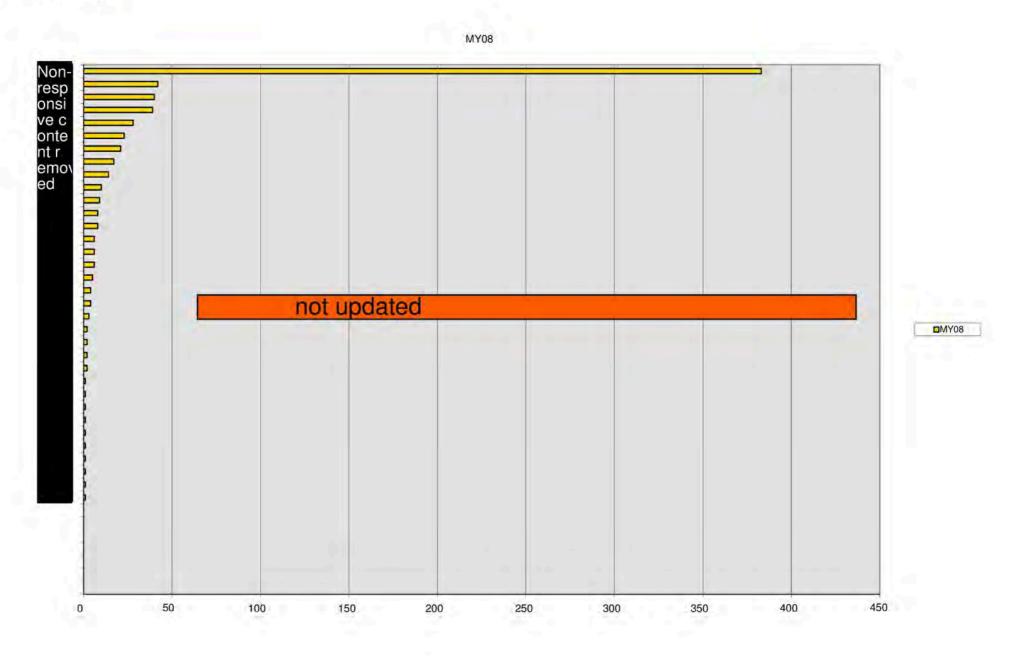
EA11003EN-02117[5]

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MY09 Non resp onsi ve c onte nt r emo ed 0000 H not updated MY09 50 300 0 100 150 200 250

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EA11003EN-02117[7]

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Chart for increase MY10

| Country | as of 1/11/2010 | 4/11/2010 | Increase 1/11-3/14/2010 |
|----------------|-----------------|-----------|-------------------------|
| Non-responsiv | 1 | 1 | 0 |
| e content rem | 1 | 1 | 0 |
| oved | 1 | 2 | - <u>1</u> |
| | 2 | 3 | 1 |
| | 2 | 4 | 2 |
| | 2 | 4 | 2 |
| | 5 | 9 | 4 |
| | 6 | 11 | 5 |
| Overall result | 20 | 44 | 24 |

not updated

EA11003EN-02119[0]

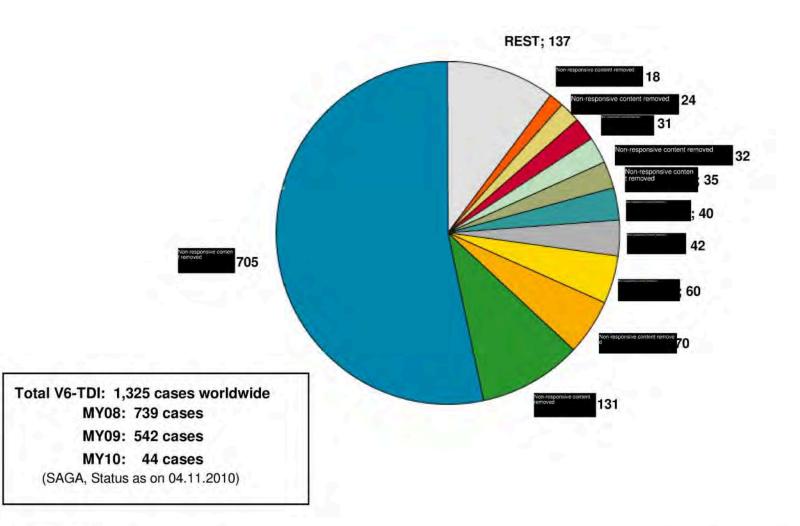
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Audi Vorsprung durch Technik



Drivetrain damage high-pressure diesel fuel pump CP4.2 TOP - meeting Bosch / Audi on April 16, 2010

Drivetrain damage high-pressure diesel fuel pump CP4.2

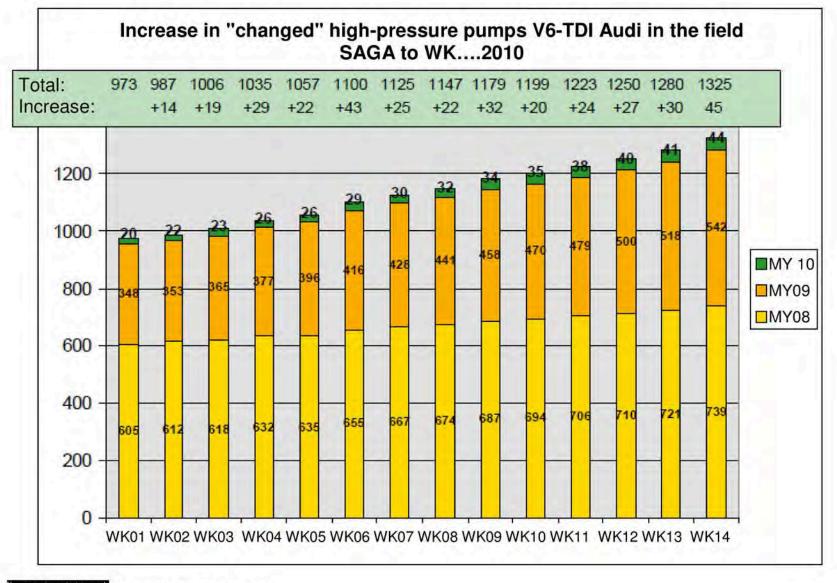


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EA11003EN-02119[2]

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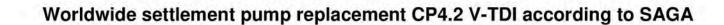
Drivetrain damage high-pressure diesel fuel pump CP4.2

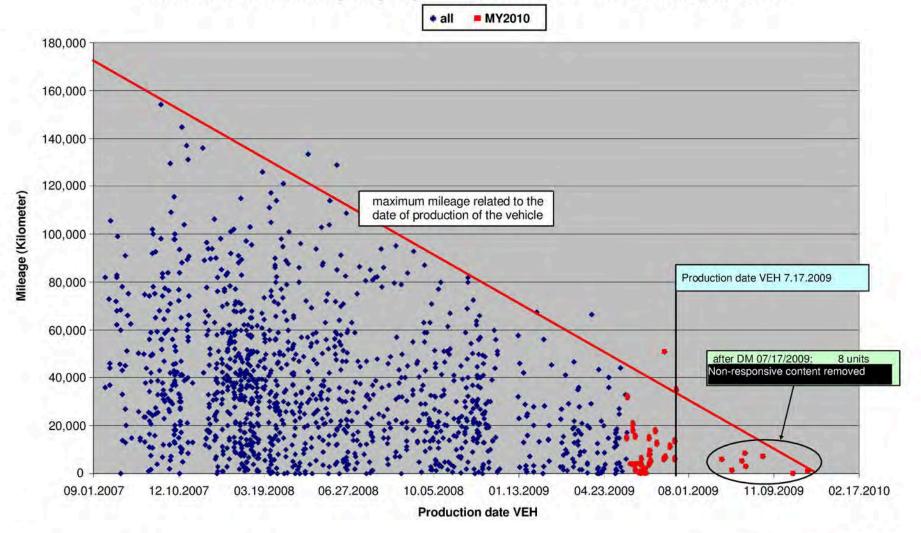


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Drivetrain damage high-pressure diesel fuel pump CP4.2

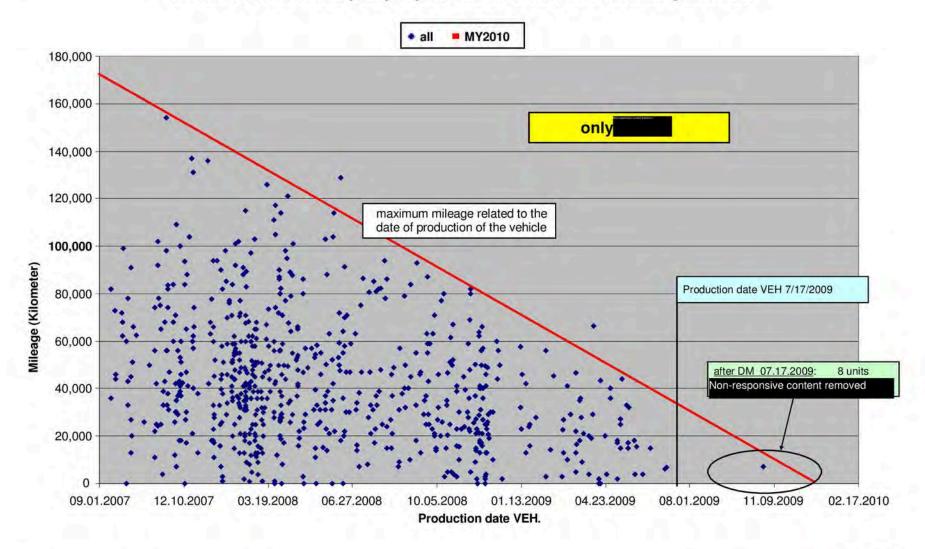




4

Drivetrain damage high-pressure diesel fuel pump CP4.2

Worldwide settlement pump replacement CP4.2 V-TDI according to SAGA



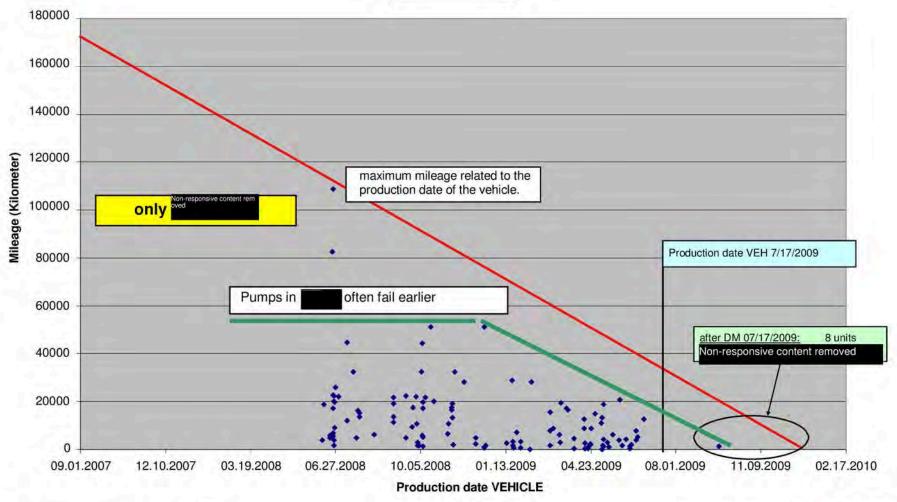
5

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Worldwide settlement pump replacement CP4.2 V-TDI according to SAGA





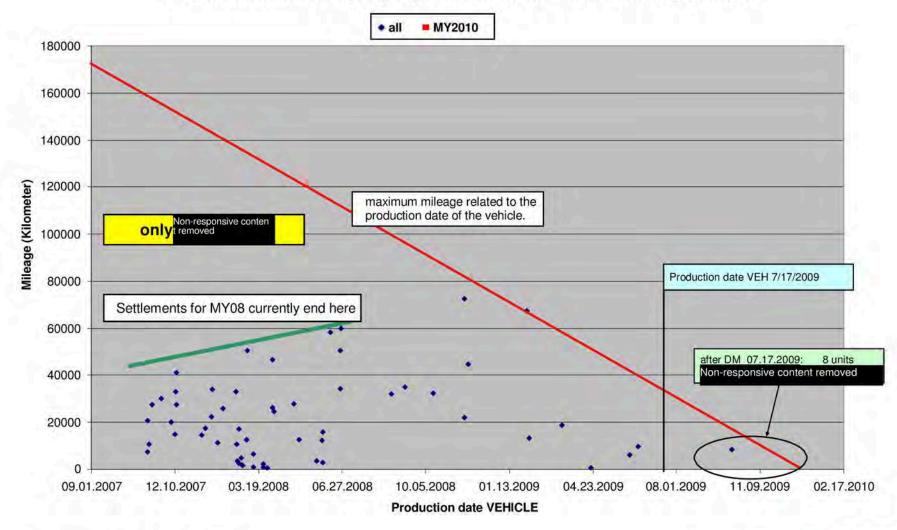
6

EA11003EN-02119[5]

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Worldwide settlement pump replacement CP4.2 V-TDI according to SAGA

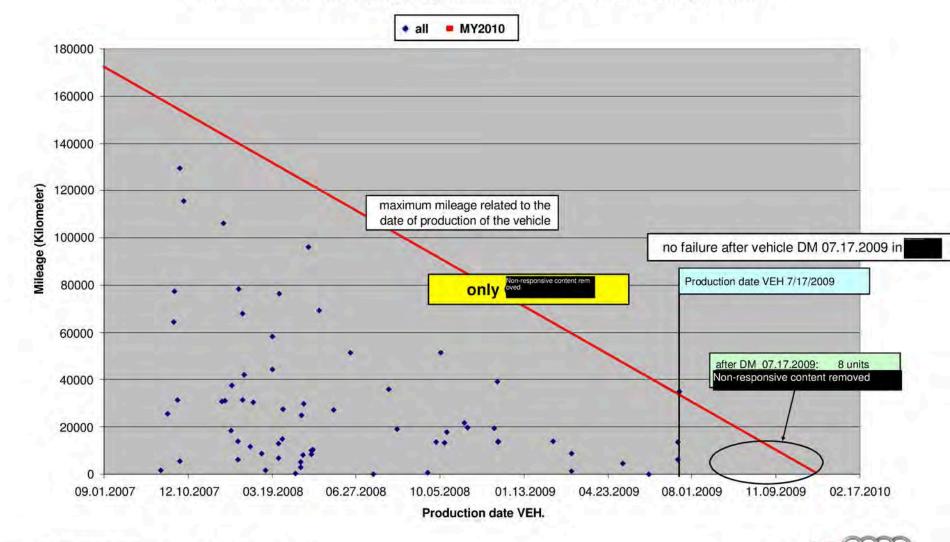


Vorsprung durch Technik

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Worldwide settlement pump replacement CP4.2 V-TDI according to SAGA



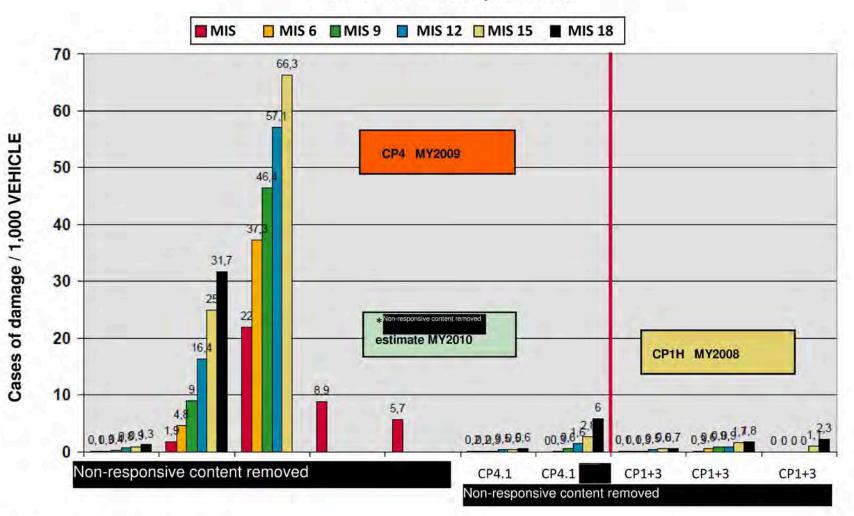
n-responsive content remove, TOP meeting Bosch-Audi, April 16, 2010

8

Vorsprung durch Technik

Drivetrain damage high-pressure diesel fuel pump CP4.2

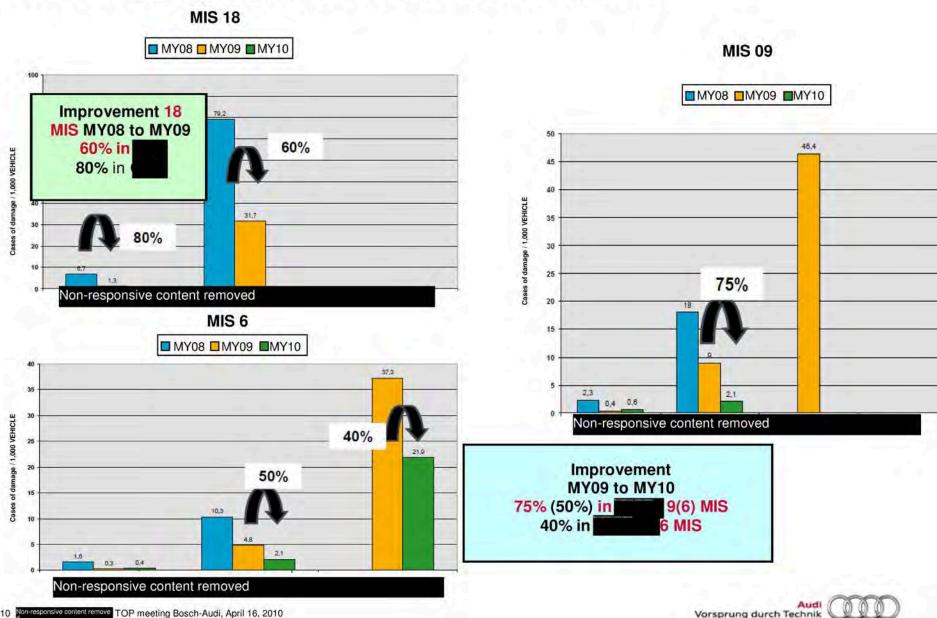
CP4.2 country comparison model year 2009 (*2010) and CP1H model year 2008



9

EA11003EN-02119[8]

Drivetrain damage high-pressure diesel fuel pump CP4.2



EA11003EN-02119[9]

Drivetrain damage high-pressure diesel fuel pump CP4.2

Topics:

EA11003EN-02119[10]

- Effectiveness of anti-wear package 1.1 in comparison with series
- National releases of CP4.2 by Bosch and Audi
- Functional analyses for anti-wear package 2 (RP2)
- Technical definition of anti-wear package 2
- Scheduling sample / testing / SOP for RP2

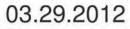
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Fault mapping field failures HPP Bosch CR 2009/10

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Status CP4.1_2 field failures - Bosch 2009/10 Volkswagen and Audi

| Complaints overview | Volkswagen | | | | S | | |
|--|------------|-----|----------|-----|-----|------------|----------------|
| Cause of failure | 4.1 | 4.2 | Total VW | 4.1 | 4.2 | Total Audi | Sum of VW+Audi |
| Pump drivetrain damage | 22 | 3 | 25 | 27 | 82 | 109 | 134 |
| Poor quality fuel | 8 | 2 | 10 | 14 | 4 | 18 | 28 |
| Poor quality fuel => tappet spring broken | | | 0 | 1 | | 1 | 1 |
| Poor quality fuel => Drivetrain damage | | | 0 | 4 | 11 | 15 | 15 |
| Non-starter (Audi) | | | 0 | 5 | 1 | 6 | 6 |
| Particle contamination | 2 | | 2 | | | 0 | 2 |
| External intervention | 1 | | 1 | | 1 | 1 | 2 |
| Incorrect fueling | | | 0 | 1 | | 1 | 1 |
| under Analysis | 10 | | 10 | 6 | 10 | 16 | 26 |
| OK after analysis NTF | 48 | 1 | 49 | 27 | 44 | 71 | 120 |

Total: 335

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Data source: Overview of Bosch CRI field failures Bosch 2009-2010 Non-responsive content removed

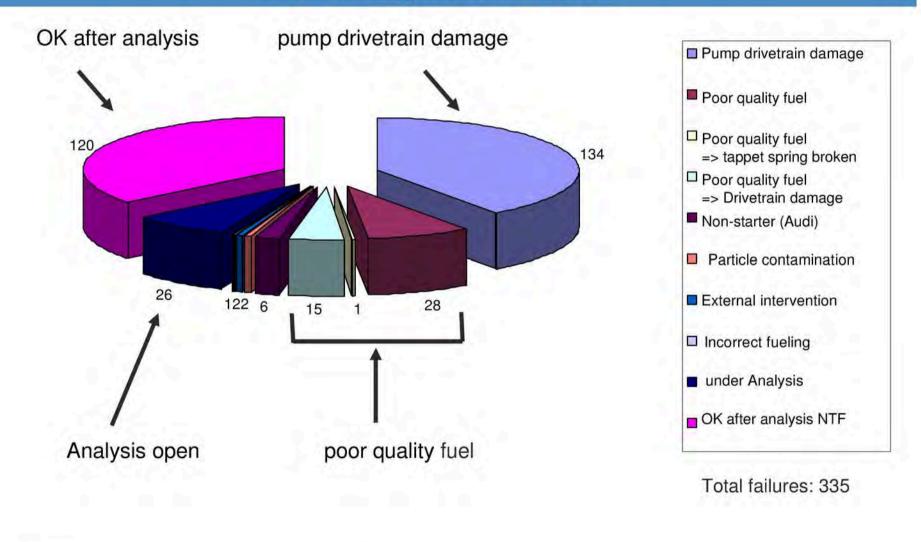


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Status CP4.1_2 field failures - Bosch 2009/10 Volkswagen and Audi



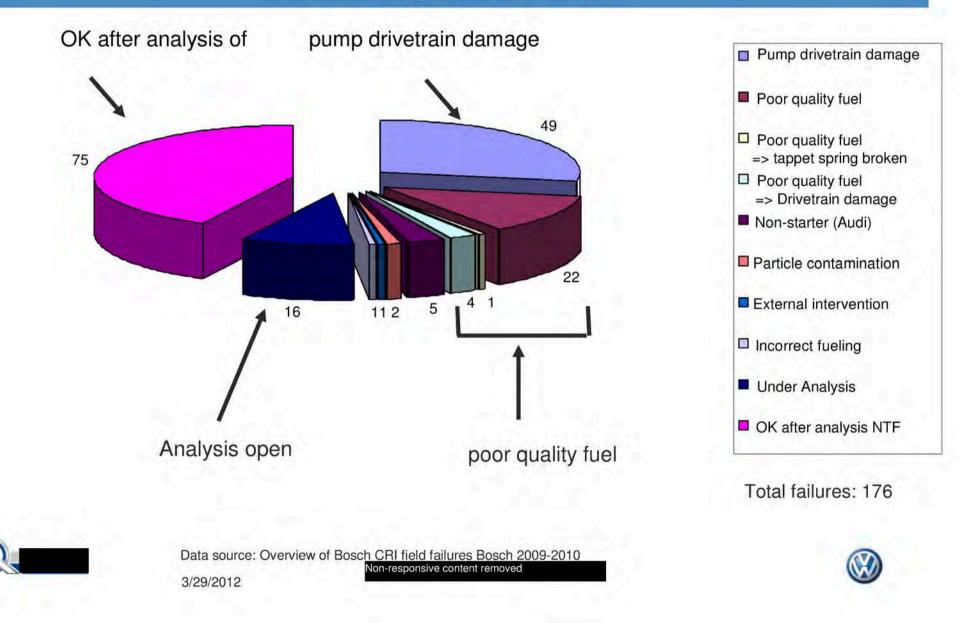


Data source: Overview of Bosch CRI field failures Bosch 2009-2010
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EA11003EN-02122[3]

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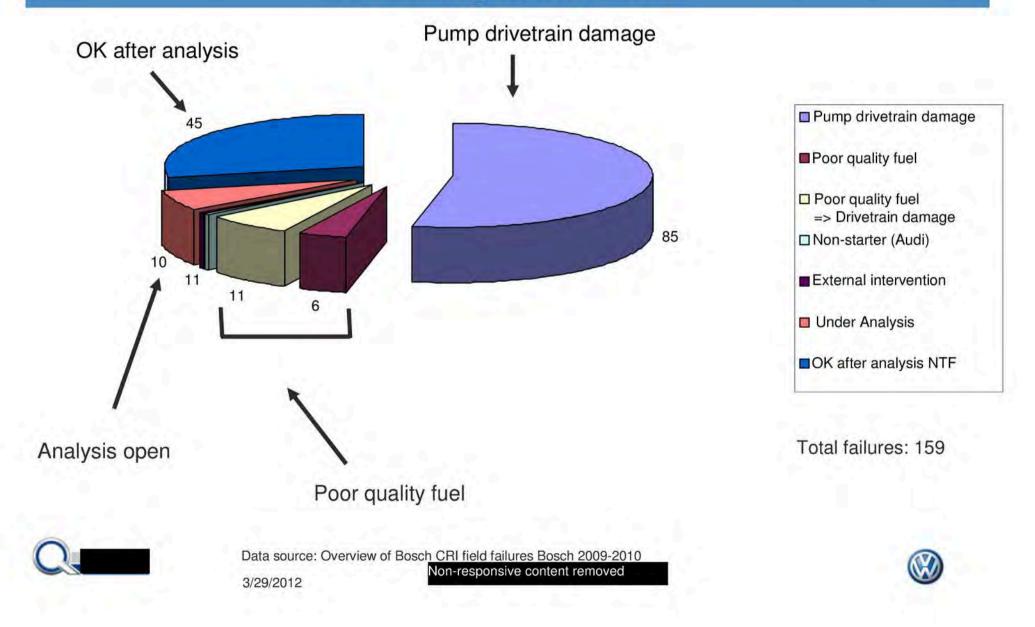
Status of CP4.1 Field failures - Bosch 2009/10 Volkswagen and Audi



EA11003EN-02122[4]

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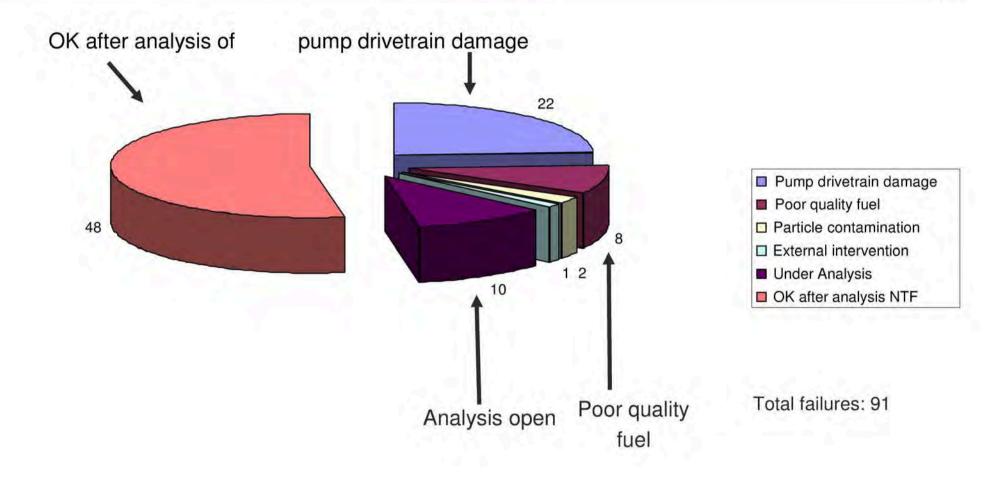
Status of CP4.2 Field failures - Bosch 2009/10 Volkswagen and Audi



EA11003EN-02122[5]

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Status of CP4.1 Field failures - Bosch 2009/10 Volkswagen





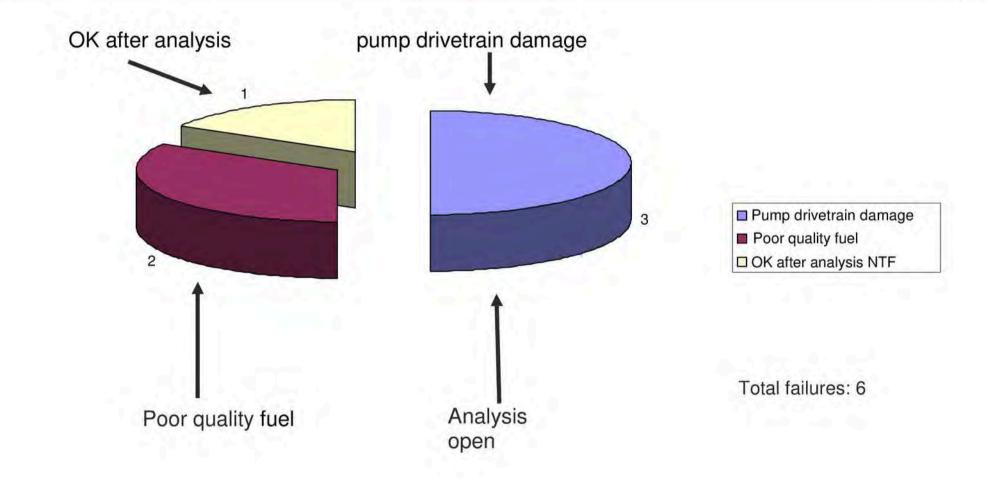
Data source: Overview of Bosch CRI field failures Bosch 2009-2010 Non-responsive content removed

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EA11003EN-02122[6]

