Eaton CMA Valve
Error Codes and Recommended Actions
& Troubleshooting Guide

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Error Codes And Recommended Actions

Note: This information is from the *EATON CMA Service Manual E-VLVM-TT002-E1 August 2018*. It has been reduced to for RRP service. (

Fault number	Fault type	Fault	Description	Suggested actions
103	Critical	The valve lost time synchronization with the VSC (i.e. no resynchronization twice in a row)	This fault often occurs when the valve is reset; the PV/CVs lose synchronization with the VSM during the reset process.	Nothing, this fault can be ignored
104	Warning	an expected CAN-D msg was not received	Typically due to a fault in the internal CAN bus wiring, although a failed PV could also cause this fault.	Check cable connections between valves and between blocks. Make sure jumpers are properly installed to activate terminating resistors in multi-block systems.
105	Error	an expected CAN-D msg was not received twice in a row	Typically due to a fault in the internal CAN bus wiring, although a failed PV could also cause this fault.	Check cable connections between valves and between blocks. Make sure jumpers are properly installed to activate terminating resistors in multi-block systems.
106	Error	CRC failed on CRC-protected data stored in EEPROM	There is a mismatch between the data stored on the PV and the back-up data on the VSM. The most common causes of this are: 1: A parameter was written to the valve, but a Write Finalize command was not issued. 2: Software has been upgraded to a version with a new OD	With the exception of a small number of live updatable OD entries (i.e. Flowshare Method, Stimulus 1 &2), all parameter writes should be Finalized (see Applicatio Developer's Guide). Software updates that require an OD change should be done using a recommended upgrade tool or with assistance from Eaton.
200	Error	during start-up the CV was not detected	The system must have a CV to operate, without it, the PVs will stay in a Safe State.	Check wiring and make sure the block containing the CV is connected to the VSM.
201	Information	during start-up the CV with the known serial number was not detected	The expected CV serial number was not found during the daisy chaining procedure	If a CV has not been replaced, then check cabling along the entire internal CAN bus. If a CV was replaced, initiate the valve replacement procedure if the valve is configured for manual valve replacement (otherwise, the replacement will happen automatically - see Application Developer's Guide or User's Manual)
202	Information	during start-up a PV was not detected	An expected PV serial number was not found during the daisy chaining procedure	If a PV has not been replaced, then check cabling along the entire internal CAN bus. If a PV was replaced, initiate the valve replacement procedure if the valve is configured for manual valve replacement (otherwise, the replacement will happen automatically - see Application Developer's Guide or User's Manual)
210	Error	Detected configuration is different than stored one	There is a mismatch between the number of valves that the VSM has stored in its Device List, and the valves found during the scanning process that occurs on start-up. This can happen when a block is added or removed, or if the valve-valve wiring is interrupted.	If valves were intentionally added or removed from the system, the valve can be told to clear its Device List and write a new one. This can be done using a service tool such as ProFx Configure 2.0. TAKE CARE that when the Device List is updated, the parameter back-up that is stored on the VSM for the PV/CVs will get over-written. If there is a valve that is not communicating or that has just been replaced, the back-up data will be lost if the Device List is updated before the valve replacement procedure has taken place.
211	Error	A data-section on the valve/VSC and its backup are corrupted	This is similar to fault 106, and they often happen together. The Suggested Actions are the same.	
214	Error	at least one valve is not compatible with the SW-version of the VSC	In order to operate, all of the valves in the system must have the same Major software version. If there is a discrepancy in the major versions, this error will be thrown. Valves with different minor versions can operate together in the same system.	Update the software on the valves so that all valves in the sysetm have the same major SW version.
215	Error	at least one valve is not compatible with the OD-version of the VSC	All valves in the system must also have the same OD version to operate. If not, the software should be updated so that this is the case.	Update the software on the valves so that all valves in the sysetm have the same major SW version.

Fault number	Fault type	Fault	Description	Suggested actions
216	Error	daisy chaining proccess failed because of defect, wrong or unexistend cabling	On start-up, the VSM does a Daisy Chaining procedure to identify the serial numbers and configuration of the devices conencted to it. This error is reported if there is a problem in this procedure.	Typically, daisy chaining errors are due to wiring issues, either in the valve-valve wires or in the Interconnect CAN wires between VSM/VSE modules. Make sure all cables are properly seated, there are no short/open pins in the cables, and the CAN lines are properly terminated.
