

**bürkert**  
FLUID CONTROL SYSTEMS

# DISTRIBUTOR NEWSLETTER

Q3 2021

## [What is an MFC & How Does it Work? An Introduction to MFCs](#)

Burkert Mass Flow Controllers are a competitive product group in the market and an opportunity for Distributors

## [The "IT" List – New Product Types Added to our Catalog & QDP](#)

4 new product types added to both the short form catalog and quick delivery program

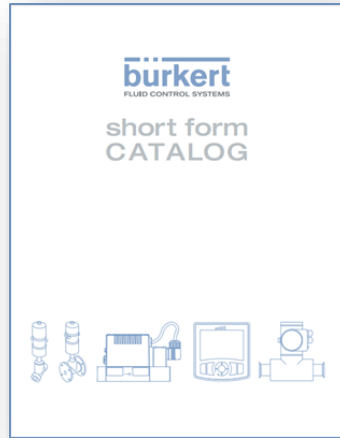
## [Updates to the Burkert Quick Delivery Program & Short Form](#)

Our product offering featured in the Short Form Catalog and Quick Delivery Program have been refreshed based on your needs



# Updated & Refreshed Short Form Catalog

- Updated Solenoid Valve Types for the latest generation product releases
- Addition of proportional valves & more combination system solutions
- Added Item Types based on Distributor Feedback & Demand planning (NEW: 2871, 2873, 2875, 3285, 7011, 7012, 8605, 8693, 7012, 8653)
- Inclusion of more items in the QDP utilizing a strategic inventory plan and distribution insights/requests



USA Select

<b>SOLENOID VALVES</b> 0390 p.6, 0300 p.7-8, <b>2871</b> p.10, <b>2873</b> p.11, <b>2875</b> p.12, <b>0385</b> p.13, 5282 p.14, 6011 p.15, 6013 p.16, 6014 p.17, 6027 p.18, 6213 p.20-21, 6281 p.22, 9407 p.23, <b>7011</b> p.24, <b>7012</b> p.25, <b>8605</b> p.26		p. 6
<b>PROCESS VALVES &amp; CONTROL HEADS</b> 2000 p.28-30, 2100 p.31-33, 2101 & 2012 p.34-35, 2103 p.36-39, 2106 p.41, 3233 p.42-45, 8661 p.46-47, 8691 p.48, <b>8602</b> & <b>8603</b> p.49, 8792 & 8793 p.50, 8801 2100+2101 p.52-53, 8802 2000+2001 p.54-55		p. 28
<b>PNEUMATIC ACTUATION</b> <b>8032801401001</b> p.56-57, 6214 p.59, 6519 p.60, 8640 p.61, 8644 p.62-63, 8652 p.64 & <b>8653</b> p.67		p. 66
<b>SENSORS, TRANSMITTERS &amp; CONTROLLERS</b> 1081 p.68, 8022 p.69, 8023 p.70, 8030 p.71, 80301 p.72, 8038 p.73, 8041 p.74, 8046 p.75, 8051+8052+8056 p.76, 8077 p.77, 8098 p.78-79, 8110+8111 p.80, 8137+8138 p.81, 8177 p.82, 8189+8189 p.83, 8222 p.84, 8223 p.85, 8222 p.86, 8229 p.87, 8311 p.88, 8316 p.89, 8400 p.90, 8619 p.91		p. 68
<b>MASS FLOW</b> 8713 p.95, 8741 p.96, 8742 p.97, 8745 p.98, 8746 p.99		p. 95

Burkert 5

# Expanded Quick Delivery Program Offering

- Increased # of items included in the QDP based on distribution requests
- New solenoid valves included
- Proportional valves were introduced
- Added focus products that have seen upgrades (e.g. Rockwell AOP/AOI enabled devices)

