



SECTION F: CONTROLS SUPPORT EQUIPMENT

ALLISON 5TH GENERATION CONTROLS

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APPLICABLE MODELS: 1000/2000 Product Family
3000 Product Family
4000 Product Family

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1.0 INTRODUCTION

Various types of auxiliary components and equipment are required to complete the installation of an Allison transmission. These items are commonly referred to as "support equipment". Support equipment may be sourced as follows:

- Some controls items are available from Allison, but must be ordered separately from the transmission.
- Other controls support equipment items are available from non-Allison sources.

This document summarizes support equipment items. The Appendix contains contact information for suppliers that are listed in the text.

NOTE: This list may not include all sources of support equipment. This list does NOT constitute approval or recommendation of a particular item or supplier. The reliability and warranty coverage of non-Allison components are the responsibility of the supplier.

2.0 REFERENCED DOCUMENTS

In this document, references are identified by *italic font*. Unless otherwise noted, referenced documents may be found in the Extranet channel of the Allison Transmission website, www.allisontransmission.com. To locate documents on the Extranet, look for Tech Data under the Engineering heading on the Extranet home page. Contact your Allison Transmission representative if you do not have access to the Allison Transmission Extranet.

Some of the referenced documents are still preliminary, others are not yet available. The preliminary documents are available from your Allison representative. A list of referenced documents and their availability can be found at the end of this document.

3.0 ORDERING INFORMATION FOR ALLISON ITEMS

3.1 ALLISON PARTS

Allison parts that are ordered separately from the transmission assembly are available from the Allison Parts Distribution Center (PDC). These parts are shipped separately from the transmission assembly. For PDC contact information, refer to the Allison listing in the Appendix.

NOTE: Consult your Allison Representative regarding the availability of the 5th Gen Controls hardware. Some components discussed in this document will not be available at the initial launch of Allison 5th Gen Controls.

3.2 ALLISON LITERATURE

Printed copies of labels, Operators Manuals, and other Allison literature are available from Allison Transmission. Refer to the Appendix for order information.

4.0 ALLISON 5TH GENERATION CONTROLS SUPPORT EQUIPMENT

4.1 TRANSMISSION CONTROL MODULE (TCM)

The TCM must be sourced from:

- Allison PDC
 - Part numbers depend upon level of VEPS (Vehicle Electronics Programming Station) implementation:
- Full VEPS implementation – each TCM shipped from the PDC will have software and a base Vocational Model Calibration (VCM), part numbers TBD
- VEPS via the PDC, Customization Center, or Allison Distributor – each TCM will be fully programmed based on the Parameter (PAR) file created by the vehicle builder using the PAR File Generator, part number determined by PAR File Generator
- TCM Reflash load stations – The PDC will ship a TCM ready for download of a complete TCM calibration. The TCM calibration will be specified and delivered via the 5th Gen Calibration Delivery System. TCM kits consists of a blank, unprogrammed TCM and a label:
 - A61, 12-volt for all 6-speed non-retarder transmissions
 - A62, 12-volt for all 6- and 7-speed, non-retarder and retarder transmissions
 - A63, 12- and 24-volt for 6- and 7-speed, non-retarder and retarder transmissions

For more information on the TCM and VEPS, refer to the following:

- [Allison 5th Generation Controls Manual Section A-1: Controls System Familiarization](#)
- [AS07-512, Control Module \(TCM\) for Allison 5th Generation Controls](#)

4.2 TRANSMISSION SHIFT CONTROLS

4.2.1 1000/2000 PRODUCT FAMILY

Shift controls and related components are available from:

Shift Control – Cable Actuated

- Orscheln Products, LLC
- Quadrastat Corporation
- Teleflex Morse

Shift Control – Air / Hydraulic / Electric Actuated

- Arens Controls Company LLC
- Stone-Bennett Corporation

The selector shaft nut must be sourced from:

- Allison PDC
 - Part number is shown on [AS64-410, Shift Selector Design Requirements](#)
this part is available in bulk quantities

For more information on selectors used with the 1000/2000 Product Family, refer to the following:

- [Technical Document \(TD\) 177. Requirements for Shift Selector and Cable System](#)
- [Allison 5th Generation Controls Manual Section C: Controls Component Installation](#)
- [Technical Document \(TD\) 181. Transmission Shift Selector with Park Brake Position](#)
- AS64-410, Shift Selector Design Requirements

4.2.2 3000 AND 4000 PRODUCT FAMILIES

Shift selectors for these models are sourced from:

