Allison Transmission 101

BELFOR FRANCHISE GROUP

redbox+

Allison Transmission

Rick Taylor

Regional Customer Support Manager

NA Regional Customer Support

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3 CENTRAL REGION

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4 SOUTH CENTRAL REGION

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5 NORTHEAST REGION

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6 ***Open*** - Regional CSR, Northeast Region

SOUTHEAST REGION

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Director NA Customer Support and Channel Development
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NATIONAL ACCOUNT CSM

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National Account Customer Support Manager
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Key Topics

- About Allison Transmission
- Product Overview
- Electrical/Controls
- Driveline
- Allison DOC
- Fluids
- Prognostics

In 1915…

James A. Allison

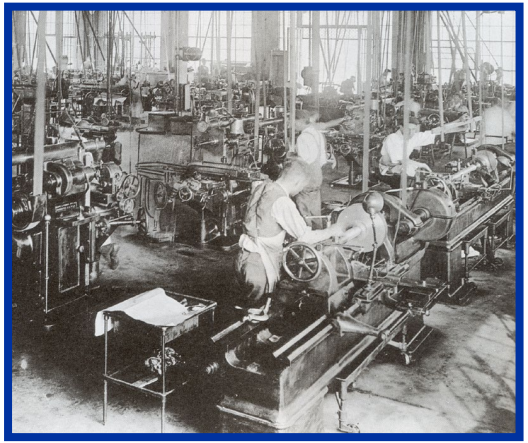
Established the Speedway Team Company – the forerunner to what eventually would become Allison Transmission.

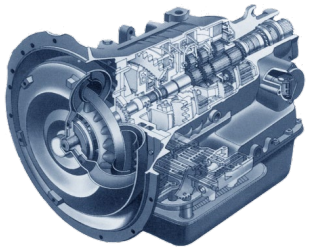
“Whatever leaves this shop over my name must be of the finest work possible.”

James Allison
1872 - 1928

1904 - 1917

Allison Engineering
1915





1929 - 2007

Indianapolis Motor Speedway – Construction 1909 – First Race 1911
3.5 million Bricks was laid down in 63 days to create the racetrack.

Bird's Eye View of the Indianapolis Motor Speedway Which Will Be Completed July 15, and Formally Opened August 19-21

A History Of Reliability

500 Miles: James Allison‘s race team won the Indy 500 just four years after his company was founded

V1710 Aircraft Engine takes flight – 69,305

Fully automatic transmission revolutionized commercial and military vehicle industries

Over 1200 Patents

A History Of Success

Over 6,000,000 transmissions delivered

Over 150,000 Fleets trust Allison

4000 Employees

110 Years of Excellence

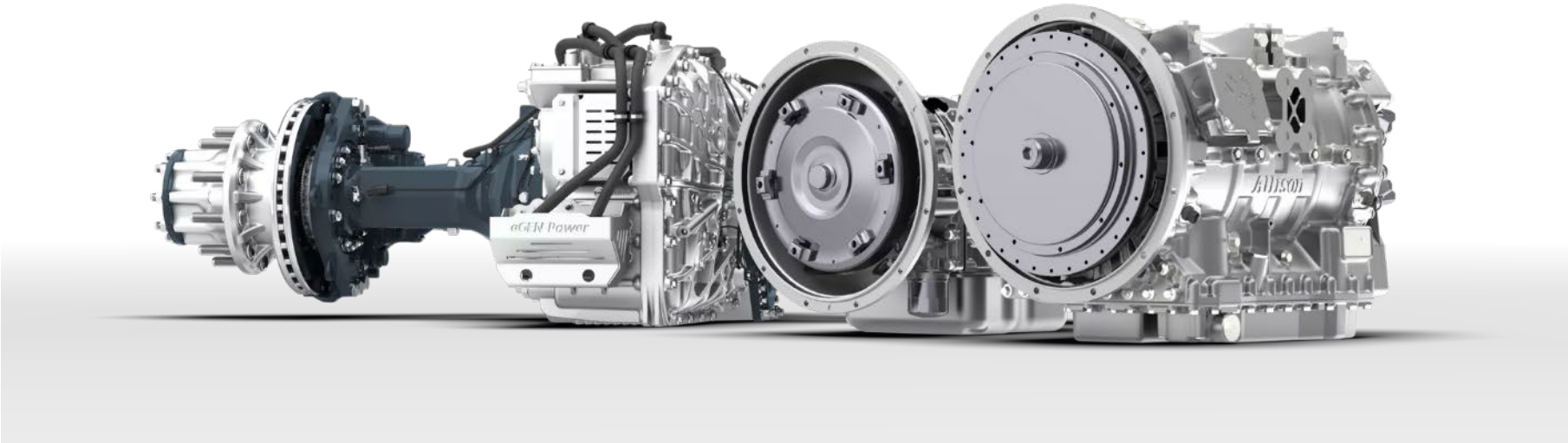
Global Headquarters

Speedway, IN USA

Headquartered in the heart of the Midwest, Allison has established deep roots in the Indianapolis community over the past 100 years. As we've grown into a leading propulsion solutions provider, Speedway has remained our home and primary manufacturing base.

Allison is proud of our established reputation as an employer of choice, and we're dedicated to attracting and retaining top talent by providing our employees with the tools they need to drive innovation.

Allison Propulsion Solutions



Conventional

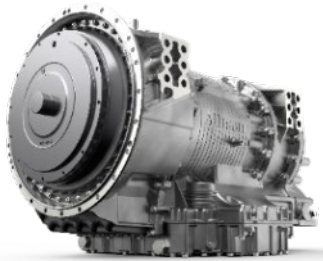
Transmissions

1000 Series™
2000 Series™

2900 Series™

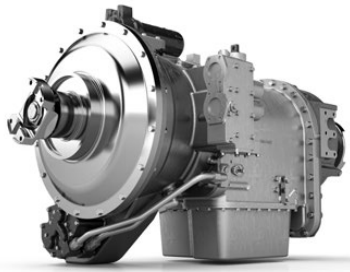
3000 Series™

4000 Series™



TerraTran™

6000 Series™



8000 Series™

9000 Series™

FracTran®

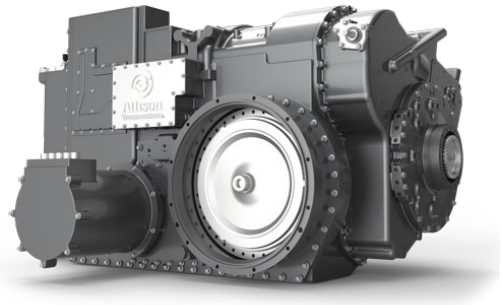
Defense

Tracked Solutions

X200 Series™

3040 MX™

X1100 Series™

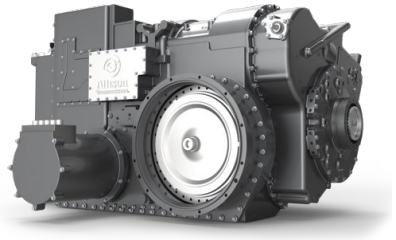


eGen Force™

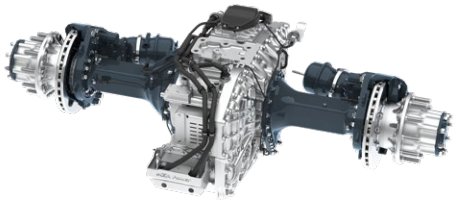
Hybrid + Electric

Propulsion Solutions

eGEN Flex®

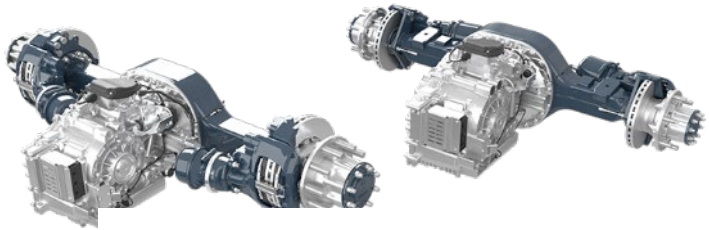


eGEN Force™



eGEN Power®

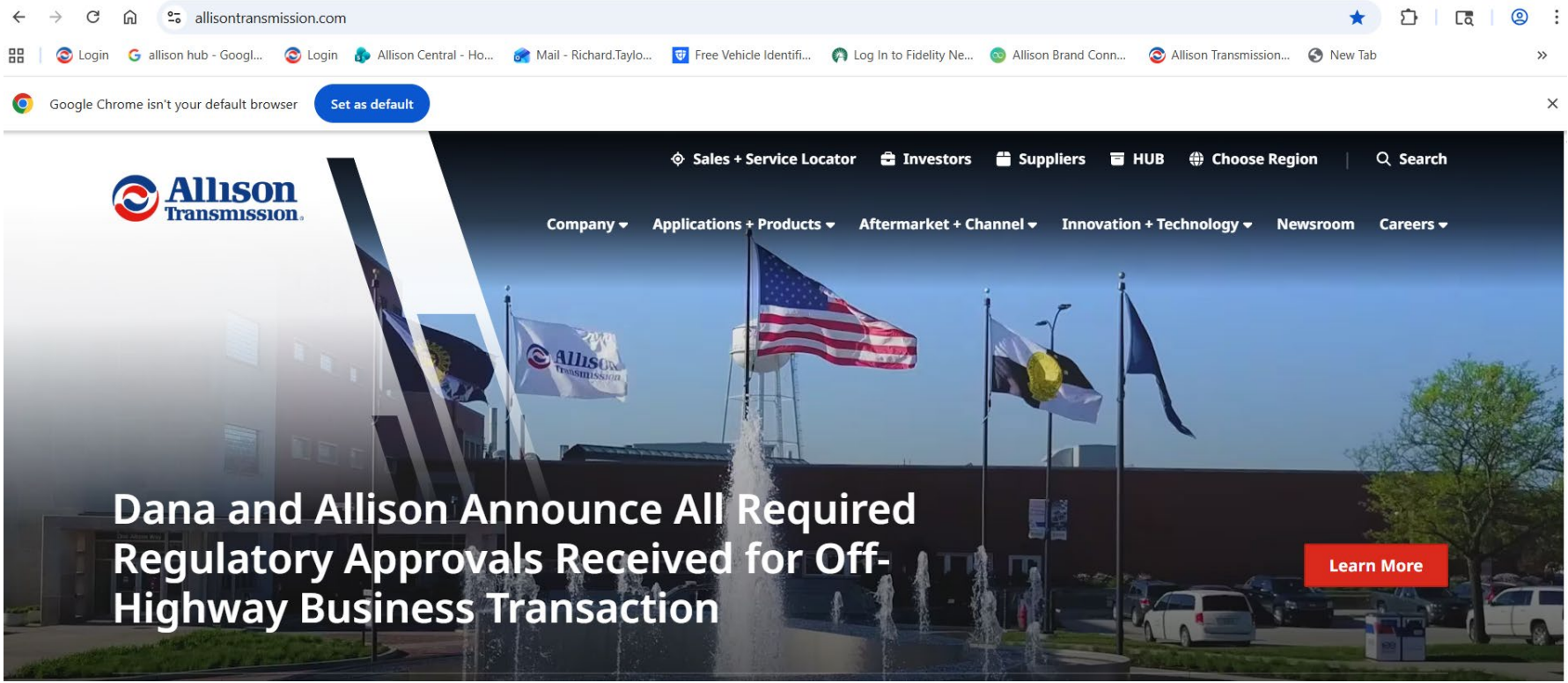
100D e-Axle
130D e-Axle



eGEN Power®

85S e-Axle
100S e-Axle
130S e-Axle

allisontransmission.com



Sales + Service Locator

To find an Allison Authorized facility near you, use the Sales + Service Locator below. Not all locations are authorized on every Allison product. Please use the filter function or click on the selected location's Details button to ensure your location is qualified for your model.

Search your location...

Select Location Type(s) (0)

Select Service(s) (0)

Select Product (0)

