14E-045
(29 pages)

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July 14, 2014

SENT VIA EMAIL AND CERTIFIED FIRST CLASS U.S. MAIL

Associate Administrator for Enforcement
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
West Building
Washington, D.C. 20590

RE: DEFECT AND NON COMPLIANCE REPORT
NHTSA IDENTIFICATION NUMBER _____

To Whom It May Concern:

Pursuant to Part 573 of Title 49 of the Code of Federal Regulations, Defect and Noncompliance Reports, Directed, LLC ("Directed") is submitting information concerning a safety related recall action that we would like to voluntarily initiate.

Attached hereto, please find the report, which we are sending via email. We will also send the report and related exhibits via Certified First Class United States mail.

If you have any questions or concerns, please do not hesitate to contact me.

Respectfully submitted,

Christie Biggs
Corporate Counsel
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COMPANY OVERVIEW

Directed, LLC ("DIRECTED") produces consumer-branded vehicle security and remote start systems (sold under Viper®, Clifford®, Python®, AutoStart® as well as other brand names). The company headquarters is located in Vista, California. The street address for this location is One Viper Way – Vista, California 92081.

Pursuant to 49 U.S.C. Section 30118 and 49 CFR Part 573.5(c) a manufacturer who has determined that a safety defect exists must report such a determination to NHTSA within five working days. Directed, LLC through their Corporate Counsel Christie Biggs, whose contact information is as follows: phone, 760.599.3198 and email, christie.biggs@soundunited.com represents Directed, LLC and all correspondence should be sent directly to her.

Directed, LLC is conducting this voluntary recall in the United States and Canada. The products which are the subject of this recall have been sold by Directed in the United States and Canada.

Directed, LLC is fully committed to working in cooperation with NHTSA to conduct a voluntarily product recall of its remote start products. Directed, LLC is requesting guidance and direction from NHTSA in order that they may conduct the recall in a manner that focuses on the safety of the consuming public.

This report contains sensitive, proprietary and confidential information about Directed, LLC's products and certain portions of this report are being provided pursuant to Federal Regulations. Directed, LLC is requesting that NHTSA keep proprietary and trade secret information confidential. Manufacturer's information, dealer lists, and end consumer information will be provided at NHTSA's request.

Directed, LLC makes aftermarket electronic control modules that are professionally installed in motor vehicles to perform the function of remote starting the vehicle for a specific period of time while the vehicle is parked, to enhance the climate control inside the vehicle for the occupant's comfort.

There are several different modules that are used to install the product depending upon the model of the vehicle.

Directed, LLC believes under certain extreme stacking conditions in **push to start vehicles (PTS) only**, some of the electronic modules can send a signal which may shut off the vehicle.

A motor vehicle may shut off under the following stacking conditions which are extremely unlikely:

1. If the vehicle is a push to start **and**
2. Directed, LLC's products must be installed using the OEM key **and**
3. Directed, LLC's products must be installed in a certain configuration **and**
4. A specific function mode must be activated **and**
5. A user must activate a control command through either a Directed smart phone APP or a remote control FOB **and**
6. The user must depress the brake inside of the car or the control module must time out.

RECALLING MANUFACTURER & IMPORTER

49 U.S.C. Section 30164(a) and 49 CFR Part 573.5(c)(1)

As it pertains to the products which are the subject of this recall, the importer of record and the overseas manufacturers are as follows:

Importer of Record:
Directed Electronics Canada, Inc.
2750 Alphonse Gariepy
Lachine, QC, Canada H8T 3M2;

DEI Sales, Inc.
One Viper Way
Vista, California, 92081

Manufacturers:
Directed will provide a list of manufacturers to NHTSA upon request as Exhibit 1. Directed's manufacturers receive specifications from Directed and design Directed's product exclusively based upon Directed's specifications.

RECALL SCOPE AND APPLICATION

CFR 573.5(c)(2)

Motor Vehicle Equipment

The scope of this recall includes the motor vehicles which are affected, the total number of items which contain the defect, and an estimated percentage of the total number of vehicles which may be subject to this recall. The population of motor vehicles affected by this recall are categorized as follows: Application 1 (Autostart)= 700 vehicles. Application 2 (DBALL)= 3,893 vehicles. Application 3 (Tech Tips)= 3,393 vehicles. The total number of SKUs which contain the defect are Application 1 (Autostart)= 101; Application 2 DBALL= 12; Application 3 (Technical Tip)=7, which is approximately Application 1 (Autostart)=.015%, Application 2 (DBALL)= .35%; Application 3 (Technical Tips)= .009% percentage of the total number of vehicles which may be subject to the recall.

The generic products which are the subject of this recall are a remote start system and an interface module. The brand or trade names of these remote starters/interface modules include; Autostart, ProStart, Polar Start, Orbit, Command Start, Nordic Start, Premier Defense, Xpresskit, and XpressStart. Technical tips which need to be updated apply to the following models; Viper, Python, Clifford, Astrostart, Ready Remote, and Avital models. The size of the product is generally a 4x4x2 up to a 8x4x2 inch module that can be installed under the dash and can be connected to the vehicle databus system. The function of the product is to remotely start a vehicle engine. The following part numbers and other identifying characteristics are the subject of this recall:

Autostart:

Part Number	Name	Firmware and version	Initial FW Release	Revised FW Release
CT3271	CTC REMOTE START	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
AS-1271	AS-1271 Remote Starter 1-Way	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
AS1271U	1-WAY RS SYSTEM 2-BUTTON 1TX	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
AS-1272	AS-1272 Remote Starter 1-Way	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
AS-1272U	1-WAY RS SYSTEM 2-BUTTON 2TX	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
AS2272	Remote Starter 1-Way (US Version)	AS-1272 / AS-2272 ver4.2	29-Jul-08	7/14/2014
CT3371	CT-3371 4 button Remote Starter	AS-1475 v4.2	23-Apr-10	7/14/2014

