This document contains wiring documentation for specific EPC applications.
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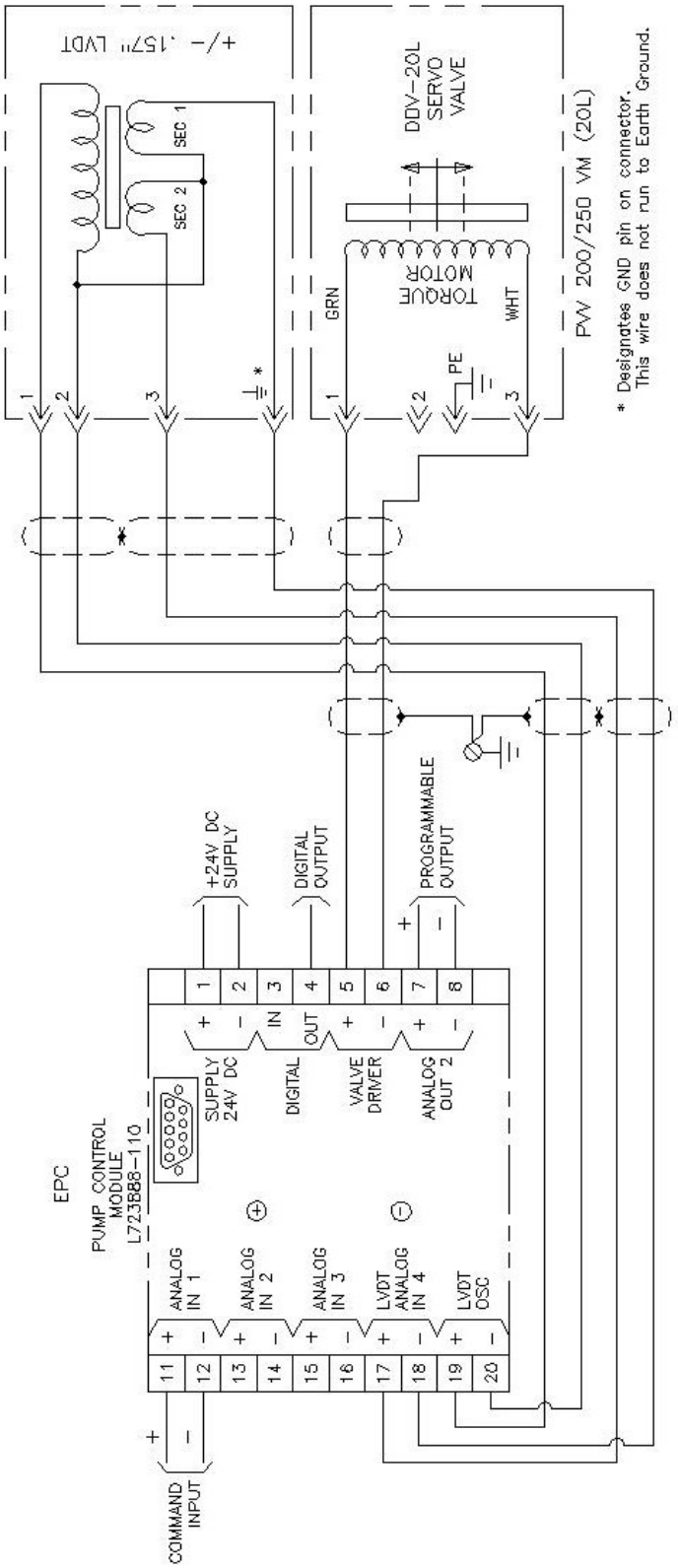

PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	Kp	Ki
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	60	COR	FINE	512*	20*	0*	
CCW	LHSFS	A	INVERT	INVERT	NORMAL	100	800		40*	0*				
CW	RHSFS	B	NORMAL	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	B	INVERT	INVERT	NORMAL									

CONFIGURATIONS (SOFTWARE SWITCHES)

CALIBRATIONS (SOFTWARE VALUES)

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PVV 200/250 VM - 20L STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

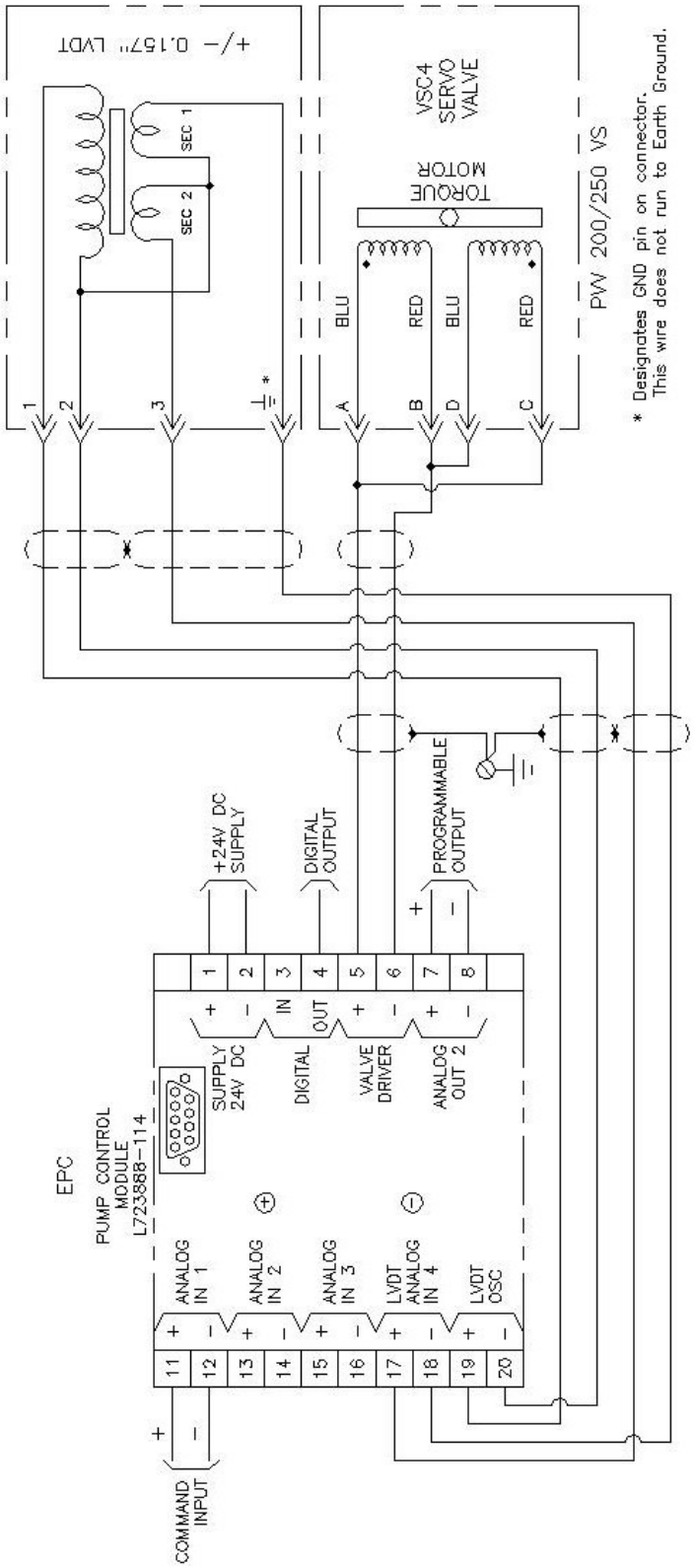
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 200/250 VM – 20L Notes:

- The servo valve (Moog DDV) is always mounted on top.
- Pump utilizes approximately 0.098” LVDT stroke for 0.96” piston stroke (10:1 cone taper).
- The standard one-way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.
- As of the fall of 2004 the LVDT part number 319643-016 directly replaces the LVDT part number 319645. See Oilgear Bulletin 836022 for hardware specifications.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804		805
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	Kp	Ki	
CCW		LHSFS	A	INVERT	INVERT	NORMAL	64	160		40*	0*		20*	0*	
CW		RHSFS	B	NORMAL	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW		LHSFS	B	INVERT	INVERT	NORMAL									

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Bulletin 836269C

PVV 200/250 VS – (A Series) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

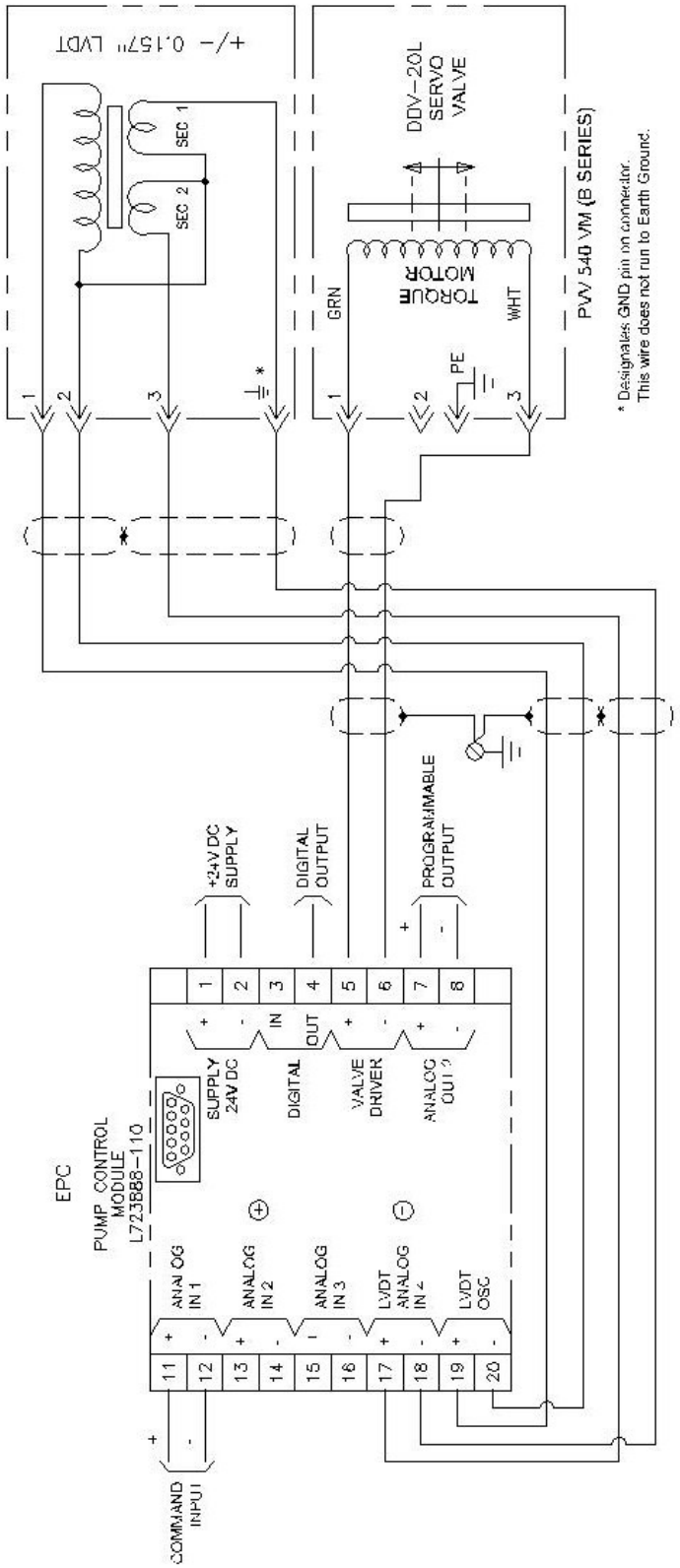
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 200/250 VS (A Series) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- Pump utilizes approximately 0.098" LVDT stroke for 0.96" piston stroke (10:1 cone taper).
- The standard one-way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.
- As of the fall of 2004 the LVDT part number 319643-016 directly replaces the LVDT part number 319645. See Oilgear Bulletin 836022 for hardware specifications.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)													
PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	40*	0*	512*	20*	0*	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION
CCW	LHSFS	A	INVERT	INVERT	NORMAL									
CW	RHSFS	B	NORMAL	NORMAL	NORMAL									
CW	LHSFS	B	INVERT	INVERT	NORMAL									

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
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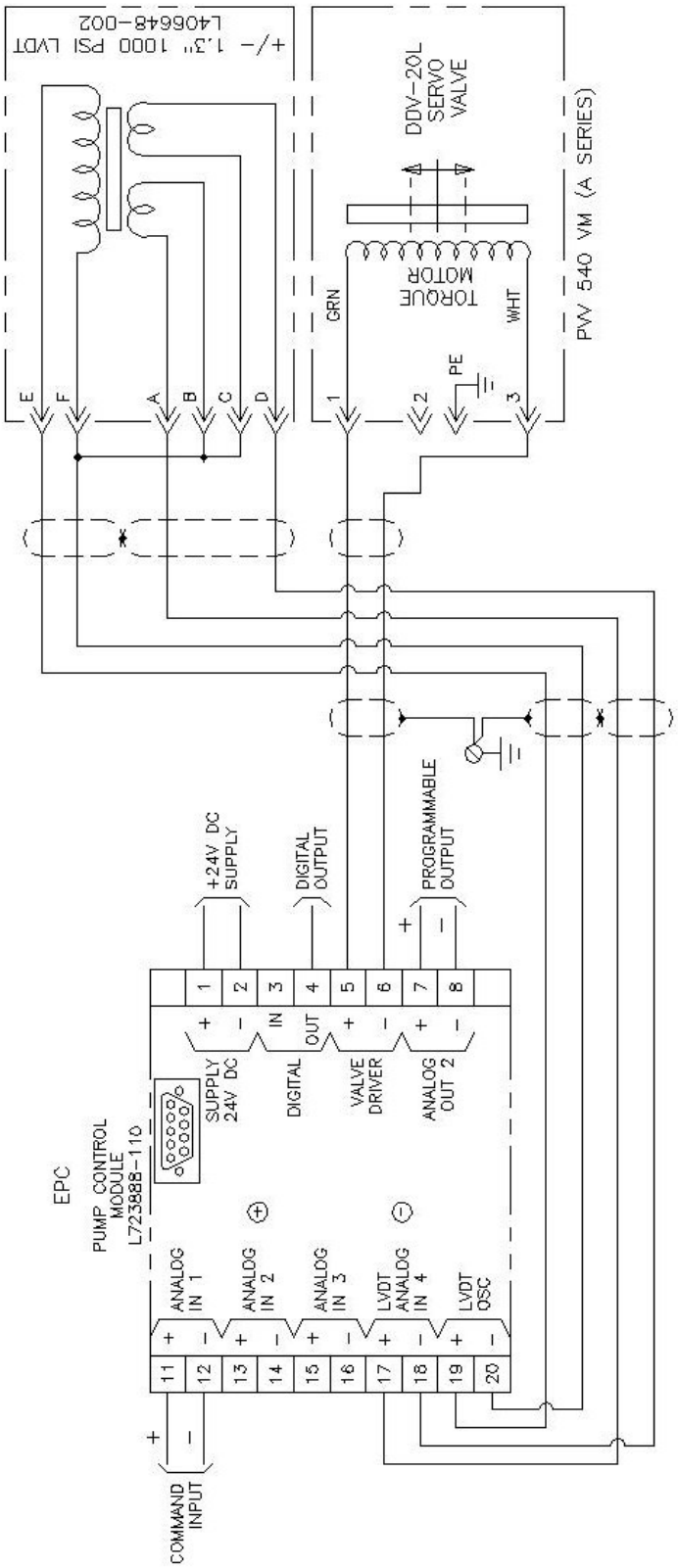
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VM B Series – 20L Notes:

- The servo valve (Moog DDV) is always mounted on top.
- Pump utilizes approximately 0.098” LVDT stroke for 1.29” control piston stroke (13:1 cone taper).
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.
- As of the fall of 2004 the LVDT part number 319643-016 directly replaces the LVDT part number 319645. See Oilgear Bulletin 836022 for hardware specifications.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)								CALIBRATIONS (SOFTWARE VALUES)						
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA							
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	COR	FINE	512*	Kp	Ki	
CCW	LHSFS	A	INVERT	INVERT	NORMAL				9*	0*		20*	0*	
CW	RHSFS	B	NORMAL	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	B	INVERT	INVERT	NORMAL									

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
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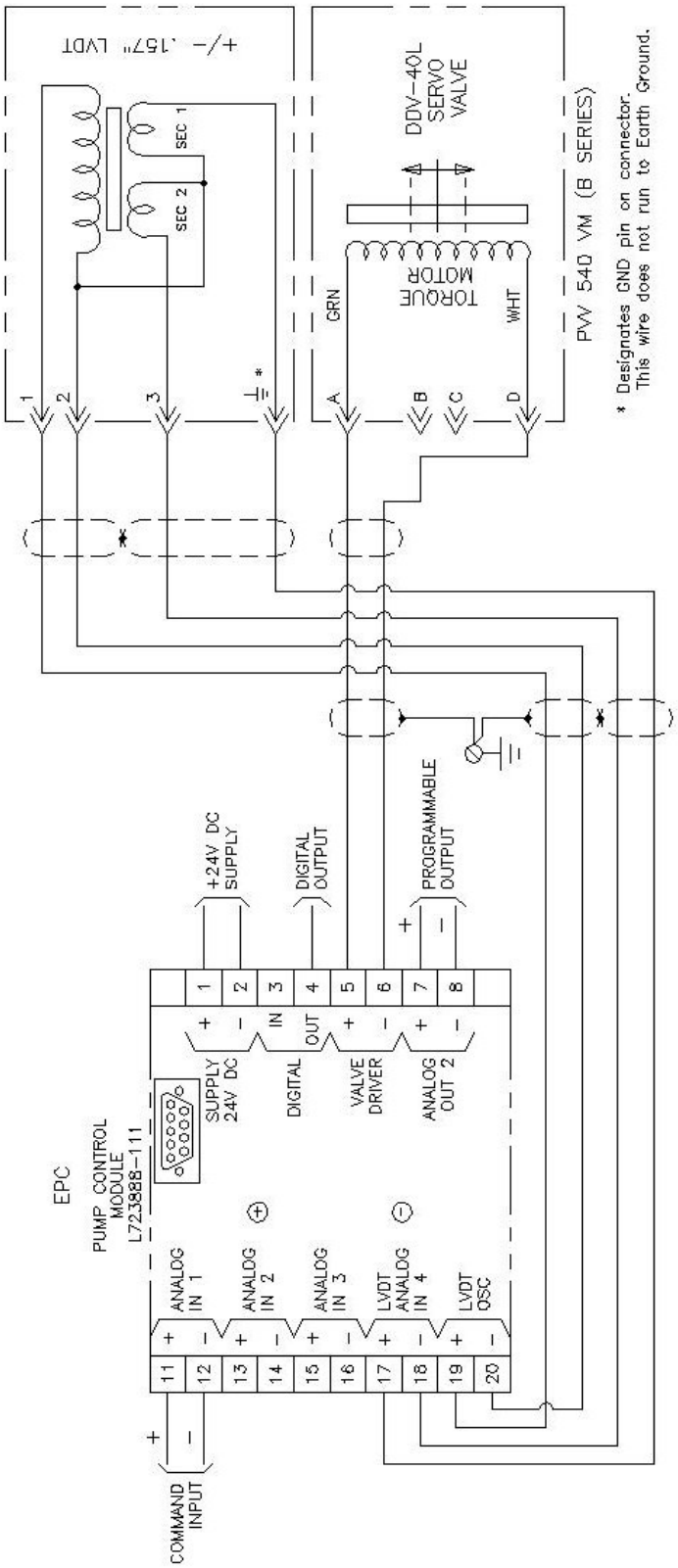
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VM A Series – 20L Notes:

- The servo valve (Moog DDV) is always mounted on top.
- LVDT is rated approximately +/- 1.3 inch stroke.
- The pump is rated approximately +/- 1.3 inch stroke.
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	40*	0*	512*	20*	0*	
CCW	LHSFS	A	N/A	N/A	N/A									
CW	RHSFS	B	N/A	N/A	N/A									
CW	LHSFS	B	N/A	N/A	N/A									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
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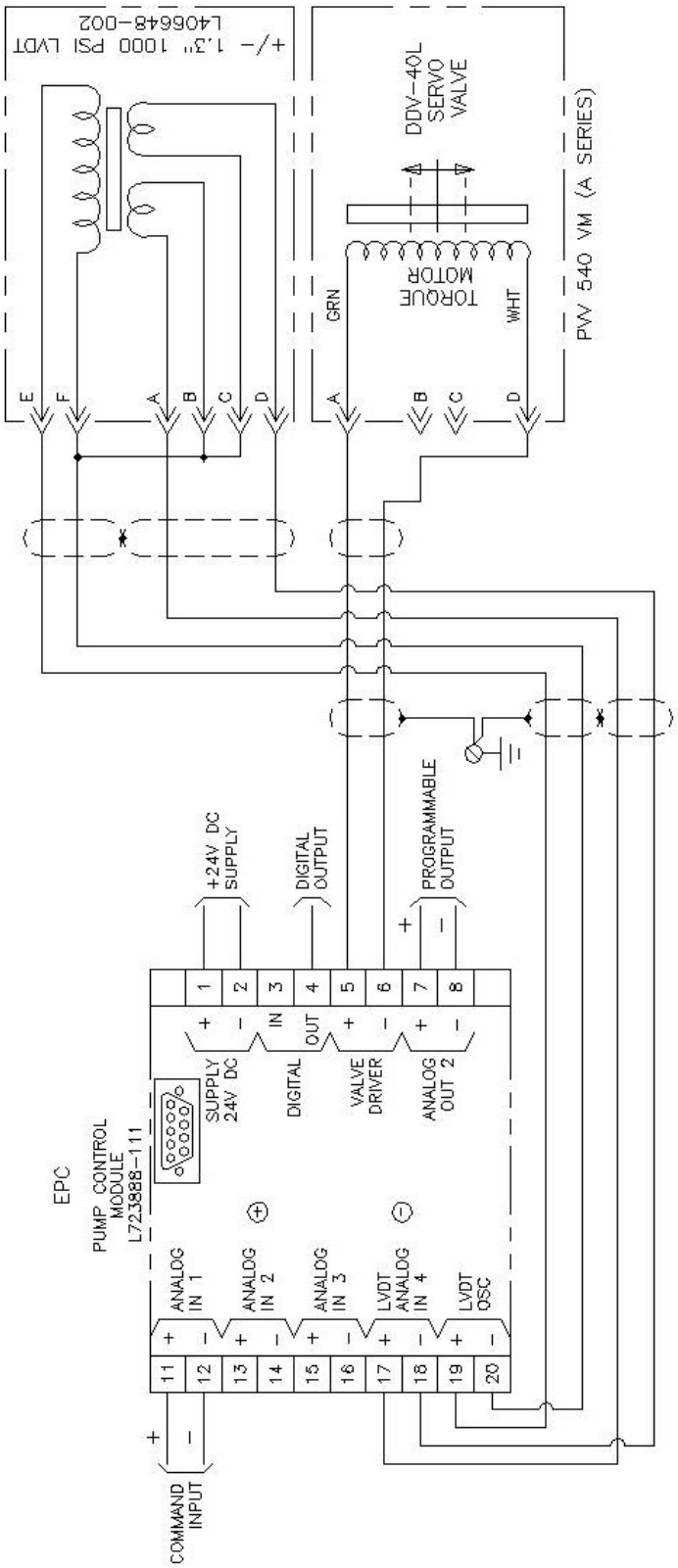
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VM B Series – 40L Notes:

- The servo valve (Moog DDV) is always mounted on top.
- Pump utilizes approximately 0.098” LVDT stroke for 1.29” control piston stroke (13:1 cone taper).
- As of the fall of 2004 the LVDT part number 319643-016 directly replaces the LVDT part number 319645. See Oilgear Bulletin 836022 for hardware specifications.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	9*	0*	512*	20*	0*	
CCW	LHSFS	A	INVERT	INVERT	NORMAL									
CW	RHSFS	B	NORMAL	NORMAL	NORMAL									
CW	LHSFS	B	INVERT	INVERT	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

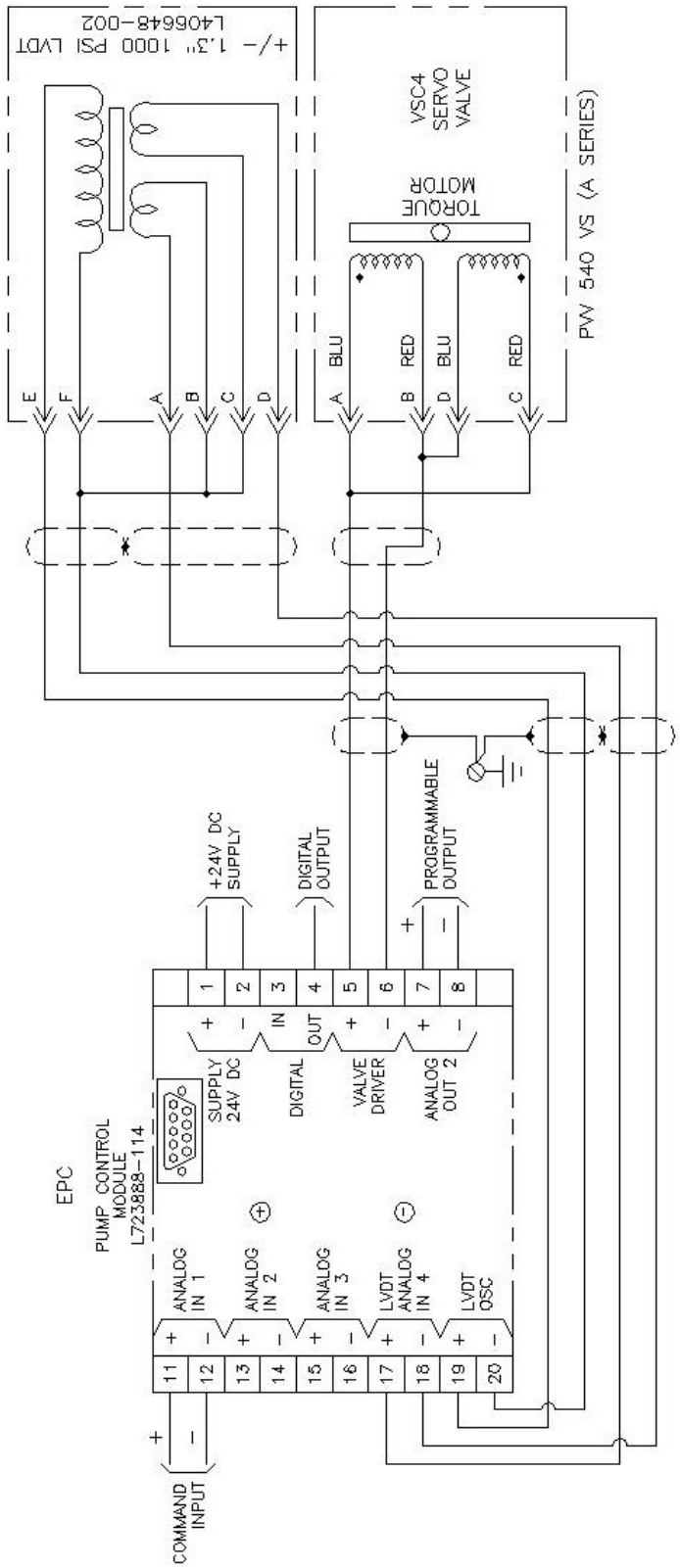
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VM A Series – 40L Notes:

- The servo valve (Moog DDV) is always mounted on top.
- LVDT is rated approximately +/- 1.3 inch stroke.
- The pump is rated approximately +/- 1.3 inch stroke.
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	60	COR	FINE	512*	Kp	Ki	
CCW	LHSFS	A	INVERT	INVERT	NORMAL	64	160		9*	0*		20*	0*	
CW	RHSFS	B	NORMAL	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	B	INVERT	INVERT	NORMAL									

