

DIAPHRAGM LIQUID PUMP WITH LINEAR DRIVE

FMM 80



FMM 80 KPDC-P



FMM 80 TTDC-P

Features

Long service life

Over >500 million cycles.

Dispense volume from 30 to 80 μ l

Mechanical calibration between 30 and 80 μ l. If desired, the pumps can be supplied with a dispense volume that cannot be adjusted externally.

Large flow range

The pump can be operated between 0 - 10 Hz, which represents a flow range of 0-48 ml/min.

Flow tight in both directions

At rest, the pump is flow tight in both directions.

Pressure stable

There is only minimal variation in stroke volume, between 0 and 1 bar of counterpressure.

High chemical resistance

The use of PP, PVDF, EPDM, FFKM and PTFE (TFM) as materials that come into contact with media enables the transfer of a large number of neutral and corrosive media.

Self-priming

The sophisticated diaphragm technology and the precise valve technology allows a suction height of 4 mWS, at nominal engine capacity.

Quiet running

A patented and tried-and-tested noise suppression system means that the pump is extremely quiet.

Maintenance-free

The pump is maintenance-free over the complete life time.

Area of use

- Medical diagnostics
- Industrial dosing systems
- Inkjet printing
- Fuel cells
- Semi conductor industry
- Water analysis
- And more

PERFORMANCE DATA

Type	Max. frequency	Flow rate at 10 Hz	Max. pressure
FMM 80	10 Hz	48 ml/min	1 bar

THE KNF MODULAR CONCEPT OF SELECTION

KNF modular system

Clearly-defined basic elements form the foundation of our versatile product range that responds to our customers specific needs. You can determine for yourself which properties fulfil your requirements in the most effective way, using the following modules to put together your diaphragm liquid pump:

1 Material of head components

KNF Flodos supplies a wide selection of material combinations for applications in direct contact with media. These enable the transfer of almost any medium.

2 Solenoid

The FMM 80 pump is a magnetically-driven linear pump. Sending an electrical impulse to the pump generates a magnetic field, which carries out a stroke movement. The solenoid possesses a fixed transient voltage suppressor. This enables a controlled discharge to take place, thereby preventing damage to the electronic control system. To avoid disturbing the control signal the electronic control should not contain any diode.

3 Voltage

The solenoids inside the FMM 80 pumps can be supplied as standard in the voltage ratings 12 V or 24 V.

TYPE DESCRIPTION			
Basic model	1	2	3
e.g. FMM 80	KP	DC-P	24V

1 MATERIALS OF HEAD COMPONENTS		
KP	Head Valves/O-rings Diaphragm Resonating diaphragm	PP EPDM EPDM EPDM
TT	Head Valves/O-rings Diaphragm Resonating diaphragm	PVDF FFKM PTFE coated FFKM

2 SOLENOID	
DC-P	Direct current impulses for the magnetic drive

3 VOLTAGE	
12 / 24 V	for a direct current solenoid

General notes

All values given in this data sheet are based on the standard FMM 80 pump and depend on the liquid, choice of head materials and tubing.

The standard FMM 80 is adjusted to a stroke volume of 80 µl per stroke using standardised test equipment.

Important notes

Accuracy

The 80 µl is set and measured during testing at KNF. If the pump is subject to different parameters then the stroke volume can differ.

Calibration

It is possible to calibrate the flowrate volume to fit the specific conditions of the application by adjusting the stroke length using the calibration screw on the base of the pump.

Repeatability

In order to achieve the best accuracy and repeatability it is important to ensure that the surrounding parameters stay constant. E.g. pressure, suction height, liquid temperature, type of hosing etc.

Vacuum

At a low frequency, it will take longer for the maximum vacuum to be built up. If the stroke volume is reduced, the inlet vacuum is also reduced.

Priming

Before dispensing starts it is important that the system is completely filled with liquid as air bubbles will lead to false results.

Fittings

Check that the fittings are connected properly and are not letting air in.

Filter

The presence of particles in the liquid being pumped can result in the valves being blocked. We therefore recommend the use of an approx. 50 micron filter on the suction side.

