



Emerson Impact Partner



# Customer Diagnostics Report

This sample document contains excerpts from a comprehensive diagnostics report. Contact your Experitec Account Manager to learn more about Diagnostics for your facility.



## 1. SUMMARY OF VALVE PERFORMANCE

This section defines the Priority 1, 2 or 3 criteria for FlowScanner™ and/or ValveLink™ diagnostic testing. **The detailed recommendations for each valve assembly can be found in the sections pertaining to each valve.**

- Priority 1 (Major Impact – Condition Red):** The Valve/Actuator/Instrument assembly requires modification to meet optimal valve performance specifications. Current condition has a major impact on Net Plant Heat Rate (NPHR) and potentially availability. Immediate repair is recommended.
- Priority 2 (Minor impact - Condition Yellow):** The Valve/Actuator/Instrument assembly needs adjustment or modification, but immediate repair is not required. Current conditions have minimal affect on NPHR, and should not affect plant availability. Recommended to implement maintenance plan to correct issue.
- Priority 3 (No Impact - Condition Green):** The Valve/Actuator/Instrument diagnostic testing revealed no problems (As Found) or minor adjustments or tuning/calibration corrected the problem (As Left). No further action is required at this time.

	Tag	Description	As Found	As Left	Comments
	Brand 1 Condensate	1"GX/225/DVC	Green	Green	No issues at this time.
	Steam	2"GX/750/DVC	Yellow	Yellow	The actuator appears to be leaking air, recommendation is to rebuild valve.
	Steam 12	3"EZ/667-45/DVC	Red	Red	Drive signal is critically low, recommendation is to replace the I/P or DVC with new.
	Cook Steam 22	3"ET/667-45/DVC	Yellow	Yellow	Valve is not stroking all the way open and it's not saturating. Air pressure needs to be adjusted to 35psi.
	Brand 2 Steam	1.5EZ/667-34/DVC	Green	Green	No issues at this time
	Brand 2 Condensate	1"GX/225/DVC	Green	Green	Overall scan looks good, supply pressure could be increased by 3-4 psi but it does not appear to be a problem at this time.
	PC Condensate	1"GX/225/DVC	Yellow	Yellow	Packing friction is lower than expected but does not appear to be leaking. Recommendation is to rebuild the valve with soft goods and new packing.
	PC Main Steam	4"ED/667-45/DVC	Red	Red	High friction coming out of the seat and going back closed. There is wear in the plug and seat. The valve is in jeopardy of seizing up unexpectedly. Recommend valve body rebuild ASAP.

## 2. VALVE DIAGNOSTICS TERMINOLOGY

### Bench Set

**Fault** – Setting high/low

**Recognition** – The setting is considered high or low if the pressure span is correct, but the starting or ending pressure reading as measured at the seat end of stroke falls outside the acceptable tolerance. Typical tolerance at the seat end of the bench set is 0.0 to +1.5 psig for a reverse acting actuator and 0.0 to -1.5 psig for a direct acting actuator.

**Effect** - On a direct acting actuator, if the bench set is too high, the seat load will be reduced (PDTC valves) possibly causing seat leakage and premature trim failure. The actuator spring may also go solid preventing proper seat loading and lead to premature spring failure. If the setting is too low the valve may not fully open.

On a reverse acting actuator, if the bench set is too high, the risk of going solid with the spring exists. If set too low, the seat load would be reduced to where it may not meet the shutoff requirements and cause premature seat damage.

**Fault** – Span high/low

**Recognition** – The span is considered high or low if it falls outside of its specified range by  $\pm 2$  psig.

**Effect** – If the bench set span is incorrect the actuator may not operate effectively under the process conditions. The valve may go unstable. If the span is incorrect, the actuator size may be different than that specified on the serial card. Or, the actuator may contain the wrong spring, and/or the specified valve travel is incorrect.

### Crossover

**Fault** – High/Low

**Recognition** – Double acting piston actuator – The crossover target during calibration is 75% of the supply pressure. It is considered high when it exceeds 90% of supply. It is considered low if it falls below 60% of supply. This is viewed on the Pressure vs. Time plot where the Actuator Top, Actuator Bottom, and Supply pressures are plotted against time.

