

# **PULSAFEEDER**<sup>®</sup>

**Mechanical Diaphragm Pumps**



**BLACK**  
**LINE**  
**Series MD Product**

Effective 01/12/15

# BLACK LINE

## Mechanical Diaphragm Pumps

### Series MD

#### Key Features

- Liquid End Materials – GFPP, 316SS & PVDF.
- Rugged double-sided PTFE faced, long life diaphragm.
- Oil Lubricated Ball Bearings in die-cast aluminum housing.
- Manual micrometer style stroke adjustment; 10:1 turndown, up to 100:1 with VFD Vector drive.
- Standard NEMA 56C or IEC71 motor frames available.

#### Optional Features

- Variable Frequency Drive for Automatic Control.
  - ◆ Fully Scalable 4-20mA, 0-10VDC signals.
  - ◆ NEMA 4X Enclosure.
- ATEX Group II, Category 3 – Zone 2/22 for non-flammable liquids with proper motor selection.



VFD VECTOR  
(Optional)

#### Pressure and Flow Rate Capacity

MODEL		MD1A	MD1B	MD1C	MD1D	MD1E	MD2F	MD2G	MD2H	MD3G
Capacity nominal (max.)	GPH	7	14	22	29	35	59	79	98	132
	LPH	26	53	82	111	133	225	298	371	501
Pressure (max.)	PSIG	150	150	150	150	150	90	90	75	75
	BAR	10	10	10	10	10	6	6	5	5
Connections:	FNPT	1/2"					3/4"	1"		
	BSPT-F	1/2"					3/4"	1"		
Strokes/Minute	SPM	84	60	84	116	138	84	118	138	118

#### Engineering Data

<b>Reproducibility:</b>	+/- 2% at maximum capacity
<b>Viscosity Max CPS:</b>	up to 1000 CPS
<b>Stroke Frequency Max SPM:</b>	60 to 138 Strokes Per Minute max. (Depending on model selection)
<b>Stroke Length Turn-Down Ratio:</b>	10:1
<b>Power Input:</b>	115 VAC/60 Hz/1 ph 230 VAC/50-60 Hz/1 ph or 3 ph
<b>Max Ambient Temperature:</b>	104° F (40° C)
<b>Max Fluid Temperature:</b>	104° F (40° C)
<b>Oil Capacity:</b>	15.2 oz (0.4 L)

## Blackline Series MD Selection Guide

MD \_ \_ \_ \_ \_ XXX

<b>MODELS:</b>	<b>1A</b>	= 7 gph ( 26 lph) max pres.: 150 PSI (10 BAR)
	<b>1B</b>	= 14 gph ( 53 lph) max pres.: 150 PSI (10 BAR)
	<b>1C</b>	= 22 gph ( 82 lph) max pres.: 150 PSI (10 BAR)
	<b>1D</b>	= 29 gph / ( 111 lph) max pres.: 150 PSI (10 BAR)
	<b>1E</b>	= 35 gph / ( 133 lph) max pres.: 150 PSI (10 BAR)
	<b>2F</b>	= 59 gph / ( 225 lph) max pres.: 90 PSI (6 BAR)
	<b>2G</b>	= 79 gph / (298 lph) max pres.: 90 PSI (6 BAR)
	<b>2H</b>	= 98 gph / ( 371lph) max pres.: 75 PSI (5 BAR)
	<b>3G</b>	= 132 gph / (501 lph) max pres.: 75 PSI (5 BAR)

<b>LIQUID END Size 1A-E</b>	<b>KTP</b>	= PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball
	<b>PPP</b>	= Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball
	<b>AAS</b>	= 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball
	<b>KMM**</b>	= PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball

<b>Size 2F-H</b>	<b>KTP</b>	= PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball
	<b>PPP</b>	= Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball
	<b>AAS</b>	= 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball
	<b>KMM**</b>	= PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball

<b>Size 3G</b>	<b>KTP</b>	= PVDF Head / PTFE Valve Seat / Pyrex Valve Check Ball
	<b>PPP</b>	= Glass Filled Polypropylene Head / PVC Valve Seat / Pyrex Valve Check Ball
	<b>AAS</b>	= 316SS Head / 316SS Valve Seat / 316SS Valve Check Ball
	<b>KMM**</b>	= PVDF Head / Incoloy 825 Valve Seat / Hastelloy C-276 Valve Check Ball

