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November 4, 2014

SENT VIA EMAIL and OVERNIGHT MAIL
Cynthia Glass
Recall Management Division: NVS-215
Office of Defects Investigation, Enforcement
National Highway Traffic Administration
1200 New Jersey Avenue SE, Room W48-331
Washington, DC 205590

Re: EQ14-012 – Response of Williams Controls

Dear Ms. Glass:

Please allow this letter to serve as Williams Controls, Inc. ("Williams Controls"), supplemental response to Jennifer Timian's letter of October 16, 2014. As you know, on October 22, 2014, Williams Controls submitted its response to Ms. Timian's letter. Today's letter provides additional information that Williams Controls is submitting for the agency's consideration.

For reasons stated in the October 22, 2014, and the attached supplemental submission, Williams Controls believes the WM-526 pedals at issue are neither defective nor do they pose an unreasonable risk to motor vehicle safety. Williams Controls will not be filing a Part 573.6 Defect and Noncompliance Information Report.

Please contact me should you have any questions or if my client can be of further assistance.

Very truly yours,

Miller, Canfield, Paddock and Stone, P.L.C.

By: _____
Brian S. Westenberg

BSW

Attachment and Enclosure

Supplemental Response of Williams Controls, Inc.,
to NHTSA's Letter of October 16, 2014

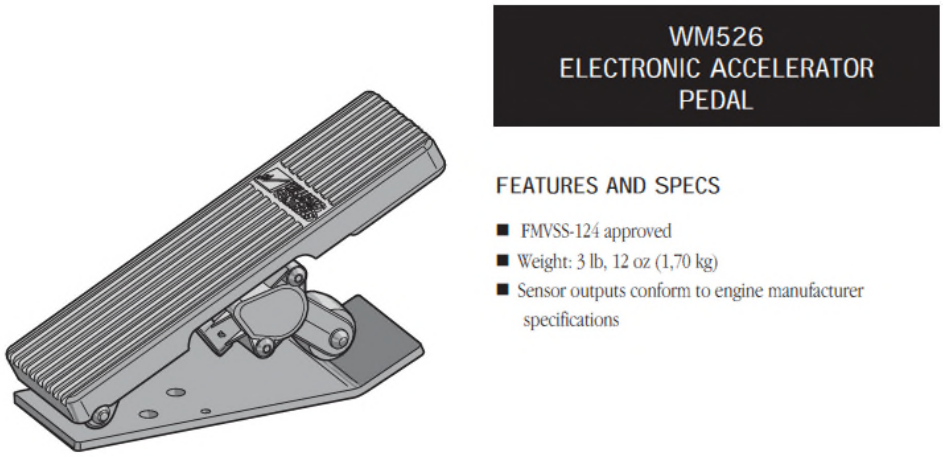
This response supplements the October 22, 2014, submission by Williams Controls, Inc. ("Williams Controls"), in response to an October 16, 2014, information request from NHTSA's Recall Management Division ("RMD"). In its October 22, 2014, response, Williams Controls informed RMD that it believes the WM-526 pedals at issue are neither defective nor do they pose an unreasonable risk to motor vehicle safety and, therefore, it will not be submitting a Part 573 Defect and Noncompliance Information Report.

This supplemental response lends additional support for this belief and can be summarized as follows:

1. The WM-526 pedal has redundant return springs. A failure of one spring still permits the throttle to return to idle and the vehicle can be operated safely.
2. Williams Controls is unaware of a single spring failure in the U.S. that is similar to what was reported in a very small number of WM-526 pedals in vehicles overseas.
3. Williams Controls is unaware of a single report anywhere in the world where a vehicle equipped with a WM-526 pedal has lost control, crashed or caused an injury as a result of a pedal spring failure.
4. There are about 5,000 vehicles in the U.S. market vehicles that could, in theory, be affected by an isolated and random return spring manufacturing variation that was attributed to a low volume 2008 spring production run. However, these vehicles have been in service now for well over five years and, collectively, they have travelled millions of miles and have been subjected to billions of accelerator pedal actuations. Not one WM-526 pedal return spring is known to have failed among these vehicles.
5. There is simply no empirical (or even anecdotal) evidence to suggest that any of the 5,000 vehicles potentially equipped with an affected WM-526 throttle pedal will experience a *single* return spring failure, much less *dual* failure that would prevent the throttle from returning to idle.