- Allison PDC
 - Part numbers are listed below

Keypad Pushbutton Shift Selectors (PBSS)

Standard PBSS	p/n 29551496	Standard PBSS with Mounting Brackets	p/n 29551556
Common PBSS	p/n 29551495	Common PBSS with Mounting Brackets	p/n 29551555
Compact PBSS	p/n 29551494		
Compact Alternate PBSS	p/n 29557741		

Strip Pushbutton Shift Selectors

Six-Button, Horizontal	p/n 29551505
Six-Button, Vertical	p/n 29551506
Three-Button, Horizontal	p/n 29551565
Three-Button, Vertical	p/n 29551566

Bump Lever Shift Selectors

Lever Right, Reverse Front (LRRF)	p/n 29557835	
Lever Left, Reverse Front (LLRF)	p/n 29557834	
Lever Right, Reverse Rear (LRRR)	p/n 29557837	
Mounting clip nuts for lever selectors, M6 x 1 threads (ordered separately)		p/n 29509954

For more information on selectors used with the 3000 and 4000 Product Families, refer to the following:

- AS07-517, Allison Shift Selectors, 3000/4000 Product Families

4.3 WIRING HARNESSSES AND CONNECTORS

Wiring harnesses, electrical connectors, connector components, and covers for unused connectors are available from:

- St. Clair Technologies Inc.

Connectors and connector components are also available from:

- | | | |
|--|--|--|
| • AEES (formerly AFL/EPC)
- AEES connectors
(formerly Engineered Plastic Components) | • Deutsch Company
- Deutsch IPD connectors | • Molex
- Molex connectors |
| • Power and Signal Group
- Delphi-Packard connectors | • ITT Cannon Electric Co.
- ITT Cannon connectors | • Qualtronic, LLC
- Qualtronic connectors |

For more information on wiring harnesses and connectors used with Allison transmissions, refer to the following:

- [Technical Document 173 \(TD-173\). Wiring Harnesses for Allison 4th and 5th Generation Controls](#)
- AS07-505, Connector Information for Allison 5th Generation Controls

4.4 RETARDER-RELATED CONTROLS SUPPORT EQUIPMENT – 3000 AND 4000 PRODUCT FAMILIES

4.4.1 RETARDER CONTROLS

Retarder controls are available from:

- Allison PDC
 - Part numbers and descriptions of the various retarder controls can be found in [Technical Document 175 \(TD-175\). Guidelines for Selecting Retarder Controls – 3000 and 4000 Product Families](#).

For dimensional and mounting information, refer to the following:

- AS07-504, Retarder Control Hardware_

4.4.2 ENGINE WATER TEMPERATURE SENSOR

An engine water temperature sensor with M12 x 1.5 thread and encapsulated copper sealing washer is available from:

- Allison P.D.C.
 - Temperature sensor p/n 29541718

The mating connector for the engine water temperature sensor is available from:

- Power and Signal Group
 - Delphi Packard Metri-Pack connector p/n 12162193, or equivalent

For additional information regarding retarder capacity reduction based on engine water temperature, refer to the following document:

- [Allison 5th Generation Controls Section B: System Operation for the 3000 & 4000 Product Families](#)

4.4.3 ELECTRONIC BRAKING SYSTEM (EBS) PRESSURE FEEDBACK TRANSDUCER

The pressure feedback transducer used to integrate the retarder into an EBS system is available from:

- Allison P.D.C.
 - Pressure transducer p/n 29548995

In order to install the pressure transducer in the Allison retarder, the Retarder EBS Valve Body must be specified when ordering the transmission. The Retarder EBS Valve Body has a port for vehicle builder to install the EBS sensor.

For more information, refer to the following:

- [*Technical Document \(TD\) 182. Use of Electronic Braking Systems \(EBS\) with Allison Transmissions*](#)

4.5 ELECTRONIC SPEEDOMETERS

Speedometers compatible with the TCM's non-zero-crossing output speed signal are available from:

- AMETEK / Dixon
- Stewart-Warner Instrument Corporation

For more information on Allison 5th Generation Controls' speedometer signal, refer to the following:

- [*Allison 5th Generation Control System Data*](#)
- [*Allison 5th Generation Controls Manual Section D: Vehicle Electrical System Interface*](#)

4.6 ELECTRONIC SPEED SIGNAL DISTRIBUTION MODULES

Electronic speed signal distribution modules are available from:

- ISSPRO, Inc.
 - Electronic speed signal distribution modules provide separate multiple output speed signals and have the capability to convert the non-zero-crossing speedometer signal to zero-crossing. Electronic ratio adapters, which can be calibrated to compensate for different axle ratios and tire sizes, are also available.

