Errata Sheet
for
FIELDVUE® DVC6000f Series Digital Valve Controllers Quick Start Guide, Form 5778
(Quick Start Guides dated December 2005 and April 2005)
and
FIELDVUE® DVC6000f Series Digital Valve Controllers Instruction Manual, Form 5774
(Instruction Manuals dated March 2006, March 2005, and December 2004)

This errata sheet covers all versions of the DVC6000f quick start guide and instruction manual listed above.

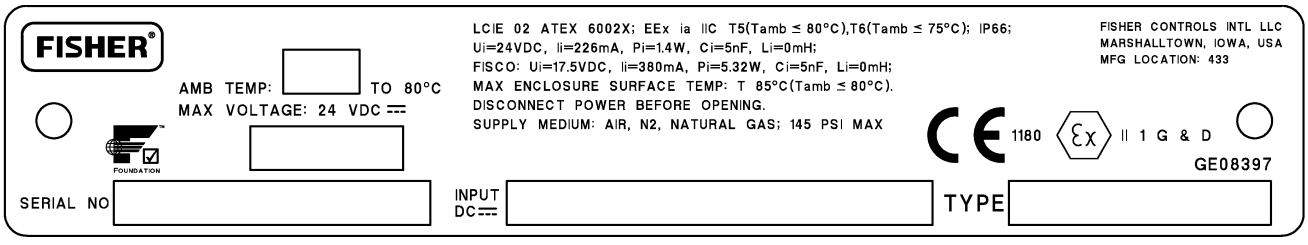
DVC6000f Quick Start Guide – Form 5778

For Quick Start Guides dated December 2005 and April 2005

Replace *figure 5-5. ATEX Nameplate; Intrinsically Safe, Dust* with the updated figure below. The intrinsically safe maximum voltage entity parameter (U_i) has been corrected to read 24 VDC.

Note

Neither Emerson, Emerson Process Management, nor any of their affiliated entities assumes responsibility for the selection, use, and maintenance of any product. Responsibility for the selection, use, and maintenance of any product remains with the purchaser and end-user.



TYPE DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5–5. ATEX Nameplate; Intrinsic Safety, Dust

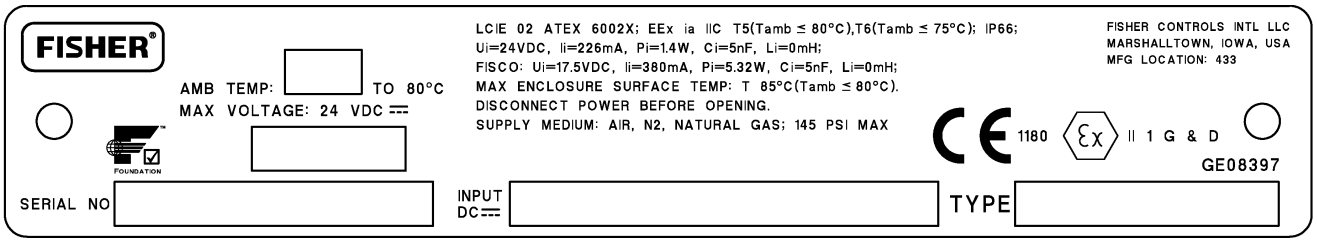
DVC6000f Instruction Manual – Form 5774

For Instruction Manuals dated March 2006 and March 2005

Replace the Intrinsic Safety, Dust-Tight nameplate for **Type DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS** in **figure D-7** with the updated nameplate below. The intrinsically safe maximum voltage entity parameter (U_i) has been corrected to read 24 VDC.

For Instruction Manuals dated December 2004

Replace the Intrinsic Safety, Dust-Tight nameplate for **Type DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS** in **figure D-3** with the updated nameplate below. The intrinsically safe maximum voltage entity parameter (U_i) has been corrected to read 24 VDC.



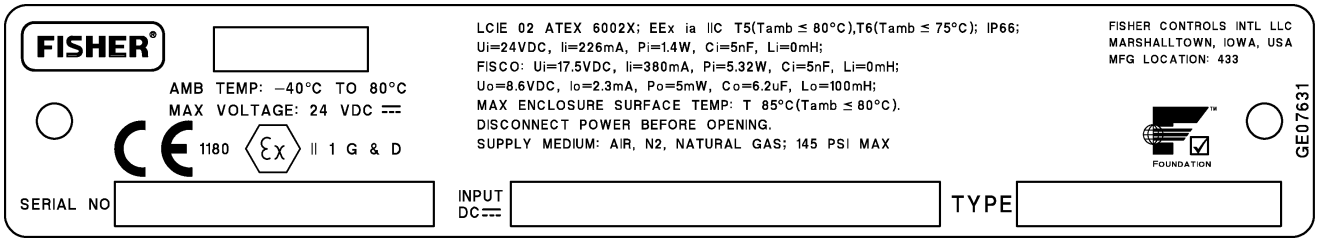
TYPE DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

For Instruction Manuals dated March 2006 and March 2005

Replace the Intrinsic Safety, Dust-Tight nameplate for **Type DVC6005F** in **figure D-7** with the updated nameplate below. The intrinsically safe maximum voltage entity parameter (U_i) has been corrected to read 24 VDC.

For Instruction Manuals dated December 2004

Replace the Intrinsic Safety, Dust-Tight nameplate for **Type DVC6005F** in **figure D-3** with the updated nameplate below. The intrinsically safe maximum voltage entity parameter (U_i) has been corrected to read 24 VDC.



TYPE DVC6005F

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Process Management

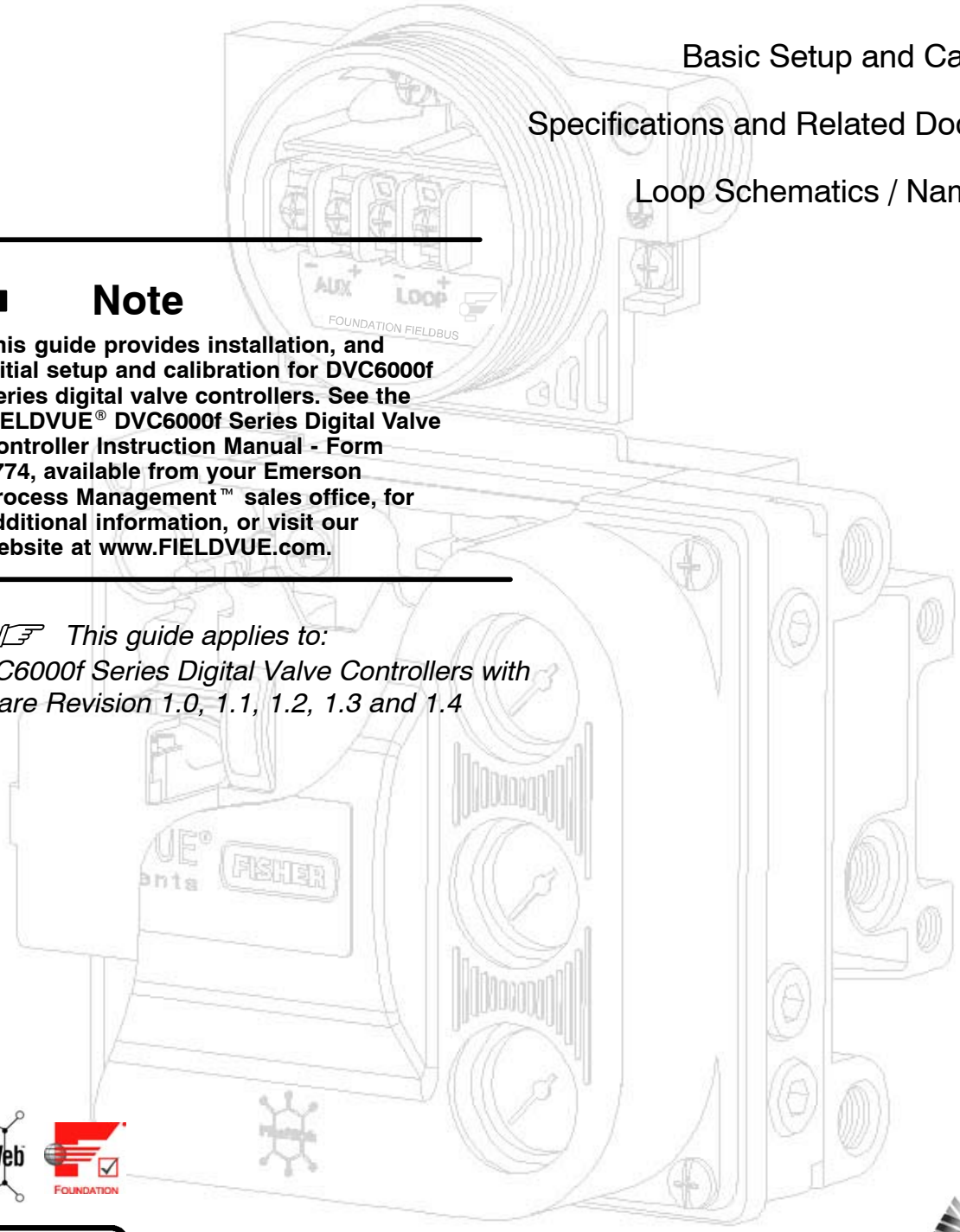
Quick-Start Guide
Form 5778
December 2005

FIELDVUE® DVC6000f Series Digital Valve Controllers

Note

This guide provides installation, and initial setup and calibration for DVC6000f Series digital valve controllers. See the FIELDVUE® DVC6000f Series Digital Valve Controller Instruction Manual - Form 5774, available from your Emerson Process Management™ sales office, for additional information, or visit our website at www.FIELDVUE.com.

Note: *This guide applies to:*
DVC6000f Series Digital Valve Controllers with Firmware Revision 1.0, 1.1, 1.2, 1.3 and 1.4



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DVC6000f Series

THE FIELDVUE® DVC6000f SERIES DIGITAL VALVE CONTROLLER IS A CORE COMPONENT OF THE PLANTWEB® DIGITAL PLANT ARCHITECTURE. THE DIGITAL VALVE CONTROLLER POWERS PLANTWEB BY CAPTURING AND DELIVERING VALVE DIAGNOSTIC DATA. COUPLED WITH AMS VALVELINK® SOFTWARE, THE DVC6000f PROVIDES USERS WITH AN ACCURATE PICTURE OF VALVE PERFORMANCE, INCLUDING ACTUAL STEM POSITION, INSTRUMENT INPUT SIGNAL AND PNEUMATIC PRESSURE TO THE ACTUATOR. USING THIS INFORMATION, THE DIGITAL VALVE CONTROLLER DIAGNOSES NOT ONLY ITSELF, BUT ALSO THE VALVE AND ACTUATOR TO WHICH IT IS MOUNTED.

FIELDVUE® DVC6000f Series Digital Valve Controller

Installation and Basic Setup Check List

Installation

Mounting

- ☐ Instrument correctly mounted on the actuator. See installation instructions provided with the mounting kit.
- ☐ Feedback linkage properly connected. See installation instructions provided with the mounting kit.

Pneumatic Connections and Air Supply

- ☐ Regulator correctly mounted. Perform one of the regulator mounting procedures on page 2-8.
- ☐ Air supply connected and at proper pressure. Connect supply as described on page 2-9. Also see specifications on page 4-1.
- ☐ Instrument output connected to the actuator. Connect instrument output as described on page 2-9.

Electrical Connections

- ☐ Conduit properly installed, if necessary. Refer to local and national electrical codes.
- ☐ Loop wiring properly connected to the LOOP terminals in the terminal box. Connect loop wiring as described on page 2-11.

Basic Setup and Calibration

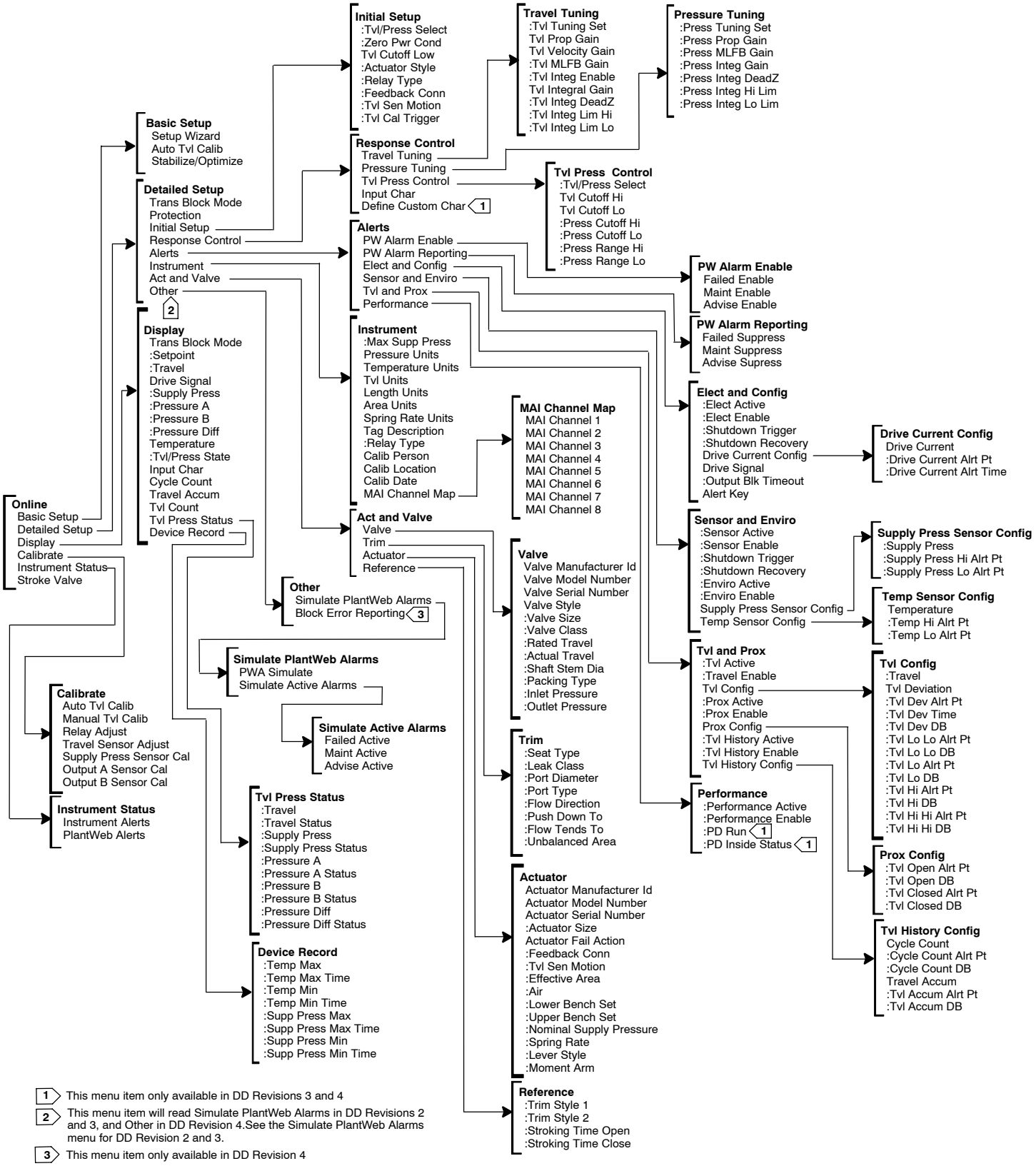
- ☐ Basic setup complete. Perform Basic Setup procedure on page 3-1.
- ☐ Calibration complete. Perform Auto Calibrate Travel procedure on page 3-4.
- ☐ Final control element correctly responds to a set point change and is stable. If necessary, perform Stabilizing or Optimizing Valve Response on page 3-5.

Final control element is ready to be placed on line.

⚠ WARNING

This product is intended for a specific range of application specifications. Incorrect configuration of a positioning instrument could result in the malfunction of the product, property damage or personal injury.

Model 375 Field Communicator Menu Tree for FIELDVUE® DVC6000f Digital Valve Controllers Transducer Block



1 This menu item only available in DD Revisions 3 and 4

2 This menu item will read Simulate PlantWeb Alarms in DD Revisions 2 and 3, and Other in DD Revision 4.See the Simulate PlantWeb Alarms menu for DD Revision 2 and 3.