WM-526 Throttle Pedal Design

The WM-526 electronic throttle control pedal (the "WM-526" or "pedal") has been in production at Williams Controls for over 20 years. Over 2.5 million pedals have been shipped since 1999 and they are used in heavy-duty vehicles, including on-road trucks, motor coaches and busses. The WM-526 is designed with redundant power springs for safety, reliability and compliance with Federal Motor Vehicle Safety Standard 124 (Accelerator Control Systems). Below is a graphic of the WM-526 pedal that was taken from product literature.



The pedal is fully operational with one spring, although with a lower actuation force that would offer advanced warning to an operator in the event of a single spring failure. If both springs were to fail, it could result in the pedal not returning to idle. Williams Controls believes that many OEMs that purchased the affected WM-526 pedals use a Brake Throttle Override system to cause the vehicle to go into "limp mode" in the event of unregulated engine torque, thereby further mitigating the potential safety risk.

The WM-526 return springs are designed to keep the stress on the springs to below 40% of their ultimate tensile stress. The Goodman diagram is also used to ensure spring design falls well under the curve for 10 million cycles. The WM-526 pedals are subjected to rigorous durability testing, which includes testing the pedal assembly for three million cycles. The pedal return springs are also tested to 10 times the life of the pedal.

Summary of Investigation Efforts: October 2010 to Present

Williams Controls' investigation of the WM-526 began in October 2010, when Volvo Bus (VB) reported a single broken return spring on a WM-526 pedal that was used on a vehicle in India. In December 2010, another single broken spring was reported in a WM-526 pedal equipped on a VB vehicle in Ireland. Neither of these pedals were returned to Williams Controls for analysis.

Between October 2010 and August 2011, 21 additional claims of pedals with broken springs were made and the parts were returned by VB to Williams Controls. Examination of the broken springs indicated that eight of the springs (including one pedal with two broken springs) fractured prematurely due to local stress risers originating from pinched or lapped material on the radius edge of the spring material. The lapped condition appears to have been present prior to the winding of the springs and was likely caused by a variation in skiving.

From October 2011 through August 2012, Williams Controls conducted an additional field survey and proactively replaced 280 pedals on vehicle fleets in Ireland, the UK and Portugal. All of the pedals were returned and analyzed for spring fracture. This analysis revealed that two additional broken springs were found to be fractured, likely due to a similar edge condition caused by a variation in skiving. There were also ten springs identified that exhibited similar poor edge condition, but were still intact. While these ten springs did not fracture, they were considered to be at risk of a premature fracture.

All of the fractured and at-risk springs identified during this period had been traced to certain spring fabricator production lots from November and December of 2007. There were 32 springs analyzed from these same production lots, which were found to have acceptable edge formations that did not exhibit the pinched or lapped condition. This analysis strongly suggested that the variation in skiving was caused by a random and isolated variation in the spring fabricator's skiving operation during the November and December 2007 production runs. This manufacturing variation likely affected only a small batch of pedal springs in certain WM-526 pedals equipped in overseas VB vehicles. These spring fractures occurred early in the life cycle of the VB vehicles.

These investigation findings were memorialized in a comprehensive Field Complaint Analysis Report dated February 14, 2013. This report was sent to NHTSA as a part of its October 22, 2014, submission to EQ14-012, and for convenience it is attached again here as Enclosure A. Moreover, at the onset of NHTSA's investigation, this report was shared with most of the 28 OEMs that were identified to the agency as purchasers of the

potentially affected WM-526 pedals. On August 6, 2014, Williams Controls informed NHTSA about this written communication with the OEMs pursuant to 49 CFR 579.5.[1]

Williams Controls has been continually monitoring warranty and other field data from over 100 vehicle manufacturers or parts distributors around the world that purchased or sold WM-526 pedals produced with springs from the affect lots. As of this filing, Williams Controls is not aware of any additional WM-526 spring fractures due to local stress risers on the radius edge of the spring material that have occurred since the February 14, 2013, Field Complaint Analysis Report was compiled. Moreover, Williams Controls is aware of no reported crashes or injuries associated with broken power springs on a WM-526 pedal anywhere in the world. Williams Controls has also searched NHTSA's Vehicle Owner Questionnaire ("VOQ") data for complaints of throttle control pedal complaints in heady-duty vehicles and found none related to a throttle control malfunction caused by a pedal failure of any kind in a vehicle known to be equipped with a WM-526 pedal assembly.