## Quick Delivery Program



**3064**  
current number  
of items  
included (and  
growing)

shipping  
out in 5  
days or  
less < **5**  
**days**

**\$0**  
no extra  
charge or  
fees

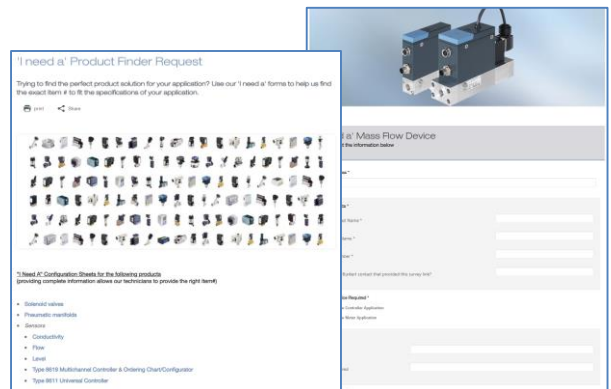


# 'I Need A' Sheets Updated on Website

The Burkert 'I Need A' sheets that assist our technical team in specifying the correct Burkert item # to fit specific requirements have been integrated directly onto the burkert-usa.com website.

The MFC/MFM 'I Need A' sheet has also been added to the available forms to better assist with specifying MFCs and/or MFMs.

As always – directly linked on the [Distributor Toolbox](#)



## The “IT” List – New QDP Product Types Added

*Your purchases and feedback pushes our Quick Delivery Program stocking plan and inventory!*

The following 4 product types are new additions to both the Short Form Catalog and Quick Delivery Program.



### Type 8681 - Control head for decentralized automation of hygienic process valves

- Universal attachment for hygienic process valves
- Contactless position measurement system with 3 switching points (Teach-In function)
- Coloured status display
- Manual override operative with closed housing
- [AS-Interface](#), [IO-Link](#), [bÜS/CANopen](#)

### Type 8691/ 8692/ 8693 - Control heads for decentralized automation of ELEMENT process valves

- Servo-assisted diaphragm valve up to DN65 orifice
- Contact-free inductive valve position registration (Teach-In function) (8691)
- Easy start-up by automatic X-Tune function (8692/93)
- Colored illuminated status display (8691)
- Integrated control air routing in the actuator
- Fieldbus interface, [IO-Link](#), [AS interface](#), [EtherNet/IP](#), [PROFINET](#), [Modbus TCP](#), PROFIBUS DP-V1 or [Bürkert system bus \(bÜS\)](#)
- Compact, robust stainless steel design



### Type 8652 - AirLINE - the valve island optimized for process automation

- Safety-related shut-off of valves possible
- Easy diagnostics via LC display
- Process reliability through pneumatic functions
- Optimized for installation at the bottom of the control cabinet
- Explosion-proof variants according to ATEX / IECEx Zone 2



### Type 8653 - AirLINE Field - the valve island optimized for process automation

- Fieldbus interface, [CANopen](#), [IO-Link](#) or [bÜS \(Bürkert System Bus\)](#)
- Easy diagnostics via LC display
- Process reliability through pneumatic functions
- Optimized for installation in the field (IP65/67)

# What is an MFC & How Does it Work?

A mass flow controller (MFC) is a device used to measure and control the flow of liquids and gases.

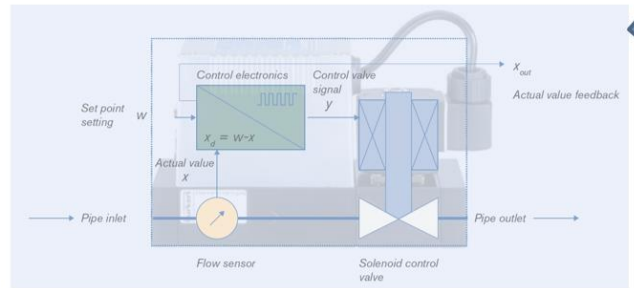
### Made up of these primary components

- Mass flow meter (sensor)
- Proportional control valve
- Solenoid: [2871](#), [2873](#), [2875](#), [2836](#)
- Motor: [3285](#)
- Controller/ Control electronics



### Working principle

- Closed loop control
- Set point- external signal sent to controller (analog or digital)
- Feedback from sensor to controller, compares SP to PV
- Controller adjusts proportional valve to match SP & PV



# Mass Flow vs. Volume Flow

Why is mass flow measurement for gases important?

Because gases are compressible!