3 This menu item only available in DD Revision 4

375 Field Communicator Transducer Block Menu Structure

PARAMETER LABEL	PARAMETER NAME	MENU STRUCTURE
Actuator Size	ACTUATOR_SIZE	TB > Detailed Setup > Act and Valve > Actuator > Actuator Size
Actuator Fail Action	ACT_FAIL_ACTION	TB > Detailed Setup > Act and Valve > Actuator > Actuator Fail Action
Actuator Manufacturer Id	ACT_MAN_ID	TB > Detailed Setup > Act and Valve > Actuator >Actuator Manufacturer Id
Actuator Model Number	ACT_MODEL_NUM	TB > Detailed Setup > Act and Valve > Actuator > Actuator Model Number
Actuator Serial Number	ACT_SN	TB > Detailed Setup > Act and Valve > Actuator > Actuator Serial Number
Actuator Style	ACTUATOR_STYLE	TB > Detailed Setup > Initial Setup > Actuator Style
Actual Travel	ACTUAL_TRAVEL	TB > Detailed Setup > Act and Valve > Valve > Actual Travel
Advise Active	ADVISE_ACTIVE	TB > Instrument Status > PlantWeb Alerts > Advise Active
Advise Enable	ADVISE_ENABLE	TB > Detailed Setup > Alerts > PW Alarm Enable > Advise Enable
Advise Suppress	ADVISE_MASK	TB > Detailed Setup > Alerts > PW Alarm Reporting > Advise Suppress
Air	AIR	TB > Detailed Setup > Act and Valve > Actuator > Air
Alert Key	ALERT_KEY	TB > Detailed Setup > Alerts > Elect and Config > Alert Key
Area Units	AREA_UNITS	TB > Detailed Setup > Instrument > Area Units
Calib Date	XD_CAL_DATE	TB > Detailed Setup > Instrument > Calib Date
Calib Location	XD_CAL_LOC	TB > Detailed Setup > Instrument > Calib Location
Calib Person	XD_CAL_WHO	TB > Detailed Setup > Instrument > Calib Person
Cycle Count	CYCLE_COUNT	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Cycle Count
Cycle Count Alrt Pt	CYCLE_COUNT_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Cycle Count Alrt Pt
Cycle Count DB	CYCLE_COUNT_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Cycle Count DB
Drive Current	DRIVE_CURRENT	TB > Detailed Setup > Alerts > Elect and Config > Drive Current
Drive Current Alrt Pt	DRIVE_CURRENT_ALRT_PT	TB > Detailed Setup > Alerts > Elect and Config > Drive Current Alrt Pt
Drive Current Alrt Time	DRIVE_CURRENT_TIME	TB > Detailed Setup > Alerts > Elect and Config > Drive Current Alrt Time
Drive Signal	DRIVE_SIGNAL	TB > Detailed Setup > Alerts > Elect and Config > Drive Signal
Effective Area	EFFECTIVE_AREA	TB > Detailed Setup > Act and Valve > Actuator > Effective Area
Elect Active	ELECT_ACTIVE	TB > Detailed Setup > Alerts > Elect and Config > Elect Active or TB > Instrument Status > Instrument Alerts
Elect Enable	ELECT_ENABLE	TB > Detailed Setup > Alerts > Elect and Config > Elect Enable
Enviro Active	ENVIRO_ACTIVE	TB > Detailed Setup > Alerts > Sensor and Enviro > Enviro Active or TB > Instrument Status > Instrument Alerts
Enviro Enable	ENVIRO_ENABLE	TB > Detailed Setup > Alerts > Sensor and Enviro > Enviro Enable
Failed Active	FAILED_ACTIVE	TB > Instrument Status > PlantWeb Alerts > Failed Active
Failed Enable	FAILED_ENABLE	TB > Detailed Setup > Alerts > PW Alarm Enable > Failed Enable
Failed Suppress	FAILED_MASK	TB > Detailed Setup > Alerts > PW Alarm Reporting > Failed Suppress
Feedback Conn	FEEDBACK_CONN	TB > Detailed Setup > Act and Valve > Actuator > Feedback Conn
Flow Direction	FLOW_DIRECTION	TB > Detailed Setup > Act and Valve > Trim > Flow Direction
Flow Tends To	FLOW_TENDS_TO	TB > Detailed Setup > Act and Valve > Trim > Flow Tends To
Inlet Pressure	INLET_PRESSURE	TB > Detailed Setup > Act and Valve > Valve > Inlet Pressure
Input Char	INPUT_CHAR	TB > Detailed Setup > Response Control > Input Char
Leak Class	LEAK_CLASS	TB > Detailed Setup > Act and Valve > Trim > Leak Class
Length Units	LENGTH_UNITS	TB > Detailed Setup > Instrument > Length Units
Lever Style	LEVER_STYLE	TB > Detailed Setup > Act and Valve > Actuator > Lever Style
Lower Bench Set	LOWER_BENCH_SET	TB > Detailed Setup > Act and Valve > Actuator > Lower Bench Set
MAI Channel 1	MAI_CHANNEL_1	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 1
MAI Channel 2	MAI_CHANNEL_2	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 2
MAI Channel 3	MAI_CHANNEL_3	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 3
MAI Channel 4	MAI_CHANNEL_4	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 4
MAI Channel 5	MAI_CHANNEL_5	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 5
MAI Channel 6	MAI_CHANNEL_6	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 6
MAI Channel 7	MAI_CHANNEL_7	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 7
MAI Channel 8	MAI_CHANNEL_8	TB > Detailed Setup > Instrument > MAI Channel Map > MAI Channel 8
Maint Active	MAINT_ACTIVE	TB > Instrument Status > PlantWeb Alerts > Maint Active
Maint Enable	MAINT_ENABLE	TB > Detailed Setup > Alerts > PW Alarm Enable > Maint Enable
Maint Suppress	MAINT_MASK	TB > Detailed Setup > Alerts > PW Alarm Reporting > Maint Suppress
Max Supp Press	MAX_SUPP_PRESS	TB > Detailed Setup > Instrument > Max Supp Press
Moment Arm	MOMENT_ARM	TB > Detailed Setup > Act and Valve > Actuator > Moment Arm
Nominal Supply Pressure	NOMINAL_SUPPLY_PRESSURE	TB > Detailed Setup > Act and Valve > Actuator > Nominal Supply Pressure
Outlet Pressure	OUTLET_PRESSURE	TB > Detailed Setup > Act and Valve > Valve > Outlet Pressure
Output Blk Timeout	OUTPUT_BLK_TIMEOUT	TB > Detailed Setup > Alerts > Elect and Config > Output Blk Timeout
Packing Type	PACKING_TYPE	TB > Detailed Setup > Act and Valve > Valve > Packing Type
PD Run	PD_RUN	TB > Detailed Setup > Alerts > Performance > PD Run

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375 Field Communicator Transducer Block Menu Structure (Continued)

PARAMETER LABEL	PARAMETER NAME	MENU STRUCTURE
PD Inside Status	PD_STATUS	TB > Detailed Setup > Alerts > Performance > PD Inside Status
Performance Active	PERF_ACTIVE	TB > Detailed Setup > Alerts > Performance > Performance Active or TB > Instrument Status > Instrument Alerts
Performance Enable	PERF_ENABLE	TB > Detailed Setup > Alerts > Performance Enable
Port Diameter	PORT_DIAMETER	TB > Detailed Setup > Act and Valve > Trim > Port Diameter
Port Type	PORT_TYPE	TB > Detailed Setup > Act and Valve > Trim > Port Type
Press Cutoff Hi	PRESS_CUTOFF_HI	TB > Detailed Setup > Response Control > Tvl/Press Control > Press Cutoff Hi
Press Cutoff Lo	PRESS_CUTOFF_LO	TB > Detailed Setup > Response Control > Tvl/Press Control > Press Cutoff Lo
Press Integ DeadZ	PRESS_INTEG_DEADZ	TB > Detailed Setup > Response Control > Pressure Tuning > Press Integ DeadZ
Press Integ Gain	PRESS_INTEG_GAIN	TB > Detailed Setup > Response Control > Pressure Tuning > Press Integ Gain
Press MLFB Gain	PRESS_MLFB_GAIN	TB > Detailed Setup > Response Control > Pressure Tuning > Press MLFB Gain
Press Prop Gain	PRESS_PROP_GAIN	TB > Detailed Setup > Response Control > Pressure Tuning > Press Prop Gain
Press Range Hi	PRESS_RANGE_HI	TB > Detailed Setup > Response Control > Tvl/Press Control > Press Range Hi
Press Range Lo	PRESS_RANGE_LO	TB > Detailed Setup > Response Control > Tvl/Press Control > Press Range Lo
Press Tuning Set	PRESS_TUNING_SET	TB > Detailed Setup > Response Control > Pressure Tuning > Press Tuning Set
Pressure A	PRESSURE_A.VALUE	TB > Display > Tvl Press Status > Pressure A
Pressure A Status	PRESSURE_A.STATUS	TB > Display > Tvl Press Status > Pressure A Status
Pressure B	PRESSURE_B.VALUE	TB > Display > Tvl Press Status > Pressure B
Pressure B Status	PRESSURE_B.STATUS	TB > Display > Tvl Press Status > Pressure B Status
Pressure Diff	PRESSURE_DIFF.VALUE	TB > Display > Pressure Diff
Pressure Diff Status	PRESSURE_DIFF.STATUS	TB > Display > Tvl Press Status > Pressure Diff Status
Pressure Units	PRESSURE_UNITS	TB > Detailed Setup > Instrument > Pressure Units
Prox Active	PROX_ACTIVE	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Active or TB > Instrument Status > Instrument Alerts
Prox Enable	PROX_ENABLE	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Enable
Push Down To	PUSH_DOWN_TO	TB > Detailed Setup > Act and Valve > Trim > Push Down To
PWA Simulate	PWA_SIMULATE	TB > Detailed Setup > Other > Simulate PlantWeb Alarms > PWA Simulate
Rated Travel	RATED_TRAVEL	TB > Detailed Setup > Act and Valve > Valve > Rated Travel
Relay Type	RELAY_TYPE	TB > Detailed Setup > Initial Setup > Relay Type
Seat Type	SEAT_TYPE	TB > Detailed Setup > Act and Valve > Trim > Seat Type
Setpoint	FINAL_VALUE.VALUE	TB > Display > Setpoint
Sensor Active	SENSOR_ACTIVE	TB > Detailed Setup > Alerts > Sensor and Enviro > Sensor Active or TB > Instrument Status > Instrument Alerts
Sensor Enable	SENSOR_ENABLE	TB > Detailed Setup > Alerts > Sensor and Enviro > Sensor Enable
Shaft Stem Dia	SHAFT_STEM_DIA	TB > Detailed Setup > Act and Valve > Valve > Shaft Stem Dia
Shutdown Recovery	SHUTDOWN_RECOVERY	TB > Detailed Setup > Alerts > Elect and Config > Shutdown Recovery
Shutdown Trigger	SHUTDOWN_TRIGGER	TB > Detailed Setup > Alerts > Elect and Config > Shutdown Trigger
Spring Rate	SPRING_RATE	TB > Detailed Setup > Act and Valve > Actuator > Spring Rate
Spring Rate Units	SPRING_RATE_UNITS	TB > Detailed Setup > Instrument > Spring Rate Units
Stroking Time Close	STROKING_TIME_CLOSE	TB > Detailed Setup > Act and Valve > Reference > Stroking Time Close
Stroking Time Open	STROKING_TIME_OPEN	TB > Detailed Setup > Act and Valve > Reference > Stroking Time Open
Supply Press	SUPPLY_PRESS.VALUE	TB > Detailed Setup > Alerts > Sensor and Enviro > Supply Press Sensor Config > Supply Press
Supply Press Hi Alrt Pt	SUP_PRES_HI_ALRT_PT	TB > Detailed Setup > Alerts > Sensor and Enviro > Supply Press Sensor Config > Supply Press Hi Alrt Pt
Supply Press Lo Alrt Pt	SUP_PRES_LO_ALRT_PT	TB > Detailed Setup > Alerts > Sensor and Enviro > Supply Press Sensor Config > Supply Press Lo Alrt Pt
Supp Press Max	SUPP_PRESS_MAX	TB > Display > Device Record > Supp Press Max
Supp Press Max Time	SUPP_PRESS_MAX_TIME	TB > Display > Device Record > Supp Press Max Time
Supp Press Min	SUPP_PRESS_MIN	TB > Display > Device Record > Supp Press Min
Supp Press Min Time	SUPP_PRESS_MIN_TIME	TB > Display > Device Record > Supp Press Min Time
Supply Press Status	SUPPLY_PRESSURE.STATUS	TB > Display > Tvl Press Status > Supply Press Status
Tag Description	TAG_DESC	TB > Detailed Setup > Instrument > Tag Description
Temperature	TEMPERATURE	TB > Detailed Setup > Alerts > Sensor and Enviro > Temp Sensor Config > Temperature
Temp Hi Alrt Pt	TEMP_HI_ALRT_PT	TB > Detailed Setup > Alerts > Sensor and Enviro > Temp Sensor Config > Temp Hi Alrt Pt
Temp Lo Alrt Pt	TEMP_LO_ALRT_PT	TB > Detailed Setup > Alerts > Sensor and Enviro > Temp Sensor Config > Temp Lo Alrt Pt
Temp Max	TEMP_MAX	TB > Display > Device Record > Temp Max
Temp Max Time	TEMP_MAX_TIME	TB > Display > Device Record > Temp Max Time
Temp Min	TEMP_MIN	TB > Display > Device Record > Temp Min
Temp Min Time	TEMP_MIN_TIME	TB > Display > Device Record > Temp Min Time
Temperature Units	TEMPERATURE_UNITS	TB > Detailed Setup > Instrument > Temperature Units
Travel	TRAVEL.VALUE	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Travel
Travel Accum	TRAVEL_ACCUM	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Travel Accum

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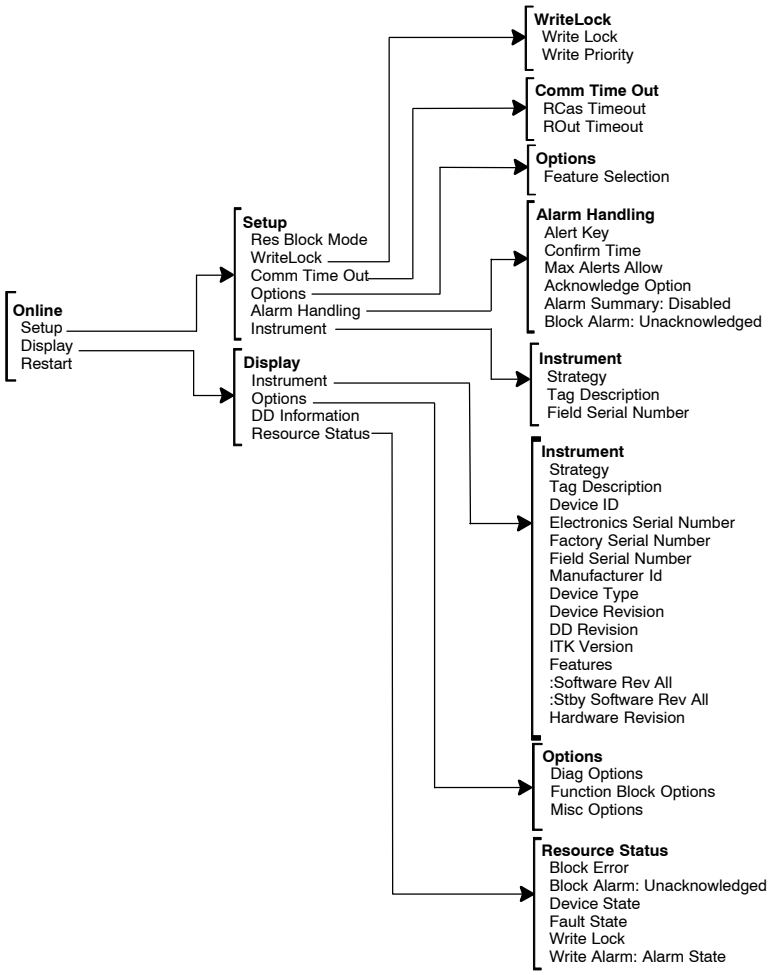
375 Field Communicator Transducer Block Menu Structure (Continued)