217	Information	serial number(s) within VSC NV and Valve DB has been updated because daisy chaining scanned serial number(s) are differ to stored ones in valve DB	This is an informational message to inform you that the valve replacement procedure was completed.	Nothing
218	Information	valve ID(s) on valve have been updated because daisy chaining scanned valve ID(s)	This is an informational message to inform you that the valve replacement procedure was completed.	Nothing
219	Information	scanned block IDs different to stored ones in valve DB, i.e. Layout Error-> Limp mode not possible	There is a mismatch between the Block IDs stored on the VSM and the ones found during the scanning process that happens on start-up. This is similar to error 210.	The Block IDs are writable parameters, so if a parameter was written to a Block ID entry inadvertently, it can be written back to the correct value. If valves were inteniionally added or removed from the system, the valve can be told to clear its Device List and write a new one. This can be done using a service tool such as ProFx Configure 2.0. TAKE CARE that when the Device List is updated, the parameter back-up that is stored on the VSM for the PV/CVs will get over-written. If there is a valve that is not communicating or that has just been replaced, the back-up data will be lost.
220	Error	during daisy chaining an error was detected	On start-up, the VSM does a Daisy Chaining procedure to identify the serial numbers and configuration of the devices conencted to it. This error is reported if there is a problem in this procedure.	Typically, daisy chaining errors are due to wiring issues, either in the valve-valve wires or in the Interconnect CAN wires between VSM/VSE modules. Make sure all cables are properly seated, there are no short/open pins in the cables, and the CAN lines are properly terminated.
221	Warning	airbleeding was not successful	The most common reason for airbleeding to fail is a problem with receiving the Airbleeding Continue command from the application. Airbleeding can also fail if there is another fault present in the system that puts the valve into a safe state (note, not all faults do this).	Check the Airbleeding continue message to make sure it is being sent correctly and frequently enough. High bus traffic could also prevent this message from being received. Check for any other faults reported by the system.
222	Warning	training was not successful	Training can fail for a number of reasons. One possible cause is that the Training Continue message is not sent correctly or frequently enough. Other training failures can occur if the mainstage spools cannot move (stuck or insufficient pilot pressure), or if there is a problem with the position sensor. The valve may give a warning as to why the training failed, which can help diagnose the problem. Training should also be conducted with an oil temperature above 20C.	Make sure that the Training Continue message is being sent properly and frequently enough. Ensure that there is sufficient pump pressure. If the oil temperature is below 20C, try to warm the block by operating the pump or other services. Many training faults can be bypassed using the Fault Mask parameters, but take note that this can cause the valve to behave incorrectly. This step can be taken to get the valve into an operational state so that further debugging can occur.
223	Warning	a training request was received, but denied, as CV is not trained	Since the CV maintains a constant pressure while the PVs are training, it must be trained before the PVs are trained. If this is not done, this error will occur.	Train the CV
225	Error	Daisy Chaining failed, because of Timeout Error, i.e. no valve is responding within daisy chaining timeout boundary	The daisy chaining procedure, which scans the system on startup to learn the devices that are connected, did not find any valves. This is likely due to an issue on the valve-valve wiring or the wiring of the internal CAN bus between VSM/VSE blocks.	Check to make sure all wiring is properly connected and the internal CAN bus is properly terminated.

Fault number	Fault type	Fault	Description	Suggested actions
229	Error	old known valve layout is not scannable, e.g. some valves are missing or a daisy chain wire is broken	The daisy chaining procedure, which scans the system on startup to learn the devices that are connected, did not find all of the valves it was expecting to find. This is likely due to an issue on the valve-valve wiring or the wiring of the internal CAN bus between VSM/VSE blocks. If a block is disconnected from the system, this can also occur.	Check to make sure all wiring is properly connected and the internal CAN bus is properly terminated.
300-305	Error	Sensor Faults	These faults are reported if a sensor (positon, pressure, temperature) is giving an invalid signal. Typically, the valve will go into a safe state if one of these faults is detected, but the Limp Mode feature will allow the valve to remain in operation for many operating modes.	Enable Limp Mode if possible. Replace the PV/CV when possible.
307	Error	32V supply sensor reported an out of range value (<32V_min, 32V_max)	The 32 volts that is supposed to be supplied by the VSM/VSE is not received by the PV/CV. This can occur if too many coils (i.e. >14) are simultaneously driven with a full current command (i.e. 100%).	Do not drive multiple coils at 100% PWM, +/-50% is more than sufficient to move the valve to either endstop. If the problem occurs when many coils are not being driven by a high command, check the input voltage at the VSM/VSE. If that is sufficient, the VSM/VSE may need to be replaced.
