

## 5002F Series

**THOMAS**  
by Gardner Denver

### FEATURES

- > Self priming
- > Dry running
- > Oil-less, non lubricated
- > Suitable for continuous operation
- > Chemical resistant pump materials for aggressive media

### TYPICAL APPLICATIONS

- > Chemical Industry
- > Medical Devices
- > Laboratory and Analysis
- > Industrial Applications
- > Hygiene

Consult factory for customized solutions

### BASE MODEL

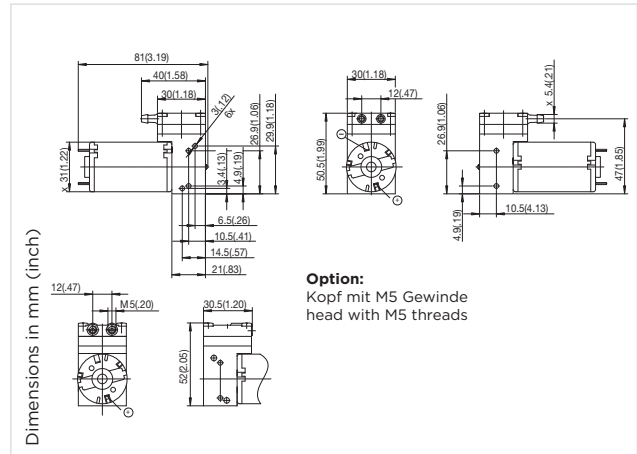
5002F  
5002F Twin



Diaphragm

# Diaphragm Liquid Pump 5002F

|                 |                             |
|-----------------|-----------------------------|
| Flow            | 400 ml/min                  |
| Pressure height | up to 40 m H <sub>2</sub> O |
| Suction height  | 6 m H <sub>2</sub> O        |



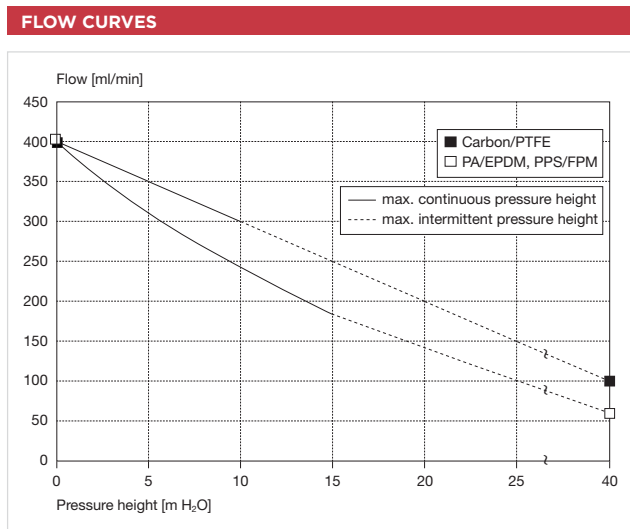
| HYDRAULIC DATA                    |                    | PA/EPDM                            | PPS/FPM                            | Carbon/PTFE                        |
|-----------------------------------|--------------------|------------------------------------|------------------------------------|------------------------------------|
| Description                       |                    | PA/EPDM                            | PPS/FPM                            | Carbon/PTFE                        |
| Part number                       | 12 V DC<br>24 V DC | <b>53001002</b><br><b>53001003</b> | <b>53001005</b><br><b>53001006</b> | <b>53001008</b><br><b>53001009</b> |
| Max. flow                         |                    | 400 ml/min                         | 400 ml/min                         | 400 ml/min                         |
| Max. intermittent pressure height |                    | 40 m H <sub>2</sub> O              | 40 m H <sub>2</sub> O              | 40 m H <sub>2</sub> O              |
| Max. continuous pressure height   |                    | up to 15 m H <sub>2</sub> O        | up to 15 m H <sub>2</sub> O        | up to 10 m H <sub>2</sub> O        |
| Max. suction height               |                    | 6 m H <sub>2</sub> O               | 6 m H <sub>2</sub> O               | 5 m H <sub>2</sub> O               |

