



PTO DRIVE INTERFACE INPUT C / OUTPUT G

ALLISON 5TH GENERATION CONTROLS

NOTE: This function is available with two separate interfaces. The wire numbers for each interface are specified by the Input/Output Package in the TCM calibration. Be sure to select the schematic with the interface and wire numbers specified in your TCM calibration.

How to determine the interface and wire numbers:

- If you know the I/O Package Number, refer to the [I/O Package Guide](#) for your geographical region.
- If you do not know the I/O Package Number:
 - Go to [ACCT \(Allison Calibration Configuration Tool\)](#) on the Extranet.
 - In the Search box enter the Allison Part Number (APN) or the corresponding Customer Part Number (CPN) for your TCM calibration.
 - In the resulting report, the General Purpose Inputs and Outputs Package number is listed in the Basic information.
 - Refer to the [I/O Package Guide](#) for your geographical region.
- If you have a vehicle with a functioning transmission, you can use the [Allison DOC® for PC](#) service tool to determine the active I/O Package Number and the wire number assigned to this function in the active package.

There are two PTO Drive Interfaces for control of two separate PTO's:

- *Input C1: PTO Request 1 and Output G1: PTO Enable Output 1*
- *Input C2: PTO Request 2 and Output G2: PTO Enable Output 2*

Input C1 / Output G1 and Input C2 / Output G2 must have separate wire numbers assigned to each Input and each Output in the selected I/O Package. The CMC's can be specified differently for PTO Drive Interface 1 and for PTO Drive Interface 2 when the TCM calibration is defined, or using [Allison DOC®](#).

The table below lists the wiring schematics for Input C / Output G: PTO Drive Interface:

TYPE OF ACTIVATION	PRODUCT FAMILY	INPUT		OUTPUT	
		ID	WIRE	ID	WIRE
MODE Button	3000, 4000	C1	MODE	G1	130
Switch	1000/2000	C1	101	G1	150
Switch	3000, 4000	C1	102	G1	130
Switch	3000, 4000	C1	117	G1	130
Switch	3000, 4000	C1	142	G1	130
Switch	1000/2000	C1	143	G1	150
Switch	3000, 4000	C1	143	G1	130
Switch	1000/2000	C1	162	G1	150
Switch	1000/2000	C1	123	G1	150
Switch	1000/2000	C2	102	G2	104
Switch	3000, 4000	C2	102	G2	104

PTO DRIVE INTERFACE 1

INPUT C1: MODE BUTTON / OUTPUT G1: WIRE 130

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested by pressing the MODE button. The TCM activates the PTO Drive Interface Output by switching power to wire 130 when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with the MODE button.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

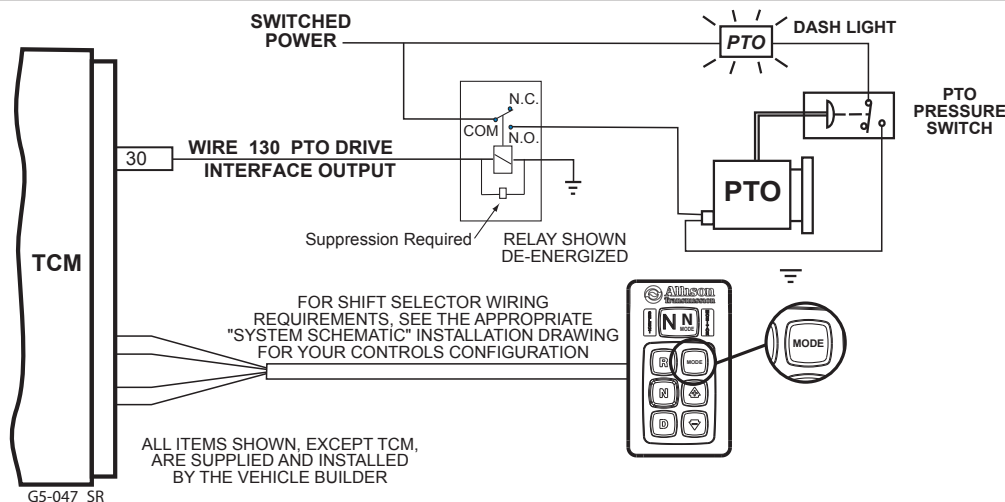
VOCATIONS: Various with usage of PTO

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 130) is disabled.