308	Error	temperature sensor (pressure sensor 1) malfunction detected	The voltage reading on the temperature sensor is out of range	Replace the PV/CV
400	Error	short circuit on H-bridge	One of the coils in the pilot valve is shorted and drawing too much current.	Replace the PV/CV
401	Error	short of voice coil to chassis	There may be a short in the voicecoil wire.	Replace the PV/CV
500, 501	Warning	Negative pressure reading on port 1 or 2 (warning)	A small negative pressure reading was observed on one of the sensors. This can be triggered by noise and minor temperature variation on the sensor. For small values, this is typically not a problem, but if the value becomes more negative over time, it could be a faulty sensor.	Usually nothing, but can replace the PV/CV if desired
502, 503	Error	Negative pressure reading on port 1 or 2 (error)	For larger negative values, the fault will be reported as an error. In this case, the sensor or the calibration is more likely to have a problem.	Replace the PV/CV
504	Warning	Oil temperature is too low for training	Training requires a temperature of about 20 C (varies slightly with Oil Type)	Try to warm the block up be moving other sections or airbleeding for a while. If that is not possible, this fault can be bypassed using the Fault Mask parameter (see the User's Manual), but NOTE: training with oil below 20 C can lead to instability in the position controller once the oil warms up. If the valve is trained cold, it MUST be re-trained with warm oil.
505-514	Warning	PV Training faults	These faults indicate that a prameter found during training was out of the expected range.	Try training again. If the fault occurs repeatedly, the PV may need to be replaced.
515, 516	Error	Position control fault on port 1 or 2	The mainstage spool did not get close to its demanded position within a specified time window. This can happen if there is insufficient pilot pressure, the control is unstable, or if a spool (pilot or mainstage) is stuck.	Make sure there is enough pressure to move the spools. Check the position vs. the position demand (monitor the debug channels) to see if the spool is unstable (if so, try airbleeding), if the spool is stuck mid-stroke (likely mainstage contamination), or if it is stuck in the center or endstops (possible pilot contamination or electrical problem). If stuck, try to clean/unstick by moving the spool back and forth (try using PWM control).

Fault number	Fault type	Fault	Description	Suggested actions
517, 518	Error	Uncontrolled position fault on port 1 or 2	The spool has not returned close to its trained spring neutral position within a specified time window. This can happen if a spool (pilot or mainstage) is stuck, or if the trained null position is incorrect.	Try moving the spool with PWM commands to see if it is stuck or freely moving to both endstops as expected. If moving as expected, try to re-train the valve.
519	Error	CV Training failed to acheive a desired pressure in a certain amount of time	During CV training, the spool sweeps through its travel and records the pressure. It needs to reach 90% of the configured maximum pressure before it can complete, so if there is an external pressure limiter (i.e. a relief valve or pressure compensator), training will time-out.	Make sure here are no mechanical pressure limiters st below the configured maximum pressure.
521	Error	The spool doesn't appear to be moving during airbleed	The CV spool is not moving during airbleeding.	Make sure there is sufficient pressure to move the spools (supply should be at least 10 bar). If there is sufficient pressure, the spool (mainstage or pilot) may be stuck. Check to see if the mainstage is moving at all, or if it is stationary. If it moves, there may be contamination limiting the stroke of the mainstage spool. If it doesn't move at all, the spool may be fully stuck, or the CV pilot might need to be replaced.
522	Error	Pressure controller exceeded an error threshold for a specified amount of time	The Inlet controller was not able to achieve its desired pressure within a specified time window. This can happen if there is a problem with the pump or supply pressure hose. It could also happen if there is a problem with the CV position controller (although this should send a separate fault), if the pressure is limited by a relief/ pressure compensator, or if the CV training was not done.	If the pressure control tracking is causing problems, check to make sure the pump and supply/loadsense hoses are correctly connected. If the controller seems unstable, try airbleeding the CV or adjusting the Loadsense hose volume parameter. Try re-training the CV. Note this will be reported if a pressure is commanded from the pump, but it is not spinning.