| ELECTRICAL DATA                                |  | Permanent magnet      | Permanent magnet      | Permanent magnet      |
|--|--|-----------------------|-----------------------|-----------------------|
| Motor type                                     |  | Permanent magnet      | Permanent magnet      | Permanent magnet      |
| Nominal speed                                  |  | 3000 rpm              | 3000 rpm              | 3000 rpm              |
| Nominal voltage                                |  | 12/24 V DC            | 12/24 V DC            | 12/24 V DC            |
| Max. power consumption @ 10 m H <sub>2</sub> O |  | 5 W                   | 7 W                   | 7 W                   |
| Motor insulation class                         |  | A                     | A                     | A                     |
| Protection class                               |  | IP20                  | IP20                  | IP20                  |
| EMC protection                                 |  | Basic EMC filter (2L) | Basic EMC filter (2L) | Basic EMC filter (2L) |

| GENERAL DATA        |  | 0 to 40 °C | 15 to 40 °C | 15 to 40 °C |
|---------------------|--|------------|-------------|-------------|
| Ambient temperature |  | 0 to 40 °C | 15 to 40 °C | 15 to 40 °C |
| Media temperature   |  | 0 to 70 °C | 15 to 70 °C | 15 to 70 °C |
| Weight              |  | 0,19 kg    | 0,19 kg     | 0,19 kg     |

| WETTED PARTS |  | PA   | PPS | Carbon |
|--------------|--|------|-----|--------|
| Pump head    |  | PA   | PPS | Carbon |
| Diaphragm    |  | EPDM | FPM | PTFE   |
| Valves       |  | EPDM | FPM | FFPM   |

The technical data is based on the use of PVC measuring tubing, 4 x 1,5 mm (ID x wall thickness), 1 m length, 65° shore hardness. The use of a different tubing will change the flow.

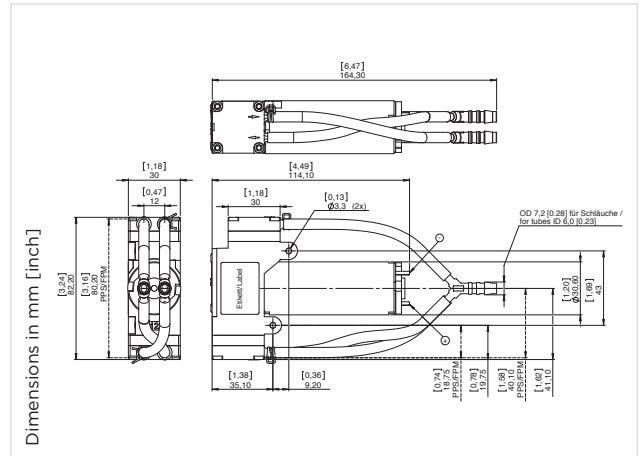


- OPTIONS**
- > Pump head with M5 female thread (PA, PPS)
  - > Pulsation damper

**5300...** Stock programme

# Diaphragm Liquid Pump 5002F Twin DC

|                        |                                  |
|------------------------|----------------------------------|
| <b>Flow</b>            | <b>1100 ml/min</b>               |
| <b>Pressure height</b> | <b>up to 25 m H<sub>2</sub>O</b> |
| <b>Suction height</b>  | <b>4,5 m H<sub>2</sub>O</b>      |



## HYDRAULIC DATA

| Description                       | 5002F Twin DC Carbon/EPDM                          | 5002F Twin DC PPS/FPM              |
|-----------------------------------|--|------------------------------------|
| Part number                       | 12 V<br>24 V<br><b>53200001</b><br><b>53200002</b> | <b>53200051</b><br><b>53200052</b> |
| Max. flow (parallel config.)      | 1000 ml/min  | 1100 ml/min                        |
| Max. intermittent pressure height | 25 m H <sub>2</sub> O                              | 25 m H <sub>2</sub> O              |
| Max. continuous pressure height   | 10 m H <sub>2</sub> O                              | 10 m H <sub>2</sub> O              |
| Max. suction height               | 4,5 m H <sub>2</sub> O                             | 4,5 m H <sub>2</sub> O             |