Miles Kilometers

ALLISON DEALER

Rudd Equipment Company

2655 Kentucky Avenue

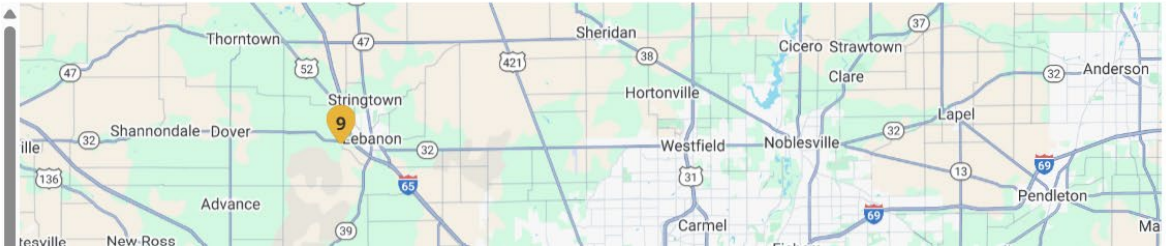
Indianapolis, IN 46221

371-247-9125

1

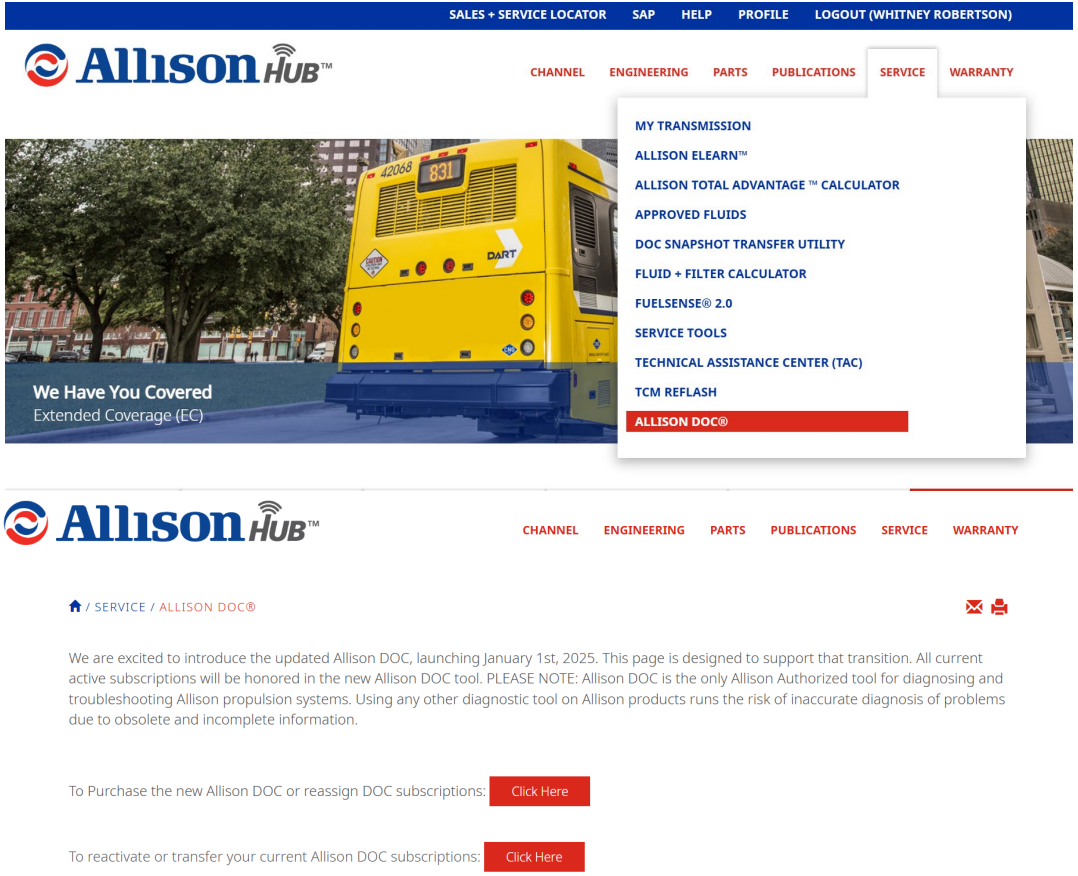
3.97 mi

Directions Details

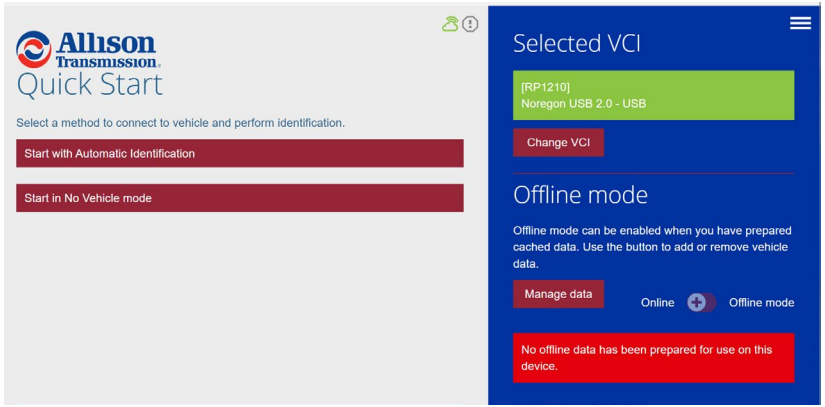


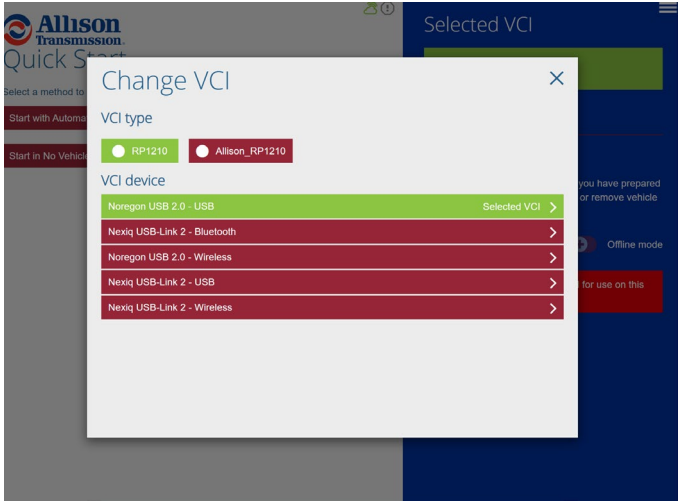
Allison DOC®

*NEW as of January 1, 2025

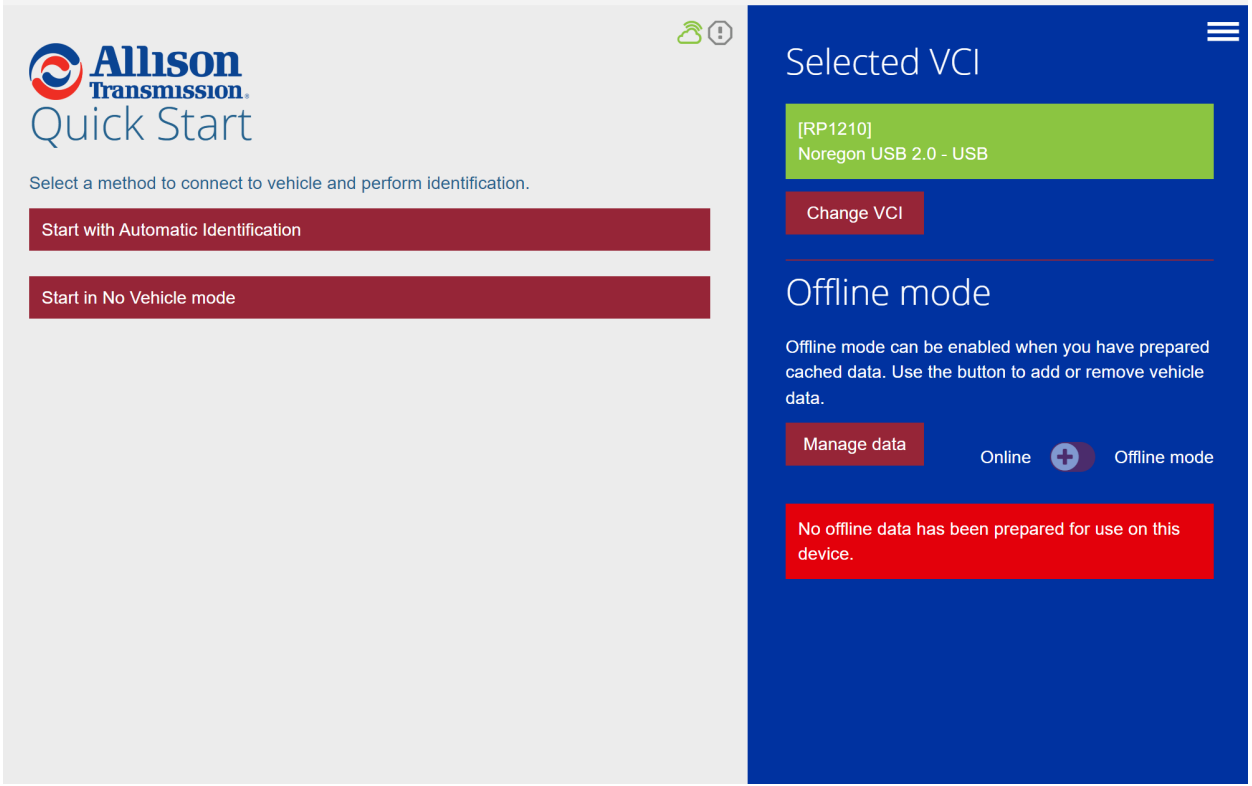


Allison DOC®


Allison Transmission
Quick Start
Select a method to connect to vehicle and perform identification.
Start with Automatic Identification
Start in No Vehicle mode
Selected VCI
[RP1210]
Noregon USB 2.0 - USB
Change VCI
Offline mode
Offline mode can be enabled when you have prepared cached data. Use the button to add or remove vehicle data.
Manage data
Online
Offline mode
No offline data has been prepared for use on this device.


Allison Transmission
Change VCI
VCI type
RP1210
Allison_RP1210
VCI device
Noregon USB 2.0 - USB
Selected VCI
Nexiq USB-Link 2 - Bluetooth
Noregon USB 2.0 - Wireless
Nexiq USB-Link 2 - USB
Nexiq USB-Link 2 - Wireless
Selected VCI
Offline mode

Allison DOC


Allison Transmission
Quick Start
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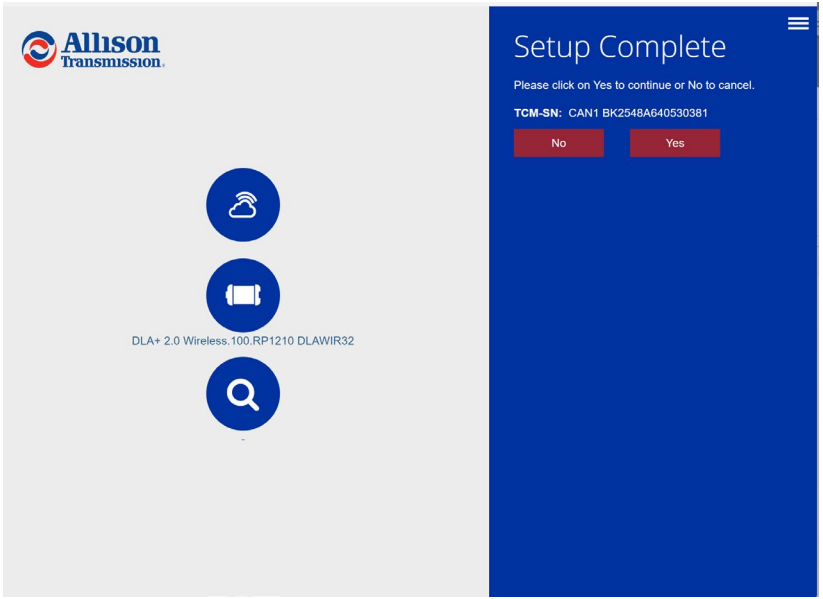
Change VCI
Offline mode
Offline mode can be enabled when you have prepared cached data. Use the button to add or remove vehicle data.
Manage data
Online
Offline mode
No offline data has been prepared for use on this device.

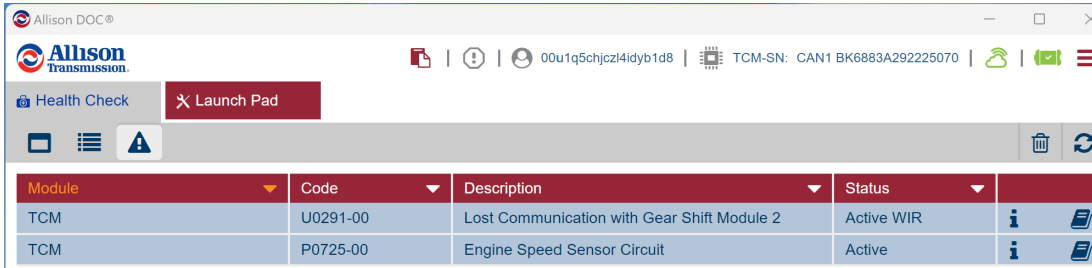
Allison DOC®


Allison Transmission
DLA+ 2.0 Wireless.100.RP1210 DLAWIR32
Checking vehicle connection

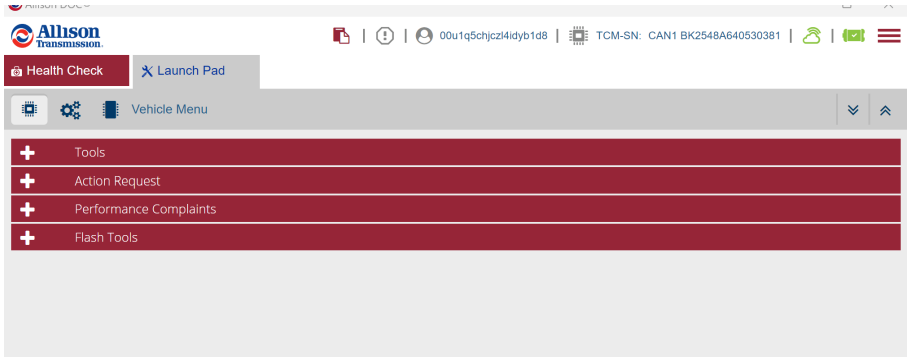

Allison Transmission
DLA+ 2.0 Wireless.100.RP1210 DLAWIR32
Setup Complete
Please click on Yes to continue or No to cancel.
TCM-SN: CAN1 BK2548A640530381
No
Yes

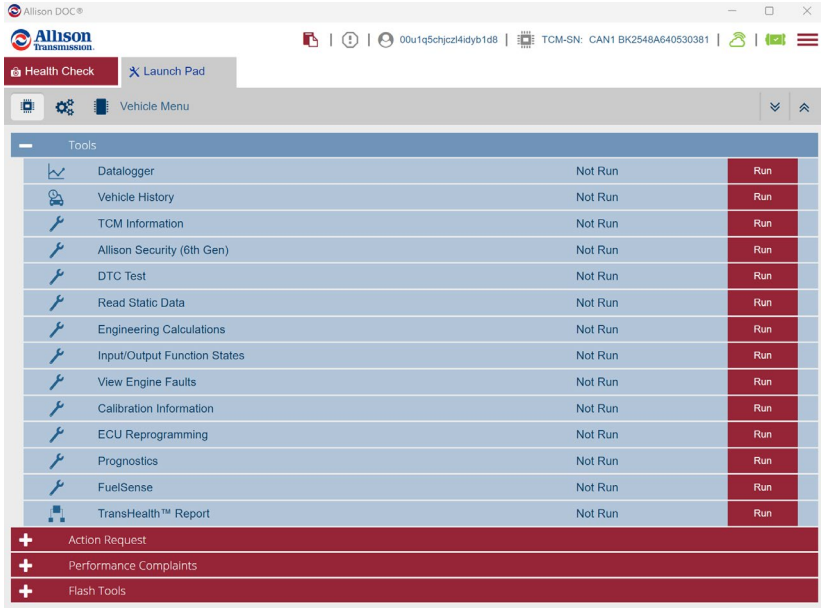
Allison DOC®


Allison Transmission
00u1q5chjczl4idyb1d8
TCM-SN: CAN1 BK2548A640530381
Health Check
Launch Pad
Discovery 33 %
No DTCs to display

