

SS 1034298 - New Cascadia Engine Harness Chafe at A06-95037-000 Bracket

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Applicable Vehicles

All New Cascadia HDEP (Detroit Engine), especially those manufactured prior to 12/13/2018.

Symptoms and Components or Features potentially affected:

Engine No-Start
Powertrain feature(s) intermittent or inop
PTCAN or 500K communication problems

Engine (MCM)
Engine Cooling Fan
Engine Air Intake
Engine Starter Control
Alternator Charging
HVAC Compressor
Coolant Level Indication
Optimized Idle (OI) Alarm
Aftertreatment (ACM)
Transmission (TCM)
Transmission Temperature
Vehicle Speed
Neutral Switch
Backup Light
PTO
PTCAN buss
H1939 (500K) buss

Issue

Refer to D66-06132, page 3. The junction pictured there is susceptible to chafe on engine harness mounting bracket A06-95037-000. A spreadsheet list of circuits running through that point is attached here.

Case Study

Sample Serial KB0064

286-C16417 (Wiring - Engine)

A06-95037-000 (BRKT-MULTI MOD SUPT,HDEP,FPT)

L06-90227 (LAYOUT-ENG,HDEP,FPT)

D66-06132 (INSTL-ENG HARN,HDEP,FPT)

Solution

Remove tie straps attaching the engine harness and inspect for wire chafe point(s). Repair harness according to TSB 54-290. Consider adding wrap material like 48-26131-002 (similar to Federal Mogul TwistTube 2420) to prevent future damage. Verify harness is routed away from rubbing on bracket, frame rail, or other features and reattach.

RefDes	Cavity	PartNo	Circuit
DL_ENG_O_RES_DL_1939_1A	1	23-13148-204	H1939+ # 1603 (W-Y)
DL_ENG_O_RES_DL_1939_1A	2	23-13148-204	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939-_XMSN_1A	X	A23-13823-000	H1939- # 1603 (W-DKG)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
DL_ENG_O_S_H1939+_XMSN_1A	X	A23-13823-000	H1939+ # 1603 (W-Y)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439A_2A	X	A23-13823-000	439A # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_CTRL_ENG_O_S_439B_3A	X	A23-13823-000	439B # 1512 (GY)
ENG_FAN_ENG_O_SOL_ENG_FAN_1A	A	23-13142-202	439L+ # 1512 (GY)
ENG_FAN_ENG_O_SOL_ENG_FAN_1A	B	23-13142-202	439L # 1512 (GY)
ENG_H_DASH_BHA_1B	12	23-13153-007	232E # 1803 (W)
ENG_H_DASH_BHA_1B	12	23-13153-007	232E # 1803 (W)
ENG_H_DASH_BHA_1B	13	23-13153-007	232D # 1803 (W)
ENG_H_DASH_BHA_1B	13	23-13153-007	232D # 1803 (W)
ENG_H_DASH_BHA_1B	14	23-13153-007	97C # 2301 (LTBL)
ENG_H_DASH_BHA_1B	14	23-13153-007	508P+ # 2008 (Y)
ENG_H_DASH_BHA_1B	14	23-13153-007	508P+ # 2008 (Y)
ENG_H_DASH_BHA_1B	15	23-13153-007	508P- # 2008 (DKG)
ENG_H_DASH_BHA_1B	15	23-13153-007	508P- # 2008 (DKG)
ENG_H_DASH_BHA_1B	18	23-13153-007	62TL # 1512 (GY)
ENG_H_DASH_BHA_1B	18	23-13153-007	62TL # 1512 (GY)
ENG_H_DASH_BHA_1B	19	23-13153-007	62TH # 1512 (LTBL*)
ENG_H_DASH_BHA_1B	19	23-13153-007	62TH # 1512 (LTBL*)
ENG_H_DASH_BHA_1B	20	23-13153-007	62AL # 1512 (GY)

GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G3_1A	1	23-11194-404	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_CHAS_F_O_RTERM_MGJB_G4_2A	1	23-11194-412	GNDE # 1206 (BK-W)
GND_PWRTN_ENG_O_S_GNDE_15A	X	A23-13823-000	GNDE # 1206 (BK-W)
GND_PWRTN_ENG_O_S_GNDE_15A	X	A23-13823-000	GNDE # 1206 (BK-W)
GND_PWRTN_ENG_O_S_GNDE_15A	X	A23-13823-000	GNDE # 1206 (BK-W)
GND_PWRTN_ENG_O_S_GNDE_15A	X	A23-13823-000	GNDE # 1206 (BK-W)
PTO_ENG_O_RTERM_MGJB_1A	1	23-11194-416	GND # 1204 (BK)
PTO_ENG_O_RTERM_MGJB_1A	1	23-11194-416	GND # 1204 (BK)
TRANS_AUX_ENG_O_S_200_1A	X	A23-13823-000	200 # 1413 (PRP)
TRANS_AUX_ENG_O_S_497Y_1A	X	A23-13823-000	497Y # 1803 (W)
TRANS_AUX_ENG_O_TRANS_CTRL_1A	A	23-13142-202	232E # 1803 (W)
TRANS_AUX_ENG_O_TRANS_CTRL_1A	B	23-13142-202	497Y # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	1	23-13153-056	497Y # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	1	23-13153-056	497Y # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	1	23-13153-056	232E # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	10	23-13153-056	497D5 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	11	23-13153-056	497D6 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	12	23-13153-056	497D10 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	13	23-13153-056	497C6 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	14	23-13153-056	497D1 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	15	23-13153-056	497D4 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	2	23-13153-056	200 # 1413 (PRP)
TRANS_AUX_ENG_O_VIW_FWD_1A	2	23-13153-056	200 # 1413 (PRP)
TRANS_AUX_ENG_O_VIW_FWD_1A	2	23-13153-056	497C7 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	3	23-13153-056	492Z # 1512 (GY)
TRANS_AUX_ENG_O_VIW_FWD_1A	3	23-13153-056	492Z # 1512 (GY)
TRANS_AUX_ENG_O_VIW_FWD_1A	3	23-13153-056	497C8 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	4	23-13153-056	497Y # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	5	23-13153-056	497K # 1803 (W)

TRANS_AUX_ENG_O_VIW_FWD_1A	6	23-13153-056	497C4 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	7	23-13153-056	497C3 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	8	23-13153-056	497D3 # 1803 (W)
TRANS_AUX_ENG_O_VIW_FWD_1A	9	23-13153-056	497C1 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	1	23-13153-048	497D6 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	10	23-13153-048	232D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	10	23-13153-048	232D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	11	23-13153-048	498G # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	11	23-13153-048	498G # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	11	23-13153-048	498G # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	11	23-13153-048	498G # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	12	23-13153-048	498A # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	12	23-13153-048	498A # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	12	23-13153-048	498A # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	12	23-13153-048	498A # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	13	23-13153-048	497C8 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	16	23-13153-048	498C # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	16	23-13153-048	498C # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	16	23-13153-048	498C # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	16	23-13153-048	498C # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	17	23-13153-048	497D10 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	18	23-13153-048	531D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	18	23-13153-048	531D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	18	23-13153-048	531D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	18	23-13153-048	531D # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	20	23-13153-048	497N2 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	20	23-13153-048	497N2 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	20	23-13153-048	497N2 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	20	23-13153-048	497N2 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	22	23-13153-048	497D4 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	23	23-13153-048	497D1 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	25	23-13153-048	497K # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	26	23-13153-048	508J1 # 2008 (DKG)
TRANS_CTRL_ENG_O_ECU_ALI_1A	26	23-13153-048	508J1 # 2008 (DKG)
TRANS_CTRL_ENG_O_ECU_ALI_1A	27	23-13153-048	508P- # 2008 (DKG)
TRANS_CTRL_ENG_O_ECU_ALI_1A	27	23-13153-048	508P- # 2008 (DKG)
TRANS_CTRL_ENG_O_ECU_ALI_1A	28	23-13153-048	H1939+ # 1603 (W-Y)
TRANS_CTRL_ENG_O_ECU_ALI_1A	28	23-13153-048	H1939+ # 1603 (W-Y)
TRANS_CTRL_ENG_O_ECU_ALI_1A	28	23-13153-048	H1939+ # 1603 (W-Y)
TRANS_CTRL_ENG_O_ECU_ALI_1A	28	23-13153-048	H1939+ # 1603 (W-Y)
TRANS_CTRL_ENG_O_ECU_ALI_1A	3	23-13153-048	497Y # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	3	23-13153-048	497Y # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	3	23-13153-048	497Y # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	3	23-13153-048	497Y # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	30	23-13153-048	497C1 # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	31	23-13153-048	497X # 1803 (W)
TRANS_CTRL_ENG_O_ECU_ALI_1A	31	23-13153-048	497X # 1803 (W)

