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Countries:

Availability: ISIS, FleetSIS

Major System: TRANSMISSION

Current Language: English

Other Languages: NONE

Viewed: 2384

Document ID: IK1300138

Revision: 6

Created: 8/10/2013

Last Modified: 10/13/2015

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Coding Information

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Title: TerraStar Transfer Case Diagnostic and Operational Information

Applies To: TerraStar 4x4 Models

Change Log

Please refer to the change log text box below for recent changes to this article:

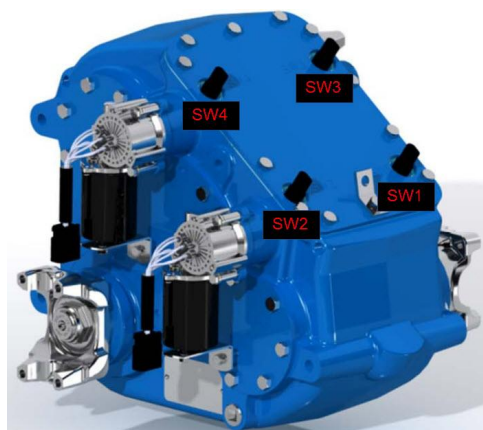
10/02/2015 - Article update into step base format for most likely cause failure mode. Excising content relocated to the bottom of this document

DESCRIPTION

This document will guide the user through diagnosing a Fabco TC-28 Transfer Case.

NOTE: Warranty claims with a failure date of 10/2/2015 and later will not be allowed if the repair as noted in step 1 and 2 below are not followed.

TerraStar 4x4 model vehicles are built with a FABCO TC-28 transfer case with 4 feedback switches and 2 electric actuators. The body controller monitors the feedback switches to regulate when it grounds each one of the 4 relays that control the amperage and polarity to each of the 2 electric actuators. The transfer case has 3 modes, 4x2 high, 4x4 high, and 4x4 low.



SYMPTOM(s)

Customer Observations or Concerns:

- DTC's
- Leaking Seal
- Noisy
- Won't shift

DTC's

SPN	FMI	Description	Signal	B/C Pin	Action
4043	6	Transfer Case Front Driveline Actuator	xfer_Case_4x4_cmd	1601_E13	Short to ground in one or both of transfer

		Transfer Case Front Driveline Solenoid Short To Ground	xfer_Case_4x2_cmd	1601_E9	
			Transfer_Case_Front_Axle_Engaged	1602_F13	
			Transfer_Case_Front_Axle_Disengaged	1602_F11	
4043	3	Transfer Case Front Driveline Actuator Fault Via Transfer Case Front Axle Disengaged	Transfer_Case_Front_Axle_Disengaged	1602_F11	Open from SW1 to the body controller, but to be in 4x2 high range
4043	4	Transfer Case Front Driveline Actuator Fault Via Transfer Case Front Axle Engaged	Transfer_Case_Front_Axle_Engaged	1602_F13	Open from SW2 to the body controller, but to be in 4x4 high range
4045	3	Transfer Case Low Range Actuator Fault Via Transfer Case Driveline Engaged Low limit switch	Transfer_Case_Driveline_Engaged_Low	1602_F8	Open from SW3 to the body controller, but to be in 4x4 high range
4044	3	Transfer Case High Range Actuator Fault Via Transfer Case Driveline Engaged High limit switch	Transfer_Case_Driveline_Engaged_High	1602_F9	Open from SW4 to the body controller, but to be in 4x4 low range
4044	6	Transfer Case High Range Actuator Transfer Case High Range Solenoid Short To Ground	xfer_Case_Low_cmd xfer_Case_High_cmd	1601_F5 1601_F4	This indicates there is a short to ground in range circuits
			Transfer_Case_Driveline_Engaged_Low	1602_F8	
			Transfer_Case_Driveline_Engaged_High	1602_F9	
			Transfer_Case_Front_Axle_Engaged	1602_F13	
3645	5	Transfer case status All Limit switches for Electronic transfer Case are open	Transfer_Case_Front_Axle_Disengaged	1602_F11	All Limit switches for Electronic transfer Case
			Transfer_Case_Driveline_Engaged_Low	1602_F8	
			Transfer_Case_Driveline_Engaged_High	1602_F9	
4043	7	Transfer Case Front Driveline Actuator System not responding Fault with Front axle engagement motor	Transfer_Case_Front_Axle_Engaged	1602_F13	The body controller is sending a command disengagement relay, but there is no status change from either SW1 or SW2
			Transfer_Case_Front_Axle_Disengaged	1602_F11	
4044	7	Transfer Case High Range Actuator System not responding Fault with Driveline Range(High/Low) engagement motor	Transfer_Case_Driveline_Engaged_Low	1602_F8	The body controller is sending a command but there is no status change from either SW3 or SW4
			Transfer_Case_Driveline_Engaged_High	1602_F9	
3645	9		ABS Module		This is a fault code from the ABS module in which range the transfer case is in