AS-1470	REMOTE START 1-WAY / ONE TX	AS-1475 v4.2	23-Apr-10	7/14/2014
AS-1475	REMOTE START 1-WAY / TWO TX	AS-1475 v4.2	23-Apr-10	7/14/2014
AS-1475U	REMOTE STARTER 1-WAY / TWO TX	AS-1475 v4.2	23-Apr-10	7/14/2014
AS-1774	RS 2X 1W 5B AM FBK HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1774SR	RS 1W 5BT AM SR FBK HDR 2TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1774SRU	RS 1W 5BT AM SR FBK HDR 2TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1774U	RS 2X 1W 5B AM FBK HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1775	AS-1775 Remote Starter 1-Way	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1775U	1-WAY RS SYSTEM 5-BUTTON 2-TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1780	RS 2X 1W 5B AM HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1780U	RS 2X 1W 5B AM HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS2775	1-WAY RS SYSTEM 5-BUTTON 2-TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-2780U	RS 2X 1W 5B AM HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
CS398I	1-WAY RS SYSTEM 5 BUTTON 2 TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
CS498I	RS 2X 1W 5B AM HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
OB-2180		AS-1775 ver 4.5	3-Jun-08	7/14/2014
PD2.8	REMOTE START	AS-1775 ver 4.5	3-Jun-08	7/14/2014
PD3.0	RS 2X 1W 5B AM HDR	AS-1775 ver 4.5	3-Jun-08	7/14/2014
PS-3175		AS-1775 ver 4.5	3-Jun-08	7/14/2014
PS-3175SR	RS 1W 5BT AM SR HDR 2TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
PS-3180	RS 1W 5BT AM SR FBK HDR 2TX	AS-1775 ver 4.5	3-Jun-08	7/14/2014
PS-3180SR		AS-1775 ver 4.5	3-Jun-08	7/14/2014
AS-1875FM	AS-1875FM Remote Starter 1-Way	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-1880FM	RS 2X 1W 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2371TW-FM	2-WAY LED HDR remote start	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-	REMOTE START 2-WAY	AS-2371TW v4.4	29-Jul-10	7/14/2014

2372TWU	LED US			
AS-2373TW-FM-V	VISION REMOTE START 2-WAY LED	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2381TW-FM	RS 1X 2W LED 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2382TWU	RS 2W LED 5B & 1W FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2383TW-FM-V	RS 2W LED 5B & 1W FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2384TW-FM-V	RS 2X 2W LED 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS3372TW	2-WAY REMOTE START	AS-2371TW v4.4	29-Jul-10	7/14/2014
CS-1875i		AS-2371TW v4.4	29-Jul-10	7/14/2014
CS-2371TW-FM	REMOTE START 2-WAY LED	AS-2371TW v4.4	29-Jul-10	7/14/2014
CS-2372TW-FM		AS-2371TW v4.4	29-Jul-10	7/14/2014
CS-2381TW-FM	RS 1X 2W LED 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
EX-1875FM		AS-2371TW v4.4	29-Jul-10	7/14/2014
EX-2371TW-FM	REMOTE START 2-WAY LED	AS-2371TW v4.4	29-Jul-10	7/14/2014
OB-2481	RS 1X 1W 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
OB-2482	RS 2X 1W 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
PD372	2-WAY RS SYSTEM 5 BUTTON 2 TX	AS-2371TW v4.4	29-Jul-10	7/14/2014
PD382	RS 2W LED 5B & 1W FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
PD385	RS 2W 5BT FM LED 2TX	AS-2371TW v4.4	29-Jul-10	7/14/2014
PS-3680FM	RS 2X 1W 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
PS-4681TW-	RS 1X 2W LED 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014

FM				
PS-4681TW-FM	RS 1X 2W LED 5B FM HDR	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-2471TW-FM	2-WAY LCD HDR remote start	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2472TW-FM-V	VISION REMOTE START 2-WAY LCD	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2472TWU	REMOTE START 2-WAY LCD	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2481TWS	RS 2W 5BT SST LCD 1TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2482TWS	RS 2W 5BT SST LCD 2TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2482TWSU	RS 2W 5BT SST LCD 2TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS-2484TWS	RS 2W 5BT SST LCD 2TX 2W	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
AS3472TW	2-WAY RS SYSTEM 6-BUTTON 2-TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
CS-2471TW-FM	REMOTE START 2-WAY LCD	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
CS-2471TW-FM	REMOTE START 2-WAY LCD	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
CS-2481TWS	RS 2W 5BT SST LCD 1TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
EX-2471TW-FM	REMOTE START 2-WAY LCD	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
GS-2472TW-FM		AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
OB-3481	RS 1X 2W LED 5B FM HDR	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
OB-3485	RS 2W 5BT SST LED 1TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
OB-3681	RS 2W LCD 6B FM HDR	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014

PD472	2-WAY RS SYSTEM 6 BUTTON 2 TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
PD485	RS 2W 5BT SST LCD 2TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
PS-4471TW-FM	RS 2W LCD 6B FM HDR	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
PS-4481TWS	RS 2W 5BT SST LCD 1TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
OB-2471	ORBIT REMOTE START 1-WAY 2 TX	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
OB2472	1WAY RS SYSTEM (5BT 2TX FM)	AS-3472 TW-FM, version:4.2	13-Aug-10	7/14/2014
PS-3175E	1-WAY HDR remote start	PS-3175E ver 5.3	2-Jun-10	7/14/2014
PS-3175ESR	RS 1W 5BT AM ECRYP SR HDR 2TX	PS-3175E ver 5.3	2-Jun-10	7/14/2014
PS-3180E	RS 2X 1W 5B AM HDR	PS-3175E ver 5.3	2-Jun-10	7/14/2014
OB-3471		OB-3475v TW-FM version: 3.5	Sept. 2, 2010	7/14/2014
OB-3475	2way FM LED RS system (metal 5 button 1TX)	OB-3475v TW-FM version: 3.5	Sept. 2, 2010	7/14/2014
OB-3671	ORBIT REMOTE START 2-WAY	OB-3671v ver:3.3	03-Sep-10	7/14/2014
PS-4461TWE-FM	2-Way remote start	PS-4461TWE-FM ver 5.2	15-Jun-10	7/14/2014
PS-3655E-FM	1-WAY RS SYSTEM 5-BUTTON 2 TX	PS-4461TWE-FM ver 5.2	15-Jun-10	7/14/2014
PS-4661TWE-FM	2-way remote start	PS-4461TWE-FM ver 5.2	15-Jun-10	7/14/2014
RS-615XR	RS 1W 5BT FM XR 2TX	AS-2371TW v4.4	29-Jul-10	7/14/2014
RS-625	RS 2W 5BT FM LED 2TX	AS-2371TW v4.4	29-Jul-10	7/14/2014
AS-6270	AS-6270 Alarm / Starter Combo 1-Way	AS-6270 v4.2	25-Jun-10	7/14/2014
AS-6270U	1-WAY RSS SYSTEM 5-BUTTON 2-TX	AS-6270 v4.2	25-Jun-10	7/14/2014
AS-6280	RSS 2X 1W 5B AM HDR	AS-6270 v4.2	25-Jun-10	7/14/2014
AS-6280U	RSS 2X 1W 5B AM HDR	AS-6270 v4.2	25-Jun-10	7/14/2014
PS-7270	POLAR START COMBO ONE-WAY	AS-6270 v4.2	25-Jun-10	7/14/2014
AS-	REMOTE STATER	PS-7870 ver:5.0	26-May-10	7/14/2014