523	Error	Pump margin compared to trained margin differed by a specified percentage	The measured pump margin between supply and loadsense does not match the margin that was recoreded during training.	Check to make sure the pump/hoses are working correctly. If other services are connected to the loadsense line, make sure there is a shuttle-check to isolate them. Try re-training the CV if the Inlet pressure control is causing problems in the system. Note, this fault may be triggered if a pressure is commanded from the pump when it is not spinning.
524-526	Error	CV Training faults	These faults indicate that a prameter found during training was out of the expected range.	Try training again. If the fault occurs repeatedly, the CV may need to be replaced.
527	Error	position control fault (CV)	Same as 515/516 for the PV	Same as 515/516 for the PV
528, 529	Error	pressure control fault WP1 or 2	The pressure controller on the PV did not achieve its desired pressure within a specified time window.	Make sure the hose is properly connected and that the requested pressure is achieveable (i.e. not limited by reliefs). Check to see if the spool is tracking its demand. Make sure the hose volume parameter is close to the actual hose volume.
530, 531	Error	Spool Stroke out of range	This is a PV training fault, when the detected stroke is either smaller or larger than expected.	Make sure there is at least 10 bar supplied to the valve supply port. If there is sufficent pressure, a spool may be blocked (try airbleeding), or the PV may need to be replaced.
532	Warning	Inlet pressure too low to safely control the valve	There is an optional fault that can send a warning if the supply pressure is below a speficied threshold. The pressure setting for this faults is adjusted through the Min Inlet Pressure setting on the PV. If the supply is lower than this setting, the control will be disabled.	This check can be bypassed by setting this parameter to be 0.
533, 534	Error	Training exceeded the timeout limit	Training is taking longer than expected.	The most likely cause is that small oscillations are causing the PV to not settle sufficiently. Try airbleeding the valve several times. There is also a parameter in the Training section of the OD that specifies the settling tolerance during training (Training Position Theshold Fail) which can be increased.

Fault number	Fault type	Fault	Description	Suggested actions
535	Error	Valve failed to find an edge while replacement training was running	This only applies to Pressure or Tank Biased spools. During training, the valve monitors the pressure to detect the edge of the deadband. This fault indicates that an edge wasn't found.	Try training again, ideally with cool oil (but still above 20C). Make sure there is no leakage in the system connected to the valve. If the problem persists, try training with the workports capped.
537, 538, 539	Error	Negative pressure reading on supply/ loadsense/tank (error)	This is the same as 502, 503 on the PV	This is the same as 502, 503 on the PV
540, 541, 542	Warning	Negative pressure reading on supply/ loadsense/tank (warning)	This is the same as 500, 501 on the PV	This is the same as 500, 501 on the PV
543	Error	The Fault Handler has gone to a Safe State	The fault handler, which controls the operation of the Limp Modes has set the valve into a safe state. This can happen if multiple sensor faults are detected, or if a single sensor fault is detected but the Limp mode is disabled.	Check to see if there are multiple sensor faults. Also, check the Logged Fault parameter in the Limp Modes section of the PV, if it is not 0-5, then the valve has saved an unknown or multiple fault condition. Try setting it to 0 to see if the detected fault condition is gone. If there are multiple faults, replace the PV.
544	Error	Fault Handler is waiting for a Write Finalize command before entering Fail Operational Mode	The valve has detected a sensor fault and is able to enter the Limp Mode, but it is configured to wait for a Write Finalize from the user before doing so.	Send a Write Finalize command or change the Limp Mode Configuration to not require a Write Finalize before entering Limp Modes.
545	Warning	Fault Handler has entered Fail Operational Mode	Notification that the valve has entered a Limp Mode	If there is a sensor fault, eventually, the PV should be replaced. However, it should be able to run in Limp Mode. Nothing needs to be done in reaction to this message.
546	Warning	Fault Handler has exited Fail Operation Mode and has returned to Normal Operation	Notification that the valve has exited Limp Mode and returned to normal operation	Nothing
547, 548, 549, 550, 551	Error	Repeat of the sensor faults (similar to 300-305), reported by the fault handler		Decide whether to remain in Limp Modes, or replace the PV
552	Error	Fault Handler is reporting multiple sensor faults	Multiple sensor faults detected, the valve cannot enter Limp Mode	Replace the PV
554	Warning	Fault Handler is reporting that it is in Fail Operational Mode but the fault condition is gone	The fault condition is gone, but, due to the Limp Mode Configuration setting, the valve is not allowed to exit the Limp Mode	Write a 0 to the Logged Fault parameter, which saves faults over valve resets, or change the Limp Mode settings to allow automatic exitting of the Limp Mode.