Ideal Gas Law:

$$\frac{p \cdot V}{T} = const$$

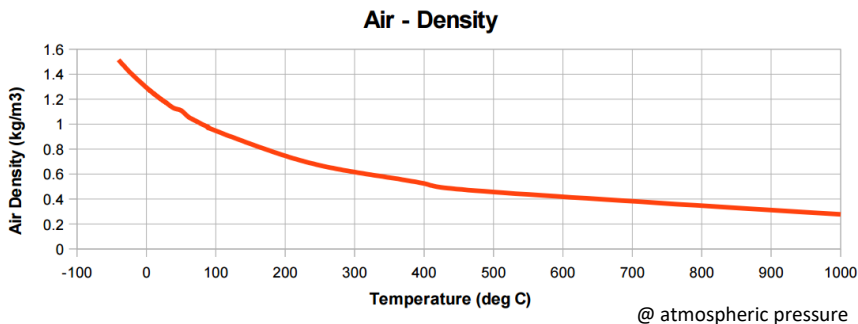
$$\frac{p_1 \cdot V_1}{T_1} = \frac{p_2 \cdot V_2}{T_2} = const$$

**Mass  $m = \rho * V$ ,**  
with density  $\rho = \rho(T, p)$

Volume flow measurement: Measures the volume of gas. For accurate results the pressure and temperature must be measured, additionally to the volume

Mass flow measurement: measures the quantity of gas molecules. Independent from pressure and temperature

- Density changes significantly with changing temperature and/or pressure



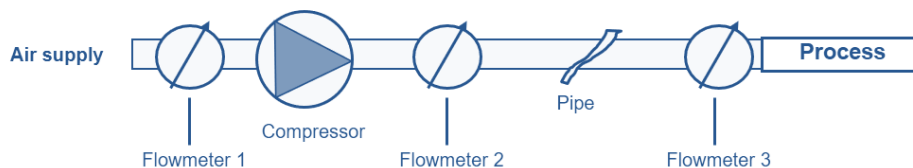
Temperature (°C)	Density - $\rho$ - (kg/m³)
-40	1.514
-20	1.395
0	1.293
5	1.269
10	1.247
15	1.225
20	1.204
25	1.184
30	1.165
40	1.127
50	1.109
60	1.060
70	1.029
80	0.9996
90	0.9721
100	0.9461
200	0.7461
300	0.6159
400	0.5243
500	0.4565

@ atmospheric pressure

# What is an MFC and how does it work?

## Mass Flow vs. Volume Flow

**Example:**



	Flowmeter 1	Flowmeter 2	Flowmeter 3
<b>Volume flow</b>	1 m <sup>3</sup> /h	0.172 m <sup>3</sup> /h	0.167 m <sup>3</sup> /h
<b>Temperature</b>	293 K	353 K	293 K
<b>Pressure</b>	1 bar(g)	7 bar(g)	6 bar(g)
<b>Density</b>	1.205 kg/m <sup>3</sup>	7.001 kg/m <sup>3</sup>	7.23 kg/m <sup>3</sup>
<b>Mass flow</b>	1.205 kg/h	1.205 kg/h	1.205 kg/h

$$\text{Density } \rho = m/V \rightarrow$$

$$\text{Mass } m = \rho * V$$

$$\frac{P \cdot V}{T} = \text{const}$$

$$\frac{P_1 \cdot V_1}{T_1} = \frac{P_2 \cdot V_2}{T_2} = \text{const}$$

## Why Burkert?

Features	Burkert Unique Benefits
Compact and integrated flow control loop	<ul style="list-style-type: none"> <li>Reduction of electrical and mechanical interfaces</li> <li>Space saving and easy to install</li> <li>Optimized PID controller</li> </ul>
Flow measurement without moving parts within the flow channel	<ul style="list-style-type: none"> <li>Pressure and temperature independent measurement</li> <li>Long lifetime</li> </ul>
Low pressure drop design	More efficient processes, suitable for applications with low $\Delta p$
Direct acting, simple solenoid control valves	<ul style="list-style-type: none"> <li>Cost-effective</li> <li>high span</li> <li>excellent repeatability</li> </ul>
Flow measurement directly in the gas	Short response and settling time
Integrated flow conditioner	No special inlet and/or outlet requirements necessary
Real gas calibration	High precision mass flow measurement
Burkert Communicator	Free software: command and monitor, customer recalibration