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Status of CP4.2 Field failures - Bosch 2009/10 Volkswagen





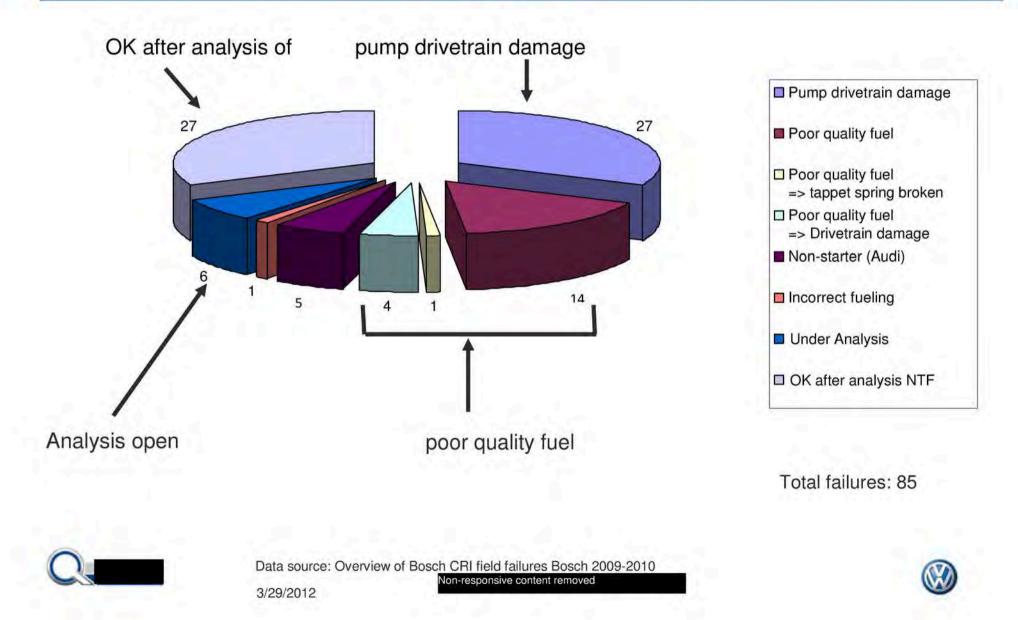
Data source: Overview of Bosch CRI field failures Bosch 2009-2010 Non-responsive content removed



EA11003EN-02122[7]

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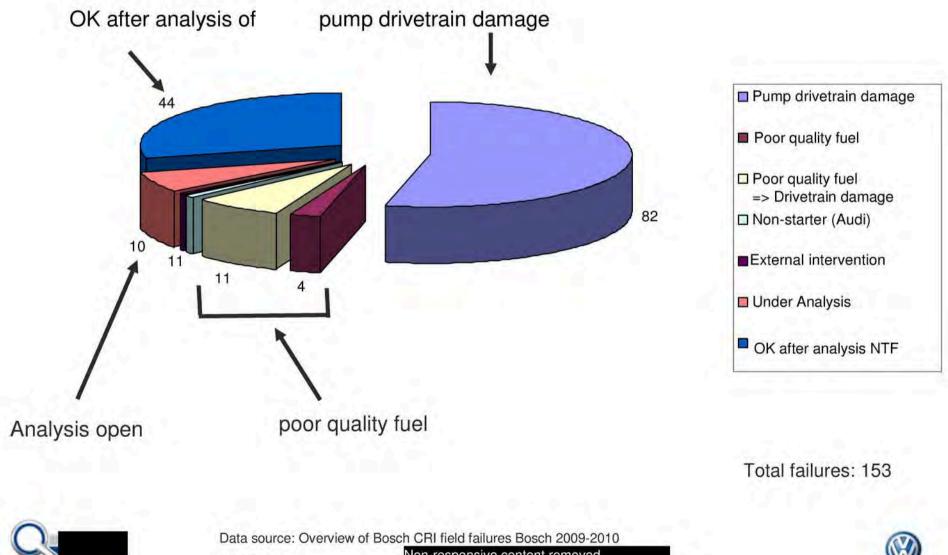
Status of CP4.1 Field failures - Bosch 2009/10 Audi



EA11003EN-02122[8]

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Status of CP4.2 Field failures - Bosch 2009/10 Audi

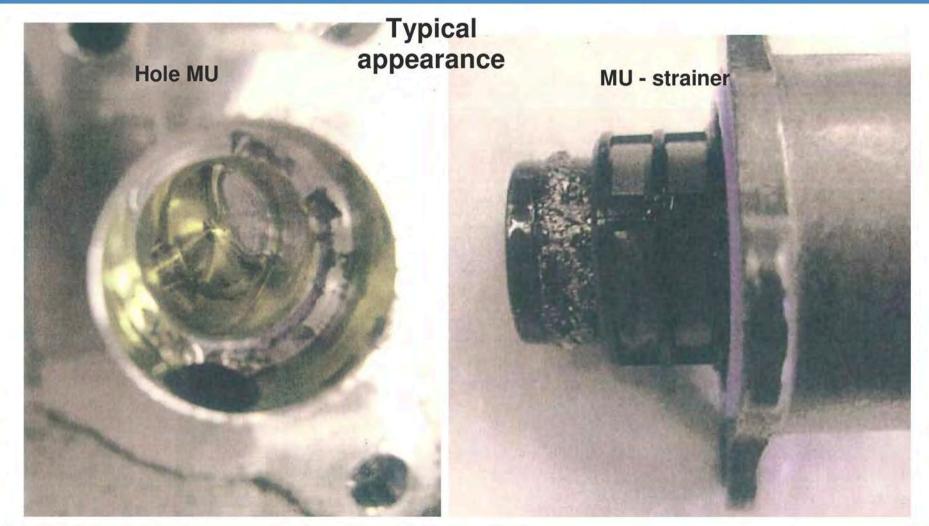


3/29/2012

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Status CP4.1_2 field failures - Bosch 2009/10 Volkswagen and Audi





3/29/2012



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Status CP4.1_2 field failures - Bosch 2009/10 Volkswagen and Audi

Pump drivetrain damage Volkswagen

Caused by:

- Metal shavings / particle in the pump
- Shavings on MU and in the hole
- Turned tappet, grinding of roller, camshaft, roller support

Impact:

- Unacceptably high mixed friction leads to local contact points between roller and roller support
- C-coating (coating) is destroyed
- The friction coefficient between the roller and roller support increases
- Sluggishness of roller, wear, particle formation => drivetrain damage

Influencing factors:

- Fuel with low dynamic viscosity, not according to specification
- => Deposit formation on roller and roller support (fusing)
- Particles in the Bosch assembly process and in the Volkswagen manufacturing process

Measure:

- Task Force team at Audi since November 2009





Status CP4.1_2 field failures - Bosch 2009/10 Volkswagen and Audi

Status of drivetrain damage Bosch CP4.1 and CP4.2

| Failure figures of | Produced | Sales | Random | Failures absolute | Failures | s per 1,000 |
|---------------------|----------|---------|---------|-------------------|--------------|---------------|
| | | | | HY 08 - 10 | HY 08 MIS 12 | HY 09 MIS 12* |
| CP4.1 VW (4 Cyl.) | 608,089 | 558,524 | 397,811 | 419 | 0.8 | 0.6 |
| CP4.1 Audi (4 Cyl.) | 514,361 | 475,995 | 350,530 | 459 | 0.9 | 0.7 |
| CP4.2 VW (6 Cyl.) | 23,150 | 22,124 | 15,626 | 175 | 3.2 | 1.2 |
| CP4.2 Audi (6 Cyl.) | 155,928 | 148,322 | 107,915 | 644 | 2.9 | 2.7 |

| Failure figures o | Produced | Sales | Random | Failures absolu | te | Failures per 1,000 |
|---------------------|----------|---------|---------|-----------------|--------------|--------------------|
| | | | | HY 08 - 10 | HY 08 MIS 12 | HY 09 MIS 12* |
| CP4.1 VW (4 Cyl.) | 249,319 | 225,267 | 187,902 | 108 | 0.6 | 0.2 |
| CP4.1 Audi (4 Cyl.) | 169,822 | 162,785 | 144,426 | 87 | 0.5 | 0.4 |
| CP4.2 VW (6 Cyl.) | 15,034 | 14,158 | 11,640 | 24 | 0.3 | |
| CP4.2 Audi (6 Cyl.) | 73,303 | 70,537 | 60,197 | 117 | 1.3 | 0.3 |

| | Produced | Sales | Random | Failures absolute | | Failures per 1,000 |
|---------------------|----------|--------|--------|-------------------|--------------|--------------------|
| | | | | HY 08 - 10 | HY 08 MIS 12 | HY 09 MIS 12* |
| CP4.1 VW (4 Cyl.) | 81,609 | 76,772 | 44,592 | 119 | 0.9 | 1.5 |
| CP4.1 Audi (4 Cyl.) | 68,573 | 63,337 | 43,213 | 153 | 2.0 | 0.8 |
| CP4.2 VW (6 Cyl.) | 2,292 | 2,238 | 1,129 | 118 | 24.1 | 4.9 |
| CP4.2 Audi (6 Cyl.) | 23,665 | 22,316 | 13,359 | 426 | 15.2 | 13.6 |

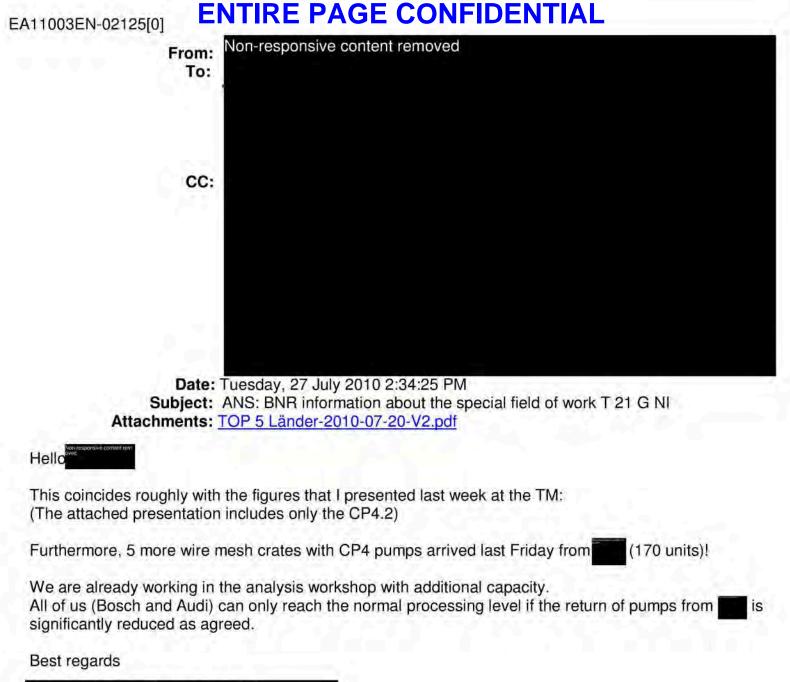


*HY 09 MIS 12 based on Aqua extrapolation

Aqua evaluation from production year 2008; Status as on: 04/2010



3/29/2012



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Domicile: Stuttgart, Court of Registry: Local District Court Stuttgart, Commercial Register No. 14000; Chairman of the Supervisory Board: Hermann Scholl; Management: Franz Fehrenbach, Siegfried Dais;

EA11003EN-02125[1] ENTIRE PAGE CONFIDENTIAL

Bernd Bohr, Rudolf Colm, Volkmar Denner, Wolfgang Malchow, Peter Marks, Peter Tyroller; Stefan Asenkerschbaumer, Uwe Raschke, Wolf-Henning Scheider

From: Non-responsive content removed Sent: Tuesday, 27 July 2010 11:58 AM Non-responsive content removed

Subject: ANS: BNR information about the special field of work T 21 G NI

Hello gentlemen,



has made me aware of something important:

This list never contains all open items!!!! This is aborted.

As you can read in the mail, 341 parts are currently open!!!!!!!!!!! (this also includes about 50 - 100 units handled by Bosch, but not by us yet)

You can subtract another 50 injectors from that; the rest are all non-analyzed high-pressure fuel pumps CP4!

has been canceled, except 3 units per week (permanent random sampling).

Please do not use up the capacity of for all individual opinions on this list, but complete via 8D in QTS.

Individual opinions (endurance runners, etc.) only in special cases.

With best regards

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-----Original message-----

From: ^{Non-responsive content removed} Sent: Tuesday, 27 July 2010 10:08

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Subject: Re: BNR information about the special field of work T 21 G NI

Hi all,

The open list once again.

With best regards

EA11003EN-02125[2]

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-----Original message-----

From: AUDI IN head office, 0 km

Sent: Monday, July 26, 2010 22:04

To: Non-responsive content removed

Subject: BNR information about the special field of work T 21 G NI

Dear damage processor,

In the Appendix, you can see a list of the 341 complaints about your special field of work

T 21 G NI, which are already more than 30 days in progress.

With best regards

AUDI AG Quality Assurance

Supp.-No. Supplier name BNR part no part name BSCHL FSCHL entry date, origin St-date L-stat

00001283 00 ROBERT BOSCH GMBH 3646966 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 TFK08 04.29.2010 FIELD 06.02.2010 1

00001283 00 ROBERT BOSCH GMBH 3649456 03L 130 755 HIGH-PRESSURE FUEL PUMP SA017 TFK08 05.03.2010 FIELD 06.10.2010 1

00001283 00 ROBERT BOSCH GMBH 3673830 057 130 755 AC HIGH-PRESSURE FUEL PUMP TFK04 05.31.2010 HALLE 2

00001283 00 ROBERT BOSCH GMBH 3675622 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 E0052 06.01.2010 FIELD 07.02.2010

00001283 30 ROBERT BOSCH GMBH 3573954 03L 130 755 HIGH-PRESSURE FUEL PUMP SA050 TFK04 02.16.2010 FIELD 03.24.2010 1

00001283 30 ROBERT BOSCH GMBH 3575860 03L 130 755 HIGH-PRESSURE FUEL PUMP SA050 TFK04 02.18.2010 FIELD 03.24.2010 1

00001283 30 ROBERT BOSCH GMBH 3609009 059 130 755 AH HIGH-PRESSURE FUEL PUMP SA010 E0052 03.19.2010 FIELD 06.03.2010

00001283 30 ROBERT BOSCH GMBH 3614538 059 130 755 AH HIGH-PRESSURE FUEL PUMP SA010 E0052 03.25.2010 FIELD 06.03.2010

00001283 30 ROBERT BOSCH GMBH 3627089 059 130 755 AH HIGH-PRESSURE FUEL PUMP TFK04 04.09.2010 FIELD 05.09.2010 1

00001283 30 ROBERT BOSCH GMBH 3627234 059 130 755 AB HIGH-PRESSURE FUEL PUMP TFK04 04.09.2010 FIELD 05.09.2010 1

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00001283 30 ROBERT BOSCH GMBH 3627247 059 130 755 AB HIGH-PRESSURE FUEL PUMP SA010 TFK04 04.09.2010 FELD 05.09.2010 1

00001283 30 ROBERT BOSCH GMBH 3627259 059 130 755 AH HIGH-PRESSURE FUEL PUMP TFK04 04.09.2010 FIELD 05.09.2010 1

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00001283 30 ROBERT BOSCH GMBH 3640583 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 MG566 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH 3640645 059 130 755 AB HIGH-PRESSURE FUEL PUMP SA010 11111 04.23.2010 FIELD

00001283 30 ROBERT BOSCH GMBH 3640657 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 TFK04 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH 3640675 03L 130 755 HIGH-PRESSURE FUEL PUMP TFK04 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH 3640692 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 TFK04 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH 3640783 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 TFK04 04.23.2010 FIELD 1

00001283 30 ROBERT BOSCH GMBH 3640829 03L 130 755 HIGH-PRESSURE FUEL PUMP SA010 TFK04 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH 3640871 059 130 755 AB HIGH-PRESSURE FUEL PUMP SA017 TFK04 04.23.2010 FIELD 3

00001283 30 ROBERT BOSCH GMBH

EA11003EN-02128[0]

ENTIRE PAGE CONFIDENTIAL



Drivetrain damage high-pressure diesel fuel pump CP4.2 Q campaign diesel on August 2, 2010

EA11003EN-02128[1]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage High-pressure diesel pump CP4

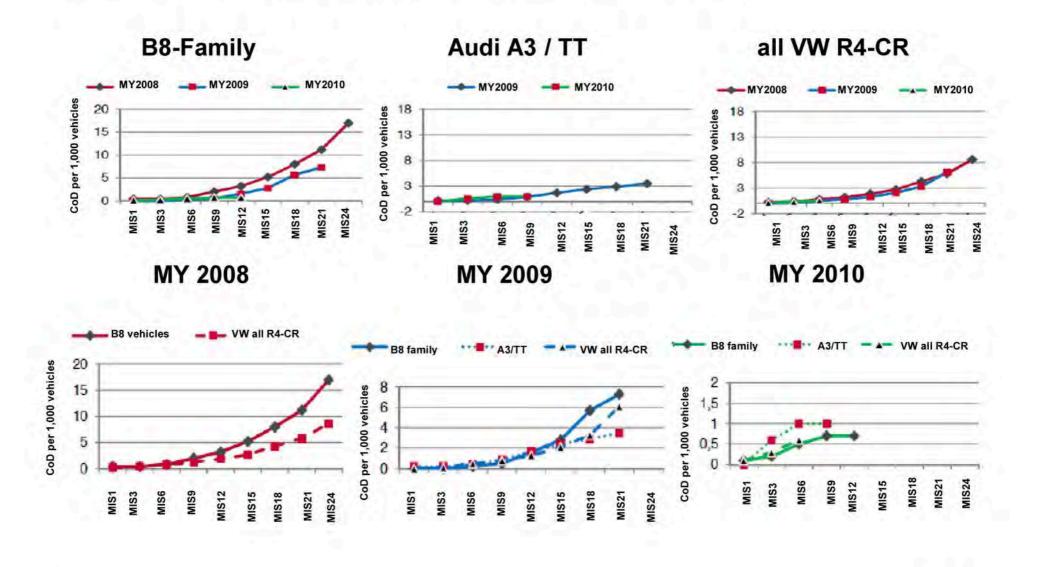
Status before APS on 09.13.2010:

- Preliminary technical meeting for APS held on 07.15.2010.
- Anti-wear package 2 (reduces the temperature in the right roller support of the CP4.2 to CP4.1 level) is not yet decided due to the "tiresome" cost discussions with Bosch (same as for VW); at the TOP meeting of Audi-Bosch on 07.12.2010 it was agreed to clarify the matter by beginning of Sept. 2010.
- Until then, measurements of the low pressure circuit on failed vehicles in over the over the over the indication over the over
- Sharp increase in Audi-R4-CR-lenghtwise failures in particularly MY2008 see VW MY08 !
- Attached is a MOP/MIS comparison of AU-R4-lenghtwise, AU-R4-transverse with VW-R4-CR-transverse:
 - in MY 2008, Audi-lenghtwise is worse than VW-transverse; AU-transverse is still not in the field; i.e. VW-transverse has coped rather better with the "fuel plight" in
 - in MY 2010 there is no visible difference so far.
 - in MY 2009, Audi-transverse is better than VW-transverse and AU-lenghtwise
- See next page (note scales of the Y axes) !

EA11003EN-02128[2]

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Drivetrain damage high pressure diesel fuel pump CP4.1



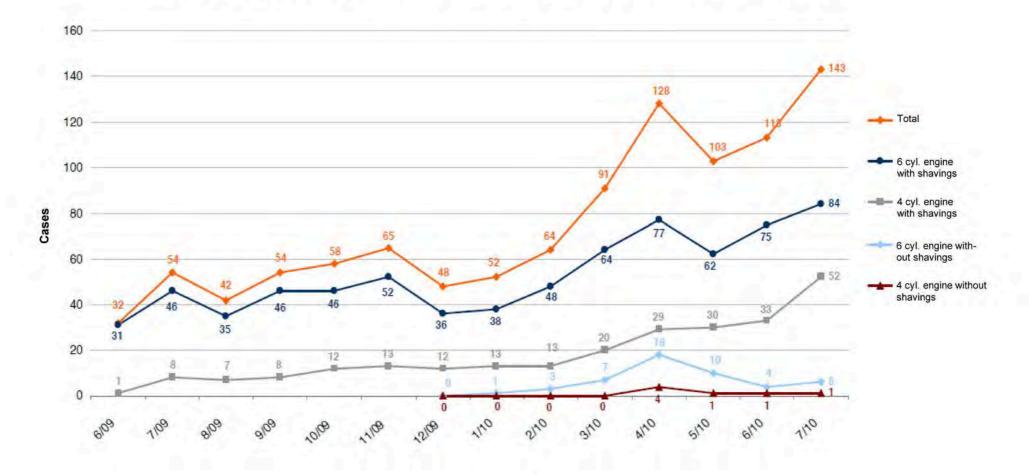
3

EA11003EN-02128[3]

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Drivetrain damage high pressure diesel fuel pump CP4.1

Failure of high pressure pump diesel CR - cases of damage per month (status 07/10 WK 29)



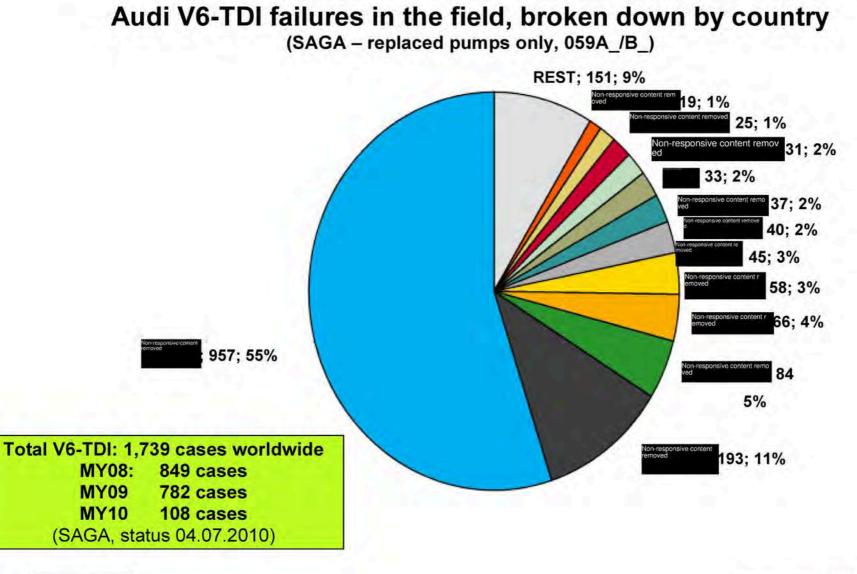
Month/Year

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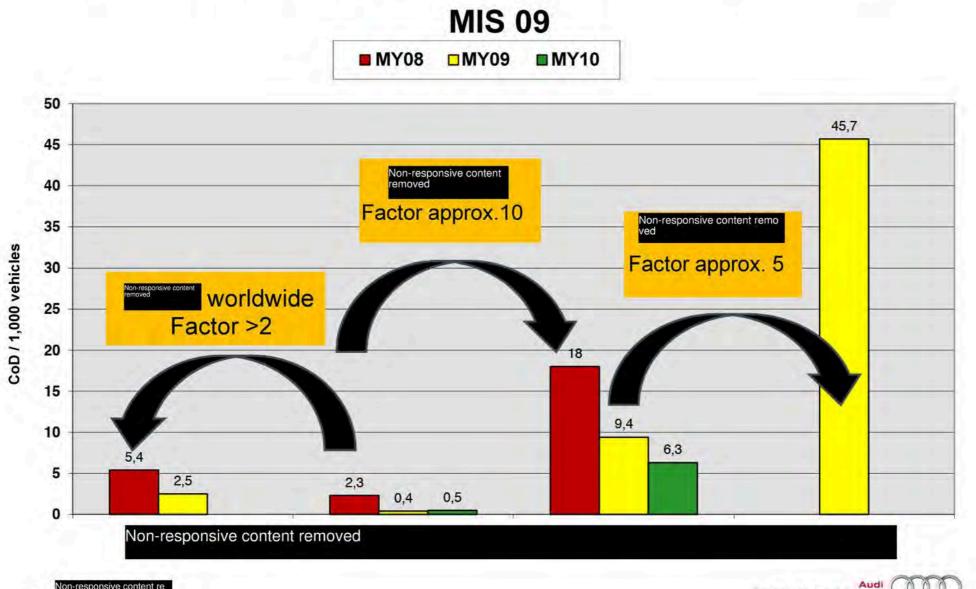
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Drivetrain damage high-pressure diesel fuel pump CP4.2



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Drivetrain damage high-pressure diesel fuel pump CP4.2



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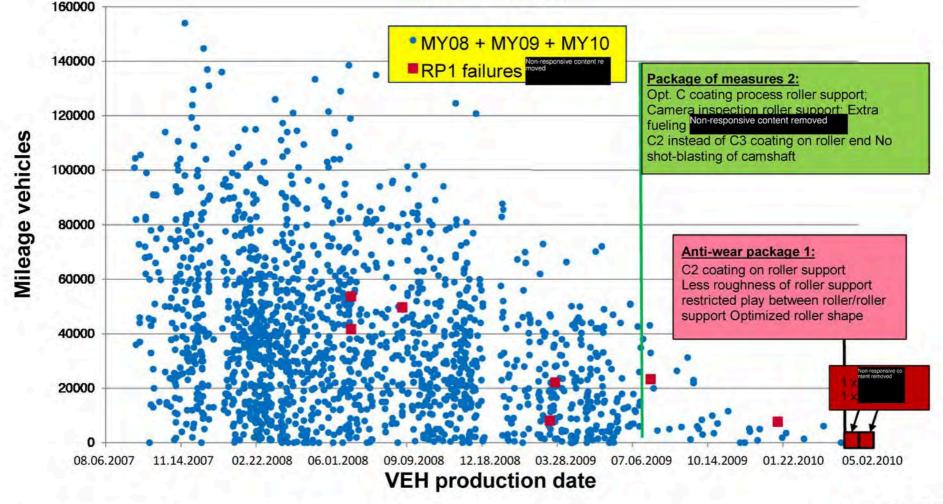
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EA11003EN-02128[5]

EA11003EN-02128[6]

Drivetrain damage high-pressure diesel fuel pump CP4.2

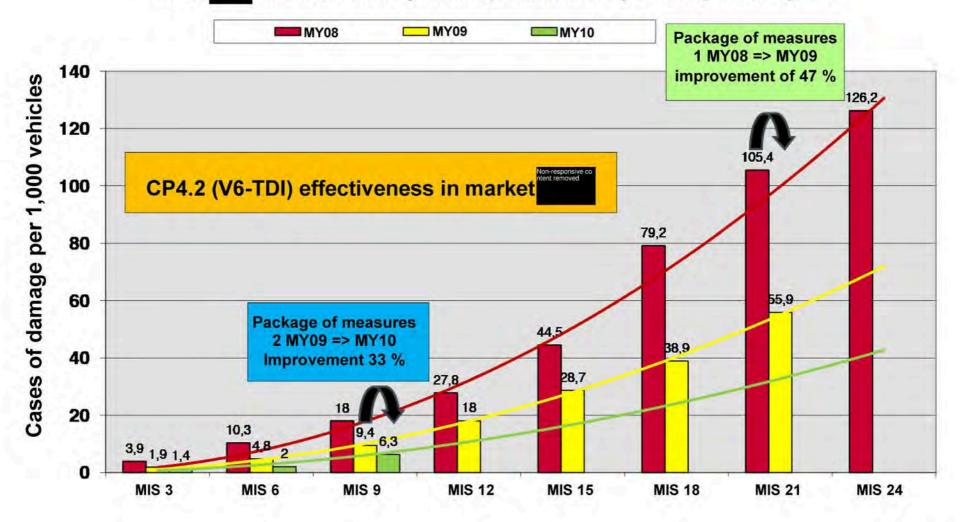




Audi

Drivetrain damage high-pressure diesel fuel pump CP4.2

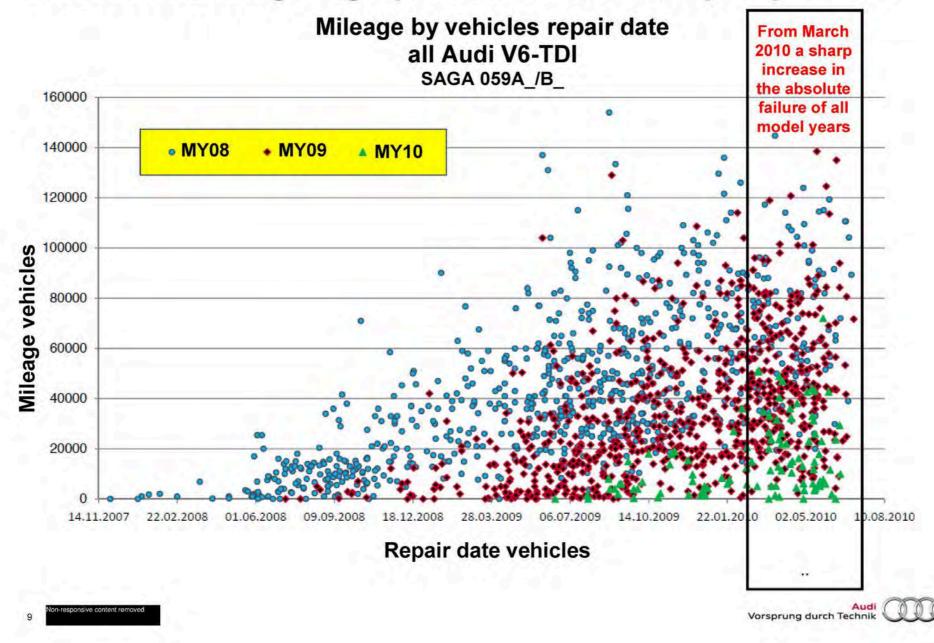
CP4.2 all V6-TDI Model year comparison Model year comparison by MIS