SPECIAL TOOL(s) / SOFTWARE

N/A

SERVICE PARTS INFORMATION

Part Description	Navistar PN	Quantity
Case, Transfer	3953725C4	1

DIAGNOSTIC STEP(s)

Step	Action	Decision
1	Identify Symptom:	Locked up, noise, or leaking from any shaft seal: Step 2
	Determine which symptom is present	Fault codes: Follow Body controller diagnostic trouble codes in manual S08327 , after repairs are complete, recheck for symptom
	Which symptom is present?	

Step	Action	Decision
2	Transfer case part number inspection:	Yes. Open case file
	Does the part number on the side of the transfer case end in C4?	No. Replace transfer case, fill with 7 quarts of SAE 50W Synthetic Oil, provide customer with service interval for fluid check and replacement, recheck for symptom

Range Diagnostics

When the transfer case is in any range, the switch that corresponds with that location will be closed, completing the feedback circuit to the body controller. The high and low range switches should never both be closed at the same time. The front axle engaged and front axle disengaged switches should never both be closed at the same time.

Low Range= 2.2 input shaft rotations to 1 output shaft rotation

High Range = 1 input shaft rotation to 1 output shaft rotation

Shift Interlock Requirements:

4X2 high to 4x4 high	4x4 high to 4x4 low (front axle indicator in front axle switch will flash when shifting)
Key is in the run position	Transfer case is in 4x4 high mode
Engine speed is above programmable parameter 3047, Engine_Operating_Threshold. Default setting is 300 RPM	Vehicle speed is below programmable parameter 3045, Range_Engage_Threshold. Default setting is 3 MPH
Vehicle speed is below programmable parameter 2812, Axle_Engage_Threshold. Default setting is 24 MPH	Transmission is in the neutral range
Axle differential speed is below programmable parameter 3052, FR2RR_Vel_Diff_ABS_Threshold. Default setting is 0.93 MPH	Service brake is depressed
Front axle switch is in the upper position and has a good status	Key is in the run position
	Engine speed is above programmable parameter 3047, Engine_Operating_Threshold. Default setting is 300 RPM
	Range switch is in the lower position and has a good status

