



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 ± 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

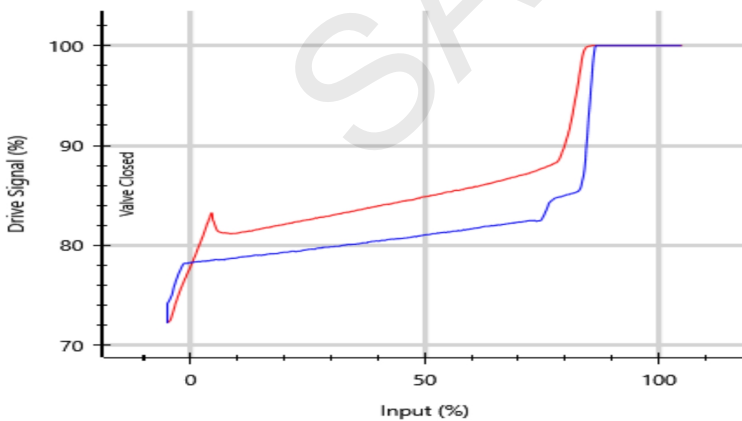
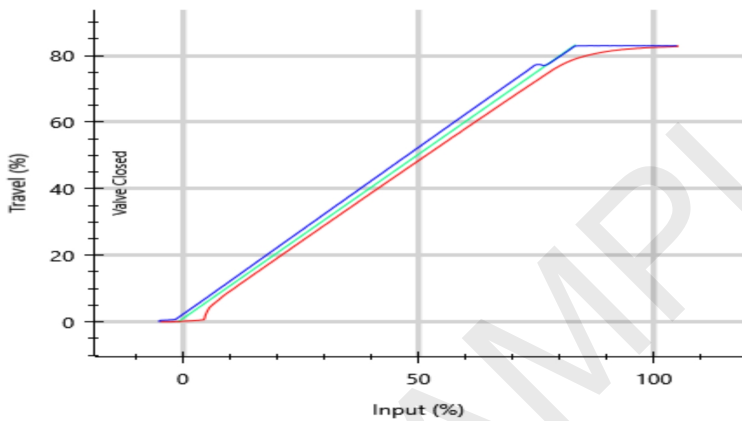
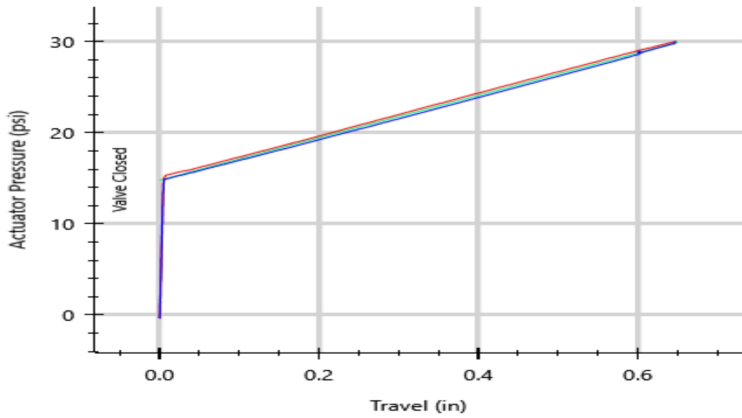
Instrument Configuration - Basic

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	Gains	
Instrument Serial Number	[REDACTED]	Pressure		Proportional Gain	9
Polling Address	0	Max Supply Pressure	65.0 psi	Velocity Gain	2
Local Display Language	English (English)	Pressure Units	psi	MLFB Gain	49
Language Pack Version	1.1.5	Local Display Pressure	psi	Input Characteristic	
Temperature Units	F	Travel Control		Input Characteristic	Linear
Initial Setup		Travel Limit High (%)	125	Integral Settings	
Control Mode	Analog (RSP)	Travel Limit Low (%)	-25	Enable Integral Control	Yes
Restart Control Mode	Resume Last	Travel Cutoff High (%)	99.46	Integral Gain (reps/min)	1
Zero Power Condition	Valve Closed	Travel Cutoff Low (%)	0.5	Integral Dead Zone (%)	0.5
Travel Cutoff Low (%)	0.5	Dynamic Response			
Valve Style	Sliding Stem	Setpoint Filter Time (sec)	Filter Off		
Actuator Style	Spring and Diaphragm	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	Travel Alerts		Valve Alerts Enable	No
Critical NVM Failure	Shutdown Disabled	Travel Deviation Alert	Enabled	Failure Alerts Enable	No
Temperature Sensor Failure	Shutdown Disabled	Travel Deviation Alert Point (%)	6.99	Limit Sw Status Enable	No
Travel Sensor Failure	Shutdown Disabled	Travel Deviation Alert Time (sec)	5	Burst Mode Enable	No
Drive Current Failure	Shutdown Disabled	Travel High/Low Alert	Disabled	Burst Command	3
Travel History Alerts		Travel High Alert Point (%)	125		
Cycle Count High Alert	Disabled	Travel Low Alert Point (%)	-25		
Cycle Count Deadband (%)	2	Travel High High/Low Low Alert	Disabled		
Cycle Count Alert Point	2147483647	Travel High High Alert Point (%)	125		
Cycle Count	32858	Travel Low Low Alert Point (%)	-25		
Travel Accumulator High Alert	Disabled	Deadband (%)	1		
Travel Accumulator Deadband	2				
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.

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

Experitec, Inc.

636-681-1500 • sales@experitec.com • www.experitec.com