DVC5010 or DVC6010 – The crossover is a calibration adjustment between the travel linkage and potentiometer. With proper adjustment the Valve Signature graph will be linear. A high crossover adjustment will cause a convex curvature to the graph. If the crossover adjustment is low the curvature will be concave in appearance.

**Effect** – Double acting piston actuator – If the crossover is adjusted too high, the performance of the positioner will become sluggish and cause poor process control. If the crossover is adjusted too low, the actuator's stiffness will be reduced, and the valve may become unstable under process flow.

DVC5010 or DVC6010 – Maladjustment of the crossover will cause non-linear control.

## DVC2000 HC

HART Tag Name	[REDACTED]
Valve Style	Sliding Stem
Actuator Style	Spring & Diaphragm
Instrument S/N	[REDACTED]
Valve S/N	[REDACTED]
Firmware Revision	5
Hardware Revision	2 : 4

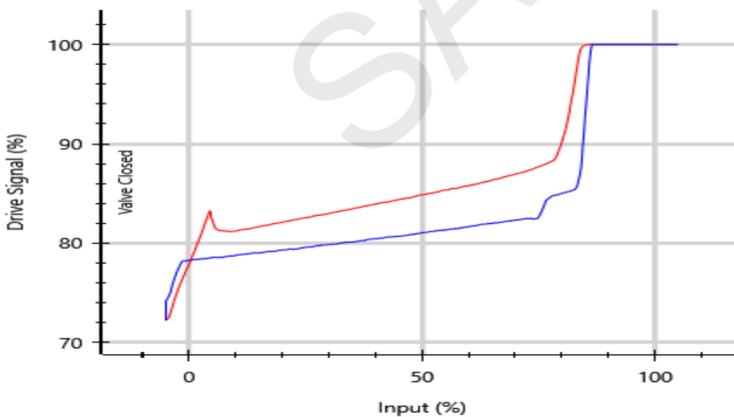
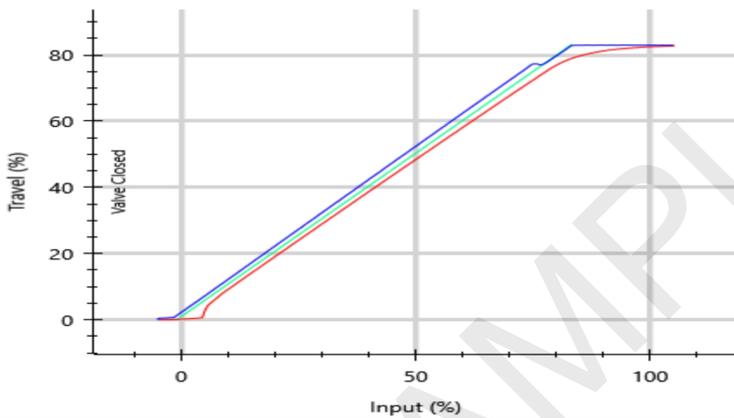
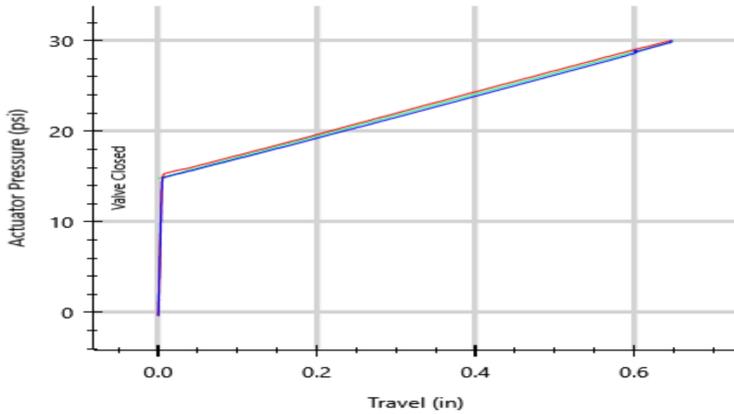
### Instrument Configuration - Basic