PARAMETER LABEL	PARAMETER NAME	MENU STRUCTURE
Travel Enable	TRAVEL_ENABLE	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Enable
Travel Status	TRAVEL.STATUS	TB > Display > Tvl Press Status > Travel Status
Trim Style 2	TRIM_STYLE_2	TB > Detailed Setup > Act and Valve > Reference > Trim Style 2
Trim Style 1	TRIM_STYLE_1	TB > Detailed Setup > Act and Valve > Reference > Trim Style 1
Tvl Accum Alrt Pt	TVL_ACCUM_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Tvl Accum Alrt Pt
Tvl Accum DB	TVL_ACCUM_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Config > Tvl Accum DB
Tvl Active	TRAVEL_ACTIVE	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl Active or TB > Instrument Status > Instrument Alerts
Tvl Cal Trigger	TVL_CAL_TRIGGER	TB > Detailed Setup > Initial Setup > Tvl Cal Trigger
Tvl Closed Alrt Pt	TVL_CLOSED_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Config > Tvl Closed Alrt Pt
Tvl Closed DB	TVL_CLOSED_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Config > Tvl Closed DB
Tvl Count	TVL_COUNT	TB > Display > Tvl Count
Tvl Cutoff Hi	FINAL_VALUE_CUTOFF_HI	TB > Detailed Setup > Response Control > Tvl/Press Control > Tvl Cutoff Hi
Tvl Cutoff Lo	FINAL_VALUE_CUTOFF_LO	TB > Detailed Setup > Response Control > Tvl/Press Control > Tvl Cutoff Lo
Tvl Dev Alrt Pt	TVL_DEV_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Dev Alrt Pt
Tvl Deviation	TRAVEL_DEVIATION	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Deviation
Tvl Dev Time	TVL_DEV_TIME	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Dev Time
Tvl Dev DB	TVL_DEV_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Dev DB
Tvl Hi Alrt Pt	TVL_HI_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Hi Alrt Pt
Tvl Hi DB	TVL_HI_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Hi DB
Tvl Hi Hi Alrt Pt	TVL_HI_HI_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Hi Hi Alrt Pt
Tvl Hi Hi DB	TVL_HI_HI_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Hi Hi DB
Tvl History Active	TVL_HISTORY_ACTIVE	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Active or TB > Instrument Status > Instrument Alerts
Tvl History Enable	TVL_HISTORY_ENABLE	TB > Detailed Setup > Alerts > Tvl and Prox > Tvl History Enable
Tvl Integ DeadZ	TVL_INTEG_DEADZ	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Integ DeadZ
Tvl Integ Enable	TVL_INTEG_ENABLE	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Integ Enable
Tvl Integ Lim Hi	TVL_INTEG_LIM_HI	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Integ Lim Hi
Tvl Integ Lim Lo	TVL_INTEG_LIM_LO	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Integ Lim Lo
Tvl Integral Gain	SERVO_RESET	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Integral Gain
Tvl Lo Alrt Pt	TVL_LO_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Lo Alrt Pt
Tvl Lo DB	TVL_LO_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Lo DB
Tvl Lo Lo Alrt Pt	TVL_LO_LO_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Lo Lo Alrt Pt
Tvl Lo Lo DB	TVL_LO_LO_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Travel Config > Tvl Lo Lo DB
Tvl MLFB Gain	TVL_MLFB_GAIN	TB > Detailed Setup > Response Control > Travel Tuning > Tvl MLFB Gain
Tvl Open Alrt Pt	TVL_OPEN_ALRT_PT	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Config > Tvl Open Alrt Pt
Tvl Open DB	TVL_OPEN_DB	TB > Detailed Setup > Alerts > Tvl and Prox > Prox Config > Tvl Open DB
Tvl/Press Select	TVL_PRESS_SELECT	TB > Detailed Setup > Response Control > Tvl/Press Control > Tvl/Press Select
Tvl/Press State	TVL_PRESS_STATE	TB > Display > Tvl/Press State
Tvl Prop Gain	SERVO_GAIN	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Prop Gain
Tvl Sen Motion	TRAVEL_SENSOR_MOTION	TB > Detailed Setup > Act and Valve > Actuator > Tvl Sen Motion
Tvl Sen Motion	TRAVEL_SENSOR_MOTION	TB > Detailed Setup > Initial Setup > Tvl Sen Motion
Tvl Tuning Set	TVL_TUNING_SET	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Tuning Set
Tvl Units	TVL_UNITS	TB > Detailed Setup > Instrument > Tvl Units
Tvl Velocity Gain	SERVO_RATE	TB > Detailed Setup > Response Control > Travel Tuning > Tvl Velocity Gain
Unbalanced Area	UNBALANCED_AREA	TB > Detailed Setup > Act and Valve > Trim > Unbalanced Area
Upper Bench Set	UPPER_BENCH_SET	TB > Detailed Setup > Act and Valve > Actuator > Upper Bench Set
Valve Class	VALVE_CLASS	TB > Detailed Setup > Act and Valve > Valve > Valve Class
Valve Manufacturer Id	VALVE_MAN_ID	TB > Detailed Setup > Act and Valve > Valve > Valve Manufacturer Id
Valve Model Number	VALVE_MODEL_NUM	TB > Detailed Setup > Act and Valve > Valve > Valve Model Number
Valve Serial Number	VALVE_SN	TB > Detailed Setup > Act and Valve > Valve > Valve Serial Number
Valve Size	VALVE_SIZE	TB > Detailed Setup > Act and Valve > Valve > Valve Size
Valve Style	VALVE_TYPE	TB > Detailed Setup > Act and Valve > Valve > Valve Style
Zero Pwr Cond	ZERO_PWR_COND	TB > Detailed Setup > Initial Setup > Zero Pwr Cond

Model 375 Field Communicator Menu Tree for FIELDVUE® DVC6000f Digital Valve Controllers Resource Block



Menu Tree for Model 375 Field Communicator
DVC6000f DD Revision 2, 3, and 4

375 Field Communicator Resource Block Menu Structure

PARAMETER LABEL	PARAMETER NAME	MENU STRUCTURE
Acknowledge Option	ACK_OPTION	RB > Setup > Alarm Handling > Acknowledge Option
Alarm Summary: Disabled	ALARM_SUM.DISABLED	RB > Setup > Alarm Handling > Alarm Summary: Disabled
Alert Key	ALERT_KEY	RB > Setup > Alarm Handling > Alert Key
Block Alarm: Unacknowledged	BLOCK_ALM.UNACKNOWLEDGED	RB > Setup > Alarm Handling > Block Alarm: Unacknowledged
Block Error	BLOCK_ERR	RB > Display > Resource Status > Block Error
Confirm Time	CONFIRM_TIME	RB > Setup > Alarm Handling > Confirm Time
Device ID	DEVICE_ID	RB > Display > Instrument > Device ID
Device Revision	DEV_REV	RB > Display > Instrument > Device Revision
Device State	RS_STATE	RB > Display > Resource Status > Device State
Device Type	DEV_TYPE	RB > Display > Instrument > Device Type
DD Revision	DD_REV	RB > Display > Instrument > DD Revision
Diag Options	DIAG_OPTIONS	RB > Display > Options > Diag Options
Electronics Serial Number	ELECTRONICS_SN	RB > Display > Instrument > Electronics Serial Number
Factory Serial Number	FACTORY_SN	RB > Display > Instrument > Factory Serial Number
Fault State	FAULT_STATE	RB > Dispaly > Resource Status > Fault State
Features	FEATURES	RB > Display > Instrument > Features
Feature Selection	FEATURE_SEL	RB > Setup > Options > Feature Selection
Field Serial Number	FIELD_SN	RB > Setup > Instrument > Field Serial Number
Function Block Options	FB_OPTIONS	RB > Display > Options > Function Block Options
Hardware Revision	HARDWARE_REV	RB > Display > Instrument > Hardware Revision
ITK Version	ITK_VER	RB > Display > Instrument > ITK Version
Manufacturer ID	MANUFAC_ID	RB > Display > Instrument > Manufacturer ID
Max Alerts Allow	LIM_NOTIFY	RB > Setup > Alarm Handling > Max Alerts Allow
Misc Options	MISC_OPTIONS	RB > Display > Options > Misc Options
RCas Timeout	SHED_RCAS	RB > Setup> Comm Time Out > RCas Timeout
ROut Timeout	SHED_ROUT	RB > Setup > Comm Time Out > ROut Timeout
Software Rev All	SOFTWARE_REVISION.SOFTWARE_REV_ALL	RB > Display > Instrument > Software Rev All
Stby Software Rev All	STBY_SOFTWARE_REV.STBY_SOFTWARE_REV_ALL	RB > Display > Instrument > Stby Software Rev All
Strategy	STRATEGY	RB > Setup > Instrument > Strategy
Tag Description	TAG_DESC	RB > Setup > Instrument > Tag Description
Write Alarm: Alarm State	WRITE_ALM.ALARM_STATE	RB > Display > Resource Status > Write Alarm: Alarm State
Write Lock	WRITE_LOCK	RB > Setup > WriteLock> Write Lock
Write Priority	WRITE_PRI	RB > Setup > WriteLock> Write Priority

W9132-1

Figure 1-1. Type DVC6010f Digital Valve Controller Mounted on Type 585C Piston Actuator

W8115 FF/ IL

Figure 1-2. Rotary Control Valve with Type DVC6020f Digital Valve Controller

Note

No person may install, operate, or maintain a DVC6000f Series digital valve controller without first • being fully trained and qualified in valve, actuator and accessory installation, operation and maintenance, and • carefully reading and understanding the contents of this manual. If you have any questions regarding these instructions, contact your Emerson Process Management sales office before proceeding.

Product Description

DVC6000f Series digital valve controllers for FOUNDATION™ fieldbus (figures 1-1 and 1-2) are communicating, microprocessor-based instruments. In addition to the traditional function of converting a digital signal to a pneumatic output pressure, the DVC6000f Series digital valve controller, using FOUNDATION fieldbus communications protocol, gives easy access to information critical to process operation as well as process control. This can be done using a DeltaV™ console, another FOUNDATION fieldbus system console, or with AMS ValveLink® Software.

Using a compatible fieldbus configuration device, you can obtain information about the health of the instrument, the actuator, and the valve. You can also obtain asset information about the actuator or valve manufacturer, model, and serial number. You can set input and output configuration parameters and calibrate the instrument.

Using the FOUNDATION fieldbus protocol, information from the instrument can be integrated into control systems.

Use of this Guide

This guide describes how to install, setup, and calibrate DVC6000f Series digital valve controllers. using a Model 375 Field Communicator. For information on the Field Communicator, see the Product Manual for the Field Communicator available from Emerson Performance Technologies. An abbreviated description of Field Communicator operation is also contained in the FIELDVUE instrument instruction manual. Additional information

for installing, operating, and maintaining DVC6000f Series digital valve controllers can be found in the related documents listed on page 4-5.

You can also setup and calibrate the instrument using a personal computer and AMS ValveLink Software. For information on using the software with a FIELDVUE instrument, refer to the appropriate user guide or help.

Displaying the Field Communicator Device Description Revision Number

Device Description (DD) revision identifies the version of the Fisher® Controls Device Description that resides in the Field Communicator. The device description defines how the Field Communicator interacts with the user and instrument.

To see the Field Communicator device description revision number, from the main menu, select *Utility, Device Descriptions List, Fisher Controls,* and *DVC6000f*.

This Quick-Start Guide applies to the following devices and device descriptions:

Revision (Firmware)	Device Type	Use DD Version(1):
1.0, 1.1, 1.2, 1.3, 1.4	4601	2, 3, 4
1. Device descriptions can be downloaded from the internet at www.fieldvue.com.		

Note

Neither Emerson®, Emerson Process Management, Fisher®, nor any of their affiliated entities assumes responsibility for the selection, use, and maintenance of any product. Responsibility for the selection, use, and maintenance of any product remains with the purchaser and end-user.

Installation

WARNING

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before installing the DVC6000f Series digital valve controller:

- **Always wear protective clothing, gloves, and eyewear when performing any installation procedures.**
- **Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.**
- **Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure from both sides of the valve. Drain the process media from both sides of the valve.**
- **Vent the pneumatic actuator loading pressure and relieve any actuator spring precompression.**
- **Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.**
- **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.**

Special Instructions for Safe-Use and Installation in Hazardous Locations

Certain nameplates may carry more than one approval, and each approval may have unique installation requirements and/or conditions of safe-use. Special instructions are listed by agency/approval below.

After reading and understanding these special conditions of use, proceed with standard installation procedures.

WARNING

Failure to follow these conditions of safe-use could result in personal injury or property damage from fire or explosion, and area re-classification.

2

CSA

Special Conditions of Safe-Use

None stated.

Refer to table 4-3 for additional approval information, figure 5-1 for CSA loop schematics, and figure 5-2 for the CSA nameplate.

FM

Special Conditions of Safe-Use

None stated.

Refer to table 4-3 for additional approval information, figure 5-3 for FM loop schematics, and figure 5-4 for the FM nameplate.

ATEX Intrinsic Safety, Dust

Special Conditions for Safe-Use

1. This apparatus can only be connected to an intrinsically safe certified equipment and this combination must be compatible as regards the intrinsically safe rules.

2. The electrical parameters of this equipment must not exceed any following values:
$U_O \leq$ 17.5 V; $I_O \leq$ 380 mA; $P_O \leq$ 5.32 W

3. Operating ambient temperature: −52°C or −40°C to + 85°C

Refer to table 4-4 for additional approval information, and figure 5-5 for the the ATEX Intrinsic Safety, Dust nameplate.

ATEX Flameproof, Dust

Special Conditions for Safe-Use

Operating ambient temperature: −52°C or −40°C to + 85°C

Refer to table 4-4 for additional approval information, and figure 5-6 for the ATEX Flameproof, Dust nameplate.

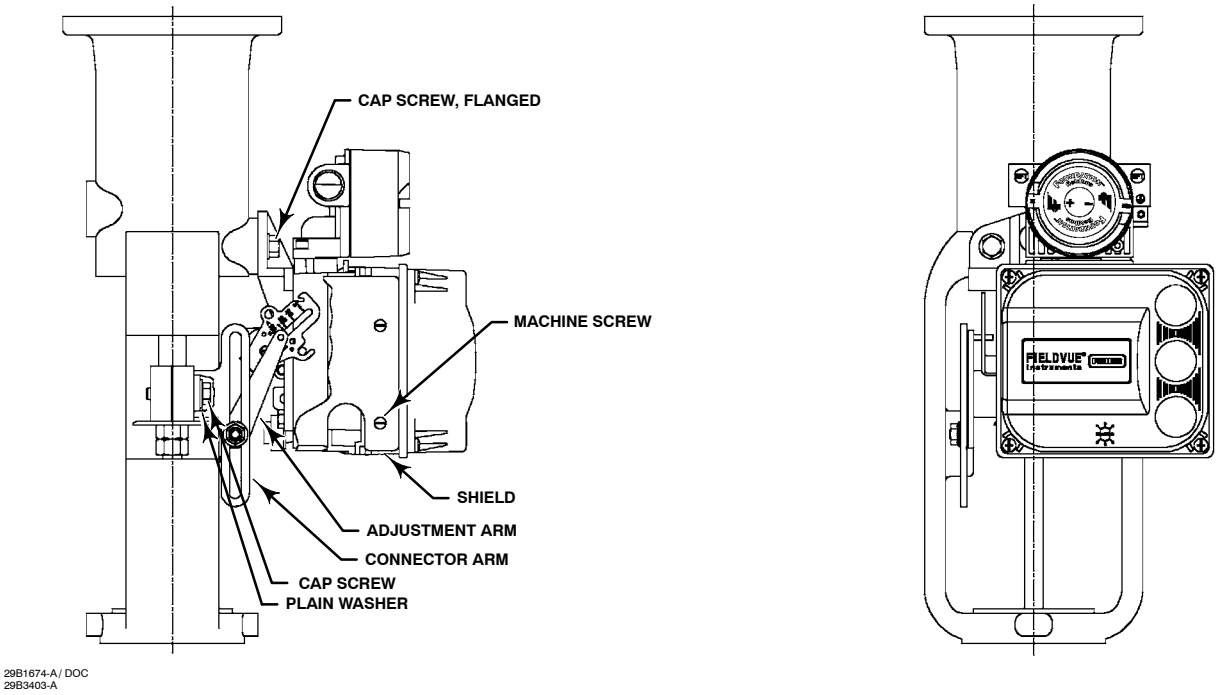


Figure 2-1. Type DVC6010f Digital Valve Controller Mounted on Sliding-Stem Actuators with up to 2 Inches Travel

ATEX Type n, Dust

Special Conditions for Safe-Use

Operating ambient temperature: −52°C or −40°C to + 80°C

Refer to table 4-4 for additional approval information, and figure 5-7 for the ATEX Type n, Dust nameplate.

IECEx Intrinsic Safety, Type n, Flameproof

Conditions of Certification

Ex ia / Ex d / Ex n

1. Warning: Electrostatic charge hazard. Do not rub or clean with solvents. To do so could result in an explosion.

EX d / Ex n

2. Do not open while energized.

Refer to table 4-4 for additional approval information, and figure 5-8 for the IECEx nameplate.

Mounting

Mounting Standard DVC6000f Series Digital Valve Controllers

If ordered as part of a control valve assembly, the factory mounts the digital valve controller on the actuator, makes pneumatic connections to the actuator, sets up, and calibrates the instrument. If you purchased the digital valve controller separately, you will need a mounting kit to mount the digital valve controller on the actuator. See the instructions that come with the mounting kit for detailed information on mounting the digital valve controller to a specific actuator model.

Guidelines for Mounting Type DVC6010f on Sliding-Stem Actuators Up to 102 mm (4 Inches) of Travel

WARNING

Refer to the Installation WARNING at the beginning of this section.

The Type DVC6010f digital valve controller mounts on sliding-stem actuators with up to 102 mm (4-inch) travel. Figure 2-1 shows a typical mounting on an

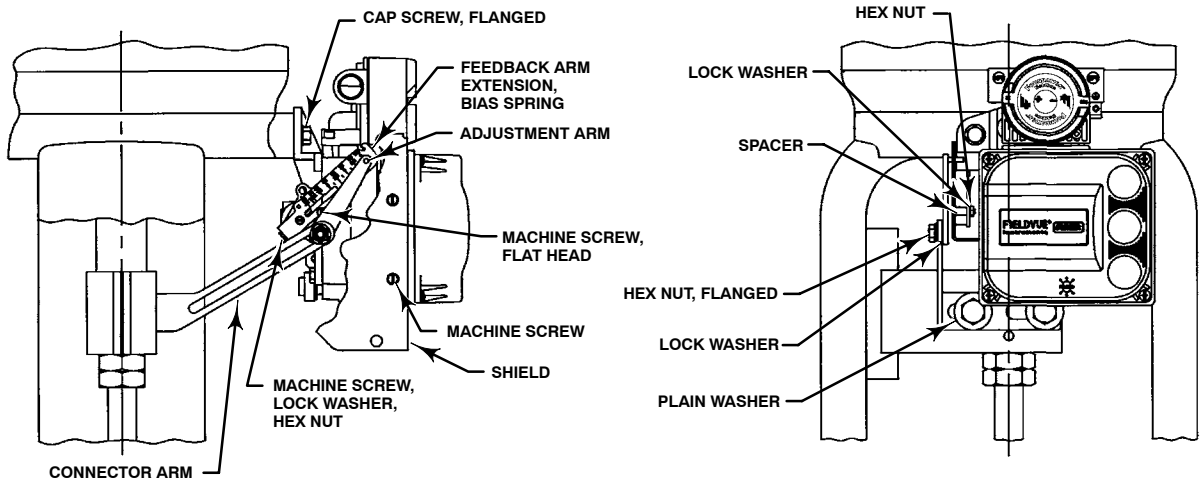


Figure 2-2. Type DVC6010f Digital Valve Controller Mounted on Sliding-Stem Actuators with 2 to 4 Inches Travel

actuator with up to 51 mm (2-inch) travel. Figure 2-2 shows a typical mounting on actuators with 51 to 102 mm (2- to 4-inch) travel. For actuators with greater than 102 mm (4-inch) travel, see the guidelines for mounting a Type DVC6020f digital valve controller.

Refer to the following guidelines when mounting on sliding-stem actuators with up to 4 inches of travel.