<b>VALVE CONNECTION:</b>	<b>N</b>	= NPT Connection
	<b>B</b>	= BSPT Connection

<b>MOTOR SELECTION:</b>	<b>1</b>	= TEFC - NEMA 56C, 1P, 115/230V, 60Hz, 1/2 Hp
	<b>2</b>	= TEFC - NEMA 56C, 3P, 230/460V, 50/60Hz, 1/2 Hp (VFD 10:1)
	<b>3</b>	= Ex.Proof- NEMA 56C, 1P, 115/230V, 60Hz, 1/2 Hp
	<b>4</b>	= Ex. Proof- NEMA 56C, 3P, 230/460V, 60Hz, 1/2 Hp
	<b>6</b>	= TEFC - IEC 71, 3P, 220/380/460V, 50/60Hz, .37kW (VFD 10:1, Required for CE Approved VFD)
	<b>8</b>	= Ex. Proof- IEC 71, 3P, 220/380/460V, 50/60Hz, .37kW
	<b>X</b>	= No Motor - NEMA 56C Frame Ready
	<b>Y</b>	= No Motor - IEC 71 Frame Ready

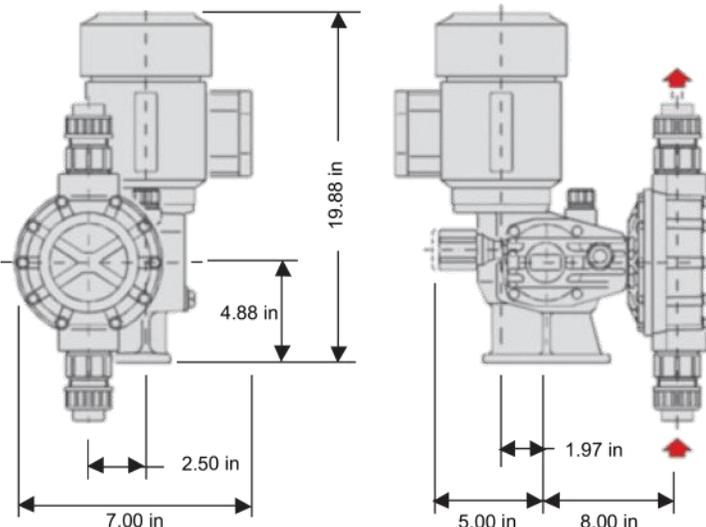
<b>VFD OPTIONS</b>	<b>A</b>	= No VFD
	<b>C</b>	= VFD, 115/230V, NEMA 4X, IP65 Enclosure, 1 Phase, Motor 2 & 6 Only

<b>OPTIONS</b>	<b>XXX</b>	= No Options
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A completed model number should look like 'MD1BKTPN1A-XXX'

\*\* For use with high concentration of Sulfuric acid and poly-alum-chloride.

## Dimensions



Series MD Dimensions (inches)			
Model	Box Dimensions	Weight Plastic (lbs)	Weight Stainless Steel (lbs)
MD1A (NO MOTOR)	19 x 19 x 10	21.5	26.0
MD1B (NO MOTOR)	20 x 19 x 10	21.5	26.0
MD1C (NO MOTOR)	21 x 19 x 10	21.5	26.0
MD1D (NO MOTOR)	22 x 19 x 10	21.5	26.0
MD1E (NO MOTOR)	23 x 19 x 10	21.5	26.0
MD2F (NO MOTOR)	24 x 19 x 10	26.0	37.0
MD2G (NO MOTOR)	25 x 19 x 10	26.0	37.0
MD2H (NO MOTOR)	26 x 19 x 10	26.0	37.0
MD3G (NO MOTOR)	27 x 19 x 10	29.0	46.0
MD1A W/VFD & MOTOR	27 x 17.4 x 18.75	67.0	71.5
MD1B W/VFD & MOTOR	28 x 17.4 x 18.75	67.0	71.5
MD1C W/VFD & MOTOR	29 x 17.4 x 18.75	67.0	71.5
MD1D W/VFD & MOTOR	30 x 17.4 x 18.75	67.0	71.5
MD1E W/VFD & MOTOR	31 x 17.4 x 18.75	67.0	71.5
MD2F W/VFD & MOTOR	32 x 17.4 x 18.75	71.5	82.5
MD2G W/VFD & MOTOR	33 x 17.4 x 18.75	72.5	83.5
MD2H W/VFD & MOTOR	34 x 17.4 x 18.75	73.5	84.5
MD3G W/VFD & MOTOR	35 x 17.4 x 18.75	74.5	91.5