6870TW-FM	COMBO 2-WAY			
AS-6870TWU	REMOTE START 2-WAY LCD US	PS-7870 ver:5.0	26-May-10	7/14/2014
AS-6880TWS	RSS 2W 5BT SST LCD 2TX	PS-7870 ver:5.0	26-May-10	7/14/2014
AS-6880TWSU	RSS 2W 5BT SST LCD 2TX	PS-7870 ver:5.0	26-May-10	7/14/2014
CS-6870TW-FM	SECURITY / RS 2-WAY LCD	PS-7870 ver:5.0	26-May-10	7/14/2014
EX-6870TW-FM	SECURITY / RS 2-WAY LCD	PS-7870 ver:5.0	26-May-10	7/14/2014
PD870	2-WAY RSS SYSTEM 6 BUTTON 2 TX	PS-7870 ver:5.0	26-May-10	7/14/2014
PS-7880TWS	RSS 2W 5BT SST LCD 2TX	PS-7870 ver:5.0	26-May-10	7/14/2014
PS-7870TWE-FM	2-WAY RSS SYSTEM 6 BUTTON 2 TX	PS-7870 ver:5.0	26-May-10	7/14/2014+B7A1:E101

DBALL, DBALL2, DBALL2PRO FW

FW name	Revisions of FW impacted	Original FW Posted date	Removal date	Total Number of downloads
401.AUKI	2.02 to 2.20	3/22/2011	5/16/2014	1654
402.AUKI	2.18 to 2.17	9/26/2013	5/16/2014	525
401.TOKI01	2.00 to 2.19	1/3/2011	6/11/2014	173
402.TOKI01	2.09 to 2.28	9/26/2013	6/11/2014	137
401.AUDI02	1.03 to 2.28	9/28/2012	6/5/2014	1691
402.AUDI02	2.11 to 2.28	10/4/2013	6/5/2014	1152
401.TOKI02	1.00.06 to 2.28	5/9/2012	6/5/2014	1310
402.TOKI02	2.20 to 2.28	9/26/2013	6/11/2014	440
401.VW02	2.12 to 3.70	6/14/2012	6/19/2014	5590
402.VW02	3.36 to 3.70	9/26/2013	6/20/2014	2226
401.VW03	0.11 to 0.21	2/19/2013	7/11/2014	106
402.VW03	0.11 to 0.49	9/16/2013	7/11/2014	70

800.AUKI	2.18.262 to 2.20.284	6/17/13 (Never published - used for testing only)	Never published –Alpha	58
800.TOKI01	2.03.223 to 2.19.29	2/18/2014 (Never published – used for testing only)	Never published - Internal	2

TECHNICAL TIPS

Location	Name	Part Number/File name	Creation Date	Date no longer available
Directechs posting	Push-to-Start with 1101T	1301	7/20/2010	Jul-14
	Push-to-Start with 556UW/TBXKEY	1302	7/20/2010	Jul-14
	First Generation GM Push-to-Start	1611	6/17/2010	Jul-14
Astrochart posting	Toyota Camry XLE Remote Starter Installation Diagram	camry(2)	2003	2008
	Toyota Camry Hybrid Remote Starter Installation Diagram	camry	2003	2008
	Infiniti M35 Ignition & Start Diagram	m35	2003	2008
	Toyota Prius Remote Starter Installation Diagram	Prius	2003	2008

SKU Lists

Attached as Exhibit #2 are lists of all of the SKUs which Directed has identified as being relevant to this recall.

Dealer Lists

Exhibit # 3 lists all of the Dealers(customers) who have purchased defective products from Directed. This will be provided at NHTSA's request as Exhibit #3.

End Consumers Who Have Registered their Products with Directed.

End consumers who have purchased their products from a Directed dealer and have electronically registered their products with Directed are listed in Exhibit #4. This Exhibit will be provided at NHTSA's request.

DESCRIPTION OF THE SAFETY DEFECT OR NON-COMPLIANCE

49 CFR Part 573.5(c)(5)

On May 21, 2014, Directed had its first notification that a software malfunction may have occurred with its product. Directed received one report from their distributor that their product may have had a software malfunction under specific circumstances. The following series of events were incorporated into Directed's investigation of the reported issue. After Directed's internal investigation, Directed's engineering team determined that the issue could be reproduced during a bench test. Directed has not tested other manufacturers' products so Directed cannot confirm at this time if there are issues with other manufacturers' products. Below is a specific timeline of the events that led Directed to report to NHTSA:

Timeline of Events:

May 21, 2014—May 28, 2014: On May 21, 2014, Directed received notification that a software malfunction may have occurred with a Directed product. Upon receipt of the notification, Directed entered into an investigation and additional inquiries were made regarding the facts and circumstances relevant to the initial report.

May 28, 2014 – June 6, 2014: Upon receipt of additional facts, Directed formalized the investigation process to determine the validity and the scope of the potential issue. Directed began its due diligence and assembled groups to ascertain the validity and scope of the potential problem. During this time, a request for a root cause analysis was requested of Directed's engineering team. Directed's engineering team continued to investigate potential relevant root causes. Directed began to outline the potential issues which were relevant to the software in the product.

June 6, 2014 - June 30, 2014: Directed's engineering team began performing tests to determine if their hypothesis in relation to the software could be replicated based on the report which they received on May 21, 2014. Bench tests were performed and in-vehicle tests were performed. Directed stopped shipping its products because they were still uncertain as to the scope of the potential defect.

July 1, 2014 - July 10, 2014: During the course of investigating the root cause of Directed's software issues, they became concerned that other platforms could also be affected by the software issue. Therefore, Directed commenced an investigation of all other platforms which related to push to start applications. As a result of Directed's engineering investigation of multiple platforms, additional platforms were identified and the technical tips that correlated to the product installation were also identified. Directed's engineers began developing software upgrades that could be applied to all affected units. Additionally, Directed's engineers investigated the specific tools which would be required to re-flash units to enable Dealers to easily update the software. Both the software upgrades and the specific tools which would be necessary to re-flash the units were tested for accuracy and proficiency and it was determined that this process would take additional time to develop.