1. Attach the connector arm to the valve stem connector.

2. Attach the mounting bracket to the digital valve controller housing.

3. If valve travel exceeds 2 inches, a feedback arm extension is attached to the existing 2-inch feedback arm. Remove the existing bias spring from the 2-inch feedback arm. Attach the feedback arm extension to the feedback arm as shown in figure 2-2.

4. Mount the digital valve controller on the actuator as described in the mounting kit instructions.

5. Set the position of the feedback arm on the digital valve controller to the no air position by inserting the alignment pin through the hole on the feedback arm as follows:

- **For air-to-open actuators** (i.e., the actuator stem retracts into the actuator casing or cylinder as air pressure to the casing or lower cylinder increases), insert the alignment pin into the hole marked ‘‘A’’. For this style actuator, the feedback arm rotates counterclockwise, from A to B, as air pressure to the casing or lower cylinder increases.

- **For air-to-close actuators** (i.e., the actuator stem extends from the actuator casing or cylinder as air pressure to the casing or upper cylinder increases), insert the alignment pin into the hole marked ‘‘B’’. For this style actuator, the feedback arm rotates clockwise, from B to A, as air pressure to the casing or upper cylinder increases.

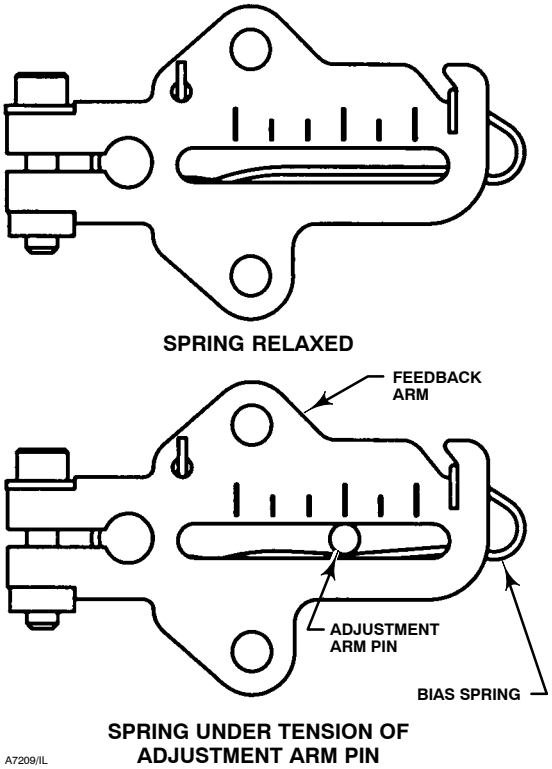
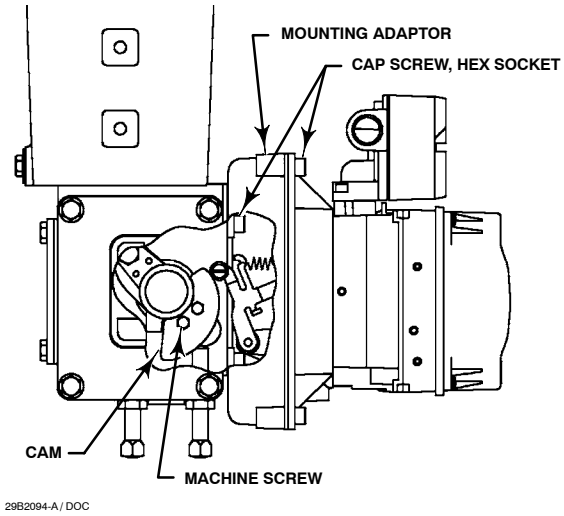
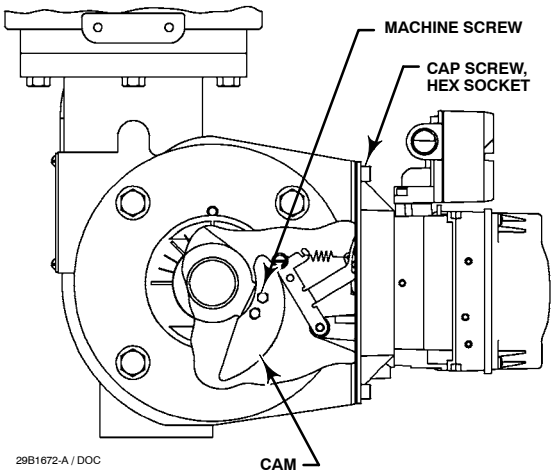


Figure 2-3. Locating Adjustment Arm Pin in Feedback Arm

6. Apply lubricant to the pin of the adjustment arm. As shown in figure 2-3, place the pin into the slot of the feedback arm or feedback arm extension so that the



TYPICAL MOUNTING WITH SHORT FEEDBACK ARM
(FISHER TYPE 1052 SIZE 33 ACTUATOR SHOWN)



TYPICAL MOUNTING WITH LONG FEEDBACK ARM
(FISHER TYPE 1061 SIZE 30–68 ACTUATOR SHOWN)

Figure 2-4. Type DVC6020f Digital Valve Controller Mounted on Rotary Actuators

bias spring loads the pin against the side of the arm with the valve travel markings.

7. Install the external lock washer on the adjustment arm. Position the adjustment arm in the slot of the connector arm and loosely install the flanged hex nut.

8. Slide the adjustment arm pin in the slot of the connector arm until the pin is in line with the desired valve travel marking. Tighten the flanged hex nut.

9. Remove the alignment pin (key 46) and store it in the module base next to the I/P assembly.

10. After calibrating the instrument, attach the shield with two machine screws.

Guidelines for Mounting Type DVC6020f on Sliding Stem and Rotary Actuators

WARNING

Refer to the Installation WARNING at the beginning of this section.

Type DVC6020f digital valve controllers use a cam and roller as the feedback mechanism. Figure 2-4 shows the Type DVC6020f mounted on rotary actuators.

Note

All cams supplied with FIELDVUE mounting kits are characterized to provide a linear response.

As shown in figure 2-4, two feedback arms are available for the digital valve controller. Installations on Fisher Type 1051 size 33 and Type 1052 size 20 and 33 actuators use the short feedback arm [54 mm (2.13 inches) from roller to pivot point]. Verify that the correct feedback arm is installed on the digital valve controller before beginning the mounting procedure.

Refer to figure 2-4 for parts locations. Refer to the following guidelines when mounting on rotary actuators:

1. If a cam is not already installed on the actuator, install the cam as described in the instructions included with the mounting kit.

2. If a mounting plate is required, fasten the mounting plate to the actuator.

3. For applications that require remote venting, a pipe-away bracket kit is available. Follow the instructions included with the kit to replace the existing mounting bracket on the digital valve controller with the pipe-away bracket and to transfer the feedback parts from the existing mounting bracket to the pipe-away bracket.

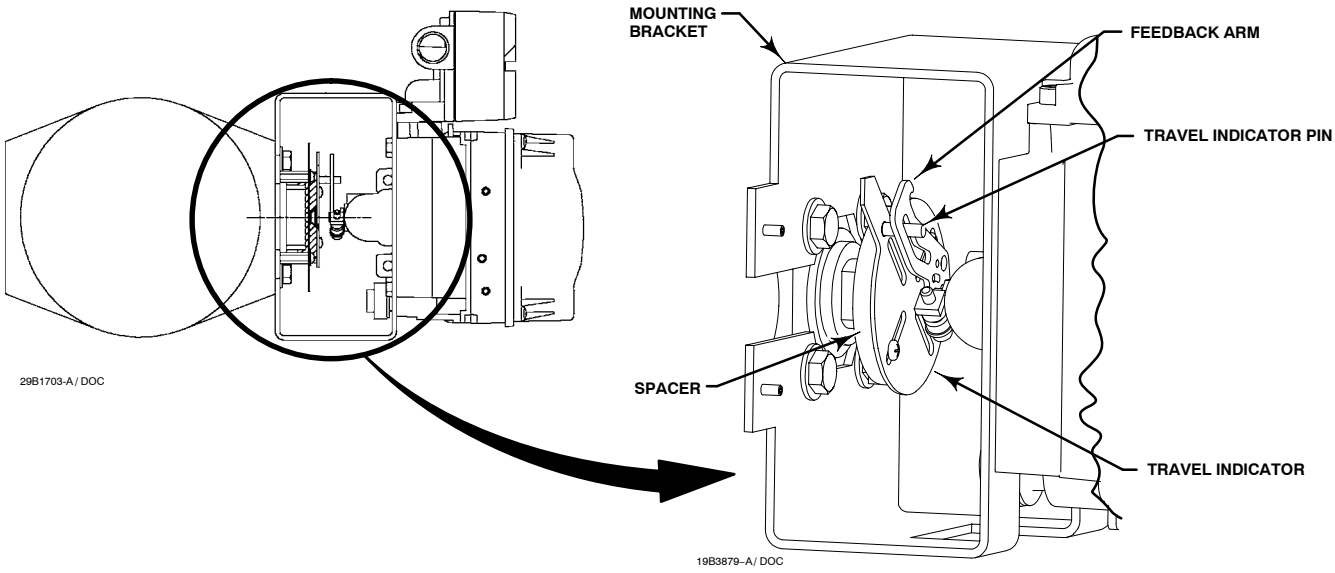


Figure 2-5. Mounting a Type DVC6030f Digital Valve Controller on a Rotary Actuator (Type 1032 Size 425A Shown)

4. Mount the Type DVC6020f on the actuator as follows:

- If required, a mounting adaptor is included in the mounting kit. Attach the adaptor to the actuator as shown in figure 2-4. Then attach the digital valve controller assembly to the adaptor. The roller on the digital valve controller feedback arm will contact the actuator cam as it is being attached.

- If no mounting adaptor is required, attach the digital valve controller assembly to the actuator or mounting plate. The roller on the digital valve controller feedback arm will contact the actuator cam as it is being attached.

Guidelines for Mounting Type DVC6030f on Quarter-Turn Actuators

WARNING

Refer to the Installation WARNING at the beginning of this section.

Figure 2-5 shows the Type DVC6030f digital valve controller mounted on a quarter-turn actuator. Refer to figure 2-5 for parts locations. Refer to the following guidelines when mounting on quarter-turn actuators:

Note

Due to NAMUR mounting limitations, do not use the heavier stainless steel Type DVC6030f in vibration service.

1. If necessary, remove the existing hub from the actuator shaft.

2. If a positioner plate is required, attach the positioner plate to the actuator as described in the mounting kit instructions.

3. If required, attach the spacer to the actuator shaft.

Refer to figures 2-6 and 2-7. The travel indicator assembly can have a starting position of 7:30 or 10:30. Determine the desired starting position then proceed with the next step. Considering the top of the digital valve controller as the 12 o'clock position, in the next step attach the travel indicator, so that the pin is positioned as follows:

- **If increasing pressure from the digital valve controller output A rotates the potentiometer shaft clockwise (as viewed from the back of the instrument)**, mount the travel indicator assembly such that the arrow is in the 10:30 position, as shown in figure 2-6.

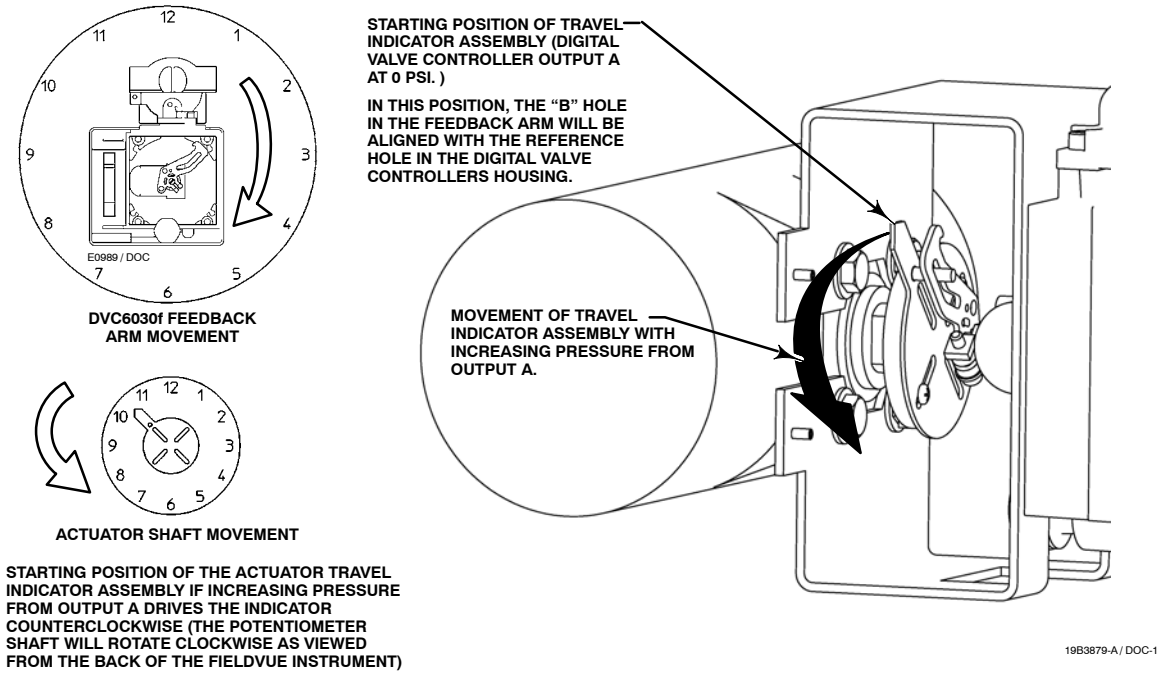


*Figure 2-6. Explanation of Travel Indicator Starting Position and Movement, if **Clockwise** Orientation is Selected for "Travel Sensor Motion" in AMS ValveLink® Software or the 375 Field Communicator*

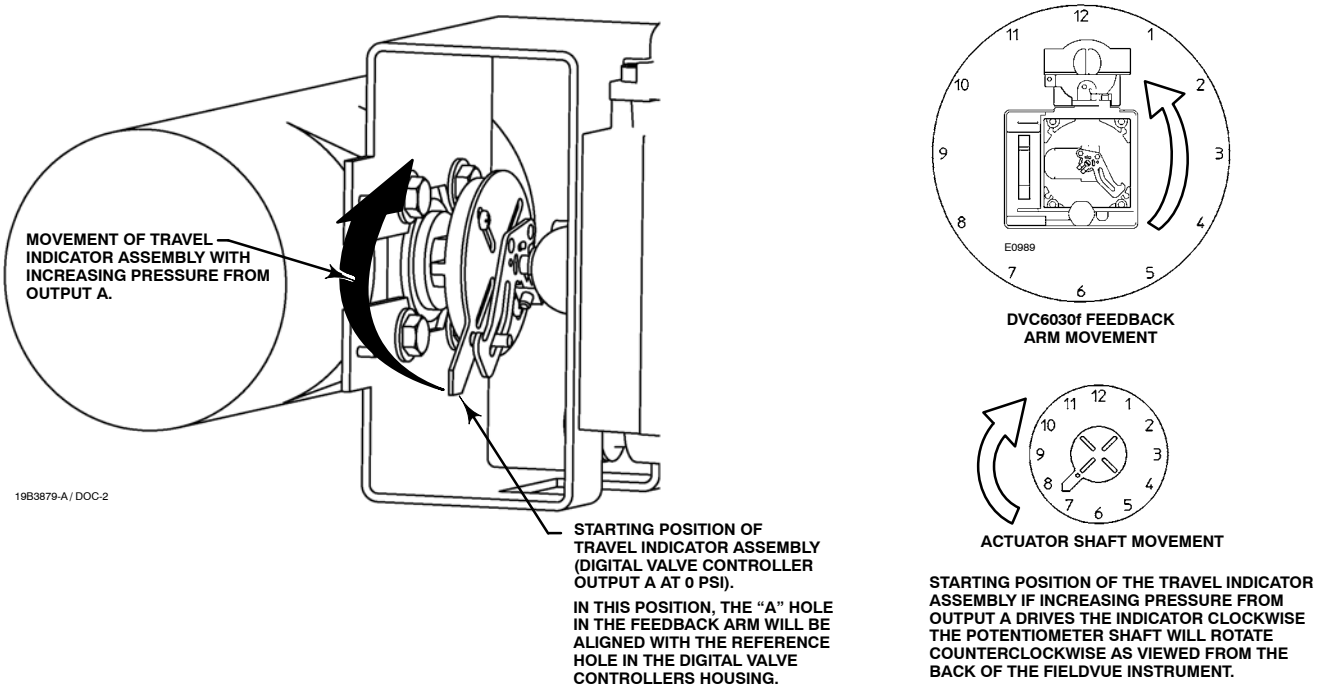


*Figure 2-7. Explanation of Travel Indicator Starting Position and Movement if **Counterclockwise** Orientation is Selected for "Travel Sensor Motion" in AMS ValveLink® Software or the 375 Field Communicator*

- **If increasing pressure from the digital valve controller output A rotates the potentiometer shaft counterclockwise (as viewed from the back of the instrument)**, mount the travel indicator assembly such that the arrow is in the 7:30 position, as shown in figure 2-7.

Note

AMS ValveLink Software and the 375 Field Communicator use the convention of clockwise (figure 2-6) and counterclockwise (figure 2-7) when viewing the potentiometer shaft from the back of the FIELDVUE instrument.

4. Attach the travel indicator, to the shaft connector or spacer as described in the mounting kit instructions.

5. Attach the mounting bracket to the digital valve controller.

6. Position the digital valve controller so that the pin on the travel indicator, engages the slot in the feedback arm and that the bias spring loads the pin as shown in figure 2-8. Attach the digital valve controller to the actuator or positioner plate.