Power restored: Output (wire 130) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 1

INPUT C1: WIRE 101 / OUTPUT G1: WIRE 150

APPLICABLE TRANSMISSIONS: 1000 / 2000 Product Families

DESCRIPTION: This function is requested when wire 101 is switched to ground. The TCM activates the PTO Drive Interface Output by switching wire 150 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system. Otherwise, variable modulated main pressure has the potential to reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

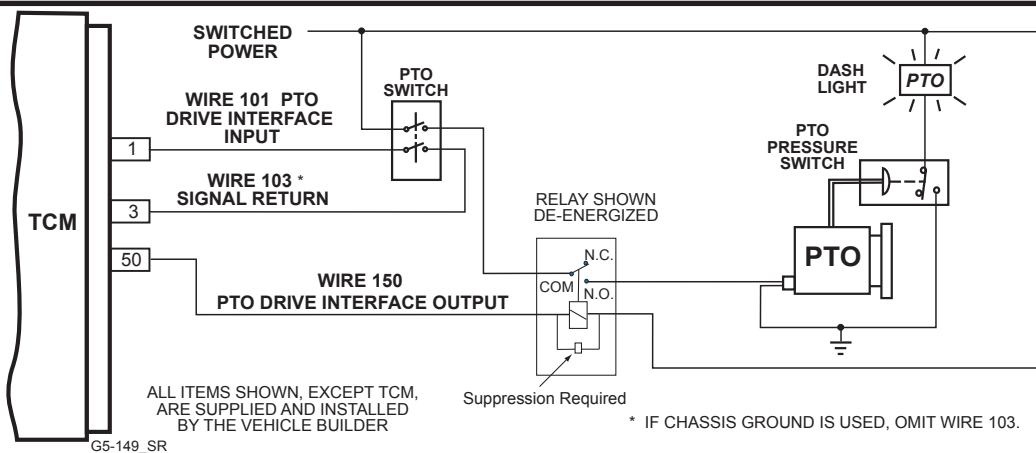
VOCATIONS: refuse vehicles, utility vehicles, emergency vehicles

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 150) is disabled.

Power restored: Output (wire 150) re-enabled if required operating conditions continue to be satisfied.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 1

INPUT C1: WIRE 102 / OUTPUT G1: WIRE 130

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested when wire 102 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching power to wire 130 when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

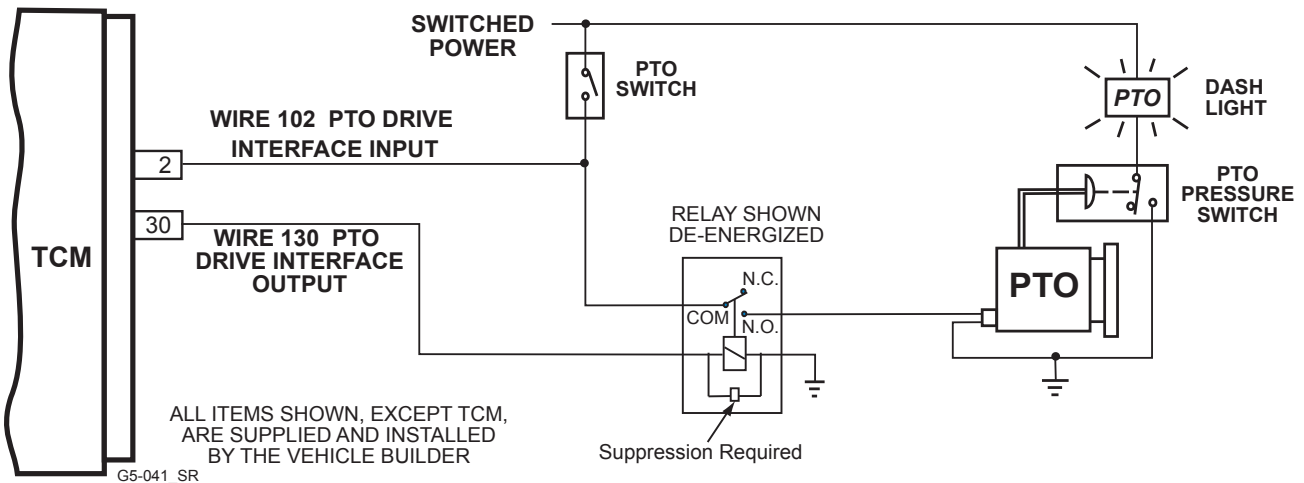
VOCATIONS: Various with usage of PTO

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 130) is disabled.