## Burkert MFCs Type [8741/8742](#) Overview








### Mass Flow Controller (MFC)/ Mass Flow Meter (MFM) for Gases

- Nominal flow ranges from 0.010 l<sub>N</sub>/min to 160 l<sub>N</sub>/min
- High accuracy and repeatability
- Very fast response times
- Easy device exchange through configuration memory
- Optional: USP Class VI, FDA, EG 1935 conformity

### Interfaces:

- Analog
  - 0/4...20 mA
  - 0...5/10 V
- bÜS / CANopen
- Industrial Ethernet
  - [PROFINET](#)
  - [Ethernet/IP](#)
  - [Modbus-TCP](#)
  - [EtherCAT](#)
- IP Protection
  - IP20 - 8741
  - IP65 - 8742

Approvals	Description
	<b>Approval</b> UL 611010 - 1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE - Part 1: General Requirements)
	<b>Approval</b> CAN/CSA-C22.2 No. 611010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE - Part 1: General Requirements)
<b>Conformity</b>	<b>Description</b>
	<b>Conformity of all materials in contact with the medium</b> USP Class VI Kapitel "87 in vitro" and "88 in vivo, Implantation" - Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
	<b>Conformity of all materials in contact with the medium</b> FDA - Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
	<b>Conformity of all materials in contact with the medium</b> Regulation (EC) No 1935/2004 on materials and objects intended to come into contact with food

## Burkert MFCs Type [8745/8746](#) Overview





### Mass Flow Controller (MFC)/ Mass Flow Meter (MFM) for gases

- Nominal flow ranges from 20 l<sub>N</sub>/min up to 2500 l<sub>N</sub>/min
- High accuracy and repeatability
- Communication via standard signals or Industrial Ethernet
- Electromagnetic and motor-driven valve actuation available
- Easy device exchange through configuration memory

### Interfaces:

- Analog
  - 0/4...20 mA
  - 0...5/10 V
- Industrial Ethernet
  - [PROFINET](#)
  - [Ethernet/IP](#)
  - [Modbus-TCP](#)
  - [EtherCAT](#)
  - [CAN open](#)
- IP Protection
  - IP20 - 8745
  - IP65 - 8746

Conformity	Description
	<b>Conformity of all materials in contact with the medium</b> USP Class VI Kapitel "87 in vitro" and "88 in vivo, Implantation" - Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
<b>Conformity</b>	<b>Description</b>
	<b>Conformity of all materials in contact with the medium</b> FDA - Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)

## Applications for MFCs

Applications of gases can be seen in:

- [Metallurgy](#)
- [Surface technology/ thin films](#)
- [Producing glass and ceramics](#)
- [Medical, pharmaceutical or biotech devices](#)
- [Chemical industry: foaming/ aeration of PVC or PU](#)
- [Food & Beverage industry](#)
- [Water treatment: Aeration](#)
- [Analytics – Test benches](#)
- [Semiconductor industry](#)
- [Fuel Cells](#)
- [Gas scrubber/ Abatement](#)



## Applications for MFCs: [Metal and Glass](#)

Metal Manufacturing & Processing : Gas flow control

- Gas nitriding
  - N<sub>2</sub>, NH<sub>3</sub>,
- Carburizing
  - C<sub>3</sub>H<sub>8</sub>, CH<sub>4</sub>, NG
- Bottom gas stirring:
  - Ar, N<sub>2</sub>
- Flame spraying carrier gas
  - Ar, N<sub>2</sub>



Metal and Glass Processing : Flame control

- Burner control
  - C<sub>3</sub>H<sub>8</sub>, CH<sub>4</sub>, H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, Ar



## Applications for MFCs: [Food & Beverage](#)

Inert gas filling/ modified atmosphere packaging (MAP)

To avoid chemical reactions with ambient air and increase shelf life

- Potato chips, Meat
- Gases used: O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>, Ar



Foaming/ Aeration

- Ice cream, Chocolate, Marshmallows
- Gases: Air, N<sub>2</sub>



# Literature & Video Content Featuring MFCs/MFMs

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BEST PRACTICE | SCHWARTZ GMBH