7. If a travel indicator scale is included in the mounting kit, attach the scale as described in the mounting kit instructions.

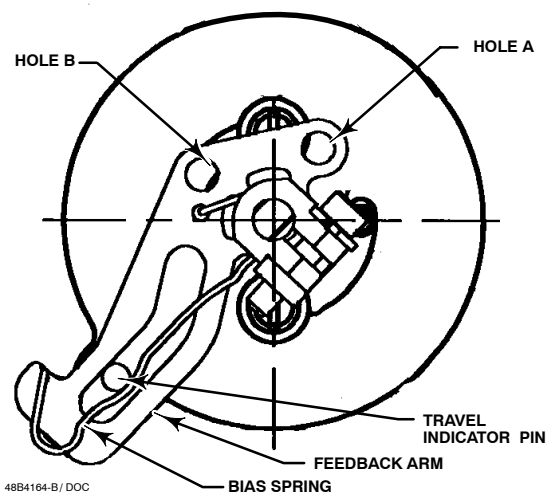


Figure 2-8. Positioning Travel Indicator Pin in the Feedback Arm (Viewed as if Looking from the Type DVC6030f toward the Actuator)

Mounting for Remote Mount Type DVC6000f Instruments

Refer to the DVC6000f Series Digital Valve Controller Instruction Manual, Form 5774.

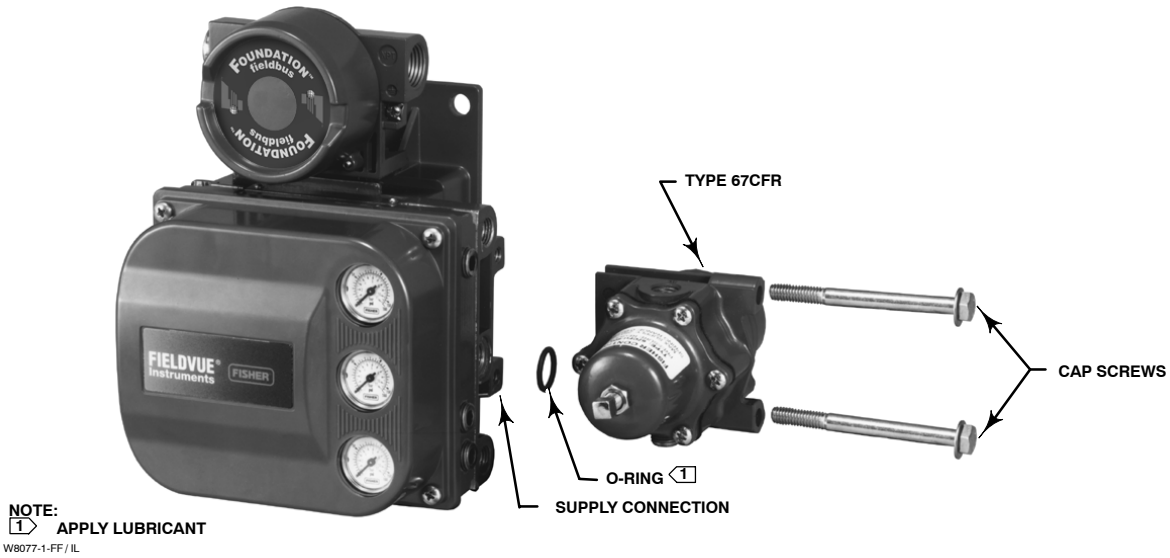


Figure 2-9. Mounting the Type 67CFR Regulator on a DVC6000f Series Digital Valve Controller

Mounting the Type 67CFR Filter Regulator

WARNING

Refer to the Installation WARNING at the beginning of this section.

A Type 67CFR filter regulator, when used with the DVC6000f Series digital valve controllers, can be mounted three ways.

Integral-Mounted Regulator

Refer to figure 2-9. Lubricate an O-ring and insert it in the recess around the SUPPLY connection on the digital valve controller. Attach the Type 67CFR filter regulator to the side of the digital valve controller. Thread a 1/4-inch socket-head pipe plug into the unused outlet on the filter regulator. This is the standard method of mounting the filter regulator.

Yoke-Mounted Regulator

Mount the filter regulator with 2 cap screws to the pre-drilled and tapped holes in the actuator yoke. Thread a 1/4-inch socket-head pipe plug into the unused outlet on the filter regulator. No O-ring is required.

Casing-Mounted Regulator

Use the separate Type 67CFR filter regulator casing mounting bracket provided with the filter regulator. Attach the mounting bracket to the Type 67CFR and then attach this assembly to the actuator casing. Thread a 1/4-inch socket-head pipe plug into the unused outlet on the filter regulator. No O-ring is required.

Pressure Connections

Pressure connections are shown in figure 2-10. All pressure connections on the digital valve controller are 1/4-inch NPT female connections. Use 10 mm (3/8-inch) tubing for all pressure connections. If remote venting is required, refer to the vent subsection.

Note

Make pressure connections to the digital valve controller using tubing with at least 10 mm (3/8-inch) diameter.

Supply Connections

WARNING

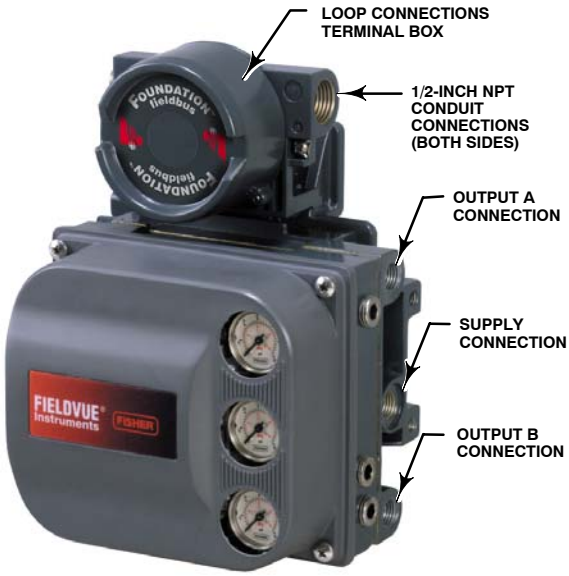
To avoid personal injury and property damage resulting from bursting of parts, do not exceed maximum supply pressure.

WARNING

Severe personal injury or property damage may occur from process instability if the instrument air supply is not clean, dry and oil-free. While use and regular maintenance of a filter that removes particles larger than 40 microns in diameter will suffice in most applications, check with a Fisher field office and Industry Instrument air quality standards for use with corrosive air or if you are unsure about the amount of air filtration or filter maintenance.

Supply pressure must be clean, dry air that meets the requirements of ISA Standard 7.0.01.

A Type 67CFR filter regulator, or equivalent, may be used to filter and regulate supply air. If you are using a Type 67CFR filter regulator, connect the supply line to the 1/4-inch NPT IN connection and attach tubing from the output connection on the filter regulator to the SUPPLY connection on the instrument. If you are using an integral mounted Type 67CFR filter regulator, connect the supply to the IN connection on the regulator.



VALVE-MOUNTED INSTRUMENT

NOTE:
PNEUMATIC CONNECTIONS APPLICABLE TO BOTH VALVE-MOUNTED INSTRUMENTS AND TYPE DVC6005f BASE UNIT.

Figure 2-10. DVC6000f Series Digital Valve Controller Connections

Output Connection

A factory mounted digital valve controller has its output piped to the supply connection on the actuator. If mounting the digital valve controller in the field connect the 1/4-inch NPT digital valve controller output connection to the pneumatic actuator input connection.

Single-Acting Actuators

When connecting a single-acting direct digital valve controller (relay type A) to a single-acting actuator, the OUTPUT B connection must be plugged. Connect OUTPUT A to the actuator diaphragm casing. The gauge for OUTPUT B is not used. It should be removed and replaced with a screened vent.

When connecting a single-acting reverse digital valve controller (relay type B) to a single-acting actuator, the OUTPUT A connection must be plugged. Connect OUTPUT B to the actuator diaphragm casing. The gauge for OUTPUT A is not used and should be replaced with a pipe plug.

Figure 2-11. Type DVC6010f Digital Valve Controller Mounted on Type 585C Piston Actuator

Double-Acting Actuators

DVC6000f Series digital valve controllers on double-acting actuators always use Relay Type A. With no instrument Fieldbus power (Zero Power Condition), OUTPUT A is at 0 pressure and OUTPUT B is at full supply pressure when the relay is properly adjusted.

To have the actuator stem retract into the cylinder with Zero Power Condition, connect OUTPUT A to the upper actuator cylinder connection. Connect OUTPUT B to the lower cylinder connection. Figure 2-11 shows the digital valve controller connected to a double-acting piston actuator.

To have the actuator stem extend from the cylinder with Zero Power Condition, connect OUTPUT A to the lower actuator cylinder connection. Connect OUTPUT B to the upper cylinder connection.

Vent

The relay output constantly bleeds a small amount of supply air into the area under the cover. The vent openings at the back of the housing should be left open to prevent pressure buildup under the cover. If a remote vent is required, the vent lines must be as short as possible with a minimum number of bends and elbows.

Fieldbus Connections

The digital valve controller is normally powered over the bus from a fieldbus power supply. Refer to the site planning guide for proper wire types, termination, length, etc. for a fieldbus loop.

Note

As shipped from the factory, DVC6000f Series digital valve controllers will not move the valve when power is applied to the instrument. To avoid the valve going to an unknown position when power is applied, the unit is shipped from the factory with the transducer block mode Out of Service. See the Basic Setup and Calibration section for information on setup and calibration and placing the instrument in service. The initial value for all blocks are shown in the parameter list for each block in the Detailed Setup / Block Section of the FIELDVUE DVC6000f Series Digital Valve Controllers Instruction Manual, Form 5774.

WARNING

To avoid personal injury resulting from electrical shock, do not exceed the maximum input voltage specified in table 4-1 of this instruction manual, or on the product nameplate. If the input voltage specified differs, do not exceed the lowest specified maximum input voltage.

WARNING

Personal injury or property damage caused by fire or explosion may occur if this connection is attempted in a potentially explosive atmosphere or in an area that has been classified as hazardous. Confirm that area classification and atmosphere conditions permit the safe removal of the terminal box cover before proceeding.

Wire the digital valve controller as follows, refer to figure 2-12:

1. Remove the terminal box cap.

2. Bring the field wiring into the terminal box. When applicable, install conduit using local and national electrical codes which apply to the application.

3. The instrument is not polarity sensitive. Connect one wire from the control system output card to one of the LOOP screw terminals on the pwb/terminal strip assembly in the terminal box shown in figure 2-12. Connect the other wire from the control system output card to the other LOOP screw terminal in the terminal box.

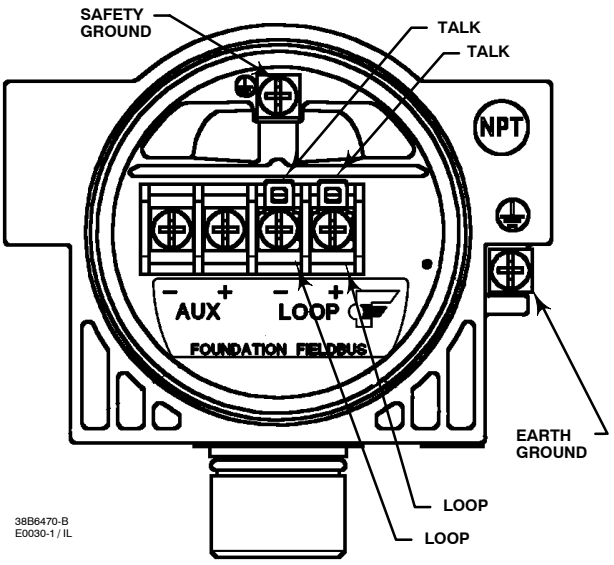


Figure 2-12. DVC6000f Series Digital Valve Controller Loop Connections Terminal Box

WARNING

Personal injury or property damage can result from the discharge of static electricity. Connect a 14 AWG (2.08 mm^2) ground strap between the digital valve controller and earth ground when flammable or hazardous gases are present. Refer to national and local codes and standards for grounding requirements.

To avoid static discharge from the plastic cover, do not rub or clean the cover with solvents. Clean with a mild detergent and water only.

4. As shown in figure 2-12, two ground terminals are available for connecting a safety ground, earth ground, or drain wire. The safety ground terminal is electrically identical to the earth ground. Make connections to these terminals following national and local codes and plant standards.

5. Replace and hand tighten the cover on the terminal box. When the loop is ready for startup, apply power to the control system output card.

Installation Check List

Mounting

- ☐ Is the instrument correctly mounted on the actuator? If not, see installation instructions provided with the mounting kit.
- ☐ Is the feedback linkage properly connected? If not, see installation instructions provided with the mounting kit.

Pneumatic Connections and Air Supply

- ☐ Is the regulator correctly mounted? If not, perform one of the regulator mounting procedures on page 2-8.
- ☐ Is the air supply connected and at proper pressure? If not, connect supply as described on page 2-9. Also see specifications on page 4-1.
- ☐ Is the instrument output connected to the actuator? If not, connect instrument output as described on page 2-9.

Fieldbus Connections

- ☐ If necessary, is the conduit properly installed? If not, refer to local and national electrical codes.
- ☐ Is the loop wiring properly connected to the LOOP terminals in the terminal box? If not, connect loop wiring as described on page 2-11.

You are ready to perform Basic Setup and Calibration in the next section.

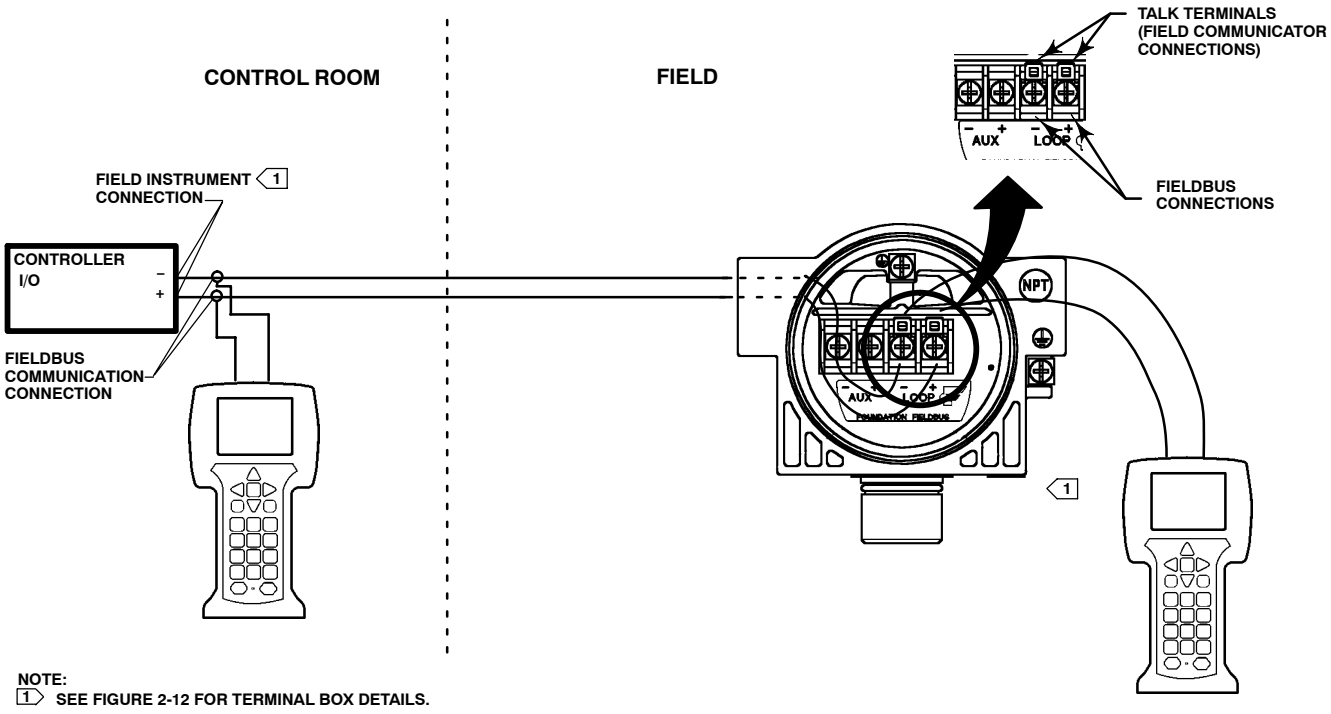


Figure 3-1. Connecting the Field Communicator to a FIELDVUE® Instrument

Connecting the Model 375 Field Communicator to the Digital Valve Controller

The Field Communicator may be connected to the Controller I/O card, or directly to the digital valve controller (see figure 3-1).

If the Field Communicator is connected directly to the digital valve controller, attach the clip-on wires provided with the Field Communicator to the TALK terminals inside the terminal box (see figure 2-12).

Basic Setup

WARNING

Changes to the instrument setup may cause changes in the output pressure or valve travel. Depending upon the application, these changes may upset process variables, which may result in personal injury or property damage.

Before beginning basic setup, be sure the instrument is correctly mounted. Refer to the installation instructions supplied with the mounting kit.

Connect the instrument to a FOUNDATION fieldbus segment. Commission the instrument as described in the host system documentation.

Connect the Field Communicator to the instrument and turn it on. For information on connecting the Field Communicator, see Connecting the Model 375 Field Communicator to the Digital Valve Controller.

Typical Actuators

Turn on the Field Communicator and start the Setup Wizard by selecting *Transducer Block, Basic Setup,* then *Setup Wizard*.