555, 556	Warning	WP is in a Pressure limiting state and its consumed flow has dropped below a threshold	This is a stall-detection feature that can be enabled to notify the application that the valve has essentially stopped flowing.	Nothing
557, 558	Warning	Consumed Flow on WP has risen above a stall threshold	This message indicates that a previously detected stall condition has dissipated.	Nothing
559	Error	Mismatch between input and output flows detected. Possible burst hose.	This is a featuer that can be enabled to detect a significant mismatch in the meter-in and meter-out flows, indicating a possible burst hose.	Check all hoses for leaks.
602	Information	A write request was attempted to a (still) protected value	Most Object Dictionary parameters have some level of Write Protection applied to them. Before writing to a protected parameter, the proper Key must be written to the Write Protection index on the VSM.	Write the proper Write Protection key. This key is not saved across resets, so it must be re-sent after every power cycle.
605	Error	An invalid Baudrate index was selected	CANOpen only - the parameter setting for the Baudrate is incorrect.	Enter a proper value
606	Error	An invalid Node ID index was selected	CANOpen only - the parameter setting for the Node ID is incorrect.	Enter a proper value

Troubleshooting Guide

Problem	Possible cause(s)	Possible cause(s)
Valve does not respond to demands	1) Anti saturation algorithm is turned on and there is no available flow message	1). Disable anti saturation algorithm or send available flow message
	2) CAN Identifier is not correct for the VSM you are trying to communicate with	2). Use ProFx Configure to determine what the VSM address is. If there are multiple VSM's, the VSM can be identified by the ECU instance number in the name field (refer to J1939 for more details)
	3) There are critical errors	3). If there are critical errors, attempt a valve reset (soft or hard). If the errors persist, contact your local Eaton representative.
	4) A valve has been replaced and the air bleed and training routine have not been completed	4). Request air bleed through ProFx Configure or implement in the user application. Once the air bleed has been completed successfully, request the valve train. Refer to the Valve Replacement section of this guide for more details.
	5) A valve has incorrect firmware version (does not match the other nodes on the system)	5). If a pilot valve replacement is necessary, the pilot valve major version needs to be the same as the major version of the rest of the nodes on the system. The same is true for the object dictionary version. When ordering replacements, please verify what version of software is required.
	6) Message transmission rate is slower than the timeout set in the VSM	6). Increase the transmission rate frequency in the application. If appropriate, the mode demand timeout can also be increased on the VSM.
	7) Supply voltage is above or below the 9 to 32 volt range	7). The supply voltage can be monitored through a monitor request to the VSM (section index 509). Refer to the Application Developers Guide for more details.
	8) Supply pressure is too low to safely control the valve.	8) Supply pressure can be monitored through Pro-FX. Also, a warning message will be sent over the User CAN. This check can be disabled (see section on Minimum Inlet Pressure). However, some pilot pressure is required to move the spools.
	9) Incorrect cable assembly	9). Refer to the Technical Catalog for proper wiring of the CMA system.
	10) Invalid control mode sent to the valve	10). Refer to the Application Developers Guide and associated tools. The Traffic Monitor in ProFx can be used to debug communication to the valve.
	11). There is no pilot pressure or pilot pressure is too low	11). Monitor the supply pressure observed by the Inlet controller. Check system hydraulics.
	12). The user CAN bus or the interconnect CAN is not properly terminated.	12). Refer to the Technical Manual. Also make sure the CAN D bus has a terminator fitted.
When multi-servicing, the largest load stops moving	1) The valve is saturating because no anti saturation scheme has been set	1). Select the appropriate anti saturation scheme (ratio, uniform, or cascade).
	2) An anti-saturation scheme has been chosen but the available flow message is incorrect	2). The available flow can be monitored through a monitor request to the VSM (section index 60).
	3) The transient flow consumption is too high on a particular service	3). Reduce the available flow by adjusting the gain or offset on the VSM. The user could also implement ramps on the demand to limit the rate of change on the flow demand.