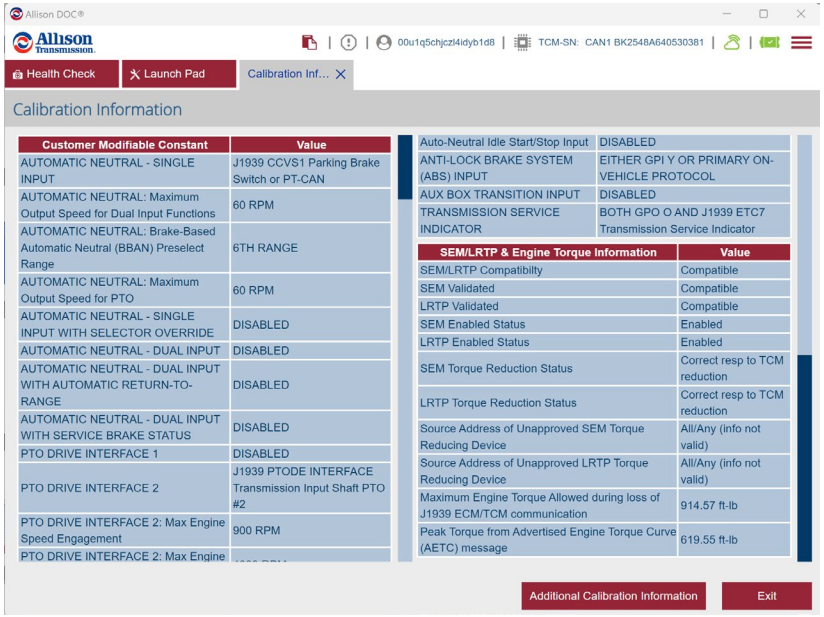

Allison DOC®
Allison Transmission
00u1q5chjczl4idyb1d8
TCM-SN: CAN1 BK6883A292225070
Health Check
Launch Pad
Module
Code
Description
Status
TCM
U0291-00
Lost Communication with Gear Shift Module 2
Active WIR
TCM
P0725-00
Engine Speed Sensor Circuit
Active

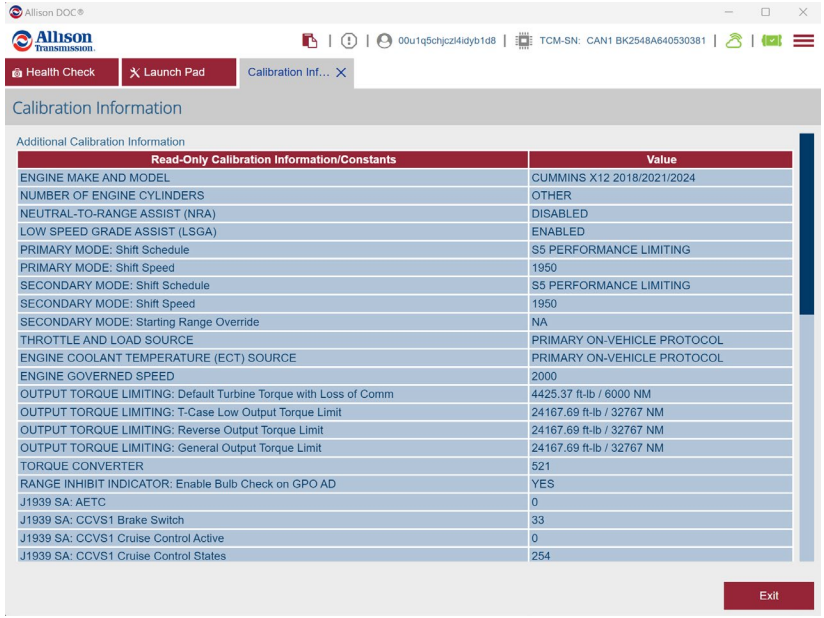
Allison DOC®


Allison Transmission
00u1q5chjczl4idyb1d8
TCM-SN: CAN1 BK2548A640530381
Health Check
Launch Pad
Vehicle Menu
Tools
Action Request
Performance Complaints
Flash Tools

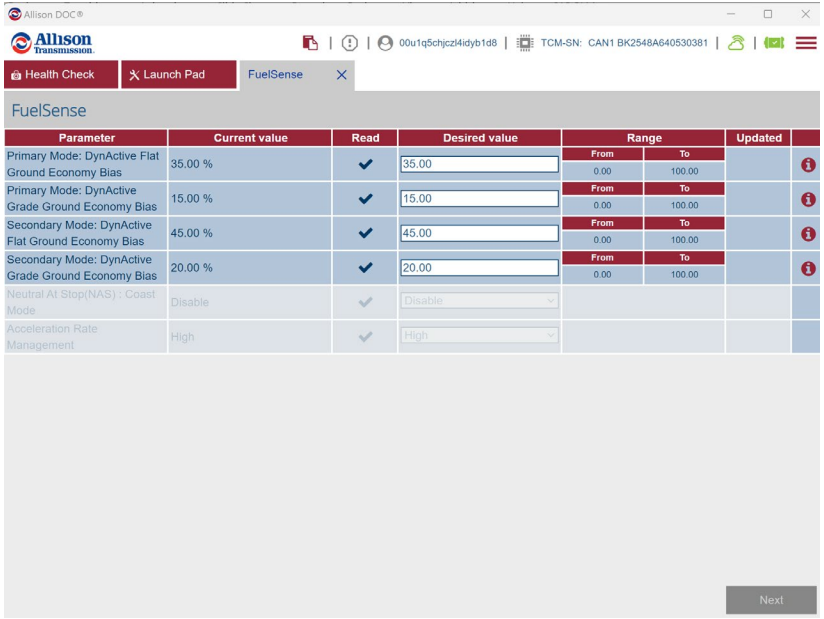

Allison DOC®
Allison Transmission
00u1q5chjczl4idyb1d8
TCM-SN: CAN1 BK2548A640530381
Health Check
Launch Pad
Vehicle Menu
Tools
Datalogger Not Run Run
Vehicle History Not Run Run
TCM Information Not Run Run
Allison Security (6th Gen) Not Run Run
DTC Test Not Run Run
Read Static Data Not Run Run
Engineering Calculations Not Run Run
Input/Output Function States Not Run Run
View Engine Faults Not Run Run
Calibration Information Not Run Run
ECU Reprogramming Not Run Run
Prognostics Not Run Run
FuelSense Not Run Run
TransHealth™ Report Not Run Run
Action Request
Performance Complaints
Flash Tools