The Setup Wizard determines the required setup information based upon the actuator manufacturer and model specified and then modifies the transducer block parameters to setup the instrument. The Setup Wizard (Setup_Wizard) is included in the device description (DD) software.

Follow the prompts on the Field Communicator display to setup the instrument. If the actuator on which the instrument is mounted is not listed by the Setup Wizard, specify OTHER as the actuator manufacturer or actuator type and refer to Non-Typical Actuators.

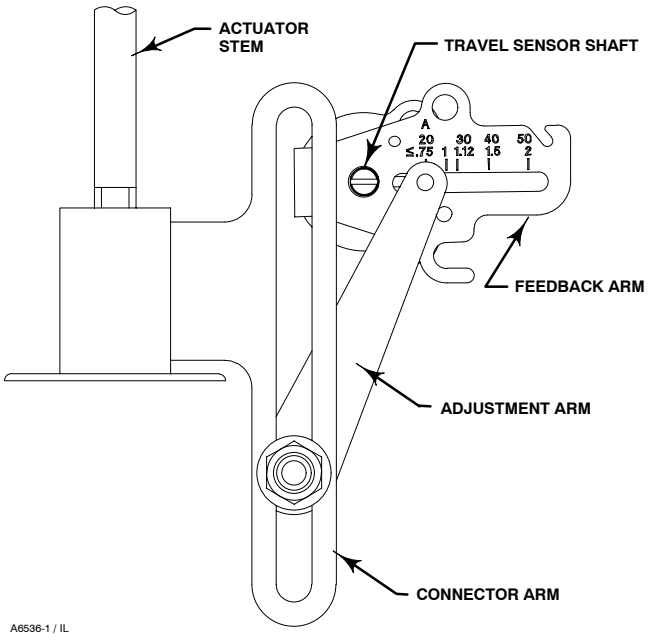


Figure 3-2. Feedback Connection for Typical Sliding-Stem Actuator (Up to 4-inch Travel)

After entering the actuator information, the Setup Wizard prompts you to automatically calibrate instrument travel. The calibration procedure uses the valve and actuator stops as the 0% and 100% calibration points. For additional information, refer to Auto Calibrate Travel in this section.

WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

Note

Relay adjustment for single acting relays is not normally required. However, it is recommended that you check the relay adjustment for double acting relays in new installations before proceeding with travel calibration. Refer to page 3-5 for relay adjustment instructions.

Non-Typical Actuators

If the actuator on which the instrument is mounted is not listed by the Setup Wizard, specify OTHER as the actuator manufacturer or actuator type. You are then prompted for setup parameters such as:

- **Actuator Style** (spring & diaphragm, piston double-acting without spring, piston double-acting with spring, piston single-acting with spring)

- **Valve Style** (rotary or sliding-stem)

- **On Loss of Instrument Signal, Valve (opens or closes)** This identifies whether the valve is fully open or fully closed when the input is 0%. If you are unsure how to set this parameter, disconnect the instrument from the segment. (With double-acting and single-acting-direct digital valve controllers, disconnecting the instrument from the segment is the same as setting the output A pressure to zero. For single-acting-reverse digital valve controllers, disconnecting the instrument from the segment is the same as setting the output B pressure to supply.)

- **Feedback Connection** (Rotary - All, SStem - Standard**,** SStem - Roller). For rotary valves, enter Rotary - All. For sliding-stem valves, if the feedback linkage consists of a connector arm, adjustment arm, and feedback arm (similar to figure 3-2), enter SStem - Standard. If the feedback linkage consists of a roller that follows a cam (similar to figure 3-3), enter SStem - Roller.

- **Travel Sensor Motion** The Setup Wizard asks if it can move the valve to determine travel sensor motion. If you answer Yes, the instrument will stroke the valve the full travel span to determine travel

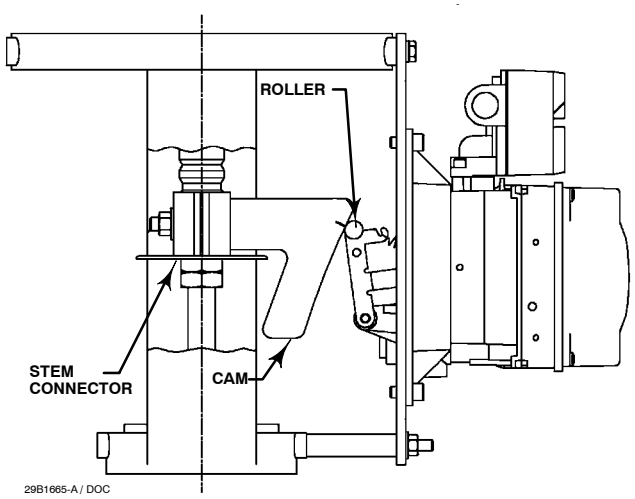


Figure 3-3. Feedback Connection for Typical Long-Stroke Sliding-Stem Actuator (4 to 24-Inches Travel)

sensor motion. If you answer No, then you must specify the rotation for increasing air pressure: clockwise or counterclockwise. Determine rotation by viewing the end of the travel sensor shaft.

WARNING

If you answer YES to the prompt for permission to move the valve, the instrument will move the valve through a significant portion of its travel range. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

For instruments with Relay Type A. If increasing air pressure at output A causes the shaft to turn clockwise, enter Clockwise. If increasing air pressure causes the shaft to turn counterclockwise, enter Cntrclockwise.

For instruments with Relay Type B. If decreasing air pressure at output B causes the shaft to turn clockwise, enter Clockwise. If decreasing air pressure causes the shaft to turn counterclockwise, enter Cntrclockwise.

Note

Relay adjustment may be required before the Setup Wizard can determine travel sensor motion. Follow the prompts on the Field Communicator display if relay adjustment is necessary.

3

WARNING

Changes to the tuning set may cause the valve/actuator assembly to stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

- **Tuning Set** There are twelve tuning sets from which to choose. Each tuning set provides preselected values for the digital valve controller gain and rate settings. Typically, tuning set C provides the slowest response and M provides the fastest response. For smaller actuators, use lower tuning sets (such as C or D). For larger actuators, use higher tuning sets (such as F or G).

In addition, you can specify Expert tuning and individually set the proportional gain, velocity gain, and minor loop feedback gain.

The tuning sets suggested by the Setup Wizard are only recommended starting points. After you finish setting up and calibrating the instrument use Stabilize/Optimize Tuning to obtain optimum tuning.

Factory Defaults

During basic setup, the Setup Wizard will ask you if you want to use factory defaults. If you select YES, the Setup Wizard sets the setup parameters to the values listed in table 3-1. (Yes is recommended for initial setup). If you select NO, the setup parameters listed in the table remain at their previous settings.

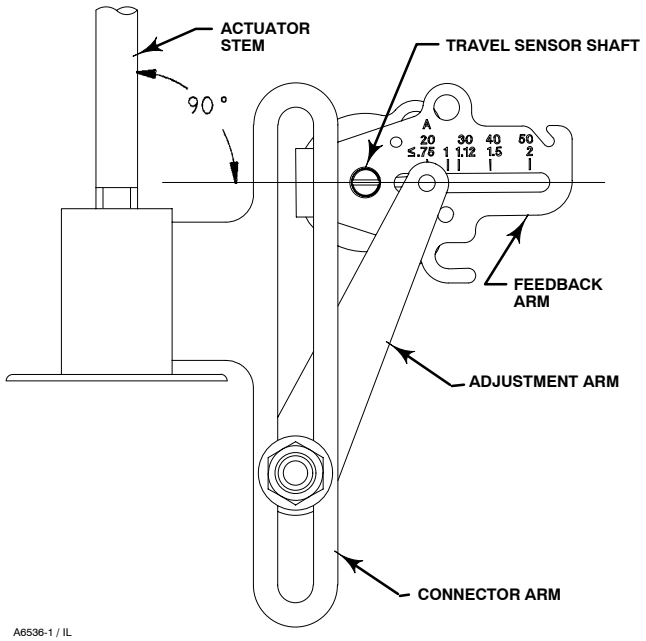


Figure 3-4. Crossover Point

Table 3-1. DVC6000f Series Factory Default Settings

SETUP PARAMETER	DEFAULT SETTING
Tvl Cutoff Hi	99.5%
Tvl Cutoff Lo	0.5%
Tvl Integral Gain	9.4 repeats/min
Tvl Cal Trigger	No
Tvl Integ Enable	On
Tvl Integ Lim Hi	30%
Tvl Integ Lim Lo	−30%
Tvl Integ DeadZ	0.25%
Press Cutoff Hi	99.5%
Press Cutoff Lo	−0.5%
Press Integ DeadZ	0.25%
Press Integ Hi Lim	20.0%
Press Integ Lo Lim	−20.0%
Input Char	Linear
Shutdown Trigger	All Off
Shutdown Recovery	All Off
Output Blk Timeout	600 sec

Auto Calibrate Travel

After entering the actuator information, the Setup Wizard prompts you to calibrate the instrument travel. Follow the prompts on the Field Communicator display to automatically calibrate instrument travel. The calibration procedure uses the valve and actuator stops as the 0% and 100% calibration points.

WARNING

During calibration the valve will move full stroke. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

To automatically calibrate travel, from the *Transducer Block* menu select *Basic Setup,* then *Auto Tvl Calib.* Follow the prompts on the Field Communicator display to automatically calibrate travel.

1. If the Feedback Connection is Sliding-Stem Standard, the Field Communicator prompts you to select the method of crossover adjustment: manual, last value, or default. Manual adjustment is recommended for initial travel calibration.

When prompted by the Field Communicator, make the crossover adjustment by adjusting the current source until the feedback arm is 90° to the actuator stem, as shown in figure 3-4.

2. The remainder of the auto-calibration procedure is automatic. It is completed when the *Calibrate* menu appears. Place the Transducer Block Mode in Auto and verify that the travel properly tracks the setpoint changes.

If after completing setup and calibration the valve cycles or overshoots (unstable), or is unresponsive (sluggish), you can improve operation by selecting *Stabilize/Optimize* from the *Basic Setup* menu.

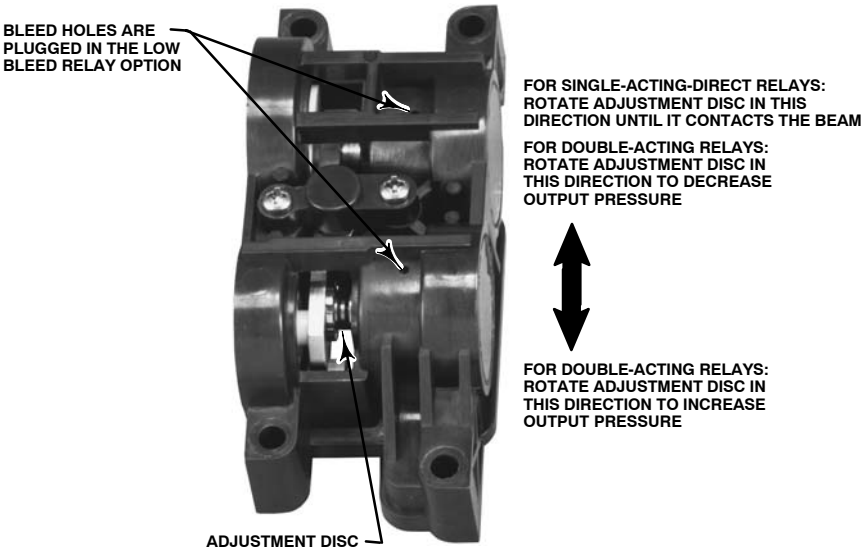


Figure 3-5. Location of Relay Adjustment (Shroud Removed for Clarity)

Stabilizing or Optimizing Valve Response

If after completing setup and calibration the valve seems slightly unstable or unresponsive, you can improve operation by stabilizing or optimizing the valve response. From the *Transducer Block* menu select *Basic Setup,* then *Stabilize/Optimize.*

WARNING

During Stabilize/Optimize the valve may move. To avoid personal injury and property damage caused by the release of pressure or process fluid, provide some temporary means of control for the process.

Stabilize/Optimize permits you to adjust valve response by changing the digital valve controller tuning.

If the valve is unstable, select *Decrease Response* to stabilize valve operation. This selects the next lower tuning set (e.g., F to E). If the valve response is sluggish, select *Increase Response* to make the valve more responsive. This selects the next higher tuning set (e.g., F to G).

If after selecting *Decrease Response* or *Increase Response* the valve travel overshoot is excessive, *Increase Damping* or *Decrease Damping* can be used to select a damping value which is not represented in a predefined tuning set. Select *Decrease Damping* to select a damping value that allows more overshoot.

Select *Increase Damping* to select a damping value that will decrease the overshoot.

When valve operation is satisfactory, select Exit. Before exiting, you are asked if you want to return the transducer block mode to Auto. Select Yes to change the transducer block mode to Auto. Select No to leave the transducer block in its current mode.

Relay Adjustment

To check relay adjustment, from the *Transducer Block* menu select *Calibrate,* then *Relay Adjust*. Follow the prompts on the Field Communicator display. Replace the digital valve controller cover when finished.

Single-Acting Actuators

For single-acting-direct digital valve controllers, make sure the adjustment disc is against the beam, as shown in figure 3-5. For single-acting-reverse digital valve controllers, the relay is adjusted at the factory, no further adjustment is necessary.

Double-Acting Actuators

For double-acting actuators, rotate the adjustment disc, shown in figure 3-5, until the value displayed on the Field Communicator is between 50 and 70% of supply pressure.

If the the low bleed relay option has been ordered, stabilization may take approximately two minutes longer than the standard relay.

Basic Setup and Calibration Check List

- ☐ Is basic setup complete? If not, perform Basic Setup procedure on page 3-1.
- ☐ Is calibration complete? If not, perform Auto Calibrate Travel procedure on page 3-4.
- ☐ Does the final control element correctly respond to a setpoint change and is it stable? If not, perform Stabilizing or Optimizing Valve Response on page 3-5.

Final control element is ready to be placed on line.

Table 4-1. Specifications

Available Configurations

Type DVC6010f: Sliding stem applications
Type DVC6020f: Rotary and long-stroke sliding-stem applications [over 102 mm (4-inch) travel]
Type DVC6030f: Quarter-turn rotary applications

Remote-Mounted Instrument(1)

DVC6005f: Base unit for 2-inch pipestand or wall mounting
DVC6015: Feedback unit for sliding-stem applications
DVC6025: Feedback unit for rotary or long-stroke sliding-stem applications
DVC6035: Feedback unit for quarter-turn rotary applications

DVC6000f Series digital valve controllers can be mounted on Fisher and other manufacturers rotary and sliding-stem actuators.

Function Block Suites

■ Standard Control (throttling control)
Includes AO, PID, ISEL, OS, AI, MAI, DO, and four DI function block
■ Fieldbus Control (throttling control)
Contains the AO function block
■ Fieldbus Logic [discrete (on/off) connectivity]
Includes DO, and four DI function blocks

Block Execution Times

AO Block: 25 ms	*AI Block:* 25 ms
PID Block: 30 ms	*MAI BLock:* 40 ms
ISEL Block: 25 ms	*DO Block:* 25 ms
OS Block: 25 ms	*DI Block:* 20 ms

Electrical Input

Voltage Level: 9 to 32 volts
Maximum Current: 18 mA
Reverse Polarity Protection: Unit is not polarity sensitive
Termination: Bus must be properly terminated per ISA SP50 guidelines

Digital Communication Protocol

FOUNDATION fieldbus registered device

Physical Layer Type(s):

121—Low−power signaling, bus-powered, Entity Model I.S.

511—Low−power signaling, bus-powered, FISCO I.S.

Output Signal(2)

Pneumatic signal as required by the actuator, up to full supply pressure.
Minimum Span: 0.4 bar (6 psig)
Maximum Span: 9.5 bar (140 psig)
Action: Double, Single direct, and Single reverse

Supply Pressure(2,6)

Recommended: 0.3 bar (5 psi) higher than maximum actuator requirements, up to maximum supply pressure
Maximum: 10 bar (145 psig) or maximum pressure rating of the actuator, whichever is lower

Steady-State Air Consumption(2,3,4)

Standard Relay: *At 1.4 bar (20 psig) supply pressure:* Less than 0.38 normal m^3/hr (14 scfh)
At 5.5 bar (80 psig) supply pressure: Less than 1.3 normal m^3/hr (49 scfh)

Low Bleed Relay: *At 1.4 bar (20 psig) supply pressure:* Average value 0.056 normal m^3/hr (2.1 scfh)
At 5.5 bar (80 psig) supply pressure: Average value 0.184 normal m^3/hr (6.9 scfh)

Maximum Output Capacity(3,4)

At 1.4 bar (20 psig) supply pressure:
10.0 normal m^3/hr (375 scfh)
At 5.5 bar (80 psig) supply pressure:
29.5 normal m^3/hr (1100 scfh)

Independent Linearity(2,5)

±0.5% of output span

Failure Modes

Refer to figure 4-1.

Electromagnetic Interference (EMI)

Tested per IEC 61326-1 (Edition 1.1). Meets emission levels for Class A equipment (industrial locations) and Class B equipment (domestic locations). Meets immunity requirements for industrial locations (Table A.1 in the IEC specification document). Immunity performance is shown in table 4-2.