Prevost (13V-532) and Gillig (14E-018) Recalls

As RMD noted in its October 16, 2014, letter, two U.S. entities that purchased WM-526 pedals assembled within the affected return spring lot production period have decided to conduct voluntary safety recalls. In their Part 573 report filings, neither of these entities reported a single failure of a pedal return spring in a WM-526 pedal.

Upon request by Prevost Cars, Inc. ("Prevost"), a manufacturer of heavy-duty motor coach vehicles, Williams Controls provided information identifying 32 WM-526 pedals that were purchased within the suspect spring lot period. Prevost decided to conduct a safety recall, despite no reports of spring failures, crashes or injuries on 81 coach vehicles that had been in service for three to five years and, presumably, had accumulated hundreds of thousands miles driven.[2]

Even more curious was the recall conducted by Gillig LLC ("Gillig"), which was filed as an Equipment recall (14E-018) and involved 98 WM-526 pedals that were sold to Gillig.

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[1] *See* Williams Control 8/6/14 submission of it Part 579.5 External Communications for the month of July, 2014.

[2] Prevost is a related entity to Volvo Bus, which was the manufacturer of the vehicles sold in Europe and India that were the subject of the WM-526 investigation in 2010. Because of an apparent parts traceability issue, it is believed that Prevost was required to recall 81 of its vehicles to account for the 32 WM-526 pedals sought in the recall campaign.

Gillig is manufacturer of heavy-duty busses, but it also sells service parts to the public. In its Part 573 report, Gillig stated that "no suspect pedals were sold on Gillig production vehicles." Rather, Gillig reported that the pedals were "sold to aftermarket" customers and that "[t]o date, no accidents, injuries, fatalities or related warranty claims have been reported." (*See* Gillig LLC's Part 573 Report, dated April 21, 2014.) Gillig did not conduct its own investigation, it received no complaints about the WM-526 pedals and it had no statutory or regulatory obligation to conduct a safety recall.[3] Nevertheless, and over the objection of Williams Controls, Gillig filed a Part 573 Report and conducted the equipment recall campaign. It remains puzzling why Gillig would undertake such a recall, and it is equally puzzling that Gillig was permitted to conduct a safety recall campaign pursuant to 49 C.F.R. Part 573 when it was simply a seller or distributor of aftermarket service parts.

Parts Return Analysis

Williams Controls continues to receive WM-526 part returns from the suspect spring production lots (November and December 2007), which are subjected to rigorous inspection and analysis. Williams Controls also requested that Gillig return the WM-526 pedals that were replaced during their recall campaign. To date, Gillig has returned 25 WM-526 pedal assemblies. Williams Controls has found no broken springs in these 25 pedal assemblies. Two springs have been randomly selected for a metallurgical analysis by an independent lab. The results are pending and will be shared with NHTSA at upon receipt.

Following the return and analysis of WM-526 springs from Ireland, the UK and Portugal, Williams Controls has inspected an additional 1,301 WM-526 pedal assemblies that were received in the ordinary course of warranty returns. These pedal contained return springs that were manufactured both within and outside of the suspect spring production lot periods (November and December 2007). Williams Controls has found no evidence of spring failures due to fatigue fractures in any of these pedals, including 1,076 pedal assemblies from vehicles that were sold in the U.S. market. This has lead Williams Controls to conclude it is likely that an extremely small number of WM-526 pedal assemblies equipped in some European vehicles may have contained a random manufacturing variation in at least one return spring. This random manufacturing

[3] Except under a few limited circumstances, the Motor Vehicle Safety Act, 49 U.S.C. 30166, does not impose recall obligations on aftermarket parts distributors and sellers. (*See*, e.g., Closing Resume for EQ12-011.) This is certainly true with respect to Gillig's over-the-counter sales of 98 WM-526 pedals as aftermarket service kits.

variation likely weakened the spring and caused a fatigue fracture very early in the duty cycle of the pedal.