## ELECTRICAL DATA

| Motor type                                     | Permanent Magnet | Permanent Magnet |
|--|------------------|------------------|
| Nominal speed                                  | 2700 rpm         | 2500 rpm         |
| Nominal voltage                                | 12/24 V DC       | 12/24 V DC       |
| Max. power consumption @ 10 m H <sub>2</sub> O | 6,5 W            | 8,2 W            |
| Motor insulation class                         | E                | E                |
| Protection class                               | IPO0             | IPO0             |
| EMC protection                                 | Yes              | Yes              |

## GENERAL DATA

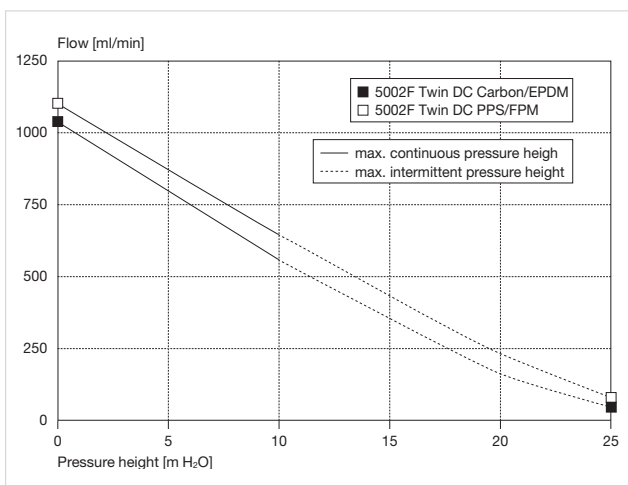
|                     |            |            |
|---------------------|------------|------------|
| Ambient temperature | 0 to 40 °C | 0 to 40 °C |
| Media temperature   | 0 to 70 °C | 0 to 70 °C |
| Weight              | 0,34 kg    | 0,33 kg    |

## WETTED PARTS

|           |        |     |
|-----------|--------|-----|
| Pump head | Carbon | PPS |
| Diaphragm | EPDM   | FPM |
| Valves    | EPDM   | FPM |
| Tubing    | PUR    | PUR |

The technical data is based on the use of PVC measuring tubing, 6 x 2 mm (ID x wall thickness), 1 m length, 75° shore hardness. The use of a different tubing will change the flow.

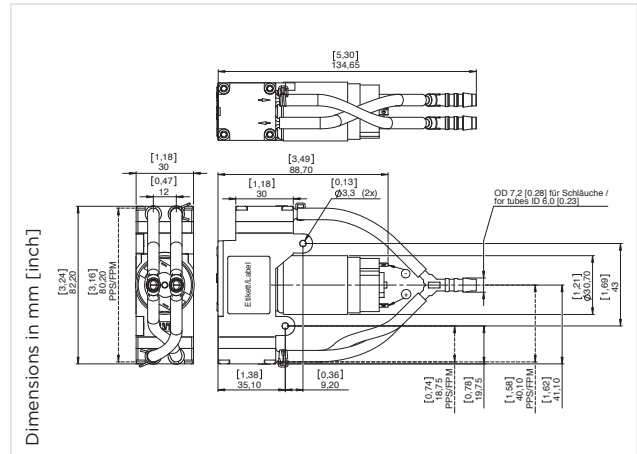
## FLOW CURVES



**5320...** Stock programme

# Diaphragm Liquid Pump 5002F Twin LC

|                 |                             |
|-----------------|-----------------------------|
| Flow            | 1100 ml/min                 |
| Pressure height | up to 25 m H <sub>2</sub> O |
| Suction height  | 4,5 m H <sub>2</sub> O      |