Power restored: Output (wire 130) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 1

INPUT C1: WIRE 117 / OUTPUT G1: WIRE 130

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested when wire 117 is switched to ground. The TCM activates the PTO Drive Interface Output by switching power to wire 130 when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

- USES:**
- Permits operator to control engagement and disengagement of the PTO with a switch.
 - Provides inhibits for PTO engagement based on engine speed or transmission output speed
 - Provides for automatic disengagement of PTO based on engine speed or transmission output speed
 - Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

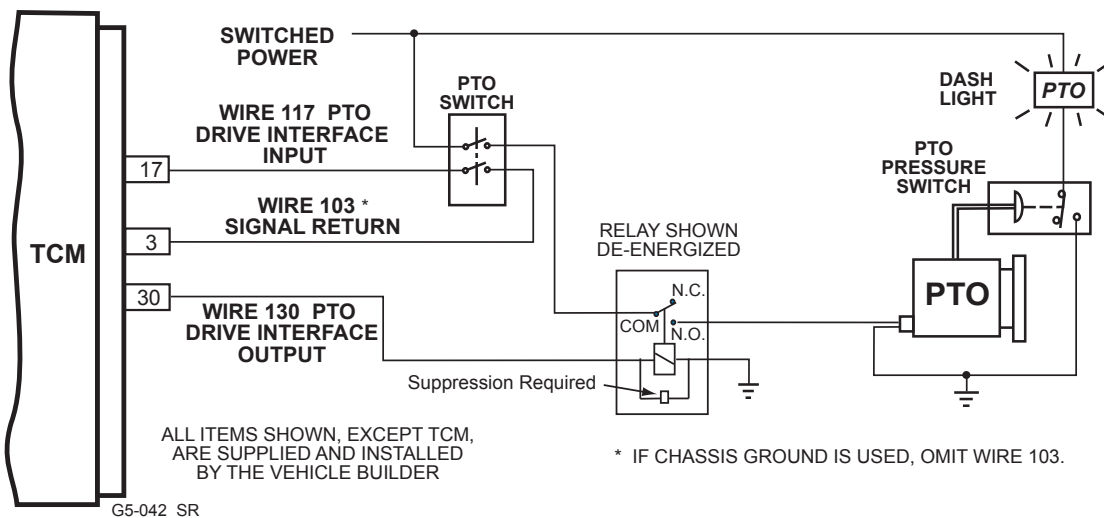
VOCATIONS: Various (with usage of PTO)

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 130) is disabled.

Power restored: Output (wire 130) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 1

INPUT C1: WIRE 142 / OUTPUT G1: WIRE 130

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested when wire 142 is switched to ground. The TCM activates the PTO Drive Interface Output by switching power to wire 130 when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

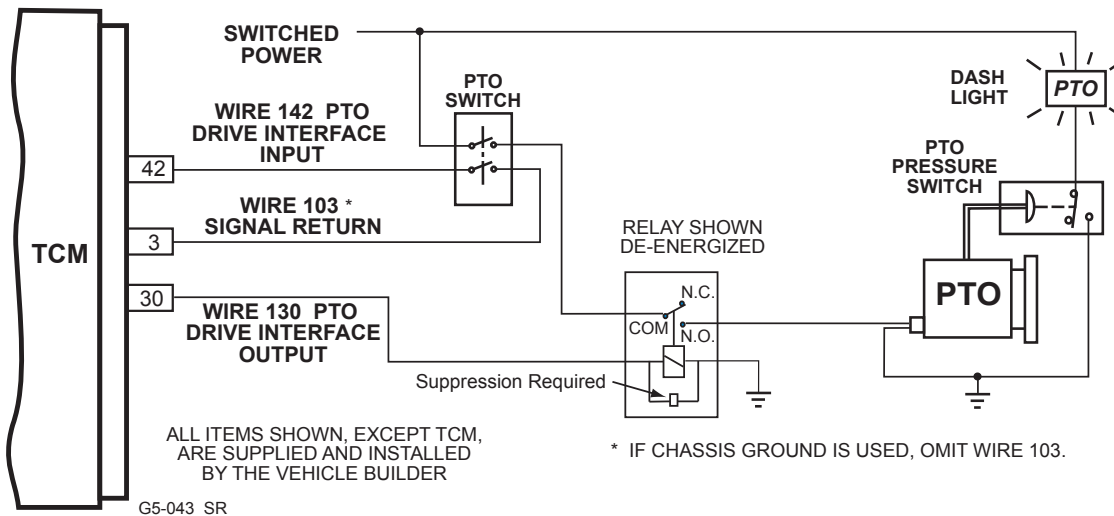
VOCATIONS: Various (with usage of PTO)

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 130) is disabled.