Conclusion

There are 4,960 WM-526 pedal assemblies that were sold to U.S. heavy-duty vehicle manufacturers and traceable to spring lots from the fabricator's production runs of November and December 2007. Each pedal assembly contains two return springs, which means there are nearly 10,000 springs from this production run now in the field. There is no empirical evidence to conclude that any of these 10,000 return springs have fractured or are at risk of a premature fatigue fracture.

To rise to the level of a risk to motor vehicle safety and prevent a throttle return to idle, both return springs would have to fail in the pedal assembly. Many of the potentially affected U.S. market vehicles have been in service for well over five years. Collectively, they have travelled millions of miles and have been subjected to billions of accelerator pedal actuations. Based upon its recent discussions with higher volume manufacturers, Williams Controls has confirmed that, to date, there has not been a single report of a throttle pedal spring failure in any WM-526 pedals used in these vehicles. It is Williams Controls' belief that these U.S. manufacturers will share in the conclusion that the WM-526 pedals at issue are neither defective nor do they pose an unreasonable risk to motor vehicle safety.

Williams Control looks forward to working with the agency in the resolution of this investigation.

EQ14-012 - Enclosure A

Williams Controls
14100 SW 72nd Avenue
Portland, Oregon 97224
Phone: 503-684-8600
Fax: 503-624-3812

Field Complaint Analysis Report

Williams Controls

WM-526 [redacted] Complaint

February 17, 2013

Executive Summary:

In October 2010, [redacted] reported a broken power spring on a WM-526 pedal from India. In December 2010, another broken spring was reported by [redacted] on a pedal from Ireland. Neither of these pedals was returned to Williams Controls (WMCO). Between October 2010 and August 2011, 21 claims of pedals with broken springs were submitted to WMCO from [redacted]. Examination of the broken springs indicated that 8 of the springs (including one pedal with 2 broken springs) fractured prematurely due to local stress risers originating from pinched or lapped material on the radius edge of the spring material. The lapped condition appears to have been present prior to the winding of the springs and was likely caused by variation in skiving.

From October 2011 through August 2012, WMCO proactively replaced 280 pedals at [redacted] on fleets in Ireland, the UK and Portugal. All of the pedals were returned and analyzed for spring fracture. From the field replacement pedals, 2 additional broken springs were found that fractured from a similar edge condition due to variation in skiving. There were also 10 springs identified that exhibited similar poor edge condition but were still in tact. While these 10 springs did not fracture, they were considered to be at risk of a premature fracture.

All of the fractured and at-risk springs have been traced to select production lots from the spring former from November and December 2007. From the same production lots, there have also been 32 good springs analyzed with acceptable edge formation that do not exhibit the pinched or lapped condition. The data suggests this issue was caused due to variation in the skiving operation isolated to a small batch of springs.

There have not been any additional spring fractures reported by [redacted] or any of the other 100+ customers around the world that bought WM-526 pedals produced with springs from these lots. There have been no reports of crashes or injuries associated with broken power springs on a WM-526 pedal.

Williams Controls will continue to closely monitor the field data on WM-526 pedal performance. Should any additional broken power springs be confirmed in the field, additional investigation will be undertaken.

Pedal Safety Design

The WM-526 electronic throttle control has been in production at Williams Controls for over 20 years. Over 2.5 million pedals have been shipped since 1999. The pedal is designed with redundant power springs for safety, reliability and compliance to FMVSS-124 Return to Idle regulation. The pedal is fully operational with one spring, although with a lower actuation force that would offer advanced warning to an operator. If both springs were to fail, it could result in the pedal not returning to idle. The vehicles from which the field complaints were submitted are [redacted] equipped with a Brake Throttle Override (BTO) system. The BTO system is a safety system that will cut fueling should the brake be applied at the same time as the accelerator.

Chronology of Events

The investigation of this issue has spanned from October 2010 through December 2012. A graphical timeline can be found in Appendix 1.