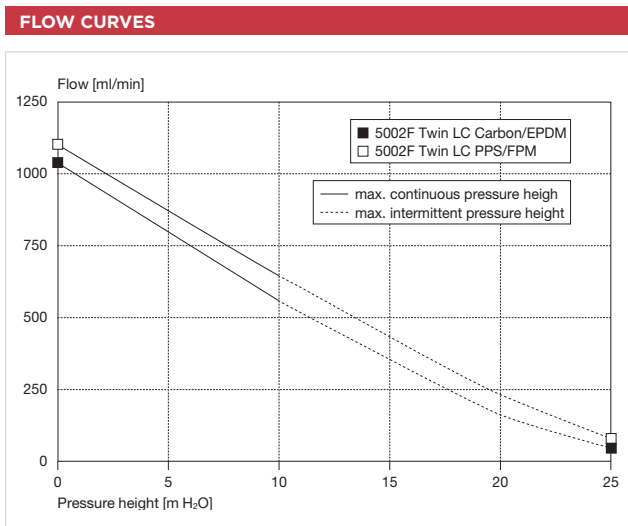
| HYDRAULIC DATA                    |      |                           |                        |
|-----------------------------------|------|---------------------------|------------------------|
| Description                       |      | 5002F Twin LC Carbon/EPDM | 5002F Twin LC PPS/FPM  |
| Part number                       | 12 V | <b>53200003</b>           | <b>53200053</b>        |
|                                   | 24 V | <b>53200004</b>           | <b>53200054</b>        |
| Max. flow (parallel config.)      |      | 1000 ml/min               | 1100 ml/min            |
| Max. intermittent pressure height |      | 25 m H <sub>2</sub> O     | 25 m H <sub>2</sub> O  |
| Max. continuous pressure height   |      | 10 m H <sub>2</sub> O     | 10 m H <sub>2</sub> O  |
| Max. suction height               |      | 4,5 m H <sub>2</sub> O    | 4,5 m H <sub>2</sub> O |

| ELECTRICAL DATA                                |  |                  |                  |
|--|--|------------------|------------------|
| Motor type                                     |  | Permanent Magnet | Permanent Magnet |
| Nominal speed                                  |  | 2600 rpm         | 2200 rpm         |
| Nominal voltage                                |  | 12/24 V DC       | 12/24 V DC       |
| Max. power consumption @ 10 m H <sub>2</sub> O |  | 7,2 W            | 10,0 W           |
| Motor insulation class                         |  | F                | F                |
| Protection class                               |  | IPO0             | IPO0             |
| EMC protection                                 |  | Yes              | Yes              |

| GENERAL DATA        |  |            |                          |
|---------------------|--|------------|--------------------------|
| Ambient temperature |  | 0 to 40 °C | 0 to 40 °C <sup>1)</sup> |
| Media temperature   |  | 0 to 70 °C | 0 to 70 °C               |
| Weight              |  | 0,24 kg    | 0,23 kg                  |

| WETTED PARTS |        |     |  |
|--------------|--------|-----|--|
| Pump head    | Carbon | PPS |  |
| Diaphragm    | EPDM   | FPM |  |
| Valves       | EPDM   | FPM |  |
| Tubing       | PUR    | PUR |  |

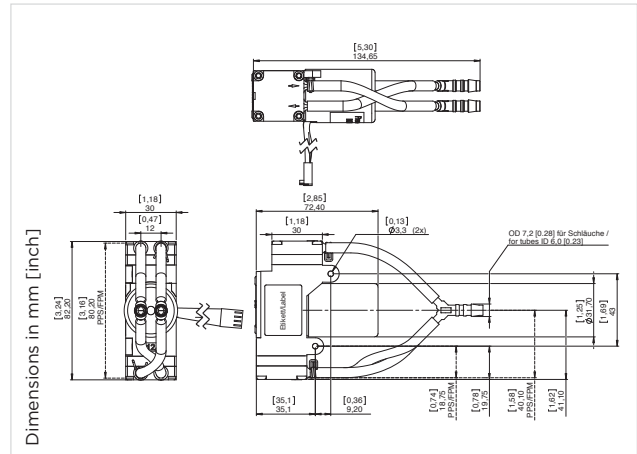
The technical data is based on the use of PVC measuring tubing, 6 x 2 mm (ID x wall thickness), 1 m length, 75° shore hardness. The use of a different tubing will change the flow. <sup>1)</sup>Motor housing temperature must not exceed 65°C



