

B.4.19.

DIRECT HOLD



WARNING: The following sections describe the intended use of a specific function which has been validated in the configuration(s) described. Implementations or use of this feature which differ from that described could result in damage to equipment or property, serious personal injury, or loss of life.

Allison Transmission is not liable for consequences associated with incorrect implementation or unintended use of this feature.

B.4.19.1. OVERVIEW

Direct Hold facilitates engagement of a direct drive transmission range directly from Neutral. This function can also be accomplished via GPI CE (see the Allison 6th Generation Controls Installation Manual).

B.4.19.2. AVAILABILITY

The J1939-based implementation is optional in 3000/4000 Series 6-speed and 7-speed applications with fast reverse.

B.4.19.3. CONFIGURATION (VEPS / ACCT)

[18010] ON-VEHICLE PROTOCOL: CAN1

[18020] ON-VEHICLE PROTOCOL: CAN2

Parameter must be received from the CAN port set to SAE J1939 FULL FUNCTIONALITY.

[25110] DIRECT HOLD INPUT

To enable Direct Hold set to:

- J1939 PTOE INTERFACE Transmission Output Shaft PTO
- J1939 CCVS1 Parking Brake Switch & J1939 PTOE INTERFACE Transmission Output Shaft PTO

B.4.19.3.1. VEPS / ACCT Trims

The following trims influence Direct Hold operation:

[25111] DIRECT HOLD INPUT: Range

This parameter specifies the transmission range used when Direct Hold Input is active.

[25117] DIRECT HOLD INPUT: Selectable Range

This parameter allows the operator to select between 4th and 5th range via the shift selector when the Direct Hold function is active. When set to DISABLED, no selector override is possible. When set to ENABLED, the shift selector may be used to select the range.

[25115] DIRECT HOLD INPUT: Custom Lockup Apply Speed

This parameter defines a specific lockup apply speed that is used during Direct Hold operation. When set to DISABLED, lockup will apply based on the selected shift schedule. Customer Integration Engineering review is required for application that utilize a custom lockup apply speed.

[25112] DIRECT HOLD INPUT: Output Speed Range Shift Inhibit Direct Drive to Single Overdrive

[25113] DIRECT HOLD INPUT: Output Speed Range Shift Inhibit Direct Drive to Single Overdrive

These parameters define the maximum output shaft speed at which shifts between the direct drive and single overdrive ranges may be requested via the shift selector. When set to DISABLED, the corresponding shift is not available while Direct Hold is active.

B.4.19.4. J1939 PARAMETER AND SA USE

B.4.19.4.1. Required Broadcast Support

The J1939 network is required to provide [PTODE Enable Switch – Transmission Output Shaft PTO](#) from one of the following SAs, in order of TCM preference:

1. SA 49 (Cab Controller) ^(V)
2. SA 23 (Instrument Cluster #1)
3. SA 33 (Body Controller)

B.4.19.4.2. Optional Broadcast Support

If DIRECT HOLD INPUT is set to J1939 CCVS1 Parking Brake Switch & J1939 PTOE INTERFACE Transmission Output Shaft PTO, the J1939 network is required to provide [CCVS1 Parking Brake Switch](#) from one of the following SAs, in order of TCM preference:

4. SA 17 (Cruise Control) ^(V)
5. SA 49 (Cab Controller)
6. SA 39 (Management Computer #1)
7. SA 23 (Instrument Cluster #1)
8. SA 33 (Body Controller)
9. SA 00 (Engine #1)

B.4.19.4.3. Required Reception Support

The vehicle system is required to receive [PTODE Operation Consent – Transmission Output Shaft PTO](#) from SA 03 (Transmission #1).

B.4.19.5. OTHER REQUIREMENTS / RESTRICTIONS

B.4.19.5.1. General Requirements

General function requirements as described in Allison 6th Generation Controls Tech Data for GPI Function CE must be followed.

B.4.19.5.2. Customer Integration Engineering Review

Due to the potential impacts on torsional vibration and hydraulic pressure capacity, Allison Customer Integration Engineering review is required before a custom lockup apply speed may be implemented for this function.

B.4.19.6. NORMAL OPERATION

The datalink implementation of Direct Hold mimics the behavior of the corresponding GPI function. A detailed function description is available in Allison 6th Generation Controls Tech Data for GPI Function CE.

PTODE Enable Switch – Transmission Output Shaft PTO takes the place of the Direct Hold Input wire.

Depending on the DIRECT HOLD INPUT configuration choice, parking brake state may be incorporated either as part of the *PTODE Enable Switch – Transmission Output Shaft PTO* signal, or separately via *CCVS1 Parking Brake Switch*.

PTODE Operation Consent – Transmission Output Shaft PTO takes the place of the Range Indicator wire and indicates when Direct Hold operation is active.

The transmission enters Direct Hold operation when the vehicle is stopped with the transmission in Neutral, the required inputs are activated, and subsequently Drive is selected on the shift selector. The transmission exits Direct Hold operation when any of the required inputs are deactivated or Neutral is selected on the shift selector.

B.4.19.7. TCM FAILURE MODES & RESPONSES

If *PTODE Enable Switch – Transmission Output Shaft PTO* reception is lost or indicates 10b (Error) or 11b (Not available), the transmission will treat it the same as receiving this signal as 00b (Enable switch off – PTO operation not desired).

If *CCVS1 Parking Brake Switch* reception is lost or indicates 10b (Error) or 11b (Not available), the transmission will treat it the same as receiving this signal as 00b (Parking brake not set).

B.4.19.7.1. PTO engaged without consent or not disengaged when consent revoked



WARNING: Engaging a PTO drive or continuing drive engagement when consent is removed may result in damage to the transmission and / or the PTO drive mechanism.