October 13, 2010	The first field complaint for a pedal with a broken spring was submitted by [redacted] to WMCO. The reported failure was in service in India. The pedal was not returned to WMCO for analysis.
December 3, 2010	The second field complaint for a pedal with a broken spring was submitted by [redacted] to WMCO from a bus in Ireland. The pedal was not returned to WMCO for analysis.
March 28, 2011	Two pedals with broken springs were returned from Ireland to WMCO for analysis.
August 30, 2011	7 [redacted] field complaints were received by WMCO, including one pedal with two broken springs. Broken springs are sent for analysis to an independent third party laboratory.
September 20, 2011	Material analysis report on broken springs is received from outside laboratory. The lab performed a range of analyses including visual inspection, scanning electron microscope (SEM), energy dispersive spectroscopy (EDS) examination and material hardness test. The report concluded that the broken springs failed from a variety of causes. The failures included fracture originating from a chlorine filled pit, weld splatter present on the spring, and 8 failures attributed to a pinched or lapped end. The pinched end is the result of variation in the skiving process that forms the rounded edges on the spring material after slitting and before spring winding.
October 28, 2011	In a proactive effort to gain more data, [redacted] and WMCO launch a joint effort to replace almost 200 pedals in the field at the bus fleet in Ireland. New pedals are supplied to replace those in service. The in service pedals are to be sent to WMCO for analysis.
March 12, 2012	The final shipment of replaced pedals is received at WMCO from Ireland. 193 pedals in total are replaced in the field. Upon receipt at WMCO, the pedals are systemically analyzed. The pedals are visually inspected, measured for mechanical characteristics, and disassembled for further visual inspection. The springs are visually inspected and the edge is screened using a cotton ball test. The test was recommended by an external export using the rationale that springs exhibiting the pinched edge condition would pull cotton fibers that would be visible to the naked eye. Any springs that pulled cotton fibers during this screening were sent to an outside lab for in depth analysis.

	From this study, 2 additional broken springs were found to be caused from variation in skiving. 34 springs were sent for analysis as a result of the cotton ball screening test. 10 springs were found to have edge condition that could be at risk for fracture, but none of these springs had actually fractured.
April 19, 2012	WMCO hires outside consultant to support investigation and statistical analysis of the issue.
June 8, 2012	To further understand the issue and collect additional data, a cooperative field survey is launched to replace pedals from the field in geographic regions outside of Ireland. WMCO supplied a range of chassis numbers based on the failed units. [redacted] identified 2 bus fleets with pedals suspected to be close to the same time range. The fleets in the UK and Portugal are sent replacement pedals to change out in service pedals for return to WMCO.
June 25, 2012	WMCO representatives visit supplier of raw material and witness skiving process.
August 5, 2012	47 pedals from a bus fleet in the UK are received by WMCO for field survey. All springs are intact and pass the cotton ball screening.
October 9, 2012	40 pedals from a bus fleet in Portugal are received and analyzed at WMCO. No additional skiving related fractures were found.

Skiving Process and Spring Failure

The in depth spring analysis revealed that on 10 of the fractured springs, and 10 at-risk springs, the edge of the spring material was characterized as having a pinched or lapped condition. In June 2012, WMCO visited the raw material supplier. The supplier receives sheets of the specified AISI 301 stainless steel material from the mill. The material is slit from the 24" wide master coil sheets to ribbons of the desired width. Skiving is performed to remove all burrs from slitting and produce the desired full round edge on the spring material. The skiving process is performed in two passes through carbide cutters in a submerged coolant bath at a speed of approximately 500 feet/minute. The material is monitored for width and camber prior to winding onto coils for shipment to WMCO spring formers.

This poor edge condition creates a local stress riser and a fracture origination point. The poor skiving on the edge of the spring material can be seen in Figures 1 and 2.