July 10, 2014: Directed's engineering team held a conference call with Directed's Executive Leadership and with Directed's Legal Team and reported that they had determined the root cause of the issue to be a software issue which may need to be reported to NHTSA and a voluntary recall may need to be undertaken by Directed.

July 11, 2014 – July 13 2014: Directed's legal team began working to assemble the defect report regarding the issue to NHTSA. The Directed engineering team continued to identify potential issues relevant to fixing the problem and implementing the repairs which would be necessary for updating the technical tips and creating the tools that the Dealers would need to re-flash the software.

July 14, 2014: **To date, Directed has not received any reports from any member of the consuming public regarding this issue nor has Directed received any reports of injury or property damage from the consuming public regarding this product.**

Directed reported the issue to NHTSA in the United States.

TECHNICAL ENGINEERING ANALYSIS

The following information was developed by Directed's engineering department. This engineering analysis is a detailed explanation which includes diagrams and product installation guidelines which will assist NHTSA in understanding the potential defects identified by Directed (root cause analysis) as well as the remedy (fix) which Directed believes will solve the potential safety defect. The following sections are included in this engineering analysis:

- The reported failure
- The background of the reported failure
- Initial troubleshooting
- System configuration and operation
- Failure mode/root cause
- Corrective actions
- Product modifications
- Technical tips and solutions

Additionally, a Failure Mode Effect Analysis (FMEA) has been added as Exhibit #5 and the following installation guidelines have been attached as Exhibits to assist NHTSA in understanding Directed's products and the changes which have been made to their installation guidelines to address this issue. The following installation guidelines are contained as Exhibits:

- Exhibit #6 – The DBALL installation guideline
- Exhibit #7 – The Autostart installation guideline (before revision)
- Exhibit #8 – The Autostart installation guideline (after revision)

Reported Failure

In push to start vehicles with subject remote start module or interface module installed, the vehicle engine may shut down unexpectedly while driving. If the vehicle engine is running, and the on/off button of the remote start handheld remote or any system phone application is depressed, and then the vehicle brake is applied, the system may shut down the vehicle engine. If the vehicle is in motion at the time of shut down, power to the vehicle's steering and braking systems may be effected. These situations have the potential to cause the driver to lose control of the vehicle, creating the risk of collision, damage to the vehicle and surrounding property or other serious personal injury.

There are three use cases where the nonconformity may express itself (referred to herein as Use Case #1, Use Case #2, and Use Case #3, respectively).

Use Case #1:

1. Remote Start Product

a) The product was installed in a push to start vehicle;

b) A key in the box method of installation was used; and

c) The remote start unit's idle mode was selected during installation.

Use Case #2:

2. DBALL used with or without a remote start system where the unit was installed in an:

a) Audi or Volkswagen vehicle; and

b) having a push to start ignition system

Use Case #3:

3. Certain installation technical tip "Tech-Tip" releases via Directed's technical support website www.directechs.com provided instructions. If the listed Tech-Tip has been downloaded or printed and used, the nonconformity may express itself.

Background of the Reported Failure

On May 21, 2014, Directed received an informal report from a distributor of its product of the possibility of the malfunction. The report indicated that a person, not in the vehicle, was demonstrating the remote start feature of its smart phone application paired with a remote start "SmartStart" cell modem module installed in the vehicle. When the remote start button of the phone application was depressed, the vehicle engine shut down.

Initial Troubleshooting Summary:

An investigation was immediately initiated upon receipt of the report to determine whether the failure mode was possible and to isolate the root cause. After bench testing and additional investigation, Directed determined there was a possibility of the occurrence in limited cases. Directed has not received any reports of actual engine shut down while driving, and no injuries have been reported to date. Directed's findings supported the possibility of a malfunction only in a very specific installation configuration, **exclusively in push to start vehicles**.

Directed has determined that the root cause of the unintentional engine shut down is a software problem. Specifically, the software did not include a sequence to prevent the vehicle's push to start ignition switch from toggling to the OFF position when the remote start unit exits idle mode. This resulted in the main module entering idle mode with depression of the on/off button of the remote start system. There is no risk to vehicles with a manual key start ignition.

System Configuration and Operation

The relevant items for the failure mode are the installation type, system configuration, relevant wiring of the remote starter module and the "IDLE MODE" feature.

Installation type:

The digital remote start interface module is designed to remote start a specific number of vehicles which are defined using an online vehicles application lookup chart available to installers. Unlike conventional generic remote starters, there is an additional layer of configuration required to complete the installation. Also unlike conventional remote starters, the digital system interacts with the vehicle's databus, therefore allowing it to detect data points to ensure driver safety.

The digital remote start interface module electronics must have the ability to "bypass" all OEM anti-theft mechanisms present in that vehicle. There are two methods to achieve this. The first, most common and preferred solution is to use a digital firmware solution on the digital device. The combination of the digital override firmware and the hw device will electronically

circumvent the vehicle immobilizer system typically by emulating the key transponder found in the user key via a variety of methods to enable engine start.

The second, less desirable solution is to do a "Key in a box" approach. This approach takes one of the keys from the driver permanently and must be used in the very rare case as digital override firmware is not available due to feasibility and a key in the box type setup is then required.

Using a "key in the box" setup, the OEM key is installed in a dedicated module, or alternate method (See install diagram in wiring section) which is then hidden in the vehicle.

Only when activated by the digital remote starter, this setup acts as a bridge between the key and the vehicle LF sensors (Antenna found around the PTS switch or key port) at the time a remote start sequence is initiated.

It allows the vehicle to see the key when needed and prevents it in all other conditions to keep the vehicle secure from theft. This method is more elaborate to install, the user will have to give up a key, and in general, it is a legacy approach trending toward extinction with the expansion of the digital bypass firmware for the remaining few unsupported models. We will refer to these two types of installations as "interface module" or "key in a box".

It's important to note that the failure mode only exists in "key in the box" installations using a limited set of firmware's on a smaller subset of push to start vehicle models.

Corrective Action Summary For Use Case #1:

The push to start feature in all software versions have been disabled in the remote starter module software. The software revisions prevent the "PTS output control (-)" wire from sending an engine start or shut down output under any circumstance. The feature is no longer available.