EA11003EN-02128[7]

EA11003EN-02128[8]

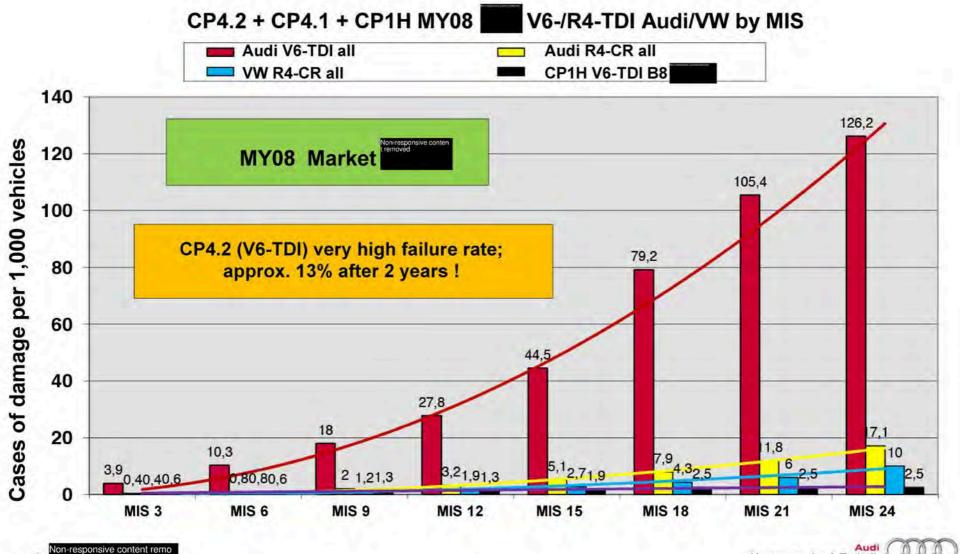
Drivetrain damage high-pressure diesel fuel pump CP4.2



EA11003EN-02128[9]

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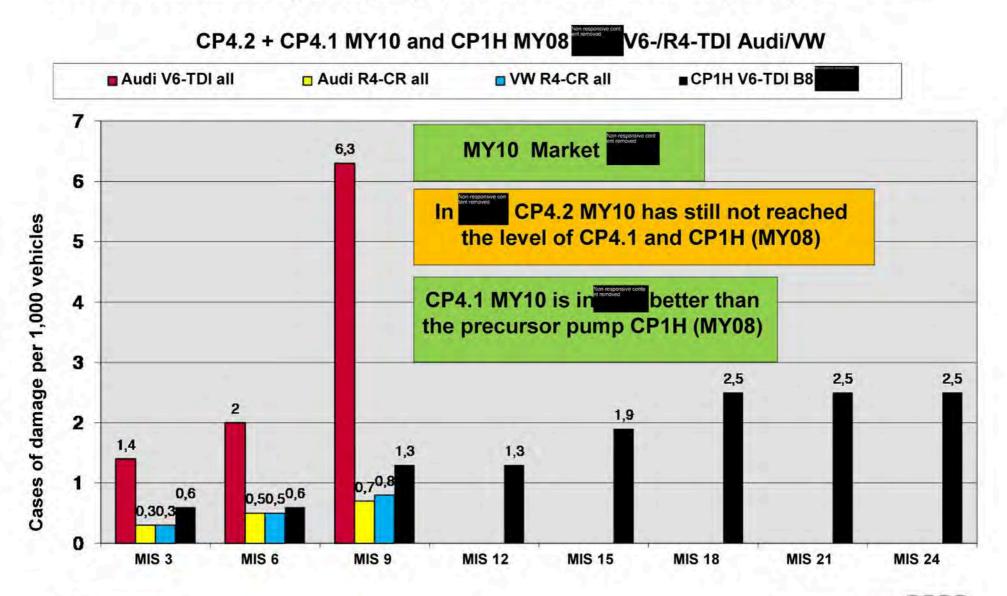
Drivetrain damage high-pressure diesel fuel pump CP4.2



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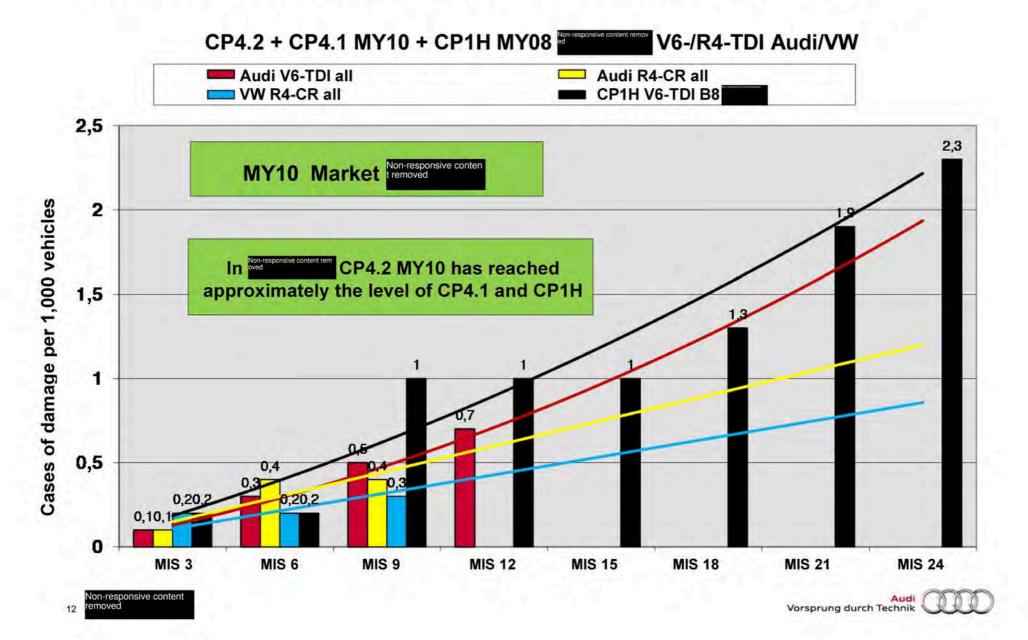
Drivetrain damage high-pressure diesel fuel pump CP4.2



11

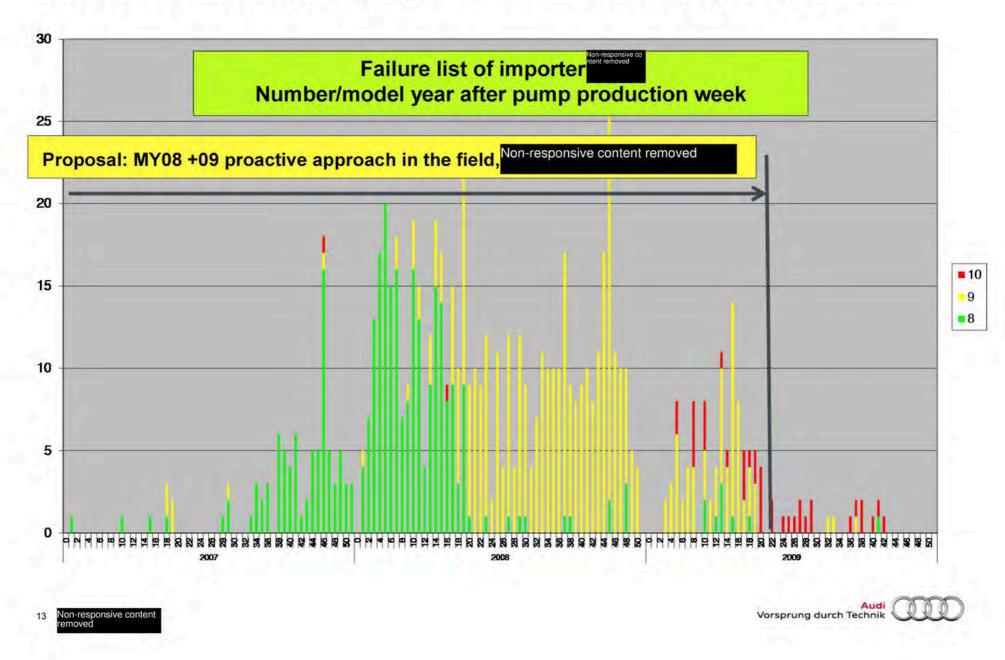


Drivetrain damage high-pressure diesel fuel pump CP4.2



EA11003EN-02128[12]

Drivetrain damage high-pressure diesel fuel pump CP4.2



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Drivetrain damage high-pressure diesel fuel pump CP4.2

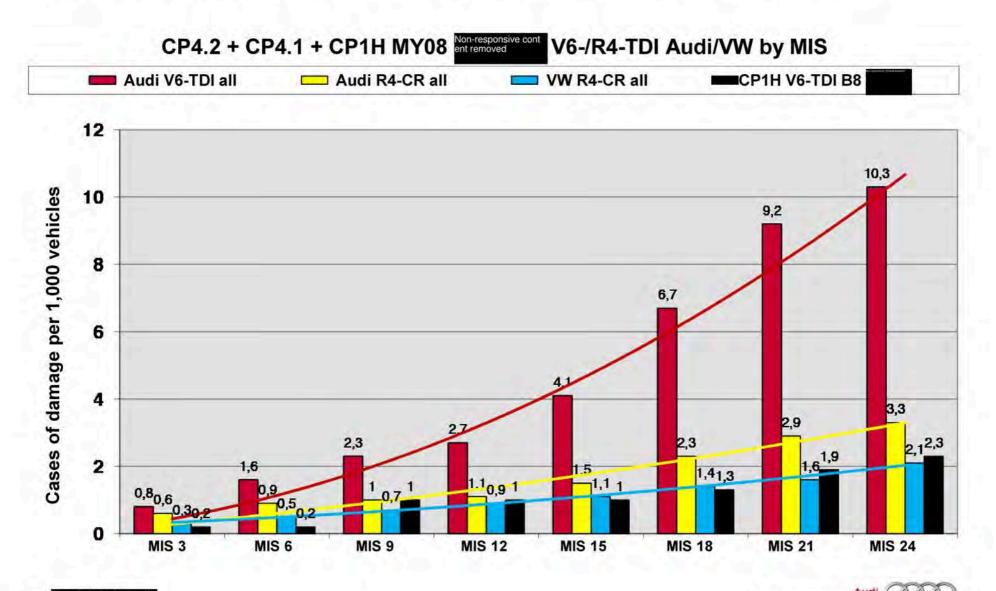
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EA11003EN-02128[14]

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Drivetrain damage high-pressure diesel fuel pump CP4.2



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EA11003EN-02128[15]

Drivetrain damage high-pressure diesel fuel pump CP4.2

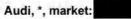
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Audi

Vorsprung durch Technik

CNR

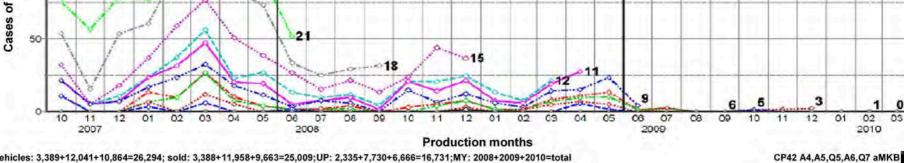


AQUA: Active quality analysis Status as on 10.05-06.12.10 01:38 PM Source/User Non-responsive content removi

MY 2008 - 2010, Offset: all (Max: 2)

CNR / Groups: High-pressure fuel pump

| 08 09 10 ff% | 0.0 0.1 0,0 100,00 | | 1.7 0.9 0,2 '8,42 | -27 | 3,9 1,9 1,4 7,47 | | 9.0 3,8 2,0 60 | 4 | 0.3 1,8 2,0 93 | 18 9, 6, -33,4 | 4 | 23.6 14,8 10,4 -28,17 | 5 | 27.8 18,0 | | 44,5 28,7 | | 79,2 38,9 | | 5.4 5,9 | 126 | 5,2 | 2008 2009 2010 | 98 | 0.0 % 3,8 % 0,0 % | 83,3 81,7 84,2 | % | 76.5 % 81,3 % 73,7 % EC ERI | 6 1 | 13,7 9 12,5 9 15,8 9 AJOF |
|-----------------------|-----------------------------|---------|----------------------------|---------|---------------------------|--------|-------------------------|-----|-------------------------|-------------------------|-----|--------------------------------|-----|--------------|-------|--------------|------|--------------|-----|------------|-----|-----|----------------------|-----|-------------------------|----------------------|-------|--------------------------------------|--------|------------------------------------|
| | Samp | le vehi | cles | | | 5.1.1 | | | | | | | | | 1 | | 5.17 | | | | | 1.1 | | 1. | - | | Vehic | cle sup | pressi | on: 5 |
| | 93 | 194 | 280 | 297 | 508 | 338 | 394 | 259 | 598 | 520 | 511 | 665 | 672 | 773 | 654 | 675 | 665 | 841 | 724 | 594 | 728 | 394 | 221 | 672 | 703 | 628 | 447 | 533 | 554 | 66 |
| | | | Mod | lel yea | ar 20 | 2 | | | | | | | Mod | del ye | ar 20 | 09 | | | | | | | | Mod | lel ye | ar 20 | 10 | | | |
| 150 | | | | | 1 | 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | | | -0- | 1 | 1 | \sim | 1 | | | | | | | | | | | | | | | | | | | | | | | |



Vehicles: 3,389+12,041+10,864=26,294; sold: 3,388+11,958+9,663=25,009;UP: 2,335+7,730+6,666=16,731;MY: 2008+2009+2010=total

50

EA11003EN-02128[16]

AQUA: Active quality analysis

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Drivetrain damage high-pressure diesel fuel pump CP4.2

Audi, *, market: AUDI (approved markets)

MY 2008 - 2010, Offset: all (Max: 6) Source/User Non-responsive content remo CNR 2374 CNR / Groups: High-pressure fuel pump CAMAI CAMBI CAMDI CANAI CANBI CANCI CANDI CASAI CASBI CASCI CASDI CATAICATBICCLAICCMAICCWAICAWBICDYAICDYBICDYCICG MY MIS0 MIS1 MIS3 MIS5 MIS6 MIS9 MIS11 MIS12 MIS15 MIS18 MIS21 MIS24 MY Replacement BD SA10 SA17 0.0 0,6 1,5 2,7 3.3 5.4 6.3 7.0 10.2 15.9 20.2 22,9 65.7 % 11.7 % 2008 2008 98.5 77.3 % 0.3 0.7 13 17 2.5 3.3 3.9 5.5 2009 0.0 9.8 2009 95.8 % 57.6 % 73.5 % 16.6 % 0.0 0.1 0.8 1,2 1.2 91.4% 56,9 % 67.2 % 20,7 % 2010 2010 2.29 -11.49-29.96 Diff% -100.00-61.69 MECER MAJOR Sample vehicles Vehicle suppression: 50 2,359 2,696 2.350 3.959 3.176 2,935 3.880 7,938 5 478 5.775 6.174 5.419 6.348 6.759 528 5.198 5,844 7,904 6.124 7.128 892 4.797 4,967 8.107 2,907 3,40 4.90 Model year 2009 Model year 2010 1,000 vehicles 21 28 24 20 per damage 18 đ Cases 5 -5 3 1 0 D 06 07 08 09 10 09 10 11 12 01 02 03 04 05 06 08 04 05 11 07 OF 10 03 2007 2008 2009 Production months

Vehicles: 30.295+95.285+92.844=218.424;Sold: 30.244+94.857+82.400=207.501;UP: 21.579+69.553+652=157.784;MY: 2008+2009+2010=Total

CP42 A4,A5,Q5,A6,Q7 aMKB 80

Confidential

without PR-numbers

EA11003EN-02128[17]

Drivetrain damage high-pressure diesel fuel pump CP4.2

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2374

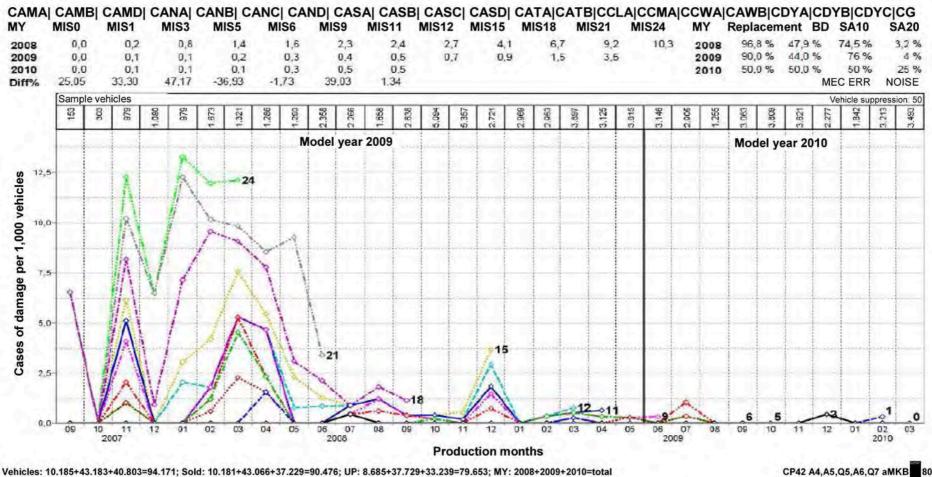
CNR

Audi, *, market:

AQUA: Active quality analysis Status as on 10/05 05.28.10 2:07 PM Source/User

MY 2008 - 2010, Offset: all (Max: 2)

CNR / Groups: High-pressure fuel pump



Vehicles: 10.185+43.183+40.803=94.171; Sold: 10.181+43.066+37.229=90.476; UP: 8.685+37.729+33.239=79.653; MY: 2008+2009+2010=total

EA11003EN-02128[18]

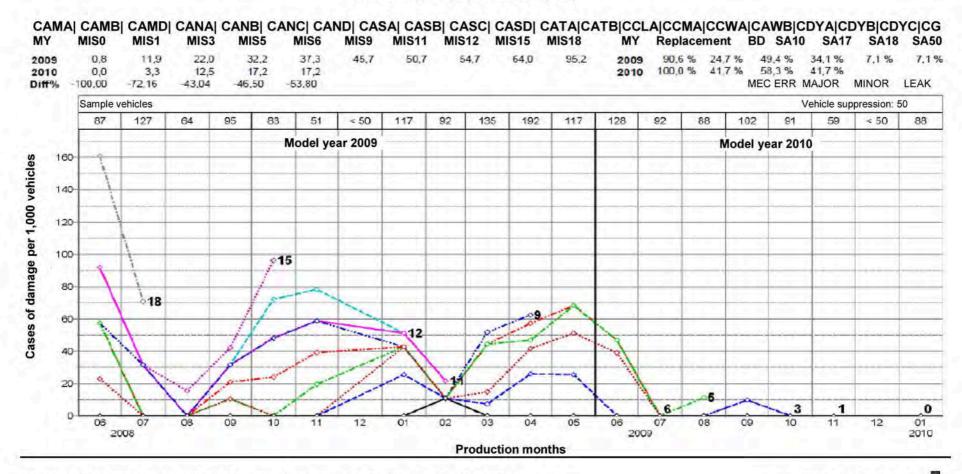
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Drivetrain damage high-pressure diesel fuel pump CP4.2

AQUA: Active quality analysis Status as on 10.05-06.12.10 1:58 PM Source/User Non-responsive content removed Audi, *, market:

MY 2008 - 2010, Offset: all (Max: 4)

CNR / Groups: High-pressure fuel pump



Vehicles: 1+2.074+2.026=4.101;Sold: 1+2.071+1.571=3.643;UP: 0+1.181+936=2.117;MY: 2008+2009+2010=total

CP42 A4, A5, Q5, A6, Q7 aMKB

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2374

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CNR

Vorsprung durch Technik

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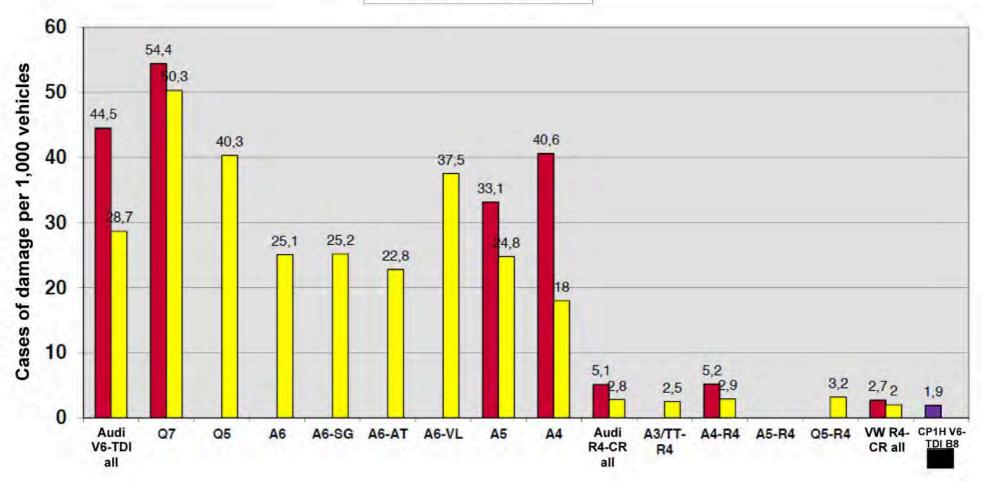
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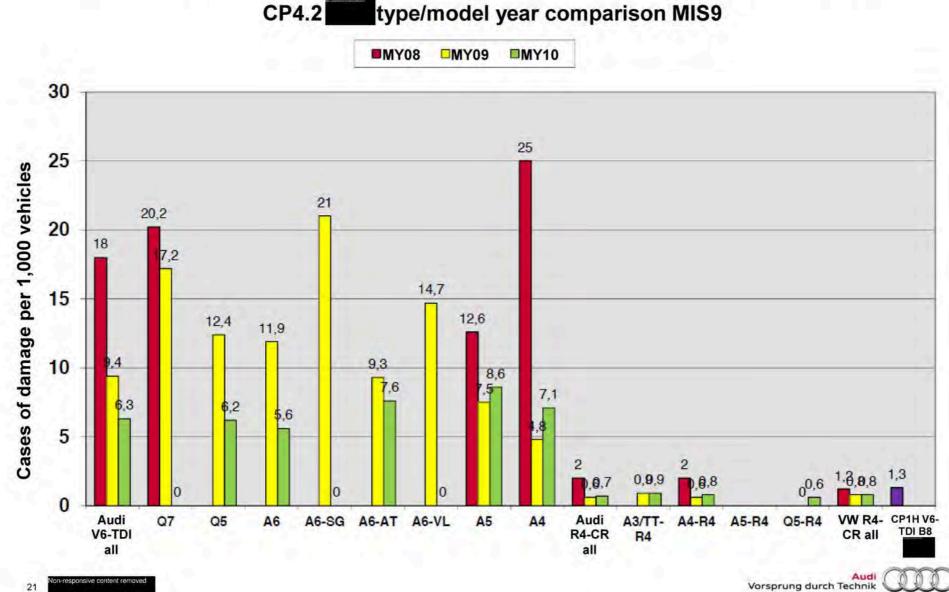
Drivetrain damage high-pressure diesel fuel pump CP4.2

CP4.2 type/model year comparison MIS15

MY08 DY09



Drivetrain damage high-pressure diesel fuel pump CP4.2



21

EA11003EN-02128[20]

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| | SWAG | | Minutes: 08.02.2010 Q campaign for diesel | | | Ø |
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| | | Intro | oduction | | | |
| Pos | CNR | | Торіс | (A)ssignment (I)nformation Date | Responsible | Dept. |
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VOLKSWAGEN

Minutes: 08.02.2010

Q campaign for diesel



| | | Follow-ups - diesel | | | |
|-----|-----|--|---------------------------------------|----------------------------|--------------|
| Pos | CNR | Торіс | (A)ssignment (I)nformation Date | Responsible | Dept. |
| 5. | | Bosch high pressure pump CP-4 failures | | Non-responsi nt removed | ve conte |
| | | HPP - failures EA 896, focus Monvessorsve content removed interview will present the CoD curves for HPP. The evaluations point to long-term damages. Title: EA896 | | | |
| | | Title: EA896 PDF, Author Mitps://gsappl0.wob.vw.vwg:4100/pis/portal/download/IFS:11895349/11895349 Title: EA896 USA.PDF, Author Mitps://gsappl0.wob.vw.vwg:4100/pis/portal/download/IFS:11895355/11895355 Title: Hochdruckpumpe_CR_15_03_2010.pdf, Author: Size: 1431 KB, Date: 5/17/2010 https://gsappl0.wob.vw.vwg:4100/pis/portal/download/IFS:11895355 Title: Hochdruckpumpe_CR_15_03_2010.pdf, Author: Size: 1431 KB, Date: 5/17/2010 https://gsappl0.wob.vw.vwg:4100/pis/portal/download/IFS:11895409/11895409 | | | |
| | | The analysis of the differences between CP4.2 and CP4.1 leads to the measures in the anti-wear package 2. Verification required, therefore series only in WK45. Title: HDP_TS Wochenstatus 11_05_10.ppt, Author: size: 1055 KB, Date: 5/18/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11900395/11900395 | | | |
| | | CR for adjustment of 4-cylinder for EU4, BIN to poor quality fuel markets made by the second | l: 5/17/2010 | Non-responsive oved | content rem |
| | | formation. Joint procedure of Audi and VW through APS Preparation through Cases of damage from EA 189 | l: 5/17/2010 | Non-responsive con | tent removed |
| | | Title: EA189_2.0L PDF, Author: Size: 282 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895397/11895397 Title: EA189_2.0L PDF, Author: Size: 268 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895379/11895379 Title: EA189_2.0L PDF, Author: Size: 217 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895385/11895385 Title: EA189_2.0L PDF, Author: Size: 229 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895373/11895385 Title: EA189_2.0L PDF, Author: Size: 229 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895373/11895373 Title: EA189_2.0L USA.PDF, Author: Size: 261 KB, Date: 05/17/2010 https://gsappl0.wob.vw.vwg:4100/pls/portal/download/IFS:11895391/11895391 | | | |
| | | Resubmission in WK 31/2010 | : 5/17/2010 | Non-responsive cor | itent remove |
| | | CP 4.2 pump in V6 TDI failures -> Introduction of package of measures 2 from WK 45/10 Negotiations with Bosch regarding the assumption of costs is difficult because of the influence of the vehicle: Electric fuel pump from TI somewhat weaker (for lenghtwise installations), therefore at unfavorable framework conditions due to temperature and fuel (biodiesel residues) the filter can clog so that lubrication is insufficient (failures such as in | | | |

EA11003EN-02130[2]

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| VOLKSWAGEN | Minutes: 08.02.2010 Q campaign for diesel | - | |
|---|--|---|-----------------------------------|
| Date: 8 https:// Increa failure from / Comp Audi / Anti-v and V Requ | 2-Offensive Diesel Bosch HDP 02.08.10.pdf, Author: | I: 08.02.2010 I: 08.02.2010 I: 08.02.2010 A: 08.02.2010 9/27/2010 : 08.02.2010 | Non-responsive co tent removed |
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Minutes: 08.02.2010

Q campaign for diesel



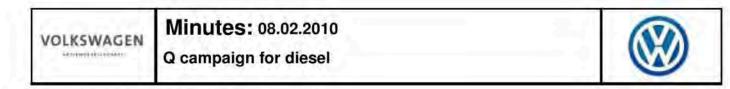
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| | | USA mar | ket | | - | (A)ssignme | nt | |
| Pos | CNR | | | Topic | | (I)nformatio Date | | Dept |
| 18. | | Title: 2010_06 06.28.2010 https://gswms.v 1 additional p Detailed repo Reporting ar Resubmissid Title: Auswertu Date: 8/3/2010 https://gswms. 15-pumps fro | esult of the analys 22 USA_HDP-Bosc wob.vw.vwg:4100/pls nump delivered by orting in 1990 and documentatio on in WK 31/2010 ng_29_07_10_Hoch wob.vw.vwg:4100/pl | ch.ppt, Author: Is/portal/download/IFS: on 06.30.2010 by on for VWoA 0 hdruckpumpe.pdf, Authors portal/download/IFS: zed at Bosch in the p | or: , size: 86 K | EA 189 2.01 A: 6/14/2010 I: 6/28/2010 A: 6/28/2010 B: I: 08.02.2010 | ntent remo | nsive c ved |
| Non-re | espons | 1 pump direct | | to Bo | | 1.00,02.201 | | |

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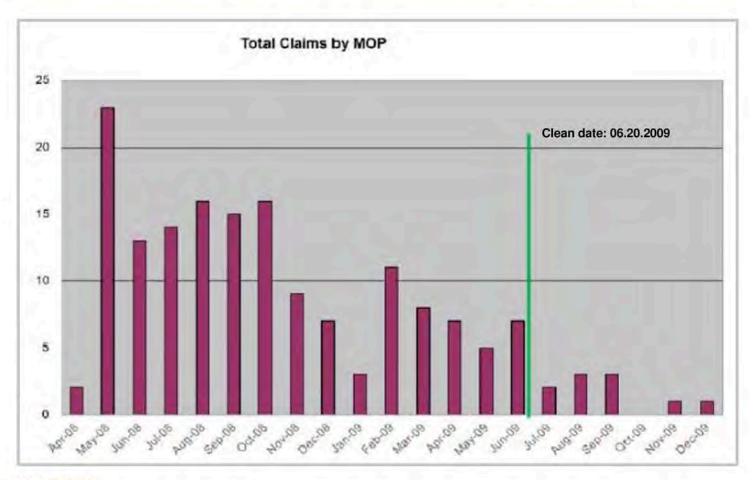
> 08.30.2010 11:08:08 AM Status for US-Q-Offensive CP4 Attachments: 100727 Status CP4 US Q Offensive (1).pdf HD- Pumpe USA.pdf

Hello

Attached is the final status of the US Q campaign of the BOSCH-HPP. Until March 2010, a total of 154 CP4.1 have failed in the US and there is a clean date in June 2009 for the existing BOSCH measures that are listed in the 2nd attachment. Unfortunately, our Aqua figures do not reproduce what the US colleagues can deduce from their own systems, so we have again inquired today about the status there for update with due urgency.