Power restored: Output (wire 130) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



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PTO DRIVE INTERFACE 1

INPUT C1: WIRE 143 / OUTPUT G1: WIRE 150

APPLICABLE TRANSMISSIONS: 1000 / 2000 Product Families

DESCRIPTION: This function is requested when wire 143 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching wire 150 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system. Otherwise, variable modulated main pressure has the potential to reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

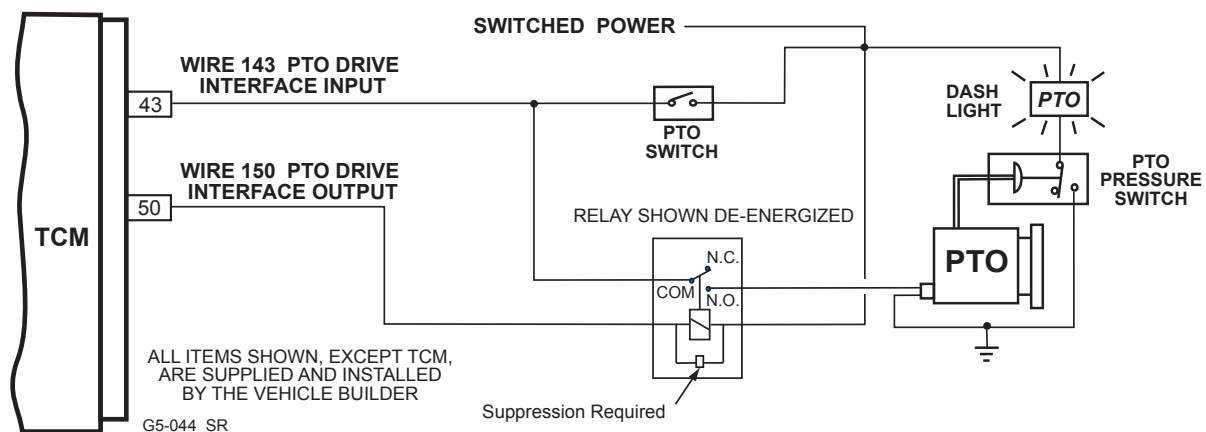
VOCATIONS: refuse vehicles, utility vehicles, emergency vehicles

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 150) is disabled.

Power restored: Output (wire 150) re-enabled if required operating conditions continue to be satisfied.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



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PTO DRIVE INTERFACE 1

INPUT C1: WIRE 143 / OUTPUT G1: WIRE 130

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested when wire 143 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching power to wire 130 when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

