



APPLICATION NOTE

APP #65

Revision History

Date	Author	Description
12-09-10	Weston Klebs	Created application note
02-15-19	DEW	Updated as per Bret

Slide Amp Calculation Adjustments through MCS-Connect



If you are using MCS Controls with a Hanbell Infinite Control (stepless) compressor, you need to follow these steps when commissioning the compressor to ensure correct operation.

Any questions regarding this release, contact: support@mcscontrols.com

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General Concept

Not all compressors will run exactly at the full load amperage rating that the manufacturer provides. Likely it will be very close, but some fine tuning of the configuration will enable the operator to maximize efficiency and control of the unit. This manual is designed to walk you through the steps of adjusting your slide amp calculation through MCS-Connect for optimum performance of your system.

1. Setting the Upper Limit

- Use MCS-Connect to link with the Magnum control board and get authorized at Supervisor or Factory level.
- While the compressor is running near design conditions, turn the UNLOAD relay manually OFF, and the LOAD relay manually ON.
- Wait until the compressor is fully loaded. Then check the value in the FLA% in the circuit grid for that compressor.

RO #	Relay Outputs	Value	Manual Status
M-1	COMP 1	ON	AUTO
M-2	LOAD 1	ON	MANON
M-3	UNLOAD 1	OFF	MANOFF

Capacity Control State	Time	Wanted/Actual	Step Delay	Wanted %	Rate of Change
UNIT IS LOADED	00:08:16	2/2	180	100.0	0.0
State	Time	PSI Diff	FLA %	Steps	Lead?
1)CMP IS LOADING	00:00:15	252.0P	96%	1	Yes

- If the FLA% is 101 or above, then increase the slide multiplier
 - If the FLA% is 97 or below, decrease the slide multiplier.
- To access the slide multiplier you must first have the proper authorization level to make changes to the unit. Double-click on the relay for the compressor you are tuning (in this example COMP is the name of the relay output).
 - A window will pop up (as shown on right) with the slide amp calculation. Increase or decrease the "Slide Multiply" value and press the OK button to accept the changes.
 - Check the FLA% value again. It should say 99 or 100. If not, then repeat steps C and D again until you reach a value of 99 or 100.

Name	Range	Value
Slide Multiply	-32,768 to 32,767	79
Slide Divide	-32,768 to 32,767	10
Slide Offset	-3,276.8 to 3,276.7	22.0
Design Suct. PSI	-3,276.8 to 3,276.7	70.0
Design Disch. PSI	-3,276.8 to 3,276.7	340.0
Nom. Tonnage(of Step)	-3,276.8 to 3,276.7	0.0
EXV Start(when lead)	-3,276.8 to 3,276.7	20.0
EXV ON Adjust	-32,768 to 32,767	-1
EXV OFF Adjust	-32,768 to 32,767	-1

Capacity Control State	Time	Wanted/Actual	Step Delay	Wanted %	Rate of Change
UNIT IS LOADED	00:14:47	2/2	180	100.0	0.0
State	Time	PSI Diff	FLA %	Steps	Lead?
1)CMP IS HOLDING	00:00:04	252.0P	99%	1	Yes

FLA %
98



FLA %
96



FLA %
102



1. Setting the Lower Limit

Now that you have finished calibrating the upper FLA% you may now work on setting the minimum FLA% limit.

- Begin by turning the LOAD relay manually OFF, and UNLOAD relay manually ON.
- Wait until the compressor is fully unloaded and then check the FLA% value in the circuit grid.

Relay Outputs				
Basic		Advanced		
Eye	RO #	Relay Outputs	Value	Manual Status
<input type="checkbox"/>	M- 1	COMP 1	ON	AUTO
<input type="checkbox"/>	M- 2	LOAD 1	OFF	MANOFF
<input type="checkbox"/>	M- 3	UNLOAD 1	ON	MANON

System Status				
Capacity Control State	Time	Wanted/Actual	Step Delay	Wanted %
UNIT IS LOADED	00:33:23	2/2	180	100.0
State	Time	PSI Diff	FLA %	Steps
1)CMP IS LOADING	00:00:05	252.0P	68%	1

- Take this number, double click on the "Value" column for setpoint #31 "MIN FLA %" and set this number as the new value.

(Note: if you have multiple compressors you should use an average of their fully unloaded values).

The screenshot shows the 'Setpoints' table with the following data:

#	SetPoints	Value	Time	SEC Ig...	windo	safety	HL zone	LOW z	Setback	MIN VED	MAX VED	MAX V	Type
1	CHW OUT TRGT	45.0F											SETPOINT
2	CTRL ZONE+	0.5F											SETPOINT
3	CTRL ZONE-	0.5F											SETPOINT
8	ChmbInjOnDis	180.0F											SETPOINT
9	SUPERHT TRGT	10.0F	5 S	0	0								ALM ONLY
10	SPRHT ZONE+-	2.0F											SETPOINT
11	EXV LOAD ADJ	0.1%											SETPOINT
12	EXV FINE ADJ	0.1%											SETPOINT
13	EXV COURSE	0.5%	3 S										SETPOINT
14	EXV Load DIV	3											SETPOINT
15	EXV MIN%	10.0%											SETPOINT
16	EXV MAX%	100....											SETPOINT
17	LO SUPERHEAT	6.0F	120 S	0	0								SETPOINT
18	LOSUCTPSIDLY	4s											SETPOINT
19	EXV DELAY	60s											SETPOINT
20	EXV STRT TME	5s											SETPOINT
23	POWERUP DLAY	15s											SETPOINT
25	STEP SENSIT	1											SETPOINT
26	STEP DELAY	180s											SETPOINT
27	MAX ROC-	-0.7F											SETPOINT
28	MAX ROC+	0.7F											SETPOINT
29	ROC INTERVAL	60s											SETPOINT
30	MAX FLA %	100....											SETPOINT
31	MIN FLA %	50.0%											SETPOINT
32	MAX ADJUST %	10.0%											SETPOINT
33	MIN ADJUST %	2.0%											SETPOINT
34	SLIDE SENSIT	1											SETPOINT
35	AMP DB HI	3.0%											SETPOINT
36	AMP DB LO	3.0%											SETPOINT
37	LOAD PULSE	6											SETPOINT
38	UNLOAD PULSE	5											SETPOINT
48	CND ADJ DLAY	15s	0 S										ADJUST
49	CdFanStrt%	25.0%											SETPOINT
50	CND TARG PSI	215.0P	0 S						5.0P	5.0P	0.0P		TARGET

The 'Setpoint Value adjustment' dialog box is open for setpoint #31 'MIN FLA %'. The current value is 50.0% and is being changed to 68%. The dialog includes a numeric keypad and buttons for 'SEND CHANGE' and 'CANCEL'. A text box says 'Set new value here for MIN FLA% CLICK SEND CHANGE'.