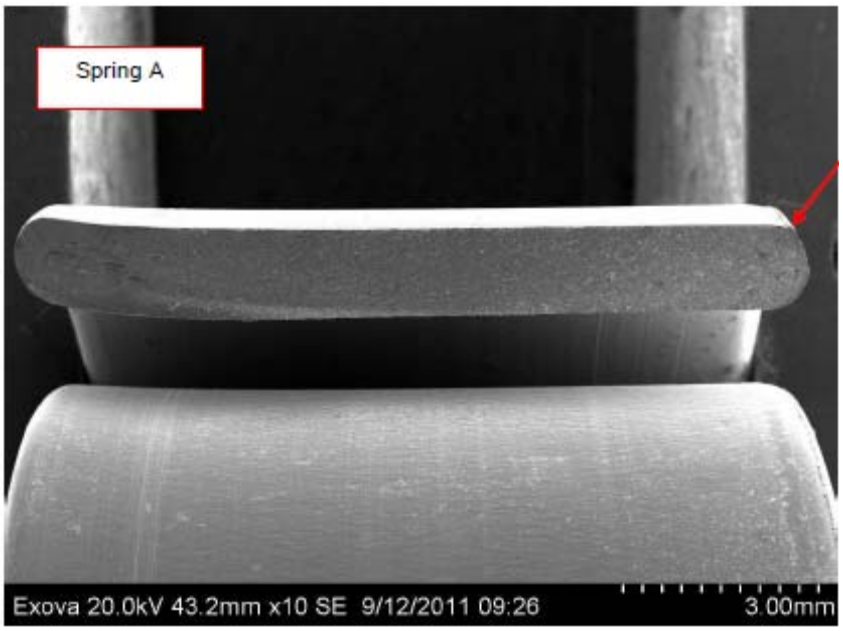


Figure 1: Spring from Ireland bus return. The red arrow shows the likely fracture origination point. Photo source report T116340.

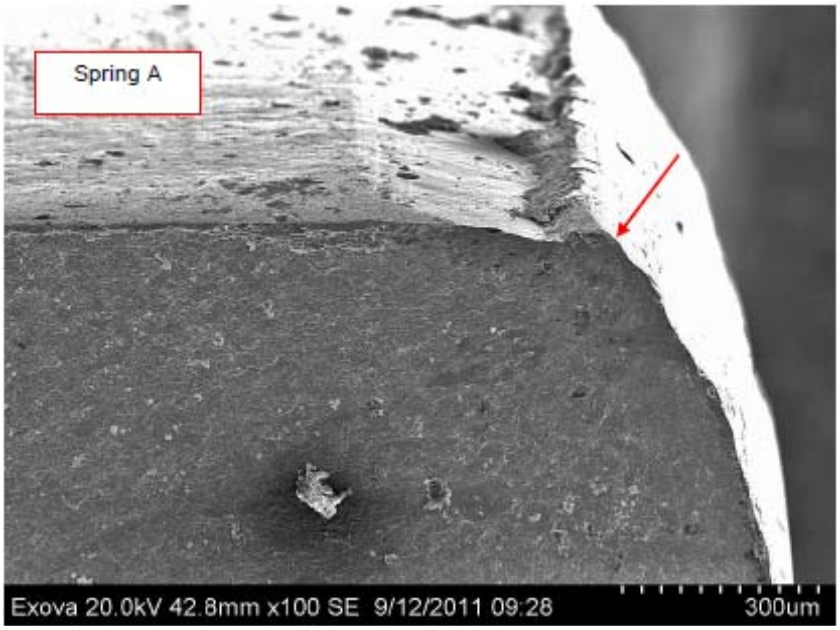


Figure 2: Spring from Ireland bus return. The red arrow shows the likely fracture origination point. Photo source report T116340.

The pedals with springs that fractured from variation in skiving had an average of 130,252 miles with a standard deviation of 27,585 miles. Statistics for the fractured springs can be found in Table 1.

Table 1: Mileage statistics for fractured and at-risk springs

	Mileage			
	Average	Min	Max	St Dev
Fractured Springs	**130,252**	**88,717**	**168,202**	**27,585**
At-Risk Springs	**117,927**	**22,958**	**168,824**	**82,316**

The summary of the fractured and at-risk springs can be found in Appendix 2.