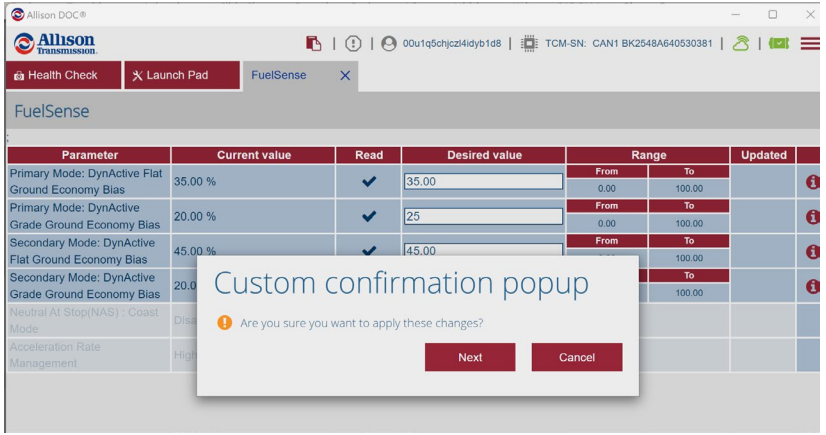
Calibration Information



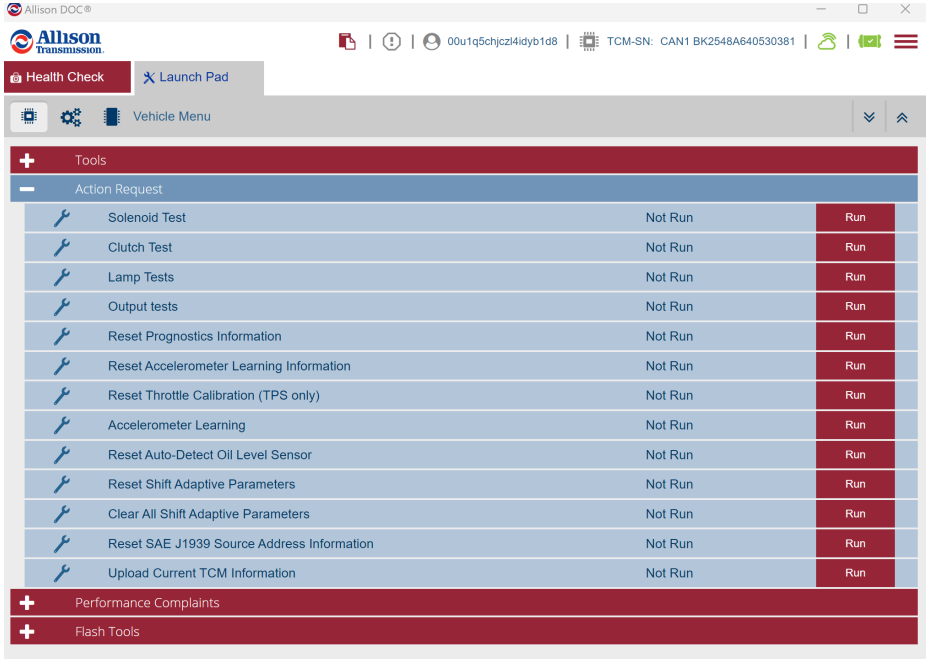


FuelSense Settings

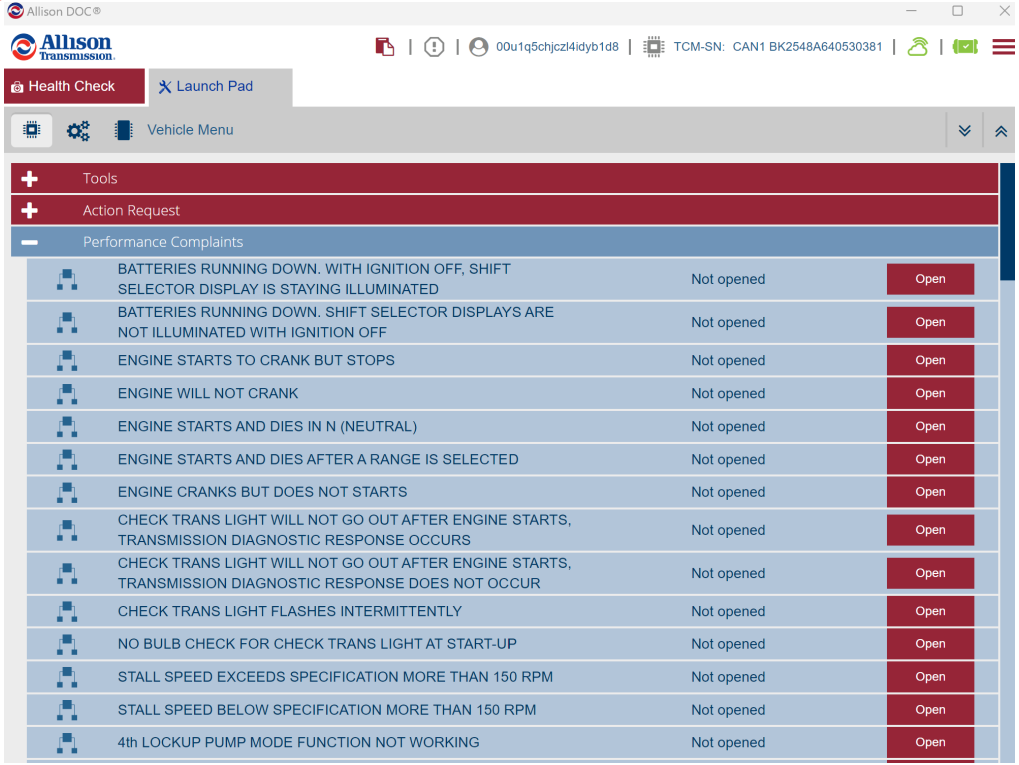




Action Requests



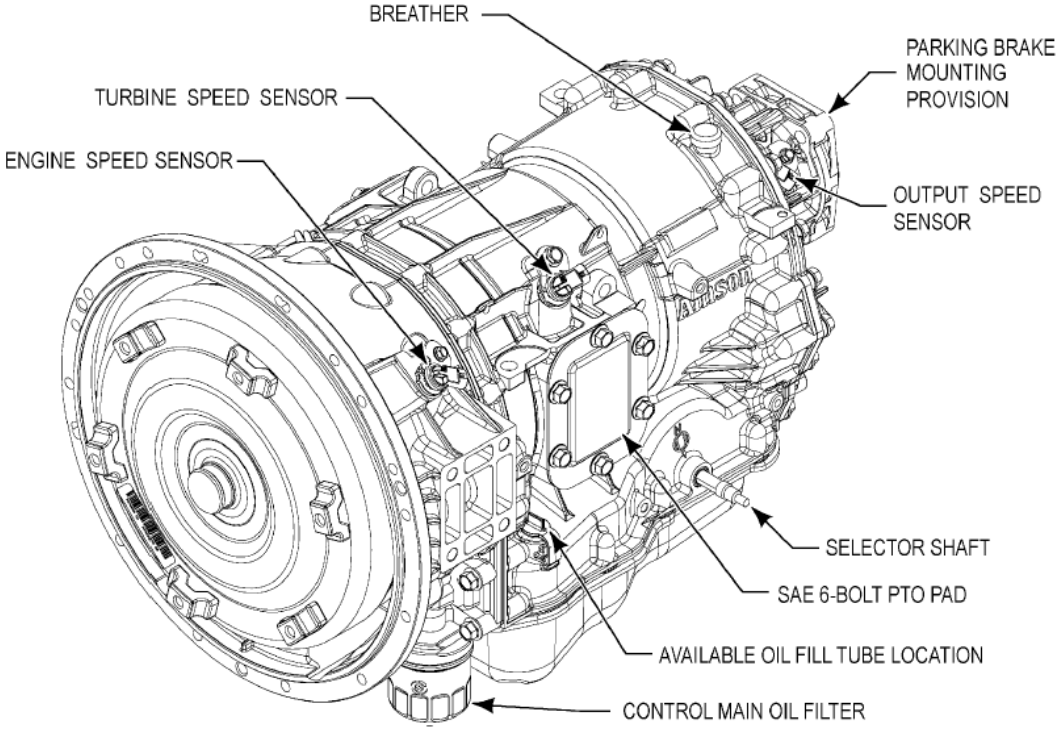
Performance Complaints



Allison 3000 Series™ and 4000 Series™

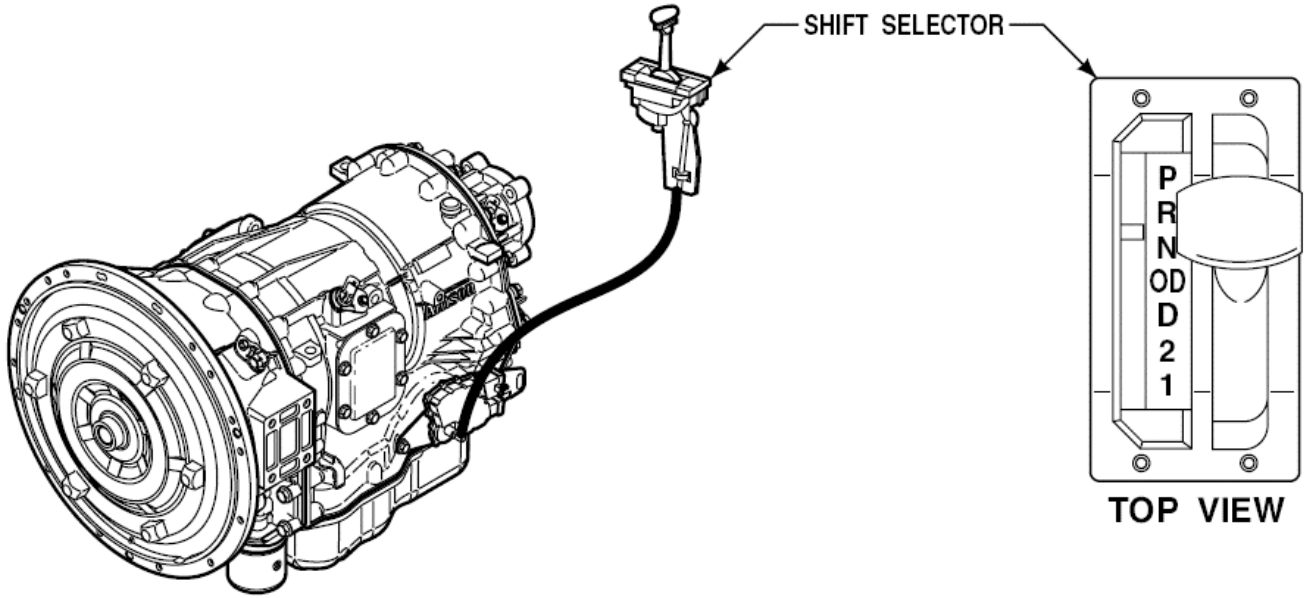
Problem	Probable Cause	Suggested Remedy
ENGINE STARTS TO CRANK BUT STOPS	Loss of Neutral start signal for the following:	
	Battery voltage dipping below 4.75 volts during engine crank	Resolve battery capacity or battery cable issue
	Vehicle Neutral start circuit component issue, e.g., starter relays, engine TCM, etc.	Resolve Neutral start circuit component issue e.g., starter, starter relays, cables, etc.
	Ignition switch issue	Resolve ignition switch circuit issue, e.g., ignition switch, relays, engine TCM, etc.
	Starter issue	Resolve starter issue
ENGINE WILL NOT CRANK	Neutral start signal not present for the following:	
	For lever shift selector, lever not in **N** (Neutral) position	Select **N** (Neutral)
	Ignition fuse or unswitched battery fuse(s) open	Resolve condition causing fuse to blow, then replace fuse
	Ignition switch is off, miswired, or open	Resolve ignition switch or wiring issue
	Ignition wiring to TCM or shift selector open or miswired	Resolve point-to-point wiring issue
	Vehicle's master disconnect switch off or switch issue	Turn on master disconnect or resolve switch issue
	Unswitched battery power to shift selector or TCM miswired or open	Resolve point-to-point wiring issue
	Battery voltage below 4.75 volts during engine cranking	Resolve battery capacity issue, or battery cabling, e.g., corrosion, wire gauge, loose powers and grounds, etc.
	Fuse blown in VIM if equipped	Repair cause for blowing fuse and replace fuse
	Neutral start relay issue in VIM, if equipped	Replace neutral start relay in VIM
	TCM issue	Replace TCM
		NOTE: Install original TCM again

1000/2000 Series



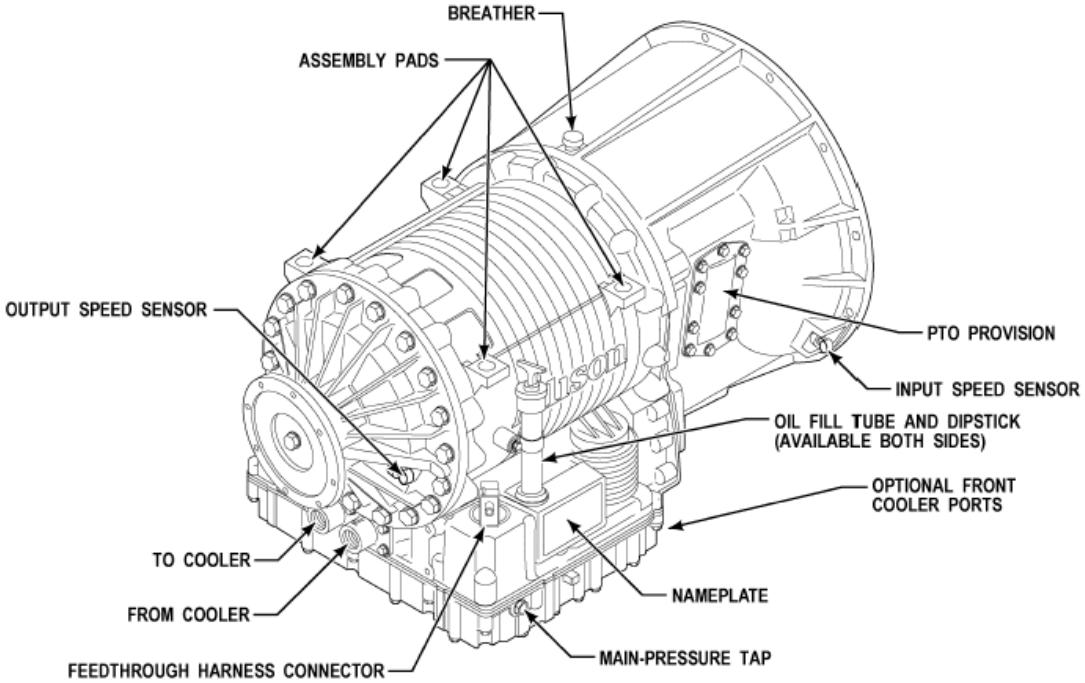
1000/2000 Components

- Shifter & Shifter Cable are OEM Supplied

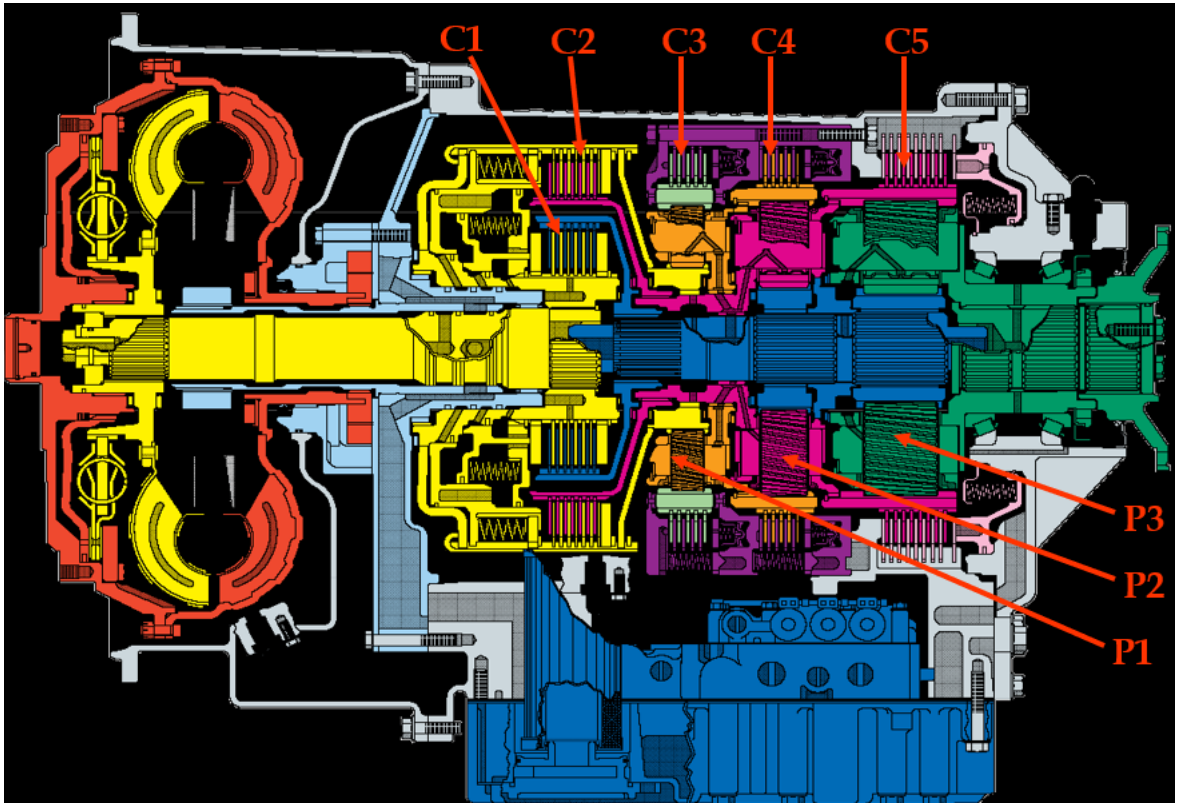


Curtis Wright Industrial Group
(formally Arens)

3000 Series

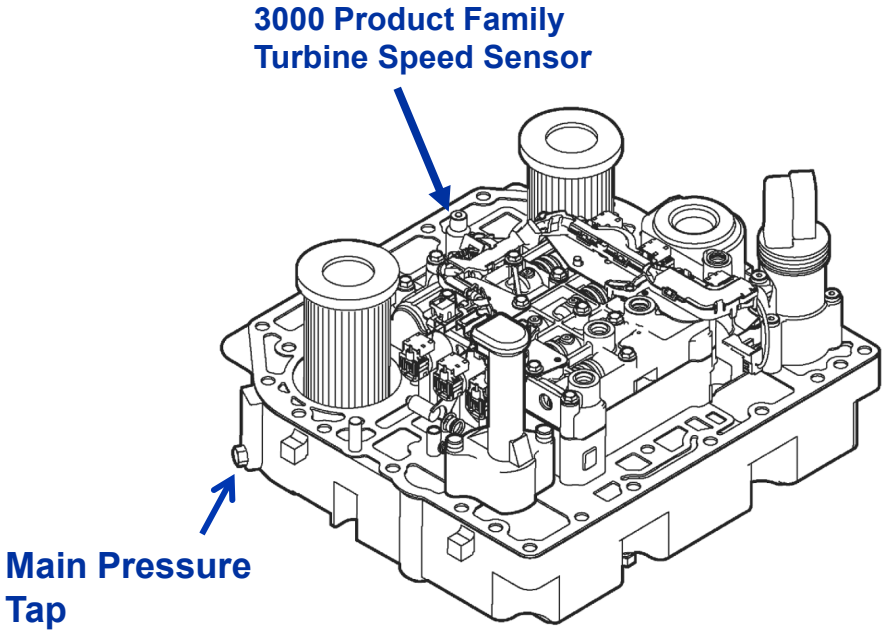

BREATHER
ASSEMBLY PADS
OUTPUT SPEED SENSOR
PTO PROVISION
INPUT SPEED SENSOR
OIL FILL TUBE AND DIPSTICK
(AVAILABLE BOTH SIDES)
OPTIONAL FRONT
COOLER PORTS
TO COOLER
FROM COOLER
NAMEPLATE
FEEDTHROUGH HARNESS CONNECTOR
MAIN-PRESSURE TAP

Gear Pack Configuration



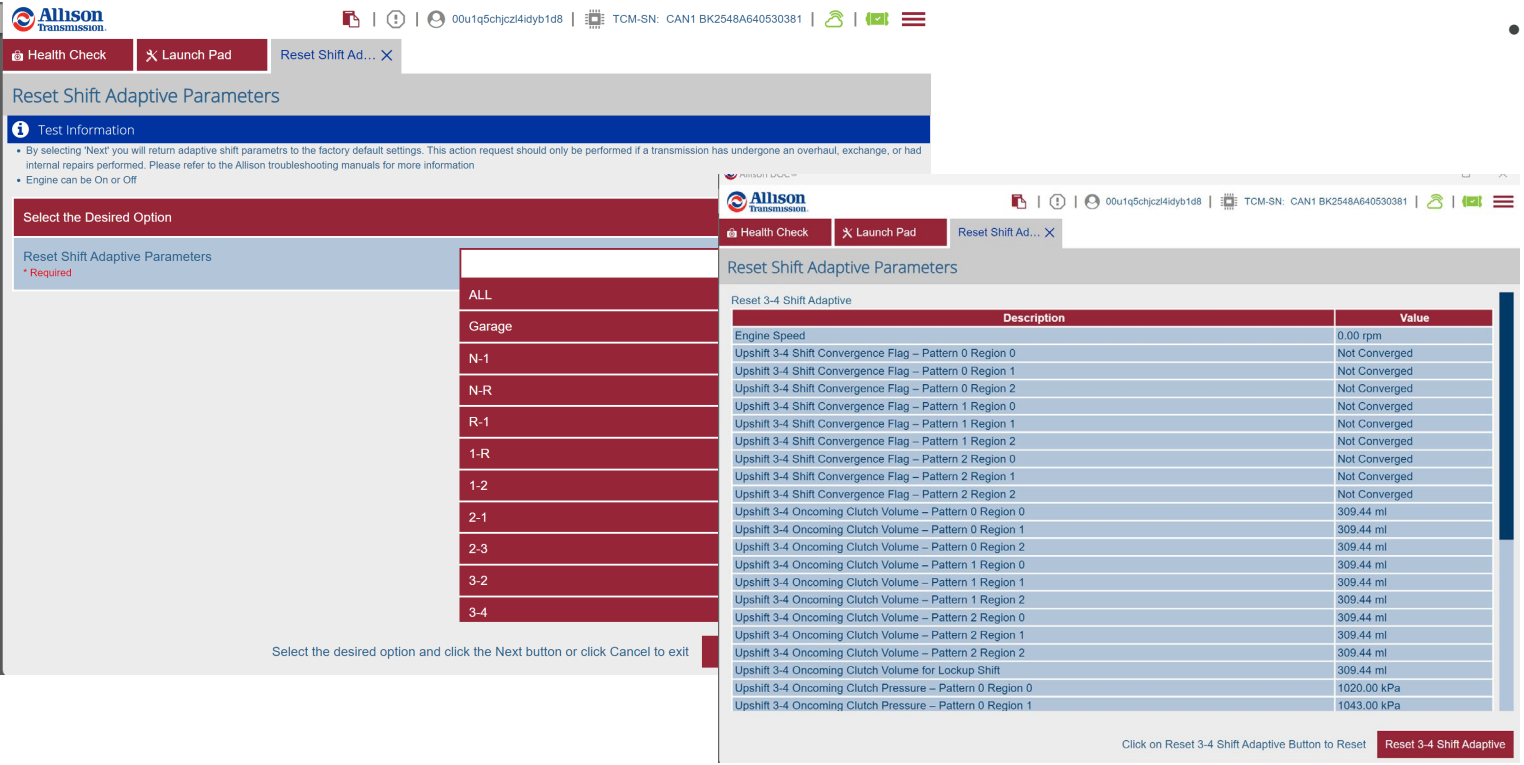
Valve Body

- Includes valves, springs, solenoids which govern fluid flow to clutches and other internal components
- Also includes a pressure switch which provides signals to the TCM