Use Case #1:

Details of Software Modification for the PTS Feature Correction:

The software modification consists of:

1. A function to force the PTS option variable to "disabled" both in EEPROM and in the corresponding runtime variable.
2. Four places where this function may occur, include:

a. when the PRG issues a "read options" command
b. when the PRG issues a "write options" command
c. when the hood-switch is used to save settings and exit programming mode
d. when the unit powers up

Effect of the Software Change

The effect of the PTS rework is to cause the logic of the Remote Start to behave precisely as if the installer configured the PTS option to be disabled, even if the installer enabled it. The installer would then discover through testing, that the PTS was not functioning. Upon reading back the option with the PRG tool, the installer would see that it had returned to being disabled. No matter how many times they tried, or whether trying with PRG or hood switch, it would always stay disabled.

Use Case #2:

Initial Troubleshooting Summary:

An investigation was immediately initiated upon receipt of the report to determine whether the failure mode was possible and to isolate the root cause. Directed's findings supported the possibility of this event in a very specific installation configuration, exclusively to PTS vehicles, which had to have a shorter than average engine shutdown ignition button press timing threshold, and the expression of the malfunction could only occur after executing specific commands on a key fob or Smartphone that is paired with the remote starter system in question.

System Configuration

In order to enable the installation of the digital remote starter in a PTS vehicle with a "Key in a box" approach", the digital remote starter module must be "flashed" with the vehicle specific firmware required to complete the installation. The process is accomplished using the following steps which have been outlined in Directed's updated installation guidelines.

Make all the required connections to the vehicle, as described in the wiring diagram(s) found in this guide, and double check to ensure everything is correct prior to moving onto the next step.

Note: Before connecting either the XL202 or SmartStart module to DBALL, it is important to ensure that the proper feature and function programming is selected using XpressVIP (version 4.5 or higher). Visit www.xpresskit.com to download the latest version of the application.

⚠ **Warning!** To take advantage of advanced features, you must use XpressVIP 4.5 or higher. Using version 2.9 or 3.1 will limit available functions and features.

1. Connect the interface module to your computer using the **XKLoader2**.
2. Open an Internet Explorer browser (version 6 or higher), and go to www.xpresskit.com. The detail of the platform and firmware that is currently saved on the interface module will be indicated in the top left corner of the page.
3. Select the **year**, **make** and **model** of the vehicle; the page will refresh to display the compatible firmware.
4. In the search result page, select one of the available install options (config for RSR, RXT or Standard install), and follow the instructions provided on the screen.
5. Once you have configured your options, click on the **FLASH** button to upload the firmware onto the interface module.
6. The following message will be displayed when the upload is completed:
   "The flashing is successfully completed. You may now unplug the kit."
   You can now proceed with the programming instructions below.

IMPORTANT: All digital remote starter modules must be configured prior to installation using the above process and do not ship with any type of firmware preloaded on the device.

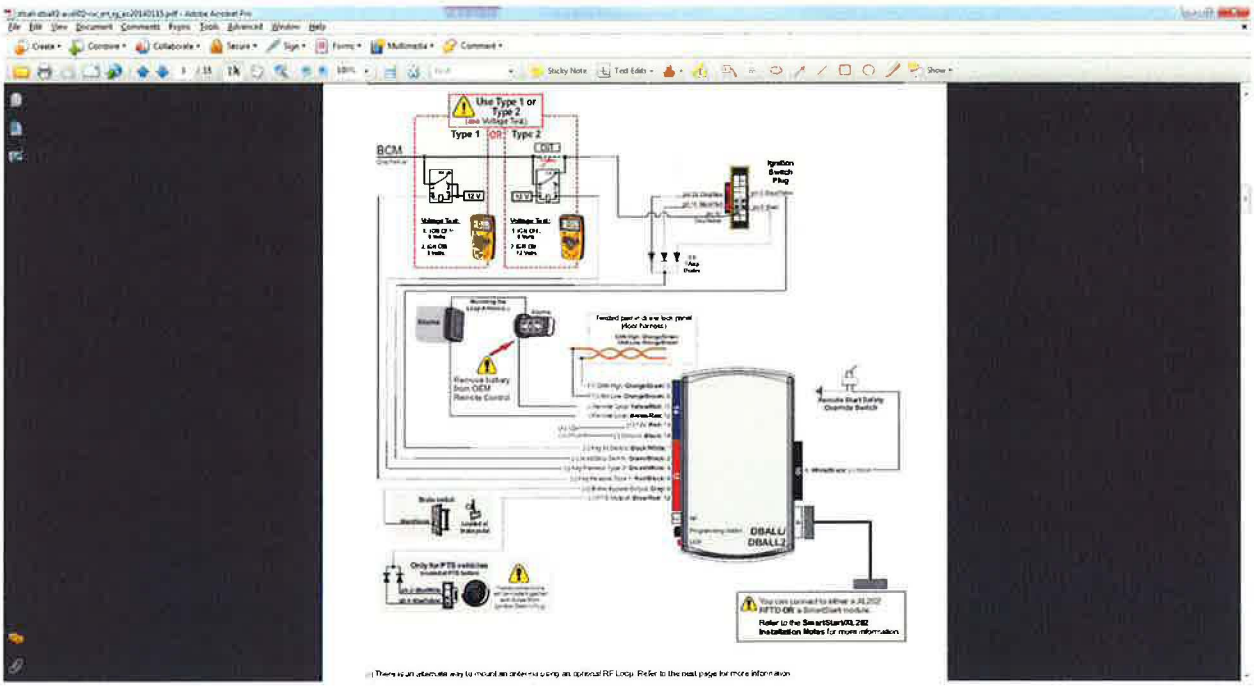
All flash logs are stored to track device history and users. Each device has a unique identification that enables Directed to determine how many vehicles where configured using the affected firmware on the digital remote starter.

Wiring

The digital remote starter module can be wired in a variety of different ways depending on the vehicle type, firmware solution, and selected options.

*The relevant wiring for this failure mode is listed below.