TRANS_CTRL_ENG_O_VIW_1A	A	23-13142-221	232E # 1803 (W)
TRANS_CTRL_ENG_O_VIW_1A	A	23-13142-221	232E # 1803 (W)
TRANS_CTRL_ENG_O_VIW_1A	B	23-13142-221	497Y # 1803 (W)
TRANS_CTRL_ENG_O_VIW_1A	B	23-13142-221	497Y # 1803 (W)
TRANS_CTRL_ENG_O_VIW_1A	B	23-13142-221	497Y # 1803 (W)
TRANS_CTRL_ENG_O_VIW_1A	B	23-13142-221	497Y # 1803 (W)
VEH_INTFC_ENG_O_PTO_ENG_GEN3_1A	A	23-13142-202	200 # 1413 (PRP)
VEH_INTFC_ENG_O_PTO_ENG_GEN3_1A	B	23-13142-202	497Y # 1803 (W)

Spec	Material	Harness	ITEM_DESC	MSTR_NO	Drawing
20/.5	TXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	TXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	GXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	TXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	GXL	A66-00258-001	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
18/.8	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
18/.8	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
18/.8	TXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
18/.8	TXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177
20/.5	GXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	TXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	GXL	A66-00258-001	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
18/.8	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
18/.8	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
18/.8	TXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
18/.8	TXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177
16/1	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
18/.8	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
16/1	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
18/.8	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
16/1	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
16/1	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
12/3	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
6/13	SGR	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
12/3	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
6/13	SGR	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
12/3	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
6/13	SGR	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
12/3	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
6/13	SGR	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
18/.8	TXL	A66-00584-000	HARN-ENG FAN,ENG OL,GTD	27680	A66-00584
18/.8	TXL	A66-00584-000	HARN-ENG FAN,ENG OL,GTD	27680	A66-00584
14/2	GXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
14/2	GXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
10/5	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
10/5	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
16/1	GXL	A06-91328-000	HARN-HVAC,OL,ENG,CPRSR,DD16,EP	70B80	A06-91328
18/.8	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
18/.8	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
18/.8	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
18/.8	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227
16/1	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227
16/1	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
18/.8 +	EXR4	A66-06227-000	HARN-ENG_CTRL,ENG_OL,STAR,2V2	28380	A66-06227