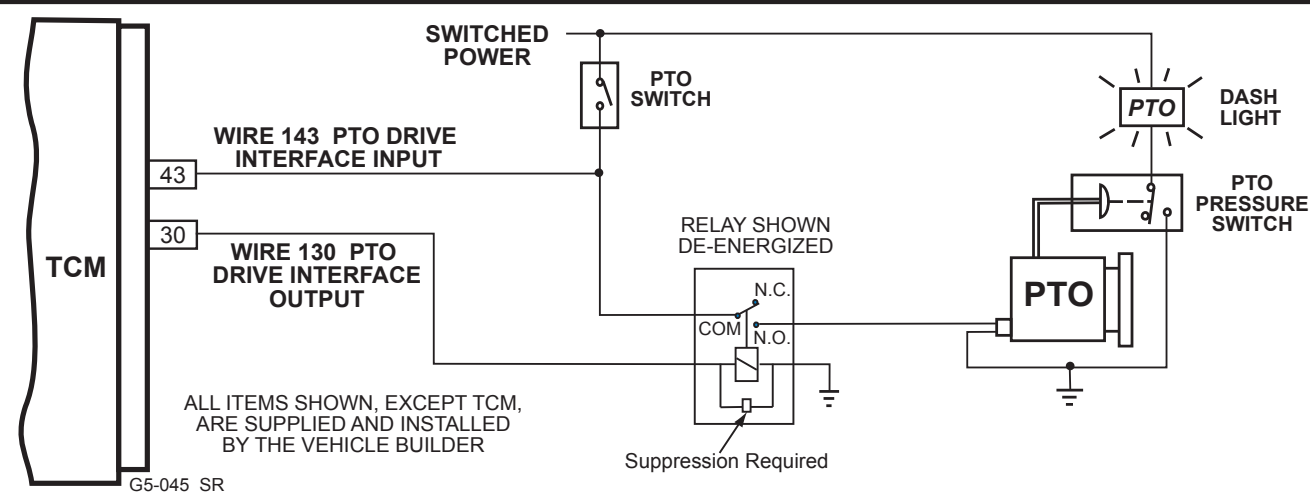
VOCATIONS: Various with usage of PTO

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 130) is disabled.

Power restored: Output (wire 130) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



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PTO DRIVE INTERFACE 1

INPUT C1: WIRE 162 / OUTPUT G1: WIRE 150

APPLICABLE TRANSMISSIONS: 1000 / 2000 Product Families

DESCRIPTION: This function is requested when wire 162 is switched to ground. The TCM activates the PTO Drive Interface Output by switching wire 150 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system. Otherwise, variable modulated main pressure has the potential to reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

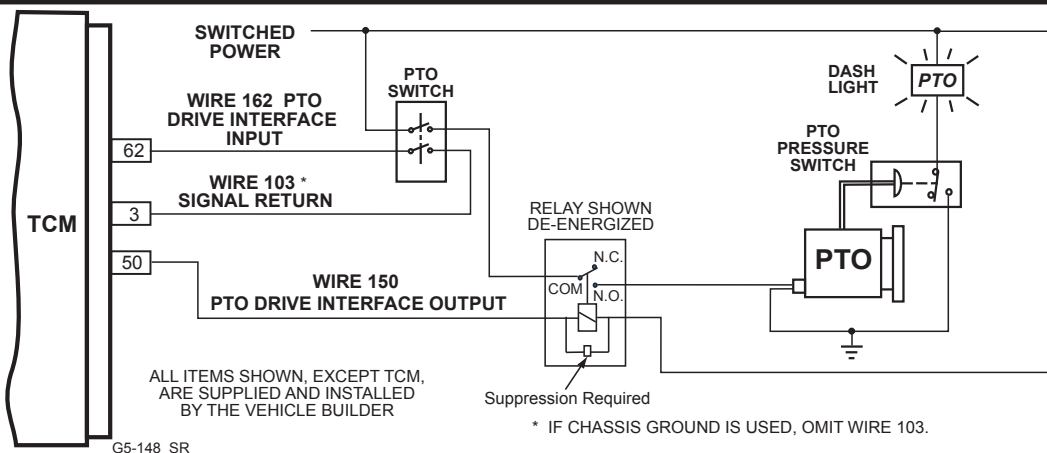
VOCATIONS: refuse vehicles, utility vehicles, emergency vehicles

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 150) is disabled.

Power restored: Output (wire 150) re-enabled if required operating conditions continue to be satisfied.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



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PTO DRIVE INTERFACE 1

INPUT C1: WIRE 123 / OUTPUT G1: WIRE 150

APPLICABLE TRANSMISSIONS: 1000 / 2000 Product Families

DESCRIPTION: This function is requested when wire 123 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching wire 150 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system. Otherwise, variable modulated main pressure has the potential to reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 1.