3000 Product Family Control Valve Body

Reset Adaptive Shift Parameters

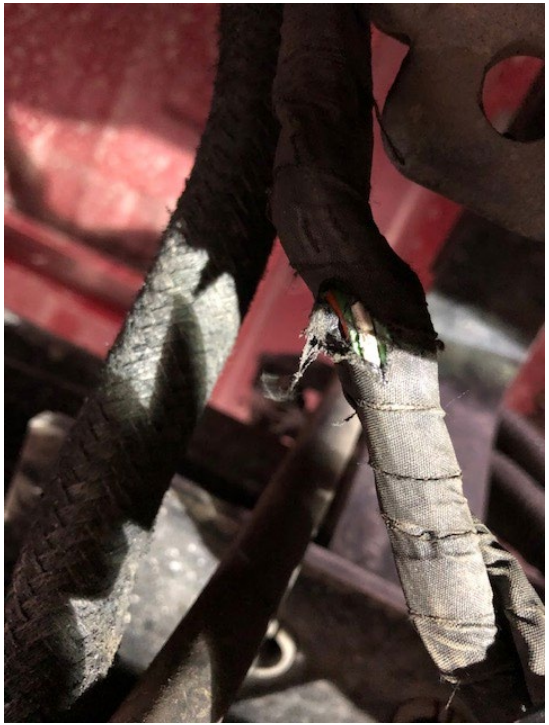


- Use after major repair or transmission replacement
  - Resets clutch control back to original factory settings
  - Allows system to re-adapt shifts
  - Individual shifts can be selected

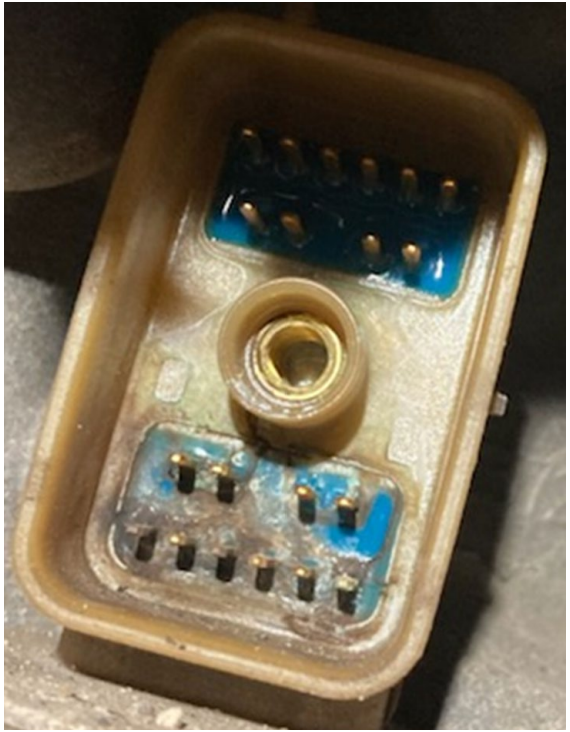
Engine Repairs affecting Shift Quality

- Unable to make upshifts (hang shifts)
- Shift Flare
- Ratio Codes
- Fuel Pump Replacement
- Injector (s) Replaced
- Sensor (s) Replaced
- Throttle Position Sensor Replaced
- Engine Calibration Updated

OEM Wiring Concerns



OEM Wiring Concerns



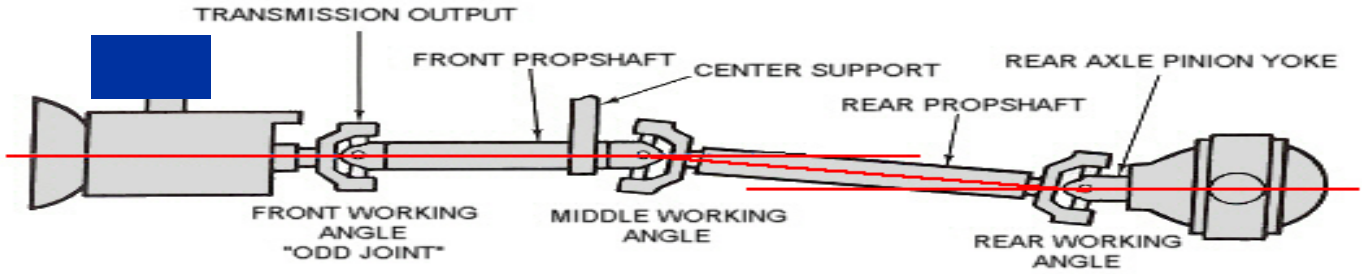
Engine Brake Operation and Transmission Preselect

- Throttle is closed
- Converter Lockup Clutch is engaged
- TCM will command preselect downshift to **4th** , 5th or 6th range based on the range specified.
- Standard Strategy: downshifts occur so the engine speed after the shift is ~300 rpm above engine gov speed
- Low Strategy: downshifts occur so the engine speed after the shift is ~150 rpm above engine gov speed
- If engine governed speed is 1900 rpm ~ 2200 rpm

Neutral at Stop

- Neutral at Stop - Premium
  - Feature that reduces or eliminates the load on the engine while the vehicle is stopped, reducing fuel usage and emissions.
  - Two Second Delay before activation
  - Starting in 2021 some OEM's have elected to use NAS feature as a Green House Emission Credit.
  - IF an OEM has taken this credit, NAS cannot be Disabled. It's for the life of the vehicle.

Driveline


TRANSMISSION OUTPUT
FRONT PROPSHAFT
CENTER SUPPORT
REAR AXLE PINION YOKE
REAR PROPSHAFT
FRONT WORKING ANGLE "ODD JOINT"
MIDDLE WORKING ANGLE
REAR WORKING ANGLE

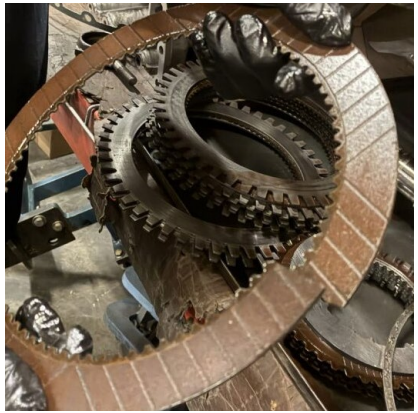
Driveline Awareness

- Visual inspection for missing balance weights or damage to the shaft tube.
- Worn U-Joints or Caps Rotating within the Yoke
- Shaft and Pinion Angle – Is the Pinion Pointing Downward.
- Air Ride Leveling Valve Properly Adjusted.
- Negative Impact on Transmission Durability and Reliability

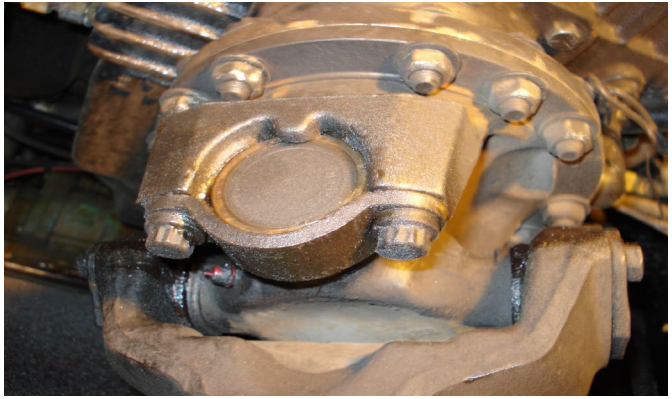
Pinion Angle – 2.0°

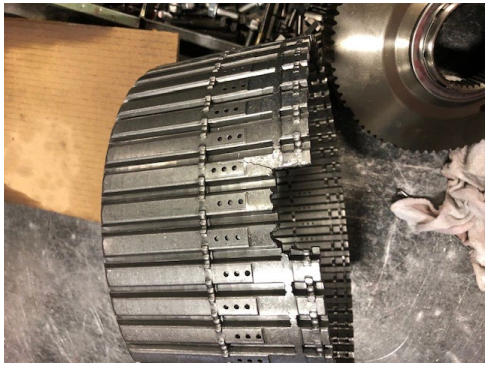
Air Ride Suspension

Air Ride Suspension

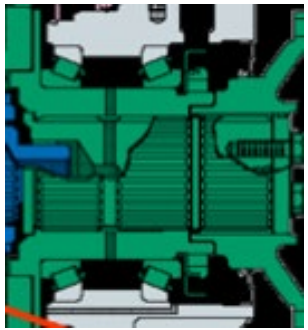


Caps Rotating within Half Round Yokes





Driveline Awareness



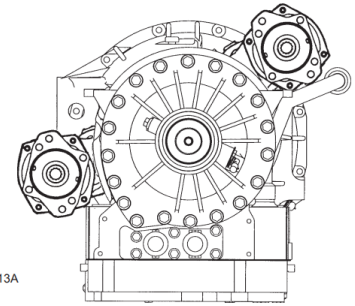
Driveline Awareness

Temperature @ 72°

PTO Mounting Locations

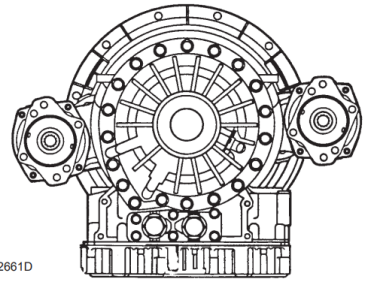
3K

TOP / SIDE PTO MOUNTING LOCATIONS



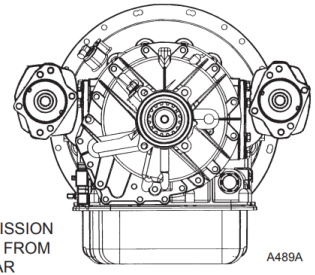
C213A

SIDE / SIDE PTO MOUNTING LOCATIONS



T2661D

1K/2K

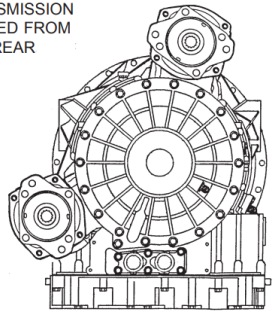


TRANSMISSION VIEWED FROM REAR

A489A

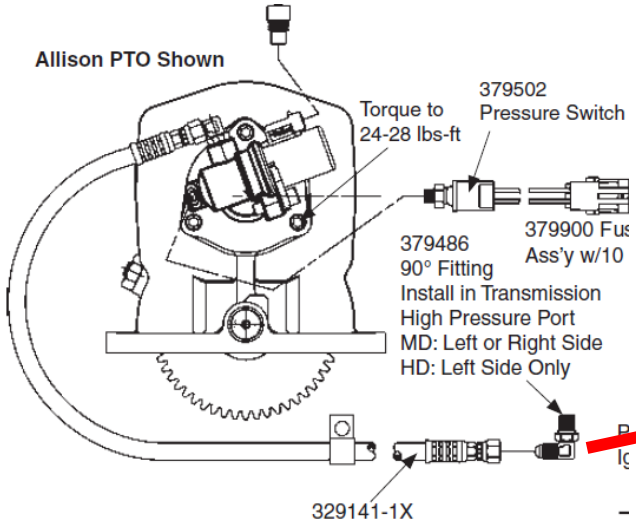
4K

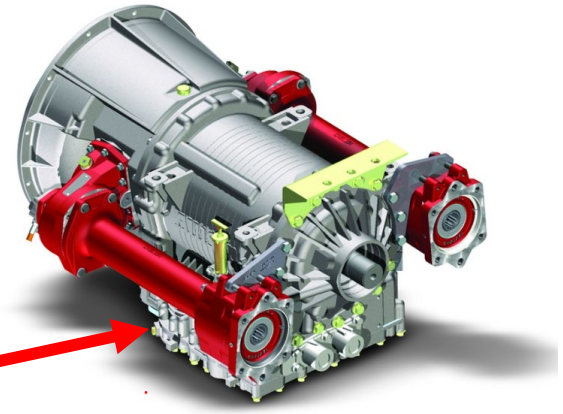
TRANSMISSION VIEWED FROM REAR



A181

Basic PTO Power Flow



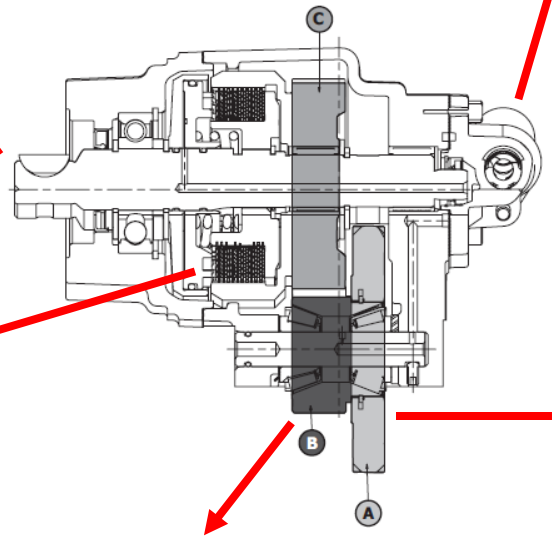


Red Arrow shows where Main Pressure tap is for 3000 series.