Besides the already implemented 34 corrective actions, we also introduce analog to AUDI the anti-wear packages which are listed in the second attachment and are currently in validation at VW since WK08.

By this evening, our electronics technicians will once again list what exactly is shown to the customers by the warning lamp in the chain of failure. Usually, it is assumed that the warning lamp is set according to specific criteria when the rail pressure falls short due to a defective pump. The worst case of the time-related sequence is that a chip reaches the intake valve of the pump suddenly resulting in an open valve, causing the pressure to drop quite abruptly.



With Best regards

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VOLKSWAGEN AG Sitz/Domicile: Wolfsburg Registergericht/Court of Registry: Local District Court Braunschweig

EA11003EN-02131[1] ENTIRE PAGE CONFIDENTIAL

HRB Nr./. Commercial Register No.: 100484

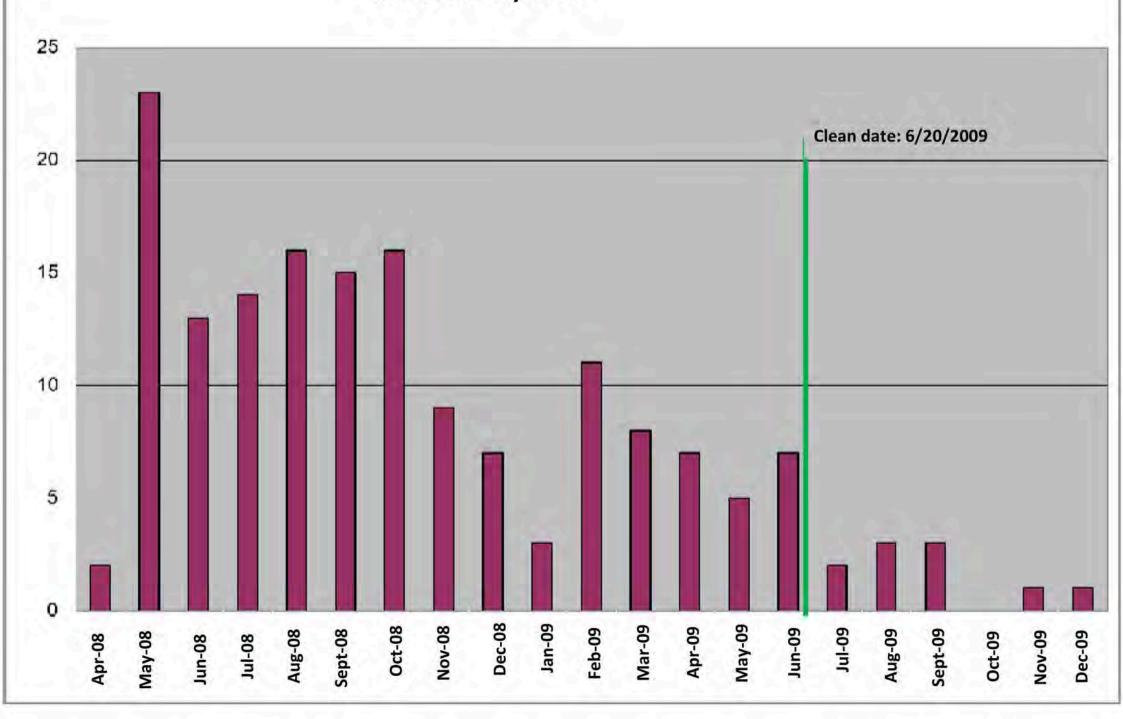
Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Ferdinand Piëch

Vorstand/Board of Management: Martin Winterkorn (Vorsitzender/Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Horst Neumann, Hans Dieter

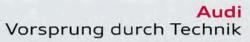
Important Notice: The above information is automatically added to this e-mail. This addition does not constitute a representation that the content of this email is legally relevant and/or is intended to be legally binding upon VOLKSWAGEN AG. This email is for the intended recipient only. Access, disclosure, copying, or distribution on any of it by anyone else is prohibited and may be a criminal offence. Please delete if obtained in error and email confirmation to the sender. In case of transfering sensitive information the VOLKSWAGEN AG reserves the right to take out the patent. EA11003EN-02134[0]

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Total Claims by MOP



EA11003EN-02139[0]



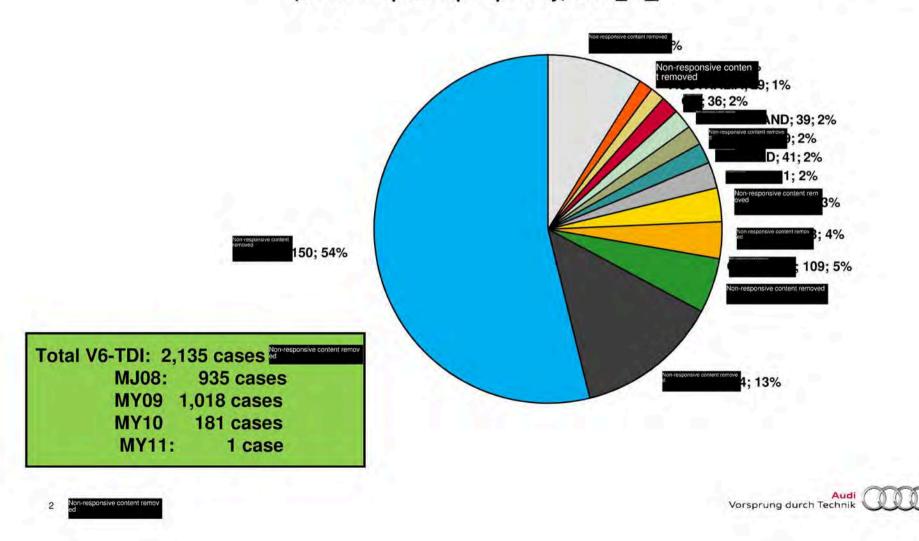


Drivetrain damage, high pressure diesel fuel pump CP4 Q campaign diesel on 2 August 2010

EA11003EN-02139[1]

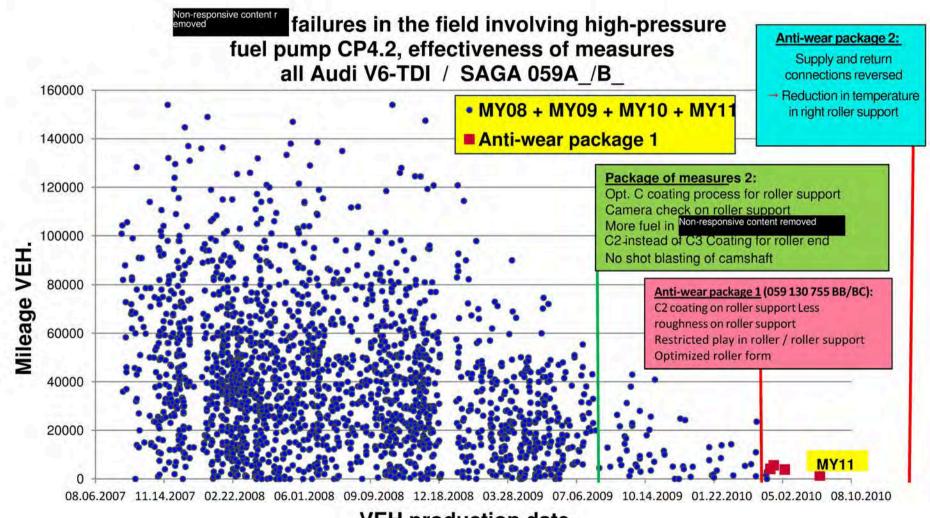
Drivetrain damage, high pressure diesel fuel pump CP4.2

Audi V6-TDI failures in the field, broken down by country (SAGA – replaced pumps only, 059A_/B_)



EA11003EN-02139[2]

Drivetrain damage, high pressure diesel fuel pump CP4



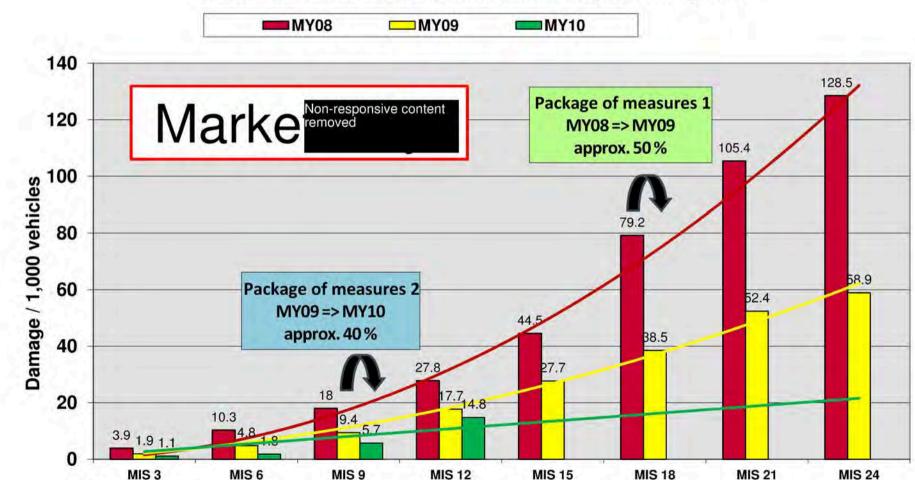
VEH production date



Vorsprung durch Technik

EA11003EN-02139[3]

Drivetrain damage, high pressure diesel fuel pump CP4.2

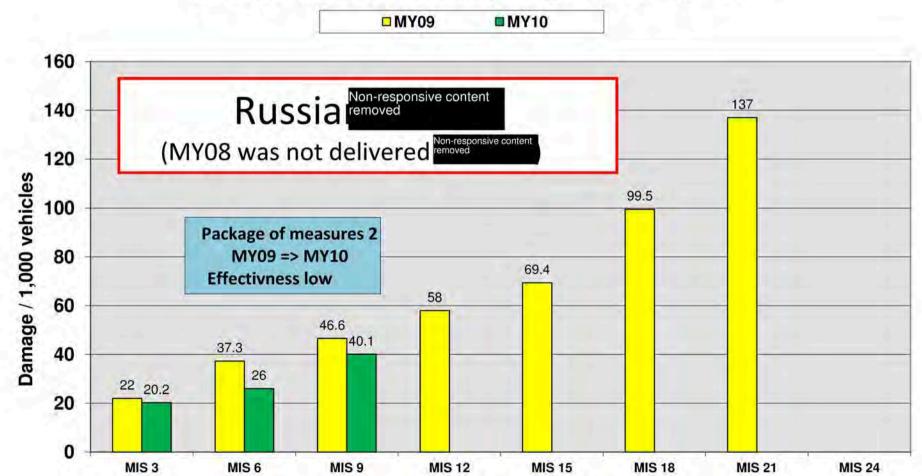


CP4.2 all Audi V6-TDI - model year comparison by MIS



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Drivetrain damage, high pressure diesel fuel pump CP4.2

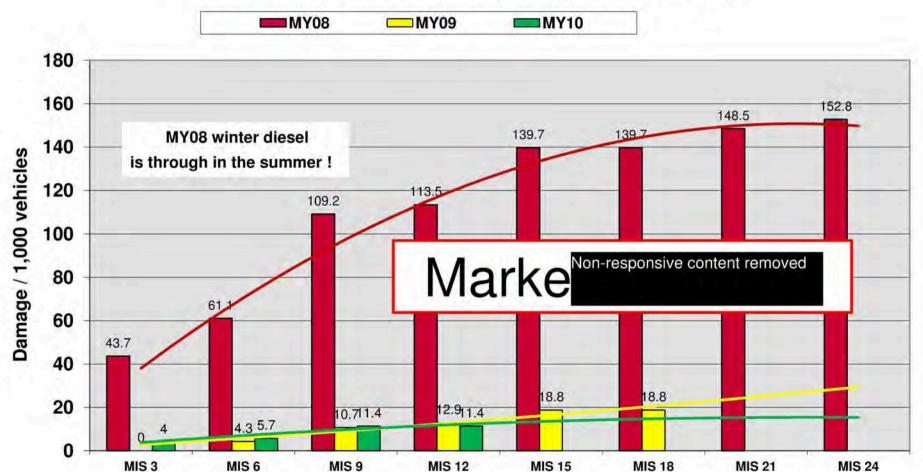


CP4.2 all Audi V6-TDI - model year comparison by MIS



EA11003EN-02139[5]

Drivetrain damage, high pressure diesel fuel pump CP4.2



CP4.2 all Audi V6-TDI - model year comparison by MIS

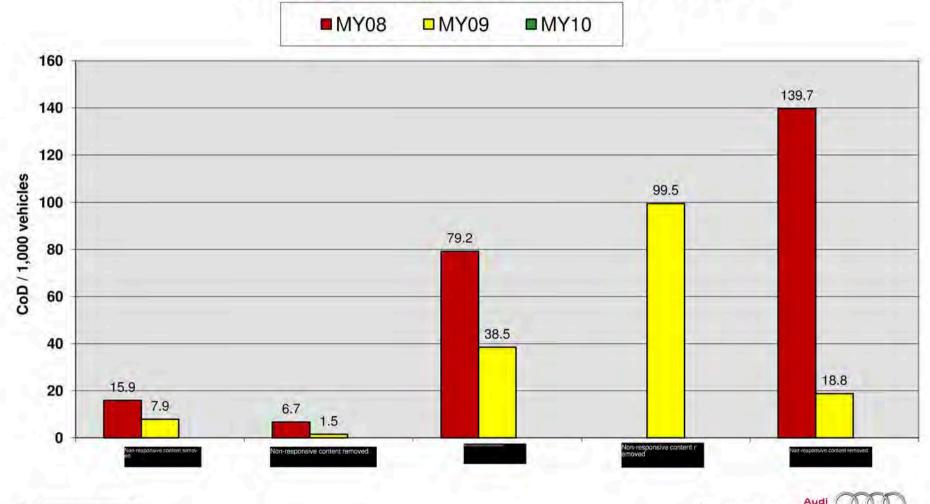
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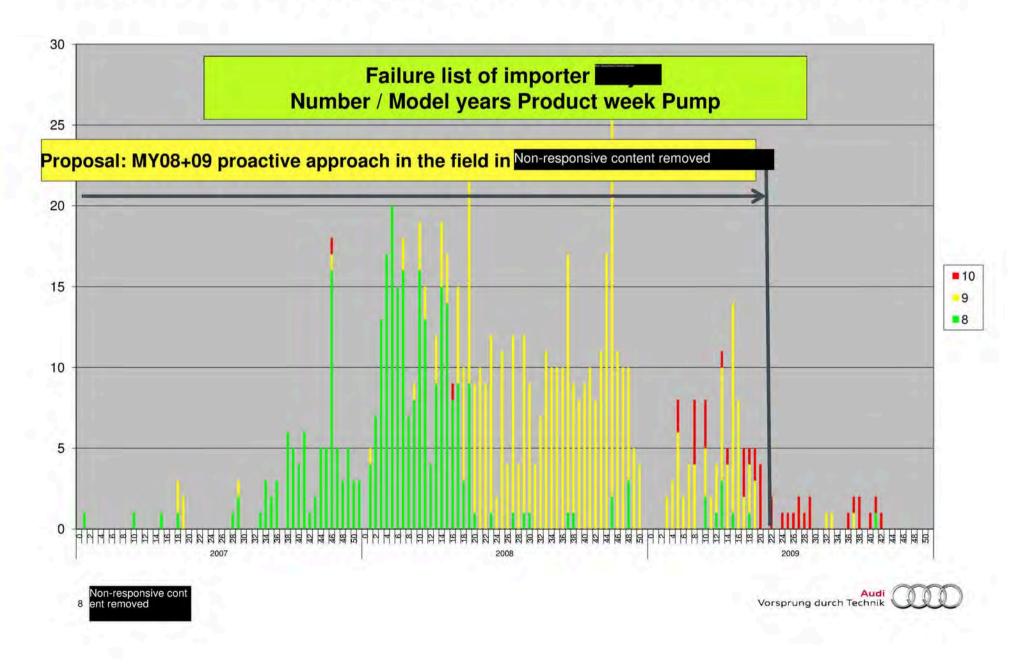
Drivetrain damage, high pressure diesel fuel pump CP4.2

Country comparison V6-TDI MIS 18



EA11003EN-02139[7]

Drivetrain damage, high pressure diesel fuel pump CP4.2



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Drivetrain damage, high pressure diesel fuel pump CP4.1

Anti-wear package 2

Task

Reduction of local temperature in the right roller support to the level of CP4.1

→ Prevention of fuel decomposition, formation of coating reduced lubrication, increased friction

Measures

- Opt. arrangement of supply & return position (swapping of the supply / return connections)
- Introduction of a robust flange (large overflow cross-sections)

Result

Reduction of temp. in the lubrication gap by 24°C (from 136° C to 111°C @ 80l/h @ 70°C supply)

- → The level is thus the same as CP4.1
- → For improvement on roller support see slide 4

Test at R.B. passed; testing / verification at Audi in progress

Series use all V6-TDI (due to changed supply and return lines)

WK45/2010

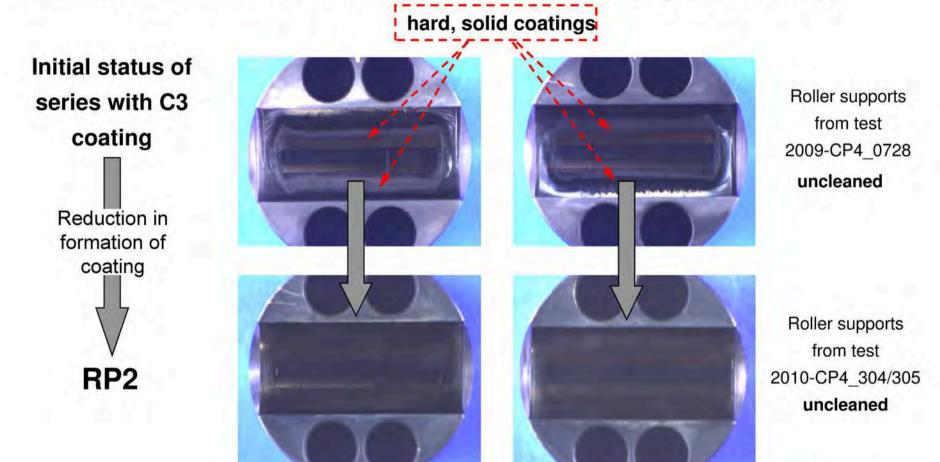


EA11003EN-02139[9]

ENTIRE PAGE CONFIDENTIAL

Anti-wear package RP2

Verification of effectiveness by overload test (150 h with low viscosity, high load/temp.)



EA11003EN-02144[0]

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| To: CC: | |
|---|--|
| | |
| Date: Subject: | 09.15.2010 3:56:00 AM Re: Please read !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! |
| | 09.13.2010 |
| Attachments: | Protokoll_TOP_2010_09_13.pdf |
| Hello | re |
| Changes are mai | rked in red, so that I can follow them. |
| | |
| | |
| HPFP V6 TDI on- | field situation Non-responsive content removed |
| High failure rates | s of HPFP in the (059.130.755.AH. and BB) Inder compared to 4 cylinder. Creating A: 09.06.2010 Non-responsive content removed |
| | /-quality fuel markets, illustrate effectiveness ^{Non-responsive content removed} |
| an responsive content removed | |
| A: 09.06.2010 Re | submission in WK 37/2010 |
| Title: Q-Offensive | e Diesel_HDP13.09.10.ppt, Author:, Size: 2342 KB, Date: 09.13.201 |
| https://aswms.w | ob.vw.vwg:4100/pls/portal/download/IFS:11336910/11336910 |
| | |
| Focus worldwide | on Non-responsive content removed . So far, 24 cases after |
| after using RP 1, | 14 x repeat failures, 8 x first failures. |
| | of repeat failures, check for special vehicle influences using |
| | |
| Bosch / Audi exp | erts. |
| 1: 09.13.2010 Non-res | erts. |
| : 09.13.2010 Measures p | erts. ponsive content removed backage 2 in June 2009 shows low effectiveness in the statute market. |
| l: 09.13.2010 Measures p HPFP failures is 1 | erts. ponsive content removed package 2 in June 2009 shows low effectiveness in the statute market. focused regionally on the region north of ^{waterponsere centent mercory} (see map). |
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With best regards



From:Non-responsive content removed

Sent: Wednesday, 15 September 2010 4:20 PM

OK, then I will wait.

With best regards



From Non-responsive content removed

Sent: Wednesday, 15 September 2010 04:18 PM

To: Non-responsive content removed

Subject: Please read !!!!!!!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010

Hello

please wait, you will get the amended minutes today !!!!!!!!!!!

With best regards



From: Non-responsive content removed

Sent: Tuesday, September 14, 2010 05:20 PM

Non-responsive content removed

Subject: Re: Q campaign diesel - minutes draft on 09.13.2010 Importance: High

< File: Protokoll_VOR_2010_09_13.pdf >> Hi all,

Attached is my draft for decision until tomorrow afternoon, 4 pm.

Best wishes

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From: Non-responsive content removed Sent: Thursday, 20 May 2010 02:47 PM

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Subject: Updated: Q campaign diesel Time: Monday, September 13, 2010 8:30-09:30 AM (GMT+01:00) Amsterdam, Berlin, Bern, Rome,

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Schedule update due to a new dial-in number. This number is valid from 05.31.2010.

With best regards

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Volkswagen Aktiengesellschaft Domicile: Wolfsburg Court of Registry: Local District Court Braunschweig Commercial Register No.: 100484 Chairman of the Supervisory Board: Ferdinand Piëch Board of Management: Martin Winterkorn (Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Christian Klingler, Horst Neumann, Hans Dieter Pötsch, Rupert Stadler Important notice: The above information is automatically added to this e-mail. This addition does not constitute a representation that the content of this e-mail is legally relevant and/or is intended to be legally binding.

Dear Sir/Madam,

Attached is the list of schedules 2010 for the Q campaign diesel.

Please circulate this invitation among the concerned employees within your organization, if necessary.

Should there be any changes to this distribution list, please let us know.

The dial-in number for the video conference is: Non-responsive content removed

In case of problems or questions about the dial-in during the video conference, please contact the video team, tel. Non-responsive content remov

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Volkswagen Aktiengesellschaft

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Volkswagen Aktiengesellschaft

Domicile: Wolfsburg

Court of Registry: District Court Braunschweig

Commercial Register No.: 100484

Chairman of the Supervisory Board: Ferdinand Piëch

Board of Management: Martin Winterkorn (Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Horst Neumann, Hans Dieter Pötsch

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| | ACTIONOESHILSEBOAR |

Minutes: 9/13/2010

Q campaign diesel engines



Introduction

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VOLKSWAGEN

Minutes: 9/13/2010

Q campaign diesel engines



EA11003EN-02145[2]

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VOLKSWAGEN

Minutes: 9/13/2010

Q campaign diesel engines



EA11003EN-02145[3]

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| VOLKSW | and the second | Minutes: 9/13/2010 Q campaign diesel engines | | |
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| | Evalu | IPP failure rates in Example . (059.130.755.BB) ation of 6 cylinder compared to 4 cylinder Creation of ures for poor quality fuel markets, illustrate effectiveness | A: 9/6/2010 A: 9/6/2010 | |
| | Title: Q- 9/13/201 https://g | swms.wob.vw.vwg:4100/pis/portal/download/IFS:11336910/11336910 | 1: 9/13/2010 | |
| | Use R Vehicl using region Inform Audi s due to format Additic critical | worldwide on and and the second secon | 1.9/13/2010 | |
| | Impac used i BMW | Iusive so far. t of the low-pressure system is expected, as the same pump is n BMW with significantly lower damage rate. Difference between and Audi / VW: olled LP system ensures a larger fuel amount in the system. | 1 | |
| | | ts from the analyses of repeat repair vehicles by the expert Please present in Q campaign. | A: 9/13/2010 | |
| | Resut | omission in WK 47/2010 | 11/22/2010 | |

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ENTIRE PAGE CONFIDENTIAL

| From: | Non-responsive content removed |
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| To: | |
| CC: | |
| Date: | 09.16.2010 11:03:00 AM |
| Subject: | Re: Please read !!!!!!!!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010 |
| Attachments: | Protokoll TOP 2010 09 13.pdf |

Okay, I can put up with it.

With best regards

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Sitz/Domicile: Ingolstadt

Registergericht/Court of Registry: Local District Court Ingolstadt

HRB Nr./Commercial Register No.: 1

Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Martin Winterkorn Vorstand/Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel

Wichtiger Hinweis: Die vorgenannten Angaben werden jeder E-Mail automatisch hinzugefügt und lassen keine Rückschlüsse auf den Rechtscharakter der E-Mail zu.

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From: Non-responsive content removed Sent: Wednesday, 15 September 2010 5:39 PM Non-responsive content removed

Subject: Re: Please read !!!!!!!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010 Importance: High

Hi all,

Attached once again is the amended text for final review, please no later than tomorrow noon.

Best wishes

EA11003EN-02146[1] ENTIRE PAGE CONFIDENTIAL

Non-responsive content removed on-responsive content remove From: Sent: Wednesday, 15 September 2010 4:56 PM Non-responsive content removed Subject: Re: Please read !!!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010 Hello Changes are marked in red, so that I can follow them. Non-responsive content removed HPP V6 TDI field situation (059.130.755.AH. and BB) High failure rates of HPP in Evaluation of 6 cylinder compared to 4 cylinder Creating A: 09.06.2010 Non-responsive content removed Measures for poor quality fuel markets, illustrate effectiveness Non-responsive content remo A: 09.06.2010 start in WK 37/2010 Title: Q campaign Diesel_HDP_ 09.13.10.ppt, Author: size: 2342 KB, Date: 9/13/2010 https://gswms.wob.vw.vwg:4100/pls/portal/download/IFS:11336910/11336910 So far, 24 cases after using RP 1, 14 x repeat failures, 8 x first-time failed Focus worldwide on vehicles In case of repeat failures, check for special vehicles influences using Bosch / Audi experts. I: 09.13.2010 Package of measures 2 in June 2009 shows low effectiveness in the market. HPP failures is focused regionally on the region north of (see map). Information by Audi to Porsche -> Cayenne. Audi sees application of C3 coating instead of C2 coating as problematic due to production-related reasons, because the tendency for the formation of spatters and irregularities increases. Additional additives added to the fuel to improve lubricity are viewed critically because of the danger of deposit formation etc. Correlations between fuel types and specific damage pattern are inconclusive so far. Similar to V6 Pump at BMW, but in counterclockwise operation with significantly lower damage rate in action. Launch of RP2 in WK45/2010 reduces temperature at the roller support of CP4.2 Audi / VW (V6-TDI) to BMW levels. Strong additional influence of the low pressure system of Bosch suspected. Difference between BMW and Audi / VW: Controlled LP system secured with a stronger EFP has reserves in case of blockage of filters and strainers (similar to 6 bar LP system at VW / Audi in the Touareg NF / Q7 MP). Please present the results from the analyses of repeat repair vehicles by the expert teams in the Q campaign. A: 09.13.2010 over

Resubmission in WK 47/2010 11.22.2010

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With best regards

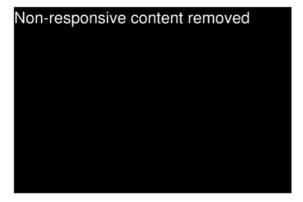


From: Non-responsive content removed Sent: Wednesday, 15 September 2010 04:20 To: Non-responsive content removed

Subject: Re: Please read !!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010

OK, then I will wait.

With best regards



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From:^{ed}

Sent: Wednesday, 15 September 2010 04:18 PM

To: Non-responsive cont

Subject: Please read !!!!!!!!!!!!!!RE: Q campaign diesel - minutes draft on 09.13.2010

Hello emoved

please wait, you will get the amended minutes today !!!!!!!!!!!!

With best regards

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From: Non-responsive content removed

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Sent: Tuesday, September 14, 2010 05:20 PM

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Subject: Re: Q campaign diesel - minutes draft on 09.13.2010 Importance: High

< File: Protokoll_VOR_2010_09_13.pdf >> Hi all,

Attached is my draft for decision until tomorrow afternoon, 4 pm.

Best wishes

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From Non-responsive content removed

Sent: Thursday, 20 May 2010 02:47 PM Non-responsive content removed Schedule update due to a new dial-in number. This number is valid from 05.31.2010.

With best regards

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Volkswagen Aktiengesellschaft Domicile: Wolfsburg Court of Registry: Local District Court Braunschweig Commercial Register No.: 100484 Chairman of the Supervisory Board: Ferdinand Piëch Board of Management: Martin Winterkorn (Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Christian Klingler, Horst Neumann, Hans Dieter Pötsch, Rupert Stadler Important notice: The above information is automatically added to this e-mail. This addition does not constitute a representation that the content of this e-mail is legally relevant and/or is intended to be legally binding.