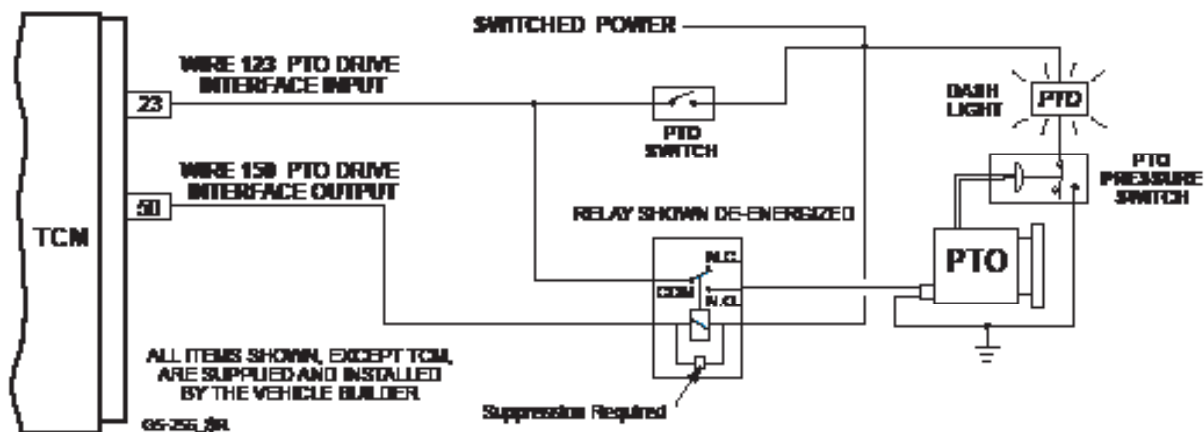
VOCATIONS: refuse vehicles, utility vehicles, emergency vehicles

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 150) is disabled.

Power restored: Output (wire 150) re-enabled if required operating conditions continue to be satisfied.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 2

INPUT C2: WIRE 102 / OUTPUT G2: WIRE 104

APPLICABLE TRANSMISSIONS: 1000/2000 Product Family

DESCRIPTION: This function is requested when wire 102 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching wire 104 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 2.

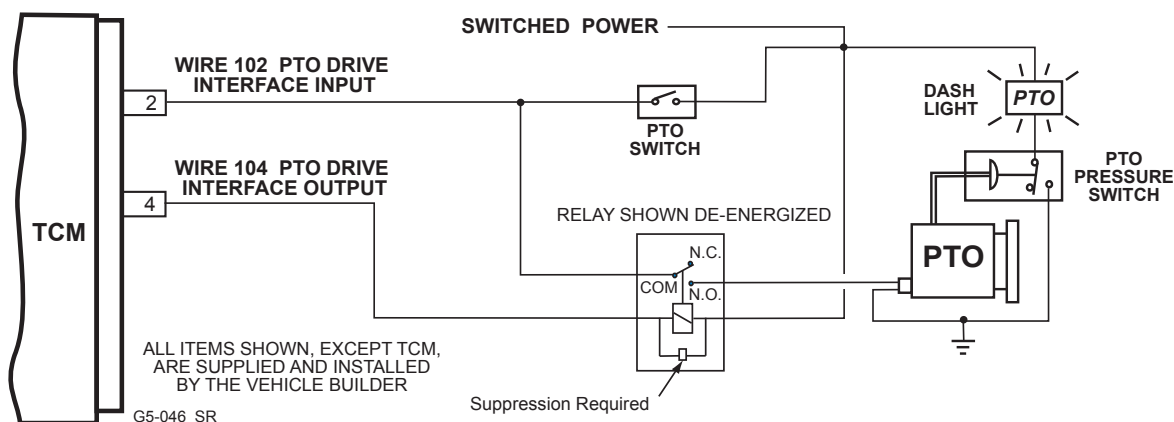
VOCATIONS: Various with usage of PTO

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 104) is disabled.

Power restored: Output (wire 104) re-enabled if required operating conditions continue to be satisfied.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

PTO DRIVE INTERFACE 2

INPUT C2: WIRE 102 / OUTPUT G2: WIRE 104

APPLICABLE TRANSMISSIONS: 3000 Product Family, 4000 Product Family

DESCRIPTION: This function is requested when wire 102 is switched to send power to the TCM. The TCM activates the PTO Drive Interface Output by switching wire 104 to ground when the following conditions have been met:

- The function has been requested
- Throttle position is low
- Engine speed is within Customer Modifiable Constant limits
- Output speed is within Customer Modifiable Constant limits

When this function is activated, the TCM disables the variable modulated main pressure feature in the transmission, resulting in transmission operation at full main pressure.

NOTE: Input C or the J1939 Datalink equivalent **MUST** be integrated into the design and installation of the PTO control system if more than 125 psi transmission main pressure is required. Otherwise, variable modulated main pressure could potentially reduce main pressure below the minimum pressure required by the PTO clutch control.