18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227
18/.8	GXL	A66-09784-000	HARN-ENG_CTRL,OL,ENG,STAR	28380	A66-09784
18/.8	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
18/.8 +	EXR4	A66-06227-000	HARN-ENG_CTRL,ENG_OL,STAR,2V2	28380	A66-06227
18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227
18/.8	GXL	A66-09784-000	HARN-ENG_CTRL,OL,ENG,STAR	28380	A66-09784
18/.8	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
16/1	TXL	A66-00522-000	HARN-ALT_CHG,ENG_OL,W/ 28SI	12C80	A66-00522
16/1	TXL	A66-00522-001	HARN-ALT_CHG,OL,ENG,W O 28SI	12C80	A66-00522
18/.8	TXL	A66-07155-000	HARN-ENG_CTRL,ENG_OL,VSS,SMP	28380	A66-07155
18/.8	TXL	A66-07155-000	HARN-ENG_CTRL,ENG_OL,VSS,SMP	28380	A66-07155
18/.8	TXL	A66-07155-000	HARN-ENG_CTRL,ENG_OL,VSS,SMP	28380	A66-07155
18/.8	TXL	A66-00545-000	HARN-ENG_IND,ENG_OL,LCL	15280	A66-00545
16/1	GXL	A66-01573-000	HARN-ST_SP,ENG_OL,NEUT_SW	15680	A66-01573
18/.8	TXL	A66-00141-000	HARN-LT_BKUP,OL,ENG,HDEP,MAN	35H80	A66-00141
18/.8	TXL	A66-00141-000	HARN-LT_BKUP,OL,ENG,HDEP,MAN	35H80	A66-00141
18/.8	TXL	A66-00545-000	HARN-ENG_IND,ENG_OL,LCL	15280	A66-00545
18/.8	TXL	A06-90930-000	HARN-PTO,ENG,AIR,1PTO	88580	A06-90930
18/.8	TXL	A06-90930-001	HARN-PTO,ENG,AIR,2PTO	88580	A06-90930
16/1	GXL	A66-11603-000	HARN-PTO,OL,ENG,DT12,REAR,	88580	A66-11603
18/.8	TXL	A06-90930-000	HARN-PTO,ENG,AIR,1PTO	88580	A06-90930
18/.8	TXL	A06-90930-001	HARN-PTO,ENG,AIR,2PTO	88580	A06-90930
16/1	GXL	A66-11603-000	HARN-PTO,OL,ENG,DT12,REAR,	88580	A66-11603
18/.8	TXL	A06-90930-001	HARN-PTO,ENG,AIR,2PTO	88580	A06-90930
18/.8	TXL	A06-90930-001	HARN-PTO,ENG,AIR,2PTO	88580	A06-90930
12/3	GXL	A66-00648-000	HARN-GND_PWRTN,ENG_OL,DT	2YT80	A66-00648
12/3	GXL	A66-00648-001	HARN-GND_PWRTN,ENG_OL,US+	2YT80	A66-00648
12/3	GXL	A66-00648-002	HARN-GND_PWRTN,ENG_OL,ALI	2YT80	A66-00648
12/3	GXL	A66-00648-003	HARN-GND_PWRTN,ENG_OL,MAN	2YT80	A66-00648
12/3	GXL	A66-00648-010	HARN-GND_PWRTN,OL,ENG,DT,RRPTO	2YT80	A66-00648
12/3	GXL	A66-06222-000	HARN-GNDPWRTN,ENG_OL,DT,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-001	HARN-GNDPWRTN,ENG_OL,US+,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-002	HARN-GNDPWRTN,ENG_OL,ALI,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-003	HARN-GNDPWRTN,ENG_OL,MAN,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-004	HARN-GND_PWRTN,ENG_OL,DT,RRPTO	2YT80	A66-06222
14/2	GXL	A66-00648-000	HARN-GND_PWRTN,ENG_OL,DT	2YT80	A66-00648
14/2	GXL	A66-00648-001	HARN-GND_PWRTN,ENG_OL,US+	2YT80	A66-00648
14/2	GXL	A66-00648-002	HARN-GND_PWRTN,ENG_OL,ALI	2YT80	A66-00648
14/2	GXL	A66-00648-003	HARN-GND_PWRTN,ENG_OL,MAN	2YT80	A66-00648
14/2	GXL	A66-00648-010	HARN-GND_PWRTN,OL,ENG,DT,RRPTO	2YT80	A66-00648
14/2	GXL	A66-06222-000	HARN-GNDPWRTN,ENG_OL,DT,2V2	2YT80	A66-06222
14/2	GXL	A66-06222-001	HARN-GNDPWRTN,ENG_OL,US+,2V2	2YT80	A66-06222
14/2	GXL	A66-06222-002	HARN-GNDPWRTN,ENG_OL,ALI,2V2	2YT80	A66-06222
14/2	GXL	A66-06222-003	HARN-GNDPWRTN,ENG_OL,MAN,2V2	2YT80	A66-06222
14/2	GXL	A66-06222-004	HARN-GND_PWRTN,ENG_OL,DT,RRPTO	2YT80	A66-06222
18/.8 +	EXR4	A66-06227-000	HARN-ENG_CTRL,ENG_OL,STAR,2V2	28380	A66-06227
18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227