# BLACK LINE

## Mechanical Diaphragm Pumps

### Common Pump Accessories

Component	Size	Material	Part No.
Drip Cover, Motor	56C	Steel, Baldor	NP999119
Pressure Relief Valves	1/2"	PVC/TFE	NA100001-PVC
	1/2"	PVDF/TFE	NA100001-PVD
	1/2"	SS/TFE	NA100001-316
	1"	PVC/TFE	NA100002-PVC
	1"	PVDF/TFE	NA100002-PVD
	1"	SS/TFE	NA100002-316
Back Pressure Valves	1.5"	PVC/TFE	NA100003-PVC
	1.5"	PVDF/TFE	NA100003-PVD
	1/2"	PVC/TFE	NA200001-PVC
	1/2"	PVDF/TFE	NA200001-PVD
	1/2"	SS/TFE	NA200001-316
	1"	PVC/TFE	NA200002-PVC
Gauge Isolator w/ 200PSI Gauge	1"	PVDF/TFE	NA200002-PVD
	1"	SS/TFE	NA200002-316
	1.5"	PVC/TFE	NA200003-PVC
	1.5"	PVDF/TFE	NA200003-PVD
	1/4"	PVC/TFE	NA500001-PVC
	1/4"	PVDF/TFE	NA500001-PVD
Calibration Column	1/4"	316SS/TFE	NA500001-316
	1/2"	PVC 100mL	NA300001-PVC
	1/2"	PVC 200mL	NA300002-PVC
	3/4"	PVC 500mL	NA300003-PVC
	3/4"	PVC 1000mL	NA300004-PVC
	1"	PVC 2000mL	NA300005-PVC
	1"	PVC 4000mL	NA300006-PVC
	2"	PVC 10,000mL	NA300007-PVC
	2"	PVC 20,000mL	NA300008-PVC
	1/2"	Glass/PVD 100mL	NA300009-PVD
	1/2"	Glass/PVD 200mL	NA300010-PVD
	3/4"	Glass/PVD 500mL	NA300011-PVD
	3/4"	Glass/PVD 1000mL	NA300012-PVD
	1"	Glass/PVD 2000mL	NA300013-PVD
	1"	Glass/PVD 4000mL	NA300014-PVD
	1/2"	Glass/SS 100mL	NA300015-316
	1/2"	Glass/SS 200mL	NA300016-316
	3/4"	Glass/SS 500mL	NA300017-316
	3/4"	Glass/SS 1000mL	NA300018-316
	1"	Glass/SS 2000mL	NA300019-316
1"	Glass/SS 4000mL	NA300020-316	
Y Strainer	1/2"	PVC	40085
	1/2"	CPVC	NA400001-CPVC
	1/2"	PVD	NA400001-PVD
	1"	PVC	NA400002-PVC
	1"	CPVC	NA400002-CPVC
1"	PVD	NA400002-PVD	