USES:

- Permits operator to control engagement and disengagement of the PTO with a switch.
- Provides inhibits for PTO engagement based on engine speed or transmission output speed
- Provides for automatic disengagement of PTO based on engine speed or transmission output speed
- Provides a mechanism to disable the modulated main pressure feature in the transmission.

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 (%)

The CMCs will be the same for all PTOs that are integrated with PTO Drive Interface 2.

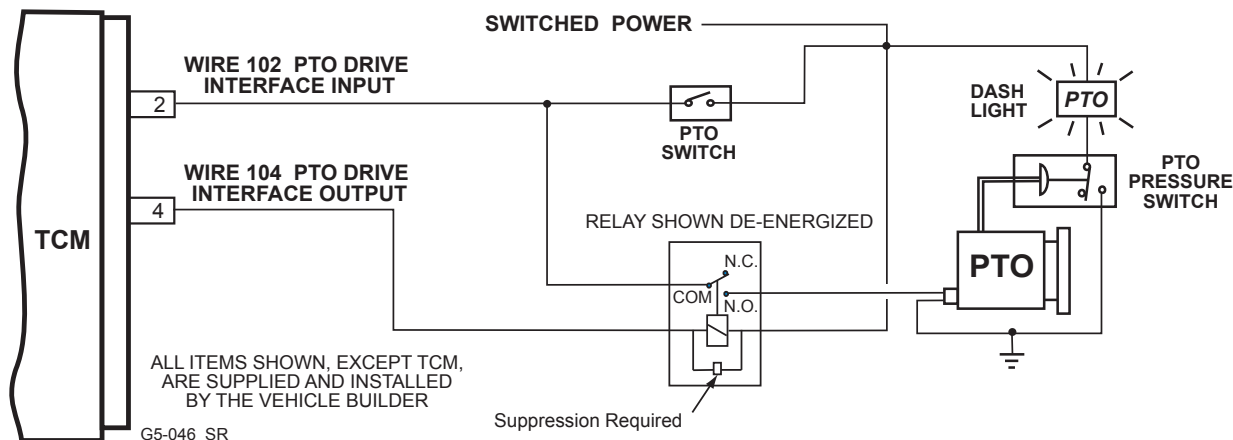
VOCATIONS: Various with usage of PTO

FUNCTION RESPONSE TO TCM POWER INTERRUPTION (power-off, followed by power restored):

Power off: Output (wire 104) is disabled.

Power restored: Output (wire 104) remains disabled until the function is re-requested.

(1) CAUTION: If the PTO is used to drive high inertia equipment (e.g. alternator, blower, chain-driven mechanical devices), the Max. Engine Speed for PTO Engagement should be set as closely as possible to the engine idle speed. Engagement of the PTO at high speed, whether by activation of this function or automatic re-engagement of the function following a disengagement due to overspeed, may cause damage to the PTO system.



WARNING! This schematic shows the intended use of the specified controls feature which has been validated in the configuration shown. Any miswiring or use of this feature which differs from that shown could result in damage to equipment or property, serious personal injury, or death. **Allison Transmission is not liable for consequences associated with miswiring or unintended use of this feature.**

REFERENCED DOCUMENTS

- [ACCT, Allison Calibration Configuration Tool](#)
 - [Allison DOC® for PC](#)
 - [I/O Package Guides](#)
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REVISION HISTORY

Input C / Output G: PTO Drive Interface

June 9, 2020

- Removed 4-cylinder lock-up engagement speed and range for 1000/2000 Series transmissions
- Lockup engagement speed, default value 1150 rpm (turbine speed) with the allowable range 900-5000 rpm for all engines.

August 26, 2015

- Added schematic for 1000/2000 C1/G1 using wires 123/150

November 12, 2014

- No functional change. Revised appropriate schematics to illustrate suppressed relays.

June 20, 2014

- Changed lockup engagement speed default value from 900 to 1150 for 1000/2000 Product Families

March 5, 2013

- Added schematic for 1000/2000 with C1 on wire 101 and G1 on wire 150
- Added schematic for 1000/2000 with C1 on wire 162 and G1 on wire 150
- In the 1000/2000 implementations, the Lockup Engagement Speed (turbine speed) CMC was Turbine Speed for Engaging Lockup in Neutral or Park.

December 7, 2012

- Created new document for Allison 5th Gen Controls PTO Drive Interface.