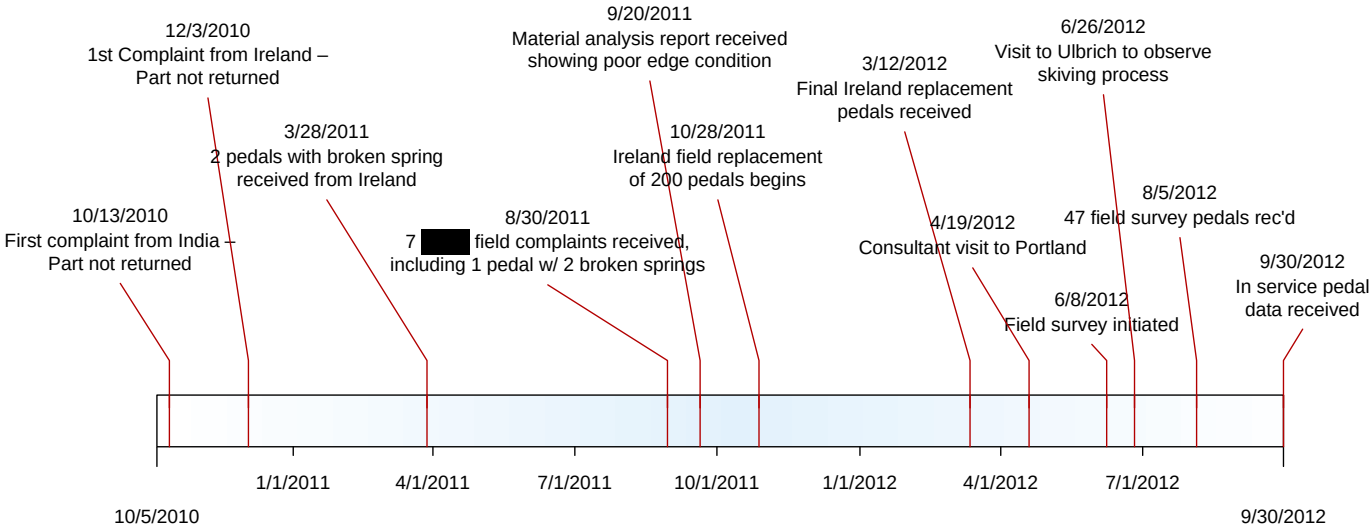
Ongoing monitoring

The confirmed spring conditions at [redacted] have been limited to 9 pedals with 10 broken springs (one pedal with two broken springs). Through the replacement pedal initiative and field survey, an additional 10 at-riskt springs have been identified but are in tact. All of the confirmed fractured and at-risk springs are found to have originated from spring lots from November or December 2007. Of the over 600 springs from the field that have been analyzed, an additional 32 springs from these production dates were examined and found to have no issue.

The WM-526 pedal platform is sold to over 100 customers all over the world in a variety of applications. No other field complaints of broken springs from this time period have been reported and there have been no reports of crashes or injuries associated with broken power springs on a WM-526 pedal.

Williams Controls will continue to closely monitor the field data on WM-526 pedal performance. Should any additional broken power springs be confirmed in the field, additional investigation will be undertaken.

Appendix 1: Timeline of Events for WM-526 spring issue



Appendix 2: Summary of Pedals with fracture or at risk springs due to improper skiving

Group	Claim Number	Pedal Build Date	Return Region	Mode	Spring Lot #	Miles	Good springs	Broken Skiving	At risk springs
1st Field Returns	[redacted]	Not available	India B9R	Skiving mark	N/A	168,202	1	1	0
1st Field Returns	[redacted]	02/15/08	Ireland	Skiving mark	71224	N/A	1	1	0
1st Field Returns	[redacted]	02/15/08	Ireland	Skiving mark	71224	101,257	1	1	0
1st Field Returns	[redacted]	12/28/07	Ireland	Skiving mark	71107	151,455	1	1	0
1st Field Returns	[redacted]	02/15/08	Ireland	Skiving mark	71224	88,717	1	1	0
1st Field Returns	[redacted]	02/15/08	Ireland	Skiving mark	71224	129,068	1	1	0
1st Field Returns	[redacted]	02/15/08	Ireland	Skiving mark	71224	132,669	0	2	0
Ireland Replace	[redacted]	12/28/07	Ireland	Skiving mark	71107	140,393	1	1	0
Ireland Replace	[redacted]	12/25/07	Ireland	At risk	71127	168,824	1	0	1
Ireland Replace	[redacted]	02/15/08	Ireland	At risk	71224	N/A	0	0	2
Ireland Replace	[redacted]	02/15/08	Ireland	At risk	71224	N/A	1	0	1
Ireland Replace	[redacted]	02/15/08	Ireland	At risk	71224	161,999	0	0	2
Ireland Replace	[redacted]B	12/28/07	Ireland	At risk	71107	N/A	0	0	2
Ireland Replace	[redacted]	12/25/07	Ireland	At risk	71127	22,958	0	0	2
Ireland Replace	[redacted]	Not available	Ireland	Skiving mark	N/A	N/A	1	1	0

Appendix 3: Spring lots for analyzed pedals