Dear Sir/Madam,

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Should there be any changes to this distribution list, please let us know.

The dial-in number for the video conference is: Non-responsive content removed

In case of problems or questions about the dial-in during the video conference, please contact the video team, tel.: Non-responsive content removed

Best regards,

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Volkswagen Aktiengesellschaft

Domicile: Wolfsburg

Court of Registry: District Court Braunschweig

Commercial Register No.: 100484

Chairman of the Supervisory Board: Ferdinand Piëch

Board of Management: Martin Winterkorn (Chairman), Francisco J. Garcia Sanz, Jochem Heizmann, Horst Neumann, Hans Dieter Pötsch

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| | | | Minutes: 9/13/2010 Q campaign diesel engines | | | | | | |
|-------|----------|--------------|--|---------------------------------------|-------------|-------|--|--|--|
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| | | | Minutes: 9/13/2010 Q campaign diesel engines | | | | |
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| | | Minutes: 9/13/2010 Q campaign diesel engines | | | 0 |
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Minutes: 9/13/2010

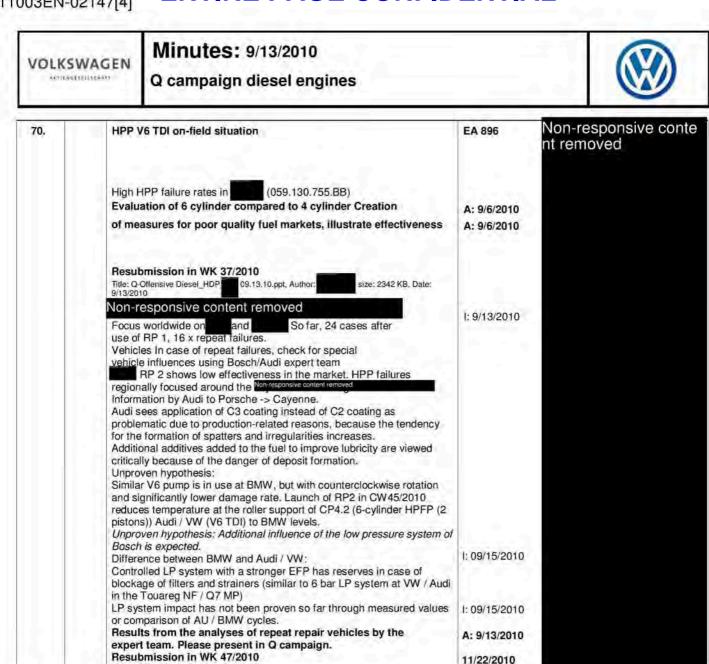
Q campaign diesel engines



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VOLKSWAGEN

Minutes: 9/13/2010

Q campaign diesel engines



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EA11003EN-02147[6]

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VOLKSWAGEN

Minutes: 9/13/2010

Q campaign diesel engines



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Audi Vorsprung durch Technik

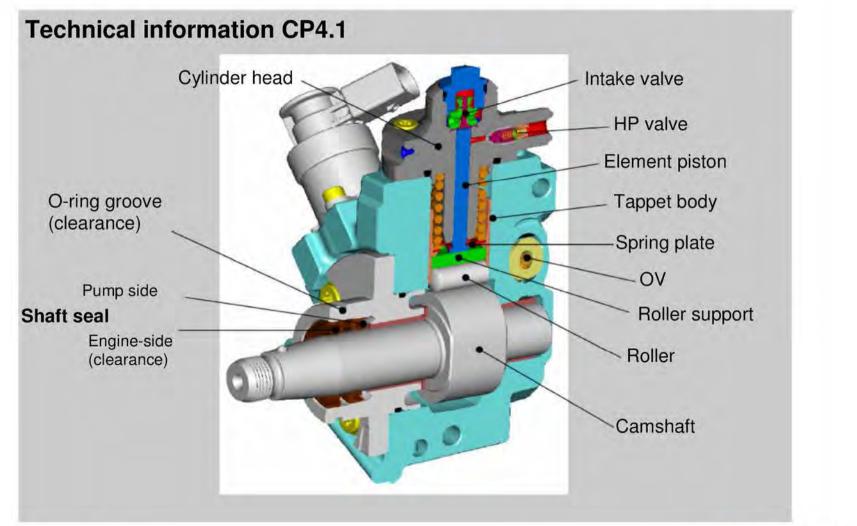


Drivetrain damage high pressure diesel fuel pump CP4

EA11003EN-02169[1]

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Drivetrain damage high-pressure diesel fuel pump CP4.2





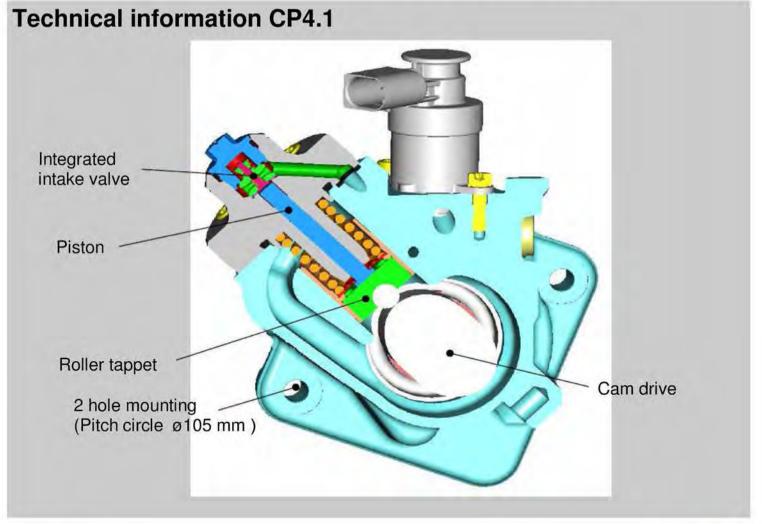
Audi Vorsprung durch Technik



EA11003EN-02169[2]

ENTIRE PAGE CONFIDENTIAL

Drivetrain damage, high-pressure diesel fuel pump CP4.2





Audi Vorsprung durch Technik

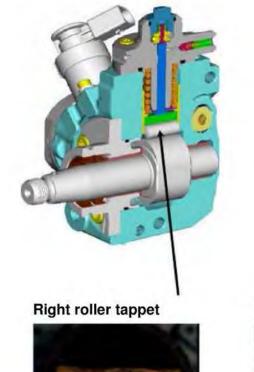


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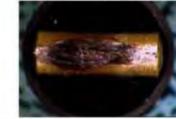
Drivetrain damage, high-pressure diesel fuel pump CP4.2

High-pressure fuel pump CP4.2





Left roller tappet





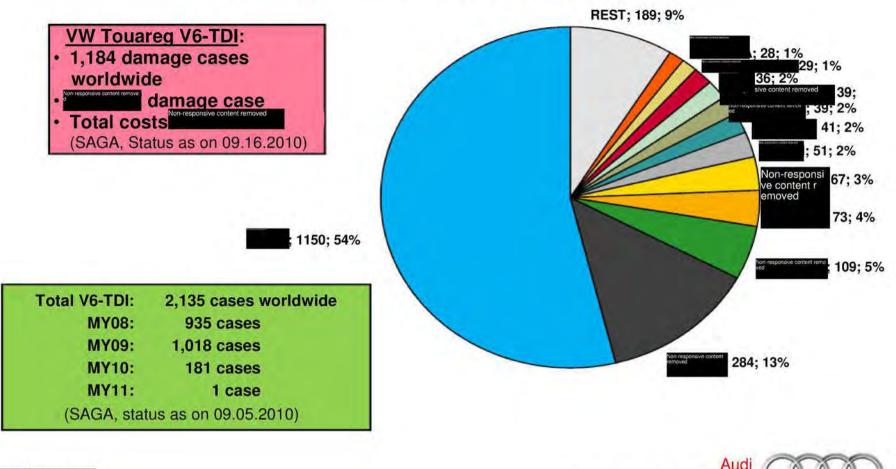


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Drivetrain damage, high-pressure diesel fuel pump CP4.2

Audi V6-TDI failures in the field, broken down by country (SAGA – replaced pumps only, 059A /B)

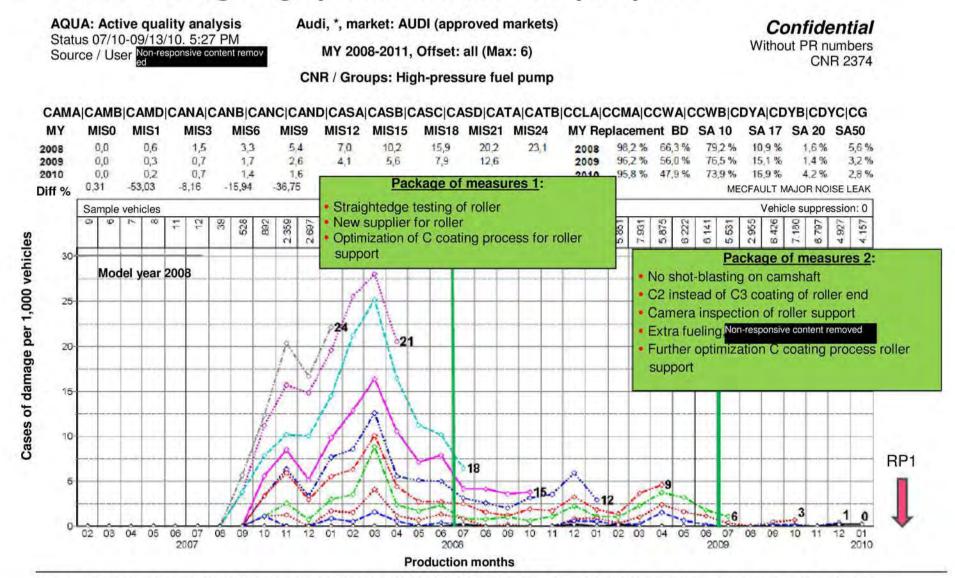


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Drivetrain damage high pressure diesel fuel pump CP4



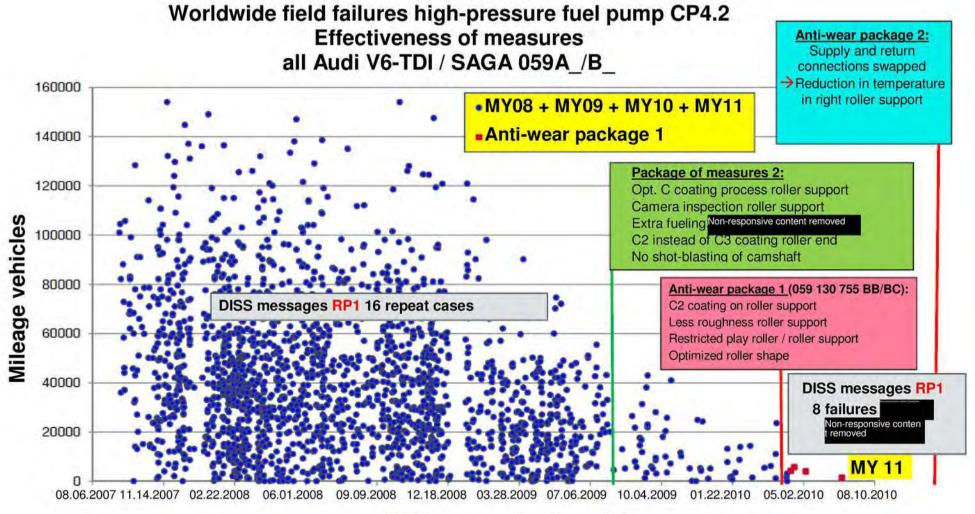
Vehicles: 30.307+95.859+94.351+19471=239.998; Sold: 30.272+95.618+91.977+12.210=230.077; UP.:21.584+69.850+72772+11.154=175.370; MY: 2008+2009+2010+2011=Total CP4.2 A4, A5, Q5, Q7aMKB free81



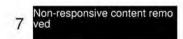
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Drivetrain damage high pressure diesel fuel pump CP4



Vehicles production date

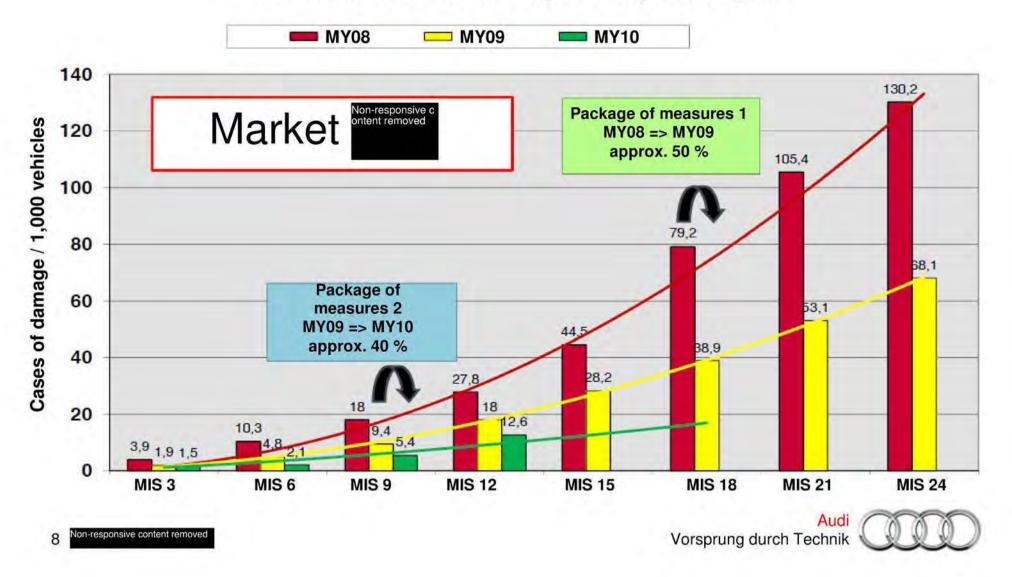


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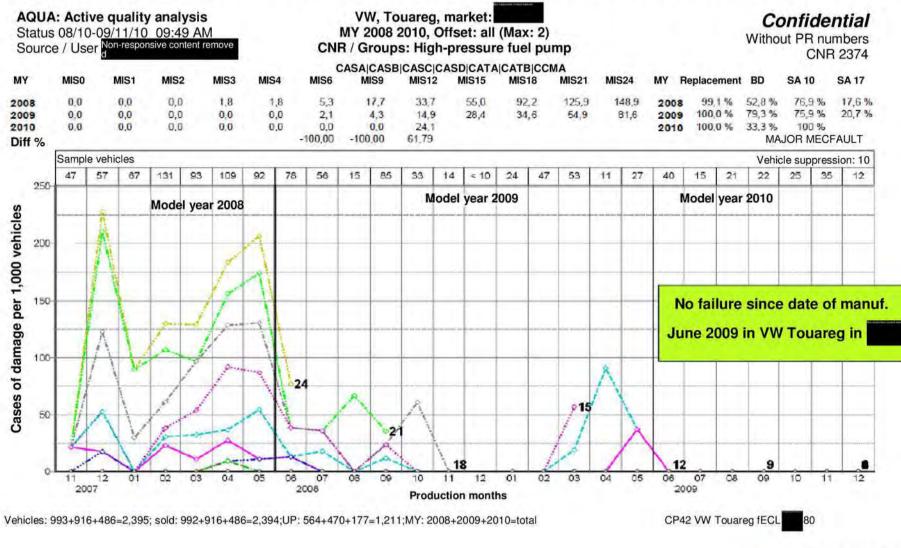
Drivetrain damage high-pressure diesel fuel pump CP4.2

CP4.2 all Audi V6-TDI - model year comparison by MIS



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Drivetrain damage high-pressure diesel fuel pump CP4.2



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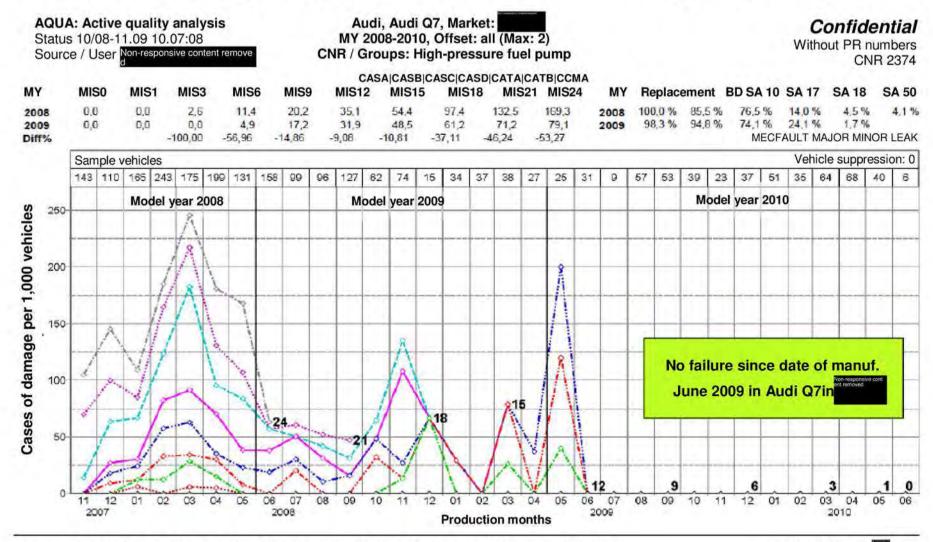


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Drivetrain damage high-pressure diesel fuel pump CP4.2



Vehicles: 1.661+1.711+1.031=4.403; Sold: 1.660+1.711+988=4.359; UP.: 1.140+815+516=2.471; MY 2008+2009+2010=total



Aud



EA11003EN-02169[10]

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Drivetrain damage high pressure diesel fuel pump CP4

Non-responsive c ontent removed Examples of fuel aging at the intake valve (CP4.1 4VW372 DM Mar 08 35,010 km

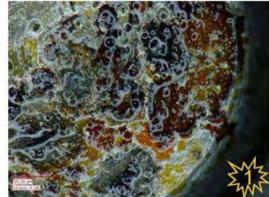


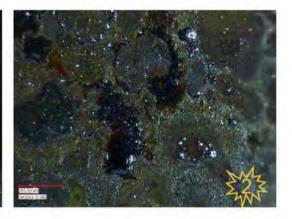


4VW354 DM Sept 09 5,358 km

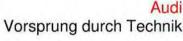












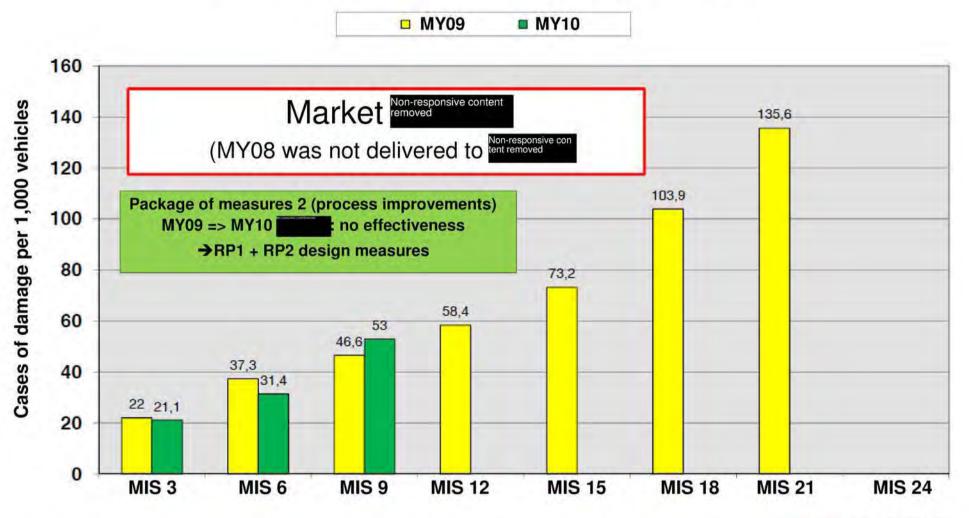


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Drivetrain damage high-pressure diesel fuel pump CP4.2

CP4.2 all Audi V6-TDI - model year comparison by MIS

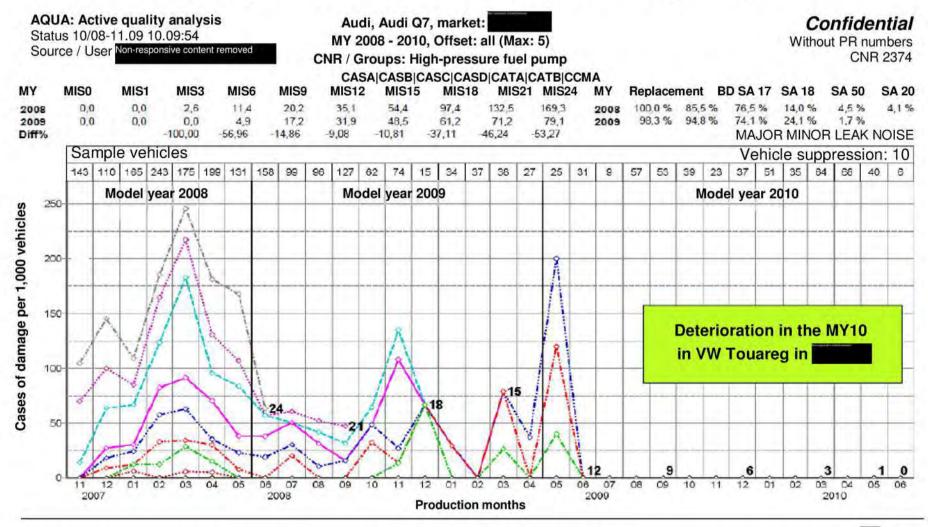


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Drivetrain damage high-pressure diesel fuel pump CP4.2



Vehicles: 1.661+1.711+1.031=4.403; Sold: 1.660+1.711+988=4.359; UP.: 1.140+815+516=2.471; MY: 2008+2009+2010=Total

CP42 aMKB V6 80



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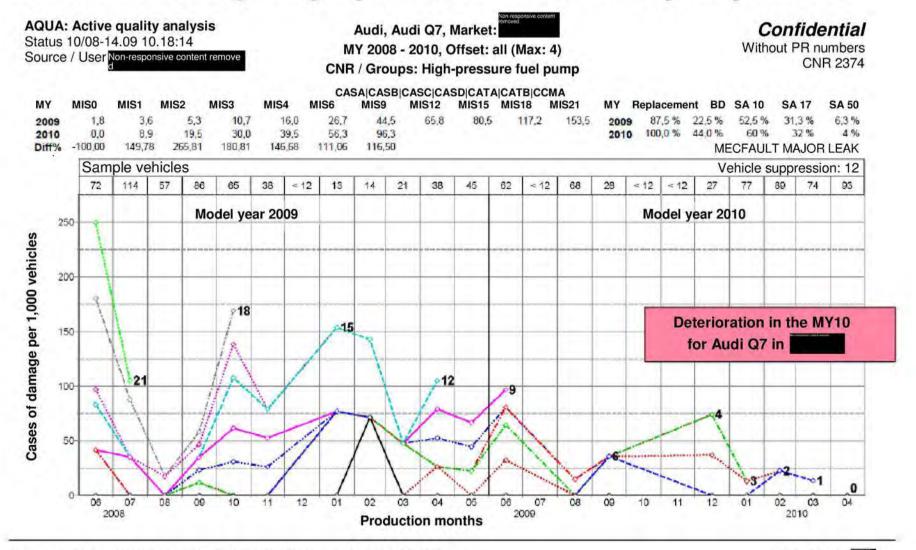


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Drivetrain damage high-pressure diesel fuel pump CP4.2



Vehicles: 1,191+941=2,132; Sold: 1,190+923=2,113; UP: 562+642=1,204; MY: 2009+2010=total

Audi Vorsprung durch Technik

CP42 aMKB V6

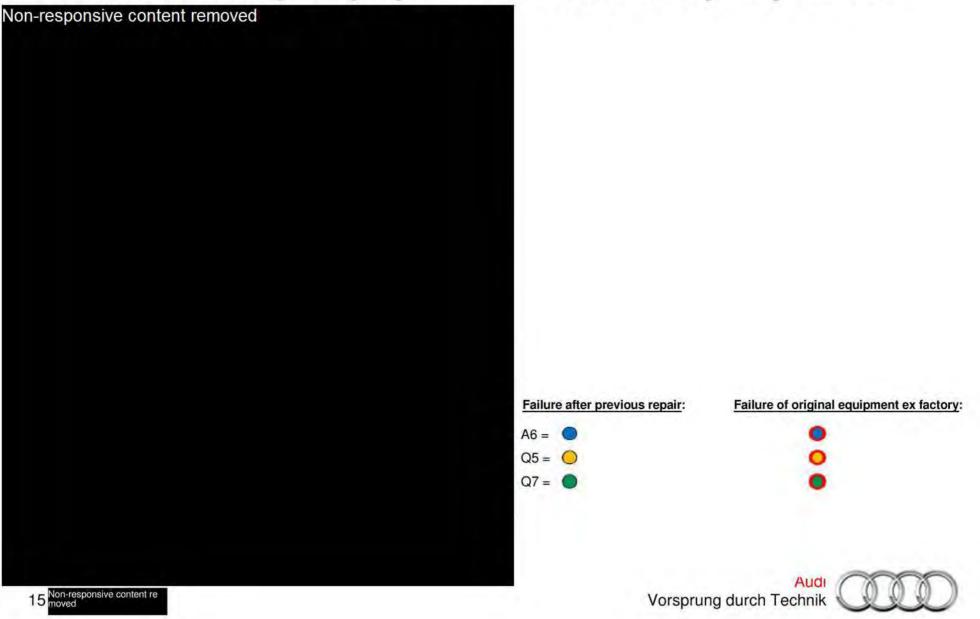
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Drivetrain damage high-pressure diesel fuel pump CP4.2

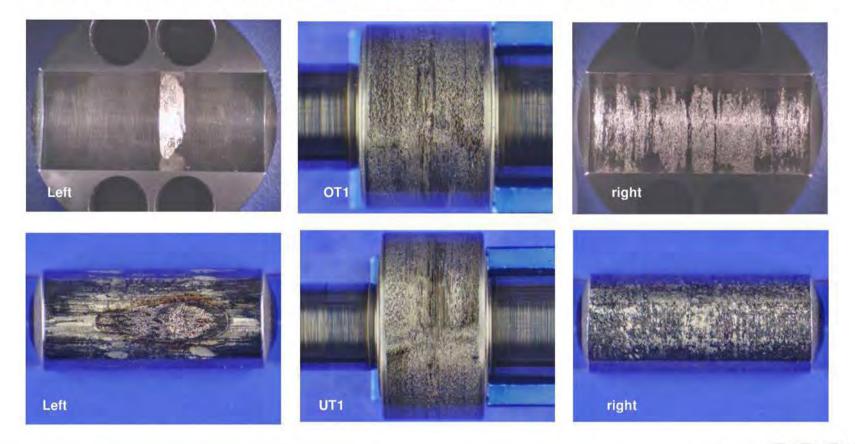


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Drivetrain damage high pressure diesel fuel pump CP4

2010-CP4_0644 Failed field pump RT not known (handing over at KAF Mon-responsive content removed 0 445 010 611; DM: 100121 BPT 1190; C-Index 05; 059 130 755 AH (without RP1)







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Drivetrain damage high pressure diesel fuel pump CP4

Analysis by Bosch:

Pump shows typical drivetrain damage. Right roller support first destroyed by abrasive wear. Left roller support, consequential damage with turned tappet.