General		Inputs		Tuning	
HART Tag	[REDACTED]	Analog Input Units	mA	Tuning Set	G
Message Descriptor	[REDACTED]	Input Range Low	4	Damping Factor	Neutral
Valve Serial Number	[REDACTED]	Input Range High	20	<b>Gains</b>	
Instrument Serial Number	[REDACTED]			Proportional Gain	9
Polling Address	0	<b>Pressure</b>		Velocity Gain	2
Local Display Language	English (English)	Max Supply Pressure	65.0 psi	MLFB Gain	49
Language Pack Version	1.1.5	Pressure Units	psi	<b>Input Characteristic</b>	
Temperature Units	F	Local Display Pressure	psi	Input Characteristic	Linear
		Units			
<b>Initial Setup</b>		<b>Travel Control</b>		<b>Integral Settings</b>	
Control Mode	Analog (RSP)	Travel Limit High (%)	125	Enable Integral Control	Yes
Restart Control Mode	Resume Last	Travel Limit Low (%)	-25	Integral Gain (reps/min)	1
Zero Power Condition	Valve Closed	Travel Cutoff High (%)	99.46	Integral Dead Zone (%)	0.5
Travel Cutoff Low (%)	0.5	Travel Cutoff Low (%)	0.5		
Valve Style	Sliding Stem	<b>Dynamic Response</b>			
Actuator Style	Spring and Diaphragm	Setpoint Filter Time (sec)	Filter Off		
		Min Opening Time (sec)	0		
		Min Closing Time (sec)	0		

### Instrument Configuration - Alerts

Self Test Shutdown		Electronic Alerts		Alert Record and Commands	
Flash Integrity Failure	Shutdown Disabled	Drive Signal Alert	Disabled	Instrument Clock	11 MAR 2023 13:14
Reference Voltage Failure	Shutdown Disabled			Valve Alerts Enable	No
Critical NVM Failure	Shutdown Disabled	<b>Travel Alerts</b>		Failure Alerts Enable	No
Temperature Sensor Failure	Shutdown Disabled	Travel Deviation Alert	Enabled	Limit Sw Status Enable	No
Travel Sensor Failure	Shutdown Disabled	Travel Deviation Alert Point (%)	6.99	Burst Mode Enable	No
Drive Current Failure	Shutdown Disabled	Travel Deviation Alert Time (sec)	5	Burst Command	3
<b>Travel History Alerts</b>		Travel High/Low Alert	Disabled		
Cycle Count High Alert	Disabled	Travel High Alert Point (%)	125		
Cycle Count Deadband (%)	2	Travel Low Alert Point (%)	-25		
Cycle Count Alert Point	2147483647	Travel High High/Low Low Alert	Disabled		
Cycle Count	32858	Travel High High Alert Point (%)	125		
Travel Accumulator High Alert	Disabled	Travel Low Low Alert Point (%)	-25		
Travel Accumulator Deadband	2	Deadband (%)	1		
Travel Accumulator Alert Point (%)	2147483647				
Travel Accumulator (%)	246001				

**Total Scan [STEAM]**



**Inputs**  
 Input Start: -5.0 %  
 Input End: 105.0 %  
 Scan Time: 100.0 sec  
 Collection Interval: 150.0 msec.

**Analyzed Data**  
 Avg. Dynamic Error: 3.76%  
 Min. Dynamic Error: 2.99%  
 Max. Dynamic Error: 4.80%  
 Dyn. Linearity (Ind.): 0.14%  
 Zero Ranged Travel at: 3.84 mA  
 Full Ranged Travel at: 20.05 mA  
 Average Friction: 28 lbf  
 Minimum Friction: 21 lbf  
 Maximum Friction: 32.13 lbf  
 Spring Rate: 2978.5 lbf/in  
 Bench Set: 14.79 - 32.96 psi  
 Seat Load As Tested: 1948.17 lbf  
 Service Seat Load: NA  
 Required Seat Load: 227.58 lbf  
 Expected Packing Friction: 60 lbf  
 Expected Total Friction: 60 lbf

**Configuration**  
 Zero Power Condition: Valve Closed

**Tuning**  
 Travel Tuning Set: J  
 Damping Factor: Neutral

**Gains**  
 Proportional: 12.00  
 Velocity: 1.00  
 MLF: 40.69

**Integral Settings**  
 Integral Control: Enabled  
 Integral Gain (reps/min) 1.0

**Cutoffs and characterization were disabled during this test.**

**Total Scan [STEAM] - Notes**

Actuator is leaking air and the supply pressure appears to be low. Recommend rebuilding valve.

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**Experitec, Inc.**

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