5320... Stock programme

# Diaphragm Liquid Pump 5002F Twin BLDC

|                        |                                  |
|------------------------|----------------------------------|
| <b>Flow</b>            | <b>1100 ml/min</b>               |
| <b>Pressure height</b> | <b>up to 25 m H<sub>2</sub>O</b> |
| <b>Suction height</b>  | <b>4,5 m H<sub>2</sub>O</b>      |



## HYDRAULIC DATA

| Description                       | 5002F Twin BLDC Carbon/EPDM          | 5002F Twin BLDC PPS/FPM              |
|-----------------------------------|--------------------------------------|--------------------------------------|
| Part number                       | 12 V DC<br>24 V DC                   |                                      |
|                                   | <b>53200005</b><br><b>53200006</b>   | <b>53200055</b><br><b>53200056</b>   |
| Max. flow (parallel config.)      | 1100 ml/min @ 3 V DC control voltage | 1100 ml/min @ 3 V DC control voltage |
| Max. intermittent pressure height | 25 m H <sub>2</sub> O                | 25 m H <sub>2</sub> O                |
| Max. continuous pressure height   | 10 m H <sub>2</sub> O                | 10 m H <sub>2</sub> O                |
| Max. suction height               | 4,5 m H <sub>2</sub> O               | 4,5 m H <sub>2</sub> O               |

## ELECTRICAL DATA

| Motor type                                     | Brushless DC                    | Brushless DC                               |
|--|---------------------------------|--|
| Nominal speed                                  | 2600 rpm @ 3 V DC speed voltage | 2500 rpm @ 3 V DC speed voltage            |
| Nominal voltage                                | 12/24 V DC                      | 12/24 V DC                                 |
| Max. power consumption @ 10 m H <sub>2</sub> O | 6,3 W                           | 8,1 W                                      |
| Motor insulation class                         | B                               | B  |
| Protection class                               | IP20                            | IP20                                       |
| EMC protection                                 | Yes                             | Yes  |
| Connector                                      | Housing<br>Terminal             | Molex KK 22-01-2045<br>Molex KK 08-50-0031 |

## GENERAL DATA

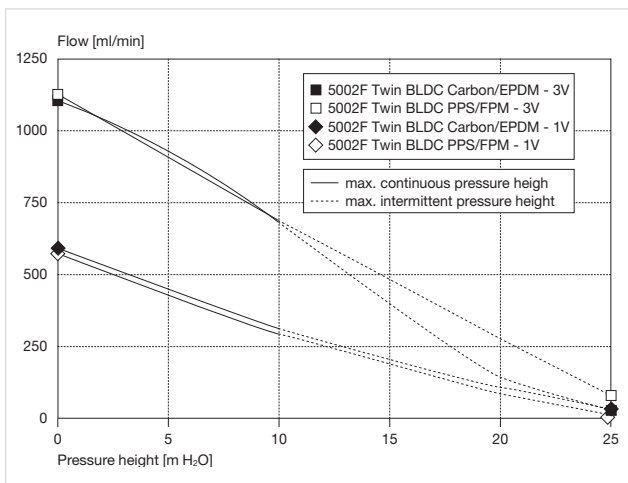
|                     |            |            |
|---------------------|------------|------------|
| Ambient temperature | 0 to 40 °C | 0 to 40 °C |
| Media temperature   | 0 to 70 °C | 0 to 70 °C |
| Weight              | 0,22 kg    | 0,21 kg    |

## WETTED PARTS

|           |        |     |
|-----------|--------|-----|
| Pump head | Carbon | PPS |
| Diaphragm | EPDM   | FPM |
| Valves    | EPDM   | FPM |
| Tubing    | PUR    | PUR |

The technical data is based on the use of PVC measuring tubing, 6 x 2 mm (ID x wall thickness), 1 m length, 75° shore hardness. The use of a different tubing will change the flow.