- 12 wire (+)
- GND (-)
- PTS output control (-)
- Brake bypass output (-)
- Key release type 1 (-)
- Key release type 2 (-)
- Start stop switch (-)
- Key in switch (-)
- FT CAN High
- FT CAN Low
- Override switch/hood switch input (-)



Failure Mode and Root Cause

Failure Mode defined

- Engine running (Keyfob in the car/doors closed)
- Remote start in a specific mode, referred to as "Pit Stop Mode" is activated by either remote starter key fob/Smartphone/or other external trigger input* (Parking lights confirm mode state – ON for pit stop mode active (Runtime set)
- "PIT STOP MODE" state behavior is identical to remote starter (Follows all safety and timeout shut down procedures) – See feature flow chart for detailed operation --
    a. Brakes pressed
    b. Runtime expires
    c. Doors unlocked (Activates remote starter take over timer – 1.5 to 3min shut down timer)
- If any safety or timeout shut down conditions occur, remote starter sends PTS shut down signal
    a. PTS shut down command will result in vehicle engine turning off**

*Activated by pressing any of the command buttons on the remote control or on the Smartphone application

**Most vehicles require extended or multiple PTS presses to shut off engine while driving, all Directed remote starters send single pulse of lengths between 100 & 1200ms.

Root Cause

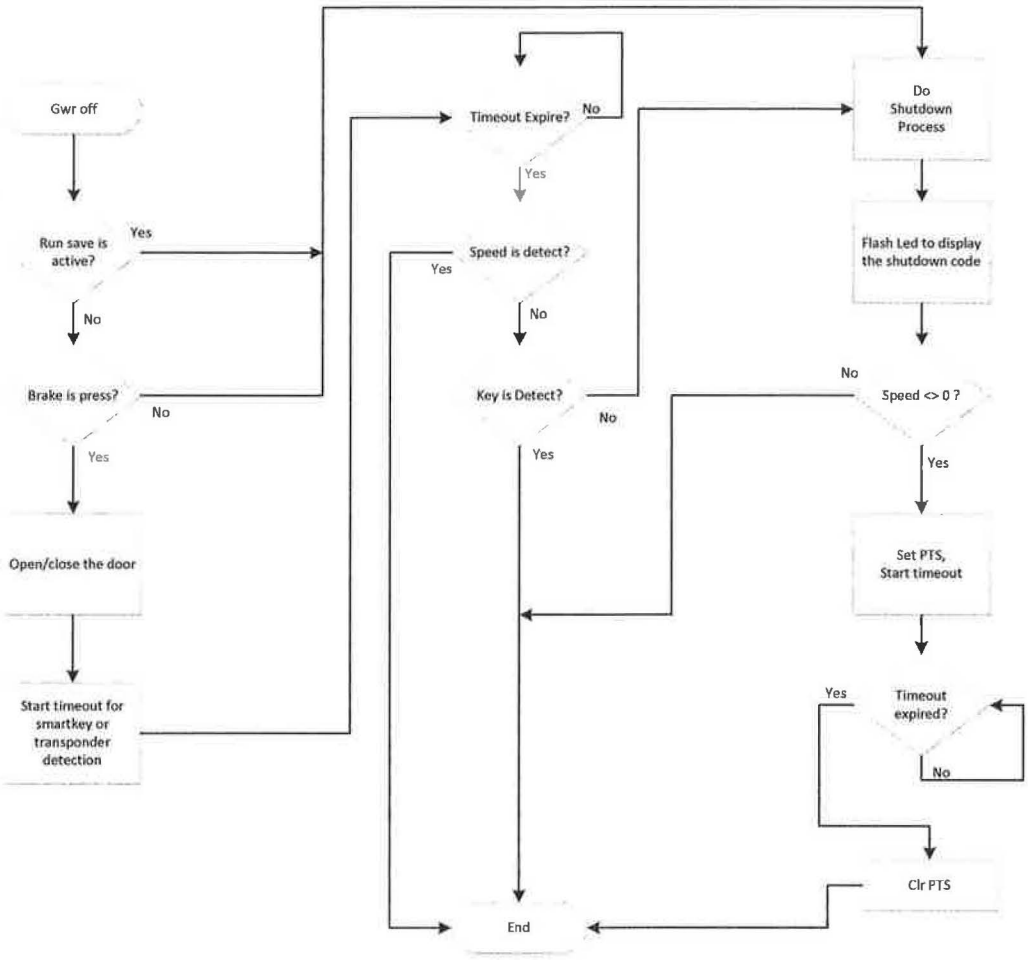
The remote starter module configured for PTS and installed with a "Key in the Box" doesn't lock out the "PIT STOP MODE" feature while in motion. This allows an engine shutdown pulse to be sent to the vehicle PTS switch causing the engine shut down condition.

The failure mode condition is limited to only some applications due to built-in safety mechanisms in the application's core which are designed to make this occurrence impossible.

The main safety mechanism built into all firmware applications is;

- Speed detection (If moving will not allow shut down)
  **Speed detection is accomplished via the vehicles CAN Bus. If vehicles moves >2KM/h a bit is set to 1. Upon pit stop mode activation attempt a check is performed. If bit is set to 1 then pit stop mode cannot be activated thus preventing any potential shut down condition.*

Shutdown function for PTS car, timeout is define by firmware



Corrective Action

1- All firmware's that were affected have been isolated and removed from any and all access by installers or others.
2- The affected firmware's have all been updated to include the safety mechanism.
3- New code review processes were defined to ensure all firmware applications include the speed detection safety shut down process.
4- Validation process changed to include testing of the failure condition in all vehicles
5- All customers/flashes with affected firmware have been identified.

Use Case #3:

TECHNICAL NONCONFORMANCE

Directed provides to installers technical support information and data that are referred to as technical tips ("Tech-Tip") to assist in the installation of its products. Certain Tech-Tips were provided, that when followed, could result in the installation of a remote start module in a manner that could result in the engine shutdown.

Below is a description of the problem encountered in starting a PTS vehicle without the Tech-Tip solution. There are 3 critical connections from the remote starter module to the vehicle;

1. The CRANK output, this wire provides the 12V signal to the brake pedal switch to simulate a brake press.
2. The START output, this wire provides the negative signal to the PTS switch to simulate the driver pressing the ignition switch.
3. The BRAKE INPUT, this is a sensing wire also connected to the brake switch to provide brake status to the remote starter module.

In this installation configuration, when a remote start is initiated, the CRANK and START outputs are activated, the BRAKE INPUT is monitored and will sense a brake press since it's connected to the same point as the CRANK wire at the brake pedal.

The remote starter has a few "Safety shut down" features one of which is brake sense. The purpose of this feature is to prevent a situation where a would be thief would enter the vehicle without authorization and attempt to drive off without having the key fob. Entering the vehicle and pressing the brakes without the key fob will results in engine shut down. This is one of the functions of the brake sense input. In order to preserve the brake sense feature and enable a successful remote engine start, we must isolate the "CRANK" and "BRAKE SENSE INPUT" lines.