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

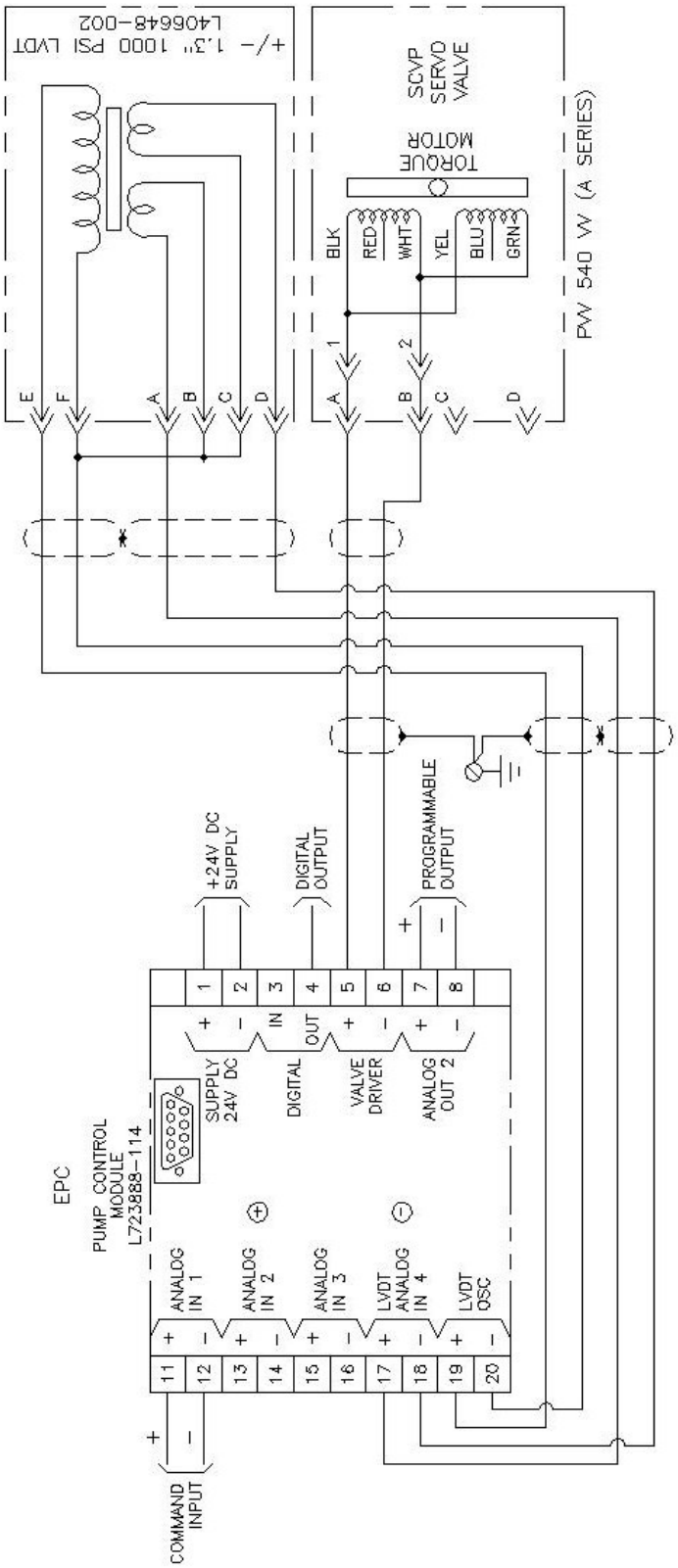
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VS (A Series) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is rated approximately +/- 1.3 inch stroke.
- The pump is rated approximately +/- 1.3 inch stroke.
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (GAIN) (841)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		(805)
PROGRAM MENU ITEMS			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)								
						%	mA									
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	9*	0*	512*	Kp	20*	Ki 0*
CCW	LHSFS	A	INVERT	INVERT	NORMAL											
CW	RHSFS	B	NORMAL	NORMAL	NORMAL											
CW	LHSFS	B	INVERT	INVERT	NORMAL											

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

PVV 540 VV (A Series SCVP) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

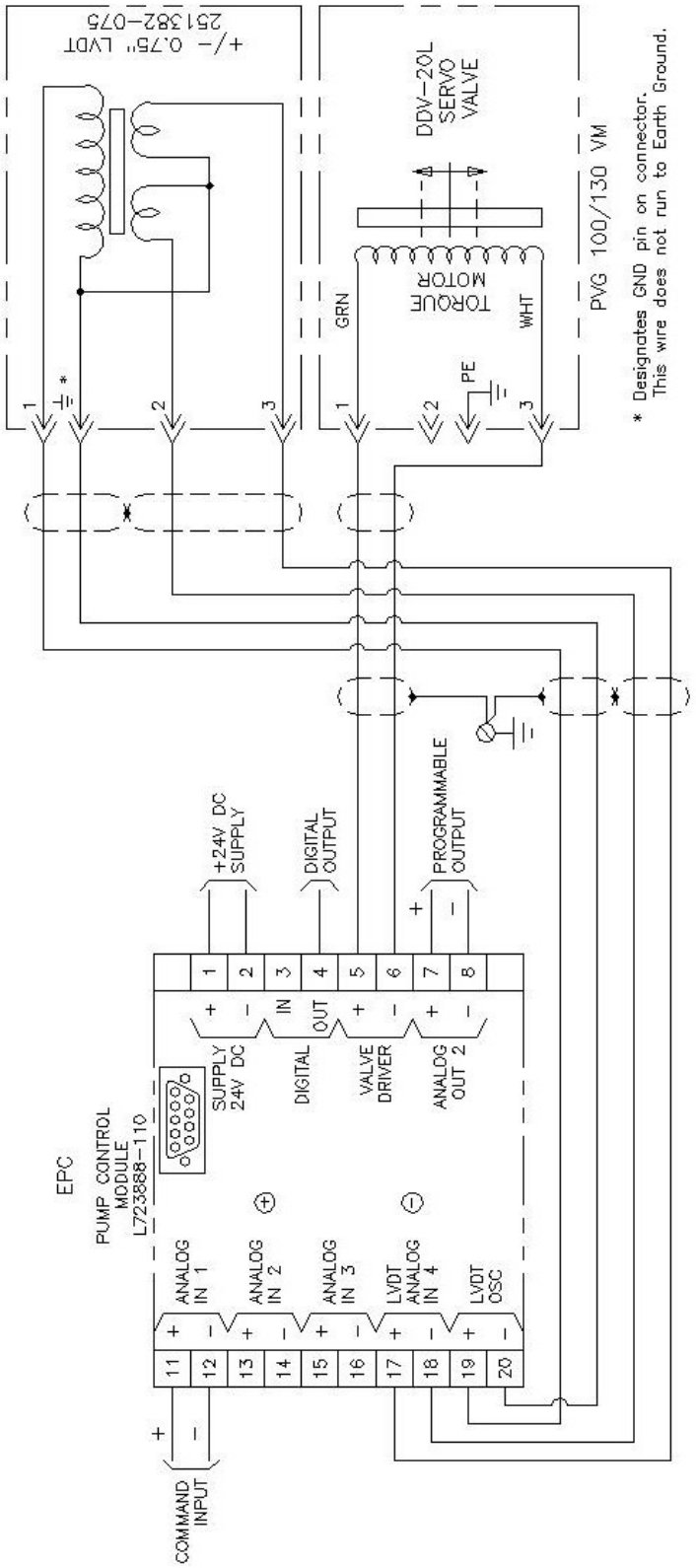
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VV (A Series) Notes:

- The servo valve (SCVP) is always mounted on top.
  The torque motor is 20 ohms per coil (10 ohm parallel) 500mA.
  LVDT is rated approximately +/- 1.3 inch stroke.
- The pump is rated approximately +/- 1.3 inch stroke.
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804		
							%	mA		COR	FINE		Kp	Ki	
	CCW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	800	0	12*	1*	512*	20*	0*	
	CW	LHSFS	B	NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

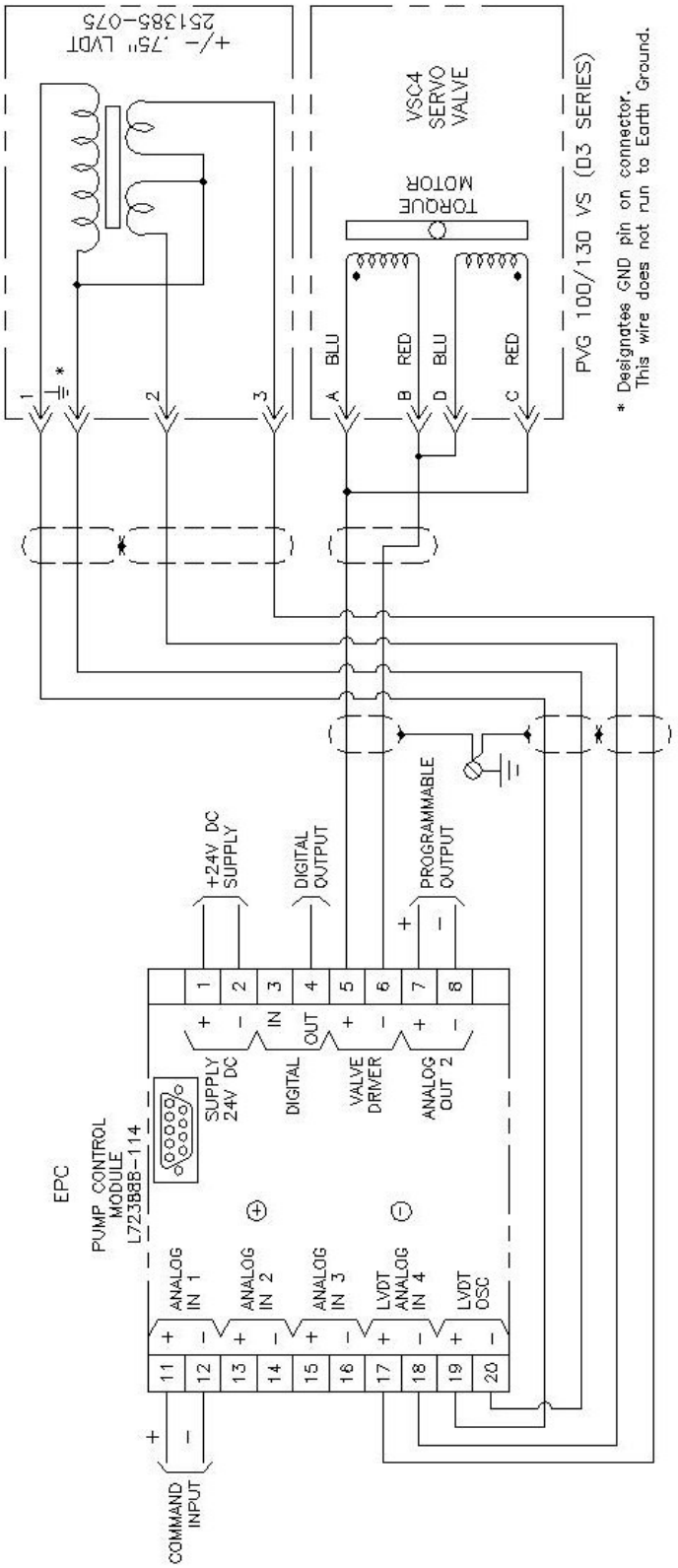
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVG 100/130 VM Notes:

- The servo valve (Moog DDV) is always mounted on RHSFS.
  High pressure Sentech LVDT (251385-075) rated at +/- 0.75 inch stroke.
  LVDT is always mounted on the LHSFS.
- Pump mechanical stroke is rated at approximately 0.750 inch, one way only, toward LVDT.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	Kp	805 Ki
CCW	LHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	20*		0*
CW	LHSFS	B	NORMAL	NORMAL	NORMAL	64	160		12*	1*				

CONFIGURATIONS (SOFTWARE SWITCHES)

CALIBRATIONS (SOFTWARE VALUES)

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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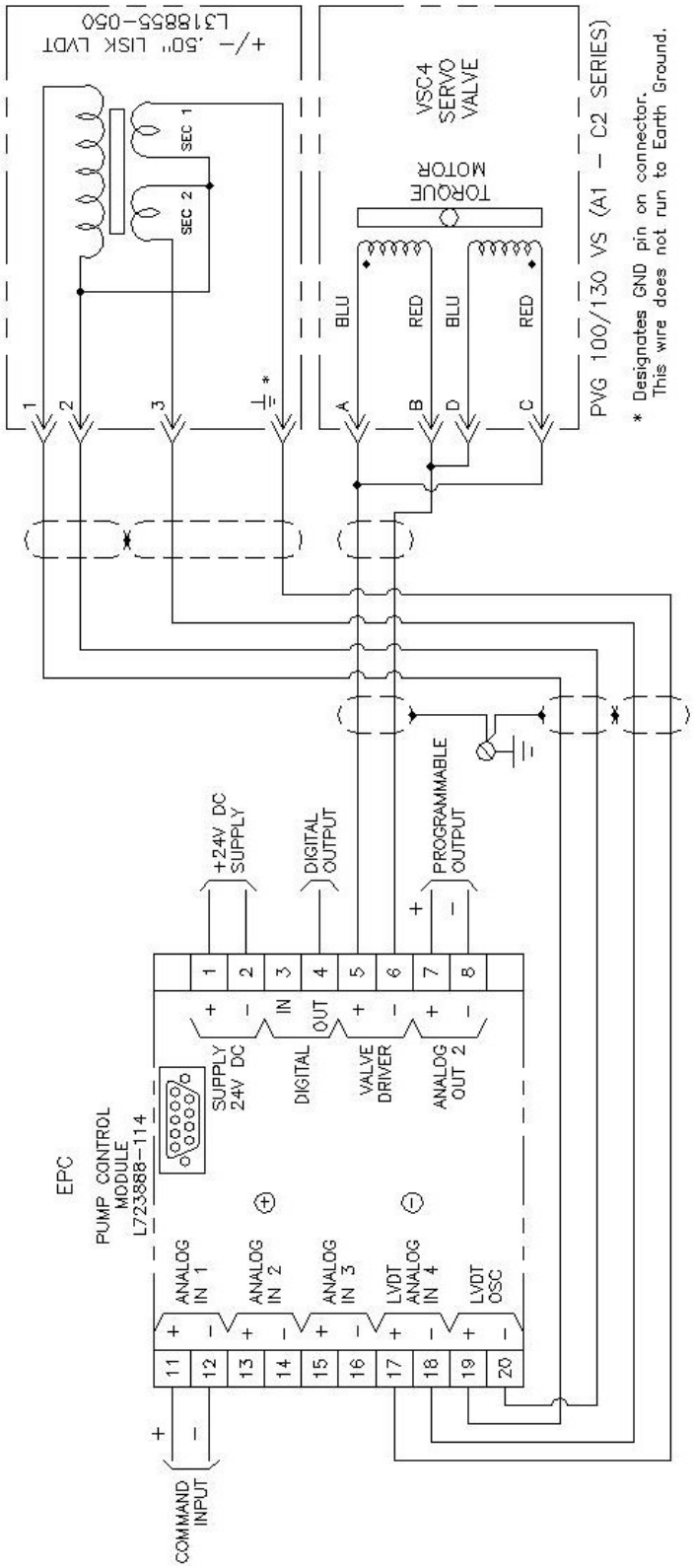
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVG 100/130 VS (D3) Notes:

- Servo valve (VSC4/SCVA) is always mounted on RHSFS.
- Design series D3 utilizing 251385-075 high pressure Sentech LVDT rated at +/- 0.75 inch stroke. LVDT is always mounted on the LHSFS.
- Pump neutral position is limited by minimum volume stop.
- Pump mechanical stroke is rated at approximately 0.750 inch, one way only, toward LVDT.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CCW	LHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	Kp	Ki	
CW	LHSFS	B	NORMAL	NORMAL	NORMAL	64	160		20*	3*		20*	0*	

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

PVG 100/130 VS (A1 – C2 VSC4) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

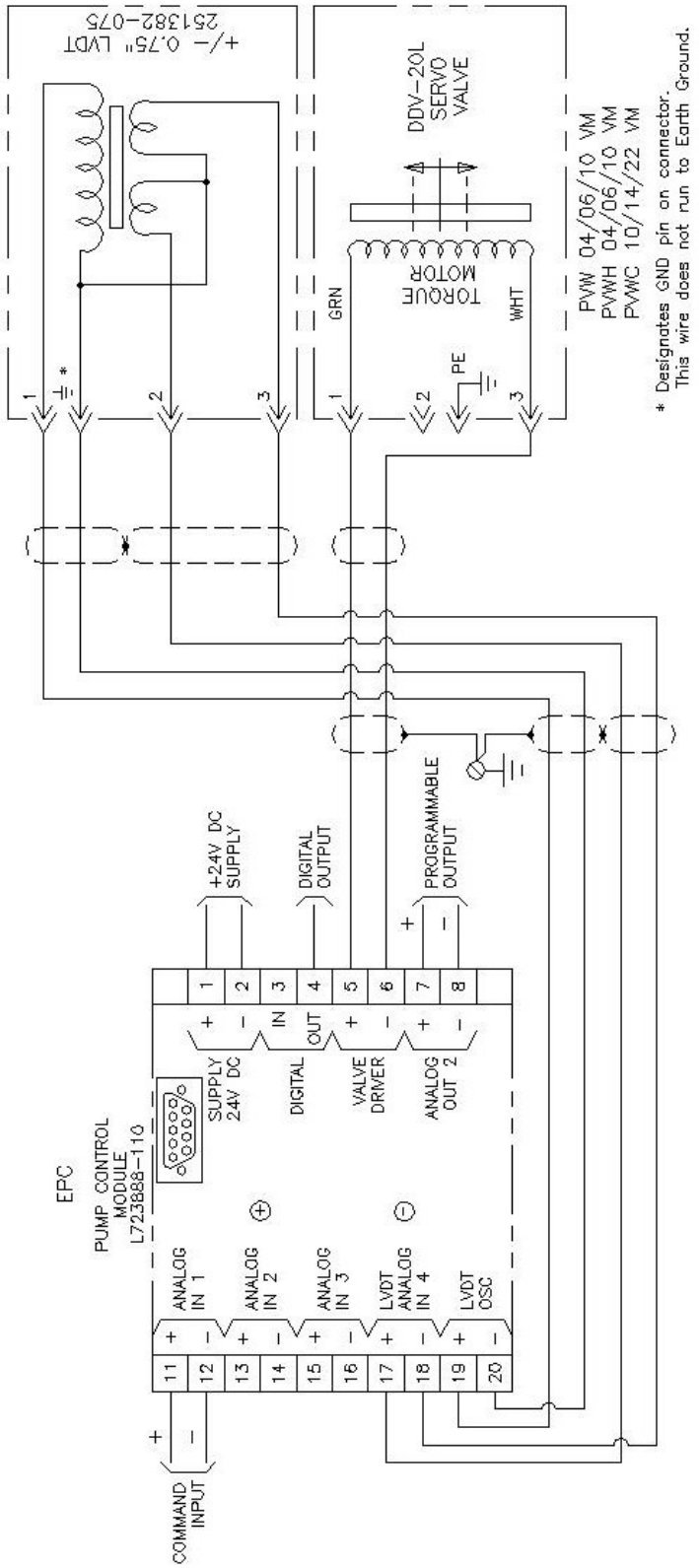
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVG 100/130 VS (A1 – C2) Notes:

- The servo valve (VSC4/SCVA) is always mounted on RHSFS.
- Design series (A1 – C2) utilizing L318855-050 Lisk LVDT rated at +/- 0.50 inch stroke. LVDT is always mounted on the LHSFS with pump neutral offset 0.25" from LVDT null.
- Pump mechanical stroke is rated at approximately 0.750 inch, one way only.
- Pump neutral position limited by minimum volume stop.



			CONFIGURATIONS (SOFTWARE SWITCHES)				CALIBRATIONS (SOFTWARE VALUES)														
PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803	%	mA	875	840	841	843	804	805	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	COR	FINE	512*	Kp	Ki	
CCW	LHSFS	N/A	N/A	N/A	N/A				22*	3*		20*	0*	
CW	RHSFS	N/A	N/A	N/A	N/A	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	N/A	N/A	N/A	N/A									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

EPC
PVW/H/C VM (A Frame)
STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

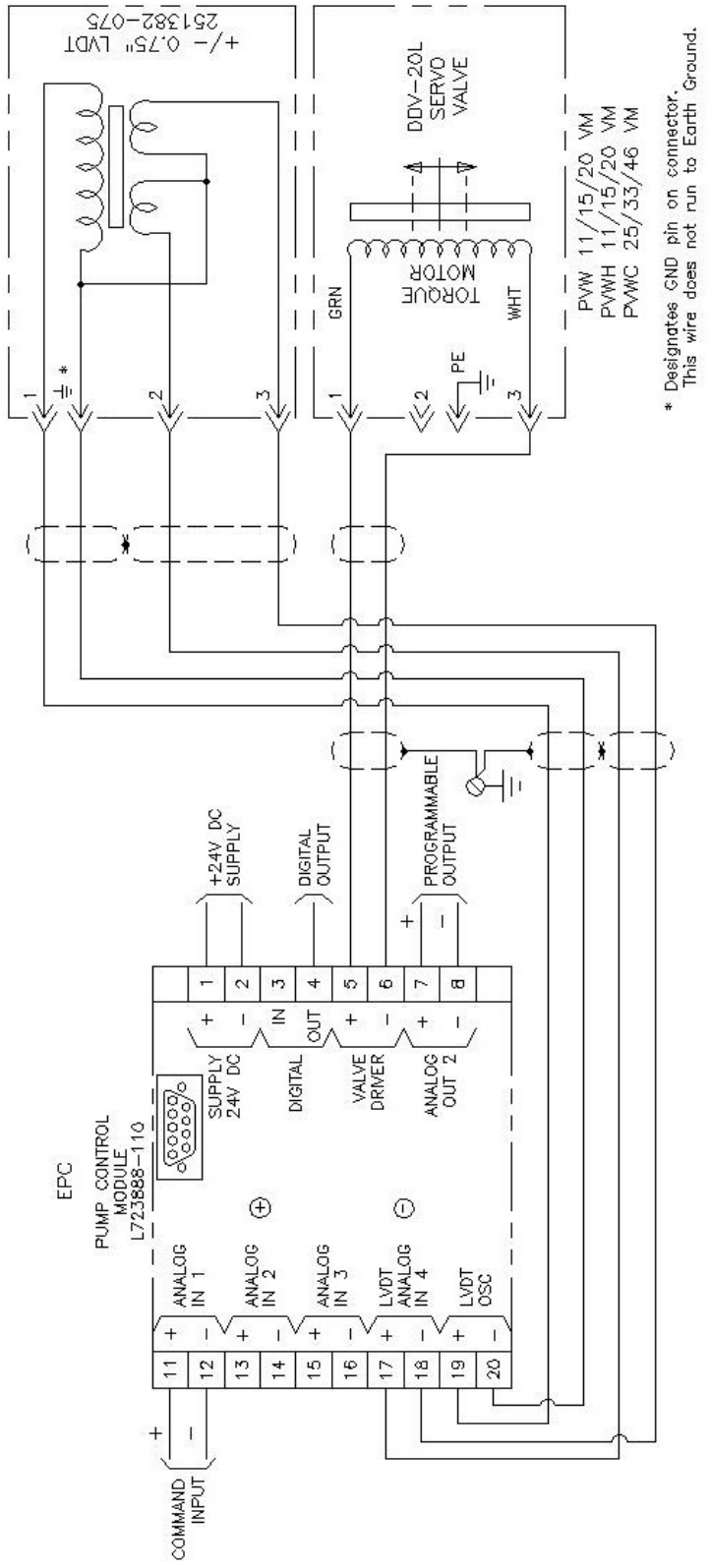
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VM (A Frame) Notes:

- The servo valve (Moog DDV) is always mounted on top.
- The LVDT is high pressure Sentech (251385-075) rated approximately +/- 0.75 inch stroke.
- The pump is rated approximately +/- 0.462 inch stroke.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	15*	7*	512*	20*	0*	
CCW	LHSFS	N/A	N/A	N/A	N/A									
CW	RHSFS	N/A	N/A	N/A	N/A	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	N/A	N/A	N/A	N/A									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

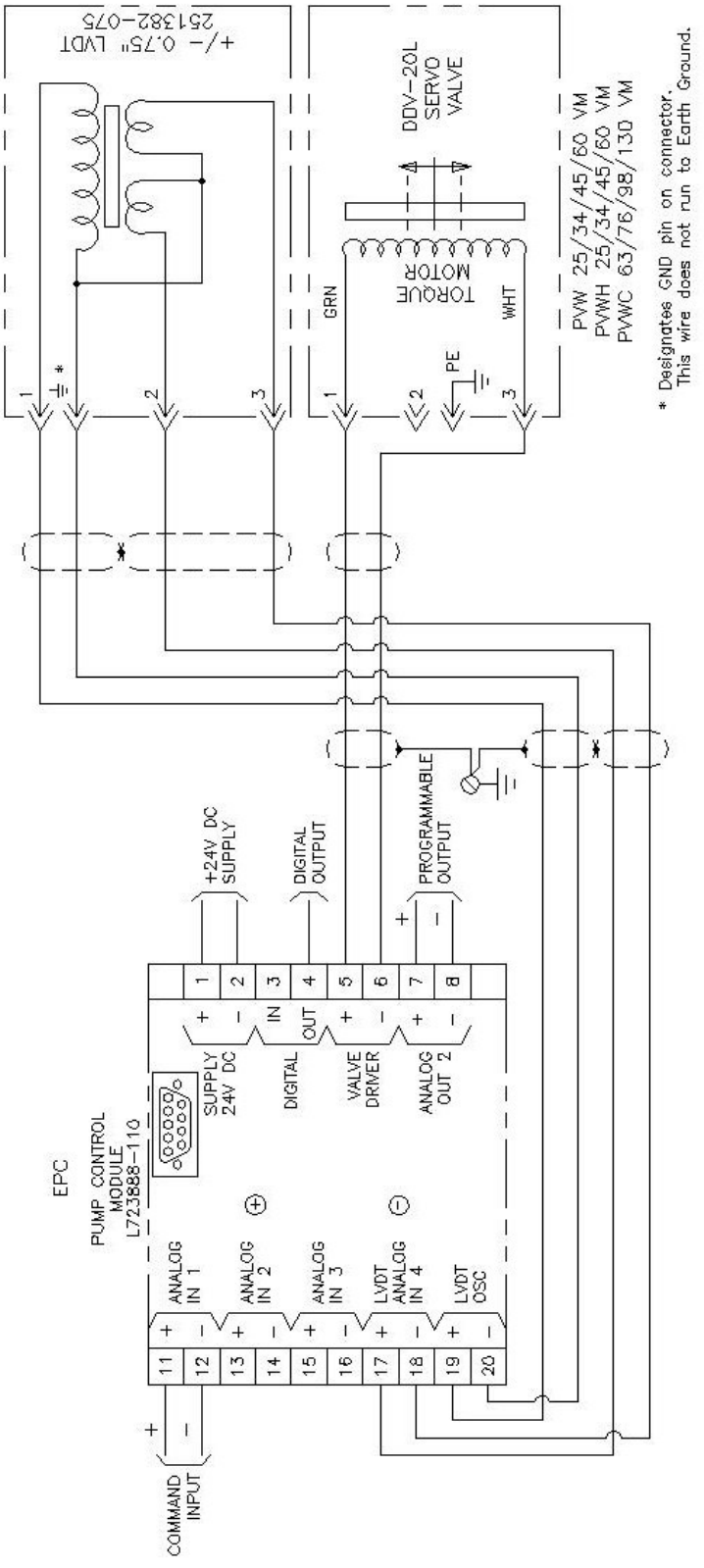
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VM (B Frame) Notes:

- The servo valve (Moog DDV) is always mounted on top.
- The LVDT is high pressure Sentech (251385-075) rated approximately +/- 0.75 inch stroke.
- The pump is rated approximately +/- 0.603 inch stroke.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804		805
							%	mA		COR	FINE		Kp		Ki
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	11*	10*	512*	20*		0*
CCW		LHSFS	A	NORMAL	INVERT	INVERT									
CW		RHSFS	B	NORMAL	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW		LHSFS	B	NORMAL	INVERT	INVERT									

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

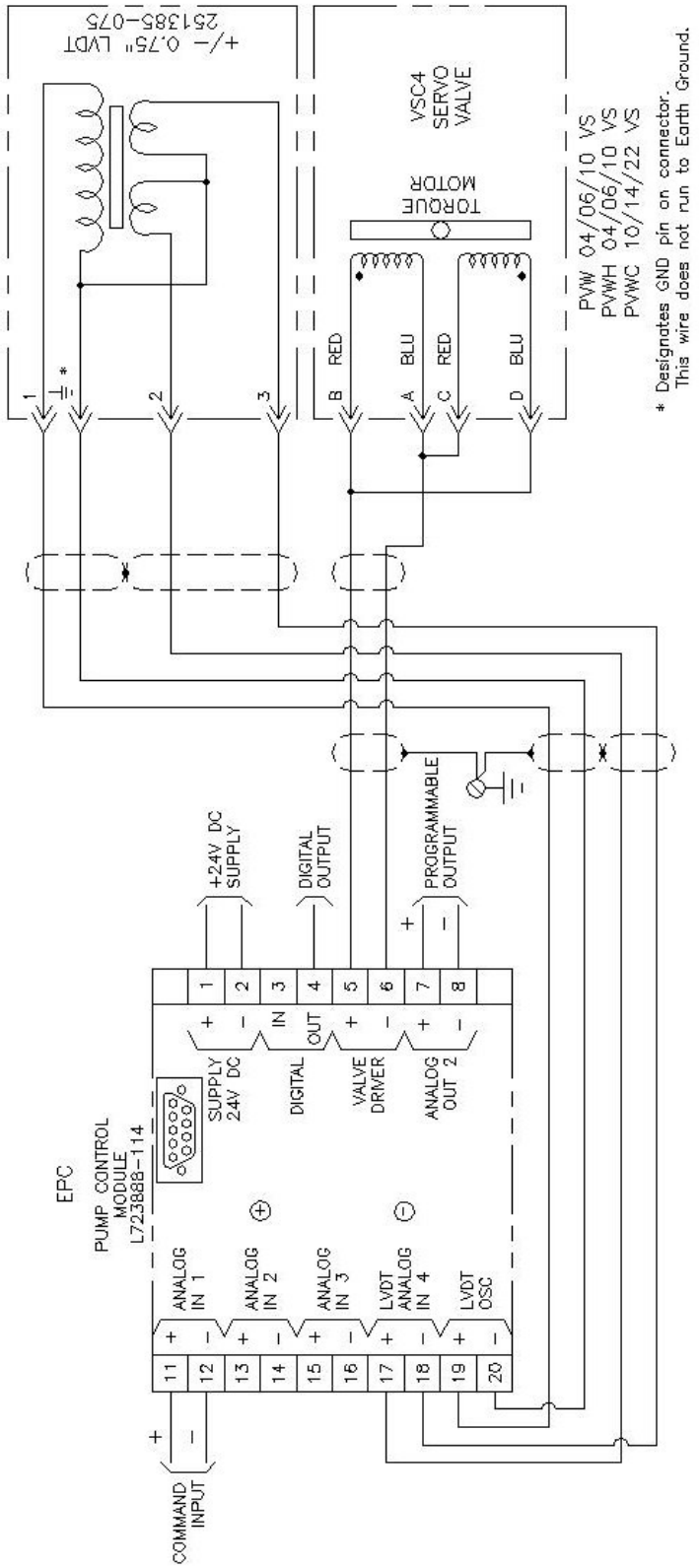
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VM (C Frame) Notes:

- The servo valve (Moog DDV) is always mounted on top.
- The LVDT is high pressure Sentech (251385-075) rated approximately +/- 0.75 inch stroke.
- The pump is rated approximately +/- 0.752 inch stroke.