The service does not reach the full commanded velocity	1)The flow limit in the valve is too low	1). Increase the flow maximum setting on the valve. Check to make sure the valve is getting the demand as the user expects (make sure to check
	2) The valve is entering pressure control	2). Check to make sure the pressure limit is set to what is required by the application
	3) The system is entering an anti-saturation scheme	3). Change the anti-saturation scheme to give priority to this service (if that is what is desired)
When using UFC, the meter out pressure drop gets very large	1) The UFC gain on that respective work port is too low	1). Increase the UFC gain
When using UFC and the load passes through the over center condition, the cylinder velocity does not remain constant	1) The UFC gains are too large so that when you transition from a meter in control to a meter out control situation the flow demand is changed	1). Lower the UFC gains and monitor the port pressures throughout the actuator movement. Adjust the UFC gains to achieve desired metering profile.

Problem	Possible cause(s)	Possible cause(s)
When using IFC, the valve chatters when transitioning from overrunning to passive or vice versa	1).There is instability caused by having too low of a margin pressure	1). Increase the margin pressure
	2). The passive and overrunning margin values are too close to each other.	2). Increase the hyteresis loop width on the overrunning and passive margins
	3). The IFC pressure controller gains are tuned too high.	3). Detune the IFC pressure controller gains (lower the gains).
When applying small flow demands, the valve moves in and out of its center position causing a jerky feel to the service	1). The flow demand gain is too high from the application.	1). Change the application flow demand gain so that the first 10% of the demand has a very low gain
	2). There is no hysteresis applied to the flow demand input device.	2). It is a good idea to apply some demand hysteresis so that the operator can achieve very fine metering
	3). Position control on the valve is not working correctly	3). Use the debug channels to see if the valve position is tracking its demand to diagnose a position control problem. Attempt to 'train' the position controller for that particular service. Refer to the valve replacement portion of this guide for more detail on training. If this does not improve position control, the pilot valve may need to be replaced. Contact your Eaton representative.
When applying a large flow demand, the service initially starts to move but then stops for a brief period of time, and then motion continues	1). The system could be momentarily saturating.	1). Rate limit the flow demand from the application
	2). Supply pressure may not be able to build fast enough or hold margin	2). Tune up the Inlet pressure controller. Refer to the appropriate sections of this document for tuning.
There is too long of a delay from when the demand is given from the application to when the service begins to move	1). The Inlet controller has poor pressure response.	1). Training can be attempted on the Inlet. Refer to the valve replacement section of this manual.
	2). The margin pressure across that service is too low.	2). Increase the PV margin. Check to make sure that the CV is achieving the margin as requested from that particular section. This can be done by monitoring the supply pressure demand (refer to the Application Developers Guide).
As the service is moving through an over center condition, there is a momentary slowdown in actuator speed.	1). One side of the service was oil starved and when the load transitions to the opposite load case the valve has to 'fill' that port.	1). The overrunning and passive margins are not set correctly. The load is transitioning to a passive state too late. Increase the passive margin. Be sure the overrunning margin is above the passive margin. If using IFC, make sure the IFC controller is keeping up and maintaining the requested port pressure.
CV will not train	1). The maximum supply pressure setting is above the achievable limit on the pump (comp pressure)	1). Lower the maximum supply pressure setting in the Inlet controller object dictionary.
	2). There is no pilot pressure or pilot pressure is too low	2). Monitor the supply pressure and check to make sure the system has at least 15 bar supply. If not, check the pump or the hydraulic configuration.
	3.) The valve is not allowed enough time to profile the spool flow/ pressure characteristics	3) Increase the timeout value stored in Object Dictionary ID 929 (J1939), found under 'VD Fault Parameters'
Pilot Valve will not train	1). Train request or train continue message was not received or not received before the valve timeout.	1). If the train request is from PRO FX Configure, avoid moving windows around that could disrupt the train continue message from being sent.
	2). If the valve finds a fault during training, it will display a message over the User CAN.	2). Depending on the fault found, it may be over ridden using the fault masks (described in further detail below). If it is a fault that cannot be over ridden, a new pilot may be necessary. Note that training is not allowed unless the measured temperature is over 20C.
The service oscillates when in motion.	1). There is an interaction with load, valve, and/or pump	1). Try adjusting the Flow Demand Shaping parameters to avoid exciting resonant modes. Reduce the Q Demand Shaper gain to move the bandwidth slower than service resonant modes
		2). Adjust the Pressure Damped Flow Control gains and/or the workport volume setting
		3). Reduce the responsiveness of the pump to rising or falling (or both) pressure demands using the Rate of Change Limits.
		4). Make sure the Line Loss Pressure Compensation gains are not too high.