Abrasive wear can be attributed to the low-viscosity fuel market in entremoved





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Drivetrain damage high-pressure diesel fuel pump CP4.2

Anti-wear package 1

Task

Increasing the lubrication film between the roller support and the roller for fuels with lower viscosity (reduction of mixed friction fraction and temperatures)

Measures

- Reduction in roughness in the roller support due to changeover to C2 coating
- Prevention of metal splashes (process-related there are no metal splashes with C2)
- Reduction of play between roller and roller support (smaller roller support bore)
- Reducing the roughness of the roller
- Optimization of edge taper on the roller (slender taper)

Result

RP1 increases lubricating film by factor of 2 (derived from diagnosis results)

RP1 for all CP4.2 since WK15 at Audi in series

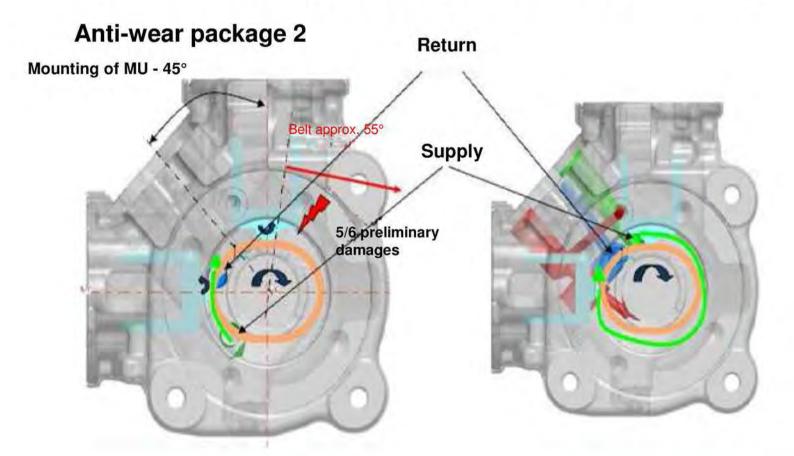
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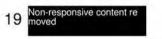
Drivetrain damage high-pressure diesel fuel pump CP4.2



Fuel goes direct to return CP4.2-EFP cw Audi W19 Fuel is pumped around once CP4.2 EFP cw **RP2** for Audi W19



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Drivetrain damage high pressure diesel fuel pump CP4.1 Anti-wear package 2

Task

Reduction of local temperature in the right roller support to the level of CP4.1

 \rightarrow Prevention of fuel degradation, deposit formation \rightarrow reduced lubrication, increased friction

Measures

- Opt. Arrangement of inflow/return position (swapping of the inflow / return connections)
- Introduction of a robust flange (large overflow cross-sections)

Result

Reduction of temp. in the lubrication gap by 24°C (from 136° C to 111°C @ 80l/h @ 70°C supply)

- →The level is thus the same as CP4.1
- →Significantly lower deposit formation on roller support
- Test at R.B. passed; testing / verification at Audi in progress

Series launch of all V6-TDI (due to changed inflow and return lines)

WK45/2010



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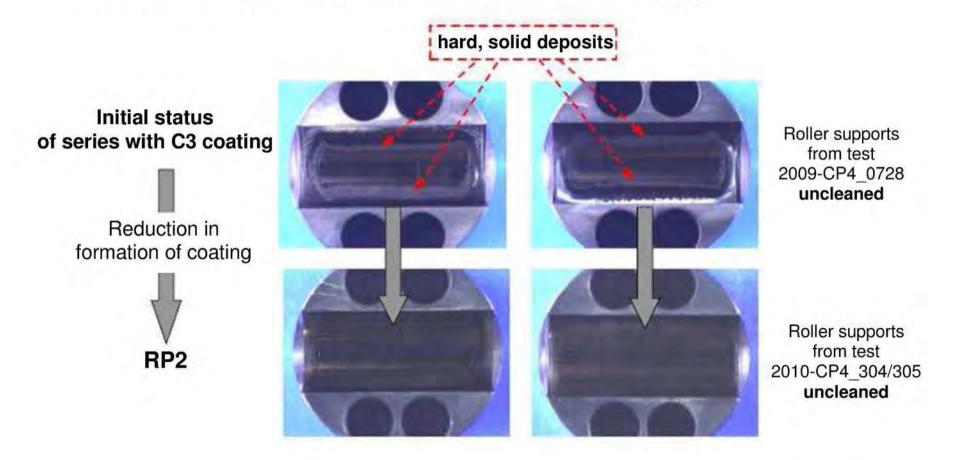
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Drivetrain damage high-pressure diesel fuel pump CP4.2

Anti-wear package RP2

Proof of effectiveness by overload test (150 h with low viscosity)





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Drivetrain damage high-pressure diesel fuel pump CP4.2

Backup



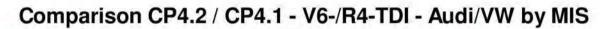
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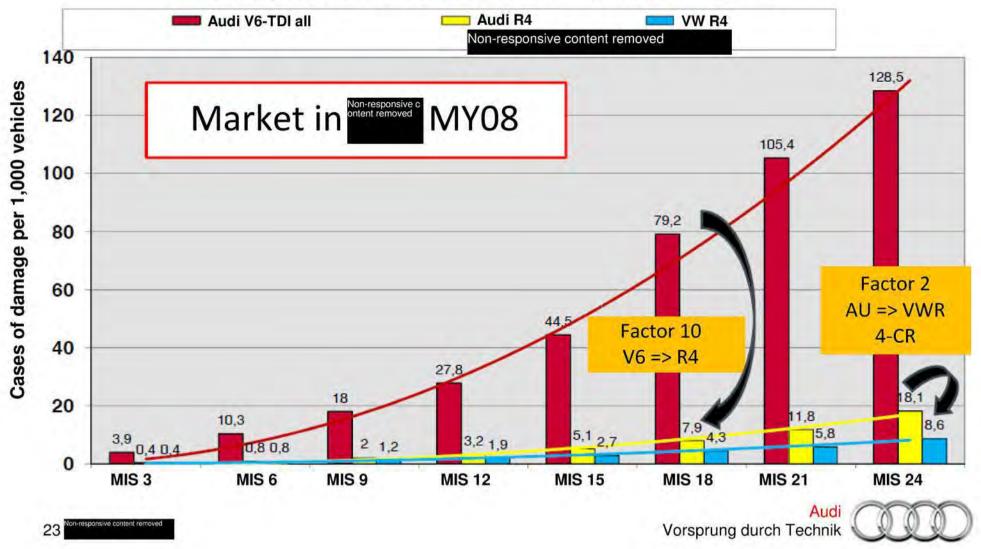


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Drivetrain damage Diesel high-pressure fuel pump CP4.2



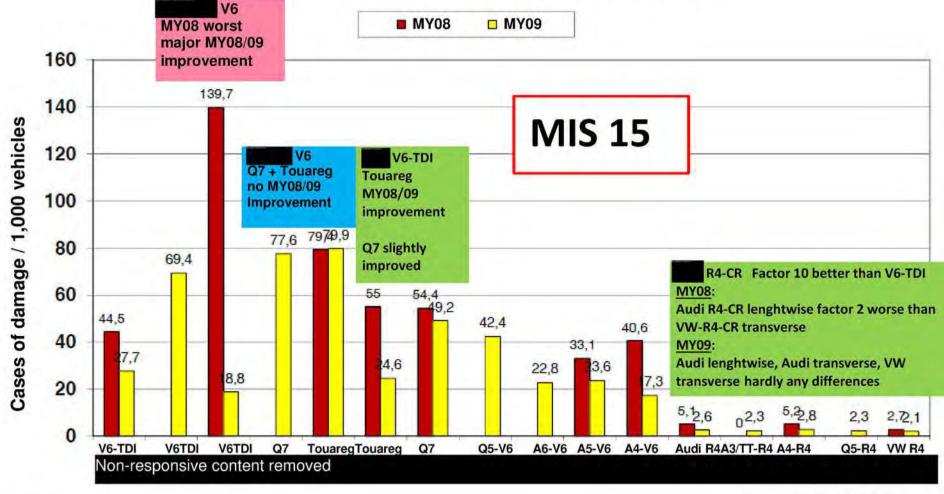


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Drivetrain damage Diesel high-pressure fuel pump CP4.2





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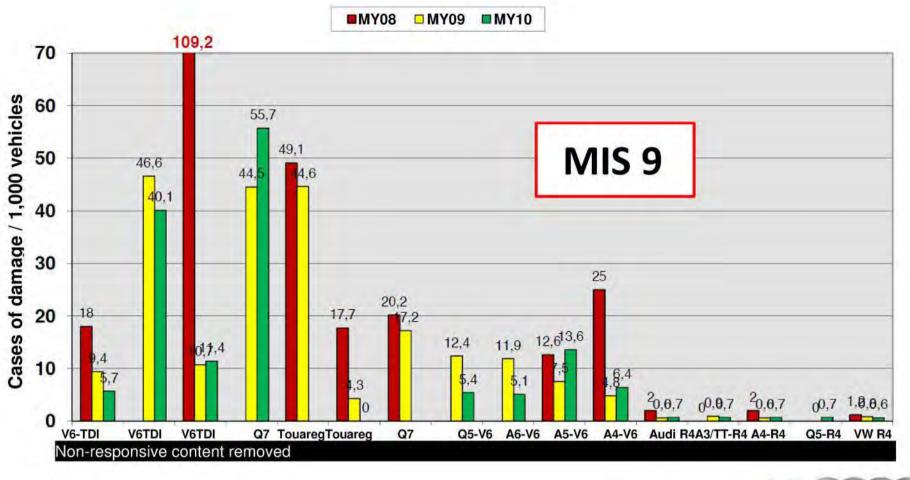


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Drivetrain damage Diesel high-pressure fuel pump CP4.2

CP4.2 + CP4.1 - Type/Model year comparison MIS9

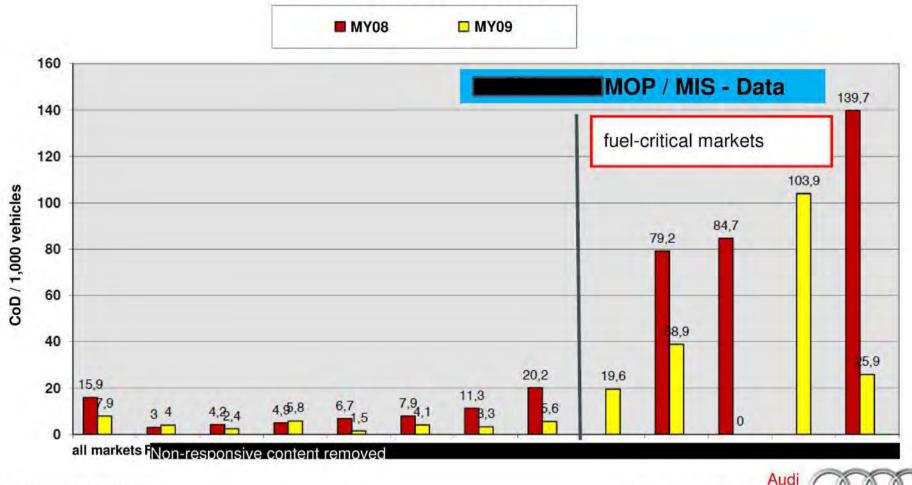




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Drivetrain damage Diesel high-pressure fuel pump CP4.2



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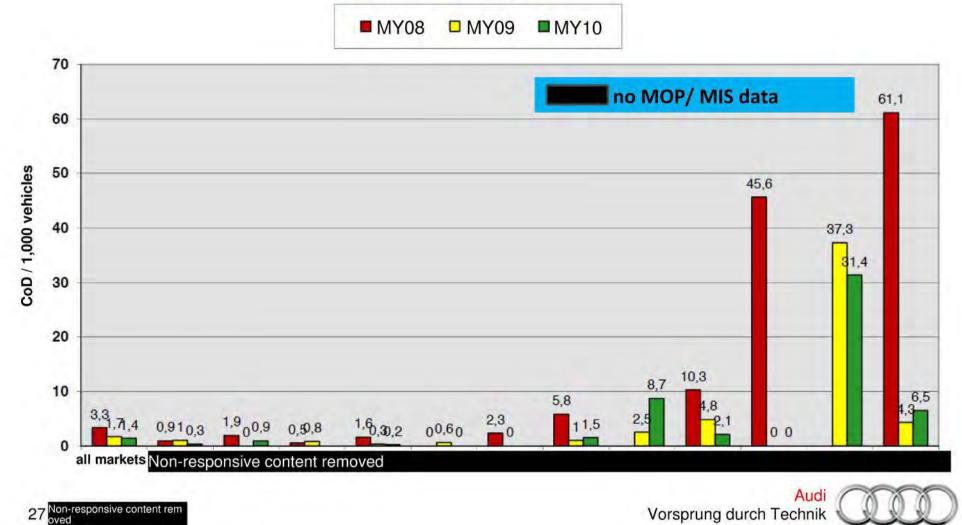


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Drivetrain damage Diesel high-pressure fuel pump CP4.2

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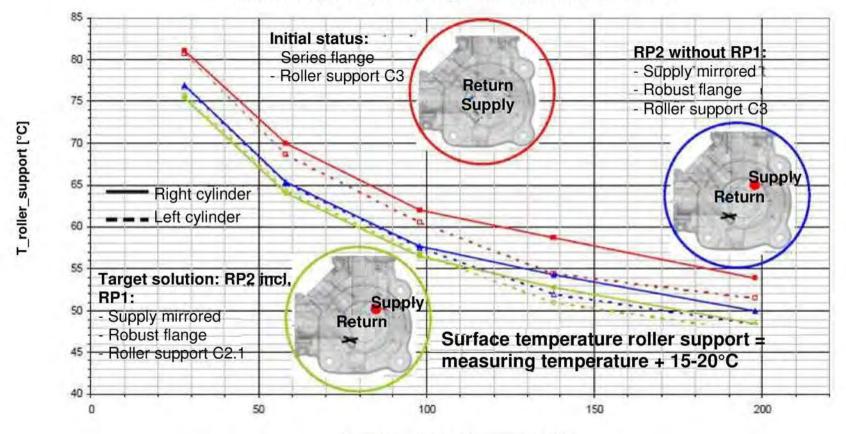


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Drivetrain damage Diesel high-pressure fuel pump CP4.2

CP4.2 Audi W19: roller support temperature as f (cooling and lubrication quantity) Robust flange; n=1,000 rpm; p_Rail= 2,300 bar; T_All=40°C



Q_cooling + lubrication quantity [l/h]



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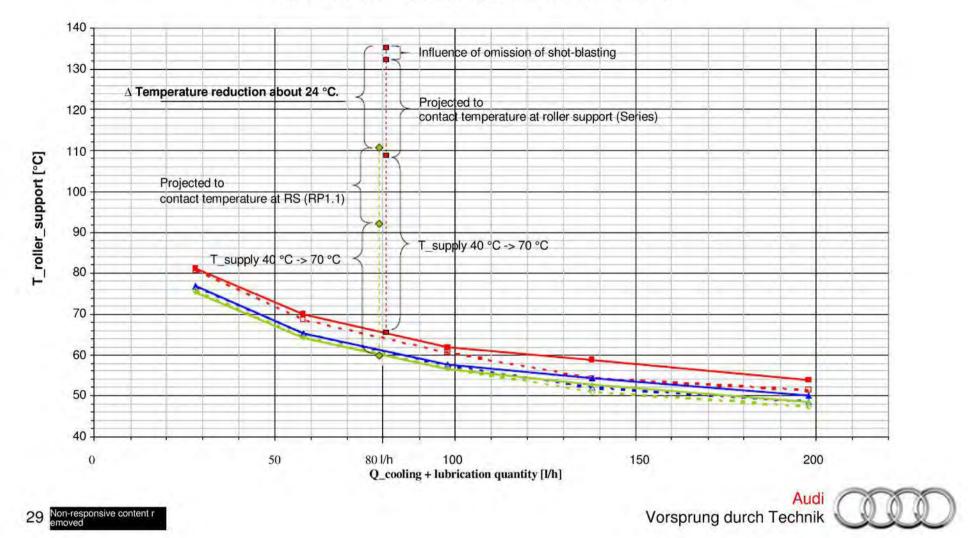


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Drivetrain damage Dieselhigh-pressure fuel pump CP4.2

CP4.2 Audi W19: Roller support temperature as f(cooling and lubrication quantity) Robust fl anges = 1,000rpm; p_Rail=2,300 bar; T_All = 40°C



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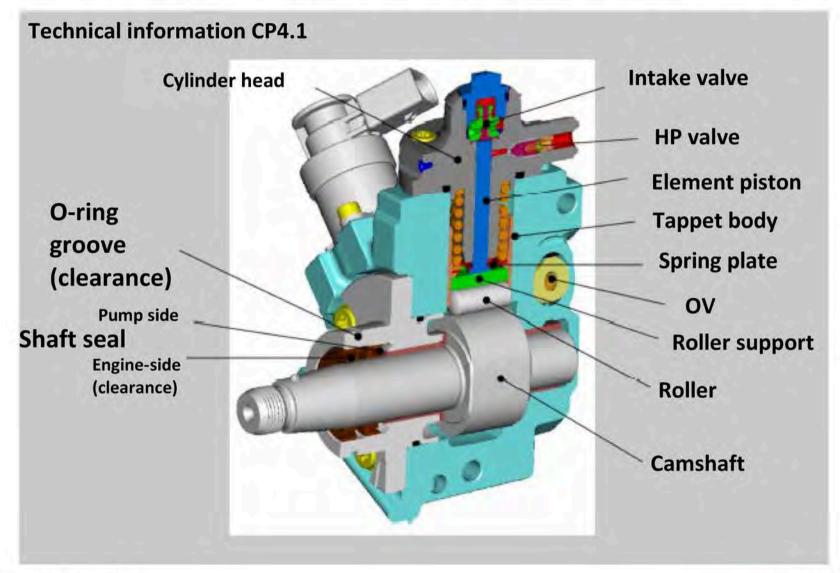
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Drivetrain damage high pressure diesel fuel pump CP4 09.29.2010

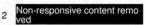
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Drivetrain damage high-pressure diesel fuel pump CP4.2



Audi

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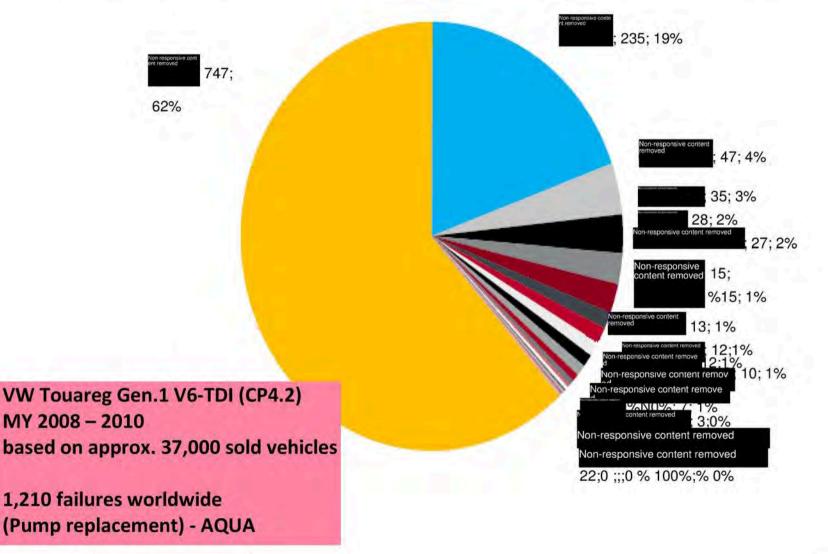
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Drivetrain damage high-pressure diesel fuel pump CP4.2



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Drivetrain damage high-pressure diesel fuel pump CP4.2



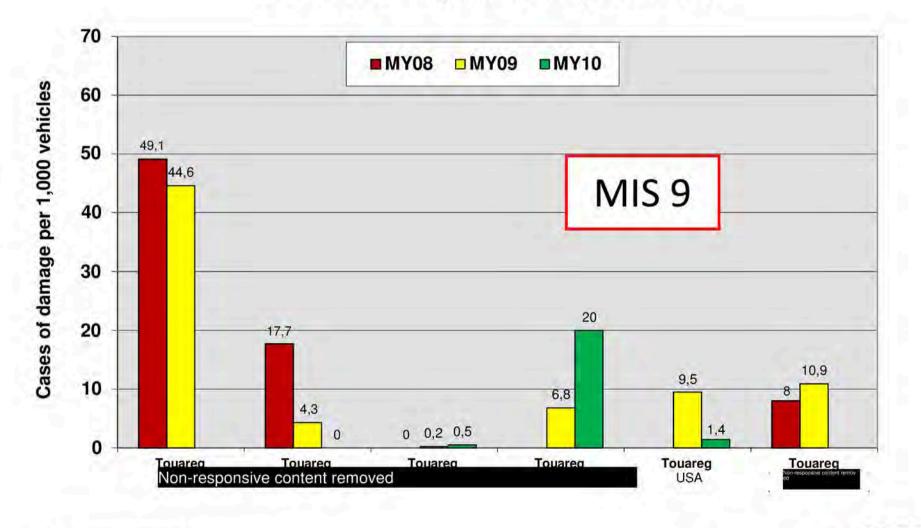
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Drivetrain damage high-pressure diesel fuel pump CP4.2

CP4.2 VW Touareg country comparison MIS9



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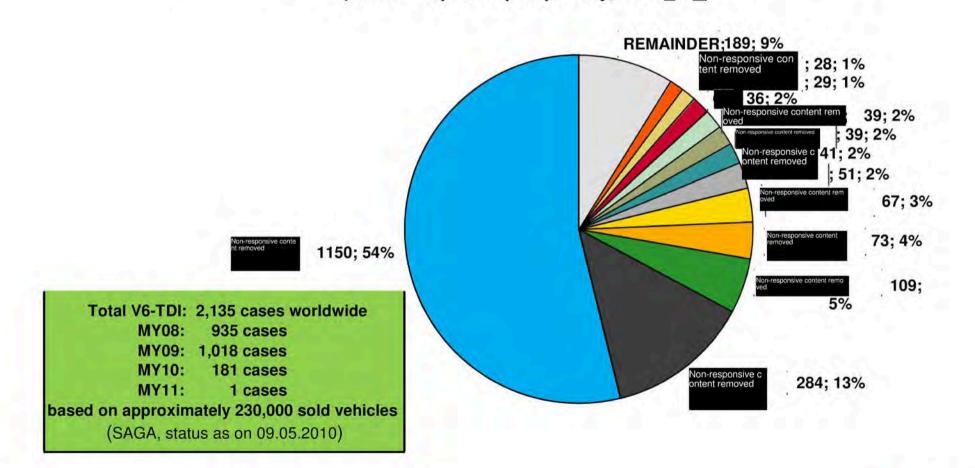
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Drivetrain damage high-pressure diesel fuel pump CP4.2

Audi V6-TDI failures in the field, broken down by country (SAGA - replaced pumps only, 059A /B)



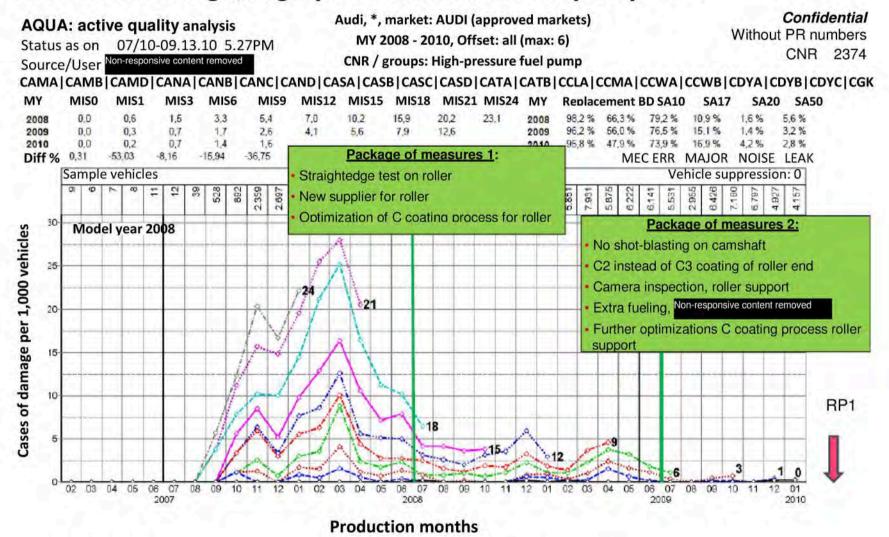
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Drivetrain damage, high pressure diesel fuel pump CP4



Vehicles: 30,307+95,859+94,361 +19,471=239,998; sold: 30,272+95,618+91,977+12,210=230,077; UP: 21,584+ 69,860+72,772+11,154=175,370 MY:2008+2009= total CP42 A4, A5, Q5, A6,Q7fECL free81



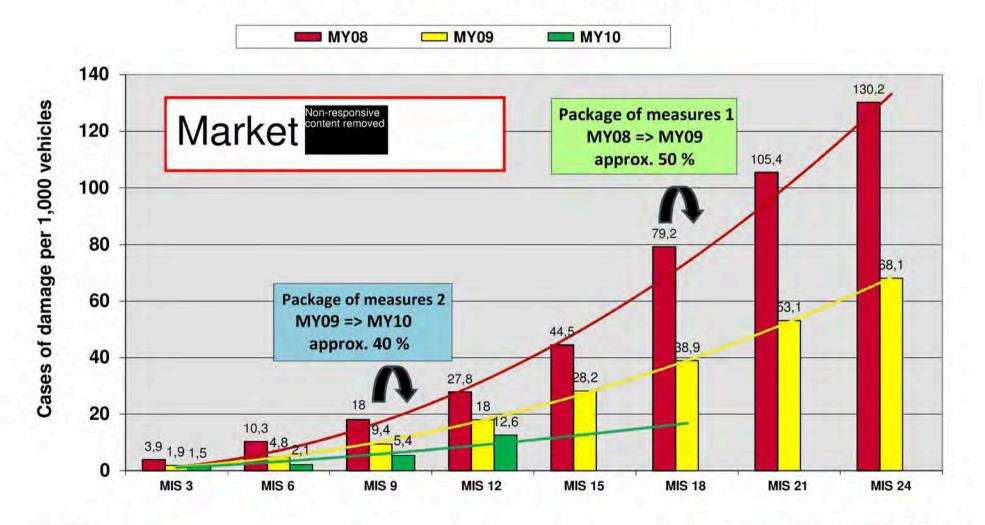
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Drivetrain damage high-pressure diesel fuel pump CP4.2

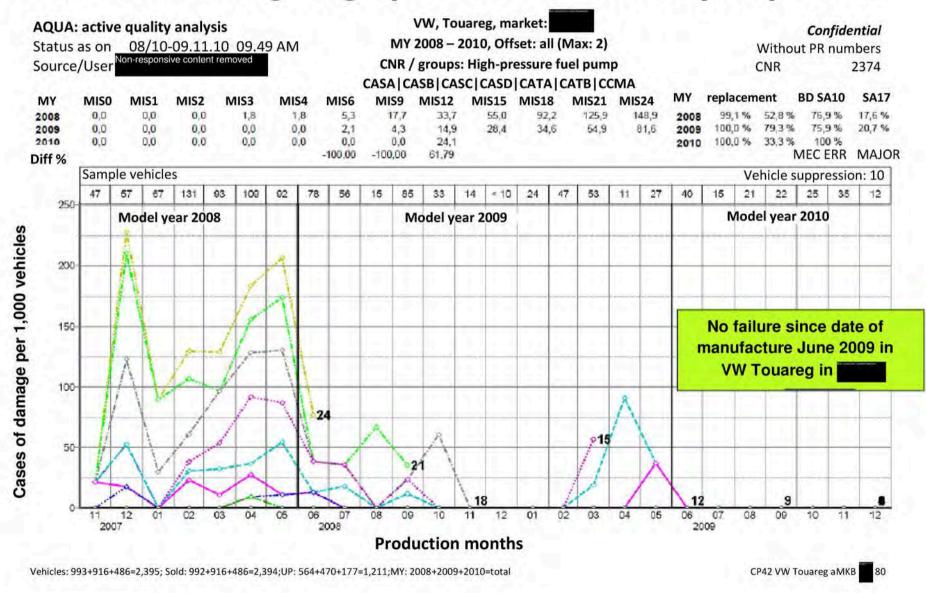
CP4.2 all Audi V6-TDI - model year comparison by MIS



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Drivetrain damage high-pressure diesel fuel pump CP4.2



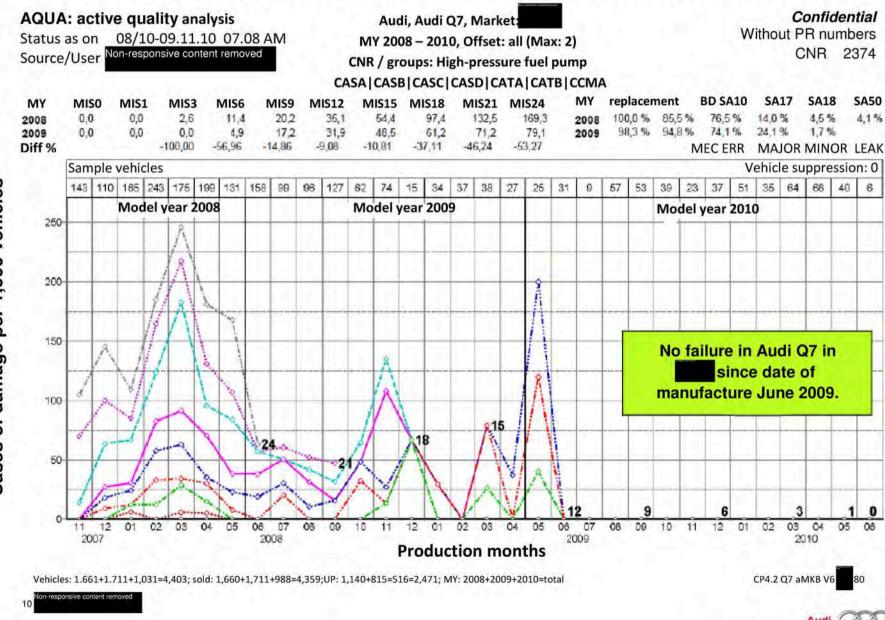




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Drivetrain damage high-pressure diesel fuel pump CP4.2

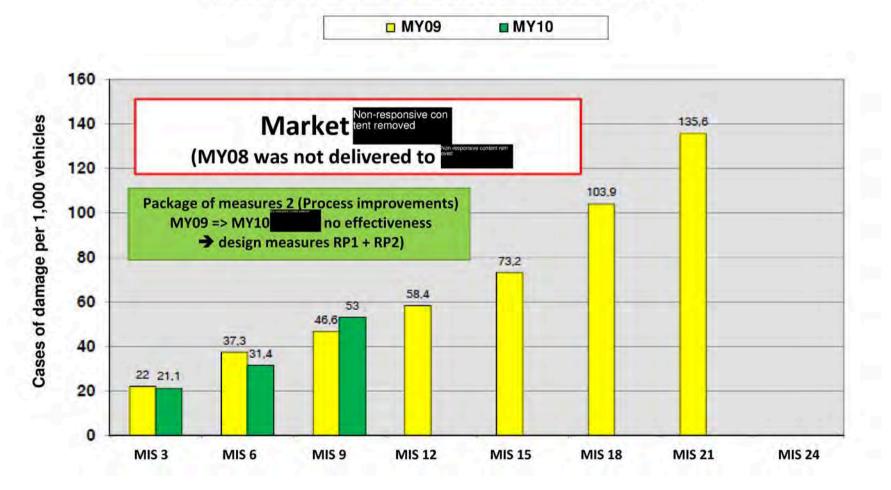


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Cases of damage per 1,000 vehicles