			CONFIGURATIONS (SOFTWARE SWITCHES)				CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	LVDT LOC.	PORT of DELIV	PROGRAM MENU ITEMS	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804		805
							%	mA		COR	FINE		Kp		Ki
CCW	RHSFS	A		NORMAL	NORMAL	NORMAL	64	160	40	22*	3*	512*	20*		0*
CCW	LHSFS	A		NORMAL	INVERT	NORMAL									
CW	RHSFS	B		NORMAL	NORMAL	NORMAL									
CW	LHSFS	B		NORMAL	INVERT	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

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Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
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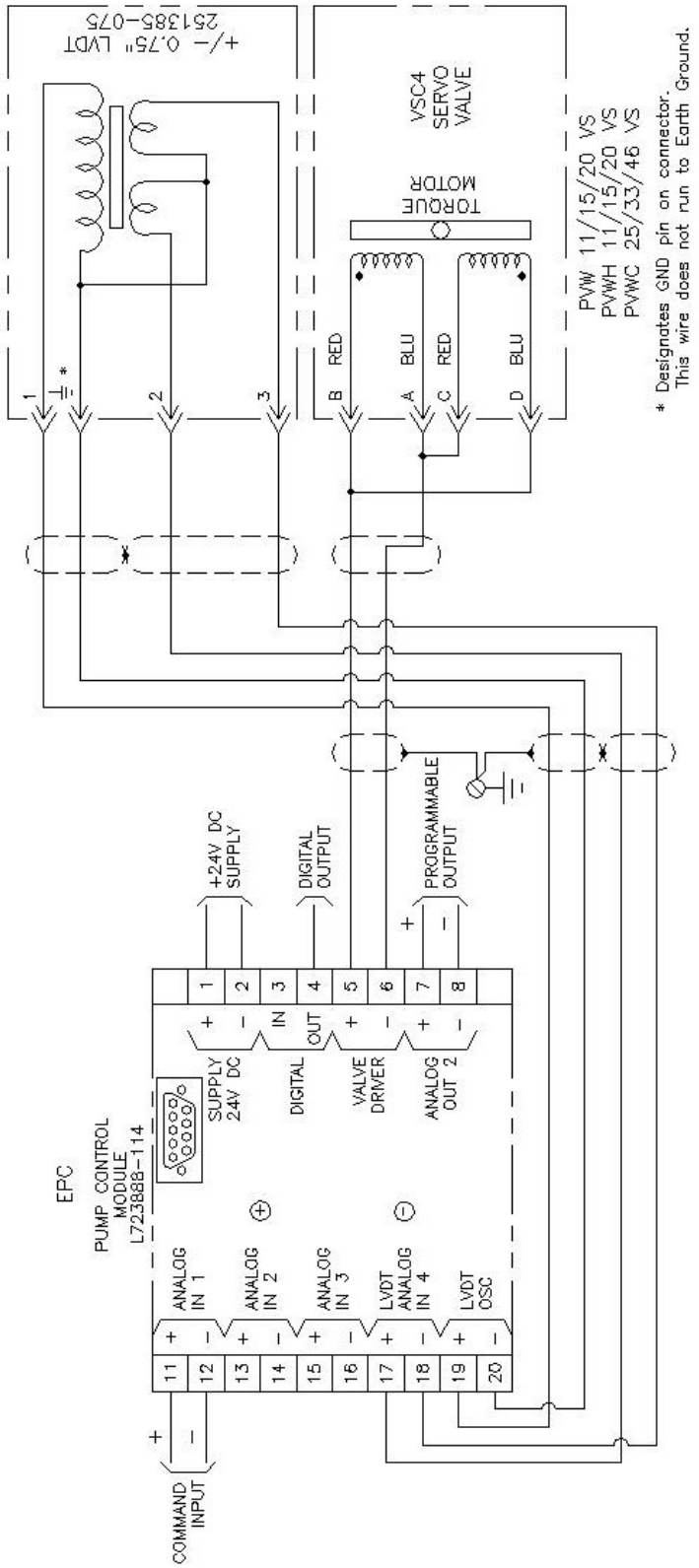
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VS (A Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is a high pressure Sentech (251385-075) rated approximately +/- 0.75 inch stroke.
- The pump is rated approximately +/- 0.462 inch stroke.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)											
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804	805	
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	Kp	Ki	
CCW		LHSFS	A	NORMAL	INVERT	NORMAL	64	160		15*	7*		20*	0*	
CW		RHSFS	B	NORMAL	INVERT	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW		LHSFS	B	NORMAL	INVERT	NORMAL									

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(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
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- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VS (B Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
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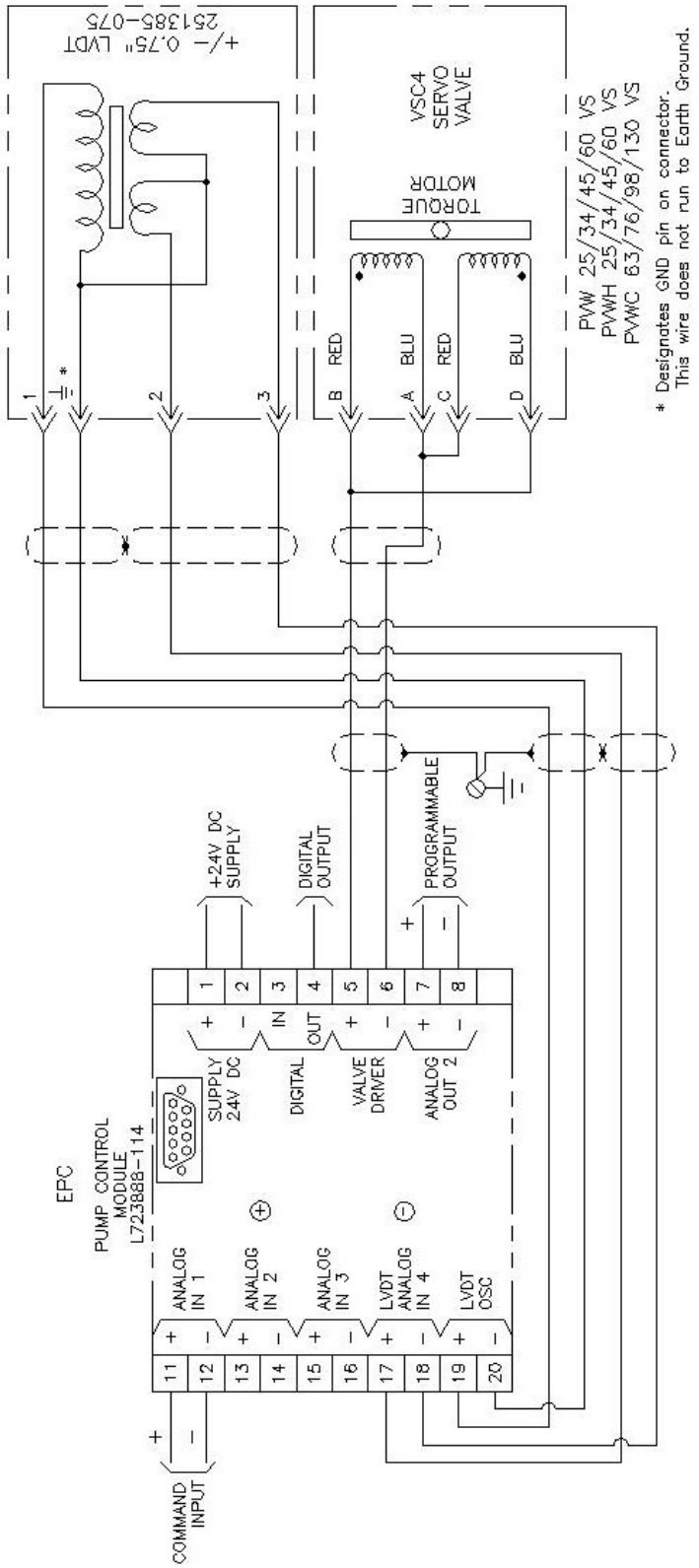

PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		(805)
CONFIGURATIONS (SOFTWARE SWITCHES)							CALIBRATIONS (SOFTWARE VALUES)								
							%	mA		COR	FINE		Kp		Ki
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	64	160	40	11*	10*	512*	20*		0*
CCW		LHSFS	A	NORMAL	INVERT	NORMAL									
CW		RHSFS	B	NORMAL	INVERT	NORMAL									
CW		LHSFS	B	NORMAL	INVERT	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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Issued: Aug, 2004

Bulletin 836269C

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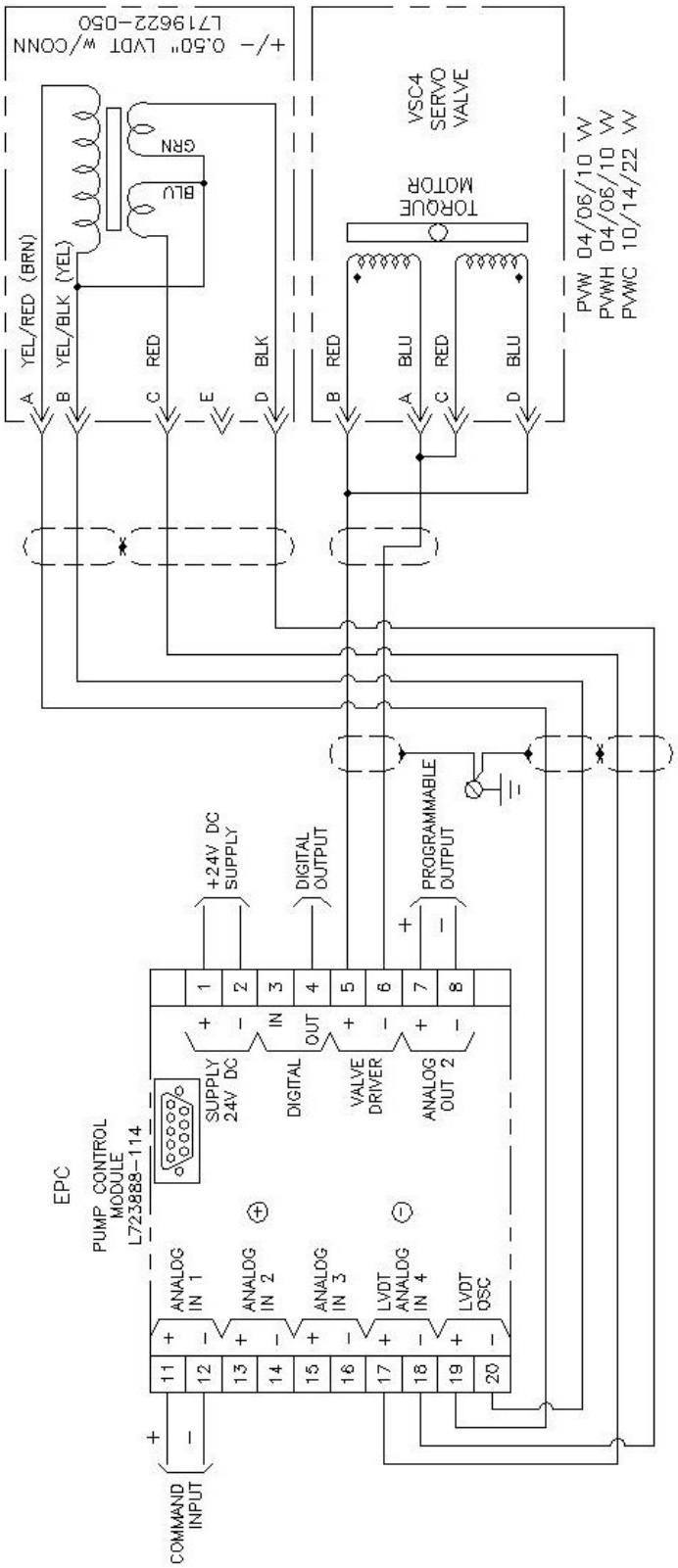
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VS (C Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is a high pressure Sentech (251385-075) rated approximately +/- 0.75 inch stroke.
- The pump is rated approximately +/- 0.752 inch stroke.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804	805	
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	%	64	40	COR	FINE	512*	Kp	Ki	
							mA	160		19*	5*		20*	0*	
CCW		LHSFS	A	NORMAL	INVERT	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW		RHSFS	B	NORMAL	INVERT	NORMAL									
CW		LHSFS	B	NORMAL	INVERT	NORMAL									

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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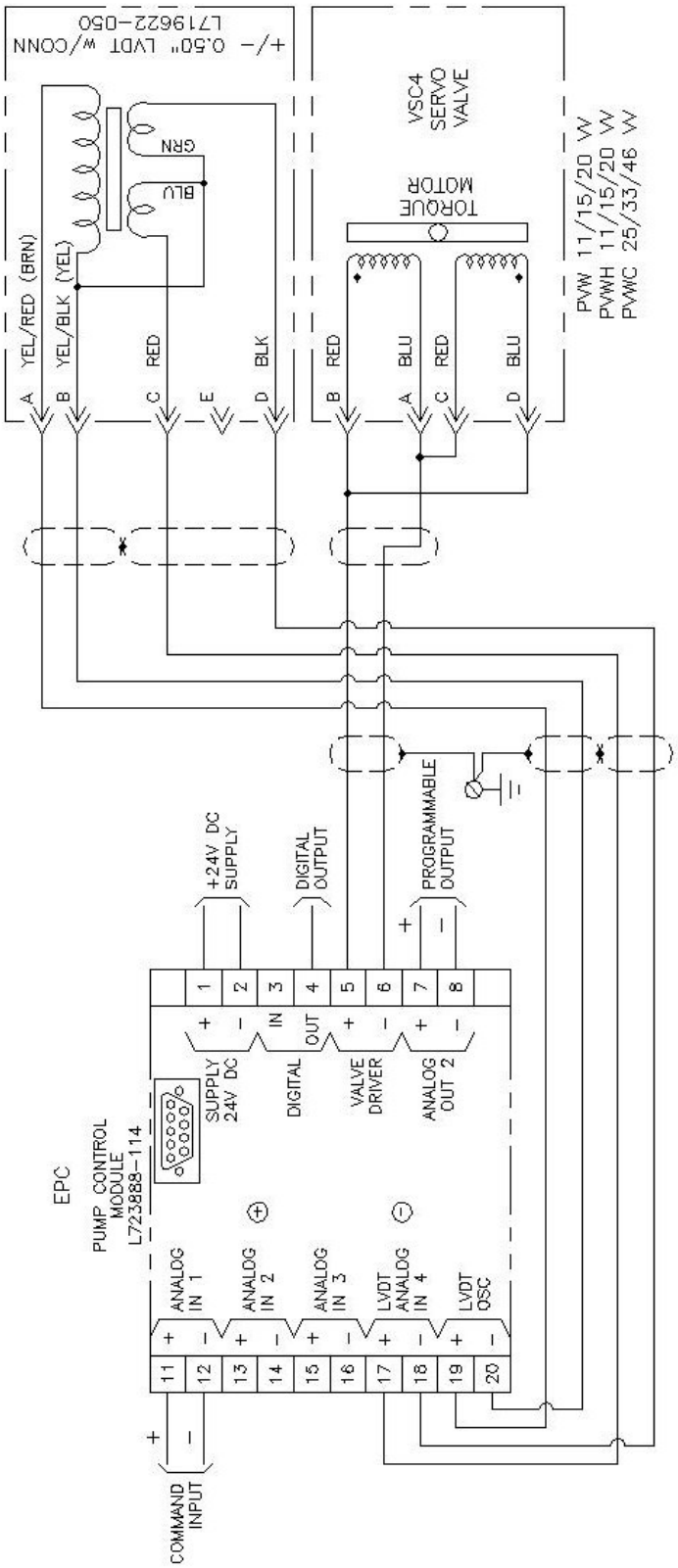
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VV (A Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is rated +/- 0.50 inch stroke.
- The pump is rated at +/- 0.462 inch stroke.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN		
			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)						
PROGRAM MENU ITEMS						%	mA					804	Kp	805 Ki
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	64	160	40	COR	FINE	512*	20*		0*
CCW	LHSFS	A	NORMAL	INVERT	NORMAL				14*	0*				
CW	RHSFS	B	NORMAL	INVERT	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CW	LHSFS	B	NORMAL	INVERT	NORMAL									

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Bulletin 836269C

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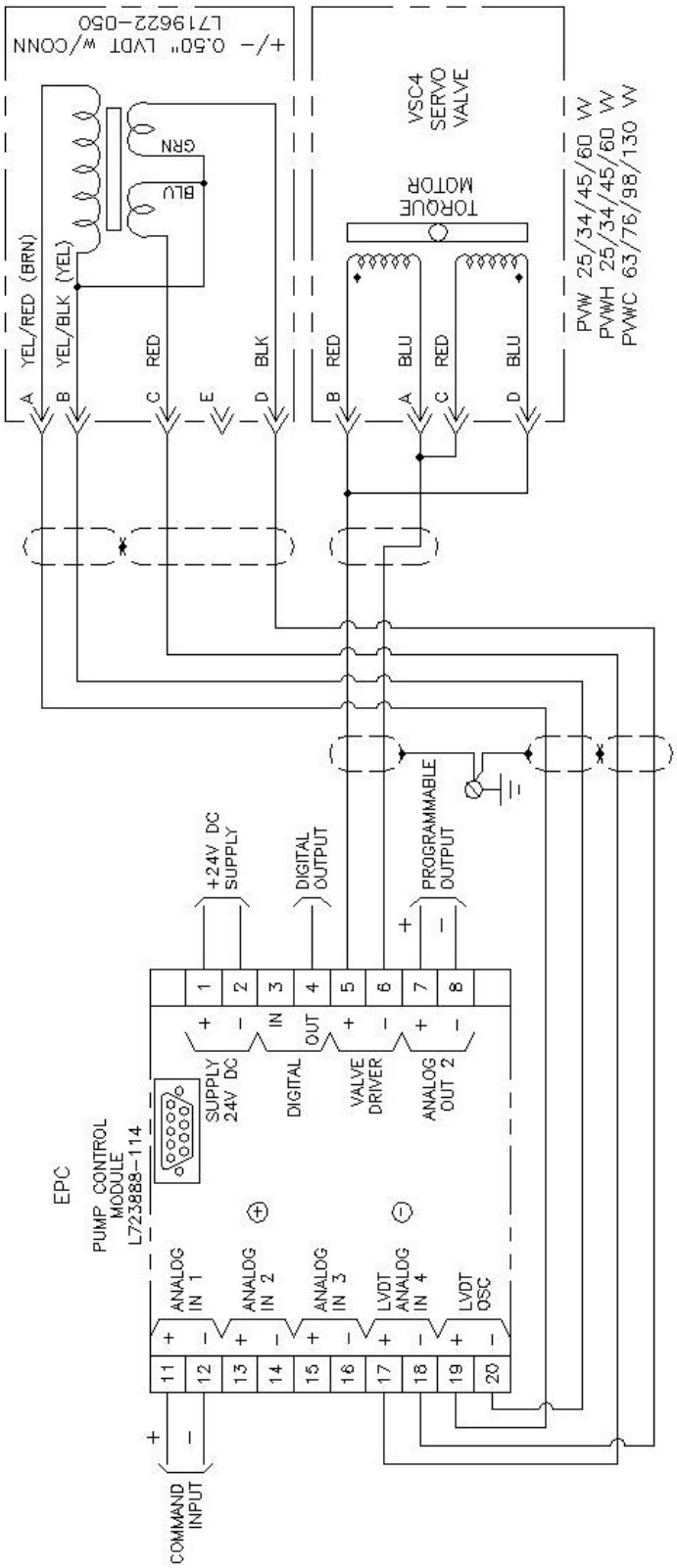
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VV (B Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is rated +/- 0.50 inch stroke.
- The pump is rated at +/- 0.603 inch stroke.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)													
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804		
							%	mA		COR	FINE		Kp	Ki	
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL	64	160	40	11*	2*	512*	20*	0*	
CCW		LHSFS	A	NORMAL	INVERT	NORMAL									
CW		RHSFS	B	NORMAL	INVERT	NORMAL									
CW		LHSFS	B	NORMAL	INVERT	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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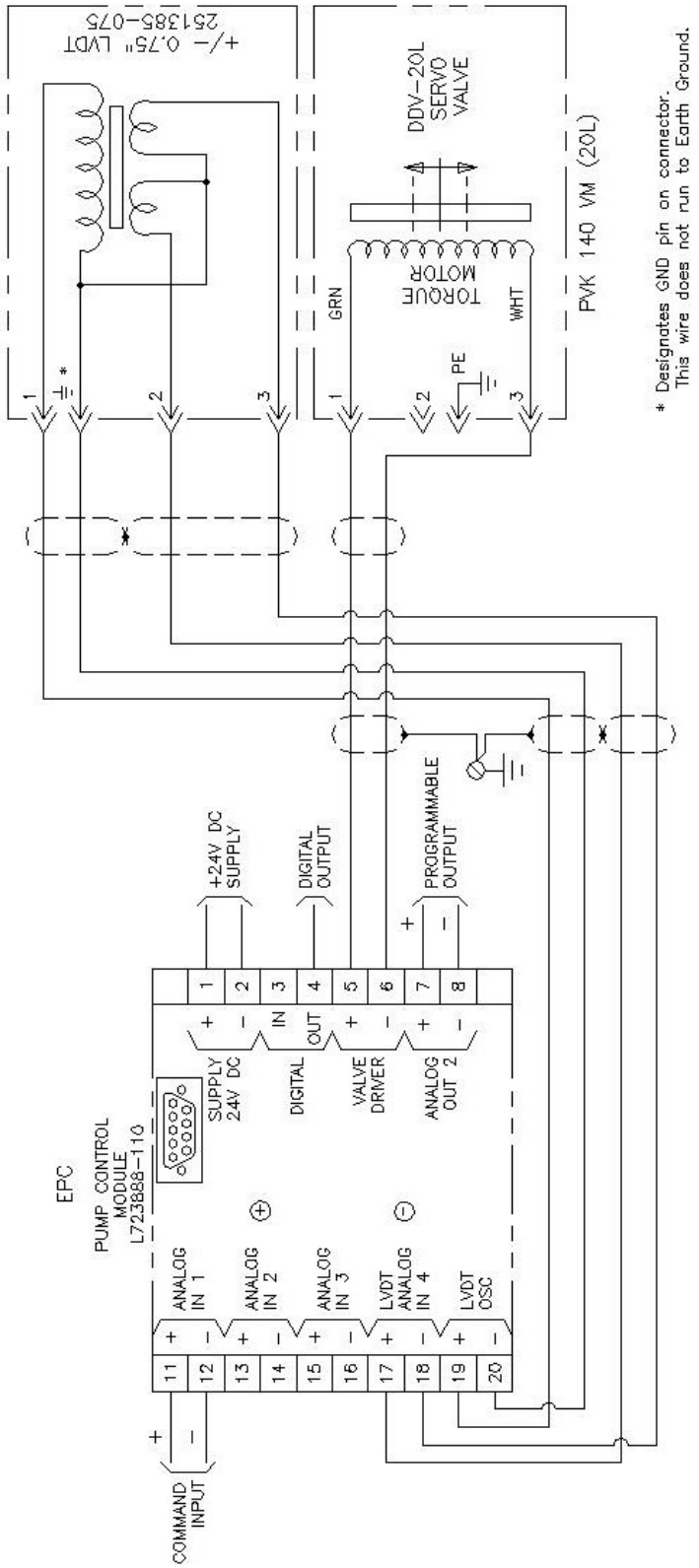
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVW/H/C VV (C Frame) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- LVDT is rated +/- 0.50 inch stroke.
- The pump is rated at +/- 0.752 inch stroke.