Basic PTO

PTO Solenoid. ON/OFF

Output Shaft

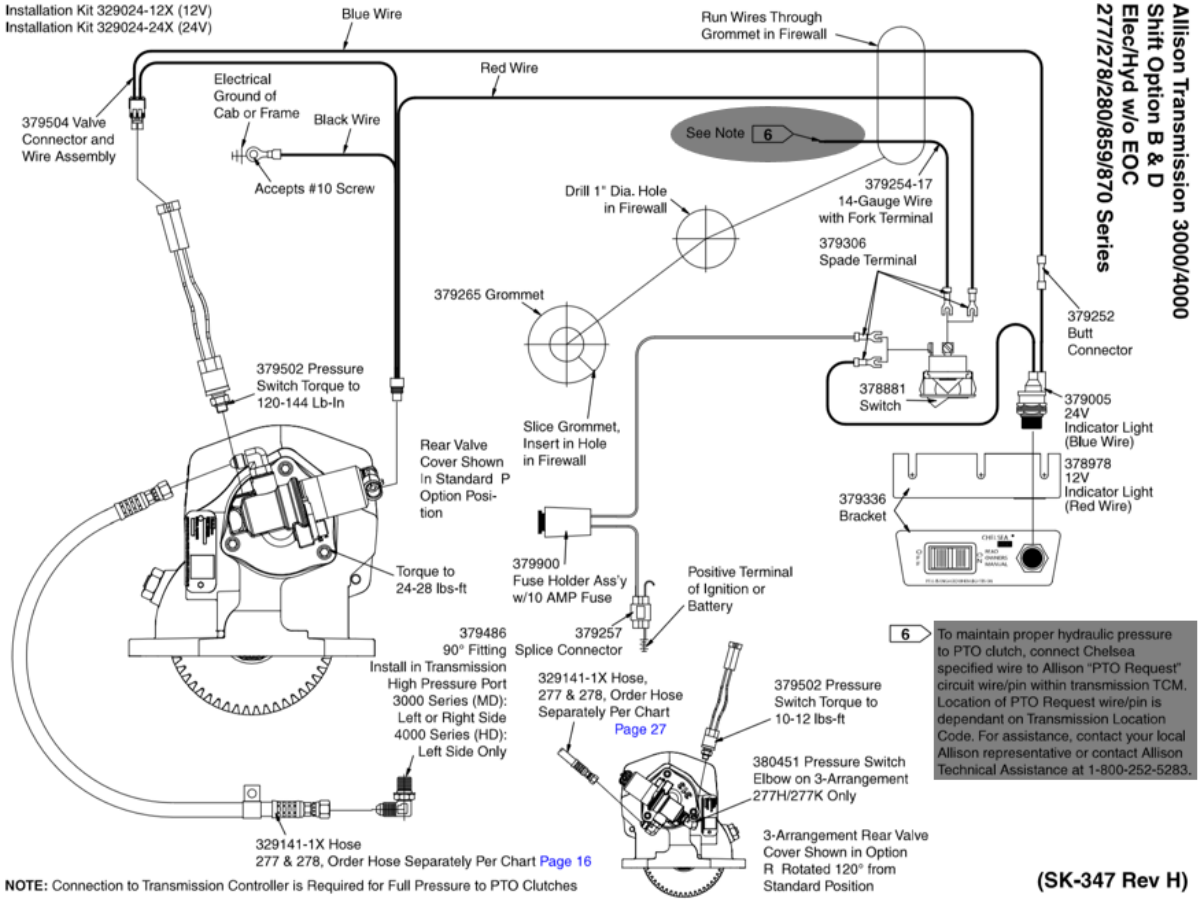


PTO Clutch. Very similar to Allison Wet Clutches. Steel and Friction plates.

PTO Input Driven Gear that Meshes to Transmission Drive Gear.

Ratio gear (B) and Output Gear (C) combine to make different ratio

Allison Transmission 3000/4000 Shift Option B & D Elec/Hyd w/o EOC 277/278/280/859/870 Series

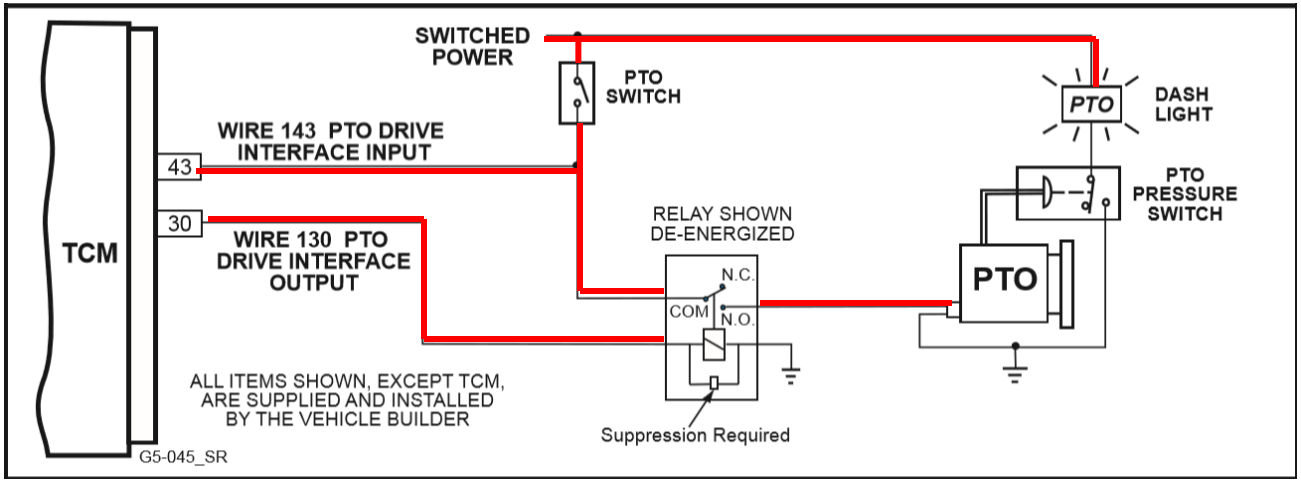


Parker Chelsea

17

Parker Hannifin Corporation
Chelsea Products Division
Olive Branch, MS 38654 USA

Allison PTO Schematic

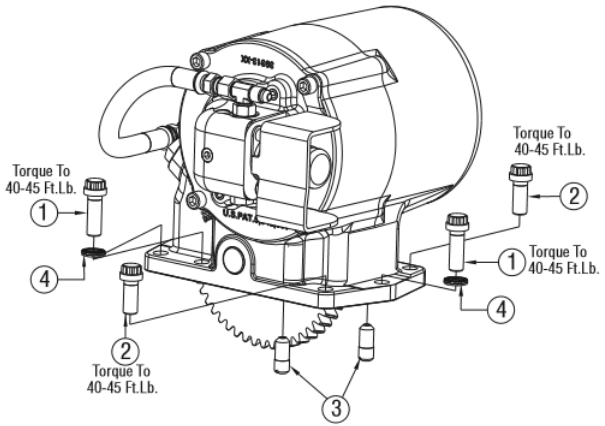


12-volt power
Ground

There are many PTO Input/output options. This is only one possible option for PTO input/output. The calibration package will direct you to the right schematic. With this option, wire 143 is the input wire from the switch in the dash. Wire 130 is only turned on when the CMC parameters are met.

Muncie CS24 Specs & PTO Kit
with Nordlock Washers

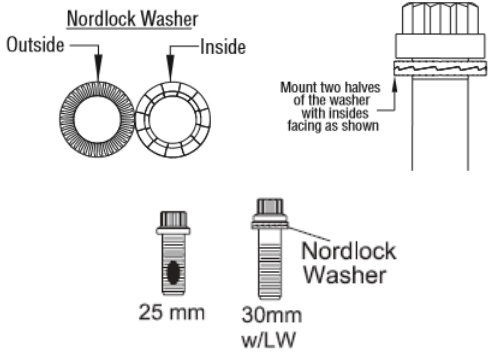
BOLT KIT



Max Torque	Max HP (@1000 RPM)	Weight
325 lbs.ft.	62 HP	52 lbs.

CS24/25 Bolt Kit – 20MK1001

ITEM	QTY	PART NO	DESCRIPTION
1	6	19T40226	12 Pt. Capscrew - 30mm
2	2	19T37727	12 Pt. Capscrew - 25mm
3	2	20T35779	Alignment Stud
4	2	21T40360	Nordlock Washer



3000/4000 PTO Mounting Requirements

1000/2000 PTO Mounting Requirements

- Sliding Gear PTO's are not ALLOWED
- Only Constant or Clutch Drive Allowed
- Torque - 42 – 50 lb. ft.
- Backlash between PTO drive gear and driven gear - .006 - .029 inch
- Pump weight > 25lbs Requires Support Bracket

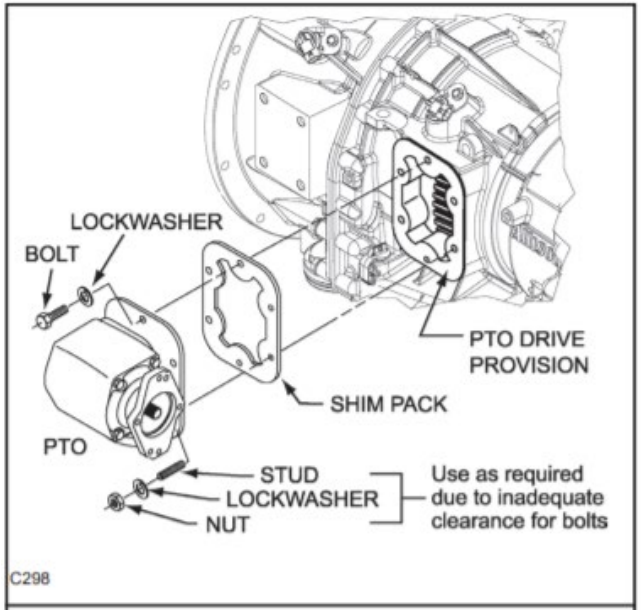
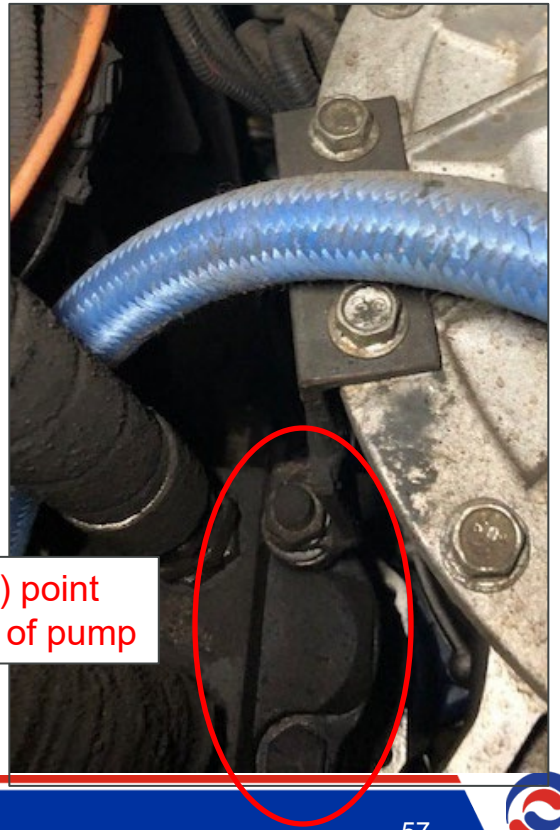


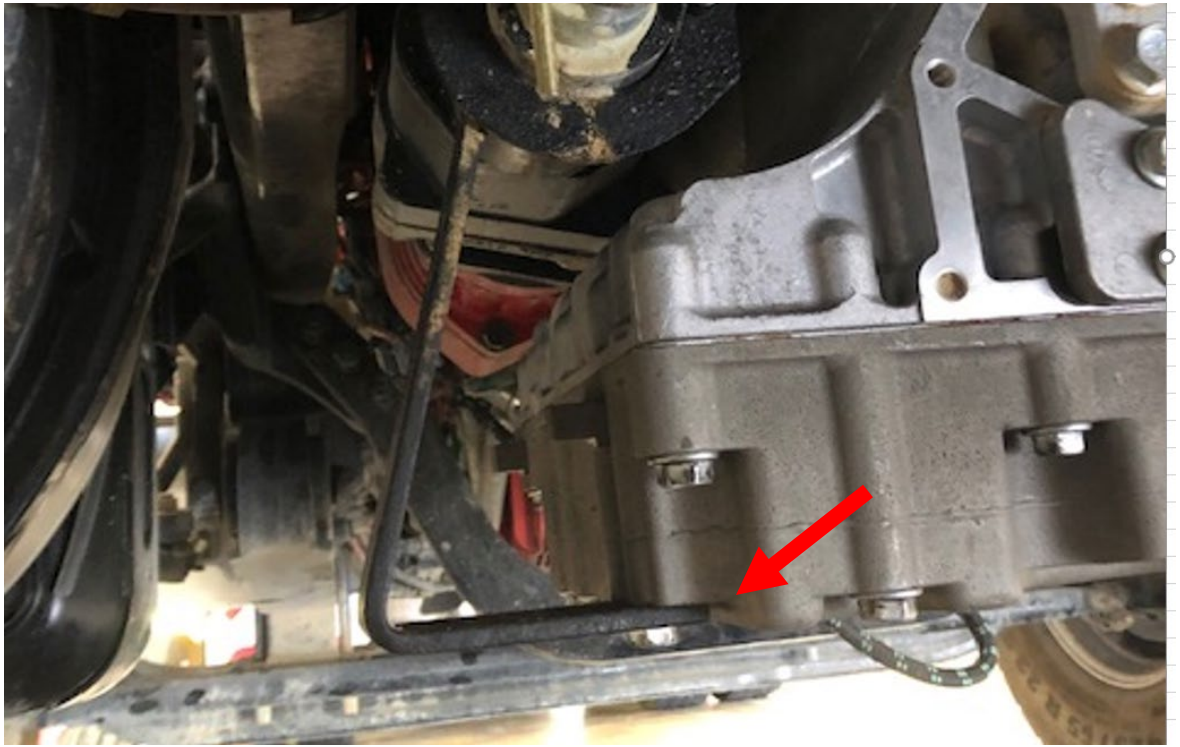
Figure 1: Typical PTO Mounting for 1000/2000 Product Families

Chelsea Installation Instructions

NOTICE:
Direct mount pumps exceeding 40 lbs. or dump pumps and multiple section pumps must be supported with a heavy duty bracket attached with two bolts on the rear of the transmission and two points on the rear of the pump.