Drivetrain damage high-pressure diesel fuel pump CP4.2

CP4.2 all Audi V6-TDI - model year comparison by MIS



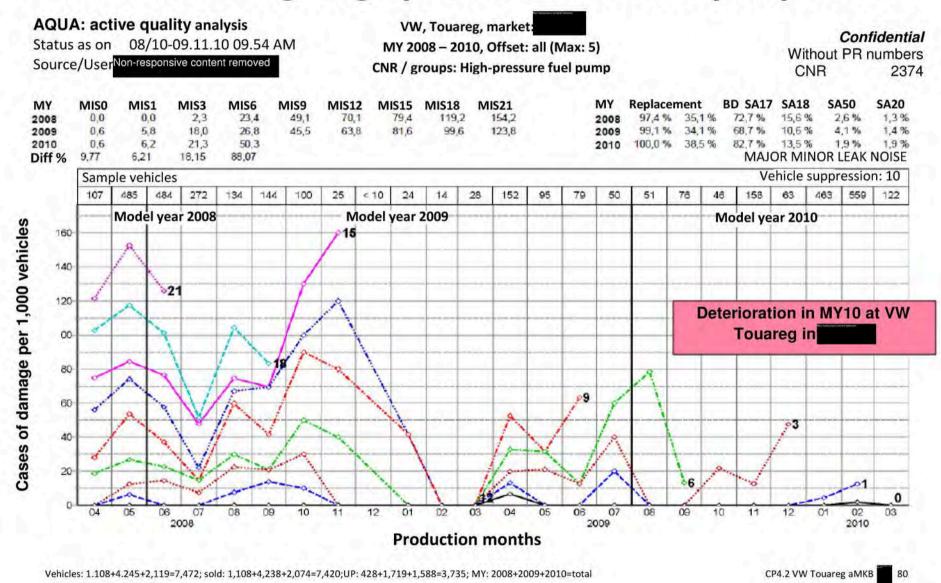
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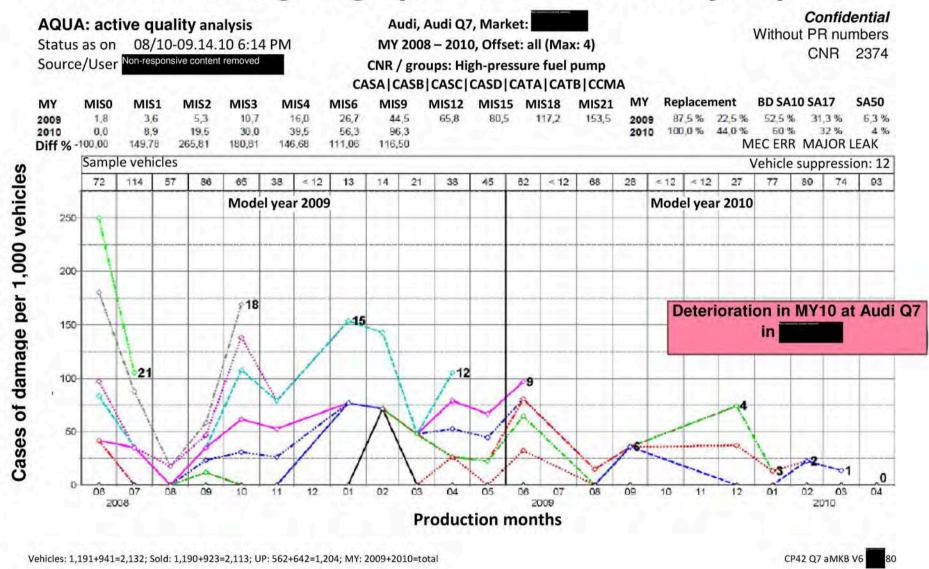
Drivetrain damage high-pressure diesel fuel pump CP4.2



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Drivetrain damage high-pressure diesel fuel pump CP4.2





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Drivetrain damage high-pressure diesel fuel pump CP4.2

Backup



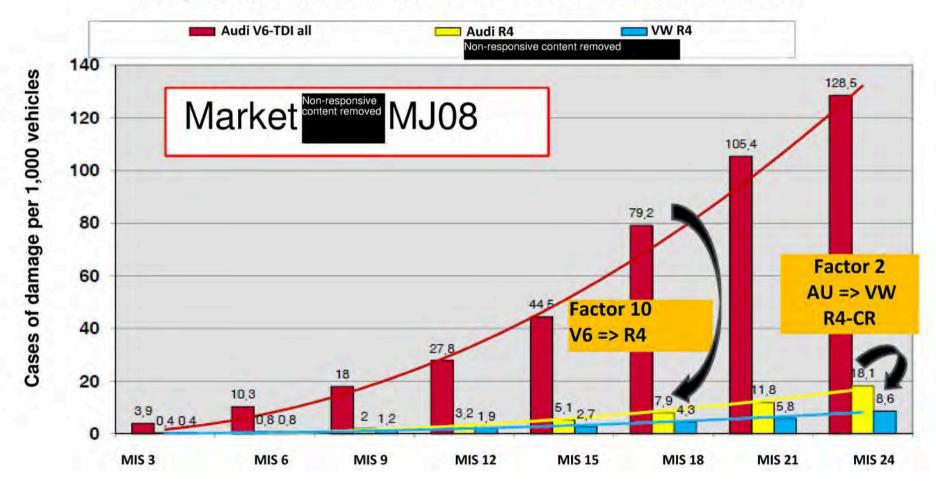
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Drivetrain damage high-pressure diesel fuel pump CP4.2

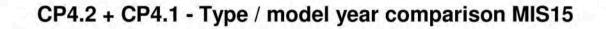
Comparison between CP4.2 / CP4.1 - V6-/R4-TDI - Audi/VW by MIS

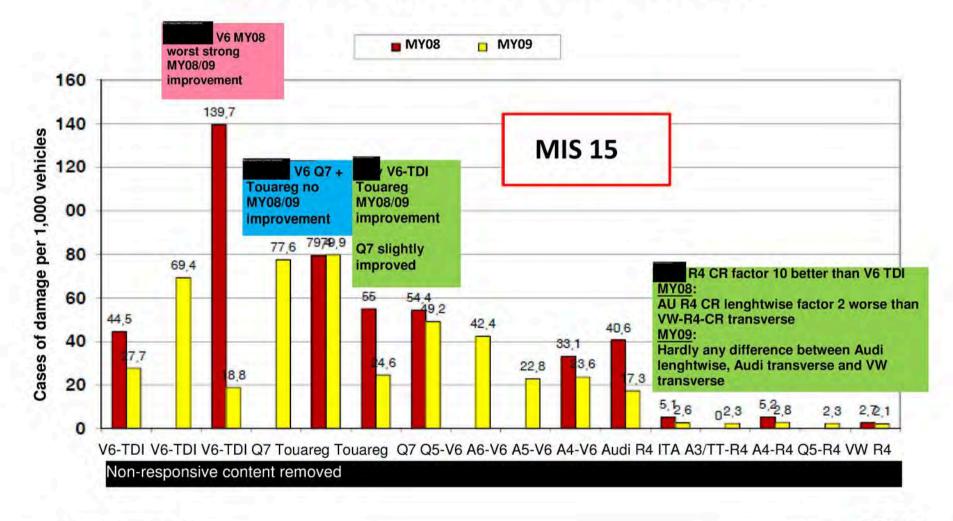


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Drivetrain damage high-pressure diesel fuel pump CP4.2

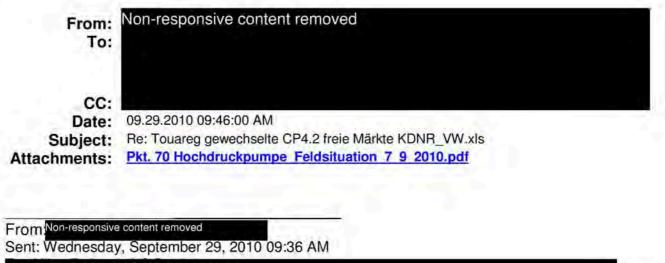






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Subject: Re: Touareg gewechselte CP4.2 freie Märkte KDNR_VW.xls

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ent removed was included via VICO.

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Some other people may also juggle with figures here. However, this is beyond my knowledge.



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Sent: Wednesday, September 29, 2010 08:49 AM

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Sitz/Domicile: Ingolstadt

Registergericht/Court of Registry: Local District Court Ingolstadt

HRB Nr./Commercial Register No.: 1

Vorsitzender des Aufsichtsrats/Chairman of the Supervisory Board: Martin Winterkorn Vorstand/Board of Management: Rupert Stadler (Vorsitzender/Chairman), Ulf Berkenhagen, Michael Dick, Frank Dreves, Peter Schwarzenbauer, Axel Strotbek, Werner Widuckel

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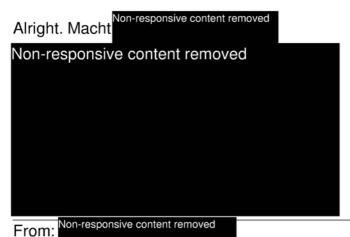
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Subject: ANS: Touareg gewechselte CP4.2 freie Märkte KDNR_VW.xls

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Sent: Tuesday, September 28, 2010 07:03 PM Non-responsive content removed

Subject: Touareg gewechselte CP4.2 freie Märkte KDNR_VW.xls

< File: Touareg gewechselte CP4.2 freie Märkte KDNR_VW.xls >>

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Attached is the AQUA evaluation of Touareg generation. 1 by CNR, only parts replacement (believe me, almost no defect coding), sorted by importers and dealers.

As discussed, please assign the dealer number of the balance of th

Folder 3 country totals by MY

Thank you.

Best wishes

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Diesel high pressure pump State of damage field

GP replacement Part number

Data source AQUA Status August 2010 Group worldwide







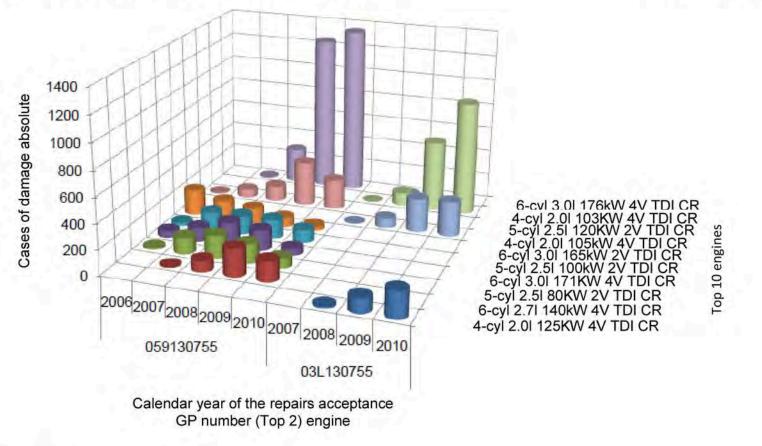
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Development of the high-pressure fuel pump cases of damage / diesel engines

Group worldwide Top 10 engines

GP replacement

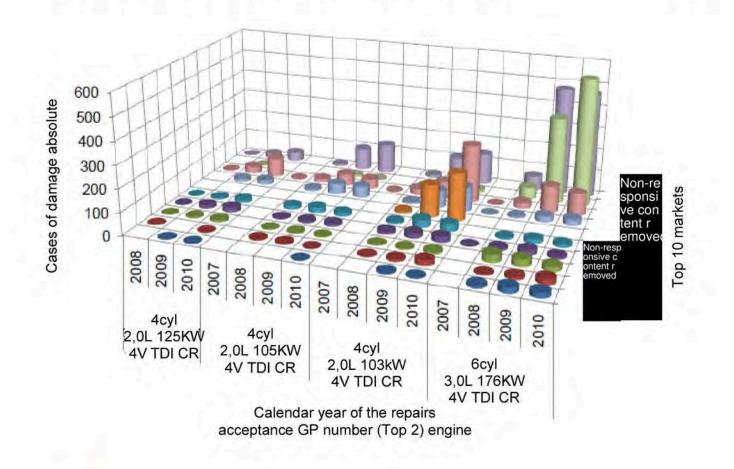




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Development of the high-pressure fuel pump cases of damage / diesel engines Group worldwide Top 10 engines selection GP replacement

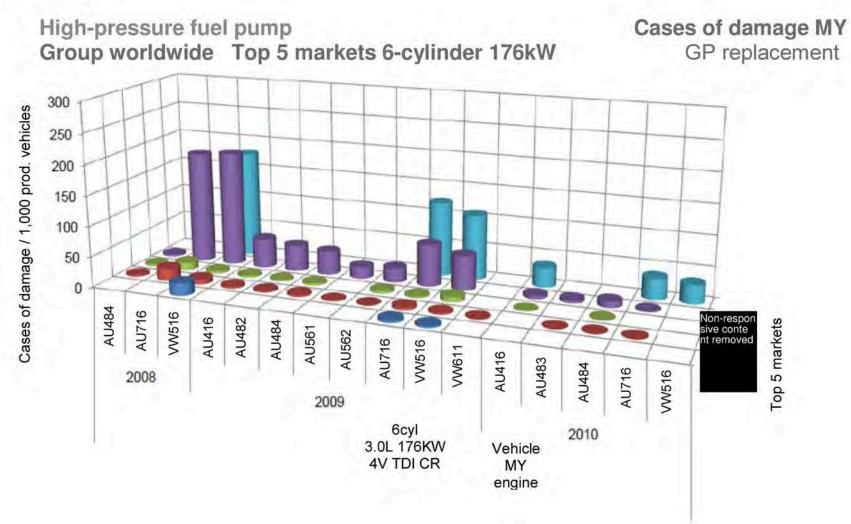


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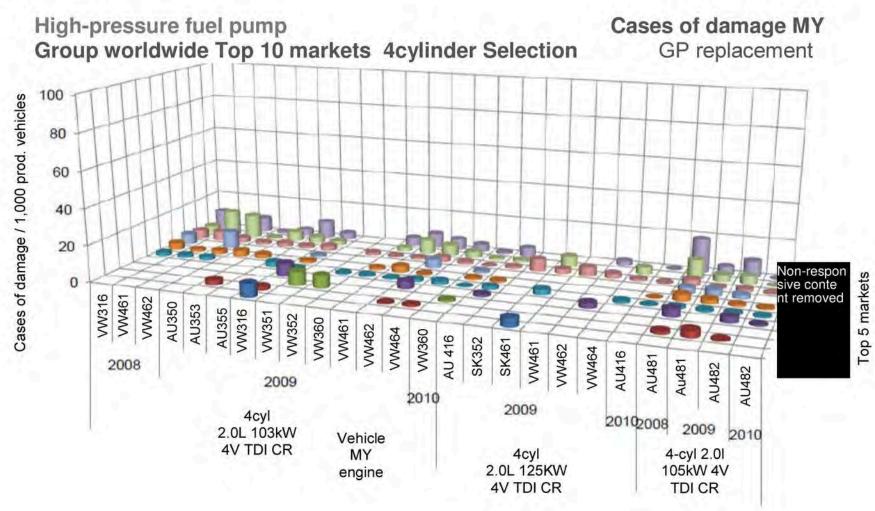


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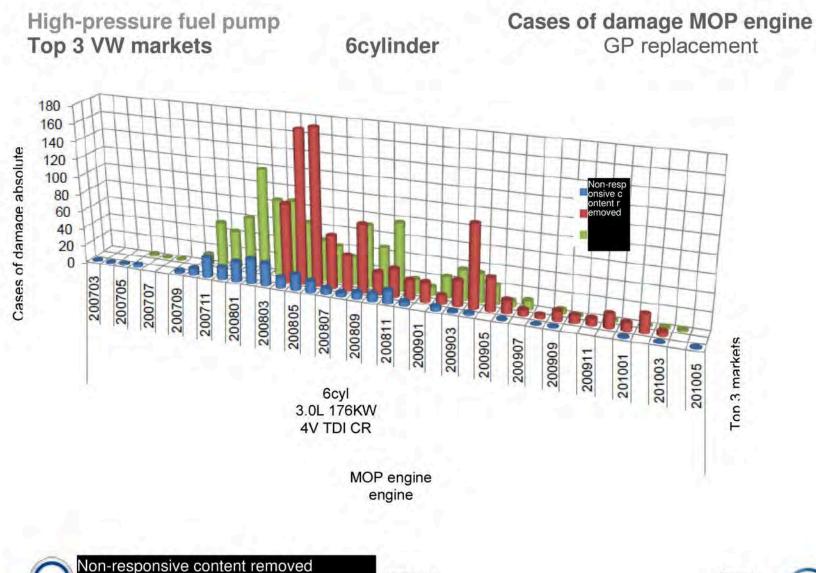


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| Is | Sample | vehicles | | _ | | _ | _ | - | | | | - | - | | | - | | - | | 4045-0-5-0 | /ehicle sup | | 2.0 |
| | 107 | 485 | 484 | 272 | 134 | 144 | 100 | < 50 | < 50 | < 50 | < 50 | < 50 | 152 | 95 | 79 | 50 | 51 | 75 | < 50 | 158 | - | 63 | 54 |
| 200 | | |) | /ear of m | anufact | ture 2 | 008 | | 11 | | | | Ye | ar of m | anufact | ure 2009 | | | Year of | manufad | ture 201 | 0 | |
| 150 | | 021 | | | | | 45 | | | | | | | | | | | | | | | | |
| 100 | 6 | ~ | X | | p18 | | 15 | 11 | 1 | | | | | | | | | | | | | | |
| 50 - | 1 | A | 10 | \checkmark | Tool a | 1 | 1 | | | | | | 10. | | | 1 | <u>6</u> | | | | | | |
| | 1 | | 9.98 | V | (and the | -0- | antern. | | | | | ***** | | 9 | sal la | ~ | | | | | | 4 | |

Vehicles: 4.221+1.984+1,357=7,472; sold: 4,221+1,836+1,264=7,348; UP: 1,755+836+1,130=3,721; HY 2008+2009+2010 = Total

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EA11003EN-02173[6]

9/7/2010

HP fuel pump MOPMIS

Page 7



| AQUA: Status | Active as on | quality : 07/* | Non-responsion Intremoved analysis 10-09/08/ Isive conten | 10 5:31 P | | | VW, VV 2007 - | V516, ma 2010, Of umber: (| fset: all 0591307 | (max: 3 55% | | | | | | hout PR | fidentia |
|-------------------------------------|---------------------------|---------------------------|---|---------------------------------------|---------------------------------------|---|--|----------------------------------|-------------------------|-------------------------|------|------|----------------|--------------------------------------|-----------------------|--------------|---------------|
| HY 2007 2008 2009 Diff% | MISO 0.0 0.0 0.0 | MIS1 0.0 0.0 0.0 | MIS3 0.0 5.2 0.0 -100.0 | MIS6 9.6 10.3 0.0 -100.00 | MIS9 19.2 21.9 3.8 -82.47 | MIS12 38.5 37.4 18.7 -50.13 | MIS15 38.5 60.6 26.7 -55.93 | MIS18 76.9 87.9 | MIS21 125.0 112.9 | MIS24 134.6 136.0 | 2007 | | 00.0% 97.4% | BD 40.0% 57.3% 75.0% | 60% 70.9% 87.5% | | 5% 4% 8.5° |
| Sa | ample veh | 1 | 1 | 1 | 1 | 1 | _ | 1. | | - | | | | 1 | 1 | | pression: 50 |
| 200 | 57 | 67 | 137 | 93 | 109 | 92 | 78 | | 6 - | 50 | 85 | < 50 | < 50 | < 50 | < 60 | | 53 |
| | Y | ear of m | anufactur | re 2007 | and a service and | 1 | Ye | ear of ma | nufacture | 2008 | | | | | ear of ma | anufacture 2 | 09 |
| 150 | 1 | V | 1 | | | | And the second | | | | | | | | | | |
| 50 | 1 | V | 1 m | | | | 100 | | 21 | _ | | | | | | | 0 12 |
| 0. | 12 2007 | 01 | 02 | 03 | 04 | 05 | 06 | 2008 | 7 | 08 | 09 | 10 | 11 | 12 | 01 | 02 2009 | 03 |

EA11003EN-02173[7]

9/7/2010

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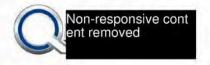
EA11003EN-02177[0]

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Quality report high-pressure fuel pump 3+4 Cyl. CR

August 2010



09.28.2010





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09.28.2010





EA11003EN-02177[2]

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Structure of the report

- 1. TOP points of the months for the high-pressure fuel pump
- 2. Situation in the engine business field

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| 2.3 | |

(hall complaints / CP 7) (hall complaints / CP7) (hall complaints / CP7)

- 3. Field situation in **Europe** 3.1 TOP 5 Cases of damage
- 4. Field situation worldwide
- 5. Current repair solutions
- 6. Current status of HPP projects
- 7. Development W&G costs for high-pressure fuel pumps June 2010



09.28.2010





EA11003EN-02177[3] ENTIRE PAGE CONFIDENTIAL 1. TOP points of the month regarding the CR high-pressure fuel pump

- Shaft seal (SS) has cracked in the 2.0I Bosch CR high-pressure fuel pumps (HPPs). This led to fuel leakage on the camshaft. Cause. 6 equipment troubles because of exceeding the temperature in the manufacturing process of the PTFE blank / green part (07.02 - 07.19.2010) at the supplier Bruss. [Hall complaint]
- Drivetrain damage 2.0I Bosch CR HPP CP4.1 US07 (USA market). Poor quality fuels lead to formation of deposits on the roller support or camshaft, which also lead to mixed friction and thus, to drivetrain damage. [Field complaint]







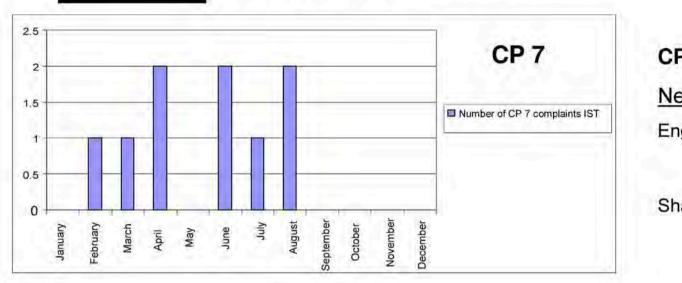
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Motor (hall complaints / CP 7)

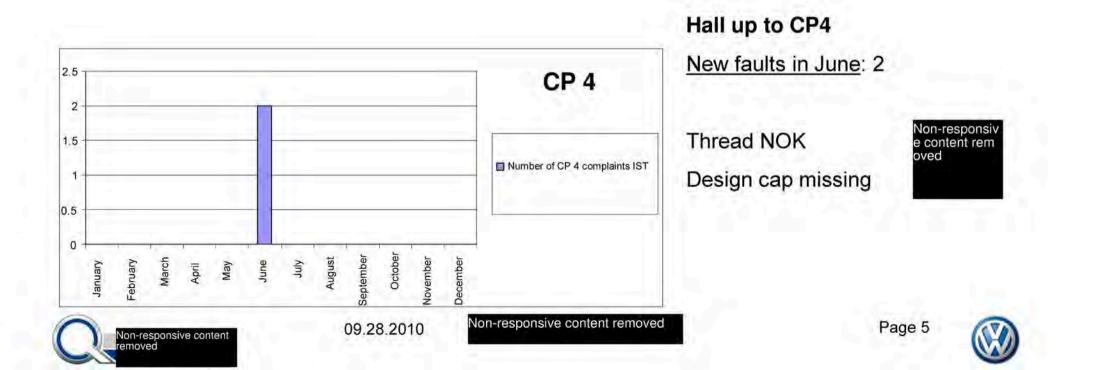


CP 7 complaints

<u>New faults in August:</u> 2 Engine doesn't start up – under analysis Bosch

Shaft seal leaking

Bosch



EA11003EN-02177[5]

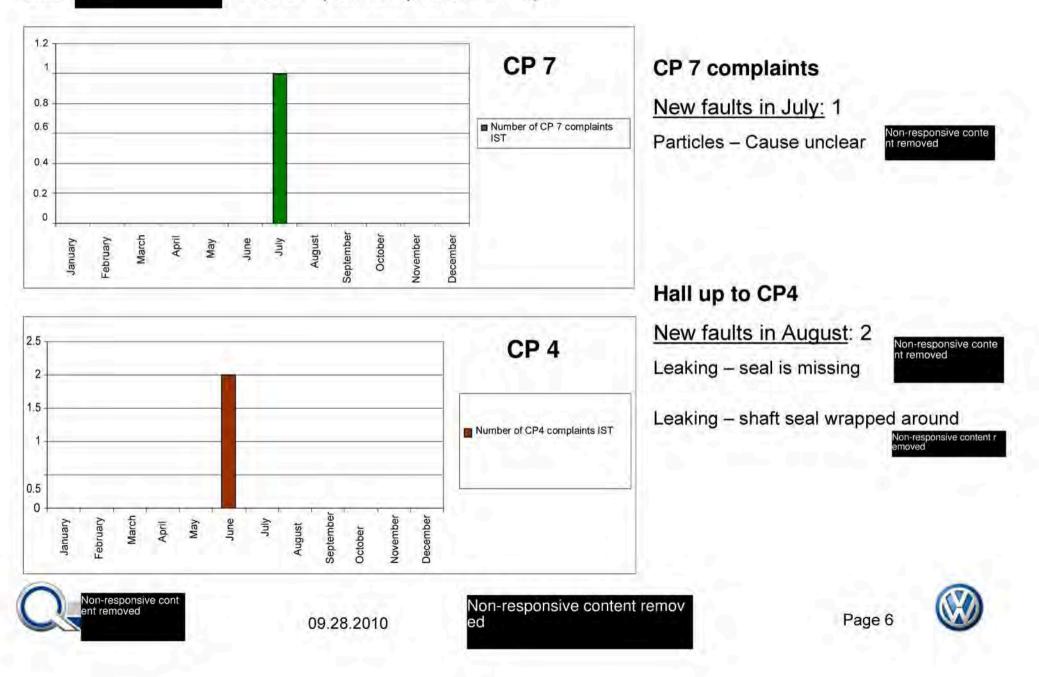
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Motor (hall complaints / CP 7)



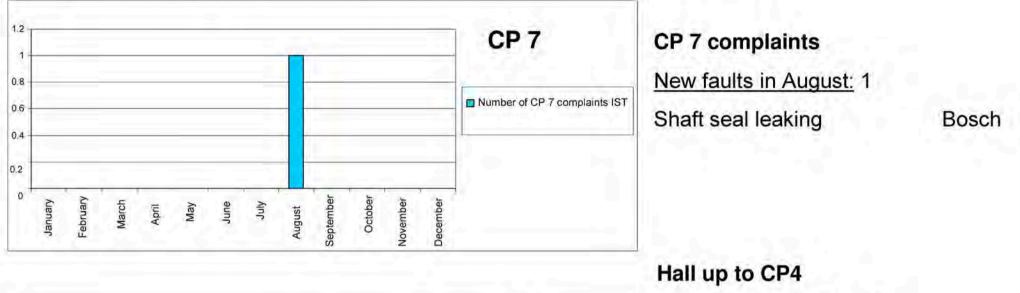
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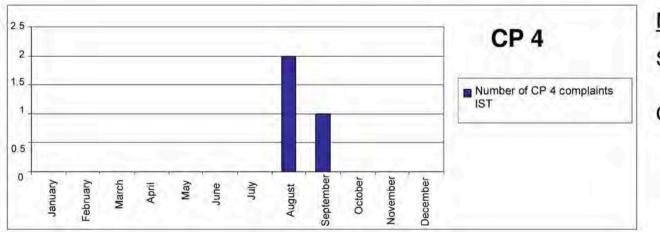
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Motor (hall complaints / CP 7) installation only for US07





New fault in Aug/Sept: 2 Shaft seal leaking Bosch Overflow valve leaking Bosch

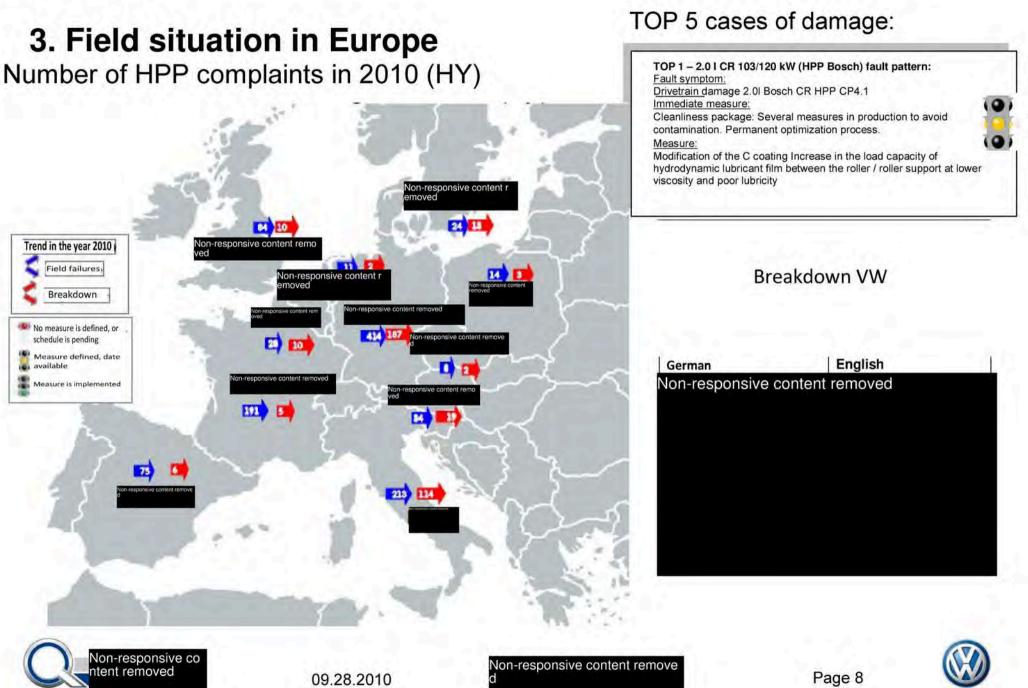


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EA11003EN-02177[8]

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3.1 TOP 5 cases of damage - Measures

TOP 1 - 2.0 | CR 103/120 kW (HPP Bosch)

Fault pattern:

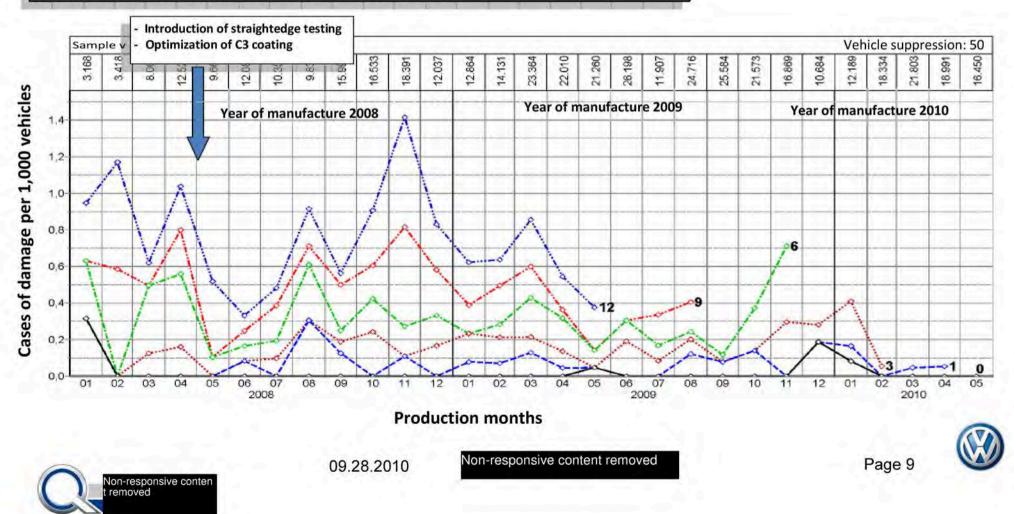
Drivetrain damage 2.0I Bosch CR HPP CP4.1

Immediate measure:

Cleanliness package: Several measures in production to avoid contamination. Permanent optimization process.