16/1	GXL	A66-09784-000	HARN-ENG_CTRL,OL,ENG,STAR	28380	A66-09784
16/1	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
18/.8 +	EXR4	A66-06227-000	HARN-ENG_CTRL,ENG_OL,STAR,2V2	28380	A66-06227
18/.8 +	EXR4	A66-06227-001	HARN-ENG_CTRL,ENG_OL,STAR,DT	28380	A66-06227
16/1	GXL	A66-09784-000	HARN-ENG_CTRL,OL,ENG,STAR	28380	A66-09784
16/1	GXL	A66-09784-001	HARN-ENG_CTRL,OL,ENG,STAR,DT	28380	A66-09784
20/.5	GXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	GXL	A66-00258-001	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
20/.5	GXL	A66-00258-002	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
20/.5	GXL	A66-00258-000	HARN-J1939,500K,DDC,ALI	43L80	A66-00258
20/.5	GXL	A66-00258-001	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
20/.5	GXL	A66-00258-002	HARN-DL_500,OL,ENG,J1939,HDEP	43L80	A66-00258
18/.8	GXL	A66-16790-000	HARN-ENG_INTK,OL,ENG,AIR,HDEP	19980	A66-16790
18/.8	GXL	A66-16790-000	HARN-ENG_INTK,OL,ENG,AIR,HDEP	19980	A66-16790
18/.8	TXL	A66-00623-000	HARN-TRANS IND,OL,ENG,DDE,FPT	86380	A66-00623
18/.8	TXL	A66-00623-000	HARN-TRANS IND,OL,ENG,DDE,FPT	86380	A66-00623
18/.8	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
18/.8	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
16/1	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
16/1	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
12/3	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
12/3	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
12/3	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
12/3	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
12/3	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
12/3	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
12/3	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
12/3	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
12/3	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
12/3	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
12/3	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
12/3	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
12/3	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
12/3	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
12/3	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
12/3	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
10/5	GXL	A66-00594-000	HARN-ENG_CTRL,ENG_OL,POWER,MAN	28380	A66-00594
10/5	GXL	A66-00594-001	HARN-ENG_CTRL,ENG_OL,DT	28380	A66-00594
10/5	GXL	A66-06220-000	HARN-ENG_CTRL,ENG_OL,PWR,MAN	28380	A66-06220
10/5	GXL	A66-06220-001	HARN-ENG_CTRL,ENG_OL,DT,2V2	28380	A66-06220
14/2	GXL	A66-00666-000	HARN-ST_SP,OL,ENG,OI,ALARM	15680	A66-00666
14/2	GXL	A66-00666-000	HARN-ST_SP,OL,ENG,OI,ALARM	15680	A66-00666
14/2	GXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
14/2	GXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177
10/5	GXL	A66-00605-000	HARN-TRANS CTRL,ENG OL,DD-HD	34B80	A66-00605
10/5	TXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
10/5	TXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177