−continued−

Table 4-1. Specifications (continued)

Operating Ambient Temperature Limits(6)

−40 to 80°C (−40 to 176°F) for most approved valve-mounted instruments.
−40 to 125°C (−40 to 257°F) for remote-mounted feedback unit.
−52 to 80°C (−62 to 176°F) for valve-mounted instruments utilizing the Extreme Temperature option (fluorosilicone elastomers)

Electrical Classification

Hazardous Area:

Explosion proof, Division 2, Dust-Ignition proof, Intrinsic Safety, and FISCO

Explosion proof, Non-incendive, Dust-Ignition proof, Intrinsic Safety, and FISCO

ATEX — Flameproof, Type n, Intrinsic Safety, and FISCO

IECEx — Flameproof, Type n, Intrinsic Safety, and FISCO

Refer to Special Instructions for Safe-Use and Installation in Hazardous Locations in section 2, tables 4-3 and 4-4, and figures 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7 and 5-8 for specific approval information.

Electrical Housing: NEMA 4X, CSA Type 4X, IEC 60529 IP66

Connections

Supply Pressure: 1/4-inch NPT female and integral pad for mounting 67CFR regulator
Output Pressure: 1/4-inch NPT female
Tubing: 3/8-inch metal, recommended
Vent: 3/8-inch NPT female
Electrical: 1/2-inch NPT female, M20 adapter optional

Stem Travel

DVC6010f, DVC6015: 0 to 102 mm (4-inches) maximum

0 to 9.5 mm (0.375 inches) minimum
DVC6020f, DVC6025: 0 to 606 mm (23.875 inches) maximum

Shaft Rotation (DVC6020f, DVC6025, DVC6030f and DVC6035)

0 to 50 degrees minimum
0 to 90 degrees maximum

Mounting

Designed for direct actuator mounting or remote pipestand or wall mounting. Mounting the instrument vertically, with the vent at the bottom of the assembly, or horizontally, with the vent pointing down, is recommended to allow drainage of moisture that may be introduced via the instrument air supply.

Weight

Valve-Mounted Instruments
Aluminum: 3.5 Kg (7.7 lbs)
Stainless Steel: 7.7 Kg (17 lbs)

Remote-Mounted Instruments
DVC6005f Base Unit: 4.1 Kg (9 lbs)
DVC6015 Feedback Unit: 1.3 Kg (2.9 lbs)
DVC6025 Feedback Unit: 1.4 Kg (3.1 lbs)
DVC6035 Feedback Unit: 0.9 Kg (2.0 lbs)

Options

■ Supply and output pressure gauges or ■ Tire valves, ■ Integral mounted filter regulator, ■ Stainless steel housing, module base and terminal box (valve-mounted instruments only)

Declaration of SEP

Fisher Controls International LLC declares this product to be in compliance with Article 3 paragraph 3 of the Pressure Equipment Directive (PED) 97 / 23 / EC. It was designed and manufactured in accordance with Sound Engineering Practice (SEP) and cannot bear the CE marking related to PED compliance.

However, the product *may* bear the CE marking to indicate compliance with *other* applicable EC Directives.

1. 3-conductor shielded cable, 22 AWG minimum wire size, is recommended for connection between base unit and feedback unit. Pneumatic tubing between base unit output connection and actuator has been tested to 15 meters (50 feet) maximum without performance degradation.
2. Defined in ISA Standard S51.1.
3. Normal m^3/hour – Normal cubic meters per hour at 0°C and 1.01325 bar, absolute. Scfh – Standard cubic feet per hour at 60°F and 14.7 psia
4. Values at 1.4 bar (20 psig) based on a single-acting direct relay; values at 5.5 bar (80 psig) based on double-acting relay.
5. Not applicable for travels less than 19 mm (0.75 inch) or for shaft rotation less than 60 degrees. Also, not applicable to Type DVC6020f digital valve controllers in long-stroke applications.
6. The pressure/temperature limits in this document and any applicable code or standard should not be exceeded.

Table 4-2. Immunity Performance

Port	Phenomenon	Basic Standard	Performance Criteria(1)
Enclosure	Electrostatic discharge (ESD)	IEC 61000-4-2	A
	Radiated EM field	IEC 61000-4-3	A
	Rated power frequency magnetic field	IEC 61000-4-8	A
I/O signal/control	Burst	IEC 61000-4-4	A
	Surge	IEC 61000-4-5	A
	Conducted RF	IEC 61000-4-6	A

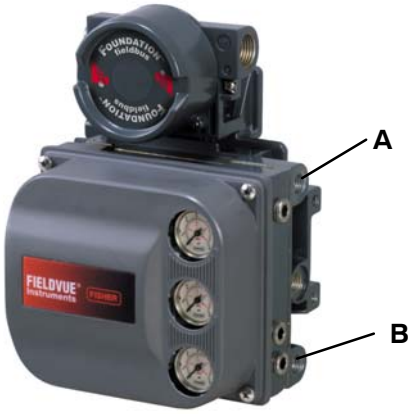
1. A = No degradation during testing. B = Temporary degradation during testing, but is self-recovering.

Table 4-3. Hazardous Area Classifications for North America

CERTIFICATION BODY	CERTIFICATION OBTAINED	ENTITY RATING	TEMPERATURE CODE	ENCLOSURE RATING
CSA	(Intrinsic Safety) Class/Division •Class I,II,III Division 1 GP A,B,C,D,E,F,G per drawing GE04331 (including FISCO)	FIELDBUS V_{max} = 30 Vdc I_{max} = 226 mA C_i = 5 nF L_i = 0 mH FISCO V_{max} = 17.5 Vdc I_{max} = 380 mA Pi = 5.32 W Ci = 5 nF Li = 0 mH	T5($T_{amb} \leq 80°C$)	4X
	(Explosion Proof) Class/Division •Class I, Division 1 GP B,C,D	– – –	T6($T_{amb} \leq 80°C$)	4X
	Class I Division 2 GP A,B,C,D Class II Division 1 GP E,F,G Class III	– – –	T6($T_{amb} \leq 80°C$)	4X
FM	(Intrinsic Safety) Class/Division •Class I,II,III Division 1 GP A,B,C,D,E,F,G per drawing GE04332 (including FISCO)	FIELDBUS V_{max} = 24 Vdc I_{max} = 226 mA P_i = 1.4 W C_i = 5 nF L_i = 0 mH FISCO V_{max} = 17.5 Vdc I_{max} = 380 mA P_i = 5.32 W C_i = 5 nF L_i = 0 mH	T5($T_{amb} \leq 80°C$)	4X
	(Explosion Proof) Class/Division •Class I, Division 1 GP B,C,D	– – –	T6($_{amb} \leq 80°C$)	4X
	Class I Division 2 GP A,B,C,D Class II Division 1 GP E,F,G Class II Division 2 GP F,G Class III	– – –	T6($T_{amb} \leq 80°C$)	4X

Table 4-4. Hazardous Area Classifications for Europe and Asia-Pacific

CERTIFICATE	CERTIFICATION OBTAINED	ENTITY RATING	TEMPERATURE CODE	ENCLOSURE RATING
ATEX	⟨Ex⟩ II 1 G D Gas •EEx ia IIC T5/T6 —Intrinsic Safety Dust •T85C (T_{amb} < 80°C)	FIELDBUS U_i = 24 Vdc I_i = 226 mA P_i = 1.4 W C_i = 5 nF L_i = 0 mH FISCO U_i = 17.5 Vdc I_i = 380 mA Pi = 5.32 W Ci = 5 nF Li = 0 mH	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66
	⟨Ex⟩ II 2 G D Gas •EEx d IIB+H2 T5/T6 —Flameproof Dust •T90C (T_{amb} < 85°C)	– – –	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66
	⟨Ex⟩ II 3 G D Gas EEx nCL IIC T5/T6 —Type n Dust •T85C (T_{amb} < 80°C)	– – –	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66
IECEx	Gas •Ex ia IIC T5/T6 —Intrinsic Safety	FIELDBUS U_i = 24 Vdc I_i = 226 mA P_i = 1.4 W C_i = 5 nF L_i = 0 mH FISCO U_i= 17.5 Vdc I_i = 380 mA Pi = 5.32 W Ci = 5 nF Li = 0 mH	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66
	Gas •Ex d IIB+H2 T5/T6 —Flameproof	– – –	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66
	Gas •Ex nC IIC T5/T6 —Type n	– – –	T5(T_{amb} ≤ 80°C) T6 (T_{amb} ≤ 75°C)	IP66



	LOSS OF POWER	LOSS OF PNEUMATIC SUPPLY
Single Acting Direct (Relay A)	Instrument goes to zero air output at port A.	Failure direction per actuator fail mode.
Double Acting (Relay A)	Instrument goes to full supply air output at port B. A goes to zero air output.	Failure direction cannot be determined.
Single Acting Reverse (Relay B)	Instrument goes to full supply air output at port B.	Failure direction per actuator fail mode.

Figure 4-1. DVC6000f Digital Valve Controller Failure Modes

Related Information

Fieldbus Installation and Wiring Guidelines

This manual describes how to connect the fieldbus to the digital valve controller. For a technical description, planning, and installation information for FOUNDATION fieldbus, refer to the FOUNDATION Fieldbus Technical Overview available from the Fieldbus FOUNDATION and Fieldbus Installations in a DeltaV System available from your Emerson Process Management sales office.

Other Related Information

Other documents containing information related to the DVC6000f Series digital valve controllers include:

- FIELDVUE® DVC6000f Series Digital Valve Controller (Bulletin 62.1:DVC6000f)
- FIELDVUE® DVC6000f Series Digital Valve Controllers Instruction Manual - Form 5774
- AMS ValveLink® Software Help or Documentation
- DeltaV™ Help or Documentation
- www.fieldvue.com

Educational Services

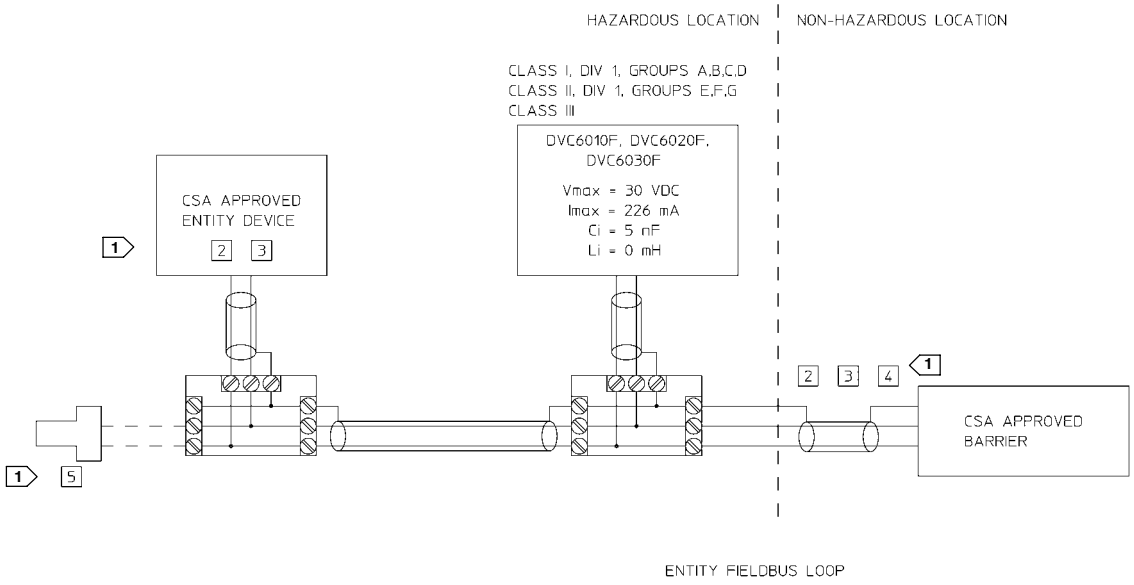
For information on available courses for the DVC6000f Series digital valve controller, as well as a variety of other products, contact:

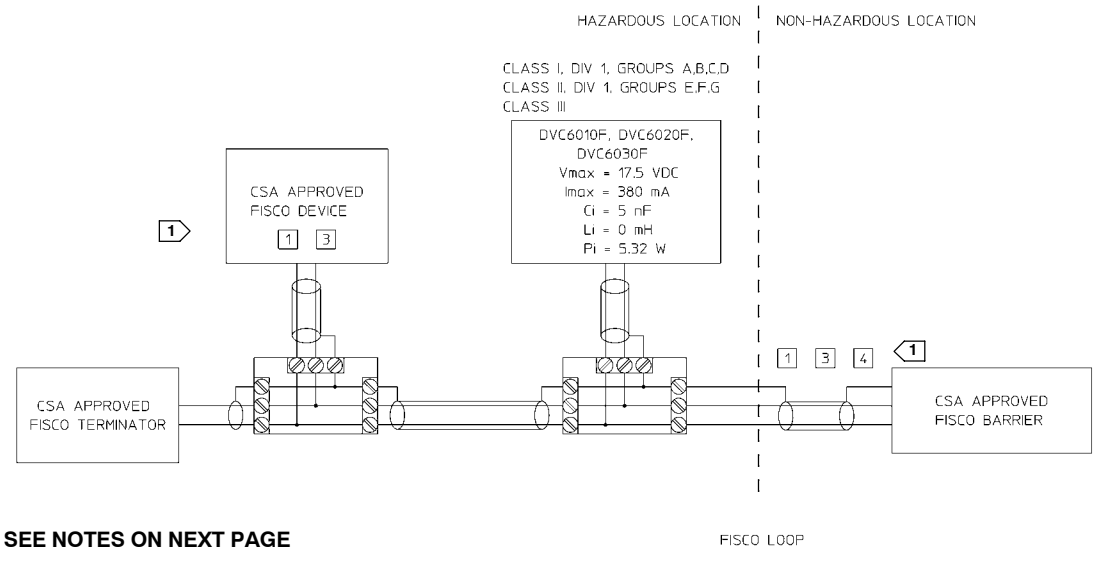
Emerson Process Management
Educational Services, Registration
P.O. Box 190; 301 S. 1st Ave.
Marshalltown, IA 50158–2823
Phone: 800–338–8158 or
Phone: 641–754–3771
FAX: 641–754–3431
e-mail: education@emersonprocess.com

Note

Neither Emerson, Emerson Process Management, Fisher nor any of their affiliated entities assumes responsibility for the selection, use, and maintenance of any product. Responsibility for the selection, use, and maintenance of any product remains with the purchaser and end-user.

This section includes loop schematics required for wiring of intrinsically safe installations. It also includes the approvals nameplates. If you have any questions, contact your Emerson Process Management sales office.





1 **SEE NOTES ON NEXT PAGE**

GE04331-A
SHEETS 1 and 2

Figure 5-1. CSA Schematics for Type DVC6000f Series

NOTES

1 THE FISCO CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR THE INTERCONNECTION IS THAT THE VOLTAGE (Vmax), CURRENT (Imax), AND POWER (Pi), WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (Voc), CURRENT (Isc), AND POWER (Po) LEVELS WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS. CONSIDERING FAULTS AND APPLICABLE FACTORS, IN ADDITION THE MAXIMUM UNPROTECTED CAPACITANCE (Ci) AND INDUCTANCE (Li) OF EACH APPARATUS (OTHER THAN THE TERMINATION) CONNECTED TO THE FIELDBUS MUST BE LESS THAN OR EQUAL TO 5 nF AND 10 uH RESPECTIVELY.

IN EACH SEGMENT ONLY ONE ACTIVE DEVICE, NORMALLY THE ASSOCIATED APPARATUS, IS ALLOWED TO PROVIDE THE NECESSARY ENERGY FOR THE FIELDBUS SYSTEM. THE VOLTAGE (Uo OR Voc OR Vt) OF THE ASSOCIATED APPARATUS HAS TO BE LIMITED TO THE RANGE OF 9 V TO 17.5 VDC. ALL OTHER EQUIPMENT CONNECTED TO THE BUS CABLE HAS TO BE PASSIVE, MEANING THAT THEY ARE NOT ALLOWED TO PROVIDE ENERGY TO THE SYSTEM, EXCEPT FOR A LEAKAGE CURRENT OF 50 uA FOR EACH CONNECTED DEVICE. SEPARATELY POWERED EQUIPMENT NEEDS A GALVANIC ISOLATION TO ASSURE THAT THE INTRINSICALLY SAFE FIELDBUS CIRCUIT REMAINS PASSIVE.

THE CABLE USED TO CONNECT THE DEVICES NEEDS TO HAVE THE PARAMETERS IN THE FOLLOWING RANGE:

LOOP RESISTANCE R':	15 TO 150 ohms/km
INDUCTANCE PER UNIT LENGTH L:	0.4 TO 1 mH/km
CAPACITANCE PER UNIT LENGTH C':	80 TO 200 nF/km
C' = C' LINE/LINE + 0.5' LINE/SCREEN, IF BOTH LINES ARE FLOATING OR	
C' = C' LINE/LINE + C' LINE/SCREEN, IF THE SCREEN IS CONNECTED TO ONE LINE.	
LENGTH OF SPLICE:	<1 m (T-BOX MUST ONLY CONTAIN TERMINAL CONNECTIONS WITH NO ENERGY STORAGE CAPABILITY)
LENGTH OF SPUR CABLE:	<30 m
LENGTH OF TRUNK CABLE:	<1 km

AT EACH END OF THE TRUNK CABLE AN APPROVED INFALLIBLE TERMINATION WITH THE FOLLOWING PARAMETERS IS SUITABLE: R= 90 TO 100 ohms AND C = 0 TO 2.2 uF
NOTE, A BUILT-IN TERMINATOR IS INCLUDED ON THE FIELD SIDE AND A SELECTABLE TERMINATOR IS AVAILABLE ON THE HOST SIDE.