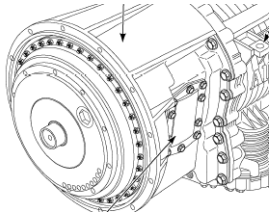
CAUTION: Do NOT attach PTO support brackets to the transmission control module, the retarder control module, or to the fill tube bosses on the side of the transmission.



Differences Live vs Turbine

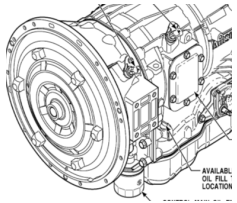
Live 3K, 4K

- Rotates at Engine speed
  - Will work in gear and vehicle stationary.
- No TC slip
- No shimming needed. PTO metal gasket only. If installed with cover plate gasket, PTO will sound like a chain saw!



Turbine 1K, 2K

- Turbine = Input shaft
- Gear stops when in gear and vehicle stationary
- TC slip will apply if Lockup is not applied.
- Shimming is required (.006 - .029)



Importance of TCM Integration

- Full Main Pressure Schedule.
  - If Allison TCM is not aware that the PTO is on, Variable main pressure will apply. (See Chart)
- Prevent Driver Abuse
  - We can prevent PTO ENGAGEMENT and OPERATION.
  - 2 Engagement, 2 Operational Parameters

Table B–1. Main Pressure Schedule With SEM

With SEM (use Universal Allison DOC® to verify). All pressures are with Variable Modulated Main active. All pressures should be taken at 80°C (176°F)				
	Main Pressure @ 750-775 rpm Variable Modulated Main Pressure Active Off*	Main Pressure @ 1400 rpm Variable Modulated Main Pressure Active Off*	Main Pressure @ 700–775 rpm (Variable Modulated Main Pressure Active)	Main Pressure @ 1400 rpm (Variable Modulated Main Pressure Active)
Reverse			369-451 kPa (54-65 psi)	720-880 kPa (104-128 psi)
Neutral			414-605 kPa (60-88 psi)	450-550 kPa (65-80 psi)
1st Range	1170-1430 kPa (170-207 psi)	1584-1936 kPa (230-281 psi)	360-440 kPa (52-64 psi)	639-781 kPa (93-113 psi)
2nd Range	792-968 kPa (115-140 psi)	1566-1914 kPa (227-278 psi)	369-451 kPa (54-65 psi)	648-792 kPa (64-115 psi)
3rd Range	801-979 kPa (116-142 psi)	1566-1914 kPa (227-278 psi)	360-440 kPa (52-64 psi)	594-726 kPa (86-105 psi)
4th Range	999-1221 kPa (145-177 psi)	1611-1969 kPa (234-286 psi)	351-429 kPa (51-62 psi)	513-627 kPa (74-91 psi)
5th Range	954-1166 kPa (138-169 psi)	1593-1947 kPa (231-282 psi)	396-484 kPa (57-70 psi)	648-792 kPa (94-115 psi)
6th Range	954-1166 kPa (138-169 psi)	1593-1947 kPa (231-282 psi)	387-473 kPa (56-69 psi)	594-726 kPa (86-105 psi)

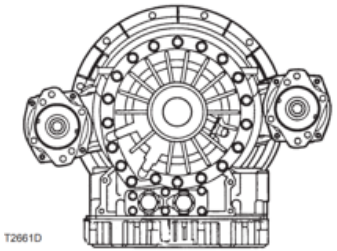
* Pressures recorded with Universal Allison DOC® in Clutch Test Enable with output speed.

Warning: Our TCM does not have the ability to ramp up engine RPM. This functionality is provided by Engine programming or by Cruise switch.

3000 / 4000 Series PTO CMC's

CUSTOMER MODIFIABLE CONSTANTS:	Default Value	Allowable Range	Units
• Maximum engine speed for PTO engagement (1)	900	500 – 2600	rpm
• Maximum engine speed for PTO operation	4000	375 – 5000	rpm
• Maximum output speed for PTO engagement	250	50 – 6000	rpm
• Maximum output speed for PTO operation	300	60 – 6000	rpm
• PTO Torque Limiting (requires SEM/LRTP)	Disabled	Disabled / Enabled	
• PTO Torque Limit	1084	100 – 1084	Nm
• Drive Ratio (Percentage of Engine Speed)	120	75 – 200	percent (%)

SIDE / SIDE PTO MOUNTING LOCATIONS

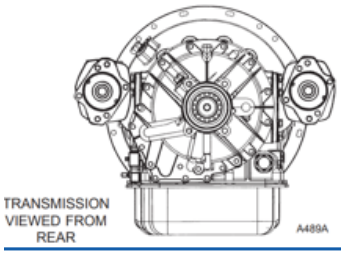


PTO Drive Interface 2 Input
3000 / 4000 – Package # 263
Input – 102
Output - 104

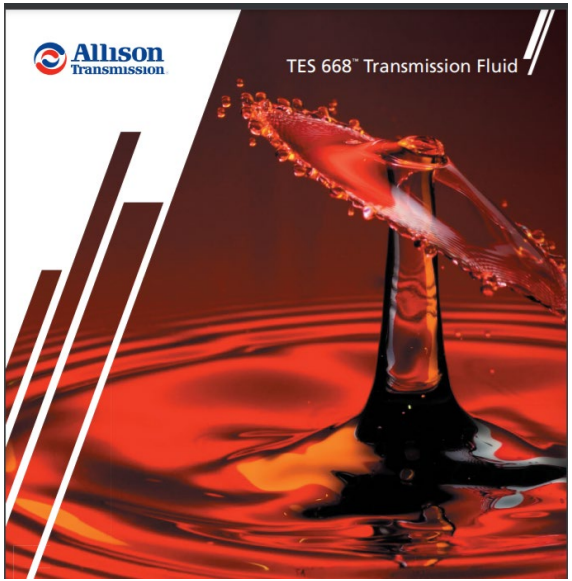
1000 / 2000 Series PTO CMC's

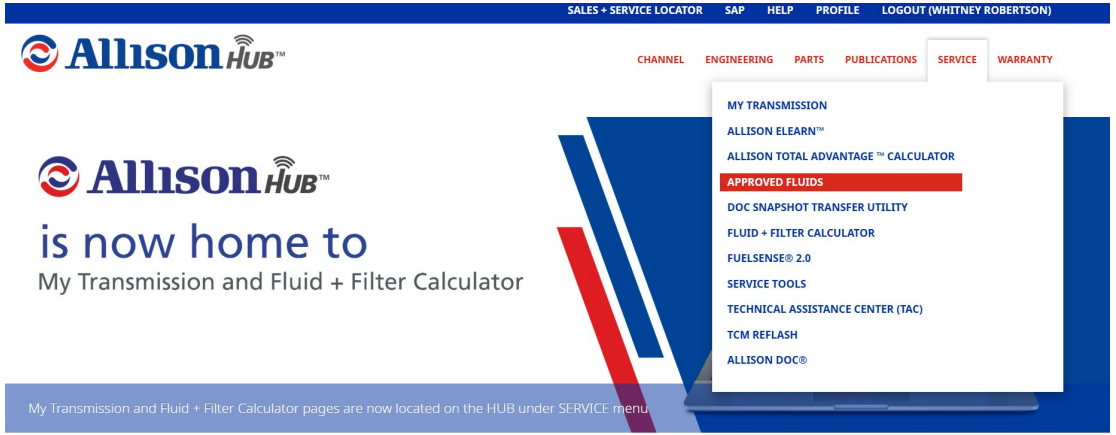
CUSTOMER MODIFIABLE CONSTANTS:	Default Value	Allowable Range	Units
• Maximum Engine Speed for PTO Engagement (1)	900	500 – 2600	rpm
• Maximum Engine Speed for PTO Operation	4000	375 – 5000	rpm
• Maximum Output Speed for PTO Engagement	250	50 – 6000	rpm
• Maximum Output Speed for PTO Operation	300	60 – 6000	rpm
• Lockup Engagement Speed (turbine speed)	1150	900 – 5000	rpm
• PTO Torque Limiting (requires SEM/LRTP)	Disabled	Disabled / Enabled	
• PTO Torque Limit	881	100 – 881	Nm
• Drive Ratio (Percentage of Engine Speed)	120	75 – 200	percent (%)

1K/2K



PTO Drive Interface 2 Input
1000 / 2000 – Package # 380
Input – 102
Output - 104





These fluids offer extended drain intervals and superior thermal and viscosity properties compared to conventional petroleum-based fluids and other synthetics. They are uniquely designed for the specific components of an Allison propulsion solution, ensuring optimal performance. Additionally, a Fluid + Filter Calculator is available on the Allison HUB™ to help users determine the appropriate change intervals.

The Benefits of TES 668®/295®

- ✓ Extended drain intervals
- ✓ Enhanced transmission performance
- ✓ Lower operating expenses
- ✓ Offers optimum transmission protection
- ✓ Backed by an Allison Factory Warranty
- ✓ Supported by our Allison Authorized Service Network

DuraDrive® Synthetic HD
668 ATF

Tutela ATF 900 HD-AXD
TFP05 ATF 240
Tutela ATF 2

PurTrax Heavy Duty
Synthetic Automatic Transmission Fluid
PurTrax Heavy Duty
Synthetic Automatic Transr Fluid

CAM2 Lubricants
ATF XHD NG

United Lubricants
United Synthetic HD Next-Gen ATF

Q8 Oils
Q8 Auto 15 A

FleetValue
Syn HD Transmission Fluid

Vistony
Vistony Brikson HD Synth ATF A8

D-A Lubricants
ProDrive-A

Dyna-Plex 21C
Synzol Extreme Heavy Duty ATF

Archer Lubricants
Archer Gold Synthetic HD Next-Gen ATF

FS
FS Synthetic HD Next-Gen ATF

April Super Flo
ATF HD-T6

Torque Glide HD

Synthetic Transmission
Oil Ultra

MOCA Full Synthetic
Heavy Duty ATF

HEAVY DUTY SYN SSE ATF

Elixir Full Synthetic
MAX-TORQUE Transmission Fluid

Fleetrite ATF All Duty
On-Highway Transmission Fluid

PACCAR ATF All Duty
On-Highway Transmission Fluid

Syn-TS HD

HD SYN DRIVE Full
Synthetic Transmission Fluid

MAXTRON ATF SS8

RAVENOL ATF THS
Truck HD Synthetic
RAVENOL ATF THS
Truck HD Synthetic

Emgard ATF 7668

Mobil Delvac 1 ATF 668

Kendall SHP® 668

Phillips 66
Triton® 668

Rugged 668 HD
Synthetic Transmission Fluid

AT FLUID HD668

Lubriguard Heavy Duty
Synthetic 668 ATF

Sunoco Duratrans ATF 668

Valvoline Syn Gard™ 668
Automatic Transmission Fluid

Advantage ATF 668

FUCHS TITAN ATF 5668

FLUIDMATIC SYN T668

SK HD 668 Fully Synthetic
Automatic Transmission Fluid

Spirax S6 ATF A668
Spirax S6 ATF A668

CITGO SynDurance® 668
Automatic Transmission Fluid

Delo SYN ATF 668

Castrol TranSynd RD™ 668

CHRYSAN SYN 668

Torq-Maxx HD Synthetic ATF

Approved Fluid

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- Start by sending sample from the barrel
- File reports to establish a trend for each vehicle

Lubricant Analysis Report

North America: +1-888-456-0120
Europe: +1-317-808-3752

0	1	2	3	4
NORMAL		ABNORMAL		CRITICAL

Overall report severity based on comments.

Account Information	Component Information	Sample Information
Account Number: ALLISN-7777-0292	Component ID: 6511616428 T	Tracking Number: 21163E02318
Company Name: POWER GRID	Secondary ID: VIN: KW5183	Lab Number: I-235977
Contact: JOHN RANDALL	Component Type: AUTO/POWERSHIFT TRANSMISSION	Lab Location: Indianapolis
Address: 3535 PARKWAY LANE HILLIARD, OH US	Manufacturer: ALLISON	Data Analyst: FLG
Phone Number: 614-527-9400	Model: 3500 RD S-P	Sampled: 13-Sep-2021
	Application: UNKNOWN	Received: 14-Sep-2021
	Sump Capacity:	Completed: 15-Sep-2021

Filter Information	Miscellaneous Information	Product Information
Filter Type: Information Requested		Product Manufacturer: CASTROL
Micron Rating: 0		Product Name: TRANSYND
		Viscosity Grade: CUSTOM GRADE

Comments: Fluid condition parameters are satisfactory. No action required. Continue sampling per established schedule;

	Wear Metals (ppm)										Contaminant			Multi-Source Metals (ppm)						Additive Metals (ppm)					
Sample #	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
1	120	0	1	31	21	5	1	0	0	0	18	7	0	0	1	0	2	0	51	8	66	0	227	34

	Sample Information							Contaminants			Fluid Properties					
Sample #	Date Sampled	Date Received	Lube Time mi	Unit Time mi	Lube Change	Lube Added gal	Filter Change	Fuel Dilution %	Soot %	Water %	Viscosity 40°C cSt	Viscosity 100 °C cSt	Acid Number mg KOH / g	Base No. D4739 mg KOH / g	Oxidation abs / cm	Nitration abs / 0.1mm
1	13-Sep-2021	14-Sep-2021	36012	36012	Unk	0	Unk			<.1 - Hotplate	34.8	6.9	0.68			

	Particle Count (particles/mL)										Additional Testing	
Sample #	ISO Code Based On 4/6/14	> 4 particles /mL	> 6 particles /mL	> 10 particles /mL	> 14 particles /mL	> 21 particles /mL	> 38 particles /mL	> 70 particles /mL	> 100 particles /mL	Test Method	Glycol
1	/ /										NEG