CONFIGURATIONS (SOFTWARE SWITCHES) | CALIBRATIONS (SOFTWARE VALUES)

PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (GAIN) (841)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		STROKE CONTROL GAIN (805)	
PROGRAM MENU ITEMS						%	mA		COR	FINE				Kp		Ki	
CCW	TOP	A	NORMAL	NORMAL	NORMAL	100	800	60	20*	0*	512*			20*		0*	
CW	TOP	B	NORMAL	NORMAL	NORMAL												

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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Bulletin 836269C

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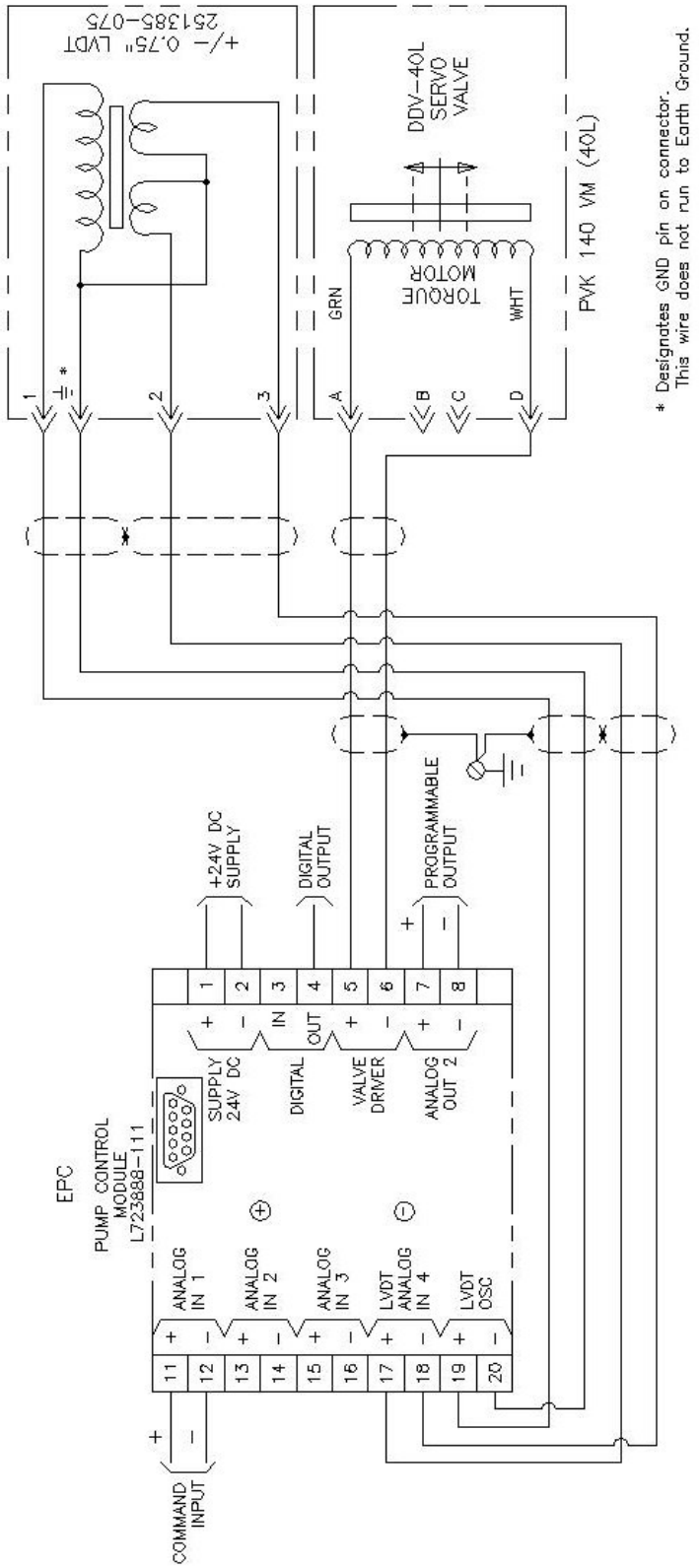
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 140 VM (20L) Notes:

- The servo valve (Moog DDV) is always mounted on top.
- High pressure Sentech LVDT (251385-075) is rated +/- 0.75 inch stroke.
- The LVDT is always mounted on top and function does not change for either mounting hole.
- "A" port located on the LHSFS, "B" port located on the RHSFS.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804	805	
CCW		TOP	A	NORMAL	NORMAL	NORMAL	%	mA	60	COR	FINE	512*	Kp	Ki	
CW		TOP	B	NORMAL	NORMAL	NORMAL	100	800		20*	0*		20*	0*	
							OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
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- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
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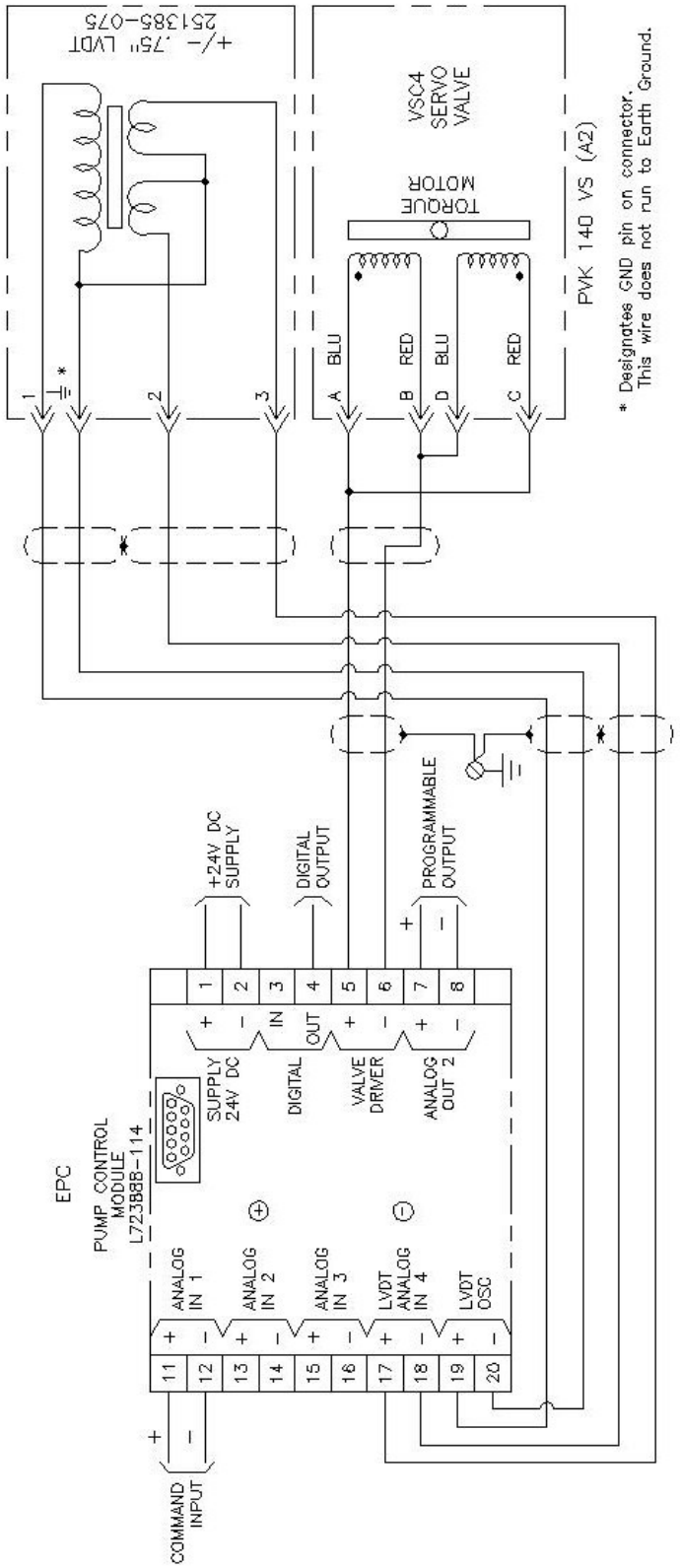
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 140 VM (40L) Notes:

- The servo valve (Moog DDV) is always mounted on top.
- High pressure Sentech LVDT (251385-075) is rated +/- 0.75 inch stroke.
- The LVDT is always mounted on top and function does not change for either mounting hole.
- "A" port located on the LHSFS, "B" port located on the RHSFS.



CONFIGURATIONS (SOFTWARE SWITCHES)

PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT
PROGRAM MENU ITEMS			852	845	802
CCW	TOP	A	NORMAL	INVERT	NORMAL
CW	TOP	B	NORMAL	NORMAL	NORMAL

CALIBRATIONS (SOFTWARE VALUES)

MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
803		875	840	841	843	804	805	
%	mA		COR	FINE		Kp	Ki	
64	160	40	25*	0*	512*	20*	0*	

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2300 S. 51st. Street
Milwaukee, WI USA 53219

Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

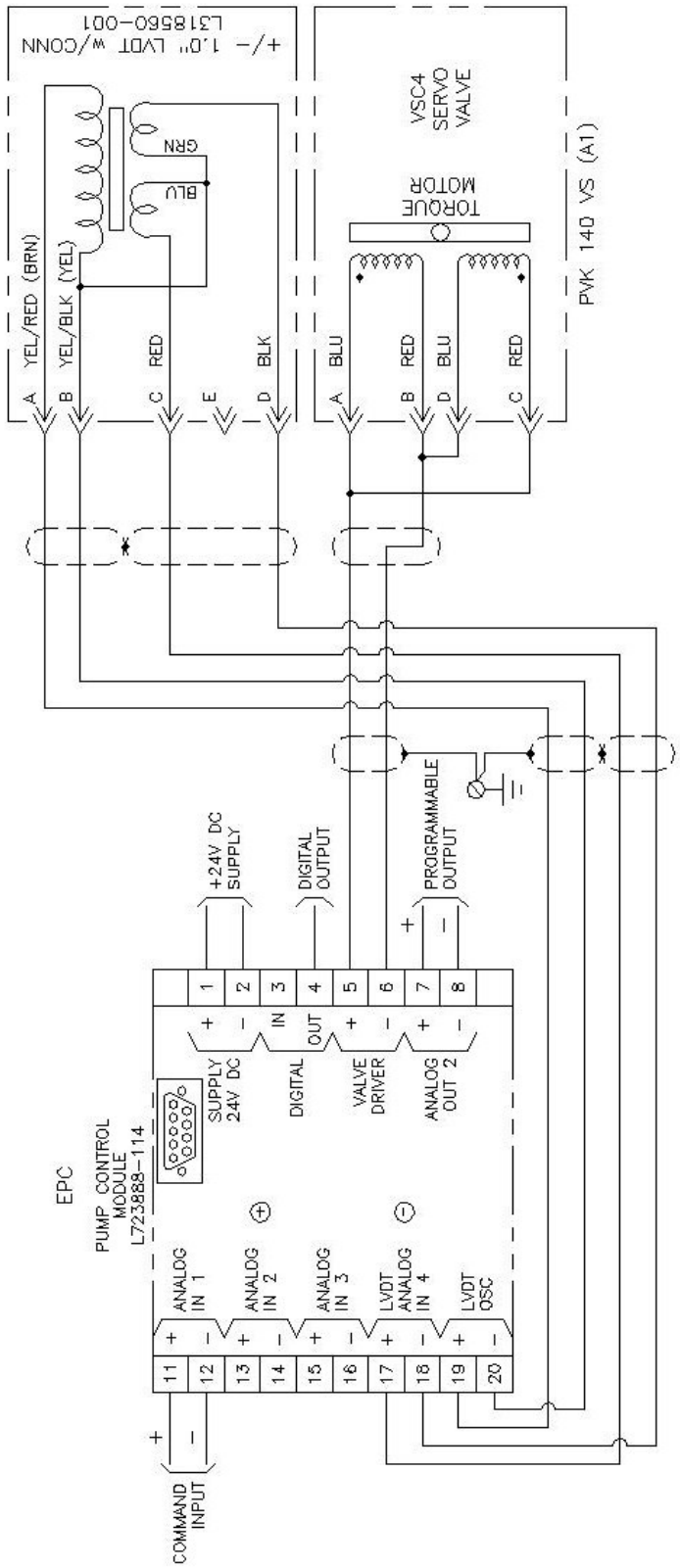
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 140 VS (A2) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- Design series A2 utilizing 251385-075 high pressure Sentech LVDT rated at +/- 0.75 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.21 inch, control piston travel for +/- 0.488 inch LVDT stroke.
- "A" port located on the LHSFS, "B" port located on the RHSFS.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (841)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS						%	mA					804	Kp	805 Ki
CCW	TOP	A	NORMAL	NORMAL	NORMAL	64	160	40	COR 45*	FINE 5*	512*	20*		0*
CW	TOP	B	NORMAL	NORMAL	NORMAL									

CONFIGURATIONS (SOFTWARE SWITCHES)

CALIBRATIONS (SOFTWARE VALUES)

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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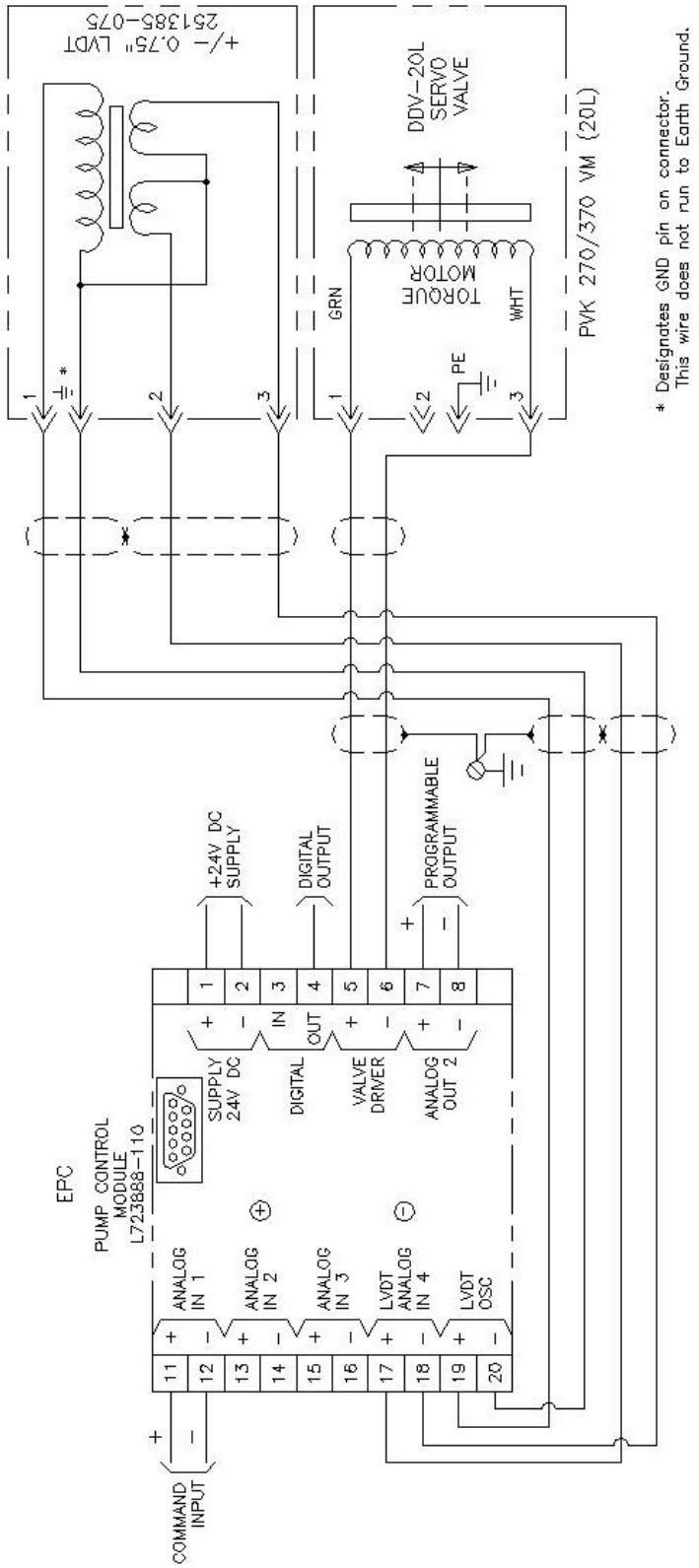
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 140 VS (A1) Notes:

- The servo valve (VSC4/SCVA) is always mounted on top.
- Design series A1 utilizing L318560-001 LVDT rated at +/- 1.0 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.21 inch, control piston travel for +/- 0.488 inch LVDT stroke.
- “A” port located on the LHSFS, “B” port located on the RHSFS.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (GAIN) (841)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		STROKE CONTROL GAIN (805)	
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)												
PROGRAM MENU ITEMS						%	mA											
CCW	TOP	A	NORMAL	NORMAL	NORMAL	100	800	60	COR	FINE	512*			Kp	Ki			
CW	TOP	B	NORMAL	NORMAL	NORMAL				15*	3*				20*	0*			

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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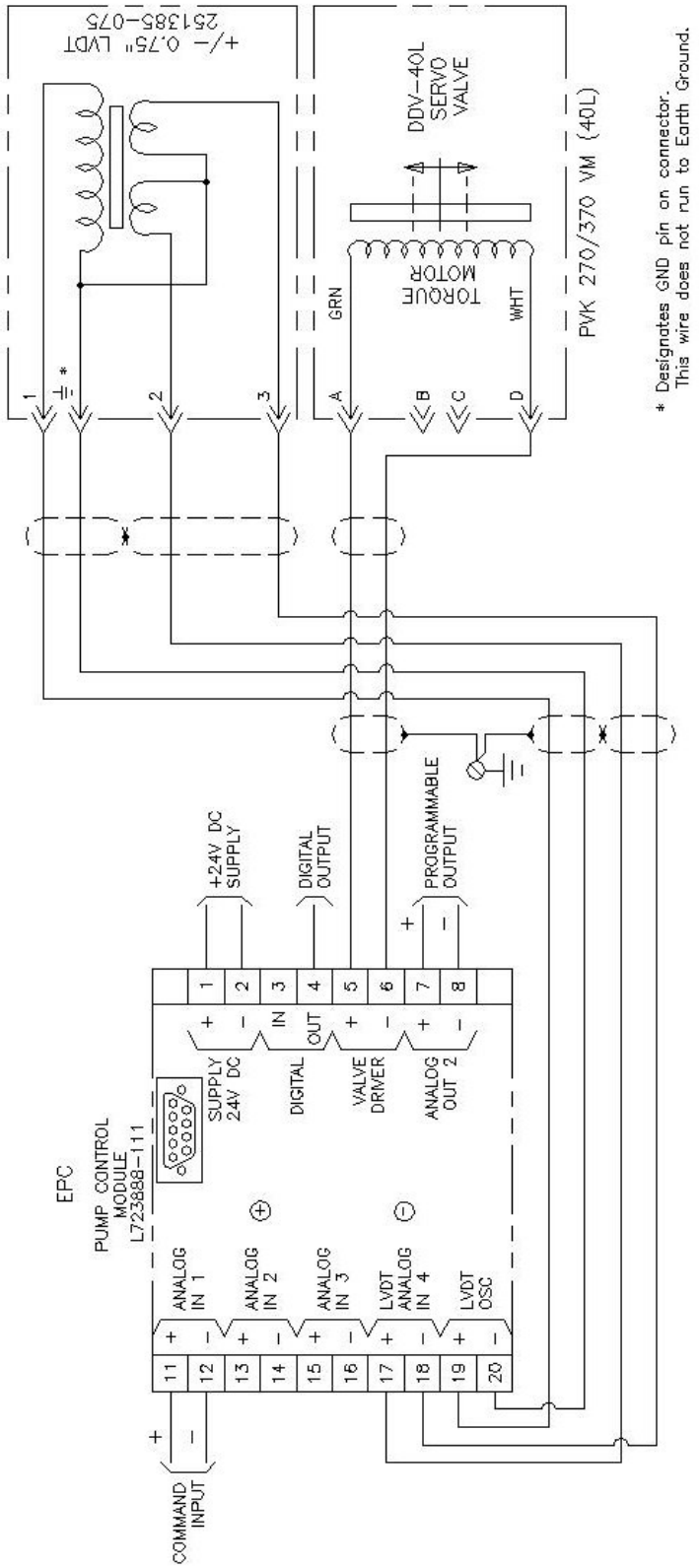
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 270/370 VM (20L) Notes:

- The servo valve (Moog DDV) is always mounted on LHSFS.
- High pressure Sentech LVDT (251385-075) is rated at +/- 0.75 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.62 inch, control piston travel for +/- 0.62 inch LVDT stroke.
- “A” port located on the LHSFS, “B” port located on the RHSFS.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CCW	TOP	A	NORMAL	NORMAL	NORMAL	%	mA	60	COR	FINE	512*	Kp	Ki	
CW	TOP	B	NORMAL	NORMAL	NORMAL	100	800		15*	3*		20*	0*	
OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION														

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
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- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
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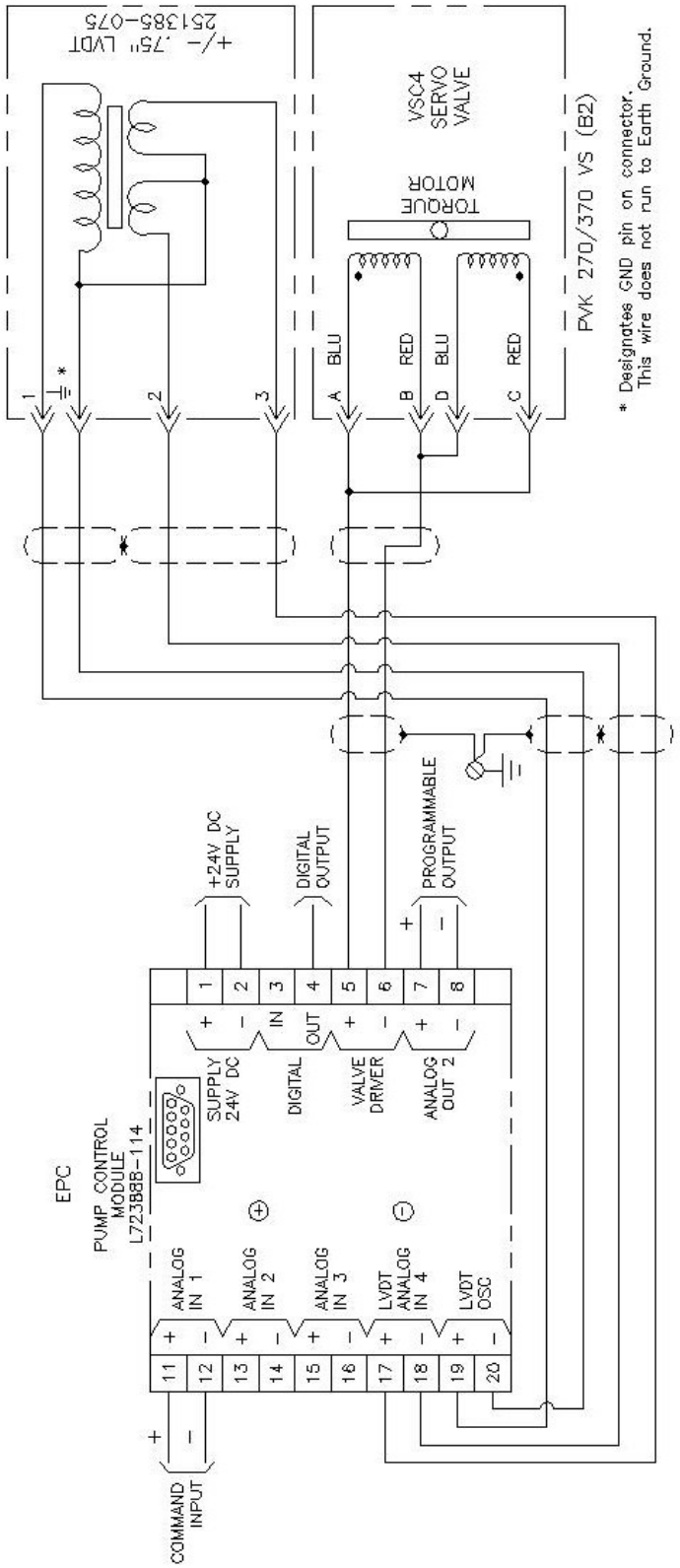
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 270/370 VM (40L) Notes;

- The servo valve (Moog DDV) is always mounted on LHSFS.
- High pressure Sentech LVDT (251385-075) is rated at +/- 0.75 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.62 inch, control piston travel for +/- 0.62 inch LVDT stroke.
- "A" port located on the LHSFS, "B" port located on the RHSFS.



				CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)											
PUMP ROT.	LVDT LOC.	PORT of DELIV	PROGRAM MENU ITEMS	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804	805	
							%	mA		COR	FINE		Kp	Ki	
CCW	TOP	A		NORMAL	NORMAL	NORMAL	64	160	40	15*	3*	512*	20*	0*	
CW	TOP	B		NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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Issued: Aug, 2004

Bulletin 836269C

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
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- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
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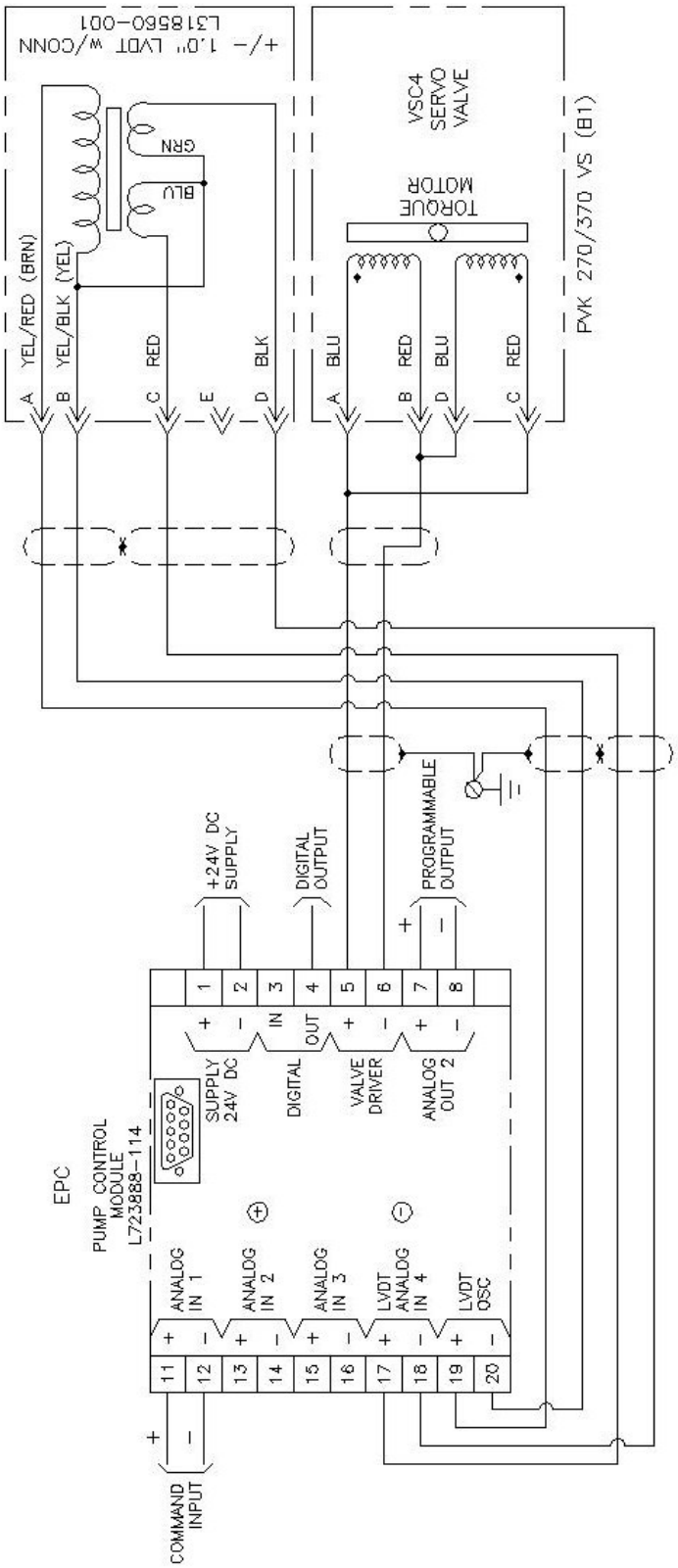
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 270/370 VS (B2) Notes;

- Servo valve (VSC4/SCVA) is always mounted on the LHSFS.
- Design series B2 utilizing 251385-075 high pressure Sentech LVDT rated at +/- 0.75 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.62 inch, control piston travel for +/- 0.62 inch LVDT stroke.
- "A" port located on the LHSFS, "B" port located on the RHSFS.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	LVDT LOC.	PORT of DELIV	PROGRAM MENU ITEMS	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804	805	
CCW	TOP	A		NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	Kp	Ki	
CW	TOP	B		NORMAL	NORMAL	NORMAL	64	160		33*	0*		20*	0*	