4/19	SGX	A66-00648-000	HARN-GND_PWRTN,ENG OL,DT	2YT80	A66-00648
4/19	SGX	A66-00648-001	HARN-GND_PWRTN,ENG OL,US+	2YT80	A66-00648
4/19	SGX	A66-00648-002	HARN-GND_PWRTN,ENG OL,ALI	2YT80	A66-00648
4/19	SGX	A66-00648-003	HARN-GND_PWRTN,ENG OL,MAN	2YT80	A66-00648
4/19	SGX	A66-00648-010	HARN-GND_PWRTN,OL,ENG,DT,RRPTO	2YT80	A66-00648
4/19	SGX	A66-06222-000	HARN-GNDPWRTN,ENG OL,DT,2V2	2YT80	A66-06222
4/19	SGX	A66-06222-001	HARN-GNDPWRTN,ENG OL,US+,2V2	2YT80	A66-06222
4/19	SGX	A66-06222-002	HARN-GNDPWRTN,ENG OL,ALI,2V2	2YT80	A66-06222
4/19	SGX	A66-06222-003	HARN-GNDPWRTN,ENG OL,MAN,2V2	2YT80	A66-06222
4/19	SGX	A66-06222-004	HARN-GND_PWRTN,ENG OL,DT,RRPTO	2YT80	A66-06222
12/3	GXL	A66-00648-000	HARN-GND_PWRTN,ENG OL,DT	2YT80	A66-00648
12/3	GXL	A66-00648-001	HARN-GND_PWRTN,ENG OL,US+	2YT80	A66-00648
12/3	GXL	A66-00648-002	HARN-GND_PWRTN,ENG OL,ALI	2YT80	A66-00648
12/3	GXL	A66-00648-003	HARN-GND_PWRTN,ENG OL,MAN	2YT80	A66-00648
12/3	GXL	A66-00648-010	HARN-GND_PWRTN,OL,ENG,DT,RRPTO	2YT80	A66-00648
12/3	GXL	A66-06222-000	HARN-GNDPWRTN,ENG OL,DT,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-001	HARN-GNDPWRTN,ENG OL,US+,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-002	HARN-GNDPWRTN,ENG OL,ALI,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-003	HARN-GNDPWRTN,ENG OL,MAN,2V2	2YT80	A66-06222
12/3	GXL	A66-06222-004	HARN-GND_PWRTN,ENG OL,DT,RRPTO	2YT80	A66-06222
10/5	GXL	A66-00648-002	HARN-GND_PWRTN,ENG OL,ALI	2YT80	A66-00648
18/.8	TXL	A66-00648-002	HARN-GND_PWRTN,ENG OL,ALI	2YT80	A66-00648
10/5	GXL	A66-06222-002	HARN-GNDPWRTN,ENG OL,ALI,2V2	2YT80	A66-06222
18/.8	TXL	A66-06222-002	HARN-GNDPWRTN,ENG OL,ALI,2V2	2YT80	A66-06222
16/1	TXL	A06-90930-000	HARN-PTO,ENG,AIR,1PTO	88580	A06-90930
16/1	TXL	A06-90930-001	HARN-PTO,ENG,AIR,2PTO	88580	A06-90930
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A06-90849-000	HARN-TRANS AUX,ENG OL,FWD	34C80	A06-90849
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A06-90849-000	HARN-TRANS AUX,ENG OL,FWD	34C80	A06-90849
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A06-90849-000	HARN-TRANS AUX,ENG OL,FWD	34C80	A06-90849
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127
18/.8	TXL	A66-08127-000	HARN-VIW,ALSN,FWD,FPT,HDEP	34C80	A66-08127

18/.8	TXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
18/.8	TXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177
18/.8	TXL	A66-00614-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-00614
18/.8	TXL	A66-00614-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-00614
18/.8	TXL	A66-05177-000	HARN-TRANS CTRL,ENG OL,ALSN,3K	34B80	A66-05177
18/.8	TXL	A66-05177-001	HARN-TRANS CTRL,ENG OL,ALSN,4K	34B80	A66-05177
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849
18/.8	TXL	A06-90849-001	HARN-TRANS AUX,ENG OL,FWD,PTO	34C80	A06-90849

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