TECHNICAL DATA

ELECTRICAL DATA

Rated voltage	12 V	24 V
Max. current consumption	2 A	1 A
Mean continuous current consumption at 10Hz	0.42 A	0.21 A
Power rating at 10 Hz	5 W	
Max. permitted frequency	10 Hz	
ON-Time impulse	30 ms	
Min. OFF-Time impulse	>70 ms	
Motor leads	AWG22	
Built-in transient voltage suppressor (Transient Voltage Suppressor)	Limits transient voltage to a max. of 70 V when deactivating the solenoid	
EMC Directive	EN 61000-6-3 (inkl. EN 55022 / EN 55011)	
Protection class	IP 54	

HYDRAULIC DATA

Nominal stroke volume	80 μ l ¹⁾
Stroke volume calibration range	30 - 80 μ l
Flowrate at 10 Hz	48 ml/min
Max. permitted pressure	1.0 bar
Flow tight in both directions	max. 1.0 bar
Max. suction height ¹⁾	4 mWg

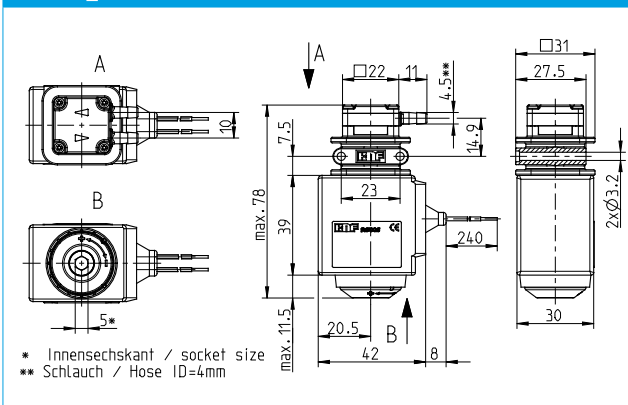
1) During the adjustment of the pump at KNF, ten consecutive strokes are measured. The nominal stroke volume is their average value, which lays between 79 and 81 μ l.

GENERAL DATA

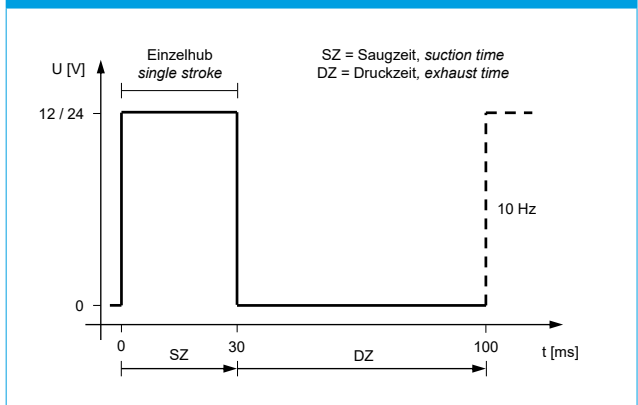
Service life	>500 million cycles
Noise level	\leq 40 dBA ²⁾
Weight	210 g
Adjusting the pump	Allen key 5 mm
Size	77 x 50 x 31 mm
Allowed ambient temperature	+5 to +40 °C
Allowed liquid temperature	+5 to +80 °C

2) Compliant to DIN 45635, wet-tested, without counterpressure

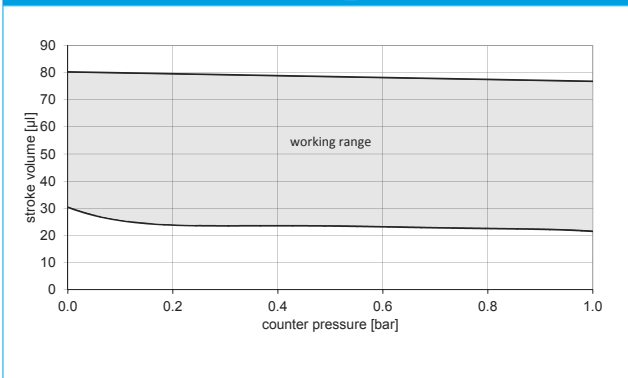
FMM 80_DC-P



CONTROL SIGNAL



CHARACTERISTIC CURVE FMM 80_DC-P



OPTIONS

Starter kit FSK 4 for test purposes available on request. KNF offers a wide range of accessories such as pressure control valves or pulsation dampers which can be used to make the perfect fluidic solution for your application.