### 150 PSI Pulsation Dampeners - Chargeable

Volume	Body	Bladder	Connection	Part Number		
10 cubic inches	POLY	EPDM	3/8" FNPT	NA601038-FPPE		
		CSPE	3/8" FNPT	NA601038-FPPC		
		TFE	3/8" FNPT	NA601038-FPPT		
		Viton	3/8" FNPT	NA601038-FPPV		
		CSPE	1/2" FNPT	NA601050-FPPC		
		TFE	1/2" FNPT	NA601050-FPPT		
	PVC	Viton	1/2" FNPT	NA601050-FPPV		
		CSPE	1/2" FNPT	NA601050-PVCC		
		TFE	1/2" FNPT	NA601050-PVCT		
		Viton	1/2" FNPT	NA601050-PVCV		
		PVDF	EPDM	3/8" FNPT	NA601038-PVDE	
			CSPE	3/8" FNPT	NA601038-PVDC	
	TFE		3/8" FNPT	NA601038-PVDT		
	Viton		3/8" FNPT	NA601038-PVDV		
	316 SS		EPDM	3/8" FNPT	NA601038-316E	
			CSPE	3/8" FNPT	NA601038-316C	
		TFE	3/8" FNPT	NA601038-316T		
		Viton	3/8" FNPT	NA601038-316V		
85 cubic inches		POLY	EPDM	3/4" FNPT	NA608575-FPPE	
			CSPE	3/4" FNPT	NA608575-FPPC	
	TFE		3/4" FNPT	NA608575-FPPT		
	Viton		3/4" FNPT	NA608575-FPPV		
	PVDF		EPDM	3/4" FNPT	NA608575-PVDE	
			CSPE	3/4" FNPT	NA608575-PVDC	
		TFE	3/4" FNPT	NA608575-PVDT		
		Viton	3/4" FNPT	NA608575-PVDV		
		316 SS	EPDM	3/4" FNPT	NA608575-316E	
			CSPE	3/4" FNPT	NA608575-316C	
	TFE		3/4" FNPT	NA608575-316T		
	Viton		3/4" FNPT	NA608575-316V		
	370 cubic inches		POLY	EPDM	2" FNPT	NA637020-FPPE
				CSPE	2" FNPT	NA637020-FPPC
		TFE		2" FNPT	NA637020-FPPT	
		Viton		2" FNPT	NA637020-FPPV	
		PVDF		EPDM	2" FNPT	NA637020-PVDE
				CSPE	2" FNPT	NA637020-PVDC
TFE			2" FNPT	NA637020-PVDT		
Viton			2" FNPT	NA637020-PVDV		
316 SS			EPDM	2" FNPT	NA637020-316E	
			CSPE	2" FNPT	NA637020-316C	
		TFE	2" FNPT	NA637020-316T		
		Viton	2" FNPT	NA637020-316V		
		36 cubic inches	POLY	EPDM	3/4" FNPT	NA603675-FPPE
				CSPE	3/4" FNPT	NA603675-FPPC
TFE				3/4" FNPT	NA603675-FPPT	
Viton				3/4" FNPT	NA603675-FPPV	
PVDF				EPDM	3/4" FNPT	NA603675-PVDE
				CSPE	3/4" FNPT	NA603675-PVDC
	TFE		3/4" FNPT	NA603675-PVDT		
	Viton		3/4" FNPT	NA603675-PVDV		
	316 SS		EPDM	3/4" FNPT	NA603675-316E	
			CSPE	3/4" FNPT	NA603675-316C	
TFE			3/4" FNPT	NA603675-316T		
Viton			3/4" FNPT	NA603675-316V		
175 cubic inches			POLY	EPDM	2" FNPT	NA617520-FPPE
				CSPE	2" FNPT	NA617520-FPPC
	TFE			2" FNPT	NA617520-FPPT	
	Viton			2" FNPT	NA617520-FPPV	
	PVDF			EPDM	2" FNPT	NA617520-PVDE
				CSPE	2" FNPT	NA617520-PVDC
		TFE	2" FNPT	NA617520-PVDT		
		Viton	2" FNPT	NA617520-PVDV		
		316 SS	EPDM	2" FNPT	NA617520-316E	
			CSPE	2" FNPT	NA617520-316C	
	TFE		2" FNPT	NA617520-316T		
	Viton		2" FNPT	NA617520-316V		

### BLACKLINE KOPkit

Pump Size	Wetted Material	KOPkit Number
Size 1A - 1E	PVDF	K1AE-KTP
	PP	K1AE-PPP
	Stainless	K1AE-AAS
	PVDF/Alloy C	K1AE-KMM
Size 2F	PVDF	K2F-KTP
	PP	K2F-PPP
	Stainless	K2F-AAS
	PVDF/Alloy C	K2F-KMM
Size 2H	PVDF	K2GH-KTP
	PP	K2GH-PPP
	Stainless	K2GH-AAS
	PVDF/Alloy C	K2GH-KMM
Size 3G	PVDF	K3G-KTP
	PP	K3G-PPP
	Stainless	K3G-AAS
	PVDF/Alloy C	K3G-KMM

Specification 150 PSI Maximum Pressure