Tech-Tip 1301 was created to address this issue.

Technical Tip Solution

Tech-Tip 1301 depicted below solves two issues but introduces one potential safety concern. The first, it overcomes the failure to successfully start the engine in a PTS installation. The second, enables the takeover feature and ability to shut down the engine when needed.

Solving the engine starting problem

This problem is addressed by adding the first relay depicted in the bottom of the diagram connected to the brake pedal and named "Relay for brake interface". The purpose of this relay

is to break the connection between the "CRANK" output and the "BRAKE INPUT" wiring at the moment a remote start command is initiated. It effectively prevents the "BRAKE INPUT" line to see the brake pedal activation signal from the "CRANK" wire and eliminates the condition that prevents engine start.

Note. This portion of the Tech-Tip solves the engine starting problem without introducing any safety concerns.

Enabling the Takeover Feature

The optional second relay in the Tech-Tip at the top of the diagram named "Relay for takeover" prevents the remote starter module from shutting down the engine when transitioning from a remote started state to drive off.

The remote starter module doesn't have any way of detecting the presence of the key fob when the driver enters the cabin, if the brake is pressed to put the car in gear, the brake safety shut down will trigger and send a shutdown pulse to the PTS switch via the "AUX 3" output to prevent theft.

The purpose of the optional second relay is to break the connection between "AUX 3" and the PTS switch when the user disarms the vehicle with the key fob. This allows the driver to press the brake pedal and put the car in gear without causing an engine shut down.

The relay also provides a path from "AUX 3" to the PTS switch for engine shut down control.

Potential Failure Mode and Root Cause

Potential Failure Mode

When the remote starter module idle mode is enabled, any of the safety shut down features will send a shutdown pulse on AUX 3. Entering idle mode is achieved by pressing any of the remote starter key fob buttons (Or Smartphone buttons).

Root Cause

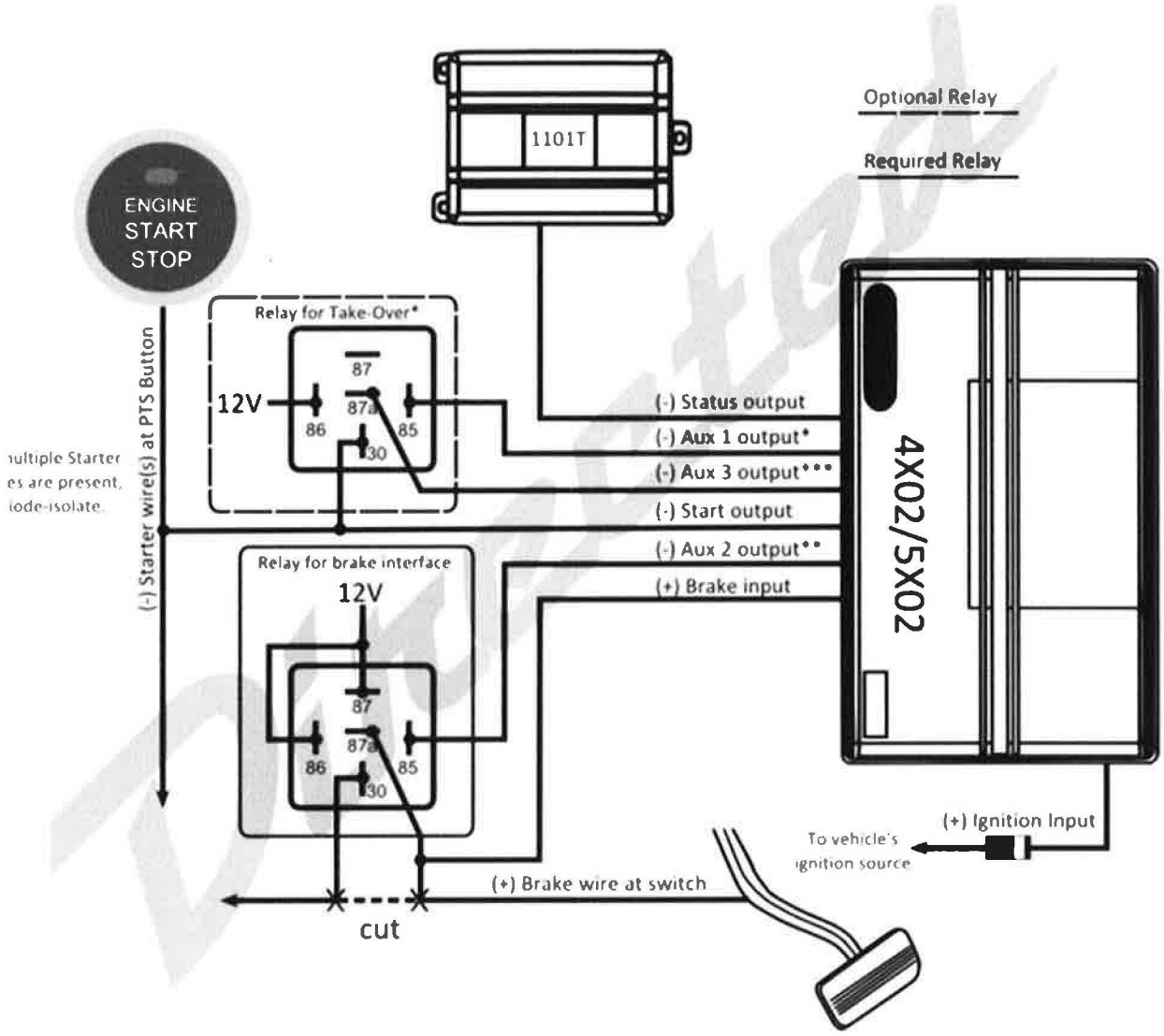
Since the optional second relay provides a path from AUX 3 to the PTS switch, if idle mode is engaged and any of the shutdown features such as brake press are triggered, a shutdown pulse will be sent from AUX 3 to the PTS switch and will shut the engine OFF. This can occur while driving.

Corrective Action

Tech-Tip 1301 successfully solves one fundamental issue supporting a PTS installation without the introduction of any safety concerns. The second solution in support of the takeover function is where the tech tip introduces a safety concern associated with an unexpected engine shut down.