High-strength metals for more safety  
Reliable gas supply and furnace atmosphere for the press hardening of steel, aluminium and non-ferrous metals


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BEST PRACTICE

Härterei Carl Gommann GmbH  
Optimising the furnace atmosphere in heat treatment plants


Flow control — Gas control systems

**Precise gas control for exact analyses**



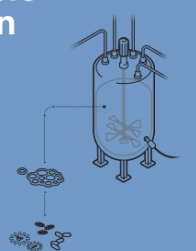
Dosing — Chemical disinfection

**Faster disinfection process increases efficiency and reliability**



Flow control — Mass flow controllers / Type 8741 and Type 8745 Ethernet

**Precise gas flow control for repeatable fermentation processes**



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Product Overview  
Mass Flow Controllers for Gases

- 01 SOLENOID VALVES
- 02 PROCESS VALVES
- 03 PNEUMATICS
- 04 MEASUREMENT DEVICES
- 05 MICROFLUIDICS
- 06**
- 07 PROPORTIONAL VALVES

Molten Metal Treatment



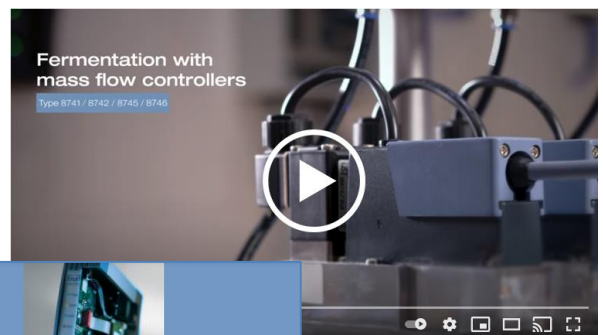
Coriolis for Surface Treatment

Fluently measure and control precise coating



Fermentation with mass flow controllers

Type 8741 / 8742 / 8745 / 8746



Literature items shown are available in digital format only.

# Success Sharing! Building Business with MFCs

Application: [Coating Equipment](#)

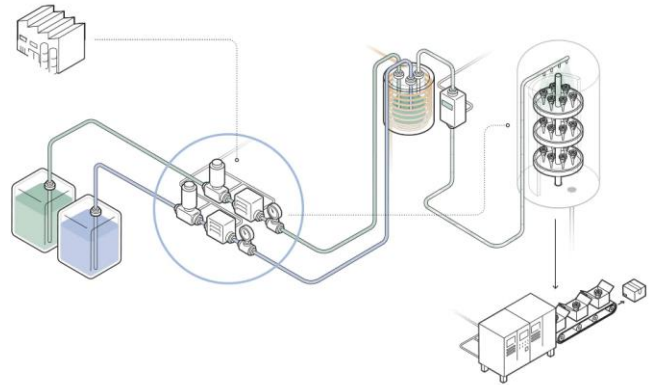
Burkert Advantage: Worked with end user to define requirements

Key to success:

- Response time
- Attention to technical details
- Distributor has strong position with integrator
- Persistence : customer took 10 months to place order

Results:

- Order even bigger than first quoted
- Nearly \$40,000 order for the distributor



# Success Sharing! Joint Webinar Event

Joint webinar with your existing customers and contacts

- Burkert prepares presentation and presents content
- Q&A session
- Good to check customer interest
- Position your company as a resource



# Success Sharing! Congratulations to French Gerleman!

Moving up from a Gold to Platinum Level Distribution Partner!

AND... the announcement of the merger with IAC Supply Solutions to form the all new Agilix Solutions!



# Your Burkert Contacts

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## SERVICE ANNOUNCEMENT:

Burkert will be upgrading our SAP sales and order processing platform on Thursday, November 11<sup>th</sup> through the weekend. During this time, *orders and shipments will not be processed*, however regular business activities will resume on Monday the 15<sup>th</sup> of November. This will impact both our inside sales processes and the E-Shop.

Want to help us make this newsletter more relevant for you?

Email feedback on what you would like to see included in upcoming issues to us at [marketing-usa@burkert.com](mailto:marketing-usa@burkert.com).