4.7 TACHOGRAPHS

Tachographs, pulse dividers and speed sensors are available from:

- Abbott Enterprises, Inc.
- VDO Automotive AG, Continental Automotive GmbH
- Yazaki North America, Inc.

Speed sensors, designed to fit the Allison tachograph provisions, are available from:

- VDO Automotive AG, Continental Automotive GmbH
 - Sensor capable of zero-speed recognition type 2159.20
 - Dynamic speed recognition sensor type 2159.50

4.7.1 TACHOGRAPH DRIVE PROVISIONS

Optional transmission rear covers, with provisions to install a tachograph speed sensor, are available in each transmission family. Configurations and availability vary by Product Family, refer to [Transmission Features and Options](#). Each provision includes a tonewheel, affixed to the transmission output shaft.

If the tachograph provision is not used, the opening must be sealed with a metal plug and copper washer which are available from:

- Allison P.D.C.
 - Metal plug p/n 29512790
 - Washer p/n 29512791

For additional information, refer to the following:

- [Tachograph Drive Provision](#)
- AS64-456, Tachograph Drive Provision for the 1000/2000 Product Family
- AS66-456, Tachograph Drive Provision for the 3000 Product Family
- AS67-456, Tachograph Drive Provision for the 4000 Product Family

4.8 THROTTLE POSITION SENSOR (TPS)

Throttle position sensors are available from:

- Allison PDC
 - Cable mounting length – mm (inches) [add 50.8 mm (2.0 inches) for actual cable length]
- | | | | | | |
|----------|--------------|-----------|--------------|-----------|----------|
| 406 (16) | p/n 29507766 | 864 (34) | p/n 29509929 | 1092 (43) | 29507769 |
| 559 (22) | p/n 29507767 | 965 (38) | p/n 29509930 | 1118 (44) | 29522952 |
| 610 (24) | p/n 29514531 | 1016 (40) | p/n 29516412 | 1372 (54) | 29516869 |
| 711 (28) | p/n 29507768 | 1067 (42) | p/n 29521585 | 1473 (58) | 29507770 |
| 762 (30) | p/n 29509928 | | | | |

The TPS part numbers listed above do not include the slip link. A slip link designed to fit the end of the TPS is available from:

- Allison PDC
 - Slip link p/n 29503631

Hardware for mounting the TPS and isolating the TPS from vibrations is available from:

- Allison PDC
 - Engine-mount bracket and isolator assembly p/n 29500824
 - Transmission-mount bracket and isolator assembly for 3000 & 4000 machining ears p/n 29508371
 - Bolt, 1/4-20 x 2.25 inch, for attaching TPS to both of the above brackets (3 required) p/n 29544294
 - Bolt, M14 x 2.0 x 40 mm, for attaching bracket to machining ears (2 required) p/n 29508413
 - Nut, M14 x 2.0 mm, for attaching bracket to machining ears (2 required) p/n 29508412

A clamp for securing the end of the TPS cable sheath to a bracket on the engine is available from:

- Orscheln Products, LLC
- Teleflex Morse
- Williams Controls

For more information on the TPS, refer to the following:

- [Technical Document \(TD\) 178, Throttle Position Sensor \(TPS\) for Use with Allison Transmissions](#)
- AS07-551, Throttle Position Sensor (TPS)

4.9 VEHICLE INTERFACE MODULE (VIM)

Vehicle Interface Modules are available from:

- Allison PDC
 - With six 12-volt diode suppressed relays and two 10-amp fuses p/n 29556644
 - With six 24-volt diode suppressed relays and two 10-amp fuses p/n 29556646
 - With two 12-volt diode suppressed relays, four 24-volt diode suppressed relays, and two 10-amp fuses p/n 29556648

For more information on the Allison VIM, refer to the following drawing:

- AS07-552, VIM – Vehicle Interface Module

4.10 ALLISON DOC® FOR PC – SERVICE TOOL

Detailed information on the Allison DOC® for PC service tool, including how to purchase and update Allison DOC®, is available at:

- [Electronic Tools](#) in the Service channel of the Allison website, www.allisontransmission.com

4.11 THROTTLE PEDAL KICKDOWN SWITCH

Throttle pedal kickdown switches are available from:

- Hunger Pneumatik GmbH
 - For high pedal force in kickdown position p/n 1182-04-00
 - For low pedal force in kickdown position (after surpassing high-force detent) p/n 1182-06-00

For more information on the throttle pedal kickdown function, refer to the following:

- [Allison 5th Generation Controls Manual Section A-1: Controls System Familiarization](#)
- [Input Function AH, Kickdown](#)

4.12 REMOTE DIGITAL DISPLAY

Remote display units are available from:

- DMR Electronics, Inc.