Measure:

Modification of the C coating Increase in the load capacity of hydrodynamic lubricating film between the roller / roller support at lower viscosity and poor lubricity

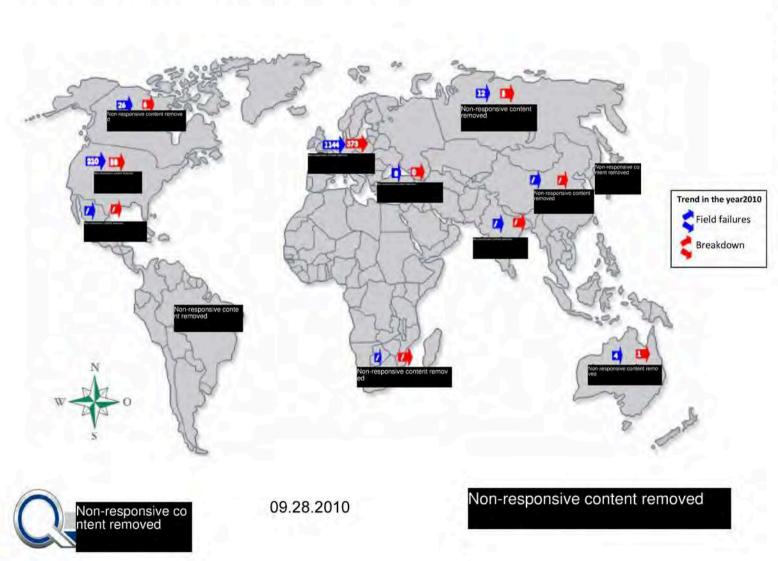




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4. Field situation worldwide

Number of HPP complaints in 2010



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| | | |
| | | |

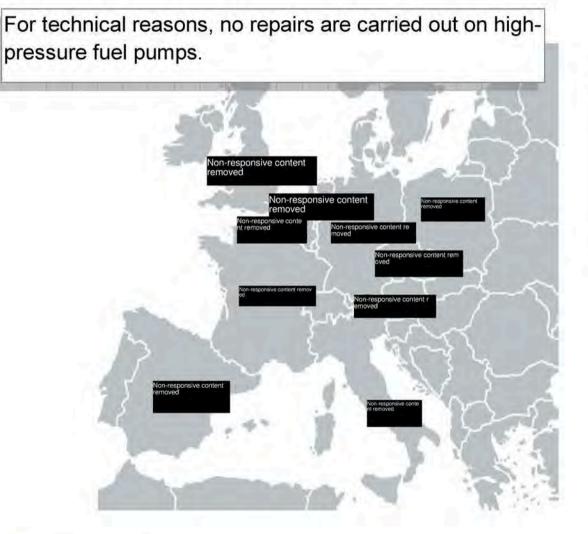
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5. Current repair solutions



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Appendix



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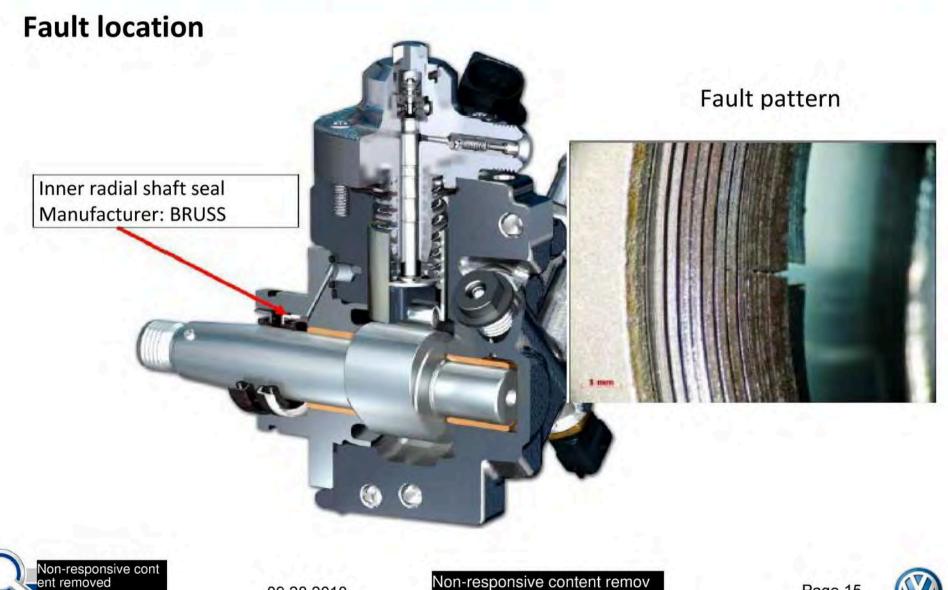


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Status report HPP 2.0I CR shaft seal leaking



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Status report HPP 2.0I CR shaft seal leaking

Status HPP 2.0I CR shaft seal (SS) leaking

| Complaint: | Leaking pu | imps in second => S | S torn (Information | on from | | 08.20.10 |
|---------------------|-------------|----------------------------|---------------------|-----------------|----------------------|----------|
| Cause: | Increased | temperature during | g the manufactur | ing of the blai | nks for the SS | |
| Scope: | 250,000 pu | imps in total (all cu | ustomers) | correspond | s to 480 affected SS | |
| | | | | 330 found a | at Bosch / Bruss | |
| | | | | 150 affecte | d all OEMs | |
| | 90,000 V | N w | hich are risky | | | |
| | 34,000 A | udi 🔹 👌 | /W and Audi 75 | units | | |
| Immediate measures: | Rotating st | ock and goods in s | stock blocked | | | 08.20.10 |
| | 100% bubb | ble test (4 bar, imp | ulses) | | | |
| Result: | Work | sorting overall | unchecked go | ods in stock | failed in test | Status |
| | SZ | 46265 | 6048 | | 34 | 09.09.10 |

| | Supply from Bo | osch 4,032 up to and | including 09.1 | 5.10 | 8 HPP from veh. plant |
|--------|------------------|----------------------|----------------|------|-----------------------|
| Györ | 27774 | 0 | | 23 | 09.09.10 |
| Saxony | 4163 | 0 | | 3 | 09.09.10 |
| Field | (Prod. date befo | ore sorting) | | _1 | 09.09.10 |
| | | | Total: | 69 | 09.10.10 |
| | | | | | |

Pumps with potentially leaking SSI as of date of manufacture: 07/12/10

Production OK pumps from Bosch as of production date: 08.25.10



09.28.2010

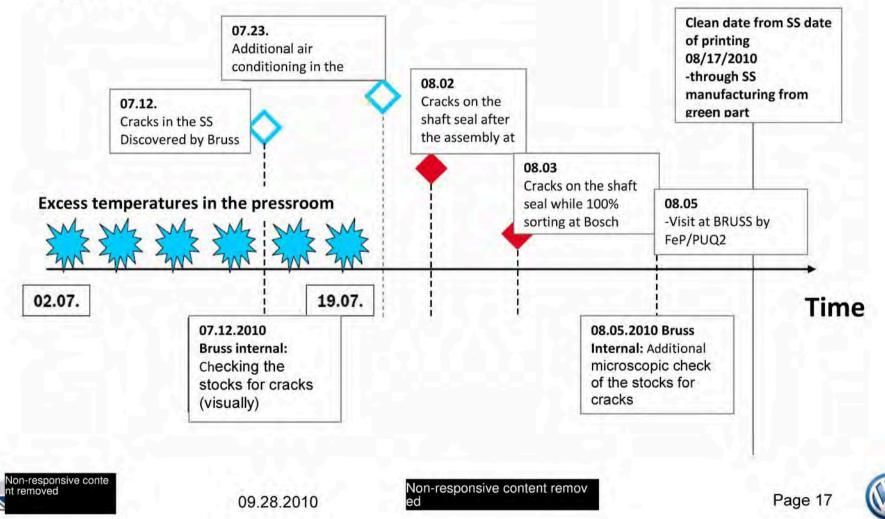
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Status report HPP 2.0I CR shaft seal leaking

Failure history

Timeline



EA11003EN-02177[17]

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Status report HPP 2.0I CR shaft seal leaking

Further procedure:

| - Bosch: | | | Deadline: | |
|-----------|-----|---|-------------|--|
| | => | The blocking of the HPPs built with SS at risk in the Bosch plants | is finished | |
| | => | Checking supplier Bruss | on-site | |
| | => | Materials inspection regarding the statement about the long-term | | |
| | | behavior of the SS: at what stress does the SS crack if this material | | |
| | | problem occurs? | In progress | |
| | => | Determining the failure probability over the running time | in progress | |
| - Volksw | age | en: | | |
| | => | Checking the SS in the laboratory | 08.26.2010 | |
| | => | Invitation by Bosch for Q meeting in Non-responsive co | 08.31.2010 | |
| | => | Process investigation at Bruss | 08.31.2010 | |
| | => | Invitation by Bosch for Q meeting in moved | 09.17.2010 | |
| | => | Daily coordination with Bosch (Bosch resident is on site when required) | daily | |
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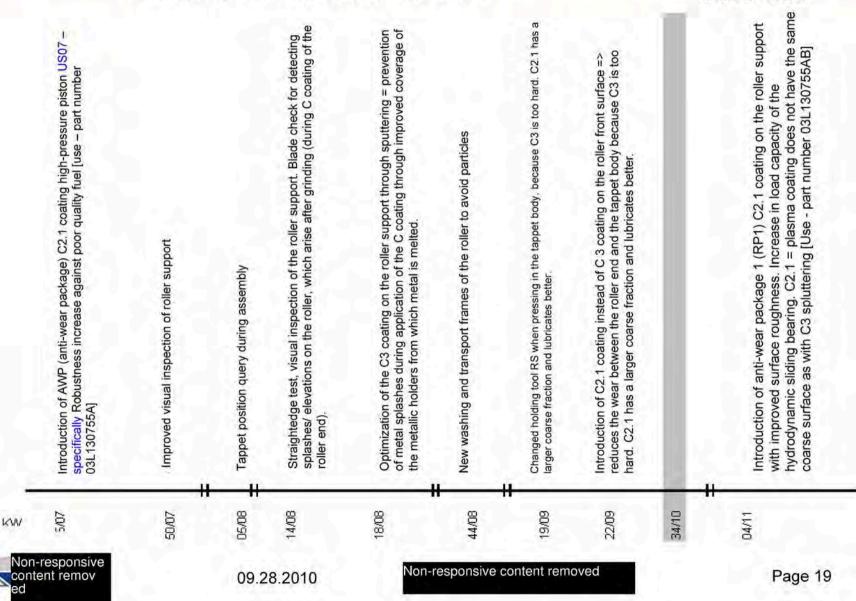
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Overview of measures US07- and EU- HDP 2.0I CR

Measures implemented at Bosch US07 - and EU - HPP

Future measures



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Overview of measures US07- and EU- HPP 2.0I CR

HPP Bosch (1,800 bar / 6 mm stroke) for 2.0 CR Gen 2)

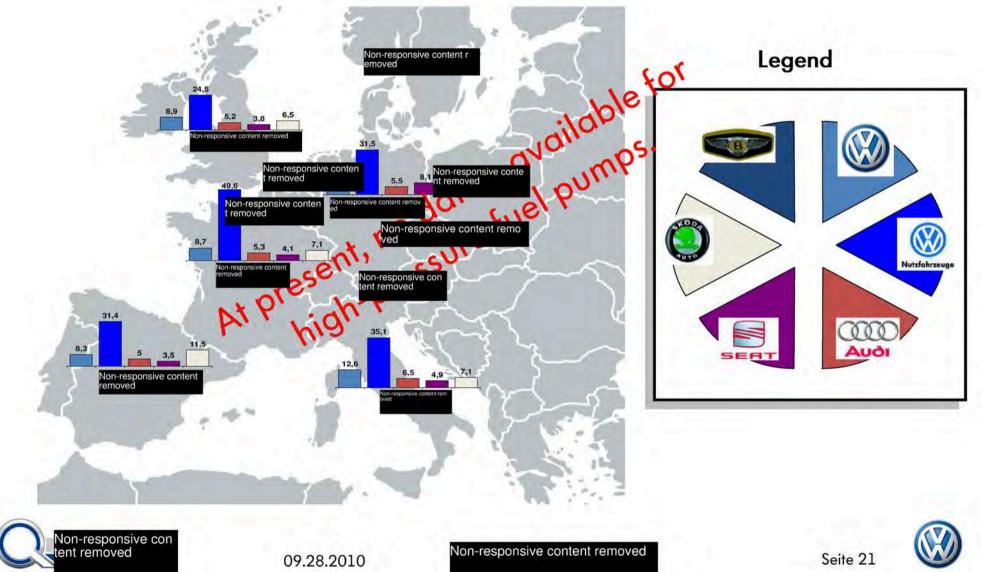
Status as on 07.26.2010

| CDe/Sta | tus Series | Series production VT03276 (approved) Support Passat/Sharan | VP11702 (approved) Anti-wear package for EU4 7 US07 | VT03599 (not yet approved) AWE VT03751E (approved) for 6 bar fuel system with overflow valve | VT11902 (not yet approved) AWE VT03751E (approved) for 6 bar fuel system with overflow valve |
|-----------------|---|---|---|---|---|
| EU5 | 03L.130.755.D All without support without overflow valve | 03L.130.755.L Passat/Sharan (superseded by AF) without support without overflow valve 03L.130.755.D Other vehicles without support without support without support without support without support without overflow valve | | 03L.130.755.AF Passat/Sharan (after approval) with support with overflow valve 03L.130.755.AC AU 03(23/11) without support with overflow valve | ▼ 03L.130.755.AC EU 5 Tiguan (MP 22/11) without support with overflow valve |
| EU4 | 03L.130.755.F All (superseded by M) vithout support vithout overflow valve vithout anti-wear package | 03L.130.755.M Passat (superseded by AA) with support without overflow valve without anti-wear package | 03I.130.755.AA Passat (gradually after Q verification) with support without overflow valve 03L.130.755.AB Tiguan/ AU 03 (superseded by AE) without support without support without overflow valve Anti-wear package 1 | 03L.130.755.AF AU 03(45/11) Carried out a long time ago without support with overflow valve Anti-wear package 1 | 03L.130.755.AE Tiguan (MP 22/11) without support with overflow valve Anti-wear package 1 |
| US07 | O3L.130.755.F All (superseded by AB) without support without overflow valve without anti-wear package | | 03L.130.755.AB NMS (41/10) without support without overflow valve without anti-wear package | | e damping bore |
| Scope of change | Series | Connection of support | Anti-wear package 1: >Roller support coating with reduced roughness >Reduction in tolerance play >opt. roller texture >opt. Roller hardness | The high-pressure fuel pump in or system (EC pump > controlled ta from the HPP after a cold start | combination with the 6-bar tank |

EA11003EN-02177[20]

Presentation of the HPP field failures relating to brands

5 main markets/Europe / July 2010 / CoD/1000 MIS24

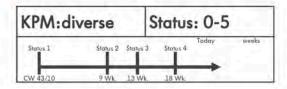


EA11003EN-02250[0] Current Field Issue:

Qualitätssicherung

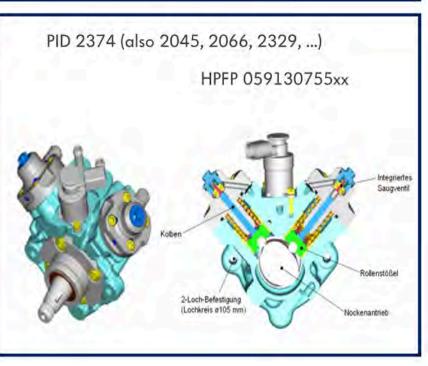
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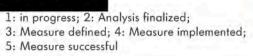
EA896_2,0L CR HDP CP4.2



| Customer Complaint | Engine stalls while driving, dies not restart, fuel leakage, noise, |
|--------------------|---|
| Workshop Finding | chips, leakings, noise, |
| Service-Activities | Repair per repair manual. |

| Field data | (VW approved markets) |
|--------------------------|---|
| Complaints total | 1.977 (replaced parts) |
| Fail./ 1.000 veh (MIS12) | 14,5 (manufacturing year 09) |
| breakdonws / repeat | 132 hard / 705 soft / 262 repeat |
| €/ incident | approx. incident |
| €/ vehicle (MIS 12) | veichle (mfr 09) |
| Affected scope | EA896_3,0L CR |
| Most recent measure | Robustness Package 2 (RP2) 11/2010 Optimized Electr. Fuel Pump-Control (Early 2011) |
| Failures after measure | 4 |
| Failed parts | yes |





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EA11003EN-02250[1]

Back-up





EA11003EN-02250[2] Current Field Issue:

EA896_2,0L CR HDP CP4.2

| KPM:di | verse | 5 | itatus | : 0-5 | |
|----------|------------|---------|----------|---------------|-------|
| Status 1 | Štotus 2 S | tatus 3 | Status 4 | Today | weeks |
| CW 43/10 | ? Wk | 3.Wk. | 18 Wk | \rightarrow | |

| KPM-No. | record date | Status |
|---------|-------------|--------|
| 5349524 | 13.03.2011 | 6 |
| 5222925 | 10.08.2010 | 2 |
| 4914966 | 13.03.2009 | 5 |
| 2514165 | 26.06.2008 | 1 |
| 4831907 | 09.04.2008 | 6 |



As of: 17.05.2011

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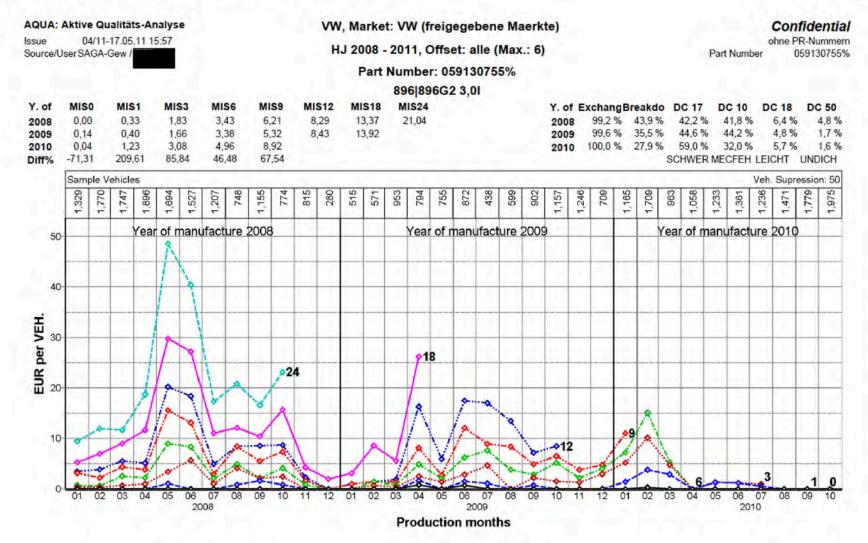


in progress; 2: Analysis finalized;
 3: Measure defined; 4: Measure implemented;
 5: Measure successful

EA11003EN-02250[3] EA896_2,0L CR HDP CP4.2

| | | | 14 | | | | | | | | | | Te | eilen | um | ner: | 059 | 130 | 755 | % | | | | | | | | | | | | |
|---------------|-------------|---------|--------|------------|---------------|--------|-------|-----------|-----|----------|-------|-----|-----|-------|----------|------------|------|-------|------|------|-----|-----|-------|------|-------|-------|-----------------|-------|----------------|--------------|-----|------------|
| | | | | | | | | | | | | | | | 896 | 896 | G2 3 | 3.01 | | | | | | | | | | | | | | |
| нј | MIS | 0 | MIS | 1 N | AIS3 | | MIS | 6 | MIS | 9 | MIS | 12 | MIS | | MIS | | | | | | H | J | Taus | ch | LB | | SA 17 | SA | 10 | SA 18 | s | A |
| 2008 | | ,0 | | ,5 | 2,3 | | | ,5 | | 3,7 | | 2,2 | | 1,7 | 3 | 5,7 | | | | | | 800 | 99,2 | | 43,4 | | 42,8 % | | 1,0 % | 6,3 | | 4, |
| 2009 | | ,2 | | 6 | 2,9 | | | 5,0 | 5 | 9,3 | 1 | 4,5 | 2 | 5,2 | | | | | | | | 009 | 99,5 | | 35,6 | | 46,6 % | | 1,3 % 5,6 % | 4,8 | | 1, |
| 2010 Diff% | -60,2 | ,1 9 | 301. | ,5 91 1 | 6,2 11,91 | | 66, | 0,0 38 | | | | | | | | | | | | | 20 | 010 | 100,0 | J 70 | 26,6 | | 63,3 % CHWER | | | 6,4 EICHT | | 1,1 DIC |
| | Stich | prob | anfahr | zeuge | | - | | | - | | | | | 1 | - | | - | | - | | - | - | - | | | - | | _ | | -Unterd | | |
| | 329 | 770 | | | 1.694 | 27 | 1.207 | 748 | 155 | 774 | 815 | 280 | 515 | 571 | 953 | 794 | 755 | 872 | 438 | 599 | 902 | 157 | 246 | 709 | 65 | 60 | 963 | | | 236 | 471 | |
| | 1.3 | 1.7 | 1.747 | - | - 9 | 1.527 | t ci | ~ | - | ~ | 8 | N | ۵ | 20 | 03 | ~ | ~ | 8 | 4 | Ω. | 02 | ÷ | 10 | 0 | 1.165 | 1.709 | 0) | - | | 5 5 | 4 | |
| | 111 | 1.1 | 1.1 | Н | erst | tellja | ahr : | 2008 | | 1.1 | h. (1 | | | | | 111 | Her | stell | jahr | 2009 | - 1 | 1.1 | | | | | Her | stell | jahr 2 | 2010 | | |
| 80 | | | | | 8 | | | | | | | | | | - | | | | | | | | 1.1 | | | | | | | | | t |
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| FZG | 5 | 51 | | 1 | N | | | | | | | | | | 1 | 11 | | | | 1 | | | | | | | | 1.1 | | | | |
| 10001 | - | | - | - | - | Ŧ | - | | - | - | - | | - | - | - | - | - | | | | | | | | | | | - | - | | | + |
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| | 8 :: | -* | -0 | -0 | • ···· | 4. | 8 | 8 | | - | 10 | ~ | - | A., | will. | | ¥ | | 0 | ×. | | - | - | - 29 | - | | -0 | | | 3 | 1.5 | 1 |
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| | | | | | | | | | | | | | | | Pro | duk | tion | smo | nate | ÷ 🗇 | | | | | | | | | | | | |

EA11003EN-02250[4] ENTIRE PAGE CONFIDENTIAL EA896_2,0L CR HDP CP4.2



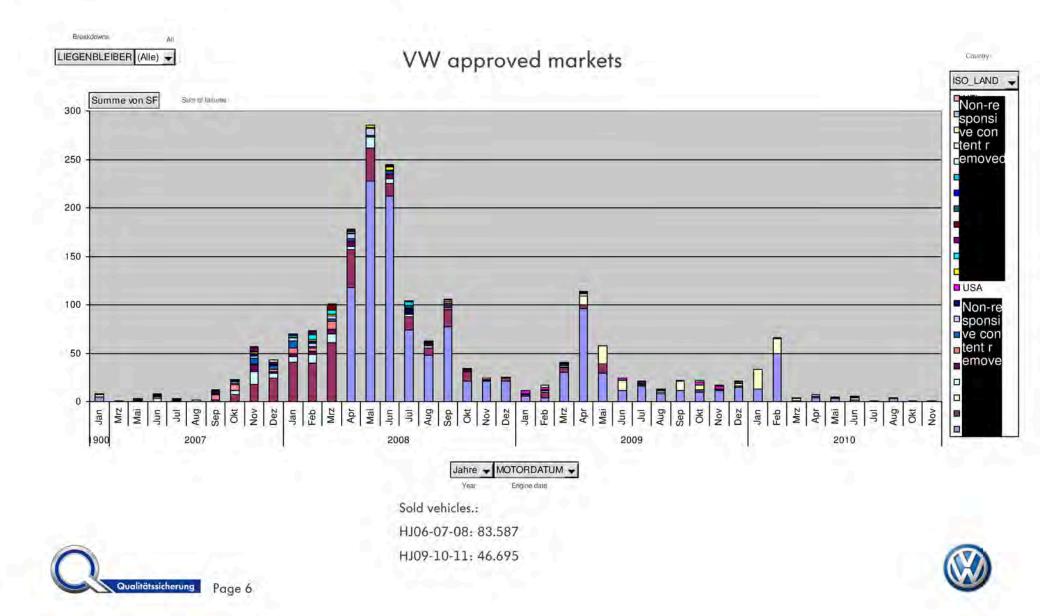
Vehicles: 27,452+15,206+29,009+12,730=84,397; Sold: 27,400+15,151+27,331+6,672=76,554; Stp.: 14,942+9,511+16,645+5,803=46,901; HJ: 2008+2009+2010+2011=Total



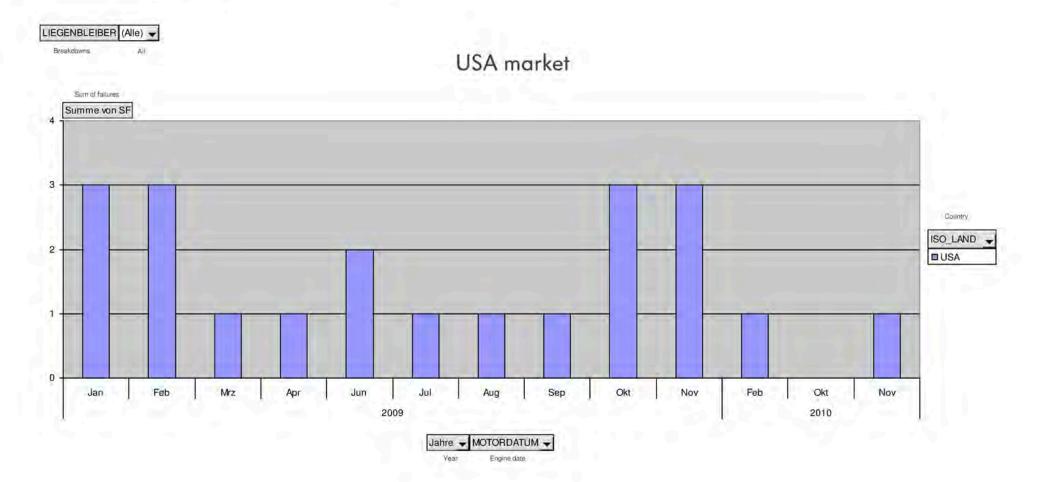
V6 TDI HDP Fzg



EA11003EN-02250[5] ENTIRE PAGE CONFIDENTIAL EA896_2,0L CR HDP CP4.2



EA11003EN-02250[6] ENTIRE PAGE CONFIDENTIAL EA896_2,0L CR HDP CP4.2



Sold vehicles (HJ09-10-11): 3.815