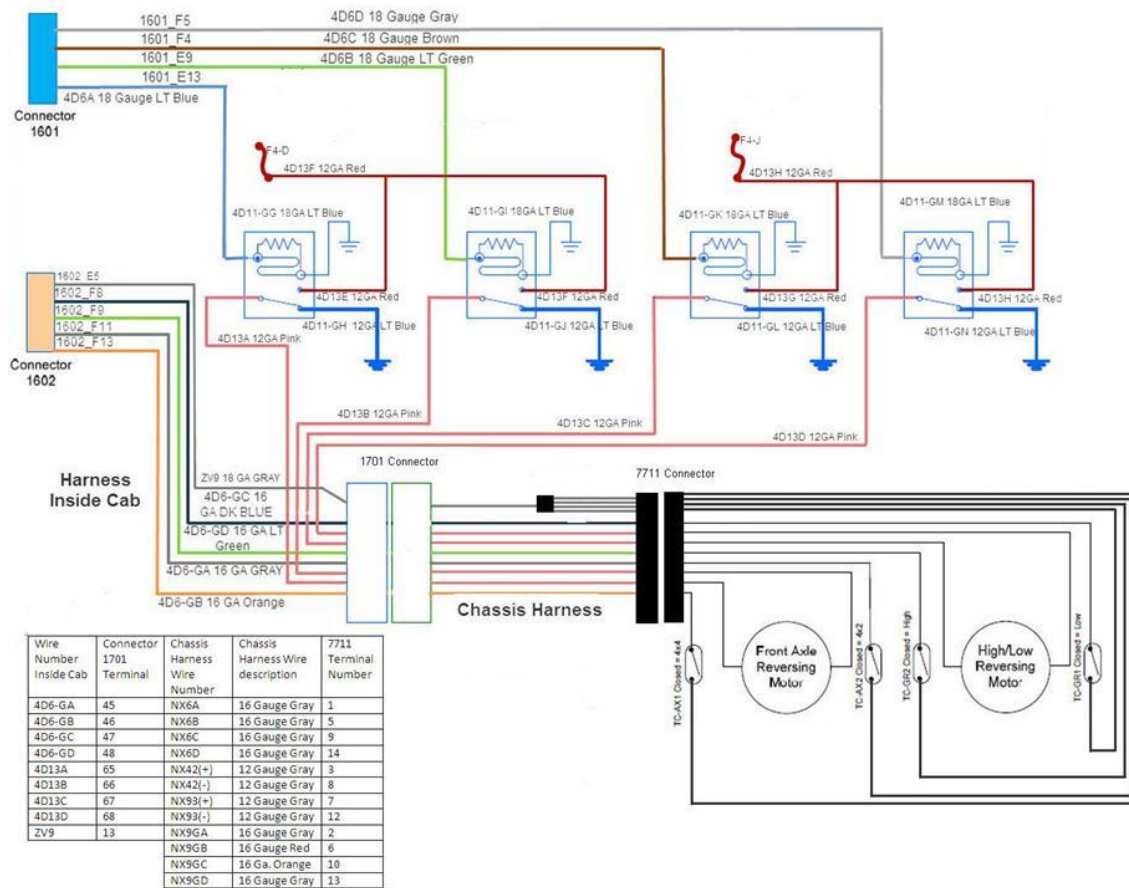
Signal Descriptions:

Signal	B/C Pin	Transfer case Mode	Description
Xfer_Case_4x4_Cmd	1601-E13	N/A	Ground command to 4x4 relay
Xfer_Case_4x2_Cmd	1601-E9	N/A	Ground command to 4x2 relay
Xfer_Case_High_Cmd	1601-F4	N/A	Ground command to high range relay
Xfer_Case_Low_Cmd	1601-F5	N/A	Ground command to low range relay
Transfer_Case_Front_Axle_Disengaged	1602-F11	Front axle is not engaged when checked in DLB	Signal from switch SW1, indicating position
Transfer_Case_Front_Axle_Engaged	1602-F13	Front axle is engaged when checked in DLB	Signal from switch SW2, indicating position
Transfer_Case_Driveline_Engaged_Low	1602-F8	Transfer case is in low range when checked in DLB	Signal from switch SW3, indicating position
Transfer_Case_Driveline_Engaged_High	1602-F9	Transfer case is in high range when checked in DLB	Signal from switch SW4, indicating position

Operational Values

Transfer Case Range	SW1	SW2	SW3	SW4
4x2 High	Closed	Open	Open	Closed
4x4 High	Open	Closed	Open	Closed
4x4 Low	Open	Closed	Closed	Open

Diagram



WARRANTY INFORMATION

Warranty Claim Coding:

Group:	13140 - Transfer Case
Noun:	114 - Case, Bearing

Standard Repair Time(s):

Description	Chassis	Engine	SRT
TRANSFER CASE, REMOVE & REINSTALL	TerraStar	MAXXFORCE 7	TS13-1140X

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Feedback Information

Viewed: 2383

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