For more information on the use of remote displays with Allison 5th Generation Controls, refer to the following:

- [Allison 5th Generation Controls Section A-1: Controls System Familiarization](#)
- [Datalink Communications](#)

4.13 VOLTAGE EQUALIZER / CONVERTER

For vehicles with dual (redundant) power sources that require use of a voltage equalizer in the power system, a voltage equalizer is available from:

- Vanner Corporation

A 24-volt to 12-volt converter is available from:

- Sure Power Industries, Inc.

For more information on electrical power requirements for the transmission control system, refer to the following:

- [Allison 5th Generation Controls System Section D: Vehicle Electrical System Interface](#)
- [Allison 5th Generation Control System Data](#)

4.14 ZONE II CERTIFIED CONTROLS COMPONENTS FOR OIL FIELD APPLICATIONS

Transmission components that meet Zone II certification for off-shore oil field applications are available from:

- United Engines

5.0 ADDRESSES OF SUPPLIERS

Allison Transmission

Allison Parts:

Parts Distribution Center (PDC)

5902 Decatur Blvd.
Indianapolis, IN 46241
Phone: 317-821-5104
Fax: 317-821-5311

Allison Literature:

order online at
<http://allisontransmissionpublications.com/>
or, contact an authorized Allison
Transmission Service Outlet

Abbott Enterprises, Inc.

901 West 4th Avenue
Pine Bluff, AR 71601
Phone: 800-643-5973
Fax: 870-535-4970
www.atrol.com

AEES

36555 Corporate Drive
Farmington Hills, MI 48331
Phone: 248-489-4900
Fax: 248-486-4733
www.aeesinc.com

AMETEK / Dixon Incorporated

287 27 Road
Grand Junction, CO 81503-1905
Phone: 970-242-8863
www.ametekdixon.co

Arens Controls Company LLC

3602 N. Kennicott Avenue
Arlington Heights, IL 60004-1467
Phone: 847-844-4700
Fax: 847-844-4790
www.arencontrols.com

Deutsch Engineered Connecting Devices, Industrial Products Division

3850 Industrial Avenue
Hemet, CA 92545
Phone: 951-765-2250
Fax: 951-765-2255
www.deutschipd.com

DMR Electronics, Inc.

1111 E. 7th Avenue
Hibbing, MN 55746
Phone: 218-262-6693
Fax: 218-262-6273
www.dmrelectronics.com

Hunger Pneumatik GmbH

Hirschlatter Strasse 20
D-88074 Meckenbeuren - Kehlen
Phone: 49-7542-94 70-0
Fax: 49-7542-94 07-20

ISSPRO, Inc.

2515 NE Riverside Way
P.O. Box 11177
Portland, OR 97211
Phone: 888-447-7776
Fax: 503-249-2999
www.issproinc.com

ITT Cannon Electric Co.

666 East Dyer Road
P.O. Box 929
Santa Ana, CA 92702-0929
Phone: 714-557-4700
Fax: 714-754-2142
www.ittcannon.com

Molex

2222 Wellington Court
Lisle, IL 60532-1682
Phone: 630-969-4550
or 800-786-6539
www.molex.com

Orscheln Products LLC

1177 N. Morley
Moberly, MO 65270
Phone: 660-269-3800
Fax: 660-269-3940
www.orschelnproducts.com

Power and Signal Group

4670 Richmond Road, Suite 120.
Cleveland, Ohio 44128-5918
Phone: 800-722-5273
Fax: 216-378-6152
www.powerandsignal.com

Quadrastat Controls Corp.

855 Commerce Parkway
Carpentersville, IL 60110
Phone: 847-844-4703
Fax: 847-844-4790
www.arencontrols.com

Qualtronics, LLC

4775 Progress Drive
Columbus, IN 47201
Phone: 888-375-8881
Fax: 812-375-8882
www.qualtronicsllc.com

St. Clair Technologies, Inc.