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Issued: Aug, 2004

Bulletin 836269C

PVK 270/370 VS (B1 VSC4) STROKE CONTROL WIRING

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
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- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
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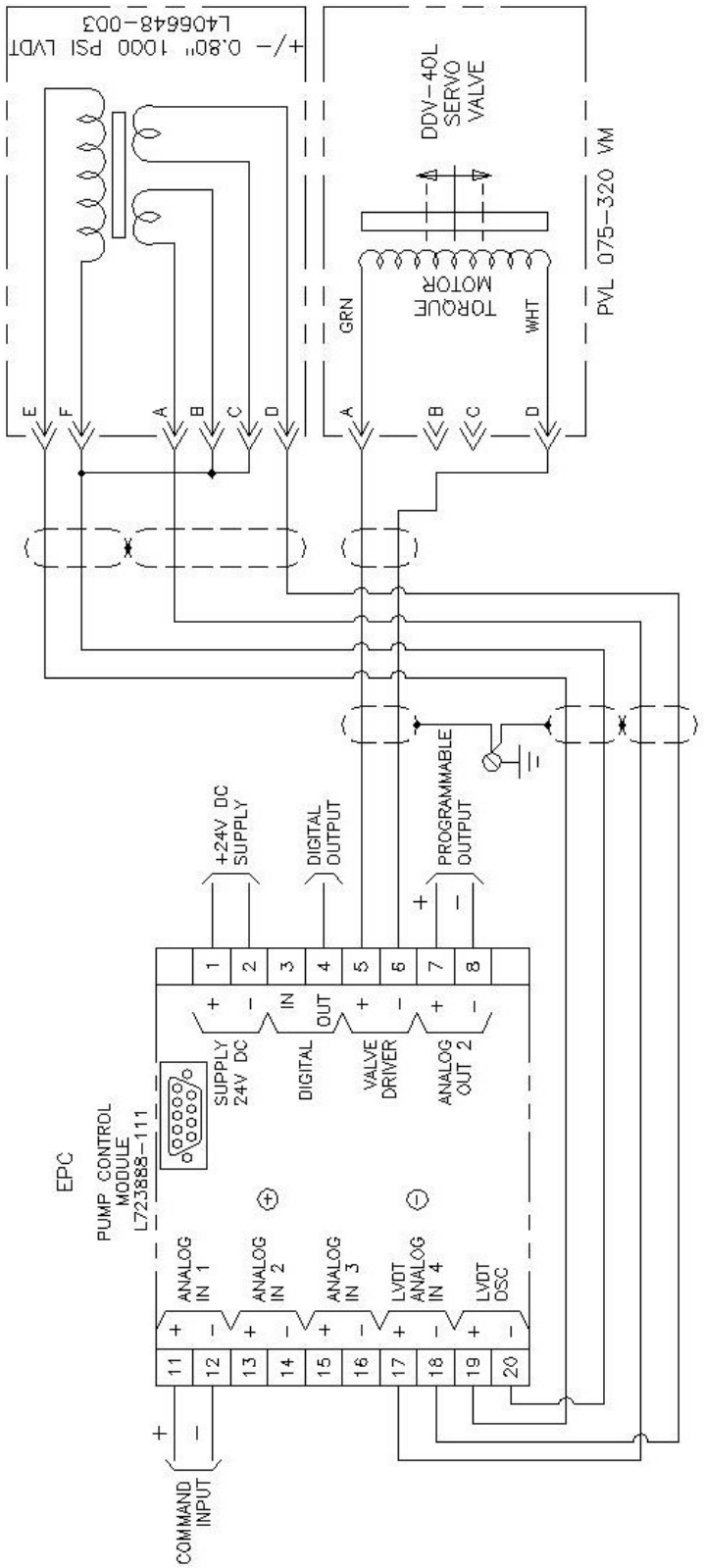
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVK 270/370 VS (B1) Notes;

- The servo valve (VSC4/SCVA) is always mounted on the LHSFS.
- Design series B1 utilizing L318560-001 LVDT rated at +/- 1.0 inch stroke.
- LVDT is always mounted on top and function does not change for either mounting hole location.
- Pump mechanical stroke is rated at approximately +/- 1.62 inch, control piston travel for +/- 0.62 inch LVDT stroke.
- "A" port is located on the LHSFS, "B" port on the RHSFS.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	PROGRAM MENU ITEMS		LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
														804	805	
CW	852	845	RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	875	840	841	843	Kp	Ki	
CCW			LHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	COR 7*	FINE 0*	512*	20*	0*	
CW			RHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW			LHSFS	A	INVERT	NORMAL	NORMAL									

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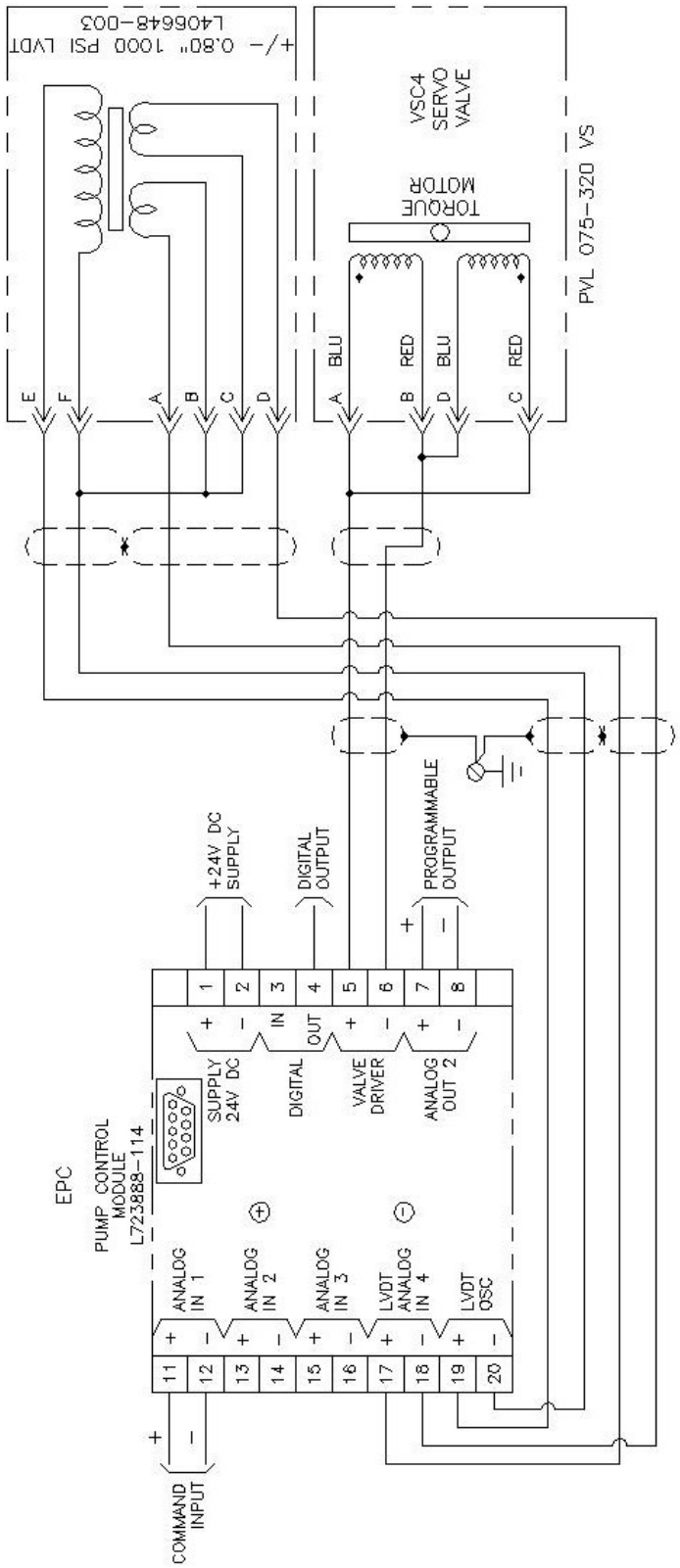
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVL 075/320 VM Notes:

- The control block with servo valve (Moog DDV) and LVDT (high pressure low impedance) may be mounted on either side of the pump.
- The pump control piston and LVDT are both rated approximately +/- 0.800 inch stroke.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)										
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
				852	845	802	803		875	840	841	843	804		
CW		RHSFS	A	NORMAL	NORMAL	NORMAL	%	64	60	COR	FINE	512*	Kp	20*	0*
							mA	160		7*	0*		Ki		
CCW		LHSFS	A	NORMAL	NORMAL	NORMAL									
CW		RHSFS	A	INVERT	NORMAL	NORMAL									
CCW		LHSFS	A	INVERT	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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Telephone: (414) 327-1700
Fax: (414) 327-0532
Website: www.oilgear.com

The Oilgear Company
2300 S. 51st. Street
Milwaukee, WI USA 53219

Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
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- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
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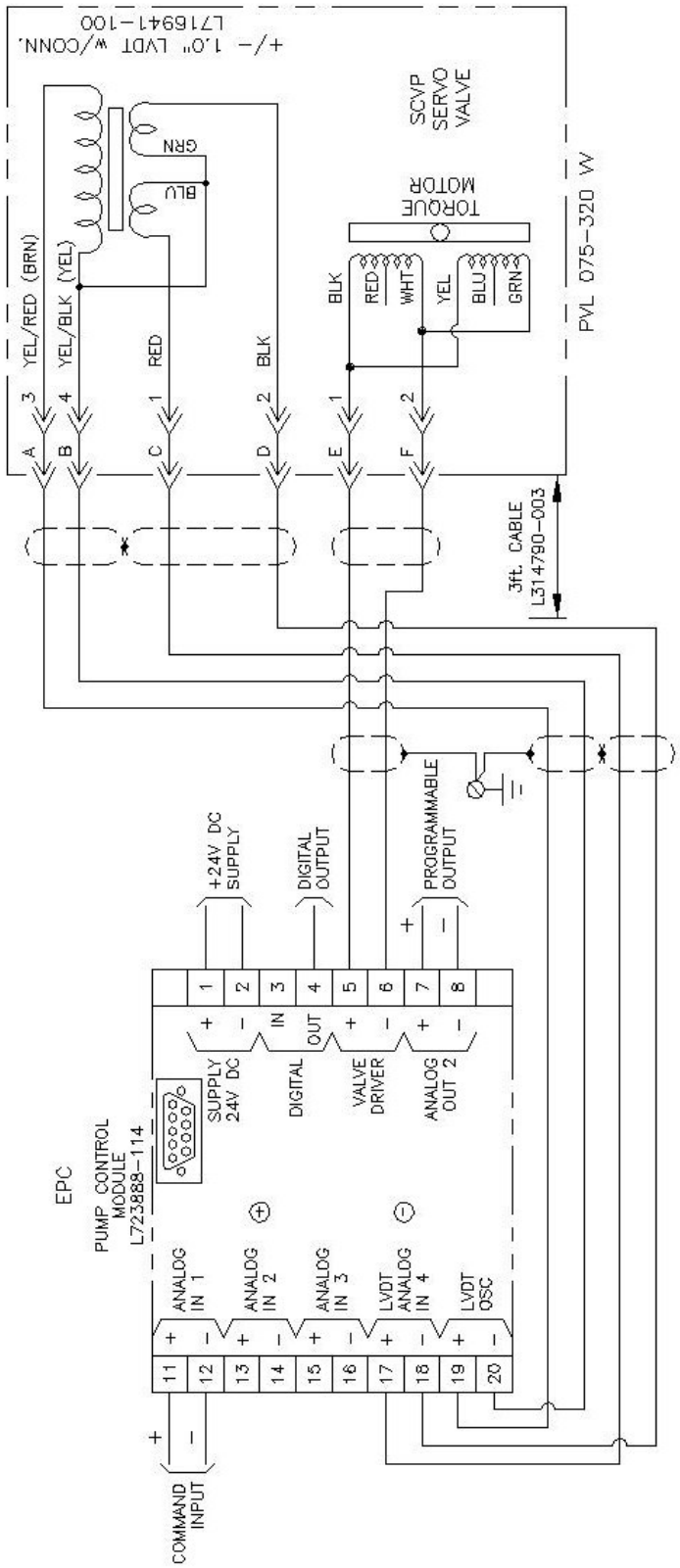
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVL 075/320 VS Notes:

- The control block with servo valve (VSC4/SCVA) and LVDT (high pressure low impedance) may be mounted on either side of the pump.
- The pump control piston and LVDT are both rated approximately +/- 0.800 inch stroke.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CW	RHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	60	COR	FINE	512*	Kp	Ki	
CCW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250		8*	11*		20*	0*	
CW	RHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	LHSFS	A	INVERT	NORMAL	NORMAL									

CONFIGURATIONS (SOFTWARE SWITCHES)

CALIBRATIONS (SOFTWARE VALUES)

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2300 S. 51st. Street
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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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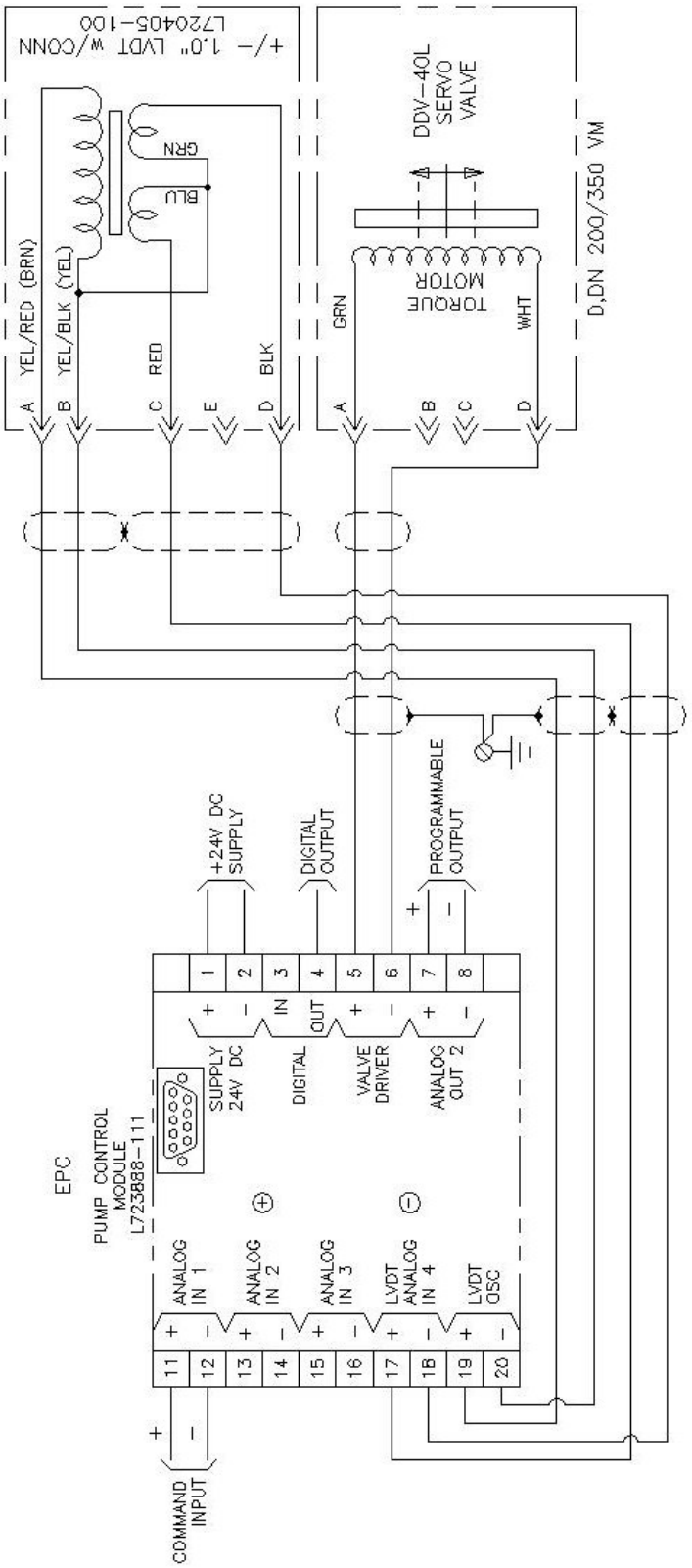
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVL 075/320 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum “Gain Pump Response” calibration.
- Pump mechanical stroke is rated at approximately +/- 0.800 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	800	60	39*	0*	512*	20*	0*	
CW	RHSFS	A	INVERT	NORMAL	NORMAL									
CCW	LHSFS	A	INVERT	NORMAL	NORMAL									
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
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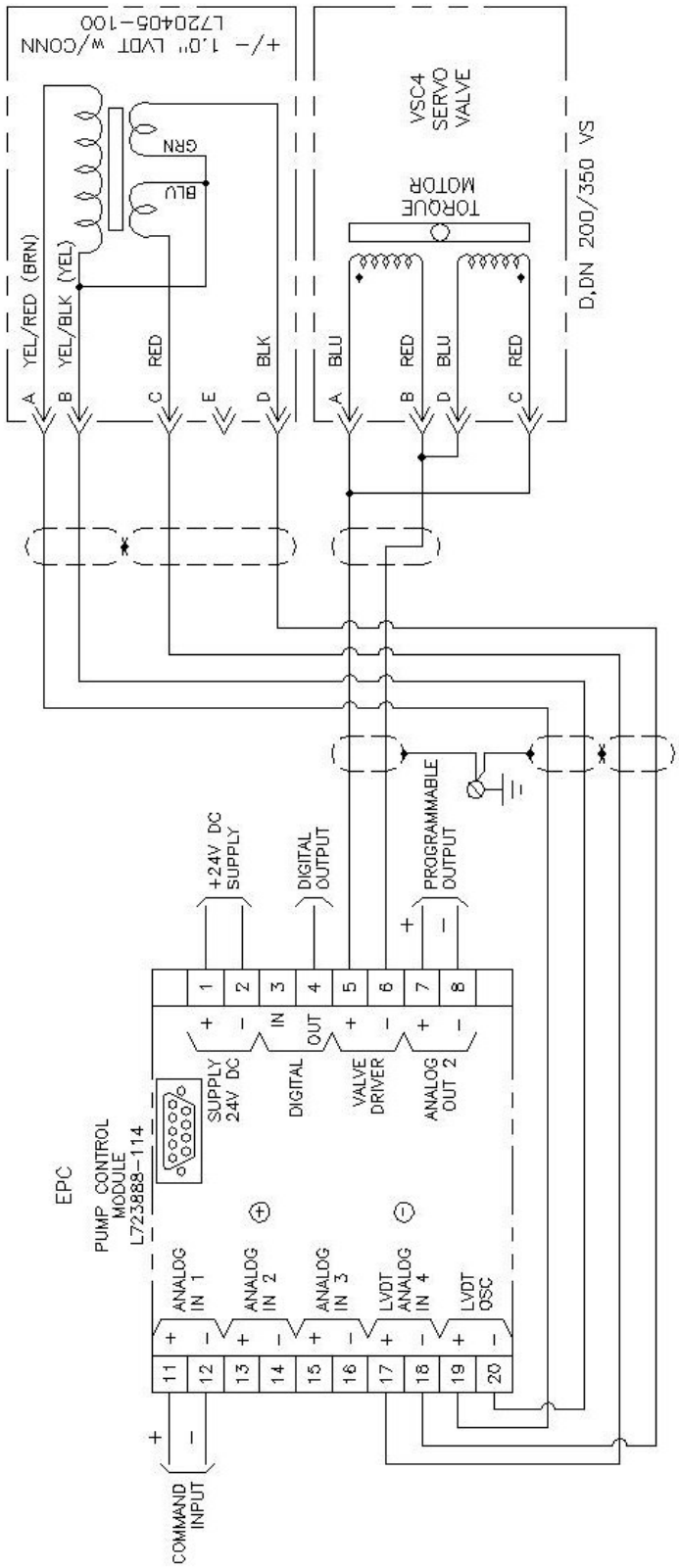
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D,DN 200/350 VM Notes:

- Servo valve (Moog DDV) is mounted on either side of the pump.
- The pump mechanical stroke is rated at approximately +/- 0.675 inch.
- The LVDT is rated at approximately +/- 1.00 inch.



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)												
PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA		COR	FINE		Kp	Ki	
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	64	160	60	39*	0*	512*	20*	0*	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION
CW	RHSFS	A	INVERT	NORMAL	NORMAL									
CCW	LHSFS	A	INVERT	NORMAL	NORMAL									
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

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- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
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- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
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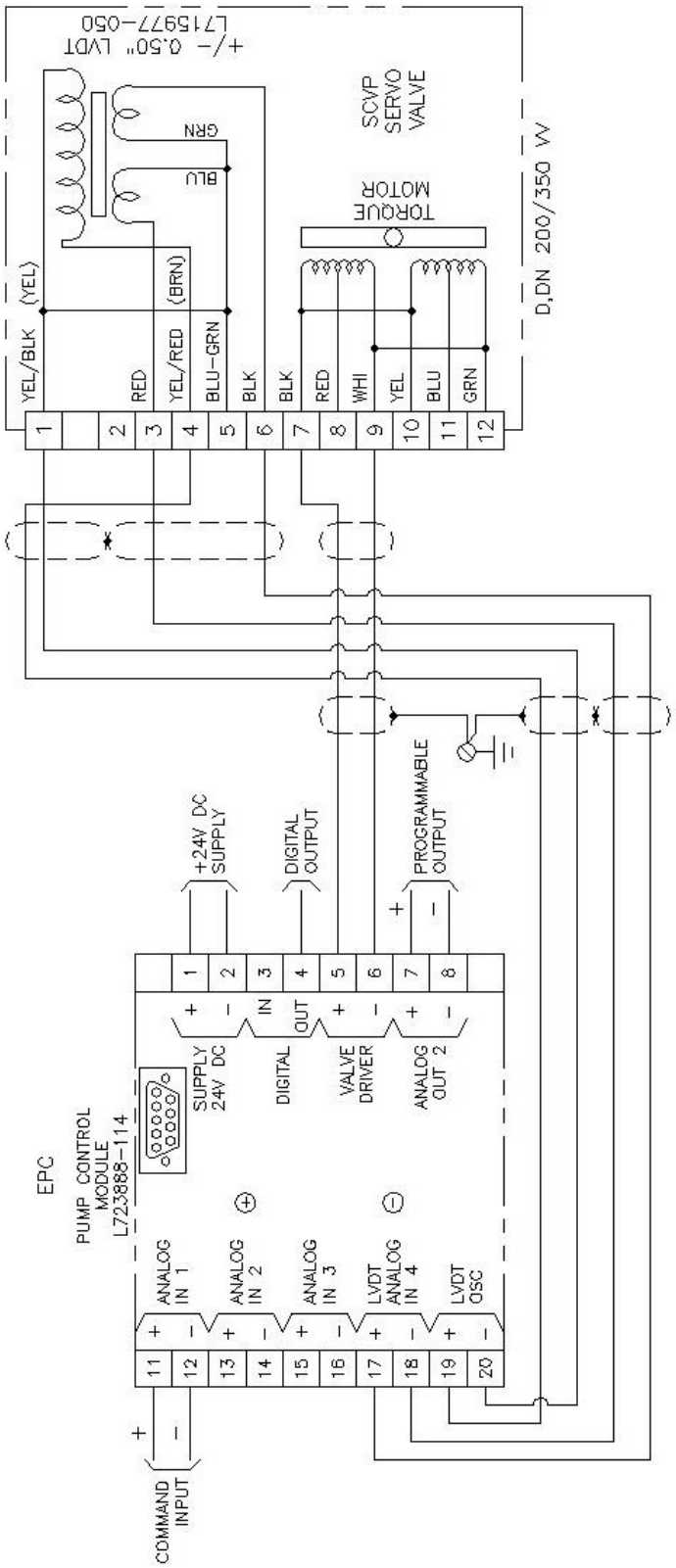
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D,DN 200/350 VS Notes:

- Servo valve (VSC4/SCVA) is mounted on either side of the pump.
- The pump mechanical stroke is at approximately +/- 0.675 inch.
- The LVDT is rated at approximately +/- 1.00 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
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PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA							
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	512*	Kp	Ki	
CW	RHSFS	A	INVERT	NORMAL	NORMAL				12*	6*		20*	0*	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

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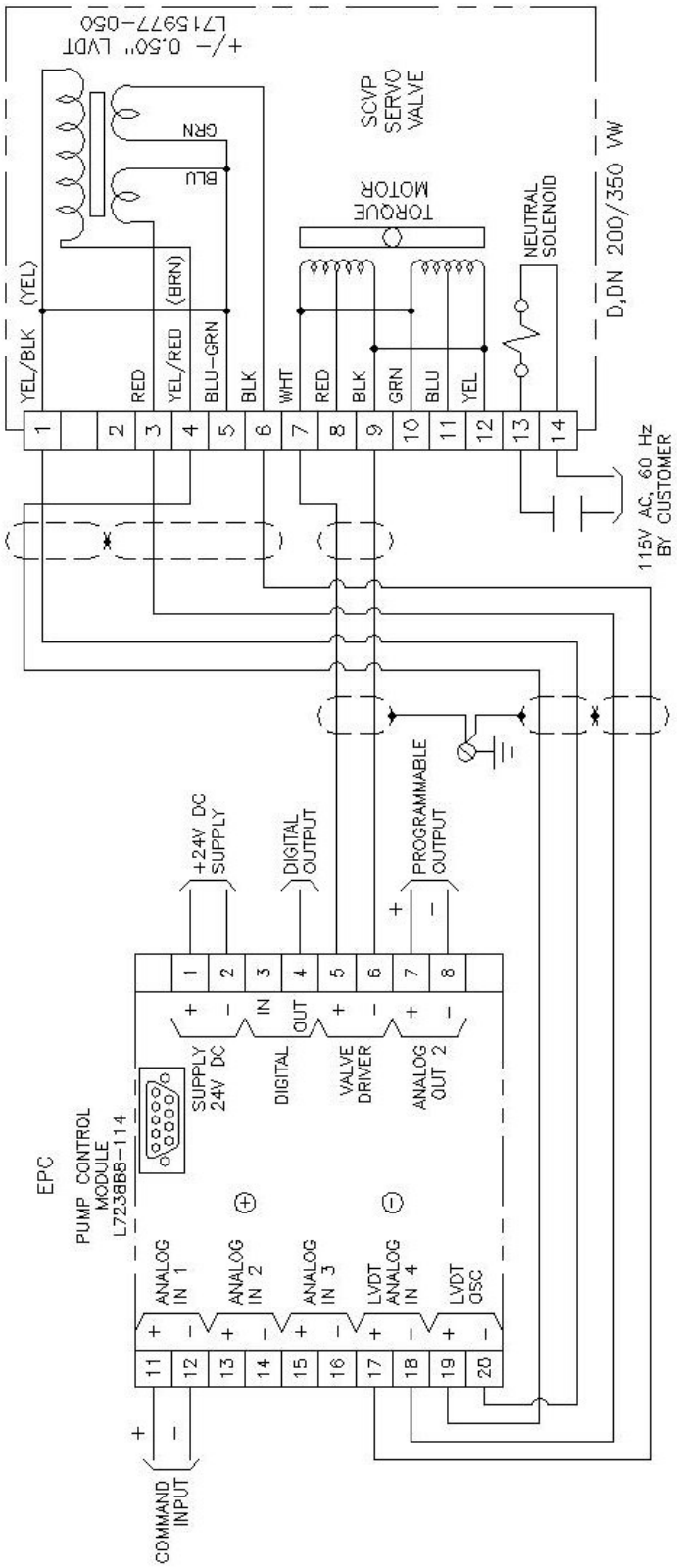
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D,DN 200/350 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum “Gain Pump Response” calibration.
- Pump mechanical stroke is rated at approximately +/- 0.675 inch.
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA					Kp	Ki	
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	512*	20*	0*	
CW	RHSFS	A	INVERT	NORMAL	NORMAL				12*	6*				
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

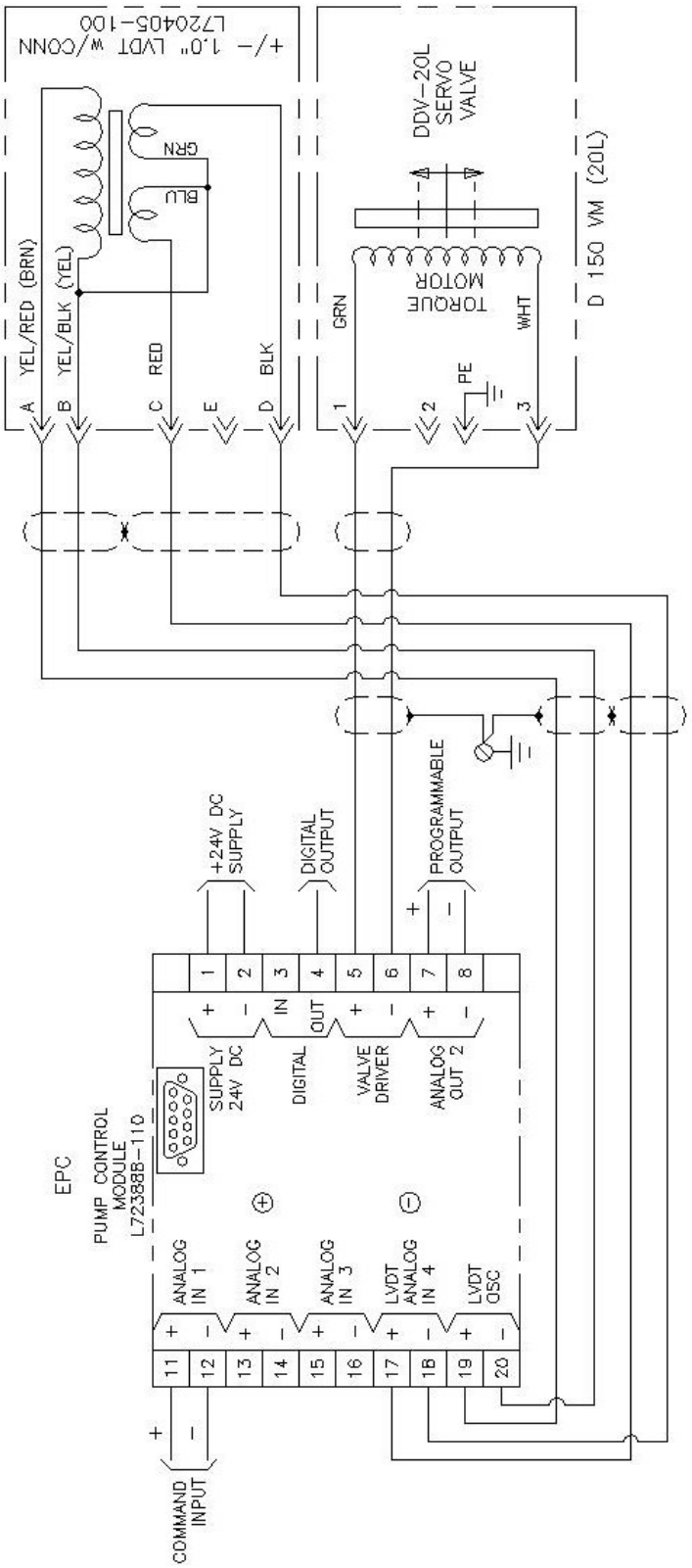
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D,DN 200/350 VW Notes:

- The VW control contains both the LVDT and torque motor servo valve in a common housing and may be mounted on either side of the pump.
- The pump mechanical stroke is rated at approximately +/- 0.675 inch.
- The LVDT is rated at approximately +/- 0.50 inch.
- The control and pump should be at neutral mechanically with the neutral solenoid de-energized (servo control disabled).



