



How can I replace Bronkhorst flowmeter?

The following document refers to flow meters, manufactured by Bronkhorst, and used to measure gas flow rate. Follow these instructions when you need to replace one of such instruments.

STEP 1: Create a backup copy of the "Config.mdb" file contained – according to the type of software – in:

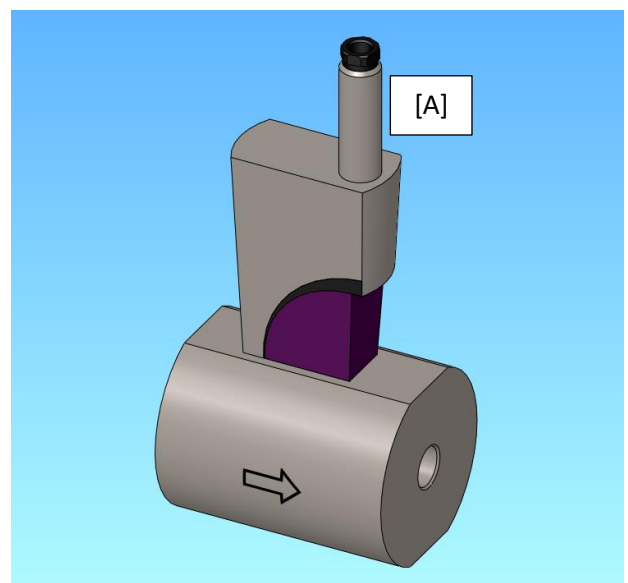
- C:\R&Dflex2\Cfg folder (for R&D test benches)
- C:\LabSoft\Cfg (for laboratory test benches)
- C:\Users\Public\Documents\Microplan\Parseq\ParseqFolders\Config folder (for EOL test benches).

STEP 2: Switch off the electrical supply of test bench.

STEP 3: (When applicable) Remove the metal protective cover of the Bronkhorst device unscrewing the two screws (circled in red).

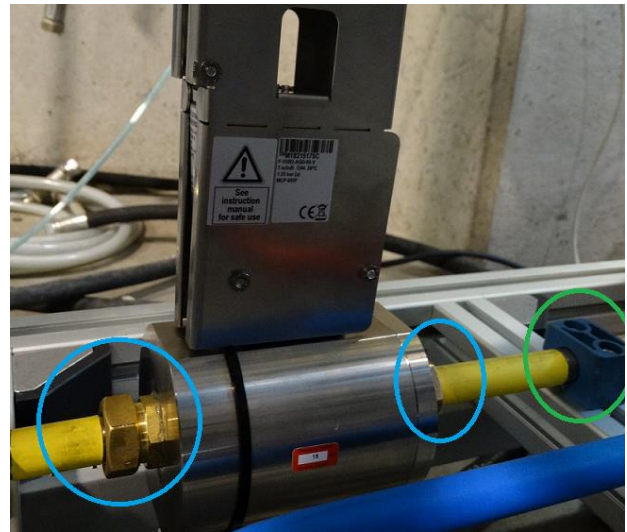


STEP 4: Unplug the electrical connector [A] from Bronkhorst device





STEP 5: Hydraulically disconnect the gas flow meter unscrewing the fittings (blue circled). Probably will also you need to loosen the pipe blocking part (circled in green) to be able to disconnect the device.



STEP 6: Replace the gas flow meter with the available spare part, tighten the hydraulic fittings and plug the electrical connector

STEP 7: At this stage you can power on the bench and open the R&Dflex2 – LabSoft - ParSeq software.

STEP 8: Enter in the Diagnostic application and within the Analog Input Values tab, switch to Electric mode.

The screenshot shows the 'Analog input Values' tab in the software. On the left, there are digital input indicators for EMERG, VPO.3F, DI2, DI3, DI4, DI5, DI6, and DI7. The main area displays a table of sensor data:

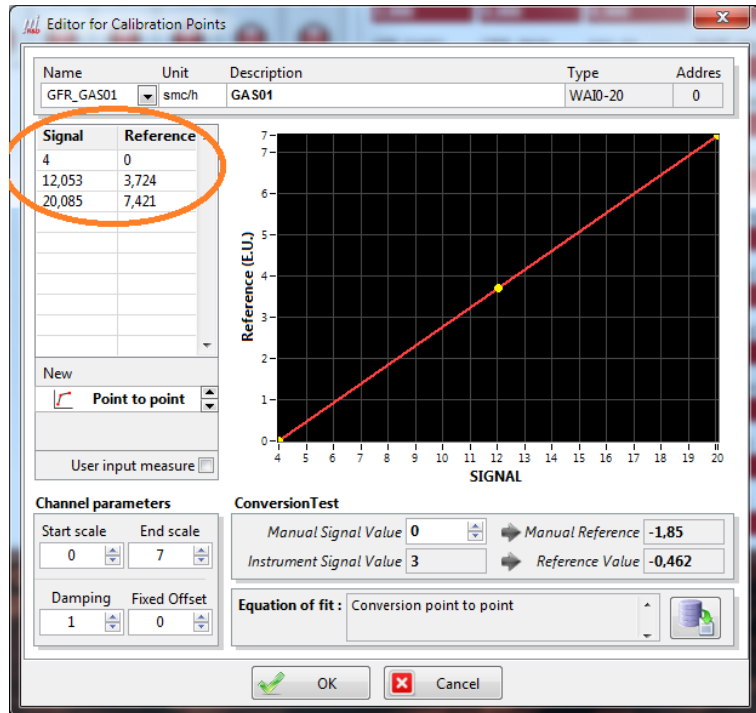
Channel	Parameter	Value	Parameter	Value	Parameter	Value
GFR_GAS01	MTFR (NI/h)	0,000	GMP3 (mbar)	0,000	CHRT (degC)	0,000
					DWDT (K)	-0,345
GFR_GAS02	CTFR (NI/h)	0,000	AAV (V)	0,000	DWIT (degC)	0,000
					QC (KW)	-17,494
GFR_GAS03	CHFR (l/h)	0,000	AAC (A)	0,000	DWOT (degC)	0,000
					CHUP (KW)	-0,137
GFR_GAS04	BLFR (l/h)	0,000	CO (ppm)	0,000	BLFT (degC)	0,000
					BLUP (KW)	-0,220
GFR_GAS05	DWFR (l/h)	0,000	CO2 (%)	0,000	BLRT (degC)	0,000
					DWUP (KW)	0,150
GFR_GAS06	DWIP (bar)	0,000	AI16 (mA)	0,000	PT6 (degC)	0,000
					AAW (kW)	0,000
GFR_GAS07	CHP (bar)	0,000	AI17 (mA)	0,000	PT7 (degC)	0,000
GFR_GAS08	GSP (mbar)	0,000	AI18 (mA)	0,000	GFR (smc/h)	-1,850
GFR_GAS09	GMP1 (mbar)	0,000	AI19 (mA)	0,000	CHDT (K)	0,197
GFR_GAS10	GMP2 (mbar)	0,000	CHFT (degC)	0,000	BLDT (K)	0,315

STEP 9: Check that the value in the GFR_GAS01 (or in GFR_G20 or generally speaking the in the gas flow rate channel related to G20 gas measure) is around 4. This is the electric value output given by the gas flow meter and its range is 4-20mA.

STEP 10: Press the “AI configuration” button to enter in the “Editor for Calibration Point” application.



STEP 11: Replace the existing calibration points of the GFR_GAS01 or of the gas flow related channel (circled in orange) with the new ones contained in the calibration certificate (read below)



In the following calibration certificate identify the "Reference instrument" column of values. Insert in the "Signal" column the "Detected value (mA)" (red circled) and insert in the "Reference" column the "Reference (Smc/h)" (blue circled). Please note that there are different templates for calibration certificates and their layout maybe different, just pay attention to follow the logic given in the previous sentence.

Reference instrument:				
Model	S/N	Calibrate by	Certificate N.	date
Elser G4-10	1150	TifemoGas	VT249	11/10/2018
ELSI	GCT	Microplan	MIC224/2018	24/10/2018
Siemens DS III	N1-A922-9171194	DeltaOHM	1000218	17/10/2018
Notes:	% f.s.	Reference (Smc/h)	Detected value (mA)	
	0%	0	4,048	
	33%	1,63	8,755	
	64%	3,22	13,489	
	100%	4,99	18,821	
Date:	21/02/2019		Microplan S.r.l. <i>Cobiani Alessandro</i>	

STEP 12: Press OK button to save the new calibration points and close the diagnostic calibration points editor software.

STEP 13: From this moment the spare gas flow meter is configured, but the execution of a leakage test is advised before extensive usage. To do this you have to:

- close the gas outlet pipe using a cap or connecting a boiler



- open the gas inlet pneumatic valve (usually VP0.1 or VP0.2) and the gas outlet pneumatic valve (could be VP0.3, if present)
- after some seconds (5-10 sec), close the gas inlet pneumatic valves (VP0.1 and VP0.2)
- wait some seconds to allow a stabilization of the pressure measured by the GSP pressure instrument (if present on the test bench, otherwise refer to the manometer gauge installed on the gas circuit)
- check that the maximum pressure drop – after in 5 minutes – is less than 0,5% of the initial pressure

STEP 14: Finally test the correct operations of the test bench (for instance, launch an automatic test) in order to verify that, with the current gas flow meter, the measured gas flow rate is the expected one.