THE NUMBER OF PASSIVE DEVICES CONNECTED TO THE BUS SEGMENT IS NOT LIMITED IN THE FISCO CONCEPT FOR INTRINSICALLY SAFE REASONS. IF THE ABOVE RULES ARE RESPECTED, UP TO A TOTAL LENGTH OF 1000 m (SUM OF THE LENGTH OF THE TRUNK CABLE AND ALL SPUR CABLES), THE INDUCTANCE AND CAPACITANCE OF THE CABLE WILL NOT IMPAIR THE INTRINSIC SAFETY OF THE INSTALLATION.

2 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS, NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE (Vmax) AND THE CURRENT (Imax) OF THE INTRINSICALLY SAFE APPARATUS MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (Voc) AND CURRENT (Isc) DEFINED BY THE ASSOCIATED APPARATUS. IN ADDITION, THE SUM OF THE MAXIMUM UNPROTECTED CAPACITANCE (Ci) AND INDUCTANCE (Li) OF EACH INTRINSICALLY SAFE APPARATUS, AND THE INTERCONNECTING WIRING, MUST BE LESS THAN THE ALLOWABLE CAPACITANCE (Ca) AND INDUCTANCE (La) DEFINED BY THE ASSOCIATED APPARATUS. IF THESE CRITERIA ARE MET, THEN THE COMBINATION MAY BE CONNECTED.

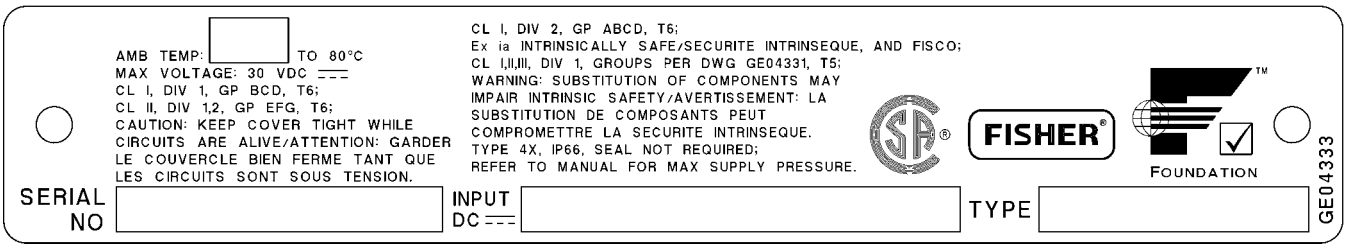
3 INSTALLATION MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE (CEC) PART 1 AND ANSI/ISA RP12.6.

4 LOOPS MUST BE CONNECTED ACCORDING TO THE BARRIER MANUFACTURER'S INSTRUCTIONS.

5 IF HAND-HELD COMMUNICATOR OR MULTIPLEXER IS USED, IT MUST BE CSA APPROVED WITH ENTITY PARAMETERS AND INSTALLED PER THE MANUFACTURER'S CONTROL DRAWING.

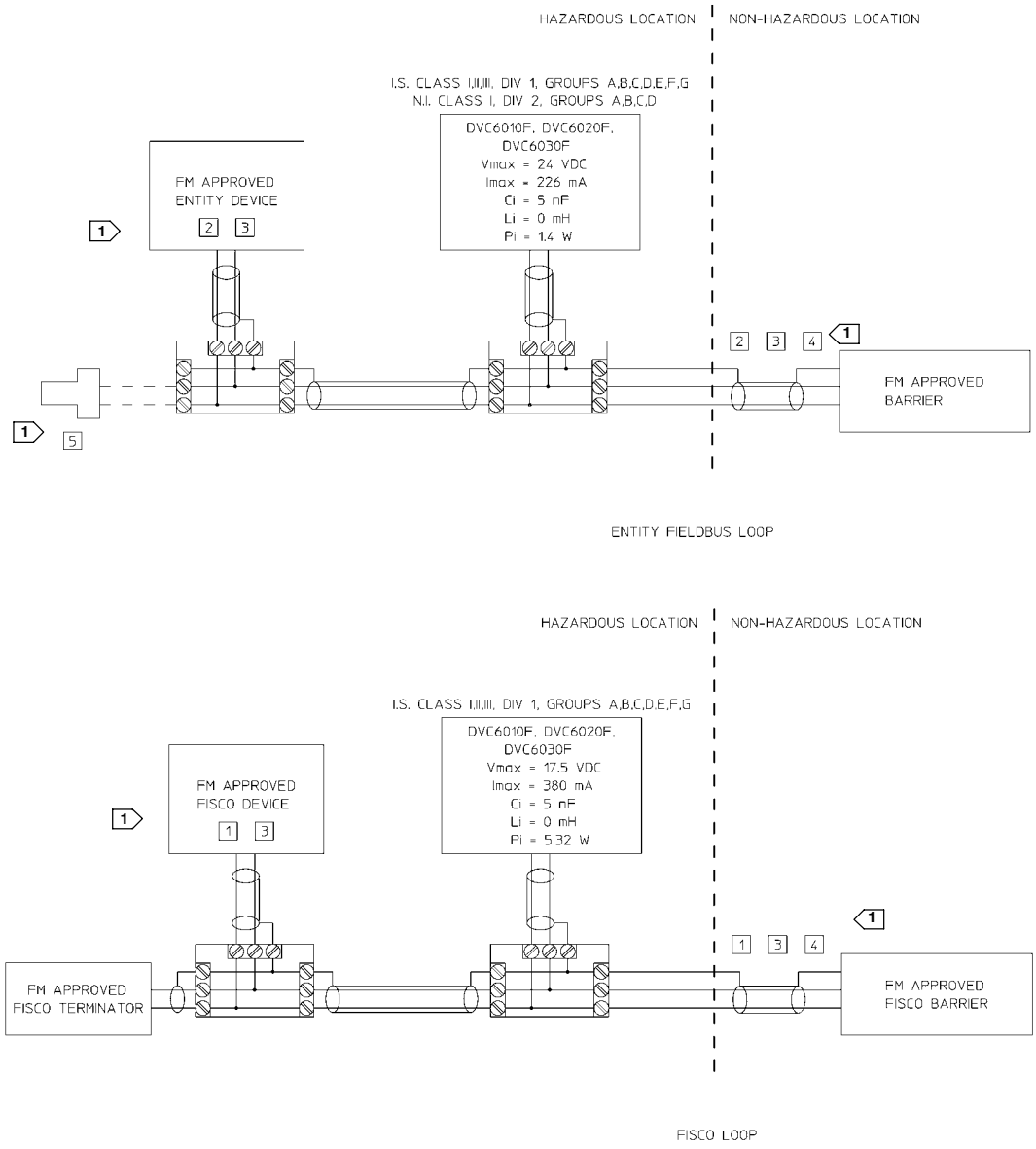
GE04331-A
SHEET 3

Figure 5-1. CSA Schematics for Type DVC6000f Series (continued)



TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-2. CSA Nameplate



1 SEE NOTES ON NEXT PAGE

GE04332-B
SHEETS 1 and 2

Figure 5-3. FM Schematics for Type DVC6000f Series

NOTES

1 THE FISCO CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR THE INTERCONNECTION IS THAT THE VOLTAGE (Vmax), CURRENT (Imax), AND POWER (Pi), WHICH INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, CONSIDERING FAULTS, MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (Voc), CURRENT (Isc), AND POWER (Po) LEVELS WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. IN ADDITION THE MAXIMUM UNPROTECTED CAPACITANCE (Ci) AND INDUCTANCE (Li) OF EACH APPARATUS (OTHER THAN THE TERMINATION) CONNECTED TO THE FIELDBUS MUST BE LESS THAN OR EQUAL TO 5 nF AND 10 uH RESPECTIVELY.

IN EACH SEGMENT ONLY ONE ACTIVE DEVICE, NORMALLY THE ASSOCIATED APPARATUS, IS ALLOWED TO PROVIDE THE NECESSARY ENERGY FOR THE FIELDBUS SYSTEM. THE VOLTAGE (Uo OR Voc OR Vt) OF THE ASSOCIATED APPARATUS HAS TO BE LIMITED TO THE RANGE OF 9 V TO 17.5 VDC. ALL OTHER EQUIPMENT CONNECTED TO THE BUS CABLE HAS TO BE PASSIVE, MEANING THAT THEY ARE NOT ALLOWED TO PROVIDE ENERGY TO THE SYSTEM, EXCEPT FOR A LEAKAGE CURRENT OF 50 uA FOR EACH CONNECTED DEVICE. SEPARATELY POWERED EQUIPMENT NEEDS A GALVANIC ISOLATION TO ASSURE THAT THE INTRINSICALLY SAFE FIELDBUS CIRCUIT REMAINS PASSIVE.

THE CABLE USED TO CONNECT THE DEVICES NEEDS TO HAVE THE PARAMETERS IN THE FOLLOWING RANGE:

LOOP RESISTANCE R':	15 TO 150 ohms/km
INDUCTANCE PER UNIT LENGTH L:	0.4 TO 1 mH/km
CAPACITANCE PER UNIT LENGTH C':	80 TO 200 nF/km
C' = C' LINE/LINE + 0.5* LINE/SCREEN, IF BOTH LINES ARE FLOATING OR	
C' = C' LINE/LINE + C' LINE/SCREEN, IF THE SCREEN IS CONNECTED TO ONE LINE.	
LENGTH OF SPLICE:	<1 m (T-BOX MUST ONLY CONTAIN TERMINAL CONNECTIONS WITH NO ENERGY STORAGE CAPABILITY)
LENGTH OF SPUR CABLE:	<30 m
LENGTH OF TRUNK CABLE:	<1 km

AT EACH END OF THE TRUNK CABLE AN APPROVED INFALLIBLE TERMINATION WITH THE FOLLOWING PARAMETERS IS SUITABLE: R= 90 TO 100 ohms AND C = 0 TO 2.2 uF
NOTE, A BUILT-IN TERMINATOR IS INCLUDED ON THE FIELD SIDE AND A SELECTABLE TERMINATOR IS AVAILABLE ON THE HOST SIDE.

THE NUMBER OF PASSIVE DEVICES CONNECTED TO THE BUS SEGMENT IS NOT LIMITED IN THE FISCO CONCEPT FOR INTRINSICALLY SAFE REASONS. IF THE ABOVE RULES ARE RESPECTED, UP TO A TOTAL LENGTH OF 1000 m (SUM OF THE LENGTH OF THE TRUNK CABLE AND ALL SPUR CABLES), THE INDUCTANCE AND CAPACITANCE OF THE CABLE WILL NOT IMPAIR THE INTRINSIC SAFETY OF THE INSTALLATION.

2 THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS, NOT SPECIFICALLY EXAMINED IN SUCH COMBINATION. THE CRITERIA FOR INTERCONNECTION IS THAT THE VOLTAGE (Vmax) AND THE CURRENT (Imax) OF THE INTRINSICALLY SAFE APPARATUS MUST BE EQUAL TO OR GREATER THAN THE VOLTAGE (Voc) AND CURRENT (Isc) DEFINED BY THE ASSOCIATED APPARATUS. IN ADDITION, THE SUM OF THE MAXIMUM UNPROTECTED CAPACITANCE (Ci) AND INDUCTANCE (Li) OF EACH INTRINSICALLY SAFE APPARATUS, AND THE INTERCONNECTING WIRING, MUST BE LESS THAN THE ALLOWABLE CAPACITANCE (Ca) AND INDUCTANCE (La) DEFINED BY THE ASSOCIATED APPARATUS. IF THESE CRITERIA ARE MET, THEN THE COMBINATION MAY BE CONNECTED.

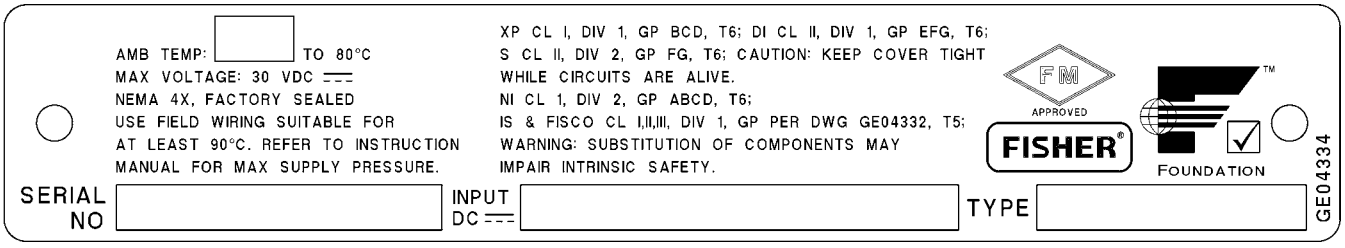
3 INSTALLATION MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ANSI/ISA RP12.6.

4 LOOPS MUST BE CONNECTED ACCORDING TO THE BARRIER MANUFACTURER'S INSTRUCTIONS.

5 IF HAND-HELD COMMUNICATOR OR MULTIPLEXER IS USED, IT MUST BE FM APPROVED WITH ENTITY PARAMETERS AND INSTALLED PER THE MANUFACTURER'S CONTROL DRAWING.

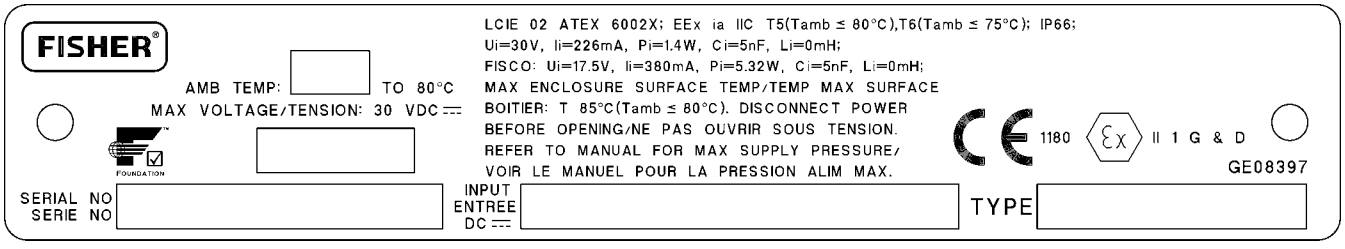
GE04332-A
SHEET 3

Figure 5-3. FM Schematics for Type DVC6000f Series (continued)



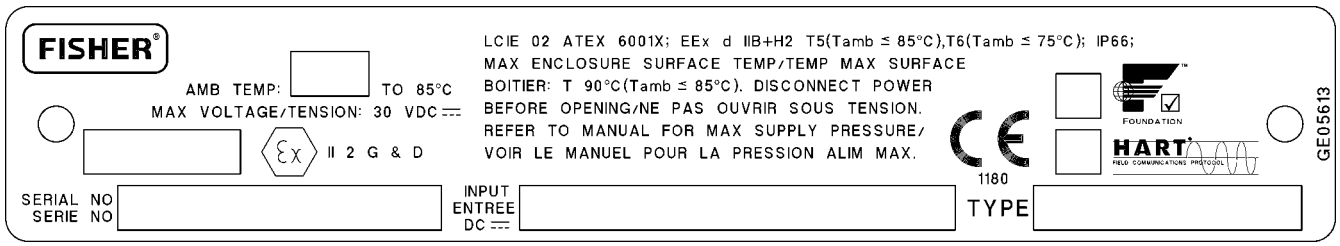
TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-4. FM Nameplate



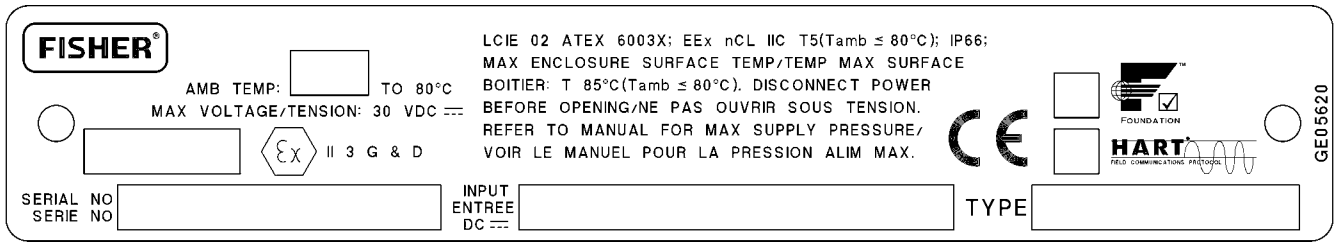
TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-5. ATEX Nameplate; Intrinsically Safe, Dust



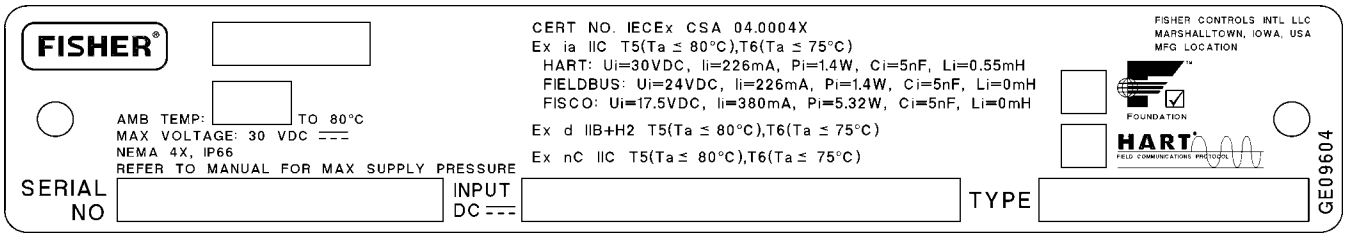
TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-6. ATEX Nameplate; Flameproof, Dust



TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-7. ATEX Nameplate; Type n, Dust



TYPES DVC6010F, DVC6020F, DVC6030F, DVC6010FS, DVC6020FS, DVC6030FS

Figure 5-8. IECEx Nameplate; Intrinsic Safety, Type n, Flameproof

Notes

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