## FLOW CURVES



## OPTIONS

**5320...** Stock programme

- > Adapter for 2-wire duty incl. potentiometer for speed adjustment
- > 29011930 (12 V DC), 29011931 (24 V DC)

| Function | Colour        | Control |
|----------|---------------|---------|
| Pin 1    | V Supply      | Red     |
| Pin 2    | Ground        | Black   |
| Pin 3    | Speed Control | White   |
| Pin 4    | Tacho out     | Green   |

12 V DC (max. voltage range: 10..18 V DC)  
24 V DC (max. voltage range: 14..28 V DC)  
Ground for V Supply (Pin 1) and Speed control (Pin 3)  
analog: 0..5 V DC (max. 28V)  
PWM: 6..20 kHz - 14..96%  
Speed voltage input threshold: 0,2 V  
18 pulses per revolution  
Pulse time "LOW": 195 µs  
Output level "LOW": 0 / max. 0,5 V  
Output level "HIGH": min. 4 V / max. 5 V

# Chemical Resistance Chart of Wetted Parts

|  | Thermoplastics |      |     |      |      | Thermosets |        | Elastomers |     |
|--|----------------|------|-----|------|------|------------|--------|------------|-----|
|  | PP             | PARA | PPS | PTFE | PVDF | PUR        | Carbon | EPDM       | FPM |
| Mineral lubricants (e.g. motor oil)  | +              | +    | +   | +    | +    | +          | +      | -          | +   |
| Aliphatic hydrocarbons (e.g. propane, butane)                                    | +              | +    | +   | +    | +    | +          | +      | -          | +   |
| Aromatic hydrocarbons (e.g. benzene, carbon monoxide)                            | ○              | +    | ○   | +    | +    | -          | +      | -          | ○   |
| Fuel   | +              | +    | +   | +    | +    | +          | +      | -          | +   |
| Minor inorganic acids (e.g. carbon dioxide, hydrochlorid acid, perchloric acid)  | +              | +    | +   | +    | +    | -          | +      | +          | +   |
| Strong inorganic acids (e.g. carbon dioxide, hydrochloric acid, perchloric acid) | +              | -    | ○   | +    | +    | -          | +      | +          | +   |
| Minor organic acids (e.g. phenol, monochloroacetic acid, citric acid)            | +              | -    | +   | +    | +    | -          | +      | ○          | +   |
| Strong organic acids (e.g. phosphoric acid, chloric acid, citric acid)           | +              | -    | +   | +    | +    | -          | +      | ○          | +   |
| Oxidizing acids (e.g. nitric acid, chloric acid, sulfuric acid)                  | ○              | -    | -   | +    | ○    | +          | +      | +          | +   |
| Minor alkalis (e.g. caustic soda, ammonia)                                       | +              | +    | +   | +    | +    | +          | +      | +          | +   |
| Strong alkalis (e.g. caustic soda, ammonia)                                      | +              | +    | ○   | +    | -    | +          | +      | +          | -   |
| Trichlorethylene   | ○              | -    | +   | +    | +    | -          | +      | -          | +   |
| Tetrachlorethylene   | ○              | -    | +   | +    | +    | -          | +      | -          | +   |
| Acetone  | +              | +    | +   | +    | -    | -          | +      | +          | -   |
| Alcohols (e.g. methanol)   | +              | +    | +   | +    | +    | ○          | +      | +          | -   |
| Hot water (hydrolysis resistance)  | +              | +    | +   | +    | +    | ○          | +      | +          | +   |

+ = small or no effect  
 - = minor or moderate effect  
 ○ = severe effect

The chemical resistance is influenced by temperature and concentration of the medium.  
 The data has to be seen as an indication and does not guarantee the material properties.

PUMP AND COMPRESSOR SOLUTIONS FOR OEMS WORLDWIDE



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