Transmission Temperature

Transmission is overheated when the following temperatures are exceeded

Fluid to the COOLER , 300° F

Sump Fluid 250°F

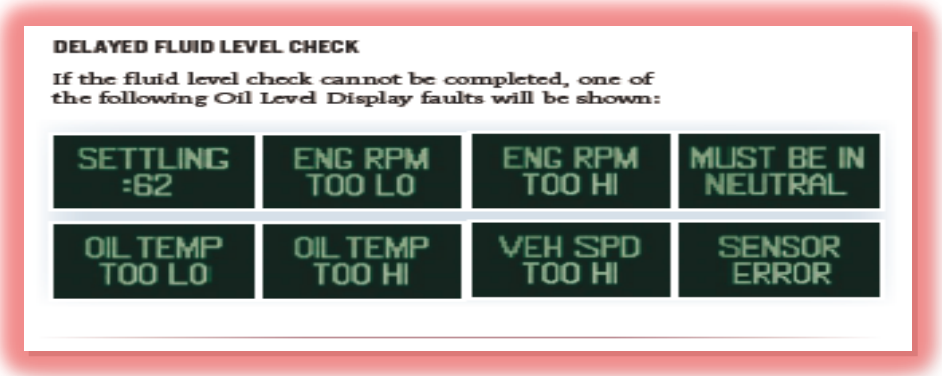
Kenworth Add-On Remote Cooler

Allison Shift Selector

Checking Fluid Level at Shift Selector - Delayed

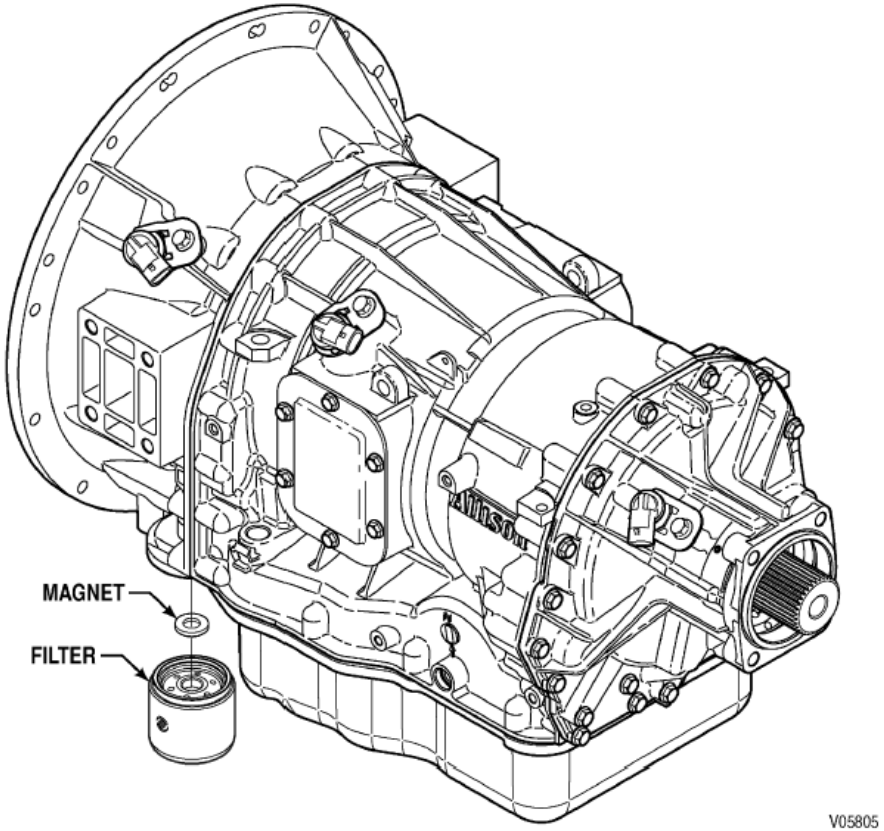
The TCM delays the fluid level check until the following conditions are met:

- The fluid temperature is above 40°C (104°F) or below 104°C (220°F).
- The transmission is in **N** (Neutral).
- The vehicle has been stationary for approximately two minutes to allow the fluid to settle.
- The engine is at idle.



1K/2K Fluid & Filter Service

1000 and 2000 Series Fluid And Filter Change Interval Recommendations						
			Prognostics Turned Off or Not Calibrated in TCM		Prognostics Turned On	
		Duty Cycle	Allison TES 668 and/orTES 295 Approved Fluid(s)	Allison TES 389 Approved Fluid(s)	Allison TES 668 and/or TES 295 Approved Fluid(s)	Allison TES 389 Approved Fluid(s)
Fluid		General*	150,000 Miles (240,000 km) 4,000 Hours 48 Months	50,000 Miles (80,000 km) 2,000 Hours 24 Months	When indicated by controller or 48 months, whichever occurs first	When indicated by controller or 24 months, whichever occurs first (MY2010)
		Severe**	75,000 Miles (120,000 km) 3,000 Hours 36 Months	12,000 Miles (20,000 km) 500 Hours 6 Months		
Filters	**Spin-On Control Main Filter**	General*	50,000 Miles (80,000 km) 2,000 Hours 24 Months	50,000 Miles (80,000 km) 2,000 Hours 24 Months	When indicated by controller or 48 months, whichever occurs first	When indicated by controller or 24 months, whichever occurs first (MY2010)
		Severe**	50,000 Miles (80,000 km) 2,000 Hours 24 Months	12,000 Miles (20,000 km) 500 Hours 6 Months		
	Internal Filter	All	Overhaul	Overhaul	Overhaul	Overhaul


MAGNET
FILTER
V05805

1000 / 2000 Control Main Filter

3K/4K Prognostic's ON - TES295/668 Fluid

Filter Change Intervals, 100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids, Prognostics "ON" *		
REQUIRED **100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids and Allison High Capacity Filters** REQUIRED		
General or Severe		
Main Filter	**Internal Filter**	**Lube Filter**
Change filters when indicated by controller between fluid changes or 60 months, whichever occurs first.	Overhaul	Change filters when indicated by controller between fluid changes or 60 months, whichever occurs first.
Fluid Change Intervals, 100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids, Prognostics "ON" *		
REQUIRED **100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids and Allison High Capacity Filters** REQUIRED		
General or Severe		
Change fluid when indicated by controller or 60 months, whichever occurs first. Replace filters with fluid.		
* If prognostics is turned "OFF " or Not Calibrated in TCM after serial numbers listed above, refer to Table 11 for fluid change intervals.		
** Less than 100 percent concentration of TES 295 or TES 468 Allison Approved fluids is considered a mixture and shall not be used with Prognostics or this change schedule. Refer to Table 11 for utilization of Allison Approved Non-TES 295 or Non-TES 468 fluids change intervals.		

3K/4K Fluid & Filter Service

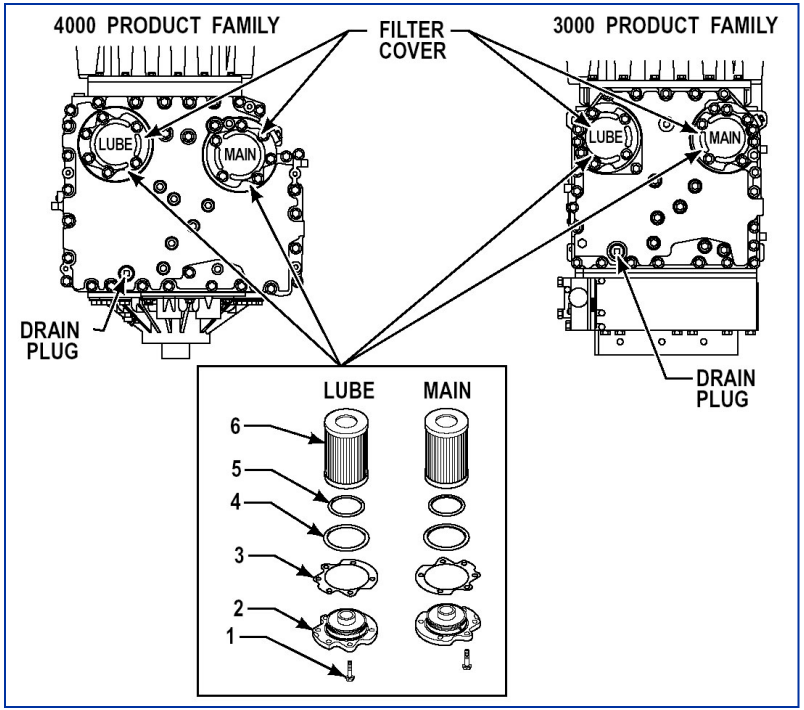
Filter Change Intervals, No Prognostics or when Prognostics is NOT Enabled/Turned OFF							
100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids*			Allison Approved Non-TES 295 or Non-TES 468 Fluids*				
Main Filter	Internal Filter	Lube Filter	Main Filter		Internal Filter	Lube Filter	
General** or **Severe***** 75,000 Miles (120 000 km) 3000 Hours 36 Months	Overhaul	**General**** or **Severe***** 75,000 Miles (120 000 km) 3000 Hours 36 Months	**General**** 25,000 Miles (40 000 km) 1000 Hours 12 Months	**Severe***** 12,000 Miles (20 000 km) 500 Hours 6 Months	Overhaul	**General**** 25,000 Miles (40 000 km) 1000 Hours 12 Months	**Severe***** 12,000 Miles (20 000 km) 500 Hours 6 Months

Fluid Change Intervals, No Prognostics or when Prognostics is NOT Enabled/Turned OFF			
100 Percent Concentration Allison Approved TES 295 or TES 468 Fluids*		Allison Approved Non-TES 295 or Non-TES 468 Fluids*	
General** 300,000 Miles (480 000 km) 6000 Hours 48 Months	**Severe***** 150,000 Miles (240 000 km) 6000 Hours 48 Months	**General**** 25,000 Miles (40 000 km) 1000 Hours 12 Months	**Severe***** 12,000 Miles (20 000 km) 500 Hours 6 Months

* Less than 100 percent concentration Allison Approved TES 295 or TES 468 fluid is considered a mixture and should utilize Allison Approved Non-TES 295 or Non-TES 468 fluids change intervals.
** General Vocation: Intercity Coach with duty cycle less than or equal to one (1) stop per mile and all other vocations not listed in severe vocation.
*** Severe Vocation: All Retarders, On/Off Highway, Refuse, Transit, and Intercity Coach with duty cycle greater than one (1) stop per mile.

Fluid & Filter Service

- Replace main and lube filters during regular service intervals
- Recommend using Allison High-Capacity Filters
- Replace sump filter only at overhaul
- Factory filled with TranSynd™
- **Bolt Torque is 38 – 45 lb. ft.**



Resetting Prognostic's

- Oil Life Monitor

Display the OM information and press and hold the **DISPLAY MODE/DIAGNOSTIC** (DMD) button for 10 seconds.

With the ignition on and the engine off, shift between **NDNDNRN** to reset the value displayed to 99, pausing no more than 3 seconds between consecutive

Resetting Prognostic's

- Filter Life Monitor

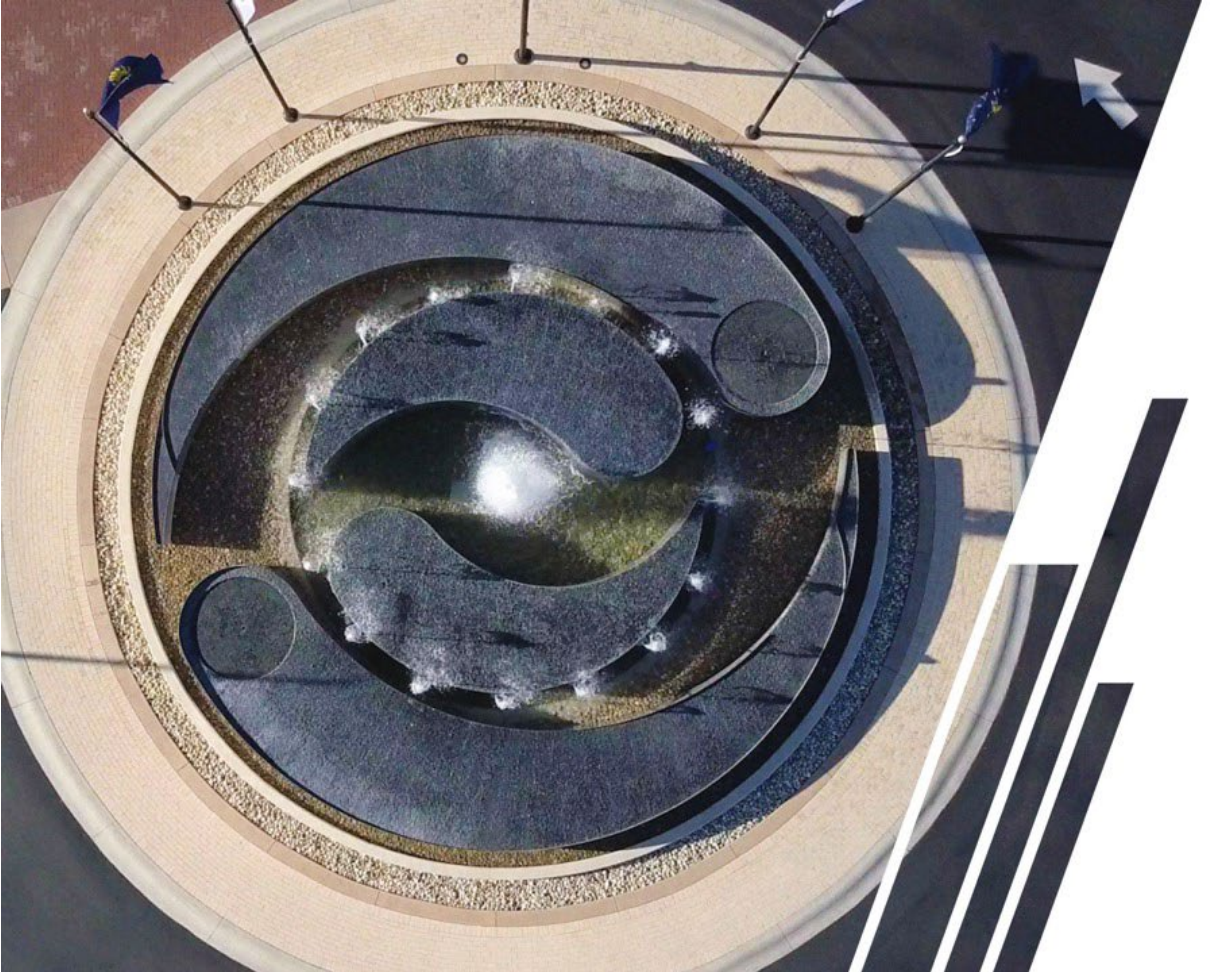
The FM automatically resets once the new filters have been installed and the Filter Life Indicator (FLI) pressure switch no longer detects low pressure at the filter.

The FM can also be reset manually by either of these methods:

• Press and hold the **MODE** button for 10 seconds while in FM mode.

• With ignition on, engine off, and brakes applied, shift between **NRNRNDN** pausing less

than 3 seconds between each selector movement.



Questions?