55 Garnet Street
Wallaceburg, Ontario N8A 4L8
Phone: 519-627-1673
Fax: 519-627-4227
www.stclairtech.com

Stewart-Warner Instrument Corporation

1320A Goodyear Drive
El Paso, TX 79936
Phone: 915-593-1965
Fax: 915-595-1449
www.stewartwarner.com

Stone-Bennett Corporation

1419 Upfield Drive
Carrollton, TX 75006
Phone: 972-446-2046
or 800-527-0883
Fax: 972-446-2031
www.stonebennett.com

Sure Power Industries, Inc.

10189 S. W. Avery Street
Tualatin, OR 97062-9517
Phone: 503-692-5360
or 800-845-6269
Fax: 503-692-9091
www.surepower.com

Teleflex Morse Controls

640 N. Lewis Rd.
Limerick, PA 19468
Phone: 610-495-7011
Fax: 610-495-7390
www.teleflexmorse.com

United Engines

5555 W. Reno
Oklahoma City, OK 73127
Phone: 405-947-3321
Fax: 405-947-3406
www.unitedengines.com

Vanner Corporation

4282 Reynolds Drive
Hilliard, OH 43026
Phone: 614-771-2718
or 800-227-6937
Fax: 614-771-4904
www.vanner.com

VDO Automotive AG**Continental Automotive GmbH**

Heinrich-Hertz-Strasse 45
78052 Villingen, Germany
www.continental-corporation.com

Yazaki North America, Inc.

6700 N. Haggerty Road
Canton, MI 48187
Phone: 734-983-1000
Fax: 734-983-7004
www.yazaki-group.com

LIST OF REFERENCED DOCUMENTS

Allison 5th Generation Controls Installation Manual

- [Section A-1: Controls System Familiarization](#)
- [Section B: System Operation for the 3000/4000 Models](#)
- [Section C: Controls Component Installation](#)
- [Section D: Vehicle Electrical System Interface](#)

- [Input & Output Functions for 5th Gen Controls](#)
- [Input AH, Kickdown](#)

- [Allison 5th Generation Control System Data](#)
- [Datalink Communications – 5th Gen Controls](#)
- [Electronic Tools – Allison DOC® for PC](#)
- [Tachograph Drive Provision](#)

- [Transmission Features & Options](#)

Technical Documents (TD's)

- [TD-173. Wiring Harnesses for Allison 4th & 5th Generation Controls](#)
- [TD-175. Guidelines for Selecting Retarder Controls – 3000/4000 Product Families](#)
- [TD-177. Requirements for Shift Selector and Cable System](#)
- [TD-178. Throttle Position Sensor \(TPS\)](#)
- [TD-181. Transmission Shift Selector with Park Brake Position](#)
- [TD-182. Use of Electronic Braking Systems \(EBS\) with Allison Transmissions](#)

Allison 5th Generation Controls Installation Drawings

- [AS07-504. Retarder Control Hardware](#)
- [AS07-505. Connector Information](#)
- [AS07-517. Allison Selectors for the 3000/4000 Product Families](#)
- [AS07-551. Throttle Position Sensor](#)
- [AS07-552. VIM – Vehicle Interface Module](#)

1000/2000 Product Family Installation Drawings

- [AS64-456. Tachograph Drive Provision](#)

3000 Product Family Installation Drawings

- [AS66-456. Tachograph Drive Provision](#)

4000 Product Family Installation Drawings

- [AS67-456. Tachograph Drive Provision](#)

REVISION HISTORY

October 30, 2018

- Updated address for Qualtronics, LLC and webpage for Allison Literature in 5.0

October 18, 2017

- Updated part numbers in 4.2.2 to reflect internal design changes for 5th Generation Bump Lever Shift Selectors (BLSS).

February 23, 2017

- Updated part numbers in 4.9 to reflect change to diode suppressed relays in new VIMs

February 22, 2016

- In 4.2.2, add Compact Alternate PBSS, p/n 29557741
- In 4.1, removed TCM part numbers

February 18, 2013

- Changed bump-shift lever selector to bump lever shift selector.
- Replaced XAS07-517 with AS07-517 for bump lever shift selector.
- Removed Preliminary designation.

October 9, 2012

- Updated references to installation drawings and 5th Gen Controls Manual.
- Added note regarding availability of 5th Gen Controls components.

August 23, 2012

- To cover page, added copyright and updated to 5th Gen color scheme.

March 19, 2012

- New preliminary document, *Support Equipment for Allison 5th Generation Controls*