Considering the impact of each element in the Tech-Tip, the need to solve the real world issue in a PTS installation for our customers and the proven reliability of the engine start section of the Tech-Tip, the reasonable course of action is to;

1. Eliminate the safety issue by deleting the relay take over support section from the Tech-Tip which eliminates the safety issue
2. Educate our installer base (Customers) of this change by
    a. Updating documents and Installation Guidelines
    b. Updating Website information
    c. Conducting a global communication protocol for all Dealers.


1101T
Optional Relay
Required Relay
ENGINE
START
STOP
Relay for Take-Over*
87
12V
87a
86
85
30
(-) Status output
(-) Aux 1 output*
(-) Aux 3 output***
(-) Start output
(-) Aux 2 output**
(+) Brake input
4X02/5X02
ıultiple Starter
es are present,
iode-isolate.
(-) Starter wire(s) at PTS Button
Relay for brake interface
12V
87
87a
86
85
30
(+) Ignition Input
To vehicle's
ignition source
(+) Brake wire at switch
cut

RECALL SCHEDULE/RECALL DEPLOYMENT

49 CFR Part 573.5(c)(8)(ii)

Currently at Directed, our highest priority globally for the company is to cast the broadest net to communicate this recall. Our global communication plan has identified 36 unique **audiences** (including consumers, dealers, and press) utilizing 28 unique **mediums** (including trainings, websites, print, call centers) to communicate 20 unique **messages** that are all clear and actionable. The global campaign will have two public focus points for all communications in English and French.

1. www.directed.com/recall

2. A dedicated 1 800 number managed by an experienced industry third party call center. All global communications will be reviewed and approved by Jim Jardin, Directed Vice President of Marketing a 20 year employee of the company.

In order to ensure flawless execution of our communication plan, a launch date has been set for Thursday July 24th at 8 a.m. pacific time. The recall bulletin (See Exhibit #9), the consumer/owner letter (See Exhibit #10), and the dealer letter (See Exhibit #11) have been submitted with this document for review. Other key documents and delivery dates will be following this schedule:

- Service Bulletin — Submitted 7/17/14
- Dealer Letter — Submitted 7/17/14
- Retailer Kit — Submitted 7/17/14
- Press Release — Submitted 7/18/14

To ensure the consistency and urgency of the communication plan, Directed is gathering our entire global sales team of over 50 representatives for an in person training at our Vista, California location on Tuesday July 22nd. All other global employees will be either trained or notified prior to the launch date. All electronic mediums will be live on July 24th, and it is our goal to have all Consumer letters and Retailer Kits arrive at their locations on or before July 28th.

RECALL REMEDY

49 CFR Part 573.5(c)

Communications

As noted in the previous section, Directed will deploy numerous strategies to communicate this recall with a clear and actionable campaign in both the United States and Canada. The communication campaign will include, but is not limited to the following:

- A phone center
- Web registration to identify end consumers
- Website Icon to explain the recall
- Point of Sale Posters
- Dealer letters
- End consumer letters
- Press Releases
- Internal training/internal communication for the entire sales force

Owners of Motor Vehicle Equipment

The specific owners who have purchased the motor vehicle equipment which is the subject of this recall may be difficult to identify. Directed is using every available media source to identify end consumers. Exhibit #4 is a list of all of the end consumers who registered their products with Directed. The following is an explanation of how Directed assembled this list.

Background:

- US based shipments- 100% of Directed system ship with a printed warranty registration card. The card can also be filled out on line.
- Canada based shipments - For U.S. brands that are sent to Directed's Canadian location, and then are sent to Canadian retailers contain the same warranty cards as outlined above. All other systems that ship from Canada contain no warranty card.

Percent of Total Population:

- From January 1, 2007 to June 6, 2014, Directed has shipped remote start systems throughout the U.S. and Canada.
- From the same date range, Directed has a total number of completed warranty cards in the range of 182,410.

Recall Model Number Sort:

- Directed took the list of their recall part numbers and cross referenced by the product model number field from Directed's total warranty card database of 182,410.
- From this sort, Directed had a TOTAL of ALL matches by ALL part numbers of 199 consumers, which are reported in Exhibit #4.

Refund, Replace and Repair Options

When product is returned to a dealer by an end user, Directed will provide the dealer with a financial incentive to swap out the product that is in the end user's vehicle. Directed will provide the dealer's with a tool for in-field flash and immediate software upgrades of the units. All of the DBALL units require software loading at the time of installation in the vehicle. All units of the interface will be upgraded with the updated software prior to installation.

Defect and Non-Compliance Notification to Purchasers

49 U.S.C. Part 30119

Directed will make every effort to reach out to end consumers. However, it is important to note that Directed **does not** sell its products directly to the end consumer. Therefore, Directed has made a business decision to reach out to end consumers in the following ways:

- Letters will be sent certified first class U.S. mail to end consumers who completed registration card information and sent it to Directed.
- Point of Sale Posters
- Various news media
- Website Information
- Web registration for end consumers so they can be identified by Directed.

Owner Notification Envelope

All owner letter envelopes must display the label shown below. The label must be one inch by three inch (1x3) in size and placed on the front of the envelope. Directed is requesting that NHTSA provide the label indicated below for our recall.

IMPORTANT SAFETY RECALL INFORMATION

U.S. Department of Transportation

Issued in Accordance With Federal Law

NHTSA

www.nhtsa.gov

RECALL MONITORING AND PERFORMANCE

Quarterly Status Reports

49 CFR Part 573.6

Quarterly status reports regarding recall deployment are required to be submitted by the 30th of the month at the end of each calendar quarter. Directed will provide a quarterly report to NHTSA which will include:

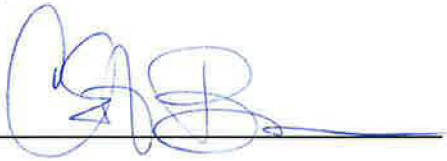
- General corporate information (name and contact information)
- NHTSA recall campaign number
- The date the notification to purchasers began and was completed.
- The total number of items of equipment involved.
- Number of items returned from inventory or remedied prior to sale.
- The total number of products inspected and remedied.
- The total number of products inspected and not requiring a remedy.
- The total number of items determined to be unreachable and include items which were stolen, scrapped, unable to notify, or otherwise unreachable.

CONCLUSION

Directed, LLC is deploying a companywide global recall in the United States and Canada. Directed is committed to the safety of the consumers who purchased our product. Members of Directed's executive staff, legal department and engineering personnel will be available to answer any questions or concerns that NHTSA may have.

Thank you for your assistance and guidance in this endeavor.

Respectfully submitted,

Signature: 

Dated: July 14, 2014

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