			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)														
PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN								
				852	845	802	803		875	840	841	843	804									
							%	mA		COR	FINE		Kp	Ki								
CW	LHSFS	A		NORMAL	NORMAL	NORMAL	100	800	60	50*	0*	512*	20*	0*	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION							
CW	RHSFS	A		INVERT	NORMAL	NORMAL																
CCW	LHSFS	A		INVERT	NORMAL	NORMAL																
CCW	RHSFS	A		NORMAL	NORMAL	NORMAL																

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

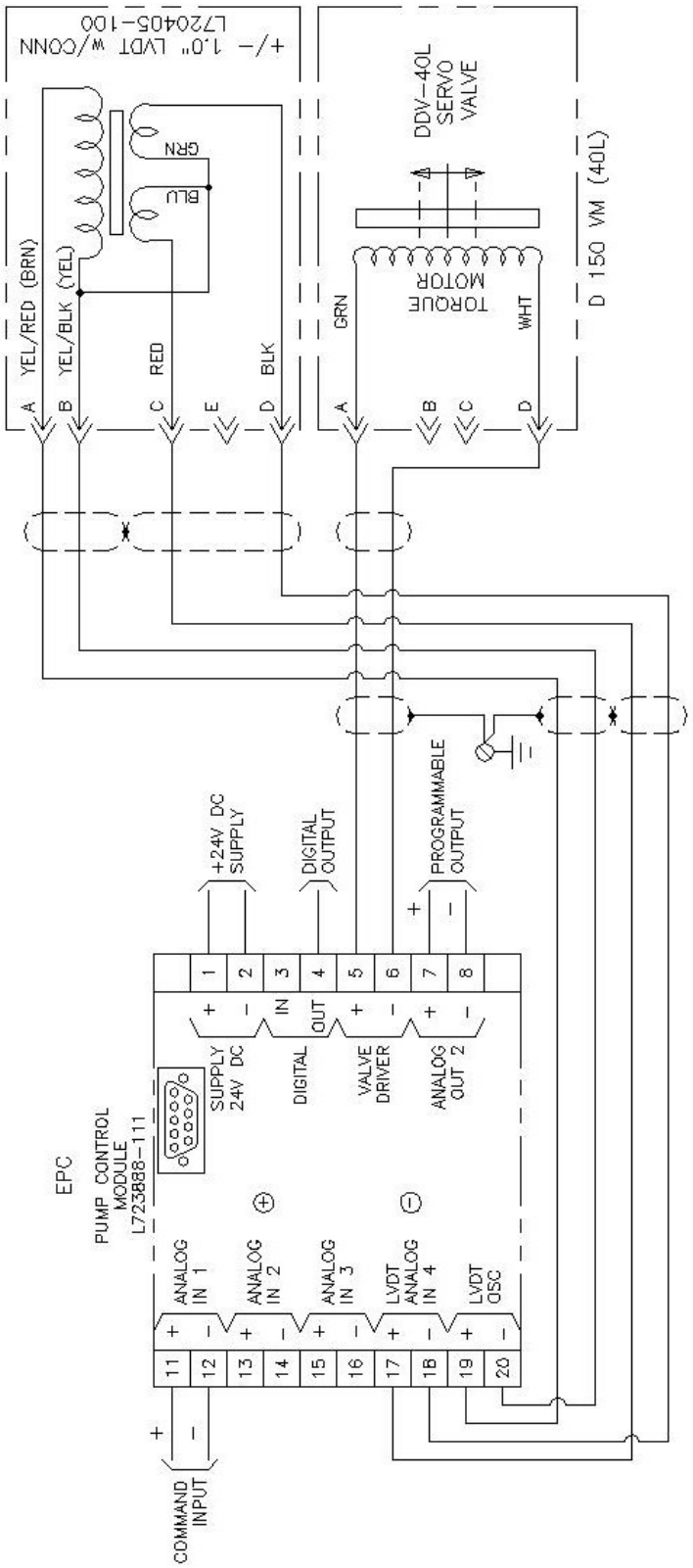
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VM (20L) Notes:

- Servo valve (Moog DDV) is mounted on either side of the pump.
- The pump mechanical stroke is rated at approximately +/- 0.531.
- The LVDT is rated at approximately +/- 1.00 Inch.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
		CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)								
				852	845	802	803		875	840	841	843	804		805
CW		LHSFS	A	NORMAL	NORMAL	NORMAL	%	100	60	COR	FINE	512*	Kp	Ki	0*
CW		RHSFS	A	INVERT	NORMAL	NORMAL	mA	800		50*	0*		20*		
CCW		LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW		RHSFS	A	NORMAL	NORMAL	NORMAL									

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D, DN 150 VM (HR-Series 40L) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

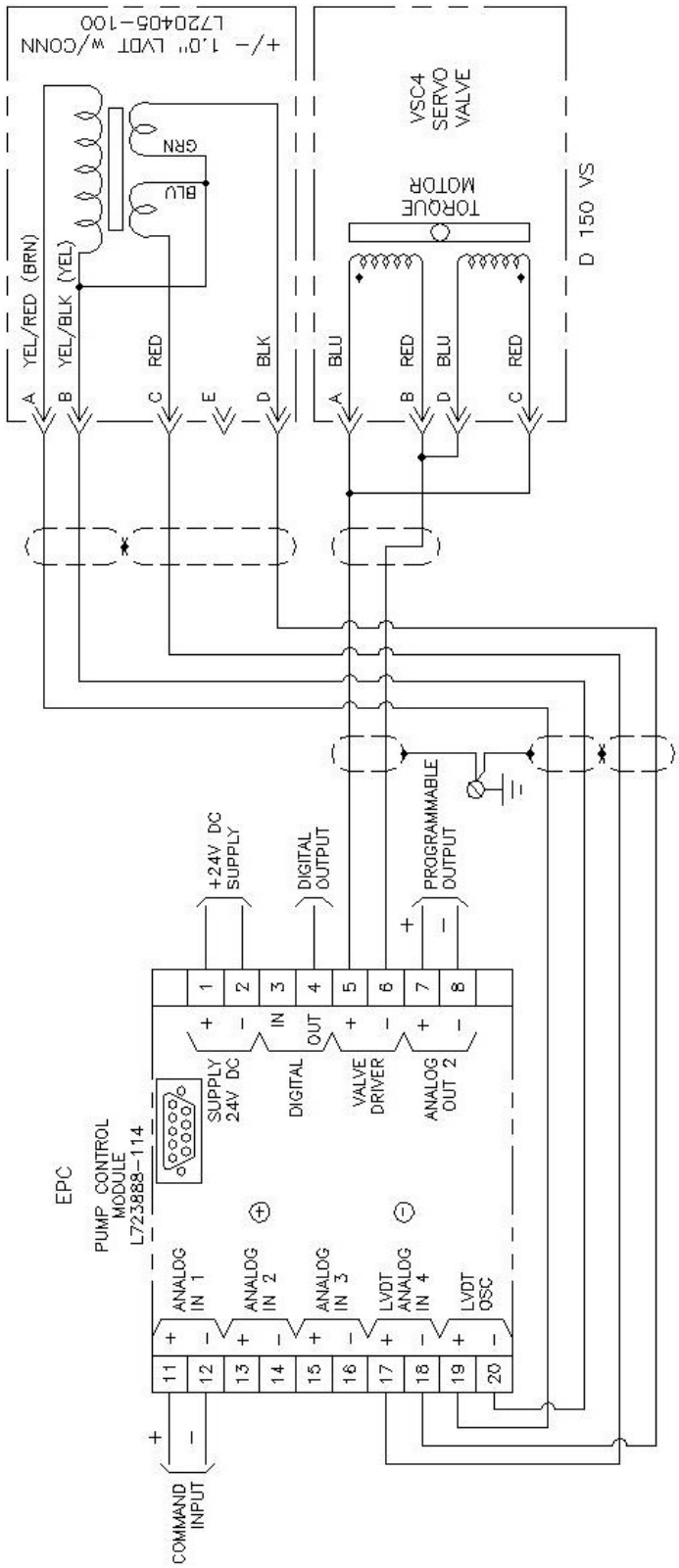
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VM (40L) Notes:

- Servo valve (Moog DDV) is mounted on either side of the pump.
- The pump mechanical stroke is rated at approximately +/- 0.531 inch.
- The LVDT is rated at approximately +/- 1.00 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	40	COR	FINE	512*	Kp	Ki	
CW	RHSFS	A	INVERT	NORMAL	NORMAL	64	160		50*	0*		20*	0*	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

D 150 VS (HR-Series VSC4) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

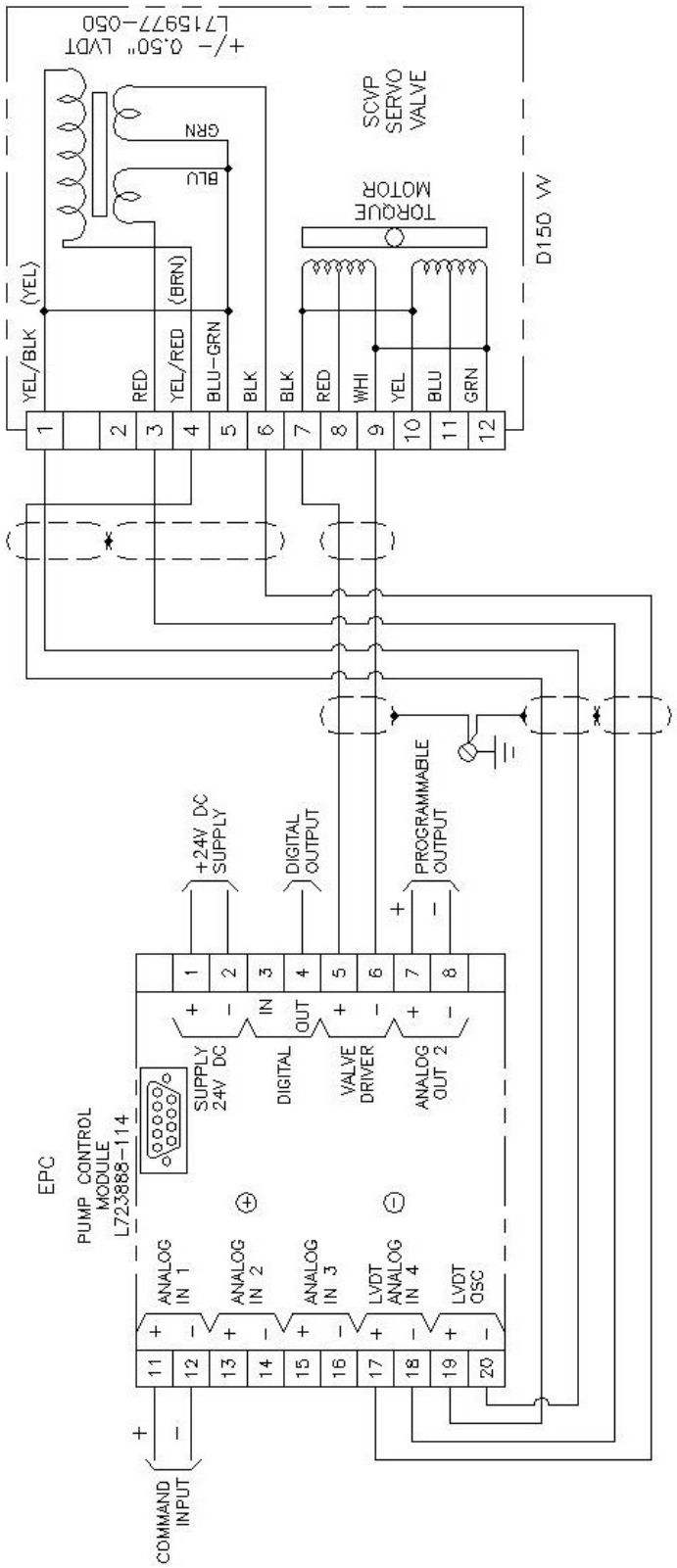
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VS Notes:

- Servo valve (VSC4/SCVA) is mounted on either side of the pump.
- The pump mechanical stroke is rated at approximately +/- 0.531 inch.
- The LVDT is rated at approximately +/- 1.00 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA							
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	512*	Kp	Ki	
CW	RHSFS	A	INVERT	NORMAL	NORMAL				17*	7*		20*	0*	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

D 150 VV (E-Series SCVP) STROKE CONTROL WIRING

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

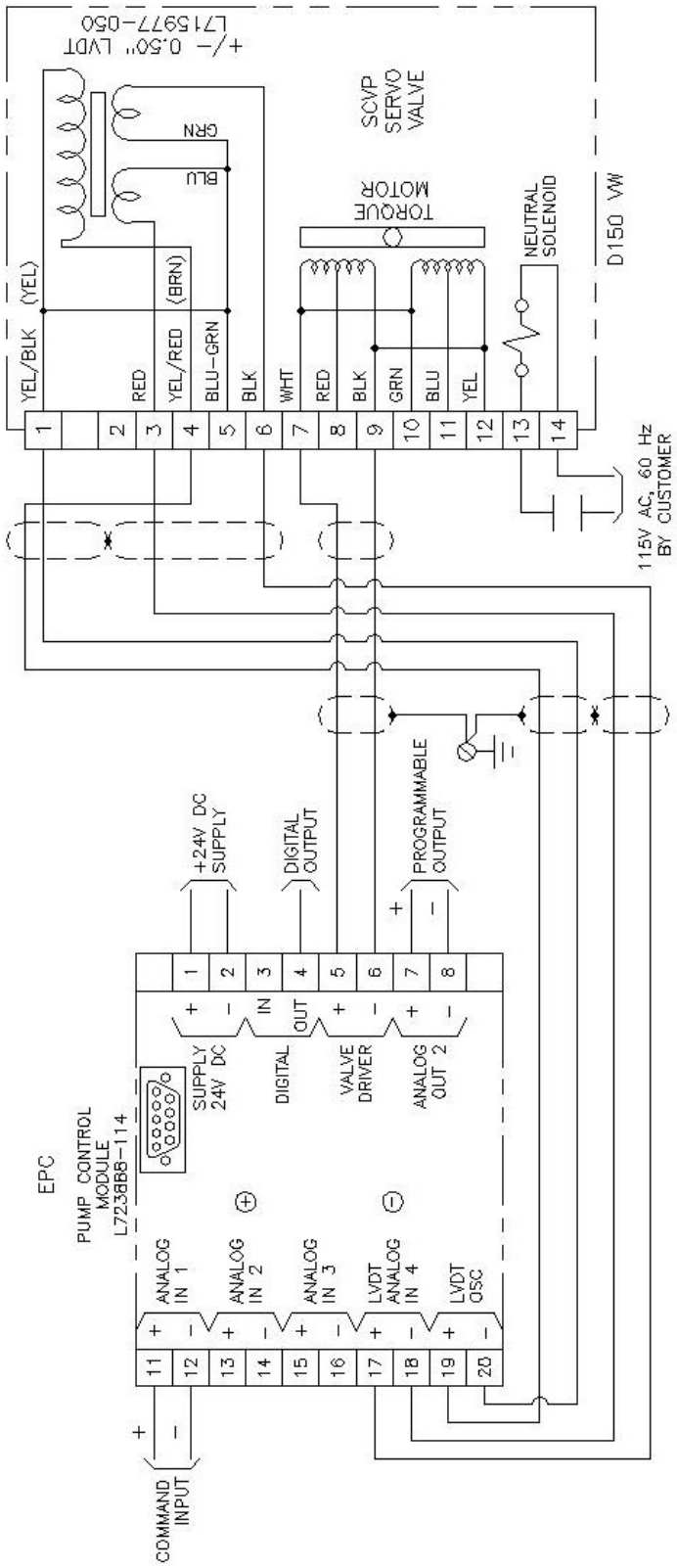
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum “Gain Pump Response” calibration.
- Pump mechanical stroke is rated at approximately +/- 0.531 inch.
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804	
PROGRAM MENU ITEMS						%	mA		COR	FINE		Kp	Ki
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	17*	7*	512*	20*	0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL								
CCW	LHSFS	A	INVERT	NORMAL	NORMAL								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL								

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

D 150 VW (E-Series SCVP) STROKE CONTROL WIRING

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Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

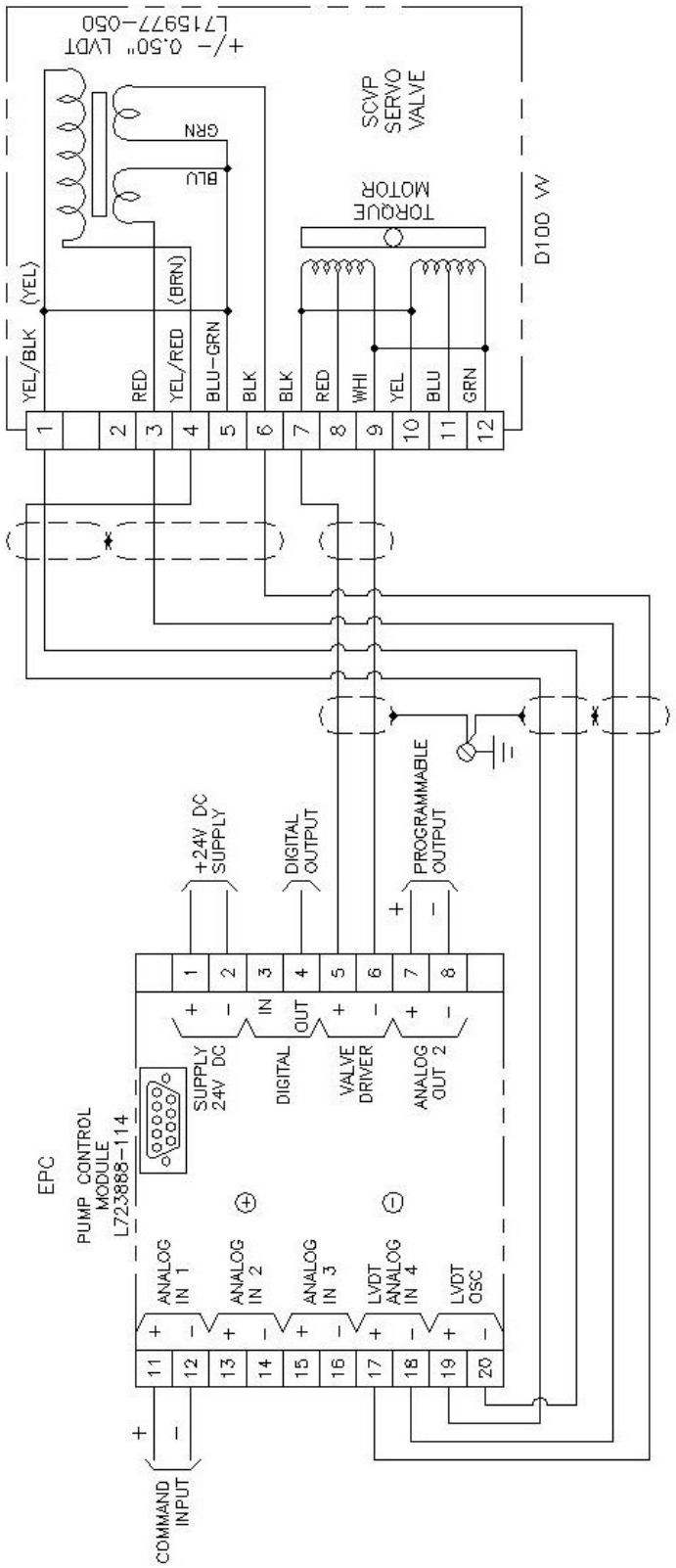
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VW Notes:

- The VW controls contain both the LVDT and torque motor servo valve in a common housing and may be mounted on either side of the pump.
- Pump mechanical stroke is rated at approximately +/- 0.531 inch.
- The control and pump should be at neutral mechanically with the neutral solenoid de-energized (servo control disabled).
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
						%	mA							
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	512*	Kp	Ki	
CW	RHSFS	A	INVERT	NORMAL	NORMAL				22*	3*		20*	0*	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. "L" (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference "L" and serial numbers to model codes.

Reference Technical Document 836261 for the "Flow Control Program" and Technical Document 836260 for the EPC "User Manual". Both may be accessed from the Internet at www.oilgear.com.

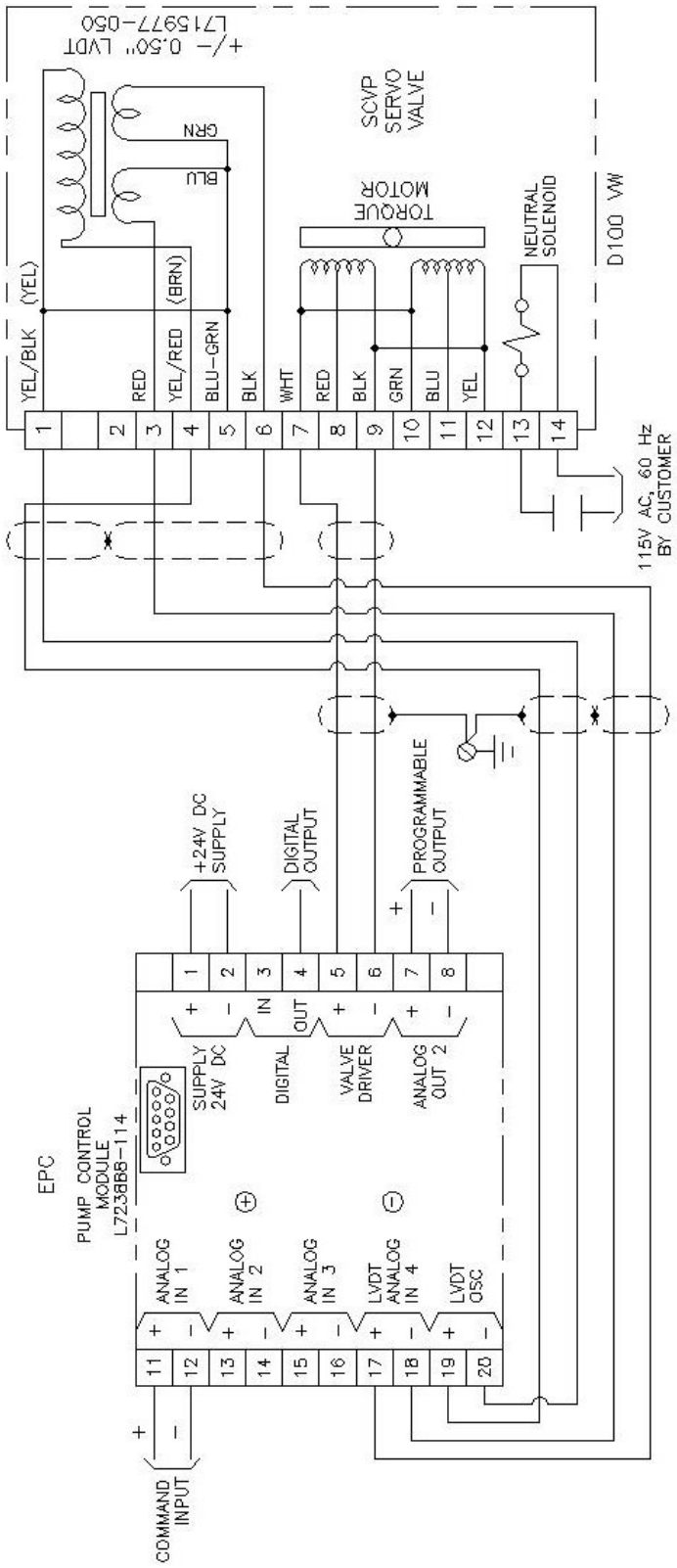
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 100 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum "Gain Pump Response" calibration.
- Pump mechanical stroke is rated at approximately +/- 0.406 inch.
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804		805
PROGRAM MENU ITEMS						%	mA		COR	FINE		Kp		Ki
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	22*	3*	512*	20*		0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL									
CCW	LHSFS	A	INVERT	NORMAL	NORMAL									
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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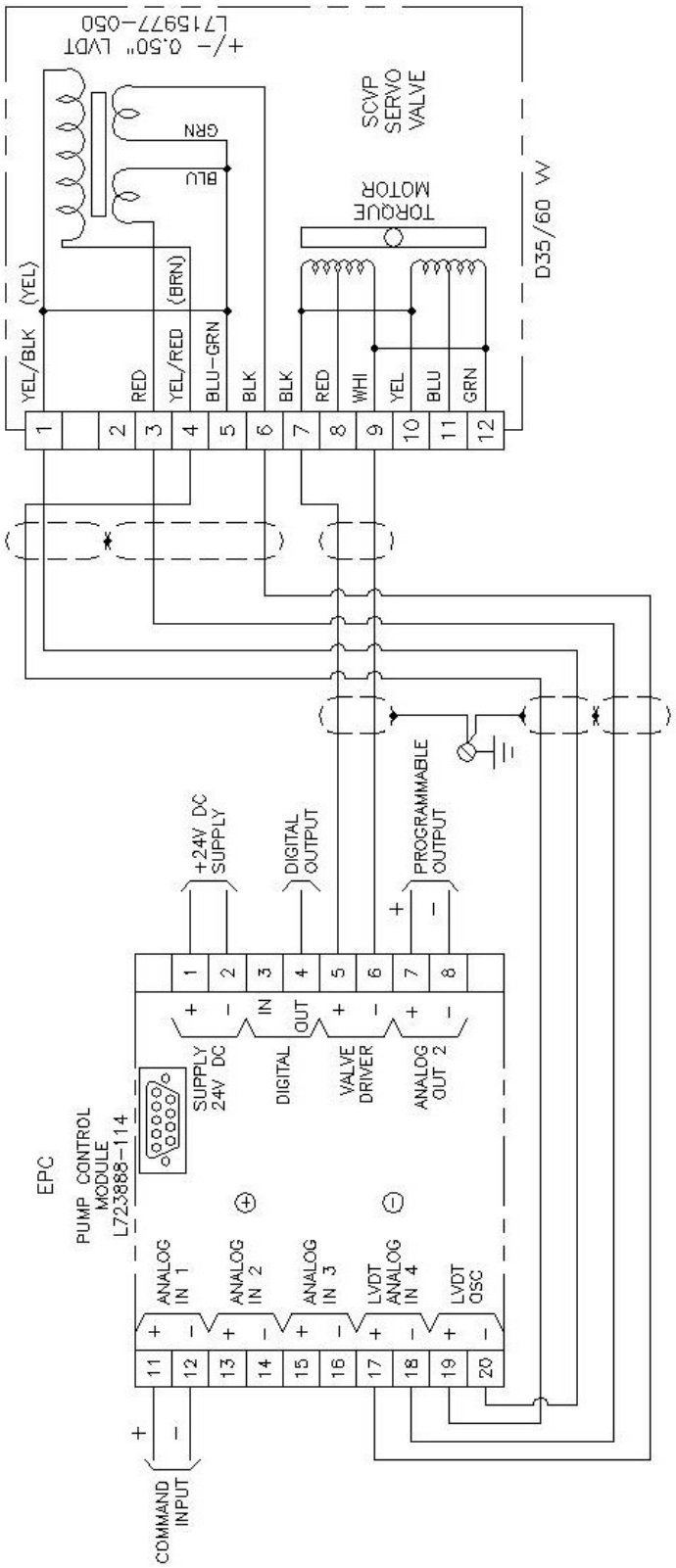
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 100 VW Notes:

- The VW controls contain both the LVDT and torque motor servo valve in a common housing and may be mounted on either side of the pump.
- Pump mechanical stroke is rated at approximately +/- 0.406 inch.
- The control and pump should be at neutral mechanically with the neutral solenoid de-energized (servo control disabled).
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804		805
							%	mA		COR	FINE		Kp		Ki
CW	1	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	25*	0*	512*	20*		0*
CW	2	RHSFS	A	INVERT	NORMAL	NORMAL									
CCW	3	LHSFS	A	INVERT	NORMAL	NORMAL									
CCW	4	RHSFS	A	NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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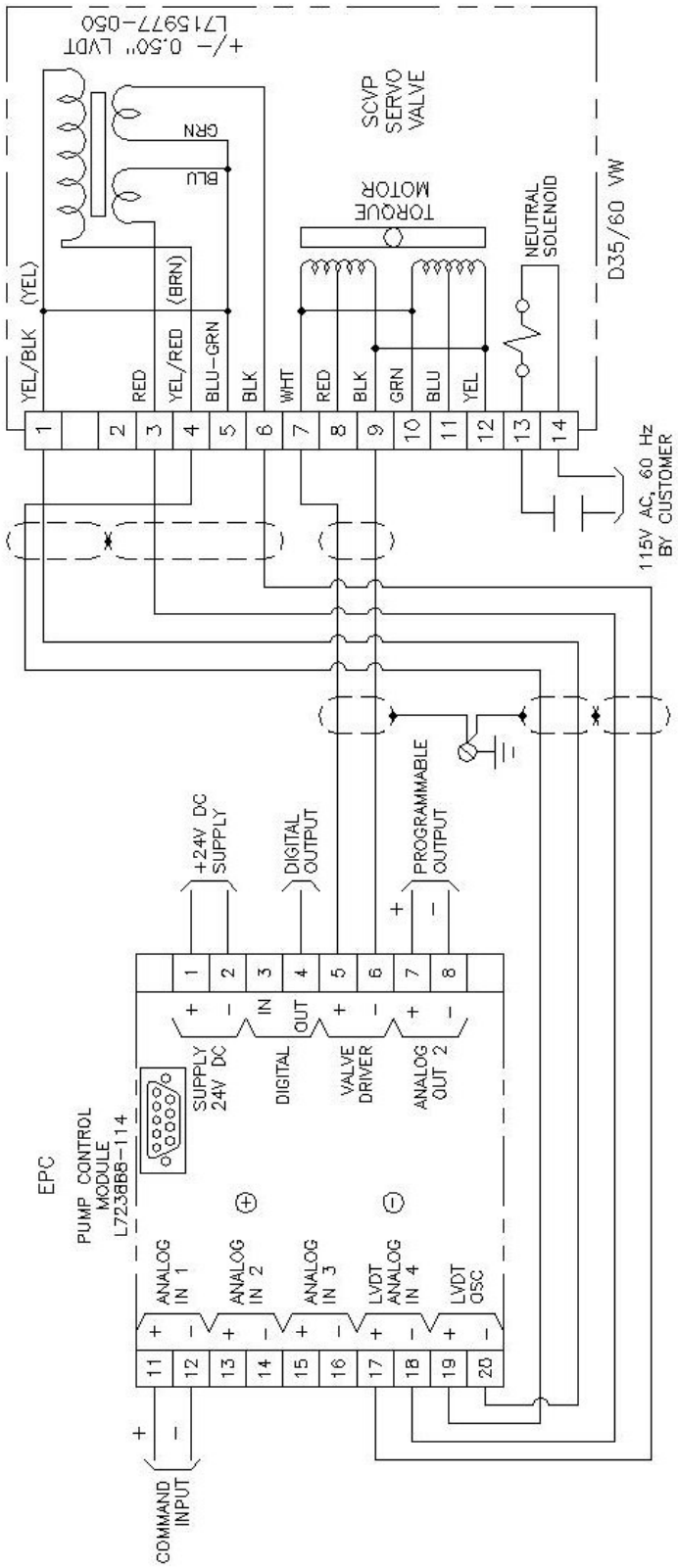
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 35/60 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum "Gain Pump Response" calibration.
- Pump mechanical stroke is rated at approximately +/- 0.375 inch.
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804	
PROGRAM MENU ITEMS						%	mA		COR	FINE		Kp	Ki
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	25*	0*	512*	20*	0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL								
CCW	LHSFS	A	INVERT	NORMAL	NORMAL								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL								

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
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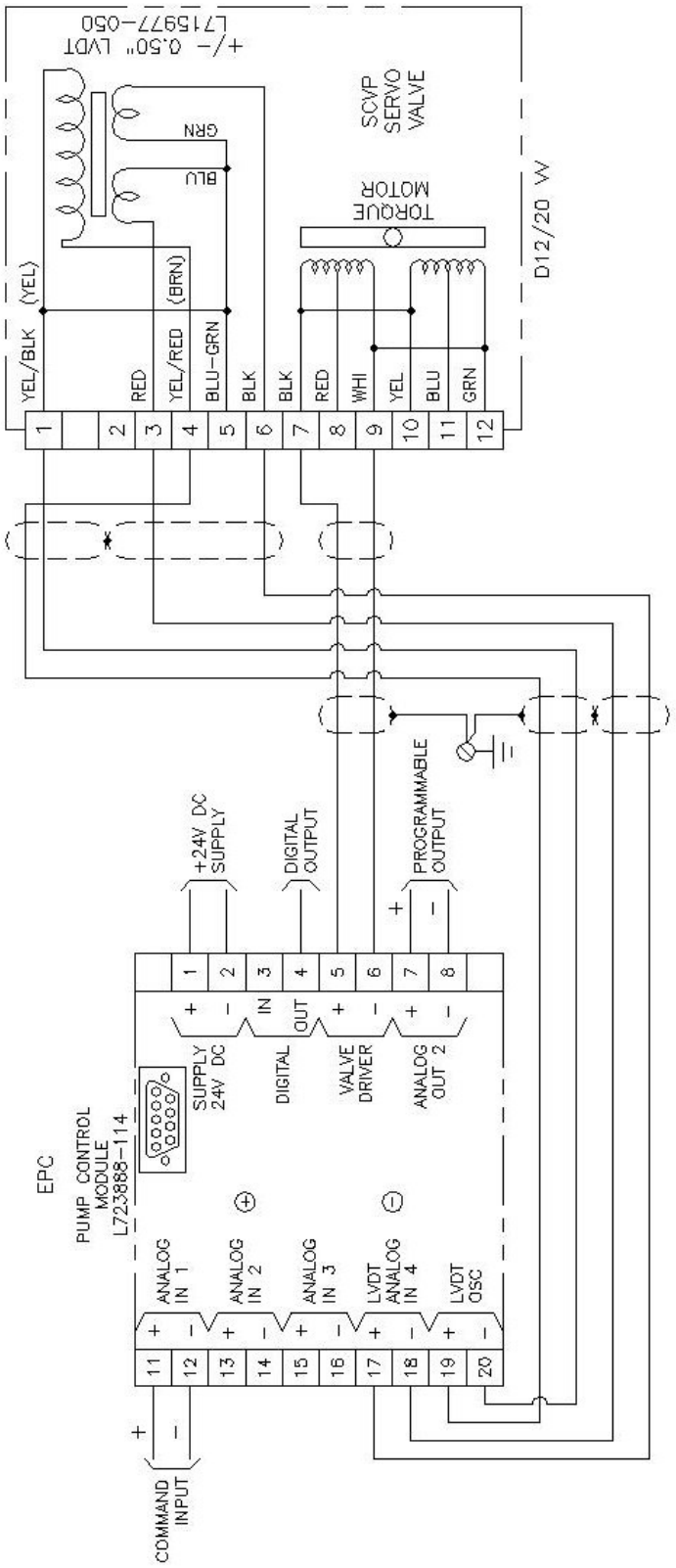
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 35/60 VW Notes:

- The VW controls contain both the LVDT and torque motor servo valve in a common housing and may be mounted on either side of the pump.
- Pump mechanical stroke is rated at approximately +/- 0.375 inch.
- The control and pump should be at neutral mechanically with the neutral solenoid de-energized (servo control disabled).
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	PROGRAM MENU ITEMS	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804		805
							%	mA		COR	FINE		Kp		Ki
CW	1	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	39*	0*	512*	20*		0*
CW	2	RHSFS	A	INVERT	NORMAL	NORMAL									
CCW	3	LHSFS	A	INVERT	NORMAL	NORMAL									
CCW	4	RHSFS	A	NORMAL	NORMAL	NORMAL									

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Milwaukee, WI USA 53219

Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

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(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
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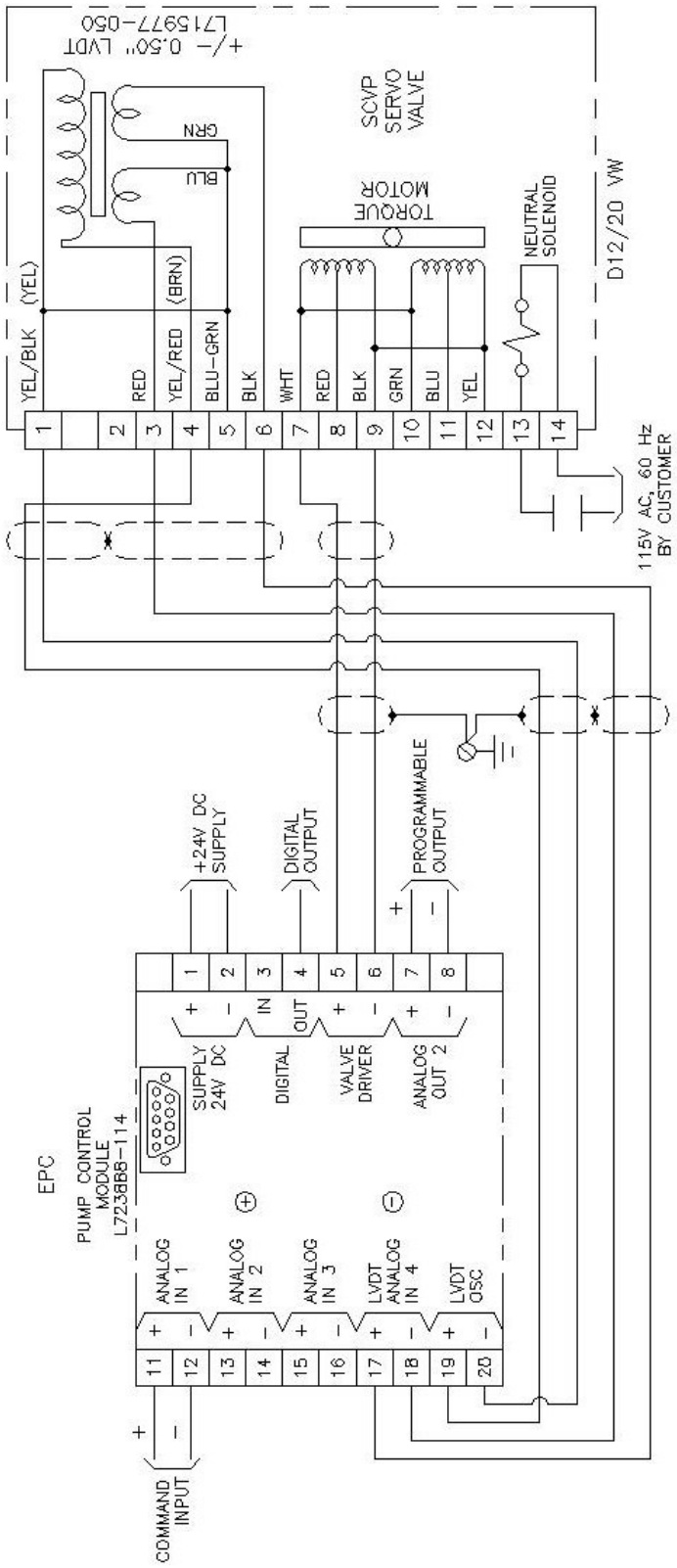
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 12/20 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum “Gain Pump Response” calibration.
- Pump mechanical stroke is rated at approximately +/- 0.250 inch.
- The LVDT is rated at approximately +/- 0.50 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804	
PROGRAM MENU ITEMS						%	mA		COR	FINE		Kp	Ki
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	39*	0*	512*	20*	0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL								
CCW	LHSFS	A	INVERT	NORMAL	NORMAL								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL								

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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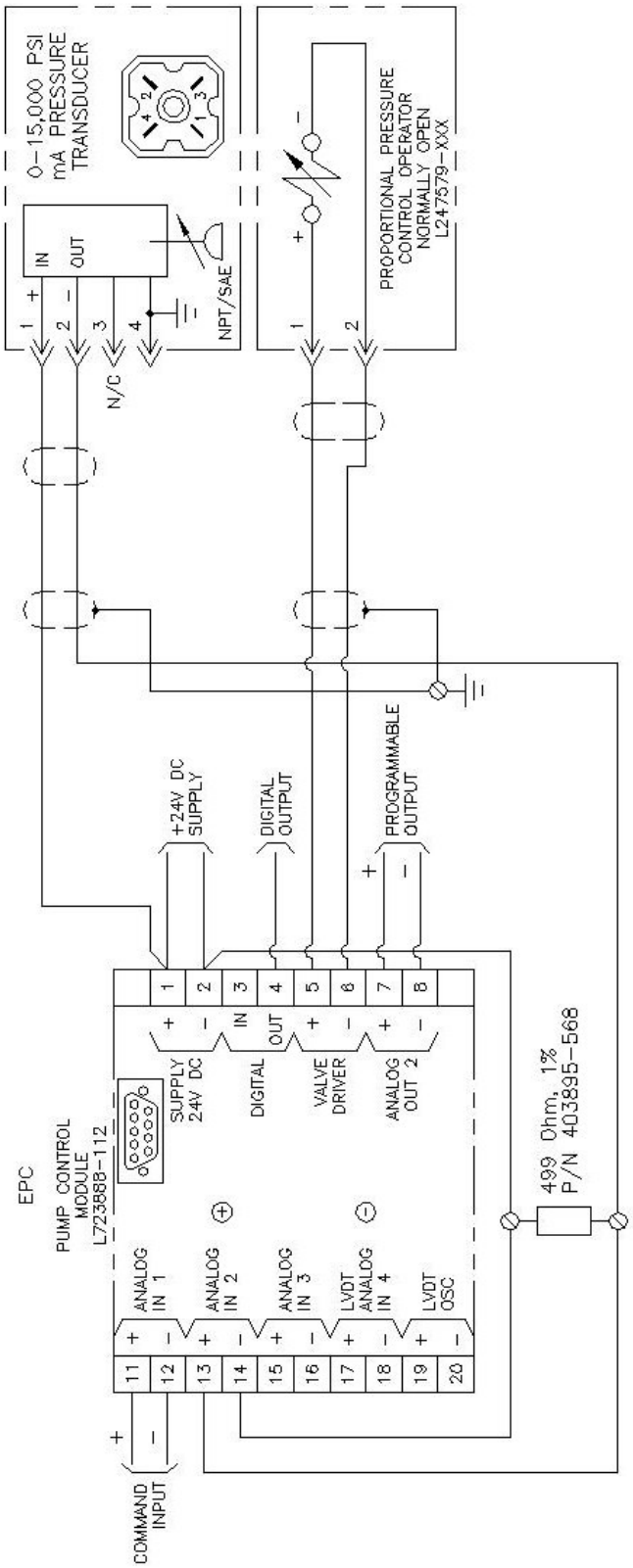
- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 12/20 VW Notes:

- The VW controls contain both the LVDT and torque motor servo valve in a common housing and may be mounted on either side of the pump.
- Pump mechanical stroke is rated at approximately +/- 0.406 inch.
- The control and pump should be at neutral mechanically with the neutral solenoid de-energized (servo control disabled).
- The LVDT is rated at approximately +/- 0.50 inch.



CONFIGURATIONS (SOFTWARE SWITCHES) | CALIBRATIONS (SOFTWARE VALUES)

VLV TYPE	CONTROL (OPEN OR CLOSED LOOP)	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 1 OFFSET COMMAND	ANALOG INPUT 2 POLARITY PSI FB	ANALOG INPUT 2 OFFSET PSI FB	ANALOG INPUT 2 GAIN PSI FB	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	CLOSED LOOP GAIN		CAL GAIN	
	PROGRAM MENU	852	850	862	860	861	802	803		875	804	805	890	
								%	ma		Kp	Ki	%	
N.O.	OPEN	NORMAL	0V	N/A	N/A	N/A	NORMAL			0				
N.O.	CLOSED	NORMAL	0V	NORMAL	-2V	1.25	NORMAL	100	700		20*	0*	100	
N.C.	OPEN	INVERT	-10V	N/A	N/A	N/A	NORMAL	OPTIONAL ENTRY FOR SPECIFIC APP.						
N.C.	CLOSED	INVERT	-10V	INVERT	-10V	1.25	NORMAL							

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

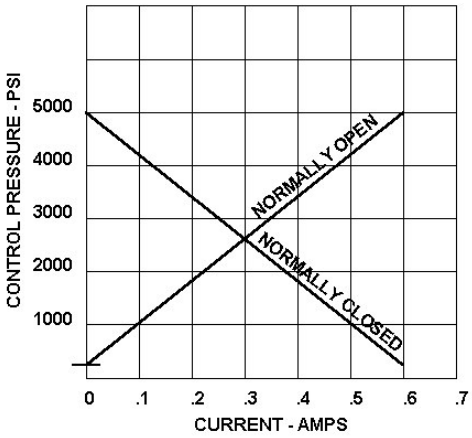
Reference Technical Document 836260 for the EPC “User Manual”. It may be accessed from the Internet at www.oilgear.com.

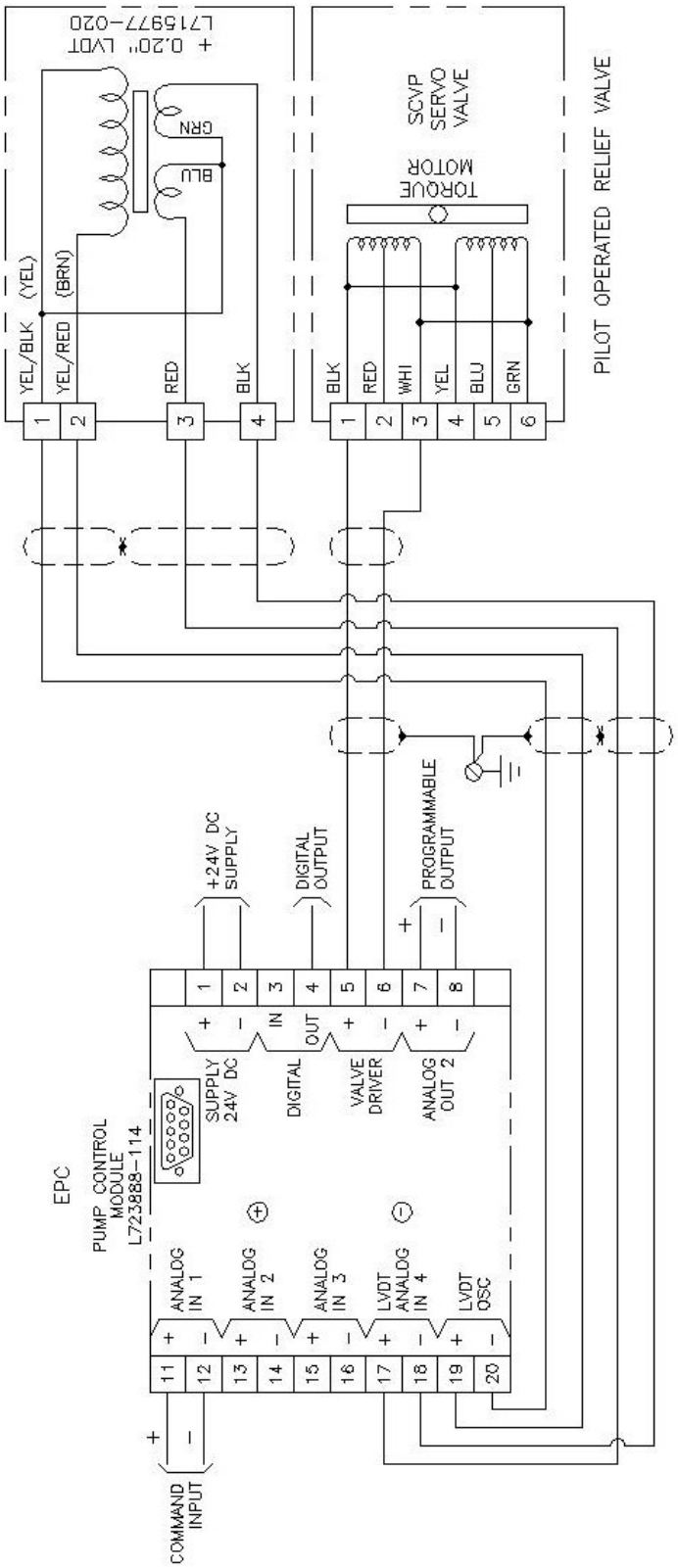
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, and damage to components, machinery and even personal injury.

- **Valve Type** - Proportional valves are designed as Normally Open (NO) or Normally Closed (NC). See notes 4 and 5 below.
- **Control Mode** – Control Modes are either Open Loop or Closed Loop (Pressure Feedback).
- **Polarity (Command)** - Commands may be either current (mA) or voltage plus, (+) DC polarity, for valve type as determined above. 0V to 10V command to be 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Offset (Command)** – Signal conditioning the Command may require offsetting this input to make a 0V to 10V Command into a 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Polarity (Feedback) –** Pressure Feedback may be either current (4 to 20mA) or voltage (0 to 10V), plus (+) DC voltage polarity, for valve type as determined above. However, the table uses a 4 to 20mA Feedback for a 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Offset (Feedback)** – Signal conditioning the Feedback requires offsetting this input to make a 4 to 20mA (2-10VDC) Feedback into 0 PSI to 5000 PSI for both NO and NC valve examples.
- **Polarity, Module (Current)** – Determines the direction of the driver current. For his valve, the setting is always Normal (Positive Current).
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specific valve. Wrong current limit entries may result In valve reduced performance and life.
- **Dither (Output Current)** – Provides optional current pulse to help keep valve from sticking (silting up). Value is based on valve design, and not used with P/N247579-XXX valves.
- **Stroke Control Gain (Closed Loop Gain)** – Sets valve response (reaction time) and accuracy of pressure setting.
- **Servo Attenuation** (**Calibration Gain)** - Sets the correct current output for a maximum dc voltage Command in open loop configuration.

P2C Notes:

- EPC input accepts a 0 to 10V or 4 to 20ma input from the transducer.
- For analog P2C amplifier module retrofits, using a millivolt transducer, it must be changed to a 0 to 10V or 4 to 20ma transducer.
- Do not disassemble the P2C Operator.
- When using a Normally Open P2C Operator, relief valve will go to minimum pressure when the electrical power is disconnected.
- When using a Normally Closed P2C Operator, relief valve will go to maximum pressure when the electrical power is disconnected.
- EPC valve driver is PWM at a frequency to match P/N 247579-XXX valves.
- 247579-XXX Valves are polarity dependent and require valve driver positive (+) terminal #5 to be connected to valve connector pin #1.





CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)														
PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
N/A	N/A	N/A	NORMAL	NORMAL	NORMAL	%	mA	100	COR	FINE	512*	Kp	Ki	
						100	250		19*	0*		3*	0*	

OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION

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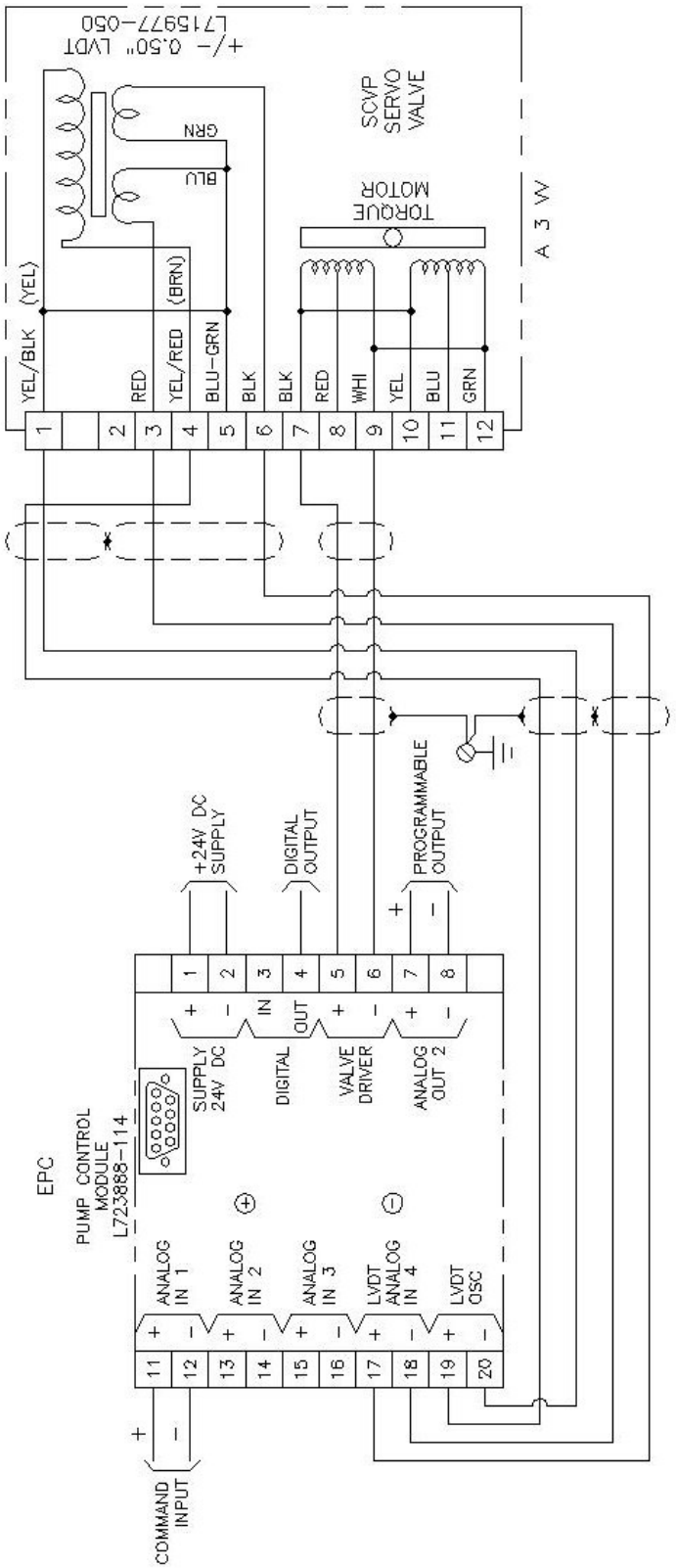
Caution! Improper wiring, configurations & calibrations may result in loss of valve control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, valve response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** – N/A
- **LVDT Location** – Is Fixed
- **Port of Delivery** – N/A
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity. The table assumes a plus (+) voltage/current for increasing pressure setting.
- **Polarity (LVDT)** - The LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow. The table assumes a “Command polarity” and “Current Polarity” for an increasing pressure.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to mechanical stroke and pressure range. Analog Output #2 is configured for LVDT 0 to approximately 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to minimum mechanical pressure. The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical valve machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets valve response (reaction time) and accuracy of stroking to pressure setting.

Pilot Operated Relief Valve (SCVP) Notes:

- The LVDT is rated at approximately +/-.200 inch stroke used for a one-way actual stroke of approximately 0.150 inch depending on maximum pressure and spring compression rate.
- Analog input #2 may be used with a pressure transducer of either 0 to 10vdc or 4 to 20ma to close the pressure control loop for improved repeatability and linearity with reduced hysterisis.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)		ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN		
CONFIGURATIONS (SOFTWARE SWITCHES)						CALIBRATIONS (SOFTWARE VALUES)								
PROGRAM MENU ITEMS			852	845	802	803		875	840	841	843	804	805	
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	%	mA	100	COR	FINE	512*	Kp	Ki	
CW	RHSFS	A	INVERT	NORMAL	NORMAL	100	250		58*	3*		20*	0*	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

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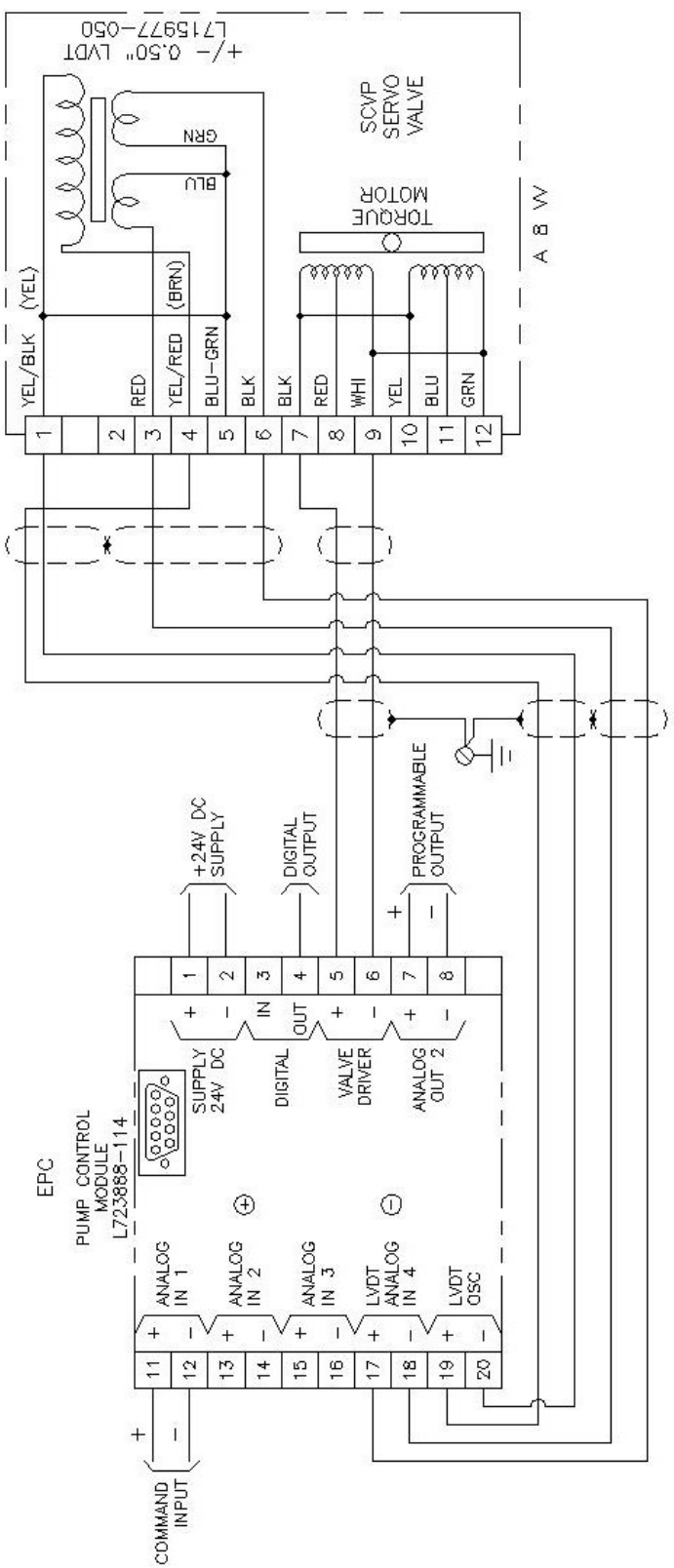
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

A 3 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum "Gain Pump Response" calibration.
- Pump mechanical stroke is rated at approximately +/- 0.188 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	CONFIGURATIONS (SOFTWARE SWITCHES) ANALOG INPUT 1 POLARITY COMMAND 852	ANALOG INPUT 4 POLARITY (LVDT) 845	MODULE POLARITY CURRENT 802	CALIBRATIONS (SOFTWARE VALUES) MODULE CURRENT LIMIT 803		DITHER OUTPUT CURRENT 875	ANALOG INPUT 4 (LVDT FB) (GAIN) 840 841		ANALOG INPUT 4 (LVDT FB) (OFFSET) 843	STROKE CONTROL GAIN 804 805	
PROGRAM MENU ITEMS						%	mA					Kp	Ki
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	COR	FINE	512*	20*	0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL				51*	1*			
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION							
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL								

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Bulletin 836269C

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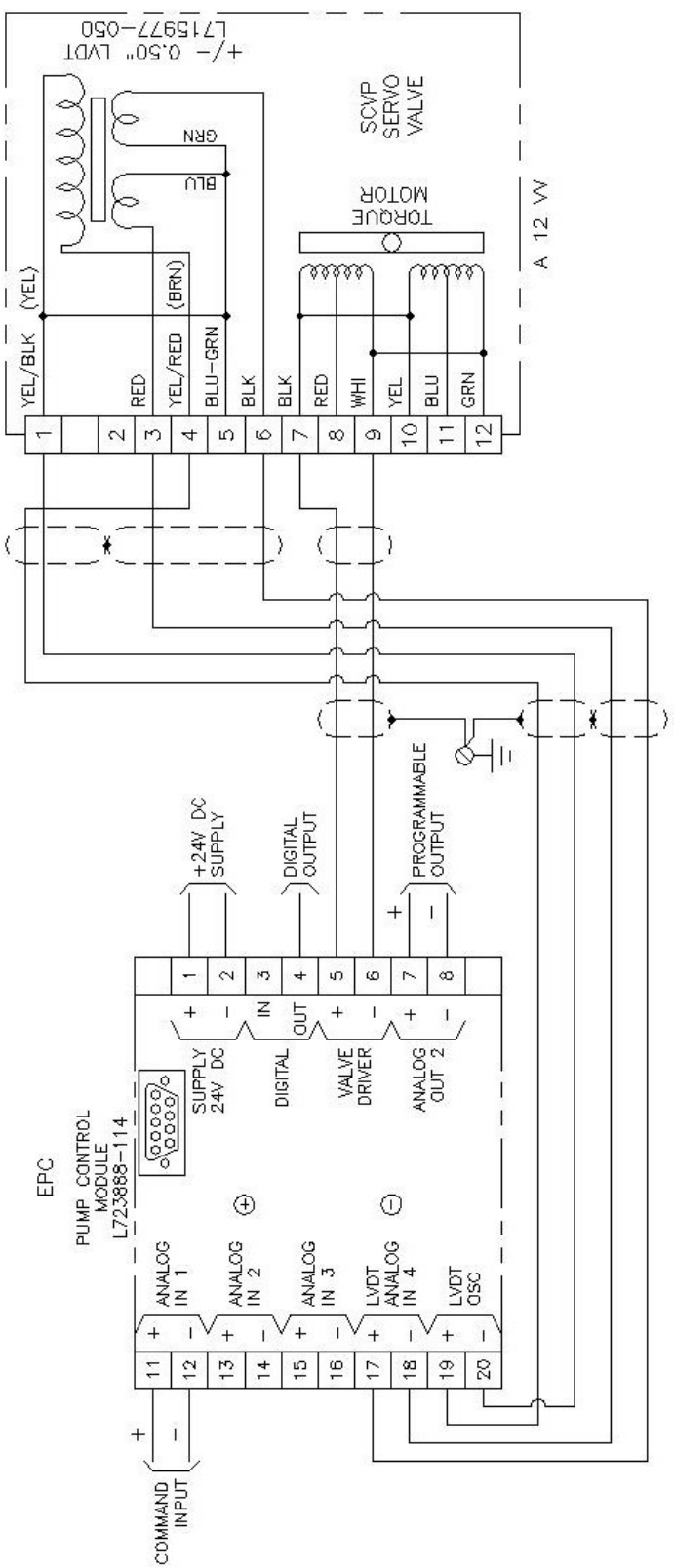
Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

A 8 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum “Gain Pump Response” calibration.
- Pump mechanical stroke is rated at approximately +/- 0.214 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		(805)
PROGRAM MENU ITEMS			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)						
						%	mA							
CW	LHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	33*	COR	512*	20*	Kp	0*
CW	RHSFS	A	INVERT	NORMAL	NORMAL				0*	FINE			Ki	
CCW	LHSFS	A	INVERT	NORMAL	NORMAL	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION								
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL									

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EPC
A 12 VV
STROKE CONTROL WIRING

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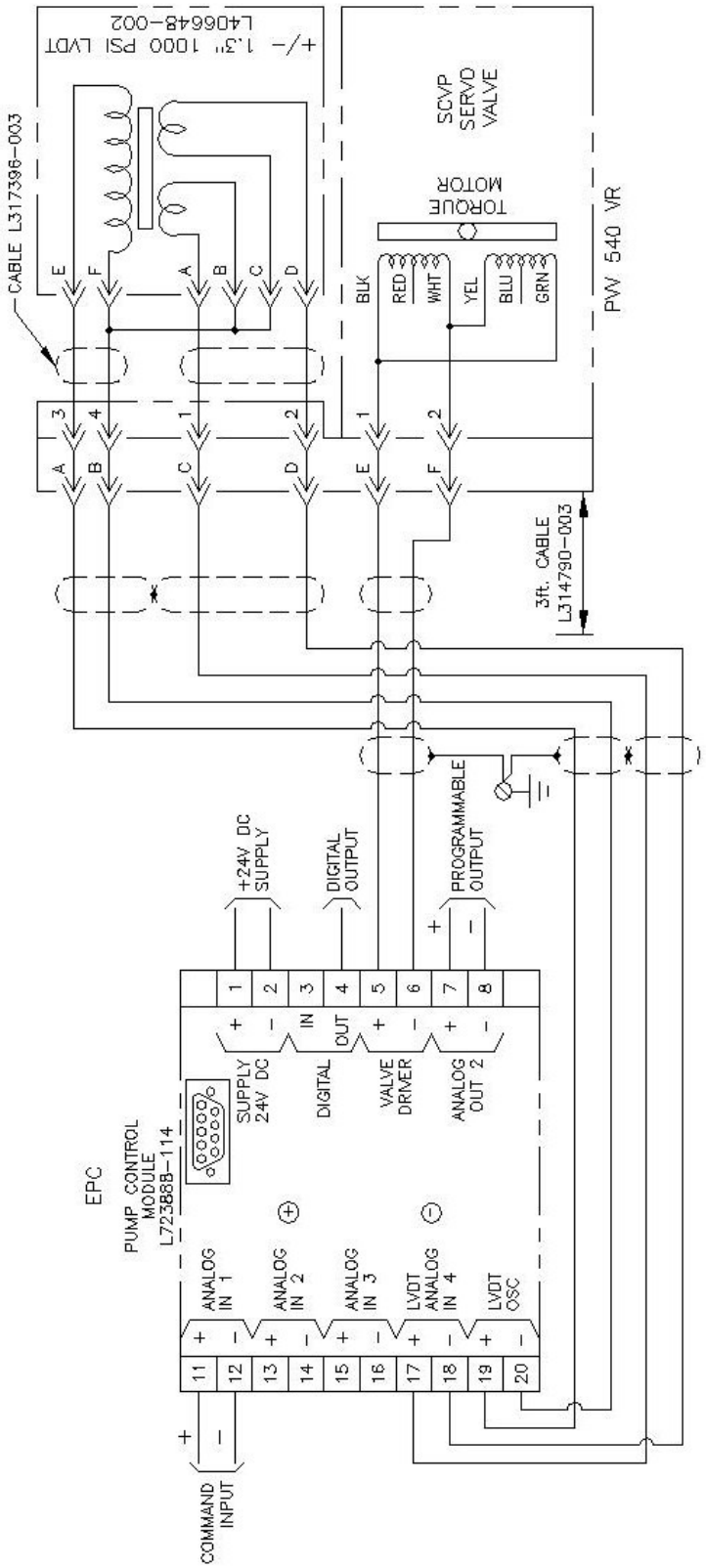
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See "LVDT Invert" for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to "A" or "B" port or two way (bi-directional) "A" to neutral to "B", depending on pump design or application. The table assumes "A" port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for "A" port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. "LVDT Invert" is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump "Port of Delivery". The table assumes a "Command polarity" and "Current Polarity" for "A" port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

A 12 VV Notes:

- The V-V control contains both the LVDT and torque motor servo valve (SCVP) in a common housing and may be mounted on either side of the pump.
- Several sizes of servo valve are available for this pump, which affect the hydraulic gain (response) and will affect optimum "Gain Pump Response" calibration.
- Pump mechanical stroke is rated at approximately +/- 0.318 inch.



PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND (852)	ANALOG INPUT 4 POLARITY (LVDT) (845)	MODULE POLARITY CURRENT (802)	MODULE CURRENT LIMIT (803)		DITHER OUTPUT CURRENT (875)	ANALOG INPUT 4 (LVDT FB) (GAIN) (840)		ANALOG INPUT 4 (LVDT FB) (GAIN) (841)		ANALOG INPUT 4 (LVDT FB) (OFFSET) (843)	STROKE CONTROL GAIN (804)		(805)
PROGRAM MENU ITEMS			CONFIGURATIONS (SOFTWARE SWITCHES)			CALIBRATIONS (SOFTWARE VALUES)										
						%	mA							Kp		Ki
CCW	RHSFS	A	NORMAL	NORMAL	NORMAL	100	250	100	9*	COR	0*	FINE	512*	20*		0*
CCW	LHSFS	A	INVERT	INVERT	NORMAL											
CW	RHSFS	B	NORMAL	NORMAL	NORMAL									OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION		
CW	LHSFS	B	INVERT	INVERT	NORMAL											

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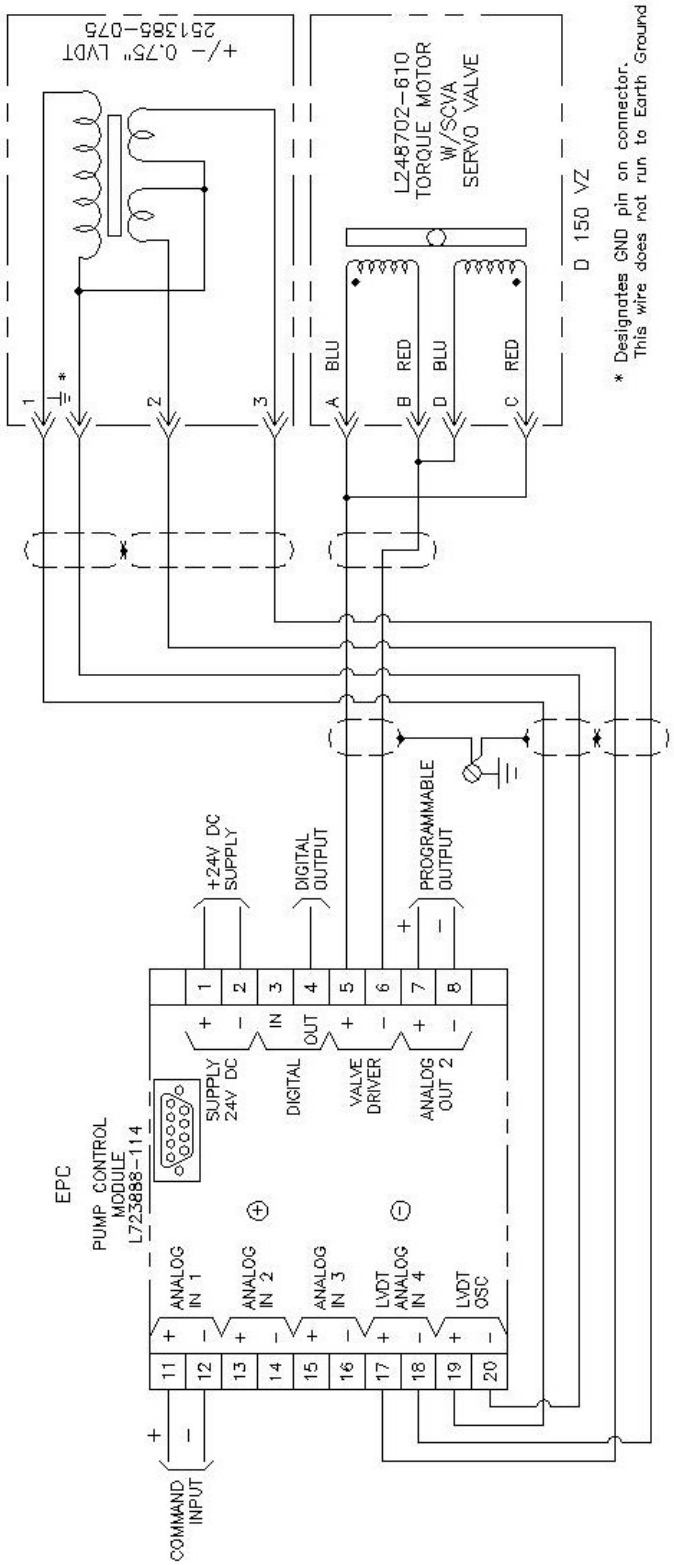
(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
- **Port of Delivery** - Pumps may be one way, neutral to “A” or “B” port or two way (bi-directional) “A” to neutral to “B”, depending on pump design or application. The table assumes “A” port delivery.
- **Polarity (Command)** - Commands may be either current (see Technical Document 836261) or voltage, plus (+) or minus (-) DC voltage polarity, for port of delivery as determined above. The table assumes a plus (+) voltage for “A” port delivery for standardization.
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

PVV 540 VR (A-Series SCVP) Notes:

- The servo valve (SCVP) is remote mounted on top of the reservoir.
- The torque motor is 20 ohms per coil (10 ohm parallel) 500mA.
- LVDT is rated approximately +/- 1.3 inch stroke.
- The pump is rated approximately +/- 1.3 inch stroke.
- The standard one way pump strokes toward the LVDT with minimum volume stop on the opposite side from the LVDT.
- ***CAUTION:*** There are several types of VR controls available. This unit uses the A-Series SCVP style, but several other styles of remote mounting do exist, be sure to confirm the style.



PROGRAM MENU ITEMS			CONFIGURATIONS (SOFTWARE SWITCHES)					CALIBRATIONS (SOFTWARE VALUES)														
PUMP ROT.	LVDT LOC.	PORT of DELIV	ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 4 POLARITY (LVDT)	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	ANALOG INPUT 4 (LVDT FB) (GAIN)			ANALOG INPUT 4 (LVDT FB) (OFFSET)	STROKE CONTROL GAIN									
			852	845	802	803		875	840		841	843	804		805							
						%	mA		COR	FINE			Kp		Ki							
CCW	RHSFS	Normal	Normal	Normal	Normal	64	160	40*	11*	10*		512*	20*		0*	OPTIONAL ENTRY FOR CUSTOMER SPECIFIC APPLICATION							
CCW	LHSFS	N/A	N/A	N/A	N/A																	
CW	RHSFS	N/A	N/A	N/A	N/A																	
CW	LHSFS	N/A	N/A	N/A	N/A																	

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Issued: Aug, 2004

Bulletin 836269C

General Notes: This document references schematic wiring standards and software configurations/calibrations required to operate a specific pump, utilizing the Oilgear EPC amplifier. The pump is identified by a partial model code. Complete model codes are defined in pump bulletins. “L” (list) numbers or serial numbers may also identify pumps. Contact the Oilgear Company to cross reference “L” and serial numbers to model codes.

Reference Technical Document 836261 for the “Flow Control Program” and Technical Document 836260 for the EPC “User Manual”. Both may be accessed from the Internet at www.oilgear.com.

Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, damage to components, machinery and even personal injury.

(*) Calibration data for LVDT feedback, pump response gain, and LVDT offset, as listed in the table, are initial values. The initial values (*) are adequate for many applications but may need to be optimized for specific applications.

- **Pump Rotation** - Pumps are designed for clockwise (CW) or counter-clockwise (CCW) rotation.
- **LVDT Location** - Pump & control design, mounting clearance and/or mounting preference, determine LVDT location. Location is defined as left hand side facing shaft (LHSFS), right hand side facing shaft (RHSFS) or top. The LVDT may be inside a control housing or as a component (visible). See “LVDT Invert” for control considerations.
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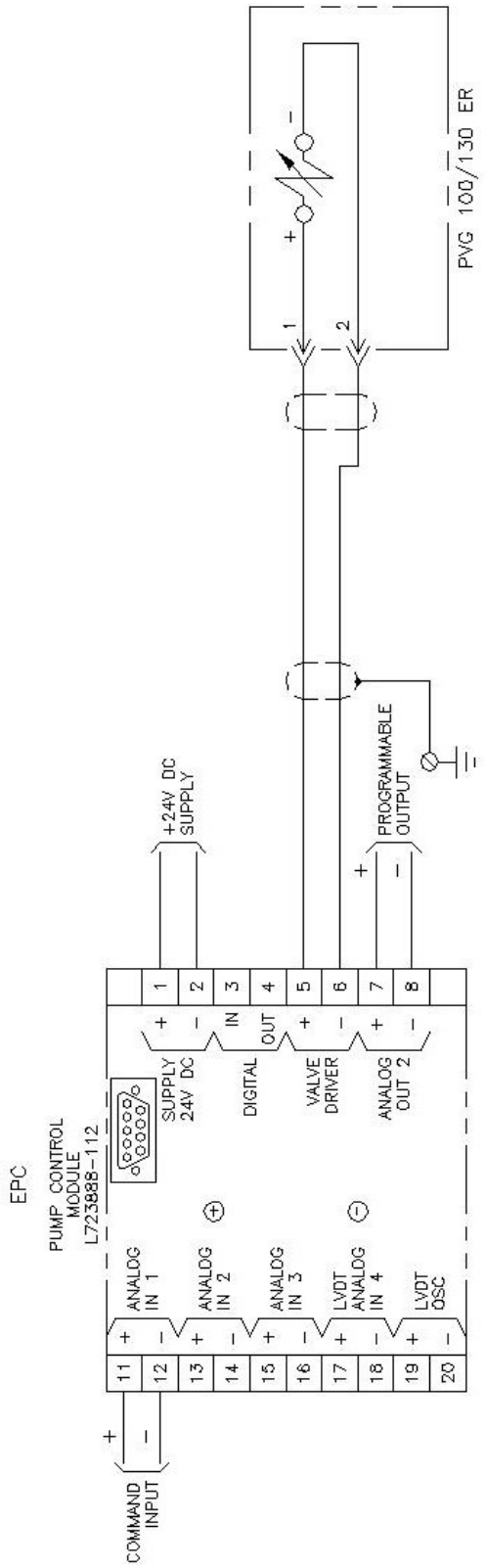
- **Polarity (LVDT)** - The control/LVDT physical location, and schematic diagram wiring, determine LVDT feedback voltage polarity. “LVDT Invert” is set to insure command and feedback cancel.
- **Polarity, Module (Current)** - The control/servo valve mounting physical location, and schematic diagram wiring, determine servo valve pilot flow to pump stroking pistons, and ultimately pump “Port of Delivery”. The table assumes a “Command polarity” and “Current Polarity” for “A” port delivery, unless otherwise listed.
- **Dither (Output Current)** - Provides approximately 200 Hz current pulse to help keep servo valve from sticking (silting up). Value is based on valve design.
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specification of servo valve. Wrong current limit entries may result in servo valve reduced performance and life.
- **LVDT Feedback Gain** - Matches maximum electrical LVDT feedback signals, to pump full mechanical stroke (flow) range. Analog Output #2 is configured for LVDT 0 to approximately +/- 10V DC feedback as a standard for customer use.
- **LVDT Feedback Offset** - Matches minimum electrical LVDT feedback signals, to pump minimum mechanical flow (neutral). The initial 512* assumes an ideal condition. Hydraulic circuit design, mechanical pump machining & electrical component, tolerances, may require resetting the offset.
- **Stroke Controller Gain** - Sets pump response (reaction time) and accuracy of stroking.

D 150 VZ Notes:

- LVDT is rated approximately +/- .75 inch stroke.



VLV TYPE	CONTROL (OPEN OR CLOSED LOOP)	CONFIGURATIONS (SOFTWARE SWITCHES)							CALIBRATIONS (SOFTWARE VALUES)								
		ANALOG INPUT 1 POLARITY COMMAND	ANALOG INPUT 1 OFFSET COMMAND	ANALOG INPUT 2 POLARITY PSI FB	ANALOG INPUT 2 OFFSET PSI FB	ANALOG INPUT 2 GAIN PSI FB	MODULE POLARITY CURRENT	MODULE CURRENT LIMIT		DITHER OUTPUT CURRENT	CLOSED LOOP GAIN		CAL GAIN	
PROGRAM MENU		852	850	862	860	861	802	803		875	804	805	890	
N.O.	OPEN	NORMAL	0V	N/A	N/A	N/A	NORMAL	%	ma	0	Kp	Ki	%	
N.O.	CLOSED	NORMAL	0V	NORMAL	-2V	1.25	NORMAL	100	700		20*	0*	100	
N.C.	OPEN	INVERT	-10V	N/A	N/A	N/A	NORMAL	OPTIONAL ENTRY FOR SPECIFIC APP.						
N.C.	CLOSED	INVERT	-10V	INVERT	-10V	1.25	NORMAL							

* INITIAL CALIBRATIONS ARE ADEQUATE FOR MOST APPLICATIONS BUT MAY NEED TO BE OPTIMIZED FOR SPECIFIC APPLICATIONS

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Reference Technical Document 836260 for the EPC “User Manual”. It may be accessed from the Internet at www.oilgear.com.

Caution! Improper wiring, configurations & calibrations may result in loss of pump control, improper operation, and damage to components, machinery and even personal injury.

- **Valve Type** - Proportional valves are designed as Normally Open (NO) or Normally Closed (NC). See notes 4 and 5 below.
- **Control Mode** – Control Modes are either Open Loop or Closed Loop (Pressure Feedback).
- **Polarity (Command)** - Commands may be either current (mA) or voltage plus, (+) DC polarity, for valve type as determined above. 0V to 10V command to be 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Offset (Command)** – Signal conditioning the Command may require offsetting this input to make a 0V to 10V Command into a 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Polarity (Feedback) –** Pressure Feedback may be either current (4 to 20mA) or voltage (0 to 10V), plus (+) DC voltage polarity, for valve type as determined above. However, the table uses a 4 to 20mA Feedback for a 0 PSI to 5000 PSI setting for both NO and NC valves.
- **Offset (Feedback)** – Signal conditioning the Feedback requires offsetting this input to make a 4 to 20mA (2-10VDC) Feedback into 0 PSI to 5000 PSI for both NO and NC valve examples.
- **Polarity, Module (Current)** – Determines the direction of the driver current. For his valve, the setting is always Normal (Positive Current).
- **Current Limit** - Matches electrical maximum saturated current output, to design limit specific valve. Wrong current limit entries may result In valve reduced performance and life.
- **Dither (Output Current)** – Provides optional current pulse to help keep valve from sticking (silting up). Value is based on valve design, and not used with P/N247579-XXX valves.
- **Stroke Control Gain (Closed Loop Gain)** – Sets valve response (reaction time) and accuracy of pressure setting.
- **Servo Attenuation** (**Calibration Gain)** - Sets the correct current output for a maximum dc voltage Command in open loop configuration.

PVG 100/130 ER Notes:

- EPC input accepts a 0 to 10V or 4 to 20ma input from the transducer.
- For analog P2C amplifier module retrofits, using a millivolt transducer, it must be changed to a 0 to 10V or 4 to 20ma transducer.
- Do not disassemble the P2C Operator.
- When using a Normally Open P2C Operator, relief valve will go to minimum pressure when the electrical power is disconnected.
- When using a Normally Closed P2C Operator, relief valve will go to maximum pressure when the electrical power is disconnected.
- EPC valve driver is PWM at a frequency to match P/N 247579-XXX valves.
- 247579-XXX Valves are polarity dependent and require valve driver positive (+) terminal #5 to be connected to valve connector pin #1.